ADDENDUM #2
ISSUE DATE: September 17, 2019

RE: KINESIOLOGY RELOCATION
UNIVERSITY OF WISCONSIN - MADISON
UWSA Project No. A-19-001

BID OPENING: For MEP BIDDERS: 2:00 P.M., TUESDAY, OCTOBER 8, 2019 (THE DATE HAS CHANGED, SEE “CHANGES TO BIDDING REQUIREMENTS” SECTION BELOW)

For GENERAL PRIME CONTRACTORS: 2:00 PM, TUESDAY, OCTOBER 22, 2019 (THE DATE HAS CHANGED, SEE “CHANGES TO BIDDING REQUIREMENTS” SECTION BELOW)

FROM: Hammel, Green and Abrahamson, Inc. Architects and Engineers
333 East Erie Street
Milwaukee, WI 53202

TO: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the current Contract Documents dated August 9, 2019 and Addendum #1 dated September 3, 2019, as noted below. Acknowledge receipt of this Addendum by inserting the number and issue date of this addendum in the blank space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.


ATTENTION BIDDERS: Please note that it is anticipated there will be another addendum in the coming days that will clarify demolition, mechanical and hazardous material scope and address other items as needed. Thank you for your time and consideration.

PREBID WALKTHROUGH (8/20/19, 10 a.m.) QUESTIONS AND ANSWERS:

1. None, as also indicated in Addendum #1

SUBSEQUENT QUESTIONS AND ANSWERS (Refer to Addendum #1 for previously addressed Questions and Answers):

2. Ref. GPC Instruction to Bidders, spec 10 14 20, A081-082 &A621-622: Please confirm that the ID-# room identification signage listed on the Door Schedules, noted in the specs and reference on A621-2 drawings are by the University. The signage documents are provided for the restrooms signage that is required by code.
   a. The signage that is in the Contract Documents is to be provided and installed by Contractor, regardless of whether it is code-required or not.
   b. Please refer to CHANGES TO BIDDING REQUIREMENTS section (below) for clarification.

3. Sheet A081: Door 24B has a hardware group of 712, but in the Spec. Section 08 71 00 no hardware group exists. Please clarify.
a. Please refer to CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28) section (below) for clarification.

4. Sheet A081: Door 273A has a hardware group of 611, but in spec. section 08 71 00 it refers to it not being used. Please clarify.
   a. Please confirm whether door 273A or 273-A is the door in question. If 273A-A, please refer to CHANGES/ADDITIONS TO DRAWINGS section (below) for clarification.

5. Spec. Section 08 71 00 has a few hardware groups that are not used at all. Please verify that Sets 230, Set 240, Set 340, and Set 440 are void
   a. Please refer to CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28) section (below) for clarification.

6. Please provide structural drawings per keynote 2 on A300B or provided clarification on what is required
   a. Please refer to S100 LIMITS ON EQUIPMENT HUNG FROM OVERHEAD STRUCTURE, Note 3, for information regarding structural requirements and clarification for overhead swings.

7. Please clarify general note L on A260 as it relates to Room 268A. If terrazzo base is to remain, is the new base called for on A262A to have a lip or will the wall be furred out to match profile of existing terrazzo base.
   a. Intent for Room 268 will be to fur out the existing walls that remain and include the terrazzo integral base with H78 walltype + <CT> finish. Additional information will be provided in drawing form in a future addendum.

8. Will rooms outside the scope of work remaining occupied during construction be identified? (e.g. Room 224)
   a. Contractor to assume all rooms outside the scope of work will remain occupied during construction and coordination of work with adjacent room users and Owner will be required.

9. Keynote 5 on A100D in room B203 identifies demo of wall finish and no new wall finish is identified on A200D. Are we to assume the columns will just be painted?
   a. Columns in room B203 should be patched as needed and painted with <PT-1>. Columns will also receive <ATH EQ-1> as noted on A260D

10. Rooms with no ceiling in various locations have interior partition modifiers listed as d. Is this correct or should we assume wall finish is to extend to bottom of deck? (e.g. Room 257)
    a. In rooms that have no ceilings, intent is for wall finish to extend to bottom of deck.

11. Per keynote 4 on demolition plans; where demo of glazed block partitions occur, are we to assume match existing block or assume all glazed block as an existing clay tile partition condition?
    a. The architect is aware of two types of existing glazed block in the project: glazed clay tile block (referred to in Contract Documents as CLAY TILE BLOCK, primarily in the basement of the 0450 building) and glazed CMU block (referred to in Contract Documents as GLAZED CMU, primarily in the 0451 “Bardeen” building). New glazed clay tile block is not proposed for any walls in the new construction and, where necessary, should be infilled as indicated on A090 (detail 5), S100 (detail 3) and A200 series drawings. New glazed CMU block walls are also not proposed for any walls or infill in the new construction and should be infilled with M-series walltype (as indicated on A060) and S100 (detail 2). Please let us know if additional clarification is needed.
12. Please clarify existing corridor finishes per finish plans as it relates to changes in corridor walls. (e.g. wall connecting Room 227 to Corridor 2000P). Are door trims and base to match existing wood and terrazzo or will an elevation of the corridors be provided to clarify required finish.
   a. Refer to door schedule and finish plans for intent of design. Regarding room 227 to Corridor 2000P, intent is to demolish existing wood door and sidelights and replace with wall (type and finish to match existing) and door/frame as indicated in door schedule.

13. General Note O on A010 requests a break-out and itemized cost for specific areas of construction. Is there a timeframe in which DSPS Form SBD10219 needs to be furnished to the owner as it was not included in the specifications.
   a. Information needed for the Architect to submit DSPS Form SBD10219 should be provided at the conclusion of the bid phase, or soon after, to allow for expedient review and approval by AHJ.

14. General Note D on A200 states, “Level floors to true plane within ¼ inch…..” Please clarify if this relates to keynote 9 on demo plans or specific areas that will be identified with a keynote on the floor plan and/or finish floor plan
   a. This note applies to areas where <CEM FILL> is used. During construction, notify architect of any areas where this requirement cannot be met.

15. Wall type M6a is called for at corridor in unisex restroom B69A on 8/A210. Keynote 6 is not identified for this location on A200D. Please clarify if this wall is to be salvaged glazed block, new to match existing, or CMU-1 as specified
   a. Please refer to CHANGES/ADDITIONS TO DRAWINGS section (below) for clarification.
   b. Also, refer to Sheet A090 for additional information.

16. MKBD-2 is shown on furniture plans. Please confirm this is to be provided and installed by the GPC.
   a. Please refer to CHANGES TO BIDDING REQUIREMENTS section (below) for clarification.

17. FEC-4 is not specified. Please provide or confirm that this is owner furnished owner installed.
   a. Confirmed. Fire Extinguishers are OF/OI.

18. Please confirm if STOR-1 appears in the drawings. Ref 10 56 00.
   a. There are no STOR-1 locations in the project.

19. Please confirm if SFS-1, folding shower seats are needed at the showers. It is not clear on A210.
   a. No SFS-1 seats are needed for the project. There are 2 showers in the project that have shower seats, but they are integral to the shower units, refer to plumbing fixtures on P800

   a. There are no HT-1 or CC-1 locations in the project.

21. Keynote 2 on the Door Schedule on A081 stated to repair and rehabilitate to original condition. Please detail what work needs to be done for this note as there is no reference to what the original condition was.
a. Frames are in various states of disrepair, with scratches, dents and missing architectural features. Each should be considered on an individual basis. Additional information will be provided in a future addendum.

22. Keynote 15 on the Floor Plan A202A states to repair terrazzo sills as needed. Please detail what repairs are needed, or who determines the scope of repairs or what is needed.
   a. There are minor abrasions and chips to individual sills. At all locations noted, Contractor to fill gaps at corners with epoxy to match and refinish/sand smooth to restore to near-original condition. It is not anticipated any sills will need replacement or removal to allow for repair, Contractor to confirm upon inspection.

23. Keynote 20 on A206C states to refurbish the noted window. Please provide detail as to the scope of the refurbishment is required.
   a. Window is currently hidden by an existing wall. The condition of the window is unknown and currently unable to be verified. The intent of the note is to flag potential work needed to bring window back to its original condition, to match adjacent.

24. Ceiling material in bathrooms is listed as GYP BD-1. Please confirm this is correct and/or if material should be GYP BD-2 in any locations.
   a. Ceilings in bathrooms should be <GYP BD-2>
   b. Please refer to CHANGES/ADDITIONS TO THE DRAWINGS section (below) for clarification

25. Panels DD2, K1A and ZZ are shown on the panel schedules as existing. However, the notes on the drawings indicate that this is a new panel to replace an existing panel and be relocated. Please clarify.
   a. K1A is an existing panel that is to be relocated. The original intent was to reuse the existing panel, but use all new circuit breakers. This isn’t efficient or cost effective, so the panel is to be relocated, but now the existing circuit breakers are to be reused.
   b. ZZ is an existing panel that is to be relocated.
   c. DD2 is an existing panel that is to be relocated.
   d. Please refer to CHANGES/ADDITIONS TO DRAWINGS section (below) for clarification.

26. Panel LBN in Conference Room B370H is called out as a retrofit. I am not seeing this on the Panel Schedules.
   a. Because Panel LBN did not have any circuit changes, it was excluded from the panel schedule. It will be added to the panel schedules for clarification.
   b. Please refer to CHANGES/ADDITIONS TO DRAWINGS section (below) for clarification.

27. (Regarding Sheet E303B, near room 322) In the note it says to feed it from LP3. The issue is that it is not feeding another panel from which to distribute it. The mech schedule says that those BIO SPO’s are to be fed from Panel T-322. But there is no such panel shown on the drawings or in the panel schedules. I assume we will need another 60A panel board located in that room.
   a. While connecting the outlets directly to the transformer would be a sufficient solution with proper transformer primary protection, a small 30A panel will be added to support the two circuits. The 30A panel will feature 2x20A, 3 pole breakers.
   b. Please refer to CHANGES/ADDITIONS TO DRAWINGS section (below) for clarification.
28. Sheet E302A shows the freezer farm room circuits being fed from panel EG2. Panel EG2 is located some 400’ away in area C (E302C). Voltage drop will require a substantial upsizing in wire and conduit for approximately 21 circuits (3 of which are 2P).

   a. Question 1: There is an EM panel (EB-2) in the next corridor on E302A approx. 50’ from the freezer farm. Would this be an option to source circuits from? We do not have a panel schedule for this panel, so we don’t know the voltage or capacity of the panel.
      
      i. Due to owner’s request for extra freezer outlets and the ability to maintain future flexibility, we’re concerned that the 100A capacity from EB-2 would not be enough. In order to keep feeder sizes down, we will locate a 150A subpanel in the freezer farm room that is fed from the EG2 panel. This subpanel will also allow the owner to have future flexibility if they decide to separate their emergency circuits based on load type.
      
      ii. Please refer to CHANGES/ADDITIONS TO DRAWINGS section (below) for clarification.

   b. Question 2: Or, is it an option to provide a sub-panel to EG2 and locate it in the corridor outside the freezer room? This would be contingent on panel EG2 being able to accept a 3-pole breaker large enough to feed the subpanel which would be at least a 100A panel if not 150A.

      i. See previous question and answer. EB2 now features a 150A circuit breaker that feeds the subpanel in the freezer farm room.

29. On Sheet E302A Note #9 there are calling for Line Isolation Monitors. Not sure what those are, or what I need to do with them electrically. Is there a spec or part number?

   a. Line Isolation Monitors are testing devices that are used in tandem with isolation power panels for testing and monitoring. Normally, these can be purchased with isolated power panels as an entire system. Square D is a common manufacturer of these.

30. There are numerous 120V drop cord reels that they are asking us to provide. Is there a spec or part number?

   a. Please refer to CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28) section (below) for clarification.

31. Specifications call out the type of patch cords needed but does not define the quantity needed. Please provide clarification on quantity of patch cords required.

   a. Patch cords are no longer required and will be provided by DoIT and the user groups.
   
   b. Please refer to CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28) section (below) for clarification.

32. Specification 27 16 19 calls out a number of different clock systems. Since the clocks added as a part of this project will need to integrate into the existing clock system of the building can information be provided on the existing Master and Secondary clock system as well as the existing clock types in order to match new devices to existing?

   a. Clock system will function utilizing GPS and do not need to tie into existing building clock systems.
   
   b. Please refer to CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28) section (below) for clarification.
33. Detail 8 on M701 is not referenced anywhere in the drawings. Please clarify.
   a. This is a general detail that graphically shows how to duct into and out of the fan we are locating
      in the 6th floor fan room.

34. General Note E on A010 states, “Provide dust control between construction areas and occupied areas at all
    times as specified.” Will a Temporary Facilities specification be provided that outlines enclosure and
    environmental protection requirements or are we to assume detail 3 on A060 is the only dust control
    required? (i.e. will walk off mats and air filtering during demo and build back be required.)
   a. Prior to the start of Demolition install dust partitions as noted on Sheet A060, Details 3, 4, 5 and
      General Notes on Sheet A100.
   b. Please refer to CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28) section (below) for
      additional clarification.

35. We are taking a look at the wire mesh partition and we found them on drawing A206C. I was curious how
    high those partitions were. The reflected ceiling plan shows that it’s exposed and I don’t see any building
    section or elevations showing how high those partitions go. Could you let me know if they go to deck and,
    if so, what that deck height is?
   a. Partitions to be height as indicated in 10 22 13.

CHANGES TO BIDDING REQUIREMENTS:

There are changes to the bidding and construction schedule, as noted here:

1. GPC Invitation to Bid
   a. Changed dates for bid opening
   b. Refer to attached document

2. MEP Invitation to Bid
   a. Changed date for bid opening
   b. Refer to attached document

3. GPC Instruction to Bidders
   a. Changed dates in line-item 22
   b. In SECTION 23: WORK BY OWNER, add note below line 17 that says
      “Markerboards/Whiteboards OF/CI”
   c. In SECTION 23: WORK BY OWNER, modify note on line 56 to read “Wayfinding / non-
      code required = CF/CI as indicated in Drawings”
   d. Refer to attached document

4. MEP Instruction to Bidders
   a. Changed dates in line-item 22
   b. In SECTION 22: WORK BY OWNER, add note below line 56 that says
      “Markerboards/Whiteboards OF/CI”
   c. In SECTION 22: WORK BY OWNER, modify note on line 38 to read “Wayfinding / non-
      code required = CF/CI as indicated in Drawings”
   d. Refer to attached document

5. General Prime Contractors (GPC) Bid Bond Form
   a. Changed Bid Opening date
   b. Refer to attached document
6. Bid Form – Mechanical, Electrical, Plumbing and Fire Protection (MEP)
   a. Changed Bid Opening date
   b. Refer to attached document

CHANGES TO CONDITIONS OF THE CONTRACT:

1. NONE in this Addendum

CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 28):

1. 02 41 19 SELECTIVE DEMOLITION
   a. Refer to attached document

2. 08 71 00 DOOR HARDWARE
   a. Refer to attached document

3. 26 27 26 WIRING DEVICES
   a. Refer to attached document

4. 27 10 00 STRUCTURED CABLING
   a. Refer to attached document

5. 27 16 19 COMMUNICATIONS PATCH CORDS, WORK AREA CORDS, AND CROSS-CONNECT WIRE
   a. OMIT from Contract Documents. No Longer in Scope

6. 27 53 13 CLOCK SYSTEMS
   a. Refer to attached document

CHANGES/ADDITIONS TO DRAWINGS:

1. A040 – CONSTRUCTION LOGISTICS PLAN
   a. Under the table “CONSTRUCTION SCHEDULE / MILESTONES”, change Start of Construction to “November 22, 2019”

2. A050 – PHASING PLAN
   a. Under the table “CONSTRUCTION SCHEDULE / MILESTONES”, change Start of Construction to “November 22, 2019”
   b. Under PHASING GENERAL NOTES, change date to read “July 17, 2020”
   c. Under the table “CONSTRUCTION SCHEDULE / MILESTONES”, change Overall Construction Period to “Nov. 22, 2019 – Aug. 28, 2020 (40 Weeks)”

3. A081 – DOOR AND HARDWARE SCHEDULE
   a. Under DOOR 273A-A, change HDWE GROUP to read “590”

4. A210 – ENLARGED FLOOR PLANS
   a. Under “DETAIL 8 – UNISEX RESTROOM B69A”, change M6a Walltype to “A6a”

5. A300C – REFLECTED CEILING PLAN BASEMENT AREA C
   a. At Rooms B353 and B355, change GYP BD-1 ceiling to “<GYP BD-2>”

6. A300D – REFLECTED CEILING PLAN BASEMENT AREA D
a. At Room B69A, change GYP BD-1 ceiling to “<GYP BD-2>”
7. A301C – REFLECTED CEILING PLAN LEVEL 01 AREA C
   a. At Rooms 1353 and 1355, change GYP BD-1 ceiling to “<GYP BD-2>”
8. A302A – REFLECTED CEILING PLAN LEVEL 02 AREA A
   a. At Rooms 268, change GYP BD-1 ceiling to “<GYP BD-2>”
9. A302C – REFLECTED CEILING PLAN LEVEL 02 AREA C
   a. At Rooms 2353 and 2355, change GYP BD-1 ceiling to “<GYP BD-2>”
10. A303C – REFLECTED CEILING PLAN LEVEL 03 AREA C
    a. At Rooms 3353 and 3355, change GYP BD-1 ceiling to “<GYP BD-2>”
11. A306D – REFLECTED CEILING PLAN BASEMENT AREA C
    a. At Rooms 6164 and 6167, change GYP BD-1 ceiling to “<GYP BD-2>”
12. E302A – POWER PLAN – LEVEL 02 – AREA A
    a. Refer to attached Drawing
13. E302D – POWER PLAN – LEVEL 0 – AREA D
    a. Refer to attached Drawing
14. E303B – POWER PLAN – LEVEL 03 – AREA B
    a. Refer to attached Drawing
15. E501 – EQUIPMENT SCHEDULES
    a. Refer to attached Drawing
    b. Refer to attached Drawing
16. E504 – PANELBOARD SCHEDULES
    a. Refer to attached Drawing
17. E505 – PANELBOARD SCHEDULES
    a. Refer to attached Drawing
18. E507 – PANELBOARD SCHEDULES
    a. Refer to attached Drawing
    a. Refer to attached Drawing
20. T202A – TELECOM PLAN – LEVEL 02 – AREA A
    a. Refer to attached Drawing
    a. Refer to attached Drawing
22. T203A – TELECOM PLAN – LEVEL 03 – AREA A
    a. Refer to attached Drawing
23. T203B – TELECOM PLAN – LEVEL 03 – AREA B
    a. Refer to attached Drawing
Hammel, Green and Abrahamson, Inc. Architects and Engineers
333 East Erie Street
Milwaukee, WI 53202

For the Board of Regents of the University of Wisconsin
On Behalf of the University of Wisconsin – Madison
1860 Van Hise Hall, 1220 Linden Drive
Madison, Wisconsin 53703
GPC INVITATION TO BID (Rev 03/2019)

THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM

Revised Addendum 1, September 3, 2019
Revised Addendum 2, September 17, 2019

KINESIOLOGY RELOCATION
UNIVERSITY OF WISCONSIN - MADISON
MADISON, WISCONSIN

UW-MADISON Project No. 0451-1803 / UWSA Project No. A-19-001

BID OPENING for MEP BIDDERS: 2:00 P.M., Tuesday, October 8, 2019. (ADD-1) (ADD-2)
BID OPENING for GENERAL PRIME CONTRACTOR BIDDERS: 2:00 P.M., Tuesday, October 22, 2019. (ADD-1)(ADD-2)

OWNER: The Board of Regents of the University of Wisconsin System on behalf of the University of Wisconsin-Madison hereinafter termed the Owner.

NOTICE: Effective January 1, 2014, all potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4 or upon request from DFD--email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. The Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders.

Sealed bids will be received at the University of Wisconsin System Administration, 780 Regent Street, Room 105, Madison, Wisconsin 53715, before the time indicated above. The bidder is responsible for the sealed bid being delivered to the indicated location for receipt stamping before the time specified for the bid opening. Third party delivery is entirely at the bidder's risk.

Due to construction at 780 Regent Street, there will be very limited to no available visitor parking. Please plan accordingly and find parking at one of the following University-owned or City of Madison parking lots, or any available street parking:

University-owned parking lots
Park Street Ramp (Lot 29) - 21 North Park St.
Grainger Hall Garage (Lot 7) - 325 North Brooks St.
Lake & Johnson Ramp (Lot 46) – 301 North Lake St.
Fluno Center Garage. (Lot 83) – 314 North Frances St.
Helen C. White Garage (Lot 6) – 600 North Park St.
Union South Garage (Lot 80) – 1308 West Dayton St.

The number of available spots for these lots can be found at https://map.wisc.edu/. Use the search box to find and click on the lot to see the number of available spots.

City of Madison parking lots
State Street Campus Garage (Two entrances) - 415 North Lake St. & 430 North Frances St.
Overture Center Garage – 318 West Mifflin St.
Directions and the number of available spots for these lots can be found at https://www.cityofmadison.com/parking-utility/garages-lots. Click on the name of the lot to see the number of available spots.

In general, the work consists of renovation approximately 46,000 square feet of classroom and lab space and approximately 28,000 square feet of corridor renovation within the existing Medical Science Center Building to accommodate the needs of the UW-Madison Kinesiology Department.

Bidding documents (drawings, specifications, and addenda) may be obtained only as electronic files (in PDF format): as a downloadable file from the University of Wisconsin System Administration’s Design and Construction Opportunities website (see website address below). Bidding documents may also be seen at various Builders’ Exchanges that have downloaded the documents. Additional project bidding information, including plan holders lists are available on the University of Wisconsin System public website: https://www.wisconsin.edu/procurement/construction/. After opening the web page, select the Kinesiology Relocation project.

**Base Bid will be received for:** A single lump sum bid for All Work.

No deposit is required to obtain documents for bidding purposes.

Bid Guarantee in the amount of 10% of the Bid must accompany each bid submitted.

Contract offer and construction phase records will be processed via email.

If prevailing wage rates are applicable to this project those rates are included in the Supplementary General Conditions.

A pre-bid tour will be conducted at the site August 20, 2019 beginning at 10:00AM. Participants should meet in the Medical Science Center building, through the loading dock entrance, Room 6225 MSC, located at 1300 University Avenue, Madison, WI. All bidders are highly encouraged to attend this Pre-bid Conference / Building Tour and no separate tours will be conducted. The contact person is Hammel, Green and Abrahamson, Inc., 333 East Erie Street, Milwaukee, Wisconsin 53202; Project Manager: Carli Cole, 262.278.3538, www.ccole@hga.com

Bidding Documents will be available online immediately upon the project being advertised for bid.

***
MEP INVITATION TO BID (Rev 03/2019)
THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM
Revised Addendum 1, September 3, 2019
Revised Addendum 2, September 17, 2019

KINESIOLOGY RELOCATION
UNIVERSITY OF WISCONSIN - MADISON
MADISON, WISCONSIN

UW-MADISON Project No. 0451-1803 / UWSA Project No. A-19-001

BID OPENING for MEP BIDDERS: 2:00 P.M., Tuesday, October 8, 2019. (ADD-1)(ADD-2)
BID OPENING for GENERAL PRIME CONTRACTOR BIDDERS: 2:00 P.M., Tuesday, October 22, 2019. (ADD-1) (ADD-2)

OWNER: The Board of Regents of the University of Wisconsin on behalf of the University of Wisconsin - Madison, hereinafter termed the Owner.

NOTICE: Effective January 1, 2014, all potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4 or upon request from DFD--email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. The Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders.

Sealed bids will be received at the University of Wisconsin System Administration, 780 Regent Street, Room 105, Madison, Wisconsin 53715, before the time indicated above. Bids must be received by the receptionist in the above office. All bids must be time-stamped by the University of Wisconsin System Administration - Office of Procurement prior to the stated opening time. Bids not so stamped will be considered late, and will not be accepted as a legitimate bid. Receipt of a bid by the State mail system does not constitute receipt of a bid by the University of Wisconsin System Administration - Office of Procurement, for purposes of this request for bids. All bids must be packaged, sealed, and have the bid information sheet (found at the end of this document) attached on the outside of the package. Third party delivery is entirely at the bidder's risk.

Due to construction at 780 Regent Street, there will be very limited to no available visitor parking. Please plan accordingly and find parking at one of the following University-owned or City of Madison parking lots, or any available street parking:

University-owned parking lots
Park Street Ramp (Lot 29) - 21 North Park St.
Grainger Hall Garage (Lot 7) - 325 North Brooks St.
Lake & Johnson Ramp (Lot 46) – 301 North Lake St.
Fluno Center Garage. (Lot 83) – 314 North Frances. St.
Helen C. White Garage (Lot 6) – 600 North Park St.
Union South Garage (Lot 80) – 1308 West Dayton St.
The number of available spots for these lots can be found at https://map.wisc.edu/. Use the search box to find and click on the lot to see the number of available spots.

**City of Madison parking lots**
State Street Campus Garage (Two entrances) - 415 North Lake St. & 430 North Frances St.
Overture Center Garage – 318 West Mifflin St.

Directions and the number of available spots for these lots can be found at https://www.cityofmadison.com/parking-utility/garages-lots. Click on the name of the lot to see the number of available spots.

In general, the work consists of renovation approximately 46,000 square feet of classroom and lab space and approximately 28,000 square feet of corridor renovation within the existing Medical Science Center Space to accommodate the needs of the UW-Madison Kinesiology Department.

Bidding documents (drawings, specifications, and addenda) may be obtained only as electronic files (in PDF format): as a downloadable file from the University of Wisconsin System Administration’s Design and Construction Opportunities website (see website address below). Bidding documents may also be seen at various Builders' Exchanges that have downloaded the documents. Additional project bidding information, including plan holders lists are available on the University of Wisconsin System public website: https://www.wisconsin.edu/procurement/construction/. After opening the web page, select the Kinesiology Relocation project.

**Base Bid will be received as a single lump sum bid for:** 2) Fire Protection (Fire Suppression); 3) Plumbing; 4) Mechanical (Heating, Ventilating, Air Conditioning); and 5) Electrical (Divisions 26, 27 and 28).

No deposit is required to obtain documents for bidding purposes.

Bid Guarantee in the amount of 10% of the Bid must accompany each bid submitted.

If prevailing wage rates are applicable to this project those rates are included in the Supplementary General Conditions.

A pre-bid tour will be conducted at the site August 20, 2019 beginning at 10:00AM. Participants should meet in the Medical Science Center building, through the loading dock entrance, Room 6225 MSC, located at 1300 University Avenue, Madison, WI. All bidders are highly encouraged to attend this Pre-bid Conference / Building Tour and no separate tours will be conducted. The contact person is Hammel, Green and Abrahamson, Inc., 333 East Erie Stree, Milwaukee, Wisconsin 53202; Project Manager: Carli Cole, 262.278.3538, www.ccole@hga.com

Bidding Documents will be available online immediately upon the project being advertised for bid.

***
1. **Definitions**

(a) "Mechanical, electrical, or plumbing subcontractor" ("MEP Subcontractor") is a contractor that performs mechanical (Heating, Ventilating, and Air Conditioning), electrical, plumbing, or fire protection (fire suppression) work for the Project, and enters into a contract with the General Prime Contractor to perform their division of work.

(b) "Qualified bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)1.

(c) "Qualified responsible bidder" means a contractor who is a qualified bidder and who is a responsible bidder.

(d) "Responsible bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)2.

(e) "Single prime contracting" means bidding and contracting through a process in which only a general prime contractor has a contractual relationship with the owner and all mechanical, electrical, or plumbing subcontractors are identified by the department and are subcontractors to the General Prime Contractor.

(f) "General Prime Contractor" ("GPC") is a contractor that enters into a contract with the owner to perform all work as required by the Contract Documents and enters into contracts with subcontractors including MEP Subcontractors identified by the Owner.

(g) "Non-MEP Subcontractor" is a subcontractor to a General Prime Contractor in divisions of work other than mechanical, electrical, plumbing, and fire protection. This includes suppliers and installers to the General Prime Contractor.

(h) "Subcontractor" is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.
(i) "Contractor" is all contractors working on a project regardless of contractual relationship. This includes the General Prime Contractor, MEP Subcontractors, Non-MEP Subcontractors, and all Subcontractors, regardless of tier of subcontract.

2. GENERAL

Time for bid opening shall be the prevailing central standard or daylight saving time in force at Madison, Wisconsin, on the date set forth in the Invitation to Bid.

All potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4 or upon request from DFD--email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. The Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The Owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders. If a project does not include any mechanical, electrical, plumbing, or fire protection divisions of work, the Owner will bid one bid package for all work to general prime contractors.

The Owner will issue an addendum if a successful MEP bid is withdrawn or rejected after the MEP Subcontractors have been identified but before the General Prime Contractor bid opening. This addendum will include a revised list of successful MEP bids that must be included in General Prime Contractor bids and will move the General Prime Contractor bid opening five (5) days later to allow bidders sufficient time to update their bids based on the revised MEP list.

Before submitting a bid, the Bidder shall examine all of the Bidding and Contract Documents listed in the Table of Contents of these specifications. The successful Bidder will be required to do all work which is shown on the drawings, mentioned in the specifications or reasonably implied as necessary to complete the contract for this project.

