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SECTION 557
SUPERSTRUCTURE SLABS AND STRUCTURAL APPROACH SLABS

557-1 DESCRIPTION. The work shall consist of placing high performance (Class HP) concrete to construct superstructure slabs, structural approach slabs, sidewalks, and safety walks, as required by the plans.

557-1.01 Options. Unless otherwise noted the contractor may use any of the following forming systems to form the underside of the superstructure slabs:

A. Removable forms
B. Permanent corrugated metal forms
C. Prestressed concrete form units

557-1.02 Restrictions. The following restrictions shall apply:

A. Fascia overhangs shall be formed with removable forms. The forms used shall leave the resulting concrete flat surfaced.

B. A bay, constructed in stages such that a longitudinal joint is required, shall be formed with removable forms.

C. A haunch which rests upon an end diaphragm shall be formed with removable or permanent corrugated metal forms.

D. Prestressed concrete form units shall not be used where the design span is less than 1.5 meters nor greater than 3.3 meters. The design span is equal to the beam spacing minus one-half the top flange width.

E. Prestressed concrete form units may be restricted at the ends of some skewed spans. Refer to the plans for details.

F. Prestressed concrete form units shall not be used on prestressed concrete box beam superstructures unless specifically allowed by the plans.

557-2 MATERIALS

A. Concrete. This shall meet the material requirements for Class HP in accordance with Department directives. Unless otherwise directed by the Engineer, all concrete shall contain a set retarding, water reducing admixture, meeting the requirements of §711-08. The quantity of the admixture shall be sufficient to achieve the minimum retardation consistent with placing conditions. The dosage rate used shall be determined by the Contractor in accordance with the manufacturer’s recommendation and in concurrence with the Regional Materials Engineer. The dosage shall remain consistent for the duration of the concrete placement except for minor adjustments to meet changing environmental conditions.

B. Other Materials. These shall meet the following requirements:

All material listed under §555-2.01 shall apply.
Epoxy coated bar reinforcement 709-04
Prestressed concrete form units 718-05
Permanent Corrugated Metal Forms for Bridge Slabs 736-01
Chairs, tie wires, and other devices used to position reinforcing steel 556-2.02
557-3 CONSTRUCTION DETAILS

557-3.01 Concrete Manufacturing and Transportation. The requirements of §501-3 shall apply.

557-3.02 Falsework. The requirements of §555-3.02 shall apply.

557-3.03 Forms

A. Removable Forms. The requirements of §555-3.03A shall apply.

B. Permanent Corrugated Metal Forms for Superstructure Slabs. Where permanent metal forms are employed, the following construction procedures shall apply:

Care and protection shall be given the metal form sheets, supports and accessory items during handling, shipping and storage. During loading, hoisting and unloading operations, extra precaution and care shall be taken to prevent damage to ends, corners and edges of the form sheets, supports and accessory items. If the form units and accessories are to be stored prior to installation, they shall not be placed in contact with the ground and the material shall be adequately covered or protected to keep it dry.

Form supports shall be placed in direct contact with the flange of stringer or floor beam. All attachments shall be made by permissible welds, bolts, clips or other approved means. The welding of form supports to steel not considered weldable or to portions of flanges subject to tensile stresses shall not be permitted. Welds, and welding shall be in accordance with the provisions of the SCM, Section 7, except that 3 mm fillet welds will be permitted. All welding shall be performed by a New York State Department of Transportation Certified Welder whose qualifications permit performing the work.

Form sheets shall not be permitted to rest directly on the flanges. They shall be securely fastened to form supports by self-tapping screws and shall have a minimum bearing length of 25 mm at each end. Transverse construction joints shall be located at the bottom of a flute and 6 mm weep holes shall be field drilled at not less than 300 mm on centers along the line of the joint.

Screed and pouring runway supports shall not be located directly on the form sheets, form supports or reinforcing steel. No loose sheets or miscellaneous hardware shall be left on the structural slab at the end of the working day. Metal forms shall not be used where longitudinal slab construction joints are located between stringers, nor shall they be used on the fascia overhang.

The corrugated metal sheets shall be fabricated for the placement sequence used with the joints between sections of sheet overlapped or securely fastened to eliminate differential deflections between sections. Any exposed form metal where galvanizing has been damaged, shall be cleaned and repaired as provided for in §719-01, Galvanized Coatings and Repair Methods.

The following inspection procedures will be used as a check to insure the soundness of the concrete structural slab adjacent to the steel forms. Not less than two days after completion of concrete structural slab pour, but prior to the next slab pour, a section of the steel form shall be removed from the most recently completed pour of each span, at a location selected by the Engineer, in order to provide visual evidence that the concrete mix or the construction procedures are obtaining the desired results. If either the concrete mix or the construction procedures are varied significantly within a pour, such as a change in the extent of vibration or change in the workability of the mix, another section of form shall be removed to verify that the new procedures are yielding desirable results.

After the concrete has been placed in a span for a minimum of ten days but prior to any further work performed on the superstructure in that span, the Engineer will spot-check the underside areas of the steel forms by sounding with a suitable weight hammer at least 50% of the area of at least 25% of the individual form panels on a random basis to determine whether any honeycomb or void areas exist. If such areas are detected, the Contractor shall remove the forms from these areas for a visual inspection of the slab.
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The amount of sounding and form removal may be moderated, at the Engineer’s discretion, after a substantial amount of slab has been constructed and inspected, if the Contractor's methods of construction and the results of the inspections as outlined above indicated that sound concrete is being obtained throughout the slabs.

If, after removing a section of form, the concrete is found to be defective, additional panels shall be removed as directed by the Engineer. All defective concrete shall be repaired to match the adjacent concrete in section and color to the satisfaction of the Engineer.

The Contractor shall provide all facilities required for safe, suitable and convenient means of access to the forms for the Engineer’s inspection procedures.

The form sections shall be removed by a metal saw or air-carbon-arc gouging with minimum damage to the concrete. Cuts shall only be sufficiently deep to sever the form. Any other method of removal shall be submitted to the Deputy Chief Engineer (Structures) for approval. Cuts that are parallel to the corrugations in the forms shall be located on the sloping surface midway between a crest and a valley. Cuts parallel to the supporting beams shall be made through the supporting angles taking care not to damage the structural steel beams. The Contractor will not be required to replace the removed forms.

C. Prestressed Concrete Form Units. The applicable requirements of §555-3.03A and the Prestressed Concrete Construction Manual shall apply.

Form supports shall be placed in direct contact with the flange of the stringer. All attachments shall be made by permissible welds, bolts, or other means approved by the Engineer. The welding of form supports to steel not considered weldable, or to portions of flanges subject to tensile stresses will not be permitted. Welds and welding shall be in accordance with those portions of the New York State Steel Construction Manual concerned with fillet weld design, fillet weld details; general workmanship and technique, except that 3 mm fillet welds will be permitted. All welding shall be performed by a New York State Department of Transportation Certified Welder whose qualifications permit performing the work.

557-3.04 Removal of Forms. The requirements of §555-3.03B shall apply.

