

SECTION S413 - SPEED HUMP AND SPEED CUSHION

S413-1 DESCRIPTION

Work consists of construction of speed humps and speed cushions as required in Contract Documents and as directed by Project Manager.

References to NYSDOT specifications are to be in accordance with *NYSDOT Standard Specifications (US Customary Units)* in effect at time of bid advertisement.

S413-2 MATERIALS

S413-2.01 Asphalt

Asphalt is to be 9.5 F2 top course asphalt 80 series compaction mix in accordance with NYSDOT Section 404 Asphalt (WMA) Pavements.

S413-2.02 Tack Coat

Tack coat is to be diluted tack coat in accordance with NYSDOT Section 702 Bituminous Materials.

S413-2.03 Temporary Speed Hump

Temporary speed hump is to be prefabricated rubber product in accordance with traffic calming safety standards and specifications outlined by Institute of Transportation Engineers (ITE), and capable of being removed and reinstalled numerous times without showing signs of excessive wear and tear.

S413-2.04 Chevron Pavement Marking Symbol

Chevron symbol is to be preformed thermoplastic reflectorized material capable of application on existing and new asphalt and portland cement concrete surfaces, meeting requirements of AASHTO M249, and shall:

- Not contain 0.1% or more of any chemical listed by International Agency for Research on Cancer (IARC), National Toxicology Program (NTP), or regulated by US Occupational Safety and Health Administration (OSHA) as carcinogen.
- Conform to current Federal, State and Local air pollution regulations, including those for control (emission) of volatile organic compounds (VOC).
- Be packaged in suitable, well-sealed in their original unopened containers. Shipping documents and containers shall have identification numbers or batch dates for confirmation of when products were manufactured, brand name, name of manufacturer, lot or batch number, temperature range for storage, expiration date, quantity contained and include Material Safety Data Sheets. This information shall be made available for inspection at any time.
- Be stored in accordance with manufacturer's instructions and manufacturers' requirements for shelf life and storage conditions.
- Be clearly labeled and in dry and clean condition prior to use.
- Provide surface friction level equivalent or better than existing pavement.
- Be colored white in conformance with latest edition of Manual of Uniform Traffic Control Devices (MUTCD) as specified on provided Work Orders or Plans.

Preformed thermoplastic reflectorized material is to be as manufactured by Ennis-Flint, Inc.; Ozark Materials, LLC; Swarco Industries, Inc; or approved equivalent.

S413-2.05 Temporary Signage

Temporary signage is to be W8-1 BUMP temporary warning sign mounted on fixed temporary sign support and are to be in accordance with NYSDOT Section 619 Work Zone Traffic Control.

S413-2.06 Asphalt Pavement Joint Adhesive

Asphalt pavement joint adhesive is to be in accordance with NYSDOT Section 705-19 Asphalt Pavement Joint Adhesive.

S413-3 CONSTRUCTION DETAILS

S413-3.01 General

Minimum of five (5) working days prior to commencing construction of speed hump/cushion, Contractor is to provide written notification of planned work to residents and businesses on each street and intersecting streets up to one (1) block away, and to Project Manager. Project Manager will in turn notify Office of Emergency Services, local City NSC Office, City School District and any other interested parties that construction of speed hump/cushion is scheduled to take place.

Notification to residents is to be type written, is to contain information informing residents and businesses of planned work, and is to be approved by Project Manager before distribution. Notification is to be placed in plastic bag with handles that have capability of being hung on door knob, and distributed to all residents and businesses in affected area.

During construction of speed hump/cushion, street can be temporarily closed on daily basis. Street is to be re-opened and fully accessible daily to vehicular traffic outside of working hours. Closure is to be done with appropriate traffic control signs and devices required to maintain and protect traffic, as directed by Project Manager and in accordance with NYSDOT Section 619 Work Zone Traffic Control.

Adjacent areas disturbed or damaged during construction must be restored within fifteen (15) working days after construction of speed hump/cushion is completed.

