

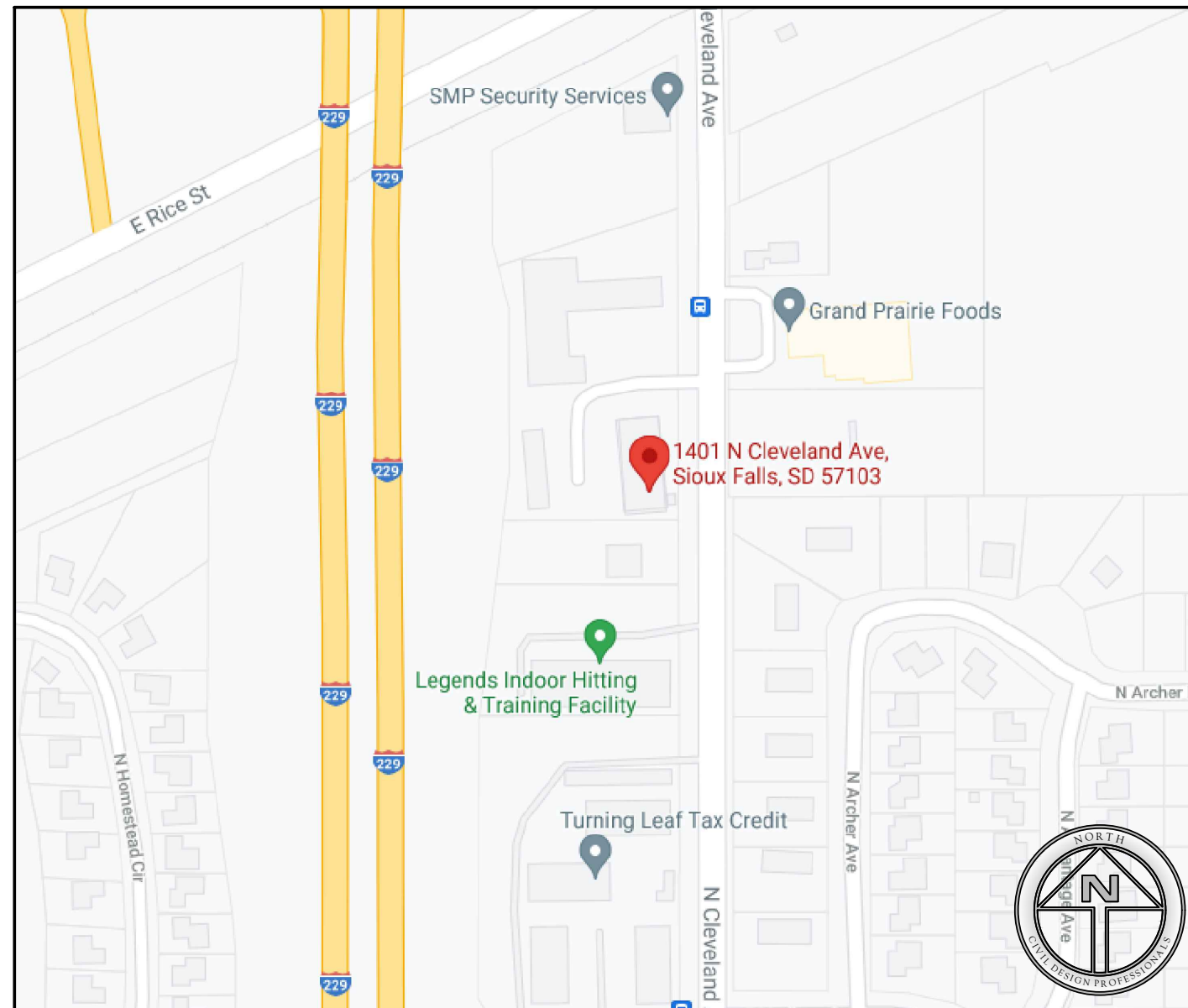
# 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA

## PROJECT INFORMATION:

1. GEOTECHNICAL EVALUATION REPORT:  
NOT PROVIDED (SEE SPEC. 1.02 ON SHEET 2.00).

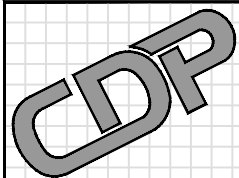
THE OWNER OR OWNER'S REPRESENTATIVE HAS NOT PROVIDED SPECIFIC SOIL PARAMETERS FOR THE PROPOSED EARTH STRUCTURE(S), AND TESTING OF THE PROPOSED SOILS HAS NOT BEEN PERFORMED PRIOR TO THE DESIGN. IN PREPARATION OF THE DESIGN, ASSUMED SOIL PARAMETERS WERE USED, THEREFORE, CONSTRUCTION VERIFICATION OF THE ABOVE ASSUMED SOIL CONDITIONS IS IMPERATIVE PRIOR TO AND DURING CONSTRUCTION. FAILURE TO VALIDATE THE ASSUMED SOIL PARAMETERS CAN RESULT IN STRUCTURE FAILURE. (SEE SPECIFICATION 1.07 ON SHEET 2.00).

2. UNIT MANUFACTURER:  
MIDWEST READY MIX
3. UNIT TYPE:  
MONSTER BLOCK LANDSCAPE



**PROJECT VICINITY MAP**  
NOT TO SCALE

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1.00	TITLE SHEET
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**CIVIL DESIGN  
PROFESSIONALS**

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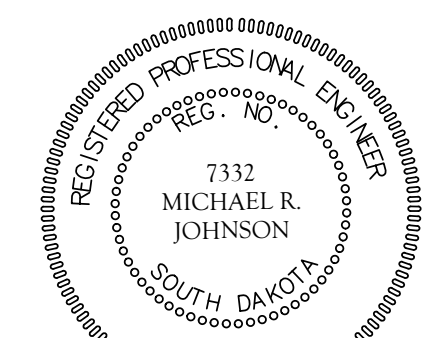
No.	Date	Revision	By
1	08/30/21	REVISED WALL PER REQUEST	LRB
2			
3			
4			
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Designed By:  
LRB  
Scale:  
N.T.S.  
Date:  
AUG 26, 2021

Project:  
1401 NORTH CLEVELAND AVE  
SIOUX FALLS, SOUTH DAKOTA

Title:  
TITLE SHEET

Registration No:  
7332  
Project No:  
21-0674  
Sheet No:  
1.00



*Michael R. Johnson*  
MICHAEL R. JOHNSON, P.E. Date: 8/30/2021

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**SECTION 1: GENERAL INFORMATION**

**1.01 SCOPE OF WORK:**

- A. THE SCOPE OF WORK FOR THE PROJECT INCLUDES FURNISHING AND INSTALLING A PREFABRICATED MODULAR BLOCK RETAINING WALL SYSTEM IN ACCORDANCE WITH CIVIL DESIGN PROFESSIONALS' (CDP) DESIGN PLANS AND SPECIFICATIONS. WORK INCLUDES PREPARING THE FOUNDATION SOIL, FURNISHING AND INSTALLING THE LEVELING PAD, CONCRETE RETAINING WALL BLOCKS, DRAINAGE AGGREGATE, AND BACKFILL IN CONFORMANCE WITH THE LINES, GRADES, AND DIMENSIONS SHOW.
- B. MULTIPLE CONTRACTORS (FENCE, WALL, GRADING, ETC.) MAY BE INVOLVED IN THE COMPLETION OF THE OVERALL PROJECT. CDP'S DESIGN PLANS DO NOT DEFINE SCOPE OF WORK FOR INDIVIDUAL ENTITIES. SEE CONTRACT DOCUMENTS FOR SPECIFIC DETAILS ON THE SCOPE OF WORK THAT WILL BE PROVIDED BY ALL PARTIES.

**1.02 GENERAL NOTES:**

- A. THE OWNER IS RESPONSIBLE FOR OBTAINING A GEOTECHNICAL INVESTIGATION WITH BORINGS DRILLED ALONG THE RETAINING WALL PER NCMA AND/OR AASHTO RECOMMENDATIONS:
  - A.1. NCMA: BORINGS SHOULD BE SPACED AT MAXIMUM 100-FOOT INTERVALS ALONG THE PROPOSED WALL ALIGNMENT AND AT 150-FOOT INTERVALS ALONG THE BACK OF THE WALL.
- B. CDP ASSUMES NO LIABILITY FOR OWNER'S FAILURE TO COMPLY WITH MINIMUM BORING RECOMMENDATIONS AT RETAINING WALL LOCATIONS.
- C. OWNER SHALL ENSURE THAT RETAINING WALL CONSTRUCTION PLANS ARE DISTRIBUTED TO GENERAL CONTRACTOR, RETAINING WALL CONTRACTOR, SITE CIVIL ENGINEER, GEOTECHNICAL ENGINEERS, INSPECTORS, AND ANY OTHER PERTINENT PARTIES.
- D. THE SITE CIVIL ENGINEER SHALL REVIEW THE RETAINING WALL CONSTRUCTION PLAN ELEVATIONS, GRADES, AND DRAINAGE PATTERNS FOR COMPLIANCE WITH THE SITE CIVIL DESIGN PLANS.

**1.03 CONSTRUCTION NOTES:**

- A. THE CONTRACTOR SHALL CALL 811 TO HAVE UTILITIES LOCATED AND ANY OTHER APPLICABLE ENTITY BEFORE BEGINNING WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL LOCATIONS AND DEPTHS OF EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION AND AVOID IMPACTING THEM.
- B. THE CONTRACTOR SHALL COORDINATE RELOCATION OF ALL EXISTING CONDUITS AND SERVICES WITH THE UTILITY PROVIDER. IF CONFLICTS EXIST, THE SITE CIVIL ENGINEER SHALL BE CONTACTED IMMEDIATELY.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS FOR EXECUTION OF WORK, INCLUDING LOCAL BUILDING INSPECTION AND CURRENT OSHA STANDARDS.
- D. THE WORK SHALL BE PERFORMED IN A GENERAL SEQUENCE DEVELOPED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR THE SEQUENCES AND PROCEDURES TO BE USED.
- E. EXCAVATION SUPPORT, IF REQUIRED, IS THE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING THE STABILITY OF THE EXCAVATION AND ITS INFLUENCE ON ADJACENT PROPERTIES AND STRUCTURES.
- F. IF THE CONTRACTOR FINDS A CONFLICT, ERROR, OR DISCREPANCY WITHIN OR BETWEEN THE CONTRACT DOCUMENTS AND DESIGN PLANS, THE CONTRACTOR SHALL IMMEDIATELY REPORT THE ISSUE TO THE RESPECTIVE ENGINEER IN WRITING. THE CONTRACTOR SHALL OBTAIN A WRITTEN INTERPRETATION OR CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION. WORK DONE BEFORE THE ENGINEER RENDERS A DECISION IS AT THE SOLE RISK OF THE CONTRACTOR.
- G. UTILITIES SHALL BE PLACED DURING THE CONSTRUCTION OF THE RETAINING WALL.

