SECTION 00 62 76.13
SALES TAX FORM

PART 1 – GENERAL

1.1. SUMMARY

A. The City of Madison is a qualifying tax exempt entity in the State of Wisconsin.

B. The Contractor shall refer to *Section 102.9 – Bidders Understanding* of the *City of Madison Standard Specifications for Public Works Construction* for more information on Tax Exempt Status.

C. This project constructs or remodels facilities owned by the City of Madison in Madison, Wisconsin.

1.2. RELATED SPECIFICATION SECTIONS

A. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".

1. Use the following link to access the Standard Specifications web page:
   http://www.cityofmadison.com/business/pw/specs.cfm
   a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
   b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.

1.3. TAX EXEMPT FORM

A. The Contractor can access Wisconsin Sales and Use Tax Exemption Certificates (form S-211, Wisconsin Department of Revenue) from the City of Madison Finance website.

1. City of Madison tax exempt information and signature by Purchasing Supervisor is already completed.
2. Website: http://www.cityofmadison.com/employeenet/finance/purchasing
   a. Under the title *Purchasing Forms*, scroll down to the form link titled *Sales Tax Exempt Form S-211*.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 – EXECUTION – THIS SECTION NOT USED

END OF SECTION

SECTION 01 26 13
REQUEST FOR INFORMATION (RFI)

PART 1 – GENERAL

1.1. SUMMARY

A. Contractors shall use the RFI form/process to request additional information or clarification regarding the construction documents.

B. All RFI documentation will be processed through the through the Construction Administration-Request for Information Library on the Project Management Web Site (PMWS).

1.2. RELATED SPECIFICATIONS

A. Section 01 26 46 Construction Bulletin (CB)

B. Section 01 26 57 Change Order Request (COR)

C. Section 01 26 63 Change Order (CO)

D. Section 01 31 23 Project Management Web Site (PMWS)

1.3. PERFORMANCE REQUIREMENTS

A. RFI issues initiated by any contractor shall be done through the General Contractor (GC).

1. RFIs submitted by any Sub-contractor under the GCs control shall be returned with no response.

B. Submit a new RFI for each issue. Only multiple questions that are of a similar nature may be combined into one RFI shall be allowed and responded to.

1.4. QUALITY ASSURANCE

A. The GC shall be responsible for all of the following:

1. Ensure that any request for additional information is valid and the information being requested is not addressed in the construction documents.
2. Ensure that all requests are clearly stated and the RFI form is completely filled out.
3. Ensure that all Work associated an RFI response is carried out as intended.

B. The City Project Manager shall be responsible for the following:

1. Ensure that all responses to contractor initiated RFIs are properly responded to in a timely fashion.
   a. The CPM, Owner, consulting staff, and other City staff shall be responsible for the initial review of the RFI. The CPM shall be responsible for codifying all consultant and Owner/City staff comments into a unified RFI response.

PART 2 – PRODUCTS

2.1. REQUEST FOR INFORMATION FORM

A. The RFI form is located on the Project Management Web Site. The GC, PA, or CPM as appropriate shall click the link in the left margin of the project web site opening a new form. Project information is pre-loaded, provide additional information as indicated below in the execution to complete the form.

PART 3 - EXECUTION

3.1. CONTRACTOR INITIATED RFI

A. Immediately on discovery of the need for additional information or interpretation of the Contract Documents any contractor may initiate an RFI for additional information or clarification through the GC.

B. The GC shall select the "Submit an RFI" link on the Project Management Web Site and completely fill out the form as follows:

1. Contract related information will be automatically populated on the form.
2. Thoroughly explain the issue at hand, provide backup information (photographs, sketches, drawings, data, etc) as necessary, and clearly state the question or problem that requires a resolution. Combine like or related issues but do not include multiple issues on one form.
    a. Example. If a duct interferes with other critical piping and electrical work include all issues into one RFI.
    b. Example. If you have a question regarding the chiller and another regarding toilet partitions create separate RFIs.
3. Check all relevant boxes for trades affected. This will assist the design team in determining who should be reviewing the RFI.

C. Upon completing the RFI click the "Submit" button. The PMWS software will automatically route the RFI to the appropriate reviewers.

3.3. RFI RESPONSES

A. Responses to simple RFI issues shall use the response section of the RFI form and shall be completed within five (5) working days of the RFI form being submitted.

B. Responses to more complex issues may require additional time or may require a Construction Bulletin to be published. The initial RFI shall be responded to within five (5) working days stating that the RFI is being reviewed and provide an estimated date for the response.

C. The following GC generated RFIs will be returned without action:

1. Requests for approval of submittals
2. Requests for approval of substitutions
3. Requests for approval of Contractor's means and methods.
4. Requests for coordination information already indicated in the Contract Documents.
5. Requests for adjustments in the Contract Time or the Contract Sum.
6. Requests for interpretation of A/E's actions on submittals.
7. Incomplete RFI or inaccurately prepared RFI.

3.4. COMMENCEMENT OF WORK RELATED TO AN RFI

A. The GC shall only proceed with the Work of an RFI when additional information is not required.

B. The GC shall not proceed with any Work associated with an RFI while it is under review.

C. The GC shall not proceed with any Work associated with an RFI that clearly states a CB will be issued in response to the RFI.

D. The GC will be required to immediately remove and replace unauthorized Work and all costs required to conform to the Contract Documents shall be borne by the GC.

END OF SECTION

SECTION 01 26 46
CONSTRUCTION BULLETIN (CB)

PART 1 – GENERAL

1.1. SUMMARY

A. Construction Bulletins (CB) are formal published construction documents that modify the original contract bid documents after construction has commenced. CBs may be published for many reasons, including but not limited to the following:
   1. Clarification of existing construction documents including specifications, plans, and details
   2. Change in product or equipment
   3. A response to a Request for Information
   4. Change in scope of the contract as either an add or a deduct of work

B. CBs provide a higher degree of detail in response to a Request for Information (RFI) through directives, revised plans/details, and specifications as necessary.

C. The CB may change the original contract documents through additions or deletions to the Work.

D. Where the directives of a CB are significant enough to warrant a Change Order Request (COR) the GC shall use all information provided in the CB to assemble all required back-up documentation for additions and deletions of materials, labor and other related contract costs for the COR.

E. All CB documentation will be processed through the Construction Administration-Construction Bulletin Library on the Project Management Web Site (PMWS).

1.2. RELATED SPECIFICATIONS

A. Section 01 26 13 Request for Information (RFI)
B. Section 01 26 57 Change Order Request (COR)
C. Section 01 26 63 Change Order (CO)
D. Section 01 31 23 Project Management Web Site

1.3. PERFORMANCE REQUIREMENTS

A. City Project Manager (CPM): The CPM shall be the only person authorized to publish a CB as needed for any reason indicated in section 1.1.A above. The CPM shall consult as necessary with any of the following while drafting the CB prior to issuing a CB:
   1. Owner
   2. Members of the consulting staff
   3. Members of city staff
   4. The General Contractor
   5. Sub-contractors

B. General Contractor: The GC shall be responsible for the following as needed:
   1. Executing the directives of the CB when he/she believes that no changes in labor, materials, equipment, or contract duration will be required for additions or deletions.
   2. Submit a COR when he/she believes that a change in labor, materials, equipment or contract duration will be required for additions or deletions.

1.4. QUALITY ASSURANCE

A. The CPM shall be responsible for ensuring the final CB sufficiently provides direction, details, specifications and other information as necessary for the GC to perform the intended Work.

B. The CPM shall be responsible for ensuring the final CB is published as expeditiously as practical based on the complexity of the CB being written. CBs that may affect the GC critical path shall be given priority.

PART 2 – PRODUCTS

2.1. CONSTRUCTION BULLETIN FORM

A. The CB form is located on the Project Management Web Site. The CPM shall click the link in the left margin of the project web site opening a new form. Project information is pre-loaded, the CPM only needs to enter information and make attachments as needed to complete the form.

PART 3 - EXECUTION

3.1. WRITING THE CONSTRUCTION BULLETIN

A. The CPM shall draft a CB as needed using the Construction Bulletin form on the Project Management Web Site.
   1. The CPM and/or consulting staff as necessary shall provide specifications, model numbers and performance data, details and other such information necessary to clearly state the intentions of the CB.
   2. The consulting staff, Owner, and other City Staff shall review the draft and recommend changes as needed.
   3. The CPM shall amend the draft as necessary into a final CB for review

B. Once the final CB has been approved the CPM shall "Submit" the CB through the Project Management Web Site to the GC.

3.2. EXECUTING THE CONSTRUCTION BULLETIN

A. The GC shall acknowledge receipt of the CB on the Project Management Web Site as instructed in the Tutorial Manual provided to the awarded contractor.

B. The GC shall notify all Sub-contractors of the CB and publish the CB to all field sets of drawings and specifications as appropriate.

C. The GC shall execute the directives of the CB or submit COR documentation as necessary during the execution and implementation of the CB.
   1. See Specification 01 26 57 Change Order Request (COR)

END OF SECTION

SECTION 01 26 57
CHANGE ORDER REQUESTS (COR)

PART 1 – GENERAL

1.1. SUMMARY

A. Except in cases of emergency, no changes in the Work required by the Contract Documents may be made by the General Contractor (GC) without having prior approval of the City Engineer or his representative.

B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in the Work by written Change Order (CO). Such changes may include additions and/or deletions.

C. Where the City desires to make changes in the Work through use of written Change Order Request (COR), the following procedures apply:

1. If requested by the City, the GC shall prepare and submit a detailed proposal, including all cost and time adjustments to which the GC believes it will be entitled if the change proposed is incorporated into the Contract. The City shall be under no legal obligation to issue a Change Order for such proposal.
2. The parties shall attempt in good faith to reach agreement on the adjustments needed to the Contract to properly incorporate the proposed change(s) into the Work. In the event that the parties agree on such adjustments, the City may issue a Change Order and incorporate such changes and agreed to adjustments, if any.
3. In some instances, it may be necessary for the City to authorize Work or direct changes in Work for which no final and binding agreement has been reached and for which unit prices are not applicable. In such cases the following shall apply.
    a. Upon written request by the City, the GC shall perform proposed Work
    b. The cost of such change may be determined in accordance with this specification.
    c. In the event agreement cannot be accomplished as contemplated herein, the City may authorize the Work to be performed by City forces or to hire others to complete the Work. Such action on the part of the City shall not be the basis of a claim by the GC for failure to allow it to perform the changed Work.

D. Where changes in the Work are made by the City through use of a force account basis, the GC shall as soon as practicable, and in no case later than ten (10) working days from the receipt of such order, unless another time period has been agreed to by both parties, give the City written Notice, stating:

1. The date, circumstances and source of the extra work; and,
2. The cost of performing extra work described by such Order, if any; and,
3. Effect of the order on the required completion date of the Project, if any.

E. The giving of each Notice by the GC as prescribed by this specification, shall be a requirement to liability of the City for payment of any additional costs incurred by the GC in implementing changes in the Work. Under this specification, no order or statement of the City shall be treated as a Change Order, or shall entitle the GC to an equitable adjustment of the terms of this Contract or damages for costs incurred by the GC on any activity for which the Notice was not given.

F. In the event Work is required due to an emergency as described in this specification the GC must request an equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the commencement of such emergency.

G. All GC requests for equitable adjustment shall be submitted to the CPM per the specifications below. Such requests shall set forth with specificity the amount of and reason(s) for the proposed adjustment and shall be accompanied by supporting information and documents.

H. No adjustment of any kind shall be made to this Contract, if asserted by the GC for the first time, after the date of final payment.

I. This specification shall be used by the GC when preparing documentation for any COR to ensure each has been properly and completely filled out as required by the City of Madison.

J. All COR documentation will be processed through the Construction Administration-Change Order Request Library on the Project Management Web Site (PMWS).

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 26 13 Request for Information (RFI)

B. Section 01 26 46 Construction Bulletins (CB)

C. Section 01 26 63 Change Order (CO)

D. Section 01 31 23 Project Management Web Site

E. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".

1. Use the following link to access the Standard Specifications web page:
   http://www.cityofmadison.com/business/pw/specs.cfm
   a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
   b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.

1.3. DEFINITIONS AND STANDARDS

A. LABOR: The amount of time and cost associated with the performance of human effort for a defined scope of Work. Labor is further defined as follows:

1. Labor rate is the total hourly rate which includes the basic rate of pay, fringe benefits plus each company's cost of required insurance, also referred to as a reimbursable labor rate.
2. Unit labor is the labor hours anticipated to install the corresponding unit of material.
3. Labor cost is the labor hours multiplied by the hourly labor rates.

B. MATERIAL: Actual material cost is the amount paid, or to be paid, by the GC for materials, supplies and equipment entering permanently into the Work, including cost of transportation and applicable taxes. The cost shall not exceed the usual and customary cost for such items available in the geographical area of the project

C. LARGE TOOLS AND MAJOR EQUIPMENT: Large tools and major equipment are those with an initial cost greater than $1,500, whether from the GC or other sources.

1. Tool and equipment use and time allowed is only for extra work associated with change orders.
   a. Rental Rate is the machine cost associated with operating a piece of equipment for a defined length of time (hour, day, week, or month) and shall not exceed the usual and customary amount for such items available in the geographical area of the project.
   b. Rental cost is the rental rate multiplied by the anticipated duration the equipment shall be required.
2. The GC shall provide a breakdown of all rental rates to indicate what items and costs are associated with the rate. Examples of items to include in the breakdown would be fuel consumption, lubrication, maintenance and other similar expenses but not including profit and overhead.
3. When large tools and equipment needed for Change Order work are not already at the job site, the actual cost to get the item there is also reimbursable.

D. BOND COST: The cost shall be calculated at 1% of the total proposed change order.

E. SUB-CONTRACTOR COSTS: Sub-contractor costs are for those labor, material, and equipment costs required by subcontracted specialties to complete the Change Order work.

F. OVERHEAD AND PROFIT Markup: The allowable markup percentage to a COR by the GC and Sub-contractors for overhead and profit. All of the following are expenses associated with overhead and profit and shall not be reimbursable as individual items on any COR:

1. CHANGE ORDER PREPARATION: All costs associated with the preparing and processing of the change order.
2. DESIGN, ESTIMATING, AND SUPERVISION: All such efforts, unless specifically requested by Owner as additional Work to be documented as a COR or portion thereof.

3. INSTALLATION LAYOUT: The layout required for the installation of material and equipment, and the installation design, is the responsibility of the GC.
4. SMALL TOOLS AND SUPPLIES: The cost of small hand tools with an initial cost of $1,500 or less, along with consumable supplies and expendable items such as drill bits, saw blades, gasoline, lubricating or cutting oil, and similar items.
5. GENERAL EXPENSE: The general expense, which is those items that are a specific job cost not associated with direct labor and material such as job trailers, foreman truck, and similar items.
6. RECORD DRAWINGS: The preparation of record or as-built drawings.
7. OTHER COSTS: Any miscellaneous cost not directly assessable to the execution of the Change Order including but not limited to the following:
    a. All association dues, assessments, and similar items.
    b. All education, training, and similar items.
    c. All drafting and/or engineering, unless specifically requested by Owner as additional Work to be documented as a Change Order proposal or portion thereof.
    d. All other items including but not limited to review, coordination, estimating and expediting, field and office supervision, administrative work, etc.

G. Contract Extension: The necessary amount of time to be added to the contract deadlines for the completion of a change order.

1.4. CONTRACT EXTENSION

A. The GC shall not assume that every COR will require a Contract Extension. If the GC feels a contract extension is warranted he/she shall provide sufficient scheduling information that shows how the COR being requested impacts the critical path of the project.

B. The City of Madison strongly encourages the GC to explore alternative methods and practices prior to submitting a COR with a request for contract extension.

1.5. OVERHEAD AND PROFIT MARKUP

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

1.6. PERFORMANCE REQUIREMENTS

A. The GC shall become thoroughly familiar with this specification as it will identify procedures and expenses that are or are not allowed under the Change Order and Change Order Request process.

B. The GC shall be responsible for all of the following:
1. Carefully reviewing the CB that is associated with the COR.
2. Collecting required supporting documentation from all contractors that quantify the need for a COR.
    a. Labor hours and wage rates
    b. Material costs
    c. Equipment costs

C. The following shall apply to establishing prices for labor, materials, and equipment costs:
1. Where Work to be completed has previously been established by individual bid items in the contract bid proposal the GC shall use the unit bid prices previously established.
2. Where Work to be completed was bid as a Lump Sum without individual bid items the GC shall provide a breakdown of all labor, materials, equipment including unit rates and quantities required.

D. The completion date is determined by Owner. The schedule, however, is the responsibility of the GC. Time extensions for extra Work will be considered when a schedule analysis of the critical path shows that the Change Order Request places the Work beyond the completion date stated in the Contract.

1.7. QUALITY ASSURANCE

A. The GC shall be responsible for ensuring that all COR supporting documentation meets the following requirements prior to completing the COR form on the Project Management Web Site:
   1. Sufficiently indicates labor, material, and other expenses related to completing the intent of the CB.
   2. No costs exceed the usual and customary amount for such items available in the geographical area of the project, and no costs exceed those established under the contract.

B. The Project Architect (PA), Commissioning Agent (CxA), City Project Manager (CPM), other members of the consulting staff, and city staff shall review all COR requests to ensure that the intent of the CB will be met under the proposal of the COR or request additional information as necessary.

PART 2 – PRODUCTS

2.1. CHANGE ORDER REQUEST FORM

A. The COR form is located on the Project Management Web Site. The GC shall click the link in the left margin of the project web site opening a new form. Follow additional instructions below in the execution section for filling out the form.

PART 3 - EXECUTION

3.1. ESTABLISHING A CHANGE ORDER REQUEST

A. Upon receipt of a Construction Bulletin (CB) where the GC believes a significant change in contract scope warrants the submittal of a COR the GC shall do all of the following within ten (10) working days after receipt of the CB:
   1. Review the CB with all necessary trades and sub-contractors required by the change in scope.
      a. Additions or deletions to the contract scope shall be as directed within the CB.
      b. Additions or deletions of labor and materials shall be determined by the GC based on the directives of the CB.
   2. Assemble all required back-up documentation for additions and deletions of materials, labor and other related contract costs as previously outlined in this specification.
   3. Submit a COR request form on the Project Management Web Site.

B. Submitting a COR does not obligate the GC to complete the work associated with the COR nor does it obligate the Owner to approve the COR as a change to the contract.

3.2. SUBMIT A CHANGE ORDER REQUEST FORM

A. This specification shall provide a subject overview only. In depth instructions shall be provided to the awarded Contractor in a PDF Instructional Manual.

B. The GC shall select the “Submit a COR” link on the Project Management Web Site.

C. The software will open a new COR form and the GC shall provide all of the following information:
   1. DO NOT perform any calculations on this worksheet, only provide the raw data as requested below. All calculations, totals, and markups shall be computed as described within this specification.
   2. Provide a summary description of the COR request, and justification for any requested time extension to the contract, indicate the number of calendar days being requested for the extension and add any attachments to the form as needed.
   3. Provide all GC self performance data including all of the following:
      a. Materials description, quantities, and unit costs.
      b. Labor hours and rates for all Foremen, Journeymen, and Apprentices by trade.
      c. Equipment descriptions, quantities, unit costs and rates.
   4. Provide all Sub-contractor data including all of the following:
      a. Materials description, quantities, and unit costs.
      b. Labor hours and rates for all Foremen, Journeymen, and Apprentices by trade.
      c. Equipment descriptions, quantities, unit costs and rates.
   5. Ensure all calculations performed by the form have been completed correctly. Contact the CPM directly if you suspect an error before hitting the save button.

C. At any time after creating a COR you must at a minimum click “Save as Draft” to save your work.

D. When all data has been entered and verified click on the “Submit COR” button. This will kick off the COR Review and Approval process.

3.3. CHANGE ORDER REQUEST REVIEW, APPROVAL, AND PROCESSING

A. The PA and CPM shall review all CORs submitted by the GC.
   1. Additional consulting staff and city staff having knowledge of the components of the COR shall review and advise the PA and CPM as to the accuracy of the items, quantities, and associated costs of the COR as directed by the CB.
   2. The CPM shall review the COR with the Owner.

B. If required the PA and CPM, shall in good faith, further negotiate the COR with the GC as necessary. All amendments to any COR shall be documented within the Project Management Web Site software.

C. After final review of the COR the CPM and Owner may accept the COR.

D. The CPM shall prepare the COR in the form of an official Board of Public Works Change Order for final review and approval as outlined in Section 01 26 63 Change Order (CO).

E. The GC shall not act upon any accepted COR until it has received final approval through the Public Works process as an official CO to the Work unless instructed to do so by the CPM. Proceeding without the final approval of a fully authorized Change Order is at the GC's own risk.

3.4. EMERGENCY CHANGE ORDER REQUEST

A. In the event Work is required due to an emergency as described in the Contract Documents, the GC must request an equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the commencement of such emergency.

B. The GC shall provide full documentation of all labor, materials and equipment used during the period of emergency as part of the COR submittal.

END OF SECTION

SECTION 01 26 63
CHANGE ORDER (CO)

PART 1 – GENERAL

1.1. SUMMARY

A. Except in cases of emergency, no changes in the Work required by the Contract Documents may be made by the General Contractor (GC) without having prior approval of the City Project Manager (CPM).

B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in the Work by written Change Order. Such changes may include additions and/or deletions.

C. The Change Order (CO) is a Board of Public Works (BPW) form that is reviewed and approved by a specific process.

D. The CO form is typically made up of multiple Change Order Requests (CORs) and/or Bid Items as appropriate depending on the type of project and how the contract was bid.

E. All CO documentation shall be processed through the Construction Administration-Change Order Library and digital workflow on the Project Management Web Site (PMWS).

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 26 13 Request for Information (RFI)
B. Section 01 26 46 Construction Bulletin (CB)
C. Section 01 26 63 Change Order Request (COR)
D. Section 01 31 23 Project Management Web Site
E. Section 01 91 00 Commissioning

1.3. BOARD OF PUBLIC WORKS PROCEDURE

A. The Board of Public Works has a very explicit procedure for the review and approval of all change orders associated with any Public Works Contract as follows:
   1. The Supervisory Chain of the CPM shall review and approve any CO under $20,000 provided it does not include either of the following:
      a. The CO does not request a time extension to the contract.
      b. The CO does not cause the contract contingency sum to be exceeded.
   2. The Board of Public Works shall review and approve any CO that requires any of the following:
      a. Any CO over $20,000.
      b. Any CO requesting a time extension to the contract regardless of the monetary value of the CO.
      c. Any CO that that causes the contract contingency sum to be exceeded.

B. The Board of Public Works generally meets every other week and only once in August and December. The GC is cautioned that, under normal scheduling, a CO requiring a BPW review will take a minimum of two (2) weeks to achieve final approval.
   1. The City shall not be responsible for additional delays to the Work caused by the scheduling constraints of the Board of Public Works.

C. *SPECIAL NOTE:* The GC is cautioned to never proceed unless told to do so by the CPM. Only in rare instances may the CPM give a written notice to proceed on a COR without an approved CO. Proceeding without the written notice of the CPM or an approved CO is at the GC's own risk.

PART 2 – PRODUCTS

2.1. CHANGE ORDER FORM

A. The CO form is located on the Project Management Web Site. The CPM shall click the link in the left margin of the project web site opening a new form. Project information is pre-loaded, the CPM only needs to enter information and make attachments as needed to complete the form.

PART 3 - EXECUTION

3.1. PREPARATION OF THE CHANGE ORDER

A. The CPM shall prepare the required CO forms in the Construction Administration-Change Order Library on the Project Management Web Site as follows:
   1. Provide information for all contract information.
   2. Provide a general description of the items described within the change order.
   3. Provide detailed information for each Item on the CO form. At the option of the CPM he/she may include multiple Change Order Requests each as their own item.
   4. Provide required pricing and accounting information as needed for the item.
   5. Insert attachments of contractor/architect provided information that clarifies and quantifies the CO. Attachments may include but not be limited to material lists, estimated labor, revised details or specifications, and other documents that may be related to the requested change.
   6. Save the final version of the completed CO.

3.2. EXECUTION OF THE CHANGE ORDER

A. Upon saving the CO as described in section 3.1 above the software associated with the Project Management Web Site shall notify the GC that the CO has been drafted and is ready for review. The GC shall do the following:
   1. Open the appropriate CO form in the Construction Administration-Change Order Library and review all items on the form.
   2. The GC shall notify the CPM immediately of any errors or discrepancies on the form and shall not sign or save it.
      a. The CPM shall make any corrections as needed, re-save the form, and notify the GC.
   3. If/when the GC concurs with the CO form as drafted the GC shall digitally sign the form and click SAVE.

B. After the GC digitally signs/saves the CO it shall be routed through the Project Management Web Site for additional review and/or approvals. The CPM shall do the following:
   1. Monitor the review process to ensure the software is working properly at each review step.
   2. Ensure that proper BPW procedures are executed as needed by the CO approval process.
      a. Schedule the CO on the next available BPW agenda if required.
         i. Attend the BPW meeting to speak on the CO to board members and answer questions.
         ii. The GC and/or PA may be required to attend the BPW meeting to address specific information as it relates to the Work and/or materials associated with the CO.
   3. Monitor final approval and distribution of the CO.
   4. Notify the GC that the CO has been completed.
   5. Ensure that the CO is posted to the next Public Works payment schedule.
   6. Verify that the GC's next Progress Payment-Schedule of Values show the CO as part of the contract sum.

C. Upon final approval of the CO the GC may proceed with executing the Work associated with the CO.

END OF SECTION

SECTION 01 29 76
PROGRESS PAYMENT PROCEDURES

PART 1 – GENERAL

1.1. SUMMARY

A. The General Contractor (GC) shall review this and all related specifications prior to submitting progress payment requests.

B. Progress payment requests (Partial Payment-PP) for this contract shall be uploaded digitally by the GC to the Project Management Web Site

C. The Project Architect (PA) and City Project Manager (CPM) shall review and amend or approve the PP on the Project Management Web Site.

D. After approval of the PP by the CPM, he/she shall forward the PP to the appropriate agencies for BPW contractual review and payment processing.

1.2. RELATED SPECIFICATIONS

A.	Section 01 26 63	Change Order (CO)
B.	Section 01 29 73	Schedule of Values
C.	Section 01 31 19	Progress Meetings
D.	Section 01 31 23	Project Management Web Site
E.	Section 01 32 16	Construction Progress Schedules
F.	Section 01 32 26	Construction Progress Reporting
G.	Section 01 33 23	Submittals
H.	Section 01 45 16	Field Quality Control Procedures
I.	Section 01 77 00	Closeout Procedures
J.	Section 01 78 13	Completion and Correction List
K	Section 01 78 23	Operation and Maintenance Data
L.	Section 01 78 36	Warranties
M.	Section 01 78 39	As-Built Drawings
N.	Section 01 78 43	Spare Parts and Extra Materials
O.	Section 01 79 00	Demonstration and Training

1.3. RELATED DOCUMENTS

A. The following documents shall be used when evaluating PP requests.

1. Daily and weekly construction progress reports filed since the last payment request.
2. Any document that may be required to be submitted for review and approval, as noted by the specifications listed in Section 1.2 above, or the Progress Payment Milestone Schedule in Section 1.4 below, to achieve a required bench mark of contract progression or contract requirement.

1.4. PROGRESS PAYMENT MILESTONES

A. City Engineering-Facility Management has developed the Project Payment Milestone Schedule (Section 1.4 below) to assist the GC in providing required construction specific documentation and general contractual documentation in a timely manner.

B. The Progress Payment Milestone Schedule is not an all inclusive list. Multiple agencies review progress payment requests and contract closeout requests. Missing, incomplete, or incorrect documentation for any agency may

be a cause for not processing progress payments. It shall be the sole responsibility of the Contractor for providing documentation as required or requested to the appropriate agencies.

C. The milestone schedule is based on the contract total sum and shall be valid for most contracts. Milestone submittals will be required with whatever progress payment hits the percentage of contract total indicated in the schedule.

D. The CPM shall review the milestone schedule with each progress payment request and at his/her option may elect to hold processing the progress payment until such time as the contractor has met the requirements for providing construction specific documentation.

E. It shall be the General Contractors responsibility to comply with all BPW Contract Administration requirements and related deadlines as outlined in the Award Letter, Award Checklist, and Start Work Letter.

Progress Payment (PP) Milestone Schedule		
Milestone Description	***Due Before***	***Remarks***
BPW Contract Administration Documentation • Workforce profiles • Best Value Contracting Documentation • Sub-contractors prequalification approval & Affirmative Action plans • Other as may be required	PP-1, or start work as applicable	• For GC and Sub-contractors before PP-1 regardless of scheduling • Sub-contractors (if applicable), due 10 days before they may start work • Sub-contractors (if applicable), due 10 days before they may start work
Required Construction Submittals/Administrative Documents • Contractors Project Directory • Submittals Schedule • Waste Management Plan • Closeout Requirement Checklist • Warranty Checklist	PP-1	References • Specification 01 31 23 • Specification 01 32 19 • Specification 01 74 19 • Specification 01 77 00 • Specification 01 78 36
Construction Progress Milestones • Early submittals, per submittal schedule • Detailed Contract Schedules	PP-1	See specifications for specific requirements • Specification 01 32 19, Examples: concrete mix, structural steel, products with long lead times • See Specification 01 32 16
General Construction Progress Requirements are all up to date • Progress Schedules • Submittals/Re-submittals (ongoing) • Progress Reporting • LEED Documentation • Waste Management documentation • QMOs are being addressed and closed • Progress Cleaning • As-Built Drawings	Each future PP	Verified with each Progress Payment Request • Specification 01 32 16 • Specification 01 33 23 • Specification 01 32 26 • All specifications with LEED documentation requirements • Specification 01 74 19 • Specification 01 45 16 • Specification 01 74 13 • Specification 01 78 39
*** All of the above are being updated on the Project Management Web Site as required**		
BPW Contract Administration Documentation • Weekly payroll reports • Best Value Contracting Reports • SBE Reports	25% CT or PP 2	See 1.4.E above. *This progress payment will be with held by BPW for any missing contractual documentation.*

Progress Payment (PP) Milestone Schedule		
Milestone Description	***Due Before***	***Remarks***
Construction Progress Milestones • Construction/Contract Closeout Meeting #1 • Submittals/Re-submittals complete	50% CT	• Specification 01 31 19 • Specification 01 33 23
Operation and Maintenance (O & M) drafts	60% CT	• Specification 01 78 23
Construction/Contract Closeout Meeting #2 • Construction closeout checklist	70% CT	• Specification 01 31 19 • Specification 01 77 00
BPW Contract Administration Documentation • Request Finalization Review from BPW	80% CT	This is a recommendation to the GC and is not a requirement of this PP. • Specification 01 77 00
Construction Progress Milestones • Operation and Maintenance (O & M) finals, accepted • All major QMO issues resolved • As-Built Drawings, Division Trades ready for GC review	80% CT	• Specification 01 78 23 • Specification 01 45 16; Items that could prevent occupancy • Specification 01 78 39
All of the following shall be completed for this PP: • Regulatory Inspections completed • All QMO reports closed • Demonstration and Training completed • Attic Stock completed • Final Cleaning	90% CT	Contractor to determine the proper order of completion: • Governing ordinances and statutes • Specification 01 45 16 • Specification 01 79 00 • Specification 01 78 43 • Specification 01 74 13
Construction Closeout Procedures: • Letter of Substantial Compliance sent to BI and DHS as needed • Certificate of Occupancy issued • As-Built Drawings, finals, accepted • City Letter of Substantial Completion • Warranty letters dated and issued	100% CT	• Specification 01 77 00 • Generated/Signed by the Architect • Building Inspection • Specification 01 78 39 • Signed by the City Engineer • Specification 01 78 36
*** Completion of this begins the one year warranty.**		
BPW Contract Administration Documentation Contract Closeout Procedures • Construction Closeout has been completed • Contractor requests final payment of retainage upon receiving City Letter of Substantial Completion • All BPW contractual requirements are verified	Final	• Specification 01 77 00 • Contractor must provide any missing BPW Contractual Documentation
*** Completion of this closes the contract but not the warranty period/bond.**		
NOTE: **CT = Contract Total less held retainage**		

1

1.5. PROGRESS PAYMENT SUBMITTAL

A. Each progress payment submittal shall be:
   1. Digital in PDF format
   2. PDF shall be in color
   3. Uploaded to the appropriate Project Management library and properly named per the tutorial instructions provided to the awarded contractor.