557-3.05 Placing and Fastening Reinforcing Steel

A. Except for prestressed concrete form units the requirements of §556-3.01 and §556-3.02 shall apply.

B. Prestressed Concrete Form Units. The requirements of §556-3.01 and §556-3.02 shall apply, except that the second paragraph of §556-3.02E which begins with “The structural...” and ends with “…of concrete.” shall not apply. The following shall apply instead: "The top reinforcing steel mat shall be securely connected to the forms and the stud shear connectors. Connections shall be placed no farther apart than 1.2 meters on center. Connections to the forms may be made to the form lifting devices, reinforcing steel projecting from the forms, or devices in the form supplied for this purpose. Hold down devices shot into the form will not be permitted. Connections shall neither deflect the reinforcing steel, nor interfere with the smooth flow of concrete.

557-3.06 Handling and Placing Concrete. The requirements of §555-3.04 shall apply. A Pre-placement Meeting will be required between the Contractor and the Engineer at least one week prior to the start of any concrete placement for superstructure slabs. The Contractor and the Engineer will review all aspects of the proposed placement including, but not limited to, the following:

- Equipment proposed for use and for back-up
- Planned workforce and assigned tasks of each designated position, based on experience and expertise
- Proposed construction techniques
- Safety considerations
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- Concrete mix design
- Admixtures and performance data; dosage rates shall be approved by the Regional Materials Engineer
- Proposed placement rate, curing and loading schedules
- Curing Practices to be employed as well as the workforce designated to the curing process
- Delivery/conveyance equipment, including deck finishing machine setup and operation
- Traffic control

No concrete shall be placed until all aspects of the proposed placement are approved by the Engineer. Modifications must be submitted in writing to the Engineer for approval.

No concrete shall be placed until all the provisions of §555-3.04A are met, environmental conditions are deemed favorable, and satisfactory means to mitigate adverse environmental conditions exist. Favorable environmental conditions are defined as an expected weather forecast suitable for concrete placement during the entire placement duration, the evaporation rate not to exceed 1.2 kg/m²/hr, and acceptable curing temperatures expected for the duration of the curing period.

The Contractor shall provide any necessary means to mitigate adverse weather conditions and curing temperatures with the approval of the Engineer. Failure to maintain acceptable environmental conditions will result in the concrete placement being stopped and a bulkhead put in place.

The Contractor shall take the necessary measurements and calculate the theoretical evaporation rate. The measurements for air temperature, relative humidity, and wind speed shall be taken as near as possible to the final placement location of the concrete.

Concrete temperature will be taken from the same sample used for slump and air content tests. These measurements will be taken prior to commencement of concrete placement. If, in the Engineer's opinion, significant changes occur in atmospheric conditions, additional atmospheric measurements and calculations by the Contractor will be required. The Contractor shall supply all instruments necessary to make the required calculations. All instruments shall be certified by an independent laboratory, approved by the Engineer, as being in good working order, and as having been calibrated within the 12 months prior to use. The Contractor's measurements and calculations will be subject to the Engineer's approval.

Vibrating of concrete shall be in accordance with §555-3.04B except as modified herein. All internal vibrators shall have a rubberized or elastomeric cover to prevent damage to epoxy coated reinforcing bars. The vibrators and covers will be inspected for defects prior to use and shall be subject to the approval of the Engineer. The number of vibrators required shall be one for every 30 cubic meters of concrete placed per hour, with a minimum of two vibrators in use at all times, and equally spaced across the placement front. One additional vibrator shall be available for use as a back-up.

557-3.07 Provisions for Concreting in Cold Weather. When permission is granted in writing by the Engineer for cold weather concreting, the curing temperature shall be maintained between 7°C and 30°C for the curing durations stated in §555-3.09, Curing. Curing temperatures shall be maintained by the provision for external heat in accordance with §555-3.06B.

Thermometers meeting the requirements of §555-3.06A1 shall be supplied by the Contractor and placed within the enclosure as directed by the Engineer to represent extreme temperature conditions. A minimum of two thermometers shall be supplied. The Engineer may require additional thermometers. The temperature recordation shall continue for the entire curing period.

When concrete is to be placed in contact with steel members, reinforcing steel or previously placed concrete, the temperature of the steel and concrete shall be raised to approximately 7°C by a method approved by the Engineer before concreting begins.

When concrete is to be placed in contact with earth, the temperature of the earth or rock shall be 2°C or higher. The earth shall not have any snow, frost, or standing water on its surface.
557-3.08 Cold Joints. “Cold Jointing”, the bonding of fresh concrete to set concrete, shall be done where indicated on the plans, or where approved by the D.C.E.S.

A. Horizontal Joints. Within 24 hours of the start of the deck placement, the tops of precast/prestressed elements shall have laitance and dirt removed by a high pressure water wash. The high pressure water wash shall be sufficiently strong to remove any laitance and dirt, but not damage the precast/prestressed units, reinforcement or reinforcement coating. The pressure wash equipment shall be capable of providing pressure of 21 MPa to 35 MPa.

After pressure washing, the tops of precast/prestressed elements shall be continuously wetted for a minimum of 12 hours immediately prior to deck placement. Before placing fresh concrete, all standing water shall be removed with oil-free compressed air. The surface shall be protected from drying to maintain a clean, saturated surface dry condition when placing the deck.

The same pressure washing and prewetting requirements shall be applied to deck surfaces prior to placement of sidewalks and safety walks.

B. Construction Joints. Construction joints for the purpose of these specifications are joints used to provide for interruptions in the placement of concrete.

Construction joints shall be designed to transfer shear and moment at the joint. Unless otherwise shown on the plans, a shear key shall be provided at each construction joint by embedding water saturated wooden blocks in the plastic concrete. The shear key thus provided shall be approximately 1/8 the width of the parts joined. The key depth shall equal the thickness of standard form lumber approximately 1/4 the key width and thickness. Shear keys need not exceed 140 mm in depth, regardless of the key width. Construction joints shall be placed only where shown on the plans or where permitted by the D.C.E.S.

The concrete in place shall have its surface scoured or abraded with a suitable tool to remove all loose and foreign materials. This surface shall be thoroughly blast cleaned to remove all laitance and loosened concrete. The surface shall be thoroughly wetted to provide a saturated surface dry condition at the time of concrete placement. Immediately before placing the new concrete, the forms shall be drawn tightly against the concrete in place. The existing concrete surface shall be thoroughly coated with mortar meeting the requirements of §705-22 Portland Cement Bonding Grout.

The mortar shall be worked into the prepared surface by means of stiff brushes, or other methods acceptable to the Engineer. Mortar shall not be allowed to begin to dry. If drying does begin to occur prior to concrete placement, as evidenced by a light grey color, the Engineer will order the mortar to be completely removed and new mortar placed at no additional cost to the State.

557-3.09 Finishing Integral Wearing Surfaces on Superstructure Slabs. The provisions of §502-3.09 Finishing and §502-3.10 Texturing, shall apply except as hereinafter modified.

Machine finishing shall be used throughout all bridge paving operations with the exception of areas which are inaccessible to finishing machines.

