

## SECTION S608 - SIDEWALK AND DRIVEWAY

### S608-1 DESCRIPTION

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

References to NYSDOT specifications are to be in accordance with latest edition of *NYSDOT Standard Specifications (US Customary Units)*.

### 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 Cold Weather Concreting	711-07
Water	712-01

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

Concrete is to be Class D in accordance with NYSDOT Section 501 Portland Cement Concrete-General. Provide concrete that contains an ASTM Type A water-reducing admixture meeting requirements of NYSDOT Section 711-08 Admixtures and provides minimum of 10% reduction of design water content from target mix design for Class D.

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

Recycled materials, pulverized or recycled portland cement concrete aggregate (RCA) and brick, reclaimed asphalt pavement (RAP), and Corian® are unacceptable for use as subbase course materials, unless specifically authorized in writing by City Engineer.

#### S608-2.03 Color-Tinted Concrete

Color-tinting of concrete is to be achieved by introducing color-conditioning, pigmented, normal or retarded-set additive directly into mixer drum at rate specified by color manufacturer. Color will be as specified in Contract Documents.

Use of Type 6 cement (white) will be permitted to reduce quantity of color additive.

Polyurethane caulking compound is to be color-matched to concrete.

#### **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 component 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 Surface**

Embedded detectable warning surface installation is preferred method for constructing detectable warning surface.

Surface applied detectable warning surface installation for constructing detectable warning surface is generally unacceptable except in select locations, at discretion of Project Manager.

Detectable warning surface is to be weather resistant, durable to high pedestrian traffic usage, and fabricated with non-slip texture.

Detectable warning surface is to provide light-on-dark or dark-on-light contrast with surrounding surface. Detectable warning surface is to be uniform in color and texture, free of cracks or other defects, and have clean-cut well defined edges.

Default color of detectable warning surface is #33538 traffic yellow. Other acceptable colors for use in concrete areas #20109 red brown and #36081 dark gunship gray; in asphalt and other similar dark surface areas #36495 light gray and #37925 insignia white; or approved equivalents. Colors are to be in accordance with Federal Standard 595C.

Color is to be homogeneous throughout thickness of material, visually provide surface which is uniform in color over entire detectable warning surface area, and matches specified color designation.

*Basis of Acceptance:* At least 30 days prior to beginning work, submit shop drawings and sample detectable warning surface unit to Project Manager for approval.

##### **A. Embedded Detectable Warning Surface Units**

Pre-approved products and manufacturer of detectable warning surface units are those listed on NYSDOT Technical Services - Materials-and Equipment Approved List.

Other equivalent products will need to be approved by Project Manager prior to installation.

Embedded detectable warning surface units are to be single full sized solid units, either rectangular or radial in shape, and be capable of molding or fitting into contours, breaks and faults of paved surfaces.

Precast brick detectable warning surface units may be provided in sizes as small as standard brick, be capable of being installed in either rectangular or radial shape, and be capable of fitting into contours, breaks and faults of paved surfaces.

Detectable warning surface units are to be colorfast, UV stable, not showing any signs of appreciable fading, lifting, shrinkage, or other signs of poor adhesion.

Where applicable, detectable warning surface 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 provide references that embedded detectable warning surface material 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 is to 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% NaCl solution in accordance with NYS Test Method 502-3P)	1% maximum

**B. Surface Applied Detectable Warning Surface Units**

Pre-approved products and manufacturer of surface applied detectable warning surface units are those as listed on NYSDOT Technical Services – Materials and Equipment Approved List.

Other equivalent products will need to be approved by Project Manager prior to installation.

Surface applied detectable warning units are to be full sized single solid unit either rectangular or radial in shape, and be capable of molding or fitting into contours, breaks and faults of paved surfaces.

Surface applied detectable warning units are not to show any signs of appreciable fading, lifting, shrinkage, tearing, rollback, or other signs of poor adhesion.

Where applicable, surface applied detectable warning 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 provide references that surface applied detectable warning surface material 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 is to 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:

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.

Recycled materials, pulverized or recycled portland cement concrete aggregate (RCA) and brick, reclaimed asphalt pavement (RAP), and Corian® are unacceptable for use as subbase course materials, unless specifically authorized in writing by City Engineer.

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 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:

<b>Composition</b>		
<b>Screen Size</b>	<b>General Limits Percent Passing</b>	<b>Job Mix Tolerance Percent</b>
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%

<b>Other Properties</b>		
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:

<b>Aggregate</b>	<b>Blend Percentage</b>
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.

Recycled materials, pulverized or recycled portland cement concrete aggregate (RCA) and brick, reclaimed asphalt pavement (RAP), and Corian® are unacceptable for use as subbase course materials, unless specifically authorized in writing by City Engineer.

