Contract Routing Form

ROUTING: Routine printed on: 08/09/2013

==========

Contract between: Joe Daniels Construction Co Inc
and Dept. or Division: Engineering Division
Name/Phone Number:

Project: Central Park Phase 1A

Contract No.: 7008 File No.: 30727
Enactment No.: RES-13-00599 Enactment Date: 08/09/2013
Dollar Amount: 2,656,361.29

(Please DATE before routing)

Signatures Required	Date Received	Date Signed
City Clerk	8/9/13	8/9/13
Director of Civil Rights	8/12/13	8/14/13 MD
Risk Manager	8-14-13	8/16/13 RS
Finance Director	8/14/2013	8/14/2013 CF
City Attorney	8-16-2013	8-19-13
Mayor	1226 AUG 19, 2013	

Please return signed Contracts to the City Clerk's Office
Room 103, City-County Building for filing.

Original + 2 Copies

08/09/2013 13:30:56 ENJAP - C Bachmann - J Dailey - 266-4751

Dis Rights: OK / (N/A) / Problem - Hold
Prev Wage: (AA) / Agency / No
Contract Value: see above
AA Plan: Approved
Amendment / Addendum # ____
Type: POS / Dvlp / Sbdv / Gov't / Grant / (PW) / Goal / Loan / Agrmt

City of Madison

City of Madison
Madison, WI 53703
www.cityofmadison.com

Master

File Number: 30727

File ID:	30727	**File Type:**	Resolution	**Status:**	Passed
Version:	1	**Reference:**		**Controlling Body:**	BOARD OF PUBLIC WORKS
Lead Referral:	BOARD OF PUBLIC WORKS	**Cost:**		**File Created Date :**	06/25/2013
File Name:	Awarding Public Works Contract No. 7008, Central Park - Phase 1A.			**Final Action:**	08/06/2013
Title:	Awarding Public Works Contract No. 7008, Central Park - Phase 1A.				
Notes:	Janet D.				
				CC Agenda Date:	08/06/2013
				Agenda Number:	72.
Sponsors:	BOARD OF PUBLIC WORKS			**Effective Date:**	08/09/2013
Attachments:	Cont 7008.pdf			**Enactment Number:**	RES-13-00599
Author:	Rob Phillips, City Engineer			**Hearing Date:**	
Entered by:	mhacker@cityofmadison.com			**Published Date:**	

Approval History

Version	Date	Approver	Action
1	07/23/2013	Craig Franklin	Approve

History of Legislative File

Ver-sion:	Acting Body:	Date:	Action:	Sent To:	Due Date:	Return Date:	Result:
1	Engineering Division	06/25/2013	Refer	BOARD OF PUBLIC WORKS	07/24/2013	07/24/2013	
	Action Text: This Resolution was Refer to the BOARD OF PUBLIC WORKS due back on 7/24/2013						
	Notes:						
1	BOARD OF PUBLIC WORKS	07/24/2013	RECOMMEND TO COUNCIL TO ADOPT UNDER SUSPENSION OF RULES 2.04, 2.05, 2.24, & 2.25 - REPORT OF OFFICER				Pass

Action Text: A motion was made by Branson, seconded by Haack Benedict, to RECOMMEND TO COUNCIL TO ADOPT UNDER SUSPENSION OF RULES 2.04, 2.05, 2.24, & 2.25, with both Alternates to be included - REPORT OF OFFICER. The motion passed by voice vote/other.

Notes: A motion was made by Branson, seconded by Haack Benedict, to RECOMMEND TO COUNCIL TO ADOPT UNDER SUSPENSION OF RULES 2.04, 2.05, 2.24, & 2.25, with both Alternates to be included - REPORT OF OFFICER. The motion passed by voice vote/other.

1	COMMON COUNCIL	08/06/2013	Adopt Under Suspension of Rules 2.04, 2.05, 2.24, and 2.25	Pass

Action Text: A motion was made by Schmidt, seconded by Resnick, to Adopt Under Suspension of Rules 2.04, 2.05, 2.24, and 2.25. The motion passed by voice vote/other.

Notes:

Text of Legislative File 30727

Fiscal Note

Budget authority is available in the Acct. Nos. listed on the attached.

Title

Awarding Public Works Contract No. 7008, Central Park - Phase 1A.

Body

BE IT RESOLVED, that the following low bids for miscellaneous improvements be accepted and that the Mayor and City Clerk be and are hereby authorized and directed to enter into a contract with the low bidders contained herein, subject to the Contractor's compliance with Section 39.02 of the Madison General Ordinances concerning compliance with the Affirmative Action provisions and subject to the Contractor's compliance with Section 33.07 of the Madison General Ordinances regarding Best Value Contracting **and subject to the approval and authorization of Federal Funds by the State of Wisconsin Department of Transportation:**

BE IT FURTHER RESOLVED, that the funds be encumbered to cover the cost of the projects contained herein.

See attached document (Contract No. 7008) for itemization of bids.

PROJECT	CONTRACTOR	AMOUNT OF BID
CONTRACT NO. 7008 CENTRAL PARK – PHASE 1A (BASE BID + ALT 1 + ALT 2)		
	JOE DANIELS CONSTRUCTION CO., INC.	$2,656,361.29

Acct. No. CL60-58201-810625-00-0000000-60102S00	$2,656,361.29
Contingency 8%±	212,508.71
GRAND TOTAL	$2,868,870.00

Wisconsin Office of the Commissioner of Insurance
Licensed Producer Search*

Friday, August 2, 2013

MCKENNA, PATRICK A
MADISON WI

Year of Birth: 1959
Status: Active
License Number: 2349196
NPN**: 650765
Effective Date: 06-27-1996
Expiration Date: 04-30-2014
License Type: Resident Intermediary Indv
CE Compliance: 04-30-2014

Lines of Authority

Line of Authority	Residency	Effective Date	Status
Property	Resident	06-27-1996	Active
Casualty	Resident	06-27-1996	Active

Appointments and Terminations

Company Name	Qualification Type/Status	Effective Date	Termination Date	Termination Reason
ACE American Insurance Company	CAS/Active	06-23-1999		
	PROP/Active	06-23-1999		
ACE Fire Underwriters Insurance Company	CAS/Inactive	06-23-1999	10-01-2002	Inadequate Production
	PROP/Inactive	06-23-1999	10-01-2002	Inadequate Production
ACE Property and Casualty Insurance Company	CAS/Active	06-23-1999		
	PROP/Active	06-23-1999		
ACUITY, A Mutual Insurance Company	CAS/Active	08-14-2007		
	CAS/Inactive	07-30-1996	08-07-2007	Canceled
	PROP/Active	08-14-2007		
	PROP/Inactive	07-30-1996	08-07-2007	Canceled
Addison Insurance Company	CAS/Active	09-19-2007		
	PROP/Active	09-19-2007		
ALLIED Property and Casualty Insurance Company	CAS/Inactive	07-14-2003	04-07-2010	Canceled
	PROP/Inactive	07-14-2003	04-07-2010	Canceled
AMCO Insurance Company	CAS/Inactive	07-14-2003	04-07-2010	Canceled
	PROP/Inactive	07-14-2003	04-07-2010	Canceled
American and Foreign Insurance Company	CAS/Inactive	10-04-2000	02-10-2005	Canceled
	PROP/Inactive	10-04-2000	02-07-2005	Canceled

American Casualty Company of Reading, Pennsylvania	CAS/Inactive	08-21-1996	01-05-2006	Canceled
	PROP/Inactive	08-21-1996	01-05-2006	Canceled
American Economy Insurance Company	CAS/Active	02-10-1998		
	PROP/Active	02-10-1998		
American Guarantee and Liability Insurance Company	CAS/Active	06-08-1999		
	PROP/Active	06-08-1999		
American Insurance Company, The	CAS/Inactive	07-25-1996	09-29-2005	Inadequate Production
	PROP/Inactive	07-25-1996	09-29-2005	Inadequate Production
American Manufacturers Mutual Insurance Company	CAS/Inactive	08-20-1996	02-17-2005	Canceled
	PROP/Inactive	08-20-1996	02-17-2005	Canceled
American Motorists Insurance Company	CAS/Inactive	08-20-1996	02-17-2005	Canceled
	PROP/Inactive	08-20-1996	02-17-2005	Canceled
American Protection Insurance Company	CAS/Inactive	08-20-1996	02-02-2005	Canceled
	PROP/Inactive	08-20-1996	02-02-2005	Canceled
American States Insurance Company	CAS/Inactive	02-10-1998	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	02-10-1998	11-20-2009	Vol. Surrender per Agent Rqst
American Zurich Insurance Company	CAS/Active	06-08-1999		
	PROP/Active	06-08-1999		
Arrowood Indemnity Company	CAS/Inactive	10-04-2000	08-28-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	10-04-2000	08-28-2006	Vol. Surrender per Agent Rqst
Artisan and Truckers Casualty Company	CAS/Inactive	01-15-2008	06-30-2008	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-15-2008	06-30-2008	Vol. Surrender per Agent Rqst
Associated Indemnity Corporation	CAS/Inactive	07-25-1996	09-29-2005	Inadequate Production
	PROP/Inactive	07-25-1996	09-29-2005	Inadequate Production
Assurance Company of America	CAS/Inactive	09-09-1998	07-23-2012	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-09-1998	07-23-2012	Vol. Surrender per Agent Rqst
Automobile Insurance Company of Hartford, Connecticut, The	CAS/Inactive	06-14-2001	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	06-14-2001	11-28-2005	Vol. Surrender per

				Agent Rqst
AXIS Insurance Company	CAS/Inactive	07-25-1996	01-06-2005	Inadequate Production
	PROP/Inactive	07-25-1996	01-06-2005	Inadequate Production
Bankers Standard Insurance Company	CAS/Active	06-23-1999		
	PROP/Active	06-23-1999		
Berkley Regional Insurance Company	CAS/Active	04-22-2005		
	PROP/Active	04-22-2005		
Bituminous Casualty Corporation	CAS/Active	06-30-2005		
	PROP/Active	06-30-2005		
Bituminous Fire and Marine Insurance Company	CAS/Active	06-30-2005		
	PROP/Active	06-30-2005		
Capitol Indemnity Corporation	CAS/Active	07-24-1996		
	PROP/Active	07-24-1996		
Charter Oak Fire Insurance Company, The	CAS/Active	09-26-2007		
	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
Chubb Indemnity Insurance Company	CAS/Active	05-12-2008		
	CAS/Inactive	09-10-1996	12-26-2006	Canceled
	PROP/Active	05-12-2008		
	PROP/Inactive	09-10-1996	12-26-2006	Canceled
Chubb National Insurance Company	CAS/Active	05-12-2008		
	PROP/Active	05-12-2008		
Cincinnati Casualty Company, The	CAS/Active	08-17-2007		
	PROP/Active	08-17-2007		
Cincinnati Indemnity Company, The	CAS/Active	08-17-2007		
	PROP/Active	08-17-2007		
Cincinnati Insurance Company, The	CAS/Active	08-17-2007		
	PROP/Active	08-17-2007		
Citizens Insurance Company of America	CAS/Inactive	12-18-1997	08-03-2005	Inadequate Production
	PROP/Inactive	12-18-1997	08-03-2005	Inadequate Production
Consolidated Insurance Company	CAS/Inactive	03-24-2000	11-20-2009	Vol. Surrender per Agent Rqst

	PROP/Inactive	03-24-2000	11-20-2009	Vol. Surrender per Agent Rqst
Continental Casualty Company	CAS/Inactive	08-21-1996	01-05-2006	Canceled
	PROP/Inactive	08-21-1996	01-05-2006	Canceled
Continental Insurance Company, The	CAS/Inactive	02-24-2006	09-15-2008	Canceled
	PROP/Inactive	02-24-2006	09-15-2008	Canceled
Continental Western Insurance Company	CAS/Inactive	08-12-2005	04-24-2009	Canceled
	PROP/Inactive	08-12-2005	04-24-2009	Canceled
Depositors Insurance Company	CAS/Inactive	07-14-2003	04-07-2010	Canceled
	PROP/Inactive	07-14-2003	04-07-2010	Canceled
Donegal Mutual Insurance Company	CAS/Active	11-09-2012		
	PROP/Active	11-09-2012		
Emcasco Insurance Company	CAS/Active	09-21-2007		
	PROP/Active	09-21-2007		
Employers Insurance Company of Wausau	CAS/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	CAS/Inactive	08-23-1996	05-14-2003	Inadequate Production
	PROP/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-23-1996	05-14-2003	Inadequate Production
Employers Mutual Casualty Company	CAS/Active	09-21-2007		
	PROP/Active	09-21-2007		
Executive Risk Indemnity Inc.	CAS/Active	05-12-2008		
	CAS/Inactive	06-16-2000	12-26-2006	Canceled
	PROP/Active	05-12-2008		
	PROP/Inactive	06-16-2000	12-26-2006	Canceled
Fairmont Insurance Company	CAS/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
Fairmont Premier Insurance Company	CAS/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
Farmington Casualty Company	CAS/Inactive	07-19-1996	11-20-2000	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-19-1996	11-20-2000	Vol. Surrender per Agent Rqst
Federal Insurance Company	CAS/Active	05-12-2008		
	CAS/Inactive	09-10-1996	12-26-2006	Canceled

	PROP/Active	05-12-2008		
	PROP/Inactive	09-10-1996	12-26-2006	Canceled
Fidelity and Deposit Company of Maryland	CAS/Active	07-23-1996		
	PROP/Active	07-23-1996		
Fidelity and Guaranty Insurance Company	CAS/Inactive	08-02-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-02-1996	02-09-2007	Vol. Surrender per Agent Rqst
Fidelity and Guaranty Insurance Underwriters, Inc.	CAS/Inactive	08-02-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-02-1996	02-09-2007	Vol. Surrender per Agent Rqst
Fidelity National Property and Casualty Insurance Company	CAS/Inactive	01-12-1999	02-21-2000	Inadequate Production
	PROP/Inactive	01-12-1999	02-21-2000	Inadequate Production
Fireman's Fund Insurance Company	CAS/Inactive	07-25-1996	09-29-2005	Inadequate Production
	PROP/Inactive	07-25-1996	09-29-2005	Inadequate Production
Firemen's Insurance Company of Newark, New Jersey	CAS/Inactive	12-11-1996	01-22-1999	Inadequate Production
	PROP/Inactive	12-11-1996	01-22-1999	Inadequate Production
First Liberty Insurance Corporation, The	CAS/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
First National Insurance Company of America	CAS/Inactive	07-24-1996	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-24-1996	11-20-2009	Vol. Surrender per Agent Rqst
General Casualty Company of Wisconsin	CAS/Active	08-16-2007		
	PROP/Active	08-16-2007		
General Insurance Company of America	CAS/Inactive	07-24-1996	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-24-1996	11-20-2009	Vol. Surrender per Agent Rqst
Globe Indemnity Company	CAS/Inactive	10-04-2000	02-07-2005	Canceled
	PROP/Inactive	10-04-2000	02-07-2005	Canceled
Great American Alliance Insurance Company	CAS/Inactive	07-26-1996	01-07-2002	Inadequate Production
	PROP/Inactive	07-26-1996	01-07-2002	Inadequate Production
Great American	CAS/Inactive	07-26-1996	01-07-2002	Inadequate Production

Assurance Company	PROP/Inactive	07-26-1996	01-07-2002	Inadequate Production
Great American Insurance Company	CAS/Inactive	07-26-1996	01-07-2002	Inadequate Production
	PROP/Inactive	07-26-1996	01-07-2002	Inadequate Production
Great American Insurance Company of New York	CAS/Inactive	07-26-1996	01-07-2002	Inadequate Production
	PROP/Inactive	07-26-1996	01-07-2002	Inadequate Production
Great Northern Insurance Company	CAS/Active	05-12-2008		
	CAS/Inactive	09-10-1996	12-26-2006	Canceled
	PROP/Active	05-12-2008		
	PROP/Inactive	09-10-1996	12-26-2006	Canceled
Guarantee Company of North America USA, The	CAS/Active	07-28-1998		
Gulf Insurance Company	CAS/Inactive	09-10-1996	06-30-2005	Inadequate Production
	PROP/Inactive	09-10-1996	06-30-2005	Inadequate Production
Hanover Insurance Company, The	CAS/Inactive	12-18-1997	08-03-2005	Inadequate Production
	PROP/Inactive	12-18-1997	08-03-2005	Inadequate Production
Hartford Casualty Insurance Company	CAS/Inactive	04-26-2000	10-26-2009	Canceled
	PROP/Inactive	04-26-2000	10-26-2009	Canceled
Hartford Fire Insurance Company	CAS/Inactive	04-26-2000	10-26-2009	Canceled
	PROP/Inactive	04-26-2000	10-26-2009	Canceled
Hartford Insurance Company of the Midwest	CAS/Inactive	04-26-2000	10-31-2008	Canceled
	PROP/Inactive	04-26-2000	10-31-2008	Canceled
Hartford Steam Boiler Inspection and Insurance Company, The	CAS/Inactive	05-12-1999	10-30-2008	Canceled
	PROP/Inactive	05-12-1999	10-21-2008	Canceled
Hartford Underwriters Insurance Company	CAS/Inactive	04-26-2000	10-31-2008	Canceled
	PROP/Inactive	04-26-2000	10-31-2008	Canceled
Hawkeye-Security Insurance Company	CAS/Inactive	01-14-2003	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-14-2003	11-20-2009	Vol. Surrender per Agent Rqst
HDI-Gerling America Insurance Company	CAS/Active	09-08-2005		
	PROP/Active	09-08-2005		
HIH America Compensation & Liability Insurance Company	CAS/Inactive	04-08-1999	05-11-2001	Company Defunct or Liquidation
	PROP/Inactive	04-08-1999	05-11-2001	Company Defunct or Liquidation

Indemnity Insurance Company of North America	CAS/Inactive	06-23-1999	10-01-2002	Inadequate Production
	PROP/Inactive	06-23-1999	10-01-2002	Inadequate Production
Indiana Insurance Company	CAS/Inactive	03-24-2000	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	03-24-2000	11-20-2009	Vol. Surrender per Agent Rqst
Insurance Company of North America	CAS/Active	06-23-1999		
	PROP/Active	06-23-1999		
Liberty Mutual Fire Insurance Company	CAS/Inactive	03-13-2006	12-06-2007	Vol. Surrender per Agent Rqst
	CAS/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	03-13-2006	12-06-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
Liberty Mutual Insurance Company	CAS/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
LM Insurance Corporation	CAS/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-14-2002	12-27-2005	Vol. Surrender per Agent Rqst
Lumbermens Mutual Casualty Company	CAS/Inactive	08-20-1996	02-17-2005	Canceled
	PROP/Inactive	08-20-1996	02-17-2005	Canceled
Maryland Casualty Company	CAS/Inactive	09-09-1998	07-23-2012	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-09-1998	07-23-2012	Vol. Surrender per Agent Rqst
Massachusetts Bay Insurance Company	CAS/Inactive	12-18-1997	08-03-2005	Inadequate Production
	PROP/Inactive	12-18-1997	08-03-2005	Inadequate Production
Merchants Bonding Company (Mutual)	CAS/Active	08-20-2007		
	CAS/Inactive	07-19-1996	09-27-2005	Canceled
Merchants National Bonding, Inc.	CAS/Active	02-06-2013		
MetLife Insurance Company of Connecticut	CAS/Inactive	09-04-1996	04-21-2003	Inadequate Production
Middlesex Mutual Assurance Company	CAS/Inactive	03-08-2006	01-17-2011	Vol. Surrender per Agent Rqst
	PROP/Inactive	03-08-2006	01-17-2011	Vol. Surrender per

				Agent Rqst
National Fire Insurance Company of Hartford	CAS/Inactive	08-21-1996	01-05-2006	Canceled
	PROP/Inactive	08-21-1996	01-05-2006	Canceled
National Surety Corporation	CAS/Inactive	07-25-1996	09-29-2005	Inadequate Production
	PROP/Inactive	07-25-1996	09-29-2005	Inadequate Production
Nationwide Affinity Insurance Company of America	CAS/Inactive	04-11-2005	04-07-2010	Canceled
	PROP/Inactive	04-11-2005	04-07-2010	Canceled
Nationwide Mutual Insurance Company	CAS/Inactive	07-14-2003	04-07-2010	Canceled
	PROP/Inactive	07-14-2003	04-07-2010	Canceled
Navigators Insurance Company	CAS/Inactive	02-19-2004	04-30-2008	Canceled
	PROP/Inactive	02-19-2004	04-30-2008	Canceled
Netherlands Insurance Company, The	CAS/Inactive	08-12-1996	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-12-1996	11-20-2009	Vol. Surrender per Agent Rqst
North American Specialty Insurance Company	CAS/Active	09-18-2000		
	PROP/Active	09-18-2000		
North River Insurance Company, The	CAS/Inactive	12-23-1996	12-17-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	12-23-1996	12-17-2009	Vol. Surrender per Agent Rqst
Northern Insurance Company of New York	CAS/Inactive	09-09-1998	07-23-2012	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-09-1998	07-23-2012	Vol. Surrender per Agent Rqst
Northwestern National Casualty Company	CAS/Inactive	04-14-1999	02-28-2001	Vol. Surrender per Agent Rqst
	PROP/Inactive	04-14-1999	02-28-2001	Vol. Surrender per Agent Rqst
Old Republic Insurance Company	CAS/Active	08-07-2007		
	CAS/Inactive	08-02-1996	04-20-2005	Canceled
	PROP/Inactive	08-02-1996	04-20-2005	Canceled
Old Republic Surety Company	CAS/Active	08-07-2007		
	CAS/Inactive	08-02-1996	04-20-2005	Canceled
	PROP/Inactive	08-02-1996	04-20-2005	Canceled
Pacific Employers Insurance Company	CAS/Active	06-23-1999		
	PROP/Active	06-23-1999		
Pacific Indemnity	CAS/Active	05-12-2008		

Company	CAS/Inactive	09-10-1996	12-26-2006	Canceled
	PROP/Active	05-12-2008		
	PROP/Inactive	09-10-1996	12-26-2006	Canceled
Peerless Indemnity Insurance Company	CAS/Inactive	06-21-2004	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	06-21-2004	11-20-2009	Vol. Surrender per Agent Rqst
Peerless Insurance Company	CAS/Inactive	08-12-1996	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-12-1996	11-20-2009	Vol. Surrender per Agent Rqst
Phoenix Insurance Company, The	CAS/Active	09-26-2007		
	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
Platte River Insurance Company	CAS/Active	07-12-2005		
	PROP/Active	07-12-2005		
Progressive Classic Insurance Company	CAS/Inactive	07-18-2005	06-30-2008	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-18-2005	06-30-2008	Vol. Surrender per Agent Rqst
Progressive Northern Insurance Company	CAS/Inactive	07-18-2005	06-30-2008	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-18-2005	06-30-2008	Vol. Surrender per Agent Rqst
Property and Casualty Insurance Company of Hartford	CAS/Inactive	07-05-2005	10-31-2008	Canceled
	PROP/Inactive	07-05-2005	10-31-2008	Canceled
Regent Insurance Company	CAS/Active	08-16-2007		
	PROP/Active	08-16-2007		
Royal Insurance Company of America	CAS/Inactive	10-04-2000	02-08-2005	Canceled
	PROP/Inactive	10-04-2000	02-07-2005	Canceled
SAFECO Insurance Company of America	CAS/Inactive	07-24-1996	11-20-2009	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-24-1996	11-20-2009	Vol. Surrender per Agent Rqst
SAFECO Insurance	CAS/Inactive	09-27-2008	11-20-2009	Vol. Surrender per

Company of Illinois				Agent Rqst
	PROP/Inactive	09-27-2008	11-20-2009	Vol. Surrender per Agent Rqst
Safeguard Insurance Company	CAS/Inactive	10-04-2000	02-10-2005	Canceled
	PROP/Inactive	10-04-2000	02-10-2005	Canceled
Seaboard Surety Company	CAS/Inactive	08-09-1996	12-05-2005	Inadequate Production
	PROP/Inactive	08-09-1996	12-05-2005	Inadequate Production
Security Insurance Company of Hartford	CAS/Inactive	03-11-2005	08-28-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	03-11-2005	08-28-2006	Vol. Surrender per Agent Rqst
Sheboygan Falls Insurance Company	CAS/Active	11-09-2012		
	PROP/Active	11-09-2012		
SOCIETY INSURANCE, a mutual company	CAS/Active	01-15-2010		
	CAS/Inactive	07-08-2005	11-14-2007	Canceled
	PROP/Active	01-15-2010		
	PROP/Inactive	07-08-2005	11-14-2007	Canceled
St. Paul Fire and Casualty Insurance Company	CAS/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
St. Paul Fire and Marine Insurance Company	CAS/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
St. Paul Guardian Insurance Company	CAS/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
St. Paul Mercury Insurance Company	CAS/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-10-1996	02-09-2007	Vol. Surrender per Agent Rqst
St. Paul Protective Insurance Company	CAS/Inactive	11-04-1998	04-21-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	11-04-1998	04-21-2003	Vol. Surrender per Agent Rqst
Statewide Insurance Company	CAS/Inactive	07-18-1996	04-08-2002	Canceled
	PROP/Inactive	07-18-1996	04-08-2002	Canceled
TIG Insurance Company	CAS/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-11-2000	09-26-2003	Vol. Surrender per

				Agent Rqst
TIG Insurance Company of Texas	CAS/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
TIG Insurance Corporation of America	CAS/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
Torus National Insurance Company	CAS/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-11-2000	09-26-2003	Vol. Surrender per Agent Rqst
Transcontinental Insurance Company	CAS/Inactive	08-21-1996	01-05-2006	Canceled
	PROP/Inactive	08-21-1996	01-05-2006	Canceled
Transportation Insurance Company	CAS/Inactive	08-21-1996	01-05-2006	Canceled
	PROP/Inactive	08-21-1996	01-05-2006	Canceled
Travelers Casualty and Surety Company	CAS/Active	09-26-2007		
	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	07-19-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-19-1996	11-28-2005	Vol. Surrender per Agent Rqst
Travelers Casualty and Surety Company of America	CAS/Active	02-04-2008		
	CAS/Inactive	07-19-1996	11-09-2007	Canceled
	PROP/Active	02-04-2008		
	PROP/Inactive	07-19-1996	11-09-2007	Canceled
Travelers Casualty Company of Connecticut	CAS/Inactive	07-19-1996	11-20-2000	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-19-1996	11-20-2000	Vol. Surrender per Agent Rqst
Travelers Casualty Insurance Company of America	CAS/Active	09-26-2007		
	CAS/Inactive	07-19-1996	11-22-2000	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	07-19-1996	11-22-2000	Vol. Surrender per Agent Rqst
Travelers Commercial	CAS/Inactive	06-14-2001	11-28-2005	Vol. Surrender per Agent Rqst

Insurance Company	CAS/Inactive	07-19-1996	11-22-2000	Vol. Surrender per Agent Rqst
	PROP/Inactive	06-14-2001	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-19-1996	11-22-2000	Vol. Surrender per Agent Rqst
Travelers Constitution State Insurance Company	CAS/Inactive	11-24-1998	12-11-2003	Vol. Surrender per Agent Rqst
	PROP/Inactive	11-24-1998	12-11-2003	Vol. Surrender per Agent Rqst
Travelers Home and Marine Insurance Company, The	CAS/Inactive	11-29-2005	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	11-29-2005	12-29-2006	Vol. Surrender per Agent Rqst
Travelers Indemnity Company of America, The	CAS/Active	09-26-2007		
	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
Travelers Indemnity Company of Connecticut, The	CAS/Active	09-26-2007		
	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
Travelers Indemnity Company, The	CAS/Active	09-26-2007		
	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
Travelers Property	CAS/Active	09-26-2007		

Casualty Company of America	CAS/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	CAS/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Active	09-26-2007		
	PROP/Inactive	01-13-2006	12-29-2006	Vol. Surrender per Agent Rqst
	PROP/Inactive	09-04-1996	11-28-2005	Vol. Surrender per Agent Rqst
Travelers Property Casualty Insurance Company	CAS/Inactive	07-22-2005	11-28-2005	Vol. Surrender per Agent Rqst
	PROP/Inactive	07-22-2005	11-28-2005	Vol. Surrender per Agent Rqst
Trumbull Insurance Company	CAS/Inactive	07-05-2005	10-31-2008	Canceled
	PROP/Inactive	07-05-2005	10-31-2008	Canceled
Twin City Fire Insurance Company	CAS/Inactive	04-26-2000	10-26-2009	Canceled
	PROP/Inactive	04-26-2000	10-26-2009	Canceled
United Fire & Casualty Company	CAS/Active	07-26-1996		
	PROP/Active	07-26-1996		
United Pacific Insurance Company	CAS/Inactive	08-27-1996	02-13-2001	Company Merger
	PROP/Inactive	08-27-1996	02-13-2001	Company Merger
United States Fidelity and Guaranty Company	CAS/Inactive	08-02-1996	02-09-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-02-1996	02-09-2007	Vol. Surrender per Agent Rqst
United States Fire Insurance Company	CAS/Inactive	12-23-1996	03-08-2004	Canceled
	PROP/Inactive	12-23-1996	03-08-2004	Canceled
United Wisconsin Insurance Company	CAS/Active	03-14-2003		
USF&G Insurance Company of Wisconsin	CAS/Inactive	08-02-1996	01-01-2001	Company Merger
	PROP/Inactive	08-02-1996	01-01-2001	Company Merger
Valiant Insurance Company	CAS/Inactive	09-09-1998	12-05-2007	Canceled
	PROP/Inactive	09-09-1998	12-05-2007	Canceled
Valley Forge Insurance Company	CAS/Inactive	08-21-1996	01-05-2006	Canceled
	PROP/Inactive	08-21-1996	01-05-2006	Canceled
Venture Insurance Company	CAS/Inactive	07-08-2005	01-04-2006	Canceled
	PROP/Inactive	07-08-2005	01-04-2006	Canceled
Vigilant Insurance Company	CAS/Active	05-12-2008		
	CAS/Inactive	09-10-1996	12-26-2006	Canceled
	PROP/Active	05-12-2008		

	PROP/Inactive	09-10-1996	12-26-2006	Canceled
Virginia Surety Company, Inc.	CAS/Inactive	01-28-1997	11-30-1998	Vol. Surrender per Agent Rqst
	PROP/Inactive	01-28-1997	11-30-1998	Vol. Surrender per Agent Rqst
Washington International Insurance Company	CAS/Active	09-07-2001		
	PROP/Active	09-07-2001		
Wausau Business Insurance Company	CAS/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	CAS/Inactive	08-23-1996	05-14-2003	Inadequate Production
	PROP/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-23-1996	05-14-2003	Inadequate Production
Wausau General Insurance Company	CAS/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	CAS/Inactive	08-23-1996	05-14-2003	Inadequate Production
	PROP/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-23-1996	05-14-2003	Inadequate Production
Wausau Underwriters Insurance Company	CAS/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	CAS/Inactive	08-23-1996	05-14-2003	Inadequate Production
	PROP/Inactive	07-18-2005	12-10-2007	Vol. Surrender per Agent Rqst
	PROP/Inactive	08-23-1996	05-14-2003	Inadequate Production
West Bend Mutual Insurance Company	CAS/Active	03-13-2008		
	CAS/Inactive	07-08-2005	10-17-2007	Canceled
	PROP/Active	03-13-2008		
	PROP/Inactive	07-08-2005	10-17-2007	Canceled
Western Surety Company	CAS/Active	07-21-2003		
Zurich American Insurance Company	CAS/Active	06-08-1999		
	PROP/Active	06-08-1999		
Zurich American Insurance Company of Illinois	CAS/Active	06-08-1999		
	PROP/Active	06-08-1999		

* Photocopies of this report provided to an insurer should be confirmed on-line for accuracy.

** NPN = National Producer Number assigned by the National Insurance Producer Registry to assist with nonresident licensing in the future.

$2,656,361.29
CONTRACTOR'S OFFICE COPY

BID OF JOE DANIELS CONSTRUCTION COMPANY, INC.

2013

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

CENTRAL PARK PHASE 1A

CONTRACT NO. 7008

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON **AUGUST 6, 2013**

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

www.cityofmadison.com/business/pw

https://bidexpress.com/login

THIS PROJECT IS FEDERALLY FUNDED DBE GOAL 12% ID 5992-01-97

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008
INDEX

SECTION A: ADVERTISEMENT FOR BIDS A-1

SECTION B: INSTRUCTIONS TO BIDDERS B-1

SECTION C: FHWA 1273 ..... C-1

SECTION D: NOTICE OF REQUIRED AFFIRMATIVE ACTION D-1

SECTION E: BUY AMERICAN AND DEBARMENT PROVISIONS E-1

SECTION F: ADDITIONAL FEDERAL-AID PROVISIONS F-1

SECTION G: WisDOT SUPPLEMENTAL CONTRACT PROVISIONS G-1

SECTION H: SPECIAL PROVISIONS H-1

SECTION H: SPECIAL PROVISIONS – APPENDIX A RESTROOM PAVILION H-62

SECTION H: SPECIAL PROVISIONS – APPENDIX B ELECTRICAL H-63

SECTION H: SPECIAL PROVISIONS – APPENDIX C SOIL BORINGS H-64

SECTION I: BIDDERS ACKNOWLEDGEMENT, DISCLOSURE OF OWNERSHIP & BVC I-1

SECTION J: BID BOND J-1

SECTION K: AGREEMENT K-1

SECTION L: PAYMENT AND PERFORMANCE BOND L-1

SECTION M: LIST OF SUBCONTRACTORS M-1

SECTION N: WAGE RATES N-1

SECTION O: PROPOSAL O-1

This Proposal, and Agreement have
been prepared by:

CITY ENGINEERING DIVISION
CITY OF MADISON
MADISON, DANE COUNTY, WISCONSIN

Robert F. Phillips, P.E., City Engineer

SECTION A: ADVERTISEMENT FOR BIDS

PROJECT NAME: CENTRAL PARK PHASE 1A

CONTRACT NUMBER: 7008

DBE GOAL: 12%

Note: This Project is FEDERALLY FUNDED

Plans and Specifications are available starting June 14, 2013, at 1600 Emil Street, Madison, WI 53713 or by calling (608) 267-4751. Documents are also available at www.cityofmadison.com/business/PW and https://bidexpress.com/login

Prequalifications: Bidders who have not been prequalified by the City Engineer and Affirmative Action Director for the period of February 1, 2013 to January 31, 2014 must submit their application on or before **1:00 p.m., July 5, 2013**, Room 115, City-County Building, Madison, WI 53703. Postmark is not applicable. Forms are available at the same location or on our website at http://www.cityofmadison.com/business/pw/forms.cfm.

Bidders must be prequalified by the City in one of the following Type(s) of Construction: Street Construction (310) or General Building Construction (420).

Pre-bid Meeting: Any Contractors bidding on this contract shall be required to attend a pre-bid meeting on **Thursday, June 27, 2013 at 1:00 P.M.** local time at the Engineering Operations Building located at 1600 Emil Street, Madison, WI 53713.

Submittal: Bidders must submit proposals no later than **1:00 P.M**. local time, **Friday, July 12, 2013.** Bids to be submitted by hand shall be in a sealed envelope to 1600 Emil Street, Madison, WI 53713.

Bids will be publicly opened and read aloud at **1:30 P.M. on Friday, July 12, 2013** at 1600 Emil Street, Madison, WI.

Proposal Guaranty: The bidder must submit with its sealed bid a properly executed bid bond or certified check in an amount equal to five percent (5%) of the total bid or certificate of Annual Bid Bond. In case the successful bidder fails to submit an executed contract and payment and performance bond, the amount of the bid bond shall be forfeited to the City as liquidated damages.

Hours of Labor and Minimum Wage Rate: Pursuant to regulations provided by applicable federal and/or state Laws, the hours of labor and minimum wage rates are set forth in the bidding proposals.

Disadvantaged Business Enterprise (DBE): It is the policy for this project that disadvantaged business enterprises, as defined by 49 CFR Part 23, shall have the maximum opportunity to participate in the performance of this contract. This project has an assigned goal of 12% Disadvantaged Business Enterprise (DBE). Bidders must demonstrate a good faith effort to meet this goal.

Affirmative Action: The City will affirmatively insure that disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation, and they will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for an award.

Affidavit of Non-Collusion: This project requires that an affidavit of non-collusion be incorporated as part of the proposal requirements provided to each prospective bidder. Failure to complete the sworn statement will make the bid non-responsive and not eligible for award considerations. Completion and submittal of Section I: Bidder Acknowledgement fulfills this requirement.

Bid Rejection: The City of Madison reserves the right to reject any or all bids, to waive irregularities, or to accept such bids, as in the opinion of the City of Madison, will be in its best interest.

General Construction: Construction of Central Park Phase 1A, City of Madison
State project number is 5992-01-97 and City project number is 53W0853. The project includes construction of pedestrian & bicycle paths, restroom, park amenities.
For further information contact Janet Dailey (608) 261-9688.

Contract Completion Date: December 31, 2013

Wisconsin State Journal: June 14, June 21, June 28, July 5, 2013

SECTION B: INSTRUCTIONS TO BIDDERS

STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2013 Edition, as supplemented and amended from time to time, forms a part of these contract documents as if attached hereto.

These standard specifications are available on the City of Madison Public Works website, www.cityofmadison.com/Business/PW/specs.cfm.

The Contractor shall review these Specifications prior to preparation of proposals for the work to be done under this contract, with specific attention to Article 102, "BIDDING REQUIREMENTS AND CONDITIONS" and Article 103, "AWARD AND EXECUTION OF THE CONTRACT." For the convenience of the bidder, below are highlights of three subsections of the specifications.

SECTION 102.1: PRE-QUALIFICATION OF BIDDERS

In accordance with Wisconsin State Statutes 66.0901 (2) and (3), all bidders must submit to the Board of Public Works proof of responsibility on forms furnished by the City. The City requires that all bidders be qualified on a biennial basis.

Bidders must present satisfactory evidence that they have been regularly engaged in the type of work specified herein and they are fully prepared with necessary capital, materials, machinery and supervisory personnel to conduct the work to be contracted for to the satisfaction of the City. All bidders must be pre-qualified by the Board of Public Works for the type of construction on which they are bidding prior to the opening of the bid.

In accordance with Section 39.02(9)(a)l. of the General Ordinances, all bidders shall submit in writing to the Affirmative Action Division Manager of the City of Madison, a Certificate of Compliance or an Affirmative Action Plan at the same time or prior to the submission of the proof of responsibility forms.

The bidder shall be disqualified if the bidder fails to or refuses to, prior to opening of the bid, submit a Certificate of compliance, Affirmative Action Plan or Affirmative Action Data Update, as applicable, as defined by Section 39.02 of the General Ordinances (entitled Affirmative Action) and as required by Section 102.11 of the Standard Specifications.

SECTION 102.4 PROPOSAL

No bid will be accepted that does not contain an adequate or reasonable price for each and every item named in the Schedule of Unit Prices.

A lump sum bid for the work in accordance with the plans and specifications is required. The lump sum bid must be the same as the total amounts bid for the various items and it shall be inserted in the space provided.

All papers bound with or attached to the proposal form are considered a part thereof and must not be detached or altered when the proposal is submitted. The plans, specifications and other documents designated in the proposal form will be considered a part of the proposal whether attached or not.

A proposal submitted by an individual shall be signed by the bidder or by a duly authorized agent. A proposal submitted by a partnership shall be signed by a member/partner or by a duly authorized agent thereof. A proposal submitted by a corporation shall be signed by an authorized officer or duly authorized registered agent of such corporation, and the proposal shall show the name of the State under the laws of

which such corporation was chartered. The required signatures shall in all cases appear in the space provided thereof on the proposal.

Each proposal shall be placed, together with the proposal guaranty, in a sealed envelope, so marked as to indicate name of project, the contract number or option to which it applies, and the name and address of the Contractor or submitted electronically through Bid Express (www.bidexpress.com). Proposals will be accepted at the location, the time and the date designated in the advertisement. Proposals received after the time and date designated will be returned to the bidder unopened.

The Bidder shall execute the Disclosure of Ownership form. REFER TO SECTION I.

SECTION 102.5: BID DEPOSIT (PROPOSAL GUARANTY)

All bids, sealed or electronic, must be accompanied with a Bid Bond equal to at least 5% of the bid or a Certificate of Annual/Biennial Bid Bond or certified check, payable to the City Treasurer. Bid deposit of the successful bidders shall be returned within forty-eight (48) hours following execution of the contract and bond as required.

Bidders for this Contract(s) must be Pre-Qualified for at least one of the following type(s) of construction denoted by an ☒

Building Demolition

101 ☐ Asbestos Removal
120 ☐ House Mover
110 ☐ Building Demolition

Street, Utility and Site Construction

201 ☐ Asphalt Paving
205 ☐ Blasting
210 ☐ Boring/Pipe Jacking
215 ☐ Concrete Paving
220 ☐ Con. Sidewalk/Curb & Gutter/Misc. Concrete Work
221 ☐ Concrete Bases and Other Concrete Work
225 ☐ Dredging
230 ☐ Fencing
235 ☐ Fiber Optic Cable/Conduit Installation
240 ☐ Grading and Earthwork
242 ☐ Infrared Seamless Patching
245 ☐ Landscaping, Maintenance
250 ☐ Landscaping, Site and Street
251 ☐ Parking Ramp Maintenance
255 ☐ Pavement Sealcoating and Crack Sealing
260 ☐ Petroleum Above/Below Ground Storage Tank Removal/Installation
265 ☐ Retaining Walls, Precast Modular Units
270 ☐ Retaining Walls, Reinforced concrete
275 ☐ Sanitary, Storm Sewer & Water Main Const.
280 ☐ Sewer Lateral Drain Cleaning/Internal TV Insp.
285 ☐ Sewer Lining
290 ☐ Sewer Pipe Bursting
295 ☐ Soil Borings
300 ☐ Soil Nailing
305 ☐ Storm & Sanitary Sewer Laterals & Water Svc.
310 ☒ Street Construction
315 ☐ Street Lighting
318 ☐ Tennis Court Resurfacing
330 ☐ Traffic Control During Construction
320 ☐ Traffic Signals
325 ☐ Traffic Signing & Marking
335 ☐ Trucking
399 ☐ Other_____

Bridge Construction

501 ☐ Bridge Construction and/or Repair

Building Construction

401 ☐ Floor Covering (including carpet, ceramic tile installation, rubber, VCT
402 ☐ Building Automation Systems
403 ☐ Concrete
404 ☐ Doors and Windows
405 ☐ Electrical - Power, Lighting & Communications
410 ☐ Elevator - Lifts
412 ☐ Fire Suppression
413 ☐ Furnishings - Furniture and Window Treatments
415 ☐ General Building Construction, Equal or Less than $250,000
420 ☒ General Building Construction, $250,000 to $1,500,000
425 ☐ General Building Construction, Over $1,500,000
428 ☐ Glass and/or Glazing
429 ☐ Hazardous Material Removal
430 ☐ Heating, Ventilating and Air Conditioning (HVAC)
433 ☐ Insulation - Thermal
435 ☐ Masonry
437 ☐ Metals
440 ☐ Painting and Wallcovering
445 ☐ Plumbing
450 ☐ Pump Repair
455 ☐ Pump Systems
460 ☐ Roofing and Moisture Protection
461 ☐ Solar Photovoltaic/Hot Water Systems
465 ☐ Soil/Groundwater Remediation
466 ☐ Warning Sirens
470 ☐ Water Supply Elevated Tanks
475 ☐ Water Supply Wells
480 ☐ Wood, Plastics & Composites-Structural & Architectural
499 ☐ Other_____

State of Wisconsin Certifications

1 ☐ Class 5 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for quarries, open pits and road cuts.

2 ☐ Class 6 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for trenches, site excavations, basements, underwater demolition, underground excavations, or structures 15 feet or less in height.

3 ☐ Class 7 Blaster - Blasting Operations and Activities for structures greater than 15 ' in height, bridges, towers, and any of the objects or purposes listed as "Class 5 Blaster or Class 6 Blaster".

4 ☐ Petroleum Above/Below Ground Storage Tank Removal and Installation (Attach copies of State Certifications.)

5 ☐ Hazardous Material Removal (Contractor to be certified for asbestos and lead abatement per the Wisconsin Department of Health Services, Asbestos and Lead Section (A&LS).) See the following link for application: http://www.dhs.wisconsin.gov/Asbestos/Cert/Index.htm. State of Wisconsin Performance of Asbestos Abatement Certificate must be attached.

6 ☐ Other_____

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

SEPTEMBER 2002

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Employment Practices" and "Equal Opportunity Clause" set forth in the Required Contract Provisions, FHWA 1273.

2. The goals and timetables for minority and female participation expressed in percentage terms for the contractor's aggregate work force in each trade, on all construction work in the covered area, are as follows:

Goals for Minority Participation for Each Trade:

County	%	County	%	County	%
Adams	1.7	Iowa	1.7	Polk	2.2
Ashland	1.2	Iron	1.2	Portage	0.6
Barron	0.6	Jackson	0.6	Price	0.6
Bayfield	1.2	Jefferson	7.0	Racine	8.4
Brown	1.3	Juneau	0.6	Richland	1.7
Buffalo	0.6	Kenosha	3.0	Rock	3.1
Burnett	2.2	Kewaunee	1.0	Rusk	0.6
Calumet	0.9	La Crosse	0.9	St. Croix	2.9
Chippewa	0.5	Lafayette	0.5	Sauk	1.7
Clark	0.6	Langlade	0.6	Sawyer	0.6
Columbia	1.7	Lincoln	0.6	Shawano	1.0
Crawford	0.5	Manitowoc	1.0	Sheboygan	7.0
Dane	2.2	Marathon	0.6	Taylor	0.6
Dodge	7.0	Marinette	1.0	Trempealeau	0.6
Door	1.0	Marquette	1.7	Vernon	0.6
Douglas	1.0	Menominee	1.0	Vilas	0.6
Dunn	0.6	Milwaukee	8.0	Walworth	7.0
Eau Claire	0.5	Monroe	0.6	Washburn	0.6
Florence	1.0	Oconto	1.0	Washington	8.0
Fond du Lac	1.0	Oneida	0.6	Waukesha	8.0
Forest	1.0	Outagamie	0.9	Waupaca	1.0
Grant	0.5	Ozaukee	8.0	Waushara	1.0
Green	1.7	Pepin	0.6	Winnebago	0.9
Green Lake	1.0	Pierce	2.2	Wood	0.6

Goals for female participation for each trade: 6.9%
These goals are applicable to all the contractor's construction work, (whether or not it is federal or federally assisted), performed in the covered area. If the contractor performs construction work in the geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The contractor's compliance with the Executive Order and the Regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the Regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of $10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

   As referred to in this section, the Director means:

   Director
   Office of Federal Contract Compliance Programs
   Ruess Federal Plaza
   310 W. Wisconsin Ave., Suite 1115
   Milwaukee, WI 53202

   The "Employer Identification Number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

4. As used in this notice, and in the contract resulting from solicitation, the "covered area" is the county(ies) in Wisconsin to which this proposal applies.

APRIL 2013

BUY AMERICA PROVISION

All steel and iron materials permanently incorporated in this project shall be domestic products and all manufacturing and coating processes for these materials from smelting forward in the manufacturing process must have occurred within the United States. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to the requirements of Buy America. The exemption of this requirement is the minimal use of foreign materials if the total cost of such material permanently incorporated in the product does not exceed one-tenth of one percent (1/10 of 1%) of the total contract cost or $2,500.00, whichever is greater. For purposes of this paragraph, the cost is that shown to be the value of the subject products as they are delivered to the project. The contractor shall take actions and provide documentation conforming to CMM 2-28.4 to ensure compliance with this "Buy America" provision.

http://roadwaystandards.dot.wi.gov/standards/cmm/cm-02-28.pdf#cm2-28.4

Upon completion of the project certify to the engineer, in writing using department form WS4567, that all steel, iron, and coating processes for steel or iron incorporated into the contract work conform to these "Buy America" provisions. Attach a list of exemptions and their associated costs to the certification form. Department form WS4567 is available at:

http://roadwaystandards.dot.wi.gov/standards/forms/hidden/ws4567.doc

APRIL 2013

ADDITIONAL FEDERAL-AID PROVISIONS

NOTICE TO ALL BIDDERS

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of possible bid rigging, bidding collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

DECEMBER 2000

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - PRIMARY COVERED TRANSACTIONS

Instructions for Certification

1. By signing and submitting this proposal, the prospective contractor is providing the certification set out below.

2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective contractor shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective contractor to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

3. The certification in this clause is a material representation of fact upon which reliance was placed when the department determined to enter into this transaction. If it is later determined that the contractor knowingly rendered an erroneous certification in addition to other remedies available to the Federal Government the department may terminate this transaction for cause or default.

4. The prospective contractor shall provide immediate written notice to the department to whom this proposal is submitted if at any time the prospective contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the department to which this proposal is being submitted for assistance in obtaining a copy of those regulations.

6. The prospective contractor agrees by submitting this proposal that, should this contract be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department entering into this transaction.

7. The prospective contractor further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," which is included as an addendum to PR-1273 - "Required Contract Provisions Federal Aid Construction Contracts," without

modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

8. The contractor may rely upon a certification of a prospective subcontractor/materials supplier that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A contractor may decide the method and frequency by which it determines the eligibility of its principals. Each contractor may, but is not required to, check the Disapproval List (telephone # 608/266/1631).

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph 6 of these instructions, if a contractor in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

(1) The prospective contractor certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offense enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective contractor is unable to certify to any of the statements in this certification, such prospective contractor shall attach an explanation to this proposal.

Effective with November 2007 Letting

PROPOSAL REQUIREMENTS AND CONDITIONS

The bidder, signing and submitting this proposal, agrees and declares as a condition thereof, to be bound by the following conditions and requirements.

If the bidder has a corporate relationship with the proposal design engineering company, the bidder declares that it did not obtain any facts, data, or other information related to this proposal from the design engineering company that was not available to all bidders.

The bidder declares that they have carefully examined the site of, and the proposal, plans, specifications and contract forms for the work contemplated, and it is assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of the specifications, special provisions and contract. It is mutually agreed that submission of a proposal shall be considered conclusive evidence that the bidder has made such examination.

The bidder submits herewith a proposal guaranty in proper form and amount payable to the party as designated in the advertisement inviting proposals, to be retained by and become the property of the owner of the work in the event the undersigned shall fail to execute the contract and contract bond and return the same to the office of the engineer within fourteen (14) days after having been notified in writing to do so; otherwise to be returned.

The bidder declares that they understand that the estimate of quantities in the attached schedule is approximate only and that the attached quantities may be greater or less in accordance with the specifications.

The bidder agrees to perform the said work, for and in consideration of the payment of the amount becoming due on account of work performed, according to the unit prices bid in the following schedule, and to accept such amounts in full payment of said work.

The bidder declares that all of the said work will be performed at their own proper cost and expense, that they will furnish all necessary materials, labor, tools, machinery, apparatus, and other means of construction in the manner provided in the applicable specifications and the approved plans for the work together with all standard and special designs that may be designed on such plans, and the special provisions in the contract of which this proposal will become a part, if and when accepted. The bidder further agrees that the applicable specifications and all plans and working drawings are made a part hereof, as fully and completely as if attached hereto.

The bidder, if awarded the contract, agrees to begin the work not later than ten (10) days after the date of written notification from the engineer to do so, unless otherwise stipulated in the special provisions.

The bidder declares that if they are awarded the contract, they will execute the contract agreement and begin and complete the work within the time named herein, and they will file a good and sufficient surety bond for the amount of the contract for performance and also for the full amount of the contract for payment.

The bidder, if awarded the contract, shall pay all claims as required by Section 779.14, Statutes of Wisconsin, and shall be subject to and discharge all liabilities for injuries pursuant to Chapter 102 of the Statutes of Wisconsin, and all acts amendatory thereto. They shall further be responsible for any damages to property or injury to persons occurring through their own negligence or that of their employees or agents, incident to the performance of work under this contract, pursuant to the Standard Specifications for Road and Bridge Construction applicable to this contract.

In connection with the performance of work under this contract, the contractor agrees to comply with all applicable state and federal statutes relating to non-discrimination in employment. No otherwise qualified person shall be excluded from employment or otherwise be subject to discrimination in employment in any manner on the basis of age, race, religion, color, gender, national origin or ancestry, disability, arrest or conviction record (in keeping with s.111.32), sexual orientation, marital status, membership in the military reserve, honesty testing, genetic testing, and outside use of lawful products. This provision shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The contractor further agrees to ensure equal opportunity in employment to all applicants and employees and to take affirmative action to attain a representative workforce.

The contractor agrees to post notices and posters setting forth the provisions of the nondiscrimination clause, in a conspicuous and easily accessible place, available for employees and applicants for employment.

If a state public official (section 19.42, Stats.) or an organization in which a state public official holds at least a 10% interest is a party to this agreement, this contract is voidable by the state unless appropriate disclosure is made to the State of Wisconsin Ethics Board.

Effective with January 2013 Letting **ASP 3**

ADDITIONAL SPECIAL PROVISION 3
DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

1. Description

General

a. The disadvantaged business enterprise (DBE) requirements of 49 CFR Part 26 apply to this contract. The department's DBE goal is shown on the cover of the bidding proposal. The contractor can meet the specified contract DBE goal by procuring services or materials from a DBE or by subcontracting work to a DBE. The department calculates the DBE participation as the dollar value of DBE participation included in the bid expressed as a percentage of the total contract bid amount.

b. Under the contract, the contractor agrees to provide the assistance to participating DBE's in the following areas:

   i. Produce accurate and complete quotes.
   ii. Understand highway plans applicable to their work.
   iii. Understand specifications and contract requirements applicable to their work.
   iv. Understand contracting reporting requirements.

c. The department encourages the contractor to assist and develop DBE firms to become fully knowledgeable contractors to successfully perform on its contracts.

d. For information on the disadvantaged business program, visit the department's Civil Rights and Compliance Section website at:

   http://www.dot.wisconsin.gov/business/engrserv/dbe-main.htm

2. Definitions

a. Interpret these terms, used throughout this additional special provision, as follows:

   i. **Bid Percentage:** The DBE percentage indicated in the bidding proposal at the time of bid.
   ii. **DBE:** A disadvantaged business enterprise (DBE) certified as a DBE by the department and included on the department's list of certified DBE's who are determined to be ready, willing and able.
   iii. **DBE goal:** The amount of DBE participation expected in the contract as shown on the cover of the Highway Work Proposal.
   iv. **Discretionary Goal:** A contractor assigned DBE goal, typically abbreviated as "Disc" on the cover of the Highway Work Proposal, which is enforced as committed.
   v. **Manufacturer:** A firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract.
   vi. **Supplier:** A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment required under the contract are bought, kept in stock, and regularly sold or leased to the public.
   vii. **Voluntary Achievement:** The amount of DBE participation achieved and reported in the contract in excess of the assigned goal.

3. DBE Percentage Required at Bid Submission

Indicate the bid percentage (i.e. 0% through 100%) of DBE participation on the completed bidding proposal, including projects with discretionary goals. For electronic submittals, show the percentage in the miscellaneous data folder, Item 3, DBE Percent. For paper submittals, show the percentage on the sheet included after the schedule of items. By submission of the bid, the bidder contractually commits to DBE participation at or above the bid percentage, or certifies that they have utilized

comprehensive good faith efforts to solicit and utilize DBE firms to meet the DBE participation requirements of this contract proposal, and that the bid percentage is reflective of these good faith efforts. If the bidder does not indicate the bid percentage of DBE participation on the completed bidding proposal, the department will consider the bid irregular and may reject the bid.

4. Department's DBE Evaluation Process

a. Documentation Submittal

Within 10 business days after the notification of contract award, the contractor is to identify, by name, the DBE firms whose utilization is intended to satisfy this provision, the items of work of the DBE subcontract or supply agreement and the dollar value of those items of work by completing the Commitment to Subcontract to DBE Form [DT1506] and all necessary attachment A forms, as well as, Good Faith Waiver Form [DT1202] and supporting documentation as necessary. If the contractor fails to furnish the required forms within the specified time, the department may cancel the award. Delay in fulfilling this requirement is not a cause for extension of the contract time and shall not be used as a tool to delay execution.

i. Bidder Meets DBE Goal

If the bidder indicates that the contract DBE goal is met, after award and before execution, the department will evaluate the Commitment to Subcontract to DBE Form DT1506 and attachment A(s) to verify the actual DBE percentage achieved. If the DBE commitment is verified, the contract is eligible for execution with respect to the DBE commitment.

ii. Bidder Does Not Meet DBE Goal

(1) If the bidder indicates a bid percentage on the Commitment to Subcontract to DBE Form [DT1506] that does not meet the contract DBE goal, the bidder must submit a Good Faith Waiver Form [DT1202] and supporting documentation. After award and before execution, the department will evaluate the bidder's DBE commitment and consider the bidder's good faith waiver request.

(2) The department will review the bidder's good faith waiver request and notify the bidder of one of the following:

a. If the department grants a good faith waiver, the bid is eligible for contract execution with respect to DBE commitment.

b. If the department rejects the good faith waiver request, the department may declare the bid ineligible for execution. The department will provide a written explanation of why the good faith waiver request was rejected. The bidder may appeal the department's rejection as allowed under 7 a. & b.

5. Department's Criteria for Good Faith Effort

The Code of Federal Regulations {CFR}, 49 CFR Part 26-Appendix A, is the guiding regulation concerning good faith efforts. However, the federal regulations do not define "good faith" but states that bidder must actively and aggressively attempt to meet the goal. The federal regulations are general and do not include every factor or effort that can be considered. As a result, each state must establish its own processes and consider the factors established in its own process when making a determination of good faith.

a. The department will only grant a good faith waiver if the bidder has made the effort, given the relevant circumstances under the contract that a bidder actively and aggressively seeking to meet the goal would make. The department will evaluate the bidder's good faith effort to determine whether a good faith waiver will be granted. The bidder must demonstrate, on the DT1202 that they have aggressively solicited DBE participation in an attempt to meet the contract DBE goal and attaining the stated DBE goal is not feasible.

Effective with January 2013 Letting **ASP 3**

b. The department, in conjunction with industry stakeholders, has developed the following guidance for contractor good faith effort. The guidance and the attached appendices provide a framework for the actions required by all parties in the processing and evaluation of bidder's total efforts to achieve the project specific DBE goal prior to the bid letting date.

c. Prime Contractors should:

i. Document all efforts and decisions made toward achieving the DBE goal on the contract. The bidder should use the Civil Rights & Compliance System [CRCS] and related WisDOT-approved DBE outreach tools, including the Bid Express Small Business Network, to foster DBE participation on all applicable contracts.

ii. Request quotes by identifying potential items to subcontract and solicit. Prime contractors are strongly encouraged to include in their initial contacts a single page including a detailed list of items for which they are accepting quotes, by project, within a letting. *See attached sample entitled "Sample Contractor Solicitation Letter" in Appendix A.* Prime contractors should also indicate a willingness to accept quotes in areas they are planning to perform themselves, ***as required by federal rules***. In some cases, it might be appropriate to use DBE's to do work in a prime contractor's area of specialization.

(1) Solicit quotes through all reasonable and available means from certified DBE firms who match 'possible items to subcontract' and send copies to DBESS office, highlighting areas in which you are seeking quotes. Email is acceptable.

(2) SBN is the preferred outreach tool. https://www.bidx.com/wi/main. Other acceptable means include postal mail, email, fax, phone call.

a. Primes must ask DBE firms for a response in their solicitations. See *Sample Contractors Solicitation Letter* in Appendix. This letter can be included as an attachment to the SBN sub-quote request.

b. Solicit quotes at least 10 calendar days prior to the letting date {ideally two Fridays before the letting} to allow DBE firms sufficient time to respond. Prime contractors should contact DBE firms early, asking them if they need help in putting together a quote, or helping to arrange for equipment needs, or solve other problems.

(3) Second solicitation should take place within 5 days

a. An email solicitation is highly recommended for this second solicitation

(4) Upon request, provide interested DBE firms with adequate information about plans, specifications and the requirements of the contract by letter, information session, email, phone call and/or referral.

(5) When potential exists, advise interested DBE firms on how to obtain bonding, line of credit or insurance as may be requested.

(6) Document DBE firm's interest in quoting by taking appropriate steps to follow up initial solicitation with:

a. Email to all prospective DBE firms in relevant work areas
b. Phone call log to DBE firms who express interest via written response or call.
c. Fax/letter confirmation
d. Copy of the DBE quotes
e. Signed copy of Bid Express SBN Record of Subcontractor Outreach Effort.

d. Evaluate DBE quotes as documentation is critical if the prime does not utilize the DBE firm's quote for any reason.

i. Evaluate DBE firm's capability to perform 'possible items to subcontract' using legitimate reasons, including but not limited to, ***a discussion with the DBE firm*** regarding its

capabilities prior to the bid letting. If lack of capacity is your reason for not utilizing the DBE quote, you are required to contact the DBE directly regarding their ability to perform the work indicated in the UCP directory as their work area [NAICS code]; only the work area and/or NAICS code listed in the UCP directory will be counted for DBE credit. Documentation of the conversation is required.

ii. In striving to meet a DBE conscious contract goal, prime contractors are expected to use DBE quotes that are responsive and reasonable. This includes DBE quotes that are not the low quote.

iii. **Special Circumstance:** Evaluation of DBE quotes with tied bid items. "Tied quotes are the condition in which a subcontractor submits quotes including multiple areas of expertise across multiple work areas noting that the items and price are tied. Typically this type of quoting represents a cost saving to the prime but is not clearly stated as a discount; tied quotes are usually presented as 'all or none' quote to the prime." When non-DBE subcontractors submit tied bid items in their quotes to the prime, the DBE firms' quote may seem not competitive. In such a case, the following steps are taken in comparing the relevant quotes. These are qualitative examples.

(1) Compare bid items common to both quotes, noting the reasonableness in the price comparison.

(2) Review quotes from other firms for the bid items not quoted by the DBE firm to see if combining both can provide the same competitive advantage that the tied bid items offered.

e. After notification of contract award, submit **'Commitment to Subcontract'** form within the time period specified in the contract.

i. Provide the following information along with department form DT1202:

(1) The names, addresses, e-mail addresses, telephone numbers of DBE's contacted. The dates of both initial and follow-up contact. A printed copy of SBN solicitation is acceptable.

(2) A description of information provided to the DBE's regarding the plans, specifications, and estimated quantities for portions of the work to be performed by that DBE.

(3) Photocopies or electronic copies of all written solicitations to DBE's.

(4) Documentation of each quote received from a DBE and, if rejected, the reason for that rejection.

(5) Bidder attendance at any pre-solicitation or pre-bid meetings the department held to inform DBE's of participation opportunities available on the project.

f. The department's DBE Support Services Office is available by phone, email or in writing to request assistance in meeting the DBE goal:

DBE Support Services Office
6150 Fond du Lac Ave.
Milwaukee, WI 53218
Phone: 414-438-4583 / 608-266-6961
Fax: 414-438-5392
E-mail: DOTDBESupportServices@dot.wi.gov

6. Bidder's Appeal Process

a. A bidder can appeal the department's decision to deny the bidder's good faith waiver request. The bidder must provide written documentation refuting the specific reasons for rejection as stated in the department's rejection notice. The bidder may meet in person with the department if so

requested. Failure to appeal within 7 calendar days after receiving the department's written notice of rejection of a good faith waiver request under constitutes a forfeiture of the bidder's right of appeal. If the bidder does not appeal, the department may declare the bid ineligible for execution.

b. The department will appoint a representative, who did not participate in the original determination, to assess the bidder's appeal. The department will issue a written decision within 7 calendar days after the bidder presents all written and oral testimony. In that written decision, the department will explain the basis for finding that the bidder did or did not meet the contract DBE goal or make an adequate good faith effort to meet the contract DBE goal. The department's decision is final. If the department finds that the bidder did not meet the contract DBE goal or did not make adequate efforts to meet the DBE goal, the department may declare the bid ineligible for execution.

7. Department's Criteria for DBE Participation

Department's DBE List

a. The department maintains a DBE list on the department's website at

http://app.mylcm.com/wisdot/Reports/WisDotUCPDirectory.aspx

b. The DBE office is also available to assist at 414-438-4583 or 608-266-6961.

8. Counting DBE Participation

Assessing DBE Work

a. The department will only count the DBE usage towards the contract DBE goal if the DBE firm is certified as a DBE by one of the unified certification program agencies. If a firm becomes DBE certified before entering into a subcontract, the department may consider that DBE usage towards the contract goal. The department only counts the value of the work a DBE actually performs towards the DBE goal. The department assesses the DBE work as follows:

b. The department counts work performed by the DBE's own resources. The department includes the cost of materials and supplies the DBE obtains for the work. The department also includes the cost of equipment the DBE leases for the work. The department will not include the cost of materials, supplies, or equipment the DBE purchases or leases from the prime contractor or its affiliate, except the department will count non-project specific leases the DBE has in place before the work is advertised.

c. The department counts fees and commissions the DBE charges for providing a bona fide professional, technical, consultant, or managerial services. The department also counts fees and commissions the DBE charges for providing bonds or insurance. The department will only count costs the engineer deems reasonable based on experience or prevailing market rates.

d. If a DBE subcontracts work, the department counts the value of the subcontracted work only if the DBE's subcontractor is also a DBE.

e. The contractor shall maintain records and may be required to furnish periodic reports documenting its performance under this item.

f. It is the prime contractor's responsibility to determine the DBE's ability to perform the work with the use of the UCP directory.

9. Commercially Useful Function

a. The department counts expenditures of a DBE toward the DBE goal only if the DBE is performing a commercially useful function on that contract.

b. A DBE is performing a commercially useful function if the following conditions are met:

c. For contract work, the DBE is responsible for executing a distinct portion of the contract work and it is carrying out its responsibilities by actually performing, managing, and supervising that work.

d. For materials and supplies, the DBE is responsible for negotiating price, determining quality and quantity, ordering, and paying for those materials and supplies.

Effective with January 2013 Letting **ASP 3**

10. Trucking

All bidders are expected to adhere to the department's current trucking policy posted on the HCCI website at

http://www.dot.wisconsin.gov/business/engrserv/docs/dbe-trucking-notice.pdf

11. Manufacturers and Suppliers

The department counts material and supplies a DBE provides under the contract. The department will give full credit toward the DBE goal if the DBE is a manufacturer of those materials or supplies. The department will give 60 percent credit toward the DBE goal if the DBE is merely a supplier of those materials or supplies. It is the bidder's responsibility to find out if the DBE is considered a supplier or a manufacturer before listing them on Commitment to Subcontract to DBE form DT1506.

12. DBE Prime

If the prime contractor is a DBE, the department will only count the work the contractor performs with its own forces, the work DBE subcontractors perform, and the work DBE suppliers or manufacturers perform.

13. Joint Venture

If a DBE performs as a participant in a joint venture, the department will only count that portion of the total dollar value of the contract equal to that portion of the work that the DBE performs with its own forces.

14. Mentor Protégé

a. If a DBE performs as a participant in a mentor protégé agreement, the department will credit the portion of the work performed by the DBE protégé firm

b. On every other project that the mentor protégé team identifies itself on.

c. For no more than one half of the total contracted DBE goal on any WisDOT project.

15. DBE Replacement

In the event a Prime Contractor needs to replace a DBE firm originally listed on the approved DBE Commitment Form DT1506, the Prime Contractor must comply with the department's DBE Replacement Policy located on the DBE page on the following web site:

http://www.dot.wisconsin.gov/business/engrserv/docs/policyreplacingdbe.pdf

16. Changes to the approved DBE Commitment Form DT1506

If there are any changes to the approved Commitment to Subcontract to DBE Form DT1506, the prime contractor must submit a revised DBE Commitment Form DT1506 and relevant attachment A(s) to the DBE Programs Office within 5 business days.

17. Contract Modifications

When additional opportunity is available by contract modifications, the Prime Contractor shall utilize DBE Subcontractors, that were committed to equal work items, in the original contract.

18. Payment

Costs for conforming to this Additional Special Provision (ASP) and any associated DBE requirements are incidental to the contract.

Effective with January 2013 Letting **ASP 3**

APPENDIX A
Sample Contractor Solicitation Letter Page 1
This sample is provided as a guide not a requirement

GFW SAMPLE MEMORANDUM

TO: DBE FIRMS

FROM: POTENTIAL PRIME CONTRACTOR OR MAJOR SUBCONTRACTOR

SUBJECT: **REQUEST FOR DBE QUOTES**

LET DATE & TIME

DATE: MONTH DAY YEAR

CC: DBE OFFICE ENGINEER

Our company is considering bidding on the projects indicated on the next page, as a prime and/or a subcontractor for the Wisconsin Department of Transportation Month- date -year Letting. Page 2 lists the projects and work items that we may subcontract for this letting. We are interested in obtaining subcontractor quotes for these projects and work categories. Also note that we are willing to accept quotes in areas we may be planning to perform ourselves as required by federal rules.

Please review page 2, respond whether you plan to quote, highlight the projects and work items you are interested in performing and return it via fax or email within 3 days. Plans, specifications and addenda are available through WisDOT at the DBE Support Services office or at the Highway Construction Contract Information (HCCI) site at http://roadwaystandards.dot.wi.gov/hcci/

Your quote should include all of the costs required to complete the items you propose to perform including labor, equipment, material, and related bonding or insurance. The quote should note items that you are DBE certified to perform, tied items, and any special terms. Page 2, with the indicated projects and items you plan to quote, should be used as a cover sheet for your quote.

Please make every effort to have your quotes into our office by time deadline the prior to the letting date. ***Make sure the correct letting date, project ID and proposal number, unit price and extension are included in your quote.*** We prefer quotes be sent via SBN but prime's alternative's are acceptable. Our office hours are include hours and days. Please call our office as soon as possible prior to the letting if you need information/clarification to prepare your quote at contact number.

If you wish to discuss or evaluate your quote in more detail, contact us after the contract is awarded. Status of the contract can be checked at WisDOT's HCCI site at http://roadwaystandards.dot.wi.gov/hcci/

All questions should be directed to:

Project Manager, John Doe,
Phone: (000) 123-4567
Email: Joe@joetheplumber.com
Fax: (000) 123- 4657

Effective with January 2013 Letting **ASP 3**

Sample Contractor Solicitation Letter Page 2

This sample is provided as a guide not a requirement

REQUEST FOR QUOTATION

Prime's Name: _____

Letting Date: _____

Project ID: _____

Please check all that apply

- ☐ Yes, we will be quoting on the projects and items listed below
- ☐ No, we are not interested in quoting on the letting or its items referenced below
- ☐ Please take our name off your monthly DBE contact list
- ☐ We have questions about quoting this letting. Please have some one contact me at this number

Prime Contractor 's Contact Person

Phone: _____
Fax: _____
Email: _____

DBE Contractor Contact Person

Phone _____
Fax _____
Email _____

Please circle the jobs and items you will be quoting below

Proposal No.	1	2	3	4	5	6	7
County							

WORK DESCRIPTION:

Clear and Grub	X		X	X		X	X
Dump Truck Hauling	X		X	X		X	X
Curb & Gutter/Sidewalk, Etc.	X		X	X		X	X
Erosion Control Items	X		X	X		X	X
Signs and Posts/Markers	X		X	X		X	X
Traffic Control		X	X	X		X	X
Electrical Work/Traffic Signals		X	X	X		X	
Pavement Marking		X	X	X	X	X	X
Sawing Pavement		X	X	X	X	X	X
QMP, Base	X	X		X	X	X	X
Pipe Underdrain	X			X			
Beam Guard				X	X	X	X
Concrete Staining							X
Trees/Shrubs	X						X

Again please make every effort to have your quotes into our office by time deadline prior to the letting date.

We prefer quotes be sent via SBN but prime's preferred alternative's are acceptable.

If there are further questions please direct them to the prime contractor's contact person at phone number.

Effective with January 2013 Letting **ASP 3**

APPENDIX B
BEST PRACTICES FOR PRIME CONTRACTOR & DBE SUBCONTRACTOR GOOD FAITH EFFORT

This list is not a set of requirements; it is a list of potential strategies

Primes

- Prime contractor open houses inviting DBE firms to see the bid "war room" or providing technical assistance
- Participate in speed networking and mosaic exercises as arranged by DBE office
- Host information sessions not directly associated with a bid letting;
- Participate in a formal mentor protégé or joint venture with a DBE firm
- Participate in WisDOT advisory committees i.e. TRANSAC, or Mega Project committee meetings
- Facilitate a small group DBE 'training session' Clarifying how your firm prepares for bid letting, evaluates subcontractors, preferred qualifications and communication methods
- Encourage subcontractors to solicit and highlight DBE participation in their quotes to you
- Quality of communication, not quantity creates the best results. Contractors should do as thorough a job as possible in communicating with DBE firms before the bid and provide any assistance requested to assure best possible bid.

DBE

- DBE firms should contact primes as soon as possible with questions regarding their quotes or bid; seven days prior is optimal.
- Continually check for contract addendums on the HCCI website through the Thursday prior to letting to stay abreast of changes.
- Review the status of contracts on the HCCI website reviewing the 'apparent low bidder' list, and bid tabs at a minimum.
- Prepare a portfolio or list of related projects and prime and supplier references; be sure to note transportation-related projects of similar size and scope, firm expertise and staffing.
- Participate in DBE office assessment programs
- Participate on advisory and mega-project committees
- Sign up to receive the DBE Contracting Update
- Consider membership in relevant industry or contractor organizations
- Active participation is a must. Quote as many projects as you can reasonably work on; quoting the primes and bidding as a prime with the department are the only ways to get work.

Effective with January 2013 Letting **ASP 3**

APPENDIX C
Types of Efforts considered in determining GFE
This list represents concepts being assessed; analysis requires additional steps

1. Whether the contractor attended any pre-solicitation or pre-bid meetings that were scheduled by WisDOT to inform DBEs of contracting and subcontracting opportunities;
2. Whether the contractor provided written notice to a reasonable number of specific DBEs that their interest in the contract was being solicited, in sufficient time to allow the DBEs to participate effectively;
3. Whether the contractor followed up initial solicitations of interest by contacting DBEs to determine if the DBEs were interested; returned the phone calls of interested DBE firms.
4. Whether the contractor selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the DBE goal;
5. Whether the contractor provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;
6. Whether the contractor negotiated in good faith with interested DBEs, not rejected DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;
7. Whether the contractor made efforts to assist interested DBEs in being more competitive.
8. Whether the contractor effectively used the services of available minority community organizations: minority contractors groups, local, state, and Federal minority business assistance offices, and other organizations that provide assistance to small businesses and DBE firms.
9. Whether Prime used CRCS to identify DBE who specialize in relevant work areas.
10. Whether the contractor used available resources including contacting the DBE office, using WisDOT's website
11. Whether the contractor returned calls of firms expressing interest in a timely manner.

Effective with January 2013 Letting **ASP 3**

APPENDIX D
Good Faith Effort Evaluation Guidance
Excerpt from Appendix A of 49 CFR Part 26

APPENDIX A TO PART 26 -- GUIDANCE CONCERNING GOOD FAITH EFFORTS

I. When, as a recipient, you establish a contract goal on a DOT assisted contract, a bidder must, in order to be responsible and/or responsive, make good faith efforts to meet the goal. The bidder can meet this requirement in either of two ways. First, the bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the bidder can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.

II. In any situation in which you have established a contract goal, part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, it is up to you to make a fair and reasonable judgment whether a bidder that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call: meeting quantitative formulas is not required.

III. The Department also strongly cautions you against requiring that a bidder meet a contract goal (i.e., obtain a specified amount of DBE participation) in order to be awarded a contract, even though the bidder makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring bona fide good faith efforts.

IV. The following is a list of types of actions which you should consider as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

Effective with January 2013 Letting **ASP 3**

D. (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non solicitation of bids in the contractor's efforts to meet the project goal.

F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

V. In determining whether a bidder has made good faith efforts, you may take into account the performance of other bidders in meeting the contract. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, you may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.

Effective with January 2013 Letting **ASP 3**

Appendix E
Small Business Network [SBN] Overview

The Small Business Network is a part of the Bid Express® service that was created to ensure that prime bidders have a centralized online location to find subs - including small and disadvantaged business enterprises (DBEs). It is available for prime bidders to use as part of their Basic Service subscription. Within the Small Business Network, **Prime Contractors** can:

1. Easily select proposals, work types and items:
    a. After adding applicable work types, select items that you wish to quote. Enter the sub-quote quantities and add comments, if desired. Adding or removing items and work types can be done quickly. If needed, you can save the sub-quote for completion at a later time.
2. Create sub-quotes for the subcontracting community:
    a. Create sub-quotes with ease using the intuitive sub-quote creator. In seven short steps, you can rapidly create a custom sub-quote directed to all subcontractors that bid on the applicable work types. Steps include: provide contact information and sub-quote expiration date, select letting and proposal, add work types and items, specify terms and conditions, upload attachments, and select vendors.
    b. Create a sub-quote to send to subcontractors or suppliers that lists the items in a proposal that you want quoted
    c. Create an unlimited number of sub-quotes for items you want quoted, and optionally mark them as a DBE-preferred request
    d. Add attachments to sub-quotes
3. View sub-quote requests & responses:
    a. After logging into the Bid Express service, you can quickly review all of your sub-quote requests and all unsolicited sub-quote requests from subcontractors. To simplify the Small Business Network home screen, sub-quote requests can be hidden with one click if they are not applicable.
    b. View or receive unsolicited sub-quotes that subcontractors have posted, complete with terms, conditions and pricing
4. View Record of Subcontractor Outreach Effort:
    a. For each sub-quote produced, a *Record of Subcontractor Outreach Effort* is generated that shows the response statistics for a particular sub-quote. If accepted by the letting agency, this report may serve as proof of a "Good Faith" effort in reaching out to the DBE community.
    b. Easily locate pre-qualified and certified small and disadvantaged businesses
    c. Advertise to small and disadvantaged businesses more efficiently and cost effectively
    d. Document your interactions with subs/DBEs by producing an Outreach Report (may be accepted as proof of DBE outreach at the discretion of each agency)

Effective with January 2013 Letting **ASP 3**

The Small Business Network is a part of the Bid Express® service that was created to ensure that small businesses have a centralized area to access information about upcoming projects. It can help small businesses learn more about opportunities, compete more effectively, network with other contractors and subcontractors, and win more jobs.

1. View and reply to sub-quote requests from primes:
    a. After logging into the Bid Express service, you can quickly review all incoming sub-quote requests and all unsolicited sub-quotes created by your company. Receive notifications by selected work type. To simplify on the Small Business Network home screen, sub-quote requests can be filtered by work types relevant to your interests, or hidden with one click if they are not applicable.
2. Select items when responding to sub-quote requests from primes:
    a. You have the freedom to choose and price any number of items when responding to a sub-quote request. Quantities can be modified, and per-item comments are also available.
    b. View requests for sub-quotes for work that primes have posted for projects they are bidding, add your pricing, terms, and conditions, and submit completed sub-quotes to the requesting primes
    c. Add attachments to a sub-quote
3. Create and send unsolicited sub-quotes to specific contractors:
    a. Create unsolicited sub-quotes with ease using the intuitive sub-quote creator. In eight short steps, you can rapidly create a custom sub-quote directed at any number of specific vendors of your choosing. Steps include: provide contact information and sub-quote expiration date, select letting and proposal, add work types and items, specify terms and conditions, upload attachments, and select vendors.
4. Easily select and price items for unsolicited sub-quotes:
    a. After adding applicable work types, select items that you wish to quote. The extended price calculates automatically, cutting out costly calculation errors. Comments can be provided on an per-item basis as well.
    b. Create an unsolicited sub-quote that lists the items from a proposal that you want to quote, include pricing, terms and conditions, and send it to selected prime/plan holder
    c. Add attachments to a sub-quote
    d. Add unsolicited work items to sub-quotes that you are responding to
5. Easy Access to Valuable Information
    a. Receive a confirmation that your sub-quote was opened by a prime
    b. View Bid Tab Analysis data from past bids, including the high, average and low prices of items.
    c. View important notices and publications from DOT targeted to small and disadvantaged businesses
6. Accessing Small Business Network for WisDOT contracting opportunities
    a. If you are a contractor not yet subscribing to the Bid Express service, go to **www.bidx.com** and select "Order Bid Express." The Small Business Network is a part of the Bid Express Basic Service.
    b. DBE firms can request a Bid Express Small Business Network Account at no cost by calling 414-438-4588

COMMITMENT TO SUBCONTRACT TO DBE NON-TRADITIONAL PROJECTS

Wisconsin Department of Transportation

DT1880 4/2010 s.84.06(2) Wis. Stats.

Project(s): _____

'rime Contractor: _____

County: _____

Letting Date: _____

This contract requires that a specified percentage of the work be subcontracted to a disadvantaged business enterprise and that this information be submitted within **10 business days** after the notification of contract award. Completion of the following information indicates your intent in the fulfillment of these contract requirements.

Total $ Value of: _____

Prime Contract: _____

DBE Contract Goal: _____ %

This form must be completed and returned for THIS contract. See reverse side for instructions.

A	V	NAME OF DBE SUBCONTRACTOR	TYPE OF WORK	SUBCONTRACT $ VALUE	Government Use Only Adjusted Amounts
		SUBTOTAL DBE $ VALUE	**A ($)**	**TOTAL %**	
			V ($)	**TOTAL %**	

A	V	NAME OF DBE SUPPLIER AND/OR MANUFACTURER (see #3 on Instructions)	TYPE OF MATERIAL	SUBCONTRACT $ VALUE	Government Use Only Adjusted Amounts
		SUBTOTAL DBE $ VALUE	**A ($)**	**TOTAL %**	
			V ($)	**TOTAL %**	

A	V	NAME OF DBE TRUCKING FIRM	MATERIAL HAULED	EST. # OF TON/C.Y.	EST. # OF TRUCKS REQ'D	$ VALUE	Government Use Only Adjusted Amounts
					O= L=		
					O= L=		
					O= L=		
					O= L=		
					O= L=		
		SUBTOTAL DBE $ VALUE	**A ($)**		**TOTAL %**		
			V ($)		**TOTAL %**		
		GRAND TOTAL DBE $ VALUE	**A ($)**		**TOTAL %**		
			V ($)		**TOTAL %**		
			T =		**TOTAL %**		

I certify that arrangements have been made for the foregoing work with the listed DBE Contractors. I further understand that any willful falsification, fraudulent statement or misrepresentation will result in appropriate sanctions, which may include debarment and/or prosecution under applicable State (Trans 504) and Federal laws.

O = Owned Trucks Used on Project

L = Leased Trucks Used on Project

\ = Assigned)BE Conscious)

V = Voluntary (DBE Neutral)

Government Use Only Approved Amounts		
A =	$	%
V =	$	%
Total =	$	%

Signature:

Date:

Good faith waiver granted: Yes ☐ No ☐

X

(Authorized Agent)

(Date)

Mail to: Wisconsin Department of Transportation
DBE Programs Office, Rm. 451
PO Box 7965
Madison, WI 53707-7965

Proposal Number _____

Instructions For Completing Commitment To Subcontract To DBE Form:

1 In accordance with the DBE Regulations (49 CFR part 26), WisDOT is tracking Assigned Goals for DBE's (DBE Conscious) and Voluntary Usage of DBE Firms (DBE Neutral). DBE participation reported on this form will be used to periodically adjust (DBE Conscious and DBE Neutral) components of WisDOT's overall annual DBE goal.

2 For each DBE firm listed on this form, place an "x" in the appropriate column to indicate whether it will be used to meet the Assigned Goal (A) and/or whether it is used on a Voluntary basis (V). Any achievement above assigned goals should be reported as a voluntary achievement. If you indicate that a firm will be used to meet both assigned and voluntary goals, indicate the dollar amount attributable to assigned goals and the amount attributable to the voluntary goal. Our objective is to capture all DBE achievement you generate. The following is an example:

   a. The total contract amount is $100,000 and the DBE goal is 10% or $10,000 in DBE participation
   b. If $10,000 is the subcontract dollar value to ADBE Landscaping Co. then $10,000 would be Assigned (DBE Conscious) and you would place an "x" in the "A" column
   c. If $15,000 is the subcontract dollar value to ADBE Landscaping Co. then $10,000 would be Assigned (DBE Conscious) and you would place an "x" in the "A" column and ADBE Landscaping Co. would be listed **on the next line** for $5,000 which would be Voluntary (DBE Neutral) and an "x" would be placed in the "V" column

3 The department will give full credit toward the DBE goal if the DBE is a manufacturer of their materials or supplies. The department will give 60 percent credit or brokerage fee set by industry's standard toward the DBE goal if the DBE is merely a supplier of these materials or supplies. It is the Prime Contractor's responsibility to use the Bidder's List or UCP Directory to find out if the DBE is considered a supplier or a manufacturer before listing them on Commitment to Subcontract to DBE form. WisDOT will apply the appropriate credit when approving the form.

4 After completing the form, if it does not indicate that the DBE goal has been met or exceeded, please complete and supply the necessary documentation on the Certificate of Good Faith Efforts form (DT1202 6/2007.)

Instructions For Completing Attachment A Form:

5 Section 26.53 (49 CFR part 26) requires written confirmation of participation from each DBE firm to be used on the contract. Please submit one copy of a completed Attachment A, Confirmation of Participation form, for each DBE firm to be used on this contract. Each form must be signed by the Prime Contractor, the hiring contractor (if applicable) and the DBE Firm specified on the form.

6 DBE crediting for the trucking industry is achieved in the following manner:

   a. A minimum of one truck owned by the DBE must be used on the contract.
   b. Full DBE credit is given for owned trucks and trucks leased from another DBE.
   c. For one truck owned by the DBE firm, they can receive DBE credit for a truck leased from a non-DBE firm (one DBE truck owned = one non-DBE truck leased).
   d. Trucks leased from non-DBE firms above the one-for-one ratio described in letter c, will be given DBE credit only for the brokerage fee charged by the DBE.
   e. All trucks used for credit must be listed and approved on the DBE firm's Schedule of Owned/Leased Vehicles for DBE Credit and/or a WisDOT approved trucking utilization plan.

   It is the Prime Contractor's and the DBE firm's responsibility to ensure that utilization of trucks and the DBE credit earned is in accordance with the above and will yield the subcontract dollar value listed on the Commitment to Subcontract to DBE form.

If you have questions about filling out these forms, please contact the Civil Rights and Compliance Office at (608) 266-6961.

COMMITMENT TO SUBCONTRACT TO DBE
ATTACHMENT A

CONFIRMATION OF PARTICIPATION

Project I.D.:	Proposal Number:
Letting Date:	Total $ Value of Prime Contract:

Name of DBE Firm Participating in this Contract:
Name of the Prime/Subcontractor who hired the DBE Firm: *(list all names of tiers if more than one)*
Type of Work or Type of Material Supplied:
Total Subcontract Value:

FOR PRIME CONTRACTORS ONLY: I certify that I made arrangements with the participating DBE firm to perform the type of work listed or supply the material indicated above for the subcontract value listed above.	Prime Contractor Representative's Signature Prime Contractor Representative's Name (Print Name) Prime Contractor (Print Company Name) Date

FOR PARTICIPATING DBE FIRMS ONLY: I certify that I made arrangements with the Prime Contractor or the Hiring Contractor to perform the type of work or supply the material indicated above for the subcontract value listed above. **FOR DBE TRUCKING FIRMS ONLY:** I certify that I will utilize, for DBE credit, only trucks listed on my WisDOT approved Schedule of Owned/Leased Vehicles for DBE Credit form and I will be utilizing the number of trucks and material hauled as listed below.	Participating DBE Firm Representative's Signature Participating DBE Firm Representative's Name (Print Name) Participating DBE Firm (Print Company Name) Date

# Owned Trucks	# Leased Trucks	# Estimated Tons/C.Y.	Material(s) Hauled

CERTIFICATE OF GOOD FAITH EFFORTS

Wisconsin Department of Transportation

DT1202 6/2007

The intent of this certification is to document the good faith efforts implemented by the apparent successful low bidder in soliciting and utilizing DBE firms to meet DBE participation requirements based on 49 CFR Part 26. This certificate will assist WisDOT in determining whether the apparent successful low bidder has implemented comprehensive good faith efforts as specified in C.5 of Disadvantaged Business Enterprise Program Additional Special Provisions 3, referenced below.

Failure to implement "good faith" efforts to the satisfaction of WisDOT may declare the bid ineligible for execution.

State Project ID	Road	County
Description		

Provide a brief summary of why the DBE participation goals on this contract proposal have not been met. (Attach additional pages if necessary.)

Identifying Subcontract Work Items

Contractors are encouraged to select portions of work to be subcontracted in a manner which will increase the likelihood of meeting DBE goals. In selecting work to be subcontracted, contractors will consider, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation.

C.5(3)2. Which portions of the contract proposal, in terms of the nature of work, were selected to be subcontracted to DBE firms? (Attach additional pages if necessary.)

Notifying DBE Firms of Contracting; Opportunities

C.5(3)4. Solicitations by mail must be made to all DBE firms identified in WisDOT's Unified Certification Program DBE Directory that do the type of work which is proposed to be subcontracted. Following this initial solicitation, at least one telephone call per quarter must be made to any DBE firms which have not responded to the mailing.

In the table below, indicate which firms received written notification of work items to be subcontracted. In the appropriate space also indicate when firms received subsequent telephone solicitations. Please attach additional pages(s) so that all companies contacted are listed. (Attach photocopies of all written solicitations to DBE firms to this certificate.)

Company Contacted	Date	DBE	Telephone	Date

C.5(3)8. Were the services of the WisDOT DBE Support Services Office used to assist in the recruitment of DBE firms? ☐ Yes ☐ No

Contact was made by ☐ Telephone ☐ Written Correspondence	Date Contact was made
Provide a brief description of your communication	

Providing DBE's With Assistance

C.5(3)4.2. Explain any efforts undertaken to provide DBE firms with information about project plans, specifications and requirements of the contract. (Attach additional pages if necessary.)

C.5(3)5. Describe any efforts undertaken to assist interested DBE firms in obtaining bonding, lines of credit, or insurance required by WisDOT or the contractor. (Attach additional pages if necessary.)

C.5(3)7. Describe any other efforts initiated to provide special assistance to DBE firms interested in participating in the project or other special services used in order to foster DBE participation. (Attach additional pages if necessary.)

Soliciting Quotes From Interested DBE Firms

Contractors must solicit quotes in good faith with interested DBE firms. Quotes, proposals, and bids from interested DBE firms must not be rejected by contractors without sound justification based on a thorough investigation of the capabilities of the DBE firms.

C.5(3)4.4.

Submit copies of all quotes received from DBEs and provide a brief explanation of why these DBE project quotes were rejected. Submit copies of non-DBE quotes that were used instead of the rejected DBE quotes.

Return to:
Wisconsin Department of Transportation
DBE Program Office, Rm. 451
PO Box 7965
Madison, WI 53707-7965

I certify that I have utilized comprehensive "good faith" efforts to solicit and utilize DBE firms to meet the DBE participation requirements of this contract proposal, as demonstrated by my responses and as specified in B.1 in the Disadvantaged Business Enterprise Additional Special Provisions 3.

I certify that the information given in the Certificate of Good Faith Efforts is true and correct to the best of my knowledge and belief.

I further understand that any willful falsification, fraudulent statement or misrepresentation will result in appropriate sanctions, which may involve debarment and/or prosecution under applicable state (Trans 504) and Federal laws.

_____
(Bidder/Authorized Representative Signature)

_____
(Print Name)

_____
(Title)

State of Wisconsin)
) ss.
_____ County)

Subscribed and sworn to before me this date: _____

_____
(Signature, Notary Public, State of Wisconsin)

_____
(Print or Type Name, Notary Public, State of Wisconsin)

_____
(Date Commission Expires)

June 2013 **ASP-4**

ADDITIONAL SPECIAL PROVISION 4

Payment to First-Tier Subcontractors

Within 10 calendar days of receiving a progress payment for work completed by a subcontractor, pay the subcontractor for that work. The prime contractor may withhold payment to a subcontractor if, within 10 calendar days of receipt of that progress payment, the prime contractor provides written notification to the subcontractor and the department documenting the reasons for withholding payment.

The prime contractor may also withhold retainage from payments due subcontractors. Reduce the total amount retained from all first-tier subcontractors to no more than the department retains within 10 calendar days of the department releasing retainage.

Payment to Lower-Tier Subcontractors

Ensure that subcontracting agreements at all tiers provide prompt payment and release of retainage rights to lower-tier subcontractors that parallel those granted first-tier subcontractors in this provision.

Effective with March 2013 Letting **ASP-6**

ADDITIONAL SPECIAL PROVISION 6
ASP 6 - Modifications to the standard specifications

Make the following revisions to the 2013 edition of the standard specifications:

106.3.4.3.1 General

Replace paragraph two with the following effective with the November 2012 letting:

(2) Required sampling and testing methodologies and documentation are specified in CMM chapter 8.

(3) If disputed, approval of materials and components, as well as acceptance of the work incorporating those materials or components, is subject to review under the QMP dispute resolution process.

107.17.3 Railroad Insurance Requirements

Replace the entire text with the following effective with the August 2012 letting:

(1) If required by the special provisions, provide or arrange for a subcontractor to provide railroad protective liability insurance in addition to the types and limits of insurance required in 107.26. Keep railroad protective liability insurance coverage in force until completing all work, under or incidental to the contract, on the railroad right of way or premises of the railroad and until the department has accepted the work as specified in 105.11.2.4.

(2) Provide railroad protective liability insurance coverage written as specified in 23 CFR part 646 subpart A. Provide a separate policy for each railroad owning tracks on the project. Ensure that the railroad protective liability insurance policies provide the following minimum limits of coverage:

1. Coverage A, bodily injury liability and property damage liability; $2 million per occurrence.
2. Coverage B, physical damage to property liability; $2 million per occurrence.
3. An annual aggregate amount of $6 million that shall apply separately to each policy renewal or extension.

(3) Obtain coverage from insurance companies licensed to do business in Wisconsin that have an A.M. Best rating of A- or better. The cost of providing the required insurance coverage and limits is incidental to the contract. The department will make no additional or special payment for providing insurance.

(4) Submit the following to each railroad owning tracks on the project as evidence of that railroad's respective coverage:

1. A certificate of insurance for the types and limits of insurance specified in 107.26.
2. The railroad protective liability insurance policy or other acceptable documentation to the railroad company.

(5) Submit the following to the region as evidence of the required coverage:

1. A copy of the letter to the railroad company transmitting the submittal documents specified in 107.17.3(4).
2. A certificate of insurance for the required railroad protective liability coverages.

(6) Do not begin work on the right of way or premises of the railroad company until the region receives the submittals specified in 107.17.3(5) and notification from the railroad company that the contractor has provided sufficient insurance information to begin work.

(7) Notify the railroad and the region immediately upon cancellation or initiating cancellation, whichever is earlier, or any material change in coverage. Cease operations within 50 feet of the railroad right of way immediately if insurance is cancelled or reduced. Do not resume operations until the required coverage is in force.

Effective with March 2013 Letting **ASP-6**

460.2.8.3.1.4 Department Verification Testing Requirements

Replace paragraph four with the following effective with the December 2012 letting:

(4) The department will randomly test each design mixture at the following minimum frequency:

FOR TONNAGES TOTALING:

Less than 501 tons	no tests required
From 501 to 5,000 tons	one test
More than 5,000 tons	add one test for each additional 5,000-ton increment

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501.2.1 Portland Cement

Replace paragraph one with the following effective with the March 2013 letting:

(1) Use cement conforming to ASTM specifications as follows:

- Type I portland cement; ASTM C150.
- Type II portland cement; ASTM C150.
- Type III portland cement; ASTM C150, for high early strength.
- Type IP portland-pozzolan cement; ASTM C595, except maximum loss on ignition is 2.0 percent.
- Type IS portland blast-furnace slag cement; ASTM C595.
- Type IL portland-limestone cement; ASTM C595, except maximum nominal limestone content is 10 percent with no individual test result exceeding 12.0 percent.

