SECTION S608 - SIDEWALK AND DRIVEWAY

S608-1 DESCRIPTION

Work consists of construction of sidewalks, sidewalk access ramps, detectable warning systems, and driveways as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addendums.

S608-2 MATERIALS

S608-2.01 General

Materials are to be in accordance with NYSDOT Section 700 Materials Details:

Portland Cement	701-01
Bituminous Materials	702
Fine Aggregate	703-01
Coarse Aggregate	703-02
Mortar Sand	703-03
Cushion Sand	703-06
Concrete Sand	703-07
Mineral Filler	703-08
Premoulded Resilient Joint Filler	705-07
Masonry Mortar	705-21
Membrane Curing Compound	711-05
Form Insulating Materials for Winter Concreting	711-07
Water	712-01

S608-2.02 Concrete Sidewalk and Driveway, Concrete Entrance Walk and Concrete Steps

Concrete is to be Class K in accordance with Section S504 Portland Cement Concrete.

Subbase course material is to be Type 1 in accordance with NYSDOT Section 304 Subbase Course.

S608-2.03 Colored Decorative Concrete

Color admixture for colored decorative concrete is to be water neutral liquid coloring admixture system for use with other concrete construction chemical performance admixtures. Liquid coloring admixture is not to initiate or promote corrosion of reinforcing steel. Color of admixture will be as specified in Contract Documents.

S608-2.04 Exposed Aggregate Concrete

Aggregate is to consist of sound washed gravel which passes number 1 sieve, contains varying colors and is available from local run-of-bank gravels.

Chemical horizontal surface retarder is to be water soluble spray applied organic chemical surface retarder that delays set of concrete to create exposed aggregate surface. Surface retarder is to be such that it will retard but not kill hydration of concrete, will allow aggregate to retain its natural appearance without effecting color or luster of aggregate, and is in compliance with Federal V.O.C. standards for concrete surface retarders.

Sealer is to be single co7mponent transparent liquid designed to cure and seal exterior concrete surfaces, including exposed aggregate concrete. Sealer is to be such that it will bring out radiance and luster of natural aggregate, providing long lasting and durable finish, and is in compliance with Federal V.O.C. standards for concrete sealers.

S608-2.05 Detectable Warning System

Preferred method for constructing detectable warning system is by using embedded or precast brick detectable warning units.

Surface applied method for constructing detectable warning system is generally not acceptable except in select locations, as deemed appropriate by and approved of by Project Manager.

Detectable warning system is to be for applications in high pedestrian use locations including but not limited to sidewalk access ramps, and is wheelchair accessible.

Units are to be uniform in color and texture, free of cracks or other defects, and have clean-cut well defined edges.

Units are to be weather resistant, durable to high pedestrian traffic usage, and are to be fabricated with non-slip texture.

Color of detectable warning system is to be dark gray per Munsell Book Notation 10BG 3/1, Federal Standard 595B Number 36081 or darker, or approved equivalent. Color must be homogeneous throughout thickness of material, and must be such that end result of finished product visually provides surface which is uniform in color over entire surface area and which is an approximate match to specified color designation.

Truncated domes are to be aligned or in-line, in parallel square pattern.

Basis of Acceptance: Shop drawings and sample detectable warning system unit must be submitted to Project Manager for approval at least 30 days prior to beginning work.

A. <u>Embedded or Precast Brick Detectable Warning System</u>

Pre-approved products and manufacturer of embedded or precast brick detectable warning system units are those as listed on NYSDOT Technical Services-Materials-Approved List. Other equivalent products will need to be approved by Project Manager prior to installation.

Embedded units are to be square with nominal size of 12 inches x 12 inches.

Units are to be composed of cementitious materials, steel, iron, clay, shale, plastics, polymeric materials, resins, pigments, or as approved by Project Manager. Units are to be colorfast, UV stable, not showing any signs of appreciable fading, lifting, shrinkage, or other signs of poor adhesion. Units are to be capable of fitting into contours, breaks and faults of concrete surfaces.

Where applicable, units are to be capable of adhering to concrete surface at minimum air temperature of 60°F and minimum surface substrate temperature of 70°F.

Manufacturer is to demonstrate in writing, and by providing references, that embedded detectable warning system material and proposed system for bonding material to substrate has been satisfactorily used for minimum period of 2 years in areas where weather conditions are similar to those experienced in Rochester, New York area

At least 30 days prior to installation, manufacturer must submit certified test results from an independent testing laboratory to Project Manager indicating that type of material to be used is in compliance with following requirements:

Property	Results
Compressive Strength (minimum after 28 days)	8000 psi minimum
Freeze-Thaw Loss (25 cycles, 1 cycle/day, 10% NaCi solution in accordance with NYS Test Method 502-3P)	1.0% maximum

B. Surface-Applied Detectable Warning System

Pre-approved products and manufacturer of surface-applied detectable warning system units are those as listed on NYSDOT Technical Services-Materials-Approved List. Other equivalent products will need to be approved by Project Manager prior to installation.

Surface applied units are to be one piece, 5 feet x 2 feet.

Units are to be composed of cementitious materials, steel, iron, plastics, polymeric materials, resins, pigments, or as approved by Project Manager. Units are not to show any signs of appreciable fading, lifting, shrinkage, tearing, rollback, or other signs of poor adhesion. Units are to be capable of molding or fitting into contours, breaks and faults of concrete surfaces.

Units are to be capable of adhering to concrete surface at minimum air temperature of 60°F and minimum surface substrate temperature of 70°F.

Manufacturer is to demonstrate in writing, and by providing references, that surface-applied detectable warning system material and proposed system for bonding material to substrate has been satisfactorily used for minimum period of 3 years in areas where weather conditions are similar to those experienced in Rochester, New York area.

At least 30 days prior to installation, manufacturer must submit certified test results from an independent testing laboratory to Project Manager indicating that type of material to be used will bond to prepared surface, and that it is in compliance with following requirements:

Standard	Property	Results
ASTM C501	Wear Resistance	Wear Index: >15
ASTM C1028	Slip Resistance	Dry Coefficient of Friction 0.8 minimum
ASTM E96	Water Vapor Transmission	10 grams/square foot/24 hours

S608-2.06 Heavy-Duty Commercial Concrete Driveway

Concrete for heavy-duty commercial concrete driveway is to be Concrete for Structures Class A (Appurtenant Placements) in accordance with NYSDOT Section 555 Structural Concrete.

Subbase course material is to be Type 4 in accordance with NYSDOT Section 304 Subbase Course.

Tie bar for construction joint is to be number 3 bar, 18 inches long, deformed billet steel bar in accordance with ASTM A615, Grade 60; or deformed rail steel bar in accordance with ASTM A616, Grade 60 including Supplementary Requirement S1.

Welded wire fabric for reinforcement is to be 6x6 10 gauge uncoated steel reinforcement in accordance with ASTM A185 or ASTM A497.

S608-2.07 Asphalt Driveway

Asphalt top is to be an asphalt mix that is dense graded and having gritty texture for single course resurfacing over stone base or asphalt binder.

Asphalt mix is to be in accordance with NYSDOT Section 401 Plant Production, with following modifications:

Composition		
Screen Size	**General Limits Percent Passing**	**Job Mix Tolerance Percent**
1/2 inch	100%	-
1/4 inch	90 to 100%	-
1/8 inch	45 to 70%	+/- 7%
#20	15 to 40%	+/- 7%
#40	8 to 27%	+/- 7%
#80	4 to 16%	+/- 4%
#200	2 to 6%	+/- 2%

Other Properties		
Asphalt Content Percentage	6 to 8%	+/- 0.4%
Asphalt Cement Grade and Number	AC-20 - 702.0500	-
Mixing and Placing Temperature Range	250°F to 325°F	-

Aggregate is to be in accordance with NYSDOT Sections 703-01 Fine Aggregate and 703-02 Coarse Aggregate, meeting following blend percentages:

Aggregate	Blend Percentage
Coarse Aggregate #1A	44%
Fine Aggregate Manufactured	28%
Fine Aggregate Natural	28%

Asphalt binder is to be 19 F9 Binder Course HMA, 80 Series Compaction in accordance with NYSDOT Sections 401 Plant Production and 402 Hot Mix Asphalt (HMA) Pavements.

Asphalt base is to be 37.5 F9 Base Course HMA, 80 Series Compaction in accordance with NYSDOT Sections 401 Plant Production and 402 Hot Mix Asphalt (HMA) Pavements.

Subbase course material is to be Type 2 in accordance with NYSDOT Section 304 Subbase Course.

