2018-2019

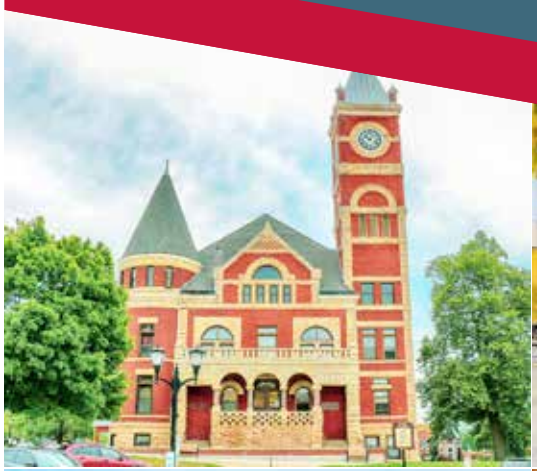
FINAL REPORT

UniverCity Year

Better • Places • Together

Constructing senior housing in Brodhead

CIVIL ENGINEERING 578: SENIOR CAPSTONE DESIGN






UniverCity Alliance

UNIVERSITY OF WISCONSIN–MADISON

May 7, 2019

To: Ann Anderson
City of Brodhead
2346 Engineering Hall
1415 Engineering Drive
Madison, WI 53706

Re: Front-End and Technical Specifications Documents for Senior Housing in City of Brodhead, Wisconsin.

Dear Ann Anderson,

Enclosed are the front-end documents and technical specifications for the Senior Housing facility located at the southwest corner of 25th street and HWY 11 in Brodhead, Wisconsin.

These documents serve to outline necessary technical specifications to bid the construction of the final design of the senior housing facility. This report will also include a list of relevant drawings, opinion of probable cost, and the project schedule.

On behalf of everyone at Forward Engineering, we would like to express our gratitude for the opportunity to have a role in completing this project for the City of Brodhead. For any further questions, comments, or to schedule a meeting to further discuss our approach to this project, please contact the project manager, at your convenience by phone or email.

Sincerely,

Forward Engineering

PROJECT MANUAL

FOR CONSTRUCTION OF:

SENIOR LIVING FACILITY
FOR THE CITY OF BRODHEAD, WI

CONTRACT #0001

IN ACCORDANCE WITH:

STATE OF WISCONSIN DOA STANDARD SPECIFICATIONS
ENGINEERING DIVISION

PREPARED BY:

TEAM 8 - FORWARD ENGINEERING, LLC

MAY 7th, 2019

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

****STUDENT PROJECT DOCUMENTS****

The concepts, drawings, and written materials provided here were prepared by students in the Department of Civil & Environmental Engineering at the University of Wisconsin - Madison as an activity in the course CEE 578 -Senior Capstone Design. These do not represent the work products of licensed engineers. These are not for construction purposes.

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

BID OF_____

2019

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

SENIOR LIVING HOUSING FOR CITY OF BRODHEAD

CONTRACT NO. 0001

MUNIS NO. 0000-00-000

IN

CITY OF BRODHEAD, GREEN COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
BRODHEAD, WISCONSIN ON_____

BRODHEAD CITY HALL
1111 W 2nd AVE
BRODHEAD, WISCONSIN 53520

Senior Living Facility
Contract No. 0001

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

TABLE OF CONTENTS

This Proposal & Agreement have been prepared by:

_____

Forward Engineering, LLC

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

LIST OF DRAWINGS

Title

- T-1.0 Cover Page
- T-1.1 Table of Contents

Architectural

- A-1.0 Parking Level Plan
- A-1.0A Entry Level Plan
- A-1.1 First Floor Plan
- A-1.2 Second Floor Plan
- A-1.3 Third Level Plan
- A-1.4 Roof Plan
- A-1.5 First Floor Furniture Plan
- A-1.6 Second and Third Floor Furniture Plan
- A-1.7 First Floor Finish Plan
- A-1.8 Second and Third Floor Finish Plan
- A-2.1 North Elevation
- A-2.2 South Elevation
- A-2.3 West Elevation
- A-2.4 East Elevation
- A-2.5 Interior Elevations
- A-2.6 Interior Elevations
- A-2.7 Interior Elevations
- A-2.8 Interior Elevations
- A-3.0 Building Sections
- A-3.1 Building Sections
- A-3.2 Building Sections
- A-3.3 Building Sections
- A-4.1 Wall Types
- A-4.2 Wall Sections
- A-4.3 Wall Sections
- A-4.4 Stair Sections and Plans
- A-4.5 Stair Sections and Plans
- A-5.1 enlarged Floor Plans
- A-5.2 Enlarged Floor Plans
- A-6.1 Accessibility Details
- A-7.1 Room Schedule
- A-7.2 Door Schedule
- A-7.3 Window Schedule

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

Structural

- S-0.0 General Notes
- S-0.1 Foundation Plan
- S-1.0Parking Level Plan
- S-1.1 First Level Plan
- S-1.2 Second Level Plan
- S-1.3 Third Level Plan
- S-1.4 Roof Plan
- S-2.0 Foundation Details
- S-2.1 Foundation Details
- S-3.0 Schedules

Civil

- C-0.0 Existing Conditions
- C-1.0 Erosion Control Plan
- C-2.0 Site Plan
- C-2.1 Fire Access Plan
- C-3.0 Grading Plan
- C-4.0 Site Utility Plan
- C-5.0 Site Details
- C-5.1 Site Details
- C-5.2 Site Details

Plumbing

- P-0.0 Plumbing Notes and Abbreviations
- P-1.0 Underfloor Plumbing Plan
- P-1.1 First Floor Plumbing Plan
- P-1.2 Second Floor Plumbing Plan
- P-1.3 Third Floor Plumbing Plan
- P-1.4 Roof Plumbing Plan
- P-2.0 Enlarged Plumbing Plan
- P-2.1 Enlarged Plumbing Plan
- P-3.0 Plumbing Details
- P-3.1 Plumbing Details
- P-4.0 Domestic Water Isometric
- P-4.1 Sanitary, Waste and Vent Isometric
- P-5.0 Plumbing Schedules

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

Fire Protection

- FP-0.0 Notes and Details
- FP-1.0 Parking Level Fire Protection Plan
- FP-1.1 First Level Fire Protection Plan
- FP-1.2 Second Level Fire Protection Plan
- FP-1.3 Third Level Fire Protection Plan

Mechanical

- M-0.0 Mechanical Notes and Symbols
- MV-1.0 Parking Level HVAC Plan
- MP-1.0 Parking Level Piping Plan
- MV-1.1 First Level HVAC Plan
- MP-1.1 First Level Piping Plan
- MV-1.2 Second Level HVAC Plan
- MP-1.2 Second Level Piping Plan
- MV-1.3 Third Level HVAC Plan
- MP-1.3 Third Level Piping Plan
- M-1.4 Roof Mechanical Plan
- M-2.0 Enlarged Mechanical Plans
- M-3.0 Mechanical Sections
- M-3.1 Mechanical Sections
- M-3.2 Mechanical Sections
- M-5.0 Mechanical Details
- M-5.1 Mechanical Details
- M-6.0 Mechanical Schedules
- M-6.1 Mechanical Schedules
- M-6.2 Mechanical Schedules

Electrical

- E-0.0 Electrical Notes and Symbols
- ES-1.0 Parking Level Systems Plan
- EP-1.0 Parking Level Power Plan
- EL-1.0 Parking Level Lighting Plan
- ES-1.1 Parking Level Systems Plan
- EP-1.1 Parking Level Power Plan
- EL-1.1 Parking Level Lighting Plan
- ES-1.2 Parking Level Systems Plan
- EP-1.2 Parking Level Power Plan
- EL-1.2 Parking Level Lighting Plan
- ES-1.3 Parking Level Systems Plan
- EP-1.3 Parking Level Power Plan
- EL-1.3 Parking Level Lighting Plan

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

- E-1.4 Roof Electrical Plan
- E-2.0 Enlarged Electrical Plans
- E-2.1 Enlarged Electrical Plans
- E-3.0 Electrical Schedules
- E-3.1 Electrical Schedules
- E-3.2 Electrical Schedules
- E-3.3 Electrical Schedules

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

From:

_____

_____

IMPORTANT: BEFORE SUBMITTING YOUR BID, PLEASE VERIFY THAT:

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

SEALED BID

Project Name	
Project No.	
Location	
Bid Category	
Bid Date	

To: **Department of Administration**
Division of Facilities Development
101 E. Wilson Street, 7th Floor Reception Desk
Madison, WI 53703

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION A: BID ADVERTISEMENT WITH DESCRIPTION OF WORK AND INSTRUCTIONS FOR SUBMISSION

ADVERTISEMENT FOR BIDS

City of Brodhead Senior Housing Development
City of Brodhead
Brodhead, WISCONSIN

City of Brodhead Project 1234

The State of Wisconsin Department of Administration – Division of Facilities Development is advertising for bids for the project described herein. No deposit is required to obtain bid information documents**.**
This project has less than a 30-day bid advertisement period.

Project Location:

City of Brodhead Senior Housing
N2721 State Highway 11
Brodhead, WI 53520

Bid Delivery:

Bid dollar amount must be entered on City of Brodhead Bid Form (provided herein) and the bid form signed by authorized representative of the company submitting the bid and shall be delivered hardcopy in a sealed envelope to:

City of Brodhead
1111 W 2nd Ave
Brodhead, WI 53520

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

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

For questions on bid opening or bid tab posting, please contact: Ann Anderson, andersonfamily1366@yahoo.com

Addendum:

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

City of Brodhead Contact:

Ann Anderson

E-Mail: andersonfamily1366@yahoo.com

General Project Description:

This project involves the new construction of a 45-unit senior living apartment facility with trades including but not limited to: site, landscaping, concrete, masonry, carpentry, plumbing, heating, air conditioning, electrical, and fire protection.

General Site Information:

Site is a green site located at the intersection of 25th Street and STH 11 in Brodhead, WI. Survey and site documents available upon request.

Site Inspection:

A site visit by each bidder is highly recommended prior to submitting the bid for this work. To arrange for such site visit, please contact Doug Pinnow, Mayor of Brodhead, at pinnowd@yahoo.com.

Failure to visit the site or failure to examine any and all Contract Documents will in no way relieve the successful contractor from necessity of furnishing any materials or equipment, or performing any work, that may be required to complete the work in accordance with the Contract Documents.

Interpretation:

No verbal explanation or instructions will be given in regard to the meaning of the drawings or specifications during the bid period. Bidders shall bring inadequacies, omissions or conflicts to the Architect/Engineer's attention at least ten (10) days before the date set for bid opening. Prompt clarification will be supplied to all bidders of record by addendum.

Failure to so request clarification or interpretation of the drawings and specifications will not relieve the successful Bidder of responsibility. Signing of the contract will be considered as implicitly denoting that the Contractor has thorough understanding of the scope of work and comprehension of the contract documents.

Submission of Bids:

NOTICE: All potential bidders must become certified by DOA prior to submitting bids on state construction projects with budgets over $50,000. All bids received from contractors who are not certified will be rejected. These changes take effect January 1, 2014. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page:
www.doa.state.wi.us/Divisions/Facilities-Development/Construction/Contractor-Certification
or upon request from DFD--email dfdcertification@wisconsin.gov.

The Simplified Bid Form has a space provided for All Work required to fully complete the project in accordance with the Contract Documents. If Unit prices are required spaces are also provided for the bids. Appropriate insertions are numerals indicating the cost of the work; $0 if there is no cost for the work. Blank space or spaces will be considered the same as “No Bid”. Entering words, alpha characters

or any other mark other than numeric characters on the bid lines may result in rejection. If Unit Prices are requested and no numerical entry is made it may result in rejection of the entire Bid. The company name is to be identical on bonding form(s) and bid form; otherwise entire bid may be rejected.

Unit Prices:
Unit prices requested on the Simplified Bid Form shall be given and if included in the contract, will be used for additions to or deductions from amount of work required under the contract. Unit prices shall include all costs of materials, labor, insurance, taxes, overhead, profit and incidentals. DFD reserves the right to reject any or all unit prices as given in the bid, the work governed by such unit price, if required, shall follow Conditions of the Contract for Simplified Projects, Article 6.

Award of Contract:
If the lowest dollar-amount bid submitted by a qualified and responsible bidder does not exceed the authorized project funds, a contract will be awarded accordingly. The lowest dollar amount is a single bid for all work comprising the project. DFD reserves the right to reject any or all bids, or accept any bid.

DFD reserves the right to reject the bid if evidence submitted by, or investigation of, the bidding firm fails to satisfy DFD that the firm is deemed responsible and qualified to carry out the obligations of the contract and fully complete all the work described in these bidding documents.

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

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

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

Withdrawal of Bids:
Bids may be withdrawn by written request received from Bidder or an authorized representative thereof prior to the time fixed for opening of bids, without prejudice to the right of the Bidder to file a new bid. Withdrawn bids will be returned unopened. Negligence on the part of the Bidder in preparing his bid confers no right for withdrawal of the bid after it has been opened.

No bid may be withdrawn for a period of thirty (30) days after the date set for the opening thereof.

If a bid contains an error, omission or mistake, the Bidder may limit liability to the amount of the Bidder's guarantee by giving written Notice of Intent not to execute the Contract to DFD within seventy-

two (72) hours of notification as the low bidder. If no such notice is given, DFD reserves the right to obtain the amount of the difference in bid price between the low bidder and the next low bidder.

Security for Separate 100% Performance and Separate 100% Payment
Bidder is required to furnish separate 100 % performance and 100 % payment bonds to the benefit of the Department of Administration as the sole obligee. These bonds shall be delivered to the State with the signed contract. The Surety Company shall be licensed to do business in Wisconsin. The Bond must be dated the same date or subsequent to the date of the Contract.

A certified copy of power of attorney shall be provided by the Surety Company showing that the agent who signs the Bond has the power of attorney to sign for the Surety Company. This power of attorney must be signed by the Secretary or Assistant Secretary of the company and not by an attorney-in-fact. The power of attorney must bear the same or later date as the bond.

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

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

Contract Payment:
The State of Wisconsin shall issue a single contract for this work. The Contractor shall furnish, on forms supplied by DFD, a detailed estimate giving a cost breakdown of the proposed values for work performed which, if approved by DFD, will become the basis for construction progress and monthly payments. The cost breakdown items shall reflect actual work progress stages as closely as possible.

Payments to the Contractor under the Contract Documents will be made as provided for as the work progresses. Payment requests from the Contractor will be processed monthly, except for special circumstances approved by DFD. The Contractor seeking payment must perform all the conditions required for payment and must have met the obligations which are necessary to qualify for any partial payments. The Contractor shall provide a final settlement certificate stating that all claims have been settled and payments made for all labor and materials.

The 2017-2019 Wisconsin State Budget (2017 Wisconsin Act 59) repealed Wisconsin's prevailing wage laws. Effective September 23, 2017, state prevailing wage requirements on state building projects no longer apply. These changes take effect for projects advertised for bid after September 23, 2017. This change does not affect the Federal Davis Bacon Act requirements.

Contract Commencement and Completion:
The successful Contractor must agree to commence work on or before a date to be specified in a written "Notice to Proceed" and to fully complete all work within **14** consecutive calendar days thereafter.

Completion time will be converted to a specific date at the time the "Notice to Proceed" is issued. Refer also to Conditions of the Contract for Simplified Projects, Article entitled "Time for Completion".

Plans, Permits and Approvals:
Plans, specifications and calculations will require submittal to the Wisconsin Department of Safety and Professional Services for Plan Review and Approval prior to commencing work. The A/E and DFD will be responsible for all submittals to the Department of Safety and Professional Services to obtain approved documents and any associated fees. The successful bidder is responsible for any other required submittals, including fees, to any other regulatory agency requiring permits or approvals as may be required for this project.