Machine finishing shall be accomplished with an approved power driven transverse finishing machine set 6 mm to 13 mm above the finished surface followed by an approved power driven longitudinal or transverse finishing machine. Machine finishing may also be accomplished by the use of an approved power driven one operation, (Strike-off and finishing), machine. All one operation machines shall be equipped with a power driven strike-off auger and a pan float. Backing up of finishing machines will not be permitted unless ordered by the Engineer.

Finishing machines shall be equipped with adjustable strike-off and finishing scribes, the bottom surfaces of which shall be adjusted to produce the required contour of the finished surface. Machines shall be kept in true adjustment. Machines out of adjustment shall not be used until proper adjustments have been made and the adjustments have been approved by the Engineer.

A sufficient amount of concrete equal to the finishing machine capacity shall be supplied at all times.
The specific method and equipment that the Contractor proposes to use for finishing will be supplied during the Pre-placement Meeting and will be subject to approval by the Regional Construction Engineer.

Screed supports shall be accurately set and of substantial construction so that the finished roadway surfaces will conform to the profile and transverse sections shown on the plans. Screed supports shall be placed and adjusted to properly provide for the deflection of forms, falsework and structural supporting members which will occur during the placement of the concrete. Screed rail supports shall not be attached by welding to portions of flanges subject to tensile stresses. The screed rail supports shall be spaced at a maximum of 600 mm on center. During stage construction, the screed support system shall be on the stage being placed.

Where the roadway surface falls outside the fascia stringer flange, the screed supports shall be placed on the forms. The forms shall be designed to take these loads through the use of outriggers or some other approved means.

Immediately before concreting operations are stated, the finishing machine shall be operated over the full length of the bridge segment to be paved. This test run shall be made with the screed adjusted to its finishing position. While operating the finishing machine during this test the screed rails shall be checked for deflection and proper adjustment, the cover on slab reinforcement measured and the controlling dimensions of slab reinforcement and forms checked. All necessary corrections shall be made before concreting is begun.

After the concrete has been placed, spread and consolidated to provide a uniformly dense structural slab, the surface shall be struck off immediately by the passage of the transverse finishing machine. The finishing machine shall carry sufficient concrete in front of the screed to fill low and porous places. This operation shall be done only once and shall produce a uniformly consolidated dense smooth surface of the required contour. The passage of the first finishing machine shall provide a concrete surface slightly above grade so that after settlement, if any, and the disappearance of excess water from the surface, the passage of the second finishing machine will result in a uniform surface at the required grade and contour over its entire area.

Should an approved one operation (strike-off and finishing) machine, equipped with a strike-off auger(s) be used for finishing, the above procedure shall be followed except that there will be no second passage allowed. The first passage of the approved machine shall be the final passage.

Care shall be taken not to overwork the concrete surface during the finishing operation. Hand finishing, when allowable, shall be performed in such a manner as to produce concrete surface quality and uniformity identical to that produced by the machine finishing. Finishing screeds shall be 250 mm, or more, in width. Screed surfaces, in contact with concrete, shall be steel. Hand operated screeds shall be used such that the action of the finishing machine is duplicated. Hand finishing shall be performed in the same sequence and manner as machine finishing, unless otherwise permitted by the Engineer. In the event the placement is delayed as a result of equipment breakdowns or delivery problems, all concrete in place shall be protected from evaporation by covering the surface with wet burlap, curing blankets, or plastic sheets. Excessive delays shall require the establishment of a bulkhead and the ceasing of the placement.

Finished plastic concrete surfaces shall be uniformly smooth, dense and even. Variations of pavement surface in excess of 6 mm above or below, the elevation required by the plans shall not be accepted.

Prior to texturing, the finished concrete surface shall be examined by the Contractor and the Engineer using a straight-edge approved by the Engineer. The straight-edge shall not be less than 3 m long. It shall be furnished by the Contractor, and maintained in good, usable condition, at the placement site at all times. While the concrete is still plastic, surface depressions shall be filled with concrete of the same class as the placement in progress. Surface irregularities greater than 5 millimeters in 3 meters in either the longitudinal, or the transverse direction shall be corrected in a manner acceptable to the Engineer. Thin mortar, or laitance, which may have accumulated ahead of the finishing screeds shall be
removed from the work site. They shall not be used to fill depressions.

After a uniformly smooth, dense, and even surface has been achieved, the surface shall be given a suitable texture with an artificial turf drag approved by the Engineer. The drag shall be made of molded polyethylene with synthetic turf blades approximately 13 mm long. There shall be approximately 64,000 blades per square meter. The artificial turf drag shall be of a type and brand appearing on the Department's approved list.

The Contractor may texture in a transverse direction, longitudinal direction or parallel to the finishing machine. The Engineer shall be notified of the chosen direction at least one day prior to the placement of structural slab concrete. Once begun, the direction of texturing shall not change. All texturing shall be done from a work bridge placed no closer than 3 m from the back of the finishing machine. Texturing shall be done prior to the beginning of curing operations. Only one pass of the turf drag over the finished area will be permitted.

If texturing is done in a transverse or skewed direction, the Contractor shall texture by hand methods as soon as practicable after finishing machine passage.

If texturing is done in the longitudinal direction the turf drag shall be a seamless strip and shall be attached to the work bridge such that the surface of the concrete is textured as soon as practicable after finishing machine passage. Small areas, otherwise inaccessible to the attached drag, may be textured by hand methods, if approved by the Engineer. Only one pass of the turf drag over the finished area will be permitted.

The finishing movement and resulting progress of the turf drag shall be done in a manner so as to prevent ridges, or gouges forming in the concrete surface. The drag shall be weighted and the contact area changed as required to produce a texture acceptable to the Engineer. The drag shall be cleaned periodically as directed by the Engineer, to remove all hardened concrete particles.

Texturing resulting from the drag shall stop within 300 mm of curbs.

§557-3.10 Finishing Integral Wearing Surfaces on Structural Approach Slabs. The requirements of §557-3.09 shall apply together with the following:

The Contractor may use an approved, manually driven vibrator equipped power screed in lieu of a power driven transverse finishing machine. Only screed model types appearing on the Department's approved list shall be employed for this work. Should the Engineer determine that satisfactory results are not being attained, the Engineer may require the use of a power driven finishing machine.

§557-3.11 Finishing Surfaces to be Overlaid with Portland Cement, or Asphalt, Concrete.

Finishing of these surfaces shall be done by mechanical means except in areas which are inaccessible to a mechanical screening operation. The equipment shall be approved by the Engineer prior to use.

Surfaces shall be screed to a surface tolerance of 10 mm in 3 meters. The surface tolerance shall be verified by the Engineer with an approved straight edge not less than 3 meters long. The straight edge shall be furnished by the Contractor who shall maintain it in good condition at the paving site at all times.

Hand screening, when required, shall be performed in such a manner as to produce the same surface quality and uniformity as that produced by mechanical screening. Finishing screeds shall be 250 mm, or more, in width and the contacting surfaces shall be steel. Hand-operated equipment shall be used in such a manner as to duplicate the action of a mechanical screed. Hand-screeding shall be performed in the same sequence and manner as mechanical screening unless otherwise directed by the Engineer.

Upon completion of screeding, surfaces which will be overlaid with portland cement concrete shall be roughened in a manner acceptable to the Engineer.