S608-2.08 Temporary Driveway

Materials are to be in accordance with Section S412 Temporary Pavement.

S608-2.09 Brick; Brick – Cultural District

A. Brick

Brick is to be as required in Contract Documents.

B. Brick – Cultural District

Color of brick for use within Cultural District is standardized on Endicott Dark Ironspot as manufactured by Endicott Clay Products Co., and any brick that is supplied must be an exact match in color.

Brick is to be wire cut brick, 3-5/8 x 7-5/8 x 2-1/4, Endicott Dark Ironspot as manufactured by Endicott Clay Products Co., or approved equivalent.

S608-2.10 Slate

Slate is to be sound and durable, reasonably uniform in quality and texture throughout, free from shale, excess mica, seams, scaling or evidence of disintegration. Slate is to have one reasonable smooth split face with no projections or depressions over 1/4 inch. Slate is to be so dressed that it may be laid with maximum of 3/4 inch joints. Size and color of slate will be as required in Contract Documents.

Basis of Acceptance: Minimum 25 square foot sample of slate must be submitted to Project Manager for approval at least 30 days prior to beginning work. Slate will be inspected for accordance to dimensional and color requirements. Slate that is not in compliance with this specification will be rejected.

S608-2.11 Stone Paver

Stone paver can be either rock-face or small ashlar natural stone. Stone paver is to be sound and durable, reasonably uniform in quality and texture throughout, free from shale, excess mica, seams, scaling or evidence of disintegration. Stone paver is to have one reasonable smooth split face with no projections or depressions over 1/4 inch. Rock-face stone paver is to be so dressed that it may be laid with maximum of 3/4 inch joints.

Size and color of stone paver will be as required in Contract Documents.

Basis of Acceptance: Minimum 25 square foot sample of stone paver must be submitted to Project Manager for approval at least 30 days prior to beginning work. Stone paver will be inspected for accordance to dimensional and color requirements. Stone paver that is not in compliance with this specification will be rejected.

S608-2.12 Paver Edge Restraint

Paver Edge Restraint is to be composed of high density polyethylene (HDPE), PVC or other durable non-metallic material for rigid straight line installation, as manufactured by SnapEdge, E-Z Edge, PaveTech, or approved equivalent.

S608-2.13 Coarse Sand

Coarse sand is to be clean washed well graded angular sand with maximum particle size of 3/16 inch, without any fine limestone screenings, free of salts and other deleterious materials, and in accordance with ASTM C33 Concrete Aggregates.

S608-2.14 Caulking Sealant

Caulking sealant is to be one component polyurethane self leveling sealant. Color of sealant is to be such as to be capable of blending in with surrounding elements.

S608-2.15 Curing Compound

Curing compound is to be single component transparent liquid designed to cure, seal and dustproof exterior concrete surfaces.

S608-2.16 Fine Sand

Fine sand is to be clean washed masons sand, free of salts and other deleterious materials, in accordance with ASTM C144 Aggregate for Masonry Mortar.

S608-2.17 Polymeric Jointing Sand

Polymeric jointing sand for filling joints is to be mix of graded sand and binder, especially formulated for filling of narrow or wide joints for brick, slate and stone paver construction.

After setting-up, polymeric jointing sand material is to be flexible, allowing for movement without cracking. Polymeric jointing sand is to resistant to insect infestation, weed growth and erosion caused by rain, frost, wind and suction. Polymeric jointing sand is to be suitable for stabilizing horizontal or sloping installations such as for streets. driveways, sidewalks, parking lots and curb park areas.

S608-3 CONSTRUCTION DETAILS

S608-3.01 General

At least 24 hours prior to commencing any work, provide written notification to all residents of adjacent properties that are being directly affected by work. Notification is to be in plastic bag with handles that has capability of being hung on door knob.

Coordinate with individual businesses that are directly affected by work to schedule construction of work such as to minimize as much as possible any disruption of business's daily operations.

Prior to commencing any work which will directly impact access to driveway area, take all steps necessary to notify owner of any vehicle that may potentially be blocked-in by work. Allow owner reasonable amount of time to remove their vehicle from driveway.

Maximum allowable transverse slope on sidewalk is 1:50, with sidewalk to be sloped such that water drains away from private property and towards street.

S608-3.02 Survey Monument

Contractor's attention is hereby directed to extensive survey monumentation system within City of Rochester. Survey monuments are designated as RCS (Rochester City Survey), RTS (Rochester Topographic Survey), and USC&GS (United States Coastal and Geodetic Survey). Survey monuments are used to establish property and right-of-way lines, as well as elevations.

RCS survey monuments are generally located at 4 foot offset from street intersection right-of-way corner, mid-block angle point in right-of-way line, and right-of-way radii pc/pt point(s). RCS survey monuments generally fall within concrete sidewalk area, but may also be found in street pavement or lawn area. RTS and USC&GS survey monuments are not located at any specific location, but may be found anywhere within public right-of-way. Location of each existing survey monument will be established by City with swing ties before any work begins at or near existing survey monument.

Exercise extreme caution when working in vicinity of any existing survey monument so as not to disturb or otherwise damage existing survey monument. In event that existing survey monument has been disturbed or otherwise damaged by Contractor's operations, existing survey monument must be restored or replaced in accordance with Section S626 Survey Monument, at Contractor's expense.

S608-3.03 Tree Protection

Existing trees and tree roots within project limits are to be protected from damage by construction activities. Construction or excavated materials are not to be placed or stockpiled within limits of canopy of any existing tree, to prevent smothering of existing tree root system. Vehicles and other construction equipment are not to be parked on any tree root system, nor left running (idling) under limits of canopy of any existing tree.

Where cutting of existing tree roots is necessary, it is to be done with sharp cutting tools. Exposed tree roots are to be re-buried as soon as possible. Until exposed tree roots can be re-buried, exposed tree roots are to be covered with wet burlap. Burlap is to be kept wet until exposed tree roots can be re-buried.

Existing trees that are damaged by construction activities are to be repaired within 72 hours using current arboricultural standards. Those existing trees that are determined by City Forester to be damaged beyond repair, are to be removed and replaced by Contractor.

S608-3.04 Appurtenances

Existing or new appurtenances such as areaway/vault frames and covers, areaway/vault frames and hatchway doors, window well frames and grates, monument frames and covers, utility valve box frames and covers, utility manhole/handhole/pullbox frames and covers, et cetera, that are located within paved area are to be set true to line and grade, and are to be flush with surrounding surface.

Under no circumstances is an appurtenance to extend above or below surrounding surface. Hatchway doors, covers and grates are to make continuous full and uniform contact with corresponding frame, and are to be non-rocking when in place.

Appurtenances that are covered or buried with construction of new paved surface material, are to be uncovered, cleaned and set to grade, and surrounding area restored.

S608-3.05 Restoration

Adjacent areas disturbed or damaged during construction must be restored within 15 working days.

When restoring lawn areas adjacent to new construction, on-site borrow material may be used to backfill area to within 3 inches of finished surface. On-site borrow material is to be thoroughly compacted and free of grass clumps, tree roots, stones larger than 1 inch in size, pieces of asphalt and any other extraneous material.

When adjacent paved areas are disturbed as part of work, Contractor will be required to repair disturbed area. Perimeter of disturbed area is to be saw cut full depth, and such that all edges are straight and true. Bricks are to be replaced in whole units only, with replacement brick matching existing brick in size, shape and color. Restoration work is to be done such that pattern, grades and cross slope are consistent with existing surrounding area.

S608-3.06 Concrete Sidewalk and Driveway

A. General

General construction details for manufacturing, transporting, and placing concrete are to meet requirements of Section S504 Portland Cement Concrete, and NYSDOT Section 501 Portland Cement Concrete - General.

Freshly poured concrete is to be secured from vandalism or other mishap. Repair any damage as soon as possible.

Concrete sidewalk section is to be minimum of 5 feet in width, and consists of 5 inches of Class K concrete, placed over thoroughly compacted subbase course Type 1 material with minimum thickness of 6 inches after compaction.

Concrete sidewalk section in areas where concrete sidewalk crosses driveway, for concrete sidewalk access ramps including landing area, for concrete sidewalk located within area of intersection radius, and for concrete driveways, is to consist of 7 inches of Class K concrete, placed over thoroughly compacted subbase course Type 1 material with minimum thickness of 6 inches after compaction.

Subbase course Type 1 material is to be placed in accordance with NYSDOT Section 304 Subbase Course.

If required by Project Manager, temporary driveway access is to be provided until permanent driveway restoration can be done.