Contract Conditions:
Conditions of the Contract for Simplified Projects (copy enclosed) apply to this project.

Minority Business Enterprise (MBE) and Disabled Veteran-Owned Business (DVB):

In awarding construction contracts, the Department of Administration shall attempt to ensure that 5 percent of the total amount expended in each fiscal year is awarded to contractors which are minority businesses, as defined under Wis. Stat. s. 16.75(3m)(a); and shall attempt to ensure that at least 1 percent of the total amount expended each fiscal year is awarded to contractors that are disabled veteran-owned businesses. In order to assist the department in these endeavors we strongly encourage all bidders to use MBEs and DVBs.

For assistance in identifying DOA certified MBE and DVB companies, please contact the Department of Administration Supplier Diversity Program at: WiSDPWebApplication@wi.gov, or by telephone at: (608)267-9550, or visit their website at: https://doa.wi.gov/Pages/DoingBusiness/SupplierDiversity.aspx

WisBuild ™ DFD INFORMATION SYSTEM:
Contract offer and construction phase records including Questions, Requests for Information, Construction Bulletins, Bids, Change Orders, Schedule of Values, and Requests for Payment will be processed electronically on the WisBuild™ DFD Information System. Other construction phase records and applications will be implemented, as they become available.

Successful bidders shall have an available Internet connection to access and utilize the WisBuild™ DFD Information System for use within 72 hours of the bid date and maintain over the course of the construction phase, from date of Notice-to-Proceed through receipt of Final Payment.

Minimum requirements - any computer or mobile device with an internet connection and web browser software installed. WisBuild is optimized for Microsoft Internet Explorer.
Information and instructions for application training and support, user names and passwords to access the WisBuild™ DFD Information System will be issued at time of contract offer.

SECTION B: BID FORM FOR GENERAL PRIME CONTRACTOR

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

BID FORM

City of Brodhead Senior Housing Development

Brodhead, WISCONSIN

DOA/DFD Project Number 00001

CLOSING DATE FOR BIDS: June 3, 2019 @ 2:00 PM

We, _____
(Name of Company)

_____

(Street, City, County, State, Zip)

hereby agree to execute the contract, if offered, and provide all labor and material required for construction of the above project for the following dollar amount, and in strict accordance with the attached contract documents.

ALL WORK

Bid dollar amount to accomplish ALL WORK LUMP SUM required to fully complete the project in accordance with the Contract Documents,

for the sum of ($_____)

Attached supplementary unit prices for reference and informational purposes only. Actual unit prices to be provided by contractor.

ADDENDA

The following addenda have been received and are included in this bid:

Addenda No_____ Date_____

Addenda No _____ Date_____

Addenda No_____ Date_____

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

Minority Business Enterprise (MBE) ☐
Disabled Veteran-Owned Business (DVB) ☐

WisBuild™ Data Information System Contact Instructions:
(For use by DFD to offer contract and activate WisBuild™ accounts to the successful bidders)

Email address:_____

Contact name:_____

Telephone Number:_____

FAX Number: _____

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

Bid Submitted by the following Authorized Agent:

Printed Name _____

Signature _____

Date _____ Title _____

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION C: GPC BID BOND

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4190 (C01/14)
S. 16.855(2)(B)1. WISCONSIN STATUTES

Mailing Address: Post Office Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *FAX*: 608 / 267-2710
http://www.doa.state.wi.us/dfd

GENERAL PRIME CONTRACTOR (GPC) BID BOND

KNOW ALL PEOPLE BY THESE PRESENTS, that _____

(a corporation of the State of _____) (individual), (partnership) (hereinafter referred to as the "Principal"), and _____, a corporation of the State of _____

Name of Surety

(thereinafter referred to as the "Surety"), are held and firmly bound unto the State of Wisconsin, for Department of Administration, Division of Facilities Development (hereinafter referred to as "DFD"), in the penal sum of ten percent (10%) of the amount of the total bid or bids of the Principal herein accepted by DFD, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, or is about to submit, to the State of Wisconsin a certain bid, including the related combined bids attached hereto and hereby made a part hereof, to enter into a Contract in writing for _____

Type of Work

for the _____

Project

(1) If said bid is rejected by DFD, then this obligation shall be void; or

(2) If said bid is accepted by DFD and the Principal shall execute and deliver a Contract in the form specified by DFD (properly completed in accordance with said bid) and shall furnish a separate 100% performance bond for the Principal's faithful performance of said Contract, and a 100% payment bond for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void; or

(3) If said bid is accepted by DFD and the Principal shall fail to execute and deliver the Contract and the performance and payment bonds noted in (2) above, all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to forfeit to DFD the penal sum mentioned above, it being understood that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal sum of this obligation as stated. Notice will be given by DFD to the Principal and Surety of intent to request payment of all or any part of the penal sum, a minimum of 7 calendar days before making demand of payment. Payment of the penal sum by the Surety and its bond shall be received by DFD within 72 hours following demand by DFD.

The Surety, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which DFD may accept such bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year set forth below.

SEAL: _____ _____

Principal Date

By: _____

SEAL: _____ _____

Name of Surety Date

By: _____

NOTE TO SURETY AND PRINCIPAL: The bid submitted, which this bond guarantees, may be rejected if the following instrument is not attached to this bond: Power of Attorney showing that the agent of Surety is currently authorized to execute bonds on behalf of the Surety, and in the amounts referenced above.

SECTION D: DESIGNATION OF CONFIDENTIAL/PROPRIETARY INFORMATION

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-3027N (R10/12)
s. 19.36(3) Wisconsin Statutes

Mailing Address: **Post Office Box 7866, Madison, WI 53707-7866**
Street Address: **101 E. Wilson Street, 7th Floor, Madison, WI 53703**
Phone: **608 / 266-2731**; *FAX:* **608 / 267-2710**
http://www.doa.state.wi.us/dfd

DESIGNATION OF CONFIDENTIAL AND PROPRIETARY INFORMATION

The attached material submitted in response to Bid/Proposal #_____ includes proprietary and confidential information which qualifies as a trade secret, as provided in s. 19.36(5), Wis. Stats., or is otherwise material that can be kept confidential under the Wisconsin Open Records Law. As such, we ask that certain pages, as indicated below, of this bid/proposal response be treated as confidential material and not be released without our written approval.

Prices always become public information when bids/proposals are opened, and therefore cannot be kept confidential.

Other information cannot be kept confidential unless it is a trade secret. Trade secret is defined in s. 134.90(1)(c), Wis. Stats. as follows: "Trade secret" means information, including a formula, pattern, compilation, program, device, method, technique or process to which all of the following apply:

1. The information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.
2. The information is the subject of efforts to maintain its secrecy that are reasonable under the circumstances.

We request that the following pages not be released

Section	Page #	Topic

IN THE EVENT THE DESIGNATION OF CONFIDENTIALITY OF THIS INFORMATION IS CHALLENGED, THE UNDERSIGNED HEREBY AGREES TO PROVIDE LEGAL COUNSEL OR OTHER NECESSARY ASSISTANCE TO DEFEND THE DESIGNATION OF CONFIDENTIALITY.

Failure to include this form in the bid/proposal response may mean that all information provided as part of the bid/proposal response will be open to examination and copying. The state considers other markings of confidential in the bid/proposal document to be insufficient. The undersigned agrees to hold the state harmless for any damages arising out of the release of any materials unless they are specifically identified above.

_____
Name - Authorized Representative

_____
Signature - Authorized Representative

_____
Company Name

_____
Date

This form can be made available in accessible formats upon request to qualified individuals with disabilities.

SECTION E: AFFADAVIT OF COMPLIANCE

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4266 (R10/2012)
S. 16.765, WIS. STATS.

Mailing Address: P. O. Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *FAX:* 608 / 267-2710
http://www.doa.state.wi.us/dfd

Form A — Affidavit of Compliance
Minority Business Enterprise (MBE) / Disabled Veteran-Owned Business (DVB) Provisions

Project Title _____

Project Location _____ Project No. _____

The State of Wisconsin has an active Diversity Business Initiative. The purpose of this initiative, in the interest of fairness and equity, is to encourage increased voluntary expenditure of State construction dollars by prime contractors under subcontracts with MBE / DVB firms. **Please refer to the checklist on page 2 of this form which is provided to assist you in this effort.**

To that end, the bidder's commitment for MBE participation on this project is _____% and DVB participation is _____%.

The State of Wisconsin, Department of Administration, Division of Facilities Development reserves the right to reject and disqualify any bidder who does not include this completed form and who fails to comply with the State's bid requirements as outlined in the bid specifications.

I, the apparent low bidder, acknowledge, understand and agree to comply with my commitment for MBE/DVB participation on this contract including submission of all information required.

I attest that, to the best of my knowledge, all of the above information is true and correct.

Dated (mm/dd/ccyy) _____ _____
Authorized Signature

_____
Printed Name

_____
Title

_____
Company Name

_____
Telephone Number

State of _____

County of _____

On this _____ day of _____, 20 _____, I confirm that _____
Bidder's Name

came before me and signed the document for the purposes stated.

I witness, and set my hand and official stamp or seal.

_____
Notary Public

_____ County, State of _____

My Commission expires _____, 20 _____

This form can be made available in alternate formats to individuals with disabilities upon request.

"Good Faith Effort" To Obtain Minority Business Enterprise / Disabled Veteran-Owned Business Participation

All "Yes" boxes must be checked to ensure that a "Good Faith Effort" has been made to obtain MBE participation.

- Have you checked the State of Wis. Minority Business/Disabled Veteran-Owned Business directories? http://www.doa.wi.gov ☐ Yes ☐ No

- Have you made an early (prior to bidding) contact with the Supplier Diversity Program office to solicit their assistance in getting MBE/DVB participation on the project? Tel. (608) 267-7806; Fax (608) 267-0600; email godwin.amegashie@wisconsin.gov . ☐ Yes ☐ No

- Have you provided MBE/DVB firms adequate project information about plans, specifications and requirements pertaining to their work? ☐ Yes ☐ No

- Have you communicated with any MBE/DVB that performs the type of services needed for the project and was there any follow-up? ☐ Yes ☐ No

- Was MBE/DVB participation advertised (newspaper, radio, etc.) for this project? (You may be asked to submit evidence.) ☐ Yes ☐ No

- Did you contact any MBE/DVB trade associations to assist in locating MBE/DVBs or have you made contact with any MBEs/DVBs that may not yet be certified by the State? (You may be asked to verify.) ☐ Yes ☐ No

- Have you determined if there are other possible opportunities for MBE/DVB participation such as suppliers, haulers, etc. or using a group of MBEs/DVBs jointly? ☐ Yes ☐ No

- Have you considered creating a plan of action with the assistance of the Supplier Diversity Program office to ensure that future contracts can have MBE/DVB participation and meet the construction requirements and goals of the State? (These plans may include mentoring, technical support and other innovative opportunities.) ☐ Yes ☐ No

- Did you negotiate in good faith? (You may be asked to verify.) ☐ Yes ☐ No

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION F: REQUEST FOR SUBMITTAL APPROVAL

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4523 (R03/13)

Mailing Address: Post Office Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *FAX*: 608 / 267-2710
http://www.doa.state.wi.us/dfd

REQUEST FOR SUBMITTAL APPROVAL

Project Name _____ DFD Project No. _____

Contractor Name _____ Contractor Phone No. _____

Subcontractor/Supplier Name _____ Specification Section No. _____

a. This Submittal is made under the provisions of the General Conditions of the Contract Documents. The Contractor makes an express warranty to DFD, by express affirmation, that if installed into or made a part of this project, the work which forms the basis of this Submittal will conform to the design requirements of the Contract Documents.

b. It is the purpose of this Submittal to describe the goods proposed for use by the Contractor and to demonstrate conformance of that description to the Contract Documents.

c. At the time of this submission, the Contractor acknowledges awareness that the purpose of this Submittal is to obtain DFD's authorization to use this Work for purposes of Contract Document compliance by the Contractor, and further, that DFD, in doing so, relies upon the skill, judgment and integrity of the Contractor to insure that this submitted Work complies with requirements of the Contract Documents. Contractor hereby acknowledges that it has, through the use of its own resources, found and selected the Work submitted herewith and that the Work submitted is usable for the purpose of being fit and suitable in the final construction under this Contract Documents.

d. Notwithstanding any provision of this Contract Documents to the contrary, the Contractor hereby notifies DFD that the following features of the Submittal MAY NOT BE IN CONFORMANCE with Contract Document requirements, but nevertheless asks approval thereof. (Contractor shall include brief, specific description of each potential nonconformity. If NONE, Contractor shall so state.)

1.

2.

3.

4.

☐ Check if additional page(s) of potential nonconformity are attached.

Signed _____ _____
Contractor's Authorized Representative Date

Note: Contractors are required to copy and use this form as a cover sheet accompanying all submittals, as described in the General Conditions of the Contract Documents. All pages of submittals are to be consecutively numbered, with a front index page listing the total sequence of pages included.

This form can be made available in accessible formats to qualified individuals with disabilities upon request.

SECTION G: REQUEST FOR SUBCONTRACTOR APPROVAL

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4225 (R10/2012)
S. 16.765, WIS. STATS.

Mailing Address: P. O. Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *Fax:* 608 / 267-2710
http://www.doa.state.wi.us/dfd

Request for Subcontractor Approval

Contractor Name	Project Title
Street Address PO Box	Location
City State ZIP + 4	Project Number
Contact Person Phone Number	DFD Project Manager
Prime Contractor Business Certification ☐ MBE* ☐ DVB*	Contract Amount $

The use of any subcontractors for this project must have prior approval by DFD. ☐ Revised Form _____

☐ **No Subcontractors will be used on this project**

Subcontractor Name / Phone Contact Person / Email	City, State	Type of Work/Service	Estimated Contract Amount	MBE*	DVB*
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐

* MBE Minority Business Enterprise / DVB Disabled Veteran-Owned Business ☐ Additional Pages Attached

Prepared By:

_____ _____
Signature Date (mm/dd/ccyy)

_____
Printed Name

_____
Title

For DFD Use Only

_____ _____
Screened By Date (mm/dd/ccyy)

☐ Subcontractors Approved
☐ Subcontractors Approved Except as Noted

_____ _____
Project Manager Date (mm/dd/ccyy)

This form can be made available in alternate formats to individuals with disabilities upon request.

SECTION H: PERFORMANCE BOND

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4188 (C01/2014)
S. 779.14 WISCONSIN STATUTES

Mailing Address: P. O. Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *Fax:* 608 / 267-2710
http://www.doa.state.wi.us/dfd

PERFORMANCE BOND (100%)

This Surety Bond instrument is hereby executed to guarantee performance of a proposed contract between the herein named Principal and the State, dated _____, 20__, a copy of which is hereto attached and made a part hereof, herein called "Contract," for the construction of

Project Title _____

_____

Project Location _____

Project Number _____ Contract For _____ work.
(All, General, HVAC, Roofing, Etc.)

KNOW ALL PEOPLE BY THESE PRESENTS That _____
(Name of Contractor)

of _____ as contractor, herein called "Principal", and _____
(City and State) (Name of Surety)

_____ of _____ as Surety, herein called
(City and State)

"Surety", are held firmly bound to the State of Wisconsin, for the Department of Administration, Division of Facilities Development herein called "the Owner", in the amount of $_____ for the faithful performance of the Contract as hereinafter set forth. For the payment of which, well and truly to be made, we bind ourselves, our heirs, successors, executors, and administrators, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that if the said bounded Principal shall promptly and faithfully perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of the Contract, in all respects, and within the time prescribed in the Contract (or as such time may be extended as provided in the Contract), and shall indemnify and save harmless the Owner, its officers, employees and agents against any direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by Principal or its subcontractors, and shall in all respects perform the Contract according to law, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

FURTHER, that no change, extension of time, alteration or addition to the work to be performed, or amount of, the Contract shall in any way affect Principal's or Surety's obligations on this bond, and Surety does hereby waive notice of any change, extension of time, alterations or additions thereunder.

