

August 26, 2021

Dave Hertz  
Midwest Ready Mix

RE: 1401 North Cleveland Ave (21-0674)  
Sioux Falls, South Dakota

**Design Assumptions:**

**Monster Block:** 27.5" & 51.5" Deep Units  
**Wall Batter:** 4.8°  
**Design Method:** NCMA  
**Seismic:** N/A  
**Live Load:** 150 PSF (Parking Lot)  
**Dead Load:** 0 PSF  
**Toe Slope:** Flat  
**Back Slope:** Varies (2H:1V max)

NCMA Safety Factors

Sliding	1.5
Overturning	1.5
Bearing	2.0

**Assumed Soil Parameters:**

	$\phi$	c	$\gamma$	
Retained Backfill	40°	0 PSF	120 PCF	Crushed Stone
Foundation Soil	26°	0 PSF	120 PCF	Sandy Lean Clay

**Notes:**

No soils or geotechnical information was provided or available at the time of this final design. CDP recommends that soil borings be drilled to comply with NCMA standards. Once the soil boring logs are available, they shall be submitted to CDP to confirm these shop drawings are valid prior to wall construction. For this final design, the onsite material is assumed to be a Sandy Lean Clay with an internal friction angle of 26° and 0 PSF cohesion. The onsite geotechnical engineer shall verify that the soils at the wall foundation are consistent with the assumed parameters stated above. Where unsuitable soils are found, a subcut may be required and structural fill shall be placed and compacted to provide an adequate bearing foundation. The proposed wall shall be backfilled with a Crushed Stone material up at a 1H:1V beginning 12" behind the back of the bottom block. The above minimum soil strength parameters shall be verified prior to construction. CDP shall be contacted if the above soil strength parameters cannot be met and a redesign may be required.

The foundation soils at the wall locations shall be capable of safely supporting the maximum applied load of the walls without failure or excessive settlement.

A global stability analysis has not been performed because of a lack of geotechnical information. The project geotechnical engineer shall confirm global stability based on the proposed wall design and the actual parameters of the onsite soils.

Wall heights obtained from plans provided by Midwest Ready Mix on 08/16/21.

CDP assumes there is no high water level in the vicinity of the walls. If there is a HWL determined, it shall be provided and the quantities and design may change.

Guardrails and fences shall be placed no closer than 3-feet from the wall face (or 1-foot minimum from back of block, whichever is greater) to the edge of the post footing. If the fence is placed directly against the wall blocks Sleeve-Its will be required, or an alternate design could be considered that connects the fence post to the top of the wall. If the fence is connected to the top of wall, the top two courses will likely need to be connected to resist block overturning, depending on loading requirements. Fence design shall be provided by others.

During wall construction, excavation shall remain within the construction limits shown on the plans. All available means and methods used to keep excavation within the construction limits shall be incidental. The contractor shall coordinate relocation of all existing conduits and services with the utility provider.

The following services are not included in the final design and shall be provided under a separate proposal:

- Project meetings including preconstruction meeting (\$150/hour and travel expenses + 10%).
- Site inspections.
- Comprehensive global stability analysis.
- Structural calculations (i.e. fences, barriers, etc.).
- Geotechnical Soil Testing.
- Fence/railing designs.
- As built drawings.
- Wall construction conformance letter

In order for CDP to provide a construction conformance letter, we require the following items:

- Foundation Inspection/Testing
- Soil Property Testing (Sieve, Shear, Moisture, etc.)
- Soil Compaction Testing
- Inspection Logs
- Construction Photographs, including: Excavation, Leveling Pad, Drainpipe and Outlets, Block Placement and Steps, Filter Fabric and/or Geogrid Reinforcement (if applicable), Finished Geometry (Back Slope, Toe Slope, Batter, etc.)

We appreciate the opportunity of providing services to you. If you have any questions or comments regarding this project, please feel free to contact us.

Sincerely,



Laura R. Blonigen

The project quantities are as follows:

- The unit area and volume quantities are neat quantities. Contractor shall confirm the quantities and add in any additional necessary factors (i.e., waste, compaction, etc.).
- Drainage aggregate includes 12" zone behind blocks, core fill, and/or voids between blocks.

	<i>Wall 1</i>
Wall Length (FT)	284.00
Block Area (SF)	2752.00
Retained Backfill (CY) Phi 40°	577
Leveling Pad (CY)	56
Drainage Aggregate (CY)	125

Unit	SF/Unit	Wall 1	Area
LCT	12.00	1	12.00
RCT	12.00	5	60.00
T	8.00	67	536.00
27.5M	8.00	198	1584.00
2H	4.00	2	8.00
27.5B	8.00	10	80.00
51.5B	8.00	59	472.00
	TOTAL:	Wall 1	2752.00