B. Submit all required construction progress documentation to the appropriate Project Management Web Site library.

C. In general the following shall apply to all PP requests:
   1. Materials or products:
      a. On order, being shipped, etc. may not be invoiced.
      b. Received and stored on the project site may be invoiced.
      c. Being manufactured off site at any location may not be invoiced (example: cabinetry, ductwork, etc.)
      d. Completed products stored off site locally waiting for delivery to the project site may be invoiced with prior approval by the CPM. All of the following conditions must be met to be allowed:
         i. Items must be visually inspected by CPM to verify product is complete.
         ii. Item must be stored inside a compatible structure and the structure and contents must be insured.
         iii. Contractor is responsible for condition until installation is completed.
   2. All labor and equipment, including rental time for the current progress period may be invoiced.
   3. Only completed installations may be invoiced to 100% based on the Schedule of Values.

D. DO NOT submit BPW Contract Administration Documentation for review with Progress Payment Requests, submit them directly to the correct agency and in the correct format as instructed from information in your BPW Contract Award Packet instructions.

PART 2 - PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL CONTRACTOR PROCEDURE

A. The GC shall fill out the City of Madison Application and Certificate of Payment cover sheet as follows:
   1. The GC shall not change any pre-printed information and shall not write in the box that indicates previous progress payments.
   2. The GC shall sign and date the form where indicated.
   3. The GC shall provide the dates from and to for the PP being requested.
   4. The GC shall provide the list of all contractors/sub-contractors that were actively working during the dates indicated above.
      a. All contractors/sub-contractors named must be in compliance with all City requirements (Pre-qualified, Affirmative Action Plan on file, etc). The PP will be held and not processed by the City of Madison until all contractors/sub-contractors are in compliance.
      b. Do not list the names of suppliers or manufacturers, doing so will slow down processing and require a re-submittal of the paperwork.

B. The General Contractor (GC) shall scan all of the documents listed below in the order shown, save the scan as a single PDF file for each PP request.
   1. City cover sheet – Application and Certificate for Payment
   2. City tabulation sheet(s)
   3. Any miscellaneous documents that may be requested as backup documentation for the pay request.
      a. Lien waivers are not required and shall not be submitted.
      b. Do not provide contractual administrative documents such as pay reports with pay requests.
      c. Do not supply progress deliverables with pay requests.

C. Upload the pay request PDF to the Contract Documents-GC Partial Pay Apps library on the Project Management Web Site.

3.2. NOT USED

3.3. CITY PROJECT MANAGER PROCEDURE

A. The CPM shall review all documents submitted by the GC ensure the PP request accurately reflects the work completed to date.

B. The CPM may elect to hold processing of any progress payment pending submittal of required progress payment milestones.

C. When verified, the CPM shall digitally sign the City Cover Sheet and forward the required documentation to the appropriate City agencies for further processing of the payment request.

D. The CPM shall add a scanned copy of any documents indicating the PP request processing was completed to the PMWS.

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 – GENERAL

1.1. SUMMARY

A. Project Coordination covers many areas within the execution of the Contract Documents and the requirements of proper coordination are applicable to all contractors executing the Work of this contract.

B. This specification provides general information regarding project coordination for the General Contractor and all Sub-contractors. All contractors shall be familiar with project coordination requirements and responsibilities that may be defined within these Contract Documents.

C. The General Contractor shall at all times be responsible for the project, project site, and execution of the Contract Documents.

1.2. RELATED SPECIFICATIONS

A.	Section 01 29 76	Progress Payment Procedures
B.	Section 01 31 19	Progress Meetings
C.	Section 01 31 23	Project Management Web Site
D.	Section 01 32 16	Construction Progress Schedules
E.	Section 01 32 19	Submittals Schedule
F.	Section 01 33 23	Submittals
G.	Section 01 45 16	Field Quality Control Procedures
H.	Section 01 60 00	Product Requirements
I.	Section 01 77 00	Closeout Procedures, including all specifications referenced therein

1.3. GENERAL REQUIREMENTS

A. The following general requirements shall be applicable to all contractors:

1. Cooperate with the Owner, all authorized Owner Representatives, Project Architect and all consultants of the Owner.
2. Materials, products, and equipment shall be new, as specified and to industry standards except where otherwise noted.
3. Labor and workmanship shall be of a high quality and to industry standards.

B. Existing conditions:

1. Verify all existing conditions noted in the contract documents with actual field locations. Verify dimensions, sizes and locations, of structural, equipment, mechanical and utility components.
2. Report any inconsistencies, errors, omissions, or code violations in writing to the General Contractor (GC) immediately.
3. Annotate any inconsistencies, errors, omissions on the GC As-Built record drawings immediately for future reference.

C. Contract Documents:

1. As noted in Section D – Special Provisions, Section 104.2 “Intent and Coordination of Contract Documents” the contract documents are complimentary to each other to form a complete set of documents including plans, specifications and other exhibits.
2. The Contract Documents are intended to include everything necessary to perform the work. Every item required may not be specifically mentioned, shown, or detailed.
   a. Except where specifically stated all systems and equipment shall be complete, installed, and fully operable.

b. If a conflict exists within the contract documents the contractor shall furnish the item, system, or workmanship of the highest quality, largest, largest quantity, or most closely fits the intent of the contract documents.
c. Manufacturers recommended installation details shall be verified and used prior to installation of products and equipment so as to not void warranties.

D. Errors and Omissions
1. No Contractor shall take any advantage of any apparent error or omission in the construction documents.
2. The City of Madison shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the construction documents.

E. Owners Representatives
1. All contractors shall be familiar with various Owner Representatives having Quality Management responsibilities for the duration of this project including but not limited to the following:
a. Owner, the designated representative of the City Agency that will occupy the project upon completion.
b. City Project Manager, responsible for all day to day decisions regarding the execution and performance of this Public Works Contract.
c. Consulting City Staff, responsible for providing consulting services to the Owner and City Project Manager, also responsible for Quality Management of the construction documents.
2. Owner Representatives shall be attending progress meetings, pre-installation meetings, performing or being present for final testing and acceptance and quality management reporting during the execution of the contract documents as outlined in other specifications.

1.4. GENERAL CONTRACTOR PERFORMANCE REQUIREMENTS

A. Assume the responsibility for all Work specified in the Contract Documents except where specifically identified to be performed by the Owner or other contractor separately hired by the Owner.
1. Coordinate all work by Owner, equipment provided Owner, or contractor hired by the Owner into the project schedule.

B. Provide all construction management responsibilities as specified in other Division 1 specifications including but not limited to:
1. Scheduling of work
2. Coordination of work between other Trades and Sub-contractors
3. Construction administration and management
4. Site layout, cleanliness, and protection of completed work/stored materials
5. Waste Management
6. Quality Assurance and Quality Control

C. Use Diggers Hotline and private utility locating companies to accurately locate all public and private utilities on the property as needed. The GC is responsible for any repair or replacement to any public or private utility damaged during the execution of the Work

D. Report any inconsistencies, errors, omissions, or code violations in writing to the Project Architect immediately. Failure to report inconsistencies prior to beginning work shall indicate that the GC accepted all existing conditions.

E. The GC shall be responsible for assigning work and related responsibilities where the Contract Documents may not clearly state who is responsible for providing the work, material, or product.

F. Provide construction management oversight of all items described in Section 1.5 below.

1.5. SUB-CONTRACTOR PERFORMANCE REQUIREMENTS

A. Be familiar with all of the contract documents as they pertain to your Work, adjacent work and the overall progress of the project.
1. All Sub-contractors shall be familiar with all Division 1 specifications as they may apply to progress, progress payments, quality control construction management, and closeout of the contract.

B. Coordinate your Work with all adjacent work and existing conditions.
1. Perform your work in proper sequence according to the GC's project schedule and in relation to the work of other trades.
2. Notify other sub-contractors and trades whose work may be connected to, combined with, or influenced by your work and allow them reasonable time and access to complete their work.
3. Join your work to the work of others in accordance with the intent of the Contract Documents.
4. Order materials and schedule deliveries to facilitate the general progress of the Work.

C. Cooperate with all other trades to facilitate the general progress of the work. This shall include providing every reasonable opportunity for the installation of work by others and the storage of their materials and equipment.
   1. In no case shall any contractor exclude from the premises or work any Sub-contractor or their employees.
   2. In no case shall any contractor interfere with the execution or installation of Work by any other Sub-contractor or their employees.

D. Arrange your work, equipment, and materials and dispose of your construction waste so as to not interfere with the work or storage of materials of others.

E. Coordinate all work as indicated during pre-installation meetings with Owner Representatives, the GC and other trades. Any work improperly coordinated shall be relocated as designated by the Owner Representative at no additional cost to the City.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 – EXECUTION – THIS SECTION NOT USED

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to identify various project related meetings and the responsible parties for scheduling, agendas, minutes, and required attendance.

B. This specification is not intended to be inclusive of all meeting types or a complete list of required meetings.

C. This specification is not intended to cover planning and execution meetings between the General Contractor (GC) and his/her sub-contractors.

1.2. RELATED SPECIFICATIONS

A. 01 31 23 Project Management Web Site

B. 01 32 16 Construction Progress Schedules

C. 01 43 39 Mockups

1.3. PROJECT MEETING TYPES

A. The following project meeting types may be used but not limited to the following

1. Preconstruction Meeting
2. Project Management Web Site – Tutorial Meeting
3. Construction Progress Meetings
4. Pre-installation Meetings (including mock-up review meetings)
5. Weekly Trade Meetings
6. Special Meetings

1.4. GENERAL REQUIREMENTS

A. Representatives of Contractors, Subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

PART 2 – PRODUCTS – NOT USED IN THIS SECTION

PART 3 - EXECUTION

3.1. PRECONSTRUCTION MEETING

A. After execution of the Contract the City Project Manager (CPM) shall schedule and conduct the Preconstruction Meeting at the Owner's facilities. The CPM shall coordinate the meeting agenda with the GC Project Manager.

B. The CPM shall be responsible for the final agenda.

C. The CPM shall take notes on the meeting and post completed meeting minutes.

D. Attendance shall be required by all of the following:

1. Owner Representative(s)
2. Applicable sub consultant(s)
3. General Contractor and applicable subcontractors and suppliers
4. City Quality Management Staff

5. Others, as may be invited for particular agenda items.

E. Topics of the Preconstruction Meeting shall include but not be limited to the following:
1. Staff and contractor introductions
2. Completion Date
3. BPW Administrative requirements and due outs
a. Small Business Enterprise (SBE) (if applicable)
b. Certified payroll forms
c. Workforce profiles
d. Best Value Contracting (BVC)
4. General Facility Management Division 1 Specifications, including:
a. Section 01 29 76 Progress Payment Procedures
b. Section 01 31 23 Project Management Web Site (overview)
c. Section 01 45 16 Field Quality Control Procedures
d. Section 01 77 00 Closeout Procedures
5. Project Meeting scheduling
a. Section 01 31 19 Project Meetings
6. Construction Schedule
7. Commissioning Process

3.2. PROJECT MANAGEMENT WEB SITE – TUTORIAL MEETING

A. The CPM shall schedule and conduct a tutorial presentation of the PMWS prior to the beginning of construction.
B. The CPM shall be responsible for the final agenda, there will be no minutes.
C. The required attendance list in 3.1.D. above shall apply except for City Staff in items 1 and 4 who are already familiar with the PMWS system.
D. It is recommended that all contractors bring their lap top, tablet or other internet capable device with them including a fully charged battery and internet connection devices as necessary.

3.3. CONSTRUCTION PROGRESS MEETINGS

A. In general all of the following shall apply:
1. Representatives of Contractors, Subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
2. The attendance shall be from the required attendance list in 3.1.D. above.
B. The City Project Manager (CPM) shall:
1. Schedule and conduct all construction progress meetings biweekly or more frequently as required.
2. Prepare agenda for meetings including, but not limited to the following:
a. Safety
b. Current Schedule, including review of the critical path and 6-week look ahead schedule
c. Status of project related documentation (Submittals, RFIs, CBs, etc.)
d. Quality Observation Log and status of correction of deficient items
e. Project questions and issues from meeting attendees
f. BPW Administration Check
g. Other as needed
h. Status of CORs and COs to be reviewed outside the standard progress meeting time.
3. Make physical arrangements for meetings.
4. CPM to post meeting agendas to the appropriate libraries on the Project Management Web Site (PMWS) no less than two (2) working days prior to the scheduled meeting. Notify all required attendees, applicable parties to the contract, and others affected of the posted meeting agenda.
5. Preside at meetings.
6. Route a meeting attendance roster for attendees to sign-in on.
7. CPM to record the minutes of the meeting; include significant proceedings and decisions. Post meeting minutes to the PMWS no more than two (2) working days after the completed meeting. Meeting minutes shall include a scanned copy of the attendance sign-in sheet. Notify all required meeting attendees, applicable parties to the contract, and others affected by decisions made at the meetings.
8. The above requirements do not apply to GC/sub-contractor meetings.

3.4. PRE-INSTALLATION MEETINGS

A. The GCPM shall schedule and conduct all pre-installation meetings, including mockup reviews, before each construction activity that requires coordination with other trades.

B. The GCPM shall be responsible for the final agenda and meeting minutes.
C. The GCPM will work with all concerned parties to resolve issues as needed and submit RFI's if necessary.
D. Required attendance shall be from the list in 3.1.D. above and shall be personnel having a stake in the outcome of the installation or knowledge of the system being installed.
E. In the event the Contractor installs equipment or materials without a pre-installation meeting the Contractor shall be solely responsible for removing, replacing, repositioning materials and equipment as instructed by the City Project Manager at no additional cost to the City.

3.6 PRE-CONTRACT CLOSEOUT MEETINGS

A. Two (2) Pre-contract Closeout Meetings shall be held to review the closeout procedures, requirements, and contract deliverables.
   1. Pre-contract Closeout Meeting #1 shall be scheduled prior to the 50% Progress Payment Request is being requested. This meeting shall discuss items such as closing out QMO reports, providing O&M drafts and finals, payroll and Affirmative Action documentation, and other contract deliverables.
   2. Pre-contract Closeout Meeting #2 shall be scheduled prior to the 80% Progress Payment Request is being requested. This meeting shall discuss, but not be limited to, the status of scheduling final regulatory inspections, cleaning up outstanding QMO's, demonstration and training, attic stock; and finalization review of payroll and other related documents.
B. The GCPM shall schedule, coordinate, and make physical arrangements for both meetings.
C. All of the following shall be required to attend both meetings:
   1. The GCPM and the GC Field Superintendent
   2. All Subcontractor Project Managers regardless of the current status of their work.
      a. The GCPM may excuse a Subcontractor PM if he is confident that all contractual requirements for closeout by the subcontractor have been completed and/or delivered to the GCPM. The list of attendees shall be reviewed and agreed upon with CPM ahead of the meeting.
      b. At the option of these project managers the field supervisors may also attend.
   3. The Project Architect and at least one design consultant from each discipline represented by the plans and specifications to address open QMOs, final tests, reports, etc.
   4. The Owner
   5. The CPM
   6. Quality Management staff as needed to address open QMOs, final tests, reports, etc.
D. The CPM shall publish an agenda and chair the meeting.

3.7 OTHER SPECIAL MEETINGS

A. The Contractor shall schedule special meetings per the requirements of the LEED Specification, the Project Quality Management Plan, the Commissioning Plan and as indicated by other specifications.
B. Special meetings include but are not limited to the following:
   1. Waste Management Conference
   2. Equipment start up meetings
   3. Testing and balancing meetings
   4. Commissioning meetings
   5. Other meetings as necessitated by the contract documents

END OF SECTION

SECTION 01 31 23
PROJECT MANAGEMENT WEB SITE

PART 1 – GENERAL

1.1. GENERAL DESCRIPTION

A. The City of Madison (CoM) has established a web based Project Management Tool (PMT) using a Microsoft product called SharePoint (SP).

B. The software is used throughout the design, construction and warranty process of major remodels and new construction projects executed as a City of Madison, Board of Public Works project.

C. Initially deployed in mid-2013, the PMT software has been successfully deployed on several projects, and we continue to modify/update/enhance the PMT on a regular basis.

1.2. SHAREPOINT PROCEDURE OVERVIEW

A. The CoM PMT is a system of consolidated Document & Form Libraries and Data Lists that assist in performing day to day functions of design/construction management while reducing the use of surface mail, email and email attachments.

1. Document libraries store a wide variety of documents in many different formats including but not limited to Word, Excel, PDF, photographs (all popular formats), etc.
2. Data Lists contain consolidated data information that can be generated and stored for further use. Punch Lists and Warranty issues will be examples of Data Lists.
3. Form Libraries are primarily used when a specific work flow process is needed. The form acts as the cover letter. An example of this would be the Submittal Review Process.
4. Libraries are controlled by Permission Groups and Permission Levels.

B. The following libraries and sub-libraries on the PMWS are provided for specific workflows and contract documentation. Related specification numbers are in "( )" if applicable.

Contract Documents	Construction Administration	Construction Progress	LEED Documentation	Quality Control	Construction Closeout
GC Partial Pay Apps (01 29 76)	*Change Order Requests (COR Form) (01 26 57)*	*Schedules (01 32 16)*	*LEED Documents*	*Regulatory Inspections*	*Misc Closeout Documents*
Construction Documents	*Change Orders (CO Form) (01 26 63)*	*Progress Meetings (01 31 19)*	*Waste Management (01 74 19)*	*Commissioning Checklists*	*O & M Manuals (01 78 23)*
Regulatory Documents	*Construction Bulletins (CB Form) (01 26 46)*	*Daily Journal (DJ Form) (01 32 26)*		*System Performance Tests*	*Product Warranties /Guarantees (01 78 36)*
Testing Contract	*Request for Information (RFI Form) (01 26 13)*			*Quality Management Observation (QMO Form) (01 45 16)*	*As-Builts (01 78 39)*
	Submittals (SUB Form) (01 33 23)			*Safety and Incident Reports*	*Attic Stock (01 78 23)*
	Substitution Request (SR Form) (01 25 13)			*Material Testing & Field Reports*	*Demonstration and Training (01 79 00)*

Contract Documents	Construction Administration	Construction Progress	LEED Documentation	Quality Control	Construction Closeout
					Warranty Issues (WI Form) (01 78 23)

C. A tutorial document on the web based PMT will be provided to the General Contractor (GC) who is awarded the contract. Additional training will be provided as needed for the GC and Sub-Contractors (SC) by the CoM.

D. The PMT has predefined work flows that channel automated alerts as documents are uploaded, reviewed, and completed. These workflows are designed for inbound information from the contractor as well as outbound information from the Architectural/Engineer consultant and the Owner.

E. The GC will be required to receive email notifications, access the internet to review related documentation and be able to upload/download documentation to the various project libraries.

F. The SC's will be required (at a minimum) to receive email notifications and access the internet to review related documentation. Prior to setting up the final PMT the GC and CPM shall meet to review all SP workflows, the GC will determine to what level over the minimum requirements the SC's will be involved.

1.3. RELATED SPECIFICATIONS

A. The following specification sections are directly related to the CoM PMT system.

1. 01 25 13 Product Substitution Procedures
2. 01 26 13 Request for Information (RFI)
3. 01 26 46 Construction Bulletins (CB)
4. 01 26 57 Change Order Request (COR)
5. 01 26 63 Change Order (CO)
6. 01 29 76 Progress Payment Procedures
7. 01 31 19 Project Meetings
8. 01 32 16 Construction Progress Schedules
9. 01 32 26 Construction Progress Reporting
10. 01 32 33 Photographic Documentation
11. 01 33 23 Submittals
12. 01 45 16 Field Quality Control Procedures (Owner)

PART 2 - PRODUCTS

2.1. SHAREPOINT SYSTEM RELATED PRODUCTS

A. SharePoint is a Microsoft Windows based software that requires no additional software installation, hardware or other special requirements/applications for the users. There are no costs associated with the use of this system.

B. Currently the CoM is using SharePoint 2010.

1. SharePoint works best if the user's computer is running Windows versions 7 through 8.1.
2. SharePoint works best when used with Internet Explorer versions 9 - 11 (32 bit).

a. At this time SharePoint is not compatible with other internet browsers such as Fire Fox, Google Chrome, and Safari.

PART 3 - EXECUTION

3.1. POST BID-OPENING

A. After bids have been opened, a successful bidder has been determined, and bid acceptance procedures have been initiated the City Project Manager (CPM) will contact the GC to provide the following information.

1. Project Management Software Tutorial. This tutorial is in a PDF printable format with screen shots and associated instructions on how to access and use the PMT.

a. Tutorial instructions will include but not be limited to the following:

i. Descriptions of various libraries, documents, and forms that will be used throughout the construction project.

ii. Uploading procedures for various types of documents including standardized naming conventions.

2. A blank Project Directory in an Excel spread sheet format. The contractor shall provide the following information for GC and SC staffs as indicated on the spreadsheet. This will generally be the Project Manager for the GC as well as the Sub-contractors and the GC Site Supervisor.
    a. Last Name, First Name
    b. Company Name
    c. Email address (valid, work related)
    d. Work Phone Number (required, include area code)
    e. Cell Phone Number (not required, include area code)
3. The GC shall provide the above information for all SC's where the GC is not self-performing the work.
4. The GC may provide project foreperson information for work being self-performed if he/she so desires.

3.2. POST PRE-CONSTRUCTION MEETING

A. The GCPM will return the completed Project Directory spread sheet to the CPM no later than the Pre-construction meeting.

B. The CPM is responsible for uploading all project directory data into SharePoint and coordinating with CoM Information Technology (CoM-IT) for creating the logins and passwords of non-city staff (GC/SC staffs).

C. All GC/SC staff will be notified through an automated email from CoM IT that logins and passwords are available. It is the responsibility of each GC/SC to call the CoM-IT number provided in the email to receive his/her login/password over the phone. Logins and passwords will not be released via email.

D. Once the GCPM has received his/her login/password uploading of contract related documents can begin. This would include but not be limited to project schedules, submittals, RFI's, and other documents as needed.

E. All workflows, review of documentation, and general archiving of construction related documentation will be conducted on the PMWS. These documents will generally not be emailed.

F. The following documents related to the execution of the contract will not be part of the PMWS:
1. All documentation related to executing the contract, such as:
    a. Sub Contractors list
    b. Affirmative Action documentation
    c. Bonding documentation
    d. Documentation associated with payroll verification
    e. Final documentation associated with closing out the contract
2. Any documentation required/generated by ordinance, code or statute, such as;
    a. Erosion Control inspections
    b. Building Inspection Department inspections

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULES

PART 1 – GENERAL

1.1. SCOPE

A. This specification is to identify various project related schedules associated with indicating construction progress and outlook. The following schedules are the responsibility of the General Contractor (GC).
   1. Overall Project Schedule
   2. 6 Week Look-out Schedule

B. This specification is not intended to include internal schedules generated by the contractors during their planning and execution of the contract.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site
C. Section 01 31 19 Progress Meetings
D. Section 01 74 13 Progress Cleaning
E. Section 01 77 00 Closeout Procedures
F. Section 01 78 23 Operation and Maintenance Data
G. Section 01 78 36 Warranties
H. Section 01 78 39 As-Built Drawings
I. Section 01 78 43 Spare Parts and Extra Materials
J. Section 01 79 00 Demonstration and Training
K. Other specification within the construction documents that may indicate the need for scheduling any event with Owner, Project Architect, Owner Representatives, including any owner provided equipment.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. OVERALL PROJECT SCHEDULE (OPS)

A. The GC shall prepare an OPS that covers the duration of the contract from the pre-construction meeting through the end of construction to final contract closeout.
   1. The GC shall review Specification 01 77 00 Closeout Procedures to become familiar with definitions, differences, and requirements for closing out the construction and contract including the association with progress payments.
B. The GC shall provide copies and lead a discussion on the OPS during the pre-construction meeting.
C. The OPS shall indicate start and end dates of each task associated with the project.
D. The OPS shall clearly indicate the critical path of the project.
E. The GC shall update the OPS as often as necessary during the duration of the project. Updates will be briefed as needed during bi-weekly progress meetings.

3.2. 6 WEEK LOOK-OUT SCHEDULES (LOS)

A. The GC shall prepare the initial LOS to include detail of daily tasks for the first six (6) weeks of construction in depth for the Pre-construction meeting. The LOS shall be compatible and complimentary to the OPS.
B. The GC shall provide copies and lead a discussion on the LOS during the pre-construction meeting.
C. The LOS shall indicate start and end dates of each major task, associated related sub-tasks, and required parallel or pre-requisite tasks required to complete the major task on time.

D. The LOS shall also include identifying and scheduling such events as:
   1. Pre-installation meetings and mock-up review meetings.
   2. Quality management reviews of installations before they are covered.
   3. Owner provided equipment as designated by the contract documents.
   4. Work by others as designated by the contract documents.
   5. Critical submittal dates.

E. The GC shall update the LOS prior to each bi-weekly progress meeting to indicate the next 6 weeks of scheduled work. Updates will be briefed during each bi-weekly progress meeting.

3.3. PROJECT MANAGEMENT WEB SITE (PMWS)

A. The GC shall upload all project schedules and updates to the PMWS in an original PDF version of the scheduling document. Scans will not be permitted.

END OF SECTION

SECTION 01 32 19
SUBMITTALS SCHEDULE

PART 1 – GENERAL

1.1. SUMMARY

A. The General Contractor shall submit a complete and comprehensive list of all submittals anticipated during the execution of this contract.

B. The GC shall include the Administrative submittals identified in item 1.5 below and shall be required to up load them to the Project Management Web Site.

C. The initial Submittals Schedule shall be based on the original contract documents used at the time of bidding and any posted addenda through awarding of the contract.

D. The Submittal Schedule may be appended during the execution of the contract based on amendments to the contract in the form of Change Orders, Construction Bulletins, and other related documents that add, or change the scope of the work.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site
C. Section 01 33 23 Submittals

1.3. RELATED DOCUMENTS

A. The following documents shall be used as the basis for initiating the original Submittals Schedule.
   1. Drawing documents and specifications (including general provisions) as provided with the bid set documents and any published addenda.

B. The following documents shall be used to amend the submittals schedule as needed during the execution of this contract.
   1. Documents associated with revisions or clarifications to number A.1 above after awarding of the contract, including but not limited to:
      a. Construction Bulletins
      b. Approved Change Orders

1.4. SUBMITTAL DEFINITIONS

A. Administrative Submittal: Any submittal that may be required by a Division 1 Specification and as noted in Section 1.5 below.

B. Critical Path Submittal: Any early submittal that needs a priority review due to early construction use or long lead times where a delay could affect the critical path of the construction schedule

C. Submittal: Any material, product, equipment, or general requirement as outlined in this and other specifications that require a favorable review or acceptance prior to proceeding with procuring the item or proceeding with the Work.

1.5. SUBMITTAL REQUIREMENTS

A. The GC and all Sub-contractors shall review the construction documents including the specifications of their individual Division or Trade to compile a complete list of all materials, products, or equipment that will require a positively reviewed submittal to be completed prior to procurement and installation.

1. Submittals shall include but not be limited to any of the following that may apply:
    a. Shop Drawings
    b. Product Data
    c. Assembly Drawings
    d. Engineered Drawings
    e. Product Samples

B. The following items will require an approved submittal, verify with specifications for specific needs and requirements:
1. Contractor certifications for specialized work such as asbestos removal, well drilling, controls, AV, etc.

1.6. ADMINISTRATIVE SUBMITTALS

A. The GC shall upload the following submittals within 15 working days of receipt of the City of Madison Start Work Letter. All Administrative Submittals shall be approved prior to requesting Progress Payment Number 1.
1. Contractors Project Directory, see specification 01 31 23, discuss requirements with CPM
2. Submittals Schedule, see Specification 01 32 19
3. Waste Management Plan, see Specification 01 74 19
4. Closeout Requirement Checklist, see Specification 01 77 00
5. Warranty Checklist, see Specification 01 78 36

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. OVERALL RESPONSIBILITIES OF ALL CONTRACTORS

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 submittals to the General Contractor.

B. Each list shall indicate the title of the submittal, the associated specification of the submittal, whether the submittal can be considered an early/middle/late submittal, the anticipated date the submittal will be provided and the anticipated date the submittal needs to be approved.

C. Contractors shall be aware that the goals for submittal review by the Architect staff and City staff will be as follows:
1. For items on the Critical Path as identified by the GC, five (5) working days
2. For most other submittals ten (10) working days
3. Additional time may be needed for complex submittals or if re-submittals are required.

D. The general format of the Submittal Schedule shall be tabular as per this example:

Title	Specification	Critical Path (Y or N)	Date provided	Date required	Remarks
Concrete Mix Design	03 30 00	Y	Oct 1, 2014	Oct 15, 2014	
Paint Draw Downs	09 90 00	N	Jan 2, 2015	Jan 20, 2015	

3.2. GENERAL CONTRACTORS RESPONSIBILITIES

A. The General Contractor shall be responsible for all of the following:
1. Consolidating all submittal lists from individual contractors into one master list.
2. Reviewing all submitted lists for completeness, timing with the overall contract, etc. The GC shall meet with individual contractors to make changes as necessary.
3. Upload the completed Submittals Schedule to the Submittal Library on the Project Management Web Site for review as SD 003.0. See Specification 01 33 23 Submittals for more information on this procedure.
4. Resubmit the schedule as needed after initial reviews have been completed.

B. The GC shall work with other contractors to amend the Submittals Schedule throughout the execution of the project based on changes and modifications as needed.

C. The GC and Project Architect shall be responsible for reviewing and briefing the submittal schedule and submittals status at each bi-weekly construction meeting.

3.3. STAFF REVIEW RESPONSIBILITIES

A. The City Project Manager, consulting staff, Owner, and other city staff will review the Submittal Schedule for completeness per the plans and specifications within their divisions of work. The reviewing staff may provide comments as needed. Some examples might include the following:

1. Submittal not required
2. Provide photos of samples with digital submittal
3. Insure one submittal for complete system
4. Append the schedule to include…
5. See Specification <xyz> for additional requirements

B. The City Project Manager will finalize review comments regarding the Submittal Schedule. Re-submittal of the submittal schedule may be required.

END OF SECTION

SECTION 01 32 23
SURVEY AND LAYOUT DATA

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to set forth the minimal required guide lines to be followed by the General Contractor (GC) and the Land Surveyor (Surveyor) including but not limited to the following:
   1. Surveyor Professional Requirements
   2. Horizontal and Vertical Datum Control
   3. Local Control (if any)
   4. Electronic File and Data Requirements
   5. As-Built Documentation Requirements

B. When working on any City of Madison project, OSHA standards must be complied with. The Surveyor shall provide appropriate traffic control in accordance to the Manual on Uniform Traffic Control Devices (MUTCD).

C. The Surveyor shall be responsible for notifying Diggers Hotline in advance of beginning the field work for this contract.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site (SharePoint)
C. Section 01 33 23 Submittals
D. Section 01 78 39 As-Built Drawings
E. Section 105.9, Survey Points and Instructions, of the City of Madison Standard Specifications for Public Works

1.3. SURVEYOR QUALIFICATIONS

A. The General Contractors, Land Surveyor Sub-Contractor shall meet or exceed the following:
   1. The Principal Land Surveyor (PLS) shall be licensed to practice in the State of Wisconsin.
      a. The PLS's license shall be current at the beginning of the contract and the PLS shall maintain an active license throughout the execution of this contract.
   2. The PLS shall have a minimum of minimum of ten (10) years of field experience on similar projects of scope and size.
      a. Land Surveyors working under the direction of the PLS shall have a minimum of five (5) years of field experience on similar projects of scope and size.

B. The PLS shall be responsible for checking and verifying all work being performed under the PLS's direction during the execution of this contract. This shall include but not be limited to periodic field checks of equipment and survey data for accuracy and compliance with the contract documents.

1.4. QUALITY ASSURANCE

A. The PLS shall do all surveying in City of Madison Datum's as follows:
   1. All Horizontal Control shall be in the Dane County Coordinates (WISCRS), NAD 83(1997) datum, US Survey foot).
   2. All Vertical Control shall be in NAVD88(1991).

3. Information on PLSS Section Corner Monuments and Tie Sheets can be found on the City Engineering Mapping website http://gis.cityofmadison.com/Madison_PLSS/PLSS_TieSheets.html.

