

PROJECT MANUAL FOR
ADAMS COUNTY
ADMINISTRATION BUILDING
SITE AND INTERIOR IMPROVEMENTS
401 ADAMS STREET
FRIENDSHIP, WI 53934

Project 21993005
October 1, 2025

ARCHITECT and SITE ENGINEER:

MSA Professional Services, Inc.
1230 South Boulevard
Baraboo, Wisconsin 53913

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SEALS PAGE

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STRUCTURAL



ARCHITECTURAL



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PROJECT MANUAL FOR
ADAMS COUNTY
ADMINISTRATION BUILDING
SITE AND INTERIOR IMPROVEMENTS
Project 21993005
October 1, 2025

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ADVERTISEMENT FOR BIDS
ADAMS COUNTY
ADMINISTRATION BUILDING
SITE AND INTERIOR IMPROVEMENTS
FRIENDSHIP, WI
Project 21993005

The Owner will ONLY receive and accept bids through QuestCDN.com via the online electronic bid service (QuestvBid) for the construction of ADAMS COUNTY ADMINISTRATION BUILDING SITE AND INTERIOR IMPROVEMENTS at 2:00 P.M, October 23, 2025. All bids will be downloaded and publicly read aloud during a virtual public bid opening that will be held at the day and time of the bid closing. All plan holders will receive information via Quest on how to join the virtual meeting prior to the bid opening. Visit the County website for more information about attending the virtual bid opening.

PROJECT INCLUDES targeted building and site improvements as follows. The interior building improvements includes some replacement walls and new walls. Some walls include ballistic resistance construction and ballistic resistance service windows. The interior work includes doors, toilet room replacements, finishes, new Conference Room and Breakroom in the adjacent Judicial Building, MEP, and associated work. The exterior improvements include new sidewalks, stairs, landscaping, lighting, signage retaining wall feature, storm water provisions, parking lot replacement/expansion, and associated work.

PLANHOLDERS LIST will be updated interactively on our web address at <http://www.msa-ps.com> under Bids.

BIDDING DOCUMENTS are electronically available starting October 1, 2025 at www.questcdn.com. Bidders may download the digital plan documents for \$25 by inputting Quest eBidDoc #9882448 on the website's Project Search page. Prime Bidders submitting an electronic Quest bid need to pay an additional \$20. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with the digital project information.

No proposal will be accepted unless accompanied by a bid bond equal to at least 5% of the amount bid, payable to the OWNER as a guarantee that, if the bid is accepted, the bidder will execute and file the proper contract and bond within 15 days after the award of the contract. BIDDER is required to deliver the original bid bond within the 72 hours of bid opening to MSA Professional Services, Inc., Attn: 1230 South Boulevard, Baraboo, WI 53913. The bid bond will be returned to the bidder as soon as the contract is signed, and if after 15 days the bidder shall fail to do so, the bid bond shall be forfeited to the OWNER as liquidated damages.

Performance and Payment Bonds for the full contract amount shall be required from the successful Bidder.

Prequalification of bidders will not be required. Bidders to whom award of a Contract is under consideration shall submit to Architect, upon request, a properly executed AIA Document A305 Contractor's Qualifications Statement. No bidder may withdraw his bid within 30 days after the actual date of the opening thereof. Pursuant to Section 66.0903, Wisconsin Statutes, the minimum wages to be paid on the project shall be in accordance with the prevailing wage rate determination provided in the Bidding Documents. Owner reserves the right to reject any or all bids, waive or not waive any informalities in the bids received, and to accept any proposal which they deem most favorable to the interests of the Owner.

Published by the authority of the Owner Adams County

E. Carter Arndt AIA, NCARB
ARCHITECT:
MSA Professional Services, Inc.
1230 S Blvd Baraboo, WI
(608) 355-8884 | carndt@msa-ps.com

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INSTRUCTIONS TO BIDDERS

Instructions to Bidders AIA Document A701 is not bound in this project manual but is included by reference. It is a part of this contract document and is incorporated herein as if it were bound in this manual.

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ARTICLE 9
SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

- 9.0 Referenced AIA Documents. The following list of AIA Documents are not bound in this project manual, but shall be included by reference. They are a part of this contract document and are incorporated herein as fully as if here set forth.

Hard copies of the documents may be purchased from AIA Wisconsin Office in Madison Wisconsin, phone 608-257-8477. The hard copies can be ordered from their website as well as from AIA on their website at the following links: <https://www.aiacontracts.org/purchase> and at <https://documentsondemand.aia.org/>. There are also sample copies of the documents that can be viewed on line at www.aiacontracts.org.

List of Documents:

A101	Owner - Contractor Agreement - 2017
A201	General Conditions of the Contract for Construction - 2017
A305	Contractor's Qualification Statement - 2020
A701	Instructions to Bidders - 2018
G701	Change Order - 2017
G702	Application & Certificate for Payment - 1992
G703	Continuation Sheet for G702 - 1992
G704	Certificate of Substantial Completion - 2017

- 9.1 Bonding Requirements. Bid Bond, Performance Bond, and Labor & Material Payment Bond are required for this contract. The Performance and Payment Bonds shall be in the full amount of the contract. Bid security shall be as stated in Advertisement for Bids. The Contractor's Performance and Payment Bonds are required to apply during the construction period and within one year after the date of substantial completion of the work. The bonds are not required to apply to any of the required extended warranties required in any of individual material specification sections.
- 9.2 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, underground facilities, and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 4.3.4 of the General Conditions.
- 9.3 Subsurface Conditions. Information and data reflected in the Contract Documents with respect to underground facilities at or contiguous to the site is based upon information and data furnished to Owner and Engineer by owners of such underground facilities or others, and Owner does not assume responsibility for the accuracy or completeness thereof.
- 9.4 Before submitting a Bid, each Bidder will be responsible to make or obtain such explorations, tests and data concerning physical conditions (surface, subsurface and underground facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance, or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 9.5 On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.
- 9.6 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.
- 9.7 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 9, that without exception the Bid is premised upon performing and furnishing the

Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

- 9.8 When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within seven (7) days thereafter, Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner with the required Bonds. Within seven (7) days thereafter, Owner shall deliver one fully signed counterpart and Notice to Proceed to Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

9.9 MODIFICATION AND WITHDRAWAL OF BIDS

If, within 24-hours after Bids are opened, any Bidder files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

9.10 SUBSTITUTIONS

Written request for approval on substitutions must be received by the Architect at least five (5) working days prior to the date for receipt of Bids.

9.11 AWARD OF CONTRACT

- 9.11.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional Bids. Also, Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 9.11.2 In evaluating Bids, Owner will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 9.11.3 Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Instructions to Bidders.
- 9.11.4 Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
- 9.11.5 If the contract is to be awarded, it will be awarded to the lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

INFORMATION AVAILABLE TO BIDDERS

Drawings of Existing Buildings

Existing drawings and limited specifications for some of past building projects are available for bidder's review. They may not be complete or current. These documents are available electronically by contacting Cara Walls at cwalls@msa-ps.com.

Viewing Existing Buildings

Bidders will be allowed to examine the existing buildings on October 14, 2025, at 10:00 AM. Meet outside the Administration Building entrance near the Memorial located at 401 Adams Street, Friendship, Wisconsin.

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Section 00 31 32

ASBESTOS BUILDING INSPECTION REPORT

See attached Asbestos Pre-Renovation Inspection dated August 24, 2020.

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Environmental Management Consulting, Inc.

ASBESTOS PRE-RENOVATION INSPECTION

**ADAMS COUNTY COURTHOUSE
402 MAIN STREET
FRIENDSHIP, WI 53934**

**INSPECTION DATE: AUGUST 19, 2020
REPORT DATE: AUGUST 24, 2020
EMC PROJECT NUMBER: 200657-01**

PREPARED FOR:

**ADAMS COUNTY
ATTN: MR. BILL RUNNELS
400 S. MAIN STREET
P.O. BOX 102
FRIENDSHIP, WI 53934**

PREPARED BY:

**MR. JEREMY R. NOEGEL
ENVIRONMENTAL MANAGEMENT CONSULTING, INC.
W7748 COUNTY HIGHWAY V
LAKE MILLS, WI 53551**

Securing Safer Futures...

W 7748 Cty Hwy V, Lake Mills, WI 53551 ♦ 920.648.6343 Fax: 920.648-4370 ♦ www.emc-wi.com

ASBESTOS PRE-RENOVATION INSPECTION

ADAMS COUNTY COURTHOUSE
402 MAIN STREET
FRIENDSHIP, WI 53934

Environmental Management Consulting, Inc. (EMC) was contacted by Mr. Bill Runnels to conduct a pre-renovation asbestos survey of the above mentioned property.

Mr. Jeremy R. Noegel of EMC inspected the subject property on August 19, 2020. The building was inspected for the presence of asbestos containing building materials. Bulk samples were extracted for each building material found suspect to contain asbestos as discussed with the owner. All samples were submitted to a NVLAP certified laboratory for analysis via Polarized Light Microscopy (PLM). This report will summarize the findings of this inspection.

The entire building was NOT inspected during this inspection. The inspection was limited to the following areas:

- Select areas of Ground, 1st Floor and 2nd Floor as specified by Mr. Bill Runnels and Vogel Brothers. See attached drawings for exact locations.

ASBESTOS CONTAINING MATERIALS (ACM)

The following is a summary of materials identified to contain >1% asbestos or assumed to contain asbestos.

No materials were identified in specified renovation area.

These materials must be removed by personnel certified by the Department of Health Services, if they are likely to be disturbed during the renovation project. Removal is not necessary if the materials will not be disturbed during the project.

NON-ASBESTOS MATERIALS

The following is a summary of materials, which have been sampled and found not to contain asbestos.

<u>Material Code</u>	<u>Material Description</u>
MF12M	12" Floor Tile (Maroon) & Adhesives
MF12WK	12" Floor Tile (White & Black) & Adhesives
MF12CK	12" Floor Tile (Cream & Black) & Black Adhesives
MCML	Yellow Carpet Adhesives
MV4	4" Vinyl Baseboard & Adhesives
MSCT1	2'x2' Ceiling Tile (Divots & Holes – Revealed Edge)
MSCT2	2'x4' Ceiling Tile (Fissured)
MDW	Drywall & Joint Compound
MCLKI(W)	White Door/Window Caulk
MPG(K)	Black Borrowed Light Glazing
MPM(D)	Drywall Adhesives
MCLKI(Y)	Gray Window/Door Caulk

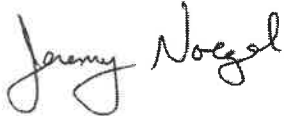
No work is necessary for these materials.

ADDITIONAL REQUIREMENTS

If this renovation will involve the removal of greater than 160 square feet or 260 linear feet of asbestos containing materials a "Notification of Demolition and/or Renovation and Application for Exemption" (Form 4500-113) must be submitted to the Wisconsin Department of Natural Resources (WDNR). Residential property as defined by the WDNR chapter 447 may be exempt from notification requirements. However, if any amount of asbestos removal is required for the project, the above stated notification will be required to be submitted to the Wisconsin Department of Health Services. The owner/operator is responsible for submitting all notifications.

If during the course of renovation, suspect materials are found, that have not been identified or sampled, work must stop, and a State of Wisconsin Certified Asbestos Building Inspector must be contacted to assess the material. There are inaccessible areas within the building that could not be accessed during the inspection, which could result in additional suspect materials discovered.

All bulk sampling information including a bulk sample chart and the laboratory results are attached to this report. Please contact the EMC office if you have any questions.

A handwritten signature in black ink that reads "Jeremy Noegel". The signature is written in a cursive style with a large, stylized 'J' and 'N'.

Jeremy R. Noegel
Certification: All-105450

BULK SAMPLE RESULTS

ASBESTOS BULK SAMPLE CHART

Sampling Date: August 19, 2020
 Sample Location: Adams County
 Sampling Personnel: Jeremy R. Noegel

EMC Project Number: 200657-01
 Inspector Number: AII-105450

SAMPLE NUMBER	HOMO CODE	MATERIAL DESCRIPTION	ROOM/ AREA	SPECIFIC SAMPLE LOCATION	LAB RESULTS
001	MF12M	12" Floor Tile (Maroon) & Adhesives	Stairs #1	By East Door	None Detected
002	MF12M	12" Floor Tile (Maroon) & Adhesives	L208 Medical Examiner	By Door	None Detected
003	MF12WK	12" Floor Tile (White & Black) & Yellow Adhesives	C221	S.E.	None Detected
004	MF12WK	12" Floor Tile (White & Black) & Yellow Adhesives	1st Hall	Middle	None Detected
005	MCML	Yellow Carpet Adhesives	Existing Clerk of Courts Files	S.W.	None Detected
006	MCML	Yellow Carpet Adhesives	Existing Child Support	N.W.	None Detected
007	MV4	4" Vinyl Baseboard & Adhesives	Ex. Child Support Office	By Door	None Detected
008	MV4	4" Vinyl Baseboard & Adhesives	Ex. Comm Services	By Main Door	None Detected
009	MSCT1	2'x2' Ceiling Tile (Divots & Holes- Revealed Edge)	Ex. Break Room	Middle	None Detected
010	MSCT1	2'x2' Ceiling Tile (Divots & Holes- Revealed Edge)	Ex. Comm Services	Middle	None Detected
011	MSCT2	2'x4' Ceiling Tile (Fissured)	C120 Files	Middle	None Detected
012	MSCT2	2'x4' Ceiling Tile (Fissured)	Ex. Child Support Files	Middle	None Detected
013		NOT SUBMITTED			Not Submitted
014		NOT SUBMITTED			Not Submitted
015	MDW	Drywall & Joint Compound	Ex. Child Support Office	N.E.	None Detected
016	MDW	Drywall & Joint Compound	Ex. Comm Service	Above Door	None Detected
017	MCLKI(W)	White Door/Window Caulk	Ex. Clerk of Courts	N.E. Door	None Detected
018	MCLKI(W)	White Door/Window Caulk	L208 Medical Examiner	On Door	None Detected
019	MPG(K)	Black Borrowed Light Glazing	Ex. Break Room	By Door	None Detected
020	MPG(K)	Black Borrowed Light Glazing	Ex. Comm Service	On Window N.E.	None Detected
021	MPM(D)	Drywall Adhesives	Existing Child Support Office	North	None Detected
022	MPM(D)	Drywall Adhesives	Existing Child Support Office	North	None Detected
023	MCLKI(Y)	Gray Window/Door Caulk	Stairs #1	On East Door Ground	None Detected
024	MCLKI(Y)	Gray Window/Door Caulk	Ex. Comm Service	On Window	None Detected
025	MF12CK	12" Floor Tile (Cream & Black) & Black Adhesives	Parks - Sump Pump Room	By Sump Pump	None Detected



Environmental Management Consulting, Inc.

W7748 County Highway V, Lake Mills, WI ■ Phone: 920.648.6343 Fax: 920.648.4370 ■ www.emc-wi.com



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 40 CFR, Part 763, Subpart E,
App.E



Customer: Environmental Management
Consulting, Inc.
W7748 Cnty Hwy V
Lake Mills, WI 53551
Project: Adams Courthouse 200657-01

Attn: Jeremy Noegel

Lab Order ID: 71948562
Analysis ID: 71948562_PLM
Date Received: 8/20/2020
Date Reported: 8/21/2020

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
001 - A	12" F.T. (Mauve) & Adhesive	None Detected		100% Other	Red Non Fibrous Homogeneous
71948562PLM_1	floor tile				Dissolved
001 - B	12" F.T. (Mauve) & Adhesive	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_24	adhesive				Dissolved
002 - A	12" F.T. (Mauve) & Adhesive	None Detected		100% Other	Red Non Fibrous Homogeneous
71948562PLM_2	floor tile				Dissolved
002 - B	12" F.T. (Mauve) & Adhesive	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_25	adhesive				Dissolved
003 - A	12" F.T. (White & Black) & Yellow Adh	None Detected		100% Other	White Non Fibrous Homogeneous
71948562PLM_3	floor tile				Dissolved
003 - B	12" F.T. (White & Black) & Yellow Adh	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_26	adhesive				Dissolved
004 - A	12" F.T. (White & Black) & Yellow Adh	None Detected		100% Other	White Non Fibrous Homogeneous
71948562PLM_4	floor tile				Dissolved
004 - B	12" F.T. (White & Black) & Yellow Adh	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_27	adhesive				Dissolved

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Byron Stroble (34)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 40 CFR, Part 763, Subpart E,
App.E



Customer: Environmental Management
Consulting, Inc.
W7748 Cnty Hwy V
Lake Mills, WI 53551
Project: Adams Courthouse 200657-01

Attn: Jeremy Noegel

Lab Order ID: 71948562
Analysis ID: 71948562_PLM
Date Received: 8/20/2020
Date Reported: 8/21/2020

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
005	Yellow Carpet Adhesive	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_5					Dissolved
006	Yellow Carpet Adhesive	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_6					Dissolved
007 - A	4" Vinyl Baseboard & Adhesive	None Detected		100% Other	Gray Non Fibrous Homogeneous
71948562PLM_7	cove base				Ashed
007 - B	4" Vinyl Baseboard & Adhesive	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_28	adhesive				Dissolved
008 - A	4" Vinyl Baseboard & Adhesive	None Detected		100% Other	Gray Non Fibrous Homogeneous
71948562PLM_8	cove base				Ashed
008 - B	4" Vinyl Baseboard & Adhesive	None Detected		100% Other	Yellow Non Fibrous Homogeneous
71948562PLM_29	adhesive				Dissolved
009	2'x2' C.T. (Divots & Holes) ...	None Detected	45% Cellulose 45% Mineral Wool	10% Other	Gray Fibrous Homogeneous
71948562PLM_9					Teased, Ashed
010	2'x2' C.T. (Divots & Holes) ...	None Detected	45% Cellulose 45% Mineral Wool	10% Other	Gray Fibrous Homogeneous
71948562PLM_10					Teased, Ashed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Byron Stroble (34)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 40 CFR, Part 763, Subpart E,
App.E



Customer: Environmental Management
Consulting, Inc.
W7748 Cnty Hwy V
Lake Mills, WI 53551
Project: Adams Courthouse 200657-01

Attn: Jeremy Noegel

Lab Order ID: 71948562
Analysis ID: 71948562_PLM
Date Received: 8/20/2020
Date Reported: 8/21/2020

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
011	2'x4' C.T. (Fissured)	None Detected	45% Cellulose 45% Mineral Wool	10% Other	Gray Fibrous Homogeneous
71948562PLM_11					Teased, Ashed
012	2'x4' C.T. (Fissured)	None Detected	45% Cellulose 45% Mineral Wool	10% Other	Gray Fibrous Homogeneous
71948562PLM_12					Teased, Ashed
015 - A	Drywall & Joint Compound	None Detected	10% Cellulose	90% Other	Brown, White Non Fibrous Homogeneous
71948562PLM_13	drywall				Teased
015 - B	Drywall & Joint Compound	None Detected	10% Cellulose	90% Other	White Non Fibrous Homogeneous
71948562PLM_30	joint compound				Teased
015 - C	Drywall & Joint Compound	None Detected	10% Cellulose	90% Other	Brown, White Non Fibrous Heterogeneous
71948562PLM_31	composite				Teased
016 - A	Drywall & Joint Compound	None Detected	10% Cellulose	90% Other	Brown, White Non Fibrous Homogeneous
71948562PLM_14	drywall				Teased
016 - B	Drywall & Joint Compound	None Detected		100% Other	White Non Fibrous Homogeneous
71948562PLM_32	joint compound				Teased
016 - C	Drywall & Joint Compound	None Detected	10% Cellulose	90% Other	Brown, White Non Fibrous Heterogeneous
71948562PLM_33	composite				Teased

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Byron Stroble (34)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 40 CFR, Part 763, Subpart E,
App.E



Customer: Environmental Management
Consulting, Inc.
W7748 Cnty Hwy V
Lake Mills, WI 53551
Project: Adams Courthouse 200657-01

Attn: Jeremy Noegel

Lab Order ID: 71948562
Analysis ID: 71948562_PLM
Date Received: 8/20/2020
Date Reported: 8/21/2020

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
017	White Door/Window Caulk	None Detected		100% Other	White Non Fibrous Homogeneous
71948562PLM_15					Ashed
018	White Door/Window Caulk	None Detected		100% Other	White Non Fibrous Homogeneous
71948562PLM_16					Ashed
019	Black Borrowed Light Glazing	None Detected		100% Other	Black Non Fibrous Homogeneous
71948562PLM_17					Ashed
020	Black Borrowed Light Glazing	None Detected		100% Other	Black Non Fibrous Homogeneous
71948562PLM_18					Ashed
021	Drywall Adhesive	None Detected		100% Other	Gray Non Fibrous Homogeneous
71948562PLM_19					Dissolved
022	Drywall Adhesive	None Detected		100% Other	Gray Non Fibrous Homogeneous
71948562PLM_20					Dissolved
023	Gray Window/Door Caulk	None Detected		100% Other	Gray Non Fibrous Homogeneous
71948562PLM_21					Ashed
024	Gray Window/Door Caulk	None Detected		100% Other	Gray Non Fibrous Homogeneous
71948562PLM_22					Ashed

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Byron Stroble (34)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 40 CFR, Part 763, Subpart E,
App.E



Customer: Environmental Management
Consulting, Inc.
W7748 Cnty Hwy V
Lake Mills, WI 53551
Project: Adams Courthouse 200657-01

Attn: Jeremy Noegel

Lab Order ID: 71948562
Analysis ID: 71948562_PLM
Date Received: 8/20/2020
Date Reported: 8/21/2020

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
025 - A	12" F.T. (Cream & Black & Black Adh)	None Detected		100% Other	White Non Fibrous Homogeneous
71948562PLM_23	floor tile				Dissolved
025 - B	12" F.T. (Cream & Black & Black Adh)	None Detected		100% Other	Black Non Fibrous Homogeneous
71948562PLM_34	mastic				Dissolved

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Byron Stroble (34)

Analyst

Approved Signatory



Environmental Management Consulting, Inc.

E.M.C., Inc.
W7748 County Highway V
Lake Mills, WI 53551
920-648-6343

Lab Order ID:

Scientific Analytical Institute
4604 Dundas Drive
Greensboro, NC 27407
877-292-3888

71948562



EMC Contact: <u>Jeremy Noegel</u>	PLM ☒	12 Hours ☐	120 Hours ☐
Email: <u>emc@emc-wi.com</u>	Point Count ☐	24 Hours ☒	144+ Hours ☐
Sample Location: <u>Adams Court house</u>	PCM ☐	48 Hours ☐	
Sample Date: <u>8-19-20</u>	TEM ☐	72 Hours ☐	
Sampling Personnel: <u>JN</u>	Lead ☐	96 Hours ☐	
Inspector Number: <u>ATL 105450</u>			
Project Name/ #: <u>Adams Court house</u>	<u>200657-01</u>		

Sample ID	Material	Color	Location	Notes	Result
001	MF12M	☐	12" F.T. (mauve)	Stairs #1 by East door	
002	↓	☐	+ adhesives	Int08 Medical Exam by door	
003	MF12WK	☐	12" F.T. (white)	C221 S.E.	
004	↓	☐	black) + yellow adk	1 st Hall middle	
005	MCML	☐	yellow carpet	Exch. Clerk of C files S.W.	
006	↓	☐	adhesives	Exch. Child support N.W.	
007	MS4	☐	4" vinyl, baseboard	Ex Child support by door	
008	↓	☐	+ adhesives	Ex Comm Service by main door	
009	MSGT1	☐	2'x2' C.T. (disks)	Ex Break room middle	
010	↓	☐	helix travel at edge	Ex Comm Service middle	
011	MSGT2	☐	2'x4' C.T. (fissure)	C120 files middle	
012	↓	☐	↓	Ex child support files middle	
013	MSGT3	☐	2'x4' C.T. (fissure)		
014	↓	☐	↓		
015	MAN	☒	log wall +	Ex child support N.E.	
016	↓	☒	joint compound	Ex Comm Service above door	
017	MCML(W)	☐	white door/window	Ex Clerk of Courts N.E. door	Accepted ☒
018	↓	☐	caulk	Int08 Medical Exam on door	Rejected ☐
019	MP6(K)	☐	black borrowed	Ex Break room by door	
020	↓	☐	light gray	Ex Comm Service on window N.E.	

Total # of Samples 23

Reviewed by: <u>Noegel</u>	Date: <u>8-19-20</u>	Reviewed by: <u>[Signature]</u>	Date: <u>8.20 12:30pm</u>

Please Email To:

☐ bfreeman@emc-wi.com	☐ proche@emc-wi.com	☒ jnoegel@emc-wi.com	☐ tbushman@emc-wi.com
☐ jbushman@emc-wi.com	☐ jschneider@emc-wi.com	☐ mfreeman@emc-wi.com	☐ jharman@emc-wi.com
☐ jjozwiakowski@emc-wi.com	☐ rhaveman@emc-wi.com	☐ ltwinslow@emc-wi.com	☐ emc@emc-wi.com
☐ amaule@emc-wi.com	☐ cfreeman@emc-wi.com	☐ bwieland@emc-wi.com	

Page 1 of 1

Lab Order ID:



Environmental Management Consulting, Inc.

E.M.C., Inc.
W7748 County Highway V
Lake Mills, WI 53551
920-648-6343

Scientific Analytical Institute
4604 Dundas Drive
Greensboro, NC 27407
877-292-3888



EMC Contact:	Test Type	Test Duration	Test Date
Email : emc@emc-wi.com	PLM ☐	12 Hours ☐	120 Hours ☐
Sample Location:	Point Count ☐	24 Hours ☐	144+ Hours ☐
Sample Date:	PCM ☐	48 Hours ☐	
Sampling Personnel:	TEM ☐	72 Hours ☐	
Inspector Number:	Lead ☐	96 Hours ☐	
Project Name/#:			

[illegible]

Total # of Samples

Requested by	Date Time	Received by	Date Time

Please Email To:

- ☐ bfreeman@emc-wi.com
- ☐ jbushman@emc-wi.com
- ☐ jjozwiakowski@emc-wi.com
- ☐ amaule@emc-wi.com

- ☐ proche@emc-wi.com
- ☐ jschneider@emc-wi.com
- ☐ rhaveman@emc-wi.com
- ☐ cfreeman@emc-wi.com

- ☐ jnoegel@emc-wi.com
- ☐ mlfreeman@emc-wi.com
- ☐ ltwinslow@emc-wi.com
- ☐ bwieland@emc-wi.com

Page 2 of 2

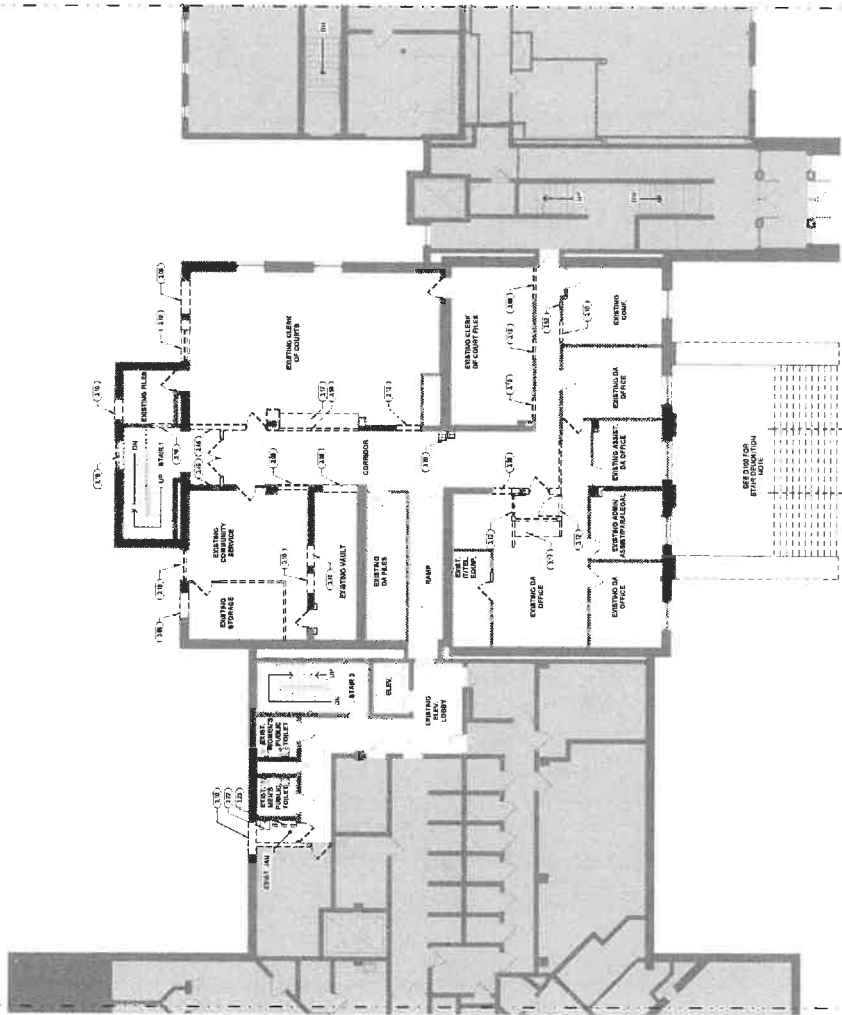
☐ tbushman@emc-wi.com
☐ jharman@emc-wi.com
☐ emc@emc-wi.com

DRAWINGS

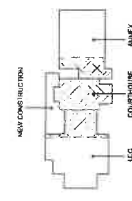
- GENERAL DEMOLITION NOTES:**
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL JURISDICTIONS PRIOR TO COMMENCING DEMOLITION WORK.
 2. ALL DEMOLITION WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
 3. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AND UTILITIES AT ALL TIMES.
 4. THESE DEMOLITION DRAWINGS HAVE BEEN DESIGNED BASED UPON THE INFORMATION PROVIDED BY THE CLIENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF THIS INFORMATION.
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NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	DEMOLITION OF EXISTING CONCRETE FLOOR SLAB	100	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
2	DEMOLITION OF EXISTING CONCRETE WALL	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
3	DEMOLITION OF EXISTING CONCRETE ROOF SLAB	200	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
4	DEMOLITION OF EXISTING CONCRETE CURB	10	LINEAL FT.	SEE DETAIL FOR REINFORCEMENT
5	DEMOLITION OF EXISTING CONCRETE DRIVEWAY	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
6	DEMOLITION OF EXISTING CONCRETE SIDEWALK	100	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
7	DEMOLITION OF EXISTING CONCRETE PATIO	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
8	DEMOLITION OF EXISTING CONCRETE PORCH	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
9	DEMOLITION OF EXISTING CONCRETE STAIRS	10	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
10	DEMOLITION OF EXISTING CONCRETE BALCONY	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
11	DEMOLITION OF EXISTING CONCRETE TERRACE	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
12	DEMOLITION OF EXISTING CONCRETE DRIVEWAY	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
13	DEMOLITION OF EXISTING CONCRETE SIDEWALK	100	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
14	DEMOLITION OF EXISTING CONCRETE PATIO	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
15	DEMOLITION OF EXISTING CONCRETE PORCH	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
16	DEMOLITION OF EXISTING CONCRETE STAIRS	10	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
17	DEMOLITION OF EXISTING CONCRETE BALCONY	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
18	DEMOLITION OF EXISTING CONCRETE TERRACE	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
19	DEMOLITION OF EXISTING CONCRETE DRIVEWAY	50	SQ. YD.	SEE DETAIL FOR REINFORCEMENT
20	DEMOLITION OF EXISTING CONCRETE SIDEWALK	100	SQ. YD.	SEE DETAIL FOR REINFORCEMENT



1 COURTHOUSE FIRST FLOOR DEMOLITION PLAN
1/8" = 1'-0"



Adams County Courthouse

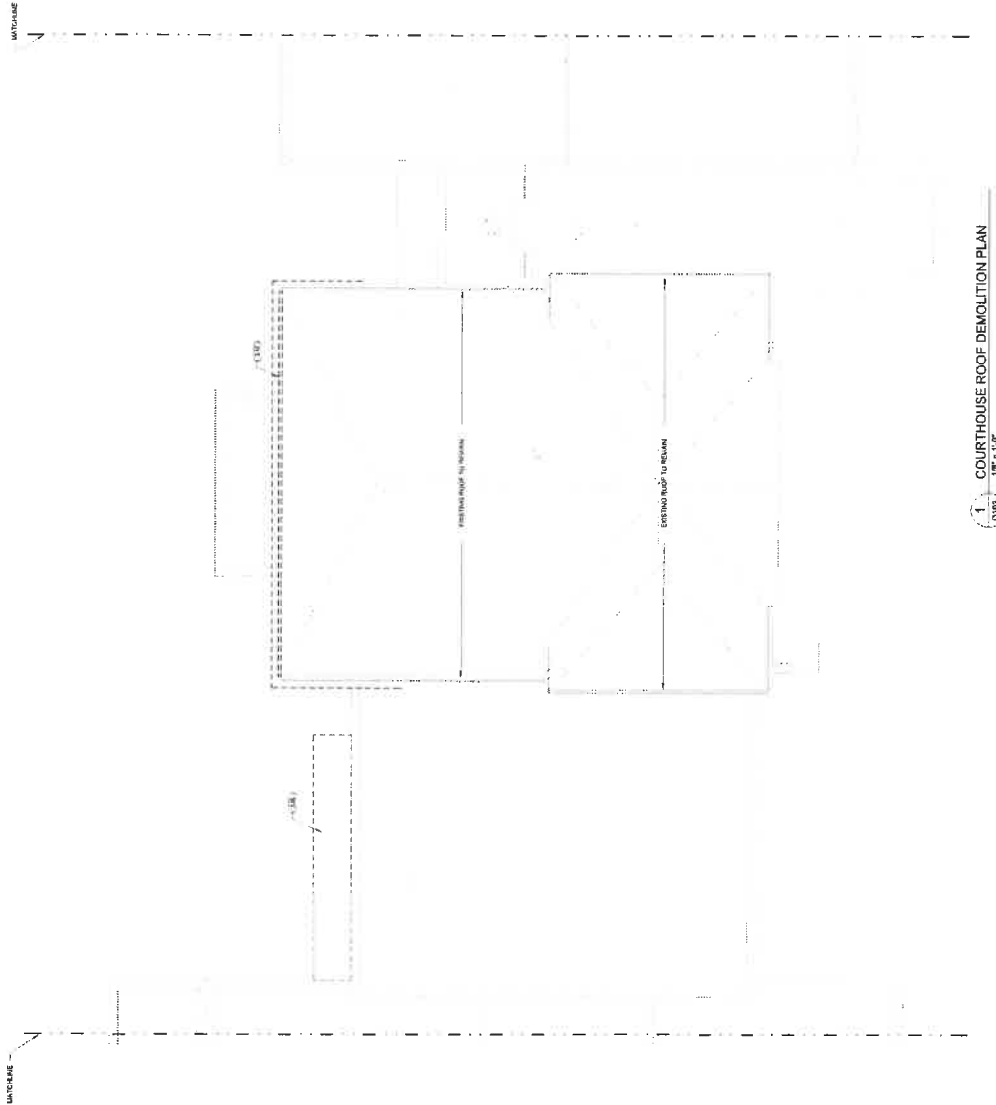
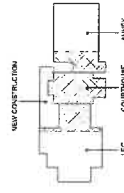
402 Main Street
Friendship, WI 53834

2019.10.00

DATE	DESCRIPTION
2019.10.00	ISSUED FOR PERMIT
2019.09.00	ISSUED FOR CONSTRUCTION
2019.08.00	ISSUED FOR REVIEW
2019.07.00	ISSUED FOR DESIGN
2019.06.00	ISSUED FOR PRELIMINARY
2019.05.00	ISSUED FOR CONCEPT
2019.04.00	ISSUED FOR Schematic
2019.03.00	ISSUED FOR PRELIMINARY
2019.02.00	ISSUED FOR CONCEPT
2019.01.00	ISSUED FOR Schematic

FIRST FLOOR DEMOLITION PLAN - COURTHOUSE

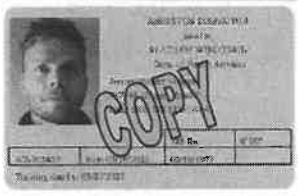
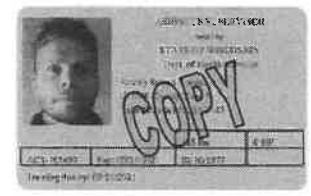
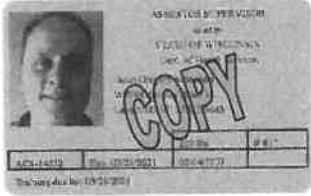
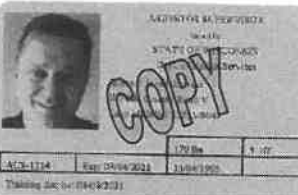
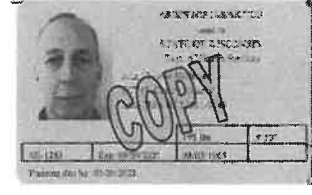
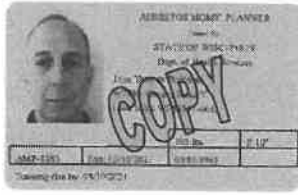
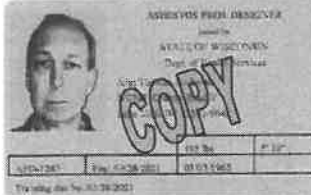
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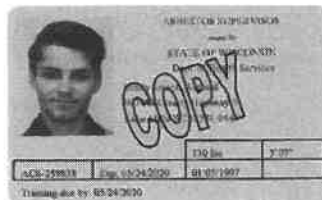
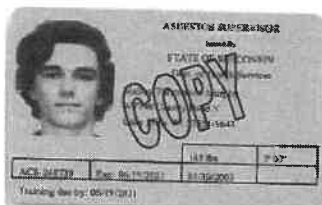
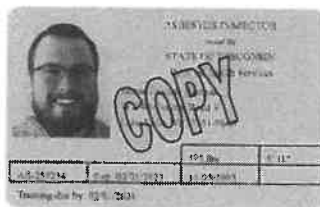
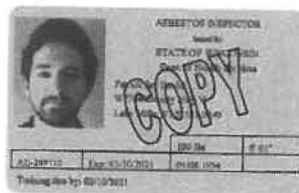


1 COURTHOUSE ROOF DEMOLITION PLAN

[illegible]

CERTIFICATIONS





Inspection of
ADAMS COUNTY COURTHOUSE
FRIENDSHIP, WI

MEI# 63-96-1214

May 14, 1996

MacNeil Environmental, Inc.
755 E. Cliff Road
Burnsville, MN 55337



INTRODUCTION:

MacNeil Environmental, Inc. (MEI) was authorized by Mr. Jerry Jensen, Chairman for Adams County Courthouse, to perform an asbestos inspection of the Adams County Courthouse building located in Friendship, Wisconsin.

The general scope of our work consisted of inspection of all accessible areas, and collection of building bulk samples to be analyzed for asbestos content. A final report including our findings and our recommendations has been provided. *(Note: A limited number of paint film samples were collected and were analyzed for lead (Pb) content).*

BUILDING INFORMATION:

The subject facility was originally constructed in 1914 (3 levels). Building additions were constructed in 1952 and 1974. (The new 1990's building addition was not included in this inspection).

OBSERVATIONS/SAMPLING:

Building observations and sampling took place on April 11 & 12, 1996 by Gary DeMars of MacNeil Environmental, Inc. (MEI).

ASBESTOS SAMPLING

Suspect building materials were sampled by removing, bagging and labeling small portions of the material. One to three samples per homogeneous material were taken, depending on the material being sampled. A Homogeneous Material is defined as those materials having like age, color, texture, and general appearance.

Destructive sampling that would damage architectural finishes, structural or mechanical systems was not performed. As a result, the following items were not sampled: underlying wall layers (which were not accessible), interior wall cavities, fire brick, build-up roofs, adhesives (other than those collected as part of another sample), gaskets, fabric wiring, cement-clay pipes, and suspect materials within mechanical equipment.

Each asbestos sample was numbered and mapped as to location. Refer to Appendix A for mapped sample locations. Refer to Appendix B for laboratory results and laboratory accreditation.

LEAD (PB) SAMPLING

Bulk paint chip samples were collected of representative homogeneous surfaces of paint. These samples were sent to a laboratory for analysis by Atomic Absorption Spectroscopy (AAS). All layers of paint down to, but not including the substrate were collected.

Each lead (Pb) sample was numbered and mapped as to location. Refer to Appendix C for mapped sample locations. Refer to Appendix D for laboratory results and accreditation.

ASBESTOS LABORATORY PROCEDURES:

All analysis were performed using Polarized Light Microscopy according to the methods specified in the USEPA 1982 procedures and found in 40 CFR part 763 Appendix A, Subpart F.

Please Note: the USEPA has made available an improved method in 1993 entitled "Method for the Determination of Asbestos in Bulk Building Materials" - EPA/600/R-93/116. This method is preferred with certain samples/instances because it can provide more precise analytical results especially at low asbestos concentrations, enhanced analysis of floor tiles which may contain thin asbestos fibers below the limits of resolution of the polarized light microscope (PLM) and clearer instruction on the analysis of bulk materials, particularly where multiple layers are present.

Any material with a concentration of more than one percent asbestos was considered to be an asbestos-containing material (ACM). Typical asbestos fiber forms found in buildings are chrysotile asbestos and amosite asbestos.

LEAD (Pb) LABORATORY PROCEDURES:

All lead (Pb) analysis was performed using USEPA method SW-846 7420 - flame atomic absorption. Sample results are given in percent by weight (% wt) of lead (Pb) in paint.

SUMMARY OF ASBESTOS CONTAINING SAMPLES

Our inspection and testing indicated asbestos was found in the following materials: (analysis by Polarized Light Microscopy or PLM).

<u>Sample #</u>	<u>Material</u>	<u>Location</u>	<u>Asbestos Content</u>
AC-06	Sheetrock Taping Compound	1914 Bldg. Basement	< 1 % Chrysotile
AC-07	Sheetrock Taping Compound	1914 Bldg. 1st Floor	< 1 % Chrysotile
AC-08	Sheetrock Taping Compound	1952 Bldg. 1st Floor	< 1 % Chrysotile
AC-09	Sheetrock Taping Compound	1974 Bldg. Basement	< 1 % Chrysotile
AC-10	Sheetrock Taping Compound	1974 Bldg. 1st Floor	< 1 % Chrysotile
AC-11	Skim Coat (Wall)	1974 Bldg. 1st Floor (squad room)	< 1 % Chrysotile
AC-12	9"x9" Floor Tile & Mastic	1914 Bldg. Basement Lunchroom	Tile - 5 % Chrysotile Mastic - 5 % Chrysotile
AC-13	9"x9" Floor Tile & Mastic (Tan)	1914 Bldg. 1st Floor	Tile - 5 % Chrysotile Mastic - 4 % Chrysotile
AC-14	12"x12" Floor Tile (Orange Marble)	1974 Bldg. 1st Floor	2 % Chrysotile
AC-16	12"x12" Floor Tile & Mastic (Tan Speckled)	1974 Bldg. Basement	Tile - 2 % Chrysotile Mastic - 5 % Chrysotile
AC-17	12"x12" Floor Tile & Mastic (Tan)	1974 Bldg. 1st Floor	Tile - < 1 % Chrysotile Mastic - 5 % Chrysotile
AC-18	"Aircell" Pipe Insulation	Boiler Area	70 % Chrysotile
AC-19	Pipe Fitting Insulation	1914-1954 Walk Tunnel	10 % Chrysotile 5 % Amosite
AC-20	Pipe Insulation	1952 Bldg. 1st Floor	30 % Chrysotile
AC-21	Pipe Insulation	1952 Bldg. 1st Floor	20 % Chrysotile

<u>Sample #</u>	<u>Material</u>	<u>Location</u>	<u>Asbestos Content</u>
AC-22	Pipe Insulation	1914 Bldg. Basement	10% Chrysotile
AC-23	Pipe Fitting Insulation (on fiberglass run)	1914 Bldg. Basement	20% Chrysotile

*The USEPA suggests that building owners use an improved asbestos bulk sample analysis test method entitled "Method for the Determination of asbestos in Bulk Building Materials" - EPA/600/R-93/116, for enhanced analysis of floor tiles which may contain thin asbestos fibers below the limits of resolution of the polarized light microscope (PLM). The approved method addresses the thin fiber limitation of the earlier 1982 EPA method by providing directions for using "transmission electron microscopy" (TEM). The method also includes improved procedures for reducing materials so that fibers may be made available for microscopic analysis.

**The USEPA suggests that any material which is <10% asbestos (by Polarized Light Microscopy) be analyzed by "Point Count" method to verify that the material contains <1% asbestos. This method is a more detailed method of quantifying asbestos content through special USEPA protocol. The Point Count method of analysis costs approximately \$75.00 per sample.

Summary of Non-Asbestos Containing Building Materials

The following "suspect" building materials were found to NOT CONTAIN ASBESTOS: (see laboratory results sheet for detailed information on sampling).

- 1914 Building - Plaster ceilings and walls (rough finish or smooth finish)
- 1952 Building - Plaster ceilings and walls (rough finish or smooth finish)
- 1974 Building (First Floor) - 12"x12" white speckled floor tile and mastic (see sample location map)
- 1914, 1952, 1974 Buildings - Sheetrock panels (*Note: applied taping compound on sheetrock panels contains <1% asbestos*)
- 1914, 1952, 1974 Buildings - "Hard", "cementitious" pipe fitting insulation on fiberglass covered pipe runs (except sample #AC-23 in 1914 Basement - see sample location map)
- 1974 Building - "Hard", "cementitious" insulation on roof drain elbows
- 1914, 1952, 1974 Buildings - 12"x12" ceiling tiles, 2'x2' suspended ceiling tiles, 2'x4' suspended ceiling tiles
- 1952, 1974 Buildings - Ceramic tile and grout (Baths)

RECOMMENDATIONS: ASBESTOS CONTAINING MATERIALS

9"x9" and 12"x12" Floor Tile/Mastic

The 9"x9" floor tile/mastic located in this building is non-friable and in good condition. If this material will not be impacted by renovations it is recommended that this material not be disturbed. This asbestos containing material can be dealt with using asbestos "Operations and Maintenance" (O&M) methods. Typical O&M recommendations for floor tile include no breaking, cutting, sanding, or grinding. It is also recommended that the tile be kept waxed or sealed. Should this floor tile be removed in the future, it must be removed by a contractor utilizing State of Wisconsin current certified workers/site supervisor trained in the handling of asbestos containing materials. Notification of asbestos abatement would need to be filed by an asbestos contractor with the State of Wisconsin Department of Health and Social Services, Department of Natural Resources-Bureau of Air Management, and the USEPA Region #5 offices in Chicago, IL. MEI suggests that floor tile be removed in a "non-friable" "in-whole" manner (i.e., no mechanical chipping, sanding, abrading etc.) so as to minimize the containment preparation, ACM dust and debris, and environmental air testing concerns as much as possible.

Asphalt floor tile mastics which are indicated to contain asbestos are non-friable unless sanded, abraded or bead-blasted. (*Note: Bead-blasting of mastic is not allowed in the State of Wisconsin*). Removal of floor tile mastics should be done using non-friable wet methods, which normally includes use of a chemical solvent to liquify the mastic. Liquified mastic is then squeegeed into floor dry for solid waste disposal purposes. Workers need to use respirators that contain organic vapor cartridge in order to protect from chemical solvent inhalation exposure during removal of mastics.

Pipe and Pipe Fitting Insulation

Pipe run and pipe fitting insulation which contain asbestos (see sample summary or sample result sheets) was found in the 1914 and 1952 building areas. These materials have some damaged areas (open ends, tears, gouges, etc.) but are generally in good condition. Asbestos containing pipe and thermal system insulation which is damaged has a high probability of releasing asbestos fibers into the air from disturbance (i.e. physical contact, vibration, water damage, etc.). These materials need to be maintained (patched/repaired) using proper asbestos O&M methods and procedures in order to avoid fiber release. Should these materials need to be disturbed during renovation activities, removal needs to be done by an asbestos contractor, complying with all OSHA regulations and all applicable notification requirements as shown above. (WI Dept. of HSS, WI DNR, Region #5 Offices).

Note: Only one "asbestos containing" pipe fitting insulation located on a "fiberglass run" was sampled (sample #AC-23, 1914 Storage Room) all other pipe fitting insulation samples which were taken off from "fiberglass runs" were ND (non-detected) for asbestos.

Sheetrock Taping Compound and Skim Coat

(samples #AC-06 through #AC-11)

All sheetrock taping compound which were tested contained a small amount of asbestos (<1% chrysotile asbestos). Building materials which contain <1% asbestos can be considered as NON-ASBESTOS materials, however the USEPA suggests that such materials in question be analyzed by "point counting" which more accurately reflects the percentage of asbestos in the

material. In addition, the sheetrock and taping compound can be considered as one material forming the wall system. In this case the average of the analysis of both materials together would likely be less than 1% asbestos and not subject to asbestos notification requirements or requirements for Wisconsin certified asbestos workers. MEI would always suggest common sense dust control measures (plastic sheet barriers, wet methods, etc.) to minimize dust from an environmental and worker protection standpoint whenever any material that contains even a trace of asbestos.

SUMMARY OF LEAD (Pb) IN PAINT RESULTS

<u>Sample #</u>	<u>Description</u>	<u>Location</u>	<u>Result</u>
Pb-01	White Wall Paint (typical)	1974 Bldg. 1st Floor	<0.009 % wt
Pb-02	Blue Wall Paint	1974 Bldg. 1st Floor Lav	<0.009 % wt
Pb-03	Paint	1952 Bldg. 1st Floor Womens Bath	0.04 % wt
Pb-04	Paint	1914 Bldg. Basement Hall	0.59 % wt

(Note: See lead (Pb) sample location map for location of samples collected)

LEAD (Pb) PAINT "LIMITS"/"ACTION LEVEL"

Lead Safe Paint: (Consumer Product Safety Commission, CPSC lower limit 0.06% wt)(percentage by weight) or 600 ppm.

HUD Guidelines - "action" level for lead (Pb) abatement: 0.5 % wt (percentage by weight) or 5,000 ppm

RECOMMENDATIONS: LEAD (Pb) CONTAINING PAINT

As stated in the introduction a "limited" number of paint film samples were collected for informational purposes. As shown in the summary of Lead (Pb) in Paint Results, only one sample collected (sample #Pb-04) had a lead (Pb) content of greater than 0.06 % wt (by weight) or 600 ppm, which is the Consumer Product Safety Commission (CPSC) allowable limit for lead (Pb) in paint.

Sample #Pb-04 contained 0.59% wt which is slightly above the Housing and Urban Development (HUD) "action level for abatement (either removal or encapsulation). (HUD "action" level for abatement is 0.50% wt). OSHA "Lead in Construction Standards" (29 CFR Part 1926.62) does not distinguish between lower or higher levels of lead (Pb) in paint, but instead require the contractor who disturbs the lead (Pb) painted surfaces/materials to provide worker personal air monitoring and interim worker protection measures until personal air monitoring data shows that airborne levels of lead (Pb) in the work area are below allowable OSHA limits. Dust control, wet methods, and proper housekeeping/clean up is always required when lead based paint is being disturbed. In addition, many other factors (condition of paint, substrate adherence, methods of disturbance, etc.) contribute to how much lead (Pb) dust is generated during renovation/demolition activities.

Based on OSHA "Lead in Construction" requirements (29 CFR Part 1926.62), in general, the following items are recommended:

- Contractor must have an OSHA competent person capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
- Exposure assessment (air monitoring) must be done to determine whether any employee may be exposed at or above the Action Level (AL) which is $30 \mu\text{g}/\text{m}^3$.
- Contractor's employees must be provided protection during exposure assessment as per OSHA task triggers until the employer documents that employees are not exposed above the Permissible Exposure Limit (PEL) which is $50 \mu\text{g}/\text{m}^3$. Examples of protection that must be provided:
 - appropriate respirators
 - personal protective equipment (PPE)
 - change areas and hand washing facilities
 - biological monitoring
 - worker training
- Contractor must use engineering controls and work practice controls where feasible to reduce exposures. Examples include:
 - sealing off the work area with poly sheeting
 - mechanical ventilation (when necessary)
 - wet methods
 - HEPA (High Efficiency Particulate Air) filtered vacuums
 - drop cloths
 - approved removal methods, etc.
- Contractor must keep the work area as free as practicable of accumulations of dust and comply with other OSHA "Housekeeping" requirements.

In addition, MEI recommends the following in order to protect the owner against any liability or occupant protection concerns:

- Contractor should secure insurance liability coverage for lead (Pb) activities in addition to their normal commercial general liability coverage.
- Contractors "competent" person should be a Wisconsin certified lead (Pb) contractor/worker, having completed an accredited four day training course.
- Wipe tests should be done to document lead (Pb) in dust levels. In particular, final wipe tests after the abatement work or work stages should be done before re-occupation by non-lead abatement personnel. Preliminary or baseline wipe tests prior to the start of work are also a good worksite assessment tool and valuable documentation for future comparison.

RECOMMENDED LEAD (Pb) ABATEMENT METHODS

- Component Removal - Windows, doors, trim, demolition of wall plaster, etc.

These methods keep the lead paint with the substrate thus creating less dust and allowing debris to be disposed of as normal construction debris. *Note: chips and small debris, sweepings, etc. must be sealed in leak-tight 6 mil poly bags and a representative sample of the chips/debris must be tested using the Toxicity Characteristic Leachate Procedure (TCLP) in order to determine whether waste is considered "hazardous waste".* Paint removed chemical methods must be disposed of as "hazardous waste".

- Off site - chemical stripping

Wall and Ceiling surfaces can be wet scraped in order to stabilize the surface, cleaned and either enclosed with sheetrock or encapsulated with a wall restoration system (light-weight fiberglass mat and liquid polymer system).

- Use of open flame torches, heat guns over 700° F, sand blasting, sanding, dry scraping, and methylene chloride based paint strippers are prohibited.

Appendix A

Mapped Sample Locations For Asbestos

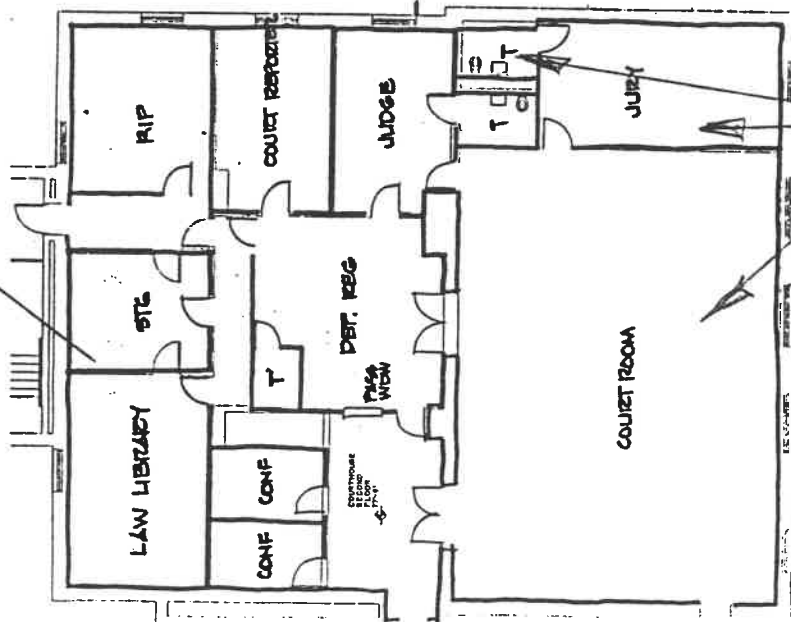
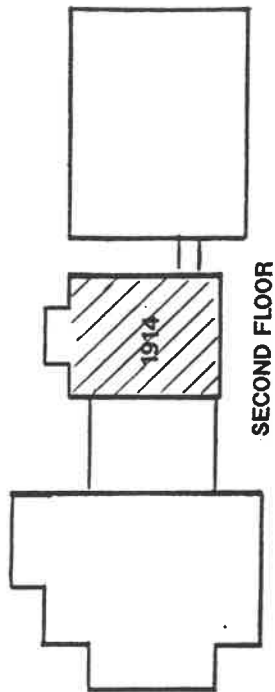


ADAMS COUNTY COURTHOUSE
FREINDSHIP, WI
SAMPLE MAP FOR ASBESTOS



32

KEY



SECOND FLOOR

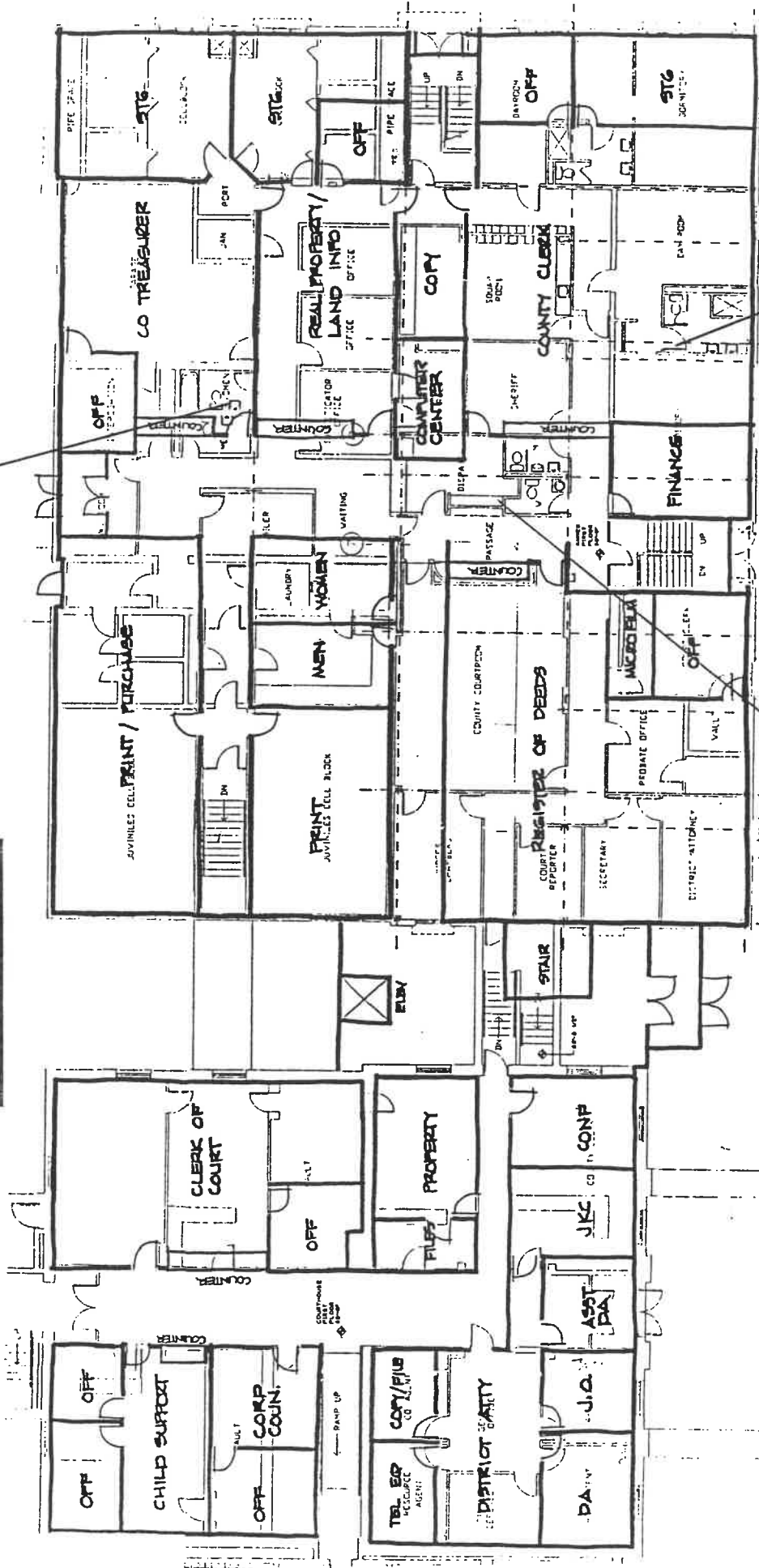
THESE AREAS RECENTLY REMODELED

MacNeil
ENVIRONMENTAL, INC.

ADAMS COUNTY COURTHOUSE FREINDSHIP, WI SAMPLE MAP FOR ASBESTOS

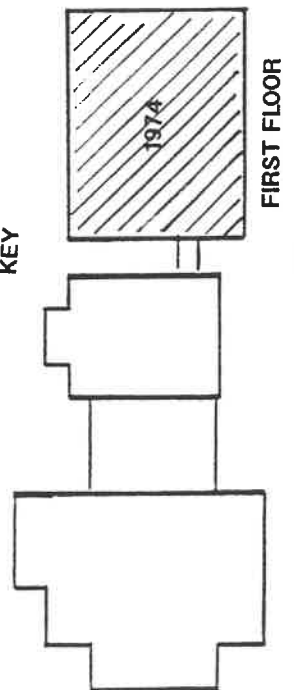
Appendix C

Mapped Sample Locations for Lead (Pb)

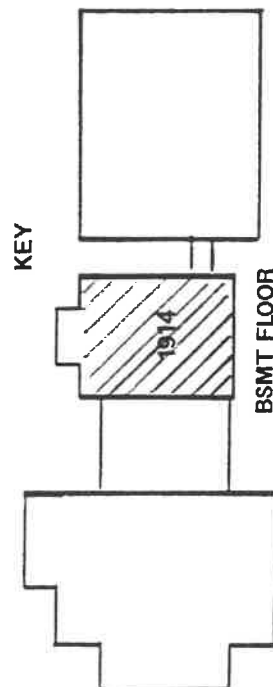


FIRST FLOOR

KEY



ADAMS COUNTY COURTHOUSE
FREINDSHIP, WI
SAMPLE MAP FOR LEAD (Pb) PAINT



ADAMS COUNTY COURTHOUSE
FREINDSHIP, WI
SAMPLE MAP FOR LEAD (Pb) PAINT

Appendix B

**Asbestos Laboratory Results
& Accreditation**



**MILAN
ASBESTOS
LABORATORY**

250 N MAIN ST. BOX 200 MILAN, MN 56262
TEL: 612-734-4406 / FAX: 612-734-4407

May 14, 1996

London Johnson
MacNeil Environmental, Inc.
755 East Cliff Road
Burnsville, MN 55337

RE: Sample Bulk Analysis

Client Number: C-30
Log-In Number: 2205

Dear London:

Enclosed are the results of bulk samples from Adams County which were submitted for asbestos analysis. These samples were received on April 29, and analyzed on May 9, 1996. Results are listed on the attached table.

The identification and quantification of asbestos is performed in accordance with EPA/600 R-93/116. Gross characteristics are first observed under 10x magnification. Each fibrous component, as well as representative random pinches, are mounted in refractive index oils. Solvents or acids may also be used for matrix reduction. Slides are then examined by polarized light microscopy (PLM) with dispersion staining techniques. Fibrous components are identified, and an area percentage of asbestos present is determined by visual estimation.

The National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision Final Rule in the Federal Register, Vol. 55, No. 224 (11/20/90 edition), imposes an additional requirement for any friable material, as well as any Category I non-friable material which has become friable or will become friable through removal, renovation, or maintenance, and is found to be asbestos-containing at a quantity of less than 10 percent by visual estimation. The building owner may either assume the asbestos quantity to be greater than one percent and treat the material as ACM, or may require verification by the point count method of quantification. If a result obtained by point counting differs from the visual estimation result, the point count result must be used. However, for some materials, both visual estimation and point count quantification results may be unreliable at the detection limit. Transmission electron microscopy (TEM) analysis or gravimetric matrix reduction may be advisable.

This report relates only to the samples analyzed, and may not be used to claim product endorsement by NVLAP or any agency of the U. S. government. Samples will be stored for one (1) year, unless otherwise requested.

If you have any questions about these analyses or require further services, please contact me at your convenience.

Sincerely,

Julie B. Trelstad
Laboratory Manager/Proprietor

PHONE: 612-734-4406 / FAX: 612-734-4407

Client Name: MacNeil Environmental, Inc.
Project Name: Adams County, WI

ANALYTICAL METHOD: PLM WITH DISPERSION STAINING - EPA/600 R-93/116

AC-01	1914 BLDG-1ST FLOOR CEILING	PLASTER	ND	-----	ND	-----
AC-02	1914 BLDG-BSMT CEILING	PLASTER	ND	-----	ND	-----
AC-03	1952 BLDG-1ST FLOOR WALL	PLASTER	ND	-----	ND	-----
AC-04	1952 BLDG 1ST FLOOR WALL	PLASTER	ND	-----	ND	-----
AC-05	1952 BLDG-1ST FLOOR CEILING	PLASTER	ND	-----	ND	-----
AC-06	1914 BLDG- BASEMENT	SHEETROCK	ND	-----	10	CELLULOSE
		TAPING COMPOUND	<1	CHRYSHOTILE	ND	-----
AC-07	1914 BLDG-1ST FLOOR	SHEETROCK	NO SAMPLE			
		TAPING COMPOUND	<1	CHRYSHOTILE	ND	-----
AC-08	1952 BLDG-1ST FLOOR	SHEETROCK	ND	-----	10	CELLULOSE
		TAPING COMPOUND	<1	CHRYSHOTILE	ND	-----

ND=NONE DETECTED NT=NOT TESTED

MILAN ASBESTOS LABORATORY
250 MAIN STREET P.O. BOX 200
MILAN, MN 56262
 PHONE: 612-734-4406 / FAX: 612-734-4407

BULK ASBESTOS LABORATORY REPORT

Client Name: MacNeil Environmental, Inc.
 Project Name: Adams County, WI

Client Number: C-30
 Log-In Number: 2205

ANALYTICAL METHOD: PLM WITH DISPERSION STAINING - EPA/ 600 R-93/116

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS FIBERS		NON-ASBESTOS FIBERS		COMMENTS
				%	TYPE	%	TYPE	

AC-9		1974-BSMT	SHEETROCK	ND	----	10	CELLULOSE	
			TAPING COMPOUND	<1	CHRYSTOTILE	ND	-----	
AC-10		1974 - 1ST FLOOR	SHEETROCK W/ VINYL COVER	ND	----	10	CELLULOSE	
			TAPING COMPOUND	<1	CHRYSTOTILE	ND	-----	
AC-11		1974-1ST FLOOR-OLD SQUAD ROOM	SHEETROCK	ND	----	10	CELLULOSE	
			SKIM COAT	<1	CHRYSTOTILE	ND	-----	
AC-12		1914 BLDG-BSMT LUNCH ROOM	9X9 FLOOR TILE	5	CHRYSTOTILE	ND	-----	
			MASTIC	5	CHRYSTOTILE	ND	-----	
AC-13		1914 BLDG-1ST FLOOR	9X9 TAN FLOOR TILE	5	CHRYSTOTILE	ND	-----	
			MASTIC	<1	CHRYSTOTILE	ND	-----	

Analyst's Signature 

NVLAP CODE #: 2095 PAT ID #: 14325

ND=NONE DETECTED NT=NOT TESTED

MILAN ASBESTOS LABORATORY
250 MAIN STREET P.O. BOX 200
MILAN, MN 56262
 PHONE: 612-734-4406 / FAX: 612-734-4407

BULK ASBESTOS LABORATORY REPORT

Client Name: MacNeil Environmental, Inc.
 Project Name: Adams County, WI

Client Number: C-30
 Log-In Number: 2205

ANALYTICAL METHOD: PLM WITH DISPERSION STAINING - EPA/ 600 R-93/116

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS FIBERS		NON-ASBESTOS FIBERS		COMMENTS
				%	TYPE	%	TYPE	

AC-14	1974 BLDG-1ST FLOOR	12X12 ORANGE MARBLE FLOOR TILE	2	CHRYSTOTILE	ND	----		
AC-15	1974-1ST FLOOR	MASTIC 12X12 WHITE SPECKLED FLOOR TILE	ND	----	ND	----		NO SAMPLE
AC-16	1974 BASEMENT	12X12 TAN SPECKLED FLOOR TILE	2	CHRYSTOTILE	ND	----		
AC-17	1974- 1ST FLOOR	MASTIC 12X12 TAN SPECKLED FLOOR TILE	5	CHRYSTOTILE	ND	----		
AC-18	BASEMENT BOILER ROOM	MASTIC AIRCELL	5	CHRYSTOTILE	ND	----		
			70	CHRYSTOTILE	ND	----		
AC-19	1914-1952 WALK TUNNEL	PIPE FITTING INSULATION	10	CHRYSTOTILE	10	FIBERGLASS AMOSITE		
			5	AMOSITE				

Analyst's Signature *J MacNeil*

NVLAP CODE #: 2095 PAT ID #: 14325

ND=NONE DETECTED NT=NOT TESTED

MILAN ASBESTOS LABORATORY
250 MAIN STREET P.O. BOX 200
MILAN, MN 56262
 PHONE: 812-734-4406 / FAX: 812-734-4407

BULK ASBESTOS LABORATORY REPORT

Client Name: MacNeil Environmental, Inc.
 Project Name: Adams County, WI

Client Number: C-30
 Log-In Number: 2205

ANALYTICAL METHOD: PLM WITH DISPERSION STAINING - EPA/ 600 R-93/116

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS FIBERS		NON-ASBESTOS FIBERS		COMMENTS
				%	TYPE	%	TYPE	

AC-20		1952-1ST FLOOR	PIPE LAGGING	30	CHRYOTILE	ND	----	
AC-21		1952-1ST FLOOR	PIPE FITTING INSULATION	20	CHRYOTILE	ND	----	
AC-22		1914-BASEMENT STORAGE ROOM	PIPE INSULATION	10	CHRYOTILE	25	FIBERGLASS	
AC-23		1914 BASEMENT	PIPE FITTING ON FIBERGLASS	20	CHRYOTILE	ND	----	
AC-24		1914-1954 WALK TUNNEL	PIPE FITTING ON FIBERGLASS	ND	----	5	FIBERGLASS	
AC-25		1952 BLDG-1ST FLOOR	PIPE FITTING ON FIBERGLASS	ND	----	5	FIBERGLASS	
AC-26		1952 BLDG-1ST FLOOR	PIPE FITTING ON FIBERGLASS	ND	----	5	FIBERGLASS	
AC-27		1974 BLDG-BASEMENT	1974 PIPE FITTING	ND	----	5	FIBERGLASS	
AC-28		1974 BLDG-HOT WATER LINE	1974 PIPE FITTING	ND	----	5	FIBERGLASS	

Analyst's Signature: 

NVLAP CODE #: 2095 PAT ID #: 14325

ND=NONE DETECTED NT=NOT TESTED

MILAN ASBESTOS LABORATORY
250 MAIN STREET P.O. BOX 200
MILAN, MN 56262
 PHONE: 612-734-4406 / FAX: 612-734-4407

BULK ASBESTOS LABORATORY REPORT

Client Name: MacNeil Environmental, Inc.
 Project Name: Adams County, WI

Client Number: C-30
 Log-In Number: 2205

ANALYTICAL METHOD: PLM WITH DISPERSION STAINING - EPA/ 600 R-93/116

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS FIBERS		NON-ASBESTOS FIBERS		COMMENTS
				%	TYPE	%	TYPE	
AC-29		1974 BLDG-1ST FLOOR	1974 ROOF DRAIN ELBOW	ND	----	5	FIBERGLASS	
AC-30		1914 BLDG-BSMT LUNCH ROOM	2X2 SUSP. CEILING TILE	ND	----	35	FIBERGLASS	
						35	CELLULOSE	
AC-31		1914-BASEMENT	2X4 SUSP. CEILING TILE	ND	----	35	FIBERGLASS	
						35	CELLULOSE	
AC-32		1914-2ND FLOOR	12X12 CEILING TILE	ND	----	98	CELLULOSE	
AC-33		1914-BASEMENT	12X12 CEILING TILE	ND	----	98	CELLULOSE	
AC-34		1914-1ST FLOOR-CLERK OF COURT	2X4 SUSP. CEILING TILE	ND	----	98	CELLULOSE	
AC-35		1914-1ST FLOOR	12X12 CEILING TILE	ND	----	98	CELLULOSE	
AC-36		1974-1ST FLOOR	2X4 SUSP. CEILING TILE	ND	----	35	FIBERGLASS	
						35	CELLULOSE	
AC-37		1974-1ST FLOOR(OLD DISPATCH)	2X4 SUSP. CEILING TILE	ND	----	35	FIBERGLASS	
						35	CELLULOSE	
AC-38		1974-BASEMENT	2X4 SUSP. CEILING TILE	ND	----	35	FIBERGLASS	
						35	CELLULOSE	

Analyst's Signature *A. Zelenka*

NVLAP CODE #: 2095 PAT ID #: 14325

ND=NONE DETECTED NT=NOT TESTED

MILAN ASBESTOS LABORATORY
250 MAIN STREET P.O. BOX 200
MILAN, MN 56262
 PHONE: 612-734-4408 / FAX: 612-734-4407

BULK ASBESTOS LABORATORY REPORT

Client Name: MacNeil Environmental, Inc.
 Project Name: Adams County, WI

Client Number: C-30
 Log-In Number: 2205

ANALYTICAL METHOD: PLM WITH DISPERSION STAINING - EPA/ 600 R-93/116

SAMPLE NUMBER	SAMPLE DATE	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS FIBERS		NON-ASBESTOS FIBERS		COMMENTS
				%	TYPE	%	TYPE	

AC-39		1974-1ST FLOOR HALL	2X2 SUSP. CEILING TILE	ND	-----	65	FIBERGLASS	
AC-40		1952-1ST FLOOR BATH	CERAMIC TILE & GROUT	ND	-----	ND	-----	
AC-41		1974-1ST FLOOR BATH	CERAMIC TILE & GROUT	ND	-----	ND	-----	

Analyst's Signature *A Zelenka*

NVLAP CODE #: 2095 PAT ID #: 14325

ND=NONE DETECTED NT=NOT TESTED

Appendix D

Lead (Pb) Laboratory Results & Accreditation

BRAUN **INTERTEC**

Braun Intertec Corporation
6875 Washington Avenue South
P.O. Box 39108
Minneapolis, Minnesota 55439-0108
612-941-5600 Fax: 942-4844

*Engineers and Scientists Serving
the Built and Natural Environments[®]*

April 30, 1996

Project CVXX-91-074I
Report 96-1277

Mr. Gary DeMars
MacNeil Environmental, Inc.
755 East Cliff Road
Burnsville, MN 55337

Dear Mr. DeMars:

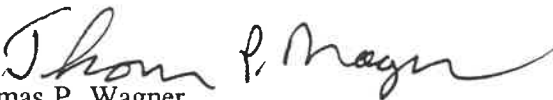
Re: 63-96-1214 Adams County, WI Courthouse

Braun Intertec Corporation received your analytical request on . Analytical results are summarized on the following laboratory report.

Routine Braun Intertec Corporation QA/QC was followed. Quality control data have been reviewed.

We appreciate the opportunity to meet your analytical needs. If you have any questions or need additional information, please call Thomas Wagner at 612-942-4932.

Sincerely,


Thomas P. Wagner
Project Manager

Attachments
Chain of Custody
Laboratory Results

Client: MacNeil Environmental, Inc.
Log-in: 96-1277
Project Number: CVXX-91-074I
Matrix: Paint
Lab Sample ID: 96-1277-01

Laboratory: Braun Intertec Corporation
Lab Contact/Phone: T. Wagner/612-942-4932
Sampler: Client
% Moisture: Not Applicable
MDL: Method Detection Limit
RL: Reporting Limit

Date Sampled: 04/11/96
Date Received: 04/30/96
Date Reported: 04/30/96

Client Sample ID/Description: Pb-01 1974-1st Floor White Wall Paint

Page: 1

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Metals									
Lead, Total	-	-	ASTM E1613	04/30/96	1.0	0.0030	0.0090	<0.0090	% wt

(Report continued on next page)

Client: MacNeil Environmental, Inc.
Log-in: 96-1277
Project Number: CVXX-91-0741
Matrix: Paint
Lab Sample ID: 96-1277-02

Laboratory: Braun Intertec Corporation
Lab Contact/Phone: T. Wagner/612-942-4932
Sampler: Client
% Moisture: Not Applicable
MDL: Method Detection Limit
RL: Reporting Limit

Date Sampled: 04/11/96
Date Received: 04/30/96
Date Reported: 04/30/96

Client Sample ID/Description: Pb-02 1974-1st Floor blue-Lav

Page: 2

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result
Metals								
Lead, Total	-	-	ASTM E1613	04/30/96	1.0	0.0030	0.0090	<0.0090 % wt

(Report continued on next page)

Client: MacNeil Environmental, Inc.
Log-in: 96-1277
Project Number: CVXX-91-074I
Matrix: Paint
Lab Sample ID: 96-1277-03

Laboratory: Braun Intertec Corporation
Lab Contact/Phone: T. Wagner/612-942-4932
Sampler: Client
% Moisture: Not Applicable
MDL: Method Detection Limit
RL: Reporting Limit

Date Sampled: 04/11/96
Date Received: 04/30/96
Date Reported: 04/30/96

Client Sample ID/Description: Pb-03 1952-1st Floor Womens Bath

Page: 3

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Metals									
Lead, Total	-	-	ASTM E1613	04/30/96	1.0	0.0030	0.0090	0.04	% wt

(Report continued on next page)

Client: MacNeil Environmental, Inc.
Log-in: 96-1277
Project Number: CVXX-91-074I
Matrix: Paint
Lab Sample ID: 96-1277-04

Laboratory: Braun Intertec Corporation
Lab Contact/Phone: T. Wagner/612-942-4932
Sampler: Client
% Moisture: Not Applicable
MDL: Method Detection Limit
RL: Reporting Limit

Date Sampled: 04/11/96
Date Received: 04/30/96
Date Reported: 04/30/96

Client Sample ID/Description: Pb-04 1914-Bsmt Hall

Page: 4

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result		
Metals										
Lead, Total	-	-	ASTM E1613	04/30/96	5.0	0.0030	0.045	0.59	% wt	gb

gb The reporting limit (RL) was raised. A dilution of the sample was necessary due to high concentrations of this analyte.

(End of Report)



ENVIRONMENTAL SERVICES

PROPOSAL

DATE: June 3, 1996

PROPOSAL #: P96-0251

PROPOSAL SUBMITTED TO: Adams County Courthouse
402 Main St.
Friendship, WI 53910

PROJECT LOCATION: Adams County Courthouse

PROJECT ADDRESS: 402 Main St.
Friendship, WI

ATTENTION: Mr. Tracy Hamman
(608) 339-4200

SPECIFIC PROJECT REQUIREMENTS

PROJECT DESCRIPTION & AMOUNT

- 1.) Removal of approximately 7530 square feet of floor tile & mastic, 250 linear feet of pipe insulation, and 140 fittings located on fiberglass pipe runs.- \$26,548.00.

INVESTMENT STRUCTURE

- 1.) Lump sum amount.

THIRD PARTY CLEARANCE MONITORING CONTRACTED BY

- 1.) Must be contracted by the owner.

REMOVAL PROCEDURES TO BE UTILIZED

- 1.) Class I and Class II asbestos procedures will be utilized per OSHA regulations.

OTHER SPECIFIC PROJECT REQUIREMENTS

- 1.) Owner will be responsible for relocating all moveable items prior to work commencing. Owner will remove all ceiling tiles where thermal pipe insulation is to be removed. Selective demolition in order to access asbestos insulation will be accomplished by others.

GENERAL PROJECT REQUIREMENTS

1. All project phases will be executed by trained and certified technicians in accordance with all applicable Federal, State, and Local rules and regulations. These rules and regulations will be used as minimal guidelines by **Schauer & Associates, Inc.** during your project.
2. Personal air monitoring of employees will be conducted by Schauer & Associates, Inc. in accordance with OSHA regulations. Stationary air samples will be taken to ensure that the integrity of the enclosure has not been breached and that all engineering controls are working effectively.
3. All persons authorized to enter the abatement area will be required to have a current medical exam, to be fit tested for respirator use, sign in and out of the abatement area, and utilize proper decontamination methods.
4. All required medical surveillance and examinations are conducted and recorded per OSHA regulations.
5. All regulated areas will be posted in compliance with all EPA regulations and OSHA standards. All signs must remain in place until final air clearance is established.
6. All personnel conducting asbestos removal or management will be certified in the applicable discipline as per local, state and federal regulations.
7. All contaminated materials will be disposed of in an approved sanitary landfill. The materials will be sealed in two, six mil thick, properly labeled bags. Any material which may puncture a bag will be disposed of in a properly labeled fiber drum.
8. Owner to provide all necessary electricity, hot and cold potable water, and sufficient storage space for non-contaminated materials and equipment. All non-stationary items are to be moved by others prior to the start of the abatement project. It will be the owners responsibility to make sure all HVAC systems within the containment areas are shut down and locked out. Owner must notify Schauer & Associates, Inc. of any other hazardous materials that we may come in contact with and supply us with the Material Safety Data Sheets (MSDS) for those materials.

