RFB NO. 321001

CONSTRUCTION DOCUMENTS
PROJECT MANUAL

DANE COUNTY DEPARTMENT OF PUBLIC WORKS,
HIGHWAY AND TRANSPORTATION

PUBLIC WORKS ENGINEERING DIVISION
1919 ALLIANT ENERGY CENTER WAY
MADISON, WISCONSIN 53713

REQUEST FOR BIDS NO. 321001
JCO-NIP SECURITY UPGRADES
DANE COUNTY JOB CENTER
1819 ABERG AVE.
MADISON, WISCONSIN

Due Date / Time: **TUESDAY, MAY 25, 2021 / 2:00 P.M.**

Location: **PUBLIC WORKS OFFICE**

Performance / Payment Bond: **100% OF CONTRACT AMOUNT**

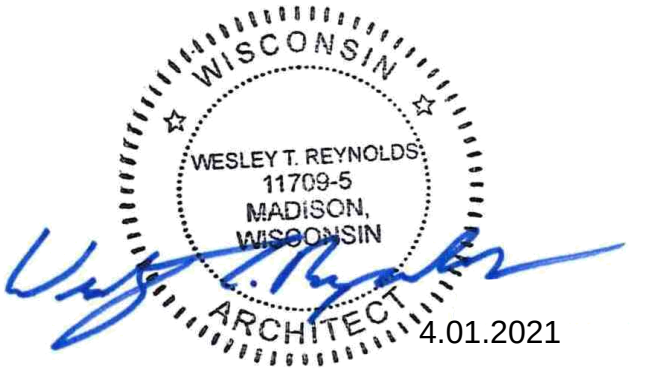
Bid Deposit: **5% OF BID AMOUNT**

FOR INFORMATION ON THIS REQUEST FOR BIDS, PLEASE CONTACT:

ERIC URTES, AIA – PROJECT MANAGER
TELEPHONE NO.: 608/266-4798
E-MAIL: urtes.eric@countyofdane.com

SECTION 00 01 07

SEALS PAGE



Architect's Seal
Wesley T. Reynolds
OPN Architects, Inc.
301 North Broom Street, Suite 100
Madison, WI 53703
Telephone: (608) 819-0260

Mechanical and Electrical Engineer's Seal
Dwight Schumm
Design Engineers
437 South Yellowstone Drive, Suite 110
Madison, WI 53719
Telephone: (608) 424-8814

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 00 01 10

TABLE OF CONTENTS

DIVISION 12 -- FURNISHINGS

12 50 00 – Furniture
12 93 00 – Site Furnishings

DIVISION 21 -- FIRE SUPPRESSION

21 00 10 – Fire Suppression General Provisions
21 05 00 – Common Work Results for Fire Suppression
21 10 00 – Water-Based Fire Suppression System

DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

23 00 10 – HVAC General Provisions
23 05 00 – Common Work Results for HVAC
23 07 00 – HVAC Insulation
23 31 13 – Metal Ducts
23 33 00 – Air Duct Accessories
23 37 13 – Diffusers, Registers, and Grilles

DIVISION 26 -- ELECTRICAL

26 05 00 – Common Work Results for Electrical
26 05 19 – Low-Voltage Electrical Power Conductors and Cables
26 05 26 – Grounding and Bonding for Electrical Systems
26 05 29 – Hangers and Supports for Electrical Systems
26 05 33 – Raceway and Boxes for Electrical Systems
26 05 53 – Identification for Electrical Systems
26 09 23 – Lighting Control Systems
26 27 26 – Wiring Devices
26 50 00 – Lighting

DIVISION 27 -- COMMUNICATIONS

27 00 10 – Telecommunications General Provisions
27 10 00 – Telecommunications Grounding and Bonding
27 11 00 – Telecommunications Cabling and Equipment
27 12 00 – Telecommunications Testing and Documentation

DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY

28 00 10 – Electronic Safety and Security General Provisions
28 50 00 – Access Control System
28 60 00 – Video Surveillance

DRAWINGS

Plot drawings on 30” x 42” (ARCH E1) paper for correct scale or size.

GENERAL

G001	COVER SHEET, SHEET INDEX, SEALS, LOCATION MAP
G002	LIFE SAFETY AND CODE SUMMARY
G003	GENERAL DRAWING INFORMATION

ARCHITECTURAL

AD101	DEMO ENLARGED FLOOR PLANS
AD201	DEMO REFLECTED CEILING PLAN
A100	SITE AND EXTERIOR DRAWINGS

A101	JCO/DWD ENLARGED FLOOR PLANS
A102	NIP ENLARGED FLOOR PLANS
A201	REFLECTED CEILING PLANS
A401	INTERIOR ELEVATIONS
A402	INTERIOR ELEVATIONS
A800	ROOM FINISH SCHEDULE AND DOOR SCHEDULE

FIRE SUPPRESSION

FXD102	NIP ENLARGED AREA FIRE SUPPRESSION DEMOLITION PLAN
FX102	NIP ENLARGED FIRE SUPPRESSION PLAN

HVAC

HD101	JCO ENLARGED HVAC DEMOLITION PLAN
HD102	NIP ENLARGED HVAC DEMOLITION PLAN
H101 J	CO ENLARGED HVAC PLAN
H102	NIP ENLARGED HVAC PLAN
H500	HVAC DETAILS, NOTES, SCHEDULES, AND SYMBOLS

ELECTRICAL

ED101	JCO ENLARGED ELECTRICAL DEMO PLANS
ED102	NIP ENLARGED ELECTRICAL DEMO PLAN
E101	JCO/DWD ENLARGED LIGHTING FLOOR PLANS
E102	NIP ENLARGED LIGHTING FLOOR PLANS
E201	JCO/DWD ENLARGED POWER FLOOR PLANS
E202	NIP ENLARGED POWER FLOOR PLANS
E500	ELECTRICAL SCHEMATIC RISER INFORMATION
E510	ELECTRICAL DETAILS
E520	ELECTRICAL NOTES AND SYMBOLS

FIRE ALARM

FA101	ENLARGED FIRE ALARM PLANS
FA500	FIRE ALARM SCHEDULES AND DETAILS

TECHNOLOGY

T100	OVERALL TECHNOLOGY FLOOR PLAN
T101	JCO/DWD ENLARGED TECHNOLOGY PLAN
T102	NIP ENLARGED TECHNOLOGY PLAN
T500	ACCESS CONTROL DETAILS AND SCHEDULES
T510	TECHNOLOGY SCHEDULES AND DETAILS

END OF SECTION

SECTION 01 11 16

INVITATION TO BID

LEGAL NOTICE

Dane County Dept. of Public Works, Hwy & Transp., 1919 Alliant Energy Center Way, Madison, WI 53713, will receive sealed Bids until:

2:00 P.M., TUESDAY, MAY 25, 2021

RFB NO. 321001

JCO-NIP SECURITY UPGRADES

DANE COUNTY JOB CENTER

1819 ABERG AVE, MADISON, WI

Dane County is inviting Bids for construction services to remodel the lobby areas of the Dane County Job Center Office and Neighborhood Intervention Program with the objective of improving security. Only firms with capabilities, experience & expertise with similar projects should obtain this Request for Bids (RFB) document & submit Bids.

RFB document may be obtained after **2:00 p.m. on Thursday, April 15, 2021** by downloading it from bids-pwht.countyofdane.com. Please contact Eric Urtes, AIA, Project Mgr. urtes.eric@countyofdane.com or 608/266-4798, for any questions or additional information.

All Bidders must be qualified as a Best Value Contractor before Bid Due Date / Time. Complete Pre-qualification Application for Contractors at publicworks.countyofdane.com/bvc or obtain one by calling 608/267-0119.

A pre-bid facility tour will be held Friday, April 30, 2021 at 10:00 a.m. at the Dane County Job Center, starting in the front lobby. Bidders are strongly encouraged to attend this tour. See RFB for mandatory disease transmission prevention practices.

PUBLISH: APRIL 13 & APRIL 20, 2021 - WISCONSIN STATE JOURNAL

APRIL 14 & APRIL 21, 2021 - THE DAILY REPORTER

END OF SECTION

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

1. GENERAL

A. Before submitting Bid, bidder shall thoroughly examine all Construction Documents. Successful Bidder shall be required to provide all the Work that is shown on Drawings, set forth in Specifications, or reasonably implied as necessary to complete Contract for this project.

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

C. Pre-bid meeting is scheduled on Friday, April 30, 2021 at 10:00 a.m. beginning outside the front entrance at 1819 Aberg Avenue. Attendance by all bidders is optional, however bidders and subcontractors are strongly encouraged to attend. See RFB for mandatory disease transmission prevention practices.

D. Safe distancing & face masks are required for all tour attendees. Tours will be limited to 10 people; please limit number of attending staff & subcontractors. If there are more than 10 people, the group will be split & there will be two or more tours and groups can be assigned to tour the interiors of the Job Center Lobby and the Neighborhood Intervention Program offices separately. Allow sufficient time if you do not make it in to first tour group. Do not visit the site if you are or have recently been ill.

E. Failure to visit site or failure to examine any and all Construction Documents will in no way relieve successful Bidder from necessity of furnishing any necessary materials or equipment,

or performing any work, that may be required to complete the Work in accordance with Drawings and Specifications. Neglect of above requirements will not be accepted as reason for delay in the Work or additional compensation.

2. DRAWINGS AND SPECIFICATIONS

A. Drawings and Specifications that form part of this Contract, as stated in Article 1 of General Conditions of Contact, are enumerated in Document Index of these Construction Documents.

B. Complete sets of Drawings and Specifications for all trades will be available to all Bidders for on-line download at the website, irrespective of category of work to be bid on, in order that all Bidders may be familiar with work of other trades as they affect their bid

A. No verbal explanation or instructions will be given in regard to meaning of Drawings or Specifications before Bid Due Date. Bidders shall bring inadequacies, omissions or conflicts to Owner or Architect / Engineer's attention at least ten (10) calendar days before Bid Due Date. Prompt clarification will be available to all bidders by Addendum.

B. Failure to so request clarification or interpretation of Drawings and Specifications will not relieve successful Bidder of responsibility. Signing of Contract will be considered as implicitly denoting that Contractor has thorough understanding of scope of the Work and comprehension of Construction Documents.

C. Owner or Architect / Engineer will not be responsible for verbal instructions.

4. QUALIFICATIONS OF BIDDER (CONTRACTOR AND SUBCONTRACTOR)

A. Before award of Contract can be approved, Owner shall be satisfied that Bidder involved meets following requirements:

1. Has completed at least one (1) project of at least fifty percent (50%) of size or value of Division of work being bid and type of work completed is similar to that being bid. If greater magnitude of experience is deemed necessary, other than size or value of work, such requirements will be described in appropriate section of Specifications.

2. Maintains permanent place of business.

3. Can be bonded for terms of proposed Contract.

4. Contractor and subcontractors shall meet all applicable Best Value Contractor requirements. Contractor must be registered and listed as a Best Value Contractor prior to opening of the bids or the bid will not be opened or accepted.

5. Has record of satisfactorily completing past projects and supplies list of no more than three (3) most recent, similar projects, with architect or engineer's and owner's names, addresses and telephone numbers for each project. Submit to Public Works Project Manager within (3) business days after Bid Due Date. Criteria which will be considered in determining satisfactory completion of projects by bidder will include:

    a. Completed contracts in accordance with drawings and specifications.
    b. Diligently pursued execution of work and completed contracts according to established time schedule unless Owner grants extensions.
    c. Fulfilled guarantee requirements of construction documents.

d. Is not presently on ineligible list maintained by County's Department of Administration for noncompliance with equal employment opportunities and affirmative action requirements.
e. Authorized to conduct business in Wisconsin. By submitting Bid, bidder warrants that it has: complied with all necessary requirements to do business in State of Wisconsin; that persons executing contract on its behalf are authorized to do so; and, if corporation, that name and address of bidder's registered agent are as set forth in Contract. Bidder shall notify Owner immediately, in writing, of any change in its registered agent, their address, and bidder's legal status. For partnership, term "registered agent" shall mean general partner.

B. County's Public Works Project Manager will make such investigations as are deemed necessary to determine ability of bidder to perform the Work, and bidder shall furnish to County's Public Works Project Manager or designee all such information and data for this purpose as County's Public Works Project Manager may request. Owner reserves right to reject Bid if evidence submitted by, or investigation of, bidder fails to satisfy Owner that bidder is responsible and qualified to carry out obligations of Contract and to complete the Work contemplated therein.

5. BID GUARANTEE

A. Bank certified check, cashier's check or Bid Bond, payable to County in amount not less than five percent (5%) of maximum bid, shall accompany each Bid as guarantee that if Bid is accepted, Bidder will execute and return proposed Contract and Performance and Payment Bonds within ten (10) business days after being notified of acceptance of Bid. Company issuing bonds must be licensed to do business in Wisconsin.

B. Any bid, which is not accompanied by bid guarantee, will be considered "No Bid" and will not be read at Bid Due Date.

C. If successful Bidder so delivers Contract, Certificate of Insurance, and Performance and Payment Bonds, check will be returned to Bidder. In case Bidder fails to deliver such Contract, insurance, and bond, amount of bid guarantee will be forfeited to County as liquidated damages.

D. All checks tendered as bid guarantee, except those of three (3) lowest qualified, responsible bidders, will be returned to their makers within three (3) business days after Bid Due Date. All such retained checks will be returned immediately upon signing of Contract and Performance and Payment Bonds by successful Bidder.

6. WITHDRAWAL OF BIDS

A. Bids may be withdrawn by written request received from bidder or authorized representative thereof prior to time fixed for Bid Due Date, without prejudice to right of bidder to file new Bid. Withdrawn Bids will be returned unopened. Negligence on part of bidder in preparing their Bid confers no right for withdrawal of Bid after it has been opened.

B. No Bid may be withdrawn for period of sixty (60) calendar days after Bid Due Date.

C. If Bid contains error, omission or mistake, bidder may limit liability to amount of bidder's guarantee by giving written Notice of Intent not to execute Contract to Owner within seventy-two (72) hours of Bid Due Date.

7. CONTRACT FORM

A. Sample copy of contract that successful Bidder will be required to enter into is included in these Construction Documents and bidders are required to familiarize themselves with all conditions contained therein.

8. CONTRACT INTERESTS BY COUNTY PUBLIC OFFICIALS

A. In accordance with Wisconsin Statute 946.13, county official may not bid for or enter into any contract involving receipts or disbursements of more than $15,000.00 in a year, in which they have private pecuniary interest, direct or indirect if at same time they are authorized to take official action with respect to making of this Contract. Any contract entered into in violation of this Statute is void and County incurs no liability thereon. This subsection does not affect application and enforcement of Wisconsin Statute 946.13 by state prosecutors in criminal courts of this state.

9. EMERGING SMALL BUSINESS PROVISIONS

A. **Emerging Small Business Definition.** For purposes of this section, ESB is defined as:

1. Independent business concern that has been in business minimum of one year;

2. Business located in State of Wisconsin;

3. Business comprised of less than twenty-five (25) employees;

4. Business must not have gross sales in excess of three million dollars ($3,000,000.00) over past three years; and

5. Business does not have history of failing to complete projects.

B. **Emerging Small Business (ESB) Involvement.** Bidder shall make good faith effort to award minimum of ten percent (10%) of the Work to ESBs. Bidder shall submit report to Dane County Contract Compliance Specialist within ten (10) business days of Bid Due Date demonstrating such efforts. Good faith efforts means significant contact with ESBs for purposes of soliciting bids from them. Failure to make or demonstrate good faith efforts will be grounds for disqualification.

C. **Emerging Small Business Report.** Emerging Small Business Enterprise Report is to be submitted by Bidder in separate envelope marked “Emerging Small Business Report”. This report is due by 2:00 p.m. following specified ten (10) business days after Bid Due Date. Bidder who fails to submit Emerging Small Business Report shall be deemed not responsive.

D. **ESB Goal.** Goal of this project is ten percent (10%) ESB participation. ESB utilizations are shown as percentage of total Bid. If Bidder meets or exceeds specified goal, Bidder is only required to submit Form A - Certification, and Form B - Involvement. Goal shall be met if Bidder qualifies as ESB.

E. **Report Contents.** Following award of Contract, Bidder shall submit copies of executed contracts for all Emerging Small Businesses. Emerging Small Business Report shall consist of these:

1. Form A - Certification;

2. Form B - Involvement;

3. Form C - Contacts;

4. Form D - Certification Statement (if appropriate); and

5. Supportive documentation (i.e., copies of correspondence, telephone logs, copies of advertisements).

F. **ESB Listing.** Bidders may solicit bids from *Dane County Targeted Business Directory* by going to this website. Do not click as a link; copy & paste address into a web browser.
https://equity.countyofdane.com/documents/PDFs/Targeted-Business-Directory.xlsx

G. **DBE Listing.** Bidders may also solicit bids from *State of Wisconsin DOT Disadvantaged Business Enterprise Unified Certification Program (DBE / UCP) Directory* by going to this website. These are not only transportation-related designers & contractors. Do not click as a link; copy & paste address into a web browser.
https://wisconsindot.gov/Documents/doing-bus/civil-rights/dbe/dbe-ucp-directory.xlsx

H. **ESB Certification.** All contractors, subcontractors and suppliers seeking ESB certification must complete and submit Emerging Small Business Report to Dane County Contract Compliance Program.

I. **Certification Statement.** If ESB firm has not been certified by County as ESB prior to submittal of this Bid, ESB Report cannot be used to fulfill ESB goal for this project unless firm provides "Form D - Certification Statement". Certification statement must be completed and signed by ESB firm.

J. **Questions.** Questions concerning Emerging Small Business provisions shall be directed to:

OEI@countyofdane.com
or
Dane County Contract Compliance Specialist
City-County Building, Room 356
210 Martin Luther King, Jr. Blvd.
Madison, WI 53703
608/266-4192

K. **Substituting ESBs.** In event of any significant changes in subcontract arrangements or if need arises to substitute ESBs, Bidder shall report such proposed changes to Contract Compliance Specialist to making any official changes and request authorization to substitute ESB firm. Bidder further agrees to make every possible effort to replace ESB firm with another qualified ESB firm.

L. **Good Faith Efforts.** Good faith efforts can be demonstrated by meeting all of these obligations:

1. Selecting portions of the Work to be performed by ESBs in order to increase likelihood of meeting ESB goal including, where appropriate, breaking down Contract into smaller units to facilitate ESB participation.

2. Advertising in general circulation, trade associations and women / minority focus media concerning subcontracting opportunities.

3. Providing written notices to reasonable number of specific ESBs that their interest in Contract was being solicited in sufficient time to allow ESBs to participate effectively.

4. Following up on initial solicitations of interest by contacting ESBs within five (5) business days prior to Bid Due Date to determine with certainty whether ESB were interested, to allow ESBs to prepare bids.

5. Providing interested ESB with adequate information about Drawings, Specifications and requirements of Contract.

6. Using services of available minority, women and small business organizations and other organizations that provide assistance in recruitment of MBEs / WBEs / ESBs.

7. Negotiating in good faith with interested ESBs, not rejecting ESBs as unqualified without sound reason based on thorough investigation of their capabilities.

8. Submitting required project reports and accompanying documents to County's Contract Compliance Specialist within twenty-four (24) hours after Bid Due Date.

M. **Appeals Disqualification of Bid.** Bidder who is disqualified may appeal to Public Works & Transportation Committee and Equal Opportunity Commission.

10. METHOD OF AWARD - RESERVATIONS

A. Following will be basis of award of Contract, providing cost does not exceed amount of funds then estimated by County as available to finance Contract(s):

1. Lowest dollar amount submitted by qualified responsible bidder on Base Bid for all work comprising project, combined with such additive Owner accepted alternates.

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

3. Unit Prices and Informational Bids will not be considered in establishing low bidder.

11. SECURITY FOR PERFORMANCE AND PAYMENTS

A. Simultaneous with delivery of signed Contract, Bidder shall be required to furnish Performance and Payment Bonds as specified in Article 29 of General Conditions of Contract, "Contract Security", Surety Company shall be licensed to do business in Wisconsin. Performance and Payment Bonds must be dated same date or subsequent to date of Contract. Performance and Payment Bonds must emulate information in Sample Performance and Payment Bonds in Construction Documents.

B. Provide certified copy of power of attorney from Surety Company showing that agent who signs Bond has power of attorney to sign for Surety Company. Secretary or Assistant Secretary of company must sign this certification, not attorney-in-fact. Certification must bear same or later date as Bond. Power of Attorney must emulate model power of attorney information detailed in Sample Performance and Payment Bonds.

C. If Bidder is partnership or joint venture, State certified list, providing names of individuals constituting partnership or joint venture must be furnished. Contract itself may be signed by one partner of partnership, or one partner of each firm comprising joint venture, but Performance and Payment Bonds must be signed by all partners.

D. If Bidder is corporation, it is necessary that current certified copy of resolution or other official act of directors of corporation be submitted showing that person who signs Contract is authorized to sign contracts for corporation. It is also necessary that corporate seal be affixed to resolution, contract, and performance and payment bonds. If your corporation has no seal, it is required that above documents include statement or notation to effect that corporation has no seal.

12. TAXES

A. Wisconsin Statute 77.54 (9m) allows building materials that become part of local unit government facilities to be exempt from sales & use tax. Vendors & materials suppliers may not charge Bidders sales & use tax on these purchases. This does not include highways, streets or roads. Any other Sales, Consumer, Use & other similar taxes or fees required by law shall be included in Bid.

B. In accordance with Wisconsin Statute 71.80(16)(a),successful nonresident bidder, whether incorporated or not, and not otherwise regularly engaged in business in this state, shall file surety bond with State of Wisconsin Department of Revenue payable to Department of Revenue, to guarantee 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. Amount of bond shall be three percent (3%) of Contract or subcontract price on all contracts of $50,000 or more.

13. SUBMISSION OF BIDS

A. All Bids shall be submitted on standard Bid Form bound herein and only Bids that are made on this Bid Form will be considered. Entire Bid Form and other supporting documents, if any, shall be removed or copied from Construction Documents, filled out, and submitted in manner specified hereinafter. Submit completed Bid Bond with Bid as well.

B. No bids for any subdivision or any sub-classification of the Work, except as indicated, will be accepted. Any conditional Bid, amendment to Bid Form or appended item thereto, or inclusion of any correspondence, written or printed matter, or details of any nature other than that specifically called for, which would alter any essential provision of Construction Documents, or require consideration of unsolicited material or data in determining award of Contract, will disqualify Bid. Telecommunication alterations to Bid will not be accepted.

C. Bidders must submit single Bid for all the Work.

D. Bid amounts shall be inserted in words and in figures in spaces provided on Bid Form; in case of conflict, written word amounts will govern.

E. Addenda issued after Bid Letting shall become part of Construction Documents. Bidders shall acknowledge receipt of such addenda in appropriate space provided on Bid Form. Bid may be rejected if receipt of any particular addendum applicable to award of Contract has not been acknowledged on Bid Form.

F. Bids shall be signed, placed in envelope, sealed and delivered before due time to place designated in Invitation to Bid, and identified with project name, bid number, location, category of work being bid upon, Bid Due Date, name and address of bidder.

G. Bidder shall be responsible for sealed Bid being delivered to place designated for Bid Due Date on or before date and time specified. Bids received after time of closing will be rejected and returned to bidder unopened.

H. Current conditions prevent public bid openings.

I. Bids dropped off at Public Works' physical address should be placed in the "Public Works Bids & Proposals" box outside the building's front vestibule. The locked box will be monitored by Public Works staff and checked at regular intervals.

J. Bid will be opened on listed due date & time & results should be available within 24 hours at bids-pwht.countyofdane.com.

K. Bid will be considered invalid and will be rejected if bidder has not signed it.

L. Faxed or emailed Bids will not be accepted.

M. Bidder's organization shall submit completed with Bid, Fair Labor Practices Certification form, included in these Construction Documents.

14. SUBCONTRACTOR LISTING

A. Bidders are required to submit Section 00 43 36, Proposed Subcontractors Form listing all subcontractors for this project including committed prices for each subcontractor. Project Manager must receive Form no later than when successful Bidder submits their signed Contract. Failure to submit may delay progress payments.

15. ALTERNATE BIDS

A. Bidder shall carefully read requests for Alternate Bids, and thoroughly examine Drawings and Specifications to determine extent various changes and conditions will affect Bid.

B. Space is provided in Bid Form for requested Alternate Bids. Failure to submit bid for any requested Alternate Bids may result in rejection of entire Bid.

C. Bidder shall state amount to be added / subtracted to Base Bid for providing alternates, including all incidentals, omissions, additions, and adjustments as may be necessary or required by such changes. If there is no difference in price, Bidder shall state, "No Change".

D. Descriptions of requested Alternate Bids are as set forth in Construction Documents.

16. INFORMATIONAL BIDS

A. Not Applicable.

17. UNIT PRICES

A. Provide unit prices where requested on Bid Form. Unit prices will include all costs for materials, labor, insurance, taxes, overhead and profit necessary to perform specified work. Estimated quantities are approximate only. Payment will be based upon actual quantities placed, provided or installed. Failure to provide requested unit prices may result in rejection of entire Bid.

B. Owner reserves right to accept or reject any unit prices as given in Bid.

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

18. COMMENCEMENT AND COMPLETION

A. Successful Bidder shall commence work when schedule and weather permit, but no later than stated in Bid Form. Contractor shall pursue the Work regularly and continuously at reasonable rate to insure completion of the Work within time stated in Bid.

B. Should it be found impossible to complete the Work on or before time specified for completion, written request may be submitted for extension of time setting forth reasons believed to justify granting of such request. Refer to Article 20 of General Conditions of Contract, titled "Time for Completion".

19. WORK BY OWNER

A. This work will be accomplished by Owner or will be let under separate contracts and will not be included under this Contract:

1. Move out & move in staff in construction areas

2. Test & remove any asbestos containing materials (ACM) that may be discovered at the site.

3. Furnish & install project signage (that is not included in the Contract Documents).

20. SPECIAL HAZARDS COVERAGE

A. Not Applicable.

FORM A

DANE COUNTY
EMERGING SMALL BUSINESS REPORT - CERTIFICATION

In accordance with General Conditions of Contract, submit this Emerging Small Business Report within ten (10) days after Bid Due Date.

PROJECT NAME: _____

_____

BID NO.: _____ BID DUE DATE: _____

BIDDER INFORMATION

COMPANY NAME: _____

ADDRESS: _____

_____

TELEPHONE NO.: _____

CONTACT PERSON: _____

EMAIL ADDRESS: _____

FORM B

DANE COUNTY
(Copy this Form as necessary to provide complete information)
EMERGING SMALL BUSINESS REPORT - INVOLVEMENT

COMPANY NAME: _____

PROJECT NAME: _____

BID NO.: _____ BID DUE DATE: _____

ESB NAME: _____

CONTACT PERSON: _____

ADDRESS: _____

_____

PHONE NO & EMAIL.: _____

_____

Indicate percentage of financial commitment to this ESB: _____% Amount: $_____

ESB NAME: _____

CONTACT PERSON: _____

ADDRESS: _____

_____

PHONE NO & EMAIL.: _____

_____

Indicate percentage of financial commitment to this ESB: _____% Amount: $_____

FORM C

DANE COUNTY
(Copy this Form as necessary to provide complete information)
EMERGING SMALL BUSINESS REPORT - CONTACTS

COMPANY NAME: _____

PROJECT NAME: _____

BID NO.: _____ BID DUE DATE: _____

	ESB FIRM NAME CONTACTED	DATE	PERSON CONTACTED	DID ESB BID?	ACC-EPT BID?	REASON FOR REJECTION
1)						
2)						
3)						
4)						
5)						
6)						
7)						
8)						

FORM D

DANE COUNTY
EMERGING SMALL BUSINESS REPORT - CERTIFICATION STATEMENT

I, _____ , _____ of
Name Title

_____ certify to best of my knowledge and
Company

belief that this business meets Emerging Small Business definition as indicated in Article 9 and that information contained in this Emerging Small Business Report is true and correct.

_____ _____
Bidder's Signature Date

Name of Bidding Firm: _____

SECTION 00 41 13

BID FORM

BID NO. 321001
PROJECT: JCO-NIP SECURITY UPGRADES
DANE COUNTY JOB CENTER

TO: DANE COUNTY DEPARTMENT OF PUBLIC WORKS, HIGHWAY & TRANSPORTATION PROJECT MANAGER
1919 ALLIANT ENERGY CENTER WAY
MADISON, WISCONSIN 53713

NOTE: WISCONSIN STATUTE 77.54 (9M) ALLOWS FOR NO SALES & USE TAX ON THE PURCHASE OF MATERIALS FOR COUNTY PUBLIC WORKS PROJECTS.

BASE BID - LUMP SUM:
Dane County is inviting Bids for construction services to remodel the lobby areas of the Dane County Job Center Office and Neighborhood Intervention Program with the objective of improving security. The undersigned, having examined the site where the Work is to be executed and having become familiar with local conditions affecting the cost of the Work and having carefully examined the Drawings and Specifications, all other Construction Documents and Addenda thereto prepared by Dane County Department of Public Works hereby agrees to provide all labor, materials, equipment and services necessary for the complete and satisfactory execution of the entire Work, as specified in the Construction Documents, for the Base Bid stipulated sum of:

_____ and __ /100 Dollars
Written Price

$_____
Numeric Price

ALTERNATE BID 1 - LUMP SUM:
Add price for providing demolition of existing VCT adhesive and vinyl base in the NIP corridors as indicated in Drawings 2/AD101 and 1/A201.

_____ and __ /100 Dollars
Written Price

$_____
Numeric Price (circle: Add or Deduct)

ALTERNATE BID 2 - LUMP SUM:
Add price for providing precast bollards at 1227 North Sherman Avenue, 1801 Aberg Avenue, and 1819 Aberg Avenue entries as indicated on Drawing Sheet A100.

_____ and __ /100 Dollars

Written Price

$_____
Numeric Price (circle: Add or Deduct)

ALTERNATE BID 3 - LUMP SUM:
Add price for providing Level 3 bullet resistive HM doors, frames, and glazing in lieu of standard HM doors, as indicated by Note 1 on Door Schedule and Drawing Sheet A800.

_____ and __ /100 Dollars
Written Price

$_____
Numeric Price (circle: Add or Deduct)

Receipt of the following addenda and inclusion of their provisions in this Bid is hereby acknowledged:

Addendum No(s). _____ through _____

Dated _____

Dane County Department of Human Services must have this project completed by February 25, 2022. Assuming this Work can be started by July 14, 2021, what dates can you commence and complete this job?

Commencement Date: _____ Completion Date: _____
(final, not substantial)

I hereby certify that all statements herein are made on behalf of:

_____
(Name of Corporation, Partnership or Person submitting Bid)

Select one of the following:
1. A corporation organized and existing under the laws of the State of _____, or

2. A partnership consisting of _____, or

3. A person conducting business as _____;

Of the City, Village, or Town of _____ of the State of _____.

I have examined and carefully prepared this Bid from the associated Construction Documents and have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Bid in (its) (their) (my) behalf; and that the said statements are true and correct. In signing this Bid, we also certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to

submit or not to submit a Bid; that this Bid has been independently arrived at without collusion with any other bidder, competitor, or potential competitor; that this Bid has not been knowingly disclosed prior to the Bids Due Date to another bidder or competitor; that the above statement is accurate under penalty of perjury.

The undersigned is qualified as a Best Value Contractor or has proven their exemption. Qualification or exemption shall be complete before Bid Due Date / Time.

The undersigned further agrees to honor the Base Bid and the Alternate Bid(s) for sixty (60) calendar days from date of Award of Contract.

SIGNATURE: _____

(Bid is invalid without signature)

Print Name: _____ Date: _____

Title: _____

Address: _____

Telephone No.: _____ Fax No.: _____

Email Address: _____

Contact Person: _____

END OF SECTION

THIS PAGE IS FOR BIDDERS' REFERENCE

DO NOT SUBMIT WITH BID FORM.

BID CHECK LIST:
These items **must** be included with Bid:
☐ Bid Form ☐ Bid Bond ☐ Fair Labor Practices Certification

DANE COUNTY BEST VALUE CONTRACTING QUALIFICATION

General Contractors & all Subcontractors must be qualified as a Best Value Contractor with the Dane County Public Works Engineering Division. Qualification & listing is not permanent & must be renewed every 24 months. Complete a *Best Value Contracting Application* online at:
pwht.countyofdane.com/bvc_application.aspx

DANE COUNTY VENDOR REGISTRATION PROGRAM

All bidders are strongly encouraged to be a registered vendor with Dane County. Registering allows vendors an opportunity to receive notifications for RFBs & RFPs issued by the County and provides the County with up-to-date company contact information. Complete a new form or renewal online at:
danepurchasing.com/Account/Login?

SECTION 00 43 36

PROPOSED SUBCONTRACTORS FORM

General Contractor Name: _____ Bid No: RFB #321001

Instructions:
1. Complete all information in table below.
2. Include this Form with signed Construction Contract (Section 00 52 96).
3. General contractors & subcontractors must be qualified & registered as Best Value Contractor (Dane County Ordinances, Chapter 40.07). General contractors must be qualified & registered before bids are due. Subcontractors must be qualified & registered before returning signed Construction Contract to Dane County Public Works. No contractor can perform work without being qualified & registered.
4. Sample Best Value Contracting Application is included in this RFB package for informational purposes; fill out form online (publicworks.countyofdane.com/bvc).

SUBCONTRACTOR NAME	ADDRESS & PHONE NO.	DIVISION OF WORK	$$ AMOUNT OF CONTRACT

Check box if there is another form page attached to include additional subcontractors. ☐

The undersigned, for and on behalf of the General Contractor named herein, certifies the information on this Form is accurate.

_____ _____
Officer or Authorized Agent Signature Date

_____
Printed or Typed Name and Title

SUBCONTRACTOR NAME	ADDRESS & PHONE NO.	DIVISION OF WORK	$$ AMOUNT OF CONTRACT

END OF SECTION

COUNTY OF DANE

PUBLIC WORKS CONSTRUCTION CONTRACT

Contract No. _____ Bid No. 321001

Authority: 2020 RES -_____

THIS CONTRACT, made and entered into as of the date by which authorized representatives of both parties have affixed their signatures, by and between the County of Dane (hereafter referred to as "COUNTY") and _____ (hereafter, "CONTRACTOR"), and

W I T N E S S E T H :

WHEREAS, COUNTY, whose address is c/o Deputy Public Works Director, 1919 Alliant Energy Center Way, Madison, WI 53713, desires to have CONTRACTOR provide JCO-NIP Security Upgrades at the Dane County Job Center, including Alternate Bids listed on the Bid Form ("the Project"); and

WHEREAS, CONTRACTOR, whose address is _____ _____ is able and willing to construct the Project, in accordance with the Construction Documents;

NOW, THEREFORE, in consideration of the above premises and the mutual covenants of the parties hereinafter set forth, the receipt and sufficiency of which is acknowledged by each party for itself, COUNTY and CONTRACTOR do agree as follows:

1. CONTRACTOR agrees to construct, for the price of $_____ the Project and at the CONTRACTOR'S own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence labor, insurance, and other accessories and services necessary to complete the Project in accordance with the conditions and prices stated in the Bid Form, General Conditions of Contract, the drawings which include all maps, plats, plans, and other drawings and printed or written explanatory matter thereof, and the specifications therefore as prepared by OPN Architects, Inc. _____ (hereinafter referred to as "the Architect / Engineer"), and as enumerated in the Project Manual Table of Contents, all of which are made a part hereof and collectively evidence and constitute the Contract.

2. COUNTY agrees to pay the CONTRACTOR in current funds for the performance of the Contract subject to additions and deductions, as provided in the General Conditions of Contract, and to make payments on account thereof as provided in Article entitled, "Payments to Contractor" of the General Conditions of Contract.

3. During the term of this Contract, CONTRACTOR agrees to take affirmative action to ensure equal employment opportunities. The CONTRACTOR agrees in accordance with Wisconsin Statute 111.321 and Chapter 19 of the Dane County Code of Ordinances not to discriminate on the basis of age, race, ethnicity, religion, color, gender, disability, marital status, sexual orientation, national origin, cultural differences, ancestry, physical appearance, arrest record or conviction record, military participation or membership in the national guard, state defense force

or any other reserve component of the military forces of the United States, or political beliefs. Such equal opportunity shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation. CONTRACTOR agrees to post in conspicuous places, available to all employees and applicants for employment, notices setting forth the provisions of this paragraph.

4. CONTRACTOR shall file an Affirmative Action Plan with the Dane County Contract Compliance Specialist in accord with Chapter 19 of the Dane County Code of Ordinances. CONTRACTOR must file such plan within fifteen (15) business days of the effective date of this Contract. During the term of this Contract CONTRACTOR shall also provide copies of all announcements of employment opportunities to COUNTY'S Office of Equity & Inclusion, and shall report annually the number of persons, by race, ethnicity, gender, and disability status, which apply for employment and, similarly classified, the number hired and number rejected.

5. During the term of this Contract, all solicitations for employment placed on CONTRACTOR'S behalf shall include a statement to the effect that CONTRACTOR is an "Equal Opportunity Employer".

6. CONTRACTOR agrees to furnish all information and reports required by COUNTY'S Contract Compliance Specialist as the same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and the provisions of this Contract.

7. This Contract is intended to be a Contract solely between the parties hereto and for their benefit only. No part of this Contract shall be construed to add to, supplement, amend, abridge or repeal existing rights, benefits or privileges of any third party or parties including, but not limited to, employees of either of the parties.

8. The entire agreement of the parties is contained herein and this Contract supersedes any and all oral agreements and negotiations between the parties relating to the subject matter hereof. The parties expressly agree that the express terms of this Contract shall not be amended in any fashion except in writing, executed by both parties.

9. CONTRACTOR must be qualified as a Best Value Contractor or have proven their exemption with Dane County Public Works Engineering Division before Bid Due Date / Time. All contractors and subcontractors must be qualified as a Best Value Contractor or have proven their exemption to perform any work under this Contract.

IN WITNESS WHEREOF, COUNTY and CONTRACTOR, by their respective authorized agents, have caused this Contract and its Schedules to be executed, effective as of the date by which all parties hereto have affixed their respective signatures, as indicated below.

* * * * * * *

FOR CONTRACTOR:

Signature Date

Printed or Typed Name and Title

Signature Date

Printed or Typed Name and Title

NOTE: If CONTRACTOR is a corporation, Secretary should attest. In accordance with IRS Regulations, unincorporated entities are required to provide either their Social Security or Employer Number in order to receive payment for services rendered.

* * * * * * *

This Contract is not valid or effectual for any purpose until approved by the appropriate authority designated below, and no work is authorized until the CONTRACTOR has been given notice to proceed by COUNTY'S Deputy Public Works Director.

FOR COUNTY:

Joseph T. Parisi, County Executive Date

Scott McDonell, County Clerk Date

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

BOND AMOUNT:

PROJECT:
(Name, location or address, and Project number, if any)

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of

(Witness)	*(Contractor as Principal)* *(Seal)*
	(Title)
(Witness)	*(Surety)* *(Seal)*
	(Title)

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

Init.
/

AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:	Name	Name and Title:	

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:	Name	Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

SECTION 00 72 12

GENERAL CONDITIONS OF CONTRACT

TABLE OF CONTENTS

1. CONSTRUCTION DOCUMENTS

A. Construction Documents, listed in Table of Contents of this Specification volume shall form part of this Contract and provisions of Construction Documents shall be as binding upon parties as if they were fully set forth in Contract itself.

B. These shall also be considered as part of Construction Documents: Addenda, including additions and modifications incorporated in such addenda before execution of Contract; requests for information; construction bulletins; change orders; and written interpretations by Architect / Engineer or Public Works Project Manager that are made after execution of Contract.

C. Construction Documents are complementary, and what is required by one shall be as binding as if required by all. Intent of Construction Documents is to include all labor, materials and equipment necessary for proper execution of the Work.

2. DEFINITIONS

A. These terms as used in this Contract are respectively defined as follows:
   1. All uses of term "County" in Construction Documents shall mean Dane County.
   2. All uses of term "Department" in Construction Documents shall mean Department of Public Works which is a unit of Dane County government. Department is County agency overseeing Contract with Contractor.
   3. Public Works Project Manager is appointed by and responsible to Department. Public Works Project Manager has authority to act on behalf of Department and will sign change orders, payment requests and other administrative matters related to projects.
   4. Public Works Project Manager is responsible for supervision, administration and management of field operations involved in construction phase of this Work.
   5. Term "Work" includes all labor, equipment and materials necessary to produce project required by Construction Documents.
   6. Term "Substantial Completion" is date when project or specified area of project is certified by Architect / Engineer that construction is sufficiently completed, in accordance with Construction Documents, and as modified by any subsequent changes agreed to by parties, so that County may occupy project or specified area of project for use for which it was intended subject to permit approval for occupancy.
   7. Contractor is person, firm, or corporation with whom County makes Contract. Though multiple contracts may be involved, Construction Documents treat them throughout as if each were of singular number.

3. ADDITIONAL INSTRUCTIONS AND DRAWINGS

A. Contractor may be furnished additional instructions and detail drawings as necessary to carry out the Work included in Contract. Additional drawings and instructions thus supplied to Contractor will coordinate with Construction Documents and will be so prepared that they can be reasonably interpreted as part thereof. Contractor shall carry out the Work in accordance with additional detail drawings and instructions.

4. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Unless otherwise specified, Contractor shall submit three (3) copies of all Shop Drawings for each submission, until receiving final approval. After final approval, provide five (5) additional copies for distribution and such other copies as may be required.

B. Contractor shall submit, on an on-going basis and as directed, Product Data such as brochures that shall contain catalog cuts and specifications of all furnished mechanical and electrical equipment. After Architect / Engineer's approval, one (1) copy shall remain in Architect / Engineer's file, one (1) kept at Department's office and one (1) kept at job site by Contractor for reference purposes.

C. Samples shall consist of physical examples furnished by Contractor in sufficient size and quantity to illustrate materials, equipment or workmanship, and to establish standards to compare the Work.
   1. Submit Samples in sufficient quantity (minimum of two (2)) to permit Architect / Engineer to make all necessary tests and of adequate size showing quality, type, color range, finish, and texture. Label each Sample stating material, type, color, thickness, size, project name, and Contractor's name.
   2. Submit transmittal letter requesting approval, and prepay transportation charges to Architect / Engineer's office on samples forwarded.
   3. Materials installed shall match approved Samples.

D. Contractor shall review Shop Drawings and place their dated stamp thereon to evidence their review and approval and shall submit with reasonable promptness and in orderly sequence to cause no delay in the Work or in work of any other contractor. At time of submission, Contractor shall inform Architect / Engineer in writing of any deviation in Shop Drawings or Samples from requirements of Construction Documents. Architect / Engineer will not consider partial lists.

E. Architect / Engineer will review and approve or reject Shop Drawings with reasonable promptness to cause no delay. Architect / Engineer's approval shall not relieve Contractor from responsibility for errors or omissions in Shop Drawings.

F. Contractor shall not commence any work requiring Shop Drawing, Product Data or Sample submission until Architect / Engineer has approved submission. All such work shall be in accordance with approved Shop Drawings, Product Data and Samples.

G. Contractor shall keep on site of the Work, approved or conformed copy of Shop Drawings and shall at all times give Department access thereto.

H. By stamping and submitting Shop Drawings, Product Data and Samples, Contractor thereby represents that he or she has or will determine and verify all field measurements, field construction criteria, materials, catalog numbers, and similar data and that he or she has checked and coordinated each Shop Drawing, Product Data and Sample with requirements of the Work and of Construction Documents. Architect / Engineer shall return without examination, Shop Drawings, Product Data and Samples not so noted.

I. All Shop Drawings from any one Contractor should be numbered consecutively and on cover sheet shall bear name and location of project, name of Contractor, date of submittal and date of each correction or revision and associated Specification section and page number.

5. CUTTING AND PATCHING

A. Contractor shall be responsible for all cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

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

6. CLEANING UP

A. Contractor shall keep premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under Contract. Contractor shall remove from and about the Work waste materials, rubbish, Contractor's tools, construction equipment, machinery, and surplus materials at completion of the Work. Contractor shall maintain streets and sidewalks around the Work site in clean condition. Contractor shall remove all spillage and prevent tracking of spillage arising from performance of the Work, into, out of, and within the Work site. Contractor shall establish regular maintenance program of sweeping, vacuuming and / or hosing to minimize accumulation of dirt and dust upon such areas.

B. If Contractor fails to clean up as directed in Construction Documents, County may do so and shall charge Contractor cost thereof.

C. Contractor shall be responsible for broken windows and glass, and at completion of the Work shall replace such damaged or broken windows and glass. After replacing damaged or broken windows and glass, Contractor shall remove all labels, wash and polish both sides of all windows and glass.

D. In addition to general cleaning (sweeping, vacuuming and / or hosing, as is appropriate to work surface), Contractor shall perform following final cleaning for all trades at completion of the Work:
   1. Remove temporary protections;
   2. Remove marks, stains, fingerprints and other soil or dirt from painted, decorated and finished woodwork and wall surfaces;
   3. Remove spots, plaster, soil and paint from ceramic tile, marble and other finished materials, and wash or wipe clean;
   4. Clean fixtures, cabinet work and equipment, removing stains, paint, dirt and dust, and leave same in undamaged, new condition;
   5. Clean aluminum in accordance with recommendations of manufacturer; and
   6. Clean resilient floors thoroughly with well-rinsed mop containing only enough moisture to clean off any surface dirt or dust and buff dry by machine to bring surfaces to sheen.

7. USE OF SITE

A. Contractor shall provide County and Architect / Engineer access to the Work under all circumstances.

B. Contractor shall confine operations at site to areas permitted by County, law, ordinance, permits and Construction Documents and shall not unreasonably encumber site with materials

or equipment. Contractor shall assure free, convenient, unencumbered, direct and safe access to all properties adjacent to the Work for County, its employees, invitees and guests.

8. MATERIALS AND WORKMANSHIP

A. Contractor shall perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, necessary to complete the Work required by this Contract, within time specified, in accordance with provisions of Construction Documents.

B. All equipment and materials incorporated in the Work covered by this Contract are to be new; use recycled and / or recovered materials to extent that such use is technically and economically feasible. Recovered materials are products recovered from solid waste in form identical to original form for use that is same as, or similar to original use. Recycled materials are products manufactured from solid waste.

C. If requested, Contractor shall furnish satisfactory evidence as to kind and quality of construction materials proposed or used. Contractor shall furnish to Architect / Engineer, for approval, manufacturer name and model, performance capacities and other pertinent information of machinery, mechanical, electrical or other types of equipment, which Contractor plans to install.

D. If not otherwise provided, materials and labor called for in this Contract shall be provided and performed in accordance with established practice and standards recognized by Architects, Engineers, Department, and construction industry.

E. Reference to "Standard" specifications of any association or manufacturer, or codes of County authorities, intends most recent printed edition or catalog in effect on date that corresponds with date of Construction Documents.

F. Whenever reference is made in Specifications that work shall be "performed", "applied", in accordance with "manufacturer's directions or instructions", Contractor to whom those instructions are directed shall furnish three (3) printed copies of such instructions to Architect / Engineer before execution of the Work.

9. CONTRACTOR'S TITLE TO MATERIALS

A. Contractor or any subcontractor shall not purchase materials or supplies for the Work subject to any chattel mortgage or under conditional sale contract or other agreement by which seller retains interest. Contractor warrants that all materials and supplies used in the Work are free from all liens, claims or encumbrances and Contractor has good title to them.

10. "OR EQUAL" CLAUSE

A. Whenever equipment or materials are identified on Drawings or in Specifications by reference to manufacturer's or vendor's name, trade name, catalog number, and other identifying information, it is intended to establish standards; and any equipment or material of other manufacturers and vendors which will perform adequately duties imposed by general design will be considered equally accepted provided equipment or material so proposed is, in opinion of Architect / Engineer, of equal substance and function. Architect / Engineer and Department shall provide written approval before Contractor may purchase or install it.

B. Equipment or materials of manufacturers, other than those named, may be used only upon following conditions:
   1. That, in opinion of Architect / Engineer and Department, proposed material or equipment item is fully equal or superior (in design, materials, construction, workmanship, performance, finish, etc.) to named item. No compromise in quality level, however small, is acceptable.
   2. That, in substituting materials or equipment, Contractor assumes responsibility for any changes in system or for modifications required in adjacent or related work to accommodate such substitution despite Architect / Engineer's and Department's approval, and all costs growing out of approval of "or equal" items shall be responsibility of Contractor. No extra costs resulting from such approval shall become responsibility of Department, Architect / Engineer or any other separate Contractor.
   3. It shall be understood that use of materials or equipment other than those specified, or approved equal by Architect / Engineer and Department, shall constitute violation of Contract, and that Architect / Engineer and Department shall have right to require removal of such materials or equipment and their replacement with specified materials or equipment at Contractor's expense.
   4. Product and manufacturer named first in Specifications or on information shown on Drawings is basis of selection of manufactured items and equipment, particularly mechanical equipment. In using other than first named products or manufacturers, including those specified as additionally approved or acceptable, Contractor assumes responsibility for any changes in system and for modifications in any work required to accommodate them. Architect / Engineer's approval of such additionally acceptable products or manufacturers, either in Specifications or in Addendum, does not relieve Contractor from obligation to coordinate such optional products with other Contractors, whose work may be affected by them, and to pay all additional costs resulting from their inclusion into the Work. Contractor's liability shall include payment of Architect / Engineer's fees for any additional services made necessary by or directly connected to such product changes. No extra costs resulting from such changes shall become responsibility of Department, Architect / Engineer or any other separate Contractor.

C. No request for approval of "or equal" materials will be entertained except from Contractor. Identify any request for substitution as substitution on Contractor's letter of transmittal and give reasons for substitution. Department may in its sole discretion allow substitutions of materials.

11. PATENTS AND ROYALTIES

A. If Contractor uses any design, device or material covered by letters, patent or copyright, it is mutually agreed and understood, that, without exception, contract prices shall include all royalties or costs arising from use of such design, device or materials, in any way involved in the Work.

B. Contractor shall indemnify and save harmless County from any and all claims for infringement by reason of use of such patent or copyright in connection with the Work agreed to be performed under this Contract, and shall indemnify County for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during prosecution of the Work or after completion of the Work.

12. SURVEYS, PERMITS, REGULATIONS AND TAXES

A. Department will furnish to Contractor all site, topography and property surveys necessary for execution of the Work.

B. Contractor shall procure all permits, licenses and approvals necessary for execution of this Contract.

C. Contractor shall give all notices and comply with all State of Wisconsin, Federal and local laws, codes, rules and regulations relating to performance of the Work, protection of adjacent property, and maintenance of passageways, guard fences or other protective facilities.

D. Contractor does not need to pay State and local sales & use taxes on building materials that become part of local unit government facilities. See Wisconsin Statute 77.54 (9m). This does not include materials for highways, streets or roads. Contractor shall pay any other Sales, Consumer, Use & other similar taxes or fees required by law.

E. Contractor shall promptly notify Architect / Engineer of any variances of Drawings or Specifications with that of any State of Wisconsin, federal or local law, code, rule or regulation. Upon such notification, Architect / Engineer will require correction of variance to comply with applicable law, code, rule or regulation at no additional cost to Contractor.

F. Work under this Contract shall comply with all applicable State of Wisconsin, Federal and local laws, codes and regulations.

G. Contractor shall pay charges for water, sewer and other utility connections made by municipalities where required by Specifications.

13. CONTRACTOR'S OBLIGATIONS AND SUPERINTENDENCE

A. Contractor shall provide and pay for all materials, labor, tools, equipment, transportation and superintendence necessary to execute, complete and deliver the Work within specified time. Contractor agrees to secure at their own expense all personnel necessary to carry out the Work. Such personnel shall not be deemed County employees nor shall they have or be deemed to have any direct contractual relationship with County.

B. Performance of any work necessary after regular working hours, on Sundays or Legal Holidays shall be without additional expense to County. Performance of any work at site at other than normal working hours must be coordinated with Public Works Project Manager.

C. Contractor shall furnish, erect, maintain and remove such temporary works as may be required.

D. Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of Construction Documents.

E. At the Work site, Contractor shall give personal superintendence to the Work or shall employ construction superintendent or foreman, experienced in character of work covered by Contract, who shall have full authority to act for Contractor. Understand that such superintendent or foreman shall be acceptable to Architect / Engineer and Department.

F. Remove from project or take other corrective action upon notice from Architect / Engineer or Department for Contractor's employees whose work is considered by Architect / Engineer or Department to be unsatisfactory, careless, incompetent, unskilled or otherwise objectionable.

G. Contractor and subcontractors shall be required to conform to Labor Laws of State of Wisconsin and various acts amendatory and supplementary thereto and to other laws, ordinances and legal requirements applicable to the Work.

H. Presence and observation of the Work by Architect / Engineer or Public Works Project Manager shall not relieve Contractor of any obligations.

14. WEATHER CONDITIONS

A. In event of temporary suspension of work, or during inclement weather, or whenever Architect / Engineer shall direct, Contractor shall, and shall cause subcontractors to protect carefully all work and materials against damage or injury from weather. If, in opinion of Architect / Engineer or Department, any work or materials that have been damaged or injured due to failure on part of Contractor or any subcontractors so to protect the Work, such materials shall be removed and replaced at expense of Contractor.

15. PROTECTION OF WORK AND PROPERTY

A. Contractor shall at all times safely guard County's property from injury or loss in connection with this Contract. Contractor shall at all times safely guard and protect the Work, and adjacent property, from damage. Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in Contract, or by County, or County's duly authorized representative.

B. Contractor may act diligently, without previous instructions from Architect / Engineer and / or Department, in emergency that threatens loss or injury of property, or safety of life. Contractor shall notify Architect / Engineer and / or Department immediately thereafter. Promptly submit any claim for compensation by Contractor due to such extra work to Architect / Engineer and / or Department for approval as provided for in Article 18 herein.

16. INSPECTION AND TESTING OF MATERIALS

A. Authorized representatives and agents of County government shall have access at all times to the Work wherever it is in preparation or progress and Contractor shall provide facilities for such access and for inspection.

B. Should it be considered necessary or advisable at any time before final acceptance of the Work to make examination of work already completed, by removing or tearing out same, Contractor shall upon request, promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any aspect, due to fault of Contractor or subcontractors thereof, Contractor shall assume all expenses of such examination and of satisfactory reconstruction. Contractor will be reimbursed for such examination and replacement in accordance with Article 18 - A.3., of these General Conditions of Contract if such work is found to meet requirements of Contract.

C. If Specifications, Architect / Engineer's, or Public Works Project Manager's instructions require any work to be specially tested or approved, Contractor shall give Architect / Engineer and Public Works Project Manager timely notice of its readiness for testing or inspection. Test all materials and equipment requiring testing in accordance with accepted or specified standards, as applicable. Architect / Engineer shall recommend laboratory or inspection agency and Department will select and pay for all initial laboratory inspection

services. Should retesting be required, due to failure of initial testing, cost of such retesting shall be borne by Contractor.

D. Cost of any testing performed by manufacturers or Contractor for substantiating acceptability of proposed substitution of materials and equipment, or necessary conformance testing in conjunction with manufacturing processes or factory assemblage, shall be borne by Contractor or manufacturer responsible.

17. REPORTS, RECORDS AND DATA

A. Contractor shall submit to Architect / Engineer and Public Works Project Manager such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, invoices, records and other data as either may request concerning work performed or to be performed under this Contract.

18. CHANGES IN THE WORK

A. Make no changes, except in cases of emergency, in the Work covered by approved Construction Documents without having prior written approval of Department. Charges or credits for the Work covered by approved change shall be determined by one of these methods:
   1. Unit bid prices previously approved.
   2. Agreed lump sum based on actual cost of:
      a) Labor, including foremen, and all fringe benefits that are associated with their wages.
      b) Materials entering permanently into the Work.
      c) Ownership or rental cost of construction tools and equipment during time of use on extra work.
      d) Power and consumable supplies for operation of power equipment.
      e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
      f) Social Security and old age and unemployment contributions.
      g) Add to cost under (2), fixed fee to be agreed upon, but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force. Fee shall be compensation to cover cost of supervision, overhead, bond, profit and any other general expense.
      h) On that portion of the Work under (2) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit and any other general expense.
      i) Department may require correct amount of costs with supporting vouchers; Contractor shall keep and present in such form as directed.
   3. Cost-plus work, with not-to-exceed dollar limit, based on actual cost of:
      a) Labor, including foremen, and all fringe benefits that are associated with their wages.
      b) Materials entering permanently into the Work.
      c) Ownership or rental cost of construction tools and equipment during time of use on extra work. Rental cost cannot exceed fifty percent (50%) replacement value of rented equipment.
      d) Power and consumable supplies for operation of power equipment.
      e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
      f) Social Security and old age and unemployment contributions.
      g) To cost under (3), there shall be added fixed fee to be agreed upon but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force.

Fee shall be compensation to cover cost of supervision, overhead, bond, profit, and any other general expense.

h) On that portion of the Work under (3) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit, and any other general expense.

i) Contractor shall keep and present, in such form as directed, correct amount of cost together with such supporting vouchers as may be required by Department.

B. If Contractor claims that by any instructions given by Architect / Engineer, Department, by drawings or otherwise, regarding performance of the Work or furnishing of material under Contract, involves extra cost, Contractor shall give Department written notice of cost thereof within two (2) weeks after receipt of such instructions and in any event before proceeding to execute work, unless delay in executing work would endanger life or property.

C. No claim for extra work or cost shall be allowed unless it was done in pursuance of written Change Order from Architect / Engineer and approved by Department, as previously mentioned, and claim presented with payment request submitted after changed or extra work is completed.

D. Negotiation of cost for change in the Work shall not be cause for Contractor to delay prosecution of the Work if Contractor has been authorized in writing by Public Works Project Manager to proceed.

19. EXTRAS

A. Without invalidating Contract, Department may order extra work or make changes by altering, adding to or deducting from the Work, contract sum being adjusted in accordance with Article 18 herein.

20. TIME FOR COMPLETION

A. Contractor agrees that the Work shall be prosecuted regularly and diligently and complete the Work as stated in Construction Documents.

21. CORRECTION OF WORK

A. All work, all materials whether incorporated in the Work or not, and all processes of manufacture shall at all times and places be subject to inspection of Architect / Engineer and Public Works Project Manager who shall be judge of quality and suitability of the Work, materials, and processes of manufacture for purposes for which they are used. Should they fail to meet Architect / Engineer's and Public Works Project Manager's approval they shall be reconstructed, made good, replaced or corrected, by Contractor at Contractor's expense. Immediately remove all rejected material from site.

B. If Contractor defaults or neglects to carry out the Work in accordance with Construction Documents or fails to perform any provision of Contract, Department may, after ten (10) business days' written notice to Contractor and without prejudice to any other remedy County may have, make good such deficiencies. In such case, appropriate Change Order shall be issued deducting from Contractor's payments then or thereafter, cost of correcting such deficiencies, including cost of Architect / Engineer's additional services made necessary by such default, neglect or failure.

22. SUBSURFACE CONDITIONS FOUND DIFFERENT

A. If Contractor encounters subsurface or latent conditions at site materially differing from those shown on Drawings or indicated in Specifications, Contractor shall immediately give notice to Architect / Engineer and Public Works Project Manager of such conditions before they are disturbed. Architect / Engineer will thereupon promptly investigate conditions, and if Architect / Engineer finds that they materially differ from those shown on Drawings or indicated in Specifications, Architect / Engineer will at once make such changes as necessary, any increase or decrease of cost resulting from such changes to be adjusted in manner provided in above Article 18 entitled "Changes in the Work".

23. RIGHT OF DEPARTMENT TO TERMINATE CONTRACT

A. In event that any provisions of this Contract are violated by Contractor or by any subcontractors, County may serve written notice upon Contractor and Surety of its intention to terminate Contract, such notice to contain reasons for such intention to terminate Contract, and unless within ten (10) business days after serving of such notice upon Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, Contract shall, upon expiration of said ten (10) business days, cease and terminate.

B. In event of any such termination, County shall immediately serve notice thereof upon Surety and Contractor, and Surety shall have right to take over and perform Contract subject to County's approval; provided, however, that if Surety does not commence performance thereof within ten (10) business days from date of mailing to such Surety of notice of termination, County may take over the Work and prosecute same to completion by contract, or by force account, at expense of Contractor; Contractor and Surety shall be liable to County for any excess cost occasioned County thereby, and in such event County may take possession of and utilize in completing the Work, such materials and equipment as may be on the Work site and therefore necessary.

24. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

A. Contractor shall be responsible for Construction Schedule and coordination. Immediately after execution and delivery of Contract and before making first payment, Contractor shall notify all subcontractors to furnish all required information to develop Construction Schedule. Contractor and all subcontractors associated with the Work shall furnish following information from each Division of Specifications:
   1. List of construction activities;
   2. Start, finish and time required for completion of each activity;
   3. Sequential relationships between activities;
   4. Identify all long lead-time items, key events, meetings or activities such as required submittals, fabrication and delivery, procurement of materials, installation and testing;
   5. Weekly definition of extent of work and areas of activity for each trade or Subcontract; and
   6. Other information as determined by Public Works Project Manager.

B. In addition to above requested items, Contractor shall request delivery dates for all County-furnished equipment, materials or labor. This shall include any work handled by Department under separate contracts such as asbestos abatement, air and water balancing, etc. Indicate on Construction Schedule these associated delivery and installation dates.

C. Progress Reporting:

1. Contractor shall update and publish Construction Schedule on monthly basis. Revisions to Schedule shall be by Contractor and made in same detail as original Schedule and accompanied by explanation of reasons for revision; and shall be subject to approval by Department.
2. Failure of Contractor to keep Schedule in updated format shall result in County hiring firm specializing in construction schedule development and deducting those costs associated with updating process from payments due Contractor.
3. Contractor shall submit show actual percentage of each activity completed, estimated future progress, and anticipated completion time.

D. Responsibility for timely completion requires:
   1. Contractor and subcontractors understand that performance of each is interdependent upon performance of others.
   2. Whenever it becomes apparent from current schedule, that phasing or progress completion dates will not be met, Contractor must take some or all following actions at no additional cost to County:
      a) Increase construction labor in such quantities and crafts as will eliminate backlog of work.
      b) Increase number of working hours per shift, shifts per working day, working days per week, amount of construction equipment, or any combination of foregoing to eliminate backlog of work.
      c) Reschedule work (yet remain in conformance with Drawings and Specifications).
   3. Prior to proceeding with any of above actions, Contractor shall notify Public Works Project Manager.

E. Maintain current Construction Schedule at all times. Revise Construction Schedule in same detail as original and accompany with explanation of reasons for revision. Schedule shall be subject to approval by Architect / Engineer and Public Works Project Manager.

25. PAYMENTS TO CONTRACTOR

A. Contractor shall provide:
   1. Detailed estimate giving complete breakdown of contract price by Specification Division; and
   2. Periodic itemized estimates of work done for purpose of making partial payments thereon.

B. Submit these estimates for approval first to Architect / Engineer, then to Public Works Project Manager. Costs employed in making up any of these schedules are for determining basis of partial payments and not considered as fixing basis for additions to or deductions from Contract price.

C. County will make partial payments to Contractor for value, proportionate to amount of Contract, of all labor and material incorporated in the Work during preceding calendar month upon receipt of Application and Certificate for Payment form from Architect / Engineer and approval of Department.

D. Contractor shall submit for approval first to Architect / Engineer, and then to Public Works Project Manager all Application and Certificate for Payment forms. If requested, Application and Certificate for Payment shall be supported by such additional evidence as may be required, showing Contractor's right to payment claimed.

E. Application and Certificate for Payment for preparatory work and materials delivered and suitably stored at site to be incorporated into the Work at some future period, will be given due consideration. Requesting payment for materials stored off site, may be rejected, however, if deemed essential for reasons of job progress, protection, or other sufficient cause, requests will be considered, conditional upon submission by Contractor of bills of sale, photographs and such other procedures as will adequately protect County's interest such as storage in bonded warehouse with adequate coverage. If there is any error in payment, Contractor is obligated to notify Department immediately, but no longer than ten (10) business days from receipt of payment.

F. Payments by County will be due within forty-five (45) business days after receipt by Department of Application and Certificate for Payment.

G. County will retain five percent (5%) of each Application and Certificate for Payment until final completion and acceptance of all the Work covered by Contract. However, anytime after fifty percent (50%) of the Work has been furnished and installed at site, County will make remaining payments in full if Architect / Engineer and Public Works Project Manager find that progress of the Work corresponds with Construction Schedule. If Architect / Engineer and Public Works Project Manager find that progress of the Work does not correspond with Construction Schedule, County may retain up to ten percent (10%) of each Application and Certificate for Payment for the Work completed.

H. All material and work covered by partial payments made shall become sole property of County, but this provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made, or restoration of any damaged work, or as waiver of right of County to require fulfillment of all of terms of Contract.

I. County will make final payment within sixty (60) calendar days after final completion of the Work, and will constitute acceptance thereof.

J. County may make payment in full, including retained percentages and less authorized deductions, upon completion and acceptance of each Division where price is stated separately in Contract.

K. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit to this Department, as requested and with final application for payment for work under said contract, affidavit(s) as required to prove that all debts and claims against this Work are paid in full or otherwise satisfied, and give final evidence of release of all liens against the Work and County.

26. WITHHOLDING OF PAYMENTS

A. County, after having served written notice on said Contractor, may either pay directly any unpaid bills of which Department has written notice, or withhold from Contractor's unpaid compensation sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged; whereupon, payment to Contractor shall be resumed in accordance with terms of this Contract, but in no event shall these provisions be construed to impose any obligations upon County to either Contractor or Contractor's Surety.

B. In paying any unpaid bills of Contractor, County shall be deemed agent of Contractor, and any payment so made by County, shall be considered as payment made under Contract by

County to Contractor and County shall not be liable to Contractor for any such payment made in good faith.

C. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from all claims growing out of lawful demands of subcontractors, laborers, workers, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in performance of this Contract.

D. At Department's request, Contractor shall furnish satisfactory evidence that all obligations of nature designated above have been paid, discharged or waived.

27. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

A. Making of final payment shall constitute waiver of all claims by County except those arising from:
   1. Unsettled lien;
   2. Faulty or defective work appearing after substantial completion;
   3. Failure of the Work to comply with requirements of Construction Documents; or
   4. Terms of any special guarantees required by Construction Documents.

B. Acceptance of final payment shall constitute waiver of all claims by Contractor.

28. PAYMENTS BY CONTRACTOR

A. Contractor shall pay following not later than fifth (5^{th}) business day following each payment received from County:
   1. All transportation and utility services rendered;
   2. All materials, tools, and other expendable equipment that have been delivered at site of the Work to extent of ninety percent (90%) of cost thereof, and balance of cost thereof when said balance is paid to Contractor; and
   3. Each subcontractor, respective amount allowed Contractor because of work performed by subcontractor to extent of subcontractor's interest therein.

29. CONTRACT SECURITY

A. Contractor shall furnish Performance and Payment Bonds in amount at least equal to one hundred percent (100%) of Contract price as security for faithful performance of this Contract and payment of all persons performing labor on project under this Contract and furnishing materials in connection with this Contract.

B. Sample Performance and Payment Bonds that Contractor will be required to execute is bound into these Construction Documents. Before construction Contract is consummated, completed Performance and Payment Bonds must be approved by Department.

30. ASSIGNMENTS

A. Contractor shall not assign whole or any part of this Contract or any moneys due or to become due hereunder without written consent of Department. In case Contractor assigns all or any part of any moneys due or to become due under this Contract, instrument of assignment shall contain clause substantially to effect that it is agreed that right of assignee in and to any moneys due or to become due to Contractor shall be subject to prior claims of all

persons, firms and corporations for services rendered or materials supplied for performance of the Work called for in this Contract.

31. MUTUAL RESPONSIBILITY OF CONTRACTORS

A. If, through acts of neglect on part of Contractor or any subcontractor shall suffer loss or damage on the Work, Contractor agrees to settle with such subcontractor by agreement or arbitration if such other subcontractor will so settle. If such subcontractor shall assert any claim against County on account of any damage alleged to have been sustained, Department shall notify Contractor, who shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives against any such claim.

32. SEPARATE CONTRACTS

A. Department may award other contracts for the Work and all Contractors shall fully cooperate with each other and carefully adjust their work to that provided under other contracts as may be directed by Department. No Contractor shall commit or permit any act that will interfere with performance of the Work by any other Contractor.

B. Contractor shall coordinate the Work with those of other Contractors. Cooperation will be required in arrangement for storage of materials and in detailed execution of the Work. Contractor, including subcontractors, shall keep informed of progress and detail work of others and shall notify Architect / Engineer or Department immediately of lack of progress or defective workmanship on part of others. Failure of Contractor to keep informed of the Work progressing on site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by Contractor of status of the Work as being satisfactory for proper coordination with Contractor's own work.

33. SUBCONTRACTS

A. Contractor may use services of specialty subcontractors on those parts of the Work that, under normal contracting practices, are performed by specialty subcontractors.

B. Contractor shall not award any work to any subcontractor without prior approval of Department. Qualifications of subcontractors shall be same as qualifications of Contractor. Request for subcontractor approval shall be submitted to Department fifteen (15) business days before start of subcontractor's work. If subcontractors are changed or added, Contractor shall notify Department in writing.

C. Contractor shall be as fully responsible to County for acts and omissions of subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for acts and omissions of persons directly employed by Contractor.

D. Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to Contractor by terms of General Conditions of Contract and other Construction Documents insofar as applicable to work of subcontractors and to give Contractor same power as regards terminating any subcontract that Department may exercise over Contractor under any provision of Construction Documents.

E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and County.

F. Contractor shall insert in all subcontracts, Articles 26, 33, 43 and 45, respectively entitled: "Withholding of Payments", "Subcontracts", "Affirmative Action Provision and Minority / Women / Disadvantaged Business Enterprises", and "Minimum Wages", and shall further require all subcontractors to incorporate physically these same Articles in all subcontracts.

34. PROJECT MANAGER'S AUTHORITY

A. Public Works Project Manager shall:
   1. Administer and ensure compliance with Construction Documents;
   2. Provide responsible on-site observations of construction and have authority to request work and to stop work whenever necessary to insure proper enforcement of Construction Documents;
   3. Convene and chair project meetings and foreman's coordination meetings when necessary to coordinate resolution of conflicts between Contractors, Architects, Engineers, Consultants, and Department; and
   4. Check and inspect material, equipment and installation procedures of all trades for proper workmanship and for compliance with Drawings, Specifications and Shop Drawings, permit no material on project site that is not satisfactory and reject work not in compliance with Construction Documents.

35. CONSULTANT'S AUTHORITY

A. Architect / Engineer is retained by, and is responsible to Department acting for County.

B. Architect / Engineer shall determine amount, quality, acceptability, and fitness of several kinds of work and materials that are provided under this Contract and shall decide all questions that may arise in relation to said work and construction thereof.

C. Architect / Engineer shall decide meaning and intent of any portion of Specifications and of any Drawings where they may be found obscure or be in dispute.

D. Architect / Engineer shall provide responsible observation of construction. Architect / Engineer has authority to stop the Work whenever such stoppage may be necessary to insure proper execution of Construction Documents.

E. Architect / Engineer shall be interpreter of conditions of Construction Documents and judge of its performance.

F. Within reasonable time, Architect / Engineer shall make decisions on all matters relating to progress of the Work or interpretation of Construction Documents.

G. Architect / Engineer's decisions are subject to review by Public Works Project Manager.

36. STATED ALLOWANCES

A. Stated allowances enumerated in Instructions to Bidders shall cover net cost of materials or equipment, and all applicable taxes. Contractor's cost of delivery and unloading at site, handling costs on site, labor, installation costs, overhead, profit and any other incidental costs shall be included in Contractor's bid, but not as part of cash allowance.

B. Department will solicit at least two (2) bids on materials or equipment for which allowance is stated and select on basis of lowest qualified responsible bid. Contractor will then be instructed to purchase "Allowed Materials". If actual price for purchasing "Allowed Materials", including taxes, is more or less than "Cash Allowance", Contract price shall be adjusted accordingly. Adjustment in Contract price shall not contain any cost items excluded from cash allowance.

37. ESTIMATES OF QUANTITIES

A. Whenever estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of Construction Documents, they are given for use in comparing bids and right is especially reserved to increase or diminish them as they may be deemed reasonably necessary or desirable by Department to complete the Work included in this Contract, and cost for such increase or diminution shall be adjusted in manner provided for in General Conditions of Contract Article 18 entitled "Changes in the Work".

38. LANDS AND RIGHTS-OF-WAY

A. Prior to start of construction, County shall furnish all land and rights-of-way necessary for carrying out and completion of the Work to be performed under this Contract.

39. GENERAL GUARANTEE

A. Neither final certificate of payment nor any provision in Construction Documents nor partial or entire occupancy of premises by County shall constitute acceptance of work not done in accordance with Construction Documents or relieve Contractor of liability in respect to any expressed warranties or responsibility for faulty materials or workmanship.
   1. In no event shall making of any payment required by Contract constitute or be construed as waiver by County of any breach of covenants of Contract or waiver of any default of Contractor and making of any such payment by County while any such default or breach shall exist shall in no way impair or prejudice right of County with respect to recovery of damages or other remedy as result of such breach or default.

B. Contractor shall remedy and make good all defective workmanship and materials and pay for any damage to other work resulting there from, which appear within period of one (1) year from date of substantial completion, providing such defects are not clearly due to abuse or misuse by County. Department will give notice of observed defects with reasonable promptness.

C. Guarantee on work executed after certified date of substantial completion will begin on date when such work is inspected and approved by Architect / Engineer's, and Public Works, Project Manager.

D. Where guarantees or warrantees are required in sections of Specifications for periods in excess of one (1) year, such longer terms shall apply; however, Contractor's Performance and Payment Bonds shall not apply to any guarantee or warranty period in excess of one (1) year.

40. CONFLICTING CONDITIONS

A. Any provision in any of Construction Documents which may be in conflict or inconsistent with any Articles in these General Conditions of Contract or Supplementary Conditions shall be void to extent of such conflict or inconsistency.

B. In case of ambiguity or conflict between Drawings and Specifications, Specifications shall govern.

C. Printed dimensions shall be followed in preference to measurements by scale. Large-scale drawings take precedence over small-scale drawings. Dimensions on Drawings and details are subject to field measurements of adjacent work.

41. NOTICE AND SERVICE THEREOF

A. Any notice to Contractor from Department relative to any part of this Contract shall be in writing and considered delivered and service thereof completed, when said notice is posted, by certified or registered mail, to Contractor at Contractor's last given address, or delivered in person to said Contractor, or Contractor's authorized representative on the Work.

42. PROTECTION OF LIVES AND HEALTH

A. In order to protect lives and health of Contractor's employees under Contract, Contractor shall comply with all pertinent provisions of Wisconsin Administrative Code, Rules of Department of Commerce, relating to Safety and Health.

B. Contractor alone shall be responsible for safety, efficiency and adequacy of Contractor's tools, equipment and methods, and for any damage that may result from their failure or their improper construction, maintenance or operation.

43. AFFIRMATIVE ACTION PROVISION AND MINORITY / WOMEN / DISADVANTAGED BUSINESS ENTERPRISES

A. Affirmative Action Provisions.
   1. During term of their Contract, Contractor agrees not to discriminate on basis of race, religion, color, sex, handicap, age, sexual preference, marital status, physical appearance, or national origin against any person, whether recipient of services (actual or potential), employee, or applicant for employment. Such equal opportunity shall include but not be limited to following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation or level of service(s). Contractor agrees to post in conspicuous places, these affirmative action standards so as to be visible to all employees, service recipients and applicants for this paragraph. Listing of prohibited bases for discrimination shall no be construed to amend in any fashion state or federal law setting forth additional bases and exceptions shall be permitted only to extent allowable in state or federal law.
   2. Contractor is subject to this Article only if Contractor has twenty (20) or more employees and receives $20,000.00 or more in annual aggregate contracts with County. Contractor shall file and Affirmative Action Plan with Dane County Contract Compliance Specialist in accord with Chapter 19 of Dane County Code of Ordinances. Such plan must be filed within fifteen (15) business days of effective date of this Contract and failure to do so by said date shall constitute ground for immediate termination of Contract by County. Contractor shall also, during term of this Contract, provide copies of all announcements of employment opportunities to County's Office of Equity & Inclusion, and shall report annually number of persons, by race, sex and handicap status, who apply for employment, and, similarly classified, number hired and number rejected.

3. Contact Dane County Contract Compliance Specialist at Dane County Office of Equity & Inclusion, 210 Martin Luther King, Jr. Blvd., Room 356, Madison, WI 53703, 608/266-4192.
4. In all solicitations for employment placed on Contractor's behalf during term of this Contract, Contractor shall include statement to affect Contractor is "Equal Opportunity Employer". Contractor agrees to furnish all information and reports required by County's Contract Compliance Specialist as same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and provision of this Contract.

B. Minority / Women / Disadvantaged / Emerging Small Business Enterprises.
1. Chapter 19.508 of Dane County Code of Ordinances is official policy of Dane County regarding utilization of, to fullest extent of, Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs) Disadvantage Business Enterprises (DBEs) and Emerging Small Business Enterprises (ESBEs).
2. Contractor may utilize MBEs / WBEs / DBEs / ESBEs as subcontractors or suppliers. List of subcontractors will be required of low bidder as stated in this Contract. List shall indicate which are MBEs / WBEs / DBEs / ESBEs and percentage of subcontract awarded, shown as percentage of total dollar amount of bid.

44. COMPLIANCE WITH FAIR LABOR STANDARDS

A. During term of this Contract, Contractor shall report to County Contract Compliance Specialist, within ten (10) business days, any allegations to, or findings by National Labor Relations Board (NLRB) or Wisconsin Employment Relations Commission (WERC) that Contractor has violated statute or regulation regarding labor standards or relations. If investigation by Contract Compliance Specialist results in final determination that matter adversely affects Contractor's responsibilities under this Contract, and which recommends termination, suspension or cancellation of this Contract, County may take such action.

B. Contractor may appeal any adverse finding by Contract Compliance Specialist as set forth in Dane County Ordinance 25.015(11)(c) through (e).

C. Contractor shall post this statement in prominent place visible to employees: "As condition of receiving and maintaining contract with Dane County, this employer shall comply with federal, state and all other applicable laws prohibiting retaliation or union organizing."

45. DOMESTIC PARTNERSHIP BENEFITS

A. Not Used.

46. USE AND OCCUPANCY PRIOR TO ACCEPTANCE

A. Contractor agrees to use and occupancy of portion or unit of the Work before formal acceptance by Department, provided Department:
1. Secures written consent of Contractor; except when in opinion of Public Works Project Manager, Contractor is chargeable with unwarranted delay in final cleanup of punch list items or other Contract requirements.
2. Secures endorsement from insurance carrier and consent of Surety permitting occupancy of building or use of the Work during remaining period of construction, or, secures consent of Surety.

3. Assumes all costs and maintenance of heat, electricity and water.
4. Accepts all work completed within that portion or unit of the Work to be occupied, at time of occupancy.

47. MINIMUM WAGES

A. Not Used.

48. CLAIMS

A. No claim may be made until Department's Deputy Public Works Director has reviewed Architect / Engineer's decision as provided for in Article 35 of General Conditions of Contract. If any claim remains unresolved after such review by Department's Deputy Public Works Director, the claim may be filed under Wisconsin Statute 893.80. Work shall progress during period of any dispute or claim. Unless specifically agreed between parties, venue will be in Dane County, Wisconsin.

49. ANTITRUST AGREEMENT

A. Contractor and County recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by County. Therefore, Contractor hereby assigns to County any and all claims for such overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from antitrust violations commencing after price is established under this Contract and any change order thereto.

50. INSURANCE

A. Contractor Carried Insurance:
   1. Contractor shall not commence work under this Contract until Contractor has obtained all insurance required under this Article and has provided evidence of such insurance to Risk Manager, 425 City-County Building, 210 Martin Luther King Jr. Blvd., Madison, WI 53703. Contractor shall not allow any subcontractor to commence work until insurance required of subcontractor has been so obtained and approved. Company providing insurance must be licensed to do business in Wisconsin.
   2. Worker's Compensation Insurance:
      a) Contractor shall procure and shall maintain during life of this Contract, Worker's Compensation Insurance as required by statute for all of Contractor's employees engaged in work at site of project under this Contract and, in case of any such work sublet, Contractor shall require subcontractor similarly to provide Worker's Compensation Insurance for all of latter's employees to be engaged in such work unless such employees are covered by protection afforded by Contractor's Worker's Compensation Insurance.
      b) If any claim of employees engaged in hazardous work on project under this Contract is not protected under Worker's Compensation Statute, Contractor shall provide and shall cause each subcontractor to provide adequate Employer's Liability Insurance for protection of such of Contractor's employees as are not otherwise protected.
   3. Contractor's Public Liability and Property Damage Insurance:
      a) Contractor shall procure and maintain during life of this Contract, Contractor's Public Liability Insurance and Contractor's Property Damage Insurance in amount not less than $1,000,000 bodily injury, including accidental death, to any one person, and subject to same limit for each person, in amount not less than $1,000,000 on account of one accident, and Contractor's Property Damage Insurance in amount not

less then $1,000,000 or combined single limit of at least $1,000,000 with excess coverage over and above general liability in amount not less than $5,000,000. Contractor shall add "Dane County" as additional insured for each project.

b) Contractor's Public Liability and Property Damage Insurance shall include Products, Completed Operation, and Contractual Liability under Insurance Contract. "Contractor shall in all instances save, defend, indemnify and hold harmless County and Architect / Engineer against all claims, demands, liabilities, damages or any other costs which may accrue in prosecution of the Work and that Contractor will save, defend, indemnify and hold harmless County and Architect / Engineer from all damages caused by or as result of Contractor's operations" and each shall be listed as additional insured on Contractor's and subcontractors' insurance policies.

c) Obligations of Contractor under Article 50.A.2.b) shall not extend to liability of Architect / Engineer, agents or employees thereof, arising out of:
   1) Preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or
   2) Giving of or failure to give directions or instructions by Architect / Engineer, agents or employees thereof provided such giving or failure to give is primary cause of injury or damage.

d) Contractor shall procure and shall maintain during life of this Contract, Comprehensive Automobile Liability Insurance covering owned, non-owned and hired automobiles for limits of not less than $1,000,000 each accident single limit, bodily injury and property damage combined with excess coverage over and above general liability in amount not less than $5,000,000.

e) Contractor shall either:
   1) Require each subcontractor to procure and to maintain during life of subcontract, subcontractor's Public Liability Property Damage Insurance, and Comprehensive Automobile Liability Insurance of type and in same amount specified in preceding paragraphs; or
   2) Insure activities of subcontractors in Contractor's own policy.