1.5. SUBMITTALS

A. After initial project setup the PLS shall provide the following information as a Survey Data Submittal for review by the CPM/CCM, and Owner. See Specification 01 33 23 – Submittals for more information.
   1. Copy of the PLS (and any supporting staff) current State of Wisconsin registration certificate/licenses.
   2. Digital Survey Submittal on a thumb drive delivered to the CPM/CCM. Submittal Survey shall be on a thumb drive or CD in Auto CAD 2017, MicroStation V8i, or DXF format. Digital Submittal shall be of the project site setup showing all of the following:
      a. Key features not scheduled for demolition, including but not limited to building corners, roof overhangs, and door locations.
      b. Location of construction limits fencing.
      c. Locations of PLSS and/or project control points provided by the Owner.
      d. Locations of project based control points.
   3. Printed Survey Submittal shall be the same as item 1 above in PDF format. PDF file shall be formatted to print to scale on 24"x36" sheets as required to show all features with text neatly organized for each item identified. When multiple sheets are used a match line and sheet references shall be required.
   4. PDF file of the complete level/layer scheme. Scheme shall be in tabular form formatted to 8.5 by 11 paper and shall include all of the following:
      a. Level/layer designation (abbreviation).
      b. Level/layer designation (full title).
      c. Feature attribute characteristics (line weight, line style, font, etc.).
      d. Cell attribute information
      e. Samples of line styles and cells.

1.6. EXAMINATION

A. The PLS shall be responsible for verifying all site data including the owner provided local control points (see Section 3.1 below) prior to starting the Work.
B. Notify the Project Architect and CPM/CCM immediately if any discrepancies are discovered.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1. PRE-CONSTRUCTION OWNER SUPPORT

A. The CPM/CCM shall provide the GC/PLS with a digital CAD seed file on or before the Pre-construction meeting.
   1. Seed file shall be a MicroStation 3D seed file using the datum indicated above. Seed file shall be delivered as a MicroStation V8i or DXF format as requested by the PLS.
      a. Seed file shall be used as the PLS's initial base file for all future work on this contract.

3.2. UTILITY LOCATING

A. The GC and/or PLS shall be responsible for notifying Diggers Hotline for all utility locate requests.

3.3. SURVEY CONTROL AND LAYOUT DATA

A. The GC and PLS are responsible for all other survey control and layout data required to perform the work in this contract.

3.4. TOPOGRAPHIC SURVEYING

A. The Surveyor may perform the topographic survey with properly calibrated equipment as follows:
   1. Total station, achieving minimum accuracy for well-defined features of +/- 0.1 feet horizontal and +/-0.04 feet vertical at 95% confidence relative to control. "Well defined features" shall include but not be limited to property irons, pavements, trees, landscaping features, buildings, utility locations, and other permanent features.
   2. RTK GPS shall be permitted in large open areas, along tree lines, and in brushy areas.

3.5. SITE SURVEY AS-BUILT

A. See Specification 01 78 39 As-Built Drawings, Section 3.2 for more information on required record site information to be provided prior to contract closeout.

B. The GC shall be responsible for scheduling the PLS to capture locations and depths of all buried utilities prior to any contractor back filing trenches. The Owner may require missing information to be located and surveyed at the GC's expense.

END OF SECTION

SECTION 01 32 26
CONSTRUCTION PROGRESS REPORTING

PART 1 – GENERAL

1.1. SUMMARY

A. Daily records of project activities, resources used, weather conditions, and other information related to the ongoing progress of the project are extremely important at all levels of Construction Management.

B. Daily records provide the base for weekly progress reports and updating progress schedules.

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 31 19 Project Meetings

B. Section 01 31 23 Project Management Web Site

C. Section 01 32 23 Photographic Documentation

1.3. PERFORMANCE AND QUALITY ASSURANCE REQUIREMENTS

A. The General Contractor (GC) shall be responsible for all Construction Progress Reporting as outlined in this and other specifications as noted.

B. The GC shall maintain daily progress journals in a format of his/her choosing provided it is legible and contains the information as outlined in Section3.1 below.

C. The journal shall be located in the job trailer and shall be reviewable by the Project Architect or City Project Manager if so requested.

PART 2 – PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. CONTRACTOR JOURNAL

A. The GC shall maintain a journal of daily progress on which Work is performed by any employee or entity for which the GC is responsible. Such reports shall include all relevant data concerning the progress of Work activities the GC and Subcontractors are responsible for and the effect of that activity on the time of performance of the Contract.

1. Some projects may not require weekly journals be kept instead of daily journals. This is at the sole discretion of the City Project Manager. A daily journal will generally be required when the contract has a significant amount of site work. A weekly journal will generally be used when a contract is interior work only.

B. Journal entries shall be made on the Contractor Daily/Weekly Report Form located in the Construction Progress-Daily Journal Library on the Project Management Web Site. The form consists of the following areas:

1. Weather; include temperature, humidity, precipitation, wind and other related information such as significant storm events, times, and details.
2. Work completed by trade
3. Delays encountered
4. Deliveries received or delayed
5. Hot issues that need to be addressed
6. Safety issues
7. Photograph progress and upload to the Photo Library on the Project Management Web Site.
8. Other including inspections, testing, etc.
9. Space for attaching documents

C. Contractor Daily/Weekly Report Forms shall be completed and signed by the GC's Job Superintendent or other on-site representative authorized by the GC confirming each such report is current, accurate and complete.

D. If applicable the GC shall include schedules of quantities and costs, progress schedules, wage rates, reports, estimates, invoices, records and other data as requested by the CPM concerning Work performed or to be performed under this Contract if the CPM determines such information is needed to substantiate Change Order proposals, claims, or to resolve disputes.

3.2. CONSTRUCTION PROGRESS MEETINGS

A. The GC shall provide a verbal summary of the previous two (2) weeks progress reports at each bi-weekly construction progress meeting.

END OF SECTION

SECTION 01 32 33
PHOTOGRAPHIC DOCUMENTATION

PART 1 – GENERAL

1.1. SCOPE

A. The General Contractor (GC) shall be required to take weekly digital photographs, both interior and exterior, of construction progress and upload the photos directly to the Project Management Web Site (SharePoint).

B. The GC shall be required to provide digital time-lapse photo service of the project exterior construction progress.

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site (SharePoint)
C. Section 01 32 19 Submittals Schedule
D. Section 01 32 33 Submittals
E. Section 01 77 00 Closeout Procedures

1.3. SUBMITTALS

A. The GC shall provide general information on the type of camera being used for interior and exterior digital photographs.
   1. Information may be written on Contractor's transmittal sheet.
      a. Include camera name/type, aspect ratio setting, and average file size
      b. Provide sample project pictures as part of PDF submittal.

B. The GC shall provide sufficient information on the type of time lapse system being used that meets the requirements identified in section 2.2 below.

PART 2 – PRODUCTS

2.1. DIGITAL CAMERA

A. All digital photographs shall be taken with a good quality digital camera, cell phone, tablet, and other such digital device.

B. Digital photographs shall be formatted to achieve a good, clear, and detailed image where the final file size is between 600 KB and 3.0 MB (3000KB).

2.1. TIME LAPSE CONSTRUCTION CAMERA (TLCC)

A. The TLCC shall be a high quality weather proof camera owned and operated, or leased, by the GC for the duration of this contract with the following minimum capabilities:
   1. Pan-Tilt-Zoom (PTZ) capable.
   2. Wireless internet or built in cellular technology capable.
      a. The use of memory cards will not be permitted.
   3. Widescreen, high resolution (5-30 MP rating).
   4. Powered by 120V AC.
      a. The use of battery packs will not be permitted.
   5. Web/cloud hosted access to archived photos and video.
   6. Provides complete time lapse video capability.
   7. 24/7 service and support for equipment, software, and hosting services.

B. Approved equipment/services include but are not limited to the following:
   1. OxBlue Corporation, www.oxblue.com
   2. EarthCam, www.earthcam.net
   3. TrueLook, www.truelook.com

PART 3 – EXECUTION

3.1. REQUIREMENTS FOR DIGITAL PHOTOGRAPHS

A. The GC shall take a minimum of two (2) exterior photographs each week. Exterior photographs will not be required on projects that do not include any exterior work.
   1. Exterior photos shall be taken from approximately the same location each week for the duration of the project.
   2. When applicable this requirement shall begin prior to commencing any site work.
   3. This requirement shall only be applicable when there is exterior work actively being conducted with the project. Periods of inactivity due to weather (winter conditions) do not require a photograph.
   4. This requirement shall end when the exterior work has been substantially completed.
   5. This requirement may be suspended due to weather conditions or substantial delays in exterior progress.

B. The GC shall take interior photographs each week that document interior construction progress.
   1. This requirement will begin when exterior wall framing begins.
      a. When an interior remodeling project includes demolition work interior photos shall be taken during the demolition process.
   2. Pictures do not need to be taken from the same location each week.
   3. This requirement shall end when the interior work has been substantially completed.

C. Digital photographs shall be properly zoomed in/out, and flash used as needed, to capture a level of detail required to properly show the progress being captured by the photograph.
   1. Blurry and dark pictures will not be accepted.

D. The camera default naming convention is acceptable. The GC does not need to rename or specifically identify pictures with a title.

E. All digital photographs shall be saved in a JPEG (.jpg) format and uploaded directly to the SharePoint Project Images Library.
   1. The GC shall upload the photos to the folder that designates the appropriate construction week and date (beginning Monday date). If no folder exists, contact the CPM/CCM prior to uploading photos.

3.2. REQUIREMENTS FOR TIME LAPSE PHOTOGRAPHS

A. The GC shall be responsible for all of the following:
   1. Verify with the CPM/CCM a suitable place for mounting the camera and related equipment prior to installation.
   2. The complete installation, setup, maintenance, and removal of the camera and related equipment.
   3. The hosting and access of all photographs and videos taken by the camera during the project.
   4. Production of a final time lapse video (minimum of 3 minutes in length) of the project provided in a viewable format to the Owner on a thumb drive or CD.

B. Time lapse photos shall be taken from the same fixed position at approximately ten (10) minute intervals.
   1. Time lapse shall start before normal daily activities begin and end after normal daily activities have been completed.
      a. The GC shall adjust the camera time lapse schedule as needed to accommodate any periods of overtime or weekend work.
      b. Time lapse shall not be taken during major periods of no activity including night hours, holidays, weather related (winter) inactivity, etc.

C. All photos taken during the execution of this contract shall be accessible from a web based service. Archived photos shall be organized by date and time so that they can be easily retrieved and viewed as needed.
   1. If necessary the GC shall coordinate usernames and passwords for access to the photos. The City of Madison would prefer that the access be generic to accommodate a wide audience.

3.3. PROJECT MANAGEMENT WEB SITE (SHAREPOINT)

A. The CPM/CCM shall provide weekly progress folders in the Project Images Library on SharePoint.
   1. Progress folders are labeled with the Construction Week Number and the date for Monday of that week.
   2. The GC shall notify the CPM/CCM if additional weekly progress folders need to be created.

B. The GC shall upload the weekly digital photographs to the appropriate progress folder in the Project Images Library.

C. Copies of Time Lapse video shall be uploaded to a separate project folder in the Project Images Library prior to Construction Closeout.

END OF SECTION

SECTION 01 33 23
SUBMITTALS

PART 1 – GENERAL

1.1. SUMMARY

A. The General Contractor (GC) shall be responsible for providing submittals for review of all contractors and sub-contractors as designated in the construction documents. Submittals shall include but not be limited to all of the following:
   1. Equipment specified and pre-approved in the specification; to ensure quality, construction, and performance specifications have not changed since final design.
   2. Equipment specified by performance in the specification; to ensure that the intended quality, construction, and performance specified is met by the selected material or product.
   3. Shop, piece, erection, and other such drawings as indicated in the specifications to ensure all structural, dimensional, and assembly requirements are being met.
   4. Submittals indicating installation sequencing
   5. Submittals indicating control sequencing
   6. Contractor licensing, certification, and other such regulatory documentation when required by a specification.
   7. Other submittals as may be required by individual specifications.

B. The submittal process shall not be used to determine alternates to specified products or equipment. All considerations shall be reviewed during the bidding process and acceptable alternates shall be acknowledged by addendum prior to the closing of bidding. See bidding instructions for the information on submitting alternates for consideration.

D. In the event that a manufacturer has significantly changed a product (discontinued a model, changed dimension or performance data changed available colors, etc.) since bid opening the GC shall submit a Request for Information (RFI) to the Project Architect requesting other approved alternates prior to uploading a digital submittal.

E. Contractors and sub-contractors shall be responsible for knowing the submittal requirements of ALL sections within their scope of work under the contract. The Owner reserves the right to request documentation on any materials, equipment, or product being installed where a submittal is not on file. If the material, equipment, or product installed is determined not to meet the intent of the specification the contractor/sub-contractor shall be required to remove and replace the items involved. The GC shall be solely responsible for all costs associated with the removal and replacement.

1.2. RELATED REFERENCES

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site
C. Section 01 32 19 Submittals Schedule
D. Section 01 32 26 Construction Progress Reporting
E. All Technical Specifications, contract documents, construction drawings, and any published addendums during the bidding process.
F. All contract documents generated during the execution of the contract including but not limited to Requests for Information (RFI) and Construction Bulletins (CB).

1.3. SUBMITTAL REQUIREMENTS

A. A completed submittal shall meet the following requirements:

1. Digital submittal shall be original PDF of manufacturer's data sheets or high quality color scan of the same.
    a. Submittals shall not include sales fliers or other similar documents that typically do not provide complete manufacturers data.
2. Documents within the PDF submittal shall be printable to a sized sheet no less than 8-1/2 by 11 inches and no larger than 24 by 36 inches.
3. At the beginning of each submittal the contractor shall identify the plan reference (WC-1, EF-3, etc.) in RED block letters that the submittal is for.
4. Where multiple model numbers appear in a table the contractor shall identify the specific model being submitted by using a RED square, box, or other designation to distinguish the correct model from others on the page.

B. A complete submittal will include all information associated with the product or equipment as presented in plans, equipment tables, and specifications. Information shall include but not be limited to the following:
1. Dimensional data
2. Performance data
3. Resource requirements, power, water, waste, etc
4. Clearance and maintenance requirements
5. Finish information, colors, textures, etc.
6. Warranty information

C. Where a submittal includes material samples (carpet, tile, paint draw downs, etc.) the contractor shall do the following:
1. The Contractor shall submit the sample(s) as indicated in the specification.
2. The Contractor shall include a quality photograph(s) of the product with the digital submittal. Photographs shall meet the following requirements:
    a. Formatted to be between 500Kb and 1.0 Mb in file size
    b. Have no glare or flash reflection on the sample
    c. Sample fills the frame of the photo and shows detail as needed. Include multiple photos from other angles as needed.
    d. Scanned copies of products or photos are not acceptable.

D. Uploaded submittals should be relative and related to a specific written specification.
1. Do not upload submittals under a broad category or division (I.E. HVAC 23 00 00). Always upload by the specific specification that identifies a required product or performance to be met.
2. Group related items together if the specification is written that way. (I.E. all of the plumbing fixtures and trim relative to one specific specification should be submitted together).
3. Submittals shall be grouped and adhere to the divisions in the submittal schedule. Submittals that do not conform to the submittal schedule and/or specification divisions will be rejected for re-submittal.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL CONTRACTORS PROCEDURES

A. All required submittals will be uploaded to the Construction Administration-Submittal Drawings Library on the Project Management Web Site (PMWS) by the GC.
1. The GC shall open a new Submittal Form in the Submittals Drawings Library for each required submittal from the Submittals schedule.
2. Fill in required information on the form that will be used for routing the review and comments.
3. Attach all documentation as described in Section 1.3 above.
    a. Submit samples under separate cover to the Project Architect when necessary.

B. Uploading the submittal indicates that the GC has reviewed and approved the submittal against the contract document requirements.

C. The GC shall discuss submittal status at all progress meetings and shall monitor submittal review/approval/re-submittal so as to not incur delays in the project schedule.

D. A completed upload of the submittal to the PMWS initiates the review process workflow.

E. The GC and sub-contractors shall provide re-submittals as required.

3.2. SUBMITTAL REVIEW

A. Upon completion of the submittal upload by the GC the PMWS automatically notifies the appropriate Architect/Engineer and Owner Representative, including CxA, by Division/Specification number that there is a submittal for review.

B. The submittal shall be reviewed internally by the required Architect/Engineer and Owner Representative and CxA in a timely fashion and provide commentary on missing items, incorrect information, or incomplete shop drawings, etc as needed.

C. When the internal review is completed the PMWS will notify the Project Architect the submittal is ready for final review.

3.3. PROJECT ARCHITECTS REVIEW

A. Upon completion of the internal review the CPM shall review all internal review comments and determine the appropriate disposition status for the submittal (approved or resubmit).

C. The CPM shall summarize final internal review comments onto the submittal cover sheet, provide a final disposition of the submittal and update the review status of the submittal to “Complete…” (with or w/o comments) or “Rejected”.

D. A completed Final Review status initiates the PMWS to notify the GC and appropriate sub-contractor(s) that the review of the submittal has been completed.

END OF SECTION

SECTION 01 45 16
FIELD QUALITY CONTROL PROCEDURES

PART 1 – GENERAL

1.1. SUMMARY

A. The City of Madison has developed a multi-faceted Quality Management Program that begins with contract signing and runs through contract closeout to ensure the best quality materials, workmanship, and product are delivered for the contracted Work.
   1. The Progress Management Web Site is a Construction Management tool that provides contractors and staff a single on-line location for the daily operations and progression of the Work.
   2. The Quality Management Observation (QMO) is an ongoing observation of the construction process as it progresses. The City of Madison does not use a “Punch List” or “Corrections List” as it is typically known throughout the construction industry. The QMO process acts as an “in progress punch list”.
      a. By using the QMO process the City of Madison’s goal is to have a zero item punch list prior to the 90% progress payment and owner occupancy.

B. All contractors shall be required to review the specifications identified in Section 1.2 below, and other related specifications identified therein to become familiar with the terminology and expectations of this City of Madison Public Works contract.

C. It is the intent of this specification to outline the requirements, expectations, and responsibilities of the General Contractor (GC), Project Architect, and other representatives of the Owner for items of Quality Assurance and Quality Control.
   1. This specification is not intended to conflict with Specification 01 40 00 Quality Requirements or other specifications requiring testing and inspecting services.
   2. This specification does not relieve the GC from any requirements associated with regulatory inspections performed by the City of Madison Building Inspection Unit, or inspectors from other agencies as required by code.
   3. Any testing performed by an Owner’s Representative does not relieve the GC from performing any testing that may required by the construction documents.

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 26 13 Request for Information (RFI)
B. Section 01 29 76 Progress Payment Procedures
C. Section 01 31 13 Project Coordination
D. Section 01 31 23 Project Management Web Site
E. Section 01 40 00 Quality Requirements
F. Section 01 77 00 Closeout Procedures
G. Section 01 78 13 Completion and Correction List

1.3. PERFORMANCE REQUIREMENTS

A. All contractors shall be responsible for a proper quality assurance/quality control (QA/QC) program throughout the execution of the Work defined within the construction documents, including all recognized construction industry standards and all applicable regulatory codes.

B. The GC shall be responsible for all of the following:

1. Monitor the quality of all workmanship, supplies, materials, and products being installed by all contractors and installers to ensure they meet or exceed the minimum requirements set forth by the construction documents.
2. Submit a Request for Information (RFI) whenever manufacturers' instructions or referenced standards conflict with the construction documents before proceeding with the Work.
3. Ensure that Work requiring special certifications or licensing is being performed by is being performed and supervised by personnel that meet the appropriate requirements.
    a. Ensure that all certificates and licenses are current throughout the execution of the project.

C. The CoM and its representatives shall perform quality assurance and quality control activities throughout the execution of this project. This in no way relieves the GC of maintaining an acceptable QA/QC program. =

1.4. QUALITY ASSURANCE

A. The GC shall be responsible for the following:
1. All materials, equipment, and products shall be new, clean, undamaged, and meet the performance specifications defined within the construction documents including favorably reviewed submittals.
    a. Any material, equipment, or product that does not meet the requirements of the construction documents shall be removed and replaced, including any adjacent and related work, at the GCs expense.
2. All Work shall be performed by persons properly trained and/or qualified to produce workmanship of the quality specified in the construction documents.
3. Providing access to updated as-builts, addenda, submittals, bulletins and other related construction documents at the project site.

B. The CoM and its representatives may be responsible for any of the following:
1. Attend pre-installation meetings
2. Attend construction progress meetings
3. Review all submittals
4. Conduct field visits for QA/QC purposes, provide feedback to the GC and sub-contractors using Quality Management Observation (QMO) reports.
5. Review delivered equipment
6. Witness equipment installations, startups, testing as specified in other specifications

1.5. QUALITY MANAGEMENT OBSERVATION REPORT

A. The Quality Management Observation report or QMO is used as a QA/QC tool by those entities responsible for QA/QC activities, including but not limited to, the GC, CoM, PA, CX agent, etc.

B. QMOs are designed to be an early observation of non-conforming construction work before it becomes buried by follow on work. As such it is most often used as an "in progress punch list".

C. QMO forms are part of the Quality Control Library on the Project Management Web Site.

PART 2 – PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. QUALITY MANAGEMENT RESPONSIBILITIES

A. While making routine progress visits to the construction project the GC, CPM, CxA and A/E, and applicable others shall observe the details of the construction and installations to ensure that the intent of the construction documents is being followed.

B. If during the progress visit there is a determination of contract non-conformance a QMO report shall be initiated to begin the documentation process.
1. The GC field superintendent shall be informed immediately of any issue that may cause harm, damage to finished work, or be buried prior to properly filing a QMO report.

C. The following information when filing a QMO report:
1. Open a QMO report in the Quality Control Library on the Project Management Web Site
2. Enter the date and time of the field visit
2. Provide references to construction documents if any (examples; specification, drawing page, details, approved submittals, RFI, CB, etc)
3. Provide a short title for the observation being made
4. Provide a detailed description of the observation being made

5. Select all categories (Site work, Structure, Enclosure, Interior, etc.) from the given list that may apply to the observation being reported.
    a. For each category selected additional boxes shall open with contractor names associated with each category.
6. Select all contractors from the lists provided that may need to be aware of the observation.
7. Provide any attachments that may help provide reference to the observation.
8. Click the SAVE button before closing the form.

D. The software for the Project Management Website will email notifications that a QMO report has been initiated. The software will automatically select and notify the following:
1. The GC, PA, and CPM for all observation reports being filed.
2. Others depending on the observation categories selected.
3. Contractors based on the selections made in the sub-contractors lists.

3.2. RESPONDING TO A QMO

A. All contractors receiving email notification of a QMO Observation shall review the details of the observation.

B. The GC shall be responsible for determining the course of action required to remedy the non-conforming issue and shall coordinate and direct the contractor(s) responsible for any work related to the observation.

C. All contractors assigned to remedy the observation by the GC shall provide follow-up responses on the QMO report as follows:
1. Open the QMO report in the Quality Control Library on the Project Management Web Site.
2. In the “Follow-Up Response” area enter a description of your follow-up response in the box provided.
    a. Click “Insert Item” if additional boxes are required.
3. Add attachments (pictures) if needed to show the work has been completed.
4. Click the SAVE button before closing the form.

3.3. GENERAL CONTRACTORS FOLLOW-UP

A. The GC shall inspect the work to ensure that all assigned contractors have remedied the observation to the intent of the construction documents.

B. The GC shall respond with any additional comments in his/her response box.
1. If no comments are to be made the GC at a minimum must date the response box to trigger the next work flow.

C. Click the SAVE button before closing the form.

D. The software will email a notification to the CPM and the person who initiated the QMO that the issue has been remedied.

3.4. QMO CLOSEOUT PROCEDURE

A. The person who initiated the QMO shall review the remedied work and if properly corrected shall close and date the QMO form.
1. Click SAVE and the software will email a notification to the CPM that final review of the Observation is required.
2. In the event there are still issues the Quality Manager can add additional comments in the response area, click SAVE and re-issue the QMO for additional review as needed.

B. Once the person who initiated the QMO has closed the item the CPM shall review and verify with the PA that the Observation has been properly remedied and provide final closure on the QMO.

3.5. CONSTRUCTION CLOSEOUT

A. The GC shall note that successful close out QMOs are required for construction closeout as follows:

1. Certain progress payments as identified in Specification 01 29 76 are contingent QMO reports being properly closed out.

2. Specification 01 77 00 defines all construction closeout requirements.

END OF SECTION

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1. REQUIREMENTS INCLUDED

A. The City of Madison (CoM) shall employ and pay for the services of an independent testing laboratory to perform specified services and testing.

B. Testing Laboratory inspection, sampling and testing is required for all of the following:

1. Soil Compaction; general excavation, utility trench, and open pits for foundations and buried tanks
2. Cast-In-Place Concrete
3. Asphalt Mix Sampling
4. Asphalt Compaction

1.2. RELATED REFERENCES

A. Section 01 31 13 Project Coordination

B. Section 01 32 16 Construction Progress Schedules

1.3. CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel, provide access to Work and to manufacturer's operations.

B. Submit the following as shop drawing submittals to the PMWS – Submittals Library for review:

1. All concrete mix designs
2. All asphalt mix designs

C. Furnish copies of Product test reports as required.

E. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

F. Provide a minimum of 5 working days notice to Testing Consultant for scheduling of any testing.

G. Temporarily halt the progress of the Work when tested materials do not comply with Contract Documents and promptly notify the Owner or his designated representative and CPM.

J. Remove and replace at no cost to the Owner, all defective materials, that discovered upon testing, do not comply with Contract Documents, including cost for retesting and re-inspecting replaced Work that failed to comply with the Contract Documents.

1.4. SPECIFIC TESTS AND INPSECTIONS TO BE CONDUCTED

A. Compaction Testing. The Testing Consultant shall test all of the following:

1. Compaction of virgin soil not disturbed after excavation to sub grade. This test will be used to determine any applicable undercut.
2. Compaction of sub-base aggregate materials for any pavement for each lift as specified in the contract documents.
3. Compaction of base aggregate materials for any pavement for each lift as specified in the contract documents.
4. Compaction of base aggregate and backfill materials for and pit excavation of buried tanks and foundations.

B. Concrete Testing. Slump and cylinder tests for all cast in place concrete.

C. Asphalt Sampling. Batch sampling of any asphalt mix being delivered to the site.

D. Compaction Testing of Asphalt pavements by layer.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 – EXECUTION – THIS SECTION NOT USED

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes general procedural requirements for temporary facilities and controls including, but not limited to the following:
   1. Temporary Utilities
   2. Telecommunications Services
   3. Temporary Sanitary Facilities
   4. Barriers
   5. Fencing
   6. Exterior Enclosures
   7. Security
   8. Vehicular Access and Parking
   6. Waste Removal
   7. Project Identification
   8. Field Offices

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 31 19 Progress Meetings
B. Section 01 31 23 Project Management Web Site
C. Section 01 74 19 Construction Waste Management and Disposal

1.3. QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
   1. Building Code requirements
   2. Health and safety regulations
   3. Utility company regulations
   4. Police, Fire Department and Rescue Squad rules
   5. Environmental protection regulations
   6. Joint Commission - Hospital Accreditation Standards

B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities".
C. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code".

1.4. TEMPORARY UTILITIES

A. Owner will provide the following:
1. Electrical power and metering, consisting of existing facilities.
2. Water supply, consisting of existing facilities.
B. General:
1. Existing structures may not be used.
2. New permanent facilities may not be used.
C. Water Service: water is available from existing building services.
1. Use trigger-operated nozzles for water hoses, to avoid waste of water.
D. Temporary Electric Power Service: Electrical Contractor shall extend temporary power from existing building services.
E. Temporary Lighting: Electrical Contractor shall provide temporary lighting with local switching
1. Install and operate temporary lighting, minimum of 30 fc, to fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for all areas of work, including construction operations and traffic conditions.
F. Temporary Heat: General Contractor shall provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
1. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.
a. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.

1.5. TELECOMMUNICATIONS SERVICES AND WI-FI

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization through construction closeout.
B. Telecommunications services shall include:
1. Windows-based personal computer dedicated to project telecommunications.
2. Shared access to the internet via WIFI or similar wireless connection.
a. Access must be capable to support minimum of 10 wireless devices.
3. Email Account/address dedicated for GC Project Manager of GC Supervisor on site.

1.6. TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. Temporary toilets: Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
C. Maintain daily in clean and sanitary condition
D. Water: Provide potable water approved by local health authorities

1.7. BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

1.8. FENCING

A. Construction: Refer to Plan Documents and Specification Section 01 76 00: Fencing Materials and Barricades

1.9. EXTERIOR ENCLOSURES

A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.10. SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.11. VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Vehicle parking of all personal vehicles shall be located along the shoulders of the south access drive only.

E. Vehicle parking of contractor work vehicles is permitted within the construction area when vehicles are actively needed for dropping off supplies, equipment, etc. It is recommended that if vehicles are used only for transportation that they remain outside the construction zone and in the designated parking area noted in 1.11.D above.

F. No parking on existing asphalt or concrete shall be permitted. These spaces are designated as Fire Lanes and must remain open at all times.

1.12. WASTE REMOVAL

A. See Section 01 74 19 - Waste Management, for additional requirements.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with lids. Remove trash from site periodically.

D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13. PROJECT IDENTIFICATION

A. No project identification signage or contractor signage is permitted for this project.

1.14. FIELD OFFICES

A. Office: Weather tight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.

B. Field Office shall be located near the Warm Storage Building but shall not be located within any Fire Lane. Verify location with City Project Manager and Owner before setting field office trailer.

C. Provide space for Project Meetings with table and chairs to accommodate a minimum of 15 persons.

PART 2 - PRODUCTS

2.1. EQUIPMENT

A. Temporary Lifts and Hoists: Contractors requiring temporary lifts and hoists shall provide facilities for hoisting materials and employees.

B. Electrical Outlets: Electrical Contractor shall provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

C. Electrical Power Cords: Contractors requiring power cords shall provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

D. Lamps and Light Fixtures: Electrical Contractor shall provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

E. Heating Units: General Contractor shall provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
F. First Aid Supplies: General Contractor shall provide first aid supplies complying with governing regulations.
G. Fire Extinguishers: General Contractor shall provide hand-carried, portable UL-rated, fire extinguishers of NFPA recommended classes for the exposures, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1. TEMPORARY FIRE PROTECTION

A. Until fire protection needs are supplied by permanent facilities, General Contractor shall install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses.
B. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations".
C. Locate fire extinguishers where convenient and effective for their intended purpose.
D. Store combustible materials in containers in fire-safe locations.
E. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires.
F. Prohibit smoking on the premises.
G. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
H. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site
I. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.2. COLLECTION AND DISPOSAL OF WASTE

A. Collect waste from construction areas and elsewhere daily
B. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly.
C. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F.
D. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.3. ENVIRONMENTAL PROTECTION

A. Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.
B. Avoid use of tools and equipment which produce harmful noise.
C. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.4. REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
B. Remove underground installations to a minimum depth of 2 feet (600 mm). Grade site as indicated.
C. Clean and repair damage caused by installation or use of temporary work.
D. Restore existing facilities used during construction to original condition.
E. Restore new permanent facilities used during construction to specified condition.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide general guidelines and responsibilities related to the receiving, handling, and storage of all materials and products from arrival on the job site through installation.
   1. Immediate inspection of delivered goods means a timely replacement if damaged.
   2. Proper storage helps prevent damage and loss by weather, vandalism, theft, and job site accidents.
   3. Proper storage helps with job site performance and safety.
   2. Proper handling helps prevent damage and job site accidents.

B. Each Contractor shall be directly responsible for the receiving, handling, and storage of all materials and products associated with the Work of their Division or Trade.

C. Each Contractor responsible for Work associated with Owner provided materials or products shall be responsible for the receiving, handling and storage of the material/product as outlined in Section 3.8 below..

1.2. RELATED SPECIFICATIONS

A. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".
   1. Use the following link to access the Standard Specifications web page:
      http://www.cityofmadison.com/business/pw/specs.cfm
      a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
      b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.
      c. City Standard Detail Drawings (SDD) may be located from the index in Part VIII.

B. Section 01 57 21 Indoor Air Quality

C. Section 01 74 13 Progress Cleaning

D. Section 01 76 00 Protecting Installed Construction

E. Other Divisions and Specifications that may address more specifically the requirements for the storage and handling of materials and products associated Work of other Divisions or Trades.

1.3. QUALITY ASSURANCE

A. The GC shall be responsible for ensuring that these minimum storage and handling requirements are met by all contractors on the project site including but not limited to the following:
   1. Receiving deliveries of materials, products, and equipment.
      a. Inspect all deliveries upon arrival for damage, completeness, and compliance with the construction documents.
         i. Deliveries shall remain in original packaging or crates, shipping manifest shall be kept with the delivery and the packaging shall have visible identification of the items within the packaging.

b. Immediately report any damaged products or equipment to the GC, begin arrangements for immediate replacement.
c. Materials or equipment that have been damaged, are incomplete, or do not comply with the construction documents shall not be permitted to be installed.