§557-3.12 Curing

A. General. All exposed surfaces of superstructure slabs and structural approach slabs shall be cured in the following manner:

After finishing and plastic concrete texturing operations are completed, the concrete surface
shall be completely covered with clean, prewetted burlap in accordance with the requirements of §555-3.09A, except that allowable time period for wet burlap covering shall not exceed five minutes from the completion of texturing, and 30 minutes from the time of concrete placement. Care shall be taken so as not to damage the finished surface and texturing. However, under no circumstances shall the curing be delayed beyond the specified period. Burlap shall meet the requirements of §711-06. It shall be lapped a minimum of 300 mm. Lapped edges are not required to be sealed. Burlap shall be thoroughly saturated over its entire surface area and shall be drained of excess water prior to its application. Burlap shall be kept continuously wet. Continuous burlap wetting shall commence 10 minutes from the time the wet burlap is placed. It shall be protected from displacement in a manner acceptable to the Engineer.

1. Superstructure Slabs. After the burlap placement has been fully completed, the concrete surface shall be cured for 14 curing days. The Contractor may use either option listed below.

After seven curing days, the Contractor may be permitted to perform incidental work on the structure under the loading limitations of §557-3.14. The burlap may be displaced in limited areas, for short durations, to perform items such as sawcut grooving, placement of sidewalks, safety walks, curbing, bridge rail and fencing. The amount of burlap displaced to perform these operations shall be limited to the immediate area affected by the Contractor’s operations. All concrete surfaces exposed during these operations shall be kept in a saturated condition. Immediately after the work is completed in the affected area, all burlap shall be replaced for the duration of the curing period. Removable forms shall remain in place until the minimum curing period is complete.

a. Fourteen Day Continuous Wetting: Leave all burlap in place for 14 curing days. Provide continuous, uniform wetting for the entire curing period.

b. Wet Burlap and Curing Covers: Provide continuous uniform wetting for seven curing days. After seven curing days, either of the following methods may be used:

i. Remove all burlap after seven curing days have passed. Apply curing covers conforming to the requirements of §555-3.09 B immediately upon burlap removal. Plastic coated fiber blankets meeting the requirements of §711-03 are not required to be laid dry. Application and maintenance of covers shall be in accordance with §555-3.09 A. Concrete cured in this manner shall not be exposed to the atmosphere for more than 10 minutes between burlap removal and curing cover placement.

ii. Apply curing covers conforming to the requirements of §555-3.09 B directly over the wet burlap. Plastic coated fiber blankets meeting the requirements of §711-03 are not required to be laid dry. Application and maintenance of covers shall be in accordance with §555-3.09 A. The concrete surface shall be inspected periodically to ensure that its condition remains saturated.

The Contractor shall inform the Engineer of the intended curing procedure at the Preplacement Meeting.

2. Structural Approach Slabs, Curbs, Sidewalks and Safety walks on Bridges.

After the burlap placement has been fully completed, leave all burlap in place for 7 curing days. Provide continuous, uniform wetting for the entire curing period. Forms for curbs, sidewalks, and safety walks shall remain in place until the minimum curing period is complete. Forms for structural approach slabs shall remain in place until sufficient strength is achieved, as determined by the Engineer, to avoid damage to the concrete. After removal of approach slab forms, the formed surfaces shall be cured as per the requirements of §555-3.09B.

B. Curing Temperatures. Only the requirements of §555-3.09C 1. and 2a shall apply.
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557-3.13 Damaged or Defective Concrete. Damaged, or defective, concrete shall be defined by, and repaired in accordance with, the requirements of Section 502, Portland Cement Concrete Pavement, and §502-3.14, Damaged or Defective Concrete. §701-08, Vertical and Overhead Patching Material, shall be used for patching vertical or overhead surfaces. After the concrete has hardened, the Engineer will examine it using the Contractor's straight-edge. Surface irregularities greater than 5 millimeters in 3 meters shall be corrected in a manner acceptable to the Engineer. Unless otherwise directed by the Regional Materials Engineer, the concrete used for repairs shall be of the same materials as that used for the original placement. All corrections shall be at the Contractor's expense.

557-3.14 Loading Limitations for Superstructure Slabs. Superstructure slabs, during the curing period, may be subjected to a vehicle load not to exceed nine metric tons, or a wheel load not to exceed three metric tons no sooner than seven calendar days after placement. Full legal loading may commence using either of the following options:

A. Superstructure slabs may be subjected to full legal loads no sooner than 14 calendar days after completion of the curing period.

B. The Contractor may subject a superstructure slab to its full legal load upon completion of the curing period, or any day thereafter provided that the procedure below is followed:

1. The Contractor shall notify the Engineer at the Pre-placement Meeting of the intention to subject the slab to full legal load prior to the 14th day after completion of curing.

2. During the slab concrete placement the Engineer will cast two sets (pairs) of test cylinders in addition to each set cast for record.

3. The Engineer will forward cylinders to the Materials Bureau or Regional Testing Facility. One set will be tested fourteen calendar days after placement and, if necessary, the second set will be tested twenty-one calendar days after concrete placement. Under no circumstances will cylinders be tested sooner than fourteen calendar days after the concrete placement they represent.

4. Concrete cylinder sets (pairs) designated for advance testing shall achieve an average compressive strength of 21 MPa, or greater, with individual cylinders having a compressive strength of 19.5 MPa, or greater.

5. Results of compression tests will be transmitted to the Engineer as soon as possible. The Engineer will inform the Contractor of the cylinder testing results and allow early loading if appropriate.

557-3.15 Loading Limitations for Structural Approach Slabs, Sidewalks and Safety Walks on Bridges. The Contractor may subject structural approach slabs, sidewalks, and safety walks to their full legal load upon completion of the 7 day curing period

557-4 METHOD OF MEASUREMENT. Payment will be made at the unit price bid per square meter for the number of square meters of slab, and sidewalk and safety walk stated in the Estimate of Quantities shown on the contract plans. The figure shown in the Estimate of Quantities shall be used to compute payment.

557-5 BASIS OF PAYMENT. The unit price bid per square meter shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work as shown on the plans or called for in the specifications. Unless otherwise provided, the unit price bid shall include the cost of furnishing and placing bar reinforcement, copper flashing, flexible water stops, mechanical connectors where specified, sheet packing, water for wetting, joint sealing compounds, joint fillers, and concrete curing materials; and the cost of screed supports and other brackets or braces necessary to support finishing
machines. In addition, if permanent metal forms are used, the cost of furnishing all facilities required for access, removing the permanent forms for inspection or repair purposes, painting the cut edges of the forms and repairing the concrete as required herein shall be included in the price bid for this work.

557-5.01 Payments

A. Partial payment, in accordance with the terms of §109-04, may be made for bar reinforcement in the cast-in-place concrete portion of the structural slab. Partial payment may be made for precast concrete form units, provided they have received the Inspector’s stamp of approval, as required under “Basis of Acceptance” under §718-01. Partial payment may be made for Permanent Corrugated Metal Forms for Bridge Slabs.

B. Progress payments will be made on a per-span basis as follows:

1. Forty (40) percent of the estimate area (less the cost of partial payments made for materials) will be paid for after all reinforcing is properly placed, to the satisfaction of the Engineer.