The Bidder shall visit and examine the site to become acquainted with the adjacent areas, means of approach to the site, conditions of actual job site, and facilities for delivering, storing, placing, and handling of materials and equipment.

Failure to visit the site or failure to examine any and all Bidding and Contract Documents will in no way relieve the successful Bidder from the necessity of furnishing any materials or equipment, or performing any work, that may be required to complete the work in accordance with the Bidding and Contract Documents. Neglect of above requirements will not be accepted as reason for delay in the work or additional compensation.

All bidders shall have established and diligently maintained a satisfactory safety program, and if eligible for Experience Modification Rating (EMR), must have a rating of 1.20 or less as established by the Wisconsin Compensation Rating Bureau (WCRB) or the National Council on Compensation Insurance (NCCI).

3. DRAWINGS AND SPECIFICATIONS

The drawings and specifications that form a part of this contract, as stated in Article 3 of the General Conditions, are listed in the Table of Contents of these specifications. Complete sets of Contract Documents for all trades will be issued to all Bidders, irrespective of the category of work to be bid on, in order that all Bidders may be familiar with the work of other trades as they affect their bid.

4. INTERPRETATION

No verbal explanation or instructions will be given in regard to the meaning of the drawings or specifications during the bid period. Bidders shall bring inadequacies, omissions or conflicts to the Architect/Engineer's attention at least ten (10) days before the date set for bid opening. Prompt clarification will be supplied to all bidders of record by addendum.
Failure to so request clarification or interpretation of the drawings and specifications will not relieve the successful Bidder of responsibility. Signing of the contract will be considered as implicitly denoting that the Contractor has thorough understanding of the scope of work and comprehension of the contract documents.

Neither the Architect/Engineer nor the Owner will be responsible for verbal instructions.

5. MANDATORY PRE-BID DOA CERTIFICATION
All potential bidders must become certified as qualified and responsible bidders before they can bid on state projects over $50,000. The criteria for determining certification of qualified and responsible bidders are itemized in Wis. Stat. s. 16.855(9m). If the Owner determines that more experience is necessary for a particular project, the Owner may include additional requirements.

6. BID GUARANTEE
A bid bond prepared on the Bid Bond Form bound herein, payable to the Owner in the amount not less than 10% of the maximum bid shall accompany each bid as a guarantee. A bank certified check or a cashier’s check may accompany each bid as a guarantee pursuant to Wis. Stat. s. 779.14(1m)(c)2.b. Failure to enter into the contract with the owner (including failure to obtain certificate of insurance and separate 100% performance and 100% payment bonds) may result in forfeiture of the Bid Bond. The company issuing the Bonds must be licensed to do business in Wisconsin.

Any bid which is not accompanied by a bid guarantee will not be accepted and will not be read at the bid opening.

All checks tendered as bid guarantee, except those of the three lowest bidders, will be returned to their makers within three (3) days after bid opening. All such retained checks will be returned immediately upon execution of the contract between the General Prime Contractor and the Owner.

7. WITHDRAWAL OF BIDS
Prior to the time fixed for bid opening, bids may be withdrawn by written request from the Bidder, without prejudice to the right of the Bidder to file a new bid. Withdrawn bids will be returned unopened.

After the bid has been opened, negligence on the part of the Bidder in preparing their bid confers no right for withdrawal of the bid without penalty.

If a bid contains an error, omission, or mistake, the bidder may limit liability to the amount of their bid guarantee by giving the Owner written Notice, within seventy-two (72) hours of the bid opening, of their intent not to execute the contract with the owner. If no such notice is given, the Owner reserves the right to obtain the amount of the difference in bid price between the low bidder and the next low bidder.

8. CONTRACT FORM
These specifications include a copy of the contract the successful Bidder is required to enter into with the owner. Bidders shall read and understand the conditions contained in this contract. The successful Bidder will be offered a contract via email to the contact provided by the bidder on the Bid Form.

9. CONTRACT INTERESTS BY STATE PUBLIC OFFICIALS
In accordance with section 19.45(6) of the Wisconsin Statutes, no state public official, member of a state public official’s immediate family, nor any organization with which the state public official or a member of the official’s immediate family owns or controls at least 10% of the outstanding equity, voting rights, or outstanding indebtedness may enter into any contract or lease involving a payment or payments of more than $3,000 within a twelve (12) month period, in whole or in part derived from state funds unless the state public official has first made written disclosure of the nature and extent of such relationship or interest to the board and to the department acting for the state in regard to such contract or lease. Any contract or lease entered into in violation of this subsection may be voided by the owner in an action commenced within three (3) years of the date on which the ethics board, or the department or officer acting for the state in regard to the allocation of state funds from which such payment is derived, knew or should have known that a violation of this subsection had occurred. This subsection does not affect the application of s.946.13.
10. DISCLOSURE OF OWNERSHIP

The Bidder shall disclose on the date of submitting a bid for this project, the name of any construction business of which the Bidder has had a 25% or greater interest as a shareholder, officer, partner, or owner at any time during the preceding three (3) years, if said construction business has been found by the Department of Workforce Development to have failed to pay the prevailing wage rate or at least 1.5 times the hourly basic rate of pay for hours worked in excess of the prevailing hours of labor to any employee at any time within the preceding three (3) years.

The "Disclosure of Ownership" form may be obtained at no charge from the Department of Workforce Development, Equal Rights Division, P.O. Box 8928, Madison, Wisconsin 53708.

11. MINORITY BUSINESS ENTERPRISE AND DISABLED VETERAN-OWNED BUSINESS INVOLVEMENT

"Minority Business Enterprise" (MBE) means: a business certified by the Wisconsin Supplier Diversity Program under Wis. Stat. s. 16.287(2).

"Disabled Veteran-Owned Business" (DVB) means: a business certified by the Wisconsin Supplier Diversity Program under Wis. Stat. s. 16.283(3).

In awarding construction contracts, the University of Wisconsin System Administration shall attempt to ensure that 5 percent of the total amount expended in each fiscal year is awarded to contractors which are minority businesses, as defined under Wis. Stat. s. 16.75(3m)(a). The General Prime Contractor Bidder shall make every effort to award a minimum of 15% of the work to minority business enterprises (MBE) involvement for all projects within 60 mile radius of Milwaukee and 5% for projects located elsewhere.

In awarding construction contracts, the University of Wisconsin System Administration shall attempt to ensure that at least 1 percent of the total amount expended each fiscal year is awarded to contractors that are disabled veteran-owned businesses.

In order to assist the department in these endeavors we strongly encourage General Prime Contractors to use MBEs and DVBs.

General Prime Contractor Bidders shall submit a "Form A Affidavit of Compliance – Minority Business Enterprise and Disabled Veteran-Owned Business Provision" with their bid or within seven days of the general prime contractor bid opening. This form should indicate the percentage of MBE/DVB participation commitment. Submission of a completed Affidavit of Compliance is an element of responsiveness. Failure to submit this completed form within the above time limits may be considered unresponsiveness and may result in contract award to the next apparent low bidder. All MEP Subcontractor Bidders shall also make every effort to encourage MBE and DVB involvement.

Every General Prime Contractor will be required to submit a report to the Owner, on a monthly basis and upon completion of the contract, which identifies the Minority Business Enterprises and Disabled Veteran-Owned Business to whom work was directly subcontracted and the value of said work. Subcontractors, material suppliers, etc. under contract to a subcontractor of a General Prime Contractor may not be used for reporting purposes under this paragraph without prior approval of the Wisconsin Supplier Diversity Program office. A MBE/DVB monthly report form will be sent to the Bidder after the Notice to Proceed is issued.

For assistance in identifying DOA certified MBE and DVB companies, please contact the Department of Administration Supplier Diversity Program at: DOABDMBD@wisconsin.gov or by telephone at: (608)267-9550, or visit their website at: http://www.doa.wi.gov/Divisions/Enterprise-Operations/Supplier-Diversity-Program.

12. SUBSTANCE ABUSE PREVENTION

Mission/Purpose: The University of Wisconsin System Administration recognizes and supports drug-free workplace programs as an important element in the national strategy to reduce the devastating effects of drug and alcohol abuse in our society. the Owner requires contractors, subcontractors, suppliers and vendors to establish and enforce drug-free workplace policies and programs that conform to Sec 103.503 of the Wisconsin Statutes.

Statement: The possession, use of, distribution or purchase of illegal drugs, or use of alcohol at work by any employee on University of Wisconsin System Administration construction job sites, is strictly prohibited.
The terms of this Substance Abuse Program Statement shall cover all construction personnel who are working on University of Wisconsin System Administration job sites. This includes employees of all Contractors, Subcontractors, contractor suppliers, and their employees working at the job site.

General Prime Contractor’s and Subcontractor’s Written Program: Each General Prime Contractor and Subcontractor shall have in place a written Substance Abuse Program conforming to Sec 103.503(3) of the Wisconsin Statutes.

In addition, representatives of the Owner who believe that any General Prime Contractor’s or Subcontractor’s employee may be under the influence of alcohol or drugs shall, where deemed appropriate, contact the General Prime Contractor’s or Subcontractor’s appropriate management/supervision authority and request that appropriate action be taken. The General Prime Contractor’s or Subcontractor’s employer shall immediately remove an employee who is suspected of being under the influence of illegal drugs or alcohol shall be immediately removed from the job site.

Procedures for testing and handling of positive drug tests shall be in compliance and consistent with State and Federal laws.

Costs of Substance Abuse Programs and Testing: The cost associated with the development, implementation and enforcement of Substance Abuse Programs and any testing required shall be the responsibility of each individual General Prime Contractor and Subcontractor for their respective employees working on the job site. The Owner will not be responsible for any cost of substance abuse testing, rehabilitation or medical reviews related to substance abuse.

The General Prime Contractor and Subcontractors shall indemnify and hold the Owner harmless from any damages or other costs incurred that are related to the implementation or enforcement of any substance abuse policy or program.

13. METHOD OF AWARD - RESERVATION

General prime contractor bids that do not include the successful MEP bids identified by the Owner will be rejected.

The general prime contract will be awarded based on the following, as long as the cost does not exceed the amount of project funds available:

- The lowest dollar amount is submitted by a qualified, responsible, certified bidder on a SINGLE BASE BID for all work comprising the project.

   Should a qualified, responsible, certified minority business enterprise or disabled veteran-owned business submit a bid that is no more than 5% higher than the apparent low bid, the Contract may be awarded to the minority business enterprise or disabled veteran-owned business.

   Firms wishing to be considered for the 5% bidding preference must be certified as a minority business enterprise or disabled veteran-owned business by the Wisconsin Supplier Diversity Program should indicate in the space provided on the Bid Form that preference is requested.

   the Owner reserves the right to reject any and all bids, or to waive any informality in any bid, or to accept any bid which will serve the best interests of the Owner.

   Informational Bids will not be considered in establishing low bidder.

14. SECURITY FOR SEPARATE 100% PERFORMANCE AND SEPARATE 100% PAYMENT

Bidder is required to furnish separate 100% performance and 100% payment bonds to the benefit of the Board of Regents of the University of Wisconsin as the sole obligee. These bonds shall be delivered to the Owner with the signed contract. The Surety Company shall be licensed to do business in Wisconsin. The Bond must be dated the same date or subsequent to the date of the Contract.

A certified copy of power of attorney shall be provided by the Surety Company showing that the agent who signs the Bond has the power of attorney to sign for the Surety Company. This power of attorney must be signed by the Secretary or Assistant Secretary of the company and not by an attorney-in-fact. The power of attorney must bear the same or later date as the bond.
If the Bidder is a partnership or a joint venture, a certified list providing the names of individuals constituting the partnership or joint venture must be furnished. The Contract itself may be signed by one partner of the partnership, or one partner of each firm comprising the joint venture, but the separate Performance and Payment Bonds must be signed by all of the partners.

If the Bidder is a corporation, a current certified copy of the resolution or other official act of the corporation must be submitted showing that the person who signs the contract is authorized to sign contracts for the corporation. The corporate seal must be affixed to the resolution, contract, and separate performance and payment bonds. If the Bidder's corporation has no seal, the above documents must include a statement or notation to the effect that the corporation has no seal.

15. TAXES
The Bidder shall include in the bid, all Sales, Consumer, Use and other similar taxes required by law.

In accordance with section 71.80(16)(a), Wis. Stats., SURETY BOND; NONRESIDENT CONTRACTOR. "All nonresident persons, whether incorporated or not, engaging in construction contracting in this state as contractor or subcontractor and not otherwise regularly engaged in business in this state, shall file a surety bond with the department (Wisconsin Department of Revenue MS 5-77 Attn: Non-Resident Surety Bonds, 2135 Rimrock Rd., Madison, WI 53713, telephone (608)266-2776) payable to the department of revenue, to guarantee the payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. The amount of the bond shall be 3% of the contract or subcontract price on all contracts of $50,000 or more..."

16. SUBMISSION OF BIDS
All bids shall be submitted on the standard Bid Forms and only bids that are made on the Bid Forms will be considered. The entire Bid Form including the Addendum Receipt/Signature page, the Bid Bond Form, (if used), and other supporting documents (if any), shall be filled out and submitted in the manner specified hereinafter. SPECIFICATIONS SHALL NOT ACCOMPANY BID.

No bids for any subdivision or any subclassification of this work, except as indicated, will be accepted. Any conditional bid, amendment to the Bid Form or appendant thereto, the inclusion of any correspondence, written or printed matter, unsolicited material or data, or details of any nature other than the information specifically called for, will disqualify the Bid. Telecommunication alterations to the bid will not be accepted.

Space is provided on the Bid Form for General Prime Contractor's single bid. Appropriate insertions are as follows: numerals indicating the cost of the work, $0 if there is no cost for the work, or the words 'No Bid' if the bidder is not intending to bid the work. Blank space(s) will be considered the same as 'No Bid'.

Bidders shall submit a Single Base Bid for all the work.

Spaces are also provided on the Bid Form for General Prime Contractor's to list the successful MEP Subcontractors bids included in the General Prime Contractor's single base bid.

General prime contractor bids that do not include the successful MEP bids identified by the Owner will be rejected.

Any addendum issued during the time of bidding shall become a part of the Contract Documents. Bidders shall acknowledge receipt of such addendum in the appropriate space provided on the Bid Form. Bid will be rejected if receipt of an addendum applicable to the award of contract has not been acknowledged on the Bid Form.

All Bidders are encouraged to submit their bids using the SEALED BID envelope label that is provided within the specifications. The Owner is not responsible for bids not clearly labeled as required. Bids shall be signed, sealed, and delivered to the place indicated in the Invitation to Bid before the time designated in the Invitation to Bid. All bids shall be identified with the Project Name, Project Number, Project Location, Category of Work being bid on, Bid Date, and the Name and Address of Bidder. Delivery to a post office box does not constitute receipt of a bid.
Bidder shall be responsible for the sealed bid being delivered to the place designated for the bid opening before the time specified. Bids received after the time indicated in the Invitation to Bid will be rejected and returned to Bidder unopened.

Bid will be considered invalid and will be rejected if it has not been signed by the Bidder.

Bids will be rejected if the bidder is not certified by DOA in the division(s) of work they bid on and/or if their bid amount exceeds their certification threshold in that division of work.

17. BASE BID
Base Bids shall be received as follows:

SINGLE BASE BID FOR ALL THE WORK.

Base Bid No. 1. All Work, as per specification Divisions 2 thru 33, applicable provisions of Division 1 and related drawings.

General prime contractor bids that do not include the successful MEP bids identified by the Owner will be rejected.

18. INFORMATIONAL BIDS
None.

19. UNIT PRICES
Unit prices requested on the Bid Form shall be given and, if included in the General Prime Contract, will be used for additions to or deductions from amount of work required under the Contract. Unit prices shall include all costs of materials, labor, insurance, taxes, overhead and profit.

The Owner reserves the right to reject any unit prices as given in the bid if they are considered excessive or unreasonable, or to accept any or all of the unit prices that may be considered fair and reasonable. If any unit price is rejected, the work governed by such unit price, if required, shall be treated as specified in General Conditions, Article entitled "Changes in the Work".

The Bidder shall refer to the Bid Form and the applicable technical section to determine the basis of unit measure and the detailed information related to each unit price item requested.

20. STATED ALLOWANCES
None.

21. SUBCONTRACTORS
GENERAL PRIME CONTRACTOR SUBCONTRACT WITH MEP SUBCONTRACTORS:
The successful General Prime Contractor shall offer a subcontract to the successful MEP Subcontractors identified by the Owner and included in the General Prime Contractor’s bid. This subcontract between a General Prime Contractor and a MEP Subcontractor must include a scope of work clause identical to the scope of work clause included in the Bid Documents and the contract between the General Prime Contractor and the owner. A General Prime Contractor and an MEP Subcontractor may not enter any agreement in connection with bids submitted that would alter or affect the scope or price of the contracts entered into. This prohibition does not apply to the Owner change orders that result in changes to the plans or specifications, or to back charges allowed by the contract.

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor.

As the work progresses under any MEP subcontract for construction of a project, the General Prime Contractor shall, upon request of a subcontractor, pay to the subcontractor an amount equal to the proportionate value of the subcontractor's work properly completed, less retainage. The retainage shall be an amount equal to not more than 5 percent of the subcontractor's work completed until 50 percent of the subcontractor's work has been completed. At 50 percent completion, no additional amounts may be retained, and partial payments shall be made in full to the subcontractor unless the department certifies that the subcontractor's work is not proceeding satisfactorily. At 50 percent completion or any time thereafter when the progress of the subcontractor's work is not satisfactory, additional amounts
may be retained but the total retainage may not be more than 10 percent of the value of the work completed. Upon substantial completion of the subcontractor's work, any amount retained shall be paid to the subcontractor, less the value of any required corrective work or uncompleted work. All payments the General Prime Contractor makes under this paragraph shall be within 7 calendar days after the date on which the General Prime Contractor receives payment from the department.

The contract entered into between the General Prime Contractor and an MEP Subcontractor must contain all of the following clauses:

**Scope of Work.** The MEP Subcontractor scope of work is identical to the General Prime Contractor scope of work included in these bidding and contract documents. By submitting and signing a bid, all bidders have examined all of the Bidding Documents listed in the Table of Contents of the project specifications. The successful bidders will be required to do all work which is shown on the drawings, mentioned in the specifications, or reasonably implied as necessary to complete the division of work bid for this project.

**Prompt Payment.** (General prime contractor) shall pay (mechanical, electrical, or plumbing subcontractor) in accordance with section 16.855(19)(b), Wisconsin stats, for work that has been satisfactorily completed and properly invoiced by (mechanical, electrical, or plumbing subcontractor). A payment is timely if it is mailed, delivered, or transferred to (mechanical, electrical, or plumbing subcontractor) by the deadline under section 16.855(19)(b), Wisconsin stats.

If (mechanical, electrical, or plumbing subcontractor) is not paid by the deadline in this contract, (general prime contractor) shall pay interest on the balance due from the eighth day after the (general prime contractor) receives payment from the University of Wisconsin System Administration for the work for which payment is due and owing to (mechanical, electrical, or plumbing subcontractor), at the rate specified in section 71.82, Wisconsin stats., compounded monthly.

A (mechanical, electrical, or plumbing subcontractor) that receives payment as provided under this contract and that subcontracts with another entity shall pay those subcontractors, and be liable for interest on late payments to those subcontractors, in the same manner as the (general prime contractor) is required to pay the (mechanical, electrical, or plumbing subcontractor) under this contract.

**Insurance and Bonds.** (Mechanical, electrical, or plumbing subcontractor) shall not commence work under this contract until it has obtained all necessary insurance required of (mechanical, electrical, or plumbing subcontractor) in the contract between the (general prime contractor) and the University of Wisconsin System Administration. (mechanical, electrical, or plumbing subcontractor) shall provide a separate 100 percent performance bond and a separate 100 percent payment bond to the benefit of the (general prime contractor) as the sole named obligee. Original bonds shall be given to the (general prime contractor) and a copy shall be given to the University of Wisconsin System Administration no later than 10 days after execution of this contract.

**Indemnification.** To the fullest extent permitted by law, (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others whom (general prime contractor) is required to indemnify under its contract with the Owner, and the employees of any of them, from and against claims, damages, fines, penalties, losses, and expenses, including but not limited to attorney fees, arising in any way out of or resulting from the performance of the work under this contract, but only to the extent such claim, damage, fine, penalty, loss, or expense: (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of property, including but not limited to loss of use resulting therefrom and is caused by the negligence, or acts or omissions, of (mechanical, electrical, or plumbing subcontractor), its subcontractors, any of their employees, and anyone directly or indirectly employed by them or anyone for whose acts they may be liable, or (2) as related to such claims, damages, fines, penalties, losses, and expense of or against (general prime contractor), results from or arises out of the negligence of the (general prime contractor) or other fault in providing general supervision or oversight of the work of (mechanical, electrical, or plumbing subcontractor) or (3) as related to claims, damages, fines, penalties, losses, and expense against the University of Wisconsin System Administration, arises out of the department's status as owner of the project or project site.

In addition (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others (general prime contractor) is
required to indemnify under its contract with the department, and the employees of any of them, from any
liability, including liability resulting from a violation of any applicable safe place act, that (general prime
contractor) or the owner incurs to any employee of (mechanical, electrical, or plumbing subcontractor) or any
third party where the liability arises from a derivative claim from said employee, when the liability arises out of
the failure of the (general prime contractor) or the owner to properly supervise, inspect, or approve the work or
work area of (mechanical, electrical, or plumbing subcontractor), but only to the extent that the liability arises
out of the acts or omissions of (mechanical, electrical, or plumbing subcontractor), its employees, or anyone
for whom (mechanical, electrical, or plumbing subcontractor) may be liable, or from (mechanical, electrical, or
plumbing subcontractor’s) breach of its contractual responsibilities or arises out of (general prime contractor’s)
negligence or other fault in providing general supervision or oversight of (mechanical, electrical, or plumbing
subcontractor’s) work or arises out of the University of Wisconsin System Administration’s status as owner of
the project or project site. In claims against (general prime contractor) or the owner by an employee of
(mechanical, electrical, or plumbing subcontractor) or its subcontractors or anyone for whose acts (mechanical,
electrical, or plumbing subcontractor) may be liable, the indemnification obligation of this paragraph is not
limited by a limitation on amount or type of damage, compensation, or other benefits payable by or for the
(mechanical, electrical, or plumbing subcontractor) subcontractors under workers compensation act.

Except as identified above, the obligations of (mechanical, electrical, or plumbing subcontractor) under this
indemnification do not extend to the liability of (general prime contractor) and its agents or employees arising
out of (1) preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or
specifications; (2) the giving of or failure to give directions or instructions by the (general prime contractor) or
the University of Wisconsin System Administration or their agents or employees provided the giving or failure
to give is the cause of the injury or damage; or (3) the acts or omissions of other subcontractors.

Retainage. Retainage shall occur and be in amounts and on a schedule equal to that in the contract between
(general prime contractor) and the University of Wisconsin System Administration.

MEP AND NON-MEP SUBCONTRACTORS:
Bidders shall submit a completed Request for Subcontractor Approval (Form DOA-4225) with their bid or within seven
days of the general prime contractor bid opening. The Request for Subcontractor Form shall also include, to the extent
practicable, a list of their suppliers furnishing materials for the project. Submission of a completed Request for
Subcontractor Approval form is an element of responsiveness. Failure to submit this completed form within the above
time limits will be considered unresponsiveness and may result in contract award to the next apparent low bidder. Refer
to Article 11 of the General Conditions for further information.

22. COMMENCEMENT AND COMPLETION
The successful General Prime Contractor Bidder shall commence work on a date to be specified in a written "Notice to
Proceed" issued by the owner and fully complete all the work per signed agreement of Substantial Completion as
stated in the schedule below within 267 consecutive calendar days for Phase 1 and 281 consecutive days for Phase 2
thereafter. Completion time will be converted to a specific date at the time the "Notice to Proceed" is issued. Phase 1
and Phase 2 run concurrently. Refer also to General Conditions for additional information in regards to time for completion.

(ADD-1)

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors
and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the
MEP Subcontractor. These milestones will be incorporated into the master project schedule after the Notice to
Proceed is issued.

NOTE: See Construction Logistics Plan Sheet, Drawing Sheet A040 for additional Schedule Information. See
Construction Phasing Plan, Drawing Sheet A050 for additional Phasing Information.
The schedule must include, but is not limited to, the following milestone categories as they apply to the project:

NOTICE TO PROCEED NOVEMBER 22, 2019 (ADD-1)(ADD-2)
MOBILIZATION NOVEMBER 25-27, 2019 (ADD-1) (ADD-2)
PHASES 1 AND 2 START OF CONSTRUCTION NOVEMBER 29, 2019 (ADD-1)(ADD-2)
PHASE 1 SUBSTANTIAL COMPLETION JULY 17, 2020
PHASE 2 SUBSTANTIAL COMPLETION: JULY 31, 2020

PARTIAL PROJECT CLOSE-OUT / PUNCH LIST: JULY 17 – JULY 23, 2020

CONSTRUCTION COMPLETE: JULY 31 - AUGUST 28, 2020

23. WORK BY THE OWNER

The following work will be accomplished by the Owner or will be let under separate contracts and will not be included under the General Prime Contract, unless noted otherwise or for installation:

Owner Furnished = OF
Owner Installed = OI
Contractor Furnished = CF
Contractor Installed = CI

Furnishing, Fixtures and Equipment (FF&E):

Markerboards and Whiteboards OG/CI (ADD-2)
Existing Faculty / User FFE = OF/OI
All furniture depicted in gray on FFE plans
Note: This includes items like freezers, autoclaves, dewers, etc…
Pickett' Study Kitchen (assumes all items are salvaged from current location)
Dishwasher OF/CI
Refrigerator OF/OI
Range OF/OI

New Faculty / User FFE = OF/OI
All furniture depicted in white with heavy black lines on FFE plans

Pickett’s Study Kitchen
Recirculating Range Hood OF/CI
Garbage Disposal (new with sink) OF/CI

Adapted Fitness (Columna)
Observation Cameras
Cabling CF/CI
Backboxes CF/CI
Display OF/OI
Camera OF/OI
Mobile Lab Benches = CF/CI

Hoods (x2) in Shared wet lab and Diffee Spaces = OF/CI
Dust Collector and Air Cleaner in Biomechanics Workshop = OF/CI
All other equipment in Biomechanics Workshop = OF/OI

Fire Extinguishers:
All Fire Extinguisher (located in plan) OF/OI

Audio Visual Components (AV):
AV = OF/CI
Monitors / TVs / Displays / Mounting Hardware = OF/CI
Wall Backing - CF/CI
HDMI / Interface Connection / Backboxes / Cabling / Conduit = not included
Associated Power and Data = CF/CI

Door Hardware:
Locksets = CF/CI
Cylinders to be handed over to UW Lock Shop for keying
Electronic Lock Power Supplies = CF/CI
Electronic Door Monitoring Devices = CF/CI
Install of Cylinders once Keying is complete = CI

Signage / Wayfinding: (ADD-2)
Code Required Signage = CF/CI
Wayfinding / non-code required = not included, CF/CI as indicated in Drawings

Security:
Cameras = not included at the moment
Cabling = CF/CI
Card Readers = CF/CI

Head End Box = OF/OI
Cabling Termination @ Head End = CF/OI
Card Readers = OF/CI
Cabling Termination @ Head End = CF/CI

DoIT:
Wireless Access Points (WAPS) = OF/OI

ASBESTOS ABATEMENT:
Removal of building materials identified as asbestos-containing materials (ACM) that will be disturbed by renovation work, including ACM spray applied and trowel applied surfaces, cement-asbestos products, ACM flooring and associated ACM flooring mastics and friable miscellaneous ACM. See General Requirements, HAZARDOUS SUBSTANCES for regulatory requirements, materials testing results, and General Prime Contractor’s responsibility regarding ACM.

DDC SYSTEM:
Direct Digital Control System for HVAC as specified in Section 23 09 23.

***
1. Definitions

(a) "Mechanical, electrical, or plumbing subcontractor" ("MEP Subcontractor") is a contractor that performs mechanical (Heating, Ventilating, and Air Conditioning, electrical, plumbing, or fire protection (fire suppression) work for the Project, and enters into a contract with the General Prime Contractor to perform their division of work.

(b) "Qualified bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)1.

(c) "Qualified responsible bidder" means a contractor who is a qualified bidder and who is a responsible bidder.

(d) "Responsible bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)2.

(e) "Single prime contracting" means bidding and contracting through a process in which only a general prime contractor has a contractual relationship with the owner and all mechanical, electrical, or audio visual subcontractors are identified by the department and are subcontractors to the General Prime Contractor.

(f) "General Prime Contractor" is a contractor that enters into a contract with the owner to perform all work as required by the Contract Documents and enters into contracts with subcontractors including MEP Subcontractors identified by the Owner.

(g) "Non-MEP Subcontractor" is a subcontractor to a General Prime Contractor in divisions of work other than mechanical, electrical, and audio visual. This includes suppliers and installers to the General Prime Contractor.