PROVIDED, FURTHER, that the undersigned states that pursuant to express authority the corporate seal affixed to this instrument is the seal of this surety company, that the seal was affixed and this instrument was executed for and on behalf of this surety company; that authority has not been revoked by this surety company; that this instrument was executed as the free act and deed of this surety company; that the certificate of authority from the Commissioner of Insurance showing authority of this surety company to transact business in the State of Wisconsin has been obtained and will be provided to the Owner upon request; and further, that this surety bond was written through an agent duly licensed as such on the date thereof.

IN WITNESS WHEREOF, this instrument is executed this the _____ day of _____, 20___.

FOR THE PRINCIPAL
By _____ _____
Corporate Secretary Signature — President, Partner or Individual Signature
(Seal) Witnessed by _____

Witnessed by _____
Two witnesses must attest above signatures.

FOR THE SURETY
By _____ _____
*Corporate Secretary Signature — Attorney in Fact or Authorized Officer
(Seal) _____
Street or PO Box

_____
City, State and Zip Code

_____
Telephone Number

_____
Email Address
(This email address will be used to notify Surety of Project Start Date)

ACKNOWLEDGEMENT
STATE OF _____)
) ss
COUNTY OF _____)

I, _____, a Notary Public of said County and State, do hereby certify that _____

_____, Attorney-in-Fact or authorized officer of _____,
Name of Surety
who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he/she signed, sealed and delivered said instrument for and on behalf of _____, for the uses and purposes therein set forth.
Name of Surety

Given under my hand and notarial seal at my office at _____, _____, in said county,
City State

this _____ day of _____, 20_____, A.D.

_____
Notary Public

My commission expires _____

This Performance Bond is

APPROVED

_____
Administrator, Division of Facilities Development

* If signatory is a corporation, Secretary of corporation shall attest, otherwise leave blank.

SECTION I: PAYMENT BOND

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4187 (C01/2014)
S. 779.14 WISCONSIN STATUTES

Mailing Address: P. O. Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *Fax:* 608 / 267-2710
http://www.doa.state.wi.us/dfd

PAYMENT BOND (100%)

This Surety Bond instrument is hereby executed to guarantee payment of certain amounts related to a proposed contract between the herein named Principal and the State, dated _____, 20__, a copy of which is hereto attached and made a part hereof, hereinafter called "Contract," for the construction of

Project Title _____

_____

Project Location _____

Project Number _____ Contract For _____ work.
All, General, HVAC, Roofing, Etc.

KNOW ALL PEOPLE BY THESE PRESENTS That _____
Name of Contractor

of _____ as contractor, herein called "Principal", and _____
City and State Name of Surety

_____ of _____ as Surety, herein called
City and State

"Surety", are held firmly bound to the State of Wisconsin, for the Department of Administration, Division of Facilities Development herein called "the Owner", in the amount of $_____ for the payment of all claims, costs, charges and other amounts arising in connection with, or related to, the Contract as hereinafter set forth. For the payment of which, well and truly to be made, we bind ourselves, our heirs, successors, executors, and administrators, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that if the said bounded Principal shall promptly make payment pursuant to Section 779.14 of the Wisconsin Statutes to all persons who supply labor and material to said project in the prosecution of the work arising in connection with, or related to, the Contract, and shall pay all other just debts, dues and demands incurred in the performance of the Contract, and shall indemnify and save harmless the Owner, its officers, employees and agents against any direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered as the result of Principal's failure to pay any amounts in connection with, or related to, the Contract, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

FURTHER, labor performed and materials furnished, used or consumed in making the public improvement or performing the public work, include, without limitation because of enumeration, fuel, lumber, building materials, machinery, vehicles, tractors, equipment, fixtures, apparatus, tools, appliances, supplies, electric energy, gasoline, motor oil, lubricating oil, greases, state imposed taxes, premiums for worker's compensation insurance and contributions for unemployment compensation.

FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

FURTHER, that no change, extension of time, alteration or addition to the work to be performed, or amount of, the Contract shall in any way affect Principal's or Surety's obligations on this bond, and Surety does hereby waive notice of any change, extension of time, alterations or additions thereunder.

PROVIDED, FURTHER, that the undersigned states that pursuant to express authority the corporate seal affixed to this instrument is the seal of this surety company, that the seal was affixed and this instrument was executed for and on behalf of this surety company; that authority has not been revoked by this surety company; that this instrument was executed as the free act and deed of this surety company; that the certificate of authority from the Commissioner of Insurance showing authority of this surety company to transact business in the State of Wisconsin has been obtained and will be provided to the Owner upon request; and further, that this surety bond was written through an agent duly licensed as such on the date thereof.

IN WITNESS WHEREOF, this instrument is executed this the _____ day of _____, 20___.

FOR THE PRINCIPAL
By _____ _____
Corporate Secretary Signature — President, Partner or Individual Signature
(Seal) Witnessed by _____

Witnessed by _____
Two witnesses must attest above signatures.

FOR THE SURETY
By _____ _____
*Corporate Secretary Signature — Attorney in Fact or Authorized Officer
(Seal) _____
Street or PO Box

_____
City, State and Zip Code

_____
Telephone Number

_____
Email Address
(This email address will be used to notify Surety of Project Start Date)

ACKNOWLEDGEMENT
STATE OF _____)
) ss
COUNTY OF _____)

I, _____, a Notary Public of said County and State, do hereby certify that _____

_____, Attorney-in-Fact or authorized officer of _____,
Name of Surety
who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he/she signed, sealed and delivered said instrument for and on behalf of _____, for the uses
Name of Surety
and purposes therein set forth.

Given under my hand and notarial seal at my office at _____, _____, in said county,
City State

this _____ day of _____, 20_____, A.D.

_____
Notary Public

My commission expires _____

This Payment Bond is

APPROVED

_____
Administrator, Division of Facilities Development

* If signatory is a corporation, Secretary of corporation shall attest, otherwise leave blank.

SECTION J: CONSTRUCTION CONTRACT

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4504 (R01/14)
s. 16.87 Wisconsin Statutes

Mailing Address: Post Office Box 7866, Madison, WI 53707-7866
Street Address: 101 E. Wilson Street, 7th Floor, Madison, WI 53703
Phone: 608 / 266-2731; *FAX:* 608 / 267-2710
http://www.doa.state.wi.us/dfd

CONSTRUCTION CONTRACT

Date _____

Project No. _____

Contract No._____

THIS AGREEMENT is between the State of Wisconsin by its Department of Administration, represented by its Division of Facilities Development, herein called "DFD", and _____ doing business as _____, of the City of _____and State of _____ hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and arrangements hereinafter mentioned, to be directed by DFD, the CONTRACTOR will commence and complete the construction described as follows:

hereinafter called the "Project", for the sum of _____ Dollars ($_____.00) and all other work in connection therewith, under the terms as stated in the Contract Documents; 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 said Project in accordance with the conditions and prices stated in the Bid Form, Bidding and Contract Requirements, the drawings which include all maps, plats, plans, and other drawings and printed or written explanatory matter thereof, and the technical portion of the specifications therefor; as prepared by _____ herein called the A/E, and as enumerated in the Specification's Table of Contents, all of which are made a part hereof and collectively evidence and constitute the Contract Documents.

The CONTRACTOR hereby agrees to commence work under this Contract on or after a date to be specified in a written "Notice to Proceed" and to complete this work by _____.

DFD agrees to have the CONTRACTOR paid in current funds for the performance of the contract subject to additions and deductions, as provided in the General Conditions of the Contract, and to authorize payments on account thereof as provided in the Article entitled, "Payments to Contractor" of the General Conditions.

DFD has the delegated power and duty pursuant to Sec. l6.85(l), to act on all matters and for all purposes under this Contract; including additions and modifications therein incorporated.

IN WITNESS WHEREOF, DFD and the CONTRACTOR have executed this contract.

CONTRACTOR

(Seal)

Contractor Firm Name
Address
State, City Zip

By _____
Signature Date

_____
Printed Name

_____ _____
Secretary of Corp. Title

_____ _____
Witness Employer Number (FEIN) or Social Security Number

This Contract is not valid or effectual for any purpose until executed by all parties, and no work is authorized until the CONTRACTOR has been given Notice to Proceed by DFD.

APPROVED ***(if Contract is over $150,000)***

_____ _____
Administrator, Division of Facilities Development Date **Governor of Wisconsin Date**

Note: If Contractor is a corporation, Secretary should attest. In accordance with current Federal IRS Regulations, all service provider entities are required to submit either their Employer Number or Social Security Number in order to receive payment for services rendered. The State of Wisconsin requests Tax ID numbers for all entities providing either goods or services, to facilitate approved payments to vendors in accordance with certain State Statutes and/or Administrative Rules.

This form can be made available in accessible formats upon request to qualified individuals with disabilities.

SECTION K: GENERAL CONDITIONS OF THE GPC CONTRACT

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT (DFD)
DOA-4193P (C01/14)

Mailing Address: **Post Office Box 7866, Madison, WI 53707-7866**
Street Address: **101 E. Wilson Street, 7th Floor, Madison, WI 53703**
Phone: **608 / 266-2731**; *FAX:* **608 / 267-2710**
http://www.doa.state.wi.us/dfd

GENERAL CONDITIONS OF THE GENERAL PRIME CONTRACTOR CONTRACT

INDEX

This document can be made available in alternate formats to individuals with disabilities upon request.

General Conditions have not been included with this document. Please find them at the following link:
https://uwmadison.app.box.com/embed/s/0a44gb2j6gwg0nd7timp6ezrctudkeb7?view=list&sortColumn=name&sortDirection=ASC&showItemFeedActions=true&showParentPath=true

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION L: DIVISION 01 – GENERAL REQUIREMENTS

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 00 50 00 - Contracting Forms and Supplements: Forms to be used.

1.03 SCHEDULE OF VALUES

A. Form to be used: AIA G703.

B. Forms filled out by hand will not be accepted.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Contractor standard cost itemization may be used if approved by Architect. Sufficient detail must be provided to verify application for payment.

D. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Form to be used: AIA G702 and G703.

C. Forms filled out by hand will not be accepted.

D. Execute certification by signature of authorized officer.

E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed .

F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

G. Submit three copies of each Application for Payment.

H. When Architect requires substantiating information, submit data justifying dollar amounts in question.

1.05 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

B. For other required changes, the Contractor will issue a document signed by the Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate any change in Contract Sum or Contract Time.
   2. No Change Order will be considered for work that the Owner was not notified of in advance.

C. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.

D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

E. Substantiation of Costs: Provide full information required for evaluation.

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

1. Provide the following data:
    a. Quantities of products, labor, and equipment.
    b. Taxes, insurance, and bonds.
    c. Overhead and profit.
    d. Justification for any change in Contract Time.
    e. Credit for deletions from Contract, similarly documented.
2. Support each claim for additional costs with additional information:
    a. Origin and date of claim.
    b. Dates and times work was performed, and by whom.
    c. Time records and wage rates paid.
    d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

F. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

G. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

H. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
    1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cash allowances.

B. Payment and modification procedures relating to allowances.

1.02 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts .

B. Costs Not Included in Cash Allowances: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.

C. Architect Responsibilities:
   1. Select products in consultation with Owner and transmit decision to Contractor.

D. Contractor Responsibilities:
   1. Assist Architect in selection of products, suppliers, and installers.
   2. Obtain proposals from suppliers and installers and offer recommendations.
   3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
   4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
   5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

1.03 ALLOWANCES SCHEDULE

A. Light Fixtures:
   1. Light Fixtures: Include the stipulated sum of $60,690.00 for purchase and delivery of Light Fixtures. Included in this allowance are upper floor common area light fixtures and dwelling unit light fixtures, including those on private balconies.
   2. Site Light Fixtures shown on the drawings shall be included in the Contract Sum.
   3. Basement fixtures, parking garage lighting, stairway fixtures, emergency egress lighting and exit lighting shall be included in the Contract Sum and are not part of any allowance.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Progress meetings.

B. Construction progress schedule.

C. Submittals for review, information, and project closeout.

D. Component submittal for State review.

E. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Document 00 72 00 - General Conditions: Dates for applications for payment.

B. Section 01 78 00 - Closeout Submittals: Project record documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROGRESS MEETINGS

A. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Contractor's Superintendent.
   5. Major Subcontractors.

C. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems that impede, or will impede, planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Review of off-site fabrication and delivery schedules.
   7. Maintenance of progress schedule.
   8. Corrective measures to regain projected schedules.
   9. Planned progress during succeeding work period.
   10. Coordination of projected progress.
   11. Maintenance of quality and work standards.
   12. Effect of proposed changes on progress schedule and coordination.
   13. Other business relating to Work.

D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.02 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major contractors have reviewed and accepted proposed schedule.

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

3.03 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.04 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. LEED or Green Built submittals and reports.
   3. Certificates.
   4. Test reports.
   5. Inspection reports.
   6. Manufacturer's instructions.
   7. Manufacturer's field reports.
   8. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.05 COMPONENT SUBMITTAL FOR STATE REVIEW

A. When specified in individual sections, submit component designs for State review.

B. Submittals shall be coordinated for any revisions made during shop drawing review and bear the original seal of the responsible design professional.

C. Submit one complete printed copy which will be submitted and an electronic (pdf) copy which will be retained by the architect.

D. Printed copy shall be collated, neatly bound and include layout drawings if applicable.

E. Submittal shall be made in a timely manner. Extra fees for late submittals shall be borne by the Contractor.

3.06 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

C. Submit for Owner's benefit during and after project completion.

3.07 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

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B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.

3.08 SUBMITTAL PROCEDURES

A. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
   2. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.

B. Transmit each submittal with a copy of approved submittal form.

C. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

D. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

E. Mark submittal to clearly identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project. **Submittals that do not clearly identify proposed product will be rejected.**

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

G. Schedule submittals to expedite the Project, and coordinate submission of related items.

H. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

J. Provide space for Contractor and Architect review stamps.

K. When revised for resubmission, identify all changes made since previous submission.

L. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

M. **Submittals not requested will not be recognized, processed or returned.**

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Testing and inspection agencies and services.

C. Control of installation.

D. Manufacturers' field services.

E. Defect Assessment.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.03 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

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Madison, WI 53706

E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.04 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. Contractor Employed Agency:
   1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3740, and _____.
   2. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
   3. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

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

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

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

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TESTING AND INSPECTION

A. See individual specification sections for testing required.

B. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:

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1415 Engineering Dr.
Madison, WI 53706

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
    a. To provide access to Work to be tested/inspected.
    b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
    c. To facilitate tests/inspections.
    d. To provide storage and curing of test samples.
4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

G. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Payment for re testing will be charged to the Contractor by deducting testing charges from the Contract Price.

3.03 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.04 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary telecommunications services.

B. Temporary sanitary facilities.

C. Temporary Controls: Barriers, enclosures, and fencing.

D. Security requirements.

E. Vehicular access and parking.

F. Waste removal facilities and services.

G. Field offices.

1.02 RELATED REQUIREMENTS

A. Section 01 51 00 - Temporary Utilities.

1.03 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:
   1. Personal computer dedicated to project telecommunications, with necessary software and laser printer.
   2. Internet Connections: Minimum of one; DSL modem or faster.
   3. Email: Account/address reserved for project use.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.05 BARRIERS

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

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way .

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

A. Construction: Commercial grade chain link fence.

B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.07 EXTERIOR ENCLOSURES

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

1.08 SECURITY

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

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Madison, WI 53706

1.09 VEHICULAR ACCESS AND PARKING

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

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

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

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.10 WASTE REMOVAL

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

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

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

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

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

1.11 FIELD OFFICES

A. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

B. Locate offices a minimum distance of 30 feet from existing and new structures.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition.

D. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Electricity, lighting, heat, ventilation, and water.

1.02 RELATED REQUIREMENTS

A. Section 01 50 00 - Temporary Facilities and Controls:
   1. Temporary telecommunications services for administrative purposes.
   2. Temporary sanitary facilities required by law.

1.03 TEMPORARY ELECTRICITY

A. Cost: By Contractor.

B. Provide power service required from utility source.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

D. Provide main service disconnect and over-current protection at convenient location and meter.

E. Permanent convenience receptacles may be utilized during construction.

F. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft .

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lighting and provide routine repairs.

1.05 TEMPORARY HEATING

A. Cost of Energy: By Contractor.

B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.
   1. Use exterior combustion type heaters with remote indoor heat exchangers to limit amount of moisture introduced to building interior.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.06 TEMPORARY VENTILATION

A. Existing ventilation equipment may not be used.

1.07 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Contractor.

B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 10 00 - SITE CLEARING: Limits on clearing; disposition of vegetative clearing debris.

B. Section 32 11 23 - Aggregate Base Courses: Temporary and permanent roadways.

C. Section 32 92 19 - Seeding: Permanent turf for erosion control.

D. Section 32 92 23 - Sodding: Permanent turf for erosion control.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mulch: Use one of the following:
   1. Straw or hay.
   2. Wood waste, chips, or bark.
   3. Erosion control matting or netting.
   4. Cutback asphalt.
   5. Polyethylene film, where specifically indicated only.

B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C. Bales: Air dry, rectangular straw bales.
   1. Cross Section: 14 by 18 inches, minimum.
   2. Bindings: Wire or string, around long dimension.

D. Bale Stakes: One of the following, minimum 3 feet long:
   1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot.
   2. Wood, 2 by 2 inches in cross section.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum properties:
   1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
   2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491.
   3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
   4. Tensile Strength: 100 lb-f, minimum, in cross-machine direction; 124 lb-f, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
   5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
   6. Tear Strength: 55 lb-f, minimum, when tested in accordance with ASTM D4533.
   7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.

F. Silt Fence Posts: One of the following, minimum 3 feet long:
   1. Hardwood, 2 by 2 inches in cross section.

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1415 Engineering Dr.
Madison, WI 53706

G. Gravel: See Section 32 11 23 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet, minimum.
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.

C. Linear Sediment Barriers: Made of silt fences.
   1. Provide linear sediment barriers:
      a. As indicated on Erosion Control Plan.
   2. Space sediment barriers with the following maximum slope length upslope from barrier:
      a. Slope of Less Than 2 Percent: 100 feet..
      b. Slope Between 2 and 5 Percent: 75 feet.
      c. Slope Between 5 and 10 Percent: 50 feet.
      d. Slope Between 10 and 20 Percent: 25 feet.
      e. Slope Over 20 Percent: 15 feet.

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
   1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
   2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
   1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.
   2. Asphalt: Use only where no traffic, either vehicular or pedestrian, is anticipated.

G. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Install erosion control measures indicated on erosion control plan and as required to comply with codes and ordinances of the municipality having jurisdiction.

B. Traffic-Bearing Aggregate Surface:
   1. Excavate minimum of 6 inches.
   2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
   3. Place and compact at least 6 inches of 1.5 to 3.5 inch diameter stone.

C. Silt Fences:
   1. Store and handle fabric in accordance with ASTM D4873.
   2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
   3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
5. Install with top of fabric at nominal height and embedment as specified.
6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
7. Fasten fabric to wood posts using one of the following:
   a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gage, 0.083 inch shank diameter.
   b. Five staples per post with at least 17 gage, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.
8. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

D. Straw Bale Rows:
1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
2. Install bales so that bindings are not in contact with the ground.
3. Embed bales at least 4 inches in the ground.
4. Anchor bales with at least two stakes per bale, driven at least 18 inches into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
5. Fill gaps between ends of bales with loose straw wedged tightly.
6. Place soil excavated for trench against bales on the upslope side of the row, compacted.

E. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Straw Bale Rows:
1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
2. Remove silt deposits that exceed one-half of the height of the bales.
3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

E. Place sediment in appropriate locations on site; do not remove from site.

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Madison, WI 53706

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

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SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations and procedures.

E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.

B. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting packaging and substitutions.

1.03 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. DO NOT USE products having any of the following characteristics:
   1. Made of wood from newly cut old growth timber.

C. Where all other criteria are met, Contractor shall give preference to products that:
   1. If used on interior, have lower emissions, as defined in Section 01 61 16.
   2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
   3. Are extracted, harvested, and/or manufactured closer to the location of the project.
   4. Have longer documented life span under normal use.
   5. Result in less construction waste.
   6. Are made of vegetable materials that are rapidly renewable.
   7. Have a published GreenScreen Chemical Hazard Analysis.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

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Madison, WI 53706

2.03 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

B. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

C. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SECTION 01 61 16
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

1.02 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
   1. Flooring.
   2. Composite wood.

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings.
   2. Interior adhesives and sealants, including flooring adhesives.
   3. Other products when specifically stated in the specifications.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2013).

C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.

D. CRI (GLP) - Green Label Plus Testing Program - Certified Products; www.carpet-rug.org; current edition.

E. GreenSeal GS-36 - Commercial Adhesives; 2011.

F. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.

G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

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1.05 QUALITY ASSURANCE

A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.
      b. Published product data showing compliance with requirements.
      c. Certification by manufacturer that product complies with requirements.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Aerosol Adhesives: GreenSeal GS-36.
   3. Joint Sealants: SCAQMD 1168 Rule.
   4. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

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SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Pre-installation meetings.

C. Cutting and patching.

D. Cleaning and protection.

E. Starting of systems and equipment.

F. Demonstration and instruction of Owner personnel.

G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
   1. Install sumps, pumps and piping required to lower water table a minimum of 2 feet below lowest footing elevation.
   2. Maintain draw-down of water table until permanent dewatering system is operational.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. Ventilate and dehumidify enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases, and prevent the growth of mold.

D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

E. Erosion and Sediment Control: Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation; comply with State and local regulations.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

F. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

G. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.03 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and

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Madison, WI 53706

conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

K. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

L. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

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Madison, WI 53706

3.06 PROGRESS CLEANING

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

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel in accordance with manufacturers' instructions.

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

3.09 DEMONSTRATION AND INSTRUCTION

A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

3.10 ADJUSTING

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

3.11 FINAL CLEANING

A. Execute final cleaning prior to Substantial Completion.

B. Use cleaning materials that are nonhazardous.

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1415 Engineering Dr.
Madison, WI 53706

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems, and area wells.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

END OF SECTION

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SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.

D. Individual Product Sections: Specific requirements for operation and maintenance data.

E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings : Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.

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1415 Engineering Dr.
Madison, WI 53706

2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Include sequence of operation by controls manufacturer.

H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

I. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

D. Prepare data in the form of an instructional manual.

E. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants,Contractorand subcontractors, with names of responsible parties.

H. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

I. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

L. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
   1. Operating instructions.
   2. Maintenance instructions for equipment and systems.
   3. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

TECHNICAL SPECIFICATIONS

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

TABLE OF CONTENTS

07 42 13	METAL WALL PANELS
07 46 10	STRAND SUBSTRATE SIDING
07 46 30	ALUMINUM SIDING, SOFFIT, AND TRIM
07 46 46	FIBER CEMENT SIDING
07 53 23	EPDM THERMOSET SINGLE-PLY ROOFING
07 54 00	THERMOPLASTIC MEMBRANE (PVC) ROOFING
07 62 00	SHEET METAL FLASHING AND TRIM
07 72 00	ROOF ACCESSORIES
07 84 00	FIRESTOPPING
07 90 05	JOINT SEALERS

DIVISION 08 - OPENINGS

08 11 13	HOLLOW METAL DOORS AND FRAMES
08 14 16	FLUSH WOOD DOORS
08 31 00	ACCESS DOORS AND PANELS
08 36 13	SECTIONAL DOORS
08 43 13	ALUMINUM-FRAMED STOREFRONTS
08 53 13	VINYL WINDOWS
08 71 00	DOOR HARDWARE
08 74 60	LOW-ENERGY DOOR OPERATORS
08 80 00	GLAZING
08 83 00	MIRRORS

DIVISION 09 - FINISHES

09 21 16	GYPSUM BOARD ASSEMBLIES
09 30 00	TILING
09 65 00	RESILIENT FLOORING
09 65 66	RESILIENT ATHLETIC FLOORING
09 68 00	CARPETING
09 90 00	PAINTING AND COATING

DIVISION 10 - SPECIALTIES

10 14 24	SIGNAGE
10 26 01	WALL AND CORNER GUARDS
10 28 00	TOILET, BATH, AND LAUNDRY ACCESSORIES
10 44 00	FIRE PROTECTION SPECIALTIES
10 55 23	MAIL BOXES
10 56 10	STORAGE SHELVING

DIVISION 11 - EQUIPMENT

11 31 00	RESIDENTIAL APPLIANCES

DIVISION 12 - FURNISHINGS

12 21 13	HORIZONTAL LOUVER BLINDS
12 21 16	VERTICAL LOUVER BLINDS
12 35 30	RESIDENTIAL CASEWORK
12 36 00	COUNTERTOPS
12 93 13	BICYCLE RACKS

DIVISION 14 - CONVEYING EQUIPMENT

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

14 21 00	ELECTRIC TRACTION ELEVATORS

DIVISION 21 - FIRE SUPPRESSION

21 00 00	FIRE SUPPRESSION SYSTEMS

DIVISION 22 - PLUMBING

22 00 00	PLUMBING

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

23 00 00	HVAC

DIVISION 26 - ELECTRICAL

26 00 00	ELECTRICAL

DIVISION 31 - EARTHWORK

31 22 00	GRADING
31 23 16	EXCAVATION
31 23 23	FILL

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 12 16	ASPHALT PAVING
32 13 13	CONCRETE PAVING
32 17 23.13	PAINTED PAVEMENT MARKINGS
32 32 23	SEGMENTAL RETAINING WALLS
32 92 19	SEEDING
32 92 23	SODDING
32 93 00	PLANTS

DIVISION 33 - UTILITIES

33 14 16	SITE WATER UTILITY DISTRIBUTION PIPING
33 31 13	SITE SANITARY SEWERAGE GRAVITY PIPING
33 41 00	SUBDRAINAGE
33 42 11	STORMWATER GRAVITY PIPING

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.

B. Floors and slabs on grade.

C. Concrete foundation walls.

D. Concrete topping on precast plank - non-structural.

E. Concrete reinforcement.

F. Joint devices associated with concrete work.

G. Miscellaneous concrete elements, including light pole bases and concrete fill for steel pan stair treads.

H. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - Thermal Insulation: High density rigid insulation in concrete split slabs.

B. Section 07 92 00 - Joint Sealants: Products and installation for sealants for saw cut joints and isolation joints in slabs.

C. Section 32 13 13 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).

C. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).

D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.

F. ACI 305R - Hot Weather Concreting; 2010.

G. ACI 306R - Cold Weather Concreting; 2010.

H. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.

J. ACI 347R - Guide to Formwork for Concrete; 2014.

K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.

L. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.

M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.

N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.

O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.

P. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.

Q. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.

R. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.

S. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.

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Madison, WI 53706

T. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.

U. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2013).

V. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

C. Mix Design: Submit proposed concrete mix design.

D. Samples for Pigment Color Selection: Submit manufacturer's complete sample chip set, including pigment number and required dosage rate for each color.

E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
   2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
      a. Low toxicity form release.
      b. Super-Strip 65 Form Releaser by Cresset Chemical Company.
      c. Substitutions: See Section 01 60 00 - Product Requirements.
   3. Form Ties: Snap type that will leave no metal within 1/4 inches of concrete surface.

2.02 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Type: Deformed billet-steel bars.
   2. Finish: Unfinished, unless otherwise indicated.

B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
   1. Form: Coiled Rolls.
   2. WWR Style: 6x6 W1.4xW1.4.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

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Madison, WI 53706

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.

B. Fine and Coarse Aggregates: ASTM C 33.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: Clean and not detrimental to concrete.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
   1. Manufacturers:
      a. "Daracem 100" by Grace Construction Products.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
   1. Manufacturers:
      a. "Daracem 19" by Grace Construction Products.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Water Reducing Admixture: ASTM C494/C494M Type A.
   1. Manufacturers:
      a. "KB-1000" by General Resource Technology.
      b. "WRDA" by Grace Construction Materails.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Underslab Vapor Retarder:
   1. Parking Garage Slabs: 6 mil thick clear polyethylene film, type recommended for below grade application.

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
   1. Material: ASTM D1752 sponge rubber (Type I).
   2. Manufacturers:
      a. W.R. Meadows, Inc; Deck-O-Foam Joint Filler with pre-scored top strip: www.wrmeadows.com/sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Slab Construction Joint Devices: Positive load transfer slip dowel.
   1. Provide plastic dowel sleeve for attachment to edge form, space at 24 inches on center, unless noted otherwise on Drawings.
   2. Size: Sleeve length 9 inches long to accept #4 rebar x 18 inches long.
   3. Manufacturers:
      a. Sika Greenstreak "Speed Dowel".
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 CURING MATERIALS

A. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
   1. Application: Use at uncolored concrete and concrete in unfinished areas.
   2. Solids by Mass: 25 percent, minimum.
   3. Manufacturers:
      a. SpecChem, LLC; Cure and Seal WB 25: www.specchemllc.com.

b. W.R. Meadows, Inc; VOCOMP-25: www.wrmeadows.com/sle.
c. W.R. Meadows, Inc; CS-309-25 OTC: www.wrmeadows.com/sle.
d. TK Products; AS-1 Achro Seal 1315.
e. Substitutions: See Section 01 60 00 - Product Requirements.

B. Curing and Sealing Compound, High Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
1. Application: Use at colored concrete and concrete within finished areas (mechanical spaces, etc.).
2. Vehicle: Solvent-based.
3. Solids by Mass: 25 percent, minimum.
4. Manufacturers:
a. SpecChem, LLC; Cure and Seal WB 30: www.specchemllc.com/sle.
b. W.R. Meadows, Inc; VOCOMP-30: www.wrmeadows.com/sle.
c. W.R. Meadows, Inc; Decra-Seal: www.wrmeadows.com/sle.
d. W.R. Meadows, Inc; Decra-Seal OTC: www.wrmeadows.com/sle.

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.

B. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

C. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
2. Fly Ash Content: Minimum 15 percent, maximum 20 percent of cementitious materials by weight.

2.09 CONCRETE MIX DESIGN - TOPPING SLABS

A. Normal Weight Concrete: Comply with ACI 211.1 recommendations.
1. Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 4,000 psi.
2. Total Air Content: 6 percent, determined in accordance with ASTM C 173/C 173M.
3. Maximum Slump: 3 inches. 6 inches max. with addition of superplasticizer.
4. Maximum Aggregate Size: 1/2 inch.

2.10 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

B. Coordinate with precast drawings.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
1. Use latex bonding agent only for non-load-bearing applications.

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Madison, WI 53706

E. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends. Repair damaged vapor retarder before covering.
   1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as shown on the drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire. Locate in middle third of slab thickness.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

D. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 12 inches and seal watertight.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

D. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

G. Protect and clean off adjacent materials from concrete placement.

H. Wash out concrete trucks in excavation, pavement or sub-base areas.

I. Remove excess concrete spoils from site.

3.05 SLAB JOINTING

A. Locate joints as indicated on the drawings or as required at maximum 200 sq. ft.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
   1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

E. Construction Joints: Where not otherwise indicated, use slip dowels.

3.06 FLOOR TOPPINGS

A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.

B. Place required dividers, edge strips, and other items to be cast in.

C. Place welded wire reinforcement.

D. Place concrete floor toppings to required lines and levels.
   1. Place topping in checkerboard panels not to exceed 20 feet in either direction.

