

SECTION 02411

ROCK REMOVAL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Measurement and removal of rock; rock being defined as material in ledges, bedded deposits and un-stratified masses any of which cannot be removed with use of Caterpillar 262D Skid Loader with H 65E hammer bundle or similar equipment or mini excavator. ~~D10R bulldozer with ripper mount (or equal).~~
- B. Rock to be removed shall be uncovered and measured in presence of Landscape Architect or Owner. ~~Any rock removed before such inspection shall be construed as general excavation and no additional compensation shall be allowed for its removal.~~

1.02 REFERENCES

- A. Standard Specifications for Public Works Construction (SSPWC), Current Edition.

1.03 DEFINITIONS

- A. Site Rock: Solid mineral material with a volume in excess of 1/3 cubic yard capacity that cannot be removed by ripping, without drilling or blasting.
- B. The identification and classification of rippable and non-rippable materials shall be determined in the field by a representative of the Owner. The basis for the distinction shall be made by observation of a performance test of a skid steer loader or equal equipped with a hammer bundle noted above or mini excavator. ~~using a Caterpillar D10R tractor (or equal) equipped with a single shank hydraulic ripper.~~ Heavy ripping effort by an experienced operator shall be performed to make the determination.
- C. Trench Rock: Solid mineral material with a volume in excess of 1/6 cubic yard or solid material that cannot be removed with a Caterpillar 225 mini excavator or skid loader or equivalent, driven by an experienced operator, without drilling.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate the proposed method of intended rock removal method.

1.05 SCHEDULING

- A. Schedule work to avoid working hours of disruption to occupied buildings nearby. If rock outcroppings are encountered that conflict with proposed improvements, the landscape architect shall be contacted to determine if a re-alignment of the proposed improvements is feasible.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Expansive Grout: The following or similar products may be used, DexPan, EcoBust, Bustar.
- ~~B. Rock Definition: Solid mineral material with a volume in excess of 1/3 cu yd or solid material that cannot be removed with a 3/4 cubic yard capacity power shovel.~~

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify site conditions and note irregularities affecting work of this Section.
- B. Beginning work of this Section means acceptance of existing condition.

3.02 ROCK REMOVAL ~~MECHANICAL METHOD~~

- A. Follow all the manufacturer's instructions regarding the drill pattern and air and surface temperatures. Drill to at least 85-90% of desired depth. ~~Excavate for and remove rock by mechanical method.~~
- B. Remove excavated material from site and place in Owner's stockpile.
- C. Correct unauthorized rock removal or overbreak in accordance with backfilling and compaction requirements of Section 0231631-22-00. ~~{Correct unauthorized rock removal in accordance with directions of Architect, at no extra cost to the Owner.}~~
- D. Roadway Excavation: Material classified as rock by these specifications shall be excavated to depth of 1 foot below sub-grade of proposed pavement base course as shown on plans within limits of roadbed and excavation backfilled with suitable on-site material, to proposed sub-grade elevation. Backfill shall then be compacted to density not less than 90% of maximum dry density as defined by ASTM D 1557 (Modified Proctor). If, due to construction operations, rock is unintentionally excavated more than 1'-0" below proposed sub-grade, excavation shall be back-filled with suitable granular material and compacted as above specified. No un-drained pockets shall be left in surface of rock. Surface of rock shall be free of projecting ribs, points or crevices.
- ~~E. Structures: Material classified, as rock by these specifications shall be excavated to dimension of footing or foundation seal. No rock shall project inside such dimensions.~~
- ~~F. Floor Slabs: Material classified as rock by these specifications shall be excavated to depth of 1 foot below sub-grade of floor slabs for main plant and ancillary structures.~~
- ~~G. Seeded Areas: Material classified, as rock by these specifications shall be excavated to depth of 2 feet below finished grade for areas that are to be seeded.~~

H.E. Pipe Structures: When depth of rock removal below bottom of pipe structure is not otherwise specified, rock shall be removed to 8" below bottom of pipe, except for water service lines and pipe under drains where depth of rock removal shall be 4 inch below bottom of pipe.

H.F. Foundations: When concrete foundations are to rest on rock, rock surfaces shall be cleaned of loose material, cleaned and cut to firm surface, either level, stepped or serrated. All seams shall be cleaned out and filled with grout.

H.G. Measurement. Rock excavation for structures, other than boulders, shall be measured in its original position and volume in cubic yards computed by method of average end areas.

3.03 DISPOSAL

A. Rock excavation that conforms to requirements as suitable fill may be used in embankments as herein specified. Boulders and other unsuitable materials shall be removed from, or disposed of on-site as directed by the Landscape Architect in Owner's stockpile area.

3.04 FIELD QUALITY CONTROL

A. Provide for visual inspection by the Geotechnical Engineer of bearing surfaces and cavities formed by removed rock.

END OF SECTION