501.2.5.5 Sampling and Testing

Replace the entire text with the following effective with the January 2013 letting:

(1) Sample and test aggregates for concrete according to the following:

Sampling aggregates	AASHTO T2
Lightweight pieces in aggregate	AASHTO T113
Material finer than No. 200 sieve	AASHTO T11
Unit weight of aggregate	AASHTO T19
Organic impurities in sands	AASHTO T21
Sieve analysis of aggregates	AASHTO T27
Effect of organic impurities in fine aggregate	AASHTO T71
Los Angeles abrasion of coarse aggregate	AASHTO T96
Freeze-thaw soundness of coarse aggregate	AASHTO T103
Sodium sulfate soundness of aggregates	AASHTO T104
Specific gravity and absorption of fine aggregate	AASHTO T84
Specific gravity and absorption of coarse aggregate	AASHTO T85
Flat & elongated pieces based on a 3:1 ratio	ASTM D4791[1]
Sampling fresh concrete	AASHTO R60
Making and curing concrete compressive strength test specimens	AASHTO T23
Compressive strength of molded concrete cylinders	AASHTO T22

[1] As modified in CMM 8-60.

501.2.6 Fly Ash

Replace paragraph three with the following effective with the March 2013 letting:

(3) Test fly ash using a recognized laboratory, as defined in 501.2.2(1), starting at least 30 days before its proposed use, and continuing at ASTM-required frequencies as the work progresses. The manufacturer shall test the chemical and physical properties listed in tables 1 and 2 of ASTM C618 at the frequencies and by the test methods prescribed in ASTM C311.

501.3.1.1.1 Air-Entrained Concrete

Replace paragraph one with the following effective with the March 2013 letting:

(1) Prepare air-entrained concrete with type I, IL, II, IS, or IP portland cement and sufficient air-entraining admixture to produce concrete with the air content specified in 501.3.2.4.

503.2.2 Concrete

Replace paragraph five with the following effective with the March 2013 letting:

(5) Furnish prestressed concrete members cast from air-entrained concrete, except I-type girders may use non-air-entrained concrete. Use type I, IL, IS, , IP, II, or III portland cement. The contractor may replace up to 30 percent of type I, IL, II, or III portland cement with an equal weight of fly ash, slag, or a combination of fly ash and slag, except for prestressed box girders and slabs, the contractor shall replace 20-30 percent of the cement with fly ash, slag, or a combination of fly ash and slag. Ensure that fly ash conforms to 501.2.6 and slag conforms to 501.2.7. Use only one source and replacement rate for work under a single bid item. Use a department-approved air-entraining admixture conforming to 501.2.2 for air-entrained concrete. Use only size No. 1 coarse aggregate conforming to 501.2.5.4.

506.3.22 Shop Inspection

Replace paragraph one with the following effective with the July 2010 letting:

(1) The engineer or an independent inspection agency under department contract may inspect all structural steel and miscellaneous metals furnished. The department will provide the contractor with monthly consultant inspection invoices and identify any quality deficiencies at the fabrication facility.

506.5 Payment

Add paragraph nine as follows effective with the June 2010 letting:

(9) The department will limit costs for inspections conducted under 506.3.2 to $0.05 per pound of material and deduct costs in excess of that amount from payment due the contractor. The department will determine costs for in-house inspections based on hourly rates for department staff plus overhead and use invoiced costs for contracted-out inspections. The department will administer deductions for the contractor's share of the total inspection cost under the Excess Costs For Fabrication Shop Inspection administrative item.

507.2.2.1 General

Replace paragraph four with the following effective with the December 2012 letting:

(4) Ensure that there are no unsound knots or knot holes. Also ensure that there are no tight knots of a diameter exceeding one-quarter of the greater dimension at the point where they occur. Measure a knot by taking its diameter at right angles to the length of the timber. Ensure that the sum of sizes of all knots in any one-foot length does not exceed 2 times the size of the largest allowed single knot. The engineer will treat cluster knots as if they were a single knot. A cluster knot is 2 or more knots grouped together, with the fibers of the wood deflected around the entire unit.

512.3.1 Driving and Cutting Off

Replace the entire text with the following effective with the December 2012 letting:

512.3.1.1 General

(1) Coordinate driving operations to prevent damage or displacement of concrete in substructure units or damage to adjacent facilities due to vibrations.

(2) Drive sheeting with a variation of 1/4 inch or less per foot from the vertical or from the batter the plans show. Ensure that the sheetpiles are within 6 inches of the plan position after driving. Do not damage sheetpiles attempting to correct for misalignment.

(3) Remove and replace, or otherwise correct, sheetpiles the engineer deems unacceptable under 105.3. Submit details of planned corrections to the engineer for review and approval before initiating any corrective actions.

(4) Drive sheetpiles to or beyond the required tip elevation the plans show.

512.3.1.2 Driving System

(1) Furnish a sheetpile driving system capable of driving the sheetpiles to the required minimum tip elevation the plans show.

(2) The engineer may order the contractor to remove a pile driving system component from service if it causes insufficient energy transfer or damages the sheetpiles. Do not return a component to service until the engineer determines that it has been satisfactorily repaired or adjusted.

(3) Drive sheetpiles with diesel, air, steam, gravity, hydraulic, or vibratory hammers.

512.3.1.3 Cut-Offs

(1) Cut off sheetpiles at the elevations the plans show or as the engineer directs. Pile cut-offs become the property of the contractor. Dispose of cut-offs not incorporated into the work.

518.2.1 General

Replace paragraph one with the following effective with the March 2013 letting:

(1) Furnish portland cement and water as specified in 501.2. Unless the engineer allows an alternate, use either type I, IL, IS, , or IP portland cement.

526.3.3 Temporary Structures

Replace paragraphs two through four with the following effective with the January 2013 letting:

(2) Inspect temporary structures conforming to the National Bridge Inspection Standards (NBIS) and the department's structure inspection manual before opening to traffic. Perform additional inspections, as the department's structure inspection manual requires, based on structure type and time in service. Submit inspection reports on department form DT2007 to the engineer and electronic copies to the department's bureau of structures maintenance section. Ensure that a department-certified active team leader, listed online in the department's highway structures information system (HSIS), performs the inspections.

(3) Maintain temporary structures and approaches in place until no longer needed. Unless the engineer directs otherwise, completely remove and dispose of as specified in 203.3.4. Contractor-furnished materials remain the contractor's property upon removal.

614.2.5 Wood Posts and Offset Blocks

Retitle and replace the entire text with the following effective with the July 2012 letting:

614.2.5 Posts and Offset Blocks

614.2.5.1 Wood Posts and Offset Blocks

(1) Furnish sawed posts and offset blocks of one of the following species:

Douglas fir	Southern pine	Ponderosa pine	Jack pine	White pine
Red pine	Western hemlock	Western larch	Hem-fir	Oak

(2) Ensure that posts are the size the plans show and conform to the nominal and minimum dimensions tabulated in 507.2.2.3. The contractor does not have to surface the posts. Provide posts of the net length the plans show after setting and cut off.

(3) Use stress graded posts rated at 1200 psi f_b or higher. Determine the stress grade rating for douglas fir, western larch, and southern pine as specified in 507.2.2.4.

(4) For hem-fir, hemlock, red pine, white pine, jack pine, ponderosa pine, and oak conform to the following:

TABLE 614-1 PROPERTIES FOR WOOD POSTS AND BLOCKS

SPECIES			WESTERN HEMLOCK, HEM-FIR, RED PINE, WHITE PINE, JACK PINE, PONDEROSA PINE		OAK	
MAXIMUM SLOPE OF GRAIN			1 in 15		1 in 12	
NOMINAL WIDTH OF FACE			6"	8"	6"	8"
SHAKES, CHECKS, AND SPLITS		GREEN	1"	1 3/8"	2 3/8"	3 1/8"
		SEASONED	1 1/2"	2"	2 5/8"	3 1/2"
MAXIMUM WANE			1"	1 3/8"	1 1/8"	1 5/8"
MAXIMUM ALLOWABLE KNOTS	NARROW FACE	MIDDLE 1/3 OF LENGTH	1 3/8"	1 5/8"	2 1/8"	2 3/8"
		END[1]	2 3/4"	3 1/4"	4 1/4"	4 3/4"
		SUM IN MIDDLE 1/2 OF LENGTH[2]	11"	13"	17"	19
	WIDE FACE	EDGE KNOT N MIDDLE 1/3 OF LENGTH	1 3/8"	1 5/8"		
		EDGE KNOT AT END[1]	2 3/4" 7	3 1/4"		
		CENTERLINE	1 3/8"	1 7/8"	2 1/4"	2 7/8"
		SUM IN MIDDLE 1/2 OF LENGTH	5 1/2"	7 1/2"	9"	11 1/2"

[1] But do not exceed the maximum allowable knot on the centerline of the wide face of the same piece.

[2] But do not exceed 4 times the maximum allowable knot on the centerline of the wide face of the same piece.

(5) Pressure treat posts and offset blocks as specified in 507.2.2.6. Use one of the oil-soluble preservatives or chromated copper arsenate conforming to 507.2.3. Use the same material for offset blocks and posts and treat material used in each continuous installation with the same type of preservative.

614.2.5.2 Steel Posts

(1) Furnish steel posts conforming to AASHTO M270 Grade 36 and galvanized according to AASTHO M111.

614.2.5.3 Plastic Offset Blocks

(1) Furnish plastic offset blocks from the department's approved products list.

614.3.1 General

Replace the entire text with the following effective with the July 2012 letting:

(1) Paint the ends of cut-off galvanized posts, rail, bolts, cut or drilled surfaces of galvanized components, and areas of damaged zinc coating with 2 coats of zinc dust/zinc oxide paint. Clean the damaged and adjacent areas thoroughly before applying paint.

(2) Apply 2 coats of wood preservative to cut surfaces of wood components. Use the same preservative originally used to treat that component or use a 2-percent solution of copper naphthenate conforming to AWPA Standard P8 or P36.

614.3.2.1 Installing Posts

Replace paragraph four with the following effective with the July 2012 letting:

(4) Cut post tops to the finished elevation the plans show.

628.2.13 Rock Bags

Replace paragraph one with the following effective with the November 2012 letting:

(1) Furnish rock bags made of a porous, ultraviolet resistant, high-density polyethylene or geotextile fabric that will retain 70% of its original strength after 500 hours of exposure according to ASTM D4355 and a minimum in-place filled size of 18-inches long by 12-inches wide by 6-inches high. Ensure that the fabric conforms to the following:

TEST REQUIREMENT	METHOD	VALUE
Minimum Tensile	ASTM D4632	
Machine direction		70 lb minimum
Cross direction		40 lb minimum
Elongation	ASTM D4632	
Machine direction		20% minimum
Cross direction		10 % min
Puncture	ASTM 4833	65 lbs minimum
Minimum Apparent Opening		0.0234 inches (No. 30 sieve)
Maximum Apparent Opening		0.0787 inches (No. 10 sieve)

639.2.1 General

Replace paragraph two with the following effective with the March 2013 letting:

(2) For grout use fine aggregate conforming to 501.2.5.3 and type I, IL, IS, or IP portland cement.

649.3.1 General

Replace paragraphs three and four with the following effective with the March 2013 letting:

(3) For pavements open to all traffic, apply centerline and no-passing barrier line markings as follows:

- On intermediate pavement layers, including milled surfaces, on the same day the pavement is placed or milled.
- On the upper layer of pavement, on the same day the pavement is placed unless the contractor applies permanent marking on the same day the pavement is placed.

If weather conditions preclude same-day application, apply as soon as weather allows. Do not resume next-day construction operations until these markings are completed unless the engineer allows otherwise.

(4) If required to apply no passing zone temporary pavement marking, reference the beginning and end of all existing no-passing barrier lines. Apply temporary no-passing barrier lines at those existing locations. If the contract contains the Locating No-Passing Zones bid item, relocate the no-passing zones as specified in section 648 for permanent marking.

701.4.2 Verification Testing

Replace paragraph two with the following effective with the December 2012 letting:

(2) The department will sample randomly at locations independent of the contractor's QC tests and use separate equipment and laboratories. The department will conduct a minimum of one verification test for each 5 contractor QC tests unless specific QMP provisions specify otherwise.

715.2.3.1 Pavements

Replace paragraph two with the following effective with the March 2013 letting:

(2) Provide a minimum cement content of 565 pounds per cubic yard, except if using type I, IL, or III portland cement in a mix where the geologic composition of the coarse aggregate is primarily igneous or metamorphic materials, provide a minimum cement content of 660 pounds per cubic yard.

715.3.1.3 Department Verification Testing

Replace paragraph one with the following effective with the December 2012 letting:

(1) The department will perform verification testing as specified in 701.4.2 except as follows:

- Air content, slump, and temperature: a minimum of 1 verification test per lot.
- Compressive strength: a minimum of 1 verification test per lot.

Errata

Make the following corrections to the 2013 edition of the standard specifications:

102.12 Public Opening of Proposals

Correct 102.12(1) errata by changing htm to shtm in the web link.

(1) The department will publicly open proposals at the time and place indicated in the notice to contractors. The department will post the total bid for each proposal on the Bid Express web site beginning at 9:30 AM except as specified in 102.8. If a proposal has no total bid shown, the department will not post the bid. After verification for accuracy under 103.1, the department will post bid totals on the department's HCCI web site.

http://roadwaystandards.dot.wi.gov/hcci/bid-letting/index.shtm

107.22 Contractor's Responsibility for Utility Facilities, Property, and Services

Correct errata by eliminating references to the department. Costs are determined by statute.

(3) If the contractor damages or interrupts service, the contractor shall notify the utility promptly. Coordinate and cooperate with the utility in the repair of the facility. Determine who is responsible for repair costs according to Wisconsin statutes 66.0831 and 182.0175(2).

204.3.2.2 Removing Items

Correct errata by changing the reference from 490.3.2 to 490.3.

(5) Under the Removing Asphaltic Surface Milling bid item, remove and dispose of existing asphaltic pavement or surfacing by milling at the location and to the depth the plans show. Mill the asphaltic pavement or surfacing as specified for milling salvaged asphaltic pavement in 490.3.

501.2.9 Concrete Curing Materials.

Correct errata by changing AASHTO M171 to ASTM C171.

(4) Furnish polyethylene-coated burlap conforming to ASTM C171 for white burlap-polyethylene sheets.

506.2.6.5.2 Pad Construction

Correct errata by changing ASTM A570 to ASTM A1011.

(4) For the internal steel plates use rolled mild steel conforming to ASTM A36, or ASTM A1011 grade

512.3.3 Painting

Correct errata by changing 511.3.5 to 550.3.11.3.

(1) Paint permanent steel sheet piling as specified for painting steel piling in 550.3.11.3.

513.2.2.8 Toggle Bolts

Correct errata by changing ASTM A570 to ASTM A1011.

(1) Use toggle bolts made of steel, conforming to the plans. Make the assembly from the material specified below:

Toggle bolt and pin ..... Cold finished steel heat-treated Brinell 311-363 ASTM A354.
Toggle washer ..... Hot rolled steel ASTM A1011. Manufacturer's standard washer.
Spacer nut ..... Grade 1213, ASTM A108. Cold finished steel heat-treated ASTM A325.

660.2.1 General

Correct errata by changing section 511 to 550.

(1) Furnish materials conforming to the following:

Concrete ..... section 501
Concrete bridges ..... section 502
Luminaires ..... section 659
Steel piling ..... section 550
Steel reinforcement ..... section 505

660.3.2.3 Pile Type Foundations

Correct errata by changing section 511 to 550.

(1) Drive piles as specified in for steel piling in section 550.

701.3 Contractor Testing

Correct errata by updating AASHTO T141 to AASHTO R60 and changing AASHTO T309 to ASTM C1064.

(1) Perform contract required QC tests for samples randomly located according to CMM 8-30. Also perform other tests as necessary to control production and construction processes, and additional testing enumerated in the contractor's quality control plan or that the engineer directs. Use test methods as follows:

TABLE 701-2 TESTING STANDARDS

TEST	TEST STANDARD
Washed P 200 analysis	AASHTO T11[1]
Sieve analysis of fine and coarse aggregate	AASHTO T27[1]
Aggregate moisture	AASHTO T255[1]
Sampling freshly mixed concrete	AASHTO R60
Air content of fresh concrete	AASHTO T152[2]
Concrete slump	AASHTO T119[2]
Concrete temperature	ASTM C1064
Concrete compressive strength	AASHTO T22
Making and curing concrete cylinders	AASHTO T23
Standard moist curing for concrete cylinders	AASHTO M201

[1] As modified in CMM 8-60.

[2] As modified in CMM 8-70.

Effective with September 2004 Letting

WISCONSIN DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS AND TRANSPORTATION FACILITIES

SUPPLEMENTAL REQUIRED CONTRACT PROVISIONS

I. Wage Rates, Hours of labor and payment of Wages
II. Payroll Requirements
III. Postings at the Site of the Work
IV. Affidavits
V. Wage Rate Redistribution
VI. Additional Classifications

I. WAGE RATES, HOURS OF LABOR AND PAYMENT OF WAGES

The schedule of "Minimum Wage Rates" attached hereto and made a part hereof furnishes the prevailing wage rates that have been determined pursuant to Section 103.50 of the Wisconsin Statutes. These wage rates are the minimum required to be paid to the various laborers, workers, mechanics and truck drivers employed by contractors and subcontractors on the construction work embraced by the contract and subject to prevailing hours and wages under Section 103.50, Stats. If necessary to employ laborers, workers, mechanics or truck drivers whose classification is not listed on the schedule, they shall be paid at rates conformable to those listed for similar classifications. Apprentices shall be paid at rates not less than those prescribed in their state indenture contacts.

While the wage rates shown are the minimum rates required by the contract to be paid during its life, this in not a representation that labor can be obtained at these rates. It is the responsibility of bidders to inform themselves as to the local labor conditions and prospective changes or adjustments of wage rates. No increase in the contract price shall be allowed or authorized on account of the payment of wage rates in excess of those listed herein.

Pursuant to Section 103.50 of the Wisconsin Statutes, the prevailing hours of labor have been determined to be up to 10 hours per day and 40 hours per calendar week Monday through Friday. If any laborer, worker, mechanic or truck driver is permitted or required to work more than the prevailing number of hours per day or per calendar week on this contract, they shall be paid for all hours in excess of the prevailing hours at a rate of at least one and one-half (1 1/2) times their hourly rate of pay. All work on Saturday, Sunday and the following holidays is to be paid at time and a half: (1) January 1, (2) the last Monday in May, (3) July 4, (4) the first Monday in September, (5) the fourth Thursday in November, (6) December 25, (7) the day before if January 1, July 4 or December 25 falls on a Saturday and (8) the day following if January 1, July 4 or December 25 falls on a Sunday.

All laborers, workers, mechanics and truck drivers shall be paid unconditionally not less often than once a week. Persons who own and operate their own trucks must receive the prevailing truck driver rate for the applicable type of truck (i.e. 2 axle, 3 or more axle, articulated, eculid or dumptor) he or she operates, plus an agreed upon amount for the use of his or her truck. Every owner-operator MUST be paid separately for their driving and for the use of their truck.

For those projects subject to the requirements of the Davis-Bacon Act, the Secretary of Labor will also have determined "Minimum Wage Rates" for work to be performed under the contract. These rates are, for all or most of the labor, worker, mechanic or truck driver classifications, identical to those established under Section 103.50 of the Wisconsin Statutes. In the event the rates are not identical, the higher of the two rates will govern.

II. PAYROLL REQUIREMENTS

All contractors and subcontractors must submit weekly Certified Payrolls and Compliance Statement verifying that all laborers, workers, mechanics and truck drivers working on the project have been paid the prevailing wage rates for all work performed under the contract required by Section 103.50 of the Wisconsin Statutes.

III. POSTINGS AT THE SITE OF THE WORK

In addition to the required postings furnished by the Department, the contractor shall post the following in at least one conspicuous place at the site of work:

a. "NOTICE TO EMPLOYEES," which provides information required to be posted by the provisions of Section 103.50 of the Wisconsin Statutes.

b. A copy of the State of Wisconsin Minimum Wages Rates. (Four pages.)

c. A copy of the contractor's Equal Employment Opportunity Policy.

d. On any project involving federal aid, in addition to the furnished postings, the contractor shall post a copy of the "Davis-Bacon Act, Minimum Wage Rates". (Three pages.)

IV. WAGE RATE REDISTRIBUTION

The amount specified as the hourly basic rate of pay and the amount(s) specified as the fringe benefit contribution(s), for all classes of laborers, workers, mechanics or truck drivers may be redistributed, when necessary, to conform to those specified in any applicable collective bargaining agreement, provided that both parties to such agreement

request and receive the approval for any such redistribution from both the Department of Transportation and the Department of Workforce Development prior to the implementation of such redistribution.

V. ADDITIONAL CLASSIFICATIONS

Any unlisted laborer or mechanic classification that is needed to perform work on this project, and is not included within the scope of any of the classifications listed in the application prevailing wage rate determination, may be added after award only if all of the following criteria have been met:

1. The affected employer(s) must make a written request to WisDOT Central Office to utilize the unlisted classification on this project.

2. The request must indicate the scope of the work to be performed by the unlisted classification and must indicate the proposed wage/fringe benefit package that the unlisted classification is to receive.

3. The work to be performed by the unlisted classification must not be performed by a classification that is included in the applicable prevailing wage rate determination.

4. The unlisted classification must be commonly employed in the area where the project is located.

5. The proposed wage/fringe benefit package must bear a reasonable relationship to those set forth in the applicable prevailing wage rate determination.

6. The request should be made prior to the actual performance of the work by the unlisted classification.

7. DWD must approve the use of the unlisted classification and the proposed wage/fringe benefit package. USDOL also must approve the use of the unlisted classification and the proposed wage/fringe benefit package on federal aid projects.

8. WisDOT and DWD may amend the proposed wage/fringe benefit package, as deemed necessary, and may set forth specific employment ratios and scope of work requirements in the approval document.

The approved wage/fringe benefit package shall be paid to all laborers, workers, mechanics or truck drivers performing work within the scope of that performed by the unlisted classification, from the first day on which such work is performed. In the event that work is performed by the unlisted classification prior to approval, the wage/fringe benefit package to be paid for such work must be in conformance with the wage/fringe

benefit package approved for such work. Under this arrangement a retroactive adjustment in wages and/or fringe benefits may be required to be made to the affected laborers, workers, mechanics or truck drivers by the affected employer(s).

SECTION H: SPECIAL PROVISIONS

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008

It is the intent of these Special Provisions to set forth the final contractual intent as to the matter involved and shall prevail over the Standard Specifications and plans whenever in conflict therewith. In order that comparisons between the Special Provisions can be readily made, the numbering system for the Special Provisions is equivalent to that of the Specifications.

Whenever in these Specifications the term "Standard Specifications" appears, it shall be taken to refer to the City of Madison Standard Specifications for Public Works Construction and Supplements thereto.

The current edition of Part 1 of the WisDOT Standard Specifications for Highway and Structure Construction will be a part of this contract and will govern the work on this contract. If there is any conflict between Part 1 of the WisDOT Standard Specifications and the City of Madison Standard Specifications for Public Works Construction, then the stricter of the two shall apply. Furthermore references to WisDOT personnel or positions will be interpreted as a reference to the applicable City of Madison personnel or positions. Part 1 language that solely refers to WisDOT State let procedures would not apply.

ARTICLE 102 – BIDDING REQUIREMENTS AND CONDITIONS

Any Contractors bidding on this contract shall be required to attend a pre-bid meeting as outlined in Section A of this contract.

Each bidder shall meet or show adequate good faith efforts to meet the DBE project goal. The bidder shall meet or exceed or demonstrate that it could not meet the goal despite its best efforts. This information **MUST BE SUBMITTED WITH THE BID** or submitted electronically through Bid Express. Commitment to Subcontract to DBE Non-Traditional Projects Form (DT1880) and all necessary attachment A forms, as well as Good Faith Waiver Form (DT1202) and supporting documentation as necessary is due by the specified bid closing time and date. Bids submitted without this information shall be deemed non-responsible and the bidder ineligible for award of this contract.

SECTION 102.10 MINIMUM RATE OF WAGE SCALE

The wages and benefits paid on this contract shall be in accordance with both of the following minimum wage rates contained in Section N

1) U.S. Department of Labor Davis-Bacon act Minimum Wage Rates
2) Prevailing Wage Rate Determination Issued by the State of Wisconsin Department of Workforce Development (Building or Heavy Construction)

The wages and benefits paid on the contract shall not be less than those specified in Section N.

For those projects subject to the requirements of the Davis-Bacon Act, the Secretary of Labor will also have determined "Minimum Wage Rates" for work to be performed under the contract. These rates are, for all or most of the labor, worker, mechanic or truck driver classifications, identical to those established under Section 103.50 of the Wisconsin Statutes. In the event the rates are not identical, the higher of the two rates will govern.

All bidders are notified that all labor employed on City contracts must be paid in accordance with the minimum rate of wage scale included in the Contract Documents.

For the information of the employees working on the project, a copy of the wage scale included in the contract documents and the provisions of Section 66.0903(8) of the Wisconsin Statutes shall be kept posted by the employer and in at least one conspicuous and easily accessible place at the site of the project.

The Contractor shall keep weekly payroll records setting forth the name, address, telephone number, classification, wage rate and fringe benefit package of each employee who worked on such City project and all other projects the employee worked in the same period, and the Contractor must keep records of the individual time each employee worked on the project and for each day of the project. Such records shall also set forth the total number of hours of overtime credited to each such employee for each day and week and the amount of overtime pay received in that week. Such records shall, in addition, set forth the full weekly wages earned by each such employee and the actual hourly wage paid to that employee. The Contractor shall submit payroll records to the Engineer every week for those periods when work is being done on the project. Said submittal shall be within twenty-one (21) calendar days of the end of the Contractor's weekly pay period.

The Contractor shall ensure that employees shall be paid unconditionally and shall receive the full amounts accrued at the time of payment, computed at rates not less than those stated in the City of Madison "Minimum Rate of Wage Scale" and that each employee's rate shall be determined by the work that is done within the trade or occupation classification which should be properly assigned to such employee. Questions regarding an employee's classification or rate of pay within that classification shall be resolved by the practice that predominates in the industry and on which the trade or occupation rate/classification is based. Therefore, rate of pay, classification and work jurisdiction disputes shall be resolved by relying upon practices established by collective bargaining agreements and guidelines used in such determinations by appropriate recognized trade unions operating within the City of Madison.

The Contractor shall agree that the normal rate of wage paid to the Contractor's employees on other projects shall not be reduced or otherwise diminished as a result of the requirement to pay no less than the minimum rate of wage scale on a City project. Mulcting of employees on City projects by Contractors, such as by kickbacks or other such devices, is prohibited.

These contract provisions shall apply to all work performed on the contract by the Contractor with its own organization and with assistance of laborers under its immediate superintendency and to all work performed by piecework or by subcontract. No laborer, worker, or mechanic shall be employed directly upon the site of the work except on a wage basis, but this shall not be construed to prohibit the rental of equipment from individuals.

In the event of a refusal by the Contractor to submit payroll records as required by the contract, the City of Madison shall have the option to cancel this contract and request the Surety to perform or to relet the balance of the work for bids, and in that event, to charge the Contractor for any loss which the City may incur thereby.

SECTION 102.12 BEST VALUE CONTRACTING

This Contract shall be considered a Best Value Contract if the Contractor's bid is equal to or greater than $53,000 for a single trade contract; or equal to or greater than $257,500 for a multi-trade contract pursuant to MGO 33.07(7).

SECTION 103.2 AWARD OF CONTRACT

The bid proposal contains bid alternates. The alternate bid items may be considered in the award of the bid, based upon the project budget. The City reserves the right to award the Contract to the lowest, responsible bidder, based on the Base Bid or any combination of the Base Bid plus bid alternates.

ARTICLE 104 - SCOPE OF WORK

Base bid work under this contract for Central Park Construction shall include installation of restroom pavilion, earthwork, storm sewer, water services, sanitary sewer, asphalt pavement, concrete pavement, curb and gutter, sidewalk, electrical, lighting, park amenities, and associated restoration.

The project includes reconstruction of approximately 240 LF of S. Ingersoll Street.

Bid Alternate A shall consist of the Irrigation Pump Station and Appurtenances, Concrete Base for Pump Station, Air Blow Off, and Irrigation System and Appurtenances. Bid Alternate B shall consist of the Restroom Pavilion (Color Changing Lighting).

Central Park Construction project limits are in three main areas: Brearly Block, S. Ingersoll Street, and the Great Lawn. Brearly Block is located between S. Brearly Street and S. Ingersoll Street bound by the railroad tracks on the southeast and northwest sides. Reconstruction of Ingersoll Street is located between E. Main Street and E. Wilson Street bound by the railroad tracks on the southeast and northwest ends. The Great Lawn is located between S. Ingersoll Street and S. Baldwin Street bound by the railroad tracks on northwest and southeast sides.

The Contractor shall view the site prior to bidding to become familiar with the existing conditions. It will be the responsibility of the Contractor to work with the utilities located in the right of way to resolve conflicts during the construction process.

SECTION 104.6 DECREASED AND DELETED ITEMS

The Engineer reserves the right to delete items that are not used for the final construction of the park. If actual quantities are less than estimated, or if items are deleted from the Contractor's work, the decreased quantities or deleted items shall not constitute the basis for a claim for damages for anticipated profits for the work dispensed with.

ARTICLE 105 – CONTROL OF THE WORK

SECTION 105.1 AUTHORITY OF THE ENGINEER

The Engineer shall resolve all questions which arise as to the quality and acceptability of materials furnished, work performed, manner of performance, rate of progress of the work, interpretation of the plans and Specifications, acceptable fulfillment of the contract, compensation, and disputes and mutual rights between Contractors under the Specifications. The Engineer shall determine the amount and quantity of work performed and materials furnished.

All decisions of the Engineer shall, when so requested, be rendered in writing. They shall be final and conclusive in all matters unless within ten (10) days after such decision the Contractor applies in writing to the Board of Public Works for a review of such decision.

Questions during the bidding phase should be first directed to:

Jaime Kurten, P.E.
MSA Professional Services, Inc.
2901 International Lane, Suite 300
Madison, WI 53704
Ph: 608.242.7779
Fax: 608.242.5664
Email: jkurten@msa-ps.com

SECTION 105.12 COOPERATION BY THE CONTRACTOR

Central Park Phase 1B, Contract No. 7059 may be performed concurrently with this project. The Contractor will need to coordinate with the contractor on the Phase 1B project for schedule, grading, paving of the asphalt pathways, and fence installation.

MG&E-Electric

Contact:
Chris Erickson
P.O. Box 1231
Madison, WI 53701
Phone: 608-252-5670
Cell: 608-516-7940
Email: cerickson@mge.com

A buried electric line is located outside of the project limits on the north side of the ATC underground transmission line. This line runs east to west from S. Ingersoll Street to S. Few Street where it bends toward the north. An additional buried electrical line runs south from the Sprint/Prime Co/PCS across E. Wilson Street to a power pole. The buried electric continues to the west approximately 40 feet. At the power pole the electric turns to overhead and heads to the east in the south terrace of E. Wilson Street. Approximately 125 feet east of the power pole is a second power pole where the overhead branches off towards S. Few Street.

MG&E also has a buried 9 duct package running parallel to the centerline on the eastern half of Ingersoll Street. This approximate size of box is 3' x 3' and at a depth of approximately 2' to the top of the box. MG&E also has an overhead line that runs south to north in the west terrace of S. Ingersoll Street

Prior to the start of this contract MG&E plans to abandon and remove the overhead line along the western terrace on Ingersoll Street and relocate their facilities into the existing duct beneath the roadway. New poles will be installed in the northwest terrace on Ingersoll Street and across E. Wilson Street on the southwest corner of the intersection of Ingersoll Street with E. Wilson Street. This work will be completed prior to the start of construction.

MG&E-Gas

Contact:
Don McClain
P.O. Box 1231
Madison, WI 53701
Phone: 608-252-5618
Cell: 608-444-9628
Email: dcmclain@mge.com

A high pressure gas line runs east to west along the south pavement edge of E. Wilson Street. An additional gas line runs east to west also parallel to E. Wilson Street beneath the sidewalk on the south side of E. Wilson Street. This line heads north at S. Ingersoll Street and runs parallel to S. Ingersoll Street in the west terrace approximately 40' north of the Wisconsin and Southern railroad tracks (Sta. 202+40, LT) before it was cut and abandoned. Gas that extends from between Sta. 202+40and Sta. 203+70 including any laterals that run to the east and west from this main are abandoned.

Conflicts with this facility are not anticipated with this phase of the project.

AT&T
Contact:
Randy Udell
316 E. Washington Ave. Rm 607
Madison, WI 53703
Phone: 608-252-4606
Cell: 608-332-6261
Email: ru2372@att.com

AT&T has buried fiber optic that runs east to west on the northeast corner of the proposed park. Within the project limits bound by S. Brearly Street on the west and S. Baldwin Street on the east the fiber is located directly between the WSOR (Union Pacific) railroad track split just west of S. Baldwin Street. AT&T also has buried fiber optic that runs along the north side of the WSOR (Union Pacific Railroad).

AT&T has and overhead line that runs east to west approximately 100 feet north of E. Wilson Street that crosses over Ingersoll Street and heads for approximately 130' to the west prior to being terminated.

AT&T will remove the overhead lines and poles for the line that crosses Ingersoll and heads to the west. AT&T will remove and bury the overhead lines that run on MG&E poles. The location for the buried facilities is to be determined. This relocation will be completed prior to the start of construction.

Wisconsin and Southern Railroad LLC Co.

Contact:
Ben Meighan
Phone: 608-243-9129 Ext. 4201
Email: bmeighan@wsorrailroad.com

Wisconsin and Southern Railroad LLC Co. (WSOR) has two overhead facilities that run parallel to the tracks between Baldwin Street and Brearly Street.

The poles and overhead lines between Ingersoll Street and Baldwin Street will be removed as part of the project. The overhead lines along the railroad between Ingersoll Street and Brearly Street will remain.

Wisconsin DOA

Contact:
Lisa Gilbert
Email: lisa.gilbert@wisconsin.gov

Wisconsin Department of Administration has buried fiber optic that runs east to west parallel with E. Wilson Street. Outside the project limits bound by S. Bearly Street on the west and S. Baldwin Street on the east the fiber optic and marker posts are located approximately 5 feet south of the existing park right way line between the right of way and the back of existing curb on E. Wilson Street.

Conflicts with this facility are not anticipated with this phase of the project.

MCI Communications

Contact:
Steve Bonczkowski
Phone: 630-327-6959
EmailL: Stephen.bonczkowski@verizon.com

MCI Communications has buried fiber optic that runs from the east to the west on the south side of the WSOR (Union Pacific) railroad tracks. Outside the project limits bound by S. Brearly Street on the west and S. Baldwin Street on the east the fiber runs along the existing southern railroad right of way line.

Conflicts with this facility are not anticipated with this phase of the project.

Level 3 Communications

Contact:
Mark Dechant
411 East Wisconsin Avenue
Milwaukee, WI 53202
Phone: 414-426-1857
Email: mark.dechant@level3.com

Level 3 Communications has a buried telephone line that runs east to west located on to the south of the WSOR (Union Pacific) railroad tracks. Outside of the project limits bound by S. Bearly Street on the west and S. Baldwin Street on the east, the line is located approximately 20 feet south of the existing tracks.

Conflicts with this facility are not anticipated with this phase of the project.

American Transmission Company

Contract:
Lori Kolbow
2 Fen Oak Court
Madison, WI 53718
Phone: 608-877-7158
Email: lkolbow@atcllc.com

American Transmission Company has a two buried electric lines outside of the project limits on the north side of the MG&E Spur line. This line runs east to west parallel to the spur line.

No conflicts with this facility are anticipated.

Madison Metropolitan Sewerage District

Contact:
Eric Hjellen
1610 Moorland Road
Madison, WI 53713
Phone: 608-222-1201 Ext. 348
Cell: 608-347-3613
Email: erich@madsewer.org

Madison Metropolitan Sewer District (MMSD) has a 30-Inch force main that runs down the centerline of E. Wilson Street. Approximately 125' west of S. Few Street the main turns to the northeast and continues within an existing 30' Sanitary Sewer Easement (Doc #4124010). The easement runs through the southeast quadrant bound by the existing tracks, E. Wilson Street, and S. Baldwin Street, outside the project limits.

Conflict is not anticipated with this facility during this phase of construction.

Windstream

Contact:
Jim Kostuch
13935 Bishops Drive
Brookfield,WI 53005
Phone: 262-792-7938
Email: james.kostuch@windstream.com

A buried telephone or fiber optic line runs east to west to the south of the WSOR (Union Pacific) railroad tracks. Outside the project limits bound by S. Ingersoll Street on the west and S. Baldwin Street on the east, the line is located approximately 15 feet south of the existing tracks.

Conflicts with this facility are not anticipated with this phase of the project.

SECTION 107.4 CONTRACTORS LIABILITY INSURANCE

The Contractor shall require its insurer to name, in addition to the City of Madison, The Wisconsin Department of Transportation, its officers, agents and employees as additional insured on the Commercial General Liability Policy provided hereunder.

SECTION 107.9 SURVEYS, POINTS AND INSTRUCTIONS

The Contractor shall provide the City Engineer notice for construction staking needs a minimum 48 hours in advance. A contact for surveying will be established during the preconstruction meeting. Electronic CAD files of the project will be provided as necessary.

SECTION 107.7 MAINTENANCE OF TRAFFIC

All signing and barricading shall conform to Part VI of the Federal Highways Administrations "Manual on Uniform Traffic Control Devices" (MUTCD), the State of Wisconsin Standard Facilities Development Manual (including Chapter 16 – Standard Detail Drawings) and the City of Madison Standards for sidewalk and bikeway closures.

The Contractor shall submit an acceptable Traffic Control Plan, including all necessary phases, to the office of the City Traffic Engineer, at 215 Martin Luther King, Jr. Blvd, Suite 100, Madison, WI 53703, a minimum of five (5) working days prior to the pre-construction meeting. The Traffic Control Plan shall address all requirements of this section of the Special Provisions. The successful bidder shall work with the City Traffic Engineering Division to develop an approved Traffic Control Plan. The Contractor shall not start work on this project until the Traffic Engineering Division has approved a traffic control plan and traffic control devices have been installed, in accordance with the approved plan. Failure of the Contractor to obtain approval of a Traffic Control Plan, as specified above, may prevent the Contractor from starting work and shall be considered a delay of the project, caused by the Contractor.

The Contractor shall be responsible for installing and maintaining traffic control in accordance with the approved Traffic Control Plan and as directed by the City Traffic Engineer. The traffic control plan may need to be altered as conditions change in the field or as unexpected conditions occur. This may include relocating existing traffic control or providing additional traffic control. The Contractor shall install and maintain any necessary modifications or additions to the traffic control, as directed by the City Traffic Engineer, at no cost to the City.

The Contractor may remove parking within the project limits as indicated on the Traffic Control Plan. The Contractor shall be responsible for posting and maintaining NO PARKING signs in accordance with City of Madison Police Department's "Guidelines for Temporary No Parking Restrictions for Construction or Special Events".

S Ingersoll Street may be closed to through traffic, at the project limits, when needed for underground utility construction and approved by construction engineer. Local and emergency vehicle access shall be maintained at all times.

Changeable message boards shall be placed at S. Ingersoll/E. Wilson intersection facing northbound traffic and at the S. Ingersoll/E. Wilson intersection facing southbound traffic for the seven days prior to the S. Ingersoll closure indicating dates of closure.

The work areas shall be backfilled, plated, or protected by traffic control devices during non-working hours. If steel plates are used, the Contractor shall notify the City of Madison Streets Division, 266-4681, (1) working day prior to placement of the plates.

The Contractor shall provide ADA/Handicap Accessible pedestrian access at all intersections within the construction area at all times.

No construction equipment or materials shall be stored in the roadway or street right-of-way that is open to traffic during non-working hours. Construction equipment and materials are not to be stored within the street right-of-way that is outside the project limits as shown on the approved plan.

Contact Tom Mohr, Traffic Engineering Division, 267-8725, with any questions concerning these traffic control specifications.

SECTION 107.8 NOTIFICATION WHEN CLOSING STREET

All Contractors shall give the Traffic Engineer (266-4761) notice of their intent to begin work on any street at least seventy-two (72) hours in advance. The Contractor shall not remove traffic signs. For removal or replacement of traffic and parking signs, contact the City of Madison Traffic Engineering Field Operations, 1120 Sayle Street, 266-4767, 8:00 a.m. to 4:00 p.m., a minimum of one (1) working day in advance of when any existing signs need to be removed. This service is provided free of charge. If the Contractor removes the signs, the Contractor will be billed for the reinstallation of, and any damage to, the signing equipment.

SECTION 107.10 OPENING OF SECTION OF HIGHWAY TO TRAFFIC

The Contractor shall notify the Traffic Engineering Field Operations Facility in writing so that the Traffic Engineering Division can install traffic control signs and barricades prior to the opening of the street. Traffic Engineering shall have five (5) working days once the project site is restored with topsoil, seed and mulch to install signs and pavement marking. The Contractor shall maintain his/her traffic control and barricades until the Traffic Engineering Division has completed their work.

SECTION 107.12 RAILROADS INSURANCE AND COORDINATION

A Description
Comply with State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2013 Edition, standard spec 107.17 for all work affecting the Wisconsin and Southern Railroad property and any existing tracks.

A.1 Railroad Insurance Requirements
In addition to standard spec 107.26, provide railroad protective liability insurance coverage as specified in standard spec 107.17.3. Insurance is filed in the name of the Wisconsin and Southern Railroad and Union Pacific Railroad.

Notify evidence of the required coverage, and duration to Ben Meighan at 608-243-9225, 1980 East Johnson Street, Madison, WI 53704. Include the following information on the insurance document:

Project Id 5992-01-97
Route Name Central Park, Dane County
Nearest Crossing ID 177834W
Railroad Subdivision Reedsburg
Nearest Railroad Milepost 139.10

A.2 Work by Railroad
The railroad will perform the work described in this section as a part of the Central Park Phase 1B Contract No. 7059, except for work described in other special provisions and will be accomplished without cost to the contractor.

Crossing I.D. – New Few Street Crossing
-Clear brush and trees within railroad right of way 105' down the tracks east and west of the crossing.
-Installation of new active warning devices
-Installation of concrete panels at the track crossing.

A.3 Names and addresses of Railroad Representatives for Consultation and Coordination
Contact Ben Meighan, Superintendent of Maintenance of Way, Wisconsin and Southern Railroad Co., 1890 East Johnson Street, Madison, WI 53704, TELEPHONE 414-438-8820, ext 4201, FAX 608-243-9225, email bmeighan@wsorrailroad.com, for consultation on railroad requirements during construction.

A.4 Temporary Grade Crossing

If a temporary grade crossing is desired, submit a written request to the railroad representative named in A.3 several weeks prior to the time needed. Approval is subject to the discretion of the railroad. The City of Madison has made no arrangements for a temporary grade crossing.

A.5 Train Operation

Approximately 0 passenger trains and 6 through freight trains operate daily through the construction site. Passenger trains operate at up to 0 mph. Through freight trains operate at up to 5-10 mph. There are 2 switching movements daily.

ARTICLE 108 LEGAL RELATIONS

The Contractor agrees to assume the entire Responsibility for Damage and Tort Claims provision of the City of Madison (Project Sponsor) to The Wisconsin Department of Transportation under the Federal/State/Project Sponsor High Priority Projects (HPP) Program Project Agreement, Project ID: 5992-01-95/96/97/98, which provision reads as follows:

Responsibility for Damage and Tort Claims: The Project Sponsor and the Project Sponsor's surety shall indemnify and save harmless the State, its officers and employees, from all suits, actions or claims of any character brought because of any injuries or damages received or sustained by any person, persons or property on account of the operations of the Project Sponsor; or on account of or in consequence of any neglect in safeguarding the work; or because of any act or omission, neglect or misconduct of the Project Sponsor; or because of any claims or amounts recovered for any infringement by the Project Sponsor of patent, trademark or copyright; or from any claims or amounts arising or recovered under the Worker's Compensation Act, relating to the Project Sponsor's employees; or any other law, ordinance, order or decree relating to the Project Sponsor's operations. So much of the money due the Project Sponsor under and by virtue of the contract as shall be considered necessary by the Department for such purposes, may be retained for the use of the State; or, in case no money or insufficient money is retained, the Project Sponsor's surety or insurer or both may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to WisDOT; except that money due the Project Sponsor will not be withheld when the Project Sponsor produces satisfactory evidence that the Project Sponsor is adequately protected by public liability and property damage insurance. The Project Sponsor also shall comply with all of the above requirements indemnifying and saving harmless the county, town, or municipality in which the improvement is made and each of them separately or jointly and their officers and employees.

The State shall not be liable to the Project Sponsor for damages or delays resulting from work by third parties. The State also shall be exempt from liability to the Project Sponsor for damages or delays resulting from injunctions or other restraining orders obtained by third parties except where the damage or delay is a direct result of an injunction or restraining order obtained by a citizen's action alleging violations of 42 U.S.C. 4331 - 4332, 23 U.S.C. 138 or Public Law 91-646.

It shall be the Project Sponsor's responsibility to see that all of the contract operations incident to the completion of the contract are covered by public liability and property damage liability insurance so the general public or any representative of the contracting authority may have

recourse against a responsible party for injuries or damages sustained as a result of the contract operations. This requirement shall apply with equal force, whether the work is performed by the Project Sponsor, by a subcontractor or by anyone directly or indirectly employed by either of them.

It is the express intent of this provision, Section 13, that the Project Sponsor that is a county, town or municipality may and should contractually pass on this entire Responsibility for Damage and Tort Claims provision to any public and private entities with which it may subcontract any of the work covered by this agreement.

a) The word, "surety" in the above paragraphs refers to the issuer of a payment and performance bond under section 779.14 Wis. Stats. (2005-2006).

b) Nothing in this section should be construed as a waiver of any statutory defenses that may be available to any governmental party.

SECTION 108.2 PERMITS

The City of Madison has submitted a DNR Water Resources Application for Projects Permits (WRAPP) to obtain coverage under the Construction Site General Permit No. WI-S067831-4 for construction site erosion control as the disturbed area is more than one (1) acre. A City of Madison Erosion Control permit number 4476 has also been obtained and weekly inspections shall be completed by City Staff.

The Contractor shall meet the conditions of the City permit by properly installing and maintaining the erosion control measures as shown on the plans, specified in these Special Provisions, or as directed by the Construction Engineer or his designees. This work will be paid for under the appropriate contract bid items.

The City's obtaining of these permits is not intended to be exhaustive of all permits that may be required to be obtained by the Contractor for construction of this project. It shall be the responsibility of the Contractor to identify and obtain any other permits needed for construction.

It is expected that the Contractor will be required to obtain a dewatering permit. There is known residual petroleum and PAH soil and groundwater contamination located in this area. This petroleum contamination may have entered City right of way. If the Construction Engineer deems the water to be dewatered as contaminated, it shall be the Contractor's responsibility to discharge the water to the sanitary sewer system. The Contractor shall obtain a Permit to Discharge to the sanitary sewer for the contaminated water from any Type I or Type II dewatering.

SECTION 109.2 PROSECUTION OF WORK

The Contractor shall begin work on or before **AUGUST 26, 2013**. Substantial completion for the project with the exception of the restroom facility shall be on or before **NOVEMBER 1, 2013**. Substantial completion includes all street improvements, paving, utility installation, and turf restoration..

Final completion for the entire project shall be on or before **DECEMBER 30, 2013.**

Daily work hours shall be between **7:00 A.M.** and **7:00 P.M.** Monday thru Saturday per City of Madison Noise Ordinance.

Work shall begin only after the start work letter is received.

Liquidated damages will be assessed for failure to meet either or both the substantial completion and the final completion date.

BID ITEM 20101 – EXCAVATION CUT

Under this item, all areas within the project limits shall be graded to the finished grades, lines, and details less an allowance for topsoil, sod depth (where required), pavement, base, and structures. This work shall also include removal and disposal of surface and base course and unsuitable materials, the trimming and finish grading for the roadway, and maintaining such work in a finished condition until acceptance. Material such as asphalt pavement, curb & gutter, sidewalk, and base course located within the Brearly Street and Ingersoll Street right-of-way is not required to be hauled to a landfill. There is no additional payment for roadway pavement removal on S. Brearly Street and S. Ingersoll Street and will be considered incidental to Excavation Cut.

During excavation, petroleum-contaminated soils and industrial fill shall be encountered. This work shall conform with the requirements of Article 201 of the City of Madison's Standard Specifications for Public Works Contracts, and pertinent parts of the Wisconsin Administration Code (Department of Natural Resources Environmental Investigation and Remediation of Environmental Contamination, Chapters NR 700-736), as shown on the plans, and as supplemented herein.

During excavation activities, soils contaminated with petroleum products, polycyclic aromatic hydrocarbons (PAHs), and heavy metals shall be encountered on the Great Lawn (201 S. Ingersoll Street) and the Brearly Block (215 S. Brearly Street and 204 S. Ingersoll Street). Both areas have undergone extensive environmental remediation efforts and both areas have been closed with residual soil and/or groundwater contamination under approval of the WDNR. A condition for their closure is that all residual contamination be capped indefinitely into the future with two feet of clean fill to provide an adequate direct contact barrier. For the purposes of this contract, soils with petroleum residues are referred to as 'petroleum-contaminated soils' and soils contaminated with PAHs and/or heavy metals are referred to as 'industrial fill', as indicated in the plans.

Per the *Soil Cover Modification Request and Materials Management Plan, March 2012*, contaminated soil may remain on-site covered by a 2-foot-thick clean soil cap, consisting of 1.5 feet of clean fill and 0.5 feet of topsoil. In areas with paved surfaces, the topsoil may be omitted and the depth of clean fill will vary depending on the proposed overlaying pavement structure. It is the City's goal to maximize the reuse of contaminated soils on-site, thereby minimizing the quantity of soil that must be disposed of at a landfill. The *Soil Cover Modification Request and Materials Management Plan, March 2012* will be made available for viewing on the City's bidding website: http://www.cityofmadison.com/business/pw/contracts/openforBid.cfm

On the Great Lawn, an existing 2-foot cap of topsoil and clean fill covers the entire site. Beneath this clean cap there are isolated zones of petroleum-contaminated soils at the west end of the site, and the rest of the site is assumed to be contaminated with industrial fill. On the Brearly Block, petroleum-contaminated soils are located on much of the west half of the block, present from the water table to the current surface. The remainder of the block is assumed to be contaminated with industrial fill. There is no existing clean fill soil cap on the Brearly Block.

The City will have an Environmental Technician on-site during grading and excavation, including footing and trench excavation work. The role of the Environmental Technician will be limited to the following:

- The Environmental Technician will perform on-site screening per the *Soil Cover Modification Request and Materials Management Plan* to determine if petroleum-contaminated soils may be reused on-site or require off-site landfill disposal, as described further under Construction Methods.

- The Environmental Technician will be on-call in the event that items of environmental concern are identified outside of what is described in these specifications. Refer to the Soil Cover Modification Request and Materials Management Plan for the Construction Contingency Plan.

- The Environmental Technician will document activities associated with management of contaminated soil, in conformance with the contaminated soil management methods for this project as specified herein.

- Contaminated soils that are determined to require removal from the site will be identified by the Environmental Technician as either petroleum-contaminated or industrial fill.

- The Environmental Technician will provide all analytical testing results required for landfill disposal of contaminated soils.

The Contractor shall notify the City at least three calendar days prior to commencement of excavation activities in each of the contaminated areas. The Contractor shall coordinate with the City to ensure that an Environmental Technician is present during excavation activities. Excavation work of contaminated soils shall occur on a continuous basis until excavation work is completed.

During excavation activities, the Contractor shall expect to encounter soil contaminated with PAH, heavy metals, and other petroleum related products. Site workers taking part in activities that will result in the reasonable probability of exposure to safety and health hazards associated with hazardous materials shall have completed health and safety training that meets the Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations and Emergency Response (HAZWOPER), as provided in 29 CFR 1910.120. The Contractor shall prepare a site-specific Health and Safety Plan, and develop, delineate and enforce the health and safety exclusion zones for each contaminated site location as required by 29 CFR 1910.120. The Contractor shall submit the site-specific health and safety plan and written documentation of up-to-date OSHA training to the Engineer prior to the start of work. All costs associated with the health and safety plan shall be incidental to construction.

CONSTRUCTION METHODS

During excavation and grading activities, the Contractor will encounter three classes of soil:

- *Uncontaminated Clean Soil and Topsoil* – Uncontaminated clean soil and topsoil currently make up the 2-ft clean cap on the entire Great Lawn. Excavation into this cap or topsoil stripping may be required for general site grading, retaining wall installation, fence post bases, or utility work in this area. On-site reuse of this clean material is required, at the direction of the Engineer. Clean soil and topsoil shall be used to satisfy the 2-foot clean cap required upon completion of the project.

- *Petroleum-Contaminated Soil* – Petroleum-contaminated soils are present at the surface on the Brearly Block and below the 2-foot clean cap on the Great Lawn, as shown in the plans. The Environmental Technician is required to be present at any excavation into these identified petroleum zones. The Environmental Technician will perform on-site screening to determine if petroleum-contaminated soils may be reused on-site or require off-site landfill disposal.

  The Environmental Technician will field screen the excavations with a PID instrument and soil with organic vapors greater than 200 ppm will be approved for off-site disposal at a WDNR-approved bioremediation facility. Soils with organic vapors less than 200 ppm may be reused on-site beneath the 2-ft clean cap, per the Engineer. Such soils shall be reused on-site to the fullest extent possible to grade to the final grades, less the required 2-foot clean soil cap.

- *Industrial Fill* – Industrial fill contaminated with PAHs and metals is assumed to be present across the entire Brearly Block and Great Lawn outside of the petroleum zones, as shown in the plans. On the Great Lawn, industrial fill soils are currently covered by two feet of clean fill and topsoil. The Environmental Technician is not required to be present on-site during excavation of the clean soil cap. All excavated industrial fill is considered suitable as general fill material, beneath the 2-ft clean soil cap. Such soils shall be reused on-site to the fullest extent possible.

During excavation and grading activities, the Environmental Technician will perform on-site screening per the *Soil Cover Modification Request and Materials Management Plan* to determine if contaminated soils may be reused on-site as general fill below the 2-foot clean cap. If

contaminated soils may not be reused on-site, the Environmental Technician shall approve their removal from the site and designate whether they are considered petroleum-contaminated soils or industrial fill.

During excavation, clean soil and topsoil suitable and approved for reuse shall be piled in an orderly manner a sufficient distance from the banks of the excavation to avoid overloading and to prevent slides or cave-ins. Temporary stockpiles of petroleum-contaminated soil destined for reuse or off-site disposal shall be placed on and covered with 6-mil plastic sheeting. Sheeting shall be secured to prevent wind or rain erosion and to reduce human exposure. The Contractor may also load contaminated soil for off-site disposal directly into haul trucks without the need for stockpiling, per approval by the Environmental Technician. Erosion control at and around the stockpile shall be considered incidental to bid items for Excavation Cut.

Procedures for excavation on the Brearly Block include the excavation referenced in Appendix A for the Restroom Pavilion.

The Contractor shall take all necessary efforts to minimize the quantity of contaminated soil excavated and maximize its reuse on-site as general fill. The City reserves the right to suspend the Contractor's operations if those operations are deemed to be generating unreasonable quantities of contaminated soil due to over excavation, soil mixing, improper handling or disposal methods or other unacceptable practices.

METHOD OF MEASUREMENT

The Contractor shall be responsible to make his or hers own computations for verification of the Excavation Cut prior to bidding. No changes will be made in the quantity amount for these items unless changes are made in the plans or in the field after bidding of the contract. Any earthwork modifications to the contract plan quantity caused by corrections or revisions of the original plans or field adjustments which have been approved by the Engineer will be measured in cubic yards in its original position, computed by the method of average end areas. The contract quantity shall be adjusted upward or downward accordingly to determine the final pay quantity.

BASIS OF PAYMENT

The contract price for Bid Item 20101 shall be payment in full for all equipment, tools, labor and incidentals necessary to complete the work of excavation and related work. Excavation of material associated with the Restroom Pavilion is included under Bid Item 90030 Restroom Pavilion-General Building.

BID ITEM 20201 - FILL BORROW

MATERIALS

It is assumed that new fill material will be needed to establish the two (2) foot clean soil cap on the Brearly Block. Other fill material that is needed below the clean soil cap must come from reused material from the site that is considered suitable for reuse by the Engineer and conforms to the Soil Cover Modification Request and Materials Management Plan for Central Park prior to

hauling in new fill material to the site. Any excavation, such as topsoil stripping, into the top two feet of the Great Lawn is suitable for reuse.

A 2-foot clean soil cap shall be constructed over the entire project area. Over non-paved areas this cap will consist of 1.5 feet of imported or salvaged clean fill and 0.5 feet of imported or salvaged topsoil. In areas with paved surfaces, the topsoil will be omitted and the depth of the clean fill will vary depending on the proposed overlaying pavement structure. The two (2) foot of clean material shall also be provided for all sewer, water, and utility trenches.

The Great Lawn has an existing two (2) foot layer of clean fill. In general, the finish grade is either equal to or above the existing ground elevation so additional cut to provide a new two (2) foot layer of clean fill is not anticipated. In contrast, the entire Brearly Block will require two feet of clean fill. Depending on final grades, additional cut may be required on this block to allow for the cap thickness.

METHOD OF MEASUREMENT

Fill Borrow shall be paid for at the contract unit bid price per TONS. A conversion of 1.5 Tons/CY was assumed for this item

BASIS OF PAYMENT

The contract price for Bid Item 20201 listed above shall be payment in full for all equipment, tools, labor and incidentals necessary to complete the work of fill borrow and related work.

ARTICLE 203 – REMOVAL OF MICELLANEOUS STRUCTURES

SECTION 203.2 DISPOSING OF MATERIALS

The Contractor shall comply with Section 203.2 of the City of Madison Standard Specifications for Public Works Construction with regard to salvaging castings.

ARTICLE 205 – ADJUSTMENT OF CASTINGS

MEASUREMENT AND PAYMENT

The adjustment and protection of water and gas main valve boxes and water and gas service shutoff valve boxes shall be considered incidental to the work, and no compensation will be made for their adjustment and protection, unless otherwise noted.

The adjustment of access structure for electrical, CATV, telephone shall be considered incidental to the work, and no compensation will be made for their adjustment and protection, unless otherwise noted.

Adjustment of access structures, catch basins, and castings for storm sewer and sanitary sewer shall be paid per Section 205.3 of the City of Madison Standard Specifications.

ARTICLE 210 – EROSION CONTROL

NOTICE TO CONTRACTOR

Supplement Article 210 of the City of Madison Standard Specifications for Public Works Construction with the following:

Prior to leaving the contaminated site, wash machinery and ensure that the machinery is free of all soil and other substances that could possibly contain contaminated material. The contractor is responsible for all vehicles that enter the contaminated site including but not limited to construction equipment, and maintenance, subcontractor, and delivery vehicles.

In the event that a rain event is in the forecast the contractor shall take proper measures to protect from runoff and contamination the portions of the site that have material for the clean soil cap installed. The contractor shall consider long range forecasts extending over weekends and holidays when implementing such erosion control measures.

BID ITEM 21001 – EROSION CONTROL PLAN AND IMPLEMENTATION

Supplement Article 210.1 (a) of the City of Madison Standard Specifications for Public Works Construction with the following:

Submit an Earthwork Construction Sequencing Plan (ECSP) to the Construction Engineer in conjunction with the Erosion Control Implementation Plan at or before the preconstruction meeting for review and approval. The ECSP shall include the construction phasing for all earthwork excavation and grading work.

BID ITEM 21011 - CONSTRUCTION ENTRANCE

The Contractor shall provide a construction entrance for both the Brearly Block and the Great Lawn. There will be no additional compensation for the Contractor in the event that the Construction Entrance needs to be relocated during construction. There will be no additional payment for clear stone and shall be considered incidental to the bid item for Construction Entrance. The Contractor is responsible for maintaining the Construction Entrance throughout construction and for removal, restoration and/or repair of any damaged areas within the immediate limits of the entrance, including curb and gutter, sidewalk and pavement, which shall be considered incidental to the Construction Entrance bid item.

BID ITEM 21012 – STREET CONSTRUCTION ENTRANCE BERM

The Contractor shall provide a Street Construction Entrance Berm for S. Ingersoll Street. There will be no additional compensation for the Contractor in the event that the Street Construction Entrance Berm needs to be relocated during construction. There will be no additional payment for clear stone and shall be considered incidental to the bid item for Street Construction Entrance Berm. The Contractor is responsible for maintaining the Street Construction Entrance Berm throughout construction and for removal, restoration and/or repair of any damaged areas within the immediate limits of the construction entrance berm including curb and gutter, sidewalk and pavement, which shall be considered incidental to the Construction Entrance Berm bid item.

BID ITEM 21064 – EROSION MATTING, CLASS I, TYPE B

The plans specify required location of erosion matting. For each area noted on the plans, the Contractor will be paid plan quantity as noted and no additional quantity will be paid in order to complete the irregular-shaped erosion matting areas.

ARTICLE 301 - CONCRETE AND CONCRETE MATERIALS

High early strength concrete
This special provision describes the use of high early strength concrete in accordance with the requirements of the standard specifications and as hereinafter provided.

High early strength concrete (on curb, driveway & sidewalks) shall be used to meet the established contract schedule and maintain access within the project limits. All use of high early strength concrete shall be incidental to the specific bid item.

All concrete used on City of Madison Public Works projects shall comply with the following subsections of Article 501, "Concrete" and the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, Division of Highways:

SECTION 301.3 REINFORCING STEEL

There will be no additional compensation for reinforcing steel and shall be considered incidental to the associated concrete bid item.

ARTICLE 501 - SEWERS AND SEWER STRUCTRES

Storm sewer general
Storm sewer work will consist of the replacement and adjustment of various storm sewer and storm sewer structures within the project limits. The project will also include the abandonment and slurry fill of select storm sewer within the project limits.

Reconnection of existing pipes at new structures, or new pipes at new structures, shall be considered to be part of the work required to construct the new structure or to construct the new sewer pipe and shall not be rewarded with additional compensation. However, if the structure being removed is larger than the new structure, thus requiring additional pipe, the new pipe shall be paid under the appropriate bid item and the connection of the old pipe to the new pipe shall be accomplished with a concrete collar.

Where a new structure is to be constructed at an existing pipe, it is expected that the Contractor shall saw cut the existing pipe in the required location to accommodate the placement of the new structure. If the Contractor for his or her convenience deems it more suitable to remove the existing pipe to a full joint, the additional pipe and concrete collar required to reconnect to the new structure stall be the Contractor's responsibility and shall not be compensated.

If there are structures where the pipe walls are to be poured into the structure roof of both the pipe walls and the structure casting are to be poured in the structure roof, the Contractor shall not

be provided additional compensation for complying with the structure requirements detailed on the storm sewer chart and plans.

Precast structures are only allowed where field poured structures are not specifically called for, and no precast structures are allowed until ULO's are completed and approval of the design engineer has been received.

Sanitary sewer general
It is advised that the Contractor visit the site prior to bidding to determine the type of trench protection that will be necessary for the sanitary sewer main installation.

Tunneling is expected to be required at the existing utility crossings. Any utility tunneling required shall be considered incidental to the pipe being installed. If the sewer laterals are less than 6' deep, the Contractor shall install Styrofoam insulation incidental to the sewer main and lateral bid items.

ARTICLE 502 – TRENCH EXCAVATION, BEDDING, AND BACKFILL

Excavation Cut
Excavation associated with Article 502, Trench Excavation, Bedding, and Backfill should comply with the requirements and procedures under Bid Item 20101, Excavation Cut.

Dewatering
It is advised that the Contractor visit the site prior to bidding to determine the type of trench protection and dewatering that will be necessary for the sanitary sewer main installation. It is anticipated that with the high groundwater table, that dewatering will be necessary with Point wells. Placing a pump in the trench will be considered Type I Dewatering which is considered incidental to the pipe installation.

Due to the contaminated nature of the site, it is anticipated that all dewatering shall be discharged to the sanitary sewer system. The Contractor shall obtain a Permit per Section 108.2 of these special provisions to Discharge to the sanitary sewer for the contaminated water from any dewatering, which requirements include removing all sediment or fines larger than the #200 sieve prior to discharge to the sanitary sewer system(s).

If pumping is expected to last beyond the contract work period called for in these specifications, dewatering wells will not be allowed in pavement area. If dewatering equipment (pumps/ hoses) is in the Street pavement area during the time periods beyond the 2 weekend contract work period, liquidated penalties in accordance with Article 109.9 will be assessed to the Contractor.

BID ITEM 50202 – TYPE II DEWATERING

Due to the high ground water level the Contractor may be required to perform Type II dewatering by use of points/wells with pump rates greater than or equal to 70 gallons per minute. If Type II Dewatering is required the Contractor shall comply with all the provisions of the City of Madison Standard Specifications regarding this bid item and shall obtain any required permitting from Wisconsin Department of Natural Resources prior to the installation of any Type II Dewatering system.

Due to the contaminated nature of the site, it is anticipated that all dewatering shall be discharged to the sanitary sewer system. The Contractor shall obtain a Permit per Section 108.2 of these special provisions to Discharge to the sanitary sewer for the contaminated water from any dewatering, which requirements include removing all sediment or fines larger than the #200 sieve prior to discharge to the sanitary sewer system(s). If Type II Dewatering extends past 3 months from the start of the dewatering activities additional approvals may be required by Madison Metropolitan Sewerage District and the City of Madison and a new permit may be required.

BID ITEM 50390 - SEWER ELECTRONIC MARKERS

With regard to the City of Madison Standard Specifications for Public Works Construction 2012 Edition Section 503.3(c), each sanitary lateral shall have a minimum of two (2) electronic markers with the City providing the Contractor with the required number of electronic markers. Each storm sewer wye and tee shall have minimum of (1) electronic markers with the City providing the Contractor with the required number of electronic markers. Provide sewer electronic markers for the 2 inch water service through the Great Lawn in 50 foot intervals.

ARTICLE 504 – STORM SEWER PIPES, APRON ENDWALLS AND OTHER STORM WATER CHANNELS

BID ITEM 20130 – UNDERDRAIN

DESCRIPTION

This bid item includes an undistributed quantity for removal and replacing underdrain within the Great Lawn. It is anticipated that the Contractor will encounter drain tile during trench excavation. This shall include any cutting, pipe removal to make the connection. Any new pipe required to reconnect the drain tile shall be included under this bid item. Removal of the existing underdrain and connection of new underdrain to existing shall be considered incidental to the bid item for Underdrain.

MATERIALS

Underdrain materials shall comply with Section 504.2 of the City of Madison Standard Specifications.

CONSTRUCTION

Contractor shall remove and replace drain tile as necessary during trench excavation. The Contractor shall match the type and size of drain tile encountered and shall make the appropriate connections for any new drain time to existing drain tile with couplings, as determined by the Construction Engineer. Any additional materials, labor or equipment required to replace the drain time and make the connection shall be incidental to this bid item.

METHOD OF MEASUREMENT

Underdrain shall be measured, by linear foot of drain tile place and shall include all work, materials and labor to complete the required connections, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Underdrain shall be paid for at the contract unit bid price per LINEAL FOOT.

ARTICLE 507 – SEWER STRUCTURES

SECTION 507.4 MEASURMENT AND PAYMENT

The contract price for storm sewer access structures, catch basins, and inlets shall include castings as specified in Section 5.7.4(b) of the City of Madison Specifications.

BID ITEM 50791 - SANITARY SEWER TAP

All existing main connections shall be field cored to accommodate existing conditions. Connection shall be made using a FERNCO RC Strong Back tee tap saddle or approved equal. All labor, equipment, materials associated with this work shall be paid under BID ITEM 50791 SANITARY SEWER TAP.

SECTION 601.10 MATERIALS FURNISHED BY THE CITY OF MADISON

The City will be furnishing the light poles to be used within the park. The Contractor shall contact Kay Rutledge at the City Park's Department at 266-4714 to arrange for pick up a minimum of 48 hours in advance.

ARTICLE 701 - PROVISIONS FOR WATER INSTALLATION AND ABANDONMENT

Water shut-off notification
Notify all affected users of water shut-offs per the Standard Specifications. Coordinate planned outages with all building representatives and businesses and ensure all owners and tenants of affected properties are properly noticed. Work with businesses to find mutually agreeable timeframes for water shut offs. The Contractor is responsible for ensuring ALL affected customers are properly notified. No premium or extra compensation shall be paid for work performed outside of normal working hours to make such accommodations.

Protection of existing water utility system
Take all necessary precautions to protect the existing Madison Water Utility system and ensure its proper functioning during construction.

View the sites prior to bidding and become familiar with existing conditions and utilities.

ARTICLE 702 - MATERIALS

All ductile iron pipe for water main construction shall be installed using nitro gaskets with cor blue bolts. Nitro gaskets shall be resistant to contaminants listed in Article 201.

ARTICLE 703 - CONSTRUCTION METHODS

Perform all work in accordance with these provisions and the City of Madison Standard Specifications. Keep all valves accessible and functioning throughout the duration of the work or directed otherwise by the Water Utility representative.

All water main and ductile iron service pipe that cannot be disinfected per Standard Specification section 704.14(c) shall be hand disinfected by a method acceptable to the Water Utility inspector.

Encase all ductile iron pipe in polyethylene. The polyethylene shall be furnished in either tube or sheet form. Installation shall be per the requirements of the American National Standard for Polyethylene Encasement for Ductile Iron Pipe Systems (ANSI/AWWA C105 - Latest Revision).

All joints and fittings (valves, tees, bends, reducers, offsets, etc.) shall have polyethylene encasement installed per manufacturer's requirements and procedures. The polyethylene encasement shall be installed with a minimum lap of one (1) foot at joints. Tape the polyethylene encasement every three (3) feet and at joints sufficiently to prevent soil from coming into contact with the pipe. Carefully place the polyethylene encasement around the pipe and fittings and carefully backfill to prevent tears and punctures. Promptly repair all tears and punctures in the polyethylene per manufacturer's recommendations.

When connecting to or tapping into an existing or new polyethylene encased pipe, prepare the site per ANSI/AWWA C105 requirements. All cuts and repairs to the polyethylene wrap shall be per ANSI/AWWA C105. Polyethylene wrap cut away to allow the connection or tap shall be replaced and the repair material shall have the required lap and shall be taped securely to the pipe.

All costs associated with the polyethylene encasement shall be incidental to the installation of the pipe.

ARTICLE 704 - MEASUREMENT AND PAYMENT

No additional payment will be made for any bends, tees, sleeves, necessary to complete the work. All costs associated with bends, tees, and sleeves shall be incidental to the installation of the associated bid item for water main pipe.

BID ITEM 70456 – FURNISH EXCAVATION AND DITCH FOR LIVE TAP

Contractor shall complete work per Section 704.36 of the City of Madison Standard Specifications. Contractor shall supply the sleeve necessary to complete the live tap. All costs associated with the sleeve shall be incidental to the installation of the pipe. The valve and valve box will be paid under the bid item for Furnish and Install Water Valve.

BID ITEM 90001 – 4 INCH PVC STORM SEWER

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install PVC storm sewer. No additional compensation will be provided for PVC fittings, tees, and wyes and shall be incidental to the installation of PVC Storm Sewer.

MATERIALS

Pipe, fittings, tees, and wye materials shall conform to Section 504.2 of the City of Madison Standard Specifications.

CONSTRUCTION

Construction shall conform to Section 504.3 of the City of Madison Standard Specifications.

METHOD OF MEASUREMENT

4 Inch PVC Storm Sewer shall be measured per lineal foot from center-of-structure to center-of-structure unless otherwise noted. 4 Inch PVC Storm Sewer stubbed to the proposed Restroom Pavilion shall be measured to 5 feet from the outside building wall. Any storm sewer within 5 feet of the proposed building shall be included with the unit bid item associated with the proposed Restroom Pavilion.

BASIS OF PAYMENT

4 Inch PVC Storm Sewer shall be paid for at the contract unit bid price per LINEAL FOOT.

BID ITEM 90002 – 6 INCH PVC STORM SEWER

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install PVC storm sewer. No additional compensation will be provided for PVC fittings, tees, and wyes and shall be incidental to the installation of PVC Storm Sewer.

MATERIALS

Pipe, fittings, tees, and wye materials shall conform to Section 504.2 of the City of Madison Standard Specifications.

CONSTRUCTION

Construction shall conform to Section 504.3 of the City of Madison Standard Specifications.

METHOD OF MEASUREMENT

6 Inch PVC Storm Sewer shall be measured per lineal foot from center-of-structure to center-of-structure unless otherwise noted.

BASIS OF PAYMENT

6 Inch PVC Storm Sewer shall be paid for at the contract unit bid price per LINEAL FOOT.

BID ITEM 90003 – 8 INCH D.I. STORM SEWER

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install ductile iron storm sewer. No additional compensation will be provided for ductile iron fittings, tees, and wyes and shall be incidental to the installation of ductile iron storm sewer.

MATERIALS

Pipe, fittings, tees, and wye materials shall conform to Section 702.2 of the City of Madison Standard Specifications.

CONSTRUCTION

Construction shall conform to Section 504.3 of the City of Madison Standard Specifications.

METHOD OF MEASUREMENT

8 Inch D.I. Storm Sewer shall be measured per lineal foot from center-of-structure to center-of-structure unless otherwise noted.

BASIS OF PAYMENT

8 Inch D.I. Storm Sewer shall be paid for at the contract unit bid price per LINEAL FOOT.

BID ITEM 90004 – 12 INCH STORM PLUG

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install a precast concrete storm plug. The plug shall provide a water-tight seal on the upstream pipe end and capable of being excavated and removed for a future extension of the pipe.

MATERIALS

Storm plug shall be a precast concrete storm plug conforming to Article 301 of the City of Madison Standard Specifications.

CONSTRUCTION

Provide mastic to provide a water-tight seal between the concrete plug and the storm sewer pipe. Install a sewer electronic marker conforming to City of Madison Standard Specification Section 503.3(c), and shall be located directly above the storm plug.

METHOD OF MEASUREMENT

12 Inch Storm Plug shall be measured, as one unit and payment shall be made upon, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

12 Inch Storm Plug shall be paid for at the contract unit bid price per EACH.

BID ITEM 90005 – 15 INCH STORM PLUG

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install a precast concrete storm plug. The plug shall provide a water-tight seal on the upstream pipe end and capable of being excavated and removed for a future extension of the pipe.

MATERIALS

Storm plug shall be a precast concrete storm plug conforming to Article 301 of the City of Madison Standard Specifications.

CONSTRUCTION

Provide mastic to provide a water-tight seal between the concrete plug and the storm sewer pipe. Install a sewer electronic marker conforming to City of Madison Standard Specification Section 503.3(c), and shall be located directly above the storm plug.

METHOD OF MEASUREMENT

15 Inch Storm Plug shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

15 Inch Storm Plug shall be paid for at the contract unit bid price per EACH.

BID ITEM 90006 – 2 FOOT X 2 FOOT STORM CATCH BASIN

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install a cast-in-place catch basin and casting as specified in the plans and per Article 507 of the City of Madison Standard Specifications.

MATERIALS

2 Foot x 2 Foot Storm Catch Basin shall be a precast concrete storm plug conforming to Article 301 of the City of Madison Standard Specifications.

CONSTRUCTION

Construction of the 2 Foot x 2 Foot Storm Catch Basin shall be per City of Madison Standard Detail Drawing 5.7.3 and Article 507 of the City of Madison Standard Specifications.

Contractor shall provide a minimum of 6 inches of adjustment. If storm sewer is shallow, and minimum adjustment cannot be achieved, notify the Engineer to determine a reduced adjustment.

METHOD OF MEASUREMENT

2 Foot x 2 Foot Storm Catch Basin shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

2 Foot x 2 Foot Storm Catch Basin shall be paid for at the contract unit bid price per EACH.

BID ITEM 90007 –2 INCH THICK STYROFOAM INSULATION

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install Styrofoam insulation at locations specified in the plans or as directed by the Engineer.

MATERIALS

Provide Styrofoam insulation with a minimum thickness of 2 inches and a minimum width of 4 feet.

CONSTRUCTION

Styrofoam shall be two (2) inches thick by four (4) foot wide in the trench center over the pipe on a level surface to provide proper support for the insulation. Any broken insulation will not be allowed and will not be considered for payment.

METHOD OF MEASUREMENT

2 Inch Thick Styrofoam Insulation shall be measured upon completion, in place along the centerline of the pipe, and accepted in accordance with the contract.

BASIS OF PAYMENT

2 Inch Styrofoam Insulation shall be paid for at the contract unit bid price per LINEAL FOOT.

BID ITEM 90008 –CONNECT TO EXISTING WATER SERVICE

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to make connection of the new water service to the existing water service.

CONSTRUCTION

Contractor shall be responsible for locating and making connection of new water service to existing water service. The location of the existing water service is shown as approximate and should be verified by the Contractor. Cut the existing water main at the connection location and provide a mechanical threaded cap with a 2 inch corporation. Connect the 2 inch copper water service to the 2 inch corporation. Any caps, fittings, corporations, and couplings shall be considered incidental to connecting to the existing water service.

METHOD OF MEASUREMENT

Connect to Existing Water Service shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Connection to Existing Water Service shall be paid for at the contract unit bid price per EACH.

BID ITEM 90009 –ENGINEERED SOIL

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install engineered soil in locations shown on the plans.

MATERIALS

Engineered soil shall contain a soil mixture of sand, compost, and topsoil. The mix shall be designed to approximate the following percentages by volume. The mix shall be free of rocks, stumps, roots, brush or other material over 1 inch in diameter. No other materials shall be mixed with the planting soil that maybe harmful to plant growth or prove a hindrance to planting or maintenance.

Engineered Soil Component	% Composition by Volume
Sand	45-55%
Topsoil	10-15%
Compost	30-50%

Sand, topsoil, and compost shall comply with section 211.2 of the City's Standard Specifications.

CONSTRUCTION

Place engineered soil at a minimum thickness of 12 inches.

METHOD OF MEASUREMENT

Engineered Soil shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Engineered Soil shall be paid for at the contract unit bid price per SQUARE YARD.

BID ITEM 90010 –ABANDON EXISTING WATER SERVICE

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to abandon an existing water service (4" diameter or larger) in locations shown on the plans.

MATERIALS

All materials wised for this work shall conform to the requirements of Article 702 of the City of Madison Standard Specifications.

CONSTRUCTION

Contractor shall be responsible for locating and abandoning the existing water service. The location of the existing water service is shown as approximate and should be verified by the Contractor.

For existing water services (4" in diameter and larger), abandon at the right-of-way. Provide a restrained mechanical joint cap over the end of the existing water main at the right-of-way. Provide and install thrust blocking at the restrained mechanical joint cap.

Abandoning existing copper water services (less than 4" diameter), will be paid under the bid item for "Abandon Existing Curb Box" per City of Madison Standard Specification 704.32.

METHOD OF MEASUREMENT

Abandon Existing Water Service shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Abandon Existing Water Service shall be paid for at the contract unit bid price per EACH.

BID ITEM 90011 – OVERHEAD UTILITY REMOVAL

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to remove overhead electric as specified. This work shall include removal and disposal of all utility poles, overhead wires, electrical cabinets, and guy wires in areas specified.

CONSTRUCTION

Remove utility poles, overhead wires, electrical cabinets, and guy wires between S. Ingersoll Street and S. Baldwin Street. Coordinate with the Wisconsin and Southern Railroad (WSOR) for the removal of poles, overhead wires, electrical cabinets, and guy wires. Overhead wires shall be removed to the nearest utility pole to remain in place. Verify which poles are to be removed with the Engineer prior to the removal of any poles. Contractor shall be responsible for any restoration outside of the project limits.

METHOD OF MEASUREMENT

The work for Overhead Utility Removal as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, and accepted in accordance with the contract.

BASIS OF PAYMENT

Overhead Utility Removal shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90012–REMOVE EXISTING WOOD PLANTER BOX

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to remove the existing wood planter box in the location shown on the plans.

CONSTRUCTION

Contractor shall be responsible for hauling and disposing of offsite.

METHOD OF MEASUREMENT

Remove Existing Wood Planter Box shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Remove Existing Wood Planter Box shall be paid for at the contract unit bid price per EACH.

BID ITEM 90013 –REMOVE EXISTING WOOD TIMBERS

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to remove all of the existing wood timbers in locations shown on the plans.

CONSTRUCTION

Contractor shall be responsible for hauling and disposing of offsite.

METHOD OF MEASUREMENT

Remove Existing Wood Timbers shall be measured upon completion and as accepted in accordance with the contract.

BASIS OF PAYMENT

Remove Existing Wood Timbers shall be paid for at the contract unit bid price per LINEAL FOOT.

BID ITEM 90014 –SAND BACKFILL FOR INFILTRATION BASIN

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to install sand backfill for the infiltration basin located in the Brearly Block.

MATERIALS

Sand backfill shall be consistent with Section 202.2(b) of the City of Madison Standard Specifications.

CONSTRUCTION

Excavate within the limits shown on the plans to the specified depth and replace with sand backfill to 12 inches within the surface. The top 12 inches will be established with Engineered Soil.

METHOD OF MEASUREMENT

Sand Backfill for Infiltration Basin shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Sand Backfill For Infiltration Basin shall be paid for at the contract unit bid price per CUBIC YARD.

BID ITEM 90015 - FENCE

DESCRIPTION

This special provision describes furnishing and installing decorative fencing.

MATERIALS

Furnish concrete for footings that is in accordance to the pertinent requirements of Part 3 of the Standard Specifications.

Furnish one of the following fence systems or approved equal:

1. Omega II Fence Systems (Laval, Quebec, Canada 1-800-836-6342, www.omegafence.com) Elite Double Wire Fence Panels, 6' height, standard 8'-3" panel length and post spacing. Horizontal wire shall be 2x4 gauge, vertical wire shall be 1x6 gauge, mesh opening shall be 1.97" x 7.875". Posts shall be 3" round, 11 gage with flush mount cap. Fence panels, posts, and all hardware shall be powder coat finish, color black.
2. TWINBAR Fencing System (Metalco / Atlantis Products Inc., Bollingbrook, IL 1-630-971-9680, www.metalco.us) 6' height, standard 8'-3" panel length and post spacing. Horizontal wire shall be 2x4 gauge, vertical wire shall be 1x4 gauge, mesh opening shall be 2" x 8". Posts shall be 3" round, 11 gauge with flush mount cap. Fence panels, posts, and all hardware shall be powder coat finish, color black.

Submit shop drawings to the City of Madison for review, including location of fence, posts, rails, details, hardware, and accessories. Indicate materials, dimensions, sizes, and finishes of components. Verify layout information for fences shown on Drawings in relation to property survey, existing utilities, and field measurements.

CONSTRUCTION

Locate all existing and new underground facilities prior to layout of the fence. Adjust the post layout as necessary to avoid underground conflicts. Layout all end posts and obtain approval of the layout from the engineer prior to beginning construction of footings and posts.

Install the fence in accordance to the construction details and the manufacturer's recommended installation instructions.

METHOD OF MEASUREMENT

Fence shall be measured by the linear foot, acceptably completed. The measurement will be made from center of end post to center of end post.

BASIS OF PAYMENT

Payment is full compensation for furnishing all fence materials, including fasteners; locating underground facilities; layout of the fence posts; excavation of post holes; furnishing and placing concrete; installing the fence; site restoration; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

BID ITEM 90016 - BENCH, BACKED

DESCRIPTION

This special provision describes furnishing and installing backed benches and appurtenances.

MATERIALS

Furnish Forms+Surfaces (Pittsburgh, PA 1-800-451-0410, www.forms-surfaces.com) Knight Bench, 6' length, backed, surface mount, or approved equal. Seat Slats: FSC Pure Ipe hardwood, penetrating oil finish in color Penofin hardwood formula 'Transparent Natural'; Bench Frame: Solid aluminum with invisible welds; End Armrests: Solid Aluminum (No Intermediate Armrest); Frame and Armrest Color: PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F.

CONSTRUCTION

Install benches per manufacturer's recommendations. Bench's rear and front legs shall be anchored into concrete base pad per manufacturer's recommendation and as detailed. Bench shall be shimmed to maintain level. Shims shall be powder coated steel, color to match bench frame.

METHOD OF MEASUREMENT

This item shall be measured as each individual unit acceptably manufactured, delivered and installed. Each unit shall include all mounting hardware, installation and all items incidental to the successful installation of each bench.

BASIS OF PAYMENT

Payment is full compensation for providing and installing all materials necessary to completely install the bench; furnishing and installing hardware, and connectors; for performing all mounting, leveling, proper disposing of surplus material and restoration; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the contract work.

BID ITEM 90017 - BENCH, BACKLESS

DESCRIPTION

This special provision describes furnishing and installing backless benches and appurtenances.

MATERIALS

Furnish Forms+Surfaces (Pittsburgh, PA 1-800-451-0410, www.forms-surfaces.com) Knight Bench, 6' length, backless, surface mount, or approved equal. Seat Slats: FSC Pure Ipe hardwood, penetrating oil finish in color Penofin hardwood formula 'Transparent Natural'; Bench Frame: Solid aluminum with invisible welds; End Armrests: Solid Aluminum (No Intermediate Armrest); Frame and Armrest Color: PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F.

CONSTRUCTION

Install benches per manufacturer's recommendations. Bench's rear and front legs shall be anchored into concrete base pad per manufacturer's recommendation and as detailed. Bench shall be shimmed to maintain level. Shims shall be powder coated steel, color to match bench frame.

METHOD OF MEASUREMENT

This item shall be measured as each individual unit acceptably manufactured, delivered and installed. Each unit shall include all mounting hardware, installation and all items incidental to the successful installation of each bench.

BASIS OF PAYMENT

Payment is full compensation for providing and installing all materials necessary to completely install the bench; furnishing and installing hardware, and connectors; for performing all mounting, leveling, proper disposing of surplus material and restoration; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the contract work.

BID ITEM 90018 - BIKE RACK

DESCRIPTION

This special provision describes furnishing and installing manufactured bike racks and bases.

MATERIALS

Bike racks shall conform to style and material shown in the plan detail. Provide one of the following bike racks or approved equal:

1. Saris Cycling Group (Madison, WI 1-800-783-7257) 2200 Bike Dock Series, 2 bike, double sided rack; flange mount. Finish: TGIC powder coating; color to be PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F.
2. Dero Bike Rack Company (Minneapolis, MN 1-888-337-6729) Downtown Rack, 2 bike, double sided rack; surface mount. Finish: TGIC powder coating; color to be PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F.

CONSTRUCTION

Install bike racks in the locations shown on the plan per manufacturer's recommendation for surface mounting.

METHOD OF MEASUREMENT

Bike rack shall be measured as each individual unit acceptably manufactured, delivered and installed.

BASIS OF PAYMENT

Payment is full compensation for providing and installing all materials necessary to completely install the bike rack; furnishing and installing hardware, and connectors; for performing all mounting, leveling, proper disposing of surplus material and restoration; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the contract work.

BID ITEM 90019 - BOULDER WALL

DESCRIPTION

The work under this item shall consist of furnishing materials and constructing a glacial boulder retaining wall in accordance with the lines, dimension, elevations and details as shown on the plans.

MATERIALS

Materials furnished under this contract shall conform to the following requirements:

Leveling Pad and Footings: The wall leveling pad shall consist of a dense-graded crushed aggregate conforming to Article 401.1(b) Gradation No. 2, minimum 6 inches deep following compaction. The wall leveling pad shall be at least 4 inches wider than the proposed stone base. Geotextile fabric shall meet manufacturer's recommendations for this application and shall conform to requirements for Geotextile Fabric, Type SAS Non-Woven conforming to Article 201.4(b).

Boulders shall be rounded, natural glacial stones of minimum dimensions not less than 31 inches and maximum dimensions not exceeding 42 inches in height, by 24 inches in width. The bottom of the bottom row of stones shall have a reasonably flat face solidly bearing on the leveling pad. Materials shall be clean, sound stone free of fines. No crushed rock, broken concrete or other manufactured materials will be accepted.

CONSTRUCTION

Excavation for the wall shall be as nearly vertical as possible based on the soil conditions, in order to disturb as little as possible behind the wall. The leveling pad shall be compacted with lightweight manually operated compaction equipment to provide a firm base without unnecessarily compacting underlying soils. The top of the leveling pad shall be stepped as necessary to provide the required minimum embedment of the stone.

The base of the wall boulders (top of leveling pad) shall be a minimum of 1/3 the height of the stone (maximum 12") below the proposed finished grade at the face of wall. The stone units shall be individually placed to the approximate lines and elevations, shown on the plans. Wall shall only be one stone high; no stacking of stones shall be allowed.

Top 6 inches of backfill shall be topsoil which shall be graded to the extent possible flush with the top of wall. Backfill shall be placed in maximum 1 foot lifts. Compaction of Wall Backfill shall be accomplished by at least three passes of lightweight manually operated compaction equipment acceptable to the Engineer. Backfilling operations shall be conducted in such a manner as to prevent damage or misalignment of the wall facing units. No tracked or wheeled equipment may operate on the backfill.

METHOD OF MEASUREMENT

This item will be measured in place by the square foot of boulder wall acceptably constructed. Area of wall will be computed on a vertical plane (exposed height x length of wall). Unless ordered by the engineer, wall area constructed above or below the limits designated by the Engineer will not be measured for payment.

BASIS OF PAYMENT

This work, measured as provided above, will be paid for at the contract unit price per square foot for Boulder Retaining Wall, which payment will be considered full compensation for excavation, furnishing and placing geotextile fabric, leveling pad and boulders, and furnishing, placing and compacting backfill (excluding topsoil, which will be measured separately for payment under the appropriate bid item), including all labor, materials, tools and incidentals necessary to complete the finished wall.

BID ITEM 90020 – MOUNTABLE INTEGRAL CONCRETE CURB AND GUTTER

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to install Mountable Integral Curb and Gutter in accordance with Article 302 of the City of Madison Standard Specifications and per the detail shown on the plans.

CONSTRUCTION

Curb and gutter shall be integral to the concrete roadway. Curb and gutter shall be 30 inches wide. Provide a 24 inch wide pan at the slope shown on the detailed drawings. Provide a two (2) inch high mountable curb head transitioned from the flow line to the back of curb. Curb head height is measured from the flowline to the top of the curb head.

METHOD MEASUREMENT

Mountable Integral Concrete Curb and Gutter shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Mountable Integral Concrete Curb and Gutter shall be paid for at the contract unit bid price per LINLEAL FOOT.

BID ITEM 90021 –CONCRETE 5-INCH, INTEGRAL COLOR WITH TEXTURE

DESCRIPTION

This work shall be in accordance with the requirements of Part 3 of the Standard Specifications, except as herein after amended. Work includes placement of concrete with integral color and surface texture.

MATERIALS

The concrete mix design shall be the same as the bid item "Concrete Sidewalk 5-Inch", except as follows:

Concrete designated as colored in the plans and specifications shall contain the proper proportion of approved admixture for Color-Conditioned Concrete in the color as selected by the City. Basis of design is Davis Colors (800-356-4848, www.daviscolors.com), color: DAVIS COLORS 61078 @ 6 lbs. per 94 lb. Bag of Gray Type II Cement. The color conditioning admixture shall be integral through the full depth of the concrete, and shall be a single-component, colored, water-reducing, set-controlling admixture, factory formulated and packaged in cubic yard dosage increments, not multiple additives and pigments added separately into the mix. Product shall comply with ASTM C 494.

Curing compound shall comply with ASTM C309, Type 1, class A.

Submit the concrete design mix, the manufacturer's complete technical data sheets for the colored admixture and curing compound, and a color sample to the City of Madison for review.

CONSTRUCTION

Mockup. At location on Project site selected by Engineer and a minimum of 28 days prior to commencement of the work, place and finish 10 feet by 10 feet, divided by control joints into 4

equal panels. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Mockup shall be produced by the individual workers who will perform the work for the Project.

Work shall not commence until a mockup of acceptable workmanship has been approved by the Engineer; only one mockup shall be included for payment. Accepted mockup provides visual standard for work, and shall remain through completion of work for use as a quality standard for finished concrete. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work. Remove mockup when directed by Engineer.

Placing and Finishing Concrete. The Placing and Finishing Concrete shall conform to Article 303.2, except as follows:

Applied surface texture: Custom finish compost material shall be provided by the City. Contact Kay Rutledge, Parks Development Manager, City of Madison, 608. 266-4714 at least 14 days in advance of installation. The Contractor shall place 4" of compost over the concrete while still impressionable, evenly distributed and separated. Any pieces of compost greater than 3" in any one direction shall be removed. Lightly roll the compost in place to provide impressions that are a maximum of ¼" in depth, and keep in place during the curing period. After curing, Contractor shall remove compost and wash all compost from path.

METHOD OF MEASUREMENT

Concrete 5-Inch, Integral Color with Texture shall be measured by the square foot installed and accepted.

BASIS OF PAYMENT

Concrete 5-Inch, Integral Color with Texture, measured as stated above, is full compensation for providing all materials, including concrete, joint fillers, joint sealers, and expansion joints; for preparing the foundation; backfilling and disposing of surplus material; for placing, finishing, protecting, and curing; and restoring the work site.

BID ITEM 90022 –CONCRETE 5-INCH, INTEGRAL COLOR NO TEXTURE

DESCRIPTION

This work shall be in accordance with the requirements of Part 3 of the Standard Specifications, except as herein after amended. Work includes placement of concrete with integral color.

MATERIALS

The concrete mix design shall be the same as the bid item "Concrete Sidewalk 5-Inch", except as follows:

Concrete designated as colored in the plans and specifications shall contain the proper proportion of approved admixture for Color-Conditioned Concrete in the color as selected by the City. Basis of design is Davis Colors (800-356-4848, www.daviscolors.com), color: DAVIS COLORS 61078 @ 6 lbs. per 94 lb. Bag of Gray Type II Cement. The color conditioning admixture shall be integral through the full depth of the concrete, and shall be a single-component, colored, water-reducing, set-controlling admixture, factory formulated and packaged in cubic yard dosage increments, not multiple additives and pigments added separately into the mix. Product shall comply with ASTM C 494.

Curing compound shall comply with ASTM C309, Type 1, class A.

Submit the concrete design mix, the manufacturer's complete technical data sheets for the colored admixture and curing compound, and a color sample to the City of Madison for review.

CONSTRUCTION

Mockup. Concrete color for this work shall be per the approved mockup for 'Concrete 5-Inch, Integral Color with Texture.' No separate mockup shall be required.

Placing and Finishing Concrete. The Placing and Finishing Concrete shall conform to Article 303.2.

METHOD OF MEASUREMENT

Concrete 5-Inch, Integral Color no Texture shall be measured by the square foot installed and accepted.

BASIS OF PAYMENT

Concrete 5-Inch, Integral Color no Texture, measured as stated above, is full compensation for providing all materials, including concrete, joint fillers, joint sealers, and expansion joints; for preparing the foundation; backfilling and disposing of surplus material; for placing, finishing, protecting, and curing; and restoring the work site.

BID ITEM 90023 –CONCRETE 9-INCH, INTEGRAL COLOR WITH TEXTURE

DESCRIPTION

This work shall be in accordance with the requirements of Part 3 of the Standard Specifications, except as herein after amended. Work includes placement of concrete with integral color and surface texture.

MATERIALS

The concrete mix design shall be the same as the bid item "Concrete Sidewalk 9-Inch", except as follows:

Concrete designated as colored in the plans and specifications shall contain the proper proportion of approved admixture for Color-Conditioned Concrete in the color as selected by the City. Basis of design is Davis Colors (800-356-4848, www.daviscolors.com), color: DAVIS COLORS 61078 @ 6 lbs. per 94 lb. Bag of Gray Type II Cement. The color conditioning admixture shall be integral through the full depth of the concrete, and shall be a single-component, colored, water-reducing, set-controlling admixture, factory formulated and packaged in cubic yard dosage increments, not multiple additives and pigments added separately into the mix. Product shall comply with ASTM C 494.