**S608-2.08 Temporary Sidewalk and Driveway**

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

## **S608-2.09 Brick**

### 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 pieces are to be 3 to 4 inches thick, generally 3 to 5 feet square in shape, with color as required in Contract Documents. Slate is to have one reasonable smooth split face with no projections or depressions over 1/4 inches, and dressed that it may be laid with maximum of 3/4 inch joints.

*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 inches. 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 be 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.

### **S608-2.18 Pervious Concrete Sidewalk**

Pervious concrete is to be in accordance with Section S507 Pervious Concrete.

Porous subbase filter layer course is to be in accordance with Section S304 Subbase Course.

### **S608-2.19 Subbase Course**

Subbase course material is to be Type 1, Type 2 and Type 4 in accordance with NYSDOT Section 304 Subbase Course, with following modification:

Recycled materials, pulverized or recycled portland cement concrete aggregate (RCA) and brick, reclaimed asphalt pavement (RAP), and Corian® are unacceptable for use as subbase course materials, unless specifically authorized in writing by City Engineer.

## **S608-3 CONSTRUCTION DETAILS**

### **S608-3.01 General**

All pedestrian facilities are to be designed, constructed, or altered, meeting or exceeding minimum requirements established in accordance with *Americans with Disabilities Act (ADA)*, *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*, and *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)*, and as reiterated and outlined under Subsection S608-3 Construction Details.

Not all pedestrian facilities can be designed, constructed, or altered, in full compliance with current *PROWAG* design standards. If full compliance is structurally impractical and/or technically infeasible, accessibility must be provided to maximum extent possible. Features that do not meet *PROWAG* requirements must be approved by City and noted as non-standard features in Contract Documents.

Structural impracticality and/or technical infeasibility should be identified as soon as possible. All structural impracticalness and/or technical infeasibility must be identified and documented during design. Designer must document that pedestrian facility or element cannot meet minimum requirements of accessibility guidelines due to specific structural impracticality and/or technical infeasibility. However, design must ensure that each affected element is made accessible to maximum extent feasible.

For pedestrian access, sidewalks are to have minimum clear width of 5 feet. Width of sidewalk is measured from back edge of curb or concrete gutter.

Sidewalk surface, grade and cross slope are to be maintained across driveways.

Sidewalk surface is to be firm, stable and slip-resistant.

Sidewalk cross slope is to be 1.50% maximum for design and field layout, 2% maximum per accessibility guidelines and for work acceptance. Sidewalk is to be sloped such that storm water runoff drains away from private property and towards street.

At least 5 working days in advance of intent to do any work that directly affects access to any business or personal residence, provide written notification of such work to each principal occupant. Provide such notification again at least 2 working days in advance when actual work is to begin. For businesses an attempt is to be made to contact and provide written notification to principal occupant in person. For residences, notifications are to be placed in weatherproof plastic bag with handles that has capability of being hung on door knob.

Coordinate with each business that is directly affected by work to schedule construction of work as to minimize as much as possible any disruption of business's daily operations.

Prior to commencing actual work which will directly impact driveway access, 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 any vehicles from driveway.

### **S608-3.02 Accessible Connections for Persons with Disabilities**

Access elements are to be constructed in accordance with *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)*, and as outlined below.

Accessible connections consist of access ramps and blended transitions, along with turning spaces and clear spaces.

Sidewalk and pedestrian street crossings are to include minimum 4 feet wide reduced vibration zone, to minimize painful vibration that persons using wheeled mobility aids may experience when traversing rough and uneven surfaces. Reduced vibration zone is to free of rough and uneven surface features, i.e.: exposed aggregate, pavers with rounded edges, pavers with chamfered edges greater than 1/4 inch, cobblestones, decorative patterning materials and surface imprints wider and deeper than 1/4 inch, and any other type of rough, uneven or jointed surface. Acceptable reduced vibration surface materials include concrete, asphalt, squared edge pavers, pavers with chamfered edges less than 1/4 inch, decorative patterning materials and surface imprints less than 1/4 inch wide and deep.

Design tolerances for dimensions, grades (running slopes) and cross slopes shown in Contract Documents are minimum and maximum limits for design and field layout of accessible elements, and maximum allowed per accessibility guidelines and for work acceptance.