B. Excavation and Backfill

Area on which concrete is to be placed is to be excavated, and subgrade shaped and compacted with vibratory compactor to relatively smooth surface. Soft areas in subgrade are to be eliminated in order to provide uniform support of concrete.

Finished subgrade is to be parallel to surface of proposed grade. Before compacting subgrade material, cull material of all large stones, tree roots, or any other foreign substances. Use subbase course Type 1 material to adjust subgrade elevations and to replace unsuitable subgrade material. Subbase course material is to be thoroughly compacted and wetted prior to placement of concrete.

Excavation includes complete removal and disposal of existing materials, including paved areas, tree roots, dirt, and any other material encountered within area to be excavated.

Stockpiling of excavated material at project site is not allowed. Excavated materials must be disposed of off project site by end of each work day.

When excavating and removing an existing paved area, take any necessary precaution to prevent any damage from occurring to adjacent paved areas that are to remain. Perimeter of existing paved area to be excavated is to be saw cut full depth with concrete saw before starting excavation. Saw cut and excavate existing concrete areas at nearest joint.

Concrete must be poured within 3 calendar days of area having been excavated. Only excavate an area that can be restored within 3 calendar days at any one time. Except for adverse weather conditions, under no other circumstances are excavated areas to remain open for greater than 3 calendar days.

No driveway, including sidewalk area, is to be excavated on Friday or day before legal holiday. Vehicular driveway access must be restored within 6 calendar days of original excavation.

Adjacent paved areas that are in satisfactory condition and are subsequently damaged by construction activities are to be restored.

C. Forms

Forms are to be minimum of 5 inches high, free from warp and have sufficient strength to resist springing out of shape. Nominal thickness of wood forms is to be 2 inches, except for those in areas with curved construction lines. Before being used, forms are to be thoroughly cleaned of any mortar, concrete, dirt or any other extraneous materials. Forms are to be well staked or otherwise held to established construction lines, with upper edges conforming to established grade. Before placing concrete, wood forms are to be thoroughly wetted, and steel forms oiled. In areas where concrete placement crosses other paved areas, forms are to be carried through area to provide uniform width of concrete.

D. Joints

1. *Edges*. Edges, including joints, are to be finished smooth and plumb with an approved jointing tool which has minimum 5/8 inch radius, so made as to slightly round corners of edge or joint.

2. *Construction Joint*. Construction joints are joints where two successive placements of concrete meet.

3. *Transverse Joint*. Transverse joints are joints that are perpendicular to length of new sidewalk and are spaced at regular intervals. Transverse joints 12 feet long or shorter are to be saw cut or finished smooth with jointing tool. Transverse joints longer than 12 feet are to be saw cut, except when placed as construction joint. Transverse joints that are saw cut are to be saw cut minimum of 1/4 of thickness of concrete slab. Tooled transverse joints are to have maximum width of 1/2 inch, excluding rounded edges of jointing tool.

4. *Longitudinal Joint*. Longitudinal joints are joints that run length of new sidewalk. Longitudinal joints 12 feet long or shorter are to be saw cut or finished smooth with jointing tool. Longitudinal joints longer than 12 feet are to be saw cut, except when placed as construction joint. Longitudinal joints that are saw cut are to be saw cut minimum of 1/4 of thickness of concrete slab. Tooled longitudinal joints are to have maximum width of 1/2 inch, excluding rounded edges of jointing tool.

5. *Scoring Pattern*. Sidewalks with areas greater than 36 square feet are to be scored with joints.

Transverse joints are to be scored at intervals of 5 feet on center so that finished sidewalk area will be marked in squares, unless otherwise indicated in Contract Documents, or as directed by Project Manager. Transverse joints are to be straight and perpendicular to longitudinal line of straight sidewalk at street side of sidewalk, and radial to line of curved sidewalk, or as directed by Project Manager.

Longitudinal joints are to be parallel to longitudinal edge of sidewalk at street side of sidewalk, unless otherwise indicated in Contract Documents, or as directed by Project Manager.

Scoring patterns at street corners and other large areas will be as indicated in Contract Documents. If Contract Documents do not indicate scoring pattern, Project Manager must approve proposed scoring pattern prior to construction of joints.

Score joints minimum length of 2 feet diagonally off corners of structures, such as pole bases, handholes, manholes, et cetera, that are located in sidewalk area. Joints can be scored with either with jointing tool or saw cut.

6. *Construction and Expansion Joint*. Construction and expansion joints are to be finished smooth with an approved jointing tool which has minimum 5/8 inch radius, so made as to slightly round corners of joint.

Construction and expansion joints are to be filled with 1/2 inch thick premoulded expansion joint material. Premoulded expansion joint material is not to protrude above finished grade.

Expansion joints are to be placed at least once every 30 feet of continuous sidewalk, and are to extend full thickness and width of sidewalk. When continuous length of sidewalk is at least 15 feet, but less than 30 feet, one piece of premoulded expansion joint material is to be placed. When continuous length of sidewalk is less than 15 feet, placement of premoulded expansion joint material is not necessary.

7. *Joints at Structures*. Premoulded expansion joint material, 1/2 inch in thickness, is to be placed between edges of concrete construction where it butts up against back edge of curb, concrete gutter, existing concrete areas, buildings, walls, around pole bases, and any other structure and appurtenance located within area of concrete construction. Top of premoulded expansion joint material is to be recessed 5/8 inch below top of concrete, with recessed area filled in with caulking sealant.

8. *Saw Cutting*. Saw cut joints within 24 hours of placement of concrete. Saw cuts are to be done with an abrasive diamond type blade. Saw cut edges are to be smooth and straight, with unbroken corners. Saw cut joint is to be 1/4 inch wide, and minimum of 1/4 of thickness of concrete slab.

9. *Joint Tolerances and Quality*. Outer edges, expansion joints, construction joints and scored joints constructed with either jointing tool or by saw cut, are to be straight and smooth.

Joints and edges are to have uniform, fine broomed surface free of holes, tears, pock marks, broken corners and other defects. Joints are to be clear of excess concrete and mortar material resulting from brooming or finishing of adjacent concrete.

Variations of edge of joint as measured from straight edge or string line set along that edge, that are greater than 1/8 inch from 5 feet straight line, or 1/4 inch from 10 feet straight line, or 1/2 inch from 20 feet straight line, will be cause for rejection of joint and adjacent sidewalk at that joint.

Transverse joints are to be constructed to required spacing, perpendicular to longitudinal line of straight sidewalks, and radial to longitudinal line of curved sidewalks at street side of sidewalk. Transverse joints not perpendicular or radial by more than 1 inch per 5 feet of transverse joint, and transverse joints at spacing 2 inches greater or less than required spacing, will be cause for rejection of transverse joint and adjacent sidewalk at that transverse joint.

Longitudinal joints and outer edges are to be constructed parallel to longitudinal line of sidewalk at street side of sidewalk. Longitudinal joints not parallel or differing in offset from longitudinal line of street side of sidewalk by more than 3 inches in 25 feet of longitudinal length of sidewalk, will be cause for rejection of longitudinal joint and adjacent sidewalk at that longitudinal joint.

10. *Driveways*. Joints and scoring pattern for driveways must be approved by Project Manager prior to construction of joints and scoring pattern. Joints and scoring pattern are to in accordance with Subsection S608-3.06D. Joints.

E. Concrete Placement

Upon placement of concrete, wet mix is to be struck off level with top of forms and bull floated to eliminate high and low spots and to force large particles back from surface in such manner as to prevent sealing of surface. After surface has been leveled and smoothed, edging and jointing is to be done.

After waiting until normal bleeding has ceased, excess water is to be removed from surface of concrete before floating with an aluminum or magnesium float. Surface is then to be sealed by steel troweling and re-edged and re-jointed. Surface is to be lightly broomed transversely, with care taken to eliminate, or fill, joints left by edging tool. Curing procedures are to begin immediately upon final finishing of surface.

Concrete surface is to be constructed level and smooth with lightly broomed surface. Variations in level of surface as measured from 5 foot straight edge that are greater than 1/8 inch, will be cause for rejection of concrete area located at unsatisfactory surface as bounded by joints surrounding such unsatisfactory surface.

F. Curing

Concrete is to be cured immediately by application of chemical curing compound. Curing compound is to be applied in accordance with manufacturer's instructions and as approved by Project Manager.

G. Barricades

Open excavations and freshly poured concrete areas are to be barricaded so as to prevent accidental intrusion into work area. Barricades in form of orange construction fencing or full saw horse type, are to be placed immediately after excavation, or after removal of any temporary access material. Barricades are to be placed so as to totally isolate construction area, and are to remain in place until concrete is finished and functional. In addition, post top mounted flashers or any other similar devices may be used along pavement edge.

