1. **GENERAL**
   1. **SECTION INCLUDES**
      1. Earth retention systems outside building area.
   2. **REFERENCES**
      1. ACI - American Concrete Institute.
      2. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
      3. ASTM C150 - Portland Cement.
      4. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of soil using modified effort.
      5. PCI MNL-116 - Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.
      6. PCI MNL-120 - Design Handbook - Precast and Prestressed Concrete.
      7. PCI MNL-123 - Manual on Design of Connections for Precast Prestressed Concrete.
      8. Chapter 18 - California Building Code.
   3. **GENERAL REQUIREMENTS**
      1. Existing Conditions: Contractor shall examine the site of the work and verify existing conditions under which work will be performed, including subsurface conditions.
      2. Drainage and Pumping: Maintain excavations and site free from water throughout work. Run surface water or seepage to sumps with float-switch controlled pumps. Pump to drainage system as approved by Architect.
      3. Protection: Provide and maintain protection to retain earthbanks and protect adjoining existing monuments, grades and structures from caving, sliding, erosions or other damage and suitable forms of protection against bodily injury or property damage.
      4. Bulkheads and shoring shall conform to Occupational Safety and Health Act Construction Safety Orders, Title 8, Industrial Relations, California Code of Regulations.
      5. Provide barricades and berms at top of slopes to prevent water from flowing over top.
      6. Tests: Contractor shall obtain and pay for all tests required for work under this section.
      7. Work of this section is subject to inspection and approval by the Geotechnical Engineer. Such inspection will be paid for by the Owner.
   4. **SOILS INFORMATION**
      1. Geotechnical investigation has been prepared under the direction of the Owner. Investigation is hereby referenced as information for the work of this section. Architect assumes no responsibility of or conclusions the Contractor may draw from information provided. Copy of investigation is available at Architect's office.
   5. **SUBMITTALS**
      1. Shop Drawings: Indicated locations, details, reinforcement, dimensions and profiles of precast units and assembled systems.
      2. Manufacturer's Installation Instructions: Indicate sequence of installation, required site access, types of equipment required and phasing of operations.
   6. **QUALITY ASSURANCE**
      1. Conforming Section 1609A, California Building Code.
   7. **FIELD MEASUREMENTS**
      1. Verify that survey benchmark and intended elevations for the Work are as indicated on Drawings.
2. **PRODUCTS**
   1. **MATERIALS**
      1. Excavated material, Imported Fill and Backfill: As specified in Section 31 23 13 and as approved by the Geotechnical Engineer prior to placement on the site.
      2. Earth Retention System: Criblock Interlocking concrete cribwall, manufactured by Retaining Walls Co., Vista, CA, or equal as approved in accordance with Division 1 for substitutions.
         1. Components: 4 feet 6 inches, stretcher lengths as indicated, single wall and double wall depth.
         2. Concrete: Minimum 3250 psi.
         3. Reinforcing: ASTM A615, 60 ksi.
3. **- EXECUTION**
   1. **PRE-CONSTRUCTION INSPECTION**
      1. Inspection of the Site: Inspect the entire site prior to commencing work and determine the character of the materials to be encountered and all conditions affecting the work.
      2. Existing Site Conditions: Ascertain the location of all existing underground structures and facilities (if any) and take adequate precautions to avoid damage to any active service or structure.
      3. Repair or replace all property damaged by the work of this section immediately.
      4. Piping and conduit encountered shall be adequately supported and protected until permanent support is provided or removal of same is approved by the Architect.
      5. Existing Utilities: After approval of Architect, totally remove abandoned pipes and utilities found in excavations. Cap or plug at both ends all abandoned utility piping, conduit and lines encountered to provide a complete seal. Provide plugs or seals of concrete or threaded caps unless otherwise approved.
      6. Support and protect existing pipes and conduits where required during construction.
      7. Loose fill and natural on-site soils that are approved by the Geotechnical Engineer may be stock-piled and used as fill material.
      8. After clearing and removal of loose fill, the exposed surfaces shall be inspected and approved by Geotechnical Engineer prior to placing fill.
      9. Backfilling: Conform to Section 02316.
   2. **SITE PREPARATION**
      1. Prior to placement of units, remove loose soil to a depth indicated on shop drawings.
      2. Scarify or blade mix exposed soil to a depth of 6 inches below exposed grade.
      3. Geotechnical Engineer shall inspect scarified areas.
      4. After approval has been received from Geotechnical Engineer to proceed, bring to optimum moisture content and re-compact to a density as required by the manufacturer, per ASTM D1557.
      5. Bring grade to sub-grades indicated or to accommodate conditions in 8 inch maximum loose lifts. Compact to density required by manufacturer per ASTM D1557.
      6. No jetting or flooding permitted.
   3. **INSPECTION**
      1. Grading operations for earth retention shall be inspected by the Geotechnical Engineer. No fill shall be placed on any prepared surface until that surface has been inspected and approved by the Geotechnical Engineer.
      2. Completed earthwork, including cuts, fills and earth bank slopes (cut or fill) shall be the Geotechnical Engineer to determine suitability of exposed soils.
   4. **SEASONAL LIMITS**
      1. No fill material shall be placed, spread or rolled while it is frozen or thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the Geotechnical Engineer indicate that the moisture content and density of the fill are as previously specified.
   5. **STOCKPILING OF FILL MATERIAL**
      1. Fill: Soil removed that is suitable for fill shall be stockpiled separately on the site.
      2. Stockpile Locations: Materials shall be stockpiled in locations approved by the Architect and convenient for future placing, causing the least disturbance to the site and away from areas of actual building construction.
   6. **DISPOSAL OF EXCESS MATERIAL**
      1. Legally dispose of excess materials. Disposal shall be in areas off the Owner's property, unless otherwise approved by the Architect.

**END OF SECTION**