9. Areas which require abatement will be accomplished by either glove bag removal or isolation/confinement.
 - A. All glove bag removal, excluding small scale short duration jobs, will be accomplished utilizing a negative pressure enclosure per OSHA requirements. A special bag designed for this type of work encloses the asbestos material to prevent any fiber release into the environment.
 - B. Areas which require Isolation/Confinement will be sealed off completely with polyethylene sheeting. Duct tape, packaging tape, and/or adhesive spray will be used to seal all polyethylene together. Negative pressure will be created within the enclosure to exchange the air inside containment a minimum of once every fifteen minutes.
10. **Schauer & Associates, Inc.** holds a GPAC license for the use of negative pressure systems. This license is a federal requirement for any contractor utilizing negative pressure enclosures.
11. **Schauer & Associates, Inc.** has a no smoking policy. Due to the synergistic effect between asbestos exposure and smoking no employee may smoke while employed by Schauer & Associates, Inc. Eating and drinking is also prohibited while in any enclosure.
12. A decontamination system will be available for personnel. This system will contain a shower for proper decontamination of anyone exiting a contaminated area.
13. All waste water will be filtered as per local, state and federal regulations.
14. All personnel required to enter the regulated area will don respiratory protection as per OSHA regulations. Respiratory protection is also worn during the waste load out procedure.
15. This proposal shall include by reference, the A. I. A. Document A201, "General Conditions of the Contract for Construction - 1987 Edition" as if it were included in its entirety.
16. **Schauer & Associates, Inc.** will provide all disposable clothing. A clean set of disposable clothing is used each time the containment area is entered. All personnel will also be required to wear head, and foot protection.
17. Upon completion of the removal phase all removal surfaces will be final cleaned by either wet wiping or HEPA vacuuming by Schauer & Associates, Inc. personnel.
18. **Schauer & Associates, Inc.** will provide copies of all air monitoring results, notifications, disposal manifests, and other related documents to the owner.

19. Performance, labor, and material bonding costs are not included in the above amounts. The bonding can be added for an investment of fifty dollars (\$50.00) per thousand dollars (\$1,000.00) of contract or portion of, minimum of one hundred dollars (\$100.00) per bond.
20. Any alterations or deviations from the above proposal involving extra costs will be executed upon verbal or written approval by the owner or owners representative. Extra costs will be added to the above proposal.
21. **Schauer & Associates, Inc.** has one million dollars (\$1,000,000) per occurrence and one million dollars (\$1,000,000) aggregate liability insurance coverage. These costs are included in the above sum. A copy of the insurance certificate will be provided if **Schauer & Associates, Inc.** is the successful bidder. \$2,000,000 to \$5,000,000 per occurrence insurance is available for an added premium.
22. All **Schauer & Associates, Inc.** employees are covered by statutory Workers Compensation Insurance.
23. **Schauer & Associates, Inc.** can proceed with the work ten working days after award of the contract, if the project exceeds 260 lineal feet or 160 square feet. A ten day notification is not required for projects less than this. Operations and Maintenance projects will be scheduled according to our availability. The project notifications are requirements of the EPA, and DHSS.
24. Payments due upon receipt of invoice. 1-1½% service charge per month after 30 days of receipt of **Schauer & Associates, Inc.** invoice. This proposal may be withdrawn if not accepted within sixty (60) days.
25. The owner is advised to be aware of Wisconsin Statutes Chapter 779, Subchapter 1, Construction Liens. The statement that appears on the following "Acceptance of Proposal" is required by Wis. Stats §779.02(2)(a) if **Schauer & Associates, Inc.** is to preserve any Lien rights in the event of failure of responsible party to pay for services rendered per this proposal.

Sincerely,

Schauer & Associates, Inc.



Scott A. Erdman
Executive Vice President

GENERAL CONDITIONS

Required medical surveillance and examinations along with record keeping is performed for the personnel of **Schauer & Associates, Inc.** by an occupational medical facility.

Required blood lead testing and record keeping is performed for the personnel of **Schauer & Associates, Inc.** by an occupational medical facility per all local, state and federal regulations.

Schauer & Associates, Inc. has in place true occurrence General Liability Insurance with limits being \$1,000,000.00 per occurrence and \$1,000,000.00 aggregate, along with \$1,000,000 Professional Liability Insurance (Errors and Omissions). This, along with our Workers Compensation, Commercial Package and Commercial Automobile policies, and the availability of \$2,000,000 and \$5,000,000 limits on the insurance policies, gives **Schauer & Associates, Inc.** one of the strongest and most flexible insurance packages available in the Nation.

All work to be completed in a workman-like manner to industry standards. Any alterations or deviations from the above specifications involving additional costs will be executed only upon the written authorization of the Owner, and will become an extra charge over and above the proposed costs.

All agreements contingent upon strikes, accidents, or delays beyond **Schauer & Associates, Inc.**'s control. Owner to carry fire, tornado, and other necessary insurance. Owner is responsible for the liabilities of hazardous chemicals and/or materials that are existing on site. Our workers are fully covered by statutory workers compensation insurance, liability insurance is as stated above.

Schauer & Associates, Inc. safety rules and procedures become a part of this contract. (Copies are available upon request by the Owner).

Payments to be made, net cash 15 days, 1-1/2% service charge per month after 15 days of receipt of invoice. This proposal may be withdrawn if not accepted within Sixty (60) days.

Upon approval of this proposal, the following information should be filled out:

(if different from Submitted to address)

Bill to Info.: _____

If available

Fax No.: _____

Phone #: _____

Building Information:

Square Footage: _____

of Floors (inc. basement): _____

Year Built: _____

Bldg. information is needed for notifying the Dept. of Health & Social Services and/or the Dept. of Natural Resources

ACCEPTANCE OF PROPOSAL

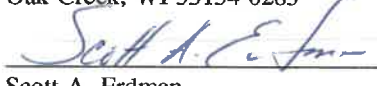
DATE: June 3, 1996

PROPOSAL #: P96-251

PROPOSAL SUBMITTED TO: Adams County Courthouse
402 Main St.
Friendship, WI 53910

PROJECT LOCATION: Adams County Courthouse

PROPOSAL SUBMITTED BY: Schauer & Associates, Inc.
6960 South 13th Street, P. O. Box 285
Oak Creek, WI 53154-0285

AUTHORIZED BY: 
Scott A. Erdman
Executive Vice President

NEW ADDRESS AS OF Oct 30, 97
3808 West Elm St
Milw. WI 53209

The above **ENVIRONMENTAL SERVICES** proposal is accepted as quoted and you are authorized to proceed with the work specified. Payments will be made as outlined above.

DATE: _____

SIGNATURE: _____

PRINT NAME: _____

TITLE: _____

Please sign and return one (1) copy of this proposal acceptance.

YOU ARE HEREBY NOTIFIED THAT PERSONS OR COMPANIES FURNISHING LABOR OR MATERIALS FOR THE CONSTRUCTION PROPERTY LOCATED AT: 402 Main St., Friendship, WI, MAY HAVE LIEN RIGHTS ON YOUR LAND AND BUILDINGS IF THEY ARE NOT PAID. THOSE ENTITLED TO LIEN RIGHTS, IN ADDITION TO THE UNDERSIGNED PRIME CONTRACTOR, ARE THOSE WHO CONTRACT DIRECTLY WITH YOU OR THOSE WHO GIVE YOU IDENTIFICATION NOTICE WITHIN SIXTY (60) DAYS AFTER THEY FIRST FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION.

YOU PROBABLY WILL RECEIVE NOTICES FROM THOSE WHO FURNISH LABOR AND MATERIALS FOR THE CONSTRUCTION. YOU SHOULD GIVE A COPY OF EACH NOTICE YOU RECEIVE TO YOUR MORTGAGE LENDER, IF ANY. THE UNDERSIGNED PRIME CONTRACTOR AGREES TO COOPERATE WITH YOU AND YOUR LENDER, IF ANY, TO SEE THAT ALL POTENTIAL LIEN CLAIMANTS ARE DULY PAID.

Metro Recycling & Disposal Facility
10712 S. 124th Street
Franklin, Wisconsin 53132
414/529-6180 • FAX 414/529-6192



A Waste Management Company

November 23, 1996

Adams County Courthouse
402 S. Main St.
Friendship, WI 53910

Re: Asbestos Disposal
Profile # ASB 22751
WSR # 488663

To Whom It May Concern:

Enclosed please find copy of the completed 'Waste Shipment Record / Asbestos Manifest' for the load of the above referenced asbestos that was disposed of at Metro Recycling and Disposal Facility. This copy is for your records.

If you have any questions, please do not hesitate to contact me at (414)529-6180.

Sincerely,
Metro Recycling and Disposal Facility
A Division of Waste Management of Wisconsin, Inc.
A WMI BioSiteSM

Emilie Keller
Scale Operator

Enclosures

EK/dlw

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Revised If Emergency, Date/Hour Notified <u> </u> / <u> </u> / <u> </u> : Other: (Explain) Called DHSS + DNR		6. Type of Project: Renovation Asbestos Present? yes	
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:		8. Inspector Certification Information: Name/WI Insp#:	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 09/09/96 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 10/01/96 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: John P. McShane Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180			
16. Approximate Amount of Asbestos, Including:	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed Cat I Cat II	C. Nonfriable Asbestos Material Not Removed before Demo Cat I Cat II Unit Measure
A. Required ACM to be removed			
B. Cat. I & II ACM to be Removed			
C. Cat. I & II ACM Not Removed			
Pipes	320		lf
Surface Area		13,130	sf
Vol. RACM Off Facility Component			cf
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):
Date and Hour of Emergency: Date: _____ Time (12 Hr Clock): _____ am pm
Description of sudden, unexpected event: _____

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden: _____

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* THERE WILL BE TWO PHASES TO THIS PROJECT-WILL NOTIFY ON 2ND PHASE

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley Villalobos Title: Admin. Assist. Date (MM/DD/YY): 7/2/96

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley Villalobos Title: Admin. Assist. Date (MM/DD/YY): 7/2/96

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	no DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Original If Emergency, Date/Hour Notified / / : Other: (Explain) _____	6. Type of Project: Renovation Asbestos Present? yes		
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: _____ End: _____		8. Inspector Certification Information: Name/WI Insp#: _____	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 09/09/96 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 10/01/96 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: John P. McShane Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: _____ City, State, Zip: _____ Contact: _____ Telephone #: _____	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished: _____		15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180	
16. Approximate Amount of Asbestos, Including:	A. Friable ACM	B. Nonfriable Asbestos Material	C. Nonfriable Asbestos Material Not Removed before Demo
A. Required ACM to be removed	To Be Removed	Cat I	Cat II
B. Cat. I & II ACM to be Removed	Removed		
C. Cat. I & II ACM Not Removed			
Pipes	320		
Surface Area		7,530	
Vol. ACM Off Facility Component			
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):

Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm

Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile and Mastic, 250 linear feet of Pipe Insulation, and 140 Fittings located on fiberglass pipe runs.

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Stacy Villalobos Title: Admin. Assist. Date (MM/DD/YY): 6/26/96

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Stacy Villalobos Title: Admin. Assist. Date (MM/DD/YY): 6/26/96

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	yes DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

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7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:		8. Inspector Certification Information: Name/WI Insp#:	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 05/31/97 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 06/15/97 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: Erdman Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
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16. Approximate Amount of Asbestos, Including:	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed Cat I Cat II	C. Nonfriable Asbestos Material Not Removed before Demo Cat I Cat II Unit of Measure
Pipes	320		lf
Surface Area		13,130	sf
Vol. RACM Off Facility Component			cf
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

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Polarized Light Microscopy

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Class I and II asbestos procedures will be utilized per OSHA regulations.

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Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):

Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm

Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* THERE WILL BE TWO PHASES TO THIS PROJECT-WILL NOTIFY ON 2ND PHASE

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley Villalobos Title: Admin. Assist Date (MM/DD/YY): 2/24/97

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley Villalobos Title: Admin. Assist Date (MM/DD/YY): 2/24/97

27. **yes** Department of Natural Resources
Asbestos Coordinator
Bureau of Air Management
P.O. Box 7921
Madison, WI. 53707

yes Dept. of Health & Human Services
Bureau of Public Health
Asbestos Unit
1414 E. Washington Ave.
Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District **no** DNR - Southeast District DNR - Lake Michigan District
DNR - Western District DNR - North Central District DNR - Northwest District
DNR - WD - LaCrosse Area

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Revised If Emergency, Date/Hour Notified <u> </u> / <u> </u> / <u> </u> : <u> </u> Other: (Explain) Called DHS + DNR.		6. Type of Project: Renovation Asbestos Present? yes	
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:		8. Inspector Certification Information: Name/WI Insp#:	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 04/21/96 End: 05/31/97 Work Shift(s) 1 Weekend: no Phase II = 4/28/97 - 5/31/97		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 06/15/97 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: Erdman Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
16. Approximate Amount of Asbestos, Including: A. Required ACM to be removed B. Cat. I & II ACM to be Removed C. Cat. I & II ACM Not Removed Pipes Surface Area Vol. RACM Off Facility Component Area being worked in: Throughout the Courthouse		15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180	
	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed Cat I Cat II	C. Nonfriable Asbestos Material Not Removed before Demo Cat I Cat II
	320	13,130	Unit of Measure
			lf sf cf
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):

Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm

Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* PHASE 2 WILL START 4/28/97 AND END 5/31/97.

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley Villalobos Title: Admin. Assist. Date (MM/DD/YY): 4/18/97

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley Villalobos Title: Admin. Assist. Date (MM/DD/YY): 4/18/97

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	no DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Revised If Emergency, Date/Hour Notified ___/___/___ : Other: (Explain) Called DHS+DNR		6. Type of Project: Renovation Asbestos Present? yes	
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:		8. Inspector Certification Information: Name/WI Insp#:	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 05/31/97 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 06/15/97 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: Erdman Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180			
16. Approximate Amount of Asbestos, Including:	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed	C. Nonfriable Asbestos Material Not Removed before Demo
A. Required ACM to be removed		Cat I Cat II	Cat I Cat II
B. Cat. I & II ACM to be Removed			
C. Cat. I & II ACM Not Removed			
Pipes	320		lf
Surface Area		13,130	sf
Vol. RACM Off Facility Component			cf
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):

Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm

Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* PHASE 2 WILL START 4/21/97 AND END 5/31/97.

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley N. Nichols Title: Admin. Assist. Date (MM/DD/YY): 4/16/97

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley N. Nichols Title: Admin. Assist. Date (MM/DD/YY): 4/16/97

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	no DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Revised If Emergency, Date/Hour Notified <u> </u> / <u> </u> / <u> </u> : <u> </u> : <u> </u> Other: (Explain) Called DHS&DNR		6. Type of Project: Renovation Asbestos Present? yes	
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:		8. Inspector Certification Information: Name/WI Insp#:	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 05/31/97 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 06/15/97 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: Erdman Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180			
16. Approximate Amount of Asbestos, Including:	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed	C. Nonfriable Asbestos Material Not Removed before Demo
A. Required ACM to be removed		Cat I Cat II	Cat I Cat II
B. Cat. I & II ACM to be Removed			
C. Cat. I & II ACM Not Removed			
Pipes	320		1f
Surface Area		13,130	sf
Vol. RACM Off Facility Component			cf
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):
Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm
Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* PHASE 2 WILL START 4/21/97 AND END 5/31/97.

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley N. Nichols Title: Admin. Assist. Date (MM/DD/YY): 4/16/97

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley N. Nichols Title: Admin. Assist. Date (MM/DD/YY): 4/16/97

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	no DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600		2. Postmark		3. Date Received		4. Department File #	
5. Type of Notification: Revised If Emergency, Date/Hour Notified <u> </u> / <u> </u> / <u> </u> : <u> </u> : <u> </u> Other: (Explain) <u> </u>				6. Type of Project: Renovation Asbestos Present? yes			
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:				8. Inspector Certification Information: Name/WI Insp#:			
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 05/31/97 Work Shift(s) 1 Weekend: no				10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 06/15/97 Work Shift(s) 1 Weekend: no			
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: Erdman Telephone #: (414) 768-7240				12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:			
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:				14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910			
15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180							
16. Approximate Amount of Asbestos, Including:		A. Friable RACH To Be Removed		B. Nonfriable Asbestos Material To Be Removed		C. Nonfriable Asbestos Material Not Removed before Demo	
A. Required ACM to be removed		To Be Removed		Cat I Cat II		Cat I Cat II	
B. Cat. I & II ACM to be Removed							
C. Cat. I & II ACM Not Removed							
Pipes		320				1f	
Surface Area				13,130		sf	
Vol. RACH Off Facility Component						cf	
Area being worked in: Throughout the Courthouse							
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00							

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):
Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm
Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* THERE WILL BE TWO PHASES TO THIS PROJECT-WILL NOTIFY ON 2ND PHASE

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley Villalobos Title: Admin. Assist Date (MM/DD/YY): 2/24/97

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley Villalobos Title: Admin. Assist Date (MM/DD/YY): 2/24/97

27. **yes** Department of Natural Resources **yes** Dept. of Health & Human Services
Asbestos Coordinator Bureau of Public Health
Bureau of Air Management Asbestos Unit
P.O. Box 7921 1414 E. Washington Ave.
Madison, WI. 53707 Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District **no** DNR - Southeast District DNR - Lake Michigan District
DNR - Western District DNR - North Central District DNR - Northwest District
DNR - WD - LaCrosse Area

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Original If Emergency, Date/Hour Notified ___/___/___:___ Other: (Explain) _____		6. Type of Project: Renovation Asbestos Present? yes	
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: _____ End: _____		8. Inspector Certification Information: Name/WI Insp#: _____	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 09/09/96 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 10/01/96 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: John P. McShane Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: _____ City, State, Zip: _____ Contact: _____ Telephone #: _____	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180	
16. Approximate Amount of Asbestos, Including:	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed	C. Nonfriable Asbestos Material Not Removed before Demo
A. Required ACM to be removed		Cat I Cat II	Cat I Cat II
B. Cat. I & II ACM to be Removed			
C. Cat. I & II ACM Not Removed			
Pipes	320		lf
Surface Area		7,530	sf
Vol. RACM Off Facility Component			cf
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
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22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):
Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm
Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:
Remove approximately 7,530 square feet (non-friable) Floor Tile and Mastic, 250 linear feet of Pipe Insulation, and 140 Fittings located on fiberglass pipe runs.

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Sisley Villalobos Title: Admin. Assist. Date (MM/DD/YY): 6/26/96

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Sisley Villalobos Title: Admin. Assist. Date (MM/DD/YY): 6/26/96

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	yes DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Revised If Emergency, Date/Hour Notified <u> </u> / <u> </u> / <u> </u> : <u> </u> : <u> </u> Other: (Explain) <u>Called DHSS + DNR</u>	6. Type of Project: Renovation Asbestos Present? yes		
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:		8. Inspector Certification Information: Name/WI Insp#:	
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 09/09/96 Work Shift(s) 1 Weekend: no		10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 10/01/96 Work Shift(s) 1 Weekend: no	
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: John P. McShane Telephone #: (414) 768-7240		12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:	
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:		14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910	
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16. Approximate Amount of Asbestos, Including:	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed Cat I Cat II	C. Nonfriable Asbestos Material Not Removed before Demo Cat I Cat II Unit of Measure
A. Required ACM to be removed			
B. Cat. I & II ACM to be Removed			
C. Cat. I & II ACM Not Removed			
Pipes	320		lf
Surface Area		13,130	sf
Vol. RACM Off Facility Component			cf
Area being worked in: Throughout the Courthouse			
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):

Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm

Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* THERE WILL BE TWO PHASES TO THIS PROJECT-WILL NOTIFY ON 2ND PHASE

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley Viala Title: Admin. Assist. Date (MM/DD/YY): 7/2/96

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley Viala Title: Admin. Assist. Date (MM/DD/YY): 7/2/96

27. **yes** Department of Natural Resources **yes** Dept. of Health & Human Services
Asbestos Coordinator Bureau of Public Health
Bureau of Air Management Asbestos Unit
P.O. Box 7921 1414 E. Washington Ave.
Madison, WI. 53707 Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District **no** DNR - Southeast District DNR - Lake Michigan District
DNR - Western District DNR - North Central District DNR - Northwest District
DNR - WD - LaCrosse Area

NOTIFICATION OF DEMOLITION AND/OR RENOVATION

1. Contractor Project # A96-187-600	2. Postmark	3. Date Received	4. Department File #
5. Type of Notification: Revised If Emergency, Date/Hour Notified <u> </u> / <u> </u> / <u> </u> : <u> </u> : <u> </u> Other: (Explain) called DHSS & DNR	6. Type of Project: Renovation Asbestos Present? yes		
7. Dates (MM/DD/YY) of DNR Required Preinspection: Start: End:	8. Inspector Certification Information: Name/WI Insp#:		
9. Dates (MM/DD/YY) of Asbestos Removal: Start: 07/09/96 End: 02/01/97 Work Shift(s) 1 Weekend: no	10. Dates (MM/DD/YY) of Demolition/Renovation: Start: 07/01/96 End: 06/15/97 Work Shift(s) 1 Weekend: no		
11. Abatement or Demolition Contractor: Name: Schauer & Associates, Inc. Address: 6960 S. 13th Street City, State, Zip: Oak Creek, WI. 53154 Contact Person: John P. McShane Telephone #: (414) 768-7240	12. Demolition Contractor: Name: N/A Address: City, State, Zip: Contact: Telephone #:		
13. Facility Information: Name: Adams County Courthouse Address: 402 Main Street City, State, Zip: Friendship, WI 53910 Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Prior Use: Courthouse Present Use: Courthouse Age (Yrs): 82 Size (Sq Ft): 16,600 Number of Floors (including basement): 3 County: Adams DNR Dist: West Central Number of Apartment Units: N/A Number of Structures to be demolished:	14. Facility Owner Information: Name: Adams County Courthouse Contact Person: Tracy Hamman Telephone #: (608)-339-4200 Address: 402 Main Street City, State, Zip: Friendship, WI 53910		
15. Waste Disposal Site: (Lic #: 01099) Name: Metro Landfill Address: 10712 South 124th Street City, State, Zip: Franklin, WI 53132 Contact Person: Rick Pager Telephone #: (414)-529-6180			
16. Approximate Amount of Asbestos, Including: A. Required ACM to be removed B. Cat. I & II ACM to be Removed C. Cat. I & II ACM Not Removed	A. Friable RACM To Be Removed	B. Nonfriable Asbestos Material To Be Removed Cat I Cat II	C. Nonfriable Asbestos Material Not Removed before Demo Cat I Cat II Unit of Measure
Pipes Surface Area Vol. RACM Off Facility Component Area being worked in: Throughout the Courthouse	320	13,130	lf sf cf
17. Fee Schedule: Permit Fee Amount Enclosed: \$ 150.00			

(Continued on next page)

NOTIFICATION OF DEMOLITION AND/OR RENOVATION (Page 2)

18. Indicate the inspection procedure, including analytical methods, used to detect the presence or absence of the ACM:
Polarized Light Microscopy

19. Description of the asbestos materials involved and its location in the facility to be demolished/renovated:
Floor Tile and Mastic (non-friable), Pipe Insulation, and Fittings.

20. Description of the planned demolition/renovation work, including specific abatement/other methods to be used:
Class I and II asbestos procedures will be utilized per OSHA regulations.

21. Description of abatement work practices/engineering controls, specific to this site, used in preventing ACM emissions:
Asbestos will be wetted/packaged in 6mil properly labeled asbestos bags, according to all local, state, and federal guidelines

22. Description of procedures to be followed if unexpected asbestos is found or previously nonfriable asbestos becomes crumbled, pulverized to a powder:
Area will be regulated and affected surfaces will be wet wiped and/or hepa vacuumed.

23. If an emergency abatement, complete the following information (attach additional sheets if necessary):

Date and Hour of Emergency: Date: Time (12 Hr Clock): am pm
Description of sudden, unexpected event:

Explanation of how event caused unsafe condition, potential equipment damage, or an unreasonable financial burden:

24. Miscellaneous Comments Section:

Remove approximately 7,530 square feet (non-friable) Floor Tile & Mastic, 250 linear feet of Pipe Insulation, & 140 Fittings located on fiberglass pipe runs. *ADD 5600SF FLOOR TILE 7/2* THERE WILL BE TWO PHASES TO THIS PROJECT-WILL NOTIFY ON 2ND PHASE

25. I certify that an Individual trained in the provisions of this regulation (40 CFR Part 61 Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours.

Signature: Shirley Vella Title: Admin. Assist. Date (MM/DD/YY): 9/9/96

26. I certify that the above submittal information is correct to the best of my knowledge.

Signature: Shirley Vella Title: Admin. Assist. Date (MM/DD/YY): 9/9/96

27. yes Department of Natural Resources	yes Dept. of Health & Human Services
Asbestos Coordinator	Bureau of Public Health
Bureau of Air Management	Asbestos Unit
P.O. Box 7921	1414 E. Washington Ave.
Madison, WI. 53707	Madison, WI. 53703

Indicate single appropriate DNR field office:

yes DNR - Southern District	no DNR - Southeast District	DNR - Lake Michigan District
DNR - Western District	DNR - North Central District	DNR - Northwest District
DNR - WD - LaCrosse Area		



Environmental Health and Safety ▼ Consulting and Management

May 15, 1996

Mr. Tracy Hamman
Maintenance Supervisor
Adams County Courthouse
402 Main Street, PO Box 278
Friendship, WI 53934

Dear Mr. Hamman,

Attached is our inspection report for areas surveyed per your request.

I would like to go over the report with you at your convenience. Please don't hesitate to call me at 612/890-3452 ext. 243 should you have any immediate questions or concerns. Thanks again for your help on the survey.

Sincerely,

Gary DeMars
Director of Abatement Engineering

Metro Recycling & Disposal Facility
10712 S. 124th Street
Franklin, Wisconsin 53132
414/529-6180 • FAX 414/529-6192



A Waste Management Company



August 8, 1996

Adams County Courthouse
402 Main St.
Friendship, WI 53910

Re: Asbestos Disposal
Profile # ASB 22750
WSR # 487752

To Whom It May Concern:

Enclosed please find the copy of the completed 'Waste Shipment Record / Asbestos Manifest' for the load of the above referenced asbestos that was disposed of at Metro Recycling and Disposal Facility. This copy is for your records.

If you have any questions, please do not hesitate to contact me at (414)529-6180.

Sincerely,
Metro Recycling and Disposal Facility
A Division of Waste Management of Wisconsin, Inc.
A WMI BioSiteSM

Emilie Keller
Scale Operator

Enclosures

EK\dlw

96-187
WASTE SHIPMENT RECORD/ASBESTOS MANIFEST *219*

WSR #

487752

Generator	1-A. Generator's Name <i>Adams Cty. Courthouse</i> <i>96-187</i>		1-B. Special Waste Profile # <i>ASB22750</i>	1-C. 24 Hr. Response Telephone # <i>1-800-677-7240</i>	
	1-D. Work Site Address <i>402 Main St. Friendship, WI 53110</i>		1-E. Generator Mailing Address <i>Same</i>		1-F. Owner's Phone No. <i>608-399-4200</i>
	2. Operator's Name and Address SCHAUER & ASSOCIATES, INC. <i>6960 S. 13th St., Oak Creek, WI 53154</i>				Operator's Phone No. <i>414-768-7240</i>
	3. Waste Disposal Site (WDS) Name, Mailing Address, and Physical Site Location Metro Recycling & Disposal Facility <i>10712 South 124th Street; Franklin, WI 53132</i>				WDS Phone No. <i>414/529-6180</i>
	4. Name, Address of Responsible Agency State of Wisconsin; Department of Natural Resources <i>Bureau of Solid Waste Management; Box 8094; Madison, WI 53708</i> BUREAU OF AIR POLLUTION <i>BOX 7921, MADISON, WI 53708</i>				
	5. Description of Materials		6. Containers No. Type		7. Total Quantity m ³ (yd ³)
	<i>Asbestos, 9, NA2212, III, RQ (Friable Asbestos)</i>		<i>67 Bags</i>		<i>6 yds³</i>
	<i>HAZARDOUS SUBSTANCE, SOLID N.O.S. (ASBESTOS) RQ ORM-E NA9188 (Non-Friable Asbestos)</i>				
Transporter	8. Special Handling Instructions and Additional Information 24 HOUR NOTICE, MUST BE BURIED.				
	9. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations. I hereby certify that the asbestos is not contaminated with hazardous and/or any special waste.				
	Printed/Typed Name & Title <i>Damon Brattick / Foreman</i>		Signature <i>[Signature]</i>		Date <i>7/18/96</i>
	10. Transport 1 Company Name (Acknowledgment of Receipt of Materials) SCHAUER & ASSOCIATES, INC.				
	Printed/Typed Name & Title <i>M. Altier / Yard Manager</i>		Signature <i>[Signature]</i>		Date <i>7-18-96</i>
	Address and Telephone No. <i>6960 S. 13th St. Oak Creek, WI 53154 414-768-7240</i>				
Disposal Site	11. Transport 2 Company Name (Acknowledgment of Receipt of Materials) <i>7-18-96</i>				
	Printed/Typed Name & Title <i>DAVID L. INNIEMAN</i>		Signature <i>[Signature]</i>		Date <i>8/2/96</i>
	Address and Telephone No. <i>Best Disposal 10007 27 Franklin</i>		7612100		
	12. Discrepancy Indication Space				
Disposal Site	13. Waste Disposal Site Owner or Operator: Special Waste Approval is issued by this signature. Certification of receipt of asbestos materials covered by this manifest except as noted in item 12. <i>METRO RBF</i>				
	Printed/Typed Name & Title <i>EMILIE KELLER (SCALE OP)</i>		Signature <i>[Signature]</i>		Date <i>8/2/96</i>

WHITE - Disposal Site

CANARY - Generator
(To be mailed by Disposal Site)

PINK - Transporter

GOLD - Generator
(To be taken prior to disposal)

INSTRUCTIONS

Waste Generator Section - (Items 1- 9)

1. A. Enter the generator's name.
B. Enter the number of the Special Waste Management Profile identifying this waste.
C. Enter the 24 Hour Emergency Response Telephone Number as per 49 CFR 172.604.
D. Enter the complete work site address, including city, state, and zip code.
E. Enter the complete generator mailing address, including city, state, and zip code.
F. Enter generator's telephone number.
2. If a demolition or renovation, enter the name and address of the company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.
3. Enter name, mailing address, physical site location, and telephone number of the waste disposal site that will be receiving the asbestos materials.
4. Provide the name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.
5. Indicate the type(s) of asbestos waste materials generated.
 - Friable Asbestos
 - Non-Friable Asbestos
6. Enter the number of containers used to transport the asbestos materials listed in item 5. Also enter one of the following container codes (specify any other type if not listed).
 - DP - Plastic drums, barrels
 - BA - 6 mil plastic bags or wrapping
7. Enter the total quantity of each type of asbestos material removed in units of cubic yards.
8. Use this space to indicate special transportation, treatment, storage or disposal.
9. The waste generator must read and then sign and date this certification. The date is the date of receipt by transporter. The generator should keep the back gold copy at this time.

Transporter Section - (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used. Print or type full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport. Enter date of receipt and signature.

Disposal Site Section - (Items 12 & 13)

12. The authorized representative of the WDS must note in this space any discrepancy between waste described on this manifest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those material provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.
13. Enter the signature (by hand) of the authorized WDS agent indicating acceptance and agreement with statements on this manifest except as noted in item 12. Enter the date of signature and receipt of shipment.

WDS will send/give copies:

PINK - Transporter

CANARY - Generator

Operator will be mailed a copy of Generator's Canary Form.

WASTE SHIPMENT RECORD/ASBESTOS MANIFEST

WSR #

487752

Generator	1-A. Generator's Name A96-187 Adams City Courthouse		1-B. Special Waste Profile # ASB22750		1-C. 24 Hr. Response Telephone # 1-800-677-7240	
	1-D. Work Site Address 402 Main St. Friendship, Wg 53110		1-E. Generator Mailing Address Same		1-F. Owner's Phone No. 608-399-4600	
	2. Operator's Name and Address SCHAUER & ASSOCIATES, INC. 6960 S. 13th St., Oak Creek, WI 53154				Operator's Phone No. 414-768-7240	
	3. Waste Disposal Site (WDS) Name, Mailing Address, and Physical Site Location Metro Recycling & Disposal Facility 10712 South 124th Street; Franklin, WI 53132				WDS Phone No. 414/529-6180	
	4. Name, Address of Responsible Agency State of Wisconsin; Department of Natural Resources Bureau of Solid Waste Management; Box 8094; Madison, WI 53708 BUREAU OF AIR POLLUTION BOX 7921, MADISON, WI 53708					
	5. Description of Materials		6. Containers No. Type		7. Total Quantity m ³ (yd ³)	
	Asbestos, 9, NA2212, III, RQ (Friable Asbestos)		67 Bags		6 yd ³	
	HAZARDOUS SUBSTANCE, SOLID N.O.S. (ASBESTOS) RQ ORM-E NA9188 (Non-Friable Asbestos)					
	8. Special Handling Instructions and Additional Information 24 HOUR NOTICE, MUST BE BURIED.					
	9. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations. I hereby certify that the asbestos is not contaminated with hazardous and/or any special waste.					
Transporter	Printed/Typed Name & Title Damon Brattick / Foreman		Signature Damon Brattick		Date 7/18/96	
	10. Transport 1 Company Name (Acknowledgment of Receipt of Materials) SCHAUER & ASSOCIATES, INC.					
	Printed/Typed Name & Title M. Brattick Address and Telephone No. 6960 S. 13th St. Oak Creek, WI 53154 414-768-7240		Signature M. Brattick		Date 7-18-96	
	11. Transport 2 Company Name (Acknowledgment of Receipt of Materials)					
Disposal Site	Printed/Typed Name & Title WILLIAM L. INDIENMAN Address and Telephone No. Best Disposal 10427 27 Franklin 7612100		Signature William L. Indienman		Date 7/12/96	
	12. Discrepancy Indication Space					
	13. Waste Disposal Site Owner or Operator: Special Waste Approval is issued by this signature. Certification of receipt of asbestos materials covered by this manifest except as noted in item 12. METRO R&F					
	Printed/Typed Name & Title William L. Indienman (Schaer & Associates)		Signature William L. Indienman		Date 7/18/96	

WHITE - Disposal Site

CANARY - Generator
(To be mailed by Disposal Site)

PINK - Transporter

GOLD - Generator
(To be taken prior to disposal)

INSTRUCTIONS

Waste Generator Section - (Items 1- 9)

1.
 - A. Enter the generator's name.
 - B. Enter the number of the Special Waste Management Profile identifying this waste.
 - C. Enter the 24 Hour Emergency Response Telephone Number as per 49 CFR 172.604.
 - D. Enter the complete work site address, including city, state, and zip code.
 - E. Enter the complete generator mailing address, including city, state, and zip code.
 - F. Enter generator's telephone number.
2. If a demolition or renovation, enter the name and address of the company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.
3. Enter name, mailing address, physical site location, and telephone number of the waste disposal site that will be receiving the asbestos materials.
4. Provide the name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.
5. Indicate the type(s) of asbestos waste materials generated.
 - Friable Asbestos
 - Non-Friable Asbestos
6. Enter the number of containers used to transport the asbestos materials listed in item 5. Also enter one of the following container codes (specify any other type if not listed).
 - DP - Plastic drums, barrels
 - BA - 6 mil plastic bags or wrapping
7. Enter the total quantity of each type of asbestos material removed in units of cubic yards.
8. Use this space to indicate special transportation, treatment, storage or disposal.
9. The waste generator must read and then sign and date this certification. The date is the date of receipt by transporter. The generator should keep the back gold copy at this time.

Transporter Section - (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used. Print or type full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport. Enter date of receipt and signature.

Disposal Site Section - (Items 12 & 13)

12. The authorized representative of the WDS must note in this space any discrepancy between waste described on this manifest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those material provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.
13. Enter the signature (by hand) of the authorized WDS agent indicating acceptance and agreement with statements on this manifest except as noted in item 12. Enter the date of signature and receipt of shipment.

WDS will send/give copies:

PINK - Transporter

CANARY - Generator

Operator will be mailed a copy of Generator's Canary Form.

WASTE SHIPMENT RECORD/ASBESTOS MANIFEST ¹⁹⁶⁻¹⁸⁷ ₂₃₀

WSR # **488663**

Generator	1-A. Generator's Name Adams Cty. Courthouse		1-B. Special Waste Profile # ASB 22751		1-C. 24 Hr. Response Telephone # 1-800-677-7240	
	1-D. Work Site Address 402 S. Main St. Friendship, WI 53984		1-E. Generator Mailing Address Same		1-F. Owner's Phone No. (608)-339-4200	
	2. Operator's Name and Address SCHAUER & ASSOCIATES, INC. 6960 S. 13th St. Oak Creek, WI 53154					Operator's Phone No. 414-768-7240
	3. Waste Disposal Site (WDS) Name, Mailing Address, and Physical Site Location Metro Recycling & Disposal Facility 10712 South 124th Street; Franklin, WI 53132					WDS Phone No. 414/529-6180
Transporter	4. Name, Address of Responsible Agency State of Wisconsin; Department of Natural Resources Bureau of Solid Waste Management, BOX 8094, Madison, WI 53708 BUREAU OF AIR POLLUTION BOX 7921, MADISON, WI 53708					
	5. Description of Materials		6. Containers No. Type		7. Total Quantity m ³ (yd ³)	
	Asbestos, 9, NA2212, III, RQ (Friable Asbestos)		7 bags		1 yds³	
	HAZARDOUS SUBSTANCE, SODD N.O.S. (ASBESTOS) RQ ORN-E NA9188 (Non-Friable Asbestos)					
	8. Special Handling Instructions and Additional Information 24 HOUR NOTICE, MUST BE BURIED.					
Disposal Site	9. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable International and government regulations. I hereby certify that the asbestos is not contaminated with hazardous and/or any special waste.					
	Printed/Typed Name & Title Damon Bitts / Foreman		Signature <i>Damon Bitts</i>		Date 11/11/96	
	10. Transport 1 Company Name (Acknowledgment of Receipt of Materials) SCHAUER & ASSOCIATES, INC.					
	Printed/Typed Name & Title Damon Bitts / Foreman Address and Telephone No. 6960 S. 13th St. Oak Creek, WI 53154 414-768-7240		Signature <i>Damon Bitts</i>		Date 11/11/96	
Disposal Site	11. Transport 2 Company Name (Acknowledgment of Receipt of Materials)					
	Printed/Typed Name & Title Jon Skorstad Driver Address and Telephone No. Best Disposal 10627 52nd Franklin Wis 761-2100		Signature <i>Jon Skorstad</i>		Date 11-22-96	
	12. Discrepancy Indication Space					
Disposal Site	13. Waste Disposal Site Owner or Operator: Special Waste Approval is issued by this signature. METRO RDF Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.					
	Printed/Typed Name & Title EMILIE KELLER (SCALE OP)		Signature <i>Emilie Keller</i>		Date 11/22/96	

WHITE - Disposal Site

CANARY - Generator
(To be mailed by Disposal Site)

PINK - Transporter

GOLD - Generator
(To be taken prior to disposal)

INSTRUCTIONS

Waste Generator Section - (Items 1- 9)

1.
 - A. Enter the generator's name.
 - B. Enter the number of the Special Waste Management Profile identifying this waste.
 - C. Enter the 24 Hour Emergency Response Telephone Number as per 49 CFR 172.604.
 - D. Enter the complete work site address, including city, state, and zip code.
 - E. Enter the complete generator mailing address, including city, state, and zip code.
 - F. Enter generator's telephone number.
2. If a demolition or renovation, enter the name and address of the company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.
3. Enter name, mailing address, physical site location, and telephone number of the waste disposal site that will be receiving the asbestos materials.
4. Provide the name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.
5. Indicate the type(s) of asbestos waste materials generated.
 - Friable Asbestos
 - Non-Friable Asbestos
6. Enter the number of containers used to transport the asbestos materials listed in item 5. Also enter one of the following container codes (specify any other type if not listed).
 - DP - Plastic drums, barrels
 - BA - 6 mil plastic bags or wrapping
7. Enter the total quantity of each type of asbestos material removed in units of cubic yards.
8. Use this space to indicate special transportation, treatment, storage or disposal.
9. The waste generator must read and then sign and date this certification. The date is the date of receipt by transporter. The generator should keep the back gold copy at this time.

Transporter Section - (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used. Print or type full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport. Enter date of receipt and signature.

Disposal Site Section - (Items 12 & 13)

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13. Enter the signature (by hand) of the authorized WDS agent indicating acceptance and agreement with statements on this manifest except as noted in item 12. Enter the date of signature and receipt of shipment.

WDS will send/give copies:

PINK - Transporter

CANARY - Generator

Operator will be mailed a copy of Generator's Canary Form.

BID FORM

PROJECT IDENTIFICATION:

ADAMS COUNTY
ADMINISTRATION BUILDING
SITE AND INTERIOR IMPROVEMENTS
FRIENDSHIP, WI
MSA Project #21993005

THIS BID IS SUBMITTED TO:

QuestCDN/vBID (www.QuestCDN.com)

Access the electronic bid form by downloading the project documents, and select the online bidding button at the top of the advertisement. Contact Quest at (952) 233-1632 if you have questions on how to upload your bid.

ADAMS COUNTY
401 ADAMS STREET
FRIENDSHIP, WI 53934

(hereinafter referred to as the Owner)

Submitted by:

(full name)

(full address)

(hereinafter referred to as the Bidder)

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form referenced in the Contract Documents, and to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - a. BIDDER has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Addendum # _____	Date: _____
Addendum # _____	Date: _____
Addendum # _____	Date: _____
Addendum # _____	Date: _____
 - b. BIDDER has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, all local conditions, and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

Section 00 41 00

- c. BIDDER has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work as BIDDER considers necessary for the performance or furnishing of the Work at the contract price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by BIDDER for such purposes.
- d. BIDDER has given A/E written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by A/E is acceptable to BIDDER.
- e. This BID is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over Owner.
- f. BIDDER understands that Work contemplated for this project will be awarded with a single prime lump sum contract.

4. BASE BID - SINGLE PRIME STIPULATED SUM

Having examined the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by MSA Professional Services, Inc., for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the sum of:

Bid		80,000
Contingency Allowance per Section 01 20 00		_____
Total	\$	_____
		(figures)
\$ _____ (words) _____ dollars \$ _____ (figures)		

in lawful money of the United States of America.

We have included herewith, the required security Bid Bond as required by the Advertisement to Bid.

Wisconsin Sales and Use Tax Exemption: Owner represents that it is a qualifying exempt entity under Section 77.54(9m), Wis. Stats. (as created by 2015 Wis. Act 126) with respect to exemption from Wisconsin sales and use tax of certain items that become part of eligible facilities owned by the qualifying exempt entity. The Bid shall account for such sales and use tax exemptions, to the extent applicable. The Contract will provide that the Contractor is not entitled to an increase in Contract Price if Contractor is not successful in obtaining an anticipated sales and use tax exemption, unless the reason for the inability to obtain the anticipated exemption is a formal determination by the State of Wisconsin that Owner is not a qualifying exempt entity. All applicable taxes due in States other than Wisconsin are to be included in the Bid Sum.

We have included in the BID all allowances which are required in the Contract Documents, Section 01 20 00.

ALTERNATES

ALTERNATE No. 1 – Additional Painting			
Room Numbers	Department	Description	ADD
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Paint Other Walls and Hollow Metal Frames, 3 Walls PT01 /Accent Wall PT0, and provide all associated work.	\$

ALTERNATE No. 2 – Additional Carpet Replacement			
Room Numbers	Department	Description	ADD
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Remove Existing Flooring and Install New Cpt, CPT, and provide all associated work.	\$

ALTERNATE No. 3 – Additional Ceiling Tile Replacement			
Room Numbers	Department	Description	ADD
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Remove ceiling tile and replace. ACT (installed in existing suspended grid), and provide all associated work.	\$

ALTERNATE No. 4 – Additional Lighting Replacement			
Room Numbers	Department	Description	ADD
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Remove 2x4 lighting, replace with new fixtures and provide all associated work.	\$

ALTERNATE No. 5 – Northeast Parking Lot Replacement			
	Site Location	Description	Add
	- Northeast Parking	See Drawings. Includes all associated work	\$

ALTERNATE No. 6 – First EV Charging Station Provisions			
	Site Location	General Summary	Add
	- Southwest Parking Lot (westerly location)	Power supply/wiring in conduit from the existing building by electrical, steel guard posts pavement marking symbols, and two EV Charging Signs with post. Level 2 Dual EV Charging Station by Owner (NIC).	\$

ALTERNATE No. 7 – Second EV Charging Station Provisions			
	Site Location	General Summary	Add
	- Southwest Parking Lot (easterly location)	Power supply/wiring in conduit from the existing building by electrical, steel guard posts pavement marking symbols, and two EV Charging Signs with post. Level 2 Dual EV Charging Station by Owner (NIC).	\$

5. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for thirty (30) days from the Bid closing date.

If this Bid is accepted by the Contractor within the time period stated above, we will:

- A. Execute the Agreement within seven (7) days of receipt of Notice of Award.
- B. Furnish the required bonds within seven (7) days of receipt of Notice of Award in the form referenced in Supplementary Instructions to Bidders.

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which the Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

6. CONTRACT TIME:

Owner will award a contract by approximately November 10, 2025.

BIDDER agrees that the Interior Base Bid Work will be substantially completed by September 1, 2026. The work including the site entry shall be completed and ready for final completion by October 20, 2026.

BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time. BIDDER shall figure that thirty (30) workdays can be lost due to inclement weather before the Owner will grant a time extension. Liquidated damages are identified in Section 00 73 00.

7. SUBCONTRACTOR LIST (MANDATORY REQUIREMENT)

Important: Failure to list Subcontractors as requested will be considered by Owner as an irregularity and may result in rejection of the BID.

If awarded the Single Prime Contract on the basis of our BID, we intend to award subcontracts as follows:

For	Subcontractor
Earthwork	
Asphalt	
Concrete	
Masonry	
Plumbing	
HVAC	
Electrical	

8. The following documents are attached to and made a condition of this Bid (i.e., bid security): If none, state so.

9. The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

DO NOT SUBMIT
ACCEPTING ONLINE BIDS ONLY

10. BID SUBMITTAL

BIDDER:

Name: _____
(Indicate correct name of bidding entity)

By: _____ (SEAL)
(Individual's signature)

Printed Name: _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(Signature)

Printed Name: _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Contact Name and email address: _____

Bidder's License No.: _____
(where applicable)

Section 00 43 00

BID BOND

Bid Bond AIA Document A310 is not bound in this project manual, but is included by reference. It is a part of this contract document and is incorporated herein as if it were bound in this manual.

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NOTICE OF AWARD

TO: {CONTRACTOR}
{ADDRESS}
{CITY, STATE ZIP}

PROJECT DESCRIPTION:
ADAMS COUNTY
ADMINISTRATION BUILDING
SITE AND INTERIOR IMPROVEMENTS
FRIENDSHIP, WI 53934
MSA Project #21993005

The OWNER has considered the BID submitted by you for the above-described WORK in response to its Advertisement to Bid.

You are hereby notified that your BID has been accepted for: the base bid of \${AMOUNT} and Alternates 1 through 10 for an add of \${AMOUNT}. Total Contract amount of \${AMOUNT}.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Contractor's Performance & Payment Bond within seven (7) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and/or furnish said bonds within seven (7) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your Bid Bond.

The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the ARCHITECT/ENGINEER.

Dated this {DATE}th day of {MONTH}, 20{XX} ACCEPTANCE OF NOTICE
{OWNER'S NAME} Receipt of the above NOTICE OF (Owner)
AWARD is hereby acknowledged by:

{OWNER'S SIGNATURE NAME}
{TITLE}

{CONTRACTORS SIGNATURE NAME}
{TITLE}
this _____ day of _____,
20{XX}.

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Section 00 52 00

OWNER/CONTRACTOR AGREEMENT

Standard Form of Agreement Between Owner and Contractor AIA Document A101 is not bound in this project manual, but is included by reference. It is a part of this contract document and is incorporated herein as if it were bound in this manual.

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NOTICE TO PROCEED

TO: {CONTRACTOR}
{ADDRESS}
{CITY, STATE ZIP}

DATE: {DATE}

PROJECT #: 21993005
ADAMS COUNTY
ADMINISTRATION BUILDING
SITE AND INTERIOR IMPROVEMENTS

You are hereby notified to commence work in accordance with the Agreement dated {DATE}, 20{XX}, on or before {DATE}, 20{XX}. The date of Substantial completion of all WORK is therefore {DATE}, 20{XX}.

{OWNER} (Owner)

By: _____
{OWNER'S NAME}

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED
is hereby acknowledged by

this the _____ day of
_____, 20{XX}.

By: _____

Title: _____

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PERFORMANCE BOND AND PAYMENT BOND

Performance Bond and Payment Bond AIA Document A312 is not bound in this project manual, but is included by reference. It is a part of this contract document and is incorporated herein as if it were bound in this manual.

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Section 00 72 00

GENERAL CONDITIONS

General Conditions AIA Document A201 is not bound in this project manual, but is included by reference. It is a part of this contract document and is incorporated herein as if it were bound in this manual.

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SUPPLEMENTARY CONDITIONS

The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201, 2017 edition. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

ARTICLE 1 – GENERAL PROVISIONS

DELETE Subparagraph 1.2.1 and substitute the following:

1.2.1 The intent of the Contract Documents is to include all items necessary to produce the indicated results. In the event of a conflict or inconsistency in or among the contract documents, or between the Contract Documents, the Contractor shall, unless directed otherwise in writing by the Architect and Owner, provide the greatest quantity, highest quality, highest degree of safety, and the most stringent material, equipment or work.

ARTICLE 3 - CONTRACTOR

Add the following Subparagraph 3.4.4 to Paragraph 3.4:

3.4.4 The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect to evaluate the Contractor's proposed substitutions and to make agreed-upon changes in the Drawings and Specifications made necessary by the Owner's acceptance of such substitutions.

3.5 Warranty

3.5.3 All work and materials shall be guaranteed for a period of (1) one year from date of substantial completion. This general guarantee shall be in addition to warranties for specific materials such as, but not limited to, the elastomeric membrane roofing. On-going problems that occur during the one year guarantee period but continue beyond the one year guarantee period shall extend the guarantee period until the problem is resolved.

3.6 Taxes

3.6.1 Sales and Use Tax. Owner represents that it is a qualifying exempt entity under Section 77.54(9m), Wis. Stats. (as created by 2015 Wis. Act 126) with respect to exemption from Wisconsin sales and use tax of certain items that become part of eligible facilities owned by the qualifying exempt entity. The Contract Price accounts for such sales and use tax exemptions, to the extent applicable. Contractor shall not be entitled to an increase in Contract Price if Contractor is not successful in obtaining an anticipated sales and use tax exemption, unless the reason for the inability to obtain the anticipated exemption is a formal determination by the State of Wisconsin that Owner is not a qualifying exempt entity.

3.6.2 How to Claim the Exemption

3.6.2.1 A contractor who makes purchases that qualify for this exemption, must provide a fully completed exemption certificate to the seller. The contractor should check "other purchases exempted by law" on the certificate and enter "exempt under sec. 77.54(9m), Wis. Stats." The Wisconsin Sales and Use Tax Exemption Certificate with Instructions is included in Section 00 73 10 of this Project Manual.

3.6.2.2 Note: A contractor who provides the seller an exemption certificate claiming an item will be used in this exempt manner, then uses it in a taxable manner, is liable for use tax on its purchase price of such items.

3.6.3 Documentation to Maintain

3.6.3.1 Retailers: The seller is not liable for Wisconsin sales tax on its sales of taxable products if, within 90 days of the sale, it receives a fully completed exemption certificate from the contractor indicating

the contractor is using the items in an exempt manner. Sellers are required to maintain adequate records, including exemption certificates obtained from contractors, to identify that the sale is exempt.

- 3.6.3.2 Contractors: The contractor is required maintain records to verify that the exemption applies when the real property construction activity is performed on a facility owned by the qualifying exempt entity. This may be done by obtaining a nonprofit organization's CES number and maintaining contracts and invoices showing the work was for this qualifying exempt entity.
- 3.6.3.3 IMPORTANT: A contractor should request the Wisconsin nonprofit organization's CES number and retain this number in its records to verify that the organization is a qualifying exempt entity. Property used in a real property contract with a Wisconsin nonprofit organization that does not hold a Wisconsin CES number does not qualify for this exemption.
- 3.6.3.4 Although a qualifying *non-Wisconsin* nonprofit organization is not required to obtain a Wisconsin CES number to be a qualifying exempt entity, the contractor must be able to verify that the entity is organized and operated exclusively for religious, charitable, scientific or educational purposes, or for the prevention of cruelty to children or animals (except hospital service insurance corporations), and no part of its net income inures to the benefit of any private stockholder, shareholder, member, or corporation. For example, the non-Wisconsin qualifying organization may provide the contractor with a copy of its IRS 501(c)3 exempt status determination letter.
- 3.6.3.5 CAUTION: Nonprofit organizations that the IRS exempts under another section of its code (e.g., 501(c)6, 501(c)7) are not qualifying exempt entities for purposes of this exemption. In addition, a Wisconsin state governmental unit that holds a CES number is not a qualifying exempt entity for purposes of this exemption.
- 3.6.3.6 For qualifying exempt entities that are not required to hold a CES number (e.g., a Wisconsin municipality), the contractor may retain the contract and invoices that indicate the work was performed for the qualifying exempt entity.
 - 3.6.3.6.1 Subcontractors: The same treatment applies to subcontractors as it does to contractors in the paragraphs above (i.e., provide exemption certificate to seller, maintain documentation). However, a subcontractor may not have a contract indicating the real property construction activity is for the qualifying exempt entity. A subcontractor will need to ensure it can identify the Wisconsin location, on a bill of sale or invoice to the general contractor, where it performed the real property construction activity and verify that the property became part of a facility in Wisconsin owned by a qualifying exempt entity.

3.7 Permits, Fees, Notices, and Compliance with Laws

Add subparagraph 3.7.1.1 to paragraph 3.7.1.

- 3.7.1.1 The Contractor shall secure all building permits from the Village of Friendship, Wisconsin.

3.12 Shop Drawings, Product Data, and Samples

Add Subparagraph 3.12.11 to Paragraph 3.12:

- 3.12.11 The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect. The Owner shall be entitled to deduct from the Contract sum amounts paid to the Architect for evaluation of such additional resubmittals.

ARTICLE 4 - ARCHITECT

Add Clause 4.2.1.1 to Subparagraph 4.2.2:

- 4.2.2.1 The Contractor shall reimburse the Owner for compensation paid to the Architect for additional site visits made necessary by the fault, neglect or request of the Contractor.

ARTICLE 9 - PAYMENTS AND COMPLETION

Add the following Clause 9.3.1.3 to 9.3.1:

- 9.3.1.3 The retainage shall be an amount equal to not more than 5% of the completed work until 50% of the work has been completed. At 50% completion, no additional amounts shall be retained, and partial payments shall be made in full to the Contractor unless the Architect or Engineer certifies that the job is not proceeding satisfactorily. At 50% completion or any time thereafter when the progress of the work is not satisfactory, additional amounts may be retained but in no event shall the total retainage be more than 10% of the value of the work completed. Upon substantial completion of the work, an amount retained may be paid to the Contractor. For the purposes of this section, estimates may include any fabricated or manufactured materials and components specified, previously paid for by Contractor and delivered to the work or properly stored and suitable for incorporation in the work embraced in the contract.

Add the following Clause 9.8.3.1 to Subparagraph 9.8.3:

- 9.8.3.1 Except with the consent to the Owner, the Architect will perform no more than one (1) inspection to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for any additional inspections.

Add the following Clause 9.10.1.1 to Subparagraph 9.10.1:

- 9.10.1.1 Except with the consent of the Owner, the Architect will perform no more than one (1) inspection to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for any additional inspections.

Add the following:

- 9.10.6 Completion Liquidated Damages: Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss and inconvenience if the Work is not completed within the times specified in Paragraph 6 of the Bid, plus any extensions thereof allowed in accordance with Article 8 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor and the Contractor's Surety, if any, shall pay Owner Two-hundred Fifty Dollars (\$250.00) for each calendar day that expires after the time specified in Paragraph 6 of the Bid for Substantial Completion until the Work is substantially complete. After Substantial Completion if Contractor shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor and the Contractor's Surety, if any, shall pay Owner Two-hundred Fifty Dollars (\$250.00) for each calendar day that expires after the time specified in Paragraph 6 of the Bid for completion and readiness for final completion. Note: If liquidated damages are assessed for a delayed Substantial Completion, that number of days must be added to the final completion date before liquidated damages can be accessed to Final Completion.

ARTICLE 11 - INSURANCE AND BONDS

11.1 Contractor's Liability Insurance

Add the following Clauses 11.1.1.1 through 11.1.1.4 to Subparagraph 11.1.1:

11.1.1.1 The limits for Worker's Compensation and Employers' Liability insurance shall meet statutory limits mandated by State and Federal Laws. If (1) limits in excess of those required by statute are to be provided or (2) the employer is not statutorily bound to obtain such insurance coverage or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows:

11.1.1.2 The limits for Commercial General Liability insurance including coverage for Premises-Operations, Independent Contractors' Protective, Products-Completed Operations, Contractual Liability, Personal Injury and Broad Form Property Damage (including coverage for Explosion, Collapse and Underground hazards) shall be as follows:

\$1,000,000 Each Occurrence
\$2,000,000 General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products-Completed Operations Aggregate

11.1.1.2.1 The policy shall be endorsed to have the General Aggregate apply to this Project only.

11.1.1.2.2 The Contractual Liability insurance shall include coverage sufficient to meet the obligations in AIA Document A201-2007 under Paragraph 3.18.

11.1.1.2.3 Products and Completed Operations insurance shall be maintained for a minimum period of three (3) years after either 90 days following Substantial Completion or final payment, whichever is earlier.

11.1.1.3 Automobile Liability insurance (owned, non-owned and hired vehicles) for bodily injury and property damage shall be as follows: \$1,000,000 Each Accident

11.1.1.4 Umbrella or Excess Liability coverage shall be as follows: \$5,000,000

11.1.5 The Contractor, at his own expense, shall acquire and maintain in a company or companies rated A- or better by A.M. Best Company and licensed to do business in the State of Wisconsin, an occurrence form policy during the Contract Time, providing liability insurance.

11.1.6 The Contractor shall purchase and maintain property insurance. The insurance shall be in place from the Notice to Proceed through substantial completion. The insurance shall cover the existing building and the new work.

WISCONSIN SALES AND USE TAX EXEMPTION CERTIFICATE

The following four pages is the Wisconsin Department of Revenue Form S-211 Wisconsin Sales and Use Tax Exemption Certificate to be used in purchasing materials for this project.

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WISCONSIN SALES AND USE TAX EXEMPTION CERTIFICATE

Check One ☐ Single Purchase ☐ Continuous

Purchaser's Business Name	Purchaser's Address

The above purchaser, whose signature appears on the reverse side of this form, claims exemption from Wisconsin state, county, baseball or football stadium, local exposition, and premier resort sales or use tax on the purchase, lease, license, or rental of tangible personal property, property under sec. 77.52(1)(b), items under sec. 77.52(1)(c), goods under sec. 77.52(1)(d), or taxable services, as indicated by the box(es) checked below.

I hereby certify that I am engaged in the business of selling, leasing, licensing, or renting: _____

(Purchaser's description of property, items, goods, or services sold by purchaser.)

Purchaser's description of property or services purchased (itemize property, items, or goods purchased if "single purchase"):

Seller's Name	Seller's Address

REASON FOR EXEMPTION

☐ **Resale** (Enter purchaser's seller's permit or use tax certificate number) _____

Manufacturing and Biotechnology

- ☐ Tangible personal property (TPP) or item under s.77.52(1)(b) that is used exclusively and directly by a manufacturer in manufacturing an article of TPP or items or property under s.77.52(1)(b) or (c) that is destined for sale and that becomes an ingredient or component part of the article of TPP or items or property under s.77.52(1)(b) or (c) destined for sale or is consumed or destroyed or loses its identity in manufacturing the article of TPP or items or property under s.77.52(1)(b) or (c) destined for sale.
- ☐ Machines and specific processing equipment and repair parts or replacements thereof, exclusively and directly used by a manufacturer in manufacturing tangible personal property or items or property under s.77.52(1)(b) or (c) and safety attachments for those machines and equipment.
- ☐ The repair, service, alteration, fitting, cleaning, painting, coating, towing, inspection, and maintenance of machines and specific processing equipment, that the above purchaser would be authorized to purchase without sales or use tax, at the time the service is performed. Tools used to repair exempt machines are not exempt.
- ☐ Fuel and electricity consumed in manufacturing tangible personal property or items or property under s.77.52(1)(b) or (c) in this state.
Percent of fuel exempt: _____ % Percent of electricity exempt: _____ %
- ☐ Portion of the amount of fuel converted to steam for purposes of resale. Percent of fuel exempt: _____ %
- ☐ Property used exclusively and directly in qualified research, by persons engaged in manufacturing at a building assessed under s. 70.995, by persons engaged primarily in biotechnology in Wisconsin, or a combined group member conducting qualified research for another combined group member that meets these requirements.

Farming

(To qualify for this exemption, the purchaser must use item(s) exclusively and directly in the business of farming, including dairy farming, agriculture, horticulture, floriculture, silviculture, or custom farming services.)

- ☐ Tractors (except lawn and garden tractors), all-terrain vehicles (ATV) and farm machines, including accessories, attachments, and parts, lubricants, nonpowered equipment, and other tangible personal property or items or property under s.77.52(1)(b) or (c) that are used exclusively and directly, or are consumed or lose their identities in the business of farming. This includes services to the property and items above.
- ☐ Feed, seeds for planting, plants, fertilizer, soil conditioners, sprays, pesticides, and fungicides.
- ☐ Breeding and other livestock, poultry, and farm work stock.
- ☐ Containers for fruits, vegetables, grain, hay, and silage (including containers used to transfer merchandise to customers), and plastic bags, sleeves, and sheeting used to store or cover hay and silage. Baling twine and baling wire.
- ☐ Animal waste containers or component parts thereof (may only mark certificate as "Single Purchase").
- ☐ Animal bedding, medicine for farm livestock, and milk house supplies.

Governmental Units and Other Exempt Entities

Enter CES No., if applicable

- ☐ The United States and its unincorporated agencies and instrumentalities.
- ☐ Any federally recognized American Indian tribe or band in this state.
- ☐ Wisconsin state and local governmental units, including the State of Wisconsin or any agency thereof, Wisconsin counties, cities, villages, or towns, and Wisconsin public schools, school districts, universities, or technical college districts.
- ☐ Organizations organized and operated exclusively for religious, charitable, scientific, or educational purposes, or for the prevention of cruelty to children or animals. CES Number _____ (Required for Wisconsin organizations).

Other

- ☐ Containers and other packaging, packing, and shipping materials, used to transfer merchandise to customers of the purchaser.
- ☐ Trailers and accessories, attachments, parts, supplies, materials, and service for motor trucks, tractors, and trailers which are used exclusively in common or contract carriage under LC, IC, or MC No. (if applicable) _____.
- ☐ Machines and specific processing equipment used exclusively and directly in a fertilizer blending, feed milling, or grain drying operation, including repair parts, replacements, and safety attachments.
- ☐ Building materials acquired solely for and used solely in the construction or repair of holding structures used for weighing and dropping feed or fertilizer ingredients into a mixer or for storage of such grain, if such structures are used in a fertilizer blending, feed milling, or grain drying operation.
- ☐ Tangible personal property purchased by a person who is licensed to operate a commercial radio or television station in Wisconsin, if the property is used exclusively and directly in the origination or integration of various sources of program material for commercial radio or television transmissions that are generally available to the public free of charge without a subscription or service agreement.
- ☐ Fuel and electricity consumed in the origination or integration of various sources of program material for commercial radio or television transmissions that are generally available to the public free of charge without a subscription or service agreement.
Percent of fuel exempt: _____ % Percent of electricity exempt: _____ %
- ☐ Tangible personal property and items, property and goods under s.77.52(1)(b), (c), and (d) to be resold by _____ on my behalf where _____ is registered to collect and remit sales tax to the Department of Revenue on such sales.
- ☐ Tangible personal property, property, items and goods under s.77.52(1)(b), (c), and (d), or services purchased by a Native American with enrollment # _____, who is enrolled with and resides on the _____ Reservation, where buyer will take possession of such property, items, goods, or services.
- ☐ Tangible personal property and items and property under s.77.52(1)(b) and (c) becoming a component of an industrial or municipal waste treatment facility, including replacement parts, chemicals, and supplies used or consumed in operating the facility. Caution: Do not check the "continuous" box at the top of page 1.
- ☐ Portion of the amount of electricity or natural gas used or consumed in an industrial waste treatment facility.
(Percent of electricity or natural gas exempt _____ %)
- ☐ Electricity, natural gas, fuel oil, propane, coal, steam, corn, and wood (including wood pellets which are 100% wood) used for fuel for **residential** or **farm** use.
- | | % of Electricity
Exempt | % of Natural Gas
Exempt | % of Fuel
Exempt |
|--|----------------------------|----------------------------|---------------------|
| ☐ Residential | _____ % | _____ % | _____ % |
| ☐ Farm | _____ % | _____ % | _____ % |
- Address Delivered: _____
- ☐ Percent of printed advertising material solely for out-of-state use. _____ %
- ☐ Catalogs, and the envelopes in which the catalogs are mailed, that are designed to advertise and promote the sale of merchandise or to advertise the services of individual business firms.
- ☐ Computers and servers used primarily to store copies of the product that are sent to a digital printer, a plate-making machine, or a printing press or are used primarily in prepress or postpress activities, by persons whose NAICS code is 323111, 323117, or 323120.
- ☐ Purchases from out-of-state sellers of tangible personal property that are temporarily stored, remain idle, and not used in this state and that are then delivered and used solely outside this state, by persons whose NAICS code is 323111, 323117, or 323120.
- ☐ Other purchases exempted by law. (State items and exemption). _____

I hereby certify that if the item(s) being purchased are not used in an exempt manner, I will remit use tax on the purchase price at the time of first taxable use. I understand that failure to remit the use tax may result in a future liability that may include tax, interest, and penalty.

Signature of Purchaser

Print or Type Name

Title

Date

INSTRUCTIONS

This certificate may be used to claim exemption from Wisconsin state, county, baseball and football stadium, local exposition, and premier resort sales or use taxes.

Under the sales and use tax law, all receipts from sales of tangible personal property, property, items and goods under sec. 77.52(1)(b), (c), and (d), or taxable services are subject to the tax until the contrary is established. However, a seller who receives a fully completed exemption certificate no later than 90 days after the date of sale is relieved of any responsibility for collection or payment of the tax upon transactions covered by the certificate. A fully completed certificate is one which is completely filled in and indicates the reason for exemption.

RESALE: A purchaser using the resale exemption is attesting that the tangible personal property, property, items, or goods under sec. 77.52(1)(b), (c), or (d), or taxable services being purchased will be resold, leased, licensed, or rented. However, in the event any such property, items, or goods is used for any purpose other than retention, demonstration, or display while holding it for sale, lease, license, or rental in the regular course of business, the purchaser is required to report and pay the tax on the purchase of the property, item, or good.

The following purchasers may make purchases for resale even though they do not hold a Wisconsin seller's permit or use tax certificate: (a) A wholesaler who only sells to other sellers for resale may insert "Wholesale only" in the space for the seller's permit number; (b) A person who only sells or repairs exempt property, such as to a manufacturer or farmer, may insert "Exempt sales only"; (c) A nonprofit organization may insert "Exempt sales only" if its subsequent sales of the tangible personal property, property, items, or goods under sec. 77.52(1)(b), (c), or (d), or taxable services are exempt as occasional sales.

A seller is allowed to accept an exemption certificate from an out-of-state retailer claiming the resale exemption for tangible personal property and items, property, and goods under sec. 77.52(1)(b), (c) and (d), Wis. Stats., drop shipped to a Wisconsin location, regardless of whether or not the out-of-state retailer holds a Wisconsin seller's permit. The out-of-state retailer's permit number, if the other state issues one, and state should be listed on the exemption certificate. If the exemption certificate does not list the Wisconsin seller's permit number or the out-of-state retailer's permit number and state, to be fully complete and valid the exemption certificate must contain a statement indicating the out-of-state retailer is a seller that is not required to hold a permit.

A resale exemption may be granted if the purchaser is unable to ascertain at the time of purchase whether the property will be sold or will be used for some other purpose. If the buyer purchases an item without tax for resale, but uses the item, the buyer owes use tax on its purchase of the item.

MANUFACTURING: "Manufacturing" means the production by machinery of a new article of tangible personal property or items or property under sec. 77.52(1)(b) or (c) with a different form, use, and name from existing materials, by a process popularly regarded as manufacturing, and that begins with the conveying raw materials and supplies from plant inventory to the place where work is performed in the same plant and ends with conveying finished units of tangible personal property or items or property under sec. 77.52(1)(b) or (c) to the point of first storage in the same plant.

FARMING: This certificate may not be used by farmers to claim exemption for the purchase of motor vehicles or trailers for highway use, lawn or garden tractors, snowmobiles, or for items used for the personal convenience of the farmer. When claiming an exemption for an ATV which is also registered for public use, a written description including the percentages of time for personal and farm use, must be submitted with the ATV Registration Application.

The sales price from the sale of electricity, natural gas, and other fuels for use in farming are exempt all 12 months of the year. Farmers claiming this exemption should check the box for electricity and fuel located in the "Other" section.

This certificate cannot be used as an exemption for paying Wisconsin motor vehicle fuel tax.

GOVERNMENTAL UNITS AND OTHER EXEMPT ENTITIES:

A seller may accept exemption certificates from federal and Wisconsin governmental units and federally recognized American Indian tribes or bands in Wisconsin. Instead of obtaining an exemption certificate, a seller may (1) accept a purchase order from the governmental unit or tribe or band, or (2) record the governmental unit or tribe or band's Certificate of Exempt Status (CES) number on its invoices. Governmental units of other countries and states are not exempt from Wisconsin sales tax.

The exemption for the United States and its unincorporated agencies and instrumentalities may also be claimed by any incorporated agency or instrumentality of the United States wholly owned by the United States or by a corporation wholly owned by the United States.

The exemption for Wisconsin governmental units and other exempt entities may be claimed by: Local Exposition District, Professional Baseball Park District, Professional Football Stadium District, UW Hospitals and Clinics Authority, Wisconsin Aerospace Authority, Health Insurance Risk-Sharing Plan Authority, Wisconsin Economic Development Authority, Fox River Navigational System Authority, public inland lake protection and rehabilitation districts, municipal public housing authorities, uptown business improvement districts, local cultural arts districts, county-city hospitals, sewerage commissions, metropolitan sewerage districts, or joint local water authorities.

Organizations holding a Certificate of Exempt Status (CES)

number: Wisconsin organizations organized and operated exclusively for religious, charitable, scientific, or educational purposes, or for the prevention of cruelty to children or animals, may purchase products or services exempt from Wisconsin sales tax if the organization holds a CES number issued by the Wisconsin Department of Revenue. Wisconsin and federal governmental units, and any federally recognized American Indian tribe or band in Wisconsin, will also qualify for a CES.

A similar out-of-state organization, generally organized under sec. 501(c)(3) of the Internal Revenue Code, may purchase products or services exempt from Wisconsin sales tax even though it has not been issued a CES number. This exemption does *not* apply to out-of-state public schools, including public colleges and universities, and governmental units from other states.

Purchases (for lodging, meals, auto rental, etc.) by employees/representatives of exempt organizations performing organization business, are exempt from sales tax, provided 1) the retailer issues the billing or invoice in the name of the exempt organization, 2) the CES number is entered on the billing or invoice, and 3) the retailer retains a copy of that document.

OTHER:

Containers: This exemption applies regardless of whether or not the containers are returnable. Containers used by the purchaser only for storage or to transfer merchandise owned by the purchaser from one location to another do not qualify for the exemption.

Common or contract carriers: The exemption available to common or contract carriers for certain vehicles and repairs listed on this certificate applies only to those units used “exclusively” in such common or contract carriage. A carrier may qualify for the common or contract carriage exemption even if it does not hold a LC or IC number. The fact that a carrier holds a LC or IC number is not in itself a reason for exemption. A carrier may qualify for the common or contract carrier exemption even if it does not hold an LC or IC number.

Waste treatment facilities: The exemption applies to the sale of tangible personal property and items and property under sec. 77.52(1)(b) and (c) to a contractor for incorporation into real property which is part of an industrial or commercial waste treatment facility that qualifies for property tax exemption or a Wisconsin or federal governmental waste treatment facility.

Electricity, natural gas, fuel oil, coal, steam, corn, and wood (including wood pellets which are 100% wood) used for fuel:

- The sales price from the sale of electricity and natural gas for residential use during the months of November through April are exempt from sales and use tax.
- The sales price from sales of fuel oil, propane, coal, steam, corn, and wood (including wood pellets which are 100% wood) used for fuel sold for residential use are exempt from sales or use tax. Wood pellets are considered 100% wood even though the pellets may contain a small amount of binding material used to form the pellets.
- The sales price from the sale of fuel and electricity for use in farming are exempt all year.

A retailer of electricity, fuel, or natural gas shall have a signed exemption certificate for exempt sales for residential or farm use unless any of the following apply:

1. 100% of the electricity, fuel, or natural gas is for exempt use.
2. The sale is to an account which is properly classified as residential or farm pursuant to schedules which are filed for rate tariff with the Wisconsin Public Service Commission which are in force at the time of sale.
3. The sale is to an account which is properly classified as residential or farm for classification purposes as directed by the Federal Rural Electrification Administration.

“Farm use” means used in farming, including use in a tractor or other farm machines used directly in farming, in a furnace heating a farm building, in providing lighting in farm buildings, and use in operating motors of machines used directly in farming.

“Residential use” means use in a structure or portion of a structure which is a person’s permanent principal residence. It does not include use in motor homes, travel trailers, other

recreational vehicles, or transient accommodations. “Transient accommodations” means rooms or lodging available to the public for a fee for a continuous period of less than one month in a building such as a hotel, motel, inn, tourist home, tourist house or court, summer camp, resort lodge, or cabin.

Other purchases exempted by law include:

1. Printed material which is designed to advertise and promote the sale of merchandise, or to advertise the services of individual business firms, which printed material is purchased and stored for the purpose of subsequently transporting it outside the state by the purchaser for use thereafter solely outside the state.
2. Parts, supplies, or repairs for a school bus used exclusively as a contract carrier pursuant to a contract with a school or other organization.
3. Waste reduction and recycling machinery and equipment, including parts and repairs, which are exclusively and directly used for waste reduction and recycling activities.
4. Railway cars, locomotives, and other rolling stock used in railroad operations, or accessories, attachments, parts, lubricants, or fuel therefor.
5. Commercial vessels and barges of 50-ton burden or over engaged in interstate or foreign commerce or commercial fishing, and accessories, attachments, parts, and fuel therefor.
6. Fuel sold for use in motorboats that are regularly employed in carrying persons for hire for sport fishing in and upon the outlying waters, as defined in sec. 29.001(63), Wis. Stats., and the rivers and tributaries specified in sec. 29.2285(2) (a)1. and 2., Wis. Stats., if the owner and all operators are licensed under sec. 29.514, Wis. Stats., to operate the boat for that purpose.
7. A product whose power source is the wind, direct radiant energy received from the sun, or gas generated by the anaerobic digestion of animal manure and other agricultural waste, if the product produces at least 200 watts of alternating current or at least 600 British thermal units per day, but not including a product that is an uninterruptible power source that is designed primarily for computers.
8. Effective July 1, 2013, snowmaking and snow-grooming machines and equipment, including accessories, attachments, and parts for the machines and fuel and electricity used to operate such machines and equipment, that are used exclusively and directly for snowmaking at ski hills, ski slopes, and ski trails.
9. Effective July 1, 2013, advertising and promotional direct mail and printing services used to produce advertising and promotional direct mail.

SIGNATURE: For corporations, this form must be signed by an employee or officer of the corporation.

QUESTIONS: If you have questions, please contact us.

WISCONSIN DEPARTMENT OF REVENUE
Customer Service Bureau
PO Box 8949
Madison WI 53708-8949

Phone: (608) 266-2776
Fax: (608) 267-1030
Website: revenue.wi.gov

SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contract description.
- B. Work by Owner.
- C. Owner-supplied products.
- D. Contractor use of site and premises.
- E. Work sequence.
- F. Owner occupancy.

1.02 CONTRACT DESCRIPTION

- A. Construct the work under a single contract with the Owner on a stipulated lump sum basis.
- B. Work of this contract comprises of general construction including mechanical and electrical.

1.03 WORK BY OWNER

- A. Items noted NIC (Not in contract) on the drawings and in the specifications will be supplied and installed by Owner.
- B. Owner will remove and retain possession of the items indicated on the drawings.
- C. Contractor will remove and Owner will take possession of the items indicated on the drawings.
- D. Owner to provide the integral site irrigation system installation. Contractor to coordinate with the Owners contractor and remove existing lines in the area of work under their direction.
- E. Owner to provide the integral site wayfinding signage at the new entrance. Contractor to coordinate with the Owners regarding the location(s) that it will be installed.

1.04 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner reviewed Shop Drawings, Product Data, and Samples, to Contractor.
 - 2. Arrange and pay for Product delivery to site.
 - 3. On delivery, inspect Products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
 - 1. Review Owner reviewed Shop Drawings, Product Data, and Samples.
 - 2. Receive and unload Products at site; inspect for completeness or damage, jointly with Owner.
 - 3. Handle, store, install and finish Products.
 - 4. Repair or replace items damaged after receipt.
- C. Owner to provide face brick for exterior door infill.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow Owner occupancy.
- B. Maintain Emergency Building Exits During Construction.
- C. Time Restrictions for Performing Work shall comply with local requirements.

1.06 WORK SEQUENCE

- A. Construct Work in phases to accommodate Owner's occupancy and staged suite move-outs and move-ins. requirements during the construction period. Coordinate construction schedule and operations with Owners.
- B. General Contractor shall propose strategies/phasing and coordinate with the Owner regarding alternative approaches to schedule to best facilitate and expedite construction.
- C. Project Schedule:
 - 1. Pre-Construction Conference TBD
 - 2. GC Start Ordering materials November 2025 (Contractor Option)
 - 3. Mobilization Approx. Dec. or Jan. 2026 (Contractor Option)
 - 4. Start Site Work Approx. Spring 2026 (Contractor Option)
 - 5. Completion:
 - a. Substantial Completion September 1, 2026
(Phased completion of designated areas is anticipated throughout the duration of construction)
 - b. Final Completion: October 20, 2026
 - 6. Note: Based on the facility remaining in use during construction, some exceptions/flexibility may be allowable to extend the proposed completion dates if proposed and coordinated by the general contractor and accepted by the Owner well in advance of completion.

1.07 OWNER OCCUPANCY

- A. The Owner will occupy the existing building during the entire period of construction. Phase construction for the conduct of normal operations.
- B. The owner will move out of each office suite in its entirety to allow access. The Owner will move their future and content. Presume that only one suite will be vacated at one time. Coordinate with the Owner regarding alternative approaches to best facilitate and expedite construction.
- C. Construction access to common areas is allowed, but must account for and allow the public use of the in that area.
- D. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- E. Schedule the Work to accommodate this requirement.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cash allowances.
- B. Contingency allowance.
- C. Schedule of values.
- D. Application for payment.
- E. Change procedures.
- F. Defect assessment.
- G. Alternates.
- H. Hazardous substances.

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 But Included in the Contract Sum/Price: 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/Engineer Responsibilities:
 - 1. Consult with Contractor for consideration and selection of Products, suppliers, and installers.
 - 2. Select Products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- D. Contractor Responsibilities:
 - 1. Assist Architect/Engineer in selection of Products, suppliers and installers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.
 - 3. On notification of selection by Architect/Engineer, 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 CONTINGENCY ALLOWANCE

- A. Include in the Contract, a stipulated sum/price of \$80,000.00 for use upon Owner's instruction.
- B. Contractor's costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- C. Funds will be drawn from the Contingency Allowance only by Change Order.

- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.
- E. Differences in cost will be adjusted by Change Order.

1.04 SCHEDULE OF VALUES

- A. Submit a schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media will be considered.
- B. Submit Schedule of Values in duplicate within 20 days after date established in Notice to Proceed.
- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify bonds and insurance.
- D. Include in each line item, the amount of Allowances specified in this section.
- E. Revise schedule to list approved Change Orders with each Application For Payment.

1.05 APPLICATIONS FOR PAYMENT

- A. Submit a PDF via email of each application on AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Monthly. The application shall be submitted by the 10th of the following month. The Owner shall make payment by the 30th of the same month.
- D. Lien Waivers shall be submitted with each pay request. The lien waivers shall cover the dollars paid on the previous request.

1.06 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 1987 Edition, Paragraph 7.4 by issuing supplemental instructions on AIA Form G710.
- B. The Architect/Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within 10 days.
- C. The Contractor may propose changes by submitting a request for change to the Architect/Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price 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 - Product Requirements.
- D. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer.
- E. Unit Price Change Order: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of Work which are not pre-determined, execute Work under a Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

- F. Construction Change Directive: Architect/Engineer may issue a directive, on AIA Form G713 Construction Change Directive signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect/Engineer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- H. Maintain detailed records of Work done on Time and Material basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
- I. Change Order Forms: AIA G701 Change Order.
- J. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- K. Correlation Of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
 - 2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - 3. Promptly enter changes in Project Record Documents.