E. Screed toppings level, maintaining surface flatness of maximum 1:1000.

3.07 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch in 10 feet.
   2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
   3. Under Carpeting: 1/4 inch in 10 feet.

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.08 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height.

D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
   2. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.09 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than 7 days.

C. Surfaces Not in Contact with Forms:
   1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
   2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   3. Final Curing: Begin after initial curing but before surface is dry.
      a. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.10 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.11 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Concrete Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

END OF SECTION

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SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for building volume below grade, slabs-on-grade, paving, and utilities within the building.

B. Trenching for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - Execution and Closeout Requirements: General requirements for dewatering of excavations and water control.

B. Section 31 22 00 - Grading: Soil removal from surface of site.

C. Section 31 22 00 - Grading: Grading.

D. Section 31 23 23 - Fill: Fill materials, filling, and compacting.

PART 3 EXECUTION

2.01 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 22 00 for additional requirements.

2.02 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

D. Do not interfere with 45 degree bearing splay of foundations.

E. Cut utility trenches wide enough to allow inspection of installed utilities.

F. Hand trim excavations. Remove loose matter.

G. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 23 23.

H. Grade top perimeter of excavation to prevent surface water from draining into excavation.

I. Remove excavated material that is unsuitable for re-use from site.

J. Remove excess excavated material from site.

2.03 PROTECTION

A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

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SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aggregate base course.

B. Double course bituminous concrete paving.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Grading: Preparation of site for paving and base.

B. Section 31 23 23 - Fill: Compacted subgrade for paving.

1.03 REFERENCE STANDARDS

A. Wisconsin DOT Standard Specifications for Highway and Structure Construction, latest addition, with supplementals; excluding limitations in section 460.3.2 restricting layer thickness by aggregate size. Hereinafter designated "Standard Specifications".

B. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.

C. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction; 2009a.

1.04 FIELD CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.01 MATERIALS

A. Asphalt Cement: Standard Specification Type PG 58-28.

B. Aggregate for Base Course : 31.5 mm Dense Graded Base, in accordance with Sections 301 and 305 of the Standard Specifications ; free of shale, clay, friable material and debris.

1. Graded in accordance with ASTM C136/C136M, within the following limits:
    a. 1 1/4 inch sieve: 95-100 percent passing.
    b. 3/4 inch sieve: 70 to 93 percent passing.
    c. 3/8 inch sieve: 42 to 80 percent passing.
    d. No. 4 sieve: 25 to 63 percent passing.
    e. No. 10 sieve: 16 to 48 percent passing.
    f. No. 40: 8 to 28 percent passing.
    g. No. 200: 4 to 10 percent passing.

C. Aggregate for Binder Course: 12.5 mm, in accordance with Section 460, Table 460-1 of the Standard Specifications.

D. Aggregate for Wearing Course: 9.5 mm, in accordance with Section 460, Table 460-1 of the Standard Specifications.

2.02 ASPHALT PAVING MIXES AND MIX DESIGN

A. Use dry material to avoid foaming. Mix uniformly.

B. Mixture type E-0.3 bituminous pavement, Section 460, Table 460-2 of the Standard Specifications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.

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Madison, WI 53706

B. Proof-roll subgrade with loaded tri-axle dump truck, scraper or front-end loader.

C. Correct unsuitable subgrade with 3" Structural Fill, as specified in Section 31 23 23 - Fill.

D. Verify gradients and elevations of base are correct.

3.02 BASE COURSE

A. Place and compact base course.

3.03 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Place asphalt binder course within 24 hours of applying primer or tack coat.

B. Place binder course to thickness identified in schedule at end of section.

C. Place wearing course within two hours of placing and compacting binder course.

D. Place wearing course to thickness identified in schedule at end of section.

E. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

F. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.

C. Variation from True Elevation: Within 1/2 inch.

3.05 SCHEDULE

A. Paving: Base Course: 10" Binder Course: 2" Surface Course: 1.5"

END OF SECTION

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Section 33 42 11
STORMWATER GRAVITY PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Storm drainage piping, fittings, and accessories.

B. Connection of drainage system to municipal sewers.

C. Catch basins, Paved area drainage, and Site surface drainage.

1.02 RELATED REQUIREMENTS

A. Section 31 23 16 - Excavation: Excavating of trenches.

B. Section 31 23 23 - Fill: Bedding and backfilling.

1.03 REFERENCE STANDARDS

A. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe; 2015.

B. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe (Metric); 2015.

C. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe; 2015.

D. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe (Metric); 2014.

E. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets; 2012.

F. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric); 2011.

G. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2015.

H. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2014.

I. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2015.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A. Concrete Pipe: Nonreinforced, ASTM C14 (ASTM C14M), Class 1; inside nominal diameter of (as shown on drawings) inches, bell and spigot end joints.

B. Concrete Pipe Joint Devices: ASTM C443 (ASTM C443M) rubber compression gasket joint.

C. Concrete Pipe: Reinforced, ASTM C76 (ASTM C76M), Class II with Wall type A; mesh reinforcement; inside nominal diameter of (as shown on drawings) inches, bell and spigot end joints.

D. Reinforced Concrete Pipe Joint Device: ASTM C443 (ASTM C443M) rubber compression gasket joint.

E. Plastic Pipe: ASTM D 3034, Type PSM, Poly(Vinyl Chloride) (PVC) material, bell and spigot style solvent sealed joint end.

F. Plastic Pipe: ASTM D1785, Schedule 40, Poly Vinyl Chloride (PVC) material; inside nominal diameter of (as shown on drawings) inches, bell and spigot style solvent sealed joint end.

2.02 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

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2.03 CATCH BASIN, TRENCH DRAIN, CLEANOUT, AND AREA DRAIN COMPONENTS

A. Lids and Drain Covers: Cast iron, hinged to cast iron frame.
   1. Catch Basin:
      a. As shown on drawings.
   2. Area Drain:
      a. As shown on drawings.

B. Trench Drain System: Trench drain system assembled from factory fabricated, polymer concrete castings in standard lengths and variable depths, with integral joint flanges and integral grating support rails; includes joint gaskets and grating.
   1. Trench Width: (As shown on Drawings) inches.

C. Shaft Construction and Concentric Cone Top Section: Reinforced precast concrete pipe sections, lipped male/female dry joints, nominal shaft diameter of (as detailed) inches.

2.04 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Section 31 23 23.

B. Cover: As specified in Section 31 23 23.

PART 3 EXECUTION

3.01 TRENCHING

A. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
   1. Plastic Pipe: Also comply with ASTM D2321.

B. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

C. Connect to building storm drainage system, foundation drainage system, and utility/municipal sewer system.

D. Make connections through walls through sleeved openings, where provided.

3.03 INSTALLATION - CATCH BASINS, TRENCH DRAINS AND CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

C. Establish elevations and pipe inverts for inlets and outlets as indicated.

D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

E. Prefabricated trench drains:
   1. Excavate; prepare substrate and supports according to the manufacturer's printed installation instructions.
   2. Install prefabricated trench drain system according to the manufacturer's printed installation instructions.
   3. Expansion, Construction, and Control Joints: Do not locate trench drain system on an expansion, construction or control joint in concrete or pavement. Where concrete or pavement joints running transverse to direction of flow cross the trench drain system, locate concrete or pavement joints and trench drain system joints so that both coincide.
   4. Concrete Trench Support: 3000 pounds per square inch compressive strength, minimum.
      a. Provide support on all sides of trench in minimum thickness recommended by trench drain system manufacturer.
      b. Screed and finish top edge of concrete flush with top surface of trench drain system.

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c. Do not use secondary edge finishing tools.

END OF SECTION

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OPINION OF PROBABLE COST

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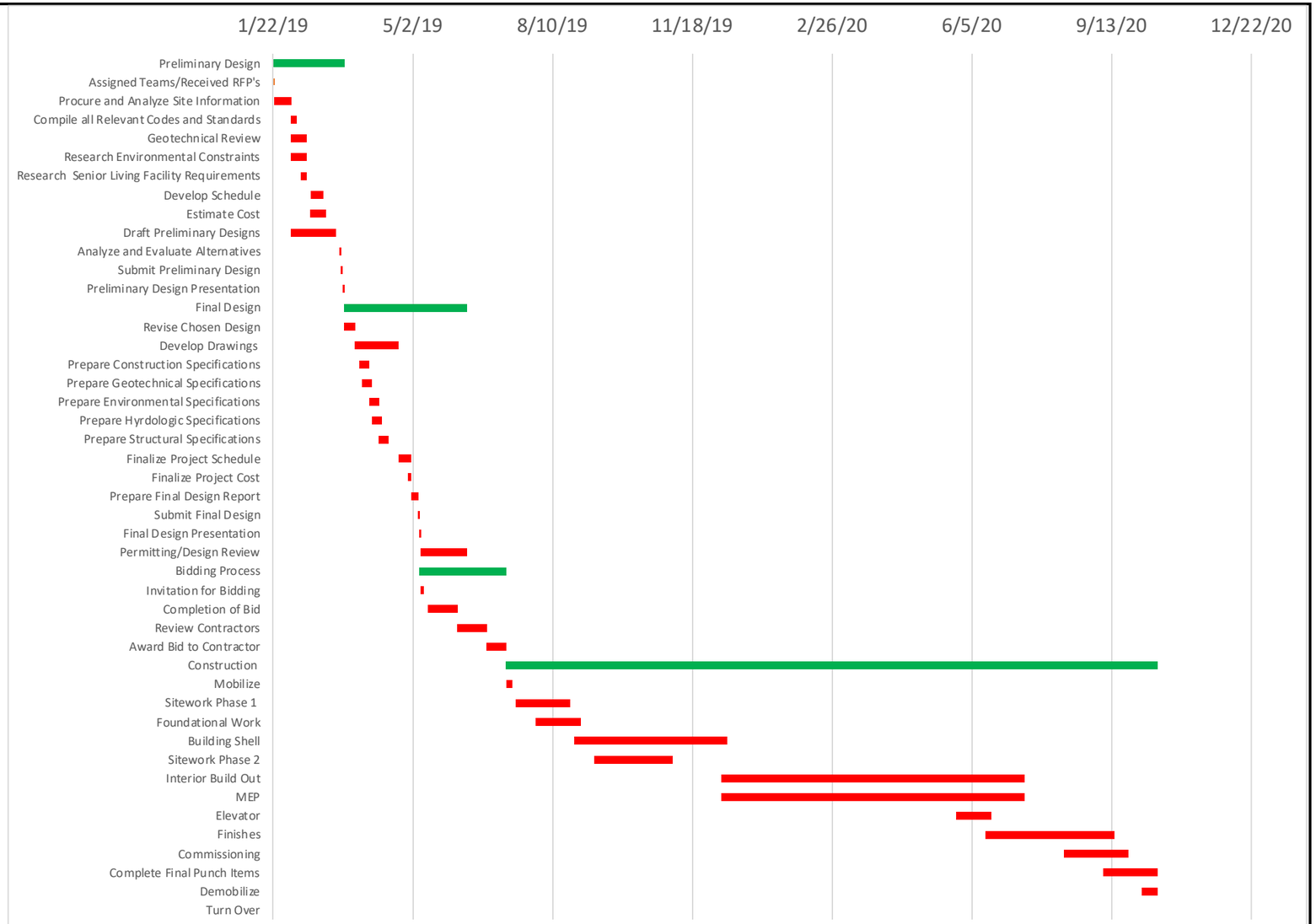
Workscope		Element	Estimated Quantity	Unit	Unit Rate	Bid Amount	
Substructure	**Foundations**	**Standard Foundations**					
		Strip Footing, concrete reinforced		LF			
		Spread Footings, 3000psi concrete		Each			
		Slab On Grade					
		Slab on grade, 4" thick, reinforced		SF			
	Basement Construction	**Basement Walls**					
		Wall, CIP, 10' tall, 8" thick		LF			
Shell	**Superstructure**	**Floor Conctruction**					
		CIP Column, 10' tall, 100 kip		VLF			
		Wood Beam & Joist Floor, 144 psf total load		SF			
		Fireproofing, gypsum board		SF			
		Roof Construction					
		Wood roof truss		SF			
	Exterior Enclosure	**Exterior Walls**					
		Brick Veneer w/ wood stud backup		SF			
		Wood Siding w/ 2"x4" studs		SF			
		Insulation, fiberglass batts		SF			
		Exterior Windows					
		Aluminum, 3'x4', insul. Glass		Each			
		Exterior Doors					
		Stainless Steel & glass		Each			
	Roofing	**Roof Coverings**					
		Asphalt roofing, strip shingles		SF			
Interiors	**Interior Construction**	**Partitions**					
		Drywall w/ wood stud, firerated		SF			
		Interior Doors					
		Single Leaf wood hollow core		Each			
		Fittings					
		Cabinets 1 door		Each			
		Cabinets 2 door		Each			
		Cabinets with laminated counter-top		LF			
	Stairs	**Stair Construction**					
		CIP concrete, 12 risers, w/ landing, w/o nosing		per flight			
	Interior Finishes	**Wall Finishes**					
		Painting primer & 1 coat		SF			
		Floor Finishes					
		Carpet tile, nylon, fusion bonded		SF			
		Ceiling Finishes					
		Gypsum board ceiling, 1/2" firerated gypsum board		SF			
Services	**Conveying**	**Elevators and Lifts**					
		Hydraulic Pass. Elev., 1500lb, 5 floors		Each			
	Plumbing	**Plumbing Fixtures**					
		Kitchen Sink w/ trim		Each			
		Water clost, w/ toilet, sink, and tub/shower		Each			
		Domestic Water Distribution					
		Electric Water Heater, 150 gal. tank		Each			
		Rain Water Drainage					
		Roof Drain, PVC 4" diam., 10' high		Each			
	HVAC	**Energy Supply**					
		Apartment building heating system, fin tube radiation		SF			
		Cooling Generating Systems					
		Packaged chiller, air cooled, w/ fan coil unit		SF			
	Fire Protection	**Sprinklers**					
		Wet pipe sprinkler system, stl. Light hazard, 5000 SF		SF			
	Electrical	**Electrical Service/Distrbution**					
		Overhead service installation, includes breakers, 200A		Each			
		Feeder Installation, 600V, 400A		LF			
		Switchgear Installation, 3 phase,		Each			
		Lighting & Branch Wiring					
		Receptacles incl. plate, 1.2 watts per SF		SF			
		Wall Switches, 2.5 per 1000 SF		Each			
		Miscellaneous Power, 2 Watts		SF			
		Central AC Power, 3 watts		SF			
		Communications & Security					
		Communication and alarm systems, fire detection		Each			
		Fire Alarm Command Center		Each			
		Internet Wiring		SF			
Equipment & Furnishings	**Equipment**	**Residential Equipment**					
		Bake Oven		Each			
		Countertop cook top range 4 burner		Each			
		Range hood		Each			
		Microwave Ovens		Each			
		Garbage disposal		Each			
		Refrigerator		Each			
		Dryer		Each			
		Washer		Each			
		Dishwasher		Each			
		Closed Circuit Television System		Each			
Building Sitework (See Separate Estimate Forms for Site Prep Details)	**Site Preperation**	**Site Preperation**					
		Erosion Control		LS			
		Site Removal/Demolition		LS			
		Site Earthwork		LS			
		Stormwater Pond Earthwork		LS			
		Building Earthwork		LS			
		Sanitary Sewer		LS			
		Storm Sewer		LS			
		Water Main		LS			
		General Conditions		LS			
		Paving					
		Light Duty Asphalt		SF			
		Heavy Duty		SF			
		Concrete		SF			