H. Unsatisfactory Work

Concrete is to be constructed with surface, edges and joints being level, smooth, straight, and of proper alignment and thickness. Areas of improperly constructed concrete will be rejected, with imperfections being corrected, or rejected concrete area removed and replaced.

In lieu of correcting or removing and replacing rejected concrete areas due to an unsatisfactory surface, or improperly constructed joints or edges, Project Manager may choose to accept defective work. If Project Manager accepts any defective work, monetary reduction in amount owed Contractor will be made as outlined under General Terms and Conditions, Article 11 Warranty and Guarantee; Tests and Inspections; Correction, Removal or Acceptance of Defective Work, Section 11.7 Acceptance of Defective Work.

S608-3.07 Colored Decorative Concrete

Colored decorative concrete areas and subbase course are to be constructed in accordance with Subsection S608-3.06 Concrete Sidewalk and Driveway, except as modified herein.

Use same quality concrete mix design, water to cement ratio, and maintain consistent slump throughout project. Concrete surface is to be protected from rapid evaporation of bleed water. Use an evaporation reducer as recommended by color additive manufacturer. Do not use plastic sheeting or water to cure decorative colored concrete.

S608-3.08 Exposed Aggregate Concrete

Exposed aggregate concrete areas and subbase course are to be constructed in accordance with Subsection S608-3.06 Concrete Sidewalk and Driveway, except as modified herein.

Length of exposed aggregate concrete slab and contraction joints are to correspond to pattern of existing surface. Exposed aggregate concrete slab is to be constructed to grade and cross slope consistent with existing surface and surrounding area.

Contractor may propose changes to this specification in order to provide an end result which will match above referenced areas. All proposed changes must be approved by Project Manager prior to use.

Before construction of exposed aggregate concrete is to commence, construct sample area at least 25 square feet in size for approval by Project Manager. Sample area is to be constructed within project limits at location acceptable to Project Manager. Construct or reconstruct as many sample areas as necessary until an acceptable end product has been achieved.

Construction of overall exposed aggregate concrete areas cannot begin until approval of sample area has been obtained. If approved by Project Manager, sample area may be left in place and incorporated into overall work. Overall exposed aggregate concrete areas are to be constructed to match approved sample area. If sample area is not incorporated into overall work, sample area is to be removed and properly disposed of.

As soon as water sheen is no longer visible on finished concrete surface area, generally within 1 hour after placement of concrete, retarder is to be sprayed onto finished concrete surface area in accordance with manufacturer's instructions. Immediately after concrete area has been sprayed with retarder, concrete area is to be covered with polyethylene or curing blankets.

After sufficient time has passed to insure that surface aggregate is securely imbedded within concrete, concrete surface is to be power washed and broomed to produce desired exposed aggregate finish. Within 24 hours after exposed aggregate concrete surface has been flushed, exposed aggregate concrete surface is to be covered with sealant placed in accordance with manufacturer's instructions.

S608-3.09 Sidewalk Access Ramp

Sidewalk access ramps are to be concrete constructed in accordance with Section S608 Sidewalk and Driveway, except as modified herein.

Sidewalk access ramp is to be located so as to be totally accessible by wheelchair, and is to be free of any object which would prohibit or impede intended use of sidewalk access ramp. Sidewalk access ramp and pavement area immediately in front of sidewalk access ramp are to be free of any object which might tend to become slippery or icy during inclement weather; or which might have an exposed pattern that could conceivably prevent or impede usage of sidewalk access ramp by wheelchair. Sample of such objects would be handhole/manhole cover, catch basin grate, utility valves, et cetera.

At signalized intersections, sidewalk access ramp is to be located such that wheelchair bound pedestrian can activate pedestrian signal without having to stop on sidewalk access ramp. Crosswalk and stop line markings are to be located to stop traffic before sidewalk access ramp crossing.

Drainage structures are not to be located directly in front of sidewalk access ramp, but may be located within transition area. Low points should be designed such that catch basins are located before main sidewalk access ramp.

When establishing curb elevations and pavement edge profile, they may be adjusted so as to eliminate any low point and ponding of water that would occur within area of sidewalk access ramp. It is extremely important that all ponding of water within sidewalk access ramp area be eliminated, and intended use of sidewalk access ramp not be compromised by ponding of water.

Prior to excavation, pavement area immediately adjacent to sidewalk access ramp is to be flooded with water to determine if adjustment to proposed grades is necessary. It is important that all ponding of water within sidewalk access ramp be kept to an absolute minimum.

Sidewalk access ramp is to have uniform grade, free of bumps, sags or short abrupt grade changes, with maximum slope of 1:12.

Surface texture of sidewalk access ramp is to be obtained by coarse brooming concrete transverse to slope of sidewalk access ramp.

Sidewalk access ramp construction will be limited to one side of street at time. Concrete for sidewalk access ramp must be poured within 3 calendar days of area having been excavated. Only excavate areas that can be restored within 3 calendar days. Except for adverse weather conditions, under no other circumstances are excavated areas to remain open for greater than 3 calendar days. Sidewalk access ramp must be finished and functional before commencing any work on other side of street.

If required, temporarily backfill excavated area with subbase course Type 1 material until placement of concrete is to occur.

S608-3.10 Detectable Warning System

Preferred method for constructing detectable warning system is by using embedded or precast brick detectable warning units.

Surface applied method for constructing detectable warning system is generally not acceptable except in select locations, as deemed appropriate by and approved of by Project Manager.

At least 30 days prior to installation, Contractor is to submit copy of manufacturer's documentation to Project Manager for approval which describes products to be used, recommended installation procedures and recommended routine maintenance.

Contractor is to follow manufacturer's recommendations for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility.

A. Embedded or Precast Brick Detectable Warning System

Units are not to be installed when ambient air temperature is under 40°F, or is expected to fall below 40°F within following 24 hour period.

Cutting straight edges of units is to be done with water cooled radial cut-off type masonry saw for sharp, straight edge. Cutting circular edges of units is to be done with concrete hole saw which produces sharp circular edge.

Foundation is to be concrete constructed in accordance with Section S608 Sidewalk and Driveway. Concrete is to be formed and poured integral with surrounding sidewalk access ramp area, and surface is to be level, without any indentations or projections.

Weep hole is to be provided at low point in foundation. Weep hole is to be 2 inches in diameter, and extend thru concrete and into subbase course material. Weep hole can be installed by either coring hole after concrete has set up, or by installing 2 inch schedule 40 PVC drain pipe along with pouring concrete. PVC drain pipe is to extend above and thru concrete and is to be thoroughly supported so it remains plumb until concrete has set up. After concrete has set up, top of PVC drain pipe is to be cut off flush with top of concrete. Weep hole is to be thoroughly cleaned out of all cuttings and fines, then flooded with water. After water has completely dissipated, weep hole is to be filled with coarse sand material.

Coarse sand bedding material is to be placed on top of concrete foundation and thoroughly compacted to minimum thickness of 1 inch after compaction, moist but not saturated, with uniformly even surface.

Units are to be placed on bedding material in required pattern, with straight courses and hand tight joints. Units are to be tamped down and leveled, and after compaction are to be true to surrounding cross-slope and grade, and free of any movement.

Unit joints are to be filled with polymeric jointing sand. Before applying polymeric jointing sand material, surface of units must be completely dry as moisture will activate binder agent of polymeric jointing sand. Cover area with polymeric jointing sand, then sweep polymeric jointing sand over and into all joints until joints are overfilled. Sweep entire surface clean removing all excess polymeric jointing sand material. Compact overall area, repeating process until joints are filled solid with polymeric jointing sand. Lightly moisten polymeric jointing sand material with water several times at 5 to 10 minute intervals gradually moistening entire depth of joint.

B. Embedded and Precast Brick Detectable Warning System at Existing Location

Saw cut perimeter of existing area to dimensions necessary to install detectable warning system. Saw cuts are to be done with an abrasive diamond type blade, full depth of existing material. Saw cut edges are to be smooth and straight, with unbroken corners. Remove and dispose of existing material.

Installation is to be in accordance with Subsection S608-3.08A Embedded or Precast Brick Detectable Warning System

C. Surface-Applied Detectable Warning System at New or Existing Location

Surface-applied detectable warning system is to be installed in accordance with manufacturer's recommendations.

S608-3.11 Concrete Entrance Walk

Concrete entrance walks are defined as those walks which are privately owned, and generally extend from public sidewalk back to house or building, providing means of pedestrian access.