1.07 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Architect/Engineer it is not practical to remove and replace the Work, the Architect/Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but the contract price will be adjusted to a new price at discretion of Architect/Engineer and Owner.
- D. Defective Work will be partially repaired to instructions of Architect/Engineer and Owner and price will be adjusted to new price at discretion of Architect/Engineer and Owner.
- E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Architect/Engineer and Owner to assess defects and identify payment adjustments is final.
- G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

1.08 ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.
- B. Coordinate related Work and modify surrounding Work as required.

C. Schedule of Alternates:

ALTERNATE No. 1 – Additional Painting			
Room No.'s	Department	General Summary	
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Paint Other Walls and Hollow Metal Frames, 3 Walls PT01 /Accent Wall PTO, and provide all associated work.	
ALTERNATE No. 2 – Additional Carpet Replacement			
Room No.'s	Department	General Summary	
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Remove Existing Flooring and Install New Cpt, CPT-01 / B-01, and provide all associated work.	
ALTERNATE No. 3 – Additional Ceiling Tile Replacement			
Room No.'s	Department	General Summary	
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Remove ceiling tile and replace. ACT (installed in existing suspended grid), and provide all associated work.	
ALTERNATE No. 4 – Additional Lighting Replacement			
Room No.'s	Department	General Summary	
A119, A050, A051, A052, A053, A054, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, A180	IT Offices, Finance, Clerk, Treasurer, GIS Office, Storage, Conservation Office, Planning Zoning, Medical Examiners	Remove 2x4 lighting, replace with new fixtures, and provide all associated work.	
ALTERNATE No. 5 – Northeast Parking Lot Replacement			
	Site Location	General Summary	
	- Northeast Parking Lot	See Drawings Includes all associated work	
ALTERNATE No. 6 – First EV Charging Station Provisions			
	Site Location	General Summary	
	- Southwest Parking Lot (Westerly location)	Power supply/wiring in conduit from the existing building by electrical, two 6" diameter 30" tall steel guard posts, pavement marking symbols, and two EV Charging Signs with post. Level 2 Dual EV Charging Station by Owner (NIC).	
ALTERNATE No. 7 – Second EV Charging Station Provisions			
	Site Location	General Summary	
	- Southwest Parking Lot (Easterly location)	Power supply/wiring in conduit from the existing building by electrical, two 6" diameter 30" tall steel guard posts pavement marking symbols, and two EV Charging Signs with post. Level 2 Dual EV Charging Station by Owner (NIC).	

1.09 HAZARDOUS SUBSTANCES

- A. All Contractors and suppliers shall note that materials or systems that contain asbestos in any form will not be allowed or accepted for use or installation on this project. If any materials or systems that contain asbestos are installed or used in any way on this project, the Contractor using or installing such materials or systems shall bear complete responsibility for removing them from the project immediately.
- B. Upon completion of the work of this contract, the Contractor shall submit a written statement to the Owner stating that none of the materials used on this project contain asbestos.
- C. If possible, asbestos-bearing materials are encountered in demolition Work, cease that portion of the Work, and notify the A/E immediately.
- D. If asbestos is present in existing buildings, the Owner shall be responsible for removal, disposal and air monitoring of all asbestos that is encountered. Work shall comply with the Occupational Safety and Health Standards Part 1910.1001 - Asbestos Removal Procedures and EPA Report for controlling asbestos materials. Work shall be completed before building construction commences.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction Document Reproduction.
- B. Coordination.
- C. Field engineering.
- D. Preconstruction meeting.
- E. Progress meetings.
- F. Preinstallation meetings.
- G. Contractor Site Supervision and Observation.
- H. Project Operations.
- I. Disposal of Materials.
- J. Contractor Environmental Requirements.
- K. Examination.
- L. Preparation.
- M. Cutting and patching.
- N. Alteration project procedures.

1.02 CONSTRUCTION DOCUMENT REPRODUCTION

- A. Architect will provide Contractor electronic documents for reproduction.

1.03 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.

- F. 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.

1.04 FIELD ENGINEERING

- A. Employ a Land Surveyor registered in the State and acceptable to Architect/Engineer.
- B. Contractor to locate and protect survey control and reference points. Promptly notify Architect/Engineer of discrepancies discovered.
- C. Control datum for survey is that shown on Drawings.
- D. Verify set-backs and easements, confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

1.05 PRECONSTRUCTION MEETING

- A. Architect/Engineer will schedule a meeting after Notice to Proceed.
- B. Attendance Required: Owner, Architect/Engineer, major subcontractors, and Contractor.
- C. Agenda:
 - 1. Submission of insurance certificates.
 - 2. Distribution of Contract Documents.
 - 3. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 4. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 - 5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 6. Scheduling.
- D. Architect/Engineer will record minutes and distribute copies within after meeting to participants.

1.06 PROGRESS MEETINGS

- A. General contractor to schedule Job Progress Meetings with project subcontractors for the purposes of the construction contractor team coordination. The Owner and A/E will typically not attend.
- B. Owner/Architect/Contractor (OAC) Meetings:
 - 1. GC to schedule and administer OAC meetings throughout progress of the Work at maximum of once a month (when construction is active).
 - 2. GC to make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
 - 3. Attendance Required: Job superintendent, GC Project Manager, Owner and Architect/Engineer, and others as appropriate to agenda topics for each meeting. Optional attendance by the
 - 4. GC to create a virtual appointment and have accommodations hold virtual meetings.
 - 5. Agenda:
 - a. Review minutes of previous meetings.
 - b. Schedule: Review of Work progress and planned progress during succeeding Work period.
 - c. Field observations, problems, and decisions.
 - d. Review of schedule and status of submittals.
 - e. Review pending:
 - 1) Submittals
 - 2) RFIs
 - 3) Proposed Change Orders
 - f. Maintenance of quality and Work standards.

g. Other business relating to Work.

C. General Contractor will record minutes and distribute copies after meetings to participants.

1.07 CONTRACTOR SITE SUPERVISION AND OBSERVATION

A. General Contractor shall have a Supervisor on the job site every day that there is work underway.

B. General Contractor shall compile a daily log of the work that takes place every day and any issue that may arise.

C. General Contractor shall take a minimum of 10 digital pictures per day of the ongoing work and progress.

D. General Contractor shall compile the daily logs and pictures and email the designated MSA representative the daily logs and pictures twice per week. Submit by 12:00 noon on Mondays and Thursdays during the course of on-site work.

1.08 DISPOSAL OF MATERIALS

A. Remove debris from building and site as it accumulates. Debris shall be transported on rubber-tired trucks and covered to prevent spread of dust.

B. All materials and property which are indicated to be removed shall be legally disposed of in an approved landfill, by the Contractor.

1.09 CONTRACTOR ENVIRONMENTAL REQUIREMENTS

A. Contractors shall remove all of their waste chemicals, chemically contaminated materials, and empty containers used in the performance of their work from the site daily. All materials and containers must be disposed of off site in accordance with local, state and federal requirements. Do not dispose of chemicals into site drain systems (inside or outside of building), onto soil or into trash dumpsters operated by the Owner. Containers owned by Contractor shall not be marked with the Owner's name.

B. Liquids are to be discharged to drain only upon authorization from the Owner. All solid wastes shall be removed from the site to approved facilities or placed in appropriate containers/holding areas as authorized by the Owner.

C. All vehicles, machinery, and equipment stored on site must be in approved areas and maintained as necessary to assure proper operation and containment of fluids.

D. Pumps, hoses, temporary storage tanks, and tankers shall be appropriately staffed and located to prevent the release of liquids from the equipment to the environment. Appropriate actions must be taken to mitigate impacts in the event of a release.

E. All releases of chemicals, fuel oils, wastewater, or other materials shall be immediately reported to the Owner.

F. Tankers, being used to transport or store materials on site must be clean of any contaminants from prior usage of the tanker.

G. All containers of chemicals, petroleum products, or other materials shall be stored, used, and disposed of in a manner preventing their release to the environment in any amount. Handling methods deemed inappropriate by Owner shall be immediately corrected by the Contractor.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct location.

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

3.03 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements which affects:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching [including excavation and fill,] to complete Work, and to:
 - 1. Fit the several parts together to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical work.
- D. Execute Work by methods to avoid damage to other Work and which will provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new Products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J. Identify any hazardous substance or condition exposed during the Work to the Architect/Engineer for decision or remedy.

- K. 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.

3.04 ALTERATION PROJECT PROCEDURES

- A. Materials: As specified in Product sections; match existing Products and Work for patching and extending Work.
- B. Employ original skilled and experienced installer to perform cutting and patching.
- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to permit installation of new work and finishes.
- G. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to specified condition.
- I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- J. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- K. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Architect/Engineer for review.
- L. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition; to Architect/Engineer for review.
- M. Trim existing doors to clear new floor finish. Refinish trim to original condition.
- N. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- O. Finish surfaces as specified in individual Product sections.

END OF SECTION

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SECTION 01 32 23
SURVEY AND LAYOUT DATA

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 1 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS (NONE)

1.03 DESCRIPTION OF WORK

- A. The Contractor will stake and layout all work. The Contractor shall immediately, upon entering the site for purpose of beginning work, locate general reference points and take such action as necessary to prevent their destruction. The Contractor shall layout the work and be responsible for all lines, elevations and measurements. The Contractor must exercise proper precaution to verify dimensions of the drawings before laying out work and will be held responsible for any error resulting from failure to exercise such precaution.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)

1.05 SUBMITTALS

- A. Automated Machine Guidance (AMG) Control / Staking Plan

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS (N/A)

PART 3 EXECUTION

3.01 AUTOMATED MACHINE GUIDANCE (AMG)

- A. Contractor may utilize AMG in lieu of or in addition to conventional staking on all or part of the work. When staking is inclusive to construction, or when the Engineer is supplying line and grade staking, any use of AMG will be considered inclusive to associated work.
- B. All AMG work must be coordinated with the Engineer throughout the course of construction to ensure that work performed using AMG conforms to the contract tolerances and that the methods employed conform to the contractor's AMG Control/Staking Plan and accepted industry standards. The contractor will need to revert to conventional staking methods (at no additional cost to the Owner) for all or part of the work at any point during construction if AMG is producing unacceptable results. Acceptable AMG work will be up to the Engineer's discretion.
- C. AMG Control/Staking Plan - Submit a detailed AMG plan to the Engineer for review at least 5 business days before the preconstruction meeting. This plan should explain, at a minimum, how AMG technology will be integrated into the project, what bid items AMG will be associated with and which, if any, will use conventional staking, and the process for verification of tolerances. The plan shall also include:
1. An explanation of how AMG Technology will be integrated into the project
 2. A comprehensive list of bid items associated with AMG
 3. A list of any items for which conventional staking will be used (either alone or in conjunction with AMG)
 4. The process for verification of tolerances
 5. The designation of a single primary contact person for AMG technology issues.

6. A list/diagram of all control points intended for use on the project for verification as required.
7. A description of Contractor's quality control procedures. Include the frequency and type of checks performed to ensure that the work conforms to the contract plans.

Engineer will review the plan for conformance with contract documents. Contractor may not perform AMG work prior to receiving written approval of the AMG plan. All work using AMG shall be performed in accordance with the approved AMG plan. Contractor shall submit plan updates to Engineer throughout the project as necessary, or as directed by the Engineer.

D. AMG Geometric and Surface Information

1. Contractor is responsible for the creating and generating all surface models and any other data required to construct the project to the lines and grades shown on the Contract Drawings. At Contractor's request, Engineer may provide an AutoCad Civil3D file and and/or .XML file of the surfaces used to generate the construction plans. The Contractor shall be responsible for comparing electronic data with available hard copies and Contract Documents. Engineer shall not be held responsible for any discrepancies between the linework, surfaces, or digital data provided to the Contractor. The use of any digital files prepared by Engineer shall not in any way obviate the Contractor's responsibility for the proper checking and coordination of dimensions, details, and other information required to facilitate complete and accurate construction.
2. Develop and maintain a contractor construction model for areas of the project employing AMG. Confirm that the resulting model accurately represents the contract plans. At Engineer's request, provide the construction model to the Engineer in .XML format, or other engineer-approved format.
3. Managing and Updating Information -Notify the Engineer of any errors or discrepancies in Engineer-provided information. Engineer will determine what, if any, revisions may be required. Engineer may revise the contract drawings, if necessary, to address errors or discrepancies that the contractor identifies. If the Engineer requests, provide construction model updates to the Engineer. All Contractor costs for revisions to the surface model, linework, etc. shall be inclusive to the item constructed and no additional money will be paid to the Contractor.
4. Engineer shall contact Contractor if design changes are made after the bid if they will affect the digital model. Contractor shall make the appropriate changes to the model or work with Engineer in the field to ensure design changes are incorporated into final product. Contractor shall be solely responsible for making adjustments or changes to the model as required.
5. Construction Checks - Check the work against the plan elevation at randomly selected points on cross-sections located on the plans at the frequency the Engineer approved as a part of the AMG Control / Staking Plan. Submit the results of these random checks to the Engineer daily. Notify the Engineer immediately if a check variance exceeds the tolerances specified below. Check the work at additional points as the Engineer directs. The Engineer may conduct periodic independent checks to verify accuracy with the plans and contract documents.
6. AMG Construction Tolerances

Item	Horizontal	Vertical
Daily Calibrations	0.10 feet*	0.05 feet*
Subgrade	0.25 feet	0.10 feet
Base Aggregate	0.25 feet	0.04 feet
Curb and Gutter	0.02 feet	0.01 feet
Concrete Pavement	0.02 feet	0.01 feet

*or as directed by the engineer

7. Contractor supplemental staking and dry run required by item to assist completing work within construction tolerances:
 - a. Curb and Gutter
 - 1) Inlets shall be staked to center of inlet at back of curb and minimum 10 ft. each side of inlet at back of curb. Stakes shall provide horizontal and vertical location of structure in the field from the construction documents.
 - 2) High/low points, and grade breaks shall be staked to substantiate vertical tolerances are met. Stakes shall be a maximum of 25 feet apart.

- 3) Intersection curb radii PC, PT, mid-point, and ramp openings shall be staked to confirm intersection details are maintained.
 - 4) Additional staking as determined in the field by Engineer to avoid possible conflicts.
 - 5) Contractor to provide at least one experienced staff member to determine that work conforms to the construction documents and allowed tolerances. If at any time work performed is producing unacceptable results contractor shall immediately stop work, notify Engineer, and may be required to revert to conventional staking methods.
 - 6) Contractor to perform dry run (no concrete placed) on a portion of the work, as directed by the Engineer, to ensure that AMG technologies will complete work within the construction tolerances. Allow the engineer to check projected curb grades on the machine during the dry run.
- b. Subgrade and Base Aggregate
 - 1) Offset staking required at high/low points, PC, PT, mid-points, and maximum of 400 ft. intervals to ensure necessary accuracy of vertical and horizontal compliance with contract documents.
 - c. Culverts
 - 1) Culverts require placement of 2 benchmarks placed within 100 ft. of each location where work is to be completed to ensure contractor/engineer can verify drainage of existing ground to best fit and record accurate as-built information.
 - d. Water Main
 - 1) Water main staking shall include all bends, tee's, hydrants, valves, reducers, etc. and a maximum interval of every 100 feet along the main.
 - e. Sanitary Sewer
 - 1) Sanitary Sewer staking shall include the structures, wye's, and 25-foot and 50-foot outside the structures along the sewer main being installed.
 - f. Storm Sewer
 - 1) Storm Sewer staking shall include the manhole and inlet structures, as well as 25-foot and 50-foot outside the structures along the storm sewer being installed. Inlet type structures shall reference the "top of curb" as well as the "back of curb" (if curb and gutter is required).

3.02 CONSTRUCTION SURVEY LAYOUT REQUIREMENTS AND TOLERANCES

- A. Tolerances for staking shall be 0.02 feet horizontal and 0.01 feet vertical unless otherwise stated.

Construction Staking Tolerances

Item	Horizontal	Vertical
Slope Stakes	0.25 feet	0.10 feet
Structure Layout	0.02 feet	0.01 feet
Sanitary Sewer	0.02 feet	0.01 feet
Water Main	0.10 feet	0.03 feet
Storm Sewer	0.02 feet	0.01 feet
Pipe Culverts	0.25 feet	0.03 feet
Electrical	0.02 feet	0.01 feet
Subgrade	0.25 feet	0.10 feet
Base Aggregate	0.25 feet	0.04 feet
Curb and Gutter	0.02 feet	0.01 feet
Curb Ramps	0.02 feet	0.01 feet
Concrete Pavement	0.02 feet	0.01 feet

END OF SECTION

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SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Shop Drawings.
- D. Product Data.
- E. Samples.
- F. Manufacturer's installation instructions.
- G. Manufacturers' certificates.

1.02 RELATED SECTIONS

- A. Section 01 40 00 - Quality Requirements: Manufacturers' field services and reports.
- B. Section 01 70 00 - Execution and Closeout Requirements: Contract warranties and closeout submittals.

1.03 SUBMITTAL PROCEDURES

- A. Submittals shall be emailed in a PDF form whenever possible.
- B. Identify Project, Contractor, Subcontractor, or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- C. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite the Project and deliver to Architect/Engineer at business address. Coordinate submission of related items.
- E. For each submittal for review, allow 15 calendar days excluding delivery time to and from the Contractor.
- F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- G. When revised for resubmission, identify changes made since previous submission.
- H. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- I. Submittals not requested will not be recognized or processed.

1.04 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 20 days after date established in Notice to Proceed.

- B. Revise and resubmit as required.
- C. Submit revised schedules identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major section of Work or operation identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.

1.05 SHOP DRAWINGS

- A. Shop Drawings: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit PDF via email.
- C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.06 PRODUCT DATA

- A. Product Data: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit PDF via email.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- D. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.07 SAMPLES

- A. Samples: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Architect/Engineer for aesthetic, color, or finish selection.
 - 2. Submit samples of finishes from full range of manufacturers' standard colors, or in custom colors specified, textures, and patterns for Architect/Engineer selection.
- C. Submit samples to illustrate functional and aesthetic characteristics of the Product with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- D. Include identification on each sample with full Project information.
- E. Submit the number of samples specified in individual specification sections; one of which will be retained by Architect/Engineer.
- F. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- G. Samples will not be used for testing purposes unless specifically stated in specification section.

1.08 MANUFACTURER INSTALLATION INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing to Architect/Engineer in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention and special environmental criteria required for application or installation.

1.09 MANUFACTURER CERTIFICATES

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

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Tolerances.
- E. References.
- F. Examination.
- G. Preparation.

1.02 QUALITY CONTROL AND 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. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer 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. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- G. The applicator shall be a company specializing in installation of single-ply roof membranes with three years of documented experience.

1.03 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.04 MANUFACTURER'S INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

1.05 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.06 REFERENCES

- A. For Products or workmanship specified by association, trade, or other consensus 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 by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Neither contractual relationship, duties, nor responsibilities of the parties in Contract nor those of the Architect/Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify 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. Verify utility services are available, of correct characteristics, and in correct locations.

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 new material or substance in contact or bond.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary ventilation.
 - 5. Telephone service.
 - 6. Temporary water service.
 - 7. Temporary sanitary facilities.
- B. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Job site technology equipment.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
- C. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures
 - 3. Fencing.
 - 4. Security.
 - 5. Water control.
 - 6. Dust control.
 - 7. Erosion and sediment control.
- D. Removal of utilities, facilities, and controls.

1.02 TEMPORARY ELECTRICITY

- A. Owner will pay cost of energy used. Exercise measures to conserve energy. Utilize Owner's existing power service.
- B. Provide temporary electric feeder from existing building electrical service. Do not disrupt Owner's use of service.
- C. Complement existing power service capacity and characteristics as required for construction operations.
- D. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment.
- E. Permanent convenience receptacles may be utilized during construction.

1.03 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.
- B. Provide and maintain lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain lighting to interior work areas after dark for security purposes.

- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps for specified lighting levels.
- E. Maintain lighting and provide routine repairs.

1.04 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.05 CELLULAR TELEPHONE SERVICE

- A. Provide, maintain, and pay for telephone service for construction staff.

1.06 TEMPORARY WATER SERVICE

- A. Owner will pay cost of temporary water. Exercise measures to conserve energy. Utilize Owner's existing water system, extend and supplement with temporary devices as needed to maintain specified conditions for construction operations.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections.
- C. Coordinate water source with Owner prior to use.

1.07 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.08 FIELD OFFICES AND SHEDS

- A. Do not use existing facilities for field offices or storage.
- B. Office: If needed - weather tight, with lighting, electrical outlets, heating, and ventilating equipment, and equipped with sturdy furniture.

1.09 JOB SITE TECHNOLOGY EQUIPMENT

- A. General Contractor shall provide a job site computer and printer with internet access.
- B. General Contractor shall provide a digital camera.

1.10 PARKING

- A. Arrange for parking areas to accommodate construction personnel.
- B. When site space is not adequate, provide additional off-site parking.
- C. Use of existing parking facilities used by construction personnel is permitted.
- D. Do not allow heavy vehicles or construction equipment in parking areas.

1.11 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- C. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide protection for plants designated to remain. Replace damaged plants.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.13 ENCLOSURES

- A. Exterior Building Opening Enclosures:
 - 1. Provide and erect temporary insulated weather tight closures on all exterior openings to accommodate acceptable working conditions and for protection of products from rain, snow, ice, wind, and vandalism and 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.
 - 2. Construction: Wood sheathing over framing with fiberglass insulation (insulated to R13 minimum) between the framing.
- B. Building Enclosure
 - 1. Provide a temporary enclosure around the exterior walls to accommodate acceptable working conditions and for protection of products from rain, snow, ice, and wind and to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections.
 - 2. Construction: Contractor's option but at a minimum 10 mil reinforced polyethylene supported by scaffolding or other framing system.
- C. Interior Enclosures:
 - 1. Provide temporary partition walls and ceilings to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.
 - 2. Construction: Wood or steel stud framing sheathed with reinforced polyethylene.

1.14 FENCING

- A. Construction: Contractor's option Commercial grade chain link fence or Plastic construction netting.
- B. Provide 4' to 6' high fence around construction exterior work areas.
- C. Security Program:
 - 1. Protect Work, existing premises, and Owner's operations from theft, vandalism, and unauthorized entry.
 - 2. Initiate program in coordination with Owner's existing security system at project mobilization.

3. Maintain program throughout construction period until Owner occupancy.

D. Entry Control:

1. Restrict entrance of persons and vehicles into Project site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. Maintain log of workers and visitors, make available to Owner on request.
4. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

1.15 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.16 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.17 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.18 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing [and permanent] facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION - Not Used.

END OF SECTION

SECTION 01 55 26
TRAFFIC CONTROL

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, current edition.

1.03 DESCRIPTION OF WORK

- A. The work covered under this section shall include installing and maintaining traffic control devices to safely and efficiently direct traffic through or around the construction site.
- B. The work also includes removing temporary traffic control devices at the completion of the project.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Work Restrictions and Provisions – Division 01
- C. Submittals – Division 01

1.05 SUBMITTALS

- A. If a detailed traffic control plan is not included in the Contract Drawings, the Contractor shall submit a traffic control plan. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (N/A)

PART 2 PRODUCTS AND MATERIALS

2.01 GENERAL

- A. Traffic control devices and materials shall conform to the MUTCD and applicable State Department of Transportation specifications.

PART 3 EXECUTION

3.01 TRAFFIC CONTROL

- A. All Contractors shall comply with the approved detour plan and schedule as attached in the Appendix. It shall be the Contractor's responsibility to notify the Wisconsin DOT and coordinate the installation and removal of said detour.
- B. Contractor shall keep all roadways open to local traffic. Advanced warning signs and barricades shall be provided.

END OF SECTION

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.

1.02 PRODUCTS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- C. Furnish interchangeable components from same manufacturer for components being replaced.

1.03 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.04 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

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

1.05 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: products of one of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

1.06 PRODUCT SUBSTITUTION PROCEDURES

- A. Where the phrase "or approved equal" occurs in the Contract Documents, material or equipment is not considered to be approved unless the item has been specifically approved for this Project.
- B. Architect/Engineer will consider requests for substitutions only when such requests are submitted no less than ten (10) calendar days prior to the bid date. No products will be considered for approval if received less than the ten (10) days prior to the date.
- C. Substitutions will not be considered after the bid date.
- D. After bidding substitutions will be considered when a product becomes unavailable through no fault of Contractor.
- E. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- F. A request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for Substitution as for specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner and Architect/Engineer for review or redesign services.
- G. 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 Contract Documents.
- H. Substitution Submittal Procedure:
 - 1. Submit via email a request for Substitution approval for consideration.
 - 2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
 - 3. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION - Not Used.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Starting of systems.
- D. Protecting installed construction.
- E. Project record documents.
- F. Manual for materials and finishes.
- G. Spare parts and maintenance products.
- H. Product warranties and product bonds.

1.02 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's review.
- B. Provide submittals to Architect/Engineer required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.03 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. 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.]
- C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- D. Clean filters of operating equipment.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.04 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Owner prior to start-up of each item.

1.05 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.

- B. Prohibit traffic from landscaped areas.

1.06 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.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- 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, not less than weekly.
- 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 and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.
- G. Submit documents to Architect/Engineer prior to claim for final Application for Payment.

1.07 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three ring binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.

- d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
- 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Originals of warranties and bonds.
- 4. Part 4: Operation and winterization procedures including the following:
 - a. 2 complete copies bound in three ring binders with laminate pages.
 - b. Generate project specific written step by procedures supplemented with photographs. Include Checklist summarization. For all major facility equipment and all aquatic equipment.
 - c. Project specific aquatics trouble shooting manual & checklist.
 - d. Complete step by step winterization procedures.
 - e. Complete step by step aquatics operations procedures.
 - f. Video tape aquatics training sessions.

1.08 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- B. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.
- C. Submit one copy of revised final volumes in final form within 10 days after final inspection.
- D. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- E. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- F. Include color-coded wiring diagrams as installed.
- G. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
- H. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- I. Include servicing and lubrication schedule, and list of lubricants required.
- J. Include manufacturer's printed operation and maintenance instructions.
- K. Include sequence of operation by controls manufacturer.
- L. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- M. Include control diagrams by controls manufacturer as installed.
- N. Include Contractor's coordination drawings, with color-coded piping diagrams as installed.

- O. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- P. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- Q. Include test and balancing reports as specified in Section 01 40 00 - Quality Requirements.
- R. Additional Requirements: As specified in individual product specification sections.
- S. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data. for design data.

1.09 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.
- C. Provide a summary of all extra materials turned over to Owner no later than 10 days after substantial completion.

1.10 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Submit prior to final Application for Payment.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION – Not Used.

END OF SECTION

SECTION 02 01 00
MAINTENANCE OF EXISTING CONDITIONS

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover all materials, equipment, supervision, and labor necessary for surface restoration. The various street surfaces disturbed, damaged, or destroyed during the performance of the work under this contract shall be restored and maintained as shown, specified, and directed. Included in this classification are pavement surfaces of all types, pavement bases, shoulders, and appurtenances as driveways, curb and gutter sections, sidewalks, alleys, and all other miscellaneous surfaces required but not designated under other sections of these specifications.
- B. A schedule of restoration of the pavement surfaces shall be worked out by the Contractor and approved by the Engineer. The schedule shall be adhered to unless subsequent changes are approved by the Engineer.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Cast-in-Place Concrete - Division 03
- C. Subgrade Preparation - Division 31
- D. Trenching and Backfill - Division 31
- E. Aggregate Base and Subbase - Division 32
- F. Asphaltic Concrete Pavement - Division 32

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to relate these materials to these specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 GENERAL

- A. Materials shall comply with the respective sections of Divisions 03, 31, and 32 of these specifications, as they are applicable, and those of the State of Wisconsin, Department of Transportation, Standard Specifications to the extent indicated by the reference thereto.

2.02 PAVEMENT SURFACE AND APPURTENANCES

- A. Asphaltic concrete pavement and appurtenances shall conform to the requirements specified in Asphaltic Concrete Pavement - Division 32 or as specified in Special Procedures - Division 01.
- B. Concrete pavement and appurtenances shall conform to the requirements specified in Cast-in-Place Concrete - Division 03 or as specified in Special Procedures - Division 01.

PART 3 EXECUTION

3.01 GENERAL

- A. Workmanship shall comply with the respective sections of Divisions 03, 31, and 32 of these specifications, as they are applicable, and those of the State of Wisconsin, Department of Transportation, Standard Specifications to the extent indicated by the reference thereto.

3.02 TEMPORARY RESTORATION

- A. Upon completion of backfilling, the pavement surface damaged or destroyed shall be temporarily restored by the Contractor.
 - 1. The pavement shall be temporarily restored by placing on a prepared subgrade a base consisting of crushed gravel or crushed stone. The base shall have a minimum thickness of 8 inches plus the thickness of the permanent type of pavement to be replaced, or greater thickness if necessary to conform to the thickness of the base disturbed or removed, and shall be placed at the proper line and grade.
 - 2. Temporary pavement shall be maintained in a suitable and safe condition for traffic until the permanent pavement is laid.
- B. Type I backfill shall be used under all paved streets, paved roads, driveways, sidewalks and curb and gutter sections.
- C. Curbs, where possible, shall be temporarily reset in their place as a part of the temporary restoration. Damaged or destroyed sidewalks shall be temporarily restored by placing a 3-inch layer of granular base material, or other approved material.

3.03 PERMANENT RESTORATION

- A. Preparation for pavement and appurtenance replacements may proceed after trenches have been compacted in accordance with Trenching and Backfill - Division 31. Level and grade, fill, or re-excavate as necessary. Neatly trim any adjacent permanent pavement by a sawcut joint prior to pavement replacement.
 - 1. Base material shall be in accordance with Aggregate Base Course - Division 32 and to a depth of 8 inches or as specified in Special Procedures - Division 01.
 - 2. Asphaltic concrete pavement shall be in accordance with Asphaltic Concrete Pavement - Division 32 and to a depth of 3 inches or as specified in Special Procedures - Division 01.
 - 3. Concrete pavement and appurtenances shall be in accordance with Cast-in-Place Concrete - Division 03 and shall be to a depth of 8 inches or as specified in Special Procedures - Division 01. Concrete pavement reinforcement shall be equal to or exceeding that existing.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of designated construction.
- B. Removal of designated building equipment, fixtures, and finishes.
- C. Removal of equipment and fixtures for reinstallation.
- D. Disposal of materials.
- E. Identification of utilities.
- F. Refer to items on drawings.

1.02 RELATED SECTIONS

- A. Section 01 11 00 – Summary of Work: Work sequence and Owner's continued occupancy.
- B. Section 01 50 00 - Temporary Facilities and Controls: Temporary enclosures, dust control barricades, security at Owner occupied areas, and cleanup during construction.
- C. Section 01 70 00 - Execution and Closeout Requirements: Project record documents.

1.03 SUBMITTALS

- A. Coordinate with Adams County and make all required submittals
- B. If submitted, submit a copy of the DNR Form 4500-113 to the Owner and Architect.

1.04 REGULATORY REQUIREMENTS

- A. Do not close or obstruct egress width to any building or site exits.
- B. Do not disable or disrupt building fire or life safety systems without 3-day prior written notice to the Owner and Architect.
- C. Conform to procedures applicable when hazardous or contaminated materials are discovered.
- D. Obtain and pay for all required permits and approvals.
- E. If required, submit and pay for submittal of DNR Form 4500-113 (Notification of Demolition and/or Renovation and Application for Permit Exemption).

1.05 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.
- C. Owner assumes no responsibility for actual conditions of buildings to be demolished.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine existing buildings indicated to be demolished before demolition.
- B. Determine where removals may result in structural deficiency or unplanned building collapse during demolition. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.
- C. Determine where demolition may affect structural integrity or weather resistance of adjacent buildings indicated to remain.
 - 1. Identify measures required to protect buildings from damage.
 - 2. Identify remedial work including patching, repairing, bracing, and other work required to leave buildings indicated to remain in structurally sound and weathertight and watertight condition.

3.02 PREPARATION

- A. Provide, erect, and maintain temporary safety barriers.
- B. Erect and maintain weatherproof closures for exterior openings.
- C. Erect and maintain temporary partitions to prevent spread of dust, odors and noise to permit continued Owner occupancy.
- D. Protect existing materials which are not to be demolished.
- E. Notify affected utility companies before starting work and comply with their requirements.
- F. Mark location and termination of utilities.
- G. Provide appropriate temporary signage including signage for exit or building egress.

3.03 DEMOLITION

- A. Remove concrete slabs-on-grade.
- B. Demolish in an orderly and careful manner. Protect existing supporting structural members.
- C. Remove materials as work progresses. Upon completion of work, leave areas in clean condition.
- D. Remove temporary work.

END OF SECTION

SECTION 02 42 00
REMOVAL, SALVAGE AND ABANDONMENT

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 1 shall govern the work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall include removals and abandonments of existing improvements as specified herein and marked in the field.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS (NONE)

PART 3 EXECUTION

3.01 REMOVE CURB & GUTTER

- A. Remove curb and gutter at existing joint or sawcut straight joint to aid in removal.
- B. If curb and gutter is tied to concrete pavement, sawcut tie bars prior to removal.

3.02 REMOVE CONCRETE

- A. Remove concrete driveway, sidewalk and steps at existing joint and/or sawcut straight joint to aid in removal.
- B. Remove railings, if any.

3.03 REMOVE ASPHALTIC PAVEMENT

- A. Remove asphaltic roadway (including asphaltic curbs, if any), driveway and trail. Sawcut straight joint to aid in removal.

3.04 REMOVE PIPE

- A. Verify that all connections to/from the pipe have been disconnected and redirected to new facilities.
- B. Remove pipes and culverts, including endwalls, valves and any other appurtenant items.
- C. Backfill trench in accordance with Section 31 23 33.

3.05 REMOVE STRUCTURE

- A. Verify that all connects to/from the structure have been disconnected and redirected to new facilities.
- B. Remove total structure including casting, unless salvage casting is specified.
- C. Backfill trench in accordance with Section 31 23 33.

3.06 REMOVE HYDRANT

- A. Remove hydrant, valves and lead pipe.
- B. Install mechanical plug in existing tee after hydrant has been removed if watermain is not also slated for immediate removal or abandonment. Mechanical plug shall be in accordance with Section 33 10 00.
- C. Backfill trench in accordance with Section 31 23 33.

3.07 REMOVE RETAINING WALL

- A. Remove retaining wall, tie backs, anchorages, foundation, drain tile and any other appurtenant items.
- B. Avoid damage to adjacent structures including remaining sections of wall not scheduled for removal.
- C. Temporarily support soil retained by wall until grading and/or new wall is complete.

3.08 SALVAGE ASPHALTIC PAVEMENT AND BASE

- A. Salvage asphaltic pavement and base in accordance with WisDOT Standard Specification 325 except:
 - 1. Salvage any underlying crushed aggregate base.
 - 2. Pulverize asphaltic pavement to until at least 97% will pass the 2-inch sieve.
 - 3. Pickup, load, haul and stockpile material at a location directed by the Engineer.
 - 4. Salvaged material shall become Owner's property unless indicated otherwise in the Bid Schedule or Special Procedures – Division 01.

3.09 SALVAGE CULVERT

- A. Salvage culverts and apron endwalls in a manner that will prevent damage. Remove any sediment from within the culvert.
- B. Pickup, load, haul and stockpile at a location directed by the Engineer.
- C. Salvaged material shall become Owner's property unless indicated otherwise in the Bid Schedule or Special Procedures – Division 01.
- D. Backfill trench in accordance with Section 31 23 33.

3.10 SALVAGE CASTING

- A. Salvage casting and lid in a manner that will prevent damage. Remove any concrete or asphaltic pavement stuck to the casting and lid.
- B. Pickup, load, haul and stockpile at a location directed by the Engineer.
- C. Salvaged material shall become Owner's property unless indicated otherwise in the Bid Schedule or Special Procedures – Division 01.

3.11 SALVAGE HYDRANT

- A. Salvage hydrant and valve in a manner that will prevent damage.
- B. Remove lead pipe.
- C. Install mechanical plug in existing tee after hydrant has been removed if watermain is not also slated for immediate removal or abandonment. Mechanical plug shall be in accordance with Section 33 10 00.
- D. Pickup, load, haul and stockpile at a location directed by the Engineer.
- E. Salvaged material shall become Owner's property unless indicated otherwise in the Bid Schedule or Special Procedures – Division 01.
- F. Backfill trench in accordance with Section 31 23 33.

3.12 SAWCUT

- A. Asphaltic pavement sawcuts shall be cut a minimum of 2 inches deep.
- B. Concrete sawcuts shall be a minimum depth of one-third the concrete thickness.
- C. Contractor shall endeavor to minimize dust.
- D. Sludge from sawing shall not be allowed to flow onto, or be deposited on, any live traffic lane. If sludge from sawing is deposited onto adjacent concrete surfaces that will remain after the completion of the project, it shall be promptly removed to avoid staining.

3.13 ABANDON PIPE

- A. Verify that all connections to/from the pipe have been disconnected and redirected to new facilities.
- B. For watermains, close all valves, remove all valve boxes and hydrants.
- C. For sanitary sewers and storm sewers, remove all structures and apron endwalls in their entirety.
- D. Seal all pipe ends with concrete for a distance of 1 foot plus the diameter of the pipe.
- E. For all pipes greater than 8 inches in diameter:
 - 1. Provide fill and vent tubes through the end seals discussed above.
 - 2. Fill pipes with blown silica sand or flowable concrete.
 - 3. Seal fill and vent tubes as stated above after filling operations are complete.
- F. All trenches shall be backfilled in accordance with Section 31 23 33.

3.14 OTHER REMOVALS

- A. Includes all removals and salvaged items within the project area not specifically designated as a contract bid item in the bid form.
- B. Includes existing utilities designated for replacement and/or abandonment as part of the project.
- C. Shall be performed in accordance with the requirements of Section 204, State of Wisconsin, Department of Transportation, Standard Specifications.
- D. Where new pipe or structures are laid in the same location or below, the removal of any existing pipe or structures shall be incidental to the construction of the new system.

3.15 DISPOSAL

- A. All removed materials not designated for salvage, shall be removed from the project site and abandoned in accordance with all applicable laws and regulations. The Contractor is responsible for providing all necessary erosion control measures at disposal sites. No materials shall be deposited in wetland areas.
- B. Contractor is encouraged to recycle as much material as is practical.

END OF SECTION

SECTION 03 15 00
CONCRETE ACCESSORIES

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
1. American Concrete Institute (ACI), Annual Book of ACI Standards:
 - a. ACI 308R – Guide to Curing Concrete, Current Edition.
 2. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards:
 - a. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete, Current Edition.
 - b. ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions, Current Edition.
 - c. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete, Current Edition.
 - d. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation, Current Edition.
 - e. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete, Current Edition.
 - f. ASTM C882 - Standard Test Method for Bond Strength for Epoxy-Resin Systems Used with Concrete by Slant Shear, Current Edition.
 - g. ASTM C884 - Standard Test Method for Thermal Compatibility Between Concrete and an Epoxy-Resin Overlay, Current Edition.
 - h. ASTM D6 – Standard Test Method for Loss on Heating of Oil and Asphaltic Compounds, Current Edition.
 - i. ASTM D297 – Standard Test Methods for Rubber Products - Chemical Analysis, Current Edition.
 - j. ASTM D994 – Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type), Current Edition.
 - k. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types), Current Edition.
 - l. ASTM D1752 – Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction, Current Edition.
 - m. ASTM E154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover, Current Edition.
 - n. ASTM E1643-98 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
 - o. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
 3. Canadian General Standards Board (CGSB) Standards:
 - a. CGSB 41-GP-35M - Performance Standards for Poly Vinyl Chloride (PVC) Waterstops, Types I and III, Current Edition.
 4. Federal Specification TTS 227 and TTS 230, Current Edition.
 5. U.S. Army Corps of Engineers (USACOE), Specifications and Standards:
 - a. USACOE CRD-C572 - Specification for Poly Vinyl Chloride (PVC) Waterstop, Current Edition.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover furnishing and installing concrete accessories as shown on the contract drawings and specified herein.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Cast-in-Place Concrete - Division 03

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to the rate these materials to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 WATERSTOP

- A. Polyvinyl Chloride PVC Waterstop.
 - 1. Ribbed Centerbulb, for non-moving joints: 4-inch long, minimum 3/16-inch thick with 1/8-inch ribs, 3/8-inch outside diameter centerbulb and shall comply with U.S. Corps of Engineers Specification CRD-C572.
 - a. Greenstreak 701 by Sika Corporation
 - b. Or equal
 - 2. Split Flange Type: 6-inch long, minimum 3/8-inch thick with 3/16-inch thick split ends, 5/8-inch outside diameter centerbulb,
 - a. Greenstreak 724 by Sika Corporation
 - b. Or equal
 - 3. Retrofit Waterstop: L-shaped PVC waterstop with 3-inch long legs, ribbed on one leg. Stainless batten bar with steel epoxy anchor bolt.
 - a. Greenstreak 655 with epoxy 7300 by Sika Corporation
 - b. Or equal
- B. Gasket Waterstop: Strip-applied non-swelling mastic waterstop for non-moving joints, 3/4-inch by 1-inch wide unless noted otherwise.
 - 1. Lockstop with Lockstop Primer by Sika Corporation
- C. Additional Waterstop at Tanks with Waterproofing Admixture: Use at all joints in water-retaining structures with waterproofing admixture (see Section 03 30 00).
 - 1. General: Crystalline, cementitious, non-toxic chemical treatment for the water-proofing and protection of concrete.
 - 2. Product: Use same product provided as admixture in concrete mix – see Section 03 30 00.
 - 3. Concentration: Concentrated slurry coat, concentration as recommended by manufacturer.

2.02 EXPANSION AND CONTRACTION JOINT FILLER

- A. Preformed Bituminous. Bituminous expansion and contraction joint filler shall be preformed bituminous strips which complies with ASTM D994.
- B. Preformed Sponge Rubber. Sponge rubber expansion and contraction joint filler shall be preformed which complies with ASTM D1752.
- C. Preformed Cork. Cork expansion and contraction joint filler shall be preformed which complies with ASTM D1752.
- D. Thermal Isolation Joint Material (Rigid Insulation). Polystyrene insulation, ASTM C578, Type X, extruded cellular type, 5 year aged R-value of 5.0 minimum at 75°F water absorption in accordance with ASTM C272 of 0.3 percent by volume maximum, minimum 15 psi compressive strength, 0.5 inch thick.

- E. Board Insulation. Contractor to choose from one of the following:
1. Polystyrene insulation: ASTM C578, Type X, extruded cellular type, 5-year aged R-value of 5.0 minimum at 75°F, water absorption in accordance with ASTM C272 of 0.3 percent by volume maximum, minimum 15 psi compressive strength, 0.5-inch thick, square edges.
 - a. Owens Corning Foamular Insulating Sheathing
 - b. Or equal
 2. Polyisocyanurate insulation: ASTM C1289 Type 1, closed-cell polyisocyanurate foam core bonded to foil facing on each side, R-value of 6 per inch, 0.05 perm water vapor permeable, water vapor absorption of 0.1%; less than 25 flame spread index, less than 450 smoke developed index, 16 psi compressive strength, 40 psi flexural strength.
 - a. Dow Thermax Sheathing
 - b. Johns Mansville AP Foil Faced Polyiso Board
 - c. Sika Rmax Pro Select Polyiso Insulation Board
 - d. Or equal.
 3. EPDM Rubber insulation: ASTM C534 Type I and II, ASTM D1056, flexible, closed-cell EPDM-rubber based elastomeric, tube and sheet, UV resistant, indoor/outdoor, mold and fungal growth resistant. k Value: 0.245 at 75 degrees F (ASTM C518/C117). Water Absorption (weight %): 0.2% (ASTM C209). Water Vapor Permeability: 0.03 perm (ASTM E96). Flame Spread/Smoke Developed Ratings: 25/50.
 - a. Aerocel by Aeroflex
 - b. Or equal.
- F. Removable Plastic Expansion Joint Cap: Plastic joint cap, board width by 1/2-inch deep.
1. Snap-Cap by W.R. Meadows.
 2. Geenstreak Expansion Board Cap by Sika Corporation.

2.03 BOND BREAKER

- A. Cast-in-Place Concrete Flatwork. Asphalt impregnated felts, 15 pound.
- B. Cast-in-Place Concrete Formwork. Non-staining liquid product which imparts a waterproof film to prevent adhesion of concrete and will not leave a paint-impeding coating on the face of the concrete.

2.04 VAPOR BARRIER

- A. Under Slab Vapor Barrier: 15 mil reinforced high-density multi-layer laminated polyethylene film for under slab application.
1. Must meet the following minimum properties:
 - a. Barrier shall meet or exceed all requirements of ASTM E1745 Classes A, B and C.
 - b. Water Vapor Permeance (ASTM F1249): 0.038 perms
 2. Products:
 - a. Stego Wrap Vapor Barrier (15-mil) by Stego Industries
 - b. Griffolyn Type-65 by Reef Industries
 - c. Or equal
- B. Seam Tape: High density polyethylene tape with pressure sensitive adhesive, minimum 4 inches wide. Tape or Mastic by vapor barrier manufacturer.
- C. Pipe Boots: Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions.

2.05 WATERPROOF SHEET MATERIAL FOR CURING

- A. Provide one of the following, complying with ASTM C171: waterproof paper, polyethylene film or polyethylene-coated burlap.
- B. Use only materials which are resistant to decay when tested in accordance with ASTM E154, as follows:
1. Polyethylene sheet not less than 6 mils thick; or

2. Water resistant barrier paper consisting of heavy papers laminated together with glass fiber reinforcement and overcoated with black polyethylene on each side.

2.06 CONCRETE REPAIR COMPOUND

- A. Concrete repair compound shall be as required for the installation as manufactured, Master Builders Solutions, or equal.

2.07 PIPE SLEEVES, ANCHOR BOLTS AND CAST IRON GROOVES

- A. Shall be furnished, installed, and anchored solid in their final location.

2.08 CURING AND SEALING COMPOUND - INTERIOR

- A. Membrane-forming curing compound shall meet the moisture retention requirements of ASTM C309, Type 1.
 1. MasterKure CC 200WB by Master Builders Solutions.
 2. Sealtight CS-309-25 Curing and Sealing Compound by W.R. Meadows, Inc.
 3. Eucocure VOX by Euclid Chemical Co.
 4. Or equal.
- B. Products shall be compatible with surface finish. Where flooring manufacturer allows, use water-based dissipating type.

2.09 CURING COMPOUND - EXTERIOR

- A. Curing compound for use on standard exterior concrete shall comply with ASTM C309, Type 2; resin, white pigmented.
- B. Curing compound for use on colored exterior concrete shall comply with ASTM C309, Type 1, and shall be compatible with concrete coloring method and surface finish.

2.10 PLATE DOWEL SYSTEM

- A. Two-component concrete slab-on-grade construction joint dowel system consisting of plastic sleeves and 3/8 inch thick steel plates meeting ASTM A36. Plates to be set in a dowel form constructed of molded high density ABS plastic.
 1. Diamond Dowel System by PNA Construction Technologies.
 2. Speed Plate by Sika.
 3. T28 Superior Plate Dowel by Dayton Superior.
 4. Or equal.

2.11 DAMPPROOFING MEMBRANE

- A. Acceptable Manufacturers:
 1. W.R. Meadows, Inc.
 2. Master Builder Solutions by BASF
 3. Substitutions: per Section 01 60 00.
- B. Dampproofing:
 1. Sealmatic Asphalt Emulsion Dampproofing by W.R. Meadows, Inc.
 2. MasterSeal 614 by BASF

2.12 PIPE BOLLARD CAPS

- A. Pipe bollard caps: Precast concrete pipe bollard caps, 5000 psi fiber reinforced concrete with a cast in place anchor, diameter to match the steel pipe diameter: Top Gard concrete bollard caps by TopGard LLC 1125 Brookside Ave, Indianapolis, IN, www.topgardcap.com.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install accessories where shown on contract drawings and as specified herein.
- B. Place bond breaker at junctures of slabs-on-grade with vertical walls.
- C. Expansion and Contraction Joint Filler: Install at locations noted on the drawings calling for expansion / contraction joint materials.
- D. Thermal Isolation Joint Material (Rigid Insulation): Install at the inside perimeter of the exterior wall foundation between the foundation wall and the concrete slab on grade. Place the snap cap on top of the insulation.
- E. Seal all exposed surfaces of expansion and contraction joints with joint sealer (3/4 inch deep and hold 1/8 inch below surface of concrete).
- F. All splices on PVC waterstops shall be field welded using an indirect heating element. Concrete shall be thoroughly vibrated around the waterstop to avoid honeycombs and to ensure complete embedment of the ribbed flanges.
- G. Apply concentrated slurry coat to surface of joints in water-retaining structures with water-proofing admixture. Clean joint as required by manufacturer. Apply slurry coat full width of second pour intersection. Apply per manufacturer's instructions for areas not subject to hydrostatic pressure.
- H. Install under-slab vapor barrier at locations shown on Drawings in accordance with manufacturer's instructions and ASTM E1643-98. Unroll vapor barrier with the longest dimension parallel with the direction of the pour. Seal vapor barrier to foundation walls behind perimeter expansion joint, unless shown otherwise on Drawings. Vapor barrier shall be continuous inside building foundation, unless noted otherwise. Overlap joints 6-inches and seal with manufacturer's tape. Seal all penetrations (including pipes) with manufacturer's pipe boot. No penetrations of the vapor barrier are allowed except for reinforcing and permanent utilities. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6-inches and taping all four sides with tape.
- I. Concrete Structural Repair Compound: Apply first coat of repair mortar with a stiff bristle brush to apply a scrub coat working the mortar into the honeycomb areas, then use a trowel to completely fill the honeycomb areas and trowel smooth the mortar to flush it out with the face of the concrete.
- J. Plate Dowel System: Install plate dowel system at concrete slab-on-grade construction joints per manufacturer's instructions. See Drawings for dowel spacing and slab depth positioning requirements.
- K. Dampproofing:
 - 1. Do not apply dampproofing to damp, frozen, dirty, dusty, or deck surfaces unacceptable to dampproofing manufacturer.
 - 2. Clean and prepare surfaces to receive dampproofing in accordance with manufacturer's instructions.
 - 3. Prime surfaces in accordance with manufacturer's instructions.
 - 4. Apply mastic to seal penetrations tie bar penetrations in substrate in accordance with manufacturer's instructions. Extend mastic in minimum 3-inch diameter around penetration. Apply two (2) coats, continuous and uniform. Do not apply where finished surface will be exposed.
 - 5. Protect membrane from damage.

END OF SECTION

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SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. The work covered under this section shall cover furnishing all materials, equipment and labor required to construct all cast-in-place concrete as shown on the contract drawings and as specified.

1.02 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Submittals - Division 01
- C. Concrete Quality Control - Division 01
- D. Concrete Accessories - Division 03
- E. Concrete Reinforcing - Division 03

1.03 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.04 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. American Concrete Institute (ACI), Annual Book of ACI Standards:
 - a. ACI 117/177R - Standard Specification for Tolerances for Concrete Construction and Materials and Commentary, Current Edition.
 - b. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete, Current Edition.
 - c. ACI 209.1R - Report on Factors Affecting Shrinkage and Creep of Hardened Concrete, Current Edition.
 - d. ACI 301 - Specification for Structural Concrete, Current Edition.
 - e. ACI 302.1R - Guide for Concrete Floor and Slab Construction, Current Edition.
 - f. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete, Current Edition.
 - g. ACI 305R - Hot Weather Concreting, Current Edition.
 - h. ACI 306 - Standard Specification for Cold Weather Concreting, Current Edition.
 - i. ACI 308R - Guide to Curing Concrete, Current Edition.
 - j. ACI 309R - Guide for Consolidation of Concrete, Current Edition.
 - k. ACI 311.4R - Guide for Concrete Inspection, Current Edition.
 - l. ACI 318/318R - Building Code Requirements for Structural Concrete and Commentary, Current Edition.
 - m. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures, Current Edition.
 - n. ACI 530/530.1/530R/530.1R - Building Code Requirements for Commentary for Masonry Structures and Specification for Masonry Structures and Related Commentaries, Current Edition.
 - o. ACI ASCC MNL-5 - The Contractor's Guide to Quality Concrete Construction, Current Edition.
 - p. ACI CP-10/PACK - Craftsman Study Package for ACI Certification of Concrete Flatwork Technician/Finisher, Current Edition.

- q. ACI MCP - ACI Manual of Concrete Practice, Parts 1 through 7, and Index, Current Edition.
- r. ACI SCM-24 - Concrete Repair Basics, Current Edition.
- s. ACI SP15 - Field Reference Manual: Standard Specifications for Structural Concrete ACI 301 with Selected ACI Reference, Current Edition.
- t. ACI SP-71 - ASTM Standards in ACI 318, Current Edition.
- 2. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards:
 - a. ASTM C33 - Standard Specification for Concrete Aggregates, Current Edition.
 - b. ASTM C70 - Standard Test Method for Surface Moisture in Fine Aggregate, Current Edition.
 - c. ASTM C94 - Standard Specification for Ready-Mixed Concrete, Current Edition.
 - d. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (using 2-inch or [50 mm] Cube Specimens), Current Edition.
 - e. ASTM C125 - Standard Terminology Relating to Concrete and Concrete Aggregates, Current Edition.
 - f. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate, Current Edition.
 - g. ASTM C128 - Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Fine Aggregate, Current Edition.
 - h. ASTM C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine, Current Edition.
 - i. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete, Current Edition.
 - j. ASTM C150 - Standard Specification for Portland Cement, Current Edition.
 - k. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete, Current Edition.
 - l. ASTM C191 - Standard Test Methods for Time Setting of Hydraulic Cement by Vicat Needle, Current Edition.
 - m. ASTM C219 - Standard Terminology Relating to Hydraulic Cement, Current Edition.
 - n. ASTM C226 - Standard Specification for Air-Entraining Additions for Use in the Manufacture of Air-Entraining Hydraulic Cement, Current Edition.
 - o. ASTM C233 - Standard Test Method for Air-Entraining Admixtures in Concrete, Current Edition.
 - p. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete, Current Edition.
 - q. ASTM C311 - Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for use as a Mineral Admixture in Portland-Cement Concrete, Current Edition.
 - r. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete, Current Edition.
 - s. ASTM C535 - Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine, Current Edition.
 - t. ASTM C566 - Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying, Current Edition.
 - u. ASTM C595 - Standard Specification for Blended Hydraulic Cement, Current Edition.
 - v. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete, Current Edition.
 - w. ASTM C688 - Standard Specification for Functional Additions for Use in Hydraulic Cements, Current Edition.
 - x. ASTM C989 - Standard Specification for Slag Cement for Use in Cement and Mortars, current edition.
- 3. Portland Cement Association (PCA) Standards and Specifications:
 - a. PCA - Design and Control of Concrete Mixtures, Current Edition.

1.05 DEFINITIONS

- A. Exposed or Exposed to View: Portion of the structure that can be observed by the “public” during normal operation.
 - 1. Normal Operation: For tanks, this means when the tank is filled with liquid to the projected design average operating liquid level.

- B. Public: Persons allowed on-site and within buildings by the Owner.
- C. Liquid-Retaining Structure: A structure intended to hold and contain liquid in various stages of treatment. These structures are designed to be watertight to prevent leakage. Examples include: storage tanks; clarifiers; aeration tanks; digesters; chemical containment.
- D. Severe Exposure: Conditions where concrete is subjected to aggressive environments that can significantly impact its durability, such as chemical attacks from substances like acids, alkalis, or other corrosive chemicals.

1.06 SUBMITTALS

- A. Submit such product literature and catalog cuts of materials to be supplied to relate these materials to the specification. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.
- B. Concrete Design Mix
 - 1. Prior to the start of placing of concrete, submit the design mix for each class of concrete, indicating that the concrete constituents and proportions will result in a concrete mix meeting the physical requirements for each class of concrete specified.
 - 2. Submit with the design mix, laboratory strength test reports and manufacturer's certificates attesting the conformance of constituents with these specifications.
 - 3. Do not vary the proportions of the constituents or source of material of the approved mix without submitting corresponding test result documentation to the Engineer for review and approval.
 - 4. Design mix shall indicate proportions of cement, aggregate and water, and names and proportions of admixtures and air-entraining agents.
 - 5. Laboratory strength test reports shall contain strength data for the required number of tests as specified in ACI 318 (for non-water retaining concrete) or ACI 350 (for water-retaining concrete) design specifications. If existing data for the required number of tests is not available, then ACI 318/350 allows for alternate data or trial mixture results to be submitted for approval. Provide certification that the design mix complies with all ACI and ASTM requirements.
- C. Concrete Installation Submittals
 - 1. Submit proposed plans and methods for cold/hot weather concrete placement procedures.
 - 2. Submit proposed curing and concrete jointing plans that indicate locations of construction joints and control joints for concrete walls and slabs.

1.07 MEETINGS

- A. Prior to submitting design mixtures and rebar shop drawings, contractor shall hold a meeting to review detailed requirements for preparing final concrete design mixes and expectations regarding shop drawing quality, to establish procedures for placing, finishing, curing, and protecting concrete to meet required quality under anticipated conditions, to review construction drawing details, and to review proposed construction and control joint locations and layouts. Representatives of each entity directly involved with the cast-in-place concrete shall attend, including the following:
 - 1. Contractor's superintendent
 - 2. Architect of Record or representative
 - 3. Structural Engineer of Record or representative
 - 4. MSA's Resident Project Representative (RPR)
 - 5. Testing laboratory responsible for field quality control
 - 6. Ready-mix concrete supplier
 - 7. Concrete subcontractor
 - 8. Special concrete finish subcontractor
- B. Pre-installation concrete meetings shall be held seasonally:
 - 1. Pre-Installation Concrete Meeting – Fall
 - a. Review of cold weather concrete placement procedures, curing methods, and protocols.

2. Pre-Installation Concrete Meeting – Spring
 - a. Review of hot weather concrete placement procedures, curing methods, and protocols.
- 3.

1.08 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 CEMENTITIOUS MATERIALS

- A. Cement
 1. Cement shall be Portland Cement ASTM C150 Type I or IA or ASTM C595 Class IL, except as otherwise noted or approved.
 - a. Type III cement shall only be used for Class L concrete, or when approved by the Engineer.
 - b. ASTM C150 Type I or IA, Type II, and Type III, and ASTM C595 blended cement types IL, IP, and IS shall be used for exterior flatwork as approved by the Engineer.
 2. A singular brand and manufacturer of cement shall be used for the entire work.
- B. Fly Ash and Slag
 1. Cement Substitutions:
 - a. Contractor may use fly ash or ground granulated blast furnace slag (GGBFS) as a substitute for a portion of Portland cement in the structural concrete. The maximum allowable substitution rates shall be as follows:
 - 1) Fly Ash: 20%
 - 2) GGBFS: 30%
 - 3) Total Mineral Admixture: 30%
 2. Fly Ash:
 - a. Fly ash shall conform to ASTM C618 Class C.
 - b. A singular source of fly ash shall be used for the entire work.
 3. Slag:
 - a. Slag shall be ground granulated blast furnace slag (GGBFS) conforming to ASTM C989.

2.02 AGGREGATE

- A. Aggregate shall consist of clean, hard durable sand, gravel, crushed gravel or crushed rock.
- B. Aggregate shall conform to the requirements of ASTM C33. Fine and coarse aggregate shall meet ASTM C33 grading requirements. Coarse aggregates shall be graded in accordance with ASTM gradations as follows:
 1. 3/4 inch maximum coarse aggregate - ASTM No. 67
 2. 1-1/2 inch maximum coarse aggregate - ASTM No. 467
- C. Maximum aggregate size shall be as defined in the Concrete Schedule, or where not defined in the Concrete Schedule, as defined by dimensional constraints for cast-in-place concrete as follows.
 1. Not larger than one-fifth of the narrowest dimension between sides of the forms;
 2. Not larger than one-third the thickness of the slab;
 3. Not larger than three-fourths of the minimum clear spacing between individual reinforcing bars or wire, bundles of bars, or prestressing tendons or ducts.

2.03 MIXING WATER

- A. Mixing water shall be natural or treated water, clean and free from injurious amount of oil, acid, alkali, chlorides and sulfates, other common salts, organic matter or other deleterious substances.
- B. Mixing water shall yield cement paste complying with the requirements ASTM C109 and ASTM C191.

2.04 ADMIXTURES

- A. All admixtures are subject to the written approval of the Engineer and shall be used in strict accordance with the manufacturer's recommendations.
1. Air-Entraining Admixture
 - a. All concrete exposed to weather and freeze-thaw cycles shall be air-entrained, unless otherwise specified.
 - b. Air-Entraining admixture shall conform to ASTM C260.
 - c. Air-Entrainment shall be as indicated for each class as in the Concrete Schedule.
 2. Water-Reducing, Set-Controlling Admixtures
 - a. Water-Reducing, Set-Controlling admixtures shall conform to ASTM C494, Type A for water-reducing, Type C for accelerating, Type D for water-reducing and retarding, and Type E for water-reducing and accelerating. Type F for water reducing, high range, and Type G for water reducing, high range and retarding.
- B. Crystalline Water-Proofing Admixture
1. Where: Water-proofing admixture is typically required in concrete mix for all concrete walls, floor slabs, and top slabs in water retaining structures. See Table 2 Concrete Schedule Uses and Properties.
 2. General: Admixture shall be crystalline, cementitious, non-toxic chemical treatment for the water-proofing and protection of concrete.
 3. Product:
 - a. Xypex Admix C-500, C-1000 or C-2000 as manufactured by Xypex Chemical Corporation, 13731 Mayfield Place, Richmond, BC, Canada, V6V 2G9; 800-961-4477 or 604-273-5264; fax 604-270-0451; enquiry@xypex.com; www.xypex.com
 - b. MasterLife 300D as manufactured by Master Builders Solutions Admixtures, LLC, 23700 Chagrin Boulevard, Beachwood, OH 44122; 800-628-9990; master-builders-solutions.com.
 - c. Penetron Admix SB as manufactured by Penetron USA, Inc., 45 Research Way, Suite 203, East Setauket, NY 11733; 631-941-9700; info@penetron.com; www.penetron.com
 - d. Substitutions: None.
 4. Dosing:
 - a. Rate as required by manufacturer.
 - b. Admixture must be added in accordance with the manufacturer's recommendations. Thorough blending of the admixture throughout the concrete mix is essential for correct performance and care should be taken to ensure a homogeneous mixture is obtained.
- C. Admixtures containing calcium chloride or soluble chloride shall not be used.

2.05 SYNTHETIC FIBER REINFORCEMENT

- A. Manufacturer:
1. The FORTA Corporation, 100 Forta Drive, Grove City, PA, 800.245.036, www.forta-ferro.com.
- B. Product: FORTA-FERRO
1. Fiber lengths are greater than 2.0 inches.
 2. Before mixing, fibers are collated by twisting with an initial bundle aspect ratio less than 20.
 3. Pre-mixing, macro monofilament fibers are bundled and have an aspect ratio of 80.
 4. Post mixing, fibers are dispersed and have an aspect ratio of 80 or greater.
 5. Fibers are made of copolymer virgin materials that are inert.
 6. Fibers are sized to be flexible and not stiff to ensure fibers 'lay down' and are easy to finish.
- C. Fiber Dosage: Add fiber reinforcement at these dosages:
1. Dosage 3.0 lbs/cy; temperature and shrinkage reinforcement only.
 2. Dosage 5.0 lbs/cy; moderate benefits to reduce cracking.
 3. Dosage 7.50 lbs/cy; best benefits to reduce cracking from tension, curling and fatigue.
- D. Batching and Mixing
1. After all or a portion of the concrete has been loaded into the truck or mixer, add fiber reinforcement by mixer ready dispersible bags at the prescribed dosage with the drum turning.

2. After fibers have been added, add water-reducing admixture (polycarboxylate superplasticizer).
3. Follow ACI procedures to mix 5 minutes once all ingredients are in the drum.

PART 3 EXECUTION

3.01 COORDINATION

- A. Examine the drawings and specifications for work of other sections or other contractors and coordinate such work with the requirements of this Section; make provisions for installation of such items as sleeves, pipes, conduits, inserts and hangers in a manner that will not impair or weaken concrete construction. Verify that preinstallation meetings have occurred per requirements of Part 1.

3.02 READI-MIX CONCRETE

- A. Acceptability and Use. Readmix concrete shall be designed on the basis of strength, durability, impermeability, and exposure condition, as required for the intended use of the structure by methods specified in ACI 211.1 and ACI 318. All readmix concrete shall comply with the water-cement ratio for each specific class of concrete as specified in the Concrete Schedule. Concrete design mix, complete with sample test results shall be submitted to the Engineer for approval prior to placing any concrete.
 1. Failure to Meet Strength Requirements. Failure to meet strength requirements shall be as defined in Concrete Quality Control- Division 01 of these specifications.
 2. Watertight Concrete. All concrete exposed to earth or water shall be watertight, shall have a water-cement ratio as specified, and shall be air-entrained as specified in the Concrete Schedule.
 - a. Provide damp-proofing membrane as indicated on the contract drawings.
 3. Waterproof Concrete. All concrete for water retaining structures shall be waterproof, shall have a water-cement ratio as specified, and shall be air-entrained as specified in the Concrete Schedule.
 - a. Install waterstops as indicated on the contract drawings.
- B. Mix Proportioning. Mix proportioning shall be the responsibility of the Contractor and shall be submitted for review and approval by the Engineer, in accordance with these specifications.
 1. Select proportions for concrete to obtain the quality requirements for the class of concrete as specified in the Concrete Schedule. Contractor, at their expense, shall have an approved independent laboratory prepare design mixes for each specified concrete class.
 2. Slump. Slump for class of concrete shall be as specified in the Concrete Schedule. The Contractor shall at their expense, make field slump tests in accordance with ASTM C143 and Concrete Quality Control-Division 01 of these specifications.
 3. Adjustment to Concrete Mixes. Design mix adjustments may be requested by the Contractor when characteristics of materials, conditions, weather, test results, or other circumstances warrant. Laboratory test data for revised design mixes and strength results shall be submitted and approved before using in the work. No change in contract price will be allowed for these changes.
 4. Addition of Water to the Batch. Addition of water to the batch delivered to the site shall be in strict accordance with ASTM C94. This shall be the Contractor's responsibility and by their direction, following consultation with the Engineer.
 - a. Addition of water to the batch shall be one time only. Total gallons of water added to the batch shall be recorded on the load ticket, which shall be supplied to the Engineer prior to that delivery truck leaving the site. If water is permitted to be added to mixed concrete upon arrival at the job, an additional mixing of 30 revolutions of the drum shall be required.
 - b. Contractor shall adjust the water-cement ratio of the batch to the corresponding value based on the addition of water to the batch and shall submit this information to the Engineer with adjusted strength data for the final batch proportion.
 - c. At no time shall the addition of water cause the water-cement ratio specified in the concrete class schedule to be exceeded.

3.03 GENERAL

- A. Unless otherwise specified, conform to ACI 304, 305, and 306 for concrete installation requirements such as preparation, mixing, conveying, depositing, curing, and cold and hot weather requirements; consolidate concrete in accordance with ACI 309.
- B. Concrete not placed within 90 minutes or 300 revolutions, whichever occurs first, after the first mixing of the cement and aggregates will be rejected.
- C. Contractor shall indicate on record set of Drawings at site, for review prior to installation, a pouring program for concrete work showing unit of operation, method of pouring, installation of construction/control joints, expansion joints and all necessary work.
- D. Proper grade marker or stakes shall be used by Contractor to establish grades for ramps, platforms, sidewalks, slopes to drains, inlets, etc.
- E. Trenches, forms, conveying equipment shall be prepared to receive concrete in accordance with ACI 304.
- F. Place concrete footings upon undistributed clean surfaces, free from frost, ice, mud and water; when foundation is on dry soil or pervious material, lay waterproof sheathing paper over earth surfaces to receive concrete.
- G. Rock surfaces upon which concrete is to be placed, make level, clean, free from all objectionable coatings, water, mud, debris, loose semi-detached or unsound fragments; level surfaces to receive sand cushion placed to minimum thickness of 2 inches.
- H. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperature and mechanical injury; maintain with minimum moisture loss and relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete.
- I. All freshly cast concrete shall be protected from damaging effects of the elements freezing, rapid drop in temperature and loss of moisture and from future construction operations.

3.04 PREPARATION OF EQUIPMENT AND PLACE OF DEPOSIT

- A. Before placement, clean equipment for mixing and transporting the concrete; remove debris and ice from all surfaces upon which concrete is placed; clean reinforcement of dirt, loose rust, and mill scale, or other coatings.
- B. Remove water from all areas before depositing concrete; before depositing new concrete on or against concrete that has set, thoroughly roughen; clean existing surfaces of laitance, foreign matter or loose particles; retighten forms; slush existing surfaces with neat cement grout coat; place new concrete before grout has attained initial set; give horizontal construction joints grout brush coat of cement, fine aggregate, in same proportions as concrete to be placed.
- C. Thoroughly wet the stone base on which slabs are to be placed where no vapor barrier is indicated.
- D. Check compaction of fill and proper grade for slabs-on-grade. Check screeds and exercise care to prevent disturbing screeds during placement. Provide for construction joints in slabs-on-grade at 20 feet maximum in each direction unless shown otherwise on the contract drawings. Place expansion joint material at junctures of slabs-on-grade with vertical walls and as otherwise shown.
- E. Remove debris, excess form oil, and water from formwork; avoid washing newly deposited concrete.

3.05 MIXING

- A. Ready-mixed concrete shall be mixed and delivered in accordance with ASTM C94 and ACI 304. The production facilities shall comply with the requirements of the National Ready Mixed Concrete Association

Certification Plan as regards materials storage and handling, batching equipment, central mixer, truck mixers, agitators, non-agitating units, ticketing system, etc.

- B. Do not over-mix; do not use concrete which is retained in mixers so long as to require additional water in excess of design mix water to permit satisfactory placing; retempering of mix is not permitted.
- C. Concrete shall be delivered to the site of the work and the mixed concrete discharged completely within 1-1/2 hours after water has been added to cement. In hot weather, or under conditions contributing to quick stiffening of concrete, this time may be reduced by the Engineer.
- D. Concrete delivered shall arrive at the site having a temperature not less than 50 Degrees F nor greater than 85 Degrees F, unless otherwise permitted by the Engineer.

3.06 CONVEYING

- A. Convey concrete from the mixer to the final deposit by methods that will prevent segregation or loss of materials.
- B. Use of aluminum conveyances is not permitted.

3.07 CONCRETE PLACEMENT

- A. Place concrete, including drops greater than 60 inches using recommended practices in accordance with ACI 304 and ACI 318. Once pouring operation commences, it shall be carried out as a continuous operation until a section is completed.
- B. Deposit concrete as nearly as practical in its final position to avoid segregation due to rehandling or flowing; do not use vibrators to move concrete horizontally within the forms.
- C. Do not use retempered concrete or concrete contaminated by foreign material.
- D. Plan and conduct concrete placement to ensure that the concrete is kept plastic and that the concrete is free of cold joints.
- E. Where there is a time delay greater than 45-minutes between adjacent concrete placement, a bulkhead construction joint, complete with waterstops where required, must be installed.
- F. Do not commence placing when the sun, heat, wind or limitations of facilities provided prevent proper finishing or curing.
- G. Discontinue concreting when the descending natural air temperature falls lower than 40 Degrees Fahrenheit unless preparations are made and in place to heat or insulate concrete in accordance with the cold weather concreting requirements of this specification.
- H. Concrete for walls shall be deposited in approximately horizontal layers not to exceed 18 inches in height to avoid segregation due to rehandling and flowing.
- I. Concrete shall not be placed or poured in water. Water level shall be removed or lowered in a manner approved by Engineer. Excess water shall not be permitted. Powdering a mixture of cement to absorb excess water shall not be permitted.
- J. Concrete shall be placed before initial set has occurred. Placing should be carried on in such manner that the concrete in the form is still plastic and can be integrated with fresh concrete.
- K. Contractor shall notify Engineer of concrete pouring schedule one day in advance of pour to allow for inspection of reinforcing and forms.

- L. Bottom dump buckets may be used for transporting mixed concrete to the desired location. Particular care shall be taken to avoid jarring or bumping as this may cause segregation.
- M. Where chutes are used to transport concrete, they shall be of metal or wood with metal lining and should have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal so that the concrete will travel fast enough to keep the chute clean but slow enough to avoid segregation of materials. The end of each chute shall be provided with a baffle to help prevent segregation, or the concrete should be discharged through a tremie or elephant trunk directly into the form.
- N. Elephant trunks and/or tremies shall be used in walls and columns to prevent free fall of the concrete and to allow the concrete to be placed through the cage of reinforcing steel.
- O. Pumping equipment shall be of suitable type, without Y-sections, and with adequate pumping capacity. Loss of slump in pumping shall not exceed 1-1/2 inches.

3.08 CONSOLIDATION

- A. Each concrete layer placed shall be compacted by mechanical internal vibrating equipment supplemented by hand spading, rodding, or tamping.
- B. The period of concrete vibration shall not be less than two seconds nor more than five seconds at any one point.
- C. Consolidate concrete thoroughly as it is placed in order to secure a dense mass; work concrete well around the reinforcement and embedded items and into the corners of the forms.
- D. Use internal vibrators inserted vertically over the entire area of the placement; form vibrators not permitted; internal vibrators shall maintain a minimum of 5000 impulses when submerged in concrete.
- E. Vibrate until voids are eliminated, coarse aggregate is suspended in mortar, and entrapped air bubbles begin to rise to the surface; concrete should move back into the space vacated by the vibrator; vibration duration shall be limited only to the time necessary to produce consolidation without causing segregation.
- F. Space vibrator insertions such that the area visibly affected by the vibrator overlaps the adjacent just-vibrated area by a few inches.
- G. Penetrate at least 6 inches into previously placed layers in order to bond between layers and avoid cold joints.
- H. Take care not to over-vibrate air entrained concrete; place vibrator to eliminate honeycombing but avoid excess vibrating that bleeds all entrapped air from the mix.
- I. Do not use vibrators to transport concrete.

3.09 JOINTS

- A. Construct expansion, control, and isolation joints only where indicated on the drawings or at additional locations approved by the Engineer (and as shown on the Standard Details).
- B. Where the placing of concrete is discontinued, clean off laitance and other objectionable material to a sufficient depth to expose sound concrete as soon as concrete is firm enough to retain its form; smooth the top surface of concrete adjacent to the forms with a trowel to minimize visible joints on exposed faces.
- C. Immediately upon completion of the work of placing concrete, remove accumulations splashed upon the reinforcement and the surfaces of the forms; perform this removal before concrete takes its initial set; clean reinforcing steel carefully to prevent damage to the concrete steel bond.

- D. Do not halt work within 18 inches of the top of any face.
- E. For bonded horizontal joint construction, roughen the surface and expose the aggregate; clean the surface thoroughly by wet sandblasting, by cutting with high-pressure water jet or by other approved methods; perform cleaning after the concrete has hardened to prevent raveling of the surface below the desired depth.
- F. Construction and contraction joints shall be constructed with interfaces roughened to 1/4-inch amplitude, cleaned and laitance removed.
- G. Before bonding concrete is placed, clean the surface of loose or soft particles or other objectionable materials and keep wet for a minimum period of 12 hours.
- H. Cover the cleaned and saturated surface with a coating of neat cement grout and deposit new concrete before the grout has attained its initial set.

3.10 CURING

- A. Concrete shall be wet cured by immersion of moisture-retaining covers in conformance with ACI 308 or shall receive curing compound in accordance with ACI 309.
- B. Water curing is the preferred method of protection for curing concrete; cover exposed surfaces with a saturated material (burlap or cotton mats) and keep wet continuously with a soil soaker hose for 7 curing days for all concrete except high early strength concrete; leave covering in place, without wetting, for an additional 3 days.
- C. A curing day is defined as 24-hour day when the concrete surfaces are kept moist and the uniform temperature of the concrete mass is between 55 Degrees Fahrenheit and 75 Degrees Fahrenheit.
- D. Curing shall start as soon as free surface water disappears after finishing. Where forms are not removed immediately, curing shall be accomplished in a manner acceptable to the Engineer.
- E. Curing compounds may not be used on surfaces that are to receive additional concrete, paint or tile, unless approved by the manufacturer for such use.
- F. Curing and sealing compound shall not be applied to steel reinforcing anchors, water stops, construction joints, or surfaces to be bonded to other concrete.
- G. When using a curing compound, keep surfaces moist after the forms are removed. Preferred sequence: Remove forms in accordance with 03 11 13 Structural Cast-In-Place Concrete Forming of this specification: apply curing compound according to manufacturer's recommendations (if manufacture allows pre-finishing application); repair form tie holes; finish surface. Alternate sequence (if manufacturer does not allow pre-finishing application): Remove forms in accordance with 03 11 13 Structural Cast-In-Place Concrete Forming of this specification; repair form tie holes; finish surface; apply curing compound according to manufacturer's recommendations.
- H. Slabs: Immediately following slab finishing, begin water curing before the surface becomes dry or apply liquid membrane-forming curing compound.
 - 1. For exposed slabs with synthetic fiber reinforcement (fiber mesh), the exposed fibers shall be melted or burned off with a heat source prior to applying the curing compound.
- I. Vertical Surfaces: When the forms are removed entirely, spray the surface with water and allow it to reach a uniformly damp appearance with no free water on the surface; apply curing compound or begin water curing.
- J. For curing concrete under hot weather conditions, see Hot Weather Requirements in this section.

- K. For curing concrete under cold weather conditions, see Cold Weather Requirements in this section.

3.11 CONCRETE WALL FINISHES

- A. Complete screeding and darbying of top of walls before excess moisture or bleeding water is present on the surface.
- B. Do not begin subsequent finishing operations until surface water has disappeared.
- C. Refer to Section 03 11 13 for As-Cast Surface Finishes requirements.
- D. All areas of concrete that have holes and pockmarks that exceed the definition for bug hole shall be repaired with a structural repair mortar after forms are removed and prior to any specific surface finishes.
- E. Refer to Concrete Schedule, included in this specification section, for finish type at each location, defined as follows:
1. Rough Form Finish: (Type W1)
 - a. Provide As-Cast Surface Finish-1.0.
 2. Smooth Form Finish: (Type W2)
 - a. Provide As-Cast Surface Finish-2.0.
 - b. .
 3. Smooth Rubbed Finish: (Type W3)
 - a. Provide As-Cast Surface Finish-2.0. Wet surface and rub with a Carborundum brick until uniform color and texture are produced.
 - b. Perform rubbing no later than 24 hours after forms are removed.
 - c. Do not use any cement grout other than the paste drawn from the concrete itself by rubbing.
 - d. Thoroughly wash the surface with water.
 4. Smooth Troweled Finish: (Type W4)
 - a. Produce a Smooth Rubbed Finish W3.
 - b. After wet-rubbing, finish with a steel trowel to increase compaction of fines and to provide maximum density.
 5. Smooth Finish (Grout Cleaned): (Type W5)
 - a. Provide As-Cast Surface Finish-3.0.
 - b. Use for surfaces exposed to general view, unless noted otherwise. This is not an architectural texture or exposed aggregate finish. This method is to fill bug holes remaining in exposed concrete, not repair defects in concrete work.
 - c. Mix 1 part portland cement and 1-1/2 parts fine sand with sufficient water to produce grout having consistency of thick paint; use white portland cement in combination with normal portland cement to achieve uniform surface color after drying.
 - d. Wet surface of concrete and uniformly apply grout with brush or spray gun completely filling air bubbles; surface with a wood float scouring wall vigorously.
 - e. Allow grout to partially set for one to two hours, depending on weather conditions; in hot dry weather, keep damp, using fine fog spray.
 - f. When grout has hardened sufficiently to be scraped from wall with edge of steel trowel without removing grout from small air holes, cut off all grout that can be removed with trowel.
 - g. Allow surface to dry thoroughly then rub vigorously with dry burlap to completely remove dried grout; there shall be no visible film or grout remaining after this rubbing.
 - h. The entire cleaning operation for any area must be completed the day it is started; no grout shall be left on overnight, and sufficient time shall be allowed for grout to dry after it has been cut with trowel so it can be wiped off clean with burlap.
 - i. After entire surface has been grout cleaned, wipe off any slightly dark spots or streaks with fine abrasive hone.