ANTICIPATED PROJECT SCHEDULE

Forward Engineering, LLC
1415 Engineering Dr.
Madison, WI 53706

Task	Start	End	Duration (Days)
Preliminary Design	1/22/19	3/14/19	51
Assigned Teams/Received RFP's	1/22/19	1/23/19	1
Procure and Analyze Site Information	1/23/19	2/4/19	12
Compile all Relevant Codes and Standards	2/4/19	2/8/19	4
Geotechnical Review	2/4/19	2/15/19	11
Research Environmental Constraints	2/4/19	2/15/19	11
Research Senior Living Facility Requirements	2/11/19	2/15/19	4
Develop Schedule	2/18/19	2/27/19	9
Estimate Cost	2/18/19	3/1/19	11
Draft Preliminary Designs	2/4/19	3/8/19	32
Analyze and Evaluate Alternatives	3/11/19	3/12/19	1
Submit Preliminary Design	3/12/19	3/13/19	1
Preliminary Design Presentation	3/13/19	3/14/19	1
Final Design	3/14/19	6/10/19	88
Revise Chosen Design	3/14/19	3/22/19	8
Develop Drawings	3/22/19	4/22/19	31
Prepare Construction Specifications	3/25/19	4/1/19	7
Prepare Geotechnical Specifications	3/27/19	4/3/19	7
Prepare Environmental Specifications	4/1/19	4/8/19	7
Prepare Hyrdologic Specifications	4/3/19	4/10/19	7
Prepare Structural Specifications	4/8/19	4/15/19	7
Finalize Project Schedule	4/22/19	5/1/19	9
Finalize Project Cost	4/29/19	5/1/19	2
Prepare Final Design Report	5/1/19	5/6/19	5
Submit Final Design	5/6/19	5/7/19	1
Final Design Presentation	5/7/19	5/8/19	1
Permitting/Design Review	5/8/19	6/10/19	33
Bidding Process	5/7/19	7/8/19	62
Invitation for Bidding	5/8/19	5/10/19	2
Completion of Bid	5/13/19	6/3/19	21
Review Contractors	6/3/19	6/24/19	21
Award Bid to Contractor	6/24/19	7/8/19	14
Construction	7/8/19	10/16/20	466
Mobilize	7/8/19	7/12/19	4
Sitework Phase 1	7/15/19	8/23/19	39
Foundational Work	7/29/19	8/30/19	32
Building Shell	8/26/19	12/13/19	109
Sitework Phase 2	9/9/19	11/4/19	56
Interior Build Out	12/9/19	7/13/20	217
MEP	12/9/19	7/13/20	217
Elevator	5/25/20	6/19/20	25
Finishes	6/15/20	9/15/20	92
Commissioning	8/10/20	9/25/20	46
Complete Final Punch Items	9/7/20	10/16/20	39
Demobilize	10/5/20	10/16/20	11
Turn Over	10/16/20	10/16/20	0
Total Duration (Days)	667		

Project: Brodhead Senior Housing Development
Date: 5/2/2019



Final Design Schedule

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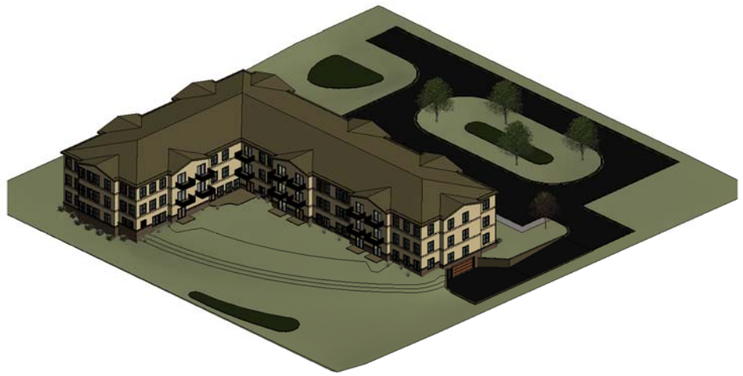


City of Brodhead Senior Apartments

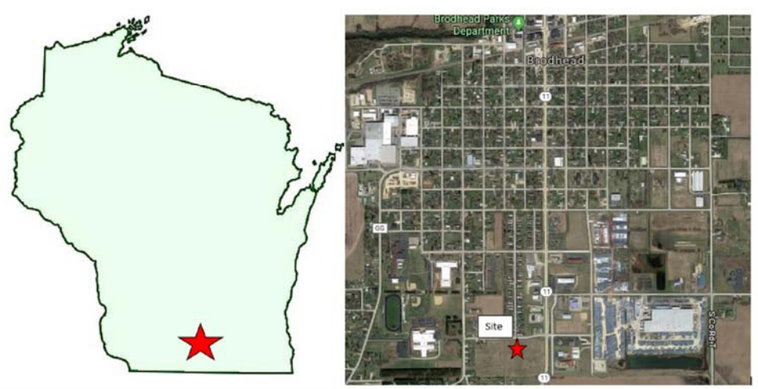
45 Unit Apartment Building
901 25th Street
Brodhead, Wisconsin 53520

Applicable Codes and Standards

2018 Wisconsin State Commercial Building Code
2018 Wisconsin State Plumbing Code
2018 Wisconsin State Electrical Code
2018 Wisconsin Energy Conservation Code
2018 Wisconsin State HVAC Code
2018 Wisconsin Fuel Gas Appliance Code
2018 International Building Code
2018 Internation Zoning Code
2010 ADA Standards for Accessible Design

Vicinity Maps

NORTH



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No.	Description	Date

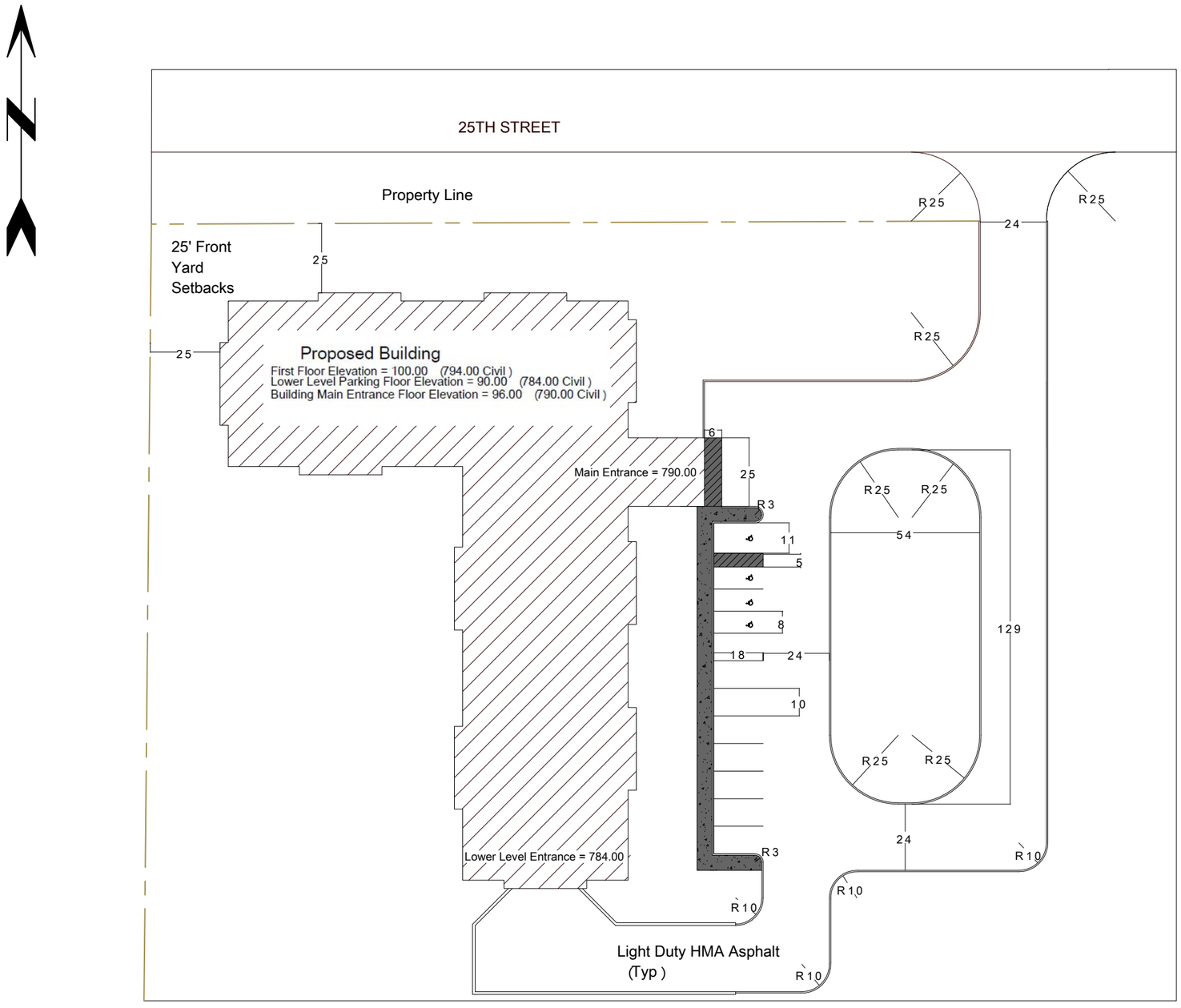
100% Drawings - City of Brodhead Senior Apartments

Cover Page

Project number			1234
Drawn by	JB	Date	04-28-19
Checked by	SS	Date	04/12/19

T1.0

Scale



1 Site and Parking Plan
1" = 20'-0"

Note: All dimensions in feet

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No.	Description	Date

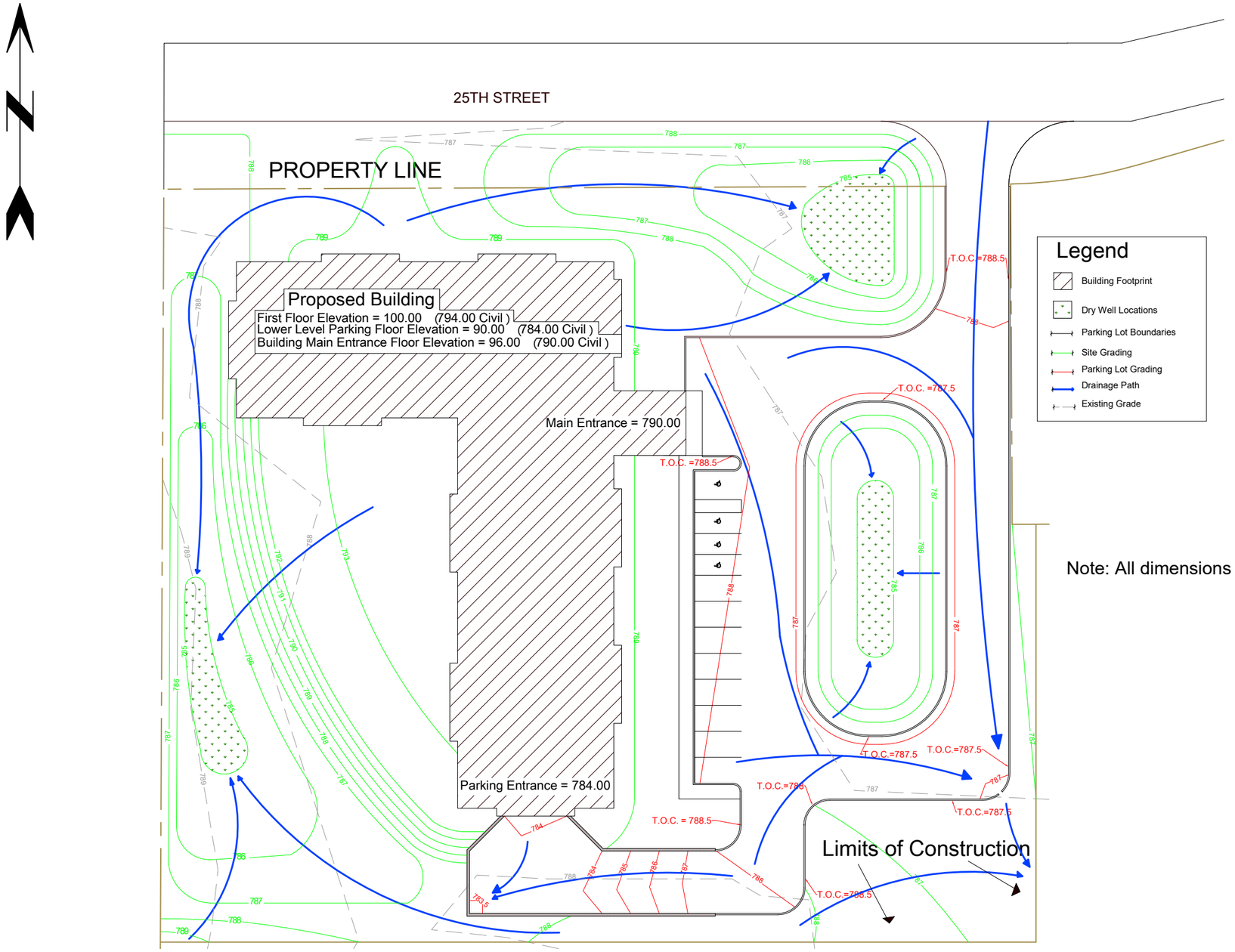
100% Drawings - City of Brodhead Senior Apartments

Site Plan

Project number			1234
Drawn by	JB	Date	04-28-19
Checked by	SS	Date	04-25-19

C2.0

Scale 1" = 20'-0"



Note: All dimensions in feet

1 Site and Grading Plan
1" = 20'-0"

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No.	Description	Date

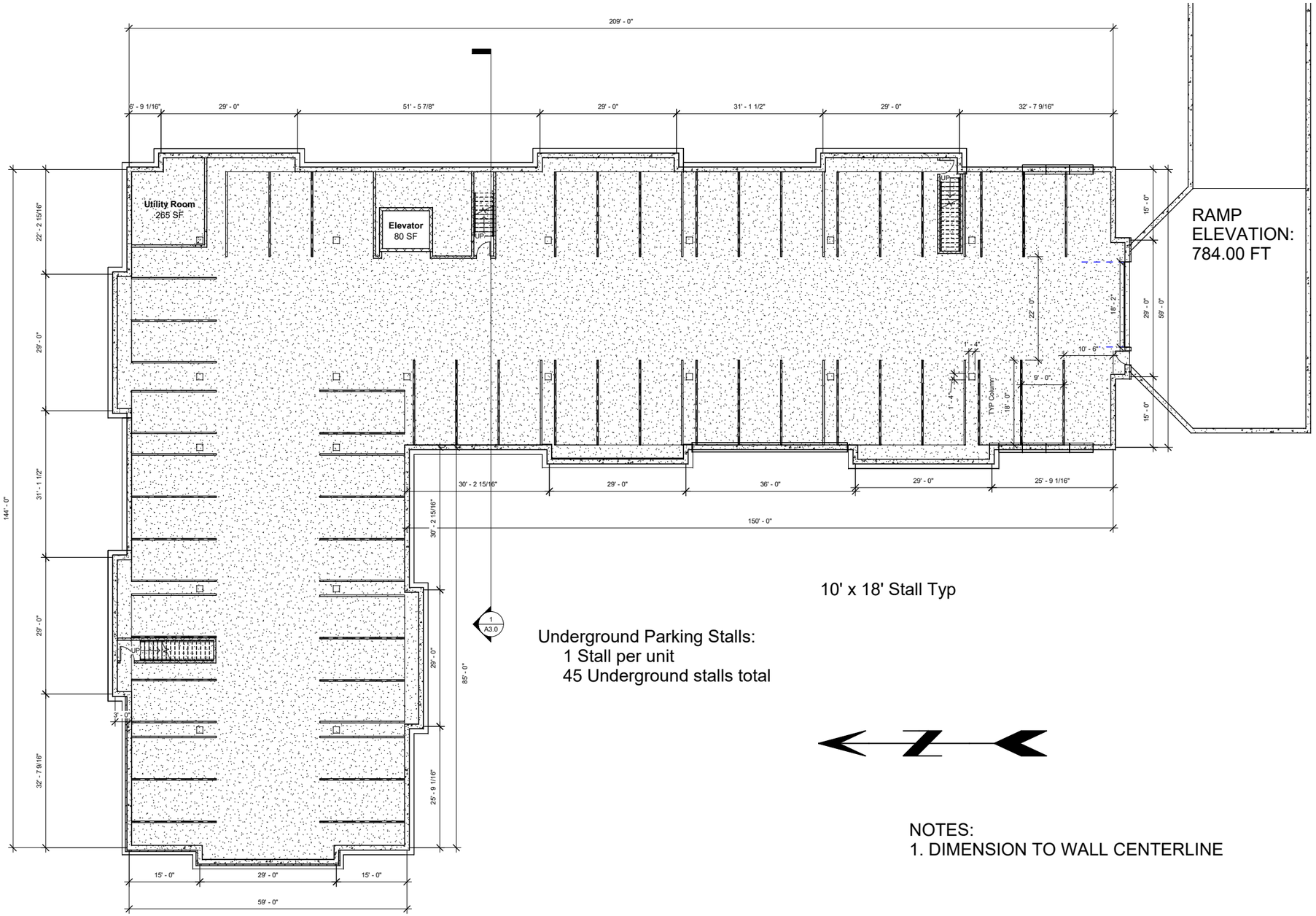
100% Drawings - City of Brodhead Senior Apartments