**1.04 TECHNICAL REFERENCES**

- A. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA) DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS - 3RD EDITION (5TH PRINTING - 2012).
- B. INTERNATIONAL BUILDING CODE, 2015 EDITION.
- C. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) TECHNICAL MANUAL.
- D. UNIFIED SOIL CLASSIFICATION SYSTEM (USCS).

**1.05 TESTING REFERENCES**

- A. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM) INTERNATIONAL.
- B. AMERICAN CONCRETE INSTITUTE (ACI).
- C. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).
- D. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)

**1.06 DESIGN INFORMATION**

- A. DESIGN METHOD: NCMA
- B. RETAINING WALL INFORMATION:
  - UNIT TYPE: MONSTER BLOCK LANDSCAPE
- C. LOADING CONDITIONS:
  - LIVE LOAD SURCHARGE 150 PSF (PARKING LOT)
  - DEAD LOAD SURCHARGE (BUILDING) 0 PSF
  - HYDROSTATIC LOADING NONE
- D. WALL GEOMETRY:
  - TOE SLOPE: FLAT
  - BACK SLOPE: VARIES (2H:1V MAX)
  - BATTER: 4.8°
- E. INTERNAL STABILITY: (MINIMUM FOS)
  - BLOCK TO BLOCK SLIDING 1.5
- F. EXTERNAL STABILITY:
  - BASE SLIDING 1.5
  - BEARING 2.0
  - OVERTURNING 1.5
  - GLOBAL STABILITY
    - A GLOBAL STABILITY ANALYSIS HAS NOT BEEN PERFORMED BECAUSE OF A LACK OF SPECIFIC GRADING & GEOTECHNICAL INFORMATION AT THE PROPOSED RETAINING WALL LOCATION. THE PROJECT GEOTECHNICAL ENGINEER SHALL CONFIRM GLOBAL STABILITY BASED ON THE PROPOSED WALL DESIGN AND THE ACTUAL PARAMETERS OF THE ONSITE SOILS.
- G. SEISMIC:
  - SEISMIC CONDITIONS N/A
  - PEAK GROUND ACCELERATION (A) N/A

**1.07 ASSUMED SOIL PARAMETERS**

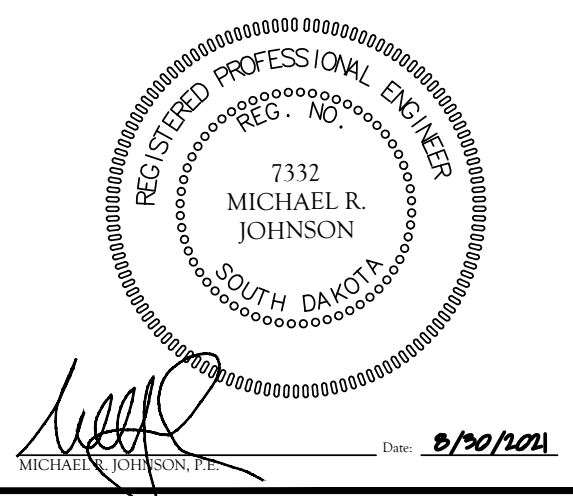
	$\phi$	c	$\gamma$	SOIL TYPE
RETAINED BACKFILL	40°	0 PSF	120 PCF	CRUSHED STONE
FOUNDATION SOIL	26°	50 PSF	120 PCF	SANDY LEAN CLAY
LEVELING PAD	40°	0 PSF	120 PCF	AGGREGATE



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No.	Date	Revision	By
1	08/30/21	REVISED WALL PER REQUEST	LRB
2			
3			
4			
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6			

Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: N.T.S.		Project No: 21-0674
Date: AUG 26, 2021	Title: SPECIFICATIONS: GENERAL INFORMATION	Sheet No: 2.00



REG. NO. 7332  
 MICHAEL R. JOHNSON  
 SOUTH DAKOTA  
 Date: 8/30/2021

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**SECTION 2: MATERIALS:**

**2.01 DEFINITIONS**

- A. ADHESIVE: HIGH STRENGTH CONSTRUCTION ADHESIVE FOR BONDING CONCRETE TO CONCRETE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.
- B. COLLECTION DRAIN SYSTEM: A SYSTEM FOR COLLECTING AND REMOVING WATER FROM BEHIND THE RETAINING WALL.
- C. DENSE GRADED AGGREGATE: LOW PERMEABLE MATERIAL USED TO HELP FACILITATE DRAINAGE THROUGH THE FACE OF THE RETAINING WALL.
- D. DRAINAGE AGGREGATE: CLEAN CRUSHED ANGULAR STONE LOCATED WITHIN AND DIRECTLY BEHIND THE RETAINING WALL UNITS TO THE DEPTH SPECIFIED ON THE CROSS SECTION, INCLUDING UNIT CORE FILL (IF APPLICABLE).
- E. EXPANSION MATERIAL: 0.5-INCH FELT EXPANSION BOARD OR POLYSTYRENE FOAM BOARD.
- F. FOUNDATION SOIL: SOIL IMMEDIATELY BENEATH THE RETAINING WALL LEVELING PAD AND REINFORCED SOIL (IF APPLICABLE).
- G. GEOTEXTILE FABRIC: A GEOSYNTHETIC MATERIAL MANUFACTURED FOR THE PURPOSE OF SOIL SEPARATION AND DRAINAGE.
- H. LEVELING PAD: AN UNREINFORCED CONCRETE OR COMPACTED SOIL PAD WHICH SERVES AS A FLAT SURFACE FOR PLACING THE INITIAL COURSE OF UNITS.
- I. LOW PERMEABLE SOIL CAP: LOW PERMEABLE SOIL, CONTAINING A MINIMUM OF 40% PASSING THE NO. 200 SIEVE AND A LIQUID LIMIT (LL) AND PLASTICITY INDEX (PI) OF LESS THAN 30 AND 15 RESPECTIVELY, PLACED OVER THE REINFORCED AND/OR RETAINED BACKFILL.
- J. RETAINED BACKFILL: SOIL DIRECTLY BEHIND THE RETAINING WALL UNITS IN A GRAVITY WALL. THE RETAINED ZONE IS DEFINED AS A LINE THAT EXTENDS UPWARD AT A 1H:1V FROM 1-FOOT BEHIND THE BOTTOM BACK CORNER OF THE BASE UNIT TO THE TOP OF WALL ELEVATION.
- K. RETAINING WALL UNIT (PMBW): A WETCAST CONCRETE PREFABRICATED MODULAR BLOCK WALL FACING UNIT.

**2.02 MONSTER BLOCK RETAINING WALL UNITS**

- A. RETAINING WALL SHALL BE COMPRISED OF MONSTER BLOCK UNITS MANUFACTURED BY A LICENSED PRODUCER.
- B. MONSTER BLOCK WALL UNITS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. STANDARD WEIGHT CONCRETE SHALL HAVE A 6% ± 1.5% AIR ENTRAINMENT BY VOLUME. WEIGHT OF CONCRETE SHALL BE 145 PCF. UNITS SHALL BE PRODUCED WITH FIRST PURPOSE FRESH CONCRETE (RECYCLED CONCRETE CANNOT BE USED TO PRODUCE UNITS).
- C. BLOCKS SHALL BE CONSISTENT AND FREE OF STAINS, DEFECTS, CRACKS, AND/OR CHIPS.
- D. TEXTURE AND COLOR ON THE FACE OF THE BLOCK SHALL BE SPECIFIED BY THE OWNER PER MANUFACTURER'S RECOMMENDATION.

**2.03 GEOTEXTILE FABRIC**

- A. GEOTEXTILE FABRIC, IF REQUIRED, SHALL BE MIRAFI 180N OR APPROVED EQUAL (80Z MINIMUM) AND SHALL MEET THE PROPERTIES SPECIFIED BY THE MANUFACTURER.
- B. ALL GEOTEXTILE SEAMS SHALL BE OVERLAPPED BY A MINIMUM OF 12-INCHES

**2.04 COLLECTION DRAIN SYSTEM**

- A. SUBSURFACE DRAINAGE SYSTEM CONSTRUCTED OF 4-INCH PERFORATED HDPE OR PVC PIPE PER ASTM D3034 AND/OR ASTM F2648. IF THE PIPE IS NOT PLACED WITHIN CLEAN CRUSHED STONE IT SHALL BE WRAPPED IN A GEOTEXTILE FABRIC.
- B. USE NON-PERFORATED PIPE TO OUTLET THROUGH FACE OF WALL, BENEATH WALL, AND WHEN CONNECTING TO DRAINAGE STRUCTURES.
- C. PIPE FITTINGS SHALL BE PER MANUFACTURER'S RECOMMENDATION.

**2.05 LEVELING PAD**

- A. SOIL LEVELING PAD SHALL CONSIST OF COMPACTED SAND, GRAVEL, CRUSHED STONE, OR ANY COMBINATION THEREOF (USE SOIL TYPE GP, GW, SP, OR SW PER USCS).
- B. CONCRETE LEVELING PAD SHALL BE UNREINFORCED AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2,500 PSI. CONCRETE MUST CURE A MINIMUM OF 12-HOURS PRIOR TO PLACING ANY MONSTER BLOCK UNITS.

**2.06 DRAINAGE AGGREGATE**

- A. DRAINAGE AGGREGATE SHALL BE DURABLE CLEAN CRUSHED STONE HAVING AT LEAST TWO FRACTURED FACES AND COMPLY WITH THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
1-INCH	100
3/4 - INCH	75 - 10
NO. 4	0 - 10
NO. 50	0 - 5

- B. ROUNDED AGGREGATE (E.G. RIVER ROCK AND PEA GRAVEL) IS NOT ACCEPTABLE DRAINAGE AGGREGATE MATERIAL.