2. An additional forty (40) percent of the estimate area (less the cost of partial payments made for materials) will be paid for after the concrete has been placed and curing applications have been instituted. Both placement and curing operations shall meet with the approval of the Engineer prior to payment authorization.

3. The remainder will be paid for after completion of all curing, and necessary corrective work.

Payment will be made under:

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SECTION 558

TRANSVERSE SAWCUT GROOVING OF STRUCTURAL SLAB SURFACE

558-1 DESCRIPTION. The work shall consist of sawcutting grooves into the surface of a portland cement concrete structural slab. The work will be performed at the locations indicated on the Contract plans, or where ordered by the Engineer.

The surface, for the purpose of this specification, is defined as the surface upon which vehicular traffic will travel.

The Contractor is hereby notified that concrete curing requirements, combined with structural slab loading restrictions may have a significant effect upon the specific time, relative to concrete placement, at which sawcut grooving may be performed. The Contractor shall familiarize himself with the limits imposed by these factors, and conduct his operations accordingly.
§558-2

558-2 MATERIALS. Only multi-bladed saw cutting equipment, using circular saw blades, will be permitted. The Engineer may allow the use of single blade, circular saw equipment, where it is determined such equipment is necessary to complete the work as required. The equipment the Contractor proposes to use will be subject to the approval of the Engineer, prior to use.

Water 712-01

558-3 CONSTRUCTION DETAILS. Sawcut grooving shall be started only after the specified curing period has elapsed, or earlier where allowed by the applicable specification.

Transverse grooves shall be cut perpendicular, or radial, to the centerline of roadway. Radial grooving shall be done in stages. Each stage shall be limited to 4 m in width, or one lane width, whichever is less.

Grooves shall be rectangular in shape. They shall conform to the following dimensions:

| Width 2.5 mm (+ 0.5 mm, - 0.0 mm) | Depth 6 mm ± 2 mm |

Grooves shall be spaced at 40 mm - center to center of groove ± 2 mm. The cutting of grooves over an area which has been grooved will not be permitted. No cutting blade shall be introduced into an already established groove.

During the grooving operations, the Engineer will verify, at random, that the minimum groove depth is being achieved. Should the Engineer determine that minimum groove depth is not being achieved, the Contractor shall stop grooving operations and make all adjustments necessary to achieve the minimum depth.

The Contractor shall supply the Engineer with two (2) accurate, easily readable, gauges with which to verify groove depth. The gauges shall be delivered no later than one week prior to the anticipated beginning of grooving operations. Gauges shall be accompanied by manufacturer's instructions for their use, if such instructions are necessary for proper understanding of the gauge's functions.

Grooves shall terminate within the following limits unless otherwise indicated on the Contract Plans:

<table>
<thead>
<tr>
<th>Location</th>
<th>Closest Allowable Distance</th>
<th>Farthest Allowable Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage structure</td>
<td>300 mm</td>
<td>380 mm</td>
</tr>
<tr>
<td>Vertical face (curb or parapet),</td>
<td>300 mm</td>
<td>380 mm</td>
</tr>
<tr>
<td>or face of railing (no curb)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint System (Dimension measured perpendicular</td>
<td>150 mm</td>
<td>750 mm</td>
</tr>
<tr>
<td>to the centerline of the joint system)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grooving operations, which are performed after the installation of the joint system, or which are performed adjacent to an existing joint system, shall be done in such a manner that the joint system is not damaged to any degree.

All damage to the joint system shall be repaired in a manner satisfactory to the Engineer. If the Engineer determines that the joint system cannot be repaired in a manner which will allow proper function of the system, the Contractor shall replace the system. The replacement shall be a new system equal in all respects to the system being replaced.

Damage to any other portion of the structural slab, or anything attached to it, or embedded in it, attributable to the Contractor's operations shall be repaired in a manner satisfactory to the Engineer.

All repair, or replacement, costs shall be borne by the Contractor.

Slurry, or debris, from the grooving operation shall not be permitted to accumulate. Residue shall be continuously removed. The slurry shall not be permitted to harden. Slurry, or debris, shall not be disposed of in the structure, or highway, drainage system, nor on the roadway slopes. It shall be disposed of in a manner satisfactory to the Engineer.
558-4 METHOD OF MEASUREMENT. The work will be measured as the number of square meters
of surface grooved as stated in the Estimate of Quantities, shown on the contract plans. No field
measurements will be taken.

558-5 BASIS OF PAYMENT. The unit price bid per square meter shall include the cost of all labor,
materials and equipment necessary to complete the work.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>558.01 M</td>
<td>Transverse Sawcut Grooving of Structural Slab Surface</td>
<td>Square Meter</td>
</tr>
</tbody>
</table>

SECTION 560 - MASONRY

560-1 DESCRIPTION. Under this work the Contractor shall furnish and place masonry, with or
without coping, of the type, shape, size, color and location indicated in the plans, proposal or as directed
by the Engineer.

560-2 MATERIALS. Materials shall meet the requirements specified in the following subsections of
700 - Materials:

- Split Faced Concrete Brick 704-10
- Precast Concrete Coping 704-11
- Caulking Compound for Structures 705-06
- Premolded Resilient Joint Filler 705-07
- Masonry Mortar 705-21
- Bar Reinforcement - Grade 420 709-01
- Wire Fabric for Concrete Reinforcement 709-02
- Admixtures 711-08

560-2.01 Dimension Stone Masonry. All stone shall be sound, durable, free from reeds, rifts,
seams, laminations and minerals which would cause discoloration or deterioration from weathering. The
stone shall be of size, quality and color acceptable to the Regional Director. Duplicate samples of stone
showing the complete color range shall be submitted to the Regional Director for approval. Stone shall
be quarried so the stratification will be radial or parallel to the bed when set in place except where split
face or seam face finish is called for on the plans. All beds and joints shall have a "Fine Point or Sawn
Finish" for at least 50 mm from the arris lines. The balance shall not fall off from a straight line for more
than 1/6 of the stone's minimum dimension. When stones project beyond adjoining faces, the fine
pointing shall be carried at least 50 mm in from the adjoining surfaces (arris lines of stone or face of
concrete).

Soffits of ring stones shall be cut to the curve of the arch and shall have a “Fine Point or Sawn
Finish” unless otherwise shown on the plans. All other showing surfaces shall be finished as indicated
on the plans.

On square bridges and on bridges where the skew is 30 degrees or less, the ring stones shall be cut
so the joint sides are parallel to the faces of the abutments. On bridges with a skew greater than 30
degrees the ring stones shall be cut so the joint sides of each stone will be at right angles with the face.
Soffit joints shall lie in a horizontal plane.

“Fine Point or Sawn Finish” shall be as described in §560-2.07, Definition of Finishes.

560-2.02 Split Faced Concrete Masonry. Split faced concrete masonry units shall be new, sound,
durable, true to size, free from laminations and cracks, and uniform quality which complies with the
requirements of §704-10. All split face concrete masonry units delivered to the site shall be of the sizes
§560-2

necessary to produce the wall pattern as indicated on the plans.