(h) "Subcontractor" is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.
(i) "Contractor" is all contractors working on a project regardless of contractual relationship. This includes the General Prime Contractor, MEP Subcontractors, Non-MEP Subcontractors, and all Subcontractors, regardless of tier of subcontract.

2. GENERAL

Time for bid opening shall be the prevailing central standard or daylight saving time in force at Madison, Wisconsin, on the date set forth in the Invitation to Bid.

All potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4 or upon request from DFD--email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. The Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders.

The Owner will issue an addendum if a successful MEP bid is withdrawn or rejected after the MEP Subcontractors have been identified but before the General Prime Contractor bid opening. This addendum will include a revised list of successful MEP bids that must be included in General Prime Contractor bids and will move the General Prime Contractor bid opening five days later to allow bidders sufficient time to update their bids based on the revised MEP list.

Before submitting a bid, the Bidder shall examine all of the Bidding Documents listed in the Table of Contents of these specifications. The successful Bidder will be required to do all work which is shown on the drawings, mentioned in the specifications or reasonably implied as necessary to complete the division of work being bid for this project.

The Bidder shall visit and examine the site to become acquainted with the adjacent areas, means of approach to the site, conditions of actual job site, and facilities for delivering, storing, placing, and handling of materials and equipment.

Failure to visit the site or failure to examine any and all Bidding Documents will in no way relieve the successful Bidder from the necessity of furnishing any materials or equipment, or performing any work, that may be required to complete the work in accordance with the Bidding Documents. Neglect of above requirements will not be accepted as reason for delay in the work or additional compensation.

All bidders shall have established and diligently maintained a satisfactory safety program, and if eligible for Experience Modification Rating (EMR), must have a rating of 1.20 or less as established by the Wisconsin Compensation Rating Bureau (WCRB) or the National Council on Compensation Insurance (NCCI).

3. DRAWINGS AND SPECIFICATIONS

The drawings and specifications that form a part of these Bidding Documents are listed in the Table of Contents of these specifications.

Complete sets of Bidding Documents for all trades will be issued to all Bidders, irrespective of the category of work to be bid on, in order that all Bidders may be familiar with the work of other trades as they affect their bid.

4. INTERPRETATION

No verbal explanation or instructions will be given in regard to the meaning of the drawings or specifications during the bid period. Bidders shall bring inadequacies, omissions or conflicts to the Architect/Engineer's attention at least ten (10) days before the date set for bid opening. Prompt clarification will be supplied to all bidders of record by addendum.
Failure to so request clarification or interpretation of the drawings and specifications will not relieve the successful Bidder of responsibility. Signing of the subcontract with the General Prime Contractor will be considered as implicitly denoting that the MEP Subcontractor has thorough understanding of the scope of work and comprehension of the Bidding Documents.

Neither the Architect/Engineer nor the Owner will be responsible for verbal instructions.

5. MANDATORY PRE-BID DOA CERTIFICATION

All potential bidders must become certified as qualified and responsible bidders before they can bid on state projects over $50,000. The criteria for determining certification of qualified and responsible bidders are itemized in Wis. Stat. s. 16.855(9m). If the Owner determines that more experience is necessary for a particular project, the Owner may include additional requirements.

6. BID GUARANTEE

A bid bond prepared on the Bid Bond Form bound herein, payable to the Owner in the amount not less than 10% of the maximum bid shall accompany each bid as a guarantee. A bank certified check or a cashier’s check may accompany each bid as a guarantee pursuant to Wis. Stat. s. 779.14(1m)(c)2.b. and 779.14(1s). Failure to enter into the contract with the owner (including failure to obtain certificate of insurance and separate 100% performance and 100% payment bonds) with the General Prime Contractor may result in forfeiture of the Bid Bond. The company issuing the Bonds must be licensed to do business in Wisconsin.

Any bid which is not accompanied by a bid guarantee will not be accepted and will not be read at the bid opening.

All checks tendered as bid guarantee, except those of the three lowest bidders, will be returned to their makers within three (3) days after bid opening. All such retained checks will be returned immediately upon execution of the contract between the General Prime Contractor and the MEP Subcontractor.

7. WITHDRAWAL OF BIDS

Prior to the time fixed for bid opening, bids may be withdrawn by written request from the Bidder, without prejudice to the right of the Bidder to file a new bid. Withdrawn bids will be returned unopened.

After the bid has been opened, negligence on the part of the Bidder in preparing their bid confers no right for withdrawal of the bid without penalty.

If a bid contains an error, omission, or mistake, the bidder may limit liability to the amount of their bid guarantee by giving the Owner written Notice, within seventy-two (72) hours of the MEP bid opening, of their intent not to execute the contract with the General Prime Contractor. If no such notice is given, the Owner reserves the right to obtain the amount of the difference in bid price between the low bidder and the next low bidder.

8. MEP BIDDER IDENTIFICATION

Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified MEP Subcontractor in each applicable MEP division of work (as long as the cost does not exceed the amount of project funds available).

The lowest dollar amounts submitted by qualified, responsible, certified bidders on the SEPARATE BASE BIDS for various specified mechanical, electrical, plumbing, and fire protection divisions of the work; or

The lowest dollar amount submitted by qualified, responsible, certified bidders on the COMBINED BASE BIDS for any combination of the Separate Base Bids for various specified mechanical, electrical, plumbing, and fire protection divisions of the work.
The Owner reserves the right to reject any and all bids, or to waive any informality in any bid, or to accept any bid which will serve the best interest of the Owner.

9. MEP SUBCONTRACT WITH GENERAL PRIME CONTRACTOR

The General Prime Contractor will offer the successful MEP Bidder(s) a subcontract. A contract entered into between a General Prime Contractor and a MEP Subcontractor must include a scope of work clause identical to the scope of work clause included in the MEP Subcontractor bid documents. A General Prime Contractor and an MEP Subcontractor may not enter any agreement in connection with bids submitted that would alter or affect the scope or price of the contracts entered into. This prohibition does not apply to the Owner change orders that result in changes to the plans or specifications, or to back charges allowed by the contract.

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor.

As the work progresses under any MEP subcontract for construction of a project, the General Prime Contractor shall, upon request of a subcontractor, pay to the subcontractor an amount equal to the proportionate value of the subcontractor's work properly completed, less retainage. The retainage shall be an amount equal to not more than 5 percent of the subcontractor's work completed until 50 percent of the subcontractor's work has been completed. At 50 percent completion, no additional amounts may be retained, and partial payments shall be made in full to the subcontractor unless the department certifies that the subcontractor's work is not proceeding satisfactorily. At 50 percent completion or any time thereafter when the progress of the subcontractor's work is not satisfactory, additional amounts may be retained but the total retainage may not be more than 10 percent of the value of the work completed. Upon substantial completion of the subcontractor's work, any amount retained shall be paid to the subcontractor, less the value of any required corrective work or uncompleted work. All payments the General Prime Contractor makes under this paragraph shall be within 7 calendar days after the date on which the General Prime Contractor receives payment from the Owner.

The contract entered into between the General Prime Contractor and an MEP Subcontractor must contain all of the following clauses:

**Scope of Work.** The MEP Subcontractor scope of work is identical to the General Prime Contractor scope of work included in these bidding and contract documents. By submitting and signing a bid, all bidders have examined all of the Bidding Documents listed in the Table of Contents of the project specifications. The successful bidders will be required to do all work which is shown on the drawings, mentioned in the specifications, or reasonably implied as necessary to complete the division of work bid for this project.

**Prompt Payment.** (General prime contractor) shall pay (mechanical, electrical, or plumbing subcontractor) in accordance with section 16.855(19)(b), Wisconsin stats, for work that has been satisfactorily completed and properly invoiced by (mechanical, electrical, or plumbing subcontractor). A payment is timely if it is mailed, delivered, or transferred to (mechanical, electrical, or plumbing subcontractor) by the deadline under section 16.855(19)(b), Wisconsin stats.

If (mechanical, electrical, or plumbing subcontractor) is not paid by the deadline in this contract, (general prime contractor) shall pay interest on the balance due from the eighth day after the (general prime contractor) receives payment from the Owner for the work for which payment is due and owing to (mechanical, electrical, or plumbing subcontractor), at the rate specified in section 71.82, Wisconsin stats., compounded monthly.

A (mechanical, electrical, or plumbing subcontractor) that receives payment as provided under this contract and that subcontracts with another entity shall pay those subcontractors, and be liable for interest on late payments to those subcontractors, in the same manner as the (general prime contractor) is required to pay the (mechanical, electrical, or plumbing subcontractor) under this contract.

**Insurance and Bonds.** (Mechanical, electrical, or plumbing subcontractor) shall not commence work under this contract until it has obtained all necessary insurance required of (mechanical, electrical, or plumbing subcontractor) in the contract between the (general prime contractor) and the Owner. (mechanical, electrical, or plumbing subcontractor) shall provide a separate 100 percent performance bond and a separate 100 percent
payment bond to the benefit of the (general prime contractor) as the sole named obligee. Original bonds shall be given to the (general prime contractor) and a copy shall be given to the Owner no later than 10 days after execution of this contract.

**Indemnification.** To the fullest extent permitted by law, (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others whom (general prime contractor) is required to indemnify under its contract with the department, and the employees of any of them, from and against claims, damages, fines, penalties, losses, and expenses, including but not limited to attorney fees, arising in any way out of or resulting from the performance of the work under this contract, but only to the extent such claim, damage, fine, penalty, loss, or expense: (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of property, including but not limited to loss of use resulting therefrom and is caused by the negligence, or acts or omissions, of (mechanical, electrical, or plumbing subcontractor), its subcontractors, any of their employees, and anyone directly or indirectly employed by them or anyone for whose acts they may be liable, or (2) as related to such claims, damages, fines, penalties, losses, and expense of or against (general prime contractor), results from or arises out of the negligence of the (general prime contractor) or other fault in providing general supervision or oversight of the work of (mechanical, electrical, or plumbing subcontractor) or (3) as related to claims, damages, fines, penalties, losses, and expense against the Owner, arises out of the department's status as owner of the project or project site.

In addition (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others (general prime contractor) is required to indemnify under its contract with the department, and the employees of any of them, from any liability, including liability resulting from a violation of any applicable safe place act, that (general prime contractor) or the owner incurs to any employee of (mechanical, electrical, or plumbing subcontractor) or any third party where the liability arises from a derivative claim from said employee, when the liability arises out of the failure of the (general prime contractor) or the owner to properly supervise, inspect, or approve the work or work area of (mechanical, electrical, or plumbing subcontractor), but only to the extent that the liability arises out of the acts or omissions of (mechanical, electrical, or plumbing subcontractor), its employees, or anyone for whom (mechanical, electrical, or plumbing subcontractor) may be liable, or from (mechanical, electrical, or plumbing subcontractor’s) breach of its contractual responsibilities or arises out of (general prime contractor’s) negligence or other fault in providing general supervision or oversight of (mechanical, electrical, or plumbing subcontractor’s) work or arises out of the Owner’s status as owner of the project or project site. In claims against (general prime contractor) or the owner by an employee of (mechanical, electrical, or plumbing subcontractor) or its subcontractors or anyone for whose acts (mechanical, electrical, or plumbing subcontractor) may be liable, the indemnification obligation of this paragraph is not limited by a limitation on amount or type of damage, compensation, or other benefits payable by or for the (mechanical, electrical, or plumbing subcontractor) subcontractors under workers compensation act.

Except as identified above, the obligations of (mechanical, electrical, or plumbing subcontractor) under this indemnification do not extend to the liability of (general prime contractor) and its agents or employees arising out of (1) preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications; (2) the giving of or failure to give directions or instructions by the (general prime contractor) or the University of Wisconsin System Administration or their agents or employees provided the giving or failure to give is the cause of the injury or damage; or (3) the acts or omissions of other subcontractors.

**Retainage.** Retainage shall occur and be in amounts and on a schedule equal to that in the contract between (general prime contractor) and the Owner.

10. CONTRACT INTERESTS BY STATE PUBLIC OFFICIALS

In accordance with section 19.45(6) of the Wisconsin Statutes, no state public official, member of a state public official’s immediate family, nor any organization with which the state public official or a member of the official’s immediate family owns or controls at least 10% of the outstanding equity, voting rights, or outstanding indebtedness may enter into any contract or lease involving a payment or payments of more than $3,000 within a twelve (12) month period, in whole or in part derived from state funds unless the state public official has first made written disclosure of the nature and extent of such relationship or interest to the board and to the department acting for the state in regard to such contract or lease. Any contract or lease entered into in violation of this subsection may be voided by the owner in an action commenced...
within three (3) years of the date on which the ethics board, or the department or officer acting for the state in regard to
the allocation of state funds from which such payment is derived, knew or should have known that a violation of this
subsection had occurred. This subsection does not affect the application of s.946.13.

11. DISCLOSURE OF OWNERSHIP
The Bidder shall disclose on the date of submitting a bid for this project, the name of any construction business of which
the Bidder has had a 25% or greater interest as a shareholder, officer, partner, or owner at any time during the preceding
three (3) years, if said construction business has been found by the Department of Workforce Development to have failed
to pay the prevailing wage rate or at least 1.5 times the hourly basic rate of pay for hours worked in excess of the
prevailing hours of labor to any employee at any time within the preceding three (3) years.

The "Disclosure of Ownership" form may be obtained at no charge from the Department of Workforce Development,
Equal Rights Division, P.O. Box 8928, Madison, Wisconsin 53708.

12. MINORITY BUSINESS ENTERPRISE AND DISABLED VETERAN-OWNED BUSINESS INVOLVEMENT
"Minority Business Enterprise" (MBE) means: a business certified by the Wisconsin Supplier Diversity Program under
Wis. Stat. s. 16.287(2).

"Disabled Veteran-Owne’d Business” (DVB) means: a business certified by the Wisconsin Supplier Diversity Program
under Wis. Stat. s. 16.283(3).

General Prime Contractors are strongly encouraged to use MBEs and DVBs.

General Prime Contractor Bidders will be required to submit a “Form A Affidavit of Compliance – Minority Business
Enterprise and Disabled Veteran-Owned Business Provision” with their bid or within seven days of the general prime
contractor bid opening. This form will indicate the percentage of MBE/DVB participation commitment. Submission of a
completed Affidavit of Compliance is an element of responsiveness. Failure to submit this completed form within the
above time limits may be considered unresponsiveness and may result in contract award to the next apparent low bidder.
All MEP Subcontractor Bidders shall also make every effort to encourage MBE and DVB involvement.

Every General Prime Contractor will be required to submit a report to the Owner, on a monthly basis and upon completion
of the contract, which identifies the Minority Business Enterprises and Disabled Veteran-Owned Business to whom work
was directly subcontracted and the value of said work. Subcontractors, material suppliers, etc. under contract to a
subcontractor of a General Prime Contractor may not be used for reporting purposes under this paragraph without prior
approval of the Wisconsin Supplier Diversity Program office. A MBE/DVB monthly report form will be sent to the General
Prime Contractor after the Notice to Proceed is issued.

For assistance in identifying DOA certified MBE and DVB companies, please contact the Department of Administration
Supplier Diversity Program at: DOABDMBD@wisconsin.gov, or by telephone at: (608)267-9550, or visit their website

13. SUBSTANCE ABUSE PREVENTION
Mission/Purpose: The Board of Regents of the University of Wisconsin System recognizes and supports drug-free
workplace programs as an important element in the national strategy to reduce the devastating effects of drug and alcohol
abuse in our society. The the Owner requires contractors, subcontractors, suppliers and vendors to establish and enforce
drug-free workplace policies and programs that conform to Sec 103.503 of the Wisconsin Statutes.

Statement: The possession, use of, distribution or purchase of illegal drugs, or use of alcohol at work by any employee
on the Owner’s construction job sites, is strictly prohibited.

The terms of this Substance Abuse Program Statement shall cover all construction personnel who are working on the
Owner’s job sites. This includes employees of all Contractors, Subcontractors, contractor suppliers, and their employees
working at the job site.
General Prime Contractor's and Subcontractor's Written Program: Each General Prime Contractor and Subcontractor shall have in place a written Substance Abuse Program conforming to Sec 103.503(3) of the Wisconsin Statutes.

In addition, representatives of the Owner who believe that any General Prime Contractor's or Subcontractor's employee may be under the influence of alcohol or drugs shall, where deemed appropriate, contact the General Prime Contractor's or Subcontractor's appropriate management/supervision authority and request that appropriate action be taken. The General Prime Contractor's or Subcontractor's employer shall immediately remove an employee who is suspected of being under the influence of illegal drugs or alcohol shall be immediately removed from the job site.

Procedures for testing and handling of positive drug tests shall be in compliance and consistent with State and Federal laws.

Costs of Substance Abuse Programs and Testing: The cost associated with the development, implementation and enforcement of Substance Abuse Programs and any testing required shall be the responsibility of each individual General Prime Contractor and Subcontractor for their respective employees working on the job site. The Owner will not be responsible for any cost of substance abuse testing, rehabilitation or medical reviews related to substance abuse.

The General Prime Contractor and Subcontractors shall indemnify and hold the Owner harmless from any damages or other costs incurred that are related to the implementation or enforcement of any substance abuse policy or program.

14. SECURITY FOR SEPARATE 100% PERFORMANCE AND SEPARATE 100% PAYMENT
MEP Subcontractors will be required to deliver to the General Prime Contractor separate 100% performance and 100% payment bonds to the benefit of the General Prime Contractor as the sole obligee. Original bonds shall be given to the General Prime Contractor and a copy shall be given to the Owner no later than 10 days after the execution of the subcontract. Separate 100% performance and separate 100% payment bond forms are included in Appendix 1 of these instructions.

15. TAXES
The Bidder shall include in the bid, all Sales, Consumer, Use and other similar taxes required by law.

In accordance with section 71.80(16)(a), Wis. Stats., SURETY BOND; NONRESIDENT CONTRACTOR. "All nonresident persons, whether incorporated or not, engaging in construction contracting in this state as contractor or subcontractor and not otherwise regularly engaged in business in this state, shall file a surety bond with the department (Wisconsin Department of Revenue MS 5-77 Attn: Non-Resident Surety Bonds, 2135 Rimrock Rd., Madison, WI 53713, telephone (608)266-2776.) payable to the department of revenue, to guarantee the payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. The amount of the bond shall be 3% of the contract or subcontract price on all contracts of $50,000 or more..."

16. SUBMISSION OF BIDS
All bids shall be submitted on the standard Bid Forms and only bids that are made on the Bid Forms will be considered. The entire Bid Form including the Addendum Receipt/Signature page, the Bid Bond Form (if used), and other supporting documents (if any) shall be filled out and submitted in the manner specified hereinafter. SPECIFICATIONS SHALL NOT ACCOMPANY BID.

No bids for any subdivision or any subclassification of this work, except as indicated, will be accepted. Any conditional bid, amendment to the Bid Form or appendant thereto, the inclusion of any correspondence, written or printed matter, unsolicited material or data, or details of any nature other than the information specifically called for, will disqualify the Bid. Telecommunication alterations to the bid will not be accepted.

Space(s) are provided on the Bid Form for each Division of Work. Appropriate insertions are as follows: numerals indicating the cost of the work, $0 if there is no cost for the work, or the words 'No Bid' if the bidder is not intending to bid the work. Blank space(s) will be considered the same as 'No Bid'.

Bidders may submit separate base bids for any divisions of work they are certified to bid on Fire Suppression, Plumbing, Heating, Ventilating and Air Conditioning, and Electrical (Divisions 26, 27 and 28).
Bidders may submit combined base bids for any combination of base bid categories if they are certified in each division of work included in their combined base bid.

Any addendum issued during the time of bidding shall become a part of the Bidding Documents. Bidders shall acknowledge receipt of such addendum in the appropriate space provided on the Bid Form. Bid will be rejected if receipt of an addendum applicable to the award of contract has not been acknowledged on the Bid Form.

All Bidders are encouraged to submit their bids using the SEALED BID envelope label that is provided within the specifications. The Owner is not responsible for bids not clearly labeled as required. Bids shall be signed, sealed, and delivered to the place indicated in the Invitation to Bid before the time designated in the Invitation to Bid. All bids shall be identified with the Project Name, Project Number, Project Location, Category of Work being bid on, Bid Date, and the Name and Address of Bidder. Delivery to a post office box does not constitute receipt of a bid.

Bidder shall be responsible for the sealed bid being delivered to the place designated for bid opening before the time specified. Bids received after the time indicated in the Invitation to Bid will be rejected and returned to Bidder unopened.

Bid will be considered invalid and will be rejected if it has not been signed by the Bidder.

Bids will be rejected if the bidder is not certified by DOA in the division(s) of work they bid on and/or if their bid amount exceeds their certification threshold in that division of work.

17. BASE BIDS

<table>
<thead>
<tr>
<th>Base Bid No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Fire Suppression Work as per specification Division 21, applicable provisions of Division 1 and related drawings.</td>
</tr>
<tr>
<td>3</td>
<td>Plumbing Work as per specification Division 22, applicable provisions of Division 1 and related drawings.</td>
</tr>
<tr>
<td>4</td>
<td>Heating, Ventilating and Air Conditioning Work as per specification Division 23, applicable provisions of Division 1 and related drawings.</td>
</tr>
<tr>
<td>5</td>
<td>Electrical Work as per specification Division 26, 27, 28 applicable provisions of Division 1 and related drawings.</td>
</tr>
</tbody>
</table>

18. INFORMATIONAL BIDS

None.

19. UNIT PRICES

Unit prices requested on the Bid Form shall be given and, if included in the General Prime Contract, will be used for additions to or deductions from amount of work required under the Contract. Unit prices shall include all costs of materials, labor, insurance, taxes, overhead and profit.

The Owner reserves the right to reject any unit prices as given in the bid if they are considered excessive or unreasonable, or to accept any or all of the unit prices that may be considered fair and reasonable. If any unit price is
reduced, the work governed by such unit price, if required, shall be treated as specified in General Conditions, Article entitled “Changes in the Work”.

The Bidder shall refer to the Bid Form and the applicable technical section to determine the basis of unit measure and the detailed information related to each unit price item requested.

20. STATED ALLOWANCES
None.

21. COMMENCEMENT AND COMPLETION
The successful General Prime Contractor Bidder shall commence work on a date to be specified in a written “Notice to Proceed” issued by the owner and to fully complete all the work per signed agreement of Substantial Completion as stated in the schedule below, within 267 consecutive calendar days for Phase 1 and 281 consecutive days for Phase 2 thereafter. Completion time will be converted to a specific date at the time the “Notice to Proceed” is issued. Phase 1 and Phase 2 run concurrently. Refer also to General Conditions for additional information in regards to time for completion. (ADD-1)

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor. These milestones will be incorporated into the master project schedule after the Notice to Proceed is issued.

NOTE: See Construction Logistics Plan Sheet, Drawing Sheet A040 for additional Schedule Information. See Construction Phasing Plan, Drawing Sheet A050 for additional Phasing Information.
The schedule must include, but is not limited to, the following milestone categories as they apply to the project:

<table>
<thead>
<tr>
<th>NOTICE TO PROCEED</th>
<th>NOVEMBER 22 &amp; OCTOBER 25, 2019 (ADD-1)(ADD-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOBILIZATION</td>
<td>NOVEMBER 25-27 &amp; OCTOBER 28-31, 2019 (ADD-1) (ADD-2)</td>
</tr>
<tr>
<td>PHASE 1 AND 2 START OF CONSTRUCTION</td>
<td>NOVEMBER 29-46, 2019 (ADD-1)(ADD-2)</td>
</tr>
<tr>
<td>PHASE 1 SUBSTANTIAL COMPLETION</td>
<td>JULY 17, 2020</td>
</tr>
<tr>
<td>PHASE 2 SUBSTANTIAL COMPLETION</td>
<td>JULY 31, 2020</td>
</tr>
<tr>
<td>PARTIAL PROJECT CLOSE-OUT / PUNCH LIST</td>
<td>JULY 17 – JULY 23, 2020</td>
</tr>
<tr>
<td>CONSTRUCTION COMPLETE</td>
<td>JULY 31 - AUGUST 28, 2020</td>
</tr>
</tbody>
</table>

22. WORK BY THE OWNER
The following work will be accomplished by the Owner or will be let under separate contracts and will not be included under the General Prime Contract, unless noted otherwise or for installation:

Owner Furnished = OF
Owner Installed = OI
Contractor Furnished = CF
Contractor Installed = CI

Furnishing, Fixtures and Equipment (FF&E):
Markerboards and Whiteboards OG/CI (ADD-2)
Existing Faculty / User FFE = OF/OI
All furniture depicted in gray on FFE plans
Note: This includes items like freezers, autoclaves, dewers, etc…
Pickett’s Study Kitchen (assumes all items are salvaged from current location)
Dishwasher OF/CI
Refrigerator OF/OI
Range OF/OI
New Faculty / User FFE = OF/OI
All furniture depicted in white with heavy black lines on FFE plans

Pickett's Study Kitchen
Recirculating Range Hood OF/CI
Garbage Disposal (new with sink) OF/CI

Adapted Fitness (Columna)
Observation Cameras
Cabling CF/CI
Backboxes CF/CI
Display OF/OI
Camera OF/OI
Mobile Lab Benches = CF/CI

Hoods (x2) in Shared wet lab and Diffee Spaces = OF/CI
Dust Collector and Air Cleaner in Biomechanics Workshop = OF/CI
All other equipment in Biomechanics Workshop = OF/OI

Fire Extinguishers:
All Fire Extinguisher (located in plan) OF/OI

Audio Visual Components (AV):
AV = OF/CI
Monitors / TVs / Displays / Mounting Hardware = OF/CI
Wall Backing - CF/CI
HDMI / Interface Connection / Backboxes / Cabling / Conduit = not included
Associated Power and Data = CF/CI

Door Hardware:
Locksets = CF/CI
Cylinders to be handed over to UW Lock Shop for keying
Electronic Lock Power Supplies = CF/CI
Electronic Door Monitoring Devices = CF/CI
Install of Cylinders once Keying is complete = CI

Signage / Wayfinding: (ADD-2)
Code Required Signage = CF/CI
Wayfinding / non-code required = not included CF/CI as indicated in Drawings

Security:
Cameras = not included at the moment
Cabling = CF/CI
Card Readers = CF/CI
Head End Box = OF/OI
Cabling Termination @ Head End = CF/OI
Card Readers = OF/CI
Cabling Termination @ Head End = CF/CI

DoIT:
Wireless Access Points (WAPS) = OF/OI

ASBESTOS ABATEMENT:
Removal of building materials identified as asbestos-containing materials (ACM) that will be disturbed by renovation work, including ACM spray applied and trowel applied surfaces, cement-asbestos products, ACM flooring and associated ACM flooring mastics and friable miscellaneous ACM. See General Requirements, HAZARDOUS SUBSTANCES for regulatory requirements, materials testing results, and General Prime Contractor’s responsibility regarding ACM.

DDC SYSTEM:
Direct Digital Control System for HVAC as specified in Section 23 09 23.
To: University of Wisconsin System Administration (UWSA)

We __________________________ (an individual)

Of ____________________________

Street                    City             County                      State           Zip

hereby agree to execute a contract with the Board of Regents of the University of Wisconsin System (the Owner) and a subcontract with all successful MEP Bidders identified by the Owner and listed in this bid, and to furnish satisfactory separate 100% Performance Bond and 100% Payment Bond in the amount specified no later than ten (10) days of the contract offer, and to provide all labor and material required for the construction of the project designated above, for the prices hereinafter set forth, in strict accordance with the Contract Documents prepared by Hammel, Green and Abrahamson, Inc., 333 East Erie Street, Milwaukee, Wisconsin, 53202 for the Owner and dated August 9, 2019.

Contact Instructions:
(For use by Owner to offer contract to the successful bidders)

Contact name:______________________________________________________________

Telephone Number:________________________________________________________

Email address:______________________________________________________________

FAX Number:_______________________________________________________________

IMPORTANT: BEFORE SUBMITTING YOUR BID, PLEASE VERIFY THAT:

1. You have been certified by DOA as a qualified and responsible bidder for the amount of your bid within the division(s) of work being bid.
2. You have entered all Bid amounts in numeric characters (Example: $9,999);
3. You have acknowledged receipt of all addenda;
4. You have signed the Bid Form
5. You have included a valid Bid Guarantee for not less than 10% of the value of the bid as either:
   a) a Bid Bond signed by the contractor and surety and with a Power of Attorney attached, or
   b) a Cashier’s Check or Bank Check pursuant to Wis stats. s. 779.14(1m)(c)2.b. and 779.14(1s). A Company or Personal Check will not be accepted.

UW-MADISON Project No. 0451-1803 / UWSA Project No. A-19-001

General Prime Contractor (GPC) Bid Opening: 2:00 P.M., Tuesday, October 22, 2019
SINGLE BASE BID - GENERAL PRIME CONTRACTOR

ALL WORK

BASE BID NO 1. ALL WORK required to fully complete the project in accordance with the Contract Documents, for the sum of ($______________________________________________________________)

Enter bid amount in numeric characters only (Example: $9,999). See Instructions to Bidders ‘Article 16 Submission of Base Bids’ for detailed instructions.