**2.07 FOUNDATION SOIL**

- A. THE FOUNDATION SOIL IS ASSUMED TO BE SANDY LEAN CLAY EXHIBITING A MINIMUM EFFECTIVE INTERNAL FRICTION ANGLE OF 26° AND A COHESION OF 50 PSF.
- B. THE FOUNDATION SOIL SHALL BE FREE OF DEBRIS, HIGH PLASTIC CLAY, FROST, ICE, ORGANIC MATTER (<1%), AND OTHER DELETERIOUS MATERIALS.

**2.08 RETAINED BACKFILL**

- A. THE RETAINED BACKFILL SHALL BE CRUSHED STONE EXHIBITING A MINIMUM EFFECTIVE INTERNAL FRICTION ANGLE OF 40°, A COHESION OF 0 PSF, AND COMPLY WITH THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
1-INCH	100
3/4 INCH	75 - 10
NO. 4	0 - 10
NO. 50	0 - 5

- B. RETAINED BACKFILL SHALL BE FREE OF DEBRIS, HIGH PLASTIC CLAY, ICE, ORGANIC MATTER (<1%), AND OTHER DELETERIOUS MATERIALS.
- C. CONTRACTOR MAY USE A HIGHER QUALITY MATERIAL IN LIEU OF CRUSHED STONE WITH APPROVAL.
- D. RETAINED BACKFILL MAY BE SITE EXCAVATED WHEN THE ABOVE REQUIREMENTS ARE MET.

**2.09 BACK SLOPE FILL MATERIAL (WHEN PRESENT)**

- A. BACK SLOPE FILL MATERIAL SHALL BE APPROVED STRUCTURAL FILL PER THE GEOTECHNICAL ENGINEER AND SHALL EXHIBIT THE MINIMUM EFFECTIVE STRESS PARAMETERS REQUIRED TO PERMANENTLY MAINTAIN SLOPE STABILITY.
- B. BACK SLOPE FILL MATERIAL SHALL BE FREE OF DEBRIS, HIGH PLASTIC CLAY, ICE, ORGANIC MATTER (<1%), AND OTHER DELETERIOUS MATERIALS.

**2.10 DENSE GRADED AGGREGATE**

- A. THE DENSE GRADED AGGREGATE SHALL EXHIBIT A MINIMUM EFFECTIVE INTERNAL FRICTION ANGLE OF 40° AND COMPLY WITH THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
1-INCH	100
3/4 - INCH	95 - 100
NO.4	35 - 70
NO. 40	10- 35
NO. 200	5 - 15

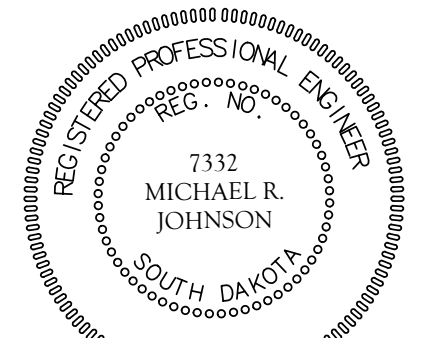
PLASTICITY INDEX (PI) < 10  
LIQUID LIMIT (LL) < 20



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Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: N.T.S.	Title: SPECIFICATIONS: MATERIALS	Project No: 21-0674
Date: AUG 26, 2021		Sheet No: 2.01



*Michael R. Johnson*  
MICHAEL R. JOHNSON, P.E. Date: 8/30/2021

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**SECTION 3: EXECUTION**

**3.01 CONSTRUCTION STAKING**

- A. STAKING SHALL BE PERFORMED BY A LICENSED SURVEYOR.
- B. WALL STATIONING SHOWN IS RELATIVE TO EACH WALL AND NOT TO ANY OTHER STATIONING SHOWN ON THE CONTRACT PLANS (UNLESS OTHERWISE NOTED). STATION 0.00 IS ON THE LEFT END OF WALL AS VIEWED FROM THE FRONT OF THE WALL (UNLESS OTHERWISE NOTED ON WALL ELEVATION).

**3.02 EXCAVATION**

- A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. CONTRACTOR SHALL BE CAREFUL NOT TO DISTURB EMBANKMENT AND FOUNDATION MATERIALS BEYOND LINES SHOWN. EXCAVATION FOR CONSTRUCTION OF THE RETAINING WALL SHALL CONFORM TO OSHA REQUIREMENTS FOR SAFE EXCAVATION.

**3.03 SOIL COMPACTION**

- A. COARSE GRAINED SOILS: ALL COARSE GRAINED SOIL SHALL BE PLACED IN MAXIMUM 9-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF ITS STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL, PRIOR TO AND DURING CONSTRUCTION, SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER AND SHALL BE WITHIN A RANGE OF 2% BELOW TO 2% ABOVE OPTIMUM MOISTURE CONTENT.
- B. FINE GRAINED SOILS: ALL FINE GRAINED SOIL SHALL BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF ITS STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL, PRIOR TO AND DURING CONSTRUCTION, SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER AND SHALL BE WITHIN A RANGE OF 2% BELOW TO OPTIMUM MOISTURE CONTENT.
- C. CRUSHED STONE: CRUSHED STONE SHALL BE PLACED IN MAXIMUM 12-INCH LOOSE LIFTS AND COMPACTED WITH A MINIMUM OF THREE (3) PASSES OF A VIBRATORY COMPACTOR (OR OTHER SUITABLE EQUIPMENT) CAPABLE OF EXERTING A MINIMUM OF 3,000 LBS OF CENTRIFUGAL FORCE AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
- D. ONLY LIGHTWEIGHT HAND-OPERATED COMPACTION EQUIPMENT SHALL BE USED WITHIN 3-FEET OF THE BACK OF WALL.

**3.04 FOUNDATION SOIL PREPARATION**

- A. FOUNDATION SOIL SHALL BE EXCAVATED FOR PLACEMENT OF THE LEVELING PAD AND BACKFILL MATERIAL AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER (WHICHEVER IS MORE STRINGENT).
- B. FOUNDATION SHALL BE EXAMINED BY THE GEOTECHNICAL ENGINEER TO CONFIRM THAT THE ACTUAL FOUNDATION CONDITIONS MEET OR EXCEED THE DESIGN ASSUMPTIONS AND MINIMUM BEARING CAPACITY REQUIREMENTS (BEARING CAPACITY SHALL BE GREATER THAN THE FACTOR OF SAFETY FOR BEARING MULTIPLIED BY THE APPLIED LOAD LISTED ALONG THE WALL PROFILE). AT A MINIMUM, FOUNDATION SOIL SHALL BE PROOF-ROLLED BEFORE CONSTRUCTION PROCEEDS. SUBGRADE MATERIAL NOT MEETING THE REQUIRED STRENGTH SHALL BE REMOVED AND REPLACED WITH SUITABLE STRUCTURAL FILL PER THE GEOTECHNICAL ENGINEER.
- C. OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH APPROVED STRUCTURAL FILL AND COMPACTED AS PER SPECIFICATION 3.03.

**3.05 BASE LEVELING PAD**

- A. LEVELING PAD MATERIALS SHALL BE PLACED UPON AN APPROVED FOUNDATION AS SHOWN ON THE CONSTRUCTION DRAWINGS TO A MINIMUM THICKNESS OF 12-INCHES AND COMPACTED PER SPECIFICATION 3.03 (SOIL LEVELING PAD).
- B. LEVELING PAD SHALL BE PREPARED TO ENSURE COMPLETE CONTACT WITH THE BASE RETAINING WALL UNITS.

**3.06 MODULAR WALL UNIT INSTALLATION**

- A. THE FIRST COURSE OF MONSTER BLOCK UNITS SHALL BE CAREFULLY PLACED ON TOP OF AND IN FULL CONTACT WITH THE LEVELING PAD. THE BASE UNITS SHALL BE CLOSELY ABUTTED TOGETHER AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. THE HORIZONTAL GAP BETWEEN UNITS SHALL NOT EXCEED 1/4-INCH. EACH UNIT SHALL BE CHECKED FOR PROPER ELEVATION, ALIGNMENT, AND THAT IT IS LEVEL.
- B. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE ACHIEVED WITH THE AID OF A STRING LINE OR OFFSET FROM A BASE LINE.
- C. DRAINAGE AGGREGATE SHALL BE PLACED BETWEEN THE UNITS, WITHIN THE UNITS (UNIT CORE FILL, IF APPLICABLE), AND IMMEDIATELY BEHIND THE UNITS TO THE DRAINAGE ZONE DEPTH SPECIFIED ON THE CROSS SECTION. THE DRAINAGE AGGREGATE SHALL BE PLACED AND COMPACTED AS PER SPECIFICATION 3.03.
- D. PRIOR TO PROCEEDING TO THE NEXT COURSE, SWEEP EXCESS MATERIAL FROM TOP OF UNITS.
- E. UNITS MAY BE SHIMMED WITH GEOGRID, ASPHALT ROOFING SHINGLES, OR ROLLED ROOFING TO MAINTAIN FACE BATTER AND UNIFORM BLOCK ELEVATIONS. SHIMMING MATERIAL SHALL MAINTAIN A MAXIMUM NOMINAL THICKNESS OF 1/8-INCH. CONTRACTOR SHALL TAKE PRECAUTIONS TO CONTINUOUSLY SUPPORT A SHIMMED UNIT TO PREVENT POINT LOADING THAT MAY INDUCE UNIT CRACKING. THE WALL CONTRACTOR MAY ALSO GRIND UNITS AS NECESSARY TO MAINTAIN FACE BATTER AND UNIFORM BLOCK ELEVATIONS.
- F. SEE MANUFACTURER'S INFORMATION FOR ADDITIONAL INSTALLATION REQUIREMENTS.