<b>Element Tolerances</b>		
<b>Element</b>	<b>Design and Field layout</b>	<b>Accessibility Guidelines and Work Acceptance</b>
Sidewalk Cross Slope	1.50% maximum	2% maximum
Turning Space Cross Slope	1.50% maximum	2% maximum
Access Ramp Cross Slope	1.50% maximum	2% maximum
Blended Transition Cross Slope	1.50% maximum	2% maximum
Side Flare Cross Slope (Where Side Flare Encroaches into Paved Area)	9.50% maximum	10% maximum
Side Flare Cross Slope (Where Side Flare Abuts Lawn Area)	20% maximum	20% maximum
Access Ramp Grade (Running Slope)	7.50% maximum	8.30% maximum
Blended Transition Grade (Running Slope)	4.50% maximum	5% maximum

Where sidewalk is less than 5 feet wide, passing spaces are to be provided at maximum intervals of 200 feet. Driveways that meet cross slope requirements are acceptable for use as passing space.

Joints between sidewalk flags, access ramps, blended transitions, turning spaces and streets are to be flush and free from abrupt vertical separations greater than 1/4 inch.

Vertical changes between 1/4 inch and 1/2 inch are to be beveled across entire joint with standard bevel slope of 1:3, but no steeper than 1:2.

Pedestrian street crossing (crosswalk) and stop line pavement markings are to be located to stop vehicular traffic before accessible connection.

Accessible connections and street pavement area immediately in front of accessible connection are to be free of any object which would prohibit or impede intended usage of accessible connection by persons with disabilities. Objects that tend to become slippery or icy during inclement weather; or which might have an exposed pattern are unsurmountable obstacles for persons with disabilities. Poles, utility handhole/manhole cover and valves, catch basin grate, et cetera are examples of such objects.

Catch basins are not to be located directly in front of accessible connection or in clear space, but may be located within side flare areas.

It is extremely important that all ponding of storm water runoff within area of accessible connection and clear space be eliminated as intended use of accessible connection will be negatively compromised by ponding storm water runoff. When establishing curb elevations and street pavement edge profile, they are to be adjusted so as to eliminate any low point and ponding of storm water runoff that would occur within area of accessible connection and clear space. Prior to excavation, street pavement area immediately adjacent to accessible connection and clear space is to be flooded with water to determine if adjustment to proposed grades is necessary.

If further information, clarification or guidance is needed, refer to *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)* and *NYS DOT Highway Design Manual – Chapter 18 Pedestrian Facility Design*.

#### A. Accessible Connections - Access Ramps and Blended Transitions

Accessible connections are access ramps and blended transitions, and are to be located so as to be totally accessible for persons with disabilities.

Accessible connections are to be minimum of 4 feet wide, constructed of concrete in accordance with Subsection S608-3.06 Concrete Sidewalk and Driveway, except as modified herein.

Access ramp is accessible connection between sidewalks and street that has grade (running slope) greater than 5%.

Blended transition is accessible connection between sidewalks and street that has grade (running slope) less than 5%.

Grade (running slope) of access ramp is to be 7.50% maximum for design and field layout, 8.30% maximum per accessibility guidelines and for work acceptance.

Where existing conditions cannot be overcome to accommodate 8.30% maximum grade (running slope) of access ramp, length of access ramp can be extended up to maximum length of 15 feet.

Grade (running slope) of accessible connection is to be uniform, free of bumps, sags or short abrupt grade changes.

Cross slope of accessible connection is to be as flat as practical while still providing positive drainage. Cross slope is to be 1.50% maximum for design and field layout, 2% maximum per accessibility guidelines and for work acceptance.



Where accessible connection encroaches into sidewalk, cross slope of side flares is to be 9.50% maximum for design and field layout, 10% maximum per accessibility guidelines and for work acceptance.

At street corners with dual pedestrian street crossings, separate accessible connections are to be provided for each pedestrian street crossing oriented in direction of pedestrian travel. Where existing conditions cannot be overcome to accommodate separate accessible connections, single diagonal accessible connection may be permitted that is oriented to serve both pedestrian street crossings.

At T-intersection, it is only necessary to provide single pedestrian crossing for through street from either corner of intersecting street.

At signalized intersections, locate accessible connection such that wheelchair bound pedestrian can activate pedestrian signal without having to stop on accessible connection proper.

Coarse broom surface of concrete transverse to grade (running slope) of accessible surface.

Accessible connection construction is to be limited to one side of street at time. Only excavate an area that can be restored within 3 days. Concrete is to be placed and finished within 3 days of area having been excavated. Except for adverse weather conditions, under no other circumstances is an excavated area to remain open any longer than 3 days. If placement and finishing of concrete cannot occur within 3 days of excavation, provide temporary sidewalk in accordance with Subsection S608-3.07 Temporary Sidewalk.

Accessible connection(s) on one side of street is to be finished and functional before commencing any work on other side of street.