Curing compound shall comply with ASTM C309, Type 1, class A.

Submit the concrete design mix, the manufacturer's complete technical data sheets for the colored admixture and curing compound, and a color sample to the City of Madison for review.

CONSTRUCTION

Mockup. Concrete color and texture for this work shall be per the approved mockup for 'Concrete 5-Inch, Integral Color with Texture.' No separate mockup shall be required.

Placing and Finishing Concrete. The Placing and Finishing Concrete shall conform to Article 303.2, except as follows:

Applied surface texture: Custom finish compost material shall be provided by the City. Contact Kay Rutledge, Parks Development Manager, City of Madison, 608. 266-4714, at least 14 days in advance of installation. The Contractor shall place 4" of compost over the concrete while still impressionable, evenly distributed and separated. Any pieces of compost greater than 3" in any one direction shall be removed. Lightly roll the compost in place to provide impressions that are a maximum of ¼" in depth, and keep in place during the curing period. After curing, Contractor shall remove compost and wash all compost from path.

METHOD OF MEASUREMENT

Concrete 9-Inch, Integral Color with Texture shall be measured by the square foot installed and accepted.

BASIS OF PAYMENT

Concrete 9-Inch, Integral Color with Texture, measured as stated above, is full compensation for providing all materials, including concrete, joint fillers, joint sealers, and expansion joints; for preparing the foundation; backfilling and disposing of surplus material; for placing, finishing, protecting, and curing; and restoring the work site.

BID ITEM 90024 –CONCRETE 9-INCH, INTEGRAL COLOR NO TEXTURE

DESCRIPTION

This work shall be in accordance with the requirements of Part 3 of the Standard Specifications, except as herein after amended. Work includes placement of concrete with integral color.

MATERIALS

The concrete mix design shall be the same as the bid item "Concrete Sidewalk 9-Inch", except as follows:

Concrete designated as colored in the plans and specifications shall contain the proper proportion of approved admixture for Color-Conditioned Concrete in the color as selected by the City. Basis of design is Davis Colors (800-356-4848, www.daviscolors.com), color: DAVIS COLORS 61078 @ 6 lbs. per 94 lb. Bag of Gray Type II Cement. The color conditioning admixture shall be integral through the full depth of the concrete, and shall be a single-component, colored, water-reducing, set-controlling admixture, factory formulated and packaged in cubic yard dosage increments, not multiple additives and pigments added separately into the mix. Product shall comply with ASTM C 494.

Curing compound shall comply with ASTM C309, Type 1, class A.

Submit the concrete design mix, the manufacturer's complete technical data sheets for the colored admixture and curing compound, and a color sample to the City of Madison for review.

CONSTRUCTION

Mockup. Concrete color for this work shall be per the approved mockup for 'Concrete 5-Inch, Integral Color with Texture.' No separate mockup shall be required.

Placing and Finishing Concrete. The Placing and Finishing Concrete shall conform to Article 303.2.

METHOD OF MEASUREMENT

Concrete 9-Inch, Integral Color no Texture shall be measured by the square foot installed and accepted.

BASIS OF PAYMENT

Concrete 9-Inch, Integral Color no Texture, measured as stated above, is full compensation for providing all materials, including concrete, joint fillers, joint sealers, and expansion joints; for preparing the foundation; backfilling and disposing of surplus material; for placing, finishing, protecting, and curing; and restoring the work site.

BID ITEM 90025 –CONCRETE 24-INCH, INTEGRAL COLOR WITH TEXTURE

DESCRIPTION

This work shall be in accordance with the requirements of Part 3 of the Standard Specifications, except as herein after amended. Work includes placement of reinforced concrete with integral color and surface texture.

MATERIALS

The concrete mix design shall be the same as the bid item "Concrete Sidewalk 9-Inch", except as follows:

Concrete designated as colored in the plans and specifications shall contain the proper proportion of approved admixture for Color-Conditioned Concrete in the color as selected by the City. Basis of design is Davis Colors (800-356-4848, www.daviscolors.com), color: DAVIS COLORS 61078 @ 6 lbs. per 94 lb. Bag of Gray Type II Cement. The color conditioning admixture shall be integral through the full depth of the concrete, and shall be a single-component, colored, water-reducing, set-controlling admixture, factory formulated and packaged in cubic yard dosage increments, not multiple additives and pigments added separately into the mix. Product shall comply with ASTM C 494.

Curing compound shall comply with ASTM C309, Type 1, class A.

Submit the concrete design mix, the manufacturer's complete technical data sheets for the colored admixture and curing compound, and a color sample to the City of Madison for review.

CONSTRUCTION

Mockup. Concrete color and texture for this work shall be per the approved mockup for 'Concrete 5-Inch, Integral Color with Texture.' No separate mockup shall be required.

Placing and Finishing Concrete. The Placing and Finishing Concrete shall conform to Article 303.2, except as follows:

Applied surface texture: Custom finish compost material shall be provided by the City. Contact Kay Rutledge, Parks Development Manager, City of Madison, 608. 266-4714, at least 14 days in advance of installation. The Contractor shall place 4" of compost over the concrete while still impressionable, evenly distributed and separated. Any pieces of compost greater than 3" in any one direction shall be removed. Lightly roll the compost in place to provide impressions that are a maximum of ¼" in depth, and keep in place during the curing period. After curing, Contractor shall remove compost and wash all compost from path.

Reinforcement. Epoxy Coated Bar Steel Reinforcement is required and shall be placed as specified in the plans.

METHOD OF MEASUREMENT

Concrete 24-Inch, Integral Color with Texture shall be measured by the square foot installed and accepted.

BASIS OF PAYMENT

Concrete 24-Inch, Integral Color with Texture, measured as stated above, is full compensation for providing all materials, including concrete, joint fillers, joint sealers, and expansion joints; for preparing the foundation; backfilling and disposing of surplus material; for placing, finishing, protecting, and curing; and restoring the work site.

BID ITEM 90026 - DRINKING FOUNTAIN

DESCRIPTION

This work shall include all labor, equipment, and incidentals required to complete the installation of a **Haws model 3177** drinking fountain as outlined in the detail drawings and manufacturer's specifications, or as directed by the Engineer. The drinking fountain shall be installed on a 5" concrete slab that is not to exceed 2% grade, which shall be paid for and constructed in accordance to "Concrete 5-Inch, Integral Color with Texture under Bid Item 90023.

Contractor shall take care to minimize the disturbed area. Any restoration required for this work shall be paid under the appropriate bid items.

MATERIALS

The work under this bid item shall include all materials necessary to install the Haws #3177 drinking fountain as described above and as shown in the detail drawings. This contract calls for the Contractor to order, accept delivery and install a Haws # 3177 drinking fountain.

METHOD OF MEASUREMENT

The work done under the bid item for installing the drinking fountain shall be measured by each fountain installed and accepted in the field.

BASIS OF PAYMENT

This item, measured as provided above, shall be paid for lump sum, per fountain installed and shall be full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to complete the work as described.

BID ITEM 90027 - PICNIC TABLE

DESCRIPTION

This special provision describes furnishing and installing picnic tables and appurtenances.

MATERIALS

Furnish Forms+Surfaces (Pittsburgh, PA 1-800-451-0410, www.forms-surfaces.com) table to match Knight Bench, 6' length, surface mount, or approved equal. Table shall be 36" x 72". Two side benches shall be provided: Knight Bench 6' length, backless model, no armrests. Table and Bench Slats: FSC Pure Ipe hardwood, penetrating oil finish in color Penofin hardwood formula 'Transparent Natural'; Table and Bench Frame: Solid aluminum with invisible welds; Table and Bench Frame Color: PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F.

CONSTRUCTION

Install picnic table per manufacturer's recommendations. All legs shall be anchored into concrete base pad per manufacturer's recommendation and as detailed. Table and side benches shall be shimmed to maintain level. Shims shall be powder coated steel, color to match bench frame.

METHOD OF MEASUREMENT

This item shall be measured as each individual unit acceptably manufactured, delivered and installed. Each unit shall include one table with two side benches, all mounting hardware, installation and all items incidental to the successful installation of each fully assembled picnic table.

BASIS OF PAYMENT

Payment is full compensation for providing and installing all materials necessary to completely install the picnic table; furnishing and installing hardware, and connectors; for performing all mounting, leveling, proper disposing of surplus material and restoration; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the contract work.

BID ITEM 90028 - REMOVABLE BOLLARD

DESCRIPTION

This special provision describes furnishing and installing manufactured removable bollards.

MATERIALS

Removable bollards shall conform to style and material shown in the plan detail. Furnish Creative Pipe, Inc. (Rancho Mirage, CA 1-800-644-8467, www.creativepipe.com) Eliminator Bollard or approved equal. Bollard shall be an internally locking removable bollard with an embedded mounting system and flat cap, 6"x6" (0.250 wall) structural and mechanical square steel tubing, 0.250" (2 gauge) wall thickness. Finish: TGIC powder coating; color to be PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F. Embedment sleeve shall be hot-dipped galvanized. Provide hole cover for use when bollard is removed: Hot-dipped galvanized finish.

CONSTRUCTION

Install removable bollards in the locations shown on the plan per manufacturer's recommendation for in-ground mounting.

METHOD OF MEASUREMENT

Removable bollards shall be measured as each individual unit acceptably manufactured, delivered and installed, including one hole cover provided to the City.

BASIS OF PAYMENT

Payment is full compensation for providing and installing all materials necessary to completely install the removable bollard; furnishing and installing hardware, and connectors; for performing all mounting, leveling, proper disposing of surplus material and restoration; for providing hole cover; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the contract work.

BID ITEM 90029 - TRASH AND RECYCLE RECEPTACLES

DESCRIPTION

This special provision describes furnishing and installing manufactured trash and recycle receptacles.

MATERIALS

Trash and recycle receptacles shall conform to style and material shown in the plan detail. Provide Victor Stanley, Inc. (Dunkirk, MD 1-800-368-2573) Ironsites Series Model S-424 steel receptacle; 36 gallon capacity high density plastic liner, or approved equal. Finish shall be standard color VS Black, TGIC polyester powder coating. Lid for trash receptacle shall be standard tapered formed lid; Lid for recycle receptacle shall be the recycle package.

CONSTRUCTION

Install receptacles using surface mounting method on concrete pads as shown on the plan per manufacturer's recommendation and as shown on the detail.

METHOD OF MEASUREMENT

This item shall be measured as each individual unit acceptably manufactured, delivered and installed. Each unit shall include all mounting hardware, installation and all items incidental to the successful installation of each receptacle.

BASIS OF PAYMENT

Payment is full compensation for providing and installing all materials necessary to completely install the receptacle; furnishing and installing hardware, and connectors; for performing all

mounting, leveling, proper disposing of surplus material and restoration; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the contract work.

BID ITEMS 90030- RESTROOM PAVILION-GENERAL BUILDING

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Restroom Pavilion per City of Madison Standard Specifications for Public Works Construction, additional specifications as specified in Appendix A, and as shown in plans.

MATERIALS

Materials in this section are in accordance with Divisions 03 11 13 Cast-In-Place Concrete Forming -31 23 23 Backfill and Compaction in Appendix A.

CONSTRUCTION

Construction in this section are in accordance with Divisions 03 11 13 Cast-In-Place Concrete Forming -31 23 23 Backfill and Compaction in Appendix A.

METHOD OF MEASUREMENT

The construction of the Restroom Pavilion as described above and in the plans shall be measured, as one unit and payment shall be made upon the completed building and appurtenances, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Restroom Pavilion shall be paid for at the contract unit bid price per EACH.

BID ITEMS 90031- RESTROOM PAVILION-PLUMBING

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Restroom Pavilion per City of Madison Standard Specifications for Public Works Construction, additional specifications as specified in Appendix A, and as shown in plans.

MATERIALS

Materials in this section are in accordance with Division 22 00 00 Plumbing in Appendix A.

CONSTRUCTION

Construction in this section are in accordance with Division 22 00 00 Plumbing in Appendix A.

METHOD OF MEASUREMENT

The construction of the Restroom Pavilion as described above and in the plans shall be measured, as one unit and payment shall be made upon the completed building and appurtenances, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Restroom Pavilion shall be paid for at the contract unit bid price per EACH.

BID ITEMS 90032- RESTROOM PAVILION-VENTILATION

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Restroom Pavilion per City of Madison Standard Specifications for Public Works Construction, additional specifications as specified in Appendix A, and as shown in plans.

MATERIALS

Materials in this section are in accordance with Division 23 00 00 HVAC in Appendix A.

CONSTRUCTION

Construction in this section are in accordance with Division 23 00 00 HVAC in Appendix A.

METHOD OF MEASUREMENT

The construction of the Restroom Pavilion as described above and in the plans shall be measured, as one unit and payment shall be made upon the completed building and appurtenances, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Restroom Pavilion shall be paid for at the contract unit bid price per EACH.

BID ITEMS 90033 - RESTROOM PAVILION-ELECTRICAL

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Restroom Pavilion-Electrical per City of Madison Standard Specifications for Public Works Construction, additional specifications as specified in Appendix B, and as shown in plans.

MATERIALS

Materials in this section are in accordance with Division 26 05 00 Basic Electrical Requirements - 26 51 00 LB-1 Base Detail in Appendix B.

CONSTRUCTION

Construction in this section are in accordance with Division 26 05 00 Basic Electrical Requirements - 26 51 00 LB-1 Base Detail in Appendix B.

METHOD OF MEASUREMENT

The construction of the Restroom Pavilion-Electrical as described above and in the plans shall be measured, as one unit and payment shall be made upon the completed building and appurtenances, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Restroom Pavilion-Electrical shall be paid for at the contract unit bid price per EACH.

BID ITEM 90034 - ELECTRICAL

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Electrical per City of Madison Standard Specifications for Public Works Construction, additional specifications as specified in Appendix B and as shown in plans. Electrical work includes all furnishing and supplying all electrical work shown on the plans which includes but not limited to electrical lines, lighting, lighting bases, electrical boxes, hand holes, etc. Work under this item shall exclude electrical work for the Restroom Pavilion.

MATERIALS

Refer to Appendix B.

CONSTRUCTION

Refer to Appendix B.

METHOD OF MEASUREMENT

The installation of the Electrical as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Electrical shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90035 – REPLACE INLET CASTING

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to replace the inlet castings.

MATERIALS

Inlet casting shall be as specified on the plans or approved equal.

CONSTRUCTION

Contractor shall replace the existing inlet casting in locations shown on the plans. The existing inlet shall be salvaged and returned to the City of Madison Public Works. Any adjustment required shall be paid under the "Adjust Inlet" bid item.

MEASUREMENT

Replace Inlet Casting shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Replace Inlet Casting shall be paid for at the contract unit bid price per EACH.

BID ITEM 90036 – HAULING AND DISPOSAL – PETROLEUM CONTAMINATED MATERIAL

DESCRIPTION

This item describes hauling and disposing of material that is contaminated with petroleum. Work under this bid item shall include all labor, equipment, materials, and fees necessary to haul and dispose of petroleum-contaminated soil from the Great Lawn (201 S. Ingersoll Street) and the Brearly Block 215 S. Brearly Street and 204 S. Ingersoll Street).

Testing for soil and groundwater contamination was completed by the City for locations within this project where excavation is required. Test results indicate that petroleum-contaminated soils are present on the south half of the Brearly Block and in isolated zones at the south end of the Great Lawn, as shown on the plan set and explained further under **Bid Item 2010 Excavation Cut**.

An Environmental Technician hired by the City will be on-site during excavation activities in petroleum-contaminated areas to make the determination if soil may be reused on-site or if it requires off-site disposal. The City requires that this material be hauled and to a WDNR-approved bioremediation facility.

The City has already extensively tested the soil and will provide these analytical reports to the Contractor to assist with proper waste profiling. The Contractor shall be responsible for acquiring the necessary waste profile including additional TCLP testing requirements if needed. Laboratory reports and sampling maps will be available on the City's bidding website. It is anticipated that the material will pass landfill TCLP testing requirements. http://www.cityofmadison.com/business/pw/contracts/openforBid.cfm.

The Contractor shall use loading and hauling practices that are appropriate to prevent any spills or releases of petroleum-contaminated soils or residues. Prior to transport, the Contractor shall sufficiently dewater soils designated for off-site bioremediation or approved disposal facility so as not to contain free liquids.

For further information regarding previous investigation and remediation activities at these sites contact:

Name:	Richard Lyster
Company:	MSA Professional Services, Inc.
Address:	1230 South Boulevard
Phone:	(608) 356-2771
Fax:	(608) 356-2770
e-mail:	dlyster@msa-ps.com

Procedures for hauling and disposal – petroleum contaminated material on the Brearly Block include the excavation referenced in Appendix A for the Restroom Pavilion.

MEASUREMENT

Hauling and Disposal – Petroleum Contaminated Material will be measured by the TON, as measured at the landfill. The City has assumed 2 Tons/CY for this item. The Contractor shall provide landfill tickets as verification of tons hauled.

BASIS OF PAYMENT

Hauling and Disposal – Petroleum Contaminated Material, measured as stated above, is full compensation associated with handling, hauling material offsite to a proper disposal facility, and fees associated with the disposal. The Contractor shall be responsible for hauling and paying for the disposal and tipping fees associated with this item.

BID ITEM 90037 – HAULING AND DISPOSAL – INDUSTRIAL FILL

This item describes the hauling and reuse or disposal of material that is contaminated with PAHs and/or heavy metals that is referred to as 'industrial fill'. Work under this bid item shall include all labor, equipment, materials, and fees necessary to haul and dispose of industrial-fill soils from the Great Lawn (201 S. Ingersoll Street) and the Brearly Block 215 S. Brearly Street and 204 S. Ingersoll Street).

Testing for soil and groundwater contamination was completed by the City for locations within this project where excavation is required. Analytical results indicate that PAH and heavy-metal contaminated soils, referred to here as 'industrial fill', are present throughout both the Brearly

Block and the Great Lawn, as shown on the plan set and explained further under **Bid Item 20101 Excavation Cut**. All non-petroleum-contaminated soils are assumed here to be contaminated with industrial fill with the following exceptions: the 2-foot clean soil cap on the Great Lawn and any other soils designated clean by the Environmental Technician.

The Contractor shall take all necessary efforts to maximize the reuse of industrial fill as general fill materials below the 2-foot clean soil cap. Off-site disposal of industrial fill at a WDNR-licensed landfill must receive prior approval by the Environmental Technician.

The City has already extensively tested the soil and will provide these analytical reports to the Contractor to assist with proper waste profiling. The Contractor shall be responsible for acquiring the necessary waste profile including additional TCLP testing requirements if needed. Laboratory reports and sampling maps will be available on the City's bidding website. It is anticipated that the material will pass landfill TCLP testing requirements.
http://www.cityofmadison.com/business/pw/contracts/openforBid.cfm.

The City anticipates that this material will be considered suitable as alternate daily cover material. If the Contractor's selected landfill requires additional testing for this designation, the City agrees to take and pay for the necessary additional soil samples for laboratory analysis (e.g. PCBs, full RCRA metals, and TCLP).

The Contractor shall use loading and hauling practices that are appropriate to prevent any spills or releases of industrial fill. Prior to transport, the Contractor shall sufficiently dewater soils designated for off-site approved disposal facility so as not to contain free liquids.

For further information regarding previous investigation and remediation activities at these sites contact:

Name:	Richard Lyster
Company:	MSA Professional Services, Inc.
Address:	1230 South Boulevard
Phone:	(608) 356-2771
Fax:	(608) 356-2770
e-mail:	dlyster@msa-ps.com

MEASUREMENT

Hauling and Disposal – Industrial Fill Contaminated Material will be measured by the TON, as measured at the landfill. The City has assumed 2 Tons/CY for this item. The Contractor shall provide landfill tickets as verification of tons hauled.

BASIS OF PAYMENT

Hauling and Disposal – Industrial Fill Contaminated Material, measured as stated above, is full compensation associated with handling, hauling material offsite to a proper disposal facility, and fees associated with the disposal. The Contractor shall be responsible for hauling and paying for the disposal and tipping fees associated with this item.

BID ITEM 90038 –AIR BLOW-OFF, COMPLETE

DESCRIPTION

This bid item is part of Bid Alternate A and shall include all labor, equipment, and materials necessary to provide an air blow-off which is intended to be used for winterization of the 4 inch ductile iron water main between the 4 inch valve and the irrigation pump station shown on the plans. The bid item air blow-off includes all fittings, connections, plugs, corporations, curb stops, copper water service, and curb boxes to install per the plans.

CONSTRUCTION

The curb box shall be installed to the finish grade elevation.

METHOD OF MEASUREMENT

Air Blow-Off, Complete shall be measured upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Air Blow-Off, Complete shall be paid for at the contract unit bid price per EACH.

BID ITEM 90039 – IRRIGATION PUMP STATION AND APPURTENANCES

DESCRIPTION

This bid item is part of Bid Alternate A and shall consist of furnishing and installing a self-enclosed automatic pump station for a turf irrigation system. This shall be accomplished by using a completely prefabricated pump station conforming to the following specifications. Supply shall be either flooded (less than 30 feet of Total Dynamic Head), suction lift, or City water booster.

The plans and details for the irrigation pump station have been prepared using Watertronics information and they are intended to be provide the bidder with a description of the work and quantities. It is the Contractor's responsibility to coordinate the material selection, sizes, joint and connection details all as necessary to carry out the intent of the plans and specifications for the work.

The pumping station shall be WaterMax Model Number WMBV-5000-2-5-208-3-80-35 as manufactured by WATERTRONICS, INC. 525 Industrial Drive, P.O. Box 530, Hartland, Wisconsin 53029-0530, www.watertronics.com, Ken Schwark, (262) 893-5656, ken.schwark@watertronics.com, or approved equal.

Proprietary names are being used to call out the kind and quality of materials. The bidder may furnish equal or better materials as approved by the Engineer.

Provide shop drawings of the Irrigation Pump Station and Appurtenances for review prior to installation.

MATERIALS

Furnish all materials, labor, and equipment necessary to supply and install the irrigation pump station.

SECTION 1: PUMP AND MOTOR

1.1 PUMP

Pump shall be electric motor driven, horizontal centrifugal with mechanical shaft seal, volute case and impeller. The shaft seal shall be a self-adjusting mechanical type to prevent leakage and eliminate the need for a drain piping. The volute case shall be precision machined from gray cast iron and engineered to modern hydraulic standards. It shall be possible to rotate the discharge connection to any of four positions. A heavy cast iron bracket shall maintain alignment between the motor and volute case. The impeller shall be an enclosed type and balanced to provide smooth operation. The impeller shall be keyed to the shaft and locked with a special cap screw and washer. The motor shaft is to be manufactured from high grade steel and of reduced length to increase shaft rigidity, extend bearing life, and reduce the overall length of the pump and motor assembly. The pump shaft shall be protected with a replaceable stainless steel sleeve. The pump, motor and impeller shall be removable from the back of volute case for service without disturbing the plumbing.

1.2 MOTOR

Pump motor shall be a squirrel cage induction horizontal solid shaft type. The pump impeller shall be direct mounted and keyed to the motor shaft with a stainless steel protective sleeve. The temperature rise of the motor shall be to NEMA Standard for class B or Class F insulation. Radial and thrust bearings of ample capacity to accommodate the hydraulic thrust of the pump shall be incorporated into the motor.

SECTION 2: PIPING MANIFOLD, VALVES, GAUGES AND OTHER MECHANICAL EQUIPMENT

2.1 FABRICATED PIPING

All fabricated piping shall conform to ASTM specifications A53 for Grade B welded or seamless schedule 40 pipe. All welded flanges shall be forged steel, slip-on or weld neck type. All welded fittings shall be seamless, ASTM Specification A234, with pressure rating not less than 150 PSI.

2.1a BY-PASS PIPING SYSTEM

A fabricated full flow bypass shall be constructed of ASTM specification A53 Grade B welded or seamless schedule 40 pipe. All welded flanges shall be forged steel, slip-on or weld neck type. All welded fitting shall be seamless, ASTM Specification A234, with pressure rating not less than 150 PSI. Full flow bypass shall be complete with 3 butterfly isolation valves to allow for

complete isolation and bypass of the pump. All valves shall be installed inside the enclosure for vandal resistance.

2.2 CHECK VALVE

On flooded suction and booster stations the pump check valve shall be cast iron bodied with a spring loaded single disc. Check valves shall be sized according to the maximum discharge flow of the pump. Pressure drop across the check valve shall not exceed 2.5 PSI at full flow. On suction lift stations the check valve will be removed and a pressure rated foot valve will be supplied to attach on the end of the suction pipe.

2.3 STATION DISCHARGE ISOLATION VALVE

Pump shall be isolated by means of a butterfly valve after the check valve and before the piping exits the station enclosure. Isolation valves shall be butterfly type with ten position lever, rated for 200 PSI WOG working pressure. Trim shall include stainless steel stem, bronze or nickel coated iron streamlined disk with full faced resilient seat design to eliminate need for flange gaskets.

2.4 DRAIN VALVES

Drains shall be provided from all low points in the system and shall consist of 1/4" petcocks or ball valves.

2.5 PRESSURE GAUGES

Pressure gauges shall be located upstream and downstream of the pump for easy reading of the intake and discharge pressure. Pressure gauges shall be 304 stainless steel case and bezel construction. Gauges shall be 2-1/2" diameter, liquid filled. Pressure sensing connection shall be 1/4" NPT lower gauge connection.

SECTION 3: ELECTRICAL CONTROLS

3.1 MAIN STATION DISCONNECT AND FUSING

A three-pole, service rated main station disconnect shall be mounted in a separate NEMA 4 enclosure outside the pump station enclosure to completely isolate the pump station electrical system from incoming power.

3.2 PUMP THERMAL SWITCH

The temperature of the pump shall be sensed by a thermal switch. The thermal switch shall be located on the pump volute. Externally mounted snap disc type thermal switches will not be accepted. The thermal switch shall activate upon a temperature rise above 120 degrees Fahrenheit.

3.3 FLOW SENSOR

The pump station discharge manifold shall incorporate an insertion type, pulse frequency output flow sensor for continuous output to pump station controls. The flow sensor output pulse shall be conditioned and fed directly to the processor for conversion and display in Gallons Per Minute and totalize. Flow sensor accuracy shall be no less than 2% for flow velocities ranging from 1 - 30 feet per second. .

3.4 PRESSURE TRANSDUCER

A solid state pressure transducer shall provide a noise free, linear output proportional to discharge pressure. Transducer shall be solid state, strain gauge type with integral voltage regulating and output accuracy not less than 0.5%. Transducer shall be constructed of stainless steel and rated for the maximum pump station discharge pressure.

3.5 VARIABLE FREQUENCY DRIVE (VFD)

The variable frequency drive shall be IGBT based with selectable carrier frequency up to 15 KHZ. The VFD shall include terminals for incoming power, motor output power and control terminals. The VFD shall generate a sine-coded, variable voltage/frequency, three-phase output for optimum speed control. The VFD shall incorporate power loss ride-through. VFD protective features shall include current limit, short circuit protection, electronic motor overload protection and ground fault protection. The VFD shall have push button programming display for easy access to operation parameters. VFD must be designed for operation in 50 degree C temperature condition.

3.6 NATIONAL ELECTRICAL CODE STANDARDS

Electrical controls shall conform to National Electrical Code Standards.

CONTROL ALARMS:

3.7 LOW SYSTEM PRESSURE SAFETY SHUTDOWN

When the station discharge pressure remains below an adjustable set point for the time called out in the Technical Specifications, the pumps will be de-energized and remain so until the alarm is manually reset. The Low Pressure alarm will be indicated on the processor display.

3.8 HIGH SYSTEM PRESSURE SAFETY SHUTDOWN

When the station discharge pressure remains above an adjustable set point for the time called out in the Technical Specifications, the pumps will be de-energized and remain so until the alarm is manually reset. The High Pressure alarm will be indicated on the processor display.

3.9 HIGH PUMP VOLUTE TEMPERATURE SHUTDOWN

If the pump volute case temperature rises above 120 degrees F. for the pre-programmed time, the pump will be de-energized and remain so until the alarm is manually reset. The High Temperature alarm will be indicated on the processor display.

3.10 MOTOR OVERLOAD SHUTDOWN

If the over current condition lasts longer than the pre-programmed limit the motor will be de-energized and remain so until the alarm is manually reset. The overload alarm will be indicated on the processor display.

3.11 PHASE LOSS (THREE PHASE POWER SUPPLIES ONLY)

The controls will sense a phase loss on the incoming power supply. If the phase loss is for longer than the drive ride through time, the motor will be de-energized and remain so until the alarm is manually reset. The Phase Loss alarm will be indicated on the processor display.

3.12 VFD FAULT SHUTDOWN

The VFD shall sense additional internal faults that will cause the VFD to shutdown for system protection. These faults will be indicated on the processor display.

3.13 LIGHTNING ARRESTOR

The main power supply to the pump station shall be equipped with a secondary lighting arrestor having a breakdown current rating of not less than 60,000 Amps at 14,000 Volts discharge. Power supplies 300 Volts and less shall use a 300 Volt arrestor with an 800 Volt spark-over Voltage. Power supplies up to 600 Volts shall use a 600 Volt rated arrestor with a 1,000 Volt spark-over Voltage.

3.14 CORROSION INHIBITING MODULES

Corrosion inhibiting modules shall be installed in the main electrical control enclosure in accordance with the manufacture's recommendations.

3.15 IRRIGATION SYSTEM CONTROLLER

The irrigation control boxes shall be supplied and mounted within the enclosure by the pump station manufacturer prior to shipment. Controller shall be Hunter IC-600-PL Irrigation Controller with 6 stations along with a Hunter ICM-600 module with 6 stations or approved equal.

3.16 SOIL MOISTURE SENSOR

A soil moisture sensor shall be supplied and the controller shall be mounted within the enclosure by the pump station manufacturer prior to shipment. The soil moisture sensor shall be a Toro Precision Soil Sensor or approved equal. The soil moisture sensor shall be compatible with the

irrigation system controller. The soil moisture sensor shall include all accessories and appurtenances necessary to make soil moisture sensor functional.

SECTION 4: MOUNTING BASE AND ENCLOSURE

4.1 MOUNTING BASE

Construction shall include a fabricated base assembly to support all components during shipping and to serve as the installed mounting base. Pump station base shall be formed from a single sheet of 1/4" plate resulting in a seamless, one piece base with rounded edges and corners. Height is to be 3-1/2" inches. The base shall be strategically reinforced beneath as required to provide additional support and strength. The base shall be drilled and tapped allowing the pump to be secured to the base. The base shall be shot blasted to bare metal prior to painting process.

4.2 ENCLOSURE

Construction shall include a weather resistant, 14 gauge or equivalent, all metal enclosure. The front side of the enclosure shall have oversized cooling vents. The enclosure is to be supplied with a two internally mounted gas struts that shall extend to keep the access door open. All components are to be accessible from top and front sides with the door completely open. Enclosure is to be suitable for mounting to the pump station base and shall include openings for suction and discharge piping.

4.3 EXHAUST FAN

For the purpose of cooling the pump motor, switchgear and control logic, an exhaust fan shall be located inside the pump enclosure, mounted to the enclosure lid. The exhaust fan shall be activated upon pump start and shall run until the pump stops. The fan shall be black die-cast aluminum construction with UL94V-0 rated polycarbonate propeller and rated for not less than 240 CFM. Fan motor shall be permanent split capacitor type with stainless steel ball bearings, class B insulation and automatic thermal protection.

SECTION 5: PAINTING

Painting of the entire pump station shall consist of a multi-step coating system which includes metal preparation, rust inhibitive baked epoxy prime coat, and a two part ultraviolet light insensitive baked polyurethane finish having total dry film thickness of not less than 5 mils. Prime coat and finish coat shall be baked at 165 degrees for not less than 30 minutes to achieve a high gloss, corrosion resistant finish. Exterior pump station components shall be painted black (includes control box, base, and piping to be exposed above ground and outside of the enclosure).

SECTION 6: ADDITIONAL EQUIPMENT

6.1 INTAKE AND DISCHARGE DROP PIPES

The inlet and discharge piping system will be attached to dual 90 degree drop pipes to provide below grade connection to a suction pipe or city water supply pipe or below grade connection to

a discharge main line. Drop pipe sizes, connection fitting style and depth of bury will be shown on the project drawings.

6.2 FULL FLOW BYPASS

A full flow bypass piping system is available for booster models. Pump bypass piping will have three isolation butterfly valves to allow city water pressure and flow to be directed around the pump. This allows isolation of the pump and motor for service without disrupting the irrigation system supply.

6.3 BACKFLOW PREVENTER

A Reduced Pressure Zone Backflow Preventer (RPZ) shall be provided by the pump station manufacturer and located inside pump station enclosure.

CONSTRUCTION

The pump station and all its component parts shall undergo a complete hydraulic and electrical test prior to shipment from the factory. Testing shall be dynamic and include operation over the entire flow range of the pump station under specified suction and net discharge pressure conditions. A plot containing actual flow, pressure, KW consumption and motor RPM shall be furnished as part of the owner's manual.

A manufacturer's representative shall be onsite to assist with pump station startup.

Complete start up instructions shall be provided by the manufacturer in the form of an owner's manual.

The manufacturer shall warrant the pump station to be free of defects for one year from date of start up.

MEASUREMENT

The installation of the irrigation pump station described above and in the plans shall be measured, as one unit and payment shall be made upon the completed system, piping, and appurtenances, in place, and accepted in accordance with the contract.

PAYMENT

The Contractor shall be paid per the contract unit price lump sum as accepted by the Engineer.

BID ITEM 90040 – CONCRETE BASE FOR PUMP STATION

DESCRIPTION

This bid item is part of Bid Alternate A and shall consist of furnishing and installing the concrete base for the irrigation pump station. The work includes furnishing and installing crushed

aggregate base course and any conduit necessary for electrical or plumbing through the concrete base.

MATERIALS

Concrete materials shall conform to Article 301 of the City of Madison Standard Specifications.

CONSTRUCTION

Concrete base shall be constructed per Article 301 and 304 of the City of Madison Standard Specifications. Subgrade shall be prepared and compacted prior to placement of the aggregate base course. Aggregate base course shall be compacted to a minimum thickness of 6 inches. Provide conduit through concrete base for any electrical.

MEASUREMENT

The installation of the Concrete Base for Pump Station described above and in the plans shall be measured, as one unit and payment shall be made upon the completed concrete base, in place, and accepted in accordance with the contract.

PAYMENT

The Contractor shall be paid for the measured quantity at the contract unit price lump sum as accepted by the Engineer.

BID ITEM 90041 – IRRIGATION SYSTEM AND APPURTENANCES

DESCRIPTION

This bid item is part of Bid Alternate A and shall consist of furnishing and installing the irrigation system, utilities, appurtenances and connections to utilities. The work includes the furnishing and installation of the following: water service lateral, electronic marker balls, electronic remote control valves, control timer, access restricted cast aluminum valve boxes, pop-up spray heads with nozzle, and conduit, and electrical wire and connections.

The plans and details for the planter irrigation services have been prepared using Rain Bird Landscape Irrigation Products information (Adam Bowers, Reinders, 262.372.5783) and they are intended to provide the bidder with a description of the work and quantities. It is the Contractor's responsibility to coordinate the material selection, sizes, jointing and connection details all as necessary to carry out the intent of the plans and specifications for the work.

Provide shop drawings of all components of the Irrigation System for review prior to installation.

MATERIALS

The materials included in this item shall be all those required to completely install the irrigation system. These include connection to the irrigation pump station, Rain Bird PGA or PEB Remote

Control Valve, Rain Bird 5LRC Quick Coupling Valve, Rain Bird 8005 SS with # 12 Nozzle, Rain Bird 7005 SS with #8 Nozzle (in locations shown on the plans), Pressure Class 200 irrigation piping, electrical cable sized by the electrician, conduit, and electrical connections. Control valves shall be housed in Irrigation Turf Boxes. Turf box shall be Pentex, black box and black lockable cover or approved equal. All water and electrical line connections and joints in order to completely install and operate the irrigation services shall be furnished and installed by the Contractor as an incidental cost associated with this bid item. The intent of the plans and special provisions are to be used for bidding purposes and are intended irrigate the coverage are as shown on the plans. The Contractor shall be responsible to verify the pressure of the water before installation of the nozzles to verify adequate coverage of the intended areas. Contractor shall furnish all fittings and appurtenances necessary so that the system can be winterized each fall. The Proprietary names are being used to call out the kind and quality of materials. The bidder may furnish equal or better materials as approved by the Engineer.

CONSTRUCTION

The system shall consist of eight (8) zones. Each zone shall have the following components: Rain Bird PGA or PEB Remote Control Valve, quick coupling valve, Class 200 PVC pipe, and Rain Bird spray nozzles, and all fittings, connections, and joints necessary. Each valve shall control an individual zone throughout the service area. Spray patterns shall be consistent with those shown on the plans. Nozzles should be throttled down as necessary in order to avoid spray on bike path. All control valves shall be housed in an irrigation turf box.

Irrigation pipes shall be installed per manufacturer recommendations. All material excavated from the trench shall be hauled off site per Article 201 and the trench compacted and replaced with select fill as specified in Section 202.2 of the City of Madison Standard Specifications. All costs associated with trench excavating, hauling material offsite, and supplying, installing, and compacting select fill shall be an incidental cost associated with this bid item.

A Hunter IC-600-PL Station Controller along with a Hunter ICM600 module shall be installed in the irrigation pump station which shall have an electric service line run inside a conduit to Remote Control Valve inside the irrigation turf box so that the valve can be set to control which zones open and close at certain hours of the day. Rain Bird Station Controller and module to paid under bid item for Irrigation Pump Station.

All connections and joints necessary to completely install and operate the irrigation system shall be furnished and installed by the Contractor as an incidental cost associated with this bid item. All fittings to connect to the irrigation pump station and 4-inch ductile iron water main shall also be incidental to this bid item.

Contractor shall install electronic markers along the PVC irrigation pipes at all bends, tees, and mainline pipe. Install markers at 50 foot intervals on all mainline pipe. The Contractor will need to install approximately 25 sewer electronic markers throughout the irrigation system. Furnishing and supplying electronic markers shall be included under this bid item. Electronic markers shall be per Section 503.2(f) of the City of Madison Standard Specifications.

MEASUREMENT

The installation of the Irrigation System and Appurtenances described above and in the plans shall be measured, as one unit and payment shall be made upon the completed irrigation system, utilities and connections, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

The contractor shall be paid for the measured quantity at the contract unit price LUMP SUM as accepted by the Engineer.

APPENDIX A
RESTROOM PAVILION
INDEX

BID ITEM 90030 – RESTROOM PAVILLION – GENERAL BUILDING

03 11 13 CAST-IN-PLACE CONCRETE FORMING 1-7
03 15 00 CONCRETE ACCESSORIES 1-2
03 20 00 CONCRETE REINFORCING 1-4
03 30 00 CAST-IN-PLACE CONCRETE 1-16
03 30 01 CONCRETE QUALITY CONTROL 1-5
04 05 00 MORTAR AND MASONRY GROUT 1-4
04 20 00 UNIT MASONRY 1-10
04 42 11 THIN STONE VENEER ASSEMBLIES 1-10
05 10 00 STRUCTURAL METAL FRAMING 1-3
06 10 00 ROUGH CARPENTRY 1-5
06 15 00 WOOD DECKING 1-3
06 20 00 FINISH CARPENTRY 1-4
07 21 13 BOARD INSULATION 1-4
07 25 00 WEATHER BARRIERS 1-3
07 27 26 FLUID-APPLIED MEMBRANE AIR VAPOR RETARDER 1-9
07 42 13 METAL WALL PANELS 1-4
07 53 23 EPDM MEMBRANE ROOFING FULLY ADHERED 1-7
07 55 64 VEGETATED ROOF COVERING SYSTEM 1-10
07 92 00 JOINT SEALANTS 1-7
08 12 13 STANDARD HOLLOW METAL FRAMES 1-4
08 13 13 STANDARD HOLLOW METAL DOORS 1-4
08 31 00 ACCESS DOORS AND PANELS 1-2
08 51 13 ALUMINUM WINDOWS 1-7
08 71 00 DOOR HARDWARE 1-6
08 81 00 GLASS GLAZING 1-4
09 67 23 RESINOUS FLOORING 1-8
09 91 00 PAINTING 1-11
09 96 23 WEATHER GRAFFITI-RESISTANT COATINGS 1-3
10 14 00 SIGNAGE 1-3
10 21 14 PLASTIC TOILET COMPARTMENTS 1-4
10 28 13 TOILET AND BATH ACCESSORIES 1-4
10 44 16 FIRE EXTINGUISHERS 1-2
11 16 20 KEY VAULTS 1-2
11 24 29 FACILITY FALL PROTECTION 1-3
31 09 00 EARTHWORK QUALITY CONTROL 1-3
31 23 16 EXCAVATION 1-3
31 23 23 BACKFILL AND COMPACTION 1-3

BID ITEM 90031 – RESTROOM PAVILLION – PLUMBING

22 00 00 PLUMBLING 1-31

BID ITEM 90032 – RESTROOM PAVILLION – VENTILATION

23 00 00 HVAC 1-16

SECTION 03 11 13

CAST-IN-PLACE CONCRETE FORMING FOR BUILDING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

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

B. True Curved Formwork.

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 117/177R - Specifications for Tolerances for Concrete Construction and Materials and Commentary, Current Edition.
   b. ACI 301 - Specifications for Structural Concrete, Current Edition.
   c. ACI 302.1R - Guide for Concrete Floor and Slab Construction, Current Edition.
   d. ACI 311.4R - Guide for Concrete Inspection, Current Edition.
   e. ACI 318 - Building Code Requirements for Structural Concrete, Current Edition.
   f. ACI 347 - Guide to Formwork for Concrete, Current Edition.
   g. ACI ASCC-1(05) - The Contractor's Guide to Quality Concrete Construction, Third Edition.
   h. ACI SCM-24 - Concrete Repair Basics, Current Edition.
   i. ACI SP-4 - Formwork for Concrete, Current Edition.
   j. ACI SP15 – Field Reference Manual: Standard Specifications for Structural Concrete ACI 301 with Selected ACI Reference, Current Edition.
   k. ACI SP-71 - ASTM Standards in ACI 318, Current Edition.
2. American Plywood Association (APA) Specifications and Standards:
   a. APA PS1 - Plywood Design Specification, Current Edition.

1.03 DESCRIPTION OF WORK

A. The work covered under this section shall consist of furnishing all materials, equipment and labor required to furnish all formwork for cast-in-place concrete as shown on the contract drawings and specified herein.

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B. The work shall include formwork, shoring for cast-in-place concrete, and installation into formwork of items by other such as anchor bolts, setting plates, bearing plates, anchorages, inserts, frames, nosings and other items to be embedded in concrete.

1.04 RELATED WORK ELSEWHERE

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

B. Concrete Accessories - Division 03

C. Concrete Reinforcing - Division 03

D. Cast-in-Place Concrete - Division 03

E. Joint Sealers – Division 07

PART 2 PRODUCTS AND MATERIALS

2.01 DESIGN

A. The design and engineering of the formwork and its accessories shall be the responsibility of the Contractor. Formwork shall be designed, erected, supported, braced and maintained so as to safely support all vertical and lateral loads until such loads can be supported by the concrete structure.

B. Determination of loads and design shall be in accordance with ACI 301 and ACI 347.

2.02 FORMS

A. Forms must provide a continuous radius (curves).

B. Forms may be wood, plywood, concrete-form-grade hardboard, metal or other acceptable material which will produce smooth, true surfaces.
   1. Provide lumber dressed on at least two edges and one side for tight fit.
   2. Metal forms shall have smooth surfaces free from any pattern, irregularities, dents, bends and sags.

C. Curved Flex-Form® can be rented from Symons Dayton Superior, 903 Silver Nail Road, Pewaukee, WI 262.547.2275. Preliminary proposal #217JW. Verify final quote based on final design.

The proposed system will include, but is not limited to, the following components:

Flex-Form Panels w/Rolled Ribs	(Factory-installed to save time)
Flex-Form Fillers	(Steel Fillers to complete gang)

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Connecting Bolts and Nuts	(3/4-inch Speed Bolts and Nuts)
Taper Ties/She-Bolts w/Washers and Nuts	(High-capacity ties)
Top Tie/Lift Brackets	(To handle each gang)
Walkway Brackets	(One row, one side, safe access)
Pipe Form Aligners	(One row, one side)

2.03 SHORING

A. All shoring members shall be of such design and material to safely support all dead and working loads throughout the placing and curing period. Shoring shall be placed to prevent sagging and settlement.

2.04 FORM TIES AND ACCESSORIES

A. Form ties shall be factory-fabricated, adjustable-length, removable or snapoff metal, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.

B. For exposed concrete surfaces, provide ties so that the portion remaining with the concrete after removal is 1 inch to 1-1/2 inches inside the finished face of the concrete.

C. Unless otherwise indicated, provide form ties which will not leave holes larger than 1 inch in diameter in concrete surfaces.

2.05 FORM COATING COMPOUND

A. Form coating compound shall be a commercial formulation that will not bond with, stain, nor adversely affect concrete surfaces and not impede the wetting of surfaces to be cured with water or curing compounds. Forms for concrete surfaces requiring subsequent treatment shall receive a type of coating that will not impair bond or adhesion.

B. Form coating compound for steel forms shall conform with all requirements stated above and shall be of rust-preventative type.

PART 3 CONSTRUCTION METHODS

3.01 GENERAL

A. Responsibility. The design and construction of formwork shall be the sole responsibility of the Contractor.

B. Earth forms are not acceptable or permitted.

C. Construct forms to the exact sizes, shapes, lines and dimensions shown, as required to obtain accurate alignment, location, grades, level and plumb in finished

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construction and to maintain tolerances in accordance with ACI 301. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required. Chamfer all corners of concrete exposed to view using chamfer strips. Use selected materials to obtain required finishes.

D. Forms shall be sufficiently tight to prevent leakage of concrete. Temporary openings shall be provided in the inside form of all wall forms and in column forms to facilitate cleaning and inspection immediately before placing concrete.

E. Assemble forms so their removal will not damage concrete and adjacent materials.

3.02 FORMWORK

A. Forms shall conform in general to shape, line, grade and dimensions of members as shown on contract drawings, and shall have the strength and stability to insure finished concrete within the tolerances specified in ACI 347.

1. Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from those other trades.
2. Exterior edges of all exposed concrete, unless otherwise specified, shall have a chamfer strip placed in form to provide bevel of sharp edges. Chamfer strips shall be 3/4-inch by 3/4-inch by 45° wood, plastic, or rubber.
3. Accurately place and secure in position, prior to placing concrete, all anchors, bolts, inserts and other items furnished under other sections of the specifications and for other contractors on the project.

B. Formwork shall be mortar-tight and sufficiently rigid to prevent displacement or sagging between supports.

C. Formwork shall be properly braced or tied together so as to maintain position and shape and insure safety to workman and passersby.

D. Temporary openings may be provided on all wall and column forms to limit the free fall of the concrete to less than 4 feet and should be so located as to facilitate the placing and consolidation of the concrete. The ports shall be spaced no more than 6 feet apart to limit the horizontal flow of concrete.

E. All forms shall be cleaned and rubbed smooth prior to placing to insure true forming surfaces for all concrete surfaces.

3.03 FORM TIES AND ACCESSORIES

A. Internal wall ties shall contain positive stops at the required wall thickness. The exterior clamp portions of the pipe shall be adjustable to permit tightening of forms. All plug holes shall be filled with non-shrink grout after forms are removed.

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B. Accessories shall be used only for the purpose intended and shall in no way interfere with the placing of concrete. Removal of accessories shall in no way impair or disturb finish concrete surfaces. Accessories shall be compatible with formwork and ties and shall maintain the watertight integrity of the formwork system.

C. Design of all form ties and accessories shall be adequate for all concrete placement, horizontal and vertical, to prevent failures and blowouts.

3.04 FORM COATINGS

A. Coat form contact surfaces with form bond breaker compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

B. Coat steel forms with form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

C. Clean reinforcing steel that has become contaminated with form coating to the satisfaction of the Engineer prior to placing concrete.

3.05 EMBEDDED ITEMS

A. Items embedded in concrete shall be properly cleaned to be free from oil or foreign matter that would weaken the bond of the concrete to these items.

B. Install in the formwork requisite inserts, anchors, sleeves and other items specified under other sections of these specifications; close end conduits, piping and sleeves embedded in concrete with caps or plugs.

3.06 CONSTRUCTION JOINTS

A. Make construction joints where indicated on the contract drawings; additional construction joints are subject to prior approval of the Engineer; locate additional construction joints to least impair the strength of the structure.

B. Form keyways and joints as indicated on the contract drawings.

3.07 EXPANSION JOINTS

A. Expansion joints shall be placed where indicated on the contract drawings.

B. Joints between slabs on earth and vertical surfaces, including columns, piers, walls, machinery foundation and other fixed structures shall have expansion joint material placed on abutting vertical surfaces.

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C. Joints to receive joint compound shall have premolded expansion filler strips at proper level placed below finished floor with slightly tapered, dressed, oiled wood strip secured temporarily to top thereof; install wood strip of depth to form groove at least 1 inch deep; after concrete has set, remove strip; fill groove with light colored joint compound for poured application; fill joint grooves flush, to be slightly concave, after drying as specified in Joint Sealers - Division 07.

3.08 CONTROL JOINTS

A. Install vertical control joints as indicated on the contract drawings.

B. Install control joints in slabs as indicated on the contract drawings.

C. Apply sealant to all joints indicated on the drawings after concrete has sufficiently cured; clean joint slot; fill joint with light colored compound for poured application; fill joint grooves flush, to be slightly concave after drying, as specified in Joint Sealers - Division 07.

3.09 FORM/SHORING REMOVAL

A. Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

B. Removal of forms shall be accomplished in such a manner as will prevent injury to concrete and insure complete safety of structure. Removal times listed below are minimum and may be increased by the Engineer as job conditions warrant.

1. Where structure as a whole is supported on shores, vertical forms such as beam and girder sides, columns, and similar vertical forms may be removed 24 hours after completion of pour, providing concrete has hardened sufficiently to sustain its own weight and to prevent injury.
2. Wall forms shall not be removed in less than 24 hours after pouring, unless otherwise required for curing.
3. Supporting forms and shoring must remain in place until concrete can carry any loads to be imposed upon it and in no case shall be removed in less than seven (7) days.
4. Forms ties, requiring any operation in removal of forms which would tend to destroy bond between tie and concrete in order to remove form, shall not be disturbed for seven (7) days after completion of pour.
5. The time periods stipulated above may be reduced if strength results of concrete so indicate adequate conditions.

C. Notify the Engineer before the forms are removed in order that an examination of the newly-stripped surfaces may be made prior to patching.

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3.10 EXPOSED WALL SURFACES

A. Exposed surfaces shall be Carborundum rubbed to take off fins; fill pores, stone pickets, honeycombs, etc., with non shrink grout as follows:
   1. Repair immediately after form removal and inspection by the Engineer.
   2. Remove concrete surrounding defect to sound concrete, then wet affected area.
   3. Brush on bonding agent, mixed and applied in accordance with manufacturer's recommendations.
   4. Consolidate patch grout and strike off to leave the patch slightly higher than the surrounding surface.
   5. Finish the repaired area flush with the surrounding area after the patch has been in place for one hour, or as prescribed by the manufacturer.

B. Perform patching before curing compound is applied; cure patched areas in the same manner as adjacent concrete; make repairs uniform in color and finish with surrounding concrete.

C. Exposed surfaces shall be protected from excessive sun, wind and rain, and kept wet until curing compound is applied. When ambient temperature falls below 40°F heat aggregate and mixing water; clear all forms, reinforcement and subgrade of snow and ice; cover all freshly placed concrete with tarpaulins, and provide heat to maintain a temperature of 70°F for at least three days or 50°F for five days; rate of cooling after end of protection period shall be accomplished in a manner approved by the Engineer.

3.11 REUSE OF FORMS

A. Clean and repair surfaces of forms to be re-used in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for the new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets.

C. Do not use "patched" forms for concrete surfaces exposed to view.

END OF SECTION

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SECTION 03 15 00

CONCRETE ACCESSORIES FOR BUILDING

PART 1 GENERAL

1.01 APPLICABLE PROVISIONS

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

1.02 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.

1.03 RELATED WORK ELSEWHERE

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

B. Structural Cast-In-Place Concrete Forming - Division 03

C. Cast-in-Place Concrete - Division 03

PART 2 PRODUCTS AND MATERIALS

2.01 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. Rigid Insulation. Polystyrene insulation, ASTM C578, Type IV, extruded cellular type, 5 year aged R-value of 5.0 minimum at 75°F water absorption in accordance with ASTM C272 Of 0.1 percent by volume maximum, minimum 15 psi compressive strength, 0.5 inch thick.

C. Removable Plastic Expansion Joint Cap: Snap-Cap by W.R. Meadows.

2.02 EPOXY AND GROUT

A. Epoxy and grout: Product suitable for each application by the Euclid Chemical Company or equal.

2.03 VAPOR BARRIER

A. Under Slab Vapor Barrier: Class C, ASTM E-1745; 3-ply laminate with two layers of high-density polyethylene and a high-strength cord grid; vapor retarder tape and pipe boots; Griffolyn Type-65 by Reef Industries, Stego Wrap Class C Vapor Retarder by Stego Industries or approved equal.

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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:
1. Premanufactured pre-cut pipe boots from vapor barrier manufacturer.
2. Where premanufactured boots are not suitable, construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions.

2.04 CONCRETE REPAIR COMPOUND

A. Concrete repair compound shall be Sonopatch, Sonneborn Building Products; Embeco 411 Mortar, Master Builders, or equal.

PART 3 CONSTRUCTION METHODS

3.01 INSTALLATION

A. Install accessories where shown on contract drawings and as specified herein.

B. 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. Lap vapor barrier over footings and seal to foundation walls, unless shown otherwise on Drawings. 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.

END OF SECTION

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SECTION 03 20 00

CONCRETE REINFORCING FOR BUILDING

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) Specifications and Standards:
   a. ACI 315 - Manual of Standard Practice for Detailing Reinforced Concrete Structures, Current Edition.
   b. ACI 318 - Building Code Requirements for Structural Concrete and Commentary, Current Edition.
2. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards:
   a. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement, Current Edition.
   b. ASTM A184 - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement, Current Edition.
   c. ASTM A185 - Standard Specification for Steel Welded Wire Reinforced, Plain for Concrete, Current Edition.
   d. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement, Current Edition.
3. American Welding Society (AWS), Specifications and Standards:
   a. AWS D12.1 - Welding Reinforcing Steel, Metal Inserts, and Connections in Reinforced Concrete Construction, Current Edition.
4. American Association of State Highway Transportation Officials (AASHTO), Specifications and Standards:
   a. AASHTO M182 - Specification for Burlap Cloth Made from Jute or Kenaf, Current Edition
5. Concrete Reinforcing Steel Institute (CRSI) Specifications and Standards:
   a. CRSI - Manual of Standard Practice, Current Edition.
   b. CRSI - Recommended Practice for Placing Reinforcing Bars, Current Edition.
   c. CRSI - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature, Current Edition.
   d. CRSI - Recommended Practice for Reinforcing Bar Splices, Current Edition.

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1.03 DESCRIPTION OF WORK

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

1.04 RELATED WORK ELSEWHERE

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

B. Concrete Accessories - Division 03

C. Cast-in-Place Concrete - Division 03

PART 2 PRODUCTS AND MATERIALS

2.01 REINFORCEMENT

A. Steel Bar Reinforcement. Main reinforcing and stirrups; ASTM A615, Grade 60.

B. Welded Wire Fabric. Welded wire fabric, ASTM A185, 6 x 6 - W1.4 /W1.4, unless otherwise specified or indicated on the contract drawings.

C. Steel Tie Wire. Steel tie wire, ASTM A82, plain, cold-drawn, 16 gauge or heavier.

D. Supports For Reinforcement. Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place complying with CRSI Manual of Standard Practice. For slabs on grade where base material will not support chairs, use supports with sand plates or horizontal runners to locate mesh properly in slab. Provide hot-dipped galvanized or plastic-coated accessories in contact with forms for sight exposed concrete; stainless steel accessories for sandblasted or bushhammered concrete.

PART 3 CONSTRUCTION METHODS

3.01 FABRICATION

A. Fabricate and place to shapes and dimensions indicated or required to carry out intent of contract drawings and these specifications.

B. Reinforcing bars shall conform accurately to the dimensions shown on the contract drawings.

3.02 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect reinforcing steel and wire fabric from damage and from dirt, oil grease, other foreign matter, and rust-causing condition. Do not store reinforcement in direct contact with the ground.

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3.03 CLEANING

A. Before placing and before pouring concrete, all reinforcement shall be thoroughly cleaned of all oil, dirt, loose mill scale, loose rust, or foreign matter that will destroy or reduce bond.

3.04 PLACING REINFORCEMENT

A. Placement. Metal reinforcement shall be accurately placed and adequately secured in position by metal chairs or spacers. Nails shall not be driven into forms to support reinforcement nor shall wire ties come in contact with forms.

B. Embedded Items. The Contractor shall provide for the installation of all items embedded in the concrete, such as anchor bolts, dowels, etc., as shown on the contract drawings or as provided for in other Divisions of these specifications.
   1. All dowel bars shall be tied securely in place before pouring concrete.
   2. Provide for clearances with appurtenant materials and devices.

C. Drilled and Grouted or Epoxy Dowel Installation. Existing concrete which will be incorporated into new work and requiring integration with new concrete will be doweled as indicated on the contract drawings and as follows:
   1. Drill hole in existing concrete of size that is 3/4 inch larger in diameter than diameter of dowel bar. Incline the hole in the concrete such that the non-shrink grouting or epoxy will be retained in the hole.
   2. Fill hole with non-shrink grouting or epoxy.
   3. Immediately place dowel bar into hole.
   4. Allow grout or epoxy to take initial set before disturbing dowel bar.

D. Steel Reinforcing Fabric. Reinforce as detailed on the contract drawings; and where not indicated, reinforce with wire fabric, place 2 inches from the top of the slab.
   1. Flat sheets shall be used. Wire fabric shall lap 6 inches on side joints and 12 inches on end joints. Properly secure with annealed wire. Fabric shall be raised and secured in the correct location using permanent supports. Raising the fabric by hook during placement of concrete shall NOT be permitted.
   2. Alternately, in tight quarters and around appurtenances and openings, lap mesh reinforcement not less than one mesh space plus 2 inches, and tie.

E. Concrete Cover. The minimum cover of concrete for all reinforcement shall conform to the dimensions indicated on the contract drawings, which indicate the clear distance from the edge and end of the reinforcement to the face of the concrete surface. Provide clearance and spacing indicated on the contract drawings and approved Submittals, where so indicated.
   1. Where no clearances are indicated, the thickness of the concrete cover over reinforcement shall be as follows:
      a. Concrete cast against and permanently exposed to earth - 3 inches;
      b. Formed concrete exposed to earth or weather - 2 inches;

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c. Formed concrete not exposed to earth or weather - 1-1/2 inches;
d. Slabs not exposed to earth or weather - 1 inch.

END OF SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE FOR BUILDING

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 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 301 - Specification for Structural Concrete, Current Edition.
   d. ACI 302.1R - Guide for Concrete Floor and Slab Construction, Current Edition.
   e. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete, Current Edition.
   f. ACI 305R - Hot Weather Concreting, Current Edition.
   g. ACI 306.1 (R2002) - Standard Specification for Cold Weather Concreting, Current Edition.
   h. ACI 308R - Guide to Curing Concrete, Current Edition.
   i. ACI 309R - Guide for Consolidation of Concrete, Current Edition.
   j. ACI 318/318R - Building Code Requirements for Structural Concrete and Commentary, Current Edition.
   k. ACI ASCC-1(05) - The Contractor's Guide to Quality Concrete Construction, Third Edition.
   l. ACI CP-10/PACK - Craftsman Study Package for ACI Certification of Concrete Flatwork Technician/Finisher, Current Edition.
   m. ACI MCP06 - ACI Manual of Concrete Practice, Parts 1 through 6, and Index, 2006 Edition.
   n. ACI SCM-24 - Concrete Repair Basics, Current Edition.
   o. ACI SP4 - Formwork for Concrete, Current Edition.
   p. ACI SP15 - Field Reference Manual: Standard Specifications for Structural Concrete ACI 301 with Selected ACI Reference, Current Edition.
   q. ACI SP-71 - ASTM Standards in ACI 318, Current Edition.

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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 C226 - Standard Specification for Air-Entraining Additions for Use in the Manufacture of Air-Entraining Hydraulic Cement, Current Edition.
   m. ASTM C233 - Standard Test Method for Air-Entraining Admixtures in Concrete, Current Edition.
   n. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete, Current Edition.
   o. 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.
   p. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete, Current Edition.
   q. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete, Current Edition.
   r. 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.

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s. ASTM C566 - Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying, Current Edition.
t. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzlan for Use in Concrete, Current Edition.
u. 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.

1.03 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.

1.04 RELATED WORK ELSEWHERE

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

B. Concrete Quality Control - Division 03

C. Cast-in-Place Concrete Forming - Division 03

D. Concrete Accessories - Division 03

E. Concrete Reinforcing - Division 03

PART 2 PRODUCTS AND MATERIALS

2.01 CEMENT

A. Cement shall be Portland Cement ASTM C150 Type I or IA, except as otherwise noted or approved. Type III cement shall only be used for Class L concrete, or when approved by the Engineer.

B. A singular brand and manufacturer of cement shall be used for the entire work.

2.02 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.

2.03 SLAG

A. Slag shall be ground granulated blast furnace slag conforming to ASTM C989.

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2.04 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.

2.05 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.

2.06 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.

B. Admixtures containing calcium chloride or soluble chloride shall not be used.

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2.07 CURING AND SEALING COMPOUND - INTERIOR

A. Membrane-forming curing compound shall meet the moisture retention requirements of ASTM C309, Type 1. Kure-N-Seal, Sonneborn Division of BASF; Sealtight Seal Cure-309, W.R. Meadows, Inc.; Eucocure, Euclid Chemical Co.; or equal.

B. Shall be compatible with surface finish.

2.08 CURING COMPOUND - EXTERIOR

A. Curing compound shall comply with ASTM C309, Type 2; resin, white pigmented.

PART 3 CONSTRUCTION METHODS

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.

3.02 READI-MIX CONCRETE

A. Acceptability and Use. Readi-mix 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 readi-mix 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 03 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.

B. Mix Proportioning. Mix proportioning shall be the responsibility of the Contractor 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 03 of these specifications.

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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.

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G. 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.

H. 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. 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,

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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 insure 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.

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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.

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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 AND KEYWAYS

A. Construct expansion, control, and isolation joints and keyways 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. Horizontal joint construction not allowed.

F. 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.

G. 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. Curing compounds may not be used on surfaces that are to receive additional concrete, paint, tile or other flooring products required to bond with the concrete. In these cases the floor must be water cured.

B. Curing and sealing compound shall not be applied to steel reinforcing anchors, water stops, construction joints, or surfaces to be bonded to other concrete.

C. When using a curing compound, keep surfaces moist after the forms are removed, and the form tie holes repaired; after the surfaces are finished, apply the curing compound according to the manufacturer's recommendations; remove forms only as required to advance repair of tie holes and minor defects.

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D. Slabs: Immediately following slab finishing, apply liquid membrane-forming curing compound or begin water curing before the surface becomes dry.

E. 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.

F. For curing concrete under hot weather conditions, see Hot Weather Requirements in this section.

G. 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 Concrete Schedule, included in this specification section, for finish type at each location, defined as follows:

1. Rough Form Finish: (Type W1)
   a. No form facing materials specified.
   b. Patch tie holes and defects.
   c. Chip off fins 1/4 inch or more in height.
2. Smooth Form Finish: (Type W2)
   a. Use a form facing material that will produce a smooth, hard, uniform texture on the concrete.
   b. Keep seams to a practical minimum.
   c. Patch tie holes and defects.
   d. Remove all fins.

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.

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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 dense, smooth, and hard steel troweled surface finish. Comply with ACI 302.1R, paragraph 8.3.11.

b. The floor shall meet ACI Class 5 minimum requirements.

c. Appearance: Ridges, trowel marks, bumps, pits, splatter or other imperfections in the surface of the concrete floor are not allowed. The floor appearance shall be uniform over the entire surface.

d. Floor flatness and levelness shall comply with the following ACI 117 4.3, 4.4, and 4.5 and 302.1R 8.15 requirements as follows:

1) $F_F = 35$

2) $F_L = 25$

3.13 PERIMETER INSULATION

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

3.14 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.

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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.

3.15 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.

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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

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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 insure 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.

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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

TABLE 2
CONCRETE SCHEDULE
USES AND PROPERTIES

Use	**Finish**	**Class and Considerations**
Foundations and footings	W1	Class A or B
Walls Above Grade	W2	Class A or B
Slabs and floors, (Interior)	S2	Class C or D
Equipment pads and bases	S2 Top, W2 Sides	Class F

END OF SECTION

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SECTION 03 30 01

CONCRETE QUALITY 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. American Concrete Institute (ACI), Annual Book of ACI Standards:
   a. ACI 117/177R - Specification for Tolerances for Concrete Construction and Materials and Commentary, Current Edition.
   b. ACI 209.1R - Report on Factors Affecting Shrinkage and Creep of Hardened Concrete, Current Edition.
   c. ACI 301 - Specifications for Structural Concrete, Current Edition.
   d. ACI 302.1R - Guide for Concrete Floor and Slab Construction, Current Edition.
   e. ACI 305R - Hot Weather Concreting, Current Edition.
   f. ACI 306.1 (R2002) - Standard Specification for Cold Weather Concreting, Current Edition.
   g. ACI 311.4R - Guide for Concrete Inspection, Current Edition.
   h. ACI 318/318R - Building Code Requirements for Structural Concrete and Commentary, Current Edition.
   i. ACI 530/530.1/530R/530.1R - Building Code Requirements and Specification for Masonry Structures and Related Commentaries, Current Edition.
   j. ACI ASCC-1(05) - The Contractor's Guide to Quality Concrete Construction, Third Edition.
   k. ACI CP-10/PACK - Craftsman Study Package for ACI Certification of Concrete Flatwork Finisher, Current Edition.
   l. ACI MCP06 - ACI Manual of Concrete Practice, Parts 1 through 6, and Index, 2006 Edition.
   m. ACI SCM-24 - Concrete Repair Basics, Current Edition.
   n. ACI SP-4 - Formwork for Concrete, Current Edition.
   o. ACI SP-15 - Field Reference Manual: Standard Specifications for Structural Concrete ACI 301 with Selected ACI Reference, Current Edition.
   p. ACI SP-71 - ASTM Standards in 318, Current Edition.
2. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards:

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a. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field, Current Edition.
b. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens, Current Edition.
c. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete, Current Edition.
d. ASTM C78 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading), Current Edition.
e. ASTM C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement, Current Edition.
f. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete, Current Edition.
g. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete, Current Edition.
h. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method, Current Edition.
i. ASTM C183 - Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement, Current Edition.
j. ASTM C186 - Standard Test Method for Heat of Hydration of Hydraulic Cement, Current Edition.
k. ASTM C187 - Standard Test Method for Normal Consistency of Hydraulic Cement, Current Edition.
l. ASTM C188 - Standard Test Method for Density of Hydraulic Cement, Current Edition.
m. ASTM C192 - Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory, Current Edition.
n. ASTM C219 - Standard Terminology Relating to Hydraulic Cement, Current Edition.
o. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method, Current Edition.
p. ASTM C470 - Standard Specification for Molds for Forming Concrete Test Cylinders Vertically, Current Edition.
q. ASTM C823 - Standard Practice for Examination and Sampling of Hardened Concrete in Constructions, Current Edition.
r. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection and/or Testing, Current Edition.

1.03 DESCRIPTION OF WORK

A. The work under this section shall cover sampling and testing of concrete to determine the materials conformance and work conformance to the requirements specified for cast-in-place concrete.

1.04 RELATED WORK ELSEWHERE

A. Concrete Accessories - Division 03

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B. Cast-in-Place Concrete - Division 03

PART 2 PRODUCTS AND MATERIALS (N/A)

PART 3 CONSTRUCTION METHODS

3.01 TESTING FOR ACCEPTANCE

A. Samples of concrete shall be delivered to a location on the site where material conformance tests can be performed.
   1. Samples of concrete shall be obtained in accordance with ASTM C172.
   2. Test specimens shall be stored without being disturbed for the first 24 hours.
   3. Contractor's Sampling and Testing. The Contractor, or independent testing laboratory engaged and paid for by the Contractor, as approved by the Engineer, shall conduct tests on the proposed concrete mixture to determine the slump, entrained air content, compressive strength, or other appropriate tests to determine conformance with these specifications. The Contractor shall supply the standard equipment and molds necessary, and the Contractor shall transport the test specimens to the testing laboratory.

B. Slump and Air Content Tests
   1. Slump tests shall be made in accordance with ASTM C143. Air content tests shall be made in accordance with ASTM 173 or ASTM C231. Slump tests and air tests shall always be performed from the same batch from which strength tests are performed.
   2. If the measured slump or air content falls outside the limits specified, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, the concrete shall be considered to have failed to meet the requirements of the specifications and shall not be used in the work.

C. Strength Tests (Contractor's Sampling and Testing for Acceptance). Results from tests conducted by the Contractor shall be considered evidence of compliance of Contractor's materials used in the work, when strength is used as the basis for acceptance.
   1. Cylinders for strength tests shall be made in accordance with ASTM C31. During the first 24 hours all test specimens shall be covered and kept at air temperatures between 60 Degrees Fahrenheit and 80 Degrees Fahrenheit in facilities provided on the job site by the Contractor. At the end of 24 hours, specimens will be carefully transported by the Contractor to the testing laboratory, where molds shall be removed, and cylinders shall be cured in a moist condition at 73.4 Degrees Fahrenheit ±3.0 Degrees Fahrenheit until time of test.
   2. A strength test for any class of concrete shall consist of four standard cylinders made from a composite sample secured from a single load of concrete in accordance with ASTM C172, with one cylinder tested at 7 days, two at 28 days, and the fourth used as a spare. The test results at 28 days

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shall be the average of the strength of two specimens determined in accordance with ASTM C39, except that if one specimen in a test shows manifest evidence of improper sampling, molding or testing, it shall be disregarded and the spare cylinder shall be tested.

3.02 SELECTION OF TESTING LABORATORY

A. An independent testing laboratory to perform Concrete Quality Control shall meet the requirements of ASTM E329. The laboratory shall be selected by the Contractor as approved by the Engineer.

3.03 TEST REPORTS

A. Test reports will be directly distributed by the laboratory as follows: The original to the Contractor; two copies to the Engineer; one copy to the Owner.

3.04 TESTING REQUIREMENTS

A. The Contractor shall be required to perform one test for footings, one test for foundation walls, and one test for floor slabs. Each test shall consist of four (4) cylinders; one (1) to be tested at seven (7) days, two (2) to be tested at twenty-eight (28) days, and one (1) to be a spare.

B. Compliance testing shall be performed on every single load, or portion thereof, where water addition to the single load, or portion thereof, takes place on site.

3.05 CONDITIONS OF COMPLIANCE AND NON-COMPLIANCE

A. <u>Compliance of Contractor's Materials Used in the Work.</u>

1. To conform to the requirements of this specification, every 28-day test representing each mix must be equal to or greater than the specified minimum strength without exception. If a specimen shows manifest evidence of improper sampling, molding, or testing, it will be disregarded. Note, however, that the anticipated strength for all mixes is appreciably above the specified minimum strength due to quality required by the water-cement ratio specified.

B. <u>Non-Compliance of Contractor's Materials Used in the Work</u>

1. When strength is used as the basis for acceptance, should individual tests of the Contractor's specimens produce strengths less than 90% of the specified strength (f'c), tests of cores drilled from the area in question may be required in accordance with ASTM C42. Three cores shall be taken for each cylinder test less than 90% of the specified strength (f'c). If the concrete in the structure will be dry under service conditions, the cores shall be air dried (temperature 60 to 80°F, relative humidity less than 60 percent) for seven (7) days before test and shall be tested dry. If the concrete in the structure will

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be more than superficially wet under service conditions, the cores shall be immersed in water for at least 48 hours and tested wet.

2. Concrete represented by the core tests will be considered structurally adequate and meet the requirements of this specification if the average of the three cores is equal to at least 95 percent of the specified strength (f'c) and if no single core is less than 90 percent of f'c. To check testing accuracy, locations represented by erratic core strengths may be retested. If these strength acceptance criteria are not met by the core tests, the Engineer shall order appropriate action at no additional cost to the Owner.

END OF SECTION

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SECTION 04 05 00

MORTAR AND MASONRY GROUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar and grout for unit masonry.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

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

1.03 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry: Mortar and grout for block.

B. Section 08 12 13 – Standard Hollow Metal Frames: Grout for steel door frames.

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM) International:

1. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
2. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
3. ASTM C150 - Standard Specification for Portland Cement.
4. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
5. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
6. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
7. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
8. ASTM C476 - Standard Specification for Grout for Masonry.
9. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
10. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
11. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
12. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength.
13. ASTM C1142 - Standard Specification for Extended Life Mortar for Unit Masonry.
14. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
15. ASTM C1329 - Standard Specification for Mortar Cement.
16. ASTM C1357 - Standard Test Method for Evaluating Masonry Bond Strength.

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17. 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 cement, lime, and mortar color to be used.

C. Samples: Submit one sample of mortar, illustrating mortar color and color range.

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. Portland Cement: ASTM C150, Type I, gray color.

B. Mortar Aggregate: ASTM C144, standard masonry type.

C. Hydrated Lime: ASTM C207, Type S.

D. Grout Course Aggregate: ASTM C404.

E. Water: Clean and potable.

F. Masonry cement not permitted.

G. Premixed Portland and Lime: Western or Carmeuse complying with ASTM C270.

H. Premixed Portland, Lime and Sand: BMI or Quikcrete complying with ASTM C270.

2.02 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:

C. Maintain sand uniformly damp immediately before the mixing process.

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.

2.03 GROUT MIXES

A. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; premixed type in accordance with ASTM C94 or mixed in accordance with ASTM C476 course grout.

B. Engineered Masonry: 3,000 psi strength at 28 days; 8-11 inches slump; premixed type in accordance with ASTM C94 or mixed in accordance with ASTM C476 course grout.

2.04 GROUT MIXING

A. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 course grout.

B. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 EXAMINATION

A. Request inspection of spaces to be grouted.

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3.02 INSTALLATION

A. Install mortar and grout to requirements in Section 04 20 00.

END OF SECTION

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SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Masonry and Brick Units.

B. Reinforcement, Anchorage, and Accessories.

C. Masonry Cleaning.

1.02 WORK INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

A. Section 03 20 00 - Concrete Reinforcement: Reinforcing bars.

B. Section 04 05 00 - Mortar and Masonry Grout: Mortar and grout.

C. Section 04 40 00 – Thin Stone Veneer.

D. Section 08 12 13 – Standard Hollow Metal Frames: Steel frames and anchors.

E. Built-in Items Furnished by Other Sections.

1.03 RELATED SECTIONS

A. Section 07 27 26 - Fluid-Applied Membrane Air/Vapor Retarder.

B. Section 07 92 00 - Joint Sealers: Backer rod and sealant at control joints.

C. Section 08 12 13 – Standard Hollow Metal Frames: Steel door frame wall openings.

D. Division 22 - Plumbing: Piping and insulation installed in walls and wall openings. Fixtures installed in walls.

E. Division 23 - Ventilating: Conduit installed in walls and wall openings.

F. Division 26 - Electrical: Conduit installed in walls and wall openings.

1.04 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.

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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, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 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.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Product Data: Submit on all accessories and reinforcement.

C. Test Data: Submit on concrete masonry units.

1.06 QUALITY ASSURANCE

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

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1.07 QUALIFICATIONS

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

1.08 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.

1.09 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.

1.10 COLD WEATHER PROTECTION

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.

1.11 COORDINATION

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

B. Coordinate masonry work with installation of window and door anchors.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Nonloadbearing Units: ASTM C129, Type II, hollow, normal weight, 4050 psi minimum compressive strength on the net area.

B. Masonry Units: Modular sized to thickness as indicated on drawings; provide special units for bullnose corners, bond beams, sash units, end units, lintels, etc.

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2.02 REINFORCEMENT AND ANCHORAGE

A. Joint Reinforcement for Single Wythe Interior Walls: Single width, truss-type; ASTM A580 Type 304 stainless steel; cold-drawn steel wire, all 9 gauge wires. #120 Truss-Mesh by Hohmann and Barnard.

B. Wall Strap: ASTM A580 type 304 stainless steel; 1/8 inch bar; 1-1/2 inch wide; 2 inch bends; length so bends are centered in masonry unit cores. #344 Rigid Partition Anchor by Hohmann and Barnard.

C. Reinforcing Steel: Type as specified in Section 03 20 00.

D. Rebar Positioner: Mill galvanized, 9 gauge wire. #RB Rebar Positioner by Hohmann and Barnard.

E. Rebar Tie: Mill galvanized. #Spyra-Lox Rebar Lap-Joint Tie by Hohmann and Barnard.

F. There may be a long lead time on delivery of the stainless steel reinforcement; therefore, it must be ordered as soon as possible. No substitutions will be allowed.

G. Other Acceptable Manufacturers:
   1. Dur-o-Wall, Inc.
   2. Heckmann Building Products, Inc.
   3. Masonry Reinforcing Corp. of America.

2.03 MASONRY CLEANING SOLUTION

A. 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.

2.04 LINTELS

A. Concrete block bond beams and lintels - size and reinforcement as shown.

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.

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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 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 bond for all exposed block walls, 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).

3.04 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. Fully bond intersections at external and internal corners.

E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.

F. 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.

G. Cut mortar joints flush where a finished base is scheduled.

3.05 TOLERANCES

A. Alignment of Pilasters: Maximum 1/4 inch from true line.

B. Variation from Unit to Adjacent Unit: 1/32 inch maximum.

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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.

3.06 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.

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 all wall openings: Install one (1) #5 bar vertically in core closest to opening up to bottom of lintel. In next adjacent core, install one (1) #5 bar vertically full height of wall.

J. At corners: Install one (1) #5 bar vertically in core full height of wall.

K. At control joints: Install one (1) #5 bar vertically in core adjacent to control joint full height of wall.

L. Lap reinforcing bars (splice lap lengths) as follows:
   1. #3 bars: 19 inch
   2. #4 bars: 25 inch
   3. #5 bars: 31 inch

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4. #6 bars: 57 inch

M. Verify that anchorages embedded in concrete attached to structural steel members are properly placed. Embed anchorages in every second joint.

N. Reinforce corners and intersections by lapping horizontal joint reinforcement or by using preformed pieces.

O. Anchors and wall ties at metal stud and existing masonry construction shall be placed at 16 inches on center vertically and horizontally.

3.07 LINTELS

A. Install reinforced unit masonry lintels over openings where steel lintels are not scheduled or unless otherwise shown. Construct lintels using grout fill and reinforcing. Maintain minimum 8 inch bearing on each side of opening.

B. Use single piece reinforcing bars only.

C. Place and consolidate grout fill without displacing reinforcing.

D. Allow masonry lintels to attain specified strength before removing temporary supports.

3.08 GROUTED COMPONENTS

A. Install grout as provided under Section 04 05 00.

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.

F. Do not grout in lifts greater than 12 inches without consolidating grout by rodding.

G. Top of lift shall terminate a minimum of 1-1/2 inches from mortar joint, except at opening or top of wall.

H. Install grout per ACI 530.

3.09 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.

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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 postioners.

3.10 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.

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3.11 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.

3.12 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.

3.13 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.

3.14 CLEANING

A. The concrete block shall be cleaned with water and non-metallic tools at the end of each workday or within 24 hours of laying in units of excess mortar and mortar smears.

B. Within two (2) weeks 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 or damage to the masonry 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.

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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.

3.15 PROTECTION OF INSTALLED CONSTRUCTION

A. Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

B. At day's end, cover unfinished walls to prevent moisture infiltration.

END OF SECTION

SECTION 04 42 11

THIN STONE VENEER ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-load bearing, natural thin veneer applied to a structural back-up wall including mortar, metal lath and special stone shapes.

1.02 RELATED SECTIONS

A. Section 03 11 13 - Structural Cast-In-Place Forms

B. Section 03 30 00 - Cast-In-Place Concrete: Concrete foundations

C. Section 07 27 26 – Fluid Applied Membrane Air/Vapor Retarders

D. Section 07 62 00 - Sheet Metal Flashing and Trim

E. Section 07 92 00 - Joint Sealers: Sealant for perimeter and control joints

F. Section 09 96 23 – Weather/Graffiti Resistant Coating

1.03 REFERENCES

A. ASTM C79M - Treated Core and Nontreated Core Gypsum Sheathing Board

B. ASTM C91 - Standard Specification for Masonry Cement

C. ASTM C97 - Standard Specification for Absorption and Bulk Specific Gravity of Dimension Stone

D. ASTM C144 - Aggregate for Masonry Mortar

E. ASTM C150 - Standard Specification for Portland Cement

F. ASTM C170 - Standard Specification for Compressive Strength of Dimension Stone

G. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes

H. ASTM C270 - Mortar for Unit Masonry

I. ASTM C476 - Grout for Masonry

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J. ASTM C568 - Standard Specification for Limestone Dimension Stone

K. ASTM C615 - Standard Specification for Granite Dimension Stone

L. ASTM C616 - Standard Specification for Quartz Based Dimension Stone

M. ASTM C 629 - Standard Specification for Slate Dimension Stone

N. ASTM C780 - Preconstruction Evaluation of Mortar for Plain & Reinforced Masonry

O. ASTM C847 - Standard Specification for Metal Lath

P. ASTM C880 - Standard Specification for Flexural Strength of Dimension Stone

Q. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster

R. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

S. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics

T. ASTM D4632 - Standard Test Method Grab Breaking Load and Elongation of Geotextiles

U. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

V. ASTM E96 - Standard Test Method for Water Vapor Transmission of Materials

W. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures

X. ACI 530.1/ASCE 6/TMS 602 - Specifications for Masonry Structures

Y. ANSI A118.4 - Specifications for Latex-Portland Cement Mortar

Z. PCA - Portland Cement Plaster (Stucco) Manual

1.04 SUBMITTALS

A. Submit:
   1. Product data for natural dimensional stone, mortar design and accessories.
   2. Shop Drawings for and special shapes.

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B. Design Data: Submit design mix when property specification of ASTM C270 is to be used, with required environmental conditions, and admixture limitations.

C. Selection Samples:

D. Selected dimensional stone illustrating color range, surface, and texture: For field stone submit 15 manufacturer's full-size samples that show color variations of natural thin veneer stone for patterns and colors specified.

E. Mortar samples, illustrating four selected colors of each, as requested by Architect during construction.

1.05 QUALITY ASSURANCE

A. Manufacture's qualifications: Company owning and operating stone quarry and specializing in quarrying, cutting, and dressing natural stone for masonry assemblies with 5 years minimum documented, successful experience.

B. Installer qualifications: Company specializing in performing stone masonry work with 5 years documented, successful experience.

1.06 MOCK-UP

A. Mason shall construct sample panel at location indicated or directed, illustrating color, finish, texture, joints, construction methods, and workmanship quality. Mock-up shall be done as follows:

1. Include up to 2 freestanding independent mock ups at 4' x 6'. Mock-ups to show fieldstone and two courses of vertical stone elements with either a sanded front face or natural front face to be selected by Architect from samples. Mock-ups shall be approved by Owner and/or Architect. One mock-up shall have FIELDSTONE MIX A1: Chestnut Boulder (100%) with 2 mortar colors split equally in Mock-Up. Second mock-up shall have MIX A2: Chestnut Boulder (75%) Highland Brown Webwall (25%) (Krukowski Stone Company Inc.) with 2 mortar colors split equally in Mock-Up. Mortar colors to be selected by Architect.
2. Mock up shall be constructed with:
   a. Natural Thin Veneer as specified in this section.
   b. Mortar & metal lath specified in this section.
   c. Backing Board
   d. Size shall be minimum 4 feet high by 6feet long.
   e. Refinish wall mock-up area as required to produce acceptable work.
3. Once a freestanding independent mock-up is approved, mason shall construct sample panel on the building wall to be constructed with:
   a. Natural Thin Veneer as specified in this section and chosen by Architect.

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b. Mortar & metal lath specified in this section.
c. Obtain owner & architect's acceptance of sample panel before beginning construction activities of this section.
d. Do not remove sample panel until construction activities of this section have been accepted by the architect.

1.07 PRE-INSTALLATION CONFERENCE

A. Preconstruction Meetings: Conduct preconstruction meetings review of all other masonry work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store products on pallets, under cover and in manufacturer's unopened packaging until ready for installation to avoid chipping, breakage, marring faces, and contact with contaminating materials.

B. Store stone materials on pallets on a dry level surface. Pallets shall not be stacked and shall be covered with tarps.

C. Store mortar and cementitious materials under cover and in an area where temperature is maintained between 40 degrees F to 110 degrees F.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Maintain materials and surrounding air temperature to following limits prior to, during, and 24 hours after completion of masonry veneer and application of water repellent coating:

B. Minimum 40 degrees F.

C. Maximum 90 degrees F.

D. Hot and Cold Weather Requirements: In accordance with ACI 530.1/ASCE 6/TMS 602 Specifications for Masonry Structures.

E. When ambient temperature falls below 50 degrees F, heat mortar mixing water.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Stone Quarriers:
1. Krukowski Stone Company Inc.
2. Buechel Stone Corporation 800.236.4473 www.buechelstone.com

B. Substitutions during bidding will be considered but must submit at least 15 pieces of each type to demonstrate range. Owner and/or Architect reserves the right to

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reject substitution requests based on natural stone color and texture, even though size, shapes, and properties are equivalent.

C. Supplier: One possible material supplier is Madison Block & Stone, 608.249.5633, www.madisonblockand stone.com, 5813 N. Highway 51, Madison WI 53704.

2.02 VENEER STONE

A. Stone A (field):
1. MIX A1 or MIX A2 as determined in mock-ups.
2. Nominal size range:
3. Length: Sizes shall range from 5" minimum to 12" maximum
4. Width: Sizes shall range from 5" minimum to 12" maximum
5. Smaller pieces with dimensions of 3" minimum and 5" maximum may be used sparingly as filler stones.
6. Thickness: 3/4 to 1 1/4 inches
7. Color range MIX A1: brown to tan
8. Color range MIX A2: brown to tan to reddish tan
9. Color consistency: Contractor shall provide submittals which shall be approved by Architect and/or Owner.
10. Ends: irregular – free form stone
11. Properties for quartzitic sandstone complying with ASTM C616.
12. Maximum absorption rate tested in accordance with ASTM C97: 3 percent.
13. Minimum density tested in accordance with ASTM C97: 2,400 kg per cubic meter.
14. Minimum compressive strength tested in accordance with ASTM C170: 68.9 Mpa
15. Minimum flexural strength tested in accordance with ASTM C 880: 8.27 Mpa.

B. Stone B (vertical accent bands)
1. Chestnut (Buechel Stone).
2. Cut size sawn on all sides or sawn on all sides with one normal textured front face. Architect and/or Owner shall select one or the other from samples of each provided by Contractor before preparation of mock-ups.
3. Length: Alternating 12 inches & 16 inches, alternate length of bottom stone so that there is one 12" and one 16" on alternate rows..
4. Width: 3 -1/2 inches
5. Thickness: 3/4 inches to 1 1/4 inches
6. Color range: Limited/tight range of brown as shown in City provided sample. Handpick to omit lighter and noncompliant colors. Contractor shall provide submittal samples to be approved by Architect.
7. Color consistency: consistent

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8. Sides & Ends: All six sides shall be cut or shall have one natural textured front face as determined by Architect through samples provided prior to preparation of mock-ups.
9. Properties for limestone complying with ASTM C616.

2.03 SPECIAL SHAPES

A. Provide special shapes as indicated on the Drawings and as follows:
1. Vertical bands
2. Corner units

B. Corner Units: At the Stone A, provide corner wrap units, provided precut outside corners of various return, with a minimum of 4" deep return to simulate solid stone corners.

2.04 WEEP SYSTEM

A. Provide complete weep system to separate Natural Thin Veneer from Structural back-up wall and provide means to remove water entering wall from exterior and allow wall to weep properly thus reducing chance of mold and mildew growth; EMC-3639XL Weep System by Buechel Stone Corporation or equal.

B. System Components: Fabricated from plastic extrusions:
1. Collection and drainage membrane: Corrugated plastic sheet with permeable fabric facing to be placed vertically and continuously behind stone veneer on structural back-up wall; EMC-3639XL by Buechel Stone Corporation.
2. Weeps: Cellular plastic material placed at base of stone veneer wall to receive water from collection and drainage membrane and convey it horizontally to weep strips spaced at 16 inch and penetrating through base mortar bed. WOW-3639 by Buechel Stone Corporation or approved equal.
3. Material properties:
   a. Water vapor transmission tested in accordance with ASTM E96: 13.8 grains per hour per square foot.
   b. Permeability tested in accordance with ASTM E96: 3.7 perm-inches.
   c. Compressive strength tested in accordance with ASTM D1621: 30 PSI at 10 percent strain.
   d. Flexural breaking load tested in accordance with ASTM D4632: 136 Pounds minimum.
   e. Puncture resistance tested in accordance with ASTM D4833: 48.7 pounds.

2.05 MORTAR

A. Portland Cement: Complying with ASTM C150:
1. Type I.

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2. Color gray
3. Mortar Aggregate: Complying with ASTM C144, standard masonry type.

B. Hydrated Lime: Complying with ASTM C207:
1. Type S

C. Water: Clean and potable.

D. Bonding Agent: Acrylic additive as recommended by the stone manufacturer.

E. Mortar mix: ASTM C270 Type S using the Property Method.

F. Color: Mineral oxide pigment. 4 colors of Mortar Color as selected by Architect and/or Owner for the Mock-up panels. Only 2 colors will be used in the final work. Selected mortar colors may vary for field stones and vertical accent bands.

G. Mix mortar ingredients in accordance with ASTM C270. Mix only in quantities needed for immediate use.
1. Do not use anti-freeze compounds.
2. Use mortar within two hours after mixing.

2.06 ACCESSORIES

A. Expanded Metal Lath: ASTM C847, galvanized, self-furring.

B. Lath Anchorage: Tie wire, nails, screws and other metal supports, galvanized, of type and size to suit application and to rigidly secure materials in place.

C. Setting Buttons and Shims: Plastic.

D. Sealants: Provide sealants and backing material for perimeter and control joints as detailed on Drawings and reviewed shop drawings and as required to provide weathertight natural thin veneer installation.
1. Type: As specified in Section 07 92 00 - Joint Sealers: Sealant for perimeter and control joints.

PART 3 EXECUTION

3.01 PREPARATION FOR INSTALLATION

A. Coordinate installation of Natural Thin Veneer with installation of other components to ensure timely execution of work and sequencing to ensure sound, attractive, and weathertight exterior wall system.

B. Prior to starting installation, inspect project conditions:
   1. Verify that back-up wall construction is complete, rigid, plumb, and ready to receive stone.
   2. Verify that door and window openings and other penetrations are accurately located, sized, and adequately prepared for application of Natural Thin Veneer.
   3. Verify built-in items are properly located and ready for roughing into masonry. Ensure built-in items are free of rust, ice, mud, and other foreign matter and that ferrous items are primed or galvanized.
   4. Verify that mechanical and electrical services within walls have been installed, tested, and approved.
   5. Concrete:
      a. Verify cast-in-place concrete walls have cured 30 days minimum.
      b. Verify that surfaces are free of form release and curing agents, oil, bituminous waterproofing, water repellent, dirt, and other foreign material that would be detrimental to mortar bonding. Clean surface as required by sandblasting, acid wash, or other means. Thoroughly rinse cleaned surfaces.
      c. Verify that the fluid applied membrane air/vapor retarder system is in place.

C. Report deficiencies to Architect and do not proceed with Natural Thin Veneer installation until all deficiencies have been addressed.

3.02 INSTALLATION

A. Install stone and related components as detailed on Drawings and reviewed shop drawings, manufacturer's instructions, and standards of workmanship as published in ACI530.1/ASCE 6/TMS

B. Flashing: Install flashings at base of wall.

C. Weep system installation: Install in accordance with manufacturer's instructions and reviewed shop drawings.
   1. At base of wall anchor weeps by stapling to substrate. Space one weep on each side of vertical accent band.

D. Metal lath installation: Install in accordance with ASTM C1068. Apply taut with long dimensional horizontal.
   1. Attach metal lath directly to cast concrete with stainless steel concrete nails or screws spaced 6 inches maximum vertically and 16 inches maximum horizontally.
   2. Start installation at bottom of wall.
   3. Lap horizontal in shingle fashion with minimum 3 inches overlap.
   4. Lap ends 1 inch minimum. Secure laps with tie wire when they occur between supports.

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5. Lap corner installations minimum 16 inches and securely fasten into adjacent wall stud.
6. Stop lath 1 inch from finished edges.

E. Scratch coat installation: Apply cement mortar scratch coat in accordance with PCA Plaster (Stucco) Manual.

F. Key into metal lath.

G. Thickness 1/2 to 3/4 inch.

H. Prior to initial set, scratch horizontally to provide key for bond coat.

I. Allow to cure 20 hours.

J. Slightly dampen scratch coat before installation of Natural Thin Veneer.

K. Apply mortar to metal lath in amount that is capable of being worked while mortar is still workable

L. Install Natural Thin Veneer to mortar before initial setup.

M. Stone installation

N. Lay out work in advance and distribute fieldstone color range and stone sizes over total work area.
1. Coursing patterns: Stone A mix selected during Mock-Up - Random field stone, Stone B-Stacked vertical bond. For Stone Ak, arrange stone pattern to provide visual variations including color and blend of sizes as well as to provide regularity and neat appearance of joints. Exercise care to avoid concentration of any particular color on any one wall surface or with adjacent stones within a wall surface. Lay Stone A - field stone with face exposed. Distribute very minor color variations of Stone B vertical banding over total work area.

O. Mortar setting: Apply 1/2 inch bonding mortar to back of Natural Thin Veneer. Ensure complete coverage of back surface. Apply extra bed of mortar around all outside edges of stone. Press and wiggle stone firmly onto wall.

P. Work from bottom ledge upward.

Q. Start at corners. Alternate installation of long and short ends of corner units in adjacent courses.
1. Isolate top of veneer stone from horizontal structural framing members and slabs or decks with compressible joint filler and sealant in accordance with Section 07900.

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R. Joints: For vertical cut stone strips, form vertical and horizontal joints of uniform thickness not to exceed 1/8" and depth not exceed ¼. For field stone, form vertical and horizontal joints of uniform thickness not to exceed 1/2" and depth of ¼'. Joints may widen slightly at intersection points.

S. Fill joints with mortar. Pack and work into voids.

T. When thumb-print hard, for vertical cut stone strips raked joint not to exceed 1/8" , for field stone not to exceed 1/2".

U. Remove excess mortar as work progresses to prevent staining.

V. Remove units disturbed after laying, clean, and re-lay with fresh mortar If adjustments are required, remove units, clean off mortar, and reset with fresh mortar.

W. Exercise care that wet mortar is not splashed onto stone face during installation. Excess or splashed mortar shall be cleaned from face with dry burlap wipe. Remove excess after mortar becomes hard enough not to smear but prior to mortar setting.

X. Ensure that sealant materials are not smeared onto stone faces. Remove as recommended by manufacturer.

Y. After installation of Natural Thin Veneer, cut off excess weep materials flush with stone edge.

3.03 PROTECTION

A. Protect installed products until completion of project.

B. Cover the top of unfinished stone masonry work to protect it from the weather.

C. Touch-up, repair or replace damaged products before substantial completion.

3.04 CLEANING AND SEALING

A. Remove excess mortar and mortar smears as work progresses.

B. Allow walls to air dry. Brush off mortar with stiff fiber brush. Do not use metallic tools for cleaning.

END OF SECTION

SECTION 05 10 00

STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members and support members.