**3.07 COLLECTION DRAIN PLACEMENT**

- A. INSTALL COLLECTION DRAIN SYSTEM PER THE APPROVED CONSTRUCTION SHOP DRAWINGS.
- B. THE COLLECTION DRAIN SYSTEM SHALL DRAIN SURFACE WATER INFILTRATION AND GROUNDWATER AWAY FROM THE REINFORCED AND RETAINED BACKFILL ZONES. THE COLLECTION DRAIN SYSTEM SHALL OUTLET INDEPENDENT OF THE STORM DRAIN SYSTEMS AT LOCATIONS THAT MOVE THE WATER AWAY FROM THE WALL WHEREVER POSSIBLE.
- C. THE DRAIN PIPE SHALL BE PLACED TO MAINTAIN GRAVITY FLOW (1% MINIMUM).
- D. DO NOT CONNECT ANY OTHER DRAINS INTO THE COLLECTION DRAIN SYSTEM.

**3.08 RETAINED BACKFILL PLACEMENT**

- A. RETAINED BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED PER SPECIFICATION 3.03 OR PER THE GEOTECHNICAL ENGINEERS RECOMMENDATION (WHICHEVER IS MORE STRINGENT).

**3.09 BACK SLOPE PLACEMENT**

- A. ALL BACKFILL PLACED ABOVE THE RETAINED BACKFILL SHALL BE PLACED AND COMPACTED AS PER SPECIFICATION 3.03 OR PER THE GEOTECHNICAL ENGINEERS RECOMMENDATION (WHICHEVER IS MORE STRINGENT).

**3.10 CAPSTONE AND FREESTANDING UNIT INSTALLATION**

- A. PRIOR TO PLACING CAPSTONES AND FREESTANDING UNITS, CLEAN BLOCK AND APPLY ADHESIVE PER THE MANUFACTURER'S RECOMMENDATIONS.
- B. TRIM SIDES OF INTERIOR CAPSTONES TO ENSURE PROPER FIT OF WALL CAPSTONE. DO NOT LEAVE CUT SURFACES EXPOSED TO VIEW IN THE FINISHED WALL.
- C. ADHESIVE SHALL BE DESIGNED TO WITHSTAND MOISTURE AND TEMPERATURE EXTREMES, REMAIN FLEXIBLE, AND SPECIFICALLY FORMULATED FOR BONDING MASONRY TO MASONRY

**3.11 SITE DRAINAGE**

- A. POOR PERFORMANCE AND/OR FAILURE OF RETAINING WALLS DURING AND AFTER CONSTRUCTION CAN OCCUR IF UNANTICIPATED STORM WATER IMPACTS THE WALL. THEREFORE IT IS CRITICAL THAT ANY POTENTIAL DRAINAGE ISSUES THAT BECOME APPARENT DURING OR AFTER CONSTRUCTION BE ADDRESSED IMMEDIATELY TO AVOID RETAINING WALL PERFORMANCE ISSUES.
- B. CONTRACTOR SHALL PROTECT RETAINING WALLS AGAINST SURFACE WATER RUNOFF FROM ADJACENT AREAS AT ALL TIMES THROUGH THE USE OF BERMS, DIVERSION DITCHES, TEMPORARY DRAINS, OR ANY OTHER MEANS NECESSARY.
- C. AT THE END OF EACH DAYS OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT AWAY FROM THE WALL FACING TO DIRECT RUNOFF AWAY FROM THE WALL.
- D. AT COMPLETION OF WALL CONSTRUCTION, BACKFILL SHALL BE PLACED LEVEL WITH FINAL TOP OF WALL ELEVATION. IF FINAL GRADING, PAVING, LANDSCAPING, OR STORM DRAINAGE INSTALLATIONS ADJACENT TO THE WALL ARE NOT PLACED IMMEDIATELY AFTER THE WALL CONSTRUCTION IS COMPLETED, TEMPORARY GRADING AND DRAINAGE SHALL BE PROVIDED TO ENSURE WATER RUNOFF IS NOT DIRECTED TOWARDS THE WALL NOR ALLOWED TO COLLECT OR POND BEHIND THE WALL UNTIL FINAL CONSTRUCTION ADJACENT TO THE WALL IS COMPLETED.
- E. ALL SLOPES ABOVE OR BELOW THE RETAINING WALL SHALL BE IMMEDIATELY VEGETATED AND PROTECTED FROM EROSION. SLOPES ABOVE THE RETAINING WALL STEEPER THAN AN 8H:1V SHALL HAVE A SILT FENCE INSTALLED AND MAINTAINED UNTIL ADEQUATE VEGETATION CAN BE ESTABLISHED.
- F. THE RETAINING WALLS ARE NOT DESIGNED TO RESIST CONCENTRATED FLOWS: INCLUDING, BUT NOT LIMITED TO, DOWNSPOUTS, SUMP PUMPS, AND SWALES. ALL CONCENTRATED FLOWS SHALL BE COLLECTED IN A SUB-DRAIN SYSTEM, DIRECTED AWAY FROM AND/OR AROUND THE ENDS OF RETAINING WALLS. ANY CHANGE IN SURFACE WATER DIRECTION OR CONNECTION INTO SITE STORM SEWER SYSTEM SHALL BE SUBMITTED TO THE SITE CIVIL ENGINEER FOR REVIEW AND APPROVAL.

**3.12 AS-BUILT CONSTRUCTION TOLERANCES:**

- A. HORIZONTAL ALIGNMENT: ±0.75-INCHES OVER ANY 10-FOOT DISTANCE; 3-INCHES MAXIMUM.
- B. WALL BATTER: WITHIN 1° OF DESIGN BATTER.
- C. CORNERS, BENDS, CURVES: ±2- FEET FROM THEORETICAL POSITION.
- D. MAXIMUM DIFFERENTIAL SETTLEMENT: L/200 (0.5% OF REFERENCED LENGTH).
- E. TOTAL SETTLEMENT: 2-INCHES MAXIMUM.

**3.13 CONSTRUCTION ADJACENT TO WALL:**

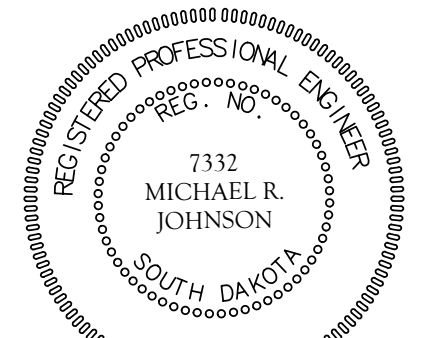
- A. THE OWNER OR OWNER'S REPRESENTATIVE IS RESPONSIBLE FOR ENSURING THAT CONSTRUCTION ADJACENT TO THE WALL DURING AND POST CONSTRUCTION DOES NOT DISTURB THE WALL OR PLACE TEMPORARY OR PERMANENT LOADS ON THE WALL THAT EXCEED THE DESIGN LOADS, INCLUDING BUT NOT LIMITED TO WATER PRESSURE, TEMPORARY GRADES, EQUIPMENT LOADING, AND FUTURE



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No.	Date	Revision	By
1	08/30/21	REVISED WALL PER REQUEST	LRB
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3			
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Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: N.T.S.	Title: SPECIFICATIONS: EXECUTION	Project No: 21-0674
Date: AUG 26, 2021		Sheet No: 2.02



*Michael R. Johnson*  
 MICHAEL R. JOHNSON, P.E. Date: 8/30/2021

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**SECTION 4: QUALITY ASSURANCE**

**4.01 OWNER/GENERAL CONTRACTOR:**

- A. THE OWNER OR GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND CONTRACTING FOR PROFESSIONAL GEOTECHNICAL ENGINEERING AND RETAINING WALL CONSTRUCTION INSPECTION SERVICES PER SPECIFICATION 4.02 AND 4.03 RESPECTIVELY.
- B. THE OWNER SHALL BE RESPONSIBLE FOR LONG TERM MAINTENANCE (SEE SPECIFICATION 4.05)

**4.02 PROFESSIONAL GEOTECHNICAL ENGINEER:**

- A. THE GEOTECHNICAL ENGINEER SHALL OBSERVE SITE SOIL CONDITIONS FOR COMPLIANCE WITH RETAINING WALL DESIGN PLANS PRIOR TO WALL CONSTRUCTION. IF THE GEOTECHNICAL ENGINEER DETERMINES THE ONSITE SOIL WILL NOT EXHIBIT THE EFFECTIVE STRESS PARAMETERS ASSUMED IN THE DESIGN PLANS, THE WALL CONSTRUCTION SHALL NOT COMMENCE UNTIL AN APPROPRIATE SOLUTION IS DETERMINED.
- B. THE GEOTECHNICAL ENGINEER SHALL INSPECT AND EVALUATE THE FOUNDATION SOILS AT THE RETAINING WALL LOCATIONS, PRIOR TO CONSTRUCTION, TO ENSURE THEY WILL SAFELY SUPPORT THE MAXIMUM APPLIED LOADS PROVIDED ON THE WALL PROFILES WITHOUT FAILURE OR EXCESSIVE DIFFERENTIAL SETTLEMENT PER SPECIFICATION 3.12D. ANY UNSUITABLE SOIL OR IMPROPERLY COMPACTED EMBANKMENT MATERIAL SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER TO ACHIEVE ADEQUATE BEARING CAPACITY AND ACCEPTABLE SETTLEMENT LIMITS.
- C. THE GEOTECHNICAL ENGINEER SHALL INSPECT WALL EXCAVATION AND RETAINED SOILS FOR GROUNDWATER AND SEEPAGE. IF EITHER CONDITION IS OBSERVED, THE GEOTECHNICAL ENGINEER SHALL IMMEDIATELY HALT THE RETAINING WALL CONSTRUCTION AND NOTIFY CDP.
- D. WALL BACKFILL MATERIAL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER FOR COMPLIANCE WITH THE MINIMUM STRENGTH ASSUMPTIONS AND GRADATION LIMITS PER SECTION 2 OF THESE SPECIFICATIONS.
- E. WALL BACKFILL SOIL SHALL BE TESTED BY THE GEOTECHNICAL ENGINEER FOR MOISTURE, DENSITY, AND COMPACTION EVERY 2-FEET VERTICALLY, 100-FEET TO 200-FEET C/C, OR PER THE PROJECT SPECIFICATIONS, IF MORE STRINGENT, TO ENSURE COMPLIANCE WITH THE MINIMUM COMPACTION REQUIREMENTS IN SPECIFICATION 3.03.