2. All materials and products shall be stored within the designated limits of the project site. Only store the amount of material necessary for upcoming operations so as not to interfere with other construction activities and access to Work by the Owner and Architect. Any offsite storage shall be at the expense of the contractor storing the material or product. All offsite storage requirements shall comply with this specification. All offsite storage of materials is subject to Owner Representative Quality Management review at any time.
3. Large storage containers may be used but shall be weather tight, securable, placed on concrete blocks, timbers, or jack stands and shall be level.
4. When lifting equipment is required the equipment rating shall be greater than the loading requirements of the item being lifted. In addition all of the following shall apply as necessary:
   a. Only designated and/or designed lift points shall be used.
   b. Large items shall have tag lines and handlers at all times during lifting operations.
   c. Lift at multiple points as needed to prevent bending.
5. Materials and products stored inside of the structure shall comply with all of the following:
   a. Storage shall not be allowed to impede the flow of work in progress.
   b. Storage shall not be allowed to hide completed work from review and inspections.
   c. Storage shall not exceed the design loads of the structural components it is being stored upon.
6. All materials and products shall be stored according the manufacturers minimum recommended requirements. All of the following shall be considered before storing any product or material:
   a. Dust and dirt
   b. Moisture and humidity, including rain and snow
   c. Excessive temperatures, direct sun, etc.
   d. Product or material weight and size
   e. Potential for breakage
   f. Product incompatibility with other products such as corrosiveness, chemical reactions, flammability, etc.
   g. Product or material value and replacement cost
7. The Contractor shall be responsible for providing fully functional tarps or plastic wrap, to protect materials and products from the weather. All coverings shall be free of large holes and tears, and shall be tied, strapped, or weighted down to resist blowing.
8. The Contractor shall be responsible for any temporary heating, cooling, or other utility requirement that may be associated with the storage of a material or product.
9. The Contractor shall be responsible for securing materials and products of value such as copper, A/V equipment, etc. Such items shall be stored in securable shipping containers, job trailers or other such storage devices. Container shall be kept secured when not in use.

B. The GC shall inspect the job site daily to ensure that all products and materials stay weather tight and are secured against vandalism or theft as required by this specification.
C. The Owners Representative may at any time request improvements regarding storage of any material or product being provided under these construction documents.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL CONTRACTOR REQUIREMENTS

A. Designate material storage and handling areas as needed including all of the following:
   1. Designate specific areas of the site for delivery and storage of materials to be used during the execution of the Work.
   2. Designated areas shall not be located so as to interfere with the installation of any Work including Work by others such as the installation of utilities or the maintenance of existing utilities. This shall include not storing items in active utility easements as designated by the site plan.
B. Arrange for openings in the building as needed to allow delivery and installation of large items. Openings shall be appropriately sized to include the use of booms, slings, and other such lifting devices that may be larger than the item being installed.

1. When openings are required in completed Work (new or existing) the GC shall be responsible for providing an appropriate opening and for restoring the opening to the original or better condition upon completion. Restoration shall be weather tight and complete.

C. Repeated moving and handling of items being stored shall not be allowed. The GC shall be responsible for any damage and replacement because of mishandling or excessive handling.

3.2. BULK MATERIAL

A. Bulk material such as sand, gravel, top soil and other types of fill shall be stored away from the construction area and shall be stock piled as follows:
1. All bulk material shall be piled safely and efficiently in as small an area as practical. Only store the amount of material necessary for upcoming operations so as not to interfere with other construction activities and access to Work by the Owner and Architect.
2. All stock piles shall have silt fence/sock properly installed around the perimeter to prevent erosion and loss of material. Refer to City of Madison Standard Specification Section 210.1(f) and other related specification or details.
3. Fine grained material shall be protected with tarps to prevent blowing. Tarps shall be weighted or staked to stay in place.

B. Bulk material such as brick, concrete block, stone, and other palletized materials shall be stored on original shipping pallets until ready for use.

3.3. DRY PACKAGED MATERIAL

A. Dry packaged material such as cement, mortar, etc shall be stored on pallets, on slightly elevated ground or clear stone pad to keep water away from the base of the material being stored. Protect from moisture.

3.4. STRUCTURAL AND FRAMING MATERIAL

A. All structural and framing material shall be stored in an organized manner arranged by type, size and dimension. Materials shall be stored on pallets or timbers as necessary and shall not be allowed to lie directly on the ground.

B. Long and heavy items shall be supported at several points to prevent bending and warping.

3.5. EQUIPMENT

A. Equipment delivered to the site shall be stored away from all construction activities until the item can either be moved inside or properly installed.

B. Equipment shall be stored on slightly elevated ground or clear stone pad to keep water away from the base of the equipment.

3.6. FINISH PRODUCTS

A. Finish products such as flooring, tile, counters, lockers, toilets, partitions, lighting, and other similar items should not be delivered and stored until the structure has been enclosed, is weather tight, temperature controlled and the contractor is ready for such items to be installed.
1. Storage of finished products outside for any length of time shall not be allowed.

B. Products that cannot be stored inside the structure shall be stored in secured containers or job trailers until such time as they are ready to be installed.

C. Products with a high potential for breakage such as glass, mirrors, tiles, toilet fixtures, etc. shall be stored with additional protection as necessary such as but not limited to the following:
1. Store in original shipping containers until ready for installation.
2. Do not store in high traffic areas.
3. Shield with other materials such as cardboard, plywood, or similar products.

3.7. DUCTWORK, PIPING, AND CONDUIT

A. All piping and conduit shall be stored horizontally unless otherwise specified by the manufacturer or Division and Trade Specifications.
1. Do not store directly on grade.
2. Cover metal pipes and tubes to prevent rust and corrosion, allow ventilation to prevent condensation.
3. Whenever possible use pipe stands for storing pipe and conduit to prevent tripping and rolling hazards.

B. All ductwork shall be stored horizontally or vertically as necessary unless otherwise specified by the manufacturer or Division and Trade Specifications.
1. During storage, both ends of each duct shall be protected with plastic sheathing to prevent dust and dirt from getting inside the duct. Sheathing shall be sufficiently taped to the duct.

2. After installation, free/open ends shall remain protected with taped plastic sheathing and or temporary filters as specified by division or Trade specifications.

3.8. OWNER PROVIDED, CONTRACTOR INSTALLED EQUIPMENT

A. Section 3.8.A. shall apply to all equipment being provided to any contractor directly from the Owner for installation under the contract.
   1. The Owner or Owners Representative shall do the following:
      a. Inspect all deliveries upon receipt and notify manufacturer of any issues directly.
      b. Review the received shipment with the contractor.
         i. Only provide products or materials to the contractor that were not damaged through shipping or handling.
         ii. Confirm missing products or materials and anticipated delivery schedule if known.
   2. The Contractor responsible for the installation of Work associated with Owner provided materials or products shall "take ownership" and provide safe and secure storage and handling as previously described within this specification.
      i. The Contractor shall be liable for the repair or replacement of any material or product damaged after taking ownership of the product from receipt through final acceptance.

B. Section 3.8.B. shall apply to all equipment being provided by the Owner but shipped directly to any sub-contractor or the project site for installation under the contract.
   1. The GC and/or Contractor responsible for the Work associated with the Owner provided materials or products shall do the following:
      a. Inspect all deliveries upon receipt and notify the Owner or Owners Representative of any issues directly.
         i. Owner or Owners Representative shall notify manufacturer of any issues directly.
      b. Review the received shipment with the Owner or Owners Representative
         i. Confirm missing products or materials and anticipated delivery schedule if known.
   2. The Contractor shall "take ownership" and provide safe and secure storage and handling as previously described within this specification.
      i. The Contractor shall be liable for the repair or replacement of any material or product damaged after taking ownership of the product from receipt through final acceptance.

END OF SECTION

SECTION 01 71 23
FIELD ENGINEERING

PART 1 – GENERAL

1.1. REQUIREMENTS INCLUDED

A. The Contractor shall provide and pay for field engineering services required for the Project:
   1. Land surveying services required to execute the Work, to include building addition location and layout, and location and layout of pavements and all proposed site improvements.
   2. Verification of existing building dimensions, elevations, and relationship to proposed additions.
   3. Professional Engineering services to execute Contractor's construction methods.
   4. Registered Professional Engineer in the State of Wisconsin to determine the load capacity of the existing structure for use of Contractors temporary facilities, equipment, lifts, machinery, material storage, etc.

1.2. RELATED REQUIREMENTS

A. Conditions of the Contract

1.3. PROCEDURES

A. A property survey has been prepared for the Owner and has been bound with Contract Drawings. Surveys shall describe physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. If information is incomplete, notify Owner to furnish additional information. Verify easement locations, front, side, and rear yard restrictions, if any; and property line locations. Verify control points, and establish bench marks. Locate and layout roads, walks, parking areas and all civil structures and all proposed site improvements.

B. Verify locations of underground services, utilities, structures, etc. which may be encountered or affected by the Work.

1.4. PROJECT SURVEY REQUIREMENTS

A. Using datum, the lot lines and present levels have been established as indicated on the Drawings. Other grades, lines, levels and benchmarks, shall be established and maintained by the Contractor, who shall be responsible for them. As work progresses, the Contractor shall layout on forms and floor, the locations of all partitions, walls and fix column centerlines as a guide to all trades. The Contractor shall make provision to preserve property line stakes, benchmarks, or datum point. If any are lost, displaced or disturbed through neglect of any Contractor, Contractor's agents or employee, the Contractor responsible shall pay the cost of restoration.

B. Establish lines and levels, locate and layout, by instrumentation and similar appropriate means, additions, column locations, floor levels, stakes for walks, etc.

C. Provide data to all Subcontractors for their use as applicable.

D. From time to time, verify layouts by same methods.

1.5. RECORDS

A. Maintain a complete, accurate log of all control and survey work as it progresses.

B. Maintain and accurate As-Built digital survey of all buried utilities and equipment. See specification 01 78 39 for more information.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 – EXECUTION – THIS SECTION NOT USED

END OF SECTION

SECTION 01 74 13
PROGRESS CLEANING

PART 1 – GENERAL

1.1. SUMMARY

A. Throughout the execution of this contract all contractors shall be responsible for maintaining the project site in a standard of cleanliness as described in this specification.

B. All contractors shall also comply with the requirements for cleaning as described in other specifications.

C. Work included in this specification shall include but not be limited to:

1. Safety Cleaning
2. Project Site Cleaning
3. Progress Cleaning
4. Final Cleaning

1.2. RELATED SPECIFICAITONS

A. Section 01 35 00 Special Procedures
B. Section 01 60 00 Product Requirements
C. Section 01 74 19 Construction Waste Management and Disposal
D. Section 01 76 00 Protecting Installed Construction

1.3. QUALITY ASSURANCE

A. The General Contractor (GC) shall conduct daily inspections, more often if necessary, of the entire project site to ensure the requirements of cleanliness are being met as described within these specifications.

B. All contractors shall comply with other regulatory requirements as they apply to waste recycling, reuse, hauling, and disposal requirements of any governmental authority having jurisdiction.

C. The Owner reserves the right to have work done by others in the event any contractor fails to perform cleaning as described within these specifications. The cost of any Owner provided cleaning shall be charged to the contractor through a deduct change order.

PART 2 - PRODUCTS

2.1. CLEANING MATERIALS AND EQUIPMENT

A. The Contractor shall provide all required personnel, equipment, and materials necessary to maintain the required level of cleanliness as described in this specification.

B. Use only cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer, or as approved by the A/E.

C. Use only cleaning materials, equipment, and methods as recommended in the manufacturers care and use guide of the material, finish or equipment being cleaned.

PART 3 - EXECUTION

3.1. SAFETY CLEANING

A. All Contractors shall be responsible for safety cleaning as required by OSHA and other regulatory requirements as applicable.

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 sptored 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.
d. Loose materials shall be properly secured.
e. Flammable or hazardous materials are properly stored or disposed of.

3. Weekly cleaning shall be conducted by all contractors as designated by the GC. Weekly cleanings shall include all the above for a daily cleaning and other necessary cleaning as designated by the GC.

B. This sub-section shall apply to Progress Cleaning in preparation for the installation of finishes, fixtures, and trim.
a. Surfaces receiving finishes shall be thoroughly cleaned prior to contractors applying finish materials. The GC shall be responsible for inspecting the area and surfaces being cleaned for finish prior to the sub-contractor applying the finish. This shall include but not be limited to the following:
i. Wall surfaces shall be wiped clean of dirt and oily residues, vacuumed free of dust, and shall be free of surface imperfections prior to painting or installing wall coverings.
ii. Metal surfaces shall be wiped clean of dirt and oily residues, and be free of surface imperfections prior to painting.
iii. Flooring shall be broom swept of large and loose items then vacuumed clean of dust and small particles, and damp mopped clean and dried prior to installing any flooring finish. Additional cleaning may be required depending on the preparation requirements recommended by the flooring material manufacturer.

C. This sub-section shall apply to Progress Cleaning after the installation of finishes, fixtures, and trim.
1. For the purposes of this section "clean" shall be defined as a level of cleanliness free of dust and other material capable of damaging or visually disfiguring finished work, finishes, fixtures, and trim.
2. Progress Cleaning at this point in the contract shall be conducted immediately as follows:
a. Dust, dirt, etc. shall be swept and vacuumed off of finish flooring and trim.
b. Liquid spills shall be cleaned up according to the spill type. This shall include drips and spills caused by paint, stain, sealants, and other such items.
3. The Contractor(s) at no additional cost to the Owner shall be responsible for replacing any finished work, finishes, fixtures, and trim damaged or disfigured because of inadequate or improper cleaning.

3.4. FINAL CLEANING

A. As noted in Specification 01 29 76 Progress Payment Procedures, Progress Payment Milestone Schedule, Final Cleaning shall not be conducted prior to requesting the 90% contract total progress payment and all of the following shall be complete:
1. All final regulatory inspections including but not limited to Building Inspection Department and Madison Fire Department inspections have been successfully completed.
2. All Quality Management Observation (QMO) reports have been closed out.
3. All Demonstration and Training has been completed.
4. All Attic Stock has been consolidated and located to its designated area
5. All protection for installed construction shall be removed prior to final cleaning by the contractor responsible for providing the protections. This shall include the removal of any adhesive residues left behind from tapes. Contractors shall only use manufacturer authorized cleaning materials for removing adhesives, etc.

B. For the purposes of this section "clean" shall be defined as a level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

C. The GC shall be responsible for ensuring that all requirements under this section are being met.

D. General Requirements
1. Employ experienced personnel or professional cleaners for final cleaning as necessary for the areas or equipment being cleaned.
2. Cleaning equipment used shall be commercial grade equipment commonly used by professional cleaners.
3. Cleaning equipment and materials shall be cleaned, rinsed, or replaced to ensure a uniform level of cleanliness is being maintained during the final cleaning. This shall include but not be limited to the following:
a. Vacuum cleaner bags and/or filters are changed and/or cleaned as often as necessary.
b. Dust & wipe down rags are washed, rinsed, or replaced before starting each room.
c. Mopping equipment
i. Mop water for washing shall have cleaning solution added to the amount and temperature per manufacturer's recommendations. Mop washing water shall be replaced often to maintain the levels of the cleaning solution and temperature required.
ii. Mop water for rinsing shall remain clean, clear, and be replaced as often as necessary.

iii. Mop heads shall be rinsed often and replaced as necessary.
iv. Mop heads and buckets shall be thoroughly rinsed with each change of water.
v. Only new mop heads shall be used for rinsing.

E. Refer to all other specifications in this contract for specific requirements regarding final cleaning of finishes, fixtures, equipment, etc.

F. Exterior Cleaning shall include but not be limited to the following:
1. All exterior glazing surfaces have been professionally cleaned and are free of dust and streaking.
2. Metal roofs, siding, and other surfaces shall be clean of dirt and free of splashed or excess materials such as sealants, mortar, paint, etc.
3. All exterior furnishings shall be clean, waste receptacles shall be empty.
4. Paved areas shall be clean, free of dirt, oily stains and other such blemishes
5. Exterior lights and diffusers are clean and free of dust.

G. Interior Cleaning shall include but not be limited to the following:
1. Remove all labels, stickers, tags, and other such items which are not required by code as permanent labels.
2. All interior glazing surfaces, including mirrors, have been professionally cleaned and are free of dust and streaking.
3. All interior surfaces have been cleaned of excess materials such as paint, sealants, etc and have been wiped free of dust.
4. Interior metals, fixtures, and trim have been cleaned free of dust and oily residues
5. Carpet flooring has been thoroughly cleaned; vacuumed free of dust, excess glues and other stains removed per manufacturers use and care instructions.
6. Resilient flooring has been thoroughly cleaned; vacuumed free of dust, excess glues and other stains removed, mopped and buffed per manufacturers use and care instructions.
7. Interior non-occupied concrete floors shall be broom cleaned, vacuumed free of dust, excess glues and other stains removed per manufacturers use and care instructions.
8. Light fixtures, lamps, diffusers and other such items have been dusted and cleaned as necessary.

3.5. CALL BACK WORK

A. The GC shall be responsible for ensuring that any contractor returning to the project site for completion or correction work has re-cleaned and restored the area to the levels described in section 3.4 above upon completion of the work. This shall include but not be limited to the following:
1. The immediate area(s) where work was completed.
2. Adjacent areas where dust or debris may have traveled.
3. Other areas occupied during the completion of the call back work.
4. Path of entrance/exit, to/from the area(s) of work.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.1. SUMMARY

A. This specification includes administrative and procedural requirements for the recycling, re-use, salvaging, and disposal of non-hazardous construction and demolition waste.

B. The General Contractor (GC) shall be fully responsible for complying with all applicable ordinances and other such regulatory requirements during the execution of this contract.

1.2. RELATED SPECIFICAITONS

A. 01 29 76 Progress Payment Procedures
B. 01 31 23 Project Management Web site
C. 01 32 19 Submittals Schedule
D. 01 33 23 Submittals
E. 01 77 00 Closeout Procedures
F. Other Divisions and Specifications that may address the proper disposal of construction or demolition waste as it pertains to work being conducted under that particular specification.

1.3. CITY ORDINANCES

A. There are two (2) Madison General Ordinances (MGO) that the City of Madison has regarding construction and demolition waste.
   1. MGO 10.185, Recycling and Reuse of Construction and Demolition Debris, describes the requirements associated with this ordinance including definitions, documentation requirements, and penalties.
   2. MGO 28.185, Approval of Demolition (Razing, Wrecking) and Removal, describes the requirements associated with applying for and receiving a demolition permit.

B. All City of Madison, Board of Public Works, contracts being conducted by City Engineering, Facility Management, for construction, remodeling, or demolition shall comply with the above ordinances regardless of project type or size.

1.4. DEFINITIONS

A. Clean: Untreated and unpainted material, free of contamination caused by oils, solvents, caulks, and other chemicals.

B. Construction and Demolition Debris: Materials resulting from the construction, remodeling, repair, and demolition of utilities, structures, buildings, and roads.

C. Disposal: Off-site removal of construction and demolition debris and the subsequent sale, recycling, reuse, or deposit in authorized landfill or incinerator.

D. Hazardous: Exhibiting the characteristics of hazardous substance, i.e. ignitability, corrosiveness, toxicity, or reactivity and including but not limited to asbestos containing materials, lead, mercury and PCBs.

E. Non-hazardous: Exhibiting none of the characteristics of a hazardous substance.

F. Nontoxic: Not immediately poisonous to humans or poisonous after a long period of exposure.
G. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.
H. Recycle: Any process by which construction or demolition debris is diverted from final disposal as solid waste at a permitted landfill and instead is collected, separated, and/or processed into raw materials for new, reused, or reconstituted products; or for the recovery of materials for energy production processes.
I. Recycler: Any recycling facility, transfer station, or other waste handling facility which accepts construction and demolition debris for recycling, or for other transferring to a recycling facility.
J. Recycling: The process of sorting, cleaning, treating, or reconstituting solid waste and other discarded materials for the purpose of preparing the material to be recyclable. Recycling does not include burning, incinerating or thermally destroying waste.
K. Return: To give back reusable items or unused products to vendors for credit.
L. Reuse: Shall mean any of the following:
    1. The on-site use of reprocessed construction and demolitions debris.
    2. The off-site redistribution of a material, for use in the same manner or similar manner at another location.
    3. The use of non-toxic, clean wood as an alternative fuel source.
M. Salvage: To remove a waste material from the project site for resale or reuse by the Owner or others.
N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
O. Trash: Any product or material unable to be re-used, returned, recycled, or salvaged.
P. Waste: Extra materials or products that have reached the end of its useful life or its intended use. Waste includes salvageable, returnable, recyclable and re-useable construction and demolition materials, and trash.

1.5. PERFORMANCE REQUIREMENTS

A. The GC shall develop a Waste Management Plan that results in end-of-project rates for salvage/recycling/reuse of 95 percent (minimum) by weight of the total waste generated by the Work. Percentages may be adjusted on a project by project basis depending on selected LEED goals associated with the project.
B. The GC shall salvage or recycle 100 percent of all uncontaminated packaging materials including but not limited to the following:
    1. Paper
    2. Cardboard
    3. Beverage containers
    4. Boxes
    5. Plastic Sheet and film
    6. Polystyrene packaging
    7. Wood crates and pallets
    8. Plastic pails and buckets
C. Promote a resourceful use of supplies and materials through proper planning and handling. Generate the least amount of waste possible by minimizing errors, poor planning, breakage, mishandling, contamination or other similar factors.
D. Use all reasonable means to divert construction waste from landfills and incinerators through recycling, reuse, or salvage as appropriate.

1.6. SUBMITTALS AND DELIVERABLES

A. The GC shall provide his/her completed Waste Management Plan to the Project Management Web Site as a submittal for review by the Project Architect and City Project Manager.
    1. See item 1.8 below for Waste Management Plan submittal requirements.
    2. The Waste Management Plan shall be completed, submitted, and approved as a pre-requisite for Progress Payment number 1.
    3. Copies of all documentation required by this specification shall be submitted to the appropriate Project Management Web Site Library. Documentation shall be reviewed by the City Project Manager during all Progress Payment reviews for compliance and accuracy.
B. The Waste Management Coordinator shall provide copies of items 1 through 5 below to the appropriate Project Management Web Site Library and shall update the Waste Management Summary Log to reflect the records being submitted.
    1. Records of Donations: Indicate receipt and acceptance of itemized salvageable waste donated to individuals or organizations. Indicate if the organization is tax exempt.

2. Records of Sales: Indicate receipt and acceptance of itemized salvageable waste sold to individuals or organizations. Indicate if the organization is tax exempt.
3. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts and invoices.
4. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts and invoices.
5. Statement of Refrigerant Recovery: The Refrigerant Recovery Technician responsible for recovering refrigerant shall provide the GC with a statement indicating all of the following:
    a. All recovery was performed according to EPA Regulations.
    b. All refrigerant present was recovered; indicate the total quantity recovered by unit.
    c. Date of Recovery.
    d. Name, address, company name, and phone number of technician performing the recovery.
    e. Technician shall sign and date the statement.

1.7. QUALITY ASSURANCE

A. Waste Management Coordinator: The GC shall be responsible for designating a Waste Management Coordinator. Coordinator may be the GC Supervisor, GC Project Manager or other member of the GC staff having knowledge of proper waste management procedures and all applicable regulations.
B. Regulatory Requirements: comply with all hauling and disposal regulations of authorities having jurisdiction.
C. The Waste Management Coordinator shall comply with Specification 01 31 19 Project Meetings, Section 3.7.B.1 and conduct a Waste Management Conference at the job site. This conference shall be repeated as necessary as additional trades are added to the Work. The conference shall include but not be limited to the following:
    1. Identify the Waste Management Coordinator; provide trade contractors with name, phone, and email information.
    2. Review and discuss the Waste Management Plan and the roles of the Coordinator.
    3. Review the requirements for documenting and reporting procedures of each type of waste and its disposition.
    4. Review procedures for material separation; indicate availability and locations of containers and bins.
    5. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
    6. Review waste management procedures specific to each trade.
D. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

1.8. WASTE MANAGEMENT PLAN

A. Develop a plan consisting of waste identification, a waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume. Use the same units of measure throughout the waste management plan.
    1. Waste Identification: Indicate anticipated types and quantities of site clearing, demolition waste, and construction waste that will be generated during the execution of this contract. Include assumptions for the estimates.
    2. Waste Reduction Work Plan: The work plan shall consist of but not be limited to all of the following:
        a. Identify methods for reducing construction waste. Re-using, framing and forming materials, re-planning material cuts to minimize waste, etc.
        b. Identify what types of materials will be recycled. Provide lists of local companies that receive and/or process the materials. Include names, addresses, and phone numbers.
        c. Identify what types of materials will be disposed of and whether it will be disposed of in a landfill facility or by incineration facility. Provide lists of local companies that receive and/or process the materials. Include names, addresses, and phone numbers.
        d. Identify methods to be used on site for separating waste including all of the following:
            i. Sizes of containers to be used.
            ii. Labels to be used on the containers to identify the type of waste allowed in the container.
            iii. Designated locations on the project site for waste material containers.
B. If project requires demolition incorporate the ordinance required (MGO 28.185) Recycling and Reuse Plan into the Waste Management Plan.
C. Provide all of the following for the Waste Management Coordinator:
    1. Name, employer, employer address, phone number, and email address of the designated coordinator.
        a. The GC shall also provide this information with the required Project Directory Submittal at the beginning of the project.

D. If at the option of the GC, he/she chooses to contract with a Waste Management Disposal Company that allows comingled and unsorted waste materials, the GC shall include with his/her Waste Management Plan the following:
   1. Name, address, phone number, state permitting information, and other pertinent information about the disposal company.
   2. Documentation from the disposal company indicating company policies and procedures regarding comingled and unsorted waste materials to include:
      a. GC responsibilities on the project site.
      b. Disposal company procedures for receiving, sorting, recycling, and disposing of comingled and unsorted waste material.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. PLAN IMPLEMENTATION

A. Implement the approved waste management plan. Provide adequate containers, storage space, signage, transportation and other items required to implement the plan during the execution of this contract.

B. The GC and Waste Management Coordinator shall be responsible for monitoring and reporting the status of the Waste Management Plan and shall monitor the waste management practices on site as frequently as needed.

C. Train all workers, sub-contractors, and suppliers on proper waste management procedures as appropriate for the work being conducted on the project site.
   1. Distribute the waste management plan to everyone concerned within seven (7) days of submittal approval.
   2. Distribute the waste management plan to new workers, sub-contractors, and suppliers when they first appear on the project site.
   3. Conduct additional training as needed during the execution of the contract to keep a positive focus on the waste management plan.

D. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent and used facilities.
   1. Designate and label specific areas on the project site necessary for separating materials to be salvaged, recycled, reused, donated, and sold.
   2. Comply with any specification or regulatory requirements pertaining to dust, dirt, environmental protection, and noise control.

3.2. HAZARDOUS AND TOXIC WASTE

A. The Owner shall be responsible under separate contract for the removal of any asbestos related materials. All other materials shall be removed by the GC.

B. All hazardous and toxic waste shall be separated, stored, and disposed of according to all applicable regulations.

C. All hazardous and toxic materials on site shall have a Material Safety and Data Sheet (MSDS) available that indicates storage requirements, emergency information, and disposal requirements as necessary.

3.3. GENERAL GUIDELINES FOR ALL WASTES

A. Recycle all paper and beverage containers used by workers, sub-contractors, suppliers and visitors to the project site.

B. All revenues, savings, rebates, tax credits, and other such incentives received from recycling, reusing, or salvaging waste materials shall accrue to the GC unless specified otherwise in the contract documents.

C. Separate recyclable, reusable, and salvageable waste from other waste materials, trash, and debris except where Waste Management Disposal Company allows comingled waste materials, see section 1.8.D above.
   1. Separate by type in appropriate containers or designated areas according to the approved waste management plan away from the construction area. Do not store within the drip lines of existing trees.
   2. Inspect containers and bins frequently for contamination and inappropriately sorted materials. Remove contaminated materials and resort as necessary.
   3. Stockpile bulk materials such as sand, topsoil, stone, etc., on site away from the construction area and without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water, and cover to prevent windblown dust. Do not store within the drip lines of existing trees.
   4. Whenever possible store items off the ground and/or protect them from the weather.

3.4. GUIDELINES FOR RECYCLABLE, RE-USABLE, AND SALVAGEABLE WASTE

A. The following guidelines is not a complete or all inclusive list and shall be adjusted as needed by the methods and procedures identified in the Waste Management Plan.

B. Asphalt Paving: Break-up into transportable pieces or grind, transport to an authorized recycling facility.

C. Clean Fill: When allowed by Division 31 Specifications; concrete, masonry, stone, asphalt pavement, sand and other such materials may be used as clean fill on this project site. The GC shall verify with the Project Architect, Structural Engineer, or Civil Engineer as necessary prior to using any materials as clean fill. Materials shall be processed, placed, and compacted as specified. If not being re-used on site, transport to an authorized recycling facility.

D. Clean Wood Materials: Including but not limited framing cutoffs, wood sheathing or paneling materials, structural or engineered wood products, and pallets or crates. Clean Wood shall be free of paints, stains, oils, preservatives and other such contaminates.

1. Useable pieces shall be sorted by type and dimension, bundled and transported off site by the GC or returned to the supplier.
2. Non-useable pieces shall be palletized or containerized, transport to an authorized recycling facility.
3. Clean, uncontaminated sawdust and wood shavings shall be bagged, transport to an authorized recycling facility.

E. Concrete: Break-up into transportable pieces, remove all reinforcing and other metals, transport to an authorized recycling facility.

F. Glass Products: Shall be sorted by types, do not include light fixture lamps and bulbs. Products broken in shipment shall be returned to the supplier. Broken or cracked items still in frames shall be taped to prevent further breakage and injury to workers. Transport to an authorized recycling facility.

G. Gypsum Board: Stack large clean pieces on wooden pallets or container, store in a dry location, transport to an authorized recycling facility.

H. Light Fixture Lamps and Bulbs: Fluorescent tubes shall be containerized, transport to an authorized recycling facility.

I. Masonry and CMU: Remove all metal reinforcing, anchors, and ties, clean undamaged pieces and neatly stack on pallets, transport damaged pieces to an authorized recycling facility.

J. Metals: Sort metals by type as follows, this does not include piping:

1. Architectural metals including but not limited to siding, soffit, and roofing panels shall be sorted by material, palletize or bundle as needed and transport to an authorized recycling facility.
2. Structural steel, sort by size and type; palletize and transport to an authorized recycling facility.
3. Miscellaneous metals such as aluminum, brass, bronze, etc shall be sorted by type, containerized or palletized as necessary, transport to an authorized recycling facility.

K. Packaging and shipping materials

1. Cardboard boxes and containers: Breakdown all cardboard boxes and containers into flat sheets. Bundle and store in a dry location until transported for recycling.
2. Pallets:
   a. Whenever possible require deliveries using pallets to remove them from the project site.
   b. Neatly stack pallets in preparation for reusing them or providing them to other companies for salvage or re-use.
   c. Break down pallets into component wood pieces that comply with the requirements for recycling clean wood materials. Neatly stack or palletize pieces in preparation for transportation.
3. Crates: Break down crates into component wood pieces that comply with the requirements for recycling clean wood materials. Neatly stack or palletize pieces in preparation for transportation.
4. Polystyrene Packaging: Separate and bag materials.

L. Piping and conduit: Reduce all piping and conduit to straight lengths, sort and store by size, material and type. Remove supports, hangers, valves, boxes, sprinkler heads, and other such components, sort and store by size, material and type. Transport to authorized recycling facilities according to material types.

M. Roofing: Roofing materials shall be sorted and containerized by type, transport to authorized recycling facilities according to material types.

N. Site-Clearing Waste: Sort all site waste by type.

1. Only stockpile soils types and quantities required for re-use on the project site. All remaining quantities shall be transported off site to an authorized facility that receives such materials.
2. Brush, branches, and trees with no marketable re-use shall be transported to facilities for chipping into mulch.
3. Trees with a marketable re-use shall be salvaged and transported to facilities that specialize in processing trees for future use as wood products.

3.5. GUIDELINES FOR DISPOSAL OF WASTES

A. The following guidelines shall be adjusted as needed by the methods and procedures identified in the Waste Management Plan.

B. Any waste that is contaminated, organic, or cannot be recycled, re-used, or salvaged shall be legally disposed of in an authorized landfill or incinerator. Disposal methods shall follow all applicable regulatory requirements.