4. Scope of Insurance and Special Hazards: Insurance required under Article 50.A.2 & 50.A.3. hereof shall provide adequate protection for Contractor and subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operation be by insured or by anyone directly or indirectly employed by insured and also against any of special hazards which may be encountered in performance of this Contract as enumerated in Supplementary Conditions.
5. Proof of Carriage of Insurance: Contractor shall furnish Risk Manager with certificates showing type, amount, class of operations covered, effective dates, dates of expiration of policies and "Dane County" listed as additional insured. Such certificates shall also contain (substantially) following statement: "Insurance covered by this certificate will not be canceled or materially altered, except after ten (10) business days written notice has been received by Risk Manager."

B. Builder's Risk:
1. County shall provide Builder's Risk insurance coverage for its insurable interests in construction or renovation projects with completed value of $1,000,000 or less. Therefore, if project completed value is more than $1,000,000, Contractor shall obtain and maintain in force, at its own expense, Builder's Risk Insurance on all risks for amount equal to full completed value of covered structure or replacement value of alterations or additions. Any deductible shall not exceed $25,000 for each loss. Policy shall include occupancy clause and list Dane County as loss payee.

C. Indemnification / Hold Harmless:
1. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from and against all

claims, damages, losses and expenses including attorneys' fees arising out of or resulting from performance of the Work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, and is caused in whole or in part by any act or omission of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by part indemnified hereunder.

2. In any and all claims against Dane County, its boards, commissions, agencies, officers, employees and representatives or by any employee of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, indemnification obligation under this Contract shall not be limited in any way by any limitation on amount or type of damages, compensation or benefits payable by or for Contractor or any subcontractor under worker's compensation acts, disability benefits or other employee benefit acts.
3. Obligations of Contractor under this Contract shall not extend to liability of Architect / Engineer, its agents or employees arising out of:
   a) Preparation or approval of maps, drawings, opinion, reports, surveys, change orders, designs or specifications; or
   b) Giving of or failure to give directions or instruction by Architect / Engineer, its agents or employees provided such giving or failure to give is primary cause of injury or damage.
4. Dane County shall not be liable to Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.

51. WISCONSIN LAW CONTROLLING

A. It is expressly understood and agreed to by parties hereto that in event of any disagreement or controversy between parties, Wisconsin law shall be controlling.

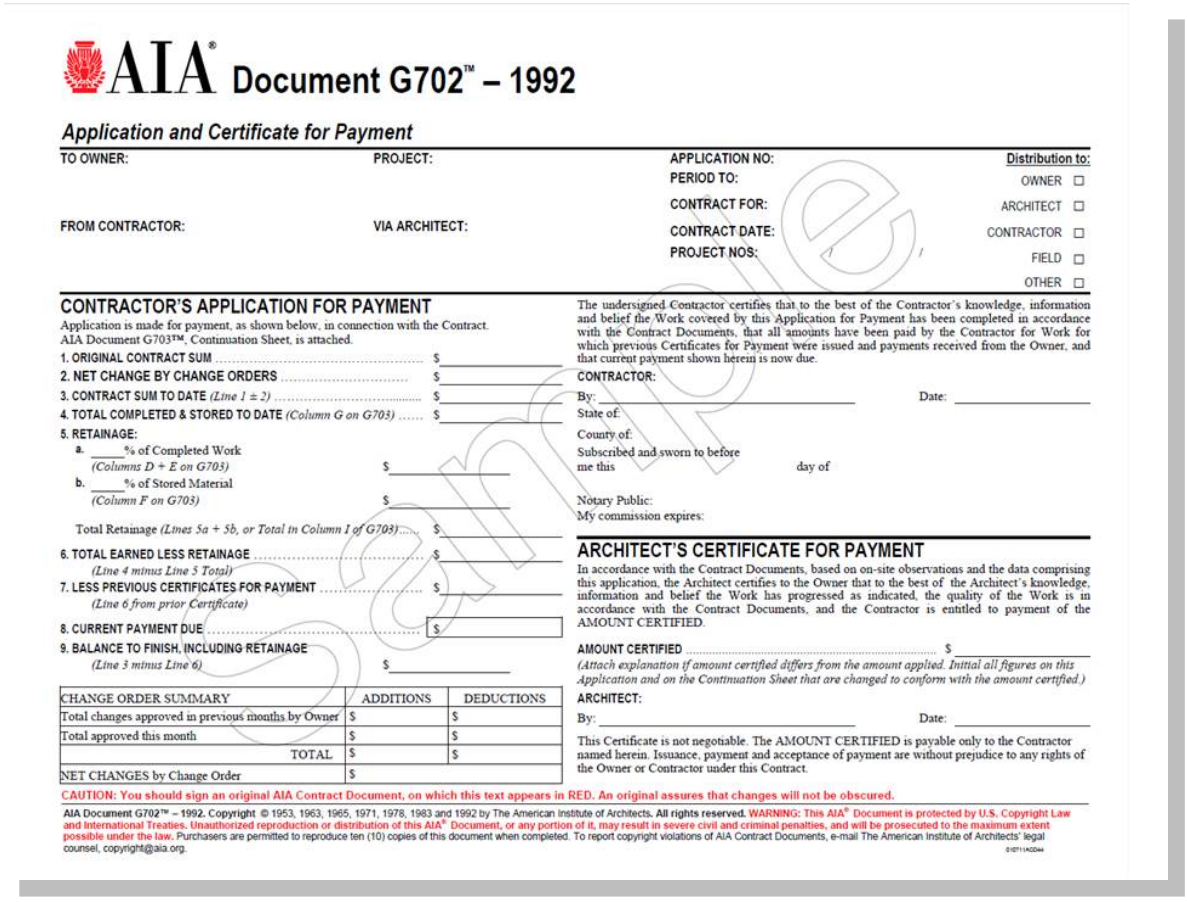
END OF SECTION

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

1. APPLICATION & CERTIFICATE FOR PAYMENT

A. Every contractor engaged in performance of any contract for Department of Public Works, shall submit partial and final Application & Certificate for Payment for work under said contract. Form shall provide similar information as shown on AIA G702™ and G703™ forms (samples shown below). Forms shall be submitted to Public Works Project Manager for approval.



AIA® Document G702™ – 1992

Application and Certificate for Payment

TO OWNER: PROJECT: APPLICATION NO: Distribution to:
PERIOD TO: OWNER ☐
CONTRACT FOR: ARCHITECT ☐
FROM CONTRACTOR: VIA ARCHITECT: CONTRACT DATE: CONTRACTOR ☐
PROJECT NOS: / / FIELD ☐
OTHER ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM ..... $
2. NET CHANGE BY CHANGE ORDERS ..... $
3. CONTRACT SUM TO DATE *(Line 1 ± 2)* ..... $
4. TOTAL COMPLETED & STORED TO DATE *(Column G on G703)* ..... $
5. RETAINAGE:
   a. ____% of Completed Work *(Columns D + E on G703)* $
   b. ____% of Stored Material *(Column F on G703)* $
   Total Retainage *(Lines 5a + 5b, or Total in Column I of G703)* ..... $
6. TOTAL EARNED LESS RETAINAGE ..... $ *(Line 4 minus Line 5 Total)*
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... $ *(Line 6 from prior Certificate)*
8. CURRENT PAYMENT DUE ..... $
9. BALANCE TO FINISH, INCLUDING RETAINAGE *(Line 3 minus Line 6)* $

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$	$
Total approved this month	$	$
TOTAL	$	$
NET CHANGES by Change Order	$	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:
By: Date:
State of:
County of:
Subscribed and sworn to before me this day of
Notary Public:
My commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... $
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)
ARCHITECT:
By: Date:

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

AIA® Document G703™ – 1992

Continuation Sheet

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED: FROM PREVIOUS APPLICATION (D + E)	WORK COMPLETED: THIS PERIOD	MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
	GRAND TOTAL								

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

Department of Public Works, Highway & Transportation
Public Works Engineering Division
608/266-4018

Gerald J. Mandli, P.E.
Commissioner / Director

Joseph T. Parisi
County Executive

Deputy Director
Todd Draper

1919 Alliant Energy Center Way
Madison, Wisconsin 53713
Fax: 608/267-1533
www.countyofdane.com/pwht/public_works.aspx

BEST VALUE CONTRACTING APPLICATION

CONTRACTORS / LICENSURE APPLICANTS

The Dane County Department of Public Works requires contractors & subcontractors to be a Best Value Contractor before being hired. Contractor & subcontractor application documents should be turned in immediately. Contractor approval or exemption must be complete prior to Bid Due Date / Time. All subcontractors must also be approved or prove their exemption before performing any work under a County contract. This document shall be completed, properly executed, along with the necessary attachments and additional information that the County requires for the protection and welfare of the public in the performance of a County contract.

Contractors or subcontractors of any tier who attain qualification status will retain that status for a period of three (3) years from the date of qualification. Contractors shall notify the Dane County Department of Public Works, Highway & Transportation within fifteen (15) days of any changes to its business or operations that are relevant to the application. Failure to do so could result in suspension, revocation of the contractor's qualification, debarment from County contracts for up to three (3) years and / or other sanctions available under the law.

No contracts will be awarded for construction work performed on Dane County projects unless the contractor is currently approved as a Wisconsin Trade Trainer or has applied for approval as an Apprenticeship Trade Trainer to the Wisconsin Department of Workforce Development and agrees to an acceptable apprenticeship program. If you are not currently approved as a Wisconsin Trade Trainer, or have not applied for approval as an Apprenticeship Trade Trainer, please contact the Department of Workforce Development - Bureau of Apprenticeship Standards at 608/266-3133 or visit their web site at: https://dwd.wisconsin.gov/apprenticeship/.

EXEMPTION TO QUALIFICATION

Listed below is the only reason for claiming an exemption if not an active Wisconsin Trades Trainer. (Q18 A)

- Contractors performing work that does not apply to an apprenticeable trade, as outlined in Appendix A.

o

SEC.	PROOF OF RESPONSIBILITY	CHECK IF APPLICABLE
1	Does your firm acknowledge that in doing work under any County Public Works Contract, it will be required to use as subcontractors only those contractors that are also qualified with the County or become so within five (5) days after the Bid Due Date?	Yes: ☐ No: ☐
2	Does your firm possesses all technical qualifications and resources, including equipment, personnel and financial resources, necessary to perform the work required for any project or obtain the same through the use of responsible, qualified subcontractors?	Yes: ☐ No: ☐
3	Will your firm possess all valid, effective licenses, registrations or certificates required by federal, state, county, or local law, which are necessary for the type of work to be performed including, but not limited to, those for any type of trade work or specialty work?	Yes: ☐ No: ☐
4	Will your firm meet all bonding requirements as required by applicable law or contract specifications?	Yes: ☐ No: ☐
5	Will your firm meet all insurance requirements as required by applicable law or specifications, including general liability insurance, workers compensation insurance and unemployment insurance requirements?	Yes: ☐ No: ☐
6	Will your firm maintain a substance abuse policy for employees hired for public works contracts that comply with Wis. Stats. Sec. 103.503?	Yes: ☐ No: ☐
7	Will your employees who will perform work on a Public Works project all be covered under a current workers compensation policy and be properly classified under such policy?	Yes: ☐ No: ☐
8	Will your employees who will perform work on a Public Works project have the opportunity to enroll in minimum essential coverage and not be subject to an enrollment period of more than 60 days per the federal Affordable Care Act, sec 1513?	Yes: ☐ No: ☐
9	Will your firm fully abide by the equal opportunity and affirmative action requirements of all applicable laws, including County ordinances?	Yes: ☐ No: ☐
10	Has your firm been the subject of any order or judgement from any State or Federal Agency or court concerning employment practice, including but not limited to: classification of employees under state unemployment or workers compensation laws; minimum wage, overtime pay, recordkeeping, and child labor standards imposed by federal or state law; and employment discrimination or unfair labor practices prohibited by federal or state law. (Attach copies of any order or judgement)	Yes: ☐ No: ☐ If Yes, attach details.
11	Is your firm authorized or registered to transact business in the state by the Department of Financial Institutions in compliance with Wis. Stat. chs. 178, 179, 180, 181, or 183?	Yes: ☐ No: ☐ If Yes, attach details.

12	In the past three (3) years, has your firm had control or has another corporation, partnership or other business entity operating in the construction industry controlled it? If so, please attach a statement explaining the nature of the firm relationship?	Yes: ☐ No: ☐ If Yes, attach details.
13	In the past three (3) years, has your firm had any type of business, contracting or trade license, certification or registration revoked or suspended?	Yes: ☐ No: ☐ If Yes, attach details.
14	In the past three (3) years, has your firm been debarred by any federal, state or local government agency?	Yes: ☐ No: ☐ If Yes, attach details.
15	In the past three (3) years, has your firm defaulted or failed to complete any contract?	Yes: ☐ No: ☐ If Yes, attach details.
16	In the past three (3) years, has your firm committed a willful violation of federal, state or local government safety laws as determined by a final decision of a court or government agency authority.	Yes: ☐ No: ☐ If Yes, attach details.
17	In the past three (3) years, has your firm been in violation of any law relating to your contracting business where the penalty for such violation resulted in the imposition of a penalty greater than $10,000?	Yes: ☐ No: ☐ If Yes, attach details.
18	Is your firm an active Wisconsin Trade Trainer as determined by the Wisconsin Bureau of Apprenticeship Standards?	Yes: ☐ No: ☐ If Yes, attach details.
18A	Is your firm claiming an exemption to qualification?	Yes: ☐ No: ☐ If Yes, attach reason for exemption.
19	Contractor has been in business less than one year?	Yes: ☐ No: ☐

SIGNATURE SECTION

Your firm's Officer, or the individual who would sign a bid and / or contract documents must sign this document. The person signing has the authority to sign on behalf of, and bind, the Applicant.

I do hereby certify that all statements herein contained are true and correct to the best of my knowledge:

Applicant understands that failing to submit or providing incorrect, false, or misleading information, shall automatically disqualify the Applicant from being awarded a public works contract.

Signature: _____

(Application is invalid without signature)

Print Name: _____ Date: _____

Title: _____

NAME AND ADDRESS OF CONTRACTOR	
Name of Firm:	
Address:	
City, State, Zip:	
Phone Number:	
Fax Number:	
E-mail Address:	

REMEMBER!

RETURN ALL TO FORMS AND ATTACHMENTS, OR QUESTIONS TO:

TODD DRAPER
EMAIL: DRAPER@COUNTYOFDANE.COM
OFFICE: (608) 267-0119, FAX: (608) 267-1533

DANE COUNTY DEPARTMENT OF PUBLIC WORKS, HGHWAY & TRANSPORTATION
1919 ALLIANT ENERGY CENTER WAY
MADISON, WI 53713

APPENDIX A

APPRENTICEABLE TRADES:

- Bricklayer
- Boilermaker
- Carpenter
- Cement Mason (Concrete Finisher)
- Cement Mason (Heavy Highway)
- Construction Craft Laborer
- Data Communications Installer
- Electrician
- Elevator Mechanic / Technician
- Environmental Systems Technician / HVAC Service Technician / HVAC Install & Service
- Glazier
- Heavy Equipment Operator / Operating Engineer
- Insulation Worker (Heat & Frost)
- Iron Worker (Assembler, Metal Buildings)
- Painter / Decorator
- Plasterer
- Plumber
- Roofer / Waterproofer
- Sheet Metal Worker
- Sprinkler Fitter
- Steamfitter (Service & Refrigeration)
- Taper & Finisher
- Telecommunications (Voice, Data & Video) Installer / Technician
- Tile Setter

END OF SECTION

SECTION 00 73 11

FAIR LABOR PRACTICES CERTIFICATION

The undersigned, for and on behalf of the BIDDER, APPLICANT or PROPOSER named herein, certifies as follows:

A. That he or she is an officer or duly authorized agent of the above-referenced BIDDER, APPLICANT or PROPOSER, which has a submitted a bid, application or proposal for a contract or agreement with the county of Dane.

B. That BIDDER, APPLICANT or PROPOSER has (check one):

_____ not been found by the National Labor Relations Board ("NLRB") or the Wisconsin Employment Relations Commission ("WERC") to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

_____ been found by the National Labor Relations Board ("NLRB") or the Wisconsin Employment Relations Commission ("WERC") to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

_____ _____

Officer or Authorized Agent Signature | Date

_____

Printed or Typed Name and Title

_____

Printed or Typed Business Name

NOTE: You can find information regarding the violations described above at: www.nlrb.gov and werc.wi.gov.

For reference, Dane County Ordinance 25.09 is as follows:

(1) BIDDER RESPONSIBILITY. (a) Any bid, application or proposal for any contract with the county, including public works contracts regulated under chapter 40, shall include a certification indicating whether the bidder has been found by the National Labor Relations Board (NLRB) or the Wisconsin Employment Relations Committee (WERC) to have violated any statute or regulation regarding labor standards or relations within the last seven years. The Controller shall investigate any such finding and make a recommendation to the committee, which shall determine whether the conduct resulting in the finding affects the bidder's responsibility to perform the contract.

If you indicated that the NLRB or WERC have found you to have such a violation, you must include copies of any relevant information regarding such violation with your proposal, bid or application.

Include this completed Certification with your bid, application or proposal.

END OF SECTION

SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Summary
2. Summary of the Work
3. Contractor Use of Premises
4. Applications for Payment
5. Change Procedures
6. Alternates
7. Lump Sum Allowances for Work
8. Coordination
9. Cutting and Patching
10. Conferences
11. Progress Meetings
12. Submittal Procedures
13. Proposed Products List
14. Shop Drawings
15. Product Data
16. Samples
17. Manufacturers' Instructions
18. Manufacturers' Certificates
19. Quality Assurance / Quality Control of Installation
20. References
21. Interior Enclosures
22. Protection of Installed Work
23. Parking
24. Staging Areas
25. Occupancy During Construction and Conduct of Work
26. Protection
27. Progress Cleaning
28. Products
29. Transportation, Handling, Storage and Protection
30. Product Options
31. Substitutions
32. Starting Systems
33. Demonstration and Instructions
34. Contract Closeout Procedures
35. Final Cleaning
36. Adjusting
37. Operation and Maintenance Data
38. Spare Parts and Maintenance Materials
39. As-Built and Record Drawings and Specifications

1.2 SUMMARY OF THE WORK

A. Project Description: Perform the Work as specified and detailed in Construction Documents package. Contractor to provide construction services to remodel the lobby areas of the Dane County Job Center Office and Neighborhood Intervention Program with the objective of improving security.

B. Work by Owner:

1. Move out & move in staff in construction areas

2. Test & remove any asbestos containing materials (ACM) that may be discovered at the site.

3. Furnish & install project signage (that is not included in the Contract Documents).

B. Permits: Prior to commencement of the Work, Contractor to secure any and all necessary permits for completion of the Work and facility occupancy. Provide Public Works Project Manager with copies of all permits and post permits as required by issuing authority.

1.3 CONTRACTOR USE OF PREMISES

A. Limit use of premises to allow work by Contractors or Subcontractors and access by Owner.

B. Coordinate utility outages and shutdowns with Owner.

C. Contractors or Subcontractors shall not visit the site if they are or have recently been ill.

1.4 APPLICATIONS FOR PAYMENT

A. Submit each Application for Payment on AIA G702™ and G703™ forms or approved contractors invoice form. Contractor shall have these forms notarized and signed.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly.

D. Submit Applications for Payment to Public Works Project Manager for approval & processing for payment.

1.5 CHANGE PROCEDURES

A. Contractor's costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from contingency allowance.

1.6 ALTERNATES

A. Alternates quoted on Bid Form shall be reviewed and accepted or rejected at Owner's option. Alternates may be chosen in any sequence (one, some or all).

B. Coordinate related work and modify surrounding work as required.

C. Schedule of Alternates:
   1. Alternate Bid 1:.
      a. Demolish the existing VCT adhesive and vinyl base in the NIP corridors as indicated in Drawings 2/AD101 and 1/A201.
   2. Alternate Bid 2 Title.
      a. Add Precast Bollards at 1227 North Sherman Avenue, 1801 Aberg Avenue, and 1819 Aberg Avenue entries as indicated on Drawing Sheet A100
   3. Alternate Bid 3 Title.
      a. Provide Level 3 Bullet Resistive HM doors, frames, and glazing in lieu of standard HM doors, as indicated by Note 1 on Door Schedule and Drawing Sheet A800.

1.7 LUMP SUM ALLOWANCES FOR WORK

A. Not Applicable.

1.8 COORDINATION

A. Coordinate scheduling, submittals, and work of various sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.

C. Coordinate space requirements and installation of mechanical and electrical work that are indicated diagrammatically on Drawings.

D. Contractor shall provide Public Works Project Manager with work plan that ensures the Work will be completed within required time of completion.

E. Construct work in stages to accommodate Dane County Job Center and Neighborhood Intervention Program operations (dedicated time periods for construction in the areas will be determined by JCO + N.I.P. staff at the pre-construction kick-off meeting). All activities shall be coordinated one (1) week (minimum) in advance with Public Works Project Manager unless noted otherwise in these specifications.

F. Public Works Project Manager may choose to photograph or videotape site or workers as the Work progresses.

1.9 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching new work; restore work with new Products.

B. Submit written request in advance of cutting or altering structural or building enclosure elements.

C. Fit work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

D. Refinish surfaces to match adjacent finishes.

1.10 CONFERENCES

A. Project shall have pre-bid conference; see Instructions to Bidders.

B. Owner will schedule preconstruction conference after Award of Contract for all affected parties.

C. Contractor shall submit Construction Schedule at pre-construction meeting.

D. When required in individual Specification section, convene pre-installation conference at project site prior to commencing work of Section.

E. Safe distancing & face masks are required for all conference attendees. Conferences will be limited to 10 people; please limit number of attending staff & subcontractors. If there are more than 10 people, group will be split & there will be two or more conferences.

1.11 PROGRESS MEETINGS

A. Day & time of progress meetings to be determined at pre-construction meeting.

B. Schedule and administer meetings throughout progress of the Work at minimum of one (1) per week, at time/day to be determined with Public Works Project Manager, involved Dane County staff & other individuals as required.

C. Preside at meetings, record minutes, and distribute copies within two (2) business days to those affected by decisions made.

D. Attendance at progress meetings by General Contractor, subcontractors, or their authorized representative, is mandatory unless prior arrangements have been made with Public Works Project Manager.

E. Contractors shall give verbal reports of progress on the Work, discuss schedule for upcoming period and present all conflicts, discrepancies or other difficulties for resolution.

F. In-person meetings shall be limited & shall follow current *Public Health - Madison & Dane County* procedures & recommendations (see publichealthmdc.com/documents/office_space_checklist.pdf and publichealthmdc.com/coronavirus/forward-dane/current-order). Whenever possible, meetings shall be held via teleconference or videoconference, to be hosted by contractor or consultant. Dane County reserves right to mandate safe physical distancing & use of face masks by all personnel while inside any County facility or on any County grounds.

1.12 SUBMITTAL PROCEDURES

A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Construction Documents references.

B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with requirements of the Work and Construction Documents.

C. Identify variations from Construction Documents and Product or system limitations that may be detrimental to successful performance of completing the Work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

1.13 PROPOSED PRODUCTS LIST

A. Within fifteen (15) business days after date of Award of Contract, submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

1.14 SHOP DRAWINGS

A. Submit number of copies that Contractor requires, plus three (3) copies that shall be retained by Public Works Project Manager.

1.15 PRODUCT DATA

A. Submit number of copies that Contractor requires, plus two (2) copies that shall be retained by Public Works Project Manager.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

1.16 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of Product.

B. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Public Works Project Manager's selection.

1.17 MANUFACTURERS' INSTRUCTIONS

A. When specified in individual Specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.18 MANUFACTURERS' CERTIFICATES

A. When specified in individual Specification sections, submit manufacturers' certificate to Public Works Project Manager for review, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.19 QUALITY ASSURANCE / QUALITY CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply fully with manufacturers' instructions.

C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.20 REFERENCES

A. Conform to reference standard by date of issue current as of date for receiving bids.

B. Should specified reference standard conflict with Construction Documents, request clarification from Public Works Project Manager before proceeding.

1.21 INTERIOR ENCLOSURES

A. Provide temporary partitions and plastic draping as required to separate work areas from Owner occupied areas, to prevent distribution of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

1.22 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual Specification sections.

1.23 PARKING

A. Arrange for temporary parking areas to accommodate construction personnel. Parking shall be available at the Work site location to be coordinated with JCO-N.I.P. staff.

B. All contractors and their employees shall cooperate with General Contractor and others in parking of vehicles to avoid interference with normal operations and construction activities.

C. Do not obstruct existing service drives and parking lots with equipment, materials and / or vehicles. Keep accessible for Owner's use at all times.

1.24 STAGING AREAS

A. Coordinate staging areas with Public Works Project Manager and Job Center + N.I.P. staff prior to starting the Work.

B. On-site space for use as staging areas and storage of materials should be available (but may have some limitations) and will be apportioned to the Contractor and sub-contractors as their needs dictate with due regard for storage requirements of each Contractor. Each Contractor shall be responsible for safety of equipment and materials that are stored on site. All storage of materials and locations will be coordinated with Public Works Project Manager and JCO-N.I.P. staff.

1.25 OCCUPANCY DURING CONSTRUCTION AND CONDUCT OF WORK

A. All construction material shall be removed from facility or secured inside the facility at day's end. Salvage material will need to be removed from the facility at day's end or secured in a lockable dumpster (location to be determined during the Pre-Construction Meeting.

B. Contractors are asked to not work at facility if they feel ill.

C. Smoking is prohibited on Dane County property.

D. If there are changes in work schedule 48 hour notice shall be provided to the Public Works Project Manager.

E. Owner reserves right at any time to dismiss from premises any Contractor or construction personnel that do not uphold requirements of this Section.

F. Owner shall not be held liable for any lost time, wages, or impacts to construction schedule by any Contractor or construction personnel dismissed for failure to uphold requirements of this Section.

G. Areas of existing facility will be occupied during period when the Work is in progress. Work may be done during normal business hours (7:00 am to 4:30 pm), but confer with Owner, schedule work and store materials so as to interfere as little as possible with normal use of premises. Work performed on weekends shall be by permission of Owner.

Notify Owner when noise making work is to be done and obtain Owner's written approval of schedule. If schedule is not convenient for Owner, reschedule and resubmit new times for Owner approval. Noisy work may have to be done on second and third shifts.

H. Work shall be done so as not to interfere with access to any occupied area and so as to cause least possible interference with normal operation of facility or any essential service thereof.

I. Contractor shall, at all times, provide approved, safe walkways and facility entrances for use by Owner, employees and public.

J. Contractor shall provide adequate protection for all parts of facility, its contents and occupants wherever the Work under this Contract is to be performed.

K. Each Contractor shall arrange with Owner to make necessary alterations, do new work, make connections to all utilities, etc., and at such times as will not cause interruption of utility services to facility. Contractor doing this work shall protect, cap, cut off and / or replace and relocate existing pipes, electrical work and other active utilities encountered which may interfere with new construction work.

L. New work in extension of existing work shall correspond in all respects with that to which it connects or similar existing work unless otherwise indicated or specified.
1. Existing work shall be cut, altered, removed or replaced as necessary for performance of Contract obligations.
2. Work remaining in place, damaged or defaced by reason of work done under this Contract shall be restored equal to its condition at time of Award of Contract.
3. If removal of work exposes discolored or unfinished surfaces or work out of alignment, such surfaces shall be refinished or materials replaced as necessary to make continuous work uniform and harmonious.

M. Contractor is not responsible for providing & maintaining temporary toilet facilities.

N. Contractor & subcontractors shall follow all current *Public Health - Madison & Dane County* procedures & recommendations (see publichealthmdc.com/documents/office_space_checklist.pdf and publichealthmdc.com/coronavirus/forward-dane/current-order). Dane County reserves right to mandate safe physical distancing & use of face masks by all personnel while inside any County facility or on any County grounds.

1.26 PROTECTION

A. Contractor shall protect from damage / injury all office areas, mechanical, electrical & plumbing equipment, and walks and pay for any damage to same resulting from insufficient or improper protection.

B. Contractor shall provide and maintain barricades & signage to prohibit public access to construction work area.

PROGRESS CLEANING

C. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

1.27 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by Construction Documents.

1.28 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

A. Transport, handle, store and protect Products in accordance with manufacturer's instructions.

1.29 PRODUCT OPTIONS

A. Where definite material is specified, it is not intentional to discriminate against "equal" product made by another manufacturer. Intention is to set definite standard of material quality.

B. Products and materials that are not specified, but have been approved for use by Public Works Project Manager shall be identified in addenda to all bidding contractors.

C. Requests for material or product substitutions submitted after Bid Due Date shall be considered. Owner reserves right to approve or reject substitutions based on Specification requirements and intended use.

1.30 SUBSTITUTIONS

A. Public Works Project Manager shall consider requests for Substitutions only within fifteen (15) calendar days after date of Public Works Construction Contract.

B. Document each request with complete data substantiating compliance of proposed Substitution with Construction Documents

C. Submit three (3) copies of requests for Substitution for consideration. Limit each request to one (1) proposed Substitution

D. Substitutions shall not change contract price established at Bid Due Date

1.31 STARTING SYSTEMS

A. Provide written notification prior to start-up of each equipment item or system.

B. Ensure that each piece of equipment or system is ready for operation.

C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.

D. Submit written report that equipment or system has been properly installed and is functioning correctly.

1.32 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of final inspection. Hold a training session for the County staff that will be using the camera systems.

B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

C. Owner may choose to photograph or videotape demonstration session; demonstration and demonstrator shall be to level of satisfaction of Owner.

1.33 CONTRACT CLOSEOUT PROCEDURES

A. Submit written certification that Construction Documents have been reviewed, the Work has been inspected, and the Work is complete in accordance with Construction Documents and ready for Public Works Project Manager's inspection.

B. Submit final Application for Payment identifying total adjusted Contract Sum / Price, previous payments, and amount remaining due.

1.34 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view.

C. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.35 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.36 OPERATION AND MAINTENANCE MANUAL

A. Provide two (2) bound, hard-copy operation and maintenance manuals that include all systems, materials, products, equipment, mechanical and electrical equipment and systems supplied and installed in the Work. Provide electronic version of operation and maintenance manual also.

1.37 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.

B. Deliver to the Work site and place in location as directed.

1.38 AS-BUILT AND RECORD DRAWINGS AND SPECIFICATIONS

A. Contractor-produced Drawings and Specifications shall remain property of Contractor whether Project for which they are made is executed or not. Contractor shall furnish Architect / Engineer with original marked up redlines of Construction Documents' drawings and specifications that shall include all Addendums, Change Orders, Construction Bulletins, on-site changes, field corrections, etc. These are project As-Built Drawings & Specifications.

B. Architect / Engineer shall update original Construction Documents to include all Addendums & any other changes including those provided by Contractor in As-Built Drawings & Specifications. These updates are project Record Drawings & Specifications.

C. Architect / Engineer shall furnish Public Works Project Manager with Record Drawings as detailed in Professional Services Agreement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT, DISPOSAL & RECYCLING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Summary
2. Waste Management Goals
3. Construction and / or Demolition Waste Management
4. Waste Management Plan
5. Reuse
6. Recycling
7. Materials Sorting and Storage On Site
8. Lists of Recycling Facilities Processors and Haulers
9. Waste Management Plan Form

B. Related Sections:
1. Section 01 00 00 - General Requirements
2. Section 02 41 00 - Demolition

1.2 WASTE MANAGEMENT GOALS

A. Dane County requires that as many waste materials as possible produced as result of this project be salvaged, reused or recycled in order to minimize impact of construction waste on landfills and to minimize expenditure of energy and cost in fabricating new materials. Additional information may be found in Dane County Green Building Policy, Resolution 299, 1999-2000.

1.3 CONSTRUCTION AND / OR DEMOLITION WASTE MANAGEMENT

A. All construction and demolition waste suitable for recycling may go to Dane County Construction & Demolition Recycling Facility located at 7102 US Hwy 12, Madison, located across from Yahara Hills Golf Course. This facility can receive mixed loads of construction and demolition waste. For complete list of acceptable materials see www.countyofdane.com/pwht/recycle/CD_Recycle.aspx.

B. Dane County Landfill, also at 7102 US Hwy 12, Madison, may receive all other waste from this project. www.countyofdane.com/pwht/recycle/landfill.aspx.

1.4 WASTE MANAGEMENT PLAN

A. Contractor shall develop Waste Management Plan (WMP) for this project. Dane County's Special Projects & Materials Manager may be contacted with questions. Outlined in RECYCLING section of this specification are examples of materials that can be recycled or reused as well as recommendations for waste sorting methods.

B. Contractor shall complete WMP and include cost of recycling / reuse in Bid. WMP will be submitted to Public Works Project Manager within fifteen (15) business days of Bid Due date. Copy of blank WMP form is in this Section. Submittal shall include cover letter and WMP form with:
   1. Information on:
      a. Types of waste materials produced as result of work performed on site;
      b. Estimated quantities of waste produced;
      c. Identification of materials with potential to be recycled or reused;
      d. How materials will be recycled or reused;
      e. On-site storage and separation requirements (on site containers);
      f. Transportation methods; and
      g. Destinations.

1.5 REUSE

A. Contractors and subcontractors are encouraged to reuse as many waste materials as possible. Salvage should be investigated for materials not reusable on site.

1.6 RECYCLING

A. These materials may be recycled at Dane County Construction & Demolition Recycling Facility:
   1. Wood.
   2. Wood Pallets.
   3. PVC Plastic (pipe, siding, etc.).
   4. Asphalt & Concrete.
   5. Bricks & Masonry.
   6. Vinyl Siding.
   7. Cardboard.
   8. Metal.
   9. Unpainted Gypsum Drywall.
   10. Shingles.

B. These materials can be recycled elsewhere in Dane County area:
   1. Fluorescent Lamps.
   2. Foam Insulation & Packaging (extruded and expanded).
   3. Carpet Padding.
   4. Barrels & Drums.

C. All materials must be recycled at WDNR permitted waste processing facilities that adhere to all State Statutes.

1.7 MATERIALS SORTING AND STORAGE ON SITE

A. Contractor shall provide separate containers for recyclable materials. Number of containers will be dependent upon project and site conditions.

B. Contractor shall provide on-site locations for subcontractors supplied recycling containers to help facilitate recycling.

C. Mixed loads of recycled materials are allowed only per instructions at www.countyofdane.com/pwht/recycle/CD_Recycle.aspx.

1.8 LISTS OF RECYCLING FACILITIES PROCESSORS AND HAULERS

A. Refer to www.countyofdane.com/pwht/recycle/CD_Recycle.aspx for information on Dane County Construction & Demolition Recycling Facility.

B. Web site www.countyofdane.com/pwht/recycle/categories.aspx lists current information for Dane County Recycling Markets. Contractors can also contact Allison Rathsack at 608/266-4990, or local city, village, town recycling staff listed at site www.countyofdane.com/pwht/recycle/contacts.aspx. Statewide listings of recycling / reuse markets are available from UW Extension at https://www.uwgb.edu/shwec/.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

WASTE MANAGEMENT PLAN FORM

Contractor Name: _____

Address: _____

_____

Phone No.: _____ Recycling Coordinator: _____

MATERIAL	ESTIMATED QUANTITY	DISPOSAL METHOD (CHECK ONE)	RECYCLING / REUSE COMPANY OR DISPOSAL SITE
Salvaged & reused building materials	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Wood	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Wood Pallets	_____ units	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
PVC Plastic	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Asphalt & Concrete	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Bricks & Masonry	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Vinyl Siding	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Cardboard	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Metals	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Unpainted Gypsum / Drywall	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Shingles	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Fluorescent Lamps	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Foam Insulation	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Carpet Padding	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Barrels & Drums	_____ units	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Glass	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____

WASTE MANAGEMENT PLAN FORM

Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

C. Abandonment and removal of existing utilities and utility structures.

1.2 RELATED REQUIREMENTS

A. Section 01 10 00 – General Requirements..

B. Section 01 74 19 - Construction Waste Management, Disposal and Recycling: Limitations on disposal of removed materials; requirements for recycling.

1.3 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 SCOPE

A. Refer to site demolition work as indicated on the Drawings.

C. Remove other items indicated, for salvage, relocation, recycling as indicated on the Drawings.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. It is not expected that asbestos containing materials (ACM) will be encountered in the Work. If materials suspected of ACM are encountered, do not disturb; immediately notify Owner.
   2. It is not expected that lead based paints and/or coatings will be encountered in the Work. If materials suspected of containing lead contaminants are encountered, do not disturb; immediately notify Owner.
   3. Obtain required permits.
   4. Comply with applicable requirements of NFPA 241.
   5. Use of explosives is not permitted.
   6. Provide, erect, and maintain temporary barriers and security devices.
   7. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   8. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   9. Do not close or obstruct drive aisles or sidewalks without permit.
   10. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   11. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

C. Remove existing systems and equipment only as indicated on the drawings.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

D. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Fire-Retardant-Treated wood blocking, cants, and nailers, and plywood backing panels.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

1.4 ACTION SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

2. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 FIRE-RETARDANT-TREATED LUMBER

A. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.

1. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.

2. All wood blocking, cants, and nailers, and plywood backing, exposed or concealed, to be fire-retardant-treated.

2.2 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.3 METAL FRAMING ANCHORS

A. Allowable design loads, as published by manufacturer, shall meet or exceed those of products of indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

D. Joist Hangers: U-shaped joist hangers with 2-inch- long seat and 1-1/4-inch- wide nailing flanges at least 85 percent of joist depth, uno.

E. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

1. Designed for connection of engineered wood products, sized to support design loads

F. Bridging: Rigid, V-section, nailless type, 0.064 inch thick, length to suit joist size and spacing.

G. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch- minimum side cover, socket 0.062 inch thick, and standoff and adjustment plates 0.108 inch thick.

H. Rafter Tie-Downs: Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-1/2 inches wide by 0.050 inch thick. Tie fastens to side of rafter or truss, face of top plates, and side of stud below.

I. Rafter Tie-Downs (Hurricane): As indicated

J. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Provide blocking and framing as indicated or as otherwise required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).

D. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 06 41 00

ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Hardware.

D. Factory finishing.

E. Preparation for installing utilities.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support blocking, cants and nailers

B. Section 09 91 23 - Interior Painting: Field finishing of cabinet exterior.

C. Section 10 26 41 – Ballistic Resistant Panels.

1.3 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program; Current Edition.

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).

C. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2016.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot (125 mm to 1 m), minimum.
   2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 8 inches (200 mm) square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
   2. Single Source Responsibility: Provide and install this work from single fabricator.

B. Quality Certification:
   1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.7 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.1 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:
   1. Adjustable Shelf Loading: 50 lbs. per sq. ft.
      a. Deflection: L/144.
   2. Cabinet Style: Flush overlay.
   3. Cabinet Doors and Drawer Fronts: Flush style.
   4. Drawer Side Construction: Multiple-dovetailed.
   5. Drawer Construction Technique: Dovetail joints.

2.2 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.3 LAMINATE MATERIALS

A. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
   1. Provide specific types as specified on Drawing Sheet A800.

B. Heavy Duty Rigid Vinyl Sheets: IPC Door and Wall Protection Systems, Palladium Rigid Vinyl Sheet System, Inpro, Corporation, www.inprocorp.com.
   1. Provide specific types as specified on Drawing Sheet A800.
   2. Vinyl Accessories: Inside corners, divider bars and outside corners shall be of a color matching the IPC.

2.4 COUNTERTOPS

A. Solid Surface Countertops where indicated and as specified on Drawing Sheet A800.

2.5 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Fasteners: Size and type to suit application.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

D. Concealed Joint Fasteners: Threaded steel.

E. Motorized Desk Base: Uplift Desk base as specified in Section 12 93 00 – Furniture. Locations as indicated on plans. Custom laminate desktops as indicated on plans.

F. Pedestal File Cabinet: Uplift pedestal file cabinets as specified in Section 12 93 00 – Furniture.

F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.6 HARDWARE

A. Concealed Brackets: Painted steel concealed steel brackets providing intermediate support for countertops and shelves as indicated on the drawings..

B. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers ("U" shaped wire pull, steel with chrome finish, 100 mm centers).

C. Drawer Slides:
   1. Type: Extension types as indicated.
   2. Static Load Capacity: Commercial grade.
   3. Mounting: Bottom mounted.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.
   6. Manufacturers:

a. Accuride International, Inc; Heavy-Duty Drawer Slides: www.accuride.com/#sle.
b. Blum, Inc; MOVENTO: www.blum.com/#sle.
c. Knape & Vogt Manufacturing Company; Heavy-Duty Drawer Slides: www.knapeandvogt.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

D. Hinges: European style concealed self-closing type, steel with nickel-plated finish.
1. Manufacturers:
a. Blum, Inc; CLIP top BLUMOTION: www.blum.com/#sle.
b. Grass America Inc: www.grassusa.com/#sle.
c. Hardware Resources: www.hardwareresources.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

2.7 SITE FINISHING MATERIALS

A. Stain, Shellac, Varnish, and Finishing Hardwood Trim: In compliance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.8 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet (600 mm) from sink cut-outs.
1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Install laminates and heavy duty rigid vinyl sheets per manufacturer's instructions.

C. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim for this purpose.

3.3 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.4 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Joint backings and accessories.

C. Joint backings and accessories.

1.2 RELATED REQUIREMENTS

A. Section 09 91 23 – Interior Painting.

1.3 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2017.

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2018.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2018.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

PART 2 PRODUCTS

2.1 JOINT SEALANT APPLICATIONS

A. Scope:

1. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
   a. Joints between door, window, and other frames and adjacent construction.
   b. Joints in concrete floors.
   c. Expansion joints in finish flooring.
   d. Other joints indicated below.
2. Do not seal the following types of joints.
   a. Intentional weepholes in masonry.
   b. Joints within rainscreen system.
   c. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
   d. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
   e. Joints where installation of sealant is specified in another section.

f. Joints between suspended panel ceilings/grid and walls.

B. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
4. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.

C. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

2.2 NONSAG JOINT SEALANTS

A. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.
2. Products:
a. Dow Corning Corporation, 786 Mildew Resistant.
b. Pecora Corporation; 898NST Sanitary Silicone Sealant - Class 50: www.pecora.com.
c. Sika Corporation; Sikasil GP: www.usa-sika.com.
d. Tremco; Tremsil 200: www.tremcosealants.com.
3. Applications:
a. Interior joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Joints between counters and adjoining walls and floors at bathrooms, kitchens and other wet areas.

B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Color: Match adjacent finished surfaces.
2. Manufacturers:
a. BASF; MasterSeal NP1/NP2.
b. Pecora Corporation; DynaTrol I-XL/DynaTrol II.
c. Sika Corporation; Sikaflex-1a/Sikaflex-2c: www.usa-sika.com.
d. Tremco; Vulkem 116/Dymeric 240: www.tremcosealants.com
3. Applications:
a. Vertical joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
b. Interior perimeter joints of exterior openings.
c. Joints between top of non-load bearing unit masonry walls and underside of cast-in-place concrete slabs and beams.

C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Color: To be selected by Architect from manufacturer's standard range.
2. Products:
a. Pecora, AC-20 + Silicone: www. pecora.com.
b. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: www.sherwin-williams.com.
c. Tremco, Tremflex 834: www.tremcosealants.com.
3. Applications:
a. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.

D. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
1. Applications:
a. Thresholds.

2.3 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.2 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Standard and custom hollow metal frames for wood doors.

B. Fire-rated and non-fire-rated hollow metal doors and frames.

C. Bullet-resistant hollow metal doors and frames (Alternate No. 4).

D. Hollow metal sidelight and/or borrowed lite frames.

E. Door and sidelight glazing.

1.2 RELATED REQUIREMENTS

A. Section 08 14 16 - Flush Wood Doors.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glazing

D. Section 09 91 23 - Interior Painting: Field painting.

1.3 REFERENCE STANDARDS

A. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2007 (Reaffirmed 2011).

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2003 (R2009).

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.

G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

I. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.

J. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

K. ITS (DIR) - Directory of Listed Products; current edition.

L. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.

M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.

O. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2007.

P. NAAMM HMMA 850 - Fire-Protection and Smoke Control Rated Hollow Metal Door and Frame Products; 2014.

Q. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.

R. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

S. NAAMM HMMA 862 - Guide Specifications for Commercial Security Hollow Metal Doors and Frames; 2013.

T. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.

U. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.

V. UL (DIR) - Online Certifications Directory; Current Edition.

W. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

X. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Include the following:
   1. Elevations of each door design.
   2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
   3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
   4. Locations of reinforcement and preparations for hardware.
   5. Details of anchorages, joints, field splices, and connections.
   6. Details of accessories.
   7. Details of moldings, removable stops, and glazing.
   8. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Verification: Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

1.6 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:
   1. CECO Door Products (C).
   2. Curries Company (CU).
   3. Pioneer Industries (PI).
   4. Steelcraft (S).

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, ANSI/SDI A250.4 for physical performance level, and HMMA 867 for door construction.
   1. Design: Flush panel.
   2. Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 “Laminated Core”.
      a. Provide 22 gauge steel stiffeners at 6 inches on-center internally welded at 5" on- center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
      b. Thermal properties to rate at a fully operable minimum U-Factor 0.37 and R-Value 2.7, including insulated door, thermal-break frame and threshold.
      c. Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.38 and R-Value 2.6, including insulated door, kerf type frame, and threshold.
   3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053 inch - 1.3-mm) thick steel, Model 2.
   4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
   5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
   6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
   7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Design: Flush panel.
      a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
   2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
   3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
   4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
   5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Manufacturers Basis of Design:
   1. Curries Company (CU) - Polystyrene Core - 707 Series.
   2. Curries Company (CU) - Energy Efficient - 777 Trio-E Series.

2.4 SPECIAL FUNCTION HOLLOW METAL DOORS

A. Bullet Resistant Door Assemblies: Subject to the same compliance standards and requirements as standard hollow metal doors, provide manufacturer's custom bullet resistant internal door construction tested in accordance with U.L. Test Standard 752. Fabricate with concealed armor plate construction, 1-3/4" thickness, in the steel gauge required to meet indicated ballistic rating. Furnish as a complete unit with factory welded frame and approved listed hardware.
   1. Provide bullet resistant assemblies with UL752 Level Rating of 1 through 10 as indicated.

2. Manufacturers Basis of Design:
    a. CECO Door Products (C) - Armorshield Series.
    b. Curries Company (CU) - 737 Series.

2.5 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Thermal Break Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 102, and resistance to air infiltration in accordance with NFRC 400. Where indicated provide thermally broken frame profiles available for use in both masonry and drywall construction. Fabricate with 1/16" positive thermal break and integral vinyl weatherstripping.

C. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Manufacturers Basis of Design:
    a. CECO Door Products (C) – SU SR Series.
    b. Curries Company (CU) – M CM Series.
    c. Curries Company (CU) – Thermal Break TQ Series.

D. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Manufacturers Basis of Design:
    a. Curries Company (CU) - C CM CG Series.
    b. Curries Company (CU) - M Series.

E. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

F. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.6 SPECIAL FUNCTION HOLLOW METAL FRAMES

A. Bullet Resistant Frame Assemblies: Subject to the same compliance standards and requirements as standard hollow metal frames, provide where indicated manufacturer tested bullet resistance frame as part of a complete door and frame system. Fabricate bullet resistance frames from minimum 12 gauge steel with fully welded construction.

B. Bullet Resistance to be Level 3 per UL 752.

1. Manufacturers Basis of Design:
    a. CECO Door Products (C) - Armorshield Series Frames.
    b. Curries Company (CU) - 737 Series Frames.

2.7 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.8 LOUVERS

A. Metal Louvers: Unless otherwise indicated provide louvers to meet the following requirements.

1. Blade Type: Vision proof inverted V or inverted Y.

2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

B. Louvers for Fire Rated Doors: Metal louvers with fusible link and closing device, listed and labeled for use in doors with fire protection rating of 1-1/2 hours and less.

1. Manufacturers: Subject to compliance with requirements, provide louvers to meet rating indicated.

2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

2.9 LIGHT OPENINGS AND GLAZING

A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.

B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.

C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.

D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.10 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.11 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

Hollow Metal Doors:

C. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.

1. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.

2. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

3. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:
    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
    b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.12 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

B. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.2 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Install bullet resistive doors and frames per manufacturer’s instructions and per UL 752.

C. Coordinate frame anchor placement with wall construction.

D. Install door hardware as specified in Section 08 71 00.

E. Coordinate installation of electrical connections to electrical hardware items.

3.3 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch (1.6 mm) measured with straight edge, corner to corner.

3.4 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.5 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Flush wood doors.

B. Door glazing.

1.2 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 71 00 - Door Hardware.

C. Section 09 91 23 – Interior Painting.

1.3 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

D. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.

E. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010 (Reapproved 2018).

F. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).

G. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).

H. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2017.

I. FM (AG) - FM Approval Guide; current edition.

J. NAAMM HMMA 866 - Guide Specifications for Stainless Steel Hollow Metal Doors and Frames; 2012.

K. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.

L. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.

M. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

N. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

O. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

1.4 SUBMITTALS

A. See Section 01 00 00 – General Requirements, for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

D. Samples: Submit two samples of door veneer, 8 by 8 inches in size illustrating wood grain, stain color, and sheen.

E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

F. Test Reports: Show compliance with specified requirements for the following:
   1. Bullet resistant doors and frames.

G. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.5 QUALITY ASSURANCE

1.6 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

PART 2 PRODUCTS

2.1 DOORS

A. Doors: See drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.

2.3 DOOR FACINGS

A. Veneer Facing: Red oak, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.

2.4 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

C. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

D. Provide edge clearances in accordance with the quality standard specified.

2.5 FINISHES - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified.

B. Factory finish doors to match existing, JCO (WD-1A) and NIP (WD-1B)

2.6 ACCESSORIES

A. Hollow Metal Door Frames: See Section 08 11 13.

B. Glazed Openings:
   1. Heat-Strengthened and Fully Tempered Glass: ASTM C1048.
   2. Tint: Clear.

C. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: 12 inches wide by 12 inches high (305 mm wide by 305 mm high).
   2. Frame Material: 18 gauge, 0.0478 inch (1.21 mm), galvanized steel.
   3. Metal Finish: Dark Bronze polyester powder coating.

D. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
shall be a laminated polycarbonate meeting UL 752, Level 3 requirement.

F. Door Hardware: See Section 08 71 00.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.3 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.4 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 08 43 13

ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Exterior Storefront and Entrance.

B. Insulated Glazing Units.

1.2 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants.

B. Section 08 71 00 - Door Hardware.

1.3 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.

B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).

C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.

F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

G. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

D. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

E. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.6 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

PART 2 PRODUCTS

2.1 EXTERIOR ALUMINUM STOREFRONT AND ENTRANCES

A. Basis-of-Design: Kawneer North America: www.kawneer.com.
   1. 500T Insulpour Thermally Broken Entrances)
   2. System Dimensions: 2 1/4" x 5”.

3. Glass: Center Plane.
4. Finish: Match existing.

B. Glazing: 1” thick insulated glazing, fully tempered safety glazing.
1. Tint: Match existing.
2. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
3. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.2 HARDWARE

A. Refer to Section 08 71 00 - Door Hardware unless noted otherwise.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.2 INSTALLATION

A. Install systems in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Set thresholds in bed of sealant and secure.

J. Install hardware using templates provided.
1. See Section 08 71 00 for hardware installation requirements.

K. Install glass and infill panels in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.

L. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.4 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

3.5 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Door Hardware.

B. Door Hardware Sets.

1.2 RELATED REQUIREMENTS

A. Section 08 11 13 – Hollow Metal Doors and Frames.

B. Section 08 14 16 – Flush Wood Doors.

C. Section 08 43 13 – Aluminum Framed Storefronts.

1.3 CODES AND REFERENCE STANDARDS

A. ANSI A117.1 - Accessible and Usable Buildings and Facilities.

B. ICC/IBC - International Building Code.

C. NFPA 70 - National Electrical Code.

D. NFPA 80 - Fire Doors and Windows.

E. NFPA 101 - Life Safety Code.

F. NFPA 105 - Installation of Smoke Door Assemblies.

G. State Building Codes, Local Amendments.

H ANSI/BHMA Certified Product Standards - A156 Series.

I. UL10C – Positive Pressure Fire Tests of Door Assemblies.

J. ANSI/UL 294 – Access Control System Units.

K. ULC-S319 - Electronic Access Control Systems.

L. ULC-60839-11-1, Alarm and Electronic Security Systems - Part 11-1: Electronic Access Control Systems - System and Components Requirements.

M. UL 305 – Panic Hardware.

N. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.

O. ULC-S533 – Egress Door Securing and Releasing Devices.

P. ANSI/UL 437- Key Locks.

Q. ULC-S328, - Burglary Resistant Key Locks.

1.4 SUBMITTALS

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

B. 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.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. 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.
3. Content: Include the following information:
    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.

c. Fastenings and other pertinent information.
d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware.
g. Door and frame sizes and materials.
h. Warranty information for each product.

4. 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.

C. Shop Drawings: Details of electrified access control hardware indicating the following:
1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.
2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. 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.

E. Informational Submittals:
1. 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.

F. 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 Procedures.

1.5 QUALITY ASSURANCE

A. 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.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. 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.

D. 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.

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

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. 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:
   1. Function of building, purpose of each area and degree of security required.
   2. Plans for existing and future key system expansion.
   3. Requirements for key control storage and software.
   4. Installation of permanent keys, cylinder cores and software.
   5. Address and requirements for delivery of keys.

H. 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.
   1. 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.
   2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
   3. Review sequence of operation narratives for each unique access controlled opening.
   4. Review and finalize construction schedule and verify availability of materials.
   5. Review the required inspecting, testing, commissioning, and demonstration procedures

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

1.6 DELIVERY, STORAGE, AND HANDLING

A. 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.

B. 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.

C. 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.

D.

E. 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.

F. 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".

1.7 COORDINATION

A. 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.

B. 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.

1.8 WARRANTY

C. 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.

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

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

F. Special Warranty Periods:
   1. Ten years for mortise locks and latches.
   2. Seven years for heavy duty cylindrical (bored) locks and latches.
   3. Five years for exit hardware.
   4. Twenty five years for manual overhead door closer bodies.
   5. Five years for motorized electric latch retraction exit devices.
   6. Two years for electromechanical door hardware.

1.9 MAINTENANCE SERVICE

A. 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

2.1 SCHEDULED DOOR HARDWARE

A. 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.

B. 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:
   1. 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.

C. 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.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
   1. Quantity: Provide the following hinge quantity:
      a. Two Hinges: For doors with heights up to 60 inches.
      b. Three Hinges: For doors with heights 61 to 90 inches.
      c. Four Hinges: For doors with heights 91 to 120 inches.
      d. 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.
   2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
      a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
      b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.
   3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
      a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
      b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
   4. Hinge Options: Comply with the following:

a. 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.

5. Manufacturers:
   a. Bommer Industries (BO).
   b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
   c. Stanley Hardware (ST).

B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinges 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.

6. Manufacturers:
   e. Bommer Industries (BO).
   f. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.3 POWER TRANSFER DEVICES

A. 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.

1. Provide one each of the following tools as part of the base bid contract:
   a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
   b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.

1. Manufacturers:
   a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.
   b. Stanley Hardware (ST) – WH Series.

B. 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.

2. Manufacturers:
   c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE) – EL-CEPT Series.
   d. Securitron (SU) – EL-CEPT Series.

2.4 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. 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.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
   a. Door Controls International (DC).
   b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
   c. Trimco (TC).

B. 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.
   1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
   2. 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.
   3. 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.
   4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
   5. Manufacturers:
      a. Hiawatha, Inc. (HI).
      b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
      c. Trimco (TC).

2.5 CYLINDERS AND KEYING

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

B. Cylinders: Original manufacturer cylinders complying with the following:
   1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
   2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
   4. 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.
   5. Keyway: Match Facility Standard.

C. Interchangeable Cores: Provide small format interchangeable cores as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Keying System: Each type of lock and cylinders to be factory keyed.
   1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
   2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
   3. Existing System: Field verify and key cylinders to match Owner's existing system.

E. Key Quantity: Provide the following minimum number of keys:
   1. Change Keys per Cylinder: Two (2)
   2. Master Keys (per Master Key Level/Group): Five (5).
   3. Construction Keys (where required): Ten (10).

F. Construction Keying: Provide construction master keyed cylinders.

G. Key Registration List (Bitting List):
   1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
   2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed.
   1. Furnish with solid cast levers, standard 2 3/4” backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.
   2. Locks are to be non-handed and fully field reversible.
   3. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 2 million cycles.
   4. Manufacturers:
      a. dormakaba Best (BE) – 9K Series.
      b. No Substitution.

2.7 LOCK AND LATCH STRIKES

A. 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:
   1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
   2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
   3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
   4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

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

2.8 ELECTRIC STRIKES

A. Standard Electric Strikes: Electric strikes tested to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.
   1. Manufacturers:
      a. HES (HS) - 1006 Series.
      b. HES (HS) – 1500/1600 Series.

B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes tested to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.
   1. Manufacturers:
      a. HES (HS) - 9400/9500/9600/9700/9800 Series.

C. 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.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
   1. 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.
   2. 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.
   3. 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.
   4. 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.
   5. 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.
   6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
      a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.

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

7. 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.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed 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.
1. Manufacturers:
a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
b. Detex (DE) – Advantex.
c. Sargent Manufacturing (SA) - 80 Series.

2.10 ELECTROMECHANICAL EXIT DEVICES

A. Electromechanical Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices subject to same compliance standards and requirements as mechanical exit devices. Electrified exit devices to be of type and design as specified below and in the hardware sets.

1. Energy Efficient Design: Provide devices which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.

2. Where conventional power supplies are not sufficient, include any specific controllers required to provide the proper inrush current.

3. 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.

4. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED5000 Series.
b. dormakaba Precision (PR) - Apex 2000 Series.
c. Sargent Manufacturing (SA) - 80 Series.

DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:
1. 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.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. 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 Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. 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.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed 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 or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
   1. Manufacturers:
   a. Corbin Russwin Hardware (RU) – DC6000 Series.
   b. Norton Door Controls (NO) – 7500 Series.
   c. Sargent Manufacturing (SA) – 351 Series.

2.11 ARCHITECTURAL TRIM

A. Door Protective Trim
   1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
   2. 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.
   3. 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.
   4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
      a. Stainless Steel: 300 grade, 050-inch thick.
   5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
   6. Manufacturers:
      a. Hiawatha, Inc. (HI).
      b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
      c. Trimco (TC).

2.12 DOOR STOPS AND HOLDERS

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

B. 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.
   1. Manufacturers:
      a. Hiawatha, Inc. (HI).
      b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
      c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed 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.
   1. Manufacturers:
      a. Rixson Door Controls (RF).
      b. Sargent Manufacturing (SA).

2.13 ARCHITECTURAL SEALS

A. 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.

B. 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.
   1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. 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.
   1. 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.

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

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

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

2.14 ELECTRONIC ACCESSORIES

A. 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.
   1. Manufacturers:
      a. Securitron (SU) - DPS Series.

B. Intelligent Switching Power Supplies: Provide power supplies with single, dual or multi-voltage configurations at 12 and/or 24VDC. Power Supply shall have battery backup function with an integrated battery charging circuit. The power supply shall have a standard, integrated Fire Alarm Interface (FAI). The power supply shall provide capability for secondary voltage, power distribution, direct lock control and network monitoring through add on modules. The power supply shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs. Network modules shall provide remote monitoring functions such as status reporting, fault reporting and information logging.
   2. Manufacturers:
      a. Securitron (SU) - AQL Series.

2.15 FABRICATION

A. 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.

2.16 FINISHES

A. 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.

B. 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

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

PART 3 EXECUTION

3.1 EXAMINATION

A. 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.

B. 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.

3.2 PREPARATION

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

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
   1. 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.

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

C. 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.

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

E. 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.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures” and “Cash Allowances”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
   1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.
   2. Submit documentation of incomplete items in the following formats:
      a. PDF electronic file.
      b. Electronic formatted file integrated with the Openings Studio™ door opening management software platform.

3.5 ADJUSTING

A. 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.

3.6 CLEANING AND PROTECTION

A. 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.

B. Clean adjacent surfaces soiled by door hardware installation.

C. 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.

3.7 DEMONSTRATION

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

3.8 DOOR HARDWARE SETS

A. 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.
   1. Quantities listed are for each pair of doors, or for each single door.
   2. The supplier is responsible for handing and sizing all products.
   3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
   4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer’s Abbreviations:
   1. MK - McKinney
   2. RO - Rockwood
   3. SA - SARGENT
   4. BE - dormakaba Best
   5. HS - HES
   6. RF - Rixson
   7. NO - Norton
   8. PE - Pemko
   9. HD - HID
   10. SU - Securitron
   11. OT - Other

HARDWARE SETS

Set: 1.0

6	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK	
1	Dust Proof Strike	570	US26D	RO	
2	Manual Flush Bolt	555/557 (as req'd)	US26D	RO	
1	Storeroom Lock	9K37D 15C	626	BE	
1	Electric Strike	1500C	630	HS	⚡
1	Closer x Stop/HO	CLP7500T	689	NO	
2	Kick Plate	K1050 10" 4BE CSK	US32D	RO	
2	Wall Stop	402 / 405 (as req'd)	US26D	RO	
1	E-Lynx Harness (Jamb)	QC-C1500P		MK	⚡
1	E-Lynx Harness (Door)	QC-C*** (length / type as req'd)		MK	⚡
1	Card Reader	By Security Contractor	BLK	HD	

Notes:
Field verify compatibility of new doors and hardware with existing frame.

Doors normally closed and locked.
Valid card read unlocks electric strike for entry.
Key override available.
Free egress at all times.

Set: 2.0

1	Continuous Hinge	DFM SL(F/I)-HD1 x Dr Ht		PE	
1	Rim Exit (Exit Only)	19 8810 EO	US10BE	SA	
1	Closer x HD Stop	UNIJ7500	690	NO	
1	Threshold - 5" T-Break	252x3DFG		PE	
1	Sweep	315DN		PE	
1	Door Position Switch	DPS-M / W-GY (as req'd)		SU	⚡

Notes:
Door position switch indicates door status.

Set: 3.0

3	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK	
1	Storeroom Lock	9K37D 15C	626	BE	
1	Electric Strike	1006CS	630	HS	⚡
1	Closer	PR7500 / Reg 7500 (as req'd)	689	NO	
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO	
1	Wall Stop	402 / 405 (as req'd)	US26D	RO	
1	E-Lynx Harness (Jamb)	QC-C1500P		MK	⚡
1	Card Reader	By Security Contractor	BLK	HD	

Notes:
Door normally closed and locked.
Valid card read unlocks electric strike for entry.
Key override available.
Free egress at all times.

Set: 4.0

6	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK	
2	Electric Power Transfer	EL-CEPT		SU	⚡
1	CVR Exit (EO, ELR)	HK56 LC NB 19 MD8610 EO	US32D	SA	⚡
1	CVR Exit (NL, ELR)	HK56 LC NB 19 MD8610 x 106	US32D	SA	⚡
1	Cylinder	Rim / Mortise (as req'd)	626	BE	
2	Closer x Stop/HO	CLP7500T	689	NO	
2	Kick Plate	K1050 10" 4BE CSK	US32D	RO	
2	E-Lynx Harness (Jamb)	QC-C1500P		MK	⚡
2	E-Lynx Harness (Door)	QC-C*** (length / type as req'd)		MK	⚡
1	Card Reader	By Security Contractor	BLK	HD	
1	Power Supply	AQL4-R8E1		SU	⚡

Notes:
Doors normally closed and locked.
Valid card read retracts latch on active leaf for entry. Key override available.
Both doors can be set to unlocked (latches held retracted, electrically) on a time schedule in access control system, so doors act as push/pull.
Doors can be held open mechanically.
Free egress at all times.

Set: 5.0

6	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK	
1	Dust Proof Strike	570	US26D	RO	
2	Manual Flush Bolt	555/557 (as req'd)	US26D	RO	
1	Mortise Exit (E-Lever)	LC 19 8976-24v ETL	US32D	SA	⚡
1	Cylinder	Rim / Mortise (as req'd)	626	BE	
1	Closer x Stop/HO	CLP7500T	689	NO	
2	Kick Plate	K1050 10" 4BE CSK	US32D	RO	
1	Wall Stop	402 / 405 (as req'd)	US26D	RO	
1	E-Lynx Harness (Jamb)	QC-C1500P		MK	⚡
1	E-Lynx Harness (Door)	QC-C*** (length / type as req'd)		MK	⚡
1	Card Reader	By Security Contractor	BLK	HD	
1	Power Supply	AQL4-R8E1		SU	⚡

Notes:
Doors normally closed and locked.
Valid card read unlocks outside lever for entry.
Key override available.
Free egress at all times.

Set: 6.0

3	Hinge	TA2714 (NRP)	US26D	MK
1	Classroom Lock	9K37R 15C	626	BE
1	Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO
1	Wall Stop	402 / 405 (as req'd)	US26D	RO

Set: 7.0

3	Hinge	TA2714 (NRP)	US26D	MK
1	Entrance Lock	9K37AB 15C	626	BE
1	Closer x Track Arm/Stop	7500ST	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO

Set: 8.0

1	Existing Hardware	To Remain		OT

END OF SECTION

SECTION 08 80 00

GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Laminated glass.

B. Glazing compounds and accessories.

1.2 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework: Cabinets with requirements for glass shields.

1.3 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM C1036 - Standard Specification for Flat Glass; 2016.

F. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

H. GANA (LGRM) - Laminated Glazing Reference Manual; 2009.

I. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 SUBMITTALS

A. See Section 01 00 00 - Administrative Requirements for submittal procedures.

B. Product Data on Laminated Glass Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 8 by 8 inch in size of glass units.

E. Certificate: Certify that products of this section meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.

PART 2 PRODUCTS

2.1 DECORATIVE LAMINATED GLASS

A. Basis-of-Design: Custom Laminated Architectural Glass by S.A. Bendheim or McGrory, www.mcgrory.com.

1. Refer to Drawings for locations and configurations of Decorative Laminate Glass.
2. Refer to Drawings for locations of patterned or clear glass.

2.2 GLASS MATERIALS

A. Laminated Glass: Float glass laminated in accordance with ASTM C1172.

1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

2. Polyvinyl Butyral (PVB) Interlayer: 0.030 inch (0.762 mm) thick, minimum.

2.3 GLAZING COMPOUNDS

A. Polymer modified latex or as recommended by manufacturer for outdoor use, knife grade consistency; gray color.

2.4 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) by width of glazing rabbet space minus 1/16 inch (1.5 mm) by height to suit glazing method and pane weight and area.

B. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

3.2 INSTALLATION - STRUCTURAL SILICONE GLAZING

A. Application - Field Glazed: Follow basic guidelines of structural silicone glazing for glazing application.

B. Provide design review of the glazing system and project details, adhesion testing, proper surface preparation, training and a quality service program.

C. Provide only structural silicone sealant, tested and manufactured for structural glazing.

3.3 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove non-permanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.4 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 09 05 61

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Carpet tile.

B. Removal of existing floor coverings.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Patching compound.

E. Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

1.2 RELATED REQUIREMENTS

A. Section 01 74 19 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.

B. Section 03 30 00 - Cast-in-Place Concrete: Moisture emission reducing curing and sealing compound for slabs to receive adhered flooring, to prevent moisture content-related flooring failures; to remain in place, not to be removed.

1.3 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2020a.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).

D. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

E. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.4 QUALITY ASSURANCE

A. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency. Test results shall meet manufacturer’s installation requirements.

1.5 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F (18 degrees C) or more than 85 degrees F (30 degrees C).

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.1 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

PART 3 EXECUTION

3.1 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Preliminary cleaning.
   2. Specified remediation, if required.
   3. Patching, smoothing, and leveling, as required.
   4. Other preparation specified.
   5. Adhesive bond and compatibility test.
   6. Protection.

3.2 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.3 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Gypsum wallboard.

C. Joint treatment and accessories.

D. Textured finish system.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

C. Section 09 91 23 – Interior Painting.

D. Section 10 26 41 – Ballistic Resistant Panels.

1.3 REFERENCE STANDARDS

B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017.

C. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).

Manufactured Housing; 2017.

F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2019b.

G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2018.

I. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

J. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.

K. GA-600 - Fire Resistance Design Manual; 2015.

L. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 SUBMITTALS

A. See Section 01 00 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Fire-Resistance-Rated Assemblies: Provide Fire-Resistance-Rated Partitions UL listed assembly numbers as indicated on the drawings.

2.2 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:

1. American Gypsum Company: www.americangypsum.com/#sle.
2. CertainTeed Corporation: www.certainteed.com/#sle.
3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
4. National Gypsum Company: www.nationalgypsum.com/#sle.
5. USG Corporation: www.usg.com/#sle.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
2. At Assemblies Indicated with Fire-Resistance Rating: Use Type X (walls) or Type C (ceilings) required by UL or GA indicated tested assembly.
3. Thicknesses as indicated on the drawings.

2.3 Gypsum Wallboard ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: as indicated on the drawings, or if not indicated, thickness to match stud thickness.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
   1. Products:
      a. Franklin International, Inc; Titebond GREENchoice Professional Acoustical Smoke and Sound Sealant: www.titebond.com/#sle.
      b. Liquid Nails, a brand of PPG Architectural Coatings: www.liquidnails.com/#sle.
      c. Specified Technologies Inc; Smoke N Sound Acoustical Sealant: www.stifirestop.com/#sle.

C. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Joint Compound: Drying type, vinyl-based, ready-mixed.

E. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

F. Textured Finish Materials: Latex-based compound; plain.

G. Nails for Attachment to Wood Members: ASTM C514.

H. Adhesive for Attachment to Wood, ASTM C557 and Metal:

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.2 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.3 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
   1. Single-Layer Applications: Adhesive application.

3.4 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.5 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings or light orange peel texture, unless otherwise indicated.
   2. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

D. Spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.6 TEXTURE FINISH

A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.2 RELATED REQUIREMENTS

A. Section 21 13 00 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.

B. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.

C. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.

D. Section 28 46 00 - Fire Detection and Alarm: Fire alarm components in ceiling system.

1.3 REFERENCE STANDARDS

A. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.

B. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2020.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2019.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit two samples 4 inch X 4 inch in size illustrating material and finish of acoustical units.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

PART 2 PRODUCTS

2.1 ACOUSTICAL UNITS

A. Refer to Finish Specifications as outlined on Drawing Sheet A800.

2.2 SUSPENSION SYSTEM(S)

A. Refer to Finish Specifications as outlined on Drawing Sheet A800.

2.3 ALTERNATE NO. 1

A. Upon documented acceptance by Owner of Alternate No. 1, Acoustic Ceiling Tile to be replaced throughout JCO Job Information Center J065 and Corridor J054 with ACP-1. Refer to Finish Specifications as outlined on Drawing Sheet A800.

2.4 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch (2 mm) galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.1 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

G. Support fixture loads using supplementary hangers located within 6 inches (152 mm) of each corner, or support components independently.

H. Do not eccentrically load system or induce rotation of runners.

3.2 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units: Make field cut edges of same profile as factory edges.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.2 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.3 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).

B. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2015.

C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.

D. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015 (Reapproved 2020).

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Stair Materials: Quantity equivalent to 5 percent of each type and color.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store all materials off of the floor in an acclimatized, weather-tight space.

B. Protect roll materials from damage by storing per manufacturer's recommendations.

PART 2 PRODUCTS

2.1 RESILIENT TILE FLOORING

A. Refer to Room Finish Schedule and Finish Specifications as outlined on Drawing Sheet A800.

2.2 RESILIENT BASE

A. Refer to Room Finish Schedule and Finish Specifications as outlined on Drawing Sheet A800.

2.3 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

B. Prohibit traffic until filler is fully cured.

3.2 Installation - General

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

D. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.3 Installation - Tile Flooring

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.4 Installation - Resilient Base

A. Fit joints tightly and make vertical. Maintain minimum dimension of 48 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.5 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.6 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 68 13

TILE CARPETING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Carpet tile.

B. Installation requirements for extreme moisture condition using pressure sensitive spray adhesive.

1.2 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.3 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).

B. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

C. CRI 104 - Standard for Installation of Commercial Carpet; 2015.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.5 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Refer to Room Finish Schedule and Finish Specifications as outlined on Drawing Sheet A800.

B. No substitutions.

2.2 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Rubber, color as selected by Architect.

C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).

1. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.2 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09 05 61 and per carpet tile manufacturer's instructions.

3.3 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Fully adhere carpet tile to substrate.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

3.4 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 91 23

INTERIOR PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
   6. Floors, unless specifically indicated.
   7. Ceramic and other tiles.
   8. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
   9. Glass.
   10. Concealed pipes, ducts, and conduits.

1.2 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 14 16 - Flush Wood Doors.

C. Section 09 21 16 – Gypsum Wallboard Assemblies.

1.3 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.

B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

E. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.4 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
2. Label each container with color in addition to the manufacturer's label.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.6 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

2.2 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.

B. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.3 PAINT SYSTEMS - INTERIOR

A. Interior Gypsum Board Surfaces to be Painted:
1. Two top coats and one coat primer.
2. Top Coats for Walls: Interior Eggshell Latex.
3. Top Coats for Ceilings: Interior Flat Latex.
4. Primer: As recommended by top coat manufacturer for specific substrate.

B. Concrete and Concrete Masonry Units: Interior Semi-Gloss Latex.

C. Ferrous and Galvanized Metal Surfaces to be Painted: For surfaces subject to frequent contact by occupants, including metals:
1. Medium duty applications include doors, door frames, railings, handrails, guardrails, balustrades, and miscellaneous metals.
2. Two top coats and one coat primer.
3. Top Coat(s): Interior Light Industrial Coating, Water Based.

D. Interior Epoxy Coating: Including gypsum board and concrete masonry units.
1. Primer for gypsum wallboard: As recommended by manufacturer.
2. Primer for concrete masonry: Masonry filler.
3. Finish Coatings: Two coats, semi-gloss finish.

E. Dry Fall: Metals; exposed structure and overhead-mounted services, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.

1. One top coat.
2. Top Coat: Latex Dry Fall.

F. Transparent Finish on Wood.
1. Two coats MPI Danish Oil (MPI # 92).

G. Transparent Finish on Concrete Floors.
1. 2 coats sealer.
2. Sealer: Water Based for Concrete Floors.
a. Products:
1) Tamms; Clearseal WB 300.
2) L & M Construction Chemicals; Dress & Seal WB
3) W.R. Meadows; VOCOMP - 25.

2.4 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
C. Test shop-applied primer for compatibility with subsequent cover materials.
D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Gypsum Wallboard: 12 percent.
2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
3. Concrete Floors and Traffic Surfaces: 8 percent.

3.2 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
D. Seal surfaces that might cause bleed through or staining of topcoat.
E. Concrete:
1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
F. Masonry:
1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
2. Prepare surface as recommended by top coat manufacturer.
G. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
I. Galvanized Surfaces:
1. Prepare surface according to SSPC-SP 3.
J. Ferrous Metal:
1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

K. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

3.3 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
B. Apply products in accordance with manufacturer's written instructions.
C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
E. Include areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
   1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
   3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
   4. Finish doors on tops, bottoms, and side edges the same as exterior faces.
F. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
G. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
H. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
I. Sand wood and metal surfaces lightly between coats to achieve required finish.
J. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
K. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
L. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
M. Concrete Floor Sealer: Follow manufacturer’s instructions for preparation and installation.

3.4 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
B. At end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
C. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting
D. Provide "Wet Paint: signs to protect newly painted finishes.

3.5 PROTECTION

A. Protect finishes until completion of project.
B. Touch-up damaged finishes after Substantial Completion.

3.6 SCHEDULE - PAINT SYSTEMS

A. Refer to Drawing Sheet A611 for Finish Material Specifications for paint schedule (P-#).

.

END OF SECTION

SECTION 10 14 00

SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Interior room and door signs.

1.2 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. IBC 2009 1007.8 – 1007.11 complying with ICC A117.1 - Accessible and Usable Buildings and Facilities.

1.3 SUBMITTALS

A. Refer to Section 01 00 00 – General Requirements submittal requirements and procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
   2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
   3. Submit for approval by Owner through Architect prior to fabrication.
   4. Refer to Interior Signage Schedule a the end of this section.

D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.4 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.1 INTERIOR SIGNAGE

A. Basis-of-Design: ASI Signage Innovations; Inform Plaque Signs; www.asisignage.com.
   1. Provide Basis-of-Design product or comparable product approved during the bid process to match existing. Characteristics that comparable products must match include, but are not limited to, color, form, aesthetic, and performance.

B. Sign Materials
   1. Sign Face: High impact clear acrylic, frosted finish with dimensional acrylic letters and braille on face; set in Dark Bronze anodized aluminum frame.
   2. Tactile Graphics and Text: Provide tactile copy and Grade 2 Braille raised 1/32 inch minimum from plaque surface.
   3. Provide lettering and graphics precisely formed, uniformly opaque to comply with ADA regulations and requirements indicated for size, style, spacing, content, position and colors.

C. Colors: High contrast semi-matte integral colors for graphics; ASI standard color as selected by the Architect. All integral resins are U.V. stabilized utilizing automotive grade pigments.

D. Fabrication Options:

1. Panel Depth: 0.374 inch thickness.
2. Attachable back plate panel depth: 0.125 inch thickness.
3. Sign Shape: As approved by the Architect.
4. Letter Style and Size: As approved by the Architect.

E. Integral Window Options:
1. Surface, lateral slot, separate changeable graphic insert plaque construction in compliance with indicated materials, thicknesses, finish, colors, designs, shapes, sizes, and details. Surface graphics to comply with manufacturer's standard process for precisely formed, uniformly opaque graphics for indicated style, spacing, content, position and colors.
2. Graphic Insert: Die-cut paper as supplied by ASI, and laser printed in accordance with manufacturer's proprietary software.
3. Visible Window Opening Location: Custom.
4. Insert Format: Lens: Clear, 0.08 inch thick, matte first surface.

F. Rest Rooms: Identify with pictograms, the names "MEN", "WOMEN", and "RESTROOM", and braille.

G. Assembly Spaces: Identify with "Maximum Occupancy" and occupancy number per code requirements.

2.3 ACCESSORIES

A. Tape Adhesive: Double sided tape, permanent adhesive.

B. Wall-mounted acrylic holders Emergency Evacuation Maps.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs where indicated by Architect.

D. Protect from damage until Substantial Completion; repair or replace damage items.

3.2 INTERIOR SIGN SCHEDULE

Door	Sign Room Number / Name	Location	Other
107A	107A Reception	NIP Corridor 122	
107B	107A Reception	NIP Corridor 122A	
107D.1	107D Mail	NIP Corridor 122A	
J065A.1	TBD	NIP Corridor 122A	
J065A.2	TBD	JCO J065	
J065B	TBD	JCO J065	
J065C.1	TBD	JCO J065	
J065C.2	TBD	JCO J065	

END OF SECTION

SECTION 10 26 41

BALLISTICS RESISTANT PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Laminated fiberglass ballistics-resistant panels.

1.2 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework: Casework to receive ballistics-resistant panels.

B. Section 09 21 16 - Gypsum Board Assemblies: Interior partitions to receive ballistics-resistant panels.

1.3 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.

B. NIJ 0108.01 - Standard for Ballistic Resistant Protective Materials; 1985.

C. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. See Section 01 00 00 - General Requirements for submittal procedures.

B. Product Data: Manufacturer's current data sheets on each product to be used.

C. Shop Drawings: Details of installation of ballistics-resistant panels, including plan views, elevations, sections, and details of the proposed installation with attachment methods.

D. Samples: Submit two samples, minimum size 6 inches by 6 inches (150 mm by 150 mm), for each product specified.

E. Certificates: Submit printed data to indicate compliance with following requirements.
   1. UL Listing verification and UL 752 Current Test Results as provided by Underwriters Laboratories.

F. Manufacturer's Instructions: Indicate preparation and installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name, manufacturer's identification, and required UL and NIJ certification labels until ready for installation.