Base Bid No. 1 includes the bids from the following successful MEP Subcontractors identified by UWSA for the mechanical, electrical, plumbing, and fire protection divisions of work in this project. The General Prime Contractor shall enter into subcontracts with these MEP Subcontractors:

Fire Suppression Base Bid No. 2:
Identified Subcontractor: ________________________________
Amount: ________________________________

Plumbing Base Bid No. 3:
Identified Subcontractor: ________________________________
Amount: ________________________________

Heating Ventilating and Air Conditioning Base Bid No. 4:
Identified Subcontractor: ________________________________
Amount: ________________________________

Electrical (Divisions 26, 27 and 28) Base Bid No. 5:
Identified Subcontractor: ________________________________
Amount: ________________________________
COMMENCEMENT AND COMPLETION OF CONTRACT WORK

The undersigned agrees, if awarded the contract, to enter into a subcontract with the MEP Bidders identified by the Owner, and to commence the Contract work on or before a date to be specified in a written Notice to Proceed, and to complete the work in accordance with the project schedule in the Instructions to Bidders.

ADDENDUM RECEIPT

We acknowledge receipt of the following Addenda:

Addendum No.______________________________ Date_________________________
Addendum No.______________________________ Date_________________________
Addendum No.______________________________ Date_________________________
Addendum No.______________________________ Date_________________________

PRIOR TO SIGNING, BIDDERS’ ATTENTION IS DIRECTED TO INSTRUCTIONS TO BIDDERS TO AVOID THE POSSIBILITY OF INVALIDATING THIS BID.

BY SIGNING THIS BID FORM, THE BIDDER ATTESTS TO PERSONAL KNOWLEDGE OF THE FOLLOWING:

1. Bidder is certified by DOA as a qualified and responsible bidder for the amount of the bid submitted, within the division(s) of work being bid.

2. In accordance with Wis. Stats. 16.855 (13) and (14) and ARTICLE 21 of these Bidding Documents, Bidder agrees to enter into a subcontract with the successful MEP Subcontractors identified by the Owner.

3. Bidder has examined the drawings and specifications, carefully prepared the bid form, and has reviewed all forms in detail before submitting bid; and bidder, or the agents, officers, or employees thereof, have not, either directly or indirectly, entered into any agreement, bid rigging, bid rotation, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

4. That all work will be performed at the Bidder’s own proper cost and expense, that the Bidder will furnish all necessary materials, labor, tools, machinery, apparatus, and other means of construction in the manner provided in the applicable specifications, and at the time stated in the contract.

____________________________________
(Firm Name)
____________________________________
(Bidder’s Printed Name)
__/__/____
Date:
By
(Signature of Bidder)

[ ] Place an “X” in the box if Bidder is certified as a minority business enterprise or disabled veteran-owned business by the Wisconsin Supplier Diversity Program and wishes to be considered for the 5% bidder preference.
BID FORM – MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION (MEP) (Rev 02/2017)

THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM

s.16.855 Wis. Stats.

Revised Addendum 1, September 3, 2019
Revised Addendum 2, September 17, 2019

KINESIOLOGY RELOCATION
UNIVERSITY OF WISCONSIN - MADISON
MADISON, WISCONSIN

UW-MADISON Project No. 0451-1803 / UWSA Project No. A-19-001

Mechanical, Electrical, Plumbing, and Fire Protection (MEP) Bid Opening: 2:00 P.M., Tuesday, October 8
September 24, 2019. (ADD-1) (ADD-2)

To: University of Wisconsin System Administration (UWSA)

We__________________________________________

Of__________________________________________

Street                    City             County                      State           Zip

hereby agree to execute a subcontract with the General Prime Contractor awarded the contract for the project designated
above and to furnish satisfactory separate 100% Performance Bond and 100% Payment Bond in the amount specified
no later than ten (10) days after execution of the subcontract with the General Prime Contractor, and to provide all labor
and material required for the construction of the project designated above, for the prices hereinafter set forth, in strict
accordance with the Bidding Documents prepared by Hammel, Green and Abrahamson, Inc., 333 East Erie Street,
Milwaukee, Wisconsin, 53202 for the Owner and dated August 9, 2019

(For use by General Prime Contractor to offer subcontract to the successful MEP bidders identified through UWSA)

Contact name: __________________________________________

Telephone Number: ______________________________________

Email address: __________________________________________

FAX Number: __________________________________________

IMPORTANT: BEFORE SUBMITTING YOUR BID, PLEASE VERIFY THAT:

1. You have been certified by DOA as a qualified and responsible bidder for the amount of your bid within the
division(s) of work being bid.
2. You have entered all Bid amounts in numeric characters (Example: $9,999);
3. You have acknowledged receipt of all addenda;
4. You have signed the Bid Form
5. You have included a valid Bid Guarantee for not less than 10% of the value of the bid as either:
   a) a Bid Bond signed by the contractor and surety, with a Power of Attorney attached, or
   b) a Cashier’s Check or Bank Check pursuant to Wis. Stat. s. 779.14(1m)(c)2.b. and 779.14(1s). A
      Company or Personal Check will not be accepted.
FIRE SUPPRESSION

BASE BID NO. 2  Fire Suppression Work fully complete as per Bidding Documents,

for the sum of ($______________________________)

   Enter bid amount in numeric characters only (Example: $9,999). See MEP Instructions to Bidders ‘Article 16 Submission of Base Bids’ for detailed instructions.
PLUMBING

BASE BID NO. 3 Plumbing Work fully complete as per Bidding Documents,

for the sum of ($____________________________________

Enter bid amount in numeric characters only (Example: $9,999). See MEP Instructions to Bidders ‘Article 16 Submission of Base Bids’ for detailed instructions.
HEATING, VENTILATING AND AIR CONDITIONING

BASE BID NO. 4 Heating, Ventilating, Air Conditioning Work fully complete as per Bidding Documents, for the sum of

($______________________________________________________________)

Enter bid amount in numeric characters only (Example: $9,999). See MEP Instructions to Bidders ‘Article 16 Submission of Base Bids’ for detailed instructions.
ELECTRICAL

BASE BID NO. 5  Electrical (Divisions 26, 27 and 28) Work fully complete as per Bidding Documents

for the sum of ($______________________________)

Enter bid amount in numeric characters only (Example: $9,999). See MEP Instructions to Bidders ‘Article 16 Submission of Base Bids’ for detailed instructions.

UNIT PRICES (listed below are for additions to or deductions from amount of work required under the contract.) Applicable to Base Bid No. 5

Unit prices include labor, material, bond, overhead and profit, and other cost associated with the unit to provide a functional unit integrated into the system being added to or deleted from.

<table>
<thead>
<tr>
<th>Item:</th>
<th>Existing Location</th>
<th>New Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>U01. Addressable Pull Station (semi-flush)</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U02. Addressable Pull Station (surface)</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U03. Photoelectric Smoke Detector, including Base (surface back box)</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U04. Photoelectric Smoke Detector, including Base (concealed back box in existing plaster or drywall ceiling)</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U05. Photoelectric Duct Smoke Detector, including Housing and sample tubes</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U06. Demo Existing Duct Smoke Detector</td>
<td>($_______)</td>
<td></td>
</tr>
<tr>
<td>U10. Intelligent / Addressable Heat Detector, Including Base (surface back box)</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U11. Intelligent / Addressable Heat Detector, Including Base (concealed back box in existing plaster or drywall ceiling)</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U16. Addressable Monitor Module surface mount</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U17. Addressable Mini-Monitor Module surface mount</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U18. Addressable Control (Relay Output) Module, surface mount</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U19. Addressable Control (Supervised Output) Module surface mount</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U20. Remote Test Switch with Indicating LED For Duct Smoke Detector</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U21. Visual-Only Notification Appliance - surface-mount including surface back box</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
<tr>
<td>U22. Visual-Only Notification Appliance</td>
<td>($_______)</td>
<td>($_______)</td>
</tr>
</tbody>
</table>
semi-Flush, wall mount (concealed back box in existing plaster or drywall wall or ceiling)

U23. Audible-Only Notification Appliance - surface-mount  ($________) ($________) per unit

U24. Audible-Only Notification Appliance – semi-flush, ceiling mount (Semi-Flush shall be interpreted as flush back box)  ($________) ($________) per unit

U25. Combination Audible / Visual Notification Appliance – (surface-mount, including surface back box)  ($________) ($________) per unit

U26. Combination Audible / Visual Notification Appliance – (concealed back box in existing plaster or drywall wall or ceiling)  ($________) ($________) per unit

U29. Access Panel for Plaster / Gypsum Ceilings or Walls (1-foot by 1-foot size, installed complete and painted)  ($________) ($________) per unit

U31. Access Panel for Plaster / Gypsum Ceilings or Walls (18-inch by 18-inch, installed complete and painted)  ($________) per unit

U32. Access Panel for Plaster / Gypsum Ceilings or Walls (2-foot by 2-foot size, installed complete and painted)  ($________) per unit

U33. 10 linear feet of ¾-inch raceway (non-painted), including any needed wiring & fittings, installed complete  ($________) per unit

U34. 10 linear feet of ¾-inch raceway (painted to match), including any needed wiring & fittings, installed complete  ($________) per unit

U35. 10 linear feet of ½ inch raceway (non-painted), including any needed wiring & fittings, installed complete  ($________) per unit

U36. 10 linear feet of ½-inch raceway (painted to match), including any needed wiring & fittings, installed complete  ($________) per unit

U37. 10 linear feet of ½ inch equivalent-size Surface Raceway, including needed wiring & fittings, installed complete  ($________) per unit

U38. 10 linear feet of 3/4 inch equivalent-size Surface Raceway, including needed wiring & fittings, installed complete  ($________) per unit

U39. Notification Appliance Power Extender  ($________) per unit

Allow a minimum of 50 feet of conduit or surface metal raceway and wire for each unit listed above that requires raceways.  Unit prices shall include all required back boxes, fittings, terminations and all other hardware and software modifications to perform the intend operations when added to the system or deleted from it as specified in Section 28 31 00
COMBINED BASE BIDS OPTION

BASE BID NO. _________ for __________(Division of Work),
BASE BID NO. _________ for __________(Division of Work) and
BASE BID NO. _________ for __________(Division of Work) and
BASE BID NO. _________ for __________(Division of Work) Work fully complete as per specifications and related
drawings,

for the sum of ($__________________________________________)

Enter bid amount in numeric characters only (Example: $9,999). See MEP Instructions to
Bidders ‘Article 16 Submission of Base Bids’ for detailed instructions.
COMMENCEMENT AND COMPLETION OF WORK

The undersigned agrees, if identified as the lowest qualified responsible certified bidder for the divisions(s) of work bid on, to enter into a subcontract with the General Prime Contractor, and to commence the work on or before a date to be specified in a written Notice to Proceed issued by UWSA to the General Prime Contractor, and to complete the work in accordance with the project schedule in the Instructions to Bidders.

ADDENDUM RECEIPT

We acknowledge receipt of the following Addenda:

1. Addendum No. ______________________ Date __________________
2. Addendum No. ______________________ Date __________________
3. Addendum No. ______________________ Date __________________
4. Addendum No. ______________________ Date __________________

PRIOR TO SIGNING, BIDDERS' ATTENTION IS DIRECTED TO MEP INSTRUCTIONS TO BIDDERS TO AVOID THE POSSIBILITY OF INVALIDATING THIS BID.

BY SIGNING THIS BID FORM, THE BIDDER ATTESTS TO PERSONAL KNOWLEDGE OF THE FOLLOWING:

1. Bidder is certified by DOA as a qualified and responsible bidder for the amount of the bid submitted, within the division(s) of work being bid.
2. Bidder agrees to enter into a subcontract with the General Prime Contractor in accordance with Wis. Stats. s. 16.855(14) and ARTICLE 9 of these Bidding Documents.
3. Bidder has examined the drawings and specifications, carefully prepared the bid form, and has reviewed all forms in detail before submitting bid; and bidder, or the agents, officers, or employees thereof, have not, either directly or indirectly, entered into any agreement, bid rigging, bid rotation, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this bid.
4. That all work will be performed at the Bidder's own proper cost and expense, that the Bidder will furnish all necessary materials, labor, tools, machinery, apparatus, and other means of construction in the manner provided in the applicable specifications, and at the time stated in the General Prime Contractor's Notice to Proceed.

____________________________________
(Firm Name)

____________________________________
(Bidder's Printed Name)

Date: ______________________________

By _______________________________
(Signature of Bidder)

[ ] Place an "X" in the box if Bidder is certified as a minority business enterprise or disabled veteran-owned business by the Wisconsin Supplier Diversity Program.
SECTION 024119
SELECTIVE DEMOLITION

Revised Addendum 2, September 17, 2019

PART 1 – GENERAL

SUMMARY
This Section includes the following:
Demolition and removal of selected portions of building or structure.
Demolition and removal of site elements.
Salvage of existing items to be reused or recycled.

Related Sections:
Section 017329 – Cutting and Patching.

DEFINITIONS
Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

SUBMITTALS
Schedule of Selective Demolition Activities: Indicate the following:
Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
Ensure Owner's on-site operations are uninterrupted.
Interruption of utility services. Indicate how long utility services will be interrupted.
Coordination for shutoff, capping, and continuation of utility services.
Use of elevator and stairs.
Locations of proposed dust- and noise-control temporary partitions and means of egress.
Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
Means of protection for items to remain and items in path of waste removal from building.

Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

QUALITY ASSURANCE
Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
Standards: Comply with ANSI A10.6 and NFPA 241.
Pre-Demolition Conference: Conduct conference at Project site to review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

PROJECT CONDITIONS

Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

Comply with requirements specified in Division 1 Section "Summary."

Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

Storage or sale of removed items or materials on-site is not permitted.

Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

Maintain fire-protection facilities in service during selective demolition operations.

WARRANTY

Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 – PRODUCTS
Not Used

PART 3 – EXECUTION

EXAMINATION

Verify that utilities have been disconnected and capped.

Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

Prior to the start of Demolition install dust partitions as noted on Sheet A060, Details 3, 4, 5 and General Notes on Sheet A100. (ADD-2)

Isolation of Work Areas in the Renovation Areas: Prevent noise dust, fumes, and odors from entering occupied areas. (ADD-2)

Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings. (ADD-2)

Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete. *(ADD-2)*

Maintain noise and dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.

Perform construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment. *(ADD-2)*

Before any coring through any concrete floor slabs is to take place for any division of work, the contractor is to engage service for ground penetrating radar to determine if there be any obstructions including electrical conduits.

Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

**UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

Comply with requirements for existing services/systems interruptions specified in Division 1 Section “Summary.”

Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

Owner will arrange to shut off indicated services/systems when requested by Contractor.

Arrange to shut off indicated utilities with utility companies.

If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

**PREPARATION**

Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

Cover and protect furniture, furnishings, and equipment that have not been removed.

Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

Strengthen or add new supports when required during progress of selective demolition.
SELECTIVE DEMOLITION, GENERAL

General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations.

Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

Maintain adequate ventilation when using cutting torches.

Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

Dispose of demolished items and materials promptly.

Removed and Salvaged Items:

Salvage and store onsite as directed by the General Contractor approximately 5 percent of existing undamaged acoustical ceiling tile for replacement in existing ceilings to remain that are damaged.

Clean salvaged items.

Pack or crate items after cleaning. Identify contents of containers.

Store items in a secure area until delivery to Owner.

Transport items to Owner’s storage area designated by Owner.

Protect items from damage during transport and storage.

Removed and Reinstalled Items:

Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

Pack or crate items after cleaning and repairing. Identify contents of containers.

Protect items from damage during transport and storage.

Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts. Neatly trim openings to dimensions indicated.

Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

DISPOSAL OF DEMOLISHED MATERIALS

General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

Do not allow demolished materials to accumulate on-site.

Remove debris in a manner that will prevent spillage on adjacent surfaces and areas.

Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

Burning: Do not burn demolished materials.

Disposal: Transport demolished materials off Owner's property and legally dispose of them.

CLEANING

Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION
SECTION 087100

DOOR HARDWARE

Revised Addendum 2, September 17, 2019

PART 1 – GENERAL

SUMMARY

This Section includes commercial door hardware for the following:
- Swinging doors
- Sliding doors
- Other doors to the extent indicated

Door Hardware includes, but is not necessarily limited to, the following:
- Mechanical door hardware
- Electromechanical door hardware
- Automatic operators
- Cylinders specified for doors in other sections

Related Sections:
- Division 08 Section “Hollow Metal Doors and Frames”
- Division 08 Section “Flush Wood Doors”
- Division 08 Section “Aluminum-Framed Entrances and Storefronts”
- Division 08 Section “Automatic Door Operators”
- Division 08 Section “Access Control Hardware”

Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
- ICC/IBC - International Building Code
- NFPA 70 - National Electrical Code
- NFPA 80 - Fire Doors and Windows
- NFPA 105 - Installation of Smoke Door Assemblies
- UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors
- State Building Codes, Local Amendments

Standards: All hardware specified herein shall comply with the following industry standards:
- ANSI/BHMA Certified Product Standards - A156 Series
- UL10C - Positive Pressure Fire Tests of Door Assemblies

SUBMITTALS

Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
Content: Include the following information:

- Type, style, function, size, label, hand, and finish of each door hardware item.
- Manufacturer of each item.
- Fastenings and other pertinent information.
- Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
- Explanation of abbreviations, symbols, and codes contained in schedule.
- Mounting locations for door hardware.
- Door and frame sizes and materials.
- Warranty information for each product.

Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

Informational Submittals:
- Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

QUALITY ASSURANCE

Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
- Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
- Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings."

Keying conference to incorporate the following criteria into the final keying schedule document:

- Function of building, purpose of each area and degree of security required.
- Plans for existing and future key system expansion.
- Requirements for key control storage and software.
- Installation of permanent keys, cylinder cores and software.
- Address and requirements for delivery of keys.

Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

- Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
- Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
- Review sequence of operation narratives for each unique access controlled opening.
- Review and finalize construction schedule and verify availability of materials.
- Review the required inspecting, testing, commissioning, and demonstration procedures.

At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

DELIVERY, STORAGE, AND HANDLING

Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

COORDINATION

Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

WARRANTY

General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

- Structural failures including excessive deflection, cracking, or breakage.
- Faulty operation of the hardware.
- Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- Electrical component defects and failures within the systems operation.

Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

Special Warranty Periods:
- Ten years for mortise locks and latches.
- Five years for exit hardware.
- Five years for motorized electric latch retraction exit devices.
- Two years for electromechanical door hardware.

MAINTENANCE SERVICE
Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner’s continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 – PRODUCTS

SCHEDULED DOOR HARDWARE
General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

- Named Manufacturer’s Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers’ names are abbreviated in the Door Hardware Schedule.

Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

HANGING DEVICES
Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

Quantity: Provide the following hinge quantity:
- Two Hinges: For doors with heights up to 60 inches.
- Three Hinges: For doors with heights 61 to 90 inches.
- Four Hinges: For doors with heights 91 to 120 inches.
- For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
• Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
• Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
• Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
• Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

Hinge Options: Comply with the following:
• Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

Manufacturers:
• Ives (IV).
• McKinney Products (MK) - TA Series.

Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

Manufacturers:
• Ives (IV).
• Pemko Products (PE).

POWER TRANSFER DEVICES
Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

Manufacturers:
• Securitron (SU) - EL-CEPT Series.
• Von Duprin (VD) - EPT-10 Series.

Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

Provide one each of the following tools as part of the base bid contract:
• McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
• McKinney Products (MK) - Connector Hand Tool: QC-R003.

Manufacturers:
• McKinney Products (MK) – QC-C Series.

DOOR OPERATING TRIM
Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.

Furnish dust proof strikes for bottom bolts.

Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.

Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

Manufacturers:
- Ives (IV).
- Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

Manufacturers:
- Ives (IV).
- Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.

Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.

Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.

Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.

Manufacturers:
- Ives (IV).
- Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

CYLINDERS AND KEYING
General: Cylinder manufacturer to have minimum (10) years’ experience designing secured master key systems and have on record a published security keying system policy.

Cylinders: Original manufacturer cylinders complying with the following:
- Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
- Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
- Bored-Lock Type: Cylinders with tailpieces to suit locks.
- Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
- Keyway: Verify with UW-Madison Lock Shop.

Keying System: Each type of lock and cylinders to be keyed by UW-Madison Lock Shop.
- UW Lock Shop shall provide the keyed lock cylinder with a full-size interchangeable core.
- Keyed locks shall come with zero bitted keys.
• Permanent cores to be purchased by UW-Madison.
• Permanent cores shall be installed by the contractor.

Key Quantity: Provide the following minimum number of keys:
• Blank Keys per Cylinder: Two (2)
• Construction Keys: Ten (10).

Construction Keying: Provide construction keyed cores, keyed alike.

MECHANICAL LOCKS AND LATCHING DEVICES
Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified.
Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body. Verify lever and escutcheon/rose design with UW Lockshop prior to ordering.

Manufacturers:
• Sargent Manufacturing (SA) – 8200 Series.
• Schlage (SC) – L9000 Series.

AUXILIARY LOCKS
Push-Pull Latches, Mortise: ANSI/BHMA A156.13, Series 1000, Grade 1 mortise type push-pull locks and latches with paddle trim capable of being mounted as a standard product in vertical (up or down) and horizontal (sideways) positions. Locksets to be manufactured with a corrosion resistant, formed steel case and be non-handed and field reversible for re-handing without disassembly of the lock body. Paddles and covers are manufactured from cast stainless steel, brass or bronze material.

Manufacturers:
• Glynn Johnson (GJ) - HL-6 9000 Series.
• Sargent Manufacturing (SA) - 7800 PT Series.

LOCK AND LATCH STRIKES
Strikes: Provide manufacturer’s standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
• Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
• Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
• Aluminum-Frame Strike Box: Provide manufacturer’s special strike box fabricated for aluminum framing.
• Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

Standards: Comply with the following:
• Strikes for Mortise Locks and Latches: BHMA A156.13.
• Strikes for Bored Locks and Latches: BHMA A156.2.
• Strikes for Auxiliary Deadlocks: BHMA A156.36.
• Dustproof Strikes: BHMA A156.16.

ELECTRIC STRIKES
Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike where specified.

Manufacturers:
• HES (HS).
• Von Duprin (VD).

Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

CONVENTIONAL EXIT DEVICES
General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.

Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.

Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.

Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

• Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.

• Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.


Rail Sizing: Provide exit device rails factory sized for proper door width application.

Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

Manufacturers:
• Sargent Manufacturing (SA) - 80 Series.
• Von Duprin (VD) - 35A/98 XP Series.

Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.

Provide keyed removable feature where specified in the Hardware Sets.

Provide stabilizers and mounting brackets as required.

Provide electrical quick connection wiring options as specified in the hardware sets.

Manufacturers:
  • Sargent Manufacturing (SA) - 980S Series.
  • Von Duprin (VD) – 9954 Series.

DOOR CLOSERS
All door closers specified herein shall meet or exceed the following criteria:

General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be UL listed for use of fire rated doors.

Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

Size of Units: Comply with manufacturer’s written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

Manufacturers:
  • LCN Closers (LC) - 4040XP Series.
  • Sargent Manufacturing (SA) - 281 Series.

ELECTROMECHANICAL DOOR OPERATORS
General: Provide low energy operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.

Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
Standard: Certified ANSI/BHMA A156.19.

Performance Requirements:

- Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
- Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.

Configuration: Surface mounted or in-ground as required. Door operators to control single swinging and pair of swinging doors.

Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19.

Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.

Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.

Brackets and Reinforcements: Manufacturer’s standard, fabricated from aluminum with nonferrous shims for aligning system components.

Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- Besam Automated Entrance Systems (BE) – SW200i Series.
- LCN Closers (LC) - 9500 Series.
- Stanley Security Solutions (ST) - Magic Force Series.

SURFACE MOUNTED CLOSER HOLDERS

Electromagnetic Door Holders: Certified ANSI A156.15 electromagnetic door holder/releases with a minimum 20 to 40 pounds holding power and single coil construction able to accommodate 12VDC, 24VAC, 24VDC and 120VAC. Coils to be independently wound, employing an integral fuse and armatures to include a positive release button.

Manufacturers:
- LCN Door Closers (LC) - SEM7800 Series.
- Rixson (RF) - 980/990 Series.

ARCHITECTURAL TRIM

Door Protective Trim

General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

Size: Fabricate protection plates (kick, armor, or mop) not more than 2” less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1” less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.

Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
- Stainless Steel: 300 grade, 050-inch thick.
Options and fasteners: Provide manufacturer’s designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.

Manufacturers:
- Ives (IV).
- Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

**DOOR STOPS AND HOLDERS**

General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

Manufacturers:
- Ives (IV).
- Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

Manufacturers:
- Glynn Johnson (GJ).
- Rixson Door Controls (RF).

**ARCHITECTURAL SEALS**

General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

- Provide smoke labeled perimeter gasketing at all smoke labeled openings.

Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

- Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

Manufacturers:
- National Guard Products (NG).
- Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
- Reese Enterprises, Inc. (RE).

**ELECTRONIC ACCESSORIES**

Key Switches: Key switches furnished standard with stainless steel single gang face plate with a 12/24VDC bi-color LED indicator. Integral backing bracket permits integration with any 1 1/4” or 1 1/2” mortise type cylinder. Key switches available as momentary or maintained action and in narrow face plate options.

Manufacturers:
- Security Door Controls (SD) - 800 Series.
- Securitron (SU) - MK Series.

Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

Manufacturers:
- Security Door Controls (SD) - DPS Series.
- Securitron (SU) - DPS Series.

Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

Manufacturers:
- Securitron (SU) - BPS Series.
- Von Duprin (VD) - PS.

**FABRICATION**

Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

**FINISHES**

Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer’s standards, but in no case less than specified by referenced standards for the applicable units of hardware.

Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

**PART 3 – EXECUTION**

**EXAMINATION**

Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

PREPARATION
Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.


INSTALLATION
Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
- Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
- Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

FIELD QUALITY CONTROL
Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

ADJUSTING
Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

CLEANING AND PROTECTION
Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

Clean adjacent surfaces soiled by door hardware installation.
Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

**DEMONSTRATION**

Instruct Owner’s maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

**DOOR HARDWARE SETS**

The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

The supplier is responsible for handing and sizing all products and providing the correct option for the appropriate door type and material where more than one is presented in the hardware sets. Quantities listed are for each pair of doors, or for each single door.

MK McKinney  
PE Pemko  
RO Rockwood  
SA SARGENT  
VD Von Duprin  
SC Schlage  
LC LCN  
MC Medeco  
AT Accurate Lock and Hardware  
RF Rixson  
NO Norton  
SU Securitron  
OT OTHER  
HD HID  
ST Stanley

**HARDWARE SETS**

*(next page)*
HARDWARE SETS

Set: 200

1 Continuous Hinge CFM_SLF-HD1 PE
1 Rim Exit (nightlatch) 99L US26D VD
1 Cylinder By UW Lock Shop 26 MC
1 Pull RM201 US32D RO
1 Door Operator (Sgl) Magic Force AL ST ⚡
1 Threshold 252x3AFG US26D VD
1 Sweep 18061CNB PE
2 Actuator Button MFR’s Standard ST ⚡

Notes: Weatherstripping by door/frame mfr.
When exit device is dogged, pressing either actuator button opens door automatically.
Free egress at all times.

Set: 230

6 Hinge TA2714 US26D MK
2 SVR-LBR Exit (classroom)
2 Cylinder By UW Lock Shop 26 MC
2 Door Closer 4040XP AL LC
2 Kick Plate K1050 10” 4BE CSK US32D RO
2 Wall Stop 402 / 405 (as req’d) US26D RO
1 Perimeter Gasketing S88BL (head & jambs) PE
1 Astragal Edge Seal S772D x Dr Ht PE

Set: 231

6 Hinge (heavy weight) T4A3786 US26D MK
2 CVR-LBR Exit (classroom)
2 Cylinder By UW Lock Shop 26 MC
1 Door Operator (Pair) Magic Access 689 ST ⚡
2 Kick Plate K1050 10” 4BE CSK US32D RO
2 Wall Stop 402 / 405 (as req’d) US26D RO
1 Perimeter Gasketing S88BL (head & jambs) PE
1 Astragal Edge Seal S772D x Dr Ht PE
2 Actuator Button Mfr’s Standard ST ⚡

Set: 235

3 Hinge TA2714 US26D MK
1 Exit Device (classroom)
1 Cylinder By UW Lock Shop 26 MC
1 Closer x Stop 4041XP-CUSH AL LC

Notes: When exit devices are manually dogged, pressing either actuator button opens both doors automatically.
Free egress through either leaf at all times.
1. Kick Plate: K1050 10'' 4BE CSK US32D RO

**Set: 240**

3. Hinge (heavy weight): T4A3786 US26D MK
1. Rim Exit (classroom, rated)


US26D VD
1. Cylinder: By UW Lock Shop 26 MC
1. Closer x Stop: 4040XP-CUSH AL LC
1. Kick Plate: K1050 10'' 4BE CSK US32D RO
1. Perimeter Gasketing: S88BL (head & jambs) PE

**Set: 310**

3. Hinge (heavy weight): T4A3786 US26D MK
1. Electrified Mortise Lock: L9092EU 03A US26D SC
1. Cylinder: By UW Lock Shop 26 MC
1. Door Closer: 4040XP AL LC
1. Kick Plate: K1050 10'' 4BE CSK US32D RO
1. Wall Stop: 402 / 405 (as req'd) US26D RO
3. Silencer: 608 RO
1. E-Lynx Harness (Jamb): QC-C1500P MK
1. E-Lynx Harness (Door): QC-C*** (length / type as req'd) MK
1. Electric Power Transfer: EPT-10 VD
1. Wiring Diagram: Elevation & Point to Point OT
1. Power Supply: BPS (size & type as req'd) SU

Notes:

OPERATION:
3. Free egress at all times.
1. Door normally closed and secured.
1. Valid credential at card reader releases fail secure electric lock allowing entry.
1. Entry by emergency key override.