C. No waste material of any kind, except those types designated as clean fill in section 3.4 above, shall be allowed to be buried on the project site at any time.

D. No burning of any kind of waste material shall be permitted on this project site at any time.

E. Paint and Stain: Paints, stains, and their containers shall be disposed of as follows:

1. Whenever possible containers should be thoroughly cleaned immediately after emptying and sorted with as appropriate (metal or plastic) for recycling
2. Empty containers, regardless of type or base material, may be disposed of with lids off with general garbage.
3. Latex paint may be placed with general garbage if properly solidified as follows:
   a. Small amounts (an inch or less in can): Remove lids and allow paint to dry out in the can and harden. Protect cans from rain and freezing.
   b. Large amounts (more than one inch): Mix paint with equal amounts of cat litter, stir and allow to completely dry. Alternate method: mix with commercial paint hardener.
4. Oil-based or combustible paints and stains, regardless of liquid or solid, shall be transported to an approved facility that takes such items such as Dane County Clean Sweep Sites.

F. Treated Wood Materials: Treated wood materials including but not limited to wood that has been painted, stained, or chemically treated shall not be recycled or incinerated.

3.6. CONCRETE WASTE MANAGEMENT

A. The GC shall only use prefabricated washout containers for this project. Open pit or lined pit washout areas will not be permitted.

B. The GC shall do all of the following:

1. Provide sufficient containers, constructed and lined to city standards, to handle the washout requirements for the concrete delivery.
2. Monitor the washout operations to ensure drivers are properly using the devices and washout is being contained within the container.
3. Monitor the waste level in the container to ensure waste levels remain at least 6” below the top of the container.
4. Immediately clean any spillage and prevent spillage from reaching inlets, ponds, or wetlands. Remove any spillage contained within surrounding soils.

C. The Contractor shall review the entire Concrete Waste Management section of the City of Madison Standard Specifications for Public Works contracts for more information.

END OF SECTION

SECTION 01 76 00
PROTECTING INSTALLED CONSTRUCTION

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities, guide lines, and requirements related to providing protection to already installed construction.

B. Already installed construction shall include but not be limited to the following:

1. Any existing site feature such as pavement, curbs, drainage features, utilities, landscaping features (trees, shrubbery, plantings, flagpoles, etc) and other such exterior items not associated with the building whether on or adjacent to the project site.
2. Any existing structure on or adjacent to the project site.
3. Any existing interior work that may be adjacent to the new work including all paths of ingress/egress to areas associated with accessing the Work.
4. Any existing feature of any kind within the public right-of-way that may be on the project site property, adjacent to the project site or across the street from the project site.

C. All contractors shall be familiar with the specifications of their Division of Work for specific requirements on protection of the Work.

D. The requirements noted within this specification do not relieve any contractor of the responsibility for compliance with any code, statute, ordinance, or other such regulatory requirement having jurisdictional authority over these contract documents.

1.2. QUALITY ASSURANCE

A. It shall be the responsibility of every contractor and worker assigned to the project to be diligent in protecting all existing work, and newly installed construction.

B. It shall be the General Contractors' (GC) responsibility under the contract to provide all reasonable protection methods, materials, or precautionary measures required to protect new or existing construction as described in within this specification to the project as a whole.

1. The GC shall be responsible to ensure any damaged new or existing construction is repaired or replaced at no additional cost to the Contract.
2. The GC at his/her discretion may direct other contractors to provide and maintain protection of completed work associated with their Division of Work. I.E.: The carpet installer may be required by the GC to provide carpet protection along traveled paths, ingress/egress, etc. after installation.

C. It shall be the responsibility of the GC to ensure that all materials being used to protect installed construction are compatible with, and/or adjacent to, the materials being protected. This shall include but not be limited to the material used as covering, tapes used to fasten protective materials, etc.

1.3. RELATED SPECIFICATIONS

A. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".

1. Use the following link to access the Standard Specifications web page:
   http://www.cityofmadison.com/business/pw/specs.cfm
   a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
   b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.
   c. City Standard Detail Drawings (SDD) may be located from the index in Part VIII.

B. Section 01 60 00 Product Requirements

C. Section 01 74 13 Progress Cleaning

PART 2 - PRODUCTS

2.1. FENCING MATERIALS AND BARRICADES

A. Except where noted in other areas of the construction documents, the responsible contractor shall provide a six foot galvanized chain link fence including full height mesh screen at the project lines as shown on the Civil Drawings. For temporary barricade situations, the responsible contractor may provide one of the following that sufficiently provide a sturdy physical barrier and/or visual barrier as necessary for the intended application.

1. Standard orange construction barrels each with a standard rubber base ring and reflective tape
   a. Provide flashing amber lights as needed to increase night time visibility
2. Steel "T" style fence posts
3. 4'0" high standard orange construction fence
4. Traffic barricades
5. Jersey barriers
6. Other types of fencing or barricades typically used in the construction industry

B. The contractor responsible for providing the fencing materials and barricades shall also be responsible for maintaining them. This shall include but not limited to fixing damaged fencing, standing up barrels that have been knocked over, realigning barrels, and ensuring flashing lights are fully operational at all times.

C. The following fencing and barricade designations, and their use descriptions shall be used throughout this specification to provide uniformity in describing protection requirements.

1. Type A, Jersey Barriers, to be used as permanent blocking devices to deny access to alternate project site entrances or exits.
2. Type B, Traffic Barricades, to be used as temporary blocking devices to deny access to alternate project site entrances or exits.
3. Type C, Construction Barrels without construction fencing shall be used for lane closures, temporary blocking devices to deny access and the protection of single locations (I.E. identify the location of an access structure) that do not require fencing.
4. Type D, Construction Barrels with construction fencing where it becomes necessary to surround an object with a complete visual barricade and it is impractical or unacceptable to install fence posts. The surround shall be constructed in such a manner as to provide a buffer zone around and access to the item being protected.
5. Type E, Steel "T" Fence Posts shall be used at the project lines, as indicated on the Civil Drawings, with six foot galvanized chain link fencing to surround an object with a complete visual barricade and it is practical to install fence posts. The surround shall be constructed in such a manner as to provide a buffer zone around and access to the item being protected. All posts shall be driven installed. Surface mounted posts to only be used for temporary barricades.
6. Type X, Other fencing or barricade types that may be designated and detailed within the construction documents shall use additional alpha numeric designations.

2.2. EROSION CONTROL PROTECTION

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

2.3. INTERIOR FINISH PROTECTION MATERIALS

A. Except where noted in other areas of the construction documents or this specification the responsible contractor:
   1. Shall not provide the cheapest or least effective method as an effort to meet any protection requirement.
   2. Shall provide materials of sufficient quality, and durability to provide adequate protection based on the seasonal conditions and the anticipated duration at the time the protection will be needed.
   3. Shall provide sufficient quantity of protection material to protect the construction as needed.

B. Prior to installing protective measures the responsible contractor shall propose to the GC, and City Project Manager (CPM) the proposed plan for protection, materials to be used and samples as necessary.
   1. The CPM reserves the right to disapprove any proposed method and/or material and/or make alternate proposals.

PART 3 - EXECUTION

3.1. GENERAL EXECUTION REQUIREMENTS

A. The GC shall be responsible for ensuring all of the following procedures and requirements are implemented as needed for the duration of the Work performed under this contract.

B. The GC shall use appropriate fencing methods as noted in section 2.1 around any work other than general excavation. Costs of the fencing methods are incidental to the bid item. This shall include but not be limited to the following:
   1. Any open utility trenches or pits including deep excavations for fuel tank placement and building foundation.
   2. Any vertical construction for the truck scale or building.
   3. Any newly poured concrete until sufficiently cured.
   4. Any work being conducted in or adjacent to a travel way including the south entrance road, Yard Dr. entrance, and areas along the bio/retention basin.

B. The GC shall also be responsible for the following:
   1. Reporting any incident of damage to existing property, right-of-way, or utility to the CPM immediately upon rendering the incident safe, and notifying emergency response teams, and emergency utility crews as needed.
   2. Conduct a site walk through prior to leaving at the end of each day to assess:
      a. Protection measures are properly in place, provide correction actions as necessary.
      b. Note damage to existing completed work and schedule repair/replacement as needed.
   3. Ensure all contractors and workers are being diligent in protecting existing work, and newly installed construction.

3.2. PROTECT ADJACENT PROPERTIES

A. Whenever possible through the design process the City of Madison shall have previously provided notice to adjacent property owners that work will be occurring on or near their property. The City of Madison shall also have obtained any permanent or temporary easements that may be necessary to complete any Work on adjacent properties.

B. It shall be the responsibility of the GC to do the following for all Work under this contract being performed on or adjacent to the property line:
   1. Contact the adjacent property owner and provide him/her with information on the work to be done, equipment to be used, and estimated duration of the work. Information to be updated and communicated to property owner(s) as construction progresses and site conditions change.
      a. If any adjacent property is a rented or leased space the GC shall also make contact and provide the same information to the tenants.
      b. Determine from the owner and/or tenants if there are any concerns for children, pets, special plantings, or other concerns.
   2. Discuss the following with all contractors performing work on or near the property line.
      a. Work to be completed and timeline.
      b. Concerns of adjacent property owners/tenants from item 1 above.
      c. Which protective measures will be necessary to protect adjacent properties and address the concerns of adjacent property owners/tenants.
   3. Ensure all protective measures are placed and maintained during the execution of Work on or adjacent to the property line. Interact with the adjacent property owners/tenants as needed.

C. Any contractor doing work on or adjacent to the property line shall install and maintain any protective measure identified in the contract documents, this specification, or as directed by the GC.

D. The GC shall be responsible for restoring any damage to structure and property located on or adjacent to the property line.

1. Restoration shall include but not be limited to repair or replacement using like materials and finishes to its original condition or better.
2. Restoration of landscaping materials shall include watering of any seed, sod, or other planting of any kind for a reasonable period of time to encourage germination and root development.

E. The GC shall keep the CPM informed directly to any issues pertaining to adjacent property owners and tenants.

3.3. PROTECT LANDSCAPING FEATURES

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

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

3.4. PROTECT UTILITIES

A. The contractor shall be responsible for notifying all utilities to determine emergency response procedures and protection requirements prior to installing any construction protection.

1. This includes requesting utility marking through Diggers Hotline.
   a. Call 811 or 1-800-242-8511 to request a public utility locate
   b. For emergency locate call (262) 432-7910 or (877) 500-9592
2. Contact the Owner and CPM for any available private utility information on the property that may be available prior to calling a private utility locating company.

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

1. Hydrants, lamp posts, electrical transformers, and other utility pedestals shall be protected with Type D fencing for areas on pavement or Type E fencing for areas on soil. Fence posts shall be located so as to not be directly over the utility main.
2. Storm sewer structures in pavement shall have proper inlet protection according to City of Madison Standard Specification 210.1(g) and Type C Construction Barrels when necessary.
3. Storm sewer structures in turf and other landscaped areas shall have proper inlet protection according to City of Madison Standard Specification 210.1(g) and Type E fencing for areas on soil.
4. Stormwater management features such as greenways, retention/detention ponds, bio-filtration ponds and other such features shall be properly protected according to the appropriate erosion control measure specified on the Erosion Control Plan. See multiple sections of City of Madison Standard Specification 210.1
   a. For the protection of hard to see items such as structures, castings, inlets, etc. in grassy areas provide Type E fencing for areas on soil.
   c. For the protection of storm water management features having special soils and plants such as bio-filtration ponds provide Type E fencing for areas on soil.
5. Other structures and covers including but not limited to cleanouts, wiring hand holes, valve boxes, access structures, grease trap structures, etc shall be protected as follows:
   a. Provide Type E fencing for areas on soil.
   b. When paving operations are complete provide a construction barrel or cone near structures as necessary depending on required heavy construction traffic.

3.5. PROTECT PUBLIC RIGHT OF WAY

A. Except where specifically stated in other areas of the construction documents the following minimal protection requirements shall apply under this section.
   1. All public right-of-way (area from behind the sidewalk to the centerline of the street) shall remain open and accessible except during periods of active work. At such times the public right of way shall be properly closed and signed as referenced in City of Madison Standard Specification 107.9.
   2. Bus stops and bus stop structures shall remain accessible at all times.
   3. Traffic signage and traffic signals, traffic control boxes shall be protected with Type D fencing for areas on pavement or Type E fencing for areas on soil.
      a. Protection at traffic signage/signals shall not obstruct the viewing of the sign/signal for its intended purpose at any time.

B. When additional protection for traffic control is required, the use of barricades, guardrails, lane closures and other such procedures will be detailed within the construction documents.

C. When additional protection for overhead sidewalk cover is required the contract documents shall indicate the specific location and structural requirements of the protective structure.

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.

C. All protection shall stay in place until the CPM, PA, and GC mutually deem the project is ready for Final Cleaning. The contractors responsible for protecting the work shall be responsible for removing the protection and removing any adhesive residue at that time. Contractors shall only use manufacturer authorized cleaning materials for removing adhesives, etc.

D. Contractors doing work in un-protected areas of finished work shall be required to provide drop cloths and other protection as noted within this specification for the duration of their work.
1. Finished areas shall be sufficiently covered to accommodate all equipment, and materials being used to complete the work being done.
2. Finished areas shall be sufficiently covered to prevent splatters, over spray, etc when doing touch-up work.
3. Contractors who do not provide sufficient protection under this sub-section shall be responsible for any costs associated with cleaning, repairing or replacing already finished construction at no additional cost to the contract.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to clearly define and quantify the requirements associated with closing a City of Madison Public Works Contract for facility related work.

B. All contracts have two distinct but related paths. Each path needs to be properly closed independently in order to close the contract as a whole.

1. Construction closeout is related to closing out all of the Work associated with the construction documents.
    a. It shall be the responsibility of all contractors to be fully aware of the required Work and closeout requirements involved in their individual trades.
2. Contract closeout is related to closing out all of the administrative aspects of the contract in general.
    a. It shall be the responsibility of all contractors to be fully aware of the administrative requirements required by the contract and to provide the supporting documentation required.
3. Construction Closeout must be completed before Contract Closeout can begin.

C. This specification will provide general knowledge associated with the following areas:

1. Construction Closeout Requirements
2. Construction Closeout Procedure
3. Contract Closeout Requirements
4. Contract Closeout Procedure
5. Final Payment and Certificate of Completion

1.2. RELATED SPECIFICATIONS

A. Contractors shall review all references to other specifications including specifications relating to the execution of the Work associated with their Division or Trade.

B. Section 01 29 76 Progress Payment Procedures
C. Section 01 31 23 Project Management Web Site
D. Section 01 32 26 Construction Progress Reporting
E. Section 01 45 16 Field Quality Control Procedures
F. Section 01 74 13 Progress Cleaning
G. Section 01 45 16 Construction Waste Management and Disposal
H. Section 01 76 00 Protecting Installed Construction
I. Section 01 78 13 Completion and Correction List
J Section 01 78 23 Operation and Maintenance Data
K. Section 01 78 36 Warranties
L. Section 01 78 39 As-Built Drawings
M. Section 01 78 43 Spare Parts and Extra Materials
N. Section 01 79 00 Demonstration and Training
O Other requirements as noted in the contract documents signed by the General Contractor

1.3. DEFINITIONS

A. ***Substantial Compliance***: A letter provided to the City of Madison Building Inspection and signed by the Project Architect indicating that all Work has been completed to a level that would allow Owner Occupancy and that all construction is in compliance with the construction documents. A copy of this letter is also provided to the State of Wisconsin Department of Health and Safety as necessary to clear plan review requirements. This letter does not represent construction closeout.

B. ***Certificate of Occupancy***: The Regulatory letter from the City of Madison Building Inspection Department indicating that all regulatory requirements and inspections have been completed and the building may now be occupied for its intended use. This letter does not represent construction closeout.

C. ***Certificate of Substantial Completion***: A letter provided by the Department of Public Works, signed by the City Engineer indicating that Construction activities are substantially complete. This letter does represent construction closeout and the date of this letter begins the date of the Warranty Period.

D. ***Construction Closeout***: The point in the contract where all contractual requirements associated the execution of the Work as described in the plans, specifications, and other documents have been successfully met and the items described in 1.3.A, .B, and .C above have been completed.

E. ***Final Progress Payment***: The progress payment associated with achieving Construction closeout as described in 1.3.D above. At this point the contractor may request all monies associated with the contract be paid with the exception of held retainage.

F. ***Contract Closeout***: The point in the contract where all contractual requirements associated with the City of Madison, Board of Public Works contract has been successfully met.

G. ***Final Payment***: The final contract payment submittal that may be approved by the City of Madison after all contractual requirements of the Public Works Contract have been met and any remaining monies (retainage) due to the contractor may be released for the Final Payment.

1.4. QUALITY ASSURANCE – CONSTRUCTION CLOSEOUT

A. All contractors shall be responsible for properly executing the construction closeout requirements associated with their Work as described in the specifications governing their Work.

B. The GC shall be responsible for all of the following:

1. Ensuring that all contractors have met the construction closeout requirements associated with their Work.
2. Coordinate the collection of all construction closeout deliverables from all contractors, provide the deliverables to the Project Architect and City Project Manager for review as necessary, and ensure all contractors correct deficiencies of deliverables and resubmit as needed for final acceptance.
3. Ensure all closeout requirements identified in the Construction Closeout Checklist below have been completed as intended by the construction documents.

1.5. QUALITY ASSURANCE – CONTRACT CLOSEOUT

A. The City of Madison, Department of Civil Rights (DCR) monitors contract compliance for construction and procurement contracts to ensure that local, state and federal regulations are followed by contractors working on City of Madison Public Works (PW) projects. DCR will monitor all PW projects from contract award through the final payment at the close of the project. Contractors will be required to submit reporting paperwork throughout the PW project process.

1. Contractors are encouraged to visit the web site identified below for additional information, checklists, forms, and other information provided by DCR as it relates to Contract Compliance.
   http://www.cityofmadison.com/Business/PW/contractCompliance.cfm
2. Questions regarding the process should be directed to parties and offices as identified on the various forms, documents, and instructions or contact:
   City of Madison, Department of Civil Rights
   210 Martin Luther King Jr. Blvd., Room 523
   Madison, WI 53703
   (608) 266-4910

B. All Sub-Contractors have submitted the applicable required documents described in item 1.5.D below to the General Contractor (GC) for Contract Closeout.

C. The GC has submitted the required applicable documents described in item 1.5.D below for all contractors to the appropriate City of Madison Agency per instructions associated with each submittal.

D. The documents required for submittal to the City of Madison for Contract Closeout may include any/all of the items listed below depending on contract type. It is the sole responsibility of all contractors to know and submit the required and complete documentation in a timely fashion.

1. Weekly Payroll Reports
2. Employee Utilization Reports
3. Documentation required for Small Business Enterprise (SBE) goals
4. 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. Commissioning and LEED related items and submittals
      f. 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. Upload the completed checklist to the Contract Closeout-Miscellaneous Documents Library on the Project Management Web Site for review.
   3. 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.

Title	Specification	Description	Responsibility	Completed
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 of HVAC	23 09 23	Provide final TnB 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, PA, 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.

2. The GC, PA, and CPM, shall utilize the Construction Closeout checklist to ensure that all construction closeout requirements have been met.

3.3. CONSTRUCTION CLOSEOUT PROCEDURE

A. Upon successful completion and final acceptance of all Construction Closeout Requirements the GC may submit to the CPM and PA the request for Final Progress Payment (100% contract total, less retainage).

B. The PA will confirm with the design consultants, CPM, and other City of Madison staff that all requirements of the Work have been completed and will do the following:
   1. Approve the final progress payment application
   2. Provide the required signed payment documents to the CPM
   3. Provide the required Letter of Substantial Compliance to the following as required:
      a. State Safety and Building Division
      b. Local Building Inspection office
      c. GC
      d. CPM

C. The CPM shall draft the City Letter of Substantial Completion for signature by the City Engineer. This letter shall state any of the following that may still be tied to the contract and/or warranty:
   1. Indicate that the date of the letter shall also be the beginning of the Warranty period.
   2. Indicate any allowed due outs, reasons for them, and anticipated dates of finalization.
      a. QMO issues such as off season testing of equipment
      b. Off season training of equipment

D. The GC and all subcontractors shall finalize all warranty letters associated with their Work using the date noted on the City Letter of Substantial Completion, and provide the CPM with all warranties as described in Specification 01 78 36 Warranties. Upon receipt and final approval of the Warranties the CPM may initiate final processing of the Final Progress Payment (100% contract total, less retainage).

3.4. CONTRACT CLOSEOUT REQUIREMENTS

A. The GC and all sub-contractors shall follow all requirements associated with documenting contract compliance and provide documentation as required or requested by DCR or PW staff. All contractors are encouraged to stay current with submissions of the following documentation:
   1. Weekly Payroll Reports no later than the Progress Payment equal to 50% of the contract total.
   2. Employee Utilization Reports
   3. Documentation required for Small Business Enterprise (SBE) goals
   4. Other documents as maybe required or requested through the Finalization Review Process

B. Near the Progress Payment equal to 80% of the contract total the GC shall request in writing a Finalization Review. At that time DCR or PW staff shall prepare a report of all contract documentation submitted to date. A list of missing items or outstanding issues will be emailed to the GC. No additional follow-up will be generated by DCR or PW Staff.

3.5. CONTRACT CLOSEOUT PROCEDURE

A. The Contract Closeout Procedure will not begin until the Construction Closeout Procedure has been completed.

B. When the GC feels he/she has successfully met all of the Contract Closeout Requirements associated with Section 3.3 above the GC may submit to the request for Final Payment to the CPM.

C. The CPM shall sign and submit the Final Payment request for processing.

D. DCR and PW staff shall do a complete review of all documentation associated with item 3.3.A above.

E. The GC shall be notified directly by DCR or PW Staff of any documentation that may still be missing, have incomplete information, or other outstanding issues. It shall be the responsibility of the GC to continue follow-up with DCR and PW staff until all documentation has been successfully submitted and accepted.

F. When all required documentation associated with Contract Closeout has been successfully submitted and accepted by DCR and PW Staff the City of Madison shall process the Final Payment of any remaining monies including retainage.

END OF SECTION

SECTION 01 78 13
COMPLETION AND CORRECTION LIST

PART 1 – GENERAL

1.1. SUMMARY

A. The City of Madison has developed a multi-faceted Quality Management Program that begins with contract signing and runs through contract closeout to ensure the best quality materials, workmanship, and product are delivered for the contracted Work.

1. The Progress Management Web Site is a Construction Management tool that provides contractors, consultants, and staff a single on-line location for the daily operations and progression of the Work.
2. The Quality Management Observation (QMO) is an ongoing observation of the construction process as it progresses. The City of Madison does not use a "Punch List" or "Corrections List" as it is typically known throughout the construction industry. The QMO process acts as an "in progress punch list". Work identified as not in compliance with the contract documents by the Owner, Owner Representatives, Owner Consultants, etc. shall be resolved immediately at the Contractor's expense. Unresolved issues will be subject to withholding of progress payment(s) until completed.
3. Very stringent expectations are tied to Construction Closeout and Contract Closeout procedures. Specific milestones throughout the project need to be met and the milestones are tied to the Progress Payment Schedule.

B. All contractors shall be required to review the specifications identified in Section 1.2 below, and other related specifications identified therein to become familiar with the terminology and expectations of this City of Madison Public Works contract.

1.2. RELATED SPECIFICATIONS

A.	Section 01 29 76	Progress Payment Procedures
B.	Section 01 31 23	Project Management Web Site
C.	Section 01 45 16	Field Quality Control Procedures
D.	Section 01 77 00	Closeout Procedures

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 – EXECUTION – THIS SECTION NOT USED

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities and guide lines related to providing well documented and complete Operation and Maintenance (O&M) Data related to general facility use, equipment, systems, finishes, and materials to City of Madison Staff (Owner, Owner Representatives, Maintenance, and Custodial Personnel) as needed.

B. Operation and Maintenance Data shall apply to both of the following categories except where specific requirements are noted under their separate titles as follows:

1. Operation and Maintenance Data: Generally shall mean the owner manual that provides information on start-up, shut-down, operation, troubleshooting, maintenance, parts, and other such documentation as it pertains to all equipment and systems installed under the Work.
2. Use and Care instructions: Where applicable use and care instructions shall also be considered O&M for such things as flooring, tile, partitions, and other such finishes and trim related items, installed under the Work.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site
C. Section 01 77 00 Closeout Procedures
D. Section 01 78 13 Completion and Correction List
E. Section 01 78 19 Maintenance Contracts
F. Section 01 78 36 Warranties
G. Section 01 79 00 Demonstration and Training
H. Other Divisions and Specifications that may address more specifically the requirements for O&M Data.

1.3. QUALITY ASSURANCE

A. All O&M Data shall meet the requirements identified in Section 1.4 below.

B. All contractors shall provide O&M Data for each piece of equipment, system, or finish installed during the installation of the Work. O&M Data shall be provided to the General Contractor (GC) for verification and submittal.

C. The GC shall be responsible for receiving all required O&M Data files from all contractors for verifying that all files submitted meet the requirements in Section 1.4 below.

1.4. O&M DATA REQUIREMENTS

A. O&M Data shall be provided in digital PDF format as follows:

1. PDF files shall be complete first generation consumer useable editions of PDF documents as provided by any of the following:
   a. Product manufacturer
   b. Supplier of product
   c. Product manufacturer internet site

2. Acceptable PDF files shall have the following functionality:
    a. Word searchable
    b. Key areas are bookmarked
    c. Table of Contents and/or Index linked to content is preferred whenever possible.
3. Scanned printed material, with word searchable capabilities, saved as a PDF, is not acceptable and will be rejected without further review.

B. O&M Data shall include but not be limited to the following manufacturers' published information as appropriate for the equipment, system, material, or finish:
1. Installation instructions
2. Parts lists, assembly diagrams, explosion diagrams
3. Wiring diagrams
4. Start-up, shut-down, troubleshooting and other related operation procedures
5. Lubrication, testing, parts replacement, and other such maintenance procedures
6. General use, care, and cleaning instructions
7. Special precautions and safety requirements
8. A list of certified equipment vendors, service companies, parts suppliers including company name, address, and phone number
9. A list of the recommended spare parts to have on hand at all times
10. A list by type of all recommended lubes, oils, packing material, and other maintenance supplies
11. Copies of final test reports, balance reports, and other related documentation
12. Warranty information for equipment and systems

1.5. O&M DATA SUBMITTALS

A. O&M Data shall be prepared as identified in this specification and shall be submitted for review as per the schedule identified in Specification Section 01 29 76, Progress Payment Procedures.

B. O&M Data Draft submittals will be reviewed for content, procedure, and compliance only. A general critique with recommendations for improvement will be made but re-submittals will not be required.

C. O&M Data Final submittals will be reviewed for content, procedure, and compliance. Re-submittals will be required until such time as each submittal is accepted.

NOTE: Acceptance of O&M Data Final submittals is required to be complete prior to scheduling and conducting owner related training and construction closeout.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. O&M 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 Operator/Maintenance, Use and Care, Parts Manuals, and other related documents to the GC.

B. Use the following format and examples for naming conventions to be used for all O&M documents:
1. Format: ***Equipment ID_Equipment Title_Manual Type***
    a. ***Equipment ID*** represents the name of any equipment, system, material or finish as designated in the Contract Documents.
    b. ***Equipment Title*** is the full name of the item, no abbreviations
    c. ***Manual Type*** represents the type of manual being provided. The following abbreviations are standard, others may be accepted with approval from the CPM:
        i. OM = Operator and Maintenance Manual
        ii. UC = Use and Care Manual
        iii. PM = Parts Manual
    d. Do not use special characters such as #, %, &, /, etc. These characters are reserved by the Project Management Web Site software the City of Madison uses; however the under-score (or under-bar) '_' is an allowed character.

C. The GC shall be responsible for all of the following:
1. Consolidating all the individual O&M lists into one master OM Checklist.
    a. The checklist shall be in a tabular data format similar to the sample below.

2. Upload the completed checklist to the Submittal Library on the Project Management Web Site for review. See Specification 01 33 23 Submittals for more information on this procedure.

Title	Specification	Completed
AHU 2_Air Handling Unit_OM	23 00 00	
CPT 2_Carpet_UC	09 68 00	

D. The GC shall work with all contractors to amend the OM Checklist throughout the execution of the project based on changes and modifications to the contract as necessary.

3.2. O&M DATA COLLECTION

A. All contractors shall prepare O&M Data for draft and final submission as follows:
1. Obtain digital PDF files for each piece of equipment, system, material or finish as described in Sections 1.4.A.1 and 1.4.A.2 above.
2. Verify that all information as described in Section 1.4.B above is included with the PDF file. Obtain missing information as necessary for a complete submittal.

B. Rename each individual PDF file to match the name provided on the approved O&M Checklist submitted in section 3.1 above. Use PDF compression to reduce file sizes prior to submitting the files.

C. All contractors shall submit the completed digital PDF files to the GC in sufficient time for the GC to meet the O&M Data submission deadlines as described in Specification Section 01 29 76, Progress Payment Procedures.

D. O&M Data shall be submitted and reviewed as described in sections 3.3 and 3.4 below.

3.3. O&M DATA DRAFT SUBMITTAL

A. All contractors shall prepare and submit the following for an O&M Data Draft review submittal:
1. Prepare three (3) complete O&M Data file samples as described in section 3.1 above.
2. Review all specifications within his/her Division of Work and prepare a complete O&M Data checklist listing all equipment, systems, materials, or finishes. Checklist shall be in tabular form similar to the example below and shall indicate the title (and plan identifier when applicable) of the O&M Data, the associated specification, and a column to verify the item has been turned in and completed.

B. The GC shall be required to review all contractors' samples and checklists for compliance with this specification and shall return any to the originating contractor that are insufficient for re-submittal.
1. When acceptable to the GC, he/she shall upload each O&M Data draft submittal file to the O&M Draft library on the Project Management Web Site.

C. The Project Architect, City Project Manager, CxA, Consulting Staffs and Owner Representatives shall review the O&M Data draft submittals and checklist within fifteen 15 working days as follows:
1. Provide general critique comments by Division on O&M Data samples submitted. Critique is intended to provide all contractors with information on strengths and weaknesses of their submittals.
a. Re-submittal of the O&M Data samples will not be required.
2. Review in detail the O&M Data Checklist for completeness. Provide comments as needed.
a. Re-submittal of the O&M Checklist will be required until accepted.

3.4. O&M DATA FINAL SUBMITTAL

A. All contractors shall prepare and submit the following for an O&M Data Final review submittal:
1. Prepare complete O&M Data files as described in Section 3.1 above according to their approved checklist as described in Section 3.2 above.
2. Submit completed checklist and all final O&M Data files to the GC for final submittal review.

B. The GC shall be required to spot check all contractors' submittals for completeness against their checklists and for compliance with this specification and shall return any to the originating contractor that are insufficient for re-submittal.
1. When acceptable to the GC, he/she shall upload each O&M Data final submittal file to the O&M Final library on the Project Management Web Site.

C. The Project Architect, City Project Manager, CxA, Consulting Staffs and Owner Representatives shall review the O&M Data final submittals and checklist within fifteen (15) working days as follows:
1. Review the files submitted against the checklist and request any missing files through the GC.
2. Review in detail all of the O&M Data files for completeness.
a. Submittals shall be accepted or rejected as individual PDF files.
b. Contractors shall re-submit entire O&M submittal if any portion is rejected or incomplete.

3.5. CONSTRUCTION CLOSEOUT

A. All contractors shall review Specification 01 77 00, Closeout Procedures and Specification 01 79 00 Demonstration and Training.

1. Acceptance of all final O&M Data submittals is required prior to scheduling Demonstration and Training Sessions.
2. Completion of all Demonstration and Training Sessions is required to receive the Substantial Compliance for Occupancy Certificate, and to begin Construction Closeout procedures.

END OF SECTION

SECTION 01 78 36
WARRANTIES

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities and guide lines related to providing all Warranties and Guarantees related to the Work, workmanship, materials, equipment, and other such items required by the Construction Documents.

B. Manufacturers' disclaimers and limitations on product warranties do not relieve any contractor of the warranty on the Work that includes the product.

C. Manufacturers' disclaimers and limitations on product warranties do not relieve suppliers, manufacturers and any contractor required to provide special warranties under the contract documents.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 23 Project Management Web Site
C. Section 01 77 00 Closeout Procedures
D. Section 01 78 23 Operation and Maintenance Data
E. Other Divisions and Specifications that may address more specifically the requirements for Warranties related to the installation of all items and equipment installed under the execution of the Work.

