

ITB# 01-17
WRF VACUUM TRUCK DISPOSAL SITE

CONCRETE SPECIFICATION

A. Concrete

Concrete shall contain cement, coarse aggregate, and fine aggregate with a minimum of 3,000 pounds compressive strength per square inch at 28 days. Concrete shall meet FDOT Road and Bridge Construction Standards, Section 346, current edition and ACI 301 and 318-08.

Aggregates shall conform to ASTM C33-03 with a maximum size of ¾”.

Water shall be clean and free from salt, oil, or organic substances. Water from local rivers, creeks, or ditches shall not be used.

B. Reinforcement

Reinforcing steel shall meet ASTM A615 Grade 60 and FDOT Road and Bridge Construction Standards, Section 415, current edition. Reinforcing bars shall be continuous unless otherwise noted.

All reinforcing steel shall have the following minimum clear concrete cover:

- Walls = 2 inches, unless otherwise noted
- Against Earth = 3 inches, unless otherwise noted
- All Other Conditions = 2 inches, unless otherwise noted

Reinforcement that is partially embedded in concrete shall not be field bent unless approved by the **COMMISSION**.

At the time of concrete placement, reinforcement shall be free of foreign materials such as mud, oil, or other nonmetallic coatings that decreases the concrete to reinforcing steel bond strength.

C. Subgrade Preparation

The subgrade shall be formed by excavating to the required depth, and shaped to the proper cross section, and shall be thoroughly compacted by rolling or tamping before placing any concrete to 95% compaction.

Where tree roots are encountered, they shall be removed to a depth of one foot for the full width of the proposed concrete area.

All soft and spongy places shall be removed and all depressions filled with suitable material which shall be thoroughly compacted in layers not exceeding 6” in thickness.

D. Forms

Forms used in construction shall be of wood or metal for full depth of the concrete, straight, free from warp, and sufficient strength. They shall be staked securely enough to resist the pressure of the concrete without springing. If of wood, they shall be of 2" surfaced planks. All work forms shall be thoroughly cleaned before being reused.

After the concrete has set sufficiently, the forms shall be removed and the spaces on both sides shall be backfilled with suitable earth, uniformly spread and compacted.

Immediately after the forms have been removed, traffic shall be excluded from crossing the concrete for a period of approximately 14 days by erection and maintenance of suitable barricades. The Contractor shall be responsible for any damage resulting from traffic within the 14 day period and he shall remove and replace any concrete damage as directed by the **COMMISSION**.

E. Placing Concrete

No concrete shall be placed until the forms and subgrade have been approved by the **COMMISSION**. The subgrade shall be thoroughly wetted and the concrete shall be placed thereon in one course to the required depth. The concrete shall be thoroughly spaded and rammed and struck off with a template to the required grade and cross section. Successive batches of concrete shall be deposited in a continuous operation until individual sections are completed.

F. Cold Weather Pouring, Curing & Protection

Concreting operations shall not be undertaken or continued when the surrounding air temperature is below 40°F or the local weather reports indicate the possibility of temperatures of 32°F or lower within the ensuing 24 hours, unless provisions are made to insulate or heat the concrete in a manner satisfactory to the **COMMISSION**. In any event, the Contractor shall plan and protect his work in a manner which will assure satisfactory results. Any concrete damage by freezing shall be removed and replaced by the Contractor at his own expense.

Concrete when deposited in the forms, shall have a temperature of not less than 50°F nor more than 90°F. The concrete shall be maintained at a temperature of not less than 50°F for a period of at least 72 hours in case of normal concrete, or 24 hours when high early cement is used. Concrete shall not be deposited on a frozen subgrade.

Immediately after finishing operations have been completed, the entire surface of the concrete shall be covered and cured under burlap or other material approved by the **COMMISSION**. The burlap shall be free from holes, dirt, clay, or other foreign matter. Reclaim burlap shall not be permitted. The burlap shall weigh not less than 12 ounces per 10 square feet when dry. Additional layers may be used to obtain the equivalent weight.