**Set: 311**

3. Hinge (heavy weight): T4A3786 US26D MK
1. Storeroom Lock


US26D SC
1. Mortise Cylinder: By UW Lock Shop 26 MC
1. Electric Strike: 1500C-LM 630 HS
1. Auto Operator: Magic Force ST
1. Kick Plate: K1050 10'' 4BE CSK US32D RO
1. Wall Stop: 402 / 405 (as req'd) US26D RO
3. Silencer: 608 RO
1. E-Lynx Harness (Jamb): QC-C1500P MK
2. Actuator Button: Mfr's Standard ST
1. Wiring Diagram: Elevation & Point to Point OT
1. Card Reader: By Owner, GC Installed HD
1. Power Supply: BPS (size & type as req'd) SU
Notes:

OPERATION:
Free egress at all times.
Door normally closed and secured.
Valid credential at card reader unlocks fail secure electric strike allowing entry.
Entry by emergency key override.
Strike can be set to be unlocked on time schedule in EAC system.
When strike is unlocked, either actuator button opens door automatically.
Inside actuator button will unlock electric strike and open door automatically.

Set: 320

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge (heavy weight)</td>
<td>T4A3786</td>
<td>US26D MK</td>
</tr>
<tr>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D SC</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26 MC</td>
</tr>
<tr>
<td>1 Electric Strike</td>
<td>1500C-LM</td>
<td>630 HS</td>
</tr>
<tr>
<td>1 Auto Operator</td>
<td>Magic Access</td>
<td>ST</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D RO</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
<td>US26D RO</td>
</tr>
<tr>
<td>1 Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
<td>PE</td>
</tr>
<tr>
<td>1 E-Lynx Harness (Jamb)</td>
<td>QC-C1500P</td>
<td>MK</td>
</tr>
<tr>
<td>1 Actuator Button</td>
<td>Mfr's Standard</td>
<td>ST</td>
</tr>
<tr>
<td>1 Wiring Diagram</td>
<td>Elevation &amp; Point to Point</td>
<td>OT</td>
</tr>
<tr>
<td>1 Card Reader</td>
<td>By Owner, GC Installed</td>
<td>HD</td>
</tr>
<tr>
<td>1 Power Supply</td>
<td>BPS (size &amp; type as req'd)</td>
<td>SU</td>
</tr>
</tbody>
</table>

Notes:
OPERATION:
Free egress at all times.
Door normally closed and secured.
Valid credential at card reader unlocks fail secure electric strike allowing entry.
Entry by emergency key override.
Strike can be set to be unlocked on time schedule in EAC system.
Strike is locked on fire alarm or loss of power (fail secure).
When strike is unlocked, either actuator button opens door automatically.
Inside actuator button will unlock electric strike and open door automatically.

Set: 330

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 6 Hinge</td>
<td>TA2714</td>
<td>US26D MK</td>
</tr>
<tr>
<td>1 Dust Proof Strike</td>
<td>570</td>
<td>US26D RO</td>
</tr>
<tr>
<td>2 Manual Flush Bolt</td>
<td>555/557 (as req'd)</td>
<td>US26D RO</td>
</tr>
<tr>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D SC</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26 MC</td>
</tr>
<tr>
<td>2 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
<td>US26D RO</td>
</tr>
<tr>
<td>2 Silencer</td>
<td>608</td>
<td>RO</td>
</tr>
</tbody>
</table>

Set: 340

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Hinge</td>
<td>TA2714</td>
<td>US26D MK</td>
</tr>
<tr>
<td>1 Dust Proof Strike</td>
<td>570</td>
<td>US26D RO</td>
</tr>
<tr>
<td>1 C/L Flush Bolt Set</td>
<td>2845/2945 (as req'd)</td>
<td>US26D RO</td>
</tr>
<tr>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D SC</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26 MC</td>
</tr>
<tr>
<td>1 Coordinator</td>
<td>2600 Series x FB x Wear Plates</td>
<td>Black RO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1</td>
<td>2 Mounting Bracket</td>
<td>2601AB/C</td>
</tr>
<tr>
<td>2</td>
<td>2 Door Closer</td>
<td>4040XP</td>
</tr>
<tr>
<td>3</td>
<td>2 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
</tr>
<tr>
<td>4</td>
<td>2 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>5</td>
<td>1 Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
</tr>
<tr>
<td>6</td>
<td>1 Astragal Edge Seal</td>
<td>S772D x Dr Ht</td>
</tr>
</tbody>
</table>

**Set: 350**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>11</td>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>12</td>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
<td>MC</td>
</tr>
<tr>
<td>13</td>
<td>1 Door Closer</td>
<td>4040XP</td>
<td>AL</td>
<td>LC</td>
</tr>
<tr>
<td>14</td>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D</td>
<td>RO</td>
</tr>
<tr>
<td>15</td>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
<td>US26D</td>
<td>RO</td>
</tr>
<tr>
<td>16</td>
<td>3 Silencer</td>
<td>608</td>
<td>RO</td>
<td></td>
</tr>
</tbody>
</table>

**Set: 360**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>21</td>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>22</td>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
<td>MC</td>
</tr>
<tr>
<td>23</td>
<td>1 Closer x Stop</td>
<td>4040XP-CUSH</td>
<td>AL</td>
<td>LC</td>
</tr>
<tr>
<td>24</td>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D</td>
<td>RO</td>
</tr>
<tr>
<td>25</td>
<td>1 Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
<td>PE</td>
<td></td>
</tr>
</tbody>
</table>

**Set: 400**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>30</td>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>31</td>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
<td>MC</td>
</tr>
<tr>
<td>32</td>
<td>1 Closer x Stop</td>
<td>4040XP-CUSH</td>
<td>AL</td>
<td>LC</td>
</tr>
<tr>
<td>33</td>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D</td>
<td>RO</td>
</tr>
<tr>
<td>34</td>
<td>3 Silencer</td>
<td>608</td>
<td>RO</td>
<td></td>
</tr>
</tbody>
</table>

**Set: 410**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>39</td>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>40</td>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
<td>MC</td>
</tr>
<tr>
<td>41</td>
<td>1 Closer x Stop</td>
<td>4040XP-CUSH</td>
<td>AL</td>
<td>LC</td>
</tr>
<tr>
<td>42</td>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D</td>
<td>RO</td>
</tr>
<tr>
<td>43</td>
<td>1 Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
<td>PE</td>
<td></td>
</tr>
</tbody>
</table>

**Set: 440**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>48</td>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>49</td>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
<td>MC</td>
</tr>
<tr>
<td>50</td>
<td>1 Surf Overhead Stop</td>
<td>10-X36</td>
<td>630</td>
<td>RF</td>
</tr>
<tr>
<td>51</td>
<td>3 Silencer</td>
<td>608</td>
<td>RO</td>
<td></td>
</tr>
</tbody>
</table>

**Set: 450**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>56</td>
<td>1 Storeroom Lock</td>
<td>L9080L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>Set:</td>
<td>480</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D MK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Classroom Lock</td>
<td>L9070L 03A</td>
<td>US26D SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26 MC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Door Closer</td>
<td>4040XP</td>
<td>AL LC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D RO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
<td>US26D RO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
<td>PE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set:</th>
<th>512</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge (heavy weight)</td>
<td>T4A3786</td>
</tr>
<tr>
<td>1 Classroom Lock</td>
<td>L9070L 03A</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1 Closer x Stop/HO</td>
<td>4040XP-H-CUSH</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
</tr>
<tr>
<td>3 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set:</th>
<th>550</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1 Classroom Lock</td>
<td>L9070L 03A</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1 Surf Overhead Stop</td>
<td>10-X36</td>
</tr>
<tr>
<td>3 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set:</th>
<th>560</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1 Classroom Lock</td>
<td>L9070L 03A</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>1 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set:</th>
<th>590</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1 Office Lock</td>
<td>L9050L 03A</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1 Door Closer</td>
<td>4040XP</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>3 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

Notes: Seals for STC doors by STC door manufacturer.
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Model/Code</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Closer x Hold Open</td>
<td>4040XP-H</td>
<td>AL</td>
</tr>
<tr>
<td>2</td>
<td>Kick Plate</td>
<td>K1050 10” 4BE CSK</td>
<td>US32D</td>
</tr>
<tr>
<td>3</td>
<td>Wall Stop</td>
<td>402 / 405 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>4</td>
<td>Silencer</td>
<td>608</td>
<td>RO</td>
</tr>
</tbody>
</table>

Notes: Seals for STC doors by STC door manufacturer.

**Set: 592**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Model/Code</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3 Hinge (heavy weight)</td>
<td>T4A3786</td>
<td>US26D</td>
</tr>
<tr>
<td>11</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
<td>US26D</td>
</tr>
<tr>
<td>12</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
</tr>
<tr>
<td>13</td>
<td>Door Closer</td>
<td>4040XP</td>
<td>AL</td>
</tr>
<tr>
<td>14</td>
<td>Kick Plate</td>
<td>K1050 10” 4BE CSK</td>
<td>US32D</td>
</tr>
<tr>
<td>15</td>
<td>Wall Stop</td>
<td>402 / 405 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>16</td>
<td>Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
<td>PE</td>
</tr>
</tbody>
</table>

**Set: 593**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Model/Code</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>3 Hinge (heavy weight)</td>
<td>T4A3786</td>
<td>US26D</td>
</tr>
<tr>
<td>21</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
<td>US26D</td>
</tr>
<tr>
<td>22</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
</tr>
<tr>
<td>23</td>
<td>Door Closer x Hold Open</td>
<td>4040XP-H</td>
<td>AL</td>
</tr>
<tr>
<td>24</td>
<td>Kick Plate</td>
<td>K1050 10” 4BE CSK</td>
<td>US32D</td>
</tr>
<tr>
<td>25</td>
<td>Wall Stop</td>
<td>402 / 405 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>26</td>
<td>Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
<td>PE</td>
</tr>
</tbody>
</table>

**Set: 594**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Model/Code</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>6 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
</tr>
<tr>
<td>31</td>
<td>Dust Proof Strike</td>
<td>570</td>
<td>US26D</td>
</tr>
<tr>
<td>32</td>
<td>Manual Flush Bolt</td>
<td>555/557 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>33</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
<td>US26D</td>
</tr>
<tr>
<td>34</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
</tr>
<tr>
<td>35</td>
<td>Door Closer x Stop/HO</td>
<td>4040XP-H-CUSH</td>
<td>AL</td>
</tr>
<tr>
<td>36</td>
<td>Kick Plate</td>
<td>K1050 10” 4BE CSK</td>
<td>US32D</td>
</tr>
<tr>
<td>37</td>
<td>Wall Stop</td>
<td>402 / 405 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>38</td>
<td>Silencer</td>
<td>608</td>
<td>RO</td>
</tr>
</tbody>
</table>

**Set: 595**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Model/Code</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>6 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
</tr>
<tr>
<td>43</td>
<td>Dust Proof Strike</td>
<td>570</td>
<td>US26D</td>
</tr>
<tr>
<td>44</td>
<td>Manual Flush Bolt</td>
<td>555/557 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>45</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
<td>US26D</td>
</tr>
<tr>
<td>46</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
</tr>
<tr>
<td>47</td>
<td>Surf Overhead Stop</td>
<td>10-X36 (5258)</td>
<td>630</td>
</tr>
<tr>
<td>48</td>
<td>Door Closer x Stop/HO</td>
<td>4040XP-H-CUSH</td>
<td>AL</td>
</tr>
<tr>
<td>49</td>
<td>Kick Plate</td>
<td>K1050 10” 4BE CSK</td>
<td>US32D</td>
</tr>
<tr>
<td>50</td>
<td>Silencer</td>
<td>608</td>
<td>RO</td>
</tr>
</tbody>
</table>

**Set: 596**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Model/Code</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>6 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
</tr>
<tr>
<td>55</td>
<td>Dust Proof Strike</td>
<td>570</td>
<td>US26D</td>
</tr>
<tr>
<td>56</td>
<td>C/L Flush Bolt Set</td>
<td>2845/2945 (as req’d)</td>
<td>US26D</td>
</tr>
<tr>
<td>Set: 600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Hinge</td>
<td>TA2714</td>
<td>US26D</td>
<td>MK</td>
</tr>
<tr>
<td>1 Office Lock</td>
<td>L9050L 03A</td>
<td>US26D</td>
<td>SC</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
<td>26</td>
<td>MC</td>
</tr>
<tr>
<td>1 Closer x Stop</td>
<td>4040XP-CUSH</td>
<td>AL</td>
<td>LC</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
<td>US32D</td>
<td>RO</td>
</tr>
<tr>
<td>3 Silencer</td>
<td>608</td>
<td>RO</td>
<td></td>
</tr>
<tr>
<td>1 Coat Hook</td>
<td>RM801</td>
<td>US32D</td>
<td>RO</td>
</tr>
</tbody>
</table>

Notes: Seals for STC doors by STC door manufacturer.

<table>
<thead>
<tr>
<th>Set: 601</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
</tr>
<tr>
<td>1 Office Lock</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
</tr>
<tr>
<td>1 Closer x Stop/HO</td>
</tr>
<tr>
<td>1 Kick Plate</td>
</tr>
<tr>
<td>3 Silencer</td>
</tr>
<tr>
<td>1 Coat Hook</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set: 604</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge (heavy weight)</td>
</tr>
<tr>
<td>1 Office Lock</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
</tr>
<tr>
<td>1 Closer x Stop</td>
</tr>
<tr>
<td>1 Kick Plate</td>
</tr>
<tr>
<td>1 Perimeter Gasketing</td>
</tr>
<tr>
<td>1 Coat Hook</td>
</tr>
</tbody>
</table>

Notes: Seals for STC doors by STC door manufacturer.

<table>
<thead>
<tr>
<th>Set: 605</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge (heavy weight)</td>
</tr>
<tr>
<td>1 Office Lock</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
</tr>
<tr>
<td>1 Closer x Stop/HO</td>
</tr>
<tr>
<td>1 Kick Plate</td>
</tr>
<tr>
<td>1 Perimeter Gasketing</td>
</tr>
<tr>
<td>1 Coat Hook</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set: 610</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
</tr>
</tbody>
</table>

4200-008-00  UWSA A-19-001  Door Hardware
Construction Documents  August 9, 2019  08 71 00 - 21
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
</tr>
<tr>
<td>2</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>3</td>
<td>Surf Overhead Stop</td>
<td>10-X36</td>
</tr>
<tr>
<td>4</td>
<td>Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

**Set: 611 – NOT USED**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hinge (heavy weight)</td>
<td>T4A3786</td>
</tr>
<tr>
<td>1</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
</tr>
<tr>
<td>1</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1</td>
<td>Surf Overhead Stop</td>
<td>10-X36</td>
</tr>
<tr>
<td>3</td>
<td>Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

Notes: Seals for STC doors by STC door manufacturer.

**Set: 620**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1</td>
<td>Office Lock</td>
<td>L9050L 03A</td>
</tr>
<tr>
<td>1</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1</td>
<td>Wall Stop</td>
<td>402 / 405 (as req’d)</td>
</tr>
<tr>
<td>3</td>
<td>Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

**Set: 640**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hinge</td>
<td>TA2314</td>
</tr>
<tr>
<td>1</td>
<td>Hotel Guest Lock</td>
<td>L9486L 03A</td>
</tr>
<tr>
<td>1</td>
<td>Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1</td>
<td>Electric Strike (for deadbolts)</td>
<td>1600-CS-LM</td>
</tr>
<tr>
<td>1</td>
<td>Auto Operator</td>
<td>Magic Force</td>
</tr>
<tr>
<td>1</td>
<td>Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
</tr>
<tr>
<td>1</td>
<td>Mop Plate</td>
<td>K1050 4&quot; 4BE CSK</td>
</tr>
<tr>
<td>3</td>
<td>Silencer</td>
<td>608</td>
</tr>
<tr>
<td>1</td>
<td>E-Lynx Harness (Jamb)</td>
<td>QC-C1500P</td>
</tr>
<tr>
<td>2</td>
<td>Actuator Button</td>
<td>Mfr’s Standard</td>
</tr>
<tr>
<td>1</td>
<td>Wiring Diagram</td>
<td>Elevation &amp; Point to Point</td>
</tr>
<tr>
<td>1</td>
<td>Card Reader</td>
<td>By Owner, GC Installed</td>
</tr>
<tr>
<td>1</td>
<td>Power Supply</td>
<td>BPS (size &amp; type as req’d)</td>
</tr>
<tr>
<td>1</td>
<td>Coat Hook</td>
<td>RM801</td>
</tr>
</tbody>
</table>

Notes:
- Door normally closed and locked.
- Valid card unlocks electric strike for entry entry. Key override available.
- Projecting deadbolt from inside with thumbturn puts electric strike into privacy mode - valid card will NOT unlock electric strike.
- Turning inside lever retracts latch and deadbolt simultaneously.
- When electric strike is unlocked by card reader, outside actuator button opens door automatically.
- To egress, turn lever to retract latch and deadbolt. Inside actuator button will unlock electric strike and open door automatically. If deadbolt isn't retracted, strike will not release and door will not open automatically.
- Free manual egress at all times.

**Set: 710**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1</td>
<td>Passage Latch</td>
<td>L9010 03A</td>
</tr>
</tbody>
</table>

---

**4200-008-00**
**UWSA A-19-001**
**Door Hardware**
**Construction Documents**
**August 9, 2019**
**08 71 00 - 22**
<table>
<thead>
<tr>
<th>Set: 711</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1 Passage Latch</td>
<td>L9010 03A</td>
</tr>
<tr>
<td>1 Surf Overhead Stop</td>
<td>10-X36 (5258)</td>
</tr>
<tr>
<td>3 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

| Notes: Seals for STC doors by STC door manufacturer. |

<table>
<thead>
<tr>
<th>Set: 712 (ADD-02)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1 Dust Proof Strike</td>
<td>570</td>
</tr>
<tr>
<td>2 Manual Flush Bolt</td>
<td>555/557 (as req'd)</td>
</tr>
<tr>
<td>1 Passage Latch</td>
<td>L9010 03A</td>
</tr>
<tr>
<td>1 Surf Overhead Stop</td>
<td>10-X36 (5258)</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>2 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

| Notes: Seals for STC doors by STC door manufacturer. |

<table>
<thead>
<tr>
<th>Set: 715</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Swing Clear Hinge</td>
<td>TA2895 4-1/2&quot;</td>
</tr>
<tr>
<td>2 Hinge (spring)</td>
<td>1502 4-1/2&quot; x 4-1/2&quot;</td>
</tr>
<tr>
<td>1 Hinge</td>
<td>TA2714</td>
</tr>
<tr>
<td>1 Constant Latching FB</td>
<td>2905 (top only)</td>
</tr>
<tr>
<td>1 Hospital Latch</td>
<td>7815 PT</td>
</tr>
<tr>
<td>1 Coordinator</td>
<td>2600 Series</td>
</tr>
<tr>
<td>1 Closer x Delayed Action</td>
<td>4040XP DA</td>
</tr>
<tr>
<td>2 Armor Plate</td>
<td>K1050 F 34&quot; CSK BEV</td>
</tr>
<tr>
<td>2 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>1 Perimeter Gasketing</td>
<td>S88BL (head &amp; jambs)</td>
</tr>
<tr>
<td>1 Sound Gasketing</td>
<td>S773BL</td>
</tr>
<tr>
<td>2 Edge Guard</td>
<td>305 UL 34&quot; CUTOUT</td>
</tr>
<tr>
<td>1 Astragal Edge Seal</td>
<td>S772D x Dr Ht</td>
</tr>
</tbody>
</table>

| Notes: Seals for STC doors by STC door manufacturer. |

<table>
<thead>
<tr>
<th>Set: 720</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2314</td>
</tr>
<tr>
<td>1 Pull Plate</td>
<td>126x70C</td>
</tr>
<tr>
<td>1 Push Plate</td>
<td>70E</td>
</tr>
<tr>
<td>1 Door Closer</td>
<td>4040XP</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
</tr>
<tr>
<td>1 Mop Plate</td>
<td>K1050 4&quot; 4BE CSK</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>1 Silencer</td>
<td>608</td>
</tr>
</tbody>
</table>

<p>| Notes: Pressing either actuator button opens door automatically. |</p>
<table>
<thead>
<tr>
<th>Set: 725</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2314</td>
</tr>
<tr>
<td>1 Pull Plate</td>
<td>126x70C</td>
</tr>
<tr>
<td>1 Push Plate</td>
<td>70E</td>
</tr>
<tr>
<td>1 Automatic Operator</td>
<td>Magic Access</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; 4BE CSK</td>
</tr>
<tr>
<td>1 Mop Plate</td>
<td>K1050 4&quot; 4BE CSK</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>402 / 405 (as req'd)</td>
</tr>
<tr>
<td>1 Silencer</td>
<td>608</td>
</tr>
<tr>
<td>2 Actuator Button</td>
<td>Mfr’s Standard</td>
</tr>
</tbody>
</table>

Notes: Pressing either actuator button opens door automatically.

<table>
<thead>
<tr>
<th>Set: 755</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sliding Door Hdwe</td>
<td>PF28200A (size as required)</td>
</tr>
<tr>
<td>1 Mortise Pocket Door Lock</td>
<td>2002CPDL</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>By UW Lock Shop</td>
</tr>
<tr>
<td>1 Pocket Flush Pull (Cyl x T-Turn)</td>
<td>CS2002CxT</td>
</tr>
</tbody>
</table>

END OF SECTION
SECTION 26 27 26
WIRING DEVICES
BASED ON DFD MASTER ELECTRICAL SPEC DATED 03/01/19

Revised Addendum 2, September 17, 2019

PART 1 - GENERAL

SCOPE
This section describes the products and execution requirements relating to furnishing and installing wiring devices and related systems for the project. Included are the following topics:

PART 1 - GENERAL
Scope
Related Work
Submittals
Operation and Maintenance Data

PART 2 - PRODUCTS
Modularly Connected (Modular) Devices
Wall Switches
Receptacles
Emergency Lighting Control Units
Wall Dimmers
Device Plates and Box Covers

PART 3 - EXECUTION
Installation
Field Quality Control
ELCU Wiring
Adjusting

RELATED WORK
Applicable provisions of Division 1 govern work under this Section.

Section 01 91 01 or 01 91 02 – Commissioning Process

SUBMITTALS
Provide product data showing model numbers, configurations, finishes, dimensions, and manufacturer's instructions.

OPERATION AND MAINTENANCE DATA
All operations and maintenance data shall comply with the submission and content requirements specified under section GENERAL REQUIREMENTS.

PART 2 - PRODUCTS

MODULARLY CONNECTED (MODULAR) DEVICES:
Modularly connected devices are allowed, but not required.

Modular Pigtailed Connector: Polarized connector with minimum six-inch stranded copper wire leads, polycarbonate right-angle housing, UL498 listed, with finger-safe connector housing which provides insulation from conductive surfaces. Contacts shall be brass. Connector shall be manufactured so that it provides a secure connection such that it will maintain contact with the device until the device is removed for replacement. Modular connectors shall be provided with covers which protect the contacts from paint, drywall mud, and construction dust and debris. Connectors shall be Hubbell SNAPConnect, Leviton Lev-Lok, Pass & Seymour PlugTail, or approved equal.

WALL SWITCHES
GENERAL: Heavy duty use toggle switch, rated 20 amperes and 120/277 volts AC. Switches shall be UL20 Listed and meet Federal Specification WS-896. All switches shall be heavy duty Specification Grade.

Handle: Ivory made of nylon or high impact resistant material.

All switches on emergency circuits shall have a red handle with matching red cover plate.

Wall Switches for Lighting Circuits and Motor Loads Under 1/2 HP: All switches shall be back and side wired, screw clamp type, suitable for solid or stranded wire up to #10 AWG, with separate green ground screw. Switches shall be as follows:

- Hubbell 1221*,
- Leviton 1221-S*,
- Pass & Seymour CSB20AC1-*,
- or approved equal. (* indicates color selection).

Modular Wall Switches for Lighting Circuits and Motor Loads Under 1/2 HP: Switches shall be as follows:

- Hubbell SNAP1221*NA,
- Leviton M1221-*,
- Pass & Seymour PT20AC1-*,
- or approved equal. (* indicates color selection).

RECEPTACLES

General Requirements: NEMA Type 5-20R, ivory nylon or high impact resistant face. Receptacles shall be UL498 Listed and meet Federal Specification WC-596. All duplex receptacles shall be heavy duty Specification Grade, 20 amp rated.

Generally, all receptacles shall be duplex convenience type unless otherwise noted.

All receptacles on emergency circuits shall have a red face with matching red cover plate.

All receptacles designated as isolated ground shall have an isolated ground triangle imprint on the face of the receptacle.

All receptacles installed in bathrooms, kitchens, and within 6 feet of the outside edge of sinks shall be GFCI type.

All receptacles installed in outdoor locations, garages, rooftops, and in other damp or wet locations shall be GFCI type with a weather-resistant (WR) rating.

Convenience and Straight-blade Receptacles: All receptacles shall be back and side wired, screw clamp type, suitable for solid or stranded wire up to #10 AWG, with a separate green ground screw. Receptacles shall be as follows:

- Hubbell 5362*,
- Leviton 5362-*,
- Pass & Seymour PS5362*,
- or approved equal. (* indicates color selection).

GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter meeting the requirements of UL standard 943 Class A, including self-test functionality and reverse line-load misfire function repeatability. GFCI receptacles shall be as follows:

- Hubbell GFR5362SG*,
- Leviton GFNT2-*,
- Pass & Seymour 2097*,
- or approved equal. (* indicates color selection).
GFCI Receptacles with a weather-resistant (WR) rating: Weather-Resistant duplex convenience receptacle with integral ground fault current interrupter meeting the requirements of UL standard 943 Class A, including self-test functionality and reverse line-load misfire function repeatability. WR GFCI receptacles shall be as follows:

- Hubbell GFR5362SG*
- Leviton GFWR2-*
- Pass & Seymour 2097TRWR*
- or approved equal. (* indicates color selection).

USB Charger and Duplex Tamper-Resistant Receptacles: Do not use combination duplex receptacles with USB chargers. Use duplex receptacles as required for the application and as specified herein. Use separate 4-port USB charging devices.

USB Charging Devices: Single-gang 4-port USB charging station. USB ports shall meet UL94 for 5V flammability rating, and shall comply with battery charging specification USB BC1.2. USB ports shall be compatible with USB 1.1/2.0/3.0 devices, including Apple products. USB ports shall be rated 5VDC, 4.2A minimum. Devices shall be as follows:

- Hubbell USB4*
- Leviton USB4P-*
- Pass & Seymour TM8USB4*CC6*
- or approved equal. (* indicates color selection).

Locking-Blade Receptacles: As indicated on drawings.

Specific-use Receptacle Configuration: As indicated on drawings.

Modular Convenience and Straight-blade Receptacles: Receptacles shall be as follows:

- Hubbell SNAP5362*A
- Leviton M5362-*
- Pass & Seymour PT5362*
- or approved equal. (* indicates color selection).

Modular GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter meeting the requirements of UL standard 943 Class A, including self-test functionality and reverse line-load misfire function repeatability. GFCI receptacles shall be as follows:

- Hubbell GFRST83SNAP*
- Leviton MGFN2-*
- Pass & Seymour PT2097*
- or approved equal. (* indicates color selection).

Modular GFCI Receptacles with a weather-resistant (WR) rating: Use back and side wired devices in lieu of modular weather-resistant rated GFCI receptacles.

Retractable Power Cord Drop Reel: Devices shall be as follows: (ADD-2)

- Hubbell GR12340-TR
- Bayco SL-8900 Outlet Series
- ULINE H-5644

EMERGENCY LIGHTING CONTROL UNITS

General Requirements: Emergency Lighting Control Units (ELCUs) shall automatically illuminate connected emergency lighting upon utility power interruption, regardless of room switch position or occupancy sensor state.

The ELCU shall be UL 924 listed.

Warranty shall be 5 year replacement warranty.
Local room switch or lighting control shall turn both normal and emergency luminaires ON at the same
time (no dedicated emergency room switch required).

The ELCU shall have a minimum load rating of 20 Amps at 120V or 277V, 1800W Tungsten at 120V,
1500W Tungsten at 277V, 1 HP, or general use 20 Amp circuits.

The ELCU shall accept 120V or 277V, 60Hz Input & Output (voltage tolerance +/- 15%).

The ELCU shall include emergency power and normal power indicator LEDs, and a manual test switch.

The ELCU shall accept separate phases on the constant hot and switched hot inputs.

The ELCU shall include high voltage input surge protection up to 50,000V.

Load contacts shall be able to withstand 10 direct shorts while connected to a 20 Amp breaker without
permanent damage.

The ELCU shall not generate any objectionable electrical or mechanical noise.

The ELCU shall have UL 94-VO or UL 94-5VA flame rating and be approved for installation above the
suspended ceiling.

