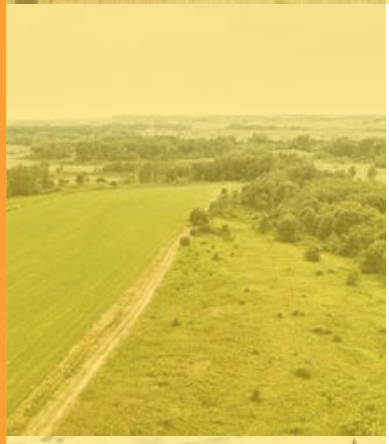

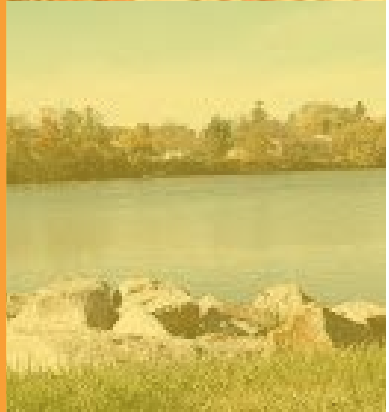

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2019-2020

Constructing a New Municipal Facility in the Village of Marshall

Civil & Environmental Engineering 578:
Senior Capstone Design

Village of Marshall

UniverCity Alliance
UNIVERSITY OF WISCONSIN-MADISON

DISCLAIMER

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

Introduction

Marshall Engineering Associates, MEA, has completed the geotechnical investigation for the proposed municipal facility for the Village of Marshall, a village in close proximity to Madison, WI as shown in Figure 5. There are two site alternatives considered for this new facility. The first being located on the existing site northeast of Farnham St. and northwest of S. Pardee St. and the second being located south of Waterloo Rd. and east of Industrial Dr. in the Village of Marshall, Dane County, Wisconsin. The geotechnical engineers at MEA have prepared this document to report the geological conditions at the two sites as they relate to the viability for the project location. Recommendations for engineering and construction services will be made following the information of this report based on the site conditions.

The conclusions and recommendations reported are based on the interpretation of available subsurface and project information. The report may not represent variations that occur between or away from boring locations. Should the scope of this project be altered, or if subsurface variations become evident during construction, it may be necessary to modify these recommendations.

Project Description

The proposed project is the construction of a new municipal facility for the Village of Marshall as the current building is not enough space for the current amount of Village staff to be housed. The current facility houses the Village Clerk, police department, village president, community voting, and much more. The proposed project will include design and construction of the facility. The facility is expected to be a single-story project with an estimated size of 20,000 sq. ft.

New pavement areas will be constructed for a parking lot and a foundation capable of holding road and building loads is required. If the site of the current facility is chosen, the foundation grade is expected to nearly match the foundation grade of the existing building at an elevation of 879.0. If the new site is chosen, the site will be excavated to have an even grade of around 851.0, the elevation at the bottom of the sloping site. New parking lot and driveway areas will be constructed adjacent to the existing building or new building in order to provide more parking stalls for public events. Some site grading is anticipated to establish final grades, specifically the site across from the Marshall Fire Department.

The current municipal facility is a one-story structure. There are two sites considered for the new facility, either Parcel A, the site of the current facility with either an addition or a demolition and construction shown in Figure 6, or Parcel B, a sloping hill across from the Marshall Fire Department, shown in Figure 7.

Parcel A has a village owned home to the northwest that can be torn down, with a grassy yard and street/parking lot to the west. The building on parcel A is expected to be removed to make way for the new facility. Parcel B is located on greenfield with a hill that has a slope range of 6-12%. This site will require site grading and retaining walls to prevent additional soil pressure on the new facility.

Scope of Work

Site variables include soil type and properties, depth to the water table and bedrock, and thickness of each type of soil. While the existing site has a foundation with enough strength to withstand the building loads as indicated by the life cycle of the current site, there will be an expansion of the building or differing placement, leading to additional site exploration to determine suitable foundations.

Field Investigation

Eight standard penetration test borings (Borings 1 through 8) were performed on January 15 and 16, 2020 by Badger Drilling at the locations shown on the attached maps in Figures 6 and 7. Borings 1-4 were performed at Parcel A, while Borings 5-8 were performed on Parcel B. It is our understanding that Borings 1, 4, 7, and 8 were structure borings performed for the proposed building addition and Borings 2, 3, 5, and 6 were pavement borings for the proposed parking lot to the west of the building. Standard penetration test sampling was performed in Borings 1 through 8 according to ASTM Test Procedure D1586 with an automatic trip hammer. Badger Drilling using two D-120 rotary drilling rigs with hollow stem augers. MEA determined the proposed boring locations and depths based on the possible placement of the proposed facility. Borings were terminated at the depth of 30 feet for the structure borings and 17 feet for the pavement borings**.** After completion of the borings, the boreholes were backfilled with bentonite chips and topped-off with auger cuttings to comply with Wisconsin DNR requirements. Borings 2 and 3 were patched with cold-mix asphaltic concrete patches.

Copies of the soil boring logs and a location map are appended to this report in Figures 10-17.

Subsurface Exploration

1. Area Geology

The Village of Marshall is located in Dane County, Wisconsin. The surface geology consists of uniform subglacial till deposited during the last part of the Wisconsin Glaciation. Post-glacial fluvial processes are the dominant form of deposition. The subsoils in this area are mapped as ground moraine deposits, which typically consist of an unstratified mixture of clay, silt, sand, gravel, cobbles, and boulders a few meters thick from the Green Bay Lobe as Dane County is near the border of this area. The NRCS web soil survey maps the near surface soils as Dodge silt loam for Parcel A and a combination of McHenry silt loam and St. Charles silt loam for Parcel B. The NRCS survey maps and descriptions can be found in appendix subsection "NRCS Soil Survey Information".

The underlying bedrock is mapped as sandstone with some dolomite and shale that is present at widely varying depths but generally at depths of greater than 145 feet below the average surface terrain near major waterways.

Note that mapped soil and bedrock conditions are provided for supplemental information only. Designs based on mapped or assumed conditions are not recommended.

2. Soils at the Boring Locations

In general, both sites can be described with the following underground soils, a visual representation of these soils are shown in Figure 1:

1. 2-3 inches of topsoil followed by
2. 2.5-4.5 feet of hard, brown sandy lean clay with little gravel followed by
3. 13-25.5 feet of medium to very dense, light brown fine to medium sand, with some silt and gravel and scattered cobbles and boulders to the maximum depth explored
4. Except for dolomite bedrock found in Borings 2, 3, 5, and 6 at 16-17.5 feet deep at elevations of around 862.0 on Parcel A and 834.0 on Parcel B.

Various borings had 1-3 feet of fill and various depths of bedrock.

Figure 1. *Generalized soil profiles from the eight soil borings representative of both sites. This figure represents soils from surface depths on both sites.*

3. Water Level Measurements

The water table was not encountered in the soil borings. However, some soils held noticeable moisture. These moisture conditions should be considered as representative of this site at the time of the boring only. It is noted that both Parcel A and B have a flow direction of north to south. MEA believes the water table will not have a substantial impact on this project as it is far below the necessary depth.

Laboratory and Field Tests

The soils were visually/manually classified by a technician at the time the borings were performed according to ASTM D2488. Soil samples taken from the site have also been examined in the for verification of descriptions which appear on the logs, and to classify the soils according to the Unified Soil Classification System. While in the field, the number of blows required to drive the sample through each layer is indicated in the boring log as "N", describing the relative density of the soils. One Atterberg test was performed on a hard, lean clay with little sand from Borings 2 and 6, one on each site. The results showed the sample had a moisture content of 13.1%, liquid limit of 32, and plastic limit of 18. These results indicate a low plasticity clay for foundations. Unconfined compressive strength, or the maximum axial compressive strength a sample of material can withstand under unconfined conditions is indicated by the variable "qu" indicated for the various samples of each boring shown in Figures 11 and 15. These values were taken by a pocket penetrometer on representative soil layers. The results of this test are in the boring logs which can be found at the end of this report.

Site Description

Site A is located northeast of Farnham St. and northwest of S. Pardee St. The elevation of this site is around 879.0 and the site is relatively flat. The topographic map of this site is located in the appendices in Figure 8.

Site B is located south of Waterloo Rd. and east of Industrial Dr. The elevation of this site ranges from 851.0-870.0 and has a slope of 6-12%. The topographic map of this site is located in the appendices in Figure 9.

These sites are located less than a mile from each other and have extremely similar soil profiles.

Recommendations and Comments

1. Site Selection

Both sites have suitable soils for conventional shallow foundations. The project team will recommend a preferred site based on input from the owner and other stakeholders. At both Parcel A and B, the soils uncovered show appropriate characteristics and strength for the construction of an administrative municipal facility and police department. Neither site shows significant concerns with its foundation and is not at risk of hitting the water table during construction.

Some geotechnical related issues to consider when deciding on the site to use:

- Parcel A will have the additional costs of demolition, proper disposal of the current building, relocation of the current employees, and construction around the current utilities and other facilities.
- Parcel B will likely lead to higher costs in excavation of the sloping hill and the need for a retaining wall. The hill may add some complications.

When solely considering the foundation conditions, either site is viable.

2. Site Preparation

In order to prepare the site for construction, it is important to remove existing topsoil, fill, trees, or debris from demolition. Excavations should comply with OSHA standards. This includes reduction of excavation side slopes to 1.5 horizontal to 1 vertical or less. Where steeper slopes are necessary or more convenient, full excavation bracing should be used (not spaced braces). Design and implementation of temporary shoring is the responsibility of the excavating contractor.

Excavations should be performed with a flat plate attached to the bucket teeth of the backhoe to lessen the disturbance at the base of the excavation. Where a toothed bucket is used, the last six inches should be excavated by turning the bucket so that the teeth are parallel to the proposed grade, thus lessening the disturbance of footing-grade soils. Soil loosened during excavation should be compacted or removed by hand.

If Parcel A is chosen for the new construction, the foundation of the existing building should be removed during demolition. When this is encountered the contractor should dispose of the remains properly and fill the excavated portions with granular fill to make it suitable for later construction.

The regional water table is not expected to be encountered, but perched water may be found. Perched water may be removed by sump pumping.

3. *Shallow Foundation Design and Allowable Bearing Pressure*

Both parcels are suitable for conventional foundational systems. Specifically, a shallow foundation should be an adequate foundation type at this site. Strip footings should have a minimum width of 18 inches. An example of the footings used is shown in Figure 2.

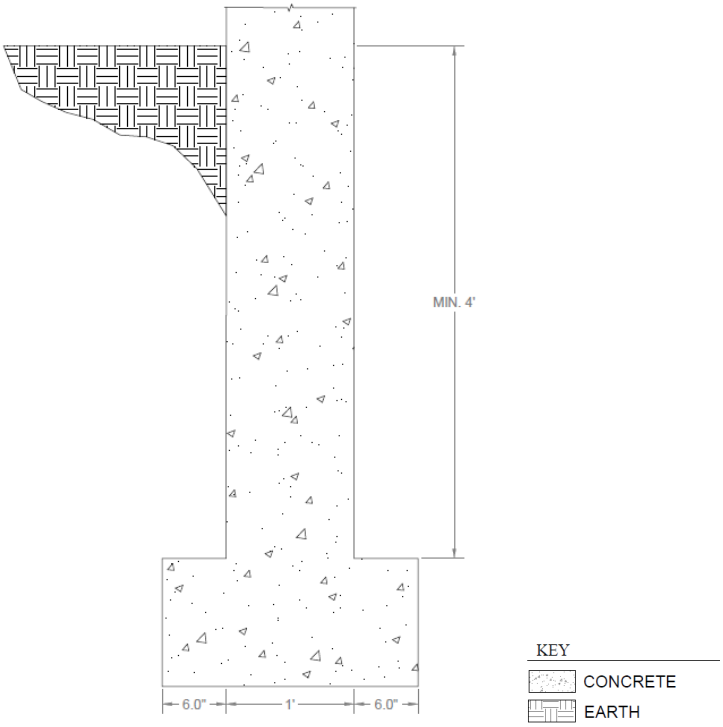

Figure 2. *Generalized strip footing to be used for this project.*

Structures sensitive to frost movement should have foundations bearing below the maximum frost depth. According to the Wisconsin Administrative Code, this site is in Zone 'B', where the mapped frost protection depth in the soil type at the site is approximately 4 feet. Be aware that frost can occur to depths significantly deeper than 4 feet in areas where traffic occurs and/or snow cover is frequently removed, such as below roadways.

Considering the above minimum footing dimensions, the recommended bearing pressure will be to limit settlement of the foundations. Settlement of shallow foundations on the native soils has estimated an immediate settlement of embankments of ¾". To limit total and differential settlements of the proposed foundations to one inch and one-half inch, respectively, foundations

bearing on the native soils, or on compacted fill placed directly on the native soils, should be designed using an allowable soil bearing pressure of 5,500 pounds per square foot (psf). This calculation was done for column loads up to 65 kips and wall loads up to 1 kip per linear foot for either site. Calculations are shown in the appendix and were found using Equation 1. This allowable bearing pressure will provide a factor of safety against bearing capacity failure to be 4.5 using Equations 2 and 3.

The base of footing excavations should be inspected by MEA at the time of construction to verify that adequate soil bearing capacity is present. MEA will provide alternate recommendations, including undercutting or compacting existing soils, if unsuitable bearing conditions are encountered.

4. *Floor and Slabs*

Based on the findings in the soil borings, we anticipate that the soils will be suitable to provide adequate support. As the initial step in subgrade preparation, we recommend the topsoil be stripped from the site. The material below the floors should be proof rolled to increase the density of near surface soils and help identify weak areas which are not suitable for floor support. An acceptable proof-roller for clayey soils and base course would be a fully loaded, tandem-axle dump truck. An acceptable proof-roller for sand would be a smooth-drum vibratory roller weighing at least 25,000 pounds. Weak soils found will need to be compacted, replaced with compacted fill, or stabilized with crushed rock. A layer of dense-graded base course, at least 8 inches in thickness, is recommended to be placed below floors and slabs. The base course will provide some stability for the floors/slabs and help to prevent subgrade soils from rutting below construction traffic. The base course should meet the requirements of Section 305 of the Wisconsin DOT Standard Specifications for Highway and Structure Construction.

5. *Pavement Design*

As requested, a parking lot will be put in place on the property of the new municipal facility. Whichever site is chosen, pavement design must be considered. The pavement construction should meet the requirements of the Wisconsin DOT Standard Specifications for Road Construction.

A prime requirement for successful pavement is preparation of the subgrade soil. Prior to pavement placement, the base grade should be firm and unyielding when proof-rolled with a fully loaded, tandem axle dump truck. To help identify weak areas prior to base course placement, the contractor should also consider proof-rolling the subgrade. An acceptable proof-roller for silty and clayey soils would be a fully loaded, tandem-axle dump truck, and an acceptable proof-roller for granular

soil (sand and/or gravel) would be a smooth-drum vibratory roller weighing at least 25,000 pounds. The subgrade may yield slightly to the proof-roller, but after base course placement, the base grade should be firm below the proof-roller. Soft soils disclosed by the proof-rolling should be replaced with drier soil or stabilized with crushed rock.

In general, traffic pavements experiencing loads around 1 design daily ESAL include car parking lots of less than 50 stalls, residential drives, and similar traffic loads. This level of ESAL will require a minimum of 8 inches of crushed aggregate base course with a minimum of 3 inches of asphaltic concrete.

6. *Retaining Wall*

If Parcel B is chosen, a retaining wall must be put in place to protect the building from the sloping hill. This wall should be designed for at rest earth conditions. Excavation should take place 4 feet behind the building end/retaining wall and backfilled with a downwards slope with free draining sand and gravel granular fill. Recommendation for at rest equivalent fluid pressure is 55 pcf.

For adequate drainage, there should be a drain tile installed at the bottom of the backfill to redirect water to a sump around the building. If water is not properly drained, it will add an additional level of pressure on the building and retaining wall which could lead to failure.

7. *Drainage*

The site should be graded to slope away from the building. Drainage measures should be routed to a suitable outlet.

8. *Job Site Safety*

The OSHA Technical Manual Section V: Chapter 2 should be used for excavation related safety standards and guidelines.

9. *Potential Contaminants and Stormwater*

There are potential contaminants within any construction project. Construction or renovation with either Parcel A or B will result in a parking lot where cars will drive. This can cause potential contaminants from the cars which can be carried through the stormwater runoff.

Parcel A: The stormwater runoff travels both northwest and southeast depending on the side of the site that it is on as shown in Figure 3. The portion that travels to the northwest enters a residential area where it is then deposited into a detention pond and will need no treatment for chemicals. The portion that travels southeast gets deposited into a floodplain that is on the southeast corner of the map on the figure. This floodplain is isolated and does not flow into the river. Since this is the case, this site poses little to no threat to water contamination from chemicals.

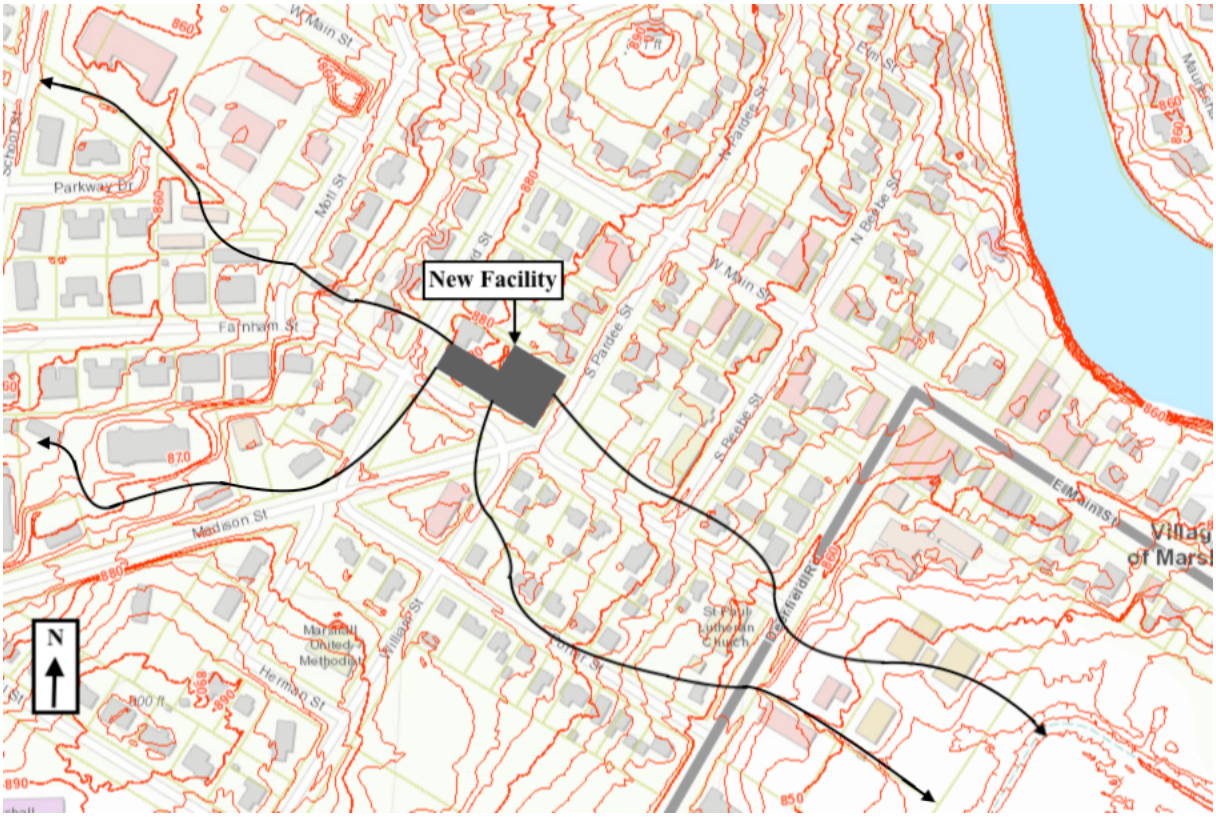

Figure 3. *Stormwater runoff directions for Parcel A*

Parcel B: The stormwater for this site flows in the northwest direction. The stormwater ends up depositing into a creek that travels to the river on the southwest side of the map as shown in Figure 4. The water runoff from the fire station (the facility across the street) has similar water runoff directions. Since the two facilities are this close with similar parking lot areas, MEA has determined to follow the same stormwater treatment and deposit techniques as the fire station. Depending on the degree of chemical contamination from cars in the parking lot, this alternative poses the biggest threat for water contamination as it deposits the water a short distance to the river. However, this alternative collects the least amount of stormwater on the roof, so it is less likely to cause flooding in the surrounding areas. A floodplain is located to the north of the fire station if needed.

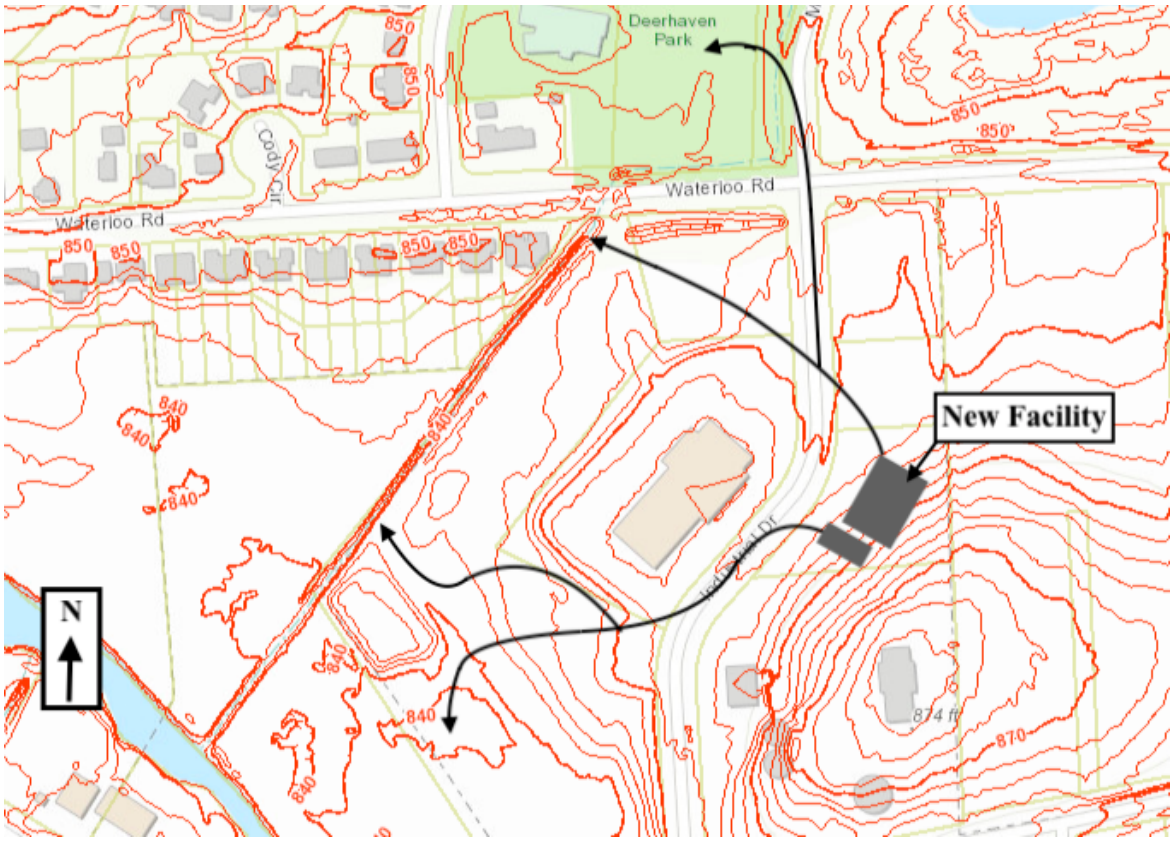

Figure 4. *Stormwater runoff directions for Parcel B*

Limitations

The two limitations to be considered are as followed:

- The existing site will have foundations from the current building, if these are not filled properly, insufficient foundation strength may occur. While this is something that can be easily avoided, it is important to fill in the existing foundations with granular soil.
- Clay softens when it gets wet. It is important to exercise care during rain and construction, so the site is drained, and the soil remains a suitable base after being exposed.

Closing Comments

This geotechnical report and analysis provide recommendations for the two sites based on the soils and foundation surrounding the potential building site. The site investigation is consistent with the data at the time this report was written. Information gained throughout the construction phase and beyond may impact decisions and known information.

We look forward to working with you on this project and are open to answering questions you may have with the site conditions.