3.12 CONCRETE SLAB FINISHING

- A. Complete screeding and darbying slabs before excess moisture or bleeding water is present on the surface.
- B. Do not begin subsequent finishing operations until surface water has disappeared and the concrete will sustain foot pressure with only approximately 1/4 inch indentation.
- C. Refer to Concrete Schedule, included in this specification section, for finish type at each location, defined as follows:
 - 1. Smooth Float Finish: (Type S1)
 - a. Consolidate concrete with a power-driven disc-type float or a combination floating-troweling machine with metal float shoes attached.
 - b. Machines which have a water attachment for wetting the concrete during the finishing operation are prohibited.
 - c. Check and level surface plane to a tolerance not exceeding 1/4 inch in 10 feet when tested with a 10-foot straightedge. Cut down high spots and fill low spots; immediately after re-leveling, refloat surface to a uniform, smooth, granular texture.
 - d. Where slab drainage is indicated, take care to maintain accurate slopes for drainage.
 - 2. Steel Troweled Finish: (Type S2)
 - a. Produce a Smooth Float Finish S1.
 - b. After float finishing, steel trowel surface as specified in Concrete Schedule to increase the compaction of fines and to provide maximum density and wear resistance.
 - c. Steel Troweled Finish: Screed and bull float or darby. Give preliminary float finish, true, even and free from depressions; float surface with hand or machine floats; compact surface with not less than 2 thorough and complete steel troweling operations.
 - d. Tolerance on finished steel troweled floors in no instance shall exceed 1/8 inch in 10'-0" on surface; where floor drains occur, slope floors to drains.
 - e. Buffing: After concrete floors have been properly cured, buff thoroughly to remove soluble salt incrustation or other foreign substances.
 - 3. Integral Finishes: (Type S3)
 - a. Use for slabs where some material other than concrete will be the final wearing surface.
 - b. Screeded Finish - Place screed blocks at frequent intervals and strike off to surface elevations desired; unless otherwise indicated, use on base slabs upon which grout finish, regular mortar bed ceramic tile, sand cushion terrazzo or similar type wearing surface is applied.
 - 4. Broom Finish: (Type S4)
 - a. Produce Smooth Float Finish S1.
 - b. Draw stiff broom over surface, to obtain non-slip finish.
 - 1) At Sidewalks, produce a medium-coarse broom finish.
 - 2) At all other areas produce a fine broom finish.
 - c. For slabs with synthetic fiber (fiber mesh) reinforcement, broom in one direction only, with a consistent sweeping motion to align the fibers with the broom texture.
 - 5. Abrasive Aggregate Non-slip Finish: (Type S5)
 - a. Screed and float concrete to the required finish level with no coarse aggregate visible.
 - b. Uniformly sprinkle abrasive aggregate over the floated surface at a rate of not less than 1/4-pound per square foot.
 - c. Steel trowel surface to a smooth even finish, uniform in texture and appearance and free from blemishes, including trowel marks.
 - d. Immediately after curing remove cement coating covering the abrasive aggregate by steel brushing, rubbing with an abrasive stone or sandblasting to expose abrasive particles.
 - 6. Hardener Floor Treatment: (Type S6)
 - a. Hardener shall be installed in strict accordance with manufacturer's printed instructions; experienced workmen shall apply hardener at a minimum of 45 pounds per 100 square feet.

3.13 CONCRETE SIDEWALKS

- A. Concrete sidewalk construction shall be as specified in Concrete Sidewalks, Steps, and Driveways - Division 32 of these specifications.

3.14 CONCRETE CURB AND GUTTER

- A. Concrete curb and gutter construction shall be as specified in Concrete Curb and Gutter - Division 32 of these specifications.

3.15 CONCRETE WHEEL BUMPER BLOCKS

- A. Shall be reinforced precast concrete, minimum 4000 psi, with air entrainment; maximum height 6 inches; install where indicated on Drawings.

3.16 CONCRETE SPLASH BLOCKS

- A. Reinforced precast concrete splash blocks formed of 4000 psi concrete with air entrained concrete; shall be 2 inches thick x 1'-0" wide x 2'-6" long; front shall be turned up 4 inches for 6 inches overall height; upper corners of turned up lip shall be cut off at 45 Degree angle; wire mesh reinforcing turned up in front lip.

3.17 CONCRETE FILL FOR COMPOSITE FLOOR DECK

- A. Fill over composite floor deck shall be lightweight aggregate concrete; no admixtures containing chloride salts or other deleterious materials shall be used; lightweight concrete shall not exceed 100 pcf weight.

3.18 PERIMETER INSULATION

- A. Install perimeter insulation at building foundation wall and under floor slab as shown on the contract drawings.

3.19 HOT WEATHER REQUIREMENTS

- A. Comply with ACI 305R unless otherwise specified herein below.
- B. Hot weather conditions are deemed to exist when the temperature in the forms is 75 Degrees Fahrenheit or above, or a combination of high air temperature, low relative humidity and wind velocity impair the quality of fresh or hardened concrete; take protective measures for mixing, transporting and placing concrete in accordance with ACI 305R.
- C. The temperature of the concrete at the place of discharge may not exceed 85 Degrees Fahrenheit.
 - 1. If ice is used to lower temperature, place crushed, shaved or chipped ice directly into the mixer as part or all of the mixing water; mix until ice is completely melted.
 - 2. Record the concrete temperature at the time of discharge.
- D. Do not add water that will cause the proportions to exceed the maximum water-cement ratio shown in Table I.
 - 1. Notify the Engineer before adding any water to the concrete mix.
 - 2. Record the amount of water added to the concrete at the jobsite.
- E. Discharge concrete within 45 minutes or 100 revolutions, whichever occurs first, after the first mixing of cement and aggregates.
- F. Placing and Curing:
 - 1. Place concrete promptly upon arrival.
 - 2. Provide at least one standby vibrator for each 3 vibrators in use.
 - 3. Protect concrete from direct sunlight; keep forms covered and moist by means of water sprinkling or the application of continuously wetted burlap or cotton mats for a minimum of 24 hours. Windbreaks and/or sunshades shall be provided as directed by the Engineer.
 - 4. When forms are removed, provide wet cover to the newly exposed surfaces to avoid exposure to hot sun and wind.

5. Continue specified water curing methods for 10 days; leave covering in place 4 additional days; do not permit alternate wetting and drying cycles.
6. For slabs on grade, beam and deck concrete, and other horizontal placements protect the surface between finishing operations using one or more of the following methods:
 - a. Careful use of a fog nozzle.
 - b. Spreading and removing polyethylene sheeting between finishing operations.
 - c. Application of mono-molecular film after the strike-off.
- G. During extremes in weather, floor slabs shall not be cast unless the slab is protected by a roof and other suitable protective measures are provided. After curing has been completed, the floor shall be exposed to the air for 48 hours prior to allowing traffic on the floors.

3.20 COLD WEATHER REQUIREMENTS

- A. Comply with ACI 306.1 (R2002) unless otherwise specified herein below.
- B. Cold weather is defined any time when the daily temperature is 40 Degrees Fahrenheit or lower during placement and the protection period. If at any time during the progress of the work, the temperature drops below 40 Degrees F., the Contractor shall make suitable provisions to protect the concrete by use of insulation materials such as blankets, mats, etc., and equipment for providing artificial heat.
- C. Combustion type temporary heating devices shall be vented outside of any temporary enclosure and building envelope. Combustion gases shall not be allowed in any temporary enclosure and building envelope.
- D. Protect concrete surfaces from freezing for at least 24 hours after placement.
- E. All surfaces in contact with newly-placed concrete including formwork, reinforcement and subgrade must be above 35 Degrees Fahrenheit.
- F. Use preparation methods capable of producing concrete with a temperature not more than 85 Degrees Fahrenheit, and not less than 55 Degrees Fahrenheit, at the time of placement.
- G. Do not heat concrete ingredients to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, within the specified temperatures. (Do not heat water in excess of 140 Degrees Fahrenheit.)
- H. Concrete shall have a temperature of not less than 55 Degrees Fahrenheit when placed; mix concrete at a temperature between:
 1. 60 Degrees Fahrenheit and 70 Degrees Fahrenheit when outside air temperature is above 30 Degrees Fahrenheit.
 2. 65 Degrees Fahrenheit and 75 Degrees Fahrenheit when outside air temperature is between 0 Degrees Fahrenheit and 30 Degrees Fahrenheit.
 3. 70 Degrees Fahrenheit and 80 Degrees Fahrenheit when outside air temperature is below 0 Degrees Fahrenheit.
- I. Follow concrete placement with tarpaulins or other readily movable coverings, so only a few feet of concrete is exposed to the outside air at any time.
- J. Maintain the temperature and moisture conditions specified in all parts of the newly placed concrete by covering, insulating, housing or heating; arrange for protection methods in advance of placement.
- K. Maintain concrete at a temperature of not less than 55 Degrees Fahrenheit nor more than 70 Degrees Fahrenheit for a period of 3 days after placement.
- L. A thermometer accurate to plus or minus 2 Degrees F shall be placed under the curing blanket. Additional insulation shall be supplied as required to maintain the temperature above 55 Degrees F.

- M. After the curing period, the temperature of the exposed surface shall not be permitted to drop faster than 30 Degrees F in 24 hours.
- N. Do not remove forms during the initial protection period.
- O. Protect insulation against wetting that will impair its insulating value using moisture-proof cover material; keep insulation in close contact with concrete.
- P. Construct enclosure to withstand wind and snow loads and be reasonably airtight; provide sufficient space between the concrete and enclosure to permit free circulation of heated air.
- Q. Use vented heaters; do not permit heaters to heat or dry concrete locally. Unvented salamanders or other heaters which produce carbon dioxide as by-products shall not be permitted within enclosures or inside buildings. If heaters are used, precautions shall be taken to prevent drying of the slab through the use of water jackets or other suitable methods.
- R. Maintain relative humidity above 40% within heated enclosures before construction supports are removed.
- S. Monitor temperature to ensure concrete is kept within specified limits recording time and concrete temperature every 8 hours.
- T. Assure concrete has developed necessary strength before removing forms; provide additional test cylinders with the same protection as the structure they represent to verify concrete strength before construction supports are removed.
- U. If water curing is used, terminate at least 12-hours before end of temperature protection period. Permit concrete to dry.
- V. After the required protection period gradually reduce the concrete temperature within an enclosure or insulation at a rate not to exceed 20 Degrees Fahrenheit per day until the outside temperature has been reached.
- W. Apply membrane forming curing compound to concrete surfaces during the first period of above-freezing temperatures after forms are stripped and before air temperature rises to 50 Degrees Fahrenheit; apply membrane forming curing compound to slabs as soon as finishing operations are completed, except where live steam curing is used.

3.21 DELIVERY TICKETS

- A. With each load of concrete delivered to the job there shall be furnished by the ready-mixed concrete producer duplicate delivery tickets, one for the Contractor and one for the Engineer. Delivery tickets shall provide the following information:
 - 1. Date and serial number of ticket;
 - 2. Name of ready-mixed concrete plant;
 - 3. Job location;
 - 4. Contractor;
 - 5. Type and brand name of cement;
 - 6. Mix number or specified cement content in bags per cubic yard of concrete;
 - 7. Truck number;
 - 8. Time dispatched stamped by a time clock;
 - 9. Amount of concrete in load in cubic yards;
 - 10. Admixtures in concrete, if any;
 - 11. Maximum size of aggregate;
 - 12. Water added at job, if any;
 - 13. Slump of concrete ordered

TABLE 1
CONCRETE CLASS SCHEDULE

Parameter Value	Compressive Strength (PSI) 28-Day	Water-Cement Ratio Maximum	Air Content Range (%) Minimum-Maximum	Slump Range (Inches) Minimum-Maximum	Coarse Aggregate (Inches) Maximum
Class A	4,000	0.5	1 to 2	2 to 4	3/4
Class B	4,000	0.5	1 to 2	2 to 4	1-1/2
Class C	4,000	0.5	5 to 7	2 to 4	3/4
Class D	4,000	0.5	4 to 6	2 to 4	1-1/2
Class E (Interior)	3,000	0.5	1 to 2	2 to 4	3/4
Class F (Exterior)	3,000	0.5	5 to 7	2 to 4	1-1/2
Class G	2,000	0.67	1 to 2	4 to 6	1-1/2
Class H	5,000	0.45	1 to 2	2 to 4	3/4
Class I	5,000	0.45	1 to 2	2 to 4	1-1/2
Class J	5,000	0.45	5 to 7	2 to 4	3/4
Class K (Exterior)	5,000	0.45	4 to 6	2 to 4	1-1/2
Class L	3,000 psi @24 hours	0.40	5 to 7 4 to 6	2 to 4 2 to 4	3/4 1-1/2

TABLE 2
CONCRETE SCHEDULE
USES AND PROPERTIES

Use	Finish	Class and Considerations
Standard Concrete (not including liquid-retaining or severe exposure structures)		
Foundations, walls, and footings, (Buried and non-exposed)	W1	Class A
	W1	Class B
Foundations and walls (Exterior and exposed)	S2 Top, W5 Sides	Class C
	S2 Top, W5 Sides	Class D
Exterior exposed retaining walls	S2 Top, W5 Sides	Class C
	S2 Top, W5 Sides	Class D
Slabs and floors, (Exterior)	S4 Top, W5 Sides	Class C
	S4 Top, W5 Sides	Class D
Slabs and floors, (Interior)	S2Top, W5 Sides	Class A
	S2 Top, W5 Sides	Class B
Beams, joists, bond beams, Spandrels, lintels, and columns	W5	Class A
Topping for precast decking, (Interior)	S2 or S4, Top W5 Sides	Class E
Topping for precast decking, (Exterior)	S2 or S4, Top W5 Sides	Class F
Equipment pads and bases	S2 Top, W5 Sides	Class E (Interior)
	S2 Top, W5 Sides	Class F (Exterior)
Curbing, sidewalk, endwalls, stairs, driveways and ramps	S4 Top, W5 Sides	Class C
	S4 Top, W5 Sides	Class D
Manhole bases and benches	Special Construction	Class E
Pavement base, cradles and inlet walls	Special Construction	Class E
		Class F
Mass and fill	None	Class G
Traffic areas requiring early access or use	Special Construction	Class L
Liquid-Retaining Structures (provide integral crystalline water-proofing admixture)		
Slabs and bases (Interior)	S2 Top, W1 Sides	Class H
	S2 Top, W1 Sides	Class I
Slabs and bases (Exterior)	S2 Top, W1 Sides	Class J
	S2 Top, W1 Sides	Class K
Elevated slabs and integral beams (Exterior)	S2 Top, W5 Sides, W5 Bottom	Class J
	S2 Top, W5 Sides, W5 Bottom	Class K
Buried walls	W1	Class J
	W1	Class K
Exposed walls	S2 Top, W5 Sides	Class J
	S2 Top, W5 Sides	Class K
Fillets	S2 Top, W5 Sides	Class E
	S2 Top, W5 Sides	Class F
Severe Exposure (Chemical Resistant)		
Slabs and bases (Interior)	S2	Class H
	S2	Class I
Slabs and bases	S2	Class J

(Exterior)	S2	Class K
Buried walls	W1	Class H
(Interior)	W1	Class I
Buried walls	W1	Class J
(Exterior)	W1	Class K
Exposed walls	S2 Top, W5 Sides	Class J
	S2 Top, W5 Sides	Class K
Fillets	S2 Top, W5 Sides	Class E
	S2 Top, W5 Sides	Class F

END OF SECTION

SECTION 04 05 13
MASONRY MORTAR

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mortar for masonry.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Section 04 20 00 - Unit Masonry: Installation of mortar.

1.03 RELATED SECTIONS

- A. Section 04 20 00 - Unit Masonry: Mortar for masonry.
- B. Division 4 – Precast caps: Mortar for installation.

1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
 - 2. ASTM C150 - Standard Specification for Portland Cement.
 - 3. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
 - 4. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
 - 5. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar.
 - 6. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
 - 7. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
 - 8. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength.
 - 9. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
 - 10. ASTM C1329 - Standard Specification for Mortar Cement.
 - 11. ASTM C1357 - Standard Test Method for Evaluating Masonry Bond Strength.
 - 12. ASTM E518 - Standard Test Methods for Flexural Bond Strength of Masonry.
- B. International Masonry Industry All-Weather Council (IMIAC):
 - 1. Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- C. The Masonry Society (TMS):
 - 1. ACI 530/530.1 - Building Code Requirements and Specifications for Masonry Structures and Related Commentaries.

1.05 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Product Data: Submit on the pre-mixed mortar to be used: cement, lime, sand and pigment to be used.
- C. Samples: Submit 3/8"x3/8"x4" colored mortar samples illustrating the colors available for selection by the Architect.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with TMS MSJC Code and TMS MSJC Specification.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Hot and Cold Weather Requirements: TMS MSJC Specification.
- B. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- C. Maintain materials and surrounding air temperature to maximum 90 degrees F (32 degrees C) prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mortar: Premixed Portland cement, lime, sand and pigment: SpecMix or BMI complying with ASTM C270. Factory mixed with products complying with the following:
 - 1. Portland Cement: ASTM C150, Type I, gray color.
 - 2. Mortar Aggregate: ASTM C144, standard masonry type.
 - 3. Hydrated Lime: ASTM C207, Type S.
 - 4. Pigment:
 - a. Prism, SGS or approved equal.
 - b. Colors may be selected from full range of standard and premium colors.
 - c. Colors from Prism 10, 20 and 40 series colors.
 - d. Colors from SGS Solomon Colors shall include A, H and X series colors.
 - e. If SpecMix and BMI do not have a color in their line up of colors then a color will be selected from SGS Solomon Colors, Inc.
- B. Water: Clean and potable.
- C. Masonry cement and site mixed mortars as not permitted.

2.02 MORTAR COLOR

- A. Mortar for the decorative concrete units, brick and cast stone shall be to match existing.
- B. Color shall be as selected by AE.
- C. Mortar for the plain grey concrete masonry shall be standard gray.

2.03 ADMIXTURES

- A. Water Repellent: Dry-Block by Grace Construction Products or BASF MasterPel 240MA. No substitutions.

2.04 MORTAR MIXING

- A. Thoroughly mix portland cement-lime mortar ingredients in accordance with ASTM C270 property specification requirements.
- B. Use Type S (1800 psi) mortar for all work, except for the locations noted below:
 - 1. Clay brick with IRA over 15: Type N (750 psi)
- C. Add water repellent in accordance with manufacturer's instructions. Provide uniformity of mix and coloration.

- D. Do not use anti-freeze compounds to lower the freezing point of mortar.
- E. If water is lost by evaporation, re-temper only within two (2) hours of mixing.
- F. Use mortar within two (2) hours after mixing at temperatures of 90 degrees F, or two-and-one-half (2½) hours at temperatures under 40 degrees F.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

3.02 INSTALLATION

- A. Install mortar to requirements in Section 04 20 00.

END OF SECTION

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SECTION 04 05 16
MASONRY GROUT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grout for masonry.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Section 04 20 00 - Unit Masonry: Installation of grout.

1.03 RELATED SECTIONS

- A. Section 04 20 00 - Unit Masonry: Grout for concrete block.

1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C150 - Standard Specification for Portland Cement.
 - 2. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
 - 3. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
 - 4. ASTM C476 - Standard Specification for Grout for Masonry.
 - 5. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
- B. International Masonry Industry All-Weather Council (IMIAC):
 - 1. Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- C. The Masonry Society (TMS):
 - 1. ACI 530/530.1 - Building Code Requirements and Specifications for Masonry Structures and Related Commentaries.

1.05 SUBMITTALS (NONE)

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with TMS MSJC Code and TMS MSJC Specification.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Hot and Cold Weather Requirements: TMS MSJC Specification.
- B. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- C. Maintain materials and surrounding air temperature to maximum 90 degrees F (32 degrees C) prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Grout:
 - 1. Premixed or Ready mix complying with ASTM C476 Standard Specification
 - 2. Fine or Coarse Aggregate: ASTM C404.
 - 3. Premixed in bags or silos:
 - a. Quikrete Commercial Grade Core Fill Grout – Fine or Coarse.
 - b. Spec Mix Core Fill Masonry Grout – Fine or Coarse.
 - 4. Ready Mix: Mix to comply with ASTM C476 Proportion method or strength method.
 - 5. Compressive strength: 3000 psi minimum at 28 days.
 - 6. Slump: 8 inch minimum to 11 inch maximum.
- B. Water: Clean and potable.

2.02 GROUT MIXING

- A. Use a mechanical batch mixer. Hand mixing is not allowed.
- B. Thoroughly mix grout ingredients in accordance with ASTM C476 in quantities needed for immediate use.
- C. Do not use anti-freeze compounds to lower the freezing point of grout.
- D. Use the grout within 1.5 hours of initial mixing.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to grouting request inspection from Architect/Engineer of spaces to be grouted.

3.02 INSTALLATION

- A. Install grout to the requirements in Section 04 20 00 – Unit Masonry.

END OF SECTION

SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire Rated CMU.
- B. Decorative CMU.
- C. Installing owner provided face brick.
- D. Reinforcement, Anchorage, and Accessories.
- E. Water Repellant.
- F. Masonry Cleaning.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete: Dovetail slot.

1.03 WORK INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

- A. Section 03 20 00 - Concrete Reinforcement: Reinforcing bars.
- B. Section 04 05 13 – Masonry Mortar: Mortar.
- C. Section 04 05 16 – Masonry Grout: Grout.
- D. Division 4 – Precast wall caps.
- E. Section 07 21 13 - Board Insulation: Insulation for cavity spaces.

1.04 RELATED SECTIONS

- A. Section 07 21 13 - Board Insulation: Insulation for cavity spaces.
- B. Section 07 92 00 - Joint Sealers: Backer rod and sealant at control joints.

1.05 REFERENCES

- A. American Society of Civil Engineers (ACI) International:
 - 1. ACI 530/530.1- Building Code Requirements and Specification for Masonry Structures and Related Commentaries.
- B. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. ASTM A580 - Standard Specification for Stainless Steel Wire.
 - 3. ASTM A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 4. ASTM A951 - Standard Specification for Steel Wire for Masonry Joint Reinforcement.
 - 5. ASTM C55 - Standard Specification for Concrete Brick.
 - 6. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units made from clay or shale).
 - 7. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
 - 8. ASTM C126 - Standard Specification for Ceramic Glazed Structure Clay Facing Tile, Facing Brick, and Solid Masonry Units.
 - 9. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.

- 10. ASTM C140 - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units.
- C. International Code Council:
 - 1. IBC - International Building Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
 - 2. IECC - International Energy Conservation Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
- D. The Masonry Society (TMS):
 - 1. TMS MSJC - Building Code for Masonry Structures (ACI 530/ASCE 5/TMS 402), Specification for Masonry Structures (ACI 530.1/ASCE 6/TMS 602) and Commentaries.
- E. National Concrete Masonry Association:
 - 1. TEK Manual for Concrete Masonry Design and Construction.

1.06 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Samples: Submit samples of face brick, decorative, glazed, and burnished block to illustrate color, texture, and extremities of color range.
- C. Product Data: Submit on all accessories and reinforcement.
- D. Test Data: Submit on concrete masonry units.
- E. Product Data: Submit on burnished masonry units.
- F. Shop Drawings: Submit reinforcing shop drawings for reinforced concrete masonry wall and lintel construction.
 - 1. Submit detailed reinforcing drawings prepared in accordance with TMS 402/ACI 530, including bar schedule with bar marks and bends indicated.
 - 2. Show bar schedules, stirrup spacing, diagrams of bent bars and arrangements of concrete masonry reinforcement.
 - 3. Verify dimensions and make proper allowance for fitting together work of other trades.
 - 4. Submit a certification attesting that reinforcing steel meets the requirements of ASTM A615, including Supplementary Requirements S1.
 - a. Submit certified copies of mill reports, tensile and bend tests for reinforcing steel on projects where the quantity of reinforcing exceeds 15 tons.
 - b. For information only, submit manufacturer's data and instruction for proprietary items, including reinforcement and accessories.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with TMS MSJC Code and TMS MSJC Specification.

1.08 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this section with minimum three (3) years documented experience.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.

- B. Concrete block, brick, and other materials stored on-site must be stored off the ground and be covered with plastic to prevent the material from becoming wet or covered with ice and snow. The material shall remain covered until it is used.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Hot and Cold Weather Requirements: International Building Code and The Masonry Society ACI 530.

1.11 COLD WEATHER PROTECTION

- A. When the ambient air temperature is below 40 degrees F implement cold weather procedures and comply with ACI 530 specifications for cold weather construction.
- B. Temporary enclosures shall be constructed around the areas of work.
- C. Combustion type temporary heating devices shall be vented outside of any temporary enclosure and building envelope. Combustion gases shall not be allowed in any temporary enclosure and building envelope.

1.12 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate masonry work with installation of window and door anchors.

1.13 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Supply 20 of each size, color, and type of brick units.

PART 2 PRODUCTS

2.01 FACE BRICK (WALL IN-FILL)

- A. Face brick for wall in-fill will be provided by the owner from attic stock.

2.02 CONCRETE MASONRY UNITS (RETAINING WALL)

- A. Hollow Loadbearing Block Units: ASTM C90, normal weight, 3250 psi minimum compressive strength on the net area.
- B. Concrete Brick (Retaining Wall): ASTM C55
 - 1. Heritage Collection Designer Concrete Brick
 - 2. Size: 12" x 4" x 16"
 - 3. Description: Normal weight, integrally pigmented load bearing unit
 - 4. Compliance: ASTM C1634
 - 5. Coloring: Integral, Through-body coloring
 - 6. Water Repellent: Integral Water Repellent
 - 7. Color: Selected from manufacturer's standard range
 - 8. Color: Best match of existing building face brick.
 - 9. Facing Texture Style: Smooth
 - 10. Style: Blended

2.03 REINFORCEMENT AND ANCHORAGE

- A. Joint Reinforcement for Exterior Walls: Ladder-type with adjustable eye-wire and adjustable wall ties; ASTM A153 - Class B2 hot-dipped galvanized; all 9 gauge wires.
1. Ladder-Type by Hohmann and Barnard.
 2. Ladder by Wire-Bond
 3. Ladder by Wire-Bond

2.04 MASONRY FLASHINGS

- A. Flashing: (At Precast wall caps) 40 mil thick x 18 inch wide roll, self-adhering, self-sealing, and self-healing flexible composite membrane with a release sheet with a wall primer.
1. Grace Construction Products Perm-A-Barrier Wall Flashing and Perm-A-Barrier WB Primer.
 2. Hohmann & Barnard Textroflash and Primer-SA.
 3. Substitutions: None.
- B. Drip Plate: (At Precast wall caps) 2-inch minimum wide, 26 gauge Type 304 stainless steel drip plate extending 1/2-inch and hemmed bent down at 45 degrees drip edge.
1. #1007 Hemmed Drip-Edge Flashing by Heckmann
 2. Hohmann and Barnard Drip Plate (DP)
 3. #4165 Drip Edge Flashing by Wire-Bond
- C. Fasteners: Type 304 stainless steel.
1. Powers Fasteners Zamac Nailin stainless steel mushroom head 1/4-inch x 1.25-inch fasteners for masonry walls.

2.05 ACCESSORIES

- A. Weep Holes: (At Precast wall caps) Plastic tube type, 3/8-inch outside diameter, stainless steel or brass screen, and no cotton wick.
1. #330 Plastic Weephole by Heckmann
 2. #341 Round Weep Hole by Hohmann and Barnard
- B. Veneer Anchors and Ties for Masonry Veneer with Metal Stud Wall Construction: (At cavity wall infill) Hohmann and Barnard DW-10HS Type 304 stainless steel anchor and #VBT – Vee Byna-Tie 3/16 inch Type 304 stainless steel. Type 304 stainless steel screws with a hex head and neoprene washer. Wood screw for wood studs and self-drilling, self-tapping for metal studs. Length of wire tie shall be as required to provide 2-1/2 inches minimum embedment in the face brick.
- C. Mortar Net (Mortar Deflector): (At cavity wall infill) Polyethylene (HDPE) or nylon woven open mesh, 10-inch high by 2-inch thick.
- D. #84 WallDefender by Heckmann
- E. #Mortar Trap by Hohmann and Barnard
- F. WallDefender by Mortar Net Solutions
- G. Or equal
- H. Water Repellant: Weather Seal Siloxane by ProSoCo, Inc. or Chem-Trete BSM-20 by Huls America, Inc. (No substitutions). Coat all masonry and the entrance feature.
- I. Sealant:
1. Tremco Dymonic
 2. Master Builders MasterSeal NP 1

2.06 MASONRY CLEANING SOLUTION

- A. Brick Cleaning Solution: Sure Klean Van Trol or Sure Klean 600 detergent as manufactured by Prosoco, Inc. Provide type of cleaner from those listed and as recommend by brick manufacturer.
- B. Decorative Concrete Masonry Unit Cleaning Solution: Sure Klean Custom Masonry Cleaner.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify field conditions are acceptable and are ready to receive work.
- C. Verify items provided by other sections of work are properly sized and located.
- D. Verify built-in items are in proper location and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied to other sections.
- B. Establish lines, levels, and coursing. Protect from disturbance.
- C. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.

3.03 COLD WEATHER CONSTRUCTION

- A. Temporary enclosures shall be constructed around the areas of work.
- B. Combustion type temporary heating devices shall be vented outside of any temporary enclosure and building envelope. Combustion gases shall not be allowed in any temporary enclosure and building envelope.
- C. When the ambient air temperature is below 40 degrees F implement cold weather procedures and comply with the following:
 - 1. Do not lay glass unit masonry.
 - 2. Preparation - Comply with the following requirements prior to conducting masonry work:
 - a. Do not lay masonry units having either a temperature below 20°F (-6.7°C) or containing frozen moisture, visible ice, or snow on their surface.
 - b. Remove visible ice and snow from the top surface of existing foundations and masonry to receive new construction. Heat these surfaces above freezing, using methods that do not result in damage.
 - 3. Construction - These requirements apply to work in progress and are based on ambient air temperature. Do not heat water or aggregates used in mortar or grout above 140°F (60°C). Comply with the following requirements when the following ambient air temperatures exist:
 - a. 40°F to 32°F (4.4°C to 0°C).
 - 1) Heat sand or mixing water to produce mortar temperature between 40°F (4.4°C) and 120°F (48.9°C) at the time of mixing.
 - 2) Heat grout materials when the temperature of the materials is below 32°F (0°C).
 - b. Below 32°F to 25°F (0°C to -3.9°C):
 - 1) Heat sand and mixing water to produce mortar temperature between 40°F (4.4°C) and 120°F (48.9°C) at the time of mixing. Maintain mortar temperature above freezing until used in masonry.
 - 2) Heat grout aggregates and mixing water to produce grout temperature between 70°F (21.1°C) and 120°F (48.9°C) at the time of mixing. Maintain grout temperature above 70°F (21.1°C) at the time of grout placement.

- 3) Heat AAC units to a minimum temperature of 40°F (4.4°C) before installing thin-bed mortar.
- c. Below 25°F to 20°F (-3.9°C to -6.7°C): Comply with Paragraph 3.03 C.3.b and the following:
 - 1) Heat masonry surfaces under construction to a minimum temperature of 40°F (4.4°C).
 - 2) Use wind breaks or enclosures when the wind velocity exceeds 15 mph (24 km/h).
 - 3) Heat masonry to a minimum temperature of 40°F (4.4°C) prior to grouting.
- d. Below 20°F (-6.7°C): Comply with Paragraph 3.03 C.3.c and the following: Provide an enclosure and auxiliary heat to maintain air temperature above 32°F (0°C) within the enclosure.
4. Protection - These requirements apply after masonry is placed and are based on anticipated minimum daily temperature for grouted masonry and anticipated mean daily temperature for ungrouted masonry. Protect completed masonry in the following manner:
 - a. Maintain the temperature of glass unit masonry above 40°F (4.4°C) for the first 48 hour after construction.
 - b. 40°F to 25°F (4.4°C to -3.9°C): Protect newly construction masonry by covering with a weather-resistive membrane for 24 hours after being completed.
 - c. Below 25°F to 20°F (-3.9°C to -6.7°C): Cover newly constructed masonry completely with weather-resistive insulating blankets, or equal protection, for 24 hours after completion of work. Extend time period to 48 hours for grouted masonry, unless the only cement in the grout is Type III portland cement.
 - d. Below 20°F (-6.7°C): Maintain newly constructed masonry temperature above 32°F (0°C) for at least 24 hours after being completed by using heated enclosures, electric heating blankets, infrared lamps, or other acceptable methods. Extend time period to 48 hours for grouted masonry, unless the only cement in the grout is Type III portland cement.

3.04 COURSING

- A. Place masonry to lines and levels indicated.
- B. Maintain masonry courses to uniform dimension. Make vertical and horizontal joints equal and of uniform thickness.
- C. Lay concrete masonry units in running or stack bond for all exposed infill block walls (match existing coursing & bond pattern) , unless noted otherwise on drawings. Course one block unit and one mortar joint to equal 8 inches. All mortar joints shall be tooled concave including concealed joints.
- D. Lay decorative (Heritage) 12"x4"x16" brick in full running bond. Three bricks and three mortar joints to equal 12 inches. Mortar joints shall be tooled concave.
- E. Lay brick in full running bond. Three bricks and three mortar joints to equal 8 inches. Mortar joints shall be tooled concave.

3.05 PLACING AND BONDING

- A. Lay masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Buttering corners of joints and deep or excessive furrowing of mortar joints are not permitted.
- C. Remove excess mortar as Work progresses.
- D. Back bevel concrete brick when placing in cavity wall.
- E. Fully bond intersections at external and internal corners.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.

- G. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Take care to prevent breaking masonry unit corners or edges.
- H. Cut mortar joints flush where a finished base is scheduled.

3.06 CAVITY WALL

- A. Build inner wythe ahead of outer wythe to receive air/vapor retarder system and cavity insulation.
- B. Install weeps in veneer at 24 inches on center horizontally above through wall flashing at shelf angles, lintels, or top of walls and at bottom of walls. Set face of weep back 3/8 inch from face of exterior wall to be flush with face of tooled mortar joint.
- C. Do not permit mortar to drop or accumulate into cavity air space or to plug weep holes. Back bevel mortar on cavity wall side of brick.
- D. A continuous board the full width of the cavity shall be used in the cavity as the wall is being laid up to catch mortar droppings. The board shall be pulled up every 16 inches to clean out the cavity.
- E. Install drainage and ventilation mat full height of wall in cavity between the board insulation and the decorative veneer.

3.07 TOLERANCES

- A. Alignment of Pilasters: Maximum 1/4 inch from true line.
- B. Variation from Unit to Adjacent Unit: 1/32 inch maximum.
- C. Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- D. Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Variation from Level Coursing: 1/8 inch in 3 feet.
- F. Variation of Joint Thickness: 1/8 inch in 3 feet.
- G. Maximum Variation from Cross Sectional Thickness of Walls: Plus or minus 1/4 inch.

3.08 REINFORCEMENT AND ANCHORS

- A. Install horizontal joint reinforcement 16 inches on center, unless noted otherwise.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend 16 inches minimum each side of opening.
- C. Place joint reinforcement continuous in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches. Extend 16 inches minimum each side of opening.
- E. Do not extend horizontal joint reinforcement across control or expansion joints, unless noted otherwise.
- F. Reinforce all bond beams with two (2) #5 bars placed 1 inch from bottom web, unless noted otherwise. Extend vertical reinforcement 6 inches into bond beams at all vertical reinforcing locations.
- G. Place reinforcing bars supported and secured against displacement. Maintain position within 1/2 inch of true dimension. Use rebar positioners to secure vertical reinforcement bars in place.
- H. Vertical reinforcing bars shall be centered in unit core and grouted solid, unless noted otherwise.

- I. At corners: Install one (1) #5 bar vertically in core full height of wall.
- J. At control joints when shown on the drawings install vertical rebar in the core adjacent to control joint full height of wall.
- K. Lap reinforcing bars (splice lap lengths) as follows unless noted otherwise on the drawings:
 - 1. #3 bars: 19 inch
 - 2. #4 bars: 25 inch
 - 3. #5 bars: 31 inch
 - 4. #6 bars: 37 inch
- L. Verify that anchorages embedded in concrete attached to structural steel members are properly placed. Embed anchorages in every second joint.
- M. Reinforce corners and intersections by lapping horizontal joint reinforcement or by using preformed pieces.
- N. Anchors and wall ties at metal stud and existing masonry construction shall be placed at 16 inches on center vertically and horizontally.

3.09 MASONRY FLASHINGS

- A. Install membrane flashing per manufacturer's instruction.
- B. Apply primer to substrate. Allow to dry.
- C. Install a stainless steel drip edge at the face of the veneer. Set drip in two beads of sealant. Flexible flashing to adhere on top of drip. Flashing shall extend to the wall face.

3.10 GROUTED COMPONENTS

- A. Install grout as provided under Section 04 05 16 – Masonry Grouting.
- B. Remove excess mortar from grout spaces.
- C. Place and consolidate grout fill without displacing reinforcing.
- D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening, unless noted otherwise.
- E. Work grout into masonry cores and cavities to eliminate voids. Do not grout in lifts greater than 12 inches without consolidating grout by rodding. Top of lift shall terminate a minimum of 1-1/2 inches from mortar joint, except at opening or top of wall.
- F. Install grout per ACI 530.

3.11 PREPARATION TO GROUT

- A. Block cells do have to align but it is best. See ACI 530-02, S-23 and S-24 for minimum grout space required and grout pour height.
- B. Must allow enough time for mortar to set so enough strength is gained to withstand the pressure of the fluid grout. For grout pours from 1 to 5 feet, wait 12 to 18 hours before grouting. For 12 inch and less pours, you can grout as each course is laid.
- C. Prevent excess mortar from extruding or falling into grout spaces. Mortar that projects more than 1/2 inch into the grout space shall be removed.
- D. At the foundation:

1. Grout must come in contact with the foundation.
2. Dowels in foundation must align with cores to be grouted.

E. Lap rebar shall be in accordance with ACI-530-02.

F. Place rebar in rebar positioners.

3.12 GROUTING

A. Grout to be provided from a ready-mix truck at the site or from a silo located on site. Trucking in tubs from an off-site location is not acceptable.

B. Grout should be moved from the mixer to the point of deposit as fast as practical.

C. Test grout slump. Must be 8 to 11 inch slump. (See TEK 9.4.)

D. Place grout within 1-1/2 hours of mixing and prior to initial set.

E. Grout lift height not to exceed 5 feet.

F. Grout pour height not to exceed ACI 530-02 Table 7 page S-24 in each day.

G. Consolidate and reconsolidate grout.

1. Consolidate grout pours 12 inches or less in height by mechanical vibration or puddling. Puddle with a wooden stick.
2. Consolidate pours exceeding 12 inches in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.
3. Use a low velocity vibrator with a 3/4-inch head. The vibrator is activated for one to two seconds in each grout cell.
4. Reconsolidation should generally take place between 3 and 10 minutes after placement. It must be done before plasticity is lost.

H. Grout may be placed by pouring from a bucket.

I. Stop lift at minimum 1-1/2 inch above or below a bed joint except the final pour.

3.13 CONTROL JOINTS

A. Do not continue horizontal joint reinforcement through control and expansion joints, unless noted otherwise.

B. Use preformed control joint block (sash) units on both sides of control joint, unless shown otherwise on Drawings.

C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.14 BUILT-IN WORK

A. As work progresses, build in metal door and glazed frames fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, lintels, columns, beams, and other items furnished by other Sections.

B. Build in items plumb and level.

C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build in organic materials subject to deterioration.

3.15 WATER REPELLANT

- A. After the brick is laid, apply the water repellant to the exposed surfaces of the brick windowsills.
- B. Cover all adjoining surfaces to protect them and to prevent from getting any water repellent on them.
- C. Immediately remove all inadvertent splashes using mineral surfaces before the product has dried.
- D. Test the product on ten loose brick that are not to be installed in the wall.
- E. Clean the brick before applying the product.
- F. Do not dilute the product.
- G. Apply with a brush.
- H. Apply two successive wet-on-wet applications.
- I. Coverage rate shall be 100-150 square feet/gallon.

3.16 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves and ground. Coordinate with other Sections of work to provide correct size, shape, and location.
- B. Obtain Architect/Engineer approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.17 CLEANING

- A. The face brick and concrete block [glazed block, and burnished block] shall be cleaned with water and non-metallic tools at the end of each workday or within 24 hours of laying the units of excess mortar and mortar smears.
- B. Cleaning of face brick shall be completed after 14 days and before 28 days of initial placement, the masonry shall be cleaned of all excess mortar, smears, and residue with a masonry cleaning solution.
 - 1. Extreme caution must be taken with cleaning the wall since damage to the masonry and mortar can result. The mortar must be maintained in a condition that after cleaning, the "skin" still remains on the mortar and no discoloration occurs to the mortar, brick, stone, or other components in or around the wall. The mason will take full responsibility for all damage that occurs during cleaning which could result in the requirement to replace the masonry construction.
 - 2. All cleaners utilized must be acceptable to the brick manufacturer.
 - 3. Follow the brick manufacturers and cleaning solution manufacturers procedures and recommendations.
 - 4. The cleaning solution must be premixed at the mason's shop in 55-gallon drums to the recommended dilution rate by the cleaning products manufacturer's recommendations.
 - 5. A small test area of the building will be cleaned with the solution.
 - 6. The wall is to be washed starting at the top and working all the way down to the bottom. Before applying the cleaning solution, the wall must be thoroughly soaked with water.
 - 7. The wall must be thoroughly rinsed with water to remove the masonry cleaning solution.
- C. Power washing of any kind is not acceptable.

3.18 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 50 00 - Temporary Facilities and Controls: Protection of provisions.

- B. Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.
- C. At day's end, cover unfinished walls to prevent moisture infiltration.

END OF SECTION

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SECTION 04 40 00
PRECAST WALL CAPS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Precast (cast stone) Wall Caps

1.02 RELATED SECTIONS

- A. Section 04 05 00 - Mortar and Masonry Grout: Masonry supporting wall.
- B. Section 05 50 00 - Metal Fabrications: Supports.

1.03 REFERENCES

- A. American Society of Testing and Materials (ASTM) International:
 - 1. ASTM A36 - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 4. ASTM A580 - Standard Specification for Stainless Steel Wire.
 - 5. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 6. ASTM C568 - Standard Specification for Wall Cap Dimension Wall Cap.

1.04 QUALITY ASSURANCE

- A. Wall Cap Supplier: Company specializing in quarrying cut Wall Cap with 10 years experience.
- B. Installer: Company specializing in installing cut Wall Cap with three (3) years documented experience and approved by manufacturer.

1.05 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures Submittals: Submittal provisions.
- B. Shop Drawings.
- C. Samples: Submit one (1) sample 6 inch x 6 inch sample illustrating general color range and texture, markings, and surface finish.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Deliver precast concrete units to project site in such quantities and at such times to assure continuity of installation. Schedules and priorities will be based on the information provided by the customer. Products to be packaged to protect the finish during transport. Precast may be a long lead time item and should be ordered accordingly.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements .
- B. Maintain materials and surrounding air to a minimum 40 degrees F (5 degrees C) prior to, during, and 48 hours after completion of work.

- C. During temporary storage on site, at the end of working day, or during rainy weather, cover Wall Capwork exposed to weather with non-staining waterproof coverings, securely anchored.

PART 2 PRODUCTS

2.01 REINFORCING MATERIALS

- A. Rebar used in some product designs to ensure safe handling.
- B. Corrugated Wall Ties - Included in moldings as the mechanical fastener. 22-gauge mill galvanized steel - 7/8" x 7".
- C. Threaded Inserts - Plastic inserts are included in very large castings such as large moldings, columns and stackable column components. These are for mechanical ties and not for lifting purposes.
- D. Adhesives - Latex - modified mortar or equivalent used on a stable substrate in conjunction with the mechanical fastener should be used. White cement can be used to adjust the greenish color created by using the latex mortar.
- E. Premium grade construction adhesives which come in tubes should be used for bonding columns and on flat surfaces where latex mortar cannot be used

2.02 CONCRETE MATERIALS

- A. Portland Cement: Type 1 Portland Cement Gray or Lehigh White
 - 1. Use only one brand, type and source of supply of cement throughout the project, unless otherwise acceptable to Architect.
- B. Coarse/Fine Lightweight Aggregate - Sand and Gravel: Hard, durable, selected and graded, free of material that causes staining or reacting with cement.
- C. Pigments: Nonfading, resistant to lime and other alkalies.
- D. Water: Drinkable, free from foreign materials in amounts harmful to concrete and embedded steel.
- E. Air-Entraining Admixture: Utilize standard mix designs incorporating admixtures which facilitate the workability, curing and strength of the mix.
- F. Compressive Strength: 2500-4000 psi minimum at 28 days.

2.03 FABRICATION

- A. General: Fabricate lightweight precast concrete units complying with manufacturing and testing procedures, quality control recommendations, and following dimensional tolerances, unless otherwise indicated. Concrete mix designs are formulated in accordance with ACI standards.
- B. Molds: Accurately construct molds mortar-tight and of sufficient strength to withstand pressures due to concrete placing operations and temperature changes. Maintain mold work to provide completed precast concrete units of shapes, lines and dimensions indicated, within specified fabrication tolerances.
- C. Dimensional Tolerances of Finished Units: Ornamental architectural precast concrete, being tapered by design, is measured for length, width and thickness at the surface from which the mold is loaded maintaining plus or minus 1/16 of an inch tolerance. Overall height and width measured at face adjacent to mold at time of casting:
- D. Surface Finish: Fabricate lightweight precast units and provide exposed surface finished as follows:
 - 1. Modern – Smooth, relatively void free texture.
 - 2. Color: Select from CDI color chart to minimize variations in color.

PART 3 EXECUTION

- A. Install precast concrete members plumb, level and in alignment. Provide temporary supports and bracing as required to maintain position, stability and alignment as members are being permanently connected.
- B. All butt joints, bed joints and penetrations joints shall have the mortar raked back and backer rod and sealant provided.
- C. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.
- D. Accessories: Install clips, hangers and other accessories required for erection of precast units to supporting members and backup materials.
- E. Anchor units in final position by bolting, welding, grouting, or as otherwise indicated. Remove temporary shims, wedges and spacers as soon as possible after anchoring and grouting are completed.
- F. Cleaning: Clean exposed facings to remove dirt and stains on units after erection and completion of joint treatments. Protect other work from damage due to cleaning operations. Do not use cleaning materials or processes that could change the character of exposed concrete finishes.

END OF SECTION

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SECTION 05 52 00
METAL RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Steel pipe handrails, railings, and fittings. At stairs & along westerly sidewalk edge.

1.02 RELATED SECTIONS

- A. Section 05 72 00- Aluminum Decorative Railings; masonry mounted decorative railings.
- B. Section 09 91 00 – Painting: Paint finish.

1.03 DESIGN REQUIREMENTS

- A. Railing assembly, wall rails, and attachments to resist lateral force of 200 pounds at any point without damage or permanent set.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.05 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on drawings.

PART 2 PRODUCTS

2.01 STEEL RAILING SYSTEM

- A. Pipe: ASTM A53, Grade B Schedule 40.
- B. Guardrail and handrails shall be 2-inch round, ASTM A53, Grade B Schedule 40 steel and other sizes as indicated. Connection plates and sleeves shall be steel. Welding Materials: AWS D1.1; type required for materials being welded. Use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding or by welding and grinding. Shopped primed with suitable primer to accommodate top coat.

2.02 FABRICATION

- A. Fit and shop assemble components in largest practical sizes, for delivery to site.
- B. Fabricate components with joints tightly fitted and secured.
- C. Continuously seal joined pieces by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Guardrails, handrails and connections shall be designed and detailed by the supplier/manufacturer to resist a 200 pound lateral load applied at any point on the system per IBC and OSHA requirements.

- F. Accurately form components, to each other and to building structure.
- G. Prepare steel surfaces in accordance with SSPC SP6 and prime paint.
- H. Paint Finish at Exterior Guardrail, handrails and associated brackets:
 - 1. Shop and Touch-Up Primer: Tnemec Tneme-Zinc 90-97, no substitutions.
 - 2. Paint: Tnemec Series 161 epoxy, no substitutions.
- I. Coal Tar Paint:
 - 1. Tnemec Series #C46-465, black.
 - 2. Sherwin Williams, Tar Guard Coal Tar Epoxy, B69B60, black.
 - 3. Rust-oleum C9578 System Coal Tar Epoxy.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Beginning of installation means erector accepts existing conditions.
- C. Take field measurements prior to preparation of shop drawings and fabrication, where possible, without delay to job progress. Allow for trimming and fitting wherever taking field measurements before fabrications.

3.02 FABRICATION

- A. Fabricate and shop assemble in lengths not to exceed 24 feet for field erection. Expansion joints shall be designed and detailed into the railings at a maximum of 24 feet.
- B. Posts shall not interrupt the continuation of the top rail at any point along the rail, including corners and end terminations (OSHA 1910.23).
- C. The top surface of the top rail shall be smooth and shall not be interrupted by projections.
- D. Fit and shop assemble components in largest practical sizes, for delivery to site.
- E. Fabricate components with joints tightly fitted and secured.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- G. Continuously seal joined pieces by continuous welds.
- H. Form exposed work true to line and level with accurate angles and surfaces and straight, true edges. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise shown on the contract drawings. Form bent-metal corners to the smallest radius possible without causing grain separation of otherwise impairing the work. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline.
- I. Accurately form components, to each other and to building structure.
- J. Exterior guardrail, handrails and associated brackets preparation and finishing:
 - 1. Prepare surfaces in accordance with SSPC SP3. Surfaces exposed to view shall have the surface prepared in accordance with SSPC SP6 to 1.0 to 1.5 blast profile.
 - 2. Prepare surfaces in accordance with SSPC SP3. Surfaces exposed to view shall have the surface prepared in accordance with SSPC SP6 to 1.0 to 1.5 blast profile.
 - 3. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

4. Prime paint all items with one coat Tnemec Tneme-Zinc 90-97, 3 mils thick, and one coat Tnemec Series 161 epoxy, 4 to 6 mils. Color(s) shall be as selected by architect.

3.03 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

3.04 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Provide anchors, and plates required for connecting railings to structure.
- C. Surfaces in contact with concrete, grout or masonry shall be protected with a coat of coal tar paint or other approved material.
- D. Perform cutting, welding and fitting required for installation. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack. Fit exposed connections accurately together to form tight hairline joints.
- E. Do not weld, cut or abrade the surfaces of units which have been coated or finished after fabrication, and are intended for field connections.
- F. Adjust railings prior to securing in place to ensure proper matching at butting joints and correct alignment throughout their length.
- G. Space posts not more than 6 feet on centers, unless otherwise shown on the contract drawings. Plumb posts in each direction. Secure posts and handrails to building construction.
- H. Expansion joints shall be installed at 24 feet maximum centers.

3.05 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch.

END OF SECTION

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SECTION 05 72 00
ALUMINUM DECORATIVE RAILINGS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Aluminum decorative railing mounted on masonry walls at exterior entrance stairs.

1.02 REFERENCES

- A. AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- B. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Wire, Profiles, and Tubes; 1996.
- C. ASTM E 935 - Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings.
- D. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
- E. ADA - American with Disabilities Act Accessibility Guidelines.
- F. ICC International Building Codes

1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Manufacturer's data sheets on each product to be used, including;
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Drawings showing fabrication and installation of handrails including plans, elevations, sections, details of components, anchor details, and attachment to adjoining units of work.
- D. QUALITY ASSURANCE
- E. Railings Structural Requirements:
 - 1. Guards shall be able to resist a single concentrated load of 200 pounds applied in any direction at any point along the top.
 - 2. Infill area of guardrail system capable of withstanding a horizontal concentrated load of 200 pounds applied to one square foot at any point in the system.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Materials to be delivered to the job site in good condition and adequately protected against damage as handrails are a finished product.
- B. Store in a location and manner to avoid damage. Store handrails and components in a dry, ventilated area. Do not store around uncured concrete or harsh chemicals.

1.05 PROJECT CONDITIONS

- A. Maintain environmental conditions within limits recommended by manufacturer for optimum results.
- B. Field Measurements: Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
- C. Coordinate railing fabrication schedule with construction progress to avoid delays.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Badger Railing 3880 W. Milwaukee Road Milwaukee, WI 53208
www.badgerrailing.com
 - 1. Other: Railing Works Architectural Railing Systems.
 - 2. Or Equal

2.02 ALUMINUM RAILINGS

- A. Pre-manufactured Railing Systems:
 - 1. Basis of Design: Badger Railing
 - a. Ultralox
 - b. Picket with Mid-Rail System
 - 2. Or Equal
- B. Railing Styles:
 - 1. Custom embed mount.
- C. Post and Mounting:
 - 1. 3 inch Core Mount.
- D. Materials:
 - 1. Pickets: 1 inch square hollow extrusion; 6063-T6 Alloy.
 - 2. Top Handrail: square hollow extrusion; 6063-T6 Alloy.
 - 3. Bottom Rail: Receiver square hollow extrusion; 6063-T6 Alloy.
 - 4. Plugs and Post Caps: Aluminum Casting; A356-T6 Alloy.
 - 5. Base plate to suit embed application
- E. Fasteners:
 - 1. 18-8 & 410-grade Stainless Steel and/or Aluminum Fasteners.
- F. Connections: Railing manufacturer's standard mechanical fasteners and fittings, providing flush, smooth, rigid joints that can be removed and reconnected after installation.
- G. Exposed Ends of Hollow Members: Closed with manufacturers prefabricated end fittings.
- H. Anchors and Inserts: Stainless steel, capable of withstanding structural design loads specified.
 - 1. Cast-in-place anchors.

2.03 FINISH:

- A. Electrostatically applied polyester powder coating fused to aluminum, complying with AAMA 2604 standards. Color to be selected by Architect from railing manufacturers range. As selected by Architect. Color: White or Black or Bronze.
- B. AAMA 2605 fluoropolymer finish. Color and specifications to be selected by Architect.

2.04 ACCESSORIES

- A. Grout and Anchoring Cement: Non-shrink, non-metallic, non-corrosive, waterproof cement-based structural grout complying with ASTM C 1107.

2.05 FABRICATION

- A. Fabricate handrails and railing systems to comply with manufacturer's printed requirements, project design requirements, details, dimensions, and finish but not less than the structural requirements to support required loads. Disassemble handrails and railing only as necessary for shipping and handling.
- B. Clearly mark all components for onsite reassembly and installation.
- C. Use connections that maintain structural capacity of joined members.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine system components, substrate, and conditions where railing systems are to be installed.
- B. Notify Architect of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected.
- C. Verify that reinforcement and anchoring devices are the correct type, have been located correctly, and have been installed properly.

3.02 PREPARATION

- A. Coordinate drawings, diagrams, templates, instructions, and directions for installation of anchors, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors, which are to be embedded in concrete as masonry construction.
 - 1. Manufacturer shall supply all integral hardware for connection of handrail and railing to each other.
 - 2. Provide hardware needed to connect handrail or railing to adjoining structures.
 - 3. Coordinate delivery of such items to Project site.

3.03 INSTALLATION GENERAL

- A. Install in accordance with manufacturers' instructions and detailed drawings.
- B. Embed in masonry construction per drawings and per manufacturers' recommendations.
- C. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing handrails and railings. Set handrails and railings accurately in location, alignment, and elevation, measured from established lines and levels.
 - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means.
 - 2. Align handrails and railing so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- D. Fit exposed connections together to form tight, hairline joints.
- E. Corrosion Protection: Coat concealed surfaces of aluminum alloys that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- F. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary to secure in-place construction. Separate dissimilar materials with bushings, grommets, or washers to prevent electrolytic corrosion.

- G. Tap water containing mild soaps, detergents, or automotive cleaners should be used on painted aluminum surfaces.

3.04 PROTECTION

- A. Protect installed products from damage by subsequent construction activities, until completion of Project.
- B. Field repair of damaged product finishes with Manufactures painted color touch up only. Return items that cannot be repaired to the manufacturer for repair or replacements.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items, other than shop prefabricated casework.
- B. Hardware and attachment accessories.

1.02 RELATED SECTIONS

- A. Section 06 41 00 - Architectural Wood Casework: Shop fabricated custom cabinetwork.
- B. Section 09 91 00 – Painting: Painting and finishing of finish carpentry items.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A135.4 - Basic Hardboard.
 - 2. ANSI A208.1 - Mat Formed Wood Particleboard.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. Architectural Woodwork Institute (AWI):
 - 1. AWI - Quality Standards Illustrated.
- D. American Wood Preservers Association (AWPA):
 - 1. AWPA C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes.
 - 2. AWPA C20 - Structural Lumber Fire Retardant Treatment by Pressure Process.
- E. BHMA A156.9 - Cabinet Hardware.
- F. Federal Specifications Unit (FS):
 - 1. FS MMM-A-130 - Adhesive, Contact.
 - 2. FS A-A-1936 - Adhesive, Contact, Neoprene Rubber.
- G. Hardwood Plywood Manufacturer's Association (HPMA):
 - 1. HPMA HP - American Standard for Hardwood and Decorative Plywood.
- H. National Electric Manufacturers Association (NEMA):
 - 1. NEMA LD3 - High Pressure Decorative Laminates.
- I. National Hardwood Lumber Association (NHLA).
- J. National Wood Window and Door Association (NWWDA):
 - 1. NWWDA I.S.4 - Water Repellant Preservative Treatment for Millwork.
- K. National Institute of Standards and Technology (NIST):
 - 1. NIST PS 1 - Construction and Industrial Plywood.
 - 2. NIST PS 20 - American Softwood Lumber Standard.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

- B. Shop Drawings: Indicate plans and elevations, materials, surface grain directions, profiles, assembly methods, fastening methods, jointing details, hardware, and accessories to a minimum scale of 3 inch to 1 foot.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Premium Grade quality.
- B. Work in this Section shall comply with the specified grade(s) or Work and Section(s) of the current edition of the AWI Quality Standards.

1.06 QUALIFICATIONS

- A. Contractors and their personnel engaged in the work shall be able to demonstrate successful experience with work of comparable extent, complexity, and quality to that shown and specified.
- B. Manufacturer shall be a member in good standing of the AWI.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire retardant requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements : Product storage and handling provisions.
- B. Protect work from moisture damage according to AWI Quality Standards, Section 01 70 00 - Execution and Closeout Requirements.

1.09 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.10 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Project coordination provisions.
- B. Coordinate the work with applicable mechanically and electrical trades and rough-in and installation of associated and adjacent components.

PART 2 PRODUCTS

2.01 WOOD MATERIALS

- A. Hardwood Lumber: Graded in accordance with AWI Lumber Grade I; Red Oak species, maximum moisture content of 6-8 percent; with plain sawn grain, of quality suitable for transparent finish.
- B. Hardwood Lumber:
 - 1. Hard Maple, Cherry and Walnut species, select grade, clear, no knots, no imperfections.
 - 2. Maximum moisture content of 6-8 percent.
 - 3. Plain sawn, S4S, of quality suitable for transparent finish.
- C. Check-In Desk Casework

2.02 SHEET MATERIALS

- A. Wood Particleboard: Graded in accordance with AWI Premium standard, composed of wood chips, medium density made with water resistant adhesive; of grade to suit application; sanded faces, minimum 45 pound density.
- B. Hardwood Plywood: Graded in accordance with AWI Grade A; Red Oak face veneer species, veneer cure, plain sliced cut.
- C. Plywood for shelving: $\frac{3}{4}$ inch thick APA rated sanded plywood, A-B, Group 1, 2, or 3 species, Exposure 1. Install $\frac{3}{4}$ by $\frac{3}{4}$ edge banding secured to the edges.

2.03 FASTENERS

- A. Fasteners: Of size and type to suit application.
- B. Concealed Joint Fasteners: Threaded steel.

2.04 HARDWARE

- A. Reference the drawings for specifications on the hardware.

2.05 FABRICATION

- A. Fabricate to AWI Premium standards.
- B. Shop assemble work for delivery to site, permitting passage through building openings.
- C. Shop prepare and identify components for grain matching during site erection.
- D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.06 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.
- D. Prime paint or seal surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Install work in accordance with AWI Premium Quality Standard.

- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- D. Install components with fasteners.
- E. Install hardware in accordance with manufacturer's instructions.

3.03 PREPARATION FOR SITE FINISHING

- A. Countersink anchorage devices at exposed locations. Apply wood filler in exposed fastener indentations. On large anchorage devices, conceal with solid wood plugs of species to match surrounding wood, finish flush with surrounding surfaces. Sand work smooth.
- B. Site Finishing: Refer to Section 09 91 00.
- C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 ERECTION TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

3.05 ADJUSTING

- A. Adjust work under provisions of Section 01 70 00.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.06 CLEANING

- A. Clean work under provisions of Section 01 70 00.
- B. Clean work.

END OF SECTION

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated custom casework and countertops of high pressure decorative laminate finish with hardware:
 - 1. Base and wall cabinets.
 - 2. P. Lam countertops.
 - 3. Countertop supports.
 - 4. Cabinet hardware.
 - 5. Casework

1.02 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry: Concealed blocking.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A156.9 - Cabinet Hardware.
 - 2. ANSI A208.1 - Mat-Formed Wood Particleboard.
- B. Architectural Woodwork Standards (AWS), latest edition.
- C. International Code Council:
 - 1. IBC - International Building Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
- D. National Electrical Manufacturers Association (NEMA):
 - 1. NEMA LD 3 - High Pressure Decorative Laminates.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Indicate plans and elevations, materials, profiles, assembly methods, joint details, fastening methods, accessories, hardware, and schedule of finishes.
- C. Product Data: Submit data for hardware accessories. Submit data for laminates.
- D. Samples: Laminate.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with Architectural Woodwork Standards.
- B. Work in this Section shall comply with the Premium Grade of the current edition of the AWS.

1.06 QUALIFICATIONS

- A. Contractors and their personnel engaged in the work shall be able to demonstrate successful experience with the work of comparable extent, complexity and quality to that shown and specified.
- B. Woodwork manufacturer shall have no less than 5 years of production experience similar to this project, whose qualifications indicate the ability to comply with the requirements of this section.

- C. The woodwork manufacturer must have at least two projects in the past 5 years where the value of the woodwork was within 50% of the cost of woodwork on this project.

1.07 WARRANTY

- A. The woodwork manufacturer shall provide a written 5 year warranty on all of the woodwork products produced under this section. The manufacturer shall, without charge to the owner, repair or replace any woodwork that is defective or develops problems within the warranty time. Defectives or problems shall include, but not limited to, high pressure laminate delamination from the substrate, woodwork joint failure, hardware issues, and adjustments to doors and drawers.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Protect units from moisture damage according to AWS.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. During and after installation of Work of this section, maintain same temperature and humidity conditions in building spaces as will occur after occupancy.

1.10 FIELD MEASUREMENTS

- A. The woodwork manufacturer is responsible for details and dimensions not controlled by job conditions and shall show on the shop drawings all required field measurements beyond their control. The general contractor and the woodwork manufacturer shall cooperate to establish and maintain these field dimensions.
- B. Verify field dimensions prior to fabrication.

1.11 COORDINATION

- A. Coordinate the work applicable mechanical and electrical trades and rough-in.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. Core shall be 45 lb. density particleboard meeting the requirements of AWS.
- B. Plastic laminate shall meet the requirements of AWS for its intended use.
 - 1. Type/Grade:
 - a. General Purpose Grade 10 (HGS), 0.044 inch thick: For horizontal surfaces.
 - b. Horizontal Postforming Grade 12 (HGP), 0.035 inch thick: For countertops with curved edges.
 - c. Vertical Surface (VGS), 0.028 inch thick: For vertical surfaces.
 - 2. Color and Pattern: Selected by Architect from manufacturer's standard.
 - 3. Manufacturers: Formica, Pionite, Wilsonart.
- C. Edge band for Door and Drawer Front Edging: 3mm PVC. Color selected by Architect.
- D. Adhesive: Type II.
- E. Hardware:
 - 1. Pulls:
 - a. Wire pull, 4 inch, metal, satin nickel finish, Liberty Hardware Part #P604BCC-SN-C or equal.

2. Drawer Guides:
 - a. Typical drawer: Grass DynaPro, soft close damping, self-closing, ball bearing, full extension, 100 pound loading. or
 - b. Typical drawer: Accuride Medium Duty Slide 3832, ball bearing, full extension, 100 pound loading.
3. Hinges: Heavy duty, five knuckle, Grade I, 2 ¾ inch institutional type hinge, 120 degree minimum opening, AWS compliant. One pair on doors up to 48 inches tall, one and one half pair on doors over 48 inches tall.
4. Adjustable Shelf Supports: twin pin design, anti-tip 5 mm minimum steel pins, 250 load rating.
5. Door and drawer bumpers: Clear, self-adhesive.
6. Locks:
 - a. Disc tumbler cylinder cam lock, Comp X National, 26D finish. or
 - b. Best Access Systems Cabinet Lock 3L Series keyed alike with the door lock. or
 - c. Schlage CL-Series Cabinet Lock with conventional cylinder.
7. Countertop support brackets.
8. Grommets: Plastic, round, two piece wire grommets. Sized large enough for computer power cords and data cables. Provide a minimum of one at each workstation.
9. Door Catches: Stanley SP41 (US28).

2.02 FABRICATION

- A. Plastic Laminate Casework:
 1. AWS Premium Grade.
 2. AWS Construction Type A frameless, and cabinet and door interface style 1, flush overlay.
 3. Exposed interior surfaces shall be HPDL.
 4. Semi-exposed surfaces: Low-pressure melamine overlay.
 5. Drawers shall meet the requirements of AWS.
 6. SPECIFIER: SPECIFY HERE OR ON THE DRAWINGS THE EXPOSED FINISH FOR THE BASE TOEKICK.
- B. Countertops:
 1. AWS Premium Grade.
 2. Core shall be #45 particleboard meeting the requirements of AWS.
 3. Triple cove unless noted otherwise on the drawings. SPECIFIER: TRIPLE COVE CAN BE FABRICATED IN DEPTHS UP TO 34 INCHES MAXIMUM.
- C. The following requirements are in addition to and/or above the AWS requirements:
 1. Cabinet backs shall be 3/8 inch minimum thickness for base units and 1/2 inch minimum thickness for wall units.
 2. Drawer subfronts and backs shall be 3/4 inch thick.
 3. Drawer bottoms shall be 3/8 inch minimum thickness.
- D. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- E. Apply plastic laminate finish in full-uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Locate counter butt joints minimum 2 feet from sink cut-outs.
- F. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
- G. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal contact surfaces of cut edges.
- H. Provide solid wood blocking at 24 inches on center in base of all base cabinets to support cabinet bottom.
- I. Items indicated on drawings to be stained, varnished, or painted, shall be done so conforming to the requirements of Section 09 91 00 - Painting.

- J. Provide two (2) bumper pads at each drawer and door.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify mechanical, electrical, and building items affecting work of this section are in place and ready to receive this work.
- C. Verify adequacy of backing and support framing.
- D. Verify locations and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

- A. Installation shall be in accordance with AWS Premium Grade.
- B. Set and secure casework in place; rigid, plumb, and level.
- C. Use fixture attachments in concealed locations for wall mounted components.
- D. Use concealed joint fasteners to align and secure adjoining cabinet units and counter tops.
- E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- F. Secure cabinet bases to floor using appropriate angles and anchorages.

3.03 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing provisions.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 06 61 16
SOLID SURFACE FABRICATIONS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Break Room countertop and sink bowl.
- B. Check-In Desk Countertops
- C. All items listed as solid surface material.

1.02 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 06 41 00 - Architectural Wood Casework.
- C. Section 07 92 00 - Joint Sealants.

1.03 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirement with adjacent work.
- C. Samples: Submit minimum 2 inch x 2 inch (156 mm x 156 mm) samples. Indicate full range of color and pattern variation. Approved samples will be retained as a standard for work.
- D. Product Data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project closeout documents.

1.04 REFERENCE STANDARDS

- A. ANSI/NPA A208.2-09 Medium Density Fiberboard (MDF) For Interior Applications
- B. ASTM C920-14a Standard Specification for Elastomeric Joint Sealants
- C. ASTM D638-10 Standard Test Method for Tensile Properties of Plastics
- D. ASTM D785-08 Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials
- E. ASTM D790-10 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- F. ASTM D5420-10 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)
- G. ASTM E84-14 Standard Test Method for Surface Burning Characteristics of Building Materials
- H. ASTM E228-11 Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer
- I. ASTM G21-13 Standard Practice for Determining Resistance of Synthetic
- J. Polymeric Materials to Fungi
- K. ASTM G22-76(96) Standard Practice for Determining Resistance of Plastics to
- L. Bacteria
- M. ASTM G155-13 Standard Practice for Operating Xenon Arc Light Apparatus for
- N. Exposure of Non-Metallic Materials
- O. CSA B45.5-11/
- P. IAPMO Z124-2011 Plastic Plumbing Fixtures
- Q. NFPA 255-06 Standard Method of Test of Surface Burning Characteristics of
- R. Building Materials

S.	NSF/ANSI 51-07	Food Equipment Materials
T.	SCAQMD Rule 1168	Adhesive and Sealant Applications (amended January 2005)
U.	UL 723	Standard for Test for Surface Burning Characteristics of Building Materials
V.	UL Environment/	Standard for Chemical Emissions for Building Materials,
W.	GREENGUARD	Finishes and Furnishings, Section 7.1
X.	UL 2818	
Y.	UL Environment/	Gold Standard for Chemical Emissions for Building Materials,
Z.	GREENGUARD	Finishes and Furnishings, Section 7.1 and 7.2
AA.	UL 2824	GREENGUARD Certification Program, Method for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers

1.05 DELIVERY, STORAGE AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Deliver no components to project site until areas are ready for installation. Store indoors.
- C. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.06 QUALITY CRITERIA

- A. Applicable Standards: Standards of the following, as referenced herein:
 - 1. American National Standards Institute (ANSI).
 - 2. American Society for Testing and Materials (ASTM)
 - 3. National Electrical Manufacturers Association (NEMA)
- B. Allowable tolerances:
 - 1. Variation in component size: $\pm 1/8$ inch (3 mm)
 - 2. Location of openings: $\pm 1/8$ inch (3 mm) from indicated location.
- C. Fabricator: Company specializing in performing the work of this section certified by manufacturer. Company with a minimum of 4 years experience.

1.07 WARRANTY

- A. Provide manufacturer's warranty. The manufacturer warrants at its option repair or replace, without charge, such product if it fails due to a manufacturing defect during the first 10 years after initial installation. This includes reasonable labor charges needed to repair or replace the product covered hereunder.

PART 2 PRODUCTS

2.01 SOLID POLYMER FABRICATIONS

- A. Acceptable Product: CORIAN surface by DuPont Company or equal.
- B. Solid polymer components:
 - 1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
 - 2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.
- C. Countertops: 1/2 inch thick CORIAN, adhesively joined with no exposed seams, having 1 1/2-inch edge details unless indicated otherwise on the drawings.

D. Under counter Break Room sink bowl; Corian accessible sink #5610.

E. Color selected from price category 1 through 4.

2.02 ACCESSORY PRODUCTS

A. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints.

B. Sink/lavatory mounting hardware:

1. Manufacturer's standard bowl clips, panel inserts and fasteners for attachment of undermount sinks/lavatories.

2.03 FABRICATION

A. Factory fabricate components to greatest extent practicable to sizes and shapes indicated, in accordance with approved shop drawings.

B. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints.

C. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the Drawings.

D. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair or reject defective and inaccurate work.

E. Coved Backsplashes at counters with sinks. Fabricate 1/2 inch (13 mm) radius cove at intersection of counters and backsplashes. Form backsplashes using 1/2 inch (19 mm) CORIAN.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings and product installation data.

B. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Keep components and hands clean when making joints.

C. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Keep clean until Date of Substantial Completion. Replace stained components.

D. Protect surfaces from damage until Date of Substantial Completion. Repair work or replace damaged work that cannot be repaired to architect's satisfaction.

E. Provide continuous bead of sealants at transition joints to adjacent materials.

3.02 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Cleaning provisions.

B. Clean all work.

END OF SECTION

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SECTION 07 13 00
SHEET WATERPROOFING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Elastomeric Bituthene waterproofing membrane for use at masonry retaining wall conditions below grade.

1.02 RELATED WORK

- A. Section 31 23 23 – Backfill and Compaction.
- B. Section 03 30 00 - Cast-in-Place Concrete.
- C. Division 4 – Below grade decorative CMU Retaining walls.

1.03 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Submit Product Data: Indicate properties of primer, bitumen, and mastic.
- C. Submit manufacturer's installation instructions.
- D. Warranty.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient and surface temperatures above 40 degrees F for 24 hours before application and continuously until waterproofing has cured.

1.05 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in waterproofing sheet membranes with minimum three (3) years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum three (3) years documented experience and approved by manufacturer.

1.06 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five (5) year manufacturer warranty for waterproofing failing to resist penetration of water.
- C. For warranty repair work, remove, and replace materials concealing waterproofing.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Grace Construction Products.
- B. W.R. Meadows, Inc.
- C. Carlisle.

2.02 MATERIALS

- A. Below Grade Wall Membrane Waterproofing: Bituthene 3000 or Bituthene Low Temperature Below Grade Waterproofing Membrane by Grace Construction Products.
- B. Wall Membrane Primer: Bituthene Primer WP-3000 or Primer B2 by Grace Construction Products.
- C. Under Floor Slab and Footing Membrane Waterproofing: Preprufe 300 R by Grace Construction Products.
- D. Liquid Termination: Bituthene Liquid Membrane by Grace Construction Products.
- E. Protection Board: Protection Board PB-3000 by Grace Construction Products.
- F. Adhesive: Protection Board Adhesive PBA-3000 by Grace Construction Products.
- G. Termination: Polymer Batten Strip by Firestone or equal and stainless steel fasteners.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify surfaces are solid, free of frozen matter, loose particles, cracks, pits, rough projections, and foreign matter detrimental to adhesion and application of waterproofing.
- B. Do not apply waterproofing to damp, frozen, dirty, dusty, or deck surfaces unacceptable to applicator.
- C. Verify items which penetrate surfaces to receive waterproofing are securely installed.
- D. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

- A. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- B. Apply primer as recommended by manufacturer.

3.03 APPLICATION

- A. Install waterproofing system in strict accordance with manufacturer's instructions.
- B. Install transitions between wall and under slab/footing waterproofing system in strict accordance with manufacturer's installation instructions.
- C. Install liquid termination for wall waterproofing at locations recommended by manufacturer.
- D. Terminate wall waterproofing system below grade. Apply rigid termination and fasteners at top edge of membrane.
- E. Install protection board at all locations.

END OF SECTION

SECTION 07 21 13
BOARD INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at exterior cavity wall.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Section 04 20 00 - Unit Masonry: Insulation materials for cavity wall construction.

1.03 RELATED SECTIONS

- A. Section 04 20 00 - Unit Masonry: Cavity wall construction.

1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C240 - Standard Test Methods of Testing Cellular Glass Insulation Block.
 - 2. ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
 - 3. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.
 - 4. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - 5. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
 - 6. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 7. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 8. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.
 - 9. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 10. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
- B. International Code Council:
 - 1. IBC - International Building Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
 - 2. IECC - International Energy Conservation Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
- D. Underwriters Laboratories Inc. (UL):
 - 1. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements Environmental conditions affecting products on site.
- B. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 INSULATION MATERIALS

- A. Polystyrene Insulation Type A: ASTM C578 Type IV; extruded cellular type, conforming to the following:

1. Thermal Resistance: 5-year aged R-values of 5.4 and 5.0 minimum per inch thickness at 40°F and 75°F, respectively.
2. Water Absorption: In accordance with ASTM C272, 0.1 percent by volume maximum.
3. Compressive Strength: Minimum 25 psi.
4. Flame Spread Index: Less than 75 [*25 where required by building code*].
5. Smoke-Developed Index: Less than 450.
6. Thickness: Thickness indicated in schedule.

B. Manufacturers:

1. DiversiFoam Products.
2. Dow Chemical: Styrofoam brand.
3. Foamular.
4. Owens Corning.
5. Or Equal.

2.02 ADHESIVES

A. Adhesive: Type recommended by insulation manufacturer for application.

B. Acceptable Manufacturer's products:

1. Henkel Loctite PL300 Foam Board Adhesive
2. Henkel Loctite PL Premium Construction Adhesive.
3. BASF MasterWeld 420.
4. DAP Beats the Nail Panel and Foam Construction Adhesive.

2.03 FOAM SEALANT

A. Polyurethane insulating foam sealant; one-component, gun or straw applied; UL classified; containing no solvents, CFC's or VOC's; moisture-resistant.

B. Products:

1. Great Stuff Pro by Dow Chemical Company.
2. Handi-Foam by FOMO.
3. Kwik Foam by DAP, Inc.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.
- C. Verify substrate surface is flat, free of fins, irregularities, and materials or substances that may impede adhesive bond.

3.02 INSTALLATION

A. Cavity Walls:

1. Apply 2-inch diameter daubs of adhesive spaced approximately 12 inches on center both ways on inside face of insulation boards.
2. Butter all edges of insulation board with adhesive to provide continuous vapor barrier.
3. Do not install until air/vapor barrier system of Section 07 27 26 installation is complete.
4. Install boards horizontally between wall reinforcement.

5. Press insulation firmly into liquid-applied air/vapor retarder substrate. At locations where liquid-applied air/vapor barrier is not the substrate, apply 2-inch diameter daubs of adhesive spaced approximately 12 inches on center both ways on inside face of insulation.
6. Place boards in a method to maximize contact bedding. Stagger joints. Butt edges and ends tight to adjacent board and to protrusions.
7. Cut and fit insulation tight to protrusions or interruptions to insulation plane.
8. Install foam sealant at insulation joints and around penetrations through insulation. Once foam has set up, cut foam back to plane of insulation, so that it does not protrude beyond face of insulation.

3.03 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protection of finished Work provisions.
- B. Do not permit Work to be damaged prior to covering insulation.

3.04 SCHEDULES

- A. Cavity Wall Insulation: Type A, extruded polystyrene, 2-inch thick, square edges.
- B. Other locations as noted.

END OF SECTION

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SECTION 07 21 16
BLANKET INSULATION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Batt insulation in exterior wall construction; and batt insulation for filling perimeter door and window shim spaces, crevices in exterior wall and roof assembly, and other miscellaneous areas.
- B. Sound batt insulation for interior walls.

1.02 RELATED WORK

- A. Section 07 27 13 – Sheet Membrane Air/Vapor Retarder.
- B. Section 09 29 00 – Metal Studs & Gypsum Board.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. International Code Council:
 - 1. IBC - International Building Code, 2025 Edition, and referenced standards with 2018 State of Wisconsin amendments.
 - 2. IECC - International Energy Conservation Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
- D. Underwriters Laboratories Inc. (UL):
 - 1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS (NONE)

1.05 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

PART 2 PRODUCTS

2.01 BATT INSULATION

- A. Batt Insulation: ASTM C665; preformed fiberglass; unfaced. Owens Corning Fiberglas Thermal Batts.
- B. Sound Batt Insulation for Interior Walls: 3-1/2 inch unfaced, Owens Corning Sound Attenuation Batt Insulation or Certainteed Acousta Therm Batts.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate adjacent materials and insulation are dry and ready to receive installation.
- C. Verify mechanical and electrical services within walls have been installed and tested.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Install in exterior walls spaces without gaps or voids.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.

END OF SECTION

SECTION 07 25 00
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Continuous weather resistive barrier at exterior wall infill as indicated on Drawings.

1.02 RELATED WORK

- A. Division 9 – Exterior Gypsum board and Metal studs.
- B. Section 07 92 00 - Joint Sealants: Penetration sealing.

1.03 REFERENCES

- A. American Society of Civil Engineer (ASCE):
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C920 - Standard Specification for Elastomeric Joint Sealers.
 - 2. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen.
 - 3. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

1.04 SUBMITTALS (NONE)

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Project condition provisions.
- B. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Acceptable Manufacturer:
 - 1. Tygar Metro Wrap.
 - 2. DuPont Tyvek Commercial Wrap.
- B. Fasteners: Per manufacturer's recommendation.
- C. Tape: Provide at all seams and termination edges. Install per manufacturer's recommendation.
- D. Head, Jamb, and Sill Wraps: Manufacturer's standard.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify surfaces are sound, clean, and free of frost, oil, grease, dirt, excess mortar or other contaminants

- B. Substrate must be continuous and secure, and free of projections and irregularities that may be detrimental to membrane installation.
- C. Sheathing fasteners must be installed into solid backing and set flush with sheathing.
- D. Do not install air barrier over substrates that are wet to touch.

3.02 INSTALLATION

- A. Install prior to door and window installation.
- B. Install full height of wall.
- C. Upper rolls should overlap bottom rolls by 6 inches minimum.
- D. Bottom edge should extend over seam between the sill plate and foundation.
- E. Secure barrier according to manufacturer's recommendations.
- F. Cut and fold into door and window openings.
- G. Tape all seams. Tape around all mechanical and plumbing penetrations.
- H. Install flexible wrap at the window sills prior to window installation.
- I. After window installation, protect window jambs and head with flashing wrap.

3.03 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Weather resistive barrier is to be protected per manufacturer's recommendation.

END OF SECTION

SECTION 07 27 13
PLASTIC SHEET MEMBRANE AIR/VAPOR RETARDER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. A continuous vapor retarder at the exterior walls and finished with gypsum board.

1.02 RELATED SECTIONS

- A. Division 7 – Batt insulation.
- B. Division 9 – Gypsum board and Metal studs.
- C. Section 07 92 00 - Joint Sealants: Penetration sealing.