S413-3.02 Signage

Contractor is to contact MCDOT Monday through Friday, between hours of 9:00AM and 3:00PM, (585) 753-7733, minimum of six (6) weeks prior to commencing construction of speed hump/cushion.

Contractor is to install temporary signage minimum of ten (10) working days prior to commencing construction of speed hump/cushion. MCDOT will install permanent signage after construction of speed hump has been completed.

Temporary signage is to be mounted on temporary sign supports in accordance with NYSDOT Section 619 Work Zone Traffic Control. Temporary signage is to be provided on each side of street adjacent to speed hump/cushion, and covered until speed hump/cushion has been constructed and street re-opened to traffic. Temporary signage is to remain in place and be maintained in good condition until permanent signage is installed by MCDOT. After permanent signage has been installed, Contractor is to remove temporary signage.

Sign post sleeves are to be installed in locations where signage will fall within paved area.

S413-3.03 Construction Performance Standards

Parabolic shape will be acceptable only if it is within tolerance range of +0.50 inch, -0.25 inch, at all cross-sections of required theoretical elevations. Take any steps necessary to correct any deficiencies that fall outside of tolerance range.

Cross-section and profile of each speed hump/cushion is to be surveyed to verify that speed hump/cushion has been constructed to required parabolic shape, and that it falls within required tolerance range, as follows:

Speed Hump: Parabolic shape of speed hump is to be verified by surveying cross-sections. Elevations are to be taken along 7 parallel lines set every 18 inches starting from and parallel to outer edge of speed hump for entire length, and along parallel lines set perpendicular to speed hump starting at centerline of speed hump, thence subsequently outward every 5 feet for entire width.

Speed Cushion: Parabolic shape of speed cushion is to be verified by surveying cross-sections. Elevations are to be taken along 7 parallel lines set every 18 inches starting from and parallel to outer edge of speed cushion

for entire width, and along 3 parallel lines set perpendicular to speed cushion starting at centerline of speed cushion, thence subsequently outward every 2 feet for entire length.

Where length represents longest dimension, width represents shortest dimension.

S413-3.04 Installation

A. General

Do not place speed hump/cushion over or near any castings. Casting include but are not limited to manholes, catch basins and valve boxes.

Speed hump/cushion is to be parabolic in shape, with top of speed hump/cushion at its apex being 3.50 inches above theoretical finished grade. Use any method necessary to form parabolic shape of speed hump/cushion.

Proven method for forming parabolic shape is to use profile template constructed from 16 feet long metal channel piece or wooden 2x10. Cut center portion of bottom of profile template 12 foot wide into basic parabolic shape leaving flat area at each end of profile template. Attach length of metal channel to top portion of profile template to stiffen and minimize any bending of wooden profile template.

Speed hump/cushion is to be constructed of asphalt in accordance with construction details of NYSDOT Section 404 Asphalt (WMA) Pavements, placing and compacting asphalt in two lifts of approximate equal thickness.

Thoroughly clean existing surface and apply diluted asphalt tack coat completely covering entire surface area, before placement of any new asphalt material, and between any and all subsequent lifts of asphalt courses, in accordance with NYSDOT Section 407 Tack Coat.

All exposed edges of existing adjacent pavement are to be treated with asphalt pavement joint adhesive in accordance with NYSDOT Section 418 Asphalt Pavement Joint Adhesive.

During compaction of asphalt it may be necessary to add additional or remove excess asphalt material to attain proper parabolic shape and elevation. Do not perform final rolling operation until proper parabolic shape of speed hump has been verified in accordance with Subsection S413-3.03 Construction Performance Standards.

B. Speed Hump

Speed hump is to be located as shown on approved plans, or adjusted as required by Resident Project Representative.

Speed hump is to be parabolic in shape, with top of speed hump at its apex being 3.50 inches above top of existing pavement.