Dimming Applications: The ELCU shall automatically illuminate connected emergency lighting to full
brightness upon utility power interruption, regardless of dimmer or switch position or occupancy sensor
state.

The ELCU shall be compatible with 2-wire, 3-wire, 0-10V, and DALI dimming systems and ballasts.

The same local room switch, dimmer, or lighting control shall dim both normal and emergency luminaires
at the same level during normal operation.

WALL DIMMERS

General:
1. Compatible with the voltage of the circuit being controlled: 120V or 277V;
2. Compatible with the load being dimmed;
3. Linear full-range slide control;
4. Separate ON/OFF switch: single-pole, 3-way, or multiple-location operation as indicated on the
drawings;
5. No derating required in multi-gang applications;
6. Polycarbonate construction;
7. Color to match receptacles and/or standard toggle switches.

Line-voltage LED Dimmer:
1. Forward or reverse phase dimming control as required for the application;

0-10 V Dimmers:
1. Ratings: 30 mA sink current;
2. Adjustable dial allows users to trim the low-end dimming range;

DEVICE PLATES AND BOX COVERS

Decorative Cover Plate: Ivory smooth thermoplastic nylon. Note requirement for red plates on
emergency outlets and switches.

Weatherproof Cover: All receptacles installed in wet locations shall have an enclosure that is
weatherproof whether or not the attachment plug is inserted. Covers shall be gasketed metal with hinged
“in-use” device covers, powder coat painted. Non-metallic covers are not allowed. Covers shall be latching type and shall be lockable. Covers shall be identified as “extra-duty” type per NEC 406.9(B)(1).

**Damp Location Cover:** All receptacles installed outdoors in a location protected from the weather or in other damp locations shall have an enclosure that is weatherproof when the receptacle is covered (attachment plug not inserted and receptacle covers closed). Covers shall be gasketed metal with hinged device covers, powder coat painted. Non-metallic covers are not allowed.

**Surface Cover Plate:** Raised galvanized steel.

**PART 3 - EXECUTION**

**INSTALLATION**

See plans for device mounting heights.

Install wall switches with OFF position down.

Wall dimmers: de-rate ganged dimmers as instructed by manufacturer; do not use common neutral.

Install convenience receptacles with grounding pole on bottom.

Install box for information outlet at the same height as adjacent convenience receptacles. Locate boxes for information outlet as close as practical to duplex power outlet, approximately 2-inches apart.

Install box for telephone jack for wall telephone at 46-inches to center above finished floor.

Install specific-use receptacles at heights shown on Contract Drawings.

Install decorative plates on switch, receptacle, and blank outlets in finished areas.

Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

Install devices and wall plates flush and level.

Receptacles shall have a bonding conductor from grounding terminal to the metal conduit system. Self-grounding receptacles using mounting screws as bonding means are not approved.

**FIELD QUALITY CONTROL**

Inspect each wiring device for defects.

Operate each wall switch and sensor with circuit energized, and verify proper operation.

Verify operation of each ELCU by turning off the normal power circuit breaker at the panelboard.

Verify that each receptacle device is energized.

Test each receptacle device for proper polarity.

Test each GFCI receptacle device for proper operation.

The user agency and DFD personnel reserve the right to be present at all tests.

**ELCU WIRING**

For lights on emergency power *without* an emergency lighting control unit (ELCU), use the *emergency* circuit to energize the Digital Load Controller. Route the emergency circuit through the Load Controller’s...
relay to the light fixtures. Route any non-emergency circuits controlled by the same Load Controller through separate auxiliary relays (Digital Auxiliary I/O Interface Modules).

For lights on emergency power with an ELCU, route the normal power through the Load Controller relay to the ELCU, then to the normal power lighting fixtures. Connect the emergency circuit to the ELCU’s emergency power terminals, then to the emergency lighting fixtures. The ELCU will control the emergency lighting along with the normal lighting controls, but will turn the emergency lights ON in a power outage, regardless of the position of the Load Controller relays (ON or OFF).

ADJUSTING

Adjust devices and wall plates to be flush and level.

Mark all conductors with the panel and circuit number serving the device with a machine generated label, at the device, and on the back of the device cover.

END OF SECTION
SECTION 27 10 00
STRUCTURED CABLES
BASED ON DFDM MASTER SPECIFICATION DATED 03/01/19

Revised Addendum 2, September 17, 2019

PART 1 - GENERAL

SCOPE

This section describes the products and execution requirements relating to furnishing and installation of Communications Cabling and Termination Components and related sub-systems as part of a Structured Cabling System for the project. The specified cabling may support "voice", "data", audiovisual and networked security applications as noted.

Work may also include removal and recycling of unused, undocumented and otherwise "abandoned" cables. Refer to project drawings and Part 3 of this Section under "Salvage Materials".

Included are the following topics:

PART 1 - GENERAL
Scope
Related Work
References
Design Intent
Quality Assurance
Submittals

PART 2 - PRODUCTS
Horizontal Permanent Link
Horizontal Twisted-Pair Cable
Equipment Outlet
Modular Patch Panel
Horizontal Jumper Management
Surface Raceway
SPARES AND Miscellaneous Materials

PART 3 - EXECUTION
General
Salvage Materials
Cable Installation
Equipment Outlet
Cable Termination
Identification and Labeling
Testing and Acceptance
Documentation
Warranty

RELATED WORK
Applicable provisions of Division 1 govern work under this Section.

REFERENCES
All work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the Wisconsin Electrical Code and present manufacturing standards.
All materials shall be listed by UL and shall bear the UL label. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled.

Other applicable standards (plus applicable update bulletins and errata) are as follows:

- SPS Chapter 316 – Wisconsin Dept. of Safety and Professional Services Electrical Code
- TIA-568.0-D, -568.1-D, -568-C.2, -569-C, -606-B and TIA standards referenced therein. 568.3-D Fiber Optic
- ANSI/TIA-862-B – Structured Cabling Infrastructure Standard for Intelligent Building Systems
- ICEA publication S-80-576-2002
- ANSI/TIA-526-14-C and -526-7
- TIA-607-C – Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
- University of Wisconsin – Madison campus Technical Guidelines; https://cpd.fpm.wisc.edu/technical-guidelines/; Division 27 – Communications

DESIGN INTENT

General

The Structured Cabling System is based on a hierarchy of cables and termination locations.

All cables and related termination, support and grounding hardware, bonding, shall be furnished, installed, wired, tested, labeled, and documented by the Contractor, as detailed in the following sections.

Provide all labor and materials necessary to construct the system as described herein. This includes - but is not limited to - furnishing and installing cable, cable supports, innerduct, racking and termination components, termination, testing, labeling, and documentation.

Refer to Part 2 - PRODUCTS, Part 3 - EXECUTION, and the project drawings for applicable cable and connectivity types and installation requirements.

Horizontal Cabling

Horizontal Cabling System links the termination in the work area (Equipment Outlet (EO) or modular plug at a communications or security device) to the Horizontal Cross-connect serving the location (e.g. Telecommunications Room (TR) or Equipment Room (ER)). This cabling and the related connectors (both ends) is referred to as the “Permanent Link” in this section.

Security devices may include Card Access Credential Readers and/or Controllers and Video Surveillance cameras.

QUALITY ASSURANCE

Manufactured Items

The manufacturer(s) of cabling and connectivity components shall be a company specializing in and having a minimum of five years documented experience in producing products similar to those specified in this and related sections.
Contractor Qualifications
The contractor shall have been in this line of business for a minimum of five (5) years and have successfully completed one or more projects of scope 50% or more of the magnitude specified by these documents.

Contractor shall have necessary certifications to provide for Guarantees as specified herein.

Contractor shall be an active participant in Installers Program operated by Manufacturer of Cabling or Termination Components used. Contractor shall be a participant in this program at time of Bidding and remain so throughout project.

Contractor shall have on the project team at a minimum one (1) certified Installer trained by the manufacturer(s) of the cabling, hardware and accessories installed under this project.

At least (1) member of each test team shall be factory trained/certified in use of the test equipment. The project foreman shall have been factory trained in the use of the test equipment.

Mockups
Provide on request, mockups for Equipment Outlet configurations, especially those for Wireless Access Points, surface-mounted, harsh environment and other unique conditions as applicable to verify selections made under Sample submittals, to demonstrate configuration, capacity and aesthetics and to set quality standards for fabrication and installation. Coordinate with Division 26 and other Division 27 requirements as applicable to include all power and communications devices.

SUBMITTALS
General
Under the provisions of Division 1, prior to the start of work, submit:

• Shop Drawings
• Contractor Qualifications
• Schedule of Values (part of GPC or STC submittal)

Group Submittals to include complete documentation of related systems, products and accessories in a single submittal.

Submittals shall be original catalog sheets, photocopies, or electronic format (ADOBE Portable Document format “.pdf”) thereof. Facsimile (fax) sheets shall not be accepted.

Identify each proposed product with a mark or reproducible highlight.

Where multiple options for a particular product may apply (color, construction, features, etc.), identify the applicable option(s).

Where applicable, mark dimensions in units to match those specified.

The Engineer shall review the Submittals and through annotation and/or a cover sheet, provide comment.

Work shall not proceed without the Engineer’s review of the submitted items.

Additional submittals (Test Plan, Test Results, Documentation, Record Documents, etc.), required during and in follow-up to construction are detailed in Part 3.

Shop Drawing Submittal
Submit documents including:
• Manufacturer’s Product data for all products proposed indicating construction, materials, ratings, and all other parameters identified in Part 2 – PRODUCTS, below. Structured Cabling submittal shall include Test Data confirming Horizontal Cabling Channel Performance.

• Manufacturer’s installation instructions.

• Upon request by the Engineer, one (1) two-foot section of each cable type to be utilized for final approval by the Engineer. This two-foot section shall have the manufacturer’s cable markings visible. Upon request, samples from every reel sent to the site shall be provided.

Contractor Qualifications
Upon request, furnish project experience and certification documentation list as identified under “Quality Assurance / Contractor Qualifications” above.

Certification documents confirming contractor status as an active participant in Installers Program operated by Manufacturer of Cabling or Termination Components used shall be from the manufacturer.

For each project listed provide:
• Name and location of installation.
• Date of initial operation of system by owner. (Minimum period of operation for referenced project shall be 12 months.)
• Owner’s representative to contact and their telephone number.

Schedule of Values Submittal
As part of the General Prime Contractor (GPC) or Single Trade Contractor (STC) submittal, include in the breakdown of the proposed values for work to be performed:
• Materials (Cable, Connectivity, Equipment Racks, etc.)
• Installation (by building if applicable)
• Testing
• Documentation
• Training
• Additional categories as appropriate

PART 2 - PRODUCTS

HORIZONTAL PERMANENT LINK

General
The Horizontal Cable System is based on the installation of 4-pair, copper twisted-pair cables from the Equipment Outlet to the Horizontal Cross-connect (wiring hub). The combined cable and termination hardware is referred to as the “Permanent Link”.

Unshielded Twisted-Pair (UTP) is the default choice for the horizontal cable unless noted otherwise.

Where a shielded cable is called for, the cable shall incorporate an overall foil shield under the cable jacket and no shielding around individual pairs.

This cable is referred to herein as “F/UTP - Foiled Unshielded Twisted Pair”. “ScTP - Screened Twisted-pair” is also sometimes used in industry publications to describe the cable type.

Cable and Termination Components (Jack, Patch Panel / Wiring Blocks) are specified to function as a System. The compatibility of the Cable to be installed with the proposed termination components shall be recognized and documented by the Termination Component Manufacturer.

All Horizontal Link Cable shall be of the same manufacturer throughout the project.

4200-008-00  UWSA A-19-001  Structured Cabling
Construction Documents  August 9, 2019  27 10 00 - 4
All Horizontal Link connectivity components shall be of the same manufacturer throughout the project.

Exception: Where identified for 4-pair cable termination at a security device (e.g. camera, card access controller) or wireless access point, Modular Plug may be from a manufacturer other than that providing other Horizontal Link connectivity.

Application
There shall be no distinction between Horizontal Cables designated for “DATA” and “VOICE” (Telephone and/or other analog) applications.

Horizontal Cables for network-type Security devices (e.g. IP Video Surveillance Camera), if applicable, are considered “Data” cables for the purpose of this specification.

Performance
Where Cable, Component and Permanent Link performance is specified to “Exceed Category 6”, performance shall be defined as follows:

• Manufacturer’s published literature shall document performance margins over worst-case ANSI/TIA-568-C.2 Category 6 Channel requirements for Power Sum Attenuation-to-Crosstalk Ratio (PSACR). Channel – as tested – shall include 4-connections (minimum). Data shall be verified by an independent source (e.g. ETL, Intertek).

• Performance Margins shall be greater than zero (0) at all frequencies up to and including 250-MHz. PSACR shall remain positive at all frequencies up to and including 250-MHz.

• Exception: Where a Modular Plug is identified for 4-pair cable termination at a device, the above requirement for performance margins does not apply. Performance of the link shall meet the requirements of the standard (e.g. Category 6).

• Exception: For Outdoor and “Wet” Locations, performance margins over standards-compliant limits do not apply.

Project Requirements
Cable shall be listed as being suitable for use in environment defined.

Cable Rating:
Indoor: CMP or approved substitutes as defined by the NEC.

Cable and connectivity type, performance and features for included applications are as follows:

Workstation Link (to Equipment Outlet)
Performance Exceed Category 6
Cable Type 4-pair UTP
Cable Jacket Color Data Pink
Modular Jack Pinning and Color
Data T568B; Color Orange (when terminated in a TR) / Color Green
(when terminated in an alternate location such as an A/V Cabinet)

Wireless Access Point (WAP) Location
Performance Exceed Category 6
Cable Type 4-pair UTP
Cable Jacket Color Pink
Modular Jack Pinning and Color
T568B; Color Orange
Terminate in 8P8C Modular Jack
Security Device Location
Performance Exceed Category 6
Cable Type 4-pair UTP
Cable Jacket Color Pink
Modular Jack Pinning and Color T568B; Color Orange
Terminate in 8P8C Modular Jack

HORIZONTAL TWISTED-PAIR CABLE

General
All Cables and Termination hardware shall be technically compliant with and installed in accordance with the referenced ANSI/TIA documents and perform as required to provide the margins stated herein.

All cables shall be suitable for installation in the environment defined.

Cables shall be Underwriters Laboratory (UL) listed, comply with Article 800 (Communications Circuits) of the National Electrical Code and shall meet the specifications of NEMA (low loss), UL 444, and ICEA.

Construction:
Horizontal Cables shall be constructed of individually twisted pairs with 24-AWG (Category 5e) or 23-AWG (Category 6 and 6A) - as applicable - insulated solid copper conductors.

Pairs shall be identified by a banded color code in which conductor insulation is marked with a dominant color and banded with a contrasting color as follows:

- Pair 1: White-Blue / Blue (or Blue/White)
- Pair 2: White-Orange / Orange (or Orange/White)
- Pair 3: White-Green / Green (or Green/White)
- Pair 4: White-Brown / Brown (or Brown/White)

Indoor Applications
Cable performance shall be as required to meet the Permanent Link and Channel performance as specified in the above Article “HORIZONTAL PERMANENT LINK”

Cable Rating shall be as identified in the above article “HORIZONTAL PERMANENT LINK”
Cable Jacket color(s) shall be as identified in the above article “HORIZONTAL PERMANENT LINK”
Cable shall be packaged in a way that minimizes tangling and kinking of the cable during installation. Examples are open reels or packages that incorporate a rotating reel.

Indoor “Wet Locations” Applications
Cable shall be suitable for installation:
- Indoors including wet locations such as below grade duct or flood-prone areas.

Cable Performance: As identified in the above article “HORIZONTAL PERMANENT LINK”
Cable Rating shall be as identified in the above article “HORIZONTAL PERMANENT LINK”

Construction:
- Jacket: UV/sunlight-resistant. Cable Jacket color(s) requirement is waived; this cable type is typically black or gray.
- Fully water-blocked / flooded core.
- Overall Shield/Armor. N/A

Temperature Range:
- Operating: -40°C to +60°C (-40°F to +140°F)
- Installation: -20°C to +60°C (-4°F to +140°F)
**Horizontal Cable Termination**

Refer to Part 2 articles “EQUIPMENT OUTLET”, “MODULAR PATCH PANEL” and “TERMINATION BLOCKS”

Termination hardware performance shall be as required to meet the criteria defined in “HORIZONTAL CABLING / Performance” above.

**Zone Cable Assembly**

Where the project includes instances where cabling is terminated in a modular jack in a work area and the cabling is then extended through an interconnect at that jack- to the Equipment Outlet, the jack at the interconnection point jack constitutes a Consolidation Point (CP) under the standards. Examples include lab areas served by an umbilical, modular furniture, conference table or “island” type design furniture.

Cable Assembly from Consolidation Point (CP) to Equipment Outlet (EO) shall be considered as part of the Horizontal Permanent Link.

Cable and connecting components shall be from the same manufacturer of the products used in the Horizontal Cable and meet the performance requirements for those cables and connecting components as specified herein.

Construction:
- 4-pair, UTP, solid conductors. Listing (e.g. CMR or CMP) to match Horizontal Cable.
- Plug-to-Jack configuration; both 8P8C.
- T568A/B Pin/Pair Assignment.
- Modular Plugs shall be a Snag-less design and incorporate Boot/Strain-relief.

**EQUIPMENT OUTLET**

**General**

Horizontal cables shall each be terminated at their designated workstation location in the connector types described in the sub-sections below. Included are Modular Jacks. These connector assemblies shall snap into a mounting frame. The combined assembly is referred to as the Equipment Outlet (EO).

EO mounting configurations shall be as follows:
- Flush in new or where existing boxes are in place.
- Mounted on Modular Furniture (base panel) - Modular Furniture Type shall be defined prior to construction.
- Mounted in a Floor Box or Poke-Through Assembly.

The Equipment Outlet Frame-wall- and furniture-mount assemblies shall accommodate:
- A minimum of four (4) Modular Jacks, Fiber Optic Connectors and/or Coaxial Connectors when installed on a wall-mounted assembly.
- A minimum of two (2) Modular Jacks and/or Coaxial Connectors when installed on modular furniture. Design shall accommodate bend radius of installed cables.
- The outlet frame shall incorporate a mechanism for adjusting the surface plate to a plumb position.

Refer to the project drawings for configuration requirements for mounting in a Floor Box or Poke-Through Assembly.
Connector mounting in the faceplate/frame shall be as follows. Where “Angled” orientation is specified, connector exits the faceplate at a (approx.) 45 degree angle with the connector facing the floor.

- Wall-mount: Flush
- Furniture-Mount: Flush
- Floor Box or Poke-Through Assembly: Flush

The same orientation and positioning of Jacks and Connectors shall be utilized throughout the installation. Prior to installation, submit the proposed configuration for each EO type for review by the Engineer.

Wall Mount Outlet Faceplates shall incorporate recessed designation strips at the top and bottom of the frame for identifying labels. Designation strips shall be fitted with clear plastic covers.

Unused jack positions shall be fitted with a removable blank inserted into the opening.

Faceplate of the EO shall be constructed of High Impact Plastic.

Faceplate Color shall (1) match other utilities in the building or (2) when installed in Surface Raceway (if applicable), match the color of the Raceway.

The dust cover shall be designed to remain with the jack assembly when the jack is in use. No damage to the Jack pinning shall result from insertion or removal of these covers. Dust covers, which result in deformation of the jack pinning, shall not be accepted. **New dust covers shall be provided for all existing to remain jacks located within the area of the project scope.**

**Outlet for Dirty or other Harsh Environment**

**Construction:**
- **Form:** 2-gang.
- **Faceplate Material:** Stainless Steel.
- **Capacity:** (1) or (2) connector assemblies as required by location.
- **Jack Configuration/Mounting:** Flush mount; Includes mount for dust cap.

Configured with dust cap which is tethered to faceplate when not in use.

Meets IP67 sealing requirements.

**Outlet for Wall-mounted Telephone Sets**

Outlets intended for wall-mounted telephone sets shall be installed where identified (“W”) on the Project Drawing(s). The Wall Plate shall be of Stainless Steel construction, accommodate one (1) modular jack as previously defined, mounted on a standard single gang outlet box or bracket and include mating lugs for wall phone mounting.

**4-pair Copper Connector (Modular Jack)**

Connector type for 4-pair, copper twisted-pair cabling shall be an 8-pin, 8-conductor (8P8C) Modular Jack.

The interface between the jack and the 4-pair cable shall be an insulation-displacement type contact. Termination components shall be designed to maintain the cable's pair twists as closely as possible to the point of mechanical termination to meet performance requirements.

Modular Jacks shall be UL verified and listed.

Modular Jack spring wire contacts shall have a minimum of 50 micro-inches of gold plating.

Modular Jack performance shall be as required to meet the specified Permanent Link and Channel performance as specified in the above Article “HORIZONTAL PERMANENT LINK”
Connector type used for 4-pair F/UTP cabling-if applicable-shall match the requirements described above plus:

- Be of all metal construction or incorporate an overall metal shield.
- Provide an integral mechanism for achieving shield continuity between the connector and cable.

Modular Jack pinning and Color(s) shall be as identified in the above article “HORIZONTAL PERMANENT LINK”

**Modular Plug**

Where identified for 4-pair cable termination at a communications or security device, Modular Plug shall:

- Support termination of solid copper conductors of the AWG specific to the cable type specified.
- Meet the performance limits for the cable type specified as identified in the above article “HORIZONTAL PERMANENT LINK”

- Incorporate an overall shield when used to termination F/UTP cable type.
- Incorporate gold plated contacts.
- Provide for cable retention means other than the crimped conductors.
- Be a snag-less design.
- Retain conductors by means other than crimp on cable.
- Incorporate strain-relief. A boot is optional.

**MODULAR PATCH PANEL**

Patch Panels shall incorporate Modular Jacks meeting the specifications for the Equipment Outlet detailed in the above article “EQUIPMENT OUTLET”

- Jack color is not applicable unless noted otherwise
- Modular Patch Panel shall be rack-mounted
- Rack-mounted panel shall be Flat

Modular Patch Panel configuration shall not exceed 48 ports (2 rows of 24 ports each) in a 2 RU panel.

Panel designs which feature removable modular jack assemblies shall be fully populated (all ports occupied by jacks) and be provided in increments of no less than 12-jacks.

Modular Patch Panel cable termination shall:

- Have the ability to seat and cut 8 conductors (4 pairs) at a time and shall have the ability of terminating 22- through 26-gauge plastic insulated, solid and stranded copper conductors.
- Be designed to maintain the cable's pair twists as closely as possible to the point of mechanical termination.
- Include color coded designation strips or other markings to identify conductor position.

Modular Patch Panels shall incorporate cable support and/or strain relief mechanisms to secure cables at the termination block and to ensure that all manufacturers minimum bend radius specifications are adhered to.

Modular Patch Panel performance shall be as required to meet the specified Permanent Link and Channel performance.

Panels on which F/UTP cable is terminated shall incorporate:

- Ground clip(s) or spade(s) to achieve continuity between the connector shield and cable shield.
- Ground lugs (2).

**HORIZONTAL JUMPER MANAGEMENT**

Equipment Rack shall be equipped with Horizontal Jumper Management Hardware as to allow an orderly routing of twisted pair, optical fiber and coaxial jumpers from the patch panels to the customer provided network equipment.

Horizontal Jumper management hardware shall be:
A 2 RU (3.5"), plastic or painted steel panel.
Configured with a minimum of five (5) Jumper distribution rings (1.75" x 3.75" minimum dimension).

SURFACE RACEWAY
Where indicated on project drawings, Surface Raceway will be used as a cable path to individual Equipment Outlet locations. No exposed wire shall be permitted.

Refer also to Section 26 05 33 “Raceway and Boxes for Electrical Systems” for metallic and/or non-metallic Raceway guidelines for this Project.

With the agreement of the Architect/Engineer, if a need arises to add Equipment outlets in areas where the walls cannot be fished, the station wire serving these outlets shall be covered with raceways. No exposed wire shall be permitted within offices, laboratories, corridors, conference rooms or like facilities.

The non-metallic surface raceway shall have a screw applied base and have a snap on cover. Both the base and cover shall be manufactured of rigid natural PVC compounds.

The color of this raceway shall be match the décor and be paintable. All fittings including, but not limited to, extension boxes, elbows, tees, fixture boxes shall match the color of the raceway.

The raceway and all system devices must be UL Listed, exhibit nonflammable self-extinguishing characteristics, tested to specifications of UL94V-0 and be Category Compliant as defined by TIA-569-B.

Minimum bend radius shall be adhered to for UTP.

SPARES AND MISCELLANEOUS MATERIALS
Deliver per Division 1 - General Requirements, “Loose and Detachable Parts”

Spares
Provide:
- Modular Jacks matching the type(s) provided–consider performance and color(s).
- Equipment Outlet Faceplate of the type(s) provided.
- 1000-foot box matching the Horizontal Cable type(s) provided. Consider performance and color(s). Box shall be new and unopened.

Base spare jack and faceplate quantity on the scope of the initial installation:

<table>
<thead>
<tr>
<th>Installed Jacks</th>
<th>Spare Jacks</th>
<th>Spare Faceplates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial 100</td>
<td>(10)</td>
<td>(3)</td>
</tr>
<tr>
<td>200 – 500</td>
<td>(10) additional</td>
<td>(3) additional</td>
</tr>
<tr>
<td>Each additional 500</td>
<td>(10) additional</td>
<td>(3) additional</td>
</tr>
</tbody>
</table>

Cords and Cross-Connect Wire
Refer to specification Section 27 16 19 – Communications Patch Cords, Station Cords, and Cross-connect Wire. (ADD-2)

Security Fastener Tool
Provide five (5) sets of the tool(s) required to operate the security fastener type used on Equipment Outlet faceplates in secure areas. These tools shall be new and unused.

PART 3 - EXECUTION

GENERAL
Refer to Project Drawings which indicate Equipment Outlet locations, major cable routes and termination location(s) within each building. Coordinate duct allocation with the Agency.
Furnish and install all cables, connectors, hardware and equipment as shown on drawings and as specified above.

It is the contractor's responsibility to survey the site and include all necessary costs to perform the installation as specified.

Identifying and report to the DFDM Construction Representative any existing damage to walls, flooring, tiles and furnishings in the work area prior to start of work. All damage to interior spaces caused by the installation of cable, raceway or other hardware must be repaired by the Contractor. Repairs must match preexisting color and finish of walls, floors and ceilings. Any contractor-damaged ceiling tiles are to be replaced by the contractor to match color, size, style and texture.

Where unacceptable conditions are found, bring this to the attention of the DFDM Construction Representative immediately. A written resolution will follow to determine the appropriate action to be taken.

Project Design Intent is for cable fill in conduit for communications to not exceed 40% based on the maximum number of cables anticipated (initial requirement plus 25% growth) and a nominal assumed cable outside dimension of 0.25 inches. Identify to the DFDM Construction Rep. shared pathways that do not provide this capacity.

Beginning installation means contractor accepts existing conditions.

Should it be found by the Engineer that the materials or any portion thereof furnished and installed under this contract fail to comply with the specifications and drawings with the respect or regard to the quality, value of materials, appliances or labor used in the work, it shall be rejected and replaced by the Contractor and all work disturbed by changes necessitated in consequence of said defects or imperfections shall be made good at the Contractor's expense.

Furnish, install, test and document all cables, termination components and support hardware unless noted otherwise.

**SALVAGE MATERIALS**

Remove and recycle unused, undocumented and otherwise "abandoned" cables prior to the completion of the project.

The Agency shall be responsible for identifying and labeling all abandoned cable within the boundary of this project.

"Abandoned Cable" is defined per NEC 2011 Articles: 640, 645, 725, 760, 770, 800, 820 and 830. Further definition is contained in NFPA-75, NFPA-76 and NFPA-90A.

Disconnect abandoned Equipment Outlets and remove devices.

Remove cabling and communications devices in walls, floors, and ceilings scheduled for removal.

Provide blank cover for abandoned Equipment Outlet boxes that are not removed.

Schedule work with Owner/Agency and other contractors.

Except where noted on the project drawings, materials removed shall become the property of and shall be disposed/recycled by the Contractor.
Maintain materials and equipment to be turned over to the DFDM/agency and/or reused in condition equal to that existing before work began. Repair or replace materials or equipment damaged by the Contractor at no additional cost to the State.

**CABLE INSTALLATION**

**General**

Install all cables in continuous lengths from endpoint to endpoint. No splices shall be allowed unless noted otherwise.

Cable shall be suitable for the installation environment through which it passes. General Purpose or Riser-rated installed in a Plenum area shall be in conduit.

Furnish all required installation tools to facilitate cable pulling without damage to the cable jacket. Such equipment is to include, but not limited to, sheaves, winches, cable reels, cable reel jacks, duct entrance tunnels, pulling tension gauge and similar devices. All equipment shall be of substantial construction to allow steady progress once pulling has begun. Makeshift devices, which may move or wear in a manner to pose a hazard to the cable, shall not be used.

Pull all cable by hand unless installation conditions require mechanical assistance. Where mechanical assistance is used, care shall be taken to ensure that the maximum tensile load for the cable as defined by the manufacturer is not exceeded. This may be in the form of continuous monitoring of pulling tension, use of a “break-away” or other approved method.