1.3. DEFINITIONS

A. See specification 01 77 00 for the definitions of the following terms that may also be used in this specification:
1. Substantial Compliance
2. Certificate of Occupancy
3. Certificate of Substantial Completion
4. Construction Closeout
5. Contract Closeout

B. Emergency Repair: The Owner or Owner Representative reserves the right to make emergency repairs as required to keep equipment or materials in operation or to prevent damage to property and injury to persons without voiding the contractors warranty or bond or relieving the contractor of his/her responsibilities during the warranty period.

C. Installer: The company or contractor hired to install a finished product that was manufactured and supplied specifically for the Work within this contract. The Installer may or may not be the same company that supplied the product. See the definition for supplier.

D. Supplier: Any company that makes a specific finished product for the Work from information within the Contract Documents. Examples of suppliers would include custom cabinets, steel stairs and railings, etc. A supplier would not be a company that distributes items manufactured by others such as an electrical or plumbing supplier.

E. Warranty: A written guarantee from the manufacturer to the owner on the integrity of a product and its installation, and the manufacturers' responsibility to repair or replace the defective product or components within a specified time from the date of ownership. Warranty may also be used interchangeably with Guarantee. The following warranty types may be part of any specification within the Work associated with the Construction Documents:

1. Expressed Warranty: A warranty that provides specific repair or replacement for covered components of a product over a specified length of time.
2. Implied Warranty: A warranty that is not stated explicitly by a seller or manufacturer that the product is merchantable and fit for the intended purpose.
3. Standard Product Warranty: Preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner. Standard warranties may be for any amount of time but shall not be for anything less than one (1) year from the warranty date.
4. Special Warranty: A written warranty required by the Contract Documents either to extend the time limit provided under a standard warranty or to provide greater rights to the Owner.

F. Warranty Date: The effective date that begins all warranty periods required for products, installations, and workmanship associated with the execution of the Work for this contract. The Warranty Date shall be set by the CPM.

G. Related Damages and Losses: When correcting failed or damaged Warranted Work, remove and reinstall (or replace if necessary) the construction that has been damaged as a result of the failure or the construction that must be removed and replaced to obtain access for the correction of Warranted Work.

H. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected reinstate the warranty by a new written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation unless specifically noted otherwise in a specification.

I. Replacement Cost: All costs that may be associated with Work being replaced under warranty including but not limited to the following:
1. Related damages and losses
2. Labor, material and equipment
3. Permits and inspection fees
4. This shall be regardless of any benefit the Owner may have had from the Work through any portion of its anticipated useful service life.

J. Replacement Work: All materials, products, required labor, and equipment necessary to replace failed or damaged warranted to an acceptable condition that complies with the requirements of the original Construction Documents.

K. Owners Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, and remedies.
1. Rejection of Warranties: The Owner reserves the right to reject any warranty and to limit the selection of products with warranties not in conflict with the requirements of the contract documents.
2. Where the Contract Documents require a Special Warranty or similar commitment on the Work or product, the Owner reserves the right to refuse acceptance of the Work until the Contractor presents evidence the entities required to countersign such required commitments have done so.

1.4. GENERAL CONTRACTORS RESPONSIBILITIES

A. The General Contractor (GC) shall be responsible to remedy, at his/her expense, any defect in the Work and any damage to City owned or controlled real or personal property when the damage is a result of:
1. The GC's failure to conform to Contract Document requirements.
   a. Any substitutions not properly approved and authorized may be considered defective.
2. Any defect in workmanship, materials, equipment, or design furnished by the GC or Sub-contractors.

B. All warranties as described in this specification and these Contract Documents shall take effect on the date established by the CPM, as noted in Section 1.3F above.
1. All warranties shall remain in effect for one (1) year thereafter unless specifically stated otherwise in the Contract Documents or where standard manufacturer warranties are greater.

C. The GC's warranty with respect to Work repaired or replaced, including restored or replaced Work due to damage, will run for one (1) year from the date of Owner Acceptance of said repair or replacement.
1. This shall be regardless of any benefit the Owner may have had from the Work through any portion of its anticipated useful service life.

D. Warranty Response
1. See Section 3.5 of this specification.

PART 2 – PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. WARRANTY 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 Warranty Requirements to the GC.

B. Use the following format and examples for naming conventions to be used for all Warranty documents:

1. Format: ***Equipment ID_Equipment Title***
   a. ***Equipment ID*** represents the name of any equipment, system, material or finish as designated in the Contract Documents.
   b. ***Equipment Title*** is the full name of the item, no abbreviations
   c. Do not use special characters such as #, %, &, /, etc. These characters are reserved by the Project Management Web Site software the City of Madison uses; however the under-score (or under-bar) '_' is an allowed character.

C. The GC shall be responsible for all of the following:

1. Consolidating all the warranty lists into one master Warranty Checklist.
   a. The checklist shall be in a tabular data format similar to the sample below.
2. Upload the completed checklist to the Submittal Library on the Project Management Web Site for review. See Specification 01 33 23 Submittals for more information on this procedure.
3. Resubmit the schedule as needed after initial reviews have been completed.

D. The GC shall work with all contractors to amend the Warranty Checklist throughout the execution of the project based on changes and modifications as necessary.

Title	Specification	Terms	Completed
AHU 2_Air Handling Unit	23 00 00	MFR 5yr	
CPT 2_Carpet	09 68 00	MFR 10 year	

3.2. CONTRACTOR LETTERS OF WARRANTY

A. All Contractor Letters of Warranty shall be in a typed letter format and provide the following information:

1. The letter shall be on official company stationary including company name, address, and phone number.
2. Indicate project name, contract number, and contract address the warranty is for on the reference line.
3. Provide a description of the warranty(ies) being provided.
   a. Include Division, Trade, or Specification information as necessary.
   b. Only combine warranties of related Divisional Work together. Create new letters for additional Divisions as necessary.
4. Indicate the effective Warranty Date. As noted in Section1.3.F above, the Warranty Date shall be the date the Certificate of Substantial Completion was signed by the City Engineer.
5. Contractor Letters of Warranty shall only be signed by a principal officer of the company.
6. After signing the letter provide the GC with a high quality color scanned image in PDF format and the original signed letter.
7. Contractor Letters of Warranty are not to be submitted as product warranties provided by the manufacturer.

B. The GC shall be responsible for the Final Warranty submittal as identified in Section 3.4 below.

C. The GC shall obtain letters of warranty from all of the following:

1. The General Contractor shall provide warranty letters for all Work that was self performed under the contract documents, identify all trades or Divisions of Work.
2. All Sub-contractors shall provide warranty letters for Work performed under the contract documents; identify all trades or Divisions of Work.
3. Suppliers, as required by other specifications within the Construction Documents where the manufacture of a specific product unique to the Work of this contract was required.
   a. The terms and conditions of the Supplier Letter of Warranty shall be as defined by the specifications associated with the Work but shall not be less than the industry standard of repair, or replace defective materials and workmanship within one (1) year of the warranty date.
   b. When the supplier is also the installer a single written letter may be submitted identifying both the warranty for the manufacture of the product and the warranty for the installation of the product.

4. Installers as required by other specifications within the Construction Documents where the installation of a specific product unique to the Work of this contract was required.
    1. The terms and conditions of the Installer Letter of Warranty shall be as defined by the specifications associated with the Work but shall not be less than the industry standard of repair, or replace defective materials and workmanship associated with the installation of the product within one (1) year of the warranty date.
5. Special Letters of Warranty shall be required from any contractor, supplier, installer or manufacturer who agrees to provide warranty services required by any Division Specification in excess of their Standard Product Warranty.

3.3. STANDARD PRODUCT WARRANTY

A. All contractors shall be responsible for collecting and providing copies of all standard product warranties for commercially available products purchased and installed under this contract.

B. Only one copy of the manufacturers' standard warranty needs to be submitted as representative for all quantities of the same model number used throughout the Work.

C. Provide the manufacturers certificate, letter, or other standard documentation for each Standard Product Warranty submitted as follows:
    1. Whenever possible a PDF version of the document shall be used.
        a. If a PDF version is used all additional information shall be completed using simple PDF editing tools such as text boxes, highlight, etc.
        b. If a PDF version is not available and an original document is furnished the additional information shall be neatly hand written and highlighted on the document in such a fashion so that it does not obscure any part of the written warranty.
    2. Provide the following additional information on each warranty document:
        a. Contract warranty date.
        b. Provide the manufacturer name and model number of the product if not specified within the warranty.
            i. Where the manufacturer name and model number is specified within the warranty it shall be highlighted for visibility.
        c. Provide the plan identifier (LAV-1, WC-2, etc) when applicable.

D. Each completed warranty shall be saved as a digital PDF. The file shall be named using the specification number and item description. I.E. 22 42 00 Toilet (WC-1).pdf
    a. Where an original certificate was furnished provide a high quality colored scan of the completed document with the additional information. Save the scanned image in PDF format and use the same naming convention as indicated above.

E. Provide all PDF files and any original documents to the GC for final consolidation to be provided to the Owner.

3.4. FINAL WARRANTY SUBMITTAL

A. The GC shall receive all required warranties (digital PDF and any original documents) from all contractors, suppliers, installers and manufacturers.

B. The GC shall inventory all received warranties with the Warranty Submittal List to ensure all required warranties have been received and all warranty periods are correct according to the specifications.

C. Provide with each Operation and Maintenance Manual a complete copy of any associated warranty.

D. Scan all warranties into a single organized electronic PDF file as follows:
    1. Organize the PDF file into an orderly sequence based on the table of contents of the Specifications.
    2. Provide a typed Table of Contents for the entire file at the front of the document.
    3. Provide bookmarks and links to each individual PDF to enable quick navigation through the PDF document.

E. Upload the warranty submittal to the appropriate document library on the Project Management Web Site for review by the PA and CPM.

F. Correct any deficiencies or omissions and resubmit as necessary.

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

A. Warranty Notification:
    1. The City of Madison, Project Management Web Site, uses an email notification system for all warranty related issues. The GC will be required to provide, and keep current during the warranty period, a minimum of two (2) email addresses and phone numbers of current employees to receive email notifications and provide response regarding Work associated with these construction documents.

a. In the event a Warranty Issue is deemed by the City of Madison to be an emergency, the GC shall first receive a phone call with a follow-up email from the Project Management Web Site.
b. The Contract Closeout-Warranty Issue Library on the Project Management Web Site uses a form for each warranty issue that is logged into the system.
i. The GC shall open each warranty issue form, review the issue description and any attached documentation or photos.
ii. The GC shall also notify any other sub-contractor, supplier, or installer that may be required to review the warranty issue.

B. Warranty Response:
1. The GC shall upon notification by the City of Madison provide warranty response as follows:
a. Critical Systems or equipment: Where damage to equipment and other building components, or injury to personnel is probable provide immediate emergency shut-down information and an on-site response team as soon as possible but in no case shall on-site response exceed 24 hours.
b. For non-critical responses where damage or injury is unlikely provide on-site response no later than the next business day.
c. Where Technical Assistance support is part of the written warranty provide all assistance necessary via phone, text, or internet systems as indicated by the warranty. If issues cannot be resolved provide on-site response no later than the next business day.
d. If the request cannot be supported in sufficient time as outlined above the Owner (or Owner Representative) reserves the right to contact other contractors or service companies having similar capability to expedite the repair or replacement and shall invoice all associated costs to the Owner back to the GC.

C. Warranty Execution:
1. The GC shall provide all repairs or replacements as necessary to restore broken or damaged Work to the original level of acceptance as intended by the Contract Documents.
a. Provide all materials, equipment, products, and labor necessary to complete the repair or replacement associated with the Warranty Issue.
b. Provide all cleaning services as may be required before, during, and after the repair or replacement as per Specification 01 74 13 Progress Cleaning.
c. Provide any protection necessary for existing construction as per Specification 01 76 00 Protecting Installed Construction
d. Provide new letters of warranty when required.

D. Warranty Follow-up:
1. Logged Warranty Issues:
a. The GC shall provide complete documented responses of all logged Warranty Issues. Responses shall provide a description of work completed, by who, inclusive dates, and photos of completed or repaired work.
i. Provide call back response if work is not acceptable.
b. The City Project Manager shall review the submitted response documentation and do a field inspection if necessary.
i. If work is not acceptable, contact GC to review details and expectations of the repair as needed.
ii. If work is acceptable close the Warranty Issue.
2. Quarterly Warranty Reviews:
a. The GC shall be responsible for scheduling quarterly on-site review with all of the following:
i. City Project Manager, and other City staff as needed
ii. Owner and Owner Tenant Representative
iii. Commissioning Agent (CxA)
iv. Plumbing, Heating, Electrical Sub-contractors
v. Other Sub-contractors that may be responsible for open Warranty issues
b. Quarterly reviews shall be scheduled at 3 months, 6 months, and 11 months after the effective date of the warranty. The review meetings shall:
i. Review the status of all open Warranty Issues, determine course of action and estimated date of completion.
ii. In the appropriate quarter, provide shut-down, start-up, testing, and training of off-season equipment as required by the contract documents.
iii. The 11th month review shall review all open Warranty Issues, final plan for resolution, and all Warranty Issues where a new letter of warranty may have been issued.

END OF SECTION

SECTION 01 78 39
AS-BUILT DRAWINGS

PART 1 – GENERAL

1.1. SUMMARY

A. This specification is intended to provide clear guidelines and identify the responsibilities of all contractors as they pertain to City of Madison contract procedures regarding the accurate recording of the Work associated with the execution of this contract. This shall include but not be limited to work that will be hidden, concealed, or buried.

B. Each contractor shall be responsible for maintaining an accurate record of all installations, locations, and changes to the contract documents during the execution of this contract as it may relate to their specific division or trade.

C. The General Contractor (GC) shall be responsible for ensuring all contractors provide as-built record information to the Master As-Built Document Set as described in this specification.

1.2. RELATED SPECIFICAITONS

A. 01 26 13 Request for Information
B. 01 31 23 Construction Bulletin
C. 01 32 23 Survey and Layout Data
D. 01 32 33 Photographic Documentation
E. 01 26 63 Change Orders
F. 01 29 76 Progress Payment Procedures
G. 01 31 23 Project Management Web Site
H. 01 33 23 Submittals
I. 01 77 00 Closeout Procedures
J. Other Divisions and Specifications that may address more specifically the requirements for field recording the installation of all items associated with the execution of this contract by Division or Trade.

1.3. RELATED DOCUMENTS

A. Other related documents shall include but not be limited to the following:
1. Bidding documents including drawings, specifications, and addenda.
2. Required regulatory documents of conditional approval.
3. Field orders, verbal or written by inspectors having regulatory jurisdiction.
4. Shop drawings and installation drawings.

1.4. PERFORMANCE REQUIREMENTS

A. The GC shall be responsible for maintaining the “Master As-Built Document Set” in the job trailer at all times during the execution of this contract. This document set shall include all of the following:
1. Master As-Built Plan Set
2. Master As-Built Specification Set
3. Other Document Sets

B. The GC shall designate one person of the GC staff to be responsible for maintaining the Master As-Built Document Set at the job trailer. This shall include, posting updates, revisions, deletions and the monitoring of all contractors posting as-built information as described in this specification.

C. All contractors shall use this specification as a general guideline regarding the requirements for documenting their completed Work. Contractors shall explicitly follow additional specification requirements within their own Division of Trade as it may apply to this specification.

1.5. QUALITY ASSURANCE

A. The GC shall be responsible for all of the following:
   a. Spot checking all sub-contractors field documents to insure daily information is being recorded as work progresses.
   b. Discuss as-built recording to the plan set at weekly job meetings with all sub-contractors on site.
   c. Schedule time with sub-contractors in the job trailer for recording as-built information to the plan set.
   d. Insure that all sub-contractors are providing clear and accurate information to the plan set in a neat and organized manner.
   e. Insure sub-contractors who have completed work have finalized recording all as-built information to the plan set before releasing them from the project site.

B. The Project Architect, the City Project Manager, Commissioning Agent and other design team staff will perform random checks of the Master As-Built Document Set during the execution of this contract to ensure as-built information is being recorded in a timely fashion as the Work progresses. An updated and current Master As-Built Document Set is a stipulation for approval of the progress payment.

PART 2 – PRODUCTS

2.1. OFFICE SUPPLIES

A. The GC shall provide a sufficient supply of office products in the job trailer at all times for all contractors to use in recording as-built information into the plan set. This shall include but not be limited to the following:
   a. Red ink pens, medium point. Pens that bleed through paper, markers, and felt tips will not be accepted.
   b. The use of highlighters is acceptable. Assign colors to various trades for consistency in recording information.
   c. Straight edges of various lengths for drawing dimension, extension and other lines.
   d. Civil and Architectural scales
   e. Clear transparent, non-yellowing, single sided tape.
   f. Correction tape or correction fluid for correcting small errors.

PART 3 - EXECUTION

3.1. FIELD DOCUMENT AS-BUILTS

A. The GC and all Sub-contractors shall be responsible for keeping their own field set of as-built documents including plans, specifications and published changes.

B. Field sets shall be kept dry and in good condition at all times.

C. No Work shall be buried, covered, or hidden, by any additional Work, regardless of Contractor or Trade, until locations of all materials and equipment has been properly documented as described below.

D. All contractors shall be required to record the following as-built information:
   a. Notes on the daily installation of materials and equipment.
   b. Sketches, corrections, and markups indicating final location, positioning, and arrangement of materials and equipment such as pipes, conduits, valves, cleanouts, pull boxes and other such items. Note all final locations on plan sheets, indicate dimension off identifiable building features. Riser diagrams need only be corrected for significant changes in locations, routing or configuration.
      i. The use of photographs in lieu of hand drawn sketches is acceptable.
      ii. Photos shall be taken according to Specification 01 32 33 Photographic Documentation
      iii. Print photo and markup with dimensions or notes as necessary.
   c. Identify by the use of existing plan symbology and notes the size, type, quantity, and use as applicable of materials such as pipes, valves, conduits, etc.

d. Note whether horizontal runs are below slab or above ceiling, include dimensions above or below finished floor elevation.

E. All contractors shall be responsible for transferring the information from their field set of documents to the Master As-Built Plan Set kept in the GC job trailer. See Section 3.3.D. below for the proper procedure.

F. All contractors shall update the GC Master Plan Set as often as necessary, but not less than once per work week.

3.2. SITE SURVEY AS-BUILT

A. The Land Surveyor Sub-Contractor shall provide digital as-built information including but not be limited to the following:

a. For underground buried utility laterals and services of all types locate all of the following that may apply:

i. Connection points at all mains
ii. Storm discharge points to open air
iii. All corners and bends regardless of angle, large radius sweeps shall have multiple point locations sufficient to define the sweep.
iv. All vertical drops
v. All wells
vi. Private buried utilities such as buried electrical cables, irrigation systems, etc.
v. Other information that may need to be located in the future by the owner prior to digging

b. Record all surface features including but not limited to the following:

i. Building corners, pavement edges, and other permanent structural features.
ii. All surface covers for inlets, catch basins, cleanouts, access structures, curb stops and other such devices.
iii. Other permanent surface features such as hydrants, lamp posts, and other permanent site amenities.

c. The following data shall be recorded while locating items in sub-sections 3.2.a and 3.2.b above:

i. Flow lines at both ends of pipes
ii. Pipe sizes and material types
iii. Rim elevations for all covers
iv. Sump elevations and invert elevations of all structures
v. Spot elevations for all pads, driveways, walks, stoops, and floors

d. All of the above ‘a’ through ‘c’ for buried tanks, equipment, piping, conduit, etc. being a part of the fuel dispensing system.

B. The Surveyor shall provide the final digital as-built on a media and in a format specified in Specification 00 31 21 Survey Information to the GC for turn in to the Project Architect and the Civil Engineer.

C. The Surveyor shall provide two printed as-built site plans to the GC for inclusion in the Master As-Built Plan Set as follows:

1. One sheet to show all features (but not contour information) with text neatly organized for each item identified.
2. One sheet showing contours, contour labels, and features from item 1 above, but with no additional text.

3.3. MASTER AS-BUILT DOCUMENT SET

A. The GC shall be responsible for maintaining the Master As-Built Document Set in the job trailer at all times.

1. The Master As-Built Plan Set (Plan Set) shall begin with one complete bid set of drawings and any additional sheets that were supplied by published addenda during the bidding process. The cover sheet shall be titled as the “Master As-Built Plan Set” in large bold red letters approximately 2” in height and shall not be used for any other purpose.

a. The Plan Set shall be kept dry, legible, and in good condition at all times.

b. The Plan Set shall be kept up to date with new revisions within two (2) working days of supplemental drawings being issued. Revisions shall be posted as follows:

i. Insert new, revised sheets into the plan set. Void old sheets but do not remove them from the plan set. Indicate date received and what document (RFI, CB, CO, etc) caused the change.
ii. Insert new, revised individual details into the plan set. Void old details, tape new details over the old details with a “tape hinge” to allow them to be viewed. Indicate date received and what document (RFI, CB, CO, etc.) caused the change.

iii. Add new details in appropriate white space on relevant sheets. If no space is available use the back side of the previous sheet or insert a new sheet. Indicate date received and what document (RFI, CB, CO, etc.) caused the change.

c. The Plan Set shall be available at anytime for easy reference during progress meetings and for emergency location information of new work already completed.

2. The Master As-Built Specification Set (Spec Set) shall begin with one complete bid set of specifications and any additional specifications that were supplied by published addenda during the bidding process. The Spec Set shall be provided in three "D" ring type binders of sufficient thickness to accommodate the specification set. Multiple binders are allowed as necessary. Label the front cover and binding edge with "Master As-Built Specifications" in bold red letters. Provide other information as necessary to distinguish the contents of multi-volume sets.
   a. The Spec Set shall be kept dry, legible, and in good condition at all times.
   b. The Spec Set shall be kept up to date with new revisions within two (2) working days of supplemental drawings being issued.
   c. The Spec Set shall be available at anytime for easy reference during progress meetings.
3. Other Document Sets may be kept at the GCs option in three "D" ring type binders of sufficient thickness to accommodate the documentation. Other documentation sets may include but not be limited to RFIs, CBs, COs, etc.

C. The Land Surveyor Sub-Contractor shall be required to use digital surveying for all exterior site surveying, and provide deliverable digital as-builts as specified in Specification 00 31 21 Survey Information. As soon as practical the surveyor shall provide the GC with a preliminary copy of installed buried utilities for inclusion with the plan set in the job trailer. The surveyor shall provide final digital as builts as per section 3.2 above.

D. All contractors shall be responsible for updating the Plan Set from their field sets at least once per work week. Updates shall include but not be limited to the following procedures:
   a. All updates shall be done only in red ink. Place a "cloud" around small areas of correction to call attention to the change.
   b. Whenever possible place general work notes, field sketches, supplemental details, photos, and other such information on the reverse side of the preceding sheet. Installation notes including dates shall be kept neatly organized in chronological order as necessary.
   c. Accurately locate items on the plan set as follows:
      i. For items that are located as dimensioned provide a check mark or circle indicating the dimension was verified.
      ii. For items that are within 5 feet of the location indicated on the plans leave as shown and:
         - Provide correct dimensions to existing dimension strings or,
         - Accurately locate with new dimension strings
      iii. For items that are more than 5 feet from the location indicated on the plans
         - Accurately draw the items in the new location as installed and,
         - Accurately locate with new dimension strings and,
         - Note that the existing location is void.
   d. Include dimensioned locations for items that will be buried, concealed, or hidden in the ground, under floors, in walls or above ceilings.
      i. Dimensions shall be pulled from identifiable building features, not from centers of columns or other buried features.
      ii. When necessary pull more dimensions as needed from opposing directions to properly locate single items.

3.4. AS-BUILT REVIEW AND ACCEPTANCE

A. The GC shall provide the Master As-Built Plan Set to the City Project Manager (CPM) for content review prior to the Progress Payment Milestone indicated in Specification 01 29 76 Progress Payment Procedures. The submitted plan set shall include the digital survey information produced under Section 3.2 above.
   1. If the plan set is not approved:
      a. The CPM shall only be required to generalize deficiencies by trade there shall be no requirement or expectation to generate a "punch list" of required corrections.
      b. The GC and Sub-contractors as necessary shall be responsible for inspecting the installation and correcting the drawings as needed.
      c. The GC shall re-submit the plan set for review.

3.5. CHANGES AFTER ACCEPTANCE

A. No Contractor shall be responsible for making changes to the As-Built record documents after acceptance by the PA and CPM except when necessitated by changes resulting from any Work made by the Contractor as part of his/her guarantee.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities and guidelines related to providing Demonstration and Training (D&T) Sessions related to general facility use, equipment, systems, finishes, and materials to City of Madison Staff (Owner, Owner Representatives, Maintenance, and Custodial Personnel) as needed.

B. All D&T shall be coordinated through the General Contractor (GC), Project Architect (PA) and City Project Manager (CPM), and will be based on or customized to the needs of City of Madison Staff being trained. New equipment and systems may have complete D&T sessions as described in this specification while equipment or systems staff is familiar with may have sessions more focused on maintenance only.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 78 13 Completion and Correction List
C. Section 01 78 19 Maintenance Contracts
D. Section 01 78 23 Operation and Maintenance Data
E. Section 01 78 36 Warranties
F. Section 01 78 39 As-Built Drawings
G. Section 01 78 43 Spare Parts and Extra Materials
H. Other Divisions and Specifications that may address more specifically the requirements for D&T sessions related to the installation of all items and equipment installed under the execution of the Work.

1.3. QUALITY ASSURANCE

A. All contractors shall have the responsibility of preparing for and conducting D&T sessions as determined by this and other Division or Trade related specifications, Owner Operation and Maintenance Manuals, and other such documentation related to the Work.

B. The GC shall have responsibility for:

1. Ensuring that all contractors required to conduct a D&T session have successfully completed all of the following:
    a. Turned in all required documentation for review and documentation has been approved/accepted prior to scheduling D&T sessions.
    b. Other required documentation as needed is available and ready for use during the D&T session.
    c. All systems have been started, tested, and running as per appropriate specification and/or manufacturers recommendations prior to scheduling D&T sessions.
    d. All contractors are sufficiently prepared for their D&T session
    e. Documents the D&T session including date, time, contractor and company name, attendees and other information regarding the session
2. Organizing the coordination and scheduling of all D&T sessions between all contractors and the appropriate representatives of the Owner. These representatives may include any of the following depending on the Work of the Contract:
    a. Owner – end users

b. Facility Maintenance personnel
   i. Facility general operation procedures including custodial services
   ii. Electrical
   iii. Mechanical
   iv. Plumbing
   v. Site
c. Information Technology (IT) Department
d. Traffic Engineering – Radio Shop
e. Architects, Engineers and Facility Management staff as project completion overview

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL REQUIREMENTS

A. The GC shall develop a specific D&T plan to be scheduled and conducted as described below but no sooner than the meeting discussed in 3.2.A.2 below.

C. The GC shall not schedule D&T sessions to preclude required personnel from attending multiple sessions.

3.2. COORDINATING AND SCHEDULING THE TRAINING

A. The GC, PA, CxA and CPM, shall review all Training and Demonstration requirements during two (2) special meetings.
   1. The first meeting shall be held at the 50% Contract Total Payment. During this meeting the following shall be discussed:
      a. Preliminary schedule of training dates to be completed prior to beginning construction closeout.
      b. List of documentation and items that need to be completed and available before and during the training session.
      c. Who (Owner, Maintenance, etc) will be attending what training session(s).
   2. The second meeting shall be held at the 80% Contract Total Payment. This meeting shall review due outs that have not yet been completed for the 90% Contract Total Payment and the requirements necessary for Construction Closeout. All Demonstration and Training sessions shall be completed prior to receiving the 90% progress payment and beginning Construction Closeout Procedures (see Specification 01 77 00).
      a. This does not include any requirement associated with off season equipment preparation and/or demonstration and Training Sessions.

B. All of the Construction Work shall be operationally ready prior to conducting training as follows:
   1. All contractors shall have their As-Built Drawing Records available for reviewing locations of system components during training.
   2. All final and approved Operations and Maintenance Data shall be completed no less than two (2) full weeks prior to the scheduled training.
   3. All systems shall have been started, functionally tested, balanced, and fully operational, and all piping and equipment labeling complete at least two (2) days prior to the scheduled training.
      a. Seasonal equipment shall not be trained out of season. Contractors having seasonal equipment shall work with the GC and CPM for coordinating additional training sessions as appropriate for seasonal equipment.

C. Correction list items that prevent a piece of equipment or system from being fully operational for training shall be corrected prior to conducting the training.

3.3. TRAINING OBJECTIVES

A. For each piece of equipment or system installed train on the following objectives/topics as applicable:
   1. System design, concept, and capabilities
   2. Review of related contractor as-built drawings
   3. Facility walkthrough to identify key components of the system
   4. System operation and programming including weekly, monthly, annual test procedures
   5. System maintenance requirements
   6. System troubleshooting procedures
   7. Testing, inspection, and reporting requirements associated with any regulatory requirements
   8. Identification of any correction list items still outstanding
   9. Review of system documentation including the following:

a. Operation and maintenance data
b. Warranties
c. Valve charts, tags, and pipe identification markers

B. For each piece of specialty equipment train on the following objectives/topics as applicable:
1. Manufacturers operations instructions
2. Manufacturers use and care instructions
3. Manufacturers maintenance and troubleshooting instructions
4. System operation and programming including weekly, monthly, annual test procedures
5. Identification of any correction list items still outstanding
6. Review of system documentation including the following:
a. Operation and maintenance data
b. Warranties

C. End User Orientation
1. Facility walkthrough
2. Security and emergency features
3. General facility operation procedures

D. Facility General Use and Custodial Services – if requested
1. Facility walkthrough
2. Security and emergency features
3. General facility operation procedures
4. Care and maintenance of specialty items, finishes, etc as requested
5. Attic stock inventory and material designations

3.4. DEMONSTRATION AND TRAINING PROGRAM PREPARATION

A. Each contractor having a responsibility for providing D&T sessions shall meet with the GC, CPM, and other City Staff as needed to review the extent of the Training Objectives in section 3.3 above needed for each piece of equipment, system, finish, etc. This meeting shall occur no less than four (4) weeks prior to the anticipated training session.

B. The contractor shall use the information from item 3.4.A above to prepare a formal training program for each piece of equipment or system based on the Training Objectives in 3.3 above.
1. The formal training program shall include the following information:
a. Session title
b. List of systems, equipment, use, care, etc to be covered during the session
c. Provide the following for each systems, equipment, use, care, etc to be covered during the session
i. Name and affiliation of each instructor to be used. As needed and discretion of the Owner the GC to require attendance by the installing technician, installing Contractor and the appropriate trade or manufacturer's representative.
ii. Qualifications of each instructor to be used. Practical building operation expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment as installed in this project is required by the training personnel. If Owner determines training was not adequate, the training shall be repeated until acceptable to Owner.
iii. A checklist of all documentation and system/equipment requirements necessary to complete a successful training session and the current status of each
iv. Any additional documents, training aids, video or other items to be used to complete the training
v. Any special requirements or needs associated with item iv above to complete the training
d. The intended audience for the training
e. The approximate duration of each objective or topic to be covered
2. Submit the completed training program to the GC for review and approval by the PA and CPM.

C. The PA and CPM shall work with staff as necessary to ensure all points of anticipated training needs have been met. The PA and CPM will approve the program as submitted or recommend changes for re-submittal as necessary.

3.5. CONDUCTING A DEMONSTRATION AND TRAINING SESSION

A. All contractors shall conduct their required D&T Sessions as follows:
1. Begin with a classroom session
a. Provide a sign in sheet indicating all training to be conducted, instructors, etc.
b. Provide an overview of the training to be conducted including the approximate schedule.

2. Conduct a general walk-through of the site.
    a. Point out locations of various equipment, valves, charts, and other related items.
    b. Use the Division or Trade As-Built record drawings to indicate locations of hidden or buried items.
3. Provide a demonstration of general equipment/system operation including using the O&M manual.
    a. Startup and shutdown procedures.
    b. Normal operational levels as depicted by any gauges, software, etc.
    c. Indicate warning devices, signs etc. and demonstrate emergency shut-down procedures.
4. Provide a demonstration of all owner level maintenance using the O&M manual.
    a. Indicate frequency of maintenance.
    b. Provide and review all spare parts, special tools, and special materials.
5. Provide and review all spare parts, special tools, special materials, or attic stock as applicable.
6. While conducting D&T sessions:
    a. Allow hands on training whenever practical.
    b. Answer questions promptly
    c. Repeat demonstrations and procedures as necessary.

B. Within two (2) working days of completing the D&T session the contractor responsible for the session shall turn-in any documentation generated including the sign in roster to the GC.