B. Handle material with care to prevent damage. Stack panels flat, store inside under cover off the ground in a dry location, and protect from other construction activities.

1.6 FIELD CONDITIONS

A. Install products under environmental conditions (temperature, humidity, and ventilation) recommended by manufacturer.

PART 2 PRODUCTS

2.1 LAMINATED FIBER BALLISTICS-RESISTANT PANELS

A. General:
   1. Laminated fiber ballistics-resistant panels to be non-ricochet type. When struck by a bullet or projectile, the panels to delaminate in such a way that absorbs the energy, stops the projectile, and prevents ricochet or spalling.
   2. Ballistics Resistance of Joints: Equal to that of the panel.

B. Performance Requirements:
   1. Ballistics Resistance Rating: Listed and labeled as tested in accordance with UL 752 Level 3 (super-power handgun) threat rating.
   2. Panel thickness: ½" or minimum thickness as required for Level 3 threat rating.
   3. Panel Size: Maximum size to limit number of seams.

4. Attachment: Mechanical fasteners.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install panels in accordance with manufacturer's instructions and shop drawings and in proper relationship with adjacent construction.
   1. Maintain ballistics-resistive rating at panel junctures with concrete floor and roof slabs, bullet-resistive door and window frames, and required penetrations.

B. Reinforce panel joints with a minimum 4 inch (102 mm) wide back-up layer of ballistics-resistant material, centered on panel joints.

C. Secure panels using screws, bolts, or industrial adhesive.

3.2 PROTECTION

A. Protect installed panels from subsequent construction operations.

END OF SECTION

SECTION 12 50 00

FURNITURE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Moveable Furniture.

1.2 REFERENCES STANDARDS

A. ANSI A208.1 - American National Standards Institute (ANSI): Particleboard.

B. ANSI/BHMA A156.9 - Builders Hardware Manufacturers Association (BHMA): Cabinet Hardware.

C. NEMA LD 3 - National Electrical Manufacturers Association (NEMA): High Pressure Decorative Laminates.

1.3 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Product Data: Operation and Maintenance Data.

C. Indicate detailed dimensions, base attachment details, and anchor requirements.

D. Submit product information and manufacturer's installation recommendations for all furniture.

E. Warranty: Submit sample meeting warranty requirements of this Section.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle furniture in accordance with manufacturer's recommendations. Ship to jobsite only after roughing-in, painting work, and other related finish work has been completed and installation areas are ready to accept furniture and recommended temperature and humidity levels will be maintained during the remainder of construction.

PART 2 PRODUCTS

2.1 MOTORIZED SIT/STAND ADJUSTABE DESK FRAME (8 Required)

A. Basis of Design: Uplift V2 - Commercial Adjustable Height Desk Frame, with lower cross bar for increased stability, as manufactured by Uplift Desk; www.upliftdesk.com.

1. Frame Model No: Model No. KIT-FRMA-2-COM-T27-WHT.
    a. Height Range: 21.6" to 47.7" H.
    b. Travel Speed: 1.57" per second.
    c. Noise Level: 50 decibels during motion.
    d. Frame Width: 41.3" min. – 72.2" max
    e. Weight Capacity: 355 lb.
    f. Control Box input: 100-120 Vac, 50/60 Hz, 400W.
    g. Color: Gray.
    h. Advanced Memory Desk Key Pad Model No: FRM001.

2.2 UNDERCOUNTER FILE DRAWER UNITS ON CASTORS (JCO - 9 required required)

A. Basis of Design: Uplift Desk 2-Drawer File Cabinet with Seat, Rolling, as manufactured by Uplift Desk; www.upliftdesk.com.

1. File Cabinet Model No: STR002-WHT.
    a. Construction: Steel.
    b. Size: 15.75"W x 19.7" D x 19.75" H.

c. Finish: Powder-Coat Paint, white.

d. Weight Capacity: 225 lbs.

e. Additional standard and/or optional features to be included:

i. Top seat.

ii. Casters.

iii. Privacy lock.

iv. Soft close drawers.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install furniture as indicated on the Drawings and per manufacturer's instructions.

B. Verify site is ready to receive work as required by manufacturer.

3.2 CLEANING AND PROTECTING

A. Repair or replace defective work as directed by Architect upon inspection.

B. Clean furniture surfaces.

C. Touch up, refinish, or replace damaged components in a manner acceptable to Owner.

END OF SECTION

SECTION 12 93 00

SITE FURNISHINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concrete Bollards.

1.2 REFERENCES STANDARDS

A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

1.3 SUBMITTALS

A. See Section 01 00 00 - General Requirements, for submittal procedures.

B. Indicate detailed dimensions, base attachment details, and anchor requirements.

C. Product Data: Provide data on furnishing, equipment, accessories, and configurations.

D. Submit product information and manufacturer's installation recommendations for all site furnishings.

PART 2 PRODUCTS

2.1 CONCRETE BOLARDS BASIS OF DESIGN

A. Manufacturer: Wausau Tile, www.wausautile.com.

B. Model No: TF6020 Reveal Line Concrete Bollard, 12" diameter, 36" high.

C. Color: Standard Weatherstone, color as selected from samples provided by manufacturer.

D. Anchoring: Option B, 4" x 14" core.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install site furnishings as indicated on the Drawings and per manufacturer's instructions.

B. Verify site is ready to receive work as required by manufacturer.

END OF SECTION

PAGE INTENTIONALLY LEFT BLANK

SECTION 21 00 10
FIRE SUPPRESSION GENERAL PROVISIONS

PART 1 - GENERAL

1.1 GENERAL

A. Refer to Division 00 – Procurement, Contracting and Warranty Requirements and Division 01 - General Requirements, which all apply to work under this section.

1.2 DESCRIPTION OF WORK

A. This section applies to all work under the fire suppression contract. This shall include, but not necessarily be limited to, the following:

1. Water Based Fire Suppression Systems
2. Demolition of Fire Suppression Systems

B. The work shall include all materials, equipment and labor required for complete and properly functioning fire suppression systems.

C. Drawings for fire suppression work are in part diagrammatic, intended to convey the scope of work and indicate general arrangement of equipment, piping and approximate sizes and locations of equipment and materials.

D. Where job conditions require reasonable changes in indicated locations and arrangements, make such changes without additional cost to Owner.

E. Because of the scale of the drawings, certain piping or items such as unions or fittings may not be shown, but where such items are required by other sections of the specifications, or where they are required by the nature of the work, they shall be furnished and installed.

F. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.

G. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft.

1.3 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:

1. International Fire Suppression Code
2. Wisconsin State Plumbing Code
3. International Building Code
4. National Electric Code (NEC)
5. National Fire Protection Association Standards (NFPA)
6. Local Utility Company Requirements
7. Local Codes, all trades
8. Standards of ASME, ASHRAE, NEMA, IEEE, AGA, SMACNA
9. Occupational Safety and Health Administration (OSHA)
10. Underwriters Laboratories, Inc. (U.L.)
11. Wisconsin Administrative Codes
12. Americans With Disabilities Act (ADA)

B. Contractors shall familiarize themselves with all codes and standards applicable to their work and shall notify Design Professional of any discrepancies between the design and applicable code requirements so that any conflicts can be resolved. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

C. Where drawings or specifications call for workmanship or materials in excess of code requirements, a lower grade of construction will not be permitted.

1.4 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Contractor shall comply with the rules and regulations of the authorities having jurisdiction and local utility companies. Contractor shall check with each utility company providing service to this project and determine or verify their requirements regarding incoming services.

B. Secure all required permits and pay for all inspections, licenses and fees required in connection with the fire suppression work. Contractor shall post all bonds and obtain all licenses required by the State, City, County and Utility.

1.5 FIRE SUPPRESSION DRAWINGS

A. The fire suppression drawings indicate in general the building arrangement only, Contractor shall examine all construction drawings to familiarize himself with the specific type of building construction, i.e. type of structural system, floors, walls, ceilings, room finishes and elevations.

B. Drawings for piping are intended to convey the scope of the work and to indicate the general arrangement and locations of piping and equipment.

C. Contractor shall layout his own work and shall be responsible for determining the exact locations for equipment and rough-ins and the exact routing of piping so as to best fit the layout of the work.

D. Contractor shall take his own field measurements for verifying locations and dimensions: scaling of the drawings will not be sufficient for laying out the work.

E. Because of the scale of the drawings, certain basic items such as pipe fittings and valves may not be shown, but where such items are required by code or by other sections of the specifications, such items shall be furnished and installed.

1.6 ACTIVE SERVICES

A. Contractor shall be responsible for verifying exact location of all existing services prior to beginning work in that area.

B. Existing active services, i.e., water, gas, sewer, electric, when encountered, shall be protected against damage. Do not prevent or disturb operation of active services which are to remain.

C. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.

D. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the authorities having jurisdiction.

1.7 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to familiarize himself with the conditions of the site which will affect his work and shall verify points of connection with utilities, routing of outside piping to include required clearances from any existing structures, trees or other obstacles.

B. Extra payment will not be allowed for changes in the work required because of the contractor's failure to make this inspection.

1.8 COORDINATION AND COOPERATION

A. It shall be Contractor's responsibility to schedule and coordinate his work with the schedule of General Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of his work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment, other equipment and the building. Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Drawings and specifications are intended to be complimentary. Any work shown in either of them, whether in the other or not, shall be executed according to the true intent and meaning thereof, the same as if set forth in all. Conflicts between the drawings and the specifications, or between the requirements set forth for the various contractors, shall be called to the attention of the Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by the Design Professional and his decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting and plaster until the project is substantially completed. Damage from rust, paint and scratches shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the painting contractor, but this shall not relieve Contractor of the responsibility for checking to assure that adequate protection is being provided.

F. Where the final installation or connection of equipment in the building requires Contractor to work in finished areas of the building, Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Contractor shall arrange with General Contractor for patching and refinishing of such areas which may be damaged in this respect.

1.9 OPENINGS, CUTTING AND PATCHING

A. Piping and sleeves passing through all fire or smoke rated floors, roofs, walls, and partitions shall be provided with firestopping. Space between wall/floor and pipe or sleeve shall be sealed with UL listed intumescent fire barrier material equivalent to rating of wall/floor. Where piping and sleeves pass through floors, roofs, walls and partitions that are not fire or smoke rated, penetrations shall be sealed with grout or caulk.

B. Existing Structure:

1. Contractor shall provide cutting, lintels and patching, and patch painting in the existing structure, as required for the installation of his work, and shall furnish lintels and supports as required for openings.

2. Cutting of structural support members will not be permitted without prior approval of the Design Professional. Extent of cutting shall be minimized; use core drills, power saws or other machines which will provide neat, minimum openings.
3. Patching shall match adjacent materials and surfaces and shall be preformed by craftsmen skilled in the respective craft required.

1.10 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable U.S.A. manufacturer regularly engaged in the manufacture of the specified item. Where two or more units are required of the same item, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items, when required, shall be furnished as part of the equipment, whether or not specifically called for.

1.11 SUBMITTALS

A. Contractor shall furnish to Design Professional, complete sets of shop drawings and other submittal data. Contractor shall review and sign shop drawings before submittal. Refer to Division 01 specifications for additional requirements.

B. Shop drawings shall be bound into sets and cover related items for a complete system as much as practical and shall be identified with symbols or "plan marks" used on drawings. Incomplete, piecemeal or unbound submittals will be rejected.

C. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

D. After award of contract, Contractor shall provide a completed submittal schedule including dates that the submittals will be to Design Professional for review.

E. Submit required information on the following items:

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF DEMON-STRATION	OTHER (SEE NOTES)
21 10 00	Water Based Fire Suppression System	X	X					1, 2

Notes:

1. Hydraulic calculations.
2. All certifications and test results required by NFPA.

F. Design Professional will review shop drawings solely to assist contractors in correctly interpreting the plans and specifications.

G. Contract requirements cannot be changed by shop drawings which differ from contract drawings and specifications.

1.12 SUBSTITUTIONS

A. Refer to Divisions 00 and 01.

B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.13 ACCEPTABLE MANUFACTURERS

A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the plan schedules are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

B. Manufacturers who do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of the contractor and/or the manufacturer.

C. If Contractor chooses to use a manufacturer listed as an equal, it shall be his responsibility to assure that the manufacturer has complied with the requirements in 'A' above. Contractor shall assume all responsibility for physical dimensions (including accessibility for maintenance), operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

D. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.14 WARRANTY

A. Refer to Divisions 00 and 01 for information on warranties and correction of work within the warranty period.

1. If a warranty or warranty period are not defined in Division 00 or 01, then the start of all warranty periods shall be the date of Substantial Completion and the length of the warranty shall be for one year.
    a. If construction is phased with distinct and separate Substantial Completion dates for portions of the building and/or systems, separate warranties shall be provided for each of these phased areas and/or systems.
    b. The entire Fire Suppression system, including all sub-systems, shall be guaranteed against defect in materials and installation for the duration of the warranty period. Any malfunctions or defects which occur within the warranty period shall be promptly corrected without cost to the Owner. This guarantee shall not limit or void any manufacturer's express or implied warranty.

B. Refer to other Division 21 sections for systems, equipment, or material requiring extended warranties beyond one year.

C. The date of systems/equipment startup or equipment/material shipment to the site shall not be considered the notable date with relation to the warranty of that item. All systems, equipment, material, etc., shall have the same start date with respect to the warranty period.

D. Systems, equipment or material put into use to facilitate construction activities (e.g. testing and balancing, commissioning, temporary conditioning, etc.) prior to the start of the warranty period shall not impact the length of the warranty in any way.

1.15 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by Owner.

B. Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

1.16 CLEANING

A. At the conclusion of the construction, the entire system of piping and equipment shall be cleaned internally.

B. All temporary labels, stickers, etc., shall be removed from all fixtures and equipment. Name plates, ratings, instruction plates, etc., shall not be obscured by paint, insulation, or placement of units.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 21 00 10

SECTION 21 05 00
COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 - GENERAL

1.1 GENERAL

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 21 00 10 - Fire Suppression General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. This section includes the following:

1. Demolition

PART 2 - PRODUCTS

2.1 DEMOLITION MATERIALS

A. All materials removed shall be the property of the removing contractor and shall be removed from the site by him, unless otherwise specified.

PART 3 - EXECUTION

3.1 DEMOLITION

A. General:

1. Demolition shall be accomplished by the proper tools and equipment for the work to be removed. Personnel shall be experienced and qualified in the type of work to be performed.
2. Contractor shall remove existing equipment and piping not necessary for additions or existing portions of building as indicated on drawings and/or specified herein. To include all abandoned equipment and piping back to point of origin. Demolition of equipment shall include removal of associated concrete equipment pad and/or support steel.
3. Contractor shall be responsible for the cutting and capping of all existing services before any work is commenced by the General Contractor.

B. Work by Others: Unless specifically noted under other contracts, Contractor shall assume all required work shall be performed by him. In general, the following will be performed by others:

1. General Contractor will remove any floors, walls and ceilings, neatly patch, match, complete and finish all affected surfaces.

C. Existing Conditions:

1. If any piping serving existing fixtures or equipment which are to remain are disturbed by operations under this Contract, Contractor shall provide pipe and insulation required to reestablish continuity of such piping systems.
2. Contractor shall arrange for General Contractor to repair, patch and paint all construction, with material necessary to match surrounding material, which is necessary due to removal of equipment and piping.

3. Contractor shall furnish all required labor and material where required to extend new work to connect to similar work where new addition adjoins existing building and for extension of existing system. Connection shall be made in a suitable manner.

D. Owner's Right of Salvage: The Owner may designate and have salvage rights to any material herein demolished by the Contractor.

END OF SECTION 21 05 00

SECTION 21 10 00
WATER-BASED FIRE SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 21 00 10 - Fire Suppression General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Extent of fire suppression work is indicated on drawings and schedules, and by requirements of this section.

B. Applications of fire suppression systems include the following:

1. Sprinkler systems.

1.3 QUALITY ASSURANCE

A. NFPA Code: Comply with ANSI/NFPA 13, "Installation of Sprinkler Systems", and ANSI/NFPA 24, "Private Fire Service Mains and Their Appurtenances", where applicable.

B. UL Labeling: Provide fire sprinkler piping products which have been approved and labeled by Underwriters Laboratories.

C. State Fire Marshal's Office Regulations: Comply with governing regulations pertaining to fire sprinkler piping.

D. All fire suppression work shall be performed by a qualified sprinkler contractor with at least three years experience that has obtained current certification in the State of Wisconsin under the Fire Extinguishing System Contractor Certification program. During the installation, a minimum of one person with at least three years sprinkler experience shall be present.

E. All grooved couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.

F. All castings used for couplings housings, fittings, or valve and specialty bodies shall be date stamped for quality assurance and traceability.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's data for fire suppression systems, materials and products.

B. Piping Shop Drawing and Hydraulic Calculations: The Contractor shall prepare a complete set of detailed working drawings and hydraulic calculations showing all equipment, fire service lines, risers, piping and heads. These drawings and calculations shall be approved in writing or stamped approved by the authorities having jurisdiction. Contractor is responsible for any fees associated with the review and approval of the fire suppression layout drawings, product data and hydraulic calculations by the State Fire Marshal's office. Contractor is also responsible for completion of the required fire extinguishing system submittal form to the SFM.

C. Sprinklers shall be referred to on drawings, submittals and other documentation, by the sprinkler identification or Model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

D. Grooved joint couplings and fittings shall be referred to on drawings and product submittals, and be identified by the manufacturer's listed model or series designation.

E. Certificate of Installation: Submit certification upon completion of fire suppression piping work which indicates that work has been tested in accordance with ANSI/NFPA 13 and also that system is operational, complete and has no defects.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Fire Suppression Specialties

1. Reliable Sprinkler Corporation.
2. Tyco.
3. Viking Corp.
4. Globe Fire Sprinkler Corporation
5. Victaulic
6. Potter
7. System Sensor

2.2 FIRE SUPPRESSION SPECIALTIES

A. General: Provide fire suppression specialties, UL listed, in accordance with the following listing. Provide sizes and types which mate and match piping and equipment connections.

1. Automatic Sprinklers:
   a. Provide automatic sprinklers of type indicated on drawings, and in accordance with the following listing. Provide liquid bulb, ordinary temperature, except where intermediate or high temperature rated sprinklers are required per NFPA 13 or as indicated on the plans.
      1) Semi-Recessed Pendant
   b. Finish: Painted white for concealed pendent, cast brass for upright pendent, chrome for recessed pendent or provide finish as indicated on the plans.
2. Escutcheons and guards shall be listed, supplied, and approved for use with the sprinkler by the sprinkler manufacturer.
3. Wrenches shall be provided by the sprinkler manufacturer that directly engage the wrench boss cast in the sprinkler body.

2.3 PIPE MATERIALS

Material	Service
A. Black steel pipe, Schedule 40, ASTM A795	Wet systems.
B. Black steel pipe, Schedule 10, ASTM A795	Wet systems.

2.4 PIPE FITTINGS

A. Steel Pipe:

1. Threaded pipe (2" dia and smaller): Malleable or Ductile iron fittings, 150 pound standard flat band water pattern.

2. Mechanical grooved and roll-groove steel piping system and fittings: may be used as approved by code for black steel, stainless steel and galvanized steel. All components shall be by one manufacturer. System installation shall be in accordance with the manufacturer's recommendations.

2.5 JOINTS

A. Steel Pipe:

1. Threaded pipe (2” dia and smaller): Make joints using Teflon tape applied to male threads only. Cut pipe square, cut threads clean, remove burrs and ream ends to full size of bore.
2. Mechanical grooved and roll-groove pipe couplings: Grooved couplings may be used as approved by code for black steel and galvanized steel piping. Gasket type to be used shall be appropriate for intended service. All components shall be by one manufacturer. System installation shall be in accordance with the manufacturer's recommendations.

2.6 NIPPLES AND UNIONS

A. All nipples shall conform to size, weight and strength of adjoining pipe. When length of unthreaded portion of nipple is less than 1-1/2", use extra strong nipple; do not use close nipples.

B. For pipe 2" and smaller, use screwed unions. For steel pipe use black or galvanized malleable iron unions, to conform to pipe with ground joint. Cast iron flanged unions gasket type. For threaded brass pipe, use bronze ground joint unions with octagon ends.

C. Install unions in the following locations so that a minimum amount of pipe need be disassembled:

1. Long runs, at intervals of 80 feet.
2. In by-pass around equipment, valves, and controls.
3. In connections to equipment.
4. Where indicated on drawings.

PART 3 - EXECUTION

3.1 GENERAL

A. Contractor shall familiarize himself with the general construction, plumbing, heating, ventilating, and electrical work and to use the information to avoid conflicts in space allocation with the other trades. Do not place pipes over electrical equipment.

B. In the case of an interference occurring during construction, Contractor shall rework and reinstall piping and equipment in order to make space available for another contractor's equipment without additional cost to the Owner.

C. Contractor shall work closely with the ceiling system installers and install sprinkler head drops before ceiling tiles are installed, and return to job after or during ceiling tile installation for installation of sprinkler heads.

D. Heads shall be located in center of ceiling tiles or as directed by Design Professional.

3.2 FIRE SUPRESSION SPECIALTIES

A. General: Install fire suppression specialties as indicated, and in accordance with ANSI/NFPA 13.

3.3 PIPING

A. General: Comply with requirements of ANSI/NFPA 13 for installation of fire sprinkler piping products where indicated, in accordance with manufacturer's written instructions, and in accordance with recognized industry practices to ensure that fire sprinkler piping complies with requirements and serves intended purposes.

B. Arrange and install piping approximately as indicated; straight, plumb, and as direct as possible; form right angles on parallel lines with building walls. Keep pipes close to walls and avoid interference with other mechanical items. Locate groups of pipes parallel to each other; space at a distance to permit access for servicing valves. Most piping to be run in concealed locations unless indicated exposed, or in equipment rooms. Locate piping to avoid ductwork.

C. Install horizontal piping as high as possible without sags or humps so that proper grades can be maintained for drainage. Install drain piping at low points of fire sprinkler piping.

D. Hangers and supports: Comply with NFPA for hanger materials.

1. Install sprinkler system piping according to NFPA 13.

E. Grooved joints shall be installed in accordance with the manufacturer’s latest published instructions. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service. Gaskets shall be molded and produced by the grooved coupling manufacturer. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. Grooved coupling manufacturer’s factory trained field representative shall provide on-site training for contractor’s field personnel in the proper use of grooving tools, application of groove, and installation of grooved piping products. Factory trained representative shall periodically visit the jobsite to ensure best practices in grooved product installation are being followed. Contractor shall remove and replace any improperly installed products.

3.4 ADJUST AND CLEAN

A. Sprinkler Piping Flushing: Prior to connecting sprinkler risers for flushing, flush water feed mains, lead-in connections and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system, as required to remove foreign substances, under pressure as specified in ANSI/NFPA 13. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinklers.

3.5 FIELD QUALITY CONTROL

A. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically, for period of 2 hours, at not less than 200 psi or at 50 psi in excess of maximum static pressure when maximum static pressure is in excess of 150 psi. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.

B. Repair or replace piping system as required to eliminate leakage in accordance with ANSI/NFPA standards for "little or no leakage", and retest as specified to demonstrate compliance.

3.6 EXTRA STOCK

A. General: For each style and temperature range required, furnish additional sprinkler heads, amounting to 1 unit for every 100 installed units, but not less than 5 units of each.

END OF SECTION 21 10 00

SECTION 23 00 10
HVAC GENERAL PROVISIONS

PART 1 - GENERAL

1.1 GENERAL

A. Refer to Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements, which all apply to work under this section.

1.2 DESCRIPTION OF WORK

A. This section applies to all work under the HVAC contract. This shall include, but not necessarily be limited to, the following:

1. Ductwork for Air Distribution
2. Grilles, Registers, Diffusers and Dampers
3. Insulation of Ducts and Plenums

B. The work shall include all materials, equipment and labor required for complete and properly functioning HVAC systems.

C. Drawings for HVAC work are in part diagrammatic, intended to convey the scope of work and indicate general arrangement of equipment, piping and approximate sizes and locations of equipment and materials.

D. Where job conditions require reasonable changes in indicated locations and arrangements, make such changes without additional cost to Owner.

E. Because of the scale of the drawings, certain piping or items such as unions or fittings may not be shown, but where such items are required by other sections of the specifications, or where they are required by the nature of the work, they shall be furnished and installed.

F. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.

G. All work shall be performed in a neat, professional manner in keeping with the highest standards of the craft.

1.3 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:

1. International Mechanical Code
2. Wisconsin State Plumbing Code
3. International Building Code
4. National Electric Code (NEC)
5. National Fire Protection Association Standards (NFPA)
6. Local Utility Company Requirements
7. Local Codes, all trades
8. Standards of ASME, ASHRAE, NEMA, IEEE, AGA, SMACNA
9. Occupational Safety and Health Administration (OSHA)
10. Underwriters Laboratories, Inc. (U.L.)
11. Wisconsin Administrative Codes
12. Americans With Disabilities Act (ADA)

B. Contractors shall familiarize themselves with all codes and standards applicable to their work and shall notify Design Professional of any discrepancies between the design and applicable code requirements so that any conflicts can be resolved. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

C. Where drawings or specifications call for workmanship or materials in excess of code requirements, a lower grade of construction will not be permitted.

1.4 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Secure all required permits and pay for all inspections, licenses and fees required in connection with the HVAC work. Contractor shall post all bonds and obtain all licenses required by the State, City, County and Utility.

1.5 HVAC DRAWINGS

A. The HVAC drawings indicate in general the building arrangement only, Contractor shall examine construction drawings to familiarize himself with the specific type of building construction, i.e. type of structural system, floors, walls, ceilings, room finishes and elevations.

B. Drawings are intended to convey the scope of the work and to indicate the general arrangement and locations of ducts, piping and equipment.

C. Contractor shall layout their own work and shall be responsible for determining the exact locations for equipment and rough-ins and the exact routing of piping and ducts so as to best fit the layout of the work.

D. Contractor shall take their own field measurements for verifying locations and dimensions: scaling of the drawings will not be sufficient for laying out the work.

E. Because of the scale of the drawings, certain basic items such as pipe fittings and valves may not be shown, but where such items are required by code or by other sections of the specifications, such items shall be furnished and installed.

1.6 ACTIVE SERVICES

A. Contractor shall be responsible for verifying exact location of all existing services prior to beginning work in that area.

B. Existing active services, i.e., water, gas, sewer, electric, when encountered, shall be protected against damage. Do not prevent or disturb operation of active services which are to remain.

C. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.

D. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the authorities having jurisdiction.

1.7 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to familiarize himself with the conditions of the site which will affect his work and shall verify points of connection with utilities, routing of outside piping to include required clearances from any existing structures, trees or other obstacles.

B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

1.8 COORDINATION AND COOPERATION

A. It shall be Contractor's responsibility to schedule and coordinate his work with the schedule of the General Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of his work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment, other equipment and the building. Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Drawings and specifications are intended to be complimentary. Any work shown in either of them, whether in the other or not, shall be executed according to the true intent and meaning thereof, the same as if set forth in all. Conflicts between the drawings and the specifications or between the requirements set forth for the various contractors shall be called to the attention of Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by Design Professional and his decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting and plaster until the project is substantially completed. Damage from rust, paint and scratches shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the Painting Contractor, but this shall not relieve Contractor of the responsibility for checking to assure that adequate protection is being provided.

F. Where the final installation or connection of equipment in the building requires Contractor to work in finished areas of the building, Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Contractor shall arrange with the General Contractor for patching and refinishing of such areas which may be damaged in this respect.

1.9 OPENINGS, CUTTING AND PATCHING

A. Piping, sleeves and ducts passing through all fire or smoke rated floors, roofs, walls, and partitions shall be provided with firestopping. Space between wall/floor and pipe, sleeve, and/or duct shall be sealed with UL listed intumescent fire barrier material equivalent to rating of wall/floor. Where piping, sleeves and ducts pass through floors, roofs, walls and partitions that are not fire or smoke rated, penetrations shall be sealed with grout or caulk.

B. Existing Structure:

1. Contractor shall provide cutting, lintels and patching, and patch painting in the existing structure, as required for the installation of his work, and shall furnish lintels and supports as required for openings.
2. Cutting of structural support members will not be permitted without prior approval of the Design Professional. Extent of cutting shall be minimized; use core drills, power saws or other machines which will provide neat, minimum openings.
3. Patching shall match adjacent materials and surfaces and shall be performed by craftsmen skilled in the respective craft required.

1.10 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable U.S.A. manufacturer regularly engaged in the manufacture of the specified item. Where two or more units are required of the same item, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items, when required, shall be furnished as part of the equipment, whether or not specifically called for.

1.11 SUBMITTALS

A. Contractor shall furnish, to Design Professional, complete sets of shop drawings and other submittal data. Contractor shall review and sign shop drawings before submittal. Refer to Division 01 specifications for additional requirements.

B. Shop drawings shall be bound into sets and cover related items for a complete system as much as practical and shall be identified with symbols or "plan marks" used on drawings. Incomplete, piecemeal or unbound submittals will be rejected.

C. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

D. After award of contract, Contractor shall provide a completed submittal schedule including dates that the submittals will be to Design Professional for review.

E. Submit required information on the following items:

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF DEMON-STRATION	OTHER (SEE NOTES)
23 07 00	HVAC Insulation		X					
23 31 13	Metal Ducts	X	X					1
23 33 00	Air Duct Accessories		X			X		
23 37 13	Diffusers, Registers and Grilles		X					

NOTES:
1. Submit test reports as described in specification section.

F. Design Professional will review shop drawings solely to assist contractors in correctly interpreting the plans and specifications.

G. Contract requirements cannot be changed by shop drawings which differ from contract drawings and specifications.

1.12 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be submitted to Design Professional in duplicate upon completion of the job. Refer to Division 01 specifications for additional information.

B. Submit manuals in duplicate upon completion of the job. Manuals shall be bound in a three ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

OPERATION
AND
MAINTENANCE
MANUAL
FOR
HVAC SYSTEMS

(PROJECT NAME)
(LOCATION)
(DATE)

SUBMITTED BY
(NAME AND ADDRESS OF CONTRACTOR)

C. Provide a master index at the beginning of manual showing items included. Use plastic tab indexes for sections of manual. Each section shall contain the following information for equipment furnished under this contract:

1. Equipment and system warranties and guarantees.
2. Installation instructions.
3. Operating instructions.
4. Maintenance instructions.
5. Spare parts identification and ordering list.
6. Local service organization, address, contract and phone number.
7. Shop drawings with reviewed stamp of Design Professional and Contractor shall be included, if applicable, along with the items listed above.
8. Reports of all tests and demonstrations including certificate of owner instruction, testing and balancing report, etc.

1.13 SUBSTITUTIONS

A. Refer to Divisions 00 and 01.

B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.14 ACCEPTABLE MANUFACTURERS

A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the plan schedules are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

B. Manufacturers who do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of Contractor and/or the manufacturer.

C. If Contractor chooses to use a manufacturer listed as an equal, it shall be his responsibility to assure that the manufacturer has complied with the requirements in 'A' above. Contractor shall assume all responsibility for physical dimensions (including accessibility for maintenance), operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

D. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.15 WARRANTY

A. Refer to Divisions 00 and 01 for information on warranties and correction of work within the warranty period.

1. If a warranty or warranty period are not defined in Division 00 or 01, then the start of all warranty periods shall be the date of Substantial Completion and the length of the warranty shall be for one year.
    a. If construction is phased with distinct and separate Substantial Completion dates for portions of the building and/or systems, separate warranties shall be provided for each of these phased areas and/or systems.
    b. The entire HVAC system, including all sub-systems, shall be guaranteed against defect in materials and installation for the duration of the warranty period. Any malfunctions or defects which occur within the warranty period shall be promptly corrected without cost to the Owner. This guarantee shall not limit or void any manufacturer's express or implied warranty.

B. Refer to other Division 23 sections for systems, equipment, or material requiring extended warranties beyond one year.

C. The date of systems/equipment startup or equipment/material shipment to the site shall not be considered the notable date with relation to the warranty of that item. All systems, equipment, material, etc., shall have the same start date with respect to the warranty period.

D. Systems, equipment or material put into use to facilitate construction activities (e.g. testing and balancing, commissioning, temporary conditioning, etc.) prior to the start of the warranty period shall not impact the length of the warranty in any way.

1.16 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by Owner.

B. Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

1.17 CLEANING

A. All temporary labels, stickers, etc., shall be removed from all fixtures and equipment. Name plates, ratings, instruction plates, etc., shall not be obscured by paint, insulation, or placement of units.

B. Heating and air conditioning equipment shall be thoroughly cleaned and clean filters installed.

1.18 ELECTRICAL WORK

A. Electrical work and equipment provided by HVAC Contractor shall include the following:

1. Starters and disconnects for motors of HVAC equipment, but only where specifically indicated to be furnished integrally with equipment.
2. Wiring from motors to disconnect switches or junction boxes for motors of HVAC equipment, but only where specifically indicated to be furnished integrally with equipment.
3. Electrical heating coils and similar elements in HVAC equipment.
4. All control wiring in accordance with the requirements of Division 26.

B. Electrical Contractor shall provide all power wiring for HVAC equipment, including services for motors and equipment furnished by the HVAC contractor. Motor and equipment locations are shown on the electrical drawings.

C. Electrical Contractor shall make final connections for all motors and equipment furnished by the HVAC contractor.

D. Electrical Contractor shall furnish safety disconnects and starters for all motors and equipment furnished by the HVAC contractor (unless specifically indicated to be furnished integrally with the equipment), so as to make service complete to each item of equipment.

E. Contractor shall consult with Electrical Contractor prior to conduit rough-in and shall verify with him the exact locations for rough-ins, and the exact size and characteristics of the services required, and shall provide Electrical Contractor a schedule of electrical loads for the equipment furnished by him. These schedules will be used for sizing services, disconnects, fuses, starters and overload protection.

F. Refer to Division 23 Controls section for control system wiring. Control wiring shall be done in accordance with the requirements of Division 26.

G. All conduit installed for control wiring shall be blue. Labeled conduit will not be accepted.

H. Control wiring, where not exposed, may be installed without conduit. Wiring in ducts, plenums and other air handling spaces shall be specifically listed for the use. All exposed control wiring and wiring behind inaccessible construction (such as in walls and above drywall ceilings) shall be routed in blue conduit. All wall penetrations shall be sleeved with blue conduit. Installation shall comply with all code requirements.

1.19 TEMPORARY UTILITIES

A. Refer to Division 01 for specific requirements concerning temporary utilities.

B. Under no circumstances shall the building HVAC equipment be used for temporary heat, cooling or ventilation during construction prior to Owner acceptance of the building at substantial completion.

END OF SECTION 23 00 10

SECTION 23 05 00
COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 GENERAL

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 23 00 10 - HVAC General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. This section includes the following:

1. Demolition

PART 2 - PRODUCTS

2.1 DEMOLITION MATERIALS

A. All materials removed shall be the property of the removing contractor and shall be removed from the site by him, unless otherwise specified.

PART 3 - EXECUTION

3.1 DEMOLITION

A. General:

1. Demolition shall be accomplished by the proper tools and equipment for the work to be removed. Personnel shall be experienced and qualified in the type of work to be performed.
2. Contractor shall remove existing equipment and piping not necessary for additions or existing portions of building as indicated on drawings and/or specified herein. To include all abandoned equipment and piping back to point of origin. Demolition of equipment shall include removal associated concrete equipment pad and/or support steel.
3. Contractor shall be responsible for the cutting and capping of all existing services before any work is commenced by the General Contractor.

B. Work by Others: Unless specifically noted under other contracts, Contractor shall assume all required work shall be performed by him. In general, the following will be performed by others:

1. General Contractor will remove any floors, walls and ceilings, neatly patch, match, complete and finish all affected surfaces.
2. Electrical Contractor will disconnect all electrical services and remove abandoned conduit back to point of origin.

C. Existing Conditions:

1. If any piping serving existing fixtures or equipment which are to remain are disturbed by operations under this Contract, Contractor shall provide pipe and insulation required to reestablish continuity of such piping systems.
2. Contractor shall arrange for General Contractor to repair, patch and paint all construction, with material necessary to match surrounding material, which is necessary due to removal of equipment and piping.

3. Contractor shall furnish all required labor and material where required to extend new work to connect to similar work where new addition adjoins existing building and for extension of existing system. Connection shall be made in a suitable manner.

D. Owner's Right of Salvage: The Owner may designate and have salvage rights to any material herein demolished by the Contractor.

END OF SECTION 23 05 00

SECTION 23 07 00
HVAC INSULATION

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 23 00 10 - HVAC General Provisions are applicable to work required of this Section.

1.2 DESCRIPTION OF WORK

A. Provide material, equipment, labor and supervision necessary to install insulation to all hot and cold surfaces of piping, ductwork, tanks, fittings and other surfaces as required by the drawings and this section.

B. Insulation shall include insulating materials, jackets, adhesive, mastic coatings, tie wire and other materials as required to complete the insulating work.

1.3 DEFINITIONS

A. Conditioned Space: an area inside the building which is heated and/or cooled.

B. Tempered Space: an area inside the building which is not directly heated or cooled, but is adjacent to a heated or cooled space with no insulation separating the two spaces (e.g., ceiling plenums).

C. Untempered Space: an area inside the building which is not conditioned and is not tempered (e.g., attic spaces).

D. Exterior: An area outside the building (e.g., roof mounted items).

1.4 QUALITY ASSURANCE

A. NFPA Compliance: Insulating materials, jackets, mastics, etc., shall meet flame spread and smoke developed ratings in accordance with NFPA-90A. Flame spread rating of not more than 25, smoke developed rating of not more than 50 as tested by ANSI/ASTM E84 (UL 723) (NFPA 255) method. All accessory items such as PVC jacketing and fittings, adhesive, mastic, cement tape and cloth shall have the same component ratings as specified above.

B. Installation of insulation materials shall be in accordance to the latest edition of MICA/NIAC National Commercial & Industrial Standards for the appropriate material application.

C. NFPA Compliance: Fire Barrier Duct Wrap systems shall meet requirements of NFPA 96 for grease duct application.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of HVAC insulation. Submit schedule showing manufacturer's product number, thickness, and furnished accessories for each HVAC system requiring insulation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver insulation, coverings, cements, adhesives, and coatings to site in containers with manufacturer's stamp or label, affixed showing fire hazard ratings of products.

B. Protect insulation against dirt, water, and chemical and HVAC damage. Do not install damaged insulation; remove from project site.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Insulating Materials

1. Owens/Corning Fiberglass Corp.
2. Armacell.
3. Pittsburgh Corning Corp.
4. CertainTeed Corp.
5. Knauf Fiber Glass
6. John's-Manville Corp.

B. Mastics and adhesives as recommended by insulation manufacturer.

2.2 DUCT INSULATION

A. Duct Covering: Johns Manville Microlite Standard or equivalent firberglass duct wrap with factory applied Foil Scrim Kraft (FSK) vapor barrier jacket, 1.0 pound per cubic foot density.

B. Rigid Duct Covering: Johns Manville or equivalent semi-rigid fiberglass insulation board with a factory applied Foil Scrim Kraft (FSK) vapor barrier jacket, three (3) pound per cubic foot density. Exterior rigid duct insulation to be covered with VentureClad 1577CW multilayered, self-adhesive jacketing system.

PART 3 - EXECUTION

3.1 GENERAL

A. Use only experienced applicators regularly engaged in the trade. Rough work will be rejected. Application details shall be in accordance with the insulating materials supplier's recommendations except where a higher standard is specified. All surface finishes shall be extended in such a manner as to protect all raw edges, cuts and surfaces of insulation.

3.2 DUCT INSULATION APPLICATION

B. Unless specifically indicated to not be insulated, all ductwork and accessories shall be either lined or covered. Duct systems not listed or without a type or thickness indicated on the plans shall be insulated with 1-1/2” wrap.

3.3 DUCT COVERING INSTALLATION

A. Inspect all ductwork and equipment before applying insulation to insure the installing contractor has completed all leak tests, and that all surfaces are clean, dry and ready for application of insulation.

B. Covering shall be cut slightly longer than circumference of duct to insure full thickness at corners. All insulation shall be adhered with edges tightly banded, and shall be adhered to duct with fire resistant adhesive. Adhesive shall be applied so that insulation conforms to duct surfaces uniformly and firmly.

C. In addition to the adhesive, the insulation shall be additionally secured to the bottom of all ducts 18" or wider by means of grip nails and speed clips. The protruding ends of the pins shall be cut off flush after the speed clips have been applied. The vapor barrier facing shall be thoroughly sealed with a vapor barrier mastic and tape where the pins have pierced through.

D. Insulation for "cold" ducts and accessories shall pass unbroken through hangers, sleeves, fire dampers, flexible connectors, reheat coils, etc. as required to prevent condensation. All details of covering for cold surfaces shall be such that continuous covering with unbroken vapor barrier and uncompressed insulation is provided. The same covering and hanging detail shall be used for ducts connecting to vibrating equipment or carrying pulsating pressures to avoid metal contact between ducts and hangers. Insulation Contractor shall be responsible for coordination with equipment suppliers as required to ensure continuous covering of unlined equipment components, i.e. VAV terminal unit supply collar and exposed reheat coil u-bends, fan coil unit discharge, etc.

E. Insulation at all access points shall be fabricated in such a manner that it can be readily removed without damage to the insulation. Removable insulation shall have a vapor proof cover fabricated so as to allow it to be resealed to the equipment vapor barrier.

END OF SECTION 23 07 00

SECTION 23 31 13
METAL DUCTS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 23 00 10 - HVAC General Provisions are applicable to work required of this Section.

1.2 DESCRIPTION OF WORK

A. Provide material, equipment, labor and supervision necessary to fabricate and erect ductwork as required by the drawings and this section.

B. All ductwork shall be classified as low velocity.

1.3 DEFINITIONS

A. Conditioned Space: An area inside the building which is heated and/or cooled.

B. Tempered Space: an area inside the building which is not directly heated or cooled, but is adjacent to a heated or cooled space with no insulation separating the two spaces (e.g., ceiling plenums).

C. Untempered Space: an area inside the building which is not conditioned and is not tempered (e.g., attic spaces).

D. Exterior: An area outside the building (e.g., roof mounted items).

1.4 QUALITY ASSURANCE

A. Duct and plenum construction, metal gauges, reinforcing, methods of supporting and hanging and other sheet metal work as called for shall be in accordance with the following standards:

1. "SMACNA HVAC Duct Construction Standards", most recent Edition, by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

B. Unless noted otherwise, all ductwork shall be provided with pressure class and leakage class as indicated and scheduled on the plans. If pressure or seal class is not indicated, ductwork shall be provided to meet the pressure class based on the scheduled capacity of the equipment it is served by or connected to and with seal class A.

C. NFPA Compliance: All liner and covering materials shall have maximum UL Flame Spread Index of 25, and maximum Smoke Developed Index of 50, and shall meet all requirements of NFPA-90A.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of mechanical insulation. Submit schedule showing manufacturer's product number, thickness, and furnished accessories for each mechanical system requiring insulation. Submit product data for each accessory/component for ducts/fittings including, but not limited to turning vanes, tie rods, sealants and balancing dampers.

B. Certifications: Submit certifications or other data as necessary to show compliance with these specifications and governing regulations. Include proof of compliance for test of products for fire rating, corrosiveness, and compressive strength.

1.6 REGULATORY REQUIREMENTS

A. National Fire Protection Association, NFPA 90A: Air Conditioning and Ventilating Systems.

B. Underwriter's Laboratories, UL 181: Factory-Made Duct Materials and Air Duct Connections.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect shop-fabricated ductwork, accessories and purchased products from damage during shipping, storage and handling.

1. Stored materials subject to rejection due to damage.

B. Deliver insulation, coverings, cements, adhesives, and coatings to site in containers with manufacturer's stamp or label, affixed showing fire hazard ratings of products.

C. Protect insulation against dirt, water, and chemical and mechanical damage. Do not install damaged insulation; remove from project site.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. All sheet metal work shall be constructed of prime quality re-squared tight coat galvanized steel, except where other type material is specified. Manufacturer's name and U.S. gauge number shall appear on each sheet.

B. Duct Lining Materials

1. Certain-Teed
2. Owens Corning Fiberglass
3. Johns-Manville
4. PPG
5. Knauf

2.2 LOW VELOCITY DUCTWORK

A. General: Provide factory-fabricated or shop fabricated duct and fittings.

B. Materials:

1. Galvanized sheet steel complying with ANSI/ASTM A527, lockforming quality, with ANSI/ASTM A525, G90 zinc coatings, galvanized.

C. Gauge: Comply with code requirements for minimum gauge thickness for various sizes.

D. Fittings:

1. Construct branches, bends, and elbows with centerline radius of not less than duct 1.0 times the width (diameter), where space conditions will not permit this radius or where indicated on drawings, square elbows with air turns shall be used.
2. Slopes for transitions or other changes in dimension shall be minimum 1:3.
3. Longitudinal seams shall be Pittsburgh Lock or snaplock equal per SMACNA. Lateral seams shall be slip drive or standing. Slip seams and sheet metal screws not permitted.

2.3 PLENUMS

A. Plenums shall be fabricated of same material as duct connecting to plenum; shall be two metal gauges heavier than gauge of largest duct connecting to plenum.

2.4 DUCT SEALING – LOW VELOCITY

A. All joints in low velocity duct work shall be sealed with Foster 32-14 or DuctMate ProSeal. Apply and install joint sealer per manufacturer's recommendations. In general, apply to male end of coupling and/or interior of female fitting. After connection, brush sealant over the assembled joint and screws with a 2" to 3" wide band. Sealant shall be allowed to set for 48 hours before any air pressure is put on system. All tie bars, bolts and rivets shall be sealed with the specified sealant. Sealant as manufactured by 3M No. 800 or United Sheet Metal will be considered equal.

B. Alternate Sealing System:

1. Transverse duct joints may be made with the Ductmate System or an approved equal.
2. The installation of the Ductmate System shall be in accordance with the manufacturer's printed instruction and installation manuals.
3. The standard Ductmate System joint is the equivalent of a SMACNA "J" connection. The Ductmate-JR System joint is the equivalent of a SMACNA "E" connection. Construction of the duct, such as gauge, reinforcing, etc. shall be as indicated in the addendum to the SMACNA manuals as provided by the manufacturer and as tested by Pittsburgh Testing Laboratory.

C. Duct Sealing Requirements: SMACNA Seal Class A.

2.5 DUCT LINER

A. Lining materials shall be Type 'A' Duct Liner, Certain-Teed Toughgard or equivalent, one and one half (1 1/2) pounds per cubic foot density or equal.

B. Unless specifically indicated to not be insulated, all ductwork and accessories shall be either lined or wrapped. Duct systems not listed or without a type or thickness indicated on the plans shall be insulated with 1-1/2" wrap.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Assemble and install ductwork in accordance with recognized industry practices which will achieve airtight and quiet systems, capable of performing each indicated service.

1. Install each run with minimum joints.
2. Align ductwork accurately at connections and with internal surfaces smooth.
3. Support ducts rigidly with suitable ties, braces, hangers and anchors of type which will hold ducts true-to-shape and prevent buckling and vibration.

B. Ducts shall be installed following essentially lines indicated on drawings, install offsets, angles and transitions as may be required to avoid interferences with other work. Maintain full capacity of ducts at offsets, angles and transitions except where drawings indicate use of reducing or increasing transitions.

1. General: Each duct section shall be rigidly supported from structure. Attach hangers to structure with expansion plugs, concrete inserts, beam clamps or other approved means. Rubber in-shear isolators shall be installed in hangers for all ducts in equipment rooms, to prevent vibration transmission to the structure.

C. Install hangers and supports in accordance with SMACNA Standards general locations:

1. Install hangers close to transverse joints of main ducts and branches, clinch collar branch connections and the first branch elbows after nested splits.
2. Locate hangers of duct penetrating walls or partitions as though the walls will contribute no support to the duct.
3. Install hangers in pairs on exact opposite sides of duct.
4. Maintain hanger spacing intervals less than, equal to, but not greater than the specified maximums.
5. Install hangers at the midpoint of small and medium size horizontal vaned square elbows. On wide vaned square elbows, install additional hangers at maximum allowable intervals or less measured along the heel lines of the elbows.
6. Provide a set of hangers at the midpoint of small and medium size horizontal radius elbows. Install one or more supplementary hangers, as necessary, along the inside and outside arcs of large radius elbows of any angle whenever the lengths of these arcs exceed the maximum hanger spacing length for that particular size duct.
7. Provide at least one set of hangers for short duct branches 3 feet or less in length.
8. Provide one or more sets of hangers for equipment in duct runs such as heating coils, heat pumps, etc., as recommended by their manufacturers.
9. Hangers shall not be attached to metal roof deck.

D. Locate duct hangers approximately:

1. 2 to 24 inches from flexible connections of fans.
2. 2 to 24 inches from the outlets or flexible connects of VAV control units or mixing boxes.
3. 12 to 36 inches from the main duct to the first hanger of long branch ducts.
4. 2 to 12 inches from the ends of all branch ducts and linear diffuser plenums.
5. 2 to 24 inches from fire damper breakaway joints.
6. 0 inches to half the duct width plus 2 inches from the vertical centerline of the lower elbow of short vertical offsets made with vaned square elbows. The width refers to the dimension of the elbow in the plane of the turn.
7. 0 inches to half the duct width plus 2 inches from the vertical centerline of the bottom and top elbows of vaned square elbow offsets over 8 feet high.
8. One-eighth of the arc in from the ends of bottom and top radius elbows of vertical offsets longer than 8 feet. Short vertical offsets require hangers at the bottom elbow. Likewise, sloping offsets need at least one set of hangers at their lower radius elbow.
9. 6 to 12 inches from transverse joints of ducts whose lengths are the same as specified hanger intervals.
10. 6 to 12 inches from one side of walls or partitions penetrated by ducts.

E. Maximum permitted hanger spacing:

1. Ducts with areas up to 4 square feet may have their hangers spaced up to 8 feet apart.
2. Ducts with areas 4.1 to 10 square feet may have their hangers spaced not more than 6 feet apart.
3. Ducts with areas over 10 square feet may have their hangers located up to 4 feet apart.

F. Provide and install locking manual volume dampers in all duct systems as required for controlling air volumes to trunk ducts, branch ducts, outlets and inlets. Provide and install additional volume dampers as required by Testing and Balancing Contractor for balancing of system.

G. All connections shall be sealed, including but not limited to branch connections, spin-ins, taps, access doors, access panels and connections to equipment. Openings for rotating shafts shall be sealed with bushings or other devices that seal off air leakage.

H. Duct sizes shown on drawings are net inside dimensions and sheet metal size shall be increased to allow for duct linings.

I. Install as indicated on the drawings all duct mounted equipment as specified in other sections.

J. Install eccentric reducers with tops of both duct sizes flush to maintain maximum ceiling space below ducts.

K. Openings:

1. Provide in ductwork to accommodate access doors..
2. Install access panels for inspection and servicing of all duct mounted equipment including, but not limited to: reheat coils, motorized dampers,.
3. Provide pitot tube openings for testing of systems, complete with metal cap, with spring device or screw to ensure against air leakage.
4. Where openings are provided in insulated ductwork, install insulation materials inside metal collar.

L. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

M. Connections:

1. Connect duct to equipment with flexible fabric, sheet metal clips, screws and washers.
2. At each point where ducts pass through partitions, provide sleeve with space between duct and sleeve packed with insulation and sealed.

3.2 DUCT LINER APPLICATION

A. Apply duct liner with coated or surface designed to be exposed facing the air stream and adhered with 100% coverage of fire retardant adhesive. When width exceeds 12" or height exceeds 24", additionally secure liner with mechanical fasteners spaced 12" maximum centers. Fasteners shall start within 3" of leading edge of traverse joints. Coat all exposed joints and edges of traverse joints with a fire retardant adhesive.

B. Duct sizes shown on drawings are net inside dimensions and sheet metal size shall be increased to allow for duct lining.

3.3 ADJUSTING AND CLEANING

A. Cleaning:

1. Clean ductwork internally, as it is installed, of dust and debris.
2. Clean external surfaces of foreign substances which might cause corrosive deterioration of metal or where ductwork is to be painted.

B. Temporary Closure:

1. At ends of ducts which are not connected to equipment or air distribution devices at time of ductwork installation or that are on-site but not yet installed, provide temporary closure of polyethylene film or other covering until time connections are to be completed.

3.4 DUCTWORK APPLICATION SCHEDULE – LOW VELOCITY

AIR SYSTEM	MATERIAL
HVAC Supply, Return	Steel, Galvanized

END OF SECTION 23 31 13

SECTION 23 33 00
AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 23 00 10 - HVAC General Provisions are applicable to work required of this Section.

1.2 DESCRIPTION OF WORK

A. Extent of duct accessories is indicated on drawings and by the requirements of this section.

B. Types of duct accessories required for project include the following:

1. Flexible Ducts

1.3 QUALITY ASSURANCE

A. SMACNA Compliance: Comply with applicable portions of Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) "Fire Damper and Heat Stop Guide".

B. Industry Standards: Comply with American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) recommendations pertaining to construction of duct accessories, except as otherwise indicated.

C. UL Compliance: Construct, test, and label fire dampers in accordance with Underwriters Laboratories (UL) Standard 555 "Fire Dampers and Ceiling Dampers".

D. NFPA Compliance: Comply with applicable provisions of ANSI/NFPA 90A "Air Conditioning and Ventilating Systems", pertaining to installation of duct accessories.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical information for each type of duct accessory, including dimensions, capacities, materials of construction, installation instructions, interfacing requirements with ductwork, and method of fastening or support where applicable.

B. Maintenance Data: Submit manufacturer's maintenance data including parts lists for each type of duct accessory; include this data in Maintenance Manual.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide products manufactured by one of the following:

1. Flexible Ductwork
    a. Semco
    b. Wiremold
    c. Thermaflex
    d. Valuflex

2.2 FLEXIBLE DUCT

B. Flexible duct shall be factory pre-insulated, consisting of vinyl coated spring steel wire helix bonded to vinyl coated fiberglass mesh screen, having one (1) inch nominal fiberglass insulation and vinyl impregnated closely woven fiberglass vapor barrier. Basis of Design: Semco, Type A1.

C. Composite assembly shall meet Class I requirements of NFPA-90A and shall be UL listed for flame spread rating of not more than 25 and smoke developed rating of not more than 50. Assembly shall meet the requirements of UL-181.

D. Where flexible duct is allowed, it shall be connected to metal ducts, terminal units and diffusers with Panduit, Tylon or equal tool installed nylon clamps.

E. Maximum length of flexible duct connections from metal duct to terminal units and grilles, registers and diffusers shall be not greater than 72". All duct turns greater than 45 deg. shall be rigid elbows.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas and conditions under which duct accessories will be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install duct accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to ensure that products serve intended function.

B. Coordinate with other work, including ductwork, as necessary to interface installation of duct accessories properly with other work.

C. Field Quality Control: Operate installed duct accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to obtain proper operation and leakproof performance.

END OF SECTION 23 33 00

SECTION 23 37 13
DIFFUSERS, REGISTERS AND GRILLES

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 23 00 10 - HVAC General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Provide material, equipment, labor and supervision necessary for the installation of grilles, registers and diffusers as per the schedules on the drawings.

1.3 SUBMITTALS

A. Submit manufacturer's catalog cuts for each type of device to be used.

B. Product Data: For each product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acceptable Manufacturers

1. Carnes
2. Titus
3. Price
4. Metal Aire
5. Krueger
6. Nailor
7. Anemostat

2.2 Diffusers, registers, and grilles shall be of the type and style as scheduled.

PART 3 - EXECUTION

3.1 Install wall mounted grilles and registers plumb and level and flush to surface. Locations may be altered slightly, as acceptable to the Design Professional, so as to fit masonry portions of the structure.

3.2 In grid panel type ceilings, lay-in metal pan, acoustical, etc., grilles, registers and diffusers shall be located in the center of the panel.

3.3 Coordinate locations of ceiling diffusers and registers with Design Professional's reflected ceiling plan. Where architectural features or other items conflict with installation, notify Design Professional for determination of final location.

3.4 Adjust blow pattern as indicated on plans and as scheduled, prior to balancing.

END OF SECTION 23 37 13

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Refer to Division 00 – Procurement, Contracting and Warranty Requirements and Division 01 - General Requirements, which all apply to work under this section.

1.2 DESCRIPTION OF WORK

A. Work shall include furnishing of all systems, equipment and material specified in this division and as called for on the electrical drawings, to include supervision, operations, methods and labor for the fabrication, installation, start-up and tests for the complete electrical installation. Include all provisions necessary for complete installation and proper operation of systems and components.

B. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft in accordance with ANSI/NECA 1 standards.

C. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft and in collaboration and coordination with other trades. Adjust work as necessary to avoid interference with other trades. Refer to contract documents and submittals for other trades such as Mechanical, Plumbing, Architectural for equipment being furnished as part of their scopes of work but requiring electrical connections.

D. Definitions for “provide”, “furnish” and “install”.

1. “Provide” = furnish and install
2. “Furnish” = does not include installation.
3. “Install” = does not include furnishing.

E. Do not scale drawings for dimensional purposes.

F. Refer to Architectural and Civil Landscape Drawings for final device locations and other features that may impact electrical work.

G. **Provide demolition as necessary to perform new work.**

1. Refer **to Division 2 for Selective and General Demolition requirements.**

1.3 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:

1. National Electrical Code (NEC)
2. National Electrical Safety Code (NESC)
3. National Fire Protection Association (NFPA)
4. National Electrical Manufacturers Association (NEMA)
5. Standards of Institute of Electrical and Electronic Engineers (IEEE)
6. International Building Code (IBC)
7. Occupational Safety and Health Act (OSHA)
8. Iowa Administrative Code
9. National Electrical Contractors Association (NECA) Standards
10. National Electrical Testing Association (NETA)

11. Americans With Disabilities Act (ADA)
12. Illuminating Engineering Society of North America (IESNA)
13. American National Standards Institute (ANSI)
14. Underwriter's Laboratories (UL)
15. Telecommunications Industries Association (TIA)
16. Federal Communication Commission (FCC)
17. Leadership in Energy and Environmental Design (LEED)

B. All Contractors shall familiarize themselves with all codes and standards applicable to their work and shall notify Design Professional of any discrepancies between the design and applicable code requirements so that any conflicts can be resolved. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

1.4 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Federal, State, local authority and utility requirements in force at time of execution of this project shall be part of the specifications.

B. Secure all required permits and pay for all inspections, licenses and fees required in connection with the electrical work including State of Iowa Electrical Inspections. Contractor shall post all bonds and obtain all licenses required by the State, City, County and Utility.

1.5 ELECTRICAL DRAWINGS

A. The electrical drawings indicate in general the building arrangement only. Contractor shall examine construction drawings to become familiar with the specific type of building construction, i.e. type of structural system, floors, walls, ceilings, room finishes and elevations.

B. Drawings for the electrical work are in part diagrammatic, and are intended to convey the scope of the work and to indicate in general the location of equipment.

C. Contractor shall layout their own work and shall be responsible for determining the exact locations for equipment and rough-ins and the exact routing of conduits and raceway so as to best fit the layout of the work.

D. Contractor shall take their own field measurements for verifying locations and dimensions; scaling of the drawings will not be sufficient for laying out the work.

E. Because of the scale of the drawings, certain basic items such as couplings, pull or splice boxes may not be shown, but where such items are required by code or by other sections of the specifications or where they are required for proper installation of the work, such items shall be furnished and installed.

1.6 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to get familiar with the conditions of the site which will affect their work.

B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

1.7 COORDINATION AND COOPERATION

A. It shall be Contractor's responsibility to schedule and coordinate their work with the schedule of the General Contractor to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of their work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to their equipment, other equipment and the building. The Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Conflicts between the drawings and the specifications or between the requirements set forth for the various contractors shall be called to the attention of the Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that the Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by the Design Professional and their decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting, plaster, etc., until the project is substantially completed. Damage from rust, paint, scratches, etc., shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the Painting Contractor, but this shall not relieve Contractor of the responsibility for checking to assure that adequate protection is being provided. Refer to Division 09 for painting protection.

F. Where the final installation or connection of equipment in the building requires the contractor to work in areas previously finished by the General Contractor, the Electrical Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Electrical Contractor shall arrange with the General Contractor for patching and refinishing of such areas which may be damaged in this respect.

G. Refer to 00 and/or 01 for requirements related to coordination drawings between trades. Contractor shall participate in the coordination process and development of the coordination drawings as specified.

1.8 OPENINGS, CUTTING AND PATCHING

A. Refer to Division 1 for additional cutting and patching information.

B. Conduits and sleeves passing through all fire or smoke rated floors, roofs, walls, and partitions shall be provided with firestopping. Space between wall/floor and conduit or sleeve shall be sealed with UL listed intumescent fire barrier material equivalent to rating of wall/floor. Where conduit or sleeves pass through floors, roofs, walls and partitions that are not fire or smoke rated, penetrations shall be sealed with grout or caulk.

C. Existing Structure:

1. Contractor shall provide cutting, lintels and patching, and patch painting in the existing structure, as required for the installation of their work, and shall furnish lintels and supports as required for openings.
2. Cutting of structural support members will not be permitted without prior approval of the Design Professional. Extent of cutting shall be minimized; use core drills, power saws or other machines which will provide neat, minimum openings.
3. Patching shall match adjacent materials and surfaces and shall be performed by craftsmen skilled in the respective craft required.

D. Do not pierce structural elements such as beams or columns without prior permission from Architect. Submit for Structural Engineer review all core drilled hole locations or other structural penetrations that may be required prior to execution of work.

E. Seal penetrations through fire-rated assemblies with UL listed fire stopping system matching installation requirements per fire stopping manufacturer.

F. Repair, replace or refinish surfaces such as lawns, paving, etc. to match existing conditions prior to commencement of work.

G. Provide chrome escutcheons to match raceway size where raceways pass through walls, floors or ceilings in public areas.

1.9 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable U.S.A. manufacturer regularly engaged in the manufacture of the specified item unless authorized in writing by Design Professional. Where more than one unit is required of the same system, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items when required shall be furnished as part of the equipment, whether or not specifically called for.

D. Provide materials that are UL listed or bear the UL mark unless the specific class of material(s) is not available with such listings. Other nationally recognized testing agencies identified as acceptable to the AHJ are acceptable.

E. Furnish equipment with factory-applied finish coats. If equipment finish is damaged during shipment, acquire manufacturer’s finish products for field touchups to satisfaction of Architect/Engineer.

1.10 SUBMITTALS

A. Contractor shall furnish, to the Design Professional, complete sets of shop drawings and other submittal data. Contractor shall review and sign shop drawings before submittal. Refer to Division 01 specifications for additional requirements.

B. Shop drawings shall be bound into sets and cover related items for a complete system as much as practical and shall be identified with symbols or "plan marks" used on drawings. Incomplete, piecemeal or unbound submittals will be rejected.

C. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

D. After award of contract, the contractor shall provide a completed submittal schedule including dates that the submittals will be to the Design Professional for review.

E. Submit required information on the following items:

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF SYSTEM DEMON-STRATION	OTHER (SEE NOTES)
26 05 19	Low-Voltage Power Conductors and Cables		X			X		
26 05 33	Raceway and Boxes for Electrical Systems		X			X		
26 09 23	Lighting Control Systems	X	X			X	X	
26 27 26	Wiring Devices		X			X		
26 50 00	Lighting	X	X			X	X	
NOTES: 1.								

F. Identify proposed materials and equipment being submitted on general catalog sheets. Indicate specific name or number of equipment being submitted as it relates to specifications or drawings.

G. Design Professional will review shop drawings solely to assist contractors in correctly interpreting the plans and specifications. Submittals must be reviewed before installation of equipment or materials.

H. Contract requirements cannot be changed by shop drawings which differ from contract drawings and specifications.

1.11 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be submitted to Design Professional. Refer to Division 01 specifications for additional information.

B. Submit manuals in duplicate upon completion of the job. Manuals shall be bound in a three ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

OPERATION
AND
MAINTENANCE
MANUAL
FOR
ELECTRICAL SYSTEMS

(PROJECT NAME)
(LOCATION)
(DATE)

SUBMITTED BY
(NAME AND ADDRESS OF CONTRACTOR)

C. Provide a master index at the beginning of manual showing items included. Use plastic tab indexes for sections of manual. Each section shall contain the following information for equipment furnished under this contract:

1. Equipment and system warranties and guarantees.
2. Installation instructions.

3. Operating instructions.
4. Maintenance instructions.
5. Spare parts identification and ordering list.
6. Local service organization, address, contact and phone number.
7. Shop drawings with reviewed stamp of Design Professional and Contractor shall be included, if applicable, along with the items listed above.

D. Items to be included shall be those listed in shop drawing section.

1.12 RECORD DOCUMENTS

A. Refer to Division 1 for Record Document Requirements.

B. Markup set of Contract Documents with final installed field conditions.

1.13 SUBSTITUTIONS

A. Refer to Divisions 00 and 01. Requests shall clearly describe the equipment for which approval is being requested. Include all data necessary to demonstrate that equipment's capacities, features and performance are equivalent. between specified equipment and equipment for which approval is being requested. If the equipment is acceptable, Design Professional will approve it in an addendum. Design Professional will, under no circumstances, be required to prove that an item proposed for substitution is or is not of equal quality to the specified item.

B. To obtain approval to use unspecified equipment, Bidding Contractors (not equipment supplier, manufacturers, etc.) shall submit written requests to Design Professional at least 10 days prior to bid due date. Requests shall clearly describe the equipment for which approval is being requested. Include all data necessary to demonstrate that equipment's capacities, features and performance are equivalent between specified equipment and equipment for which approval is being requested. If the equipment is acceptable, Design Professional will approve it in an addendum. Design Professional will, under no circumstances, be required to prove that an item proposed for substitution is or is not of equal quality to the specified item.

C. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.14 ACCEPTABLE MANUFACTURERS

In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the plan schedules are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

Manufacturers, who do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of the Contractor and/or the manufacturer.

A. If Contractor chooses to use a manufacturer listed as an equal, it shall be their responsibility to assure that the manufacturer has complied with the requirements in *SUBSTITUTIONS* 'A' above. Contractor shall assume all responsibility for physical dimensions, operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

B. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.15 WARRANTY

A. Refer to Divisions 00 and 01 for information on warranties and correction of work within the warranty period.

1. If a warranty or warranty period are not defined in Division 00 or 01, then the start of all warranty periods shall be the date of Substantial Completion and the length of the warranty shall be for one year.
    a. If construction is phased with distinct and separate Substantial Completion dates for portions of the building and/or systems, separate warranties shall be provided for each of these phased areas and/or systems.
    b. The entire Electrical system, including all sub-systems, shall be guaranteed against defect in materials and installation for the duration of the warranty period. Any malfunctions or defects which occur within the warranty period shall be promptly corrected without cost to the Owner. This guarantee shall not limit or void any manufacturer's express or implied warranty.

B. Refer to other Division 26 sections for systems, equipment, or material requiring extended warranties beyond one year.

C. The date of systems/equipment startup or equipment/material shipment to the site shall not be considered the notable date with relation to the warranty of that item. All systems, equipment, material, etc., shall have the same start date with respect to the warranty period.

D. Systems, equipment or material put into use to facilitate construction activities (e.g. testing and balancing, commissioning, temporary conditioning, etc.) prior to the start of the warranty period shall not impact the length of the warranty in any way.

1.16 CHANGES IN THE WORK

A. Refer to Divisions 00 and 01.

1.17 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by the Owner.

B. When all the electrical work is complete Contractor shall thoroughly clean all material and equipment installed as a part of this contract and leave all equipment and material in new condition.

C. Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

1.18 ACCESS DOORS

A. When the Electrical Contractor provides any equipment requiring periodic servicing which will be concealed by non-accessible architectural construction, the Electrical Contractor shall provide a flush access door. The access door shall be equal to a Karp DSC-211 Universal access door or Nystrom APWB or type for the specific construction involved.

B. Access doors in fire rated construction shall be fire rated and have U.L. label.

C. Construction:

1. Door and trim shall be 13 gauge steel, frames shall be 16 gauge steel.
2. Trim shall be of one piece construction.

3. Finish shall be prime coat of rust inhibitive baked grey enamel.
4. Hinges shall be concealed, offset, floating hinge.
5. Locks shall be flush, screwdriver operated with stainless steel cam-and-studs.

PART 2 - PRODUCTS

2.1 MATERIALS FOR DEMOLITION

A. All materials removed shall be the property of the removing contractor and shall be removed from the site unless otherwise specified. Contractor shall remove and turnover devices, equipment, etc. identified by the Owner to be retained.

PART 3 - EXECUTION

3.1 GENERAL DEMOLITION

A. Demolition shall be accomplished by the proper tools and equipment for the work to be removed. Personnel shall be experienced and qualified in the type of work to be performed.

B. Examination

1. Verify field measurements and circuiting arrangements are as shown on Drawings.
2. Verify that abandoned wiring and equipment serve only abandoned facilities.
3. Demolition Drawings are based on casual field observation. Report discrepancies to Owner before disturbing existing installation.

C. Preparation

1. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
2. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
3. Existing Fire Alarm System: Maintain existing system in service. Disable system only to make switchovers and connections. Notify Owner at least 72 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.
4. Existing Telecommunications Systems: Maintain existing systems in service. Disable systems only to make switchovers and connections. Obtain permission from Owner at least 72 hours before partially or completely disabling system.

D. Demolition and Extension of Existing Electrical Work

1. Demolish and extend existing electrical work under provisions of this Section.
2. Remove, relocate, and extend existing installations to accommodate new construction. Extend existing installations using materials and methods as specified.
3. Remove abandoned wiring to source of supply.
4. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
5. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
6. Disconnect and remove abandoned panelboards and distribution equipment.
7. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
8. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
9. Repair adjacent construction and finishes damaged during demolition and extension work.

10. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
11. Clean and repair existing materials and equipment which remain or are to be reused.

E. Fluorescent Lamp and Ballast Disposal

1. Unless noted otherwise, all existing fluorescent lamps and ballasts within light fixtures to be removed shall be assumed to contain mercury and PCB's respectively. These items need to be disposed of by a mercury and PCB Disposal Contractor, who shall be a subcontractor to Electrical Contractor. This Disposal Contractor shall have all local, state, and federal authorization for handling, transporting, and processing these materials. Disposal Contractor shall have pollution insurance and shall generate a Certificate of Disposal. Ballasts and all contaminated materials shall be incinerated. Lamps shall be recycled.

F. Work by Others

1. Unless specifically noted under other contracts, Electrical Contractor shall assume all required work shall be performed by him. In general, the following will be performed by others:
   a. General Contractor will remove any bases, floor fill, wall work and footings; neatly patch, match, complete and finish all affected surfaces.
   b. Mechanical Contractor will disconnect all mechanical services and remove pipe back to behind finish surfaces, close and cap ends of pipe.

G. Cleaning and Repair of Existing Components

1. Clean and repair existing equipment and materials that will remain or be reused. Replace damaged components where necessary.
2. Clean exposed surfaces and re-torque all electrical connections.
3. Revise panel circuit directories for panelboards that are used to serve new loads.
4. Remove **existing luminaires and clean all surfaces prior to reinstallation.**

H. Owner's Right of Salvage

1. Owner may designate and have salvage rights to any material herein demolished by the Contractor. Turnover all materials to be salvaged at a place and time designated by Owner. Maintain condition of salvaged materials for re-use. Repair or replace damaged materials at no additional cost to Owner. Remove and dispose all materials that are not identified to be salvaged.]

3.2 START-UP, TESTS AND DEMONSTRATIONS

A. All systems shall be tested by Contractor and placed in proper working order prior to demonstrating systems to Owner. Notify Owner, Architect, Engineer or Inspector at least 10 days prior to beginning testing.

B. Follow manufacturer's instructions for start-up and adjustment. Contractor shall provide services from a factory certified representative where specified or contractor does not have qualified personnel.

3.3 DELIVERY AND STORAGE

A. Deliver and store products per Division 1 requirements.

B. Store in dry and clean space(s). Leave products in factory shipping materials and/or protect from water, dust and other debris.

C. Provide environmental heating as necessary to prevent moisture damage.

3.4 EQUIPMENT ACCESS

A. Maintain equipment clearances and access, repair or removal for maintenance. Relocate equipment, devices, raceways, etc. to allow maintenance access at no additional cost to the Owner.

B. Refer to Architectural elevations for device locations. Identify locations that may have limited access prior to installation of equipment or devices.

C. Verify location of door latch prior to installation of light switches.

3.5 SUPPORTS

A. Provide supporting steel as necessary for installation of equipment including hangers, support frames, beams, etc.

B. Use steel plug type concrete anchors of equipment supports. Lead, plastic or other materials are not permitted.

C. Do not support equipment or luminaires from metal roof decking.

D. Protect threaded rods, bolts and any other sharp edges mounted below 7’-0” above finished floor to protect personnel from injury.

3.6 CLEANING

A. Prior to assembly of electrical equipment, all loose dirt, scale, oil and other foreign matter on internal and exterior surfaces shall be removed by means consistent with good electrical practices.

B. All temporary labels, stickers, etc., shall be removed from all fixtures and equipment. Name plates, ratings, instruction plates, etc., shall not be obscured by paint, insulation, or placement of units.

C. Electrical equipment shall be thoroughly cleaned on the interior and exterior of equipment. This includes but is not limited to removal of wiring trimmings within electrical panels and dirt/debris from activation boxes.

D. All light fixtures shall be wiped clean with all fingerprints and dust removed.

END OF SECTION 26 05 00

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 - Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Contractor shall furnish all material, tools, labor, and supervision necessary to install all wiring systems.

B. This section describes the basic materials and methods of installation for general wiring systems of 600 volts and less. Wiring for a higher voltage rating, if required, shall be as specified in other sections or called for on the drawings.

1.3 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical wire, cable, and connectors.

B. UL Compliance: Comply with UL standards pertaining to wire, cable, and connectors.

C. UL Labels: Provide electrical wires, cables and connectors which have been UL-listed and labeled.

D. NEMA/ICEA Compliance: Comply with applicable portions of NEMA/Insulated Cable Engineers Association standards pertaining to materials, construction and testing of wire and cable.

E. ANSI/ASTM: Comply with applicable portions of ANSI/ASTM standards pertaining to construction of wire and cable.

F. The materials used for wiring systems shall be the products of a manufacturer regularly engaged in the manufacturing of the specified material.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data for each product specified.

PART 2 -PRODUCTS

2.1 WIRE AND CABLE

A. All wire and cable for power, lighting, control, and signal circuits shall have copper conductors of not less than 98% conductivity and shall be insulated to 600 V. Conductor sizes #12 AWG and smaller shall be solid, conductor sizes #10 AWG and larger shall be stranded.

B. Minimum size conductors shall be #12 AWG for power and lighting.

C. Type of wire and cable for various applications shall be as follows:

1. Type THHN/THWN-2, or XHHW-2 (90 deg. C) - use for branch circuits, Class 1 control circuits, panel and equipment feeders in dry locations.
2. Type XLPE (105 deg. C) twisted conductors – use for Class 2 and 3 circuits.
3. Type MC – Metal-clad Cable – use for branch circuit from homerun junction box to in-**wall device.**

2.2 CONDUCTOR COLOR CODING

A. Wiring systems shall be color coded. Conductor insulation shall be colored in sizes up through #8 AWG. Conductors #6 AWG and larger shall be colored or have black insulation and shall be phase color coded with one-half inch band of colored tape at all junctions and terminations. Colors shall be assigned to each conductor as described below and carried throughout all main and branch circuit distribution. When necessary to use tape, use colored tape on black wire. Do not use colored tape on colored wire.

	120/240V - Delta	120/208V - Wye	277/480V - Wye
Phase 'A' Conductor	Black	Black	Brown
Phase 'B' Conductor	Orange**	Red	Orange
Phase 'C' Conductor	Red	Blue	Yellow
Neutral Conductor	White*	White*	Grey*
Equipment Grounding Conductor	Green	Green	Green
Isolated Grounding Conductor		Green w/Yellow Stripe	Green w/Yellow Stripe

* For branch circuits with non-shared neutral conductors, provide colored tracer to match associated phase conductor. Tracers shall be Black, Red, Blue, Brown, Orange, or Yellow.

** Use red and black for phases which are 120V to neutral. Use orange for "wild leg".

2.3 CONNECTORS

A. Twist-on Wire Connectors.

1. Dry Locations. 600V rated, UL 486C listed, Ideal Industries 451/452/454 or equal by 3M or Thomas and Betts. Use for #8 and smaller.
2. Wet locations. 600V rated, UL 485D listed with pre-filled silicone sealant. Ideal industries 61/62/63 series or equal by 3M or Thomas and Betts. Use for #8 and smaller. To be used for all above ground splices in exterior locations and interior wet locations.
3. Underground locations. 600V rated, UL 485D listed for direct burial with pre-filled silicone sealant. Ideal Industries 60/64/66 series or equal buy 3M or Thomas and Betts. Use for #8 and smaller. To be used for all below ground and in-slab locations.

B. Push-in Wire Connectors.

1. Dry Locations. 600V rated, UL 486C listed, Ideal Industries 32/33/34 or equal by Wago, 3M or Thomas and Betts. Use for #10 and smaller.

C. Conductor Taps and Splices.

1. Dry Locations. 600V rated, UL 486A/B listed, insulated mechanical termination. Ilsco ClearTap PCT or equal by Burndy. Use for #6 and larger.
2. Wet and Underground Locations. 600V rated, UL 486D listed, watertight mechanical termination suitable for direct burial in earth. Ilsco SafetySub PDSS or equal by Burndy or 3M. Use for #6 and larger.

3. Insulation piercing taps are not allowed.
4. Split bolt connectors and splices are not allowed.

PART 3 - EXECUTION

3.1 PREPARATION

A. Wire shall not be installed in the conduit system until the building is enclosed and masonry work is completed.

B. Conduit shall be swabbed free of moisture and debris prior to pulling in wiring. Pull mouse through conduits prior to pulling conductors.

3.2 INSTALLATION

A. All cable for major feeders shall be continuous from origin to termination, unless otherwise indicated.

B. Branch circuit conductor sizes shall be increased to maintain a maximum 3% voltage drop.

1. 120V, 20A homeruns shall be sized as follows based on one-way circuit length:
   a. 0-80': #12 AWG
   b. 81'-140': #10 AWG
   c. 141'- 210': #8 AWG
   d. 211' and over: #6 AWG
2. 277V, 20A homeruns shall be sized as follows based on the one-way circuit length:
   a. 0-200': #12 AWG
   b. 201'-300': #10 AWG
   c. 301' and over: #8 AWG

C. Conductors for 208V and 480V systems shall be installed in separate raceway systems.

D. Splices shall be made only in accessible junction boxes or handholes.

E. All power feeder cable shall be pulled with the use of approved pulling compound or powder. Compound must not deteriorate conductor or insulation.

F. If conductor insulation is damaged during installation, replace entire conductor.

G. Use pulling means, including fish tape, cable or rope which cannot damage raceway.

H. Install exposed cable, parallel and perpendicular to surfaces or exposed structural members and follow surface contours, where possible.

I. Keep branch circuit conductor splices to a minimum.

J. The continuity of circuit conductors shall not be dependent on service connections such as lamp holders, receptacles, etc., where the removal of such devices would interrupt the continuity.

K. Provide separate green equipment ground conductor throughout entire electrical system.

L. Isolated ground conductors shall be kept isolated from the equipment grounding system from the outlet back to where the system is derived.

M. All branch circuits shall have dedicated neutrals.

N. Install 2-hour rated cable systems in strict accordance with the manufacturer's instructions and the UL Listing.

O. Leave at least 6” of slack for terminations at wiring devices.

P. For all vibration type installations (i.e. motors, etc.), provide stranded type conductors.

Q. Support cables above accessible ceilings from structure. Do not place cables on ceiling panels.

3.3 FIELD QUALITY CONTROL

A. Prior to energizing system, test cable and wire for continuity of circuitry, and for short circuits. Correct malfunctions when detected.

B. After wire terminations are complete, energize circuitry and demonstrate function in accordance with requirements.

END OF SECTION 26 05 19

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 - Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Extent of grounding work is indicated by drawings and shall comply with NEC.

B. Applications of grounding work in this section include the following:

1. Enclosures.
2. Equipment.

C. Requirements of this section apply to electrical grounding work specified elsewhere in these specifications.

1.3 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC requirements as applicable to materials and installation of electrical grounding systems, associated equipment and wiring. Provide grounding products which are UL-listed and labeled.

B. UL Compliance: Comply with applicable requirements of UL Standards Nos. 467 and 869 pertaining to electrical grounding and bonding.

C. IEEE Compliance: Comply with applicable requirements of IEEE Standard 142 and 241 pertaining to electrical grounding.

PART 2 - PRODUCTS

2.1 GROUNDING SYSTEMS

A. Materials and Components

1. General: Except as otherwise indicated, provide electrical grounding systems indicated; with assembly of materials, including, but not limited to, cables/wires, connectors, terminals (solderless lugs), bonding jumper braid, and additional accessories needed for complete installation. Where more than one type unit meets indicated requirements, selection is Installer's option. Where materials or components are not indicated, provide products complying with NEC, UL, IEEE, and established industry standards for applications indicated.
2. All components shall be listed under ANSI/UL 467 – “Grounding and bonding Equipment”.
3. Raceways: Provide raceways, and electrical boxes and fittings complying with Division 26, Section 26 0533 – Raceway and Boxes for Electrical Systems.
4. Conductors: Unless otherwise indicated, provide electrical grounding conductors for grounding connections matching power supply wiring materials and sized according to NEC.

