

PART 1: GENERAL

1.01 Description

- A. The work to be performed includes sourcing, providing and installing concrete retaining wall blocks to the lines and grades as specified on the project construction drawings and as may be further specified herein.
- B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and backfill to the lines and grades shown on the construction drawings.
- C. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction shop drawings.

1.02 Reference Standards

- A. ASTM D448 Sizes of Aggregate for Road and Bridge Construction.
- B. AASHTO T 27 Sizes of Aggregate.
- C. ASTM D698 Laboratory Compaction Characteristics using Standard Effort.
- D. AASHTO T 96 Aggregate percent of wear.

1.03 Quality Assurance

- A. Owner shall be responsible for soil testing, compaction testing and inspection quality control during earthwork operations.

PART 2: MATERIALS

2.01 Definitions

- A. ReCon Retaining Wall Unit - A precast concrete, segmental facing block provided by an authorized manufacturer under license to ReCon Retaining Wall Systems, Inc.
- B. Base Leveling Pad - An unreinforced cast-in-place or compacted crushed stone pad which serves as a flat surface for placing the initial course of precast units.
- C. Drainage Aggregate - Clean 25.4mm minus crushed angular rock located immediately behind the retaining wall units to facilitate drainage and help compaction in close proximity to the retaining wall units.
- D. Foundation Soil - Soil zone immediately beneath the retaining wall facing units and the wall leveling pad.
- E. Retained Soil - Soil immediately behind the retaining wall facing drainage aggregate or reinforced backfill if present.
- F. Subsurface Drainage System - A system for removing water from behind the wall and channeling it to a point of positive drainage.

2.02 ReCon Retaining Wall Units

- A. ReCon wall units shall have a minimum 28-day compressive strength of 35 MPa. Standard weight concrete shall have a 5-9% air entrainment by volume. Weight of concrete shall be 21kN/m³.
- B. Texture on the face of the block shall be North Shote Granite.
- C. Color of block shall be Natural Concrete.
- D. Block shall be fabricated in accordance to S.D. Ireland Companies standard drawings.

2.03 Geogrid

- A. Geogrid shall be the type as shown on the drawings having the proerty requirements described within the manufacturer's specifications and required by the design.

2.04 Base Leveling Pad Material

- A. As shown on the construction drawings, material shall consist of compacted granular backfill for structures (Subsection 704.08A) meeting the sieve criteria shown.

Sieve Size	% Passing
25mm	100
19mm	75-100
4.75mm	0-10
0.075mm	0-5

2.05 Drainage Aggregate

- A. Drainage Stone shall consist of drainage aggregate for structures (Subsection 704.16) meeting the sieve criteria shown:

Sieve Size	% Passing
25mm	100
19mm	90-100
9.5mm	20-55
4.75mm	0-10
2.36mm	0-10

2.06 Reinforced Backfill (Select Granular)

- A. Reinforced backfill shall be free of debris or organic material meeting the following gradation:

Sieve Size	% Passing
50mm	100
19mm	75-100
4.75mm	20-100
0.07mm	0-12

Plasticity Index (PI)<6

- B. The maximum aggregate size shall be limited to 200mm unless field tests have been performed to evaluate potential strength reduction to installation.
- C. Material can be site excavated material when the above requirements are met. Unsuitable soils for backfill (high plastic clays or organic materials) shall not be used in the reinforced soil mass.
- D. Contractor shall submit reinforced fill sample and test results to the Architect/Engineer for approval prior to construction.

2.07 Low Permeable Soil

- A. Low permeable soil shall have an infiltration rate less than 10mm/hour, such as those classified in Hydrologic Soil Groups (HSG) C and D.

PART 3: EXECUTION

3.01 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.

3.02 Foundation Soil Preparation

- A. Foundation soil shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Geotechnical Engineer. Unsuitable soils shall be removed and replaced with acceptable material.
- B. Over-excavated areas shall be backfilled with approved compacted backfill material.

3.03 Base Leveling Pad

- A. Leveling pad materials shall be placed upon approved foundation as shown on the construction drawings to a minimum thickness of 600mm.
- B. Aggregate material shall be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to 95% of Standard Proctor Density as determined in accordance with ASTM D698. For crushed rock, material shall be densely compacted as determined by visual observation.

3.04 Unit Installation

- A. The first course of concrete modular wall units shall be carefully placed on the base leveling pad. Each unit shall be checked for level and alignment.
- B. Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from a base line.
- C. Sweep excess material from top of units and install next course. Ensure that each course is completely backfilled and compacted prior to proceeding to next course.

3.05 Geogrid Installation

- A. Geogrid shall be laid at the proper elevations and orientation as shown on the construction drawings or as directed by the Engineer. embed grid over the tongue and groove and up the unexposed front edge of the block.
- B. The geogrid shall be pulled taut (75 kg/m) to eliminate loose folds and pretension the reinforcement. Stake or secure back edge of geogrid prior to and during backfill and compaction.
- C. Correct orientation (roll direction) of the geogrid shall be verified by the contractor.

3.06 Fill Placement


- A. Backfill material shall be placed with a maximum of 203mm lifts and compacted to 95% of Standard Proctor Density. As determined in accordance with ASTM D698. The in place moisture content shall not exceed the optimum moisture content as determined in accordance with ASTM D698 and be no lower than 2% below optimum moisture content.
- B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack or loss of pretension of the geogrid.
- C. Backfill shall be placed from the wall back towards the embankment to ensure that the geogrid remains taut.
- D. Only hand-operated compaction equipment shall be allowed within 1.000m of the back surface of the concrete units.
- E. Tracked construction equipment shall not be operated directyl on the geogrid. A minimum backfill thickness of 150mm is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles shall be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds, (less than 16 kmph). Avoid sudden braking and sharp turning.

3.07 Capstone Installation

- A. Clean and apply adhesive to top course of ReCon wall units prior to placing capstone.
- B. Capstones shall be set in a bed of adhesive designed to withstand moisture and temperature extremes, remain flexible, and shall be specifically formulated for bonding masonry to masonry.
- C. Trim sides of interior capstones to insure proper fit of wall cap. Do not leave cut surfaces exposed to view in the finished wall.

3.08 Guard Rail Installation

- A. At each proposed guard rail post location, the Contractor shall install a one-foot diameter Sono-Tube or approved equal.
- B. Sono-Tubes shall be installed to a depth equal to the maximum depth of each individual guard rail post and shall be centered to each individual guard rail post. Provision for the installation of these Sono-Tubes shall be made in each layer of geogrid by the Contractor.
- C. Once all of the layers of geogrid and backfill material have been installed, the Contractor shall install the guard rail post in each Sono-tube and backfill with Class B concrete meeting the requirements of Section 501.
- D. Sono-tubes shall be cut, as necessary, to an elevation flush with the finished grade.
- E. Furnishing and installing the Sono-tubes and Class B concrete backfill shall be considered incidental to Item 621.20 Steel Beam Guardrail.



CIVIL DESIGN
PROFESSIONALS
8609 LYNDALE AVENUE SOUTH, SUITE 200
BLOOMINGTON, MN 55420
PHONE: (952) 303-5312 | FAX: (763) 392-1989
WEBSITE: WWW.CDP-US.COM

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Curtis J. Derichs
Curtis J. Derichs, P.E.
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