Concrete entrance walks are to be constructed in accordance with Section S608 Sidewalk and Driveway, except as modified herein.

Concrete entrance walks are to be constructed with pattern, grades and cross slope consistent with existing walk and surrounding area.

S608-3.12 Concrete Steps

Concrete steps are to be constructed in accordance with Section S608 Sidewalk and Driveway, except as modified herein.

Concrete steps are to be constructed with pattern, grades and cross slope consistent with existing walk and surrounding area.

Concrete steps are to be minimum of 3 feet wide for residential properties, and 4 feet wide for commercial properties. Risers and treads are to be of uniform size and shape. Riser height is to be between 4 inches and 7 inches, tread is to be minimum 11 inches. Tolerance between largest and smallest riser/tread is not to exceed 3/8 of an inch within any set of steps. All edges are to be rounded with 1/2 inch radius.

S608-3.13 Heavy-Duty Commercial Concrete Driveway

Heavy-duty commercial concrete driveways are for businesses that generate significant amount of semi-tractor trailer truck traffic. Coordinate with individual businesses that are directly affected by work to schedule construction activities such as to minimize as much as possible any disruption of business's daily operations.

If required by Project Manager, temporary driveway access is to be provided until permanent driveway restoration can be done.

Area on which concrete is to be placed is to be excavated, and subgrade shaped and compacted with vibratory compactor to relatively smooth surface. Soft areas in subgrade are to be eliminated in order to provide uniform support of concrete.

Finished subgrade is to be parallel to surface of proposed grade. Before compacting subgrade material, cull material of all large stones, tree roots, or any other foreign substances. Use subbase course Type 4 material to adjust subgrade elevations and to replace unsuitable subgrade material. Subbase course material is to be thoroughly compacted and wetted prior to placement of concrete.

When excavating and removing an existing paved area, take any necessary precaution to prevent any damage from occurring to adjacent paved areas that are to remain. Perimeter of existing paved area to be excavated is to be saw cut full depth with concrete saw before starting excavation. Saw cut and excavate existing concrete areas at nearest joint.

Forms are to be minimum of 5 inches high, free from warp and have sufficient strength to resist springing out of shape. Nominal thickness of wood forms is to be 2 inches, except for those in areas with curved construction lines. Before being used, forms are to be thoroughly cleaned of any mortar, concrete, dirt or any other extraneous materials.

Forms are to be well staked or otherwise held to established construction lines, with upper edges conforming to established grade. Before placing concrete, wood forms are to be thoroughly wetted, and steel forms oiled. In areas where concrete placement crosses other paved areas, forms are to be carried through area to provide uniform width of concrete.

Scoring pattern and final location of joints must be approved by Project Manager prior to construction of such.

Subbase course is to be constructed in accordance with requirements of NYSDOT Section 304 Subbase Course.

Welded wire fabric is to be placed in accordance with requirements of NYSDOT Section 556 Reinforcing Steel for Concrete Structures.

Concrete and construction joint is to be constructed in accordance with requirements of NYSDOT Section 555 Structural Concrete.

S608-3.14 Asphalt Driveway

Asphalt top is to be placed in accordance with NYSDOT Section 401 Plant Mix Pavements – General. Asphalt binder and base is to be placed in accordance with NYSDOT Sections 401 Plant Production and 402 Hot Mix Asphalt (HMA) Pavements.

Subbase course Type 2 material is to be placed in accordance with NYSDOT Section 304 Subbase Course.

Seams between existing and new asphalt surfaces is to be sealed with asphalt joint and crack filler material in accordance with NYSDOT Section 702 Bituminous Materials.

S608-3.15 Temporary Driveway

Temporary driveway is to blend in with adjacent slopes and grades, is to be constructed and operational before existing driveway access is closed, and is to be maintained to provide adequate access at all times until permanent driveway is operational.

Excavate area to depth sufficient to construct temporary driveway, and if necessary remove existing curb. Remove any features such as fencing, guide rail, bollards, or any other miscellaneous features that are in way. Store removed features in safe location until they can be reinstalled.

After permanent driveway has been constructed and is operational, temporary driveway is to be removed. Backfill excavation with select backfill material excavated from site, and restore surface as required.

S608-3.16 Brick

Brick is to be placed in pattern as required in Contract Documents, and to uniformly even surface. Brick is not to be installed when ambient air temperature is under 40°F, or is expected to fall below 40°F within following 24 hour period.

Cutting straight edges of brick is to be done with water cooled radial cut-off type masonry saw for sharp, straight edge. Cutting circular edges of brick is to be done with concrete hole saw which produces sharp circular edge.

Premoulded expansion joint material, 1/2 inch in thickness, is to be placed between edges of brick construction where it butts up against back edge of curb, concrete gutter, concrete areas, buildings, walls, around pole bases, and any other structure/appurtenance located within area of brick construction. Top of premoulded expansion joint material is to be recessed 5/8 inch below top of brick, with recessed area filled in with caulking sealant.

Subbase material is be minimum of 6 inches thick, and is to be subbase course type 1 material. Bottom of subbase material is to be even with or below bottom of surrounding subbase material.

Surface of underlying subbase material should be thoroughly clean and dry before installation of bedding material. Screed rails should be set on surface of subbase to proper line and level. Verify elevations of subbase to ensure that bedding material will be at consistent thickness after compaction, with isolated high and low spots being corrected before placement of bedding material. Bedding material should not be used to bring subbase to proper grade.

An allowance should be made in overall thickness of setting bed material for compaction during brick installation. Overall placement thickness of setting bed material should be established so that after brick has been compacted, top surface of brick will be maximum of 1/8 inch above finished grade to allow for limited in-service settlement.

To prevent disturbance, bedding material should not be spread too far ahead of brick laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture. Moisture content of bedding material should be kept as uniform as possible to minimize undulations in brick surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting. Stockpiled bedding material is to be covered to protect it from wind and rain.

Install rigid paver edge restraint material along outer edge of brick driveways, and across entire opening of any adjacent open tree pit located within brick sidewalk area. Paver edge restraint is to be installed in accordance with Subsection S608-3.24 Paver Edge Restraint. Paver edge restraint is not required where concrete foundation is being installed as part of brick construction,

Bricks are to be placed by hand on bedding material, in required pattern, with straight courses. Bricks should be tamped down and leveled with mechanical vibrator. After compaction, top of brick is to be maximum 1/8 inch above finished grade, true to surrounding cross-slope and grade, and free of any movement.

Joints between bricks are to be between 1/16 and 3/16 of an inch, with no joint width to exceed 3/16 of an inch. Joints are to be filled with polymeric jointing sand to within 1/8 inch of brick surface after compaction. Before applying polymeric jointing sand material, surface of brick must be completely dry as moisture will activate binder agent of polymeric jointing sand. Cover area with polymeric jointing sand, then sweep polymeric jointing sand over and into all joints until joints are overfilled. Sweep entire surface clean removing all excess polymeric jointing sand material as soon as possible so polymeric jointing sand does not get stuck in surface texture of brick. Compact overall area, repeating process until joints are filled solid with polymeric jointing sand. Lightly moisten polymeric jointing sand material with water several times at 5 to 10 minute intervals gradually moistening entire depth of joint.

S608-3.17 Brick – Optional Concrete Foundation

Brick is to be constructed in accordance with Subsection S608-3.16 Brick, except as modified herein.

Foundation is to be concrete in accordance with Section S608 Sidewalk and Driveway. Surface of concrete is to be level, without any indentations or projections.

Weep hole is to be provided for every 100 square feet of brick area, and at any low point in foundation. Weep hole is to be 2 inches in diameter, and extend thru concrete and into subbase course material. Weep hole can be installed by either coring hole after concrete has set up, or by installing 2 inch schedule 40 PVC drain pipe along with pouring concrete. PVC drain pipe is to extend above and thru concrete and is to be thoroughly supported so it remains plumb until concrete has set up. After concrete has set up, top of PVC drain pipe is to be cut off flush with top of concrete. Weep hole is to be thoroughly cleaned out of all cuttings and fines, then flooded with water. After water has completely dissipated, weep hole is to be filled with coarse sand material.

Coarse sand bedding material is to be placed on top of concrete foundation and thoroughly compacted to minimum thickness of 1 inch after compaction, moist but not saturated, with uniformly even surface.

S608-3.18 Brick Border - Bus Stop Landing Pad

Brick border at bus stop landing pad is to be constructed in accordance with Subsection S608-3.16 Brick and S608-3.17 Brick – Optional Concrete Foundation, except as modified herein.