Marshall Engineering Associates

[redacted]
Geotechnical Engineer

[redacted]
Project Manager

Equations and Calculations

Allowable Bearing Pressure equation: (Eq. 1)

This equation allows calculation of the allowable bearing pressure for settlement of 1 in or less.

$$Q_{all}, = N \times 0.11$$

Where:

Q_{all} = Bearing pressure (tons/ft^2)

N = Lowest average N value from borings, summarized in Table -----.

Table 1. Average N-value for each Boring Log

	Boring 1	Boring 2	Boring 3	Boring 4	Boring 5	Boring 6	Boring 7	Boring 8
Average N-value	27	25	40	25	40	25	25	27

Terzaghi's Bearing capacity equation: (Eq. 2)

$$Q_u = c * N_c + \gamma D N_q + 0.5 \gamma B N_\gamma$$

Where:

Q_u = Bearing capacity

c= Cohesion

γ= Unit weight of soil

D = Depth of footing (ft)

N_q, $N\gamma$, and N_c= Bearing capacity factors which depend on θ', the effective friction angle of the soil. These values are shown in Table 1.

B=Footing width (ft)

As the soils carrying the bearing capacity will be sands, the cohesion, c, will be 0. The unit weight of soils can be assumed to be 125 pcf. The depth of the footing will be 4 feet, as it is a heated building and this depth will protect against frost. The footing width will be 18 inches as this is a standard footing and the angle is 35°.

Table 2. Terzaghi's Bearing Capacity Factors

ϕ	N_c	N_q	N_γ
0	5.7	1	0
5	7.3	1.6	0.5
10	9.6	2.7	1.2
15	12.9	4.4	2.5
20	17.7	7.4	5
25	25.1	12.7	9.7
30	37.2	22.5	19.7
35	57.8	41.4	42.4
40	95.7	81.3	100.4
45	172.3	173.3	297.5
48	258.3	287.9	780.1

Factor of Saftey: (Eq. 3)
The factor of safety against bearing capacity failure is determined by the equation:

$$FS = Q_u/Q_{all}$$

Calculations:

$$Q_{all} = 25 \text{ x } 0.11 = 2.75 \text{ tons/ft}^2 \rightarrow 5{,}500 \text{ psf}$$

$$Q_u = 0 + \left(125\frac{lbs}{ft^2}\right) * (4\,ft) * 41.4 + 0.5 * (125\frac{lbs}{ft^2}) * 1.5 * 42.4$$

$$Q_u = 24{,}675 \text{ psf}$$

Using the bearing capacity and bearing pressure will allow for the factor of safety calculation:

$$FS = 25{,}000/5{,}500 = 4.5$$

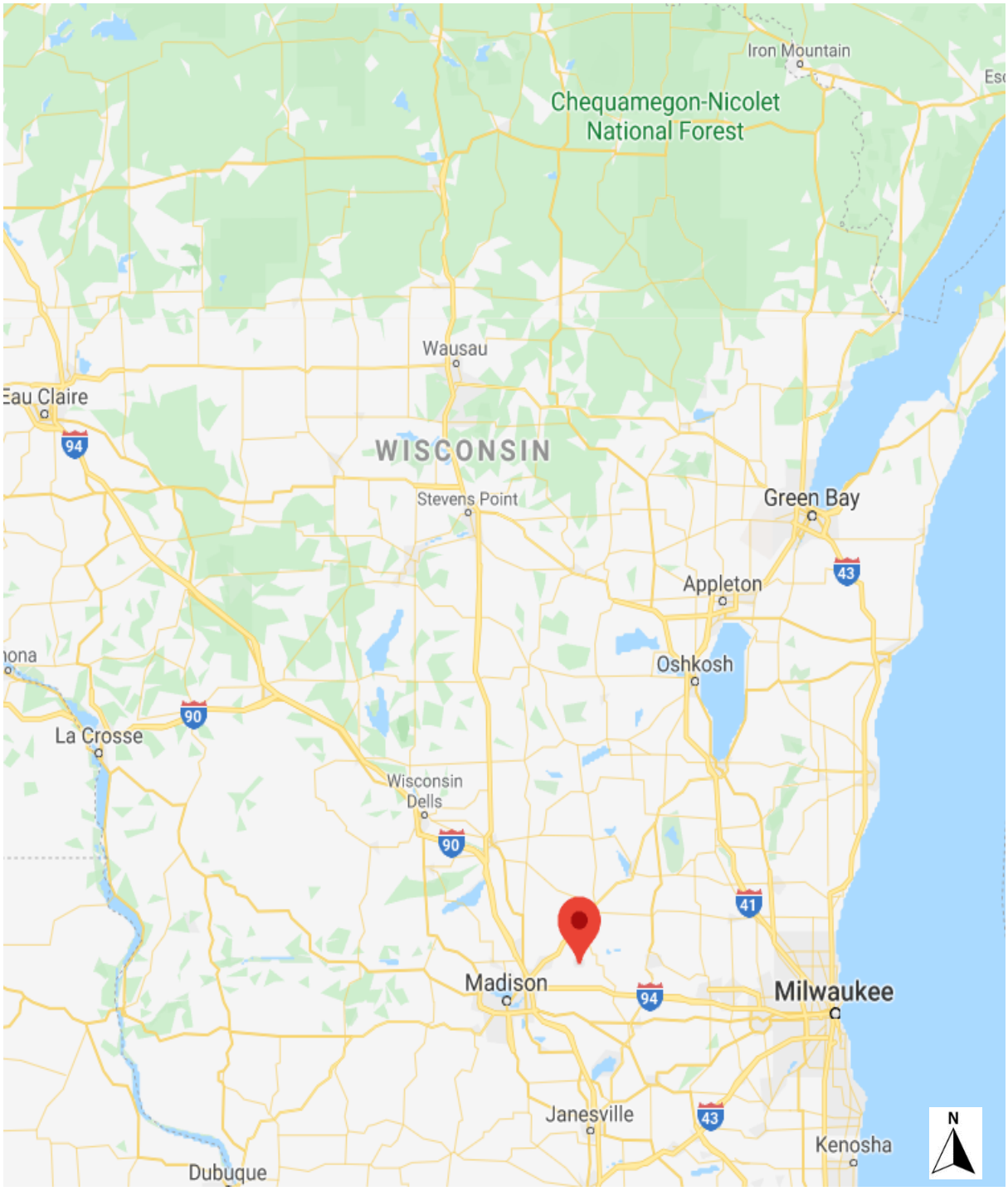

Figure 5. *Location of project.*

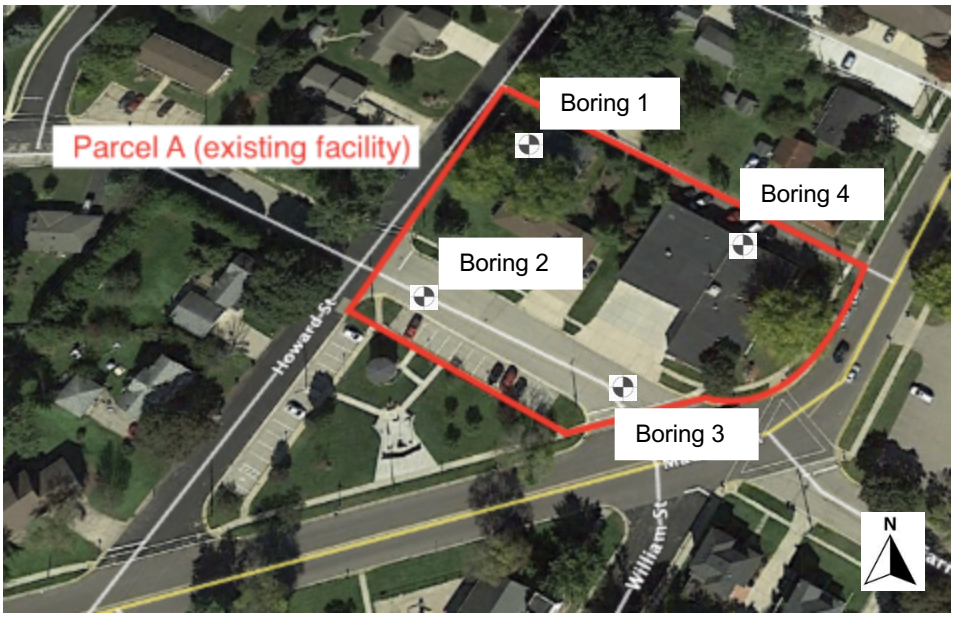

Figure 6. *Parcel A with soil boring map.*

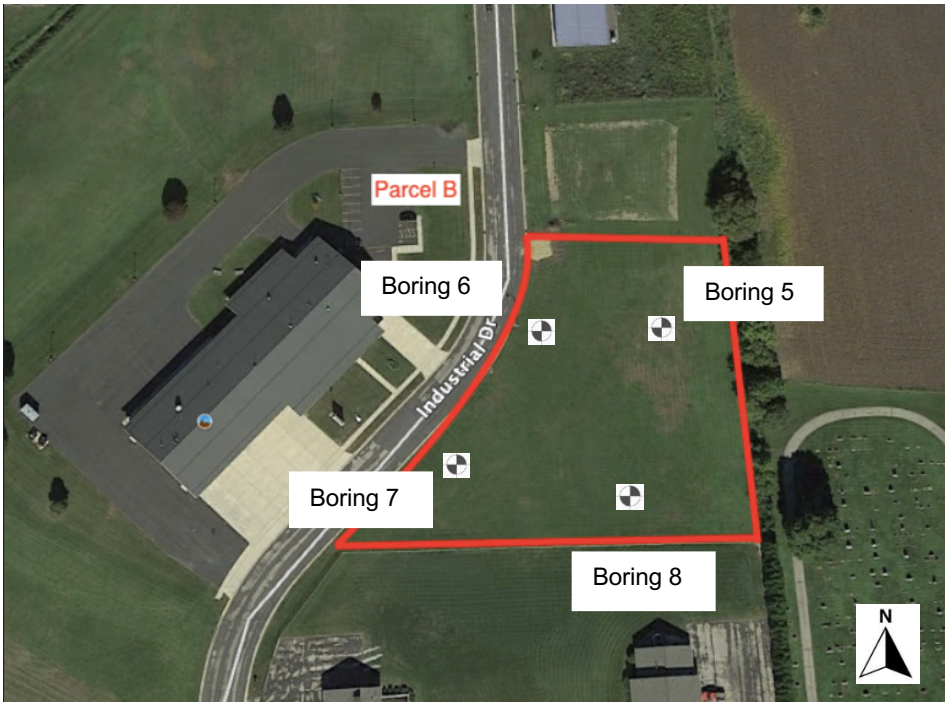

Figure 7. *Parcel B with soil boring map.*

Figure 8. *Topographic map of Parcel A.*

Figure 9. *Topographic map of Parcel B.*

Badger Drilling

LOG OF TEST BORING

Project: Marshall Municipal Facility

Location: Marshall, WI

Boring No. 1
Surface Elevation (ft) 879.0
Job No. C14413
Sheet 1 of 1

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qs) (tsf)	W	LL	PL	LI
						2 in. TOPSOIL					
1		14	M	27		Hard, Dark Brown Sandy Lean CLAY (CL) - Possible Fill in Upper Few Feet	(4.5)				
2		10	M	26	5	Medium Dense to Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3		16	M	14							
4		18	M	39	10						
5		16	M	34	15						
6		14	M	27	20						
7		14	M	29	25						
8		18	M	19	30	End Boring at 30 ft Borehole backfilled with bentonite chips					
					35						

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NOT FOR PROFESSIONAL USE.

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW — Upon Completion of Drilling NW
Time After Drilling — 15 min.
Depth to Water — NW ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 01/14/20 End 01/14/20
Driller BSD Chief ... g D-120
Logger DD Editor WWW
Drill Method 2.25" HSA; Autohammer

Figure 10. *2020 Soil Boring log 1.*

Badger Drilling

LOG OF TEST BORING

Project: Marshall Municipal Facility
Location: Marshall, WI

Boring No. 2
Surface Elevation (ft) 880.0
Job No. C14413
Sheet 1 of 1

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qs) (tsf)	W	LL	PL	LI
						2 in. TOPSOIL					
1		10	M	31		Hard, Brown Lean CLAY, Little Sand (CL)	(4.5)	13.1	32	18	
2		10	M	20	5	Medium Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3		16	M	22							
4		16	M	25	10						
5		18	M	26	15	Probable Dolomite Bedrock					
					20	End Boring/Auger Refusal on Probable Bedrock at 18 ft					
						Borehole backfilled with bentonite chips					
					25						
					30						
					35						

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WATER LEVEL OBSERVATIONS

While Drilling ▽ NW — Upon Completion of Drilling NW
Time After Drilling — 15 min.
Depth to Water — NW ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 01/14/20 End 01/14/20
Driller BSD Chief AP Rig D-120
Logger DD Editor WWW
Drill Method 2.25" HSA; Autohammer

Figure 11. *2020 Soil Boring log 2.*

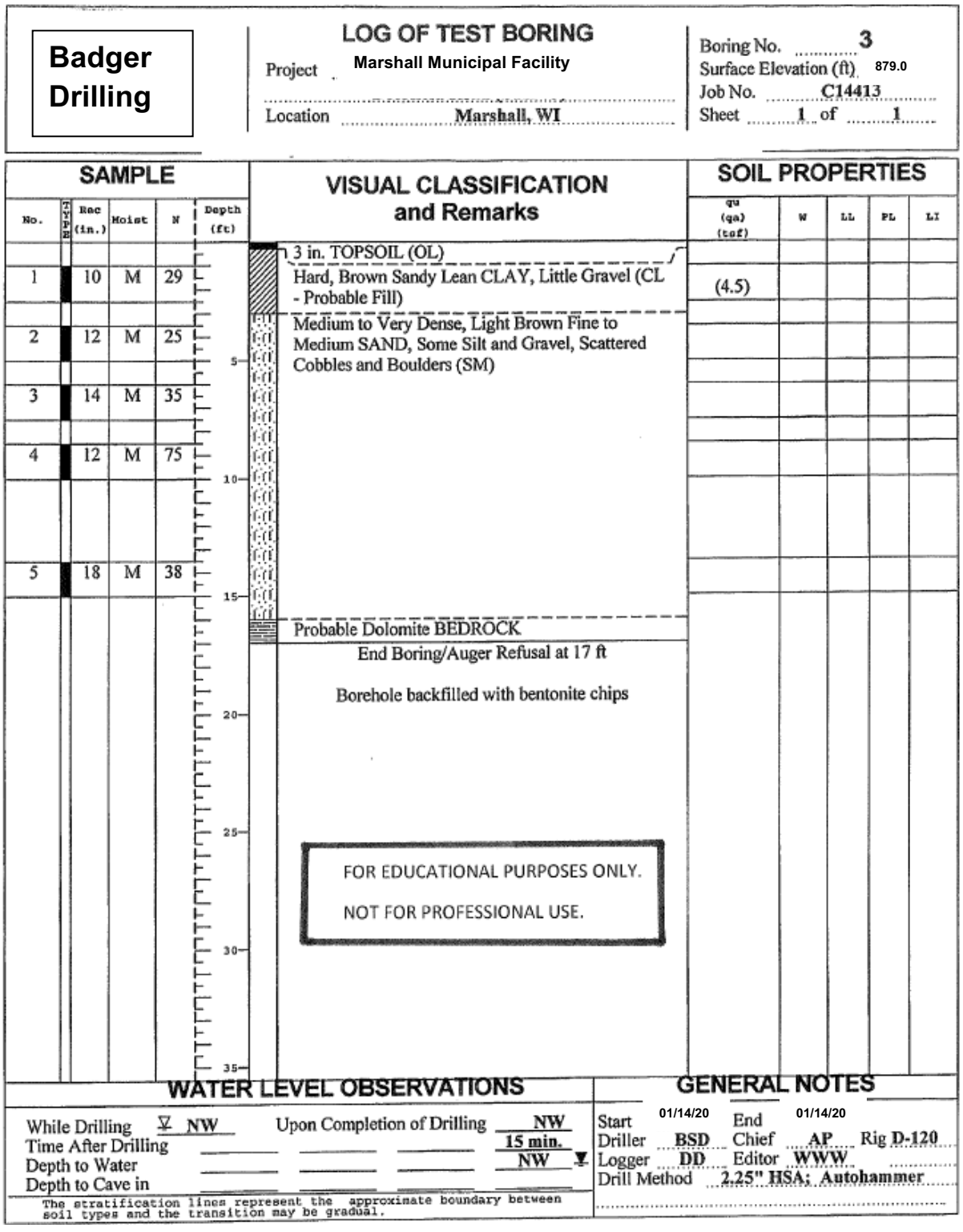

Figure 12. *2020 Soil Boring log 3.*

Badger Drilling

LOG OF TEST BORING

Project: Marshall Municipal Facility
Location: Marshall, WI

Boring No. 4
Surface Elevation (ft) 879.0
Job No. C14413
Sheet 1 of 1

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
					3 in. TOPSOIL FILL (OL)					
1	10	M	26		FILL: Brown to Dark Brown Clayey Sand, Some Gravel, Scattered Wood Chips					
2	10	M	21	5	Medium to Very Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3	14	M	26							
4	14	M	20	10						
5	12	M	54	15						
6	16	M	28	20						
7	14	M	14	25						
8	14	M	14	30	End Boring at 30 ft Borehole backfilled with bentonite chips					
				35						

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NOT FOR PROFESSIONAL USE.

WATER LEVEL OBSERVATIONS

While Drilling	▽ NW		Upon Completion of Drilling	NW
Time After Drilling				15 min.
Depth to Water				NW ▽
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 01/14/20 End 01/14/20
Driller BSD Chief AP Rig D-120
Logger DD Editor WWW
Drill Method 2.25" HSA; Autohammer

Figure 13. *2020 Soil Boring log 4.*

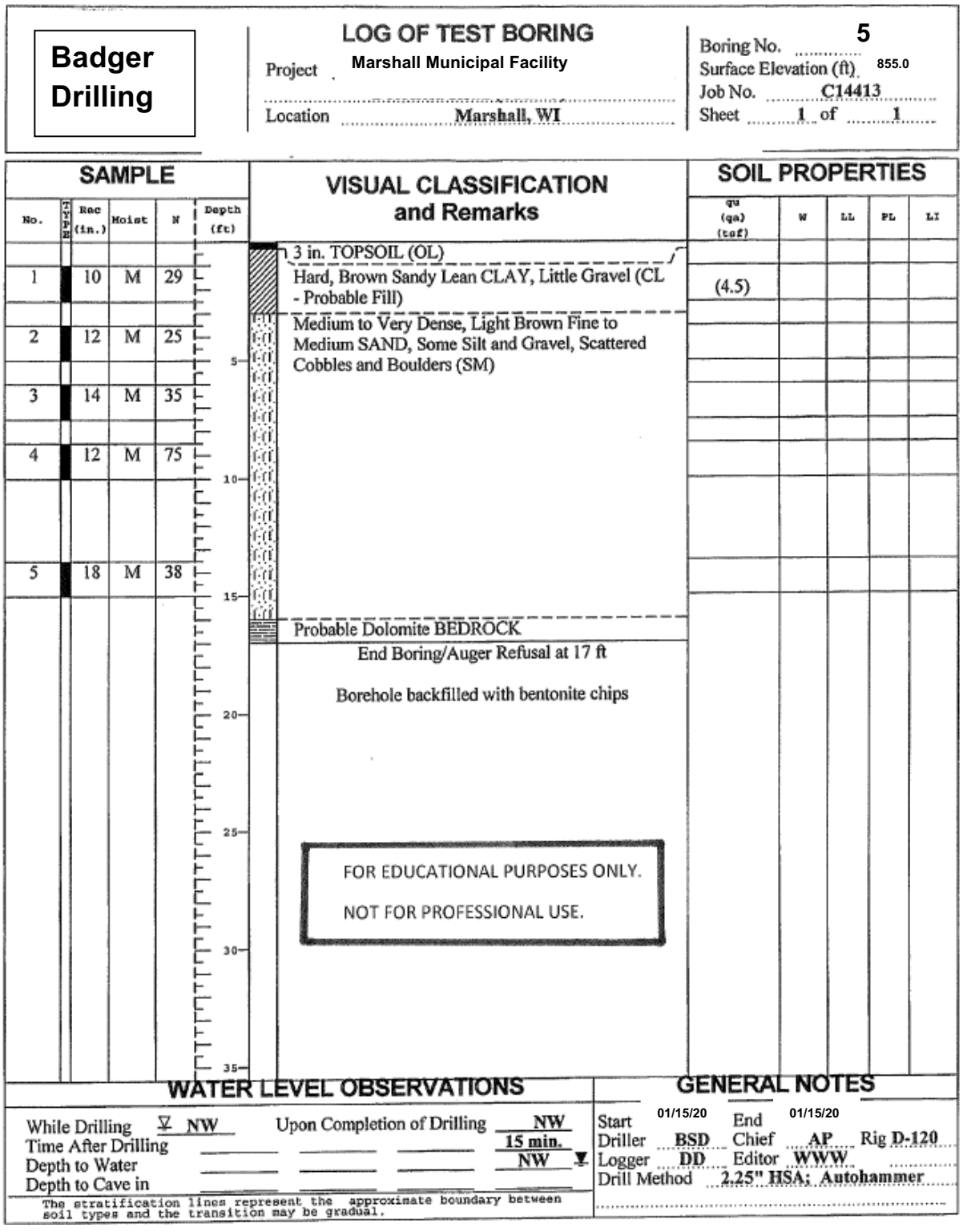


Figure 14. *2020 Soil Boring log 5.*

Badger Drilling

LOG OF TEST BORING

Project: Marshall Municipal Facility
Location: Marshall, WI

Boring No. 6
Surface Elevation (ft) 851.0
Job No. C14413
Sheet 1 of 1

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qs) (tsf)	W	LL	PL	LI
						2 in. TOPSOIL					
1		10	M	31		Hard, Brown Lean CLAY, Little Sand (CL)	(4.5)	13.1	32	18	
2		10	M	20	5	Medium Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3		16	M	22							
4		16	M	25	10						
5		18	M	26	15	Probable Dolomite Bedrock					
						End Boring/Auger Refusal on Probable Bedrock at 18 ft					
					20	Borehole backfilled with bentonite chips					
					25						
					30						
					35						

FOR EDUCATIONAL PURPOSES ONLY.

NOT FOR PROFESSIONAL USE.