An approved mechanical self-leveling splitting machine with two steel knives, one directly above the other will be used for all field splitting. Four samples of each thickness of each split faced concrete masonry unit shall be submitted to the Engineer for tentative approval. They shall be labeled with the contract title and number, the Contractor's name, and manufacturer's name. The split faced concrete masonry units used in the work shall be equal in all respects, color, quality, texture and surface to the approved samples.

Anchors shall be a metal slot formed from sheet zinc not less than 0.5 mm in thickness, bent to form a dovetail channel 16 mm wide at the front, 25 mm wide at the rear, 25 mm deep and with wings 3 mm to 6 mm wide. The slots shall be provided with a felt insert to prevent the entrance of fresh concrete. These inserts shall be removed just prior to the insertion of the ties. Ties shall be formed of zinc not less than 2 mm thick, 25 mm wide with one end designed to fit snugly into the anchor slots and shall be crimped with corrugations 3 mm ± deep, but no less than 2 mm deep.

The ties shall be at least 100 mm long. The Contractor shall submit to the Engineer for tentative approval four samples of the material used to fabricate the ties, i.e. anchors, felt and ties.

560-2.03 Stone Masonry. All stone shall be sound, durable, properly quarried, free from reeds, rifts, seams, laminations and minerals which would cause discoloration from weathering. Samples of stone shall be submitted to and be approved by the Regional Director prior to the beginning of any work on this masonry. The size, color and quality of the stone delivered to the site shall be substantially in accordance with the approved samples.

The stones may have an average variation of 1/6 of the thickness shown on the plans, however, they shall have a minimum thickness of at least % that shown on the plans and a maximum thickness of 1/6 over the maximum thickness shown on the plans.

560-2.04 Rubble Stone Masonry. All stones shall be clean, free from structural defects and acceptable to the Engineer. Selected stones, roughly squared and pitched to line, shall be used at all angles and ends of walls.

560-2.05 Precast Concrete Coping. Precast concrete coping units shall be new, sound, durable, true to size, free from laminations and cracks and of uniform quality which complies with the requirements of §704-11.

560-2.06 Mortar. Use 705-21 Masonry Mortar.

560-2.07 Definition of Finishes. Finishes of stone or manufactured masonry units shall be defined as shown in Table 560-1.

560-3 CONSTRUCTION DETAILS

560-3.01 General. Masonry or precast concrete coping shall not be constructed when the ambient temperature is 5°C or below, or when the stone or masonry units contain frost, except by written permission of the Engineer and subject to any conditions the Engineer may require.

Stone, masonry units or coping units shall not be dropped upon or slid over existing masonry, nor shall hammering or turning of stones, masonry units or coping on the masonry be allowed. Stones, masonry unit or coping units shall be carefully set without jarring masonry already laid, and they shall be handled in a manner so as not to cause disfigurement.

560-3.02 Dimension Stone Masonry. The provisions of §560-3.01 shall apply with the following additional requirements:

A. Preparation of Stone and Bed. Each stone shall be cleaned and thoroughly saturated with water before being set. The bed which is to receive the masonry shall also be cleaned and moistened.
TABLE 560-1 MASONRY UNITS, SURFACE FINISH

<table>
<thead>
<tr>
<th>Finish Name</th>
<th>Maximum Surface Projection Beyond Pitch Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth Finish</td>
<td>2 mm</td>
</tr>
<tr>
<td>Fine Point or Sawn Finish</td>
<td>6 mm</td>
</tr>
<tr>
<td>Rough Finish</td>
<td>13 mm</td>
</tr>
<tr>
<td>Scabbed Finish</td>
<td>20 mm</td>
</tr>
<tr>
<td>Seam and Split Face</td>
<td>25 mm</td>
</tr>
<tr>
<td>Rock Face</td>
<td>1/10 the vertical height of the individual stone</td>
</tr>
<tr>
<td>Thermal Finish</td>
<td>6 mm</td>
</tr>
</tbody>
</table>

NOTE: All faces of Dimension Masonry shall extend to the pitch lines shown on the plans.

B. Bedding of Stone. All stone shall be well bedded in mortar and settled in place with a suitable wooden male before the setting of the mortar.

C. Spalls not Permitted in Mortar Beds. No pinning up of stones with spalls will be permitted, and no spalls will be permitted in beds.

D. Expansion Joints. All surfaces of stone in contact with expansion joint material shall be made smooth, unless otherwise shown on the plans. The joints shall be filled with premolded resilient joint filler and sealed with an approved joint sealer as shown on the plans, or as ordered by the Engineer.

All joints in concrete backing shall be protected against intrusion of water into or through the joint by the installation of an approved water stop. The water stop shall be embedded into the concrete at least 75 mm on each side of the joint and shall be installed as near to the inside face of the concrete backing as practicable. The water stop may be of ASTM B370, 568 gram preformed copper strip, 0.655 mm minimum thickness, soldered to be water tight and continuous, or may be approved flexible water stop as shown on the plans. Water stops shall be manufactured and installed so as to provide for the expansion and contraction movements present at the joint.

In case any stone is moved or the joint broken, the stone shall be taken up, the mortar thoroughly cleaned from beds and joints, and the stone reset in fresh mortar.

Joints shall not be filled by pouring in a thin or liquid mortar.

E. Pointing (new construction) and Tuck Pointing (raking out and repointing).

1. Pointing. Tool the face joints with a pointing tool before the mortar sets, as approved by the Engineer. Avoid smearing the masonry surfaces with excess mortar forced out of the joints. For joints not pointed when the masonry is laid, prepare the joints for pointing by following the tuck pointing procedures. There will be no separate payment for this work.

2. Tuck Pointing (Repointing). Repoint the joints in masonry where indicated on the Contract plans or directed by the Engineer. Use an Item 705-21 Type M, S or N masonry or mortar cement; tuck pointing mortar (or a specially designed one) with the same or weaker strength than the original mortar, as approved by the Engineer.

Remove soft, loose, cracked and deteriorated mortar to a minimum depth (measured from the wall face) of twice the average joint width, and remove all deteriorated mortar beyond the minimum depth, as ordered by the Engineer. Do not damage the masonry during the removal process. Clean all contamination from the prepared joints.

Prior to repointing, flush with water and leave all surfaces to be re-mortared in a dampened, surface dry state. Pack the prepared joints in layers with mortar that closely matches the
§560-3

original color and texture, allowing each layer to become thumb-print hard before the next. Use at least two layers when the joint depth is twice the joint width. Apply a final layer thickness that does not exceed the joint width. When the final layer is thumb-print hard, finish with a pointing tool that recreates the original joint shape, or as approved by the Engineer.

Perform pointing when the ambient temperature is 5°C or above, and the masonry is frost free. Avoid recessed joints that hold water.

After the mortar sets, clean all mortar and cement stains from other surfaces. In direct sunlight, keep the newly pointed masonry moist for at least 3 days. In shade, moisten 2 to 3 times a day for at least 3 days.