Speed hump is to be 2 feet narrower than full width of existing pavement, across and perpendicular to centerline of street. Leave 12 inch wide open area on both sides of street between edge of pavement and edge of speed hump to permit free flow of storm water runoff.

Keyway 24 inches in width is to be provided around perimeter of speed hump. Saw cut extents of key way 1.50 inches deep. Mill and remove existing pavement from extents of keyway area.

C. Speed Cushion

Speed cushions are to be located and spaced apart as shown on approved plans, or adjusted as required by Resident Project Representative.

Speed cushion is to be parabolic in shape, with top of speed hump at its apex being 3.50 inches above top of existing adjacent pavement.

Speed cushion is to be 7 feet in width and perpendicular to flow of traffic.

Saw cut around full extents of speed cushion area, mill and remove as necessary existing pavement within saw cut area to a depth of 1.50 inches.

D. Chevron Symbol

Chevron symbols are to be placed as shown on approved plans, and can be adjusted as required by Resident Project Representative. In no instance should chevron symbol cross-over centerline of street, nor more than half of chevron symbol encroach into parking lane, or be obscured by parked vehicle.

Apply chevron symbol only during conditions of dry weather and on dry pavement surfaces. At time of installation, pavement surface temperature is to be at or above manufacturer recommendations.

At time of application of chevron symbol, Contractor is to thoroughly clean pavement surface and existing durable markings such that they are free of oil, dirt, dust, grease and similar foreign materials, and to satisfaction of Resident Project Representative.

Heat torch used for placement of markings and/or drying of pavement is to be type recommended by manufacturer of preformed material. All application equipment is to be approved by Resident Project Representative prior to start of work.

S413-3.05 Temporary Speed Hump

Temporary speed hump is to be installed within forty-five (45) days after Notice to Proceed has been issued, and removed after substantial completion of Project, as determined by Project Manager.

No more than ten (10) days after removal of temporary speed hump, re-notification is to be done in accordance with Subsection S413-3.01 General, stating that temporary speed humps have been removed.

Prior to installation of temporary speed hump, existing pavement area is to be thoroughly cleaned. Installation of temporary speed humps is to be in accordance with manufacturer's instructions. Maintain temporary speed humps, making any adjustments or re-installation necessary to ensure that temporary speed humps remain properly situated and are set firmly in place.

Chevron symbol is to be installed on temporary speed humps that are not pre-marked, in accordance with manufacturers' instructions. Chevron symbols are to be placed as shown on approved plans, and can be adjusted as required by Resident Project Representative, and in no instance are they to encroach into parking lane

When project extends for more than one (1) construction season requiring winter shutdown, temporary speed humps, hardware and signage are to be removed during first week of October, and re-installed at same location(s) during week immediately preceding April 15th of following year. Before re-installation of temporary speed humps, re-notification is to be done in accordance with Subsection S413-3.01 General.

For winter shutdown, upon removal of temporary speed humps existing pavement is to be restored, filling in all holes necessitated for installation of temporary speed hump anchoring system. Properly store and protect temporary speed humps, hardware and signage during winter shutdown.

After final removal of temporary speed humps and hardware, permanently restore existing pavement, permanently filling in all holes necessitated for installation of temporary speed hump anchoring system.

After final removal, temporary speed hump and hardware is to be turned over to City of Rochester. Any material that is damaged is to be repaired, or if beyond repair, replaced with new material.

Temporary speed hump and hardware is to be delivered to City of Rochester Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00 AM and 3:00 PM, (585) 428-7479. Street Maintenance Division requires minimum of five (5) working days advance notice to make arrangements for delivery of salvaged materials.

S413-3.06 Temporary Speed Hump (Furnished)

Temporary speed hump and hardware, will be as furnished by City of Rochester.

To make arrangements for pick-up, Contractor is to call City of Rochester Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00 AM and 3:00 PM, (585) 428-7479. Street Maintenance Division requires minimum of five (5) working days advance notice to make arrangements for pick-up of furnished materials.