WATER LEVEL OBSERVATIONS

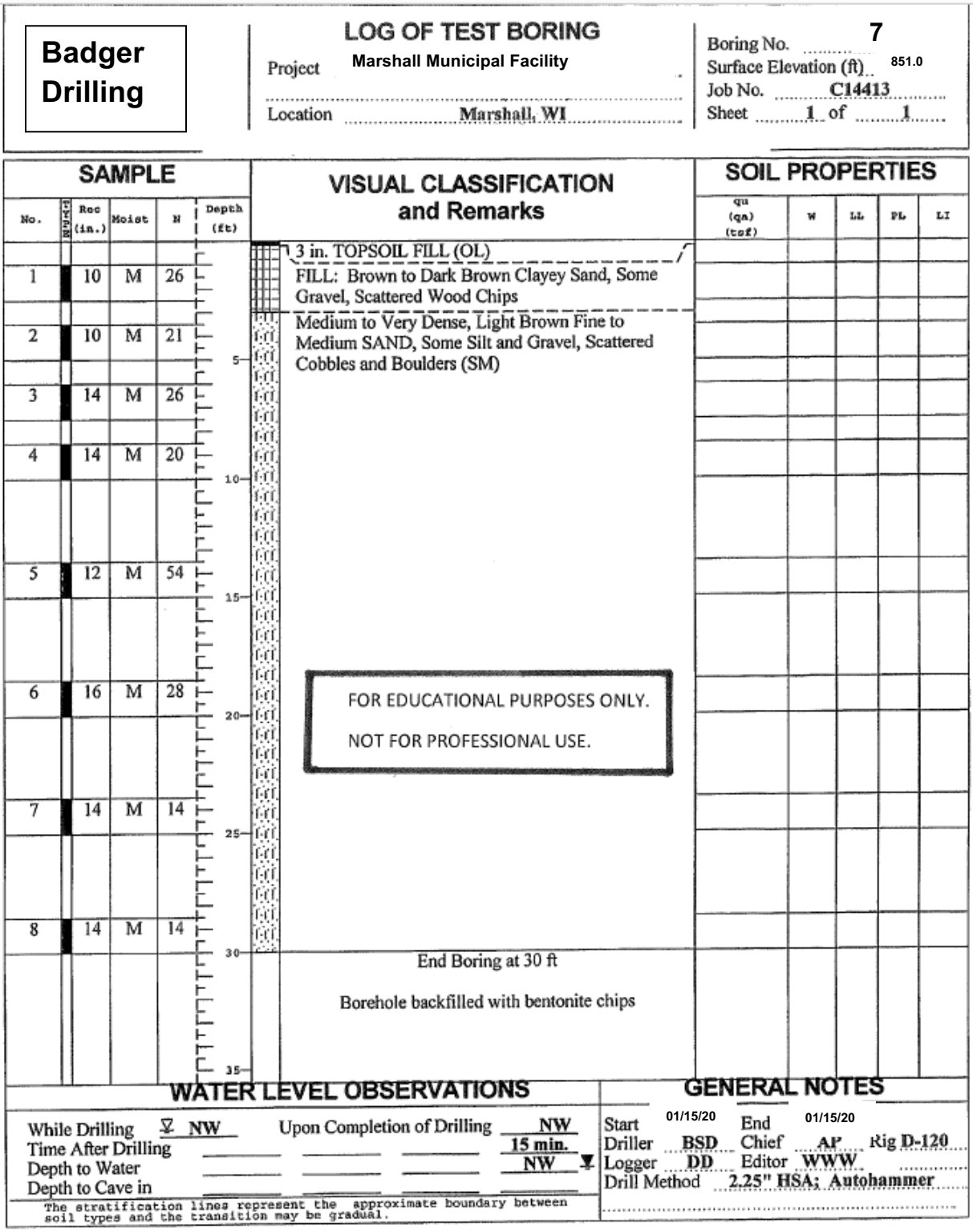
While Drilling ▽ NW — Upon Completion of Drilling NW
Time After Drilling — 15 min.
Depth to Water — NW ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 01/15/20 — End 01/15/20
Driller BSD — Chief AP — Rig D-120
Logger DD — Editor WWW
Drill Method 2.25" HSA; Autohammer

Figure 15. *2020 Soil Boring log 6.*



Badger Drilling

LOG OF TEST BORING

Project: Marshall Municipal Facility

Location: Marshall, WI

Boring No. 7
Surface Elevation (ft) 851.0
Job No. C14413
Sheet 1 of 1

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
					3 in. TOPSOIL FILL (OL)					
1	10	M	26		FILL: Brown to Dark Brown Clayey Sand, Some Gravel, Scattered Wood Chips					
2	10	M	21	5	Medium to Very Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3	14	M	26							
4	14	M	20	10						
5	12	M	54	15						
6	16	M	28	20						
7	14	M	14	25						
8	14	M	14	30	End Boring at 30 ft Borehole backfilled with bentonite chips					
				35						

FOR EDUCATIONAL PURPOSES ONLY.

NOT FOR PROFESSIONAL USE.

WATER LEVEL OBSERVATIONS

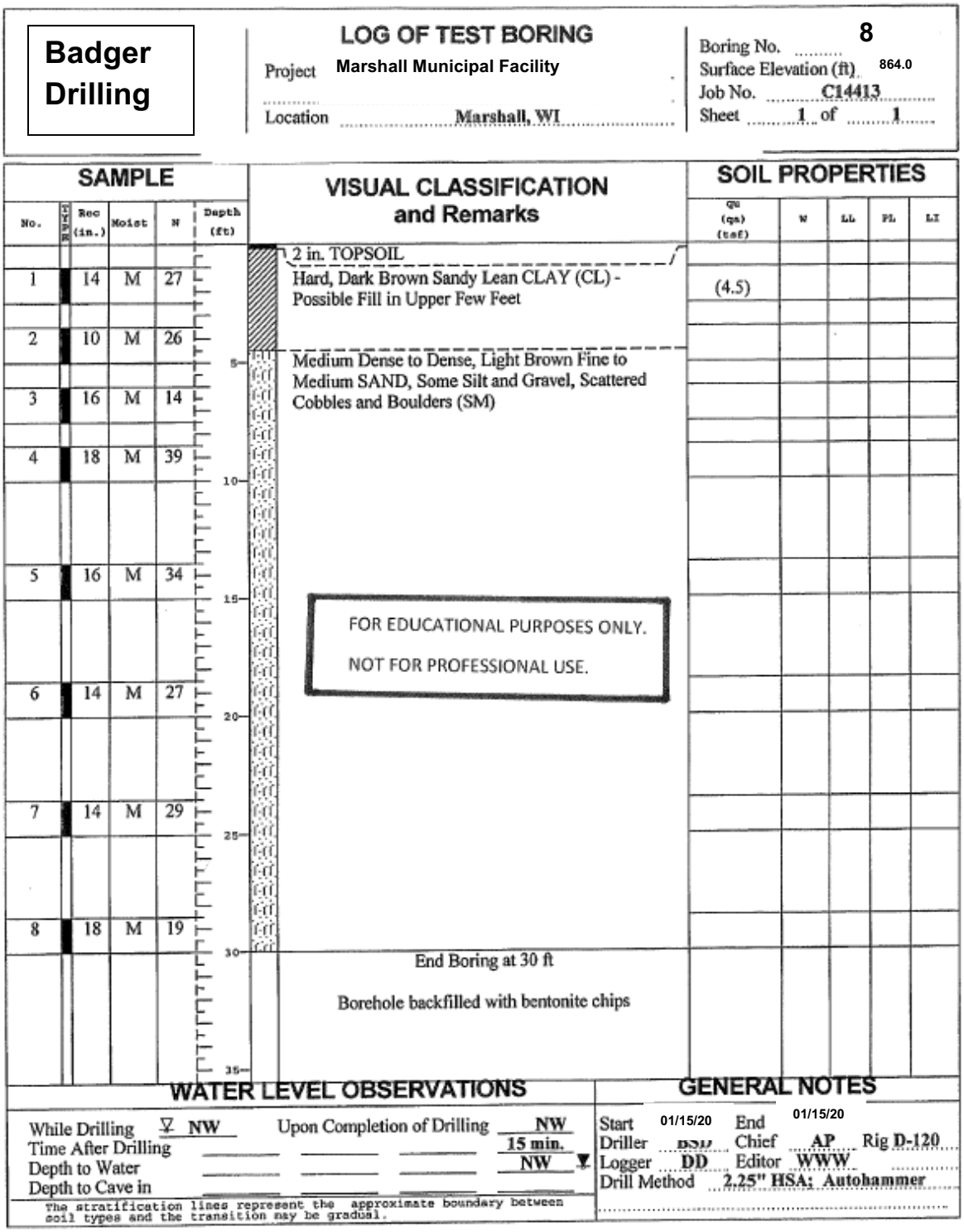
While Drilling ▽ NW — Upon Completion of Drilling NW
Time After Drilling — 15 min.
Depth to Water — NW ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 01/15/20 — End 01/15/20
Driller BSD — Chief AP — Rig D-120
Logger DD — Editor WWW
Drill Method 2.25" HSA; Autohammer

Figure 16. *2020 Soil Boring log 7.*



Badger Drilling

LOG OF TEST BORING

Project: Marshall Municipal Facility

Location: Marshall, WI

Boring No. 8
Surface Elevation (ft) 864.0
Job No. C14413
Sheet 1 of 1

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qs) (tsf)	W	LL	PL	LI
1	14	M	27		2 in. TOPSOIL					
					Hard, Dark Brown Sandy Lean CLAY (CL) - Possible Fill in Upper Few Feet	(4.5)				
2	10	M	26	5	Medium Dense to Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3	16	M	14							
4	18	M	39	10						
5	16	M	34	15						
6	14	M	27	20						
7	14	M	29	25						
8	18	M	19	30	End Boring at 30 ft Borehole backfilled with bentonite chips					
				35						

FOR EDUCATIONAL PURPOSES ONLY.

NOT FOR PROFESSIONAL USE.

WATER LEVEL OBSERVATIONS

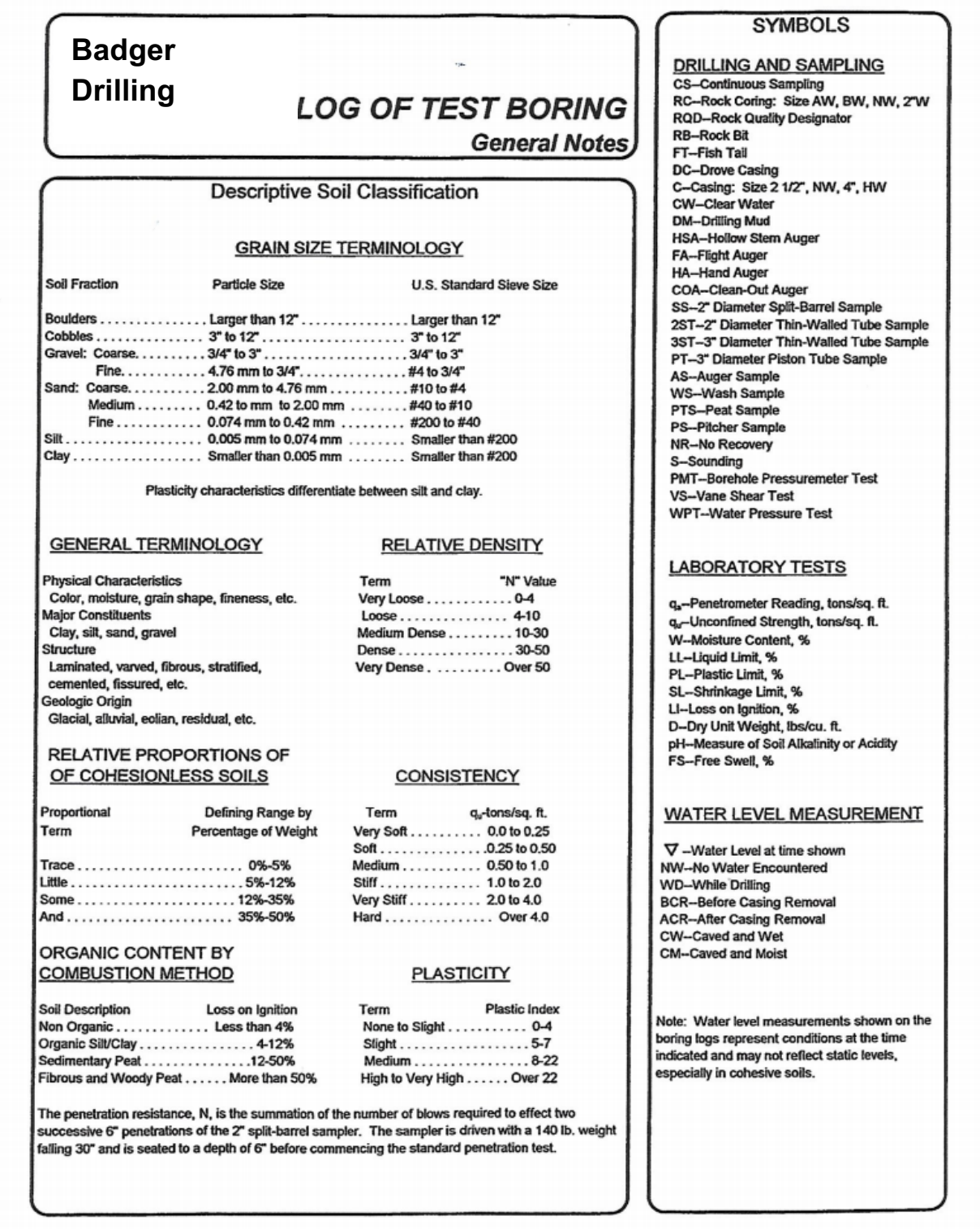
While Drilling ▽ NW — Upon Completion of Drilling NW
Time After Drilling — — — — 15 min.
Depth to Water — — — — NW ▼
Depth to Cave in — — — —

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 01/15/20 End 01/15/20
Driller BSW Chief AP Rig D-120
Logger DD Editor WWW
Drill Method 2.25" HSA; Autohammer

Figure 17. *2020 Soil Boring log 8.*



Badger Drilling

LOG OF TEST BORING
General Notes

Descriptive Soil Classification

GRAIN SIZE TERMINOLOGY

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse	3/4" to 3"	3/4" to 3"
Fine	4.76 mm to 3/4"	#4 to 3/4"
Sand: Coarse	2.00 mm to 4.76 mm	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm	#200 to #40
Silt	0.005 mm to 0.074 mm	Smaller than #200
Clay	Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

GENERAL TERMINOLOGY

Physical Characteristics
Color, moisture, grain shape, fineness, etc.
Major Constituents
Clay, silt, sand, gravel
Structure
Laminated, varved, fibrous, stratified, cemented, fissured, etc.
Geologic Origin
Glacial, alluvial, eolian, residual, etc.

RELATIVE DENSITY

Term	"N" Value
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

RELATIVE PROPORTIONS OF OF COHESIONLESS SOILS

Proportional Term	Defining Range by Percentage of Weight
Trace	0%-5%
Little	5%-12%
Some	12%-35%
And	35%-50%

CONSISTENCY

Term	q_u-tons/sq. ft.
Very Soft	0.0 to 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.0
Stiff	1.0 to 2.0
Very Stiff	2.0 to 4.0
Hard	Over 4.0

ORGANIC CONTENT BY COMBUSTION METHOD

Soil Description	Loss on Ignition
Non Organic	Less than 4%
Organic Silt/Clay	4-12%
Sedimentary Peat	12-50%
Fibrous and Woody Peat	More than 50%

PLASTICITY

Term	Plastic Index
None to Slight	0-4
Slight	5-7
Medium	8-22
High to Very High	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

DRILLING AND SAMPLING

CS--Continuous Sampling
RC--Rock Coring: Size AW, BW, NW, 2"W
RQD--Rock Quality Designator
RB--Rock Bit
FT--Fish Tail
DC--Drove Casing
C--Casing: Size 2 1/2", NW, 4", HW
CW--Clear Water
DM--Drilling Mud
HSA--Hollow Stem Auger
FA--Flight Auger
HA--Hand Auger
COA--Clean-Out Auger
SS--2" Diameter Split-Barrel Sample
2ST--2" Diameter Thin-Walled Tube Sample
3ST--3" Diameter Thin-Walled Tube Sample
PT--3" Diameter Piston Tube Sample
AS--Auger Sample
WS--Wash Sample
PTS--Peat Sample
PS--Pitcher Sample
NR--No Recovery
S--Sounding
PMT--Borehole Pressuremeter Test
VS--Vane Shear Test
WPT--Water Pressure Test

LABORATORY TESTS

q_p--Penetrometer Reading, tons/sq. ft.
q_u--Unconfined Strength, tons/sq. ft.
W--Moisture Content, %
LL--Liquid Limit, %
PL--Plastic Limit, %
SL--Shrinkage Limit, %
LI--Loss on Ignition, %
D--Dry Unit Weight, lbs/cu. ft.
pH--Measure of Soil Alkalinity or Acidity
FS--Free Swell, %

WATER LEVEL MEASUREMENT

▽ --Water Level at time shown
NW--No Water Encountered
WD--While Drilling
BCR--Before Casing Removal
ACR--After Casing Removal
CW--Caved and Wet
CM--Caved and Moist

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

Figure 18. *Boring log guide.*

UNIFIED SOIL CLASSIFICATION SYSTEM

COARSE-GRAINED SOILS

(More than half of material is larger than No. 200 seive size.)

GRAVELS More than half of coarse fraction larger than No. 4 sieve size	**Clean Gravels** (Little or no fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
	Gravels with Fines (Appreciable amount of fines)	
	GM^{d}_{u}	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS More than half of coarse fraction smaller than No. 4 sieve size	**Clean Sands** (Little or no fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with Fines (Appreciable amount of fines)	
	SM^{d}_{u}	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS

(More than half of material is smaller than No. 200 sieve.)

SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

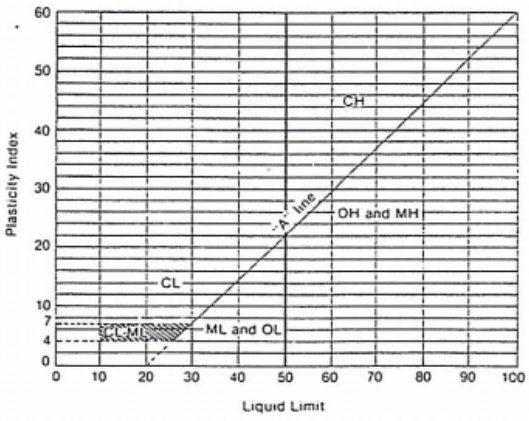
LABORATORY CLASSIFICATION CRITERIA

GW	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for SW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 per cent ..... GW, GP, SW, SP
More than 12 per cent ..... GM, GC, SM, SC
5 to 12 per cent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



For classification of fine-grained soils and fine fraction of coarse-grained soils.

Atterberg Limits plotting in hatched area are borderline classifications requiring use of dual symbols.

Equation of A-line: PI = 0.73 (LL - 20)

Badger Drilling

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Madison, WI 54715

Document Qualifications and Limitations

- This report is based on a unique set of project-specific factors. Even seemingly minor changes in the function, location, loading conditions or other factors assumed or provided to us for this report could affect the validity of the recommendations in this report. The geotechnical engineer should be notified of such changes and asked to review their impact on the recommendations.

- This report is based on the findings of the soil borings and test results performed for this project at the locations shown on the accompanying boring location plan. Variations in subsurface soil and groundwater conditions should be expected between boring locations. These variations or differences may not be apparent until construction. For this reason, your geotechnical engineer should be engaged to provide construction observation services so that appropriate modifications can be made, where necessary, in the recommendations in this report.

- Subsurface conditions including groundwater and soil conditions can change with time due to construction activities on this site or nearby properties, water table fluctuations, weather conditions and other factors. Construction observation services provided by your geotechnical engineer will help you address the impact of these changes on your project.

- Environmental concerns are NOT addressed in this report, as they were not included within the scope of our work. Professional consultation and exploration by a qualified environmental consulting firm is recommended where such concerns may exist.

NRCS Soil Survey Information

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

2/28/2020
Page 1 of 3

Soil Map—Dane County, Wisconsin
(NRCS soil map for Parcel A.)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 18, Sep 10, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2011—Sep 10, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Madison, WI 54715

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DnB	Dodge silt loam, 2 to 6 percent slopes	1.4	100.0%
Totals for Area of Interest		**1.4**	**100.0%**

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Dane County, Wisconsin

DnB—Dodge silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2szfp
Elevation: 830 to 1,090 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 127 to 181 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Dodge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dodge

Setting

Landform: Drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over calcareous loamy till

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 9 inches: silt loam
Bt1 - 9 to 29 inches: silty clay loam
2Bt2 - 29 to 40 inches: clay loam
2C - 40 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

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Hydrologic Soil Group: C
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

Minor Components

St. charles
Percent of map unit: 8 percent
Landform: Drumlins
Hydric soil rating: No

Mayville
Percent of map unit: 5 percent
Landform: Drumlins
Hydric soil rating: No

Lamartine
Percent of map unit: 2 percent
Landform: Drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 18, Sep 10, 2019

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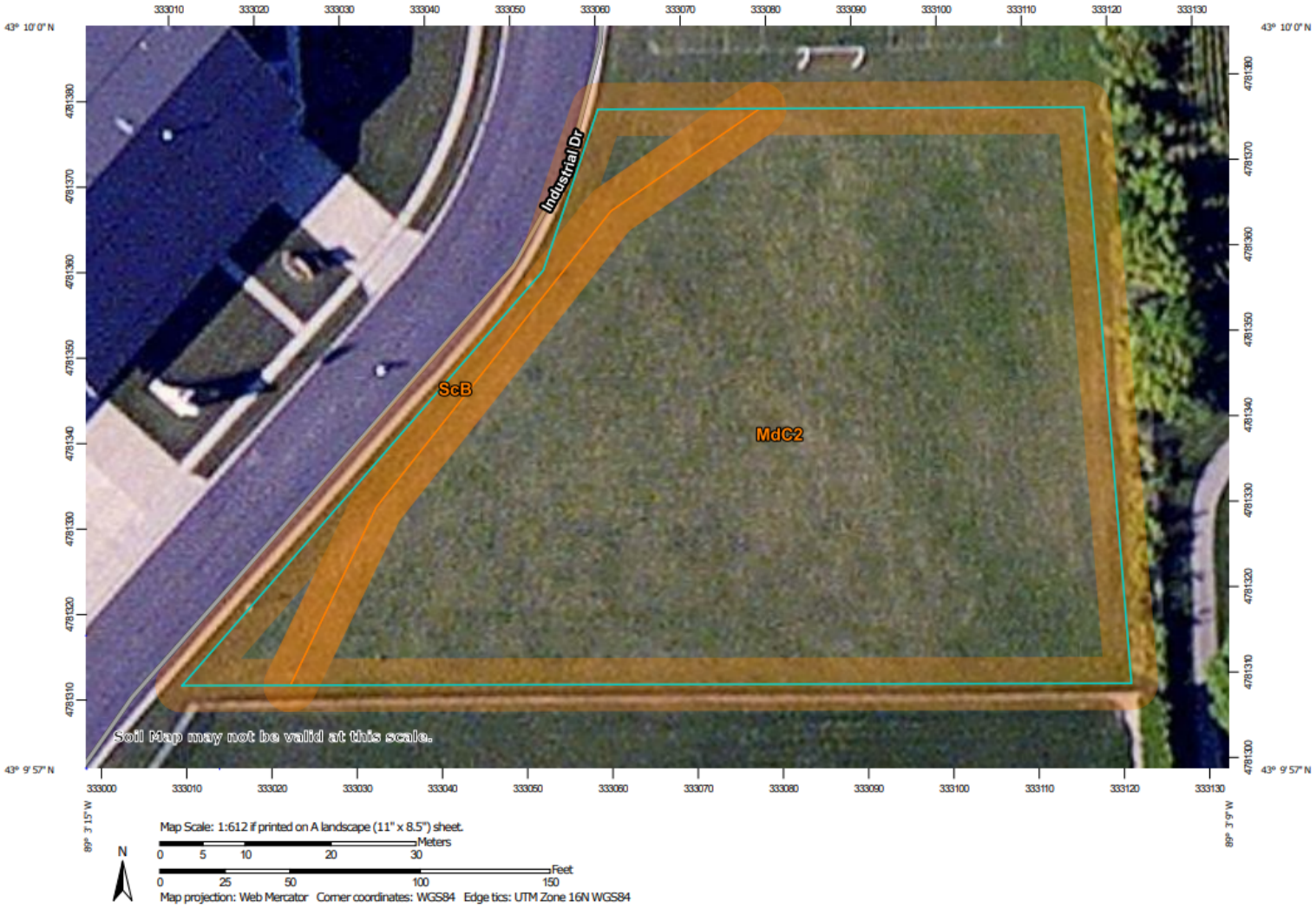
Madison, WI 54715

Soil Map—Dane County, Wisconsin
(NRCS soil map for Parcel B.)



USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

2/28/2020
Page 1 of 3

Soil Map—Dane County, Wisconsin
(NRCS soil map for Parcel B.)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 18, Sep 10, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2011—Sep 10, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MdC2	McHenry silt loam, 6 to 12 percent slopes, eroded	1.2	91.7%
ScB	St. Charles silt loam, 2 to 6 percent slopes	0.1	8.3%
Totals for Area of Interest		**1.3**	**100.0%**

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Dane County, Wisconsin

MdC2—McHenry silt loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tjyt
Elevation: 750 to 1,540 feet
Mean annual precipitation: 31 to 37 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 174 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mchenry, eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mchenry, Eroded

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over loamy till

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 22 inches: silty clay loam
2Bt2 - 22 to 31 inches: loam
2Bt3 - 31 to 36 inches: fine sandy loam
2C - 36 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

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Hydrologic Soil Group: B
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

Minor Components

Kidder, eroded
Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Kendall
Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 18, Sep 10, 2019

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Dane County, Wisconsin

ScB—St. Charles silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2szdy
Elevation: 630 to 1,240 feet
Mean annual precipitation: 29 to 37 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 127 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

St. charles and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Charles

Setting

Landform: Till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over glacial loamy till

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 48 inches: silt loam
2Bt2 - 48 to 54 inches: sandy loam
2C - 54 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 40 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

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Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

St. charles, moderately well drained
Percent of map unit: 8 percent
Landform: Till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Virgil
Percent of map unit: 4 percent
Landform: Till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Pella
Percent of map unit: 3 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 18, Sep 10, 2019

MEA MARSHALL ENGINEERING ASSOCIATES
Marshall Engineering Associates
1415 Engineering Dr.
Madison, WI 54715

MARSHALL MUNICIPAL FACILITY
VILLAGE OF MARSHALL
DANE COUNTY, WISCONSIN

GPC (General Prime Contractor) BID DOCUMENT

Division Project No. **P1004822**

May 5, 2020

FOR
THE STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF FACILITIES DEVELOPMENT
STATE OF WISCONSIN ADMINISTRATION BUILDING - 7TH FLOOR
101 EAST WILSON STREET - P.O. BOX 7866
MADISON, WISCONSIN 53707

Village of Marshall

For Engineer Seal

By

For Architect Seal

Marshall Engineering Associates
2355 Engineering Hall
1415 Engineering Drive
Madison WI, 53706

(920) 287-9977

TABLE OF CONTENTS GPC BIDDERS (11/2017)

Division Project No. **P1004822**

S102	Exterior Wall Section
<u>Architectural</u>	
A101	Floor Plan
A102	North and South Elevation
A104	Police Station Demolition Plan

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GPC INVITATION TO BID (Rev 11/2017)
DIVISION OF FACILITIES DEVELOPMENT

Marshall Municipal Facility
Village of Marshall
Dane County, Wisconsin

Division Project No**. P1004822**

BID OPENING for MEP BIDDERS: 2:00 P.M., None
BID OPENING for GENERAL PRIME CONTRACTOR BIDDERS: 2:00 P.M., May 5, 2020

OWNER: State of Wisconsin, Department of Administration, Division of Facilities Development, hereinafter termed DFD.