B. Connectors

1. Lugs: Grounding and bonding conductors shall terminate in two-hole, long barrel irreversible compression lugs, Burndy YGA series or equal by Blackburn, Ilsco, Erico, Harger or Anderson.

PART 3 - EXECUTION

3.1 INSTALLATION OF ELECTRICAL GROUNDING

A. General: Install electrical grounding systems where shown, in accordance with applicable portions of NEC, with NECA's "Standard of Installation", and in accordance with recognized industry practices to ensure that products comply with requirements and serve intended functions.

B. Coordinate with other electrical work as necessary to interface installation of electrical grounding system with other work.

C. When making ground and ground bonding connections, apply a corrosion inhibitor to all contact surfaces. Use corrosion inhibitor appropriate for protecting a connection between the metals used.

D. Protect ground conductors from physical and environmental damage. Wherever possible, and where indicated, grounding electrode and bonding conductors shall be enclosed in a non-metallic raceway. Where ground conductors are subject to physical damage, install in galvanized rigid steel conduit with grounding bushings on each end. Where conductors are required to be exposed, as in the connection to the main ground bus, support ground conductors by corrosion resistant metallic hardware at 4-foot intervals or less.

E. Provide separate green ground conductor throughout entire electrical system sized as required by the NEC.

F. Conduit Grounding

1. Bond all metallic conduit systems together to provide a continuous electrical ground path. Bond metallic conduits to other conduit components using insulated ground bushings when required. Connect ground bushings to the grounding system using conductors sized in compliance with NEC.
2. Provide ground conductors in non-metallic conduits in accordance with the NEC.

END OF SECTION 26 05 26

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Provide materials, labor and supervision as necessary to provide hangers and supports for conduit, fixtures and equipment.

1.3 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical supporting devices.

B. ANSI/NEMA Compliance: Comply with applicable requirements of ANSI/NEMA Std. Pub. No. FB 1, "Fittings and Supports for Conduit and Cable Assemblies".

C. NECA Compliance: Comply with National Electrical Contractors Association's "Standard of Installation" pertaining to anchors, fasteners, hangers, supports, and equipment mounting.

D. UL Compliance: Provide electrical components which are UL-listed and labeled.

PART 2 - PRODUCTS

2.1 MANUFACTURED SUPPORTING DEVICES

A. Manufacturer: Subject to compliance with requirements, provide channel systems of one of the following:

1. B-Line Systems, Inc.
2. Thomas & Betts, Superstrut
3. Unistrut Div.; Tyco International
4. Globestrut

B. General: Provide supporting devices; complying with manufacturer's standard materials, design and construction in accordance with published product information, and as required for a complete installation; and as herein specified. Where more than one type of device meets indicated requirements, selection is Installer's option.

C. Conduit Cable Supports: Provide cable supports with insulating wedging plug for non-armored type electrical cables in risers; construct for rigid metal conduit; type wire as indicated; construct body of malleable iron casting with hot dip galvanized finish.

D. U-Channel Strut Systems: Provide U-channel strut system for supporting electrical equipment, 16-guage hot dip galvanized steel, of types and sizes indicated; construct with 9/16" dia. holes, 8" o.c. on top surface, with standard green finish, and with the following fittings which mate and match with U-channel:

1. Fixture hangers.
2. Channel hangers.
3. End caps.

4. Beam clamps.
5. Wiring stud.
6. Thinwall conduit clamps.
7. Rigid conduit clamps.
8. Conduit hangers.
9. U-bolts

PART 3 - EXECUTION

3.1 INSTALLATION OF SUPPORTING DEVICES

A. Install hangers, anchors, sleeves and seals as indicated, in accordance with manufacturer's written instructions and with recognized industry practices to ensure supporting devices comply with requirements.

B. Coordinate with other electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.

C. Conduit hangers and support devices shall be approved type for the method of supporting required. Size supports as necessary per manufacturer's recommendations for the weight being supported. All hangers and supports shall have galvanized finish or other approved corrosion resistance finish. In general, hangers and supports shall be as follows:

1. Where single or multiple run of conduit is routed on surface of structure; use conduit clamps mounted on U-channel strut so as to maintain not less than 1" clearance between conduit and structure.
2. Where single run of conduit is suspended from overhead; use split ring conduit clamp suspended by 3/8" steel drop rod.
3. Where multiple parallel runs of conduit are suspended from overhead; use split ring conduit clamps uniformly spaced and supported on trapeze hangers fabricated of U-channel strut, suspended by not less than two steel drop rods.
4. Maximum hanger and support spacing shall be in accordance with NEC.

D. Hangers and supports shall be anchored to structure as follows:

1. Hangers and supports anchored to poured concrete, use malleable iron or steel concrete inserts attached to concrete forms.
2. Hangers or supports anchored to precast concrete, use self-drilling expansion shields. Expansion shields may be used where concrete inserts have been missed or additional support is required in poured concrete.
3. Hanger or supports anchored to structural steel, use beam clamps and/or steel channels as required by structural system.
4. Hangers or supports anchored to metal deck, use spring clips or approved welding pins. Maximum permissible load on each hanger shall not exceed 50 pounds.
5. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls.
6. Use sheet metal screws in sheet metal studs and wood screws in wood construction.

E. The following is not permitted:

1. Attaching supports and hangers to piping, ductwork, mechanical equipment, or conduit.
2. Use of powder-actuated anchors.
3. Drilling of structural steel members.

F. Fixtures on plastered or acoustical ceilings shall not be supported directly on ceiling tile. Provide metal bar hangers or U-channel strut attached to ceiling supports.

G. Where disconnect switches and panels cannot be mounted on wall, provide support racks fabricated of structural steel or U-channel strut.

END OF SECTION 26 05 29

SECTION 26 05 33
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Contractor shall furnish all materials, tools labor and supervision necessary to fabricate and install complete conduit systems.

B. Conduit systems shall be provided for all wiring, except where the drawings or other sections of the specifications indicate that certain wiring may be installed in cable trays, surface raceway, underfloor raceway, wireways and/or auxiliary gutters.

C. Types of raceways in this section include the following:

1. Rigid metal conduit.
2. Intermediate metal conduit.
3. Electrical metallic tubing.
4. Flexible metal conduit.
5. Liquid-tight flexible metal conduit.
6. Rigid non-metallic conduit.
7. MC cable.

D. Provide factory painted red conduit for fire alarm system.

E. Contractor shall furnish all material, tools, labor and supervision necessary to install electrical boxes and fittings as required by drawings and specifications.

F. Types of electrical boxes and fittings in this section include the following:

1. Outlet boxes.
2. Junction boxes.
3. Pull boxes.
4. Wireways
5. Activation boxes.
6. Handholes

G. Telecommunications Raceway Requirements:

1. The term “telecommunications” includes all low voltage technology systems including voice and data, access control, video surveillance, intrusion detection, audio video, induction loop, paging, intercom, nurse call, school bell and/or clock systems. The term does not include fire alarm system, which is addressed separately in the plans and specifications.
2. Contractor shall provide and install telecommunications boxes and conduits, including wall sleeves unless otherwise noted.
3. Interior building, above grade conduits and sleeves shall be EMT unless otherwise noted. PVC is never acceptable above grade.

4. All interior conduits shall have bushings installed during conduit installation. Completed individual installations shall have bushings installed same business day.
5. All interior conduits shall have pull strings, except sleeves which are less than 4’ long. EMT conduits shall receive standard round cable pull string (multi-strand plastic twine type).
6. Minimum interior conduit size for all information jacks (voice data cabling) shall be 1” unless otherwise noted.
7. Minimum interior conduit size for audiovisual shall be 1" unless otherwise noted. Junction (pull) boxes shall be added at a maximum of 100' of raceway distance, and also for a maximum of 180 degrees of bend radius.
8. Minimum interior conduit size for video surveillance, intrusion detection, paging, intercom, nurse call, school bells and/or clock systems shall be 3/4" unless otherwise noted.
9. Access control system conduit sizes at the door location shall be per the access control detail found on the drawings. The conduit from the door location to the access control head end which contains all conductors needed for all access control functions at that door (may be individual conductors but is often one large composite cable) shall be minimum 3/4".
10. Boxes for all low voltage systems in stud walls shall be metallic 5”x5”x2.875” with single gang mud ring unless otherwise noted.
11. Conduits inside walls which feed the low voltage side of dual compartment Wiremold shall be minimum 1.25”
12. Contractor shall provide and install hand holes for cable pulling in buried raceway at a maximum interval of 500’.

1.3 QUALITY ASSURANCE

A. NEMA Compliance: Comply with applicable requirements of NEMA standards pertaining to raceways.

B. UL Compliance and Labeling: Comply with provisions of UL safety standards pertaining to electrical raceway systems; and provide products and components which have been UL-listed and labeled.

C. NEC Compliance: Comply with requirements as applicable to construction and installation of raceway systems.

D. The materials used in the fabrication of the raceway system shall be products of a manufacturer regularly engaged in the manufacturing of the specified material.

E. NEC compliance: Comply with NEC as applicable to construction and installation of electrical wiring boxes and fittings.

F. UL Compliance: Provide electrical boxes and fittings which have been UL-listed and labeled.

G. ANSI/NEMA Standards Compliance: Comply with ANSI C 134.1 (NEMA Standards Pub No. OS 1) as applicable to sheet-steel outlet boxes, covers and box supports.

1.4 SUBMITTALS

A. Raceway Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations, for each type of raceway listed below. Include data substantiating that materials comply with requirements for the following:

1. Raceways and Fittings
2. MC Cable

B. Activation Box Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations for each type of activation box required. Include data substantiating that units comply with requirements.

C. In-Ground Handhole Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations for each type of handhole required. Include data substantiating that units comply with requirements.

PART 2 - PRODUCTS

2.1 RACEWAYS

A. General: Provide metal conduit, tubing and fittings of types, grades, sizes and weights (wall thicknesses) for each service indicated. Where types and grades are not indicated, provide proper selection determined by Installer to fulfill wiring requirements, and comply with applicable portions of NEC for raceways. Conduit shall be used where concealed in permanent wall construction or in ceiling plenums. Surface raceway shall be used where exposed in finished regularly occupied areas.

B. Rigid Conduit: Full weight, threaded, rigid steel conduit, galvanized inside and out by hot dip or electro galvanized process. Additional protection by electrostatically applied baked coating. Thread protective caps and couplings. Use for all feeders larger than 2 1/2" in size.

C. Intermediate Metal Conduit (IMC): May be used as approved by code where rigid conduit is specified, except shall not be used for conduit buried in earth fill.

D. Electrical Metallic Tubing: Thin wall, electrically welded cold rolled steel conduit, galvanized inside and out by electro galvanized process. Baked clear elastic enamel coating in and out. Use for installations in stud walls, masonry walls, above suspended ceilings and where exposed. Size limited to 2 1/2" and smaller.

E. Flexible Metal Conduit: Formed of one continuous length of spirally wound electro galvanized steel strip. Use for final connections to all motor operated equipment such as unit heaters, fans, air handling units, pumps, generators, generator enclosures and connections to dry type transformer, connections from junction boxes to lighting fixtures in accessible ceiling, and for wiring within casework and millwork. 6’ maximum length.

F. Liquidtight Flexible Metal Conduit: Formed of one continuous length of spirally wound steel strip, with water and oil tight neoprene jacket. Use for final connection to equipment listed in paragraph "E" above when located in wet areas.

G. PVC Conduit: Conduit shall be Carlon PV-Duit, Type 40, 90 deg.C. Conduit shall be composed of Polyvinyl Chloride and shall conform to NEMA Standards. Conduit, fittings and cement shall be produced by the same manufacturer. May be used where installed in earth fill or in poured concrete walls, columns, floors, or under concrete slab.

H. Rigid Aluminum Conduit: Full weight, threaded, rigid aluminum conduit. Thread protective caps and couplings.

I. Type MC Cable: Type MC cable meets or exceeds all applicable ASTM Specifications, UL Standard for Safety 1569, UL Standard for Safety 1581, UL Standard for Safety 83, Federal Specification A-A-59544 and requirements of the National Electrical Code (NFPA 70).

1. Type MC cable is constructed with copper conductors that are soft annealed copper, insulated with heat and moisture resistant lead-free polyvinyl chloride (PVC) over which a nylon (polyamide) or UL listed equivalent jacket is applied (Type THHN and THWN). The assembly is wrapped with polypropylene tape and covered with interlocking aluminum armor.
2. Cable shall be UL listed type MC, suitable for operation at 600 volts in all installations as specified by the National Electrical Code.
3. MC cable shall contain a copper equipment ground conductor equal in size with the branch circuit conductors, with green insulation.

4. Use for branch circuit wiring only in office areas above ceilings and concealed in stud and drywall partitions. MC cable is not to be used at any exposed locations, mechanical rooms, shop spaces, or in highbay spaces.
5. Type MC cable is prohibited for feeders or branch circuits over 30 amps.

2.2 CONDUIT FITTINGS

A. Rigid Conduit Fittings:

1. Fittings shall be standard threaded couplings, locknuts, bushings, and elbows. Material shall be malleable iron, steel or aluminum alloy. Iron or steel fittings shall be zinc or cadmium plated. Aluminum fittings shall not contain more than 0.4 percent copper. Aluminum fittings shall be used with aluminum conduit only.
2. Locknuts shall be of the bonding type with sharp edges for digging into the metal wall of an enclosure.
3. Bushings shall be of the metallic insulating type and consist of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
4. Sealing fittings shall be of the threaded cast iron type. Sealing fittings used to prevent passage of water vapor shall be of the continuous drain type.
5. Set screw fittings are not allowed.

B. Metallic Tubing Fittings: Compression type galvanized or zinc coated malleable iron or steel, water and concrete tight where exposed to wet locations or imbedded in concrete. Steel set screw type acceptable in all dry location applications. Die-cast fittings are not allowed.

C. Flexible Metal Conduit Fittings: External squeeze or set screw type galvanized or zinc coated malleable iron or steel with nylon insulated throats. Internal screw type fittings are not allowed.

D. Liquidtight Flexible Conduit Fittings: Galvanized malleable iron or steel, with watertight gaskets, "O" ring and retainer, and nylon insulated throats.

E. Condulet Fittings: Exposed conduit fittings shall be condulet type for all sharp turns, tees, etc.

F. Provide insulated bushings for all conduits terminations.

2.3 WALL OUTLET BOXES

A. General: Boxes shall be Raco, Steel City, Appleton or equal, catalog numbers based on Raco, unless otherwise indicated. In general, the type of boxes shall be as follows:

1. In Stud Walls: For single outlet use 4" square by 2-1/8" deep box. Boxes to be provided with raised covers of depth as required for thickness of wall materials.
2. In Masonry and Poured Concrete Walls: Use 3-3/4" high by 2-1/2" and/or 3-1/2" deep masonry boxes #691 through #694 and/or #695 through #699.
3. Surface Mounted Wall Outlets for conduit: Use 4" square by 1-1/2" deep box #192 with raised cover.
4. Surface Mounted Wall Outlets for surface metal raceway: Use single gang boxes 1-1/2" deep Wiremold #V57xx series.
5. Suspended Ceiling: Use octagon boxes, depth as required for application, securely fastened to structure.
6. Poured Concrete Ceiling Slabs: Use octagon concrete rings with back plates.
7. Outlets Installed Outdoors or in Wet Locations: Use Bell Product 53XX Series outlet box.

2.4 PULL BOXES, AND JUNCTION BOXES

A. Construction, sizes and installation of pull boxes and junction boxes shall comply with NEC, Article 314.

B. Pull and junction boxes not specifically described in NEC, Article 314, shall be fabricated of heavy gauge galvanized steel with screw or hinged covers, and equipped with corrosion resistant screws and hardware.

C. Pull and junction boxes for installation in poured concrete floors shall be flush type, cast iron, with watertight gasketed covers. Boxes for installation in floors with tile or carpet floor covering shall have recessed covers to accommodate the floor covering.

D. Pull boxes and junction boxes for outdoor installation shall be raintight.

E. Pull boxes, and junction boxes designated '4X' shall be NEMA 4X water tight and corrosion resistant.

PART 3 - EXECUTION

3.1 INSTALLATION OF RACEWAY

A. In general, all horizontal runs of branch circuit conduit shall be installed in ceiling plenum. Raceway for convenience outlets, wall mounted fixtures and other wall outlets shall be routed overhead and dropped through wall to the outlet. Branch circuit raceway shall not be installed in or below concrete floor slabs except where conditions will not permit the raceway to be installed overhead. Conduit shall be used where concealed in permanent wall construction or in ceiling plenums. Surface raceway shall be used where exposed in finished regularly occupied areas where walls are existing.

B. Feeder conduits to panelboards, motor control centers and other major loads may be installed in fill below concrete slabs on grade.

C. Conduits that are run in fill below concrete slabs on grade shall be installed so as not to interfere with welded wire mesh (wwm), vapor barrier, or concrete placement.

D. Generally, all conduit shall be concealed, except in crawl spaces, tunnels, shafts, mechanical equipment rooms, and at connection to surface panels and free standing equipment, and as otherwise noted.

E. Exposed conduit and conduit concealed in ceiling space shall be routed in lines parallel to building construction.

F. All conduit runs above suspended acoustical ceilings shall be routed so as not to interfere with tile panel removals with 4'0" to 6'0" flexible conduit drops from an independent junction box, accessible from below the ceiling, to ceiling mounted equipment.

G. Minimum size conduit shall be 1/2" trade size except all home runs to panels shall be minimum 3/4". Minimum size surface raceway shall be V500. Where specified size is not called for on drawings or in the specifications, conduit shall be sized per NEC.

H. Utilize approved thread lubricant for rigid steel and aluminum conduits to ensure equipment grounding paths.

I. Utilize approved thread sealant for all underground and wet locations threaded conduit joints.

J. Install the conduit system mechanically and electrically continuous from outlet to outlet and to all cabinets, junction or pull boxes. Conduit shall enter and be secured to all cabinets and boxes in such a manner that all parts of the system will have electrical continuity.

K. All conduit penetrations to the exterior of the building including the service entrance, telecommunications, site feeds, grounding electrode and spare conduits shall be sealed at one or both ends against the intrusion of water and gasses. The seal shall be identified for use with the cable insulation installed. All seals shall be removable.

L. Installation of PVC conduit shall comply with the NEC with regard to grounding and expansion fittings.

M. PVC conduit shall not be installed above grade unless noted otherwise.

N. Support conduit raceway systems in accordance with requirements as set forth in the National Electric Code.

O. All connections to NEMA 3R enclosures shall maintain the enclosure listing regardless of the equipment location.

3.2 INSTALLATION OF BOXES AND FITTINGS

A. Install electrical boxes and fittings where indicated, complying with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Coordinate installation of electrical boxes and fittings with wire/cable and raceway installation work.

3.3 OUTLET BOX INSTALLATION

A. Outlet boxes shall be installed for all fixtures, switches, receptacles and other devices.

B. Approximate locations of outlets are shown on the plans, but each outlet location as shown shall be checked by Contractor before installing the outlet box.

C. Wall boxes installed flush in common wall shall not be back-to-back or through-wall type. Boxes located on opposite sides of a common wall that are closely connected by conduit shall have the conduit openings plugged with duct seal.

D. Install boxes and conduit bodies in those locations to ensure ready accessibility of electrical wiring.

E. Outlet boxes shall be installed plumb and square with wall face and with front of box or cover located within 1/8" of face of finish wall. Boxes in masonry shall be set with bottom or top of the box tight to the masonry unit.

3.4 PULL BOX, JUNCTION BOX & WIREWAY INSTALLATION

A. Install pull boxes, junction boxes and auxiliary wiring gutters where indicated on drawings and where required to facilitate installation of the wiring.

B. For concealed conduit, install boxes flush with ceiling or wall, with covers accessible and easily removable. Where flush boxes are installed in finish ceilings or walls, provide cover which shall exceed the box face dimensions by a sufficient amount to allow no gap between box and finished material.

C. Boxes shall not be located in finished, occupied rooms, without prior approval of Design Professional.

END OF SECTION 26 05 33

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Contractor shall provide identification for wiring systems and equipment as called for in this section.

B. Types of electrical identification specified in this section include the following:

1. Conduit color banding.
2. Cable conductor identification.
3. Equipment/system identification signs.

1.3 QUALITY ASSURANCE

A. UL Compliance: Comply with applicable portions of UL safety standards pertaining to electrical marking and labeling identification systems.

B. NEC Compliance: Comply with NEC as applicable to installation of identifying labels and markers for wiring and equipment.

PART 2 -PRODUCTS

2.1 ELECTRICAL IDENTIFICATION MATERIALS

A. General: Except as otherwise indicated, provide manufacturer's standard products of categories and types required for each application. Where more than single type is specified for an application, selection is Installer's option, but provide single selection for each application.

B. Color-Coded Conduit System

1. General: For conduit, use colored electrical tape to band conduits within 6" of termination at each switchboard, panelboard, distribution board, pull box and junction box. Where conduit is exposed and painted to match adjacent surfaces, band with colored electrical tape.
2. Colors:

a.	Normal Power:	gray/silver (uncolored)
b.	Emergency:	yellow*
c.	Fire alarm:	red*
d.	Division 27 systems:	purple*
e.	Division 28 systems excluding fire alarm:	purple*

* Factory colored conduit permitted for EMT conduit

3. For exposed conduits in finished spaces, refer to architectural for paint to match room finish.
4. For branch circuits, mark panel name and circuit numbers on all junction/pull boxes.

C. Cable/Conductor Identification Bands

1. General: Provide manufacturer's standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type; either pre-numbered plastic-coated type or write-on type with clear plastic self-adhesive cover flap; numbered to show circuit identification.

D. Self-Adhesive Tape for Receptacle Circuit Identification

1. General: Provide clear self-adhesive or pressure-sensitive, pre-printed, flexible vinyl tape for panel name and circuit number.

E. Engraved Plastic-Laminate Signs

1. General: Provide engraving stock melamine plastic laminate, in sizes and thickness indicated, engraved with engraver's standard letter style of sizes and wording indicated, black and white core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
   a. Thickness: 1/16", for units up to 20 sq. in. or 8" lengths; 1/8" for larger units.
   b. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate substrate.

PART 3 - EXECUTION

3.1 APPLICATION AND INSTALLATION

A. General Installation Requirements

1. Coordination: Where identification is to be applied to surfaces which require finish, install identification after completion of painting.

B. Conduit Identification

1. Conduit above accessible ceiling spaces shall be identified per 2.01 B.
2. Where electrical conduit is exposed in spaces with exposed mechanical piping which is identified by a color-coded method, apply color-coded identification on electrical conduit in a manner similar to piping identification.
3. Identify junction and pullboxes of systems with stencil lettering for panel and circuit numbers or system type.

C. Cable/Conductor Identification

1. General: Apply cable/conductor identification on each cable and conductor in each box/enclosure/cabinet where wires of more than one circuit or communication/signal system are present, except where another form of identification (such as color-coded conductors) is provided. Match identification with marking system used in panelboards, shop drawings, contract documents and similar previously established identification for project electrical work.

D. Equipment/System Identification

1. All receptacles and light fixtures shall be labeled with panel and circuit number. Use clear dyno-tape with black lettering that matches other tags.

END OF SECTION 26 05 53

SECTION 26 09 23
LIGHTING CONTROL SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Provide materials, equipment, labor and supervision necessary for a complete operational lighting control system as required by the drawings and this section.

B. This section applies to all work under this division. This shall include, but not necessarily be limited to, the following:

1. Furnish, install, and terminate all system equipment and cabling as applicable and per drawings.
2. Furnish and install any devices, controllers and cable management as required and as indicated.
3. Furnish any other material required to form a complete and operational system.
4. Provide As-Built drawings per Division 0 and/or Division 1 specification.
5. Provide Owner training and testing documentation.
6. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.
7. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft.

1.3 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical wiring devices.

B. UL Compliance and Labeling: Provide electrical wiring devices which have been UL-listed and labeled.

C. NEMA Compliance: Comply with NEMA standards for general- and specific-purpose wiring devices.

D. ASHRAE Compliance: Comply with ASHRAE 90.1-2016 section 9.

E. All Contractors shall familiarize themselves with all codes and standards applicable to their work. No extra compensation will be allowed for corrections or changes in the work required due to failure to comply with the applicable codes and standards. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

1.4 SUBMITTALS

A. Submit manufacturer's product data literature for each lighting control component required. For occupancy sensors and related components, submit Manufacturer’s device layout indicating recommended device placement, product data and project specific wiring diagrams. Submittals shall include the Sequence of Operation for each area of lighting control.

1.5 WARRANTY

A. The control system designated on the drawings and plans and herein specified shall be guaranteed to be free from original defects in both material and workmanship for a period of five (5) years. This warranty shall become effective starting the date of project substantial completion.

1.6 SYSTEM DESCRIPTION

A. System Architecture:

1. The lighting control system shall be a non-networked, distributed lighting control system. The system shall have no central monitoring, control or time functions. Each individual room or area shall have a standalone control system that is not dependent on a network for any reason including programming.

B. Lighting control system for manual and automatic control of interior lighting systems.

1. Space Control – Provide occupancy/vacancy control with manual occupant input as noted on the lighting control sequence schedule.
2. Daylit Areas – All luminaries in the daylit zone shall be controlled separately from luminaires outside of daylit zones. Luminaires in the primary daylit zones shall be controlled separately from luminaires in secondary daylit zones.
3. Daytime setpoints for total ambient illumination (combined daylight and electric light) level that initiate dimming shall be programmed to be not less than 125% of the nighttime maintained designed illumination levels.
4. Provide smooth and continuous daylight dimming for areas marked on drawings. Daylighting control system will be designed to turn off electric lighting when daylight is at or above required lighting levels, only if system functions to turn fixtures back on at dimmed level, rather than turning full-on prior to dimming.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide lighting control systems of one of the following:

1. WattStopper Digital Lighting Management – DLM
2. Hubbell Control Solutions – NX
3. Leviton – SectorFlex
4. Cooper Greengate
5. Acuity Controls – nLight
6. Lutron – Vive
7. Crestron – Green Light

2.2 SINGLE / DUAL RELAY WALL SWITCH OCCUPANCY SENSORS (STAND-ALONE*)*

A. Dual Technology: Manual-ON, Automatic-OFF dual technology (passive infrared and ultrasonic) wall switch occupancy sensor. Furnish the model which suits the electrical system parameters, and accommodates the square-foot coverage and wattage requirement for each area (and type of lighting) controlled. 120/277VAC rated.

2.3 WALL OR CEILING MOUNTED OCCUPANCY SENSOR SYSTEM

A. Description: Wall or ceiling mounted passive infrared (PIR), ultrasonic or dual technology digital (passive infrared and ultrasonic) occupancy sensor as indicated on the drawings. Furnish the system which accommodates the square-foot coverage requirements for each area controlled, utilizing room controllers, occupancy sensors and accessories which suit the lighting and electrical system parameters.

B. The manufacturer shall review electrical drawings and adjust sensor types and placement as required for proper covers based on the specific characteristics of the proposed sensor.

2.4 WALL SWITCHES AND DIMMERS

A. Description: Low voltage momentary pushbutton switches in 1, 2, 3, 4, and 5 button configuration compatible with wall plates with decorator opening. Wall switches shall include the following features:

1. Engraving where indicated on the drawings.
2. LED indicator lights indicating status.
3. Dimmers shall indicate light level with multiple LEDs.

B. Switches and dimmers shall be able to function as noted below:

1. Load and Scene button function may be reconfigured for individual buttons.
2. Individual button function may be configured to Toggle, On only or Off only.
3. Individual scenes may be locked to prevent unauthorized change.

2.5 ROOM CONTROLLERS

A. Room Controllers shall be provided to match the room lighting load and control requirements. The control units will include the following features:

1. Dual voltage (120/277 VAC, 60 Hz)

B. On/Off Room Controllers shall include:

1. One or two relay configuration
2. Relay controller listed for connection to receptacles, for occupancy-based control of plug loads within the space.
    a. One relay configuration only, rated at 20A, 120VAC.
    b. Automatic-ON/OFF configuration

C. On/Off/Dimming Room Controllers shall include:

3. One, two or three relay configuration
4. One 0-10 volt analog output per relay for control of compatible ballasts and LED drivers.
5. The following dimming attributes may be changed or selected via programming:
    a. Establish preset level for each load from 0-100%
    b. Set high and low trim for each load.
6. Relay controller listed for connection to receptacles, for occupancy-based control of plug loads within the space.
    a. One relay configuration only, rated at 20A, 120VAC.
    b. Automatic-ON/OFF configuration

2.6 EMERGENCY LIGHTING

A. Emergency Lighting Control Unit – A UL 924 listed device that monitors a switched circuit providing normal lighting to an area. The unit provides normal ON/OFF control of emergency lighting along with the normal lighting. Upon normal power failure, the emergency lighting circuit will close, forcing the emergency lighting ON until normal power is restored. Features include:

1. 120/277 volts, 50/60 Hz. 20 amp rating
2. Push to test button

3. Auxiliary contact for remote test or fire alarm system interface
4. Relays controlling 0-10V dimmed emergency lights shall include an auxiliary or integral relay device to open the control signal and force emergency lights to 100% light output.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRING DEVICES

A. Install components as indicated on the drawings and as called for below.

B. Low-voltage lighting control cable shall be plenum rated.

C. Low-voltage lighting control cables shall not share raceway or cable tray with telecommunications wiring. All cable shall be neatly routed and tie-wrapped to structural components. Excess wire shall be neatly coiled and secured to structure. Provide a 6' coil of cable at each ceiling mounted device for ease of relocation if conflicts arise. Under no circumstances shall cable be supported by piping, conduit, ductwork, ceiling tile or ceiling support wires. Cable shall be neatly routed in line with building lines.

D. Where installed above accessible ceiling, all components shall be located in easily accessible areas. Any controller located in an area above a non-removable ceiling tile or where obstructed by piping or duct work shall be relocated. All locations shall be recorded on as-built drawings.

E. Low voltage lighting control cable shall not use the same conduit sleeves as fire alarm or telecommunications cable. Provide dedicated sleeves. Where installed within non-accessible permanent construction or in exposed areas, provide continuous raceway to accessible location.

F. It is the Contractor's responsibility to determine the ceiling type for each space and provide accessories as required for installation of devices in ceiling.

G. Proper judgment must be exercised in executing the installation so as to ensure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference of structural components.

H. It is the Contractor's responsibility to arrange a pre-installation meeting with the manufacturer's factory authorized representative, at the Owner's facility, to verify placement of sensors and installation criteria.

I. Install the work of this Section in accordance with manufacturer's printed instructions unless otherwise indicated.

J. Calibrate all sensor time delays and sensitivity to provide proper detection of occupants and energy savings.

1. Adjust time delay so that controlled area remains lighted for 15 minutes after occupant leaves area or as indicated in the Sequence of Operations.
2. Adjust lighting system to provide maximum lighting levels as indicated on the drawings.

K. Provide 120V circuits as required for lighting control components.

3.2 SPARE PARTS

A. Spare Parts: Provide the following list of spare equipment (for each type used) to Owner to match equipment used in project.

1. Occupancy Sensor, ceiling mounted – quantity: 1
2. Digital Wall Switch, 2-button- Quantity: 1
3. Digital Wall Dimmer - Quantity: 1
4. Any specialty tool required for programming - Quantity: 1

END OF SECTION 26 09 23

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 - Procurement and Contracting Requirements, Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Provide materials, equipment, labor and supervision necessary to install wiring devices as required by the drawings and this section.

B. Types of wiring devices this section include the following:

1. Straight blade receptacles
2. GFI receptacles
3. Wall switches
4. Wiring device accessories
5. Wall box dimmers
6. Service poles

1.3 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical wiring devices.

B. UL Compliance and Labeling: Provide electrical wiring devices which have been UL-listed and labeled.

C. NEMA Compliance: Comply with NEMA standards for general- and specific-purpose wiring devices.

1.4 SUBMITTALS

A. Submit manufacturer's name and product data literature for each type of wiring device required.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

1. Hubbell, Inc.
2. Leviton Manufacturing Co., Inc.
3. Pass & Seymour / Legrand

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. Device Color:

1. Device color shall match existing devices; white for the Job Center and light almond for the Neighborhood Intervention Program area. Devices and coverplates mounted on service poles shall match service pole color.
2. Device color may not be consistent throughout the building. Select areas may require different standard colors. Refer to Architectural elevations and finishes.

3. Device model numbers indicated below to not include a color suffix. Model numbers listed do not indicate brown device color.

B. Modular Connectors: Devices that are manufactured for use with modular plug-in connectors (snap connect, plug tail, etc.) may be substituted. Plug in connectors shall meet the following conditions:

1. Connectors shall comply with UL498 and shall be made with stranded building wire.

C. Tamper Resistant:

1. Devices marked 'TR' shall be tamper resistant. Provide tamper resistant versions of the model specified.
2. Refer to Part 3 - Execution section for required locations.

2.3 STRAIGHT BLADE RECEPTACLES

A. Heavy Duty Convenience Receptacles 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

1. Hubbell HBL5361 (simplex), 5362 (duplex).
2. Pass & Seymour 5361 (simplex), 5362 (duplex)
3. Leviton 5361 (simplex), 5362 (duplex)

2.4 GFCI RECEPTACLES

A. Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596. Configuration 5-20R. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection. Self-testing, 4 to 6mA trip. Hubbell is basis of design. Other listed manufacturers are acceptable.

1. Heavy duty standard. Hubbell GFRST20
2. Heavy duty tamper resistant: Hubbell GFTRST20
3. Heavy duty weather resistant. Hubbell GFWRST20
4. Heavy duty tamper resistant and weather resistant: Hubbell GFTWRST20
5. Heavy duty faceless. Hubbell GFBFST20

B. Hospital grade, straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498 Supplement sd, and FS W-C-596. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection. Self-testing, 4 to 6mA trip. Hubbell is basis of design. Other listed manufacturers are acceptable.

1. Heavy duty standard. Hubbell GFRST83
2. Heavy duty tamper resistant with alarm: GFTRST83
3. Heavy duty tamper resistant and weather resistant: Hubbell GFTWRST83

2.5 WALL SWITCHES

A. Heavy duty industrial grade switch. Comply with NEMA WD 1, and FS W-S-896. Hubbell is basis of design. Other listed manufacturers are acceptable.

1. Single pole toggle light switch - 20 amp, 120-277 volt, Hubbell #1221 series.
2. Double pole toggle light switch - 20 amp, 120-277 volt, Hubbell #1222 series.
3. Three-way toggle light switch - 20 amp, 120-277 volt Hubbell #1223 series.
4. Four-way toggle light switch - 20 amp, 120-277 volt, Hubbell #1224 series.
5. Double-pole double-throw center off light switch - 20 amp, 277 volt, Hubbell #1386 series.

6. Momentary contact switch - 15 amp, 120-277 volt, Hubbell #1556 series.

2.6 WIRING DEVICE ACCESSORIES

A. Cover Plates:

1. Smooth High-Impact Thermo plastic (nylon, unbreakable), Hubbell NP Series or equal.
2. Stainless steel, smooth metal, Type 302.
3. Plates for surface outlets shall be of the raised cover type utilizing 4" square boxes.

2.7 WALL BOX DIMMERS

A. Acceptable Manufacturers:

1. Lutron Electronics Co., Inc.
2. Hubbell
3. Lithonia

B. Line-Voltage Dimmers: Solid-state reverse phase dimmer capable of controlling 120 VAC LED. Incandescent, and electronic low-voltage lighting intensity over complete range from zero to full light intensity. Unit shall be designed to eliminate noise and RFI (Radio Frequency Interference). Dimmers for low voltage fixtures shall be UL listed to control transformer-supplied incandescent low voltage lamps. Verify compatibility with electronic or magnetic transformers.

1. Lutron Nova T linear slide
2. Lutron Diva
3. Lutron Skylark
4. Lutron Caseta
5. Lutron Grafik T

C. 0-10v Dimmers: Provide single-pole, three way or multi-location, semi-conductor modular type 0-10 Volt dimmers for LED fixtures with 60 hertz, wattage and voltage as indicated, and with electromagnetic filters to reduce noise and interference to minimum. Construct with continuously adjustable trim potentiometer for adjustment of low end dimming.

1. Lutron Nova T linear slide
2. Lutron Diva
3. Lutron Maestro

2.8 SERVICE POLES

A. Basis-of-Design Product: Subject to compliance with requirements, provide Hubbell Wiring Device Kellems; HBL PP series service poles or comparable product by one of the following:

1. MonoSystems.
2. Wiremold.

B. Description:

1. Factory-assembled and -wired units to extend power and voice and data communication from distribution wiring concealed in ceiling to devices or outlets in pole near floor.
2. Poles: Nominal 2.5-inch square cross section, with height adequate to extend from floor to at least 6 inches above ceiling, and with separate channels for power wiring and communication cabling.

3. Mounting: Ceiling trim flange with concealed bracing arranged for positive connection to ceiling supports; with pole foot and carpet pad attachment.
4. Material and Finish: Painted steel; light almond
5. Wiring: Sized for minimum of five No. 12 AWG power and ground conductors and a minimum of four, four-pair, 6 communication cables.
6. Power Receptacles: Two duplex, 20-A, straight-blade receptacles complying with requirements in this Section.
7. Communication Outlets: Blank insert with bushed cable opening.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRING DEVICES

A. Install wiring devices as indicated on the drawings and as called for below.

B. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.

C. In masonry walls, switches and receptacle heights shall be adjusted as required so outlets are at nearest mortar joint to specified height.

D. Where light switches are located adjacent to doors, they shall be installed on "knob" side of door, unless indicated otherwise.

E. All GFI type receptacles shall be installed where GFI notation is shown on plans. No downstream protection of receptacles will be allowed from load side of other GFI type receptacles unless specifically noted on drawings.

F. All GFI receptacles shall be accessible for testing. Where a GFI receptacle is located behind equipment, a faceless GFCI device shall be provided in an adjacent accessible location.

G. All receptacles within 6' of the edge of a sink shall be GFI type, Contractor shall notify Engineer prior to installation if the drawings do not indicate these as GFI.

H. Prior to roughing-in outlet boxes, Contractor shall verify from general construction drawings, door swings, type of wall finishes and locations for counters and work benches.

I. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.

J. All receptacles installed in damp and wet locations shall be weather resistant.

K. All non-locking 15A and 20A receptacles in the following locations shall be tamper resistant regardless of mark on plans:

1. Offices, corridors and waiting rooms in spaces accessible to the public.

END OF SECTION 26 27 26

SECTION 26 50 00
LIGHTING

PART 1 - GENERAL

1.1 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 05 00 – Common Work Results for Electrical are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. Provide lighting fixtures, accessories, labor and supervision necessary to install complete lighting system as required by the drawings and this section.

B. Types of lighting fixtures in this section include the following:

1. Solid State (LED)
2. Exit Signs
3. Emergency
4. Exterior Luminaires

1.3 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to installation and construction in building lighting fixtures.

B. NEMA Compliance: Comply with applicable requirements of NEMA standard publications pertaining to lighting equipment.

C. Listings: Provide lighting fixtures which have been listed and labeled. Listing or labeling shall be by UL, ETL Intertek or other nationally recognized agency.

D. CBM Labels: Provide fluorescent-lamp ballasts which comply with Certified Ballast Manufacturers Association standards and carry the CBM label.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's data on interior building lighting fixtures.

B. Shop Drawings: Submit fixture shop drawings in booklet form with separate sheet for each fixture, assembled in luminaire "type" alphabetical order, with proposed fixture and accessories clearly indicated on each sheet. Shop drawing booklet shall include lamp and ballast data sheets.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers shall be as listed in the light fixture schedule on the drawings.

B. Basis of Design Product: The design for each luminaire is based on the product named and described in the light fixture schedule on the drawings. Provide either the named product or a comparable product by one of the equivalent manufacturers listed. Equivalent manufacturers shall match the basis of design product in both form and function. The Architect and Engineer have the final acceptance of equivalent products. Where equivalent products are not determined to match the basis of design, the basis of design product shall be provided at no additional cost to the Owner. Upon request, equivalent manufacturers shall submit lighting calculations and ies files to prove performance of product and samples for table top viewing.

2.2 SOLID STATE LIGHTING / LIGHT EMITTING DIODE (LED) LUMINAIRES (Greater than 20W)

A. General:

1. Luminaire manufacturer shall have a minimum of five (5) years' experience in the manufacture and design of LED products and systems.
2. All LED sources used in the LED luminaire shall be of proven quality from established and reputable LED manufacturers. Acceptable LED lamp manufacturers unless otherwise noted are:
    a. Cree, Inc.
    b. Philips Lighting
    c. Nichia Corporation
    d. Norlux
    e. Opto Technology, Inc.
    f. Osram Optronic Semiconductors
    g. Samsung

B. LED Warranty

1. Luminaire manufacturer provide a five (5) year written warranty.

C. Replacement and Spares:

1. Manufacturer shall provide written guarantee of the following:
    a. Manufacturer shall be able to provide compatible replacement parts that are designed to fit into original luminaire for ten (10) years.
    b. Replacement LED array/module shall be within 3 MacAdam color ellipse, within 10% of lumen output, 7% of correlated color temperature (CCT) and equivalent distribution of original array/module.
    c. Replacement LED array/module shall utilize equal to or less than amount of wattage of original array/module.
2. LED driver and array/module shall be replaceable in field.

D. Products and Components – Performance:

1. All LED components shall be mercury-free and lead-free.
2. LEDs shall comply with ANSI/NEMA/ANSLG C78.377-2008 – Specifications for the Chromaticity of Solid State Lighting Products. Color shall remain stable throughout the life of the light source.
3. LEDs shall comply with IESNA LM-80 – Standards for Lumen Maintenance of LED Lighting Products.
4. LEDs shall have a minimum rated source life of 50,000 hours under normal operating conditions or as noted on the lighting fixture schedule. LED "rated source life" is defined as the time when a minimum of 70% of initial lumen output remains, as defined by IESNA LM-70.
5. Luminaire assembly shall include a method of dissipating heat so as to not degrade life of source, electronic equipment, or lenses. LED luminaire housing shall be designed to transfer heat from the LED board to the outside environment. Luminaire housing shall have no negative impact on life of components. Upon request, manufacturer shall provide junction temperature limitations and test reports of installed LED in fixture.
6. Method of dissipating heat shall be passive, active cooling systems are not allowed.
7. High power LED luminaires shall be thermally protected using one or more of the following thermal management techniques: metal core board, gap pad, and/or internal monitoring firmware.
8. LEDs shall be adequately protected from moisture or dust in interior applications.
9. For wet and damp use, LED-based luminaires itself shall be sealed, rated, and tested for appropriate environmental conditions, not accomplished by using an additional housing or enclosure. Such protection shall have no negative impact on rated life of source or components, or if so, such reductions shall be explicitly brought to the attention of the designer.

10. All hardwired connections to LED luminaires shall be reverse polarity protected and provide high voltage protection in the event connections are reversed or shorted during the installation process.
11. Manufacturer shall provide Luminaire Efficacy (lm/W), total luminous flux (lumens), luminous intensity (candelas) chromaticity coordinates, CCT and CRI. Optical performance, polar diagrams, and relevant luminance and illuminance photometric data. Provide data in IES file format in accordance with IES LM-79-2008, based on test results from an independent Nationally Recognized Testing Laboratory. Provide information upon special request.

E. LED drivers shall meet the following requirements:

1. Drivers shall have a minimum efficiency of 85%.
2. Minimum/Maximum Ambient Temperature: -20˚C/55˚C interior locations, -40˚C/55˚C exterior locations,
3. Input Voltage: 120 to 277 (±10%) V or as scheduled.
4. Power Supplies: Class I or II output.
5. Dimming Type: 0-10V control with current source driver, current sinking drivers are not allowed.
6. Surge Protection for exterior fixtures: The system must survive 250 repetitive strikes of “C Low” (C Low: 6kV/1.2 x 50 µs, 10kA/8 x 20 µs) waveforms at 1-minute intervals with less than 10% degradation in clamping voltage. “C Low” waveforms are as defined in IEEE/ASNI C62.41.2-2002, Scenario 1 Location Category C.
7. Power Factor (PF): ≥ 0.90.
8. Total Harmonic Distortion (THD): ≤ 20%.
9. Comply with FCC Title 47 CFR Part 18 Non-consumer RFI/EMI Standards.
10. Drivers shall be reduction of hazardous substances (ROHS)-compliant.
11. Mean Time Between Failure (MTBF): 100,000 hours based on 90% survival.

2.3 EXIT SIGNS

A. Housing to be per light fixture schedule (thermoplastic, edge lit or cast aluminum) for wall, end or ceiling mounting. Illumination to be by long life, low watt LED lamps. Battery, where specified, to be maintenance free, sealed nickel-cadmium type and shall operate sign for 90 minutes after loss of power.

2.4 EMERGENCY FIXTURES

A. Housing and lamping per light fixture schedule. Self contained complying with UL 924. Battery to be premium grade, lead-acid or nickel cadmium, maintenance free battery and shall operate sign for 90 minutes after loss of power.

PART 3 -EXECUTION

3.1 INSTALLATION OF INTERIOR LIGHTING FIXTURES

A. Install interior lighting fixtures at locations and heights as indicated, in accordance with fixture manufacturer's written instructions, applicable requirements of the National Electric Code (NEC), NEMA standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.

B. All low-voltage luminaires using remote drivers or power supplies shall be installed as follows:

1. Installation shall be in compliance with the manufacturer's instructions including distance limitations.
2. Remote drivers and power supplies shall be located in accessible locations and clearly noted on as-built plans. Where plywood is used for power supply mounting, plywood shall be UL Listed fire resistant.
3. Unless specifically noted "Class 2", all low-voltage wiring between remote drivers or power supplies and luminaires shall be considered Class 1 and installed in accordance with NEC Article 725. Wiring shall be 600V rated and installed in conduit.

4. All remote drivers and power supplies not specifically labeled "Class 2" on the power supply housing shall be installed in a ventilated metal enclosure. Where the power supply includes cooling fan or convection cooling, ventilation openings in enclosure shall be provided to not impede power supply cooling.

C. Coordinate with other electrical work as appropriate to properly interface installation of interior lighting fixtures with other work.

D. Coordinate fixture location with reflected ceiling plan.

E. Recessed fixtures in removable ceilings shall be connected to the branch circuit with flexible conduit and branch circuit wire from an accessible junction box. Where fluorescent fixture housings are connected together, use 90 deg.C wire for branch circuit feed through fixture channels.

F. All fixtures shall be grounded. All lamp sockets shall be wired so that the outer shell is connected to the neutral grounded conductor.

G. Fixtures recessed in furred ceiling shall be installed so that they can be removed from below the ceiling.

H. For all dimmed light fixtures, “burn in” or “season” lamps prior to dimming as recommended by the lamp manufacturer.

I. Luminaires located in suspended ceilings shall be connected with a maximum 6 foot length of flexible metal conduit and building wire.

J. Housing, trim, and lens frame shall be true, straight and parallel to each adjacent fixtures and features.

K. Contractor shall include all materials and labor necessary for the final aiming and adjusting of adjustable light fixtures. Adjustment of light fixtures may be required to occur after sunset at a time designated by the Engineer.

L. Round fixtures or fixtures smaller than the ceiling grid shall have at least two (2) 3/4 inch (19 mm) metal channels spanning, and secured to, the ceiling tees for centering and aligning the fixture.

M. Troffer, recessed and semi-recessed fixtures shall be installed at a minimum per the manufacturer’s instructions and the requirements below. Fixtures shall not be supported directly on the ceiling material. Support fixtures with metal bar hangers or strut channels attached to the ceiling tees.

N. Fixture whips shall be in accordance with section 26 05 33 Raceway and Boxes for Electrical Systems.

END OF SECTION 26 50 00

SECTION 27 00 10
TELECOMMUNICATIONS GENERAL PROVISIONS

PART 1 - GENERAL

1.01 GENERAL

A. Refer to Division 00 – Procurement, Contracting and Warranty Requirements and Division 01 - General Requirements, which all apply to work under this section.

1.02 DESCRIPTION OF WORK

A. This section applies to all work under the telecommunications contract. This shall include, but not necessarily be limited to, the following:

1. Pre-Register Project with structured cabling plant manufacturer if applicable.
2. Furnish and install a complete voice and data-wiring infrastructure.
3. Furnish, install, and terminate all UTP cable and fiber as applicable and per drawings.
4. Furnish and install all wall plates, jacks, patch panels, and patch cords as required and as indicated.
5. Furnish and install any cabinets, racks and ladder rack as required and as indicated.
6. Furnish any other material required to form a complete system.
7. Perform permanent link testing (100% of links) and certification of all components.
8. Furnish test results of all cabling to the owner on disk and paper format, listed by each closet, then by workstation ID.
9. Provide Owner As-builts in the form of one electronic copy and two hard copies of a labeled map of the building(s) showing the structured cabling plant.
10. Adhere and comply with all requirements of the Contractor Agreement for the structured cabling plant manufacturer to be used.
11. Provide Owner training and testing documentation.

B. The work shall include all materials, equipment and labor required for complete and properly functioning telecommunications systems.

C. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.

D. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft.

1.03 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:

1. National Electrical Code
2. Local Electrical Code
3. National Fire Protection Association
4. National Electrical Manufacturers Association
5. Standards of Institute of Electrical and Electronic Engineers
6. Applicable Building Codes
7. Occupational Safety and Health Act
8. Wisconsin Administrative Codes
9. ANSI TIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
10. ANSI TIA-526-14-C Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
11. ANSI TIA-568-D.1 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements

12. ANSI TIA-568-C.2 Balanced Twisted-Pair Telecommunications Cabling and Components Standards
13. ANSI TIA-568-C.3 Optical Fiber Cabling Components Standard
14. ANSI TIA-568-C.4 Broadband Coaxial Cabling and Components Standard
15. ANSI TIA-569-D Telecommunications Pathways and Spaces
16. ANSI TIA-570-C Residential Telecommunications Infrastructure Standard
17. ANSI TIA-598-D Optical Fiber Cable Color Coding
18. ANSI TIA-606-B Administration Standard for Commercial Telecommunications Infrastructure
19. ANSI TIA-607-B Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
20. ANSI TIA-758-B Customer-owned Outside Plant Telecommunications Infrastructure Standard
21. National Fire Protection Agency (NFPA - 70), National Electrical Code (NEC)

B. All Contractors shall familiarize themselves with all codes and standards applicable to their work. No extra compensation will be allowed for corrections or changes in the work required due to failure to comply with the applicable codes and standards. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

1.04 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Contractor shall comply with the rules and regulations of the local serving utility companies and shall check with each utility company providing service to this project and determine or verify their requirements regarding incoming services.

B. Secure and pay for all permits, licenses, fees and inspections.

1.05 DRAWINGS

A. Drawings for the work are in part diagrammatic, and are intended to convey the scope of the work and to indicate in general the location of equipment.

B. Contractor shall layout his own work and shall be responsible for determining the exact quantities and locations for equipment.

C. Contractor shall take own field measurements for verifying locations and dimensions; scaling of the drawings will not be sufficient for laying out the work.

D. Because of the scale of the drawings, certain basic items for a complete installation are not shown, but where such items are required by code (or referenced standards) where they are required for proper installation and operation of the work, such items shall be furnished and installed.

1.06 ACTIVE SERVICES

A. Contractor shall be responsible for verifying exact locations of all existing services prior to beginning work in that area.

B. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.

C. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the authorities having jurisdiction.

1.07 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to become familiar with the conditions of the site which will affect the work and shall verify points of connection with utilities and/or existing system wiring.

B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

1.08 COORDINATION AND COOPERATION

A. It shall be Contractor's responsibility to schedule and coordinate work with the schedule of General Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of his work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment, other equipment and the building. The Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Drawings and specifications are intended to be complimentary. Any work shown in either of them, whether in the other or not, shall be executed according to the true intent and meaning thereof, the same as if set forth in all. Conflicts between the drawings and the specifications, or between the requirements set forth for the various contractors, shall be called to the attention of the Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by Design Professional and his/her decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting, plaster, etc., until the project is substantially completed. Damage from rust, paint, scratches, etc., shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the Painting Contractor, but this shall not relieve Contractor of the responsibility for checking to assure that adequate protection is being provided.

F. Where the final installation or connection of equipment in the building requires Contractor to work in areas previously finished by Owner, the Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Contractor shall be responsible for patching and refinishing of such areas which may be damaged in this respect.

G. Where two or more specified items/systems in the specifications and/or the drawings are in conflict, that requiring the highest order of workmanship and the most financially expensive products shall take precedence. Such questions shall be referred to the Design Professional for final decision.

1.09 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable manufacturer regularly engaged in the manufacture of the specified item unless authorized in writing by Design Professional. Where more than one unit is required of the same items, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items when required shall be furnished as part of the equipment, whether or not specifically called for.

1.10 SUBMITTALS

A. Contractor shall furnish, to the Design Professional, complete sets of submittals. Contractor shall review and sign submittals before submitting. Contractor shall provide submittals via electronic process (.PDF format) unless otherwise instructed. Refer to Division 01 specifications for additional requirements.

B. Submittals shall be bound into sets per specification section (not division). The content of the submittal shall cover related items for a complete system as much as practical and items shall be identified with symbols or "plan marks" used on drawings whenever possible. Incomplete, piecemeal or unbound submittals will be rejected.

C. Each submittal shall include a cover sheet providing the Approved Contractors company name, address, phone number and contact person (person to contact if there are questions about the submittal). The cover sheet shall also have adequate white space for the design professional review stamp as well as up-stream contractor stamps. The company providing the submittal shall be the same as that which meets the APPROVED CONTRACTOR requirements paragraph found later in this specification section (submittals without this identifying contractor information on the cover page will be rejected to ensure the Approved Contractor process is being followed).

D. Design Professional will review submittals solely to assist contractors in correctly interpreting the plans and specifications.

E. Contract requirements cannot be changed by submittals. Contract documents remain in force even if equipment is submitted which differs from contract drawings and specifications and that submittal is stamped as reviewed (or any other stamp verbiage).

F. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

G. After award of contract, the contractor shall provide a completed submittal schedule including dates that the submittals will be to the Design Professional for review.

H. Submit required information on all items in the project for the following systems (see table). Submittals shall be sorted and separately identified per specification section listed below.

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF SYSTEM DEMON-STRATION	OTHER (SEE NOTES)
27 00 10	Contractor Certifications					X		Note 1
27 00 10	Manufacturer Certification					X		Note 2
27 00 10	UTP No-Paint Notification					X		Note 7
27 10 00	Grounding Equipment		X			X		
27 10 00	Grounding Cabling		X			X		
27 10 00	Grounding Hardware		X			X		
27 11 00	UTP Cabling/Equipment		X			X	X	Note 6
27 11 00	Fiber Cabling/Equipment		X			X	X	Note 6
27 11 00	IDC/Lightning Blocks		X			X	X	Note 6
27 11 00	Data Racks/Cabinets		X			X	X	Note 6
27 11 00	Cable Management		X			X	X	Note 6
27 11 00	As-Builts at Closeout							Note 3
27 12 00	Tester, UTP/Fiber		X			X		Note 4
27 12 00	Test Report at Closeout					X		Note 5

Notes:

1. Division 27 Contractor shall submit copies of the Contractor Certifications under section 27 00 10 (BICSI or IBEW/NECA Certifications) showing compliance with the specification. See Approved Contractors paragraph for details.
2. Division 27 Contractor shall submit Manufacturer Certification under section 27 00 10. See Approved Contractors paragraph in this section for details, and further requirements listed in Cabling and Equipment specification section.
3. Division 27 Contractor shall submit As-Builts as specified in Cabling and Equipment section.
4. Division 27 Contractor shall submit product information on UTP Tester and Fiber Tester. See testers specified in Testing and Documentation section.
5. Division 27 Contractor shall submit Test Report as specified in Testing and Documentation section.
6. Grounding and Bonding or Cabling and Equipment section submittals will not be opened or reviewed by the Design Professional until the Division 27 00 10 Contractor Certifications (see Note 1) and Division 27 Manufacturer Certifications (see Note 2) have been received and found to be acceptable by the Design Professional.
7. Division 27 Contractor shall submit the "Do Not Paint The UTP" written notification (addressed to the General Contractor) for review by the Design Professional. This written notification is specified in the Telecommunications Cabling and Equipment section. The submittal process may be used as the vehicle to inform the General Contractor of the "Do Not Paint The UTP" requirement (and the mandatory corrections required if this were to happen, outlined in the Telecommunications Cabling and Equipment section) if the General Contractor acknowledges receipt of the written notification.

1.11 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be submitted to the Design Professional in duplicate upon completion of the job. Refer to Division 01 specifications for additional information.

B. Submit manuals shall be bound in a three ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

OPERATION
AND
MAINTENANCE
MANUAL
FOR
TELECOMMUNICATIONS SYSTEMS

(PROJECT NAME)
(LOCATION)
(DATE)

SUBMITTED BY
(NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR)

C. Provide a master index at the beginning of manual showing items included. Each section shall contain the following information for equipment furnished under this contract:

1. Equipment and system warranties and guarantees.
2. Installation instructions.
3. Operating instructions.
4. Maintenance instructions.
5. Spare parts identification and ordering list.
6. Local service organization, address, contact and phone number.
7. Submittals with reviewed stamp of Design Professional and Contractor shall be included, if applicable, along with the items listed above.

1.12 TESTS AND DEMONSTRATIONS

A. All systems shall be tested by Contractor and placed in proper working order prior to demonstrating systems to Owner.

1.13 TRAINING AND DEMONSTRATIONS

A. Prior to acceptance of the telecommunications installation, the Contractor shall provide to Owner, or his designated representatives, all comprehensive training on essential features and functions of all systems installed, and shall instruct Owner in the proper operation and maintenance of such systems.

1. Provide adequate notice to Owner as to when instruction will be conducted so appropriate personnel can be present.
2. Prepare the instruction format for a minimum of four Owner Representatives.

B. Equipment training:

1. Manufacturer's representatives shall provide instruction on each major piece of equipment. Contractor shall provide instruction on all other equipment.
2. Training sessions shall use the printed installation, operation and maintenance instruction materials included in the O&M manuals and emphasize preventative maintenance and safe operating procedures.
3. Training shall be performed by qualified factory trained technicians.

4. Contractor shall attend all sessions performed by the manufacturer's representative and shall add to each session any special information relating to the details of installation of the equipment as it might impact the operation and maintenance.
5. Equipment training shall occur as soon as possible after start up of the equipment and shall include hands-on operation. Training shall be provided for equipment listed in the table below.

C. System training:

1. Training sessions shall include hands-on demonstrations of system wide start-up, operation in all possible modes, shut-down and emergency procedures.

D. The following are minimum requirements for Owner instruction:

Section	**Description**	**Hrs. on Site**	**Presented By**	**Others Present**	**Remarks**
27 11 00	Cabling and Equipment	2	Contractor		

E. Each Contractor shall submit a certificate (in the project closeout submittals), signed by Owner stating the date, time and persons instructed and that the instruction has been completed to Owner's satisfaction. An example of a certificate form is as follows:

CERTIFICATE OF SYSTEM DEMONSTRATION

This document is to certify that the contractor has demonstrated the hereafter listed systems to Owner's representatives in accordance with the Contract documents and that the instruction has been completed to the Owner's satisfaction.

A. Project:

B. System(s):

C. Contractor's representatives giving instruction and demonstration:

Contractor: _____

NAMES	DATE	HOURS

D. Owner's representatives receiving instruction:

Owner: _____

NAMES	DATE	HOURS

E. Acknowledgement of demonstration:

Contractor's Representative: _____
signature

_____
date

Owner's Representative: _____
signature

_____
date

1.14 PERMITS, FEES, ETC.

A. Secure all required permits and pay for all inspections required in connection with the telecommunication systems work. Contractor shall post all bonds and obtain all licenses required by the State, City, County, and Federal Agencies.

1.15 SUBSTITUTIONS

A. To obtain approval to use unspecified equipment, Bidding Contractors (not equipment supplier, manufacturers, etc.) shall submit written requests to Design Professional at least 10 days prior to bid due date. Requests shall clearly describe the equipment for which approval is being requested. Include all data necessary to demonstrate that equipment's capacities, features and performance are equivalent to include a cost comparison between specified equipment and equipment for which approval is being requested. If the equipment is acceptable, Design Professional will approve it in an addendum. The Design Professional will, under no circumstances, be required to prove that an item proposed for substitution is or is not of equal quality to the specified item.

B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.16 APPROVED CONTRACTORS

A. MANUFACTURER CERTIFICATION: Contractor shall be a manufacturer certified installer for the structured cabling plant. A copy of the current annual manufacturer certification shall be provided with 27 0010 submittals. Contractor is responsible for workmanship and installation practices in accordance with the manufacturer requirements and shall be authorized to provide an extended Manufacturer's Product Warranty with his installation. The specific warranty program that is acceptable for each solution is listed with the connectivity solution in specification section 27 1100 TELECOMMUNICATIONS SYSTEMS CABLING AND EQUIPMENT. Contractors shall provide proof upon request that they have maintained the Manufacturers Certification in good standing for at least six months prior to the overall project bid. Temporary or short term certifications (less than the standard 12 month annual certification described above) or case-by-case certifications are not acceptable.

B. CONTRACTOR CERTIFICATION: Contractor shall meet one of the following two paragraphs and provide appropriate documentation in the 27 0010 submittals:

1. Contractor shall have BICSI Registered Installers and Technicians on staff and assign them to this project. The project shall be staffed at all times by Installers and Technicians who, in the role of lead craft-persons, will be able to provide leadership and technical resources for the remaining craft-persons on the project. A minimum of 30 percent of personnel shall be BICSI registered telecommunications installers. Of that number 15 percent shall be registered at the Technician Level, at least 40 percent shall be registered at the Installer Level 2, and the balance shall be registered at the Installer Level 1. Contractor shall provide BICSI certifications showing employee name, level, and expiration date. BICSI certificate for the highest level attained shall be submitted.
2. Contractor shall have employees on staff and assigned to the project that are currently indentured in or have successfully completed the IBEW/NECA three-year Telecommunications Installer/Technician registered apprenticeship program. Contractor shall maintain a ratio of 1 Technician to 1 indentured Apprentice. Contractor shall provide documentation verifying the indentured status of Apprentices, and the Department of Labor Certificates of Completion for the Installer/Technicians.

C. Contractor pulling the telecommunications cabling (if different from the prime Telecommunications Contractor) shall meet all the same BICSI or IBEW/NECA requirements, and requirements of this specification, as the prime Telecommunications Contractor.

D. Contractor shall be located within 125 miles of the construction site to establish a potential two hour response time for ongoing customer needs after construction completion.

1.17 ACCEPTABLE MANUFACTURERS

A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the drawing schedules, are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

B. Manufacturers, who do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of Contractor and/or the manufacturer.

C. If Contractor chooses to use a manufacturer listed as an equal, it shall be his responsibility to assure that the manufacturer has complied with the requirements in 'A' above. Contractor shall assume all responsibility for physical dimensions, operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

D. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.18 QUALITY ASSURANCE

A. Contractor shall be a company specializing in telecommunication cable and/or accessories with a minimum of five years documented experience in installation of cable and/or accessories similar to those specified below.

1.19 WARRANTY AND SERVICES

A. The entire telecommunications system including all sub-systems shall be guaranteed against defect in materials and installation for a minimum of one year. Any malfunctions which occur within the guarantee period shall be promptly corrected without cost to Owner. This guarantee shall not limit or void any manufacturer's express or implied warranties.

B. A Manufacturer Product Warranty shall be provided which warrants functionality of all components used in the system for 20 years from the date of registration. The Manufacturers Product Warranty shall warrant the installed horizontal and/or backbone copper, and both the horizontal and the backbone optical fiber portions of the cabling system.

C. Continuing Maintenance: The contractor shall furnish an hourly rate with the proposal submittal, which shall be valid for a period of one year from the date of acceptance. This rate will be used when cabling support is required to affect moves, adds, and changes to the system (MACs). MACs performed by an approved Contractor shall be added to the warranty.

D. Final Acceptance & System Certification: Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation, and successful performance of the cabling system for a two-week period will constitute acceptance of the system. Upon successful completion of the installation and subsequent inspection, the end user shall be provided with a numbered certificate registering the installation.

1.20 CHANGES IN THE WORK

A. A Contract Change Order is a written order to Contractor signed by Owner and Contractor, issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Contract Change Order.

B. Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, with the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Contract Change Order and shall be performed under the applicable conditions of the Contract Documents.

C. The cost or credit to Owner resulting from a change in the Work shall be determined by mutual acceptance of a lump sum properly itemized and supported by sufficient substantial data to permit evaluation. Change Orders shall be submitted with each item listed individually with a material cost and labor unit extension. Overhead and profit, as mutually agreed upon between Owner and Contractor shall be added to material and labor cost figures.

D. It shall be the responsibility of Contractor before proceeding with any change to satisfy himself that the change has been properly authorized on behalf of Owner.

1.21 GROUNDING AND BONDING OF SYSTEMS

A. All low voltage systems shall be subject to the Telecommunications Grounding and Bonding specification section 27 1000. For those systems which may require a specialized sub-contractor, the sub-contractor providing and installing systems shall also be responsible for grounding and bonding per this specification.

1.22 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by Owner.

B. When all the work is complete Contractor shall thoroughly clean all material and equipment installed as a part of this contract and leave all equipment and material in new condition.

C. Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

END OF SECTION 27 00 10

SECTION 27 10 00
TELECOMMUNICATIONS GROUNDING AND BONDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 27 00 10 – Telecommunications General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this grounding and bonding system in compliance with the applicable standards, specifications and drawings. Contractor will provide and install all of the required material to form a complete and operational system whether specifically addressed in the technical specifications or not.

B. All division 27 low voltage systems shall adhere to these grounding and bonding requirements.

1.3 SUBMITTALS

A. Submittal data for equipment, cabling, and hardware shall consist of catalog cuts showing technical data necessary to evaluate the materials with specific item designated by arrow or by being highlighted.

1.4 WORK BY OTHERS

A. The Intersystem Grounding Busbar located outside the main electrical service equipment will be installed as part of the main electrical gear and connected back to the various building grounding sources (ground rods, water pipe, building steel, etc.).

1.5 FIRESTOPPING

A. Contractor shall be responsible for fire stopping all conduit sleeves (internally only) and cable tray where required to maintain integrity of fire and/or smoke walls. The Contractor shall review architectural drawings to determine which walls have a fire and/or smoke rating. Any rating other than “non-rated” shall constitute a wall that requires fire stopping in all penetrations/openings.

PART 2 -PRODUCTS

2.01 GROUNDING EQUIPMENT

A. Telecommunications Main Grounding Busbar (TMGB): Panduit part number GB4B0624TPI-1.

B. Telecommunications Grounding Busbar (TGB): Panduit part number GB2B0312TPI-1.

C. Telecommunications Grounding and Bonding Conductor Label Kit: Panduit part number LTYK.

D. Data Rack Grounding Busbar, 19”: Panduit part number RGRB19U.

E. Server Cabinet Grounding Busbar, Cage-nut Mounting, 19”: Panduit part number RGRB19CN.

F. Electrostatic Discharge Port Kit: Panduit part number RGESD2-1.

2.02 GROUNDING CABLING

A. Cable used for Intersystem Grounding Busbar to Telecommunications Main Grounding Busbar (TMGB) shall be non-jacketed AWG #3/0 bare copper stranded grounding cable.

B. Cable used for Telecommunications Main Grounding Busbar (TMGB) to Telecommunications Grounding Busbar (TGB) shall be non-jacketed AWG #3/0 bare copper stranded grounding cable.

C. Cable used for Telecommunications Main Grounding Busbar (TMGB) or Telecommunications Grounding Busbar (TGB) to data racks/server cabinets inside the telecom room shall be AWG #6 copper stranded cable, green jacketed or bare copper.

D. Cable used for Telecommunications Main Grounding Busbar (TMGB) or Telecommunications Grounding Busbar (TGB) to any wall mounted low voltage system in the telecom room that requires grounding shall be AWG #6 copper stranded cable, green or bare copper.

E. Cable used for Telecommunications Main Grounding Busbar (TMGB) or Telecommunications Grounding Busbar (TGB) to the telecom room ladder rack system shall be AWG #6 copper stranded cable, green or bare copper.

F. Cable used for Cable Tray and/or Wire Basket grounding outside the telecom room shall be #6 AWG stranded bare copper cable.

2.03 GROUNDING HARDWARE

A. Two Hole Lug, Code Conductor, Long Barrel with Window, AWG #3/0 3/8” with 1” spacing. Panduit part number LCC3/0-38DW-X.

B. Two Hole Lug, Code Conductor, Long Barrel with Window, AWG #6 with 5/8” spacing. Panduit part number LCC6-14AW-L.

C. Paint Piercing Grounding Washer Kit with Antioxidant: Panduit parts.

D. Bonding Screws, #12-24: Panduit part number RGTBSG-C.

PART 3 -EXECUTION

3.1 STAR TOPOLOGY

A. The telecom grounding and bonding system shall be provided and installed in a star topology. Each building shall receive one Telecommunications Main Grounding Busbar (TMGB) in the designated telecom room or utility demarcation area (see below for location), and one Telecommunications Grounding Busbar (TGB) in each additional telecom room or identified specialty location (see below for locations). All TGB’s shall receive a dedicated Telecommunications bonding backbone (TBB) conductor back to the TMGB. The TMGB shall receive a dedicated Telecommunication bonding conductor (TBC) conductor back to the building Intersystem Grounding Busbar (see work by Div.26). The building Intersystem Grounding Busbar is usually just outside the main electrical service gear (interior to the building, visible on the wall.

3.2 INTERSYSTEM GROUNDING BUSBAR LOCATION:

A. NA

3.3 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB) LOCATION:

A. NA

B. If in a telecom room, the TMGB shall be mounted on a wall toward the rear of the room, preferably out of the way of other equipment and walkways.

C. If in a telecom room, the TMGB shall be mounted at an elevation approximately 6”-12” below the ladder rack in the room to allow easy access for grounding cables from the ladder rack, and to keep it up and out of the way for better technician safety.

3.4 TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) LOCATION:

A. NA

B. If in a telecom room, the TGB shall be mounted on a wall toward the rear of the room, preferably out of the way of other equipment and walkways.

C. If in a telecom room, the TGB shall be mounted at an elevation approximately 6”-12” below the ladder rack in the room to allow easy access for grounding cables from the ladder rack, and to keep it up and out of the way for better technician safety.

3.5 TELECOMMUNICATIONS ROOM LADDER RACK

A. All telecom room ladder rack shall be bonded together and to the telecommunications grounding busbar in that room using a dedicated Equipment bonding conductor (EBC).

B. Bonding shall be accomplished per the following:

1. Use the #6 AWG green cable listed in the cable paragraph.
2. Use the #6 AWG two-hole lugs listed in the hardware paragraph.
3. Use the bonding stud and bonding nuts listed in the hardware paragraph to secure the lug to the ladder rack.
4. Drill holes in ladder rack to accommodate the two-hole lugs and bonding studs with bonding nuts.
5. Install bonding conductors in a neat and orderly fashion so as not to droop or hang away from the material it is bonding.
6. Use the #6 AWG two-hole lugs to bond to the busbar.

3.6 TELECOMMUNICATIONS ROOM RACKS AND CABINETS

A. All telecom room racks and cabinets shall be individually bonded to the copper busbar in that room (the TMGB or TGB) using a dedicated Equipment bonding conductor (EBC).

B. Grounding the rack or cabinet to the copper busbar shall be accomplished per the following:

1. Use the #6 AWG green cable listed in the cable paragraph.
2. Use the #6 AWG two-hole lugs listed in the hardware paragraph to connect to the telecom room grounding busbar.
3. Use the #6 AWG two-hole lugs listed in the hardware paragraph to connect to the rack or cabinet grounding busbar.
4. Use the paint piercing washers listed in the hardware paragraph.
5. Install bonding conductors in a neat and orderly fashion so as not to droop or hang away from the material it is bonding.
6. Use the #6 AWG two-hole lugs to bond to the busbar.

3.7 TELECOMMUNICATIONS CABLE TRAY AND/OR WIRE BASKET

A. All installations of cable tray and/or wire basket runs shall be bonded to the nearest copper busbar in a telecom room (the TGB or TMGB) using a AWG #6 stranded bare copper grounding conductor. The break point shall be at the same boundary as the UTP boundary between telecom rooms. Do not bond the cable tray or wire basket together across these boundaries as this could cause a grounding loop.

B. Bonding cable tray and/or wire basket shall be accomplished per the following:

1. The bare copper bonding conductor shall be one continuous run from the telecom room grounding busbar to the end of the cable tray and/or wire basket longest run. Remember to not bond across the boundaries (see above).
2. Additional branches of cable tray and/or wire basket that branch off the initial “longest run” shall have their own installation of continuous bare copper bonding conductor from the main run to the end. This run shall be mechanically and permanently bonded to the “longest run” using permanent crimp on Panduit lugs and the proper Panduit hydraulic tool for the job. The end result of this is like a tree with a main trunk and branches off that main trunk (the branches connect at the main trunk and do not need to individually run to the telecom room).
3. Each individual piece or stick of cable tray and/or wire basket shall be mechanically bonded to the bare copper grounding conductor.
    a. For cable tray, use a mechanical bonding lug with paint piercing washer and bolt with nylock nut through body of cable tray. The bare copper bonding cable shall slide into the “C” opening of the lug and be tightened using the lug stud.
    b. For wire basket, use a mechanical screw type compression lug.

END OF SECTION 27 10 00

SECTION 27 11 00
TELECOMMUNICATIONS CABLING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 27 00 10 – Telecommunications General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this structured cabling system in compliance with the specifications and drawings. Contractor will provide and install all of the required material to form a complete system whether specifically addressed in the technical specifications or not.

1.3 SUBMITTALS

A. Manufacturer and Contractor Certifications are required submittals in the division 27 General Provisions specifications section. The Manufacturer Certification is based on the material information listed below in the Acceptable Manufacturers paragraph.

B. Submittal data for cabling and components shall consist of catalog cuts showing technical data necessary to evaluate the materials.

1.4 WORK BY OTHERS

A. In general, the following is provided or is of note:

1. Architect will specify each dedicated telecom room fully lined on all walls from floor to 8' AFF (+96") with 0.75" fire retardant 3/4" AC plywood (A side visible after installation), painted with three coats of fire retardant bright white paint. Each sheet of plywood shall have one fire rating stamp masked off such that after painting this stamp is visible to the Authority Having Jurisdiction (AHJ). The Division 27 Contractor shall review the architectural drawings and be prepared to mount ladder rack and other equipment to masonry, gypsum, or other wall types if the plywood was omitted from the architectural design.
2. Electrical Contractor will provide field device back boxes and conduit paths for use by the Telecom or other division 27 Contractor.
3. The project painter may not be aware that ANY paint overspray (or direct application) of paint of any type (latex, oil based and ALL other paint types) to the UTP (unshielded twisted pair, generally called data cabling) voids the manufacturer's warranty and violates this specification. Paint may not be chemically or physically removed in any way once applied to the data cabling. Any cabling with paint overspray shall be fully replaced (no splicing therefore the entire run).

1.5 FIRESTOPPING

A. Contractor shall be responsible for fire stopping all conduit sleeves (internally only) and cable tray where required to maintain integrity of fire and/or smoke walls. The Contractor shall review architectural drawings to determine which walls have a fire and/or smoke rating. Any rating other than “non-rated” shall constitute a wall that requires fire stopping in all penetrations/openings.

PART 2 - PRODUCTS

2.1 COPPER UTP CABLE AND CONNECTIVITY PRODUCTS

A. Cabling and connectivity products (devices, cover plates, patch panels, insulation displacement connectors, etc.) must be part of a matched solution, provided by manufacturers that have been tested together and provide a fully certified end to end system.

B. Acceptable Manufacturers:

1. Belden Cat6a UTP connectivity (flat, modular patch panels) w/ Belden 10GXS Series Cat6a cable with 25-year Belden IBDN Component Warranty and Application Assurance Program provided by a Belden Certified System Vendor (CSV).
2. CommScope Systimax Cat6a UTP connectivity (flat, modular patch panels) w/ CommScope Systimax X10D Cat6a cable, with Systimax 20-year product and performance warranty.
3. Leviton Cat6a Atlas X1 UTP connectivity (flat, modular patch panels) w/ Berk-Tek XTP Cat6a cable with BLT limited lifetime warranty provided by Leviton Preferred Network Installers (PNI).
4. Ortronics TracJack Cat6a UTP connectivity (flat, modular patch panels) w/ Superior Essex 10 Gain Cat6a cable, with the 25 year "nCompass" system warranty provided by an Ortronics CIP (Certified Installer Plus).
5. Panduit Mini-Com Cat6a UTP connectivity (flat, modular patch panels) w/ General GS10000 Cat6a cable with PanGenPlus 25-year system warranty provided by a Panduit Certified Installer.

C. Cable Jacket Rating:

1. Plenum

Note: If the above selection is not edited down to only one cable jacket type, the Contractor shall provide plenum rated cabling.

D. Additional Cabling and Connectivity Requirements:

1. Furnish and install cable between telecommunications room and field device locations as noted on the drawings.
2. Each field jack shall have a dedicated cable.
3. Provide cable terminations at telecommunications room.
4. Provide terminations at all field locations with an 8 pin, 8 conductor (RJ45 type) modular jack and flush wall plate per drawings.
5. Terminate using T568B wiring schematic unless noted otherwise.
6. Provide thermoplastic wall faceplates from the same connectivity manufacturer per location requirements for all field devices. Faceplate shall match electrical receptacle faceplates (if stainless steel, then match with stainless steel, if thermoplastic, then match with same color thermoplastic). Verify color/material before submittal time with Design Professional and include faceplate color/material choice in submittals.
7. Removable snap on colored icons shall be used to distinguish jacks meant for voice service and data service. For thermoplastic faceplate projects, all jacks shall be the same color as the thermoplastic faceplate unless specifically instructed otherwise (ask Design Professional about jack color for stainless steel faceplate projects – all jacks shall be the same color [only one color] unless specifically instructed otherwise by the Design Professional). Provide at least 100 extra snap-on voice icons and at least 100 extra snap-on data icons to Owner. Contractor shall ask the Owner what two colors they want for voice and data icons respectively.
8. Configure faceplates as required for individual field locations per drawings.
9. Blanks shall be installed in all empty jack locations.
10. Provide terminations onto insulation displacement connectors for high pair count copper cables.
11. All patch panels shall be modular 48 port in 2RU. No standard density (24 port in 2RU) patch panels allowed).

E. Lightning protection shall be provided for all cabling that does not remain fully inside the building envelope.

F. Acceptable Manufacturers are:
   1. L-Com inc.
   2. DITEK Surge Protection

G. Additional Lightning Protection Requirements:

   1. All cabling 25 pair or larger shall use an enclosed Building Entrance Terminal. This terminal shall be sized to accommodate all incoming cable pairs (full of 5 pin modules). Module selection shall be determined by the application chart found in manufacturer literature.
   2. For applications smaller than 25 pair, the proper manufacturer recommended solution is acceptable (enclosed or not).

PART 3 -EXECUTION

3.1 UTP NO-PAINT WRITTEN NOTIFICATION REQUIREMENT

A. Many painters do not know that paint overspray of any quantity on voice/data UTP cabling (called UTP from here on) voids the manufacturer's extended warranty required by the specification. The Telecom Contractor shall notify the General Contractor in writing that the UTP cannot be painted (not even the slightest bit of overspray) and inform him or her that mechanical or chemical removal of paint is not allowed but rather full replacement of any cable that has received any amount of paint or paint overspray shall be fully replaced (no splicing allowed). This notification shall occur at least 30 days prior to any UTP being installed in the facility or brought on-site for storage.

3.2 INSTALLATION AND LABELING

A. Install telecommunication systems cables and auxiliary materials as indicated in accordance with manufacturer's written instructions, and recognized industry practices.

   1. In general, all interior cables are installed in conduit.
   2. D rings are allowed in telecommunications room as needed.
   3. Contractor shall use hook and loop type fasteners on all UTP telecommunications cable. Tie wraps may be temporarily used loosely for dressing UTP cables during installation if they are removed before final inspection. Any tie wrap found in place around UTP cable tight enough that a 0.5” wooden dowel cannot be inserted into the bundle at the tie wrap location shall therefore obligate the Contractor to replace those potentially damaged UTP cables at the Design Professionals discretion, whether they pass electronic testing or not.
   4. Tie wraps may be used carefully on OSP and armored cabling at light tension levels which do not result in any visible cable jacket deformation.
   5. If unarmored fiber is specified without innerduct for any reason, tie wraps are forbidden on that cabling.
   6. Any and all tie wraps used in the project shall be trimmed flush at the locking device using a fully flush cutter tool for safety. Any tie wrap found with a sharp point shall be removed by the Contractor and replaced without additional compensation.

B. Identify all fiber, copper, and coaxial cables that terminate in the telecommunication room as to field location.

   1. Provide manufacturer’s standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type; either pre-numbered plastic-coated type, or write-on type with clear plastic self-adhesive cover flap; numbered to show cable identification. Install within 6" of cable end.
   2. Contractor shall not distinguish between UTP that is initially intended for voice or data use. The structured cabling plant is designed to be flexible and shall be numbered sequentially throughout the building. Room numbers shall not be used in the numbering scheme. For buildings with multiple Telecom Rooms (and/or per floor), an alphanumeric identifier shall identify the telecom room, followed by the sequentially numbered jack. For example, a jack labeled 2A-97 would terminate in the “A” Telecom Room on the second floor, and be connected to jack #97 on the patch panels.