B. Baseplates, connection plates and angles attached to structural framing.

C. Anchor bolts for structural steel.

D. Fasteners for connecting structural steel items.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Section 03 30 00 - Cast-In-Place Concrete: Anchors for casting into concrete.

B. Section 04 20 00 - Unit Masonry: Anchors for embedding into masonry.

1.03 RELATED SECTIONS

A. Section 06 10 06 - Rough Carpentry: Roof and wall framing.

1.04 REFERENCES

A. AISC (American Institute of Steel Construction)
   1. Specification for Structural Steel Buildings, Allowable Stress Design (ASD).
   2. Code of Standard Practice for Structural Steel Buildings and Bridges.

B. American Society for Testing and Materials (ASTM) International:
   1. ASTM A36 - Standard Specification for Carbon Structural Steel.
   2. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   3. ASTM A307 - Standard Specification for Carbon Steel Bolt and Studs, 60000 PSI Tensile Strength.
   4. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
   5. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
   6. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
   7. ASTM A992 - Standard Specification for Steel for Structural Shapes.

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C. American Welding Society (AWS):
1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
2. AWS D1.1 - Structural Welding Code - Steel.

D. Research Council on Structural Connections:
1. RCSC - Specification for Structural Joints Using ASTM A325 or A490 Bolts, LRFD or ASD.

E. Steel Structures Painting Council (SSPC):
1. SSPC - Steel Structures Painting Manual, Volumes 1 and 2.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Shop Drawings:
1. Indicate profiles, sizes, spacing, and locations of structural members attachments, fasteners.
2. Connections.
3. Cambers & loads.
4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

1.06 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC Codes of Standard Practice.

1.07 QUALIFICATIONS

A. Fabricator: Company specializing in performing the work of this Section with minimum three (3) years documented experience.

B. Erector: Company specializing in performing the work of this Section with minimum three (3) years documented experience.

C. Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the state of which the project is located.

PART 2 PRODUCTS

2.01 MATERIALS

A. Channels, Angles, M, S and HP-Shapes, Tees: ASTM A36, Fy = 36 ksi.

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B. Structural Tubing: ASTM A500, Grade B, Fy = 46 ksi.

C. Bolts, Nuts, and Washers: ASTM A325.

D. Anchor Bolts: ASTM A307.

E. Welding Materials: AWS D1.1; type required for materials being welded.

2.02 FINISH

A. Shop prime structural steel members. Do not prime surfaces that will be field welded in contact with concrete, or fireproofed.

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.

3.02 ERECTION

A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

B. Field weld components indicated on shop drawings.

C. Field connect members with threaded fasteners. Torque to required resistance.

D. Do not field cut or alter structural members without approval of Architect/Engineer.

E. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.03 ERECTION TOLERANCES

A. Per AISC.

END OF SECTION

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SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural roof framing.

B. Roof and wall sheathing.

C. Pressure treated lumber.

D. Microlam and glue laminated beams.

E. Miscellaneous framing, sheathing, nailers, and blocking.

1.02 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry.

B. Section 05 10 00 - Structural Metal Framing.

1.03 REFERENCES

A. American Lumber Standards Committee (ALSC):
   1. Softwood Lumber Standards.

B. American National Standards Institute (ANSI):
   1. ANSI A135.4 - Basic Hardboard.
   2. ANSI A208.1 - Wood Particleboard and Flakeboard: Types, Grades, and Uses.

C. American Plywood Association (APA).

D. American Wood-Preservers' Association (AWPA):
   1. AWPA C1 - All Timber Products - Preservative Treatment by Pressure Process.

E. National Forest Products Association (NFPA).

F. National Institute of Standards and Technology (NIST):
   1. NIST PS 20 - American Softwood Lumber Standard.

G. Southern Pine Inspection Bureau (SPIB):
   1. SPIB - Standard Grading Rules for Southern Pine Lumber.

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H. Western Wood Products Association (WWPA):
1. WWPA G5 - Western Lumber Grading Rules.

1.04 QUALITY ASSURANCE

A. All lumber and plywood shall bear a grading stamp exposed to view.

1.05 DELIVERY, STORAGE, AND HANDLING

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

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

A. Lumber Grading Rules: SPIB and WWPA.

B. Lumber Framing: 19 percent maximum moisture content.
2x4s: SPF Standard Grade, F_b = 550 psi
2x6s: SPF Stud Grade, F_b = 675 psi
2x8s and 2x10s: Hem Fir No. 2 and better, F_b = 850 psi
2x12s: DF No. 2 and better, F_b = 825 psi.

C. Rafter Framing: Hem Fir No. 2 or better, 19 percent maximum moisture content.

D. Nailers and Blocking: Spruce-Pine-Fir or Hem Fir No. 2 or better, 19 percent maximum moisture content.

E. Pressure Treated Lumber: Southern Pine No. 2 or better, preservative treated with CCA or ACQ to a retention level of 0.40 lbs/cu. ft. minimum conforming to the approved standards of the American Wood Preserver's Association. Each piece shall be treated in accordance with AWPA standards and certified by an approved inspection agency.

F. Microlams: As indicated on the drawings.

2.02 GLUE LAMINATED BEAMS

A. Wood Species: DF/DF lumber conforming to applicable grading rules with 12 ercent maximum moisture content before fabrication, grades as required for working stresses as indicated below.
1. Wood Grade: 24F- V4
2. Fb – Tension: 2,400 psi
3. Fb – Compression: 1,850 psi
4. Fv – Shear: 265 psi

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B. Appearance Grade: AITC Architectural. Factory Stain color as selected by Architect/Owner. Provide temporary weather barrier wrap to protect during construction.

2.03 SHEATHING MATERIALS

A. Roof and Wall Sheathing: ½-inch Plywood, APA Rated Sheathing, Exposure 1, unsanded, Group 2; or OSB, APA Rated Sheathing, Exposure 1.

B. Pressure Treated Plywood: APA Rated Sheathing, Grade C-D, Exterior, unsanded, Group 2, pressure treated with CCA or ACQ same as lumber.

2.04 ACCESSORIES

A. Masonry Screws: Tap-cons.

B. Aluminum screws.

C. Aluminum ring shank nails.

D. Self drilling and tapping screws.

E. Galvanized ring shank nails.

F. Metal Connectors: Hot dipped galvanized steel, sized to suit framing conditions, manufactured by Simpson, Kant Sag.

G. Nails.

H. Wood to Metal Screws: Hilti Self-Drilling screws, #3 point, #10 fastener diameter.

I. Sill Gasket: Closed cell polythene foam in continuous rolls. Gasket shall be as wide as wall plate.

J. Plate Steel: A36, prime painted.

PART 3 EXECUTION

3.01 FRAMING

A. Set structural members level and plumb, in correct position.

B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

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C. Place horizontal members crown side up.

D. Construct framing members full length without splices.

E. Set members level and plumb, in correct position.

F. Fasten members in place. Anchor lumber together with nails. Anchor lumber to masonry and/or concrete with masonry screws or bolts as detailed. Anchor lumber to metal deck with self-drilling and tapping screws. Anchor lumber to existing lumber with galvanized ring shank nails. Anchor plywood to lumber with nails.

G. Provide pressure treated lumber at all locations in contact with concrete or masonry.

H. Provide headers for all openings.

I. Place sill gasket directly on concrete and/or masonry units. Puncture gasket clean and fit tight to protruding items.

J. Exterior walls shall be curved with custom cut top and bottom plates. Curvature will follow shape or concrete wall below.

3.02 ROOF SHEATHING

A. Install with the long dimension of the panel across supports, and with panel continuous over two or more spans. Suitable edge support shall be provided where indicated on drawings or in recommendations of the American Plywood Associates by use of panel clips, tongue-and-groove panels, or lumber blocking between joists. Panel end joints shall occur over framing. Allow 1/8 inch spacing at panel ends and 1/4 inch at panel edges, unless otherwise recommended by the panel manufacturer. Bend sheathing to conform with variations in the roof deck.

B. Nail 6 inches on center along panel edges and 12 inches on center at intermediate supports; except, when supports are spaced 48 inches on center or more, space nails 6 inches on center at all supports. Use 6d common nails for panels 1/2 inch and less and 8d for greater thicknesses; except, when panels are 1-1/8 inch or 1-1/4 inch, use 8d ring-shank or 10d common.

C. Shape to form curve. Follow wood decking and shim/radius at beam lines.

3.03 WALL SHEATHING

A. At wood studs, nail 6 inches on center along panel edges and 12 inches on center at intermediate support with 6d common nails for panels 1/2 inch and less, and 8d

for greater thicknesses. Bend sheathing to conform with variations in the wall studs.

B. Allow 1/8 inch spacing at panel ends and 1/4 inch at panel edges, unless otherwise recommended by the panel manufacturer.

C. Shape to form/follow curbed wall framing.

3.04 NAILERS

A. Fasten wood nailers to masonry with masonry screws. Use one (1) screw at 24 inches on center for 2x4's. Use two (2) screws at 24 inches on center for 2x6's, 2x8's, and plywood on top of masonry walls. Fasten to metal with self-drilling, self-tapping wood to metal screws.

3.05 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floors: 1/4 inch in 10 feet, maximum.

END OF SECTION

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SECTION 06 15 00

WOOD DECKING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes softwood lumber structural wood decking.

1.02 RELATED SECTIONS:

A. Section 06 10 00 - Rough Carpentry: Timber Framing.

B. Section 09 91 00 – Painting: Field Finishing (stain).

1.03 REFERENCES

A. AITC 108 (American Institute of Timber Construction) - Standard For Heavy Timber Construction.

B. AITC 112 (American Institute of Timber Construction) - Standard for Tongue and Groove Heavy Timber Decking.

C. ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.

D. APA (APA/Engineered Wood Association) - Rated Sheathing.

E. ASTM D2559 - Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions.

F. NFPA (National Forest Products Association) - Lumber Grading Rules.

G. RIS (Redwood Inspection Service) - Lumber Grading Rules.

H. SPIB (Southern Pine Inspection Bureau) - Lumber Grading Rules.

I. WCLIB (West Coast Lumber Inspection Bureau) - Lumber Grading Rules.

J. WWPA (Western Wood Products Association) - Lumber Grading Rules.

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Shop Drawings: Indicate deck framing system, loads and cambers, and bearing details.

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C. Product Data: Submit technical data on wood preservative materials.

D. Samples of Exposed To View Wood Deck: Submit two (2) samples, 4 x 4 inch in size illustrating wood grain, stain, and finish.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. Lumber Grading Agency: Certified by ALSC.

B. In lieu of grade stamping exposed to view lumber, submit manufacturer's certificate certifying Products meet or exceed specified requirements.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three (3) years documented experience.

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

C. Design decking under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Wisconsin.

1.07 DELIVERY, STORAGE, AND HANDLING

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

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
   1. The Filler King Company as distributed by Wood-Lam, Inc., 800-242-2216.
   2. Substitutions: Section 01 60 00.

2.02 MATERIALS

A. Lumber Decking: Stress Group A, Douglas Fir species, non-laminate rough sawn solid decking, No. 1 grade, 2 x 6 size classification, 19 percent maximum moisture content; tongue and groove.

2.03 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Hot-dipped galvanized steel for all wood locations.

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2.04 FINISHES

A. Surfaces Exposed to View: Rough-sawn, bright and clear.

B. Section 09 91 00 - Painting: Site finishing.

PART 3 EXECUTION

3.01 EXAMINATION

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

B. Verify support framing is ready to receive decking.

3.02 PREPARATION

A. Coordinate placement of bearing and support items.

3.03 INSTALLATION - LUMBER DECKING

A. Install decking perpendicular to framing members, segmented between each beam with butt ends at beams to account for varied beam height and slope.

B. Fit butt end deck joints occurring between support members to maintain tight, aligned joints.

C. Engage decking tongue and groove edges.

D. Secure with fasteners. Side spike planks together, through pre-drilled holes.

E. Maintain decking joint space of 1/16 inch maximum.

3.04 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Surface Flatness of Decking Without Load: 1/4 inch in 10 feet and 1/2 inch in 30 feet maximum.

END OF SECTION

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SECTION 06 20 00

FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior wood trim.

B. Interior wood siding.

1.02 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry: Wall and roof construction.

B. Section 09 91 00 – Painting: Staining 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. Hardwood Plywood Manufacturer's Association (HPMA):
   1. HPMA HP - American Standard for Hardwood and Decorative Plywood.

F. National Hardwood Lumber Association (NHLA).

1.04 QUALITY ASSURANCE

A. Perform work in accordance with AWI Custom Grade quality.

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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.

1.05 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.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire retardant requirements.

1.07 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.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.09 COORDINATION

A. 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. Cedar Trim: Where noted on Drawings, surface 4 sides (S4S) cedar. Size indicated on Drawings.

2.02 SHEET MATERIALS

A. Interior Wood Siding Panel: 19/32-inch textured rough sawn with grooves at 12 inches on center, ship lap edges.

2.03 FASTENERS

A. Fasteners: Of size and type to suit application.

B. Concealed Joint Fasteners: Threaded steel.

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2.04 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.

E. Final finish by Section 09 91 00.

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 Custom 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.

END OF SECTION

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SECTION 07 21 13

BOARD INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall, underside of floor slabs, cavity wall construction, exterior wall furring construction, and attic access construction.

1.02 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete: Slab and foundation construction.

1.03 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, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
   2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.

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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.

1.04 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 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.

2.02 ADHESIVES

A. Adhesive: Type recommended by insulation manufacturer for application.

B. Acceptable Manufacturer's products:
1. Henkel PL300 Foam Board Adhesive.
2. Henkel Premium Foam Based Adhesive.
3. Sonneborn 200 Adhesive.
4. DAP Beats the Nail.

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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. Foundation Perimeter:
   1. Adhere insulation to wall by applying 2 inch diameter spots of adhesive to insulation boards at 16 inches on center both ways.
   2. Butt edges and ends tight to adjacent board and to protrusions.
   3. Cut and fit insulation tight to protrusions or interruptions to insulation plane.

B. Under Concrete Slabs:
   1. Place insulation under slabs on grade after base for slab has been compacted.
   2. Prevent insulation from being displaced or damaged while placing [vapor retarder and] slab.
   3. Cut and fit insulation tight to protrusions or interruptions to insulation plane.

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.

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3.04 SCHEDULES

A. Perimeter Foundation Wall Insulation: Type A, extruded polystyrene, 2-inch thick, square edges.

B. Under Floor Insulation: Type A, extruded polystyrene, 2-inch thick, square edges.

END OF SECTION

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SECTION 07 25 00

WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Continuous weather resistive barrier as indicated on Drawings behind all metal wall and fascia panels.

B. Accessories including insect netting and staples.

1.02 RELATED WORK

A. Section 06 10 00 - Rough Carpentry: Weather resistive barrier substrate.

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, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Product Data: Submit data on material characteristics, performance criteria, and limitations.

C. Manufacturer's Installation Instructions: Submit preparation, installation requirements and techniques, and product storage and handling criteria.

D. Samples: Submit samples of the Weather barrier and Insect Netting.

E. Warranty: Unconditional guarantee against weather and construction damage.

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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. Self-Adhered weather barrier: Rubberized sheet waterproof membrane complying with ASTM D 1970, self-adhering.
   1. Resistance to Direct Exposure: At least 90 days.
   2. Minimum High Temperature Resistance: 230 degrees F (110 degrees C).
   3. Water Vapor Permeance: 0.1 perm (5.7 ng/Pa s sq m)), maximum.
   4. Provide one of the following:
      a. Firestone CladGard SA.
      b. WR Grace Ice & Water Shield HT.
      c. Approved equal.
   5. Note: these products where selected based on this special metal panel application and their high temperature resistance.

B. Corrosion resistant Staples.

C. Insect Netting: Mason ProNet website: www.masonpro.com 1"x10".

PART 3 EXECUTION

3.01 INSPECTION

A. Verify surfaces are ready to receive Weather resistive barrier.

B. Beginning of installation means acceptance of substrate.

3.02 INSTALLATION

A. Install prior to door and window installation.

B. Install full height of framed walls, soffit and fascia.

C. Upper rolls should overlap bottom rolls by 6 inches minimum.

D. For wall and fascia application tack staple to initially hold in place. Further secure barrier according to manufacturer's recommendations.

E. Cut and fold into door, window and mechanical openings.

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F. Install at the window sills prior to window installation.

G. Install insect netting with a dollop of sealant at each upper leg or staple. Set netting up 1" from bottom edge of the metal panel. Cut and install a narrow strip below windows. Cut around the metal panel stand-off blocks. Panels will compress the netting to ½".

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

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SECTION 07 27 26

FLUID-APPLIED MEMBRANE AIR/VAPOR RETARDER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section includes the following material and installation for a complete air/vapor retarder system for exterior wall, including: liquid-applied air/vapor retarder system located in the non-accessible part of the wall, sheet rubberized-asphalt self-adhered air/vapor retarder membrane, and other materials to bridge and seal air leakage pathways and gaps.

1.02 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete: Back-up walls and wall openings.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) International:

1. ASTM C836 – Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
2. ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
3. ASTM D903 – Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
4. ASTM D1644 – Standard Test Methods for Nonvolatile Content of Varnishes.
5. ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as a Steep Roofing Underlayment for Ice Dam Protection.
6. ASTM D3767 – Standard Practice for Rubber – Measurement of Dimensions.
7. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
8. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
9. ASTM D5295 – Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems.
10. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
11. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

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12. ASTM E2178 – Standard Test Method for Air Permeance of Building Materials.
13. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

B. Wisconsin Commercial Building Code, Current Edition.

1.04 PERFORMANCE REQUIREMENTS

A. Provide air/vapor retarder constructed to perform as a continuous air/vapor retarder, and as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration. Membrane shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air seal materials at such locations, changes in substrate and perimeter conditions.

B. Provide an air retarder assembly that has been tested in accordance ASTM E2357 to provide air leakage results not to exceed: 0.06 cfm/sf at 0.30 inch H_2O.

C. Provide vapor retarder assembly that has been tested in accordance with ASTM E96, Method B, to provide results not to exceed: 0.08 perms.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Manufacturer's Product Data Sheets: Submit for each type of membrane, including manufacturer's printed instructions for evaluating, preparing, and treating substrate, temperature and other limitations of installation conditions, technical data, and tested physical and performance properties.

1.06 QUALITY ASSURANCE

A. Installer Qualifications:
1. The air retarder contractor and each installing worker shall be certified by the product manufacturer.
2. Each Lead Certified Applicator can supervise a maximum of five (5) registered installers. The Certified Applicator shall be thoroughly trained and experienced in the installation of air retarders of the types being applied. Lead Certified Applicators shall perform or directly supervise all air/vapor retarder work on the project.

B. Air/vapor retarder installers must be trained and certified by [NECA (National Energy Conservation Association) and PSDI (Professional Skills Development Institute for energy conservation)] [and the product manufacturer].

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C. Single-Source Responsibility: Obtain air/vapor retarder materials from a single manufacturer regularly engaged in manufacturing the product.

D. Products shall comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

E. Section 01 30 00 - Administrative Requirements [01 31 13 - Project Coordination]: Meeting requirements.

F. Preconstruction Meeting: Convene minimum one (1) week prior to commencing Work of this section.

G. Field-Constructed Mock-Ups: Prior to installation of air/vapor retarder on building, apply air/vapor retarder as follows to verify details under shop drawing submittals and to demonstrate tie-ins with adjoining construction, and other termination conditions, as well as qualities of materials and execution:

1. Apply air/vapor retarder in field-constructed mock-up specified in Section 04 20 00. Mock-up shall incorporate termination at flashing, control joint, junction with roof system and typical penetrations and gaps. Mock-up shall illustrate materials interface and seals.

H. Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover any installed air and vapor retarder membrane unless it has been inspected, tested, and approved.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements [Material and Equipment]: Product storage and handling provisions.

B. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product, date of manufacture, and directions for storage.

C. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air/vapor retarder manufacturer. Protect stored materials from direct sunlight.

D. Avoid spillage. Immediately notify Owner, Architect if spillage occurs and start clean up procedures.

E. Clean spills and leave area as it was prior to spill.

1.08 WASTE MANAGEMENT AND DISPOSAL

A. Separate and recycle waste materials.

B. Place materials defined as hazardous or toxic waste in designated containers.

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C. Ensure emptied containers are sealed and stored safely for disposal away from children.

1.09 PROJECT CONDITIONS

A. Section 01 60 00 - Product Requirements.

B. Environmental Conditions: Apply air/vapor retarder within range of ambient and substrate temperatures recommended by air/vapor retarder manufacturer. Do not apply air/vapor retarder to a damp or wet substrate, unless the manufacturer specifically permits that for the product.
   1. Do not apply air/vapor retarder in snow, rain, fog, or mist.
   2. Do not apply air/vapor retarder when the temperature of substrate surfaces and surrounding air temperatures are below those recommended by the manufacturer.

1.10 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Warranty provisions.

B. Furnish 2-year manufacturer's warranty for liquid and membrane materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Liquid Air/Vapor Retarder: Synthetic rubber, spray applied.
   1. Air-Bloc 32MR synthetic rubber Air/Vapor Retarder Insulation Adhesive as manufactured by Henry Building Envelope Systems.
   2. Perm-A-Barrier® Liquid spray-applied air and vapor retarder by Grace Construction Products.
   3. Rub-R-Wall Airtight Air/Vapor Retarder liquid-applied 100% rubber copolymer membrane as manufactured by Rubber Polymer Corporation.

B. Acceptable Equal Systems:
   1. Poly-Wall, Poly-Wall AirLock Flex and ancillary products.
   2. BASF, Enershield-I ancillary products.
   3. TK-Ainnax 2102 NP and ancillary products.

2.02 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended by air/vapor retarder manufacturer for intended use and compatible with the air/vapor retarder membrane.

B. Self-Adhesive Membrane Flashing: 32 mils of self-adhesive rubberized asphalt integrally bonded to 8 mil cross-laminated, high density polyethylene film to provide

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a minimum 40 mil thick membrane shall be interleaved with disposable silicone-coated release paper until installed:

1. Blueskin® SA by Henry Building Envelope Systems.
2. Perm-A-Barrier® Wall Flashing by Grace Construction Products.
3. Rub-R-Wall SA by Rubber Polymer Corporation.

C. Primer:

1. Water based liquid primer for extruded polystyrene, concrete, masonry, gypsum sheathing, wood, metal, and painted substrates;
   a. Aquatac or LVC Adhesive Primer as manufactured by Henry Building Envelope Systems.
   b. Perm-A-Barrier® WB Primer by Grace Construction Products.
2. Solvent based, VOC compliant primer for concrete, masonry, gypsum sheathing, wood, metal, and painted substrates:
   a. Bituthene Primer B-2 by Grace Construction Products.
   b. Rub-R-Wall Primer by Rubber Polymer Corporation.

D. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes as recommended by self-adhesive membrane flashing or liquid membrane air retarder material manufacturer.

E. Substrate Filler for Rub-R-Wall: Rub-R-Wall Mastic manufactured by Rubber Polymer Corporation.

F. Sealants provided under Section 07 92 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions under which air/vapor retarder systems will be applied, with Installer present, for compliance with requirements. Verify that surfaces and conditions are suitable prior to commencing work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

1. Do not proceed with installation until after minimum concrete curing period recommended by air/vapor retarder manufacturer.
2. Ensure that:
   a. surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants
   b. concrete surfaces are cured and dry, smooth without large voids, spalled areas or sharp protrusions.
   c. masonry joints are flush and completely filled with mortar, and all excess mortar sitting on masonry ties has been removed.
3. Verify substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.

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4. Notify Architect in writing of anticipated problems using air/vapor retarder over substrate.

3.02 SURFACE PREPARATION

A. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air/vapor retarder application.

B. Prime masonry substrates with conditioning primer when installing modified asphalt membrane transition membranes.

C. Prime wood, metal, and painted substrates with primer recommended by membrane manufacturer.

D. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through air/vapor retarder and at protrusions according to air/vapor retarder manufacturer's written instructions.

3.03 INSTALLATION

A. Air Bloc 32MR:
1. Install materials according to manufacturers instructions.
2. Transition joints: Prior to the application of the Air Bloc 32MR, seal transitions with primer and Blueskin SA transition strip at beams, columns, changes in substrate material, and similar joints or connections to provide continuity of air/vapor retarder assembly. Generally, apply transition strips so that a minimum of 3 inches coverage is achieved over both substrates. Position strip over firm bearing.
3. Apply air/vapor retarder membrane within recommended application temperature ranges. Consult manufacturer when membrane cannot be applied within these temperature ranges.
4. Apply Air Bloc 32MR by air assisted spray equipment in a continuous unbroken film at a wet film thickness of 1/8 inch to the substrate. Imbed insulation as work progresses.
5. Ensure that Air Bloc 32MR is applied in full contact around protrusions such as brick ties.
6. Overlap Blueskin SA transition membrane a minimum of 1 inch.
7. Complete application of membrane to provide a seamless, monolithic surface to a thickness of 40 mils.
8. Wall/Foundation Junction: Prime all surfaces. Lap transition strip from wall substrate onto horizontal foundation ledge.

B. Perm-A- Barrier® Liquid:
1. Install materials in accordance with manufacturer's instructions.

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2. Apply waterproofing over concrete block. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.
3. Treat construction joints and install flashing as recommended by manufacturer.
4. Spray apply a continuous uniform film at 60 mils wet film thickness using multiple, overlapping passes.
5. When spraying use a cross-hatching technique (alternating horizontal and vertical passes) to ensure even thickness and coverage.
6. When spraying use high pressure, multi-component, airless spray equipment approved bay material manufacturer.
7. Carry membrane into any openings a minimum of 2 inches.
8. Seal all brick-ties and other penetrations as work progresses.

C. Application of Transition Membrane for Perm-A- Barrier® Liquid:
1. After allowing the Fluid Applied Membrane to cure to tack-free, apply transition membrane with a minimum overlap of 3 inches onto each surface at all beams, columns and joints as indicated in detail drawings.
2. Tie in to window and door frames, spandrel panels, roof and floor intersections and changes in substrate.
3. Use pre-cut, easily handled lengths for each location.
4. Remove silicone-coated release paper and position flashing carefully before placing it against the surface.
5. When properly positioned, place against surface by pressing firmly into place by hand roller.
6. Overlap adjacent pieces 2 inches and roll all seams with a hand roller.
7. Seal top edge of transition membranes and flashing with termination mastic
8. Apply liquid membrane to all fastener heads, overlapping board by 1 inch.

D. Rub-R-Wall:
1. Install materials in accordance with manufacturer's instructions.
2. Transition joints: Seal with primer and transition strip at changes in substrate material and similar joints or connections to provide continuity of air/vapor retarder assembly. Generally, apply transition strips so that a minimum of 3 inches coverage is achieved over both substrates. Position strip over firm bearing.
3. Apply air/vapor retarder membrane within recommended application temperature ranges. Consult manufacturer when membrane cannot be applied within these temperature ranges.
4. Using airless spray equipment having a minimum pressure of 3000 psi, apply prime coat of air/vapor retarder membrane over outer surface of inner wythe masonry.
5. Use alternating horizontal and vertical passes to ensure complete coverage of substrate and transition strips. Seal masonry anchors or other penetrations air tight.

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6. Check surfaces again and if necessary, fill any remaining gaps with mastic substrate filler prior to covering with membrane.
7. Complete application of membrane to provide a seamless, monolithic surface.
8. Adhere insulation to air/vapor retarder membrane after initial set time of approximately 1 to 2 hours, and while membrane is still tacky, to prevent convection currents occurring behind the insulation.

E. Built-in Door Frames: Do not apply air/vapor retarder to door frame. Run air/vapor retarder up to edge of door opening to a location which will not be exposed after perimeter sealant is installed.

F. Window and Door Frames Not Built In: Lap transition strip from wall substrate with 3 inches of full contact over firm bearing into window or door frame opening with full 1 inch to be installed under installed windows or door frames, unless noted otherwise. Coordinate installation depth at opening with product or supplier. Membrane shall not be exposed within building.

G. Wall/Foundation Junction: Prime all surfaces. Lap transition strip from wall substrate onto horizontal foundation ledge. .

H. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

3.04 PROTECTING AND CLEANING

A. Protect air/vapor retarder system from damage during application and remainder of construction period, according to manufacturer's written instructions.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

C. Protect air/vapor retarder from exposure to the elements as required by the manufacturer.

3.05 PROTECTION AND CLEANING

A. Remove any masking materials after installation. Clean any stains on materials that would be exposed in the completed work using procedures as recommended by manufacturer.

B. Protect membranes to avoid damage from other trades, and construction materials during subsequent operations. Protection products may be installed on the same day as the membrane. Extruded polystyrene insulation boards are compatible with membranes. Bonding of the insulation is achieved if the insulation products are installed when the membrane is tacky; generally within 1 to 2 hours after the Procor membrane is installed.

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C. Schedule work to ensure that the air and vapor retarder system is covered as soon as possible after installation. Protect air and vapor retarder system from damage during subsequent operations. If the air and vapor retarder system cannot be covered within 60 days, or shorter time as recommended by manufacturer after installation, apply temporary UV protection such as dark plastic sheet or tarpaulins.

END OF SECTION

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SECTION 07 42 13

METAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Custom curved metal cladding system for walls, soffits, fascia, and exterior door cladding, which includes creating fabrication template, accessory components and installation. Metal wall panel system is a screen wall.

1.02 REFERENCES

A. ASTM A167 – Standard Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet, and Strip.

B. ASTM A606 – Standard Specification for Steel, Sheet, and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled with Improved Atmospheric Corrosion Resistance.

1.03 DESIGN REQUIREMENTS

A. After building erection, field verify, measure and template the building in order to document the exact required panel sizes for fabrication.

B. Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

C. Provide continuity of weather barrier at building enclosure elements.

D. Provide fabrication/installation comments to the architect and refine and provided complete system for this application.

1.04 SUBMITTALS FOR REVIEW

A. Section 01 33 00: Submittals Procedures

B. Provide comments, shop drawings indicating dimensions, layout, joints, construction details, and methods of anchorage.

C. Submit two samples of panel (one of each thickness used) , 12" x 12" in size illustrating finish color, sheen, and texture. Samples shall convey the edge treatment for the panels.

D. Submit samples of the attachment hardware.

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1.05 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 5-years documented experience.

B. Installer: Company specializing in performing the work of this section with minimum 5-years of documented experience and approved by manufacturer.

C. Three possible providers of this system are:
   1. Custom Metals, Inc, Madison WI, (608) 222-4699
   2. Architectural Products of Wausau, WI, (715) 848-4008.
   3. Buss Welding & Fabricating, Madison, WI, (608) 513-9353.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Section 01 60 00 - Material Equipment and approved equals: Transport, handle, store, and protect products

B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

C. Store pre-finished material off the ground and protect them from the weather.

D. This is to help prevent twisting, bending, or abrasion, and to provide ventilation.

E. Slope metal sheets to ensure drainage.

F. Prevent contact with materials that may cause discoloration or staining.

1.07 COORDINATION

A. Coordinate work under provisions of Section 01 31 00.

B. Coordinate the Work with installation doors, windows, louvers, and other components or materials.

1.08 WARRANTY

A. Correct any defective work within a two-year period after Substantial Completion.

PART 2 PRODUCTS

2.01 EXTERIOR SHEET MATERIALS

A. Upper Wall, Soffit and Fascia Panels:14 Gauge steel sheet. Ease all edges with slight chamfer. These panels will be bent into a curve in the field. Panel joints shall be butts with maximum 1/16-inch gap; uniform gaps required.

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B. Alcove accent wall Panels: ¼" Plate Steel. Ease all edges with 1/8-inch 45 degree chamfer. Proved welded threaded rod stud for panel anchor mounting. These panels are all flat/straight. Panel joints shall be butted with maximum 1/16-inch gaps; uniform gaps required.

2.02 PRIMER FINISH

A. Preparation: Sandblast all surfaces after fabrication to a SSPC SPC5 finish.

B. Primer: Pre-coated all surfaces after fabrication with a zinc rich primer. Tnemic Series 90-97 Tnemezinc (no substitutions). Spray apply; 2.5-3.5 mils dry film thickness.

C. Intermediate Coat: After priming, coat all exposed surfaces with Tnemic Series 73 Endura Shield (no substitutions). Apply 2.0-3.0 mils dry film thickness. Color as selected by Architect/Owner.

D. Field Touch up Paint.

E. Finish coat shall be field applied under Section 09 91 00.

2.03 ACCESSORIES /COMPONENTS

A. Upper wall, Soffit, Fascia and Door Panel Exposed Fasteners: Stainless steel Kreg screws with square or hex drive. Size as determined by installer to suit application.. Provided small stainless steel washers if needed.

B. Alcove wall panel hanging system:
   1. Aluminum Z-Clip. Model MF 375 with 3/8" lift off as manufactured by Monarch Metal Fabrications. www.monarchmetals.com
   2. Neoprene spacer sheet or equal between aluminum spacer and the back of the steel panel. (see detail on drawings).
   3. Aluminum bar stock spacer to hold Z-clip off wall (see detail on drawings).

2.04 FABRICATION

A. Do not fabricate component profiles on site.

B. Form sections true to shape, accurate in size and free from distortion or defects.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify substrate framing under provisions of Section 01 31 00.

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B. Verify that framing members are ready to receive panel system.

3.02 INSTALLATION

A. Install metal building panel system.

B. Protect panel surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

C. Permanently fasten panel system to structural supports; aligned, level, and plumb, within specified tolerances.

D. Locate panel anchors at supports.

3.03 TOLERANCES

A. Maximum Offset from True Alignment between Adjacent Members Butting or In Line: 1/16" in 12".

B. Maximum Variation from Plane or Location 1/16" in 12".

3.04 CLEANING

A. Clean work.

B. Remove site cuttings from finish surfaces.

C. Clean and wash pre-finished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

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SECTION 07 53 23

EPDM MEMBRANE ROOFING - FULLY ADHERED

PART 1 GENERAL

1.01 WORK INCLUDED

A. Adhesive attached single ply EPDM membrane roofing over ½-inch HD ISO board, and tapered insulation.

B. Root Barrier (slip sheet)

C. Flashing of all roof penetrations.

D. Vegetated Roof Covering System (07 55 64) shall be coordinated and provided as part of this section.

1.02 RELATED WORK

A. Section 06 15 00 - Wood Decking.

B. Section 06 10 00 - Rough Carpentry.

C. Section 07 55 64 – Vegetated Roof Covering System.

D. Section 07 62 00 - Sheet Metal Flashing and Trim.

E. Division 22 - Plumbing: Equipment on the roof and penetrations through the roof.

F. Division 23 –Ventilating: Equipment on the roof and penetrations through the roof.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) International:

1. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
2. ASTM C578 - Standard Specification for Rigid, Cellular Polystrene Thermal Insulation.
3. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
4. ASTM C1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
5. ANSI/ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
6. ANSI/ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.

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7. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
8. ASTM D822 - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
9. ASTM D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
10. ASTM D2240 - Standard Test Method for Rubber Property - Durometer Hardness.

B. Factory Mutual Corporation (FM):
1. FM Global Property Loss Prevention Sheets I-28.

C. Underwriters Laboratories, Inc. (UL).

1.04 QUALITY ASSURANCE

A. Applicator: Company specializing in installation of sheet roofing membranes approved by membrane manufacturer.

B. The applicator shall be a company specializing in installation of single-ply roof membranes with five (5) years of documented experience.

C. The roofing system must be applied by a roofing contractor authorized by the roof system manufacturer.

D. All components used in the roofing system shall be approved by the membrane manufacturer.

E. At start of new membrane installation, manufacturer's representative shall visit the job site to ensure that the installation begins correctly with all installation procedures and guidelines being followed and notify the Owner in writing of his findings. Failure to notify hereby constitutes acceptance of the work of his licensed applicator (the contractor) by the manufacturer.

F. Upon 50 percent completion of the project, the roof manufacturer's representative shall inspect the installation for adherence to installation procedures and guidelines.

G. Upon substantial completion of the installation, an inspection shall be made by a representative of the membrane manufacturer to ascertain that the roofing system has been installed according to the applicable roof manufacturer's specifications and details.

H. All the above indicated job visits shall be documented in writing by the roof manufacturer's representative indicating all problems, concerns, recommendations, and directives given to the roofing contractor regarding the roofing system installation. Copies shall be provided to the Architect/Engineer within five days of

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the inspection date. It is the roofing contractor's responsibility to arrange the above inspections.

I. Prior to installation of vegetated roof, roof manufacturer shall perform final inspection, produce punch list for warranty repairs. The contractor shall do all necessary warranty repairs PRIOR to any vegetated roof component installation.

1.05 REGULATORY REQUIREMENTS

A. Underwriters Laboratories, Inc. (UL): Class B Fire Hazard Classification.

B. Factory Mutual Corporation (FM): Wind uplift requirement of I-90 in accordance with FM Construction Bulletin I-28.

1.06 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Submit shop drawings detailing special joint or termination conditions and conditions of interface with other materials.

C. Submit product data for sheet membrane, insulations, fasteners, warranty, and elastic flashing.

D. Submit manufacturer's installation instructions under provisions of Section 01 40 00.

E. Submit tapered insulation layout.

F. Prior to commencement of installing any roofing, submit a written statement from the roof membrane manufacturer stating that they have reviewed the project plans and specifications and that they accept the roofing system as specified and detailed.

1.07 DELIVERY, STORAGE, AND HANDLING

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

B. Under provisions of Section 01 60 00, store materials in weather protected environment clear of ground and moisture.

1.08 WARRANTY

A. Membrane Manufacturer's Warranty: The membrane manufacturer shall warrant that they will pay all costs of repair or replacement of the roof system and elastic flashings which occur during a period of twenty (20) years from the date of completion, as a result of workmanship or deterioration of the membrane system or flashings. The warranty shall cover labor and materials. The warranty shall cover

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sustained winds and wind gusts to 72 MPH. Provide under the provisions of Section 01 70 00.

B. Provide thirty (30) year manufacturer's material and workmanship warranty under provisions of Section 01 70 00.

C. Warranty: Include coverage of materials and installation resulting from failure to resist penetration of moisture. Provide no dollar limit warranty.

D. One manufacturer shall supply a total system warranty including membrane, elastic flashing material and accessories. The insulation shall be included in the warranty if covered by the manufacturer. The metal flashings as specified in Section 07 62 00 are not to be covered in this warranty.

E. Warranty shall include removal and reinstallation of all planted or vegetated garden roof system in the event that there is need for leak identification and correction.

F. See Section 07 55 64 for vegetated roof plant warranty coverage.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Apply roofing membrane during cold weather in accordance with the manufacturer's instructions.

B. Do not apply roofing membrane to damp or frozen deck surface.

C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

PART 2 PRODUCTS

2.01 SINGLE PLY ROOFING SYSTEM - FULLY ADHERED

A. Acceptable Manufacturers:
1. Carlisle Syntec Systems
2. Firestone Building Products Co.

B. No substitutions.

2.02 MEMBRANE MATERIALS

A. Membrane: 0.090 inch thick, black, non-reinforced, EPDM.

B. Root Barrier (Slip Sheet - Under All vegetated roof areas): 0.045 inch thick TPO, UltraPly TPO

C. Seaming Materials: As recommended by membrane manufacturer.

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D. Night Seal: Roofing membrane as recommended by membrane manufacturer which must be compatible between the new and existing roof membranes.

2.03 INSULATION MATERIALS

A. Insulation Base Layer: HD Polyisocyanurate shall be 1/2 inch, 4'x4' maximum, and as approved by roof membrane manufacturer, such as:

1. Firestone ISOGARD HD.
2. Carlisle SecureShield HD Plus.

B. Tapered Polyisocyanurate Insulation: ASTM C1289, Type II, Class I, faced rigid cellular polyisocyanurate roof insulation panel composed of a closed cell polyisocyanurate foam core bonded on each side in the framing process to fiber reinforced facers, and shall meet FRS Class 1 and UL Class A approvals. Shall be manufactured without the use of CFC-11 as a blowing agent. The insulation shall have an R-value of 6.0 per inch, a density of 2.0 lb per cu. ft., a compressive strength of 20 psi nominal, and shall be approved by the roof membrane manufacturer. Thickness shall be as implied on the drawings and as needed to provided positive drainage, square edges.

2.04 ADHESIVE MATERIALS

A. Surface Conditioner: Compatible with membrane.

B. Membrane Adhesives: As recommended by membrane manufacturer.

C. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

2.05 ACCESSORIES

A. Sealants: As recommended by membrane manufacturer.

B. Termination Bar: Double lipped, extruded aluminum bar anchored 12" on center minimum at outer wall detail.

C. Insulation adhesives: 2-part Urethane or by manufacturer such as:
1. Firestone.ISOSTICK
2. Carlisle One Step Insulation Adhesive.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains, valleys, or eaves.

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B. Verify roof openings and penetrating elements through roof are solidly set, wood nailing strips and reglets are in place. Verify deck is supported and secured.

C. Do not apply roofing materials to damp, frozen, dirty, dusty, or deck surfaces unacceptable to manufacturer.

D. Beginning installation means acceptance of substrate.

3.02 PREPARATION

A. Prepare substrate in accordance with manufacturers instructions.

3.03 INSULATION APPLICATION

A. Lay insulation base layer boards to moderate contact without forcing joints.
   1. Cut insulation to fit neatly to perimeter blocking and around protrusions through roof.
   2. Insulation adhesive bead spacing shall be installed as:
      a. Field attachment is 6 inches on center or per manufacturer's recommendations.
      b. Perimeter/Corner is 4 inches on center or per manufacturer's recommendations.

B. Place tapered insulation in accordance with insulation manufacturer's instructions. Lay tapered layer of insulation with joints staggered from base layer. Set in insulation adhesive using beads spaced as 4 inches on center.

C. Lay tapered Cut boards to slope to establish pitch to drains.

3.04 MEMBRANE INSTALLATION

A. Install membrane roofing in accordance with manufacturer's instructions.

B. Continue membrane up vertical surfaces.

C. Seal items penetrating membrane per manufacturers instructions.

D. **At roof edge conditions, the membrane shall wrap over and down the edge. A termination bar shall be installed on the outer vertical face of the parapet over the membrane.**

3.05 PROTECTION

A. Protect finished installation under provisions of Section 01 50 00.

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B. Construct a watertight night seal at the end of each day between the new roofing installed and the existing roofing and roof deck. A complete watertight roofing system shall be maintained between each work day to protect the building interior from water damage and to prevent the new and existing roofing materials to remain from getting wet.

3.06 FIELD QUALITY CONTROL

A. Manufacturer shall provide technical backup, on-site assistance, and inspections at start-up, during application and at completion. Manufacturers shall submit a written inspection report to the Architect.

B. Inspection shall be performed under provisions of Section 01 40 00.

3.07 FLASHING

A. All flashing shall be in accordance with roof membrane manufacturer's requirements. Inform the Architect if any details shown or requirements specified are not in compliance with the roof membrane manufacturer.

END OF SECTION

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SECTION 07 55 64

VEGETATED ROOF COVERING SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Vegetated roof covering system installed over membrane roofing system, including:
   1. System shall be either a Low Profile Multilayer System or a tray system. Both shall have a pre-vegetated plant layer.
   2. Low Profile Multilayer System with drainage mat, filtration mat, water retention mat
   3. Trays Edge elements / metal trim.
   4. Growing media.
   5. Pre-vegetated Plants.
   6. 3 Year Maintenance Agreement.
   7. 2 Year Plant Warranty.
   8. Overburden responsibility/tie-in to the Roofing Warranty.

B. Related Sections:
   1. Section 07 53 23 - EPDM Membrane Roofing.

1.02 DEFINITIONS

A. Phytoremediation: Use of green plants to extract pollutants, mineral elements, heavy metals, and radioisotopes, and other contaminants from soil and water environments.

B. German FFL Greenroof Guidelines: Guideline for the Planning, Execution and Upkeep of Green Roof Sites, Release 2002. Worldwide acknowledged state-of-the-art technology as scientific foundation for successful and thriving green roofs.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Provide coordination with work of other Sections.
   1. Section 07 53 23 for sequencing, scheduling, and placement over roofing system.

B. Preinstallation Meetings:
   1. Arrange.
   2. Attendance: Contractor, installer, Owner, Architect, vegetated roofing system and membrane roofing system manufacturer representatives, roofing installer, and those requested to attend.
   3. Meeting Time: Minimum 2 weeks prior to beginning work of this Section and to prior work of related Sections affecting work of this Section.

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4. Location: Project Site.
5. Agenda:
   a. Discuss drainage mats, root barriers, filter fabrics, slip-sheets, protection course, and other requirements required by roofing manufacturer.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Shop Drawings: Plan layout and details at critical terminations of garden roof system with adjacent building construction. Include flashing connections to planter system, and building systems.

C. Product Data:
   1. Vegetated roofing system, components, growing media type, and planting types with descriptive published data indicating characteristics and limitations.
   2. Include standard details, system components, and proposals for plant types and characteristics.

D. Manufacturer Instructions: Include manufacturer's installation instructions, special procedures, and conditions requiring special attention.

E. Certifications: Written submittal by manufacturer indicating that installer is certified as qualified to perform work of this Section.

F. Sample Warranty: Manufacturer's standard warranty meeting or exceeding provisions specified by this Section.

G. Sample Maintenance Agreement: Manufacturer's or Installers standard maintenance agreement meeting or exceeding provisions specified by this Section.

1.05 QUALITY ASSURANCE

A. Single Source Responsibility: Provide drainage mat/filtration layer/water retention pad (or interlocking plastic trays with tray edge trim), growing media, pre-vegetated plant materials, and maintenance for stipulated period as a single system by or under direction of roof system manufacturer.

B. Manufacturer Qualifications:
   1. Company specializing in work of this Section and Section 07 53 23.
   2. Maintain locally available representation for technical and inspection support services.

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3. Manufacturer's Technical Representative:
   a. Available on site to make interim observations, recommendations, and final inspection.
   b. Available to verify installation in conformance with manufacturer's Warranty provisions.

C. Installer Qualifications: Certified as pre-approved and qualified by roofing system manufacturer to install work of this Section.

D. Preconstruction Testing: Conduct to verify following:
   1. Membrane Roofing Manufacturer: Conduct inspection by certified manufacturer representative to verify that in-place membrane roofing system is acceptable for installation of vegetated roof tray system. Verify protection course and other requirements to maintain warranty provisions.

1.06 DELIVERY, STORAGE, HANDLING

A. Conform to provisions of the manufacturer's instructions.

B. Delivery: Conduct roof top delivery, assembly, and storage of each component of vegetated roof system under direction of manufacturer's authorized installer.

C. Storage:
   1. Maintain health of plant media as recommended by nursery guidelines prior to rooftop installation.
   2. Take measures to located and spread loads in manner to not exceed load bearing capacity of roof deck.
   3. Store vegetated planters and materials over plywood panels or protective sheeting and do not allow products, growing media, grit, debris, and pedestrian traffic on unprotected roofing membrane.
   4. Provide water source for irrigation of and maintenance of plants until permanent drip irrigation system is in place.

D. Handling: Stabilize equipment for moving pallets to roof deck to account for decreasing load limits as cranes or forklifts are extended.

1.07 FIELD CONDITIONS

A. Ambient Air Temperature: Install plant materials in trays preferably between April 1 and November 1 at temperatures between 40 degrees F and 95 degrees F , except as otherwise instructed by manufacturer.

1.08 WARRANTY

A. Conform to 3-year Maintenance Agreement and 2 Year Plant Warranty provisions.

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B. Manufacturer: Provide materials and labor Warranty for vegetated system components including connectors, and edge elements for length of roofing membrane-warranty.

C. Include removal of overburden by roofing manufacturer to retain provisions of roofing system manufacturer's Warranty.

PART 2 PRODUCTS

2.01 SYSTEM

A. Vegetated Roof System: Drainage mat/filtration mat/water retention mat (or plastic trays with metal edge trim), growing medium, and plant materials for installation over roofing system, including other systems by manufacturer as required for complete installation.

B. Basis-Of-Design: Firestone SkyScape Vegetative Multilayer System by Firestone Building Products Company, LLC.

2.02 MANUFACTURERS

A. Firestone Building Products Company, LLC, 250 W 9^{6th} Street, Indianapolis, IN 46260; www.firestonebpco.com.

B. Other providers include: GreenGrid G3 (Carlisle) with products conforming to the Basis-Of-Design Product. Full overburden tie-in to the Roof Membrane is required.

C. Substitution Requests: No substitutions allowed.

2.03 PERFORMANCE / DESIGN CRITERIA

A. Roof Load Criteria: Following roof load requirements are regionally dependent and may vary by specific installation.

B. Post, Sedum Tiles, Hydro Planted SkyScape 5.25 inch Growing Media

Fully Saturated Weight	26 psf
Field Moisture Capacity Weight	20.5 psf

C. Pre-planted SkyScape 4.625 inch Growing Media

Fully Saturated Weight	23 psf
Field Moisture Capacity Weight	18 psf

D. SkyScape 5.25 inch Growing Media

Fully Saturated Weight	18.5 psf
Field Moisture Capacity Weight	12.5 psf

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E. SkyScape 4.625 inch Growing Media

Fully Saturated Weight	16.5 psf
Field Moisture Capacity Weight	11 psf

2.04 TRAYS (if applicable):

A. Performance / Design Criteria: Engineer to:
1. Retain and meter rain and drip irrigation water.
2. Allow hydration of plants and prevent root rot.
3. Allow phytoremediation (removal of contaminates) from soil and water at bottom of trays.
4. De-energize wind flow under trays reducing chance of wind uplift.
5. Eliminate need for additional drainage material, root barriers, and filter fabric.

B. Tray Size: per manufacturer requirements.

C. Material: 100 percent post-industrial recycled content, injection molded, 100 mil polypropylene.
1. Water-Retention Ridges and Troughs: Eleven 3/4 inch wide by 5/8 inch high troughs and corresponding troughs
2. Molded Drain Holes: 3/8 inch diameter. Nine holes located at tops of water-retention ridges and one at each trough.
3. Interlocks: Two flat and two overlapping top edges designed to connect and hold adjacent trays together.
4. Sides: Sloped at 5 degree angle from top to bottom.
5. Clearance: 5/8 inch above underlying roof membrane to allow water to flow freely under and around trays.
6. Connection Holes and Fasteners:
   a. Four 3/8 inch holes, aligned and centered in each vertical side panel.
   b. Quick-lock fasteners.
   c. Hook and quick-lock fastener for drip irrigation system.

D. Weight:
1. Unloaded Tray Weight: 3.6 pounds.
2. Loaded With Mature Plants and Fully Saturated 23 to 26 pounds per square foot,
3. Moisture Content Weight: 18 to 20 pounds per square foot, fully saturated.

E. Color/Sheen: Black/semi-gloss.

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2.05 GROWING MEDIA

A. Growing Media: Based on German FLL Greenroof Guidelines.
   1. Produced from organic recycled material and inorganic by-products for use as a light weight growing media for hardy long lasting succulent or phytoremediation plants that are beneficial in a green roof environment.
   2. Pre-blended regionally and delivered to site for application in bulk or minimum in 1.5 cubic yard super totes when possible.
   3. 4" minimum required. For the Multi-layer system depth will deepen to conceal non tapered insulation areas and confirm to uniform roof profile.

2.06 PLANTS

A. Conform to project landscape design requirements, recommendations of local horticulturists, where possible, and requirements of authorities having jurisdiction, including Fire Marshal, for specific recommendations and regulations.

B. Design mix of firewise/firesafe hardy long-lasting fibrous succulents, capable of thriving in limited-irrigated rooftop environment for project location. Selections conforming to USDA hardiness zone classification and regional horticulturalist recommendation and as accepted by Architect.

C. Multi-Layer Planting Method: Sedum Tiles: Post plant with Tuff Stuff Mix.

D. Tray Planting Method: Pre-planting of trays or Sedum Tiles. Plant mix to be approved by Architect/Owner and equal to SkyScape's Tuff Stuff Mix.

2.07 EDGE ELEMENTS / METAL TRIM (for trays only)

A. Edge Flashing and Trim: Manufacturer's standard 26 gauge stainless steel sidewall flashing and trim at trays and walkways to frame, connect, and tie tray and walkway systems into each other and adjacent building components.
   1. Pre-drill to accommodate quick-lock fasteners and
   2. Notch and configure to allow for tray placement and curved roof deck (horizontally and vertically).
   3. Prefinished standard color as selected by the Architect/Owner.

B. Other flashing: As specified Section 07 60 00.

2.08 VEGETATED ROOF COMPONENTS

A. Drainage layer: 1.5" polypropylene woven into an entangled matrix

B. Filtration Layer Nonwoven polypropylene

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C. Water Retention Layer: High durable polyester blanket with anchorage points for promoting solid root structure

D. All components must be provided by roof system manufacture and vegetated roof system manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect and verify roofing membrane and components complete and ready prior to beginning work of this Section.

B. Verify protection course over membrane roofing in place and conforming to roofing manufacturer instructions, as inspected and accepted by roofing manufacturer's technical representative.

C. Verify that equipment and methods needed to place trays, growing media, planting, and other system components as adequate, stabilized, and available.

3.02 SUBSTRATE PREPARATION

A. Sweep with broom and then use air compressor to blow remaining dust and debris from substrate.

3.03 INSTALLATION – GENERAL

A. Conform to manufacturer's instructions and provisions of Contract Documents. Where in conflict verify with Architect before beginning.

3.04 MULTI-LAYER SYSTEM AS REQUIRED BY MANUFACTURER.

A. Install drainage mat, filtration mat, water retention mat as required by manufacturer.

B. Place directly over protection cover provided under roofing work of Section 07 53 23 as required by manufacturer.

3.05 TRAYS AS REQUIRED BY MANUFACTURER.

A. Place trays directly over slip layer protection cover provided under roofing work of Section 07 53 23 as required by manufacturer.

B. Positioned bottom troughs of trays perpendicular to roof slope, except minor crickets.

C. Cut perimeter trays to confirm to the curvilinear roof parapet shape. Cut to with 2" of parapet wall.

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D. Orient edges to interlock and hold trays in place.

E. Attach trays in place with manufacturer's standard quick-lock fastener through aligned holes in tray sidewalls.

F. Secure trays together with quick-lock fasteners and install edge flashing in place.

G. Promptly after placing trays on roof, install growth medium or ballast as necessary to prevent movement of trays due to weather and construction activities..

3.06 GROWING MEDIA

A. Transport bulk growing media to roof on pallets of trays using stabilized hoisting equipment or cranes in 1.5 or 2.0 cubic yard totes or 50 to 70 pound sacks.

B. Distribute growing media evenly throughout tray, 4.0" minimum. For the Multi-layer system depth will deepen to conceal non tapered insulation areas and confirm to uniform roof profile.

3.07 PLANTING

A. Install planting tiles, conforming to manufacturers recommendations.

B. Distribute differing plant species evenly and uniformly within each tray for overall uniform appearance of overall in-place installation.

C. Following installation of plant media, irrigate using potable water free of substances harmful to plant growth. Provide hoses in lengths reaching from water supply source to planting trays.

3.08 EDGE FLASHING (For Tray System)

A. Conform to manufacturer's details and provisions of Section 076000 for interconnections of flashing systems.

B. Install trim flashing to conceal tray sides and to lock trays together.

C. Install interlocking metal anchor flashing at openings between trays and perimeter roof edges to anchor trays, building perimeter flashings and counter flashings together.

3.09 FIELD QUALITY CONTROL

A. Manufacturer:

1. Conduct preconstruction, interim, and final inspections to determine acceptance of vegetated roofing system in presence of Owner, Architect, Contractor, manufacturer's representative, and installer.

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2. Verify conformance to manufacturer's instructions and Warranty provisions.

B. Final Inspection and Acceptance:
1. Make arrangements for final inspection of in-place installation within 14 days following Substantial Completion with Owner, Architect, Contractor, installer, and others as requested to be present.
2. Owner will assume maintenance and care of vegetated roof try system following acceptance, except as modified by a maintenance service agreement between Owner and manufacturer.

3.10 ADJUSTING

A. Make adjustments and alignments of trays and flashing trim as necessary to give a uniform and finished appearance.

B. Replace plant media that appears to be stressed or damaged.

3.11 CLEANING

A. Leave installations clean, premises free from debris and residue resulting from work of this Section.

B. Remove stains from adjacent surfaces with manufacturer's recommended cleaning agents.

3.12 PROTECTION OF COMPLETED WORK

A. Protect membrane waterproof from contamination from petroleum products, grease, oil, solvents, vegetable and mineral oils, animal fat, chemicals, and other foreign material.

3.13 MAINTENANCE

A. Maintenance is the responsibility of the installing Contractor, and should be performed per the instructions provided in the manufacturer's Garden Roof System Maintenance Plan.

B. Maintain a uniform stand of succulent plants by watering and maintaining vegetated roof trays following installation and through Substantial Completion and occupancy by Owner.
1. Include watering, spot weeding, fertilization, and other measures as necessary to maintain health and propagation of plant materials and as necessary for stabilization.
2. Instruct Owner and furnish written maintenance instructions, following maintenance period, as necessary for planting materials to develop complete root structure and to become stabilized.

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3. Provide periodic hydration as needed, depending on precipitation.
4. Follow horticultural / nursery recommended plant maintenance procedures.

C. 3–year Annual Maintenance Continuation Agreement: Following initial construction maintenance, consult with Owner for continuation of maintenance as offered by installer and manufacturer.
1. Include watering for first year after installation to ensure proper root development.
2. Continue watering should be done on an as needed basis.
3. Provide requirements set forth by Green Grid or Firestone TotalGard roof maintenance program (for Firestone SkyScape vegetated garden system).

END OF SECTION

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SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparing sealant substrate surfaces.

B. Sealant and joint backing.

1.02 RELATED SECTIONS

A. Division 3 - Concrete: Sealants used in conjunction with cast-in-place concrete.

B. Section 04 20 00 - Unit Masonry: Sealants used in conjunction with masonry.

C. Section 04 40 00 – Thin Stone Veneer: Sealants used in conjunction with stone.

D. Section 08 13 13 – Standard Hollow Metal Doors: Sealants used in conjunction with door frames.

E. Section 08 51 13 - Aluminum Windows: Sealants used in conjunction with windows.

F. Section 08 81 00 – Glass Glazing: Glazing sealants and accessories.

G. Division 22 - Plumbing: Sealants used in conjunction with plumbing penetrations, fixtures, and equipment.

H. Division 23 - Ventilating: Sealants used in conjunction with mechanical penetrations, fixtures, and equipment.

I. Division 26 - Electrical: Sealants used in conjunction with electrical penetrations.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) International:
   1. ASTM C834 – Standard Specification for Latex Sealants.
   2. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
   3. ASTM D1056 – Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
   4. ASTM C1193 - Standard Guide for Use of Joint Sealants.
   5. ASTM C1382 - Test Method for Determining Fensile Adhesion Properties of Sealants When Used In Exterior Insulation and Finish Systems (EIFS) Joints.

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6. ASTM D1667 - Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).

B. Federal Specification Unit (FS):
1. FS A-A-272B - Caulking Compounds.
2. FS TT-S-001543 - Sealing Compound, Silicone Rubber Base.

C. Sealing and Waterproofers Institute (SWI):
1. SWI - Sealant and Caulking Guide Specification.

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Product Data: Indicate sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.

D. Warranty: Include coverage for installed sealants and accessories failing to achieve watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

1.05 QUALITY ASSURANCE

A. Conform to Sealant and Waterproofers Institute requirements for materials.

B. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

C. Applicator qualifications:
1. Applicator shall have at least three (3) years experience in installing materials of types specified and shall have successfully completed at least three (3) projects of similar scope and complexity.
2. Applicator shall designate a single individual as project foreman who shall be on site at all times during installation.

D. Single source responsibility for joint sealants:
1. Obtain joint sealants from single manufacturer for each different product required to ensure compatibility.
2. Manufacturer shall instruct applicator in procedures for intersecting sealants.

E. Perform work in accordance with ASTM C1193 guidelines, except where more stringent requirements are indicated or specified.

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1.06 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Do not install solvent curing sealants in enclosed building spaces.

C. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 PRODUCT STORAGE AND HANDLING

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

B. Deliver the materials to the job site in the manufacturer's unopened containers with all labels intact and legible at time of use.

C. Store materials in accordance with manufacturer's recommendations with proper precautions to ensure fitness of material when installed.

1.08 SEQUENCING AND SCHEDULING

A. Section 01 30 00 - Administrative Requirements: Work coordination provisions.

B. Coordinate the work of this Section with all Sections referencing this Section.

1.09 SUBSTRATE CONDITIONS

A. Provide joints properly dimensioned to receive the approved sealant system.

B. Provide joint surfaces that are clean, dry, sound and free of voids, deformations, protrusions, and contaminants which may inhibit application or performance of the joint sealant.

1.10 WARRANTY

A. Deliver to the Architect signed copies of the following written warranties against adhesive and cohesive failure of the sealant and against infiltration of water and air through the sealed joint for a period of three (3) years from date of completion.
   1. Manufacturer's standard warranty covering sealant materials.
   2. Applicator's standard warranty covering workmanship.

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PART 2 PRODUCTS

2.01 GENERAL

A. Compatibility:
   1. Provide joint sealants, joint fillers, and accessory joint materials that are compatible with one another and with joint substrates under project conditions.
   2. Install joint sealants, joint fillers, and related joint materials that are nonstaining to visible joint surfaces and surrounding substrate surfaces.

B. Provide colors selected by Architect/Owner from manufacturer's standard color range, unless noted otherwise.

2.02 SEALANTS

A. Polyurethane Sealant:
   1. Tremco Dymonic or Dymeric, Sonneborn NP1 or NP2 or Vulkem 921 or 922. *(Architect Note: 50 standard colors available with Dymeric 922, 40 with NP2)*
   2. Vertical joints which are bordered on one or both sides by a porous building material such as concrete, natural stone, or masonry or a non-porous building material such as painted metal, anodized aluminum, mill finish aluminum, stainless steel, vinyl siding, PVC, or porcelain tile. Locations such as interior and exterior door frame, window, and louver perimeters; masonry, brick, and stone joints; plumbing, HVAC, and electrical penetrations.
   3. EIFS Joints: Sonneborn Sonolastic 150 with VLM Technology.

B. Low Modulus Silicone Sealant:
   1. Vertical joints which are bordered on one or both sides by a porous building material such as concrete or masonry or a non-porous building material such as painted metal, anodized aluminum, mill finish aluminum, stainless steel, or PVC. Locations such as door frame, window, and louver perimeters; masonry joints; plumbing, HVAC, and electrical penetrations.
   2. Tremco Spectrem 3.
   3. Primer for mortar, masonry, concrete, and other porous substrates: Tremsil Silicone Porous Primer.

C. Medium Modulus Silicone Sealant:
   1. Mildew-resistant, fungicide.
   2. Locations such as at top perimeter of countertops and other plumbing fixtures perimeters requiring sealant.
   3. Color: White.
   4. Dow Corning 786, GE Sanitary 1700, or Tremsil 200.

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D. Self-Leveling Polyurethane Sealant:
   1. Locations such as at interior and exterior concrete slab control and perimeter expansion joints.
   2. Color: Match floor color.
   3. Sonneborn Sonolastic SL 1, Tremco THC-900, or Vulkem 45.
   4. For areas where the slope of the slab makes self-leveling material impractical Sonneborn Sonolastic SL 2, Tremco THC-901, or Vulkem 245 may be used.

2.03 ACCESSORIES

A. Primer: Non-staining type, as recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, as recommended by sealant manufacturer; compatible with joint forming materials.

C. Backer Rod: Polyethylene foam rod or rope or other compatible non-waxing, non-extruding, non-staining resilient material as recommended by sealant manufacturer, closed cell, sized 25 percent wider than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Masking Tape: Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces that is suitable for masking.

PART 3 EXECUTION

3.01 EXAMINATION

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

B. Verify that joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.

C. Beginning of installation means acceptance of substrates.

3.02 PREPARATION

A. Prepare surfaces to receive sealants in accordance with sealant manufacturer's instructions and recommendations.

B. Examine joint sizes and correct as required to allow for anticipated movement and to achieve proper width/depth ratio per manufacturer's recommendations for specified sealant.

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C. Thoroughly clean joint surfaces using cleaners approved by sealant manufacturer, whether primers are required or not.
   1. Remove all traces of previous sealant and joint backer by mechanical methods, such as by cutting, grinding and wire brushing, in manner not damaging to surrounding surfaces.
   2. Remove paints from joint surfaces except for permanent, protective coatings.
   3. Remove wax, oil, grease, dirt film residues, temporary protective coatings and other residues by wiping with cleaner recommended for that purpose. Use clean, white, lint-free cloths and change cloths frequently.
   4. Remove loose materials and foreign matter.
   5. Remove dust by blowing clean with oil-free, compressed air.

D. Verify that joint backing and release tapes are compatible with sealant.

E. Measure joint dimensions and size materials to achieve required width/depth ratios.

F. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions, and SWI "Sealant: The Professional's Guide".

B. Where necessary to protect adjacent surfaces, mask adjacent surfaces with tape prior to priming and/or caulking.
   1. Use masking tape where required to prevent sealant or primer contact with adjoining surfaces that would be permanently stained or otherwise damaged by such contact or the cleaning methods required for removal.
   2. Apply tape so as not to shift readily and remove tape immediately after tooling without disturbing joint seal.

C. Provide backer rod uniformly to depth required by sealant manufacturer for proper joint design using a blunt instrument.
   1. Fit securely by compressing backer material 25 percent to 50 percent so no displacement occurs during tooling.
   2. Avoid stretching or twisting joint backer.
   3. Install to achieve a neck dimension no greater than 1/3 the joint width.

D. Install bond breaker where backer rod is not used or where recommended by sealant manufacturer, adhering strictly to the manufacturers installation requirements.

E. Prime joint substrates where required.
   1. Use and apply primer according to sealant manufacturers recommendations.
   2. Confine primers to sealant bond surfaces; do not allow spillage or migration onto adjoining surfaces.
   3. Prime immediately prior to caulking.

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F. Install sealants immediately after joint preparation.

G. Install sealants to fill joints completely from the back, without voids or entrapped air, using proven techniques, proper nozzles, and sufficient force that result in sealants directly contacting and fully wetting joint surfaces.

H. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

I. Install sealants to uniform cross-sectional shapes with depths relative to joint widths that allow optimum sealant movement capability as recommended by sealant manufacturer.

J. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

K. Tool sealants in manner that forces sealant against back of joint, ensures firm, full contact at joint interfaces and leaves a finish that is smooth, uniform and free of ridges, wrinkles, sags, air pockets and embedded impurities. Provide concave tooled joints.

L. Remove sealant from adjacent surfaces in accord with sealant and substrate manufacturer recommendations as work progresses.

M. Protect joint sealants from contact with contaminating substances and from damages. Cut out, remove, and replace contaminated or damaged sealants, immediately, so that they are without contamination or damage at time of substantial completion.

N. Clean adjacent surfaces immediately and leave work neat and clean. Remove excess and droppings using recommended cleaners as work progresses. Remove masking tape immediately after tooling of joints.

3.04 CLEANING AND REPAIRING

A. Section 01 70 00 - Execution and Closeout Requirements: Cleaning provisions.

B. Clean adjacent soiled surfaces.

C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed work.

B. Protect sealants until cured.

END OF SECTION

SECTION 08 12 13

STANDARD HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Steel door 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 03 20 00 - Cast-In-Place Concrete.

B. Section 04 05 00 - Mortar and Masonry Grout: Mortar fill of metal frames.

C. Section 04 20 00 - Unit Masonry: Wall opening construction.

D. Section 06 10 00 - Rough Carpentry: Wall opening construction.

E. Section 07 92 00 - Joint Sealants: Perimeter sealing.

F. Section 08 13 13 – Standard Hollow Metal Doors.

G. Section 08 71 00 - Door Hardware.

H. Section 09 91 00 Painting: Field painting of frames.

1.04 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 - 2003 - Accessible and Usable Buildings and Facilities.
   2. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

C. American Society for Testing and Materials (ASTM) International:
   1. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

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2. ASTM A879 - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
3. ASTM E152 - Methods of Fire Tests of 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.

E. International Code Council:
1. IBC - International Building Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.

F. Steel Door Institute (SDI):
1. SDI-100 - Standard Steel Doors and Frames.

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.

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. Break seals on site to permit ventilation.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

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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. Pioneer Industries.
   4. Republic Builders Products.
   5. Steelcraft.

B. Exterior Frames: 16 gauge thick material, base metal thickness, galvanized steel ASTM A653 G60.

C. Interior Frames: 16 gauge thick material, base metal thickness, cold rolled steel in accordance with SDI-100.

2.02 ACCESSORIES

A. Silencers: Resilient rubber, fitted into drilled hole. Provide three (3) single silencers. Provide two (2) single silencers on frame head for each door at double doors without mullions.

2.03 FABRICATION

A. Fabricate frames as welded unit.

B. Fabricate frames with hardware reinforcement plates welded in place.

C. Provide drilled holes in frame for silencers.

2.04 SHOP FINISHING

A. Baked on primer in accordance with SDI-100.

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PART 3 EXECUTION

3.01 EXAMINATION

A. Coordination with 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 in accordance with ANSI A250.8, SDI-100 and DHI.

B. Coordinate with concrete and masonry wall construction for anchor placement.

C. Coordinate installation of frames with installation of hardware specified in Section 08 71 00 and doors in Sections 08 13 13.

END OF SECTION

SECTION 08 13 13

STANDARD HOLLOW METAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Standard steel doors.

1.02 RELATED SECTIONS

A. Section 07 42 13 - Post Applied Metal Door Panels.

B. Section 08 12 13 – Standard Hollow Metal Frames.

C. Section 08 71 00 - Door Hardware.

D. Section 09 91 00 - Painting: Field painting of doors.

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 - 2003 - Accessible and Usable Buildings and Facilities.
   2. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

C. American Society for Testing and Materials International (ASTM):
   1. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM A879 - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
   3. ASTM C1363 - Standard Test Method for the Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
   4. ASTM E413 - Standard Classification for Rating Sound Insulation.

D. Door Hardware Institute (DHI) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

E. Hollow Metal Manufacturer's Association (HMMA):
   1. HMMA 810 - Hollow Metal Doors.

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F. International Code Council:
1. IBC - International Building Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.

G. National Fire Protection Association (NFPA):
1. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

H. Steel Door Institute (SDI):
1. SDI-100 – Recommended Specifications for Standard Steel Doors and Frames.
2. SDI-108 - Recommended Selection and Usage Guide for Standard Steel Doors.

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Shop Drawings: Indicate door elevations, internal reinforcement, closure method, and louver, and finish.

C. Product Data: Submit door configurations, location of cut-outs for hardware reinforcement, and manufacturer literature.

D. Manufacturer's Installation Instructions: Submit special installation instructions.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ANSI A250.8.

B. Conform to requirements of SDI-100 and ANSI A117.1.

C. Installed 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: Product storage and handling provisions.

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.

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1.08 COORDINATION

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

B. Coordinate the work with wall opening construction, frame, and hardware installation.

C. Sequence installation to accommodate required door hardware electric wire connections.

PART 2 PRODUCTS

2.01 DOORS

A. Manufacturers:
   1. Ceco Door Products.
   2. Curries.
   3. Pioneer Industries.
   4. Republic Builders Products.
   5. Steelcraft.

B. Exterior Doors:
   1. SDI-100 Grade III, flush, 16 gauge, continuously welded seamless edge, flush end closure treatment.
   2. Fabricated of galvanized steel ASTM A653 G60.
   3. Core: Expanded polystyrene insulation.

C. Interior Doors:
   1. SDI-100 Grade II, 18 gauge, flush.
   2. Fabricated of cold-rolled steel in accordance with SDI-100.
   3. Core: Cardboard honeycomb.

D. Integral Frameless Door Louver:
   1. Flush mounted fixed slat louver. 4684 (CECO) or equal.
   2. SDI-11C.
   3. See Drawings for intent.

2.02 FABRICATION

A. Fabricate doors with lock, hinge, and closer reinforcement welded in place.

B. Close top of exterior doors with flush end seamless steel channel closure treatment. Seal joints watertight.

C. Reinforce doors for louver openings.

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2.03 SHOP FINISHING

A. Baked on primer in accordance with SDI-100.

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.

3.02 INSTALLATION

A. Install doors in accordance with ANSI A250.8, SDI-100, and DHI.

B. Install fire-rated doors in accordance with NFPA 80.

C. Coordinate installation of glass and glazing specified in Section 08 80 00.

D. Coordinate installation of louvers specified in Section 23 00 00.

E. Coordinate installation of doors with installation of frames specified in Section 08 12 13 and hardware specified in Section 08 71 00.

3.03 ADJUSTING

A. Adjust door for smooth and balanced door movement.

END OF SECTION

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SECTION 08 31 00

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Exterior wall access door for use to accommodate exterior electrical runs.

1.02 RELATED SECTIONS

A. Section 03 20 00 - Cast-In-Place Concrete.

1.03 SHOP DRAWINGS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Shop Drawings: Indicate exact position of access door units.

C. Product Data: Submit literature indicating sizes, types, finishes, hardware, scheduled locations, fire resistance listings, and details of adjoining Work.

D. Manufacturer's Installation Instructions: Submit installation requirements and rough-in dimensions.

1.04 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of access units.

1.05 QUALITY ASSURANCE

A. Fire Resistance Ratings: Where indicated as fire rated provided assemblies from manufacturers listed in UL Directory or Intertek Testing Services (Warnock Hersey Listed) Directory.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in the manufacture of products specified with minimum three (3) years documented experience.

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PART 2 PRODUCTS

2.01 ACCESS DOORS

A. Manufacturers/Model:
   1. Cierra Products/C-XT.
   2. Nystorm Products Co./XT.
   3. Larsens/L-XT.
   4. Substitutions: Section 01600.

B. Wall Access Door
   1. Door: Galvanized steel.
   2. Frame: Flanged.
   3. Insulation.
   4. Hinge: Continuous/concealed.
   5. Latch: Handle cam latch at interior only.
   6. Finish: Paintable.
   7. Gasketed.
   8. Opening Size: 8" x 8".

PART 3 EXECUTION

3.01 EXAMINATION

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

B. Verify rough openings for access doors and panels are correctly sized and located.

3.02 INSTALLATION

A. Secure frames rigidly in place, plumb and level in opening, with plane of door and panel face aligned with adjacent concrete surface.
   1. Set concealed frame type units flush with concrete wall.
   2. Mount with hinge at top of opening.

B. Position unit where shown on the Drawings.

END OF SECTION

SECTION 08 51 13

ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stick built extruded aluminum windows with fixed sash; site glazed.

B. Aluminum light fixture valance and aluminum sills.

1.02 RELATED SECTIONS

A. Section 03 20 00 - Cast-In-Place Concrete.

B. Section 06 10 00 - Rough Carpentry: Wall opening construction.

C. Section 07 25 00 - Weather Barriers.

D. Section 07 92 00 - Joint Sealants: Perimeter sealant and back-up materials.

E. Section 08 81 00 – Glass Glazing.

1.03 REFERENCES

A. Aluminum Association (AA):
   1. AA DAF-45 - Designation System for Aluminum Finishes.

B. American Architectural Manufacturers Association (AAMA):
   1. AAMA 101 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
   2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
   3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
   4. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
   5. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
   6. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
   7. AAMA MCWM-1 - Metal Curtain Wall manual.

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C. Americans with Disabilities Act (ADA) of 1990, Accessibility Guidelines for Buildings and Facilities.

D. American National Standards Institute (ANSI):
1. ANSI A117.1 - 2003 - Accessible and Usable Buildings and Facilities.
2. ANSI Z9.1 - Safety Glazing Materials Used in Buildings Safety.

E. American Society of Civil Engineers (ASCE):
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

F. American Society of Testing and Materials (ASTM):
1. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
3. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
4. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
5. ASTM D3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns.
6. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
7. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
8. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
9. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential. 1
10. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.
11. ASTM F588 - Standard Test Methods for Resistance of Window Assemblies to Forced Entry Excluding Glazing.

G. Glass Association of North America (GANA): 1
1. GANA - Glazing Manual.

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H. International Code Council:
1. IBC - International Building Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.

I. National Fenestration Rating Council Incorporated (NFRC):
1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.

J. The Society for Protective Coatings (SSPC):
1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

1.04 PERFORMANCE REQUIREMENTS

A. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as measured in accordance with ASTM E330.

B. Deflection: Limit member deflection to flexure limit of glass with full recovery of glazing materials.

C. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.

D. Water Leakage: None, when measured in accordance with ASTM E331, ASTM E1105, or ASTM E547.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Shop Drawings:
1. Indicate opening dimensions, framed opening tolerances, affected related work and installation requirements.
2. Provide component complete with materials manufacturer product literature, sealants, and finishes.

C. Product Data: Submit component dimensions, anchorage and fasteners, glass, internal damage, and typical details.

D. Samples:
1. Submit color samples.

E. Submit warranty.

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1.06 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. Aluminum Windows: Fabricate window assemblies in accordance with AAMA 101 for types of windows required.
   2. Insulated Glass: Fabricate insulated glass units in accordance with GANA (formerly FGMA) Glazing Manual.
   3. Safety Glass: Conform to ANSI Z97.1 and applicable codes.

1.07 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing commercial aluminum windows with minimum three (3) years documented experience.

B. Installer: Company specializing in installing commercial aluminum windows with minimum three (3) years documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

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

B. Handle Work of this section in accordance with AAMA MCWM-1 - Curtain Wall Manual #10.

C. Protect prefinished aluminum surfaces with wrapping or stripable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental provisions.

B. Do not install glazing materials when ambient temperature is less than 40 degrees F.

C. Maintain this minimum temperature during and after installation of glazing materials.

1.10 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on Drawings.

1.11 WARRANTIES

A. Window System:
   1. Contractor shall warrant for one (1) year the satisfactory performance of the window installation which includes windows, hardware, glass, glazing, and anchorage as called for by the Specifications and approved shop drawings.

2. Window manufacturer shall provide written five (5) year warranty against defects in materials and workmanship. Shall include coverage for degradation of color finish.
3. Glass shall be warranted as specified in Section 08 80 00.

PART 2 PRODUCTS

2.01 WINDOWS

A. Aluminum store front by CMI Architectural (www.cmiarch.com). 1 ¼-inch perimeter, 10-011 face, 10-007 gutter, high performance fluorocarbon coating in custom color.

2.02 GLASS AND GLAZING MATERIALS

A. Glass and Glazing Materials: Type A as specified in Section 08 80 00. Field glazed under Section 08 80 00.

B. Glaze in accordance with manufacturer's instructions.

2.03 PERIMETER SEALANT MATERIALS

A. Sealant and Backing Materials: As specified in Section 07 92 00.

2.04 FABRICATION

A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Arrange fasteners and attachments to ensure concealment from view.

E. Prepare components with internal reinforcement for operating hardware.

F. Provide internal reinforcement in mullions with galvanized steel members to maintain rigidity.

G. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

H. Assemble insect screen frame, miter and reinforce frame corners. Fit mesh taut into frame and secure.

I. Fit frame with four spring loaded steel pin retainers.

2.05 FINISHES

A. Architect/Owner shall select custom color. Finish shall be Kynar 500 or equal.

B. Apply one (1) coat of bituminous or alkali resistant paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

2.06 ACCESSORIES

A. Fasteners: Aluminum or stainless steel fasteners shall be used.

B. Exterior Projecting Mounting Flange: Provide all four sides per jamb detail, 4-inches, 3/16-inches ± thick.

C. Interior Lighting Valance: At all window sill, per detail, 3/16-inch ± thick. (Alternate Bid)

D. Sill Flashing: Per detail. Provide end dams.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify site opening conditions.

B. Verify wall openings are ready to receive work of this Section.

C. Beginning of installation means acceptance of substrate.

3.02 INSTALLATION

A. Install window frames, flanges and valances and glass in accordance with manufacturer's instructions and drawings.

B. Coordinate with electrical for internal concealed wiring to feed the alternate bid lighting at the base of window frames.

C. Anchor window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

D. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

E. Coordinate attachment and seal of perimeter air barrier and vapor barrier materials.

F. Install glass in accordance with manufacturer's instructions and Section 08 80 00.

G. Apply sealants at joints and intersections and at opening interior and exterior perimeter to provide a watertight installation. Wipe off excess material and leave exposed surfaces and joints clean and smooth.

3.03 TOLERANCES

A. Maximum Variation from Level or Plumb: 1/16 inch every 3 feet non-cumulative or 1/8 inch per 100 feet, whichever is less.

3.04 CLEANING

A. Remove protective material from prefinished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

END OF SECTION

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SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.01 WORK INCLUDED

A. Hardware for hollow steel doors and frames.

B. Thresholds.

C. Gasketting.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

A. Furnish templates to Sections 08 12 13 and 08 13 13 for door and frame preparation.

1.03 RELATED WORK

A. Section 08 12 13 – Standard Hollow Metal Frames.

B. Section 08 13 13 – Standard Hollow Metal Doors.

C. Section 08 16 00 - Fiberglass Reinforced Polyester Door and Frame System.

1.04 REFERENCES

A. American National Standards Institute (ANSI):
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ANSI A156.1 - Butts and Hinges.
   3. ANSI A156.2 - Bored and Preassembled Locks and Latches.
   4. ANSI A156.3 - Exit Devices.
   5. ANSI A156.4 - Door Controls - Closures.
   6. ANSI A156.5 - Auxiliary Locks and Associated Products.
   7. ANSI A156.6 - Architectural Door Trim.
   8. ANSI A156.7 - Template Hinge Dimensions.
   9. ANSI A156.13 - Mortise Locks and Latches.
   10. ANSI A156.16 - Auxiliary Hardware.
   11. ANSI A156.18 - Materials and Finishes
   12. 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.

C. Architectural Woodwork Institute (AWI).

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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, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
   2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.

H. National Association of Architectural Metal Manufacturers (NAAMM).

I. Steel Door Institute (SDI).

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with the following requirements:
   1. ANSI A156 series.
   2. 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 30 00 - Administrative Requirements: Submittal provisions.

B. Submit schedule.

C. Shop Drawings: Indicate locations and mounting heights of each type of hardware.

D. Product Data: Submit catalog cuts.

E. Section 01 40 00 - Quality Requirements: Manufacturer's certificate provisions.

F. All hardware schedules shall be vertical format.

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 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 10 extra key lock cylinders for each master keyed group.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Hinges: Hager, McKinney, PBB, Stanley.

B. Continuous Hinges: Select Hinges.

C. Latch Sets: Dorma, Schlage.

D. Push/Pulls: Form and surfaces.

E. Cylinder Locks: Schlage.

F. Closers: Dorma, LCN.

G. Manual Bolts: Hager, Ives.

H. Gasketting: National Guard, Reese, Zero.

I. Protection Plates: Builders Brass, Hager, Hiawatha.

J. Latch Guards: Hager, Ives.

K. Substitutions: None.

2.02 KEYING

A. Door Locks: Key per Owner requirements to existing master key systems at substantial completion.

B. Supply two (2) keys for each lock.

C. Supply keys per Owner requirements.

2.03 FINISHES

A. Finishes are identified in Schedule at end of this Section.

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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 and for minimum clearance to adjacent surfaces.

3.04 PROTECTION OF INSTALLED CONSTRUCTION

A. Protect installed construction.

B. Do not permit adjacent work to damage hardware or hardware finish.

3.05 SCHEDULE (H.S. = Hardware Set)

H.S.1 (exterior single door)

1 continuous hinges	SL11 HD (Dark Bronze)	(Select Hinges)
1 dead bolt lock	B663P, 12-618	(Schlage)
1 closer	P4041 Spring H-Cush	(LCN)
1 kickplate	190S, 12 inch	(Hager)

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1 threshold	425	(NG)
1 jamb seal	A626DKB	(NG)
1 sweep	C607DKB	(NG)
1 pull	18-inch HDREC1014 (US10B)	(Form & Surfaces)

H.S.2 (pair of exterior doors - no mullion)

2 continuous hinges	SL11 HD (Dark Bronze)	(Select Hinges)
1 dead bolt lock	B663P, 12-618	(Schlage)
2 closers	4041 Spring H-Cush	(LCN)
1 astragal	176ADKB	(NG)
2 flush bolt	FB458	(Ives)
1 threshold	425	
1 jamb seal	A626DKB	
2 sweeps	C607DKB	

H.S.3 (interior metal door)

3 butts	BB1191	(Hager)
1 lock	ND94PD	
1 closer	P4041 Cush-N-Stop	
1 stop	WS401 CCV	(Ives)
1 latch guard	341D	

NOTES:

1. Lock type design as follows, unless noted otherwise:
   a. Schlage D Series, Rhodes.
   b. Full size interchangeable cores.
2. Finishes:
   a. 613, unless noted otherwise.
   b. Closers sprayed dark bronze, unless noted otherwise.
3. Hinge Size: 4½ inch by 4½ inch, unless noted otherwise.

END OF SECTION

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SECTION 08 81 00

GLASS GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass glazing for windows.

1.02 RELATED SECTIONS

A. Section 08 51 13 - Aluminum Windows.

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.

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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, 2006 Edition, and referenced standards with 2008 State of Wisconsin amendments.
2. IECC - International Energy Conservation Code, 2006 Edition, and referenced standards with 2008 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

A. Section 01 30 00 - Administrative Requirements: Submittal provisions.

B. Product Data:
1. Glass: Provide structural, physical, and environmental characteristics, size limitations, special handling or installation requirements, and manufacturer product literature.
2. Glazing Sealants, Compounds, and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors where exposed.

C. Samples: Submit two (2) samples 12 inch x 12 inch in size; illustrating each glass unit.

D. Submit laminated glass warranty.

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.

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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 and wall openings.

1.10 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Warranty provisions.

B. Manufacturer's Warranty:
   1. 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: Frosted laminated safety glass, 1/4 inch total thickness with frosted finish at sandwiched location.

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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.

B. Install in accordance with glazing and frames manufacturer's instructions.

3.04 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Cleaning provisions.

B. Remove glazing materials from finish surfaces.

C. Remove labels from glass after work is complete.

D. Clean glass and adjacent surfaces.

3.05 PROTECTION OF FINISHED WORK

A. Protect finished work provisions.

B. After installation, mark pane with an 'X' by using removable plastic tape or paste.

END OF SECTION

SECTION 09 67 23

RESINOUS FLOORING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes the following:
   1. Resinous flooring system as shown on the drawings and in schedules.

B. Related sections include the following:
   1. Cast-in-Place Concrete, division 03

1.03 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of an epoxy based multi roller applied flooring system with Q 28 colored quartz aggregate and urethane topcoat. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/8 inch. It shall be applied to the prepared areas as defined in the plans strictly in accordance with the Manufacturer's recommendations.

B. Cove base to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.04 SUBMITTALS

A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.

B. Manufacturer's Material Safety Data Sheet (MSDS) for each product being used.

C. Samples: A 6 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system.

1.05 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 8 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.

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B. The Applicator shall have been approved by the flooring system manufacturer in all phases of surface preparation and application of the product specified.

C. No requests for substitutions shall be considered that would change the generic type of the specified System.

D. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping
   1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.

B. Storage and Protection
   1. The Applicator shall be provided with a storage area for all components. The area shall be between 60 F and 90 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
   2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

C. Waste Disposal
   1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.07 PROJECT CONDITIONS

A. Site Requirements
   1. Application may proceed while air, material and substrate temperatures are between 60 F and 90 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
   2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
   3. The Applicator shall ensure that adequate ventilation is available for the work area.
   4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.

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B. Conditions of new concrete to be coated with epoxy material.
1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of (90) ninety days prior to the application of the coating system pending moisture tests.
2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary or desirable).
3. Sealers and curing agents should not to be used.
4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

C. Safety Requirements
1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
2. "No Smoking" signs shall be posted at the entrances to the work area.
3. The Owner shall be responsible for the removal of foodstuffs from the work area.
4. Non-related personnel in the work area shall be kept to a minimum.

1.08 WARRANTY

A. A warranty for a period of not less than one (1) year from the date of the projects substantial completion. Manufacturer shall provide a material warranty and the installer a will provide a warranty on workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Dur-A-Flex, 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802

B. General Polymers Corporation, a division of Sherwin Williams, www.sherwin-williams.com/im, (800) 524-5979.

C. Key Resin Company (Only if a system of products is offered that is an equal to the specified product).

2.02 PRODUCTS

A. Dur-A-Flex, Inc, Dur-A-Quartz, Epoxy-Based seamless flooring system with urethane topcoat.
1. System Materials:
a. Primer: Dur-A-Flex, Inc, Dur-A-Shield #2 resin and hardener.
b. Broadcast Coats: Dur-A-Flex, Inc, Dur-A-Glaze #4 resin and hardener.

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c. The quartz aggregate shall be Dur-A-Flex, Inc. Q-28 colored quartz aggregate.
d. Grout coat: Dur-A-Flex, Inc. Dur-A-Glaze #4 resin and Water Clear hardener.
e. Topcoat: Dur-A-Flex, Inc. Armor Top resin and hardener.

2. Patch Materials
a. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Dur-A-Glaze # 4 Cove-Rez.
b. Deep Fill and Sloping Material (over ¼ inch): Use Dur-A-Flex, Inc. Dur-A-Crete.

3. Joint Sealant: Type recommended or produced by resinous flooring manufacturer and recommended by manufacturer.

B. Sherwin Williams, General Polymers 1/8-inch ceramic carpet system.
1. Primer: 3579.
2. First Broadcast: 3561/5900F.
3. Second Broadcast: 5900F.
4. Grout Coat: 3745.
5. Seal Coat: 3745.

2.03 PRODUCT REQUIREMENTS

A. Primer Dur-A-Shield #2
1. Percent Solids 57 %
2. VOC 330 g/L
3. Bond Strength to Concrete ASTM D 4541 400 psi, substrates fails
4. Hardness, ASTM D 2134 60
5. Elongation, ASTM D 2370 7 %
6. Abrasion Resistance ASTM D 4060,
7. CS 17 wheel, 1,000 g Load 35 mg loss

B. Broadcast Coat and Grout Coat Dur-A-Glaze #4
1. Percent Solids 100 %
2. VOC 3.8 g/L
3. Compressive Strength, ASTM D 695 11,200 psi
4. Tensile Strength, ASTM D 638 2,100 psi
5. Flexural Strength, ASTM D 790 5,100 psi
6. Abrasion Resistance, ASTM D 4060 C-10 Wheel, 1,000 gm load, 1,000 cycle 29 mg loss
7. Flame Spread/NFPA-101, ASTM E 84 Glass A
8. Impact Resistance MIL D-24613 0.0007 inches, no cracking or delamination
9. Water Absorption. MIL D-24613 Nil
10. Potlife @ 70 F 20 minutes

C. Topcoat Armor Top

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1. Percent Solids 95 %
2. VOC 74 g/L
3. Tensile Strength, ASTM D 2370 7,000 psi
4. Adhesion, ASTM 4541 Substrate Failure
5. Hardness, ASTM D 3363 4H
6. 600 Gloss ASTM D 523 70
7. Abrasion Resistance, ASTM D4060 CS 17 wheel (1,000 g load) 1,000 cycles 14 mg loss
8. Pot Life, 70 F, 50% RH 2 Hours

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.
   1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.02 PREPARATION

A. General
   1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.
   2. Moisture Testing: Perform anhydrous calcium chloride test ASTM F 1869-98.
      a. Perform three tests for the first 1,000 sf and then one test per 1,000 sf after that.
      b. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 3 lbs/1,000 sf/24 hrs.
      c. If the vapor drive exceeds 3 lbs/1,000 sf/24 hrs then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
   3. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
   4. Mechanical surface preparation
      a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface

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characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.

b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.

c. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.

d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.

5. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufactures recommendations.

3.03 APPLICATION

A. General

1. The system shall be applied in six distinct steps as listed below:
   a. Substrate preparation
   b. Priming
   c. First broadcast coat application with first aggregate broadcast
   d. Second broadcast coat with second aggregate broadcast
   e. Grout coat application, sand floor (if required)
   f. Topcoat application
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Primer

1. The primer shall consist of a liquid resin and hardener that is mixed at the ratio of 2 parts resin to 1 part hardener per the manufacturer's instructions.
2. The primer shall be applied by flat squeegee and back rolled at the rate of 200-250 sf/gal to yield a dry film thickness of 6 mils.

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C. Broadcast Coat

1. The broadcast coat shall be applied as a double broadcast system as specified by the Architect.
2. The broadcast coat shall be comprised of two components, a resin, and hardener as supplied by the Manufacturer and mixed in the ratio of 2 parts resin to 1 part hardener.
3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means.
4. The broadcast coat shall be applied over horizontal surfaces using "v" notched squeegee and back rolled at the rate of 90-100 sf/gal.
5. Colored quartz aggregate shall be broadcast to excess into the wet material at the rate of 0.5 lbs/sf.
6. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
7. Apply a second coat of resin with a coverage rate of 90-100 sf/gal and broadcast aggregate to excess at the rate of 0.5 lbs/sf.
8. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

D. Grout Coat

1. The grout coat shall be comprised of a liquid resin and a liquid hardener that is mixed in the ratio of 1 part hardener to 2 parts resin and installed per the manufacturer's recommendations.
2. The grout coat shall be squeegee applied and back rolled with a coverage rate of 90-100 sf/gal.

E. Topcoat

1. The topcoat of Armor Top shall be roller applied at the rate of 500 sf/gal to yield a dry film thickness of 3 mils.
2. The topcoat shall be comprised of a liquid resin, hardener and grit that is mixed per the manufacturer's instructions.
3. The finish floor will have a nominal thickness of 1/8 inch.

3.04 FIELD QUALITY CONTROL

A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
   a. Temperature
      1) Air, substrate temperatures and, if applicable, dew point.
   b. Coverage Rates
      1) Rates for all layers shall be monitored by checking quantity of material used against the area covered.

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3.05 CLEANING AND PROTECTION

A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.

B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.

END OF SECTION

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SECTION 09 91 00

PAINTING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Surface preparation.

B. Surface finish.

C. Paints, Coatings & Stains.

1.02 RELATED WORK

A. Division 22 - Plumbing: Painting of mechanical items and identification.

B. Division 23 - Ventilating: Painting of mechanical items and identification.

C. Division 26 - Electrical: Painting of electrical items and identification.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) International:
   1. ASTM D16 - Standard Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
   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.

1.04 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.05 REGULATORY REQUIREMENTS

A. Conform to International Building Code for flame/fuel/smoke rating requirements for finishes.

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1.06 SUBMITTALS

A. Samples: Submit samples illustrating range of colors available for each surface finishing product scheduled, for selection.

B. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

C. Provide two (2) copies of a schedule detailing each substrate in the same order as the schedules used in Part 3 of this section. Include the following:
   1. The specific products to be used for each coat.
   2. Documentation that the manufacturer has reviewed and approved each painting system.
   3. Data pages for all products listed.
   4. On one set of data pages, highlight the following:
      a. Type of Resin.
      b. Dry Film Thickness.
      c. Volume Solids.
      d. Units of Sheen.
      e. Other performance or descriptive data required by Part 2 of this section.
      f. If this information is not on the data page, provide the information in a letter of certification from the manufacturer. Attach the letter to the appropriate data page.

D. 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.

1.07 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit data on cleaning, touch-up and repair of painted and coated surfaces.

1.08 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.

1.09 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.

1.10 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.

1.11 EXTRA MATERIAL

A. Provide a two (2) gallons container of each color, type, and finish to Owner.

B. 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: Pratt & Lambert, Mautz Paints, Pittsburgh Paints, Diamond Vogel.

2.02 ACCEPTABLE MANUFACTURERS - URETHANE AND STAIN

A. Sherwin Williams.

B. Other Acceptable Manufacturers: Pratt & Lambert, Mautz Paints, Pittsburgh Paints.

2.03 ACCEPTABLE MANUFACTURERS - EPOXY PAINT

A. Sherwin Williams.

B. Other Acceptable Manufacturers: Pratt & Lambert, Mautz Paints, Pittsburgh Paints.

2.04 ACCEPTABLE MANUFACTURERS - METAL PANELS

A. Tnemec (no substitutions).

2.05 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.