C. The GC shall turn over all training documentation to the PA and CPM upon completion of D&T sessions.

D. Re-schedule any training that has been determined to be inadequate or inappropriate for any reason including but not limited to any of the following;
1. Unqualified instructor
2. System installation incomplete or untested to the specifications
3. Equipment failure during demonstration
4. Un-expected cancellation

3.6. CLOSEOUT PROCEDURE

A. Prior to receiving the 90% Progress payment the GC shall:
1. Verify with the PA and CPM that each Demonstration and Training Session was conducted properly and according to the submitted plan.
2. Any required “Off Season” equipment testing, balancing, and Demonstration and Training Sessions have been tentatively scheduled with the GC, necessary sub-contractors, instructors and Owner/Owner Representatives as necessary.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1. SUMMARY

A. This specification is for all hollow metal doors, hollow metal door frames, and hollow metal window frames.

1.2. RELATED SPECIFICATIONS

A. 01 31 13 Project Coordination
B. 01 31 19 Project Meetings
C. 01 31 23 Project Management Web Site
D. 01 33 23 Submittals
E. 01 74 13 Progress Cleaning
F. 01 76 00 Protecting Installed Construction
G. 01 78 23 Operation and Maintenance Data
H. 01 78 36 Warranties
I. 01 78 39 As-Built Drawings
J. 08 71 00 Door Hardware

1.3. RELATED DRAWINGS

A. Refer to Exhibit A sheets 9, 10, 13, and 16 for plans and details regarding hollow metal doors and window frames.

1.4. SUBMITTALS

A. The General Contractor shall schedule a meeting to review the doors, frames, hardware and glazing for this project prior to providing submittals and shop drawings for review. No submittal will be reviewed for these items until this meeting has been conducted.
   1. This meeting shall include all of the following:
      a. General Contractor
      b. Door and door frame supplier
      c. Glazing supplier
      d. Door hardware supplier
      e. Door, frame, hardware, and glazing installers if not previously listed
      f. Electrical Contractor
      g. Masonry Contractor
      h. City Project Manager and/or Construction Manager
      i. Owner Representative-Maintenance
      j. Owner Data and Security Contractor

2. The meeting shall review the plans, specifications, special requirements, hardware, and other related topics to ensure all required components have been specified, will work with the installation as intended, and all contractors/suppliers are aware of what needs to be installed.

B. After the meeting the Contractors and suppliers shall provide a complete submittal package in a timely manner to allow sufficient review time prior to ordering the system components required for a complete installation. The General Contractor shall be solely responsible for any equipment, purchased/ordered/delivered that has not been reviewed and appoved according to this specification.

1.5. WARRANTY

A. The Contractors/Suppliers shall warrant for one year the complete installation of equipment and components associated with this contract and installation. Contractors warranty shall be in the form of a written letter on company letterhead referring to the contract information, dates of installation and acceptance, signed by an authorized representative of the Contractors Company.

1. The Contractors warranty shall include but not be limited to the following:
   a. Transportation to and from the location as often as needed during the warranty period.
   b. All labor and materials necessary to properly and thoroughly trouble shoot the system.
   c. All fees associated with the shipping of any component that needs to be returned or supplied by the manufacturer for repair or replacement.
   d. All labor and materials required to remove, repair, replace, or re-install any component.

B. The Contractors/Suppliers shall also provide all manufacturers warranties/guarantees associated with installed components of the completed installation.

1.6. QUALITY ASURANCE

A. The General Contractor (GC) shall be responsible for coordinating this Work with all other trades and divisions as needed for a complete installation. This shall include a pre-installation meetings for locating equipment, conduit, cabling, control devices, and other materials and equipment required by this installation.

B. The GC shall be responsible for ensuring that all doors requiring controlled access are properly prepared and installed per the contract documents. The GC shall further be responsible for ensuring all project coordination, pre-installation meetings, submittals and other such project management responsibilities are conducted efficiently and according to the project specifications and schedules.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

A. The following manufacturers are approved for hollow metal doors and frames.

1. Curries Company, ASSA ABLOY
2. LaForce, Inc.
3. Equals will be considered during the bidding phase only. The General Contractor shall provide complete specifications for any alternates being considered to later than 10 working days prior to the bid date. This allows for any approved manufacturers to be included in bidding addenda.

2.2. EXTERIOR AND INTERIOR HOLLOW METAL DOORS AND FRAMES

A. This section shall apply to all exterior and interior hollow metal doors, and hollow metal dor and window frames.

1. Doors
   a. Thickness = 1-3/4”
   b. Face; metallic coated steel sheet, minimum thickness of 0.042 inch before application of A40 coating.
   c. Full flush edge.
   d. Core; standard reinforcing and insulation of polystyrene, poly urethane, or polyisocyanurate
      i. R-value of not less than 6.0 deg F x h x SF/BTU
2. Frames
   a. Materials; metallic coated steel sheet, minimum thickness of 0.053 inch before application of A40 coating.
   b. Construction; full profile, welded. Welds ground smooth.
3. Finish
   a. Doors and frames shall be finished the same on both sides
   b. Factory primed with Pro Industrial PRO-CRYL Universal Primer

c. Painted with Pro Industrial PRE-CATALYZED Waterbased Epoxy, semi-gloss, colored to match metal building siding.
d. All frames shall be caulked inside and out with high quality silicone sealant raed for exterior use. Caulk color shall match the adjacent CMU wall color.

2.3. FRAME ANCHORS

A. Jamb anchors shall be masonry type adjustable strap-and-stirrup or T-shape anchors to match frame size. Anchors shall be not less that 0.042 inch thick with corrugated or perforated straps that are not less than 2 inches in width and 10 inches in length.
B. Provide a total of four (4) anchors per jamb to match CMU coursing as follows:
1. Not more than 8 inches from the top and bottom of the frame.
2. Spacing not more than 24 inches O.C.

2.4. FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles with minimum radius for metal thickness.
B. Provide weep-hole openings on bottoms of all doors to permit moisture to escape.
C. Hardware Preparation; Factory prepare all hollow metal work to receive template mortised hardware. Include cutouts, reinforcement, mortising, drilling, and taping according to SDI A250.6, the door hardware schedule and appropriate hardware templates.
D. Stops and Mouldings Provide stops and ouldings around glazed lites and louvers where indicated in the door schedule. Corners to be formed with hairline mitered joints
1. Provide fixed frame mouldings on the exterior side doors and frames and on the secure side of interior doors.

2.5. LOUVERS

A. Provide sightproof louvers on doors as indicated in the the door schedule. See heating plan sheet 16 for specifications.

PART 3 - EXECUTION

3.1. INSTALLATION

A. Set frames in openings according to the door and frame schedule. Ensure frames with removable stops are located on the secure side of the frame.
1. Ensure frames are aligned, plumbed and braced securely until permanent anchors are set.
2. Install door silencers inframes before grouting.
3. Check plumb, square, and twist of frames during wall construction. Shim as necessary to maintain tolerances.
4. Coordinate the installation of frames to allow for solidly filling the space with grout during masonry construction. Drilled frames with pumped grout will not be permitted.
5. installation Tolerances; Adjust the hollow metal frames for square, alignment, twist and plumb to the following tolerances:
a. Square: Plus or minus 1/16 inch measured at the door rabbet on a line 90 degrees from the jamb and perpendicular to the head.
b. Alignment: Plus or minus 1/16 inch measured at jambs on a horizontal line parallel to the plane of the wall.
c. Twist: Plus or minus 1/16 inch measured at opposite face corners of jambs on parallel lines, and perpendicular to the plane of the wall.
d. Plumb: Plus or minus 1/16 inch measured at the jambs at the floor.
B. Fit Hollow metal doors accurately in their frmaes within the tolerance listed below. Shim as necessary.
1. Between door and frame jambs, 1/8 inch to 1/4 inch plus or minus 1/32 inch.
2. At the bottom of door, 1/2 inch plus or minus 1/32 inch.
3. Between door face and stop, 1/16 inch to 1/8 inch plus or minus 1/32 inch.
C. Glazing. Comply with installation requirements and hollow metal manufacturers written instructions.
1. secure stops with counter sunk flat- or oval-head machine screws spaced uniformly not more than 9 inches O.C. and not more than 2 inches O.C. from each corner.

3.2. CLEANING AND FINISHING

A. Immediately after the completion of building construction inspect all frames and doors.
B. Notify City Project Manager of any damage, repair any damaged materials or replace as needed.
C. Remove all grout, greasy marks, rust, and other similar dirt from doors and frames.
D. Touch up primer coat as needed.
E. Install all glazing materials.
F. Field paint doors and frames according to the finish specifications noted in Section 2.2 above.
G. Install a uniform, smooth, continuous bead of caulk where all frames abut masonry walls.

3.3. FINAL INSPECTION

A. Prior to the final inspection walk through do all of the following::
   1. Make final adjustments to all door hardware. Ensure all closures and locking devices are functioning properly.
   2. Clean scuffs from all painted surfaces. Touch up paint as needed..
   3. Clean all glazing free of dirt, hand prints, stickers, etc.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1. SUMMARY

A. This specification includes all material and related service necessary to furnish door hardware indicated on the drawings or specified herein.

B. All work shall be in accordance with all applicable state and local building codes. Code requirements have precedence over this specification where conflicts exist.

1.2. RELATED SPECIFICATIONS

A. 01 31 13 Project Coordination
B. 01 31 19 Project Meetings
C. 01 31 23 Project Management Web Site
D. 01 33 23 Submittals
E. 01 74 13 Progress Cleaning
F. 01 76 00 Protecting Installed Construction
G. 01 78 23 Operation and Maintenance Data
H. 01 78 36 Warranties
I. 08 11 13 Hollow Metal Doors and Frames

1.3. RELATED DRAWINGS

A. Refer to Exhibit A sheets 9, 10, 13, and 16 for plans and details regarding hollow metal doors and window frames.

1.4. SUBMITTALS

A. The General Contractor shall schedule a meeting to review the doors, frames, hardware and glazing for this project prior to providing submittals and shop drawings for review. No submittal will be reviewed for these items until this meeting has been conducted.

1. This meeting shall include all of the following:
   a. General Contractor
   b. Door and door frame supplier
   c. Glazing supplier
   d. Door hardware supplier
   e. Door, frame, hardware, and glazing installers if not previously listed

f. Electrical Contractor
g. Masonry Contractor
h. City Project Manager and/or Construction Manager
i. Owner Representative-Maintenance
j. Owner Data and Security Contractor

2. The meeting shall review the plans, specifications, special requirements, hardware, and other related topics to ensure all required components have been specified, will work with the installation as intended, and all contractors/suppliers are aware of what needs to be installed.

B. After the meeting the Contractors and suppliers shall provide a complete submittal package in a timely manner to allow sufficient review time prior to ordering the system components required for a complete installation. The General Contractor shall be solely responsible for any equipment, purchased/ordered/delivered that has not been reviewed and appoved according to this specification.

1.5. WARRANTY

A. The Contractors/Suppliers shall warrant for one year the complete installation of equipment and components associated with this contract and installation. Contractors warranty shall be in the form of a written letter on company letterhead referring to the contract information, dates of installation and acceptance, signed by an authorized representative of the Contractors Company.

1. The Contractors warranty shall include but not be limited to the following:
   a. Transportation to and from the location as often as needed during the warranty period.
   b. All labor and materials necessary to properly and thoroughly trouble shoot the system.
   c. All fees associated with the shipping of any component that needs to be returned or supplied by the manufacturer for repair or replacement.
   d. All labor and materials required to remove, repair, replace, or re-install any component.

B. The Contractors/Suppliers shall also provide all manufacturers warranties/guarantees associated with installed components of the completed installation.

1.6. QUALITY ASURANCE

A. The General Contractor (GC) shall be responsible for coordinating this Work with all other trades and divisions as needed for a complete installation. This shall include all pre-installation meetings for locating equipment, conduit, cabling, control devices, and other materials and equipment required by this installation.

B. The GC shall be responsible for ensuring that all doors requiring controlled access are properly prepared and installed per the contract documents. The GC shall further be responsible for ensuring all project coordination, pre-installation meetings, submittals and other such project management responsibilities are conducted efficiently and according to the project specifications and schedules.

PART 2 - PRODUCTS

2.1. FASTENERS

A. All exposed fasteners shall be Phillips head unless otherwise specified, and shall match the finish of the adjacent hardware.

B. All fasteners exposed to the weather shall be non-ferrous or stainless steel. Furnish the correct fasteners to accommodate surrounding conditions.

C. Coordinate required reinforcements for doors and frames.

2.2. HINGES

A. Hinges shall be 2 pair full mortise FBB168 Heavy Duty, 4-1/2” x 4-1/2” Butt Hinges with Non-removable Pin and 32-D Stainless Satin Finish.

1. Typical of doors D-1, D-2, and D-3.

2.3. OPENERS & CLOSERS

A. Door D-1; Stanley Magic-Force Operator. With 4” square hard wired door operator paddles as located in the electrical floor plans.

B. Door D-2 = NONE

C. Door D-3; Stanley SL-60, with top jamb hold open/stop, Aluminum finish

2.4. LOCKSETS

A. Door D-1; Schlage L9010-06N Mortise Passage Set, 626 Satin Chrome finish.

1. Deadbolt with Schlage keyway. Contractor shall key to match owner provided key.
2. Operation is for normal passage both sides of door. Door is unlocked 24/7 unless the building is completely shut down and not accessible.

B. Door D-2; Schlage L9496-06N deadbolt with "Occupied" indicator and ADA thumb turn, 626 Satin Chrome finish.
1. Deadbolt with Schlage keyway. Contractor shall key to match owner provided key.
2. Operation is for normal passage both sides of door.
a. ADA thumb turn on inside locks door and shows "Occupied" Indicator on outside of door. Use of handle from inside releases locking mechanism.
b. Keyed use of the deadbolt to secure and release the door from the outside.

C. Door D-3; Schlage L9092-06N-EU Mortise Lock, electrical, 626 Satin Chrome finish.
1. Deadbolt with Schlage keyway. Contractor shall key to match owner provided key.
2. Operation is to Fail Secure. Upon power failure the outside lock/lever will fail to secure door from entry. Inside lever is always free for egress.

2.5. KICKPLATES

A. Trimco, 34" wide x 12" tall, Stainless steel.
1. Typical of boths sides of doors D-1, D-2, and D-3

2.6. THRESHOLD

A. National Guard 613, 1/4" x 6" Saddle, Aluminum finish.
1. Typical of doors D-1 and D-3

2.7. SWEEP

A. Pemko, 18061CNB, Aluminum, 5/8" Brush.
1. Typical of doors D-1 and D-3

2.8. WEATHERSEAL

A. National Guard 700NA, Neoprene Door Frame Weatherstrip.
1. Typical of doors D-1 and D-3

2.9. WALL STOP

A. Ives WS406CVX, satin Chrome finish .
1. Typical of doors D-2 and D-3

2.10. KEYLESS ACCESS CONTROL

A. Door D-3 shall have a keyless access control system.

B. The following components shall be provided and installed by the door Contractor and/or Hardware Installer:
1. Concealed Power Transfer; Von Duprin, Model EPT-10.
a. Door cords shall be armored cable with screw on caps.
b. CPT shall be concealed in the door and frame when the door is closed.
c. CPT shall be steel tube to protect the wires from being cut.
d. CPT with spring tubes are not acceptable and shall be rejected.
e. CPT shall be supplied with a mud box to house all terminators
2. Door Contact; Schlage 679-05HM concealed Door Position Switch for Metal Doors and Frames
3. Power Supply; Schlage PS902.

C. The following components shall be provided and installed by the Owner Data and Security Contractor and are not part of this contract:
1. Door Security Panel; Keyscan CA-150. Plan designation = DSP
2. Credential Reader. Keyscan K-KPR – Keyscan Proximity Reader/Keypad, this reader accepts swipe monitoring of cards, key bobs, and other such devices as well as accepting personal identification numbers (PINs). Plan designation = CR1

PART 3 - EXECUTION

3.1. INSTALLATION

A. The General Contractor shall be responsible for the coordination of all installations associated with this specification. In addition:

1. The Electrical Contractor shall be responsible for providing and installing all conduit required to complete the door hardware installations. This shall include but not be limited to the following:
    a. Conduit between the ADA door paddles (locations as indicated in the electrical plans) and the power assist operator. Conduit is permitted to run exposed in the Supply Room.
    b. Conduit between the Door Security Panel and the D-3 door frame. conduit is permitted to run exposed in the Electrical Room.
    c. Conduit between the Door Security Panel and the Credential Reader. Conduit is permitted to run exposed in the Electrical Room.
    d. No control wiring will be permitted to be buried in mortar/grout. Electrical Contractor is responsible for all bends, pull boxes, or other devices needed keep power and control wiring free of grout and accessible.
2. The Door Hardware Installer shall be responsible for locating, installing, and connecting the Power Supply, Concealed Power Transfer, and Door Contactor
3. The Owners Data and Control Wiring Contractor shall be responsible for installing all of the following, this work is not part of this contract
    a. The Door Security Panel and the control wiring from the DSP to the Power Supply.
    b. The Credential Reader and the control wiring from the DSP to the CR.
4. Install all locksets, and other door hardware using the manufacturers supplied fasteners.
5. Keep all finished surfaces protected during construction.
6. After installation of hardware ensure that all doors, locksets, closures, and other devices function properly in both directions. Adjust openers and closures as necessary for positive latching and ease of operation.

3.2. FINAL INSPECTION

A. Prior to the final inspection walk through do all of the following::
    1. Remove all protective film for hardware such as handles, kickplates and openres/closers
    2. Make final adjustments to all door hardware. Ensure all closures and locking devices are functioning properly and latching securely.

END OF SECTION

SECTION 23 10 00
FACILITY FUEL SYSTEMS

PART 1 – GENERAL

1.1. SUMMARY

A. This section is intended to provide general documentation and contract expectations for all Work related to the installation of equipment needed for the fuel dispensing operations.

B. Work under this section includes all labor, materials, equipment and services; necessary to complete new to complete the design, permitting, installation, and successful commissioning of the fuel dispensing system outlined in the plans and specifications.

C. Refer to the following plan sheets for more information:

1. GS-1 General Site Plan
2. 5 thru 8 Fuel Point Enlarged Plans and Details
3. 14 & 15 Gas Hut Electrical Plans and Details

D. Throughout this section, the Fuel Equipment Sub-Contractor shall be referred to as “FEC” and the General Contractor shall be referred to as “GC”.

1.2. RELATED SPECIFICATIONS

A. The following specifications are pertinent to the planning, acquisition, installation, and commissioning of the completed fuel dispensing system. Other specifications may apply, but should be coordinated through the GC:

1. 00 62 76.13 Sales Tax Form
2. 01 33 23 Submittals
3. 01 45 16 Field Quality Control Procedures
4. 01 45 29 Testing Laboratory Services
5. 01 60 00 Product Requirements
6. 01 74 19 Construction Waste Management
7. 01 78 23 Operation and Maintenance Data
8. 01 78 36 Warranties
9. 01 78 39 As-Built Drawings
10. 01 79 00 Demonstration and Training

1.3. REFERENCES

A. The FEC shall design and install the entire Fuel Dispensing System to meet all applicable Codes and Industry Standards to include but not be limited to the following:
   1. Wisconsin Department of Agriculture, Trade, and Consumer Protection (ATCP) Code, Chapter ATCP 93; Flammable, Combustible, and Hazardous Liquids, https://docs.legis.wisconsin.gov/code/admin_code/atcp/090/93/I/100
   2. All local codes pertaining to applications, design, installation, and inspections.
   3. All codes that pertain to the installation of buried tanks, electrical wiring, and other related Work of the fuel dispensing system.

1.4. FUEL POINT INSTALLATION AND EXPANSION CONCEPT

A. There are 2 primary goals for this project:
   1. Provide above surface and below surface fueling equipment and controls to support minimal dispensing of fuel to the City of Madison fleet until such time as the entire Public Works site at South Point Road is completely built out.
   2. Provide all buried conduit, piping, and other related fuel dispensing equipment necessary for the future build out so no below ground work needs to be done in the future.

B. The concept of operation for gasoline dispensing is as follows:
   1. Install one single buried 10,000 gallon tank for a single unleaded gasoline product.
   2. Install one fully functional 2 hose dispenser on a raised concrete fuel island with curb as indicated in the plans for dispensing gasoline.
   3. Rough-in one fully functional raised concrete fuel island with curb, ready for future expansion, as indicated in the plans for dispensing gasoline.
      a. Rough-in shall include all pipes, empty conduits, valves, and other equipment that will be buried below any paved surface or the gas hut building.
      b. Rough-in shall include any access hole and cover over buried equipment in the gas island to protect stubbed in equipment and materials noted above.
      c. Rough-in shall not include product dispensers, power and data wiring, pumps or motors, or other equipment located within the gas island access hole that can be added during the future expansion.

C. The concept of operation for diesel dispensing is as follows:
   1. Install one single buried 20,000 gallon tank.
      a. Tank shall have a 10,000/10,000 gallon split for holding diesel and bio-diesel fuels.
      b. Provide all equipment and controls necessary for onsite blending and dispensing of diesel and bio-diesel fuels. Blending equipment shall be capable of all of the following:
         i. Dispensing 100% diesel with no bio-diesel blend.
         ii. Dispensing proportional blends of diesel and bio-diesel for all blends from B-5 through B-50.
   2. Install one fully functional 2 hose dispenser on a raised concrete fuel island with curb as indicated in the plans for dispensing diesel and blended diesel fuels. Both hoses on this dispenser shall be capable of dispensing the diesel/bio-diesel blends noted in item 1 above.
   3. Rough-in one fully functional raised concrete fuel island with curb, ready for future expansion of a 2 hose dispenser, as indicated in the plans for dispensing diesel.
      a. Both hoses on this dispenser shall be capable of dispensing the diesel/bio-diesel blends noted in item 1 above.
      b. Rough-in shall include all pipes, empty conduits, valves, and other equipment that will be buried below any paved surface or the gas hut building.
      c. Rough-in shall include any access hole and cover over buried equipment in the gas island to protect stubbed in equipment and materials noted above.
      d. Rough-in shall not include product dispensers, power and data wiring, pumps or motors, or other equipment located within the gas island access hole that can be added during the future expansion.
   4. Rough-in one fully functional raised concrete fuel island with curb, ready for future expansion of a 2 hose dispenser, as indicated in the plans for dispensing diesel.
      a. One (1) hose on this dispenser shall be capable of dispensing the diesel/bio-diesel blends noted in item 1 above.
      b. One (1) hose on this dispenser shall be capable of dispensing B-100 bio-diesel.

a. Rough-in shall include all pipes, empty conduits, valves, and other equipment that will be buried below any paved surface or the gas hut building.
b. Rough-in shall include any access hole and cover over buried equipment in the fuel island to protect stubbed in equipment and materials noted above.
c. Rough-in shall not include product dispensers, power and data wiring, pumps or motors, or other equipment located within the fuel island access hole that can be added during the future expansion.

D. Fuel Terminal Control Unit (FTCU)
1. One (1) FTCU pedestal shall be installed, and fully operational inside the gas hut as indicated in the plans.
2. Rough-in one (1) pedestal FTCU on a raised concrete island with curb, ready for future expansion.
a. Rough-in shall include all pipes, empty conduits, and other equipment that will be buried below any paved surface or the gas hut building.
b. Rough-in shall include any access hole and cover over buried equipment in the island to protect stubbed in equipment and materials noted above.
c. Rough-in shall not include FTCU, power and data wiring, pumps or motors, or other equipment located within the concrete island access hole that can be added during the future expansion.
3. All automation operations shall be done with data/control cables in appropriately sized conduit run between dispenser locations and FTCU locations. No dispensing operation shall be conducted using WIFI.

1.5. GENERAL CONTRACTOR (GC) REQUIREMENTS

A. Any corporation, partnership, sole proprietor, independent contractor, or person that provides or offers to provide installation, removal, testing, lining, cleaning, assessments, cathodic testing or cathodic protection system design or installation for a tank system regulated under Wisconsin Administrative Code ATCP 93 must have a certification issued by the Wisconsin Department of Agriculture, Trade and Consumer Protection.
1. The GC shall be responsible for contracting with a State Of Wisconsin Certified Contractor that meets the above requirements.
2. The GC shall ensure the FEC is certified for the duration of this contract, and shall provide copies of all FEC Company and Individual Certifications as Administrative Submittals, to the Project Management Website – Submittals Library, prior to submitting any fuel equipment submittals for review.

B. The GC shall be responsible for scheduling and coordinating the FEC Work into the overall project schedule. This shall include but not be limited to coordination between other subcontractors having work in/through the Fuel Point Area.

C. The following Work in the Fuel Point Area is the responsibility of the GC. See Section 1.5 below for Work by the FEC.
1. General site excavation.
2. General fill and compaction of the sub-base and base materials including the geo grid liner.
3. Geo-grid liner in the deeper excavation for the buried tanks (excavation and tanks by FEC).
4. All concrete flat work including all curbing as located and designed by the FEC.
5. All construction related to the Gas Hut including the exterior sidewalk, and ADA ramp.
6. The installation of all area light bases, poles and fixtures in the plans and specifications.

1.6. FUEL EQUIPMENT CONTRACTOR (FEC) REQUIREMENTS

A. The FEC shall be responsible for meeting all requirements and providing the GC with all documentation outlined in section 1.4.A above.

B. The FEC shall be responsible for the design and installation of all equipment necessary to complete the fuel dispensing system installation as shown in the plans and specifications.
1. The fuel dispensing system shall meet all applicable codes and regulations including Wisconsin Administrative Code ATCP 93.
2. Meet with designated city staff for plan and equipment review prior to submitting State of Wisconsin Applications for Plan Review.

C. The FEC shall be responsible for making all applications associated with plan/permit review and approvals, paying for all fees associated with said applications, scheduling all inspections, and commissioning the completed fuel dispensing system.

D. The FEC shall coordinate with the GC all Work, deliveries, and inspections.

E. The FEC shall prepare and submit, through the GC, all shop drawings including: plans, elevations, equipment cut sheets, piping diagrams, and electrical schematics associated with the fuel dispensing system.

F. The following Work in the Fuel Point Area is the responsibility of the FEC.
1. Any extra excavation required for the burial and securing of buried storage tanks and equipment.

2. Back fill and compaction of buried storage tanks and equipment up to the level of the geo-grid.
3. The installation of all storage tanks, equipment, piping, conduit, wiring, dispensing equipment and control equipment required for a complete fuel dispensing system.
4. The FEC shall be responsible for the final testing, inspections, and commissioning of the fuel dispensing system.

1.7. OPERATION AND MAINTENANCE DATA

A. The FEC shall provide O&M data for all equipment associated with the fuel dispensing system, see specification 01 78 23 for more information.

1.8. WARRANTY

A. The FEC shall warrant for one year the complete installation of all fuel dispensing equipment associated with this contract and installation. Contractors warranty shall be in the form of a written letter on company letterhead referring to the contract information, dates of installation and acceptance, signed by an authorized representative of the Contractors Company.
   1. The FEC warranty shall include but not be limited to the following:
      a. Transportation to and from the location as often as needed during the warranty period.
      b. All labor and materials necessary to properly and thoroughly trouble shoot the system.
      c. All fees associated with the shipping of any component that needs to be returned or supplied by the manufacturer for repair or replacement.
      d. All labor and materials required to remove, repair, replace, or re-install any component.

B. The FEC shall also provide, separately from his/her installation warranty, all manufacturers warranties associated with installed components of the completed installation. See specification 01 78 36 for more information.
   1. Warranties shall be individually submitted for each piece of equipment by type. A combined warranty of all equipment will not be accepted.
   2. Multiple pieces of equipment of the same type and specification do not need to have individual warranties provided.

1.9. AS-BUILT DRAWINGS

A. The FEC shall coordinate with the GC the scheduling of the Surveyor for digitally surveying all equipment and piping locations associated with the fuel dispensing system. This shall include all buried equipment, piping, and conduits. See specification 01 78 39 for more information.

1.10. DEMONSTRATION AND TRAINING

A. The FEC shall provide Demonstration and Training of all fuel dispensing equipment for designated city staff. See specification 01 79 00 for more information. Coordinate training sessions with the City Project Manager a minimum of 2 weeks prior to training.

PART 2 - PRODUCTS

2.1. GENERAL

A. All equipment and materials provided and installed for the fuel dispensing system shall be new and undamaged.
B. All equipment installed shall be as per approved submittals and approved plan reviews.
C. Some equipment below is noted as “no alternates” to match existing equipment at other fueling sites that require routine maintenance or replacement. No alternates for this equipment will be considered.
D. The Fuel Dispensing System shall be compatible with “Inform” and “EJ Ward Fuel View” software platforms for Tank Level Sensor (TLS) monitoring and EJ Ward for fuel dispensing authorization.

2.2. BURIED UNDERGROUND FUEL TANKS

A. Buried underground fuel tanks shall be equal to ZCL/XERXES tanks comprised of the following specifications:
   1. Single or dual compartment fiberglass tanks as follows:
      a. One (1) - 10,000 gallon tank for gasoline fuel storage, see sheet 5 for location. To be compatible with various grades of un-leaded fuels and ethanol-blended fuels.
      b. One (1) - 20,000 gallon tank for combined diesel and bio-diesel fuel storage, see sheet 5 for location.
         i. Split tank, 10,000 gallon diesel and 10,000 gallon bio-diesel
         ii. With onsite blending capabilities for 0% to 50% blends of diesel/bio-diesel fuel
   2. Ribbed double wall tank construction

3. Continuous leak detection system.
4. Thirty (30) year manufacturer's warranty.

2.3. FUEL DISPENSERS

A. Gasboy Atlas 9853KXTW1 side load, electronic fuel dispensers for diesel and gasoline with the following specification and options. No alternates of this will be permitted.
1. Dual hose, single product, 22 GPM
2. All Panels to be Stainless Steel (SS)
3. Pulse Output Interface, Dual Channel Dual Pulse
4. R18189-30 Internal filter, Standard 30 Micron
5. Slowdown Valve (PP)
6. All hoses and piping to be 3/4"
7. High hose retractor, external post mounted
8. Standard 12-month warranty
9. Hose, nozzle, swivel, breakaway

B. Dispensers shall be complete with all hoses, dispensing nozzles for unleaded gasoline or diesel, and pulsers.

2.4. SUBMERSIBLE FUEL DISPENSER PUMPS

A. Provide/install one submersible pump per fuel type.
B. Pumps shall be capable of dispensing fuel at a rate of 15-20 gpm and be a minimum of 1.5hp high psi..

2.5. TANK LEVEL SENSOR

A. Provide and install Veeder-Root TLS4c Tank Level Sensor unit (no alternates) capable of doing all of the following:
1. Inventory level monitoring
2. Interstitial space monitoring
3. Overfill alarm monitoring
4. Overfill alarm notification
5. Communicates with fuel control software (EJ Ward Fuel View) for TLS information to be displayed in Fuel View.

PART 3 - EXECUTION

3.1. BURIED UNDERGROUND FUEL TANKS

A. Provide excavation for the buried fuel tanks, minimum depth below finished grade to be 4'-0" to top of tank.
1. Fuel Equipment Contractor shall ensure in his/her design that depth of bury and/or additional insulation for the bio-diesel storage is kept at appropriate industry storage temperatures for this product.

B. Coordinate installation of geo-grid in tank pit with GC.
C. Install tanks, dead-man anchors, tie down straps, observation wells and leak detection per approved plans.
D. Install tank access structures.
E. Backfill tank with appropriate backfill and compact.
F. Install and connect submersible pumps.
G. Install and connect overfill protection system.

3.2. UNDERGROUND FUEL PIPING

A. Install all underground fuel piping a minimum of 2'-0" below the bottom of all pavements
B. Provide continuous detectable caution tape for "BURIED FUEL LINE" along trench 1'-0" above all fuel piping.
C. Provide all pipes and fittings required for a complete installation according to approved design.

3.3. UNDERGROUND ELECTRICAL AND DATA WIRING

A. Install all underground electrical and data wiring in appropriate sized conduit. All conduit shall be a minimum of 2'-0" below bottom of all pavements.
1. Install data cabling from fuel dispensing system to the TLS system in the gas hut.
2. Install data cabling for the automation equipment pedestal.

B. Provide continuous detectable caution tape for "ELECTRICAL" and "DATA" along trench 1'-0" above all conduit.
C. Use large radius bends at all changes in direction horizontally and vertically.
D. Data cable shall not be run in the same conduit as line voltage wiring.