3. All field device labeling shall match the telecom room labeling for the corresponding cable.
4. Jacks shall be numbered sequentially on the patch panel field, beginning at the top left, working across the row to the right, then down to the next row, etc. This will require Contractor to plan the installation and terminate sequentially on both ends through the building rather than terminate randomly which results in confusion for Owner.
5. When transitioning from one floor to another on a multi-floor installation served out of one telecom room (or a multi-floor section of a larger building), the patch panel at the end of the installation for a particular floor shall have at least 12 open jacks/slots for future growth on that floor. Also, a new patch panel shall always be started for each new floor. This means if a particular floor has 25 jacks (using 24 port patch panels), the Contractor shall leave the second patch panel with 23 openings and start a fresh patch panel for the next floor.

C. After completion, all cables shall be thoroughly tested in accordance with the division 27 Testing and Documentation section.

1. Contractor shall provide all instruments for testing the cables.
2. Contractor shall demonstrate in the presence of Owner's representative that the telecommunications system is complete and operational.
3. Contractor shall complete and submit the Certificate of System Demonstration.

D. After completion, comprehensive As-Builts will be created and posted in each Telecom Room within 3 days.

1. Two hard copies shall be created for each Telecom Room detailing the entire structured cabling plant and labeling scheme after installation. One hard copy shall consist of (at a minimum) the Telecom plans marked with permanent ink to show the labeling used at each field location, and a table or spreadsheet (for example, an 8 ½" x 11" printed Excel file) that lists all the patch panel jacks in a column sequentially, followed by a cross reference column identifying the room name/number that the corresponding jack is in. This is the only part of the labeling process in which room name/numbers are acceptable. The second hard copy shall be identical to the first one. One copy shall be posted in each corresponding Telecom Room, and the other copy shall be submitted to the Design Professional for review according to the submittal process identified in the shop drawing paragraph of Specification Section 27 00 10. This second copy will then be forwarded to Owner.

END OF SECTION 27 11 00

SECTION 27 12 00
TELECOMMUNICATIONS TESTING AND DOCUMENTATION

PART 1 - GENERAL

1.1 GENERAL

A. Refer to Division 00 – Procurement, Contracting and Warranty Requirements and Division 01 - General Requirements, which all apply to work under this section.

1.2 PURPOSE

A. The purpose of the testing is to ensure proper installation of the telecommunications cabling system.

1.3 SUBMITTALS

A. Submit product data under provisions of Division 1.

B. Submit product data for the following:

1. Hand-held testing equipment manufacturer, model, last calibration date/calibration due date and software version.
2. Injector equipment manufacturer, model, and software version.

1.4 REFERENCES

A. The following Performance Standards shall be followed. Unless otherwise stated, where Performance Standards conflict with manufacturer's recommendations, the more restrictive shall be applied:

1. TIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
2. TIA-526-14 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
3. TIA-568-C.0 Generic Telecommunications Cabling For Customer Premises
4. TIA-568-C.1 Commercial Building Telecommunications Cabling Standard
5. TIA-568-C.2 Balanced Twisted-Pair Telecommunications Cabling and Components Standards
6. TIA-568-C.3 Optical Fiber Cabling Components Standard
7. TIA-568-C.4 Broadband Coaxial Cabling and Components Standard

1.5 TEST EQUIPMENT

A. Test Equipment: JDSU Certififer40G, Fluke DSX-5000, Fluke DTX-1800 or TIA & Connectivity Manufacturer approved Level IV (or better) Certifier.

B. The software version for the testers shall be the latest version available.

C. The tester must have been calibrated within the last 12 months with calibration date noted on all test results.

1.6 LINK DEFINITION FOR THE PROJECT

A. A link consists of up to 90 meters (295 feet) of horizontal cabling, a connection at each end, up to 2 meters of test equipment lead from the main unit of the hand-held tester to the local connection, and up to 2 meters of test equipment lead from the remote unit to the remote connection. A total length of up to 94 meters (308 feet).

B. The connection to the equipment at each end of the link is not included in the link definition.

1.7 CHANNEL DEFINITION FOR THE PROJECT

A. A channel consists of up to 90 meters (295 feet) of horizontal cabling, a connection at each end, up to 7 meters for the cross-connect and equipment cable, and up to 3 meters for the work area equipment cable. A total length of up to 100 meters (328 feet).

B. The connection to equipment at each end of the channel is not included in the channel definition.

PART 2 -COPPER CABLING ACCEPTANCE TESTING

2.1 ACCEPTANCE TESTS

A. The following field acceptance tests shall be performed for twisted - pair cabling:

1. Wire Map (continuity).
2. Length.
3. Attenuation.
4. NEXT.
5. ACR-F
6. Delay and delay skew.
7. Return loss.
8. Power sum crosstalk (PSNEXT and PSACR-F).

2.2 TEST EQUIPMENT SET-UP AND TEST PARAMETERS

A. Autotest: Use the Autotests to perform the required tests. Customize the Autotest as necessary to satisfy testing requirements and parameters.

B. Cable Type: Select the cable type being tested. Cable Type may vary. Always change the NVP for the type of cable being tested.

C. Frequency Range: The frequency range for category 6A tests shall be 1 MHz to 500 MHz.

D. Cable Pairs: Test all cable pairs. Select all pairs for TEST and all pairs for Pass/Fail criteria for Autotest.

E. Length Units: Cable length test results shall be in feet.

F. Date Style. The date style shall show month, day, and year. Date shall be the date the test is conducted.

G. Language: The language shall be English.

2.3 TEST PROCEDURE

A. Testing shall be performed with the tester at the distribution frame and the remote unit at the Work Area Outlet.

B. A Channel OR Permanent Link certification test will be performed as outlined in the specific job description.

C. Test leads and test hardware have limited life-cycles. Inspect and replace the test leads as necessary.

D. Use only test leads specified by the test equipment manufacturer.

E. Strictly follow the test equipment manufacturer's instructions for equipment setup, initialization, and calibration.

2.4 DOCUMENTATION

A. The Test Documentation requirements are the minimum requirements. Other details of presentation and recording methods will be discussed with Owner and Design Professional. Gain approval from Owner and Design Professional of the test documentation format and content prior to full-scale testing. Coordinate with Owner and Design Professional to get representative sample of the documentation format and content for review.

B. Provide Owner with a printed copy of ONLY the summary report of all tests, the electronic file of the test results for each test on CD or USB, and the electronic copy of the summary report on CD or USB. Do not print out each report.

2.5 TEST REPORT

A. The following header fields on each test report shall contain the appropriate information. These are minimum requirements.

1. Circuit ID
2. Test Result
3. Owner
4. Test Equipment Serial Number
5. Software Version
6. Calibration Date
7. Date
8. Cable Type
9. NVP
10. Building
11. Closet

B. The information in each user definable header field on each test report shall contain the information as follows.

1. Circuit ID: Indicate the outlet location number and jack number under test
2. Owner: Indicate the owner of the test equipment
3. Date: Indicate the date of the test
4. Cable Type: Indicate the cable type being tested
5. NVP: Indicate the field measured NVP
6. Building: Indicate the building where the cable is being tested
7. Closet: Indicate the closet identifier where the cable is terminated

C. The minimum test result information on each report shall include the data for the tests identified in the Acceptance Tests paragraph of each applicable testing part.

D. Contractor shall provide the test data in a complete and consistent format. Printed test results shall be printed from a laser printer.

E. The contractor shall verify that a report for each jack in the Project is contained in the file list.

F. Two weeks (14 days) prior to scheduled telecommunications systems start-up date Design Professional shall receive from Contractor complete printed cable performance test results via the submittal process (see 27 0010). Start-up shall not commence unless test results are submitted.

2.6 ELECTRONIC COPY

A. **The electronic copy of the test results shall be on CD or USB.**

B. **The electronic copy shall be labeled. The label shall read:**

Project Name
building name (BLDG. No. x)
"Copper/Fiber Test Results"
“CD No." X of X
date (month and year)

C. The files shall not be altered from the original test equipment output.

END OF SECTION 27 12 00

SECTION 28 00 10
ELECTRONIC SAFETY AND SECURITY GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Refer to Division 00 - Procurement and Contracting Requirements and Division 01 - General Requirements, which all apply to work under this section.

1.2 DESCRIPTION OF WORK

A. This section applies to all work under this division. This shall include, but not necessarily be limited to, the following:

1. Furnish, install, and terminate all system equipment and cabling as applicable and per drawings.
2. Furnish and install any cabinets, racks and cable management as required and as indicated.
3. Furnish any other material required to form a complete and operational system.
4. Provide As-Built drawings per Division 0 and/or Division 1 specification.
5. Provide Owner training and testing documentation.
6. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.
7. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft.

1.3 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:

1. National Electrical Code
2. Local Electrical Code
3. National Fire Protection Association
4. National Electrical Manufacturers Association
5. Standards of Institute of Electrical and Electronic Engineers
6. Applicable Building Codes
7. Occupational Safety and Health Act
8. Iowa Administrative Codes
9. ANSI TIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
10. ANSI TIA-526-14-C Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
11. ANSI TIA-568-C.0 Generic Telecommunications Cabling For Customer Premises
12. ANSI TIA-568-C.1 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements
13. ANSI TIA-568-C.2 Balanced Twisted-Pair Telecommunications Cabling and Components Standards
14. ANSI TIA-568-C.3 Optical Fiber Cabling Components Standard
15. ANSI TIA-568-C.4 Broadband Coaxial Cabling and Components Standard
16. ANSI TIA-569-D Telecommunications Pathways and Spaces
17. ANSI TIA-570-C Residential Telecommunications Infrastructure Standard
18. ANSI TIA-598-D Optical Fiber Cable Color Coding
19. ANSI TIA-606-B Administration Standard for Commercial Telecommunications Infrastructure
20. ANSI TIA-607-B Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
21. ANSI TIA-758-B Customer-owned Outside Plant Telecommunications Infrastructure Standard
22. National Fire Protection Agency (NFPA - 70), National Electrical Code (NEC)

B. All Contractors shall familiarize themselves with all codes and standards applicable to their work. No extra compensation will be allowed for corrections or changes in the work required due to failure to comply with the applicable codes and standards. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

1.4 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Contractor shall comply with the rules and regulations of the local serving utility companies and shall check with each utility company providing service to this project and determine or verify their requirements regarding incoming services.

B. Secure and pay for all permits, licenses, fees and inspections.

1.5 DRAWINGS

A. Drawings for the work are in part diagrammatic, and are intended to convey the scope of the work and to indicate in general the location of equipment.

B. Contractor shall layout his own work and shall be responsible for determining the exact quantities and locations for equipment.

C. Contractor shall take own field measurements for verifying locations and dimensions; scaling of the drawings will not be sufficient for laying out the work.

D. Because of the scale of the drawings, certain basic items for a complete installation are not shown, but where such items are required by code or where they are required for proper installation and operation of the work, such items shall be furnished and installed.

1.6 ACTIVE SERVICES

A. Contractor shall be responsible for verifying exact locations of all existing services prior to beginning work in that area.

B. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.

C. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the authorities having jurisdiction.

1.7 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to become familiar with the conditions of the site which will affect the work and shall verify points of connection with utilities and/or existing system wiring.

B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

1.8 COORDINATION AND COOPERATION

A. It shall be the Contractor's responsibility to schedule and coordinate work with the schedule of the General Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of his work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment, other equipment and the building. The Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Conflicts between the drawings and the specifications, or between the requirements set forth for the various divisions shall be called to the attention of the Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that the Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by the Design Professional and the decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting, plaster, etc., until the project is substantially completed. Damage from rust, paint, scratches, etc., shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the Painting Contractor, but this shall not relieve the Contractor of the responsibility for checking to assure that adequate protection is being provided.

F. Where the final installation or connection of equipment in the building requires the Contractor to work in areas previously finished by the Owner, the Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Contractor shall be responsible for patching and refinishing of such areas which may be damaged in this respect.

G. Where two or more specified items/systems in the specifications and/or the drawings are in conflict, that requiring the highest order of workmanship and the most financially expensive products shall take precedence. Such questions shall be referred to the Design Professional for final decision.

1.9 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable manufacturer regularly engaged in the manufacture of the specified item unless authorized in writing by Design Professional. Where more than one unit is required of the same items, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items when required shall be furnished as part of the equipment, whether or not specifically called for.

1.10 SUBMITTALS

A. Contractor shall furnish, to the Design Professional, complete sets of shop drawings and other submittal data. Contractor shall review and sign shop drawings before submittal. Refer to Division 01 specifications for additional requirements.

B. Shop drawings shall be bound into sets and cover related items for a complete system as much as practical and shall be identified with symbols or "plan marks" used on drawings. Incomplete, piecemeal or unbound submittals will be rejected.

C. The Design Professional will review shop drawings solely to assist contractors in correctly interpreting the plans and specifications.

D. Contract requirements cannot be changed by shop drawings which differ from contract drawings and specifications.

E. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

F. After award of contract, the contractor shall provide a completed submittal schedule including dates that the submittals will be to the Design Professional for review.

G. Submit required information on the following items:

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF SYSTEM DEMON-STRATION	OTHER (SEE NOTES)
28 31 00	Fire Alarm and Detection Systems	X	X		X	X		
28 40 00	Emergency Two Way Communication System		X			X		
28 50 00	Access Control		X			X		
28 60 00	Video Surveillance System		X			X		
28 70 00	Intrusion Detection System		X			X		
28 80 00	Distributed Antenna System		X			X		
Notes:								

1.11 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be submitted to the Design Professional in duplicate upon completion of the job. Refer to Division 01 specifications for additional information.

B. Submit manuals in duplicate upon completion of the job. Manuals shall be bound in a three-ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

OPERATION
AND
MAINTENANCE
MANUAL
FOR
TELECOMMUNICATIONS SYSTEMS

(PROJECT NAME)
(LOCATION)
(DATE)

SUBMITTED BY
(NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR)

C. Provide a master index at the beginning of manual showing items included. Each section shall contain the following information for equipment furnished under this contract:

1. Equipment and system warranties and guarantees.
2. Installation instructions.
3. Operating instructions.
4. Maintenance instructions.
5. Spare parts identification and ordering list.
6. Local service organization, address, contact and phone number.
7. Shop drawings with reviewed stamp of Design Professional and Contractor shall be included, if applicable, along with the items listed above.

1.12 TESTS AND DEMONSTRATIONS

A. All systems shall be tested by the Contractor and placed in proper working order prior to demonstrating systems to Owner.

1.13 TRAINING AND DEMONSTRATIONS

A. Prior to acceptance of the telecommunications installation, the Contractor shall provide to the Owner, or his designated representatives, all comprehensive training on essential features and functions of all systems installed, and shall instruct the Owner in the proper operation and maintenance of such systems.

1. Provide adequate notice to the Owner as to when instruction will be conducted so appropriate personnel can be present.
2. Prepare the instruction format for a minimum of four Owner Representatives.

B. Equipment training:

1. Manufacturer's representatives shall provide instruction on each major piece of equipment. The Contractor shall provide instruction on all other equipment.
2. Training sessions shall use the printed installation, operation and maintenance instruction materials included in the O&M manuals and emphasize preventative maintenance and safe operating procedures.
3. Training shall be performed by qualified factory trained technicians.
4. The Contractor shall attend all sessions performed by the manufacturer's representative and shall add to each session any special information relating to the details of installation of the equipment as it might impact the operation and maintenance.
5. Equipment training shall occur as soon as possible after start up of the equipment and shall include hands-on operation. Training shall be provided for equipment listed in the table below.

C. System training:

1. Training sessions shall include hands-on demonstrations of system wide start-up, operation in all possible modes, shut-down and emergency procedures.

D. The following are minimum requirements for Owner instruction:

Section	Description	Hrs. on Site	Hrs. off Site	Presented By	Others Present	Remarks
28 31 00	Fire Alarm and Detection Systems	4	0	Manufacturer's Representative	Contractor	1
28 40 00	Emergency Two Way Communication System	2	0	Installing Contractor	Owner	1
28 50 00	Access Control	4	0	Access Control Contractor	Owner	1
28 60 00	Video Surveillance	4	0	Video Surveillance Contractor	Owner	1
28 70 00	Intrusion Detection System	4	0	Intrusion Detection Contractor	Owner	1
28 80 00	Distributed Antenna System	2	0	DAS Contractor	Owner	1
Remarks: 1. Perform complete system test at time of instruction.						

E. The Contractor shall submit a certificate, signed by the Owner stating the date, time and persons instructed and that the instruction has been completed to the Owner's satisfaction. An example of a certificate form is as follows:

CERTIFICATE OF SYSTEM DEMONSTRATION

This document is to certify that the contractor has demonstrated the hereafter listed systems to the Owner's representatives in accordance with the Contract documents and that the instruction has been completed to the Owner's satisfaction.

A. Project:

B. System(s):

C. Contractor's representatives giving instruction and demonstration:

Contractor: _____

NAMES	DATE	HOURS

D. Owner's representatives receiving instruction:

Owner: _____

NAMES	DATE	HOURS

E. Acknowledgement of demonstration:

Contractor's Representative: _____
Signature

_____
date

Owner's Representative: _____
signature

_____
date

1.14 PERMITS, FEES, ETC.

A. Secure all required permits and pay for all inspections required in connection with the telecommunication systems work. Contractor shall post all bonds and obtain all licenses required by the State, City, County, and Federal Agencies.

1.15 SUBSTITUTIONS

A. To obtain approval to use unspecified equipment, Bidding Contractors (not equipment supplier, manufacturers, etc.) shall submit written requests to the Design Professional at least 10 days prior to bid due date. Requests shall clearly describe the equipment for which approval is being requested. Include all data necessary to demonstrate that equipment's capacities, features and performance are equivalent to include a cost comparison between specified equipment and equipment for which approval is being requested. If the equipment is acceptable, the Design Professional will approve it in an addendum. The Design Professional will, under no circumstances, be required to prove that an item proposed for substitution is or is not of equal quality to the specified item.

B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.16 APPROVED CONTRACTORS

A. The Contractor shall be a manufacturer certified installer and service provider for the product submitted and installed. A copy of the Contractor’s manufacturer certification must be submitted under this specification section for the Access Control Contractor and the Video Surveillance Contractor if applicable to the project. The Contractor is responsible for workmanship and installation practices in accordance with the manufacturer requirements and must be authorized to provide a Manufacturer's Product Warranty with his installation.

B. The Contractor pulling the cabling (if different from the prime system Contractor) shall meet the BICSI or IBEW/NECA requirements found in the Division 27 General Provisions.

C. Contractor shall be located within 125 miles of the construction site to establish a potential two-hour response time for ongoing customer needs after construction completion.

1.17 ACCEPTABLE MANUFACTURERS

A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the plans are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to the Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

B. Manufacturers who do not submit prior to bidding run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of the Contractor and/or the manufacturer.

C. If the Contractor chooses to use a manufacturer listed as an equal, it shall be his responsibility to assure that the manufacturer has complied with the requirements in 'A' above. Contractor shall assume all responsibility for physical dimensions, operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

D. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.18 QUALITY ASSURANCE

A. The Contractor shall be a company specializing in telecommunication cable and/or accessories with a minimum of five years documented experience in installation of cable and/or accessories similar to those specified below.

1.19 WARRANTY

A. Refer to Divisions 00 and 01 for information on warranties and correction of work within the warranty period.

1. If a warranty or warranty period are not defined in Division 00 or 01, then the start of all warranty periods shall be the date of Substantial Completion and the length of the warranty shall be for one year.
    a. If construction is phased with distinct and separate Substantial Completion dates for portions of the building and/or systems, separate warranties shall be provided for each of these phased areas and/or systems.
    b. The entire HVAC system, including all sub-systems, shall be guaranteed against defect in materials and installation for the duration of the warranty period. Any malfunctions or defects which occur within the warranty period shall be promptly corrected without cost to the Owner. This guarantee shall not limit or void any manufacturer's express or implied warranty.

B. Refer to other Division 23 sections for systems, equipment, or material requiring extended warranties beyond one year.

C. The date of systems/equipment startup or equipment/material shipment to the site shall not be considered the notable date with relation to the warranty of that item. All systems, equipment, material, etc., shall have the same start date with respect to the warranty period.

D. Systems, equipment or material put into use to facilitate construction activities (e.g. testing and balancing, commissioning, temporary conditioning, etc.) prior to the start of the warranty period shall not impact the length of the warranty in any way.

1.20 CHANGES IN THE WORK

A. A Contract Change Order is a written order to the Contractor signed by the Owner and Contractor, issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Contract Change Order.

B. The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, with the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Contract Change Order and shall be performed under the applicable conditions of the Contract Documents.

C. The cost or credit to the Owner resulting from a change in the Work shall be determined by mutual acceptance of a lump sum properly itemized and supported by sufficient substantial data to permit evaluation. Change Orders shall be submitted with each item listed individually with a material cost and labor unit extension. Overhead and profit, as mutually agreed upon between Owner and Contractor shall be added to material and labor cost figures.

D. It shall be the responsibility of the Contractor before proceeding with any change to satisfy himself that the change has been properly authorized on behalf of the Owner.

1.21 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by the Owner.

B. When all the work is complete the Contractor shall thoroughly clean all material and equipment installed as a part of this contract and leave all equipment and material in new condition.

C. The Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

END OF SECTION 28 00 10

SECTION 28 50 00
ACCESS CONTROL SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 28 00 10 – Electronic Safety and Security General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this access control in compliance with the specifications and drawings. Contractor will provide and install all the required material to form a complete system.

1.3 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:

1. National Electrical Code
2. Local Electrical Code
3. National Fire Protection Association
4. National Electrical Manufacturers Association
5. Standards of Institute of Electrical and Electronic Engineers
6. Applicable Building Codes
7. Occupational Safety and Health Act
8. Wisconsin Administrative Codes
9. ANSI TIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
10. ANSI TIA-526-14-C Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
11. ANSI TIA-568-C.0 Generic Telecommunications Cabling for Customer Premises
12. ANSI TIA-568-C.1 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements
13. ANSI TIA-568-C.2 Balanced Twisted-Pair Telecommunications Cabling and Components Standards
14. ANSI TIA-568-C.3 Optical Fiber Cabling Components Standard
15. ANSI TIA-568-C.4 Broadband Coaxial Cabling and Components Standard
16. ANSI TIA-569-D Telecommunications Pathways and Spaces
17. ANSI TIA-570-C Residential Telecommunications Infrastructure Standard
18. ANSI TIA-598-D Optical Fiber Cable Color Coding
19. ANSI TIA-606-B Administration Standard for Commercial Telecommunications Infrastructure
20. ANSI TIA-607-B Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
21. ANSI TIA-758-B Customer-owned Outside Plant Telecommunications Infrastructure Standard
22. National Fire Protection Agency (NFPA - 70), National Electrical Code (NEC)

1.4 SUBMITTALS

A. Submittal data for access control cabling and components shall consist of catalog cuts showing technical data necessary to evaluate the materials.

1.5 WORK BY OTHERS

A. Unless noted otherwise, the building's Electrical Contractor will provide field device backboxes as needed, and conduit paths for use by Access Control Contractor. In general, the following is provided:

1. Available space on Telecom Room plywood wall to surface mount head end equipment as required with telecommunications room ground bus bar available for grounding.

1.6 FIRESTOPPING

A. Contractor shall be responsible for firestopping all conduit sleeves and cable tray where required to maintain integrity of fire and/or smoke walls. Contractor shall see architectural drawings for walls that require fire rating.

1.7 ACCEPTABLE ACCESS CONTROL CONTRACTORS

A. The following contractors are pre-approved to bid this job:

1. Access Control Contractor shall be a manufacturer authorized Dealer, verifiable by the manufacturer's representative. The Access Control Contractor shall also provide as a submittal documentation that they have been and continue to be an established manufacturer authorized dealer in good standing for a minimum of six continuous months before the project bid date. Bidding the project without certifications and attempting to acquire certifications after the bid is not acceptable.
2. Contractor shall be located within 125 miles of the construction site to establish a potential two-hour response time for ongoing customer needs after construction completion.

PART 2 - PRODUCTS

2.1 ACCESS CONTROL CABLING AND COMPONENTS

A. Acceptable Access Control System Manufacturers:

1. Existing to Remain: Tyco, C-Cure

B. Acceptable Access Control System Components:

1. Card Readers
    a. HID: Signo
    b. Approved equal or better.

2. Video Door Station
    a. 2N: All part numbers make up (1) full installation.
        1) Main Unit w/Camera: 01273-001
        2) RFID & Bluetooth Reader Module: 01639-001
        3) Tamper Switch: 01260-001
        4) I/O Module: 01257-001
        5) 2 Module Surface Frame: 01289-001
        6) 2 Module Backplate: 01294-001
        7) Gold Software License: 01380-001
            a) Per Workstation, (4) required for project. Coordinate with Client what workstation to install the software on.
    b. Approved equal or better.

3. Access Control Cable
    a. CSC WESSCO
    b. Belden
    c. Approved equal.

4. Access Control Lock Out Button
    a. STI: SS2-4-3-2-ZA-EN,
        1) Button Labeling Shall be “LOCK OUT”

5. Access Control Buzz Open Button
    a. Bosch: ISC-PB1-100
    b. Approved equal.

6. Access Control Request to Exit
    a. Bosch Surface Mounted, DS160 PIR REX

7. Local Audible Alarm Sounder
    a. Floyd Bell Inc.: MB-V09-530-Q(M). With cover plate. Kyle: SPCX688-T

8. Access Control Power Supply and Battery Backup
    a. Same as Access Control System
    b. Altronix
    c. LifeSafety Power

9. Access Control Door Controller
    a. Same as Access Control System
    b. Mercury Security

C. Additional Access Control Requirements:

1. The Access Control Contractor shall establish JCO doors and NIP doors as separate groups/buildings in the access control system. JCO staff with access rights to the system shall only have access to control doors for in the JCO occupied space. Similarly NIP staff with access rights to the system shall only have access to control doors in the NIP occupied space. Coordinate with both clients any persons who should have or needs access rights to all door within the building.
2. The Access Control Contractor shall install and configure all local access control panels in the identified telecommunication rooms on the construction plans. Unless noted otherwise.
3. The Access Control Contractor shall program all security system databases hardware configurations.
4. The Access Control Contractor shall test and certify all access control communication and operation in accordance with the specifications and manufactures recommendations.
5. The Access Control Contractor shall provide and install all cabling necessary for a complete and operational system considering all access control system devices called out on the plans (door contacts of all types, card readers, request to exit devices either internal to door hardware or surface mounted, and electrified door hardware of all types).
    a. Access control cabling shall be home run to the main system hardware, no splicing.
6. Any door identified on the plans that has any of the system components {door contacts (sometimes called position switches) of all types, card readers, request to exit devices, electrified door hardware of all types} shall be considered an access control system door.
7. Any door that is considered an access control system door shall have door contacts that can ensure the door is in the closed position and that the door is latched unless specifically noted otherwise. Both sides of a contact shall have a dedicated alarm point in the system.

8. If an electric strike is being provided with a latch bolt monitoring contact internal to the strike, a door slab contact shall still be provided to monitor the position of the slab. It shall be the Access Control Contractors responsibility to:
    a. Verify that a suitable latch bolt monitoring contact is being specified in the door hardware or point out that what is specified is not compatible with the access control product being provided or the system requirements placed upon the Contractor.
    b. Provide and install a door slab contact which, when these two are used together, accomplish the requirements of knowing that the door slab is physically closed, and the door hardware is engaged therefore ensuring a secured doorway.
9. The Access Control Contractor shall provide door controllers for all access control doors on the project that require a controller.
10. The Access Control Contractor shall provide and install all devices not specifically identified on the plans which are required for a complete and operational system for all access control system doors.
11. The Access Control Contractor shall provide and install 6 client software packages on an Owner provided computer.
12. The Access Control Contractor shall provide training to all Client operators and or managers identified by the Client.
13. The Access Control Contractor shall furnish 50 proximity cards.
14. ADA door operation: Doors that are part of the access control system and have ADA electric openers shall be subject to the following hardware/software requirements.
    a. The Access Control Contractor shall provide and install the necessary physical equipment and/or programming or other soft services necessary to meet these requirements.
    b. The card reader shall be in close proximity to the ADA button (whether on the building wall or on a bollard or equivalent).
    c. During times when the system is scheduled to have the door of interest unlocked, pressing the ADA button (no card presentation required) shall physically open the door (and retract the latch as necessary). The access control system shall only unlock door trims during the unlocked door schedule (the latch shall remain engaged so the door cannot be opened by the wind or by people without using the door hardware). The Access Control Contractor shall coordinate with door hardware provided.
    d. During times when the system is scheduled to have the door of interest locked, pressing the ADA button without a valid card presentation shall not activate any electric door hardware or electric opening devices.
    e. During times when the system is scheduled to have the door of interest locked, pressing the ADA button after a valid card presentation shall activate any electric door hardware necessary to unlatch the door and activate the electric opening device(s).
        1) The valid card presentation shall only allow activation of these electrical systems for a limited amount of time after the card presentation.
        2) At no time shall a valid card presentation automatically activate the electric door opening device.
        3) Pressing the ADA button to have the door electrically open shall always be required, subject to the requirements listed above.
15. The Access Control head end (all cabinets if multiple) shall be furnished and installed with a minimum 7ah of battery backup serving no more than 8 doors each (i.e. if one panel serves 16 doors, then two 7ah batteries are required minimum). A battery backed power supply of the same manufacturer as the access control system shall be used if available, otherwise see this spec. 2.01 B.8 for an acceptable manufacturer to use.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install systems cables and auxiliary materials as indicated in accordance with access control manufacturer's written instructions, and recognized industry practices.

1. Contractor shall use hook and loop type fasteners on all security cable. Tie wraps shall not be used.

B. Identify all cables as to field location.

1. Provide manufacturer’s standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type; either pre-numbered plastic-coated type or write-on type with clear plastic self-adhesive cover flap; numbered to show cable identification. Install within 6" of cable end.

C. After completion, all cables shall be thoroughly tested.

1. Contractor shall provide all instruments for testing the cables.
2. Contractor shall demonstrate in the presence of Owner's representative that the access control is complete and operational.
3. Contractor shall complete and submit the Certificate of System Demonstration.

D. After completion, comprehensive As-Builts will be created and provided to Owner within 14 days.

1. Two hard copies shall be provided to Owner detailing the entire access control after installation. Each field position shall be labeled and cross referenced to the appropriate head end position for ease of troubleshooting.

3.2 COMMISSIONING

A. The Contractor shall coordinate a date/time with the Engineer after the system is fully operational, but before final payment, for the Contractor to provide a full system demonstration. This shall include all aspects of system operation that the user might encounter.

END OF SECTION 28 50 00

SECTION 28 60 00
VIDEO SURVEILLANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 28 00 10 – Electronic Safety and Security General Provisions are applicable to work required of this section.

1.2 DESCRIPTION OF WORK

A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this surveillance system in compliance with the specifications and drawings. Contractor will provide and install all the required material to form a complete system whether specifically addressed in the technical specifications or not.

1.3 SUBMITTALS

A. Submittals for all Manufacturer and Contractor certifications (noted below) shall be submitted first.

B. Submittal data for surveillance cabling and components shall consist of catalog cuts showing technical data necessary to evaluate the materials.

1.4 WORK BY OTHERS

A. Unless noted otherwise, the building's Electrical Contractor will provide field device backboxes as needed, and conduit paths for use by surveillance Video Surveillance Contractor. In general, the following is provided:

1. Grounded 19" data rack in Telecom Room by Telecom Contractor to mount head end equipment to.
2. Available space on Telecom Room wall for power supply.

1.5 FIRESTOPPING

A. Contractor shall be responsible for firestopping all conduit sleeves and cable tray where required to maintain integrity of fire and/or smoke walls. Contractor shall see architectural drawings for walls that require fire rating.

1.6 ACCEPTABLE VIDEO SURVEILLANCE CONTRACTORS

A. The following contractors are pre-approved to bid this job:

1. Video Surveillance Contractor shall be a certified dealer of the Acceptable Manufacturer in this spec, section 2.01, A. Shall be in good standing for a minimum of six continuous months before the project bid date. This shall include factory trained and certified technicians in house for the installation of this project (six months experience applies here also). The dated dealer certification document and the dated technician training certificate are each required submittal items.
2. Video Surveillance Contractor shall be a certified camera dealer of the Acceptable Manufacturer in this spec, section 2.01, C. Shall be in good standing for a minimum of six continuous months before the project bid date. This shall include factory trained and certified technicians in house for the installation of this project (six months experience applies here also. The dated dealer document and the dated technician training certificate are each required submittal items.

3. The four or more submittal items (if multiple technicians) noted above are all criteria which determine if the Contractor is authorized to enter the project and begin work. No project work shall be authorized until these submittals are reviewed with a favorable response. Product data submittals are a separate submittal package and shall only be reviewed after the above items are resolved.
4. Contractor shall be located within 125 miles of the construction site to establish a potential two-hour response time for ongoing customer needs after construction completion.

PART 2 - PRODUCTS

2.1 VIDEO SURVEILLANCE CABLING AND COMPONENTS

A. Acceptable Video Management System Manufacturers:

1. Basis of Design: Axis
2. Hanwha Techwin
3. Avigilon

B. Acceptable Video Management Storage Servers:

1. Axis Camera Station NVR
2. Hanwha Techwin NVR
3. Arlington Computer Products Inc. ACP
4. Avigilon NVR

C. Acceptable Video Surveillance Camera Manufacturers:

1. Basis of Design Axis Communications Network Cameras
2. Hanwha Techwin Network Cameras
3. Avigilon Network Cameras

D. Additional Video Surveillance Requirements:

1. The Video Surveillance Contractor shall establish JCO cameras and NIP cameras as separate groups/buildings in the video surveillance system. JCO staff with access rights to the system shall only have access to view recorded and live video in the JCO occupied space. Similarly NIP staff with access rights to the system shall only have access to view recorded and live video in the NIP occupied space. Coordinate with both clients any persons who should have or need access rights to view all recorded or live video within the building and the building's exterior.
2. All power and video cables shall be homerun, no splicing.
3. The Contractor shall provide new Local video storage Network Video Recorders for this project.
4. Total required video storage is calculated on:
    a. Minimum video compression: H.264 or H.265
        i. Contractor to note that not all IP cameras are H.265 compatible.
    b. Maximum resolution for selected cameras
    c. Minimum Frames Per Second: 30 FPS
    d. Percentage of motion: 70%
    e. Hours of active video: 24 hours
    f. Duration of video storage: 30 days
    g. Required storage space for future growth: 20%
5. The Contractor shall furnish and install the required amount of video storage based off the criteria for calculations stated in the spec, section 2.01. D.
6. Contractor shall provide licensing for 4 client workstations.
7. Contractor shall coordinate with the Client regarding establishing access to the client workstations for individual users.

8. The Contractor shall program all camera names into the system per Client direction.
9. The Contractor shall coordinate with Client's network administrator in the integration of cameras and VMS into the Client's network. Including, but not limited to, the following areas:
    a. IP addressing
    b. Hostnames (as necessary)
    c. Port settings to allow video traffic to traverse firewalls.
    d. PoE requirements
    e. Video bandwidth requirements
    f. VLAN integration (as necessary)
    g. VPN integration (as necessary)

10. The Contractor shall furnish camera licenses for all cameras provided on the project, and program all the associated camera license keys into the software to make the cameras operational.
11. If the chosen VMS from this section 2.01.A requires software licenses per camera. The contractor shall provide 3 years of software and license updates to all cameras, VMS client software, and VMS server software.
12. The field of views indicated on the construction plans are for general aiming direction only.
13. During camera installation, the Contractor shall initiate with the Client a meeting for their final FOV aiming guidance.
14. During the warranty period the Client may request one follow up visit to make any camera view changes that the Client desires.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install surveillance systems cables and auxiliary materials as indicated in accordance with manufacturer's written instructions, and recognized industry practices.

    1. Contractor shall use hook and loop type fasteners on all security cable. Tie wraps shall not be used.

B. Identify all cables as to field location.

    1. Provide manufacturer’s standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type; either pre-numbered plastic-coated type or write-on type with clear plastic self-adhesive cover flap; numbered to show cable identification. Install within 6" of cable end.

C. After completion, all cables shall be thoroughly tested.

    1. Contractor shall provide all instruments for testing the cables.
    2. Contractor shall demonstrate in the presence of Client's representative that the surveillance system is complete and operational.
    3. Contractor shall complete and submit the Certificate of System Demonstration.

D. After completion, comprehensive As-Builts will be created and provided to Client within 14 days.

    1. Two hard copies shall be provided to Client detailing the entire security system after installation. Each field position shall be labeled, and cross referenced to the appropriate head end position for ease of troubleshooting.

3.02 COMMISSIONING

A. When the system is fully operational, but before final payment. The Contractor shall initiate a date and time with the Engineer for the Contractor to provide a full system demonstration. The demonstration shall include all aspects of system operation that the user might encounter.

END OF SECTION 28 60 00

DANE COUNTY - JCO / NIP SECURITY UPGRADES

CONSTRUCTION DRAWINGS

April 13, 2021

ARCHITECTURAL DRAWINGS

G001	COVER SHEET, SHEET INDEX, SEALS, LOCATION MAP
G002	LIFE SAFETY AND CODE SUMMARY
G003	GENERAL DRAWING INFORMATION
AD101	DEMO ENLARGED FLOOR PLANS
AD201	DEMO REFLECTED CEILING PLANS
A100	SITE AND EXTERIOR DRAWINGS
A102	NIP ENLARGED FLOOR PLANS
A201	REFLECTED CEILING PLANS
A401	INTERIOR ELEVATIONS
A402	INTERIOR ELEVATIONS
A800	ROOM FINISH SCHEDULE AND DOOR SCHEDULE

FIRE SUPPRESSION DRAWINGS

FXD102	NIP ENLARGED FIRE SUPPRESSION DEMOLITION PLAN
FX102	NIP ENLARGED FIRE SUPPRESSION PLAN

MECHANICAL DRAWINGS

HD101	JCO ENLARGED HVAC DEMOLITION PLAN
HD102	NIP ENLARGED HVAC DEMOLITION PLAN
H101	JCO ENLARGED HVAC PLAN
H102	NIP ENLARGED HVAC PLAN
H500	HVAC DETAILS, NOTES, SCHEDULES, AND SYMBOLS

ELECTRICAL DRAWINGS

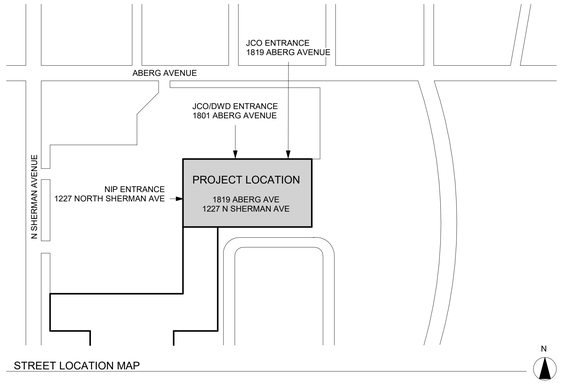
ED101	JCO ENLARGED ELECTRICAL DEMOLITION PLANS
ED102	NIP ENLARGED ELECTRICAL DEMOLITION PLAN
E101	JCO ENLARGED LIGHTING FLOOR PLAN
E102	NIP ENLARGED LIGHTING FLOOR PLAN
E201	JCO ENLARGED POWER FLOOR PLAN
E202	NIP ENLARGED POWER FLOOR PLAN
E500	ELECTRICAL LIGHTING SCHEDULES AND CONTROLS
E510	ELECTRICAL DETAILS
E520	ELECTRICAL NOTES AND SYMBOLS

FIRE ALARM DRAWINGS

FA101	ENLARGED FIRE ALARM PLANS
FA500	FIRE ALARM SCHEDULES AND DETAILS

TECHNOLOGY DRAWINGS

T100	OVERALL TECHNOLOGY FLOOR PLAN
T101	JCO/DWD ENLARGED TECHNOLOGY PLAN
T102	NIP ENLARGED TECHNOLOGY PLAN
T500	ACCESS CONTROL SCHEDULES AND DETAILS
T510	TECHNOLOGY SCHEDULES AND DETAILS



STREET LOCATION MAP

SITE AERIAL

I hereby certify these plans and specifications were prepared by me or under my direct personal supervision and that I am a duly licensed professional architect under the laws of the state of Wisconsin.

WISCONSIN
WESLEY T. REYNOLDS
11709-5
MADISON, WISCONSIN
ARCHITECT

04.01.2021

Sheets covered by this seal: Listed As "Architectural"

I hereby certify this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed professional engineer under the laws of the state of Wisconsin.

WISCONSIN
DWIGHT C. SCHUMM
43480-6
CEDAR RAPIDS, IA
PROFESSIONAL ENGINEER

04.012021

Sheets covered by this seal: Listed As "Mechanical, Plumbing"

I hereby certify this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed professional engineer under the laws of the state of Wisconsin.

WISCONSIN
DWIGHT C. SCHUMM
43480-6
CEDAR RAPIDS, IA
PROFESSIONAL ENGINEER

04.012021

Sheets covered by this seal: Listed As "Electrical"

OPN ARCHITECTS

301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date

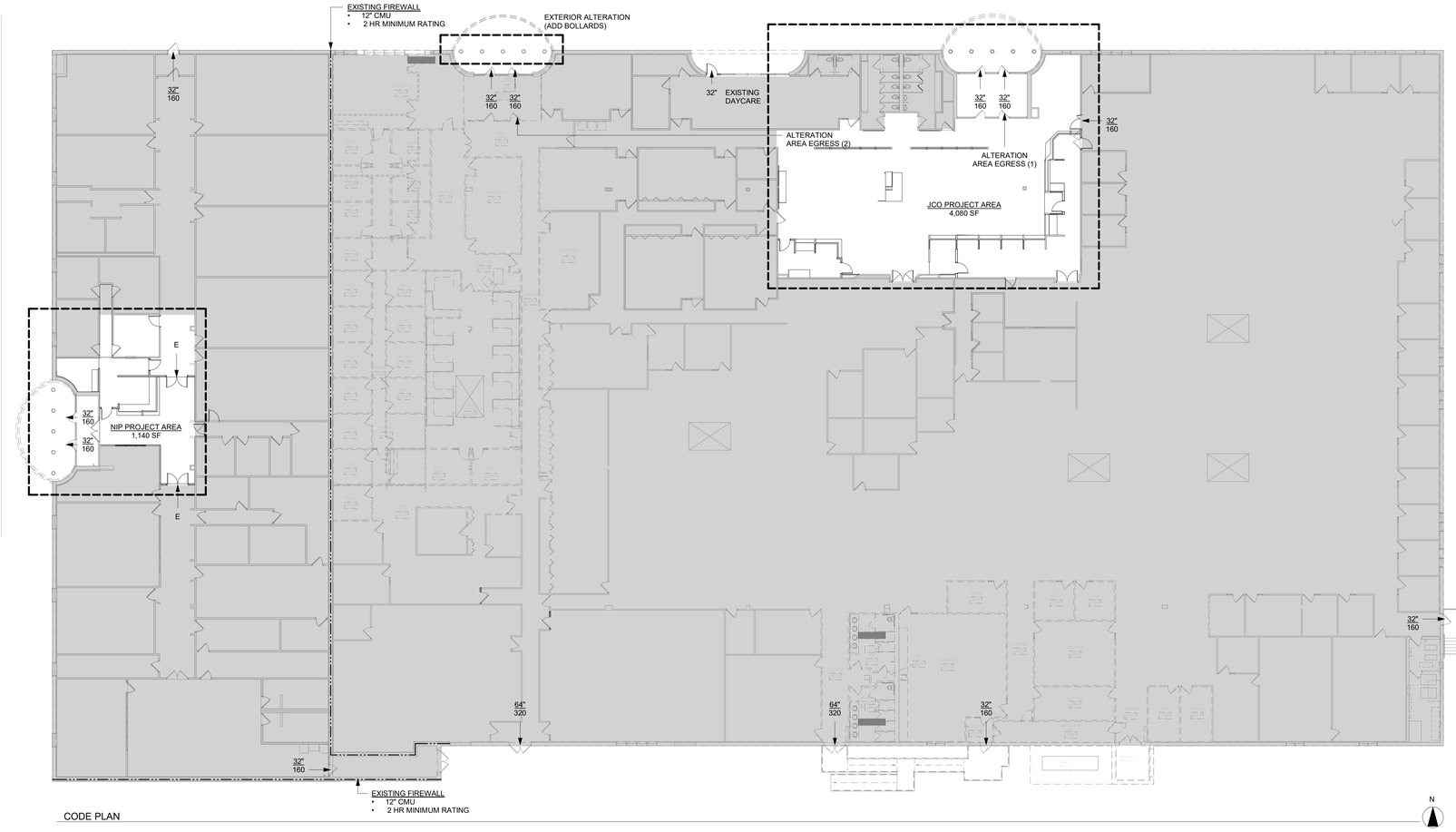
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name

COVER SHEET, SHEET INDEX, SEALS, LOCATION MAP

Sheet Number

G001



CODE PLAN

APPLICABLE CODE INFORMATION

THE PROJECT WILL COMPLY WITH THE FOLLOWING CODES:

WISCONSIN COMMERCIAL BUILDING CODE- Wisconsin Department of Safety and Professional Services (SPS) Chapters 361 to 366, incorporating:

- International Building Code (IBC) 2015
- International Energy Conservation Code (IECC) 2015
- International Existing Building Code (IEBC) 2015
- International Fuel Gas Code (IFGC) 2015
- International Mechanical Code (IMC) 2015
- Adopted portions of the International Fire Code (IFC) 2015
- ICC/ANSI A117.1 (2009): Standard for Accessibility and Usable Buildings and Facilities

SPS Chapters 380-387; Plumbing

City of Madison Code of Ordinances, Chapter 29 – Building Code – applicable provisions

BUILDING CHARACTERISTICS

Project Description: The Project consists of primarily interior remodeling and security systems upgrades for Dane County Neighborhood Intervention Program (NIP) at 1227 North Sherman Avenue, Madison and the Dane County Job Center (JCP) at 1819 Aberg Avenue, Madison.

Building Area:	JCO	1819 Aberg Avenue:	64,468 SF
	NIP	1227 North Sherman Avenue:	16,872 SF
Total Builing Area:			**81,340 SF**

Fully Sprinkled: Yes - both buildings are equipped with fully automated sprinkler system
Fie Alarm: Yes - both buildings are equipped with emergency voice/alarm communication system

IBC Chapter 3 - Use and Occupancy Classification

This submittal is primarily for interior alterations to existing spaces. There is no addiiton proposed for this project.

1819 Aberg Avenue

Existing Occupancy	Proposed Occupancy	No. Stories	Existing Area	Addition	Alteration Area
Business (B Office)	B (no change)	One	64,468 SF	0	4,080 SF

1227 North Sherman Avenue

Existing Occupancy	Proposed Occupancy	No. Stories	Existing Area	Addition	Alteration Area
Business (B Office)	B (no change)	One	16,872 SF	0	1,140 SF

Total Proposed Altered Area: 5,220 SF

IBC Chapter 4 - Special Detailed Requirements Based on Use and Occupancy

No Special Requirements

IBC Chapter 5 - General Building Heights and Areas

	Allowable	Actual Buildng Area (Existing)
Building Height :	75 FT	21 FT
Allowable Number of Stories:	Four	One
Allowable Building Area:	92,000 SF	81,340 SF

Mixed Use and Occupancy (IBC 508)

Nonseperated occupancies (IBC 508.3):	N/A
Separation of Occupancies (IBC Table 508.4):	N/A
Incidental Uses (IBC 509):	N/A

IBC Chapter 6 - Types of Construction

Construction Classification (IBC 601) **Type IIB**

Fire Resisteance Rating Required (IBC Table 601)

Primary Structural Frame	0 HR
Bearing Walls	0 HR
Nonbearing Wall and Partition (Exterior)	0 HR
Nonbearing Wall and Partitions (Interior)	0 HR
Floor Construction and Secondary Members	0 HR
Roof Construction and Secondary Members	0 HR

Fire Resistive Rating for Exterior Walls based on Fire Construction (IBC Table 602)
Fire Separataion Distance is greater than 30 FT = 0 HR, or Fire Walls Provided as indicated.

IBC Chaper 7 - Fire and Smoke Protection Features

Fire Walls (IBC 706)

Existing Fire Wall between 1801 Aberg Avenue and 1227 N Sherman Avenue (Business – Business):	3 Hour Rated
Existing Fire Wall between 1227 N Sherman Avenue AND 1191 N Sherman Avenue (Business – Mercantile):	3 Hour Rated

IBC Chapter 9 - Fire Protection Systems

Automatic Sprinkler Systems (IBC 903)
Automatic sprinkler systems shall comply with this section and NFPA 13.

Portable Fire Extinguishers (IBC 906)
Portable Fire Extinguishers will be installed per requirements of this section.

Fire Alarm and Detection System (IBC 907)
An automatic fire alarm and detection system shall be installed meeting requirements for the automatic fire sprinkler system per this section and NFPA 13.

Emergency Resonder Radio Coverage (IBC 916)
Code requires new buildings provide complete radio coverage. This is an existing building with minor alterations.

Additional Required Portable Fire Extinguishers in the International Fire Code (IBC Table 906.1)

Open Flames Torches (welding bay) (IBC 308.1.3):	N/A
Motor Fuel Dispensing Facilities (fuel island) (IBC 2305.5):	N/A
Repair garages (IBC 2311.6):	N/A
Tire Storage (IBC 3408.2):	N/A

IBC Chapter 10 - MEANS OF EGRESS

Occupant Load (IBC 1004)

1819 Aberg Avenue

Area	Function	Occupant Load	Occupants
64,468 SF	B (Office)	100 GSF Per Occupant	645

1227 North Sherman Avenue

Area	Function	Occupant Load	Occupants
16,872 SF	B (Office)	100 GSF Per Occupant	169

Means of Egress Sizing (IBC 1005)

1819 Aberg Avenue

	No. Occupants	Required	Provided	
Stairways (0.3 IN per Occupant):	N/A			
Other Egress Components (0.2 IN per Occupant)	645 Occupants	129 IN	320 IN	(10 existing egress doors at 32" each)

1227 North Sherman Avenue

	No. Occupants	Required	Provided	
Stairways (0.3 IN per Occupant):	N/A			
Other Egress Components (0.2 IN per Occupant)	169 Occupants	34 IN	128 IN	(4 existing egress doors at 32" each)

Number of Exits and Exit Access Doorways (IBC 1006)

1819 Aberg Avenue

	Maximum Allowed	Maximum Actual
Group B (With Sprinkler System)	100'-0"	

1227 North Sherman Avenue

	Maximum Allowed	Maximum Actual
Group B (With Sprinkler System)	100'-0"	

Minimum Number of Exits or Access to Exits Per Story (IBC 1006.3.1)

1819 Aberg Avenue

	Required	Provided
Group B (With Sprinkler System)	2	6

1227 North Sherman Avenue

	Required	Provided
Group B (With Sprinkler System)	2	3

Exit Access Travel Distance (IBC 1017)

1819 Aberg Avenue

	Allowed	Maximum Actual
Group B (With Sprinkler System)	300'-0"	

1227 North Sherman Avenue

	Allowed	Maximum Actual
Group B (With Sprinkler System)	300'-0"	

IBC Chapter 29 - PLUMBING FIXTURE REQUIREMENTS

No increase in occupancy for proposed alterations, and no alterations proposed for Existing Restrooms.

2015 INTERNATIONAL ENERGY CONSERVATION CODE

No exterior opaque walls are affected by proposed altertions to this project.

One exterior door is being added at a location of existing storefront glazing. Building energy use will net be affected by this alteration.

ZONING - CITY OF MADISON

Zoning District: CC-T (Commercial Corridor – Transitional District)

No zoning changes are required or proposed.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

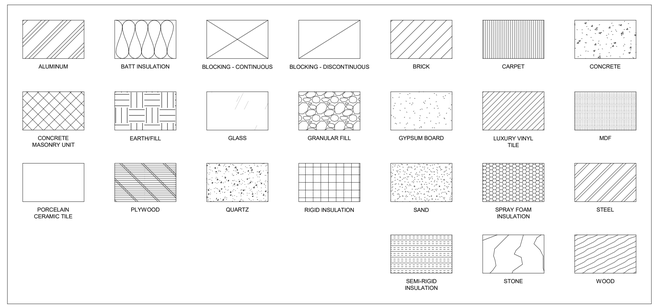
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
LIFE SAFETY AND CODE SUMMARY

Sheet Number
G002



GENERAL INFORMATION - STANDARD ARCHITECTURAL MATERIAL DEFINITIONS

GENERAL NOTES

1. REFER TO FLOOR PLANS FOR PARTITION TYPE LOCATIONS.
2. STEEL FRAME PARTITIONS ARE BASED ON DESIGN INFORMATION INCLUDED IN PRODUCT TECHNICAL INFORMATION OF THE STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA) PUBLICATION DATED 2000 AND THE FOLLOWING PERFORMANCE CRITERIA:

   A. LIMITING HEIGHT CRITERIA:

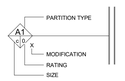
   - DEFLECTION OF L/360 AT ALL WALLS TO RECEIVE TILE.
   - DEFLECTION OF L/240 AT ALL OTHER WALLS AT 5 LBS. PER SQ. FT.

   B. THICKNESS - STEEL COMPONENTS:

GAUGE	DESIGN THICKNESS
25	0.0188
22	0.0283
20	0.0346
18	0.0451

3. MINIMUM GAUGE: IF LIMITING HEIGHT AS SCHEDULED IN PARTITION DETAILS EXCEEDS PROJECT CONDITIONS OR IF THE SELECTED STEEL STUD MANUFACTURER'S THICKNESS OF STEEL COMPONENTS VARIES FROM THE BASIS OF DESIGN AS SET FORTH ABOVE, PROVIDE MANUFACTURER'S STANDARD THICKNESS(GAUGE) THAT MEETS OR EXCEEDS LIMITING HEIGHT PERFORMANCE CRITERIA FOR STUD DEPTH AND SPACING INDICATED.
4. WOOD BLOCKING CONCEALED BY GYPSUM BOARD DOES NOT NEED TO BE FIRE TREATED.
5. ACOUSTIC PARTITIONS: REFER TO REFLECTED CEILING PLANS FOR ACOUSTIC PARTITIONS TO RECEIVE ACOUSTICAL BATT INSULATION AND SOUND SEALANT

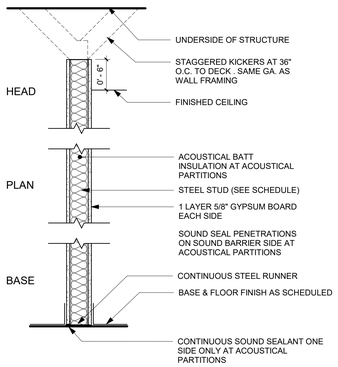
PARTITION TYPE AND SYMBOL LEGEND



	PARTITION TYPE
	SYSTEM
A	STEEL FRAMED
B	SHAFT WALL
C	FURRED
D	MASONRY
E	SPECIAL FINISHES
T	TEMPORARY PARTITION

	SIZE
	STEEL STUD
a	1 5/8"
b	2 1/2"
c	3 5/8"
d	6"
e	7 1/4"
	SHAFT WALL STUD
f	2 1/2"
g	4"
h	6"
	STEEL FURRING
j	7/8" Hat Channel
k	1" Z
l	1 1/2" Z
m	2" Z
n	3" Z
	CONCRETE MASONRY UNIT
p	4"
q	6"
r	8"
s	10"
t	12"
	LIGHT GAUGE STRUCTURAL STEEL (SEE STRUCTURAL)
u	6"
v	12"

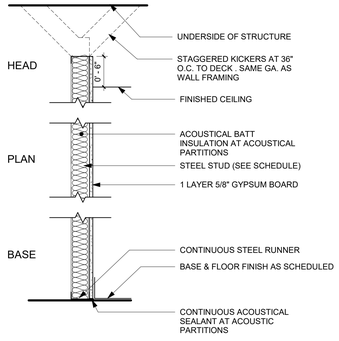
	RATING
0	NON-RATED
S	SMOKE
1	1 HOUR
2	2 HOUR
3	3 HOUR
4	4 HOUR



A1 STEEL FRAMED PARTITION

NON RATED / NON-LOAD BEARING

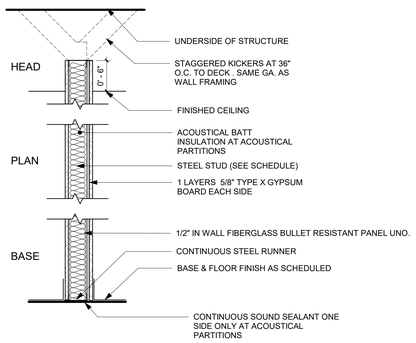
	WIDTH	STUD SIZE	SPACING	GAUGE	LIMITING HEIGHT	
A1 / 10	4 7/8"	3 5/8"	16" OC	18 GA	17'-5"	L/240
			16" OC	20 GA	15'-6"	
A1 / 10	7 1/4"	6"	16" OC	18 GA	26'-1"	
			16" OC	20 GA	22'-11"	
A1 / 10	4 7/8"	3 5/8"	16" OC	18 GA	15'-3"	L/360
			16" OC	20 GA	13'-6"	
A1 / 10	7 1/4"	6"	16" OC	18 GA	22'-10"	
			16" OC	20 GA	20'-0"	



A2 STEEL FRAMED PARTITION

NON RATED / NON-LOAD BEARING

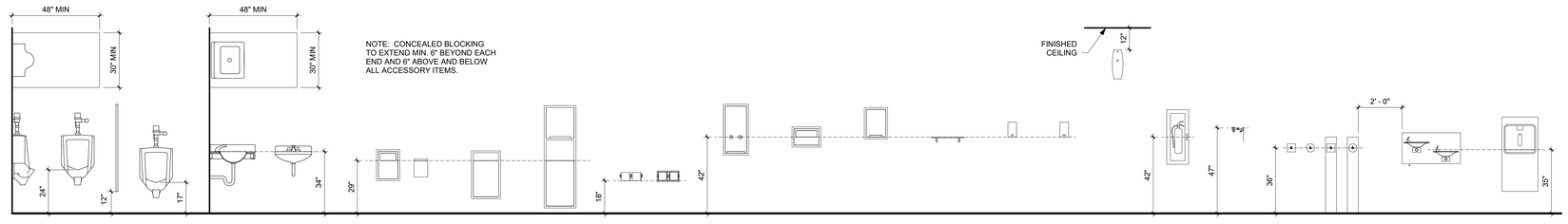
	WIDTH	STUD SIZE	SPACING	GAUGE	LIMITING HEIGHT	
A2 / 10	2 1/2"	1 5/8"	16" OC	20 GA	8'-5"	L/240
A2 / 10	4 1/4"	3 5/8"	16" OC	18 GA	17'-5"	
			16" OC	20 GA	15'-6"	
A2 / 10	6 5/8"	6"	16" OC	18 GA	26'-1"	
			16" OC	20 GA	22'-11"	
A2 / 10	2 1/4"	1 5/8"	16" OC	20 GA	7'-4"	L/360
A2 / 10	4 1/4"	3 5/8"	16" OC	18 GA	15'-3"	
			16" OC	20 GA	13'-6"	
A2 / 10	6 5/8"	6"	16" OC	18 GA	22'-10"	
			16" OC	20 GA	20'-0"	



A3 STEEL FRAMED PARTITION

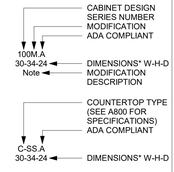
NON RATED / NON-LOAD BEARING

	WIDTH	STUD SIZE	SPACING	GAUGE	LIMITING HEIGHT	
A1 / 10	4 7/8"	3 5/8"	16" OC	18 GA	17'-5"	L/240
			16" OC	20 GA	15'-6"	
A1 / 10	7 1/4"	6"	16" OC	18 GA	26'-1"	
			16" OC	20 GA	22'-11"	
A1 / 10	4 7/8"	3 5/8"	16" OC	18 GA	15'-3"	L/360
			16" OC	20 GA	13'-6"	
A1 / 10	7 1/4"	6"	16" OC	18 GA	22'-10"	
			16" OC	20 GA	20'-0"	



GENERAL INFORMATION - STANDARD MOUNTING HEIGHTS

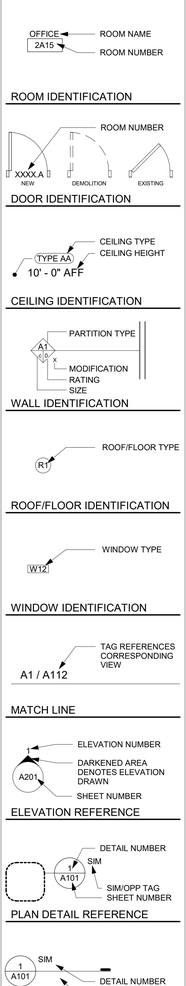
STANDARD SYMBOLS



*FOR BASE CABINETS AND COUNTERTOPS HEIGHT IS MEASURED FROM FINISH FLOOR TO TOP OF COUNTERTOP

CASEWORK IDENTIFICATION

STANDARD SYMBOLS



STANDARD ABBREVIATIONS

#	NUMBER
ACM	ALUMINUM COMPOSITE METAL PANEL
ACP	ACOUSTICAL CEILING PANEL
AFF	ABOVE FINISH FLOOR
BAS	BUILDING AUTOMATION SYSTEM
BC	BOTTOM OF CURB
BM	BENCH MARK
BOC	BACK OF CURB
BOS	BOTTOM OF STEEL
BOW	BOTTOM OF WALL
BRG	BEARING
BS	BOTTOM OF STAIR
C	CHANNEL
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CG	CORNER GUARD
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLL	CONSTRUCTION LIMITS LINE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUOUS
CPT	CARPET
CRK	CORK
DEMO	DEMOLISH / DEMOLITION
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DN	DOWN
DS	DOWNSPOUT
EC	ELECTRICAL CONTRACTOR
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION
EPF	EPOXY FLOORING
EPT	EPOXY PAINT
EQ	EQUAL
EWC	ELECTRIC WATER COOLER
EX	EXISTING
FD	FLOOR DRAIN
FF	FACTORY FINISH
FFE	FINISHED FLOOR ELEVATION
FOC	FACE OF CURB
FOF	FACE OF FINISH
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GHM	GALVANIZED HOLLOW METAL
GL	GLASS
GT	GROUT
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HORZ	HORIZONTAL
HM	HOLLOW METAL
HT	HEIGHT
HVAC	HEATING/VENTING/AIR CONDITIONING
ID	INSIDE DIAMETER
L	ANGLE
LB/LBS	POUND / POUNDS
LVT	LUXURY VINYL TILE
MAX	MAXIMUM
MB	MARKERBOARD
MC	MECHANICAL CONTRACTOR
MDF	MEDIUM DENSITY FIBERBOARD
MFR	MANUFACTURERS
MH	MANHOLE
MIL	MIL THICKNESS
MIN	MINIMUM
MO	MASONRY OPENING
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OA	OVERALL
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OVERHEAD
ORD	OVERFLOW ROOF DRAIN
OTS	OPEN TO STRUCTURE
PCT	PORCELAIN CERAMIC TILE
PL	PLATE
PLAM	PLASTIC LAMINATE
PVC	POLY VINYL CHLORIDE
PT	PAINT
QT	QUARTZ
RAD	RADIUS
RD	ROOF DRAIN
RAF	RESILIENT ATHLETIC FLOORING
REX	RESIN
REV	REVISION
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RUB	RUBBER
SF	SQUARE FEET
SIM	SIMILAR
SS	SOLID SURFACE
STN	STONE
ST STL	STAINLESS STEEL
SUSP	SUSPENDED
T&G	TONGUE AND GROOVE
TOC	TOP OF CURB
TOM	TOP OF MASONRY
TOS	TOP OF SLAB / TOP OF STEEL
TOW	TOP OF WALL
TP	TOILET PARTITION
TS	TOP OF STAIR
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
WB	WALL BASE
W/	WITH
W/O	WITHOUT
WD	WOOD
WP	WALL PROTECTION
WT	WINDOW TREATMENT
WWF	WELDED WIRE FABRIC

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

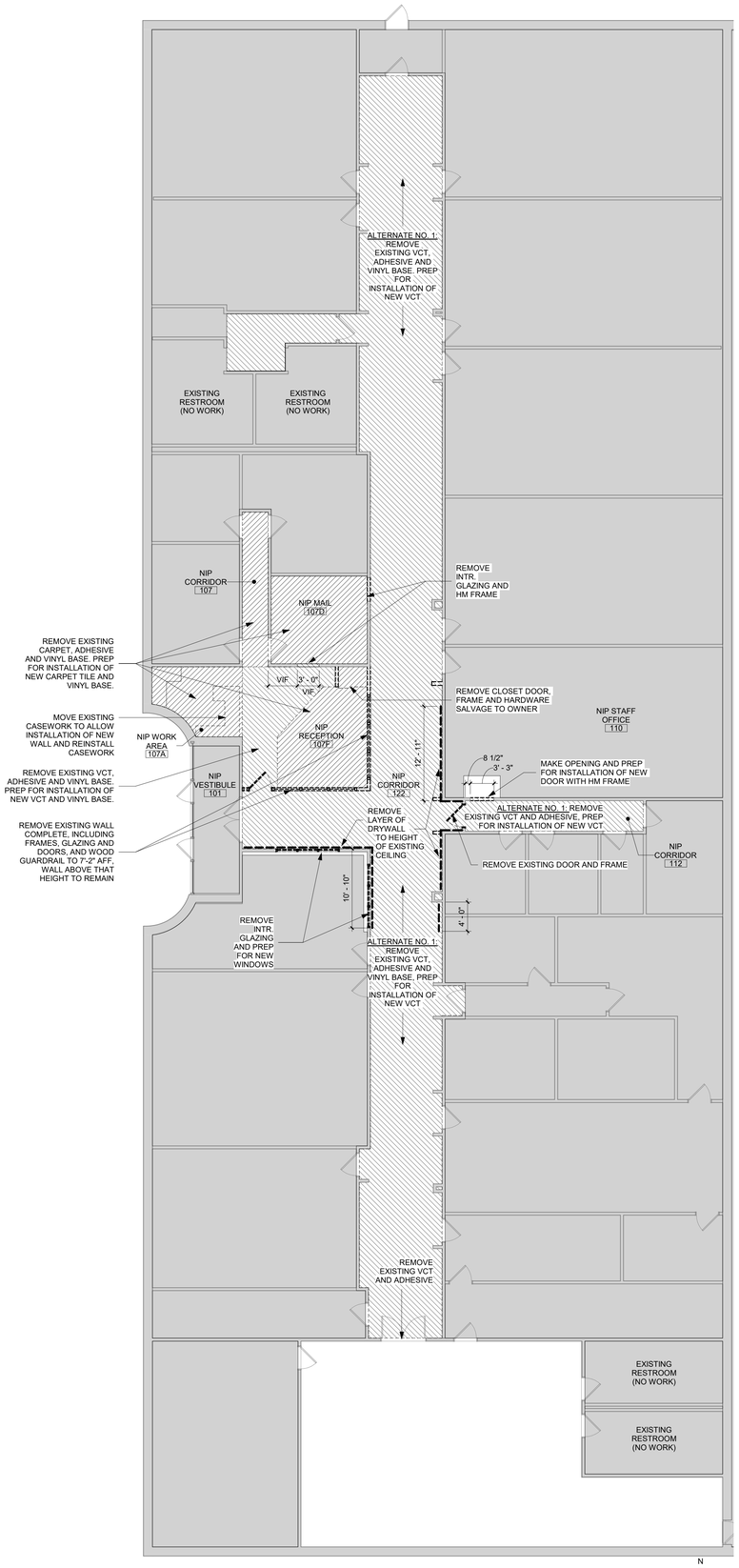
Revision	Description	Date

OPN Project No.
20635000

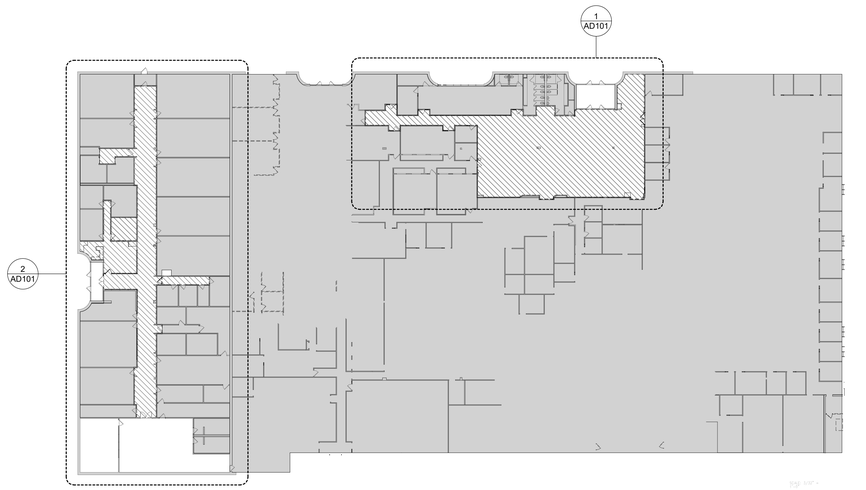
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
GENERAL DRAWING INFORMATION

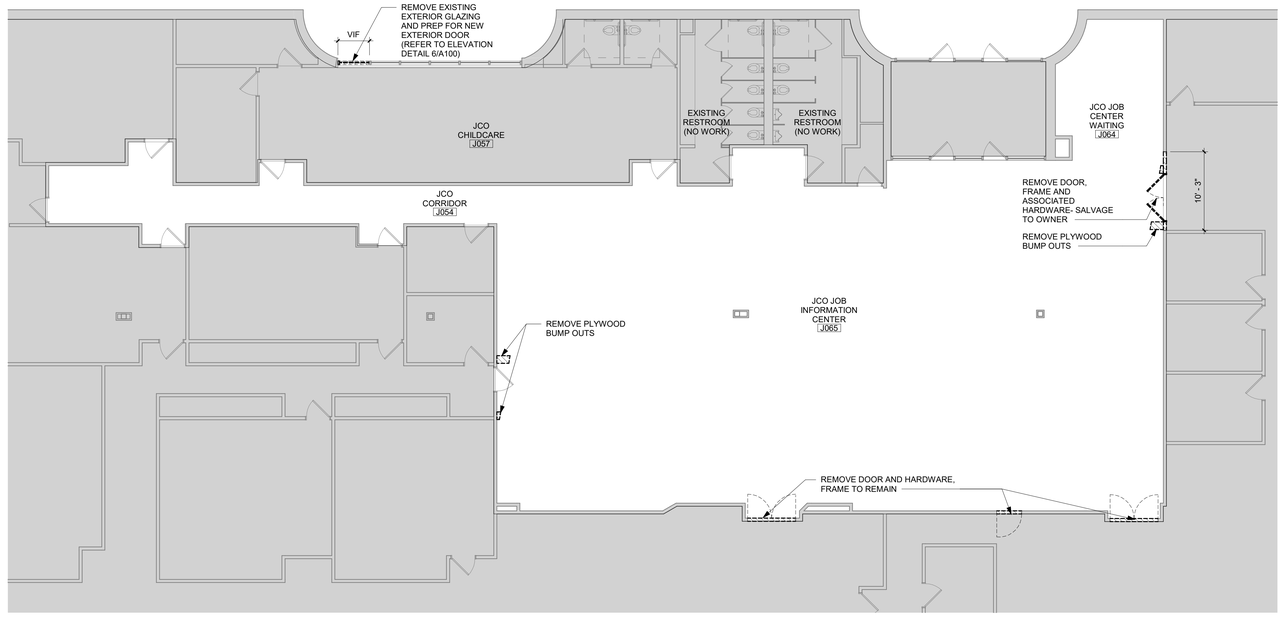
Sheet Number
G003



2 DEMO NIP FLOOR PLAN
1/8" = 1'-0"



3 OVERALL DEMO PLAN
1/32" = 1'-0"



1 DEMO JCO FLOOR PLAN
1/8" = 1'-0"

DEMOLITION LEGEND

INDICATES EXISTING 1 HR FIRE BARRIER

DENOTES AREA OF COMPLETE REMOVAL OF AN EXISTING BUILDING ELEMENT

GENERAL NOTES

1. IDENTIFICATION AND/OR ABATEMENT OF HAZARDOUS MATERIALS IS NOT PART OF THIS SCOPE OF WORK. IF ASBESTOS OR OTHER HAZARDOUS MATERIALS ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY.
2. REMOVE LOOSE PAINT AND MISCELLANEOUS HANGING OBJECTS FROM WALLS AND CEILINGS AT ALL AREAS TO RECEIVE NEW FINISHES.
3. OPENING IN THE EXISTING STRUCTURE SMALLER THAN 12" IN ANY DIRECTION ARE NOT IDENTIFIED ON THESE DRAWINGS. SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR PROVIDING OPENINGS SMALLER THAN 12" AS REQUIRED FOR INSTALLATION OF THEIR WORK.
4. OPENINGS IN THE EXISTING STRUCTURE SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
5. PATCH AND REPAIR ALL EXISTING FLOOR SLABS AND WALL SURFACES DAMAGED FROM DEMOLITION OR PRIOR USE.
6. PATCH ALL AREAS OF ELECTRICAL AND MECHANICAL DEMOLITION THAT WILL NOT BE REUSED.
7. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS. IN THE EVENT OF A DISCREPANCY BETWEEN THE DRAWINGS AND THE EXISTING CONDITIONS, NOTIFY THE ARCHITECT BEFORE PROCEEDING.
8. DO NOT REMOVE ANY ITEMS WHICH JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BUILDING. IF HIDDEN ELEMENTS OR DETERIORATED ELEMENTS ARE ENCOUNTERED, NOTIFY THE ARCHITECT IMMEDIATELY.
9. EXISTING BUILDING IS TO REMAIN WEATHER-TIGHT DURING ALL DEMOLITION ACTIVITIES.
10. REFER TO CONSULTANT DRAWINGS FOR ADDITIONAL DEMOLITION OF OTHER DISCIPLINES.
11. PROTECT ALL ADJACENT AREAS AND ITEMS "TO REMAIN" DURING DEMOLITION/CONSTRUCTION. REPAIR/REPLACE ALL ITEMS DAMAGED DURING CONSTRUCTION.
12. EXISTING BUILDING CONDITIONS SHOWN ON THESE DRAWINGS ARE DERIVED FROM DRAWINGS OF THE ORIGINAL BUILDING AND FROM LIMITED FIELD OBSERVATION.
13. INDICATED EXISTING BUILDING CONDITIONS ARE ASSUMED TO BE REPRESENTATIVE OF THE ACTUAL CONSTRUCTION OF THE BUILDING. LOCAL CONDITIONS MAY VARY.
14. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADDITIONAL MEANS OF EGRESS AS NEEDED AS A RESULT OF CONSTRUCTION SEQUENCING AND/OR REGULATORY REQUIREMENTS.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

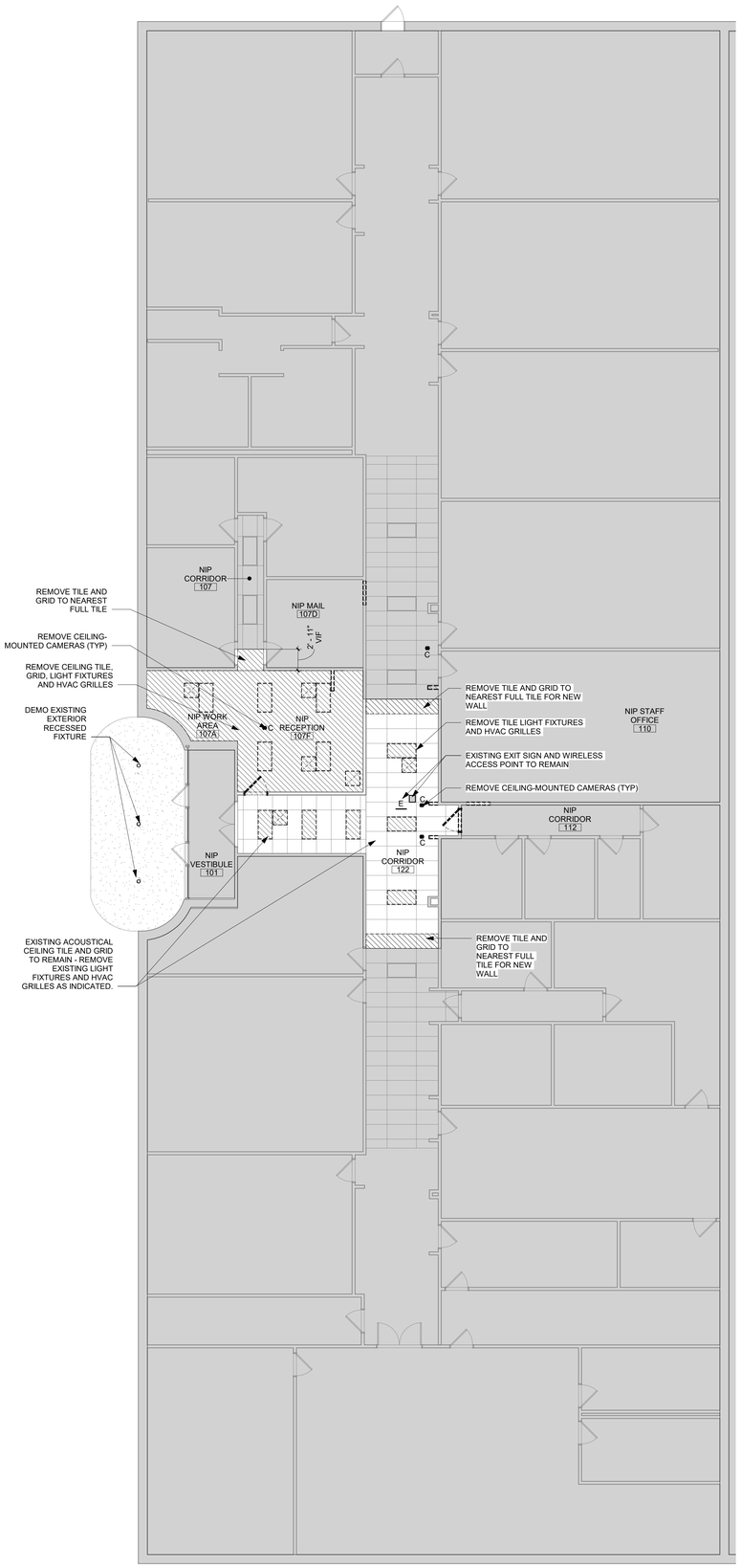
Revision Description Date

OPN Project No.
20635000

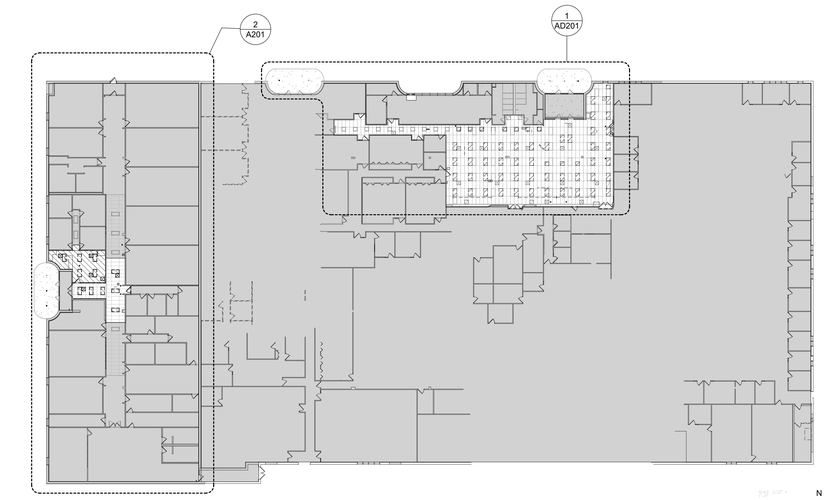
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
DEMO ENLARGED FLOOR PLANS