2.06 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.

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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 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. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. 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. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
2. Wood: 15 percent, measured in accordance with ASTM D4442.

D. 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. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

F. Copper Surfaces Scheduled for a Paint Finish: Remove contamination by steam, high pressure water, or solvent washing. Apply vinyl etch primer immediately following cleaning.

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G. Copper Surfaces Scheduled for a Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.

H. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

I. 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.

J. 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.

K. 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.

L. Glue-Laminated Beams: Prior to finishing, wash surfaces with solvent, remove grease and dirt.

M. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

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.

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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.

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3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. 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.

B. Reference drawings for additional miscellaneous items to be field painted.

3.08 EXTERIOR PAINT SCHEDULE:

A. Zinc-coated Metal - doors, frames, and handrails:
Touch-up: Rust-inhibitive waterborne acrylic primer, free of heavy metals
DFT: 2.5-5.0 mils
Min. Volume Solids: 44%
1. S-W DTM Acrylic Primer/Finish B66WW10
2. PPG Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel 90-712 Series.
2nd Coat: Non-blocking, 100% acrylic gloss coating
3rd Coat: Non-blocking, 100% acrylic gloss coating
Min. DFT: 1.3 mils per coat
Min. Volume Solids: 31%
Sheen: 70-90 units @ 60 degrees
1. S-W Exterior Super Paint High Gloss Door & Trim Enamel A85 series
2. PPG Pitt-Tech Int/Ext High Gloss DTM Industrial Enamel 90-374 Series.

B. Ferrous Metal - all exposed steel wall, soffit, fascia, and door panels:
1st Coat (Primer): By Section 07 42 13.
2nd Coat (Intermediate Coat): By Section 07 42 13.
3rd Coat (Finish Coat): Tnemic Series 73 Endura Shield, 2.0-3.0 mils dry film thickness. Satin finish. Exposed panel fastener shall also be painted.

C. Concrete (to be stained) – Semi-Transparent Stain. One location at base of exposed concrete wall at entry alcove.
1st Coat: LITHOCHROME Tintura Stain
2nd Coat: Sealer – Selectseal-W

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Install in accordamce with manufacturer recommendations. Closest color match (from standard colors) to the adjacent colored concrete sidewalk.

3.09 INTERIOR PAINT SCHEDULE:

A. Concrete, - walls (not scheduled for epoxy):
1st Coat: 100% acrylic, alkali resistant primer
Min. DFT: 3.0 mils
Min. Volume Solids: 37%
Alkali Resistance: tolerance of PH levels up to 13
1. S-W PrepRite Masonry Primer B28W300
2. PPG Speedhide Int/Ext Acrylic Alkali Resistant Primer 6-603.
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 Speedhide Interior Eggshell Latex Enamel 6-411 Series.

B. Concrete Masonry Units (not scheduled for epoxy):
1st Coat: Vinyl acrylic blockfiller
Min. DFT: 8.0 mils (75-125 sq. ft./gal)
Min. Volume Solids: 48%
1. S-W ProMar Blockfiller B25W25
2. PPG Speedhide Int/Ext Latex Masonry Block Filler 6-7.
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 Speedhide Interior Eggshell Latex Enamel 6-411 Series.

C. Wood Siding, Trim, Decking and Beams - semi-transparent finish:
1st Coat: VOC compliant stain
1. Sherwin Williams WoodScapes Exterior stain.

D. Ferrous Metal:
Touch-up: Rust-inhibitive waterborne acrylic primer, free of heavy metals
DFT: 2.5-5.0 mils
Min. Volume Solids: 44%
1. S-W DTM Acrylic Primer/Finish B66WW10
2. PPG Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel 90-712 Series.

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2nd Coat: Non-blocking, acrylic, semi-gloss
3rd Coat: Non-blocking, acrylic, semi-gloss
Pencil Hardness (ASTM D3363): H or harder
Min. DFT: 1.3 mils per coat
Min. Volume Solids: 33%
Sheen: 35-45 units @ 60 degrees
1. S-W ProClassic Waterborne Interior Acrylic Semi-gloss B31W20 series
2. PPG Int/Ext Semi-Gloss Acrylic Metal Finish 7-374 Series

E. Zinc-coated metal:
1st Coat: Rust-inhibitive waterborne acrylic primer, free of heavy metals
DFT: 2.5-5.0 mils
Min. Volume Solids: 44%
1. S-W DTM Acrylic Primer/Finish B66WW10
2. PPG Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel 90-712 Series.
2nd Coat: Non-blocking, acrylic, semi-gloss
3rd Coat: Non-blocking, acrylic, semi-gloss
Pencil Hardness (ASTM D3363): H or harder
Min. DFT: 1.3 mils per coat
Min. Volume Solids: 33%
Sheen: 35-45 units @ 60 degrees
1. S-W ProClassic Waterborne Interior Acrylic Semi-gloss B31W20 series
2. PPG Int/Ext Semi-Gloss Acrylic Metal Finish 7-374 Series

F. Concrete - walls and ceilings - (scheduled to receive epoxy):
1st Coat: 100% acrylic, alkali resistant primer
Min. DFT: 3.0 mils
Min. Volume Solids: 37%
Alkali Resistance: tolerance of PH levels up to 13
1. S-W PrepRite MasonryPrimer B28W300
2. PPG Speedhide Int/Ext Acrylic Alkali Resistant Primer 6-603.
2nd Coat: 2-component polyester epoxy
3rd Coat: 2-component polyester epoxy
DFT: 2.5-4.0 mils per coat
Min. Volume Solids: 58%
Sheen: 75-90 units @ 60 degrees
1. S-W Armor-Tile HS Polyester Epoxy B67W100 series/B67VW100
2. PPG Aquapon 35 Gloss Polyamide Epoxy Enamel 95-1 Series.

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G. Concrete Masonry Units (scheduled to receive epoxy):
1st Coat: 100% acrylic blockfiller
Min. DFT: 10.0 mils (50-90 sq. ft./gal)
Min. Volume Solids: 53.5%
1. S-W Heavy Duty Blockfiller B42W46
2. PPG Pitt-Glaze Int/Ext Latex Block Filler 16-90.
2nd Coat: 2-component polyester epoxy
3rd Coat: 2-component polyester epoxy
DFT: 2.5-4.0 mils per coat
Min. Volume Solids: 58%
Max. VOC's: 307 gms/L (catalyzed)
Sheen: 75-90 units @ 60 degrees
1. S-W Armor-Tile HS Polyester Epoxy B67W100 series/B67VW100
2. PPG Aquapon 35 Gloss Polyamide Epoxy Enamel 95-1 Series.

3.10 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

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SECTION 09 96 23

WEATHER/GRAFFITI-RESISTANT COATINGS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Weather seal and graffiti control coating to protect exterior stone wall surfaces on the restroom pavilion.

1.02 RELATED WORK

A. Section 04 05 00 - Mortar Masonry Grout.

B. Section 04 40 00 – Thin Stone Veneer.

C. Section 07 92 00 – Joint Sealers.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product literature.

B. Manufacturer's Installation Instructions: Submit.

C. Maintenance Instructions: Submit manufacturer's product literature on graffiti removal procedures and products.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in graffiti-resistant coatings with minimum three (3) years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years documented experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

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

B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Material and Equipment: Environmental conditions affecting products on site.

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B. Maintain ambient and surface temperatures above 40 degrees F and below 90 degrees F for 24 hours before application and continuously until protective treatment has cured.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Prosoco, Inc.

B. Approved equal. Substitution request shall be submitted at least seven (7) calendar days prior to bid date. Request shall include product data, manufacturer literature, and list of recent projects.

2.02 PROTECTIVE TREATMENT COATINGS

A. Clear, solvent-based silicone elastomer formulated for masonry materials to protect treated surfaces from repeated graffiti attacks without altering the natural appearance of the protected materials.

B. Sure Klean Weather Seal Blok-Guard & Graffiti Control by Prosoco.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify surfaces are complete and ready to receive protective treatment.

B. Newly constructed surfaces shall cure for 28 days before application.

C. Sealant and caulking compounds shall be in place and cured before application.

D. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Prepare surfaces to receive protective treatment in strict accordance with manufacturer's instructions.

B. Protect people, vehicles, plants, painted surfaces, anodized metal, metal, glass, and all non-masonry surfaces from product, residue, splash, fumes and wind drift.

3.03 APPLICATION

A. Apply protective coating in strict accordance with manufacturer's instructions.

B. Do not dilute or alter product.

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C. Field test surface to confirm it is capable of receiving a second coat per manufacturer's standards.

D. If surface is capable of receiving a second coat, apply coat as soon as the first coat is dry to the touch, or within 2 hours of the first coat.

E. If surface is not capable of receiving a second coat, do not apply and turn over the associated second coat quantity of coating to Owner.

3.04 PROTECTION

A. Protect in accordance with manufacturer's instructions.

B. Protect from rain for at least 6 hours after application.

END OF SECTION

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SECTION 10 14 00

SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Toilet Room Accessible Signs.

B. Building Street Address Numbers.

1.02 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Shop Drawings: Indicate letters and sign styles, lettering font, foreground and background colors, locations, and overall dimensions of each sign and letter.

C. Manufacturer's Installation Instructions: Submit installation template and attachment devices.

1.03 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three (3) years documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Product storage and handling provisions.

B. Package letters and signs, labeled in name groups.

C. Store adhesive attachment tape at ambient room temperatures.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Do not install signs when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

C. Provide ventilation to disperse fumes during application of solvent-based adhesive.

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PART 2 PRODUCTS

2.01 COMPONENTS

A. Toilet Room Accessible Signage: One-piece constructed signs that provide raised characters with corresponding Grade II Braille and pictograms on .153-inch thick Chemcast. Braille-Tac Signage Systems as manufactured by Advance Corporation, 8200 97th Street South, Cottage Grove, Minnesota 55016, (888) 328-9451.
   1. Men's Toilet Room: ISC-0608 P101, "MEN" text with man pictogram and symbol of accessibility.
   2. Women's Toilet Room: ISC-0608 P102, "WOMEN" text with woman pictogram symbol and symbol of accessibility.

B. Other Acceptable Manufacturers; equal as manufactured by:
   1. National Signage Affiliates.
   2. Best Sign Systems, Inc.
   3. Seton Identification Product.
   4. Or equal.

C. Building Street Address Numbers: Vinyl, of color and font as selected by Architect, adhered to window glass.

D. Colors as selected by Architect/Owner from manufacturer's standard colors.

2.02 ACCESSORIES

A. Mounting Hardware: As required for installation location and substrate, as provided by manufacturer.

B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

A. Coordinate with project conditions.

B. Verify that surfaces are ready to receive work.

C. Beginning of installation means acceptance of substrates.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install signs and letters after substrate is finished, in locations indicated.

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C. Mount accessible room signage with adhesive to wall adjacent to latch side of door. Sign shall be mounted 9 inch minimum from edge of door to center of sign and 60 inches above finished floor to center of sign, unless noted otherwise.

3.03 CLEANING

A. Clean signs per manufacturer's instructions.

END OF SECTION

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SECTION 10 21 14

PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Toilet Compartment.

1.02 RELATED SECTIONS

A. Section 10 28 13 - Toilet and Bath Accessories.

1.03 REFERENCES

A. National Fire Protection Associates 101 Life Safety Code 1991 Edition. Chapters 5, 6, 8-30.

1.04 QUALITY ASSURANCE

A. Model numbers for compartments manufactured by Bobrick Washroom Equipment, Inc. are listed to establish a standard of quality of design, function, materials, workmanship, and appearance. Other manufacturers may be submitted for evaluation by the architect by following the conditions of the substitutions clause. Unless approval is obtained fourteen calendar days prior to the bid date, all bids shall be based on the standard of quality. The architect shall be the sole judge as to the acceptability of all products submitted for substitution.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Submit shop drawings and product data.

C. Manufacturer's Data
   1. Provide product data sheets, installation instructions, replacement parts information, color selection samples.

D. Shop Drawings
   1. Provide required number of copies of all shop drawings.
   2. Show fabrication and erection of compartment assemblies, to extent not fully described by manufacturer's data sheets.
   3. Show anchorage, accessory items and finishes.
   4. Provide location drawings for bolt hole locations in supporting members for attachment of compartments.

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1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

B. Deliver items in manufacturer's original unopened protective packaging.

C. Store materials in original protective packaging to prevent physical damage or wetting.

D. Handle so as to prevent damage to finished surfaces.

1.07 WARRANTY

A. Furnish 10 year limited warranty for panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship.

B. Furnish one (1) year guarantee against defects in material and workmanship for stainless steel door hardware and mounting brackets.

PART 2 PRODUCTS

2.01 CONFIGURATIONS

A. Toilet compartments shall be Overhead Braced (Bobrick Sierra Series 1090.67), or approved equal.

B. Solid color reinforced composite (SCRC). Colors as selected by Architect/Owner from Bobrick Standards. Toilet partitions shall be constructed of Solid Color Reinforced Composite material, which is composed of dyes, organic fibrous material, and polycarbonate/phenolic resins. Material shall have a non-ghosting, graffiti resistant surface integrally bonded to core through a series of manufacturing steps requiring thermal and mechanical pressure. Edges of material shall be the same color as the surface.

C. Material thickness shall be as follows:
   1. Stiles and doors shall be 3/4 inch (19 mm),
   2. Panels shall be 1/2 inch (13 mm).

D. Finish Thickness
   1. Stiles and doors shall be ¾-inch (19 mm).
   2. Panels and benches shall be 1/2-inch (13mm).

E. Hardware
   1. All hardware to be 18-8, type-304 stainless steel with satin finish.
   2. Hardware of chrome-plates "Zamak", aluminum, or extruded plastic is unacceptable.

F. Latch

1. Sliding door latch shall be 14-gauge (2mm) and shall slide on nylon track.
2. Sliding door latch shall require less than 5-lb force to operate. Twisting latch operation will not acceptable.
3. Latch track shall be attached to door by machine screws into factory installed threaded brass inserts.
4. Threaded brass inserts shall be factory installed for door hinge and latch connections and shall withstand a direct pull exceeding 1,500 lbs. per insert.
5. Through-bolted, stainless steel, pin-in-head Torx sex bolt fasteners shall be used at latch keeper-to-stile connections and shall withstand direct pull force exceeding 1,500 lbs. per fastener.

G. Hinges

1. Hinge shall be 16-gauge (1.6mm) continuous piano-hinge.
2. All doors shall be equipped with self-closing hinge.
3. Continuous piano-hinge shall be attached to door and stile by theft-resistant, pin-in-head Torx stainless steel machine screws into factory installed, threaded brass inserts.
4. Fasteners secured directly into the core are not acceptable.
5. Door shall be furnished with two 11-gauge (3mm) stainless steel door stop plates with attached rubber bumpers to resist door from being kicked in/out beyond stile.
6. Door stops and hinges shall be secured with stainless steel, pin-in-head Torx machine screws into threaded brass inserts.
7. Threaded brass inserts shall withstand a direct pull force exceeding 1,500 lbs per insert.

H. Clothes Hook

1. Clothes Hook shall be constructed of stainless steel and shall project no more than 1-1/8-inch (29mm) from face of door.
2. Clothes hook shall be secured to door by through-bolted, theft-resistant, pin-in-head Torx stainless steel screws. Through-bolted fasteners shall withstand a direct pull force exceeding 1,500 lbs. per fastener.

I. Mounting Brackets

1. Mounting Brackets shall be constructed of stainless steel and shall be mounted inside compartment.
2. Fasteners at locations connecting panels-to-stiles shall utilize through-bolted, stainless steel, pin-in-head Torx sex bolt fasteners. Through-bolted fasteners shall withstand direct pull force exceeding 1,500 lbs. per fastener.

J. Leveling Device shall be 7-gauge, 3/16-inch (5mm) hot rolled steel bar; chromate-treated and zinc-plated; through-bolted to base of solid color reinforced composite stile.

K. Stile Shoe shall be one-piece, 4-inch (102mm) high, type-304, 22-gauge (0.8mm) stainless steel with satin-finish. Top shall have 90° return to stile. Shoe will be composed of one-piece of stainless steel and capable of being fastened (by clip) to stiles starting at wall line.

L. Headrail (Overhead-Braced) shall be satin-finished, extruded anodized aluminum (.065-inch/1.65mm thick) with anti-grip profile.

PART 3 EXECUTION

3.01 INSPECTION

A. Check areas scheduled to receive compartments for correct dimensions, plumbness of walls, and soundness of surfaces that would affect installation of mounting brackets.

B. Verify spacing of plumbing fixtures to assure compatibility with installation of compartments.

C. Do not begin installation of compartments until conditions are satisfactory.

3.02 ERECTION

A. Install compartments rigidly, straight, plumb, and level and in accordance with manufacturer's installation instructions.

B. Installation methods shall conform to manufacturer's recommendations for backing and proper support.

C. Conceal evidence of drilling, cutting, and fitting to room finish.

D. Maintain uniform clearance at vertical edge of doors.

3.03 ADJUSTMENT AND CLEANING

A. Adjust hardware for proper operation after installation.

B. Set hinges on in-swinging doors to hold doors open approximately 15 degrees from closed position when unlatched.

C. Set hinges on out-swinging doors to hold unlatched doors in closed position.

D. Clean exposed surfaces of partitions, hardware, and fittings.

END OF SECTION

SECTION 10 28 13

TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Toilet and washroom accessories.

B. Attachment hardware.

C. Mounting Owner-supplied accessories.

1.02 PRODUCTS FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

A. Section 04 20 00 - Unit Masonry: Installation of concealed anchor devices.

B. Section 10 21 14 - Plastic Toilet Compartments.

1.03 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry: Mounting substrate.

B. Section 10 21 14 - Plastic Toilet Compartments.

1.04 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 - 1998 - Accessible and Usable Buildings and Facilities.

C. American Society of Testing and Materials (ASTM):
   1. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
   3. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   4. ASTM A666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   5. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
   6. ASTM C1036 - Standard Specification for Flat Glass.

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D. Federal Specification Unit (FS):
1. FS A-A-3002 - Mirrors, Glass.

E. International Code Council:
1. IBC - International Building Code, 2000 edition, with all referenced standards and State of Wisconsin amendment.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal provisions.

B. Product Data: Submit product data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instruction: Submit special procedures and conditionings requiring special attention.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for installing work in conformance with ADA and ANSI.

1.07 COORDINATION

A. Section 01 31 00 - Project Management and Coordination: Coordination provisions.

B. Coordinate the Work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

1.08 WARRANTY

A. Mirrors: Guarantee against loss of perfect reflection quality for 15 years.

PART 2 PRODUCTS

2.01 PRODUCTS

A. Manufacturers:
1. Royce Rolls (roycerolls.net).
2. American Specialties, Inc.
3. Bobrick Washroom Accessories.
4. Bradley Corp.
5. General Accessories Manufacturing Corp. (Gamco).
6. Substitutions: None.

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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.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

B. Keys: Furnish two (2) keys for each accessory to Owner; master key accessories.

C. Fasteners, Screws, and Bolts: Hot dip galvanized tamper-proof or security type.

D. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 ACCESSORIES

A. Mirrors: 18 inch x 36 inch polished stainless steel. Royce Rolls #LMI836 or approved equal.

B. Toilet Paper Dispenser: Royce Rolls #STP-3 or approved equal.

C. Grab Bars: American Specialties 3800 Series, Bradley 812, Bobrick B-6806, or Gamco 1-1/2 inch "S" Series. Assembly shall be able to withstand 300# downward pull.

D. Surface Mounted Waste Receptacle: Bobrick B-43644 or approved equal.

E. Electric Hand Dryer: White, semi-recessed (Excel) R76-IW or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 31 00 - Project Management and Coordination: Coordination and project conditions.

B. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.

C. 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.

B. Provide templates and rough-in measurements as required.

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C. Verify exact location of accessories for installation.

3.03 EXISTING WORK

A. Clean and repair existing toilet accessories which remain or are to be reinstalled.

3.04 INSTALLATION

A. Install fixtures, accessories, and items in accordance with manufacturers' instructions.

B. Install grab bars so that center of bar is at 34 inches above finished floor.

C. Install other accessories so that bottom of item is at 40 inches above finished floor, unless noted otherwise.

D. Install recessed combination trash receptacle paper towel dispenser so that bottom of unit is 4 inches above finished floor, unless noted otherwise.

E. All accessories shall be mounted so that all operable parts are no more than 48 inches above finished floor.

F. All accessories shall be mounted so as to comply with ADA and ANSI requirements.

G. Install plumb and level, securely and rigidly anchored to substrate.

END OF SECTION

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SECTION 10 44 16

FIRE EXTINGUISHERS

PART 1 GENERAL

1.01 WORK INCLUDES

A. Fire extinguishers.

1.02 REFERENCES

A. National Fire Protection Association (NFPA):
   1. NFPA 10 - Standard for Portable Fire Extinguishers.
   2. NFPA 17 - Dry Chemical Fire.

B. Underwriter's Laboratories Inc. (UL):
   1. Fire Protection Equipment Directory.

1.03 PERFORMANCE REQUIREMENTS

A. Conform to NFPA 10 requirements for extinguishers.

B. Furnish extinguishers classified and labeled by Underwriters Laboratories Inc. for purpose specified and indicated.

PART 2 PRODUCTS

2.01 FIRE EXTINGUISHERS

A. Manufacturers:
   1. Amerex.
   2. Ansal Incorporated.
   3. Grinnel Corporation.
   4. J.L. Industries.
   5. Larsens Manufacturing Company.
   6. Nystorm Products Company.
   7. Potter Roemer.

B. Ten pound Model MP10, Larsen's or equal. UL Rating: 4A-60B:C.

C. Finish: Red enamel.

2.02 ACCESSORIES

A. Brackets, exposed: Support bottom of extinguisher, by manufacturer.

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PART 3 EXECUTION

3.01 EXAMINATION

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

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install mounting bracket at each extinguisher location, so that top of extinguisher is 48 inches above the finished floor

B. Place extinguisher on wall bracket. Secure rigidly in place in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 11 16 20

KEY VAULTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush mounted key vaults.

1.02 RELATED SECTIONS

A. Section 03 20 00 - Cast-In-Place Concrete.

B. Section 04 20 00 - Unit Masonry.

1.03 SUBMITTALS

A. Product Data: Provide component dimensions, describe component within assembly, anchorage and fasteners, and finish.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Knox Company, 17672 Armstrong Avenue, Irvine, California 92614-5728, (800) 552-5669 or equal.

B. Or other if required by local fire department.

2.02 MATERIAL

A. Recessed Mounted Key Vault: Knox-Box Model #3226 with Dark Bronze finish.

B. Verify with local fire official for brand, keying, type and location.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify rough opening for unit is correctly sized and located.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install plumb and level in wall openings or on surface 56 inches from finished floor to inside top of cabinet.

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B. Secure rigidly in place in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 11 24 29

FACILITY FALL PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Supply and installation of fall arrest roof anchors, including:
   1. Fall Arrest Roof anchors.

1.02 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry: Wood deck and wood beams.

B. Section 07 53 23 - Membrane Roofing.

C. Section 07 92 00 - Joint Sealers.

1.03 REFERENCES

A. The work of this Section shall conform to:
   1. International Window Cleaner's Association:
      a. IWCA I 14 (Window Cleaning Safety Standard).
   2. Aluminum Association:
      a. AA 5AS-30 (Specifications for Aluminum Structures).
   3. OSHA.

1.04 SYSTEM DESCRIPTION

A. Design safety anchor fall protection system to provide for safe execution of roof maintenance.

B. Coordinate work of this Section with Membrane Roofing, to provide continuous waterproof protection.

C. Design for fall arrest anchors to resist without fracture a pull-out force of 5,000 lbs (22kN), applied in the most adverse direction.

1.05 SUBMITTALS

A. Manufacturer's descriptive literature for each product, including section or other type details.

B. Manufacturer's written installation instructions.

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1.06 QUALITY ASSURANCE

A. Fall arrest roof anchors manufacturer to have minimum 3 years documented experience in the design and fabrication of fall protection systems.

B. Comply with all requirements of:
   1. Local Code Applicable.
   2. OSHA.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Provide one of the following or equal:
   1. Miller Fussion Roof Anchor Post for Membrane Roof. www.millerfallprotection.com.
   2. DBI Sala Roof Top Anchor for Membrane Roof. www.majorsafety.com.
   3. Tie Down #48591 Roof Anchor. www.tiedown.com.
   4. FP Sales Roof Top Anchor for wood sheathing. www.fpsales.com.
   5. All products shall have a stem height of approximately 7-inches (field verify) and tie-off hook.

B. Mounting Accessories:
   1. Provide all required bolts, bottom plate, and accessories for a complete installation with the given conditions and in accordance with manufacture's recommendation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Report to the Contractor in writing defects of work prepared by other trades and other unsatisfactory site conditions. Verify site dimensions. Commencement of work will imply acceptance of prepared work.

B. **Note: Review design criteria for tapered roof insulation systems if necessary for specific project. Height of anchor may be affected.**

3.02 INSTALLATION

A. Roof Anchors:
   1. Install anchors or equipment in accordance with manufacturer's printed instructions, shop drawings and as specified.
   2. Ensure anchors or equipment is installed under the direct supervision of a Professional Engineer and/or Roofing Consultant.

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3. Where bolting is used for fastening anchors, no fewer than two stainless steel threads is to be exposed and the nut is to be positively locked by deforming threads, welding, pinning or equivalent method.
4. Ensure work is inspected and approved prior to application of roofing.

B. Flashing:
1. Install roof anchor flashing in accordance with manufacturer's printed instructions, shop drawings and as specified.
2. Set deck flange in layer of membrane adhesive and extend single ply up sleeve to highest elevation possible and clamp membrane to a flashing.

3.03 ADJUSTING AND FINAL INSPECTION

A. Verify that all manufactured units have been installed in accordance with specifications and details, and will function as intended. Adjust any items where necessary to ensure proper operation.

3.04 CLEANING

A. Clean manufactured units using materials and methods approved by manufacturer. Do not use cleaners or techniques which could impair performance of the roofing system.

END OF SECTION

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SECTION 22 00 00

PLUMBING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Plumbing where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
   1. Domestic hot, cold, and tempered water piping systems and water service.
   2. Waste and vent systems and waste service.
   3. Storm system and service.
   4. Plumbing fixtures and trim as shown on the Drawings.
   5. Plumbing equipment.
   6. Water heating systems.
   7. Pipe and pipe fittings. Pipe hangers and supports. Valves. Piping specialties, drainage specialties, and plumbing supply specialties.
   8. Mechanical Identification. Sleeves. Mechanical sleeve seals.
   9. Piping and equipment insulation, jackets, and accessories.
   10. Caulking of penetrations, openings, and fixtures.
   11. Installation of heat tape on interior horizontal and vertical storm piping, from below roof at drain inlet to just below floor slab. Heat tape provided under Division 26.

B. Coordinate services, with required meters, with local utilities. Verify water service pressure at connection.

1.02 WORK INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

A. Division 26 - Electrical: Heat tape for interior storm piping.

1.03 RELATED SECTIONS

A. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 01 of these specifications.

B. Section 07 92 00 - Joint Sealants: Requirements for sealing of exterior and interior floor, wall, ceiling, and roof penetrations and fixture perimeters.

C. Division 26 - Electrical: Requirements for electric connections specified by this section.

D. Division 31 – Earthwork: Requirements for trenching and backfilling.

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1.04 WORK OF OTHER SECTIONS

A. Openings for work in walls, floor, roof, ceiling, etc., required by this section shall be provided under other sections. Locations and size of these openings shall be the responsibility of this Contractor.

B. Division 03 - Concrete.

C. Division 04 - Masonry.

D. Division 06 - Woods, Plastics, and Composites.

E. Division 07 - Thermal and Moisture Protection.

F. Division 09 - Finishes.

G. Section 09 91 00 – Painting: Painting of piping, insulation, etc.

H. Division 26 - Electrical: Electrical line voltage wiring (100 volts and greater) connections.

1.05 GENERAL PROVISIONS

A. Everything essential for the completion of the work implied to be covered by these Specifications to make the System ready for normal and proper operation must be furnished and installed by the Contractor. Accordingly, any omission from either the plans or the Specifications, or both, of details necessary for the proper installation and operation of the system shall not relieve the Contractor from furnishing such detail in full and proper manner.

B. The plans show various details indicating the general arrangement of the plumbing work, sizes and locations of piping, equipment, etc. The said plans with figures, lettering, etc., shall be considered a part of these Specifications and no charge or alternation shall be made in either case unless ordered by the Engineer.

C. In addition to the plumbing plans, see General Plans of the building, all plumbing work appearing on the latter plans will be part of this contract unless especially specified to be done by other contractors, as well as, said work detailed on the plumbing plans.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with State of Wisconsin and industry standards.

B. Qualification of Installer:
   1. Company specializing in performing the work of this section with minimum three (3) years documented experience.

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2. In acceptance or rejection of installed work, the Architect or Engineer shall make no allowances for lack of skill on part of the installers.
3. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
4. All work shall be installed in a first class manner by State of Wisconsin licensed plumbers.

C. Qualification of Manufacturer:
1. Company specializing in manufacturing products specified in this section with a minimum of 10 years experience. Manufacturer shall conform to the ratings and certifications indicated.

D. Codes and regulations:
1. All plumbing installation shall meet the requirements of the State of Wisconsin Board of Health.
2. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.
3. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Engineer.

E. The following standards, referred hereafter by basic designation only, are imposed, as applicable to work in each instance, and form a part of this specification to the extent indicated by the reference thereto:

ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
COMM	Department of Commerce, Wisconsin Administrative Code: Plumbing, Current Edition
IECC	International Energy Conservation Code, 2009 edition, and all referenced standards with 2011 State of Wisconsin amendments

1.07 PERMITS

A. The Contractor shall obtain and pay for all construction permits required for Work of this section.

B. One (1) copy of all permits shall be provided to Owner.

C. One (1) copy of all permits shall be maintained on site.

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1.08 COORDINATION

A. Division 01: Coordination provisions.

B. Cooperate and coordinate with other trades to assure that all systems in the plumbing work may be installed in the best arrangement. Coordinate as required with all other trades to share space in common areas and to provide the maximum of access to each system.

C. Arrange work in neat, well organized manner with piping and similar services running parallel with primary lines of building construction and with minimum 7 foot overhead clearance. Provide maximum clearances wherever possible.

D. Locate equipment properly to provide easy access, and arrange entire plumbing work with adequate access for operation and maintenance.

E. Give right-of-way to piping which must slope for drainage.

1.09 SUBMITTALS

A. Division 01: Submittal provisions.

B. The Contractor shall be responsible for correction of work deemed necessary by the Engineer due to proceeding with the work without shop drawings that have the Engineers final approval.

C. This Contractor will be responsible for all figures and dimensions shown on the shop drawings. Approval of shop drawings describing equipment that cannot fit in the space allotted does not relieve this Contractor from providing equipment that will meet the space requirements.

D. Shop drawings: include data on physical dimensions, gauges, materials of construction, and capacities.
   1. Plumbing Fixtures and Equipment: Manufacturer's literature, include capacities, equipment performance, and electrical characteristics.

E. Product Data:
   1. Plumbing Drainage Specialties: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes, and finishes.
   2. Plumbing Supply Specialties: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes, and finishes.
   3. Mechanical Insulation and Finished Jackets: Product description, list of materials, and thickness for each service or equipment scheduled and locations.
   4. Mechanical Identification: Submit manufacturer's catalog literature for each product.

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F. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Division 01: Product storage and handling provisions.

B. Accept equipment on site in factory packaging. Inspect for damage.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Do not install insulation and related products when ambient temperatures and conditions do not meet manufacturer's requirements.

B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.12 CLOSEOUT SUBMITTALS

A. Division 01: Closeout provisions.

B. Operation and Maintenance Data and Instructions:
   1. Submit manufacturer's descriptive literature, operating instructions, service instructions, installation instructions, maintenance and repair data, parts listing, warranties, and wiring diagrams.
   2. Assemble two (2) complete sets. Prepare in bound copies complete with index tabs.
   3. Submit bound copies to Engineer for disbursement.

C. Test Results:
   1. Submit the Certificate of Performance on the domestic water service, include results of laboratory analysis of water sample.
   2. Submit all records and certifications approving testing requirements and a complete record of all testing that has been approved on the piping systems.

D. Warranties.

E. Record Drawings (as-builts).

1.13 WARRANTY

A. Division 01: Warranty provisions.

B. Water Heater: Furnish three (3) year manufacturer's warranty against tank leaks.

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PART 2 PRODUCTS

2.01 PIPES AND TUBES

A. Sanitary Sewer Piping and Vent Piping:
   1. Buried below the building and outside within 5 feet of the building:
      a. Polyvinyl Chloride (PVC) Pipe: ASTM D2665 or ASTM D3034 with PVC fittings. Flexible elastomeric gaskets shall conform to ASTM F477.
      b. Polyvinyl Chloride (PVC) Pipe: ASTM D1785 or ASTM D2665 with solvent cemented joints conforming to ASTM D2466 or ASTM D2467 or ASTM F1866 and ASTM D3311. Primer shall conform to ASTM F656. Solvent shall conform to ASTM D2564.
   2. Above ground inside the building:
      a. Polyvinyl Chloride (PVC) Pipe: ASTM D1785, ASTM D2665, or ASTM F891 with solvent cemented joints conforming to ASTM D2855. Primer shall conform to ASTM F656. Solvent shall conform to ASTM D2564.
      b. Polyvinyl Chloride (PVC) Pipe: ASTM D1785, ASTM D2665, or ASTM F891 with mechanical push-on joints conforming to ASTM D3212. Flexible elastomeric seals shall conform to ASTM D3139.

B. Water Piping:
   1. General:
      a. All materials in contact with water shall be suitable for use with potable water.
      b. All pipes, fittings, and other materials for water supply lines shall be made of a material that contains not more than 8 percent lead.
      c. A water supply system shall be resistive to corrosive action and degrading action from the water being conveyed.
      d. Water distribution pipe shall have a minimum working pressure of 100 psig at 180 degrees F, except cold water underground pipe shall have a minimum working pressure at 100 degrees F.
      e. Joints between different materials shall be made with mechanical compression joints.
   2. Buried below the building and outside the building:
      a. Copper Tubing: ASTM B42, annealed without fittings. Type K.
   3. Above ground inside the building:
      a. Copper Tubing: ASTM B88, Type L, hard drawn, with cast brass or wrought copper fittings and Grade 95TA soldered joints. Joint surfaces shall be made in accordance with ASTM B828. Solder shall conform to ASTM B32. Flux shall be approved by NSF.

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C. Equipment Drains and Overflows:
1. Copper Tubing: ASTM B88, Type M or L hard drawn, cast brass, wrought copper or mechanically extracted fittings, lead free solder joints.

D. Storm Sewer Piping:
1. Buried below the building and outside within 5 feet of building:
a. Polyvinyl Chloride (PVC) Pipe: ASTM D2665 or ASTM D3034 with PVC fittings and elastomeric gasket joints.
2. Above ground inside the building:
a. Polyvinyl Chloride (PVC) Pipe: ASTM D2665 or ASTM D3034 with PVC fittings and solvent weld joints.

2.02 VALVES

A. Valves must be trademarked on body with manufacturer's name or trademark and pressure rating.

B. Minimum design pressure of 200 psig and certified for water-oil-gas (WOG) operation.

C. Valves installed in pipes with insulation shall be provided with extensions for the handles.

D. Ball Valves:
1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, Teflon seats and stuffing box ring, lever handle, solder or threaded ends.
2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.
3. Acceptable Manufacturers: American Valve, Crane, FMC Crosby Valve, Red-White Valve Corp., or equal.

E. Relief Valves:
1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.
2. Gas service: Stainless steel seat and disc.
3. Acceptable Manufacturers: Aquatrol, Kunkle Valve, or equal.

2.03 PIPING SPECIALTIES

A. Flanges, Unions, and Couplings:
1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.

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4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Pressure Gages:
1. Gage: ASME B40.100, with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.
a. Case: Cast aluminum or stainless steel.
b. Bourdon Tube: Brass or Phosphor bronze.
c. Dial Size: 4-1/2 inch diameter. Readable to person standing on floor.
d. Mid-Scale Accuracy: Two percent.
e. Scale: Psi.
f. Graduation: 0 to 5 psig, in inch of water increments.
2. Acceptable manufacturers: Kunkle, Taylor, Trerice, or equal.

C. Thermometers:
1. Stem Type Thermometer: ASTM E1, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device.
a. Size: 9 inch scale.
b. Window: Clear glass.
c. Stem: Brass, 3/4 inch NPT, 3-1/2 inch long.
d. Accuracy: 2 percent.
e. Calibration: Both degrees F and degrees C.

D. Pressure Reducing Valve:
1. Designed for plumbing system, serviceable in line, bypass feature for thermal expansion pressure. Cast bronze body, stainless steel fasteners, stainless steel seat.
2. ASSE Listed 1003, IAMPO Listed, CSA Certified.
3. Maximum Working Pressure: 300 psi.
4. Adjustable Outlet Pressure: 75-125 psi.
5. Wilkins Model 500-510.
6. Acceptable Manufacturers: Watts, Bell & Gosset, Wilkins, or equal.

2.04 DRAINAGE SPECIALTIES

A. Roof Drains:
1. Roof Drains: Lacquered cast iron body with sump:
a. Strainer: Removable cast iron dome/strainer.
b. Accessories: Coordinate with roofing type:
1) Membrane flashing clamp and gravel stop.
2) Top-set roof deck plate.
3) Body height shall be 4" or less so that drain and piping will fit into soffit construction and be completely concealed.
c. Model: Zurn Z125-DP.

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d. Acceptable Manufacturers: Josam, Smith, or Zurn.

2. Accessories:

a. Inspection Chamber: 18-gauge stainless steel construction with roof flange. Designed with side drainage and lid for access to roof drain installed in "green roofing" systems.

1) Standard size, 11"x11"x4¾" with 3½" flange.

2) Extensions. Assume a minimum of (2) extensions, 1" in height, will be required. Final height shall be coordinated with Architect.

3) Manufacturer: Green Roof Solutions, Glenview IL, 866.675.9963, www.greenroofsolutions.com.

B. Floor Drains:

1. See Plumbing Fixture and Equipment Schedule on Drawings.

2. Floor Drain:

a. General service floor drain for use in finished areas where foot traffic is expected.

b. Cast iron body and flashing collar.

c. Reversible flashing collar for adjustment of the strainer.

d. Nickel-bronze strainer, 6 inch round or square. Square strainer in areas with tile flooring. Round strainer for all other areas.

e. Josam 30000; Smith 2005/2010; Wade 1100; Zurn ZN-415.

3. Acceptable Manufacturers: Josam, Jay R. Smith, Wade, or Zurn.

C. Cleanouts:

1. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

2. Exterior, in concrete: Smith 4250 series, Josam 58680, or Zurn Z1474 with heavy-duty cast iron top.

3. Walls:

a. In masonry walls: Smith 4436 or 4434 taper thread plug with round or square frame and cover or Smith 4720 round or 4730/4735 square frame with secured cover in walls at cleanout or access locations.

4. Floors: Smith 4020, Josam 55000, or Zurn ZN1400 with round nickel-bronze top.

5. Pipes: Provide cleanout tee or plug.

6. Cleanout plugs shall be bronze, brass, or plastic. Provide bronze plugs for all utility type areas.

a. Brass cleanout plugs shall be used with metallic piping only and shall conform to the requirements of ASTM A74.

b. Plastic cleanout plugs shall conform to the requirements of ASTM D2464 or ASTM D2466 or ASTM D2467 or ASTM D3311 or ASTM F409 for PVC material.

7. Cleanouts shall be of the same nominal size as the pipes they serve.

8. Acceptable Manufacturers: Josam, Smith, Zurn, or equal.

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D. Traps: For all lavatories, Los Angeles pattern cast brass traps with brass nuts.

2.05 SUPPLY SPECIALTIES

A. Backflow Preventers:
   1. Hose Bibb: ASSE 1011; hose connection type anti-siphon vacuum breaker; meet the requirements of ANSI A112.1.3.
   2. Acceptable Manufacturers: Watts or equal.

B. Water Hammer Arrestors:
   1. Stainless steel construction bellows type, pre-charged suitable for operation in temperature range -100 to 300 degrees F and maximum 250 psi working pressure, permanently sealed.
      a. Acceptable manufacturers: Smith 5000 series, Josam 75000 series or equal.
   2. Provide at each fixture or branch of fixtures and where called for elsewhere on the drawings.
   3. Water hammer arrestors shall be tested and certified in accordance with the Plumbing Drainage Institute Standard PDI WH-201.

C. Thermostatic Mixing Valve: Provided by faucet manufacturer.

D. Hose Bibbs/Hydrants:
   1. Interior Hose Bibbs, Potable Systems:
      a. Bronze or brass, replaceable hexagonal disc, hose thread spout, chrome plated with vacuum breaker.
      b. Acceptable Manufacturers: Watts, Woodford, or equal.
   2. Wall Hydrants:
      a. Anti-siphon type with chrome plated lockable recessed box hose thread spout, removable key, and vacuum breaker.
      b. Acceptable Manufacturer: Woodford or equal.

2.06 PIPE INSULATION

A. Man Made Mineral Fiber (Fiberglass): ASTM C547; rigid molded, noncombustible. Corrosion, moisture, and vermin resistant. CFC and HCFC free.
   1. k (ksi) factor: 0.24 at 75 degrees F.
   2. Maximum service temperature: 850 degrees F.
   3. Installation Locations: Indoor. Outdoor with weather-protective jacket. Above and below ground.
   4. Vapor Retarder Jacket: White Kraft paper with glass fiber yarn and bonded to aluminized film, secured with self-sealing longitudinal laps and butt strips or with outward clinch expanding staples and vapor retarder mastic.
   5. Acceptable Manufacturers: Childers Products Co., Johns Manville, Owens Corning, Pittsburgh Corning Corp., or equal.

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B. Composite piping insulation (insulation, jackets, coverings, sealers, mastics, and adhesives) shall have ratings not exceeding flame spread index rating of 25 and a smoke developed index rating of 150 (test method ASTM E-84).

C. EPDM-Rubber: 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, paintable.
   1. Physical Properties:
      a. k Value: 0.245 at 75 degrees F (ASTM C518/C117)
      b. Density: 3 to 6 psf
      c. Service Temperature (continuous): -297^{O}F to 300^{O}F
      d. Water Vapor Permeability: 0.03 perm (ASTM E96)
      e. Water Absorption (weight %): 0.2% (ASTM C209)
      f. Flame Spread/Smoked Developed Ratings: 25/50, self-extinguishing
   2. Acceptable Products:
      a. Aerocel by Aeroflex, 423-337-2493, www.aeroflexusa.com
      b. Tundra Seal by Industrial Thermo Polymers Limitied, 905-846-3666, 800-387-3847, www.tundrafoam.com

D. Finished Jackets:
   1. PVC Plastic: One piece molded type fitting covers and sheet material.
      a. Thickness: 10 mil.
      b. Tensile Strength and Modulus: 6,000 psi, 470,000 psi
      c. Flexural Strength and Modulus: 11,600 psi, 460,000 psi
      d. Surface Burning Characteristics: Flame spread - 25 or less, smoke development - 50 or less.
      e. Connections: Brush on adhesive, or pressure sensitive color matching vinyl tape, or solvent welding adhesive.
      f. Installation Locations: Indoor.
      g. Color: Blue for water pipe, off-white for other applications.

E. All exposed insulation without finished jacket shall have paintable surface finish.

F. Schedule:
   1. Installer's option where more than one type is indicated.
   2. Domestic Hot, Cold, and Tempered Water:
      a. Locations: All (above grade, below grade, exposed, and concealed).
      b. Insulation:
         1) Glass Fiber
         2) EPDM-Rubber
      c. Finished Jacket (where exposed):
         1) Fiberglass: PVC
         2) EPDM-Rubber: Painted

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d. Schedule

1) Hot Water

Pipe Size Range	Thickness
1/2 inch to 2 inches	1 inch

2) Cold and Tempered Water

Pipe Size Range	Thickness
1/2 inch to 1 inch	1/2 inch
1 1/4 inch to 2 inches	3/4 inch

3. Storm Piping:
   a. Location: Above grade, exposed and concealed.
   b. Insulation:
      1) Glass Fiber
      2) EPDM-Rubber
   c. Finished Jacket (where exposed):
      1) Fiberglass: PVC
      2) EPDM-Rubber: Painted
   d. Schedule:
      1) Pipe: 1 1/2-inch
      2) Roof Drain Body: 1/2-inch
4. Plumbing Vents:
   a. Location: Within 10-feet of building exterior, above grade, exposed and concealed.
   b. Insulation:
      1) Glass Fiber
      2) EPDM-Rubber
   c. Finished Jacket (where exposed):
      1) Fiberglass: PVC
      2) EPDM-Rubber: Painted
   d. Schedule: 1/2-inch

2.07 SPECIALTY INSULATION

A. Under Lavatory ADA approved pipe protection:
   1. Cover: Soft, impact-resistant, stain-resistant, antimicrobial molded vinyl, 1/8 inch with internal ribs, UV protection, paintable finish. White.
   2. Products: Manville "Aerotube" insulation, Truebro Lav Guard 2, or equal.

2.08 SLEEVES AND SEALS

A. Sleeves for pipes through walls and floors: Steel pipe or 18 gage thick galvanized steel or Schedule 40 PVC.

B. Sleeves shall be of sufficient length to pass through entire floor or wall construction, including finished floor, etc., as applicable. Sleeves through floors shall extend 1 inch above finished floor level, unless noted otherwise.

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C. All sleeves shall be of sufficient diameter such that the bare or insulated pipe, as applicable, with unbroken pipe covering or wrapping, where specified, can pass through and allow for expansion and contraction in all directions.

1. Uninsulated: Sleeve shall be two pipe sizes larger than the pipe passing through; or provide a minimum of 1/2 inch clearance between inside of sleeve and outside of the pipe.
2. Insulated: Sleeve shall be of adequate size to accommodate the full thickness of pipe covering, with clearance for packing and caulking.

D. Material for between sleeve and opening:

1. Non-shrink grout by BASF or equal.
2. Hydraulic cement.

2.09 ESCUTCHEONS

A. 1 inch wide or of sufficient size to cover the sleeved opening and an inside diameter to fit snugly around pipe.

B. Finish shall be chrome plated steel.

2.10 PIPE HANGERS AND SUPPORTS

A. Plumbing Piping - Drain, waste, vent, and domestic water:

1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
2. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
3. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
4. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
5. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
6. Vertical Support: Steel riser clamp.
7. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

B. Pipe Hanger Spacing:

Pipe size:	max. hanger spacing	hanger rod diameter
1/2 to 1-1/4	6'	3/8"
1-1/2 to 2	10'	3/8"
2-1/2 to 3	10'	1/2"
4 to 6	10'	5/8"
8 to 12	14'	7/8"
14 and over	20'	1"
PVC (All Sizes)	6'	3/8"

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2.11 FIXTURES

A. See Plumbing Fixture and Equipment Schedule on Drawings for additional requirements.

B. Water Closets:
   1. Flush Valve Type:
      a. Wall hung vitreous china closet with elongated rim, 1-1/2 inch spud, china bolt caps; maximum 1.6 gallon flush volume.
      b. Acceptable Manufacturer: Kohler or approved equal.
   2. Flush Valve:
      a. Concealed, automatic, flushometer for back inlet water closets.
      b. Quiet, concealed, infrared sensor with indicator light operation, chrome wall cover plate, diaphragm type, rough brass urinal flushometer, non-hold-open integral solenoid operator, vacuum breaker, angle stop and dual filtered fixed bypass.
      c. Transformer.
      d. Warranty: 3-year.
      e. Acceptable Manufacturer: Sloan or approved equal
   3. Seat:
      a. Solid white plastic, elongated, open front, extended back, self-sustaining hinge, brass bolts, without cover.
      b. Acceptable Manufacturer: Bemis or approved equal.
   4. Wall Mounted Carrier:
      a. Adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.
      b. Epoxy expansion anchors for floor mounting.
      c. Acceptable Manufacturer: Jay R. Smith, Zurn, or equal.

C. Urinals:
   1. Wall Hung:
      a. Urinal: Vitreous china, wall hung washout urinal with shields and extended rim, integral trap, removable stainless steel strainer, 3/4 inch rear spud, steel supporting hanger; maximum 1.0 gallon flush volume.
      b. Acceptable Manufacturer: Kohler or approved equal.
   2. Flush Valve:
      a. Concealed, automatic, flushometer for back spud urinals.
      b. Quiet, concealed, infrared sensor with indicator light operation, chrome wall cover plate, diaphragm type, rough brass urinal flushometer, non-hold-open integral solenoid operator, vacuum breaker, angle stop and dual filtered fixed bypass.
      c. Transformer.
      d. Warranty: 3-year.

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e. Acceptable Manufacturer: Sloan or approved equal.

3. Wall Mounted Carrier:
   a. Cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs.
   b. Epoxy expansion anchors for floor mounting.
   c. Acceptable Manufacturer: Jay R. Smith, Zurn, or equal.

D. Lavatories:
1. Vitreous China Wall Hung Basin:
   a. Vitreous china wall-hung lavatory, with drillings on 8-inch centers, rectangular basin with splash lip, front overflow.
   b. Acceptable Manufacturer: Kohler or approved equal.
2. Trim:
   a. Chrome plated sensor operated electronic hand washing faucet for tempered water, water economy aerator with maximum 0.50 gpm flow, grid outlet, chrome plated brass P-trap with clean-out plug and arm with escutcheon.
   b. Transformer.
   c. Thermostatic mixing valve.
   d. Acceptable Manufacturer: Sloan or approved equal.
3. Wall Mounted Carrier:
   a. Cast iron and steel frame with tubular legs, lugs for floor and wall attachment, concealed arm supports, bearing plate and studs.
   b. Epoxy expansion anchors for floor mounting.
   c. Acceptable Manufacturer: Jay R. Smith, Zurn, or equal.

E. Service Sinks:
1. Mop Service Basin:
   a. Floor mounted, industrial grade, one-piece molded fiberglass mop basin, integral molded-in drain, and removable stainless steel strainer.
   b. Accessories:
      1) Stainless steel bumper guard(s) on exposed edge rims by sink manufacturer.
      2) Five (5) feet of 1/2 inch diameter plain end reinforced rubber hose and wall mounted hose holder.
   c. Acceptable Manufacturer: E.L. Mustee & Sons or equal.
2. Trim: Wall type supply with lever handles, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges.
   a. Acceptable Manufacturer: Chicago Faucet, Delta, Elkay, Kohler, Moen or equal.

F. Drinking Fountain:
1. Concrete pedestal drinking fountain, push-button stainless steel valve assembly. Barrier free with square pedestal. Vandal resistant components.

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Concrete with exposed aggregate finish. 100% lead-free waterways. Front access for valve adjustment and cartridge replacement. Hood extension for bubbler head with a partial enclosure.

2. Finish: Standard color concrete with standard exposed aggregate finish.
3. Acceptable Manufacturer: Haws or approved equal.

2.12 EQUIPMENT

A. See Plumbing Fixture and Equipment Schedule on Drawings for additional requirements.

B. Electric Water Heaters:

1. Commercial automatic circulating and automatic storage, short vertical type.
2. Tank: Welded steel pressure vessel; glass lined with an alkaline borosilicate composition that has been fused to steel by firing at temperatures of 1600 degrees-F, tank inspection port, with factory installed ASME rated temperature and pressure (T&P) relief valve. The outer jacket shall be a baked enamel finish and provided with a full-size control compartment for performance of service and maintenance through a hinged front panel and shall enclose the tank with foam insulation.
3. Anode Rods: Unit shall have extruded high-density anode rod for electrolytic tank corrosion protection.
4. Electric heating elements shall be medium watt density with zinc-plated copper sheath. Each element shall be controlled by an individually mounted thermostat and high-temperature cutoff switch. Electrical junction box with heavy-duty terminal block shall be provided.
5. Unit shall be wired for simultaneous element operation.
6. The drain valve shall be located on the front for ease of service.
7. Underwriters Laboratories listed. Meet or exceed the thermal efficiency and/or standby loss requirements of the US Department of Energy and current edition of ASHRAE/IESNA 90.1.
8. Manufacturer: A.O. Smith, State or equal.
9. Warranty: Furnish three (3) year limited manufacturer warranty against failure due to corrosion, metal fatigue or overheating caused by buildup of scale, film or other sediment and against failure due to corrosion by multiple, factory-installed magnesium anodes.
10. Furnish fully illustrated instruction manual.
11. Drain pan by unit manufacturer.
12. Acceptable Manufacturer: AO Smith, State, or equal.

2.13 FLASHING AND TRIM

A. Flashing for roof vents shall be by Roofing Contractor under Division 07.

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2.14 MECHANICAL IDENTIFICATION

A. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.

B. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have a minimum sheet size with stainless steel spring fastener. Minimum width of 3 inches, to comply with State of Wisconsin Plumbing Code. Color and Lettering: Conform to ASME A13.1 and State of Wisconsin Plumbing Code.
   1. Acceptable Manufacturer: Seton Nameplate Corporation, Kolbi Pipe Markers Co., or equal.

C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Minimum width of 3 inches, to comply with State of Wisconsin Plumbing Code. Color and Lettering: Comply with ASME A13.1 and State of Wisconsin Plumbing Code. Directional arrow tape shall be used at each end of marker and shall run entirely around the pipe and adhere to itself.
   1. Acceptable Manufacturer: Seton Nameplate Corporation, Kolbi Pipe Markers Co., or equal.

D. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

E. Valve Tags: minimum 1 1/2 inches diameter, lettering shall be a minimum of 1/2 inch in height.
   1. Material:
      a. Metal: Non-corrosive metal with raised or engraved letters.
      b. Brass.
      c. Plastic: Laminated three-layer plastic with engraved black letters on light background color.
   2. Shape:
      a. Potable Water Service: Circle shape.

F. Framed, typewritten directory under glass for all valves.

2.15 OTHER MATERIALS

A. 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 Engineer.

B. Formed steel channels:
   1. Galvanized 12 gage thick steel with holes 1 1/2 inches on center.

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2. Manufacturers: Allied Tube & Conduit Corp., B-Line Systems, Midland Ross Corp., Unistrut Corp., or equal.

C. Provide all supporting steel and related materials not indicated on structural drawings as required for the installation of equipment and materials, including angles, channels, and hangers.

D. Prime coat paint all supports.

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Division 01: Coordination and project conditions.

B. Surface Conditions: Examine the areas and conditions under which work will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

C. Cooperate as necessary with other trades in order that all work be installed in the best arrangement. Coordinate as required with all other trades to share space in common areas and to provide the maximum access to each system. Coordinate openings and placement of sleeves and inserts in building construction.

D. Measurements:
1. Field measuring existing conditions.
2. Lay out work, properly locate all apparatus, pipe, fittings, fixtures, sleeves, etc. Adjust work, as necessary, to insure that work shall fit into the spaces that have been allotted for such work. Due regard shall be taken for the work of other trades.

E. Proceed as rapidly as the building construction will permit.

3.02 ELECTRICAL PROVISIONS

A. Contractor shall furnish complete list and location of equipment requiring electrical connections and necessary wiring diagrams to Division 26.

B. Division 26: All line voltage electrical wiring connections.

3.03 PLUMBING SYSTEM LAYOUT

A. Lay out the plumbing system in careful coordination with the Drawings; determine proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system.

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B. Follow the general layout shown on the Drawings in all cases, except where other work may interfere.

C. Lay out pipes to fall within partition, wall, or roof cavities and to not require furring other that as shown on the Drawings, unless noted otherwise on drawings.

D. Schematics are shown for size requirements and arrangement only. Field conditions shall determine actual routes.

E. Water system shall be designed for complete winterization, complete with drains, valves, air couplings, quick-disconnects, etc., as required, whether or not shown.

F. Sanitary drainage system shall be designed for winterization. All pipes installed below grade, including under the floor slab, shall be installed a minimum of 4-feet of cover.

3.04 TRENCHING AND BACKFILLING

A. Perform trenching and backfilling associated with the work of this Section in strict accordance with the provisions of Division 31 of these Specifications.

B. Cut bottom of trenches to grade, do not over-excavate. Make trenches 12 inches wider than the greatest dimension of the pipe.

C. Bedding and backfilling:

1. Install piping promptly after trenching. Keep trenches open as short a time as practicable.
2. Under the building, install pipes on a 6 inch bed of damp sand. Backfill to bottom of slab with damp sand.
3. Outside the building, install underground piping on a 6 inch bed of damp sand. Backfill to within 12 inches of finish grade with damp sand. Backfill remainder with native soil.
4. Do not backfill until installation has been approved and until Project Record Documents have been properly annotated.

3.05 FLOOR, WALL, ROOF, AND CEILING OPENINGS

A. All openings for work of this section shall be provided under other sections. Openings shall be made as necessary in ceiling, floors, walls, roof, etc., as required to permit the installation of Work specified or shown on the Drawings. Openings shall be made with care to avoid damage which cannot be concealed when work is completed.

B. Provisions for openings and holes and clearances through walls, floors, and ceilings to be made in advance of construction of such parts of the building. The Contractor is responsible for the correct size and location of these openings.

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3.06 SERVICE CONNECTIONS

A. Install sanitary and storm sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and verify proper slope for drainage and proper cover to avoid freezing. Where storm pipe is required to be installed with the invert above the frost line, install insulation per the State of Wisconsin Plumbing Code.

B. Install water service complete with water meter with by-pass valves. Floor- Install sleeve around service main to 6 inch above floor and 4 feet minimum below grade. Install pressure gauge after water meter. Before commencing work check invert elevations required for water service connections and verify proper cover to avoid freezing. Verify water pressure at building service connection; if pressure exceeds 80 PSI, install water pressure reducing valve.

3.07 INSTALLATION - SLEEVES

A. Provide and install sleeves wherever piping passes through floors, walls, partitions, ceilings, etc.

B. Sleeves shall be set and maintained in place during the progress of the work. Set sleeves in position in forms. Set sleeves in place before concrete is placed. Provide reinforcing around sleeves.

C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Sleeves shall be securely fastened in place.

E. Extend sleeves through floors 1 inch above finished floor level.

F. Exterior watertight entries:
   1. Above-grade: Sleeve pipe and seal with caulk.

G. Where piping penetrates floor, ceiling, wall, etc., close off space between pipe and adjacent work with stuffing insulation to within 1/2 inch of surface face.

H. Caulk the space between the sleeve and pipe or pipe covering for all sleeves and penetrations not visible after finished installation or hidden behind covers.

I. Section 07 92 00: Requirements for caulking of all sleeves and penetrations.

J. Provide close fitting metal collar, escutcheon covers, or plates wherever piping or hanger rods are exposed to view and pass through floor, wall, ceiling, partitions, and similar locations. Hold escutcheons in place with set screw. Escutcheon not required around openings for insulated pipe if opening is not visible after insulation installation.

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3.08 INSTALLATION - PIPE

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside piping before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.09 INSTALLATION - PIPING SYSTEMS

A. Install dielectric connections wherever jointing dissimilar metals.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Route piping parallel to building structure and maintain gradient.

D. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Thoroughly clean items before installation.

G. Bolt all equipment, isolators, hangers, and similar items securely in place.

H. Cut pipe accurately, and work into place without springing or forcing properly clearing window, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.

I. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

J. Sleeve pipe passing through partitions, walls and floors.

K. Install piping system allowing clearance for installation of insulation and access to valves and fittings.

L. Install piping, equipment, valves, and other items to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to the Owner.

M. Provide access doors where valves, clean outs, and fixtures or equipment requiring access for maintenance are located in wall or chases or above ceilings. Coordinate location of access doors with other trades as required.

N. Install identification on piping systems, including underground piping.

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O. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

P. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings.

Q. Provide sufficient swing joint, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the Drawings.

R. Support piping independently at tanks and similar locations so that weight of pipe will not be supported by the equipment.

S. Pipe Joints:
1. Copper Tubing:
a. Cut square, remove burrs, and clean inside of female filling to a bright finish.
1) Apply solder flux with brush to tubing.
2) Remove internal parts of solder-end valves prior to soldering.
b. Provide dielectric unions at points of connection of copper tubing to ferrous piping and equipment.
c. For joining copper tubing, use the following:
1) Water piping 3 inches and smaller: 95-5 solder;
2) Water piping larger than 3 inches: "Sil-fos" brazing;
3) Underground: "Si1-fos" brazing.
2. Screwed Piping:
a. Deburr cuts.
1) Do not ream exceeding internal diameter of the pipe.
2) Thread to requirements of ANSI B2.1.
b. Use Teflon tape on male thread prior to joining other services.
c. Use litharge and glycerin on joint prior to cleaning for air and oil piping.
3. Leaky Joints:
a. Remake with new material.
b. Remove leaking section and/or fitting as directed.
c. Do not use thread cement or sealant to tighten joint.

3.10 INSTALLATION - VALVES

A. Install valves in water system so as to give complete regulation of apparatus, equipment, and fixtures.

B. Furnish and install where necessary for the proper control of piping flow and equipment operation control valving required; as ball, globe, and check valves.

C. Provide valves in at least the following locations:
1. In branches and/or headers of water piping serving a group of fixtures.

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2. At each fixture.
3. On both sides of apparatus and equipment.
4. For shutoff of risers and branch mains.
5. For flushing and sterilizing the system.
6. Where shown on the Drawings.
7. As specified herein.

D. Install valves with stems upright or horizontal, not inverted.

E. Extend valve handles to above insulation surface.

3.11 INSTALLATION – SUPPLY PIPING AND SPECIALTIES

A. Install water piping in accordance with ASME B31.9.

B. Establish elevations of buried piping outside the building to obtain not less than six (6) feet of cover.

C. Water service installed under the building slab and foundation shall be continuous, without joints or fittings.

D. Provide support for utility meters in accordance with requirements of utility companies.

E. Coordinate installation of water meter by utility.

F. Slope water piping upwards adequately in direction of flow and arrange to drain at low points, for complete drainage of system.

G. Install piping with straight side of eccentric fittings at top of pipe, unless noted otherwise.

H. Install piping from relief valves and other drains to nearest floor drain, open sight drain, or other acceptable discharge point. Terminate with a plain and unthreaded pipe 6 inches above the drain.

I. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories and sinks.
1. Install in upright position at the following locations:
   a. all quick closing valves
   b. isolated plumbing fixtures
   c. supply headers at plumbing fixture groups
2. Locate and size as specified, locate in accordance with Plumbing and Drainage Institute Standard "P.D.I. WH-201."
3. Install water hammer arrestors behind access panels where installed within wall construction.

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J. Provide water service complete with approved water meter with by-pass valve station and pressure reducing valve (if water pressure at meter is 80 psi or greater).

3.12 INSTALLATION - DRAINAGE PIPING AND SPECIALITIES

A. Install bell and spigot pipe with bell end upstream.

B. Establish elevations of buried piping outside building to provide not less than four (4) feet of cover. Where appropriate depth of cover is not possible, insulate as required by the plumbing code.

C. Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum, unless noted otherwise. Maintain gradients.

D. Floor drains shall be installed prior to placement of concrete slab. Install top of drain at elevation shown on the drawings; if top of drain elevation is not noted on drawings, floor drain shall be installed so that adjacent areas slope toward the drain at a maximum slope of 1 inch in 50 inches; unless noted otherwise.

E. Floor drains shall be so constructed with a P-trap and shall be provided with removable strainers, unless otherwise noted on drawings.

F. Drain lines shall be so constructed so that they may be cleaned and so that the drain inlet is accessible.

G. Cleanouts:
1. Secure the Architect's approval of locations for cleanouts in finished areas prior to installation.
2. Make all cleanouts accessible. Install with clearance at cleanout for rodding of drainage system.
3. Extend cleanouts to finished floor or wall surface.
4. Encase exterior cleanouts in concrete flush with grade.
5. Install floor cleanouts at elevation to accommodate finished floor.
6. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil after pressure tests are made and approved.

H. All vents must rise. No vent-to-vent connection allowed below floor, except for loop-vent construction.

I. Pipe the drains from water heater and other similar locations to nearest floor drain, open sight drain, or other acceptable discharge point. Terminate with a plain and unthreaded pipe 6 inches above the drain.

J. Install piping penetrating roofed areas to maintain integrity of roof assembly. All pipes passing through the roof shall be flashed. Flashing shall be installed by Division 07.

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K. Install piping penetrating roofed areas to maintain integrity of roof assembly.

L. Vents shall extend not less than 8 inches nor more than 12 inches above finished roof level.

3.13 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Support horizontal piping as scheduled.

B. Pipe hangers shall be installed according to recommendations of the pipe manufacturer and hanger manufacturer.

C. Space hangers and supports according to the schedule, unless shorter distances are required by other standards or standard industry practice and to prevent excessive pipe movement during normal operations.

D. Arrange supports to prevent excessive deflection and to avoid excessive bending stress.

E. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

F. Insulation shall be continuous through hangers. Protect insulation with galvanized steel shields.

G. Place hangers within 12 inches of each horizontal elbow.

H. Use hangers with 1-1/2 inch minimum vertical adjustment.

I. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub. Supports shall be secured to the piping and resting on the building structure. Provide at each floor, unless noted otherwise.

J. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

K. Support each pipe independently. Do not use wire for hanging or strapping pipes.

L. Support riser piping independently of connected horizontal piping.

M. Design hangers for pipe movement without disengagement of supported pipe.

N. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

O. Provide sway bracing on hangers longer than 18 inches.

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P. Piping can be surface mounted to walls and ceilings, unless noted otherwise.

3.14 INSTALLATION – PIPING INSULATION AND FINISHED JACKETS

A. Insulate complete system of pipes for the following: hot, cold, and tempered domestic water piping and storm piping located in interior space of building, including all piping located inside walls, unless noted otherwise.

B. Continue insulation vapor barrier through penetrations and supports.

C. Locate insulation and cover seams in least visible locations.

D. Neatly finish insulation at supports, protrusions, and interruptions.

E. Install fiberglass insulated pipes conveying fluids below ambient temperature with vapor barrier jackets. Finish with glass cloth and vapor barrier adhesive.

F. For man made mineral fiber insulated pipes conveying fluids above ambient temperature, install standard jackets. Bevel and seal ends of insulation at equipment, flanges, and unions.

G. Install insert between support shield and piping on piping 2 inches diameter or larger. Fabricate of cork or other high density insulating material suitable for temperature, not less than 6 inches long.

H. For exposed fiberglass insulated pipe, finish with PVC jacket and fitting covers.

I. For exposed EPDM-Rubber insulated pipe, paint exposed insulation.

J. For below grade applications, install vapor barrier jacket. Insulate pipe, fittings, joints, and valves and finish with glass mesh reinforced vapor barrier cement.

3.15 INSTALLATION – HEAT TAPE

A. Install heat tape provided under Division 26. Heat tape shall be installed in all interior storm piping, from drain body to just below floor slab. Heat tape shall not be wrapped around pipe. Heat tape shall be inserted into pipe through cleanout provided under ceiling, just after connection to roof drain body. Heat tape shall be in a single layer, contractor shall make sure that the tape is not kinked or twisted inside the pipe.

3.16 INSTALLATION – SPECIALTY INSULATION

A. At all lavatories, install insulation to cover tailpiece. Hot water supply, cold water supply, and trap shall be installed in Mechanical Room.

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3.17 INSTALLATION - FIXTURES

A. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.

B. Set fixtures in proper alignment with respect to walls and floors.

C. Provide supplies in proper alignment with fixtures and with each other.

D. Grout wall and floor mounted fixtures watertight where the fixtures are in contact with walls and floors.

E. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons.

F. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

G. Install sealant required for plumbing installation, which is concealed once fixture is in place.

H. Install piping penetrations in exterior horizontal areas to maintain integrity of water-proofing assembly. All piping penetrating these areas shall be flashed water-tight.

I. Section 07 92 00: Requirements for all caulking exposed deck-mounted trim, self-rimming sinks installed in casework, wall mounted fixtures, etc.

3.18 INSTALLATION – EQUIPMENT

A. Show no tool marks or threads on exposed connections.

B. Set equipment in proper alignment with respect to walls and floors.

C. Provide supplies in proper alignment with equipment and with each other.

D. Install water heaters in accordance to UL requirements. Coordinate with plumbing piping and related electrical work to achieve operating system.

E. Install support for water heater, secure to building structural framing members.

F. Clean and flush tanks after installation. Keep openings sealed until pipe connections are made.

G. On water heaters, install drain at water inlet and outlet, thermometer with range of 40 to 200 degrees F on water inlet and outlet, and ASME pressure relief valve suitable for maximum working pressure.

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H. Install sealant required for plumbing installation.

I. Install piping penetrations in exterior horizontal areas to maintain integrity of water-proofing assembly. All piping penetrating these areas shall be flashed water-tight.

3.19 INSTALLATION - MECHANICAL IDENTIFICATION

A. Install adequate marking of exposed accessible piping, per ANSI A13.1.

B. Install plastic nameplates with adhesive when mounting to metal equipment cabinets and screws when mounting to building materials.

C. Install plastic and metal tags with corrosion resistant metal chain.

D. Valves:
   1. Tag all valves, except potable water fixture stop valves, with tags.
   2. Install valve directory where directed.

E. Pipes:
   1. Install pipe markers on all pipes.
   2. Install plastic pipe markers or plastic tape pipe markers on all pipes with canvas paintable jacket. Where plastic tape pipe markers are used, plastic tape direction arrow pipe markers shall be installed around the entire pipe at each end of the pipe marker. Do not install until after pipe has been painted.
   3. Install per State of Wisconsin Plumbing Code and as follows: Space no more than 25 feet apart, with a minimum of one marker on each straight section of pipe, and at each side where the piping passes through a wall, floor, or roof.
   4. Color of bands shall comply with State of Wisconsin Plumbing Code:
      a. Potable Water Pipe: green

3.20 PAINTING

A. Section 09 91 00: Painting of piping, valves, and specialties, all exposed insulated and non-insulated piping and equipment, without factory finish or finished cover, shall be painted.

B. Touch-up all factory finishes damaged during construction.

3.21 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Perform disinfection under the Engineer's observation. Notify the Engineer at least 48 hours prior to start of the disinfection process.

B. Disinfecting of Domestic Water Systems:
   1. Prior to starting, verify system is complete, flushed and clean.
   2. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

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3. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.
4. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.
5. Maintain disinfectant in system for 24 hours.
6. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
7. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.
8. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

C. Upon completion of disinfecting, secure and submit the Certificate of Performance, stating system capacity, disinfectant used, time and rate of disinfectant applied, and resultant residuals in ppm at completion.

D. When disinfection operation is completed, and after final flushing, secure an analysis by a laboratory approved by the Engineer, based on water samples from the system, showing test negative for coli-aerogene organisms. Provide a total plate count of less than 100 bacteria per cc, or equal to the control sample.

E. If analysis results are not satisfactory, repeat the disinfection procedures and retest until specified standards are achieved.

3.22 TESTING AND ADJUSTING

A. Division 01: Testing and adjusting provisions.

B. Contractor shall notify any inspectors required to observe test, when test is ready to be performed. Contractor shall advise A/E field representative that notification has been given.

C. All equipment required for testing, including fittings for additional openings, shall be provided by Contractor. Provide all openings inside and outside the building as required. Contractor shall provide all personnel required for testing. Contractor shall pay the cost of all required tests and retests and inspections if required.

D. Tests shall be witnessed and approved by Owner's representatives and A/E field representative. Contractor shall certify in writing the time, date, name, and title of person approving test. This shall also include the description and what portion of the system has been approved. Person approving test shall sign certification.

E. A complete record shall be maintained of all testing that has been approved, and shall be made available at the job site to all authorities concerned.

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F. Upon completion of the work, all records and certifications approving testing requirements shall be submitted to the A/E Field Representative before final payment is made.

G. Test drainage piping in accordance with local code requirements.

H. Water test entire drainage system (sanitary and vent system) by sections if necessary, with a minimum of 10 foot head for two hours without loss of water. If weather makes water test impractical, use air test with 10 inches of mercury column pressure and no loss of pressure for at least 15 minutes.

I. Test supply piping in accordance with local code requirements.

J. Water test entire domestic water systems, by sections if necessary, before connecting fixtures, with hydrostatic pressure of 100 PSI without loss of pressure for at least two hours.

K. Notify A/E in advance regarding time and date of all tests.

L. Defective work or material shall be replaced or repaired, as necessary, and the inspection and test repeated. Repairs shall be made with new materials. Caulking of screwed joints or holes will not be acceptable.

M. Adjust the system to optimum standards of operation.

3.23 CLOSEOUT OPERATIONS

A. Division 01: Closeout provisions.

B. Closeout Equipment/System Operations: Sequence operations properly so that work of the project will not be damaged or endangered. Coordinate with seasonal requirements.

1. Adjust and correct operations as required for proper performance.
2. Clean each system: After all equipment and fixtures have been proven operational, carefully clean all accessible parts, thoroughly removing all traces of dirt, oil, grease, and foreign substances.

C. Instruction: Upon completion of the installation, but before final acceptance of the system, the Contractor shall instruct the Owner (Owner's personnel) on the proper operation and maintenance of all parts of the system.

D. Extra Materials.

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3.24 SCHEDULE OF MECHANICAL IDENTIFICATION

A. Piping:

1. Sanitary Sewer: "Sanitary Drain" or "Drain" or "Sanitary Sewer" or "Sanitary Waste" or "Waste"
2. Sanitary Vent: "Plumbing Vent" or "Sanitary Vent" or "Vent"
3. Storm: "Roof Drain" or "Storm Drain"
4. Potable Water, Cold: "Domestic Cold Water" or "Potable Water" or "City Water" or "Cold Water"
5. Potable Water, Hot: "Domestic Hot Water" or "Hot Water"
6. Potable Water, Tempered: "Tempered Water"

END OF SECTION

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SECTION 23 00 00

HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

PART 1 GENERAL

1.01 WORK INCLUDED

A. Provide system where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
   1. Exhaust fans, motors.
   2. Controls: Low-voltage wiring, conduit, relays, thermostats, dampers, switches, etc.
   3. Air Distribution: Ductwork, duct accessories, louvers, grilles, etc.
   4. Related accessories.
   5. Testing, adjusting, and balancing.
   6. Caulking of penetrations and openings.

1.02 RELATED SECTIONS

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 0l of these Specifications.

B. Section 07 92 00 - Joint Sealants: Requirements for sealing of exterior and interior floor, wall, ceiling, and roof penetrations.

C. Division 26 - Electrical: Execution requirements for electric connections specified by this section.

1.03 WORK OF OTHER SECTIONS

A. Openings for work in walls, floor, roof, ceiling, etc., required by this section shall be provided under other sections. Location and size of these openings shall be the responsibility of this Contractor.

B. Division 04 - Masonry.

C. Division 06 - Woods, Plastics, and Composites.

D. Division 07 - Thermal and Moisture Protection.

E. Division 09 - Finishes.

F. Section 09 91 00 - Painting: Painting of conduit, insulation, ductwork, accessories, etc.

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G. Division 26 - Electrical: Electrical line voltage wiring (100 volts and greater) connections and equipment starters and disconnects.

1.04 GENERAL PROVISIONS

A. Everything essential for the completion of the work implied to be covered by these Specifications to make the system ready for normal and proper operation must be furnished and installed by the Contractor. Accordingly, any omission from either the plans or the Specifications, or both, of details necessary for the proper installation and operation of the System shall not relieve the Contractor from furnishing such detail in full and proper manner.

B. The Drawings show various details indicating the general arrangement of the heating and ventilating work, sizes, locations of units, etc., the said plans with figures, lettering, etc., shall be considered a part of these Specifications and no charge or alternation shall be made in either case, unless ordered by the Engineer.

C. In addition to the heating and ventilating plans, see General Plans of the building, heating and ventilating work appearing on the latter plans will be part of this contract unless especially specified to be done by other contractors, as well as, the said work detailed on the heating and ventilating plans.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with State of Wisconsin and industry standards.

B. Qualification of Installer:
   1. Company specializing in performing the work of this section with minimum three (3) years documented experience.
   2. For the actual fabrication, installation, and testing, adjusting, and balancing of heating and ventilating work, use only thoroughly trained and experience workers completely familiar with the items required and manufacturer's is current recommended methods of installation.
   3. In acceptance or rejection of installed work, the Architect or Engineer shall make no allowance for lack of skill on part of the workers.

C. Qualification of Manufacturer:
   1. Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.
   2. Equal products shall be of similar quality, be functionally similar, and have the controls specified. Where more than one type of product is specified in a particular section, the listed acceptable manufacturers may not have an equal product for every type of product specified.

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D. Codes and Regulations:
1. In addition to complying with the specified requirements, comply with pertinent regulations of State or local governmental agencies having jurisdiction, including building codes and local ordinances.
2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Engineer.

E. Report Forms: Testing, adjusting, and balancing - AABC MN-1 National Standards for Total System Balance forms, forms prepared following ASHRAE 111, or NEBB forms.

F. The following standards, referred hereafter by basic designation only, are imposed, as applicable to work in each instance, and form a part of this specification to the extent indicated by the reference thereto:
1. AABC - Associated Air Balance Council
2. ARI - Air Conditioning and Refrigeration Institute
3. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers
4. ASME - American Society of Mechanical Engineers
5. ASTM - American Society of Testing and Materials
6. IBC - International Building Code, 2009 edition, and all referenced standards with 2011 State of Wisconsin amendments
7. IECC - International Energy Conservation Code, 2009 edition, and all referenced standards with 2011 State of Wisconsin amendments
8. IMC - International Mechanical Code, 2009 edition, and all referenced standards with 2011 State of Wisconsin Amendments
9. MCA - Mechanical Contractors Association
10. MSS - Manufacturers Standardized Society
11. NEC - National Electric Code
12. NEMA - National Electrical Manufacturers Association
13. NFPA - National Fire Protection Association
14. SMACNA - Sheet Metal and Air Conditioning Contractors National Association

1.06 PERMITS

A. The Contractor shall obtain and pay for all construction permits required for Work of this section.

B. One (1) copy of all permits shall be provided to Owner.

C. One (1) copy of all permits shall be maintained on site.

1.07 COORDINATION

A. Division 01: Coordination provisions.

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B. Cooperate and coordinate with other trades to assure that all systems in the work of this section may be installed in the best arrangement. Coordinate as required with all other trades to share space in common areas and to provide the maximum of access to each system.

C. Arrange heating and ventilating work in neat, well organized manner with piping and similar services running parallel with primary lines of building construction, and with minimum 7 foot overhead clearance. Provide maximum clearances wherever possible.

D. Locate operating and control equipment properly to provide easy access, and arrange entire heating and ventilating work with adequate access for operation and maintenance.

E. Give right-of-way to piping that must slope for drainage.

1.08 SUBMITTALS

A. Contractor shall be responsible for correction of work deemed necessary by the Engineer due to proceeding with the work without shop drawings that have the Engineer's final approval.

B. Contractor will be responsible for all figures and dimensions. Approval of shop drawings describing equipment that cannot fit in the space allotted does not relieve the Contractor from providing equipment that will meet the space requirements.

C. Product Data:
1. Louvers, grilles: Manufacturer's catalog information with sizes, capacities, rough-in requirements, and finishes.
2. HVAC Equipment: Submit dimensions, connections, arrangement, accessories, capacities, and finishes.
3. Mechanical Insulation: Product description, list of materials, and thickness for each service or equipment scheduled and locations.

D. Manufacturer's Installation Instructions: Submit for all material and equipment.

E. Wiring Diagrams: Submit for all equipment.

F. Test Reports: Testing, adjusting, and balancing - submit prior to final acceptance and for inclusion in operating and maintenance manuals. Assemble in soft cover, letter size, 3-ring binder, with table of contents page and tabs, and cover identification. Include reduced scale drawings with air outlets and equipment identified with data sheets, and indicating thermostat locations.

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1.09 DELIVERY, STORAGE, AND HANDLING

A. Division 01: Product storage and handling provisions.

B. Accept equipment on site in factory packaging. Inspect for damage.

1.10 CLOSEOUT SUBMITTALS

A. Division 01: Submittal provisions.

B. Project Record Documents (As-Builts): Record actual location of equipment, ductwork, and controls including thermostats remotely located from equipment in pipes, ducts, and walls.

C. Operation and Maintenance Data:
   1. Assembly two (2) complete sets. Prepare in bound copies complete with index tabs.
   2. Submit bound copies to Engineer for distribution.
   3. Controls:
      a. Systems descriptions, set points, and controls settings and adjustments.
      b. Inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.
      c. Interconnection wiring diagrams complete field installed systems with identified and numbered system components and devices.
   4. Equipment: Submit for each piece of equipment. Submit manufacturer's descriptive literature, operating instructions, service instructions, installation instructions, maintenance and repair data, parts listing, warranties, and wiring diagrams.

D. Warranties.

PART 2 PRODUCTS

2.01 ELECTRICAL PROVISIONS

A. Contractor shall consult with the Division 26 before ordering electrical motors, to ascertain correct electrical current characteristics.

B. Motors: Comply with applicable provisions of the National Electrical Code, NEMA Standards, and Division 26 of these Specifications, and as follows, unless otherwise indicated.
   1. Phases and Current: up to 1/3 HP, capacitor-start, 120 volt, 60 cycle single-phase; 1/2 HP and larger, squirrel-cage induction NEMA rated 460 volt, three phase, 60 cycle. Provide 2 separate windings on 2 speed three-phase motors. Coordinate with actual current characteristics; refer to Division 26.

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2. High Efficiency Motors: All motors 1 HP and larger shall be high efficiency motors meeting or exceeding values test in accordance with IEEE Standards 112, Method B procedures as stated in NEMA MG 1-12.53a.
3. Integral Thermal Overload: on all motors less than 1/2 HP.
4. Service Factor: 1.15 for three-phase; 1.35 for single-phase.
5. Construction: General purpose, continuous duty.
6. Frames: NEMA Standard for horsepower specified.
7. Overload Protection: Built-in thermal, with internal sensing device for stopping motor, and for signaling where indicated.
8. Type: Motors in airstream shall be totally enclosed; all others shall be open drip-proof; unless noted otherwise.

C. Starters:
1. Where starters are indicated to be an integral part of equipment furnished by this Section, they shall meet requirements of Division 26 and shall be connected under Division 26.
2. All starters not provided integral with equipment shall be provided and installed under this Section, they shall meet requirements of Division 26 and shall be connected under Division 26.

D. Disconnects:
1. Where disconnects are provided as an integral part of equipment furnished by this Section or where they are provided standard for field installation for equipment furnished by this Section, they shall meet requirements of Division 26 and shall be connected under Division 26.
2. All disconnects not integral with equipment shall be provided and installed under Division 26.

E. General Wiring: Comply with applicable provisions of Division 26 Section.

2.02 FANS

A. Furnish fans in the size, capacity, and type as scheduled on the drawings. See Schedule on Drawings for additional requirements.

B. Fans shall be quiet operating and vibration free.

C. Fans shall be UL Listed and CSA approved.

D. The fan shall bear the AMCA Certified Ratings Seal for both sound and air performance.

E. Fan shall bear a permanently affixed manufacturer's engraved metal nameplate containing the model number and individual serial number for future identification.

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F. Fan shall comply with OSHA guideline 1926.300 – General Requirements for Machine Guarding.

G. A general duty, internal wiring pigtail (flexible metal conduit) shall be provided by the fan manufacturer.

H. Inline Cabinet Fan:
1. Duct mounted fan shall be of the centrifugal direct drive type.
2. The fan housing shall be constructed of heavy gauge galvanized steel. The housing interior shall be lined with 1/2 inch acoustical insulation. The outlet duct collar shall include an aluminum back-draft damper and shall be adaptable for horizontal or vertical discharge.
3. The access wiring shall be external. The motor disconnect shall be internal and of the plug in type.
4. The motor shall be mounted on vibration isolators. The fan wheel shall be of the forward curved centrifugal type and dynamically balanced.
5. Greenheck Model CSP-A.

I. Inline Ceiling Cabinet Fan:
1. Ceiling mounted exhaust fan shall be of the centrifugal direct drive type.
2. The fan housing shall be constructed of a heavy gauge galvanized steel.
3. The housing interior shall be lined with 1/2-inch acoustical insulation.
4. The outlet duct collar shall include a plastic backdraft damper on sizes A50 through A90 and a spring loaded aluminum spring loaded backdraft damper on sizes A110 and larger. Outlet shall be adaptable for horizontal or vertical discharge.
5. The designer grille for sizes A50 through A390 shall be constructed of high impact polystyrene and for sizes A410 through A1550, the grille shall be constructed of aluminum. Grilles shall be non-yellowing.
6. The access wiring shall be external. The motor disconnect shall be internal and of the plug in type.
7. The motor shall be mounted on vibration isolators.
8. The fan wheel shall be of the forward curved centrifugal type and dynamically balanced.
9. Greenheck Model SP-A.

J. Acceptable Manufacturers: Acme, Cook, Greenheck, or Penn.

2.03 ELECTRIC HEATERS

A. Furnish unit in the size and capacity as scheduled on the drawings. See Schedule on Drawings for additional requirements.

B. All electrical components shall carry UL, ETL, or CSA listing.

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C. Radiant-Convection Type Heaters:

1. Enclosure: The heater shall be fabricated of 24-gauge galvanized steel, completely welded, then coated with a corrosive resistant neutral gray polyester powder paint coating.
2. Heating Element: The heating element shall be of non-glowing design consisting of special resistance wire enclosure in steel sheath to which aluminum fins, mechanically crimped.
3. Control Box: The heater housing shall contain an enclosed tamper proof control box to isolate all live electrical parts from the remainder of the heater. An integral thermostat with a temperature range of 40 degrees-F to 70 degrees-F shall be completely contained in the control box.
4. Berko Model WHT.

D. Acceptable manufacturers: Berko, Marley, Markel, Q'Mark, Raywall, or equal.

2.04 DUCTWORK

A. Materials:

1. Galvanized Steel Sheet: ASTM A653 Galvanized steel sheet of lock-forming quality. Galvanized coating tube 1.25 ounces per square foot, both sides of sheet, G90 in accordance with ASTM A90.
2. Sealant (Mastic): Non-hardening, water based, water resistant, fire resistive, used alone or with tape. UL 181A-M listed / UL 181B-M listed.
3. Duct Joint Sealing Tape: Pressure sensitive duct joint sealer, UL-181B-FX listed, 2.0-mil annealed aluminum foil coated tape, for flexible and sheet metal ducts.

B. Metal Ductwork:

1. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible; except as indicated on Drawings.
2. Construct T's, bends, and elbows with radius of 1 1/2 times the width of the duct on centerline. Where not possible, furnish turning vanes.
3. Increase duct sizes gradually, not exceeding 30 degrees divergence and 45 degrees convergence.

C. Duct Accessories:

1. Volume Control Dampers:
   a. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
   b. Fabricate single blade dampers for duct sizes to 12 inches by 30 inches.
   c. Except in round ductwork 12 inches and smaller, furnish end bearings.
   d. Furnish locking, indicating quadrant regulators dampers.

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2. Duct Access Doors:
   a. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
   b. Access doors smaller than 12 inches square secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.

2.05 AIR INLETS AND OUTLETS

A. See Schedule on Drawings for additional requirements.

B. Furnish inlets and outlets in the type, size, and free area as scheduled on the drawings.
   1. Louvered grilles (brick vents):
      a. Frame: Surface mount border with countersunk screw holes.
      b. Construction: Extruded aluminum, 6063-T5, 0.125-inch minimum thickness.
      c. Supply, Fixed Blades, 1-inch on center spacing:
         1) Frame: 4-inches deep
         2) Blades parallel to floor or long direction.
         3) Flange: 1-inch front flange
         4) Screen: 18X14 aluminum mesh insect screen
         5) Damper: Opposed blade manual damper with opening in face of grille for operator access.
         6) Finish: Kynar, custom color to match soffit color
         7) Model: Sunvent FL series.
      d. Return, Fixed Blades, 1-inch on center spacing:
         1) Frame: 1-1/2-inch deep
         2) Blades parallel to floor or long direction.
         3) Flange: 1-inch front flange.
         4) Screen: 18X14 aluminum mesh insect screen
         5) Damper: None.
         6) Finish: Clear anodized
         7) Model: Sunvent EX series.
   2. Acceptable Manufacturers: Sylro/Sunvent Industries (800-325-4115) or approved equal.

2.06 CONTROLS

A. Contractor shall be responsible for all automatic electric controls for HVAC equipment as indicated on the plans and as described herein.

B. Furnish all protected relays, interlocks, and transformers as required. Contractor shall mount same in suitable control panels, occupied mechanical space, or on equipment as required, specified herein, or shown on drawings. Furnish low voltage relays as required for all fans and motors automatically controlled.

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C. Furnish necessary wiring diagrams and be responsible for obtaining proper working installation. Furnish all multi-speed switches and control apparatus.

D. Relays: Furnish necessary relays to interlock motorized fresh air dampers with occupied/unoccupied scheduling, as well as related control of fan and exhaust fan operation.

2.07 FLASHING AND TRIM

A. Provide all opening trim as shown on drawings and as required for a complete and weather-tight installation.

2.08 OTHER MATERIALS

A. 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 Engineer.

B. Formed steel channels:
1. Galvanized 12 gage thick steel with holes 1 1/2 inches on center.
2. Manufacturers: Allied Tube & Conduit Corp., B-Line Systems, Midland Ross Corp., Unistrut Corp., or equal.

C. Provide all supporting steel and related materials not indicated on structural drawings as required for the installation of equipment and materials, including angles, channels, beams and hangers.

D. Prime coat paint all supports.

PART 3 EXECUTION

3.01 JOB CONDITIONS

A. Division 01: Coordination and project conditions.

B. Surface Conditions: Examine the areas and conditions under which the work of this section will be preformed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

C. Cooperate as necessary with other trades in order that all system the work may be installed in the best arrangement. Coordinate as required with all other trades to share space in common areas and to provide the maximum access to each system.

D. Measurements:
1. Field measure existing conditions.

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2. Lay out work, properly locate all apparatus, ductwork, equipment, etc. Adjust work, as necessary, to insure that work shall fit into the spaces that have been allotted for such work. Due regard shall be taken for the work of other trades.

E. Proceed as rapidly as the building construction will permit.

F. Start of work means acceptance of existing conditions.

3.02 ELECTRICAL PROVISIONS

A. Control Wiring:
1. Exposed low voltage (less than 100 volts) control wiring in connection with work of this section shall be provided and installed under this section in strict accordance with the applicable sections of Division 26.
2. All control wiring shall be less than 100 volts, unless noted otherwise. If Contractor opts to install control wiring of 100 volts or over, Contractor shall contract with a certified electrical contractor for its installation under this section in strict accordance with the applicable sections of Division 26.

B. Division 26: All line voltage (100 volts and greater) electrical wiring connections. Certain equipment connections have been assumed to be over 100 volts, see Electrical Drawings for equipment and locations.

C. Furnish complete list and location of equipment requiring electrical connections and necessary wiring diagrams to Division 26.

3.03 INSTALLATION - GENERAL

A. Locations: Install all equipment in the locations shown on the drawings, except where specifically otherwise approved on the job by the Owner.

B. All equipment, as called for on the drawings and herein specified, shall be installed in strict accordance with manufacturer's recommendations.

C. Interferences: Avoid interference with structure, and with work of other trades, preserving adequate headroom and clearing all doors and passage ways.

D. Inspection: Check each piece of equipment in the system for defects, verifying that all parts are properly furnished and installed, that all items function properly, and that all adjustments have been made.

E. Section 07 92 00: Requirements for caulking around the exterior perimeter of exterior equipment and where called for on the drawings.

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F. General: All volume dampers, equipment, and accessories shall be installed to permit access to equipment for maintenance, servicing, or repairs. Relocation of piping, ducts, or equipment to accomplish equipment access shall be completed by the Contractor, at no additional cost to the Owner.

G. Provide access panels in ductwork at all dampers not accessible from open end of duct.

H. Provide access doors where equipment is located in inaccessible locations. Access panels shall be furnished by the Contractor and installed by the specific trade responsible for the material in which the access panels are installed.

3.04 FLOOR, WALL, ROOF, AND CEILING OPENINGS

A. All openings for work of this section shall be provided under other sections. Openings shall be made as necessary in ceiling, floors, walls, etc., as required to permit the installation of Work specified or shown on the Drawings. Openings shall be made with care to avoid damage which cannot be concealed when work is completed.

B. Provisions for openings and holes and clearances through walls, floors, and ceilings to be made in advance of construction of such parts of the building. Contractor is responsible for the correct size and location of these openings.

3.05 INSTALLATION - DUCTWORK

A. Examination:
   1. Verify sizes of equipment connections before fabricating transitions
   2. Verify ducts and equipment installation is ready for accessories.
   3. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangements.

B. Installation:
   1. Install in accordance with State of Wisconsin and Industry Standards.
   2. Metal Ducts: Install in accordance with SMACNA Duct Construction Standards - Metal and Flexible.
   3. Use crimp joints with or without bead for joining round duct sizes to 8 inches and smaller with crimp in direction of airflow.
   4. All ductwork joints shall be sealed, including longitudinal joints. Sealing shall be in compliance with SMACNA Duct Construction Standards and meet requirements of the State of Wisconsin Commercial Mechanical and Energy Conservation Codes.
   5. Cut openings in ductwork to accommodate controllers. Cut pitot tube openings for testing of systems, complete with metal can with spring device or screw to eliminate against air leakage.

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6. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
7. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
8. Install duct access doors for inspection and cleaning before and after fans and elsewhere as indicated on Drawings. Install minimum 8 inch by 8 inch size for hand access, 18 inch by 18 inch for shoulder access.
9. Support terminal units individually from structure. Do not support from adjacent ductwork.
10. Install balancing dampers on duct take-off to grilles, regardless of whether dampers are specified as part of the grille assembly.
11. Do not operate fans until ductwork is clean and fan has been test run under observation.
12. Exterior of all non-insulated ductwork and non-finished jacket of insulated ductwork installed exposed within building shall be painted under Division 09.

3.06 INSTALLATION - FANS

A. Install fans with resilient mountings and flexible electrical leads.

B. Install sheaves required for final air balance. Speed controls may be used on direct drive motors for final air balance. Duct mounted balancing dampers may also be used where speed controls and sheave replacement is impractical.

C. Install safety screen where fan inlet or outlet is exposed.

D. Install fans with access to adjustable blade axial fan wheels for varying blade angle setting. Adjust blades for varying range of volume and pressure.

3.07 INSTALLATION - ELECTRIC HEATERS

A. Install units from manufacturer bracket where available.

B. Install to provide minimum clearances to combustibles.

3.08 TESTING, ADJUSTING, AND BALANCING

A. Examination:
1. Before starting work, verify systems are complete and operable.
2. Report defects, deficiencies, or abnormal conditions in mechanical systems preventing system balance.
3. Beginning of work means acceptance of existing conditions.

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B. Installation Tolerances:
1. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent for exhaust systems.
2. Air Outlets and Inlets: Adjust to within plus or minus 10 percent of design.
3. Positive, negative, or neutral system design relationship shall be maintained during final balance of system.

C. Air System Procedure:
1. Adjust air handling and distribution systems to deliver design supply and exhaust air quantities within previously stated tolerances.
2. Make air quantity measurements in ducts by traverse of entire cross sectional area of duct.
3. Measure air quantities at air inlets and outlets.
4. Use volume control devices to regulate air quantities only to extent those adjustments do not create objectionable air motion or sound levels. Change volume using dampers mounted in ducts.
5. Vary total system air quantities by adjustment of fan speeds. Provide drive changes to accomplish system air flow, speed controls may be used on direct drive motors where allowed by manufacturer. Vary branch air quantities by damper regulation.

D. Field Quality Control:
1. Verify recorded data represents actually measured or observed conditions.
2. Permanently mark settings of dampers or other adjustment devices. Set and lock memory stops.