Weep holes are to be provided every 4 feet on center, and at any low point in foundation.

S608-3.19 Reset Existing Brick

Reset existing brick is to be constructed in accordance with Subsection S608-3.16 Brick and S608-3.17 Brick – Optional Concrete Foundation, except as modified herein.

Caution is to be taken in removing existing brick to minimize any breakage. Brick is to be cleaned of all foreign or extraneous matter. Removal and cleaning of brick is to be done such that overall structural integrity of brick is maintained. Brick is to be stored at location that is safe from damage, and is to be placed on level ground which will provide even bearing across brick surface. Work is to be phased so as to reduce to minimum amount of time brick is to be stored.

Existing bedding material is to be removed and properly disposed of, and new coarse sand bedding course material installed.

If required, existing foundation is to be removed and properly disposed of, and new concrete foundation complete with weep holes is to be constructed.

S608-3.20 Salvage Existing Brick

Use extra caution when removing and handling existing brick that is to be salvaged, and when working adjacent to brick areas that are to remain, so that there is to be no breakage caused by ongoing operations. Existing brick that is to be salvaged, and is damaged due to Contractor's operations, is to be replaced with new brick. Replacement brick is to match existing brick in general size, thickness, shape, form and color as much as possible.

Project Manager will pre-determine which existing bricks are structurally acceptable to be salvaged. Carefully excavate around and remove existing brick such that overall structural integrity of brick is not compromised. Clean removed brick of all extraneous materials, including concrete, in such manner as to be non-deleterious to brick. Existing brick that is broken during excavation, salvage or cleaning operations, is to be disposed of.

Salvaged brick is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Brick is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire brick surface. Work is to be phased so as to reduce to minimum amount of time brick is to be stored.

If required, salvaged brick that was installed by an adjacent property owner is to be placed and stacked on owner's property, and off of public right-of-way.

If required, after removing existing brick, existing setting bed material and/or foundation is to be removed and properly disposed of.

S608-3.21 Slate/Stone Paver

A. General

Use extra caution when handling and installing slate/stone paver, and when working adjacent to existing slate/stone paver areas that are to remain, so that there is to be no breakage caused by ongoing operations.

Slate/stone paver is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Slate/stone paver is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver. Work is to be phased so as to reduce to minimum amount of time slate/stone paver is to be stored.

Slate/stone paver is to be placed in pattern as required in Contract Documents, and to uniformly even surface. Slate/stone paver is not to be installed when ambient air temperature is under 40°F, or is expected to fall below 40°F within following 24 hour period.

Premoulded expansion joint material, 1/2 inch in thickness, is to be placed between edges of slate/stone construction where it butts up against back edge of curb, concrete gutter, concrete areas, buildings, walls, around pole bases, and any other structure and appurtenance located within area of slate/stone construction. Top of premoulded expansion joint material is to be recessed 5/8 inch below top of slate/stone, with recessed area filled in with caulking sealant.

Install rigid paver edge restraint material along outer edge of slate/stone paver driveways, and across entire opening of any adjacent open tree pit located within slate/stone paver sidewalk area. Paver edge restraint is to be installed in accordance with Subsection S608-3.24 Paver Edge Restraint. Paver edge restraint is not required where concrete foundation is being installed as part of slate/stone paver construction,

Cutting edges of slate/stone paver is to be done with stone or diamond cut-off type saw for sharp, straight edges. Cutting diagonal edges of slate/stone paver is to be done with angle grinder following pre-marked line on slate/stone paver.

Slate/stone pavers are to be placed by hand on bedding material, in required pattern, with straight courses. Slate/stone pavers are to be tamped down and leveled with mechanical vibrator. After compaction, top of slate/stone paver is to be maximum 1/8 inch above finished grade, true to surrounding cross-slope and grade, and free of any movement.

Joints for slate and rock-face cut stone paver are to be between 3/8 and 3/4 of an inch, with no joint width to exceed 3/4 of an inch. Joints for small ashlar cut stone paver are to be between 1/16 and 3/16 of an inch, with no joint width to exceed 3/16 of an inch. Joints are to be filled with polymeric jointing sand. Before applying polymeric jointing sand material, surface of slate/stone paver must be completely dry as moisture will activate binder agent of polymeric jointing sand. Cover area with polymeric jointing sand, then sweep polymeric jointing sand over and into all joints until joints are overfilled. Sweep entire surface clean removing all excess polymeric jointing sand material. Compact overall area, repeating process until joints are filled solid with polymeric jointing sand. Lightly moisten polymeric jointing sand material with water several times at 5 to 10 minute intervals gradually moistening entire depth of joint.

B. Light-Duty

Subbase material is be minimum of 6 inches thick, and is to be subbase course type 1 material. Bottom of subbase material is to be even with or below bottom of surrounding subbase material.

Bedding is to be coarse sand bedding material.

Surface of underlying subbase material should be thoroughly clean and dry before installation of bedding material. Verify elevations of subbase to ensure that bedding material will be at consistent thickness after compaction, with isolated high and low spots being corrected before placement of bedding material. Bedding material should not be used to bring subbase to proper grade.

Screed rails should be set on surface of subbase to proper line and level.

An allowance should be made in overall thickness of bedding material for compaction during slate/stone paver installation, and for additional in service settlement. Overall placement thickness of bedding material should be established so that after slate/stone pavers have been compacted, top surface of slate/stone pavers will be maximum of 1/8 inch above finished grade to allow for limited settling in place.

To prevent disturbance, bedding material should not be spread too far ahead of slate/stone paver laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture. Moisture content of bedding material should be kept as uniform as possible to minimize undulations in slate/stone paver surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting. Stockpiled bedding material is to be covered to protect it from wind and rain.

C. Medium-Duty

Foundation is to be concrete constructed in accordance with Section S608 Sidewalk and Driveway. Surface of concrete is to be level, without any indentations or projections.

Weep hole is to be provided for every 100 square feet of slate/stone paver area, and at any low point in foundation. Weep hole is to be 2 inches in diameter, and extend thru concrete and into subbase course material. Weep hole can be installed by either coring hole after concrete has set up, or by installing 2 inch schedule 40 PVC drain pipe along with pouring concrete. PVC drain pipe is to extend above and thru concrete and is to be thoroughly supported so it remains plumb until concrete has set up. After concrete has set up, top of PVC drain pipe is to be cut off flush with top of concrete. Weep hole is to be thoroughly cleaned out of all cuttings and fines, then flooded with water. After water has completely dissipated, weep hole is to be filled with coarse sand material.

Coarse sand bedding material is to be placed on top of foundation, with an allowance being made in overall thickness for compaction during slate/stone paver installation, and for additional in-service settlement. Overall placement thickness of bedding material should be established so that after slate/stone pavers have been compacted, top surface of slate/stone pavers will be maximum of 1/8 inch above finished grade to allow for limited settling in place.

To prevent disturbance, bedding material should not be spread too far ahead of slate/stone paver laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture.

Moisture content of bedding material should be kept as uniform as possible to minimize undulations in slate/stone paver surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting.

Stockpiled bedding material is to be covered to protect it from wind and rain.

S608-3.22 Reset Existing Slate/Stone Paver

Reset existing slate/stone pavers are to be constructed in accordance with Subsection S608-3.21 Slate/Stone Paver, except as modified herein.

Use extra caution when removing and handling existing slate/stone paver that is to be reset, and when working adjacent to slate/stone paver areas that are to remain, so that there is to be no breakage caused by ongoing operations.

Existing slate/stone paver that is to be reset, and is damaged due to Contractor's operations, is to be replaced with new slate/stone paver. Replacement slate/stone paver is to match existing slate/stone paver in general size, thickness, shape, form and color as much as possible.

Project Manager will pre-determine which existing slate/stone pavers are structurally acceptable to be reset. Carefully excavate around and remove existing slate/stone paver such that overall structural integrity of slate/stone paver is not compromised. Clean removed slate/stone paver of all extraneous materials, including concrete, in such manner as to be non-deleterious to slate/stone paver. Existing slate/stone paver that is broken during excavation, salvage or cleaning operations, is to be disposed of.

Slate/stone paver that is to be reset, is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Slate/stone paver is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver. Work is to be phased so as to reduce to minimum amount of time slate/stone paver is to be stored.

Existing bedding material is to be removed and properly disposed of, and new coarse sand bedding material installed.

If required, existing foundation is to be removed and properly disposed of, and new concrete foundation with weep holes is to be constructed.