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

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

Sealed bids will be received at the Village of Marshall Town Hall, 130 South Pardee Street, Marshall, Wisconsin 53559, before the time indicated above. The bidder is responsible for the sealed bid being delivered to the indicated location for receipt stamping before the time specified for the bid opening. Third party delivery is entirely at the bidder's risk.

In general the work consists of a new building addition and renovation of the existing municipal facility in Marshall, WI. The single-story facility will be 17,964 ft^2 and will be accompanied by a 6,780 ft^2 asphalt parking lot.

Bidding documents (drawings, specifications, and addenda) may be obtained only as electronic files (in PDF format)**:** as a downloadable file from the Division's Projects Bidding website (see website address below) and/or on compact discs or DVD by ordering from the Construction Project Bidding Opportunities webpage. Bidding documents may also be seen at various Builders' Exchanges. Additional project bidding information, including plan holders lists are available on the Division of Facilities Development public website: http://www.doa.state.wi.us/divisions/facilities-development. After opening the web page, select Current Construction Project Bidding Opportunities at the bottom of the screen.

Bidder shall identify the division of work they are bidding on when requesting Bidding Documents online.

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

No deposit is required to obtain documents for bidding purposes.

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

Contract offer and construction phase records will be processed electronically on the WisBuild™ DFD Information System.

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

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

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GPC INSTRUCTIONS TO BIDDERS (Rev 11/2017)

Division Project No. **P1004822**

INDEX

1. DEFINITIONS

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

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

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

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

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

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

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

(h) “Subcontractor “is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.

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

2. GENERAL

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

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

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

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

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

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

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

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

3. DRAWINGS AND SPECIFICATIONS

The drawings and specifications that form a part of this contract, as stated in Article 3 of the General Conditions, are listed in the Table of Contents of these specifications.

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

4. INTERPRETATION

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

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

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

5. MANDATORY PRE-BID DOA CERTIFICATION

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

6. BID GUARANTEE

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

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

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

7. WITHDRAWAL OF BIDS

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

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

If a bid contains an error, omission, or mistake, the bidder may limit liability to the amount of their bid guarantee by giving DFD written Notice, within seventy-two (72) hours of the bid opening, of their intent

not to execute the contract with the state. If no such notice is given, DFD reserves the right to obtain the amount of the difference in bid price between the low bidder and the next low bidder.

8. CONTRACT FORM

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

9. CONTRACT INTERESTS BY STATE PUBLIC OFFICIALS

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

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

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

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

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

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

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

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

Every General Prime Contractor will be required to submit a report to DFD, on a monthly basis and upon completion of the contract, which identifies the Minority Business Enterprises and Disabled Veteran-Owned Business to whom work was directly subcontracted and the value of said work. Subcontractors, material suppliers, etc. under contract to a subcontractor of a General Prime Contractor may not be used for reporting

purposes under this paragraph without prior approval of the Wisconsin Supplier Diversity Program office. A MBE/DVB monthly report form will be sent to the Bidder after the Notice to Proceed is issued.

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

11. SUBSTANCE ABUSE PREVENTION

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

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

The terms of this Substance Abuse Program Statement shall cover all construction personnel who are working on State of Wisconsin job sites. This includes employees of all Contractors, Subcontractors, contractor suppliers, and their employees working at the job site.

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

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

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

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

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

12. METHOD OF AWARD - RESERVATION

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

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

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

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

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

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

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

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

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

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

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

14. TAXES

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

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

15. SUBMISSION OF BIDS

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

No bids for any subdivision or any subclassification of this work, except as indicated, will be accepted. Any conditional bid, amendment to the Bid Form or appendant thereto, the inclusion of any correspondence,

written or printed matter, unsolicited material or data, or details of any nature other than the information specifically called for, will disqualify the Bid. Telecommunication alterations to the bid will not be accepted.

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

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

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

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

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

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

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

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

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

16. BASE BID

Base Bids shall be received as follows:

SINGLE BASE BID FOR ALL THE WORK.

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

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

17. INFORMATIONAL BIDS

NONE

18. UNIT PRICES

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

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

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

The GPC shall list a **total** unit price for each item requested on the Bid Form. The **total** unit price listed should be calculated by adding the unit price included with the MEP bid to the cost of any GPC work required for that item.

19. STATED ALLOWANCES

The Bidder shall include the following cash allowances in the bid:

NONE

20. SUBCONTRACTORS

GENERAL PRIME CONTRACTOR SUBCONTRACT WITH MEP SUBCONTRACTORS:

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

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

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

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

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

drawings, mentioned in the specifications, or reasonably implied as necessary to complete the division of work bid for this project.

Prompt Payment. (general prime contractor) shall pay (mechanical, electrical, or plumbing subcontractor) in accordance with section 16.855(19)(b), Wisconsin stats, for work that has been satisfactorily completed and properly invoiced by (mechanical, electrical, or plumbing subcontractor). A payment is timely if it is mailed, delivered, or transferred to (mechanical, electrical, or plumbing subcontractor) by the deadline under section 16.855(19)(b), Wisconsin stats. If (mechanical, electrical, or plumbing subcontractor) is not paid by the deadline in this contract, (general prime contractor) shall pay interest on the balance due from the eighth day after the (general prime contractor) receives payment from the Department of Administration for the work for which payment is due and owing to (mechanical, electrical, or plumbing subcontractor), at the rate specified in section 71.82, Wisconsin stats., compounded monthly.

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

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

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

In addition (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others (general prime contractor) is required to indemnify under its contract with the department, and the employees of any of them, from any liability, including liability resulting from a violation of any applicable safe place act, that (general prime contractor) or the state incurs to any employee of (mechanical, electrical, or plumbing subcontractor) or any third party where the liability arises from a derivative claim from said employee, when the liability arises out of the failure of the (general prime contractor) or the state to properly supervise, inspect, or approve the work or work area of (mechanical, electrical, or plumbing subcontractor), but only to the extent that the liability arises out of the acts or omissions of (mechanical, electrical, or plumbing subcontractor), its employees, or

anyone for whom (mechanical, electrical, or plumbing subcontractor) may be liable, or from (mechanical, electrical, or plumbing subcontractor's) breach of its contractual responsibilities or arises out of (general prime contractor's) negligence or other fault in providing general supervision or oversight of (mechanical, electrical, or plumbing subcontractor's) work or arises out of the Department of Administration's status as owner of the project or project site. In claims against (general prime contractor) or the state by an employee of (mechanical, electrical, or plumbing subcontractor) or its subcontractors or anyone for whose acts (mechanical, electrical, or plumbing subcontractor) may be liable, the indemnification obligation of this paragraph is not limited by a limitation on amount or type of damage, compensation, or other benefits payable by or for the (mechanical, electrical, or plumbing subcontractor) subcontractors under workers compensation act. Except as identified above, the obligations of (mechanical, electrical, or plumbing subcontractor) under this indemnification do not extend to the liability of (general prime contractor) and its agents or employees arising out of (1) preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications; (2) the giving of or failure to give directions or instructions by the (general prime contractor) or the Department of Administration or their agents or employees provided the giving or failure to give is the cause of the injury or damage; or (3) the acts or omissions of other subcontractors.

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

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

21. COMMENCEMENT AND COMPLETION
The successful General Prime Contractor Bidder must agree to commence the work on or before a date to be specified in a written "Notice to Proceed" issued by the state and to fully complete all the work within **233** consecutive calendar days thereafter. Completion time will be converted to a specific date at the time the "Notice to Proceed" is issued. Refer also to General Conditions, Article entitled "Time for Completion of the Project."

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor. These milestones will be incorporated into the master project schedule after the Notice to Proceed is issued. The schedule must include, but is not limited to, the following milestone categories as they apply to the project:

Start Date (Month/Year)	End Date (Month/Year)	Schedule Milestones
April/2021	April/2021	Demolition
April/2021	July/2021	Renovation of Existing Building
March/2021	May/2021	Site Work
May/2021	June/2021	Foundations
June/2021	July/2021	Exterior Envelope
July/2021	August/2021	MEP Systems
August/2021	September/2021	MEP Rough-in
September/2021	October/2021	MEP Typical Finishes
October/2021	November/2021	Site Improvements

22. WisBuild™ DFD INFORMATION SYSTEM

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

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

23. WORK BY THE STATE

The following work will be accomplished by DFD or will be let under separate contracts and will not be included under the General Prime Contract:

NONE

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

- ASBESTOS ABATEMENT - Removal of friable and category II non-friable asbestos-containing materials (WAC NR447) from buildings being demolished. (See General Requirements, HAZARDOUS SUBSTANCES for regulatory requirements, materials testing results, and General Prime Contractor's responsibility regarding ACM.)

***

BID FORM – GENERAL PRIME CONTRACTOR (GPC) (Rev 11/2017)
DIVISION OF FACILITIES DEVELOPMENT
s.16.855 Wis. Stats.

Marshall Municipal Facility
Village of Marshall
Marshall, Wisconsin

Division Project No. **P1004822**

General Prime Contractor (GPC) Bid Opening: 2:00 P.M., May 5, 2020

To: State of Wisconsin, Department of Administration, Division of Facilities Development

(a joint venture)
(a corporation)
(a partnership)
We_____(an individual)
(Cross out inapplicable)

Of_____
Street City County State Zip

hereby agree to execute a contract with the Division of Facilities Development (DFD) and a subcontract with all successful MEP Bidders identified by DFD and listed in this bid, and to furnish satisfactory separate 100% Performance Bond and 100% Payment Bond in the amount specified no later than ten (10) days of the contract offer, and to provide all labor and material required for the construction of the project designated above, for the prices hereinafter set forth, in strict accordance with the Contract Documents prepared by Marshall Engineering Associates at 1415 Engineering Drive Madison, WI 53706 for DFD and dated May 5th, 2020.

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

Contact name:_____

Telephone Number:_____

Email address:_____

FAX Number: _____

IMPORTANT: BEFORE SUBMITTING YOUR BID, PLEASE VERIFY THAT:

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

SINGLE BASE BID - GENERAL PRIME CONTRACTOR

ALL WORK

BASE BID NO 1. ALL WORK required to fully complete the project in accordance with the Contract Documents,

for the sum of ($_____)

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

UNIT PRICES (listed below are for additions to or deductions from amount of work required under the contract. See Instructions to Bidders 'Article 19 Unit Prices' for detailed instructions.) (Applicable to Base Bid No. 1)

Item Unit Price

$_____Per

Enter bid amount in numeric characters only *(Example: $9,999).*

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

Fire Suppression Base Bid No. 2:

Identified Subcontractor:_N/A_____

Amount:___N/A_____

Plumbing Base Bid No. 3:

Identified Subcontractor:_____N/A_____

Amount:___N/A_____

Heating Ventilating and Air Conditioning Base Bid No. 4:

Identified Subcontractor:____N/A_____

Amount:____N/A_____

Electrical Base Bid No. 5:

Identified Subcontractor:_____N/A_____

Amount:_____N/A_____

INFORMATIONAL BID NO. 1-IA, For accounting purposes only, the following lump sum amount has been included in Base Bid No. 1 for the renovation of the existing municipal facility and construction of an additional facility on the adjacent lot.

($_____)

Enter bid amount in numeric characters only *(Example: $9,999).*

COMMENCEMENT AND COMPLETION OF CONTRACT WORK

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

ADDENDUM RECEIPT

We acknowledge receipt of the following Addenda:

Addendum No._____Date_____

Addendum No._____Date_____

Addendum No._____Date_____

Addendum No._____Date_____

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

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

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

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

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

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

_____
(Firm Name)

_____
(Bidder's Printed Name)

(Seal, if bid is by a corporation)

Date: _____ By _____
(Signature of Bidder)

[ ] Place an "X" in the box if Bidder is certified as a minority business enterprise or disabled veteran-owned business by the Wisconsin Supplier Diversity Program and wishes to be considered for the 5% bidder preference.

From:

_____

_____

_____

IMPORTANT: BEFORE SUBMITTING YOUR BID, PLEASE VERIFY THAT:

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

SEALED BID

Project Name _____

Project No. _____

Location _____

Bid Category _____

Bid Date _____

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

(Complete and securely tape to exterior of sealed envelope)

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SUPPLEMENTARY GENERAL CONDITIONS (Rev 11/2017)
Division Project No. **P1004822**

INDEX

1. DEFINITIONS

General Conditions, Article 2.B. shall be supplemented with the following:

Architect/Engineer (A/E) for this project: **Marshall Engineering Associates**
2355 Engineering Hall
1415 Engineering Drive
Madison, WI 53706

2. INSURANCE

General Conditions, Article 31.A.(4), shall be supplemented with "special hazard" coverage as follows:

"General Prime Contractor's, MEP Subcontractor's and Subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards, unless provided as part of Comprehensive General Liability coverage: loading and unloading; excavating; filling; drilling; demolition. Coverages shall be in the amounts specified in Article 31 of the General Conditions."

3. SCHEDULE OF OCCUPATIONAL CLASSIFICATIONS AND MINIMUM HOURLY WAGE RATES (REPEALED)

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

1

DIVISION 1 - GENERAL REQUIREMENTS (Rev 11/2017)

Division Project No. **P1004822**

INDEX

1. DEFINITIONS

In this document, the following terms are defined as:

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

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

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

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

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

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

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

(h) "Subcontractor "is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.

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

2. GENERAL

All articles in these General Requirements are applicable to all Divisions and Sections of the Work included herein. The Conditions of the Contract, General and Supplementary General Conditions, and these General Requirements shall apply with equal force and effect to the General Prime Contractor and all Subcontractors engaged in this work.

Contractor or the Contractor's authorized representative must be present to accept delivery of all equipment and material shipments. DFD's representatives will not knowingly accept, unload or store anything delivered to the site for the Contractor's use. Inadvertent acceptance of delivered items by any representative or employee of the State shall not constitute acceptance or responsibility for any of the materials or equipment. It is the Contractor's responsibility to assume liability for equipment or material delivered to the job site.

3. SPECIAL SITE CONDITIONS

Confine all operations, equipment, apparatus and storage of materials, to the immediate area of work to the greatest possible extent. Contractor shall ascertain, observe and comply with all rules and regulations in effect on the project site, including but not limited to parking and traffic regulations, use of walks, security restrictions and hours of allowable ingress and egress. Any special traffic control during construction involving lane closures shall be in accordance with the federal standard, Manual of Uniform Traffic Control Devices.

The Contractor shall take all measures necessary to become acquainted with the location of underground service, utilities, structures, etc., which may be encountered or be affected by the Contractor's work, and shall be responsible for damage caused by neglect to provide proper precautions or protection. As a minimum to become acquainted with such underground appurtenances, the Contractor shall: 1) Observe existing conditions visible at the site immediately prior to commencement of work; 2) Review available site plans incorporated in the contract documents and/or provided by the DFD Project Representative; 3) Final check with the DFD Project Representative for additions to or changes from conditions indicated on site plans for the facility; and 4) Obtain input from the "one-call system", the organization composed of all suppliers of utilities/services to or from the site.

Information pertaining to existing conditions that are described in the specifications or appear on the drawings is based on available records. While such data has been collected with reasonable care, there is no expressed or implied guarantee that conditions so indicated are entirely representative of those actually existing. This information is provided to inform the Contractor of known, existing conditions so that due diligence is taken by the Contractor to avoid damage. Where site observation or documents indicate existing underground utilities/services in close proximity (within four feet horizontally and/or four feet vertically) to necessary new construction work, the Contractor shall be responsible to test, probe or otherwise determine exact locations so as to prevent damage to such utilities/services.

Existing pipes, electrical work, and all other utilities encountered, which may interfere with new work, shall be re-routed, capped, cut off, or replaced by the Trades having jurisdiction, in accordance with the Bidding and Contract Documents.

Foundations are designed for soil pressure indicated. Because of variation in bearing capacity of the ground, some foundations may have to be revised after excavation has been completed. DFD's Project Representative's approval to proceed with foundation work must be obtained before concrete is poured. Changes in the work due to revisions of foundations because of unsatisfactory soil conditions will be classed as additional work.

4. INSPECTION OF SURFACES

Contractor shall obtain complete data at the site and inspect surfaces that are to receive the Work before proceeding with fabricating, assembling, fitting or erecting any work under this contract.

Contractor shall notify DFD's Project Representative in writing in case of discrepancies between existing work and drawings, and of any defects in such surfaces that are to receive the Contractor's work. DFD's Project Representative will evaluate the notice and direct what remedial action will be taken.

Starting of work implies acceptance of existing work or the work of others. Removal and replacement of work applied to defective surfaces, in order to correct defects, shall be done at the expense of the Contractor who applied work to defective surfaces.

5. HAZARDOUS SUBSTANCES - ASBESTOS, LEAD AND POLYCHLORINATED BIPHENYLS (PCB'S)

Airborne asbestos fibers, lead, and PCB compounds, if encountered, have been determined to be hazardous to one's health. Compliance with all possible applicable regulations is the Contractor's responsibility. Contractor shall not provide or install any product that contains any amount of asbestos or PCB. See General Requirements, CLEANING AND WASTE DISPOSAL for disposal of hazardous waste, if encountered.

<u>ASBESTOS</u>

Contractor's attention is directed to WAC NR 447, WAC DHS 159 and the Occupational Safety and Health Act (OSHA) in general, part 1926.1101--ASBESTOS in particular. Contractor is responsible for compliance with all applicable regulations when the work includes fastening to or coring through Asbestos Containing Materials (ACM) and disturbance of asbestos containing caulking and adhesives. The Contractor is responsible for removal and disposal of Category I non-friable ACM that will be disturbed by the work..

Unless otherwise indicated, all caulking, sealants, glazing compounds, gaskets, asphalt roofing materials, damp proofing and miscellaneous adhesives are assumed to contain asbestos and are considered to be Category I non-friable ACM as defined in NR 447. Waste material containing Category I non-friable ACM, is regulated as Construction and Demolition (C&D) waste and may be disposed of at a Department of Natural Resources (DNR) approved C &D waste landfill. If Contractor's work methods cause non-friable ACM to become friable, the Contractor is responsible for the disposal of the friable asbestos waste at a landfill specifically approved by DNR to accept friable asbestos. A copy of the signed waste manifest for the disposal of all friable asbestos waste shall be provided to DFD prior to request for final payment.

The regulations referenced above require removal of friable ACM and Category II non-friable ACM prior to demolition of a building. Category I non-friable ACM does not need to be removed from a building prior to demolition if the waste generated from the demolition is taken to a DNR approved C & D waste landfill. If the contractor chooses to recycle building materials from a building to be demolished, the contractor is responsible for removal and disposal of all Category I non-friable ACM in accordance with applicable regulations prior to demolition. If the contractor's demolition methods will cause non-friable ACM to become friable, the contractor is responsible for removal and disposal of all Category I non-friable ACM in accordance with applicable regulations prior to demolition.

The following building materials have been identified to be ACM.

The following building materials have been identified to be non-ACM.

Lead Based Paint

Paint and glazed finishes on tile and masonry units is assumed to contain lead. The Contractor is responsible for compliance with Occupational Safety and Health Act (OSHA) in general and particularly to 29 CFR 1910 (LEAD STANDARD) and to CFR 1926 (LEAD EXPOSURE IN THE CONSTRUCTION INDUSTRY). Dispose of refuse containing lead based paint or contaminated with lead by the demolition process in conformance with State of Wisconsin Hazardous Waste Regulations set forth by the Department of Natural Resources and in conformance with OSHA and EPA recommended worker safety requirements.

PCB'S

Contractor's attention is directed to Wisconsin Administrative Code, Chapter NR 157 relative to PCB's. Refer to Division 26, Electrical within these specifications for work involving PCB's.

6. SOIL TEST BORINGS

Test borings have been made and boring data has been provided; however, these records do not form a part of the Contract Documents, but are provided for information only.

Neither the Architect/Engineer nor DFD guarantee continuity of conditions indicated at the boring locations.

Contractor must interpret the soil boring data and be satisfied as to the materials to be excavated and materials upon which fill or other materials may be placed.

7. MUTUAL RESPONSIBILITY

Contractor(s) shall coordinate the work with adjacent work and shall cooperate with all other trades to facilitate the general progress of the work. Each trade shall afford all other trades every reasonable opportunity for the installation of their work and for the storage of their material. In no case will the Contractor(s) be permitted to exclude from the premises or work, any other Contractor or employees thereof, or interfere with any other Contractor in the executing or installation of their work.

Contractor(s) shall arrange the work and dispose of materials so as not to interfere with the work or storage of materials of others and each shall join their work to that of others in accordance with the intent of the drawings and specifications.

All Contractors shall work in cooperation with the General Prime Contractor and with each other, and fit their work into the structure as job conditions may demand. All final decisions as to the right-of-way and run of pipe, ducts, etc., shall be made by DFD at prearranged meetings with responsible representatives of the Contractors involved.

8. PROJECT MEETINGS

Project meetings will be held at the time designated by DFD. Contractor, when requested, shall attend these meetings. If the principal of the firm does not attend meetings, a responsible representative of the Contractor who can bind the Contractor to a decision at the meetings shall attend.

The Architect/Engineer or a representative thereof will write a report covering all items discussed and decisions reached and copy of such report distributed to all parties involved.

10. CUTTING AND PATCHING

Provisions of Article 9. Sleeves and Openings herein, cover the work involved for providing and installing sleeves and openings.

Cutting and patching required to access work in existing walls, in chases, above inaccessible ceilings, below floors, etc., shall be by the Contractor who requires the access, unless shown in the bid documents otherwise or noted otherwise.

The Contractor shall do all cutting, or fitting of the work as required to make its several parts fit together, or to receive the work of others, as shown or reasonably implied by the drawings or specifications, or as may be directed by DFD. Holes cut in exterior walls and/or roofs shall be waterproofed.

The Contractor who cuts for required access to work shall also be responsible for patching. Where cutting and patching is required, Contractor shall hire individuals skilled in such work to do cutting and patching.

Except where specifically identified, the Contractor who removes or relocates building components which leave a remaining opening shall be responsible for patching the opening., Where building components are removed by the Asbestos abatement Contractor on behalf of a contractor, the Contractor on whose behalf the components are removed shall be responsible for patching the remaining opening.

Patching includes repairing openings to match adjacent construction and painting the surface to match existing. Painting means covering the entire wall where patching is to be done to nearest break point or corner unless indicated to be done by other trades.

Contractor shall not endanger any work by cutting, digging or otherwise and shall not cut or alter the work of others without their consent.

Do not pierce beams or columns without permission of DFD and then only as directed in writing. If any ductwork, piping, conduit, etc. is required through walls or floors where no sleeve has been provided, use a core drill or saw cut to prevent damage and structural weakening.

Wherever any material, finish, or equipment, is damaged, the skilled trade shall accomplish the repair or replacement, in that particular work and the cost shall be charged to the party responsible for the damage. DFD reserves the right to disallow any means and/or methods that, in the opinion of DFD, are harmful to and/or not in the best interest of preserving the improvements receiving the work.

11. MANUFACTURER'S DIRECTIONS

Contractors shall apply, install, connect, erect, use, clean and condition manufactured articles, materials, and equipment as recommended by the manufacturer, unless specified to the contrary. The manufacturer's latest recommendations at the time of bidding shall be used.

12. LAYOUT

The General Prime Contractor shall immediately upon entering the site for purpose of beginning work, locate general reference points and take such action as is necessary to prevent their destruction. Each Contractor shall lay out its work and be responsible for all lines, elevations and measurements of the building and other work executed under its Contract. Each Contractor must exercise proper precaution to verify dimensions on the drawings before laying out work and will be held responsible for any error resulting from failure to exercise such precaution.