Curing operations shall be carried on at all times when the air surrounding the concrete is

50°F or greater. After finishing the concrete, and the surface is hardened sufficiently or prevent marring, the entire surface shall be covered with one layer of thoroughly saturated burlap overlapping at least 6" at joints to prevent gaps. Additional layers of burlap to result in a total of not less than 24 ounces of burlap per 10 square feet of surface shall be spread, thoroughly saturated, upon the first layer. The covering shall be maintained fully wetted for 72 hours after the concrete has been placed. Water shall be applied by a spray fine enough to avoid damage to the fresh concrete.

Liquid membrane forming curing compound may be used in lieu of keeping the concrete wet. When used, it shall be applied at a rate of 1 gallon per 150 square feet of area immediately after the concrete has been finished and the surface water sheen has disappeared. After the curing compound has been applied, the concrete shall be kept covered with a tarpaulin or heavy building paper for at least 3 days to protect the surface from traffic and rain. Sufficient barricades, signs, and warning devices shall be provided by the Contractor to protect the finished concrete.

G. Concrete Slab

The minimum concrete slab thickness shall be 6", except at expansion joints where the designated minimum thickness is 8". The **COMMISSION** reserves the right to require additional wire mesh reinforcement.

Concrete slab shall be constructed in conformance to the lines and grades on the Construction Drawings and shall have a uniform, positive slope of not less than 1/4" per foot, nor greater than 1/2" per foot.

Contraction joints shall be provided uniformly to separate the slab, and shall be cut in a straight line to a depth equal to at least 1/3" of the total slab thickness. The joint shall be not less than 1/8", nor more than 1/4" in width.

A 1/2" expansion joint filled with joint filler shall be placed as shown in the Construction Drawings. The maximum distance between transverse expansion joints shall be 20 feet. The joint filler shall extend the full depth of the concrete and shall be 1/4" below the finished surface of the slab.

After the freshly-poured concrete has been brought to the establishing grade, it shall be floated with a wooden float to produce a surface free from irregularities. The final surface shall be obtained by troweling with a steel trowel or hand float and brushing lightly with a light weight brush in a transverse direction so as to produce a uniform gritty surface of the proper texture. All edges and joints shall be rounded to 1/4".

No more concrete shall be laid than can be properly finished and covered during daylight.

H. Block Wall

Masonry construction shall be in accordance with the Provisions of Section R6060 or TMS 402/ ACI 530/ ASCE 5.

Concrete masonry units shall be Grade N, Type II or equal and in accordance with ASTM C90-06b, Standard Specifications for Hollow Load-Bearing Concrete Masonry Units, minimum compressive strength of $F'm=1500$ psi.

Mortar shall be Type M or S in accordance with ASTM C270-07, Standard Specifications for Mortar for Masonry. Mortar joints shall be 3/8" thick. Grout shall be in accordance with ASTM C476, Standard Specifications for Grout for Masonry.

Masonry walls shall be 8"x 8" x 16" CMU hollow masonry block laid with full mortar bedding in a running bond with tooled joints. Appropriate steel bars placed, tied and poured with concrete in accordance with the Florida Building Code.

CMU walls shall be laid in a running bond pattern and filled solid with grout at all cells.

I. Concrete Footer

Footings shall be a minimum of 1 foot thick and 2 foot wide of reinforced concrete. Footings shall be set below finished grade.

J. Concrete Cap

Concrete Cap shall be 4" thick and 8" wide reinforced concrete. Concrete cap shall be tied to CMU wall such that the cap and the wall have a seamless and continuous form bound by mortar. Concrete cap shall not result in wall being greater than 5 feet tall.

K. Concrete Structures

Concrete structures shall meet FDOT Road and Bridge Construction Standards, Section 400, current edition.

L. Removal of Defective Work

The **COMMISSION** shall have the authority to and shall require the removal of any concrete portion thereof laid under these specifications which does not conform to the requirements as set forth herein. Upon notification in writing by the **COMMISSION**, the Contractor shall take immediate action to correct the faulty work at his own expense.

M. Cleaning Site

Prior to the acceptance of the work, all surplus and rejected material and unsightly objects such as stones, stumps, limbs, roots, concrete, etc., shall be removed from the site and not be considered complete until all cleaning up has been done and the site is of a neat appearance, with appropriate seeding, fertilizer, etc., completed.