S608-3.23 Salvage Existing Slate/Stone Paver

Use extra caution when removing and handling existing slate/stone paver that is to be salvaged, and when working adjacent to slate/stone paver areas that are to remain, so that there is to be no breakage caused by ongoing operations. Existing slate/stone paver that is to be salvaged, and is damaged due to Contractor's operations, is to be replaced with new slate/stone paver. Replacement slate/stone paver is to match existing slate/stone paver in general size, thickness, shape, form and color as much as possible.

Project Manager will pre-determine which existing slate/stone pavers are structurally acceptable to be salvaged. Carefully excavate around and remove existing slate/stone paver such that overall structural integrity of slate/stone paver is not compromised. Clean removed slate/stone paver of all extraneous materials, including concrete, in such manner as to be non-deleterious to slate/stone paver. Existing slate/stone paver that is broken during excavation, salvage or cleaning operations, is to be disposed of.

Slate/stone paver that is to be salvaged, is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Slate/stone paver is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver. Work is to be phased so as to reduce to minimum amount of time slate/stone paver is to be stored.

On cleaned side surface, label width and running length of individual slate/stone paver with marking paint.

Salvaged slate/stone paver is to be delivered to City's Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 428-7479. Street Maintenance Division requires minimum of 2 working days advance notice to make arrangements for delivery of salvaged materials.

Salvaged slate/stone paver is to be delivered to location as designated by Street Maintenance Division. Slate/stone paver is to be stacked no more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver.

If required, after removing existing slate/stone paver, existing setting bed material and/or foundation is to be removed and properly disposed of.

S608-3.24 Paver Edge Restraint

Install rigid paver edge restraint material along outer edge of brick/slate/stone paver driveways, and across entire opening of any adjacent open tree pit located within brick/slate/stone paver sidewalk area. Paver edge restraint is not required where concrete foundation is being installed as part of brick/slate/stone paver construction.

Paver edge restraint material is to provide secure rigid edge restraint against which to install brick, slate or stone paver, and coarse sand bedding material. Paver edge restraint is to be installed on top of compacted subbase material, and anchored into subbase material with 10 to 12 inch long spikes or soil nails, or as recommended by manufacturer. After paver edge restraint has been properly installed, place and compact coarse sand bedding material, and brick, slate or stone paver.

S608-3.25 Coarse Sand Bedding Material

Surface of underlying subbase material should be thoroughly clean and dry before installation of bedding material. Verify elevations of subbase to ensure that bedding material will be at consistent thickness after compaction, with isolated high and low spots being corrected before placement of bedding material. Bedding material should not be used to bring subbase to proper grade.

Screed rails should be set on surface of subbase to proper line and level. An allowance should be made in overall thickness of bedding material for compaction during pavement material installation, and for additional in service settlement. Overall placement thickness of bedding material should be established so that after pavement material has been compacted, top surface of pavement material will be maximum of 1/8 inch above finished grade to allow for limited settling in place.

To prevent disturbance, bedding material should not be spread too far ahead of pavement material laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture. Moisture content of bedding material should be kept as uniform as possible to minimize undulations in pavement material surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting. Stockpiled bedding material is to be covered to protect it from wind and rain.

S608-3.26 Replace Existing Coarse Sand Bedding Material

Existing bedding material is to be removed and properly disposed of. Subgrade is to be prepared and new coarse sand bedding material placed in accordance with Subsection S608-3.25 Coarse Sand Bedding Material.

S608-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be either number of cubic yards, square feet or linear feet of each item either constructed, reset or salvaged.

S608-5 BASIS OF PAYMENT

S608-5.01 General all Items

Unit price bid for all items includes cost of: preserve, safeguard and maintain survey monument; coordinating work with adjacent businesses; furnishing and distributing written notification to residents of adjacent properties; plastic bags; protection of overall work from damage, vandalism or other mishap; furnishing, installing and maintaining barricades; flaggers; furnishing, placing, maintaining and removing temporary access; layout of proposed work to required grade and cross-slope; quality control; saw cutting; cutting and disposal of tree roots; preparation of subgrade; furnishing and applying water; expansion joints; furnishing and installing premoulded expansion joint material; caulking sealant; cleaning finished work; equipment; site cleanup; correction or replacement of unsatisfactory work; and furnishing all labor, material and equipment necessary to complete work.

Adjustment of appurtenances such as monument frames and covers, utility valve box frames and covers, utility manhole/handhole/pullbox frames and covers, areaway/vault frames and covers, areaway/vault frames and hatchway doors, window well frames and grates, et cetera, will be paid for under separate bid items.

Removal of unsatisfactory subgrade material and installation of additional subbase course material as replacement backfill for additional excavated area, will be paid for under separate bid items.

Restoration of lawn areas including furnishing and installing topsoil, seed, hydroseed, sod, mulch and fertilizer, will be paid for under separate bid items.

Restoration of adjacent paved areas done as part of overall work will be paid for under separate bid items.

Restoration or replacement of existing features, including paved areas, that are damaged by Contractor's operations will be done at Contractor's expense.

S608-5.02 Excavation and Subbase Course

Excavation and subbase course will be paid for under separate bid items or included in unit price bid for each item as indicated in item description.

Excavation includes complete removal and disposal of existing materials, paved areas including concrete, asphalt or other pavement material types, tree roots, dirt, and any other material encountered within area to be excavated.

Excavation that is included in pay item does not include rock excavation. Rock excavation will be paid for under separate bid item. Rock excavation consists of boulders exceeding 1/2 cubic yard in volume; and ledge rock which cannot in opinion of Project Manager, be removed without blasting or use of pneumatic hammers. Concrete pavements and pavement foundations, and utility appurtenances will not be considered rock.

S608-5.03 Concrete Sidewalk and Driveway – all Related Bid Items

Unit price bid also includes cost of: flooding pavement with water; layout of pavement/curb/sidewalk/ sidewalk access ramp cross-slope and grade; construction of sidewalk access ramp; furnishing, placing and finishing concrete; forms; edges; construction, transverse and longitudinal joints; scoring pattern; joints at appurtenances; curing compounds; brooming; polyethylene or curing blankets; conforming to joint tolerance and quality requirements.

In addition, unit price bid for following individual work items will also include cost of:

A. Concrete Sidewalk and Driveway

Unit price bid also includes cost of: all required work necessary to construct concrete sidewalk and driveways.

B. Colored Decorative Concrete

Unit price bid also includes cost of: all required work necessary to construct colored decorative concrete slab; color admixture; evaporation reducer; sealer.

C. Exposed Aggregate Concrete

Unit price bid also includes cost of: all required work necessary to construct exposed aggregate concrete slab; constructing and removing sample(s); surface retardant; power washing; additional brooming; sealer.

D. Concrete Entrance Walk

Unit price bid also includes cost of: all required work necessary to construct concrete entrance walk.

E. Concrete Steps

Unit price bid also includes cost of: all required work necessary to construct concrete steps.

F. Heavy-Duty Commercial Concrete Driveway

Unit price bid also includes cost of: all required work necessary to construct heavy-duty commercial concrete driveway; contraction and construction joints; tie bars; uncoated steel reinforcement.

S608-5.04 Detectable Warning System – all Methods

Unit price bid also includes cost of: furnishing sample(s); preparation of existing surface; furnishing, cutting, placing and finishing detectable warning system; doing work in accordance with manufacturer's recommendations.

For precast brick detectable warning system, unit price bid will also include cost of: furnishing, compacting and placing coarse sand bedding material; polymeric jointing sand; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes.

Excavation, furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

S608-5.05 Detectable Warning System at Existing Location – all Methods

Unit price bid also includes cost of: furnishing sample(s); preparation of existing surface; furnishing, cutting, placing and finishing detectable warning system; doing work in accordance with manufacturer's recommendations.

For precast brick detectable warning system, unit price bid will also include cost of: excavation; additional saw cutting; furnishing, compacting and placing coarse sand bedding material; removing and disposing existing material; furnishing and installing new concrete foundation and subbase course material; polymeric jointing sand; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes.

For embedded detectable warning system, unit price bid will also include cost of: excavation; additional saw cutting; removing and disposing existing material; furnishing and installing new concrete foundation and subbase course material; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes.

S608-5.06 Asphalt Driveway

Unit price bid also includes cost of: excavation; furnishing and placing asphalt top; asphalt joint and crack filler; subbase course material.

For medium-duty driveway, unit price bid will also include cost of: furnishing and placing asphalt binder course.

For heavy-duty driveway, unit price bid will also include cost of: furnishing and placing asphalt binder and asphalt base courses.