Using datum furnished by the State, the lot lines and present levels have been established as shown on the drawings. Other grades, lines, levels and benchmarks, shall be established and maintained by each Contractor, who shall be responsible for them.

As work progresses, the General Prime Contractor shall lay out on forms and floor, the locations of all partitions, walls and fix column centerlines as a guide to all trades.

The General Prime Contractor shall make provision to preserve property line stakes, benchmarks, or datum point. If any are lost, displaced or disturbed through neglect of any Contractor, Contractor's agents or employees, the Contractor responsible shall pay the cost of restoration.

Each Contractor shall verify grades, lines, levels, locations and dimensions as shown on drawings and report any errors or inconsistencies to DFD's Project Representative before commencing work. Starting of work by each Contractor shall imply acceptance of existing conditions.

13. SUPERVISION

The General Prime Contractor shall take complete charge of the work under this contract and coordinate the work of all Trades on the project.

14. FIELD OFFICES

The General Prime Contractor shall provide and maintain a temporary watertight office where directed for use by the Contractor and Trades. The office shall be equipped with a plan rack and suitable table for examination of plans.

The General Prime Contractor shall also provide and maintain a temporary office for the sole use of Architect/Engineer and DFD's Project Representative. The office shall be at least 150 square feet in floor area, equipped with a plan rack, 3'-0" x 8'-0" smooth sloped top table, flat top desk, three chairs, and a four-drawer legal size metal filing cabinet equipped with a workable lock.

Exterior of offices shall be of neat appearance, and if deemed necessary by DFD, shall be painted to achieve such appearance; heat offices during cold weather; provide each office with at least one glazed movable window and one door with a cylinder lock and latch set.

Provide and maintain artificial light, minimum of 40 foot-candles, and two duplex outlets where directed. Provide screen door and window screens if requested. When directed, move the office into a suitable area in the building.

If other offices are provided, they will be located as agreed to by the Contractor and approved by DFD.

A mobile type office with equivalent space and equipment may be used if Architect/Engineer and DFD's Project Representative have a separate office and separate entrance.

15. STAIRS AND SCAFFOLDS

The General Prime Contractor shall:

Furnish and maintain equipment such as temporary stairs, fixed ladders, ramps, chutes, runways and the like as required for proper execution of work by all trades, and shall remove them on completion of the work.

Erect permanent stair framing as soon as possible. Provide stairs with temporary treads, handrails, and shaft protection.

Contractors requiring scaffolds shall make arrangements with and compensate the General Prime Contractor for scaffolding, or shall provide their own and remove them upon completion of the work.

Each Contractor shall underlay its interior scaffolds with planking to prevent uprights from resting directly on the floor construction.

16. HOISTS, ELEVATORS OR CRANES

Each separate contractor shall provide and pay for its own hoist/crane or other apparatus necessary for unloading/setting or moving their equipment and materials. Installation and removal of equipment for this activity must be accounted for in the Project Schedule.

Equipment and operations for this activity shall comply with applicable Department of Safety and Professional Services and OSHA requirements. No material hoist may be used to transport personnel unless it meets Department of Safety and Professional Services and OSHA requirements for that purpose.

Contractors shall provide any protection required, temporary or long term, to prevent damage to work in place or in progress. When hoisting activity results in such damage, the responsible contractor shall pay for cleaning, repair or replacement of material or equipment as determined by DFD.

Equipment, that imposes loads of any kind on work in place, shall not be erected without agreement from DFD.

At their own discretion, two or more contractors may agree to use common hoisting facilities. Under such arrangements, the allocation of costs, access and scheduling and all other details of the agreement are the responsibility of the contractors involved.

Existing elevators may be used on a limited basis with DFD’s permission and agreement. Costs of warranty extensions and additional service work required will be paid by the using contractor. Appropriate protection must be provided by the using contractor and that contractor shall be responsible for any structural, mechanical or finish damage to the elevator and its parts and to adjoining building finishes and components.

17. SIGNS

The General Prime Contractor shall provide a job sign constructed of 3/4" thick exterior grade plywood. The size, colors and content shall conform to job sign detail which is included as an appendix to these General Requirements. The General Prime Contractor shall order, paint and erect the sign. The sign shall be placed on the property where directed and shall be maintained for the duration of the construction period.

No individual advertising signs, plaques or credits, temporary or permanent, will be permitted on the building or premises, except the name of the Contractor on Contractor's office or material shed.

18. FENCE

The General Prime Contractor shall provide a neat appearing protective fence where indicated on the drawing, constructed of standard studded T-Posts of sufficient length for line posts and spaced not to exceed 8'-0" apart. Corner posts and gate posts are to be galvanized steel pipe of not less than 2 1/2" o.d. and shall

be properly braced. A 4-foot high wooden snow fence shall be securely fastened to the supports. Plastic fencing is not acceptable. The snow fence shall project 4" above the fence posts. Provide gates, properly constructed and braced, complete with hinges, hasps, and padlocks in number and location required for proper control, delivery and distribution of material and equipment. Gate posts shall be adequately back tied and anchored to insure a rigid installation. All protective fencing shall be maintained in an upright, orderly fashion throughout the construction schedule. In areas where existing trees are to be protected, the area inside the protective fencing shall not be used for any purpose related to construction activities, such as material storage, vehicle parking, portable toilets, or other disruptive activities that would result in damage of any kind to the site inside the fence.

19. ROADWAY

The General Prime Contractor may build a temporary roadway for delivery of materials at the Contractor's own expense and maintain it until completion of construction or until service drives are installed. Where possible, build temporary roadway within the confines of the new roadway and allow others to use it at no cost. Any gravel topping used for temporary roadway shall be at least 6" below finished elevation of permanent drives. If temporary roadway is not intended to be converted to a permanent road, all road materials shall be removed upon termination of access need, and the confines of the temporary roadway shall be repaired to match adjacent area.

20. TOILETS

The General Prime Contractor shall provide and maintain sanitary temporary toilets, located where directed by DFD's Project Representative, in sufficient number required for the force employed. The toilets shall comply with International Building Code Chapter 29 on Plumbing Systems. Toilets shall be self-contained chemical type.

As soon as conditions will allow, the Plumbing Trade shall provide temporary toilets within the building, where directed, and equip the room with at least two temporary water closets and one temporary lavatory, each with connections to cold water and sanitary sewer. The General Prime Contractor shall provide a temporary wood enclosure with doors; remove when directed.

After directed by DFD's Project Representative, the Plumber shall remove the temporary fixtures and replace them with permanent fixtures.

After temporary toilet accommodations are provided within the building, the General Prime Contractor shall remove the temporary outside toilets.

The General Prime Contractor shall maintain the temporary toilets in a sanitary condition at all times and shall supply toilet paper until completion of the job.

21. TELEPHONES

It is expected that each contractor have access to their own cell phone for their own use. No additional telephone service will be provided

22. WATER SUPPLY

The General Prime Contractor shall supply all water required for construction and other purposes until the permanent water supply system is accepted and in operation.

Immediately after award of contract, the Plumbing Trade shall make arrangements for temporary connections and extension of existing water service facilities. As soon as possible, the Plumbing Trade shall install the permanent main into the building and provide a temporary gate valve, extend piping, provide temporary water meter, and provide two 3/4" hose bibbs on each floor, located where directed. Permanent risers may be used for temporary service. Provide two 3/4" hose bibbs outside of the building at suitable locations for construction purposes where directed.

The Plumbing Trade shall supply, maintain the installation, and remove it when directed by DFD's Project Representative. The General Prime Contractor shall provide necessary patching of surfaces and structure after such temporary service is removed.

The General Prime Contractor shall prevent waste of water and shall maintain valves, connections, and hoses in perfect condition, at all times. Trades shall provide their own hose or piping from hose bibbs.

The Contractor shall pay cost of water used.

Immediately after award of contract, the Plumbing Trade shall make arrangements to begin underground sewer work and shall complete sewer work, including backfilling required, as soon as possible.

23. TEMPORARY ELECTRICAL WORK

The General Prime Contractor shall make all arrangements with the local utility company for metered electrical service, pay for the installation of all temporary service to utility point of termination shown on drawings, and upon completion of project, pay for removal of temporary service. The General Prime Contractor shall patch surfaces and structure after services have been removed. The service shall be 120/208 volt, 3 phase, 4 wire, 400 amps.

If a Contractor contemplates the use of equipment that requires a different voltage or greater capacity than that specified, then that Contractor must arrange with Utility for this additional service and pay for installation of the service and the necessary additional switches and wiring required.

The meter shall be taken out in the General Prime Contractor's name.

The General Prime Contractor shall pay for all electrical energy consumed for construction purposes for all trades including temporary offices, for operation of ventilating equipment, for heating of building, and for testing and operating of all equipment. The General Prime Contractor shall continue to pay for energy used until substantial completion even though equipment has been connected to the permanent wiring.

Any Trade that has a temporary office shall provide and pay for installation of temporary service for lighting of such temporary office.

The Electrical Trade shall provide meter base and wiring to point of utility termination, provide main fused service switch, and fused or breaker distribution panel(s). The Electrical Trade shall also provide, at no cost to others, all lamps, wiring, switches, sockets and similar equipment required for temporary system until substantial completion. Upon completion of the project, the Electrical Trade shall remove the temporary system.

The temporary lighting system shall be sufficient to enable all trades to safely complete their work and to enable DFD's Project Representative to check all work as it is being done. Illumination shall be 5 foot-candles minimum in all areas and, in addition, shall meet or exceed the requirements of 29 CFR 1926.56 Illumination (OSHA regulations).

Provide at least one duplex outlet for small power tools for each 400 square feet of floor space, 120 volt single phase. Circuits shall be 20 ampere, single pole.

In accordance with the latest issue of the National Electrical Code, all temporary electrical circuits for construction purposes shall be equipped with combination ground fault interrupter and circuit breakers meeting the requirements of UL for Class A, Group 1 devices. The ground fault interrupter portion shall be solid state type, insulated and isolated from the breaker mechanism. A test button shall be provided for checking the device. The breaker mechanism shall provide overload and short circuit protection and shall be operated by a toggle switch with overcenter switching mechanism so that contact cannot be held closed.

All Trades shall furnish their extension cords and lamps other than those furnished for general lighting.

All Trades and other separate Contractors shall be allowed to use the service provided for general lighting and fractional horsepower hand tools at no cost.

The General Prime Contractor shall be compensated by those requiring three phase and single-phase energy used for equipment other than fractional horsepower hand tools. Arrangements shall be made with the General Prime Contractor before construction equipment is used.

The General Prime Contractor shall post the cost rates at start of construction. Rates may be posted on an hourly use basis or energy may be submetered at the General Prime Contractor's option, but shall be based upon a fair and reasonable estimate of the cost of power used as billed by the Utility.

Those trades requiring lighting or other electrical service outside of building shall pay for the installation and removal of service, maintenance charges, and energy consumed.

Trades requiring voltage other than basic temporary system specified, three phase power, or a special single phase run, for operation of construction equipment or testing shall make their own arrangements with the General Prime Contractor for cost of energy used, and the Electrical Trade for the cost of installation, and removal when no longer required.

Heating and Ventilating Trade shall provide wiring, equipment and connections for portable or temporary heating units.

The Electrical Trade shall expedite the work under this contract in such a manner that the permanent power wiring system and panels will be installed and connected to permanent heating and ventilating equipment in time to operate and test this equipment when the building has been closed sufficiently to permit the use of portions of heating and ventilating system for temporary heating during construction. Permanent wiring and connections may be used at permanent equipment; however, the use of the permanent system during construction shall in no way waive any part of the guarantee period.

After Substantial Completion of the permanent electrical system and building wiring, permanent receptacles may be used during finishing work. Permanent wiring for lighting fixtures, switches and receptacles shall be installed only after all masonry and plastering has been completed, but this wiring shall not be used for motors larger than fractional HP or for welding equipment. Circuits for larger motors and welding equipment may be provided with special circuits to mains of electrical panels at the expense of those trades requiring them, provided that special permission is obtained from DFD's Project Representative and the installation is made by skilled electricians.

24. COLD WEATHER PROTECTION

All heating and protective covering, required to protect the work from injury due to freezing and moisture during the construction period and prior to enclosure of the building, shall be classed as COLD WEATHER PROTECTION. Such protection shall be provided and paid for by the General Prime Contractor.

Heat required to protect materials from injury due to freezing during the construction period and prior to enclosure, shall be provided by means of portable heating units intended for this purpose.

All heating units must be approved types. Proper ventilation must be provided. The use of temporary units whose product of combustion will damage fresh concrete, mortar or other building materials, will not be allowed. Use of coke or oil salamanders is prohibited.

If electrical power is required for oil or gas portable heating units, it may be taken from the available temporary power source and paid for by the General Prime Contractor.

Heating units and the area surrounding the units shall be kept in a clean and safe condition.

25. ENCLOSURE

Before the building, or portion thereof, can be considered enclosed, the General Prime Contractor shall have advanced the construction of the building to conform with the following requirements.

The exterior walls should be erected to full thickness and height shall extend to the top of the horizontal level which encloses the space intended to receive heat. If erection of full thick walls is not feasible, erection of back-up wall only will be accepted if approved weatherproofing of back-up materials is provided to avoid damage to back-up materials.

The horizontal slab, which will serve as the overhead enclosure of the spaces to receive heat (whether it be the roof slab or intermediate floor slab), shall have all openings covered with closures capable of sustaining any loads imposed thereon. The entire overhead enclosure shall be made weatherproof.

Provide approved translucent material for temporary enclosure of window openings if they have not been glazed. Plain or reinforced polyethylene film or other suitable translucent material will be acceptable, provided it is installed in or on a well fitting rigid wood frame and kept in good repair. This means of temporary enclosure shall be used for other minor openings in walls.

Construct temporary walls as required to protect contents and to separate the interior enclosed sections from the interior open section of the building during construction. Temporary wall enclosure shall consist of plywood panels, at least 3/8" thick, fastened to wood framework, consisting of 2 x 4 studs spaced 24" o.c., securely spiked to wood plates, top and bottom. Provide intermediate girts between studs as required for fastening of plywood. Temporary walls must provide protection from dirt, dust, and drafts.

Provide exterior doors with hinges, self-closing device, and locks.

Make suitable provisions for passage of air to permit proper drying out of the building.

At end of day's work, securely close temporary enclosures. Padlock exterior doors. The General Prime Contractor shall supervise effectiveness of enclosures.

Where reference is made to a "portion of the building", it is intended to mean definable areas of the building such as a group of floor levels or an entire wing of the building. It is not intended to require a room-by-room or erratic piece-meal enclosure operation, but shall provide for an orderly expansion of large adjacent or related areas to be enclosed which are advantageous to the progress of the work and approved by DFD's Project Representative.

26. TEMPORARY HEAT

All heating required after enclosure of the building up to substantial completion shall be classified as TEMPORARY HEAT. Enclosure is defined in preceding Article.

It shall be the responsibility of the General Prime Contractor to see that every precaution is used to prevent unnecessary escape of heat.

For installations where central plant steam or central plant hot water will be used for permanent heating, the State will furnish all steam or hot water required for temporary heat at no cost to the Contractor. (Condensate shall be wasted until it is determined by DFD's Project Representative that condensate is of a quality suitable for return to the central plant. When such determination is made all condensate shall be returned to the State's system). It is the responsibility of the heating trade to connect to the existing steam or hot water source.

For installations that are not connected to central plant steam or central plant hot water, the General Prime Contractor shall pay the fuel costs for temporary heat for both permanent heating systems used for temporary heat and/or temporary heating systems used for temporary heat.

The General Prime Contractor shall pay for all electrical energy consumed for temporary heat.

The Heating Trade shall provide one of the following systems or a combination thereof, for furnishing temporary heat:

Permanent heating system may be used for temporary heating. If permanent system is used, the Heating Trade shall install in their permanent location heating coils or connectors as approved by DFD, with controls to maintain temperatures required. Temporary filters shall be used in the permanent system. Provide bases, shields, etc., around heating elements to prevent too rapid drying of adjacent concrete, masonry or plaster. Relocation of some of the permanent heating system equipment may be required during construction to prevent interference with new construction. Temporary units may be installed in such areas during the time permanent equipment is not operating due to relocation

The distribution piping of the permanent heating system may be utilized for supply and return to unit heaters on each floor in lieu of temporary piping, provided approved connections, controls and protection of such piping is maintained.

If the permanent air system is used during temporary heating period, temporary filters shall be provided in the system and they shall have efficiency equal to the permanent filters. The return air ductwork shall be protected from construction dirt by temporary filters placed over return openings.

If the Heating Trade does not have one of the above systems in operation by the time the building is enclosed, then the Heating Trade shall provide, maintain and supervise the operation of temporary portable units with necessary automatic controls to provide required temperatures. Current required may be taken from the temporary electrical service. See "Temporary electrical Installation". Cost of fuel to operate portable units shall be paid by the General Prime Contractor.

All electrical wiring required for temporary heating units shall be furnished and installed by Heating Trade, from temporary wiring service. Electrical wiring to permanent equipment used for temporary heating that has been mounted in its permanent location shall be wired by trades skilled in that work.

The use of open salamanders as portable heating units will not be approved. All portable temporary heating units shall be properly ventilated to prevent combustion gases from remaining in the heating area.

The Heating Trade must ascertain if heating equipment will operate on the temporary electrical service available. If service is insufficient to operate equipment, Heating Trade shall make other arrangements.

The Heating Trade shall be responsible for the proper adjustment and maintenance of the system, and shall supervise and be responsible for the operation of the system used for temporary heating until State occupies the building. Supervision shall include periodic checking of operation as required.

A minimum temperature of 45 degrees and a maximum temperature of 60 degrees for the building shall be maintained by the Heating Trade, except for a period of at least ten days prior to the placing of interior woodwork and throughout the placing of this and other finish, varnishing, painting, etc., and until substantial completion to provide sufficient heat to insure a temperature in the spaces involved of not less than 70 degrees nor more than 80 degrees.

The temporary heating system shall be removed by the Heating Trade after the permanent heating system has been installed and operating. Surfaces and structure shall be patched as required. Temporary heating

equipment shall be relocated by the Heating Trade as required during construction to prevent interference with new construction.

At completion of construction work or when temporary heat is no longer required, Heating Trade must repair any damage done to permanent equipment during temporary heating period and also perform the necessary cleaning of all ducts and equipment. The Heating Trade shall provide permanent filters to the complete satisfaction of DFD.

27. FIRE PROTECTION

The General Prime Contractor shall provide and maintain in working order during the entire construction period, a minimum of three (3) fire extinguishers on each floor level, including basement of the building, and one (1) in temporary office. Extinguishers shall be nonfreeze type such as A-B-C rated dry chemical, of not less than 10-pound capacity each. In addition, any Subcontractor who maintains an enclosed shed on the site shall provide and maintain, in an accessible location, one or more similar nonfreezing type fire extinguisher in each enclosed shed.

Fire alarm systems and fire suppression systems shall be kept in service during construction. The General Prime Contractor shall impair system operability only as necessary to avoid false alarms, false activations or damage and where required to complete construction activities. The General Prime Contractor is responsible for the first responder cost of repeat false alarms.

Where systems are impaired, provide a fire protection impairment program in compliance with NFPA 25, NFPA 72, NFPA 101, IFC Chapter 9 and the Authority Having Jurisdiction (AHJ) including the following:

- Written notification to DFD's Construction Representative, the Agency Impairment Coordinator (to be assigned at the preconstruction meeting), first responders and the fire department of the dates, times and extent of system impairments and system restorations and description of contractor actions minimizing risk.
- Temporary bagging or removal of smoke detectors during the work day with restoration of smoke detectors at end of the work day.
- Confirmation that systems are fully operational at the end of the work day before leaving the job site.
- An approved fire watch or other approved procedures where systems are disabled beyond the work day or where required by the DFD Project Representative, the Agency Impairment Coordinator, first responders or the fire department.
- Tags indicating which system or system component has been impaired placed at each fire department connection, affected control valve and alarm panel. Remove tags after restoration.
- Tags listing temporary fire alarm notification procedures on all non-functional fire alarm devices including pull stations, automatic detectors and audio/visuals. Remove tags after restoration.
- Daily log of system impairments and restorations.

29. STORAGE OF MATERIALS

Contractor shall confine equipment, apparatus, storage of materials and operations to limits indicated on the drawings or by specific direction of DFD's Project Representative and shall not bring material onto the site until they are needed for the progress of the work.

The storage of materials on the grounds and within the building shall be in strict accordance with the instructions of DFD's Project Representative. Storage of materials within the building shall at no time exceed the design carrying capacity of the structural system.

Provide and maintain watertight storage sheds on the premises where directed, for storage of materials that might be damaged by weather. Sheds shall have wood floors raised at least 6" above the ground.

All materials affected by moisture shall be stored on platforms and protected from the weather.

All materials shall be stored in a manner that prevents release of hazardous material to the environment.

All hazardous materials, including motor fuels, shall be properly handled and contained to prevent spills or other releases. The General Prime Contractor shall develop and maintain a contingency plan to provide emergency response, containment, and cleanup of spills of hazardous materials resulting from contract activities. All spills and releases shall be reported to DFD as soon as possible.

During the construction of this building, materials, construction sheds, and earth stockpiles shall be located so as not to interfere with the installation of the utilities nor cause damage to existing lines.

The Contractor shall allot space to others for storage of their materials, and erection of their sheds.

Should it be necessary at any time to move material sheds or storage platforms, the Contractor shall move same at the Contractor's expense, when directed by DFD's Project Representative.

The State assumes no responsibility for materials stored in building or on the site. The Contractor assumes full responsibility for damage due to the storage of materials.

Repairing of areas used for placing of sheds, offices, and for storage of materials shall be done by the Contractor.

30. PROTECTION OF FINISHED CONSTRUCTION

Contractor shall assume the responsibility for the protection of all finished construction under the Contract and shall repair and restore any and all damage of finished work to its original state.

Wheeling of any loads over any type of floor, either with or without plank protection, will be permitted only in rubber tired wheelbarrows, buggies, trucks or dollies.

Where structural concrete is also the finished surface, care must be taken to avoid marking or damaging those surfaces.

31. PROTECTION IN GENERAL

All structures and equipment shall be constructed, installed and operated with guards, controls and other devices in place.

Temporary pumps required for pumping water from building excavation or from building proper shall be provided by the General Prime Contractor, including temporary connections. Plumbing Trade shall install permanent sump basins and piping where and when required. Permanent sump pumps shall not be installed until building is substantially complete and when approved by DFD's Project Representative. The General Prime Contractor shall remove temporary pumps and connections when approved by DFD's Project Representative.

The General Prime Contractor shall:

Provide, erect and maintain all required planking, barricades, guard rails, temporary walkways, etc., of sufficient size and strength necessary for protection of stored material and equipment; paved surfaces, walks, curbs, gutters and drives; streets adjacent to or within project area; adjoining property and all project work to prevent accidents to the public and the workmen at the job site.

Notify adjacent property owners if their property interferes with the work so that arrangements for proper protection can be made.

Provide and maintain proper shoring and bracing to prevent earth from caving or washing into the building excavation. Provide temporary protection around openings through floors and roofs, including elevator openings, stairwells, and edge of slabs.

Provide and maintain proper shoring and bracing for existing underground utilities, sewers, etc., encountered during excavation work, to protect them from collapse or other type of damage until such time as they are to be removed, incorporated into the new work, or can be properly backfilled upon completion of new work.

Provide protection against rain, snow, wind, ice, storms, or heat to maintain all work, materials, apparatus, and fixtures, incorporated in the work or stored on the site, free from injury or damage. At the end of the day's work, cover all new work likely to be damaged. Remove snow and ice as necessary for safety and proper execution of the work.

Protect the building and foundations from damage at all times from rain, ground water and back-up from drains or sewers. Provide all equipment and enclosures as necessary to provide this protection.

Damaged property shall be repaired or replaced in order to return it to its original condition. Damaged lawns shall be replaced with sod.

Protect materials, work and equipment, not normally covered by above protection, until construction proceeds to a point where the general building protection of the area where located, dispenses with the necessity therefore. Protect work outside of the building lines such as trenches and open excavations, as specified above.

Take all necessary precautions to protect the State's property as well as adjacent property, including trees, shrubs, buildings, sanitary and storm sewers, water piping, gas piping, electric conduit or cable, etc., from any and all damage which may result due to work on this project.

Repair work outside of property line in accordance with the requirements of the authority having jurisdiction.

Repair any work, damaged by failure to provide proper and adequate protection, to its original state to the satisfaction of DFD or remove and replace with new work at the Contractor's expense.

Protect trees indicated on the drawings to remain and trees in locations that would not interfere with new construction, from all damage. Do not injure trunks, branches, or roots of trees that are to remain. Do cutting and trimming only as approved and as directed by DFD's Project Representative.

