Walks - 2521

2521.1 DESCRIPTION

This work shall consist of bituminous or concrete walkway construction in accordance with these Specifications and close conformity with the lines and grades indicated in the Plans or established by the Engineer.

2521.2 MATERIALS

A Concrete, Mix No.3A32.....2461
Concrete, Mix No.3A36.....2461
B Preformed Joint Filler.....3702
C Blank
D Concrete Treating Oil.....3917
E Bituminous Mixture, Type as Specified....2331
F Curing Materials
F1 Curing Paper.....3752
F2 Plastic Sheeting.....3756
F3 Membrane Curing Compound.....3754
F4 Extreme Service Membrane Cure.....3755
G Granular Materials.....3149

2521.3 CONSTRUCTION REQUIREMENTS

A Foundation Preparations

The foundation shall be excavated, shaped, and compacted to a firm, uniform bearing surface, conforming to the planned section and established grade. Unsuitable subgrade soils shall be removed and replaced as directed. Granular material, as specified and where required by the Plans, shall be furnished, placed, and compacted thoroughly to the required depth.

B Forms

Forms shall be of wood or metal, coated on the contact face with form treating material, and in a condition that will allow proper finishing and subsequent form removal. The form height shall be at least that of the planned walk thickness.

C Concrete

C1 Placing and Finishing Concrete

The foundation and forms shall be thoroughly wetted immediately prior to the placing of the concrete.

The concrete shall be placed, consolidated to fill all voids, struck off to the required grade, and floated smooth. After the water sheen has disappeared, the joints shall be edged and the surface lightly brushed to a uniform texture.

The surface shall not vary more than 5 mm (3/16 inch) from a 3 m (10-foot) straight edge, and the formed concrete shall be within 13 mm (1/2 inch) of the required location.

Forms shall remain in place for a minimum 12 hours after placing the concrete therein unless earlier removal is authorized by the Engineer.

C1a Exposed Aggregate Finish

Concrete Mix No. 3A36, modified for exposed aggregate construction shall conform to the requirements of Mn/DOT 3137

CA-50 and be multi-colored rounded stone.

Provide an exposed aggregate finish using surface retardation to produce a medium to deep exposure, so that the aggregate becomes the dominant surface feature. Embedment or top seeding of aggregate is not permitted.

Apply retardant coating as soon after the concrete surface has been screeded, edged, and jointed. Retardant shall be applied in accordance with the manufacturer's instructions to produce a 6 mm (±2mm) etch of mortar removal after final set.

Surface mortar shall be removed by washing with water under pressure. Avoid excessive pressure which loosens individual aggregate particles.

Following approval of the exposed aggregate finish obtained, a 10 percent muratic acid wash shall be applied to the exposed aggregate surfaces. Surfaces shall be flushed thoroughly wit water following a 5 to 10 minute interaction period between the acid solution and the surface.

Curing of the concrete shall be continued by covering with white polyethylene sheeting. Any staining or streaking of the exposed aggregate surface resulting from the moist curing shall be removed before applying the sealer.

The exposed aggregate finish shall be sealed with two coats of a clear acrylic based compound with 18 percent minimum solids conforming to ASTM C309.

C2 Joint Construction

The walk shall be divided into panels of uniform size, outlined with contraction or expansion joints as required by the Plans. The panels shall be square where practicable and generally have not more than 3 m2 (36 square feet) of area.

Joints shall be vertical and straight, and be parallel with or at right angles to the walk centerline where possible. The joints shall align with like joints in adjoining work unless the work is isolated by 13 mm (1/2 inch) preformed joint filler.

All joints and edges of the walk shall be rounded with a 6 mm (1/4 inch) radius edging tool.

Contraction joints shall extend to at least 30 percent of the walk thickness and shall be approximately 3 mm (1/8 inch) wide.

Expansion joints shall be 13 mm (1/2 inch) wide and shall be equal in depth to the full thickness of the walk.

Joint construction at locations where a fixed object or structure extends through the walk shall be modified to the extent deemed necessary by the Engineer. Preformed joint filler material, 13 mm (1/2 inch) thick, shall be placed adjacent to all fixed objects so as to separate the object from the abutting concrete edges.

C3 Concrete Curing and Protection

After the finishing operations have been completed and as soon as the set of the concrete permits, the concrete shall be cured for a minimum period of 72 hours. The curing shall be in accordance with one of the methods prescribed herein. Where side forms are used, the edges shall receive the curing media within 30 minutes after removal of the forms. During cold weather, the Contractor shall protect the concrete from frost damage prior to and throughout the duration of the cure.

After September 15th, in that part of the State which is north of the 46 degree Parallel, and after October 1 in that part of the State which is south of the 46 degree Parallel, or before April 15, only the blanket

curing or extreme service membrane methods of curing will be permitted.

With the blanket method, after being cured the prescribed minimum period of 72 hours, the concrete shall be treated with two applications totaling approximately 4 m2 per liter (1 gallons per 150 square feet) of concrete treating oil applied over all concrete surfaces that will remain exposed in the completed work. The concrete shall be clean and dry when the treating oil is applied.

C3a Blanket Curing Method

The concrete shall be covered with waterproof paper or plastic sheeting as soon as possible (without marring the concrete) after completion of the finishing operations. The curing blankets shall be in such condition and be utilized in such manner as to envelop the exposed concrete and prevent loss of water vapor.

C3b Membrane and Extreme Service Membrane Curing Method

All surfaces exposed to air at the time of cure shall be coated with membrane curing compound within 1 hour after finishing the concrete surfaces. The compound shall be applied by an approved airless spraying machine at the approximate rate of 4 m2 per liter (1 gallon per 150 square feet) of surface curing area.

As conditions for approval, the spraying machine shall have as essential elements; a recirculating bypass system that provides for continuous agitation of the reservoir material; separate hose and nozzle filters; and a multiple or adjustable nozzle system that will provide for variable spray patterns.

Before application, the curing compound as received in the shipping container shall be agitated until a homogeneous mixture is obtained. Application shall be such that a uniform coating is obtained. Any areas that, by visual inspection, appear to have received too light a coating shall be resprayed immediately. Also, should the membrane film become damaged at any time within the required curing period, the damaged areas shall be repaired immediately by respraying. Wherever the initial or corrective spraying is such as to result in unsatisfactory curing, the Engineer may require use of the blanket curing method at no additional cost to the Department.

D Bituminous

The bituminous mixture shall be placed on the compacted foundation material in one or more courses as indicated in the Plans, so as to give the required thickness. Compaction shall be accomplished to a uniform density in a manner and quantity deemed satisfactory by the Engineer.

E Backfilling

Following removal of the forms, the area adjacent to the walk shall be finished in a neat and workmanlike manner using material obtained from the excavation. Surplus excavated materials shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

1521.4 METHOD OF MEASUREMENT

Each uniform thickness item will be measured separately by top surface area.

2521.5 BASIS OF PAYMENT

Payment for the concrete or bituminous construction provided for herein, at the Contract prices per unit of measure, will be compensation in full for all costs of furnishing the materials and constructing the work complete in place as specified, except that any granular materials furnished and placed by order of the Engineer in the absence of specific Plan requirements will be paid for separately under 2451.5.

Concrete and Bituminous walk construction will be paid for on the basis of the following schedule:

Item No.	Item	Unit
2521.501	__mm (")Concrete Walk	square meter (square foot)
2521.503	__mm (")Concrete Terrace	square meter (square foot)
2521.511	__mm (")Bituminous Walk	square meter (square foot)
2521.513	__mm (")Bituminous Terrace	square meter (square foot)