Grading Plan

Project number			1234
Drawn by	SS	Date	04-28-19
Checked by	JB	Date	04-29-19

C3.0

Scale 1" = 20'-0"



10' x 18' Stall Typ

Underground Parking Stalls:
1 Stall per unit
45 Underground stalls total

NOTES:
1. DIMENSION TO WALL CENTERLINE

1 Parking Level - Sheet
3/32" = 1'-0"

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No.	Description	Date

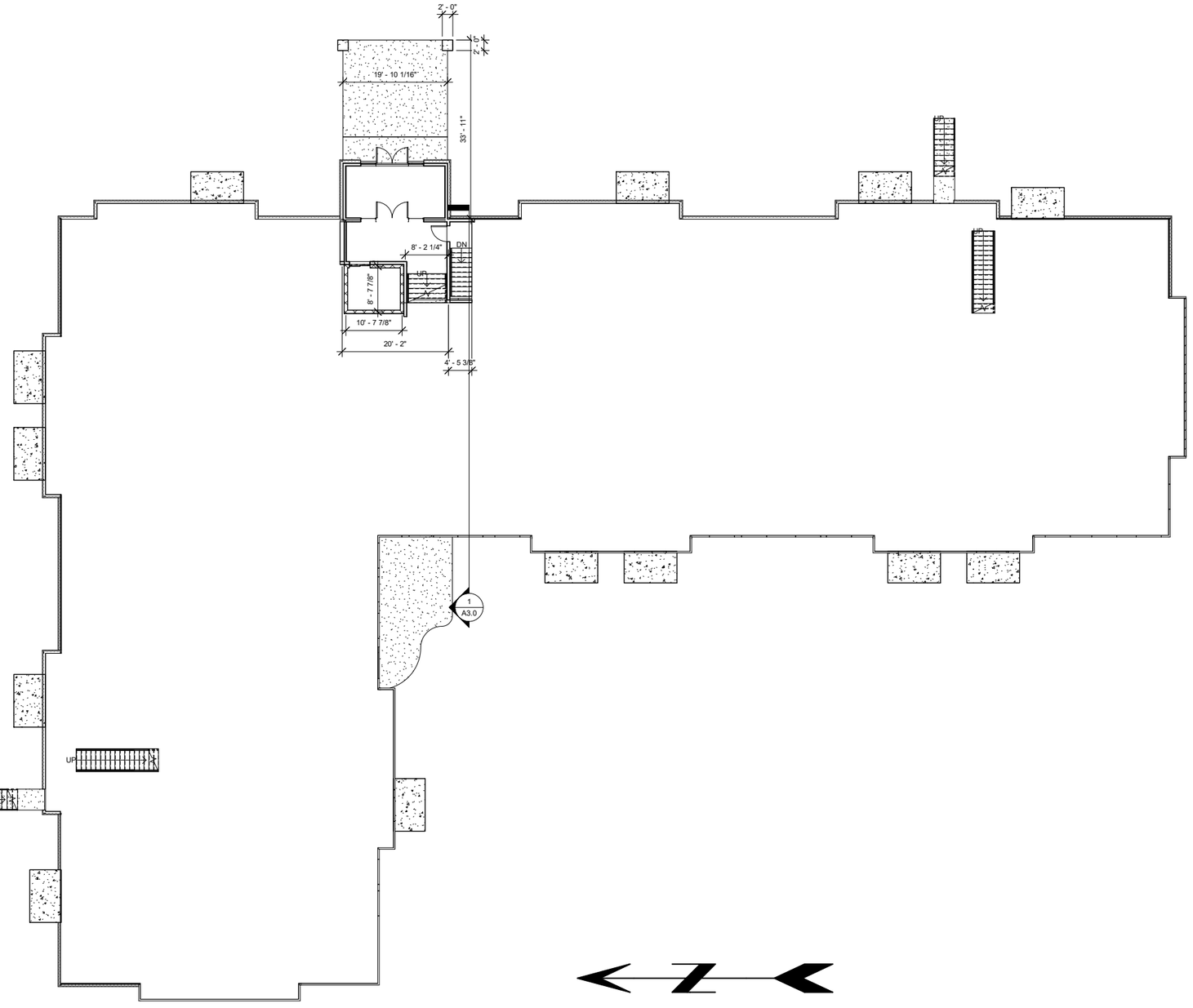
100% Drawings - City of Brodhead Senior Apartments

Parking Level Plan

Project number			1234
Drawn by	JB	Date	04-28-19
Checked by	SS	Date	04-25-19

A1.0

Scale 3/32" = 1'-0"



1 Entryway - Sheet
3/32" = 1'-0"

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No.	Description	Date

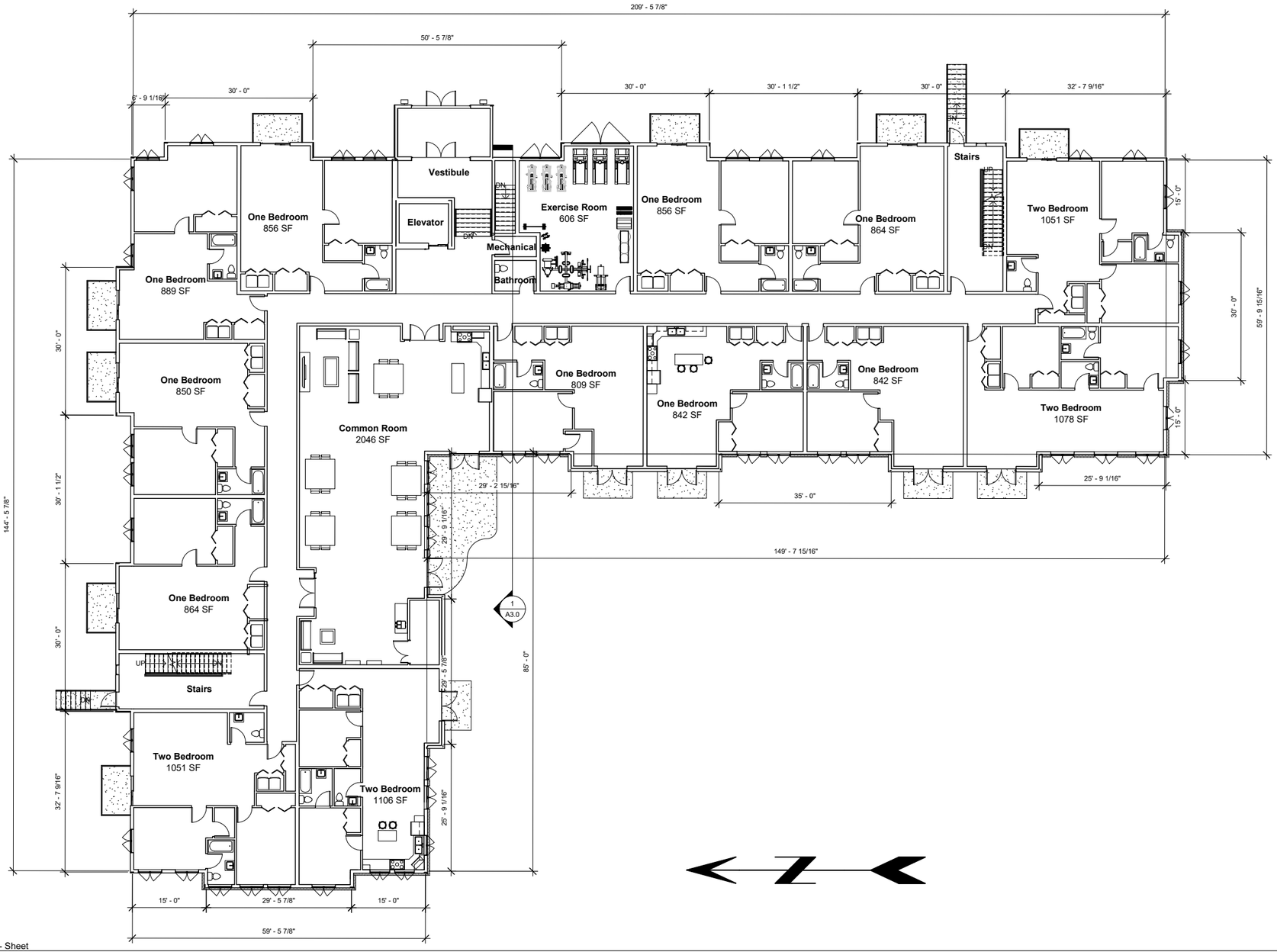
100% Drawings - City of Brodhead Senior Apartments

Entry Level Floor Plan

Project number			1234
Drawn by	SS	Date	04-28-19
Checked by	JB	Date	04/14/19

A1.0A

Scale 3/32" = 1'-0"



1 Residential 1 - Sheet
3/32" = 1'-0"

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No.	Description	Date

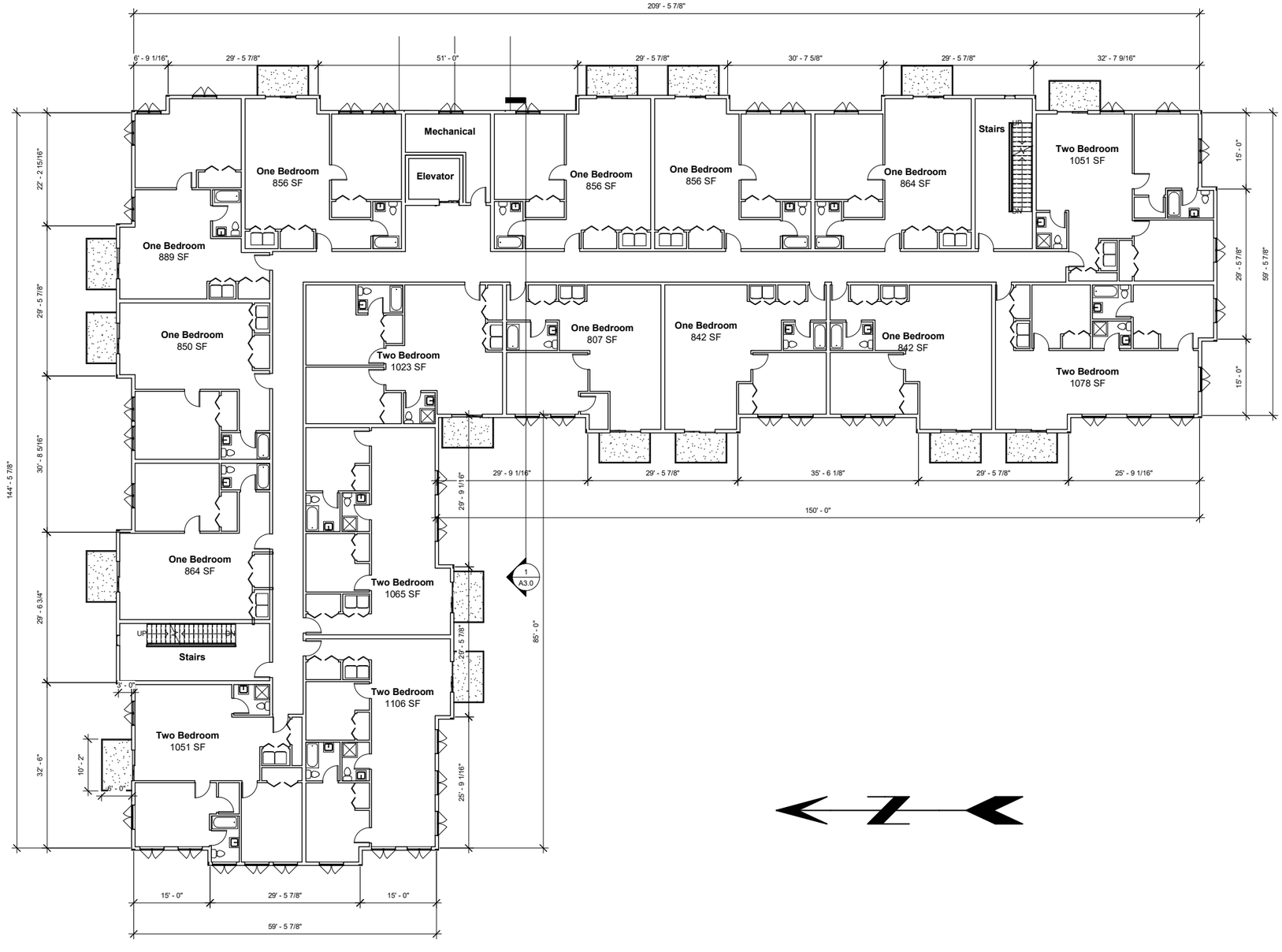
100% Drawings - City of Brodhead Senior Apartments

First Residential Level Floor Plan

Project number			1234
Drawn by	SS	Date	04-28-19
Checked by	Checker	Date	04/14/19

A1.1

Scale 3/32" = 1'-0"



1 Residential 2 - Sheet
3/32" = 1'-0"

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No.	Description	Date

100% Drawings - City of Brodhead Senior Apartments

Second Residential Level Floor Plan

Project number			1234
Drawn by	SS	Date	04-28-19
Checked by	JB	Date	04/14/19

A1.2

Scale 3/32" = 1'-0"