The value of trees destroyed or damaged will be charged against the account of the Contractor responsible for the damage in an amount equal to the expense of replacing the trees with those of similar kind and size, but not to exceed $1000.00 for any one tree.

32. CLEANING AND WASTE DISPOSAL

Contractor shall be responsible for all cleaning required within the technical sections of the specifications governing work under the Contractor's jurisdiction as well as for keeping all work areas, passageways, ramps, stairs and all other areas of the premises free of accumulation of surplus materials, rubbish, debris and scrap which may be caused by the Contractor's operations or that of the Subcontractors.

Remove rubbish, debris and scrap promptly upon its accumulation and in no event later than the end of each week.

Combustible waste shall be removed immediately or stored in fire resistive containers until disposed of in an approved manner.

No burning of rubbish or debris will be allowed at the site. Rubbish, debris and scrap shall not be thrown through any window or other opening, or dropped from any great height; it shall be conducted to the ground, to waiting truck(s) or removable container(s) by means of approved chutes or other means of controlled conveyance.

Form and scrap lumber shall have all nails withdrawn or bent over; shall be neatly stacked, placed in trash bins, or removed from the premises.

Spillages of oil, grease or other liquids which could cause a slippery or otherwise hazardous situation or stain a finished surface shall be cleaned up immediately.

Waste materials removed from the site shall be managed by the contractor and disposed of in accordance with all applicable laws, regulations, codes, rules, and standards. Materials that meet the definition of a hazardous waste (Wis. Admin. Code NR 600) shall be disposed through the State's hazardous waste service contract (Posted on Vendornet https://vendornet.wi.gov/Contracts.aspx; search for "hazardous wastes service"), unless otherwise directed in writing by DFD. The Contractor shall prepare all hazardous wastes for transport and disposal. Arrangements for disposal shall be coordinated through DFD's Project Representative. Charges for transport and disposal of hazardous waste by the State's hazardous waste service contractor will be paid directly by the State. Other materials such as soil, debris, sludge, water, etc. generated by project activities which may contain constituents exceeding federal, state, or local environmental cleanup standards must not be removed from the site, or treated and disposed on site without prior written approval of DFD. DFD will provide a list of acceptable offsite disposal or treatment facilities for disposal by Contractor. Other unused or discarded materials may be treated as solid waste. Facilities for recycle, disposal or landfill of such items shall be approved by DFD prior to removal from the site.

Dust, dirt and other foreign matter shall be removed completely from all internal surfaces of all mechanical and electrical units, cabinets, ducts, pipes, etc.

Dirt, soil, fingerprints, stains and the like, shall be completely removed from all exposed finished surfaces.

General Prime Contractor shall wash all glass immediately prior to the occupancy of this project. Work shall include the removal of labels, paint splattering, glazing compound and sealant. Surfaces shall include mirrors and both sides of all glass in windows, borrowed lights, partitions, doors and side lights.

Broken, scratched or otherwise damaged glass shall be replaced by the General Prime Contractor.

In addition to the above, the General Prime Contractor shall be responsible for the general "broom" cleaning of the premises and for expediting all of the cleaning, washing, waxing and polishing required within the technical sections of the specifications governing work under this Contract. The General Prime Contractor shall also perform "final" cleaning of all exposed surfaces to remove all foreign matter, spots, soil, construction dust, etc., so as to put the project in a complete and finished condition ready for acceptance and use intended.

If rubbish and debris is not removed, or if surfaces are not cleaned as specified above, DFD reserves the right to have said work done by others and the related cost(s) will be deducted from monies due the Contractor.

33. OPERATING AND MAINTENANCE MANUALS AND INSTRUCTIONS

Contractor shall provide DFD with two (2) sets of the O&M data for each device, piece of equipment and assembly furnished and/or installed under this contract. Format shall be paper, indexed and labeled and bound in three-ring binders. In addition to the hard copies provide electronic (PDF) copies of the O&M manuals to the AE. Also include, the electronic media (CD or flash drive) in 3 hole vinyl holders in binders.

The O&M manuals shall include the following:

- Table of Contents

- Contact information (including emergency contact number) for installing contractor, original vendor manufacturer and service provider
- Copy of approved submittals
- As-built control drawings and sequences of operations
- Catalog data or literature with correct model number checked
- Manufacturer's installation and operation instructions including start-up, break-in, shutdown, seasonal, emergency and special operation procedures
- Manufacturer's maintenance instructions including procedures and instructions for problem corrections, preventive maintenance, testing, alignment, adjustment and repair
- Complete parts list in an exploded view diagram of the equipment
- Construction Verification Checklists
- Inspection and testing reports
- Maintenance records indicating maintenance performed by contractor prior to substantial completion
- Equipment warranties including terms and conditions and date of inception (substantial completion) and date of expiration
- List of special tools or testing equipment required for the operation, testing or maintenance of the equipment
- For items assembled by the Contractor for special functions, write operating and maintenance instructions

Contractor shall submit to A/E for review, make revisions noted by A/E and provide final O&M data for A/E's review 30 business days prior to training. Any revisions or changes to the systems and/or equipment post delivery of the final O & M data submittal must be submitted to A/E as an addendum within 30 days of the revision or change.

34. TESTS AND ADJUSTMENTS

The complete installation consisting of the several parts and systems and all equipment installed according to the requirements of the Contract Documents, shall be ready in all respects for use by the User Agency and shall be subjected to a test at full operating conditions and pressures for normal conditions of use.

Contractor shall make all necessary adjustments and replacements affecting the work which is necessary to fulfill DFD's requirements and to comply with the directions and recommendations of the manufacturer of the several pieces of equipment, and to comply with all codes and regulations which may apply to the entire installation. Contractor shall also make all required adjustments to comply with all provisions of the drawings and specifications.

35. LOOSE AND DETACHABLE PARTS

Contractor shall retain all loose and small detachable parts of apparatus and equipment furnished under this Contract, until completion of the work and shall turn them over to DFD's Project Representative designated to receive them. Contractor shall obtain from DFD an itemized receipt thereof in triplicate. Contractor shall retain one copy of receipt for their files and attach the other two to request for final payment for the work.

36. EROSION CONTROL AND STORM WATER MANAGEMENT

In accordance with state law, where applicable, and what the Department of Administration believes to be good soil conservation practices and pollution prevention, the General Prime Contractor shall be governed by the following:

The General Prime Contractor hereby covenants to maintain all project grounds, public streets and associated areas, including fill areas in a manner consistent with state laws and the general policy to conserve soil and soil resources, and to control and prevent soil erosion and to control and prevent siltation into waters of the state. This clause is to be liberally construed to further the above stated objectives. The following shall include, but not limit areas in which control is to be executed:

Erosion Control Plan: Implement the erosion control plan developed for the project and maintain erosion control practices throughout the construction period. Modifications to the erosion control plan, addressing phases of construction shall be the responsibility of the General Prime Contractor. Erosion control practices that are compromised as the result of construction activity shall be returned to their functioning state by the end of the current work day. Where applicable, erosion control practices shall comply with Chapters NR 151 and 216, Wis. Adm. Code.

Minimum Stripping: Limit stripping of sod and vegetation and limit land disturbance to an area and a time period that will expose bare soil to least possibility of erosion that construction requirements will allow.

Stockpiling: Materials, including soil, shall be stored and protected in a manner that will prevent runoff of material from the stockpiles into streets, drainage facilities, storm sewer systems, or waters of the state in the event of rain.

Soil Erosion and Erodible Materials: Take positive measures to prevent soil erosion from the construction area and areas disturbed by construction activities by employing such means as seed and mulch, mulches, intercepting embankments and berms, sedimentation basins, ditch checks, riprap, erosion mats, silt fence, approved polyacrylamides, inlet protection, or other temporary erosion control devices or methods.

Record Keeping: Maintain a copy of the current erosion control plan on site. Maintain maintenance records and inspection logs on-site for erosion control and storm water management practices. Contractor shall provide project representative with a weekly maintenance and inspection report.

Street Maintenance: Control the tracking of soil onto street and paved surfaces to a minimum. Any such tracking shall be removed no less than on a daily basis.

Storm Water Management: Practices installed for post-construction storm water management shall be protected during construction activity, and in the event that their intended function becomes compromised during construction activity, shall be restored and/or repaired according to Chapters NR 151 and 216, Wis. Adm. Code, for post-construction storm water management.

Erosion control and storm water management practices shall be installed and maintained in accordance with the WDNR approved technical standards available at the following website:
http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm

Responsibility and authority for inspections are vested in the Department of Administration through the Division of Facilities Development.

Responsibility and authority for maintaining records for NR 216 is the responsibility of the General Prime Contractor.

37. AIR QUALITY MANAGEMENT

In accordance with the Department of Administration's air quality management practice on Ozone Action Days, all contractors shall reduce or limit emissions and particulate matter that adversely affect air quality.

The General Prime Contractor shall establish the action plan, in cooperation with other contractor(s), concerning implementation of air quality management on Ozone Action Days. This plan shall include suspending work or modifying operations for all activities related to ozone, volatile organic compounds (VOC) and nitrogen oxide emissions. These work activities include but are not limited to the following:
Limit equipment and vehicle refueling to after 6 pm.

- Limit use of gasoline-powered vehicle and equipment.
- Limit excessive idling of diesel-powered vehicle and equipment.
- Limit large scale painting with VOC.
- Limit large scale asphalt roofing and paving.

Limit and/or control all dust creating activities.

For information on air quality readings on Ozone Action Days refer to:
1-866-324-5924; or
http://www.dnr.state.wi.us/org/aw/air/wisards/state.htm

38. CONSTRUCTION WASTE MANAGEMENT

See Section 01 74 19 – Construction Waste Management.

39. GUARANTEE DOCUMENTS

Upon Substantial Completion of project, the Contractor shall submit such written guarantees and bonds to DFD for presentation to the User Agency. Furnish guarantees in triplicate unless otherwise indicated.

40. RECORD DOCUMENTS

On a suitable set of Contract Documents, the contractor is to maintain a daily record of changes and deviations from the contract. All buried or concealed piping, conduit, or similar items shall be located by dimensions and elevations on the record drawings.

The daily record of changes shall be the responsibility of Contractor's field superintendent. No arbitrary mark-ups will be permitted.

Once during the month the Contractor shall present, at the project, the job copy showing variations and changes to date to the Architect/Engineer and DFD Project Representative for their review.

At substantial completion of the project, the Contractor shall transmit the marked up as-built documents to the Architect/Engineer and copy the DFD Project Representative on the transmittal of the documents. The A/E will incorporate the contractor marked up as-built drawings into the record drawings.

In addition to providing marked up drawings to the AE, the contractor shall provide (when available) electronic drawing drawings for all contractor generated drawings to the AE. Drawing shall include but not be limited to:

- Contractor coordinated BIM models
- Fabrication, erection and installation drawings for:
  - Ductwork and piping
  - Steel
  - Concrete
  - Special process systems
  - Lighting controls
  - Audio Visual
  - Telecommunications
- DSPS approved submittals for:
  - Fire Protection
  - Fire Alarm
  - Structural
  - Elevator

***

PREPARATION OF ADDENDA (Rev 11/2017)

The Addendum, like all other documents to the Contract, must follow a certain format and contain the necessary information which will clearly identify it with the Contract Documents and to be made a part thereof.

The Addendum shall have a heading which provides the Addendum number, date of issue, project title, location, and project number. The bid closing time and date shall always be included in the Addendum. A standard paragraph will then follow which stipulates the purpose of the Addendum.

The body of the addendum should consist of four parts AS APPLICABLE: Changes to Bidding Requirements, Changes to Conditions of Contract, Changes to Specifications and Changes to Drawings. Should one or more of these parts not be changed, do not include that part's title in the addendum.

Addendum change items must refer to a specific document within the project manual or drawings and shall be listed in the Addendum in the same numerical sequence as they occur in the original documents. Each addendum item should be identified by a unique, consecutive number (1, 2, 3, etc.).

Items referencing specifications shall include the following, in the order listed: Section number and title, page number, line number, and then pertinent information concerning the item being changed.

Items referencing drawings shall include the following, in the order listed: Drawing Sheet Number; word description of item being changed such as 1st Floor plan, Door Schedule, North elevation, etc.; detail or section number; followed by description of change.

Closing on the Addendum shall consist of the title block for the Architect/Engineer and for the Division of Facilities Development. A sample Addendum is appended to this manual.

Holding addendum information for consolidation into one large addendum is not desired. The Architect/Engineer shall endeavor to release addenda in sufficient time for Bidders to review and incorporate into their bids. Bidders are requested to bring inadequacies, omissions or conflicts to Architect/Engineer's attention. **THE A/E SHALL SUBMIT THE ADDENDUM TO DFD AT LEAST 10 DAYS PRIOR TO BID OPENING.** The addendum will then be issued by DFD no less than 7 days prior to Bid Opening. Approval from DFD must be obtained to waive this requirement. If this requirement is waived, and the addendum is issued less than 7 days prior to bid opening, it shall contain an extension of the bid opening date for no less than 7 days from the present bid opening date.
Any change to the Bid Form by addendum shall require that the complete corrected Bid Form be reissued rather than only reference the changes to be made. The corrected Bid Form shall have a heading to read: "REVISED BID FORM" and have page numbers C-1(REV), C-2(REV), etc.

Addenda are to be submitted electronically following the bidding documents' electronic process. Drawings are to be completed per the *DFD CAD Standards Manual*. Addenda Submittal Exception - The PDF text and drawings shall be incorporated into one PDF document even if large full format drawings are required. The complete PDF addenda shall then be submitted to the DFD SharePoint site previously indicated. The files shall be named according to file naming standards.

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

ADDENDUM NO (Rev 01/2017)
ISSUE DATE:

RE: **Marshall Municipal Facility**
Village of Marshall
Marshall, Wisconsin

Division Project No. **P1004822**

BID OPENING: May 5, 2020

FROM: Marshall Engineering Associates
2355 Engineering Hall
1415 Engineering Drive
Madison, WI 53706

TO: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the original Contract Documents dated May 5th, 2020 as noted below. Acknowledge receipt of this Addendum by inserting the number and issue date of this addendum in the blank space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of and the attached documents

CHANGES TO BIDDING REQUIREMENTS:

1.

CHANGES TO CONDITIONS OF THE CONTRACT:

2.

CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 33):

3.

CHANGES TO DRAWINGS:

4.

END OF ADDENDUM

Marshall Engineering Associates
2355 Engineering Hall
1415 Engineering Drive
Madison, WI 53706

Division of Facilities Development
Department of Administration
Madison, Wisconsin 53707-7866

Marshall Municipal Facility

Project No. P1004822

List of Included Technical Specifications

Part I: Concrete

Part II: Masonry

Part III: Structural Steel (Metals)

Part IV: Geotechnical and Environmental (Earthwork)

Note: The sections above correspond to construction engineering, environmental engineer, structural engineer, and geological engineering respectively.

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.
B. Concrete building frame members.
C. Concrete floor topping.
D. Floors and slabs on grade.
E. Concrete foundation walls.
F. Concrete reinforcement.
G. Joint devices associated with concrete work.
H. Miscellaneous concrete elements, including concrete fill for steel pan stair treads.
I. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw
cut joints and isolation joints in slabs.
B. Section 32 13 13 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010
(Reapproved 2015).
B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
C. ACI 301 - Specifications for Structural Concrete; 2016.
D. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.
E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
F. ACI 305R - Guide to Hot Weather Concreting; 2010.
G. ACI 306R - Guide to Cold Weather Concreting; 2016.
H. ACI 308R - Guide to External Curing of Concrete; 2016.
I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2017).
J. ACI 347R - Guide to Formwork for Concrete; 2014.
K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
L. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).
N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.
O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2017a.
P. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
Q. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
R. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017.
S. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan

for Use in Concrete; 2015.
T. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
U. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with
Soil or Granular Fill under Concrete Slabs; 2017.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Submit manufacturers' data on manufactured products showing compliance with
specified requirements and installation instructions.
C. Mix Design: Submit proposed concrete mix design.
D. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.
B. Follow recommendations of ACI 305R when concreting during hot weather.
C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
a. Low toxicity form release.
3. Form Ties: Snap type that will leave no metal within 1/4 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
1. Type: Deformed billet-steel bars.
2. Finish: Unfinished, unless otherwise indicated.
B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
1. WWR Style: As indicated on drawings.
C. Reinforcement Accessories:
1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
3. Provide galvanized components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
B. Fine and Coarse Aggregates: ASTM C33/C33M.
C. Fly Ash: ASTM C618, Class C or F.
D. Water: Clean and not detrimental to concrete.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight
of cement.
B. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
1. Manufacturers:
a. "Daracem 100" by Grace Construction Products.
b. Substitutions: See Section 01 60 00 - Product Requirements.
C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
1. Manufacturers:
a. "Daracem 19" by Grace Construction Products.
b. Substitutions: See Section 01 60 00 - Product Requirements.
D. Water Reducing Admixture: ASTM C494/C494M Type A.
1. Manufacturers:
a. "KB-1000" by General Resource Technology.
b. "WRDA" by Grace Construction Materails.
c. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

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

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
1. Material: Closed-cell, non-absorbent, compressible polymer foam in sheet form.
2. Manufacturers:
a. W. R. Meadows, Inc; Deck-O-Foam Joint Filler with pre-scored top strip: www.wrmeadows.com/#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.
C. Slab Construction Joint Devices: Positive load transfer slip dowel.
1. Provide plastic dowel sleeve for attachment to edge form, space at 24 inches on center, unless noted otherwise on Drawings.
2. Size: Sleeve length 9 inches long to accept #4 rebar x 18 inches long.
3. Manufacturers:
a. Sika Greenstreak "Speed Dowel".
b. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 CURING MATERIALS

A. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
1. Application: Use at uncolored concrete and concrete in unfinished areas.
2. Solids by Mass: 25 percent, minimum.
3. Manufacturers:
a. SpecChem, LLC; Cure and Seal WB 25: www.specchemllc.com.
b. W. R. Meadows, Inc; VOCOMP-25: www.wrmeadows.com/#sle.
c. W. R. Meadows, Inc; CS-309-25 OTC: www.wrmeadows.com/#sle.
d. TK Products; AS-1 Achro Seal 1315.
e. Substitutions: See Section 01 60 00 - Product Requirements.

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

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
B. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
C. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
2. Fly Ash Content: Minimum 15 percent, maximum 20 percent of cementitious materials by weight.

2.09 MIXING

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

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.
B. Coordinate with precast drawings.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
B. Verify that forms are clean and free of rust before applying release agent.
C. Coordinate placement of embedded items with erection of concrete formwork and placement of
form accessories.
D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by
cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
1. Use latex bonding agent only for non-load-bearing applications.
E. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends. Repair damaged vapor retarder before covering.
1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as shown on the drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both

directions. Splice laps with tie wire. Locate in middle third of slab thickness.
C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.
D. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 12 inches and seal watertight.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.
B. Place concrete for floor slabs in accordance with ACI 302.1R.
C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
D. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.
G. Protect and clean off adjacent materials from concrete placement.
H. Wash out concrete trucks in excavation, pavement or sub-base areas.
I. Remove excess concrete spoils from site.

3.05 SLAB JOINTING

A. Locate joints as indicated on the drawings or as required at maximum 200 sq. ft. and a maximum aspect ratio of 1:1.5
B. Anchor joint fillers and devices to prevent movement during concrete placement.
C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours
after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
E. Construction Joints: Where not otherwise indicated, use slip dowels.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
1. Exposed Concrete Floors: 1/4 inch in 10 feet.
2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
3. Under Carpeting: 1/4 inch in 10 feet.
B. Correct the slab surface if tolerances are less than specified.
C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.
B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
C. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:

FINISH	SURFACE
Scratch Finish	Areas to receive concrete toppings, mortar beds or bonded cementitious floor finishes
Float Finish	Areas to receive fluid or sheet applied waterproofing
Trowel Finish	Surfaces exposed to view or to be covered with resilient flooring, thinset tile, carpeting, or any thin finish
Broom Finish	Exterior slabs and paving, walks, steps and elsewhere indicated

D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at
1:100 nominal.

3.08 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
1. Normal concrete: Not less than seven days.
C. Surfaces Not in Contact with Forms:
1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
2. Final Curing: Begin after initial curing but before surface is dry.
a. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.09 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01
40 00 - Quality Requirements.
B. Provide free access to concrete operations at project site and cooperate with appointed firm.
C. Submit proposed mix design of each class of concrete to inspection and testing firm for review
prior to commencement of concrete operations.
D. Tests of concrete and concrete materials may be performed at any time to ensure conformance
with specified requirements.
E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
F. Take one additional test cylinder during cold weather concreting, cured on job site under same

conditions as concrete it represents.
G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.10 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances
or specified requirements.
C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Concrete Contractor when defective concrete is identified.
D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction
of Architect for each individual area.
END OF SECTION

SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.
B. Decorative Faced Concrete Masonry Units.
C. Architectural Cast Stone. Indicated as "Cast Stone" or "Precast" on drawings.
D. Clay facing brick.
E. Mortar and grout.
F. Reinforcement and anchorage.
G. Flashings.
H. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Loose steel lintels.
B. Section 07 21 00 - Thermal Insulation: Insulation for cavity spaces.
C. Section 07 62 00 - SHEET METAL FLASHING AND TRIM: Through-wall flashing and counterflashing at membrane roofing.
D. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
D. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
F. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
G. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2017.
H. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
I. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
J. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2017a.
K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
L. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
M. ASTM C476 - Standard Specification for Grout for Masonry; 2016.
N. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.

O. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013, with Editorial Revision (2014).
P. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).
Q. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2016.
R. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
S. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014a.
T. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
U. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.
V. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
W. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.
X. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
C. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

1.05 MOCK-UP

A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, and flashings (with lap joint, corner, and end dam) in mock-up.
B. Locate mockup on site.
C. Remove mockup when Work is complete.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
    1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8 inches.
    2. Special Shapes: Provide non-standard blocks configured for corners, lintels, and headers.
    3. Units: ASTM C90, normal weight.

4. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
    a. Performance of Units with Integral Water Repellent
        i. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            1. No water visible on back of wall above flashing at the end of 24 hours.
            2. No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
            3. No more than 25 percent of wall area above flashing visibly damp at end of test.
        ii. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
        iii. Compressive Strength: ASTM C1314; maximum 5 percent decrease.
        iv. Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.
    b. Use only in combination with mortar that also has integral water repellent admixture.
    c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.02 DECORATIVE FACED CONCRETE MASONRY UNITS

A. Integrally colored, burnished face CMU:
    1. County Materials "Premier Ultra" block.
    2. Finish: Burnished.
    3. Color: As selected.
B. Mortar for burnished masonry units:
    1. As specified in this section.
    2. Color: As selected by Architect from manufacturer's full range.

2.03 HIGH DENSITY PRE-FINISHED CONCRETE MASONRY UNITS

A. Use where indicated on Drawings as "Cast Stone", "Precast" or "Prairie Stone".
B. Use for veneer, sills, accents and bands where indicated.
C. Masonry Units: ASTM 90, normal weight.
D. Manufacturer:
    1. Prairie Stone masonry units manufactured by Reading Rock.
    2. Color: Gris.
E. Mortar for masonry units:
    1. As specified this section with water repellent admixture.
    2. Color: As selected by Architect from manufacturer's full range.

2.04 BRICK UNITS

A. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW. 1. Brick: Interstate Brick, "Ebony", utility size.
B. Mortar for facing brick:
    1. As specified in this section.
    2. Color: As selected by Architect from manufacturer's full range.

2.05 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
    1. Not more than 0.60 percent alkali.
B. Hydrated Lime: ASTM C207, Type S.
C. Mortar Aggregate: ASTM C144.
D. Grout Aggregate: ASTM C404.
E. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
    1. Color(s): As selected by Architect from manufacturer's full range.
    2. Manufacturers:
        a. Quickrete Wisconsin, Inc.
        b. Prism Pigments.
        c. Mortar Technologies
F. Water: Clean and potable.
G. Accelerating Admixture: Nonchloride type for use in cold weather.
H. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
    1. Use only in combination with masonry units manufactured with integral water repellent admixture.
    2. Use only water repellent admixture for mortar and grout from the same manufacturer as water repellent admixture in masonry units, or as recommended by masonry unit manufacturer.

2.06 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
    1. Blok-Lok Limited: www.blok-lok.com.
    2. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.
    3. WIRE-BONDwww.wirebond.com/#sle.
B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; uncoated.
C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
D. Single Wythe Joint Reinforcement: Ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

E. Adjustable Multiple Wythe Joint Reinforcement: Ladder type with adjustable ties spaced at 16 in on center ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.

F. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B. Corrugated strap anchors are not acceptable.
    1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
    2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
    3. Vertical adjustment: Not less than 2 inches.
    4. Seismic Feature (where detailed): Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.

G. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

1. Manufacturers:
    a. ITW Commercial Construction North America; Teks Select Series; with neoprene washer.: www.ITWBuildex.com.

2.07 FLASHINGS

A. Metal Flashing Materials: Pre-finished galvanized steel, as specified in Section 07 62 00.
1. Where membrane roof abuts masonry, roofing contractor to supply mason with sheet metal receiver for counterflashing for installation by mason.

B. Termination Bar: Minimum 1/8"x1"x12' extruded aluminum bar with prepunched holes for fasteners.

C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

2.08 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
    1. Manufacturers:
        a. Blok-Lok Limited; NS: www.blok-lok.com.
        b. Hohmann & Barnard, Inc (including Dur-O-Wal brand); NS: www.h-b.com.
        c. WIRE-BOND: www.wirebond.com/#sle.

B. Joint Filler: Closed cell polyvinyl chlorideneoprene; oversized 50 percent to joint width; self expanding; 5/8 inch wide by maximum lengths available.
    1. Manufacturers:

a. Hohmann & Barnard, Inc (including Dur -O-Wal brand); NS: www.h-b.com.
b. WIRE-BOND: www.wirebond.com/#sle.

C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
a. Manufacturers:
1) Advanced Building Products Inc; Mortar Break: www.advancedflashing.com/sle.
2) Mortar Net Solutions; MortarNet: www.mortarnet.com.
3) Substitutions: Not permitted.

D. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt.

E. Weeps and Vents:
1. Type: Molded polyethylene.

F. Cleaning Solution: Factory formulated brick washing solution of type recommended by brick manufacturer. Dilutions of plain muriatic acid are not acceptable.
1. Prosoco; product "Sure Klean 600". Use "Vana Trol" on stain sensitive brick.
2. EaCo Chem; product "NMD80".
3. Diedrich Technologies, Inc.; product "202 Detergent." Use "202V Vana Stop" on stain sensitive brick.

2.09 LINTELS

A. Steel lintels as specified in section 05 50 00 - Metal Fabrications.

2.10 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Masonry below grade and in contact with earth: Type S.
2. Exterior, non-loadbearing masonry: Type N.
3. Interior, loadbearing masonry: Type S.

B. Colored Mortar: Provide colored mortar for all exposed to view masonry. Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

D. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

E. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that 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 for installation under other sections.
B. Protect existing construction, windows and doors from mortar droppings with plastic sheeting.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Concrete Masonry Units:
    1. Bond: Stack or Running, as indicated and as appropriate for reinforcting.
    2. Mortar Joints: Flush.
D. Brick Units:
    1. Bond: Running.
    2. Mortar Joints: Concave.

3.05 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
B. Lay hollow masonry units with face shell bedding on head and bed joints.
C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
D. Remove excess mortar and mortar smears as work progresses.
E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
F. Interlock intersections and external corners.
G. Return veneer to within 1/2" of exterior sheathing at window and door openings.
H. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
I. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
J. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
K. Isolate top joint of masonry partitions from horizontal structural framing members and concrete slabs or decks with compressible joint filler.
L. Isolate horizontal elements that project through the plane of the masonry with compressible joint filler.

3.06 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

3.07 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
B. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - CMU WALLS

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
C. Place continuous joint reinforcement in first and second joint below top of walls.
D. Lap joint reinforcement ends minimum 6 inches.
E. Place vertical reinforcement as indicated on Drawings.

3.09 REINFORCEMENT AND ANCHORAGE - BRICK VENEER

A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
B. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
C. Seismic Reinforcement: Where detailed, connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

3.10 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
    1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at non-masonry construction.
    2. Remove or cover protrusions or sharp edges that could puncture flashings.
    3. Seal lapped ends and penetrations of flashing before covering with mortar.
B. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
C. Lap flexible flashing over metal flashing and extend up wall 8" minimum.
    1. Hold back 3/4" from exterior face of wall to prevent material from extruding through wall.
    2. Terminate turned up edges of membrane on vertical walls under building wrap secured with cap nails. Lap building wrap over top of flashing 2" and tape seal.

3. Where building wrap does not occur, use termination bar with bead of mastic.

D. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.
E. Install end dams at ends of all horizontal flashings.

3.11 LINTELS

A. Install loose steel lintels over openings.
B. Maintain minimum 8 inch bearing on each side of opening.

3.12 CAST STONE HEADS

A. Flash between cast stone and loose lintel as specified in Masonry Flashings.
B. Set heads with projection indicated on Drawings.
C. Install weeps in all vertical joints in head pieces.
D. Continue control joints around end of head.

3.13 CAST STONE SILLS AND BANDS

A. Flash below all sills and bands as specified in Masonry Flashings.
B. Set sills on stainless steel dowels installed into masonry veneer below.
C. Seal dowel penetrations through flashing with mastic.
D. Set sills below windows and other components attached to wood framing with the following clearances to allow for shrinkage:
    1. First Floor: 3/8 inch.
    2. Second Floor: 1/2 inch.
    3. Third Floor: 3/4 inch.
    4. Fourth Floor: 1 inch.
E. Rake all head joints and install sealant.

3.14 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.
B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
C. Place and consolidate grout fill without displacing reinforcing.

3.15 CONTROL AND EXPANSION JOINTS

A. Whether or not specifically indicated, install control and expansion joints in accordance with the following, and as recommended by the National Concrete Masonry Association and the Brick Industry Association.
B. Do not continue horizontal joint reinforcement through control or expansion joints.
C. At CMU construction install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
D. Control joint locations:
    1. At changes in wall height.
    2. At movement joints in adjacent foundations, floors and roofs.
    3. At door and window openings:
        a. On one side of openings less than 6 feet wide.
        b. On both sides of openings wider than 6 feet.
    4. Place at a spacing of 1 1/2 times the wall height for walls without openings.

5. For walls less than 4 feet high place at 12-14 feet on center.

E. At brick veneer form expansion joint as follows:
    1. Form expansion joints as wall is built. Extend to top of brickwork, including parapets.
    2. Install preformed foam or neoprene pad full depth of wythe; hold back from outer face of veneer 3/8" for sealant.
    3. Install sealant. Minimum sealant depth 1/4".
F. Vertical Expansion joint locations:
    1. At or near corners.
    2. At offsets and setbacks.
    3. At wall intersections.
    4. At changes in wall height.
    5. Where wall backing system changes.
    6. Where support of brick veneer changes.
G. Horizontal Expansion joint locations:
    1. At elements that are rigidly attached to the structural frame and project into the veneer.
H. Install sheet building paper or polyethylene bond breaker at horizontal junction of dissimilar masonry materials; i.e. between clay masonry and concrete masonry units.

3.16 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
B. Install built-in items plumb, level, and true to line. **3.17 TOLERANCES**
A. Maximum Variation from Alignment of Columns: 1/4 inch.
B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.18 CLEANING

A. Remove excess mortar and mortar droppings.
B. Replace defective mortar. Match adjacent work.
C. Clean soiled surfaces with cleaning solution.
D. Use non-metallic tools in cleaning operations.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members.

B. Grouting under base plates.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Steel fabrications and loose lintels.

B. Section 07 81 00 - Applied Fireproofing: Alternate fireproof protection to framing systems.

C. Section 09 21 16 - Gypsum Board Assemblies: Fire protection of steel framing.

1.03 REFERENCE STANDARDS

A. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).

F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.

H. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2015.

I. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).

J. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2016.

K. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.

L. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2016.

M. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2015, with Editorial Revision (2017).

N. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

O. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2014, with Errata (2015).

P. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.04 SUBMITTALS

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

B. Shop Drawings:

1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
2. Connections not detailed. STRUCTURAL STEEL FRAMING 05 12 00 - 2

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles, Plates, and Channels: ASTM A36/A36M.

B. Steel W Shapes and Tees: ASTM A992/A992M.

C. Rolled Steel Structural Shapes: ASTM A992/A992M.

D. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.

E. Hot-Formed Structural Tubing: ASTM A501/A501M, seamless or welded.

F. Pipe: ASTM A53/A53M, Grade B, Finish galvanized.

G. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A galvanized to ASTM A 153/A 153M, Class C. Use at wood construction or temporary connections only.

H. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563 or ASTM A563M nuts and ASTM F436/F436M washers.

I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

J. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
3. Height Change, Plastic State; when tested according to ASTM C827/C827M:
    a. Maximum: Plus 4 percent.
    b. Minimum: Plus 1 percent.

K. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Fabricate connections for bolt, nut, and washer connectors.

PART 3 EXECUTION

3.01 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".
E. Do not field cut or alter structural members without approval of Architect.
F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.02 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 31 20 00
EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

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

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

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.

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

C. Section 31 22 00 - Grading: Grading.

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

PART 3 EXECUTION

2.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

2.02 PREPARATION

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

B. See Section 31 22 00 for topsoil removal.

C. Locate, identify, and protect utilities that remain and protect from damage.

D. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

2.03 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

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

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

D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

2.04 FILLING AND BACKFILLING

A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.B. See Section 31 23 23 for fill, backfill, and compaction requirements at general excavations.C. See Section 31 22 00 for rough and final grading and topsoil replacement requirements.

2.05 REPAIR

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

2.06 CLEANING

A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 22 00.

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

C. Remove excess excavated material from site.

2.07 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

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

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

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

E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 31 20 00
GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of topsoil.

B. Rough grading the site.

C. Finish grading.

1.02 RELATED REQUIREMENTS

A. Section 31 10 00 - Site clearing.

B. Section 31 23 16 - Excavation.

C. Section 31 23 23 - Fill: Filling and compaction.

1.03 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: Fertile, agricultural soil, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots.

1. Soil Type: Topsoil shall be a loamy sand, sandy loam, clay loam, loam, silt loam, sandy clay loam or other soil approved by the architect.
2. Graded.
3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
4. Acidity range (pH) of 5.5 to 7.5.
5. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.

B. Other Fill Materials: See Section 31 23 23.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Verify the absence of standing or ponding water.

3.02 PREPARATION

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

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect from damage above- and below-grade utilities to remain. Should uncharted or incorrectly charted piping or other utilities be encountered during grading, consult the Engineer immediately for directions to proceed. Cooperate with the owner and utility companies while keeping their respective services and facilities in operation.

D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

E. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

3.03 ROUGH GRADING

A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B. Do not remove topsoil when wet.

C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.

E. When excavating through roots, perform work by hand and cut roots with sharp axe.

F. See Section 31 23 23 for filling procedures.

G. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

H. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL STOCKPILING

A. Stockpile topsoil to be re-used on site; remove remainder from site.

B. Stockpile subsoil to be re-used on site; remove remainder from site.

C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

1. Grade stockpiles to prevent ponding of water.

3.05 FINISH GRADING

A. Before Finish Grading:

1. Verify building and trench backfilling have been inspected.
2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. Where topsoil is to be placed, scarify surface to depth of 3 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

E. Place topsoil in areas where sodding and planting are indicated.

F. Place topsoil to the following compacted thicknesses:

1. Areas to be Sodded: 4 inches.
2. Shrub Beds: 18 inches.

G. Place topsoil during dry weather.

H. Remove roots, weeds, rocks, and foreign material while spreading.

I. Near plants spread topsoil manually to prevent damage.

J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

K. Lightly compact placed topsoil.

L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.

B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

C. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

D. Top Surface of Finish Grade: Plus or minus 1/2 inch.

3.07 FIELD QUALITY CONTROL

A. See Section 31 23 23 for compaction density testing.

3.08 CLEANING

A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

PROJECT INFORMATION

VILLAGE OF MARHSALL MUNICIPALITY BUILDING
130 S PARDEE ST, MARSHALL, WI, 53559
NEW ADMINISTRATIVE DEPARTMENT CONSTRUCTION
POLICE DEPARTMENT RENOVATION

Building Summary

1 STORY ABOVE GRADE
TOTAL AREA: 17,964 SQ FT
TOTAL HEIGHT: 19 FT

BUILDING CODES

2015 INTERNATIONAL BUILDING CODE
AMERICANS WITH DISABILITIES ACT

CONTACTS

[redacted]

SHEET INDEX

MEA
MARSHALL ENGINEERING ASSOCIATES

Marshall Engineering Associates

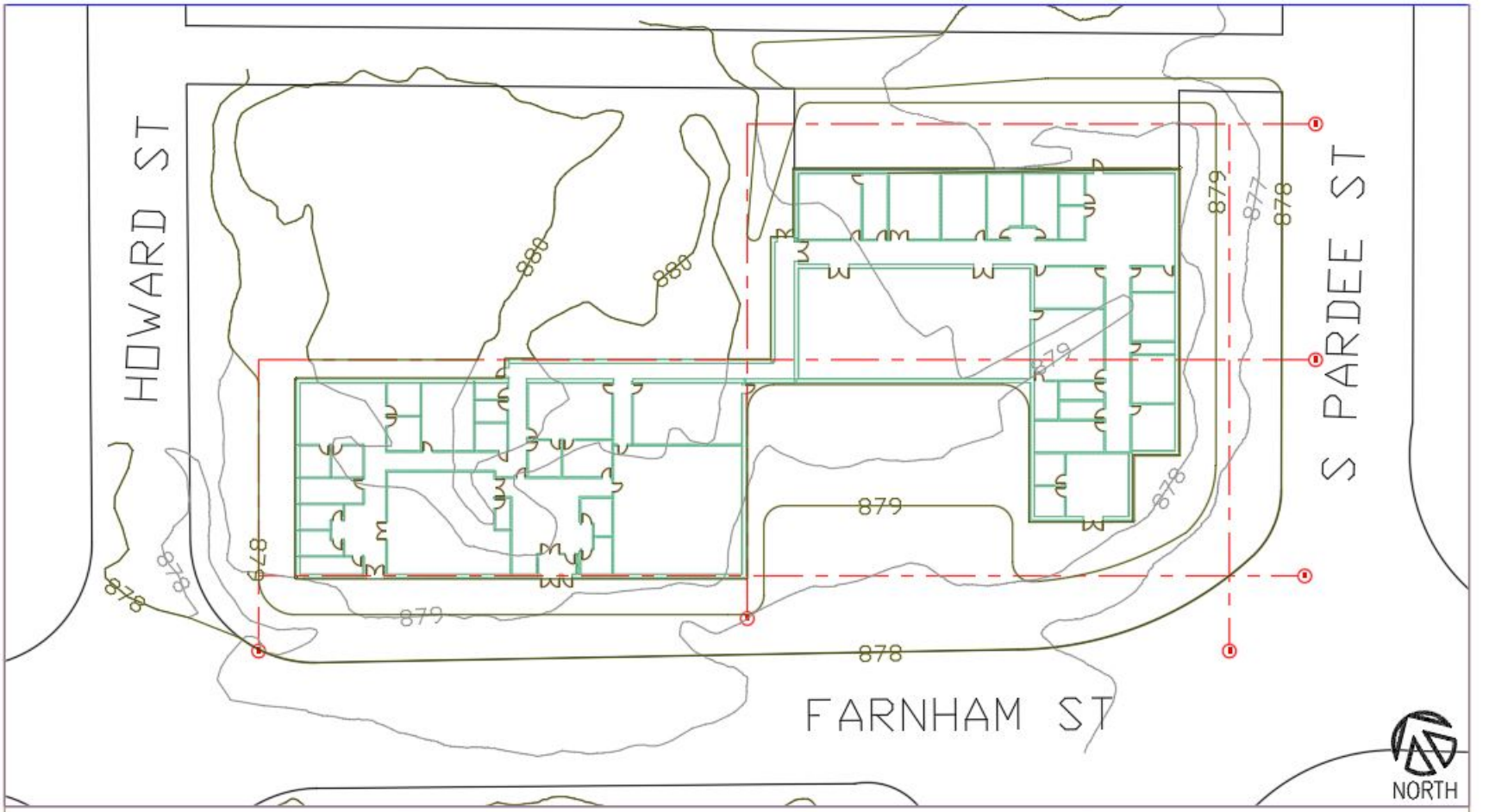
Village of Marshall Municipality Building

Title Sheet

T-1

Scale

5/4/2020 1:39:27 PM



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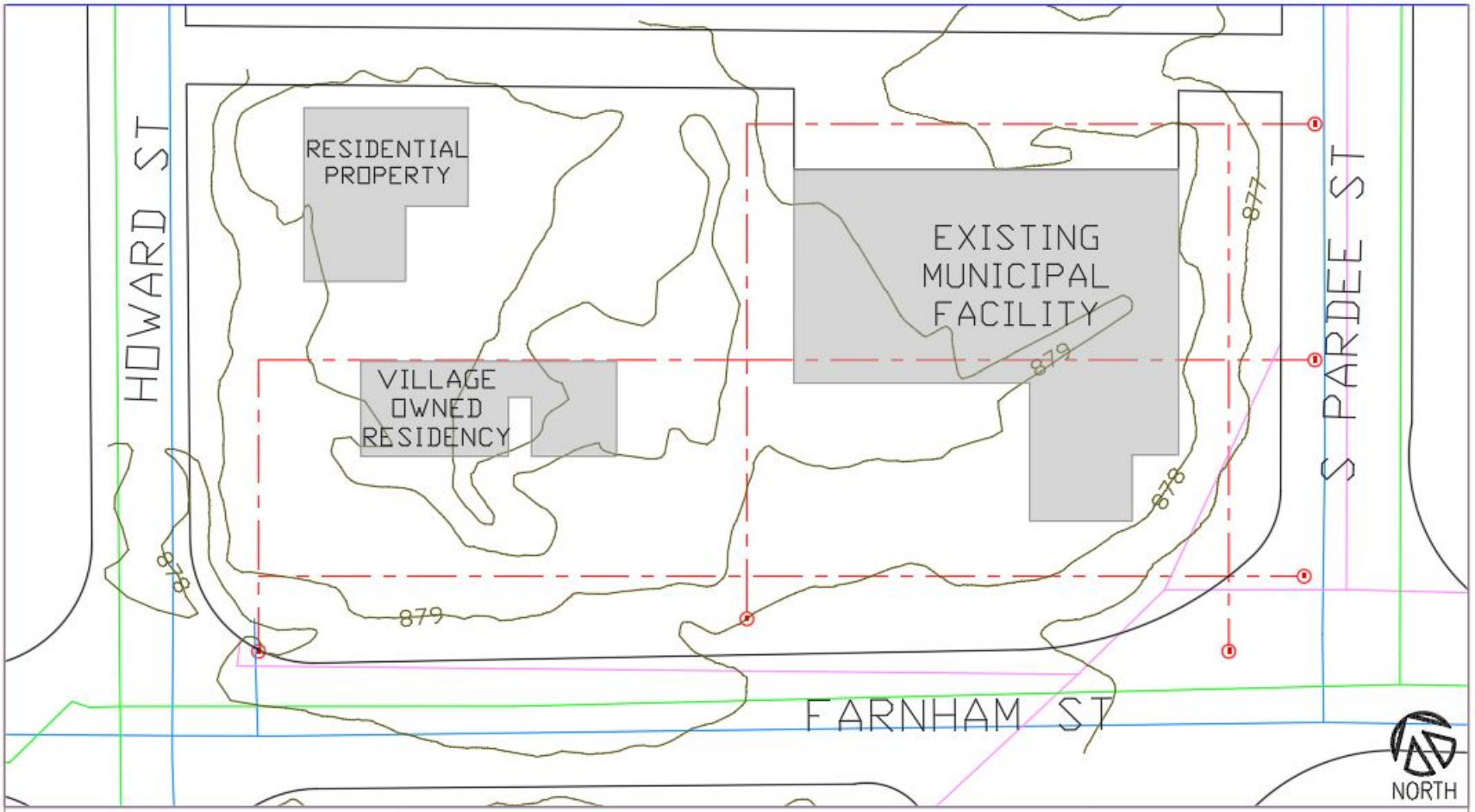
VILLAGE OF MARSHALL
MUNICIPALITY BUILDING

No.	Description	Date

GRADING PLAN C-1

Scale 0 10 20 30 45 ft

04 MAY, 2020



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VILLAGE OF MARSHALL MUNICIPALITY BUILDING

No.	Description	Date

SITE UTILITY C-2

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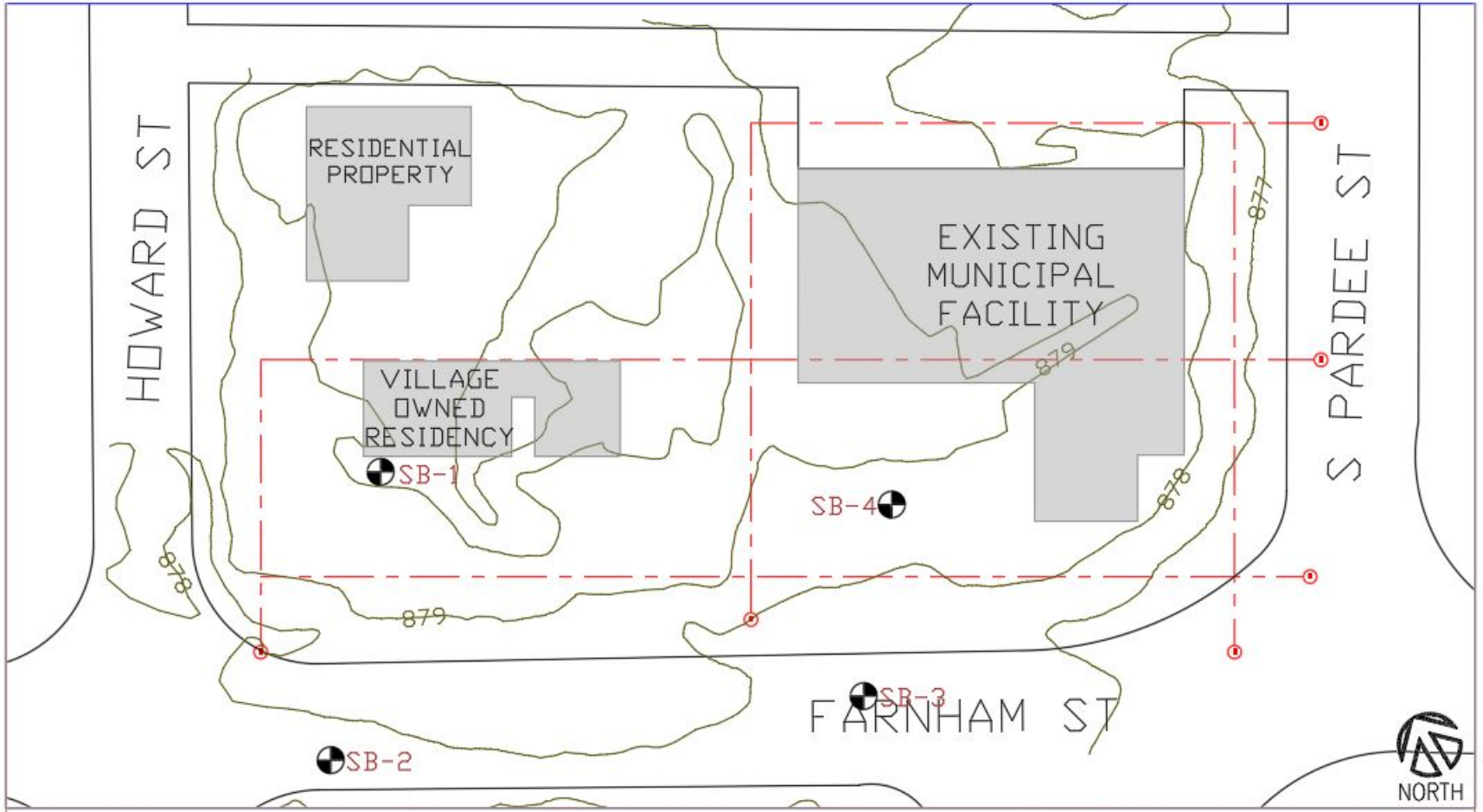