**F. Drawings.** The contract plans show the general character of the masonry. Prior to the beginning of any work, the Contractor shall prepare and submit for the approval of the Regional Director, three sets of detail plans for all dimension masonry shown on the plans. The Contractor shall carefully check and assume full responsibility for the accuracy of this work. These detail plans will be examined and either approved or returned without approval to the Contractor, who shall check the indicated corrections and resubmit two sets of prints of revised details. When the detail plans have been approved, the Contractor shall furnish the Regional Director with three sets, one of which shall be reproducible. The drawings shall conform to the size and type of requirements for Shop Drawings set forth in the New York State Steel Construction Manual.

560-3.03 Split Faced Concrete Masonry. The provisions of §560-3.01 shall apply with the following additional requirements:

**A. Sample Wall.** The Contractor shall construct a split faced concrete masonry wall 2 m long and 1.2 m high of approved units and matching mortar at a location designated. This procedure shall be repeated until a sample wall is approved by the Engineer. The approved sample wall shall be maintained intact until the Engineer directs its removal.

In lieu of the field sample wall, the Contractor may show, for approval, a building constructed with units of the same type, color, texture and surface finish required. The field sample wall shall be required if the building masonry is not approved.

Upon approval of the sample wall or building, the Contractor shall furnish and lay split masonry to conform with the approved sample wall.

**B. Protection and Handling.** Split faced concrete masonry units shall be protected by a wrapping of 100 μm polyethylene, and shall be handled on pallets by mechanical means, or by hand or tongs. Dumping of the masonry units from trucks, wheel barrows or other conveyances is prohibited. Particular care shall be taken to protect all edges and the face of the masonry units. Distorted, laminated, checked or cracked masonry units will be rejected and removed from the site of construction.

On delivery to the site, the masonry units shall be neatly piled off the ground, on pallets or other approved implements, and protected from moisture by wrapping them with 100 μm polyethylene. Masonry units which become wet, shall not be laid in the wall until their conformance with the specifications for §704-10 is shown by tests. The cost of these tests shall be borne by the Contractor.

**C. Laying.** The split faced concrete masonry shall be laid up, in the pattern shown on the plans, by skilled masons and in a first-class manner. The masonry shall be laid true to line and grade in level horizontal beds and be properly anchored. Each masonry unit shall be laid in a full mortar bed and in a manner to form a full end joint in one operation. The space between the split face masonry and the supporting concrete shall be filled with mortar and rodded until the mortar rises to the top of the masonry unit as each unit is placed.
D. Bonding. The split faced concrete masonry shall be bonded to the supporting concrete. Dovetail anchors shall be continuous, set vertically and spaced on centers not exceeding 300 mm on the concrete walls. Ties shall be installed in the anchor slots at a maximum vertical height of 300 mm on centers.

E. Joints. Joints in the exposed face shall be struck with a concave jointing unless otherwise specified. The joints shall be 10 mm wide and the concave jointing shall be 3 mm deep at the center.

F. Protection Against Weather. The split faced concrete masonry shall be protected against the action of the weather. The tops and at least 600 mm down the sides of all walls not completed shall be constantly protected with suitable waterproof covering properly secured in place during periods of suspended work. The facing shall be so protected until it has been bonded to the concrete wall and completely sealed against moisture. During hot dry weather, the masonry shall be protected from the sun and kept moist for at least three days after completion.

G. Protection Against Damage. Projections and angles exposed to damage shall be boxed or otherwise protected to prevent damage. Any units damaged during the progress of the work shall be replaced with new units at the Contractor's expense.

H. Cleaning of Exposed Faces of Mortar and Drippings. Exposed faces of split faced concrete masonry units shall be cleaned free of excess mortar and mortar drippings, as the work progresses, to prevent excessive rubbing during final cleaning operations.

I. Expansion and Contraction Joints. Expansion and contraction joints shall be constructed as shown on the plans. The surfaces of the joints shall be plumb, true to line and smooth to the caulking compound.

J. Final Cleaning. After the completion of adjacent work likely to soil the masonry, the split faced concrete masonry shall be thoroughly cleaned, removing all dirt, dust, mortar, stains, etc. The concrete masonry shall be brushed, while dry, with stiff fiber brushes. If this brushing does not clean the masonry to the satisfaction of the Engineer, then the Contractor shall clean the facing with soap powder in clean water applied with stiff fiber scrub brushes. After scrubbing with soap and water the Contractor shall rinse the masonry with clean water. The Contractor may, with the Engineer's approval, substitute a cleaning solution that will not harm the concrete or mortar joints. The cleaning operation shall in all cases start at the top and proceed downward.

K. Caulking. When the split faced concrete masonry has received the final cleaning, all expansion and contraction joints shall be filled at least 25 mm deep with caulking compound.

All surfaces to receive the caulking compound shall be clean, free of loose materials, dirt, dust, frost, moisture, oils, laitance or curing compounds and shall be primed with clear lacquer, shellac or the manufacturer's recommended primer after the surfaces have been cleaned. A bond breaker shall be used as a release material back of the caulking compound. The bond breaker may be polyethylene, specially treated bond inhibiting pressure sensitive tape or any approved equal. The caulking compound shall be tooled with a concave joint finishing tool to provide a neat smoothly finished joint of uniform width. Where solvents are required on the jointing tool, they shall be as recommended by the manufacturer of the caulking compound.

560-3.04 Stone Masonry. The construction provisions of §560-3.02 shall apply. The individual stones shall be trimmed, rect and dressed, as may be necessary at the site, to obtain a pattern in the finished wall which will be in character with the requirements of drawings, specifications and the approved sample wall.

The following general requirements will apply to the placing of stone masonry:

A. Cross-Joints, Steps or Ladders. There shall be no cross-joints, steps or ladders.
§560-3

B. Subdivision of Rectangles. There shall be no subdivision of rectangles.

C. Stone Shapes. There shall be no unusually shaped stone.

D. Clusters. There shall be no clusters of stone of the same length and height.

E. Horizontal Joint Length. There shall be no continuous horizontal joint greater in length than 3 meters.

F. Vertical Joints. There shall be no more than five stones abutting any one vertical joint.

G. Stone Proportions. There shall be no stone longer than six times its height nor shorter than one and one half times its height. The length of the average stone shall be three to five times its height.

H. Horizontal Joints. Horizontal joints shall not have a slope varying from the horizontal by more than one percent.

I. Color. Where stone masonry and dimension masonry are specified, for the same structure or in close proximity to each other, there shall be no great contrast in size or color between the Stone Masonry and the Dimension Masonry.

Prior to beginning the work the Contractor shall lay up a sample wall conforming to the requirements of §560-3.03A except that the material details for the work shall conform to those for Stone Masonry.