1.03 REFERENCES

- A. International Code Council: IBC - International Building Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments. IECC - International Energy Conservation Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.

1.04 Submittals (NONE)

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Vapor retarder:
 - 1. 6 mil clear polyethylene film for above grade application.
- B. Tape: Provide at all seams and termination edges.
 - 1. Heavy-duty, weather-resistant, double sided asphaltic mastic tape. Fab Tape by Reef Industries, (800) 231-6074.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Secure vapor retarder to bottom side of wood ceiling framing and to the inside face of the exterior wall studs.
- B. Secure air/vapor retarder to top of wall plates at exterior masonry walls and as required to secure in place until installation of exterior furring members. Air/vapor retarder shall be continuous behind furring members.
- C. Air/vapor retarder shall be continuous throughout the building, including over top of interior walls and ceiling. Air/vapor retarder shall be connected to exterior wall air/vapor retarder.
- D. Seams shall be lapped with 4 inches minimum. Tape all seams. Tape the seam at the transition between the ceiling and wall. Completely seal any tears and punctures with tape. Seal all penetrations vapor-tight with tape and/or sealant.
- E. Install the air-vapor barrier boxes at all the electrical boxes in walls and ceilings with sheet air-vapor barriers. Install at the time that the electrical boxes are being set. Install the air-vapor barrier boxes in accordance with the manufacturer's instructions.

END OF SECTION

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SECTION 08 12 13
HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Steel frames.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Section 04 20 00 - Unit Masonry: Placement of anchors and frames into wall construction.

1.03 RELATED SECTIONS

- A. Section 07 92 00 - Joint Sealants: Perimeter sealing.
- B. Section 08 13 13 – Standard Hollow Metal Doors.
- C. Section 08 14 16 - Flush Wood Doors.
- D. Section 08 71 00 - Door Hardware.
- E. Division 8 - Glazing

1.04 REFERENCES

- A. Americans with Disabilities Act (ADA) of 1990, Accessibility Guidelines for Buildings and Facilities, 2010 Edition.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - 2003 - Accessible and Usable Buildings and Facilities.
 - 2. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
 - 3. ANSI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, and Frame Anchors.
 - 4. ANSI A250.6 - Hardware Reinforcing on Standard Steel Doors and Frames.
 - 5. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
 - 6. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 - 7. ANSI A250.11 - Recommended Erection Instructions for Steel Frames.
- C. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM A568 - Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
 - 2. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. ASTM A879 - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
 - 4. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - 5. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 - 6. ASTM A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

7. ASTM E2074 - Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies.
- D. Door Hardware Institute (DHI): The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- A. Hollow Metal Manufacturer's Association (HMMA), a Division of National Association of Architectural Metal Manufacturers (NAAMM):
 1. NAAMM HMMA 820 - Hollow Metal Frames.
- E. International Code Council:
 1. IBC - International Building Code, 2015 Edition, and referenced standards.
- F. National Fire Protection Association (NFPA):
 1. NFPA 80 - Standard For Fire Doors and Other Opening Protectives.
 2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- G. Steel Door Institute (SDI):
 1. SDI-100 – Specifications for Standard Steel Doors and Frames.
 2. SDI-111 - Recommended Details and Guidelines for Standard Steel Doors, Frames, and Accessories.
 3. SDI-112 - Zinc-Coated (Galvanized/Galvannealed) Standard Steel Doors and Frames.SDI-117 - Manufacturing Tolerances for Standard Steel Doors and Frames.
 4. SDI-118 - Basic Fire Door, Fire Door Frame, Transom/Sidelight Frame, and Window Requirements.
- H. Underwriter's laboratories (UL):
 1. UL 10B – Standard for Fire Tests of Door Assemblies.

1.05 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacings, location of cut-outs for hardware, and finish.
- C. Product Data: Indicate frame configuration, reinforcement, and manufacturer literature.
- D. Manufacturer's Installation Instructions: Submit special installation instructions.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of ANSI A250.8, SDI-100 and ANSI A117.1.
- B. Fire Rated Frame Construction: Conform to NFPA 252 and UL 10B.
- C. Installed Frame Assembly: Conform to NFPA 80 for fire rated class same as fire door.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Accept frames on site in manufacturer's packaging. Inspect for damage.
- C. Where specified, all products shall be marked with architects opening number on all doors, frames, misc. parts and cartons.

- D. All materials upon receipt shall be inspected for damage, and the shipper and supplier notified if damage is found.
- E. All frames shall be stored vertically under cover. Units shall be placed on at least 4-inch high wood sills or in a manner that will prevent rust or damage.
- F. The use of non-vented plastic or canvas shelters that can create a humidity chamber shall be avoided.
- G. A minimum 1/4-inch space between the frames shall be provided to promote air circulation. If the wrapper becomes wet, it must be removed immediately.
- H. Break seals on site to permit ventilation.

1.08 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.09 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate the work with wall opening construction, door, and hardware installation.
- C. Sequence installation to accommodate required door hardware electric wire connections.

PART 2 PRODUCTS

2.01 FRAMES

- A. Manufacturers:
 - 1. Ceco Door Products.
 - 2. Curries.
 - 3. Mesker.
 - 4. Pioneer Industries.
 - 5. Republic Builders Products.
 - 6. Steelcraft.
 - 7. Or Equal approved by Architect.
- B. Interior Frames:
 - 1. SDI-100 Level 2: 16 gauge minimum steel thickness.
 - 2. Fabricated of cold rolled steel in accordance with ASTM A1008.

2.02 ACCESSORIES

- A. Silencers: Resilient rubber, fitted into drilled hole. Provide three (3) single silencers for single doors and mullions of double doors on strike side. Provide two (2) single silencers on frame head for each door at double doors without mullions.
- B. Removable Glazing Stops: Rolled steel channel shape, butted corners; prepared for countersink style tamperproof screws, stops must not extend beyond face of frame.

2.03 FABRICATION

- A. Fabricate frames as fully or continuously full profile welded unit, including fixed mullions and transom bars.
- B. Provide a minimum of three (3) anchors per jamb suitable for the adjoining wall construction. Frames over 7'-6" in height shall be provided with an additional anchor per jamb.

- C. Fabricate frames with hardware reinforcement plates welded in place.
- D. Provide drilled holes in frame for silencers.
- E. Fabricate frames to suit masonry wall coursing with 4-inch head member, unless noted otherwise.
- F. Attach metal fire rated label to each fire rated frame.

2.04 SHOP FINISHING

- A. Prime finish: Frames shall be thoroughly cleaned, and chemically treated to insure maximum paint adhesion. All surfaces of the frame exposed to view shall receive a factory applied coat of rust inhibiting primer, either air-dried or baked-on. The finish shall meet the requirements for acceptance stated in ANSI/SDI A250.10

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Beginning of installation means acceptance of substrates.

3.02 INSTALLATION

- A. Install frames plumb, level, rigid, and in true alignment in accordance with ANSI A250.11, SDI-100 and DHI.
- B. Install rated frames in accordance with NFPA 80. Any repair required to frame shall be conducted in accordance with NFPA 80.
- C. Coordinate with masonry wall construction for anchor placement. Frames shall be braced or fastened in such a way to prevent the pressure of the grout from deforming the frame members.
- D. Coordinate installation of glass and glazing specified in Section 08 81 00.
- E. Coordinate installation of frames with installation of hardware specified in Section 08 71 00 and doors in 08 14 16.

END OF SECTION

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors.

1.02 RELATED SECTIONS

- A. Section 08 12 13 – Standard Hollow Metal Frames: Steel door frames.
- B. Section 08 71 00 - Door Hardware.

1.03 REFERENCES

- A. Window and Door Manufacturers Association (WDMA).
- B. Architectural Woodwork Institute (AWI) – Architectural Woodwork Standards.
- C. Hardwood Plywood Veneer Association (HPVA):
 - 1. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 80 - Standard for Fire Doors, Fire Windows.
 - 2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- E. Underwriters Laboratories Inc. (UL):
 - 1. UL 10B - Fire Tests of Door Assemblies.
 - 2. UL - Building Materials Directory.
- F. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.
- G. ANSI A208.1 – Particleboard.
- H. ASTM E 90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- I. ASTM E 413 – Classification for Rating Sound Insulation.
- J. AWI/AWMAC/WI Architectural Woodwork Standards, Edition 1, Section 9 – Doors.
- K. NFPA 80 – Standard for Fire Doors and Other Opening Protectives.
- L. UL 10C – Positive Pressure Fire Tests of Door Assemblies.
- M. WDMA Finish System TR-6, Catalyzed Polyurethane.
- N. WDMA I.S. 1A-11 – Architectural Wood Flush Doors.
 - 1.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

- B. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, and factory machining criteria.
- C. Product Data: Indicate door core materials and construction; and veneer species, type and characteristics.

1.05 QUALITY ASSURANCE

- A. Fire Door Construction: Conform to NFPA 252 and UL 10B.
- B. Installed Fire-Rated Door Assembly: Conform to NFPA 80 for fire-rated class as scheduled.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Break seal on site to permit ventilation.

1.07 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.08 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate the work with door opening construction, door frame and door hardware installation.

1.09 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Warranty provisions.
- B. Interior Doors: Life Time. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. VT Industries Heritage Collection.
 - 1. Five Ply Flush Bonded Door.
 - 2. 1 ¾ inch thick.
 - 3. Particle board core.
 - 4. WDMA Heavy Duty.
 - 5. Veneer: Rotary cut, whole piece, Premium Grade A, Oak
 - 6. Matching hardwood edges.
 - 7. Lifetime warranty.
 - 8. WDMA Premium Grade.
 - 9. Finish: Factory stain and varnish with UV cured finish to meet or exceed WDMA TR-6. Architect shall select color from manufacturer's standard colors.
- B. Or Equal approved by Architect

2.02 FIVE-PLY FLUSH BONDED DOORS

- A. Five-Ply Flush Bonded Doors: Heritage Collection.

1. W S P C – 5
2. Thickness: 1-3/4"
3. Face: Wood Vener - HPDL Horizontal Grade Standard (HGS) meets NEMA standard LD-3, or MDO
4. Adhesive: Type 1
5. Quality Standards: WDMA I.S. 1-A & AWS, Section 9 Quality Standards (Bonded Core)
6. Warranty: Lifetime
7. Core: Agrifiber

B. Veneer:

1. Apply to crossbanded core in hot press using Type I, exterior, water-resistant adhesive.
2. Species: To be selected from manufacturers' standard species.
3. Cut: Plain.
4. Match: Book
5. Assmebly: Running

2.03 FABRICATION

- A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.
- B. Provide blocking where necessary for hardware reinforcement.
- C. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Provide solid blocking for through bolted hardware.

2.04 FINISHES

- A. Doors shall receive factory finishing.
- B. Factory Finishing: .WDMA System TR-8, UV cured urethane, premium grade.
 1. Stain coat.
 2. Sealer: minimum 3 coats.
 3. Sanding: Sand.
 4. Topcoat: 2 coats
- C. Stain Color: Selected from manufacturers' standard colors.

2.05 ACCESSORIES

- A. Glass Stops: Rolled steel channel type; butted corners; stops must be flush with door when installed; tamperproof screws.
- B. Glass Stops: Flush wood molding. Species to match door face veneer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.

- B. Trim non-rated door width by cutting equally on both jamb edges.
- C. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).
- D. Machine cut doors for hardware installation.
- E. Pilot drill screw and bolt holes.
- F. Coordinate installation of doors with installation of frames specified in Section 08 12 13 and hardware specified in Section 08 71 00.
- G. Coordinate installation of glass and glazing specified in Section 08 81 00.
- H. Repair minor damages to finish in accordance with the manufacturer's instructions and as approved by Architect.
- I. Remove and replace damaged doors that cannot be successfully repaired, as determined by Architect

3.03 INSTALLATION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Conform to AWI requirements for fit and clearance tolerances.
- C. Conform to AWI Section 1300 requirements for maximum diagonal distortion.

3.04 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust door for smooth and balanced door movement.

END OF SECTION

SECTION 08 34 55
BULLET RESISTANT FLUSH WOOD DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Bullet resistant pressed steel frames.
- B. Bullet resistant pressed wood doors.
- C. Catalyzed lacquer, premium grade finish to WDMA I.S. 1A, stain and clear coat.
- D. Bullet Resistant Rated/Compatible Door Butts & accessories.

1.02 RELATED SECTIONS

- A. Section 08 71 00 - Door Hardware.

1.03 REFERENCES

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. HMMA 802 - Manufacturing of Hollow Metal Doors and Frames.
- C. HMMA 840 - Installation and Storage of Hollow Metal Doors and Frames.
- D. UL 752 - Standard for Bullet-Resisting Equipment.
- E. ANSI/WDMA I.S. 1A - Industry Standard for Architectural Wood Flush Doors.
- F. FSC – Forest Stewardship Council Standard for Chain of Custody Certification.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, and factory machining criteria.
- C. Product Data: Indicate door core materials and construction; and veneer species, type and characteristics.
- D. Samples: Submit finish samples of all the finish choices.

1.05 QUALITY ASSURANCE

- A. Ballistic Resistance: Conform to UL 752, Level 4
- B. Conform to ICC/ANSI A117.1.
- C. Provide products of this section from a single manufacturer unless components are referenced specifically in other sections.
- D. Manufacturer: Minimum Five (5) years documented experience manufacturing security door assemblies.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Comply with WDMA I.S. 1A for doors and
- C. Comply with HMMA 840 for steel frames and manufacturer's written instructions.
- D. Weld minimum two temporary jamb spreaders per frame prior to shipment.
- E. Remove frames from wrappings or coverings upon receipt on site and inspect for damage, leave doors covered for protection until hung.
- F. Store doors in horizontal position, frames in vertical position, spaced with blocking to permit air circulation between components.
- G. Store materials out of water and covered to protect from damage. Use covering that allows air circulation and does not permit light to penetrate.
- H. Store doors between 50 to 90 degrees F (10 to 32 degrees C) and 25 to 55 percent relative humidity.
- I. Clean and touch up scratches or disfigurement to metal and wood surfaces.

1.07 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate the work with door opening construction, door frame and door hardware installation.

1.08 WARRANTY

- A. Manufacturer's Limited Warranty: Five (5) years from date of supply, covering material and workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Safeguard Security Systems - www.armortex.com
- B. AMBICO Limited, 1120 Cummings Avenue, Ottawa, Ontario Canada
- C. Or Equal

2.02 MATERIALS

- A. Sheet Steel: Galvanized steel to ASTM A653/A653M, Z275.
- B. Reinforcement Channel: To CSA G40.20/G40.21, coating designation to ASTM A653/A653M.
- C. Wood door panel: Ballistic resistant core with wood veneer.
- D. Door Facing: Wood Face Veneer: Red Oak species, Book Match cut; minimum thickness before sanding 0.6 mm (1/4 inch).
- E. Door Edging: Where door face is wood face veneer, door edges shall be supplied with matching stiles and rails

2.03 FABRICATION

- A. Manufacture doors and frames to Level 4 bullet resistance rating in accordance with UL 752.

- B. Wood Doors:
 - 1. Wood veneer faces, door thickness, design and core suitable to achieve specified ballistic performance.
 - 2. Reinforce doors where surface-mounted hardware is required.
 - 3. Drill and tap for mortised, templated hardware.
- C. Steel Frames:
 - 1. Sheet steel, metal thickness and appropriate to maintain ballistic door ratings, mitred corners.
 - 2. Factory assemble and weld frames.
 - 3. Reinforce frames wider than 48 inches with roll formed steel channels welded tightly into frame head, flush with top.
 - 4. Provide three single silencers for single doors on strike side.

2.04 FINISHES

- A. Metal Frame: Factory applied zinc phosphate primer to be applied to all exposed surfaces, where product had been welded and ground smooth.
- B. Factory Door Finish: Catalyzed lacquer, premium grade finish to WDMA I.S. 1A, stain and clear coat.

2.05 ACCESSORIES

- A. BR Hinges: Heavy weight ball bearing butt for BR door supplier. Shall be bullet resistant rated/compatible.
- B. Frame silencers.
- C. Door Frame Primer: Rust inhibitive zinc phosphate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install components to manufacturer's written instructions.
- B. Install doors and frames to HMMA 841 and ANSI/WDMA IS 1A standards.
- C. Coordinate with gypsum board wall construction for anchor placement.
- D. Set frames plumb, square, level and at correct elevation.
- E. Allow for deflection to ensure that structural loads are not transmitted to frame.
- F. Adjust operable parts for correct clearances and function.
- G. Finish paint in accordance with Section 09 91 00.
- H. Touch up finishes where damaged.

3.03 INSTALLATION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Installation tolerances of installed frame for squareness, alignment, twist and plumbness are to be no more than $\pm 1/16$ in in compliance with HMMA 841.

3.04 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust door for smooth and balanced door movement.
- C. Provide qualified manufacturer's representative to instruct installers on the proper installation and adjustment of door assemblies.
- D. Provide manufacturer's representative to inspect door installation, and test minimum five (5) cycles of operation. Correct any deficient doors and frames.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Hardware at Bullet Resistant Flush Wood Steel and Frames.
- B. Hardware at Hollow Metal Frames and Wood Doors.
- C. Replacement Automatic Door Openers at Existing Aluminum Entrance System.

1.02 RELATED WORK

- A. Section 08 34 55 – Bullet Resistant Flush Wood Steel and Frames.
- B. Division 8 - Hollow Metal Frames and Wood Doors.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ANSI A156 - Complete Set of 24 BHMA Standards (A156 Series) with Binder.
- B. Americans with Disabilities Act (ADA) of 1990, Accessibility Guidelines for Buildings and Facilities, 2010 edition.
- C. Architectural Woodwork Institute (AWI).
- D. Builders' Hardware Manufacturers Association (BHMA).
- E. Door and Hardware Institute (DHI).
- F. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.
- G. International Code Council:
 - 1. IBC - International Building Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
 - 2. IECC - International Energy Conservation Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
- H. National Fire Protection Association (NFPA):
 - 1. NFPA 80 - Standard for Fire Doors, Fire Windows.
 - 2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
 - 3. NFPA 101 - Life Safety Code.
- I. National Association of Architectural Metal Manufacturers (NAAMM).
- J. Steel Door Institute (SDI).
- K. Underwriters Laboratories Inc. (UL):
 - 1. UL 10B - Fire Tests of Door Assemblies.
 - 2. UL 305 - Panic Hardware.
 - 3. UL - Building Materials Directory.

1.04 PERFORMANCE REQUIREMENTS

- A. At BR Openings: Ballistic Resistance: Conform to UL 752, Level 4

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with the following requirements:
 - 1. ANSI A156 series.
 - 2. NFPA 80.
 - 3. UL 305.

1.06 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout provisions.
- B. Project Record Documents: Record actual locations of installed cylinders and their master key code.
- C. Operation and Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- D. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

1.07 QUALIFICATIONS

- A. Manufacturers: Companies specializing in manufacturing door hardware with minimum three (3) years experience.
- B. Hardware Supplier: Company specializing in supplying commercial door hardware with three (3) years documented experience.

1.08 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Submit schedule in vertical format.
- C. Shop Drawings: Indicate locations and mounting heights of each type of hardware.
- D. Product Data: Submit catalog cuts.
- E. Submit manufacturer's parts lists, templates, and installation instructions.
- F. Section 01 40 00 - Quality Requirements: Manufacturer's certificate provisions.
- G. Submit manufacturer's certificate that fire-rated hardware meets or exceeds specified requirements.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Package hardware items individually with necessary fasteners, instrumentations, and templates; label and identify package with door opening code to match hardware schedule.
- C. Protect hardware from theft by cataloging and storing in secure area.

1.10 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination provisions.

- B. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.
- C. Provide templates or actual hardware as required to ensure proper preparation of doors and frames.
- D. Coordinate Owner's existing Schlage keying requirements during course of work, prior to submittal of shop drawings.

1.11 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Warranty provisions.
- B. Closer: Furnish 10 year warranty.

1.12 MAINTENANCE MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Maintenance materials.
- B. Furnish special wrenches and tools applicable to each different or special hardware component.
- C. Furnish maintenance tools and accessories supplied by hardware component manufacturer.

1.13 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Extra material provisions.
- B. Provide 1 extra key lock cylinders for each master keyed group.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Butt Hinges: Hager, McKinney, PBB, Stanley.
- B. Geared Hinges: NGP, PBB
- C. Locksets: PDQ, Schlage, Sargent.
- D. Push/Pulls: Don-Jo, Trimco, Rockwood.
- E. Cylinder Locks, Electric Locks: PDQ, Sargent, Schlage.
- F. Exit Devices: PDQ, Sargent, Von Duprin.
- G. Closers: PDQ, LCN.
- H. Overhead Holders: Glynn Johnson, Don-Jo
- I. Manual Bolts: Don-Jo, Hager, Ives, Rockwood.
- J. Thresholds and Gasketting: National Guard, Reese, Pemko.
- K. Protection Plates: Don-Jo, Hager, Trimco, Rockwood.
- L. Latch Guards: Don-Jo, Ives.
- M. Door Position Switches: Security Door Controls, Sentrol

N. Substitutions: None.

2.02 KEYING

- A. Door Locks: Key per Owner requirements to existing master key systems at substantial completion.
- B. Supply two (4) keys for each lock.
- C. Supply keys per Owner requirements.

2.03 FINISHES

- A. Finishes to match satin chrome US26D and satin stainless steel US32D. Closers sprayed to match.

2.04 LOCK, LATCHES, AND DEADLOCKS

- A. Furnish rim or mortise cylinders as required for overhead doors, folding doors, wire gates and partitions, special interior doors and coiling doors.
- E. Provide Command Access RX latches as specified in hardware groups.

2.05 DOOR CLOSERS

- A. Shall be PDQ or LCN of proper size as described in manufacturer's schedule of sizes.
- B. Where parallel arm or weather strip is specified, closers shall be one size larger than manufacturer's recommendations.
- C. Closers shall have key adjusting device. Furnish six adjusting keys.
- D. Mount to provide maximum opening permitted by building construction or equipment, and note on this schedule this maximum swing per location for other trades involved in reinforcement or installation.
- E. Closers shall be of cast aluminum or cast iron, of full rack and pinion construction, including two speed closing adjustment, adjustable hydraulic back-check and fully adjustable spring power plus reversible shoe feature, of type listed in schedule. Closer fluid shall be "all weather" type not subject to normal temperature changes.
- F. All doors closers shall be similar in design and appearance to those listed in the schedule, so far as possible, and shall be of one manufacturer. Furnish special arms and applications as indicated in hardware schedule or as dictated by structural conditions or local code requirements.
- G. Door closers at labeled fire doors shall bear UL approval. Provide thru-bolts for mineral core doors.
- H. Where more than one door occurs in an opening, equip each door with closer, unless otherwise noted.

2.08 STOPS AND BUMPERS

- A. Shall be Don-Jo 1406/1407 series or ABH overhead type indicated in the hardware schedule. Provide wall type bumper wherever possible. If construction prohibits the use of wall type, furnish 1445 floor type. Equal products as manufactured by Rockwood and Hiawatha are also approved.
- B. Install bumper behind each door.
- C. Where two doors interfere with each other in swinging, provide roller bumper 1480 series as required.
- D. Apply with expansion shield and machine screws only.

2.09 MISCELLANEOUS HARDWARE

- A. Power supplies, Electric Strikes – Folger Adam, Trine, HES, PDQ, Von Duprin

- C. Card Readers: By owner vendor
- D. Door Position Switches,: Security Door Control or Sentrol of type as specified in hardware groups.
- F. Wiring diagrams: provide complete and detailed system operation and elevation diagrams specially developed for each opening requiring electrified hardware, except openings where only magnetic hold-opens or door position switches are specified. Provide these diagrams with hardware schedule submittal for approval. Provide detailed wiring diagrams with hardware delivery to jobsite.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- C. Verify that power supply is available to power operated devices.
- D. Beginning of installation means acceptance of substrates.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and requirements of SDI, NFPA 80, and BHMA.
- B. Use the templates provided by hardware item manufacturer.
- C. Mounting heights for hardware from finished floor to centerline of hardware item shall comply with ADA, ANSI, and BHMA.
- D. Conform to ADA and ANSI for positioning requirements for accessibility.

3.03 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements Testing, adjusting, and balancing.
- B. Adjust hardware for smooth operation.

3.04 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Do not permit adjacent work to damage hardware or hardware finish.

3.05 SCHEDULE (H.S. = Hardware Set)

HS 1 (Bullet Resistant Doors with existing access control)

3 butts	Provided by Section 08 34 55	(BR Door Supplier)
1 Lock	L/LV9070	(Schlage)-Verify function with CA system
1 Closer	4040XP Spring Cush	(LCN)
1 Kick Plate	190S, 12 inch	
1 Electric Strike	6400 Series or equal	(Von Duprin)

NOTE: Maintain, reuse, relocate (if needed) and integrate existing access control devices and recommission.

OPERATIONAL DESCRIPTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS ALLOWED AT ALL TIMES. OUTSIDE ACCESS BY CARD READER, WHICH WILL SHUNT THE ALARM AND UNLOCK ELECTRIC STRIKE

HS 2 (Private Toilet Rooms)

3 butts	BB1199 32D	(Hager)
1 mortise lock	LV9485 x L283-722	(Schlage)
	(Occupied / Vacant Indicator)	
1 closer	4040XP Spring Cush	(LCN)
1 kickplate	190S, 12 inch	

HS 3 (Main Exterior Entrance Door)

	ADA Opener System	
1 closer/operator	4640 (LCN), Clear anodized powder coat finish	

NOTE: This is an existing door. The existing automatic door opener system shall be recommissioned with a new operator at beach entrance door. Other aspects of the existing system (such as wiring) may be reused to extent be feasible as long as the new system is fully functional and re-commissioned.

Existing access control system will remain and be reprogrammed by the Owner.

HS 4 (Bullet Resistant Doors with New Access Control)

3 butts	Provided by Section 08 34 55 (BR Door Supplier)	
1 Lock	L/LV9070	(Schlage)-Verify function with CA system 1
Closer	4040XP Spring Cush	(LCN)
1 Kick Plate	190S, 12 inch	
1 Electric Strike	6400 Series or equal	(Von Duprin)

NOTE: New access control devices wired and provided and commissioned by the Owner Access Control Contractor. Electrician shall rough-in conduit and junction boxes for all access control devices.

OPERATIONAL DESCRIPTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS ALLOWED AT ALL TIMES. OUTSIDE ACCESS BY CARD READER, WHICH WILL SHUNT THE ALARM AND UNLOCK ELECTRIC STRIKE

HS 5 (New Door without Access Control)

3 butts	BB1191	(Hager)
1 lock	L/LV9056 with XL13-439	(Schlage)
1 stop	WS401 CCV	(Ives)

GENERAL NOTES:

1. Hinge Size: Heavy Duty Ball Bearing 4½ inch by 4½ inch, unless noted otherwise.

END OF SECTION

SECTION 08 81 00
GLASS GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glass and glazing for doors, windows, and frames.

1.02 RELATED SECTIONS

- A. Section 08 12 13 – Standard Hollow Metal Frames.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Used in Buildings.
- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
 - 2. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - 3. ASTM C1036 – Standard Specification for Flat Glass.
 - 4. ASTM C1048 – Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
 - 5. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
 - 6. ASTM C1193 - Standard Guide for Use of Joint Sealants.
 - 7. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 8. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls By Uniform Static Air Pressure Difference.
 - 9. ASTM E546 - Standard Test Method For Frost/Dew Point of Sealed Insulating Glass Units.
 - 10. ASTM E576 - Standard Test Method For Frost/Dew Point of Sealed Insulating Glass Units in the Vertical Position.
 - 11. ASTM E773 – Standard Test Methods for Accelerated Weathering of Sealed Insulating Glass Units.
 - 12. ASTM E1425 - Standard Practice for Determining the Acoustical Performance of Windows, Doors, Skylights, and Glazed Wall Systems.
- D. Federal Specification Unit (FS):
 - 1. FS A-A-272B - Caulking Compounds.
 - 2. FS TT-S-01543 - Sealing Compound, Silicone Rubber Base.
- E. Glass Association of North America (GANA) - formerly FGMA:
 - 1. GANA - Sealant Manual.
 - 2. GANA - Glazing Manual.
 - 3. GANA - Laminated Glass Design Guide.
- F. International Code Council:
 - 1. IBC - International Building Code, 2015 Edition, and referenced standards with 2018 State of Wisconsin amendments.
- G. Laminators Safety Glass Association - Standards Manual.
- H. National Fire Protection Association (NFPA):

1. NFPA 80 - Standard for Fire Doors, Fire Windows.

I. Sealed Insulated Glass Manufacturers Association (SIGMA).

J. Underwriters Laboratories Inc. (UL):

1. UL - Building Materials Directory.

1.04 SUBMITTALS (NONE)

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, SIGMA and Laminators Safety Glass Association Standards Manual for glazing installation methods.

1.06 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three (3) years experience.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental provisions.

B. Do not install glazing when ambient temperature is less than 50 degrees F.

C. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on drawings.

1.09 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination provisions.

B. Coordinate the Work with glazing frames, wall openings, and perimeter air and vapor seal to adjacent Work.

1.10 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Warranty provisions.

B. Manufacturer's Warranty:

1. Furnish 10 year warranty, include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.
2. Furnish 10 year warranty to include coverage for delamination of laminated glass and replacement of same.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass:

1. Cardinal IG.
2. Libby-Owens-Ford.
3. Pilkington.
4. PPG.
5. Viracon.

2.02 GLASS MATERIALS

- A. Type A: Safety glass, 1/4-inch thick tempered.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that openings for glazing are correctly sized and within acceptable tolerance.
- C. Verify surfaces of glazing channels or recesses are clean, free of obstructions impeding moisture movement, weeps are clear, and ready to receive glazing.
- D. Beginning of installation means acceptance of substrates.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces in accordance with manufacturers instructions.

3.03 INSTALLATION

- A. Perform installation in accordance with GANA Glazing Manual.
 - 1. Glazing Sealants: Comply with ASTM C1193.
 - 2. Fire Rated Openings: Comply with NFPA 80.
- B. Install in accordance with glazing and frames manufacturer's instructions.
- C. Interior Wet/Dry Method (Tape and Sealant) Installation:
 - 1. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch above sight line.
 - 2. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
 - 3. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
 - 4. Install removable stops, spacer shims inserted between glazing and applied stops at 24 inch intervals, 1/4 inch below sight line.
 - 5. Fill gaps between pane and applied stop with elastomeric glazing sealant to depth equal to bite on glazing, to uniform and level line.
 - 6. Trim protruding tape edge.

3.04 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Cleaning provisions.
- B. Clean glass and adjacent surfaces.

3.05 PROTECTION OF FINISHED WORK

- A. Section 01 50 00 - Temporary Facilities and Controls: Protection of finished work provisions.
- B. After installation, mark pane with an 'X' by using removable plastic tape or paste.

END OF SECTION

08 81 00-3

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SECTION 09 29 00
GYPSUM BOARD

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Metal stud wall framing.
- B. Metal channel ceiling framing.
- C. Gypsum board and joint treatment.
- D. Gypsum sheathing.
- E. Exterior Gypsum Sheathing.
- F. Cementitious backer board.
- G. Texture finish.

1.02 RELATED WORK

- A. Section 05 40 01 - Cold-Formed Metal Framing: Framing for exterior gypsum sheathing.
- B. Section 06 10 00 - Rough Carpentry: Substrate and blocking.
- C. Section 07 21 23 - Loose Fill Insulation.
- D. Section 07 27 13 - Sheet Membrane Air/Vapor Retarder.
- E. Section 09 91 00 - Painting: Surface finish.
- F. Section 13 40 00.11 - Bullet-Resistant Protection.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 2. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.
 - 3. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - 4. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
 - 5. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 6. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
 - 7. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - 8. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - 9. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing.
 - 10. ASTM C1396 - Standard Specification for Gypsum Board.
 - 11. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 12. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. Gypsum Association (GA):
 - 1. GA 214 - Recommended Levels of Gypsum Board Finish.
 - 2. GA 216 - Application and Finishing of Gypsum Panel Products.

3. GA 223 - Gypsum Panel Products, Types, Uses, Sizes, and Standards.
4. GA 226 - Application of Gypsum Board to form Curved Surfaces.
5. GA 232 - Painting for New Gypsum Board.
6. GA 253 - Application of Gypsum Sheathing.
7. GA 254 - Fire-Resistant Gypsum Sheathing.
8. GA 276 - Gypsum Board Roof Underlayment Systems.
9. GA 600 - Fire Resistance Design Manual Sound Control.

- C. Underwriters Laboratories Inc. (UL):
1. UL - Fire Resistance Directory.

- D. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Samples: Submit samples of texture, 12 inches by 12 inches in size.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C840, GA-214, GA-216, and GA-600.

1.06 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum three (3) years documented experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD SYSTEMS

- A. Manufacturers:
1. Celotex Corp.
 2. Georgia-Pacific.
 3. Gold Bond Building Products.
 4. United States Gypsum Company (USG).
 5. Substitutions: 01 60 00 - Product Requirements.
 6. Or Equal

2.02 FRAMING AND FURRING MATERIALS

- A. Interior non-load bearing studs and tracks: Clark Dietrich ProSTUD and ProTRAK with G40EQ Diamond Plus galvanized coated steel, 33 ksi minimum, see the floor plan for locations.
1. 3-5/8 inch walls: 362S125-30 at 16 inches on center.
 2. 6 inch walls: 600S125-27 at 16 inches on center.
- B. Cold Rolled Channels: 16 gauge, G40 galvanized 33 ksi sheet steel, 1-1/2 inch, galvanized.
- C. Metal Furring Channels: USG DWC-25 for walls and USG DWC-20 for ceilings.
- D. Metal Z Furring: 1-1/2 inch deep, corrosion-resistant steel.
- E. Resilient Channel: ASTM A1003 G40 galvanized sheet steel, 33ksi steel, 1/2 inch depth, 1 ½ inch leg, produced to meet ASTM C645.
- F. Slip Track: 18 gauge, galvanized steel, 2-1/2 inch long logs, for use at top of all non-rated walls.

2.03 GYPSUM BOARD MATERIALS

- A. Gypsum Board for Walls and Ceilings: 5/8 inch thick standard gypsum board, gypsum core, paper face, tapered edges, ASTM C1396: National Gypsum Gold Bond Fire-Shield Gypsum Board or equal.
- B. Gypsum Board for Walls: 5/8 inch thick high abuse drywall; Georgia-Pacific DensArmor Plus Abuse-Resistant Interior Panels or equal.
- C. Moisture Resistant Gypsum Board: ASTM C630; maximum permissible length; tapered edges.
- D. Exterior Gypsum Sheathing Board: ASTM C1177, moisture-resistant core, embedded glass mat faces, maximum permissible length, ends square cut, square edges by G-P Gypsum.
 - 1. Dens-Glass Gold Gypsum Sheathing, 5/8 inch by Georgia-Pacific Corporation
 - 2. Dens-Element Sheathing, 5/8 inch by Georgia-Pacific Corporation.
 - 3. Or Equal approved by Architect
- E. Flexible Gypsum Panels: USG Sheetrock brand for use on curved surfaces.
- F. Tile Backer Gypsum Sheathing: Georgia-Pacific Corporation, Dens-Shield Tile Backer, 5/8 inch thick.
- G. Cementitious Backing Board: High density, glass fiber reinforced, 2 inch wide coated glass fiber tape for joints and corners, maximum permissible length.

2.04 ACCESSORIES

- A. Corner Beads: Metal.
- B. Edge Trim: Vinyl.
- C. Hanger Wire: Galvanized annealed 8 gauge.
- D. Tie Wire: Galvanized annealed 18 gauge.
- E. Control Joint: USG No. 093.
- F. Screws:
 - 1. At Wood Framing: Flat head phillips bugle drywall screws
 - 2. At Metal Framing: USG Type S-12 at 20 gauge or heavier metal framing.
- G. Steel to steel self drilling, self tapping screws: TEK screws, size to suit application.
 - 1. ITW Buildex.
 - 2. Hilti.
- H. Masonry Screws: 3/16 inch diameter, 1 3/4 inch long, corrosion resistant coat steel.
 - 1. Buildex Tapcon Concrete Anchor.
 - 2. Hilti Kwik-Con II.
 - 3. Powers Fasteners Tapper.
- I. Joint Materials: ASTM C475; GA-216; reinforcing tape, joint compound, adhesive, and water.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that site conditions are ready to receive work.

- C. Beginning of installation means acceptance of substrate.

3.02 EXISTING WORK

- A. Extend existing gypsum board installations using materials and methods as specified.
- B. Repair and remodel existing gypsum board assemblies which remain or are to be altered.

3.03 METAL STUD INSTALLATION

- A. Install studs in accordance with ASTM C754, GA-216, GA-600, and manufacturer's instructions.
- B. Metal Stud Spacing: As indicated on Drawings.
- C. Partition Heights: Full height unless indicated otherwise on Drawings. Install bracing for non-full height partitions.
- D. Studs shall be full length studs to match the wall height. No splices allowed.
- E. Headers over openings shall be two wall studs boxed together with a track at the top and bottom screwed to the studs. Provide one jamb stud and one shoulder stud at each end of the header to support the header.
- F. Blocking: Fasten wood blocking to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and etc.
- G. Coordinate installation of bucks, anchors, blocking, electrical, and mechanical work placed in or behind partition framing.
- H. Bracing framing as required to make walls rigid and support lateral load of 5 psf.
- I. Set the metal track on the concrete floor. Fasten the track to the floor with masonry screws at 32 inches on center.
- J. Secure the studs to the tracks with self drilling, self tapping screws.

3.04 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA 216 and manufacturer's instructions.
- B. Erect single layer gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Use screws when fastening gypsum board to metal furring or framing.
- D. Use screws when fastening gypsum board to wood furring or framing. Staples may only be used when securing the first layer of double layer applications.
- E. Double Layer Applications: Use gypsum backing board for first layer, placed perpendicular to framing or furring members. Use fire rated gypsum backing board for fire rated partitions and ceilings.
- F. Place second layer perpendicular to first layer. Offset joints of second layer from joints of first layer.
- G. Treat cut edges and holes in moisture resistant gypsum board with sealant.
- H. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials and at exposed edges or ends.
- I. Provide control joints consistent with lines of building spaces, spaced not more than 30 feet apart.

- J. Install acoustical sealant at all walls scheduled to receive acoustical insulation. Install sealant to both sides of wall between the floor and the bottom edge of the gypsum board. Caulk all penetrations of partitions by conduit, pipe, ductwork, rough-in boxes, etc.
- K. Apply wetted gypsum board on curved surfaces.
- L. Tile backer gypsum (cementitious backing bond) board sheathing shall be installed at all locations where ceramic tile is scheduled.
- M. Install paperless drywall in the toilet rooms and shower rooms everywhere there is no ceramic tile.

3.05 EXTERIOR GYPSUM SHEATHING INSTALLATION

- A. Fasten extruded aluminum vent strips to metal framing with insect screen mounted behind vent.
- B. Erect gypsum sheathing in accordance with C1280, horizontally, with edges butted tight and ends occurring over firm bearing. Fasten to framing with rust resistant metal screws 8 inches on center at perimeter and 8 inches on center in field.

3.06 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. All joints shall have tape embedded in joint compound and three separate coats of joint compound applied over all joints angles, fastener heads, and accessories. All joint compounds shall be smooth and free of tool marks and ridges.
- C. Feather coats onto adjoining surfaces.
- D. Install joint treatment in accordance with GA-201 and GA-216 and manufacturer's instructions.
- E. Taping and one coat of joint compound required at concealed surfaces.

3.07 SURFACE TEXTURE

- A. Apply a light sprayed-on orange peel texture on all walls unless noted otherwise on room finish schedule or if there is a wall covering scheduled.

3.08 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

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SECTION 09 30 13
CERAMIC TILING

1.01 GENERAL

1.02 SECTION INCLUDES

- A. Ceramic tile floor and base finish using the thin set application method.
- B. Ceramic tile walls using thin-set method.

1.03 RELATED SECTIONS

- A. Section 09 29 00 - Gypsum Board: Wall substrate.

1.04 REFERENCES

- A. American National Standards Institute (ANSI) – American National Standard Specifications for the Installation of Ceramic Tile.
- B. Tile Council of North America (TCNA) - Handbook for Ceramic, Glass, and Stone Tile Installation.

1.05 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Product Data: Submit product data on all the specified products. Indicate material specifications, characteristics, and instructions for using adhesives and grouts.
- C. Samples: Submit tile and colored grout samples for selection by Architect.

1.06 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout provisions.
- B. Operation and Maintenance Data: Submit recommended cleaning methods, stain removal methods, and polishes and waxes.

1.07 QUALITY ASSURANCE

- A. Perform work in accordance with TCA Handbook and ANSI A108 Series/A118 Series.
- B. Conform to ANSI A137.1

1.08 QUALIFICATIONS

- A. Manufacturer: Company specializing in the manufacture of products specified in this Section with minimum five (5) years documented experience. Provide manufacturer's Master Grade Certificate (after materials are on the job site) stating type of each tile materials to be used.
- B. Installer: Company specializing in applying the work of this Section with minimum three (3) years documented experience and approved by product manufacturer.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesives in a closed, unventilated environment.
- B. Maintain 50 degrees F (10 degrees C) during installation of mortar materials.

1.11 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Space parts and maintenance products.
- B. Supply no less than 2 percent of floor tile, base and grout of each color, size, and pattern selected in full unopened containers. Provide each material packed separately, clearly identified, and adequately protected.

PART 2 PRODUCTS

2.01 TILE MATERIAL

- A. Manufacturers:
 - 1. Dal-Tile International Or Equal approved by Architect
- B. Ceramic Floor Tile Men's and Women's Ground Level Toilet Rooms:
 - 1. Floor Tile:
 - a. Porcelain Ceramic Tile: Dal-Tile Synchronic Texture Grey
 - b. Color Profile: Grey SY33
 - c. Tile Size: 12 inch x 24 inch
- C. Ceramic Wall Tile for Men's and Women's Ground Level Toilet Rooms:
 - 1. Wall Tile:
 - a. Porcelain Ceramic Tile: Dal-Tile Multitude Origami White Rectangle
 - b. Color Profile: Origami White MU21
 - c. Tile Size: 12 inch x 24 inch
- D. Ceramic Floor Tile Base
 - 1. Base Tile (Floor Tile Continued 4" Up Wall as Base)
 - a. Porcelain Ceramic Tile: Dal-Tile Synchronic Texture Grey
 - b. Color Profile: Grey SY33
 - c. Tile Size: 4 inch x 24 inch

2.02 MORTAR

- A. Mapei Kerabond Keralastic Or Equal.

2.03 GROUT

- A. ANSI A118.7 high performance grout: Mapei Ultracolor Plus FA or Custom Building Products Prism.
- B. Color as selected from manufacturer's standard colors.
- C. ANSI A118.7 High Performance Cement Grout
 - 1. Strength - improved adhesion, hardness, abrasion resistance
 - 2. Less porous – more resistant to staining compared to 118.6 grouts, but I would still recommend sealing these grouts
 - 3. Eliminate color variation and efflorescence

2.04 ACCESSORIES

- A. Crack Isolation Membrane:
 - 1. Custom Building Products RedGard Waterproofing and Crack Prevention Membrane.

2. Mapei Mapelastic CI.
 3. TEC Triple Flex Waterproofing, Crack Isolation Membrane and Flexible Mortar.
- B. Tile Floor Edging: Bullnose ceramic tile.
 - C. Subfloor Filler: Mapei or equal, type recommended by subfloor filler manufacturer.
 - D. Floor Control Joint Sealant: Urethane, Shore A hardness of 35 or greater.
 - E. Wall Control Joint Sealant: Single component mildew-resistant silicone sealant.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that surfaces are ready to receive work. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch within 10 feet.
- C. Concrete floors shall be at least 90 days old prior to beginning installation of the flooring.
- D. Verify concrete floors are dry to a maximum moisture content, and exhibit negative alkalinity, carbonization, and dusting in accordance with the flooring manufacturers recommendations. If the moisture content is too high, do not install flooring until it is acceptable. If the alkalinity is too high, neutralize the concrete in accordance with the flooring manufacturers recommendations.
- E. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

- A. Clean surfaces to remove all dust, oil, grease, paint, tar, wax, curing compounds, primers, sealers, form release agent, latex, or any deleterious substances and debris which may prevent or reduce adhesion.
- B. Protect surrounding work from damage or disfiguration.
- C. Level subfloor so as to be free from irregularities. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler. Grind high spots. Prepare subfloor to provide a maximum variation of 1/16 inch within 10 feet. Prep subfloor and install subfloor filler in accordance with subfloor filler.
- D. The floor substrate shall be prepared so no ponding of water occurs on the finished floor tile system after the floor has dried.
- E. Apply, trowel, and float filler to leave a smooth, flat, hard surface.
- F. Prohibit traffic from area until filler is cured.
- G. Apply crack prevention membrane along all sawed control joints and random cracks in the concrete floor surfaces as recommended by manufacturer. Apply over an area wide enough so that any tile that crosses the joint is completely resting on top of the crack prevention membrane. Allow to cure for the time required by the manufacturer. Apply the liquid membrane over the entire floor surface.

3.03 INSTALLATION - THINSET METHOD

- A. Install tile and grout in accordance with applicable requirements of ANSI A108 Series and TCA Handbook recommendations.
- B. Skim coat the masonry walls with latex mortar to flatten out the irregularities in the wall.

- C. Install mortar, tile, and grout in accordance with manufacturer's instructions.
- D. Mix mortar and grout in accordance with manufacturers' instructions.
- E. Do not interrupt tile pattern through openings.
- F. Place bullnose tile at exposed tile edges.
- G. Cut and fit tile tight to penetrations through tile. Form corners and bases with trim pieces. Align floor and base joints.
- H. Locate a tile control joint at the floor slab on grade and wall joints. Tile shall be cut if a normal tile joint does not line up with the floor slab joint. Also, locate a tile control joint between the floor tile and base tile when the floor slab stops at the wall. Keep tile control joints free of mortar and grout. Apply sealant to joints. Sealant color to match grout. The joint installation method shall comply with TCA EJ171.
- I. Apply sealant in lieu of grout at tile joints closed to a concrete floor joint. If the tile size is 12 inches and larger then the tile joints on both sides of the concrete floor joint shall be filled with sealant, not grout.
- J. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- K. Sound tile after setting. Replace hollow sounding units.
- L. Grout tile joints. Upon completion of grouting, clean the work of this section in accordance with recommendations of the manufacturers of the materials used.
- M. Provide tile surfaces clean and free from cracked, broken, chipped, unbonded, and otherwise defective units.
- N. Apply sealant to control joints.

3.04 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning provisions.
- B. Clean tile surfaces.

3.05 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Do not permit traffic over finished floor surface.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Suspended metal grid ceiling system.
- B. Acoustical panels.
- C. Perimeter trim.
- D. Alternate No. 3 applies to some of this work.

1.02 RELATED WORK

- A. Division 23 - Heating, Ventilating, and Air Conditioning: Heating ventilation; air diffusion devices in ceiling system.
- B. Division 26 - Electrical: Light fixtures in ceiling system.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - 2. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - 3. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 4. ASTM E580 - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
 - 5. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.
- B. Ceilings and Interior Systems Construction Association (CISCA):
 - 1. CISCA - Acoustical Ceilings: Use and Practice.
- C. International Code Council:
 - 1. IBC - International Building Code, 2009 Edition, and referenced standards with 2011 State of Wisconsin amendments.
- D. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.
- E. Underwriters Laboratories Inc. (UL):
 - 1. UL - Fire Resistance Directory.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Product Data: Submit on metal grid system components and ceiling panel units.

1.05 QUALITY ASSURANCE

- A. Conform to CISCA requirements.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental provisions.
- B. Maintain uniform temperature of minimum 60 degrees F, and humidity of 40 percent prior to, during, and after installation.

1.07 SEQUENCING/SCHEDULING

- A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust-generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Schedule installation of acoustic units after interior wet work is dry.

1.08 EXTRA MATERIAL

- A. Section 01 70 00 - Execution and Closeout Requirements: Extra material provisions.
- B. Provide extra quantity of acoustic units.
- C. Provide to the Owner full unopened cartons of each ceiling tile used of no less than 2 percent of the total quality installed.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - SUSPENSION SYSTEM

- A. Armstrong World Industries.
- B. Chicago Metallic
- C. USG Interiors.
- D. Or Equal.

2.02 SUSPENSION SYSTEM MATERIALS

- A. ACOUSTICAL CEILING UNIT (Where all new ceiling is identified in drawings)
 - 1. Style: ULTIMA Lay-In and Tegular
 - a. Surface Texture: Fine Texture
 - b. Composition: Mineral Fiber
 - c. Color: White
 - d. Size: 24" x 24"
 - e. Edge Profile: Beveled Tegular
 - f. Flame Spread: ASTM E 1264; Class A
 - g. Light Reflectance (LR) White Panel: ASTM E 1477; 0.85
 - h. Dimensional Stability: Standard, HumiGuard Plus
 - i. ALL tile must be Fire Performance, Class A, plenum rated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

- B. Verify that existing conditions are ready to receive work. Verify that layout of hangers will not interfere with other work. Beginning of installation means acceptance of substrates.

3.02 INSTALLATION

A. Suspended Ceiling Grid:

1. Schedule:
 - a. Install aluminum cap suspension grid in toilet rooms.
 - b. Install fire rated suspension grid at rooms scheduled with a fire rating.
 - c. Install standard suspension at all other locations.
2. Install system in accordance with ASTM C636, manufacturer's instructions and as supplemented in this Section.
3. Install system capable of supporting imposed loads to a deflection of L/360 maximum of any component.
4. Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
5. All hanger wires shall be hung vertically.
6. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
7. Hang system independent of ducts, pipes, and conduit. Where ducts or other equipment prevent the regular spacing of hangers, provide addition supports where required. Wires through ducts are not permitted.
8. Center system on room axis according to reflected plan.
9. Do not support light fixtures or other ceiling apparatus on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support fixtures independently.
10. Do not eccentrically load system, or produce rotation of runners.
11. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.

B. Acoustic Panels

1. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function. Lay directional patterned units one way with pattern parallel to room axis.
2. All cutting and fitting shall be done in a neat manner. Field cut reveal edge tile at wall edge moldings and at all locations where tile is field cut.
3. Install units after above ceiling work is complete. Install panels level, in uniform plane, and free from twist, warp, and dents.
4. Cutting acoustic units:
 - a. Cut to fit irregular grid and perimeter edge trim.
 - b. Cut square reveal [bevel] edges to field cut units.
 - c. Double cut and field paint exposed edges of tegular units.
5. Where bullnose concrete block corners and other round obstructions occur, provide preformed closers to match edge molding.
6. Install hold-down clips to retain panels tight to grid system in the vestibules and within 10 feet of exterior doors.

3.03 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- C. Variation from Plumb of Grid Members Caused by Eccentric Loads: Two degrees maximum.

END OF SECTION

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SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vinyl base and accessories.
- B. Vinyl transitions.

1.02 RELATED SECTIONS

- A. Section 09 29 00 - Gypsum Board.
- B. Section 09 65 16 - Resilient Sheet Flooring.
- C. Section 09 68 16 - Sheet Carpeting.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - 2003 - Accessible and Usable Buildings and Facilities.
- B. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. Federal Specification Unit (FS):
 - 1. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.

1.04 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Product Data: Submit on specified products, describing physical and performance characteristics, sizes, colors available, and method of installation.
- C. Shop Drawings: Location and type of all edge moldings.
- D. Submit samples.
- E. Submit manufacturer's installation instructions.

1.05 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance product provisions.
- B. Provide a 6-foot piece of each color used for the Owner's use.

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Johnsonite by Tarkett Traditional 4" Toe Wall Base or equal
- B. Tentative Color: Burnt Amber

- C. Adhesive: Type recommended by base manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that substrate surfaces are ready to receive work.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 INSTALLATION - BASE MATERIAL

- A. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.
- B. Miter internal corners. At external corners, field form.
- C. Install base on solid backing. Bond tight to wall and ceiling surfaces.
- D. Scribe and fit to interruptions.
- E. Adhesive Application: Use only adhesives recommended by manufacturer of base. Spread cove base adhesive on back of the cove base with a 1/8 inch notched trowel. The adhesive should cover at least 80 percent of the ribbed back of the base. Leave a 1/4 inch uncovered space at the top edge of the cove base to prevent the adhesive from oozing onto the wall above the base. Roll cove base firmly in place immediately after applying the adhesive. Use a hand held roller and roll back toward the starting point.
- F. This product MUST NOT be stretched. Care must be taken NOT TO PULL the cove base excessively when removing it from the carton, unwinding it from the coil, or at any time during installation. Cove Base WILL NOT SHRINK - but it will relax to its original length if stretched. When installing the base work backward toward the last piece installed or back toward the starting point of the job to prevent stretching. If you do not work back toward the last piece installed or back toward the starting point, it is possible that the base will be slightly stretched and after it returns to its original length will leave gaps between pieces.

3.03 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements Protecting installed construction.
- B. Remove excess adhesive from base and wall surfaces without damage.

END OF SECTION

SECTION 09 65 19
RESILIENT TILE FLOORING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Resilient tile flooring where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete: Floor substrate.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - 1998 - Accessible and Usable Buildings and Facilities.
- B. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 3. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - 4. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.
 - 5. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing.
 - 6. ASTM F1344 - Standard Specification for Rubber Floor Tile.
 - 7. ASTM F1861 - Standard Specification for Resilient Wall Base.
- C. Federal Specification Unit (FS):
 - 1. FS L-F-475 - Floor Covering Vinyl, Surface (Tile and Roll), with Backing.
 - 2. FS L-F-001641 - Floor Covering, Translucent or Transparent Vinyl Surface, with Backing.
 - 3. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant.
 - 4. FS SS-T-312B - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.
 - 5. FS SS-W-40A - Wall Base: Rubber and Vinyl Plastic.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

1.04 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame/fuel/smoke rating requirements in accordance with ASTM E84.

1.05 SUBMITTAL

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Samples: Sample Binder.

1.06 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout provisions.
- B. Cleaning and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.07 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum 10 years documented experience.
- B. Installer: Company specializing in applying the work of this Section with a minimum five (5) years documented experience and approved by product manufacturer.
- C. Use skilled experienced workmen, trained, and who are completely familiar with and have five (5) years minimum experience with the specified requirements and methods needed to carry out performance of the work of this Section.
- D. Installer shall, upon request of the Architect, provide evidence of having performed satisfactorily using similar materials as specified herein.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Protect roll materials from damage by storing on end.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental provisions.
- B. Store materials for not less than 48 hours prior to installation in area of installation to achieve temperature stability.

1.10 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Extra material provisions.
- B. Furnish no less than 2 percent of floor tile and base (full pieces) of each color and pattern selected. Provide each material packaged separately, clearly identified, and adequately protected.

1.11 GUARANTEE

- A. Installer shall furnish written guarantee that all work required by this section shall be free from defects in material and workmanship, provided the contractor is notified in writing by Owner of any defect within one (1) year from date of project substantial completion.

PART 2 PRODUCTS

2.01 RESILIENT SHEET FLOORING

- A. RES-01: VINYL PLANK FLOORING
 - 1. Manufacturer: SHAW
Or Equal pre-approved by Architect
 - 2. Product: Native Origins 0116V
 - 3. Dimensions: 6 in x 48 in
 - 4. Pattern: Ashlar
 - 5. Color: To be selected by Owner.

- B. RES-02: VINYL LARGE FORMAT TILE FLOORING
1. Manufacturer: Patcraft
 2. Product: AdMix Or Equal pre-approved by Architect
 3. Field - Typical
 - a. Product: AdMix I347V
 - b. Dimensions: 36 in x 36 in
 - c. Color to be selected by Owner.
 4. 18" Border – Only at Corridor 114
 - a. Product: AdMix I347V
 - b. Dimensions: 36 in x 36 in
 - c. Contrasting Color to be selected by Owner.
- C. INSTALLATION MATERIALS
1. High Moisture Management Solutions (10 Year Warranty)
 - a. Concrete with %RH <99%, MVER <=10, pH < 11
 - 1) Apply USG Advanced skim coat as necessary for patch/skim coat.
 - 2) Install flooring with adhesive.
 - b. Concrete with %RH >= 99%, MVER <=12, pH <= 12
 - 1) Apply Surface Prep EXT followed by Moisture Shield.
 - 2) Apply USG Advanced skim coat as necessary for patch/skim coat.
 - 3) Install flooring with adhesive.
 - c. Concrete with %RH >= 99%, MVER <= 17, pH > 12
 - 1) Apply Surface Prep
 - 2) Apply Moisture Shield.
 - 3) Apply MRP
 - 4) Apply USG Advanced Skim Coat as necessary for patch/skim coat.
 - 5) Install flooring with adhesive
 - d. Concrete with %RH >= 99%, MVER >17, pH > 12
 - 1) Apply Shaw Surface Prep EXT followed by MoistureTek.
 - 2) Apply USG Advanced skim coat as necessary for patch/skim coat.
 - 3) Install flooring with adhesive.
 2. Adhesives:

a. Lokworx Resilient	95% RH	8 lbs	pH 10
b. Lokworx+ Resilient			
c. S150 spray	95% RH	NA	pH 11
d. Shaw 4151 for high moisture	99% RH	10 lbs.	pH 12
e. Shaw 200 for low demand areas	85% RH	5 lbs	pH 5-9
 3. Primer: Shaw 9050
 4. Leveling and Patching Compounds: Use only Portland-based patching and leveling compounds. Do not install resilient flooring over gypsum-based patching and/or leveling compounds.
 5. Shaw MRP: Barrier Primer over concrete, Old Cut Back Adhesive, Chemically Abated Floors or other solid surfaces
 6. Seam Sealer: Shaw 4062
 7. FinishWorx Transition Strips (Micro Transition, Metal TrimMaster

2.02 ACCESSORIES

- A. Subfloor Filler: Mapei Plani Patch.
- B. Primers and Adhesives: Types recommended by flooring and base manufacturer.
- C. Edge Strips: Vinyl type, color as selected, by Johnsonite (no substitutions), profile as recommended by contractor and approved by Architect.
- D. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Ensure that moisture tests have been conducted and that the results do not exceed 90% In-Situ relative humidity when tested according to ASTM F 2170.
- B. PH of concrete sub-floor surface is no greater than 10.
- C. The permanent HVAC system turned on and set to a minimum of 68°F (20°C) for a minimum of 72 hours prior to, during and after installation. After the installation, the temperature should not exceed 100°F.
- D. Flooring material and adhesive need to be acclimated to the installation area for a minimum of 48 hours prior to installation.
- E. Refer to adhesive label for proper roller or trowel requirements
- F. Material should always be visually inspected prior to installations. Any material installed with visual defects will not be considered a legitimate claim as it pertains to labor cost.
- G. Install all cuts and rolls in consecutive sequence.
- H. Ensure that all recommendations for sub-floor and job site conditions are met prior to beginning the installation. Once the installation has started, you have accepted these conditions.

3.02 PREPARATION

- A. All substrates to receive resilient flooring shall be dry, clean, smooth and structurally sound. They shall be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation or laitance, mold, mildew and other foreign materials that might prevent adhesive bond.
- B. Concrete
 - 1. New or existing concrete subfloors must meet the guidelines of the latest edition of ACI 302 and ASTM F 710.
 - 2. On or below-grade slabs must have an effective vapor retarder directly under the slab.
 - 3. Wet curing 7 days is the preferred method for curing new concrete.
 - 4. Remove curing compounds 28 days after placement, so concrete can begin drying.
 - 5. Concrete floors shall be flat within 3/16" in 10 ft. F-Number System: Overall values of FF 36/FL 20 may be appropriate for resilient floor coverings.
 - 6. Internal relative humidity may not exceed 90% RH.
- C. Priming:
 - 1. Apply concrete primer if so recommended by the resilient flooring manufacturer.
 - 2. Apply in accordance with the manufacturer's recommendations as approved by the Architect.

3.03 INSTALLATION - TILE

- A. Install in accordance with tile manufacturer's instructions.
- B. Install in multi-color pattern as scheduled and with design as provided by Architect. Assume no additional cutting is needed to provide pattern.
- C. Mix tile from container to ensure shade variations are consistent when tile is placed.
- D. Spread only enough adhesive to permit installation of materials before initial set.
- E. Set flooring in place, press with heavy roller to attain full adhesion.

- F. Lay flooring with joints and seams parallel to building lines to produce minimum number of seams and symmetrical tile patterns.
- G. Where floor finishes are different on opposite sides of door, terminate flooring at centerline of door openings.
- H. Install edge strips at unprotected or exposed edges and where flooring terminates.
- I. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- J. Install border where called for.
- K. Fit joints tightly.

3.04 CLEANING

- A. Sweep, vacuum or dust mop to remove dirt and grit.
- B. If needed, add neutral cleaner to cool water following the manufacturer's instructions.
- C. Scrub with a low-rpm machine or auto scrubber. Use a red pad or brush.
- D. Never use brown or black pads (too aggressive and can damage the product)
- E. Remove the cleaning solution with a wet-dry vacuum or auto scrubber until the floor is dry.
- F. Rinse the floor with clean water. Repeat the rinse process if necessary to remove all haze.

3.05 PROTECTION

- A. Use walk-off mats that are as wide as the doorway and long enough for soil load and weather conditions.
- B. Use mats with a non-staining backing.
- C. Floor protectors should be used on all furniture legs.
- D. The surface area of the floor protectors should be no less than 1" in diameter.

END OF SECTION

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SECTION 09 68 12
TILE CARPETING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes modular, tufted carpet tile.
- B. Alternate No.2 applies to some of this work.

1.02 RELATED SECTIONS:

- A. Section 09 65 13 - Resilient Base and Accessories: Resilient wall base and accessories installed with carpet tile.

1.03 SUBMITTALS

- A. Samples: Color samples binder for selection by Architect.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.05 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10.67 sq. yd.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Carpet manufacturer shall have no less than 5 years' experience of producing recyclable carpet tile.
- B. Installer Qualifications: An installer with a minimum of 5 years commercial carpet installation experience.
- C. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with carpet manufacturer's installation recommendations and the Carpet & Rug Institute Installation Standard 2011 where applicable.

1.08 FIELD CONDITIONS

- A. Comply with carpet manufacturer's installation recommendations and the Carpet & Rug Institute Installation Standard 2011 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weather-tight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.

- C. HVAC system should be operational and running prior to carpet installation and remain running after carpet installation.
- D. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to allow bond between adhesive and concrete. Concrete slabs should have moisture and have pH readings that are within the specified tolerance of the adhesive to be used.

1.09 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent face fiber loss, edge raveling, dimensional instability, excess static discharge, loss of tuft bind strength, delamination, and where face fiber is 100 percent solution dyed, inability to remove acid based stains, lack of colorfastness to light, and lack of colorfastness to atmospheric contaminants.
 - 3. Carpet and fiber must be manufactured and warranted by same manufacturer.
 - 4. Warranty Period: Lifetime Commercial Limited Warranty.

PART 2 PRODUCTS

2.01 CARPET TILE

- A. Basis-of-Design Product: Provide Patcraft Modular:
 - 1. Carpet Tile CPT-01: Patcraft Material Paradox – Backlit10469 – Chroma 00700
 - a. Installation Method: Ashlar
- B. Source Limitations: Single Source Responsibility: Provide products that have components manufactured by a single source. Fiber and backing, as well as final carpet product, should be manufactured and warranted by same company.
- C. Colors: Multi-color/Pattern design. As selected & designed by Architect from manufacturer's full range.
- D. Pile Characteristics: Multi-Level Pattern Loop pile.
- E. Fiber Content: Eco Nylon - 100 percent trilobal, minimum 24 denier per filament (DPF) nylon 6. Fiber must contain a minimum of 45 percent recycled content (20 percent pre consumer recycled content and 25 percent post-consumer recycled content.)
- F. Fiber Name: Solution Q Extreme Nylon
- G. Dye Method: 100 percent Solution Dye
- H. Primary Backing: Nonwoven synthetic.
- I. Secondary Backing: High performance precoat laminated to a proprietary thermoplastic polyolefin compound with a fiberglass reinforced layer. Backing must contain a minimum of 40 percent recycled content and be SCS NSF 140 Platinum certified. Backing should be recyclable, PVC free, free of 4-PCH, brominated flame retardants, and phthalate plastizers.
 - 1. Total Backing Weight: Not to exceed 80 oz./sq yd .
- J. Backing System: EcoWorx.
- K. Size: 18" x 36" 10469
- L. Texture Appearance Retention Rating (T.A.R.R.):

1. Texture Appearance Retention Rating (T.A.R.R.): Severe Traffic

M. Performance Characteristics: As follows:

1. Critical Radiant Flux Classification, Flooring Radiant Panel ASTM E648: Not less than 0.45 W/sq. cm.
2. Smoke Density: Less than 450 per ASTM E662.
3. Methanamine Pill Test CPSC FF1-70: Must pass pill test.
4. Tuft Bind: Not less than 8 lbf (36 N) according to ASTM D 1335.
5. Delamination: Not less than 3.5 lbf/in. (15 N/mm) according to ASTM D 3936.
6. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
7. Dimensional Stability: 0.119 percent or less according to ISO 2551 (Aachen Test).
8. Noise Reduction Coefficient (NRC): Minimum 0.20 according to ASTM C 423.
9. Colorfastness to Atmospheric Contaminants: Not less than 4, according to AATCC 129 and AATCC 164.
10. Colorfastness to Light: Not less than 4 after 60 AFU (AATCC fading units) according to AATCC 16, Option E.
11. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174 when installed using the Shaw 5036D pressure sensitive adhesive.
12. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.
13. Emissions: Provide carpet tile that complies with testing and product requirements of Carpet & Rug Institute's "Green Label Plus" program.

2.02 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Trowelable Adhesives: Water-resistant, mildew-resistant, non-staining, premium grade pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation such as Shaw 5000 or Shaw 5100 or available equivalent where slab moisture does not exceed 85 percent per ASTM F 2170 or 5 lbs. per ASTM F 1869. Where moisture exceeds 85 percent or 5 lbs. but does not exceed 90 percent or 10 lbs. use Shaw 5900 or available equivalent.
 1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
 3. Adhesives shall comply with the testing and product requirements of the Carpet and Rug Institute Green Label Plus Program.
- C. Non-Trowelable Adhesive: Water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation such as LokDots where slab moisture does not exceed 95 percent per ASTM F 2170 or 10 lbs. per ASTM F 1869. Each carpet tile must be adhered to the subfloor.
- D. Vinyl Transition Strips: Coordinate at all flooring transition joints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet

tile performance. Examine carpet tile for type, color, pattern, and potential defects prior to installation. See manufacturer's requirements for substrate conditions and ambient conditions.

- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing moisture and pH tests as recommended by carpet tile manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" for slabs receiving carpet tile.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
 - 4. Lightweight concrete and gypcrete subfloors may require a primer such as Shaw 9050 or equivalent to reduce surface porosity.
 - 5. Where previous surface treatments are unknown, or where other concerns exist as to the ability of the adhesive to bond to the substrate, a 24 hour bond test is recommended.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. General: Comply with Carpet & Rug Institute Installation Standard 2011, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Use trowelable leveling and patching compounds that contain a cementitious base with a latex additive, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.03 INSTALLATION

- A. General: Comply with Carpet & Rug Institute Installation Standard 2011, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive or with a non-spreadable dry adhesive system, such as LokDots. Any non-spreadable adhesive system must adhere the carpet to the substrate.
- C. Maintain dye lot integrity. Do not mix dye lots in same area unless the specific carpet tile style is manufactured as a merge-able dye lot product.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, and thresholds. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, non-staining marking device.
- G. Install pattern parallel to walls and borders.
- H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.
- I. Roll the entire installation with a 75 lb. roller once installation is completed.

3.04 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with Carpet & Rug Institute Installation Standard 2011, "Protecting Indoor Installations."
- C. When construction or move-in activities will continue where new carpet is installed, provide non-staining building material paper to protect carpet. Do not use plastic sheeting as it can trap moisture, and self-sticking plastic sheeting can transfer adhesive residue to carpet that will attract soil.
- D. When heavy objects are moved over carpet within 24 hours of installation, use plywood over carpet to prevent buckling and wrinkling.
- E. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

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SECTION 09 68 13
WALK-OFF CARPET TILE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Walk-off carpet squares glued to substrate.
- B. Accessories.

1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete: Floor substrate.
- B. Section 09 65 13 – Resilient Base and Accessories

1.03 REFERENCES

- A. Americans with Disabilities Act (ADA) of 1990, Accessibility Guidelines for Buildings and Facilities.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - 1998 - Accessible and Usable Buildings and Facilities.
- C. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
 - 2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- D. Carpet and Rug Institute (CRI):
 - 1. CRI 104 - Standard for Installation of Commercial Carpet.
- E. Federal Specifications Unit (FSU):
 - 1. FS DDD-C-95 - Carpets and Rugs, Wool, Nylon, Acrylic, Modacrylic.
 - 2. FS DDD-C-0095 - Carpet and Rugs, Wool, Nylon, Acrylic, Modacrylic, Polyester, Polypropylene.
- F. National Fire Protection Association (NFPA):
 - 1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

1.04 SUBMITTALS

- A. Samples: Submit one (1) product sample binder.

1.05 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout provisions.
- B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- C. A copy of the IICRC S001-1994 "Standard Reference Guide for Professional On-Location Cleaning of Installed Textile Floor Covering Materials" shall be furnished to the Owner by the Installer with signed receipt of delivery submitted by the Architect.

1.06 QUALITY ASSURANCE

- A. Manufacturer: A commercial carpet manufacturer specializing in the manufacturing of carpet styles utilizing commercial fiber and yarn systems with a minimum denier per filament of 15 dpf. The carpet must be tested and certified to be for commercial use and appropriate for the end use as specified.
- B. Installer: Company approved by manufacturer. Submit to Architect written proof of ability to purchase materials directly from carpet manufacturer.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for carpet flammability requirements in accordance with ASTM E84.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental provisions.
- B. Store materials for three (3) days prior to installation in area of installation to achieve temperature stability.
- C. Maintain minimum 70 degrees F (21 degrees C) ambient temperature three days prior to, during, and 24 hours after installation of materials.
- D. Ventilate installation area during installation and for three (3) days after installation.

1.09 EXTRA MATERIALS

- A. 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Supply Owner the extra material of carpet no less than 5 tiles.

PART 2 PRODUCTS

2.01 CARPET

- A. Basis-of-Design Product: Provide Patcraft Walk Right In II:
 - 1. Carpet Tile CTP-02: Patcraft Walk Right In II – tentative Navy 00450
- B. Walk-off Carpet Tile: Patcraft Walk Right In II
 - 1. Primary Backing: Polypropylene
 - 2. Secondary Backing: Infinity® RE with a minimum 10% post-consumer and 20% pre-consumer recycled content by total product weight, or equal.
 - 3. Wear Warranty: Lifetime Limited Wear Warranty
 - 4. Backing Warranty : Lifetime Limited Backing Warranty
 - 5. Bleach Resistance Warranty: 15 Year Limited ColorSafe® Warranty, or equal.
 - 6. Stain Resistance Warranty: 15 Year Limited XGUARD® Warranty, or equal.
 - 7. Size: 24 inches x 24 inches.

2.02 ACCESSORIES

- A. Subfloor Filler: Mapei Plani Patch.
- B. Primers and Adhesives: Types recommended by carpet manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 31 00 - Project Management and Coordination: Coordination and project conditions.
- B. Verify that substrate surfaces are smooth and flat with maximum variation of 1/8 inch in 10 feet and are ready to receive work.
- C. New concrete shall be cured, clean, and dry. It shall be free of curing or parting agents that interfere with the bonding of the adhesive. Old concrete must be clean, dry, and free of paint, dirt, adhesive, oils, and other contaminants.
- D. Verify concrete floors are dry to a maximum moisture emissions rate of 5 lbs per 1,000 square feet; and exhibit negative alkalinity, carbonization, or dusting. A pH range of 5 to 9 is satisfactory.
- E. Temperature and Humidity: Carpet shall be installed when the temperature is between 65°F and 95°F (18°C and 25°C) and the relative humidity is between 10% and 65%, and, if installing over concrete, the slab temperature should not be less than 65°F (18°C).
- F. Environmental Conditions: Fresh air ventilation during installation should be maintained by opening windows and doors, by utilizing exhaust fans, and by operating the ventilation system at full capacity. Always exhaust to the outside and avoid the recirculation of air.
- G. Fresh air ventilation should be maintained after installation for 48-72 hours at normal room temperatures by operating the ventilation or exhaust fan system at full capacity and opening windows and doors, if possible. This procedure will help exhaust, dissipate, and eliminate any lingering odors.
- H. Conditions: The carpet and adhesive shall be conditioned on-site in a heated, dry space at a minimum temperature of 65°F (18°C) and a relative humidity between 10% and 65% for at least 48 hours before installation. These conditions shall be maintained night and day during installation and for at least 72 hours after completion.
- I. Beginning of installation means acceptance of substrates and site conditions.

3.02 PREPARATION

- A. Level subfloor so as to be free from irregularities. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler. Grind high spots. Prepare subfloor to provide a maximum variation of 1/16 inch in 10 feet.
- B. Apply, trowel, and float filler to leave smooth, flat, hard surface.
- C. Prohibit traffic until filler is cured.
- D. Vacuum clean substrate.
- E. Immediately prior to installation of the work of this Section, thoroughly clean substrate and remove oil, grease, paint, varnish, hardeners, and other items which would adversely affect the bond of adhesive. Moisture check new construction of freshly poured slab.

3.03 INSTALLATION

- A. Install carpet in accordance with CRI 104.
- B. Apply carpet and adhesive in accordance with carpet manufacturers' instructions.
- C. Verify carpet match before cutting to ensure minimal variation between dye lots.
- D. Double cut carpet, to allow intended seam and pattern match. Make cuts straight, true, and unfrayed. Edge seam carpet at public areas.

- E. Locate seams in area of least traffic.
- F. Fit seams straight, not crowded or peaked, free of gaps.
- G. Lay carpet on floors with run of pile in same direction as anticipated traffic.
- H. Do not change run of pile in any room where carpet is continuous through a wall opening into another room. Locate change of color or pattern between rooms under door centerline.
- I. Cut and fit carpet neatly at walls and around interruptions.
- J. Fit carpet tight to intersection with vertical surfaces without gaps.
- K. Rolling: Rolling shall be performed with the lightest roller that will achieve 100% transfer of the floor adhesive into the carpet back. Refer to manufacturer's recommendations.

3.04 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Remove access adhesive from floor, base, and wall surfaces without damage.
- C. Clean and vacuum carpet surfaces.

3.05 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Do not permit traffic over unprotected floor surface.
- C. Materials for Protection: If required to protect the finished floor covering from dirt or paint, or if additional work is to be done after the installation, cover it with a non-staining building material paper.
- D. Plastic sheeting shall not be used over glue-down or tackled installations as it may trap moisture, retarding adhesive cure and promoting mold and mildew growth.
- E. Protect the installation from rolling traffic by using sheets of hardboard or plywood in affected areas.
- F. Curing of Adhesive: Traffic over adhesive installations should be restricted for a minimum of 24-48 hours to allow proper adhesive cure. Premature traffic can cause installation failure. Exposure to water from cleaning and other sources should be restricted for a minimum of 30 days.
- G. Maintain Temperature: Temperatures of indoor-carpeted areas should never fall below 50°F (10°C) regardless of the age of the installation.

END OF SECTION

SECTION 09 72 16
VINYL-COATED FABRIC WALL COVERING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation and prime painting.
- B. Wallcovering.

1.02 RELATED SECTIONS

- A. Section 09 29 00 - Gypsum Board: Wall substrate.

1.03 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Product Data: Provide data on wallcovering and adhesive.
- C. Samples: Submit samples of wallcovering, in size illustrating color, finish, and texture.

1.04 QUALIFICATIONS

- A. Applicator: Company specializing in performing the work of this section with minimum three years experience.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame and smoke ratings.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Inspect roll materials on site to verify acceptance.
- C. Protect packaged adhesive from temperature cycling and cold temperatures.
- D. Do not store roll goods on end.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the adhesive or vinyl covering product manufacturer.
- B. Maintain these conditions 24 hours before, during, and after installation of adhesive wallcovering.

1.08 EXTRA MATERIALS

- A. Furnish under provisions of Section 01 70 00.
- B. Provide 10 linear feet of each color of wallcovering under provisions of Section 01 70 00.
- C. Package and label each roll by manufacturer, color and pattern, and destination room number; store where directed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Wallcovering: shall meet Federal Specification CCC-W-408 C and the CFFA-W-101-A, Quality standard for Vinyl Coated Fabric Wallcovering. The wallcovering shall be Type II, 54-inch width, Oshburg fabric backing, total weight 21 ounces, stipple texture, and shall contain mildew inhibitors. Color shall be selected by Architect. Provide five-year warranty against manufacturing defects in the wallcovering.
- B. Substrate Filler: As recommended by adhesive and wallcovering manufacturers; compatible with substrate.
- C. Substrate Primer and Sealer: Alkyd enamel type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions under provisions of Section 01 33 00.
- B. Verify that substrate surfaces are ready to receive work, and conform to requirements of the wallcovering manufacturer.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply coverings unless moisture content of surfaces are below the following maximums:
 - 1. Plaster and Gypsum Wall board: 12 percent.

3.02 PREPARATION

- A. Fill cracks and smooth irregularities with filler; sand smooth.
- B. Remove electrical and telephone wall plates and covers.
- C. Apply primer seal to substrate surfaces in accordance with manufacturers instructions.
- D. Vacuum clean surfaces free of loose particles.

3.03 INSTALLATION

- A. Apply adhesive and wallcovering in accordance with manufacturer's instructions. Horizontal seams are not acceptable. Do not seam within 2 inches of internal corners or within 6 inches of external corners.
- B. Install wallcovering before installation of bases, cabinets, hardware, or items attached to or spaced slightly from wall surface. Do not install wallcovering more than 1/4-inch below top of resilient base. Cover spaces above and below windows, above doors, in pattern sequence from roll.

3.04 CLEANING

- A. Clean work under provisions of 01 70 00. Clean wallcoverings of excess adhesive, dust, dirt, and other contaminants. Reinstall wall plates and accessories removed prior to work of this Section.

3.05 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01 50 00.
- B. Do not permit work at or near finished wall covered areas.

END OF SECTION

SECTION 09 91 00
PAINTING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Surface preparation.
- B. Surface finish.
- C. Alternate No. 1 applies to some of this work.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - 2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
- B. Painting and Decorating Contractors of America:
 - 1. PDCA - Architectural Painting Specification Manual.
- C. SSPC: The Society for Protective Coatings:
 - 1. SSPC - Steel Structures Painting Manual.
- D. OSHA
- E. WI DNR

1.03 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.04 REGULATORY REQUIREMENTS

- A. Conform to International Building Code for flame/fuel/smoke rating requirements for finishes.
- B. Conform to all OSHA and WI DNR requirements for surface preparation, existing finish removal and disposal, especially regarding lead based paints.

1.05 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Samples: Submit samples illustrating range of colors available for each surface finishing product scheduled, for selection.
- C. Submit two (2) drawdowns of each product and color combination selected. Drawdowns shall be applied using a 4 mil WFT drawdown bar on Leneta form WD plain white coated cards size 3-7/8 inch x 6 inch.
 - 1. Label each card with the following:
 - a. Job Name.
 - b. Date.
 - c. Product Name.
 - d. Product Number.
 - e. Color number as stated in the color schedule.
 - f. Name, address, and phone number of the supplying facility.

1.06 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout provisions.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up and repair of painted and coated surfaces.

1.07 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing quality products specified in this section with minimum three (3) years documented experience.
- B. Applicator: Company specializing in performing commercial work of this section with minimum three (3) years documented experience.
- C. Certified lead renovation contractor or lead abatement contractor for removal or surface preparation of existing lead based finishes.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling provisions.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- D. Paint Materials: Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in well ventilated area, unless required otherwise by manufacturer's instructions.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental provisions.
- B. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 50 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- C. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- D. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- E. Minimum Application Temperatures for Latex Paints: 50 degrees F (10 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.
- F. Minimum Application Temperature for Varnish and Stain Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.
- G. Comply with OSHA and WI DNR requirements when dealing with existing lead based paint finishes.

1.10 EXTRA MATERIAL

- A. Section 01 70 00 - Execution and Closeout Requirements: Extra material provisions.

- B. Provide a one (1) gallon container of each color, type, and finish to Owner.
- C. Label each container with color, texture, and room locations in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PAINT, PRIMERS, SEALERS, BLOCK FILLER

- A. Sherwin Williams.
- B. Other Acceptable Manufacturers that can meet same or better requirements of the specified Sherwin Williams paint: Hallman Lindsay Paint, Pratt & Lambert, PPG Paints, and Diamond Vogel.

2.02 ACCEPTABLE MANUFACTURERS - URETHANE AND STAIN

- A. Sherwin Williams.
- B. Other Acceptable Manufacturers that can meet same or better requirements of the specified Sherwin Williams products: Hallman Lindsay Paint, Pratt & Lambert, PPG Paints, and Diamond Vogel.