Use a swivel between the pull-line and pulling grip to prevent the pull-line from imparting a twist to the cable.

Complete all work using qualified personnel utilizing state-of-the-art equipment and techniques. During pulling operation an adequate number of workers shall be present to allow cable observation at all points of duct entry and exit, as well as to feed cable and operate pulling machinery.

Pull cable in accordance with cable manufacturer’s recommendations and ANSI/IEEE C2 standards. Manufacturer’s recommendations shall be a part of the cable submittal. Recommended pulling tensions and pulling bending radius shall not be exceeded. Any cable bent or kinked to radius less than recommended dimension shall not be installed. If any installed cable is kinked to a radius less than recommended dimension it shall be replaced by the contractor with no additional cost to the project.

All wiring shall be run “free-air”, in conduit, in a secured metal raceway or in modular furniture as designated on the plan drawings. All cable shall be free of tension at both ends.

Avoid abrasion and other damage to cables during installation.

Pulling Lubricant may be used to ease pulling tensions. Lubricant shall be of a type that is non-injurious to the cable jacket and other materials used. Lubricant shall not harden or become adhesive with age.

All cable shall be free of tension at both ends. In cases where the cable must bear some stress, Kellem grips may be used to spread the strain over a longer length of cable.

Manufacturer’s minimum bend radius specifications shall be observed in all instances.

A pull cord (nylon; 1/8 inch minimum) shall be co-installed with all cable installed in any conduit.

**Protection of cable and devices from foreign materials:**

Provide adequate physical protection during construction to prevent foreign material application or contact with cables and devices.
Foreign material is defined as any material that would negatively impact the validity of the manufacturer’s performance warranty. This includes, but is not limited, to overspray of paint (accidental or otherwise), drywall compound, or any other surface chemical, liquid or compound that could come in contact with the cable, cable jacket or cable termination components.

Overspray of paint on any cable, cable jacket, termination component or device will not be accepted.

Use of any cleaning agents to remove overspray shall be per the cable manufacturer’s written consent.

Replace any component or assembly affected by a foreign material. This shall be at no additional cost to the project.

Should the manufacturer and/or warrantor of the structured cabling system desire to physically inspect the installed condition and certify the validity of the structured cabling system (via a signed and dated statement by an authorized representative of the structured cabling manufacturer), the Owner may, at their sole discretion, agree to accept said warranty in lieu of having the affected cables replaced.

In the case of plenum cabling, in addition to the statement from the manufacturer, submit a letter from the local Authority Having Jurisdiction stating that they consider the plenum rating of the cable to be intact and acceptable.

**Horizontal Cable Installation**

Refer to the project Drawings which identify the location of the Horizontal Cross-connect and Equipment Outlet (EO) locations.

Route Horizontal Cabling on each Floor to the Telecommunications Room (TR) on that floor or to the designated TR if on another floor.

The maximum Horizontal Cable length shall not exceed 295 feet (90 meters). This length is measured from the termination in the wiring closet to the equipment outlet and must include any slack required for the installation and termination.

Install horizontal cabling in a fashion as to avoid unnecessarily long runs. Identify and report to the engineer prior to installation any area that cannot be reached within the above constraints.

Changes to the plan shall be approved by the Engineer.

Where installed free-air, installation shall consider the following:

- Cable shall run at right angles and be kept clear of other trades work.
- Support cables according to code utilizing "J-Hook" or "Bridle Ring" supports anchored to ceiling concrete, or structural steel beams. Cable support devices shall be designed to maintain cables bend to larger than the minimum bend radius.
- J-Hooks shall incorporate a metal wire or other type closure to retain the cables.
- Bridle Rings shall be equipped with “saddles” to maintain the required bend radius.
- Space supports at a maximum 4 foot interval unless limited by building construction. If cable "sag" at mid-span exceeds 6 inches, another support shall be used.
- Do not place cable directly on the ceiling grid or attach cable in any manner to the ceiling grid wires.
- Do not attach cables to existing cabling, plumbing or steam piping, ductwork, ceiling supports or electrical or communications conduit.
Take care in the use of cable ties to secure and anchor the horizontal cabling. Do not overtighten ties as to compress the cable jacket. No sharp burrs should remain where excess length of the cable tie has been cut.

Protect cable sheaths from damage from sharp edges. Where a cable passes over a sharp edge, provide a bushing or grommet to protect the cable.

At Equipment Outlet locations, provide slack in each horizontal cable under 250 feet in length to allow for change in the office layout without re-cabling. These "service loops" shall be secured at the last cable support (e.g. J-Hook, Bridle Ring, etc.) before the cable leaves the ceiling. Minimum coil diameter shall be 8 inches.

Slack cable length shall, unless noted otherwise on the project drawings, be as follows:

- Where cables enter a fishable wall, conduit, surface raceway or box: 4-feet.
- Location where cables are installed into movable partition walls or modular furniture via a service pole: 15-feet.
- At Wireless Access Point (WAP) and Security Camera locations: 20-feet.

At all Telecommunication Rooms (TR), provide approximately 10-feet of slack in each horizontal cable to allow for changes in the telecommunication room layout without re-cabling.

This slack shall not be required where a horizontal cable length in excess of 295-feet would result.

Secure cable slack to the cable runway above the equipment racks.

Cable bends shall be 200% of the cable recommended minimum bend radius or greater.

Minimum separation distances between communications wires and cables, and any electric light, power, Class 1, non-powered fire alarm, or medium power network-powered broadband communications circuit shall comply with NEC Article 800.

In addition, to reduce or eliminate EMI, the following minimum separation distances shall be adhered to:

- Thirty-nine (39) inches from transformers and motors.
- Cabling installed in cable tray shall be separated from fluorescent lamps and associated fixtures by a minimum of 5 inches (125 mm).

Zero pathway separation distance is permitted when electrically conductive communications cables, power conductors or both are enclosed in metallic pathways that meet the following conditions:

- Metallic pathway(s) completely enclose the power conductors and are continuous;
- Metallic pathway(s) are properly bonded and grounded per ANSI/TIA-607-B; and
- Walls of the pathway(s) have a minimum thickness 1 mm (0.04 in) nominal if made of steel (1/2 inch EMT minimum)

No separation is required between power and telecommunications cables crossing at right angles.

Sleeve all openings and fire-stop per prevailing code and building construction ratings upon completion of cable installation.

Within the equipment room in which Data Cabling is to be terminated, use only Hook and Loop (e.g. “Velcro”) ties from room entry to the point of termination. This is to facilitate the addition of future cables.
**Horizontal Cabling in Modular Furniture**

Protect cabling routed from an in-wall box, poke-through fitting or other device to modular furniture without wall contact via a length of flexible plastic conduit, “spiral wrap” or other approved protective means. Conduit fittings shall be compatible with the “Poke-thru” and Wall Fittings proposed. There shall be no exposed cable in the transition to the modular furniture. Fill Ratio (Cable Area vs. Conduit Area) in each feed shall not exceed 40%.

Where horizontal cabling is routed to a floor fitting via the floor below, the cabling shall return to the floor on which the Equipment Outlet appears and be terminated in the Telecommunications Room serving other Equipment Outlets in that area.

For purposes of bidding, assume that the cable pathway shall be limited to the bottom panel of the modular furniture only. Communications cables would be run through these channels to the jack location.

For purposes of bidding, assume that it will be the responsibility of the Contractor to punch and re-install the bottom molding panels on the modular furniture as required to accommodate the Communications cabling and Equipment Outlets. The panels shall be marked prior to installation by the owner to identify the desired location of the Equipment Outlets. Bring to the attention of the DFDM Construction Representative any discrepancy between the Project Drawing identifying Outlet locations and the markings.

Secure the EO to the panel via mounting tabs, pop-rivets, screws or other approved method. Use of adhesive tape is not acceptable. The method of securing the EO to the panel shall not result in sharp protrusions (e.g. sheet metal screw tip) into the channel behind the panel.

**Grounding**

Where a cable incorporates metal armor, strength elements, shielding or other metallic elements (not including conductors), Bond those elements to an approved ground using a #6 AWG solid copper conductor. Cable grounding hardware and method shall be per manufacturer’s recommendations.

**EQUIPMENT OUTLET**

**General**

Mount outlets flush in wall-, ceiling- and/or ceiling mounted boxes, in floor boxes and/or poke-through assemblies, on Surface Raceway and in modular furniture. Refer to project drawings for applicable outlet types.

Mount level.

Unless noted otherwise on drawings, default mounting height (from finished floor to center line of outlet) in new installation shall be as follows:

- **Standard Equipment Outlet**: 18 inches
- **Outlet for Wall-Mounted Telephone**: per ADA

Assemble and terminate connectors per manufacturer’s recommendations.

In shielded installations, assemble to ensure continuity between connector shield and cable shield.

Fit all Connectors (e.g. modular jacks and coaxial type) with a dust cover.

**Wireless Access Point (WAP) Locations**

Unless noted otherwise on drawings, mount Equipment Outlet intended for use with a Wireless Access Point (WAP) as follows:

- **Drop Ceilings - Cut ceiling tiles and deliver cabling into 2-gang, deep outlet box mounted on a grid box hanger (a.k.a. “tile bridge”).**
Exposed Ceilings (surface mount) - Cabling piped to a 2-gang, deep outlet box. Unless mounted to structure, support outlet box using threaded rod or other means. Mount so assembly is horizontal.

Reduce 2-gang openings to 1-gang using “mud ring”.

Equipment Outlet locations for Wireless Access Points as shown on drawings are approximate. Coordinate final locations with Agency.

CABLE TERMINATION

General
At the Telecommunications Rooms, position all Data and Voice Cables on termination hardware in sequence of the Outlet I.D. starting with the lowest number.

Termination Hardware (Blocks and Patch Panels) Positioning and Layout must be reviewed and approved by the Engineer prior to construction. The review does not exempt the Contractor from meeting any of the requirements stated in this document.

At each Equipment Outlet (or communications or security device where terminated in a Modular Plug), terminate cabling per manufacturer’s recommendations and as identified in the above article “HORIZONTAL PERMANENT LINK”.

Where F/UTP cabling is installed, maintain continuity of the shield from Modular Patch Panel to EO or Modular Plug.

Cable Termination - Modular Patch Panels
Install Modular Patch Panel(s) in a fashion as to allow future horizontal cabling to be terminated on the panel without disruption to existing connections.

Size Modular Patch Panels to accommodate a minimum of 20% growth in the quantity of equipment outlets relative to the initial installation.

Cables designated for cameras—where applicable—shall be terminated on patch panel shared with other 4-pair horizontal cabling.

At Equipment Outlet and Modular Patch Panel, ensure that the twists in each horizontal cable pair are preserved per manufacturer’s recommendations, typically to within 0.5-inch of the termination. Remove the cable jacket only to the extent required to make the termination.

Bond F/UTP cable shield and drain wire to connecting hardware per manufacturer’s instructions. Bond connecting hardware to the Telecommunications grounding system.

Provide horizontal cable management hardware above and below each Modular Patch Panel.

Exception: Where angled patch panels are specified, provide horizontal management above and below patching area. Refer to project drawings.

IDENTIFICATION AND LABELING
Refer to Section 27 05 53 “Identification for Communications Systems” for Identification and Labeling guidelines for this Project.

Label all Backbone and Horizontal Cable, Outlet Faceplates, and Termination components (e.g. Voice Termination Blocks & Modular Patch Panel).

Prior to installation, provide samples of all label types planned for the project. These samples shall include examples of the lettering to be used.
**TESTING AND ACCEPTANCE**

**General**

Prior to testing, provide a summary of the proposed test plan for each cable type including equipment to be used, set-up, test frequencies or wavelengths, results format, etc. Failure to provide the above information shall be grounds for the Owner/Engineer to reject any and all Documentation of Results on related testing and to require a repeat of the affected test.

Visually inspect all cabling and termination points to ensure that they are complete and conform to the wiring pattern defined herein. Provide to the Engineer with a written certification that this inspection has been made.

Conduct acceptance testing according to a schedule coordinated with the Agency and DFDM.

Agency and DFDM representatives may be in attendance to witness the test procedures. Provide a minimum of one (1) week advance notice to allow for such participation.

Provide Test Plan as part of this notice or sooner.

Supply all equipment and personnel necessary to conduct the acceptance tests.

All equipment used in testing shall be maintained and calibrated per manufacturer’s guidelines. Provide documentation of equipment calibration.

Document all tests. Refer to the Article “DOCUMENTATION” below which details requirements.

Perform tests related to connected equipment by others only with the permission and presence of the agency and/or responsible contractor.

The Engineer or DFDM may request that a random field re-test, not to exceed 10% of the installed cabling, be conducted on the cable system to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the Contractor, additional testing can be requested to the extent determined necessary by the Engineer, including a 100% re-test. Any and all re-test shall be at no additional cost to the project.

All cabling shall be 100% fault free. Should it be determined by the Engineer that the materials or any portion thereof furnished and installed under this contract fail to comply with the specifications and drawings with regard to quality, performance, value of materials, appliances or labor used in the work, it shall be rejected and replaced by the Contractor and all work disturbed by changes in consequence of said defects or imperfections made good at the Contractor’s expense.

**Horizontal 4-pair Copper Cabling**

**General**

Test from the Equipment Outlet to the Modular Patch Panel (or Wiring Block) at the TR on which the cables are terminated.

The cabling must pass all the specified requirements. Conditional passing test results that are within the measurements accuracy of the test equipment (e.g. “*PASS”) are not acceptable.

When the EO is located on/in the wall behind modular furniture, a patch cord may be inserted into the EO to allow the furniture to be returned to its normal location. Cable testing, in this case, will be done with the patch cord. If the cable test fails only due to the length of the patch cord, the DFDM will accept the cable as passing. Provide list of such locations in Test Results documentation.

Horizontal cables shall be free of shorts within the pairs, and be verified for continuity, pair validity and polarity, and Wire Map (Conductor Position on the Modular Jack).
Correct any defective, split or mis-positioned pairs.

Additional testing of Cabling Systems rated at TIA Category 5e and higher shall be performed to confirm proper functioning and performance.

Performance Testing
Test Performance per ANSI/TIA-568-C.2 Permanent Link test configuration and procedures.

Test using a test instrument designed for use with the installed cable type(s) and specified standards. The instrument shall verify "PASS" on each cable and record the results of all tests, comparing measured values with standards-based limits.

Test Transmission Performance of Horizontal Cabling to include the following:

- Length
- Attenuation (Insertion Loss)
- Pair-to-Pair NEXT Loss
- PSNEXT Loss
- Attenuation-to-Crosstalk Ratio (ACR)
- Power-sum ACR (PSACR)
- Propagation Delay
- Delay Skew
- Return Loss

The maximum length of horizontal cable Permanent Link shall not exceed 90 meters (295 feet).

Program test unit to match Net Propagation Velocity (NPV) of the installed cable type.

In the event results of the tests are not satisfactory, make changes as necessary and repeat the test or tests which disclosed faulty or defective material, equipment or installation method.

Special Considerations
Where Cabling is terminated in a Modular Plug at the device location (e.g. Video Surveillance Camera or Wireless Access Point), use one of the following methods:

- Use Modular-Jack to Modular Jack adapter cord.
- or
- Use tester configured with Channel Test head at “plug end”. This method must be supported by the test equipment manufacturer.

Where the horizontal cabling includes an interconnect (e.g. where a zone cable is extended from a Consolidation Point to the work area Equipment Outlet (EO)), testing of the Permanent Link shall be from the Horizontal Cross-connect at the Telecom Room to the EO and include the interconnect.

Where a Surge Protector is in place as part of the Horizontal Permanent Link, performance testing shall include the Surge Protector as part of the link.

DOCUMENTATION
General
Provide project documentation as detailed in the sub-sections below.

Submit all documentation in electronic form.
In addition, provide (2) paper copies of Record Drawings.
Where documentation provided in electronic form requires unique software (e.g. NATIVE formats) other than Adobe Acrobat Reader for viewing test results, provide one (1) copy of such software. The software shall run on MICROSOFT Windows operating system. Software shall include license if applicable.

Organize documentation by Building and Telecom Room.

Name file(s) and records to include building, route or other cable identifiers that match labeling formats used. Prefix file name with the DFDM project number.

Provide test results and describe the conduct of the tests including the date of the tests, the equipment used and the procedures followed. At the request of the Engineer, provide copies of the original test results.

Where interim documentation as described below is submitted, submit a composite results package containing all records at closeout.

Interim Documentation
Submit within ten (10) working days of the completion of each testing phase (e.g. subsystem, cable type, area, floor, etc.) or before demobilizing in an area–whichever is shorter–the following:

Test Results.

Draft as-built record drawings to include Equipment Outlet locations and the cable/jack identifier at each location. Draft drawings may be machine generated or annotated by hand.

Interim documentation on a shorter schedule may be required to accommodate occupancy or other requirements. Confirm requirements during construction.

Test Data - Copper Media
Test results shall include a record of test frequencies, cable type, conductor pair and cable I.D., measurement direction, test equipment type, model and serial number, calibration date, test date, reference setup, and crew member name(s).

Submit Test Results for each Horizontal Link and each Backbone Cable in electronic form as follows:

In the native format of the test instrument (e.g. flw for Fluke, sdf for Agilent or Ideal, etc.).

Summarized in a fashion that includes a graphical display of key test parameters. The Summary shall be in Adobe Acrobat (.pdf) format and include all records. Individual .pdf documentation of individual records (e.g. for each horizontal cable) are not required.

Cross-Connect Data
Provide the necessary assistance to allow Owner and/or Internet/Telephone Service Provider personnel to make the necessary connections to establish and/or maintain service on the new cable system. These activities include, but are not limited to (1) a general wiring overview and (2) detailed cross connect documentation (relating EO I.D., Room Number and Riser pair). The latter shall be in the form of an electronic format database (MS Excel or convertible format). An example Template is available from the DFDM. (ADD-2)

Record Drawings
Provide Record Drawings which denote as-built information.

Include cable routes and outlet locations.

Identify Telecommunications and other low-voltage Outlet locations by their sequential number as defined elsewhere in these documents. Numbering, icons and drawing conventions used shall be consistent throughout all documentation provided.
The DFDM will provide floor plans in electronic (AutoCAD .dwg) format on which as-built construction information can be added. Modify these documents to denote as-built information as defined above and return to the Engineer for acceptance. Coordinate the schedule for creation of these drawings, including interim and final sets, during construction to accommodate scheduled occupancy.

Refer to DFDM “CAD Standards Manual” for file format, naming and other applicable guidelines.

Identify each drawing submitted by the Contractor as part of the Project Documentation as a “Record Drawing” (RD) and include: a) the contractor name and/or logo, and b) the date of the drawing.

Retain all fonts, color, layer, Model Space/Paper Space conventions established in the base drawings by the Contractor in preparation of the As-built drawings.

Prior to generation of the drawings, provide a sample file to the Engineer for review and approval.

All documentation, including hard copy and electronic forms shall become the property of the State.

WARRANTY
See Division 1, GENERAL CONDITIONS, and GENERAL REQUIREMENTS - Guarantee Documents for general requirements.

Minimum Warranty period for Structured Cable System sub-systems shall be as follows:

Horizontal Copper Permanent Link: 15 years. Warranty shall be direct from manufacturer(s) of cabling and connecting components to Owner.

*Exception:* Where cabling is terminated in a modular plug, such links shall be covered by a 2-year system warranty. Cabling and Connecting Components shall carry a 15 year manufacturer’s component warranty.

Warranties shall include all labor, material, and travel time.

Provide Warranty Certification of the Horizontal Copper Permanent Link from the manufacturer(s) of cabling and connecting components as part of system documentation.

Submit documents to manufacturer as required for Extended Warranties.

Construction Verification
Provide applicable construction Verification Checklists included in specification Section 27 08 00 and in accordance with the procedures defined for in specification Section 01 91 01 or 01 91 02.
SECTION 27 53 13
CLOCK SYSTEMS

Revised Addendum 2, September 17, 2019

PART 1 - GENERAL

SCOPE
This section describes the general products and execution requirements relating to the furnishing of clock system. Components include (but are not limited to): Master clock control, secondary indicating clocks and system wire and cabling. Included are the following topics:

PART 1 - GENERAL
Scope
Related Work
Definitions
Action Submittals
Informational Submittals
Closeout Submittals
Quality Assurance

PART 2 - PRODUCTS
Master and Secondary Clock System
Master Clock
Secondary Indicating Clocks
Program Signal Devices
Clock Circuit Power Booster
Back Boxes for Secondary Indicating Clocks and Program Devices
Guards
Rack-Mounting Provision for Master Clock
Conductors and Cables
Pathways

PART 3 - EXECUTION
Wiring Methods
Electrical Connections
Identification
Field Quality Control
Adjusting
Demonstration

RELATED WORK
The work covered by this section of the specifications shall be coordinated with the related work as specified elsewhere under the following project sections:

Section 26 05 00 – Common Work Results for Electrical
Section 26 05 33 – Raceways and Boxes for Electrical Systems
Section 27 05 53 – Identification for Communications Systems
Section 27 08 00 – Commissioning of Communications Systems

DEFINITIONS
NIST  The National Institute of Science and Technology.
PC    Personal computer.
UTC   Universal time coordinated. The precisely measured time at zero degrees longitude; a worldwide standard for time synchronization.

ACTION SUBMITTALS
GENERAL REQUIREMENTS
Combine electronic submittals into one unified PDF document that includes complete Product Data and Shop Drawings organized per the table of contents. Piecemeal submittals will not be accepted. The submittal shall be free of copyrighted files and proprietary file formats. Electronic links may be submitted to supplement product datasheets, but may not be used as a substitute for product datasheets that are required to be included in the unified PDF submittal.

Provide coversheet indicating project title, project location, and vendor contact information.

Organize submittal into logical sections and provide table of contents.

Provide itemized bill of materials indicating model number and quantity for each product.

On datasheets with multiple products, indicate which product is provided under this project.

Manufacturers’ catalog sheets with complete technical data for each item being furnished.

**PRODUCT DATA**

For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes (including available colors) for each product indicated and describe features and operating sequences, both automatic and manual, for the following:

- Master unit.
- Indicating clocks.
- Signal equipment.
- Equipment enclosures and back boxes.
- Accessory components.

**SHOP DRAWINGS**

For clock systems. Include plans, elevations, sections, details, and attachments to other work.

**WIRING DIAGRAMS**

For power, signal, and control wiring and correction circuits.

Identify terminals and wiring color codes to facilitate installation, operation, and maintenance.

Indicate recommended wire types and sizes, and circuiting arrangements for field-installed system wiring.

Show protection from overcurrent, static discharge, and voltage surge.

**DELEGATED-DESIGN SUBMITTAL**

For the master clock and housing indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

Detail fabrication and assembly of the master clock and housing.

**INFORMATIONAL SUBMITTALS**

Field quality-control reports.

**CLOSEOUT SUBMITTALS**

**OPERATION AND MAINTENANCE DATA**

For clock and program control to include in emergency, operation, and maintenance manuals.

**QUALITY ASSURANCE**

Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Comply with NFPA 70.
PART 2 - PRODUCTS

MASTER AND SECONDARY CLOCK SYSTEM
MANUFACTURERS

Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

American Time & Signal Co.
Dukane Communication Systems; Part of GE Security, Inc.
Faraday; Siemens Building Technologies, Inc.
Lathem Time.
Midwest Time Control, Inc.
National Time & Signal Corporation.
Primex
SimplexGrinnell LP.

SYSTEM FUNCTIONS AND FEATURES

Supply 120V power to remote indicating clocks.
Maintain correct synchronized time and transmit time-correction signals over dedicated GPS Broadcast signal from a master clock to any one type(s) of secondary indicating clocks, including the following:

Analog Synchronous Clocks: Correct for minute- and second-hand synchronization at least once each hour and for hour-hand synchronization at least once each day.

Initiate and execute programs for scheduled automatic operation of remote devices. Include audible signal devices.
Provide for manual control of programmed signal and equipment-switching circuits.
Communicate with remote PC for access to UTC time base and to permit programming from remote location.
Maintain system access security with a minimum of one level of user-access control to restrict use of system controls to authorized personnel. Levels of access apply to both local access and access from a remote computer. Access to user programming and control functions is accomplished by entering a minimum three-digit code. Access levels include the following:

Access to review existing programs only.
Access to normal system operating controls.
Access to all user-programming and control functions.

Regulate system timing functions using power-line frequency, backed up for power outages by an internal battery-powered, crystal-controlled oscillator.
Provide for programming multiple independent event schedules into memory and running them simultaneously for different output circuits.

Quantity of Programmable Schedules: Eight, minimum.
Number of Weekly Events That Can Be Programmed for Each Schedule: 64, minimum.
Simultaneous operation of independent schedules shall be limited only by the number of signal-device and equipment-switching output circuits.
Advance Programming for Automatic Holiday Schedule Changes: Number of schedule changes that can be programmed to suit holidays and vacations shall be 16 and each change may be programmed up to a year in advance to occur on any day of the calendar year.

Provide programming for automatic daylight savings time correction.
Provide for adjustments to master clock output signals. Duration of momentary signal shall be individually programmable for each signal and equipment-control output circuit from 1 to 99 seconds. Signals shall be programmable for either on or off switching to suit equipment-operation scheduling.
MASTER CLOCK

DESCRIPTION
Microprocessor-based, software-controlled unit complying with Class A device requirements in 47 CFR 15.
Programming and control switches.

INFORMATIONAL DISPLAY
LED or backlit LCD type.
Normally shows current time display.
Provides programming cues when system is being programmed.

Output Circuits for Power and Correction of Secondary Indicating Clocks:
Wired Synchronous Clock Power-and-Correction Circuits: For analog clocks; a minimum of one required.
Relay controlled.

Circuits for Programmable Switching of Remote Equipment and Circuits:
Relay controlled, manually switchable, using controls on the master clock. Rated 120-V ac, 5A minimum.
A minimum of two circuits.

POWER SUPPLIES
Capacity for internal loads and power-and correction circuits of connected clocks.

HOUSING
Rack-mounting metal enclosure with display indication visible on front panel face.

BATTERY BACKUP FOR TIME BASE
Lithium battery to maintain the timekeeping function and retain the programs in memory during outage of normal ac power supply for up to 10 years.

SECONDARY INDICATING CLOCKS

ANALOG CLOCK
Equipped with a sweep second hand. Movement shall be driven by self-starting, permanently lubricated, sealed synchronous motor equipped with a correcting solenoid actuator, or be a microprocessor-based, second impulse unit, compatible with the master clock.

Secondary Indicating Clock Characteristics:

Clock Type: Analog.
Face Configuration: Single.
Mounting: Semirecessed.
Nominal Dimensions: 4 x 12” diameter face. (ADD-2)
Casing Finish: high impact black molded case.
Dial Face Color: White
Analog Clock Crystal: Clear polycarbonate.

PROGRAM SIGNAL DEVICES

BELLS
Heavy-duty, modular, vibrating type with the following sound-output ratings measured at 10 feet (3 m):
4-Inch (100-mm) Bell: 90 dB.

CLOCK BUZZERS
Adjustable output signal device designed for mounting within clock housing or outlet box.
Sound-Output Rating Measured at 3 Feet (1 m): 75 dB.
Audible Tone Frequency: Manufacturer's standard between 120 Hz and 2 kHz.

OUTDOOR SIGNAL EQUIPMENT:
Weatherproof models listed for outdoor use.
MOUNTING ARRANGEMENT FOR SIGNAL DEVICES:
Designed for attachment with screws on the mounting plate of a flush-mounted back box unless otherwise indicated.

ENCLOSURES FOR FLUSH-MOUNTING BELLS AND HORNS:
Enclosure, mounting plate, and grille assembly shall be furnished by device manufacturer to match features of the device to be mounted. Enclosure shall be recessed in wall, completely enclosing the device, with grille mounting over the open side of the enclosure and flush with the wall.

CLOCK CIRCUIT POWER BOOSTER
DESCRIPTION:
Transformer power supply, mounted in steel cabinet with hinged door, and having fuse-protected input and output circuits.

BACK BOXES FOR SECONDARY INDICATING CLOCKS AND PROGRAM DEVICES
DESCRIPTION
Box and cover-plate assembly shall be furnished by device manufacturer and be suitable for device to be mounted. Back boxes shall be equipped with knockouts and hanger straps or mounting adapters arranged for flush mounting the device unless otherwise indicated.

GUARDS
DESCRIPTION
Formed-steel wire, shaped to fit around guarded device, with 1-inch (25-mm) maximum clearance.
Mounting Provisions: Fixed tabs, welded to guard and arranged for screw attachment to mounting surface.
Finish for Indoor Devices: Clear epoxy lacquer over zinc plating.
Finish for Outdoor Devices: Black powder coat over zinc plating and primer.

RACK-MOUNTING PROVISION FOR MASTER CLOCK
Mount Master in clock in equipment rack as indicated on floor plans.

CONDUCTORS AND CABLES
CONDUCTORS
Jacketed, twisted pair and twisted multipair, untinned solid copper. Sizes as recommended by system manufacturer, but not smaller than No. 22 AWG. Voltage drop for signal, control, and clock correction circuits shall not exceed 10 percent under peak load conditions.