560-3.05 Rubble Stone Masonry. The provision of §560-3.01 shall apply with the following additional requirements:

The stone shall be laid to form substantial masonry presenting a neat, finished appearance. The minimum size of stone to be used shall be 100 mm in depth or rise, 230 mm in width, and 300 mm long. Spalls and pinners will not be allowed to show on the face of the work and shall be used otherwise only where necessary. All stones shall be soundly and completely bedded in the mortar. The length of stretchers shall not exceed three times their rise, and the width of stretchers shall in no case be less than one and one-half times their rise. At least one-fourth of the stones in the face shall be headers and shall be evenly distributed. The length of headers shall be not less than 810 mm nor more than the thickness of the wall, where the work is 1.2 m or less in thickness. Where the work is more than 1.2 m thick, the length of headers shall be not less than 810 mm. The width of headers shall be not less than their rise. All stones shall be laid to break joints 150 mm or more and to thoroughly bond the work. No joint in the face shall be over 25 mm in width. Backing shall be good-sized, well-shaped stones so laid as to break joints. Spaces between stones shall be filled with spalls set in mortar. The degree of roughness of exposed faces shall be measured with a two meter straight edge supported between adjacent projections on the stone face. Variations in the stone face, in excess of 100 mm, measured from the straight edge to the extreme depression in stone or mortar will not be permitted. Rear faces shall present approximately plane surfaces.

Pointing shall conform to the requirements of §560-3.02E.

560-3.06 Rubble Stone Masonry Laid Dry. The specifications of §560-3.05, Rubble Stone Masonry, shall apply except that no mortar shall be used and the requirements of §560-3.01 Construction Details (General), pertaining to frost shall not apply unless otherwise directed by the Engineer.

560-3.07 Precast Concrete Coping. The provisions of §560-3.02, Dimension Stone Masonry and §560-3.03, Split Faced Concrete Masonry, shall apply with exception of §560-3.02D, §560-3.03A, and §560-3.03D.
560-3.08 Tuck Pointing. Apply the provisions of §560-3.02E2 Tuck Pointing. For re-caulking work, rake out any old caulking to a minimum 25 mm depth and follow the provisions of §560-3.03K. Caulking. Do not damage masonry during the removal and cleaning process.

560-4 METHOD OF MEASUREMENT

560-4.01 Dimension Masonry. Dimension masonry will be measured as the number of square meters (including joints within the dimension masonry) measured on the plane of all the exposed surfaces of the dimension masonry incorporated in the work.

560-4.02 Split Faced Concrete Masonry. Split faced concrete masonry will be measured as the number of square meters (including joints within the masonry and between the split faced concrete masonry and the concrete wall, and the mortar bed for precast concrete coping), on the plane of all exposed surfaces of the masonry incorporated in the work. Split faced masonry below the finished surface of the ground or paving shall be considered as exposed in computing the area for payment. The approved, constructed, split faced concrete masonry sample wall will be paid for as split face concrete masonry.

560-4.03 Rubble Stone Masonry. Payment for rubble stone masonry will be made for the number of cubic meters within the payment lines shown on the plans and placed in accordance with the specifications. Concrete, mortar or any joint material within these payment lines will, for the purpose of payment, be classified as stone masonry and will not be paid for under any other item.

560-4.04 Stone Masonry. Payment for stone masonry will be made for the number of square meters (including joints within the stone masonry) measured on the plane of all the exposed surfaces of the stone masonry incorporated in the work. Mortar joints between concrete and stone masonry will be paid for as stone masonry.

Stone masonry shown on the plans below the finished grade or sidewalk (to prevent the possible exposure of unfaced concrete) shall be considered as exposed in computing the payment area for this item.

2.5 square meters will be used in payment for the complete accepted sample wall required in this specification.

560-4.05 (Vacant)

560-4.06 Precast Concrete Coping. The quantity to be paid for will be the number of meters of precast concrete coping (including the joints between the coping units) placed in accordance with the plans, specification and orders of the Engineer.

560-4.07 Tuck Pointing. The Engineer will measure this work in the field as the number of square or linear meters of masonry pointed and cleaned, as bid. Linear measurements will be made along the joint centerline.

560-5 BASIS OF PAYMENT

560-5.01 Dimension Stone Masonry. The unit price bid per square meter shall include the cost of furnishing all labor, materials and equipment necessary to complete the work.

Concrete, dimension masonry, mortar or any joint material within the nominal thickness of the dimension masonry will, for the purpose of payment, be classified as dimension masonry and will not be paid for under any other item. Projections, if any, into the concrete beyond the nominal thickness of dimension masonry will be paid for as the class of concrete displaced by the stone. No deduction will be made for railing post holes.

Mortar Joints between Dimension Masonry and Concrete will be paid for as Dimension Masonry.

Mortar Joints between Dimension Masonry and Stone Masonry will be paid for as Stone Masonry.
§560-5

560-5.02 Split Faced Concrete Masonry. The unit price bid per square meter shall include the cost of furnishing all labor, materials (including anchors, ties, premolded bituminous joint material, and caulking compound) and equipment necessary to complete the work. The payment shall also include the labor, materials and equipment necessary to remove and dispose of all constructed sample masonry panels when directed by the Engineer.

No payment shall be made to the Contractor for the submitted alternate sample walls or for any unapproved sample walls.

The cost of furnishing and placing anchoring devices shall be included in the unit price bid for this work.

The cost of erecting and disposing the sample wall shall be included in the unit price bid for this item.

560-5.03 Stone Masonry. The unit price bid per square meter shall include the cost of furnishing all labor, materials and equipment necessary to complete the work.

Concrete, stone masonry, mortar or any joint material within the nominal thickness of the stone masonry will, for the purpose of payment, be classified as stone masonry and will not be paid for under any other item. Projections, if any, into the concrete beyond the nominal thickness of stone masonry will be paid for as the class of concrete displaced by the stone. No deduction will be made for railing post holes.

The cost of furnishing and placing anchoring devices shall be included in the unit price for this item.

560-5.05 Rubble Stone Masonry. The unit price bid per cubic meter for Rubble Stone Masonry with joints or laid dry, shall include the cost of furnishing all labor, materials and equipment necessary to complete the work except excavation will be paid for under the appropriate excavation item.

560-5.06 Precast Concrete Coping. The unit price bid per meter shall include the cost of furnishing all labor, materials (including anchors, reinforcement, premolded resilient joint materials, and caulking compound) and equipment necessary to complete the work.

560-5.07 Tuck Pointing. Include all labor, material (including any re-caulking material), and equipment to complete the work in the unit bid price.

560-5.08 Progress Payments. Progress payments will be made, at the unit price bid, for 75% of the quantity properly placed. The balance of the quantity will be paid for upon proper cleaning and caulking of the joints.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>560.01 M</td>
<td>Dimension Stone Masonry</td>
<td>Square Meter</td>
</tr>
<tr>
<td>560.02 M</td>
<td>Split Faced Concrete Masonry</td>
<td>Square Meter</td>
</tr>
<tr>
<td>560.0401 M</td>
<td>Stone Masonry</td>
<td>Square Meter</td>
</tr>
<tr>
<td>560.05 M</td>
<td>Rubble Stone Masonry</td>
<td>Cubic Meter</td>
</tr>
<tr>
<td>560.06 M</td>
<td>Rubble Stone Masonry Laid Dry</td>
<td>Cubic Meter</td>
</tr>
<tr>
<td>560.07 M</td>
<td>Precast Concrete Coping</td>
<td>Meter</td>
</tr>
<tr>
<td>560.08 M</td>
<td>Tuck Pointing</td>
<td>Square Meter</td>
</tr>
<tr>
<td>560.09 M</td>
<td>Tuck Pointing</td>
<td>Square Meter</td>
</tr>
</tbody>
</table>