2.03 MATERIALS

- A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.04 FINISHES

- A. Refer to schedule at end of Section for surface finish. Colors shall be selected by Architect.
- B. See plans and specifications for items to receive finishes.
- C. If the drawings do not convey a particular color scheme, a multiple color scheme for interior paint finishes shall be presumed. This may include exterior doors with a different color on the interior surface than the exterior surface, up to 5 different interior wall colors (for the project) and individual rooms having 2 different wall colors within them. Color transitions if present will occur at outside corners, inside corners and/or at a transition point with surface mounted trim.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Plaster and Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 - 3. Interior Located Wood: 15 percent, measured in accordance with ASTM D4442.

4. Exterior Located Wood: 15 percent, measured in accordance with ASTM D4442.

E. Contractor is required to test existing paint finishes for the presence of lead prior to removal or surface preparation.

F. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

B. Surfaces: Correct minor defects and clean surfaces which affect work of this Section.

C. Marks: Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

H. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

I. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.

J. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

K. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

L. Remove and dispose or prepare lead based paint finishes in accordance with OSHA and WI DNR requirements.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.
- G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- H. Prime back surfaces of interior and exterior woodwork with primer paint.
- I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.
- J. If painting is scheduled at the interior surface of an exterior masonry wall, the entire wall surface, including concealed spaces, shall be painted.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Divisions 22, 23, and 26 are responsible for color coding and identification banding of equipment, ductwork, piping, and conduit.
- B. Paint shop primed equipment.
- C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- D. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished at locations where adjacent surface is scheduled to be painted.
- E. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- F. Painting of interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers shall be by Divisions 22, 23, and 26.
- G. Paint exposed conduit and electrical equipment occurring in finished areas.
- H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.06 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
- C. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

- D. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

- A. Division 08: All hollow metal doors and hollow metal frames.

3.08 INTERIOR PAINT SCHEDULE:

- A. Gypsum Drywall - walls:
 - 1st Coat: 100% acrylic primer
 - Min. DFT: 1.6mils
 - Min. Volume Solids: 39%
 - 1. S-W Premium Interior Wall and Wood Latex Primer B28W8111
 - 2. PPG Speedhide Interior Latex Primer Sealer 6-2
 - 2nd Coat: Vinyl acrylic eggshell finish
 - 3rd Coat: Vinyl acrylic eggshell finish
 - Min. DFT: 1.6 per coat
 - Min. Volume Solids: 37%
 - Sheen: 10-20 units @ 85 degrees
 - 1. S-W ProMar 200 Latex Eg-shel B20W200 series
 - 2. PPG Aquapon WB Waterborne Gloss.
- B. Gypsum Drywall - ceilings:
 - 1st Coat: 100% acrylic primer
 - Min. DFT: 1.6 mils
 - Min. Volume Solids: 39%
 - 1. S-W Premium Interior Wall and Wood Latex Primer B28W8111
 - 2. PPG Speedhide Interior Latex Primer Sealer 6-2
 - 2nd Coat: Vinyl acrylic flat finish
 - 3rd Coat: Vinyl acrylic flat finish
 - Min. DFT: 1.2 per coat
 - Min. Volume Solids: 27%
 - Sheen: 0-5 units @ 85 degrees
 - 1. S-W ProMar 400 Latex Flat B30W400 series
 - 2. PPG Speedcraft Interior Wall & Ceiling Flat Latex 5-70 Series.

3.09 MISCELLANEOUS PAINT SCHEDULE

- A. For items that require finish and no specific paint system is identified, provide manufacturer recommended paint system for the given application.

END OF SECTION

SECTION 10 14 00
EXTERIOR SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cast Aluminum Fabricated Letters.

1.02 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Indicate signage dimensions.
- C. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer to have a minimum of 20-year experience in manufacturing letters.
- B. Installer Qualifications: Minimum 2-year experience installing similar products.
- C. Sourcing: All signage shall be manufactured by one manufacturer.

PART 2 PRODUCT

2.01 MANUFACTURER

- A. Acceptable Manufacturer: Gemini Inc., which is located at: 103 Mensing Way; Cannon Falls, MN
- B. Or Equal.

2.02 FABRICATED LETTERS

- A. Building Exterior Letters: Cast aluminum letters, as manufactured by Gemini Incorporated or equal
- B. Size of letters are indicated on Drawings. Size may be reduced by up to 1" if needed to accommodate available standard sizes.
- C. Mounting:
 - 1. At Masonry – Projected Jam Nut Standoff mount.
 - 2. Font: As selected by Owner from manufacturers standard options.
 - 3. Color shall be selected by Architect from manufacturer's standard colors:
 - a. Brushed Clear Anodized or Black Andozed
 - b. Painted - Minimum of 40 colors.
- D. Provide layout drawing, showing font, size, and layout, for review by Architect.
- E. Fabricate installation template after layout has been approved.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in proper relationship to adjacent construction.

END OF SECTION

SECTION 10 14 10
INTERIOR SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal and turn over to Owner all existing room and wayfinding signage disturbed by construction and/or as noted on the drawings.
- B. Reinstallation of existing restroom signs.

1.02 SUBMITTALS (NONE)

PART 2 PRODUCTS

2.01 ACCESSORIES

- A. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that surfaces are ready to receive work.
- C. Beginning of installation means acceptance of substrates.

3.02 INSTALLATION

- A. Mount accessible room signage with adhesive to wall adjacent to latch side of door. If not detailed on the drawings the room signs shall be mounted 9 inch minimum from edge of door to center of sign and 52 inches above finished floor to center of sign.

3.03 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Cleaning provisions.
- B. Clean signs per manufacturer's instructions.

END OF SECTION

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SECTION 10 26 00
VINYL CORNER AND WALL GUARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Corner guard system for wall protection.

1.02 SUBMITTALS

- A. Samples: color selection samples.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging to the jobsite
- B. Inspect materials at delivery to ensure that specified products have been received.
- C. Store in original packaging in a climate-controlled location away from direct sunlight.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements: Products must be installed in an interior climate-controlled environment.

1.05 WARRANTY

- A. Standard Limited Lifetime Warranty against material and manufacturing defects.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer:
 - 1. INPRO/IPC Door and Wall Protection Systems, InPro Corporation, PO Box 406 Muskego, WI 53150 USA; Telephone: 800-222-5556, Fax: 888-715-8407, Internet address: <http://www.inprocorp.com>
 - 2. Substitutions: Approved Equal
- B. Provide all corner guards and wall protection from a single source.

2.02 MANUFACTURED UNITS

- A. Corner Guard
 - 1. InPro 160 Corner Guards with Aluminum retainer.
 - 2. Size: 2" x 2" (90 degree)
 - 3. Standard height: 4'
 - 4. Color: Solid vinyl—color as selected by Architect. 50 standard colors.
 - 5. Surface shall have a pebblette texture.

2.03 MATERIALS

- A. Vinyl: Extruded from chemical and stain resistant polyvinyl chloride with the addition of impact modifiers. No plasticizers shall be added.

2.04 COMPONENTS

- A. Attachments

1. Anchors: To suit application and manufacturer recommendations.

PART 3 EXECUTION

3.01 EXAMINATION/PREPARATION/INSTALLATION

- A. Examine areas and conditions in which the corner guard systems will be installed.
 1. Complete all finishing operations, including painting, before beginning installation of corner guard system materials.
 2. Wall surface shall be dry and free from dirt, grease and loose paint.
- B. General: Prior to installation, clean substrate to remove dust, debris and loose particles.
- C. General: Locate the corner guard directly above the 4" resilient base at locations indicated on drawings for the appropriate substrate and in compliance with the IPC installation instructions. Install corner guard level and plumb.

3.02 CLEANING

- A. At completion of the installation, clean surfaces in accordance with the IPC clean-up and maintenance instructions.

END OF SECTION

SECTION 10 28 13
TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Toilet accessories.
- B. Attachment hardware.
- C. Installation of accessories provided by the Owner.

1.02 REFERENCES

- A. Americans with Disabilities Act (ADA) of 1990, Accessibilities Guidelines for Buildings and Facilities.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - 2003 - Accessible and Usable Buildings and Facilities.
- C. American Society of Testing and Materials (ASTM): ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium. ASTM C1036 - Standard Specification for Flat Glass.
- D. International Code Council:
 - 1. IBC - International Building Code, 2006 edition, with all referenced standards and 2008 State of Wisconsin amendment.

1.03 SUBMITTALS (NONE)

1.04 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination provisions.
- B. Coordinate the Work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

1.05 WARRANTY

- A. Mirrors: Guarantee against loss of perfect reflection quality for 15 years.

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Manufacturers:
 - 1. American Specialties, Inc. (ASI)
 - 2. Bobrick Washroom Accessories.
 - 3. Bradley Corp.
 - 4. General Accessories Manufacturing Corp. (Gamco).
 - 5. Substitutions: None.

2.02 COMPONENTS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation. Grind welded joints smooth.
- B. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof or security type.

2.03 ACCESSORIES

- A. Mirrors: Indicated at lavatory sinks Channel Frame glass, American Specialties 0620, Bobrick B-165, Bradley 781, or Gamco C-Series.
- B. Grab Bars, Concealed Mounting: American Specialties 3800 Series, Bradley 812, Bobrick B-6806, or Gamco "150-S" Series. Assembly shall be able to withstand 300 pound downward pull.
- C. Surface Mounted Waste Receptacle: Bobrick B-277 or equal.
- D. Clothes Hook: Bobrick B-233 or equal with tamper proof SS screws. Provide as follows:
 - 1. 1 per baby changing station.
 - 2. Mount at 47" above finished floor.
 - 3. Field verify mounting locations with Architect.
- E. Baby Changing Station: Koala Design (ADA Compliant) or equal. Orientation as indicated on the drawings. Color as selected by Architect.
 - 1. Horizontal orientation – KB 208 accessible
- F. Items furnished by Owner and installed by Contractor:
 - a. Toilet Paper Dispensers.
 - b. Paper Towel Dispensers.
 - c. Soap dispensers.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings. Beginning of installation means acceptance of substrates.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site at appropriate time for building-in. Provide templates and rough-in measurements as required. Verify exact location of accessories for installation.

3.03 INSTALLATION

- A. Install fixtures, accessories, and items in accordance with manufacturers' instructions.
- B. Install other accessories so that bottom of item is at 40 inches above finished floor, unless noted otherwise.
- C. All accessories shall be mounted so that all operable parts are no more than 48 inches above finished floor.
- D. All accessories shall be mounted so as to comply with ADA and ANSI requirements.
- E. Install plumb and level, securely and rigidly anchored to substrate.

END OF SECTION

SECTION 13 40 00
BULLET-RESISTANT PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Bullet resistant transaction window
- B. Bullet resistant wall liner panel.
- C. All accessories and components for a Level 4 bullet resistant rating.

1.02 RELATED SECTIONS

- A. Section 06 41 00 - Architectural Wood Casework.
- B. Section 07 92 00 - Joint Sealers.
- C. Division 8 – BR Doors and frames.

1.03 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal provisions.
- B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances.
- C. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Safeguard Security Systems - www.armortex.com
- B. Or equal.

2.02 BULLET-RESISTANT FIBERGLASS WALL PANELS:

- A. Shall be 1 5/16 (+/-) inch thick, UL4 rated, Armotex product code O.F.400 or equal.
- B. Bullet-Resistant Fiberglass Sheet - ARMORTEX Opaque Fiberglass.
 - 1. Manufactured from multiple layers of woven roving ballistic grade fiberglass cloth impregnated with thermoset polyester resin, compressed into flat rigid sheets.
 - 2. Provide controlled internal delaminating to permit capture of penetrating projectile.
 - 3. Ballistic Level: 4
 - 4. Fire rating: 1 hour, tested to ASTM E119.
 - 5. Sizes: 3' or 4' widths and 8', 9', and 10' length
 - 6. BULLET-RESISTANT TRANSACTION WINDOW:
- C. Shall be 3-sided extruded aluminum, clear or dark bronze anodized finish, prime painted 16 gauge steel, with UL-4 rating, non-ricochet natural voice frame with U.L. rated fiberglass frame liner.
- D. Glazing shall be 1.31 inch thick, UL-4 rated, glass/polycarbonate composite, Armotex Product Code GCP 400.
- E. 12 inch wide 16 gauge stainless steel dip tray, SS #3 finish, Armotex Model #RMDT-1012.

2.03 FABRICATION

- A. Fabricate frames as welded unit.

2.04 ACCESSORIES

- A. Adhesives and Fasteners, Type recommended by bullet-resistant sheet manufacturer to specific application

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that opening sizes and tolerances are acceptable.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions
- B. Cut panels to fit at perimeter and around penetrations
- C. Reinforce joints between sheets with minimum 4-inch-wide backup layer of bullet-resistant sheet, centered on joint. Bullet-resistant of reinforced joint at least equal to ballistics level of panel
- D. Fasten or adhere panels to supports in manner to maintain bullet-resistive rating at perimeter, junctures with other materials, and penetrations

END OF SECTION

**Adams County Administration Building
Site and Interior Improvements
Friendship, WI 53934**

**DIVISION 22
PLUMBING SCOPE SPECIFICATIONS**

PART 1 – GENERAL

The following codes and standards shall apply to the plumbing design and installation. The codes listed below are not all inclusive, all applicable codes pertaining to a building of this type must be met:

Abbreviations of standards of organizations referenced in this and other sections are as follows:

ADAAG	Americans with Disabilities Act Accessibility Guidelines
DCF 251	State of WI Department of Children & Families Licensing Rules for Group Child Care Centers and Child Care Programs Established or Contracted For By Schools Boards
IBC	ICC International Building Code 2015
ICC A117.1	ICC/ANSI Accessible and Usable Building and Facilities
IEBC	ICC International Existing Building Code 2015, Addition and Alteration
IECC	ICC International Energy Conservation Code 2015
IFC	ICC International Fire Code 2015 (State of Wisconsin)
IFC	ICC International Fire Code 2021 (Town of Friendship)
SPS 361	Administration & Enforcement of State of WI Building Code
SPS 362	State of WI Building Code
SPS 361	Administration & Enforcement of State of WI Building Code

General

State of Wisconsin Commercial Building Code & ICC 2015
American National Standards ICC/ANSI A117.1 for accessibility
Wisconsin Uniform Plumbing Code
Town of Friendship Building Code

GENERAL PROVISIONS

This specification for the Plumbing work is a "performance" scope specification. It is intended to establish design criteria for the Plumbing work. The Plumbing Contractor shall assume full responsibility for the design and construction to meet the requirements of the Owner, Architect, State and Local Codes, Plumbing industry standards and fully coordinate with all Building Contractors. All references to Contractor in this Division shall mean Plumbing Contractor.

The Contractor shall be the Designer of Record for the Plumbing in this project. The Contractor shall complete the system design, drawings and coordinate all requirements with the Owner, Architect and other Building Contractors. The Contractor shall submit plans for approval.

The Plumbing Contractor shall include, as part of his bid, a list of manufacturers and model numbers used in the preparation of his bid. This shall include the following:

Plumbing Fixtures and Trim

1
2 Plumbing Equipment and Accessories
3
4 Drains and Cleanouts
5
6 Pipe, Fittings, and Valves
7
8 Pipe Insulation, and Pipe Hangers / Support
9
10 Pipe Labels, and Valve Tags
11
12 All penetrations through walls will be provided with complete firestopping.
13
14 Provide additional load calculations to the city or state inspector requesting them.
15
16 Cutting and patching for the plumbing work: Patching shall be provided by the General Contractor
17 where required.
18
19 The work covered by this Division of the specifications includes the furnishing of all necessary
20 components and incidental items for executing and completing the plumbing design work and
21 plumbing installation work.
22
23 Read all other Divisions of the Specifications, which are applicable to this work, including the
24 General Conditions section applicable to all bidders.
25
26 **CODES, PERMITS, TAXES AND CERTIFICATES OF INSPECTION AND APPROVAL**
27
28 This system shall be installed in accordance with all national, state and local codes and
29 regulations.
30
31 The Contractor shall secure and pay for all permits, licenses and certificates of inspection
32 applicable to this work.
33
34 The Contractor shall pay for all taxes applicable to this work.
35
36 Copies of the certificates shall be included in the Operating and Maintenance Instructions.
37
38 Provide all documents, calculations, drawings, and information and include costs of all required
39 plan review/approval and processing fees.
40
41 **OPERATING AND MAINTENANCE INSTRUCTIONS**
42
43 Prepare three (3) copies of operating manuals plus electronic format in pdf.
44
45 Assemble material in three-ring or post binders, using an index at the front of each volume and
46 tabs for each system or type of equipment. In addition to the data indicated in the General
47 Requirements, include the following information:
48
49 Copies of all approved shop drawings.
50
51 Documentation of the care, maintenance, and operation of all equipment and systems.
52
53 Manufacturer's wiring diagrams for electrically powered equipment.
54
55 Records of tests performed to certify compliance with system requirements.
56

- 1 Certificates of inspection by regulatory agencies.
- 2
- 3 Parts list for manufactured equipment.
- 4
- 5 Lubrication instructions, including list/frequency of lubrication done during construction.
- 6
- 7 Warranties.
- 8
- 9 As-built drawings.
- 10
- 11 Manufacturer contact information.
- 12

13 **TRAINING OF OWNER PERSONNEL**

- 14
- 15 Instruct Owner personnel in the proper operation and maintenance of systems and equipment
- 16 provided as part of this project, using the Operating and Maintenance manuals during this instruction.
- 17 Demonstrate startup and shutdown procedures for all equipment. All training shall be during normal
- 18 working hours.
- 19

20 **WORK OF OTHER SECTIONS**

- 21
- 22 Plumbing required for the HVAC system.
- 23

24 **FINAL REQUIRMENTS**

- 25
- 26 All tests and trials of the entire system requested or directed by the Engineer/Architect must be made
- 27 by the Contractor free of charge before acceptance of the work.
- 28

29 **GUARANTEE**

- 30
- 31 This Contractor guarantees all work, new material and apparatus to operate to the satisfaction of the
- 32 Owner/Architect for one year from the completion and acceptance of the system and must keep
- 33 same in repair for said period, unless such defects are clearly the result of bad management.
- 34

- 35 The guarantee period shall start when the system has been accepted by the Owner/Architect as
- 36 being in working order.
- 37

38 **PROJECT OVERVIEW AND DESIGN PARAMETERS**

- 39
- 40 All new floor openings and cores shall be x-rayed and approved by the structural engineer prior to
- 41 performing the work.
- 42

43 **Domestic Water:**

- 44
- 45 The existing water mains are to remain.
- 46

- 47 Modify existing branch piping as required to suit new fixtures and remodeled spaces. Piping serving
- 48 existing to remain fixtures to remain in place to the extent possible. Provide new branch piping to all
- 49 new plumbing fixtures. Provide new isolation ball valves and balance valves to isolate each of the
- 50 newly remodeled rooms.
- 51

- 52 Route hot water return piping to the new lavatory locations. Field verify connection points. Balance
- 53 entire system as required to maintain hot water temperatures to both the new and existing fixture
- 54 locations. Provide hot water recirculation piping in accordance with the Wisconsin plumbing code,
- 55 and IECC 2015 requirements.
- 56

1 Sanitary Waste & Vent:

2
3 The existing sanitary mains are to remain.

4
5 Modify existing waste and vent piping to the extent required to suit the remodeled spaces. Provide
6 new piping to all new fixtures.

7
8 Plumbing Fixtures:

9
10 Remove and dispose of all demolished plumbing fixtures where shown on the architectural plans.
11 Remove and dispose of all associated piping and cap back at nearest active main.

12
13 Provide new fixtures where shown on the architectural plans. Provide a complete plumbing system
14 (sanitary/vent, domestic hot & cold water) as required, for all fixture to operate properly.

15
16 Storm:

17
18 N/A.

19
20 Toilet Rooms

21
22 The remodeled toilet rooms shall have ADA compliant fixtures.

23
24 Restrooms shall have an ADA floor mounted, pressure assist toilets. Provide with flush
25 handles on the tank side opposite of wall.

26
27 Lavatory basins shall be wall-mount (refer to Architectural plans). Faucets shall be manual
28 with quarter turn ceramic disc cartridges. Provide with thermostatic mixing valves below
29 lavatory basins. The mixing valve shall be secured to the wall and the supply tubes shall be
30 neatly installed.

31
32 Break Room

33
34 The break room shall have an ADA compliant integral sink.

35
36 Faucets shall be manual with quarter turn ceramic disc cartridges.

37
38 Provide a refrigerator valve box behind the refrigerator.

39
40
41 Drains and Receptors

42
43 Floor drains shall be provided in each new restroom. Floor drains shall have square grates
44 and shall be installed square with the tiles and walls.

45
46
47 **PART 2 - PRODUCTS**

48
49 **SANITARY WASTE AND VENT**

50
51 Pipe and Fittings:

52
53 Cast iron, soil or no-hub, service weight for all sanitary waste and vent piping, ASTM A74
54 or CISPI 301, with rubber gasket ASTM C564.

1 PVC, Schedule 40, ASTM D-1784, with PVC-DWV socket fittings, ASTM D-2665 with
2 PVC solvent cement, ASTM D-2564.

3
4 Testing:

5
6 Test sanitary piping 5 PSI compressed air.

7
8 **STORM/CLEARWATER WASTE AND VENT**

9
10 Pipe and Fittings:

11
12 Cast iron, soil or no-hub, service weight for all sanitary waste and vent piping, ASTM A74
13 or CISPI 301, with rubber gasket ASTM C564.

14
15 PVC, Schedule 40, ASTM D-1784 with PVC-DWV socket fittings, ASTM D-2665 with
16 PVC solvent cement, ASTM D-2564.

17
18 **DOMESTIC WATER DISTRIBUTION**

19
20 Pipe and Fittings:

21
22 Interior Above Ground:

23
24 Copper tube, Type L, hard temper for all riser mains per ASTM Specification
25 B88, Wrought copper sweat fittings and 95/5 solder joints tin-antimony, or other
26 lead-free solder.

27
28 Mechanically pressed fittings for copper per ASTM B16.18 or ASTM B16.22,
29 EPDM O-ring by Viega.

30
31 Shutoff Valves:

32
33 Ball valve, bronze body, two-piece, conventional port.

34
35 Balancing Valves:

36
37 Bell & Gossett "Circuit Setter" bronze body balancing valve with sweat or threaded ends,
38 calibrated brass orifice, integral adjustment knob with calibrated scale, memory stop
39 indicator, drain tapping and differential pressure metering connections.

40
41 Check Valves:

42
43 Swing check, bronze body, resilient seat.

44
45 Testing:

46
47 Test water piping before connecting fixtures with hydrostatic pressure of 100 psi without
48 loss of pressure for at least two hours.

49
50 Disinfecting:

51
52 Provide chlorine disinfection. Test for presence of disinfecting agent at remote locations
53 to ensure the disinfecting agent has reached throughout the domestic water systems.
54 Other disinfecting methods may be used with prior approval of the Architect and local
55 authorities.

56

1 Test for bacteria after disinfecting and domestic water system is flushed.

2

3 **PLUMBING INSULATION**

4

5 Insulate horizontal storm piping above ground. Insulate all domestic water piping (copper),
6 including existing piping where required.

7

8 Glass Fiber Insulation:

9

10 Manville Micro-Lok meeting ASTM C547; rigid molded, non-combustible, "K" Value: 0.23
11 at 75 degrees Fahrenheit, maximum service temperature: 850 degrees Fahrenheit, with
12 vapor Retarder Jacket: AP-T Plus White Kraft paper reinforced with glass fiber yarn and
13 bonded to aluminum foil, secure with self-sealing longitudinal laps and butt strips or AP
14 Jacket with outward clinch expanding staples or vapor barrier mastic as needed.

15

16 Connection:

17

18 Waterproof vapor retarder adhesive; Halstead Contact Adhesive.

19

20 Minimum Insulation Thickness:

21

22	PIPE SIZE			
	1"	1¼" TO	2½" TO	5"
23	OR LESS	2"	4"	AND UP
24	<u>SYSTEMS</u>			
25				
26	Storm Conductor Horizontal Piping	---	1"	1"
27	Domestic Cold-Water Piping	½"	1"	1"
28	Domestic Hot Water Supply Piping	1"	1½"	1½"
29	Domestic Hot Water Return Piping	1"	1½"	1½"

30

31 **FIRESTOPPING**

32

33 Sealing and Fire stopping of sleeves/openings between piping, etc. and the sleeve, structural or
34 partition opening shall be the responsibility of the contractor whose work penetrates the opening.
35 The contractor responsible shall hire individuals skilled in such work to do the sealing and
36 fireproofing.

37

38 FIRE AND/OR SMOKE RATED PENETRATIONS:

39

40 Provide material and perform work in compliance with the following:

41

42 2015 International Building Code, Wisconsin Uniform Plumbing Code

43

44 Provide materials tested and listed by Underwriters Laboratories.

45

46 Provide materials which have been tested in accordance with ASTM E814-88: Standard
47 Test Method for Fire Tests of Through-Penetration Firestops.

48

49 Materials shall have been tested to provide fire rating at least equal to that of the
50 construction being penetrated and shall comply with the T-ratings as required by
51 applicable building code.

52

53 Contractor shall submit product data for each firestop system.

54

55 Plumbing Contractor shall use firestop putty, caulk sealant, intumescent wrapstrips, intumescent
56 firestop collars, firestop mortar or a combination of these products to provide a UL listed system

1 for each application required for this project. Provide mineral wool backing where specified in
2 manufacturer's application detail. Use product that has a rating not less than the rating of the wall
3 or floor being penetrated.

4
5 Install approved product in accordance with the manufacturer's instructions where the pipes
6 penetrate a fire/smoke rated surface. When pipe is insulated, use a product which maintains the
7 integrity of the insulation and vapor barrier.

8 9 NON-RATED PENETRATIONS:

10
11 Pipe Penetrations: At pipe penetrations of non-rated interior partitions, floors and exterior walls
12 above grade, use urethane caulk in annular space between pipe and insulation and sleeve.

13 14 **PLUMBING FIXTURES**

15 16 Lavatories:

17
18 Basins shall be ADA compliant, wall mount, vitreous china. Kohler K-2005 or pre-
19 approved equal.

20
21 Faucets shall be ADA compliant, deck mounted, chrome plated, with quarter turn ceramic
22 disc cartridges, and wrist blade handles. Chicago Faucet 802-V317E66XKABCP or pre-
23 approved equal.

24 25 Water closets:

26
27 Water closets shall be ADA compliant, floor mounted, pressure assist tank style toilets,
28 with right hand operation, tank locks, and insulated tank.

29 30 Hose Bibs:

31
32 Exterior hose bibs shall be with a box and door, freeze-less, and with an anti-siphon
33 vacuum breaker. Woodford model B65, or pre-approved equal.

34 35 Sink:

36
37 Break room sink shall be integral with the countertop.

38
39 Faucets shall be ADA compliant, deck mounted, chrome plated, with quarter turn ceramic
40 disc cartridges and wristblade handles. Chicago Faucet 786-GN8AE3XKABCP or pre-
41 approved equal.

42 43 Valve box:

44
45 Refrigerator valve box shall have a built in water hammer arrestor. Provide with
46 ASSE1024 double check in supply line.

47 48 Floor Drains:

49
50 Square nickel bronze strainers for finish floors with tile. Provide with trap seal protection,
51 Rector SureSeal or equal.

52 53 Cleanouts:

54
55 Square nickel bronze covers for floors with tile. Round nickel bronze covers for finished
56 floors other than tile. Round stainless-steel covers for walls.

PLUMBING EQUIPMENT

N/A

PART 3 - EXECUTION

GENERAL REQUIREMENTS

The design of all Plumbing systems shall be performed by a registered P.E., Master Plumber or Plumbing Designer who shall be the supervising professional for this division of the work. The design shall be submitted, coordinated and approved by General Contractor and Owner before installation work begins. The Contractor shall pay for all plan review fees, permits and inspections and plan approvals required for this project. The Contractor is responsible for the sizing of equipment based on code requirements and load calculations he has completed.

This Contractor shall provide all fixtures, equipment, materials and a complete installation. Perform all start-up and testing of equipment to assure the Plumbing system is operating correctly. Provide all systems, fixtures, equipment, materials and accessories that are normally associated with the Plumbing system.

This Contractor shall test all piping systems, backflow devices and balance new and existing hot water systems affected by new installation work to assure compliance with codes for plumbing.

This Contractor shall submit all close-out documentation and completion statements for the project. All Plumbing systems, equipment and fixtures shall be installed and placed in operation in strict accordance with the manufacturer's recommendations.

QUALITY ASSURANCE

Comply with manufacturer's instructions in full detail, including each step-in sequence. Should instructions conflict with contract documents, request clarification from General Contractor before proceeding.

Where equipment or accessories are used which differ in arrangement, configuration, dimensions, ratings, or engineering parameters from those indicated in the contract documents, the contractor is responsible for all costs involved in integrating the equipment or accessories into the system and for obtaining the performance from the system into which these items are placed. This may include changes found necessary during the testing, adjusting and balancing phase of the project.

EXAMINATION

DELIVERY, STORAGE AND HANDLING

Material on Site and Storage:

Maintain proper care and storage of material, equipment and fixtures on site.

All copper supply piping shall be capped for protection from contamination when stored onsite or left unattended while being installed.

Any material damaged by rust corrosion, warping, breakage, finish damage, etc. shall be replaced by the Contractor to the satisfaction of the Owner/Architect.

SANITARY AND VENT SYSTEMS INSTALLATION

Connect drain and vent piping to each fixture and piece of equipment and install required piping as shown on drawings. Provide necessary fittings and hardware to make required offsets and transitions.

Changes in direction of drainage piping shall be made by the appropriate use of 45-degree wyes, long or short sweep 1/4 bends, 1/6, 1/8, 1/16 bends or combination.

Fittings shall be installed to make for the least possibility of stoppage. Horizontal drainage piping less than 3 inches shall be pitched a minimum of 1/4 inch per foot or run. Piping 3" and larger shall be pitched a minimum of 1/8" per foot of run.

Connect to drains, fixtures, and equipment.

Pipe Joints:

Install cast iron pipe and fittings, hub less pattern, as recommended by CISPI in their publication "Installation Suggestions for Cast Iron No-Hub Pipe and Fittings".

Prepare PVC pipe ends as recommended by manufacturer. Use a P-70 type primer (for PVC) and a PVC solvent cement appropriate to the pipe size and temperature range.

Cleanouts:

Provide and install cleanouts as defined by Wisconsin Uniform Plumbing Code.

Traps:

Provide traps at fixtures and equipment. Trap seals shall be standard depth, except for resident shower drains which are to be deep seal. Traps shall be set true and level and located within the limits of the Code requirements. A trap shall not be used as a separator, interceptor or other type of device to retain solids. Fixture traps above grade shall be provided with screw-type cleanout plugs.

Traps shall be protected during construction and sealed to prevent foreign matter from entering. Provide adjustable expansion plug, plastic cap, or equivalent.

Piping in HVAC Plenum return Ceilings:

Piping penetrating smoke or fire separations shall not violate the integrity of the separation. Where penetrations occur through fire rated walls or floors, "Link-Seal Pyro-Pac" shall be used, which is rated for 3-hour fire resistance by ASTM E-119-76. "Pyro-Pac" shall consist of two individual sealing units consisting of fire-resistant silicon links, steel pressure plates, and corrosion resistant fasteners.

Hangers and Supports:

Provide pipe hangers or strut connected to structural elements to support piping.

Piping Identification:

Identify piping systems with labels or stencils. Include valve tags for shutoff valves.

WATER PIPING SYSTEM INSTALLATION

- 1 Piping shall be pitched as required to drain the entire system; install drain valves at low points.
2 Provide unions at equipment and valves. Provide offsets and transition fittings.
3
4 Provide and install water hammer arrestor devices at all remodeled fixtures to the extent required
5 for noiseless operation.
6
7 No water piping shall be installed in exterior walls, unless adequately protected from freezing.
8 Two-inch insulation shall be installed on back and sides of chase, front shall be open to room
9 heat, covered only by finished wall material.
10
11 Use dielectric unions for connecting copper and steel piping.
12
13 Provide cross connection control devices as defined by the Wisconsin Uniform Plumbing Code on
14 water connections to HVAC equipment and other equipment subject to contamination of the water
15 supply system.
16
17 Cold water, Hot water supply and hot water recirculation piping shall be kept at least 6 inches
18 apart whenever possible.
19
20 Mechanically Pressed Fittings:
21
22 Mechanically pressed fittings for copper piping systems shall be made in accordance with
23 the manufacturer's instructions. The tubing shall be inserted into the fitting and the tubing
24 marked at the shoulder of the fitting. The fitting alignment shall be checked against the
25 mark on the tubing to ensure the tubing is fully engaged (inserted) in the fitting. The joints
26 are to be pressed using the tool approved by the fitting manufacturer. Insulate the piping
27 system as required to prevent excessive heat loss and any condensation of ambient
28 temperatures.
29
30 Hot Water Re-Circulating System:
31
32 The hot water return piping system shall include ball valves, check valves, and balancing
33 valves. Pitch and grade lines to ensure satisfactory circulation.
34
35 Balance return flow to provide continuous circulation throughout entire system. Test and
36 demonstrate to A/E upon request. Hot water loop piping shall extend to within 2 feet of
37 each new sink or lavatory supply angle stop that will be used for hand washing when
38 required.
39
40 Hot Water System Temperature Maintenance:
41
42 Install hot water supply and return piping system per SPS382.50(3)(b). Provide point of
43 use temperature mixing valves as required.
44
45 Valve Installation:
46
47 Valves with threaded ends shall be installed using "Teflon" tape applied on male portion
48 of piping fitting.
49
50 Each individual fixture or piece of equipment shall have an independent shut-off valve
51 adjacent to fixture in addition to the required branch shut-off. Where valves are installed in the
52 walls, an access panel shall be provided.
53
54 Branches:
55
56 Valve shut-off full size of branch for each branch take-off to supply stack or fixture group.

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Drains:

Provide drain valves as required at low points of systems. Piping shall be arranged to drain through valved drains.

Flushing Water Mains and Branch Piping:

Upon completion of the water distribution system, test valves to ensure their full opening and flush out the system progressively by opening drain valves and building outlets and permitting the flow to continue from each until the water runs clear.

Sterilization of Water Distribution System:

As soon as the water distribution system has been flushed out, it shall be sterilized in accordance with the requirements of the local Health Department/Water Utility and the Wisconsin Uniform Plumbing Code. In the absence of local requirements, use the following method:

Introduce chlorine or a solution of calcium or sodium hypochlorite, filling the lines slowly and applying the sterilizing agent at a rate of 50 parts per million of chlorine, as determined by residual chlorine tests at the ends of the lines. Open and close valves and hydrants while the system is being chlorinated.

After the sterilizing agent has been applied for 24 hours, test for residual chlorine at the ends of the lines. If less than 5 PPM, repeat the sterilization process.

When tests show at least 5 ppm of residual chlorine, flush out the system until all traces of the chemical used are removed.

OWNER TRAINING

Provide training for all Plumbing systems.

END OF SECTION

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**Adams County Administration Building
Site and Interior Improvements
Friendship, WI 53934**

**DIVISIONS 23, 24, 25
HVAC SYSTEM PERFORMANCE SPECIFICATIONS**

PART 1 – GENERAL

APPLICABLE PROVISIONS

Drawings and general provisions of contract, including General Information specification section, apply to work under this Section.

APPLICABLE PUBLICATIONS

Publications, standards and listing requirements called out in the Sections of this Division shall form a part of these specifications as if contained herein.

The requirements of the Contract Documents, including the General Information, apply to this section except as modified herein.

APPLICABLE CODES AND STANDARDS

The following codes and standards shall apply to the electrical design and installation. The codes listed below are not all inclusive, all applicable codes pertaining to a building of this type must be met:

ADAAG	Americans with Disabilities Act Accessibility Guidelines
IBC	ICC International Building Code 2015
ICC A117.1	ICC/ANSI Accessible and Usable Building and Facilities
IEBC	ICC International Existing Building Code 2015, Alteration
IECC	ICC International Energy Conservation Code 2015
IFC	ICC International Fire Code 2015 (State of Wisconsin)
NFPA 70	National Electrical Code 2017
NFPA 72	National Fire Alarm Code 2013
SPS 316	State of WI Electrical Code
SPS 361	Administration & Enforcement of State of WI Building Code
SPS 362	State of WI Building Code
SPS 363	State of WI Energy Code
WCBC	Wisconsin Commercial Building Code (SPS 361-366) 2018

GENERAL

This specification for the HVAC work is a "performance" scope specification. It is intended to establish design criteria for the Electrical work. The HVAC Contractor shall assume full responsibility for the design and construction to meet the requirements of the Owner, Architect, State and Local Codes, HVAC industry standards and fully coordinate with all Building Contractors. All references to Contractor in this Division shall mean HVAC Contractor.

The Contractor shall be the Designer of Record for the HVAC in this project. The Contractor shall complete the system design, drawings and coordinate all requirements with the Owner, Architect and other Building Contractors. Contractor shall submit plans for Code approval. Comply with WI Enrolled Commercial Building Code and all National and Local Code requirements.

1
2 If the bidding documents contain conflicting information or discrepancies, the bidder shall base
3 his bid upon the conflict or discrepancy which will result in the highest first cost.
4

5 **DESCRIPTION OF WORK**

6
7 The project consists of modifications to the existing HVAC systems to provide heating, cooling
8 and ventilation to all areas of the building. HVAC work includes but is not limited to:
9

10 Conference Room C031

11 The diffusers serving existing Conference Room C031 and adjacent corridor shall be
12 removed. New diffusers and increased airflow will be installed to serve new Conference
13 Room C031.
14

15 Mens A041 and Womens A040

16 The exhaust grilles serving existing Mens A040 and Womens A041 shall be removed.
17 New grilles shall be installed to serve new Mens A041 and Womens A040.
18

19 Corridor A112

20 The diffusers serving existing Corridor A112 shall be removed. New diffusers shall be
21 installed to serve Corridor A112.
22

23 IT Office A121 and A120

24 The diffusers serving existing IT A120 and Office A121 shall be removed. New diffusers
25 will be installed to serve new Office A121 and IT A121.
26

27 IT A142 and Storage A141

28 The diffusers and ductwork serving existing IT A142 and Storage A141 shall be removed.
29 New diffusers and ductwork will be installed to serve new IT A142 and Storage A141.
30

31 Office A151 and Office A152

32 The diffusers serving existing Office A151 shall be removed. New diffusers will be
33 installed to serving new Office A151 and Office A152.
34

35 Conference Room No. 1 A160

36 The diffusers and ductwork serving the existing small room within Planning Zoning Land
37 and Water A150 shall be removed. New diffusers, ductwork and increased airflow will be
38 installed to serve new Conference Room No. 1 A160.
39

40 Conference Room No. 2 A171

41 The diffusers and ductwork serving the existing small room within Register of Deeds
42 A170 shall be removed. New diffusers, ductwork and increased airflow will be installed to
43 serve new Conference Room No. 2 A171.
44

45 The HVAC Contractor for this project is required to provide design build services. It is assumed
46 that the contractor has experience in construction of this type of facility and will use that
47 experience to develop a bid that includes those items required by code and those items typically
48 found in this type of facility. The HVAC Contractor shall carry a minimum of \$1,000,000 of
49 professional liability coverage per claim with \$2,000,000 aggregate.
50

51 The work covered by this Division of the specifications includes the furnishing of all necessary
52 components and incidental items for executing and completing the HVAC design work and HVAC
53 installation work and work on related systems this includes:
54

55 Design
56

1 Labor.
2
3 Materials.
4
5 Tools.
6
7 Equipment.
8
9 Permits.
10
11 Certificates.
12
13 Inspection authority review documents.
14
15 Temporary protection.
16
17 Read all other Divisions of the Specifications, which are applicable to this work, including
18 the General Conditions section applicable to all bidders.
19
20 The HVAC Contract Requirements section is a supplement to and not a replacement for
21 the project General Information section.
22
23 Failure to become acquainted with existing conditions at the site shall in no way relieve
24 the responsibility for making installation in conformance with plans and specifications
25 without additional cost to the owner.
26
27 Contractor is responsible for all cutting and patching associated with the mechanical
28 installation.
29
30 Provide Revit and PDF electronic files for all drawings to the General Contractor.
31
32 **PERMITS AND TAXES**
33
34 This system shall be installed in accordance with all national, state and local codes and
35 regulations.
36
37 HVAC equipment shall comply with the requirements of ASHRAE 90-1.
38
39 The Contractor shall secure and pay for all plan reviews, permits, licenses and certificates of
40 inspection applicable to this work.
41
42 The Contractor shall pay for all taxes applicable to this work.
43
44 **REVIEW DOCUMENTS**
45
46 The Contractor is responsible for submitting plans, specifications and calculations for applicable
47 systems to the Wisconsin Department of Safety and Professional Services for approval.
48
49 **RELATED DOCUMENTS**
50
51 Drawings and General Information specification sections apply to work of this Section.
52
53 **HVAC CONSTRUCTION INSTALLATION DOCUMENTS**
54

1 The HVAC Contractor is responsible for providing HVAC construction drawings. These drawings
2 must be provided to the General Contractor and to the HVAC Engineer for review, prior to
3 installation.

4
5 These drawings shall include:

6
7 Floor plans indicating all equipment, piping and ductwork locations and sizes.

8
9 Equipment schedules and submittal data for review.

10
11 Installation details

12
13 Coordinate the drawings with other contractors during the design. No contractor shall have
14 exclusive right of way. Failure to properly coordinate the work shall not be valid reason for
15 additional compensation.

16
17 Provide .DWG and .PDF electronic files for all drawings to the Architect and to the HVAC
18 Engineer.

19 The HVAC Contractor shall provide concept drawings and equipment cut sheets with his bid to assist
20 in the evaluation of his bid. All sub-contractors shall be listed with the bid.

21 22 **SHOP DRAWINGS**

23
24 Submit the quantity of shop drawings as required for the design team for review.

25
26 Submit all HVAC equipment, materials and products for coordination, record purposes, and for
27 operation and maintenance manual preparation.

28
29 Submit shop drawings for all equipment and materials sufficiently in advance of work required to
30 the Architect, to allow ample time for review and coordination with other divisions of work.

31 32 **OPERATING AND MAINTENANCE INSTRUCTIONS**

33
34 Also refer to General Requirements.

35
36 Prepare three (3) copies of operating manuals plus electronic format in PDF.

37
38 Assemble material in three-ring or post binders, using an index at the front of each volume and
39 tabs for each system or type of equipment. In addition to the data indicated in the General
40 Requirements, include the following information:

41
42 Copies of all approved shop drawings.

43
44 Documentation of the care, maintenance, and operation of all equipment and systems.

45
46 Manufacturer's wiring diagrams for electrically powered equipment.

47
48 Records of tests performed to certify compliance with system requirements.

49
50 Certificates of inspection by regulatory agencies.

51
52 Parts list for manufactured equipment.

53
54 Lubrication instructions, including list/frequency of lubrication done during construction.

55
56 Warranties.

1 As-built drawings.
2
3 Manufacturer contact information.
4
5 **TRAINING OF OWNER PERSONNEL**
6
7 Instruct Owner personnel in the proper operation and maintenance of systems and equipment
8 provided as part of this project, using the Operating and Maintenance manuals during this instruction.
9 Demonstrate startup and shutdown procedures for all equipment. All training shall be during normal
10 working hours.

11
12 **WORK OF OTHER SECTIONS**
13

14 Applicable provisions of General Information shall govern work in this section
15

16 Electrical Contractor:
17

18 Will furnish and install all fused and/or circuit breaker disconnect switches for all HVAC,
19 plumbing, fire protection, general architectural equipment, and Owner's specialty
20 equipment.
21

22 Will furnish and install all power wiring from panel board to equipment / motor control
23 panels and junction boxes in factory-assembled units.
24

25 Will install all starters in cooperation with and under the supervision of the Mechanical
26 Contractor.
27

28 Mechanical, Plumbing, Fire Protection, and General Architectural Contractors:
29

30 Shall furnish all starting equipment. The respective contractor shall turn all starters over
31 to the Electrical Contractor with complete instructions and wiring diagrams required for a
32 complete installation.
33

34 Shall furnish and install all control wiring.
35

36 Shall confirm voltage requirements with the Electrical Contractor prior to ordering
37 equipment.
38

39 **DESIGN CONDITIONS**

	Summer	Winter
40 Outside Air Dry Bulb, Deg. F.	87	-20
41 Outside Air Wet Bulb, Deg. F.	75	---
42 Room Air Dry Bulb, Deg. F	75	70

44 **GENERAL BUILDING INFORMATION**

45 Utilities available: Natural Gas
46 Electrical 480 volt, 3 phase and 208/120 volt, 1 phase
47 System sound levels: NC=30 maximum

48 **DESIGN AND CONSTRUCTION GUIDELINES**

49 Provide a complete HVAC system following the intent within these specifications. Refer to the
50 Architectural drawings for building layout, size and arrangements.

1 **ADDITIONAL HVAC WORK**

2 Perform all HVAC demolition work as required for the intent of the HVAC system design.

3 Insulate all HVAC ductwork and piping systems per IECC and state code requirements.

4 Furnish and install a DDC control system as hereinafter specified.

5 Balancing of all air and water systems shall be by an independent third-party NEBB certified
6 contractor.

7 Furnish and install ductwork and piping as required to accommodate the intent of the HVAC work.

8 Ductwork and piping shall be as hereinafter specified. It is the responsibility of the HVAC contractor
9 to coordinate his ductwork and piping with the building structural system, ceiling elevations, recessed
10 lighting, piping of other trades and soffits as indicated on the Architectural drawings to allow for the
11 routing of the ductwork through the building. Exposed ductwork is not acceptable unless located
12 within an area without ceilings.

13
14 **FINAL REQUIREMENTS**

15
16 At the completion of the work, the entire system must be delivered to the Owner in perfect working
17 order.

18
19 Piping and ductwork shall be routed in an orderly manner with lines run in parallel with the building
20 construction.

21
22 All equipment utilizing air filtering equipment shall have all throwaway filters replaced with new filters
23 and all permanent filter media thoroughly cleaned before presenting the system to the Owner for
24 acceptance.

25
26 Balance the entire air system to deliver and exhaust air quantities as designated, with allowable error
27 of plus or minus 5%. Submit to the Engineer in triplicate, complete air balancing data sheets as
28 hereinbefore specified.

29
30 All tests and trials of the entire system requested or directed by the Engineer must be made by the
31 Contractor free of charge before acceptance of the work.

32
33 Upon completion of the installation, but before final acceptance of the system, the Contractor shall
34 instruct the Owner on the care and operation of all parts of the system.

35
36 **GUARANTEE**

37
38 This Contractor guarantees all work, new material and apparatus to operate to the satisfaction of the
39 Engineer for one (1) year from the completion and acceptance of the system and must keep same in
40 repair for said period, unless such defects are clearly the result of bad management.

41
42 The guarantee period shall start when the system has been accepted by the Engineer as being in
43 working order.

44
45 All equipment shall be provided with a manufacturer's warranty. Equipment warranties shall be
46 effective from the date of substantial completion and acceptance and shall be a minimum of two (2)
47 years unless otherwise indicated in the individual specification sections. This Contractor shall provide
48 factory start-up services for all equipment when available from the equipment manufacturer.

49
50 Any exterior wall penetrations that leak within five (5) years after project substantial completion and
51 acceptance shall be repaired and/or re-worked by the Electrical Contractor at no additional cost to
52 the Owner.

1 The ventilating system shall be guaranteed to supply and exhaust the amounts of air as noted on the
2 schedules to within plus or minus 5%.

3
4 The temperature control system shall be guaranteed to maintain the temperatures at the instruments
5 to within plus or minus one degree of their setting.

6 7 **PART 2 –MATERIALS**

8 9 **PLAQUE TYPE CEILING DIFFUSERS**

10 Furnish plaque type ceiling diffusers with a removable 22-gauge steel face panel with the
11 exposed surface of the face panel smooth, flat and free of visible fasteners.

12
13 Lay-in type frame.

14 15 **CEILING EXHAUST, RETURN, AND TRANSFER GRILLES (EGG CRATE)**

16 Furnish grilles constructed of aluminum with 1/2 x 1/2 x 1/2 fixed aluminum grid. Grilles for T-bar
17 lay-in installation shall have a lay-in type border. Raw egg crate material without a lay-in border
18 will not be accepted. Surface mounted type to have flange type frame with countersunk holes for
19 surface mounting.

20 21 **DUCTWORK**

22 Ductwork shall be G-90 coated galvanized steel of lock forming grade conforming to ASTM
23 Standards A-525 and A-527. Duct wall thicknesses, reinforcements, seams, joints, sealing, cross
24 bracing, beading, hangers, supports, etc., shall be in accordance with the latest manual of
25 heating, ventilating and air conditioning duct construction standards as published by the Sheet
26 Metal and Air Conditioning Contractors National Assoc., Inc. (SMACNA).

27
28 All ductwork upstream of the VAV boxes shall be 4" pressure class.

29
30 All other ductwork shall be 2" pressure class.

31
32 Ductwork upstream of the VAV boxes shall be sized for a maximum velocity of 1750 ft./min.

33
34 Ductwork downstream of the VAV boxes and return air ductwork shall be sized for a maximum
35 velocity of 1200 ft./min.

36 37 **ACOUSTICAL LINING**

38 Certaineed, Knauf, Manville or Owens-Corning Aeroflex.

39
40 Supply Ductwork:

41 Maximum two inch (2") thick fibrous glass duct liner with bacteria and fungi resistant face
42 coating.

43 Entire assembly shall provide a minimum R=6.

44
45 Return/Exhaust/Transfer Ductwork:

46 Maximum one inch (1") thick fibrous glass duct liner with bacteria and fungi resistant face
47 coating.

48
49 Liner shall have a composite flame and smoke hazard rating as tested by NFPA-225 and UL-723
50 not exceeding 25 flame spread or 50 smoke developed.

51
52 Note: Plan listed duct sizes are the clear inside dimensions. The sheet metal duct shall be
53 increased in each dimension to accommodate the lining.

54 55 **FLEXIBLE DUCTWORK**

56 Furnish and install flexible ducts where indicated on the drawings.

Flexmaster, Novaflex, Thermaflex, or Buckley flexible ductwork.

Factory applied glass fiber insulation with vaporproof jacket, minimum total insulating value R=6.

The ductwork shall be UL 181 listed, Class 1 Air Duct and comply with NFPA 90A and 90B.

Supply, Return, and Exhaust Ducts:

Flexmaster Type 1M, Novaflex Type 8, Thermaflex M-KC, or Buckley Type 3.

Polyethylene fabric core supported by a galvanized steel helix formed and mechanically locked to the liner.

Working pressure not less than 10" w.g. positive and 5" w.g. negative through 16" diameter.

Minimum Acoustic Performance (based on six (6) foot length):

	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
8-inch dia.	16	17	18	16	11
12-inch dia.	17	14	18	14	11

Transfer Ducts:

Flexmaster Type 6M, Novaflex Type 6, Thermaflex M-KE, or Buckley Type 4.

Acoustical spun bond nylon fabric core supported by a galvanized steel helix formed and mechanically locked to the liner.

Working pressure not less than 6" w.g. positive.

Minimum Acoustic Performance (based on six (6) foot length):

	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
8-inch dia.	13	15	16	18	16
12-inch dia.	12	15	15	18	13

INSULATION - DUCTWORK

Type of ductwork and type of insulation:

All fresh air intake ductwork. Rigid Board

All exhaust air ductwork from automatic exhaust air damper or self-acting damper to roof or wall termination except acoustically lined ductwork. Rigid Board

All supply air ductwork from each air handling unit installed within the mechanical equipment room (except acoustically lined ductwork). Rigid Board

All supply air ductwork from each air handling unit installed outside of the mechanical equipment room (except ductwork exposed within an air conditioned space and acoustically lined ductwork). Duct Wrap

Rigid Board insulation:

Indoor ductwork: Maximum two inch (2") thick Owens-Corning, Manville, Certainteed or Knauf fiberglass duct insulation with factory applied aluminum foil reinforced kraft vaporproof facing. The entire assembly shall provide a minimum "installed R value" of 6 for all indoor ductwork.

Outdoor ductwork: Maximum two and one half inch (2.5") thick Owens-Corning, Manville, Certainteed or Knauf fiberglass duct insulation with factory applied aluminum foil reinforced kraft

1 vaporproof facing. The entire assembly shall provide a minimum "installed R value" of 12 for all
2 outdoor ductwork.

3
4 Insulation shall cover all duct flanges for a smooth exterior finish.

5
6 The insulation shall be fastened to the duct with fire resistive adhesive (100% coverage) and
7 Graham welding pins located on a maximum of 18" centers and not less than 3" from each edge
8 or corner of the board. Stick-Klip fasteners may be used in lieu of welding pins providing they are
9 installed in accordance with the manufacturer's recommendations on a clean surface with Type S
10 adhesive.

11
12 Duct Wrap Insulation:

13 Maximum two inch (2") thick Owens-Corning, Manville, Certainteed or Knauf fiberglass blanket
14 type duct insulation with factory applied reinforced foil vapor barrier facing and a 2" stapling and
15 taping flange.

16
17 Insulation shall be installed with facing outside so that tape flaps overlap at opposite end.
18 Insulation shall be tightly butted. Seams shall be stapled 6" on center. Seal joints with pressure
19 sensitive tape matching the facing.

20
21 Where rectangular ducts are greater than 24" in width insulation shall be secured to the bottom of
22 the duct with mechanical fasteners spaced on 18" centers to prevent sagging of insulation.

23
24 Seal all tears, punctures and other penetrations of facing with tape or mastic to provide a vapor
25 tight system installation.

26
27 The entire assembly shall provide a minimum "installed R value" of 6.

28
29 Acoustic Wrap

30 Minimum two inch (2") thick GLT Products, or approved equal, Vinaflex VP2-100 noise barrier
31 sheets 0.4 lbs. per sq. ft. density with flexible mass loaded vinyl laminated to a quilted fiberglass
32 absorber/decoupler on both sides and a 2" stapling and taping flange per manufacturer
33 instructions.

34 35 **FIRESTOPPING**

36
37 All penetrations through walls will be provided with complete firestopping.

38
39 Provide through-penetration firestop systems that are compatible with one another, with the
40 substrates forming openings, and with the items, if any, penetrating through-penetration firestop
41 systems, under conditions of service and application, as demonstrated by through-penetration
42 firestop system manufacturer based on testing and field experience.

43
44 Provide components for each through-penetration firestop system that are needed to install fill
45 materials. Use only components specified by the firestopping manufacturer and approved by the
46 qualified testing agency for the designated fire-resistance-rated systems.

47
48
49 **END OF SECTION**

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**Adams County Administration Building
Site and Interior Improvements
Friendship, WI 53934**

**DIVISIONS 26, 27, 28
ELECTRICAL, COMMUNICATIONS, ELECTRONIC SAFETY AND SECURITY
PERFORMANCE SPECIFICATIONS**

PART 1 – GENERAL

APPLICABLE PROVISIONS

Drawings and general provisions of contract, including General Information specification section, apply to work under this Section.

APPLICABLE PUBLICATIONS

Publications, standards and listing requirements called out in the Sections of this Division shall form a part of these specifications as if contained herein.

The requirements of the Contract Documents, including the General Information, apply to this section except as modified herein.

APPLICABLE CODES AND STANDARDS

The following codes and standards shall apply to the electrical design and installation. The codes listed below are not all inclusive, all applicable codes pertaining to a building of this type must be met:

ADAAG	Americans with Disabilities Act Accessibility Guidelines
IBC	ICC International Building Code 2015
ICC A117.1	ICC/ANSI Accessible and Usable Building and Facilities
IEBC	ICC International Existing Building Code 2015, Alteration
IECC	ICC International Energy Conservation Code 2015
IFC	ICC International Fire Code 2015 (State of Wisconsin)
NFPA 70	National Electrical Code 2017
NFPA 72	National Fire Alarm Code 2013
SPS 316	State of WI Electrical Code
SPS 361	Administration & Enforcement of State of WI Building Code
SPS 362	State of WI Building Code
SPS 363	State of WI Energy Code
WCBC	Wisconsin Commercial Building Code (SPS 361-366) 2018
	Village of Friendship Ordinance Title 10 Chapter 1 Zoning Code
	Village of Friendship Ordinance No. 67 Building Control Permit
	Village of Friendship Ordinance No. 2025-1-6 Fire Inspection
	Type VB, non-sprinklered construction
	See Architectural Code Plan for additional information, including occupancy types: B and S-1

GENERAL

This specification for the Electrical work is a "performance" scope specification. It is intended to establish design criteria for the Electrical work. The Electrical Contractor shall assume full

responsibility for the design and construction to meet the requirements of the Owner, Architect, State and Local Codes, Electrical industry standards and fully coordinate with all Building Contractors. All references to Contractor in this Division shall mean Electrical Contractor.

The Contractor shall be the Designer of Record for the Electrical in this project. The Contractor shall complete the system design, drawings and coordinate all requirements with the Owner, Architect and other Building Contractors. Contractor shall submit plans for Code approval. Comply with WI Enrolled Commercial Building Code and all National and Local Code requirements.

If the bidding documents contain conflicting information or discrepancies, the bidder shall base his bid upon the conflict or discrepancy which will result in the highest first cost.

DESCRIPTION OF WORK

The Electrical Contractor shall include, as part of his bid, a list of equipment manufacturers and model numbers used in the preparation of his bid. This shall include the following:

Firestopping

Raceways

Wire and Cable

Electrical Boxes

Wiring Devices and Plates, including switches, receptacles, coverplates, etc.
Light fixtures and lighting control systems.

Panelboards and all electrical distribution equipment

Interior Lighting and Controls

Exterior Lighting and Controls

Circuit and Motor Disconnects

Fire Alarm System components and riser diagram

Data and VOIP Phone System distribution components

All penetrations through walls will be provided with complete firestopping.

Provide additional load calculations to utility, city or state inspector requesting them.

Cutting and patching for the electrical work: Shall be done by the electrical contractor where required.

The work covered by this Division of the specifications includes the furnishing of all necessary components and incidental items for executing and completing the electrical design work and electrical installation work, this includes:

Labor.

Materials.

1 Tools.
2
3 Equipment.
4
5 Permits.
6
7 Certificates.
8
9 Inspection authority review documents including emergency lighting calculation submittal
10 and lighting energy calculations submittal, provide all required processing and approval
11 fees.
12
13 Temporary protection.
14
15 Electrical and fire alarm connections for all equipment furnished by Fire Protection.
16
17 Electrical connections for all equipment furnished by Plumbing.
18
19 Electrical and fire alarm connections for all equipment furnished by HVAC.
20
21 Electrical connections for all equipment furnished by General Contractor as indicated on
22 architectural and site / civil drawings, such as but not limited to, motorized automatic door
23 operators, electric vehicle chargers (alternate bid), internally illuminated signage, etc.
24
25 Fire Alarm system, including electrical connections, cabling, and devices.
26
27 Data and VOIP Phone System, including electrical connections, cabling, and devices.
28
29 Security Camera system data cabling and terminations only.
30
31 Access Control system rough-in only.
32
33 Read all other Divisions of the Specifications, which are applicable to this work, including
34 the General Conditions section applicable to all bidders.
35
36 Install and remove temporary power and lighting.
37
38 Floor plans; indicating all lighting fixture, equipment and wiring device locations. This
39 shall have fixture type designations that coordinate with fixture submittal data.
40
41 Circuit numbers for all circuits.
42
43 Light fixture and lighting controls schedule and fixture submittal data for review.
44
45 One-line diagrams showing service, motor loads, wire, and conduit sizes.
46
47 Installation details.
48
49 Motor schedules.
50
51 Circuits required by HVAC, plumbing, fire protection, and food service contractors and
52 other control wiring.
53
54 Provide Revit and PDF electronic files for all drawings to the General Contractor.
55
56

1 **PERMITS AND TAXES**

2
3 This system shall be installed in accordance with all national, state and local codes and
4 regulations.

5
6 The Electrical Contractor shall secure and pay for all permits, licenses and certificates of
7 inspection applicable to this work. Copies of the certificates shall be included in the Operating and
8 Maintenance Instructions.

9
10 The Electrical Contractor shall pay for all taxes applicable to this work.

11
12 **REVIEW DOCUMENTS**

13
14 The Contractor is responsible for submitting plans, specifications and calculations for applicable
15 systems to the Wisconsin Department of Safety and Professional Services for approval.

16
17 **RELATED DOCUMENTS**

18
19 Drawings and General Information specification sections apply to work of this Section.

20
21 **SHOP DRAWINGS**

22
23 Submit the quantity of shop drawings as required for the design team for review.

24
25 Submit all Electrical equipment, materials and products for coordination, record purposes, and for
26 operation and maintenance manual preparation.

27
28 Include wiring diagrams of all low voltage systems.

29
30 Submit shop drawings for all equipment and materials sufficiently in advance of work required to
31 the Architect, to allow ample time for review and coordination with other divisions of work.

32
33 **OPERATING AND MAINTENANCE INSTRUCTIONS**

34
35 Also refer to General Requirements.

36
37 Prepare three (3) copies of operating manuals plus electronic format in PDF.

38
39 Assemble material in three-ring or post binders, using an index at the front of each volume and
40 tabs for each system or type of equipment. In addition to the data indicated in the General
41 Requirements, include the following information:

42
43 Copies of all approved shop drawings.

44
45 Documentation of the care, maintenance, and operation of all equipment and systems.

46
47 Manufacturer's wiring diagrams for electrically powered equipment.

48
49 Records of tests performed to certify compliance with system requirements.

50
51 Certificates of inspection by regulatory agencies.

52
53 Parts list for manufactured equipment.

54
55 Lubrication instructions, including list/frequency of lubrication done during construction.

- 1 Warranties.
- 2
- 3 As-built drawings.
- 4
- 5 Manufacturer contact information.
- 6

7 **TRAINING OF OWNER PERSONNEL**

- 8
- 9 Instruct Owner personnel in the proper operation and maintenance of systems and equipment
- 10 provided as part of this project, using the Operating and Maintenance manuals during this instruction.
- 11 Demonstrate startup and shutdown procedures for all equipment. All training shall be during normal
- 12 working hours.
- 13

14 **WORK OF OTHER SECTIONS**

15 Electrical Contractor:

- 16
- 17
- 18 Will furnish and install all fused and/or circuit breaker disconnect switches for all HVAC,
- 19 plumbing, fire protection, general architectural equipment, and Owner's specialty
- 20 equipment.
- 21
- 22 Will furnish and install all power wiring from panel board to equipment / motor control
- 23 panels and junction boxes in factory-assembled units.
- 24
- 25 Will install all starters in cooperation with and under the supervision of the Mechanical
- 26 Contractor.
- 27

28 Mechanical, Plumbing, Fire Protection, and General Architectural Contractors:

- 29
- 30 Shall furnish all starting equipment. The respective contractor shall turn all starters over
- 31 to the Electrical Contractor with complete instructions and wiring diagrams required for a
- 32 complete installation.
- 33
- 34 Shall furnish and install all control wiring.
- 35
- 36 Shall confirm voltage requirements with the Electrical Contractor prior to ordering
- 37 equipment.
- 38

39 **FINAL REQUIREMENTS**

- 40
- 41 At the completion of the work, the entire system must be delivered to the Owner in perfect working
- 42 order.
- 43
- 44 All tests and trials of the entire system requested or directed by the Engineer must be made by the
- 45 Electrical Contractor free of charge before acceptance of the work.
- 46
- 47 Upon completion of the installation, but before final acceptance of the system, the Electrical
- 48 Contractor shall instruct the Owner on the care and operation of all parts of the system.
- 49

50 **GUARANTEE**

- 51
- 52 This Contractor guarantees all work, new material and apparatus to operate to the satisfaction of the
- 53 Engineer for one (1) year from the completion and acceptance of the system and must keep same in
- 54 repair for said period, unless such defects are clearly the result of bad management.
- 55

1 The guarantee period shall start when the system has been accepted by the Engineer as being in
2 working order.

3
4 All equipment shall be provided with a manufacturer's warranty. Equipment warranties shall be
5 effective from the date of substantial completion and acceptance and shall be a minimum of two (2)
6 years unless otherwise indicated in the individual specification sections. This Contractor shall provide
7 factory start-up services for all equipment when available from the equipment manufacturer.

8
9 Any exterior wall penetrations that leak within five (5) years after project substantial completion and
10 acceptance shall be repaired and/or re-worked by the Electrical Contractor at no additional cost to
11 the Owner.

12 13 14 **PART 2 – MATERIALS**

15 16 **FIRESTOPPING**

17
18 All penetrations through walls will be provided with complete firestopping.

19
20 Provide through-penetration firestop systems that are compatible with one another, with the
21 substrates forming openings, and with the items, if any, penetrating through-penetration firestop
22 systems, under conditions of service and application, as demonstrated by through-penetration
23 firestop system manufacturer based on testing and field experience.

24
25 Provide components for each through-penetration firestop system that are needed to install fill
26 materials. Use only components specified by the firestopping manufacturer and approved by the
27 qualified testing agency for the designated fire-resistance-rated systems.

28
29 Performance Requirements:

30
31 Provide products that upon curing do not re-emulsify, dissolve, leach, breakdown or
32 otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes,
33 ponding water or other forms of moisture characteristic during and after construction.

34
35 Openings within walls and floors designed to accommodate cabling systems subjected to
36 frequent cable changes shall be provided with re-enterable products specifically designed
37 for retrofit.

38
39 Subject to compliance with through-penetration firestop systems (XHEZ) listed in Volume 2 of the UL
40 Fire Resistance Directory, provide products of the following manufacturers as identified below:

41
42 Manufacturers listed in the UL Fire Resistance Directory – Volume 2.

43
44 General: Use only through-penetration firestop system products that have been tested for specific
45 fire-resistance-rated construction conditions conforming to construction assembly type, penetrating
46 item type, annular space requirements, and fire-rating involved for each separate instance.

47
48 Latex Sealants: Single component latex formulations that upon cure do not re-emulsify during
49 exposure to moisture.

50
51 Firestop Devices: Factory-assembled steel collars lined with intumescent material sized to fit specific
52 outside diameter of penetrating item.

53
54 Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic
55 fibers or silicone compounds.

1 Firestop Putty Pads: Intumescent, non-hardening putty pads to be installed on metallic and
2 nonmetallic electrical switch and receptacle boxes to reduce horizontal separation between boxes to
3 less than 24".

4
5 Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film.

6
7 Firestop Pillows: Re-enterable, non-curing, mineral fiber core encapsulated with an intumescent
8 coating contained in a flame-retardant poly bag.

9
10 Mortar: Portland cement based dry-mix product formulated for mixing with water at Project site to
11 form a non-shrinking, water-resistant, homogenous mortar.

12
13 Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal
14 surfaces (pourable or nonsag) or vertical surface (nonsag).

15 16 **RACEWAYS**

17
18 All power feeders will be routed in metallic raceways.

19
20 All low voltage cabling to include data, security, fire alarm, and other communications cable must be
21 installed in raceway within walls to allow for future access. All low voltage cabling at exposed
22 structure and above inaccessible ceilings shall be installed in raceways to allow for future access.

23 24 **BUILDING WIRE AND CABLE**

25
26 Wiring methods required per NEC will be followed. In addition, the following will be specified
27 unless Owner desires to follow Code minimum.

28
29 EMT may be used above ceiling and in walls. All fitting must be steel, set screw with insulated
30 throat connectors.

31
32 MC cabling may be used in walls. In corridors and support areas, EMT must be used above
33 ceilings.

34
35 All rigid steel feeders must be terminated in double lock-nuts with insulated bushings.

36
37 Minimum raceway size shall be ½" inner diameter.

38
39 Feeders shall be copper.

40
41 Minimum wire size to be #12.

42
43 Conductors #8 and larger will be stranded; conductors #10 or smaller may be solid or stranded.

44
45 Feeders will be sized to allow no more than 2% voltage drop.

46
47 Individual neutral conductors will be provided for all circuits.

48
49 Branch circuits will be sized to allow no more than 3% voltage drop.

50
51 Romex NM-B cabling will not be allowed.

52 53 **ELECTRICAL BOXES**

54
55 All electrical devices in walls will be provided with stamped steel boxes to include low voltage
56 devices.

1
2 **LOCATIONS OF OUTLETS AND EQUIPMENT**
3

4 All device mounting heights will be ADA compliant.
5

6 Devices will be mounted at convenience height for a facility of this type and will be coordinated with
7 casework.
8

9 Low voltage devices to be mounted at same elevation as adjacent duplex receptacle.
10

11 **WIRING DEVICES AND PLATES**
12

13 Switches and plates will be high impact type, specification grade, quiet operation type.
14

15 Wall switches: 20 ampere specification grade.
16

17 Duplex grounded receptacles, 20 ampere, tamper-resistant, one-piece strap, specification grade.
18

19 GFI receptacles: 20 ampere, tamper-resistant, specification grade; weather resistant where installed
20 exterior to building.
21

22 Exterior receptacles to be provided with code approved weatherproof while-in-use covers, cast type.
23

24 **SERVICE ENTRANCE**
25

26 Existing to remain.
27

28 **PANELBOARDS AND POWER DISTRIBUTION SYSTEM**
29

30 Existing to remain.
31

32 **INTERIOR LIGHTING AND CONTROLS**
33

34 Remove all existing interior lighting and associated controls where new lighting is indicated in
35 description of specific work in each room.
36

37 Provide new light fixtures and controls throughout all spaces in which lighting is removed. All new
38 light fixtures shall be LED type. This includes new exit lights. New emergency egress lighting shall
39 also be provided by connecting select fixtures to existing emergency egress lighting circuit in area.
40

41 Review architectural plans to determine ceiling types and coordinate specific fixture mounting types
42 of ceilings.
43

44 Provide a foot candle point by point calculation for proposed layout and fixture selections in all areas.
45

46 All interior and exterior light fixtures to be selected with input from Owner and Architect.
47

48 Full cut sheets shall be provided for all equipment as a part of the design.
49

50 Preliminary cut sheets shall be provided with the contractor's bid.
51

52 All normally occupied rooms shall be provided with dimmer switches.
53

54 All rooms required by code to have automatic shut off controls shall be provided with ceiling mounted
55 occupancy sensors.
56

Color temperature shall be 4000K unless otherwise desired by Owner. CRI of all light sources shall be 80 or higher.

Light fixtures and controls shall match standards set forth in the 2020 Courthouse Renovation.

Exit Lights:

Exit lights shall be black cast aluminum body with red letters and universal arrows / mounting, Lithonia LE series or equal. Provide single and double faced as needed. Field modify arrows / chevrons as needed. Exit lights shall not be provided with battery; connect to existing exit light circuit connected to emergency branch of generator.

Locate exit lights per Code, coordinating locations with Architectural details.

EXTERIOR LIGHTING AND CONTROLS

Maintain existing building mounted exterior lighting and controls. No new building mounted exterior lighting is required,

At south side of parking lot at corner of 4th Street and Adams Street, remove (1) cobra head and wooden pole with equipment for previously removed utility meter. Coordinate removal of (1) existing utility owned flood light and wooden pole with overhead line back to source.

Remove (3) additional poles, concrete bases, and fixture heads at same parking lot and parking area along 3rd Street.

Provide approximately (4) straight square steel poles with concrete base extending 2' above finished grade and full cut-off area lights as required to provide .2 fc minimum on parking lot. Provide no more than .5 fc or maximum allowable by Village ordinance (whichever is less) on property line. See Civil plan for recommended locations. Connect to existing circuit and control feeding demo'd non-utility owned poles.

Existing lighting to remain at parking lot located at northeast corner of Adams Street and 3rd Street. It appears to be lit only by street lighting.

Existing lighting to remain at parking lot located at the northwest corner of Adams Street and 4th Street. It appears to be lit only by building mounted lighting.

Circuit and control new backlit signage / lettering at new main entrance plaza. See architectural details. Control with existing site lighting that is photocell on / photocell off, such that signage is on all night.

CIRCUIT AND MOTOR DISCONNECTS

All disconnects will be heavy-duty type.

Starters will be provided by the HVAC contractor and installed by the electrical contractor. Fractional horsepower motor disconnects to be furnished and installed by E.C.

All disconnects will be installed where required per code and properly labeled.

ELECTRICAL IDENTIFICATION

Electrical identification will be provided for all panels, disconnects, starters, junction boxes, and low voltage devices and cabling.

1 **GROUNDING**

2
3 Grounding will be provided per applicable codes.

4
5 Separate ground wires will be pulled to all receptacles.

6
7 **FIRE ALARM**

8
9 Provide additions and modifications to the existing tone annunciated Simplex Fire Alarm System to
10 accommodate the renovations.

11
12 Provide new notification devices (horns, strobes and horn / strobe devices) as required by Code to
13 provide audible and visual notification throughout the building. Utilize ceiling mounted devices at
14 ACT ceiling to minimize surface raceway to new wall mounted device locations.

15
16 Furnish and install all initiating devices as indicated in description of specific work in each room.

17
18 Smoke Damper and Combination Fire / Smoke Damper System Interface:

19
20 Furnish duct smoke detectors

21
22 Upon activation of associated smoke detector, damper shall close, and fire alarm system
23 shall be activated.

24
25 The fire alarm control panel shall provide a manual control mode so that the damper can be
26 opened to override the automatic function.

27
28 Upon reset of the fire alarm system, damper shall open.

29
30 Ceiling mounted notification devices shall be white to coordinate with ACT. Wall mounted notification
31 devices shall be red to match existing wall mounted devices.

32
33 **DATA AND VOIP PHONE SYSTEM**

34
35 Maintain existing floor mounted data rack in IT A142 on Main Level. Provide new Cat 6 patch panel
36 in rack for quantity of new data cabling plus 25% spare.

37
38 All cabling, jacks, and patch panels shall be plenum rated Cat6 type. Match Owner's IT standards
39 for all new work, including products, materials, labeling, terminations, etc.

40
41 Provide unit price for each data drop assuming 200' from rack to allow owner to add additional drops
42 are required.

43
44 All data cabling to be supported in J Hooks 3' on center above ACT ceilings and be installed in
45 conduit at exposed structure ceilings and above gyp / plaster systems.

46
47 System to be fully certified and tested and allow for 25 year warranty.

48
49 **SECURITY SYSTEMS**

50
51 Provide rough-in only for new doors to be controlled with Owner's existing access control /
52 keyless entry system. For existing doors controlled by Owner's existing access control / keyless
53 entry system that will be replaced in place, salvage existing card reader and turn over to Owner
54 and maintain existing cabling to card reader and electronic hardware. Provide rough-in for card
55 reader and electronic hardware to new door and reroute existing cabling. All components such
56 as card readers, door controllers, software, power supplies, cabling, terminations, testing, and

programming shall be provided by Owner's vendor under separate contract. See Division 8 Door Hardware specification for additional information. Verify all required rough-ins with Owner's vendor prior to commencing work.

Provide data cabling only for new cameras. For pricing purposes, assume (4) new camera locations are required. All cameras, software, and programming shall be provided by Owner's vendor under separate contract. Verify all required cabling requirements with Owner's vendor prior to commencing work.

SPECIFIC WORK REQUIRED

The intention of this description of specific work required is not to be all inclusive, but to provide minimal guidelines for intended scope of work. Provide all demolition and new work necessary to accommodate architectural renovations.

Where ceilings are removed and reinstalled, temporarily support and reinstall existing to remain devices such as paging speakers, wireless access points, exit lights, fire alarm smoke / heat detectors, and cameras in new ceiling. See architectural reflected ceiling plan for extents.

Existing Mens A040 / New Women's A040

Remove existing lighting and controls.

Provide new lighting: (2) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with center square, Lithonia 2BLT or Metalux 22EN with 3400 lumens. Provide occupancy sensor wall switch.

Disconnect existing cabinet heater and extend existing circuit to new location of cabinet heater. Coordinate with HVAC contractor.

Remove any existing general convenience receptacles in room.

Provide new GFCI duplex receptacle on north or west wall near lactation chair shown in northwest corner. Fish existing wall. Circuit to nearest receptacle circuit in area.

Remove and relocate fire alarm strobe. Reinstall immediately north of new door A040.

Existing Womens A041 / New Mens A041

Remove existing lighting and controls.

Provide new lighting: (2) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with center square, Lithonia 2BLT or Metalux 22EN with 3400 lumens. Provide occupancy sensor wall switch.

Disconnect existing cabinet heater and extend existing circuit to new location of cabinet heater. Coordinate with HVAC contractor.

Remove any existing general convenience receptacles in room.

Provide new GFCI duplex receptacle on the south wall near the sink or on the north or west wall. Fish existing wall. Circuit to nearest receptacle circuit in area.

Remove and relocate fire alarm strobe. Reinstall immediately east of new door A041.

Stair C006

Remove existing exit light, light switches, fire alarm manual pull station, and Access Control / Keyless Entry devices at demo'd door.

1 Revise existing to remain lighting controls at existing entrance points to accommodate
2 removed controls (i.e. change 3-way switch to single pole switch).
3
4 Finance Department A050
5 Maintain existing lighting. Remove lighting controls at demo'd door. Revise existing to remain
6 lighting controls at existing door to remain to the north to accommodate removed controls (i.e.
7 change 3-way switch to single pole switch).
8
9 Maintain existing power and data devices at removed desk, casework and countertop.
10
11 Employee Break Room C010
12 Maintain existing lighting. Remove and reinstall existing light switches to accommodate
13 revised door.
14
15 Add (2) duplex outlets on north wall. Locate these receptacles per Owner's direction. Circuit
16 all of these receptacles to new 20-amp, 120-volt circuit from nearest panelboard with space.
17 Provide new breaker to match existing.
18
19 Add (2) GFCI duplex receptacles above counter on south wall. Locate these receptacles per
20 Owner's direction. Circuit each of these receptacles to new 20-amp, 120-volt circuit from
21 nearest panelboard with space. Provide (2) new breakers to match existing.
22
23 Conference Room C031
24 Remove existing exit light at demo'd door into Courthouse Lobby A001.
25
26 Remove existing lighting and controls.
27
28 Provide new lighting: (6) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
29 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
30 and dual technology ceiling mounted occupancy sensor.
31
32 Provide (2) duplex receptacles along furred out south wall. Provide (1) duplex receptacle
33 along new north wall, immediately west of door C031. Locate these receptacles per Owner's
34 direction. Circuit all of these receptacles to new 20-amp, 120-volt circuit from nearest
35 panelboard with space. Provide new breaker to match existing.
36
37 Behind wall mounted TV, provide 1 duplex outlet, 1 network data jack and 1 HDMI jack.
38 Connect HDMI jack to HDMI jack at in input location. Coordinate location with Owner. Provide
39 fiber HDMI cable to allow for distance greater than 50'.
40
41 Add ceiling mounted fire alarm horn / strobe notification device.
42
43 Courthouse Lobby A001 / Corridor C103:
44 Remove existing exit light, fire alarm manual pull station, and Access Control / Keyless Entry
45 devices at demo'd door.
46
47 Corridor A112:
48 Remove existing lighting and controls.
49
50 Provide new lighting: (4) 4' recessed slot fixtures, Mark Slot 4 or equal with 3200 lumens.
51 Connect to existing corridor lighting circuit; 2 fixtures shall be on emergency lighting / nightlight
52 circuit and 2 fixtures shall be on normal lighting circuit. Provide (1) ultrasonic long throw ceiling
53 mounted occupancy sensor to control normal lighting.
54
55 Remove and reinstall any existing devices on demo'd walls replaced with new walls in
56 approximately same locations as existing devices.

1
2 Remove and relocate fire alarm manual pull station at wall where door A171 will be cut in.
3 Reinstall immediately west of new door A171.
4
5 Corridor A113:
6 Remove existing lighting and controls.
7
8 Provide new lighting: (5) 4' recessed slot fixtures, Mark Slot 4 or equal with 3200 lumens.
9 Connect to existing corridor lighting circuit; 2 fixtures shall be on emergency lighting / nightlight
10 circuit and 3 fixtures shall be on normal lighting circuit. Provide (1) ultrasonic long throw ceiling
11 mounted occupancy sensor to control normal lighting.
12
13 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
14 approximately same locations as existing devices.
15
16 Corridor A114:
17 Remove existing lighting and controls.
18
19 Provide new lighting: (4) 4' recessed slot fixtures, Mark Slot 4 or equal with 3200 lumens.
20 Connect to existing corridor lighting circuit; 2 fixtures shall be on emergency lighting / nightlight
21 circuit and 2 fixtures shall be on normal lighting circuit. Provide (1) ultrasonic long throw ceiling
22 mounted occupancy sensor to control normal lighting.
23
24 Remove and reinstall any existing devices on demo'd walls replaced with new walls in
25 approximately same locations as existing devices.
26
27 Vestibule A115:
28 Remove existing lighting and controls.
29
30 Provide new lighting: (1) 4' recessed slot fixture, Mark Slot 4 or equal with 3200 lumens.
31 Connect to existing corridor emergency lighting / night light circuit.
32
33 Power connection to Automatic Door Operator at Interior and Exterior door. Provide rough-in
34 and wiring for push button actuators.
35
36 IT Corridor A119:
37 Remove existing exit light, fire alarm manual pull station, and Access Control / Keyless Entry
38 devices at removed exterior doors.
39
40 Remove existing lighting and controls including wall mounted linear light fixture at east wall
41 shared with IT A120.
42
43 Provide new lighting: (4) 4' recessed slot fixtures, Mark Slot 4 or equal with 3200 lumens.
44 Connect to existing corridor lighting circuit; 2 fixtures shall be on emergency lighting / nightlight
45 circuit and 2 fixtures shall be on normal lighting circuit. Provide (2) ultrasonic long throw ceiling
46 mounted occupancy sensors to control normal lighting.
47
48 At stair landing, north of new wall, add (1) new 4' LED industrial strip, Lithonia ZL1N or
49 Metalux SNLED; circuit to existing emergency egress lighting / nightlight circuit in IT Corridor
50 A119.
51
52 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
53 approximately same locations as existing devices.
54
55 IT A120:
56 Remove existing lighting and controls.

