

SECTION 511 - STONE BASE

511.01 DESCRIPTION

Work consists of all labor, materials, equipment and services necessary for and incidental to the execution and completion of preparation of stone base for both pervious and impervious installations, as called for in the plans and specifications herein.

511.02 REFERENCE STANDARDS

ASTM	D2940
MSHA	Specifications, Section 901
AASHTO	M43, T180
MSMT	321
M-NCPPC	Section 200 – Excavation, Filling and Grading

511.03 DEFINITIONS

Not Applicable

511.04 MATERIALS

- A. Graded Aggregate Sub-base (ASTM D2940): This material shall be in accordance with MSHA (2008) Specifications Section 901.
- B. #2 / #3 Stone: This material shall be in accordance with AASHTO M43, No.2. Recycled aggregate (RC-2) may be used as substitute with material certification and with approval of M-NCPPC Construction Manager
- C. No. 57: This material shall be in accordance with MSHA (2008) Specifications, Section 901, (No. 57) stone and AASHTO M43.
- D. Bank Run Gravel Sub-base (ASTM D2940). This material shall be in accordance with MSHA (2008) Specifications, Section 901.
- E. Crusher Run Aggregate (CR-6) (ASTM D2940): This material shall be in accordance with MSHA Specifications, Section 901. Recycled aggregate (RC-6) may be used as substitute with material certification and approval of M-NCPPC Construction Manager.
- F. Filter Stone (Pervious Areas): All stone base used for infiltration/recharge shall be certified by the supplier and meet MCDPS standards as washed material.
- G. Sand (Pervious Areas): All sand used for infiltration/recharge shall meet MCDPS standards for washed silica sand.
- H. Recycled concrete: Recycled concrete (various sizes) may be used as substitute with material certification and approval of Construction Manager.

511.05 SUBMITTALS

Provide submittals for each stone type.

511.06 QUALITY ASSURANCE

Not Applicable

511.07 CONSTRUCTION

- A. After completion of excavation, filling and grading, it shall be ensured that the line, grade, shape, elevations are in accordance with and shall meet the final grades as shown in the plans. The earth subgrade shall not be frozen at time of stone/sand placement. See Section 200 Excavation, Filling and Grading for tolerances of the subgrade.
- B. The area where the stone base is to be located shall be free of topsoil or any other unsuitable material. The earth sub-base shall not be frozen
- C. The M-NCPPC Construction Manager, and Geotechnical Engineer as required, shall approve the earth subgrade before initial lift of sand/stone is placed.
- D. The stone material as specified in the plans and this specification shall then be deposited and spread in the area (roads, parking lots, tennis courts, multi-use courts, etc.) as required to the depth of fully compacted stone as shown in the plans, details, list of items, contract, etc. The material shall be spread on earth sub-base, foundations, or preceding layer (previously compacted to required density), in a manner that will prevent segregation of coarse and fine particles. Proper equipment shall be used to indicate the required depth for the spreading of stone layers. An approved machine capable of spreading the material to the desired width shall be used.
- E. Compaction requirements: The moisture content of stone base material shall be maintained within 3% of the material's optimum moisture. Note that no compaction shall occur across intended Pervious Area prior to minimum 6" of sand/stone is placed. The maximum dry density for bank run gravel shall be in accordance with AASHTO T180. For graded aggregate sub-base, the dry density shall be in accordance with MSMT 321. Compaction shall occur in lifts not to exceed 6". Pervious areas shall not receive excessive compaction. Also, see Section 200 Excavation, Filling and Grading
- F. After the compaction has been completed by the Contractor, the M-NCPPC Construction Manager or Inspector will witness the stone base surface proof rolling by contractor and if he is not satisfied with the compaction will require the Contractor to re-compact, remove the stone to check the sub-base and adjust it if necessary, delay the rolling to permit drying of the subgrade, reconstruction of the entire base or sub-base, or request the Geotech engineer or an approved lab check the density of the stone base at the contractor's expense and at no cost to M-NCPPC.
- G. These methods shall apply for each layer/course of stone base, should there be more than one layer of stone base.

H. Tolerances after spreading, laying and compacting a stone base shall be no more than 1/2 inch from designed grade. The compacted thickness of the stone base, duly approved by M-NCPPC, shall be as per plans, sections, and details for the various facilities requiring a stone base.

511.08 MEASUREMENT AND PAYMENT

A. Payment will be full compensation for all material, labor, equipment, tools and incidental items necessary to complete the work. Payment shall be made on a unit rate or lump sum basis as shown in the bid proposal; or shall be considered incidental to other bid items if not specifically listed on bid forms.