#### B. Turning Spaces and Clear Spaces

Turning space is an area at top of access ramp or blended transition for changing direction from sidewalk into access ramp or blended transition.

Clear space is an area beyond bottom grade break that is within width of pedestrian street crossing.

Turning space is to be minimum of 4 feet by 4 feet where there are no vertical constraints at back of sidewalk, e.g. structures, fences, walls, curb, et cetera. Where there are vertical constraints, turning space is to be minimum of 4 feet by 5 feet, with 5 feet dimension being perpendicular to constraint.

Cross slope of turning space is to be as flat as possible while still providing positive drainage. Cross slope is to be 1.50% maximum for design and field layout, 2% maximum per accessibility guidelines and for work acceptance.

Clear space is to be minimum of 4 feet by 4 feet, and is to be kept clear of any impediment that may interfere with access for persons with disabilities.

#### C. Construction Performance Standards

Contractor is responsible for field verifying all elevations and dimensions to ensure that final layout of sidewalks, curb ramps and blended transitions meet *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)* requirements prior to pouring concrete, or placing asphalt or pavers.

Dimensions, grades (running slopes) and cross slopes of all access elements including access ramps, blended transitions, side flares, turning spaces, clear spaces and curb reveal are to be measured to verify that elements have been constructed within required guidelines without exceeding allowable maximum limit for work acceptance.

To check field layout and to verify work acceptance, all grades (running slopes) and cross slopes are to be measured with 4 foot long digital level using at least two readings. Where readings vary measurements are to be averaged.

Dimensions, grades (running slopes) are to be measured in direction of pedestrian travel along centerline and on 12 inch and 18 inch offsets from centerline.

Cross slopes are to be measured perpendicular to direction of pedestrian travel at 5 foot intervals.

Take any steps necessary to correct any deficiencies that exceed maximum limit for work acceptance, including total replacement of deficient area if necessary.

Written documentation including and noting all measurements taken to verify dimensions, grades (running slopes) and cross slopes is to be prepared and provided to City to format acceptable to Project Manager.

### **S608-3.03 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 feet 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.

### **S608-3.04 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.

### **S608-3.05 Grade Level Castings**

#### **A. Installation - General**

Grade level castings are to be planar with surrounding surface, true to line and grade and cross-slope, with top of cover/grate being level with top of corresponding frame. Cover must be no greater than 1/4 inch below/above top of frame.

Suitable measures are to be taken to ensure that cover/grate has full continuous and uniform bearing contact with corresponding frame, and be non-rocking when in place and when under influence of load bearing stress.

Castings 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.

Suitable methods to achieve non-rocking fit between cover/grate and corresponding frame will include, but not be limited to following:

- ground mating surfaces
- machined and milled mating surfaces (horizontal and vertical)
- match marked elements
- locking elements

If match marked elements are utilized, care is to be taken to retain identity of elements in order to correctly match them and assure proper fit.

Field repairs may include grinding or proper welding techniques for material involved. Repairs that involve welding will be allowed only on steel castings and only with prior approval of Project Manager. Repairs are to result in complete unit whose individual parts have continuous, full and uniform bearing contact with each other, and that cover/ grate does not rock or move under influence of traffic or other loads.

#### B. Basis of Acceptance

Acceptable installation of grade level casting is where casting is installed with maximum vertical difference between top of casting and surrounding surface of 1/4 inch.

Deficient condition is where vertical difference is over 1/4 inch but does not exceed 1/2 inch. Deficient conditions are to be continually monitored for further deterioration and for possible future corrective action. In interim deficient condition is to be mitigated by transitioning surrounding surface with maximum 1V:3H slope.

Unacceptable installation is where vertical difference is over 1/2 inch. Unacceptable installation must be corrected within 30 days of having been identified, with casting being reset to be within acceptable installation tolerance range.

If cover is greater than 1/4 inch below/above top of frame, it is an unacceptable deficient condition that must be mitigated within 30 days of having been identified.

#### **S608-3.06 Restoration Time Restrictions – Liquidated Damages**

In addition to liquidated damages that are assessed in accordance with Subsection 10.4 Liquidated Damages Article 10 Changes During the Project of General Terms and Conditions Section of Contract Documents, additional liquidated damages will be assessed for failure to complete restoration work that is not completed within following specified time frames.

##### A. Restoration of Areas Adjacent to Planned Work

Areas adjacent to planned work that are disturbed by Contractor's operations must be restored in-kind to pre-existing or better condition within 21 calendar days of original start of work at that area. Should Contractor fail to complete restoration work on time, or any portion thereof that restoration work remains uncompleted, liquidated damages will be assessed in accordance with Subsection 10.4 Liquidated Damages Article 10 Changes During the Project of General Terms and Conditions Section of Contract Documents in an amount of **\$50.00** per calendar day per negligent location.