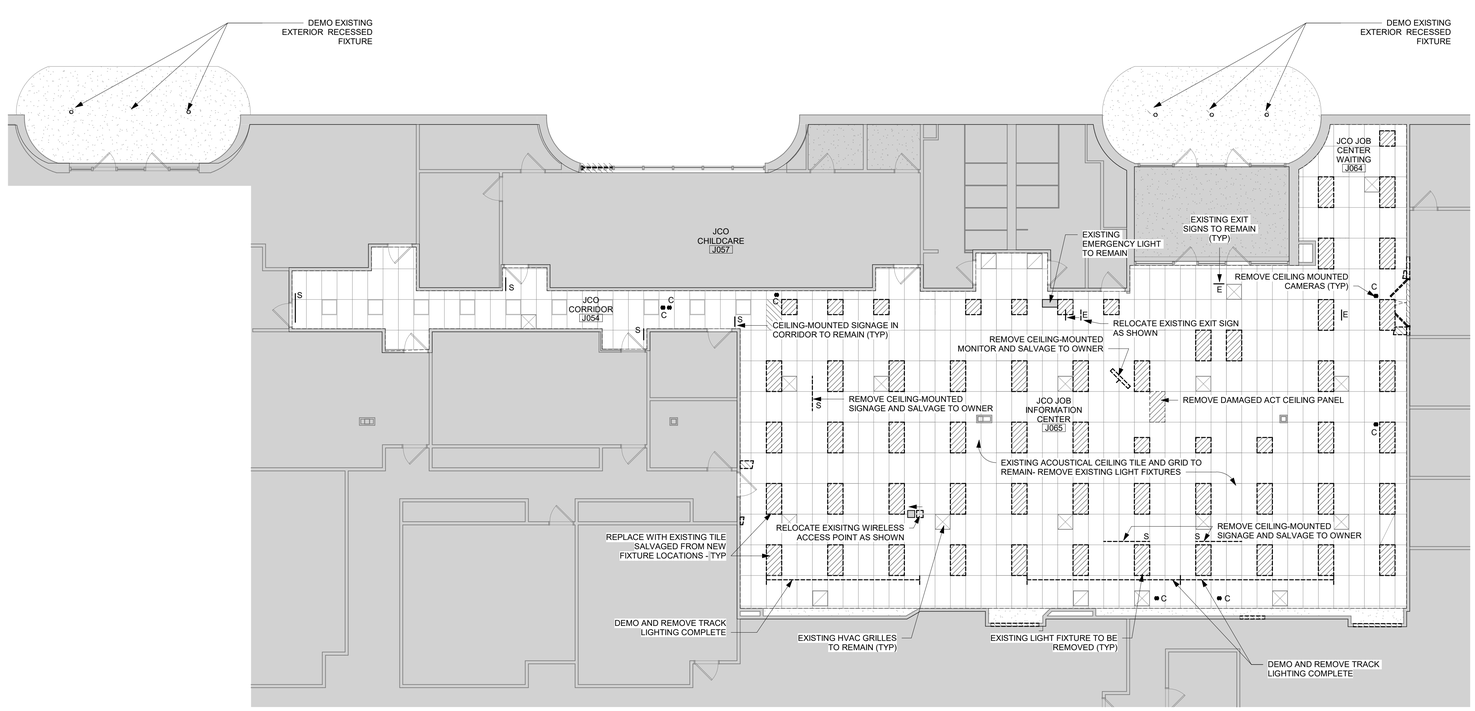
Sheet Number
AD101



2 DEMO NIP REFLECTED CEILING PLAN
1/8" = 1'-0"



3 DEMO OVERALL REFLECTED CEILING PLAN
1/32" = 1'-0"



1 DEMO JCO REFLECTED CEILING PLAN
1/8" = 1'-0"

GENERAL NOTES

1. REMOVE AND SALAVGE ALL CEILING TILE AND LIGHTING FIXTURES FOR REINSTALLATION UNLESS NOTED OTHERWISE
2. IDENTIFICATION AND/OR ABATEMENT OF HAZARDOUS MATERIALS IS NOT PART OF THIS SCOPE OF WORK. IF ASBESTOS OR OTHER HAZARDOUS MATERIALS ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY.
3. REFER TO SPECIFICATION FOR RECYCLING, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL REQUIREMENTS.
4. REMOVE LOOSE PAINT AND MISCELLANEOUS HANGING OBJECTS FROM WALLS AND CEILINGS AT ALL AREAS TO RECEIVE NEW FINISHES.
5. OPENING IN THE EXISTING STRUCTURE SMALLER THAN 12" IN ANY DIRECTION ARE NOT IDENTIFIED ON THESE DRAWINGS. SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR PROVIDING OPENINGS SMALLER THAN 12" AS REQUIRED FOR INSTALLATION OF THEIR WORK.
6. OPENINGS IN THE EXISTING STRUCTURE SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
7. PATCH ALL AREAS OF ELECTRICAL AND MECHANICAL DEMOLITION THAT WILL NOT BE REUSED.
8. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS. IN THE EVENT OF A DISCREPANCY BETWEEN THE DRAWINGS AND THE EXISTING CONDITIONS, NOTIFY THE ARCHITECT BEFORE PROCEEDING.
9. DO NOT REMOVE ANY ITEMS WHICH JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BUILDING. IF HIDDEN ELEMENTS OR DETERIORATED ELEMENTS ARE ENCOUNTERED, NOTIFY THE ARCHITECT IMMEDIATELY.
10. PATCH ALL REMAINING EXISTING EXPOSED PLASTER CEILING AS REQUIRED TO RECEIVE NEW FINISH.
11. EXISTING BUILDING IS TO REMAIN WEATHER-TIGHT DURING ALL DEMOLITION ACTIVITIES.
12. REFER TO CONSULTANT DRAWINGS FOR ADDITIONAL DEMOLITION OF OTHER DISCIPLINES.
13. PROTECT ALL ADJACENT AREAS AND ITEMS "TO REMAIN" DURING DEMOLITION/CONSTRUCTION. REPAIR/REPLACE ALL ITEMS DAMAGED DURING CONSTRUCTION.
14. EXISTING BUILDING CONDITIONS SHOWN ON THESE DRAWINGS ARE DERIVED FROM DRAWINGS OF THE ORIGINAL BUILDING AND FROM LIMITED FIELD OBSERVATION.
15. INDICATED EXISTING BUILDING CONDITIONS ARE ASSUMED TO BE REPRESENTATIVE OF THE ACTUAL CONSTRUCTION OF THE BUILDING. LOCAL CONDITIONS MAY VARY

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

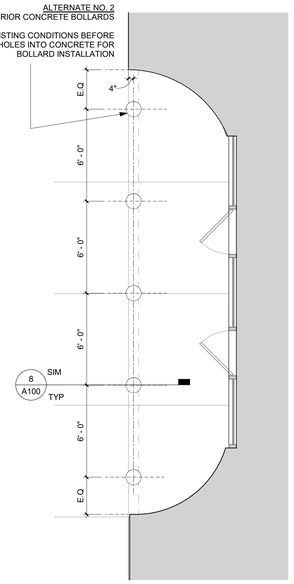
Revision	Description	Date

OPN Project No.
20635000

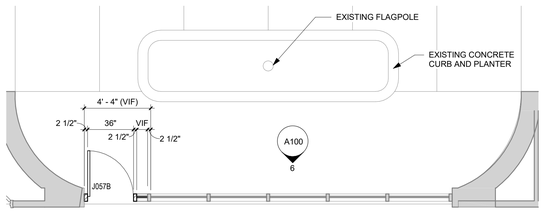
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
DEMO REFLECTED CEILING PLANS

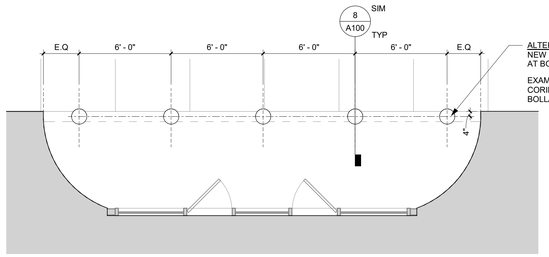
Sheet Number
AD201



3 NIP ENTRANCE - 1227 N SHERMAN AVENUE ALTERNATE NO. 2
1/4" = 1'-0"

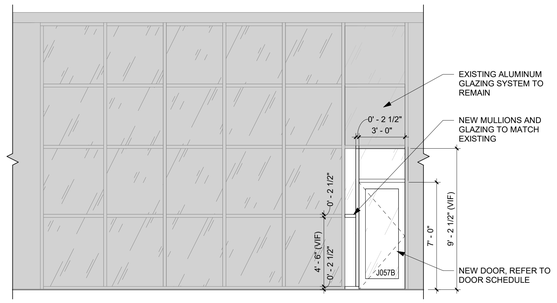


5 JCO CHILDCARE ENTRANCE
1/4" = 1'-0"

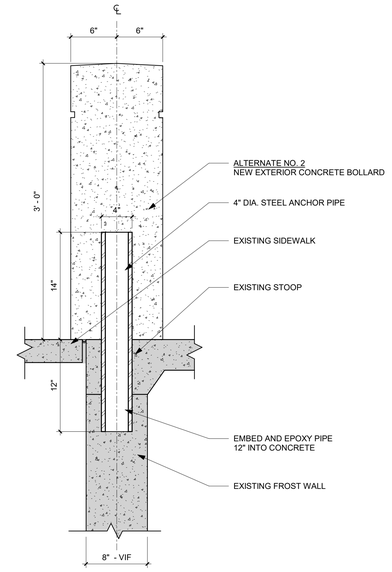


4 JCO ENTRANCE - 1801 AND 1819 ABERGE AVENUE - ALTERNATE NO. 2
1/4" = 1'-0"

7 3D VIEW OF BOLLARDS AT ENTRY (TYP) - ALTERNATE NO. 2



6 EXTERIOR ELEVATION AT CHILDCARE
1/4" = 1'-0"



8 TYPICAL BOLLARD SECTION - ALTERNATE NO. 2
1 1/2" = 1'-0"

2 OVERALL SITE PLAN
1/16" = 1'-0"

1 SITE AERIAL

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

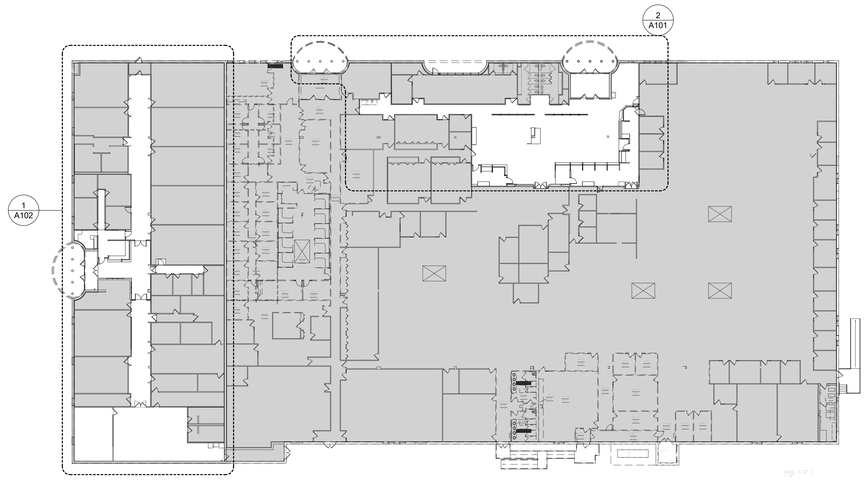
Revision Description Date

OPN Project No.
20635000

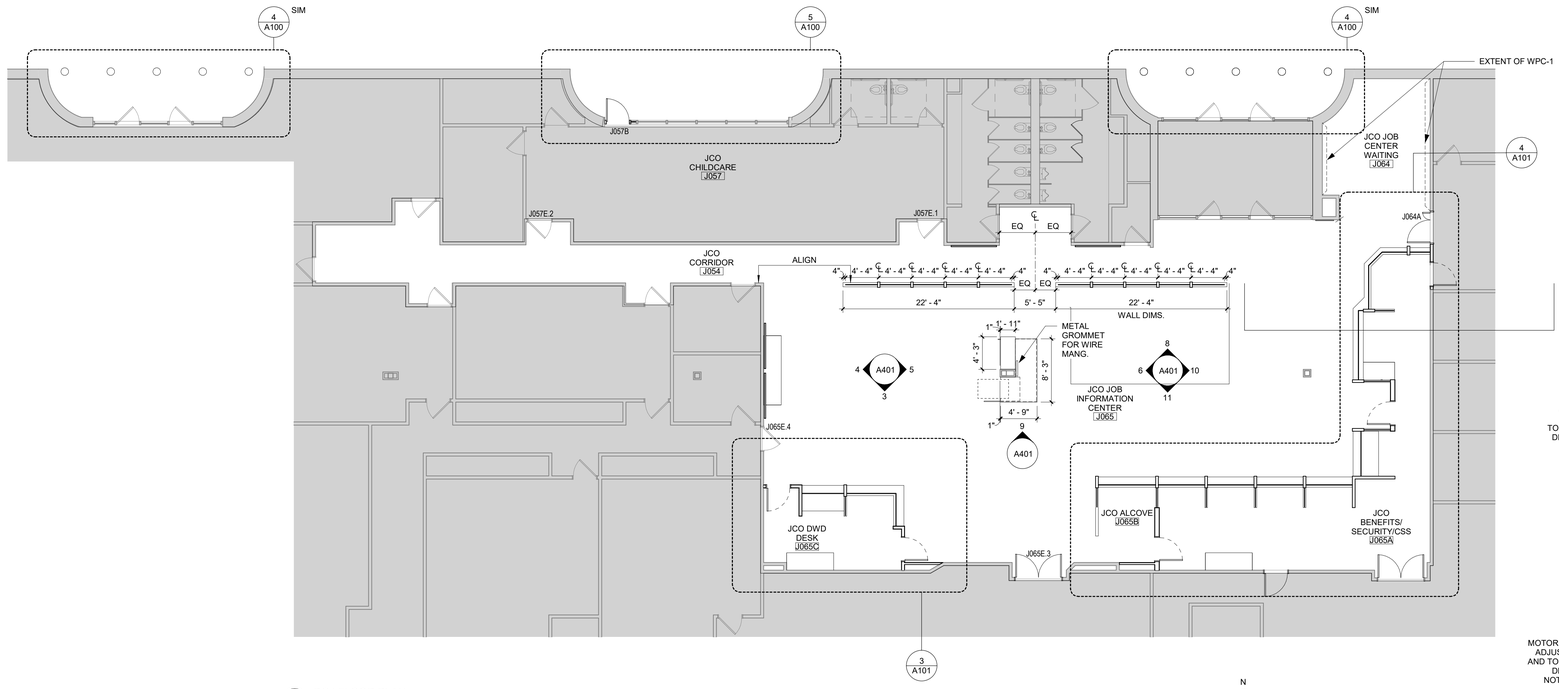
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
SITE AND EXTERIOR DRAWINGS

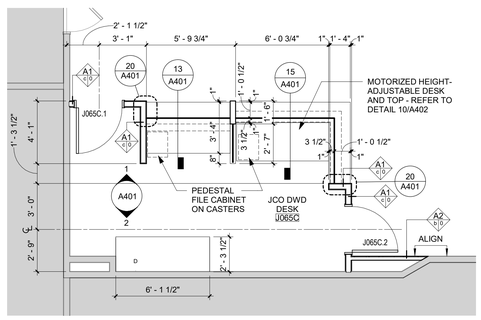
Sheet Number
A100



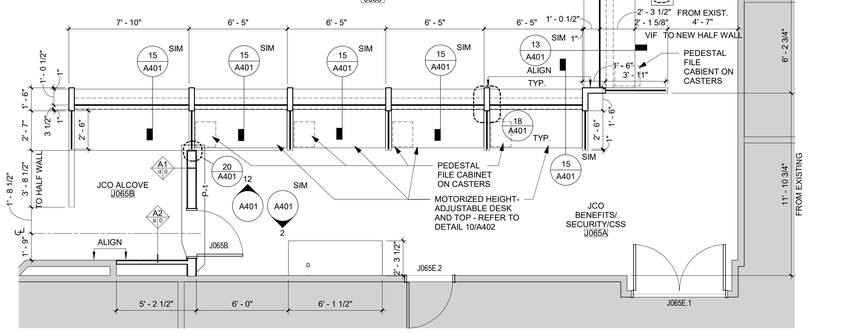
5 OVERALL PLAN
1/32" = 1'-0"



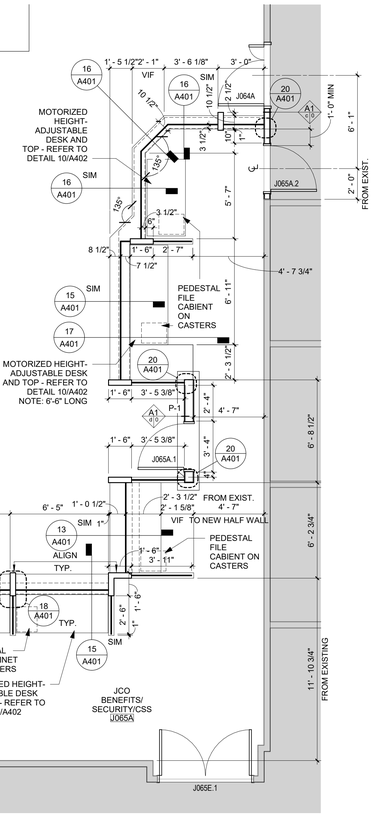
2 DOJ FLOOR PLAN
1/8" = 1'-0"



3 ENLARGED DWD DESK PLAN
1/4" = 1'-0"



4 ENLARGED BENEFITS DESK PLAN
1/4" = 1'-0"



OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

GENERAL NOTES

1. DIMENSIONS ARE MEASURED FACE-OF-FINISH TO FACE-OF-FINISH OR ROUGH MASONRY OPENING UNLESS NOTED OTHERWISE - TYPICAL FOR ALL DRAWINGS.
2. FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS - TYPICAL FOR ALL DRAWINGS.
3. IN THE EVENT OF A DISCREPANCY BETWEEN ARCHITECTURAL AND CONSULTANT DRAWINGS, NOTIFY ARCHITECT IMMEDIATELY PRIOR TO COMMENCING WORK - TYPICAL FOR ALL DRAWINGS.
4. ALL PENETRATIONS IN FIRE RATED FLOORS AND WALLS MUST BE SEALED WITH APPROPRIATE FIRESTOPPING SYSTEM.
5. PATCH AND REPAIR EXISTING FLOOR SLABS AND WALL SURFACES DAMAGED FROM DEMOLITION.
6. PATCH AND REPLACE ANY SOILED OR DAMAGED CARPET TILES

Key Plan

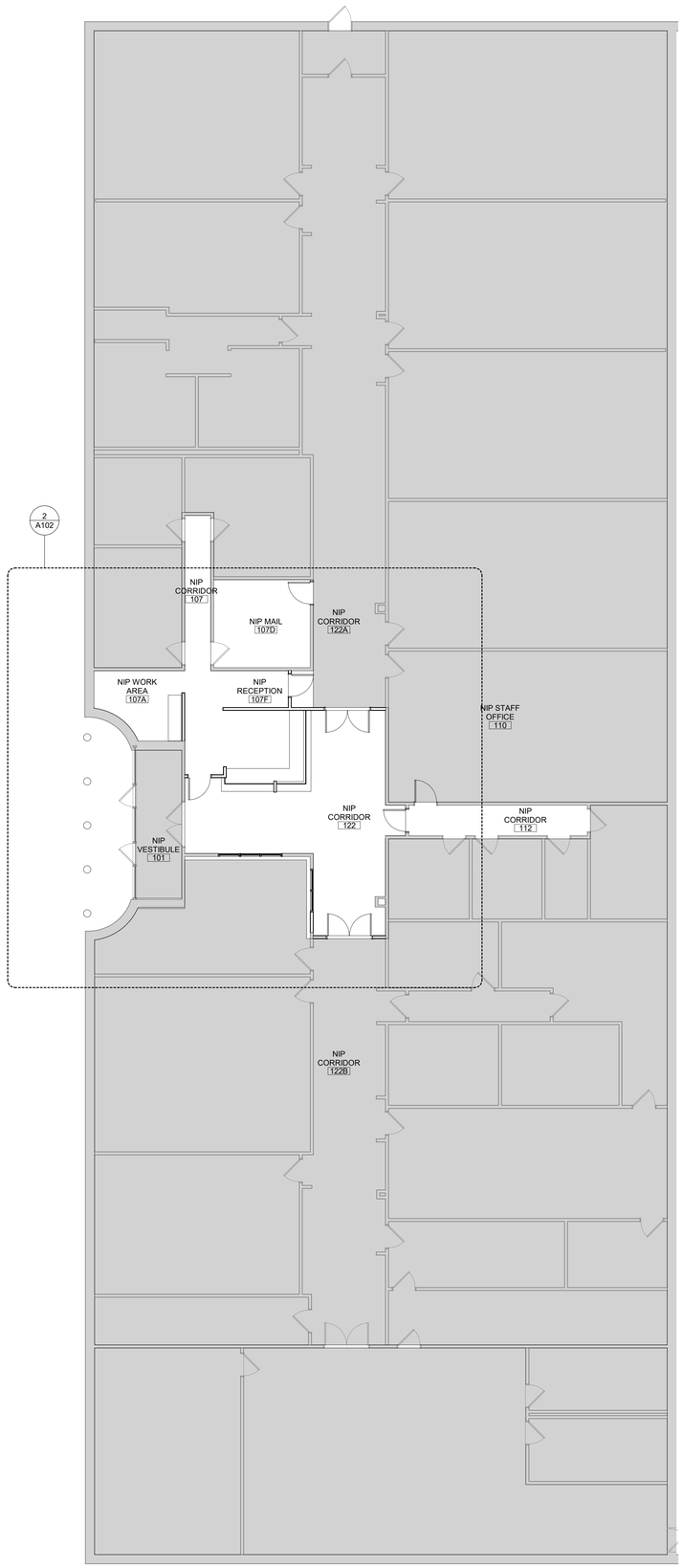
Revision	Description	Date

OPN Project No.
20635000

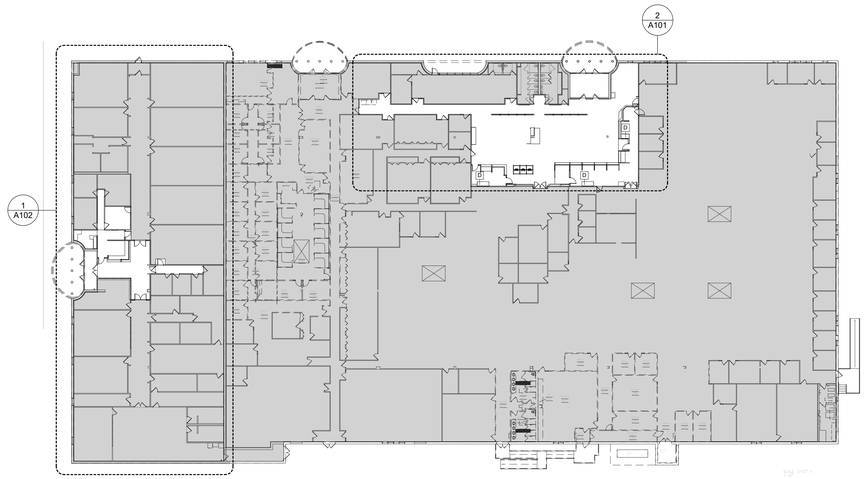
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
JCO/ DWD ENLARGED FLOOR PLANS

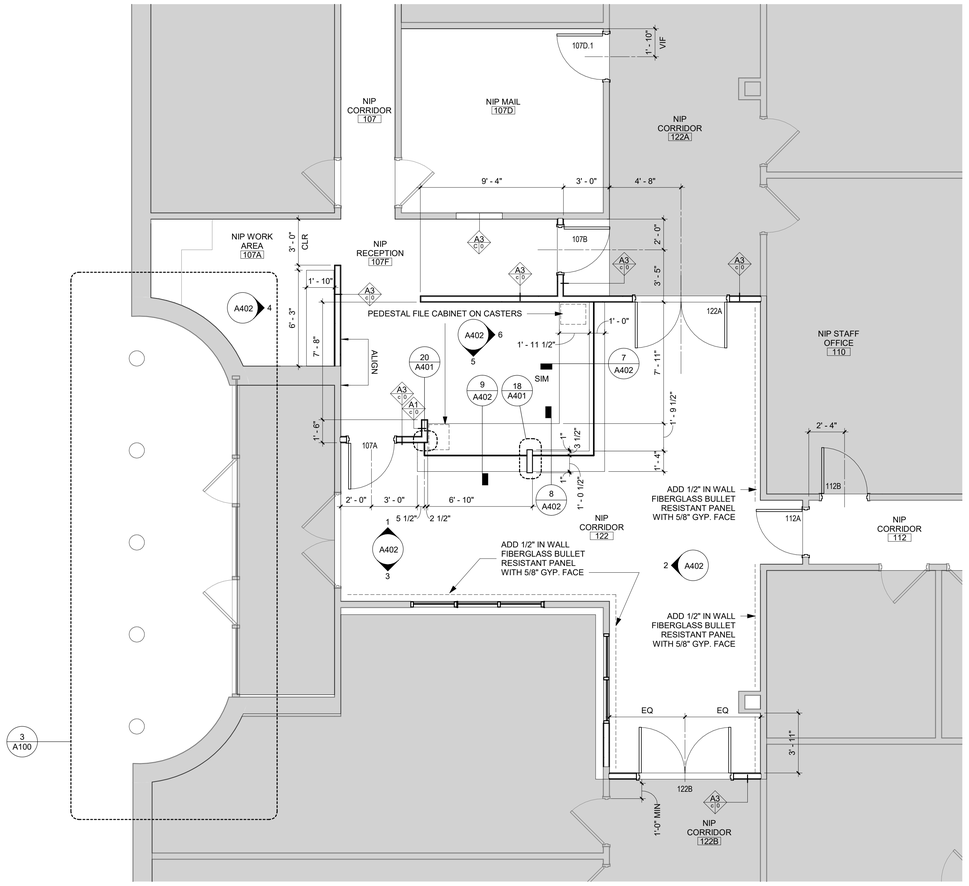
Sheet Number
A101



1 NIP FLOOR PLAN
1/8" = 1'-0"



3 OVERALL PLAN1
1/32" = 1'-0"



2 ENLARGED NIP FLOOR PLAN
1/4" = 1'-0"

GENERAL NOTES

1. DIMENSIONS ARE MEASURED FACE-OF-FINISH TO FACE-OF-FINISH OR ROUGH MASONRY OPENING UNLESS NOTED OTHERWISE - TYPICAL FOR ALL DRAWINGS.
2. FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS - TYPICAL FOR ALL DRAWINGS.
3. IN THE EVENT OF A DISCREPANCY BETWEEN ARCHITECTURAL AND CONSULTANT DRAWINGS, NOTIFY ARCHITECT IMMEDIATELY PRIOR TO COMMENCING WORK - TYPICAL FOR ALL DRAWINGS.
4. ALL PENETRATIONS IN FIRE RATED FLOORS AND WALLS MUST BE SEALED WITH APPROPRIATE FIRESTOPPING SYSTEM.
5. PATCH AND REPAIR EXISTING FLOOR SLABS AND WALL SURFACES DAMAGED FROM DEMOLITION.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

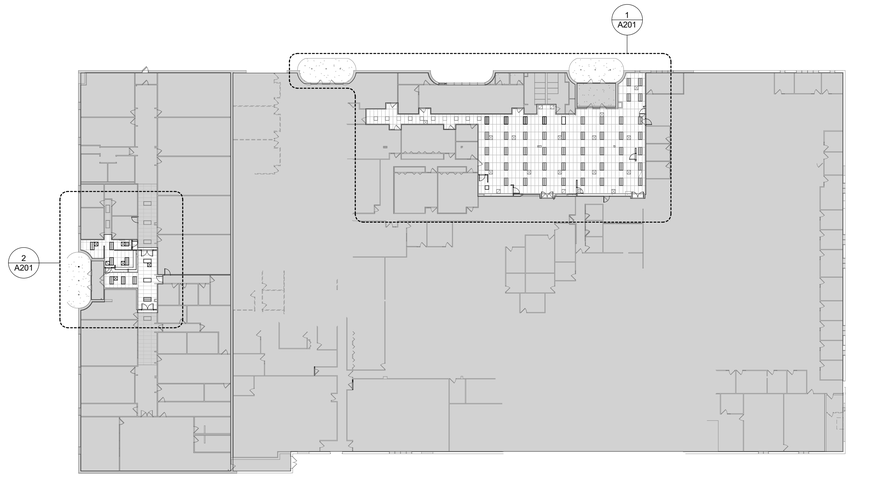
Revision	Description	Date

OPN Project No.
20635000

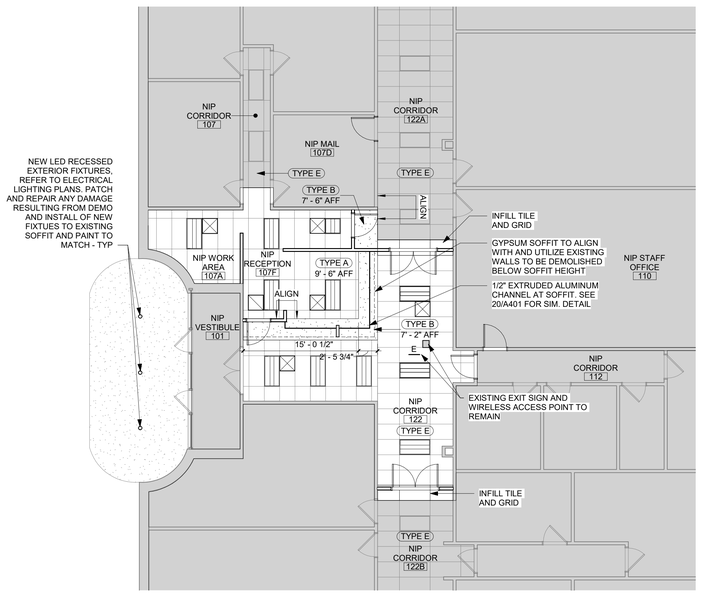
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
NIP ENLARGED FLOOR PLANS

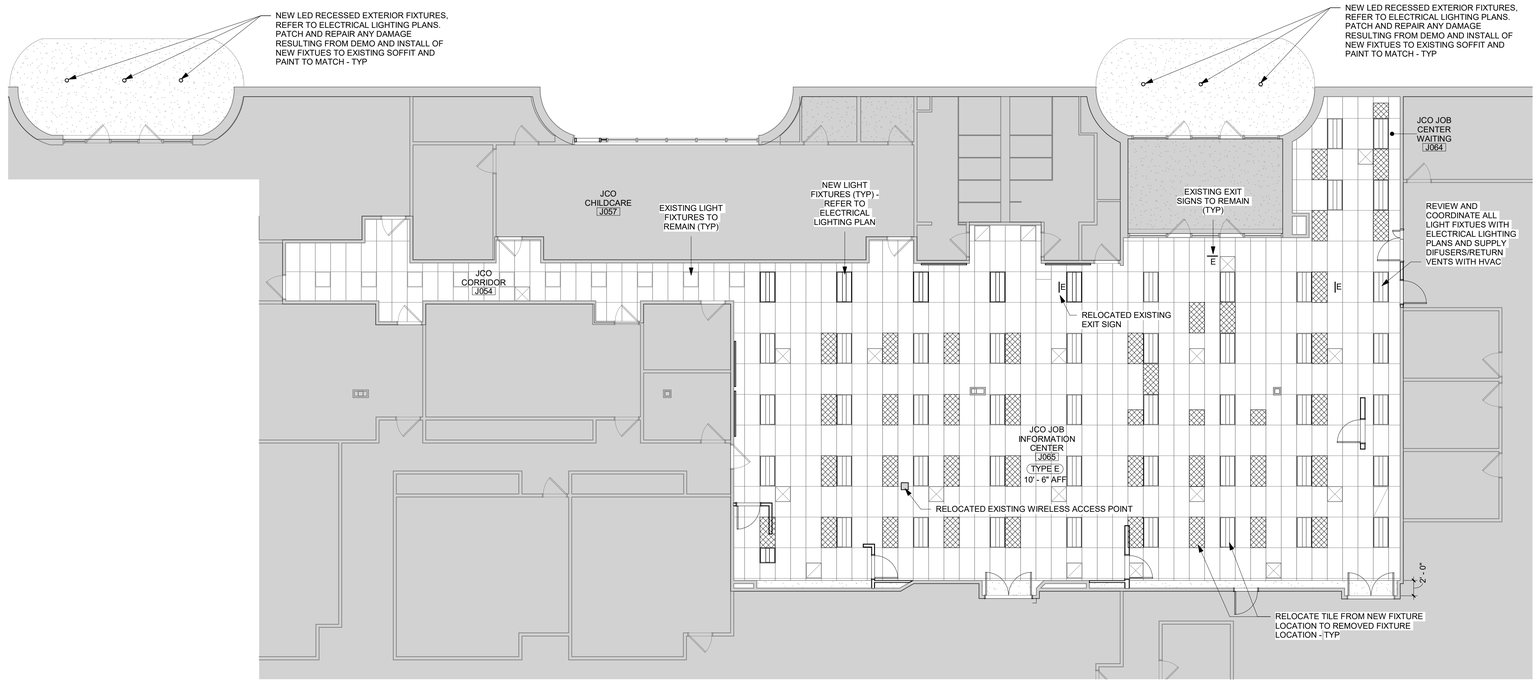
Sheet Number
A102



3 OVERALL RCP
1/32" = 1'-0"



2 NIP REFLECTED CEILING PLAN
1/8" = 1'-0"



1 JCO REFLECTED CEILING PLAN
1/8" = 1'-0"

CEILING LEGEND

- LINEAR FIXTURE
- LINEAR PENDANT
- RECESSED LED FIXTURE 3500K
- DOWN LIGHT PENDANT
- UTILITY LIGHT
- SPRINKLER
- SPEAKER
- MICROPHONE
- WIRELESS ROUTER
- CEILING MOUNT CLOCK
- DATA / POWER FOR CEILING MOUNT MONITORS
- CEILING MOUNT CAMERA
- PROJECTOR
- HVAC RETURN DIFFUSER
- HVAC SUPPLY DIFFUSER
- HVAC SLOT DIFFUSER
- HVAC CYLINDER DIFFUSER
- ACCESS PANEL
- CEILING MOUNTED MONITORS

GENERAL NOTES

1. CEILINGS ARE TYPE A AND INSTALLED TO MATCH EXISTING ELEVATION (8'-2") UNLESS NOTED OTHERWISE
2. CEILING-MOUNTED FIXTURES, SPRINKLERS AND EQUIPMENT SHALL BE CENTERED IN CEILING PANELS OR GYPSUM BOARD SOFFITS AND EQUALLY SPACED UNLESS NOTED OTHERWISE
3. CENTER CEILING GRID IN ROOMS AS SHOWN UNLESS NOTED OTHERWISE.
4. CONCEALED SPRINKLER HEAD COVERS SHALL BE PAINTED BY MANUFACTURER TO MATCH ADJACENT SOFFIT/ACP UNLESS NOTED OTHERWISE.
5. COORDINATE LOCATIONS OF EXIT LIGHTS AND EMERGENCY LIGHTS SHOWN ON ARCHITECTURAL DRAWINGS. IN THE EVENT OF A DISCREPANCY, VERIFY WITH ARCHITECT PRIOR TO INSTALLATION.
6. CEILING FIXTURE DIMENSIONS ARE TAKEN FROM CENTERLINE OF FIXTURE UNLESS NOTED OTHERWISE.
7. REFER TO ARCHITECTURAL DRAWINGS (ELEVATIONS & REFLECTED CEILING PLANS) FOR ALL MECHANICAL AND ELECTRICAL DEVICE AND FIXTURE LOCATIONS & MOUNTING HEIGHTS. IF NOT CLEARLY SPECIFIED, CONTACT ARCHITECT FOR FURTHER CLARIFICATION. MECHANICAL & ELECTRICAL DRAWINGS ARE FOR FIXTURE TYPE REFERENCE ONLY.
8. PAINT ALL EXPOSED STRUCTURE, DECK, DUCTWORK, CONDUIT, ETC. IN AREAS NOTED TO BE OPEN TO STRUCTURE UNLESS NOTED OTHERWISE. PAINTING OF EXPOSED STRUCTURE TO BE DONE AFTER ALL UTILITIES ARE INSTALLED.

CEILING TYPES

A. ACOUSTICAL CEILING ACT-1, REFER TO FINISH SPECIFICATIONS SHEET A800.

B. GYPSUM BOARD CEILING ON METAL STUD FRAMING, PAINT P-1.

E. EXISTING CEILING TO REMAIN. VERIFY HEIGHT IN FIELD.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

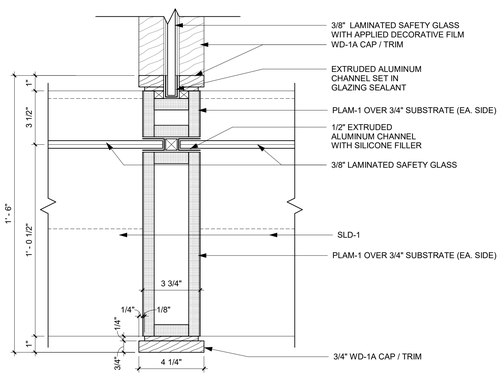
Revision	Description	Date

OPN Project No.
20635000

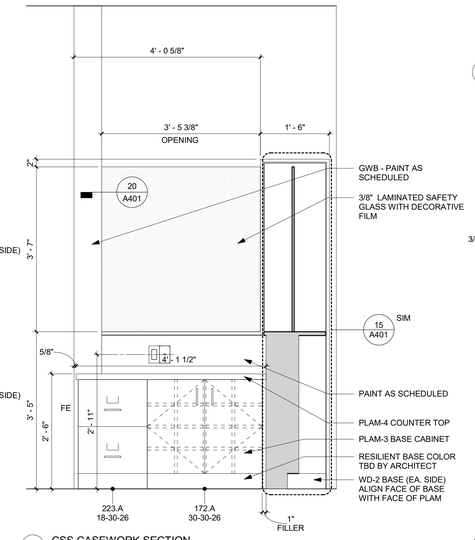
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
REFLECTED CEILING PLANS

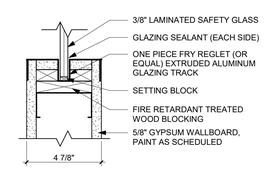
Sheet Number
A201



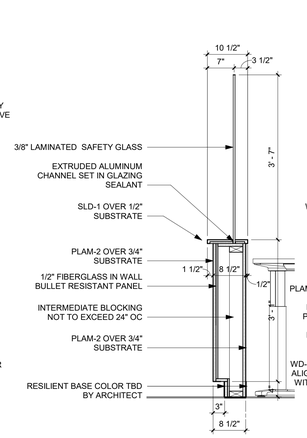
18 GLASS PARTITION DETAIL
3" = 1'-0"



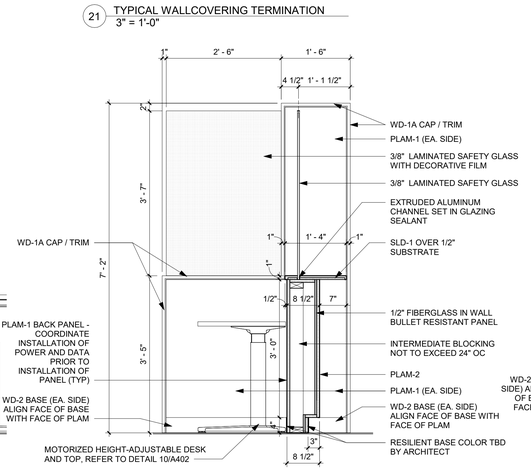
17 CSS CASEWORK SECTION
3/4" = 1'-0"



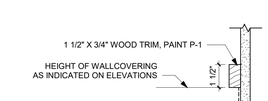
20 GLASS AT GYPSUM (TYP)
3" = 1'-0"



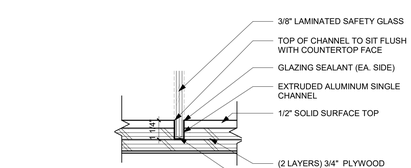
16 SECTION AT DESK NORTH
3/4" = 1'-0"



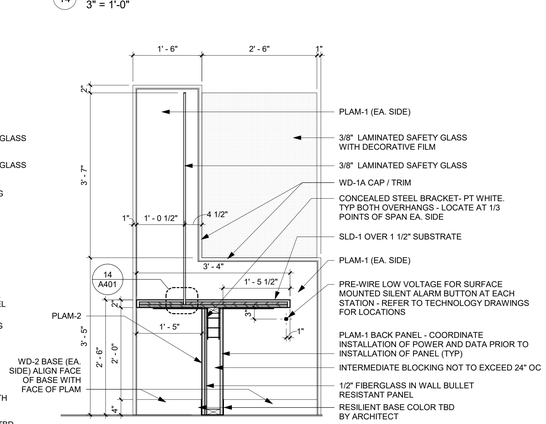
15 TYPICAL STATION SECTION
3/4" = 1'-0"



21 TYPICAL WALLCOVERING TERMINATION
3" = 1'-0"

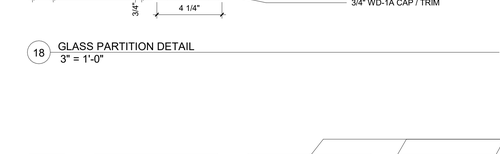


14 GLASS TO COUNTERTOP SECTION DETAIL
3" = 1'-0"

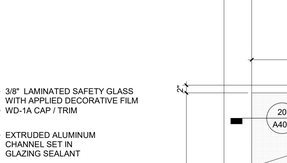


13 ADA STATION SECTION
3/4" = 1'-0"

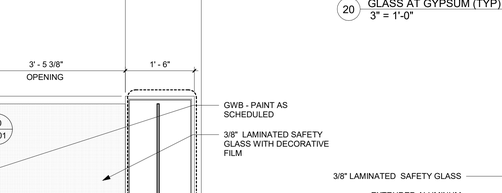
UNLESS NOTED OTHERWISE



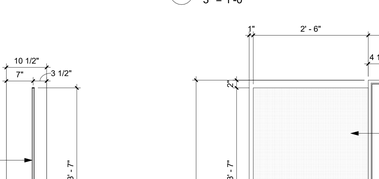
19 PARTITION HALF WALL SECTION
3/4" = 1'-0"



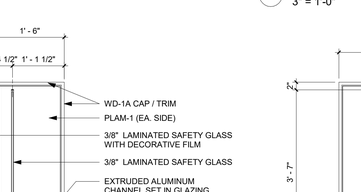
9 PRINTER HUB SOUTH ELEVATION
1/4" = 1'-0"



8 PARTITION HALF WALL ELEVATION (TYP BOTH SIDES)
1/4" = 1'-0"



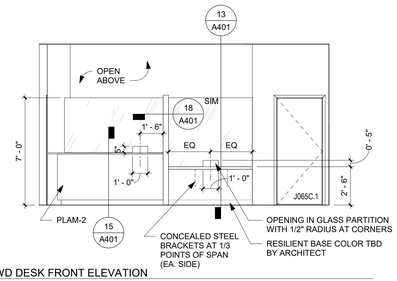
7 PLAN DETAIL AT DIVIDER (TYP)
3" = 1'-0"



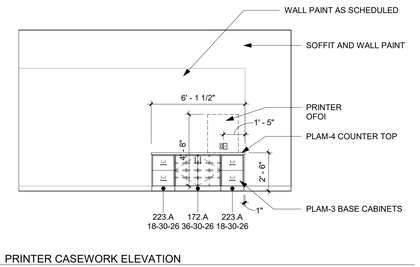
6 PRINTER HUB WEST ELEVATION
1/4" = 1'-0"

5 PRINTER HUB EAST ELEVATION
1/4" = 1'-0"

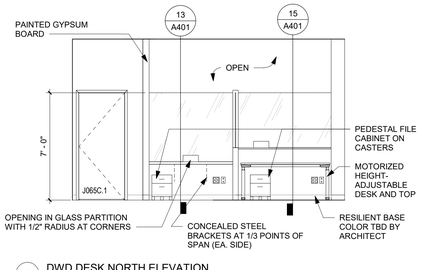
4 DWD PUBLIC PRINTER ELEVATION
1/4" = 1'-0"



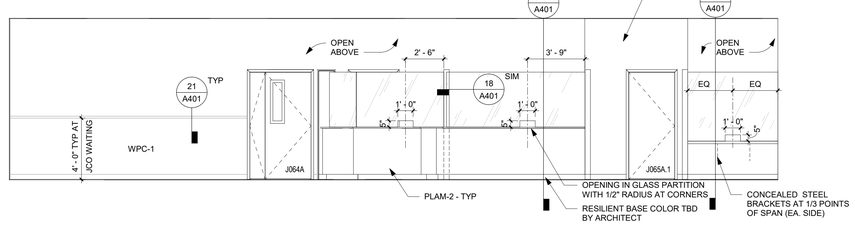
3 DWD DESK FRONT ELEVATION
1/4" = 1'-0"



2 PRINTER CASEWORK ELEVATION
1/4" = 1'-0"



1 DWD DESK NORTH ELEVATION
1/4" = 1'-0"



10 CSS/ SECURITY FRONT ELEVATION
1/4" = 1'-0"

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

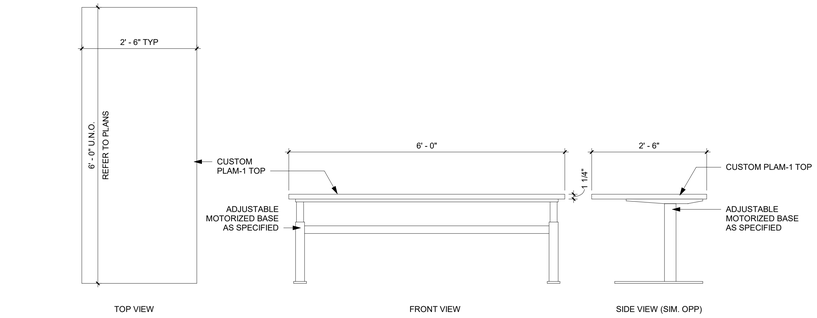
Revision	Description	Date

OPN Project No.
20635000

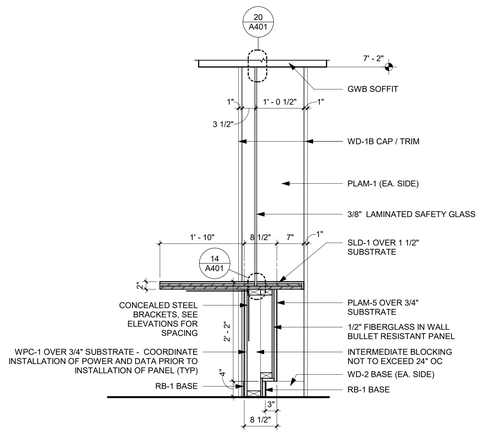
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

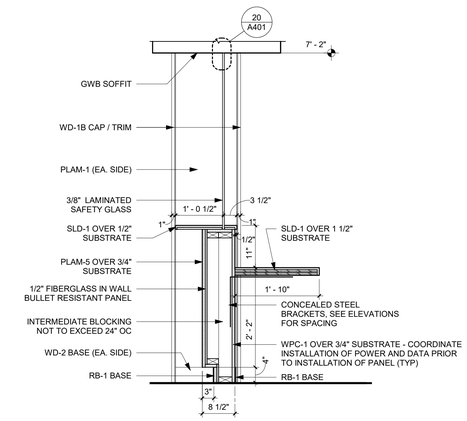
Sheet Name
INTERIOR ELEVATIONS

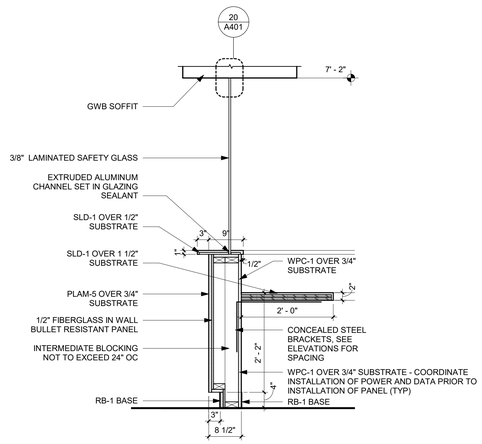
Sheet Number
A401



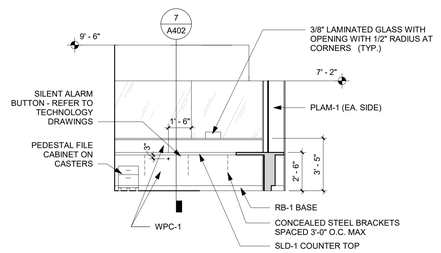
10 MOTORIZED HEIGHT-ADJUSTABLE DESK DETAILS
3/4" = 1'-0"





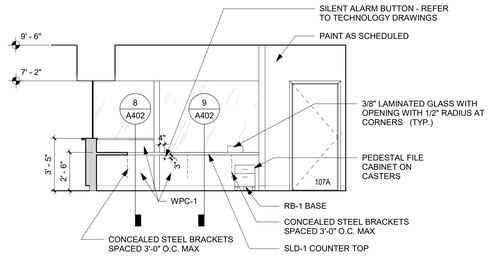


9 NIP RECEPTION ADA DESK SECTION
3/4" = 1'-0"



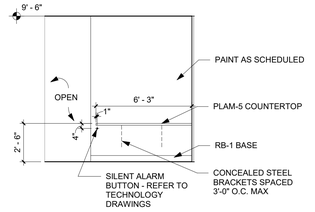
6 NIP RECEPTION DESK EAST ELEVATION
1/4" = 1'-0"

8 NIP RECEPTION DESK SECTION
3/4" = 1'-0"

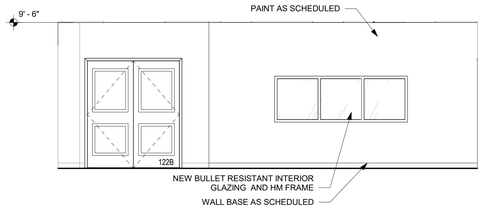


5 NIP RECPETION DESK SOUTH ELEVATION
1/4" = 1'-0"

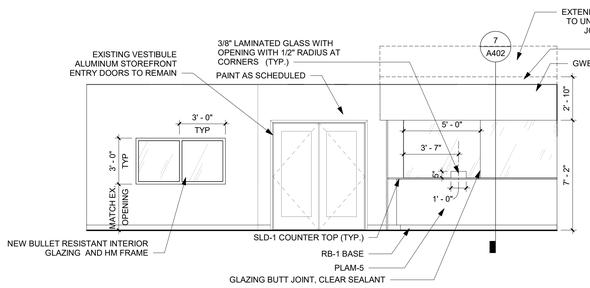
7 NIP RECEPTION DESK EAST
3/4" = 1'-0"



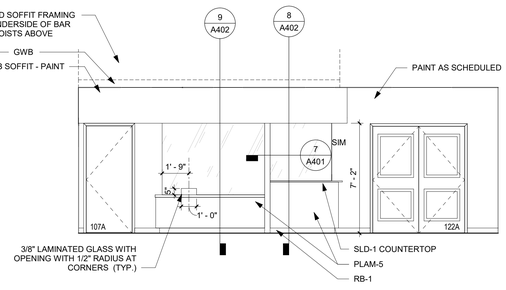
4 NIP- WORK AREA CASEWORK ELEVATION
1/4" = 1'-0"



3 NIP CORRIDOR- SOUTH ELEVATION
1/4" = 1'-0"



2 NIP CORRIDOR- WEST ELEVATION
1/4" = 1'-0"



1 NIP CORRIDOR- NORTH ELEVATION
1/4" = 1'-0"

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision Description Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
INTERIOR ELEVATIONS

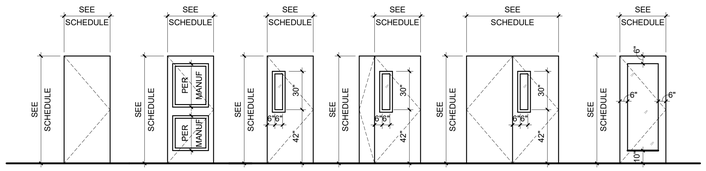
Sheet Number
A402

DOOR SCHEDULE

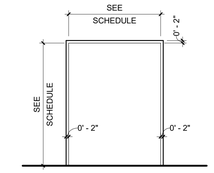
From Room: Name	From Room: Number	DOOR NUMBER	PANEL WIDTH	PANEL HEIGHT	Door Panel Type	PANEL PANEL 1 WIDTH	PANEL 2 WIDTH	PANEL MATERIAL	PANEL FINISH	FRAME MATERIAL	FRAME FINISH	HARDWARE SET	REMARKS
NIP CORRIDOR	122	107A	3' - 0"	7' - 0"	F	3' - 0"		HM	P-3	HM	P-3	3.0	1
NIP CORRIDOR	122A	107B	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1B	HM	P-3	6.0	
NIP CORRIDOR	122A	107D.1	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1B	HM	P-3	6.0	
NIP CORRIDOR	112	112A	3' - 0"	7' - 0"	F	3' - 0"		HM	P-3	HM	P-3	3.0	1,3
NIP CORRIDOR	112	112B	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1B	HM	P-3	7.0	
NIP CORRIDOR	122	122A	6' - 0"	7' - 0"	HG	3' - 0"	3' - 0"	HM	P-3	HM	P-3	4.0	1
NIP CORRIDOR	122B	122B	6' - 0"	7' - 0"	HG	3' - 0"	3' - 0"	HM	P-3	HM	P-3	4.0	1
JCO CHILDCARE	J057	J057B	3' - 0"	7' - 0"	ALUM	3' - 0"		ALUM	MATCH EXIST.	ALUM	MATCH EXIST.	2.0	2
JCO CHILDCARE	J057	J057E.1	EXISTING	EXISTING	EX	EXISTING		EX	EX	EX	EX	8.0	
JCO CHILDCARE	J057	J057E.2	EXISTING	EXISTING	EX	EXISTING		EX	EX	EX	EX	8.0	
JCO JOB INFORMATION CENTER	J065	J064A	4' - 0"	7' - 0"	QG1	3' - 0"	1' - 0"	WD	WD-1A	HM	P-3	5.0	3
JCO BENEFITS/ SECURITY/CSS	J065A	J065A.1	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1A	HM	P-3	3.0	3
JCO BENEFITS/ SECURITY/CSS	J065A	J065A.2	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1A	HM	P-3	3.0	3
JCO ALCOVE	J065B	J065B	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1A	HM	P-3	3.0	3
JCO DWD DESK	J065C	J065C.1	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1A	HM	P-3	3.0	4
JCO DWD DESK	J065C	J065C.2	3' - 0"	7' - 0"	F	3' - 0"		WD	WD-1A	HM	P-3	3.0	3
JCO BENEFITS/ SECURITY/CSS	J065A	J065E.1	6' - 0"	7' - 0"	QG2	3' - 0"	3' - 0"	WD	WD-1A	EX	EX	1.0	3,5
JCO BENEFITS/ SECURITY/CSS	J065A	J065E.2	3' - 0"	7' - 0"	QG	3' - 0"		WD	WD-1A	EX	EX	3.0	3,5
JCO JOB INFORMATION CENTER	J065	J065E.3	6' - 0"	7' - 0"	QG2	3' - 0"	3' - 0"	WD	WD-1A	EX	EX	1.0	3,5
JCO JOB INFORMATION CENTER	J065	J065E.4	EXISTING	EXISTING	EX	EXISTING		EX	EX	EX	EX	8.0	

NOTES:
1. ALTERNATE NO. 3: PROVIDE ALTERNATE PRICE FOR LEVEL 3 BULLET RESISTANT HM DOOR, GLAZING (WHERE SHOWN) AND FRAME IN LIEU OF STANDARD HM DOOR AND FRAME.
2. PANIC HARDWARE -EXIT ONLY . FINISHES TO MATCH EXISTING
3. KEY CARD ACCESS - REFER TO AND COORDINATE WITH DRAWING SHEETS T101 AND T102 FOR CARD READER LOCATIONS.
4. EXIT ONLY
5. NEW DOOR IN EXISTING HM FRAME.

GENERAL NOTES:
- ALL DOOR LEVERS TO BE ADA ACCESSIBLE
- ALL DOORS TO HAVE SURFACE MOUNTED CLOSER AND STANDARD HINGES- CLOSURES TO BE MOUNTED ON INSIDE OF ROOM.



1 DOOR PANEL TYPES
1/4" = 1'-0"



2 DOOR FRAME ELEVATIONS
1/4" = 1'-0"

ROOM FINISH SCHEDULE

ROOM NAME	Number	FLOOR FINISH	FLOOR BASE	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING	NOTES
Level 1									
JCO CHILDCARE	J057	N/A	N/A	TOUCH UP AS NEEDED	N/A	N/A	N/A	E.T.R.	
JCO CORRIDOR	J054	E.T.R.	E.T.R.	N/A	N/A	N/A	N/A	E.T.R.	
JCO JOB CENTER WAITING	J064	E.T.R.	E.T.R.	EXISTING	WPC-1/ P-1 ABOVE	N/A	SEE PLAN	E.T.R.	1
JCO ALCOVE	J065B	E.T.R.	E.T.R.	N/A	P-1	P-1	P-1	E.T.R.	1
JCO DWD DESK	J065C	E.T.R.	E.T.R.	P-1	P-1	P-1	P-1	E.T.R.	1
JCO BENEFITS/ SECURITYCSS	J065A	E.T.R.	E.T.R.	SEE ELEVATIONS	P-1	P-1	P-1	E.T.R.	1
JCO JOB INFORMATION CENTER	J065	E.T.R.	E.T.R.	P-1	P-1	P-1	P-1	E.T.R.	1
NIP RECEPTION	107F	CPT-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	
NIP CORRIDOR	122	CPT-3	RB-1	SEE ELEVATIONS	P-1	P-1	P-1	E.T.R.	
NIP CORRIDOR	122A	E.T.R.	E.T.R.	P-2 TOUCH UP AS NEEDED	P-2 TOUCH UP AS NEEDED	P-2	P-2 TOUCH UP AS NEEDED	E.T.R.	1,2,3
NIP CORRIDOR	122B	E.T.R.	E.T.R.	P-2	N/A	N/A	N/A	E.T.R.	1,2,3
NIP CORRIDOR	112	E.T.R.	E.T.R.	P-2 TOUCH UP AS NEEDED	N/A	N/A	N/A	E.T.R.	1
NIP STAFF OFFICE	110	N/A	N/A	N/A	N/A	TOUCH UP AS NEEDED	N/A	E.T.R.	
NIP CORRIDOR	107	CPT-2	RB-1	P-1	P-1	P-1	P-1	E.T.R.	
NIP MAIL	107D	CPT-2	RB-1	P-2 TOUCH UP AS NEEDED	P-2 TOUCH UP AS NEEDED	P-2	P-2	E.T.R.	
NIP WORK AREA	107A	CPT-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	
NIP VESTIBULE	101	N/A	N/A	N/A	N/A	N/A	N/A	E.T.R.	

NOTES:
1. ALTERNATE NO. 1: INSTALL NEW VCT-1 AND RB-1.
2. INFILL TILE AND GRID AS NECESSARY AT NEW PARTITIONS.
3. NEW WALL BASE TO MATCH EXISTING AT NEW PARTITIONS, NEW FLOORING INFILL AS NECESSARY TO MATCH EXISTING.

FINISH SPECIFICATIONS

FLOORING

CPT-1
(NOT USED)

CPT-2
MANUFACTURER: MILLIKEN
STYLE: BASS LINE
SIZE: 24X24
COLOR: BSL27 VINLY
INSTALLATION: RANDOM

CPT-3
MANUFACTURER: MILLIKEN
STYLE: OBEX TILE CUTX / DRIFT
SIZE: 24X24
COLOR: DTX5-27 GREY
INSTALLATION: ASHLAR

VCT-1
MANUFACTURER: ARMSTRONG
STYLE: PREMIUM EXCELON
SIZE: 12" X 12"
COLOR: PEWTER 5C908

WALL BASE

RB-1
MANUFACTURER: JOHNSONITE
STYLE: TRADITIONAL WALL BASE
COLOR: 63 BURNT UMBER B
SIZE: 4" HIGH
PROFILE: STRAIGHT
NOTE: ROLLED GOODS ONLY

PAINT

P-1
MANUFACTURER: BENJAMIN MOORE
COLOR: 1534 RODEO
FINISH: EGGSHELL

P-2
MATCH EXISTING NIP WALL PAINT

P-3
MATCH EXISTING DOOR FRAME PAINT

WALLCOVERING

WPC-1
MANUFACTURER: WOLF GORDON
STYLE: RAMPART
COLOR: KEREN / GREIGE

WOOD

WD-1A
SPECIES: RED OAK
STAIN: MATCH EXISTING DOORS AT JCO PER APPROVED SAMPLES

WD-1B
SPECIES: RED OAK
STAIN: MATCH EXISTING DOORS AT NIP PER APPROVED SAMPLES

WD-2
SPECIES: RED OAK
STAIN: BLACK STAIN PER APPROVED SAMPLE

PLASTIC LAMINATE

PLAM-1
MANUFACTURER: WILSONART
COLOR: SHADOW ZEPHYR
COLOR NUMBER: 4857-60

PLAM-2
MANUFACTURER: WILSONART
STYLE: COMPACT 535
COLOR: WEATHERED BRONZE
COLOR NUMBER: Y0384-60
THICKNESS: 3/8"- DOUBLE FACED BOARD
NOTES: EACH STRAIGHT RUN TO BE SINGLE SEAMLESS SHEET. CORNERED OUTSIDE

PLAM-3
MANUFACTURER: ARBORITE
STYLE: W-449 EV
COLOR: RIFT NATURAL OAK

PLAM-4
MANUFACTURER: WILSONART
COLOR: WEATHERED BRONZE
COLOR NUMBER: Y0384-60

PLAM-5
MANUFACTURER: WILSONART
COLOR: POTTERS CLAY
COLOR NUMBER: 5011K-22

SOLID SURFACE

SLD-1
MANUFACTURER: WILSONART
STYLE: QUARTZ SELECT
COLOR: Q6017 ABILIENE
THICKNESS: 2CM

DECORATIVE LAMINATED GLAZING

BASIS OF DESIGN:

MANUFACTURER: 3FORM
STYLE: PRESSED GLASS: GRAPHIC PATTERN COLOR
PATTERN: BRANCHED
SCALE: SCALE D
COLOR: W04 FLURRY 50%

ACOUSTICAL CEILING

ACT-1
MANUFACTURER: USG
STYLE: ECLIPSE ACOUSTICAL PANEL
SIZE: 2' X 4'
EDGE: FINELINE
GRID: 9/16" CENTRICITEE DXT
COLOR: WHITE
GRID COLOR: WHITE

GENERAL NOTES

1. SEE FRAME PLANS AND INTERIOR ELEVATIONS FOR DIMENSIONAL SIZES WITH MATERIALS OF FRAMES.
2. PREPARE DOOR AND FRAME FOR PAINT - BONDO DENTS AND SAND SCRATCHES SMOOTH.
3. PAINT ALL HOLLOW METAL DOORS AND FRAMES AS SCHEDULED.

GENERAL NOTES

1. DIMENSIONS ARE MEASURED FACE-OF-FINISH TO FACE-OF-FINISH OR ROUGH MASONRY OPENING UNLESS NOTED OTHERWISE - TYPICAL FOR ALL DRAWINGS.
2. FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS - TYPICAL FOR ALL DRAWINGS.
3. IN THE EVENT OF A DISCREPANCY BETWEEN ARCHITECTURAL AND CONSULTANT DRAWINGS, NOTIFY ARCHITECT IMMEDIATELY PRIOR TO COMMENCING WORK - TYPICAL FOR ALL DRAWINGS.
4. ALL PENETRATIONS IN FIRE RATED FLOORS AND WALLS MUST BE SEALED WITH APPROPRIATE FIRESTOPPING SYSTEM.
5. PATCH AND REPAIR EXISTING FLOOR SLABS AND WALL SURFACES DAMAGED FROM DEMOLITION.
6. PATCH AND REPLACE ANY SOILED OR DAMAGED CARPET TILES

GENERAL NOTES

1. REFER TO FINISH PLANS, REFLECTED CEILING PLANS, AND ELEVATIONS FOR LOCATION AND EXTENT OF FINISHES.
2. PAINT ALL INTERIOR MISCELLANEOUS METAL GRILLES, LOUVERS ACCESS PANELS, PIPES AND CONDUIT EXPOSED TO VIEW TO MATCH THE WALLS IN WHICH THEY OCCUR UNLESS OTHERWISE NOTED.
3. ALL EXPOSED DRYWALL TO RECEIVE PAINT UNLESS NOTED OTHERWISE.
4. PAINT ALL REVEALS TO MATCH THE WALLS IN WHICH THEY OCCUR.
5. PAINT ALL LIGHT FIXTURE TRIMS AND FLANGES OF LINEAR DIFFUSERS TO MATCH THE COLOR TO THE CEILING IN WHICH THEY OCCUR.
6. PAINT ALL EXPOSED SPEAKERS WITH A PAINT THAT WILL NOT DEGRADE THEIR ACOUSTICAL PERFORMANCE IN A COLOR TO MATCH THE WALL OR CEILING IN WHICH THEY OCCUR.
7. ALL PAINTED HOLLOW METAL DOORS AND FRAMES TO BE PAINTED TO MATCH THE COLOR OF THE WALL IN WHICH THEY OCCUR U.N.O
8. REFER TO ROOM FINISH SPECIFICATION FOR CARPET PATTERN AND DIRECTION & FOR ROOM FINISH SPECIFICATIONS AND ADDITIONAL INFORMATION
9. ALL FLOORING MATERIAL TRANSITIONS, TERMINATION AND SEAM LOCATIONS ARE TO BE CENTERED UNDER DOOR LEAFS IN CLOSED POSITION U.N.O.
10. EXTEND FLOORING INTO TOE SPACES, DOOR REVEALS, CLOSETS AND SIMILAR OPENINGS U.N.O.
11. PROVIDE FLOORING TRANSITION STRIPS AT FLOOR MATERIAL CHANGES. COORDINATE FLOORING TRANSITION MATERIAL, PROFILE, AND COLOR WITH ARCHITECT PRIOR TO INSTALLATION-REFER TO DETAIL DRAWINGS FOR DESIGN INTENT.
12. REFER TO SHEET AG002 FOR TYPICAL MOUNTING HEIGHTS.
13. POWER AND DATA LOCATIONS ARE TO BE COORDINATED IN THE FIELD WITH FINAL FURNISHING PLANS PRIOR TO INSTALLATION OF BOXES, FITTINGS, AND RACEWAYS.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

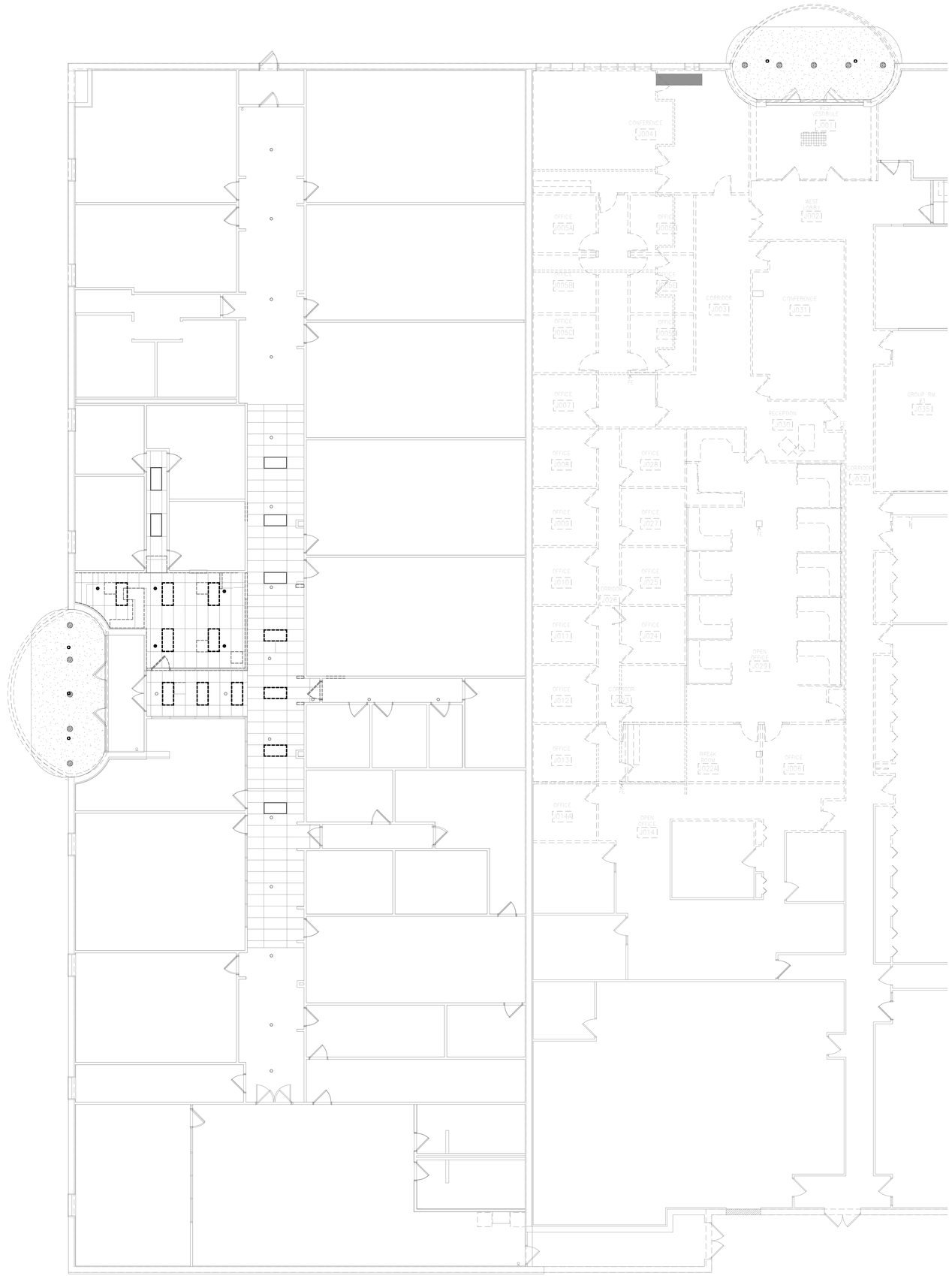
Revision	Description	Date

OPN Project No
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
ROOM FINISH SCHEDULE AND DOOR SCHEDULE

Sheet Number
A800



1 NIP ENLARGED FIRE SUPPRESSION DEMOLITION PLAN
1/8" = 1'-0"

KEYED NOTES

DEMOLITION KEY
- TO REMAIN
- TO BE REMOVED / REVISED

SPRINKLER HEAD DEMO KEY PLAN
- TO BE REMOVED/ REVISED
- EXISTING TO REMAIN

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

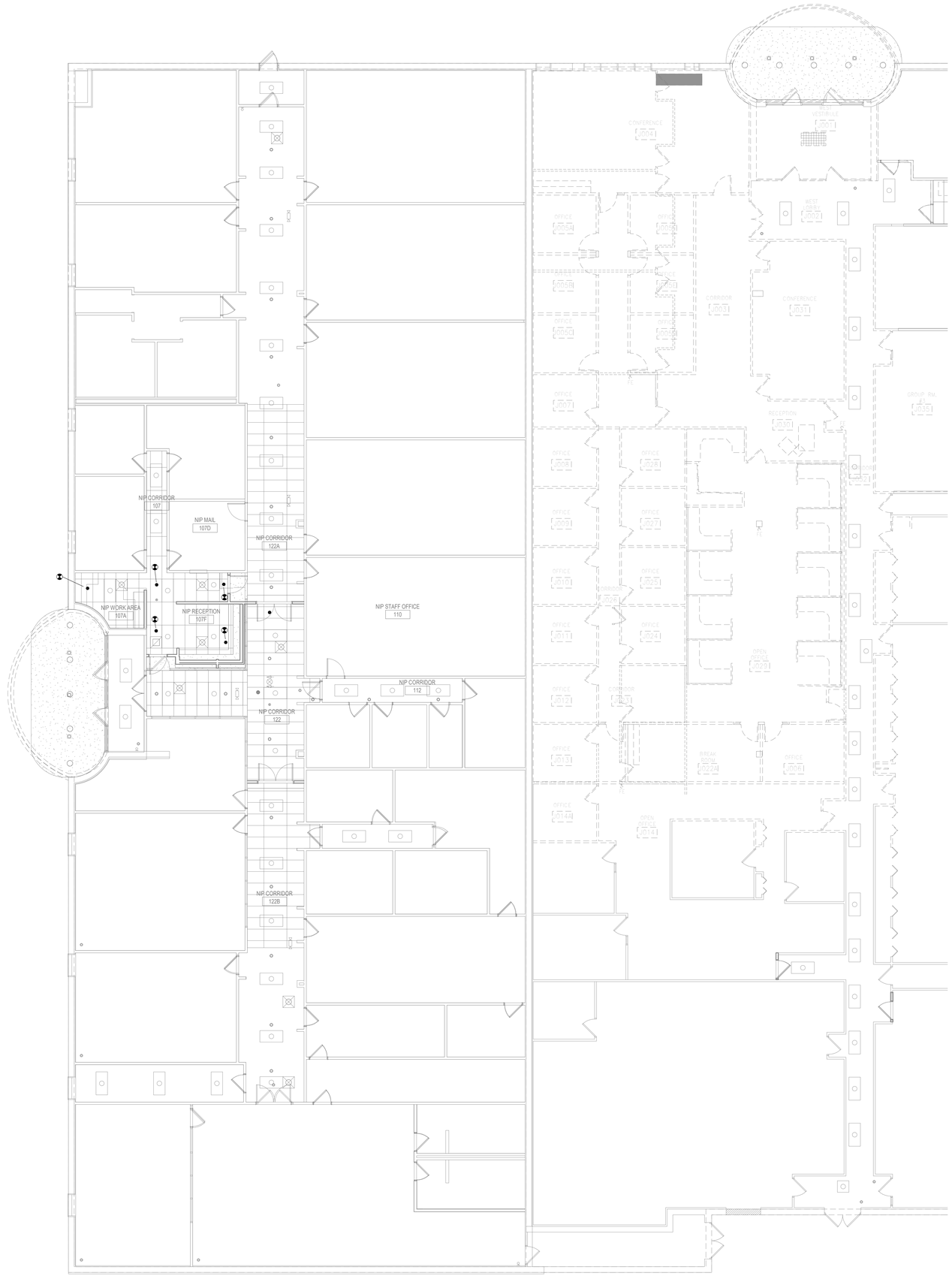
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
NIP ENLARGED FIRE SUPPRESSION DEMOLITION PLAN

FXD102



KEYED NOTES

GENERAL FIRE SUPPRESSION DEMOLITION NOTES:

1. REFER TO DEMOLITION KEY FOR ITEMS TO BE REMOVED VERSUS ITEMS TO REMAIN.
2. SHUT DOWN OF EXISTING FIRE SUPPRESSION SYSTEMS TO BE REQUESTED AND COORDINATED THROUGH OWNER'S REPRESENTATIVE IN ACCORDANCE WITH DIVISION 00 AND 01 SPECIFIATIONS.
3. NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO CREATING ANY SMOKE, HEAT, MOISTURE, VAPORS OR DUST AROUND ANY FIRE ALARM EQUIPMENT.
4. SCHEDULE FOR ALL WORK IMPACTING ADJACENT OCCUPIED AREAS SHALL BE COORDINATED WITH OWNER'S REPRESENTATIVE. WORK TO BE PERFORMED IN A MANNER THAT MINIMIZES THE INTERRUPTIONS AND INCONVENIENCE TO THE OWNER'S OCCUPANCY OF THESE SPACES.
5. COORDINATE SCHEDULE FOR RELOCATION OF ALL PIPING WITH THE OWNER'S REPRESENTATIVE, DOWNTIME FOR ALL SYSTEMS TO BE MINIMIZED.
6. WHERE PIPING THROUGH A FLOOR OR A WALL IS REMOVED, PATCH ALL REMAINING HOLES TO MATCH EXISTING AND TO PROVIDE THE REQUIRED FIRE RATING.
7. WHERE EXISTING PIPING TO BE REMOVED IS ROUTED IN AN EXISTING WALL OR FLOOR SLAB TO REMAIN, PIPING TO BE CAPPED AND ABANDONED IN WALL AND/OR SLAB.
8. FOR ALL WORK REQUIRED ABOVE EXISTING CEILINGS TO REMAIN, (EITHER WITHIN OR OUTSIDE THE PROJECT AREA) CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REINSTALLATION OF ALL CEILING TILE AS REQUIRED TO ACCOMPLISH THE WORK. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR TYPES AND EXTENT OF BOTH EXISTING AND NEW CEILINGS THROUGHOUT PROJECT.
9. UNLESS SPECIFICALLY NOTED OTHERWISE, WHERE EQUIPMENT IS INDICATED TO BE REMOVED, DEMOLITION WORK SHALL INCLUDE REMOVAL OF ASSOCIATED CONCRETE EQUIPMENT PAD AND/OR SUPPORT STEEL AND HANGERS.
10. ALL WORK WILL BE COMPLETED IN MULTIPLE SEQUENCES. THE BUILDING WILL REMAIN OCCUPIED AND IN USE FOR THE DURATION OF CONSTRUCTION. REFER TO SEQUENCING PLANS, SPECIFICATIONS AND SEQUENCING NOTES FOR ADDITIONAL INFORMATION.

GENERAL FIRE SUPPRESSION NOTES:

1. SHUT DOWN OF EXISTING FIRE SUPPRESSION SYSTEMS TO BE REQUESTED AND COORDINATED THROUGH OWNER'S REPRESENTATIVE IN ACCORDANCE WITH DIVISION 00 AND 01 SPECIFIATIONS.
2. SPRINKLER SYSTEM TO BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13. COORDINATE EXACT ROUTING OF PIPING AND QUANTITY AND PLACEMENT OF SPRINKLER HEADS WITH REFLECTED CEILING PLAN. SPRINKLER HEADS TO BE QUICK RESPONSE HEADS. TEMPERATURE RATING OF 155 DEGREES F UNLESS NOTED OTHERWISE. IN AREAS WITH SUSPENDED CEILINGS, ALL SPRINKLER HEADS ARE TO BE CONCEALED PENDENT HEADS. ALL OFFICE AND CIRCULATION AREAS ARE TO BE CLASSIFIED AS LIGHT HAZARD OCCUPANCY EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.
   a. COORDINATE FINAL SPRINKLER HEAD PLACEMENT WITH CEILING, EXPOSED STRUCTURE, LIGHTS, DUCTWORK, AND PIPING. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN. UNLESS NOTED OTHERWISE, ALL SPRINKLER HEADS ARE TO BE CENTERED IN CEILING TILES.
3. PROVIDE COVERAGE ABOVE AND BELOW DUCTWORK AS REQUIRED BY NFPA 13. SEE MECHANICAL PLANS FOR DUCTWORK SIZES AND LOCATIONS.
4. DRAWINGS ARE IN PART DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK, AND TO INDICATE THE GENERAL LOCATIONS OF EQUIPMENT, PIPING. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LAYOUT THEIR OWN WORK ACCORDING TO THE FOLLOWING GUIDELINES:
   a. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS FOR EQUIPMENT AND ROUGH INS AND THE EXACT ROUTING OF PIPING PRIOR TO CONSTRUCTION SO AS TO BEST FIT THE LAYOUT OF THE WORK. COORDINATE FINAL LAYOUT WITH ALL TRADES.
   b. WHERE OFFSETS IN PIPING ARE REQUIRED TO COORDINATE THE WORK OF OTHER TRADES, WITH STRUCTURE, PIPING, CONDUIT, DUCTWORK ETC., OR TO MAINTAIN REQUIRED CEILING HEIGHTS, THEY SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
   c. UNLESS OTHERWISE NOTED, ALL PIPING TO BE ROUTED CONCEALED IN WALLS OR CHASES OR ABOVE SUSPENDED CEILING. WATER PIPING SHALL NOT BE ROUTED IN EXTERIOR WALLS. COORDINATE LAYOUT WITH EXISTING CONDITIONS AND ALL OTHER TRADES. ROUTE ALL PIPING AS HIGH AS POSSIBLE AND ALONG WALLS TO MAXIMIZE SPACE AVAILABLE FOR OTHER TRADES.
   d. COORDINATE ROUTING OF PIPING TO MAINTAIN ACCESS TO FILTERS, MOTORS, ELECTRICAL EQUIPMENT, AND CONTROLS. IN NO CASE, SHALL PIPING PASS DIRECTLY OVER ELECTRICAL PANELS OR DISCONNECTS OR RESTRICT ACCESS TO ANY ELECTRICAL EQUIPMENT INCLUDING JUNCTION BOXES.
5. ALL ELEMENTS OF THE CONSTRUCTION SHALL BE PERFORMED BY TRADES PEOPLE SKILLED IN THE PARTICULAR CRAFT INVOLVED, AND REGULARLY EMPLOYED IN THAT PARTICULAR CRAFT. ALL WORK SHALL BE PERFORMED IN A NEAT, PROFESSIONAL MANNER IN KEEPING WITH THE HIGHEST STANDARDS OF THE CRAFT.
6. COORDINATE LOCATIONS AND SIZES OF OPENINGS IN STRUCTURE WITH GENERAL CONTRACTOR. WHEN ADDITIONAL CUTTING AND PATCHING IS REQUIRED DUE TO FIRE SUPPRESSION CONTRACTOR'S FAILURE TO COORDINATE THIS WORK, IT SHALL BE THE FIRE SUPPRESSION CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE ADDITIONAL CUTTING AND PATCHING. SEAL AND/OR FIRE STOP ALL PENETRATIONS AS REQUIRED.
7. PROVIDE ALL REQUIRED SUPPORT STEEL FOR PIPING AND EQUIPMENT.
8. THE SPACE ABOVE CEILINGS IN ALL AREAS IS EXTREMELY LIMITED AND COORDINATION OF WORK IS MANDATORY.

FIRE SUPPRESSION SYMBOLS

NOTES:
1. ALL SYMBOLS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT.
2. FOR REFLECTED CEILING SYMBOLS NOT SHOWN BELOW, REFER TO OTHER TRADES AS NECESSARY.