3.09 PAINTING

A. Section 09 91 00: Painting of exposed ductwork and equipment, without factory finish or finished cover.

B. Touch-up all factory finishes damaged during construction.

3.10 CLEANING

A. Equipment: After the equipment has been started and proved operational, carefully clean all accessible parts of each piece of equipment, thoroughly removing all traces of dirt, oil, grease, and other foreign substances.

3.11 LUBRICATION

A. Upon completion of the work and before turning over to the Owner, clean and lubricate all bearings, except sealed and permanently lubricated bearings. Use only lubricant recommended by the manufacturer.

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B. Contractor is responsible for maintaining lubrication of all mechanical equipment under his contract until work is accepted by the Owner.

C. Furnish a chart with each piece of equipment listed, itemizing location for lubricant required and recommended periods of lubrication. Incorporate chart in Instruction Manual.

3.12 INSTRUCTIONS

A. Instruct Owner's representative in the operation and maintenance of all mechanical systems.

B. Assemble two (2) complete sets of manufacturer's printed operating and maintenance instructions for all mechanical equipment installed under the contract. Prepare in bound copies with index tabs. Information must include parts list and wiring diagrams. Submit to Engineer for presentation to the Owner.

3.13 CLOSEOUT OPERATIONS

A. Division 01: Closeout provisions.

B. Closeout Equipment/System Operations: Sequence operations properly so that work of the project will not be damaged or endangered. Coordinate with seasonal requirements.
   1. Operate each item of equipment and each item in a test run of appropriate duration with the Owner's operating personnel present to demonstrate sustained, satisfactory performance.
   2. Adjust and correct operations as required for proper performance.
   3. Clean and lubricate each system.

C. Instruction, O&M: Instruct Owner or Owner's personnel in the proper operation and maintenance of the HVAC systems.

D. Turn-Over of Operations: At time of substantial completion, turn over the prime responsibility for operation of HVAC equipment and systems to the Owner's operating personnel.

E. Record Drawings.

3.14 SEQUENCE OF OPERATION

A. Storage Room 101:
   1. Fan: Operate with room lights. Fan shall be activated whenever lights are ON. Light controls shall be provided under Division 26.

B. Chase Room 102:
   1. Heater: Control with integral thermostat.

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C. Chase Room 104:
   1. Heater: Control with integral thermostat.

D. Men Room 105 and Women Room 103:
   1. Fan: Operate with room lights. Fan shall be activated whenever lights in either room are ON. Light controls shall be provided under Division 26.

E. Custodian Room 106:
   1. Fan: Operate with room lights. Fan shall be activated whenever lights are ON. Light controls shall be provided under Division 26.
   2. Heater: Control with integral thermostat.

END OF SECTION

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SECTION 31 09 00

BUILDING EARTHWORK QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Inspecting and testing laboratory services.

B. Manufacturers' field services and reports.

C. Examination.

D. Preparation.

1.02 RELATED SECTIONS

A. Section 31 23 16 - Building Excavation

B. Section 31 23 23 - Building Backfill and Compaction

1.03 INSPECTING AND TESTING LABORATORY SERVICES

A. Contractor will employ services of an independent firm to perform inspecting and testing. Contractor shall pay for services from a $3,000 cash allowance included in the building bid.

B. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.
   1. Prior to start of Work, submit testing laboratory name, address, and telephone number.

C. The independent firm will perform inspections, tests, and other services specified in individual specification sections and as required by the Architect/Engineer or the Owner.

D. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

E. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

F. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer.

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Payment for retesting will be charged to the Contractor by deducting inspecting or testing charges from the Contract Sum/Price.

G. Agency Responsibilities:
1. Test samples as submitted by Contractor.
2. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests required by Architect/Engineer.

H. Agency Reports: After each test, promptly submit one copy of report to Architect/Engineer, Owner and to Contractor. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

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

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.

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B. Verify existing substrate is capable of structural support of new Work.

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

3.02 PREPARATION

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

END OF SECTION

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SECTION 31 23 16

BUILDING EXCAVATION

PART 1 GENERAL

1.01 WORK INCLUDED

A. Building excavation.

B. Removal and disposal of contaminated soils related to building excavation.

C. Dewatering associated with building excavation.

1.02 RELATED WORK

A. Section 31 09 00: Inspection of bearing surfaces and compaction testing.

B. Section 31 23 23 - Backfill and Compaction.

C. Bid Item 20101 - Refer to this section for requirements of dealing with contaminated soils, but note that the building excavation is part of the lump sum building bid #90030.

D. Bid Item 50202 - Refer to this section for requirement related to dewatering, but note that dewatering associated with building excavation is part of the lump sum building bid #90030.

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.

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PART 2 PRODUCTS

2.01 MATERIALS

A. Reference the Foundation Exploration Report in Division 01 of this specification manual for a description of the existing soils on site.

B. All excavated soils shall be considered and treated as contaminated and removed from the site. Thus no reuse of materials is allowed.

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 building 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. Remove all excavated subsoil from site.

I. Excavation for building foundations shall extend to footing bearing.

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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.

D. Provisions in bid item 20101 shall apply to this work.

3.04 FIELD QUALITY CONTROL

A. Field inspection and testing shall be performed under the provisions of Section 31 09 00.

B. An independent inspection and testing firm 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 23

BUILDING BACKFILL AND COMPACTION

PART 1 GENERAL

1.01 WORK INCLUDED

A. Backfilling to subgrade elevations around building foundations.

B. Compaction of existing subsoil prior to backfilling.

C. Compaction requirements.

D. All fill materials shall be imported.

1.02 RELATED WORK

A. Section 31 09 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

2.01 COMMON FILL MATERIALS

A. Type B: Granular fill, well-graded sand, or sand and gravel with a maximum aggregate size of 2½ inches in the greatest dimension, not more than 30 percent material retained on the 3/4 inch sieve, and not more than 25 percent passing the No. 200 mesh sieve.

B. Type C: Free-draining granular fill having a maximum of 8 percent of particles passing the No. 200 mesh sieve, a maximum of 35 percent retained on a 1-inch sieve and 100 percent on the material passing the 1½-inch sieve.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify areas to be backfilled are free of debris, snow, ice, or water, and ground surfaces are not frozen.

3.02 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 2 inches in 10 feet unless noted otherwise.

G. Make changes in grade gradual. Blend slopes into level areas.

3.03 TOLERANCES

A. Top Surface of Backfilling: Plus or minus 1 inch.

B. Allow adequate space for topsoil or paving.

3.04 FIELD QUALITY CONTROL

A. Field inspection and testing shall be performed under the provisions of Section 31 09 00.

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.

3.05 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.

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B. Interior Slab-On-Grade: One 6 inch minimum layer of Type C directly under the slab and 46-inch minimum layer of Type B or C for fill to raise the grade up to that point, each lift compacted to 95 percent.

C. Around Foundations Within the Building Area: Type B, each lift compacted to 95 percent.

D. Fill Under Grass Areas at Exterior Side of Perimeter Foundation Walls: Type B, compacted to 90 percent, compacted to 95 percent within 10 feet of foundation walls.

E. Fill Under Concrete Paving at Exterior Side of Perimeter Foundation Walls: Type B, compacted to 95 percent.

F. Fill Under Concrete Sidewalks: Type B or C, provide 6-inch thick layer, compact to 95 percent.

END OF SECTION

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APPENDIX B
ELECTRICAL
INDEX

BID ITEM 90033 – RESTROOM PAVILLION – ELECTRICAL
BID ITEM 90034 – ELECTRICAL
BID ITEM 90042 – RESTROOM PAVILLION – COLOR CHANGING LIGHTING

26 05 00 BASIC ELECTRICAL REQUIREMENTS 1-22
26 05 13 WIRE AND CABLE 1-5
26 05 26 GROUNDING AND BONDING 1-7
26 05 27 SUPPORTING DEVICES 1-4
26 05 31 BOXES 1-5
26 05 33 CONDUIT 1-14
26 05 53 ELECTRICAL IDENTIFICATION 1-5
26 09 33 LIGHTING CONTROL SYSTEMS 1-13
26 20 00 SERVICE ENTRANCE 1-2
26 24 16 PANELBOARDS 1-3
26 27 26 WIRING DEVICES 1-3
26 43 00 SURGE PROTECTION DEVICES 1-6
26 51 00 LIGHTING 1-10
26 51 00 LB-1 BASE DETAIL 11

SECTION 26 05 00

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements applicable to all Division 26 Sections. Also refer to Division 1 - General Requirements. This section is also applicable to Interior Communications Pathways Section 27 05 28.

B. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced in each specification section.

1.2 SCOPE OF WORK

A. This Specification and the associated drawings govern furnishing, installing, testing and placing into satisfactory operation the Electrical Systems.

B. The Contractor shall furnish and install all new materials as indicated on the drawings, and/or in these specifications, and all items required to make his portion of the Electrical Work a finished and working system.

C. Description of Systems shall be as follows:

1. Electrical power system to and including light fixtures, equipment, motors, devices, etc.

2. Electrical power service system from the Utility Company to and including service entrance equipment, distribution and metering.

3. Grounding system.

4. Wiring of equipment furnished by others.

D. Work Not Included:

1. Temperature control wiring for plumbing and HVAC equipment (unless otherwise indicated) will be by other Contractors.

1.3 OWNER FURNISHED PRODUCTS

A. The Owner will supply manufacturer's installation data for new equipment purchased by him for this project.

B. This Contractor shall make all electrical system connections shown on the drawings **or** required for fully functional units.

C. This Contractor is responsible for all damage to Owner furnished equipment caused during installation.

1.4 DIVISION OF WORK BETWEEN MECHANICAL, ELECTRICAL, AND CONTROL CONTRACTORS

A. Division of work is the responsibility of the Prime Contractor. Any scope of work described at any location on the contract document shall be sufficient for including said requirement in the project. The Prime Contractor shall be solely responsible for determining the appropriate subcontractor for the described scope. In no case shall the project be assessed an additional cost for scope that is described on the contract documents on bid day. The following division of responsibility is a guideline based on typical industry practice.

B. Definitions:

1. "Mechanical Contractors" refers to the Contractors listed in Division 21/22/23 of this Specification.

2. Motor Power Wiring: The single phase or 3 phase wiring extending from the power source (transformer, panelboard, feeder circuits, etc.) through disconnect switches and motor controllers to, and including the connections to the terminals of the motor.

3. Motor Control Wiring: The wiring associated with the remote operation of the magnetic coils of magnetic motor starters or relays, or the wiring that permits direct cycling of motors by means of devices in series with the motor power wiring. In the latter case, the devices are usually single phase, have "Manual-Off-Auto" provisions, and are usually connected into the motor power wiring through a manual motor starter.

4. Control devices such as start-stop push buttons, thermostats, pressure switches, flow switches, relays, etc., generally represent the types of equipment associated with motor control wiring.

5. Motor control wiring is single phase and usually 120 volts. In some instances, the voltage will be the same as the motor power wiring. When the motor power wiring exceeds 120 volts, a control transformer is usually used to give a control voltage of 120 volts.

6. Temperature Control Wiring: The wiring associated with the operation of a motorized damper, solenoid valve or motorized valve, etc., either modulating or two-position, as opposed to wiring that directly powers or controls a motor used to drive equipment such as fans, pumps, etc. This wiring will be from a 120 volt source and may continue as 120 volt, or be reduced in voltage (24 volt), in which case a control transformer shall be furnished as part of the temperature control wiring.

7. Control Motor: An electric device used to operate dampers, valves, etc. It may be two-position or modulating. Conventional characteristics of such a motor are 24 volts, 60 cycles, 1 phase, although other voltages may be encountered.

C. General:

1. The purpose of these Specifications is to outline the Electrical and Mechanical Contractors' responsibilities related to electrical work required for items such as temperature controls, mechanical equipment, fans, chillers, compressors, etc. The exact wiring requirements for much of the equipment cannot be determined until the systems have been selected and submittals approved. Therefore, the electrical drawings show only known wiring related to such items. All wiring not shown on the electrical drawings, but required for mechanical systems, is the responsibility of the Mechanical Contractor.

2. Where the drawings require the Electrical Contractor to wire between equipment furnished by the Mechanical Contractor, such wiring shall terminate at terminals provided in the equipment. The Mechanical Contractor shall furnish complete wiring diagrams and supervision to the Electrical Contractor and designate the terminal numbers for correct wiring.

3. The Electrical Contractor shall establish electrical utility elevations prior to fabrication and installation. The Electrical Contractor shall coordinate utility elevations with other trades. When a conflict arises, priority shall be as follows:

   a. Lighting Fixtures
   b. Gravity flow piping, including steam and condensate.
   c. Sheet metal.
   d. Other piping.
   e. Conduits and wireway.

D. Mechanical Contractor's Responsibility:

1. Assumes responsibility for internal wiring of all equipment furnished by the Mechanical Contractor.

2. Assumes all responsibility for miscellaneous items furnished by the Mechanical Contractor that requires wiring but are not shown on the electrical drawings or specified in the Electrical Specification. If items such as relays, flow switches, or interlocks are required to make the mechanical system function correctly or are required by the manufacturer, they are the responsibility of the Mechanical Contractor.

3. Assumes all responsibility for Temperature Control wiring, if the Temperature Control Contractor is a Subcontractor to the Mechanical Contractor.

4. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

E. Temperature Control Contractor's or Subcontractor's Responsibility:

1. Wiring of all devices needed to make the Temperature Control System functional.

2. Verifying any control wiring on the electrical drawings as being by the Electrical Contractor. All wiring is required for the Control System, but not shown on the electrical drawings, is the responsibility of the Temperature Control Contractor or Subcontractor.

3. Coordinating equipment locations (such as PE's, EP's, relays, transformers, etc.) with the Electrical Contractor, where wiring of the equipment is by the Electrical Contractor.

F. Electrical Contractor's Responsibility:

1. Furnishes and installs all combination starters, manual starters and disconnect devices shown on the Electrical Drawings or indicated to be by the Electrical Contractor in the Mechanical Drawings or Specifications.

2. Installs and wires all remote control devices furnished by the Mechanical Contractor or Temperature Control Contractor when such so noted on the Electrical Drawings.

3. Furnishes and installs motor control and temperature control wiring, when noted on the drawings.

4. Furnishes, installs, and connects all relays, etc., for automatic shutdown of certain mechanical equipment (supply fans, exhaust fans, etc.) upon actuation of the Fire Alarm System.

5. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

1.5 QUALITY ASSURANCE

A. Contractor's Responsibility Prior to Submitting Pricing/Bid Data:

1. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract

Documents are a two-dimensional representation of a three-dimensional object, subject to human interpretation. This representation may include imperfect data, interpreted codes, utility guides, three-dimensional conflicts, and required field coordination items. Such deficiencies can be corrected when identified prior to ordering material and starting installation. The Contractor agrees to carefully study and compare the individual Contract Documents and report at once in writing to the Architect/Engineer any deficiencies the Contractor may discover. The Contractor further agrees to require each subcontractor to likewise study the documents and report at once any deficiencies discovered.

2. The Contractor shall resolve all reported deficiencies with the Architect/Engineer prior to awarding any subcontracts, ordering material, or starting any work with the Contractor's own employees. Any work performed prior to receipt of instructions from the Architect/Engineer will be done at the Contractor's risk.

B. Qualifications:

1. Only products of reputable manufacturers as determined by the Engineer are acceptable.

2. All Contractors and subcontractors shall employ only workmen who are skilled in their trades. At all times, the number of apprentices at the job site shall be less than or equal to the number of journeymen at the job site.

C. Compliance with Codes, Laws, Ordinances:

1. Conform to all requirements of the City of Madison, Wisconsin Codes, Laws, Ordinances and other regulations having jurisdiction over this installation.

2. If there is a discrepancy between the codes and regulations and these specifications, the Engineer shall determine the method or equipment used.

3. If the Contractor notes, at the time of bidding, any parts of the drawings or specifications that do not comply with the codes or regulations, he shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time for this procedure, he shall submit with his proposal a separate price to make the system comply with the codes and regulations.

4. All changes to the system made after the letting of the contract to comply with codes or the requirements of the Inspector, shall be made by the Contractor without cost to the Owner.

5. If there is a discrepancy between manufacturer's recommendations and these specifications, the manufacturer's recommendations shall govern.

6. If there are no local codes having jurisdiction, the current issue of the National Electrical Code shall be followed.

D. Permits, Fees, Taxes, Inspections:

1. Procure all applicable permits and licenses.

2. Abide by all laws, regulations, ordinances, and other rules of the State or Political Subdivision where the work is done, or as required by any duly constituted public authority.

3. Pay all charges for permits or licenses.

4. Pay all fees and taxes imposed by State, Municipal, and other regulatory bodies.

5. Pay all charges arising out of required inspections by an authorized body.

6. Pay all charges arising out of required contract document reviews associated with the project and as initiated by the Owner or authorized agency/consultant.

7. Where applicable, all fixtures, equipment and materials shall be listed by Underwriter's Laboratories, Inc. or a nationally recognized testing organization.

E. Utility Company Requirements:

1. Secure from the private or public utility company all applicable requirements.

2. Comply with all utility company requirements.

3. The Owner shall make application for and pay for new electrical service equipment and installation. The Contractor shall coordinate schedule and requirements with the Owner and Utility Company.

4. Furnish the meter socket metering compartment with CT space adjacent to utility transformers. Verify approved manufacturers and equipment with the Utility Company.

5. The Owner shall apply and pay for any changes for removal of existing electrical service by the utility company. The Contractor shall verify approved manufacturers and equipment with the Utility Company.

F. Examination of Drawings:

1. The drawings for the electrical work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment.

2. Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of raceways so as to best fit the layout of the job.

3. Scaling of the drawings will not be sufficient or accurate for determining these locations.

4. Where job conditions require reasonable changes in arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.

5. Because of the scale of the drawings, certain basic items, such as junction boxes, pull boxes, conduit fittings, etc., may not be shown, but where required by other sections of the specifications or required for proper installation of the work, such items shall be furnished and installed.

6. If an item is either shown on the drawings or called for in the specifications, it shall be included in this contract.

7. The Contractor shall determine quantities and quality of material and equipment required from the documents. Where discrepancies arise between drawings, schedules and/or specifications, the greater and better quality number shall govern.

8. Where used in electrical documents the word "furnish" shall mean supply for use, the word "install" shall mean connect up complete and ready for operation, and the word "provide" shall mean to supply for use and connect up complete and ready for operation.

9. Any item listed as furnished shall also be installed unless otherwise noted.

10. Any item listed as installed shall also be furnished unless otherwise noted.

G. Electronic Media/Files:

1. Construction drawings for this project have been prepared utilizing AutoCAD MEP.

2. Contractors and Subcontractors may request electronic media files of the contract drawings and/or copies of the specifications. Specifications will be provided in PDF format.

3. Upon request for electronic media, the Contractor shall complete and return a signed "Electronic File Transmittal" form provided by KJWW.

4. If the information requested includes floor plans prepared by others, the Contractor will be responsible for obtaining approval from the appropriate Design Professional for use of that part of the document.

5. The electronic contract documents can be used for preparation of shop drawings and as-built drawings only. The information may not be used in whole or in part for any other project.

6. The drawings prepared by KJWW for bidding purposes may not be used directly for ductwork layout drawings or coordination drawings.

7. The use of these CAD documents by the Contractor does not relieve them from their responsibility for coordination of work with other trades and verification of space available for the installation.

8. The information is provided to expedite the project and assist the Contractor with no guarantee by KJWW as to the accuracy or correctness of the information provided. KJWW accepts no responsibility or liability for the Contractor's use of these documents.

H. Field Measurements:

1. Verify all pertinent dimensions at the job site before ordering any conduit, conductors, wireways, fittings, etc.

1.6 SUBMITTALS

A. Submittals shall be required for the following items, and for additional items where required elsewhere in the specifications or on the drawings.

1. Submittals list:

Referenced Specification Section	Submittal Item
26 05 26	Grounding and Bonding
26 09 33	Lighting Control System
26 20 00	Service Entrance
26 24 16	Panelboards
26 27 26	Wiring Devices
26 43 00	Surge Protection Devices
26 51 00	Lighting
Drawings	Photocells, Timeclocks, Relays

B. In addition to the provisions of Division 1, the following provisions are required:

1. Submittals shall include all fabrication, erection, layout, and setting drawings; manufacturers' standard drawings; schedules; descriptive

literature, catalogs and brochures; performance and test data; wiring and control diagrams; and all other drawings and descriptive data of materials of construction as may be required to show that the materials, equipment or systems and the location thereof conform to the requirements of the contract documents.

2. The Contractor shall submit electronic copies of each shop drawing for review by the Architect/Engineer BEFORE releasing any equipment for manufacture or shipment.

3. Review and markup air conditioning and ventilating contractor's layout drawings with electrical equipment and conduit routings for coordination.

4. Shop drawings that are larger than 11" x 17" or are plan size layout or erection drawings such as cable tray or busduct drawings, shall be submitted on reproducible media. Submit one reproducible and one print of each drawing or plan. All Contractor approval stamps shall be on the reproducible.

5. The Contractor shall thoroughly review and approve all shop drawings before submitting them to the Architect/Engineer. CONTRACTOR'S APPROVAL STAMP IS REQUIRED ON ALL SUBMITTALS. APPROVAL WILL INDICATE THE CONTRACTOR'S REVIEW of all material and a COMPLETE UNDERSTANDING OF EXACTLY WHAT IS TO BE FURNISHED. Contractor shall clearly mark all deviations from the contract documents on all submittals. IF THE CONTRACTOR DOES NOT MARK DEVIATIONS, THEN THE ITEM SHALL BE REQUIRED TO MEET ALL DRAWING AND SPECIFICATION REQUIREMENTS.

6. Each data sheet shall clearly show at the top of the sheet what General Electrical Equipment Schedule symbol (and applicable variations and subscripts) that data sheet corresponds to.

7. Each data sheet shall show the size, rating, style, finish, material, catalog number, manufacturer name and product photos for each item to ensure compliance with these specifications.

8. Assemble all submittals in sets, such as panelboards, fire alarm, lighting, or motor control. All sets shall be identical and contain an index of the items enclosed with a general topic description on the cover.

9. Bind each set in a manufacturer's folder or inside of a manila file folder.

10. Where more than one model is shown on a manufacturer's sheet, clearly indicate exactly which item and which data is relevant to the work.

11. Where the manufacturer lists multiple part numbers or options on a single data sheet, the part number and options to be used shall be clearly set apart from other part numbers shown on that sheet.

12. Failure to comply with the above shall be reason to resubmit all shop drawings.

13. The Engineer's responsibility shall be to review one set of shop drawing submittals for each product. If the first submittal is incomplete or does not comply with the drawings and/or specifications, the Contractor shall be responsible to bear the cost to the Owner, for the Engineer to recheck and handle the additional shop drawing submittals.

C. Provide Schedule of Values:

1. Application forms: Use AIA Document Continuation Sheets G703 (or similar) as the form for application.

2. Provide line items on the Schedule of Values including:

a. General Conditions (mobilization, bonds, insurance, etc.)
b. Lighting
c. Power

3. Change orders shall have schedule of values broken out as listed above submitted with each change order.

4. Coordinate with the Project Engineer the items included in the Schedule of Values. The intent is to not create schedules in addition to those the Electrical Contractor normally submits to the General Contractor for payment.

1.7 PRODUCT DELIVERY, STORAGE, HANDLING AND MAINTENANCE

A. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage.

B. Keep all materials clean, dry and free from damaging environments.

C. Coordinate the installation of heavy and large equipment with the General Contractor and/or Owner. If the Electrical Contractor does not have prior documented experience in rigging and lifting similar equipment, he/she shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.

D. Contractor is responsible for moving equipment into the building and/or site. Contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. Contractor shall coordinate his/her work with other trades.

1.8 WARRANTY

A. Provide one-year warranty for all fixtures, equipment, materials, and workmanship.

B. The warranty period for all work in this specification Division shall commence on the date of Substantial Completion or successful system performance whichever occurs later. The warranty may also commence if a whole or partial system or any separate piece of equipment or component is put into use for the benefit of any party other than the installing contractor with prior written authorization of the Owner. In this instance, the warranty period shall commence on the date when such whole system, partial system or separate piece of equipment or component is placed in operation and accepted in writing by the Owner.

C. Warranty requirements extend to correction, without cost to the Owner, of all work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage due to defects or nonconformance with contract documents excluding repairs required as a result of improper maintenance or operation, or of normal wear as determined by the Architect/Engineer.

1.9 INSURANCE

A. This Contractor shall maintain insurance coverage as set forth in Division 1 of these specifications.

1.10 MATERIAL SUBSTITUTION

A. Where several manufacturers' names are given, the manufacturer for which a catalog number is given is the basis of design and establishes the quality required.

B. Equivalent equipment manufactured by the other named manufacturers may be used. Contractor shall ensure that all items submitted by these other manufacturers meet all requirements of the drawings and specifications, and fit in the allocated space. The Engineer shall make the final determination of whether a product is equivalent.

C. Any material, article or equipment of other unnamed manufacturers which will adequately perform the services and duties imposed by the design and is of a quality equal to or better than the material, article or equipment identified by the drawings and specifications may be used if approval is secured in writing from the Architect/Engineer via addendum. The Contractor assumes all costs incurred as a result of using the offered material, article or equipment, on his part or on the part of other Contractors whose work is affected.

D. Voluntary add or deduct prices for alternate materials may be listed on the bid form. These items will not be used in determining the low bidder. This Contractor assumes all costs incurred as a result of using the offered material or equipment on his part or on the part of other Contractors whose work is affected.

E. All material substitutions requested after the final addendum must be listed as voluntary changes on the bid form.

PART 2 - PRODUCTS

2.1 GENERAL

A. All items of material having a similar function (e.g., safety switches, panelboards, contactors shall be of the same manufacturer unless specifically stated otherwise on drawings or elsewhere in specifications.

PART 3 - EXECUTION

3.1 JOBSITE SAFETY

A. Neither the professional activities of the Engineer, nor the presence of the Engineer or his or her employees and subconsultants at a construction site, shall relieve the Contractor and any other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Engineer and his or her personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for jobsite safety. The Engineer and the Engineer's consultants shall be indemnified and shall be made additional insureds under the Contractor's general liability insurance policy.

3.2 EXCAVATION, FILL, BACKFILL, COMPACTION

A. General:

1. Prior to the commencement of any excavation or digging, the Contractor shall verify all underground utilities with the regional utility locator. Provide prior notice to the locator before excavations. Contact information for most regional utility locaters can be found by calling 811.

2. The Contractor shall do all excavating, filling, backfilling, compacting, and restoration in connection with his work.

B. Excavation:

1. Make all excavations to accurate, solid, undisturbed earth, and to proper dimensions.

2. If excavations are carried in error below indicated levels, concrete of same strength as specified for the foundations or thoroughly compacted sand-gravel fill, as determined by the Architect/Engineer shall be placed in such excess excavations under the foundation. Place thoroughly compacted, clean, stable fill in excess excavations under slabs on grade, at the Contractor's expense.

3. Trim bottom and sides of excavations to grades required for foundations.

4. Protect excavations against frost and freezing.

5. Take care in excavating not to damage surrounding structures, equipment or buried pipe. Do not undermine footing or foundation.

6. Perform all trenching in a manner to prevent cave-ins and risk to workmen.

7. Where original surface is pavement or concrete, the surface shall be saw cut to provide clean edges and assist in the surface restoration.

8. If satisfactory bearing soil is not found at the indicated levels, immediately notify the Architect/Engineer or their representative, and do no further work until the Architect/Engineer or their representative gives further instructions.

9. Excavation shall be performed in all ground conditions, including rock, if encountered. Bidders shall visit the premises and determine the soil conditions by actual observations, borings, or other means. The cost of all such inspections, borings, etc., shall be borne by the bidder.

10. If a trench is excavated in rock, a compacted bed with a depth of 3" (minimum) of sand and gravel shall be used to support the conduit unless masonry cradles or encasements are used.

11. Mechanical excavation of the trench to line and grade of the conduit or to the bottom level of masonry cradles or encasements is permitted, unless otherwise indicated on the electrical drawings.

12. Mechanical excavation of the trench to line and grade where direct burial cables are to be installed is permitted provided the excavation is made to a depth to permit installation of the cable on a fine sand bed at least 3 inches deep.

C. Dewatering:

1. Furnish, install, operate and remove all dewatering pumps and pipes needed to keep trenches and pits free of water.

D. Underground Obstructions:

1. Known underground piping, conduit, feeders, foundations, and other obstructions in the vicinity of construction are shown on the drawings. Review all Bid Documents for all trades on the project to determine obstructions indicated. Take great care in making installations near underground obstructions.

2. If objects not shown on the drawings are encountered, remove, relocate, or perform extra work as directed by the Architect/Engineer.

E. Fill and Backfilling:

1. No rubbish or waste material is permitted for fill or backfill.

2. Furnish all necessary sand for backfilling.

3. Dispose of the excess excavated earth as directed.

4. Backfill materials shall be suitable for required compaction, clean and free of perishable materials, frozen earth, debris, earth with a high void content, and stones greater than 4 inches in diameter. Water is not permitted to rise in unbackfilled trenches.

5. Backfill all trenches and excavations immediately after installing of conduit, or removing forms, unless other protection is directed.

6. Around piers and isolated foundations and structures, backfill and fill shall be placed and consolidated simultaneously on all sides to prevent wedge action and displacement. Spread fill and backfill materials in 6" uniform horizontal layers with each layer compacted separately to required density.

7. For conduits that are not concrete encased, lay all conduits on a compacted bed of sand at least 3" deep. Backfill around conduits with sand, in 6" layers and compact each layer.

8. Backfill with sand up to grade for all conduits under slabs or paved areas. All other conduits shall have sand backfill to 6" above the top of the conduit.

9. Place all backfill above the sand in uniform layers not exceeding 6" deep. Place then carefully and uniformly tamp each layer to eliminate lateral or vertical displacement.

10. Where the fill and backfill will ultimately be under a building, floor or paving, each layer of fill shall be compacted to 95% of the maximum density as determined by AASHTO Designation T-99 or ASTM Designation D-698. Moisture content of soil at time of compaction shall not exceed plus or minus 2% of optimum moisture content as determined by AASHTO T-99 or ASTM D-698 test.

11. After backfilling of trenches, no superficial loads shall be placed on the exposed surface of the backfill until a period of 48 hours has elapsed.

F. Surface Restoration:

1. Where trenches are cut through graded, planted or landscaped areas, the areas shall be restored to the original condition. Replace all planting and landscaping features removed or damaged to its original condition. At least 6" of topsoil shall be applied where disturbed areas are to be seeded or sodded. All lawn areas shall be sodded unless seeding is called out in the drawings or specifications.

2. Concrete or asphalt type pavement, seal coat, rock, gravel or earth surfaces removed or damaged shall be replaced with comparable materials and restored to original condition. Broken edges shall be saw cut and repaired as directed by Architect/Engineer.

3.3 ENGINEER OBSERVATION OF WORK

A. The contractor shall provide seven (7) calendar days' notice to the Engineer prior to:

1. Placing fill over underground and underslab utilities.

2. Covering exterior walls, interior partitions and chases.

3. Installing hard or suspended ceilings and soffits.

B. The Engineer will review the installation and provide a written report noting deficiencies requiring correction. The contractor's schedule shall account for these reviews and show them as line items in the approved schedule.

C. Above-Ceiling Final Observation:

1. All work above the ceilings must be complete prior to the Engineer's review. This includes, but is not limited to:

a. All junction boxes are closed and identified in accordance with Section 26 05 53 Electrical Identification.

b. Light fixtures, including ceiling-mounted exit and emergency lights, are installed and operational.

c. Light fixture whips are suspended above the ceiling.

d. Conduit identification is installed in accordance with Section 26 05 53 Electrical Identification.

e. Light fixtures are suspended independently of the ceiling system when required by these contract documents.

f. All wall penetrations have been sealed.

2. It is understood that if the Engineer finds the ceilings have been installed prior to this review and prior to seven days elapsing, the Engineer may not recommend further payments to the contractor until such time as full access has been provided.

3.4 PROJECT CLOSEOUT

A. The following paragraphs supplement the requirements of Division 1.

B. Final Jobsite Observation:

1. In order to prevent the Final Jobsite Observation from occurring too early, the Contractor shall review the completion status of the project and certify that the job is ready for the final jobsite observation.

2. It is understood that if the Engineer finds the job not ready for the final observation and additional trips and observations are required to bring the project to completion, the cost of the additional time and expenses incurred by the Engineers will be deducted from the Contractor's final payment.

C. The following must be submitted before Architect/Engineer recommends final payment:

1. Operation and maintenance manuals with copies of approved shop drawings.

2. Record documents including marked-up or reproducible drawings and specifications.

3. A report documenting the instructions given to the Owner's representatives complete with the number of hours spent in the instruction. The report shall bear the signature of an authorized agent of this Contractor and shall be signed by the Owner's representatives.

4. Provide spare parts, maintenance, and extra materials in quantities specified in individual specification sections. Deliver to project site and place in location as directed and submit receipt to Architect/Engineer.

5. Start-up reports on all equipment requiring a factory installation or start-up.

3.5 OPERATION AND MAINTENANCE INSTRUCTIONS

A. Submit three (3) properly indexed and bound copies, in "D" ring style notebooks, of the Operations and Maintenance Instructions to the Architect/Engineer. Make all corrections or additions required.

B. Operation and Maintenance Instructions shall include:

1. Notebooks shall be heavy duty locking three ring binders and incorporate clear vinyl sheet sleeves on the front cover and spine for slip-in labeling. "Peel and stick" labels are **not** acceptable. Sheet lifters shall be supplied at the front of each notebook. Provide "Wilson-Jones" or equal, color black. Size notebooks a minimum of 1/2" thicker than material for future inserts. Label the spine and front cover of each notebook. If more than one notebook is required, label in consecutive order. For example; 1 of 2, 2 of 2. No other forms of binding will be acceptable.

2. Prepare binder covers (front and spine) with printed title "Operation and Maintenance Instructions", title of project, and subject matter of binder when multiple binders are required.

3. Title page with project title, Architect, Engineer, Contractor, and Subcontractor with addresses, telephone numbers, and contacts.

4. Table of Contents describing all index tabs.

5. Listing of all Subcontractors and major equipment suppliers with addresses, telephone numbers, and contacts.

6. Index tabs dividing information by specification section, major equipment, or systems. All tab titles shall be clearly printed under reinforced plastic tabs. Label all equipment to match the identification in the construction documents.

7. Copies of warranties.

8. Copies of all final approved shop drawings and submittals. Copy of power system study and overcurrent protective device settings.

9. Copies of all factory inspection and/or equipment start-up reports.

C. Operation and maintenance data shall consist of written instructions for the care, maintenance, and operation of the equipment and systems. Instruction books, cards, manuals furnished with the equipment shall be included.

3.6 INSTRUCTING THE OWNER'S REPRESENTATIVE

A. Adequately instruct the Owner's designated representatives in the maintenance, care, and operation of the complete systems installed under this contract.

B. Provide verbal and written instructions to the Owner's representatives by FACTORY PERSONNEL in the care, maintenance, and operation of the equipment and systems.

C. The instructions shall include:

1. Maintenance of equipment.
2. Start-up procedures for all major equipment.

D. Notify the Architect of the time and place for the verbal instructions to the Owner's representative so his representative can be present if desired.

E. Minimum hours of instruction time for each item and/or system shall be as indicated in each individual specification section.

F. Operating Instructions:

1. Contractor is responsible for all instructions to the Owner's representatives for the electrical and specialized systems.

2. If the Contractor does not have staff that can adequately provide the required instructions, he shall include in his bid an adequate amount to reimburse the Owner for the Engineer to perform these services.

3.7 RECORD DOCUMENTS

A. The following paragraphs supplement the requirements of Division 1.

B. Maintain at the job site a separate and complete set of electrical drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

C. Mark drawings and specifications to indicate approved substitutions; Change Orders, and actual equipment and materials used. All Change Orders, RFI responses, Clarifications and other supplemental instructions shall be marked on the documents. Record documents that merely reference the existence of the above items are not acceptable. Should this Contractor fail to complete Record Documents as required by this contract, this Contractor shall reimburse Architect/Engineer for all costs to develop record documents that comply with this requirement. Reimbursement shall be made at the Architect/Engineer's hourly rates in effect at the time of work.

D. Record changes daily and keep the marked drawings available for the Architect/Engineer's examination at any normal work time.

E. Upon completing the job, and before final payment is made, give the marked-up drawings to the Architect/Engineer.

3.8 PAINTING

A. Paint all equipment that is marred or damaged prior to the Owner's acceptance. Paint and color shall match original equipment paint and shall be obtained from the equipment supplier if available. All equipment shall have a finished coat of paint applied unless specifically allowed to be provided with a prime coat only.

B. Equipment in finished areas that will be painted to match the room decor will be painted by others. Should this Contractor install equipment in a finished area after the area has been painted, he shall have the equipment and all its supports, hangers, etc., painted to match the room decor. Painting shall be performed as described in project specifications.

C. Equipment cabinets, casings, covers, metal jackets, etc., located in equipment rooms or concealed spaces, shall be furnished in standard finish, free from scratches, abrasions, chippings, etc.

D. Equipment in occupied spaces, or if standard to the unit, shall have a baked primer with baked enamel finish coat free from scratches, abrasions, chipping, etc. If color option is specified or is standard to the unit, verify with the Architect/Engineer his color preference before ordering.

E. Paint all equipment in unfinished areas such as boiler room, mechanical spaces, and storage rooms. Equipment furnished with a suitable factory finish need not be painted; provided the factory applied finish is not marred or spattered. If so, equipment shall be refinished with the same paint as was factory applied.

F. All electrical conduit and equipment, fittings, hangers, structural supports, etc., in unfinished areas, such as equipment and storage room area, shall be painted two (2) coats of oil paint of colors selected by the Architect/Engineer.

G. Do NOT paint electric conduits in crawl spaces, tunnels, or spaces above suspended ceilings except that where conduit is in a damp location give exposed threads at joints two coats of sealer after joint is made up.

H. After surfaces have been thoroughly cleaned and are free of oil, dirt or other foreign matter, paint all raceway and equipment with the following:

1. Bare Metal Surfaces - Apply one coat of metal primer suitable for the metal being painted. Finish with two coats of Alkyd base enamel paint.

2. Plastic Surfaces - Paint plastic surfaces with two coats of semi-gloss acrylic latex paint.

3.9 ADJUST AND CLEAN

A. Thoroughly clean all equipment and systems prior to the Owner's final acceptance of the project.

B. Clean all foreign paint, grease, oil, dirt, labels, stickers, etc. from all equipment.

C. Remove all rubbish, debris, etc., accumulated during construction from the premises.

3.10 SPECIAL REQUIREMENTS

A. Coordinate the installation of all equipment, controls, devices, etc., with other trades to maintain clear access area for servicing.

B. Install all equipment to maximize access to parts needing service or maintenance. Review the final location, placement, and orientation of equipment with the Owner's representative prior to setting equipment.

C. Installation of equipment or devices without regard to coordination of access requirements and confirmation with the Owner's representative will result in removal and reinstallation of the equipment at the Contractor's expense.

3.11 SYSTEM COMMISSIONING

A. The electrical systems shall be complete and operating. System start-up, testing, balancing, and satisfactory system performance is the responsibility of the Contractor. This includes all calibration and adjustment of electrical controls, balancing of loads, troubleshooting and verification of software, and final adjustments that may be needed.

B. All operating conditions and control sequences shall be tested during the start-up period. Testing all interlocks, safety shut-downs, controls, and alarms.

1. The Contractor, subcontractors, and equipment suppliers shall have skilled technicians to ensure that all systems perform properly. If the Architect/Engineer is requested to visit the job site for trouble shooting, assisting in start-up, obtaining satisfactory equipment operation, resolving installation and/or workmanship problems, equipment substitution issues or unsatisfactory system performance, including call backs during the warranty period, through no fault of the design; the Contractor shall reimburse the Owner on a time and materials basis for services rendered at the Architect/Engineer's standard hourly rates in effect when the services are requested. The Contractor shall pay the Owner for services required that are product, installation or workmanship related. Payment is due within 30 days after services are rendered.

3.12 FIELD QUALITY CONTROL

A. General:

1. Conduct all tests required during and after construction.

2. Supply necessary instruments, meters, etc., for the tests. Supply competent technicians with training in the proper testing techniques.

3. All cables and wires shall be tested for shorts and grounds following installation and connection to devices. Replace shorted or grounded wires and cables.

4. Any wiring device, electrical apparatus or lighting fixture, if grounded or shorted on any integral "live" part, shall have all defective parts or materials replaced.

5. Test cable insulation of service and panel feeder conductors for proper insulation values. Tests shall include the cable, all splices, and all terminations. Each conductor shall be tested and shall test free of short circuits and grounds and have an insulation value not less than the National Electrical Code Standards. Take readings between conductors, and between conductors and ground.

6. If the results obtained in the tests are not satisfactory make adjustments, replacements, and changes as needed. Then repeat the tests, and make additional tests, as the Architect/Engineer or authority having jurisdiction deems necessary.

B. Ground Resistance:

1. Conduct service ground resistance tests using an approved manufactured ground resistance meter. Submit to the Architect/Engineer a proposed test procedure including type of equipment to be used. (The conventional ohmmeter is not an acceptable device.)

2. Make ground resistance measurements during normal dry weather and not less than 48 hours after a rain.

3. If the ground resistance value obtained is more than the value set forth in Section 26 05 26, the following shall be done to obtain the value given:

   a. Verify that all connections in the service ground system are secure.

   b. Increase the depth to which ground rods are driven by adding section lengths to the rods and retest. If the resistance is still excessive increase the depth by adding an additional rod section and retest.

c. If the resistance is still excessive, furnish and install additional ground rods, spaced not less than 20 feet from other ground rods unless otherwise noted on plans, and connect into the ground electrode system. Retest.

d. Review results with the Architect/Engineer.

4. Before final payment is made to the Contractor submit a written report to the Architect/Engineer including the following:

a. Date of test.

b. Number of hours since the last rain.

c. Soil condition at the time of the test in the ground electrode location. That is: dry, wet, moist, sand, clay, etc.

d. Diagram of the test set-up showing distances between test equipment, ground electrode, auxiliary electrodes, etc.

e. Make, model, and calibration date of test equipment.

f. Tabulation of measurements taken and calculations made.

C. Other Equipment:

1. Give other equipment furnished and installed by the Contractor all standard tests normally made to assure that the equipment is electrically sound, all connections properly made, phase rotation correct, fuses and thermal elements suitable for protection against overloads, voltage complies with equipment nameplate rating, and full load amperes are within equipment rating.

D. If any test results are not satisfactory, make adjustments, replacements and changes as needed and repeat the tests and make additional tests as the Architect/Engineer or authority having jurisdiction deem necessary.

END OF SECTION

SECTION 26 05 13

WIRE AND CABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building wire
B. Remote control and signal cable

1.2 REFERENCES

A. NEMA WC 70 - Power Cables Rated 2,000V or Less for the Distribution of Electrical Energy

B. UL 44 – Thermoset-Insulated Wires and Cables

C. UL 83 – Thermoplastic-Insulated Wires and Cables

D. UL 854 – Service-Entrance Cables

E. UL 1581 – Standard for Electrical Wires, Cables, and Flexible Cords

PART 2 - PRODUCTS

2.1 BUILDING WIRE

A. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation, THHN/THWN.

B. Feeders and Branch Circuits Larger than 6 AWG in Underground Conduit: Copper, stranded conductor, 600 volt insulation, THWN.

C. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, THHN/THWN. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid or stranded conductor, unless otherwise noted on the drawings.

D. Control Circuits: Copper, stranded conductor 600 volt insulation, THHN/THWN.

2.2 REMOTE CONTROL AND SIGNAL CABLE

A. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 60°C, individual conductors twisted together, shielded, and covered with a PVC jacket.

B. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60°C, individual conductors twisted together, shielded, and covered with a PVC jacket; UL listed.

C. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60°C, individual conductors twisted together, shielded, and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

PART 3 - EXECUTION

3.1 WIRE AND CABLE INSTALLATION SCHEDULE

A. Concealed Interior Locations: Building wire in raceways.

B. Exposed Interior Locations: Building wire in raceways.

C. Above Accessible Ceilings: Building wire in raceways.

D. Wet or Damp Interior Locations: Building wire in raceway.

E. Exterior Locations: Building wire in raceways.

F. Underground Locations: Building wire in raceways.

G. Below Accessible Floor: Building wire in raceways.

3.2 CONTRACTOR CHANGES

A. The basis of design is copper conductors installed in raceway based on ambient temperature of 30°C, NEC Table 310.16. Service entrance conductors are based on copper conductor installed in underground electrical ducts, NEC Table B.310.7.

B. The Contractor shall be responsible for derating and sizing conductors and conduits to equal or exceed the ampacity of the basis of design circuits, if he/she chooses to use methods or materials other than the basis of design.

C. Underground electrical duct ampacity rating shall be in accordance with NEC Table B.310.7 or calculated in accordance with Annex B Application Information for Ampacity Calculation. The calculations and a sketch of the proposed installation shall be submitted prior to any conduit being installed.

D. Record drawing shall include the calculations and sketches.

3.3 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.

B. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet, and for 20 ampere, 277 volt branch circuit home runs longer than 200 feet.

C. Use no wire smaller than 8 AWG for outdoor lighting circuits.

D. The ampacity of multiple conductors in one conduit shall be derated per National Electrical Code, Article 310. In no case shall more than 4 conductors be installed in one conduit to such loads as motors larger than 1/4 HP, panelboards, motor control centers, etc.

E. Where installing parallel feeders, place an equal number of conductors for each phase of a circuit in same raceway or cable.

F. Splice only in junction or outlet boxes.

G. Neatly train and lace wiring inside boxes, equipment, and panelboards.

H. Make conductor lengths for parallel circuits equal.

I. All conductors shall be continuous in conduit from last outlet to their termination.

3.4 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

B. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

C. Pulling shall be continuous without unnecessary stops and starts with wire or cable only partially thru raceway.

D. Where reels of cable or wire are used, they shall be set up on jacks close to the point where the wire or cable enters the conduit or duct so that the cable or wire may be unreeled and run into the conduit or duct with a minimum of change in the direction of the bend.

E. Cables or wires shall not be laid out on the ground before pulling.

F. Cables or wires shall not be dragged over earth or paving.

G. Care shall be taken so as not to subject the cable or wire to high mechanical stresses that would cause damage to the wire and cable.

H. Conductors shall not be pulled through conduits until plastering or masonry work is completed and conduits are free from moisture. Care shall be taken so that long

pulls of wire or pulls around several bends are not made where the wire may be permanently stretched and the insulation damaged.

I. Only nylon rope shall be permitted to pull cables into conduit and ducts.

J. At least six (6) inch loops or ends shall be left at each outlet for installation connection of fixtures or other devices.

K. All wires in outlet boxes not connected to fixtures or other devices shall be rolled up, spliced if continuity of circuit is required, and insulated.

L. Completely and thoroughly swab raceway system before installing conductors.

M. Conductor Supports in Vertical Raceways:

1. Support conductors in vertical raceways in accordance with NEC 300.19 and Table 300.19(A) Spacing of Conductors Supports.

2. Supports shall be of insulated wedge type (OZ Gedney Type S, or equal) and installed in a tapered insulated bushing fitting or a metal woven mesh with a support ring that fits inside conduit fitting installed in an accessible junction box (Hubbell Kellens support grip or equal).

3.5 WIRING CONNECTIONS AND TERMINATIONS

A. Splice and tap only in accessible junction boxes.

B. Use solderless, tin-plated copper, compression terminals (lugs) applied with circumferential crimp for copper conductor terminations, 8 AWG and larger.

C. Use solderless, tin-plated, compression terminals (lugs) applied with indenter crimp for copper conductor terminations, 10 AWG and smaller.

D. Use solderless pressure connectors with insulating covers for copper wire splices and taps, 8 AWG and smaller. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps.

E. Use copper, compression connectors applied with circumferential crimp for copper wire splices and taps, 6 AWG and larger. Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor.

F. Thoroughly clean wires before installing lugs and connectors.

G. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

H. Terminate spare conductors with electrical tape, unless otherwise indicated on the drawings.

I. Phase Sequence: All apparatus shall be connected to operate in the phase sequence A-B-C representing the time sequence in which the phase conductors so identified reach positive maximum voltage.

J. As a general rule, applicable to switches, circuit breakers, starters, panelboards, switchgear and the like, the connections to phase conductors are intended thus:

1. Facing the front and operating side of the equipment, the phase identification shall be:

a. Left to Right - A-B-C
b. Top to Bottom - A-B-C

K. Connection revisions as required to achieve correct rotation of motors shall be made at the load terminals of the starters or disconnect switches.

3.6 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 1.

B. Cable Testing: Test shall be made by means of an insulation testing device such as a "Megger" using not less than 500 volts D.C. test potential.

C. Inspect wire and cable for physical damage and proper connection.

D. Torque test conductor connections and terminations to manufacturers recommended values.

E. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Equipment grounding system
B. Bonding system
C. Grounding electrode system

1.2 SUMMARY

A. This section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.3 SUBMITTALS

A. Submit shop drawings under provisions of Section 26 05 00.

B. Product Data: For the following:

1. Ground rods.
2. Chemical electrodes.

C. Field Test Reports: Submit written test reports to include the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

D. Indicate layout of ground field, location of system grounding electrode connections, and routing of grounding electrode conductor and ground ring.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.

B. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association to supervise on-site testing specified in Part 3.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with UL 467 Grounding and Bonding Equipment.

E. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

F. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE/ANSI C2 National Electrical Safety Code (NESC).

PART 2 - PRODUCTS

2.1 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 26 Section 26 05 13 "Wire and Cable".

B. Material: Copper.

C. Equipment Grounding Conductors: Insulated with green-colored insulation.

D. Grounding Electrode Conductors: Stranded cable.

E. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.

F. Sizes and types below are typical. Adjust to suit Project conditions and requirements.

G. Copper Bonding Conductors: As follows:

1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, 1/4 inch in diameter.

2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.

3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

H. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulators.

2.2 CONNECTOR PRODUCTS

A. Comply with UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Connectors: Hydraulic compression type, in kit form, and selected per manufacturer's written instructions.

C. Bolted Connectors: Bolted-pressure-type connectors.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel.

B. Chemical Electrodes: Copper tube, straight or L-shaped, filled with nonhazardous chemical salts, terminated with a 4/0 bare conductor. Provide backfill material recommended by manufacturer.

PART 3 - EXECUTION

3.1 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.

2. Make connections with clean, bare metal at points of contact.

3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.

4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.

5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

D. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically non-continuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.

E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

G. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.2 INSTALLATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

B. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

C. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then use a bolted clamp. Bond straps directly to the basic structure, taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

D. In raceways, use insulated equipment grounding conductors.

E. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells.

F. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

G. Underground Grounding Conductors: Use copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade or bury 12 inches above duct bank when installed as part of the duct bank.

H. Grounding electrode conductor shall be protected from physical damage by rigid polyvinyl chloride conduit (PVC).

I. Each grounding conductor that passes through a basement wall must be provided with a waterstop.

3.3 EQUIPMENT GROUNDING SYSTEM

A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

B. Install equipment grounding conductors in all feeders and circuits. Terminate each end on a grounding lug or bus.

3.4 BONDING SYSTEM

A. At building expansion joints, provide flexible bonding jumpers to connect to columns or beams on each side of the expansion joint.

B. Isolated Equipment Enclosure: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate equipment bonding conductor.

C. Exterior Metallic Pull and Junction Box Covers, Metallic Hand Rails: Bond to grounding system using flexible grounding conductors.

D. Equipment Circuits: Install a bonding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.

E. Water Heater, Heat-Tracing, Metal Well Casing, and Heating Cables: Install a separate equipment grounding conductor to each electric water heater, heat-tracing, and anti-frost heating cable. Bond conductor to heater units, piping, well casing, connected equipment, and components.

F. Connect bonding conductors to metal water pipe using a suitable ground clamp. Make connections to flanged piping at street side of flange. Provide bonding jumper around water meter.

G. Terminal Cabinets: Terminate bonding conductor on cabinet grounding terminal.

H. Remote control, signaling, and fire alarm circuits shall be bonded in accordance with the most recent version of the National Electric Code.

3.5 GROUNDING ELECTRODE SYSTEM

A. Supplementary Grounding Electrode: Use driven ground rod on exterior of building.

B. Provide bonding at Utility Company's metering equipment and pad mounted transformer.

C. Ground Rods: Install at least two rods spaced at least 20 feet from each other and located at least the same distance from other grounding electrodes.

1. Drive ground rods until tops are 12 inches below finished floor or final grade, unless otherwise indicated.

2. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make connections without exposing steel or damaging copper coating.

D. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

E. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.

F. Bond each aboveground portion of natural gas metallic piping system at equipment locations. The equipment grounding conductor may serve as the bonding means.

3.6 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

1. Measure ground resistance from system neutral connection at service entrance to convenient ground reference points using suitable ground testing equipment. Resistance shall not exceed 5 ohms.

2. Testing: Owner will engage a qualified testing agency to perform the following field quality-control testing:

3. Testing: Engage a qualified testing agency to perform the following field quality-control testing:

4. Testing: Perform the following field quality-control testing:

a. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.

b. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

3.7 GRADING AND PLANTING

A. Restore surface features, including vegetation, at areas disturbed by Work of this Section. Reestablish original grades, unless otherwise indicated. If sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include application of topsoil, fertilizer, lime, seed, sod, sprig, and mulch. Comply with Division 2. Maintain restored surfaces. Restore disturbed paving.

END OF SECTION

SECTION 26 05 27

SUPPORTING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Conduit and equipment supports
B. Fastening hardware
C. Concrete housekeeping pads

1.2 COORDINATION

A. Coordinate size, shape and location of concrete pads with Section on Cast-in-Place Concrete or Concrete Topping.

1.3 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Allied Support Systems
B. Cooper B-Line
C. Erico, Inc.
D. Hilti
E. Power Fasteners

2.2 MATERIAL

A. Support Channel: Hot-dip galvanized for wet/damp locations; painted steel for interior/dry locations. All field cut ends shall be touched up with matching finish to inhibit rusting.

B. Hardware: Corrosion resistant.

C. Anchorage and Structural Attachment Components:

1. Strength: Defined in reports by ICBO Evaluation Service or another agency acceptable to Authorities Having Jurisdiction.

a. Structural Safety Factor: Strength in tension and shear of components used shall be at least two times the maximum seismic forces to which they will be subjected.

2. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.

3. Welding Lugs: Comply with MSS-SP-69, Type 57.

4. Beam clamps for Steel Beams and Joists: Double sided. Single-sided type is not acceptable.

5. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to the type and size of anchor bolts and studs used.

6. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to the type and size of attachment devices used.

7. Concrete Anchors: Fasten to concrete using cast-in or post-installed anchors designed per the requirements of Appendix D of ACI 318-05. Post-installed anchors shall be qualified for use in cracked concrete by ACI-355.2.

8. Masonry Anchors: Fasten to concrete masonry units with expansion anchors or self-tapping masonry screws. For expansion anchors into hollow concrete block, use sleeve-type anchors designed for the specific application. Do not fasten in masonry joints. Do not use powder actuated fasteners, wooden plugs, or plastic inserts.

D. Conduit Sleeves and Lintels:

1. Each Contractor shall provide, to the General Contractor for installation, lintels for all openings required for the Contractor's work in masonry walls and conduit sleeves for floors, unless specifically shown as being by others.

2. Fabricate all lintels from structural steel shapes or as indicated on the drawings. All lintels and grouped wall openings shall be approved by the Architect or Structural Engineer.

3. Fabricate all sleeves from standard weight black steel pipe. Provide continuous sleeve. Cut or split sleeves are not acceptable.

4. Sleeves through the floors on exposed risers shall be flush with the ceiling, with planed squared ends extending 1" above the floor in unfinished areas, and flush with the floor in finished areas, to accept spring closing floor plates.

5. Sleeves shall not penetrate structural members without approval from the Structural Engineer.

6. Openings through unexcavated floors and/or foundation walls below the floor shall have a smooth finish with sufficient annular space around material passing through opening so slight settling will not place stress on the material or building structure.

7. Install all sleeves concentric with conduits. Secure sleeves in concrete to wood forms. This Contractor is responsible for sleeves dislodged or moved when pouring concrete.

8. Where conduits rise through concrete floors that are on earthen grade, provide 3/4" resilient expansion joint material (asphalt and cork) wrapped around the pipe, the full depth of concrete, at the point of penetration. Secure to prevent shifting during concrete placement and finishing.

9. Size sleeves large enough to allow expansion and contraction movement.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors in concrete and beam clamps on structural steel.

B. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

C. Do not fasten supports to ceiling systems, piping, ductwork, mechanical equipment, or conduit, unless otherwise noted.

D. Do not use powder-actuated anchors without specific permission.

E. Do not drill structural steel members.

F. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

G. In wet locations and on all building floors below exterior earth grade install free-standing electrical equipment on concrete pads.

H. Install surface-mounted cabinets and panelboards with minimum of four anchors. Provide steel channel supports to stand cabinet one inch off wall.

I. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.

J. Do not exceed 25 lbs. per hanger and a minimum spacing of 2'-0" on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2'-0" spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

K. Refer to Section 26 05 33 for special conduit supporting requirements.

3.2 FINISH

A. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.

B. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1" of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6'-6" of finish floor and presents potential injury to personnel.

END OF SECTION

SECTION 26 05 31

BOXES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wall and ceiling outlet boxes
B. Pull and junction boxes
C. Accessories

1.2 REFERENCES

A. ANSI/NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports

B. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum)

D. Federal Specification A–A–50563 – Conduit Outlet Boxes, Bodies, and Entrance Caps, Electrical Cast Metal

PART 2 - PRODUCTS

2.1 OUTLET BOXES

A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1; galvanized steel, minimum of 14 gauge, with 1/2 inch male fixture studs where required.

B. Nonmetallic Outlet Boxes: ANSI/NEMA OS 2.

C. Cast Boxes: NEMA FB1, Type FD, Aluminum or cast feralloy, deep type, gasketed cover, threaded hubs.

D. Outlet boxes for light fixtures to be 4" octagon box not less than 1-1/2" deep, deeper if required by the number of wires or construction.

E. Switch outlet boxes for local light control switches shall be 4 inches square by 1-1/2 inches deep, with raised cover to fit flush with finish wall line. Multiple gang switch outlets shall consist of the required number of gang boxes appropriate to the quantity of switches comprising the gang. Where walls are plastered, provide a plaster raised cover. Where switch outlet boxes occur in exposed concrete block walls, boxes shall be installed in the block cavity with a raised square edge tile cover of sufficient depth to extend out to face of block or masonry boxes.

F. Wall or column receptacle outlet boxes shall be 4 inches square with raised cover to fit flush with finished wall line. Boxes in concrete block walls shall be installed the same as for switch boxes in block walls.

2.2 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: ANSI/NEMA OS 1; galvanized steel.

B. Sheet metal boxes larger than 12 inches in any dimension that contain terminations or components: Continuous hinged enclosure with 1/4 turn latch and white back panel for mounting terminal blocks and electrical components.

C. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250; Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

D. Cast Metal Boxes for Underground Installations: NEMA 250; Type 4, inside flanged, recessed cover box for flush mounting, UL listed as raintight. Galvanized cast iron box and plain cover with neoprene gasket and stainless steel cover screws.

E. Handholes for Underground Installations: Precast composite polymer concrete stackable body with conduit entry holes at center bottom of each side; composite polymer concrete cover with logo and skid resistant surface and stainless steel bolts. Refer to general electrical equipment schedule for handhole requirements.

F. Flanged type boxes shall be used where installed flush in wall.

2.3 ACCESSORIES

A. Fire Rated Moldable Pads: UL #9700, moldable sheet putty at required thickness on all five sides of back boxes. Kinetics Noise Control – IsoBacker Pad, SpecSeal – SSP Putty and Pads, 3M #MPP-4S or equal.

PART 3 - EXECUTION

3.1 BOX INSTALLATION SCHEDULE

A. Galvanized steel boxes may be used in:

1. Concealed interior locations above ceilings and in hollow studded partitions.

2. Exposed interior locations in mechanical rooms and in rooms without ceilings; higher than 8' above the highest platform level.

3. Direct contact with concrete except slab on grade.

B. Cast boxes shall be used in:

1. Exterior locations.

2. Exposed interior locations within 8' of the highest platform level.

3. Direct contact with earth.

4. Direct contact with concrete in slab on grade.

5. Wet locations.

3.2 COORDINATION OF BOX LOCATIONS

A. Provide electrical boxes as shown on the drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.

B. Electrical box locations shown on the Contract Drawings are approximate, unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.

C. Locate and install boxes to allow access. Avoid interferences with ductwork, piping, structure, equipment, etc. Where installation is inaccessible, provide access doors. Coordinate locations and sizes of required access doors with the Architect and General Contractor.

D. Locate and install to maintain headroom and to present a neat appearance.

E. Coordinate locations with Heating Contractor to avoid baseboard radiation cabinets.

3.3 OUTLET BOX INSTALLATION

A. Do not install boxes back-to-back in walls. Provide a minimum horizontal offset of 24 inches between boxes installed on opposite sides of stud walls.

1. When the minimum 24-inch horizontal separation cannot be maintained in fire-rated walls, install fire-rated moldable pads to all five sides of the back box to maintain the fire rating of the wall. Install moldable pads in accordance with UL listing for the specific product. Sound insulation pads are not acceptable for use in fire-rated wall applications unless the product carries the necessary fire rating.

B. The Contractor shall anchor switch and outlet box to wall construction so that it is flush with the finished masonry, paneling, drywall, plaster, etc. The Contractor shall check the boxes as the finish wall surface is being installed to assure that the box is flush. (Provide plaster rings as necessary.)

C. Mount at heights shown or noted on the drawings or as generally accepted if not specifically noted.

D. Locate boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat openings for boxes.

E. Provide knockout closures for unused openings.

F. Support boxes independently of conduit.

G. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

H. Install boxes in walls without damaging wall insulation.

I. Coordinate mounting heights and locations of outlets mounted above counters, benches, backsplashes, and below baseboard radiation.

J. Position outlets to locate luminaires as shown on reflected ceiling drawings.

K. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed luminaire, to be accessible through luminaire ceiling opening.

L. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioned to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.

M. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

N. Provide cast outlet boxes in exterior locations and wet locations, and where exposed rigid or intermediate conduit is used.

3.4 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.

B. Support pull and junction boxes independent of conduit.

C. Do not install back-to-back boxes in walls. Provide a minimum horizontal offset of 24 inches between boxes installed on opposite sides of stud walls.

1. When the minimum 24-inch horizontal separation cannot be maintained within fire-rated walls, install fire-rated moldable pads to all five sides of the back box to maintain the fire rating of the wall. Install moldable pads in accordance with UL listing for the specific product. Sound insulation pads are not acceptable for use in fire-rated wall applications unless the product carries the necessary fire rating.

2. When the minimum 24-inch horizontal separation cannot be maintained in non-fire-rated walls, install sound insulation pads on all five sides of the back box in accordance with the manufacturer's specification.

D. Install sound insulation pads on all five sides of the back of all boxes in sound-rated wall assemblies. Sound-rated wall assemblies are defined as partition types carrying a Sound Transmission Class (STC) rating.

3.5 EXPOSED BOX INSTALLATION

A. Boxes shall be secured to the building structure with proper size screws, bolts, hanger rods, or structural steel elements.

B. On brick, block and concrete walls or ceilings, exposed boxes shall be supported with no less than two (2) Ackerman-Johnson, Paine, Phillips, or approved equal screw anchors or expansion shields and round head machine screws. Cast boxes shall not be drilled.

C. On steel structures, exposed boxes shall be supported to the steel member by drilling and tapping the member and fastening the boxes by means of round head machine screws.

D. Boxes may be supported on steel members by APPROVED beam clamps if conduit is supported by beam clamps.

E. Boxes shall be fastened to wood structures by means of a minimum of two (2) wood screws adequately large and long to properly support. (Quantity depends on size of box.)

F. Wood, plastic, or fiber plugs shall not be used for fastenings.

END OF SECTION

SECTION 26 05 33

CONDUIT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Rigid metallic conduit and fittings
B. Intermediate metallic conduit and fittings
C. Electrical metallic tubing and fittings
D. Flexible metallic conduit and fittings
E. Liquidtight flexible metallic conduit and fittings

1.2 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI C80.1 - Rigid Steel Conduit, Zinc-Coated
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc-Coated and Fittings
3. ANSI C80.4 - Fittings for Rigid Metal Conduit and Electrical Metallic Tubing
4. ANSI C80.6 – Intermediate Metal Conduit, Zinc Coated

B. Federal Specifications (FS):

1. A–A–50553A – Fittings for Conduit, Metal, Rigid, (Thick-Wall and Thin-Wall (EMT) Type
2. A–A–55810 – Specification for Flexible Metal Conduit

C. NECA "Standards of Installation"

D. National Electrical Manufacturers Association (NEMA):

1. ANSI/NEMA FB 1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
2. RN 1 – Polyvinyl chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
3. TC 2 – Electrical Polyvinyl Chloride (PVC) Conduit
4. TC 3 – PVC Fittings for use with Rigid PVC Conduit and Tubing
5. TC 6/TC 8 – PVC Plastic Utilities Duct for Underground Installations

6. TC 7 – Smooth-Wall Coilable Electrical Polyethylene Conduit

7. TC 9 – Fittings for PVC Plastic Utilities Duct for Underground Installation

8. TC13 – Electrical Non-Metallic Tubing

9. TC14 – Filament-Wound Reinforced Thermosetting Resin Conduit and Fittings

E. National Fire Protection Association (NFPA):

1. ANSI/NFPA 70 – National Electrical Code

F. Underwriters Laboratories (UL): Applicable Listings

1. UL 1 – Flexible Metal Conduit

2. UL 6 – Rigid Metal Conduit

3. UL 6A – Standard for Electrical Rigid Metal Conduit - Aluminum

4. UL 360 – Liquid Tight Flexible Steel Conduit

5. UL514-B – Conduit Tubing and Cable Fittings

6. UL651-A – Type EB and a PVC Conduit and HDPE Conduit

7. UL651-B – Continuous Length HDPE Conduit

8. UL746A – Standard for Polymeric Materials – Short Term Property Evaluations

9. UL797 – Electrical Metal Tubing

10. UL1242 – Intermediate Metal Conduit

G. Definitions:

1. Fittings: Conduit connection or coupling.

2. Body: Enlarged fittings with opening allowing access to the conductors for pulling purposes only.

3. Mechanical Spaces: Enclosed areas, usually kept separated from the general public, where the primary use is to house service equipment and to route services. These spaces generally have exposed structures, bare concrete and non-architecturally emphasized finishes.

4. Finished Spaces: Enclosed areas where the primary use is to house personnel and the general public. These spaces generally have architecturally emphasized finishes, ceilings and/or floors.

5. Concealed: Not visible by the general public. Often indicates a location either above the ceiling, in the walls, in or beneath the floor slab, in column coverings, or in the ceiling construction.

6. Above Grade: Not directly in contact with the earth. For example, an interior wall located at an elevation below the finished grade shall be considered above grade but a wall retaining earth shall be considered below grade.

7. Slab: Horizontal pour of concrete used for the purpose of a floor or sub-floor.

PART 2 - PRODUCTS

2.1 RIGID METALLIC CONDUIT (RMC) AND FITTINGS

A. Acceptable Manufacturers:

1. Acceptable Manufacturers: Allied, LTV, Steelduct, Wheatland Tube Co, O-Z Gedney, or approved equal.

2. Acceptable Manufacturers of RMC Conduit Fittings: Appleton Electric, O-Z/Gedney Co., Electroline, Raco, Bridgeport, Midwest, Regal, Thomas & Betts, Crouse-Hinds, Killark, or approved equal.

B. Minimum Size Galvanized Steel: 3/4 inch (19mm), unless otherwise noted.

C. Fittings and Conduit Bodies:

1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.

2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.

3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.

4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. **High impact phenolic threaded type bushings are not acceptable.**

5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

D. PVC Externally Coated Conduit: NEMA RN 1; rigid steel conduit with external 40 mil PVC coating and internal galvanized surface. All fittings and conduit bodies shall be complete with coating. Acceptable Manufacturers: Robroy, Permacote, or approved equal.

2.2 INTERMEDIATE METALLIC CONDUIT (IMC) AND FITTINGS

A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted.

B. Acceptable Manufacturers: Allied, LTV, Steelduct, Wheatland Tube Co, O-Z Gedney, or approved equal.

C. Fittings and Conduit Bodies:

1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.

2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.

3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.

4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. **High impact phenolic threaded type bushings are not acceptable.**

5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

2.3 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

A. Minimum Size Electrical Metallic Tubing: 3/4 inch, unless otherwise noted.

B. Acceptable Manufacturers of EMT Conduit: Allied, LTV, Steelduct, Wheatland Tube Co, or approved equal.

C. Fittings and Conduit Bodies:

1. 2" Diameter or Smaller: Compression or steel set screw type of steel designed for their specific application.

2. Larger than 2": Compression or steel set screw type of steel designed for their specific application.

3. Acceptable Manufacturers of EMT Conduit Fittings: Appleton Electric, O-Z/Gedney Co., Electroline, Raco, Bridgeport, Midwest, Regal, Thomas & Betts, or approved equal.

2.4 FLEXIBLE METALLIC CONDUIT (FMC) AND FITTINGS

A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted. Lighting branch circuit wiring to an individual luminaire may be a manufactured, UL listed 3/8" flexible metal conduit with #12 AWG THHN conductors and an insulated ground wire.

B. Acceptable Manufacturers: American Flex, Alflex, Electri-Flex Co, or approved equal.

C. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel. Provide a separate equipment grounding conductor when used for equipment where flexibility is required.

D. Fittings and Conduit Bodies:

1. Threadless hinged clamp type, galvanized zinc coated cadmium plated malleable cast iron or screw-in type, die-cast zinc.

2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.

3. Acceptable Manufacturers: O-Z/Gedney Co., Thomas & Betts, Appleton Electric, Electroline, Bridgeport, Midwest, Regal, or approved equal.

2.5 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC) AND FITTINGS

A. Acceptable Manufacturers: Anaconda Type UA, Electri-Flex Type LA, Alflex, Carlon (Lamson & Sessions), or approved equal.

B. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel and an extruded PVC cover.

C. Fittings and Conduit Bodies:

1. Watertight, compression type, galvanized zinc coated cadmium plated malleable cast iron, UL listed.

2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.

3. Acceptable Manufacturers: Appleton Electric, O-Z/Gedney Co., Electroline, Bridgeport, Thomas & Betts, Midwest, Regal, Carlon (Lamson & Sessions), or approved equal.

PART 3 - EXECUTION

3.1 CONDUIT SIZING

A. Size conduit as shown on the drawings and specifications. Where not indicated in the contract documents, conduit size shall be according to N.E.C. (Latest Edition). Conduit and conductor sizing shall be coordinated to limit conductor fill to less than 40%, maintain conductor ampere capacity as required by the National Electrical Code (to include enlarged conductors due to temperature and quantity derating values) and to prevent excessive voltage drop and pulling tension due to long conduit/conductor lengths.

B. Minimum Conduit Size (Unless Noted Otherwise):

1. Above Grade: 3/4 inch. (The use of 1/2 inch would be allowed for installation conduit to individual light switches, individual receptacles and individual fixture whips from junction box.)

2. Below Grade 5' or less from Building Foundation: 1 inch.

3. Below Grade More than 5' from Building Foundation: 1 inch.

C. Conduit sizes shall change only at the entrance or exit to a junction box, unless specifically noted on the drawings.

3.2 CONDUIT ARRANGEMENT

A. In general, conduit shall be installed concealed in walls, in finished spaces and where possible or practical, or as noted otherwise. In unfinished spaces, mechanical and utility areas, conduit may run either concealed or exposed as conditions dictate and as practical unless noted otherwise on drawings. Installation shall maintain headroom in exposed vicinities of pedestrian or vehicular traffic.

B. Conduit shall not share the same cell as structural reinforcement in masonry walls.

C. Conduit runs shall be routed as shown on large scale drawings. Conduit routing on drawings scaled 1/4"=1'-0" or less shall be considered diagrammatic, unless noted otherwise. The correct routing, when shown diagrammatically shall be chosen by the Contractor based on information in the contract documents, in accordance with manufacturer's written instructions, applicable codes, the NECA's "Standard of Installation", in accordance with recognized industry standards, and coordinated with other contractors.

D. Contractor shall adapt his work to the job conditions and make such changes as required and permitted by the Architect/Engineer, such as moving to clear beams and joists, adjusting at columns, avoiding interference with windows, etc., to permit the proper installation of other mechanical and/or electrical equipment.

E. Contractor shall cooperate with all Contractors on the project. He shall obtain details of other Contractor's work in order to ensure fit and avoid conflict. Any expense due to the failure of This Contractor to do so shall be paid for in full by him. The other trades involved as directed by the Architect/Engineer shall perform the repair of work damaged as a result of neglect or error by This Contractor. The resultant costs shall be borne by This Contractor.

3.3 CONDUIT SUPPORT

A. Conduit runs installed above a suspended ceiling shall be properly supported. In no case shall conduit rest on the suspended ceiling construction, nor utilize ceiling support system for conduit support.

B. Conduit shall not be supported from ductwork, water, sprinkler piping, or other non-structural members, unless approved by the Architect/Engineer. All supports shall be from structural slabs, walls, structural members, and bar joists, and coordinated with all other applicable contractors, unless noted otherwise.

C. Conduit shall be held in place by the correct size of galvanized one-hole conduit clamps, two-hole conduit straps, patented support devices, clamp back conduit hangers, or by other means if called for on the drawings.

D. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

E. Spring-steel conduit clips specifically designed for supporting single conduits or tubing may be used in lieu of malleable-iron hangers for 1" and smaller raceways serving lighting and receptacle branch circuits above accessible ceilings and for securing raceways to slotted channel and angle supports.

F. Group conduits in parallel runs where practical and use conduit racks or trapeze hangers constructed of steel channel, suspended with threaded solid rods or wall mounted from metal channels with conduit straps or clamps. Provide space in each rack or trapeze for 25% additional conduits.

G. Do not exceed 25 lbs. per hanger and a minimum spacing of 2'-0" on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2'-0" spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Supports for metallic conduit shall be no greater than 10 feet. A smaller interval may be used if necessitated by building construction, but in no event shall support spans exceed the National Electrical Code requirements. Conduit shall be securely fastened within 3 feet of each outlet box, junction box, device box, cabinet, or fitting.

J. Supports of flexible conduit shall be within 12 inches of each outlet box, junction box, device box, cabinet, or fitting and at intervals not to exceed 4.5 feet.

K. Supports for non-metallic conduit shall be at sufficiently close intervals to eliminate any sag in the conduit. The manufacturer's recommendations shall be followed, but in no event shall support spans exceed the National Electrical Code requirements.

L. Where conduit is to be installed in poured concrete floors or walls, provide concrete-tight conduit inserts securely fastened to forms to prevent conduit misplacement.

M. Finish:

1. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.

2. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1" of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6'-6" of finish floor and presents potential injury to personnel.

3.4 CONDUIT INSTALLATION

A. Conduit Connections:

1. Shorter than standard conduit lengths shall be cut square using industry standards. The ends of all conduits cut shall be reamed or otherwise finished to remove all rough edges.

2. Metallic conduit connections in slab on grade installation shall be sealed and one coat of rust inhibitor primer applied after the connection is made.

3. Where conduits with tapered threads cannot be coupled with standard couplings, then approved split or Erickson couplings shall be used. Running threads will <u>not</u> be permitted.

4. Install expansion/deflection joints where conduit crosses structure expansion/seismic joints.

B. Conduit terminations for all low voltage wiring shall have nylon bushings installed on each end of every conduit run.

C. Conduit Bends:

1. Use a hydraulic one-shot conduit bender or factory elbows for bends in conduit 2" in size or larger. All steel conduit bending shall be done cold; no heating of steel conduit shall be permitted.

2. All bends of rigid non-metallic conduit (RNC) shall be made with the manufacturer's approved bending equipment. The use of spot heating devices will not be permitted (i.e. blow torches).

3. A run of conduit shall not contain more than the equivalent of four (4) quarter bends (360°), including those bends located immediately at the outlet or body.

4. Provide product submittals, per specifications, on slip sleeves and/or gutters to the Engineer for approval prior to purchase and installation.

5. Rigid non-metallic conduit (RNC) runs longer than 100 feet or runs which have more than two 90° equivalent bends (regardless of length) shall use rigid steel factory elbows for bends.

6. Use conduit bodies to make sharp changes in direction (i.e. around beams).

D. Conduit Placement:

1. Conduit shall be mechanically continuous from source of current to all outlets. Conduit shall be electrically continuous from source of current to all outlets, unless a properly sized grounding conductor is routed within the conduit. All metallic conduits shall be bonded per the National Electrical Code.

2. Route exposed conduit and conduit above suspended ceilings (accessible or not) parallel/perpendicular to the building structural lines, and as close to building structure as possible. Wherever possible, route horizontal conduit runs above water and steam piping.

3. Route conduit through roof openings provided for piping and ductwork where possible. If not provided or routing through provided openings is not possible, route through roof jack with pitch pocket. Coordinate roof penetrations with other trades.

4. Conduits, raceway, and boxes shall not be installed in concealed locations in metal deck roofing or less than 1.5" below bottom of roof decking.

5. Avoid moisture traps where possible. Where unavoidable, provide a junction box with drain fitting at conduit low point.

6. All conduits through walls shall be grouted or sealed into openings. Where conduit penetrates firewalls and floors, seal with a UL listed sealant. Seal penetrations with intumescent caulk, putty, or sheet installed per manufacturer's recommendations. All materials used to seal penetrations of firewalls and floors shall be tested and certified as a system per ASTM E814 Standard for fire tests or through-penetration fire stops as manufactured by 3M or approved equal.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN MASONRY OR EXTERIOR WALLS UNDER THIS DIVISION. A QUALIFIED MASON AT THE EXPENSE OF THIS CONTRACTOR SHALL REPAIR ALL OPENINGS TO MATCH EXISTING CONDITIONS.

8. Seal interior of conduit at exterior entries, air handling units, coolers/freezers, etc., and where the temperature differential can potentially be greater than 20°F, to prevent moisture penetration. Seal shall be placed where conduit enters warm space. Conduit seal fitting shall be a drain/seal, with sealing compound, equal to O-Z/Gedney type EYD.

9. No conduits are allowed in concrete on metal deck unless expressly approved in writing by the Structural Engineer.

10. Do not route conduits across each other in slabs on grade.

11. Rigid non-metallic conduit (RNC) shall be installed when material surface temperatures and ambient temperature are greater than 40°F.

12. Where rigid non-metallic conduit (RNC) conduit is used below grade, in a slab, below a slab, etc., a transition to rigid galvanized steel or PVC-coated steel conduit shall be installed before conduit exits earth. The metallic conduit shall extend a minimum of 6" into the surface concealing the non-metallic conduit.

13. Contractor shall provide suitable mechanical protection around all conduits stubbed out from floors, walls or ceilings during construction to prevent bending or damaging of stubs due to carelessness with construction equipment.

14. Contractor shall provide a polypropylene pull cord with 2000 lbs. tensile strength in each empty conduit (indoor and outdoor), except in sleeves and nipples.

3.5 CONDUIT TERMINATIONS

A. Where conduit bonding is indicated or required in the contract documents, the bushings shall be a grounding type sized for the conduit and ground bonding conductor as manufactured by O-Z/Gedney, Appleton, Thomas & Betts, Burndy, Regal, or approved equal.

B. Conduits with termination fittings shall be threaded for one (1) lock nut on the outside and one (1) lock nut and bushing on the inside of each box.

C. Where conduits terminate in boxes with knockouts, they shall be secured to the boxes with lock nuts and provided with approved screw type tinned iron bushings or fittings with plastic inserts.

D. Where conduits terminate in boxes, fittings, or bodies with threaded openings, they shall be tightly screwed against the shoulder portion of the threaded openings.

E. Conduit terminations to all motors shall be made with flexible metallic conduit (FMC), unless noted otherwise. Final connections to roof exhaust fans, or other exterior motors and motors in damp or wet locations shall be made with liquidtight flexible metallic conduit (LFMC). Motors in hazardous areas, as defined in the National Electrical Code, shall be connected using flexible conduit rated for the environment.

F. Rigid non-metallic conduit (RNC) conduit shall be terminated using fittings and bodies produced by the manufacturer of the conduit, unless noted otherwise. Prepare conduit as per manufacturer's recommendations before joining. All joints shall be solvent welded by applying full even coat of plastic cement to the entire areas that will be joined. Turn the conduit at least a quarter to one half turn in the fitting and let the joint cure for 1-hour minimum or as per the manufacturer's recommendations.

G. All conduit ends shall be sealed with plastic immediately after installation to prevent the entrance of any foreign matter during construction. The seals shall be removed and the conduits blown clear of any and all foreign matter prior to any wires or pull cords being installed.

3.6 UNDERGROUND CONDUIT INSTALLATION

A. Conduit Connections:

1. Conduit joints in a multiple conduit run shall be staggered at least one foot apart.

B. Conduit Bends (Lateral):

1. Conduits shall have long sweep radius elbows instead of standard elbows wherever special bends are indicated and noted on the drawings, or as required by the manufacturer of the equipment or system being served.

C. Conduit Elbows (vertical):

1. Minimum steel elbow radiuses shall be 30 inches for primary conduits (>600V) and 18 inches for secondary conduits (<600V). Increase radius, as required, based on pulling tension calculation requirements.

D. Conduit Placement:

1. Conduit runs shall be pitched a minimum of 4" per 100 feet to drain toward the terminations. Duct runs shall be installed deeper than the minimum wherever required to avoid any conflicts with existing or new piping, tunnels, etc.

2. For parallel runs, use suitable separators and chairs installed not greater than 4' on centers. Band conduit together with suitable banding devices. Securely anchor conduit to prevent movement during concrete placement or backfilling.

3. Before the Contractor pulls any cables into the conduit he shall have a mandrel 1/4" smaller than the conduit inside diameter pulled through each conduit and if any concrete or obstructions are found, the Contractor shall remove them and clear the conduit. Spare conduit shall also be cleared of all obstructions.

4. Conduit terminations in masonry pull boxes, or masonry walls shall be with malleable iron end bell fittings.

5. All spare conduits not terminated in a covered enclosure shall have its terminations plugged as described above.

6. Conduit shall be installed a minimum of 24" below finished grade, unless otherwise noted on the drawings or elsewhere in these specifications.

7. All non-metallic conduit installed underground outside of a slab shall be rigid.

E. Horizontal Directional Drilling:

1. Entire drill path shall be accurately surveyed, with entry and exit stakes placed and coordinated with other contractors. If using a magnetic guidance system, entire drill path shall be surveyed for any surface geo-magnetic variations or anomalies.

2. Any utility locates within 20 feet of the bore path shall have the exact location physically verified by hand digging or vacuum excavation. Restore inspection holes to original condition after verification.

F. Raceway Seal:

1. Where a raceway enters a building or structure, it shall be sealed with a sealing bushing or duct seal to prevent the entry of liquids or gases. Seal must be compatible with conductors and raceway system. Spare or unused raceway shall also be sealed.

3.7 CONDUIT INSTALLATION SCHEDULE

A. In the event the location of conduit installation represents conflicting installation requirements as specified in the following schedule, a clarification shall be obtained from the Architect/Engineer. If This Contractor is unable to obtain a clarification as outlined above, concealed rigid galvanized steel conduit installed per these specifications and the National Electrical Code shall be required.

B. The following schedule shall be adhered to unless they constitute a violation of applicable codes or are noted otherwise on the drawings. The installation of RMC conduit will be permitted in place of any and all conduit specified in this schedule.

1. Dry Mechanical Spaces:

a. Exposed:

1) Panel feeders, etc.: EMT.
2) Branch Circuits (lighting, receptacles, controls, etc.): EMT.

b. Concealed: EMT.

2. Wet or Damp Locations: RMC Conduit.

3. Finished Spaces: Concealed EMT.

4. In or Under Slabs on Grade or Site Conduits:

a. Within 5' from the Perimeter of a Building Foundation: RMC conduit with a minimum of 3" thickness between the surface of the concrete and the nearest conduit. Concrete to be doweled into the foundation.

b. 5' or Greater from the Perimeter of a Building Foundation: RNC.

c. Under Roads, Drives, and Vehicle Traveled Ways: Schedule 40 or Schedule 80 RNC.

5. Interior Locations:

a. Exposed: EMT conduit.

b. Concealed: EMT.

END OF SECTION

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Nameplates and tape labels
B. Wire and cable markers
C. Conduit labeling
D. Conduit color coding
E. Conductor color coding
F. Power distribution equipment labeling

1.2 REFERENCES

A. ANSI C2 – National Electrical Safety Code

B. NFPA 70 – National Electrical Code

C. ANSI A13.1 – Standard for Pipe Identification

D. ANSI Z535.4 – Standard for Product Safety Signs and Labels

PART 2 - PRODUCTS

2.1 ELECTRICAL IDENTIFICATION PRODUCTS

A. Colored Adhesive Marking Tape for banding Raceways, Wires, and Cables: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch to 2 inches in width.

B. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letter.

C. Underground Plastic Markers: Bright colored continuously printed plastic ribbon tape of not less than 6 inches wide by 4 mil thick, printed legend indicating type of underground line, manufactured for direct burial service. Tape shall contain a continuous metallic wire to allow location with a metal detector.

D. Brass or aluminum Tags: 2" by 2" by .05-inch metal tags with stamped legend, punched for fastener.

E. Indoor/Outdoor Number and Letters: Outdoor grade vinyl label, minimum of 3/4" high x 9/16" wide, with acrylic adhesive designed for permanent application in severe indoor and outdoor environments.

2.2 NAMEPLATES AND SIGNS

A. Engraved, Plastic-Laminated Labels, Signs and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 square inches, or 8 inches in length; 1/8 inch thick for larger sizes. Labels shall be punched for mechanical fasteners. Engraving legend shall be as follows:

1. Black letters on white face for normal power.

2. White letters on green face for grounding.

B. Baked–Enamel Signs for interior Use: Preprinted aluminum signs, punched, or drilled for fasteners, with colors, legend, and size required for application. Mounting ¼" grommets in corners.

C. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with .0396 inch galvanized-steel backing: and with colors, legend, and size required for application. Mounting ¼" grommets in corners.

D. Safety Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations used in electrical identification work with corresponding designations specified or indicated. Install numbers, lettering, and colors as required by code.

B. Install identification devices in accordance with manufacturer's written instruction and requirements of NEC.

C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work. All mounting surfaces shall be cleaned and degreased prior to identification installation.

D. Identify Junction, Pull and Connection Boxes: Labeling shall be 3/8-inch Kroy tape or permanent magic marker (color coded), neatly hand printed.

E. Circuit Identification: Tag or label conductors as follows:

1. Multiple Power or Lighting Circuits in Same Enclosure: Where multiple branch circuits are terminated or spliced in a box or enclosure, label each conductor with source and circuit number.

2. Multiple Control Wiring and Communication/Signal Circuits in Same Enclosure: For control and communications/signal wiring, use wire/cable marking tape at terminations in wiring boxes, troughs, and control cabinets. Use consistent letter/number conductor designations throughout on wire/cable marking tape.

3. Match identification markings with designations used in panelboards shop drawings, Contract Documents, and similar previously established identification schemes for the facility's electrical installations.

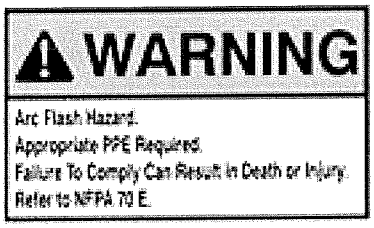
F. Apply warning, caution and instruction signs as follows:

1. Install warning, caution or instruction signs where required by NEC, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

G. Apply circuit/control/item designation labels of engraved plastic laminate for pushbuttons, pilot lights, alarm/signal components, and similar items, except where labeling is specified elsewhere.

H. Install labels parallel to equipment lines at locations as required and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

I. Install ARC FLASH WARNING signs on all panelboards. Sign at a minimum shall contain:



J. Underground Electrical Lines: For exterior underground power lines, install continuous underground plastic line marker located directly above line at 6 to 8 inches below grade. Where width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches overall, use a single marker.

3.2 CONDUIT AND EXPOSED CABLE LABELING

A. Conduit Identification: Pre-printed, flexible, self-adhesive vinyl labels with legend at 20 foot intervals to identify all conduits run exposed or located above accessible ceilings. Conduits located above non-accessible ceiling or in floors

and walls shall be labeled within 3 feet of becoming accessible. Labels for multiple conduits shall be aligned. Use the following colors

1. 600 Volts and Below Normal: White letters on black background indicating feeder identification and voltage.

2. Temperature Control: White or black letters on blue background.

3. Grounding: White letters on green background indicating "GROUND" and equipment and designation.

B. Blank conduit ends or outlet boxes for future extension of system shall have permanent identification marker indicating purpose of conduit or box and where the raceway originated.

3.3 BOX LABELING

A. All junction, pull, and connection boxes shall be identified as follows:

1. For power and lighting circuits, indicate system voltage and identity of contained circuits ("120V, 1LA1-3,5,7").

3.4 CONDUCTOR COLOR CODING

A. Color coding shall be applied at all panels, switches, junction boxes, pull boxes, vaults, manholes etc., where the wires and cables are visible and terminations are made. The same color coding shall be used throughout the entire electrical system, therefore maintaining proper phasing throughout the entire project.

B. All wires and cables, 6 AWG or larger, used in motor circuits, main feeders, sub-main feeders and branch circuits, shall be coded by the application of plastic tape. The tape shall be 3-M, Plymouth or Permacel, in colors specified below. The tape shall be applied at each conductor termination with two 1-inch tape bands at 6-inch centers. Contractor option to use colored cabling in lieu of the tape at each end for conductor 6 AWG to 500 KCM.

C. Wire and cables smaller than 6 AWG shall be color coded by the manufacturer.

D. Colored cable ties shall be applied in groups of three ties of specified color to each conductor at each terminal or splice point starting 3 inches from the termination and spaced at 3- inches centers. Tighten to a snug fit, and cut off excess length.

E. Conductors shall be color coded as follows:

1. 208Y/120 Volt, 4-Wire:

   a. A-Phase – Black
   b. B-Phase – Red

c. C-Phase – Blue
d. Neutral – White
e. Ground Bond – Green

3.5 POWER DISTRIBUTION EQUIPMENT IDENTIFICATION

A. Provide identification on the front of all power distribution equipment, such as panelboards, etc. The identification material shall be engraved plastic-laminated labels. Text shall be a minimum of 1/4" high, Swiss 721 Bold.

B. Labeling shall include:

1. Equipment type and contract documents designation of equipment.
2. Voltage of the equipment.
3. Name of the upstream equipment and location of the upstream equipment if it is not located within sight.

> DISTRIBUTION PANEL DP-H1
> 480Y/277V
> FED FROM SWITCHBOARD "SB-1" (LOCATED IN MAIN ELECTRIC ROOM)

C. A separate nameplate for the service entrance equipment shall be labeled with the MAXIMUM AVAILABLE FAULT CURRENT and DATE of calculation given on the one-line diagram.

D. Distribution panelboards and switchboards shall have each overcurrent protection device identified with name and location of the load being served ("AHU-1 LOCATED IN PENTHOUSE 1").

E. Branch panelboards shall be provided with typed panel schedules upon completion of the project. Existing panelboards shall have their existing panel schedules typed, with all circuit changes, additions or deletions also typed on the panel schedules. A copy of all panel schedules for the project shall be turned over as part of the O&M Manuals. Refer to 26 05 00 for other requirements.

END OF SECTION

SECTION 26 09 33

LIGHTING CONTROL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Lighting control panels, control station and programming software.
B. Line and low voltage, occupancy sensors, photo sensors and related power supplies.
C. Communications wiring and interfaces related to lighting controls.

1.2 RELATED WORK

A. Section 01 91 00 - Commissioning
B. Section 23 09 00 - Energy Management Control System (ECMS)

1.3 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code
B. FCC Rules and Regulations, Part 15, Subpart J - Radio Frequency Interference
C. UL Standard 916 Energy Management Equipment

1.4 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Submit product data showing dimensions and ratings for relays, dimmers, power supplies, control stations, sensors, and accessory modules.

C. Submit control riser diagram of the specific project system configuration.

D. Submit typical wiring diagrams for all components including, but not limited to, dimmer panels, dimmers, relay panels, relays, low voltage switches, occupancy sensors, control stations, and communication interfaces.

E. Submit manufacturer sensor coverage patterns applicable to this project. For areas requiring multiple sensor devices for appropriate coverage, submit specific manufacturer approved sensor layout as an overlay directly on the project drawings, either in print or approved electronic form.

1.5 PROJECT RECORD DOCUMENTS

A. Submit project record documents under provisions of Section 26 05 00.

B. Accurately record location of control panels, stations, switches, power supplies, and control enclosures. Include description of switching and circuiting arrangements.

1.6 OPERATION AND MAINTENANCE DATA

A. Submit emergency, operation, and maintenance data under provisions of Section 26 05 00. Data shall also include the following:

1. Schedule for routine maintenance, inspection, and calibration of all lighting control devices and system components.

2. Complete narrative describing intended operation and sequence for each control scenario and system component, updated to reflect all changes resulting from commissioning of systems. Narrative shall indicate recommended settings for devices where applicable.

3. Replacement part numbers for all system components.

B. Identify installed location and labeling for each luminaire controlled by automated lighting controls.

C. Submit software operating and maintenance manuals, program software backup on compact disc or compatible media with data files, device address list, and a printout of software application and graphic screens, where applicable.

1.7 EXTRA STOCK

A. Provide extra stock under provisions of Section 26 05 00.

B. Relay Modules: Five (5) percent of quantity installed. Minimum of two (2) of each size and type.

C. Daylight Sensors and Photocells: One (1) of each configuration and type.

D. Occupancy Sensors and Power Supply/Relay: Five (5) percent of quantity installed. Minimum of two (2) of each configuration and type.

1.8 QUALITY ASSURANCE

A. Manufacturers shall be regularly engaged in the manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than five (5) years.

B. All components and assemblies are to be factory pre-tested prior to delivery and installation.

C. Comply with NEC as applicable to electrical wiring work.

D. Comply with applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.

E. Panels and accessory devices are to be UL listed under UL 916 Energy Management Equipment. Panels and accessories used for control of life safety and critical branch circuits shall be listed under UL 924 Emergency Lighting and Power Equipment.

F. All assemblies are to be in compliance with FCC emissions standards specified in Part 15 Subpart J for Class A applications.

1.9 COMMISSIONING

A. Commissioning of a system or systems specified in this section is part of the construction process. Documentation and testing of these systems, as well as training of the Owner's operation and maintenance personnel, is required in cooperation with the Owner's Representative and the Commissioning Agent. Project closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure. Refer to Division 1 for detailed commissioning requirements.

B. This project will have selected building systems commissioned. The Contractor is responsible to execute commissioning. The commissioning process, equipment, and systems to be commissioned are defined in Division 1. A third-party Commissioning Agent will direct the commissioning process.

C. The Contractor shall notify the Commissioning Agent, Engineer and Owner's Representative ten (10) working days prior to scheduled commissioning date.

D. The commissioning process requires meeting attendance. Refer to Division 1 for meeting requirements.

E. System shall be functionally tested by a factory-authorized engineer. All loads shall be tested live for continuity and freedom from defects, and all control wiring shall be tested for continuity and connections prior to energizing the system.

1.10 WARRANTY

A. Manufacturer shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of two (2) years from date of commissioning.

B. Occupancy, vacancy, daylight sensors and controls shall have a five (5) year warranty from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acceptable manufacturers as listed below meet the qualifications as outlined within this specification. Contractor is responsible for verifying that selected manufacturer is capable of furnishing the complete system as specified herein.