Restoration work required at each repair site will be inspected within above stated time frame. If location requires re-inspection of any non-compliant restoration work after first inspection, additional liquidated damages will be assessed against Contractor in an amount of **\$10.00** per location per re-inspection.

Refer to Subsection S608-3.07 Restoration of Areas Adjacent to Planned Work for additional information.

##### B. Sidewalk Restoration

Concrete placement for sidewalk areas and sidewalk access ramps must be poured within 14 calendar days of area having been excavated. Should Contractor fail to complete sidewalk restoration work on time, or any portion thereof that sidewalk restoration work remains uncompleted, liquidated damages will be assessed in accordance with Subsection 10.4 Liquidated Damages Article 10 Changes During the Project of General Terms and Conditions Section of Contract Documents in an amount of **\$150.00** per calendar day per negligent location.

Refer to Subsection S608-3.09 Concrete Sidewalk and Driveway for additional information.

### **S608-3.07 Restoration of Areas Adjacent to Planned Work**

Restoration of existing areas that are adjacent to planned work are subject to liquidated damages. Refer to Subsection S608-3.06 Restoration Time Restrictions – Liquidated Damages for additional information.

Existing areas that are adjacent to planned work and are disturbed by Contractor's construction activities must be restored in-kind to pre-existing or better condition within 21 days of original start of work at that area.

Perimeter of paved areas that are disturbed are to be saw cut full depth, along straight lines, and with squared corners. Bricks/stone pavers are to be replaced in whole units only, with replacement units matching as much as possible existing units in size, shape and color. Restoration work is to be done such that pattern, grades and cross slope are consistent with existing surrounding area.

On-site borrow material may be used to backfill disturbed and low lawn areas to within 4 inches of finished surface, topped with 4 inches of topsoil and seeded. 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, concrete and any other extraneous material.

### **S608-3.08 Temporary Sidewalk Restoration**

Temporary sidewalk restoration must be provided when pedestrian pathway is unavailable on opposite side of street, or when excavated sidewalk areas cannot be poured within 14 calendar days of original excavation.

Temporary sidewalk section is to consist of minimum 2 inch thick compacted hot mix asphalt material, constructed and maintained in accordance with NYSDOT Section 619 Work Zone Traffic Control.

Maintain temporary sidewalk areas in good non-hazardous condition at all times, including thru any winter shut-down period. Inspect all temporary sidewalk locations on weekly basis, taking any measures necessary to correct any deficiencies by end of following day.

### **S608-3.09 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.

Contractor is responsible for field verifying all elevations and dimensions to ensure that final layout of sidewalks, curb ramps and blended transitions meet *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)* requirements prior to pouring concrete, or placing asphalt or pavers.

Restoration of concrete sidewalk areas, including sidewalk access ramps, are subject to liquidated damages. Refer to Subsection S608-3.06 Restoration Time Restrictions – Liquidated Damages for additional information.

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 D 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 D 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.

Concrete placement for sidewalk areas and sidewalk access ramps must be poured within 14 calendar days of area having been excavated. Only excavate areas where concrete can be poured within 14 calendar days at any one time. Except for adverse weather conditions, under no other circumstances are excavated areas to remain open for greater than 14 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.

Carriage walks are considered to be an integral part of general concrete sidewalk, and are to be constructed in accordance with requirements for concrete sidewalk. Carriage walk is any concrete pathway that provides pedestrian access between main sidewalk and edge of pavement.

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.

#### 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 S608-3.08D 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.

### **S608-3.10 Color-Tinted Concrete**

Color-tinted concrete areas and subbase course are to be constructed in accordance with Subsection S608-3.09 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 if recommended by color additive manufacturer. Do not use plastic sheeting or water to cure color-tinted concrete.

Admixtures such as air-entraining agents, normal or retarded-set agents, or water-reducing agents may be used in concrete, but calcium chloride or admixtures containing calcium chloride are not to be used. Admixtures are to be added in same proportions to all loads of concrete.

Color additive is to be introduced into mixer drum in manner recommended by color manufacturer, and mixer operated at charging speed which will ensure sufficient mixing of color with aggregate, cement and water. Quantity of concrete being mixed is to be no less than one-third of capacity of mixing drum, and is to be in full cubic yard increments.

Prior to placing color-tinted concrete, all adjacent surfaces and structures are to be protected from spatters. If concrete is to be pumped, pump and hoses are to be primed with slurry that is colored to match desired concrete tint. Color-tinted concrete is to be placed in one course to required thickness. Once portion of batch has been placed, no water is to be added to remaining batch.