*** FIRE SUPPRESSION SYSTEM ***

- SPR — SPRINKLER PIPE
- WSP — WET STANDPIPE
- CSS — COMBINED STANDPIPE / SPRINKLER RISER
- DSP — DRY STANDPIPE
- DRY — DRY PIPE
- CA — CLEAN AGENT PIPE
- SPRINKLER HEAD
- SIDEWALL SPRINKLER HEAD
- FS = FLOW SWITCH; TS = TAMPER SWITCH
- FIRE DEPARTMENT CONNECTION (FDC)
- BACKFLOW PREVENTER
- SURFACE MOUNTED VALVE CABINET
- RECESSED VALVE CABINET
- ISOLATION VALVE
- FHV — FIRE HOSE VALVE
- ZCV — ZONE CONTROL VALVE
- CONNECTION - NEW TO EXISTING

*** REFERENCE ***

- ELECTRICAL PANEL SHOWN FOR COORDINATION

DEMOLITION KEY
- TO REMAIN
- TO BE REMOVED / REVISED

SPRINKLER HEAD DEMO KEY PLAN
- TO BE REMOVED/ REVISED
- EXISTING TO REMAIN

1 NIP ENLARGED FIRE SUPPRESSION PLAN
1/8" = 1'-0"

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

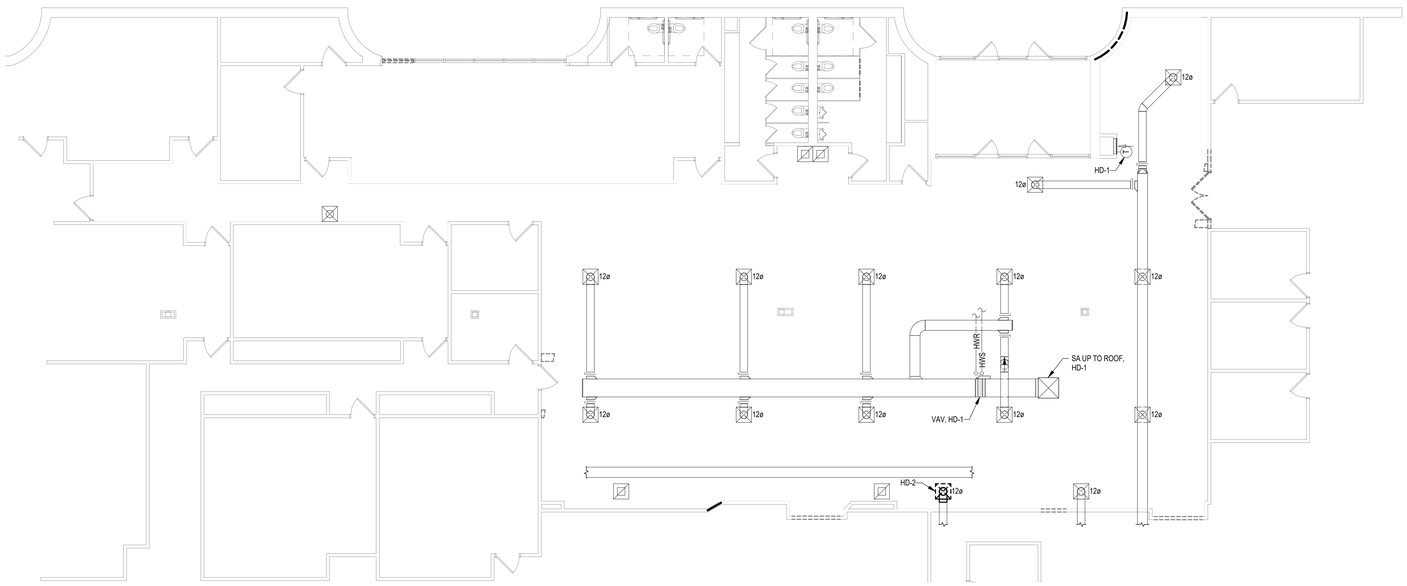
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS 04/13/2021

Sheet Name
NIP ENLARGED FIRE SUPPRESSION PLAN

Sheet Number
FX102



1 JCO ENLARGED HVAC DEMOLITION PLAN
1/8" = 1'-0"

KEYED NOTES	
HD-1	EXISTING TO REMAIN.
HD-2	SALVAGE AND RELOCATE DIFFUSER PER NEW WORK PLAN.

DEMOLITION KEY	
	TO REMAIN
	TO BE REMOVED / REVISED
	EQUIPMENT TO REMAIN
	EQUIPMENT TO BE REMOVED / REVISED

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

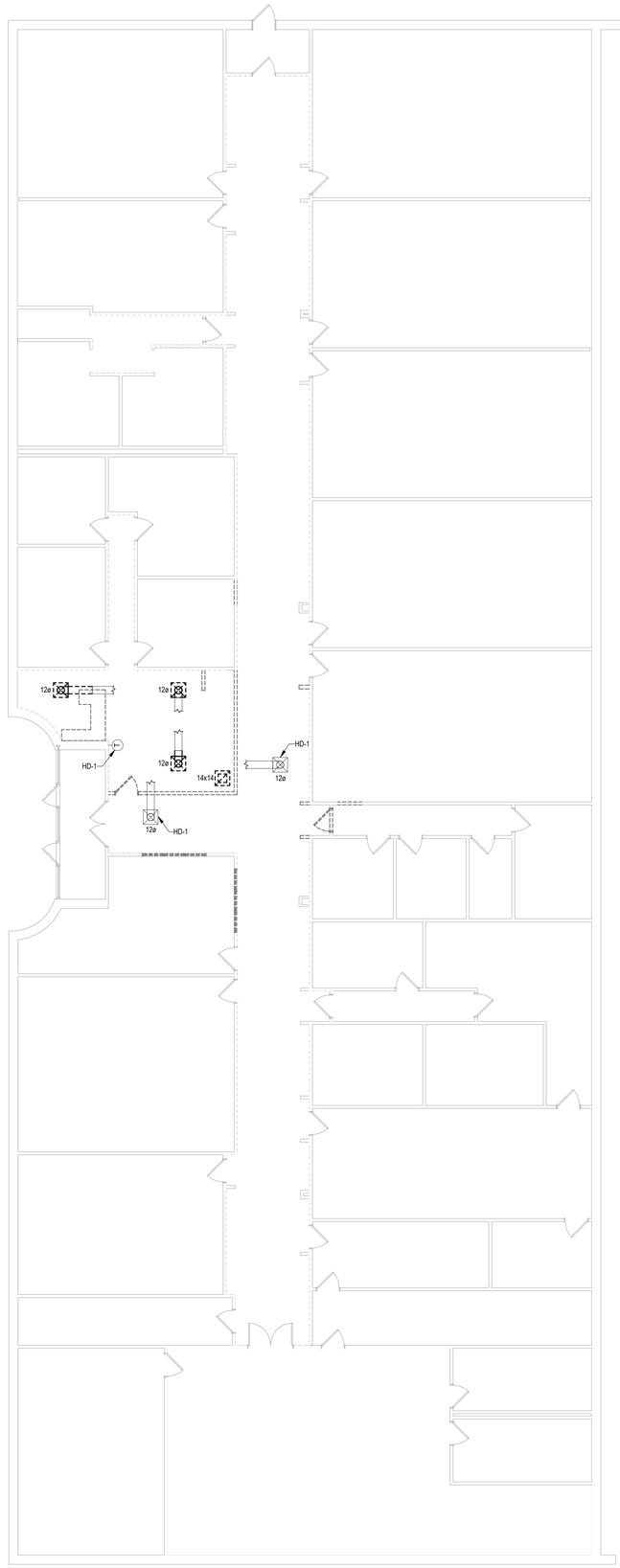
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
JCO ENLARGED HVAC DEMOLITION PLAN

Sheet Number
HD101



1 NIP ENLARGED HVAC DEMOLITION PLAN
1/8" = 1'-0"

KEYED NOTES

HD-1	EXISTING TO REMAIN.

DEMOLITION KEY

- TO REMAIN
- TO BE REMOVED / REVISED
- EQUIPMENT TO REMAIN
- EQUIPMENT TO BE REMOVED / REVISED

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

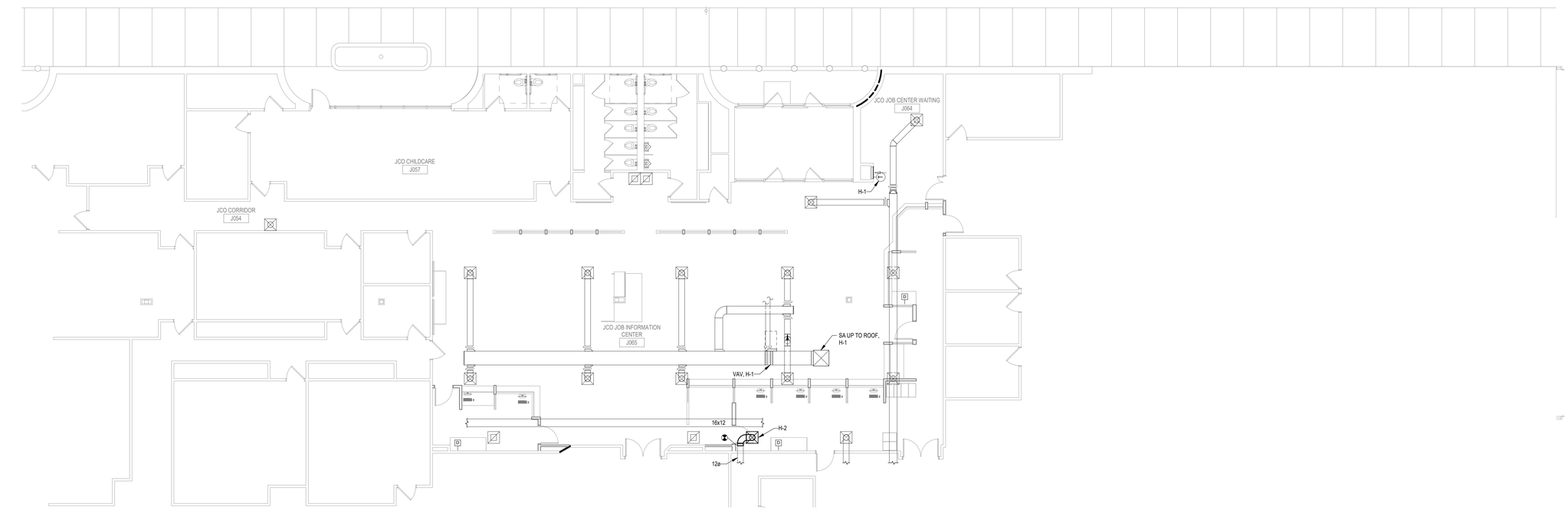
Revision	Description	Date

OPN Project No
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
NIP ENLARGED HVAC DEMOLITION PLAN

Sheet Number
HD102



1 JCO ENLARGED HVAC PLAN
1/8" = 1'-0"

KEYED NOTES	
H-1	EXISTING TO REMAIN.
H-2	RELOCATE SALVAGED DIFFUSER.

GRILLE AND DIFFUSER KEY

GRILLE OR DIFFUSER PLAN MARK — 1a | 10 | 500 — DIFFUSER NECK SIZE; CFM*

COORDINATE CEILING DIFFUSERS WITH ARCHITECTURAL REFLECTED CEILING PLAN

*RETURN GRILLE TAGS INDICATE DESIGN RETURN AIRFLOW DURING OCCUPIED OPERATION BUT ALL RETURN GRILLES AND DUCTWORK ARE SIZED FOR 100% OF SUPPLY AIRFLOW.

NEW WORK KEY

- EXISTING
- NEW
- EXISTING EQUIPMENT
- NEW EQUIPMENT

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

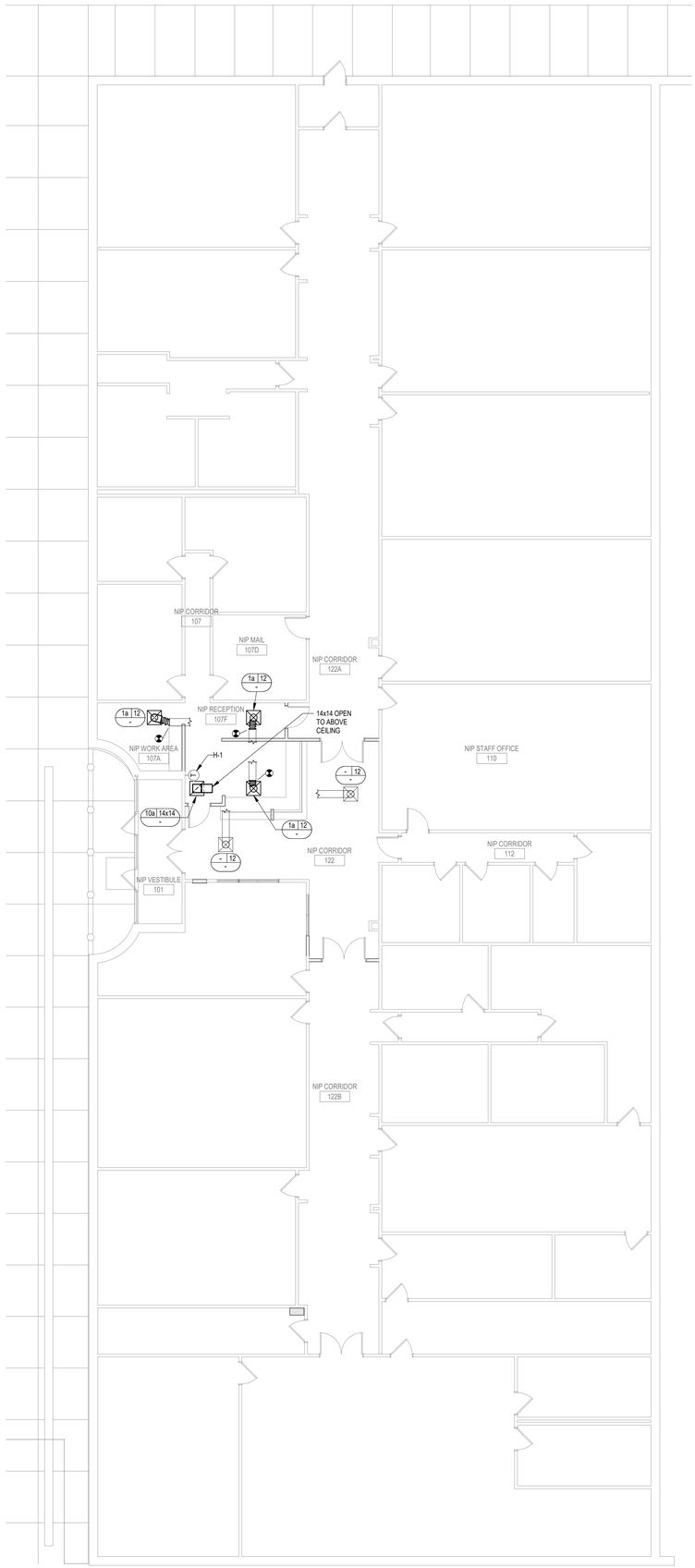
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
JCO ENLARGED HVAC PLAN

Sheet Number
H101



1 NIP ENLARGED HVAC PLAN
1/8" = 1'-0"

KEYED NOTES	
H-1	EXISTING TO REMAIN.

NEW WORK KEY	
	EXISTING
	NEW
	EXISTING EQUIPMENT
	NEW EQUIPMENT

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
NIP ENLARGED HVAC PLAN

Sheet Number
H102

DIFFUSER AND GRILLE SCHEDULE

PLAN MARK	TYPE	MODEL NUMBER (Note 1)	DESCRIPTION	MOUNTING (Note 2)	COLOR (Note 3)	REMARKS	NOTES
1a	Supply Diffuser	SPD	Steel Plaque Diffuser	Lay-in	Standard White	24" x 24"	
10a	Return Grille	PDDR	Steel Perforated Grille	Lay-in	Standard White	24" x 24"	
-	Existing Grille	NA	Existing Grille to Remain	NA		Rebalance existing grille as indicated on plans	

NOTES:
1. Selections based on Price Industries. Installing contractor to set and adjust airflow directions as noted.
2. Coordinate T-grid style/size for lay-in diffuser/grilles with Ceiling Contractor.
3. Finish to be powder coat or electro coat process. Prime coat finishes to be field painted, color by Architect.

DUCT INSULATION SCHEDULE (Note 1)

SPACE TYPE	SERVICE (Note 2)	CONSTRUCTION	TYPE	DUCT LINER (Note 3)	DUCT COVERING (Note 4)	PRE-INSULATED (Note 5)	RIGID COVERING (Note 4, 12)	UN-INSULATED
Conditioned or Tempered (Note 6,7)	Supply Air	Round	General	-	1-1/2"	-	-	-
			Single wall, w/duct liner	1"	-	-	-	-
		Rectangular	General	1"	-	-	-	-
			Downstream of VAVs / reheat coils	1"	-	-	-	-
		Flex Duct	-	-	-	1-1/2"	-	-
		Flex Connector	-	-	1-1/2"'	-	-	-
	Return Air	Round	General	-	-	-	-	Uninsulated
		Rectangular	General	1"	-	-	-	-
		Flex Duct	-	-	-	1-1/2"	-	-
		Flex Connector	-	-	-	-	-	Uninsulated

NOTES:
1. Unless listed above as "Uninsulated", all ductwork and accessories shown on the plans shall be either lined or covered. If type or thickness is not indicated, it shall be 1-1/2" covering.
2. Refer to plans for ductwork designations.
3. See Specification Section 23 3113 - HVAC Metal Ducts.
4. See Specification Section 23 0700 - HVAC Insulation.
5. See Specification Section 23 3300 - Air Duct Accessories and/or 23 3113 - HVAC Metal Ducts.
6. Conditioned Space: an area inside the building which is heated and/or cooled.
7. Tempered Space: an area inside the building which is not directly heated or cooled, but is adjacent to a heated or cooled space with no insulation separating the two spaces (e.g., ceiling plenums).

DUCT PRESSURE AND SEAL CLASS SCHEDULE (NOTE 1)

SYSTEM	SERVICE	DUCT PRESSURE CLASS (Note 2)	DUCT SEAL CLASS (Note 2)
Air Handling Unit AHU-X	Supply Air Downstream of VAV	Positive 1"	A
	Return Air	Negative 2"	A

NOTES:
1. Ductwork to be duct pressure class +-6" and duct seal class A unless listed otherwise in schedule above.
2. Duct pressure and seal classes indicated are minimum requirements based on SMACNA duct construction standards.

HVAC SYMBOLS

(NOTE: ALL SYMBOLS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)

*** EQUIPMENT ***

XX ## XX # ## EQUIPMENT DESIGNATION PER EQUIPMENT SCHEDULE

*** SHEET METAL ***

MANUAL VOLUME DAMPER

FD = FIRE DAMPER
SD = SMOKE DAMPER
FSD = COMBINATION FIRE/SMOKE DAMPER (TRIANGLE INDICATES ANTICIPATED ACCESS LOCATION OR ACTUATOR PLACEMENT, COORDINATE WITH FIELD CONDITIONS)

TRANSITION PIECE

MITERED ELBOW WITH SINGLE THICKNESS TURNING VANES

RADIUSED ELBOW
R = 1.0 x W (DEFAULT)
R = 1.5 x W AS SHOWN OR NOTED
(REFER TO DETAILS, PLAN AND SPEC.)

GRILLE OR DIFFUSER ON SIDE OF DUCT

MOTOR OPERATED DAMPER

DIFFUSER OR GRILLE BELOW DUCT

PITCH DOWN IN DIRECTION OF ARROW

FLEX DUCTWORK

AD OR AD DUCT ACCESS DOOR

SUPPLY (CONDITIONED) AIR DUCT
SOLID CROSS - UP/TOWARDS
DASHED CROSS - DOWN/AWAY

EXHAUST OR RELIEF AIR DUCT
SOLID CROSS - UP/TOWARDS
DASHED CROSS - DOWN/AWAY

RETURN OR TRANSFER AIR DUCT
SOLID CROSS - UP/TOWARDS
DASHED CROSS - DOWN/AWAY

UNCONDITIONED OUTDOOR AIR DUCT
SOLID CROSS - UP/TOWARDS
DASHED CROSS - DOWN/AWAY

*** CONTROLS ***

FLUSH MOUNT SPACE SENSOR
(REFER TO CONTROL SCHEMATICS AND SPECIFICATIONS)
T = TEMPERATURE SENSOR WITH SETPOINT ADJUSTMENT

SURFACE MOUNT
T' = TEMPERATURE SENSOR ONLY
H = HUMIDITY SENSOR
CO_2 = CARBON DIOXIDE SENSOR
CO = CARBON MONOXIDE SENSOR
NG = NATURAL GAS SENSOR
NO_x = NITROGEN DIOXIDE SENSOR
VO = VENTILATION OVERRIDE BUTTON
S = SWITCH WITH PILOT LIGHT
B = PUSH BUTTON

COMBINATION DEVICE

*** PIPING SPECIALTIES ***

PUMP
ELBOW TURNED UP OR TOWARDS
ELBOW TURNED DOWN OR AWAY
TEE TURNED UP OR TOWARDS
TEE TURNED DOWN OR AWAY
DROP OR RISE
ARROW IN LINE INDICATES DIRECTION OF FLOW
CAP OR PLUG
STRAINER
UNION
DIELECTRIC UNION
SHUT-OFF VALVE
BALANCING OR SHUT-OFF COCK
FLOW CONTROL VALVE
AUTOMATIC CONTROL VALVE
RELIEF OR SAFETY VALVE
PRESSURE REDUCING VALVE
CHECK VALVE
BACKFLOW PREVENTER
VALVE IN RISER
3-WAY AUTOMATIC CONTROL VALVE
PRESSURE-TEMPERATURE RELIEF VALVE
WATER METER
STEAM DRIP ASSEMBLY
SINGLE EXPANSION JOINT
CONCENTRIC REDUCER OR INCREASER
PIPE ANCHOR
PIPE GUIDE
CONNECTION - NEW TO EXISTING
THERMOMETER
PRESSURE GAUGE
PRESSURE SENSOR
DIFFERENTIAL PRESSURE SENSOR

*** SHEET METAL ABBREVIATIONS ***
SA = SUPPLY AIR
RA = RETURN AIR
TA = TRANSFER AIR
EA = EXHAUST AIR
OA = OUTDOOR AIR

*** DUCT SIZE NOMENCLATURE ***
(ALL SIZES IN INCHES)
x = RECTANGULAR (e.g. 24x12)
/ = OVAL (e.g. 24/12)
ø = ROUND (e.g. 24ø)

*** REFERENCE ***
ELECTRICAL PANEL SHOWN FOR COORDINATION

*** PIPING ABBREVIATIONS ***
CHS — CHILLED WATER SUPPLY
CHR — CHILLED WATER RETURN
HWS — HEATING HOT WATER SUPPLY
HWR — HEATING HOT WATER RETURN
HPWS — HEAT PUMP WATER SUPPLY
HPWR — HEAT PUMP WATER RETURN
CHWS — CHILLED & HOT WATER SUPPLY
CHWR — CHILLED & HOT WATER RETURN
D — CONDENSATE DRAIN LINE

HVAC DEMOLITION KEYED NOTES

HD-1	EXISTING TO REMAIN.
HD-2	SALVAGE AND RELOCATE DIFFUSER PER NEW WORK PLAN.

GENERAL HVAC DEMOLITION NOTES:

1. REFER TO DEMOLITION KEY FOR ITEMS TO BE REMOVED VERSUS ITEMS TO REMAIN.
2. SHUT DOWN OF EXISTING HVAC SYSTEMS TO BE REQUESTED AND COORDINATED THROUGH OWNER'S REPRESENTATIVE IN ACCORDANCE WITH DIVISION 00 AND 01 SPECIFIATIONS.
3. SCHEDULE FOR ALL WORK IMPACTING ADJACENT OCCUPIED AREAS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE. WORK TO BE PERFORMED IN A MANNER THAT MINIMIZES THE INTERRUPTIONS AND INCONVENIENCE TO THE OWNER'S OCCUPANCY OF THESE SPACES.
4. NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO CREATING ANY SMOKE, HEAT, MOISTURE, VAPORS OR DUST AROUND ANY FIRE ALARM EQUIPMENT.
5. FOR ALL WORK REQUIRED ABOVE EXISTING CEILINGS TO REMAIN, (EITHER WITHIN OR OUTSIDE THE PROJECT AREA) CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REINSTALLATION OF ALL CEILING TILE AS REQUIRED TO ACCOMPLISH THE WORK. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR TYPES AND EXTENT OF BOTH EXISTING AND NEW CEILINGS THROUGHOUT PROJECT.

HVAC KEYED NOTES

H-1	EXISTING TO REMAIN.
H-2	RELOCATE SALVAGED DIFFUSER.

GENERAL HVAC NOTES:

1. SHUT DOWN OF EXISTING HVAC SYSTEMS TO BE REQUESTED AND COORDINATED THROUGH OWNER'S REPRESENTATIVE IN ACCORDANCE WITH DIVISION 00 AND 01 SPECIFIATIONS.
2. DRAWINGS ARE IN PART DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK, AND TO INDICATE THE GENERAL LOCATIONS OF EQUIPMENT, PIPING AND DUCTWORK. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LAYOUT THEIR OWN WORK ACCORDING TO THE FOLLOWING GUIDELINES:
   a. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS FOR EQUIPMENT AND ROUGH INS AND THE EXACT ROUTING OF PIPING AND DUCTS PRIOR TO CONSTRUCTION SO AS TO BEST FIT THE LAYOUT OF THE WORK. SPACE ABOVE CEILINGS IS EXTREMELY LIMITED; COORDINATE FINAL LAYOUT WITH ALL TRADES.
   b. WHERE OFFSETS IN PIPING OR DUCTWORK ARE REQUIRED TO COORDINATE THE WORK OF OTHER TRADES, WITH STRUCTURE, PIPING, CONDUIT, DUCTWORK ETC., OR TO MAINTAIN REQUIRED CEILING HEIGHTS, THEY SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
   c. ALL EXISTING PIPING AND DUCTWORK ROUTING SHOWN IS INTENDED TO INDICATE APPROXIMATE SIZE, NUMBER AND LOCATION OF PIPING BRANCHES FOR BIDDING PURPOSES ONLY. CONTRACTOR TO VERIFY EXACT SIZE AND CONFIGURATION PRIOR TO CONSTRUCTION.
   d. UNLESS OTHERWISE NOTED, ALL DUCTWORK AND PIPING TO BE ROUTED CONCEALED IN WALLS, CHASES OR ABOVE SUSPENDED CEILING. WATER PIPING SHALL NOT BE ROUTED IN EXTERIOR WALLS. COORDINATE LAYOUT WITH EXISTING CONDITIONS AND ALL OTHER TRADES. ROUTE ALL PIPING AND DUCTWORK AS HIGH AS POSSIBLE AND ALONG WALLS TO MAXIMIZE SPACE AVAILABLE FOR OTHER TRADES.
   e. COORDINATE ROUTING OF PIPING AND DUCTWORK TO MAINTAIN ACCESS TO FILTERS, MOTORS, ELECTRICAL EQUIPMENT, AND CONTROLS. IN NO CASE, SHALL PIPING OR DUCTWORK PASS DIRECTLY OVER ELECTRICAL PANELS OR DISCONNECTS OR RESTRICT ACCESS TO ANY ELECTRICAL EQUIPMENT INCLUDING JUNCTION BOXES.
   f. COORDINATE EXACT DUCTWORK CONNECTION SIZES WITH EQUIPMENT AND TRANSITION AS REQUIRED.
   g. VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SYSTEMS AND COMPONENTS REQUIRING CONNECTION TO NEW PIPING PRIOR TO COMMENCING WORK.
3. ALL ELEMENTS OF THE CONSTRUCTION SHALL BE PERFORMED BY TRADES PEOPLE SKILLED IN THE PARTICULAR CRAFT INVOLVED, AND REGULARLY EMPLOYED IN THAT PARTICULAR CRAFT. ALL WORK SHALL BE PERFORMED IN A NEAT, PROFESSIONAL MANNER IN KEEPING WITH THE HIGHEST STANDARDS OF THE CRAFT.
4. REFER TO ARCHITECTURAL PLANS FOR DETAILED ELEVATIONS INDICATING STANDARD MOUNTING HEIGHTS, LOCATIONS AND ALIGNMENT REQUIREMENTS FOR ALL WALL MOUNTED DEVICES AND REFLECTED CEILING PLANS FOR ALL CEILING MOUNTED DEVICES.
5. THE SPACE ABOVE CEILINGS IN ALL AREAS IS EXTREMELY LIMITED AND COORDINATION OF WORK IS MANDATORY.
6. FOR ALL WORK REQUIRED ABOVE EXISTING CEILINGS TO REMAIN, (EITHER WITHIN OR OUTSIDE THE PROJECT AREA) CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REINSTALLATION OF ALL CEILING TILE AS REQUIRED TO ACCOMPLISH THE WORK. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR TYPES AND EXTENT OF BOTH EXISTING AND NEW CEILINGS THROUGHOUT PROJECT.
7. MECHANICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED SUPPORT STEEL FOR PIPING, DUCTWORK AND EQUIPMENT.
8. DUCT DIMENSIONS SHOWN ON DRAWINGS ARE NET INSIDE DIMENSIONS. INCREASE SHEET METAL SIZE FOR LINED DUCTWORK TO ALLOW FOR INTERNAL INSULATION IF APPLICABLE.
9. PROVIDE VOLUME DAMPERS IN ALL DUCTWORK SERVING INDIVIDUAL GRILLES, REGISTERS, OR DIFFUSERS FOR BALANCING. DAMPERS TO BE INSTALLED AS CLOSE TO TAKE-OFF AS POSSIBLE. DAMPERS AT GRILLES, REGISTERS, OR DIFFUSERS ARE NOT ACCEPTABLE UNLESS OTHERWISE NOTED.
10. PROVIDE A MINIMUM OF ONE ELBOW AND TEN FEET OF LINED DUCTWORK BETWEEN DIFFUSER/GRILLE/REGISTER AND DUCT MAIN.
11. IF DUCT SIZE REVISIONS ARE NECESSARY FOR COORDINATION PURPOSES ETC. NEW DUCT SIZE SHALL BE EQUIVALENT TO THE DUCT SIZE INDICATED ON PLANS.
12. ALL CONTROL DEVICES TO BE MOUNTED AT +46" A.F.F. TO CENTER LINE.
13. ALL CONTROL DEVICES LOCATED IN VESTIBULES, RESTROOMS, CORRIDORS, AND OTHER GENERAL PUBLIC AREAS, TO BE PROVIDED WITH LOCKING CLEAR PLASTIC GUARD.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

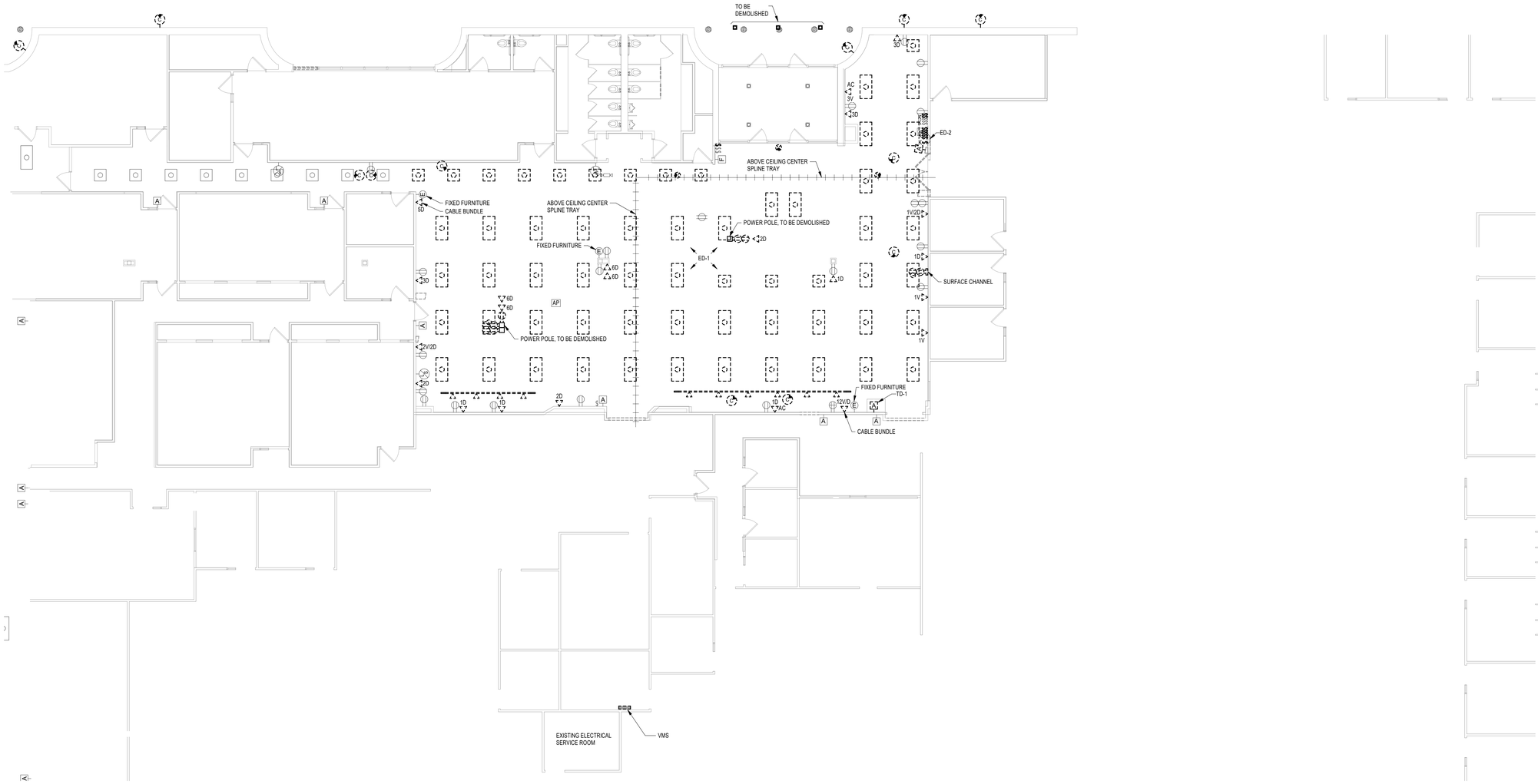
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
HVAC DETAILS, NOTES, SCHEDULES, AND SYMBOLS

Sheet Number
H500



1 JCO ENLARGED ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"

KEYED NOTES	
ED-1	MAINTAIN EXISTING LIGHTING CIRCUITS AND CONTROL WIRING, TO BE REUSED IN NEW WORK.
ED-2	SAVE EXISTING SWITCHES. EXISTING SWITCHES TO BE RELOCATED. SEE NEW WORK AND E-4 FOR NEW LOCATION.
TD-1	CONTRACTOR SHALL DEMO EXISTING READER AND RELOCATE TO THE DESIGNATED LOCATION ON THE OPPOSITE SIDE OF THE WALL

DEMOLITION KEY	
	TO REMAIN
	TO BE REMOVED / REVISED
	EQUIPMENT TO REMAIN
	EQUIPMENT TO BE REMOVED / REVISED

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
JCO ENLARGED ELECTRICAL DEMOLITION PLANS

Sheet Number
ED101

1 NIP ENLARGED ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"

KEYED NOTES	
ED-1	MAINTAIN EXISTING LIGHTING CIRCUITS AND CONTROL WIRING, TO BE REUSED IN NEW WORK.

DEMOLITION KEY
- TO REMAIN
- TO BE REMOVED / REVISED
- EQUIPMENT TO REMAIN
- EQUIPMENT TO BE REMOVED / REVISED

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

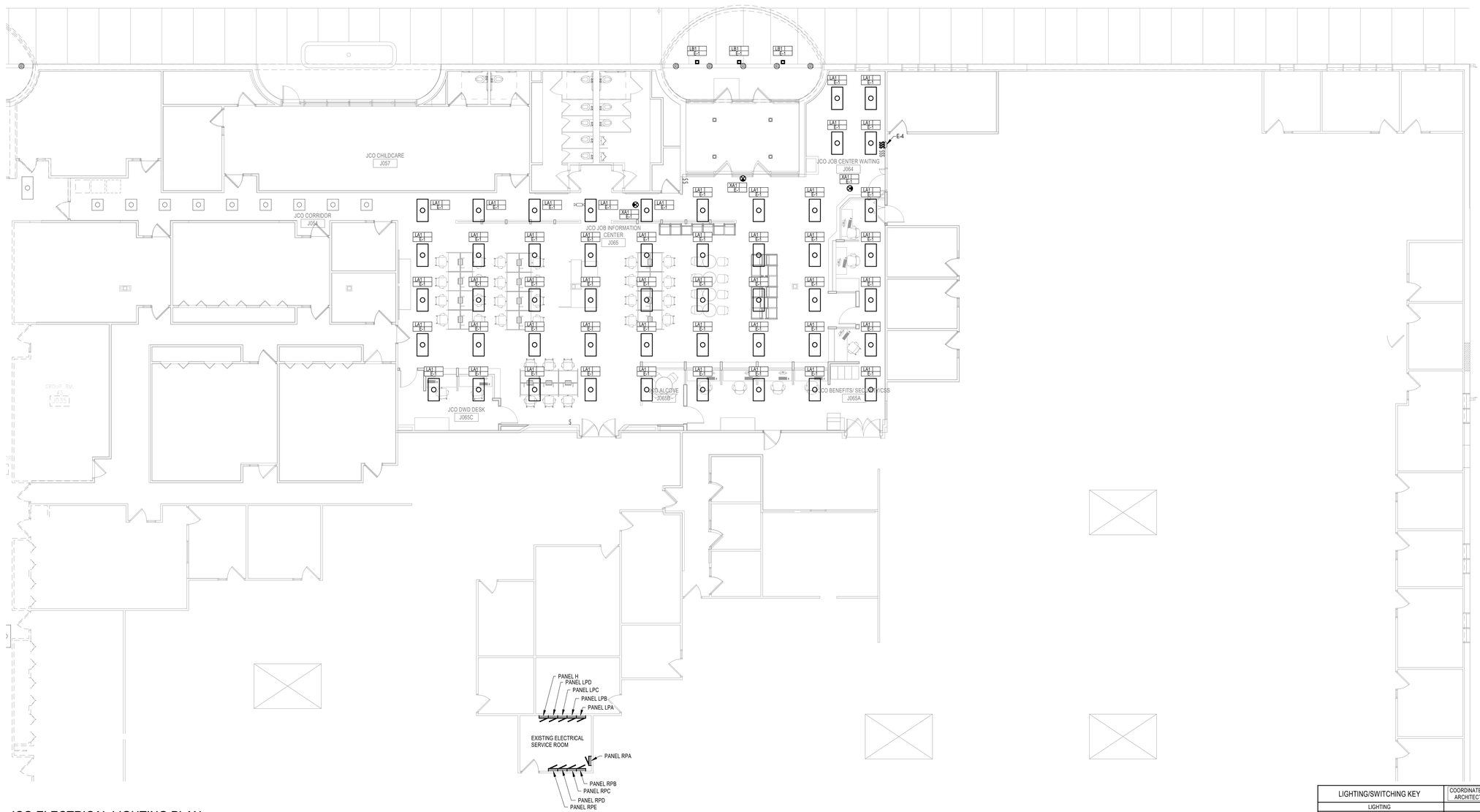
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
NIP ENLARGED ELECTRICAL DEMOLITION PLAN

Sheet Number
ED102



1 JCO ELECTRICAL LIGHTING PLAN
1/8" = 1'-0"

KEYED NOTES	
E-4	NEW LOCATION OF EXISTING SWITCHES. EXTEND CONDUIT AND WIRING AS NECESSARY TO NEW LOCATION.

NEW WORK KEY
EXISTING
NEW / REVISED
EXISTING EQUIPMENT
NEW / REVISED EQUIPMENT

LIGHTING/SWITCHING KEY	COORDINATE CEILING MOUNTED DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN
LIGHTING	SWITCHING
FIXTURE TYPE PER SCHEDULE; LIGHTING CONTROLS OPERATION SEQUENCE (0,1,2...) PER DETAILS SHEETS; SWITCHING ZONE (a,b,c...); XXXX.### CIRCUIT DATA: PANEL NAME-CIRCUIT NUMBER (XXXX.###) OR CIRCUIT NOTE (E-#)	(BLANK) - INDICATES STANDARD SWITCH 2 - INDICATES 2 POLE SWITCH 3 - INDICATES 3 WAY SWITCH 4 - INDICATES 4 WAY SWITCH PIL - INDICATES PILOT LIGHT K - INDICATES KEYED SWITCH WP - INDICATES RECEPTACLE WITH WEATHERPROOF BOX/LID/COVER +##" - DIMENSION INDICATES HEIGHT TO CENTER OF SWITCH ABOVE FINISH FLOOR (+48" IF NOT SHOWN) "x" - LOWERCASE LETTER INDICATES SWITCHING SCHEME M - INDICATES MOMENTARY SWITCH
EM: EMERGENCY FIXTURE NL: NIGHT LIGHT	

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

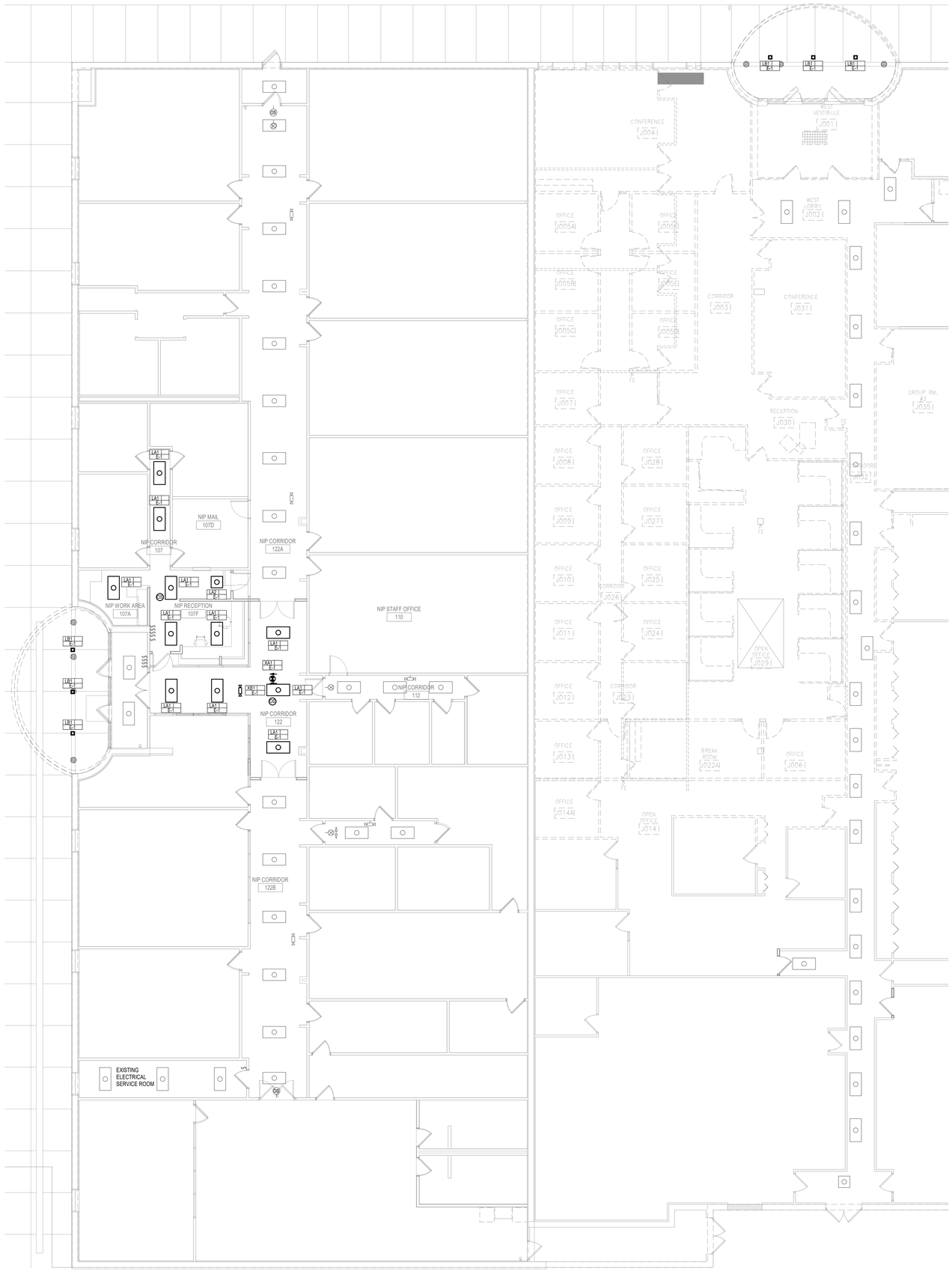
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
JCO ENLARGED LIGHTING FLOOR PLAN

Sheet Number
E101



1 NIP ELECTRICAL LIGHTING PLAN

1/8" = 1'-0"

KEYED NOTES	
E-1	REUSE AND/OR EXTEND EXISTING LIGHTING CIRCUITS AND CONTROL WIRING. PROVIDE POWER PACKS AS NECESSARY.

NEW WORK KEY
EXISTING
NEW / REVISED
EXISTING EQUIPMENT
NEW / REVISED EQUIPMENT

LIGHTING/SWITCHING KEY	COORDINATE CEILING MOUNTED DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN
LIGHTING	SWITCHING
FIXTURE TYPE PER SCHEDULE — XXXX.### — LIGHTING CONTROLS OPERATION SEQUENCE (0.1.2...) PER DETAILS SHEETS; SWITCHING ZONE (a,b,c...); CIRCUIT DATA: PANEL NAME-CIRCUIT NUMBER (XXXX-###) OR CIRCUIT NOTE (E-#)	(BLANK) - INDICATES STANDARD SWITCH 2 - INDICATES 2 POLE SWITCH 3 - INDICATES 3 WAY SWITCH 4 - INDICATES 4 WAY SWITCH PIL - INDICATES PILOT LIGHT K - INDICATES KEYED SWITCH WP - INDICATES RECEPTACLE WITH WEATHERPROOF BOX/FLIPCOVER +## - DIMENSION INDICATES HEIGHT TO CENTER OF SWITCH ABOVE FINISH FLOOR (+48" IF NOT SHOWN) "x" - LOWERCASE LETTER INDICATES SWITCHING SCHEME M - INDICATES MOMENTARY SWITCH
EM: EMERGENCY FIXTURE NL: NIGHT LIGHT	

OPN ARCHITECTS

301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

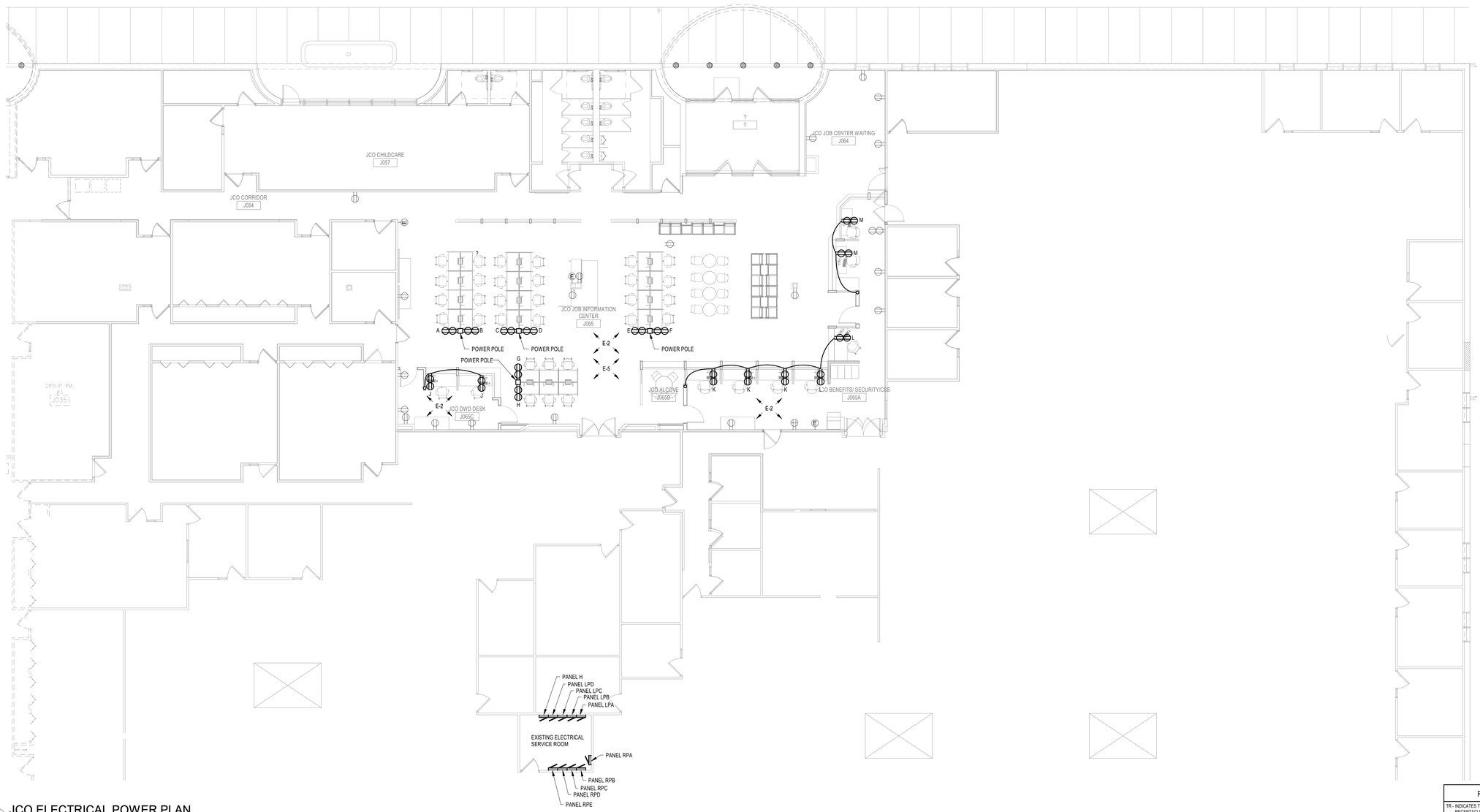
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS 04/13/2021

Sheet Name
NIP ENLARGED LIGHTING FLOOR PLAN

Sheet Number
E102



1 JCO ELECTRICAL POWER PLAN
1/8" = 1'-0"

KEYED NOTES	
E-2	TYPICAL: EXISTING CIRCUITING TO BE FIELD VERIFIED. ALL EXISTING CIRCUITS THAT WERE REMOVED DURING DEMOLITION MAY BE REUSED. PROVIDE NEW BREAKERS TO MATCH EATON PANELS AS NECESSARY. NEW CIRCUIT DESIGNATIONS (LETTERS) SHOWN ONLY TO CONVEY DESIGN INTENT FOR DEVICES ON THE SAME CIRCUIT. USE NEXT AVAILABLE CIRCUIT IN EXISTING PANELS LPA, LPB, LPC, LPD, PPA, PPC FOR NEW CIRCUITS. SERVE SAME GENERAL AREA CURRENTLY SERVED BY EACH PANEL.
E-5	FINAL LOCATION OF POWER POLES TO BE COORDINATED BEFORE INSTALLATION WITH OWNER AND OWNERS FURNITURE SUPPLIER.

NEW WORK KEY	
	EXISTING
	NEW / REVISED
	EXISTING EQUIPMENT
	NEW / REVISED EQUIPMENT

RECEPTACLE KEY
TR - INDICATES TAMPER RESISTANT (SAFETY TYPE) RECEPTACLE
GFI - INDICATES GROUND FAULT INTERRUPTER RECEPTACLE
TVSS - INDICATES TRANSIENT VOLT SURGE SUPPRESSOR RECEPTACLE
IG - INDICATES ISOLATED GROUND RECEPTACLE
WP - INDICATES RECEPTACLE WITH WEATHERPROOF BOX/ FLIPCOVER
WPD - INDICATES RECEPTACLE WITH WEATHERPROOF BOX/ CORD AND PLUG COVER
- NUMBER INDICATES PANEL CIRCUIT NUMBER
+##" - DIMENSION INDICATES HEIGHT TO CENTER OF RECEPTACLE ABOVE FINISH FLOOR (+18" IF NOT SHOWN)
USB - INDICATES USB TYPE RECEPTACLE

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

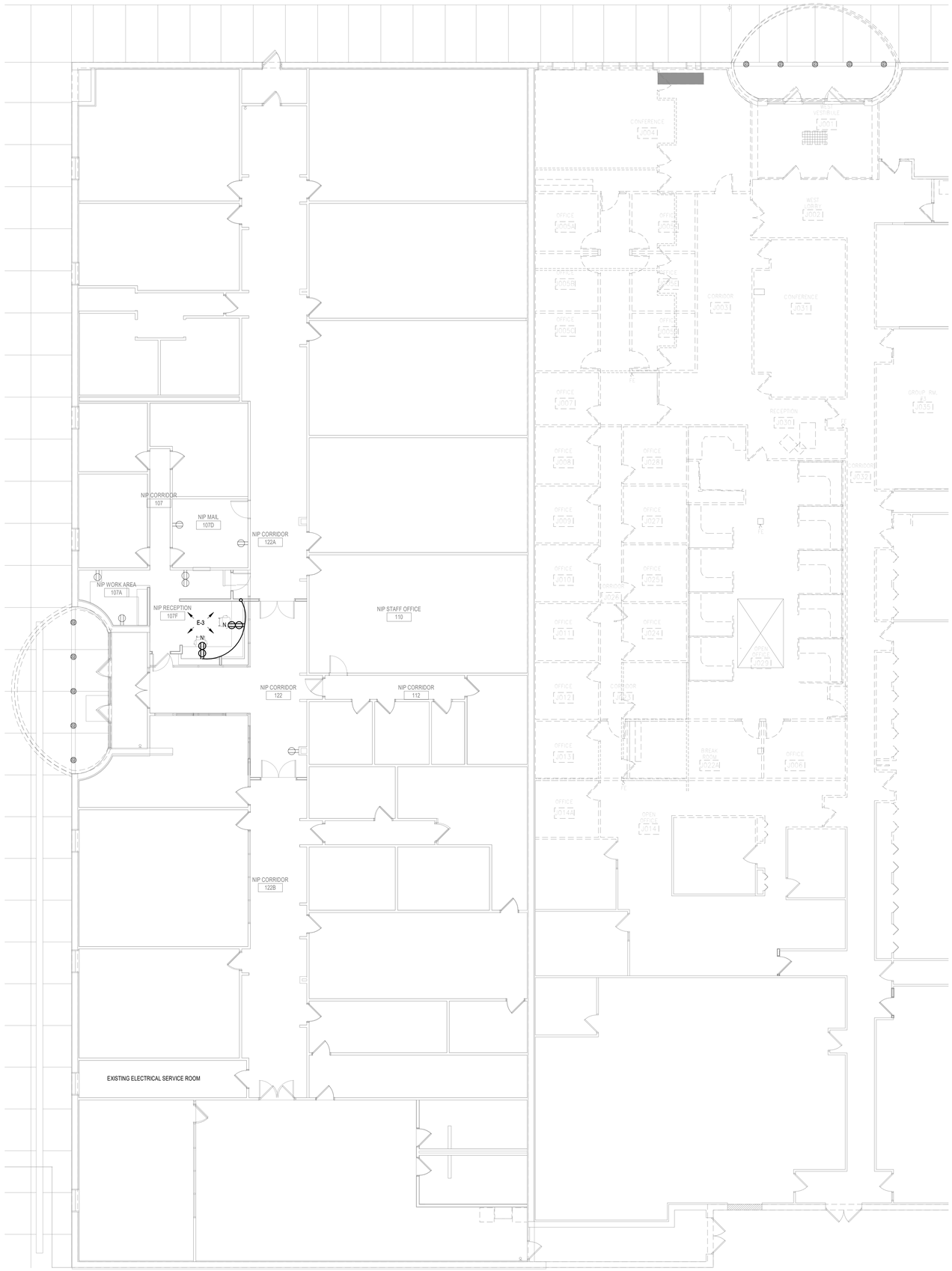
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
JCO ENLARGED POWER FLOOR PLAN

Sheet Number
E201



1 NIP ELECTRICAL POWER PLAN
1/8" = 1'-0"

KEYED NOTES	
E-3	TYPICAL: EXISTING CIRCUITING TO BE FIELD VERIFIED. ALL EXISTING CIRCUITS THAT WERE REMOVED DURING DEMOLITION MAY BE REUSED. PROVIDE NEW BREAKERS TO MATCH EATON PANELS AS NECESSARY. NEW CIRCUIT DESIGNATIONS (LETTERS) SHOWN ONLY TO CONVEY DESIGN INTENT FOR DEVICES ON THE SAME CIRCUIT. USE NEXT AVAILABLE CIRCUIT IN EXISTING PANELS IN EXISTING ELECTRICAL SERVICE ROOM FOR NEW CIRCUITS. SERVE SAME GENERAL AREA CURRENTLY SERVED BY EACH PANEL.

NEW WORK KEY	
	EXISTING
	NEW / REVISED
	EXISTING EQUIPMENT
	NEW / REVISED EQUIPMENT

RECEPTACLE KEY
TR - INDICATES TAMPER RESISTANT (SAFETY TYPE) RECEPTACLE GFI - INDICATES GROUND FAULT INTERRUPTER RECEPTACLE TVSS - INDICATES TRANSIENT VOLT SURGE SUPPRESSOR RECEPTACLE IG - INDICATES ISOLATED GROUND RECEPTACLE WP - INDICATES RECEPTACLE WITH WEATHERPROOF BOX/ FLIPCOVER WPD - INDICATES RECEPTACLE WITH WEATHERPROOF BOX/ CORD AND PLUG COVER # - NUMBER INDICATES PANEL CIRCUIT NUMBER "##" - DIMENSION INDICATES HEIGHT TO CENTER OF RECEPTACLE ABOVE FINISH FLOOR (+16" IF NOT SHOWN) USB - INDICATES USB TYPE RECEPTACLE

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS 04/13/2021

Sheet Name
NIP ENLARGED POWER FLOOR PLAN

Sheet Number
E202

LIGHT FIXTURE SCHEDULE

PLAN MARK	MANUFACTURERS AND MODEL NUMBERS	DESCRIPTION	LED DETAILS		DRIVER			INPUT		FIXTURE	
			COLOR (K)	LUMEN OUTPUT	QTY.	TYPE	DIM MIN.	WATTS	VOLTS	MOUNTING	NOTES
LA1	LITHONIA BLC-2x4-4000LM-80CRI-35K-SDSM-MIN10-ZT-MVOLT-BDP OR SIMILAR BY CREE, METALUX	2x4 LED TROFFER	3500	4,034	1	0-10	10%	32	120/277	RECESSED	
LA2	LITHONIA BLC-2x2-4000LM-80CRI-35K-SDSM-MIN10-ZT-MVOLT-BDP OR SIMILAR BY CREE, METALUX	2x2 LED TROFFER	3500	4,034	1	0-10	10%	36	120/277	RECESSED	
LB1	JUNO IC22LED-G4-14LM-35K-90CRI-MVOLT ZT10-2330 WVH OR SIMILAR BY HALO, LIGHTOLIER, WILLIAMS	6" DOWNLIGHT	3500	1,400	1	0-10	10%	15.6	120/277	RECESSED	
XA1	SURE LITES CX-6-x-BK-R OR SIMILAR BY LITHONIA, WILLIAMS	EXIT SIGN	NA	NA	NA	NA	NA	1	120-277	VARIES SEE PLANS	NOTE 3
XB1	LITHONIA ELM6L UVOLT LTP SDRT OR SIMILAR BY ISOLITE, EMERGI-LITE, MULE LIGHTING	EMERGENCY WALLPACK	NA	1,100	NA	NA	NA	22	120-277		

KEY:

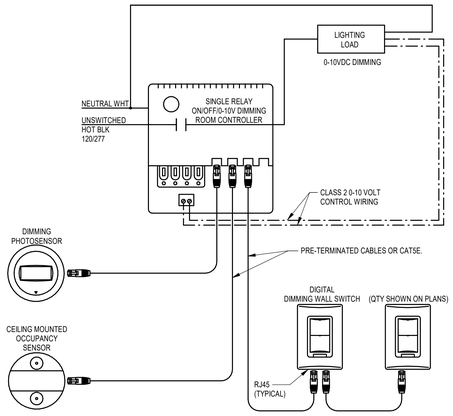
3W =THREE WIRE DIMMING
0-10 =0-10V DIMMED
DA =DIGITAL ADDRESSABLE
ND =NON-DIMMED
SD =STEP DIMMED
DMX =DMX ENABLED

GENERAL NOTES:

A. REFER TO SPECIFICATION 265000 FOR ADDITIONAL REQUIREMENTS.
B. PROVIDE A MINIMUM 5 YEAR WARRANTY ON ALL LED PRODUCTS 20W AND GREATER.
C. EQUIVALENT MANUFACTURERS LISTED SHALL MEET PERFORMANCE REQUIREMENTS OF THE BASE FIXTURE SPECIFIED. EQUIVALENTS SHALL NOT CONSUME MORE THAN 10% IN WATTAGE OR BE LESS THAN 5% IN LUMENS.
D. COORDINATE WITH ARCHITECTURAL CEILING PLANS FOR CEILING TYPES PRIOR TO SUBMITTAL PROCESS, VERIFY PLANNED CEILING TYPES COORDINATE WITH SPECIFIED FIXTURES.
E. COORDINATE FIXTURES LOCATED IN NON-ACCESSABLE CEILINGS ARE ACCESSIBLE FROM BELOW THROUGH THE FIXTURE, PRIOR TO SUBMITTAL PROCESS.
F. COORDINATE DRIVER TYPE WITH THE LIGHTING CONTROL SYSTEM, PRIOR TO SUBMITTAL PROCESS.

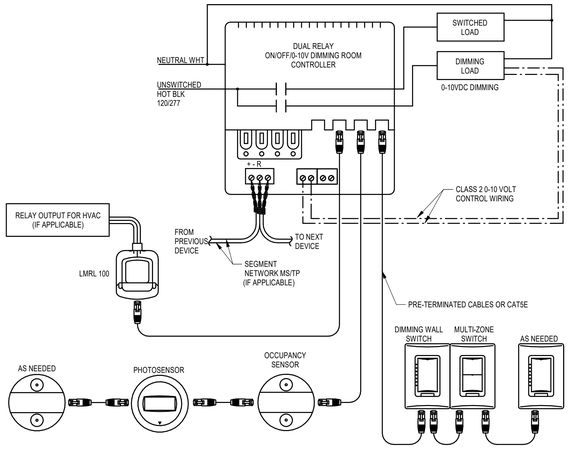
SPECIFIC NOTES:

1. PROVIDE WITH INTEGRAL BATTERY PACK.
2. PROVIDE AND INSTALL LENGTHS PER PLANS. PROVIDE ADJUSTABLE AIRCRAFT CABLE WITH STRAIGHT CORD FEEDS. FIXTURES SHALL BE MOUNTED AT +FF'-NN" A.F.F. COORDINATE WITH ARCHITECTURAL PLANS FOR CEILING TYPE(S) PRIOR TO ORDERING HANGING HARDWARE. EACH ROW OF FIXTURES SHALL HAVE ONLY ONE FEED POINT WITH CIRCUIT RUN BEING FED THROUGH FIXTURE HOUSING.
3. SEE PLANS FOR MOUNTING ORIENTATIONS, CHEVRON ARROWS, AND FACE OPTIONS. FINAL FINISH SELECTION IS TO BE DETERMINED DURING SUBMITTALS.



MULTI-ZONE DIMMING NOTES

1. LIGHTING CONTROL BASED ON WATTSTOPPER COMPONENTS AND MATERIALS. ALL COMPONENTS AND MATERIALS SHALL BE INSTALLED AND TESTED AS A COMPLETE SYSTEM.
2. CONTRACTOR SHALL FIELD ADJUST OCCUPANCY SENSORS FOR PICK-UP AND TIME OUT FUNCTIONS.
3. ALL COMPONENTS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR MOUNTING.
4. PROVIDE ROOM CONTROLLER AS REQUIRED.
5. PROVIDE ADDITIONAL ROOM CONTROLLERS AS NECESSARY TO CONTROL ALL ZONES.



MULTI-ZONE DIMMING NOTES

1. LIGHTING CONTROL BASED ON WATTSTOPPER COMPONENTS AND MATERIALS. ALL COMPONENTS AND MATERIALS SHALL BE INSTALLED AND TESTED AS A COMPLETE SYSTEM.
2. CONTRACTOR SHALL FIELD ADJUST OCCUPANCY SENSORS FOR PICK-UP AND TIME OUT FUNCTIONS.
3. ALL COMPONENTS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR MOUNTING.
4. PROVIDE ROOM CONTROLLER AS REQUIRED.
5. PROVIDE ADDITIONAL ROOM CONTROLLERS AS NECESSARY TO CONTROL ALL ZONES.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

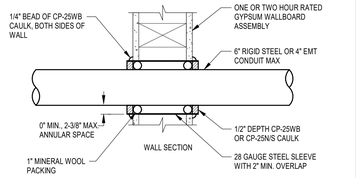
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
ELECTRICAL LIGHTING SCHEDULES AND CONTROLS

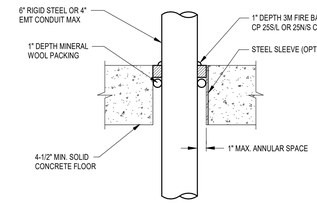
Sheet Number
E500



NOTES:
1. MATERIALS AND CONFIGURATION SHOWN ARE FOR 3M SYSTEM #WL1003.

BREACH SEALING DETAIL ONE AND TWO HOUR FIRE-STOP

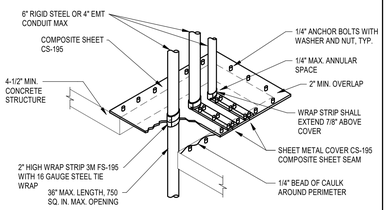
E010-01a



NOTES:
1. MATERIALS AND CONFIGURATION SHOWN ARE FOR 3M SYSTEM #CAJ1001.

FLOOR SEALING DETAIL TWO HOUR FIRE-STOP

E010-01e



NOTES:
1. MATERIALS AND CONFIGURATION SHOWN ARE FOR 3M SYSTEM #WL1003.

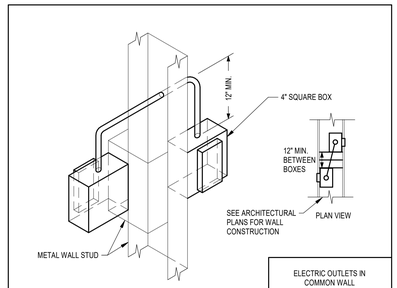
PENETRATION FOR LARGE OPENINGS THREE HOUR FIRE-STOP

E010-02

NOTES:
1. INDIVIDUAL DETAILS APPLY ONLY TO THE MATERIALS, CONSTRUCTION TYPES, AND CONFIGURATIONS SHOWN. REFER TO MANUFACTURER S SYSTEM AND APPLICATION DETAILS FOR OTHER MATERIALS, CONSTRUCTION OR CONFIGURATIONS.
2. DETAILS SHOWN ARE FOR TYPICAL APPLICATIONS AND DO NOT NECESSARILY APPLY TO ANY OR ALL FIRE STOPPING REQUIREMENTS ON THE PROJECT.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO INSTALL ALL FIRE STOPPING IN STRICT ACCORDANCE TO THE MANUFACTURER' INSTRUCTIONS TO COMPLY WITH THE APPROPRIATE 3M SYSTEM ASSEMBLY REQUIREMENTS.
4. MODEL NUMBERS AND MATERIALS ARE BASED ON 3M PRODUCTS.

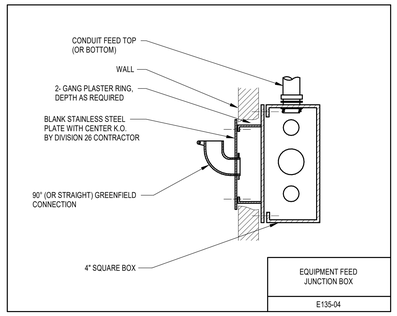
TYPICAL ELECTRICAL FIRE-STOPPING DETAILS

E010-01g



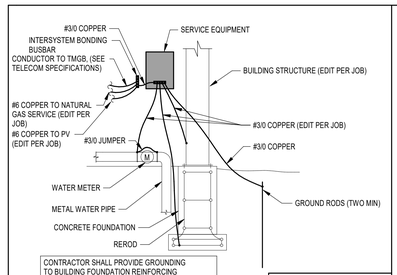
ELECTRIC OUTLETS IN COMMON WALL

E135-03



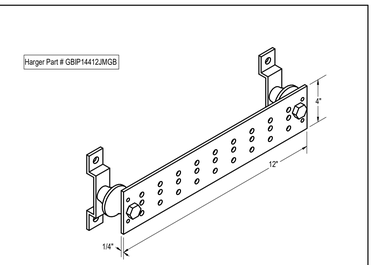
EQUIPMENT FEED JUNCTION BOX

E135-04



GROUNDING ELECTRODE SYSTEM

E450-02a



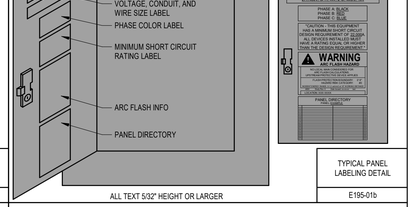
INTERSYSTEM BONDING BUSBAR DETAIL

E450-02b

NOTES:
1. LABEL JUNCTION BOX & CONDUITS WITH BLACK PERMANENT MARKER
2. SPRAY PAINT JUNCTION BOX COVERS PER SPECIFICATIONS
3. SEE SPECIFICATION SECTION 260553 ADDITIONAL INFORMATION.

RACEWAY/WIRING IDENTIFICATION

E195-01a



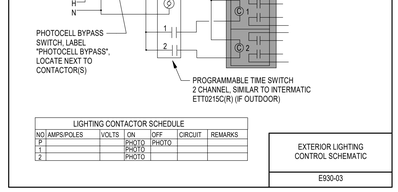
NOTE:
ALL UL LABELS AND MANUFACTURER'S INFORMATION SHALL NOT BE COVERED / DAMAGED.

EXAMPLE OF BACKSIDE COVER

ALL TEXT 5/32" HEIGHT OR LARGER

TYPICAL PANEL LABELING DETAIL

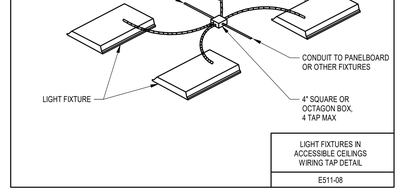
E195-01b



LIGHTING CONTACTOR SCHEDULE						
NO	AMPS/POLES	VOLTS	ON	OFF	CIRCUIT	REMARKS
P			PHOTO	PHOTO		
1			PHOTO			
2			PHOTO			

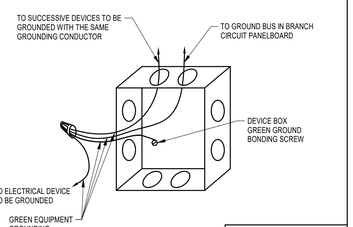
EXTERIOR LIGHTING CONTROL SCHEMATIC

E930-03



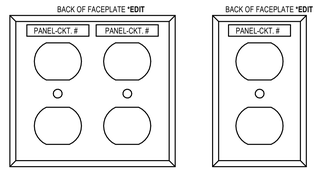
LIGHT FIXTURES IN ACCESSIBLE CEILINGS WIRING TAP DETAIL

E511-08



GROUNDING CONDUCTOR CONNECTION IN DEVICE BOX

E450-04

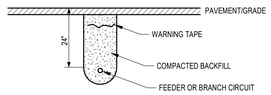


*EDIT FOR FRONT OR BACK OF FACEPLATE

ALL TEXT 5/32" HEIGHT OR LARGER

TYPICAL FACEPLATE LABELING DETAIL

E195-01d



CONDUIT TRENCH DETAIL

E551-07

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
ELECTRICAL DETAILS

Sheet Number
E510

ELECTRICAL ABBREVIATIONS

(NOTE: ALL ABBREVIATIONS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)

*** ABBREVIATIONS ***

3R	NEMA 3R ENCLOSURE
4X	NEMA 4X ENCLOSURE
A	AMPERES
AF	AMPERE FRAME
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMP INTERRUPTING CAPACITY
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
ACT	ACOUSTICAL CEILING TILE
BRKR	BREAKER
C	CONDUIT
C1D1	CLASS I DIVISION 1
C1D2	CLASS I DIVISION 2
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CMS	COMBINATION MOTOR STARTER
CT	CURRENT TRANSFORMER
DB	DISTRIBUTION BOARD
DISC	DISCONNECT
DN	DOWN
DP	DISTRIBUTION PANEL
DS	DISCONNECT SWITCH
EGC	EQUIPMENT GROUND CONDUCTOR
EM/EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FDR	FEEDER
FDS	FUSED DISCONNECT SWITCH
FLA	FULL LOAD AMPERES
FMC	FLEXIBLE METAL CONDUIT
FLR	FLOOR
FVNR	FULL VOLTAGE NON-REVERSING
FSD	FIRE/SMOKE DAMPER
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
HH	HAND HOLE
HOA	HAND OFF AUTOMATIC
HP	HORSE POWER
HGT	HEIGHT
IMC	INTERMEDIATE METAL CONDUIT
INV	INVERTER
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
KWH	KILOWATT HOURS
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LED	LIGHT EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LI	LONG-TIME / INSTANTANEOUS
LSI	LONG-TIME / SHORT-TIME / INSTANTANEOUS
LSIA	LONG-TIME / SHORT-TIME / INSTANTANEOUS / GROUND ALARM
LSIG	LONG-TIME / SHORT-TIME / INSTANTANEOUS / GROUND
LTG	LIGHTING
LV	LOW VOLTAGE (0-49V)
MCB/MB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CIRCUIT
MCP	MOTOR CIRCUIT PROTECTOR
MCS	MOLDED CASE SWITCH
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTR	MOTOR / METER
MV	MEDIUM VOLTAGE (601V TO 69KV)
NA	NOT APPLICABLE
NAC	NOTIFICATION APPLIANCE CIRCUIT
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OS	OCCUPANCY SENSOR
P	POLE
PB	PULL BOX / PUSH BUTTON
PC	PHOTOCELL
PDU	POWER DISTRIBUTION UNIT
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PT	POTENTIAL TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE CONDUIT
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
REC	RECESSED
RCPT	RECEPTACLE
REL	RELOCATE
REQD	REQUIRED
RGS	RIGID GALVANIZED STEEL CONDUIT
SCCR	SHORT CIRCUIT CURRENT RATING
SIM	SIMILAR
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SSBJ	SUPPLY SIDE BONDING JUMPER
ST	SHUNT TRIP
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SD	SMOKE DAMPER
TS	TAMPER SWITCH
TR	TAMPER RESISTANT
TYP	TYPICAL
UC	UNDER COUNTER
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTED POWER SUPPLY
V	VOLTS
VA	VOLT AMPS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WG	WIRE GUARD
WP	WEATHERPROOF
WPD	WEATHERPROOF DEVICE - IN USE
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL SYMBOLS

(NOTE: ALL SYMBOLS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)

*** LIGHTING FIXTURES ***

- INDICATES DAYLIGHT HARVEST ZONE
- CEILING FIXTURE - PENDANT MOUNTED
- CEILING FIXTURE
- CEILING FIXTURE - RECESSED
- FIXTURE - WALL MOUNTED
- LINEAR FIXTURE
- LINEAR FIXTURE - WALL MOUNTED
- STRIP FIXTURE
- STRIP FIXTURE - WALL MOUNTED
- DIRECT / INDIRECT FIXTURE - SUSPENDED
  - = FEED/SUSPENSION POINT
  - = SUSPENSION POINT
- LED STRIP FIXTURE
  - = FEED POINT
- EXIT SIGN - CEILING MOUNTED
- EXIT SIGN - WALL MOUNTED
- EXIT / EMERGENCY SIGN - CEILING MOUNTED
- EXIT / EMERGENCY SIGN - WALL MOUNTED

(SOLID FILL) - INDICATES EXIT FACE

(ARROWS) - INDICATES CHEVRON DIRECTION

- EMERGENCY LIGHT - CEILING MOUNTED
- EMERGENCY LIGHT - WALL MOUNTED
- LIGHT TRACK
  - = FEED POINT
  - = HEAD
- POLE AND LUMINAIRE, ARROW INDICATES AIMING
- POLE AND TWO LUMINAIRE, ARROWS INDICATE AIMING
- FLOOD LIGHT - GROUND MOUNTED
- BOLLARD ON CONCRETE BASE
- FLOOD LIGHT - IN GROUND

*** RACEWAYS ***

- SURFACE RACEWAY - CONDUIT UNLESS NOTED OTHERWISE
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
- HOME RUN TO PANELBOARD - NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS
- CABLE TRAY
- LADDER RACK
- CABLE J-HOOKS
- UNDERFLOOR DUCT WITH SERVICES AS NOTED
  - =ACTIVATION
- BUSDUCT
- WIREWAY
- PLUG IN STRIP-TYPE RECEPTACLES OR OTHER OUTLETS AS NOTED
- MULTI-OUTLET RACEWAY AS NOTED
  - = FEED POINT / JUNCTION BOX
- JUNCTION BOX
- JUNCTION BOX - WALL MOUNTED
- GROUND
- SPLICE CONNECTION FROM EXISTING TO NEW
- CONDUIT STUB
- CONDUIT CONTINUATION
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- NEW FEEDER/CONDUIT PER SCHEDULE
- EXISTING FEEDER / CONDUIT PER SCHEDULE

*** EQUIPMENT ***

- SPECIAL EQUIPMENT DESIGNATION PER SCHEDULE
- EQUIPMENT DESIGNATION PER SCHEDULE
- MOTOR OUTLET AND CONNECTION
- EQUIPMENT CONNECTION
- EQUIPMENT CONNECTION - WALL MOUNTED
- FURNITURE FEED CONNECTION
- FURNITURE FEED CONNECTION - WALL MOUNTED
- SAFETY DISCONNECT SWITCH
- MOTOR STARTER OR CONTACTOR
- COMBINATION SAFETY DISCONNECT SWITCH/MOTOR STARTER
- SURFACE BRANCH CIRCUIT PANELBOARD
- FLUSH BRANCH CIRCUIT PANELBOARD
- POWER DISTRIBUTION PANELBOARD
- SPECIAL CABINET AS NOTED - SURFACE MOUNTED
- SPECIAL CABINET AS NOTED - RECESSED MOUNTED
- VARIABLE FREQUENCY DRIVE
- GROUND BAR
- TRANSFORMER

*** WIRING DEVICES ***

- DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE - MOUNTED 8" ABOVE COUNTERTOP OR 4"ABOVE BACKSPLASH
- DOUBLE DUPLEX RECEPTACLE - MOUNTED 8" ABOVE COUNTERTOP OR 4" ABOVE BACKSPLASH
- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE - IN CEILING
- DUPLEX RECEPTACLE WITH TOP RECEPTACLE SWITCHED
- DUPLEX RECEPTACLE WITH BOTH RECEPTACLES SWITCHED
- OUTLET BOX WITH SPECIAL DEVICE AS NOTED
- ELECTRIC CORD REEL W/ RECEPTACLE DEVICE AS NOTED
- ACTIVATION BOX WITH SERVICES AND COMPARTMENTS AS NOTED
- ACTIVATION BOX WITH SERVICES AND COMPARTMENTS AS NOTED - WALL MOUNTED
- SINGLE POLE WALL SWITCH
- LIGHT DIMMER
- PUSHBUTTON
- ANY WIRING DEVICE WITH THIS SYMBOL INDICATES SURFACE MOUNTED OUTLET BOX
- MOTOR SPEED CONTROLLER - 2 SPEED, 3 SPEED OR VARIABLE SPEED (V) AS INDICATED
- CEILING FAN
- POWER POLE
- THERMOSTAT - WALL MOUNTED
- OCCUPANCY SENSOR
  - X - INDICATES TYPE, SEE LIGHTING CONTROL DEVICE SCHEDULE
  - x - INDICATES SWITCH ZONE, IF APPLICABLE
- OCCUPANCY SENSOR - WALL MOUNTED
  - X - INDICATES TYPE, SEE LIGHTING CONTROL DEVICE SCHEDULE
  - x - INDICATES SWITCH ZONE, IF APPLICABLE
- PHOTO SENSOR
  - X - INDICATES TYPE, SEE LIGHTING CONTROL DEVICE SCHEDULE
  - x - INDICATES SWITCH ZONE, IF APPLICABLE
- PHOTO SENSOR - WALL MOUNTED
  - X - INDICATES TYPE, SEE LIGHTING CONTROL DEVICE SCHEDULE
  - x - INDICATES SWITCH ZONE, IF APPLICABLE

GENERAL ELECTRICAL DEMOLITION NOTES:

1. UNLESS NOTED OTHERWISE ALL ITEMS TO BE REMOVED AND DISPOSED OF BY CONTRACTOR. SEE DEMOLITION KEY. THE OWNER MAY ELECT TO SALVAGE SELECT ELECTRICAL SYSTEM COMPONENTS. COORDINATE WITH OWNER PRIOR TO DISPOSAL OF EQUIPMENT.
2. WHERE ELECTRICAL EQUIPMENT, WIRING DEVICES, OR COMMUNICATIONS DEVICES ARE NOTED TO BE REMOVED, DEMO CONDUIT AND WIRE BACK TO SOURCE OR NEAREST ACTIVE JUNCTION BOX. WHERE CONDUITS PENETRATE CMU OR CAST-IN-PLACE CONCRETE, CUT CONDUIT FLUSH WITH WALL OR FLOOR. PATCH ALL WALL AND FLOOR PENETRATIONS TO MATCH EXISTING SURFACE. UNDER NO CIRCUMSTANCES SHALL ABANDONED CONDUIT, WIRE, OR ELECTRICAL EQUIPMENT REMAIN AT THE COMPLETION OF CONSTRUCTION.
3. ELECTRICAL DEMOLITION DRAWINGS ARE BASED ON FIELD OBSERVATION AND EXISTING DOCUMENTATION WHERE AVAILABLE. EXTENSIVE EFFORTS HAVE BEEN MADE TO ACCURATELY PORTRAY EXISTING CONDITIONS. DEMOLITION DRAWINGS ARE INTENDED TO CONVEY THE GENERAL SCOPE OF DEMOLITION. MISCELLANEOUS ABANDONED BOXES AND CONDUIT MAY NOT BE INDICATED. ALL ELECTRICAL AND COMMUNICATIONS SYSTEMS, RACEWAYS AND SUPPORTS IN WALLS AND CEILINGS SCHEDULED TO BE REMOVED ARE TO BE DEMOLISHED. CONTRACTOR FIELD VERIFICATION IS REQUIRED.
4. COORDINATE ANY SERVICE OUTAGES AFFECTING AREAS OUTSIDE THE REMODEL AREA WITH OWNER AT LEAST 72 HOURS PRIOR TO OUTAGE. WHERE REQUIRED BY THE OWNER, ANY WORK REQUIRING POWER INTERRUPTION SHALL BE SCHEDULED OUTSIDE OF NORMAL WORKING HOURS.
5. MAINTAIN INTEGRITY OF EXISTING CIRCUIT WIRING SERVING AREAS OUTSIDE THE REMODEL AREA. IF SPECIFIC ITEMS/DEVICES ARE TAKEN OUT OF SERVICE TEMPORARILY TO COMPLETE NEW WORK, RETURN TO SERVICE AS SOON AS POSSIBLE.
6. THE BUILDING WILL REMAIN OCCUPIED AND IN USE FOR THE DURATION OF CONSTRUCTION. REFER TO THE SPECIFICATIONS AS WELL AS PHASING PLANS FOR ADDITIONAL INFORMATION REGARDING WORKING ACCESS WITHIN AND ADJACENT TO OCCUPIED AREAS AND SPECIFIC PHASING REQUIREMENTS.
7. FOR ALL DEMOLISHED FLUORESCENT LIGHT FIXTURES, IT SHALL BE ASSUMED THAT BALLASTS CONTAIN PCB'S AND SHALL BE DISPOSED OF PROPERLY. RECYCLE ALL FLUORESCENT AND HID LAMPS IN ACCORDANCE WITH EPA AND LOCAL REQUIREMENTS.
8. WHERE CEILING SYSTEMS ARE REMOVED, ELECTRICAL CONTRACTOR SHALL PERMANENTLY SUPPORT LOW VOLTAGE CABLING SYSTEMS CURRENTLY SUPPORTED BY CEILING SYSTEM WITH J-HOOKS ON BUILDING STRUCTURE.
9. FOR ALL FLUSH DEVICES TO BE REMOVED IN REMAINING WALLS, COVER ABANDONED OPENING WITH NEW COVERPLATE, UNLESS NOTED OTHERWISE.