1. LC&D
2. GreenGate
3. Synergy

2.2 CENTRAL LIGHTING CONTROL FEATURES AND FUNCTIONS

A. Lighting control system shall be designed to allow control of lighting and associated systems via switches, occupancy sensors, daylight sensor, and astronomical/time-of-day scheduling controls.

B. Clock events shall be activated by calendar schedule, by day type and/or specific day programming, including every day, weekday, weekend, S, M, T, W, H, F, S, Holiday. Clock events shall also be activated by astronomical events, which will compensate for daylight savings time and will have programmable setback periods relative to sunrise and sunset.

C. Channels for grouping relays shall be provided, each with an associated pushbutton to toggle the channel ON/OFF and a terminal block for a separate dry contact input. Any number of relays in the panel can be assigned to each channel, with overlapping allowed. Channels shall be set up via communication line communications and networking. Each channel pushbutton shall provide LED status indication. The panel shall also have the ability to assign functions to relays independently of the channels. Panels shall be addressable with DIP switches or other local means to set panel address.

D. System shall accept any type of switch input, including momentary or maintained.

E. System shall support by relay or zone the "blink warning" function. System shall be capable of flashing lights Off/On prior to the lights being turned Off. The warning interval time between the flash and the final lights off signal shall be definable for each zone. Occupant shall be able to override any scheduled Off sweep using local wall switches within the occupied space. Occupant override time shall be locally and remotely programmable and shall not exceed two (2) hours.

F. System shall provide temporary override conditions for each relay or dimmer so that lights can always be turned on.

G. All programming and scheduling shall be able to be done locally at the master lighting control panel and remotely via the Internet. Remote connection to the

lighting control system shall provide real-time control and real-time feedback. Lighting control system shall be able to be monitored by and take commands from a remote PC. At any time, should the remote PC go offline, all system programming uploaded to the lighting control system shall continue to operate as intended.

H. All programs, schedules, time of day, etc, shall be held in non-volatile memory for a minimum of two (2) years at power failure. At restoration of power, lighting control system shall implement programs required by current time and date.

I. Lighting control shall be configured to allow individual users to turn lighting on and off with their PCs. Software shall be written for Windows operating system, with web page as the display and ActiveX controls that can be accessed through an Internet browser. Include at least three levels of password protection.

2.3 COMPONENTS

A. Lighting Control Panels:

1. Cabinets and Enclosures: NEMA 1 enclosure sized to accept required relays and dimmers. Surface-mounted cover as required, with captive screws in a hinged, lockable configuration.

2. Interior: Interiors shall be provided with installed and tested relays or dimming and interface modules.

3. Power Supply: Transformer assembly including internal overcurrent protection with automatic reset and metal oxide varistor protection against power line spikes.

4. Panel shall be provided with expansion space for ease of installation of other system components (e.g., timeclock and/or photocell controller). Terminals shall be included in the interior to accept a communication line for the connection of communication line switches to the system, or to allow a communication line to be run between multiple panels for network communications.

B. Switch Interface: Control panels shall be designed to provide eight (8) dry maintained or momentary contact input or output signals for interface to fire alarm, security, building controls and other associated systems.

C. Ethernet Connection Port - Interoperability:

1. System shall include an Ethernet port for connection to Owner's TCP/IP network, permitting remote management of system from local or wide area network connection.

2. Contractor shall coordinate with technology vendor to provide an Ethernet connection to (LCP) panel as specified by manufacturer.

D. Relays: Momentary-pulsed mechanically latching contactors with plug-in connector. Relays shall have mechanically latching contacts with single moving part design for improved reliability. Relays shall have the following characteristics:

1. Coil:

   a. Magnetically held, momentary coil activation (50 milliseconds).
   b. 2.2 VA max per relay to allow up to 20 relays to be controlled in parallel using class 2 wiring.
   c. Split coil - 1/2 for ON, 1/2 for OFF.

2. Power Contacts:

   a. 20 amp tungsten and NEMA electronic ballast rated.
   b. Rated for 50,000 ON/OFF cycles at full load.
   c. Support #10 - #14 AWG solid or stranded wire.
   d. 120 and 277 volt rated.
   e. 30 VAC Isolated contacts for status feedback and pilot light indication.
   f. FCC approved for commercial and residential use.

2.4 CONTROL INTERFACES

A. Manual Switches, Stations and Plates:

1. Switches: Modular, momentary pushbutton, with addressable capabilities.

2. Switch shall digitally communicate with the lighting control system to control the luminaires assigned to that switch. The switch shall be able to actuate the functions based on the described sequence of operation and intended functions.

3. Preset/fader stations shall operate using programmable buttons and/or faders as indicated on drawings.

4. Integral Pilot Light or LED: Indicate that controls are active or powered by being on continuously when powered or when pushbuttons are actuated.

5. Labeling of buttons and faders shall be engraved/screened by manufacturer, using approved text returned with shop drawing submittals.

6. Manufacturer shall supply backboxes for all surface-mounted stations and flush-mounted half-gang stations.

7. Station control components shall be designed to operate standard default or custom system functions. Components shall operate default functions unless re-assigned via direct or network connection. Function options include: preset selection, manual mode, record mode, station lockout, raise/lower, macro, cue, and room join/separate.

B. Wall Plates: Match those scheduled in the General Electrical Equipment Schedule for materials, finish, and color. Use multi-gang plates if more than one switch is indicated at a location.

F. Network Photo Sensors:

1. Networked sensors shall serve as a measurement device that provides ongoing read-back of sensor settings to lighting control network or daylight controller. Refer to the sequence of operation for actions to be triggered at various read-back values.

2. Sensor shall be ceiling- or wall-mounted for range and viewing angle, meeting application requirements as outlined in the sequence of operation. Outdoor sensors shall be wet location listed and designed specifically for outdoor use.

3. Output signal from sensor shall be linear with light level. Network connection permits remote query of sensor status and value via control software. All adjustments, with the exception of sensor range, shall be made via network connection.

4. Sensor shall have adjustable sensitivity range to permit use as scheduled.

2.5 CENTRAL LIGHTING CONTROL SOFTWARE

A. Lighting control software shall be an application software package that facilitates offline control system configuration. Software shall enable a computer to be connected online with lighting control panels for real-time preset selection, editing and recording.

B. Software shall provide graphic user interface of a visual representation of a specific area or zone indicating status of load(s). Software shall include astronomical timeclock, scheduling, holiday override and override functions. Software shall support the programming of station and component electronic security. Software shall include zone and device naming.

C. Graphic pages shall be designed to the Owner's selection from manufacturer's sample templates.

D. Access for remote monitoring, system support and diagnostics shall be provided via Ethernet port and web access or RS232 port and dial-up.

E. System Control Software: Windows-based control software shall permit users to interface with control panel components via Ethernet connection.

1. Software shall permit configuration of control stations, zones, and device parameters. Each device shall have an independent address on the system network, allowing individual programming of each device from the workstation.

2. Software shall allow user to manage astronomical and scheduled events via an intuitive calendar interface. Multiple overlapping calendar events can be active at any time, with varying start, stop, fade and sequencing parameters.

3. Software shall serve as a programming interface only. Once user completes updating, all scheduling and other data is stored at each panel for execution. This provides redundancy for lighting controls in the event of failure of any given network component.

2.6 LOCAL DAYLIGHTING CONTROLS

A. Standalone Interior Photo Sensors:

1. Sensor shall detect changes in ambient light level and provide triggering of lighting groups in area based on sequence of operation.

2. Sensor shall be configurable via DIP switches at device or via handheld wireless remote programming unit. Settings shall include:

   a. Ambient sensitivity range between 1 and 1,000 foot-candles.
   b. Time delay of 5 to 300 seconds.
   c. Trigger setpoints with deadband adjustment.

3. Sensor shall provide on/off setpoints in quantity as specified on drawings, and as shown in the sequence of operation.

4. Sensor shall be ceiling- or wall-mounted for range and viewing angle meeting application requirements as outlined in the sequence of operation.

5. Output signal from sensor shall be linear with light level.

B. Indoor Daylight Controller:

1. Daylight controller shall provide one (1) channels of switching open loop control.

2. Daylight sensor shall have with range and viewing angle to meet requirements of sequence of operation and construction documents.

3. Provide separate adjustable setting for each channel. Each channel shall have its own adjustable setpoint, deadband, ON delay, OFF delay, and load shed point.

4. The controller shall interface to occupancy sensors, energy management systems and low voltage wall switches where indicated.

C. Standalone Exterior Photo Sensors:

1. Sensor shall be within a weatherproof enclosure, with design operation in temperatures of -30°F to +130°F. Sensor shall have threaded stem for box mounting, with knuckle to permit aiming of receptor after installation.

2. Sensor shall contain an integral switching contactor rated for 277 volt operation, with loads of up to 1,800 VA. Contacts shall be configured for zero-crossing closure to provide 100,000 cycle minimum operation.

3. Sensor shall detect changes in daylight levels to provide triggering of exterior lighting equipment based on the sequence of operation.

4. Sensor shall be field configurable at the device or via handheld wireless remote controller. Configurable settings shall include:

   a. Ambient sensitivity range of 5 to 1,500 foot-candles.
   b. Adjustable setpoint.
   c. Deadband adjustment by percentage of setpoint.
   d. Time delay of up to five minutes.

5. Sensor shall be equipped with a lens cover that can be applied for system testing during daylight conditions.

2.7 INDOOR OCCUPANCY AND VACANCY SENSORS

A. General Description: Wall- or ceiling-mounting, solid-state units with a separate power supply/relay unit.

1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied, with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes. Vacancy sensors require a manual switch operation to turn lights on and off, with a time delay for turning lights off when unoccupied.

2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.

3. Relay Unit: Dry contacts rated for 20 A ballast load at 120 and 277 VAC, for 13 amp tungsten at 120 VAC, and for 1 hp at 120 VAC. Power supply to sensor shall be 24 V dc, 150-mA, Class 2 power source as defined by NFPA 70.

4. Mounting:

a. Sensor: Suitable for mounting in any position on a standard outlet box.

b. Relay: Externally mounted through a 1/2-inch knockout in a standard electrical enclosure. Mount relay above ceiling near entry door to room or area.

c. Time Delay and Sensitivity Adjustments: Recessed and concealed.

5. Indicator: LED to show when motion is being detected during testing and normal operation of the sensor.

6. Bypass Switch: Override the on function in case of sensor failure.

B. PIR Type: Ceiling mounting; detect occupancy by sensing a combination of heat and movement in area of coverage.

1. With daylight filter and lens to afford coverage applicable to space to be controlled.

2. Detection Coverage (Room): Detect occupancy anywhere in an area based on hand motion.

3. Detection Coverage (Corridor): Detect occupancy based on a half-step motion.

C. Ultrasonic Type: Ceiling mounting. Detect occupancy by sensing a change in pattern of reflected ultrasonic energy in area of coverage.

1. Crystal controlled with circuitry that causes no detection interference between adjacent sensors.

2. Detection Coverage (Room): Detect occupancy anywhere in an area based on hand motion.

3. Detection Coverage (Corridor): Detect occupancy based on a half-step motion.

D. Dual-Technology Type: Ceiling mounted. Detect occupancy by using a combination of PIR and ultrasonic or acoustic detection methods in area of coverage. Particular technology or combination of technologies that controls on and off functions shall be selectable in the field by operating controls on unit.

1. Sensitivity Adjustment: Separate for each sensing technology.

2. Detection Coverage:

a. Task Areas: Detect occupancy anywhere in an area based on hand motion.

b. Circulation Areas: Detect occupancy anywhere in an area based upon half-step walking motion.

E. Mask sensors where necessary to prevent nuisance switching from adjacent areas.

2.8 CONDUCTORS AND CABLES

A. Control Wiring:

1. Where installed with the line-voltage wiring, control wiring shall be copper conductors not smaller than No. 16 AWG with insulation voltage rating and temperature rating equal to that of the line-voltage wiring, complying with Division 26 Section 26 05 13 "Wire and Cable."

2. Tap conductors to switches or relays: Stranded copper conductors of 16 AWG or solid 16 or 18 AWG with insulation rating equal to that of the line-voltage wiring.

3. Tap conductors to dimming ballasts: Solid copper conductors of 18 AWG with insulation voltage rating equal to that of the line-voltage wiring and insulation temperature rating not less than 90°C.

4. Network cabling as required by manufacturer.

B. Splices and Taps:

1. Tapping or wire trap connectors shall be used to splice all Class 1 and Class 2 control wiring. Twist-on, wire-nut type connectors are not allowed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Verify field dimensions and coordinate physical size of all equipment with the architectural requirements of the spaces into which they are to be installed. Allow space for adequate ventilation and circulation of air.

C. Verify that required utilities are available, in proper location, and ready for use.

D. Beginning of installation means installer accepts existing conditions.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings.

B. All wiring shall be installed in conduit. Class II low voltage control wiring may be open wiring and shall maintain 150 mm (6 inch) spacing from electronic ballast and other RFI/EMI sources.

C. All branch load circuits shall be live tested before connecting the loads to the lighting control panel.

3.3 SUPPORT SERVICES

A. System Startup:

1. Manufacturer shall provide factory authorized technician to confirm proper installation and operation of all system components.

B. Testing:

1. System shall be completely functional tested by a factory-authorized technician. All loads shall be tested live for continuity and freedom from defects, and all control wiring shall be tested for continuity and connections prior to energizing the system components.

2. Programming of initial zones, schedules, lighting levels, control station groups, and sensor settings shall be performed by a factory-authorized technician. Lighting Control Matrices shown on drawings shall serve as a basis for programming, However, all final decisions regarding groups and schedules shall be at the direction of the Owner. The following procedures shall be performed at a minimum:

a. Confirm occupancy sensor placement, sensitivity, and time delay settings to meet specified performance criteria.

b. Confirm daylight sensor placement, sensitivity, deadband, and delay settings to meet specified performance criteria.

c. Confirm that schedules and time controls are configured to meet specified performance criteria and Owner's operating requirements.

C. Training:

1. Manufacturer shall provide competent factory-authorized technician to train Owner personnel in the operation, maintenance and programming of the lighting control system. Submit training plan with notification seven (7) days prior to proposed training dates.

2. Training duration shall be no less than four (4) hours.

D. Documentation:

1. Manufacturer shall provide system documentation including:

a. System one-line showing all panels, number and type of control stations and sensors and communication line.

b. Drawings for each panel showing hardware configuration and numbering.

c. Panel wiring schedules.

d. Typical diagrams for each component.

3.4 SYSTEM COMMISSIONING

A. Contractors' tests shall be scheduled and documented in accordance with the commissioning requirements. Refer to Section 01 09 00, General Commissioning, for further details.

B. System verification testing is part of the commissioning process. Verification testing shall be performed by the Contractor and witnessed and documented by the Commissioning Agent. Refer to Section 01 09 00, General Commissioning, for system verification tests and commissioning requirements.

C. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative. The instruction shall be scheduled in coordination with the Owner's Representative after submission and approval of formal training plans. Refer to Section 01 09 00, General Commissioning, for Contractor training requirements.

END OF SECTION

SECTION 26 20 00

SERVICE ENTRANCE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Arrangement with Utility Company for permanent electric service
B. Underground service entrance

1.2 SYSTEM DESCRIPTION

A. System Voltage: 208Y/120 volts, three phase, four-wire, 60 Hertz.

1.3 QUALITY ASSURANCE

A. Utility Company: Madison Gas and Electric.

B. Contact: Chris Erickson.

C. Install service entrance in accordance with Utility Company's rules and regulations.

1.4 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 26 05 00.

B. Submit Utility Company prepared drawings (if applicable).

PART 2 - PRODUCTS

2.1 METERING EQUIPMENT

A. Meter: Furnished by the Utility Company.

B. Meter Base: Furnished by the Contractor, as approved by the Utility Company. (Manufacturers: Milbank, Superior, Duncan, or Anchor).

C. Exterior Mounted Metering Cabinets: Furnished and installed by the Contractor to Utility Company's specifications. Conduit and conductors between metering cabinets and instrumentation shall be by the Contractor. Connections as required by the Utility Company.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Make arrangements with Utility Company to obtain permanent electric service to the Project.

B. Primary distribution equipment and pad-mounted transformers shall be furnished and installed by the Utility Company.

C. Primary conductors shall be furnished, installed, and terminated by the Utility Company. Primary conduit shall be furnished and installed by the Contractor, as shown on the drawings, to the Utility Company's requirements.

D. Underground: Install service entrance conduits stubbed from service entrance equipment to floor. Utility Company will provide service entrance conduits below grade and connect service conductors to transformer secondary lugs.

E. Concrete Pad for Transformer: Furnished and installed by the Utility Company.

END OF SECTION

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Service and distribution panelboards

B. Lighting and appliance branch circuit panelboards

1.2 REFERENCES

A. NEMA AB 1 - Molded Case Circuit Breakers

B. NEMA PB 1 - Panelboards

C. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less

D. NEMA PB 1.2 - Application Guide for Ground-fault Protective Devices for Equipment

E. UL 67 - Panelboards

1.3 SUBMITTALS

A. Submit shop drawings for equipment and component devices under provisions of Section 26 05 00.

B. Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

1.4 SPARE PARTS

A. Keys: Furnish four (4) each to the Owner.

PART 2 - PRODUCTS

2.1 RATINGS

A. Definitions:

1. Series rated equipment shall be defined as equipment that can achieve a required UL AIC rating with an upstream device such as a main breaker or a combination of devices to meet or exceed a required UL AIC rating. All

series rated equipment shall have a permanently attached nameplate indicating that device rating must be maintained. See Section 26 05 53 for additional requirements.

2. Fully rated equipment shall be defined as equipment where all devices in that equipment shall carry a minimum of the AIC rating that is specified.

B. The panelboards for this project shall be fully rated unless otherwise specifically noted in the Drawings or Specifications.

2.2 MAIN AND DISTRIBUTION PANELBOARDS

A. Panelboards: NEMA PB 1; type as shown on the drawings.

B. Enclosure: NEMA PB 1; Type 1.

C. Provide cabinet front with concealed trim clamps and hinged door with flush lock. Finish in manufacturer's standard gray enamel.

D. Provide panelboards with aluminum bus, ratings as scheduled on the drawings. Provide copper ground bus in all panelboards.

E. Minimum Integrated Short Circuit Rating: As shown on the drawings.

F. Molded Case Circuit Breakers: Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole.

2.3 BRANCH CIRCUIT PANELBOARDS

A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB 1; circuit breaker type.

B. Enclosure: NEMA PB 1; Type 1.

C. Provide cabinet front with door-in-door construction, concealed hinge, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

D. Provide panelboards with copper bus, ratings as scheduled on the drawings. Provide copper ground bus in all panelboards.

E. All multiple-section panelboards shall have the same dimensional back box and cabinet front size.

F. Minimum Integrated Short Circuit Rating: As shown on the drawings.

G. Molded Case Circuit Breakers: Bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on the drawings. Do not use tandem circuit breakers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panelboards plumb as indicated on the drawings in conformance with NEMA PB 1.1.

B. Height: 6 feet to handle of highest device.

C. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each branch circuit panelboard. Label each circuit with the type of load and the name and number of the area served. Revise directory to reflect circuit changes required to balance phase loads.

3.2 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.

B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wall switches
B. Receptacles including GFCI and weather resistant
C. Device plates and box covers

1.2 REFERENCES

A. DSCC W-C-896F – General Specification for Electrical Power Connector

B. FS W-C-596 - Electrical Power Connector, Plug, Receptacle, and Cable Outlet

C. FS W-S-896 - Switch, Toggle

D. NEMA WD 1 – General Color Requirements for Wiring Devices

E. NEMA WD 6 – Wiring Devices – Dimensional Requirements

F. UL 498 – Standard for Attachment Plugs and Receptacles

G. UL 943 – Standard for Ground Fault Circuit Interrupters

1.3 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

1.4 QUALITY ASSURANCE

A. Provide similar devices from a single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency to Authorities Having Jurisdiction and marked for intended use.

C. Comply with NFPA 70.

1.5 COORDINATION

A. Receptacles for Owner Furnished Equipment: Match plug configurations.

B. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

A. Refer to General Electrical Equipment Schedule for configuration and ratings.

2.2 RECEPTACLES

A. Refer to General Electrical Equipment Schedule for configuration and ratings.

B. Back wired devices shall be complete with eight holes that are screw activated with metal clamps for connection to #12 or #10 copper conductors.

C. Side wired devices shall have four binding screws that are undercut for positive wire retention.

D. Ground Fault Circuit Interrupter (GFCI) receptacles shall comply with the 2006 edition of U.L. 943 requiring increased surge immunity, improved corrosion resistance, improved resistance to false tripping and diagnostic indication for miswiring if the line and load conductors are reversed during installation.

2.3 CORD AND PLUG SETS

A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.

1. Cord: Rubber-insulated, stranded copper conductors, with Type SOW-A jacket; with green insulated grounding conductor and equipment rating ampacity plus a minimum of 30 percent.

2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection, FS/UL listed.

2.4 WALL PLATES

A. Decorative coverplate shall be as shown on the drawings.

B. Weatherproof coverplates shall be as shown on the drawings.

C. Plate securing screws shall be metal with head color matching the wall plate finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install light switches and convenience receptacles at elevations indicated in the General Installation Notes on the contract drawings.

B. Install specific-use receptacles at heights shown on the contract drawings. Install devices level, plumb, and square with building lines. Coordinate installation of adjacent devices of separate systems with common mounting heights, including lighting, power, systems, technology, and temperature control device rough-ins.

C. Install receptacles vertically with ground slot up or where indicated on the drawings, horizontally with ground slot to the left.

D. Install jumbo size plates for outlets installed in masonry walls.

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

F. Install devices and wall plates flush and level.

G. Install nameplate identification to receptacle cover plates indicated. Identification shall identify panel name and circuit number. Refer to Specification Section 26 05 53 - Electrical Identification.

H. Test receptacles for proper polarity, ground continuity and compliance with requirements.

END OF SECTION

SECTION 26 43 00

SURGE PROTECTION DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This section describes materials and installation requirements for low voltage surge protection devices (SPD) for the protection of all AC electrical circuits. SPD equipment to be installed at designated service entrance equipment.

1.2 REFERENCES

A. ANSI/IEEE C62.33 – IEEE Guide on Testing of MOV components

B. ANSI/IEEE C62.41 - IEEE Recommended Practice on Surge Voltage in Low Voltage AC Power Circuits

C. ANSI/IEEE C62.45 - IEEE Guide on Surge Testing for Equipment Connected to Low Voltage AC Power Circuits

D. ANSI/UL 1449 Third Edition (Version 3.0) - UL Standard for Safety for Surge Protective Devices

E. CBEMA – Computer Business Equipment Manufacturers Association

F. IEC 664 – International Engineering Consortium, Standard for Clamping Voltage

G. National Electrical Code 285 - Surge Protection Devices

H. NFPA 70 - National Electrical Code

I. UL 67 – Listed for Internal Panelboard Transient Voltage Surge Suppressors

J. UL 96A – Devices listed as approved for secondary surge arrestors (VZCA)

K. UL 248-1 - Fusing

L. UL 1283 – Electromagnetic Interference Filters, Fifth Edition

1.3 QUALITY ASSURANCE

A. The specified unit shall be designed, manufactured, tested and installed in compliance with the above references. The unit shall be "Listed by Underwriters Laboratories" to UL 1449.

B. Each unit shall be designed and manufactured by a qualified manufacturer of power conditioning equipment. The qualified manufacturer must have been engaged in the design and manufacturer of such products for a minimum of five years.

1.4 SUBMITTALS

A. Shop Drawings: Should include device dimensions, mounting requirements including wire size and over-current protection device rating, nameplate nomenclature, electrical ratings, short circuit current rating, and test results as indicated below under "Testing, Warranty and Life Expectancy" as provided by an independent test lab or a UL certified test lab for the category of suppression device specified using the appropriate IEEE test wave. Product data sheets with installation instructions for each size and type of device are required. Shop drawings submitted without the testing data as required by section this section will be rejected.

B. Fuse information: Provide fuse information if required for operation. Include size, manufacturer, time-current chart responses to UL 1449 testing requirements, maximum surge protection capability per mode and phase as limited by the fuse, and verification of repetitive surge protection device operation without system degeneration greater than 10%.

1.5 TESTING, WARRANTY AND LIFE EXPECTANCY

A. Manufacturer must provide independent testing on repetitive capability and maximum surge current rating of service entrance suppressor units. This shall be performed at a nationally recognized lab not affiliated with the manufacturer.

1. Single pulse surge current capacity: Single pulse surge current tested in a mode at rated surge currents.

2. Single pulse surge current capacity test: An initial UL 1449 defined 1.2 x 50μs, 6000V open circuit voltage waveform and an 8 x 20μs, 500A and 3kA short circuit current waveform shall be applied to benchmark the unit's suppression voltage (VPR).

3. A single 8 x 20μs waveform pulse of maximum rated surge current per mode shall then be applied. To complete the test, another UL 1449 surge shall be applied to verify the unit's survival. Survival is achieved if the suppression voltage measured from the two UL1449 surges does not vary by more than 10%.

B. Minimum Repetitive Surge Current Capacity:

1. Service entrance suppressor units should be tested repetitively at an independent lab to verify repetitive capacity.

2. Minimum Repetitive Surge Current Capacity Test:

a. An initial UL 1449 surge defined as 1.2 x 50µs, 6000V open circuit voltage waveform and an 8 x 20µs, 500A and 3kA short circuit current waveform shall be applied to benchmark the unit's suppression voltage.

b. A repetitive number of ANSI/IEEE C62.41.2-2002 (Category C3) surges, defined as a 1.2 x 50µs 10kV or 20kV open circuit voltage waveform and an 8 x 20µs 10,000A short circuit current waveform, shall then be applied at one-minute intervals.

c. To complete the test, another UL 1449 surge shall be applied to verify the unit's survival.

3. Survival is achieved if the suppression voltage (VPR) does not vary by more than 10%.

4. Proof of such testing shall be the test log generated by the surge generator.

C. Provide UL 1449 classification white sheet pages indicating the VPR (voltage protection rating) for each SPD unit submitted for this product using the 6kV/3kA combination wave surge.

D. Warranty: Ten (10) years. Includes workmanship, installation and programming.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS – REFER TO GENERAL ELECTRICAL EQUIPMENT SCHEDULE ON DRAWINGS

2.2 DESCRIPTION

A. General: The unit shall provide transient voltage suppression, surge current diversion and high-frequency noise attenuation, when connected in parallel to the facilities distribution system. The unit MCOV shall not be less than 115% of the nominal system voltage. Operating frequency shall be for a 60 Hz system. The unit shall provide protection in all normal modes for "wye" and "delta" systems. The short circuit current rating shall be the larger of the listed value on the drawings or as required by the equipment protected.

2.3 RATINGS

A. Service Entrance Suppressors – NonModular:

1. For 120/208 volt, 3 phase, 4 wire, type 2, category C3 unit.

a. Surge current capacity: 80,000/160,000 amps per protection mode/phase

b. Nominal Discharge Current: 20 kA.

c. Mounting: Refer to the drawings.

d. Voltage Protection Rating: Refer to requirements below.

e. Components: Minimum component size of 20mm metal oxide varistors (MOV).

f. Components: Minimum component size of modular 20mm metal oxide varistors (MOV).

B. Voltage Protection Rating:

1. Protection modes and UL 1449 voltage protection rating for surge suppression units per each mode (L-N, L-L, L-G, and N-G as appropriate).

a. 120/208 Volt, 3 phase, 4 wire. 700 Volt L-N, L-G, N-G and 1200 Volt L-L

C. EMI/RFI Noise Rejection or Filtering:

1. Each unit shall include a UL1283 first order, high-frequency filter for noise filtering between 10 KHz and 100 MHz.

D. Indication:

1. Each unit shall include solid-state indicators with externally mounted LED visual status indicators that indicate on-line status of each protection mode of the unit.

2. Each unit shall include an audible alarm with silencing switch to indicate when protection has failed.

3. Provide each service entrance type unit(s) with a transient counter.

4. Each unit shall contain form "C" contacts for remote indication of an alarm status.

E. Fuses:

1. Use fuses recommended by the manufacturer to satisfy repetitive UL 1449 operation of the surge suppression unit.

2. Fuses shall be rated 200, 000 AIC minimum interrupting capacity.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine equipment for size and type of surge protection device to be used to ensure physical compatibility.

B. Inspect surge protection device for any signs of physical damage due to shipping or handling before installing surge protection device.

3.2 INSTALLATION

A. Mounting Location:

1. The unit shall be installed as close as practical to the panel secondary lugs in accordance with applicable national/Local Electrical Codes and the manufacturer's recommended installation instructions. Connect the unit to the panel using a conduit nipple. Flush mount the unit in the front of the switchboard. Mount unit directly across from the breaker or disconnect serving it.

B. Connections:

1. Conductors from the protected bus to the unit shall not be any longer than necessary avoiding unnecessary bends. The conductor leads shall be twisted together and as short as possible. Connection shall be with mechanical lugs for each phase, neutral, and ground if applicable. Contractor shall provide wire and circuit breakers sized per the approved manufacturer's requirements. Maximum lead length from protected bus to surge protection device shall be per manufacturer's requirements, but no greater than 5'-0".

2. The surge protection unit shall be isolatable from the electrical distribution system via 3 pole circuit breaker mounted in the switchboard/panelboard. Single phase 120 volt units shall be hardwired without a disconnecting means.

3. Neutral and ground shall not be bonded together at secondary panelboard locations.

C. General:

1. Check unit for proper operation of protection and indication under start-up.

2. Check unit to ensure all MOVs for each mode of protection are operational. Verify integral fuse links are operational and have not melted.

3. Surge suppression devices shall not be installed ahead of the main service disconnect(s).

4. Install fuses in all fuse holders and fused disconnects internal to the surge protection unit. Use fuses recommended by the manufacturer to satisfy repetitive UL 1449 operation of the surge suppression unit. External fusing of the surge protection device is not allowed.

5. Coordinate location of surge protection device to allow adequate clearances for maintenance.

6. Manufacturer service phone number shall be posted on the front of the surge protection device.

END OF SECTION

SECTION 26 51 00

LIGHTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Interior luminaires and accessories
B. Exterior luminaires and accessories
C. Lamps
D. Ballasts
E. Poles

1.2 REFERENCES

A. ANSI C78.377-2008 – Specifications for the Chromaticity of Solid State Lighting Products

B. ANSI C82.4 - High-Intensity Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type)

C. ANSI C82.6 - Ballasts for HID Lamps - Method Measurement

D. ANSI C82.11 - High Frequency Fluorescent Lamp Ballasts

E. ANSI C82.77-2002 – Standard for Harmonic Emission Limits and Related Power Quality Requirements for Lighting Equipment

F. IEEE C2 - National Electrical Safety Code

G. NEMA LE 2 - H-I-D Lighting System Noise Criterion (LS-NC) Ratings

H. UL 935 – Standard for Fluorescent Lamp Ballasts

1.3 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Submit product data sheets for luminaires, lamps, ballasts, drivers and poles. Include complete product model number with all options as specified.

C. Submit lens product data, dimensions and weights if not included in product data sheet submittal.

D. Include outline drawings, support points, weights, and accessory information for each luminaire type.

E. Submit utility rebate forms, where offered at project location, with rebate items completed.

F. LED luminaire submittals shall include photometric report per IESNA LM-79-08 for the latest generation system being furnished, including independent testing laboratory name, report number, date, luminaire model number, input wattage, luminaire, and light source specifications. Manufacturer origin of LED chipset and driver shall be submitted.

G. For all LED luminaires specified as dimmer controlled, submit dimmer device data that is approved by manufacturer of submitted luminaire and that Contractor proposes to furnish and install. Contractor is responsible for verifying that installed dimming controls are compatible with and approved by the luminaire manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site. Store and protect under provisions of Section 26 05 00.

B. Protect luminaire finishes, lenses, and trims from damage during storage and installation. Do not remove protective films until construction cleanup within each area is complete.

C. Handle site lighting poles carefully to prevent breakage and damage to finish.

1.5 EXTRA STOCK

A. Provide extra stock under provisions of Section 26 05 00.

B. Fluorescent Lamps: Five (5) percent of quantity installed. Minimum of two (2) of each size and type, and maximum of one (1) case (30 lamps).

C. HID Lamps: Five (5) percent of quantity installed. Minimum of two (2) of each size and type, and maximum of one (1) case (12 lamps).

D. Lenses: Three (3) percent of quantity installed, minimum of one (1) of each size and type.

E. Ballasts and LED Drivers: One (1) percent of quantity installed, minimum of one (1) of each size and type.

1.6 WARRANTY

A. Fluorescent ballasts shall carry a three-year warranty from date of Substantial Completion. HID ballasts shall carry a two-year warranty from date of Substantial Completion. Dimming electronic ballasts shall have a five year warranty.

B. Emergency fluorescent ballast shall have a three-year warranty from date of substantial completion.

C. Fluorescent lamps shall carry a two-year warranty from date of Substantial Completion.

D. HID lamps shall carry a one-year warranty from date of Substantial Completion.

E. Light emitting diode (LED) light engines and drivers shall have a five-year warranty from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 INTERIOR LUMINAIRES AND ACCESSORIES - GENERAL

A. Lensed Fluorescent Troffers: Provide hinged frames with latches and 0.125 inch thick virgin acrylic lenses. Prismatic lenses shall have depth of no less than 0.080", KSH12 or equal. Other lenses as scheduled.

B. Recessed Ceiling Luminaires: Confirm ceiling type and furnish trim and accessories necessary to permit proper installation in each ceiling system. Where fire-rated ceiling assemblies are specified, furnish and install listed enclosures around luminaires that maintain the system rating.

C. Parabolic Luminaires: Louvers shall be anodized low iridescent specular aluminum with mitered corners and interlocking construction. Provide ballast covers to separate inboard/outboard lamps when multi-level switching is indicated, so light does not spill into unlit cells.

D. Suspended Luminaires: Coordinate power feed and suspension canopies with ceiling type and architectural RCP for proper fit and location. Ensure finished installations are plumb and level at elevations specified.

E. Self-Powered Exit Signs: Stencil face, 6 inch high letters, directional arrows as indicated, universal mounting type as indicated on the drawings. One-piece, self-contained unit with sealed, maintenance-free nickel cadmium battery, automatic charger and electronic circuitry. Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

F. HID Luminaires: Pre-wired, with integral ballast.

G. Painted reflector surfaces shall have a minimum reflectance of 90%. Painted after fabrication.

2.2 EXTERIOR LUMINAIRES AND ACCESSORIES - GENERAL

A. Listed for wet or damp location as scheduled. Fountain and pool luminaires shall be listed for submersible location to meet depth specified.

B. Provide low temperature ballasts or LED drivers, with reliable starting to -20°F.

C. In-grade luminaires shall have lamp/optic separation to prevent surface temperature from exceeding 115°F. Compartment separation of wire entry and control gear/lamp chamber.

2.3 LIGHT EMITTING DIODE (LED) LUMINAIRE SYSTEMS

A. Light emitting diodes used in interior applications shall have a minimum color rendering index (CRI) of 80. Light emitting diodes used in exterior applications shall have a minimum color rendering index (CRI) of 70. Color temperature of the luminaires shall be as noted on the luminaire schedule.

B. LED chip arrays specified as color changing shall have chip colors as noted on the luminaire schedule.

C. LED chips shall be wired so that failure of one chip does not prohibit operation of the remainder of the chip array.

D. LED Driver:

1. Solid state driver with integral heat sink. Driver shall have overheat, short-circuit and overload protection, power factor 0.90 or above and maximum total harmonic distortion of 20%. Surge suppression device for all exterior luminaires.

2. Drivers shall have dimming capabilities as outlined in the luminaire schedule for each luminaire type.

3. Driver shall have a minimum of 50,000 hours rated life.

2.4 ACCEPTABLE MANUFACTURERS – LAMPS

MANUFACTURER	INCAND. HALOGEN	FLUORESCENT	COMPACT FLUOR.	INDUCTION	HID
Philips Lighting Company	X	X	X	X	X
Osram Sylvania	X	X	X	X	X
Venture Lighting International Inc.					X
GE Lighting	X	X	X		X
USHIO America, Inc.	X	X	X		X

A. Lamps used with dimming shall be verified for compatibility with dimmer manufacturer prior to ordering.

2.5 FLUORESCENT LAMPS

A. T-8 Type: Correlated color temperature (CCT) and Color Rendering Index (CRI) as scheduled on the drawings. Lamps shall be reduced mercury type having credentials that pass the EPA 1990 Toxic Characteristics. Four-foot, 32-watt lamps shall be 3100 lumen extended performance type, with minimum 30,000-hour lamp life at three-hour starts.

B. Compact Fluorescent: Correlated Color Temperature (CCT) and a Color Rendering Index (CRI) as scheduled on the drawings.

C. Other Types: Correlated Color Temperature (CCT) and Color Rendering Index (CRI) as scheduled on the drawings.

2.6 HID LAMPS

A. Metal Halide HID Lamps: Clear, suitable for all burning positions. Pulse start lamps shall have a lumen maintenance factor of .75 or greater and a CRI of 65 or greater with color stability of +/- 100°K. Correlated Color Temperature (CCT) as scheduled on the drawings.

2.7 FLUORESCENT BALLASTS - GENERAL

A. All ballasts shall have a Class A sound rating, or better.

B. Ballast shall comply with EMI and RFI limits set by FCC (CFR 47 Part 18).

C. Linear fluorescent ballasts shall operate parallel circuit lamps that allow remaining lamps to maintain full output if companion lamps fail.

D. All fluorescent ballasts designed for operation of double-ended lamps or integral to a luminaire supplied by multi-wire branch circuits shall comply with disconnecting means as specified in NEC Article 410 and amendments thereto.

2.8 ACCEPTABLE MANUFACTURERS - FLUORESCENT ELECTRONIC BALLASTS

MANUFACTURER		PRS
A.	Advance	IOP
B.	GE	UltraStart
C.	MagnaTek/Universal	AccuStart Ultim8
D.	Osram/Sylvania	QuickTronic

2.9 FLUORESCENT ELECTRONIC BALLAST

A. Fluorescent Ballast: Shall meet UL Standard 935. Ballasts shall be PROGRAM RAPID START (PRS) type.

B. Ballasts operated by occupancy sensors shall be program rapid start type.

C. Ballasts shall meet applicable ANSI and IEEE standards regarding harmonic distortion and surge protection. The input current 3rd harmonic content shall not exceed 13% of the input current. The total harmonic distortion shall not exceed 10%.

D. Fluorescent ballasts shall conform to the performance criteria listed below:

1. Ballast factor as indicated on luminaire schedule.

2. Mean System Efficacy:

   a. Instant Start: $\geq$ 90 MLPW (T8)

   b. Program Start: $\geq$ 88 MLPW(T8); $\geq$ 87 MLPW(T5); $\geq$ 85 MLPW(T5HO)

E. Luminaires designed as multi-level switching shall have combination of 1, 2 or 3 lamp ballasts configured to allow switching of all inboard lamps as a group separate from outboard lamps in the room. Master/slave luminaire arrangement is preferred where practical. The Contractor shall verify ballast configuration to achieve switching shown.

F. The ballast must maintain constant high output through input voltage ranges of 90 to 145 volts for a 120V ballast (+/- 25%) and 200 to 320 volt for a 277V ballast (+/- 28%).

G. Ballast Requirements:

1. Current crest factor shall be no greater than 1.8 for F40 lamps and 1.7 for all other lamps.

2. The operating ambient temperature range shall be 50°F to 105°F.

3. Fluorescent ballasts shall operate at 20KHZ or higher, with no detectable lamp flicker.

4. Ballasts shall not be affected by lamp failure and shall yield normal lamp life.

5. Ballast power factor shall be greater than 90%.

6. Ballast shall be rated Class P and shall be thermally protected.

7. Program rapid start ballasts shall heat the filament prior to applying the starting voltage to the lamp, then remove lamp cathode heat in a sequence consistent with ANSI standard C82.11.

8. Cold weather ballast(s) must reliably start and operate lamps in ambient temperatures down to 0°F for the rated life of the lamps.

2.10 COMPACT FLUORESCENT BALLASTS

A. Fluorescent Ballast: ANSI C82.1; high power factor type, Class P with voltage rating matching branch circuit voltage. Ballast factor shall be .85 or greater.

B. Current crest factor shall be no greater than 1.7. Ballast shall have a Class A sound rating.

C. Ballast shall meet applicable ANSI and IEEE standards regarding harmonic distortion and surge protection. The total harmonic distortion for lamp wattage <26 watts shall not exceed 33%; all others shall not exceed 20%.

D. Ballast shall have lamp fault shut off circuitry to prevent starting of a faulty lamp.

E. Ballasts shall operate at a frequency of 20 KHz or higher with no detectable lamp flicker.

F. Cold weather ballast must reliably start and operate the lamp in ambient temperatures down to 0°F for the rated life of the lamp.

G. Manufacturer shall be one of the listed fluorescent electronic ballast acceptable manufacturers.

2.11 FLUORESCENT EMERGENCY BATTERY BALLASTS

A. One-piece, self-contained unit with high-temperature, maintenance-free nickel cadmium battery, charger, and electronic circuitry.

B. Charging indicator light to monitor charger and battery. Test switch and installation hardware.

C. UL listed for installation inside or on top of luminaire.

D. Minimum lumen output and number of lamps served as indicated on luminaire schedule.

2.12 HIGH INTENSITY DISCHARGE BALLASTS

A. HID Ballasts:

1. Comply with ANSI C82.4, C82.6 and C92.1.

2. Metal Halide: Lead-peaked auto-transformer - high power factor for lamps above 400 watts.

3. Metal Halide Pulse Start: Super constant wattage auto-transformer with igniter and a maximum crest factor of 1.6.

4. The ballast design center shall not vary more than ±5% from rated lamp watts for nominal line voltage and nominal lamp voltage.

5. With a nominal voltage "reference" lamp, the wattage regulation spread shall not exceed 20% for ±5% line voltage variation for high reactance auto-transformer - high power factor ballasts and 30% for ±10% line voltage variation for high power factor auto-regulator ballast.

6. Ballasts must reliably start and operate the lamp in ambient temperatures down to -20°F for the rated life of the lamp. The ballast primary current during starting for high reactance auto-transformer type ballasts may exceed the normal operating current by a factor of 1.5, for 250-1000 watt lamps. Auto-regulating type ballasts shall not exceed normal operating current.

7. High reactance autotransformer - high power factor ballasts shall be capable of sustaining lamp operation with a line voltage dip or sag of 20% for up to 4 seconds when operating a nominal voltage lamp with nominal line voltage applied to the ballast primary.

8. Auto-regulating high power factor ballasts shall be capable of sustaining lamp operation with a line voltage dip or sag of 40% for up to 4 seconds when operating a nominal voltage lamp with nominal line voltage applied to the ballast primary.

9. For high reactance auto-transformer - high power factor ballasts, the current crest factor shall not exceed 1.6 for ±5% line voltage variation, including lamp starting or from nominal lamp voltage through rated end of life lamp voltage.

10. For auto-regulating high power factor ballasts, the current crest factor shall not exceed 1.8 for ±10% line voltage variation, including lamp starting or from nominal lamp voltage through rate end of life lamp voltage.

11. For high reactance auto-transformer - high power factor ballasts, the line power factor of the lamp/ballast system shall not be below 90% for ±5% line voltage variation.

12. For auto-regulating high power factor ballasts, the line power factor of the lamp/ballast system shall not be below 90% for ±10% line voltage variation.

13. LS-NC Rating: NEMA LE 2; equal to or less than ratings listed in Table C-1.

2.13 LIGHTING POLES

A. Lighting poles to be provided by City of Madison. Coordinate Contractor pickup of poles with Dan Dettmann at Traffic Engineering.

B. Coordinate anchor bolt requirements with City of Madison Traffic Engineering.

C. Refer to standard "LB-1" City of Madison pole base detail (located at the end of this section).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Securely fasten luminaires to the ceiling framing member by mechanical means such as bolts, screws, rivets or listed clips identified for use with the type of ceiling framing members.

B. Install lamps in lamp holders of luminaires.

C. Support surface-mounted luminaires directly from building structure. Install luminaires larger than eight square feet (8 ft^2) or weighing more than 30 pounds independent of ceiling framing.

D. Support suspended or pendant mounted luminaires independent of ceiling grid with a minimum of two #12 gauge wires. Suspension assembly and anchors shall be capable of supporting 300 pounds dead load at each suspension point.

E. Install recessed luminaires to permit removal from below. Use plaster frames or install grid clips. Support luminaires independent of ceiling grid with a minimum of two (2) #12 gauge wires located on diagonal corners.

F. Adjust aimable luminaires to obtain lighting levels on objects and areas as directed to obtain desired lighting levels.

G. Parabolic louvers and other optical accessories shall remain in protective wraps or films until construction in area is complete and area has been cleaned.

H. Luminaire Pole Bases: Sized and constructed as indicated on the drawings. Project anchor bolts 2 inches minimum above base. Install poles plumb with double nuts for adjustment. Grout around pole anchor base. Refer to City of Madison "LB-1" base detail.

I. Use belt slings or non-chafing ropes to raise and set pre-finished luminaire poles.

3.2 LAMP SEASONING

A. Operate all fluorescent and HID lamps for 100 hours prior to requesting final observation. Operate dimming fluorescent lamps at 100% output during seasoning. Operate lamps for minimum 8 hour intervals during seasoning.

3.3 RELAMPING

A. Replace failed lamps at completion of work. Replacement of incandescent and other lamp burnouts after the warranty period starts shall be the responsibility of the final user.

3.4 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.

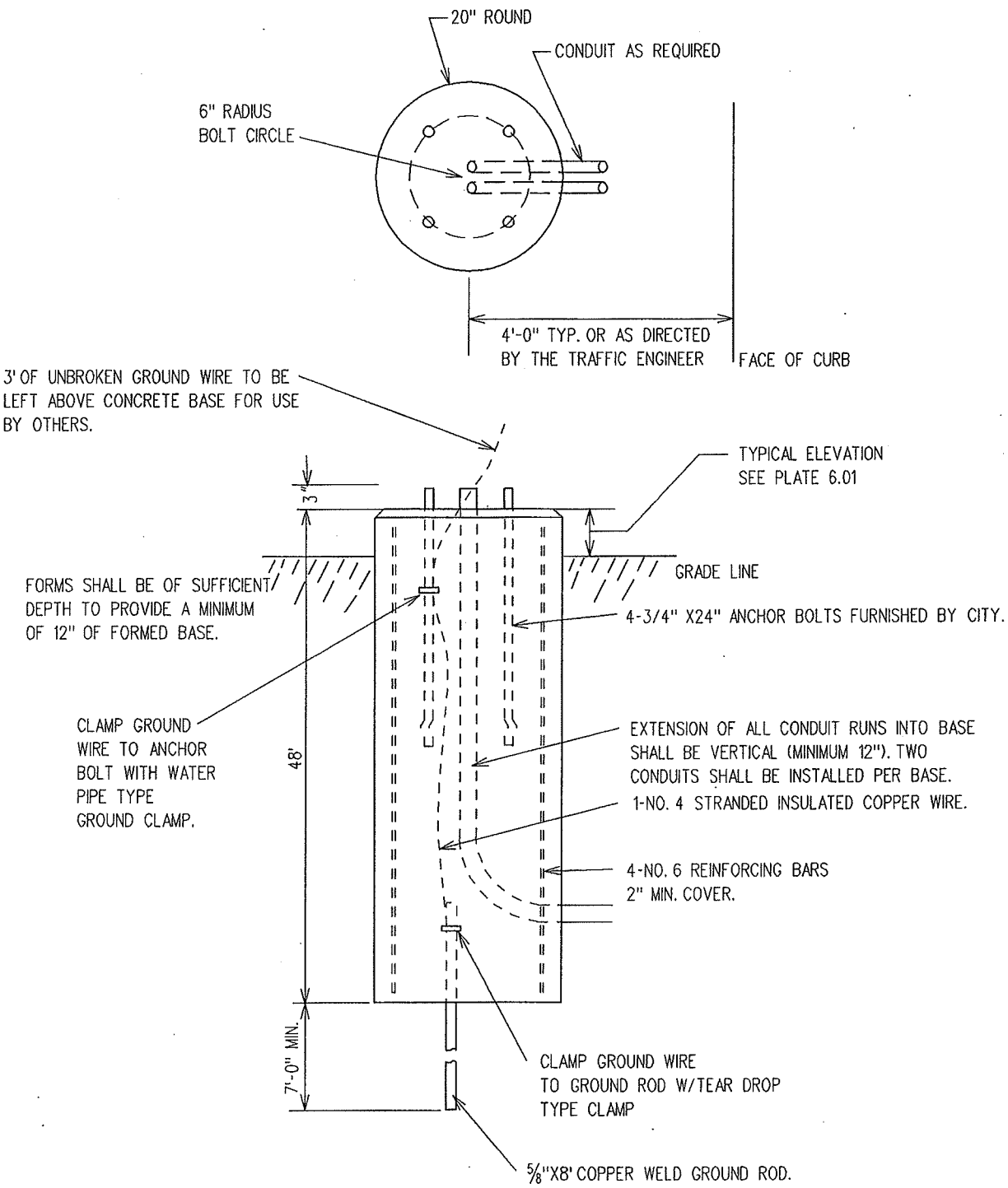
B. Touch up luminaire and pole finish at completion of work.

3.5 LUMINAIRE SCHEDULE

A. As shown on the drawings.

3.6 UTILITY REBATE

A. Submit utility rebate form to Owner with each rebate item information completed. Include all invoices and information required by utility.



2004

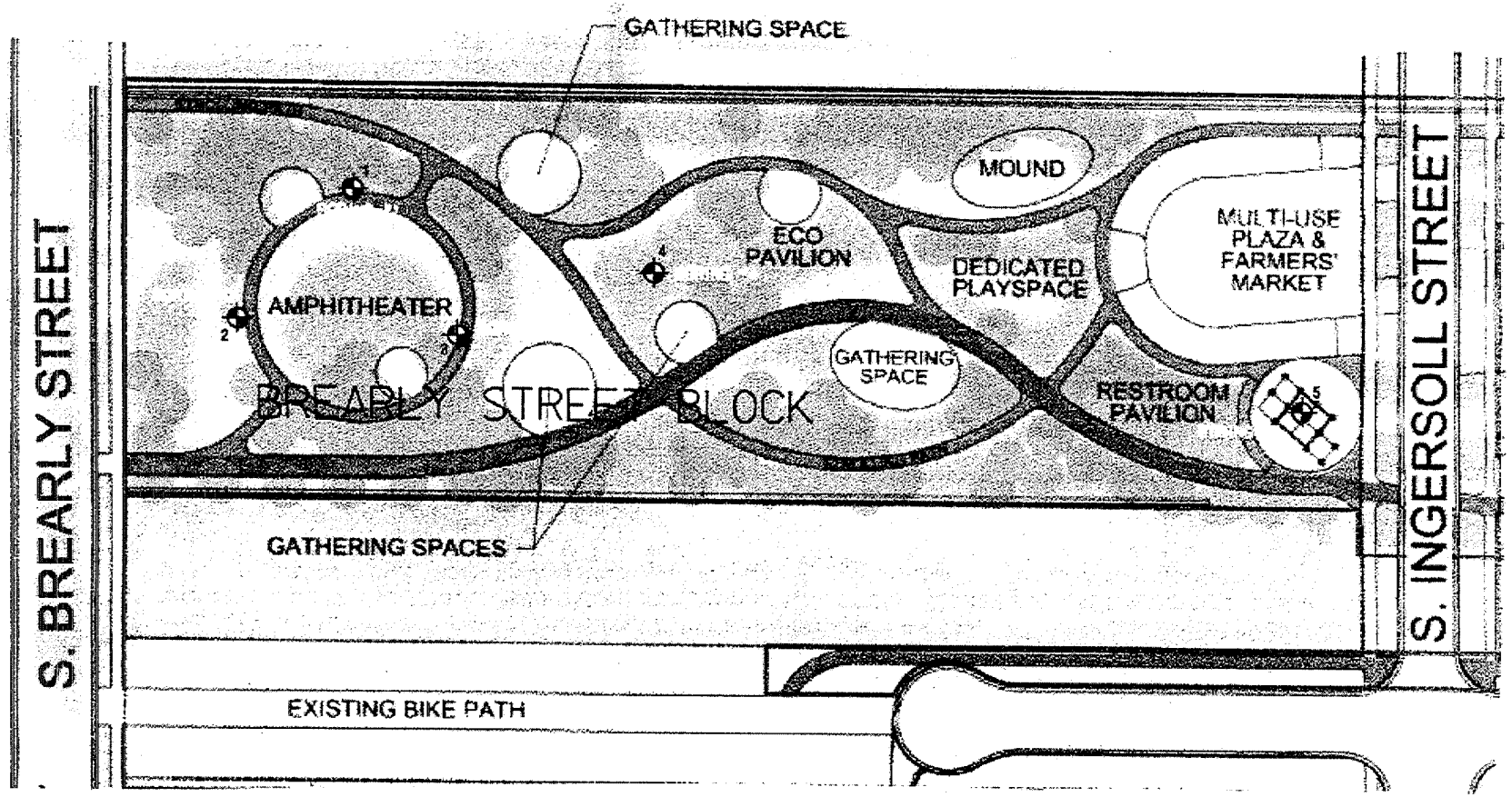
CITY OF MADISON
TRAFFIC ENGINEERING DIVISION

LB-1
BASE DETAIL

STANDARD DETAIL DRAWING 6.12

APPENDIX C
SOIL BORINGS

SOIL BORINGS – BREARLY STREET BLOCK.....H-65 - H-70
SOIL BORINGS – GREAT LAWN.....H-71 – H-87



Legend

Denotes Boring Location (approximate)

Notes

1. Soil borings performed by Badger State Drilling in December 2011

DWN: -	APP'D: MNS	Date: 12/11	C11054-41	[illegible] Inc.	SOIL BORING LOCATION PLAN Central Park – Brearly Street Block Madison, Wisconsin

CGC Inc.

LOG OF TEST BORING

Project: Central Park - Brearly Block
Location: Madison, Wisconsin

Boring No. 1
Surface Elevation (ft) *96.4
Job No. C11054-41
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	PID
						FILL: Dark Brown to Black Sand with Gravel, Silt and Clay					
1		15	M	6							
2		12	M	7		Buried Wood Debris Recovered in Sample 2					
					5						
3		10	M/W	4		Very Soft, Blue-Gray Mottled Lean CLAY	(<0.25)	25.3			
4		18	W	22		Medium Dense, Gray Fine to Medium SAND, Trace to Little Silt (SP/SP-SM)					
					10						
						Medium Stiff to Very Stiff, Gray Lean CLAY (CL)					
5		18	W	10			(1.0)	19.7			
					15						
6		18	W	12			(2.25)	21.5			
					20	End Boring at 20 ft Borehole backfilled with bentonite chips					
						*Elevation determined using an assumed datum of 100.0 ft referencing the top nut of a hydrant situated along E. Wilson Street between Ingersoll and Brearly					
					25	** Petroleum odor noted in Samples 3 and 4					
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling ____
Time After Drilling ____ ____ ____ 10 min.
Depth to Water ____ ____ ____ ▼
Depth to Cave in ____ 8.0'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/5/11 End 12/5/11
Driller Badger Chief BM Rig CME-55
Logger MC Editor ESF
Drill Method 2 1/4" HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park - Brearly Block

Location: Madison, Wisconsin

Boring No. 2
Surface Elevation (ft) *97.2
Job No. C11054-41
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	PID
						FILL: Brown Fine to Medium Sand, Some Silt and Gravel					
1		18	M	28							
2		18	M	21	5						
3		12	M/W	2		Soft to Medium Stiff, Blue-Gray Lean CLAY (CL)	(0.5)	25.4			
4		18	W	15	10	Medium Dense, Gray Fine to Medium SAND, Little to Some Silt and Gravel (SP/SP-SM)					
						Stiff to Very Stiff, Gray-Brown Lean CLAY (CL)					
5		18	W	13	15		(1.75)	22.6			
6		18	W	13	20		(2.25)	20.8			
						End Boring at 20 ft					
						Borehole backfilled with bentonite chips					
					25	*Elevation determined using an assumed datum of 100.0 ft referencing the top nut of a hydrant situated along E. Wilson Street between Ingersoll and Brearly					
						** Petroleum odor noted in Samples 3 and 4					
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 7'
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/5/11 End 12/5/11
Driller Badger Chief BM Rig CME-55
Logger MC Editor ESF
Drill Method 2 1/4" HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park - Brearly Block

Location: Madison, Wisconsin

Boring No. 3
Surface Elevation (ft) *97.2
Job No. C11054-41
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	PID
						FILL: Dark Brown to Black Sand with Gravel, Silt and Clay to 3 ft					
1		6	M	12							
						Brown Sand with Silt to 5.5 ft					
2		18	M/W	9	5						
						Medium Stiff, Blue-Gray Mottled Lean CLAY (CL)					
3		18	W	3			(0.75)	19.7			
						Loose, Gray Fine to Medium SAND, Trace to Little Silt (SP/SP-SM)					
4		18	W	7	10						
						Very Stiff, Gray Lean CLAY (CL)					
5		18	W	11			(2.5)	20.2			
					15						
						Loose to Medium Dense, Gray-Brown Sandy SILT (ML)					
6		18	W	10							
					20	End Boring at 20 ft					
						Borehole backfilled with bentonite chips					
						*Elevation determined using an assumed datum of 100.0 ft referencing the top nut of a hydrant situated along E. Wilson Street between Ingersoll and Brearly					
					25	** Petroleum odor noted in Samples 3 and 4					
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 5.0' Upon Completion of Drilling 7.5'
Time After Drilling
Depth to Water
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/5/11 End 12/5/11
Driller Badger Chief BM Rig CME-55
Logger MC Editor ESF
Drill Method 2 1/4" HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park - Brearly Block

Location: Madison, Wisconsin

Boring No. 4
Surface Elevation (ft) *97.2
Job No. C11054-41
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	PID
						FILL: Dark Brown to Black Sand with Gravel, Silt and Clay to 3 ft					
1		18	M	16							
						Brown Fine to Medium Sand, Some Silt and Gravel to 5.5 ft					
2		10	M	8							
					5						
						Medium Stiff, Blue-Gray Mottled Lean CLAY (CL)					
3		10	M	3			(0.75)				
						Loose, Gray Sandy SILT (ML)					
4		15	W	6							
					10						
						Stiff, Gray Lean CLAY (CL)					
5		18	M	14		Occasional Sand Partings	(1.75)				
					15						
6		18	M	11			(1.5)				
					20	End Boring at 20 ft Borehole backfilled with bentonite chips					
						*Elevation determined using an assumed datum of 100.0 ft referencing the top nut of a hydrant situated along E. Wilson Street between Ingersoll and Brearly					
					25	** Petroleum odor noted in Sample 3					
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 10'
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/5/11 End 12/5/11
Driller Badger Chief BM Rig CME-55
Logger MC Editor ESF
Drill Method 2 1/4" HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park - Brearly Block

Location: Madison, Wisconsin

Boring No. 5
Surface Elevation (ft) *95.7
Job No. C11054-41
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7807

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	PID
						2.5 in. Asphalt Pavement/8 in. Base Course					
1		18	M	7		FILL: Brown Sand with Silt, Clay and Gravel					
2		18	M	5	5	Stiff, Black Silty CLAY (CL) (Probable Buried Topsoil)	(1.25)				
3		18	M/W	10		Medium Stiff, Brown Lean CLAY, Little Sand (CL)	(0.75)				
4		18	W	11	10	Medium Dense, Brown Fine to Medium SAND, Little to Some Silt and Gravel, Scattered Cobbles (SP-SM/SM)					
5		8	W	40	15	Dense near 14 ft (Pushed Stone)					
6		18	W	22	20	End Boring Boring at 20 ft Borehole backfilled with bentonite chips and asphalt patch					
					25	*Elevation determined using an assumed datum of 100.0 ft referencing the top nut of a hydrant situated along E. Wilson Street between Ingersoll and Brearly					
					30						

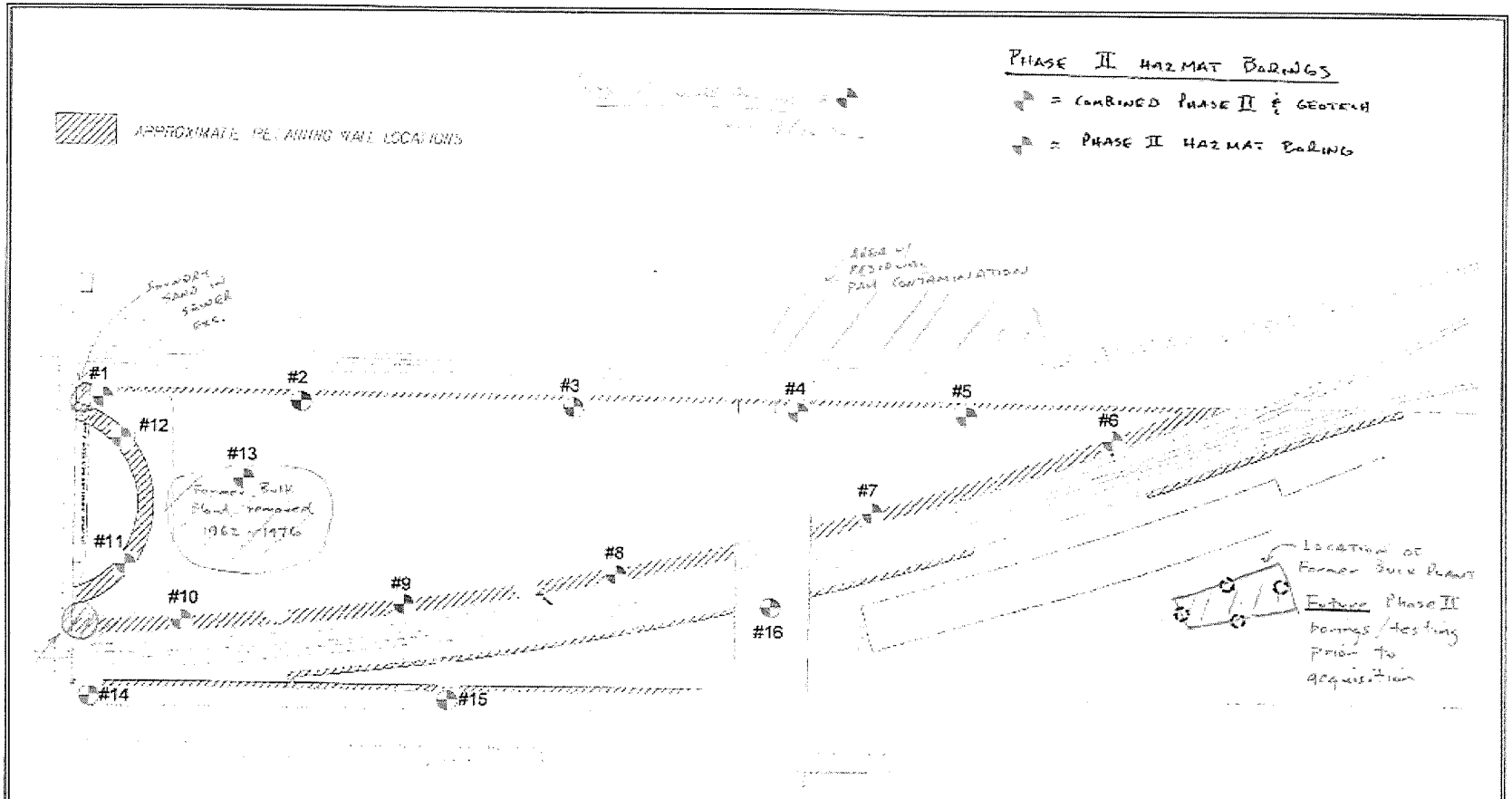
WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 7.5'
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/5/11 End 12/5/11
Driller Badger Chief BM Rig CME-55
Logger MC Editor ESF
Drill Method 2 1/4" HSA



Notes

1. Soil borings drilled by Badger State Drilling in May 2010

DWN: -	APP'D: MNS	Date: 06/10	C10041-3	GEC, Inc.	SOIL BORING LOCATION MAP Central Park Madison, Wisconsin

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 1
Surface Elevation (ft) 851.4
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7807

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qe) (tsf)	W	LL	PL	LI
					FILL: Mix of Clay, Sand, Gravel and Silt with Trace Cinders to 4 ft					
1	16	M	22							
2	12	M	6		Gray Sandy Clay to 5.5 ft	(1.0-1.5)				
				5						
					Very Loose to Loose Black Sedimentary PEAT, Trace Sand (PT)					
3	10	M	5				69.2			19.9
					Loose to Very Loose, Gray SILT with Alternating Lenses of Lean Clay and Sandy Silt (ML)	(0.5)				
4	18	W	4			(0.5)				
				10						
					Loose, Gray Sandy SILT (ML)					
5	18	W	9							
				15	End Boring at 15 ft					
					Borehole backfilled with bentonite chips					
				20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 11'
Time After Drilling 24 hrs
Depth to Water 11' ▽
Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 2
Surface Elevation (ft) 853.7
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Topsoil to 0.5 ft Brown Clay with Sand and Gravel to 2.5 ft					
1		12	M	26			(3.5)				
						Black and Brown Clay with Trace Sand and Wood Chips to 5 ft					
2		10	M	17			(1.75)				
					5	Brown Clay Layered with Tan Sand to 7.5 ft					
3		10	M	5							
						Medium Stiff, Gray/Brown Mottled Sandy Lean CLAY (CL)					
4		14	M	5			(0.7)				
					10	Dense, Light Brown Fine SAND, Trace to Little Silt (SP/SP-SM)					
5		14	W	33							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 13.5' Upon Completion of Drilling 13'
Time After Drilling 15 min
Depth to Water 9.5' ▼
Depth to Cave in 11.5'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

LOG OF TEST BORING

CGC Inc.

Project: Central Park
Location: Madison, Wisconsin

Boring No. 3
Surface Elevation (ft) 853.9
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft Brown Fine to Medium Sand, Some Silt and Gravel to 2.5 ft					
1		14	M	18							
						Brown Clay to 4.5 ft					
2		14	M	14			(2.5-3.0)				
					5	Black Foundry Sand to 5 ft Brown Silty Sand with Gravel and Clay to 7.5 ft					
3		10	M	4							
						Medium Stiff, Gray Brown Mottled Sandy Lean CLAY (CL)	(0.75)				
4		14	W	13							
					10	Medium Dense, Brown Fine SAND, Trace to Little Silt (SP/SP-SM)					
						Stiff, Gray Silty CLAY with Fine Sand Partings (CL)					
5		14	W	10			(1.25)				
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 9.6'	Upon Completion of Drilling	10'
Time After Drilling			24 hrs
Depth to Water			10' ▼
Depth to Cave in			11'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 4
Surface Elevation (ft) 854.4
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qp (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Clay with Sand, Silt and Gravel to 4'					
1		14	M	16							
2		16	M	28		Black Foundry Sand to 4.5 ft					
					5	Brown Fine to Medium Sand, Trace to Little Silt and Gravel to 7.5 ft					
3		16	W	12							
						Stiff, Gray Brown Sandy Mottled Lean CLAY (CL)					
4		18	M	6			(1.5)				
					10						
						Stiff, Gray Lean CLAY, Occasional Sand Partings (CL)					
5		14	M	6			(1.75)				
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0'
Upon Completion of Drilling
Time After Drilling
Depth to Water 11' ▼
Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 5
Surface Elevation (ft) 853.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
					FILL: Brown Silty Sand to 2 ft					
1	14	M	4		Brown Clay with Sand to 3.5 ft	(2.0)				
2	12	M	13	5	Brown Sand Mixed with Silt and Clay, Occasional Cinders/Foundry Sand to 7.5 ft					
3	8	M/W	29							
					Loose, Dark Brown-Black Sedimentary PEAT, Trace Sand (OL/PT)		52.8			22.2
4	14	W	12	10	Medium Stiff to Stiff, Gray Mottled Lean CLAY (CL)	(1.0)				
					Medium Dense, Brown Fine to Medium SAND, Little Silt, Trace Gravel (SP-SM)					
5	14	W	10		Interbedded with Layers of Gray Silt and Clay at 14'					
				15	End Boring at 15 ft					
					Borehole backfilled with bentonite chips					
				20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 6.0'	Upon Completion of Drilling		9'
Time After Drilling				24 hrs
Depth to Water				9' ▼
Depth to Cave in				10'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/11/10 End 5/11/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 6
Surface Elevation (ft) 852.6
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7087

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	q_u (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		16	M	14		Black Foundry Sand with Cinders to 1 ft Brown and Black Sand with Silt to 4.5 ft					
2		12	M	12	5	Medium Stiff, Gray Lean CLAY, Trace to Little Sand (CL)					
3		14	M	6			(0.6-0.75)				
4		16	W	8	10	Medium Stiff, Gray Brown Mottled Lean CLAY (CL)	(0.75)				
5		12	W	11	15	Medium Dense, Gray Silty SAND to Sandy SILT (SM/ML)					
						End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0'
Upon Completion of Drilling 8.5'
Time After Drilling 2 hrs
Depth to Water 8.5' ▼
Depth to Cave in 10'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 7
Surface Elevation (ft) 853.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		12	M	37		Brown Clay with Sand and Gravel to 3 ft	(2.0)				
						Brown and Tan Silty Sand to 5 ft (Possible Foundry Sand Mixed In)					
2		14	M	12	5						
						Dark Brown to Black Clay to 7 ft					
3		10	M	7			(1.5)				
						Loose, Black Organic SILT, Trace Sand (OL) (Possible Buried Topsoil)					
4		12	M/W	16		Medium Dense, Tan fine SAND, Trace to Little Silt (SP/SP-SM)					
					10						
						Soft to Medium Stiff, Gray Lean CLAY, Trace Sand (CL)					
5		12	W	6			(0.5)				
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 9.6'	Upon Completion of Drilling	10'	
Time After Drilling			15 min	
Depth to Water			10'	▼
Depth to Cave in			11'	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 8
Surface Elevation (ft) 853.2
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	SAMPLE TYPE	SAMPLE Rec (in.)	SAMPLE Moist	SAMPLE N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clay Topsoil to 0.5 ft					
1		14	M	6		Brown Fine Sand to 2 ft	(2.5)				
						Dark Brown Clay to 3 ft					
2		14	M	13		Black Foundry Sand to 5 ft					
					5	Medium Stiff, Black Organic CLAY, Trace Sand (OL) (Possible Buried Topsoil)					
3		10	M	6			(0.75)	39.2			13.9
						Loose to Medium Dense, Brown Sandy SILT, Trace to Little CLAY (ML)					
4		12	M	10			(1.50)				
					10						
						▼					
5		14	W	21		Medium Dense, Gray Clayey Fine to Coarse SAND, Trace Gravel (SC)					
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 12.5'
Upon Completion of Drilling
Time After Drilling 15 min
Depth to Water 12' ▼
Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 9
Surface Elevation (ft) 852.2
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		14	M	10		Brown Sand with Silt, Gravel, Clay and Occasional Cinders to 5 ft					
2		6	M	6			(0.5)				
					5	Medium Stiff, Gray/Brown Mottled Lean CLAY (CL)					
3		14	M	6			(0.8)				
						Medium Dense, Brown Silty Fine SAND, Some Gravel (SM)					
4		12	M	18							
					10	Medium Dense, Gray-Brown Fine to Medium Silty SAND to Sandy SILT (SM/ML)					
5		14	W	12							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 13.5' Upon Completion of Drilling

Time After Drilling				15 min
Depth to Water				12.5' ▽
Depth to Cave in				13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 10
Surface Elevation (ft) 851.7
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-0100, FAX (608) 288-7687

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Sand with Silt and Gravel, Trace Cinders to 3 ft					
1		6	M	11							
						Brown Silty Sand to Sandy Silt to 4.5 ft					
2		12	W/M	6			(0.25)				
					5	Brown Clay to 5.5 ft					
						Medium Stiff, Brown/Gray Mottled Lean CLAY (CL)					
3		14	M	5			(0.6)				
					▽						
4		12	W	4	▼	Less Mottling with Depth	(0.75)				
					10						
						Loose, Brown Fine to Medium SAND, Some Gravel, Trace to Little Silt (SP/SP-SM)					
5		18	W	9							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0'
Upon Completion of Drilling 12'
Time After Drilling 2 hrs
Depth to Water 9' ▼
Depth to Cave in 12'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 11
Surface Elevation (ft) 851.4
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7687

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qe) (csf)	W	LL	PL	LI
						FILL: Brown Crushed Aggregate to 1 ft					
1		18	M	12		Brown-Black Sand with Foundry Sand and Cinders to 3.5 ft					
2		16	W	4		Brown sand with Silt to 5.5 ft					
					5						
3		18	W	9		Medium Stiff, Brown-Gray Sandy Lean CLAY (CL)	(0.75)				
4		18	W	7		Medium Stiff to Stiff at 9 ft	(1.0)				
					10						
5		8	W	11		Medium Dense, Brown Silty Fine SAND, Trace Gravel (SM)					
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 5.0'	Upon Completion of Drilling	10'	
Time After Drilling			1 hr	
Depth to Water			10'	▼
Depth to Cave in			12'	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 12
Surface Elevation (ft) 851.6
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7897

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Crushed Aggregate to 1 ft					
1		16	M	23		Brown Sand with Silt and Gravel to 3.5 ft					
2		12	W	4	▽	Brown Fine to Medium Sand, Little Silt and Gravel to 5.5 ft					
					5						
3		12	M	3		Medium Stiff, Brown/Gray Mottled Lean CLAY (CL)	(0.75)				
4		18	W	3	▼	Soft to Medium Stiff, Gray Lean CLAY with Sand Partings (CL)	(0.5)				
					10						
						Loose, Gray Sandy SILT (ML)					
5		18	W	7							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 4.0'	Upon Completion of Drilling	10'
Time After Drilling			2 hrs
Depth to Water			10' ▼
Depth to Cave in			12'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 13
Surface Elevation (ft) 853.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft Dark Brown to Black Clay with Sand to 2 ft					
1		12	M	9			(2.0)				
						Dark Gray to Black Silty Sand, Sandy Silt with Gravel, Foundry Sand and Cinders to 8 ft					
2		14	M	20							
					5						
3		12	M	9							
						▼					
						Soft to Medium Stiff, Gray Lean CLAY (CL) Occasional Partings and Thin (1/4") Seams of Sand					
4		14	W	11			(0.5)				
					10						
						Medium Dense, Silty Fine SAND to Sandy SILT (SM/ML)					
						End Boring at 13 ft					
5		10	W	27		Borehole backfilled with bentonite chips					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 7.5'
Time After Drilling
Depth to Water 7.5' ▼
Depth to Cave in 11'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 14
Surface Elevation (ft) 851.5
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Claycy Topsoil to 0.5 ft Brown Sand to 3 ft					
1		10	W/M	23							
						Dark Gray Clay with Sand to 5.5 ft					
2		6	W	3			(0.25)				
					5						
						Soft, Blue-Gray Lean CLAY (CL)					
3		12	M	3			(0.3)				
						Medium Dense, Gray Fine to Medium SAND, Little to some Silt (SP-SM/SM)					
4		18	W	20							
					10						
						Medium Dense, Gray Sandy SILT, Some Clay, Trace to Little Gravel (ML)					
5		10	W	14							
					15						
						End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling 6.5'
Time After Drilling 24 hrs
Depth to Water 6.5' ▼
Depth to Cave in 9'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/11/10 End 5/11/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 15
Surface Elevation (ft) 852.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
					0	FILL: 8 in. Topsoil					
1		14	M	17		Brown Fine to Medium SAND with GRAVEL, Trace Silt to 3 ft					
						Stiff, Gray-Brown Lean CLAY, Trace to Little Sand (CL) (Possible Fill)					
2		18	M	7	5		(1.25)				
3		18	M	10		Medium Stiff to Stiff, Brown Lean CLAY (CL)	(1.0)				
						Stiff, Gray-Brown Sandy Lean CLAY, Some Gravel (CL)					
4		16	M	15	10		(1.5)				
						Medium Dense, Brown Silty Fine to Medium SAND, Some Gravel (SM)					
5		14	W	14							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 13.5' Upon Completion of Drilling 9'
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/11/10 End 5/11/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 16
Surface Elevation (ft) 850.8
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Clayey Topsoil to 0.2 ft Gray-Brown Clayey Mixed with Sand and Gravel to 5 ft					
1		12	M	6							
2		14	M	6			(.75)				
					5	Medium Stiff, Gray Lean CLAY, Trace Sand and Gravel (CL)					
3		14	M	8			(0.75-1.0)				
				▽							
4		12	W	11			(.75-1.0)				
				▼	10	Medium Dense, Gray-Brown Silty Fine to Medium SAND, Some Gravel (SM)					
5		14	W	15							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 11'
Time After Drilling 15 min
Depth to Water 10.5 ▼
Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger WK Editor ESF
Drill Method 2 1/4 in. HSA

Department of Public Works
City Engineering Division

Robert F. Phillips, P.E.
City Engineer

City-County Building, Room 115
210 Martin Luther King, Jr. Boulevard
Madison, Wisconsin 53703
FAX 608 264 9275
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608 266 4751

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Facilities & Sustainability
Jeanne E. Hoffman, Manager

Operations Supervisor
Kathleen M. Cryan

Mapping Section Manager
Eric T. Pederson

Financial Officer
Steven B. Danner-Rivers

Hydrogeologist
Brynn Bemis

July 10, 2013

NOTICE OF ADDENDUM
ADDENDUM NO. 01
CONTRACT NO. 7008
CENTRAL PARK – PHASE 1A

Revise and amend the contract document(s) for the above project as stated in this addendum, otherwise, the original document shall remain in effect.

Please acknowledge this addendum on page I1 of the contract documents and/or in Section I: Bidder's Acknowledgement on Bid Express.

Electronic version of these documents can be found on Bid Express at https://www.bidexpress.com.

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

for Robert F. Phillips, City Engineer

SECTION H: SPECIAL PROVISIONS:

DELETE SECTION 107.12 RAILROADS INSURANCE AND COORDINATION and **REPLACE** as follows:

SECTION 107.12 RAILROADS INSURANCE AND COORDINATION

A Description
Comply with State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2013 Edition, standard spec 107.17 for all work affecting the Wisconsin and Southern Railroad property and any existing tracks.

A.1 Railroad Insurance Requirements
In addition to standard spec 107.26, provide railroad protective liability insurance coverage as specified in standard spec 107.17.3. Insurance is filed in the name of the Wisconsin and Southern Railroad and Union Pacific Railroad. NOTE: Railroad insurance and all costs associated with this section shall be considered incidental to the contract. No additional compensation shall be provided.

Notify evidence of the required coverage, and duration to Ben Meighan at 608-243-9225, 1980 East Johnson Street, Madison, WI 53704. Include the following information on the insurance document:

Project Id 5992-01-97
Route Name Central Park, Dane County
Nearest Crossing ID 177834W
Railroad Subdivision Reedsburg
Nearest Railroad Milepost 139.10

A.2 Work by Railroad
The railroad will perform the work described in this section as a part of the Central Park Phase 1B Contract No. 7059, except for work described in other special provisions and will be accomplished without cost to the contractor.

Crossing I.D. – New Few Street Crossing
-Clear brush and trees within railroad right of way 105' down the tracks east and west of the crossing.
-Installation of new active warning devices
-Installation of concrete panels at the track crossing.

A.3 Names and addresses of Railroad Representatives for Consultation and Coordination
Contact Ben Meighan, Superintendent of Maintenance of Way, Wisconsin and Southern Railroad Co., 1890 East Johnson Street, Madison, WI 53704, TELEPHONE 414-438-8820, ext 4201, FAX 608-243-9225, email bmeighan@wsorrailroad.com, for consultation on railroad requirements during construction.

A.4 Temporary Grade Crossing
If a temporary grade crossing is desired, submit a written request to the railroad representative named in A.3 several weeks prior to the time needed. Approval is subject to the discretion of the railroad. The City of Madison has made no arrangements for a temporary grade crossing.

A.5 Train Operation
Approximately 0 passenger trains and 6 through freight trains operate daily through the construction site. Passenger trains operate at up to 0 mph. Through freight trains operate at up to 5-10 mph. There are 2

switching movements daily.

DELETE BID ITEM 50202 – TYPE II DEWATERING and **REPLACE** as follows:

BID ITEM 50202 – TYPE II DEWATERING

Due to the high ground water level the Contractor may be required to perform Type II dewatering by use of points/wells with pump rates greater than or equal to 70 gallons per minute. If Type II Dewatering is required the Contractor shall comply with all the provisions of the City of Madison Standard Specifications regarding this bid item and shall obtain any required permitting from Wisconsin Department of Natural Resources (WDNR) prior to the installation of any Type II Dewatering system. Costs associated with obtaining any dewatering permits from WDNR shall be paid by the contractor.

Due to the contaminated nature of the site, it is anticipated that all dewatering shall be discharged to the sanitary sewer system. The Contractor shall obtain a Permit per Section 108.2 of these special provisions to Discharge to the sanitary sewer for the contaminated water from any dewatering, which requirements include removing all sediment or fines larger than the #200 sieve prior to discharge to the sanitary sewer system(s). The volume charges for discharge to the sanitary will be paid for directly by the City of Madison. If Type II Dewatering extends past 3 months from the start of the dewatering activities additional approvals may be required by Madison Metropolitan Sewerage District and the City of Madison and a new permit may be required.

The permit shall require all discharge to the Madison Metropolitan Sewer interceptor located adjacent to the project, unless otherwise approved by the City of Madison and Madison Metropolitan Sewerage District. The permit shall dictate the construction activities and duration of the pumping, which shall be limited to sanitary sewer, water service installation, and building foundation work. If pumping is required for storm sewer construction or earth moving activities the Contractor shall obtain approval by the City of Madison prior to starting any pumping activities.

BID ITEM 90017 BENCH, BACKLESS

REVISE Materials as follows:

MATERIALS

Furnish Forms+Surfaces (Pittsburgh, PA 1-800-451-0410, www.forms-surfaces.com) Knight Bench, 6' length, backless, surface mount, or approved equal. Seat Slats: FSC Pure Ipe hardwood, penetrating oil finish in color Penofin hardwood formula 'Transparent Natural'; Bench Frame: Solid aluminum with invisible welds; No Armrest; Frame Color: PT-TT02-HS16, Nutmeg CB, Mil Thickness = 3.8, Gloss = 2, Time/Temp = 10'@400 degrees F.

APPENDIX A – RESTROOM PAVILION

Section 06 15 00 – Wood Decking

Page 06 15 00-3, Part 3.03 Installation – Lumber decking

REPLACE item D. as follows:

"D. Secure with fasteners. Locate fasteners at each support; each piece shall be toe-nailed through the tongue with one 16d common nail and also face nailed with two 16d common nails."

APPENDIX A – RESTROOM PAVILION

Section 08 12 13 – Standard Hollow Metal Frames

Page 08 12 13-3, Part 2.01 Frames – Item A. Manufacturers

ADD item 6. as follows: "6. Mesker."

Section 08 13 13 – Standard Hollow Metal Doors

Page 08 13 13-3, Part 2.01 Doors, Item A. Manufacturers

ADD item 6. as follows: "6. Mesker."

APPENDIX A – ELECTRICAL

Section 26 51 00 – Lighting

Page 26 51 00-9, Part 2.13 LIGHTING POLES

REVISE item A. as follows:

"A. Lighting poles to be provided by City of Madison. Coordinate Contractor pickup of poles with the Parks Department."

PROPOSAL:

DELETE:
BID ITEM 20201 FILL BORROW – (16,013) CY
BID ITEM 40104 CRUSHED AGGREGATE BASE COURSE, GRADATION NO. 5 – (1,648) TONS

ADD:
BID ITEM 20201 FILL BORROW – (16,013) TONS
BID ITEM 20219 BREAKER RUN – (1,648) TONS

PLANS:

DELETE: delete pages C1.28, C1.39
INSERT: Insert pages C1.28 REV, C1.39 REV (revised 7/9/2013)

CENTRAL PARK PHASE 1A

ADDITIONAL INFORMATION AND CLARIFICATIONS

July 9, 2013

Q: Do you have additional earthwork cross sections other than the two sheets on Ingersoll curb to curb? Can you provide CAD files?

The spec states (H-16).....The contractor shall be responsible to make his or hers own computations for verification of the Excavation Cut prior to bidding. No changes will be made in the quantity.....

We really need more information, if you can't provide CAD files or cross sections, could you at least provide us with your computations that make up your earthwork summary chart?

A: CAD files provided upon request.

Q: Bid item 40104 is for gradation #5, breaker run, I assume. Is there a spec on the gradation, I can't find one in the City Spec book?

A: This will be changed from Bid Item 40104 to Bid Item 20219 Breaker Run in Addendum 1.

Q: Bid item 90035 is replace inlet casting, I can't find where it tells me what Neenah casting for replacement.

A: For Bid Item 90035 "Replace Inlet Casting," this is for replacing the casting on the existing ST-101. Refer to the "Ingersoll Street Storm Sewer" table on plan sheet C1.26. The table indicates that this will be replaced with a Neenah 3067 Casting, Type Q, 3067-7000 curb plate.

Q: Additionally, why are water/gas valve box adjustments incidental as are adjusting CATV and telephone manholes, as noted on H-17? These items are normally pay items. Can you provide the bidders information as to how many valves and manholes have to be adjusted that are incidental?

A: There are a minimal number of valve adjustments that we chose to include this as an incidental item. The exact number should be verified in the field by the Contractor prior to bidding.

Q: Per 50390, I believe it is worded the contractor is to provide electronic markers, normally the City provides?

A: This City normally would provide these, however, given the nature of the funding sources on this project, the utilities are federally eligible, including the electronic markers, therefore the City would like the contractor to provide them.

Q: Also the City normally pays for clear stone for erosion control, construction entrances and street construction entrance berms, why is this incidental on this contract? Can you provide us a quantity of estimated clear stone required?

A: Without dictating means and methods for the erosion control, construction entrances, and street construction entrance berms we cannot provide a quantity. It is the contractor's responsibility to determine construction operations and staging in order to determine the amount of material needed and what the maintenance will be on these items.

Q: On sheet C1.30, Irrigation System Plan, in the detail at the bottom left of the page it indicates 2" remote control valves A1-A5, whereas the piping out appears to have larger diameter sizes, 2 ½" and 3", am I missing something or shouldn't the valves be larger?

A: For the irrigation question, the 2" remote valve was intentional and is ok. It was verified with the contact from Reinders who helped in the irrigation design.

Q: Has the City of Madison used compost impression on colored concrete before? I know Olbrich Gardens has something similar but I didn't think mulch was used.

A: This is similar to what was done at Olbrich Gardens. The design team met with Jeff Epping at Olbrich to verify the process and the mulch product is what was used to create the impressions.

Q: Item 50225 Utility Trench Patch Type 3, where is this? Ingersoll is being reconstructed in the project area, so I wouldn't think a trench patch would be needed there?

A: The utility trench patch was included on Ingersoll Street for the sanitary and water work that is being done in the event that it is needed for staging of the roadway to minimize roadway closures.

Q: What is the depth of the irrigation on the Great Lawn? Will it require excavation below the existing 2ft cap?

A: The mainline irrigation is designed to be approximately 18" below grade. The laterals will be 10"-12" below grade. This should not require excavation below the existing 2ft cap.

Q: The earthwork summary on Sheet C1.18 of the plans lists quantities in both Tons and CY. Which is correct?

A: The pay item in the proposal will be changed to TONS to match the special provisions. This will be accounted for in Addendum 1.

Q: The City's' contracts typically have a pay item for Rail Road insurance. Should this be added as a bid item?

A: Contractors should account for this in their bid, this item is incidental to the contract. Please see Addendum 1.

Q: what compaction factor was used in calculating the earthwork quantities?

A: A compaction factor of 95% was used to determine the quantities. This is for all earthworks within the park.

Q: The Type II Dewatering does not take into account the cost to discharge to the sewerage system. Should this be a separate bid item?

A: This will be addressed in Addendum 1. The City will pay for the discharge of the contaminated waters to the sewerage system but the Contractor will have to comply with the permit conditions.

Q: When is the DBE documentation required?

A: The DBE documentation is required at the time of the Bid, based on the Special Provisions Article 102. Contractors were instructed to contact Norman Davis in the City's Civil Rights Department for clarification on any of the DBE requirements.

INGERSOLL STREET

GREAT LAWN

IRRIGATION SYSTEM (TYP)

STA 17+68, 26.0' LT.
1 EA - 6" D.I. TEE
1 EA - 6"X4" REDUCER (EAST)
1 EA - FURNISH AND INSTALL CURB STOP (2 INCH)
1 EA - FURNISH AND INSTALL CURB BOX (2 INCH)

89 LF - FURNISH AND INSTALL 6" D.I. WATERMAIN AND FITTINGS (MAINLINE TO TEE)

1 EA - ULO

FURNISH EXCAVATION AND DITCH FOR LIVE TAP (EXISTING 12" WATERMAIN)
1 EA - 12"X6" TAPPING SLEEVE
1 EA - FURNISH & INSTALL 6" VALVE

45° BEND

50 LF - FURNISH AND INSTALL 4" D.I. WATERMAIN AND FITTINGS

IRRIGATION SYSTEM (TYP) (BID ALT. A)

IRRIGATION PUMP STATION (BID ALT. A)

AIR BLOW-OFF, COMPLETE (SEE DETAIL)
BID ITEM FOR AIR BLOW-OFF INCLUDES:
12 LF - 1 INCH SERVICE LATERAL (COPPER)
1 EA - CURB STOP (1 INCH)
1 EA - CURB BOX (1 INCH)

595 LF - 2 INCH SERVICE LATERAL (COPPER) (TEE TO CORPORATION)

FURNISH AND INSTALL 4" WATER VALVE (PROVIDE PIPE PLUG FOR WATERMAIN INSTALLATION AFTER THE VALVE IF THE CITY DECIDES NOT TO CONSTRUCT BID ALTERNATIVE A

45° BEND (PROVIDE PIPE PLUG)

PROPERTY LINE

PROPERTY LINE

CONTRACTOR SHALL INSTALL SEWER ELECTRONIC MARKERS ALONG THE 2" WATER SERVICE STARTING AT STA 17+68 AND CONTINUING THROUGH STA 23+73 AT 50 FT INTERVALS.

ART WORKS.
arts.gov

Lorna Jordan Studio
Brearly Block
S. Ingersoll to S. Brearly
©2011-2012 Lorna Jordan

PROPOSED ℄ PROFILE (BIKE PATH)
EXISTING ℄ PROFILE (BIKE PATH)

MIN. 6.5' COVER (TYP.)

STA 17+68
T.O.P. = 845.00

STA 19+00
T.O.P. = 846.50

STA 20+00
T.O.P. = 846.61

STA 21+00
T.O.P. = 846.95

6" D.I. WATERMAIN

2" INCH SERVICE LATERAL

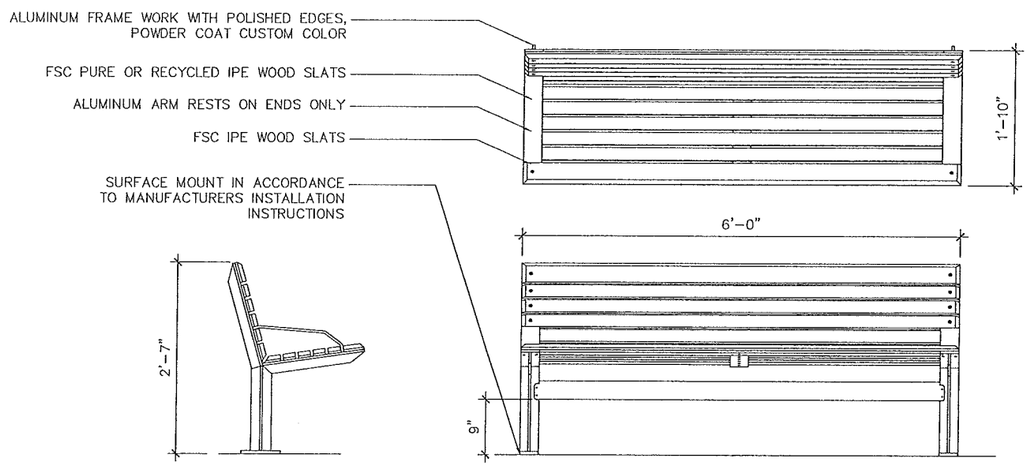
LIVE TAP EXISTING 12" WATERMAIN

854
852
850
848
846
844
842
840
838

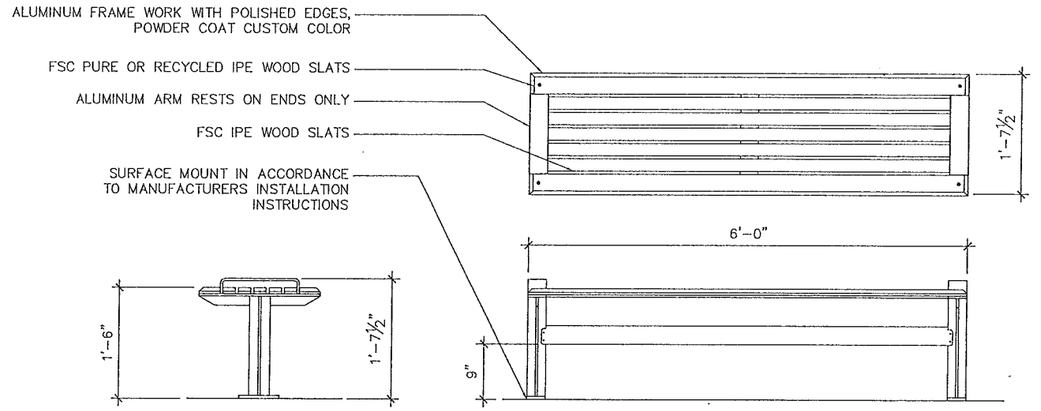
16+00 16+50 17+00 17+50 18+00 18+50 19+00 19+50 20+00 20+50 21+00 21+50 22+00

PROJECT NO: 5992-01-97	HWY: NON-HIGHWAY	COUNTY: DANE	WATER SERVICE - GREAT LAWN	SHEET C1.28 E

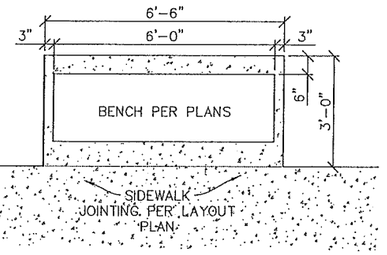
FILE NAME : $$....designfile....$$ PLOT DATE : $$...plottingdate...$$ PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : $$.....plotscale.....$$



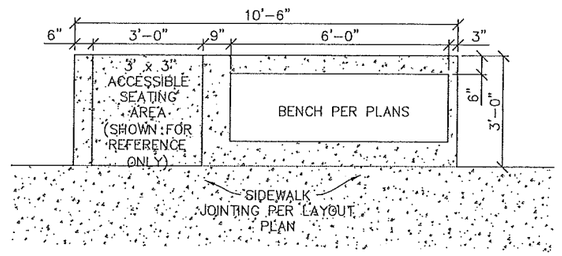
1 BACKED BENCH
SCALE: ½" = 1'-0"



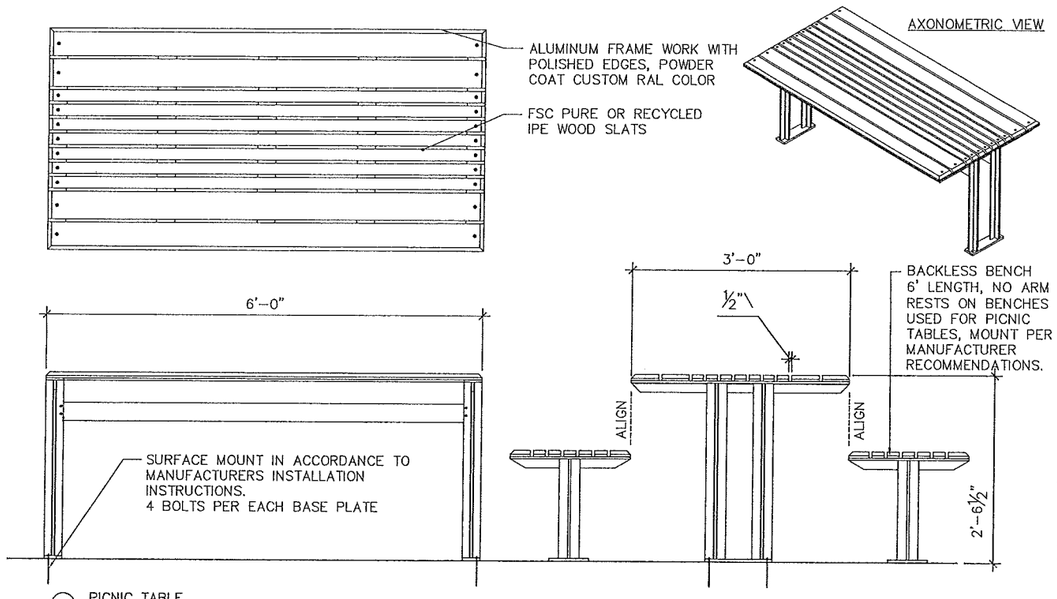
2 BACKLESS BENCH
SCALE: 1/2" = 1'-0"



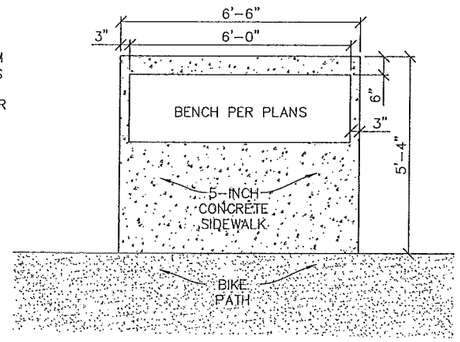
5 STANDARD BENCH PAD LAYOUT
SCALE: ¼" = 1'-0"



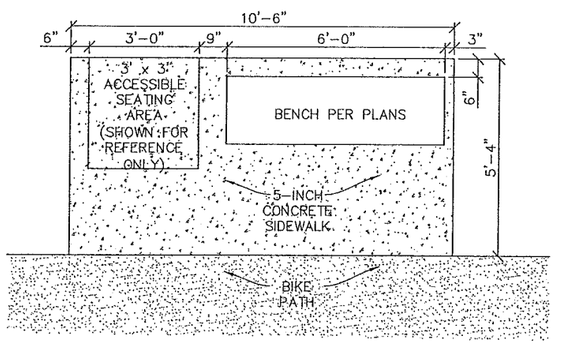
6 ACCESSIBLE BENCH PAD LAYOUT
SCALE: ¼" = 1'-0"



3 PICNIC TABLE
SCALE: NTS



7 GREAT LAWN BENCH PAD LAYOUT
SCALE: ¼" = 1'-0"



8 GREAT LAWN ACCESSIBLE BENCH PAD LAYOUT
SCALE: ¼" = 1'-0"

PROJECT NO: 5992-01-97	HWY: NON HIGHWAY	COUNTY: DANE	DETAILS	SHEET C1.39 E

FILE NAME : \\MD-FILE1\PROJECTS\50134\003\CAD\SHEET\50134-DETLS.DWG PLOT DATE : 2/17/2012 PLOT BY : JJR PLOT NAME : PLOT SCALE : N/A

SECTION I: BIDDERS ACKNOWLEDGEMENT

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008

Bidder must state a Unit Price and Total Bid for each item. The Total Bid for each item must be the product of quantity, by Unit Price. The Grand Total must be the sum of the Total Bids for the various items. In case of multiplication errors or addition errors, the Grand Total with corrected multiplication and/or addition shall determine the Grand Total bid for each contract. The Unit Price and Total Bid must be entered numerically in the spaces provided. All words and numbers shall be written in ink.