Consistent finishing practices are to be used on all color-tinted concrete areas to insure uniformity of color. Water is not to be sprinkled or otherwise added to concrete surface during finishing process.

Sample segment of color-tinted concrete measuring approximately 60 square feet is to be constructed in portion of flatwork area to determine suitability of color. If sample segment is satisfactory to Project Manager, it is to be incorporated into finished flatwork. If sample segment is unsatisfactory it is to be removed and new sample segment constructed. Repeat process until satisfactorily color-tinted concrete sample is achieved and approved.

### **S608-3.11 Exposed Aggregate Concrete**

Exposed aggregate concrete areas and subbase course are to be constructed in accordance with Subsection S608-3.09 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 and for approval by Project Manager, construct sample area at least 25 square feet in size. 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.

### **S608-3.12 Detectable Warning Surface**

Embedded detectable warning surface installation is preferred method for constructing detectable warning surface.

Surface applied detectable warning surface installation is generally unacceptable except in select locations, at discretion of Project Manager.

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

Follow manufacturer's recommendations for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility.

Detectable warning surface is to be minimum of 24 inches deep situated in predominant direction of pedestrian traffic, and extend across full width of accessible connection or flush surface, excluding side flares.

Truncated dome rows are to be aligned perpendicular or radial to lower grade break on accessible connections with grade (running slope) of 5% or greater. Where truncated domes are arrayed radially truncated domes may differ in diameter and center-to-center spacing. Where grade (running slope) is less than 5%, orientation is less critical and truncated domes may differ from perpendicular or radial alignment to lower grade break.

Detectable warning surface is to be provided at following locations:

- access ramps, blended transitions and flush surfaces at pedestrian street crossing
- both sides of street medians and pedestrian refuge islands and where sidewalk is minimum of 6 feet long
- both sides of street intersection style driveway opening
  
- both sides of driveway opening that is controlled by stop sign or traffic signal

Some detectable warning surface products require concrete border for proper installation. If required, width of border is not to exceed 2 inches, as measured between edge of detectable warning surface and back edge of curb or concrete gutter.

#### **A. Embedded Detectable Warning Surface - General**

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

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

Foundation is to be concrete constructed in accordance with Subsection S608-3.09 Concrete Sidewalk and Driveway. Concrete is to be formed and poured integral with surrounding concrete sidewalk areas, and surface is to be level, without any indentations or projections.

Embedded detectable warning surface unit(s) is to be installed in accordance with manufacturer's recommendations.

## B. Precast Brick Detectable Warning Surface

Weep hole is to be provided at low point in concrete 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 foundation and is to be thoroughly supported so it remains plumb until concrete has set. After concrete has set, 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.

Precast brick detectable warning surface units are to be placed on bedding material in required pattern, with straight courses and hand tight joints. Precast brick detectable warning surface 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.

Joints are to be filled with polymeric jointing sand. Before applying polymeric jointing sand material, surface of precast brick detectable warning surface 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.

## C. Embedded Detectable Warning Surface at Existing Location

Saw cut perimeter of existing area to dimensions necessary to install embedded detectable warning surface. 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. Existing material is to be removed by any practical method, and removed material properly disposed of.

Installation is to be in accordance with Subsection S608-3.12A Embedded Detectable Warning Surface - General and S608-3.12B Precast Brick Detectable Warning Surface.

## D. Surface-Applied Detectable Warning Surface at New or Existing Location

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

### **S608-3.13 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 Subsection S608-3.09 Concrete 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.

### **S608-3.14 Concrete Steps**

Concrete steps are to be constructed in accordance with Subsection S608-3.09 Concrete Sidewalk and Driveway, except as modified herein.

Stairway and individual steps are to be constructed with pattern, grades and cross slope consistent with existing walk and surrounding area. Handrail is to be provided on both sides of stairway, with end extension not to protrude into main sidewalk area.

Minimum clear space between inside of handrails is to be 3 feet for 1 and 2 family residences, 4 feet for buildings other than 1 and 2 family residences.

Stairway is to have minimum of 3 steps, with risers and treads being of uniform size and shape. Adjust riser/tread dimensions to provide for stairway with minimum of 3 steps; or eliminate need for steps by adjusting elevation of surrounding area, or extending overall replacement limits.

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 or chamfered with 1/2 inch radius. Top and bottom steps to have 2 inch wide non-slip visual contrast strip across leading edge of step. Strip is to be shaded to provide light-on-dark or dark-on-light contrast with underlying step.