1 North Elevation
1/8" = 1'-0"

2 East Elevation
1" = 10'-0"

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No.	Description	Date

100% Drawings - City of Brodhead Senior Apartments

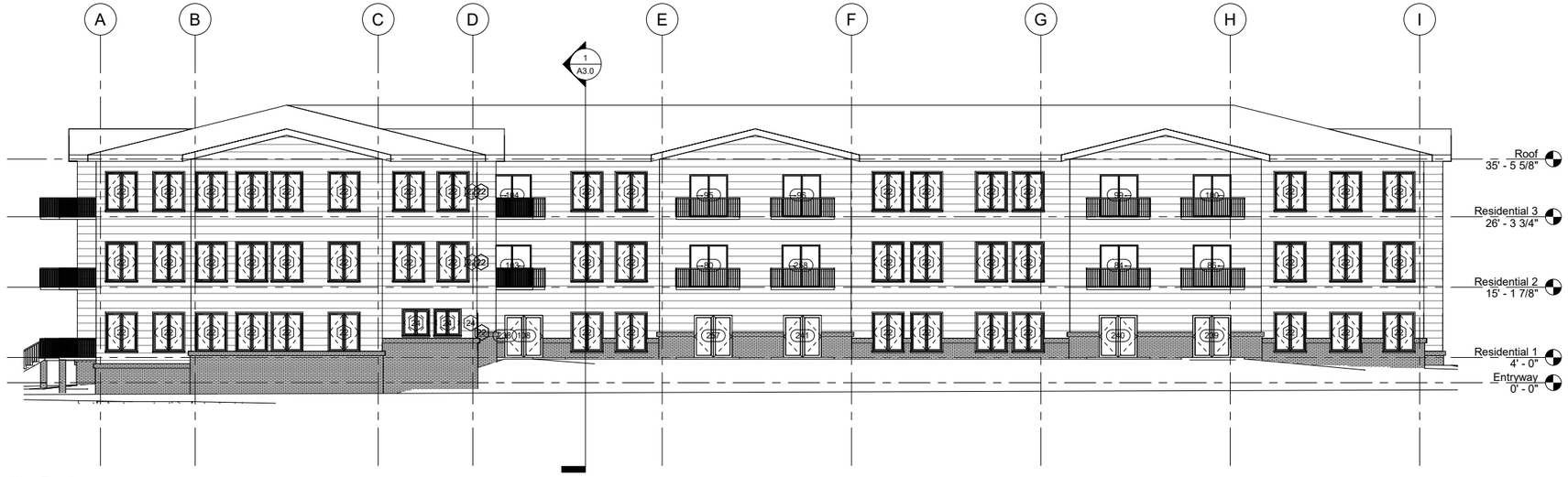
North and East Elevation View

Project number			1234
Drawn by	JB	Date	04-28-19
Checked by	SS	Date	04/14/19

A2.1

Scale: As indicated

1 South Elevation
1/8" = 1'-0"



2 West Elevation
1" = 10'-0"

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No.	Description	Date

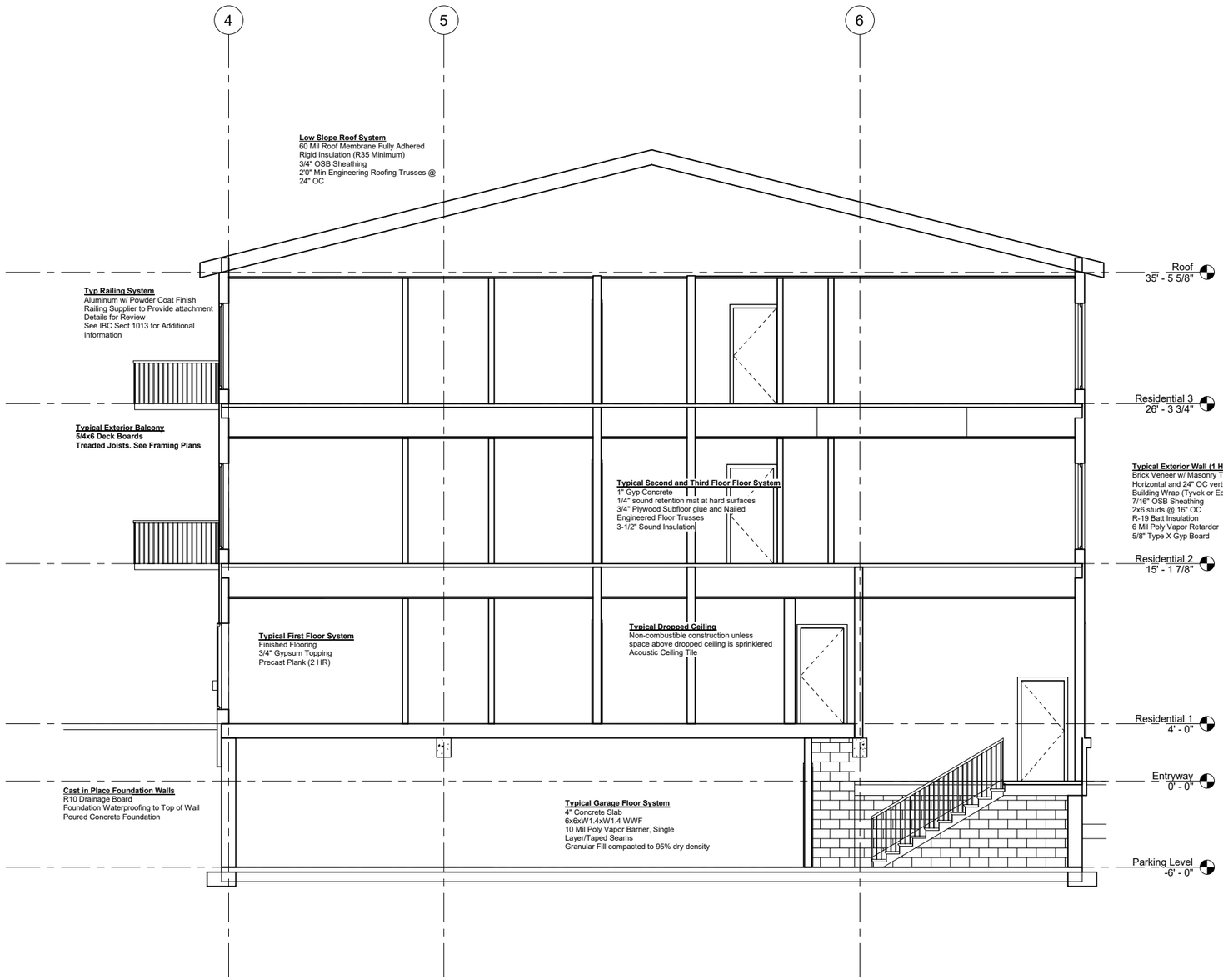
100% Drawings - City of Brodhead Senior Apartments

South and West Elevation View

Project number			1234
Drawn by	SS	Date	04-28-19
Checked by	Checker	Date	04/14/19

A2.2

Scale: As indicated



1 / A3.0 Building Section
1/4" = 1'-0"

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No.	Description	Date

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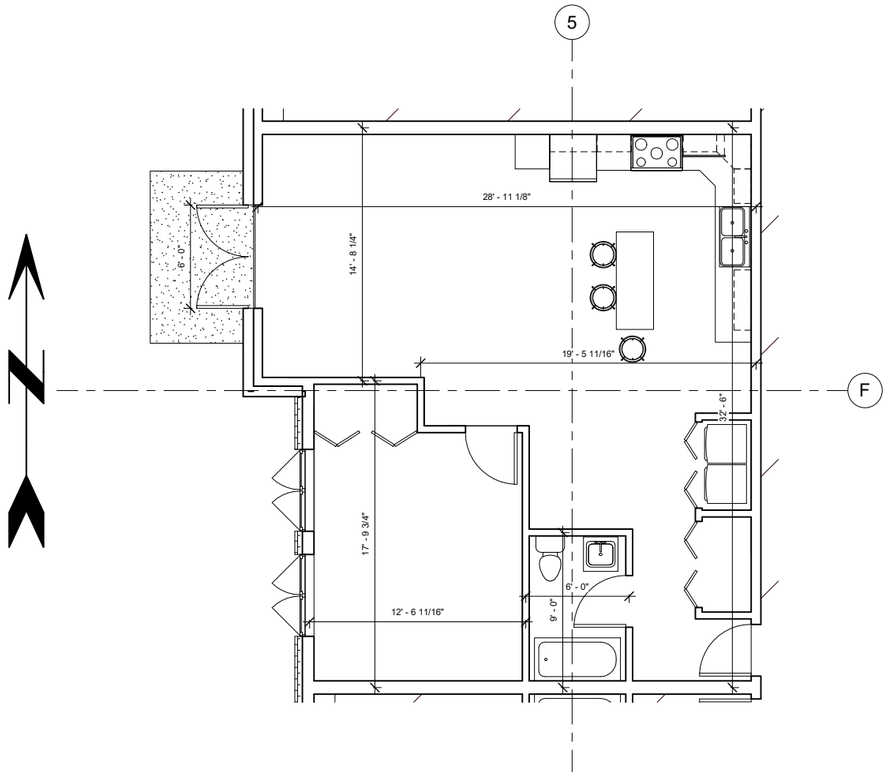
Building Section

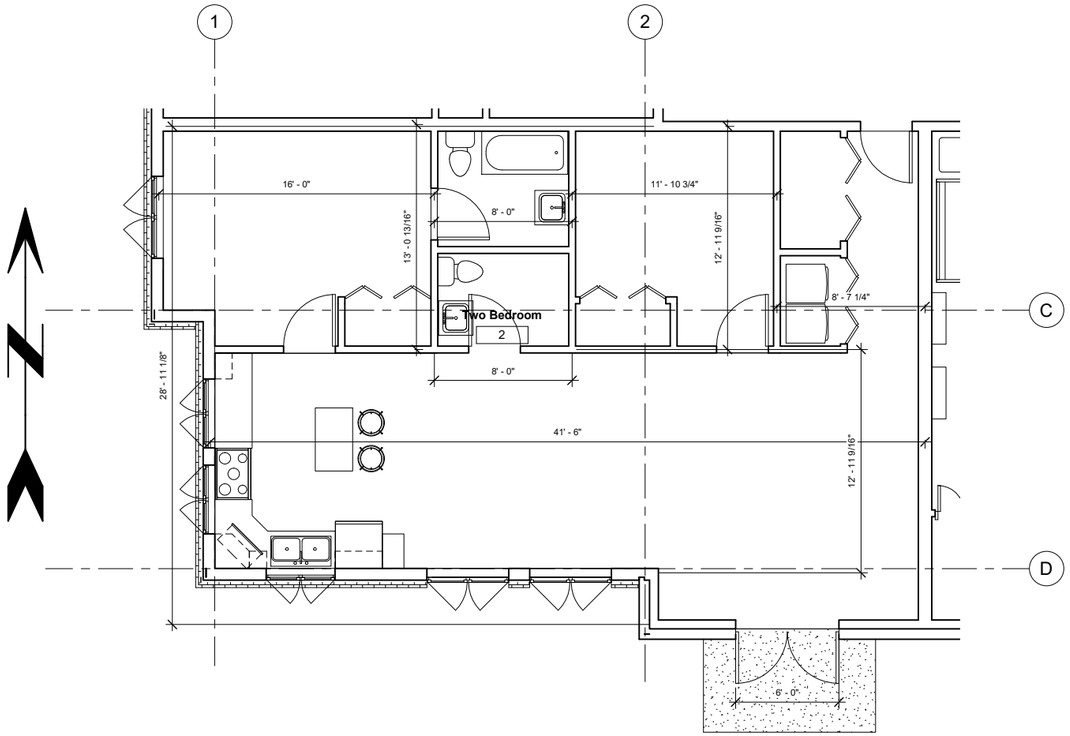
Project number			1234
Drawn by	JB	Date	04-28-19
Checked by	SS	Date	04/14/19

A3.0

Scale 1/4" = 1'-0"



1 Model One Bedroom - Plan View
1/4" = 1'-0"



2 Model Two Bedroom - Plan View
1/4" = 1'-0"

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No.	Description	Date

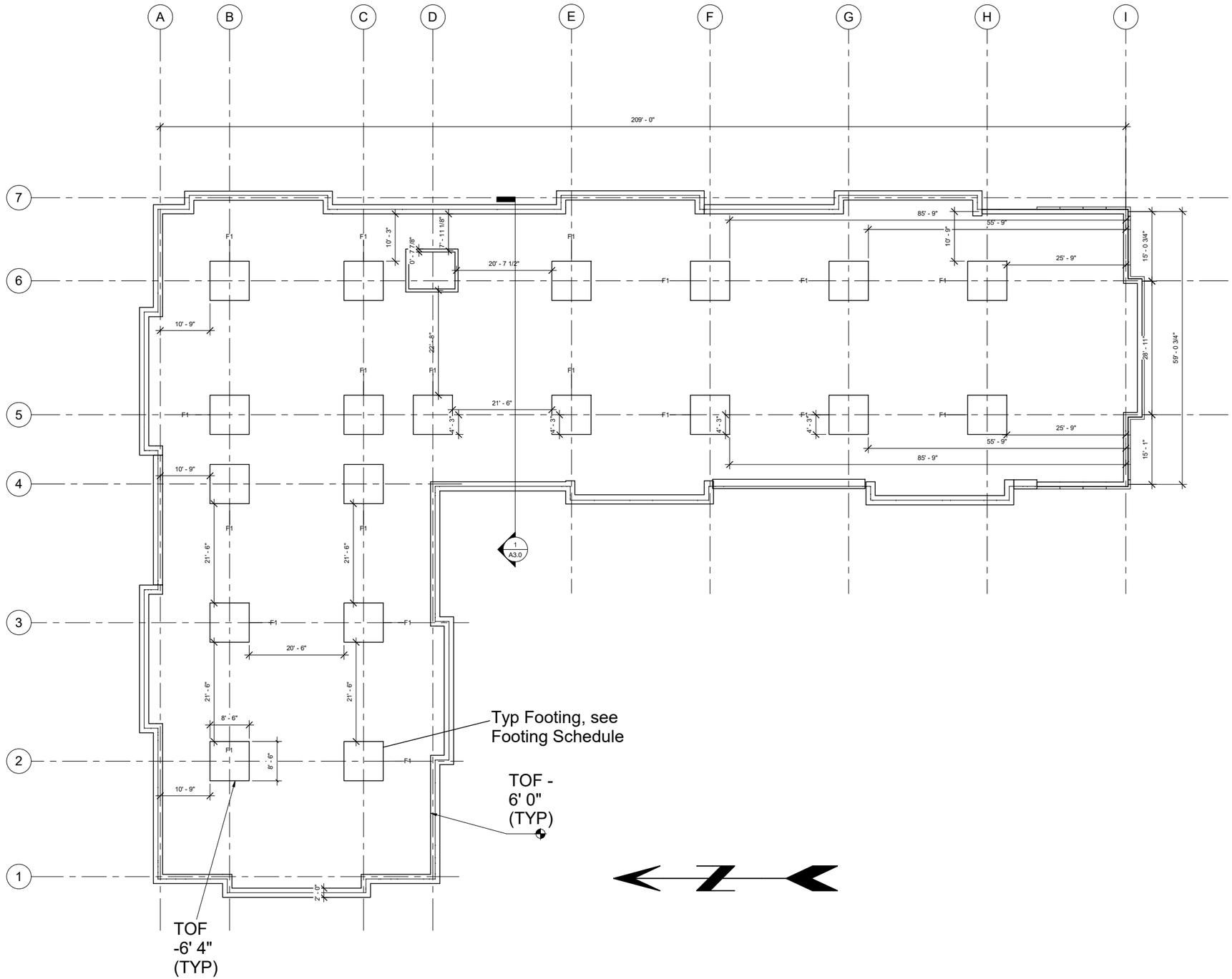
100% Drawings - City of Brodhead Senior Apartments

Enlarged Floor Plans

Project number			1234
Drawn by	SS	Date	04-28-19
Checked by	Checker	Date	04/14/19

A5.1

Scale 1/4" = 1'-0"



1 Foundations - Sheet
3/32" = 1'-0"

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No.	Description	Date

100% Drawings - City of Brodhead Senior Apartments

Foundations Plan

Project number			1234
Drawn by	JB	Date	04-28-19
Checked by	SS	Date	04-29-19

S0.1

Scale 3/32" = 1'-0"

About UniverCity Year

UniverCity Year is a three-phase partnership between UW-Madison and one community in Wisconsin. The concept is simple. The community partner identifies projects that would benefit from UW-Madison expertise. Faculty from across the university incorporate these projects into their courses, and UniverCity Year staff provide administrative support to ensure the collaboration's success. The results are powerful. Partners receive big ideas and feasible recommendations that spark momentum towards a more sustainable, livable, and resilient future. Join us as we create better places together.

GREEN COUNTY WISCONSIN

UniverCity Alliance
UNIVERSITY OF WISCONSIN–MADISON

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608-890-0330
univercity.wisc.edu