Check all furnished materials for condition, noting any pre-existing deficiencies or damage.

Installation, removal, salvaging and repair or replacement of temporary speed hump and hardware is to be done in accordance with Subsection S413-3.05 Temporary Speed Hump. Contractor is not responsible for repair or replacement of pre-existing deficiencies or damage of furnished materials.

Upon final removal, temporary speed humps and hardware are to be returned to City of Rochester Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00 AM and 3:00 PM, (585) 428-7479. Street Maintenance Division requires minimum of five (5) working days advance notice to make arrangements for delivery of salvaged materials.

S413-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of speed humps/cushions constructed, or number of temporary speed humps installed.

S413-5 BASIS OF PAYMENT

S413-5.01 General All Items

Unit price bid for all items includes cost of: preparation and distribution of written notification; providing plastic bags; notifying and coordinating with MCDOT for signage installation; cleaning pavement; additional pavement preparation; and furnishing all labor, material and equipment necessary to complete work.

Restoration of adjacent areas disturbed or damaged during construction by Contractor's operations, will be paid for by Contractor.

Furnishing and installing sign post sleeves; and maintenance and protection of traffic will be paid for under separate bid items.

Furnishing, installing, maintaining and removing temporary signage will be paid for under lump sum bid item for Basic Work Zone Traffic Control per NYSDOT Section 619 Work Zone Traffic Control.

S413-5.02 Speed Hump

Unit price bid also includes cost of: construction of keyway by saw cutting, milling and removing existing pavement; construction of speed hump; furnishing, placing and compacting asphalt; profile template; tack coat; survey of cross-section and profile to verify parabolic shape for quality control measures; correction of any deficiencies that fall outside of required tolerance range; furnishing and installing chevron symbol pavement marking; asphalt pavement joint adhesive.

S413-5.03 Speed Cushion

Unit price bid also includes cost of: saw cutting, milling and removing existing pavement; construction of speed cushion; furnishing, placing and compacting asphalt; profile template; tack coat; survey of cross-section and profile to verify parabolic shape for quality control measures; correction of any deficiencies that fall outside of required tolerance range; furnishing and installing chevron symbol pavement marking; asphalt pavement joint adhesive.

S413-5.04 Temporary Speed Hump

Unit price bid also includes cost of: furnishing, installing, maintaining and removing temporary speed hump and hardware; furnishing and installing chevron symbol pavement marking where required; repairing or replacement of materials damaged by Contractor's operations; coordinating with and delivery of temporary speed hump and hardware to City Street Maintenance Division; permanent restoration of existing pavement, including filling in all holes necessitated for installation of temporary speed hump anchoring system.

For installation of temporary speed hump including winter layover, unit price bid also includes cost of: re-notification; removing, storing, protecting and reinstalling temporary speed hump; temporary pavement restoration, including filling in all holes necessitated for installation of temporary speed hump anchoring system.

S413-5.05 Temporary Speed Hump (Furnished)

Unit price bid also includes cost of: picking-up, inspecting for pre-existing deficiencies or damage, installing, maintaining and removing furnished materials; furnishing and installing chevron symbol pavement marking where required; repairing or replacement of materials damaged by Contractor's operations; coordinating with and delivering of furnished materials to City Street Maintenance Division; permanent restoration of existing pavement, including filling in all holes necessitated for installation of temporary speed hump anchoring system.

For installation of temporary speed hump (furnished) including winter layover, unit price bid also includes cost of: removing, storing, protecting and re-installing temporary speed hump; re-notification; temporary pavement restoration, including filling-in all holes necessitated for installation of temporary speed hump anchoring system.

Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
S413.0102	Speed Hump	Each
S413.0201	Speed Cushion	Each
S413.03	Temporary Speed Hump	Each
S413.04	Temporary Speed Hump (Winter Layover)	Each
S413.05	Temporary Speed Hump (Furnished)	Each
S413.06	Temporary Speed Hump (Furnished) (Winter Layover)	Each