**4.03 RETAINING WALL CONSTRUCTION INSPECTOR:**

- A. THE RETAINING WALL CONSTRUCTION SHALL BE INSPECTED BY A LICENSED PROFESSIONAL ENGINEER OR QUALIFIED TECHNICIAN (IF NOT THE GEOTECHNICAL ENGINEER). THE INSPECTOR SHALL HAVE ADEQUATE KNOWLEDGE OF THE PROJECT AND BE FAMILIAR WITH THE MEANS AND METHODS OF RETAINING WALL CONSTRUCTION. IF THE RETAINING WALL INSPECTOR IS NOT EMPLOYED BY THE GEOTECHNICAL ENGINEER, THE GEOTECHNICAL ENGINEER SHALL BE CONSULTED IN THOSE MATTERS PERTAINING TO SOIL CONDITIONS AND WALL PERFORMANCE.
- B. THE INSPECTOR IS RESPONSIBLE FOR READING AND UNDERSTANDING THE RETAINING WALL DESIGN AND CONSTRUCTION PLANS AND SPECIFICATIONS. THE INSPECTOR SHALL BE IN POSSESSION OF A COMPLETE SET OF THESE DOCUMENTS WHEN PERFORMING ON-SITE INSPECTIONS.
- C. THE INSPECTOR SHALL INSPECT THE RETAINING WALL UNITS, WALL ELEVATIONS, GRADES, BACK SLOPE, AND TOE SLOPE CONDITIONS FOR CONFORMANCE WITH THE APPROVED SHOP DRAWINGS.
- D. THE INSPECTOR SHALL IMMEDIATELY NOTIFY THE WALL CONTRACTOR OF ANY DEFICIENCIES DISCOVERED IN THE RETAINING WALL INSTALLATION AND PROVIDE THE CONTRACTOR A REASONABLE OPPORTUNITY TO CORRECT THE DEFICIENCY.
- E. THE INSPECTOR SHALL NOTIFY THE GENERAL CONTRACTOR, OWNER, AND CDP OF ANY CONSTRUCTION DEFICIENCIES THAT HAVE NOT BEEN CORRECTED IN A TIMELY MANNER.
- F. THE INSPECTOR SHALL DOCUMENT AND MAINTAIN RECORDS OF ALL INSPECTION RESULTS.

**4.04 RETAINING WALL CONTRACTOR:**

- A. PRIOR TO PLACING THE BLOCKS, THE CONTRACTOR SHALL INSPECT THE RETAINING WALL UNITS TO ENSURE THEY DO NOT CONTAIN ANY VISIBLE DEFECTS PER SPECIFICATION 2.02C.
- B. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN QUALITY CONTROL FOR THE CONSTRUCTION OF THE RETAINING WALL TO ENSURE COMPLIANCE WITH THE CONTRACT REQUIREMENTS. THIS INCLUDES, BUT IS NOT LIMITED TO, TAKING PHOTOGRAPHS THROUGHOUT THE WALL CONSTRUCTION AND MAINTAINING ALL QUALITY CONTROL RECORDS.

**4.05 MAINTENANCE:**

- A. THE RETAINING WALL(S) SHOULD BE INSPECTED EVERY SIX MONTHS FOR MOVEMENT, SOIL TENSION CRACKS, EROSION ADJACENT TO THE RETAINING WALL STRUCTURES, AND FOR SURFICIAL SLOPE STABILITY WHEN A SLOPE EXISTS ABOVE OR BELOW THE RETAINING WALL(S).
- B. SURFICIAL SLOPE INSTABILITY TYPICALLY IMPACTS THE UPPER 3 TO 5 FEET OF THE SUBSURFACE PROFILE. REGULAR MAINTENANCE SHOULD BE ANTICIPATED TO IDENTIFY AND ADDRESS POTENTIAL SOIL CREEP OR EROSION. THIS INCLUDES REPLACING OR REPLANTING TREES AND GRASSES, AS NECESSARY, AND GRADING THE SLOPE TO REDUCE SOIL CREEP AND EROSION. IF FUTURE SURFICIAL SLOPE EROSION OCCURS, CDP RECOMMENDS THE SLOPE FACE BE RESTORED AS SOON AS PRACTICAL. CDP ALSO RECOMMENDS IRRIGATED LANDSCAPING BE SETBACK A MINIMUM OF 20-FEET FROM THE CREST OF THE SLOPES.
- C. FILL SLOPES SHOULD BE RE-VEGETATED AS SOON AS POSSIBLE AFTER GRADING AND PROTECTED FROM EROSION UNTIL VEGETATION IS ESTABLISHED. SLOPE PLANTING SHOULD CONSIST OF GROUND COVER, SHRUBS, AND TREES POSSESSING DEEP, DENSE ROOT STRUCTURES THAT REQUIRE MINIMUM IRRIGATION.

**4.06 CONFORMANCE LETTER:**

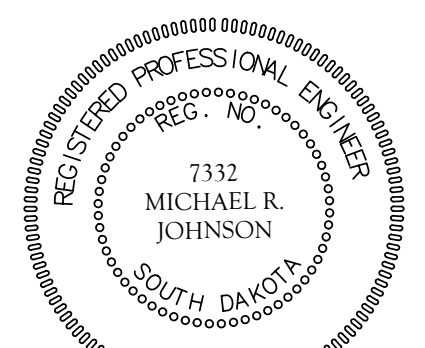
- A. IF A CONFORMANCE LETTER IS REQUIRED, IT MAY BE PROVIDED UNDER A SEPARATE PROPOSAL.
- B. IN ORDER TO PROVIDE A CONSTRUCTION CONFORMANCE LETTER, THE FOLLOWING ITEMS WILL BE REQUIRED:
  - B.1. FOUNDATION INSPECTION/TESTING
  - B.2. SOIL PROPERTY TESTING (SIEVE, SHEAR, MOISTURE, ETC.)
  - B.3. SOIL COMPACTION TESTING
  - B.4. INSPECTION LOGS
  - B.5. 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.)



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No.	Date	Revision	By
1	08/30/21	REVISED WALL PER REQUEST	LRB
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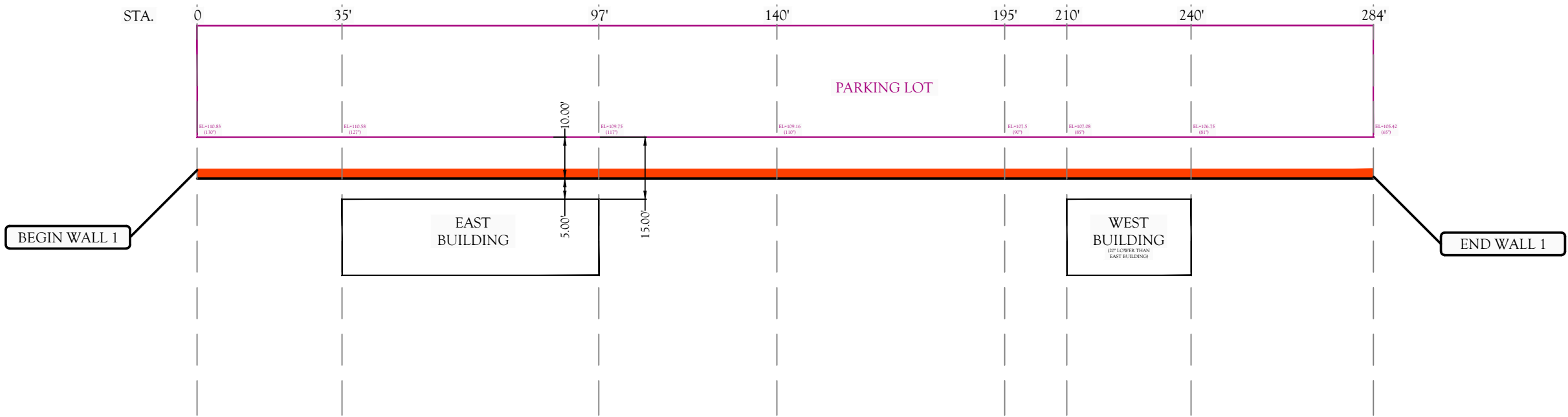
Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: N.T.S.		Project No: 21-0674
Date: AUG 26, 2021	Title: SPECIFICATIONS: QUALITY ASSURANCE	Sheet No: 2.03



*Michael R. Johnson*  
 MICHAEL R. JOHNSON, P.E. Date: 8/30/2021

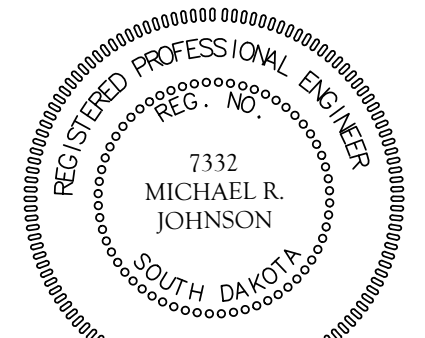
**NOTES:**

1. THE SITE PLAN SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. IT WAS REPRODUCED FROM A SKETCH (SHOWING WALL LENGTHS AND PARKING LOT HEIGHTS) BY MIDWEST READY MIX, PROVIDED ON 08/16/21. REFER TO PROJECT PLANS FOR GRADING, DRAINAGE, PAVING, AND ALL OTHER CIVIL ASPECTS OF THE PROJECT. ANY MODIFICATIONS TO THE REFERENCED PLANS MAY IMPACT THE RETAINING WALL DESIGN AND SHALL BE PROVIDED TO CDP TO CONFIRM THESE PLANS ARE STILL VALID.
2. THE APPROXIMATE LOCATION OF UTILITIES KNOWN TO EXIST AS SHOWN ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION.



**LEGEND:**

WALL LOCATION



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Designed By: LRB  
 Scale: 1" = 30'  
 Date: AUG 26, 2021

Project: 1401 NORTH CLEVELAND AVE  
 SIOUX FALLS, SOUTH DAKOTA

Title: SITE PLAN

Registration No:	7332
Project No:	21-0674
Sheet No:	3.00

Date: 8/30/2021  
 MICHAEL R. JOHNSON, P.E.