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VILLAGE OF MARSHALL MUNICIPALITY BUILDING

No.	Description	Date

SOIL BORINGS C-3

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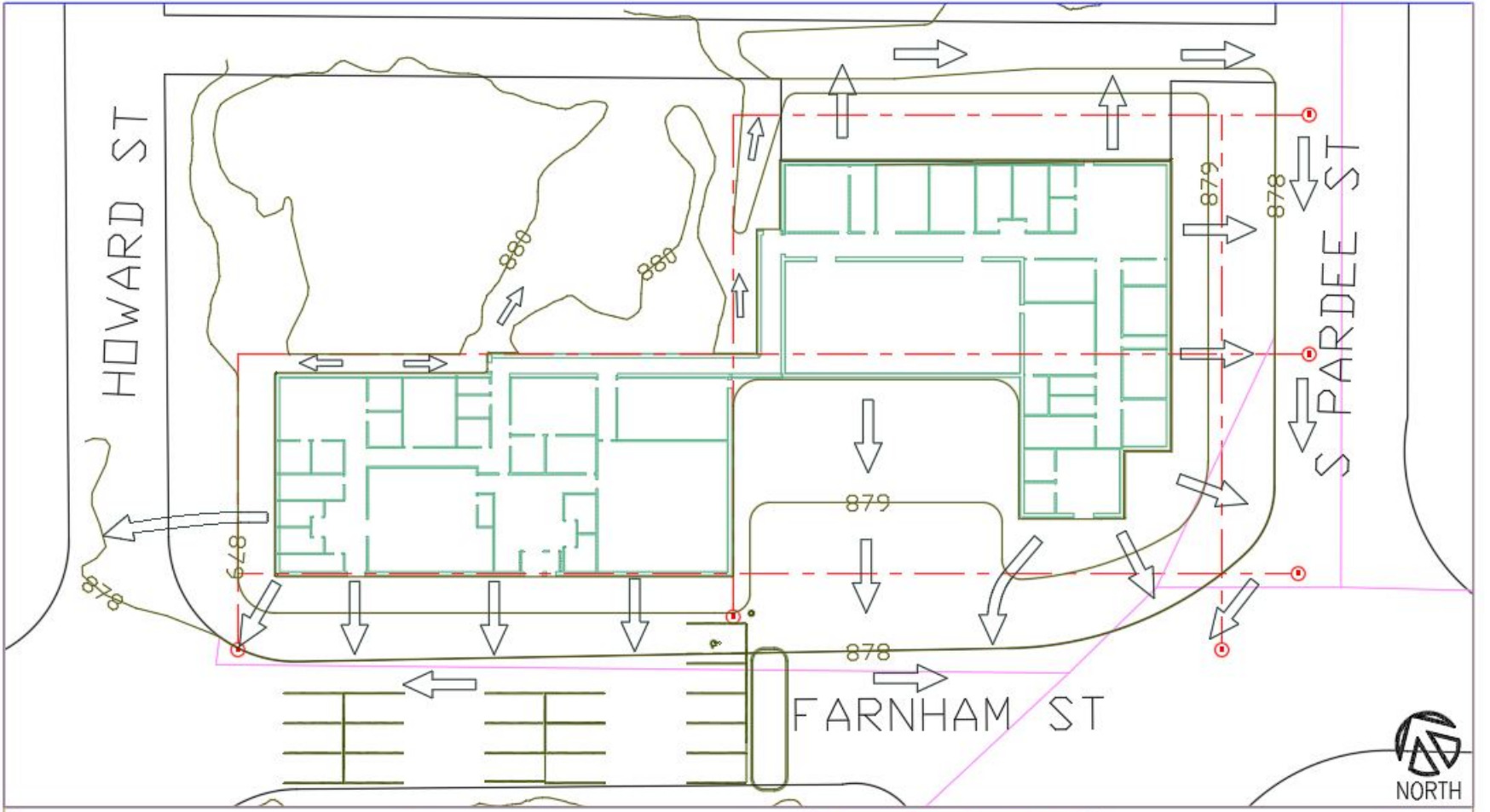

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VILLAGE OF MARSHALL MUNICIPALITY BUILDING

No.	Description	Date

WATER RUNOFF C-4

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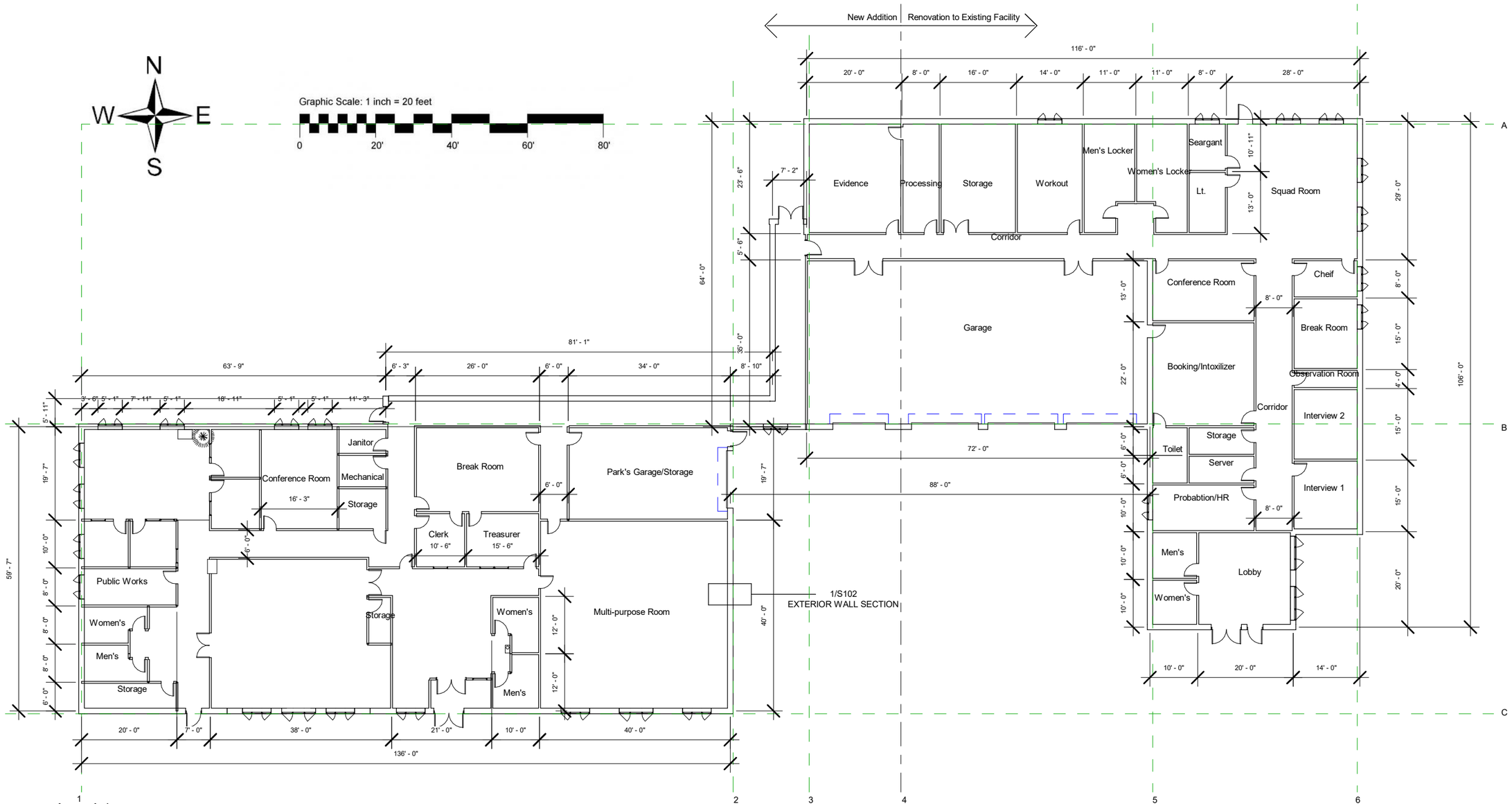
04 MAY, 2020



1 Level 1
1" = 20'-0"

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Village of Marshall Municipality Building

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Floor Plan

A101

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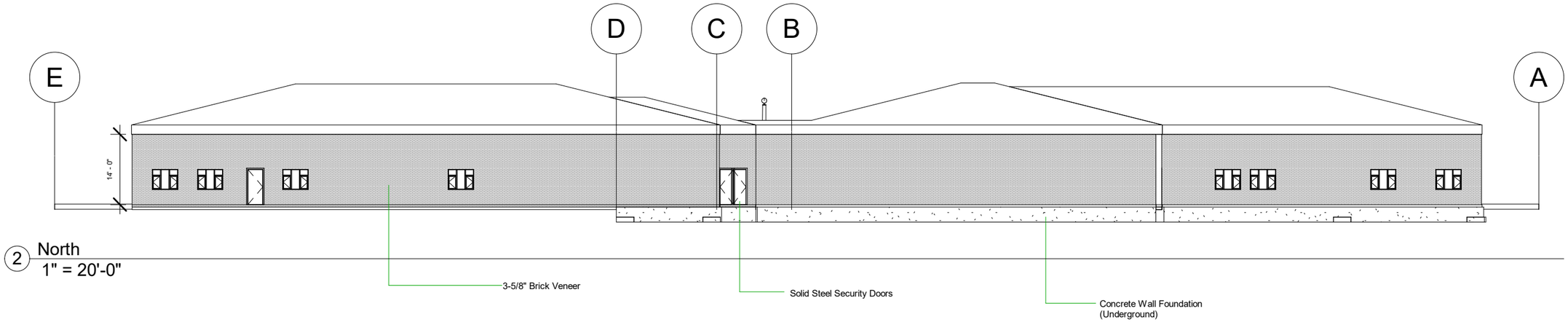
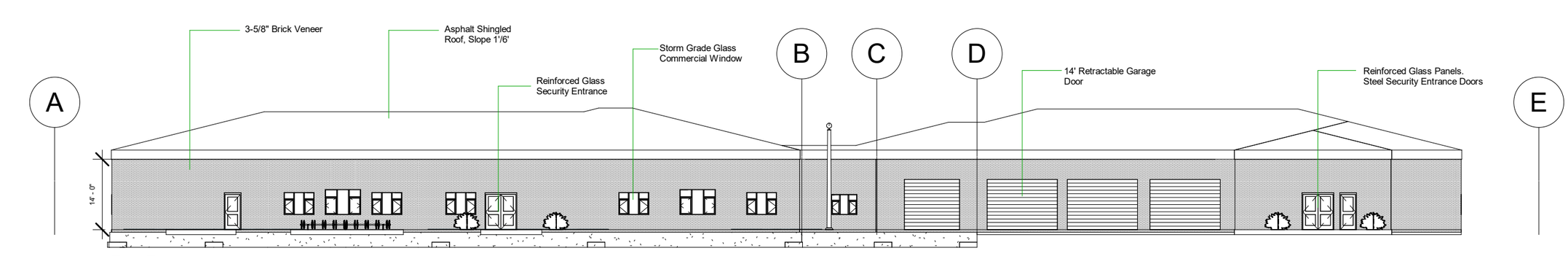


2 North
1" = 20'-0"



1 South
1" = 20'-0"

Graphic Scale: 1 inch = 20 feet

0 20' 40' 60' 80'

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Village of Marshall Municipality Building

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North and South Elevations

A102

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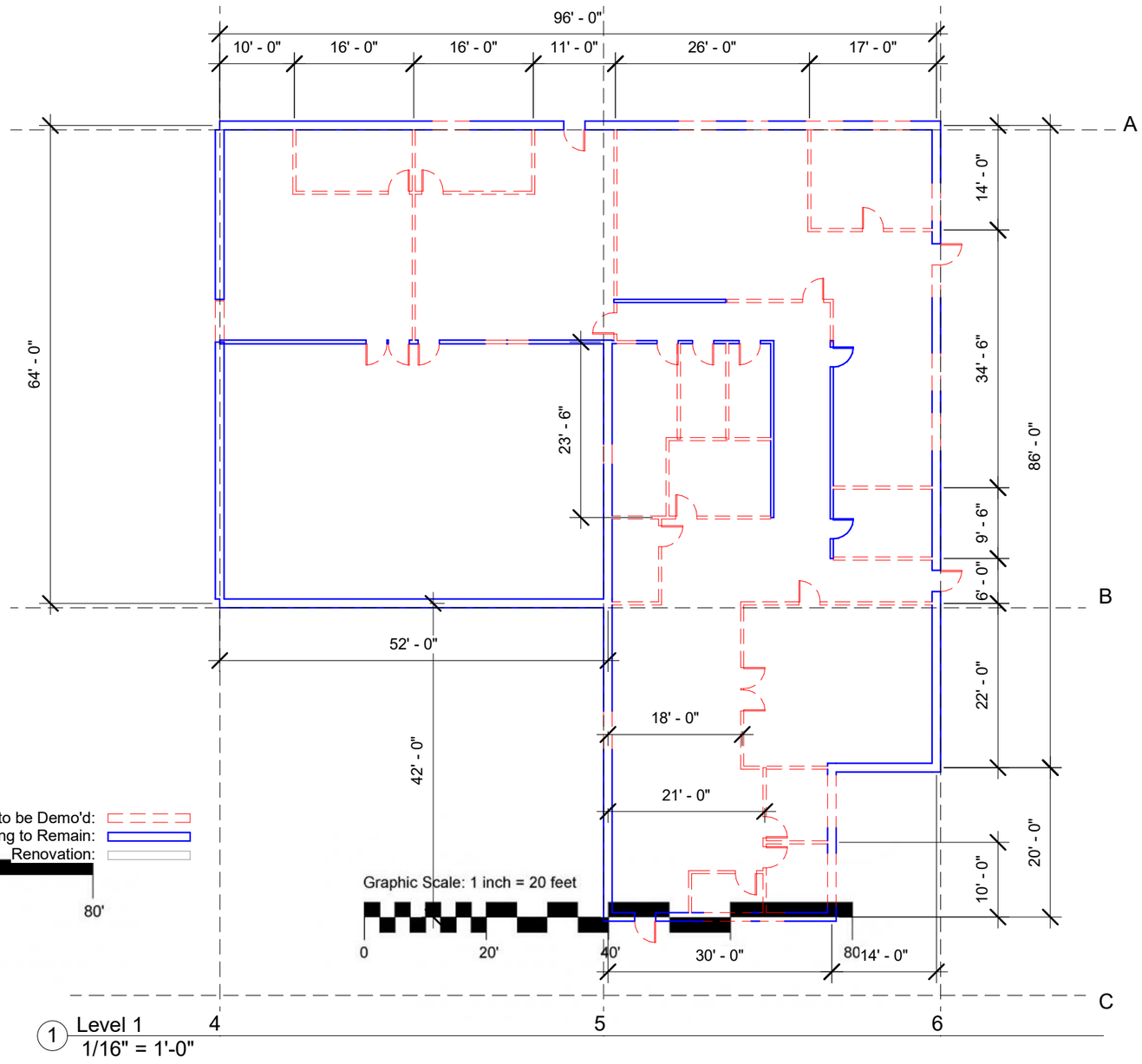

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Village of Marshall Municipality Building

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Police Station Demolition Plan

A104

Scale 1/16" = 1'-0"

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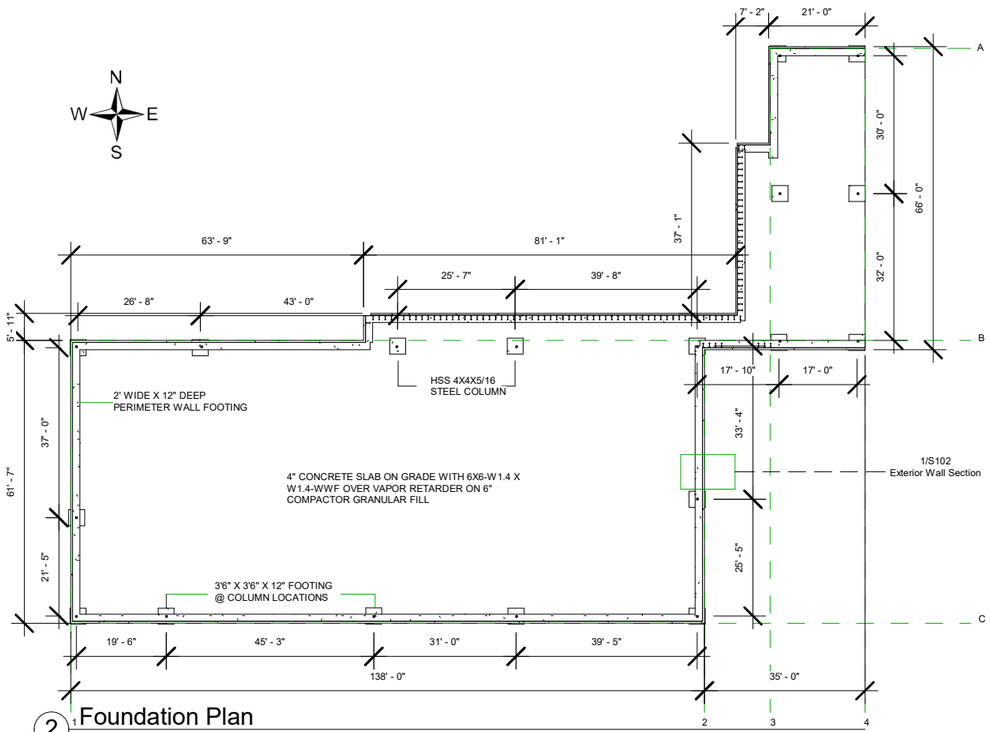

2 Foundation Plan
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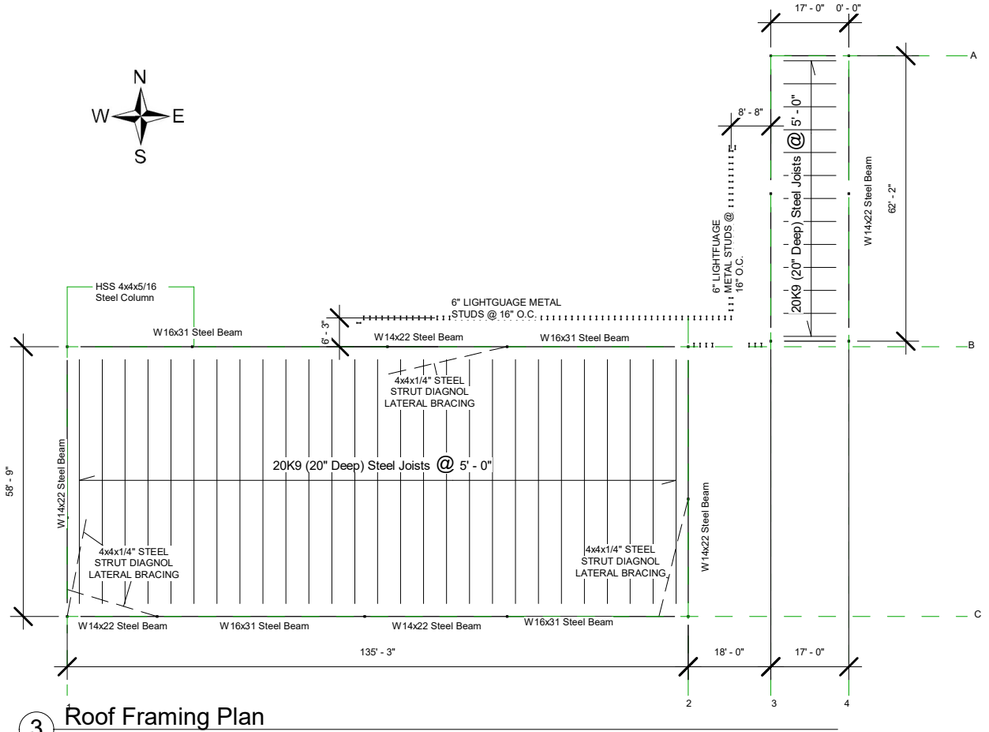

3 Roof Framing Plan
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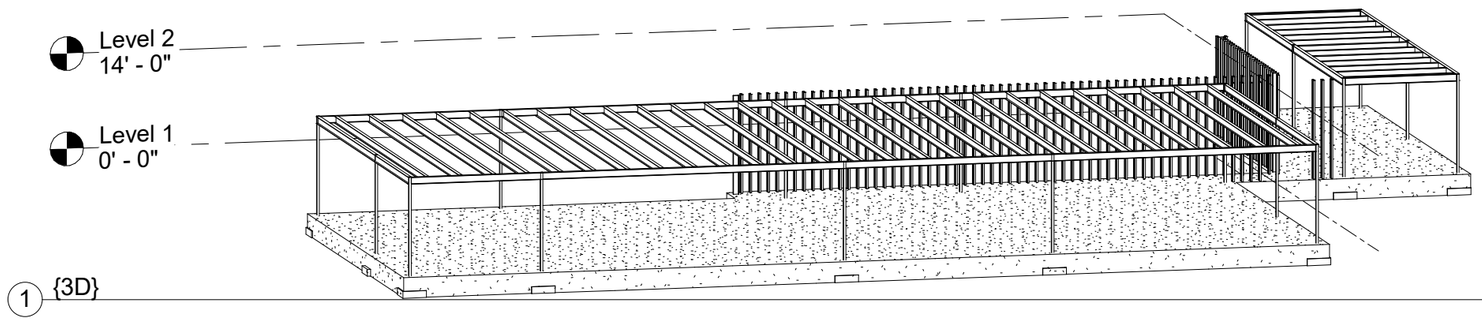

1 {3D}

Graphic Scale: 1 inch = 20 feet
0 20' 40' 60' 80'

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Structural Plan

S101

Scale 1" = 30'-0"

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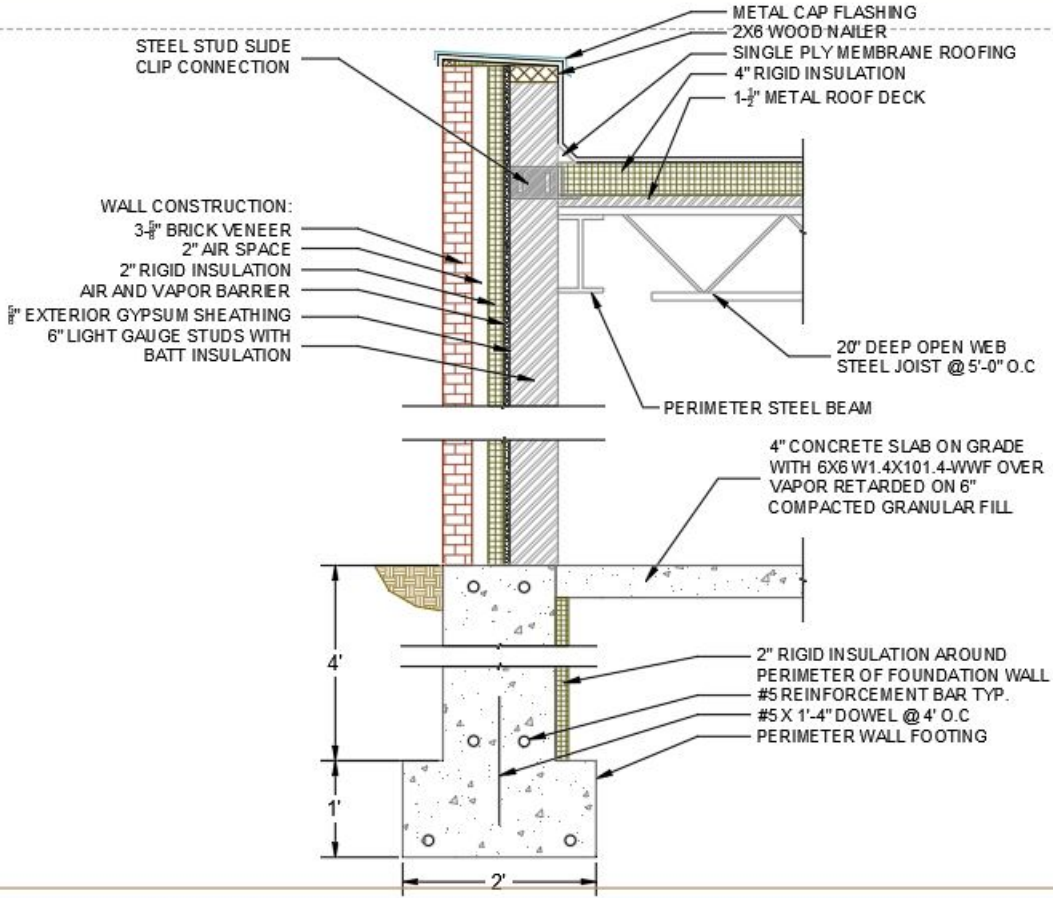

Marshall Engineering Associates

VILLAGE OF MARSHALL MUNICIPALITY BUILDING

No.	Description	Date

EXTERIOR WALL SECTION

S102

04 MAY 2020

UniverCity Alliance
UNIVERSITY OF WISCONSIN–MADISON

About UniverCity Year

UniverCity Year is a three-phase partnership between UW-Madison and one community in Wisconsin. The concept is simple. The community partner identifies projects that would benefit from UW-Madison expertise. Faculty from across the university incorporate these projects into their courses, and UniverCity Year staff provide administrative support to ensure the collaboration's success. The results are powerful. Partners receive big ideas and feasible recommendations that spark momentum towards a more sustainable, livable, and resilient future. Join us as we create better places together.

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