### **S608-3.15 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.

### **S608-3.16 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.

### **S608-3.17 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.

### **S608-3.18 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.

Brick driveways, brick sidewalk crossing driveways, and other areas as required are to have concrete foundation constructed in accordance with Subsection S608-3.19 Brick with Concrete Foundation.

Subbase material is to be type 1, minimum of 6 inches thick. 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 bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and re-screeded. Extensive areas of bedding material are not to 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 S608-3.25 Paver Edge Restraint.

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.

### **S608-3.19 Brick with Concrete Foundation**

Brick is to be constructed in accordance with Subsection S608-3.18 Brick, except as modified herein.

Brick driveways, brick sidewalk crossing driveways, and other areas as required, are to be constructed with concrete foundation. Concrete foundation is to be concrete in accordance with Subsection S608-3.08 Concrete 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.

### **S608-3.20 Reset Existing Brick**

Reset existing brick is to be constructed in accordance with Subsection S608-3.18 Brick, 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 in accordance with Subsection S608-3.19 Brick with Concrete Foundation.

### **S608-3.21 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.

### **S608-3.22 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 S608-3.25 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 to 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 bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and re-screeded. Extensive areas of bedding material are not to 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 Subsection S608-3.09 Concrete 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 bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and re-screeded. Extensive areas of bedding material are not to 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.

### **S608-3.23 Reset Existing Slate/Stone Paver**

Reset existing slate/stone pavers are to be constructed in accordance with Subsection S608-3.22 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.

### **S608-3.24 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.

### **S608-3.25 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 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.

### **S608-3.26 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 bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and re-screeded. Extensive areas of bedding material are not to 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.

### **S608-3.27 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 S608-3.26 Coarse Sand Bedding Material.

### **S608-3.28 Pervious Concrete Sidewalk**

Pervious concrete is to be constructed in accordance with Section S507 Pervious Concrete and Subsection S608-3.09 Concrete Sidewalk and Driveway.

Pervious concrete is not to be used for construction of sidewalk access ramps.

Porous subbase filter layer course is to be installed in accordance with Section S304 Subbase Course.

## **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.

Carriage walks are considered to be an integral part of general concrete sidewalk, and measurement for carriage walks will be included under concrete sidewalk bid items.

## **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; polyurethane caulking compound; cleaning finished work; equipment; site cleanup; correction or replacement of unsatisfactory work; and furnishing all labor, material and equipment necessary to complete work.

Unit price bid for all items also includes cost of: survey work necessary to field verifying all elevations and dimensions to ensure that final layout of sidewalks, curb ramps and blended transitions meet *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)* requirements prior to pouring concrete, or placing asphalt or pavers.

Unit price bid for all items also includes cost of: constructing all elements in accordance with *Americans with Disabilities Act (ADA)* and *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)*, and in accordance with requirements of S608 Sidewalk and Driveway; and verifying dimensions, grades (running slopes) and cross slopes of all access elements including access ramps, blended transitions, side flares, turning spaces, clear spaces and curb reveal to ensure that elements have been constructed within required guidelines without exceeding allowable maximum limit for work acceptance.

Furnishing and installing temporary sidewalk will be paid for under NYSDOT Item 619.01 Basic Work Zone Traffic Control.

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. Color-Tinting Concrete**

Unit price bid also includes cost of: all required work necessary to construct color-tinted concrete; color additive; color-matched polyurethane caulking compound; evaporation reducer; furnishing and constructing satisfactory sample segment.

#### **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; furnish and install visual contrast strip.

Furnishing and installing handrails will be paid for under separate bid item.

#### 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 Surface – all Methods**

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

For precast brick detectable warning surface, unit price bid will also include cost of: furnishing, compacting and placing coarse sand bedding; 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 Surface 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 surface; doing work in accordance with manufacturer's recommendations.

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

For embedded detectable warning surface, 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; 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.

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; removing, cleaning, storing and reinstalling curb or other materials as specified.

##### **S608-5.08 Brick**

Unit price bid also includes cost of: furnishing and installing brick; coarse sand bedding; brooming; polymeric jointing sand; compaction; cutting brick; patterning.

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

##### **S608-5.09 Brick with Concrete Foundation**

Unit price bid also includes cost of: furnishing and installing brick; concrete foundation; subbase course; coarse sand bedding; 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 paver edge restraint will be paid for under separate bid item.

#### **S608-5.10 Reset Existing Brick**

Unit price bid also includes cost of: removing, storing, cleaning, cutting and reinstalling existing brick; removing and disposing existing bedding material; furnishing and installing coarse sand bedding; brooming; polymeric jointing sand; compaction; patterning.