1
2 Provide new lighting: (12) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
3 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
4 and dual technology ceiling mounted occupancy sensor.
5
6 Provide double duplex receptacle and (2) data jacks adjacent to each other on new wall.
7 Provide additional duplex receptacle on same wall. Locate per Owner's direction. Provide
8 new 20-amp, 120-volt circuit from nearest panelboard with space. Provide new breaker to
9 match existing.
10
11 Maintain existing devices on existing walls.
12
13 Maintain existing fire alarm horn / strobe notification device.
14
15 Office A121:
16 Remove existing lighting and controls.
17
18 Provide new lighting: (6) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
19 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
20 and dual technology ceiling mounted occupancy sensor.
21
22 Provide double duplex receptacle and (2) data jacks adjacent to each other on new wall.
23 Provide additional duplex receptacle on same wall. Locate per Owner's direction. Circuit to
24 new receptacles in IT A120.
25
26 Maintain existing devices on existing walls.
27
28 Add ceiling mounted fire alarm strobe notification device.
29
30 County Clerk A130:
31 Remove and reinstall existing devices at check-in counter to coordinate with new wall and
32 casework.
33
34 Maintain existing Access Control / Keyless Entry cabling and devices at door A130A which will
35 be replaced. Disconnect and reconnect cabling to electronic door hardware.
36
37 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
38 approximately same locations as existing devices.
39
40 County Treasurer A140:
41 Remove and reinstall existing devices at check-in counter to coordinate with new wall and
42 casework.
43
44 Maintain existing Access Control / Keyless Entry cabling and devices at door A140A which will
45 be replaced. Disconnect and reconnect cabling to electronic door hardware.
46
47 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
48 approximately same locations as existing devices.
49
50 Storage A141:
51 Remove existing light fixture in footprint of expanded room IT A142. Maintain existing lighting
52 and control in remaining Storage A141 portion of room.
53
54 Remove devices on demo'd wall. No new devices required.
55
56

1 IT A142:

2 Remove existing lighting and controls.

3
4 Provide new lighting: (2) 2'x4' recessed flat panel, Lithonia EPANL or Metalux FPS with 4000
5 lumens. Provide on / off wall switch and dual technology ceiling mounted occupancy sensor.

6
7 Maintain and protect (3) existing open floor mounted IT racks during construction.

8
9 Disconnect and reconnect existing room air conditioning unit and condensate pump which will
10 be relocated from existing demo'd south wall to new location. Coordinate exact location with
11 HVAC contractor.

12
13 Provide (6) surge-protected duplex receptacles on walls in expanded area; assume (2) on new
14 east wall, (2) on south wall, and (2) on west wall in expanded area. Coordinate exact locations
15 with County IT Department. Connect these to (6) separate circuits connected to existing
16 optional standby (also known as equipment or non-life safety) branch of generator distribution.
17 Existing circuits for demo'd receptacles may be used. Provide new breakers to match existing.

18
19 GIS A143:

20 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
21 approximately same locations as existing devices.

22
23 Planning, Zoning, Land & Water A150:

24 Maintain existing power pole and devices near door A150. Add power and data at new check-
25 in counter for (2) work stations.

26
27 Maintain existing Access Control / Keyless Entry cabling and devices at door A150 which will
28 be replaced. Disconnect and reconnect cabling to electronic door hardware.

29
30 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
31 approximately same locations as existing devices.

32
33 Remove and reinstall any existing devices on demo'd north wall shared with Conference
34 Room No. 1 A160 and reinstall in new wall installed slightly to the south.

35
36 Revise lighting to accomodate enlarged Conference Room No. 1 A160.

37
38 Office A151:

39 Remove existing lighting and controls.

40
41 Provide new lighting: (4) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
42 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
43 and dual technology ceiling mounted occupancy sensor.

44
45 Provide double duplex receptacle and (2) data jacks adjacent to each other on new wall.
46 Provide additional duplex receptacle on same wall. Locate per Owner's direction. Provide
47 new 20-amp, 120-volt circuit from nearest panelboard with space. Provide new breaker to
48 match existing.

49
50 Remove existing fire alarm system smoke detector.

51
52 Add ceiling mounted fire alarm strobe notification device.

53
54 Office A152:

55 Remove existing lighting and controls.

1 Provide new lighting: (4) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
2 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
3 and dual technology ceiling mounted occupancy sensor.
4
5 Provide double duplex receptacle and (2) data jacks adjacent to each other on new wall.
6 Provide additional duplex receptacle on same wall. Locate per Owner's direction. Circuit to
7 new receptacles in Office A151.
8
9 Add ceiling mounted fire alarm strobe notification device.
10
11 Conference Room No. 1 A160:
12 Remove existing lighting and controls.
13
14 Provide new lighting: (6) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
15 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
16 and dual technology ceiling mounted occupancy sensor.
17
18 Remove and reinstall any existing devices on demo'd east and south walls and reinstall in new
19 walls.
20
21 Register of Deeds A170:
22 Revise lighting to accommodate Conference Room No. 2 A171.
23
24 Remove and reinstall existing devices at check-in counter to coordinate with new wall and
25 casework.
26
27 Maintain existing Access Control / Keyless Entry cabling and devices at door A170 which will
28 be replaced. Disconnect and reconnect cabling to electronic door hardware.
29
30 Remove and reinstall any existing devices on demo'd walls replaced with new walls in
31 approximately same locations as existing devices.
32
33 Provide (2) duplex receptacles along new west wall shared with Conference Room No. 2
34 A171. Provide (3) duplex receptacles along new south wall shared with Conference Room
35 No. 2 A171. Locate these receptacles per Owner's direction. Circuit all of these receptacles to
36 new 20-amp, 120-volt circuit from nearest panelboard with space. Provide new breaker to
37 match existing.
38
39 Conference Room No. 2 A171:
40 Remove existing lighting and controls in footprint of new room.
41
42 Provide new lighting: (9) 2'x2' recessed volumetric troffer with smooth acrylic diffuser with
43 center square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide 0-10V wall dimmer
44 and dual technology ceiling mounted occupancy sensor.
45
46 Remove devices at demo'd casework.
47
48 Provide (2) duplex receptacles along east wall shared with Register of Deeds A170. Provide
49 (3) duplex receptacles along new north shared with Register of Deeds A170. Locate these
50 receptacles per Owner's direction. Circuit all of these receptacles to new 20-amp, 120-volt
51 circuit from nearest panelboard with space. Provide new breaker to match existing.
52
53 Behind wall mounted TV, provide 1 duplex outlet, 1 network data jack and 1 HDMI jack.
54 Connect HDMI jack to HDMI jack at in input location. Coordinate location with Owner. Provide
55 fiber HDMI cable to allow for distance greater than 50'.
56

1 Add ceiling mounted fire alarm horn / strobe notification device.
2
3 Medical Examiner A180:
4 Remove and reinstall any existing devices on demo'd wall replaced with new wall in
5 approximately same locations as existing devices.
6
7 Alternate Bid – Additional Lighting Replacement in Rooms A012, A013, A050, A051, A052, A053,
8 A054, A120, A121, A130, A131, A132, A140, A141, A143, A144, A150, A153, A170, and A180
9 Remove existing lighting and controls in the room.
10
11 Provide new lighting and controls in the room.
12
13 In Offices provide 2'x2' recessed volumetric troffer with smooth acrylic diffuser with center
14 square, Lithonia 2BLT or Metalux 22EN with 3300 lumens. Provide quantity of fixtures shown
15 on Reflected Ceiling Plan. Provide 0-10V wall dimmer and dual technology ceiling mounted
16 occupancy sensor. Provide additional dual technology ceiling mounted occupancy sensors as
17 required to provide complete coverage of the space. Provide additional 3-way and 4-way
18 on/off switches at secondary entrances / exits from space. Where there is existing emergency
19 egress or optional standby lighting, connect to fixtures to existing circuit to provide
20 approximately the same light level.
21
22 In Storage & File Rooms provide 2'x4' recessed flat panel(s), Lithonia EPANL or Metalux FPS
23 with 4000 lumens. Provide on / off wall switch and dual technology ceiling mounted
24 occupancy sensor. Provide quantity of fixtures as shown on Reflected Ceiling Plan.
25
26 In Corridor A012 / A013 provide (11) 4' recessed slot fixtures, Mark Slot 4 or equal with 3200
27 lumens. Connect to existing corridor lighting circuit; 5 fixtures shall be on emergency lighting /
28 nightlight circuit and 6 fixtures shall be on normal lighting circuit. Provide (4) ultrasonic long
29 throw ceiling mounted occupancy sensors to control normal lighting.
30
31

32 **PART 3 – EXECUTION**

34 **GENERAL REQUIREMENTS**

35
36 The design of all Electrical, Communications, and Electronic Safety and Security systems shall be
37 performed by a registered P.E. or Electrical Designer of Engineering Systems who shall be the
38 supervising professional for this division of the work. The design shall be submitted, coordinated,
39 and approved by Architect and Owner before installation work begins. The Contractor shall
40 submit and pay for all review fees, permits and inspections and plan approvals required for this
41 project. The Contractor is responsible for the sizing of equipment based on code requirements
42 and load calculations he has completed.
43

44 This Contractor shall provide all equipment, materials and a complete installation. Perform all
45 start-up and testing of equipment to assure the systems are operating correctly. Provide all
46 systems, equipment, materials and accessories that are normally associated with the Electrical,
47 Communications, and Electronic Safety and Security systems.
48

49 This Contractor shall submit all close-out documentation and completion statements for the
50 project. All Electrical, Communications, and Electronic Safety and Security systems and
51 equipment shall be installed and placed in operation in strict accordance with the unit
52 manufacturer's recommendations.
53
54

EXAMINATION

Equipment Submittal Drawings:

Within 45 days after a notice to proceed and prior to ordering equipment, furnish to the Architect / Owner submittal drawings for review.

Review of any submittal drawings does not waive any condition of the specifications unless specifically noted thereon.

No fabrication or ordering of equipment shall be started until reviewed drawings are returned.

DELIVERY, STORAGE AND HANDLING

Material On-Site and Storage:

Maintain proper care and storage of material and equipment on site.

Any material damaged by rust corrosion, warping, breakage, finish damage, etc. shall be replaced by the Contractor to the satisfaction of the Engineer.

DEMOLITION

Remove all existing devices, equipment, cabling, wiring, and conduits in areas on demolished walls and in renovated areas including where room use changes. Also remove any cabling and raceway, in addition to other components that are left behind from systems removed by others, such as but not limited to sound systems, cameras, etc. Dispose of all removed material off-site. Provide Owner with any existing equipment, devices, etc. which they wish to maintain.

Where devices are removed from existing to remain walls and the boxes are not used for a new device or fixture, remove box to allow for patching of wall by others. Existing boxes at removed devices shall not be used as junction boxes.

INSTALLATION

Connections to Equipment Furnished by Others:

Refer to final shop drawings for equipment provided by other divisions for exact location of electrical outlets and the connections required.

Provide energization to the equipment furnished by other Divisions only at the request of the providing party.

Assume that once the equipment has been started up, it shall be shut off unless it is requested that it be left on by the providing party.

Only start up and turn on equipment if requested so by the party providing said equipment.

If required, power shall not be activated to the equipment until qualified starting personnel are on site.

After making a permanent power connection, the breaker shall be left in an off position and a "hold" tag or some other device be utilized to keep the power turned off to the equipment.

1 Equipment Access & Location:

2
3 All equipment, junction and pull boxes, and accessories shall be installed to permit access to
4 equipment for maintenance.

5
6 Any relocation of conduits, equipment, or accessories required to provide maintenance
7 access shall be accomplished at no additional cost.

8
9 Equipment shall be installed with ample space allowed for removal, repair or changes to the
10 equipment.

11
12 Ready accessibility to equipment and wiring shall be provided without moving other
13 equipment which is to be installed, or which is already in place.

14
15 Locate electrical outlets and equipment to fit the details, panels, decorating or finish at the
16 space.

17
18 Verify door swings before installing room lighting switch boxes and install boxes on the latch
19 side of door unless noted otherwise.

20
21 Furnish information as to exact location and size of sleeves for openings for new
22 construction.

23
24 Provide and set in place all required sleeves, inserts, forms, etc. and coordinate this work
25 with all other divisions of work.

26
27 Coring, Cutting and Patching:

28
29 The existing floor slabs are engineered post-tension slabs. All new slab openings and cores
30 shall be x-rayed and approved by the structural engineer prior to performing the work.

31
32 Beams or columns shall not be pierced without permission of the Architect and then only as
33 directed.

34
35 If any openings are required through walls where no sleeve has been provided, the hole for
36 the sleeve shall be core drilled to avoid all unnecessary damage and structural weakening.

37
38 Provide all cutting and patching required for complete installation of systems unless
39 specifically noted elsewhere.

40
41 All new or existing work cut or damaged shall be patched and restored to its original
42 condition.

43
44 Coordinate the location of sleeves, openings, chases, furred spaces, etc.

45
46 Provide during the progress of construction all sleeves, hangers and inserts that are to be
47 built into the structure.

48
49 Provide sleeves for cables passing through masonry, concrete or other similar construction.

50
51 Sleeves shall be of metal conduit and shall extend completely through the construction.

52
53 Conduits or cables penetrating smoke or fire barriers must not destroy the barrier's integrity.

54
55 Grout openings between sleeves and concrete or masonry walls and floors.
56

1 Pack annular space between sleeves and conduits with fiberglass.
2
3 Where penetrations occur through fire rated walls or floors, fill space with fire resistive caulk.
4
5 Wherever cables must pass through fire or smoke rated walls or floors, provide approved,
6 sleeved, foam filled fire stops around cables as manufactured by O.Z., Dow, Square D, or
7 equal.
8
9 Provide all materials required for patching unless otherwise noted.
10
11 Where alterations disturb lawns, paving, walks, etc., the surfaces shall be repaired,
12 refinished and left in the condition existing prior to commencement of work.
13
14 Floor Mounted Equipment:
15
16 Provide "housekeeping" pads for all floor mounted equipment to be installed, specifically
17 switchboard, generator and transformers.
18
19 In general, a housekeeping pad shall consist of a concrete base 4" in height extending 3"
20 beyond perimeter of equipment.
21
22 Do not use the base dimensions shown on the drawings.
23
24 Base dimensions depend upon final approved equipment shop drawings.
25
26 Attachments and Supports:
27
28 Be responsible for proper fittings and support for each item of equipment and materials
29 installed under Division 26.
30
31 Be responsible for the proper application, installation and location of all necessary and
32 required inserts, supports and anchor bolts.
33
34 Where same are to be installed by other Divisions of work, supply same to the contractor in
35 whose work they occur with instructions for placement and proper installation.
36
37 Establish the method and nature and select accessories necessary for proper support
38 appropriate to item and point of attachment with due consideration given to
39 ambient/environmental conditions and service duty.
40
41 Attachments, supporting devices and accessories shall be specifically designed for the
42 application, suitable for the duty imposed in service and acceptable to the Architect.
43
44 Attachments shall be made to structural components of the structure in such a manner as
45 not to jeopardize the integrity of the structure and otherwise be consistent with trade
46 practices.
47
48 Generally, anchors shall be concrete insert type in poured concrete and drilled expansion
49 type in precast concrete.
50
51 Powder actuated anchors shall not be used in concrete work.
52
53 Provide all mounting backboards as required to mount electrical and electronic equipment.
54
55 That equipment which is normally assumed to be mounted on some type of a backboard
56 shall be mounted on backboards provided by Division 26.

1
2 All mounting backboards used by the contractor shall be 3/4" AC grade marine duty
3 plywood.
4
5 All plywood shall be painted on both sides and edges with two coats of fire-resistant gray
6 enamel paint.
7
8 Provide back mounting panels to meet this specification.
9
10 Steel channel interior to be painted or galvanized.
11
12 Exterior conduit mounting channel shall be stainless steel.
13
14 All sleeves are to be furnished and installed by Division 26.
15
16 Temporary Electric Distribution
17
18 Install temporary electric distribution
19
20 Installation of the temporary power and lighting system is to begin upon notification by the
21 Architect and shall be installed and routed in a manner acceptable to the Architect and the
22 various trades so as not to interfere with construction of the project.
23
24 The temporary power and lighting system should be adequate for the construction of this
25 project and in accord with OSHA Requirements for Construction Projects.
26
27 Provide a minimum of 20-foot candles of lighting in work areas for construction.
28
29 The temporary light and power system shall include fused main disconnect switch,
30 panelboards, branch circuits, outlets, lamps and the maintenance thereof.
31
32 Temporary lights shall be equipped with heavy duty electric cords and guards.
33
34 Temporary lights must not be suspended by the power supply cord unless it is designed for
35 this use.
36
37 Furnish 2 general purpose, 20 ampere, 120 volt, single phase, grounding type receptacle
38 outlets for every 1000 square feet of floor space.
39
40 The maximum length of a 20 ampere, 120 volt lighting or power circuit shall not be greater
41 than 200' from panelboard to farthest outlet.
42
43 All single phase receptacle outlet circuits shall have approved ground fault circuit interrupter
44 protection or other OSHA approved protection systems.
45
46 Temporary power requirements, other than the specified, shall be furnished by the division
47 of work requiring the same.
48
49 Trial Usage of Electrical Systems
50
51 The operations shall be carried out only with the express knowledge and under supervision
52 of the responsible sub-trade who shall not waive any responsibility because of trial usage.
53
54 While trial usage will be kept to a minimum, it shall not be construed as acceptance by the
55 Electrical Engineer.
56

1 Cooperation/Coordination

2
3 Coordinate and cooperate with other Divisions of work and Owner by scheduling and
4 installing work to facilitate the construction progress and the Owner's use of the building.

5
6 Study the plans of other trade divisions of work and to fit work into the work of others in a
7 coordinated manner.

8
9 Lay out work and be responsible for measurements.

10
11 Check facilities provided by others which require electrical connections and provide outlets
12 suitably located for them.

13
14 Take such measurements as may be necessary to assure approved fitting and proper
15 installation of his work and all other work depending thereon.

16
17 Cooperate with other contractors to avoid complications between the installation of electrical
18 equipment and equipment installed by others.

19
20 Finish and Painting

21
22 Equipment and materials, such as panels and switches, shall be furnished with the
23 manufacturer's standard finishes, consisting of a prime coat and baked enamel finish coat,
24 unless otherwise noted.

25
26 Roof mounted equipment and other exterior materials including support hardware shall have
27 a factory or field applied prime coat and finish coat of color selected by the Owner's
28 Representative.

29
30 In general painting will be done by other trades. Assume responsibility to coordinate work
31 with the painters so that all equipment is installed prior to painting.

32
33 Assume responsibility for additional expense required to paint support channels, panel trims,
34 flush junction box covers, fixture hangers and other electrical devices not in place prior to
35 normal routine painting.

36
37 An undamaged finish is required on all equipment.

38
39 If finish becomes rusted, corroded, scratched, or flaked during storage or installation, be
40 responsible for refinishing the equipment to the satisfaction of the Architect.

41
42 Finishing painting on the job site is not required by the electrical contractor, except where
43 noted.

44
45 Where painting is required to be done by the electrical contractor, the painting shall be done
46 in accordance with the painting portion of the general specification.

47
48 Damage to Other Work

49
50 Assume responsibility to adequately protect Division 26 work at all times.

51
52 All damages resulting from their operations shall be repaired, or the damaged portions
53 replaced by the party originally performing the work (to the entire satisfaction of the
54 Architect), and all cost thereof shall be borne by those responsible for the damage.

Clean-Up

At all times, keep the premises free from excessive accumulation of waste materials or rubbish resulting from work, including tools, scaffolding, and surplus materials and leave the work room or its equivalent, clean.

In case of dispute, the Architect may order the removal of such rubbish and charge the cost to the responsible Division of work as determined by the Architect.

At the time of final clean-up, all fixtures and equipment shall be thoroughly cleaned and left in proper condition for their intended use.

Coordination Drawings

Prepare coordination drawings to a scale of $\frac{1}{4}" = 1'0$ or larger, detailing major elements, components, and systems of electrical equipment and materials in relationship with other systems, installations, and building components.

Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the work, including, (but not limited to) the following:

Indicate the proposed locations of major raceway systems, equipment, and materials. Include the following:

Clearances for servicing equipment, including space for equipment disassembly required for periodic maintenance.

Exterior wall and foundation penetrations.

Fire-rated wall and floor penetrations.

Equipment connections and support details.

Sizes and location of required concrete pads and bases.

Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.

Locations include, but are not limited to, electrical rooms and other specialty electrical and communication rooms where equipment is being provided.

Contract Termination Requirements

Furnish Owner with service manuals for all items furnished under this Contract.

Service manuals shall be complete with drawings, diagrams, operations and installation instructions and parts lists.

END OF SECTION

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SECTION 31 23 13
SUBGRADE PREPARATION

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover furnishing all material, equipment, and labor required to execute the earthwork for this project in accordance with Sections 201 through 214 of the State of Wisconsin, Department of Transportation Standard Specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Erosion and Sedimentation Controls - Division 31
- C. Aggregate Base and Subbase - Division 32
- D. Topsoil Placement and Grading - Division 32
- E. Seeding - Division 32
- F. Sodding - Division 32

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS (N/A)

PART 3 EXECUTION

3.01 PRESERVATION OF TREES AND SHRUBS

- A. Trees and shrubs to be preserved shall be thoroughly protected from scarring or other injury during grading operations. Excavation operations shall not disturb the original ground around trees within a distance of one foot or twice the diameter of the tree, whichever is greater. Exposed roots resulting from excavation shall be cut cleanly and covered with humus-bearing soil.
- B. When necessary or required by the Contract Documents, trees or shrubs around which embankment is placed shall be protected by tree wells built in accordance with Detailed Drawings or as laid out in the field by the Owner or Engineer.

3.02 UNCLASSIFIED EXCAVATION AND GRADING

- A. Excavation to subgrade shall be performed to provide a finished subgrade prepared for the application of crushed aggregate, curb and gutter, sidewalks and topsoil as shown on the typical section.
- B. Also included is the removal and disposal of existing stumps, trees, miscellaneous structures and rubble as shown on the contract drawings and any other obstructions encountered which interfere with the proposed construction. Stumps shown on contract drawings to be removed from terraces or backslopes shall be shredded to a minimum of 6 inches below finish subgrade or otherwise removed by the Contractor.
- C. Driveways shall be graded to a 10:1 maximum slope to match proposed construction.
- D. The Contractor shall adjust all valve boxes, manhole frames, and other utility appurtenances to within 1 inch of the final grade as shown on the contract drawings or as staked in the field by the Engineer.

3.03 FILLING

- A. All suitable excavated material shall be used for roadway construction, and at other places shown on the drawings.
- B. Fill shall be spread in successive uniform horizontal layers not exceeding 9 inches in depth over entire area before compaction. Each layer shall be worked to break down clods over 6 inches in size and to secure uniform moisture content. Where filling in 9 inch layers is not feasible, as in the case of filling in water or over steep slopes, construct fill in one layer to the minimum elevation at which equipment can be operated. Above this elevation, the fill shall be constructed in layers of the specified depth.
- C. Compact each layer of fill material to the following percentage of maximum dry density per modified proctor (ASTM D1557).
 - 1. 91 percent for fine grained soils (more than 50 percent passing the No. 200 sieve).
 - 2. 93 percent for coarse-grained soils (less than 50 percent passing the No. 200 sieve).

3.04 PREPARATION OF SUBGRADE

- A. The preparation of the subgrade shall consist of bringing the area to be paved to a subgrade conforming to the required grade and cross section, of uniform density, ready to receive the base course. This is to be accomplished by excavating or backfilling as needed, shaping, watering as required, or permitting to dry to proper consistency, and rolling the entire area with an approved self-propelled roller weighing not less than 8 tons. Shaping and rolling shall be continued until the subgrade has been properly prepared and shows that no further compaction of any practical benefit would result from continued compaction. The subgrade shall be tested as to cross section, crown, and elevation. After being properly prepared, it shall be so maintained until the base course is constructed. A completed subgrade shall be maintained sufficiently in advance of the base course operations to permit proper control. Any part of the subgrade area not accessible to a roller shall be thoroughly compacted by hand or mechanical compaction in a manner acceptable to the Engineer. This work shall be in accordance with Section 211 of the State of Wisconsin, Department of Transportation Standard Specifications.

3.05 UNSTABLE SUBBASE/EXCAVATION BELOW SUBGRADE (EBS)

- A. Deposits of frost-heave material, unstable soils, topsoil containing considerable amounts of organic matter, or other undesirable foundation material shall be removed from the area within the roadbed depths as shown on the drawings or as directed by the Engineer and shall be replaced as directed by the Engineer in the field.
- B. Contractor shall notify the Engineer of any questionable material. The work shall be performed in accordance with Section 205 of the State of Wisconsin, Department of Transportation, Standard Specifications.

3.06 DRAINAGE

- A. During construction, ditches and channels shall be drained at all times by keeping the excavation areas and embankments sloped to the approximate section of the final earth grade. If existing surface drainage must be interrupted, temporary drainage shall be provided.
- B. Construction in and adjacent to flowing streams shall be performed to avoid washing, sloughing or deposition of materials into the channel which may obstruct or impair stream flow, or which may result in contamination and/or silting of the stream.
- C. Precautions shall be taken to preserve, protect, and continue service of all existing tile drains, sewers, and other subsurface utilities; repair any damage to drains, sewers and utilities.

3.07 TESTING

- A. A testing laboratory will perform compaction and density tests at locations determined by the Owner's Authorized Representative. Where tests indicate that the subgrade does not conform to the compaction density specified, the subgrade shall be replaced or re-worked until it does conform.

END OF SECTION

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SECTION 31 23 16
BUILDING EXCAVATION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Excavation for the entrance stair & feature.

1.02 RELATED WORK

- A. Section 01 40 00 - Quality Requirements: Inspection of bearing surfaces and compaction testing.
- B. Section 31 23 23 - Backfill and Compaction.

1.03 PROTECTION

- A. Protect benchmarks from equipment and vehicular traffic.
- B. Protect above and below grade utilities which are to remain.
- C. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.
- D. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- E. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.
- F. Grade excavation top perimeter to prevent surface water run-off into excavation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Existing soils on site.

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum. Coordinate with 01 30 00 - Administrative Requirements.
- B. Identify known underground utilities. Stake and flag locations.
- C. Identify and flag surface and aerial utilities.
- D. Notify utility company to remove and relocate utilities.
- E. Maintain and protect existing utilities remaining which pass through work area.

3.02 EXCAVATION

- A. Excavate subsoil required for foundations, construction operations, and other work.
- B. Machine slope banks to angle of repose or less until shored.
- C. Excavation shall not interfere with normal 45 degree bearing splay of any foundation.

- D. Hand trim excavation and leave free of loose matter.
- E. Remove lumped subsoil, boulders, and rock up to 1/3 cu. yd., measured by volume.
- F. Correct unauthorized excavation at no cost to Owner.
- G. Fill over-excavated areas under structure bearing surfaces in accordance with direction by Architect/Engineer.
- H. Stockpile excavated material in area designated on site and remove excess subsoil not being reused, or not re-usable from site.
- I. Excavation for building foundations shall extend to footing bearing.

3.03 DEWATERING

- A. Water collected in footing trenches from surface run-off or seepage of groundwater shall be removed by sump pump or other conventional dewatering method prior to placement of foundation concrete.
- B. Any soil softened by standing water shall be removed prior to resuming construction activities.
- C. Site grades shall be maintained during construction to prevent flow toward open excavations and the construction area.

3.04 FIELD QUALITY CONTROL

- A. Field inspection and testing shall be performed. An independent inspection and testing firm hired by the contractor shall observe and perform field compaction tests on the bearing surfaces to determine if the existing soils are adequate for a bearing surface for the proposed structure. If the existing soils are found not to be adequate, the independent firm shall provide recommendation on the course of action required to correct the situation. The building foundation has been designed for an allowable soil bearing capacity of 1,500 psf.

END OF SECTION

SECTION 31 23 19
DEWATERING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern the work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. Wisconsin Administrative Code (WAC), Department of Natural Resources Environmental Protection Regulations, Current Edition.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover furnishing all materials and labor to keep all excavations free of water during the preparation of the subgrade, to keep all concrete and masonry work free of water through the time period specified herein, and to keep the excavation free of water during backfilling.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Trenching and Backfilling - Division 31
- C. Erosion and Sedimentation Controls - Division 31

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

1.07 PERMITS AND APPROVALS

- A. The Contractor shall obtain a High Capacity Well Permit from the Wisconsin Department of Natural Resources for all wells installed or operated for pumping groundwater to lower the groundwater table, for which the single or aggregate well capacity may be 70 gallons per minute (gpm) or greater. The Contractor shall submit the High Capacity Dewatering Well Application (Form 3300-258) to the Wisconsin Department of Natural Resources, Private Water Supply Section, P.O Box 7921, Madison, WI 53707, along with any necessary permit fees, and obtain said permit prior to the construction or operation of said high capacity well(s).
- B. Permit Fees. Permit fees include, but are not limited to, high capacity well permits and Great Lakes Basin discharge fees.
- C. The Contractor shall be responsible for all equipment, labor, materials and supplies required to comply with the requirements of the High Capacity Dewatering Well Permit, if necessary, at no additional cost to the Owner.

HIGH CAP WELL - GENERAL PERMIT APPLICATION INSTRUCTION -

<https://dnr.wisconsin.gov/sites/default/files/topic/Wells/HighCap/HighCapAppInstructions.pdf>

HIGH CAP WELL - GENERAL PERMIT APPLICATION - <https://dnr.wi.gov/files/PDF/forms/3300/3300-258.pdf>

- D. The Contractor shall apply for and obtain a Dewatering Operations General Permit (Form 3400-201, available from the link below), Wisconsin Pollution Discharge Elimination System (WPDES) Permit No WI-0049344-5. The permit, if required should be submitted on the DNR's website through their online permitting process.

DEWATERING - GENERAL PERMIT AND REQUEST FOR COVERAGE -

Wizard: [Wastewater General Permit Eligibility: Dewatering Operations \(WI-0049344-05-0\) Survey](#)

Application Log-in: <https://permits.dnr.wi.gov/water/SitePages/Waste%20Water%20Permit.aspx>

- E. The Contractor shall apply for and obtain a Dewatering Operations General Permit (Form 3400-201, available from the link below), Wisconsin Pollution Discharge Elimination System (WPDES) Permit No WI-0049344-5. The permit, if required should be submitted on the DNR's website through their online permitting process.
- F. The Contractor shall be responsible for all requirements of the General Discharge Permit Dewatering Operations, including monitoring, metering, sampling, testing, and reporting, and shall also be responsible for compliance with all discharge limits contained in the General Discharge Permit.
- G. The Contractor shall be responsible for all equipment, labor, materials and supplies required to comply with the requirements of the General Discharge Permit for Dewatering Operations, at no additional cost to the Owner.

PART 2 PRODUCTS AND MATERIALS

2.01 GENERAL

- A. The Contractor shall furnish dewatering sumps, wells, discharge pipe, and pumping equipment as may be required to adequately dewater the work.

2.02 PUMPING EQUIPMENT

- A. Pumping equipment shall be capable of running continuously except for conditions which may be approved by the Engineer.

2.03 WELLS

- A. For the purposes of compliance, the provisions of chapter NR 812 apply to all new and existing drill holes to be utilized for the purpose of dewatering and the following:
1. Wells governed under chapter NR 141 do not apply, unless they are high capacity wells, and shall not be used for the purpose of dewatering.

PART 3 EXECUTION

3.01 WATER LEVELS

- A. At all times during the excavation period and until its completion and acceptance at final inspection, ample means and equipment shall be provided with which to remove promptly, and dispose of properly, all water entering any excavation or other parts of the work. The excavation shall be kept dry and groundwater levels shall be kept low enough to prevent a quicksand condition from ruining the excavation bottom.
- B. Water levels shall be maintained at a level below all open excavations for structures and below the level of concrete until the concrete has been in place for 14 days or until test cylinders show the concrete strength to be at least 3,000 pounds per square inch or until high-early-strength concrete has been in place for 6 days or until test cylinders show the strength of the concrete to be at least 3,000 pounds per square inch. Water levels will be allowed to rise on structures prior to the concrete attaining its strength provided that

water levels are raised uniformly on each side of walls. At no time shall water be allowed to rise on a structure within 12 hours of the final concrete placement.

- C. Concrete immersed in water for the required period of time shall be an acceptable alternative for the concrete curing specified in Cast-in-Place Concrete - Division 03 of these specifications.
- D. Water levels shall be maintained at a minimum level of 6 inches below the invert elevation of a pipe during placement.

3.02 WELLS

- A. For the purposes of construction and installation, and abandonment, the provisions of chapter NR 812 apply to all drillholes and wells.
- B. For the purpose of operation for wells used for dewatering, these operations shall be in accordance with the requirements of these specifications, the Engineer and all local, municipal, and state codes, rules and regulations.

3.03 DISCHARGE LINE

- A. Discharge line shall be at a location approved by the Engineer.

3.04 DISPOSAL OF WATER

- A. All water discharged from work sites shall be disposed of in such a manner to minimize erosion and sedimentation. Water must be discharged to a hard surface such as metal sheeting, wood sheeting, concrete, etc., so that erosion at the discharge point is eliminated.
- B. Temporary and permanent erosion and sedimentation control measures shall be performed by the Contractor during construction to control water pollution, erosion and siltation, through the use of intercepting embankments, berms, dikes, dams, settling basins, sodding, planting and other erosion control devices or methods.
- C. No water shall be discharged to sanitary sewers.
- D. No water containing settleable solids shall be discharged into storm sewers.

3.05 SAMPLING AND MONITORING

- A. Sampling and monitoring shall be performed by the Contractor in accordance with WPDES permit requirements. The cover letter accompanying the permit shall specify which parameters shall be monitored to assure compliance with water quality standards or treatment technology based standards.
- B. Samples representative of the discharge shall be collected after treatment and prior to discharge to the environment. When treatment efficiency reporting is required, the influent sample shall be collected before the water passes through the treatment unit.

END OF SECTION

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SECTION 31 23 23
BUILDING BACKFILL AND COMPACTION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Backfilling to subgrade elevations around foundations and under exterior stairs.
- B. Compaction of existing subsoil prior to backfilling.
- C. Compaction requirements.

1.02 RELATED WORK

- A. Section 01 40 00 - Quality Requirements.
- B. Section 31 23 16 - Excavation.

1.03 REFERENCES

- A. ANSI/ASTM C136 - Sieve Analysis of Fine and Coarse Aggregates.
- B. ANSI/ASTM D698 - Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 5.5 lb 2.49 kg Rammer and 12-inch Drop.
- C. ANSI/ASTM D1557 - Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 10-pound Rammer and 18-inch Drop.

PART 2 PRODUCTS

1.04 COMMON FILL MATERIALS

- A. Type A: Subsoil; Existing, sandy soil free of all topsoil and organic material, roots, gravel larger than 3-inch size, and debris may be used to backfill under footings, floor slabs, around building foundations. Only utilizable if verified with geotechnical review.
- B. Type B: Imported borrow, sand, conforming to the gradations required in Section 209 of the State of Wisconsin Department of Transportation Standard Specifications.
- C. Type C: Imported borrow, aggregate base course, $\frac{3}{4}$ -inch dense graded base, crushed stone or crushed gravel conforming to the gradations required in Section 305.2.2.1 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- D. Type D: Clean crushed clear stone. $\frac{3}{8}$ -inch to $\frac{3}{4}$ inch size.

PART 3 EXECUTION

1.05 INSPECTION

- A. Verify foundation walls are braced to support surcharge forces imposed by backfilling operations.
- B. Verify areas to be backfilled are free of debris, snow, ice, or water, and ground surfaces are not frozen.

1.06 BACKFILLING

- A. Provide compaction of all existing subsoil prior to backfilling.

- A. Backfill areas to contours and elevations. Use unfrozen materials.
- B. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, or spongy subgrade surfaces.
- C. Place and compact fill materials in continuous layers not exceeding 8 inches loose depth.
- D. Maintain optimum moisture content of backfill materials to attain required compaction density.
- E. Backfill simultaneously on each side of unsupported foundation walls.
- F. Slope grade away from building minimum 4 inches in 10 feet unless noted otherwise.
- G. Make changes in grade gradual. Blend slopes into level areas.
- H. Remove surplus backfill materials from site.
- I. Leave stockpile areas completely free of excess fill materials.

1.07 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus 1 inch.
- B. Allow adequate space for topsoil or paving.

1.08 FIELD QUALITY CONTROL

- A. Field inspection and testing shall be performed by the contractor.
- B. An independent inspection and testing firm shall perform field compaction tests on the compacted backfill materials.
- C. If compaction tests on backfill material indicate work does not meet specified requirements, remove work, replace, and retest at no cost to Owner.

1.09 SCHEDULE OF LOCATIONS

- A. The paragraphs below identify location, fill material to be used and compaction expressed as a percentage of maximum density with ANSI/ASTM D1557.
- B. Around Foundations: Type A or B, each lift compacted to 95 percent.
- C. Fill Under Grass Areas at Exterior Side of Perimeter Foundation Walls: Type A or B, compacted to 90 percent, compacted to 95 percent within 10 feet of foundation walls.
- D. Fill Under Concrete Paving at Exterior Side of Perimeter Foundation Walls: 6 inches of Type C directly under the concrete, Type A or B for fill to bring grade up to that point, compacted to 95 percent.
- E. Fill and Base Course Under Concrete Sidewalks: Type B or C, provide 8-inch thick minimum layer, compact to 95 percent.
- F. Fill at areas of over excavation: Type A or B, compacted to 95 percent.
- G. Miscellaneous clean stone fill as noted or needed: Type D, compacted to 95 percent.

END OF SECTION

SECTION 31 23 33
TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
1. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Current Edition.
 2. Code of Federal Regulations (CFR), Title 29, Chapter XVII - Occupational Safety and Health Administration (OSHA), Department of Labor, Part 1926 Regulations, Current Edition.
 3. Wisconsin Administrative Code (WAC), Department of Natural Resources, Environmental Protection, Regulations, Current Edition.
 4. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall include all excavating, trenching, and backfilling for utilities as indicated from the contract drawings and as specified herein.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Erosion and Sedimentation Controls - Division 31

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 INSITU BACKFILL MATERIAL

- A. Previously excavated soil free of organic debris, clay balls, and aggregate larger than 1-1/2 inches as approved by the Engineer.

2.02 IMPORTED GRANULAR BACKFILL (TRUCKED BACKFILL) MATERIAL

- A. Imported granular fill (trucked backfill) shall be sand conforming to State of Wisconsin, Department of Transportation, Standard Specifications Subsection 209.2.2, Grade No. 1 Granular Backfill or well-graded sand and gravel conforming to Subsection 305.2.2.1 of said State Standard Specification 1-1/4 inch dense graded base with not more than eight percent (8 percent) by weight passing a No. 200 sieve.

2.03 FLOWABLE BACKFILL

- A. A cubic yard of flowable backfill shall consist of 1,350 pounds of sand, 775 pounds of #1 stone, 1,150 pounds of #2 stone, and 25 gallons of water. All weights are damp weights and no additional water will be allowed.
- B. The #1 stone shall conform to the gradation of ASTM C33 No. 67 Stone. The #2 stone shall conform to the gradation of ASTM C33 No. 4 stone.

2.04 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

- A. The CLSM shall include fine aggregate, cementitious material, and water to produce a flowable, non-shrinking backfill. The strength of the CLSM shall be less than 1200 psi. If future excavation of the area is a possibility, the CLSM shall have a maximum strength of 150 psi. The Contractor shall submit a mix design to the Engineer for approval prior to use.

PART 3 EXECUTION

3.01 SURFACE OBSTRUCTIONS

- A. Structures, sidewalk, driveways, curb and gutter, trees, shrubs, lawns, signs, fences, utilities, survey monuments, pavements, culverts and other appurtenances which are adjacent to the right-of-way or work easements, shall be carefully protected against damage. In the event of damage or inadvertent injury or removal of these surface features by failure of the Contractor to exercise reasonable precautions or proper construction techniques, he shall bear the full cost and responsibility for resulting damages and shall replace or repair such damage as early as possible. No allowance for extra payment or time lost will be allowed for such interferences that the Contractor could have suspected or anticipated during pre-bid site inspection and interpretation of the bidding documents.
- B. Clearing, grubbing, and removal of all pavements, sidewalks, curbs, signs, poles, fences, etc., shall be done only as necessary for the completion of the work. Brush, trees, shrubs, concrete, rubble, and other removals, which are not intended to be replaced, shall be disposed of by the Contractor off the work site.
- C. Obstructions, which are intended to be reset, shall be stored and protected by the Contractor. Fences, signs, mailboxes, trees, shrubs, structures, and similar features requiring removal, shall be restored to their original position except where permanent removal is indicated.
- D. Monuments for land surveys encountered in the path of work shall be carefully protected from movement. Should removal be necessary, the Contractor shall notify the Engineer in advance. The Contractor will be held responsible for re-establishing monuments lost due to his negligence or failure to notify the Engineer at least 24 hours in advance of disturbing.

3.02 SUBSURFACE OBSTRUCTIONS

- A. The approximate location and size of sewers, drains, culverts, gas mains, water mains, survey monuments, electric and telephone conduits and other underground structures shown on the drawings are based on records available to the Owner or surface markings indicating their existence.
- B. The Contractor shall use caution in excavating and trenching so that the exact location of underground structures, both known and unknown, may be determined; he shall be held responsible for the repair of such structures when broken or otherwise damaged during construction.
- C. The Contractor shall make arrangements with the utility companies for any relocation of interfering utilities. No extra cost due to unexpected delays or coordination work shall be incurred on the Owner except for authorized utility alterations performed by the Contractor as provided below.
- D. When the Engineer permits the Contractor to make a change to avoid a utility relocation, the Engineer shall determine whether the change constitutes extra work as defined in the General Conditions.
- E. Any underground utilities or other structures, which the Contractor wishes to have moved to facilitate construction, shall be arranged with the owner of such structures. The Contractor shall pay all costs of the accommodation.
- F. In the event that there is any question as to whether any of the above enumerated obstructions, underground utilities or other structures cross or pass through the space occupied by the completed structures of this contract, the Engineer's decision shall be binding upon the Owner and the Contractor.

- G. During the construction of the pipe lines, it may be necessary to cross under certain sewers, drains, culverts, water lines, gas lines, electric conduits and other underground structures. Where necessary, the flow in drains or culverts shall be diverted so that the excavation is kept dry during the progress of the construction work. Every effort shall be made to prevent damage to such underground structures. Wherever such structures are disturbed or broken, they shall be restored to good condition at no additional cost to the Owner.
- H. The Contractor shall use sand or gravel backfill beneath said structures. This backfill shall be deposited and thoroughly compacted by mechanical means in layers not to exceed 6 inches in depth.

3.03 EXCAVATION

- A. General. All excavation of every description and of whatever substances encountered shall be performed to the depths indicated or as otherwise specified.
 - 1. During excavation, material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or suitable for backfill shall be removed and wasted as specified. Grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavations and any water accumulated therein shall be removed by pumping or by other approved methods.
 - 2. Sheet piling and shoring shall be placed as may be necessary for the protection of the work and for the safety of personnel. Unless otherwise indicated, excavation shall be by open cut.
- B. Trench Excavation. Trenches shall be of the necessary width for proper laying of pipe and shall conform to WAC requirements. The banks of pipe trenches shall conform to OSHA requirements and the Contractor is responsible for all safety requirements of said codes.
 - 1. Care shall be taken not to overexcavate. The bottom of the trenches shall be accurately graded to provide uniform bearing and support for each section of the pipe. Bell holes and depressions for joints shall be dug after the trench bottom has been graded, and in order that the pipe rest on the prepared bottom for as nearly its full length as practicable, bell holes and depressions shall be only of such length, depth, and width as required for properly making the particular type of joint. Stones shall be removed as necessary to avoid point bearing.
 - 2. Except as hereinafter specified for wet or other unstable material, overdepths shall be backfilled with and with materials specified for, backfilling the lower portion of trenches. Whenever wet or otherwise unstable material that is incapable of properly supporting the pipe is encountered in the bottom of the trench, such material shall be overexcavated to a depth to allow for construction of a stable pipe bedding. The trench shall be backfilled to the proper grade with suitable approved materials.
 - 3. Trench Width. The width of the trench at and below the top of the pipe shall be such that the clear space between the barrel of the pipe and the trench wall shall not be less than 6 inches nor exceed 8 inches on either side of the pipe, unless otherwise approved by the Engineer in writing. The width of the trench above that level shall be as wide as necessary for sheet piling and bracing and the proper performance of the work.
 - 4. Excavation for Appurtenances. Excavation for manholes and similar structures shall be sufficient to leave at least 12 inches clear space between the outer surface of structure and the bank or timber that may be used to hold and protect the banks. Any overdepth excavation below such appurtenances that has not been directed will be considered unauthorized and shall be refilled with sand, gravel, or concrete, as directed, at no additional cost to the Owner.
 - 5. Embedment. Embedment for utilities shall be as specified in the respective utility specification section.
- C. Protection and Removal of Utility Lines. The Contractor shall notify all affected utility companies at least three consecutive working days preceding his construction operations to coordinate his work regarding poles, wires, valve boxes and other surface obstructions and to determine the location of gas, water main, power, light, telephone or telegraph conduit or service connection thereto or any other subsurface structure that crosses or passes through the space occupied by any of the proposed improvements. The Contractor shall

make advance arrangements with the utility companies for any relocation of interfering utilities so as not to delay construction.

- D. Interruptions of Services. Interruptions of utility services to existing buildings or facilities which become necessary either directly or indirectly due to work required under this contract shall be coordinated with the Owner through the Engineer. If the down time for connections is limited by them as to duration and time (weekend, nights or holidays), the Contractor shall perform the work during the designated period at no additional cost to the Owner.

3.04 BACKFILLING

- A. Types of Backfill. Backfill for sanitary sewers, water mains, storm sewers, culverts, and drainpipes is the material placed between the bedding and the ground surface. Debris, frozen material, organic matter, unstable material, or stones greater than 8 inches in diameter shall not be suitable for backfill. Large clods and stones not exceeding 8 inches in diameter, when allowed for use as backfill, shall not be placed within two feet of the top of the pipe. Backfill shall be of the following types:

1. Type I Backfill:

- a. Type I backfill shall be used where shown on the contract drawings or stated in Special Procedures - Division 01, and unless directed otherwise shall extend from the top of the embedment to the underside of surface restoration.
- b. Type I backfill shall be used under and around all existing underground structures, tunnels, conduits, and pipes crossing the excavation. Such backfill shall extend underneath and on all sides to a structure, tunnel, conduit or pipe.
- c. Type I backfill shall be selected fill material consisting of granular subbase course, base course or approved existing sand. The backfill material shall be mechanically compacted in 6-inch layers, from a distance of one foot above the pipe to the surface. The degree of compaction shall be to 95 percent maximum dry density per modified proctor (ASTM D1557).

2. Type II Backfill:

- a. Type II backfill shall be used where shown on the contract drawings or stated in Special Procedures - Division 01.
- b. Type II backfill shall be suitable excavated material, or other approved material, placed in uniform layers and mechanically compacted. The following compaction percentages based on the maximum dry density per modified proctor (ASTM D1557) for the materials are required:
 - 1) For fine grained soils (more than 50 percent passing the No. 200 sieve).

Zone III:	From bottom of surface restoration to 3 feet below - 91 percent
Zone II:	From bottom of Zone III to top of the embedment - 88 percent
Zone I:	Specified as embedment
 - 2) For coarse grained soils (less than 50 percent passing the No. 200 sieve).

Zone III:	From bottom of surface restoration to 3 feet below - 93 percent
Zone II:	From bottom of Zone III to top of the embedment - 90 percent
Zone I:	Specified as embedment

3. Type III Backfill:

- a. Type III backfill shall be used in all areas where shown on the Plans or stated in Special Procedures - Division 01. Backfill material shall be suitable excavated material placed, from top of embedment to the bottom of surface restoration, in 12 to 18 inch layers and consolidated by jetting, spading, tamping, or puddling, to the approval of the Engineer, to insure complete filling of the trench.

4. Type IV Backfill:

- a. Utilize Type III Backfill with the following jetting: at least a 1-1/2 inch jetting hose, equipped with a regulating valve which permits the hydrant valve to be fully open during use, with a minimum 1-1/2 inch diameter pipe nozzle at least 6 feet long shall be used. During the flooding operation, the nozzle shall be inserted as deeply into the backfill as is possible without damaging the sewers, water mains, or foundations. The insertions shall be made at intervals of 5 feet or less and maintained until the backfill is saturated. Depressions caused by flooding shall be backfilled until there is no further settlement.

5. Flowable Backfill:

- a. The materials shall be placed in a clean cement mixer truck and thoroughly mixed. Just prior to placement, the mixer shall be run at mixing speed for one full minute to insure an even mixture. The mixture shall be deposited in the trench directly from the mixer truck. Copies of the load tickets shall be provided to the Engineer.
- B. After Settlement. Should after settlement occur, succeeding any of the above backfilling methods, the Contractor shall scarify the surface of the fill material and place additional fill material in the same manner as herein described so that the surface elevation conforms to that shown on the Plans. No additional compensation shall be allowed for repairing filled areas where after-settlement occurs.
- C. Backfill Placement. The excavated space around and above underground structures, tunnels, conduits and pipes not filled with embedment material and where select fill backfill is not shown or specified may be backfilled by machine.
- D. Backfilling work shall be done in such a way as to prevent dropping of material directly on top of any conduit or pipe through any great vertical distance. In no case shall backfilling material from a bucket be allowed to fall directly on a structure or pipe and in all cases, the bucket shall be lowered so that the shock of falling earth will not cause damage.
- E. Lumps shall be broken up and if there are any stones, pieces of crushed rock or lumps, which cannot be readily broken up, they shall be distributed throughout the mass so that all interstices are solidly filled with fine material. Stones, lumps and clods shall also be placed to maintain a 2 foot minimum separation distance from the top of the pipe or structure. No frozen material shall be used for backfilling.

END OF SECTION

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SECTION 31 25 00
EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
1. State of Wisconsin, Department of Natural Resources (WDNR), Conservation Practice Standards, Current Edition.
 2. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover providing the necessary materials, equipment and labor to control erosion and sedimentation controls by the methods specified herein. If no specific quantities are shown on the contract drawings, the Contractor shall use whatever quantities are necessary to prevent sediment transport off the job site, into permanent manmade storm water conveyances or management facilities or to Waters of the State.
- B. The Contractor will be required to provide erosion control as per the current edition of the applicable State of Wisconsin, Department of Natural Resources (WDNR), Conservation Practice Standards. Copies of these standards can be obtained by contacting the following:

State of Wisconsin Department of Natural Resources
Non-Point Source and Land Management Section
101 South Webster Street, P.O. Box 7921
Madison, WI 53707-7921

or by visiting the following website:

http://dnr.wi.gov/topic/stormwater/standards/const_standards.html

- C. The Engineer has prepared an erosion control plan for this project. The intent of this plan is to identify erosion control provisions for the construction site that comply with local, state, and federal regulations. The Contractor shall submit for approval by the appropriate regulatory agency any changes to the Erosion Control Plan, prior to beginning any construction on the project which may cause erosion in the portion of the site where the change to the Erosion Control Plan is proposed.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Clearing and Grubbing - Division 31
- C. Subgrade Preparation - Division 31
- D. Trenching and Backfilling - Division 31

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 TOPSOIL

- A. Topsoil shall be fertile, friable, natural loam surface soil, reasonably free of subsoil, clay lumps, brush, weeds and free of roots, stumps, stones larger than 2 inches in any dimension, and other matter harmful to plant growth. Topsoil to supplement insufficient topsoil on the site shall originate from local sources, but not from bogs or marshes.

2.02 LIME

- A. Lime used for soil amendment shall be agricultural grade limestone ground sufficiently fine so that 80 percent passes a No. 8 sieve. Lime shall contain 80 percent calcium carbonate equivalent. Moisture shall not exceed 10 percent.

2.03 FERTILIZER

- A. Fertilizer used in conjunction with seeding shall be dry, free-flowing granular fertilizer suitable for application by agricultural fertilizer spreaders or blower equipment, or non-volatile liquid commercial fertilizer, having an analysis of 20-10-10 (Nitrogen-Phosphoric Acid-Potash), or equal, unless use of phosphorus based fertilizers are banned by the community where the work is to be completed. In such communities, an analysis of 20-0-10, or equal, shall be used. Fertilizer having other analysis shall be applied at a rate to achieve at least the individual following amounts of nutrient per unit area:

<u>Nutrient</u>	<u>Application Rate</u> (Per Acre)	<u>Application Rate</u> (Per 1000 Sq. Ft.)
Nitrogen (N)	100 pounds	2.3 pounds
Phosphoric Acid (P ₂ O ₅)	50 pounds	1.2 pounds
Potash (K ₂ O)	50 pounds	1.2 pounds

2.04 SEEDING FOR CONSTRUCTION SITE EROSION CONTROL

- A. Seeding for Construction Sites shall conform with Wisconsin DNR Conservation Practice Standard 1059.
- B. Seed mixtures shall conform to one of the following:
1. WisDOT, 2003. State of Wisconsin Standard Specifications For Highway and Structure Construction. Section 630, Seeding.
 2. United States Department of Agriculture – Natural Resource Conservation Service Field Office Technical Guide Section IV, Standard 342, Critical Area Planting.
 3. UWEX Publication A3434 Lawn and Establishment & Renovation.
- C. All seed shall conform to the requirements of the Wisconsin Statutes and of the Administrative Code Chapter ATPC 20.01 regarding noxious weed seed content and labeling.
- D. Seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities shall be avoided.
- E. Seed shall not be used later than one year after the test date that appears on the label.
- F. Seed shall be tested for purity, germination and noxious weed seed content and shall meet the minimum purity and germination requirements as prescribed in the current edition of Rules for Testing Seed, published by the Association of Official Seed Analysts.

2.05 MULCH FOR CONSTRUCTION SITES

- A. Mulching for construction sites shall conform with Wisconsin DNR Conservation Practice Standard 1058.
- B. Mulch shall consist of natural biodegradable material such as plant residue (including but not limited to straw, hay, wood chips, bark and wood cellulose fiber), or other equivalent materials of sufficient dimension (depth or thickness) and durability to achieve the intended effect for the required time period.
- C. Mulch shall be environmentally harmless to wildlife and plants. Materials such as gravel, plastic, fabric, sawdust, municipal solid waste, solid waste byproducts¹, shredded paper, and non-biodegradable products shall not be used.
- D. Mulch shall be free of diseased plant residue (i.e., oak wilt), noxious weed seeds, harmful chemical residues, heavy metals, hydrocarbons and other known environmental toxicants.
- E. Marsh hay shall not be used as mulch in lowland areas but may be used on upland sites to prevent the spread of invasive, nonnative species (i.e., reed canary grass) commonly found in marsh hay.
- F. Straw and hay mulch that will be crimped shall have a minimum fiber length of 6 inches.
- G. Wood chips or wood bark shall only be used for sites that are not seeded.

2.06 EROSION MAT

- A. Non-Channel Erosion Mat products shall conform with Wisconsin DNR Conservation Practice Standard 1052.
- B. Channel Erosion Mat products shall conform with Wisconsin DNR Conservation Practice Standard 1053.
- C. Erosion mat shall conform to the requirements of the State of Wisconsin, Department of Transportation, Product Acceptability List (PAL) for Erosion Control Revegetative Mat (ECRM) and Turf-Reinforcement Mat (TRM).
- D. For mats that utilize netting, the netting shall be bonded to the parent material to prevent separation of the net for the life of the product.
- E. For urban class mats the following material requirements shall be adhered to:
 - 1. Only 100% organic biodegradable netted products are allowed, including parent material, stitching, and netting.
 - 2. The netting shall be stitched with biodegradable thread/yarn to prevent separation of the net from parent material.
 - 3. All materials and additive components used to manufacture the anchoring devices shall be completely biodegradable as determined by ASTM D 5338.
 - 4. Mats with photodegradable netting shall not be installed after September 1st.
 - 5. Steel wire pins or staples shall not be used in lawns.

2.07 SEEDING AND SODDING

- A. Seeding and sodding shall conform to Seeding - Division 32 and Sodding - Division 32.

2.08 STRAW BALE EROSION BARRIERS

- A. Straw Bale (Sediment Bale Barriers) shall conform with Wisconsin DNR Conservation Practice Standard 1055.
- B. Bales used for erosion control shall be either hay or straw, shall have rectangular surfaces, and shall be tightly bound with twine, not wire. The material in the bales shall be reasonably free of grain, weed seed and mold, and shall be dry and suitable for the purpose intended.
- C. The minimum cross sectional area for wood stakes shall be 2.0 by 2.0 inches nominal.
- D. The minimum diameter of steel (rebar) stakes shall be one-half inch.

2.09 SEDIMENT CONTROL FENCE (SILT FENCE)

- A. Silt Fence shall conform with Wisconsin DNR Conservation Practice Standard 1056.
- B. Silt fence shall be in accordance with Section 628.2.6 of the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction.
- C. Wood Posts:
 - 1. Wood Posts used to support the fabric shall be at least 1-1/8 inch x 1-1/8 inch in cross-section and shall be a minimum of 4 feet with a minimum in ground depth of 2 feet. Posts shall be made from kiln-dried hickory or Oak.
 - 2. Staples used to attach silt fence to wood posts shall be at least 0.5-inches in length.
- D. Steel Supports:
 - 1. Steel posts shall be at least 5 feet long with a strength of 1.33 pounds per foot and shall have projections for the attachment of fasteners.
 - 2. The silt fence fabric shall be attached in at least three places on the upslope side with 50 pound plastic tie straps or wire fasteners.
- E. Silt fence shall have a support cord.
- F. The Contractor shall furnish upon request a manufacturer's Certificate of Compliance that the geotextile fabric as furnished meets the above requirements.
- G. Silt Fence shall be installed in accordance with Wisconsin DNR Conservation Practice Standard 1056.

2.10 STONE DITCH CHECKS

- A. Stone Ditch Checks shall be installed in accordance with Wisconsin DNR Conservation Practice Standard 1062.

2.11 RIPRAP

- A. Riprap shall be established in accordance with Riprap - Division 31 of this specification.

2.12 LAND APPLICATION OF POLYACRYLAMIDE

- A. Land Application of Polyacrylamide shall be performed in accordance with Wisconsin DNR Conservation Practice Standard 1050.

2.13 STONE TRACKING PAD

- A. Stone Tracking Pads shall be established in accordance with Wisconsin DNR Conservation Practice Standard 1057.
- B. The aggregate for tracking pads shall be 3 to 6 inch clear or washed stone. All material to be retained on a 3-inch sieve.

2.14 VEGETATIVE BUFFERS

- A. Vegetative Buffers for Construction shall be established in accordance with Wisconsin DNR Conservation Practice Standard 1054.
- B. Prior to land disturbance the perimeter of vegetative buffers shall be flagged or fenced to prevent equipment from creating ruts, compacting the soil and to prevent damage to existing vegetation.
- C. Trees should not be cut down to establish a vegetative buffer. Other erosion control measures are preferred.

2.15 TEMPORARY SEDIMENT TRAPS

- A. Temporary Sediment Traps shall conform with Wisconsin DNR Conservation Practice Standard 1063.
- B. The stone outlet of a Sediment Trap shall consist of a stone section of embankment located at the discharge point. Stone shall consist of angular well graded 3 to 6 inch clear washed stone.
- C. If filter fabric is indicated for the up-slope side of the stone outlet, a monofilament type fabric shall be used (such as WisDOT Type FF or equivalent).

2.16 TEMPORARY CONSTRUCTION SITE DIVERSION

- A. Temporary Construction Site Diversions shall conform to Wisconsin DNR Conservation Practice Standard 1066.

2.17 DUST CONTROL

- A. Dust Control measures shall be implemented in accordance with Wisconsin DNR Conservation Practice Standard 1068.
- B. Asphalt and petroleum based products shall not be used for dust control.
- C. Mulch or seed and mulch may be applied to protect exposed soil from wind erosion according to the provisions of WDNR Conservation Practice Standard 1058 Mulching for Construction Sites and 1059 Seeding for Construction Site Erosion Control.
- D. Polymers may be used for dust control according to the provisions of WDNR Conservation Practice Standard 1050 Erosion Control Land Application of Polymers.
- E. Tackifiers and Soil Stabilizers Type A – Products must be selected from the WisDOT Erosion Control PAL.
- F. Solid board fences, snow fences, burlap fences, crate walls, bales of hay and similar material may be used to control air currents and blown soil.

2.18 CONSTRUCTION SITE DE-WATERING

- A. Construction Site Dewatering activities shall be conducted in accordance with Wisconsin DNR Conservation Practice Standard 1061.

2.19 STORM DRAIN INLET PROTECTION

- A. Storm Drain Inlet Protection shall conform Wisconsin DNR Conservation Practice Standard 1060.
- B. All fabrics used as part of an inlet protection device must be selected from the list of approved fabrics certified for inlet protection, Geotextile Fabric, Type FF in the current edition of the WisDOT Product Acceptability List (PAL).
- C. Inlet Protection Barriers include, but are not limited to, straw bales, sandbags, other material filled bags and socks, and stone weepers.
- D. Manufactured bags, when used, shall conform to the standards below:
 - 1. Minimum Size 14 x 26 inches
 - 2. Grab Tensile strength of fabric, ASTM D-4632 = 95 lb. min.
 - 3. UV stability, ASTM D-4355 = 70 % min.
 - 4. Fabric shall be sewn together with double stitching.

- E. Straw Bale installation shall conform to the criteria outlined in the WDNR Conservation Practice Standard (1055) Sediment Bale Barrier (Non-Channel).
- F. Stone weeper installation shall conform to the criteria in WDNR Conservation Practice Standard (1063) Sediment Trap.

2.20 DITCH CHECK (CHANNEL)

- A. Ditch Checks for erosion and sediment control in drainage ditches and channels shall conform Wisconsin DNR Conservation Practice Standard 1062.
- B. Stone ditch checks shall be constructed of a well-graded angular stone, a D50 of 3 inch or greater, sometimes referred to as breaker run or shot rock.
- C. Manufactured products listed in WisDOT's PAL are also acceptable for temporary ditch checks.
- D. Silt fence and single rows of straw bales are not permitted.

2.21 LAND APPLICATION OF ANIONIC POLYACRYLAMIDE (POLYMERS, PAM).

- A. Land Application of Anionic Polyacrylamide (PAM) shall conform Wisconsin DNR Conservation Practice Standard 1050.
- B. Anionic PAM mixtures shall be environmentally benign, harmless to fish, aquatic organisms, wildlife, and plants. Anionic PAM mixtures shall be non-combustible.
- C. Cationic PAM shall not be used at any level. Anionic PAM mixtures shall have $\leq 0.05\%$ free acrylamide monomer by weight as established by the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA).
- D. The manufacturer or supplier shall provide a product expiration date for anionic PAM mixtures based on product expiration date of PAM in pure form. PAM shall not be used if the expiration date will be reached prior to establishment of vegetation in areas where PAM is to be used.
- E. Contractor shall store and mix polymer in accordance with manufacturer or supplier written instructions.

PART 3 EXECUTION

3.01 EROSION CONTROL REQUIREMENTS

- A. The erosion control requirements specified in the project Storm Water Management Plan shall be adhered to at all times.
- B. Temporary and permanent erosion control measures shall be performed by the Contractor. The Contractor shall control water pollution, erosion, and siltation through the use of intercepting embankments, berms, dikes, dams, settling basins, slope paving, ditch checks, riprap, mulches, erosion mats, seeding, sodding, plantings and other erosion control devices or methods.
- C. The Contractor shall submit for approval his plan of operations for accomplishing temporary and permanent erosion control work relating to grubbing, grading, paving and other work which might create erosion.
- D. The area of erosive land exposed to the elements by grubbing, excavation, borrow and fill operations at any one time shall be minimized to the maximum extent practicable and the duration of such exposure prior to final trimming, finishing and seeding or application of temporary erosion control measures shall be as short as practicable. Construction in and adjacent to rivers, streams, lakes, or other waterways shall be performed in such a manner as to avoid washing, sloughing or deposition of materials into such waterways which would

obstruct or impair the flow thereof thus endangering the roadway or stream banks, or which would result in undue or avoidable contamination, pollution or siltation of such waterways.

- E. The Owner or Designated Representative shall have full authority to suspend or limit grading and other operations pending adequate performance of such permanent erosion control measures as finish grading, topsoiling, mulching, matting and seeding and any temporary erosion control measures ordered by the Engineer.
- F. Grubbing and grading operations shall be performed in proper sequence with other work to minimize erosion. Intercepting ditches or dikes shall be constructed as soon as practical after clearing and grubbing operations are completed and prior to or during the operations of excavating the cuts. Where erosion is likely to be a problem, the permanent erosion control measures shall follow immediately after the grading operations if conditions permit, unless the Engineer shall authorize temporary erosion control measures.
- G. Water pumped from the site shall be treated by temporary sedimentations basins, grit chambers, sand filters, upslope chambers, hydro-cyclones, swirl concentrators, or other appropriate controls designed and used to remove total suspended solids (TSS) to 40 mg/l or less for the highest dewatering pumping rate. If the water is demonstrated to contain less than 40 mg/l TSS during dewatering operations, then no control is needed before discharge. Water may not be discharged in a manner that causes erosion of the site or receiving channels. Construction Site Dewatering activities shall be conducted in accordance with Wisconsin DNR Conservation Practice Standard 1061.
- H. The Contractor shall take all possible precautions to prevent sediment from being tracked onto public or private roadways. Any sediment reaching a public or private road shall be removed by street cleaning (not flushing) before the end of each workday.
- I. All storm drain or culvert inlets shall be protected with appropriate erosion control practices as identified in the appropriate Conservation Practice Standard. Channelized runoff from adjacent areas passing through the site shall be diverted around disturbed areas, if practical. Otherwise, the channel shall be protected. Sheet flow runoff from adjacent areas greater than 10,000 square feet in area shall also be diverted around disturbed areas unless shown to have resultant runoff velocities of less than 0.5 ft/sec across the disturbed area for one-year design storms having a duration of from 0.5 to 24 hours. Diverted runoff shall be conveyed in a manner that will not erode the conveyance and receiving channels.
- J. All disturbed ground left inactive for seven (7) or more days shall be stabilized by seeding or sodding (only prior to October 15) or by mulching or covering, or other equivalent control measure.
- K. For sites with more than 10 acres disturbed at one time, or if a channel originates in the disturbed area, one or more Temporary Sediment Traps shall be constructed in accordance with Wisconsin DNR Conservation Practice Standard 1063. The basin discharge rate shall also be sufficiently low as to not cause erosion along the discharge channel or the receiving water.
- L. For sites with less than 10 acres disturbed at one time, sediment control fences, hay bales, or equivalent control measures shall be placed along all sideslope and downslope sides of the site. If a channel or area of concentrated runoff passes through the site, sediment control fences shall be placed along the channel edges to reduce sediment reaching the channel.
- M. Any soil or dirt storage piles containing more than ten cubic yards of material should not be located with a downslope drainage length of less than 25 feet to a roadway or drainage channel. If remaining for more than seven (7) days, they shall be stabilized by mulching, vegetative cover, tarps, or other means. Erosion from piles which will be in existence for less than seven (7) days shall be controlled by placing hay bales or sediment control fence barriers around the pile. In-street utility repair or construction soil; or dirt storage piles located closer than 25 feet to a roadway or drainage channel must be covered with tarps or a suitable alternative control must be used if exposed for more than seven (7) days, and storm drain or culvert inlets must be protected with straw bales or other appropriate filtering barriers (CPS 1060).

3.02 TEMPORARY SEEDING

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Erosion and Sedimentation Controls

- A. Seeding for Construction Sites shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1059.
- B. Temporary Seeding (Cover Crop) - Areas needing protection during periods when permanent seeding is not applied shall be seeded with annual species for temporary protection. See table below for seeding rates of commonly used species. The residue from this crop may either be incorporated into the soil during seedbed preparation at the next permanent seeding period or left on the soil surface and the planting made as a no-till seeding.

<u>Species</u>	<u>Lbs/Acre</u>	<u>Percent Purity</u>
Oats	131 ¹	98
Cereal Rye	131 ²	97
Winter wheat	131 ²	95
Annual Ryegrass	80 ²	97

1 Spring and summer seeding

2 Fall seeding

- C. Permanent Seeding - Rates shall be based on pounds or ounces of Pure Live Seed (PLS) per acre. If a nurse crop is used in conjunction with permanent seeding, the nurse crop shall not hinder establishment of the permanent vegetation. A nurse crop shall be applied at 50% its temporary seeding rate when applied with permanent seed.
- D. Inoculation - Legume seed shall be inoculated in accordance with the manufacturer's recommendations. Inoculants shall not be mixed with liquid fertilizer.
- E. Sowing
 - 1. Seed grasses and legumes no more than 1/4 inch deep. Distribute seed uniformly. Mixtures with low seeding rates require special care in sowing to achieve proper seed distribution.
 - 2. Seed may be broadcast, drilled, or hydroseeded as appropriate for the site.
 - 3. Seed when soil temperatures remain consistently above 53°F. Dormant seed when the soil temperature is consistently below 53°F (typically November 1st until snow cover). Seed shall not be applied on top of snow.
- F. Turf seedlings must not be mowed until the stand is at least 6 inches tall. Do not mow closer than 3 inches during the first year of establishment.
- G. Alternate plans must be submitted for approval.

3.03 APPLICATION OF STRAW OR HAY MULCH

- A. Mulching for Construction Sites shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1058.
- B. Application Rate:
 - 1. Mulch shall cover a minimum of 80% of the soil surface for unseeded areas. For seeded areas, mulch shall be placed loose and open enough to allow some sunlight to penetrate and air to circulate but still cover a minimum of 70% of the soil surface.
 - 2. Mulch shall be applied at a uniform rate of 1½ to 2 tons per acre for sites that are seeded, and 2 to 3 tons per acre for sites that are not seeded. This application results in a layer of ½ to 1½ inches thick for seeded sites, and 1½ to 3 inches thick for sites not seeded.
 - 3. Wood chips or wood bark shall be applied at a rate of 6 to 9 tons per acre to achieve a minimum of 80% ground cover. This application should result in a layer of wood chips or wood bark ½ to 1½ inches thick.
- C. In areas where mulch is to be placed over seed, mulch shall be placed within 24 hours of seeding.

- D. Mulch Anchoring Methods - Anchoring of mulch shall be based on the type of mulch applied, site conditions, and accomplished by one of the following techniques:
1. Crimping: Immediately after spreading, the mulch shall be anchored by a mulch crimper or equivalent device consisting of a series of dull flat discs with notched edges spaced approximately 8 inches apart. The mulch shall be impressed in the soil to a depth of 1 to 3 inches.
 2. Polypropylene Plastic, or Biodegradable Netting: Apply plastic netting over mulch application and staple according to manufacturer's recommendations.
 3. Tackifier: Tackifier shall be sprayed in conjunction with mulch or immediately after the mulch has been placed. Tackifiers must be selected from those that meet the WisDOT Erosion Control Product Acceptability List (PAL). Asphalt based products shall not be applied.
 - a. The tackifiers shall be applied at the following minimum application rates per acre:
 - 1) Latex-Base: mix 15 gallons of adhesive (or the manufacturer's recommended rate which ever is greater) and a minimum of 250 pounds of recycled newsprint (pulp) as a tracer with 375 gallons of water.
 - 2) Guar Gum: mix 50 pounds of dry adhesive (or the manufacturer's recommended rate which ever is greater) and a minimum of 250 pounds of recycled newsprint (pulp) as tracer with 1,300 gallons of water.
 - 3) Other Tackifiers: (Hydrophilic Polymers) mix 100 pounds of dry adhesive (or the manufacturer's recommended rate which ever is greater) and a minimum of 250 pounds of recycled newsprint (pulp) as a tracer with 1,300 gallons of water.

3.04 PLACING EROSION MAT

- A. Installation instructions shall be supplied by the manufacturer. The Contractor shall install the mat in accordance with the manufacturer's recommendations and in accordance with Section 628.2 of the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, and the State of Wisconsin, Department of Transportation general requirements for erosion mat except as may be modified herein.
- B. Erosion control revegetative mats shall be installed after all topsoiling, fertilizing, liming and seeding is complete.
- C. The mat shall be in firm and intimate contact with the soil. It shall be installed and anchored per the manufacturer's recommendation.
- D. The mat shall be unrolled and draped loosely, without stretching, so that continuous ground contact is maintained. In ditches, mat shall be unrolled and applied parallel to the direction of drainage. On slopes, mat shall be applied parallel to the slope direction.
- E. Turf-reinforcement mat shall be installed in conjunction with the topsoiling operation and shall be followed by Erosion Control Revegetative Mat installation.
- F. At time of installation, document the manufacturer and mat type by retention of material labels and manufacturer's installation instructions. Retain this documentation until the site has been stabilized.
- G. In channels and on slopes, each upslope and each downslope end of each piece of mat shall be placed in a 4-inch trench, stapled on 12-inch centers, backfilled and tamped. Where one roll ends and second roll starts, the upslope piece shall be brought over the end of the downslope roll so that there is a 12 inch overlap, placed in a 4 inch trench, stapled on 12 inch centers, backfilled and tamped. In channels, erosion mats shall extend for whichever is greater: upslope one-foot minimum vertically from the ditch bottom or 6 inches higher than the design flow depth.
- H. On slopes, where two or more widths of mat are applied, the two edges shall be overlapped according to the manufacturer's installation instructions and stapled at 18 to 24 inch intervals along the exposed edge of the lap joint. The body of the mat shall be stapled in a grid pattern with staples 3 feet on center each way.

- I. Where heavy concentrations of water or extremely erodible soil conditions exist, as noted on the contract drawings, erosion checks shall be installed at intervals of 50 feet, or less. Such a check shall consist of a 4-inch deep trench perpendicular to the flow direction across the entire width of the fabric. The mat shall be stapled at 9-inch intervals along the bottom of the trench across the entire width of the mat. The trench shall then be backfilled and tamped.
- J. If anchoring devices become loosened, or if any fabric loosens, is torn or undermined, repairs shall be made immediately without additional compensation.
- K. Erosion mat when used in conjunction with fertilizing and seeding done for surface restoration, shall be installed immediately after fertilizing and seeding operations have been completed. Straw or hay mulch shall not be used under the fabric.
- L. Erosion mat shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.
 - 1. If there are signs of rilling under the mat, install more staples or more frequent anchoring trenches. If rilling becomes severe enough to prevent establishment of vegetation, remove the section of mat where the damage has occurred. Fill the eroded area with topsoil, compact, reseed and replace the section of mat, trenching and overlapping ends per manufacturer's recommendations. Additional staking shall be provided where rilling was filled.
 - 2. If the reinforcing plastic netting has separated from the mat, remove the plastic and if necessary replace the mat.
 - 3. Maintenance shall be completed as soon as possible with consideration to site conditions.

3.05 VEGETATIVE BUFFERS

- A. Vegetative Buffers for Construction shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1054.
- B. Trees should not be cut down to establish a vegetative buffer.
- C. A stand of dense vegetation shall be maintained to a height of 3 – 12 inches.
- D. Vegetative buffers shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period. Vegetative buffers shall be inspected for proper distribution of flows, sediment accumulation and signs of rill formation.
- E. If the vegetative buffer becomes silt covered, contains rills, or is otherwise rendered ineffective, other perimeter sediment control measures shall be installed. Eroded areas shall be repaired and stabilized. Repair shall be completed as soon as possible with consideration to site conditions.

3.06 TEMPORARY SOD PLACEMENT

- A. The Contractor shall place sod with edges in close contact and with joints staggered. Sod placement on slopes shall commence at the bottom of the slope, and the rows shall be laid perpendicular to the slope. The edge of the sod at the tops of slopes shall be turned slightly under, and a layer of soil shall be compacted over the edge to direct surface drainage over the edge onto the top of the sod. Sod placement in areas other than on slopes shall be made so that the top sod surface is flush with adjoining surfaces.
- B. On slopes steeper than 4:1 horizontal to vertical, the Contractor shall stake the sod with split cedar shingles, or other equally effective stakes, spaced from 18 to 36 inches apart along the longitudinal axis of the sod strip. These stakes shall be placed near the top edge of the sod strip and shall be driven flush with the sod.
- C. After the sod is placed, it shall be rolled or firmly tamped to press the sod onto the underlying soil. The Contractor shall, at the end of the day in which the sod is laid, thoroughly soak all sodded areas by sprinkling them with water.

- D. Sod shall be maintained in a moist, growing condition. The Contractor shall repair all areas damaged by erosion or traffic of any kind.

3.07 PLACING HAY BALE BARRIERS

- A. Straw Bale (Sediment Bale Barriers) shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1055.
- B. Sufficient bales shall be on the site to create the necessary barriers prior to the start of groundbreaking operations. The bales shall be stacked and covered with plastic sheeting until required for use.
- C. At a minimum, sediment bale barriers shall be placed in a single row, lengthwise on the contour, with the ends of adjacent sediment bale barriers tightly abutting one another. The holes between bales shall be chinked (filled by wedging) with straw, hay or equivalent material to prevent water from escaping between the bales.
- D. The maximum allowable slope lengths contributing runoff to a sediment bale barrier are specified below:

Slope Barrier Row Spacing	
< 2%	100 feet
2 to 5%	75 feet
5 to 10%	50 feet
10 to 33%	25 feet
33 to 50%	20 feet
> 50%	Not Permitted

- E. Sediment bale barriers shall not be placed perpendicular to the contour.
- F. The end of the sediment bale barrier shall be extended upslope to prevent water from flowing around the barrier ends.
- G. Installed sediment bale barrier shall be a minimum of 10 inches high and shall not exceed a maximum height of 20 inches from ground level.
- H. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a sediment bale barrier and the length of the proposed barrier to a minimum depth of 4 inches. After bales are staked and chinked, the excavated soil shall be backfilled and compacted against the barrier. Backfill to ground level on the down slope side. On the upslope side of the sediment bale barrier backfill to 4 inches above ground level.
- I. At least two wood stakes, "T" or "U" steel posts, or 1/2 inch rebar driven through at equidistance along the centerline of the barrier shall securely anchor each bale. The first stake in each bale shall be driven toward the previously laid bale to force the bales together. Stakes shall be driven a minimum 12-inches into the ground to securely anchor the sediment bale barriers.
- J. Bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings.
- K. Sediment bale barriers shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.
- L. Damaged or decomposed sediment bale barriers, any undercutting, or flow channels around the end of the sediment bale barriers shall be repaired.
- M. Sediment shall be properly disposed of once the deposits reach 1/2 the height of the sediment bale barrier.
- N. Sediment bale barriers and anchoring devices shall be removed and properly disposed of when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

- O. Any sediment deposits remaining in place after the sediment bale barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded.

3.08 CONSTRUCTION OF SEDIMENT CONTROL FENCE (SILT FENCE)

- A. Silt Fence shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1056.
- B. When installed as a stand-alone practice on a slope, silt fence shall be placed on the contour. The parallel spacing shall not exceed the maximum slope lengths for the appropriate slope as specified:

Slope Fence Spacing

< 2% 100 feet
2 to 5% 75 feet
5 to 10% 50 feet
10 to 33% 25 feet
> 33% 20 feet
> 50% Not Permitted

- C. Silt fences shall not be placed perpendicular to the contour.
- D. The ends of the fence shall be extended upslope to prevent water from flowing around the ends of the fence.
- E. When attached to wooden posts the silt fence fabric shall be stapled, using at least 0.5-inch staples, to the upslope side of the posts in at least 3 places.
- F. When attached to steel supports the silt fence fabric shall be attached in at least three places on the upslope side with 50 pound plastic tie straps or wire fasteners. To prevent damage to the fabric from fastener, the protruding ends shall be pointed away from the fabric.
- G. The maximum spacing of posts for nonwoven silt fence shall be 3 feet and for woven fabric 8 feet.
- H. Where joints are necessary, each end of the fabric shall be securely fastened to a post. The posts shall then be wrapped around each other to produce a stable, secure joint or shall be overlapped the distance between two posts.
- I. On the terminal ends of silt fence the fabric shall be wrapped around the post such that the staples are not visible.
- J. A minimum of 20 inches of the post shall extend into the ground after installation.
- K. Anchoring – Silt fence shall be anchored by spreading at least 8 inches of the fabric in a 4 inch wide by 6 inch deep trench, or 6 inch deep V-trench on the upslope side of the fence. The trench shall be backfilled and compacted. Trenches shall not be excavated wider and deeper than necessary for proper installation.
- L. Removal – Silt fences shall be removed once the disturbed area is permanently stabilized and no longer susceptible to erosion.
- M. Silt fences shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.
- N. Damaged or decomposed fences, undercutting, or flow channels around the end of barriers shall be repaired or corrected.
- O. Sediment shall be properly disposed of once the deposits reach 1/2 the height of the fence.