1. The undersigned having familiarized himself/herself with the Contract documents, including Advertisement for Bids, Instructions to Bidders, Form of Proposal, City of Madison Standard Specifications for Public Works Construction - 2013 Edition thereto, Form of Agreement, Form of Bond, and Addenda issued and attached to the plans and specifications on file in the office of the City Engineer, hereby proposes to provide and furnish all the labor, materials, tools, and expendable equipment necessary to perform and complete in a workmanlike manner the specified construction on this project for the City of Madison; all in accordance with the plans and specifications as prepared by the City Engineer, including Addenda to the Contract Nos. _____ through _____ issued thereto, at the prices for said work as contained in this proposal. (Electronic bids submittals shall acknowledge addendum under Section E and shall not acknowledge here)
2. If awarded the Contract, we will initiate action within seven (7) days after notification or in accordance with the date specified in the contract to begin work and will proceed with diligence to bring the project to full completion within the number of work days allowed in the Contract or by the calendar date stated in the Contract.
3. The undersigned Bidder or Contractor certifies that he/she is not a party to any contract, combination in form of trust or otherwise, or conspiracy in restraint of trade or commerce or any other violation of the anti-trust laws of the State of Wisconsin or of the United States, with respect to this bid or contract or otherwise.
4. I hereby certify that I have met the Bid Bond Requirements as specified in Section 102.5. *(IF BID BOND IS USED, IT SHALL BE SUBMITTED ON THE FORMS PROVIDED BY THE CITY. FAILURE TO DO SO MAY RESULT IN REJECTION OF THE BID).*
5. I hereby certify that all statements herein are made on behalf of Joe Daniels Const. Co. Inc (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of Wisconsin a partnership consisting of _____; an individual trading as _____; of the City of Madison State of Wisconsin; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

Joseph A. Daniels
SIGNATURE Joseph A. Daniels

President
TITLE, IF ANY

Sworn and subscribed to before me this 12th day of July, 2013.

Kara L. Danielson
(Notary Public or other officer authorized to administer oaths)
My Commission Expires 07/17/2016

Bidders shall not add any conditions or qualifying statements to this Proposal.

Contract 7008- Joe Daniels Corporation

Section I: Disclosure of Ownership and BVC

This section is a required document for the bid to be considered complete. There are two methods for completing the Disclosure of Ownership and BVC form. Method one: The form can be filled out online and submitted to this site to be included with your electronic bid. Method two: The form can be downloaded from the site and submitted by hand to the City of Madison.

Please select the method of submission below. The form can be found below for filling out
online or download and submit by hand.

Please check the box in the Upload section if submitting the report by hand.

Method of Submittal for Disclosure of Ownership and BVC (click in box below to choose) *
I will submit Bid Express fillable online form (Disclosure of Ownership and BVC).

Section I: Disclosure of Ownership and Best Value Contracting

Notice required under Section 15.04(1)(m), Wisconsin Statutes. The statutory authority for the use of this form is prescribed in Sections 66.0903(12)(d), Wisconsin Statutes. The use of this form is mandatory. The penalty for failing to complete this form is prescribed in Section 103.005(12). Personal information you provide may be used for secondary purposes.

(1) On the date a contractor submits a bid to or completes negotiations with a state agency or local governmental unit, on a project subject to Section 66.0903 or 103.49, Wisconsin Statutes, the contractor shall disclose to such state agency or local governmental unit the name of any "other construction business", which the contractor, or a shareholder, officer or partner of the contractor, owns or has owned within the preceding three (3) years.

(2) The term "other construction business" means any business engaged in the erection, construction, remodeling, repairing, demolition, altering or painting and decorating of buildings, structures or facilities. It also means any business engaged in supplying mineral aggregate, or hauling excavated material or spoil as provided by Sections 66.0903(3), 103.49(2) amd 103.50(2), Wisconsin Statues.

(3) This form must ONLY be filed, with the state agency or local governmental unit that will be awarding the contract, if both (A) and (B) are met.

(A) The contractor, or a shareholder, officer or partner of the contractor:

1. Owns at least a 25% interest in the "other construction business", indicated below,on the date the contractor submits a bid or completes negotiations.

2. Or has owned at least a 25% interest in the "other construction business" at any time within the preceding three (3) years.

(B) The Wisconsin Department of Workforce Development (DWD) has determined that the "other construction business" has failed to pay the prevailing wage rate or time and one-half the required hourly basic rate of pay, for hours worked in excess of the prevailing hours of labor, to any employee at any time within the preceding three (3) years.

Other Construction Business

☑ Not Applicable

Name of Business

Street Address or PO Box
City
State and Zip Code

Name of Business

Street Address or P O Box
City
State and Zip Code

Name of Business

Street Address or P O Box
City
State and Zip Code

Best Value Contracting
1. The Contractor shall indicate the non-apprenticeable trades used on this contract.
Trucking and Landscape

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

☐ Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.

☐ No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.

☐ Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.

☐ First time contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.

☐ Contractor has been in business less than one year.

☐ Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade.

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O. 33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

☐ The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

☐ BRICKLAYER
☑ CARPENTER
☑ CEMENT MASON / CONCRETE FINISHER
☐ CEMENT MASON (HEAVY HIGHWAY)

☑ CONSTRUCTION CRAFT LABORER

☐ DATA COMMUNICATION INSTALLER

☐ ELECTRICIAN

☐ ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE

☐ GLAZIER

☑ HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER

☐ INSULATION WORKER (HEAT and FROST)

☐ IRON WORKER

☐ IRON WORKER (ASSEMBLER, METAL BLDGS)

☐ PAINTER and DECORATOR

☐ PLASTERER

☐ PLUMBER

☐ RESIDENTIAL ELECTRICIAN

☐ ROOFER and WATER PROOFER

☐ SHEET METAL WORKER

☐ SPRINKLER FITTER

☐ STEAMFITTER

☐ STEAMFITTER (REFRIGERATION)

☐ STEAMFITTER (SERVICE)

☐ TAPER and FINISHER

☐ TELECOMMUNICATIONS (VOICE, DATA and VIDEO) INSTALLER-TECHNICIAN

☐ TILE SETTER

FEBRUARY 1999

LIST OF SUBCONTRACTORS

Section 66.29(7), Wisconsin Statutes, provides that a bidder, as a part of his proposal, shall submit a list of the subcontractors he proposes to contract with and the class of work to be performed by each, provided that to qualify for such listing each subcontractor must first submit his bid in writing to the general contractor at least 48 hours prior to the time of bid closing. It further provides that a proposal of a bidder shall not be invalid if any subcontractor, and the class of work to be performed by such subcontractor, has been omitted from a proposal.

No subcontract, whether listed herein or later proposed, may be entered into without the written consent of the Engineer as provided in Subsection 108.1 of the Standard Specifications.

Name of Subcontractor	Class of Work	Estimated Value
	SEE ATTACHED LISTING	

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008

JOE DANIELS CONSTRUCTION
LIST OF SUBCONTRACTORS

NAME OF SUBCONTRACTOR	CLASS OF WORK	ESTIMATED VALUE
JR'S LANDSCAPING	LANDSCAPING	32,447.00
NORTHERN FENCE	FENCING	122,563.00
BRICKLINE	PAVEMENT MARKING	2,530.00
BRUCE COMPANY	IIRIGATION SYSTEM	59,813.00
TRI-COUNTY PAVING	ASPHALT PAVEMENT	36,800.00
SCHROCK TRUCKING	TRUCKING	50,000.00
MALY ROOFING	ROOFING	44,000.00
GROTE PAINTING	PAINTING	13,000.00
RURAL MASONRY	MASONRY	80,000.00
PRESTIGE	PLUMBING	20,000.00
NICKLES ELECTRIC	ELECTRIC	210,000.00
BRENNER CORPORATION	HVAC	8,500.00
HGS	EPOXY FLOORING	3,500.00
PROFOAMERS	WATERPROOFING/MEMBRANE	4,200.00
LAKE CITY GLASS	ALUMINUM WINDOWS	30,000.00

SECTION F: ADDITIONAL FEDERAL-AID PROVISIONS

COMMITMENT TO SUBCONTRACT TO DBE NON-TRADITIONAL PROJECTS

Wisconsin Department of Transportation

DT1880 4/2010 s.84.06(2) Wis. Stats.

Project(s): City of Madison - Contract #7008
Central Park Phase 1A

Prime Contractor: Joe Daniels Construction Co., Inc.

County: Dane

Letting Date: July 12, 2013

This contract requires that a specified percentage of the work be subcontracted to a disadvantaged business enterprise and that this information be submitted within 10 business days after the notification of contract award. Completion of the following information indicates your intent in the fulfillment of these contract requirements.

Total $ Value of:
Prime Contract: 2,570,635.00
DBE Contract Goal: 3.21 %

This form must be completed and returned for THIS contract. See reverse side for instructions.

A	V	NAME OF DBE SUBCONTRACTOR	TYPE OF WORK	SUBCONTRACT $ VALUE	Government Use Only Adjusted Amounts
X		JR's Construction	Landscape	$32,447.	
	SUBTOTAL DBE $ VALUE	A ($) 1.26		TOTAL % 1.26	
		V ($) -0-		TOTAL % -0-	

A	V	NAME OF DBE SUPPLIER AND/OR MANUFACTURER (see #3 on Instructions)	TYPE OF MATERIAL	SUBCONTRACT $ VALUE	Government Use Only Adjusted Amounts
	SUBTOTAL DBE $ VALUE	A ($) -0-		TOTAL % -0-	
		V ($) -0-		TOTAL % -0-	

A	V	NAME OF DBE TRUCKING FIRM	MATERIAL HAULED	EST. # OF TON/C.Y.	EST. # OF TRUCKS REQ'D	$ VALUE	Government Use Only Adjusted Amounts
X		Schrock Trucking	Topsoil/fill	10k tns	O= 1 L= 1	50,000.	
					O= L=		
					O= L=		
					O= L=		
					O= L=		
	SUBTOTAL DBE $ VALUE	A ($) 1.95			TOTAL % 1.95		
		V ($) -0-			TOTAL % -0-		
	GRAND TOTAL DBE $ VALUE	A ($) 3.21			TOTAL % 3.21		
		V ($) -0-			TOTAL % -0-		
		T = 3.21			TOTAL % 3.21		

I certify that arrangements have been made for the foregoing work with the listed DBE Contractors. I further understand that any willful falsification, fraudulent statement or misrepresentation will result in appropriate sanctions, which may include debarment and/or prosecution under applicable State (Trans 504) and Federal laws.

O = Owned Trucks Used on Project

L = Leased Trucks Used on Project

A = Assigned (DBE Conscious)

V = Voluntary (DBE Neutral)

Government Use Only
Approved Amounts

A = $ %

V = $ %

Total = $ %

Signature:

Date:

Good faith waiver granted: Yes ☐ No ☐

X Joseph A Daniel
(Authorized Agent)

7-12-13
(Date)

Mail to: Wisconsin Department of Transportation
DBE Programs Office, Rm. 451
PO Box 7965
Madison, WI 53707-7965

SECTION F: ADDITIONAL FEDERAL-AID PROVISIONS

COMMITMENT TO SUBCONTRACT TO DBE
ATTACHMENT A

CONFIRMATION OF PARTICIPATION

Project I.D.: Federal #5992-01-97 City #7008	Proposal Number:
Letting Date: July 12, 2013	Total $ Value of Prime Contract: 2,570,635.00

Name of DBE Firm Participating in this Contract: Schrock Trucking
Name of the Prime/Subcontractor who hired the DBE Firm: *(list all names of tiers if more than one)* Joe Daniels Construction Co., Inc.
Type of Work or Type of Material Supplied: Trucking
Total Subcontract Value: 50,000.00

FOR PRIME CONTRACTORS ONLY: I certify that I made arrangements with the participating DBE firm to perform the type of work listed or supply the material indicated above for the subcontract value listed above.	Prime Contractor Representative's Signature Joseph A. Daniels Prime Contractor Representative's Name (Print Name) Joseph A. Daniels Prime Contractor (Print Company Name) Joe Daniels Construction Co., Inc. Date July 12, 2013

FOR PARTICIPATING DBE FIRMS ONLY: I certify that I made arrangements with the Prime Contractor or the Hiring Contractor to perform the type of work or supply the material indicated above for the subcontract value listed above. **FOR DBE TRUCKING FIRMS ONLY:** I certify that I will utilize, for DBE credit, only trucks listed on my WisDOT approved Schedule of Owned/Leased Vehicles for DBE Credit form and I will be utilizing the number of trucks and material hauled as listed below.	Participating DBE Firm Representative's Signature Participating DBE Firm Representative's Name (Print Name) Participating DBE Firm (Print Company Name) Schrock Trucking Date July 12, 2013

# Owned Trucks	# Leased Trucks	# Estimated Tons/C.Y.	Material(s) Hauled
1	1	10k tons	topsoil/fill

SECTION F: ADDITIONAL FEDERAL-AID PROVISIONS

COMMITMENT TO SUBCONTRACT TO DBE
ATTACHMENT A

CONFIRMATION OF PARTICIPATION

Project I.D.: Federal #5992-01-97 City #7008	Proposal Number:
Letting Date: July 12, 2013	Total $ Value of Prime Contract: 2,570,635.00

Name of DBE Firm Participating in this Contract: JR's Construction & Landscaping
Name of the Prime/Subcontractor who hired the DBE Firm: *(list all names of tiers if more than one)* Joe Daniels Construction Co., Inc.
Type of Work or Type of Material Supplied: Landscape
Total Subcontract Value: 32,447.00

FOR PRIME CONTRACTORS ONLY: I certify that I made arrangements with the participating DBE firm to perform the type of work listed or supply the material indicated above for the subcontract value listed above.	Prime Contractor Representative's Signature Joseph A. Daniels Prime Contractor Representative's Name (Print Name) Joseph A. Daniels Prime Contractor (Print Company Name) Joe Daniels Construction Co., Inc. Date July 12, 2013

FOR PARTICIPATING DBE FIRMS ONLY: I certify that I made arrangements with the Prime Contractor or the Hiring Contractor to perform the type of work or supply the material indicated above for the subcontract value listed above. **FOR DBE TRUCKING FIRMS ONLY:** I certify that I will utilize, for DBE credit, only trucks listed on my WisDOT approved Schedule of Owned/Leased Vehicles for DBE Credit form and I will be utilizing the number of trucks and material hauled as listed below.	Participating DBE Firm Representative's Signature Participating DBE Firm Representative's Name (Print Name) Participating DBE Firm (Print Company Name) JR's Construction & Landscaping Date July 12, 2013

# Owned Trucks	# Leased Trucks	# Estimated Tons/C.Y.	Material(s) Hauled

Contract 7008 – Joe Daniels Corporation

Item Code	Description	Quantity	Units	Unit Price	Extension
10701	TRAFFIC CONTROL	1.00	LS	$3,000.00	$3,000.00
10911	MOBILIZATION	1.00	LS	$158,885.00	$158,885.00
20130	UNDERDRAIN	100.00	LF	$11.50	$1,150.00
20101	EXCAVATION CUT	5,776.00	CY	$13.50	$77,976.00
20201	FILL BORROW	16,013.00	TONS	$8.85	$141,715.05
20221	6" TOPSOIL	19,338.00	SY	$3.48	$67,296.24
20221	12" TOPSOIL	425.00	SY	$7.00	$2,975.00
20302	SAWCUT CONCRETE FULL DEPTH	15.00	LF	$5.00	$75.00
20303	SAWCUT BITUMINOUS PAVEMENT	259.00	LF	$2.75	$712.25
20312	REMOVE CATCHBASIN	1.00	EACH	$475.00	$475.00
20313	REMOVE INLET	3.00	EACH	$250.00	$750.00
20314	REMOVE PIPE	328.00	LF	$22.50	$7,380.00
20321	REMOVE CONCRETE PAVEMENT	24.00	SY	$10.00	$240.00
20322	REMOVE CONCRETE CURB AND GUTTER	667.00	LF	$3.65	$2,434.55
20323	REMOVE CONCRETE SIDEWALK AND DRIVE	502.00	SY	$1.00	$502.00
20326	REMOVE FENCE	150.00	LF	$8.00	$1,200.00
20336	PIPE PLUG	2.00	EACH	$175.00	$350.00
20503	ADJUST INLET	3.00	EACH	$325.00	$975.00
20506	ADJUST SEWER ACCESS STRUCTURE CASTING	1.00	EACH	$325.00	$325.00
20701	TERRACE SEEDING	22,735.00	SY	$0.80	$18,188.00
20704	INFILTRATION SEEDING	125.00	SY	$3.00	$375.00
21001	EROSION CONTROL PLAN AND IMPLEMENTATION	1.00	LS	$500.00	$500.00
21002	EROSION CONTROL INSPECTION	42.00	EACH	$200.00	$8,400.00
21011	CONSTRUCTION ENTRANCE	4.00	EACH	$1,500.00	$6,000.00
21012	STREET CONSTRUCTION ENTRANCE BERM	1.00	EACH	$1,750.00	$1,750.00
21013	STREET SWEEPING	1.00	LS	$1,500.00	$1,500.00
21021	SILT FENCE-COMPLETE	5,780.00	LF	$2.00	$11,560.00
21031	INLET PROTECTION, TYPE C - COMPLETE	4.00	EACH	$100.00	$400.00
21041	INLET PROTECTION, TYPE D - COMPLETE	39.00	EACH	$200.00	$7,800.00
21064	EROSION MATTING, CLASS I, TYPE B	1,823.00	SY	$2.50	$4,557.50
21092	TERRACE RESTORATION	30.00	SY	$20.00	$600.00

30201	TYPE "A" CONCRETE CURB AND GUTTER	152.00	LF	$27.00	$4,104.00
30301	5-INCH CONCRETE SIDEWALK	2,385.00	SF	$6.00	$14,310.00
30302	7-INCH CONCRETE SIDEWALK AND DRIVE	818.00	SF	$6.85	$5,603.30
30340	CURB RAMP DETECTABLE WARNING FIELDS	192.00	SF	$26.00	$4,992.00
40101	CRUSHED AGGREGATE BASE COURSE, GRADATION NO. 1	111.00	TON	$15.00	$1,665.00
40102	CRUSHED AGGREGATE BASE COURSE, GRADATION NO. 2 OR NO. 3	2,484.00	TON	$14.00	$34,776.00
40202	HMA PAVEMENT TYPE E-1	484.00	TON	$71.50	$34,606.00
40211	TACK COAT	68.00	GAL	$3.00	$204.00
40402	9-INCH CONCRETE PAVEMENT	6,030.00	SF	$8.40	$50,652.00
50211	SELECT BACKFILL FOR STORM SEWER	1,219.00	TF	$1.00	$1,219.00
50202	TYPE II DEWATERING	1.00	LS	$500.00	$500.00
50212	SELECT BACKFILL FOR SANITARY SEWER	74.00	TF	$1.00	$74.00
50225	UTILITY TRENCH PATCH TYPE III	100.00	TF	$58.00	$5,800.00
50352	6-INCH SANITARY SEWER LATERAL	74.00	LF	$95.80	$7,089.20
50390	SEWER ELECTRONIC MARKERS	15.00	EACH	$25.00	$375.00
50401	12-INCH HDPE STORM SEWER PIPE	378.00	LF	$45.80	$17,312.40
50411	12-INCH RCP STORM SEWER PIPE	637.00	LF	$46.50	$29,620.50
50412	15-INCH RCP STORM SEWER PIPE	62.00	LF	$51.00	$3,162.00
50451	12-INCH X 12-INCH HDPE STORM SEWER TEE	2.00	EACH	$200.00	$400.00
50461	12-INCH RCP AE	2.00	EACH	$500.00	$1,000.00
50499	CONCRETE COLLAR	6.00	EACH	$200.00	$1,200.00
50601	12-INCH RCP AE GATE	2.00	EACH	$425.00	$850.00
50741	TYPE "H" INLET	15.00	EACH	$1,375.00	$20,625.00
50780	CLEANOUT	1.00	EACH	$300.00	$300.00
50791	SANITARY SEWER TAP	1.00	EACH	$500.00	$500.00
50801	UTILITY LINE OPENING (ULO)	15.00	EACH	$400.00	$6,000.00
60802.0	PAVEMENT MARKING EPOXY, LINE, 6-INCH	101.00	LF	$3.25	$328.25
60818.0	PAVEMENT MARKING EPOXY, STOP LINE, 25-INCH	71.00	LF	$8.00	$568.00
60835.0	PAVEMENT MARKING EPOXY, SYMBOL, RAILROAD CROSSING	2.00	EACH	$895.00	$1,790.00
70001	FURNISH AND INSTALL 4-INCH PIPE AND FITTINGS	50.00	LF	$108.00	$5,400.00

70002	FURNISH AND INSTALL 6-INCH PIPE AND FITTINGS	89.00	LF	$110.00	$9,790.00
70009	FURNISH AND INSTALL 1-INCH SERVICE LATERALS	50.00	LF	$80.00	$4,000.00
70011	FURNISH AND INSTALL 2-INCH SERVICE LATERALS	672.00	LF	$78.00	$52,416.00
70408	SELECT FILL - SAND FOR WATER	861.00	LF	$1.00	$861.00
70418.0	ADJUST WATER VALVE BOX	2.00	EACH	$125.00	$250.00
70427	FURNISH AND INSTALL 4-INCH WATER VALVE	1.00	EACH	$1,135.00	$1,135.00
70428	FURNISH AND INSTALL 6-INCH WATER VALVE	1.00	EACH	$1,355.00	$1,355.00
70450	FURNISH AND INSTALL CURB BOX	3.00	EACH	$400.00	$1,200.00
70451	FURNISH AND INSTALL CURB STOP	3.00	EACH	$650.00	$1,950.00
70453.0	ABANDON EXISTING CURB BOX	1.00	EACH	$100.00	$100.00
70455	PIPE PLUG FOR WATERMAIN INSTALLATION	1.00	EACH	$250.00	$250.00
70456	FURNISH EXCAVATION AND DITCH FOR LIVE TAP	1.00	EACH	$1,150.00	$1,150.00
90001	4-INCH PVC STORM SEWER	34.00	LF	$44.00	$1,496.00
90002	6-INCH PVC STORM SEWER	56.00	LF	$47.00	$2,632.00
90003	8-INCH D.I. STORM SEWER	52.00	LF	$65.00	$3,380.00
90004	12-INCH STORM PLUG	1.00	EACH	$100.00	$100.00
90005	15-INCH STORM PLUG	2.00	EACH	$105.00	$210.00
90006	2 FOOT X 2 FOOT STORM CATCH BASIN	4.00	EACH	$1,350.00	$5,400.00
90007	2-INCH THICK STYROFOAM INSULATION	105.00	LF	$10.00	$1,050.00
90008	CONNECT TO EXISTING WATER SERVICE	1.00	EACH	$500.00	$500.00
90009	ENGINEERED SOIL	33.00	SY	$32.50	$1,072.50
90010	ABANDON EXISTING WATER SERVICE	1.00	EACH	$685.00	$685.00
90011	OVERHEAD UTILITY REMOVAL	1.00	LS	$6,500.00	$6,500.00
90012	REMOVE EXISTING WOOD PLANTER BOX	7.00	EACH	$60.00	$420.00
90013	REMOVE EXISTING WOOD TIMBERS	125.00	LF	$3.00	$375.00
90014	SAND BACKFILL FOR INFILTRATION BASIN	179.00	CY	$30.00	$5,370.00
90015	FENCE	3,326.00	LF	$38.75	$128,882.50
90016	BENCH, BACKED	13.00	EACH	$2,550.00	$33,150.00
90017	BENCH, BACKLESS	4.00	EACH	$2,000.00	$8,000.00

90018	BIKE RACK	10.00	EACH	$425.00	$4,250.00
90019	BOULDER WALL	230.00	SF	$42.00	$9,660.00
90020	MOUNTABLE INTEGRAL CONCRETE CURB AND GUTTER	488.00	LF	$30.00	$14,640.00
90021	CONCRETE 5-INCH, INTEGRAL COLOR WITH TEXTURE	11,219.00	SF	$7.70	$86,386.30
90022	CONCRETE 5-INCH, INTEGRAL COLOR NO TEXTURE	629.00	SF	$8.40	$5,283.60
90023	CONCRETE 9-INCH, INTEGRAL COLOR WITH TEXTURE	1,583.00	SF	$13.00	$20,579.00
90024	CONCRETE 9-INCH, INTEGRAL COLOR NO TEXTURE	5,764.00	SF	$14.10	$81,272.40
90025	CONCRETE 24-INCH, INTEGRAL COLOR WITH TEXTURE	435.00	SF	$35.00	$15,225.00
90026	DRINKING FOUNTAIN	1.00	EACH	$3,450.00	$3,450.00
90027	PICNIC TABLE	4.00	EACH	$5,250.00	$21,000.00
90028	REMOVABLE BOLLARD	15.00	EACH	$1,580.00	$23,700.00
90029	TRASH AND RECYCLE RECEPTACLES	6.00	EACH	$1,200.00	$7,200.00
90030	RESTROOM PAVILION - GENERAL BUILDING	1.00	EACH	$632,480.00	$632,480.00
90031	RESTROOM PAVILION - PLUMBING	1.00	EACH	$23,000.00	$23,000.00
90032	RESTROOM PAVILION - VENTILATION	1.00	EACH	$9,330.00	$9,330.00
90033	RESTROOM PAVILION - ELECTRICAL	1.00	EACH	$92,445.00	$92,445.00
90034	ELECTRICAL	1.00	LS	$130,195.00	$130,195.00
90035	REPLACE INLET CASTING	1.00	EACH	$800.00	$800.00
90036	HAULING AND DISPOSAL-PETROLEUM CONTAMINATED	1,825.00	TON	$38.15	$69,623.75
90037	HAULING AND DISPOSAL-INDUSTRIAL FILL	6,450.00	TON	$37.08	$239,166.00
20219	BREAKER RUN	1,648.00	TON	$13.50	$22,248.00

Section O: Proposal Page - Bid Alternate A

$65,800.00

Item Code	Description	Quantity	Units	Unit Price	Extension

Alternate: Owner-agency may award independently from entire bid.

- Component is not included in bid total.

90038	AIR BLOW OFF, COMPLETE	1.00	EACH	$1,650.00	$1,650.00
90039	IRRIGATION PUMP STATION AND APPURTENANCES	1.00	LS	$38,850.00	$38,850.00
90040	CONCRETE BASE FOR PUMP STATION	1.00	LS	$1,250.00	$1,250.00
90041	IRRIGATION SYSTEM AND APPURTENANCES	1.00	LS	$24,050.00	$24,050.00

4 Items

Total: $65,800.00

Section O: Proposal Page - Bid Alternate B

$19,875.00

Item Code	Description	Quantity	Units	Unit Price	Extension

Alternate: Owner-agency may award independently from entire bid.

- Component is not included in bid total.

90042	RESTROOM PAVILION (COLOR CHANGING LIGHTING)	1.00	LS	$19,875.00	$19,875.00

1 Item

Department of Public Works
City Engineering Division

Larry D. Nelson, P.E.
City Engineer

City-County Building, Room 115
210 Martin Luther King, Jr. Boulevard
Madison, Wisconsin 53703
608 264 9275 FAX
1 866 704 2315 Textnet

608 266 4751

Deputy City Engineer
Robert F Phillips, P.E.

Principal Engineers
Michael R. Dailey, P.E.
Christina M. Bachmann, P.E.
John S. Fahmey, P.E.
Gregory T Fries, P.E.

Facilities & Sustainability
Jeanne E. Hoffman, Manager
James C. Whitney, A.I.A.

Operations Supervisor
Kathleen M. Cryan

Hydrogeologist
Joseph L. DeMorett, P.G.

GIS Manager
David A. Davis, R.L.S.

Financial Officer
Steven B. Danner-Rivers

BIENNIAL BID BOND

Joe Daniels Construction Co., Inc.
(a corporation of the State of Wisconsin)
(individual), (partnership), (hereinafter referred to as the "Principal") and
Cincinnati Insurance Company,
a corporation of the State of Ohio (hereinafter referred to as the "Surety") and licensed to do business in the State of Wisconsin, are held and firmly bound unto the City of Madison, Wisconsin (hereinafter referred to as the "City"), in the sum equal to the individual proposal guaranty amounts of the total bid or bids of the Principal herein accepted by the City, for the payment of which the Principal and the Surety hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is that the Principal has submitted to the City certain bids for projects from the time period of 2/1/12 through 1/31/14.

If the Principal is awarded the contract(s) by the City and, within the time and manner required by law after the prescribed forms are presented for its signature, the Principal enters into (a) written contract(s) in accordance with the bid(s), and files with the City its bond(s) guaranteeing faithful performance and payment for all labor and materials, as required by law, or if the City rejects all bids for the work described, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

In the event the Principal shall fail to execute and deliver the contract(s) or the performance and payment bond(s), all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to pay to the City within ten (10) calendar days of written demand a total equal to the sum of the individual proposal guaranty amounts of the total bid(s) as liquidated damages.

The Surety, for value received, hereby agrees that the obligations of it and its bond shall be in no way impaired or affected by any extension of time within which the City may accept a bid, and the Surety does hereby waive notice of any such extension.

This bond may be terminated by the Surety upon giving thirty (30) days written notice to the City of its intent to terminate this bond and to be released and discharged therefrom, but such termination shall not operate to relieve or discharge the Surety from any liability already accrued or which shall accrue before the expiration of such thirty (30) day period.

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

PRINCIPAL

Joe Daniels Construction Co., Inc.
COMPANY NAME

AFFIX SEAL (none)

January 3, 2012
DATE

By: Joseph A. Daniels
SIGNATURE AND TITLE
Joseph A. Daniels - President

SURETY

Cincinnati Insurance Company
COMPANY NAME

AFFIX SEAL

January 3, 2012
DATE

By: Patrick A. McKenna
SIGNATURE AND TITLE
Patrick A. McKenna - Attorney-in-Fact

This certifies that I have been duly licensed as an agent for the Surety in Wisconsin under License No. 2349196 for the year 2012, and appointed as attorney in fact with authority to execute this bid bond, which power of attorney has not been revoked.

January 3, 2012
DATE

Hausmann-Johnson Insurance, Inc.
Patrick A. McKenna
AGENT

700 Regent Street
ADDRESS

Madison, WI 53725
CITY, STATE AND ZIP CODE

608/252-9661
TELEPHONE NUMBER

Note to Surety and Principal: Any bid submitted which this bond guarantees may be rejected if the Power of Attorney form showing that the Agent of Surety is currently authorized to execute bonds on behalf of Surety is not attached to this bond.

THE CINCINNATI INSURANCE COMPANY

Fairfield, Ohio

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That THE CINCINNATI INSURANCE COMPANY, a corporation organized under the laws of the State of Ohio, and having its principal office in the City of Fairfield, Ohio, does hereby constitute and appoint

Tim Hausmann; Jeff Hausmann; Steven L. Squires; Sheila Dickey; Judith A. Walker; Patrick A. McKenna; Brooke L. Parker and/or Kelsey Jacobson

of Madison, Wisconsin its true and lawful Attorney(s)-in-Fact to sign, execute, seal and deliver on its behalf as Surety, and as its act and deed, any and all bonds, policies, undertakings, or other like instruments, as follows:

Any such obligations in the United States, up to Thirty Million and No/100 Dollars ($30,000,000.00).

This appointment is made under and by authority of the following resolution passed by the Board of Directors of said Company at a meeting held in the principal office of the Company, a quorum being present and voting, on the 6th day of December, 1958, which resolution is still in effect:

"RESOLVED, that the President or any Vice President be hereby authorized, and empowered to appoint Attorneys-in-Fact of the Company to execute any and all bonds, policies, undertakings, or other like instruments on behalf of the Corporation, and may authorize any officer or any such Attorney-in-Fact to affix the corporate seal; and may with or without cause modify or revoke any such appointment or authority. Any such writings so executed by such Attorneys-in-Fact shall be binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company."

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company at a meeting duly called and held on the 7th day of December, 1973.

"RESOLVED, that the signature of the President or a Vice President and the seal of the Company may be affixed by facsimile on any power of attorney granted, and the signature of the Secretary or Assistant Secretary and the seal of the Company may be affixed by facsimile to any certificate of any such power and any such power of certificate bearing such facsimile signature and seal shall be valid and binding on the Company. Any such power so executed and sealed and certified by certificate so executed and sealed shall, with respect to any bond or undertaking to which it is attached, continue to be valid and binding on the Company."

IN WITNESS WHEREOF, THE CINCINNATI INSURANCE COMPANY has caused these presents to be sealed with its corporate seal, duly attested by its Vice President this 10th day of October, 2008.

THE CINCINNATI INSURANCE COMPANY

Vice President

STATE OF OHIO) ss:
COUNTY OF BUTLER)

On this 10th day of October, 2008, before me came the above-named Vice President of THE CINCINNATI INSURANCE COMPANY, to me personally known to be the officer described herein, and acknowledged that the seal affixed to the preceding instrument is the corporate seal of said Company and the corporate seal and the signature of the officer were duly affixed and subscribed to said instrument by the authority and direction of said corporation.

MARK J. HULLER, Attorney at Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date. Section 147.03 O.R.C.

I, the undersigned Secretary or Assistant Secretary of THE CINCINNATI INSURANCE COMPANY, hereby certify that the above is a true and correct copy of the Original Power of Attorney issued by said Company, and do hereby further certify that the said Power of Attorney is still in full force and effect.

GIVEN under my hand and seal of said Company at Fairfield, Ohio.
this 3rd day of January, 2012.

Secretary

BN-1005 (10/08)

SECTION K: AGREEMENT

THIS AGREEMENT made this 7 day of AUGUST in the year Two Thousand and Twelve between **JOE DANIELS CONSTRUCTION COMPANY., INC.** hereinafter called the Contractor, and the City of Madison, Wisconsin, hereinafter called the City.

WHEREAS, the Common Council of the said City of Madison under the provisions of a resolution adopted **AUGUST 6, 2013**, and by virtue of authority vested in the said Council, has awarded to the Contractor the work of performing certain construction.

NOW, THEREFORE, the Contractor and the City, for the consideration hereinafter named, agree as follows:

1. **Scope of Work.** The Contractor shall, perform the construction, execution and completion of the following listed complete work or improvement in full compliance with the Plans, Specifications, Standard Specifications, Supplemental Specifications, Special Provisions and contract; perform all items of work covered or stipulated in the proposal; perform all altered or extra work; and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work or improvements:

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008

2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.

3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of **TWO MILLION SIX HUNDRED FIFTY-SIX THOUSAND THREE HUNDRED SIXTY-ONE DOLLARS AND TWENTY-NINE CENTS ($2,656,361.29)** being the amount bid by such Contractor and which was awarded to him/her as provided by law.

4. **Wage Rates for Employees of Public Works Contractors**

General and Authorization. The Contractor shall compensate its employees at the prevailing wage rate in accordance with section 66.0903, Wis. Stats., DWD 290 of the Wisconsin Administrative Code and Davis-Bacon Act. In the event the State and Federal Rates are not identical, the higher of the two rates shall govern.

"Public Works" shall include building or work involving the erection, construction, remodeling, repairing or demolition of buildings, parking lots, highways, streets, bridges, sidewalks, street lighting, traffic signals, sanitary sewers, water mains and appurtenances, storm sewers, and the grading and landscaping of public lands.

"Building or work" includes construction activity as distinguished from manufacturing, furnishing of materials, or servicing and maintenance work, except for the delivery of mineral aggregate such as sand, gravel, bituminous asphaltic concrete or stone which is incorporated into the work under contract with the City by depositing the material directly in final place from transporting vehicle.

"Erection, construction, remodeling, repairing" means all types of work done on a particular building or work at the site thereof in the construction or development of the project, including without limitation, erecting, construction, remodeling, repairing, altering, painting, and decorating, the transporting of materials and supplies to or from the building or work done by the employees of the Contractor, Subcontractor, or Agent thereof, and the manufacturing or furnishing of materials, articles, supplies or equipment on the site of the building or work, by persons employed by the Contractor, Subcontractor, or Agent thereof.

"Employees working on the project" means laborers, workers, and mechanics employed directly upon the site of work.

"Laborers, Workers, and Mechanics" include preapprentices, helpers, trainees, learners and properly registered and indentured apprentices but exclude clerical, supervisory, and other personnel not performing manual labor.

Establishment of Wage Rates. The Department of Public Works shall periodically obtain a current schedule of prevailing wage rates from DWD. The schedule shall be used to establish the City of Madison Prevailing Wage Rate Schedule for Public Works Construction (prevailing wage rate). The Department of Public Works may include known increases to the prevailing wage rate which can be documented and are to occur on a future specific date. The prevailing wage rate shall be included in public works contracts subsequently negotiated or solicited by the City. Except for known increases contained within the schedule, the prevailing wage rate shall not change during the contract. The approved wage rate is attached hereto.

Workforce Profile. The Contractor shall, at the time of signature of the contract, notify the City Engineer in writing of the names and classifications of all the employees of the Contractor, Subcontractors, and Agents proposed for the work. In the alternative, the Contractor shall submit in writing the classifications of all the employees of the Contractor, Subcontractors and Agents and the total number of hours estimated in each classification for the work. This workforce profile(s) shall be reviewed by the City Engineer who may, within ten (10) days, object to the workforce profile(s) as not being reflective of that which would be required for the work. The Contractor may request that the workforce profile, or a portion of the workforce profile, be submitted after the signature of the contract but at least ten (10) days prior to the work commencing. Any costs or time loss resulting from modifications to the workforce profile as a result of the City Engineer's objections shall be the responsibility of the Contractor.

Payrolls and Records. The Contractor shall keep weekly payroll records setting forth the name, address, telephone number, classification, wage rate and fringe benefit package of all the employees who work on the contract, including the employees of the Contractor's subcontractors and agents. Such weekly payroll records must include the required information for all City contracts and all other contracts on which the employee worked during the week in which the employee worked on the contract. The Contractor shall also keep records of the individual time each employee worked on the project and for each day of the project. Such records shall also set forth the total number of hours of overtime credited to each such employee for each day and week and the amount of overtime pay received in that week. The records shall set forth the full weekly wages earned by each employee and the actual hourly wage paid to the employee.

The Contractor shall submit the weekly payroll records, including the records of the Contractor's subcontractors and agents, to the City Engineer for every week that work is being done on the contract. The submittal shall be within twenty-one (21) calendar days of the end of the Contractor's weekly pay period.

Employees shall receive the full amounts accrued at the time of the payment, computed at rates not less than those stated in the prevailing wage rate and each employee's rate shall be determined by the work that is done within the trade or occupation classification which should be properly assigned to the employee.

An employee's classification shall not be changed to a classification of a lesser rate during the contract. If, during the term of the contract, an employee works in a higher pay classification than the one which was previously properly assigned to the employee, then that employee shall be considered to be in the higher pay classification for the balance of the contract, receive the appropriate higher rate of pay, and she/he shall not receive a lesser rate during the balance of the contract. For purposes of clarification, it is noted that there is a distinct difference between working in a different classification with higher pay and doing work within a classification that has varying rates of pay which are determined by the type of work that is done within the classification. For example, the classification "Operating Engineer" provides for different rates of pay for various classes of work and the Employer shall compensate an employee classified as an "Operating Engineer" based on the highest class of work that is done in one day. Therefore, an "Operating Engineer's" rate may vary on a day to day basis depending on the type of work that is done, but it will never be less than the base rate of an "Operating Engineer". Also, as a matter of clarification, it is recognized that an employee may work in a higher paying classification merely by chance and without prior intention, calculation or design. If such is the case and the performance of the work is truly incidental and the occurrence is infrequent, inconsequential and does not serve to undermine the single classification principle herein, then it may not be required that the employee be considered to be in the higher pay classification and receive the higher rate of pay for the duration of the contract. However, the Contractor is not precluded or prevented from paying the higher rate for the limited time that an employee performs work that is outside of the employee's proper classification.

Questions regarding an employee's classification, rate of pay or rate of pay within a classification, shall be resolved by reference to the established practice that predominates in the industry and on which the trade or occupation rate/classification is based. Rate of pay and classification disputes shall be resolved by relying upon practices established by collective bargaining agreements and guidelines used in such determination by appropriate recognized trade unions operating within the City of Madison.

The Contractor, its Subcontractors and Agents shall submit to interrogation regarding compliance with the provisions of this ordinance.

Mulcting of the employees by the Contractor, Subcontractor, and Agents on Public Works contracts, such as by kickbacks or other devices, is prohibited. The normal rate of wage of the employees of the Contractor, Subcontractor, and Agents shall not be reduced or otherwise diminished as a result of payment of the prevailing wage rate on a public works contract.

Hourly contributions. Hourly contributions shall be determined in accordance with the prevailing wage rate and with DWD. 290.01(10), Wis. Admin. Code.

Apprentices and Subjourneypersons. Apprentices and subjourneypersons performing work on the project shall be compensated in accordance with the prevailing wage rate and with DWD 290.02, and 290.025, respectively, Wis. Admin. Code.

Straight Time Wages. The Contractor may pay straight time wages as determined by the prevailing wage rate and DWD 290.04, Wis. Admin. Code.

Overtime Wages. The Contractor shall pay overtime wages as required by the prevailing wage rate and DWD 290.05, Wis. Admin. Code.

Posting of Wage Rates and Hours. A clearly legible copy of the prevailing wage rate, together with the provisions of Sec. 66.0903(10)(a) and (11)(a), Wis. Stats., shall be kept posted in at least one conspicuous and easily accessible place at the project site by the Contractor and such notice shall remain posted during the full time any laborers, workers or mechanics are employed on the contract.

Evidence of Compliance by Contractor. Upon completion of the contract, the Contractor shall file with the Department of Public Works an affidavit stating:

a. That the Contractor has complied fully with the provisions and requirements of Sec. 66.0903(3), Wis. Stats., and Chapter DWD 290, Wis. Admin. Code; the Contractor has received evidence of compliance from each of the agents and subcontractors; and the names and addresses of all of the subcontractors and agents who worked on the contract.

b. That full and accurate records have been kept, which clearly indicate the name and trade or occupation of every laborer, worker or mechanic employed by the Contractor in connection with work on the project. The records shall show the number of hours worked by each employee and the actual wages paid therefor; where these records will be kept and the name, address and telephone number of the person who will be responsible for keeping them. The records shall be retained and made available for a period of at least three (3) years following the completion of the project of public works and shall not be removed without prior notification to the municipality.

Evidence of Compliance by Agent and Subcontractor. Each agent and subcontractor shall file with the Contractor, upon completion of their portion of the work on the contract an affidavit stating that all the provisions of Sec. 66.0903(3), Wis. Stats., have been fully complied with and that full and accurate records have been kept, which clearly indicate the name and trade or occupation of every laborer, worker or mechanic employed by the Contractor in connection with work on the project. The records shall show the number of hours worked by each employee and the actual wages paid therefor; where these records shall be kept and the name, address and telephone number of the person who shall be responsible for keeping them. The records shall be retained and made available for a period of at least three (3) years following the completion of the project of public works and shall not be removed without prior notification to the municipality.

Failure to Comply with the Prevailing Wage Rate. If the Contractor fails to comply with the prevailing wage rate, she/he shall be in default on the contract.

5. **Affirmative Action.** In the performance of the services under this Agreement the Contractor agrees not to discriminate against any employee or applicant because of race, religion, marital status, age, color, sex, disability, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, political beliefs, or student status. The Contractor further agrees not to discriminate against any subcontractor or person who offers to subcontract on this contract because of race, religion, color, age, disability, sex or national origin.

The Contractor agrees that within thirty (30) days after the effective date of this agreement, the Contractor will provide to the City Affirmative Action Division certain workforce utilization statistics, using a form to be furnished by the City.

If the contract is still in effect, or if the City enters into a new agreement with the Contractor, within one year after the date on which the form was required to be provided, the Contractor will provide updated workforce information using a second form, also to be furnished by the City. The second form will be submitted to the City Affirmative Action Division no later than one year after the date on which the first form was required to be provided.

The Contractor further agrees that, for at least twelve (12) months after the effective date of this contract, it will notify the City Affirmative Action Division of each of its job openings at facilities in Dane County for which applicants not already employees of the Contractor are to be considered. The notice will include a job description, classification, qualifications and application procedures and deadlines. The Contractor agrees to interview and consider candidates referred by the Affirmative Action Division if the candidate meets the minimum qualification standards established by the Contractor, and if the referral is timely. A referral is timely if it is received by the Contractor on or before the date started in the notice.

Articles of Agreement
Article I

The Contractor shall take affirmative action in accordance with the provisions of this contract to insure that applicants are employed, and that employees are treated during employment without regard to race, religion, color, age, marital status, disability, sex or national original and that the employer shall provide harassment free work environment for the realization of the potential of each employee. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training including apprenticeship insofar as it is within the control of the Contractor. The Contractor agrees to post in conspicuous places available to employees and applicants notices to be provided by the City setting out the provisions of the nondiscrimination clauses in this contract.

Article II

The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractors state that all qualified or qualifiable applicants will be employed without regard to race, religion, color, age, marital status, disability, sex or national origin.

Article III

The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided by the City advising the labor union or worker's representative of the Contractor's equal employment opportunity and affirmative action commitments. Such notices shall be posted in conspicuous places available to employees and applicants for employment.

Article V

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison, including the contract compliance requirements. The Contractor agrees to submit the model affirmative action plan for public works contractors in a form approved by the Director of Affirmative Action.

Article VI

The Contractor will maintain records as required by Section 39.02(9)(f) of the Madison General Ordinances and will provide the City Affirmative Action Division with access to such records and to persons who have relevant and necessary information, as provided in Section 39.02(9)(f). The City agrees to keep all such records confidential, except to the extent that public inspection is required by law.

Article VII

In the event of the Contractor's or subcontractor's failure to comply with the Equal Employment Opportunity and Affirmative Action Provisions of this contract or Section 39.03 and 39.02 of the Madison General Ordinances, it is agreed that the City at its option may do any or all of the following:

1. Cancel, terminate or suspend this Contract in whole or in part.

2. Declare the Contractor ineligible for further City contracts until the Affirmative Action requirements are met.

3. Recover on behalf of the City from the prime Contractor 0.5 percent of the contract award price for each week that such party fails or refuses to comply, in the nature of liquidated damages, but not to exceed a total of five percent (5%) of the contract price, or five thousand dollars ($5,000), whichever is less. Under public works contracts, if a subcontractor is in noncompliance, the City may recover liquidated damages from the prime Contractor in the manner described above. The preceding sentence shall not be construed to prohibit a prime Contractor from recovering the amount of such damage from the non-complying subcontractor.

Article VIII

The Contractor shall include the above provisions of this contract in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor shall take such action with respect to any subcontractor as necessary to enforce such provisions, including sanctions provided for noncompliance.

Article IX

The Contractor shall allow the maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this contract.

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008

IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused these presents to be sealed with its corporate seal and to be subscribed by its Mayor and City Clerk the day and year first above written.

Countersigned:

Keera L. Sainsbury 8/7/13
Witness Date

Keera L. Sainsbury 8/7/13
Witness Date

JOE DANIELS CONSTRUCTION CO., INC.
Company Name

Joseph A. Daniels 8/7/13
President Date
Joseph A. Daniels

Jerrald M. Daniels 8/7/13
Secretary Date
Jerrald M. Daniels

CITY OF MADISON, WISCONSIN

Provisions have been made to pay the liability that will accrue under this contract.

Franklin for
Finance Director

Approved as to form:

M P. My
City Attorney

Signed this 16/9 day of August 20 13

Witness

Jean K. Phelps
Witness

Mayor Date 8-19-13

Mark Woulf for 8/9/13
City Clerk Date

SECTION L: PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we **JOE DANIELS CONSTRUCTION CO., INC.** as principal, and Cincinnati Insurance Company Company of Cincinnati, Ohio as surety, are held and firmly bound unto the City of Madison, Wisconsin, in the sum of **TWO MILLION SIX HUNDRED FIFTY-SIX THOUSAND THREE HUNDRED SIXTY-ONE DOLLARS AND TWENTY-NINE CENTS ($2,656,361.29)**, lawful money of the United States, for the payment of which sum to the City of Madison, we hereby bind ourselves and our respective executors and administrators firmly by these presents.

The condition of this Bond is such that if the above bounden shall on his/her part fully and faithfully perform all of the terms of the Contract entered into between him/herself and the City of Madison for the construction of:

CENTRAL PARK PHASE 1A
CONTRACT NO. 7008

Bond No. 1200035

in Madison, Wisconsin, and shall pay all claims for labor performed and material furnished in the prosecution of said work, and save the City harmless from all claims for damages because of negligence in the prosecution of said work, and shall save harmless the said City from all claims for compensation (under Chapter 102, Wisconsin Statutes) of employees and employees of subcontractor, then this Bond is to be void, otherwise of full force, virtue and effect.

Signed and sealed this 7th day of August 2013,

Countersigned:

Witness

Secretary
Jerrald M. Daniels

Approved as to form:

City Attorney

JOE DANIELS CONSTRUCTION CO., INC.
Company Name (Principal)

President
Joseph A. Daniels

Seal (none)

CINCINNATI INSURANCE COMPANY
Surety Seal

☐ Salary Employee ☒ Commission

By

Attorney-in-Fact
Patrick A. McKenna

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under License No. 2349196 for the year 20 13, and appointed as attorney-in-fact with authority to execute this payment and performance bond which power of attorney has not been revoked.

August 7, 2013
Date

Agent
Patrick A. McKenna - Attorney-in-Fact

THE CINCINNATI INSURANCE COMPANY

Fairfield, Ohio

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That THE CINCINNATI INSURANCE COMPANY, a corporation organized under the laws of the State of Ohio, and having its principal office in the City of Fairfield, Ohio, does hereby constitute and appoint

Tim Hausmann; Jeff Hausmann; Steven L. Squires; Sheila Dickey; Judith A. Walker; Patrick A. McKenna; Brooke L. Parker and/or Kelsey Jacobson

of Madison, Wisconsin its true and lawful Attorney(s)-in-Fact to sign, execute, seal and deliver on its behalf as Surety, and as its act and deed, any and all bonds, policies, undertakings, or other like instruments, as follows:

Any such obligations in the United States, up to Thirty Million and No/100 Dollars ($30,000,000.00).

This appointment is made under and by authority of the following resolution passed by the Board of Directors of said Company at a meeting held in the principal office of the Company, a quorum being present and voting, on the 6th day of December, 1958, which resolution is still in effect:

"RESOLVED, that the President or any Vice President be hereby authorized, and empowered to appoint Attorneys-in-Fact of the Company to execute any and all bonds, policies, undertakings, or other like instruments on behalf of the Corporation, and may authorize any officer or any such Attorney-in-Fact to affix the corporate seal; and may with or without cause modify or revoke any such appointment or authority. Any such writings so executed by such Attorneys-in-Fact shall be binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company."

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the Company at a meeting duly called and held on the 7th day of December, 1973.

"RESOLVED, that the signature of the President or a Vice President and the seal of the Company may be affixed by facsimile on any power of attorney granted, and the signature of the Secretary or Assistant Secretary and the seal of the Company may be affixed by facsimile to any certificate of any such power and any such power of certificate bearing such facsimile signature and seal shall be valid and binding on the Company. Any such power so executed and sealed and certified by certificate so executed and sealed shall, with respect to any bond or undertaking to which it is attached, continue to be valid and binding on the Company."

IN WITNESS WHEREOF, THE CINCINNATI INSURANCE COMPANY has caused these presents to be sealed with its corporate seal, duly attested by its Vice President this 10th day of October, 2008.

The Cincinnati Insurance Company CORPORATE SEAL OHIO

THE CINCINNATI INSURANCE COMPANY

Thomas H. Kelly

Vice President

STATE OF OHIO) ss:
COUNTY OF BUTLER)

On this 10th day of October, 2008, before me came the above-named Vice President of THE CINCINNATI INSURANCE COMPANY, to me personally known to be the officer described herein, and acknowledged that the seal affixed to the preceding instrument is the corporate seal of said Company and the corporate seal and the signature of the officer were duly affixed and subscribed to said instrument by the authority and direction of said corporation.

NOTARIAL SEAL STATE OF OHIO

Mark J. Huller

MARK J. HULLER, Attorney at Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date. Section 147.03 O.R.C.

I, the undersigned Secretary or Assistant Secretary of THE CINCINNATI INSURANCE COMPANY, hereby certify that the above is a true and correct copy of the Original Power of Attorney issued by said Company, and do hereby further certify that the said Power of Attorney is still in full force and effect.

GIVEN under my hand and seal of said Company at Fairfield, Ohio.

this 7th day of August, 2013

The Cincinnati Insurance Company CORPORATE SEAL OHIO

Gregory J. Schlosser

Secretary

BN-1005 (10/08)

SUPERSE ECISION WI20070010
U. S. DE TMENT OF LABOR
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin
DECISION NUMBER: WI130010
DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

DATE: February 1, 2013

LABORERS CLASSIFICATION:		Basic Hourly Rates	Fringe Benefits
Group 1:	General Laborer; Tree Trimmer; Conduit Layer; Demolition and Wrecking Laborer; Guard Rail, Fence and Bridge Builder; Landscaper, Multiplate Culvert Assembler; Stone Handler; Bituminous Worker (Shoveler, Loader, Utility Man); Batch Truck Dumper; or Cement Handler; Bituminous Worker; (Dumper, Ironer, Smoother, Tamper); Concrete Handler	$27.20	13.45
Group 2:	Air Tool Operator; Joint Sawer and Filler (Pavement); Vibrator or Tamper Operator (Mechanical Hand Operated); Chain Saw Operator; Demolition Burning Torch Laborer	27.30	13.45
Group 3:	Bituminous Worker (Raker and Luteman); Formsetter (Curb, Sidewalk, and Pavement); Strike Off man	27.35	13.45
Group 4:	Line and Grade Specialist	27.55	13.45
Group 5:	Blaster and Powderman	27.40	13.45
Group 6:	Flagperson and Traffic Control Person	23.55	13.45

Truck Drivers:	Basic Hourly Rates	Fringe Benefits
1 & 2 Axles	23.16	17.13
Three or More Axles; Euclids, Dumptor & Articulated, Truck Mechanic	23.31	17.13

CLASSES OF LABORER AND MECHANICS

Bricklayer	28.41	12.81
Carpenter	30.48	15.80
Millwright	32.11	15.80
Piledriverman	30.98	15.80
Ironworker	31.25	19.48
Cement Mason/Concrete Finisher	32.09	16.13
Electrician		See Page 3
Line Construction		
Lineman	38.25	18.00
Heavy Equipment Operator	34.43	16.71
Equipment Operator	30.60	15.41
Heavy Groundman Driver	26.78	14.11
Light Groundman Driver	24.86	13.45
Groundsman	21.04	12.16
Painter, Brush	24.50	16.27
Painter, Spray, Structural Steel,Bridges	25.50	16.27
Well Drilling:		
Well Driller	16.52	3.70

Notes: Welders receive rate prescribed for craft performing operation to which welding is incidental. Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR, 5.5(a)(1)(ii)). Includes Modification #0, dated January 4, 2013; Modification #1 dated February 1, 2013.

SUPERSEDES DECISION WI20070010
U. S. DEPARTMENT OF LABOR
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin
DECISION NUMBER: WI130010
DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

DATE: February 1, 2013

POWER EQUIPMENT OPERATORS CLASSIFICATION:	Basic Hourly Rates	Fringe Benefits
Group 1: Cranes, tower cranes and derricks, with or without attachments, with a lifting capacity of over 100 tons or cranes, tower cranes and derricks with boom, leads and/or jib lengths measuring 176 feet or longer	$35.22	$19.65
Group 2: Cranes, tower cranes and derricks, with or without attachments, with a lifting capacity of 100 tons or less or cranes, tower cranes and derricks with boom, leads and/or jib lengths measuring 175 feet or less, and backhoes (excavators) having a manufacturer's rated capacity of 3 cu. yds. and over, caisson rigs, pile driver, dredge operator, dredge engineer.	$34.72	$19.65
Group 3: Mechanic or welder - heavy duty equipment, cranes with a lifting capacity of 25 tons or less, concrete breaker (manual or remote); vibrator/sonic concrete breaker; concrete laser screed; concrete slipform paver; concrete batch plant operator; concrete pavement spreader - heavy duty (rubber tired); concrete spreader and distributor, automatic subgrader (concrete); concrete grinder and planing machine; concrete slipform curb and gutter machine; slipform concrete placer; tube finisher; hydro blaster (10,000 psi and over); bridge paver; concrete conveyor system; concrete pump; stabilizing mixer (self propelled); shoulder widener; asphalt plant engineer; bituminous paver; bump cutter and grooving machine; milling machine; screed (bituminous paver); asphalt heater, planer and scarifier; backhoes (excavators) having a manufacturers rated capacity of under 3 cu. yds.; grader or motor patrol; tractor (scraper, dozer, pusher, loader); scraper - rubber tired (single or twin engine); endloader hydraulic backhoe (tractor-type); trenching machine; skid rigs; tractor, side boom (heavy); drilling or boring machine (mechanical heavy); roller (over 5 tons); percussion or rotary drilling machine; air track; blaster; loading machine (conveyor); tugger; boatmen; winches and A-frames; post driver; material hoist operator.	$34.22	$19.65
Group 4: Greaser, roller steel (5 tons or less); roller (pneumatic tired) - self-propelled; tractor (mounted or towed compactors and light equipment); shouldering machine; self-propelled chip spreader; concrete spreader; finishing machine; mechanical float; curing machine; power subgrader; joint saw (multiple blade) belting machine; burlap machine; texturing machine; tractor, endloader (rubber tired) - light; jeep digger; fork lift; mulcher; launch operator; fireman; environmental burner.	$33.96	$19.65
Group 5: Air compressor; power pack; vibratory hammer and extractor; heavy equipment, leadman; tank car heaters; stump chipper; curb machine operator; concrete pro-portioning plants generators; mudjack operator; rock breaker; crusher or screening plant; screed (milling machine); automatic belt conveyor and surge bin; pug mill operator; oiler; pump (over 3 inches); drilling machine helper.	$33.67	$19.65
Group 6: Off – road material hauler with or without ejector	$27.77	$19.65

Premium Pay:
EPA Level "A" protection - $3.00 per hour
EPA Level "B" protection - $2.00 per hour
EPA Level "C" protection - $1.00 per hours

N-2

SUPERSE' 'ECISION WI20070010
U. S. D. .TMENT OF LABOR
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin
DECISION NUMBER: WI130010
DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

DATE: February 1, 2013

LABORERS CLASSIFICATION:	Rates	Benefits
Electricians		
Area 1	$27.80	16.52
Area 2:		
Electricians	29.13	17.92
Area 3:		
Electrical contracts under $130,000	26.24	16.85
Electrical contracts over $130,000	29.41	16.97
Area 4:	28.10	17.24
Area 5	28.61	16.60
Area 6	35.25	19.30
Area 8		
Electricians	30.00	17.76
Area 9:		
Electricians	32.94	18.71
Area 10	28.97	19.55
Area 11	31.27	23.12
Area 12	32.87	19.23
Area 13	32.20	21.64
Teledata System Installer		
Area 14		
Installer/Technician	21.89	11.83
Sound & Communications		
Area 15		
Installer	16.47	14.84
Technician	24.75	16.04

Area 1 - CALUMET (except township of New Holstein), GREEN LAKE (N. part, including Townships of Berlin, St. Marie and Seneca), MARQUETTE (N. part, including Townships of Crystal Lake, Neshkoro, Newton & Springfield), OUTAGAMIE, WAUPACA, WAUSHARA and WINNEBAGO COUNTIES.

Area 2 - ASHLAND, BARRON, BAYFIELD, BUFFALO, BURNETT, CHIPPEWA, CLARK (except Mayville, Colby, Unity, Sherman, Fremont, Lynn and Sherwood), CRAWFORD, DUNN, EAU CLAIRE, GRANT, IRON, JACKSON, LA CROSSE, MONROE, PEPIN, PIERCE, POLK, PRICE, RICHLAND, RUSK, ST. CROIX, SAWYER, TAYLOR, TREMPEALEAU, VERNON and WASHBURN COUNTIES

Area 3 - FLORENCE (townships of Aurora, Commonwealth, Fern, Florence and Homestead), MARINETTE (Niagara township)

Area 4 - BROWN, DOOR, KEWAUNEE, MANITOWOC (except Schleswig), MARINETTE (Wausauke and area south thereof), OCONTO, MENOMINEE (East of a line 6 miles West of the West boundary of Oconto County), SHAWANO (except area North of Townships of Aniwa and Hutchins) COUNTIES.

Area 5 - ADAMS, CLARK (Colby, Freemont, Lynn, Mayville, Sherman, Sherwood, Unity), FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, MARINETTE (Area North of the town of Wausaukee), MENOMINEE (Area West of a line 6 miles West of the West boundary of Oconto County), ONEIDA, PORTAGE, SHAWANO (Area North of the townships of Aniwa and Hutchins), VILAS AND WOOD COUNTIES

Area 6 - KENOSHA COUNTY

Area 8 - DODGE, (Emmet Township only), GREEN, JEFFERSON, LAFAYETTE, RACINE (Burlington township), ROCK and WALWORTH COUNTIES

Area 9 - COLUMBIA, DANE, DODGE, (area west of Hwy. 26, except Chester & Emmet Townships), GREEN LAKE (except townships of Berlin, Seneca and St. Marie), IOWA, MARQUETTE (except townships of Neshkoka, Crystal Lake, Newton and Springfield), and SAUK COUNTIES

Area 10 - CALUMET (Township of New Holstein), DODGE (East of Hwy. 26 including Chester Township), FOND DU LAC, MANITOWOC (Schleswig), and SHEBOYGAN COUNTIES

Area 11 - DOUGLAS COUNTY

Area 12 - RACINE (except Burlington township) COUNTY

Area 13 - MILWAUKEE, OZAUKEE, WASHINGTON and WAUKESHA COUNTIES

Area 14 - Statewide.

Area 15 - DODGE (East of Hwy 26 including Chester Twp, excluding Emmet Twp), FOND DU LAC (Except Waupun), MILWAUKEE, OZAUKEE, MANITOWOC (Schleswig), WASHINGTON, AND WAUKESHA COUNTIES.

N-3

PREVAILING WAGE RATE DETERMINATION
Issued by the State of Wisconsin
Department of Workforce Development
Pursuant to s. 66.0903, Wis. Stats.
Issued On: 01/10/2013
Amended On: 02/18/2013

DETERMINATION NUMBER: 201300080

EXPIRATION DATE: Prime Contracts MUST Be Awarded or Negotiated On Or Before 12/31/2013. If NOT, You MUST Reapply.

PROJECT NAME: ALL PUBLIC WORKS PROJECTS UNDER SEC 66.0903, STATS - CITY OF MADISON

PROJECT LOCATION: MADISON CITY, DANE COUNTY, WI

CONTRACTING AGENCY: CITY OF MADISON-ENGINEERING

CLASSIFICATION:	Contractors are responsible for correctly classifying their workers. Either call the Department of Workforce Development (DWD) with trade or classification questions or consult DWD's Dictionary of Occupational Classifications & Work Descriptions on the DWD website at: dwd.wisconsin.gov/er/prevailing_wage_rate/Dictionary/dictionary_main.htm.
OVERTIME:	Time and one-half must be paid for all hours worked: - over 10 hours per day on prevailing wage projects - over 40 hours per calendar week - Saturday and Sunday - on all of the following holidays: January 1; the last Monday in May; July 4; the 1st Monday in September; the 4th Thursday in November; December 25; - The day before if January 1, July 4 or December 25 falls on a Saturday; - The day following if January 1, July 4 or December 25 falls on a Sunday. Apply the time and one-half overtime calculation to whichever is higher between the Hourly Basic Rate listed on this project determination or the employee's regular hourly rate of pay. Add any applicable Premium or DOT Premium to the Hourly Basic Rate before calculating overtime. A DOT Premium (discussed below) may supersede this time and one-half requirement.
FUTURE INCREASE:	When a specific trade or occupation requires a future increase, you MUST add the full hourly increase to the "TOTAL" on the effective date(s) indicated for the specific trade or occupation.
PREMIUM PAY:	If indicated for a specific trade or occupation, the full amount of such pay MUST be added to the "HOURLY BASIC RATE OF PAY" indicated for such trade or occupation, whevenever such pay is applicable.
DOT PREMIUM:	This premium only applies to highway and bridge projects owned by the Wisconsin Department of Transportation and to the project type heading "Airport Pavement or State Highway Construction." DO NOT apply the premium calculation under any other project type on this determination.
APPRENTICES:	Pay apprentices a percentage of the applicable journeyperson's hourly basic rate of pay and hourly fringe benefit contributions specified in this determination. Obtain the appropriate percentage from each apprentice's contract or indenture.
SUBJOURNEY:	Subjourney wage rates may be available for some of the trades or occupations indicated below with the exception of laborers, truck drivers and heavy equipment operators. Any employer interested in using a subjourney classification on this project MUST complete Form ERD-10880 and request the applicable wage rate from the Department of Workforce Development PRIOR to using the subjourney worker on this project.

This document **MUST BE POSTED** by the **CONTRACTING AGENCY** in at least one conspicuous and easily accessible place **on the site of the project** . A local governmental unit may post this document at the place normally used to post public notices if there is no common site on the project. This document **MUST** remain posted during the entire time any worker is employed on the project and **MUST** be physically incorporated into the specifications and all contracts and subcontracts. If you have any questions, please write to the Equal Rights Division, Labor Standards Bureau, P.O. Box 8928, Madison, Wisconsin 53708 or call (608) 266-6861.

The following statutory provisions apply to local governmental unit projects of public works and are set forth below pursuant to the requirements of s. 66.0903(8), Stats.

s. 66.0903 (1) (f) & s. 103.49 (1) (c) "PREVAILING HOURS OF LABOR" for any trade or occupation in any area means 10 hours per day and 40 hours per week and may not include any hours worked on a Saturday or Sunday or on any of the following holidays:

1. January 1.
2. The last Monday in May.
3. July 4.
4. The first Monday in September.
5. The 4th Thursday in November.
6. December 25.
7. The day before if January 1, July 4 or December 25 falls on a Saturday.
8. The day following if January 1, July 4 or December 25 falls on a Sunday.

s. 66.0903 (10) RECORDS; INSPECTION; ENFORCEMENT.
(a) Each contractor, subcontractor, or contractor's or subcontractor's agent performing work on a project of public works that is subject to this section shall keep full and accurate records clearly indicating the name and trade or occupation of every person performing the work described in sub. (4) and an accurate record of the number of hours worked by each of those persons and the actual wages paid for the hours worked.

s. 66.0903 (11) LIABILITY AND PENALTIES.
(a) 1. Any contractor, subcontractor, or contractor's or subcontractor's agent who fails to pay the prevailing wage rate determined by the department under sub. (3) or who pays less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor is liable to any affected employee in the amount of his or her unpaid wages or his or her unpaid overtime compensation and in an additional amount as liquidated damages as provided under subd. 2., 3., whichever is applicable.
2. If the department determines upon inspection under sub. (10) (b) or (c) that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the department shall order the contractor to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages within a period specified by the department in the order.
3. In addition to or in lieu of recovering the liability specified in subd. 1. as provided in subd. 2., any employee for and in behalf of that employee and other employees similarly situated may commence an action to recover that liability in any court of competent jurisdiction. If the court finds that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the court shall order the contractor, subcontractor, or agent to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages.
5. No employee may be a party plaintiff to an action under subd. 3. unless the employee consents in writing to become a party and the consent is filed in the court in which the action is brought. Notwithstanding s. 814.04 (1), the court shall, in addition to any judgment awarded to the plaintiff, allow reasonable attorney fees and costs to be paid by the defendant.

BUILDING OR HEAVY CONSTRUCTION

Includes sheltered enclosures with walk-in access for the purpose of housing persons, employees, machinery, equipment or supplies and non-sheltered work such as canals, dams, dikes, reservoirs, storage tanks, etc. A sheltered enclosure need not be "habitable" in order to be considered a building. The installation of machinery and/or equipment, both above and below grade level, does not change a project's character as a building. On-site grading, utility work and landscaping are included within this definition. Residential buildings of four (4) stories or less, agricultural buildings, parking lots and driveways are NOT included within this definition.

SKILLED TRADES

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer	30.16	15.31	45.47
102	Boilermaker	31.09	24.52	55.61
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add $ .80 on 6/1/2013 Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.01	17.35	49.36
104	Cabinet Installer	30.16	15.31	45.47
	Carpenter	30.16	15.31	45.47
106	Carpet Layer or Soft Floor Coverer	30.16	15.31	45.47
107	Cement Finisher	31.48	13.19	44.67
108	Drywall Taper or Finisher	25.10	14.78	39.88
109	Electrician Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.94	18.80	51.74
110	Elevator Constructor	44.94	23.84	68.78
111	Fence Erector	22.50	3.98	26.48
112	Fire Sprinkler Fitter	36.07	18.60	54.67
113	Glazier	37.13	12.32	49.45
114	Heat or Frost Insulator	33.93	23.26	57.19
115	Insulator (Batt or Blown)	27.47	19.16	46.63
116	Ironworker	30.90	19.11	50.01
	Lather	30.16	15.31	45.47
118	Line Constructor (Electrical)	37.05	16.94	53.99

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
119	Marble Finisher	20.00	0.00	20.00
120	Marble Mason	32.01	16.85	48.86
121	Metal Building Erector	18.05	8.08	26.13
122	Millwright	31.76	15.36	47.12
123	Overhead Door Installer	13.50	0.00	13.50
124	Painter	24.80	14.78	39.58
125	Pavement Marking Operator	30.00	0.00	30.00
126	Piledriver	30.66	15.31	45.97
127	Pipeline Fuser or Welder (Gas or Utility)	30.18	19.29	49.47
129	Plasterer	30.03	16.36	46.39
130	Plumber	36.17	15.37	51.54
132	Refrigeration Mechanic	42.45	16.71	59.16
133	Roofer or Waterproofer	30.40	2.23	32.63
134	Sheet Metal Worker	34.23	20.19	54.42
135	Steamfitter	41.20	16.28	57.48
137	Teledata Technician or Installer Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	21.89	11.85	33.74
138	Temperature Control Installer	41.20	16.21	57.41
139	Terrazzo Finisher Future Increase(s): Add $ .80 on 6/1/2013	26.57	16.50	43.07
140	Terrazzo Mechanic	29.51	17.63	47.14
141	Tile Finisher Future Increase(s): Add $ .80/hr on 6/1/2013.	23.77	16.50	40.27
142	Tile Setter Future Increase(s): Add $ .80/hr on 6/1/2013.	29.71	16.50	46.21
143	Tuckpointer, Caulker or Cleaner Future Increase(s): Add $ .80 on 6/1/2013 Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.01	17.35	49.36

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
144	Underwater Diver (Except on Great Lakes)	34.16	15.31	49.47
146	Well Driller or Pump Installer Future Increase(s): Add $.20/hr on 06/01/2013.	25.32	15.45	40.77
147	Siding Installer	37.20	17.01	54.21
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	28.24	15.10	43.34
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	29.64	14.64	44.28
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	24.00	11.57	35.57

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
	Single Axle or Two Axle	31.89	17.98	49.87
203	Three or More Axle	18.00	11.45	29.45
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	18.00	11.45	29.45

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $.75/hr. on 06/03/2013 Premium Increase(s): Add $1.00/hr for certified welder; Add $.25/hr for mason tender	24.19	13.90	38.09
302	Asbestos Abatement Worker	18.00	0.00	18.00
	Landscaper	15.00	3.90	18.90
310	Gas or Utility Pipeline Laborer (Other Than Sewer and Water)	20.94	12.65	33.59

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased) Premium Increase(s): DOT PREMIUMS: Pay two times the hourly basic rate on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	18.31	12.67	30.98
314	Railroad Track Laborer	23.41	6.91	30.32
315	Final Construction Clean-Up Worker	24.69	12.90	37.59

HEAVY EQUIPMENT OPERATORS
SITE PREPARATION, UTILITY OR LANDSCAPING WORK ONLY

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
501	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Milling Machine; Boring Machine (Directional, Horizontal or Vertical); Backhoe (Track Type) Having a Mfgr's Rated Capacity of 130,000 Lbs. or Over; Backhoe (Track Type) Having a Mfgr's Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Crane, Shovel, Dragline, Clamshells; Forklift (Machinery Moving or Steel Erection, 25 Ft & Over); Gradall (Cruz-Aire Type); Grader or Motor Patrol; Master Mechanic; Mechanic or Welder; Robotic Tool Carrier (With or Without Attachments); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Tractor (Scraper, Dozer, Pusher, Loader); Trencher (Wheel Type or Chain Type Having Over 8 Inch Bucket). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
502	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Environmental Burner; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Jeep Digger; Screed (Milling Machine); Skid Rig; Straddle Carrier or Travel Lift; Stump Chipper; Trencher (Wheel Type or Chain Type Having 8 Inch Bucket & Under). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
503	Air Compressor (&/or 400 CFM or Over); Augers (Vertical & Horizontal); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Crusher, Screening or Wash Plant; Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Greaser; High Pressure Utility Locating Machine (Daylighting Machine); Mulcher; Oiler; Post Hole Digger or Driver; Pump (3 Inch or Over) or Well Points; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1/hr on 6/2/2013.	30.32	18.46	48.78

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
504	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
505	Work Performed on the Great Lakes Including Crane or Backhoe Operator; Assistant Hydraulic Dredge Engineer; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder; 70 Ton & Over Tug Operator. Future Increase(s): Add $2.19/hr on 01/01/2013; Add $2.00/hr on 01/01/2014. Premium Increase(s): Add $.50/hr for Friction Crane, Lattice Boom or Crane Certification (CCO).	38.80	20.17	58.97
506	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery. Future Increase(s): Add $2.08/hr on 01/01/2013; Add $2.00/hr on 01/01/2014.	34.50	20.04	54.54
507	Work Performed on the Great Lakes Including Deck Equipment Operator, Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks - Great Lakes ONLY. Future Increase(s): Add $1.88/hr on 01/01/2013; Add $2.00/hr on 01/01/2014.	28.70	19.86	48.56

HEAVY EQUIPMENT OPERATORS
EXCLUDING SITE PREPARATION, UTILITY, PAVING LANDSCAPING WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
508	Boring Machine (Directional); Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic. Future Increase(s): Add $1/hr on 6/2/2013. Premium Increase(s): Add $.50/hr for >200 Ton / Add $1/hr at 300 Ton / Add $1.50 at 400 Ton / Add $2/hr at 500 Ton & Over.	35.12	18.46	53.58

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
509	Backhoe (Track Type) Having a Mfgr's Rated Capacity of 130,000 Lbs. or Over; Boring Machine (Horizontal or Vertical); Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With A Lifting Capacity Of 4,000 Lbs. & Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Pile Driver; Versi Lifts, Tri-Lifts & Gantrys (20,000 Lbs. & Over). Future Increase(s): Add $1/hr on 6/2/2013. Premium Increase(s): Add $.25/hr for all >45 Ton lifting capacity cranes.	34.12	18.46	52.58
510	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump (Over 46 Meter), Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Dredge (NOT Performing Work on the Great Lakes); Forklift (Machinery Moving or Steel Erection, 25 Ft & Over); Gradall (Cruz-Aire Type); Hydro-Blaster (10,000 PSI or Over); Milling Machine; Skid Rig; Traveling Crane (Bridge Type).	32.42	17.97	50.39
511	Air, Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Pump (46 Meter & Under), Concrete Conveyor (Rotec or Bidwell Type); Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Environmental Burner; Gantrys (Under 20,000 Lbs.); Grader or Motor Patrol; High Pressure Utility Locating Machine (Daylighting Machine); Manhoist; Material or Stack Hoist; Mechanic or Welder; Railroad Track Rail Leveling Machine, Tie Placer, Extractor, Tamper, Stone Leveler or Rehabilitation Equipment; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yd or More Capacity; Screed (Milling Machine); Sideboom; Straddle Carrier or Travel Lift; Tining or Curing Machine; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type Having Over 8-Inch Bucket). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
512	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Grout Pump; Hoist (Tugger, Automatic); Industrial Locomotives; Jeep Digger; Lift Slab Machine; Mulcher; Roller (Rubber Tire, 5 Ton or Under); Screw or Gypsum Pumps; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Stump Chipper; Trencher (Wheel Type or Chain Type Having 8-Inch Bucket & Under); Winches & A-Frames. Future Increase(s): Add $1/hr on 6/2/2013.	30.32	18.46	48.78

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
513	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Boatmen (NOT Performing Work on the Great Lakes); Boiler (Temporary Heat); Crusher, Screening or Wash Plant; Elevator; Farm or Industrial Type Tractor; Fireman (Asphalt Plant NOT Performing Work on the Great Lakes); Forklift; Generator (&/or 150 KW or Over); Greaser; Heaters (Mechanical); Loading Machine (Conveyor); Oiler; Post Hole Digger or Driver; Prestress Machine; Pump (3 Inch or Over) or Well Points; Refrigeration Plant or Freeze Machine; Robotic Tool Carrier (With or Without Attachments); Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1/hr on 6/2/2013.	29.69	18.46	48.15
514	Gas or Utility Pipeline, Except Sewer & Water (Primary Equipment). Future Increase(s): Add $2/hr on 1/1/2013.	34.89	20.59	55.48
515	Gas or Utility Pipeline, Except Sewer & Water (Secondary Equipment). Future Increase(s): Add $1.60/hr on 06/01/2013; Add $1.60/hr on 06/01/2014; Add $1.65/hr on 06/01/2015.	31.32	17.95	49.27
516	Fiber Optic Cable Equipment Future Increase(s): Add $1.75/hr on 02/01/2013; Add $1.75/hr on 02/01/2014	26.69	16.65	43.34

SEWER, WATER OR TUNNEL CONSTRUCTION

Includes those projects that primarily involve public sewer or water distribution, transmission or collection systems and related tunnel work (excluding buildings).

SKILLED TRADES

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add $1.45/hr on 6/01/2013 Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	35.80	16.87	52.67
105	Carpenter Future Increase(s): Add $.75/hr on 6/3/2013. Add $1.25/hr on 6/2/2014. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.93	19.81	52.74
107	Cement Finisher Future Increase(s): Add $1.87 on 6/1/13; Add $1.87 on 6/1/14; Add $1.87 on 6/1/15; Add $1.75 on 6/1/16. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	32.09	16.13	48.22
109	Electrician Future Increase(s): Add $1.60/hr on 6/1/2013. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.20	21.71	53.91
111	Fence Erector	22.50	3.98	26.48
116	Ironworker	30.90	19.11	50.01
118	Line Constructor (Electrical)	37.05	16.94	53.99
125	Pavement Marking Operator	28.10	15.00	43.10
126	Piledriver	30.66	15.31	45.9
130	Plumber	36.97	17.66	54.63

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
135	Steamfitter	41.20	16.28	57.48
137	Teledata Technician or Installer	21.26	11.75	33.01
143	Tuckpointer, Caulker or Cleaner	32.01	16.85	48.86
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
146	Well Driller or Pump Installer	21.00	2.23	23.23
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	28.24	15.10	43.34
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	29.64	14.64	44.28
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.65

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	25.87	13.00	38.87
203	Three or More Axle	17.54	13.85	31.39
204	Articulated, Euclid, Dumptor, Off Road Material Hauler	31.89	17.98	49.87
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	17.00	0.00	17.00

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $.80/hr. on 06/03/2013 Premium Increase(s): Add $.20 for blaster, bracer, manhole builder, caulker, bottomman and power tool; Add $.55 for pipelayer; Add $1.00 for tunnel work 0-15 lbs. compressed air; Add $2.00 for over 15-30 lbs. compressed air; Add $3.00 for over 30 lbs. compressed air.	25.53	13.89	39.42
303	Landscaper	26.92	12.51	39.43

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
304	Flagperson or Traffic Control Person	17.33	15.53	32.86
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
314	Railroad Track Laborer	23.41	6.91	30.32

HEAVY EQUIPMENT OPERATORS SEWER, WATER OR TUNNEL WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
521	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Master Mechanic; Pile Driver. Future Increase(s): Add $1/hr on 6/2/2013. Premium Increase(s): Add $.50/hr for >200 Ton / Add $1/hr at 300 Ton / Add $1.50 at 400 Ton / Add $2/hr at 500 Ton & Over.	35.12	18.46	53.58
522	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Boring Machine (Directional); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump (Over 46 Meter), Concrete Conveyor (Rotec or Bidwell Type); Concrete Spreader & Distributor; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. & Under; Dredge (NOT Performing Work on the Great Lakes); Milling Machine; Skid Rig; Telehandler; Traveling Crane (Bridge Type). Future Increase(s): Add $1/hr on 6/2/2013.	32.92	18.46	51.38
523	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Boring Machine (Horizontal or Vertical); Bulldozer or Endloader (Over 40 hp); Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Concrete Pump (46 Meter & Under), Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Manhoist; Material or Stack Hoist; Mechanic or Welder; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yd or More Capacity; Screed (Milling Machine); Sideboom; Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type Having Over 8-Inch Bucket). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
524	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Environmental Burner; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Hoist (Tugger, Automatic); Grout Pump; Jeep Digger; Lift Slab Machine; Mulcher; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Screw or Gypsum Pumps; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Stump Chipper; Tining or Curing Machine; Trencher (Wheel Type or Chain Type Having 8-Inch Bucket & Under); Winches & A-Frames.	31.89	18.11	50.00
525	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Crusher, Screening or Wash Plant; Farm or Industrial Type Tractor; Fireman (Asphalt Plant NOT Performing Work on the Great Lakes); Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Loading Machine (Conveyor); Post Hole Digger or Driver; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1/hr on 6/2/2013.	29.69	18.46	48.15
526	Boiler (Temporary Heat); Forklift; Greaser; Oiler.	30.44	19.10	49.54
527	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
528	Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	37.45	19.45	56.90
529	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	27.75	19.15	46.90
530	Work Performed on the Great Lakes Including Deck Equipment Operator; Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under), Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks - Great Lakes ONLY.	27.75	19.15	46.90

AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION

Includes all airport projects (excluding buildings) and all projects awarded by the Wisconsin Department of Transportation (excluding buildings).

SKILLED TRADES

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason	35.58	19.20	54.78
105	Carpenter	30.16	15.31	45.47
107	Cement Finisher Future Increase(s): Add $1.87 on 6/1/13; Add $1.87 on 6/1/14; Add $1.87 on 6/1/15; Add $1.75 on 6/1/16. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	32.09	16.13	48.22
109	Electrician Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.94	18.80	51.74
111	Fence Erector	28.00	4.50	32.50
116	Ironworker	30.90	19.11	50.01
118	Line Constructor (Electrical)	31.29	15.34	46.63
124	Painter	26.65	13.10	39.75
125	Pavement Marking Operator	29.22	16.71	45.93
126	Piledriver	30.66	15.31	45.97
133	Roofer or Waterproofer	30.40	2.23	32.63
137	Teledata Technician or Installer	21.26	11.75	33.01
143	Tuckpointer, Caulker or Cleaner	32.01	16.85	48.86
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	17.00	46.64
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	35.50	15.09	50.59

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.65

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	33.22	18.90	52.12
203	Three or More Axle Future Increase(s): Add $1.85/hr on 6/1/2013. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	23.31	17.13	40.44
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	27.77	19.90	47.67
205	Pavement Marking Vehicle	23.84	14.94	38.78
206	Shadow or Pilot Vehicle	33.22	18.90	52.12
207	Truck Mechanic	22.50	16.19	38.69

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $1.70/hr on 6/1/2013; Add $1.60/hr on 6/1/2014. Premium Increase(s): Add $.10/hr for topman, air tool operator, vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add $.15/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add $.20/hr for blaster and powderman; Add $.25/hr for bottomman; Add $.35/hr for line and grade specialist; Add $.45/hr for pipelayer. / DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	28.35	13.90	42.25
302	Asbestos Abatement Worker	18.00	0.00	18.00
303	Landscaper Future Increase(s): Add $1.70/hr on 6/1/13; Add $1.60/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	28.35	13.90	42.25
304	Flagperson or Traffic Control Person Future Increase(s): Add $1.70/hr on 6/1/2013; Add $1.60/hr on 6/1/2014. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	24.70	13.90	38.60
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
314	Railroad Track Laborer	23.41	6.91	30.32

HEAVY EQUIPMENT OPERATORS
AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
531	Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Traveling Crane (Bridge Type). Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	35.22	19.90	55.12
532	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With A Lifting Capacity Of 4,000 Lbs., & Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	34.72	19.90	54.62

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
533	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boatmen (NOT Performing Work on the Great Lakes); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vlbratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane WIth a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	34.22	19.90	54.12
534	Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Asphalt Plant, Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Hoist (Tugger, Automatic); Jeep Digger; Joint Sawer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or WIthout Attachments); Telehandler; Tining or Curing Machine. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s):	33.96	19.90	53.86

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
	DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.			
535	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Concrete Proportioning Plant; Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	33.67	19.90	53.57
536	Fiber Optic Cable Equipment.	25.74	15.85	41.59
537	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
538	Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	37.45	19.45	56.90
539	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	27.75	19.15	46.90
540	Work Performed on the Great Lakes Including Deck Equipment Operator, Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks-Great Lakes ONLY.	27.75	19.15	46.90

LOCAL STREET OR MISCELLANEOUS PAVING CONSTRUCTION

Includes roads, streets, alleys, trails, bridges, paths, racetracks, parking lots and driveways (except residential or agricultural), public sidewalks or other similar projects (excluding projects awarded by the Wisconsin Department of Transportation).

SKILLED TRADES

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason	33.00	15.00	48.00
105	Carpenter	30.16	15.31	45.47
107	Cement Finisher	31.48	15.68	47.16
109	Electrician Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.94	18.80	51.74
111	Fence Erector	22.50	3.98	26.48
116	Ironworker	30.90	19.11	50.01
118	Line Constructor (Electrical)	37.05	16.94	53.9[illegible]
124	Painter	24.80	14.78	39.58
125	Pavement Marking Operator	28.10	15.00	43.10
126	Piledriver	30.66	15.31	45.97
133	Roofer or Waterproofer	30.40	2.23	32.63
137	Teledata Technician or Installer	21.26	11.75	33.01
143	Tuckpointer, Caulker or Cleaner	32.01	16.85	48.86
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	14.55	44.19
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	30.60	14.64	45.24
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.[illegible]

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	25.87	13.00	38.87
203	Three or More Axle	17.00	0.00	17.00
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
205	Pavement Marking Vehicle	20.85	11.02	31.87
206	Shadow or Pilot Vehicle	25.87	13.00	38.87
207	Truck Mechanic	17.00	0.00	17.00

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	27.20	13.37	40.57
	Landscaper	18.25	1.11	19.36
304	Flagperson or Traffic Control Person	17.33	15.53	32.86
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
314	Railroad Track Laborer	23.41	6.91	30.32

HEAVY EQUIPMENT OPERATORS
CONCRETE PAVEMENT OR BRIDGE WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
541	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	35.22	19.90	55.12
542	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. & Under; Crane, Tower Crane Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	34.72	19.90	54.62

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
543	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	34.22	19.90	54.12
544	Backfiller; Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Jeep Digger; Joint Sawer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler; Tining or Curing Machine. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.	33.96	19.90	53.86

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
545	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Concrete Proportioning Plant; Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack.	29.82	17.98	47.80
546	Fiber Optic Cable Equipment.	25.74	15.85	41.59
547	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
548	Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	37.45	19.45	56.90
549	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or more); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	27.75	19.15	46.90
550	Work Performed on the Great Lakes Including Deck Equipment Operator; Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks - Great Lakes ONLY.	27.75	19.15	46.90

HEAVY EQUIPMENT OPERATORS
ASPHALT PAVEMENT OR OTHER WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
551	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self Erecting Tower Crane With a Lifting Capacity of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads and/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic.	34.62	17.98	52.60
552	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity Of 4,000 Lbs. & Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add $1/hr on 6/2/2013.	32.92	18.46	51.38

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
553	Air, Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Laser/Screed; Concrete Slipform Placer Curb & Gutter Machine; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Railroad Track Rail Leveling Machine, Tie Placer, Extractor, Tamper, Stone Leveler or Rehabilitation Equipment; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
554	Backfiller; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Asphalt Plant, Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Hoist (Tugger, Automatic); Jeep Digger; Joint Sawer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Self-Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14.	33.67	19.55	53.22
555	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14.	33.67	19.55	53.22
556	Fiber Optic Cable Equipment.	25.74	15.85	41.59

RESIDENTIAL OR AGRICULTURAL CONSTRUCTION

Includes single family houses or apartment buildings of no more than four (4) stories in height and all buildings, structures or facilities that are primarily used for agricultural or farming purposes, excluding commercial buildings. For classification purposes, the exterior height of a residential building, in terms of stories, is the primary consideration. incidental items such as site work, driveways, parking lots, private sidewalks, private septic systems or sewer and water laterals connected to a public system and swimming pools are included within this definition. Residential buildings of five (5) stories and above are NOT included within this definition.

SKILLED TRADES

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer	19.50	11.10	30.60
102	Boilermaker	31.09	24.52	55.61
103	Bricklayer, Blocklayer or Stonemason	23.00	0.00	23.00
104	Cabinet Installer	16.25	3.22	19.47
105	Carpenter	30.16	1.36	31.52
106	Carpet Layer or Soft Floor Coverer	23.95	6.48	30.43
107	Cement Finisher	22.46	2.71	25.17
108	Drywall Taper or Finisher	15.50	0.00	15.5
109	Electrician	17.00	13.64	30.64
110	Elevator Constructor	44.94	23.84	68.78
111	Fence Erector	18.52	5.93	24.45
112	Fire Sprinkler Fitter	36.07	18.60	54.67
113	Glazier	37.13	12.32	49.45
114	Heat or Frost Insulator	35.00	0.00	35.00
115	Insulator (Batt or Blown)	18.50	13.98	32.48
116	Ironworker	30.90	19.11	50.01
117	Lather	30.16	1.36	31.52
119	Marble Finisher	16.50	2.38	18.88
120	Marble Mason	23.00	0.00	23.00
121	Metal Building Erector	16.52	1.82	18.34
123	Overhead Door Installer	17.00	0.00	17.00
124	Painter	23.00	11.27	34.(
125	Pavement Marking Operator	28.10	15.00	43.10

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
129	Plasterer	20.00	0.00	20.00
130	Plumber	38.90	0.00	38.90
132	Refrigeration Mechanic	33.00	1.79	34.79
133	Roofer or Waterproofer	17.50	3.73	21.23
134	Sheet Metal Worker	21.03	3.40	24.43
135	Steamfitter	41.20	16.28	57.48
137	Teledata Technician or Installer	19.23	1.46	20.69
138	Temperature Control Installer	21.00	0.00	21.00
139	Terrazzo Finisher	26.57	16.00	42.57
140	Terrazzo Mechanic	30.01	17.13	47.14
141	Tile Finisher	20.60	4.88	25.48
142	Tile Setter	19.00	0.00	19.00
143	Tuckpointer, Caulker or Cleaner	32.50	2.84	35.34
146	Well Driller or Pump Installer	19.00	7.30	26.30
	Siding Installer	19.07	0.00	19.07

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	28.05	4.18	32.23
203	Three or More Axle	20.00	4.37	24.37
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	19.00	1.85	20.85

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	19.80	7.22	27.02
	Asbestos Abatement Worker	18.00	6.24	24.24
303	Landscaper	13.15	6.51	19.66

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
315	Final Construction Clean-Up Worker	15.00	0.00	15.00

HEAVY EQUIPMENT OPERATORS
RESIDENTIAL OR AGRICULTURAL CONSTRUCTION

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
557	Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type); Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, VIbratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & DIstributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Crane, Shovel, Dragline, Clamshells; Forestry Equipment, TImbco, Tree Shear, Tub Grinder, Processor; Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type); WInches & A-Frames.	31.89	18.20	50.09
558	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Backfiller; Belting, Burlap, Texturing Machine; Boiler (Temporary Heat); Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & LIght Equipment); Concrete Finishing Machine (Road Type); Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Jeep Digger; Lift Slab Machine; Mulcher; Oiler; Post Hole Digger or Driver; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Rock, Stone Breaker; Roller (Rubber Tire, 5 Tons or Under); Screed (Milling Machine); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Stump Chipper; Telehandler; Vibratory Hammer or Extractor, Power Pack.	28.70	4.91	33.61

********** END OF RATES **********

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