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

#### **S608-5.11 Reset Existing Brick with Concrete Foundation**

Unit price bid also includes cost of: removing, storing, cleaning, cutting and reinstalling existing brick; removing and disposing existing bedding material; furnishing and installing concrete foundation; subbase course; and coarse sand bedding; 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 paver edge restraint will be paid for under separate bid item.

#### **S608-5.12 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.

#### **S608-5.13 Slate/Stone Paver – Light Duty**

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

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

#### **S608-5.14 Slate/Stone Paver – Medium-Duty**

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

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

#### **S608-5.15 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 coarse sand bedding; brooming; polymeric jointing sand; compaction; patterning.

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

#### **S608-5.16 Reset Existing Slate/Stone Paver with Concrete Foundation**

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 concrete foundation; subbase course; coarse sand bedding; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

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

**S608-5.17 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.

**S608-5.18 Paver Edge Restraint**

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

**S608-5.19 Coarse Sand Bedding Material**

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

**S608-5.20 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.

**S608-5.21 Pervious Concrete Sidewalk**

Unit price bid also includes cost of: all required work necessary to layout and construct pervious concrete sidewalk; furnishing, placing and finishing pervious concrete; forms; edges; construction, transverse, longitudinal and expansion joints; scoring pattern; joints at appurtenances; curing compounds; polyethylene or curing blankets; conforming to joint tolerance and quality requirements; providing, maintaining, removing and disposing test sample.

Payment will be made under:

<b>ITEM NO.</b>	<b>ITEM</b>	<b>PAY UNIT</b>
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
S608.180204	Brick with Concrete Foundation	Square Foot
S608.180205	Brick with Concrete Foundation (Including Excavation)	Square Foot
S608.180206	Brick with Concrete Foundation (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
S608.180304	Brick with Concrete Foundation – Cultural District	Square Foot
S608.180305	Brick with Concrete Foundation – Cultural District (Including Excavation)	Square Foot
S608.180306	Brick with Concrete Foundation – Cultural District (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
S608.180504	Reset Existing Brick with Concrete Foundation	Square Foot

ITEM NO.	ITEM	PAY UNIT
S608.180505	Reset Existing Brick with Concrete Foundation (Including Excavation)	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
S608.180604	Reset Existing Brick with Concrete Foundation – Cultural District	Square Foot
S608.180605	Reset Existing Brick with Concrete Foundation – Cultural District Including Excavation)	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 with Concrete Foundation	Square Foot
S608.200202	Slate - Medium-Duty with Concrete Foundation (Including Excavation)	Square Foot
S608.200301	Reset Existing Slate	Square Foot
S608.200302	Reset Existing Slate (Including Excavation)	Square Foot
S608.200303	Reset Existing Slate (Including Excavation and Subbase Course)	Square Foot
S608.200401	Reset Existing Slate with Concrete Foundation	Square Foot
S608.200402	Reset Existing Slate with Concrete Foundation (Including Excavation)	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 with Concrete Foundation	Square Foot
S608.220202	Stone Paver - Medium-Duty with Concrete Foundation (Including Excavation)	Square Foot
S608.220301	Reset Existing Stone Paver	Square Foot
S608.220302	Reset Existing Stone Paver (Including Excavation)	Square Foot
S608.220303	Reset Existing Stone Paver (Including Excavation and Subbase Course)	Square Foot
S608.220401	Reset Existing Stone Paver with Concrete Foundation	Square Foot
S608.220402	Reset Existing Stone Paver with Concrete Foundation (Including Excavation)	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 Surface	Square Foot
S608.380602	Embedded Detectable Warning Surface	Square Foot
S608.380603	Surface Applied Detectable Warning Surface	Square Foot
S608.380701	Precast Brick Detectable Warning Surface at Existing Location	Square Foot
S608.380702	Embedded Detectable Warning Surface at Existing Location	Square Foot
S608.380703	Surface Applied Detectable Warning Surface 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

<b>ITEM NO.</b>	<b>ITEM</b>	<b>PAY UNIT</b>
S608.55	Heavy-Duty Commercial Concrete Driveway (Including Excavation and Subbase Course)	Cubic Yard
S608.5601XX	Color-Tinted Concrete - Color	Cubic Yard
S608.5602XX	Color-Tinted Concrete – Color (Including Excavation)	Cubic Yard
S608.5603XX	Color-Tinted Concrete – Color (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
S608.5901	Pervious Concrete Sidewalk	Cubic Yard
S608.5902	Pervious Concrete Sidewalk (Including Excavation and Porous Subbase Filter Layer Course)	Cubic Yard
S608.5903	Pervious Concrete Sidewalk (Including Excavation, Porous Subbase Filter Layer Course and Geotextile Separation)	Cubic Yard

REVISED May 15, 2020