GENERAL ELECTRICAL NOTES:

1. BELOW IS A LIST OF COMMON REQUIREMENTS OUTLINED IN THE PROJECT MANUAL. REFER TO THE PROJECT MANUAL AND STANDARD DETAILS FOR MORE DETAILED INFORMATION FOR THESE ITEMS AND FOR ALL OTHER MATERIALS AND CONSTRUCTION METHODS REQUIRED.
   a. MINIMUM WIRE SIZE TO BE #12 FOR POWER.
   b. WALL BOXES INSTALLED FLUSH IN COMMON WALL SHALL NOT BE BACK-TO-BACK OR THROUGH WALL TYPE.
   c. ALL CONDUITS, JUNCTION BOXES, WIRING, EQUIPMENT, ETC. TO BE PROPERLY LABELED.
   d. PROVIDE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.
   e. ALL CIRCUITS SHALL HAVE DEDICATED NEUTRALS TO MEET NEC WITHOUT HAVING HANDLE TIES. SHARED NEUTRALS ARE NOT ALLOWED.
2. COORDINATE LIGHT FIXTURE LOCATIONS WITH MECHANICAL EQUIPMENT AND PIPING.
3. COORDINATE DEVICE LOCATIONS AND HEIGHTS WITH ARCHITECTURAL ELEVATIONS AND DETAILS PRIOR TO ROUGH IN.
4. PENETRATIONS FOR ALL CONDUITS PASSING THROUGH FIRE AND SMOKE RATED WALLS AND FLOORS SHALL BE PROVIDED WITH FIRESTOPPING TO MAINTAIN THE FIRE RATING. USE OTHER 3M (OR EQUAL) UL-LISTED DETAILS AS APPLICABLE FOR SPECIFIC INSTALLATIONS.
5. WHERE CONDUIT OR SLEEVES PASS THROUGH FLOORS, ROOFS, WALLS AND PARTITIONS THAT ARE NOT FIRE OR SMOKE RATED, PENETRATIONS SHALL BE SEALED WITH CAULK.
6. COORDINATE CEILING SPACE WITH OTHER TRADES FOR NEW AND EXISTING EQUIPMENT.
7. DRAWINGS ARE IN PART DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK, AND TO INDICATE THE GENERAL LOCATIONS OF EQUIPMENT AND SOME FEEDERS. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LAYOUT THEIR OWN WORK ACCORDING TO THE FOLLOWING GUIDELINES:
   a. COORDINATE DEVICE LOCATIONS AND HEIGHTS WITH ARCHITECTURAL ELEVATIONS AND DETAILS PRIOR TO ROUGH IN. FIXTURES AND DEVICES TO BE CENTERED AROUND ARCHITECTURAL CONSTRUCTION. VERIFY EXACT BOX ROUGH-IN LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION OF CONDUIT AND WIRE. ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR ADJUST BOX LOCATIONS AT THIS TIME.
   b. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS FOR EQUIPMENT AND ROUGH-INS AND THE EXACT ROUTING OF FEEDERS PRIOR TO CONSTRUCTION SO AS TO BEST FIT THE LAYOUT OF THE WORK. SPACE ABOVE CEILINGS IS LIMITED, COORDINATE FINAL LAYOUT WITH ALL TRADES.
   c. WHERE OFFSETS IN FEEDERS ARE REQUIRED TO COORDINATE THE WORK OF OTHER TRADES OR TO MAINTAIN REQUIRED CEILING HEIGHTS, THEY SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
   d. COORDINATE LOCATION OF EQUIPMENT AND ROUTING OF FEEDERS TO MAINTAIN ACCESS TO HEAT PUMPS, MOTORS, ELECTRICAL EQUIPMENT, AND CONTROLS.
   e. CONTRACTOR SHALL INSTALL EQUIPMENT PER CLEARANCES LISTED IN NEC.
8. ALL ELEMENTS OF THE CONSTRUCTION SHALL BE PERFORMED BY TRADES PEOPLE SKILLED IN THE PARTICULAR CRAFT INVOLVED, AND REGULARLY EMPLOYED IN THAT PARTICULAR CRAFT. ALL WORK SHALL BE PERFORMED IN A NEAT, PROFESSIONAL MANNER IN KEEPING WITH THE HIGHEST STANDARDS OF THE CRAFT.
9. ELECTRICAL, COMMUNICATIONS AND FIRE ALARM SYSTEMS SHALL NOT BE SUPPORTED BY MECHANICAL DUCTWORK, MECHANICAL PIPING, SPRINKLER OR CEILING SYSTEM SUPPORT WIRES. WHERE COORDINATED WITH OTHER TRADES, COMMON SUPPORT STRUCTURES MAY BE UTILIZED.
10. PROVIDE TWO 1"C AND THREE 3/4"C STUBS OUT OF ALL FLUSH MOUNTED PANELBOARDS TO ACCESSIBLE CEILING SPACE.
11. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR CONSTRUCTION PHASING AND SCHEDULE REQUIREMENTS.
12. COORDINATE INSTALLATION OF ALL ITEMS PENETRATING THE EXTERIOR BUILDING ENVELOPE WITH GENERAL CONTRACTOR. ALL PENETRATIONS SHALL BE WEATHER TIGHT. INTERIORS OF CONDUITS SHALL BE SEALED WITH DUCT SEAL.
13. COORDINATE LOCATIONS AND SIZES OF OPENINGS IN NEW STRUCTURE WITH GENERAL CONTRACTOR. SEAL AND/OR FIRE STOP ALL PENETRATIONS AS REQUIRED.
14. CIRCUIT NUMBERS SHOWN HAVE BEEN CHOSEN TO AID IN DESIGN AND TO PROVIDE CLARITY OF SCOPE OF WORK. ADJUST AS NECESSARY BASED ON FIELD CONDITIONS.
15. REFER TO TELECOM DRAWINGS FOR BUILDINGS AND SITE FOR ADDITIONAL ELECTRICAL WORK ASSOCIATED WITH THE TELECOM INSTALLATION.
16. REFER TO SPECIFICATIONS FOR ALTERNATE BID DESCRIPTION INFORMATION.
17. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE INSTALLATION OF THE NEW ELECTRIC SERVICE WITH THE ELECTRIC UTILITY COMPANY. THE CONTRACTOR SHALL REVIEW AND FOLLOW ALL UTILITY COMPANY SERVICE INSTALLATION REQUIREMENTS.
18. WHERE CONDUITS AND CABLE TRAY CROSS BUILDING EXPANSION JOINTS, PROVIDE SUITABLE EXPANSION FITTINGS. UNLESS FITTING IS LISTED FOR BONDING, PROVIDE EXTERNAL BONDING JUMPER.
19. ALL 120V RECEPTACLES WITHIN 6' OF SINKS SHALL BE GFCI TYPE.

REMODEL*

1. ELECTRICAL CONTRACTOR SHALL CUT AND PATCH WALLS AND FLOORS AS REQUIRED FOR INSTALLATION OF NEW SYSTEMS.
   a. ALL OPENINGS IN CONCRETE OR MASONRY CONSTRUCTION SHALL BE CORE DRILLED OR SAW CUT. COORDINATE WITH EXISTING STRUCTURE AND GENERAL CONTRACTOR AS REQUIRED TO MAINTAIN STRUCTURAL INTEGRITY AND MINIMIZE SIZE OF OPENINGS. DO NOT MODIFY STRUCTURAL BUILDING COMPONENTS WITHOUT COORDINATING MODIFICATIONS WITH THE ARCHITECT.
   b. FIRE STOP AROUND ALL CONDUIT PENETRATIONS THROUGH FIRE RATED CONSTRUCTION. REFER TO ARCHITECTURAL PLANS FOR REQUIRED FIRE RATINGS. SEE DETAILS AND SPECIFICATIONS FOR FIRE STOPPING REQUIREMENTS.
2. ELECTRICAL CONTRACTOR SHALL REMOVE AND REINSTALL ACOUSTICAL CEILING TILE (ACT) AS REQUIRED TO COMPLETE ELECTRICAL WORK AS INDICATED ON THE PLANS. ANY TILE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
3. PROVIDE UPDATED TYPEWRITTEN CIRCUIT DIRECTORIES AT ALL EXISTING PANELBOARDS WITH NEW OR MODIFIED CIRCUITS.
4. THE BUILDING WILL REMAIN OCCUPIED AND IN USE FOR THE DURATION OF CONSTRUCTION. CONTRACTOR SHALL MAINTAIN ALL CIRCUITS IN OCCUPIED AREAS. ANY WORK REQUIRING POWER INTERRUPTION TO OCCUPIED AREAS SHALL BE SCHEDULED WITH THE OWNER. AFTER-HOURS WORK MAY BE REQUIRED.
5. UNLESS OTHERWISE NOTED, NEW DEVICES ON EXISTING WALLS SHALL BE INSTALLED WITH CONCEALED RACEWAY AND FLUSH BOXES.

GENERAL STRUCTURE NOTES:

1. THE LOCATION AND SIZE OF ANY HOLES THROUGH STRUCTURE WILL REQUIRE REVIEW AND APPROVAL OF STRUCTURAL ENGINEER.
2. SUPPORT CONDUIT AT EACH FLOOR RATHER THAN AS A POINT LOAD AT ONE LOCATION.
3. COORDINATE THE EXACT LOCATION OF FLOOR BOXES TO MISS STEEL BEAMS AND OPEN WEB FLOOR JOISTS; CONTRACTOR SHALL FORM ALL RECESSED FLOOR BOXES INTO CONCRETE POUR.
4. SUPPORT ALL HORIZONTAL CONDUIT ON INTERVALS OF 10' ON CENTER OR LESS. DO NOT SUSPEND EQUIPMENT FROM METAL ROOF DECKING.
5. COORDINATE EXACT SIZE AND LOCATIONS OF ALL HOUSEKEEPING PADS PRIOR TO POURING OF CONCRETE.
6. BLOCK OUT DUCTWORK OPENINGS AND SLEEVE PIPING AND CONDUIT OPENINGS IN FLOORS AND IN FIRE RATED CONCRETE AT BOTTOM AND TOP OF EACH SHAFT. REFER TO STRUCTURAL PLANS FOR TYPICAL DETAILS FOR OPENINGS IN FLOORS.
7. OPENINGS IN LOAD BEARING CMU WALLS AND PRECAST WALL PANELS, NOT SPECIFICALLY DETAILED ON DRAWINGS, SHALL BE COORDINATED BY CONTRACTOR. REFER TO STRUCTURAL PLANS FOR SPECIFIC LOCATIONS OF LOAD BEARING CMU WALLS AND PRECAST WALL PANELS.
8. COORDINATE THE SPECIFIC SIZE AND LOCATION FOR ALL OPENINGS REQUIRED IN HOLLOW CORE SLABS IN ALL APPLICABLE AREAS OF THE BUILDING. CUTTING OF HOLLOWCORE TENDONS IS PROHIBITED AND THE CONTRACTOR SHALL TAKE SPECIAL CARE WHEN LOCATING CORE DRILLED HOLES. ALL CORE DRILLED HOLES SHALL BE LOCATED IN THE VOID SPACES OF THE PRECAST PLANKS.

ELECTRICAL DEMOLITION KEYED NOTES	
ED-1	MAINTAIN EXISTING LIGHTING CIRCUITS AND CONTROL WIRING, TO BE REUSED IN NEW WORK.
ED-2	SAVE EXISTING SWITCHES. EXISTING SWITCHES TO BE RELOCATED. SEE NEW WORK AND E-4 FOR NEW LOCATION.

ELECTRICAL KEYED NOTES	
E-1	REUSE AND/OR EXTEND EXISTING LIGHTING CIRCUITS AND CONTROL WIRING. PROVIDE POWER PACKS AS NECESSARY.
E-2	TYPICAL: EXISTING CIRCUITING TO BE FIELD VERIFIED. ALL EXISTING CIRCUITS THAT WERE REMOVED DURING DEMOLITION MAY BE REUSED. PROVIDE NEW BREAKERS TO MATCH EATON PANELS AS NECESSARY. NEW CIRCUIT DESIGNATIONS (LETTERS) SHOWN ONLY TO CONVEY DESIGN INTENT FOR DEVICES ON THE SAME CIRCUIT. USE NEXT AVAILABLE CIRCUIT IN EXISTING PANELS LPA, LPB, LPC, LPD, PPA, PPC FOR NEW CIRCUITS. SERVE SAME GENERAL AREA CURRENTLY SERVED BY EACH PANEL.
E-3	TYPICAL: EXISTING CIRCUITING TO BE FIELD VERIFIED. ALL EXISTING CIRCUITS THAT WERE REMOVED DURING DEMOLITION MAY BE REUSED. PROVIDE NEW BREAKERS TO MATCH EATON PANELS AS NECESSARY. NEW CIRCUIT DESIGNATIONS (LETTERS) SHOWN ONLY TO CONVEY DESIGN INTENT FOR DEVICES ON THE SAME CIRCUIT. USE NEXT AVAILABLE CIRCUIT IN EXISTING PANELS IN EXISTING ELECTRICAL SERVICE ROOM FOR NEW CIRCUITS. SERVE SAME GENERAL AREA CURRENTLY SERVED BY EACH PANEL.
E-4	NEW LOCATION OF EXISTING SWITCHES. EXTEND CONDUIT AND WIRING AS NECESSARY TO NEW LOCATION.
E-5	FINAL LOCATION OF POWER POLES TO BE COORDINATED BEFORE INSTALLATION WITH OWNER AND OWNERS FURNITURE SUPPLIER.

OPN ARCHITECTS

301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

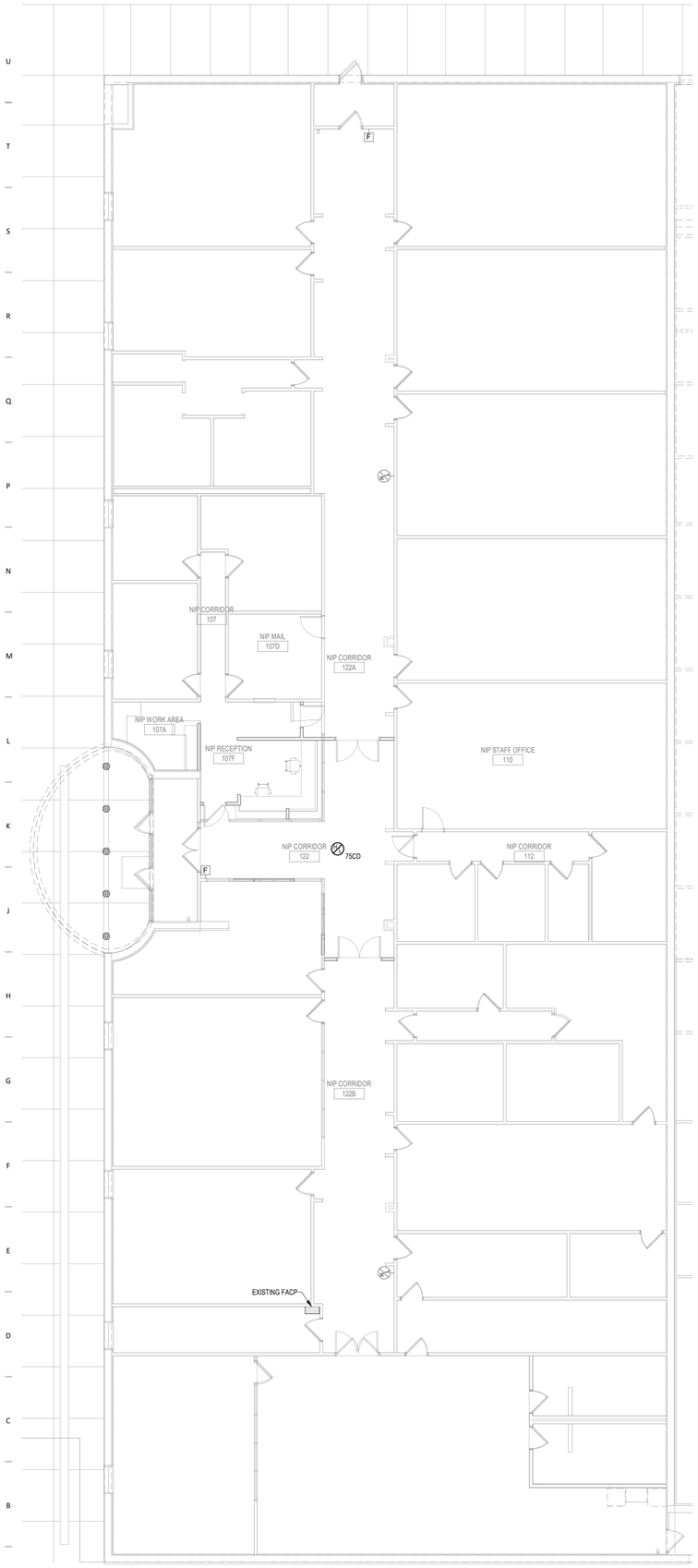
Revision	Description	Date

OPN Project No.
20635000

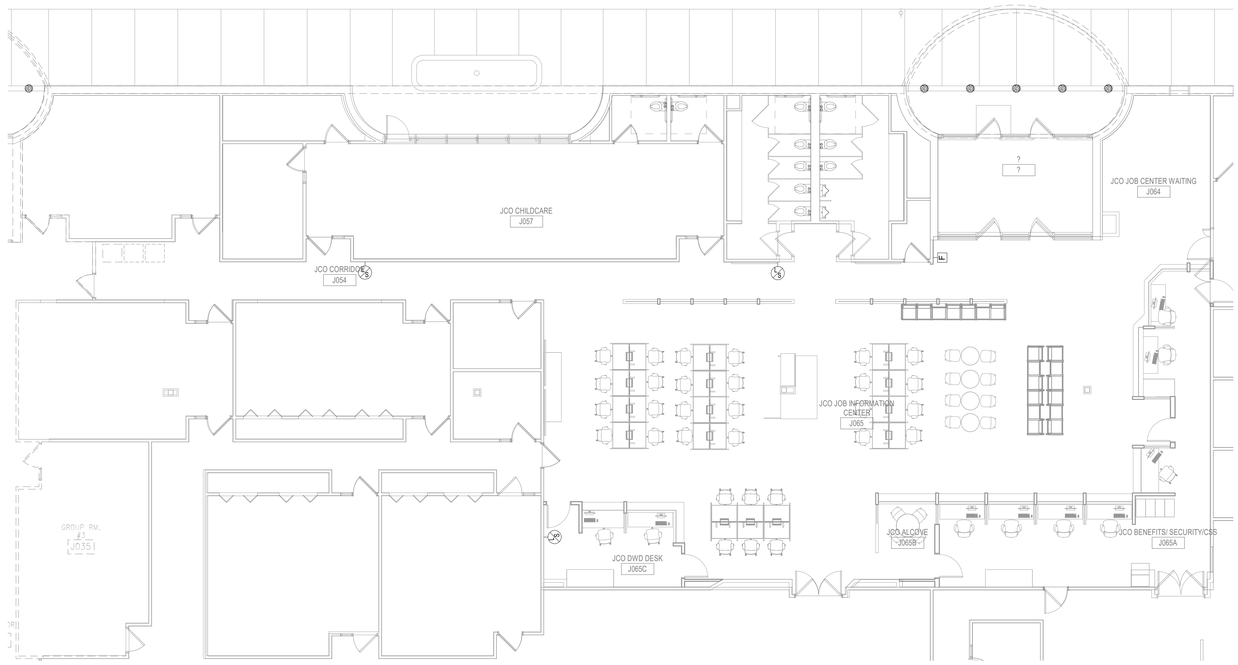
Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
ELECTRICAL NOTES AND SYMBOLS

Sheet Number
E520



2 NIP FIRE ALARM PLAN
1/8" = 1'-0"



1 DOJ FIRE ALARM PLAN
1/8" = 1'-0"

KEYED NOTES

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
ENLARGED FIRE ALARM PLANS

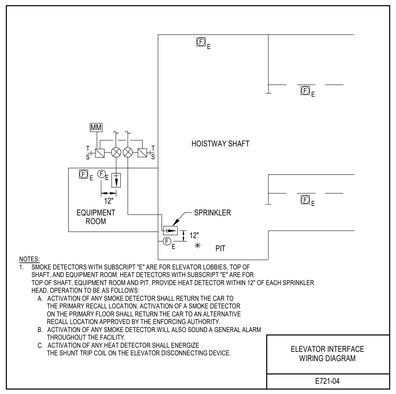
Sheet Number
FA101

FIRE ALARM SYMBOLS

(NOTE: ALL SYMBOLS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)

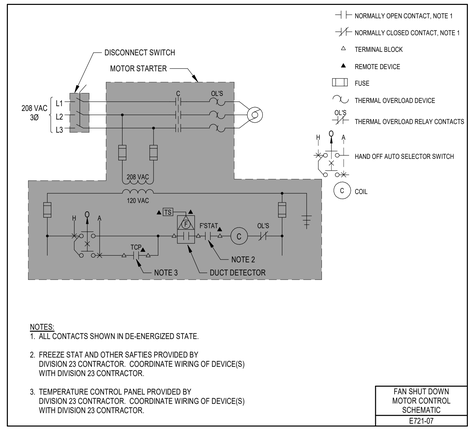
*** FIRE ALARM SYSTEM ***

- MANUAL PULL STATION 46" ABOVE FLOOR
- SMOKE DETECTOR - CEILING MOUNTED
  E - ELEVATOR
  SB - SOUNDER BASE
  CO - CARBON MONOXIDE
- SMOKE DETECTOR - WALL MOUNTED
  E - ELEVATOR
  SB - SOUNDER BASE
  CO - CARBON MONOXIDE
- THERMAL DETECTOR, RATE OF RISE TYPE
  200=200 DEGREE TYPE
- THERMAL DETECTOR, RATE OF RISE TYPE - WALL MOUNTED
  200=200 DEGREE TYPE
- SMOKE DETECTOR IN DUCT
- BEAM SMOKE DETECTOR - CEILING MOUNTED
  T = TRANSMITTER / RECEIVER
  R = REFLECTOR
- BEAM SMOKE DETECTOR - WALL MOUNTED
  T = TRANSMITTER / RECEIVER
  R = REFLECTOR
- VISUAL / AUDIO NOTIFICATION DEVICE
  #/CD
  B - BELL
  C - CHIME
  H - HORN
  S - SPEAKER
  #/CD - CANDELA VALUE
- VISUAL / AUDIO NOTIFICATION DEVICE - WALL MOUNTED
  #/CD 80" ABOVE FLOOR OR AS NOTED
  B - BELL
  C - CHIME
  H - HORN
  S - SPEAKER
  #/CD - CANDELA VALUE
- VISUAL NOTIFICATION LIGHT - CEILING MOUNTED
  #/CD - CANDELA VALUE
- VISUAL NOTIFICATION LIGHT - WALL MOUNTED
  #/CD 80" ABOVE FLOOR OR AS NOTED
  #/CD - CANDELA VALUE
- AUDIO NOTIFICATION DEVICE - CEILING MOUNTED
  B - BELL
  C - CHIME
  H - HORN
  S - SPEAKER
- AUDIO NOTIFICATION DEVICE - WALL MOUNTED
  80" ABOVE FLOOR OR AS NOTED
  B - BELL
  C - CHIME
  H - HORN
  S - SPEAKER
- ELECTROMAGNETIC DOOR HOLDER - CEILING OR FLOOR MOUNTED
- ELECTROMAGNETIC DOOR HOLDER - WALL MOUNTED
- SPRINKLER ALARM FLOW SWITCH
- SPRINKLER ALARM TAMPER SWITCH
- MM MONITOR MODULE
- CM CONTROL MODULE
- TS TEST SWITCH
- FAN SHUT-DOWN OR CONTROL RELAY
- FSD SMOKE OR FIRE/SMOKE DAMPER CONNECTION
- FD SMOKE DAMPER CONNECTION
- DAMPER INDICATING LIGHT - CEILING MOUNTED
- DAMPER INDICATING LIGHT - WALL MOUNTED
- REMOTE LED FOR DETECTOR ANNUNCIATION - CEILING MOUNTED
- REMOTE LED FOR DETECTOR ANNUNCIATION - WALL MOUNTED
- FIRE ALARM VOICE PHONE JACK
- EQUIPMENT CONNECTION
- EQUIPMENT CONNECTION - WALL MOUNTED
- FIRE ALARM CONTROL PANEL - RECESSED
- FIRE ALARM CONTROL PANEL - SURFACE
- ANY WIRING DEVICE WITH THIS SYMBOL INDICATES SURFACE MOUNTED OUTLET BOX



NOTES:
1. SMOKE DETECTORS WITH SUBSCRIPT "E" ARE FOR ELEVATOR LOBBIES. TOP OF SHAFT, AND EQUIPMENT ROOM. HEAT DETECTORS WITH SUBSCRIPT "E" ARE FOR TOP OF SHAFT, EQUIPMENT ROOM AND PIT. PROVIDE HEAT DETECTOR WITHIN 12" OF EACH SPRINKLER HEAD. OPERATION TO BE AS FOLLOWS:
   A. ACTIVATION OF ANY SMOKE DETECTOR SHALL RETURN THE CAR TO THE PRIMARY RECALL LOCATION. ACTIVATION OF A SMOKE DETECTOR ON THE PRIMARY FLOOR SHALL RETURN THE CAR TO AN ALTERNATIVE RECALL LOCATION APPROVED BY THE ENFORCING AUTHORITY.
   B. ACTIVATION OF ANY SMOKE DETECTOR WILL ALSO SOUND A GENERAL ALARM THROUGHOUT THE FACILITY.
   C. ACTIVATION OF ANY HEAT DETECTOR SHALL ENERGIZE THE SHUNT TRIP COIL ON THE ELEVATOR DISCONNECTING DEVICE.

ELEVATOR INTERFACE WIRING DIAGRAM
E721-04



NOTES:
1. ALL CONTACTS SHOWN IN DE-ENERGIZED STATE.
2. FREEZE STAT AND OTHER SAFTIES PROVIDED BY DIVISION 23 CONTRACTOR. COORDINATE WIRING OF DEVICE(S) WITH DIVISION 23 CONTRACTOR.
3. TEMPERATURE CONTROL PANEL PROVIDED BY DIVISION 23 CONTRACTOR. COORDINATE WIRING OF DEVICE(S) WITH DIVISION 23 CONTRACTOR.

FAN SHUT DOWN MOTOR CONTROL SCHEMATIC
E721-07

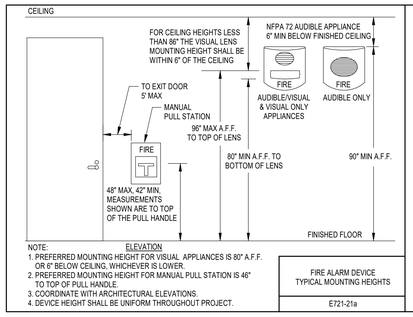
NOTES:
1. Relay is normally energized closing contacts. Upon general alarm, relay is de-energized opening contacts and doors close.
2. Relay is normally de-energized with mechanical devices wired through normally closed contacts. Upon designated duct detector going into alarm, the relay is energized opening contacts and shutting down the AHU and closing FSD's.
3. Provide 120 volt control wiring (3#14 THHN) between controller and fan shutdown relay.
4. For sprinkler system risers, connect all tamper switches vertically to one monitor module per riser.

TYPICAL FIRE ALARM WIRING DIAGRAM
E721-14

NOTES:
1. THE PHOTOELECTRIC TYPE SMOKE DETECTOR INSTALLED IN THE EQUIPMENT ROOM SHOULD SENSE THE FIRST PRODUCTS OF COMBUSTION. THIS WILL SOUND A GENERAL ALARM AND RECALL THE ELEVATOR TO THE DESIGNATED FLOOR.
2. IF HEAT CONTINUES TO RISE IN THE ROOM, THE HEAT DETECTOR(S) LOCATED ADJACENT TO THE SPRINKLER HEAD(S) WILL ACTIVATE, SENDING A SIGNAL TO THE FIRE ALARM PANEL WHICH IN TURN SIGNALS THE CONTROL MODULE TO ACTIVATE THE RELAY AND ENERGIZE THE SHUNT TRIP COIL IN THE CIRCUIT BREAKER DISCONNECTING MEANS. THE ELEVATOR CONTROLLER POWER SUPPLY TO THE CONTROLLER WILL NOW BE DISENERGIZED.
3. THE THERMAL LINK ON THE SPRINKLER HEAD(S) IS RATED AT 165° F.(s) AND WILL DISCHARGE WATER IF TEMPERATURE IN THE ROOM REACHES THIS VALUE.

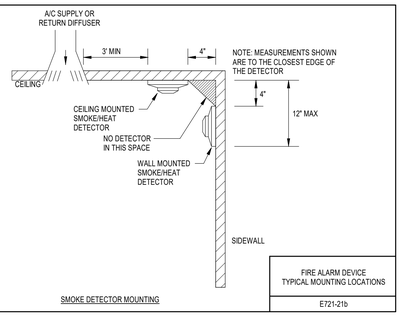
FOR ADDRESSABLE SYSTEM WITH ELEVATOR EQUIPMENT NOT CLOSE TO FIRE ALARM PANEL

ELEVATOR EMERGENCY TRIP SCHEMATIC
E721-16



NOTE:
1. PREFERRED MOUNTING HEIGHT FOR VISUAL APPLIANCES IS 80" A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.
2. PREFERRED MOUNTING HEIGHT FOR MANUAL PULL STATION IS 46" TO TOP OF PULL HANDLE.
3. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
4. DEVICE HEIGHT SHALL BE UNIFORM THROUGHOUT PROJECT.

FIRE ALARM DEVICE TYPICAL MOUNTING HEIGHTS
E721-21a



FIRE ALARM DEVICE TYPICAL MOUNTING LOCATIONS
E721-21b

FIRE ALARM KEYED NOTES

GENERAL STRUCTURE NOTES:

1. THE LOCATION AND SIZE OF ANY HOLES THROUGH STRUCTURE WILL REQUIRE REVIEW AND APPROVAL OF STRUCTURAL ENGINEER.
2. SUPPORT CONDUIT AT EACH FLOOR RATHER THAN AS A POINT LOAD AT ONE LOCATION.
3. COORDINATE THE EXACT LOCATION OF FLOOR BOXES TO MISS STEEL BEAMS AND OPEN WEB FLOOR JOISTS; CONTRACTOR SHALL FORM ALL RECESSED FLOOR BOXES INTO CONCRETE POUR.
4. SUPPORT ALL HORIZONTAL CONDUIT ON INTERVALS OF 10' ON CENTER OR LESS. DO NOT SUSPEND EQUIPMENT FROM METAL ROOF DECKING.
5. COORDINATE EXACT SIZE AND LOCATIONS OF ALL HOUSEKEEPING PADS PRIOR TO POURING OF CONCRETE.
6. BLOCK OUT DUCTWORK OPENINGS AND SLEEVE PIPING AND CONDUIT OPENINGS IN FLOORS AND IN FIRE RATED CONCRETE AT BOTTOM AND TOP OF EACH SHAFT. REFER TO STRUCTURAL PLANS FOR TYPICAL DETAILS FOR OPENINGS IN FLOORS.
7. OPENINGS IN LOAD BEARING CMU WALLS AND PRECAST WALL PANELS, NOT SPECIFICALLY DETAILED ON DRAWINGS, SHALL BE COORDINATED BY CONTRACTOR. REFER TO STRUCTURAL PLANS FOR SPECIFIC LOCATIONS OF LOAD BEARING CMU WALLS AND PRECAST WALL PANELS.
8. COORDINATE THE SPECIFIC SIZE AND LOCATION FOR ALL OPENINGS REQUIRED IN HOLLOW CORE SLABS IN ALL APPLICABLE AREAS OF THE BUILDING. CUTTING OF HOLLOWCORE TENDONS IS PROHIBITED AND THE CONTRACTOR SHALL TAKE SPECIAL CARE WHEN LOCATING CORE DRILLED HOLES. ALL CORE DRILLED HOLES SHALL BE LOCATED IN THE VOID SPACES OF THE PRECAST PLANKS.

GENERAL FIRE ALARM NOTES:

1. SYSTEM BASED ON SIMPLEX.
2. PROVIDE ALL PROGRAMMING FOR A COMPLETE AND OPERATIONAL SYSTEM; VERIFY ALL ROOM NUMBERS AND NAMES WITH OWNER PRIOR TO PROGRAMMING.
3. INSTALL ALL SURFACE MOUNT FIRE ALARM DEVICES WITH WIREMOLD V700 SERIES.
4. PROVIDE FIRE ALARM DOCUMENTATION CABINET IN ACCORDANCE WITH NFPA-72-2013 7.7. CABINET TO BE LABELED "SYSTEM RECORD DOCUMENTS". SPACE AGE SYSTEMS SRD ACE-11 OR EQUAL. ALL SYSTEM DOCUMENTATION IS TO BE IN CABINET PRIOR TO SYSTEM ACCEPTANCE.

OPN ARCHITECTS

301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

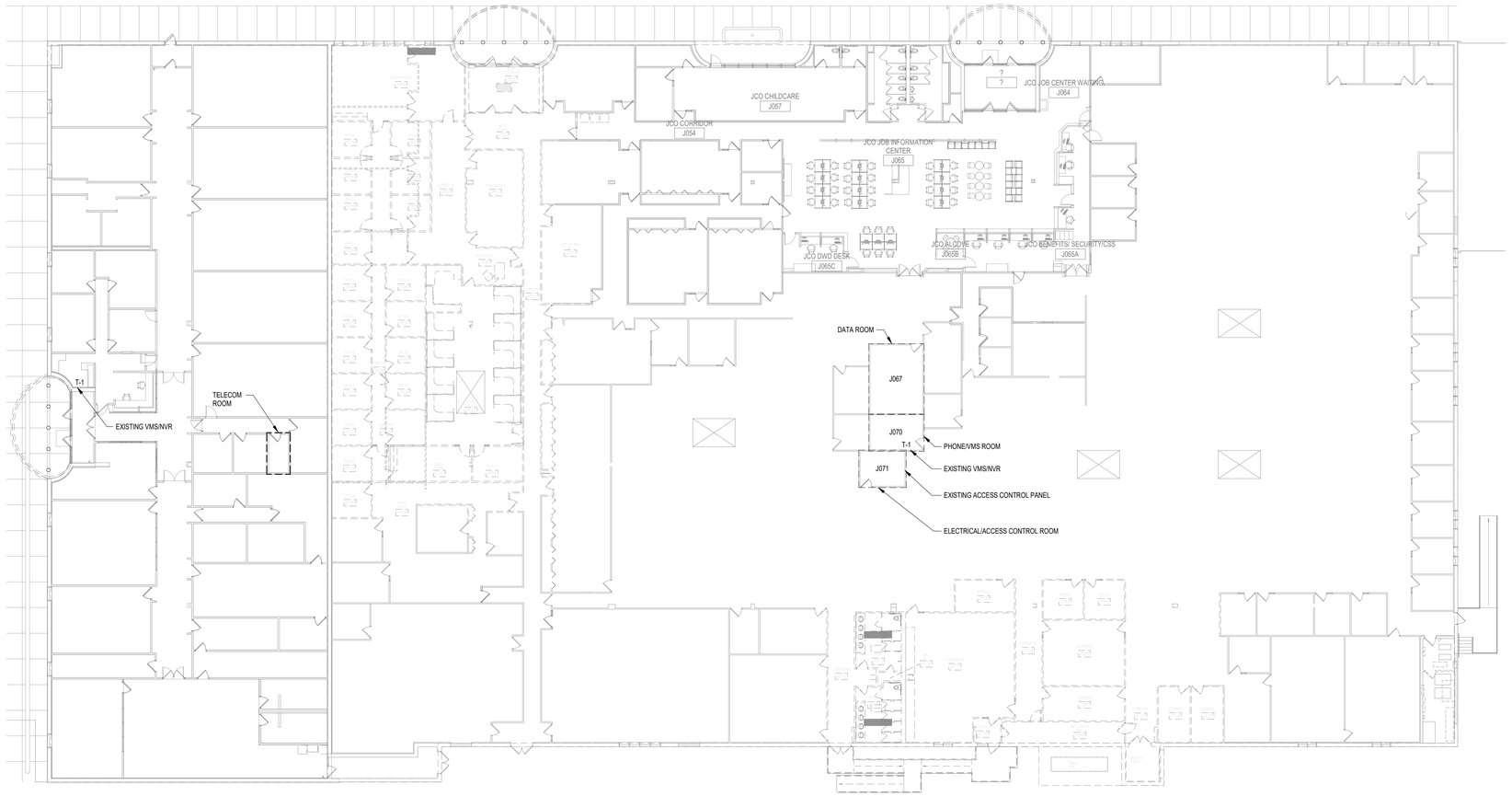
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
FIRE ALARM SCHEDULES AND DETAILS

Sheet Number
FA500



1 OVERALL TECHNOLOGY FLOOR PLAN
1/16" = 1'-0"

KEYED NOTES	
T-1	REMOVE ALL COAX, ANALOG CAMERAS AND EXISTING VMS EQUIPMENT AFTER NEW DATA CABLES, IP CAMERAS AND VMS EQUIPMENT IS INSTALLED AND OPERATIONAL.

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

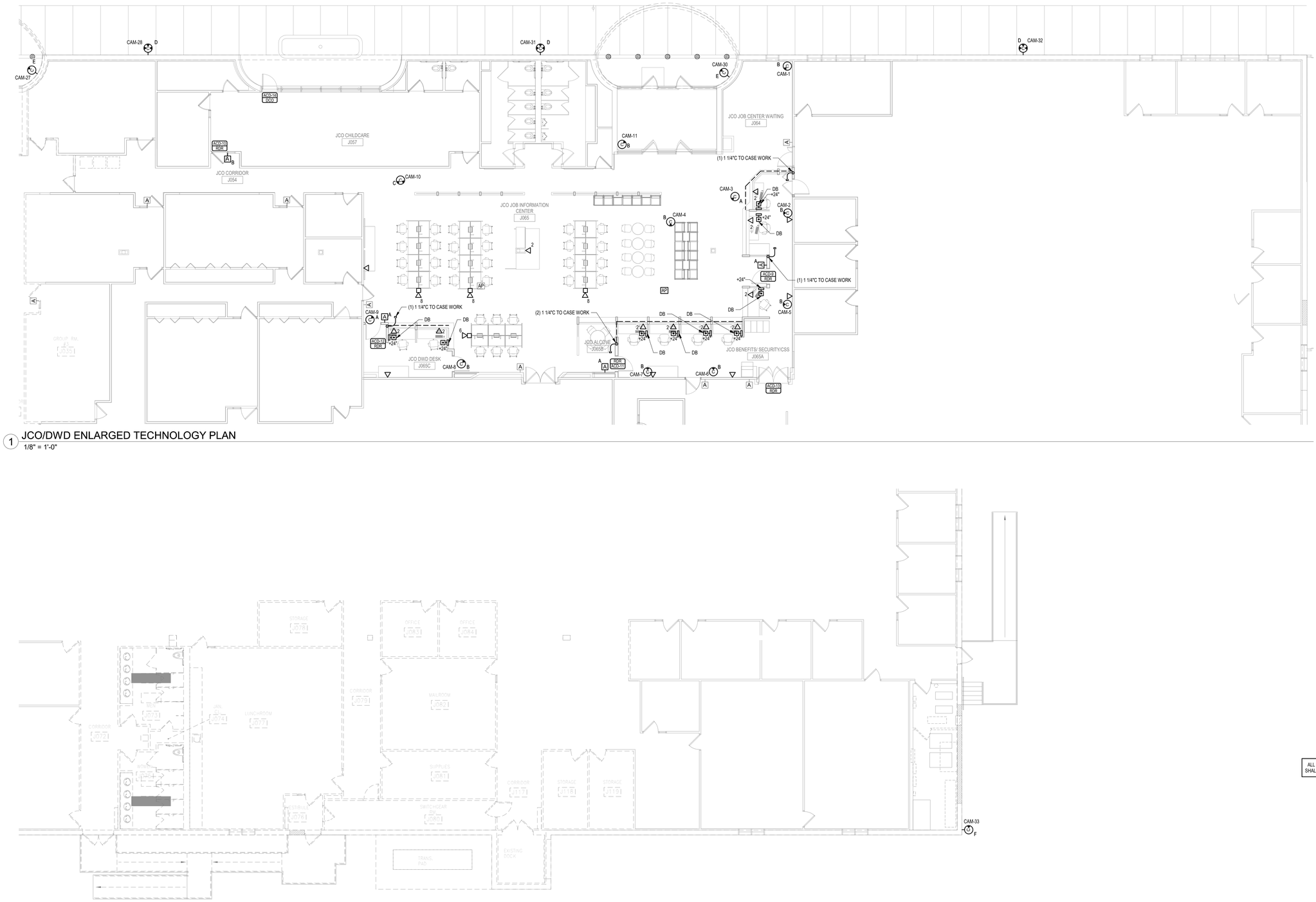
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
OVERALL TECHNOLOGY FLOOR PLAN

Sheet Number
T100



1 JCO/DWD ENLARGED TECHNOLOGY PLAN
1/8" = 1'-0"

2 SOUTHEAST EXTERIOR TECHNOLOGY PLAN
1/8" = 1'-0"

KEYED NOTES

ALL DEVICES ON THIS SHEET SHALL GO BACK TO RDOM J070

DEMO/NEW WORK KEY
- EXISTING
- TO BE REMOVED / REVISED
- NEW / REVISED

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

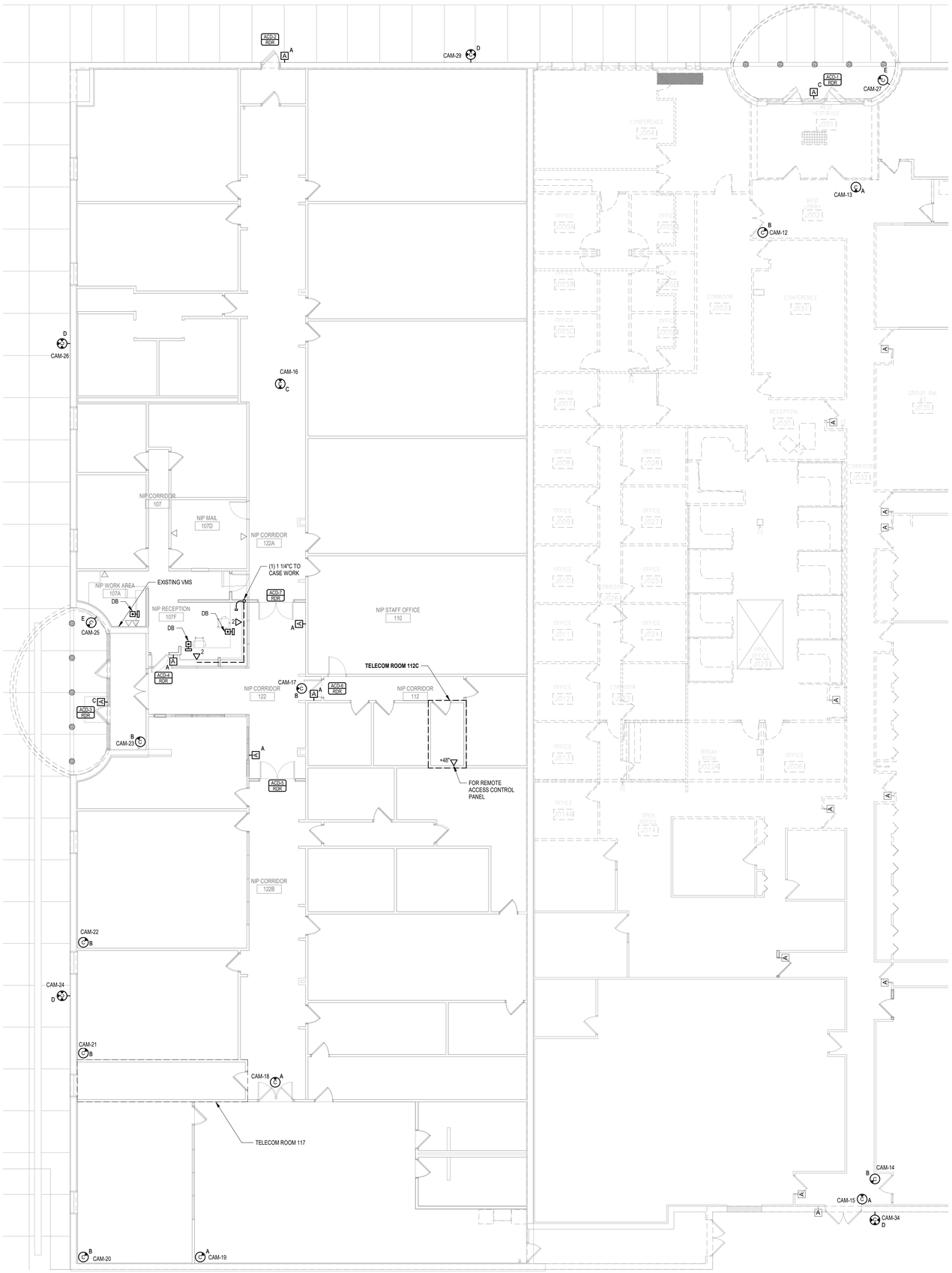
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS 04/13/2021

Sheet Name
JCO/DWD ENLARGED TECHNOLOGY PLAN

Sheet Number
T101



1 NIP ENLARGED TECHNOLOGY PLAN
1/8" = 1'-0"

KEYED NOTES

DEMO/NEW WORK KEY
- EXISTING
- TO BE REMOVED / REVISED
- NEW / REVISED

ALL DEVICES ON THIS SHEET SHALL GO BACK TO ROOM 112C

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

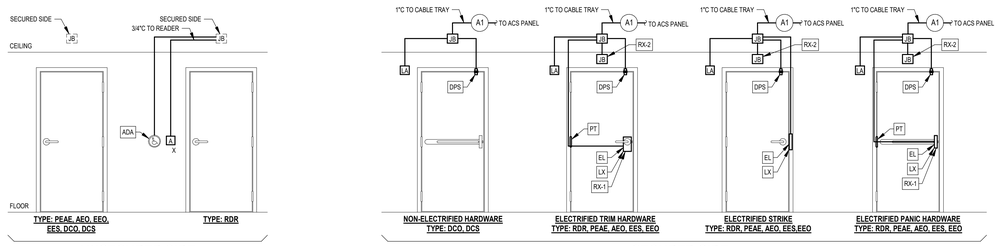
Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS 04/13/2021

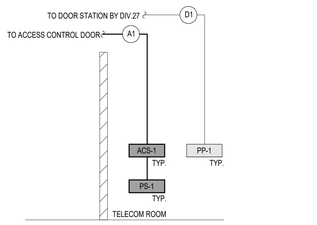
Sheet Name
NIP ENLARGED TECHNOLOGY PLAN

Sheet Number
T102



ELECTRONIC ACCESS CONTROL DETAIL - SINGLE DOOR SCHEMATIC

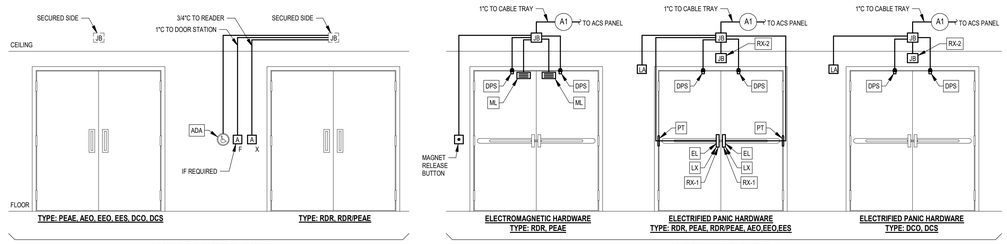
TY281000.1a



ACCESS CONTROL HEAD END SCHEMATIC DIAGRAM

ELECTRONIC ACCESS CONTROL DETAIL - HEAD END SCHEMATIC DIAGRAM

TY281000.1c



ELECTRONIC ACCESS CONTROL DETAIL - DOUBLE DOOR SCHEMATIC

TY281000.1b

ACCESS CONTROL GENERAL NOTES:

1. ALL DETAILS ARE TYPICAL INSTALLATIONS. EVERY ACCESS CONTROL DOOR SCENARIO ON PROJECT MAY NOT BE FULLY REPRESENTED.
2. AN INSTALLATION COORDINATION MEETING BETWEEN THE DIV.28 AND DIV.8 CONTRACTORS IS REQUIRED.

ELECTRONIC ACCESS CONTROL DETAIL - GENERAL NOTES

TY281000.1d

ACCESS CONTROL DOOR OPERATION TYPES

CONTROL TYPE	DESCRIPTION
RDR	SINGLE CARD READER ENTRANCE, ACCEPTABLE EXIT - EQUIPPED WITH CARD READER FOR ACCESS VIA ELECTRICALLY UNLOCKING DOOR HARDWARE. REQUEST TO EXIT FUNCTIONALITY, ACCEPTABLE EXIT LATCH BOLT MONITORING, AND DOOR POSITION CONTACTS. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.
PEAE	PROGRAMMABLE ENTRANCE, ACCEPTABLE EXIT - EQUIPPED WITH ELECTRICALLY UNLOCKING DOOR HARDWARE (BUT NO CARD READER). REQUEST TO EXIT FUNCTIONALITY, ACCEPTABLE EXIT LATCH BOLT MONITORING, AND DOOR POSITION CONTACTS. MAY BE PROGRAMMED UNLOCKED AS AN ACCEPTABLE ENTRANCE. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.
AEO	ACCEPTABLE EXIT ONLY - REQUEST TO EXIT FUNCTIONALITY. LATCH BOLT MONITORING, AND DOOR POSITION CONTACTS. CANNOT BE ELECTRICALLY UNLOCKED. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.
EEO	EMERGENCY EXIT ONLY - DOOR POSITION CONTACTS AND LATCH BOLT MONITORING. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.
EES	EMERGENCY EXIT ONLY W/SOUNDER - DOOR POSITION CONTACTS. LATCH BOLT MONITORING AND A LOCAL AUDIBLE ALARM (SOUNDER) TIED INTO ACCESS CONTROL SYSTEM. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.
DCO	DOOR CONTACTS ONLY - DOOR POSITION CONTACTS ONLY. TYPICALLY USED FOR GARAGE DOORS OR SPECIALTY SITUATIONS. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.
DCS	DOOR CONTACTS W/SOUNDER - DOOR POSITION CONTACTS AND A LOCAL AUDIBLE ALARM (SOUNDER) TIED INTO ACCESS CONTROL SYSTEM. SEE DIVISION 08 FOR EXACT DOOR FUNCTION AND RELATED HARDWARE.

GENERAL ROUGH-IN AND INSTALLATION NOTES

1. ALL CONDUITS ARE 1/2" UNLESS NOTED OTHERWISE. THIS APPLES TO SINGLE AND DOUBLE DOORS.
2. ALL EXPOSED/VISIBLE RACEWAY SHALL BE WIREMOLD UNLESS DIRECTED OTHERWISE AND PAINTED TO MATCH ADJACENT SURFACE.
3. NOT ALL DEVICES ARE REQUIRED FOR EACH DOOR. CONTRACTORS SHALL COORDINATE PER THE HARDWARE SPEC. ACCESS CONTROL SCHEDULE AND DETAILS.
4. THE JUNCTION PULL BOX SHALL BE LOCATED ABOVE THE ACCESSIBLE CEILING AND AS CLOSE TO THE DOOR AS POSSIBLE.
5. ALL CONDUITS AND/OR RACEWAY SHALL BE ROUTED TO THE JUNCTION PULL BOX.
6. ALL CABLES ARE TO BE ROUTED FROM THE JUNCTION PULL BOX TO THE NEAREST ACCESSIBLE CABLE TRAY AND ON TO THE ACCESS CONTROL PANEL.

ELECTRONIC ACCESS CONTROL DETAIL - DOOR OPERATION TYPE SCHEDULE

TY281000.1e

ACCESS CONTROL MATERIAL SCHEDULE

KEY:

DIV.28	DIVISION 28 CONTRACTOR	FB	FURNISHED BY
DIV.8	DIVISION 8 CONTRACTOR	IB	INSTALLED BY
DIV.26	DIVISION 26 CONTRACTOR		

GENERAL NOTE:

1. CONTRACTORS SHALL REVIEW PROJECT SPECIFICATIONS FOR FURTHER MATERIRAL REPSONSIBILITIES AND OR DIRECTIONS.
2. ALL ITEMS ARE BY THE DIVISION IDENTIFIED UNLESS NOTED OTHERWISE
3. SEE THE TELECOMMUNICATION SYMBIOLS LIST FOR FUTHER DETAILS REGARDING PLAN MARKS.
4. PLAN MARKS CAN BE FOUND ON THE FLOOR PLAN AND ON THE SCHEMATICS DETAILS. NOT ALL PLAN MARKS ARE ON BOTH.
5. ALL ELECTROMAGNETIC LOCKS INSTALLED ON THE PROJECT SHALL BE INTEGRATED W/FACP TO RELEASE UPON FIRE ALARM.

PLAN MARK (A)	DESCRIPTION	FB	IB	REMARKS
A (A)	3.3" X 4.8" X 1.0" STANDARD READER	DIV.28	DIV.28	Per Spec. TYPICAL +36" AFF UNLESS NOTED OTHERWISE
A (B)	1.9" X 4.1" X 0.9" MULLION READER	DIV.28	DIV.28	Per Spec. TYPICAL +36" AFF UNLESS NOTED OTHERWISE
A (C)	13.1" X 13.1" X 1.55", LONG RANGE READER	DIV.28	DIV.28	Per Spec. TYPICAL +36" AFF UNLESS NOTED OTHERWISE
A (D)	3.3" X 4.8" X 1.0" READER / KEYPAD COMBO	DIV.28	DIV.28	Per Spec. TYPICAL +36" AFF UNLESS NOTED OTHERWISE
A (S)	VIDEO DOOR STATION	DIV.28	DIV.28	Per Spec. TYPICAL +36" AFF UNLESS NOTED OTHERWISE
A (E)	VIDEO DOOR MASTER STATION DESKTOP	DIV.28	DIV.28	Per Spec.
A (F)	VIDEO DOOR MASTER STATION W/ALL MOUNT	DIV.28	DIV.28	Per Spec.
A (G)	LOCK OUT BUTTON, LOCKS ALL ELECTRIFIED DOORS UPON ACTIVATION	DIV.28	DIV.28	Per Spec. TYPICAL +46" AFF UNLESS NOTED OTHERWISE
A (H)	ACCESS CONTROL BUZZ OPEN BUTTON	DIV.28	DIV.28	Per Spec.
A1	16 CONDUCTOR, #22-3, #18-4C, #22-4C,#22-2C, SHIELDED, PLENUM	DIV.28	DIV.28	Per Spec.
ACS-1	ACCESS CONTROL SYSTEM, HEAD END	DIV.28	DIV.28	Per Spec.
ADA	ADA PADDLE FOR POWERED DOOR OPERATOR.	DIV.8	DIV.8	Per Spec.
DPS	DOOR POSITION SWITCH.	DIV.8	DIV.8	Per Spec.
EL	ELECTRIFIED LATCH	DIV.8	DIV.8	Per Spec.
JB	JUNCTION PULL BOX.	DIV.26	DIV.26	Per Spec.
LS	LOCAL AUDIBLE ALARM SOUNDER	DIV.28	DIV.28	Per Spec.
LX	LATCH BOLT MONITOR	DIV.8	DIV.8	Per Spec.
ML	ELECTROMAGNETIC LOCK W/INTEGRATED RX	DIV.8	DIV.8	Per Spec. INTEGRATE W/FACP TO RELEASE UPON FIRE ALARM
PS-1	POWER SUPPLY, ACCESS CONTROL SYSTEM	DIV.28	DIV.28	Per Spec.
PT	POWER TRANSFER.	DIV.8	DIV.8	Per Spec.
RX1	REQUEST TO EXIT. INTEGRATED IN ELECTRIFIED HARDWARE	DIV.8	DIV.8	Per Spec.
RX2	REQUEST TO EXIT	DIV.8	DIV.8	Per Spec.

ELECTRONIC ACCESS CONTROL DETAIL - MATERIAL AND ROUGH-IN SCHEDULE

TY281000.1f

CAMERA SCHEDULE

Key:
DIV.28: Video Surveillance Contractor
DIV.27: Telecommunication Contractor

General Notes:
1. Contractor shall check specifications for possible further details.

Notes:
1. Provide (1) Axis Weathershield Kit R with every exterior surveillance Camera

CAMERA #	PLAN MARK	SHEET LOCATION	DE Video Surv Sched Remarks
CAM-1	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-2	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-3	A	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: P3227-LV
CAM-4	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-5	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-6	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-7	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-8	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-9	A	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: P3227-LV
CAM-10	C	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: P3715-PLVE
CAM-11	B	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-12	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-13	A	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3227-LV
CAM-14	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-15	A	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3227-LV
CAM-16	C	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3715-PLVE
CAM-17	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-18	A	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3227-LV
CAM-19	A	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3227-LV
CAM-20	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-21	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-22	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-23	B	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M4206-LV
CAM-24	D	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE
CAM-25	E	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M3206-LVE
CAM-26	D	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE
CAM-27	E	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: M3206-LVE
CAM-28	D	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE
CAM-29	D	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE
CAM-30	E	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: M3206-LVE
CAM-31	D	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE
CAM-32	D	T101 - JCO/DWD ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE
CAM-33	F	T101 - SOUTHWEST EXTERIOR TECHNOLOGY PLAN	Axis: P3227-LVE
CAM-34	D	T102 - NIP ENLARGED TECHNOLOGY PLAN	Axis: P3807-PVE

ACCESS CONTROL DOOR SCHEDULE

Key:
ACD: Access Control Door

General Notes:
1. Contractor shall check specifications for possible further details.
2. Contractor shall reference the Electronic Access Control Detail for further details.

Notes:
1. Add remote panel if needed in 112C to shorten the distance of cable runs for the access control doors in the NIP occupied space. A network cable is being added in 112C to support the panel. Coordinate with the client any network configuration requirments so the remote panel can communiate with the head-end panel in J071.

PLAN MARK (PREFIX "ACD")	DOOR #	DOOR TYPE	HEAD END LOCATION	NOTES
1	J001E.1	RDR	112C	1
2	1200CCCC	RDR	112C	1
3	101.E1	RDR	112C	1
4	1200LLL	RDR	112C	1
5	1200PP	RDR	112C	1
6	EXIST 112A	RDR	112C	1
7	122A	RDR	112C	1
9	J065A.1	RDR	112C	1
10	J057E.2	RDR	J071	1
11	J065B	RDR	J071	
12	J065C.1	RDR	J071	
13	J065E.1	RDR	J071	RELOCATE EXISTING READER
14	J057B	DCO	J071	

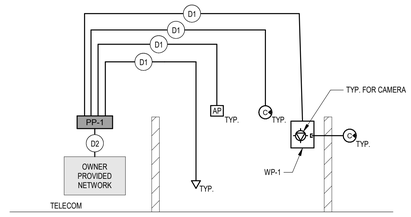
VIDEO SURVEILLANCE SCHEDULE

Key:
DIV.28: Video Surveillance Contractor
DIV.27: Telecommunication Contractor

General Notes:
1. Contractor shall check specifications for possible further details.

Notes:
1. Provide (1) Axis Weathershield Kit R with every exterior surveillance Camera

PLAN MARK (PREFIX "C")	DESCRIPTION	FURNISHED BY	INSTALLED BY	REMARKS	NOTES
VS-1	Video Surveillance System, VMS and Storage Server	VSC	VSC	Per Spec	
	BLANK ROW				
A	Indoor, Fixed Dome Camera	DIV.28	DIV.28	Axis: P3227-LV	
B	Indoor, Fixed Dome Camera	DIV.28	DIV.28	Axis: M4206-LV	
C	Indoor, Dual Lens, Dome Camera	DIV.28	DIV.28	Axis: P3715-PLVE	
D	Outdoor, Multi-Lens, 180 Degree FOV, Camera	DIV.28	DIV.28	Axis: P3807-PVE	
E	Outdoor, Fixed Dome Camera	DIV.28	DIV.28	Axis: M3206-LVE	
F	Outdoor, Fixed Dome Camera	DIV.28	DIV.28	Axis: P3227-LVE	



1 STRUCTURAL CABLING SCHEMATIC
NOT TO SCALE

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date
1	ADD #1	04/XX/202

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS 04/13/2021

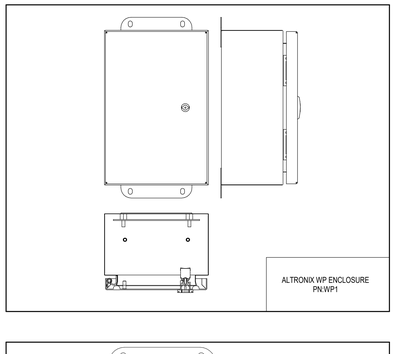
Sheet Name
ACCESS CONTROL SCHEDULES AND DETAILS

Sheet Number
T500

GENERAL TELECOMMUNICATIONS NOTES:

1. THE DIVISION 26 CONTRACTOR SHALL STUDY ALL TELECOM PLANS INCLUDING READING ALL TELECOM GENERAL AND SPECIFIC NOTES FOR INSTRUCTIONS THAT WILL AFFECT OR PERTAIN TO THE ELECTRICAL CONTRACTOR.
2. THE DIVISION 26 CONTRACTOR SHALL PROVIDE AND INSTALL ALL TELECOM CONDUITS TO ACCESSIBLE CEILING SPACE (THEY SHALL NOT BE TERMINATED ABOVE HARD LIDS OR IN EXPOSED AREAS). UNLESS INSTRUCTED OTHERWISE, STUB ALL TELECOM CONDUITS TO THE ACCESSIBLE CEILING SPACE IN THE SAME ROOM AS THE OPENING.
3. THE DIVISION 26 CONTRACTOR SHALL NOT DAISY CHAIN ANY VOICE/DATA CABLING OR AV CABLING CONDUITS WHEN ROUTING FROM BOXES TO ACCESSIBLE CEILING SPACES, ETC.
4. THE DIVISION 26 CONTRACTOR SHALL PROVIDE AND INSTALL BUSHINGS ON ALL TELECOM CONDUITS AT THE TIME OF CONDUIT INSTALLATION.
5. COORDINATE ROUTING OF RACEWAY AND EQUIPMENT TO MAINTAIN ACCESS TO FILTERS, MOTORS, ELECTRICAL EQUIPMENT, AND CONTROLS. IN NO CASE SHALL RACEWAY, CABLING BUNDLES, OR EQUIPMENT PASS DIRECTLY OVER ELECTRICAL PANELS OR DISCONNECTS OR RESTRICT ACCESS TO ANY ELECTRICAL EQUIPMENT INCLUDING JUNCTION BOXES.
6. CONDUIT MINIMUM SIZES SHALL BE PER THE ELECTRICAL RACEWAY SPECIFICATIONS UNLESS NOTED OTHERWISE.
7. THE DIVISION 26 CONTRACTOR SHALL VERIFY ALL QUANTITIES.
8. THE DIVISION 26 CONTRACTOR SHALL FASTEN ALL EQUIPMENT TO STRUCTURE SO EVERYTHING IS COMPLETELY SOLID.
9. THE DIVISION 27 CONTRACTOR SHALL USE HOOK AND LOOP FASTENERS ON CABLING EXCLUSIVELY, NO TIE WRAPS. EXCEPTION: TIE WRAPS MAY BE USED LOOSELY FOR DRESSING CABLES DURING INSTALLATION, BUT SHALL BE REMOVED AND REPLACED WITH HOOK AND LOOP FASTENERS BEFORE JOB IS COMPLETE.
10. THE MAXIMUM DISTANCE BETWEEN ALL J HOOKS SHALL BE FIVE FEET. ALL J HOOKS SHALL BE SIZED TO HAVE AT LEAST 50% CAPACITY AVAILABLE FOR FUTURE GROWTH. CONTRACTOR SHALL NOT FASTEN CABLING TO PIPING, DUCTWORK, CONDUITS, OR ANYTHING OTHER THAN CONTRACTOR INSTALLED J HOOKS OR CABLE TRAY SUPPORTED FROM STRUCTURE. CONTRACTOR SHALL NOT LAY CABLE OVER PIPING, DUCTWORK, CONDUITS, CEILING GRID/TILES, AND ANY OTHER BUILDING STRUCTURE ELEMENT OR BUILDING SUPPORT SYSTEM DEVICE. USE LOW VOLTAGE PATHWAY ONLY.
11. ALL TELECOM CABLING IN FINISHED SPACES IS TO BE ROUTED CONCEALED IN WALLS, UNLESS SPECIFICALLY NOTED OTHERWISE. ALL EXPOSED CABLING AND CABLING BEHIND INACCESSIBLE CONSTRUCTION (SUCH AS IN WALLS AND ABOVE DRYWALL CEILINGS) SHALL BE ROUTED IN CONDUIT WHICH IS PROVIDED AND INSTALLED BY THE DIVISION 26 CONTRACTOR. ALL WALL PENETRATIONS SHALL BE SLEEVED WITH CONDUIT.
12. THE CONTRACTOR SHALL NOT PULL ANY CABLING THROUGH CONDUITS THAT DO NOT HAVE THE REQUIRED BUSHINGS INSTALLED. CABLE DAMAGED DUE TO BEING INSTALLED THROUGH CONDUITS WITH NO BUSHINGS SHALL BE REPLACED BY THE CONTRACTOR AT NO CHARGE TO THE OWNER.
13. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL PLANS FOR FIRE WALL LOCATIONS. THEN FURNISH AND INSTALL FIRE STOPPING IN ALL TELECOM CONDUITS INCLUDING THOSE WITH CABLING IN THEM AND THOSE TELECOM SLEEVES OR CONDUITS WITHOUT CABLING IN THEM FOR THOSE FIRE WALL LOCATIONS.
14. THE TELECOM STRUCTURED CABLING SHALL NOT HAVE PAINT OR PAINT OVERSPRAY ON THE CABLING JACKET WHICH MAY DEGRADE THE PERFORMANCE OF THE CABLING AND VOID THE WARRANTY. CABLING WHICH HAS PAINT ON IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE (IT CANNOT BE CLEANED MECHANICALLY OR WITH SOLVENTS, IT SHALL BE REPLACED).
15. THE CONTRACTOR SHALL ARRANGE FOR A PRE-INSTALLATION MEETING WITH THE DIVISION 26 CONTRACTOR FOR REVIEW OF SLEEVE PLACEMENT PRIOR TO ROUGH-IN. THE DIVISION 26 CONTRACTOR SHALL INCLUDE MATERIAL AND LABOR COST FOR AN ALLOWANCE OF 10 EXTRA 2"X24" CONDUIT SLEEVES TO BE USED AS DIRECTED DURING THE PRE-INSTALLATION MEETING OR AS OTHERWISE DIRECTED BY THE DESIGN PROFESSIONAL OR OWNER.

TECHNOLOGY KEYED NOTES	
T-1	REMOVE ALL COAX, ANALOG CAMERAS AND EXISTING VMS EQUIPMENT AFTER NEW DATA CABLES, IP CAMERAS AND VMS EQUIPMENT IS INSTALLED AND OPERATIONAL.



TELECOMMUNICATIONS SCHEDULE

Key:

FB: Furnished By
IB: Installed By
O: Owner
DIV.27: Telecom Contractor
DIV.26: Electrical Contractor
E: Existing To Remain

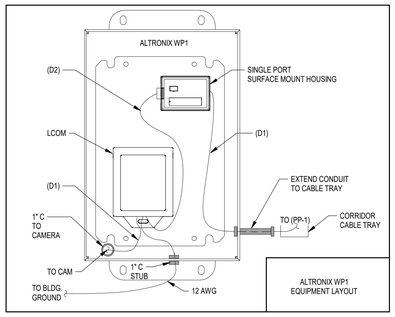
General Notes:

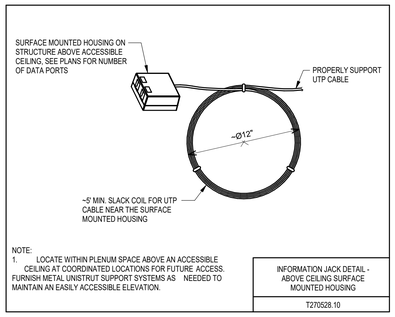
1. Contractor shall check specifications for possible further details.

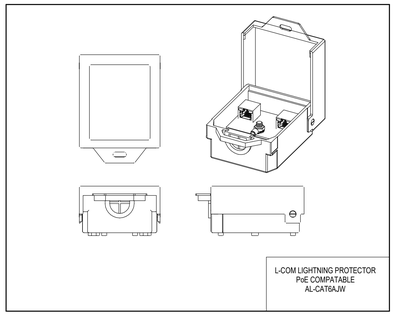
Notes:

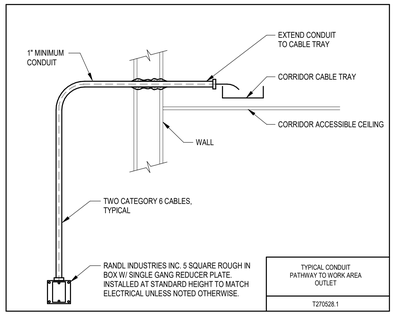
1. Contractor install new wire to the existing emergency/duress dialer equipment
2. Contractor provide and install (1) WP1 at every exterior security camera location. See TY sheets for exterior camera locations. Coordinate with DIV.26 Contractor for rough-in and bonding connections to the WP1. See WP1 installation detail for further instructions.
3. Contractor provide and install (1) L-COM in every WP1.

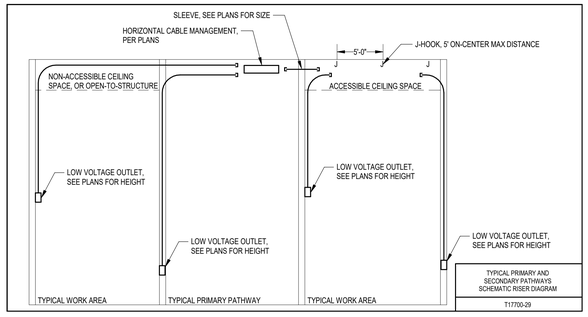
PLAN MARK	DESCRIPTION	FB	IB	REMARKS	NOTES
D1	Cable, Data Branch, 6A, 4pr UTP, Plenum	DIV.27	DIV.27	See Spec	
D2	Cable, Data Patch Cord.	DIV.27	DIV.27	See Spec	
DB	Duress Button	DIV.27	DIV.27	AMSECO: HUSK-20	1
L-COM	PoE Lighting Protector	DIV.27	DIV.27	L-COM: AL-CAT6AJW	3
PP-1	Patch Panel, Rack Mounted, 24 Port, 1 RU	DIV.27	DIV.27	See Spec	
WP1	Wall Mount Enclosure	DIV.27	DIV.27	Altronix: WP1	2











TECHNOLOGY SYMBOLS

(NOTE: ALL SYMBOLS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)
(NOTE: ALL STANDARD HEIGHT DEVICES 18" AFF TO CENTER OF BOX UNLESS NOTED OTHERWISE)

*** TECHNOLOGY ***

- INFORMATION JACK FOR VOICE OR DATA USE, MATCH RECEPTACLE HEIGHT UNLESS OTHERWISE NOTED
  - # - INDICATES CABLE AND JACK QUANTITY
  - AC - INDICATES 8" ABOVE COUNTERTOP OR 4"ABOVE BACKSPLASH
  - W - INDICATES WALL PHONE PLATE AT +48" UNLESS OTHERWISE NOTED
- INFORMATION JACK FOR VOICE OR DATA USE - ABOVE CEILING
  - # - INDICATES CABLE AND JACK QUANTITY
- WIRELESS ACCESS POINT (WAP) - CEILING MOUNTED, TWO INFORMATION JACKS FOR DATA BY TELECOMMUNICATION CONTRACTOR
- WIRELESS ACCESS POINT (WAP) - WALL MOUNTED, TWO INFORMATION JACKS FOR DATA BY TELECOMMUNICATION CONTRACTOR
- CATV SYSTEM OUTLET
- CLOCK - CEILING MOUNTED
  - X - INDICATES PLAN MARK OF CLOCK DEVICE, SEE CLOCK SCHEDULE
- CLOCK - WALL MOUNTED
  - X - INDICATES PLAN MARK OF CLOCK DEVICE, SEE CLOCK SCHEDULE
- RADIO FREQUENCY REPEATER - WALL MOUNTED
- RADIO FREQUENCY REPEATER - WALL MOUNTED
- SECURITY DEVICE
  - X - INDICATES PLAN MARK OF SECURITY DEVICE, SEE SECURITY SCHEDULE
- SECURITY DEVICE - WALL MOUNTED
  - X - INDICATES PLAN MARK OF SECURITY DEVICE, SEE SECURITY SCHEDULE
- EMERGENCY COMMUNICATION DEVICE, ONE INFORMATION JACK FOR VOICE OR DATA
  - X - INDICATES PLAN MARK OF EMERGENCY COMMUNICATION DEVICE, SEE EMERGENCY COMMUNICATION SCHEDULE
- EMERGENCY COMMUNICATION DEVICE - WALL MOUNTED, ONE INFORMATION JACK FOR VOICE OR DATA
  - X - INDICATES PLAN MARK OF EMERGENCY COMMUNICATION DEVICE, SEE EMERGENCY COMMUNICATION SCHEDULE
- INTERCOM DEVICE
  - X - INDICATES PLAN MARK OF INTERCOM DEVICE, SEE INTERCOM SCHEDULE
- INTERCOM DEVICE
  - X - INDICATES PLAN MARK OF INTERCOM DEVICE, SEE INTERCOM SCHEDULE
- INTERCOM SPEAKER - CEILING MOUNTED
  - X - INDICATES PLAN MARK OF INTERCOM DEVICE, SEE INTERCOM SCHEDULE
- INTERCOM SPEAKER - WALL MOUNTED
  - X - INDICATES PLAN MARK OF INTERCOM DEVICE, SEE INTERCOM SCHEDULE
- ACCESS CONTROL READER - WALL MOUNTED
  - X - INDICATES READER TYPE, SEE ACCESS CONTROL DOOR SCHEDULE
- ACCESS CONTROL DOOR
  - # - INDICATES PLAN MARK, SEE ACCESS CONTROL DOOR SCHEDULE
  - XXX - INDICATES DOOR OPERATION TYPE, SEE ACCESS CONTROL DOOR DETAIL
- CAMERA - CEILING MOUNTED, ONE INFORMATION JACK FOR DATA ABOVE CEILING BY TELECOMMUNICATION CONTRACTOR
  - • - INDICATES LENS AIMED OUT
  - • - INDICATES LENS AIMED DOWN
  - X - INDICATES PLAN MARK, SEE VIDEO SURVEILLANCE SCHEDULE
- CAMERA - WALL MOUNTED, ONE INFORMATION JACK FOR DATA ABOVE CEILING BY TELECOMMUNICATION CONTRACTOR
  - • - INDICATES LENS AIMED OUT
  - • - INDICATES LENS AIMED DOWN
  - X - INDICATES PLAN MARK, SEE VIDEO SURVEILLANCE SCHEDULE
- EQUIPMENT DESIGNATION PER EQUIPMENT SCHEDULE
- TECHNOLOGY RACK - 2 POST — CLEARANCE BORDER
- TECHNOLOGY RACK - 4 POST — CLEARANCE BORDER
- TECHNOLOGY RACK - SLIDE OUT
- TECHNOLOGY RACK - SWING OUT — CLEARANCE BORDER
- SPECIAL CABINET AS NOTED - SURFACE MOUNTED
- SPECIAL CABINET AS NOTED - RECESSED MOUNTED
- GROUND BAR
- WIRE BASKET
- LADDER RACK
- SPLINE TRAY
  - W - INDICATES WIDTH IN INCHES
  - H - INDICATES HEIGHT IN INCHES
- HALF SPLINE TRAY
  - W - INDICATES WIDTH IN INCHES
  - H - INDICATES HEIGHT IN INCHES
- CABLE J-HOOKS
- SPLICE CONNECTION FROM EXISTING TO NEW
- CONDUIT STUB
- CONDUIT CONTINUATION
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- PULL BOX
- JUNCTION BOX - IN FLOOR BOX OR CEILING
- JUNCTION BOX - WALL MOUNTED
- FURNITURE FEED
- FURNITURE FEED - WALL MOUNTED
- FLOOR BOX / POKE THRU WITH SERVICES AS NOTED
- WALL BOX WITH SERVICES AS NOTED
- ANY WIRING DEVICE WITH THIS SYMBOL INDICATES SURFACE MOUNTED OUTLET BOX
- ANY WIRING DEVICE WITH THIS SYMBOL INDICATES SURFACE MOUNTED OUTLET BOX
- RADIO FREQUENCY REPEATER - WALL MOUNTED

OPN ARCHITECTS
301 N Broom St., Suite 100
Madison, WI 53703
P: 608-819-0260
F.
www.opnarchitects.com

Owner

DANE COUNTY
Department of Public Works, Highway & Transportation, Engineering Division
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

Project

JCO/ NIP LOBBY SECURITY UPDATES
1819 Aberg Avenue and
1227 North Sherman Avenue
Madison, WI 53704

Consultants

MEP Engineer

DESIGN ENGINEERS
437 South Yellowstone Drive
Madison, Wisconsin 53719-1042
608.424.8815

Key Plan

Revision	Description	Date

OPN Project No.
20635000

Sheet Issue Date
CONSTRUCTION DRAWINGS **04/13/2021**

Sheet Name
TECHNOLOGY SCHEDULES AND DETAILS

Sheet Number
T510