S608-5.07 Temporary Driveway

Unit price bid also includes cost of: excavation; furnishing, installing, maintaining, removing and disposing asphalt and subbase course material; removing, cleaning, storing and reinstalling curb or other materials as specified.

S608-5.08 Brick; Brick – Cultural District

Unit price bid also includes cost of: furnishing and installing brick; coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; cutting brick; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

S608-5.09 Brick Border - Bus Stop Landing Pad

Unit price bid also includes cost of: furnishing and installing brick; coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; cutting brick; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

S608-5.10 Reset Existing Brick; Reset Existing Brick – Cultural District

Unit price bid also includes cost of: removing, storing, cleaning, cutting and reinstalling existing brick; removing and disposing existing bedding material; furnishing and installing new coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

S608-5.11 Salvage Existing Brick

Unit price bid also includes cost of: excavation; removing, cleaning and storing brick; furnishing new brick as replacement for existing brick damaged by Contractor's negligence; disposal of damaged brick; placing and stacking salvaged brick on adjacent private property; removing and disposing existing concrete foundation; backfill.

S608-5.12 Slate/Stone Paver – Light Duty

Unit price bid also includes cost of: furnishing, cutting and installing slate/stone paver; coarse sand bedding material; polymeric jointing sand; compaction; patterning.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

S608-5.13 Slate/Stone Paver – Medium-Duty

Unit price bid also includes cost of: furnishing, cutting and installing slate/stone paver; coarse sand bedding material; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

S608-5.14 Reset Existing Slate/Stone Paver

Unit price bid also includes cost of: removing, storing, cleaning, cutting and reinstalling existing slate/stone paver; furnishing new slate/stone paver as replacement for existing slate/stone paver damaged by Contractor's negligence; removing and disposing existing bedding material; furnishing and installing new coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

S608-5.15 Salvage Existing Slate/Stone Paver

Unit price bid also includes cost of: excavation; removing, cleaning, storing, delivering and stock piling slate/stone paver; furnishing new slate/stone paver as replacement for existing slate/stone paver damaged by Contractor's negligence; labeling; sticker strips; disposal of damaged slate/stone paver; removing and disposing existing concrete foundation; backfill.

S608-5.16 Paver Edge Restraint

Unit price bid also includes cost of: furnishing and installing paver edge restraint.

S608-5.17 Coarse Sand Bedding Material

Unit price bid also includes cost of: furnishing, placing and compacting coarse sand bedding material.

S608-5.18 Replace Existing Coarse Sand Bedding Material

Unit price bid also includes cost of: excavation; removing and disposing existing bedding material; preparing existing subgrade; furnishing, placing and compacting new coarse sand bedding material.

Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
S608.12	Concrete Sidewalk and Driveway	Cubic Yard
S608.13	Concrete Sidewalk and Driveway (Including Excavation)	Cubic Yard
S608.14	Concrete Sidewalk and Driveway (Including Excavation and Subbase Course)	Cubic Yard
S608.15	Asphalt Driveway - Light-Duty	Square Foot
S608.16	Asphalt Driveway - Medium-Duty	Square Foot
S608.17	Asphalt Driveway - Heavy-Duty	Square Foot
S608.180201	Brick	Square Foot
S608.180202	Brick (Including Excavation)	Square Foot
S608.180203	Brick (Including Excavation and Subbase Course)	Square Foot
S608.180301	Brick – Cultural District	Square Foot
S608.180302	Brick – Cultural District (Including Excavation)	Square Foot
S608.180303	Brick – Cultural District (Including Excavation and Subbase Course)	Square Foot
S608.180401	Brick Border - Bus Stop Landing Pad	Square Foot
S608.180402	Brick Border - Bus Stop Landing Pad (Including Excavation)	Square Foot
S608.180403	Brick Border - Bus Stop Landing Pad (Including Excavation and Subbase Course)	Square Foot
S608.180501	Reset Existing Brick	Square Foot
S608.180502	Reset Existing Brick (Including Excavation)	Square Foot
S608.180503	Reset Existing Brick (Including Excavation and Subbase Course)	Square Foot
S608.180601	Reset Existing Brick – Cultural District	Square Foot
S608.180602	Reset Existing Brick – Cultural District (Including Excavation)	Square Foot
S608.180603	Reset Existing Brick – Cultural District (Including Excavation and Subbase Course)	Square Foot
S608.1902	Salvage Existing Brick	Square Foot
S608.200101	Slate - Light-Duty	Square Foot
S608.200102	Slate - Light-Duty (Including Excavation)	Square Foot
S608.200103	Slate - Light-Duty (Including Excavation and Subbase Course)	Square Foot
S608.200201	Slate - Medium-Duty	Square Foot
S608.200202	Slate - Medium-Duty (Including Excavation)	Square Foot
S608.200203	Slate - Medium-Duty (Including Excavation and Subbase Course)	Square Foot

ITEM NO.	ITEM	PAY UNIT
S608.200301	Reset Existing Slate - Light-Duty	Square Foot
S608.200302	Reset Existing Slate - Light-Duty (Including Excavation)	Square Foot
S608.200303	Reset Existing Slate - Light-Duty (Including Excavation and Subbase Course)	Square Foot
S608.200401	Reset Existing Slate - Medium-Duty	Square Foot
S608.200402	Reset Existing Slate - Medium-Duty (Including Excavation)	Square Foot
S608.200403	Reset Existing Slate - Medium-Duty (Including Excavation and Subbase Course)	Square Foot
S608.2103	Salvage Existing Slate	Square Foot
S608.220101	Stone Paver - Light-Duty	Square Foot
S608.220102	Stone Paver - Light-Duty (Including Excavation)	Square Foot
S608.220103	Stone Paver - Light-Duty (Including Excavation and Subbase Course)	Square Foot
S608.220201	Stone Paver - Medium-Duty	Square Foot
S608.220202	Stone Paver - Medium-Duty (Including Excavation)	Square Foot
S608.220203	Stone Paver - Medium-Duty (Including Excavation and Subbase Course)	Square Foot
S608.220301	Reset Existing Stone Paver - Light-Duty	Square Foot
S608.220302	Reset Existing Stone Paver - Light-Duty (Including Excavation)	Square Foot
S608.220303	Reset Existing Stone Paver - Light-Duty (Including Excavation and Subbase Course)	Square Foot
S608.220401	Reset Existing Stone Paver - Medium-Duty	Square Foot
S608.220402	Reset Existing Stone Paver - Medium-Duty (Including Excavation)	Square Foot
S608.220403	Reset Existing Stone Paver - Medium-Duty (Including Excavation and Subbase Course)	Square Foot
S608.2303	Salvage Existing Stone Paver	Square Foot
S608.24	Temporary Driveway	Square Foot
S608.32	Concrete Entrance Walk	Square Foot
S608.33	Concrete Entrance Walk (Including Excavation)	Square Foot
S608.34	Concrete Entrance Walk (Including Excavation and Subbase Course)	Square Foot
S608.35	Exposed Aggregate Concrete	Cubic Yard
S608.36	Exposed Aggregate Concrete (Including Excavation)	Cubic Yard
S608.37	Exposed Aggregate Concrete (Including Excavation and Subbase Course)	Cubic Yard
S608.380601	Precast Brick Detectable Warning System	Square Foot
S608.380602	Embedded Detectable Warning System	Square Foot
S608.380603	Surface-Applied Detectable Warning System	Square Foot
S608.380701	Precast Brick Detectable Warning System at Existing Location	Square Foot
S608.380702	Embedded Detectable Warning System at Existing Location	Square Foot
S608.380703	Surface-Applied Detectable Warning System at Existing Location	Square Foot
S608.51	Coarse Sand Bedding Material	Square Foot
S608.52	Replace Existing Coarse Sand Bedding Material	Square Foot
S608.53	Heavy-Duty Commercial Concrete Driveway	Cubic Yard
S608.54	Heavy-Duty Commercial Concrete Driveway (Including Excavation)	Cubic Yard
S608.55	Heavy-Duty Commercial Concrete Driveway (Including Excavation and Subbase Course)	Cubic Yard
S608.5601	Colored Decorative Concrete	Cubic Yard
S608.5602	Colored Decorative Concrete (Including Excavation)	Cubic Yard
S608.5603	Colored Decorative Concrete (Including Excavation and Subbase Course)	Cubic Yard
S608.57	Paver Edge Restraint	Linear Foot
S608.5801	Concrete Step	Cubic Yard
S608.5802	Concrete Step (Including Excavation)	Cubic Yard
S608.5803	Concrete Step (Including Excavation and Subbase Course)	Cubic Yard

REVISED May 1, 2013