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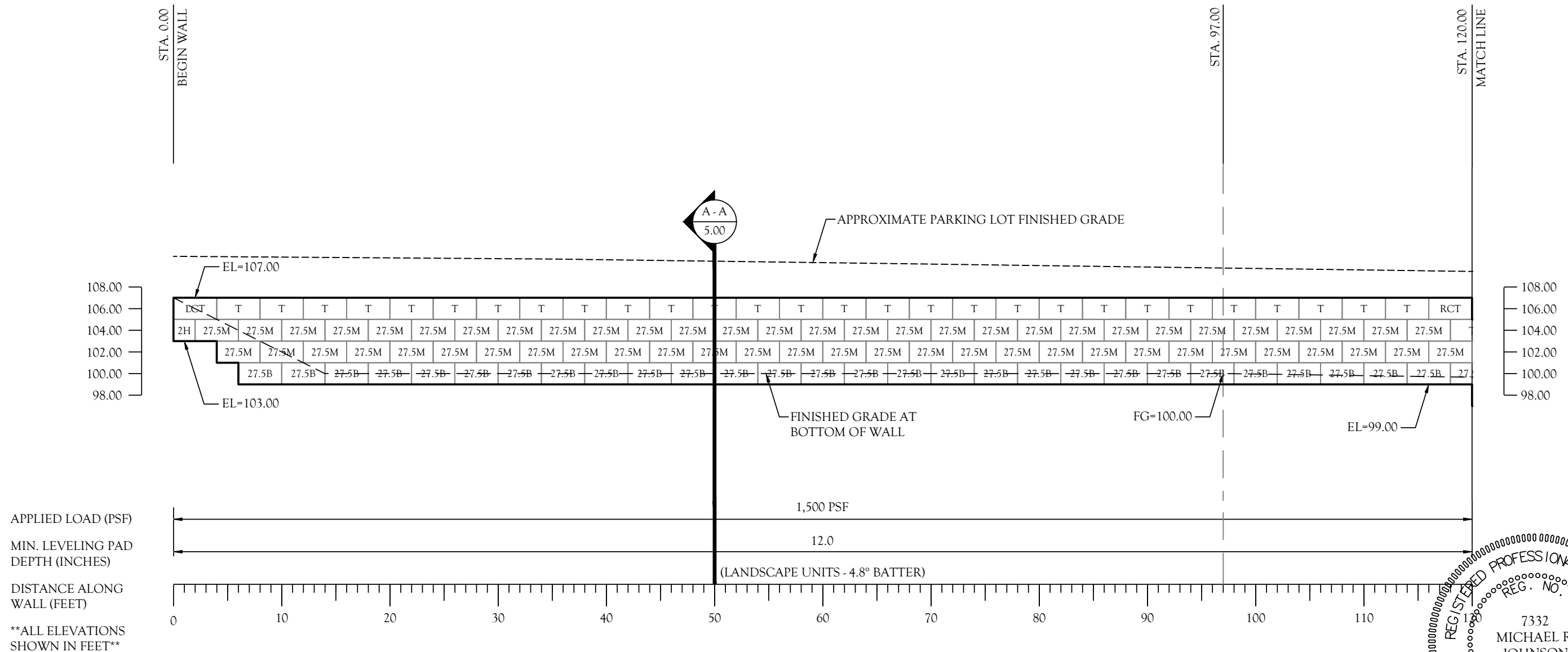
**GENERAL NOTES:**

1. SEE SHEET 5.00 FOR SECTION A - A.
2. ELEVATIONS SHOWN ARE FOR WALL HEIGHT REFERENCE ONLY.

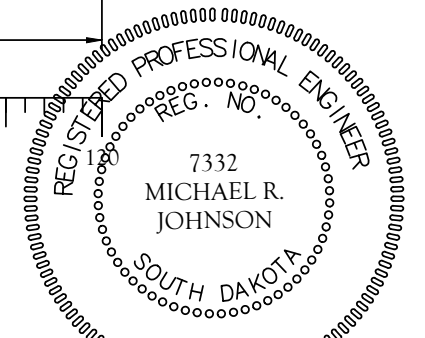
MONSTER BLOCK LANDSCAPE BLOCK KEY		
LCT	LEFT CORNER TOP BLOCK	1
RCT	RIGHT CORNER TOP BLOCK	5
T	TOP BLOCK	67
27.5M	STANDARD 27.5" LANDSCAPE MIDDLE BLOCK	137
2H	27.5" HALF BLOCK	1
27.5B	STANDARD 27.5" LANDSCAPE BASE BLOCK	68

WWW.MONSTERBLOCK.COM

CONTRACTOR SHALL CONFIRM ALL QUANTITIES



**MONSTER BLOCK WALL 1 - FRONT FACE ELEVATION**



**CDP**

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Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: 1" = 10'	Title: WALL 1 ELEVATION	Project No: 21-0674
Date: AUG 26, 2021		Sheet No: 4.00

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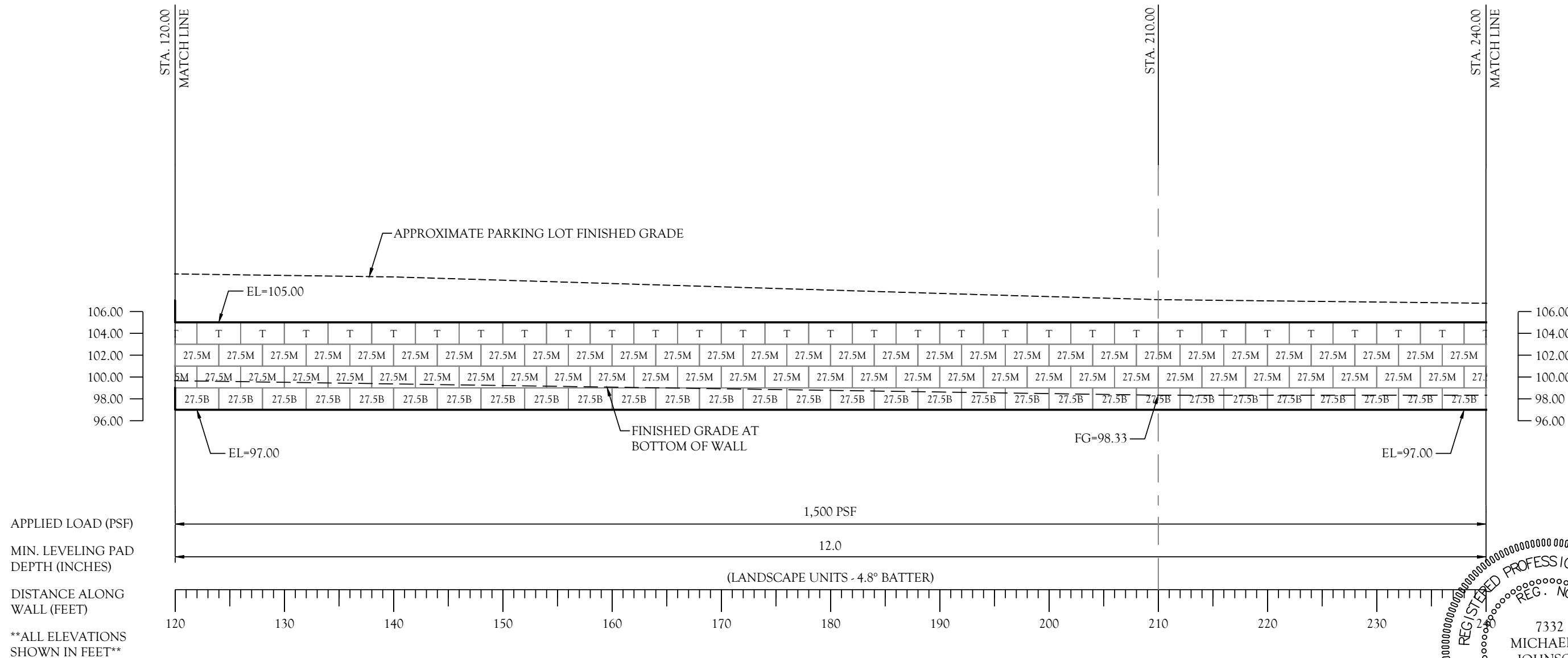
Date: 8/30/2021

GENERAL NOTES:

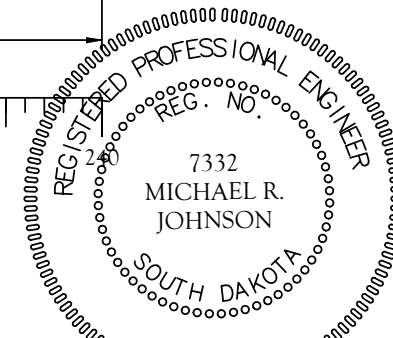
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 CONTRACTOR SHALL CONFIRM ALL QUANTITIES



MONSTER BLOCK WALL 1 - FRONT FACE ELEVATION



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Scale: 1" = 10'	Title: WALL 1 ELEVATION	Project No: 21-0674
Date: AUG 26, 2021		Sheet No: 4.01

