S-511 STORM SEWERS: This work shall consist of the construction of storm sewers for the removal of water from collection points, in accordance with these Specifications and as shown on the Plans, the Standard Details, or established by the Engineer.

A. Pipe, including joints, for “Storm Sewer” shall be either Reinforced Concrete meeting the requirements of Section 1900 of the Standard Specifications or Corrugated Polyethylene Pipe (Type S) meeting the requirements of AASHTO M294. Concrete pipe shall be Class III pipe unless stated otherwise on the plans.
B. The trench shall be excavated beginning at the outlet end and proceeding toward the upper end, true to line and grade shown on the Plans or as established by the Engineer. The width of the trench shall be sufficient to lay and backfill the pipe satisfactorily but in no case shall be less than the external diameter of the pipe times two (2). When necessary, the trench shall be adequately shored or sheeted to insure safe and satisfactory construction and backfilling. If tunneling under a railroad or existing street or highway is required, it shall be done by methods which will insure that the railroad, street, or highway is undisturbed during and after the construction and such methods shall be approved by the Engineer before work is begun. If it is necessary to remove an existing street or highway surface in constructing the sewer the surface shall be repaired according to the Standard Details for a "Trench Under Pavement". In no case shall backfill be placed on frozen ground. In no case shall frozen material be used for backfill.
C. The trench shall be backfilled per the Standard Details for the class of bedding called for in these specifications for the type of pipe. All pipes shall be backfilled with SCA-5 bedding, unless otherwise shown on the plans. Minimum cover of soil over the top of the pipe shall be 2 feet.
D. SCA-5 bedding shall be pared or molded to give full support to each pipe as shown in the Standard Details. Notches shall be cut to receive the bell (when bell and spigot pipe is used).
E. The pipe shall be supported for its full length and anchored to prevent floating, if necessary, for concrete encasement.
F. The trenches for all sewers that lie within the roadbed, or beneath entrances, side roads, sidewalks, and other intersecting traveled ways, or which are so designated on the Plans, shall be backfilled to the required grade in accordance with the Standard Detail for a "Trenching in Paved Area".
G. The laying of pipes in finished trenches shall be started at the outlet end so that the spigot ends (when bell and spigot pipe is used) point to the direction of flow. All pipes shall be laid with ends abutting and true to line and grade. They shall be fitted and matched so that when laid in the trench, they will form a sewer with a smooth, uniform invert. Bell ends (when bell and spigot pipe is used) shall be carefully cleaned before pipes are lowered into the trenches. Pipes shall be so lowered as to avoid unnecessary handling in the trench.
H. Plastic joint compound shall be used to joint the sections of RCP’s and applied in accordance with the manufacturer's recommendations.
I. Concrete pipes used as outlet pipes from wetponds, wetlands and lakes, shall use synthetic rubber “O-ring” gasketed joints (APWA-KCMO 2602) O-ring type, circular cross section or “Profile” gasketed joints, non-circular section, conforming to ASTM C1619.
J. Sections of Corrugated Polyethylene Pipe (Type S) shall be joined with a coupler of the bell and spigot type. All joints shall be soil tight.
K. Reinforced concrete box storm sewer shall be constructed of the class of concrete designated on the Plans and the work shall conform to the requirements specified in sections 400 and 700 of the Standard Specifications in regards to “Classification and Proportioning” of concrete, and to “Concrete Structure Construction”.

L. Backfilling of reinforced concrete box storm sewer shall conform to the requirements specified in the section of this specification titled “Backfilling for Structures”.

M. METHOD OF MEASUREMENT: “Storm Sewers” shall be measured by the linear foot of the size of conduit specified in the Plans (i.e. 36", etc.) measured from inside face of structure. Excavation, installation, backfill and restoration of any disturbed areas will be subsidiary to “Storm Sewer” of the specified size.

N. BASIS OF PAYMENT: “Storm Sewer” shall be paid for at the contract unit price, measured as stated above.