3.09 STONE TRACKING PAD

- A. Stone Tracking Pads shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1057.
- B. The tracking pad shall be installed prior to any traffic leaving the site.
- C. The aggregate shall be placed in a layer at least 12 inches thick. On sites with a high water table, or where saturated conditions are expected during the life of the practice, stone tracking pads shall be underlain with a WisDOT Type R geotextile fabric to prevent migration of underlying soil into the stone.
- D. Tracking pads and tire washing stations shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.
- E. The tracking pad performance shall be maintained by scraping or top-dressing with additional aggregate.
- F. A minimum 12-inch thick pad shall be maintained.

3.10 STORM DRAIN INLET PROTECTION

- A. Storm Drain Inlet Protection shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1060.
- B. The contributing drainage area to the inlet protection device shall be one acre or less. In instances where a larger contributing drainage area exists, runoff shall be routed through a properly designed sediment trapping or settling device upstream of inlet.
- C. Other than Type D inlet protection devices, no gaps shall be left in the material used that would allow the flow of water to bypass the inlet protection device.
- D. Filter Fabric Barrier Criteria - See Inlet Protection Detail
 - 1. Inlet protection Type A devices shall be utilized around inlets and unpaved areas until permanent stabilization methods have been established. Type A devices shall be utilized on inlets prior to installation of curb and gutter or pavement, and where safety considerations are not compromised on the site.
 - 2. Type B shall be utilized after the casting and grate are in place.
 - 3. Type D shall be utilized in areas where other types of inlet protection are identified as incompatible with roadway and traffic conditions, causing possible safety hazards when ponding occurs at the inlet. Type D shall only be used after castings are in place on top of the inlet boxes.
 - 4. Type D inlet protection shall conform to the standard drawing as shown in the contract drawings. There shall be a three-inch space between the bag and the sides of the inlet to prevent the inlet sides from blocking the overflow; and shall only be used in inlets deeper than 30 inches from the top of grate to bottom of the inlet. If such clearance is not available, cinch or tie the sides of the bag (with rope or ties) to provide clearance.
- E. Criteria Applicable to the Post-Paving/Curbing Phase of Construction
 - 1. Inlet protection Types B, C, and D are applicable to post paving construction. See Inlet Protection Detail.
 - a. Type B shall be utilized on inlets without curb box.
 - b. Type C shall be utilized on street inlets with curb heads. A 1½ inch x 3½ inch (37 mm by 87 mm) minimum, piece of wood shall be wrapped and secured in the fabric and placed in front of the curb head as shown in the contract drawings. The wood shall not block the entire opening of the curb box and be secured to the grate with wire or plastic ties.
 - c. Type D.
- F. Remove inlet protection devices once the contributing drainage area is stabilized with appropriate vegetation or impervious area.

- G. Inlet protection shall be at a minimum inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.
- H. Sediment deposits shall be removed and the inlet protection device restored to its original dimensions when the sediment has accumulated between 1/3 to 1/2 the design depth of the device, or when the device is no longer functioning as designed. Removed sediment shall be deposited in a suitable area and stabilized.
- I. Any material falling into the inlet shall be removed.

3.11 DITCH CHECK (CHANNEL)

- A. Ditch Checks for erosion and sediment control in drainage ditches and channels shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1062.
- B. Ditch checks shall be utilized during rough grading and shall be removed once the final grading and channel stabilization is applied, unless intended to be part of a permanent storm water management plan.
- C. Channel erosion mat or other nonerodible materials shall be placed at the base of a ditch check, and extended a minimum of 6 feet, to prevent scour and washing out the toe of the ditch check. DNR Conservation Practice Channel Erosion Mat (1053) contains criteria for the placement of erosion mat in this location.
- D. Stone ditch checks may be underlain by a nonwoven geotextile fabric to ease installation and removal. If the geotextile fabric is extended, it can serve purpose specified in item 3.11 C above.
- E. Chink or seal stone and rock ditch checks to minimize the flow through the ditch check.
- F. For added stability, the base of a stone or rock ditch check shall be keyed into the soil to a depth of 6-inches.
- G. Ditch checks shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.
- H. Unless incorporated into a permanent storm water management system, ditch checks shall be removed once the final grading and channel stabilization is applied.
- I. Maintenance shall be completed as soon as possible with consideration to site conditions.

3.12 TEMPORARY SEDIMENT TRAPS

- A. Temporary Sediment Traps shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1063.
- B. Sediment traps shall be constructed prior to disturbance of up-slope areas and placed so they function during all phases of construction.
- C. The depth of the sediment trap measured from the sediment trap bottom to the invert of the stone outlet, shall be at least three feet to minimize re-suspension and provide storage for sediment.
- D. The sediment trap shall have a length to width ratio of at least 2:1. The position of the outlet to the inlet shall be as such to minimize short-circuiting of the water flow path.
- E. Side slopes shall be no steeper than 2:1.
- F. Embankments of temporary sediment traps shall not exceed five feet in height measured from the downstream toe of the embankment to the top of the embankment. Construct embankments with a minimum top width of four feet, and side slopes of 2:1 or flatter. Earthen embankments shall be compacted.

- G. Sediment traps shall be constructed with both a principal and emergency spillway. The stone outlet of a sediment trap shall consist of a stone section of embankment (stone outlet) located at the discharge point. The stone outlet section provides a means of dewatering the basin back to the top of the permanent storage between storm events, and also serves as a non-erosive emergency spillway for larger flow events.
- H. The stone outlet shall have a minimum top width of 2 feet and a maximum side-slope of 2:1.
- I. The stone outlet shall be protected from undercutting by excavating a keyway trench across the stone foundation and up the sides to the height of the outlet.
- J. Sediment Traps shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period. Sediment may need to be removed more frequently.
- K. Deposits of sediment shall be removed when they reach a depth of one foot.
- L. If the outlet becomes clogged it shall be cleaned to restore flow capacity.
- M. Maintenance shall be completed as soon as possible with consideration given to site conditions.
- N. Sediment traps shall be removed and the location stabilized after the disturbed area draining to the sediment trap is stabilized and no longer susceptible to erosion.

3.13 TEMPORARY CONSTRUCTION SITE DIVERSION

- A. Temporary Construction Site Diversions shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1066.
- B. The minimum berm cross section shall have side slopes of 2:1 (horizontal:vertical) or flatter, a minimum top width of two feet and a minimum height of 1.5 feet.
- C. Diversions that are to serve longer than 30 days shall be stabilized as soon as they are constructed.
- D. Diversions shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.
- E. Maintenance shall be completed as soon as possible with consideration to site conditions.
- F. Accumulated sediment shall be removed when it reaches one half the height of the diversion berm.
- G. Diversions shall be removed and the area stabilized according to construction contract drawings.

3.14 DUST CONTROL

- A. Dust Control measures shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1068.
- B. Polymers may be used in areas that do not receive vehicle traffic. Dry applied polymers must be initially watered for activation to be effective for dust control. Polymers shall be utilized in accordance with the provisions of WDNR Conservation Practice Standard 1050 Erosion Control Land Application of Polymers.
- C. Tackifiers and Soil Stabilizers Type A – Products must be installed at rates conforming to the WisDOT Erosion Control PAL.
- D. Chlorides shall be applied according to the most recent version of the WisDOT Standard Specifications for Highway and Bridge Construction.

- E. Barriers - Barriers shall be placed at right angles to prevailing wind currents at intervals of about 15 times the barrier height.
- F. Areas that have dust control practices shall at a minimum be inspected daily.

3.15 LAND APPLICATION OF ANIONIC POLYACRYLAMIDE (POLYMERS).

- A. Land Application of Anionic Polyacrylamide (polymers) shall be installed and maintained in accordance with Wisconsin DNR Conservation Practice Standard 1050.
- B. Application rates shall not exceed manufacturer's written application rate recommendations that shall not exceed the WDNR use restrictions.
- C. Maximum application rates, in parts per million (ppm or mg/L or mg/kg), shall be determined by multiplying 1.4 by the number of pounds applied per acre. This number shall be less than or equal to the WDNR use restriction. Repeated applications of anionic PAM mixtures may be applied, if necessary, to ensure adequate effectiveness.
- D. The application method shall provide uniform coverage to the target area and avoid drift to non-target areas.
- E. When used on bare soil, without seed or mulch, anionic PAM mixtures shall be used on slopes 2.5:1 or flatter.
- F. Anionic PAM mixtures shall not be applied to channel bottoms.
- G. The applicator of anionic PAM mixture shall document, at the time of application, the following: name of applicator, application rate per acre, date applied, product type, weather conditions during application, and method of application. Copies of this documentation shall be entered into the contractor's monitoring log or project diary and made available upon request.
- H. Unused liquid anionic PAM mixtures shall be minimized. Excess material shall not be applied at a rate greater than the maximum application rate. Disposal shall not occur in storm water conveyance systems (i.e., storm sewer manholes, storm sewer inlets, ditches, and culverts).
- I. PAM shall not be used within 30 feet of surface waters of the state.
- J. Maintenance will consist of reapplying anionic PAM mixtures to disturbed areas, including high use traffic areas, which interfere in the performance of this practice.
- K. Anionic PAM mixtures should be reapplied in areas where wind or rill erosion is apparent and whenever an area has been graded, driven upon, or otherwise disturbed since the anionic PAM mixture was last applied.

3.16 RESTORATION

- A. Contractor shall restore all disturbed areas as a result of erosion control installation and maintenance.

END OF SECTION

SECTION 32 01 16.76
SALVAGE EXISTING PAVEMENT AND BASE

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work covered under this section shall include all equipment, supervision, and labor necessary to salvage the existing pavement and base as indicated on the contract drawings and specified herein and in accordance with Section 410 of the State of Wisconsin, Department of Transportation, Standard Specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Subgrade Preparation - Division 31
- C. Aggregate Base and Subbase - Division 32

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 SALVAGED MATERIAL

- A. Salvaged material shall consist of existing asphaltic pavement and aggregate base course processed, by crushing, milling, or pulverizing, to its original particle size with 97 percent passing a 2-inch sieve.

PART 3 EXECUTION

3.01 SALVAGE AND REGRADE EXISTING ASPHALT PAVEMENT

- A. The existing asphalt surface shall be milled or pulverized to the full depth or to a maximum depth of 6 inches. The depth of the pavement and base varies and extreme care shall be taken to prevent penetration into the subgrade of the roadway.
- B. The existing salvaged pavement shall be graded and compacted. In the presence of the Engineer, the Contractor shall test roll the salvaged pavement with a loaded tandem dump truck. If deemed necessary by the Engineer, the Contractor shall remove the salvaged pavement and base, excavate to subgrade, and reinstall the salvaged material. Subgrade shall be 12 inches below the proposed cross section, unless otherwise defined in the contract drawings or Special Procedures - Division 01. The total base required shall be supplemented with aggregate base course or excess salvaged pavement if available.

- C. If deemed necessary by the Engineer, excess or unsuitable salvaged pavement shall be removed and stockpiled at the Owner's storage site. Any salvaged pavement contaminated by the Contractor with unsuitable material, shall be hauled off site, and disposed of by the Contractor.

3.02 SALVAGE EXISTING ASPHALT PAVEMENT AND BASE

- A. The existing asphalt surface shall be milled or pulverized to the depth of the existing asphalt pavement. The depth of the pavement and base varies and extreme care shall be taken to prevent penetration into the subgrade of the roadway.
- B. The salvaged pavement and aggregate base shall be removed, hauled, and stockpiled at the Owner's storage site.

3.03 PULVERIZE, SALVAGE AND REINSTALL EXISTING ASPHALT PAVEMENT AND BASE

- A. It is the intent of this process to salvage and reuse as base, as much of the existing pavement and base course as possible.
- B. The existing pavement structure shall be milled or pulverized to the depth of the existing aggregate base or to a maximum depth of 6 inches. The depth of the pavement structure varies and extreme care shall be taken to prevent penetration into the subgrade of the roadway.
- C. The salvaged material shall be removed, reinstalled, and compacted as soon as the subgrade has been prepared by the Contractor and approved by the Engineer. If approved by the Owner, millings may be stockpiled on-site until the subgrade is prepared.
- D. Any excess material from pulverizing and grading shall be used as base material for other areas of the project.

END OF SECTION

SECTION 32 11 23
AGGREGATE BASE AND SUBBASE

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work covered under this section shall consist of furnishing all material equipment and labor required to construct a dense compacted base course composed of one or more courses or layers of coarse aggregate, fine aggregate and binder or filler blended to produce an intimate mixture of the required gradation and stability, in accordance with Sections 301 and 305 of the State of Wisconsin, Department of Transportation, Standard Specifications. This work shall also consist of a furnishing all material equipment and labor required to place breaker run and select crushed material for this project in accordance with Sections 301, 311 and 312 of the State of Wisconsin, Department of Transportation, Standard Specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Subgrade Preparation - Division 31
- C. Salvage Existing Pavement and Base - Division 32

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 DENSE GRADED BASE

- A. Materials furnished and used in this work shall consist of coarse and fine aggregate with sufficient binder to produce a stable base for the surfacing. Base materials shall be free from vegetative or organic matter, shale and lumps of clay. Dense graded base shall be crushed stone or crushed gravel conforming to the gradations required in Section 305.2.2.1 of the State of Wisconsin, Department of Transportation, Standard Specifications, unless indicated otherwise in Special Procedures - Division 01 or on the contract drawings.

2.02 BREAKER RUN

- A. Breaker Run shall be used when shown on typical sections or called for in Special Procedures - Division 01. Breaker run shall be free of organic matter, shale and lumps of clay. The material shall comply with Section 311 of the State of Wisconsin, Department of Transportation, Standard Specifications. If the cross section thickness of breaker run is less than 12 inches, the gradation for breaker run shall conform to 3-inch dense graded base as per Section 305.2.2.1 of the State of Wisconsin, Department of Transportation, Standard Specifications.

2.03 SELECT CRUSHED MATERIAL

- A. Select Crushed Material shall be used when shown on typical sections or called for in Special Procedures - Division 01. Select Crushed shall be free of organic matter, shale and lumps of clay. The material shall comply with Section 312 of the State of Wisconsin, Department of Transportation, Standard Specifications.

PART 3 EXECUTION

3.01 DENSE GRADED BASE

- A. Each layer of base shall be compacted over the entire area per Section 301.3 and 305.3 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- B. Each layer shall also be compacted and consolidated to the degree that there will be no appreciable displacement of it laterally or longitudinally under compaction equipment or a fully loaded tandem dump truck.
- C. Where aggregate base is being placed on top of existing gravel, the existing gravel shall be scarified to a depth of three inches prior to placement of additional base.
- D. Aggregate base course beneath and within 10 feet of a structure shall be compacted to 95 percent maximum dry density per modified proctor (ASTM D1557).
- E. The aggregate base shall be graded, shaped and rolled to the finished cross section template shown on the contract drawings and to the satisfaction of the Engineer.

3.02 BREAKER RUN

- A. Each layer of breaker run shall be compacted over the entire area per Section 301.3 and 305.3.2.3 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- B. Each layer shall also be compacted and consolidated to the degree that there will be no appreciable displacement of it laterally or longitudinally under compaction equipment or a fully loaded tandem dump truck.
- C. The breaker run shall be graded, shaped and rolled to the finished cross section template shown on the contract drawings and to the satisfaction of the Engineer.

END OF SECTION

SECTION 32 12 13.16
ASPHALTIC TACK COAT

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern the work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section includes all materials, equipment, supervision, and labor necessary to apply asphaltic tack coat prior to paving asphaltic concrete pavement on an existing surface, as indicated on the Contract Drawings.
- B. All work shall conform to the requirements specified in Section 455 of the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Submittals - Division 01
- C. Asphaltic Concrete Pavement - Division 32

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to relate these materials to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 ASPHALTIC TACK COAT

- A. The materials furnished and used for asphaltic tack coat shall conform to the requirements of Section 455 of the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition.

PART 3 EXECUTION

3.01 GENERAL

- A. All work shall conform to the requirements specified in Section 455 of the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition, unless specified otherwise herein or in Special Procedures - Division 01.

- B. Apply asphaltic tack coat only when the air temperature is 32°F or more, unless the engineer approves otherwise in writing. Do not apply to surfaces with standing water, and do not apply if weather or surface conditions are unfavorable, or before impending rains.
- C. Apply the asphaltic tack coat at 0.050 to 0.070 gallons per square yard or as otherwise designated by the Engineer to provide complete and uniform coverage.
- D. Apply asphaltic tack coat to the vertical faces of adjacent curbs and pavement, as well as to the lower asphalt layer, unless the upper asphalt layer is installed the same day as the lower asphalt layer. Also apply asphaltic tack coat to existing pavement surfaces to be overlaid.

3.02 PREPARING THE EXISTING SURFACE

- A. Immediately prior to applying the asphaltic tack coat to existing surfaces, remove all vegetation from the surface and sweep the surface to remove all dust, dirt, debris or other foreign or loose material.

3.03 MAINTAINING TACK COAT

- A. Protect and repair the existing surface and the tack coat. Correct areas with excess or deficient tack material and any breaks, raveled spots, or other areas where bond might be affected.

END OF SECTION

SECTION 32 12 16
ASPHALTIC CONCRETE PAVEMENT

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern the work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section includes all materials, equipment, supervision, and labor necessary to construct a plant-mixed asphaltic concrete pavement on the prepared foundation of base course or existing surface, as indicated on the contract drawings and specified herein.
- B. All work shall conform to the requirements specified in the State of Wisconsin, Department of Transportation, Standard Specifications for the particular class, type and grade of material specified.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Submittals - Division 01
- C. Subgrade Preparation - Division 31
- D. Aggregate Base and Subbase - Division 32
- E. Asphaltic Tack Coat - Division 32

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to relate these materials to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.
- B. Job Mix Formula. Contractor shall submit a Wisconsin Department of Transportation approved Job Mix Formula for the asphaltic mixture to be used to the Engineer prior to paving. If requested, the Contractor shall submit a history of recent testing results.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 GENERAL

- A. All materials shall conform to the requirements of the State of Wisconsin, Department of Transportation, Standard Specifications, unless specified otherwise herein or in Special Procedures - Division 01.

- B. Asphaltic concrete pavement shall be Asphaltic Concrete Pavement, Classification LT, unless indicated otherwise in the Bid Schedule or Special Procedures - Division 01.

2.02 ASPHALTIC MATERIAL

- A. The asphaltic material for asphaltic concrete pavement, including overlays shall be asphalt, Type AC with an Asphaltic Binder Grade of PG 58-28 and a binder designation 'S' unless specified otherwise in the Bid Schedule or Special Procedures – Division 01.

PART 3 EXECUTION

3.01 GENERAL

- A. All work shall conform to the requirements specified in the State of Wisconsin, Department of Transportation, Standard Specifications for the particular class, type and grade of material specified, unless specified otherwise herein or in Special Procedures - Division 01.

3.02 PREPARATION

- A. All existing asphaltic concrete pavement removals, including driveway removals, shall be saw cut to the limits designated as pavement removal on the contract drawings or to the limits staked by the Engineer in the field. Typically, all pavement sawcuts shall be parallel or perpendicular to the centerline of the roadway.
- B. Weeds shall be removed on all streets to be resurfaced prior to the application of the tack coat or construction of asphaltic concrete pavement. Prior to the application of the tack coat or construction of asphaltic concrete, the surface of the prepared foundation shall be cleaned by brooming all dust, dirt, debris or other foreign or loose material.
- C. Apply tack coat as specified in Asphaltic Tack Coat - Division 32 to existing pavement and each layer of a plant-mixed asphaltic base or pavement that will be overlaid with asphaltic mixture.
- D. The Contractor shall perform all final shaping and grading of aggregate bases necessary to produce the required roadway cross sectional contour. All valve boxes, manhole frames, and other utility appurtenances shall be adjusted to the final grade prior to the placement of the upper layer of asphalt.

3.03 PLACEMENT

- A. Asphaltic concrete pavements shall be placed in reasonable conformity with the thickness shown on the contract drawings, Bid Schedule, or specified in Special Procedures - Division 01.
- B. Upper layer paving. The upper layer of asphalt pavement shall not be paved when ambient air temperatures 3-feet above the paving surface is less than 40 degrees F.
- C. Lower layer paving. The lower layer of asphalt pavement shall not be paved when ambient air temperatures 3-feet above the paving surface is less than 32 degrees F.
- D. The following thickness limits shall apply unless specified otherwise:

ASPHALT MIX GRADATION (Nmas)	NOMINAL AGGREGATE SIZE (inches)	MINIMUM LAYER THICKNESS (inches)	MAXIMUM LOWER LAYER (inches)	MAXIMUM UPPER LAYER (inches)
1	1.5	3.5	5	4.5
2	1.0	3.25	5	4
3	3/4	2.25	4	3
4	1/2	1.75	3	2.5
5	3/8	1.5	3	2

3.04 COMPACTION

- A. Compaction methods and requirements shall conform to Sections 450.3.2.6 and 460.3.3 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- B. The Contractor shall perform field pavement density tests on projects requiring over 1000 tons of asphaltic mixture. Tests shall be performed to determine the necessary compaction methods to achieve the required minimum density. The Contractor shall not operate below the specified minimum density on a continuing basis.
- C. Additional tests shall be performed as directed by the Engineer for varying paving conditions, such as different weather conditions, base conditions, job mix, layer thickness, and construction methods.
- D. Documentation of all testing shall be provided to the Engineer.

3.05 QUALITY CONTROL

- A. The Contractor shall provide and maintain a quality control program.
- B. If requested by the Owner or Engineer, submit samples and sampling data of all proposed materials for test and analysis.

END OF SECTION

SECTION 32 13 10
CONCRETE SIDEWALK, STEPS AND DRIVEWAYS

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.
 - 2. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Current Edition.

1.03 DESCRIPTION OF WORK

- A. The work covered under this section shall consist of furnishing all material, equipment, and labor required to execute the concrete sidewalk, driveway and step work for this project.
- B. This work shall be in accordance with Section 602 of the State of Wisconsin, Department of Transportation, Standard Specifications, and as indicated on the contract drawings and specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Concrete Quality Control - Division 01
- C. Maintenance of Existing Conditions - Division 02
- D. Cast-in-Place Concrete - Division 03
- E. Subgrade Preparation - Division 31
- F. Aggregate Base and Subbase - Division 32

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts to relate the materials supplied to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 CONCRETE

- A. Concrete for sidewalk, steps and driveways shall be as specified in Cast-in-Place Concrete - Division 03 of these specifications.

2.02 BASE MATERIAL

- A. Base material shall be as specified in Aggregate Base and Subbase - Division 32 of these specifications or conform with Section 305 of the State of Wisconsin, Department of Transportation, Standard Specifications.

2.03 DETECTABLE WARNING FIELDS

- A. Detectable warning fields shall be included in the current WisDOT Prequalified Product List.

2.04 CURING COMPOUND

- A. Curing compound shall be as specified in Cast-in-Place Concrete - Division 03 of these specifications.

PART 3 EXECUTION

3.01 BASE PREPARATION - GRADING

- A. Prepare foundation by excavating to the lines, grades and cross section as required. All soft or unstable material shall be removed and replaced with sand or aggregate base course material compacted to a relative field density of 95%, based on the Modified Proctor Density, ASTM D1557. Proof-roll subbase to check for unstable areas needing additional compaction. Finish to a true and firm surface.
- B. If not listed as a separate bid item, minor clearing and grubbing shall be considered incidental to the respective concrete work.
- C. Disposal locations for all excess or unsuitable excavated material shall be subject to Owner approval.

3.02 BASE MATERIAL

- A. A minimum thickness of 4 inches of compacted aggregate base course or granular subbase course material is required under sidewalks and steps, unless indicated otherwise on the contract drawings or Special Procedures - Division 01.

3.03 SIDEWALK

- A. Sidewalks shall be constructed to a uniform depth of 4 inches except at alleys and driveways where they shall be constructed to a uniform depth of 6 inches unless otherwise noted.
- B. Sidewalks shall slope toward the roadway at 1 foot vertical per 50 feet horizontal (2 percent).
- C. The concrete shall be placed on a moist foundation, deposited to the required depth, and consolidated and spaded sufficiently to bring the mortar to the surface, after which it shall be struck off and finished to a true and even surface.
- D. The final floating shall be done with a wooden float. Before the mortar has set, the surface shall be brushed or lightly broomed, perpendicular to the direction of travel or as shown on the contract drawings. Before the concrete is given the final surface finish, the surface of the walk shall be checked with a ten-foot straightedge, and any areas which show a variation or departure from the testing edge of more than 1/4 inch shall be corrected by adding or removing concrete as necessary while the concrete is still plastic.
- E. Concrete sidewalks may be constructed with suitable, approved slip-form equipment when permitted by the Engineer. The wood floating may be omitted when a suitable finish is produced by the slip-form equipment.
- F. Ramps for individuals with disabilities shall be constructed at the locations and in accordance with the details and dimensions shown on the contract drawings, these specifications and the Americans with Disabilities Act (ADA). Ramps shall include detectable warning fields installed per manufacturer's recommendations.
- G. Where reinforcement is required, it shall conform to and be placed in accordance with the details shown on the contract drawings.

- H. Joints for sidewalks, including transverse joints, longitudinal joints, contraction joints, expansion joints and joint felts and filler materials shall conform to the requirements of Section 602.3.2.5 of the State of Wisconsin, Department of Transportation, Standard Specifications, except as modified herein.
1. Sidewalks shall be divided into sections not less than 3 feet nor more than 12 feet, unless otherwise indicated on the contract drawings. Transverse joints shall be spaced at 6 foot intervals.
 2. Prefabricated expansion joint of 1/2-inch thickness shall be placed where steps or sidewalks abut curbs, pavements, steps, or existing sidewalk. Prefabricated expansion joint of 1 inch thickness shall be placed where sidewalk abuts buildings, retaining walls, or other rigid structures. Expansion joints shall be provided on each side of driveways and at uniform intervals of not more than 96 foot centers for sidewalk construction.
 3. Extend joint fillers full-width and depth of joint and not less than 1/4-inch or more than 1/2-inch below finished surface. Furnish joint fillers in one-piece lengths for the full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Trim top edge of filler to conform to profile of concrete.

3.04 STEPS

- A. Steps shall be constructed and placed as shown on the contract documents.

3.05 DRIVEWAYS

- A. Driveways shall be constructed to a uniform depth of 6 inches. Driveways shall be constructed to the limits and slope shown on the contract drawings or as staked by the Engineer.

3.06 CURING COMPOUND

- A. Curing compound shall be applied at the recommended coverage requirement and application rate of the manufacturer. The compound shall be applied by sprayer as soon as all free water has disappeared after finishing operations.
- B. If the coating is damaged within 72 hours of its application, the damaged surfaces shall be resprayed immediately.

3.07 ADJUSTING UTILITY APPURTENANCES

- A. Valves and curb stop boxes shall be adjusted to finished grade of new construction in a manner that the new construction will not interfere with the proper operation of the facility. Catch basins, manholes and inlet covers shall be adjusted to the required elevation by adjusting the top of the existing structure by removing or adding adjusting rings and reinstalling the fixtures firmly in place.

END OF SECTION

SECTION 32 16 13
CONCRETE CURB AND GUTTER

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Current Edition.
 - 2. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover furnishing all material, equipment, and labor required to execute the construction of concrete curb and gutter for this project.
- B. This work shall be in accordance with Section 601 of the State of Wisconsin, Department of Transportation, Standard Specifications, and as indicated on the contract drawings and these specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Cast-in-Place Concrete - Division 03
- C. Subgrade Preparation - Division 31
- D. Aggregate Base and Subbase - Division 32
- E. Concrete Sidewalk, Steps, and Driveways - Division 32

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to relate these materials to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 CONCRETE

- A. Concrete for curb and gutter construction shall be as specified in Cast-in-Place Concrete - Division 03 of these specifications.

2.02 BASE MATERIAL

- A. Base material for concrete curb and gutter construction shall be as specified in Aggregate Base and Subbase - Division 32 of these specifications.

2.03 CURING COMPOUND

- A. Curing compound for curb and gutter construction shall be as specified in Cast-in-Place Concrete - Division 03 of these specifications.

PART 3 EXECUTION

3.01 CONCRETE CURB AND GUTTER, GENERAL

- A. All work shall be in accordance with Section 601 of the State of Wisconsin, Department of Transportation, Standard Specifications, and as otherwise indicated on the contract drawings and as specified herein.

3.02 GRADING

- A. Prepare foundation by excavating to the lines, grades and cross section as required.
- B. All soft or unstable material shall be removed and replaced with sand, gravel or crushed stone base course material compacted to a relative density of 95 percent, of the Modified Proctor density, ASTM D1557. Proof-roll subbase to check for unstable areas needing additional compaction. Finish to a true and firm surface.
- C. Dispose of all excess or unsuitable excavated material, subject to Engineer's approval.

3.03 BASE MATERIAL UNDER CURB AND GUTTER

- A. A minimum of 4 inches of compacted aggregate base course material is required under the curb and gutter, unless otherwise indicated on the contract drawings or Special Procedures - Division 01.

3.04 CONCRETE CURB AND GUTTER

- A. This work shall consist of constructing combination curb and gutter of the type shown on the contract drawings and to the line and grade as staked in the field.
- B. Driveway entrances shall be installed where shown on the contract drawings or at any other locations required by the Engineer.
- C. Final brooming shall be done perpendicular to the curb.

3.05 JOINTS

- A. Construct expansion, weakened-plane (contraction), and construction joints with face perpendicular to surface, unless otherwise shown. Construct traverse joints at right angles to curb, unless otherwise shown on the contract drawings or specifically designated in Special Procedures - Division 01.
 - 1. Provide expansion joints on each side of catch basins, inlets, structures, and other fixed objects; abutting to existing curb and gutter; at radius points; and at 300 foot centers, unless otherwise shown.
 - 2. Contraction joints shall be a slot or groove at least 1 inch in depth by 1/4 inch width at 20-foot maximum and 6-foot minimum intervals.
- B. Extend joint fillers full-width and depth of joint, and not less than 3/4 inch or more than 1 inch below finished surface. Furnish joint fillers in one-piece lengths for the full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Trim top edge of filler to conform to profile of concrete.

3.06 CURING COMPOUND

- A. Curing compound shall be applied at the recommended coverage requirement and application rate of the manufacturer. The compound shall be applied by sprayer as soon as all free water has disappeared after finishing operations.
- B. If the coating is damaged within 72 hours of its application, the damaged surfaces shall be resprayed immediately.

3.07 ADJUSTING UTILITY APPURTENANCES

- A. Adjust valve and curb stop boxes to finished grade of new construction in a manner that the new construction will not interfere with the proper operation of the facilities.
- B. Adjust catch basin, manhole and inlet frames and covers to the required elevation by adjusting the top of the existing structure by removing or adding concrete masonry and reinstalling the fixtures, supporting them in a collar of concrete mortar and brick constructed to hold them firmly in place.

3.08 SAWCUTTING

- A. The existing curb and gutter shall be sawcut full-depth, where the existing curb and gutter sections will butt to the new sections.

END OF SECTION

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SECTION 32 17 23
PAVEMENT MARKING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable Provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications listed below, are referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition, and current Supplemental Specifications.
 2. American Association of State Highway Transportation Officials (AASHTO), Specifications and Standards.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall include all equipment, supervision, and labor necessary to furnish and apply or remove pavement markings to streets, parking lots, and bike paths as indicated on the contract drawings and specified herein and in accordance with Section 646 of the State of Wisconsin, Department of Transportation, Standard Specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to relate these materials to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 EPOXY

- A. Furnish epoxy from the State of Wisconsin, Department of Transportation's approved product list <http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/tools/appr-prod/default.aspx>.

2.02 GLASS BEADS

- A. The glass beads shall conform to AASHTO M 247. The gradation shall conform to the requirements in Section 646.2.2 of the State of Wisconsin, Department of Transportation, Standard Specifications, unless indicated otherwise in Special Procedures – Division 01 or on the contract drawings.

PART 3 EXECUTION

3.01 PREPARATION

- A. Surface shall be dry and free of any undesirable materials that will prevent bonding to the pavement. Sweep and clean surface to eliminate loose material and dust.

- B. Contractor shall remove any existing pavement markings in conflict with proposed pavement markings.
- C. Do not damage existing pavement surface.

3.02 APPLICATION

- A. Apply at manufacturer's recommended rate. Apply with mechanical equipment to produce uniform straight edges.
- B. Pavement markings shall be applied without the addition of thinner.

3.03 REMOVALS

- A. Shall be in accordance with WisDOT section 646.3.1.4.

END OF SECTION

SECTION 32 91 19.13
TOPSOIL PLACEMENT AND GRADING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover furnishing all material, equipment, and labor required to salvage and/or furnish, haul, place, and prepare topsoil for this project in accordance with Section 625 of the State of Wisconsin, Department of Transportation Standard Specifications.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Erosion and Sedimentation Controls - Division 31
- C. Subgrade Preparation - Division 31
- D. Seeding - Division 32
- E. Sodding - Division 32

1.05 SUBMITTALS

- A. Submit a sample of the topsoil material prior to placement. Topsoil material shall be approved by the Owner or Engineer prior to placing on the project.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 TOPSOIL

- A. Topsoil shall be screened and conform to Section 625 of the State of Wisconsin, Department of Transportation, Standard Specifications. A minimum of 100% of the topsoil shall pass through the one-inch sieve (25 mm) and 90% shall pass the No. 10 (2.00 mm) sieve.
- B. Topsoil shall be shredded and conform to Section 625 of the State of Wisconsin, Department of Transportation, Standard Specifications. 100% of the topsoil shall pass through the one-inch sieve (25 mm).

PART 3 EXECUTION

3.01 PRESERVATION OF TREES AND SHRUBS

- A. Trees and shrubs to be preserved shall be thoroughly protected from scarring or other injury during placement and grading operations. Excavation operations shall not disturb the original ground around trees within a distance of one foot or twice the diameter of the tree, whichever is greater. Exposed roots resulting from excavation shall be cut cleanly and covered with humus-bearing soil.
- B. When necessary or required by the Contract Documents, trees or shrubs around which embankment is placed shall be protected by tree wells built in accordance with Detailed Drawings or as laid out in the field by the Owner or Engineer.

3.02 REMOVING AND SALVAGING TOPSOIL

- A. General. Topsoil shall be stripped and salvaged or removed in accordance with Subsection 625.3 of the State of Wisconsin, Department of Transportation Standard Specifications.

3.03 PLACEMENT AND GRADING

- A. General. Topsoil shall be placed in accordance with Subsection 625.3 of the State of Wisconsin, Department of Transportation Standard Specifications.
- B. Grading. The Contractor shall grade in back of the curb or walk to provide a smooth surface and a 4:1 maximum slope unless shown otherwise on the plan. Graded surfaces shall be covered with topsoil to finished grade as shown on the typical sections.
- C. Utility Adjustment. The Contractor shall adjust all valve boxes, manhole frames, and other utility appurtenances to within 1 inch of the final grade as shown on the contract drawings or as staked in the field by the Engineer.
- D. All areas disturbed by the Contractor's activities and intended for seeding or sodding shall be topsoiled to the depth of 4-inches, unless shown otherwise on the Contract Drawings or specified in Special Procedures - Division 01.
- E. All areas disturbed by the Contractor's activities and intended for cultivation of vegetation other than turf shall be topsoiled to the depth of the original topsoil, unless shown otherwise in the Contract Drawings.
- F. Construction in and adjacent to flowing streams shall be performed to avoid washing, sloughing or deposition of materials into the channel which may obstruct or impair stream flow, or which may result in contamination and/or silting of the stream.

END OF SECTION

SECTION 32 92 19
SEEDING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. The work covered under this section shall consist of furnishing all material, equipment, and labor required to execute the seeding for this project. All areas disturbed by the construction and not covered with pavement, aggregate base course, sod, or other structures shall be seeded, fertilized and mulched.

1.02 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.03 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Submittals - Division 01
- C. Subgrade Preparation - Division 31
- D. Trenching and Backfilling - Division 31
- E. Erosion and Sedimentation Controls - Division 31
- F. Topsoil Placement and Grading - Division 32
- G. Sodding - Division 32

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 SEED

- A. Mixture. Unless specified otherwise, the Contractor shall select a seed mixture or mixtures from the following:
 - 1. 'Deluxe 50' Mix by Reinders, or equal, shall be used in all lawn areas
 - a. Reinders Contact Patrick McKinley - pmckinley@reinders.com
 - 2. Or owner approved equal.

2.02 FERTILIZER

- A. Fertilizer shall contain the following percentages by weight:

Nitrogen	(N)	20%
Phosphorus	(P)	10%

Potash (K) 10%

- B. If local ordinances restrict the use of phosphorus in fertilizer, the local restrictions shall supercede the above percentages.

2.03 MULCH

- A. Mulching shall consist of any straw, hay, wood excelsior fiber or other suitable material of a similar nature, which is substantially free of noxious weed seeds and objectionable foreign material.

2.04 WATER

- A. Water shall be clean and free of impurities or substances that might injure the seed or grass.

PART 3 EXECUTION

3.01 SEEDING

- A. Seeding shall be done in conformance with Subsection 630.3 of the State of Wisconsin, Department of Transportation, Standard Specifications. Seed shall be sown at a rate of four pounds per 1,000 square feet unless otherwise specified.
- B. A nurse crop shall be sown with the seeding at a rate of four pound per 1000 square feet of area.

3.02 FERTILIZER

- A. Apply fertilizer in conformance with Section 629 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- B. Deliver fertilizer to site in original unopened containers showing manufacturer's name, guaranteed analysis and weight. Store in a weatherproof location and use only when dry and free flowing. Apply fertilizer at rate of 10 pounds per 1000 square feet and evenly mix into top 2 inches of topsoil.
- C. At the Contractor's option, the Contractor may perform soil tests and apply fertilizer based on the results.

3.03 MULCHING

- A. This work shall consist of furnishing, placing, and anchoring a mulch cover over seeded areas.
- B. Construction shall be done in conformance with Section 627 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- C. In existing developed areas, mulching shall be done in such a manner to prevent dust and mulch from being deposited on non-seeded areas. Acceptable methods are by hand or a small chopper/mulcher with a controlled discharge.

3.04 ACCEPTANCE

- A. The work will be considered acceptable after a 3-inch uniform stand of grass is attained and all gullies, rivulets, and washouts have been repaired to the satisfaction of the Engineer. The Contractor shall request the Engineer's inspection and acceptance will be made in writing when the above conditions have been complied with. Contractor shall make all corrective actions necessary to attain acceptance.

3.05 WATERING

- A. If weather conditions are not suitable establishing turf, the seeded areas shall be watered twice weekly. Water shall be applied uniformly and in such a manner as not to waterlog the topsoil, dislodge the seed, or cause erosion.
- B. If water is provided by a water utility, the Contract shall maintain a record of the amount of water obtained and provide it to the utility.

END OF SECTION

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SECTION 32 92 23
SODDING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. The work covered under this section shall consist of furnishing all material, equipment, and labor required to execute the sodding for this project.
- B. Dedicated area of work at the building entrance and adjacent yard area as depicted on the drawings.

1.02 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.03 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.04 RELATED WORK ELSEWHERE

- A. Irrigation system will be simultaneously installed by Owner's irrigation Contractor.
- B. Procurement and Contracting Requirements - Division 00 (All Sections)
- C. Submittals - Division 01
- D. Subgrade Preparation - Division 31
- E. Grading - Division 31
- F. Trenching and Backfilling - Division 31
- G. Erosion and Sedimentation Controls - Division 31
- H. Topsoil Placement and Grading - Division 32
- I. Seeding - Division 32

1.05 SUBMITTALS (NONE)

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 SOD

- A. Materials. Sod shall be vigorous, well-rooted, healthy nursery grown lawn grass turf free from disease, insect pests, weeds, stones and other foreign material. Sod shall conform to Section 631 of the State of Wisconsin, Department of Transportation, Standard Specifications. Sod shall be cut in uniform strips approximately 18 inches wide and have a thickness of not more than 1-1/2 inches nor less than 1 inch, and have grass approximately 2 inches high.

2.02 FERTILIZER

- A. Fertilizer shall contain the following percentages by weight:

Nitrogen	(N)	20%
Potash	(K)	10%
Phosphorus	(P)	10%
- B. If local ordinances restrict the use of phosphorus in fertilizer, the local restrictions shall supercede the above percentages.

2.03 WATER

- A. Water shall be clean and free of impurities or substances that might injure the sod.

PART 3 EXECUTION

3.01 SODDING

- A. Coordinate with the Owner's irrigation contractor.
- B. Sod shall be installed within 48 hours after cutting. Do not lay sod during freezing weather or on a frozen bed.
- C. Match to existing and lay sod snugly with alternating joints, stamp firmly and evenly by hand. After laying, clean surface of extraneous material, and compact with a roller weighing not more than 100 pounds per lineal foot nor less than 25 pounds per lineal foot. Finished surface shall be true to grade, smooth and equally firm at all points.
- D. A total of three waterings are required; an initial and two subsequent waterings within 10 days after sod placement. Watering shall be done with a slow fine spray to a minimum penetration depth of 4 inches.
- E. Sodding shall be done in conformance with Section 631 of the State of Wisconsin, Department of Transportation, Standard Specifications.

3.02 FERTILIZER

- A. Apply fertilizer in conformance with Section 629 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- B. Deliver fertilizer to site in original unopened containers showing manufacturer's name, guaranteed analysis and weight. Store in a weatherproof location and use only when dry and free flowing. Apply fertilizer at rate of 10 pounds per 1000 square feet and evenly mix into top 2 inches of topsoil.
- C. At the Contractor's option, the Contractor may perform soil tests and apply fertilizer based on the results.

3.03 WATERING

- A. If weather conditions are not suitable to achieve sod rooting, the sodded areas shall be watered to keep the sod thoroughly moist. Water shall be applied uniformly and in such a manner as not to waterlog the topsoil, dislodge the sod, or cause erosion.
- B. If water is provided by a water utility, the Contract shall maintain a record of the amount of water obtained and provide it to the utility.

3.04 ACCEPTANCE

- A. The work will be considered acceptable after a 2-inch uniform stand of grass is attained and all gullies, rivulets, and washouts have been repaired to the satisfaction of the Engineer. The Contractor shall request the Engineer's inspection and acceptance will be made in writing when the above conditions have been complied with.

END OF SECTION

SECTION 32 93 00
PLANTS

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern the work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
1. American Association of Nurserymen, (AAN), Horticultural Specifications and Standards, Current Edition.
 2. American National Standards Institute (ANSI), Specifications and Standards, Current Edition.
 - a. ANSI Z60.1 - Nursery Stock, Current Edition.
 3. Federal Specifications (FS), Specifications and Standards, Current Edition.
 - a. FS O-F-241 - Fertilizers, Mixed, Commercial, Current Edition.
 4. United States Department of Agriculture (USDA), Natural Resource Conservation Service - Wisconsin, Technical Guide:
 - a. NRCS 612 - Tree/Shrub Establishment, Current Edition.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall consist of furnishing and planting plants of the species, varieties and size specified, complete in place at locations designated on the plans or as directed by the Landscape Architect. This shall include furnishing all necessary materials and performing all necessary work such as excavation of plant holes, salvaging topsoil, transplanting, backfilling, pruning, mulching, watering, fertilizing, support staking where necessary, disposing of surplus waste materials, necessary care and required replacements pending acceptance, and such work necessary or incidental to complete the item in accordance with the plans, specifications and contract.

1.04 RELATED WORK ELSEWHERE

- A. Irrigation system will be simultaneously installed by Owner's irrigation Contractor.
- B. Procurement and Contracting Requirements - Division 00 (All Sections)
- C. Submittals - Division 01
- D. Grading - Division 31
- E. Erosion and Sedimentation Controls - Division 31
- F. Seeding - Division 32
- G. Sodding - Division 32

1.05 SUBMITTALS

- A. None

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS

- A. The manual shall include operating and maintenance literature for continuing Owner maintenance. The submitted literature shall be in sufficient detail and include cutting and trimming methods; types, application frequency, and recommended coverage of fertilizer.

- B. Preparation of this document shall be in conformance with the requirements stated in Submittals - Division 01 of these specifications. The Contractor shall submit to the Engineer OR Landscape Architect for review an outline of any variations of information for the operation and maintenance manuals and other documentation he proposes to prepare.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Material and Equipment - Division 01. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Plants shall not be on site and not installed for more than one week. Keep plants root balls, containers and bare roots moist at all times. Protect plants from adverse weather during this period.
- C. Deliver plant materials immediately prior to placement. Keep plants moist.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Do not install plant life when ambient temperatures may drop below 35 degrees Fahrenheit or above 90 degrees Fahrenheit.
- B. Do not plant when wind velocity exceeds 30 mph.

1.09 WARRANTY

- A. Provide one (1) warranty under provisions of Closeout Procedures - Division 01.
- B. Warranty. Provide a one (1) year warranty. Include coverage for one (1) full years from time of planting; replace dead or unhealthy plants in the next appropriate planting season. Remove any dead trees from the site as soon as they are 40% dead or more and inspected by the Landscape Architect.
- C. Replacements. Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

1.10 DEFINITIONS

- A. Weeds. Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.
- B. Plants. Living trees, shrubs, perennials and ground cover specified in this Section, and described in ANSI Z60.1.

1.11 QUALIFICATIONS

- A. Nursery. Nursery shall be a company specializing in growing and cultivating the plants with three years documented experience. Nurseries shall be from Northern Illinois, Wisconsin, Minnesota or Northern Iowa.
- B. Installer. Installer shall be a company specializing in installing and planting the plants with three years documented experience and shall be approved by Landscape Architect, and client prior to signing a contract.
- C. Maintenance Services. Maintenance services shall be performed by installer, which shall consist of watering, weeding the mulched areas around all plants and pruning as necessary.

PART 2 PRODUCTS AND MATERIALS

2.01 PLANTS

- A. General. All plants shall be hardy under climactic conditions similar to those in the location of the project.
1. All plants shall be typical of their species or variety and shall have a normal habit of growth. They shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae. They shall have healthy, well-developed root systems that do not encircle the plant. Any soil above the root flare shall be removed prior to planting so it can be placed at the proper depth. Bare rooted shrubs shall be dug with adequate fibrous roots. Roots of these plants shall be covered or packed in moist straw, or other water holding material. B&B plants shall be dug with firm natural balls of earth of sufficient diameter and depth to include most of the fibrous roots.
 2. Container grown stock shall have been grown in a container long enough for the root systems to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container. Prune roots as needed and prune of any encircling roots once the plant is removed from its container.
- B. Trees and Plants. Species and size shall be as identifiable in plant schedule. No substitute will be permitted without approval from the Engineer or Landscape Architect.
1. Measurement. Dimensions of trees and shrubs shall conform to the specifications in the current edition of Horticultural Standards of the American Association of Nurserymen.
 2. Sizes. All plants shall conform to the measurements specified in the plant schedule. Exceptions are as follows: plants larger than specified in the plant list may be used but use of such plants shall not increase the contract price. If the use of larger plants is approved, the spread of roots or ball of earth shall be increased in proportion to the size of the plant.

2.02 SOIL MATERIALS

- A. Topsoil: Topsoil shall be fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots.
- B. Organic Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings. Organic Matter Content: 50 to 60 percent dry weight.

2.03 FERTILIZER FOR TREES & SHRUBS

- A. Fertilizer to be used in plant holes shall be a water-soluble fertilizer contained in a micropore slow release polyethylene packet. The amount of fertilizer in each packet shall be a minimum of one ounce. The fertilizer shall meet the following requirements:
- | | |
|--------------------------------|-----|
| Nitrogen, not less than | 16% |
| Phosphoric Acid, not less than | 8% |
| Potash, not less than | 16% |

2.04 DECORATIVE GROUND COVER

- A. Stone Mulch – Type A. Shall be 1 to 2-inch rounded stone free of contaminants. Mexican Pebble Beach. 3-inch minimum stone layer thickness.
- B. Contractor to submit three (3) samples to ENGINEER or LANDSCAPE ARCHITECT for approval.
1. Accepted mulch mixes from Madison Block and Stone, LLC; Madison, WI (<https://www.madisonblockandstone.com/>) or equal as approved by the Owner.

2.05 WATER

- A. Suitable water for the execution of this work and maintenance shall be provided by the Owner. The Contractor shall be required to furnish his own hose connections from outlets where the water will be provided. An adequate water supply must be available if a replacement policy on plant material is called for in the specifications.

2.06 ACCESSORIES

- A. Tree Wrapping Materials. Before tree is wrapped, the Landscape Architect shall inspect the plant stock. Only trees with a smooth bark shall be wrapped and only applied in late fall before the first frost. Use a two-ply waterproofed crepe tree wrapping paper, laminated with a layer of pliable asphalt material. The wrap shall tightly cover the entire surface of the trunk, overlapped one-half inches in a spiral fashion, starting from the base of the tree and extending to the height of the first branches. The wrapping shall be secured in at least three places with masking tape. The Contractor shall be responsible for removing and disposing of the tree wrap in the following spring.
- B. Stakes. When and where specified, these materials shall consist of such wood or metal stakes, soft straps or banding material as needed to perform the work. Support stakes shall be of solid durable wood or metal approximately two inches wide and of the required length. In no case shall the strap or banding material be tight around the tree trunk. Material should be attached loosely enough to allow a small amount of play in the trunk.
- C. Weed Barrier. Permeable, 100% polypropylene, abrasive texture of the fabric insures against slippage of decorative cover even on sloped surfaces. This should only be used where no plants are installed.
- D. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.
 - 1. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material
- E. Anti-desiccant: If required as protection for leaf surfaces, anti-desiccant shall be permeable to permit transpiration, and mixed and applied in accordance with manufacturer's specifications.
 - 1. Pre-emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- F. Flexible Support ties: 2" (5.1 cm) or wider bands of polypropylene, or elasticized or webbed strapping.
- G. Edging. Use only metal edging made of aluminum, steel or other metal product with a minimum of 1/8" thickness and 4" height, capable of being formed to the design of the planting bed edge. Otherwise the planting bed edge should be shovel cut as shown in the details.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared topsoil is ready to receive work.
- B. Owner's Representative will inspect all plant material prior to installation. Provide a minimum of 48 hours notice of when plants will be delivered to the site.

3.02 PREPARATION

- A. Coordinate with the Owner's irrigation contractor.
- B. Receive Owner or Architect/Engineer approval of staking layout prior to excavation.
- C. Stake all planting areas and notify Digger's Hotline (1-800-242-8511 statewide) to verify location of all underground utilities prior to excavation.
- D. Excavate planting areas as shown in the contract drawings.
- E. Adequately barricade with proper warning devices any planting pit left open when planting work is not in progress, and that poses a hazard to vehicles and/or pedestrians.
- F. Notify the Owner in writing of any soil conditions, obstructions, or concerns about water drainage deemed detrimental to healthy plant growth. These conditions or obstructions shall be detailed, along with any suggestions for correction, removal or relocation. Where soil conditions, poor drainage or other obstructions are encountered that cannot be easily remedied, the Owner will designate alternate locations, and will bear the additional costs of such relocation.
- G. The planting pit for balled and burlapped plants shall be at least 2 times the diameter of the soil ball, or to a dimension otherwise specified.
- H. The planting pit for a single shrub shall be 12" (30.5 cm) wider than the root ball. Excavate individual shrub pits to the proper depth.
- I. Loosen the soil beyond the edge of the planting pit. The soil at the base of the planting pit is to remain undisturbed, the depth of which shall correspond to the distance from the bottom of the soil ball to the root flare, or slightly less.
- J. Planting pits for bare root plants shall be only broad enough to receive the full extension of the roots when the plant is set, and only deep enough to set the uppermost roots just below existing grade.
- K. Application of Mycorrhizal Fungi: At time directed by Architect/Engineer, broadcast dry product uniformly over prepared soil at application rate recommended by manufacturer.

3.03 PLANTING OF TREES AND SHRUBS

- A. Root balled plants shall have rope, string, wire baskets, burlap and other wrapping material removed from the top two-thirds (2/3) of the ball after the plant has been set in the hole. Remaining wrappings, other than those made from plastic or synthetic material, may be left around the bottom half of the ball.
- B. If deciduous species are planted in leaf, they may be sprayed with an approved anti-desiccant prior to planting when so directed by the Owner.
- C. Trees and shrubs grown using root containment material shall have the containment bag removed prior to setting.

- D. The root flare of trees must be visible and trees shall be set such that the root flare is approximately 2 inches above adjacent soil grades.
- E. Set trees and shrubs straight and upright, and in the center of the planting hole and on the unexcavated base of the planting pit, with the most desirable face towards the most prominent view.
- F. Root-balled shrubs are to be carried and set in the hole by the root ball.
- G. Backfilling: Backfill pits with Planting Mixture. No soil in frozen or muddy condition shall be used for backfilling.
- H. When pit is approximately two-thirds backfilled, tamp down and water to eliminate air pockets. After initial watering, add remainder of the soil to the top of pit, water without puddling, and firmly tamp without over compacting. Form a 2-3" high saucer around the outer rim of the pit prior to mulching.

3.04 FINISHING

- A. Finish-grade planting areas to required elevations after plants have fully settled.
- B. No soil is to cover the top of the root ball. All plants shall be completely mulched over the root system with a 3" layer of specified mulching material immediately after planting. Pull back mulch no less than 3" and no more than 6" from the trunk.
- C. Where specified lay weed control fabric over grade prior to mulching as per manufacturer's recommendations. Secure to slopes with pin anchors.
- D. Thoroughly water plants immediately after planting and before mulching, primarily within and filling the saucer.
- E. Wrapping: Only trees so designated shall be protected with tree wrap. Secure wrapping at a minimum of 5 locations, including the top, middle and bottom of the trunk. Cover the trunk's entire surface in a spiral manner, starting at the tree's base and extending to just below the height of the lowest main branches. Overlap material at 1/2-1". Owner will be responsible for removing the tree wrap after a recommended period.
- F. Prune any dead or broken branches. Prune newly-planted hedges as directed by the Landscape Architect or Project Representative.
- G. Remove all twine and rope after planting, along with any labels attached around trunks or branches.

3.05 INSTALLATION OF ACCESSORIES

- A. Place edging, mulch and weed barrier fabric only as indicated on drawings. All plants shall be mulched over the root system with a three (3) inch layer of shredded hardwood bark mulch free of any colorants. Mulching material shall be pulled back no less than 3 inches and no more than 6 inches from the trunk of trees and shrubs. All edging shall be

3.06 PLANT SUPPORT

- A. Stake only those individual plants designated on-site by Owner and Engineer.
- B. Space stakes evenly outside of, and driven clear of, the root ball. Stakes are to be driven at an angle then drawn to vertical.
- C. Ties made of approved material shall be directly attached to the stakes. Attach ties so as to allow for 1-3" of sway in the trunk. For drooping stems, ties shall be placed at the point on the stem at which the top can then stand on its own.
- D. Staking shall conform to any additional directions found in the drawings.

- E. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:

<u>Tree Caliper</u>	<u>Tree Support Method</u>
1 inch (25 mm)	1 stake with one tie
1 – 2.5 inches (25 - 50 mm)	2 stakes with two ties
3- 4 inches (50 - 100 mm)	3 fabric ties
Over 4 inches (100 mm)	4 fabric ties

3.07 PLANTING OF GROUND COVERS, PERENNIALS, ANNUALS AND BULBS

- A. Preparation: Loosen soil of the planting bed to a depth of [8"] by mechanical or hand tilling while soil is dry. For bulbs, the depth of loosened soil will be determined by the type of bulb planted, and specified in the contract or landscape plan.
- B. After soil is loosened, till organic compost into the soil across the planting bed to a uniform depth of [2"] for compost.
- C. Fertilizer, at amounts determined by the soil test, shall be top dressed to the soil. Liquid fertilizer may be applied to annuals if directed by Owner or Architect/Engineer.
- D. Planting: Space as described in the landscape plan.
- E. Plugs shall be installed through straw mulch and erosion control blankets.
- F. Unless otherwise specified, install plants no closer than 12" to the trunks of trees or shrubs within planting bed, and to within 6" of the edge of the bed.
- G. Prior to planting, biodegradable plant containers shall be split and non-biodegradable containers removed. The root systems of all such plants shall be split or crumbled by hand.
- H. For small quantities of bulbs, or in sections where bulbs are set within other plants, drive bulb planting holes through mulch using a bulb planter, hand trowel, or power auger. Plant bulb such that its basal plate faces downward, then cover with soil and mulch.
- I. For larger quantities of bulbs, excavate designated areas to specified planting depth, place bulbs such that their basal plates face downward, then cover with soil and mulch.
- J. When applying stone mulch lay weed control fabric over grade prior to mulching as per manufacturer's recommendations. Secure to slopes with pin anchors.
- K. When applying organic mulch apply pre-emergent herbicide per manufacturer's recommendations before applying mulch.
- L. Apply approved mulch uniformly across the entire planting bed to a depth of 3", except as noted in the drawings.

3.08 INSPECTION AND ACCEPTANCE

- A. Client Project Representative and a representative of the A/E Consultant with the Contractor of all plant material at one (1) week and three (3) week intervals (or other specified interval) after the original planting to note and correct any discrepancies from the contract. Plants that are alive and healthy following the three (3) week (or other time frame specified) inspection shall be accepted.
- B. Acceptance of plant material by Owner shall reflect general conformity with the *American Standards for Nursery Stock* as to specified size, character and quality. Acceptance shall not relieve the Contractor of responsibility for full conformity to the contract documents and the guarantee period. Any defects or imperfections appearing in whole or any part of the work caused by or due to any fault or negligence on the part of the Contractor shall be corrected before the work is accepted.

- C. Planting work may be accepted in stages when the Contractor and Owner deem that practice to be in their mutual interest. Approval must be given in writing by Owner to the Contractor verifying that work may be completed in stages. Acceptance of planting work in stages shall not waive any other provisions of the contract.

3.09 CLEANING

- A. Soil, branches, binding and wrapping material, rejected plants, or other debris resulting from plant installation shall be promptly cleaned up and removed. New landscape construction in and around the planting areas are to be especially well-cleaned.
- B. The contractor shall repair any damages that occurred during the completion of the work outlined in this section. All areas that are damaged by the contractor during completion of the work shall be repaired by the contractor. The damaged areas are to be restored to the conditions outlined on the plans at no additional cost to the owner.

3.10 MAINTENANCE

- A. During planting, maintenance shall begin immediately after each plant is planted and shall continue until the installation of plants is completed. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected. Settled plants shall be reset to proper grade and position, planting saucer restored and dead material removed. Defective work shall be corrected as soon as possible after it becomes apparent and weather and season permit. Upon completion of planting and prior to provisional acceptance, the landscape contractor shall remove from the site excess soil and debris and repair damage to structures, etc., resulting from planting operation.
- B. Fertilizing: Any and all chemical applications are to be performed in accordance with current federal, state and local laws, through EPA-registered materials and application techniques, and performed under the supervision of a licensed certified applicator. Apply fertilizer to planted areas at the specified rate, and as per manufacturer's recommendations.
- C. Watering: All plant materials installed under the contract shall be watered within the first 24 hours of initial planting and not less than twice weekly until final acceptance by Owner.
- D. Water used shall be of sufficient quality for irrigation and free of materials harmful to plant growth. Contractor responsible to supply water for temporary irrigation.
- E. Pesticide: Any use of pesticides during the contracted maintenance period, as determined by the Owner, shall utilize the minimum amount of approved pesticide needed to control pests on plant materials installed under the contract. Pesticide applications are to be performed in accordance with current federal, state and local laws, through EPA-registered materials and application techniques, and performed under the supervision of a licensed certified applicator. Apply at the specified rate, and as per manufacturer's recommendations.

3.11 PRUNING

- A. Prune in accordance with current *American National Standards (ANSI) for Tree Care Operations*. Perform all pruning work in a manner consistent with the landscape design intent. Plants overhanging and blocking pedestrian and/or vehicular paths shall be pruned as needed to allow the desired clearance.
- B. Except in the cases of hedges, or to conform to some design intent, all pruning of ornamental trees, shrubs and ground covers should aim to retain their natural shapes. With multiple leader plants, preserve the leader that best promote the plant's symmetry. Prune branches of deciduous stock to improve the branch structure of the plant.
- C. Plants that flower before late spring should be pruned immediately after flowering. Those that flower in summer or fall should be pruned in winter or spring before new growth emerges.
- D. Prune evergreens only to remove dead, broken or damaged branches. Prune yews, junipers, hemlocks and arborvitae after new growth has hardened off in late summer.

- E. Where necessary, repairs to damaged wood shall be performed under the direction of Owner, or a certified arborist.
- F. Prune using scissors-style cutting devices, and not anvil-style hand pruners, pole pruners or loppers.
- G. The Contractor shall remove all trimmed branches and other debris from the site at the end of each work day.

3.12 PLANT SCHEDULE

- A. See Landscaping Plans

END OF SECTION

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SECTION 33 41 13
PUBLIC STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
1. American Association of State Highway and Transportation Officials (AASHTO), Standard Specifications, Latest Edition.
 2. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Current Edition.
 3. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.

1.03 DESCRIPTION OF WORK

- A. The work covered under this section shall consist of furnishing all material, equipment, and labor required to install the public storm utility drainage piping for this project.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Removal, Salvage and Abandonment – Division 02
- C. Dewatering - Division 31
- D. Trenching and Backfilling - Division 31
- E. Storm Drainage Manholes, Frames, and Covers - Division 33

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied to relate these materials to the specifications. Information shall be in conformance with requirements of Submittals - Division 01 of these specifications.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 REINFORCED CONCRETE PIPE (RCP)

- A. Reinforced concrete pipe shall conform to the requirements of Section 608 of the State of Wisconsin, Department of Transportation, Standard Specifications.
- B. Reinforced concrete apron endwalls shall confirm to the requirements of Section 522 of the State of Wisconsin, Department of Transportation, Standard Specifications. All endwalls 24-inches and larger in diameter require trash guard.

2.02 CORRUGATED METAL PIPE (CMP)

- A. Steel corrugated metal pipe and steel apron endwalls shall conform to the requirements of Sections 520 and 521 of the State of Wisconsin, Department of Transportation, Standard Specifications. All endwalls 24-inches and larger in diameter require trash guard.
- B. Aluminum corrugated metal pipe and aluminum apron endwalls shall conform to the requirements of Sections 520 and 525 of the State of Wisconsin, Department of Transportation, Standard Specifications. All endwalls 24-inches and larger in diameter require trash guard.

2.03 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

- A. High density polyethylene pipe shall conform to the requirements of Section 530 of the State of Wisconsin, Department of Transportation Standard Specifications. Pipes which are between 42 inch diameter and 48 inch diameter shall meet the requirements of AASHTO M252 and M294, Type D.
- B. Couplings and fittings for 4-36 inch pipe shall be suitable for the specific project application and as recommended by the pipe manufacturer. The joint for 42-48 inch pipe shall consist of a bell and spigot, integrally welded to the barrel of the pipe, utilizing a suitable profile gasket located on the spigot end.
 - 1. The fittings shall not reduce or impair the overall integrity or function of the pipe line. Fittings may be either molded or fabricated. Common corrugated fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as tees, wyes, and end caps. These fittings may be installed by various methods, such as snap-on, screw-on, bell and spigot, and wrap around.
 - 2. Couplings shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints.
 - 3. Only fittings supplied or recommended by the pipe manufacturer shall be used. Where designated on the contract drawings, a neoprene or rubber gasket shall be supplied.

2.04 POLYVINYL CHLORIDE PIPE (PVC)

- A. Four-inch to 15-inch diameter pipe shall be Type PSM SDR-35 and meet the requirements of ASTM D3034. Pipe over 15-inch diameter shall meet the requirements of ASTM F679. Pipe shall be of the bell and spigot type.

2.05 TRASH GUARDS FOR ENDWALLS

- A. Trash guards shall be constructed of painted or galvanized steel bars and pipes, spaced no more than 8-inches on center and welded into the configuration shown on the contract drawings. Fasteners shall be zinc-coated stainless steel.

2.06 CONCRETE BRICK OR BLOCK

- A. Concrete brick and block masonry units shall conform to the requirements of Section 519 of the State of Wisconsin, Department of Transportation, Standard Specifications.

PART 3 EXECUTION

3.01 GENERAL

- A. Construction of the public storm utility drainage piping shall include all excavation, backfilling, compacting of trenches and breaking into existing manholes, inlets or storm sewers required to provide a completed storm sewer at the locations shown on the contract drawings.

3.02 PROTECTION OF EXISTING UTILITIES

- A. Utility locations shown on contract drawings are approximate. Contractor shall contact all utility companies at least three working days prior to excavation for locations of all buried utilities owned by them. Should utilities be unexpectedly encountered during excavation, consult Engineer immediately for directions as to procedure.

Cooperate with the Owner and public and private utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner. Contractor shall be responsible for the cost of repairing damaged utilities.

3.03 CONCRETE STORM SEWER

- A. Concrete storm sewer shall be constructed as shown on the contract drawings and in accordance with Section 608 of the State of Wisconsin, Department of Transportation, Standard Specifications, with the following exceptions and additions:
1. Joints shall be of flexible watertight rubber gaskets installed as per manufacturer's instructions and in accordance with Section 608 of the State of Wisconsin, Department of Transportation Standard Specifications.
 2. Joints for elliptical storm sewer shall be mortar, gasket, mastic or combination in accordance with Section 608 of the State of Wisconsin, Department of Transportation Standard Specifications.
 3. Backfill shall be as indicated on the contract drawings and specified in Trenching and Backfilling - Division 31 and Special Procedures - Division 01. Backfill shall be incidental to storm sewer construction.
 4. If no embedment class is specified, then Class B embedment with a shaped subgrade shall be used.
 5. Joint ties shall be installed on apron endwall joints and the adjacent two pipe joints.

3.04 CORRUGATED METAL PIPE (CMP) STORM SEWER

- A. Corrugated metal pipe shall be constructed as shown on the contract drawings and in accordance with the Special Procedures and Sections 520, 521, and 529 of the State of Wisconsin, Department of Transportation, Standard Specifications, with the following exceptions and additions:
1. Joints shall be of watertight bolted bands installed as per manufacturer's instructions.
 2. Backfill and embedment shall be as noted in the Special Procedures and shall be incidental to storm sewer construction.
 3. Basis of payment will be per lineal foot in place. Miscellaneous bends, fittings and bands shall be included in the unit bid price of the associated pipe. The footage to be paid for shall not include the construction into or through catch basins, manholes, and inlets.

3.05 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

- A. High density polyethylene pipe shall be constructed as shown on the contract drawings and, in accordance with the Special Procedures - Division 01 and Section 608 of the State of Wisconsin, Department of Transportation, Standard Specifications, and in accordance with "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications" (ASTM D 2321) with the following exceptions and additions:
1. Joints for sewer pipe shall be sealed to be watertight in accordance with AASHTO Standard Specifications for Highway Bridges, Division II, Section 30.4.2.1
 2. Embedment shall be Class II or as indicated in Special Procedures - Division 01 and shall be incidental to storm sewer construction.
 3. Backfill shall be Type II as specified in Trenching and Backfilling - Division 31 or as indicated in Special Procedures - Division 01. Backfill shall be incidental to storm sewer construction.

3.06 POLYVINYL CHLORIDE PIPE (PVC)

- A. PVC pipe shall be constructed as shown on the contract drawings and in accordance with the Special Procedures - Division 01 and in accordance with "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications" (ASDM D2321) with the following exceptions:
1. Joints for sewer pipe shall be sealed to be water tight in accordance with AASHTO Standard Specifications for Highway Bridges, Division II, Section 30.4.2.1
 2. Embedment shall be Class II or as indicated in Special Procedures - Division 01 and shall be incidental to storm sewer construction.

3. Backfill shall be Type II as specified in Trenching and Backfilling - Division 31 or as indicated in Special Procedures - Division 01. Backfill shall be incidental to storm sewer construction.

3.07 LAYING SEWER PIPE FOR CURVES

- A. Sewers laid on curves shall be one of the following types:
 1. Deflection of pipe joints will be permitted when the joint opening is less than 1/2 the length of the tongue for mortar joints or 1/4 the length of the tongue with rubber gasket joints; otherwise use cut-off pipe or miter pipe.
 2. Cut-off pipe shall be molded with the difference between the longest and shortest sides, measured along the outside of the pipe, conforming to the values given in Table 1. Lengths of pipe other than that shown may be used only with approval of the Engineer.
 3. Miter pipe shall be manufactured by the removal of a wedge from the center of the pipe to provide for the required angle of deflection. Sufficient additional reinforcement shall be added at the spring lines and top and bottom of the pipe to prevent shearing after installation. Repairs to complete the pipe shall be such that the concrete shall have the same strength as that of the remainder of the pipe barrel and shall not spall or separate. Miter pipe shall be used for all elliptical pipe laid on a curve. Miter pipe for circular sewers shall be used only with the approval of the Engineer.

Table 1
Cut-Off of Pipe for Curved Sewer (inches)
(4-foot long pipe sections)

Pipe I.D. Inches	Radius of Curve in Feet							
	40	50	57.3	60	70	80	90	100
21	2-5/8	2-1/8	1-3/4	1-3/4	1-1/2	1-3/8	1-1/4	1/1/8
24	2-7/8	2-3/8	2	2	1-3/4	1-1/2	1-3/8	1-1/4
27	3-1/4	2-5/8	2-1/4	2-1/8	1-7/8	1-5/8	1-1/2	1-3/8
30	3-1/2	2-7/8	2-1/2	2-3/8	2-1/8	1-7/8	1-5/8	1-1/2
36	4-1/4	3-3/8	3	2-7/8	2-1/2	2-1/8	1-7/8	1-3/4
42	--	3-7/8	3-3/8	3-1/4	2-7/8	2-1/2	2-1/4	2
48	--	4-3/8	3-7/8	3-3/4	3-1/4	2-7/8	2-1/2	2-1/4
54	--	--	4-3/8	4-1/8	3-5/8	3-1/8	2-7/8	2-1/2
60	--	--	--	--	4	3-1/2	3-1/8	2-3/4
66	--	--	--	--	4-3/8	3-3/4	3-3/8	3-3/8
72	--	--	--	--	--	4-1/8	3-5/8	3-3/8
78	--	--	--	--	--	4-3/8	4	3-5/8
84	--	--	--	--	--	4-3/4	4-1/4	3-7/8
96	--	--	--	--	--	--	4-7/8	4-3/8

3.08 TESTING

- A. Leakage Testing. All storm sewers shall be tested for excessive infiltration and sand leakage. All sand leaks shall be repaired by the Contractor at his expense. If in the judgment of the Engineer the infiltration will cause a continued maintenance problem, the sewer shall be repaired by the Contractor at his expense.
- B. Alignment and Grade shall be checked by lamping method to detect poor alignment, offset joints, sags, kinks, or open joints; defects shall be corrected by the Contractor before final acceptance. If closer inspection is warranted, the Owner may arrange for a televised inspection. The Owner will assume the cost of televised inspection if no serious defect is found. If defects are found which the Engineer attributes to the failure of proper installation or sound materials, the Contractor shall pay for the test. Defects shall be promptly corrected.
- C. Deflection Limitation. Deflections in corrugated metal pipe shall be limited to 5 percent of the nominal pipe diameter. If visual inspection indicates a greater deflection, the Contractor shall supply and pull a rigid ball or

mandrel with a diameter 5 percent less than the nominal pipe size through the sewer. Failure of the ball to freely pass through shall be cause for rejection of the sewer.

- D. Deflection Test. All HDPE and PVC pipe installations shall be tested for deflection by using a rigid ball or mandrel and shall be performed in accordance with ASTM D2321 and without the use of mechanical pulling devices. Deflection may not exceed 5 percent if tested within 30 days of placement of final backfill or 7.5 percent if tested more than 30 days after final backfill is placed. Final backfill must be in place prior to testing.
- E. Acceptance. If any of the tests are not met, the Contractor shall, at his own expense, determine the source of the problem and repair or replace all defective work.

3.09 PROTECTING OPENINGS

- A. Fences shall be provided around all openings and whenever required for the protection of the public. They shall be neat and substantial. All openings, fences, and surface obstructions shall be guarded and shall be indicated at night by suitable flashers.

END OF SECTION

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SECTION 33 49 13
STORM DRAINAGE MANHOLES, FRAMES AND COVERS

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

- A. Applicable provisions of Division 01 shall govern the work of this section.

1.02 APPLICABLE PUBLICATIONS

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.
 - 1. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Current Edition.
 - 2. Federal Specifications (FS), Specifications and Standards, Current Edition.
 - 3. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition at time of bid opening.
 - 4. American Concrete Institute, Annual Book of ACI Standards, Current Edition.

1.03 DESCRIPTION OF WORK

- A. The work under this section shall cover design, furnishing and installing catch basins, storm manholes, inlets and similar structures constructed of precast concrete sections, or solid concrete block, set on a concrete base and fitted with standard structure covers, frames and steps, in accordance with the contract drawings and as specified herein.

1.04 RELATED WORK ELSEWHERE

- A. Procurement and Contracting Requirements - Division 00 (All Sections)
- B. Submittals - Division 01
- C. Removal, Salvage and Abandonment – Division 02
- D. Trenching and Backfilling - Division 31
- E. Erosion and Sedimentation Controls - Division 31
- F. Public Storm Utility Drainage Piping - Division 33

1.05 SUBMITTALS

- A. Contractor shall submit such product literature and catalog cuts of materials to be supplied. Information shall be in conformance with requirements of Submittals - Division 01 of this specification.
- B. Contractor shall submit submittals and details required for the design, construction and installation of the materials. Submittals and details shall indicate the intended materials arrangement, dimensions, major support requirements, plot area and or detailed construction requirements.

1.06 OPERATION/MAINTENANCE MANUALS AND INSTRUCTIONS (NONE)

PART 2 PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

- A. The products listed are intended to establish a basis for comparison of products of other manufacturers. Substitutions will be permitted but only with the prior written approval of the Engineer. Catalogue reference numbers stated are those of Neenah Foundry Company and are intended to establish a basis for comparing the products of other manufacturers.

2.02 STRUCTURES

- A. The minimum compressive concrete strength for all structures shall be 4000 psi and shall conform to ASTM C478 for round structures and ASTM C913 for square or rectangular structures. Wall thicknesses of round manholes will vary with the diameter in conformance with ASTM C76, Class B concrete tongue and groove joint pipe. Larger diameter round manholes (7 feet +) shall have wall thickness a minimum of one-twelfth of the inside diameter of the manhole as specified in ASTM C478. Flat top slabs and reduction flat top slabs shall be designed in accordance with ACI 318 and designed to withstand the anticipated loads from riser sections, soil and hydrostatic loads, surcharge loads, live loads, and impact loads. Required site specific slab thickness shall be determined by the aforementioned calculations with the following minimum requirements:
 - 1. Minimum slab thickness for structures shall be 8 inches or as necessary as required by design calculations.
- B. All other design elements for structures shall comply with ASTM C478 and C497 for round structures, and ASTM C913 and ASTM C890 for square or rectangular structures.
- C. Materials furnished and used in this work shall conform to the requirements of Section 611 of the State of Wisconsin, Department of Transportation, Standard Specifications and details in the contract drawings.
- D. The Contractor shall verify size, invert elevation, and location of all pipes in existing manholes and inform Engineer of any discrepancies before the replacement manhole is constructed.

2.03 STEPS

- A. Steps shall be constructed of a 1/2 inch diameter, Grade 60 reinforcing steel bar conforming with ASTM A615 completely encased in polypropylene conforming with ASTM D4101 to obtain a minimum thickness of 1-1/8 inch and minimum width of 12 inches. They shall be securely and permanently set in the manhole wall. Steps shall be set at 16 inches on center and have a 5-3/4 inch projection from the wall. Steps shall conform with ASTM F783.

2.04 FRAMES, COVERS AND GRATINGS

- A. Frames, covers and gratings shall be of the type and duty as shown on the contract drawings. Iron castings shall conform to ASTM A48, Class 20. All castings shall be true to pattern in form and dimensions, free from faults, sponginess, cracks, blow holes, and other defects affecting their strength.
- B. The standard castings for storm sewer manholes shall be Type B with non-rocking lids as listed below except as designated otherwise on the contract drawings or in Special Procedures - Division 01.

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- C. Where bolted lids are specified on the contract drawings or in Special Procedures - Division 01, they shall be Neenah R-1916-F, manhole frames with bolted lids.
- D. Where low profile castings are specified on the contract drawings or in Special Procedures - Division 01, they shall be Neenah R-1689 (4-inch casting) with Type B non-rocking lid.
- E. The standard casting for inlet structures located in curb lines shall be Neenah R-3067 inlet casting, or equal, except as designated on the contract drawings or in the Special Procedures - Division 01. Grate shall be

as designated on the contract drawings or in the Special Procedures - Division 01. If none is indicated, provide as follows:

1. Type R, or equal – Low points
2. Type L, or equal – On grade

2.05 JOINT MATERIALS

- A. Joint materials shall be plastic gasket material or butyl rubber gasket material. Plastic gaskets shall be preformed, high adhesion material, packaged ready for use between protective paper strips conforming to Federal Spec SS-S-00210, Type I, Rope Form; Ram-Nek by K.T. Snyder Company, Inc.; Kent Seal No. 2 or equal. Butyl rubber gaskets shall be preformed, high adhesion material, packaged ready for use between protective paper strips, conforming to Federal Spec SS-S-210A, Rope Form; by Press Seal Gasket Corporation or equal.

2.06 ADJUSTMENT RINGS

- A. The manholes shall be built so that a minimum of four inches is allowed for adjustment. A maximum of 12 inches of adjustment will be allowed.
- B. Concrete Adjustment Rings
1. Adjustment rings shall be concrete with steel reinforcement in conformance with ASTM C478. Rings shall be either 2 inches or 4 inches in thickness, but the top two rings shall be of 2 inches thickness.
 2. Precompressed butyl gasket, 3/8 inch x 3-1/2 inch or mortar shall be used between the manhole, manhole casting, and all adjustment rings. Butyl material shall be ez-stick or equal.
- C. Polypropylene Adjustment Rings
1. Adjustment rings shall be manufactured from Expanded Polypropylene (EPP), compliant with ASTM D4819 and tested according to ASTM D3575.
 2. Rings shall be available in heights (thicknesses) which will allow final adjustment of the frame and cover or grate to within 1/4" (one quarter inch) to 1/2" (one half inch) of the specified final elevation.
 3. "Finish" Rings shall be provided with grooves on the lower surface and flat upper surface. "Finish" rings may also have a keyway on the upper surface of the inner diameter to facilitate installation of an "Angle" ring, where "Angle" ring is required.
 4. "Angle" rings may have an upper and lower keyway (tongue and groove) for vertical alignment and/or an adhesive trench on the underside.
 5. Any adhesive or sealant used for watertight installation of the manhole grade adjustment rings shall meet manufacturers specifications and the requirements of ASTM C-920, Type S, Grade NS, Class 25, Uses NT, T, M, G, A and O Federal Specification TT-S-00230-C Type II, Class A.
 6. Repair mortar and cementitious grout shall meet manufacturer's specifications.

PART 3 EXECUTION

3.01 STORM DRAINAGE MANHOLES, FRAMES AND COVERS, GENERAL

- A. All lift holes on structures shall be sealed watertight.

3.02 ADJUSTMENT RINGS

- A. Surface preparation and installation shall be in accordance with manufacturer's recommendations.

3.03 FRAMES AND COVERS

- A. Structures shall be built up so that the frames and cover, when placed, will be at the established required grade.

3.04 PROVISION FOR FUTURE CONNECTION

- A. Connections for future sewers, when specified, shall consist of a short piece of sewer terminating with a bell end and stopper or bulkhead not more than one full pipe length outside the structure wall unless otherwise shown. Other structure components and requirements are indicated on detail drawings. If no elevation is given for future connections, set the invert 1/2 inch above the main sewer invert.

3.05 ABANDONMENT OF STORM SEWER AND STRUCTURES

- A. Abandonment and/or removal of existing storm sewer and structures shall be completed in accordance with Section 02 42 00 "Removal, Salvage and Abandonment" in Division 02.

3.06 CONNECT TO EXISTING STORM

- A. Connections to existing storm sewer and/or structures shall include all material, equipment, labor, and incidentals necessary to reconnect existing storm sewer to proposed storm sewer at the at the locations shown on the contract drawings. All storm sewer piping connections into existing storm sewer structures and onto existing storm sewer piping shall include a pour-in-place concrete collar completely surrounding the connection as shown on the contract drawings. If making a connection to an existing structure, the Contractor shall core a hole of adequate diameter to accommodate the proposed pipe.

END OF SECTION