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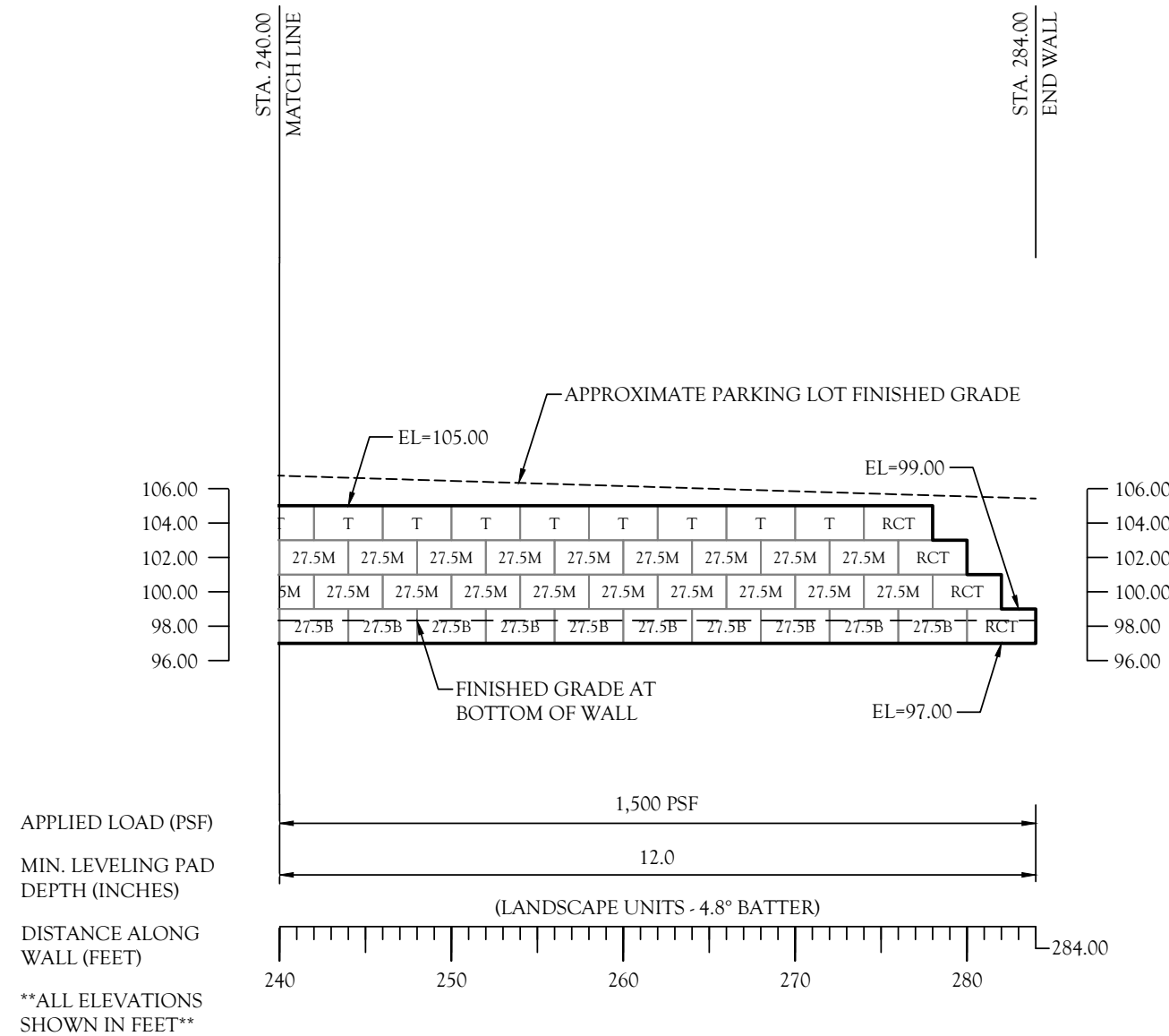
GENERAL NOTES:

- 1. ELEVATIONS SHOWN ARE FOR WALL HEIGHT REFERENCE ONLY.

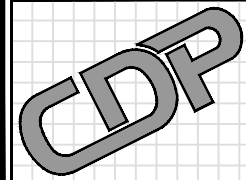
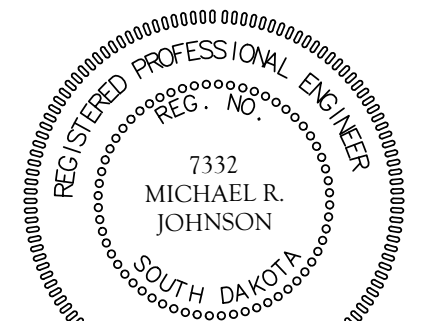
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MONSTER BLOCK WALL 1 - FRONT FACE ELEVATION



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Scale: 1" = 10'	Title: WALL 1 ELEVATION	Project No: 21-0674
Date: AUG 26, 2021		Sheet No: 4.02

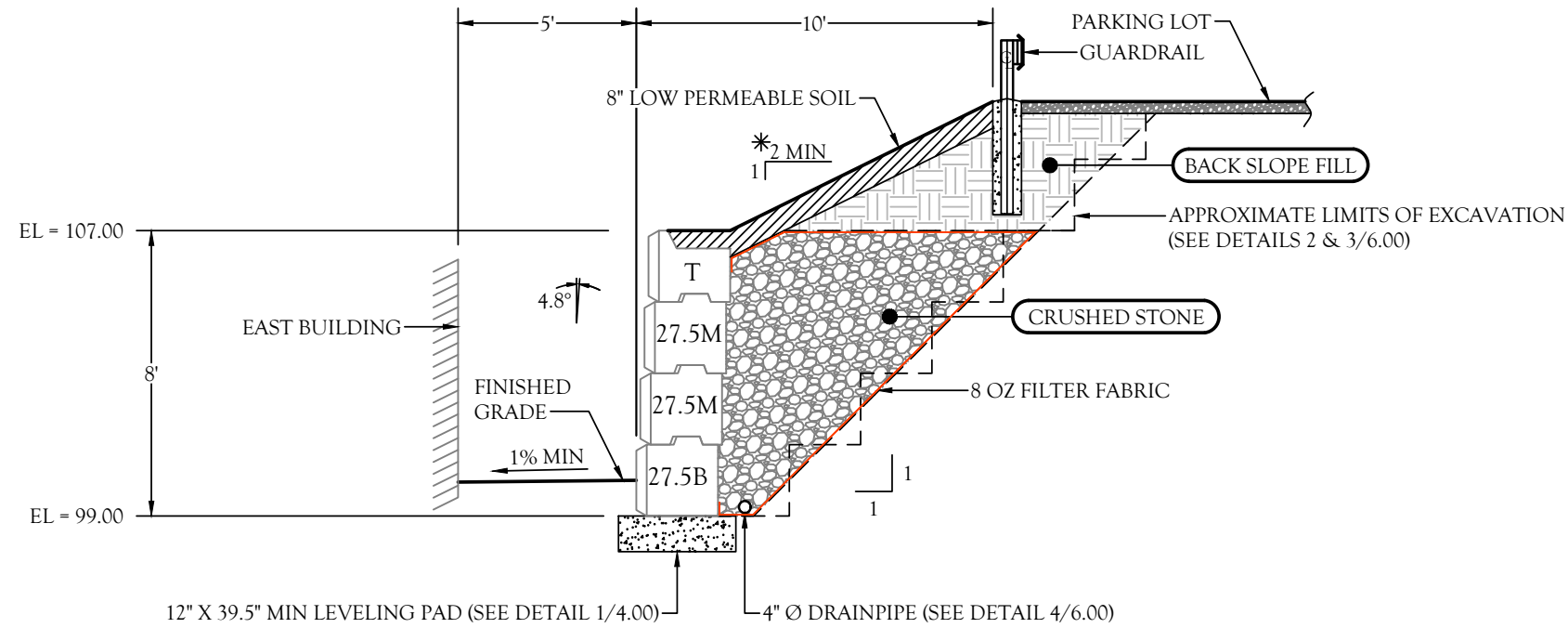
Signature: *Michael R. Johnson*  
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**GENERAL NOTES:**

1. THE SECTION SHOWN IS A REPRESENTATIVE WALL SECTION. THE WALL HEIGHTS, ELEVATIONS, TOE SLOPES, AND BACK SLOPES VARY ACCORDING TO THE ELEVATION PLAN AND SITE PLAN RESPECTIVELY. SECTIONS AND DETAILS APPLY TO SAME AND SIMILAR CONDITIONS UNLESS SPECIFICALLY NOTED OTHERWISE.
2. THE WALL SHALL BE BACKFILLED UP AT A 1H:1V BEGINNING 12" BEHIND THE BACK OF THE BOTTOM UNIT TO THE TOP OF WALL ELEVATION WITH 100% FREE DRAINING, WASHED, ANGULAR CRUSHED STONE. WRAP THE CRUSHED STONE WITH 8 OZ. FILTER FABRIC.
- \*3. THE SLOPE BEHIND THE WALL SHALL NOT BE GRADED ANY STEEPER THAN A 2H:1V. DEPENDING ON ACTUAL SITE GRADES, SLOPE MAY NEED TO BE EXTENDED INTO THE PARKING LOT SLIGHTLY TO MAINTAIN A MAX 2H:1V SLOPE.



**GRAVITY WALL SECTION A - A**  
(WALL 1 SECTION SHOWN AT STA 50')

CDP

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No.	Date	Revision	By
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Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: 1" = 5'		Project No: 21-0674
Date: AUG 26, 2021	Title: SECTION A - A	Sheet No: 5.00

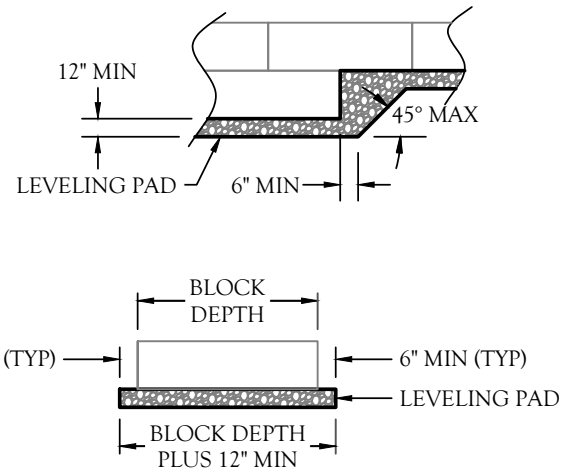
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**NOTES:**

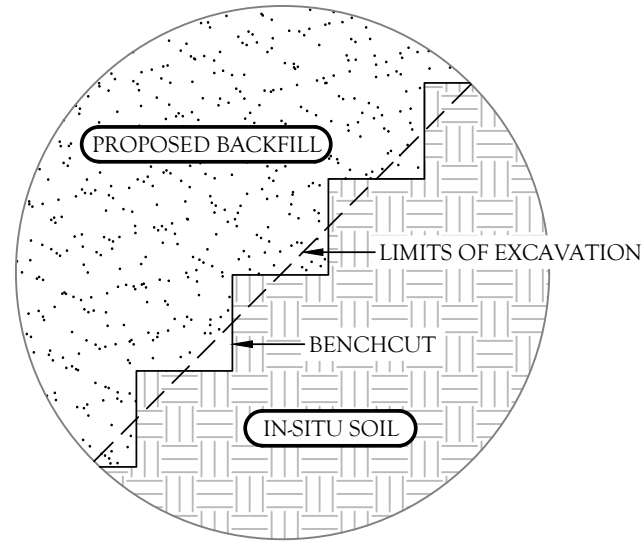
1. THE LEVELING PAD SHALL BE PER SPECIFICATION 2.05.
2. THE BASE FOUNDATION SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF THE LEVELING PAD.
3. IF THE LEVELING PAD IS AT AN ELEVATION LOWER THAN THE 100-YEAR HIGH WATER LEVEL IN FRONT OF THE WALL, THE LEVELING PAD, UNLESS CONCRETE, SHALL BE WRAPPED WITH AN 8OZ. MINIMUM FILTER FABRIC.