3.4. INSTALL FUEL DISPENSING SYSTEM

A. Install and connect all fuel dispensing system equipment and hardware in the electrical room of the gas hut.
B. Connect all monitoring equipment.
C. Update all software platforms to latest software release.

3.5. CONNECT EMERGENCY SHUT-OFF DEVICE

A. Locate emergency shut-off device as indicated on the southwest corner of the gas hut.
B. Shut-off device shall be set at an ADA compatible height located at the bottom of the ADA ramp.
C. Post all required signage at dispensing islands and at emergency shut-off device.

3.6. COMMISSIONING THE FUEL DISPENSING SYSTEM

A. Coordinate with owner to provide sufficient fuel for testing and commissioning the fuel dispensing system.
B. Test system dispensing from all dispenser nozzles to ensure accurate dispensing.
   1. Test all installed dispensers for accurate volume dispensing of products.
   2. Test all diesel dispenser equipment for accurate mixing of diesel and bio-diesel products.
C. Test all system software for dispensing authorization, dispensing reporting, tank level sensors, and other related functions.
D. When all installation testing is complete schedule all required final inspections and dispenser certifications.
E. Provide required Owner training after all inspections and certifications are complete.

END OF SECTION

SECTION 26 27 29
ELECTRIC VEHICLE CHARGING STATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This specification provides information as it relates to the rough-in installation of Electric Vehicle Charging Stations (EVCS) and related components.

1.2 RELATED SPECIFICATIONS

A. 01 31 13 Project Coordination
B. 01 31 19 Project Meetings
C. 01 33 23 Submittals
D. 01 76 00 Protecting Installed Construction
E. 01 78 39 As-Built Drawings

1.3 SUBMITTALS

A. The Contractor shall provide submittals for all equipment and materials required for a complete rough-in installation for the future Electric Vehicle Charging System. Submittals shall include conduit, bends, boxes, concrete and rebar submittals

1.5 WARRANTIES AND GUARANTEES

A. Upon completion and acceptance of the contract the contractors shall provide a one (1) year workmanship warranty from the date of substantial completion.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials used for the rough-in of the ECVS shall match other materials of similar nature previously specified in plans, details, and specifications.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prior to a pre-installation meeting the General contractor shall verify with the City Project Manager the final size, location, and installation details required for the concrete pads to be installed for the future ECVS.
B. The GC shall locate and layout the locations for the ECVS concrete pads to be installed under this contract.
   1. The GC shall conduct a pre-installation meeting with all of the following:
      a. General Contractor
      b. Electrical Contractor
      c. City Staff including the Project Manager, Fleet Services, and Renewable Energy Installation Team
   2. Pre-installation meeting shall verify locations of pads, conduits, stub outs and other related information prior to the installation of materials.
C. The GC shall be responsible for protecting the finished pads during construction.

END OF SECTION

SECTION 26 31 00
PHOTOVOLTAIC SYSTEM PERFORMANCE REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section includes general performance requirements that apply to installing a roof mounted solar electric (PV) system for this project

B. Contractor is the Designer of Record for this system. Contractor is required to provide a Structural PE (Professional Engineer) Stamp for the structural design and an Electrical PE Stamp for the overall system design.

C. Both the structural and electrical stamps are to be provided from experienced PV designers with at least 5 similar completed projects.

D. Contractor is required to have experience with at least 5 similar completed PV projects.

E. Product specifications included in this section are the Basis for Design. Design substitutions shall meet the minimum performance requirements defined in this section. Contractor shall select number of inverters and perform string sizing.

F. Related Work and Requirements:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

G. Incentive Paperwork:

1. Contractor to provide support with Owner's application for Focus on Energy incentives.

1.2 DEFINITIONS

A. MPPT: Maximum power point tracking.

B. STC: Standard test conditions, 1000 W/m2, 1.5 air mass, and 25°C cell temperature.

C. NABCEP: North American Board of Certified Energy Practitioners

D. PTC: PV USA Test Conditions, 1000 W/m2, 1.5 air mass, 20°C air temperature, and 1 meter/sec. wind speed.

E. Voc: Open circuit voltage

F. Isc: Short circuit current.

1.3 SUBMITTALS

A. Experience: Submit resumes for individuals involved with the design and construction of the PV System. Submit references and summaries of five similar projects that these individuals have completed.

B. Product Data: For each type of component indicated below. Include rated capacities, operating characteristics, and furnished specialties and accessories. All product data submittals shall be submitted for review by Owner prior to purchasing any materials or equipment.

1. Solar panels
2. Combiner boxes and fuses
3. Grid tied inverters, including efficiency data.
4. Solar panel structural system, including rail, clamps, and brackets.
5. Manufacturer's installation instructions.

C. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. All shop drawings shall be submitted for review by Owner prior to purchasing any materials or equipment.
1. Dimensioned AutoCAD plan drawings of equipment including solar panel array, inverters, disconnects, combiner boxes, metering, and electrical routing.
2. Provide AutoCAD drafted three-line wiring diagram of solar PV system indicating ratings of all panels and inverters, wire and conduit types and sizes, and disconnects.
3. Wiring Diagrams: Power, signal, and control wiring.

D. Design Calculations
1. The following design calculations shall be performed by Contractor and submitted for review by Owner prior to purchasing any materials or equipment.
   a. Electrical calculations, including string sizing, inverter selection, and voltage losses.
   b. Structural calculations, including rail spans, wind and snow loading, required ballast weights, and roof strength calculations.

E. Permitting and Agreements
1. The following permits and agreements shall be prepared by Contractor on behalf of the Owner. All approved permits and agreements shall be submitted for review by Owner prior to purchasing any materials or equipment.
   a. Utility interconnection agreement
   b. Building permit
   c. Electrical permit

F. As built drawings:
1. Dimensioned AutoCAD plan drawings of equipment including solar panel array, inverters, disconnects, combiner boxes, metering, and electrical routing.
2. Provide AutoCAD drafted three-line diagram of solar PV system indicating ratings of all panels and inverters, wire and conduit types and sizes, and disconnects.

G. Field quality-control test reports.
1. Include voltages and power output for each string. Measure and record solar intensity during testing. Include time, date, and weather conditions of test.

H. Operation and Maintenance Data: For panels, inverter, metering, and monitoring. In addition to items specified in Division 01 include the following:
1. Instructions for operating equipment.
2. Identification of operating limits which may result in hazardous or unsafe conditions.
3. Document ratings of equipment and each major component.
4. Technical Data Sheets.
5. Wiring Diagrams.
6. Parts list.

I. Warranty: Copies of all manufacturer's and installer's warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:
1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
2. Installer must have PV Installer certification through NABCEP.

B. Source Limitations: Obtain panels from a single manufacturer, of a single type and rating. Obtain inverters from a single manufacturer, of a single type and a single rating.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with NFPA 70 and all applicable state and local codes

1.5 COORDINATION

A. Coordinate metering and interconnection agreement with electric utility. Contractor shall pay all interconnection fees including the application review fee, engineering review fee, and distribution system study fee. Contractor shall submit all required forms to utility.

1.6 WARRANTY

A. Installer must provide a two year installation warranty covering any defects of the installation.

B. Panel Warranty Period:

1. 5 years workmanship warranty.
2. 10 year 90% linear power output warranty.
3. 25 year 80% linear power output warranty.

C. Inverter Warranty Period: 15 year warranty.

PART 2 – PRODUCTS

2.1 SOLAR MODULES

A. Available Manufacturers: Subject to compliance with performance requirements, manufacturers offering products that may be incorporated into the Work include:

1. Canadian Solar
2. Hanwha Q-cells
3. Heliene
4. REC
5. Trina Solar.

B. If an alternate product is proposed, bid is to document how the proposed solution is more cost effective to the owner. Follow substitution request procedure per 01 25 13.

C. Capacities and Characteristics:

1. All modules shall be of a single type from a single manufacturer.
2. Power Output Ratings: STC rated power of at least 360 W.
3. DC Array size at least 4.32 kW
4. AC Energy Produced between 4,374 and 4,954 kWh/yr based on the following assumptions:
   a. http://pvwatts.nrel.gov/pvwatts.php (PV Watts version 1)
   b. Module Type: Standard
   c. Array Type: Fixed (roof mount)
   d. System Losses: 16.65%
   e. Tilt: 18 degrees
   f. Azimuth: 90 degrees
   g. DC to AC Size Ratio: 1.2
   h. Inverter Efficiency: 96%
   i. Ground Coverage Ratio: 0.4
5. Power tolerance of less than 5% variation (maximum minus minimum). Minimum tolerance of -0%.
6. Manufactured in the U.S., Mexico or Canada
7. Nameplates: To identify electrical characteristics, manufacturer's name and address, and model and serial number of component.
8. Module efficiency: minimum 17.00%
9. 72 or 144 cell

D. Materials and construction

1. Monocrystalline or Polycrystalline
2. Junction box with bypass diodes.
3. Output Connections: Factory wired separate positive and negative leads sized per division 26 wire requirements with locking quick disconnects, rated for use in direct sunlight. Shall meet all requirements of NEC article 690.33.
4. Anodized aluminum frame with drainage holes and grounding holes.
5. Operating temperature range of -40°C to +85°C.
6. Withstand 1” diameter hail at 50 mph without damage.
7. Load rated at 5400 Pa (113 psf) when used with two rail system.

2.2 INVERTERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
   1. Enphase

B. If an alternate product is proposed, bid is to document how the proposed solution is more cost effective to the owner. Follow substitution request procedure per 01 25 13.

C. Standards
   1. IEEE 1547
   2. UL 1741 – anti-islanding.

D. Electrical characteristics
   1. AC kW rating: Minimum DC-to-AC ratio of 1.2
   2. Output voltage: 208VAC (-12%, +10%), 3 phase.
   3. Frequency: 60 Hz sine wave
   4. Input voltage: Coordinated with solar array.
   5. Max Voc: Coordinated with solar array.
   6. Max DC current: Coordinated with solar array.
   7. Startup voltage: Coordinated with solar array.
   8. Output power factor: Unity
   9. DC to AC conversion efficiency:
      a. 97.5% CEC rated efficiency
   10. A/C and D/C rapid shutdown compliant with NEC 2017

E. Features
   1. Transformerless design.
   2. DC side ground fault protection.
   3. Inverter must limit power output to nameplate value. If connected to an array capable of producing more than the inverter's capacity, the inverter must limit the power without damage.
   4. Maximum power point tracking over the range of voltages of the array, at the ambient temperatures of the site.
   5. Communication device for online monitoring.
   6. NEMA 3R enclosure

2.3 PV WIRING

A. Type PV-WIRE, #10AWG, from array to combiner box, and where used as a jumper for connection between modules.

B. UV-Stabilized Cable Ties:
   1. Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
   2. Minimum Width: 3/16 inch (5 mm).
   3. Tensile Strength at 73 °F (23 °C), According to ASTM D 638: 12,000 psi (82.7 MPa).
   4. Temperature Range: -40 to +185 °F (-40 to +85 °C).
   5. Color: Black.

C. Ampacity of PV source circuits shall be a minimum of 156% of the sum of parallel strings short circuit currents.
   1. Shall be sized to limit voltage drop to 1.5% from array to inverter during full production at MPPT voltage at maximum ambient temperature.
   2. Shall be in metallic conduit from combiner box, if installed, to inverter.

2.4 RACKING & ROOF ATTACHMENT & ROOF PENETRATIONS

A. Tilt Angle of Modules: Flush to roof

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
   1. Products for pitched roofs:
      a. Roof attachment
         i. S-5 Clamps (for standing seam installations)
            A.) Use S-5-U, S-5-S, or the required clamp for the specific roofing product.
            B.) S-5 mini clamps are not acceptable.
      b. Racking
         i. Iron Ridge
         ii. Unirac

2.5 METERING

A. Refer to Division 26 specifications.

2.6 INTERNET BASED MONITORING

A. Provide standard package from inverter manufacturer and connect to the City Network. Coordinate with Owner. Contractor is required to test monitoring to confirm it is functioning.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of electrical connections. Verify actual locations of connections before panel installation.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ARRAY REQUIREMENTS

A. Install panels on racking designed for solar (PV) panels.
B. Coordinate installation with roof shop drawings.
C. Structural Performance: Installation shall withstand all local wind and snow loads, and all local building department requirements.
D. If applicable, Slip sheet is to be used between ballasted racking and roof membrane
E. All fastening hardware must be stainless steel.
F. All materials must be metallurgically compatible where different materials are in contact with each other.
G. Roof penetrations shall be made watertight using methods that are standard to the roofing industry, are approved by the roofing manufacturer, and that protect the warranty of the roof.
H. The panels shall be connected in arrays with the following characteristics:
    1. Total DC peak STC rated power of all panels in the array shall be minimum 4.36 kW. The panels shall be divided into even arrays between the inverters.
    2. The panels shall be installed only in the area outlined on the architectural roof drawing.
    3. If an alternate layout is proposed, bid is to document how the proposed solution is more cost effective to the owner. Follow substitution request procedure per 01 25 13.
    4. If needed, Each array shall be provided with a combiner box.
    5. The panels shall be installed with long axis running east west as shown on architectural roof drawing.
    6. PV panel cables may be installed exposed where routed directly behind panels, but all cables shall be installed in a section of conduit where crossing part of the roof not under a panel. Conduit running across roof shall be supported on roof using Cooper B-Line Dura-Blok or equivalent.
    7. All PV panel cables shall be installed in a neat and workmanship like manner. Excess wire shall be coiled and bundled neatly and supported securely in an area where they are not subject to environmental degradation, such as from wind, sun, and animals. Attach PV panel cables to racking with zip-ties listed for use in direct sunlight.
    8. Panels shall be connected in series and parallel to match voltage and current ratings of inverter, across all ambient temperatures common to site (-25°C to 40°C).
        a. Open circuit voltage of array on coldest day of year in full sunlight shall not exceed maximum operating voltage rating of inverter, panels, or any other equipment.
        b. Open circuit voltage on warmest day of year in morning sunlight conditions (200W/m2 irradiance) shall exceed inverter startup voltage. Voltage under operating MPPT conditions, minus any voltage drop over conductors, shall exceed minimum inverter input voltage.
        c. Available short circuit current multiplied by 1.25 shall not exceed ratings for the inverter or any panels.
        d. All series strings of panels shall have same performance characteristics.

3.3 ELECTRICAL INSTALLATION

A. Ground equipment according to Division 26
    1. Size grounding conductors per NEC articles 250 and 690.
    2. All conductive equipment enclosures must be grounded.
    3. All panel frames must be grounded.
        a. The removal of any panel shall not interrupt a grounded conductor to another photovoltaic source circuit.

B. Install wiring, combiner boxes, conduit, disconnects, inverter, web based monitoring hardware, sensors and other equipment according to Division 26.
   1. Exception – If Division 26 specifies otherwise, All Solar Electric Conduit material is to be metallic.
C. Connect wiring according to Division 26.

3.4 IDENTIFICATION

A. Identify and label system components according to Division 26.
   1. Provide a unique label for each inverter, PV output circuit, combiner box, PV Source circuit, and panel. Labeling shall match labeling shown on as-built diagram and plan provided by contractor.
B. Provide all labeling required by NEC article 690, including, but not limited to:
   1. Label disconnects capable of being energized from both directions as such.
   2. Provide plaque at utility service disconnect per article 690.56B. Field verify exact location.
   3. Label each photovoltaic disconnecting means per NEC article 690.53.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections as indicated below and prepare test reports. Correct any deficiencies.
   1. Visually inspect all connections.
   2. Visually inspect all supports.
   3. Measure Voc of each individual string of panels under full sunlight.
      a. Verify Voc of all strings are balanced.
      b. Verify measured Voc against calculated Voc for the ambient temperature. Extrapolate Voc to temperatures expected at site, and verify they are within inverters ratings.
   4. Measure Isc of each string of panels.
   5. Verify correct operation of inverter.
   6. Verify correct operation of complete system.
   7. Replace any defective panels. Panels shall be replaced at contractor's expense.

3.6 DEMONSTRATION

A. Simulate power outage by interrupting normal source, and demonstrate that system disconnects from utility.
B. Provide owner's maintenance personnel with minimum two hour training session and in compliance with Div 1 Training Requirements.
   1. Provide training on function of each piece of equipment.
   2. Provide training on maintaining the system.
   3. Explain means of disconnecting the system, and principals of operation and safety.

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1. SUMMARY

A. This section includes specifications and installation requirements for industrial/commercial chain link fence and gates.

B. Work under this section includes all labor, materials, equipment and services; necessary to complete new fencing, relocated fencing, new gate, relocated gate, new automated gate opening equipment, relocated automated gate opening equipment, traffic loops, and other related equipment per plans.

C. Refer to the General Site Plan sheet GS-1 for more information on locations.

D. It is the responsibility of the Fencing Contractor to coordinate all required work with other trades and to include that work in their bid for this item.

1.2. RELATED SPECIFICATIONS

A. 01 31 13 Project Coordination
B. 01 31 19 Project Meetings
C. 01 31 23 Project Management Web Site
D. 01 33 23 Submittals
E. 01 60 00 Product Requirements
F. 01 74 13 Progress Cleaning
G. 01 76 00 Protecting Installed Construction
H. 01 78 23 Operation and Maintenance Data
I. 01 78 36 Warranties
J. 01 75 39 As-Built Drawings
K. 01 79 00 Demonstration and Training

1.3. REFERENCES

A. ASTM A121: Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.

B. ASTM A123/A 123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A153/A 153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
D. ASTM A392: Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
E. ASTM A491: Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.
F. ASTM F567: Standard Practice for Installation of Chain-Link Fence.

1.4. QUALITY ASSURANCE

A. The Fence/Gate Contractor shall have a minimum of 5 years experience installing similarly sized commercial perimeter security fencing and gating installations. Provide references to similar projects installed if so requested by the owner.
B. The Fence/Gate Contractor shall be responsible for coordinating his/her Work with other trades and divisions as needed for a complete installation. This shall include pre-installation meetings for locating equipment, conduit, cabling, control devices, and other materials and equipment required by this installation.
C. The GC shall be responsible for ensuring all project coordination, pre-installation meetings, submittals and other such project management responsibilities are conducted efficiently, and according to the project specifications and schedules.

1.5. SUBMITTALS

A. The Fence/Gate Contractor shall provide a complete submittal package in a timely manner to allow sufficient review time prior to ordering the system components for a complete installation. No materials shall be ordered until all fence and gating material submittals have been reviewed and approved.
B. Multiple submittals under this specification are preferred in order to expedite submittal review. DO NOT submit all parts and components under one submittal. At a minimum, submit the following three (3) individual submittals:
    1. Fencing and Gating; including but not limited to all fence, gate, poles, caps, barbed wire, and other miscellaneous hardware required for a complete installation.
    2. Gate Operating Equipment; including but not limited to hold open devices, radio controlled devices, and push button devices.
    3. Traffic Loop Equipment; including but not limited to al loop and connecting hardware to support the loop system described below.
C. Submittals shall consist of product information cut sheets that clearly show shop drawings, performance data, manufacturing data (including point of origin and processing), and other related information to ensure the supplied product is as specified or is an approved equal.
D. The Fence/Gate Contractor shall include any required documentation or licensing as needed for radio-controlled equipment to ensure compliance with the FCC is being followed.

1.6. PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver materials with manufacturer's tags and labels intact.
B. Store all materials in a manner that keeps material clean and free of damage. See Specification Section 01 60 00 Product Requirements for more information.
C. Damaged materials shall not be installed.

1.7. WARRANTY

A. The Fence/Gate Contractor shall warrant for one year the complete installation of equipment and components associated with this contract and installation. Contractors warranty shall be in the form of a written letter on company letterhead referring to the contract information, dates of installation and acceptance, signed by an authorized representative of the Contractors Company.
    1. The Fence/Gate Contractor warranty shall include but not be limited to the following:
        a. Transportation to and from the location as often as needed during the warranty period.
        b. All labor and materials necessary to properly and thoroughly trouble shoot the system.
        c. All fees associated with the shipping of any component that needs to be returned or supplied by the manufacturer for repair or replacement.
        d. All labor and materials required to remove, repair, replace, or re-install any component.
B. The Fence/Gate Contractor shall also provide, separately from his/her installation warranty, all manufacturers warranties/guarantees associated with installed components of the completed installation.

PART 2 - PRODUCTS

2.1. RECYCLING AND REUSE OF EXISTING MATERIALS

A. The Fence/Gate Contractor is responsible for reviewing all existing fence and gating materials and equipment, determining the salvageability of the materials and equipment, and including all costs for replacement of existing materials and equipment in their bid price.

B. The Fence/Gate Contractor shall carefully dismantle existing fencing materials to be removed and reuse undamaged components in the new perimeter fence whenever possible. Reusable materials shall include but not be limited to the following:
   1. Woven Fence Fabric
   2. Top and Brace Rails
   3. Post Caps and Barbed Wire
   4. Existing vehicle gate
   5. Any related hardware

C. The following items shall not be reused but shall be removed and prepared for recycling
   1. Line and Terminal Posts embedded in concrete or corroded.
   2. Any parts in item A above that cannot be reused due to damage or impractical reuse
   3. Concrete post foundations

D. All salvaged material shall be neatly stored and protected until reused.

E. Materials to be recycled shall be sorted and disposed of by material type. Posts and pipes shall be cut clean from their concrete base.

2.2. ACCEPTABLE MANUFACTURERS

A. Except where specifically noted below all fence and gate, materials and components, shall be American Made products that meet or exceed the ANSI standards listed in this specification. Provide information as to point of origin and all processing with the component submittals.

2.3. NEW FENCING PRODUCTS

A. Fence Framework
   1. Terminal Posts; All end, corner, and pull posts shall be 3” O.D., 5.7#/ft. with a minimum bending strength of 486 pounds under a 6' cantilever load coated with 2.0 ounces of hot dipped zinc in accordance with ASTM A123/A123M.
   2. Line Posts shall be C-Section roll formed from steel conforming to ASTM A1011/ A1011M, Grade 45, 1.875" x 1.625" with minimum bending strength of 247 pounds under a 6' cantilever load, continuously coated with 2.0 ounces of GALFAN Alloy in accordance with ASTM A875/A875M.
   3. Top and Brace Rails shall be roll formed section of 1.5/8" O.D., 5.7#/ft. channel shaped rail with a minimum vertical bending strength of 237 pounds on a 10' span continuous coated with 2.0 ounces of GALFAN Alloy in accordance with ASTM A875/A875M. Top rail couplings 6" minimum in length will be spaced at maximum 21' centers.

B. Chain link fabric shall be aluminized conforming to ASTM A491;
   1. Woven from 9 gauge wire 2" x 2” mesh
   2. Type I, 0.40 ounce per square foot of surface area
   3. Knuckled at bottom selvage
   4. Twisted at top selvage
   5. Fabric Height = 8 feet
   6. Color = Aluminum

C. Tension and Brace Bands; shall comply with ASTM F626, minimum of 3/4” wide, 12 gauge steel, galvanized. With galvanized bolts and nuts.

D. Tension Bars; shall comply with ASTM F626, galvanized steel flat bar, consisting of a single piece 7’-10” long with a cross section of 3/4” wide by 3/16” thick.

E. Truss Rod Assembly; shall comply with ASTM F626. 3/8” steel truss rod with a pressed steel tightener, assembly capable of withstanding 2,000 lbs. of tension.

F. Caps; shall comply with ASTM F626
   1. Terminal Post Dome Caps; pressed steel, sized to fit Terminal Post outside diameter, galvanized after fabrication.
   2. Rail and Brace End Caps; formed steel caps, sized to fit outside diameter of pipe being capped, galvanized after fabrication.
   3. Line Post Caps; formed steel caps, sized to fit outside diameter of line post, sleeved for top rail, with 45 degree 3 strand barbed wire extension, galvanized after fabrication.

G. Barbed Wire; shall comply with ASTM A121, double 12 gauge twisted strand wire with 4 point 14 gauge round barbs spaced at 5" on center, coated the same as the chain link fabric.
H. Tension Wire; shall comply with ASTM A824, 7 gauge, coated the same as the chain link fabric.
I. Tie Wires; shall comply with ASTM F626, 9 gauge steel, preformed.

2.4. NEW HORIZONTAL SLIDING GATE

A. The New Vehicle Cantilevered Slide Gate located at the Yard Drive entrance shall be as manufactured by the Tymetal Corporation (no alternates).
   1. Fortress Heavy Duty Aluminum Gate of standard manufacturers design.
      a. Reference the Tymetal product information, specifications, and details from this website: https://www.tymetal.com/industrial-commercial/cantilever-gates/fortress-heavy-duty/
   2. Gate shall provide a clear opening of 30'-0"
   3. 8'-0" high to match perimeter fencing specifications, with 18" high 3 strand barbed wire top.
   5. All posts and rails as per manufacturers details
   6. Provide owner with manufacturers written 5 year warranty at contract closeout.
B. Gate Operator; the new gate operator located at the Yard Dr. gate shall be as manufactured by Linear-Osco Operators (no alternates).
   1. Model HSLG-1, 460V, 3 phase, 1 HP, https://linear-solutions.com/product/hslg-series-slide-gate-opener/
   2. Cabinet to be weather proof, hinged, lockable, color=black powder coat
   3. Include all other manufacturers standard features.
   4. Provide Linear Vehicle Loop Detector, Model 2510-195, and related materials/equipment as required for a complete under pavement installation as indicated in details on sheet GS-2.
   5. Contractor shall coordinate with City Project Manager and Traffic Engineering Radio Shop for installation of radio controlled operator prior to installation of the equipment.
   6. Provide owner with manufacturers written 5 year warranty at contract closeout.

2.5. RELOCATED GATE

A. Remove and reuse the existing service road gate, all mounting hardware (pulleys, guides, etc.) and electric gate opening equipment.
B. Remove and recycle existing support poles embedded in concrete. Supply new poles of the same size and quality as the support poles currently being used.
C. Provide new loop detection materials that are compatible with the existing gate operator for a complete under pavement installation as indicated in details on sheet GS-2.

2.6. CONCRETE

A. The Fence and Gate Contractor shall be responsible for all forming and pouring of concrete required for a complete installation of all fencing, gate, and gate operator components.
B. Equivalent to ASTM C94.
C. Minimum of 2500psi at 28 day compressive strength.

PART 3 - EXECUTION

3.1. PRE-INSTALLATION

A. The Fence and Gate Contractor shall be responsible for coordinating all pre-installation meetings with the General Contractor, other sub-contractors, and the Owner prior to installing components associated with the installation of perimeter fencing and vehicle gates as indicated in the plans and specifications. Pre-installation meetings shall include but not be limited to the following:
   1. Removal and relocation of existing vehicle gate and equipment.
   2. Installation of new vehicle gate and equipment.
   3. Removal of existing perimeter fencing and installation of new perimeter fencing.
B. Verify with the General Contractor that all final grading along the new fence line has been completed. DO NOT begin installation until all grading has been completed.
C. Verify all submittals of fence and gate components have been reviewed and approved by the owner.
D. Verify there are no changes to the location of the new fence or gates.
E. Verify all materials are on site, clean, undamaged, and ready for the installation.

3.2. PREPARATION

A. Lay out the complete fence line. All measurements shall be parallel to the ground

B. Locate and mark all corner posts where the fence line changes direction by more than 10 degrees.
C. Locate and mark all gate posts required to maintain gate support and security during operation.
D. Locate and mark positions for all line posts. Line posts shall have equal distance spacing between corner posts. Spacing between line posts shall not exceed 10 feet.

3.3. INSTALL POSTS

A. The minimum post hole diameter shall be not less than 3 times the outside diameter of the post being put into the hole. Verify all post hole requirements for the installation of the vehicle gate with the gate manufacturer.
B. Minimum post hole depth shall be 4 feet below grade for all posts.
C. Minimum concrete cover at bottom of the post shall be 3 inches.
D. Place post in hole to depth of post bottom, plumb post to 1/4" in 10 feet.
E. Fill hole with concrete to approximately 2 inches above grade, crown the top surface away from post down to approximately 1 inch above grade

3.4. INSTALL LINE POST CAPS, TOP RAILS, AND BRACE RAILS

A. Reuse salvaged existing parts first.
B. Install all barbed wire line post caps to line posts with 45 degree arm point outside of the perimeter.
C. Install all top rails through line post cap sleeves.
D. Install rail caps at all terminal post ends of top rail.
E. Install all brace rails and caps as needed at terminal posts.
    1. Install all Truss Rod Assemblies.

3.5. INSTALL FENCE FABRIC

A. DO NOT start fabric installation until the minimum concrete strength has been achieved by verified testing.
B. Reuse salvaged fence fabric first.
C. All fence fabric between terminal posts shall be one complete piece of fabric. Weave additional rolls together to increase length or unweave partial rolls to decrease length.
    1. Fence fabric shall be approximately 1 inch off and parallel to finished grade.
D. Fasten fabric at first terminal post with tension bar and tension bands.
E. Stretch fabric tight to first line post
    1. Secure fabric to top rail, line post, and brace rail with wire ties, maximum of 2 feet on center.
    2. Tighten brace rail and truss rod assembly.
F. Continue to stretch fabric between line posts to next terminal post securing with wire ties at top rails and each line post.
G. Secure fabric to terminal end post with tension bar and tension bands.

3.6. INSTALL BARBED WIRE

A. Reuse salvaged barbed wire first.
B. Attach 3 strands of barbed wire to first terminal post with bracing bands.
C. Attach strands to each line post cap and tighten.
D. Attach strands to end terminal post with bracing bands and tighten.
E. All barbed wire strands shall be continuous, splice rolls together as needed.

3.7. INSTALL MISCELLANEOUS FENCE LINE COMPONENTS

A. Reuse salvaged existing parts first.
B. Install all terminal post caps.
C. Install bottom tension wire and secure to fabric.
D. Verify all nuts, bolts, and tension assemblies are tight.

3.8. INSTALL EXISTING RELOCATED GATE

A. Layout new gate posts. The Fence and Gate Contractor shall adjust the existing layout as needed so that the gate will open on the inside of the perimeter fencing instead of the outside as it is currently installed.
B. Install new gate support posts as noted in section 3.3 above.
C. DO NOT relocate and hang existing vehicle gate until the minimum concrete strength has been achieved by verified testing.
    1. Install relocated gate guides and pulleys on new gate support posts. Set heights so the bottom of the gate maintains a clearance between 4 and 6 inches above the service road when the gate is closed.
    2. Install relocated gate and ensure gate freely moves within gate guides and pulleys.

D. Relocate existing gate operator and extend electrical service as needed.
   1. Connect loop detection devices to gate operator, see section 3.10 below.
   2. Perform the following tests and adjust gate and operator equipment as needed.
      a. Gate opening and closing limits.
      b. Gate manual open and close switches.
      c. Radio control activation.
      d. All safety overrides.
      e. Testing and adjustments shall be repeated as many times as needed until all test points operate without issue.
      f. Final testing shall be performed with Owner Representatives on site. Coordinate with City Project Manager a minimum of 5 working days prior to performing final test.

3.9. INSTALL NEW GATE

A. Layout gate posts according to the manufacturers shop drawings.
B. Install new gate support posts as noted in section 3.3 above.
C. DO NOT install new vehicle gate until the minimum concrete strength has been achieved by verified testing.
   1. Install gate guides and pulleys on new gate support posts. Set heights so the bottom of the gate maintains a clearance between 4 and 6 inches above the service road when the gate is closed.
   2. Install gate and ensure gate freely moves within gate guides and pulleys.
D. Install gate operator and extend electrical service as needed.
   1. Connect loop detection devices to gate operator, see section 3.10 below.
   2. Perform the following tests and adjust gate and operator equipment as needed.
      a. Gate opening and closing limits.
      b. Gate manual open and close switches.
      c. Radio control activation.
      d. All safety overrides.
      e. Testing and adjustments shall be repeated as many times as needed until all test points operate without issue.
      f. Final testing shall be performed with Owner Representatives on site. Coordinate with City Project Manager a minimum of 5 working days prior to performing final test.

3.10. INSTALL LOOP DETECTION DEVICES

A. The Fence and Gate Contractor shall provide 3 traffic loop detectors for each gate. Loop detectors shall be installed and connected by the Electrical Contractor at both vehicle gates.
B. Loop detectors shall be installed prior to paving.
C. See Detail 2 on sheet GS-2 for loop detector layout
   1. Loop #1, Safety Loop Outside Reopen. Closing gate will reopen if this loop detects vehicle presence.
   2. Loop #2, Safety Loop Inside Reopen. Closing gate will reopen if this loop detects vehicle presence.
   3. Loop #3, Free To Exit. Located inside of perimeter, closed gate will open if this loop detects vehicle presence.

END OF SECTION