120-V AC and Class 1 Signal and Control Circuits:
Stranded, single conductors of size and type recommended by system manufacturer. Materials and installation requirements are specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

Class 2 and Class 3 Signal and Control Circuits:
Single conductor or twisted-pair cable, unshielded, unless manufacturer recommends shielded cable.

PLENUM CABLE
Listed and labeled for plenum installation.

CONDUCTOR COLOR-CODING
Uniformly identified and coordinated with wiring diagrams.

SHIELDING
For speaker-microphone leads and at other locations recommended by manufacturer; No. 34 AWG tinned, soft-copper strands formed into a braid or equivalent foil. Minimum Shielding Coverage on Conductors: 60 percent.
**PATHWAYS**

Intercommunication and Program System Raceways and Boxes:

Same as required for electrical branch circuits specified in Section 260533 "Raceway and Boxes for Electrical Systems."

Outlet boxes shall be no smaller than 2 inches (50 mm) wide, 3 inches (75 mm) high, and 2-1/2 inches (64 mm) deep.

**PART 3 - EXECUTION**

**WIRING METHODS**

**WIRING METHOD**

Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters. Conceal raceway and cables except in unfinished spaces.

Install plenum cable in environmental air spaces, including plenum ceilings.

Comply with requirements for raceways and boxes specified in Section 260533 "Pathways for Electrical Systems."

**WIRING METHOD**

Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

Wiring within Enclosures:

Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

Support cables not enclosed in raceways on J-Hooks. Install, size, and space J-Hooks to comply with TIA/EIA-568-B.

**ELECTRICAL CONNECTIONS**

Make splices, taps, and terminations on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

Use plug connectors for connections to clocks and signal devices.

Ground clocks, programming equipment, and conductor and cable shields to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

**IDENTIFICATION**

Color-code wires, and apply wire and cable marking tape to designate wires and cables so they are uniformly identified and coordinated with wiring diagrams throughout the system.

**FIELD QUALITY CONTROL**

Perform tests and inspections.

Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

**TESTS AND INSPECTIONS**

Perform operational-system tests to verify compliance with the Specifications and make adjustments to bring system into compliance. Include operation of all modes of clock correction and all programming and manually programmed signal and relay operating functions.

Verify that units and controls are properly labeled and interconnecting wires and terminals are identified.

Clock system will be considered defective if it does not pass tests and inspections.

Prepare test and inspection reports.
ADJUSTING
Program system according to Owner's requirements. Set system so signal devices operate on Owner-required schedules and are activated for durations selected by Owner. Program equipment-control output circuits to suit Owner's operating schedule for equipment controlled.

Adjust sound-output level of adjustable signal devices to suit Owner's requirements.

Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

DEMONSTRATION
Train Owner's maintenance personnel to adjust, operate, and maintain clock-and-program-control system components.

END OF SECTION
GENERAL NOTES

MILLWORK AND CASEWORK.

WORKSTATIONS WITH FINAL FURNITURE PLANS AND SHOP DRAWINGS PRIOR TO DEVICE ROUGH-IN.

C. REFER TO THE ARCHITECTURAL DETAILS AND ELEVATION DRAWINGS FOR COORDINATION OF ELECTRICAL, PLUMBING, AND HVAC.

D. CONDUIT AND WIRING MAY NOT BE SHOWN GRAPHICALLY ON THE PRINT. THE LOCATION OF CONDUITS AND WIRING MAY BE DETERMINED BY MEASURING FROM THE CLOSEST CENTERLINE OF THE CONDUIT OR WIRING TO THE CENTER OF THE EMBELLISHED ELEVATION SYMBOL OR THE CENTERLINE OF THE DEVICE OR FIXTURE.

E. IDENTIFICATION OF CIRCUIT NUMBERS, RELAY NUMBERS, SWITCHING IDENTIFICATION, MOTOR EQUIPMENT SCHEDULE, PANEL BOUNDARIES, SPECIFIED MINIMUM CONDUIT SIZE, SPECIFIED MINIMUM CONDUCTOR SIZE, AND/OR SPECIFIED MINIMUM GROUNDING, AS APPROPRIATE.

F. FEEDERS AND ELECTRICAL EQUIPMENT.

G. FIXTURES, DEVICES, AND RECEPTACLES IN HALFTONE ARE TO REMAIN UNLESS NOTED OTHERWISE.

H. ANY UNDOCUMENTED EXISTING DISCONNECTS, PANELS, OR CONTROLS ARE TO REMAIN. REFER TO MECHANICAL DRAWINGS FOR HVAC CONTROL INFORMATION.

VERIFY PROPER FUNCTIONALITY AND CODE COMPLIANCE.
1. PROVIDE AND INSTALL NEW DEVICE AND FACIAL IN PLACE OF THE EXISTING DEVICE. REUSE EXISTING CONDUIT AND WIRING.

2. PROVIDE AND INSTALL NEW DEVICE AND FACIAL IN PLACE OF THE EXISTING DEVICE. REUSE EXISTING CONDUIT AND WIRING.

3. EXISTING PANEL TO BE RETROFITTED. REMOVE EXISTING COVER AND PANEL INTERIOR. PROVIDE AND INSTALL NEW PANEL INTERIOR AND COVER PLATE. RECONNECT EXISTING CIRCUIT BREAKERS TO NEW CIRCUIT BREAKERS.

4. KEYNOTES:
   1. PROVIDE AND INSTALL NEW DEVICE AND FACIAL IN PLACE OF THE EXISTING DEVICE. REUSE EXISTING CONDUIT AND WIRING.
   2. PROVIDE AND INSTALL NEW GFCI DEVICE AND FACIAL IN PLACE OF THE EXISTING DEVICE. REUSE EXISTING CONDUIT AND WIRING.
   3. EXISTING PANEL TO BE RETROFITTED. REMOVE EXISTING COVER AND PANEL INTERIOR. PROVIDE AND INSTALL NEW PANEL INTERIOR AND COVER PLATE. RECONNECT EXISTING CIRCUIT BREAKERS TO NEW CIRCUIT BREAKERS.

5. GENERAL NOTES
   A. COORDINATE LOCATION AND MOUNTING OF DEVICES WITH MILLWORK AND CASEWORK.
   B. COORDINATE DEVICE LOCATIONS AND ELEVATIONS AT ALL WORKSTATIONS WITH FINAL FURNITURE PLANS AND SHOP DRAWINGS PRIOR TO DEVICE ROUGH-IN.
   C. REFER TO THE ARCHITECTURAL DETAILS AND ELEVATION DRAWINGS FOR COORDINATION OF ELECTRICAL DEVICES.
   D. CONDUIT AND WIRING MAY NOT BE SHOWN GRAPHICALLY ON THE PLANS. HOWEVER, IT SHALL BE PROVIDED COMPLETE AS REQUIRED BASED ON IDENTIFICATION OF CIRCUIT NUMBERS, RELAY NUMBERS, SWITCHING IDENTIFICATION, MOTOR EQUIPMENT SCHEDULE, PANEL BOUNDARIES, SPECIFIED MINIMUM CONDUIT SIZE, SPECIFIED MINIMUM CONDUCTOR SIZES, AND/OR SPECIFIED MINIMUM GROUNDING.
   E. REFER TO ONE-LINE DIAGRAMS FOR ADDITIONAL INFORMATION FOR FEEDERS AND ELECTRICAL EQUIPMENT.
   F. FIXTURES, DEVICES, AND RECEPTACLES IN HALFTONE ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.
   G. ANY UNDOCUMENTED EXISTING DISCONNECTS, PANELS, OR CONTROLS ARE TO REMAIN. REFER TO MECHANICAL DRAWINGS FOR HVAC CONTROL INFORMATION.
   H. ELECTRICAL CONTRACTOR IS TO INSPECT AND TEST ALL ELECTRICAL EQUIPMENT PRIOR TO ANY DEMOLITION AND NEW INSTALLATION AND VERIFY PROPER FUNCTIONALITY AND CODE COMPLIANCE.
4. Establish new, to be reconnected, existing conductors to the new circuit breaker for light and power.

5. Enter the existing panel board and all existing conductors from the existing panel to the new circuit breaker(s).

6. Obtain the layout and all existing conductors from the existing panel location to the new circuit breaker(s).

7. Establish all existing conductors to be used to connect to the new panel board and new circuit breaker(s).

8. Provide and install a new circuit breaker panel board and all existing conductors from the existing panel to the new circuit breaker(s).

9. Provide and install a new circuit breaker panel board and all existing conductors from the existing panel to the new circuit breaker(s).

10. Establish all existing conductors to be used to connect to the new panel board and new circuit breaker(s).

11. Provide and install a new circuit breaker panel board and all existing conductors from the existing panel to the new circuit breaker(s).

12. Establish all existing conductors to be used to connect to the new panel board and new circuit breaker(s).

13. Provide and install a new circuit breaker panel board and all existing conductors from the existing panel to the new circuit breaker(s).

14. Establish all existing conductors to be used to connect to the new panel board and new circuit breaker(s).

15. Provide and install a new circuit breaker panel board and all existing conductors from the existing panel to the new circuit breaker(s).

16. Establish all existing conductors to be used to connect to the new panel board and new circuit breaker(s).

17. Provide and install a new circuit breaker panel board and all existing conductors from the existing panel to the new circuit breaker(s).
**EQUIPMENT SCHEDULE**

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>DESCRIPTION</th>
<th>LOCATION</th>
<th>LOAD</th>
<th>VOLTAGE</th>
<th>PHASE</th>
<th>NO OF POLES</th>
<th>PANEL</th>
<th>CIRCUIT AND WIRE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AUTO DOOR OPENER</td>
<td></td>
<td>600 VA</td>
<td>120 V</td>
<td>1</td>
<td>2#12 &amp; 1#12</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICAL</td>
<td>460V BIOMECHANICAL</td>
<td>322</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AUTOCLAVE SHARED</td>
<td>WETLAB</td>
<td>8132 VA</td>
<td>208 V</td>
<td>3 P-322</td>
<td>3#10 &amp; 1#10</td>
<td>GRD, 1-1/4&quot;C</td>
<td>- - L16-20R</td>
</tr>
<tr>
<td></td>
<td>DRY HAND</td>
<td>SEE PLANS</td>
<td>720 VA</td>
<td>120 V</td>
<td>1</td>
<td>2#12 &amp; 1#12</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>DISHWASHER STUDY KITCHEN</td>
<td>1200 VA</td>
<td>120 V</td>
<td>1 RPB</td>
<td>26</td>
<td>2#10 &amp; 1#10</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>FURNITURE FEED</td>
<td>SEE PLANS</td>
<td>1800 VA</td>
<td>120 V</td>
<td>1</td>
<td>2#12 &amp; 1#12</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>Fume Hood</td>
<td>SEE PLANS</td>
<td>1800 VA</td>
<td>208 V</td>
<td>2</td>
<td>2#10 &amp; 1#10</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>FREEZER FARM</td>
<td>2000 VA</td>
<td>208 V</td>
<td>2 EG2-B</td>
<td>2#10 &amp; 1#10</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LATHE EQUIPMENT WORKROOM</td>
<td>1000 VA</td>
<td>208 V</td>
<td>3 LP-MB</td>
<td>20,22,24</td>
<td>3#10 &amp; 1#10</td>
<td>GRD, 1&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>OVEN STUDY KITCHEN</td>
<td></td>
<td>11600 VA</td>
<td>208 V</td>
<td>2 RPB</td>
<td>20,22</td>
<td>2#8 &amp; 1#10</td>
<td>GRD, 1&quot;C</td>
</tr>
<tr>
<td></td>
<td>TABLE SAW WORKSHOP</td>
<td>94</td>
<td>2000 VA</td>
<td>208 V</td>
<td>2 LP-MB</td>
<td>15,17</td>
<td>2#12 &amp; 1#12</td>
<td>GRD, 3/4&quot;C</td>
</tr>
<tr>
<td></td>
<td>SECURITY PANEL LEVEL 02 CLOSET</td>
<td>180 VA</td>
<td>120 V</td>
<td>1 EG2-B</td>
<td>31</td>
<td>2#12 &amp; 1#12</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>TREADMILL</td>
<td>SEE PLANS</td>
<td>1000 VA</td>
<td>208 V</td>
<td>2</td>
<td>2#10 &amp; 1#10</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>TREADMILL</td>
<td>SEE PLANS</td>
<td>3300 VA</td>
<td>208 V</td>
<td>2 LBAA</td>
<td>2#10 &amp; 1#12</td>
<td>GRD, 3/4&quot;C</td>
<td>- -</td>
</tr>
</tbody>
</table>

**MECHANICAL EQUIPMENT SCHEDULE**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>LOCATION</th>
<th>FLA</th>
<th>MCA</th>
<th>VOLTAGE</th>
<th>PHASE</th>
<th>LOAD</th>
<th>PANEL</th>
<th>CIRCUIT AND WIRE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPLIT UNIT - OUTDOOR ROOF</td>
<td>1</td>
<td>25</td>
<td>240 V</td>
<td>1</td>
<td>240 VA</td>
<td>269</td>
<td>2</td>
<td>1,23</td>
</tr>
<tr>
<td>SPLIT UNIT - INDOOR FREEZER FARM</td>
<td>274</td>
<td>0.57</td>
<td>1.00</td>
<td>2</td>
<td>40 V</td>
<td>1</td>
<td>119 VA</td>
<td>269</td>
</tr>
<tr>
<td>EXHAUST FAN 6TH FLOOR - SEE 2ND FLOOR PLAN</td>
<td>3.5</td>
<td>4.375</td>
<td>208 V</td>
<td>3</td>
<td>1,300 VA</td>
<td>2C</td>
<td>10,12,14</td>
<td>3#12 &amp; 1#12</td>
</tr>
<tr>
<td>EXHAUST FAN STORAGE B65</td>
<td>2.3</td>
<td>2.875</td>
<td>208 V</td>
<td>1</td>
<td>500 VA</td>
<td>LBAA</td>
<td>27,29</td>
<td>2#12 &amp; 1#12</td>
</tr>
<tr>
<td>FAN COIL PE LAB 2420</td>
<td>9.8</td>
<td>12.25</td>
<td>208 V</td>
<td>1</td>
<td>2,038 VA</td>
<td>L2 FB</td>
<td>2,4</td>
<td>2#12 &amp; 1#12</td>
</tr>
<tr>
<td>FAN COIL OFFICE 2450</td>
<td>9.8</td>
<td>12.25</td>
<td>208 V</td>
<td>1</td>
<td>2,038 VA</td>
<td>FC</td>
<td>6,8</td>
<td>2#12 &amp; 1#12</td>
</tr>
<tr>
<td>FAN COIL GYM B69</td>
<td>9.8</td>
<td>12.25</td>
<td>208 V</td>
<td>1</td>
<td>2,038 VA</td>
<td>LBAA</td>
<td>23, 25</td>
<td>2#12 &amp; 1#12</td>
</tr>
</tbody>
</table>

**NOTES:**

1. ELECTRICAL CONTRACTOR IS TO COORDINATE WITH OWNER ON EXACT RECEPTACLE TYPE.
### Panel: LP-2A

- **Location:**
- **Distribution System:**
- **A.I.C Rating:**

#### Mains Rating
- **208/120V**
- **MLO**

#### Phase
- **RECESSED**

### NEMA 1

#### SPARE
- **1 RECEPT. WORKSTATION (RM# 240)**
  - 20 A
  - 720 VA
  - 0 VA
  - 2
  - EXISTING CIRCUIT TO REMAIN

#### RECESSED
- **1 RECEPTACLES (RM# 227A, 277)**
  - 20 A
  - 900 VA
  - 6
  - 1
  - 20 A
  - EXISTING CIRCUIT TO REMAIN

#### RECESSED
- **1 RECEPTACLES (RM# 257)**
  - 20 A
  - 360 VA
  - 13
  - 1
  - 20 A
  - EXISTING CIRCUIT TO REMAIN

#### RECESSED
- **1 RECEPT. WIREMOLD (RM# 257)**
  - 20 A
  - 540 VA
  - 17
  - 1
  - 20 A
  - SPARE

#### RECESSED
- **1 RECEPT. WORKSTATION (RM# 237)**
  - 20 A
  - 720 VA
  - 41
  - 1
  - 20 A
  - EXISTING CIRCUIT TO REMAIN

#### RECESSED
- **1 RECEPT. WIREMOLD (RM# 257)**
  - 20 A
  - 180 VA
  - 27
  - 1
  - 20 A
  - SPARE

#### RECESSED
- **1 RECEPTACLES (RM# 201, 201A)**
  - 20 A
  - 1440 VA
  - 14
  - 1
  - 20  A
  - RECEPTACLES (RM# 201B)
  - 1
  - 20 A
  - SPARE

#### RECESSED
- **1 RECEPTACLES (RM# 234)**
  - 20 A
  - 2340 VA
  - 49
  - 1
  - SPARE

#### RECESSED
- **1 RECEPTACLES (RM# 2375A, 2375)**
  - 20 A
  - 1080 VA
  - 10
  - 1
  - 20 A
  - RECEPTACLES (RM# 2375)
  - 1
  - 20 A
  - SPARE

#### RECESSED
- **1 RECEPTACLES (RM# 216)**
  - 20 A
  - 1919 VA
  - 24
  - 1
  - 20 A
  - TV/RECEPT (RM# 216)
  - 1
  - 20 A
  - SPARE

#### RECESSED
- **1 RECEPT. UNIT**
  - 20 A
  - 0 VA
  - 31
  - 1
  - 20 A
  - EXISTING CIRCUIT TO REMAIN

### Panelboard Notes:
- **1. EXISTING CIRCUIT BREAKER TO BE REUSED.**
- **2. PROVIDE AND INSTALL NEW CIRCUIT BREAKER.**

### HGA NO:
- **2019-06-01**

### UNIVERSITY OF WISCONSIN - MADISON
- **MEDICAL SCIENCE CENTER**
- **UW PROJ: 04-19-001**
- **1300 UNIVERSITY AVE., MADISON, WI 53706**

### EISSUANCE
- **HGA NO:**
- **E504**
- **DATE:**
- **8 AUGUST 2019**

---

*Copyright Hammel, Green and Abrahamson, Inc.*

---

*Construction Documents*
### Panel: LP-3B-C
- **Location:** 353F
- **Distribution System:** 22,000
- **Mains Rating:** SURFACE
- **Enclosure Type:** NEMA 1
- **A.I.C Rating:** 100 A
- **MCB Rating:** 225 A

### Panel: LP-3-PP
- **Location:** 4
- **Distribution System:** 100 A
- **Mains Rating:** SURFACE
- **Enclosure Type:** NEMA 1
- **A.I.C Rating:** 100 A
- **MCB Rating:** 225 A

### Note Descriptions

<table>
<thead>
<tr>
<th>Load Classification</th>
<th>Connected Load</th>
<th>Demand Factor</th>
<th>Estimated Demand</th>
<th>Panel Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>01 - Ltg</strong></td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td><strong>03 - Rcpt Non-Dwlg</strong></td>
<td>3600 VA</td>
<td>100.00%</td>
<td>3600 VA</td>
<td></td>
</tr>
<tr>
<td><strong>04 - Equipment</strong></td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td><strong>05 - Equipment Greater than 3 Hr</strong></td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td><strong>07 - Heating Greater than 3 Hr</strong></td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td><strong>08 - Cooling</strong></td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
</tbody>
</table>

### Panelboard Notes:
- **EXISTING GOULD ITE PANEL TO BE RETROFITTED. EXISTING PANEL BACKBOX AND CONDUITS TO REMAIN. PROVIDE AND INSTALL NEW PANEL INTERIOR, 1300 UNIVERSITY AVE., MADISON, WI 53706.**
**Panel: EG2**

**Panel: EGB**

**Panel: E6N**

**Location:**

*Panel: EG2*

<table>
<thead>
<tr>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>B1300J</td>
</tr>
<tr>
<td>22,000</td>
<td></td>
</tr>
<tr>
<td>A.I.C Rating</td>
<td></td>
</tr>
<tr>
<td>Mains Type</td>
<td>MLO</td>
</tr>
<tr>
<td>Phase</td>
<td>4</td>
</tr>
<tr>
<td>Mounting</td>
<td>SURFACE</td>
</tr>
<tr>
<td>Enclosure Type</td>
<td></td>
</tr>
<tr>
<td>MCB Rating</td>
<td></td>
</tr>
<tr>
<td>Note Descriptions</td>
<td>Amps Pole CKT A B C CKT Pole Amps Description Note</td>
</tr>
<tr>
<td>-- EXISTING CIRCUIT TO REMAIN</td>
<td>20 A</td>
</tr>
<tr>
<td>EMERGENCY LIGHTS (RM# 6250)</td>
<td>20 A</td>
</tr>
<tr>
<td>-- EXISTING CIRCUIT TO REMAIN</td>
<td>20 A</td>
</tr>
<tr>
<td>-- NEW SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- NEW SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- NEW SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- NEW SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- SPARE</td>
<td>20 A</td>
</tr>
<tr>
<td>-- SPARE</td>
<td>20 A</td>
</tr>
</tbody>
</table>

**Phase A Phase B Phase C**

<table>
<thead>
<tr>
<th>Load Classification</th>
<th>Connected Load</th>
<th>Demand Factor</th>
<th>Estimated Demand</th>
<th>Panel Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 - Ltg</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>03 - Rcpt Non-Dwlg</td>
<td>4180 VA</td>
<td>100.00%</td>
<td>4180 VA</td>
<td></td>
</tr>
<tr>
<td>07 - Heating Greater than 3 Hr</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>08 - Cooling</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>Spare</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>09 - Cooling Greater than 3 Hr</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>11 - Kitchen</td>
<td>65% (6 or more Items)</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
</tr>
<tr>
<td>19 - LED</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
</tbody>
</table>

**Total Conn. Load:** 0 VA

**Total Est. Demand:** 0 VA

**Total Conn. Current:** 0 A

**Total Est. Demand Current:** 0 A

---

**Panel: E5N**

**Panel: E50-8**

**Panel: LBN**

**Location:**

*Panel: E50-8*

<table>
<thead>
<tr>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>MADISON, WI 53706</td>
</tr>
<tr>
<td>22,000</td>
<td></td>
</tr>
<tr>
<td>A.I.C Rating</td>
<td></td>
</tr>
<tr>
<td>Mains Type</td>
<td>SURFACE</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mains Rating</td>
<td>150A</td>
</tr>
<tr>
<td>Mounting</td>
<td>SURFACE</td>
</tr>
<tr>
<td>NEMA 1</td>
<td></td>
</tr>
<tr>
<td>MCB Rating</td>
<td></td>
</tr>
<tr>
<td>Note Descriptions</td>
<td>Amps Pole CKT A B C CKT Pole Amps Description Note</td>
</tr>
<tr>
<td>-- EXISTING CIRCUIT TO REMAIN</td>
<td>20 A</td>
</tr>
<tr>
<td>-- EXISTING 20 A</td>
<td>1</td>
</tr>
<tr>
<td>-- EXISTING 20 A</td>
<td>1</td>
</tr>
</tbody>
</table>
| FREEZER (RM# 274) | 20 A | 1 | 9 | 0 VA | 0 VA | 10 | 1 | 20 A FREEZER (RM# 274)
| -- EXISTING CIRCUIT TO REMAIN | 20 A | 1 | 11 | 0 VA | 0 VA | 12 | 1 | 20 A EXISTING CIRCUIT TO REMAIN |
| -- EXISTING CIRCUIT TO REMAIN | 20 A | 1 | 19 | 0 VA | 0 VA | 20 | 1 | 20 A EXISTING CIRCUIT TO REMAIN |
| -- SPARE | 20 A | 1 | 21 | 0 VA | 0 VA | 22 | 1 | 20 A SPARE |
| -- SPARE | 20 A | 1 | 23 | 0 VA | 0 VA | 24 | 1 | 20 A SPARE |
| -- SPARE | 20 A | 1 | 25 | 0 VA | 0 VA | 26 | 1 | 20 A SPARE |
| -- SPARE | 20 A | 1 | 29 | 0 VA | 0 VA | 30 | 1 | 20 A SPARE |

**Phase A Phase B Phase C**

<table>
<thead>
<tr>
<th>Load Classification</th>
<th>Connected Load</th>
<th>Demand Factor</th>
<th>Estimated Demand</th>
<th>Panel Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 - Ltg</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>03 - Rcpt Non-Dwlg</td>
<td>5360 VA</td>
<td>100.00%</td>
<td>5360 VA</td>
<td></td>
</tr>
<tr>
<td>07 - Heating Greater than 3 Hr</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>08 - Cooling</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>Spare</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>09 - Cooling Greater than 3 Hr</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
<tr>
<td>11 - Kitchen</td>
<td>65% (6 or more Items)</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
</tr>
<tr>
<td>19 - LED</td>
<td>0 VA</td>
<td>0.00%</td>
<td>0 VA</td>
<td></td>
</tr>
</tbody>
</table>

**Total Conn. Load:** 0 A

**Total Est. Demand:** 0 A

**Total Conn. Current:** 0 A

**Total Est. Demand Current:** 0 A

---

**Panelboard Notes:**

- Load Classification
- Connected Load
- Demand Factor
- Estimated Demand
- Panel Totals

**Construction Documents**

- Addendum #1 09/03/2019
- Addendum #2 09/17/2019
KEYNOTES:
1. OWNER PROVIDED VIDEO EQUIPMENT RACK. VERIFY EXACT LOCATION, SIZE AND CONFIGURATION. PROVIDE JUNCTION BOX TO RECEIVE (6) 3/4" CAMERA CONDUITS.
2. OWNER PROVIDED CAMERA LOCATION. VERIFY EXACT LOCATION WITH OWNER. PROVIDE 3/4" CONDUIT FROM CAMERA LOCATIONS TO JUNCTION BOX X VIDEO EQUIPMENT RACK.

GENERAL NOTES:
A. COORDINATE WITH ELECTRICAL PLANS FOR ROUGH-IN DETAILS.
B. REFER TO SHEET T000 FOR TELECOM SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
C. ROUTE HORIZONTAL CABLES TO DATA OUTLETS ON THIS SHEET FROM TELECOM ROOM INDICATED ON AREA PLAN, UNLESS NOTED OTHERWISE.
D. LEAVE 20'-0" OF EXTRA HORIZONTAL CABLING ABOVE THE CEILING AT EACH WIRELESS LAN OUTLET ON THIS SHEET.
E. ALL NEW HORIZONTAL COMMUNICATION CABLES SHALL BE TERMINATED IN EXISTING PATCH PANELS FROM OEM LOCATION TO EXISTING PATCH PANELS TO VIDEO EQUIPMENT RACK.
F. PROVIDE NEW PATCH PANELS AS REQUIRED.
**GENERAL NOTES:**

A. Coordinate with electrical plans for power in details.

B. Refer to sheet 0528 for electrical symbols, abbreviations, and general notes.


D. Leave 20'-0" of extra horizontal cables above the ceiling at each wireless LAN outlet on this sheet.

E. All new horizontal communication cables shall be terminated to the data outlets with a separate patch panel accessible above the ceiling.

F. Provide new patch panels as required.

**KEYNOTES:**

1. Computer work station connected to Cisco server.
A. COORDINATE WITH ELECTRICAL PLANS FOR ROUGH-IN DETAILS.
B. REFER TO SHEET T000 FOR TELECOM SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
C. ROUTE HORIZONTAL CABLES TO DATA OUTLETS ON THIS SHEET FROM TELECOM ROOM INDICATED ON AREA PLAN, UNLESS NOTED OTHERWISE.
D. LEAVE 20'-0" OF EXTRA HORIZONTAL CABLING ABOVE THE CEILING AT EACH WIRELESS LAN OUTLET ON THIS SHEET.
E. ALL NEW HORIZONTAL COMMUNICATION CABLES SHALL BE TERMINATED DIRECTLY INTO THE PATCH PANEL PORTS ABOVE AVAILABLE PORTS. ADDITIONAL PORTS OR PORTS ABOVE AVAILABLE PORTS ARE TO BE INCLUDED IN THE REMOVAL OF HORIZONTAL CABLES DURING DEMOLITION.
F. PROVIDE NEW PATCH PANELS AS REQUIRED.
**KEYNOTES:**

1. PROVIDE 16 DATA CABLES TO THIS LOCATION FOR INSTALLATION IN FUTURE POWER POLE TO STATION LOCATIONS.

**GENERAL NOTES:**

A. COORDINATE WITH ELECTRICAL PLANS FOR ROUGH-IN DETAILS.

B. REFER TO SHEET T000 FOR TELECOM SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.

C. ROUTE HORIZONTAL CABLES TO DATA OUTLETS ON THIS SHEET FROM TELECOM ROOM AS INDICATED ON AREA PLAN, UNLESS NOTED OTHERWISE.

D. LEAVE 20'-0" OF EXTRA HORIZONTAL CABLES ABOVE CEILING AT EACH WIRELESS LAN OUTLET ON THIS SHEET.

E. ALL NEW HORIZONTAL COMMUNICATION CABLES SHALL BE TERMINATED ON EXISTING PATCH PANELS WITH PORTS MADE AVAILABLE WHEN CABLES ARE REMOVED DURING DEMOLITION. PROVIDE NEW PATCH PANELS AS REQUIRED.