1  
6.00 LEVELING PAD  
SCALE: N.T.S.

**NOTES:**

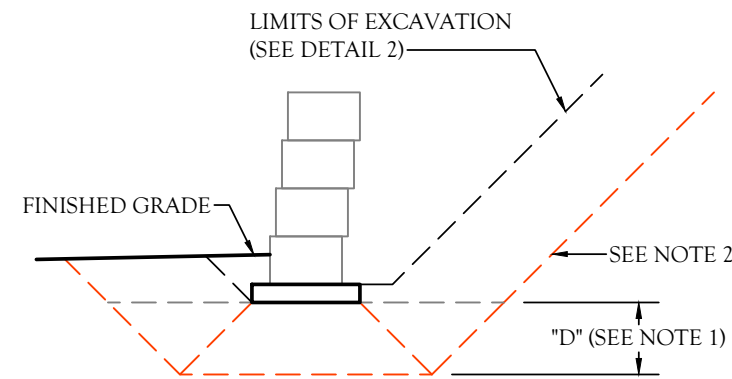
1. DURING WALL EXCAVATION, BENCHCUT LIMITS OF EXCAVATION, WHEN ONSITE SOILS ALLOW, TO INCREASE BOND BETWEEN THE IN-SITU SOILS AND NEW BACKFILL.
2. BENCHCUT USING MINIMUM 24-INCH HORIZONTAL BENCHES (TYPICAL).



2  
6.00 TYPICAL BENCHCUT DETAIL  
SCALE: N.T.S.

**NOTES:**

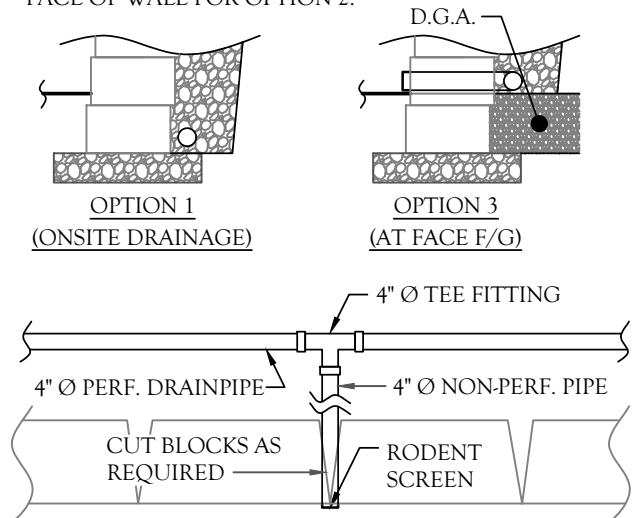
1. UPON EXCAVATION, WHERE UNSUITABLE SOILS ARE FOUND, SUBCUT TO DEPTH "D" AS REQUIRED BY THE ONSITE GEOTECHNICAL ENGINEER AND REPLACE WITH SUITABLE COMPACTED STRUCTURAL FILL TO ACHIEVE THE REQUIRED BEARING CAPACITY.
2. APPROXIMATE LIMITS OF EXCAVATION VARIES WHERE SUBCUT IS REQUIRED. ACTUAL LIMITS AND SIDE SLOPES SHALL BE DETERMINED BY OSHA REGULATIONS OR THE ONSITE GEOTECHNICAL ENGINEER.



3  
6.00 TYPICAL GRAVITY WALL SUBCUT DETAIL  
SCALE: N.T.S.

**NOTES:**

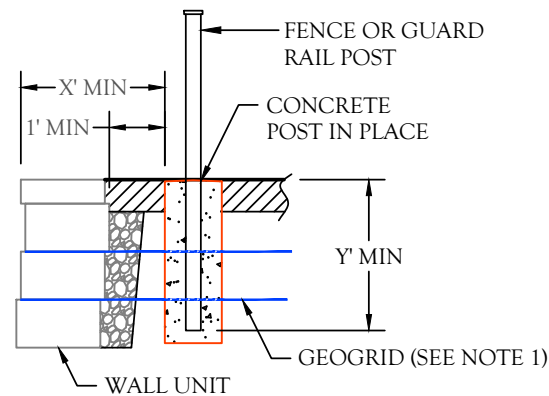
1. 4" DIAMETER CORRUGATED PERFORATED PLASTIC DRAINPIPE WRAPPED WITH A GEOTEXTILE FABRIC.
2. OUTLET INTO ONSITE DRAINAGE SYSTEM (OPTION 1).
3. OUTLET AT 40' O.C. MAXIMUM AND LOW POINTS ALONG WALL. PROVIDE RODENT SCREEN AND NON-PERFORATED PLASTIC PIPE FOR OUTLET THROUGH THE WALL (OPTION 2).
4. A DENSE GRADED AGGREGATE SHALL FOLLOW THE F/G AT FACE OF WALL FOR OPTION 2.



4  
6.00 TYPICAL 4" DRAINPIPE OUTLET  
SCALE: N.T.S.

**NOTES:**

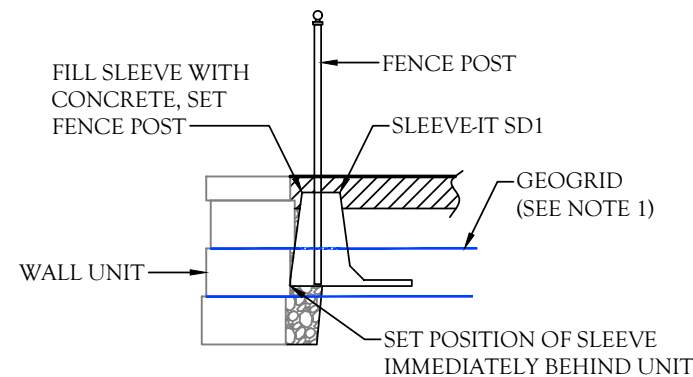
1. PLACE SONOTUBES AT POST LOCATIONS DURING WALL CONSTRUCTION, AND HAND CUT GEOGRID AROUND SONOTUBE (IF APPLICABLE).
2. X=3.0' MIN. AND Y=3.0' MIN FOR STANDARD FENCING; X=3.0' MIN. AND Y=5.0' MIN FOR GUARDRAILS. EDGE OF SONOTUBE SHALL NOT BE CLOSER THAN 1-FOOT FROM THE BACK OF THE CLOSEST BLOCK.
3. SEE NCMA FOR ADDITIONAL REQUIREMENTS.
4. FENCE AND RAIL DESIGNED BY OTHERS.



5  
6.00 TYP. FENCE & GUARDRAIL INSTALL  
SCALE: N.T.S.

**NOTES:**

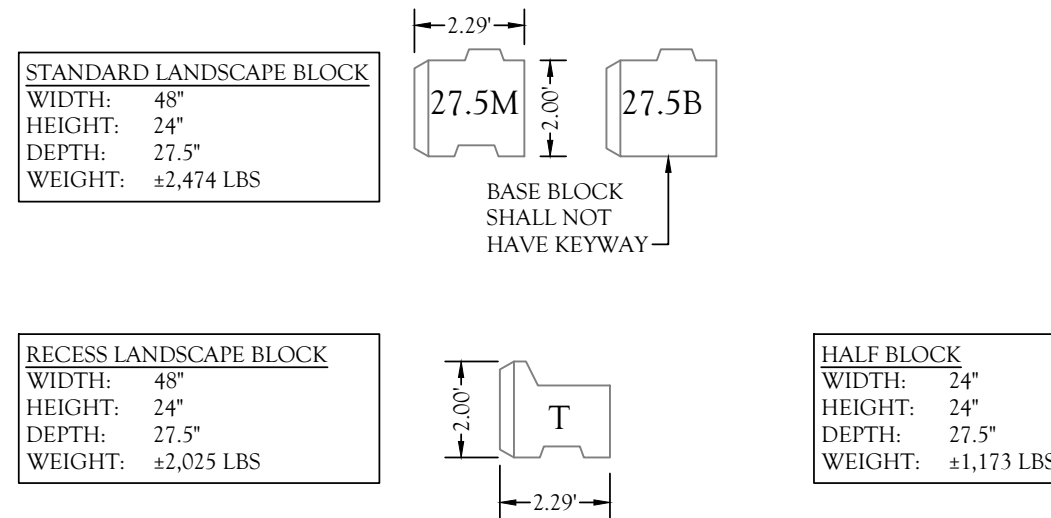
1. PLACE SLEEVE-IT SD1 AT POST LOCATIONS DURING WALL CONSTRUCTION, AND HAND CUT GEOGRID AROUND SLEEVE-IT (IF APPLICABLE).
2. FENCING SYSTEMS APPROVED FOR USE WITH THE SLEEVE-IT SD1 ARE LIMITED TO THE FOLLOWING HEIGHTS: CHAIN LINK UP TO 8 FT, PRIVACY UP TO 6 FT (WOODEN, PVC, METAL). MAXIMUM POST SIZE 4" x 4".
3. SEE STRATA SYSTEMS INC. SLEEVE-IT FENCE POST INSTALLATION DETAILS FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.
4. FENCE DESIGNED BY OTHERS.



6  
6.00 OPTIONAL FENCE INSTALLATION  
SCALE: N.T.S.

**NOTES:**

1. REFER TO MONSTER BLOCK LANDSCAPE BLOCK INSTALLATION AND ENGINEERING MANUAL FOR ADDITIONAL DETAILS.



7  
6.00 LANDSCAPE BLOCK INFORMATION  
SCALE: N.T.S.

No.	Date	Revision	By
1	08/30/21	REVISED WALL PER REQUEST	LRB
2			
3			
4			
5			
6			

Designed By: LRB	Project: 1401 NORTH CLEVELAND AVE SIOUX FALLS, SOUTH DAKOTA	Registration No: 7332
Scale: AS NOTED		Project No: 21-0674
Date: AUG 26, 2021	Title: DETAILS	Sheet No: 6.00