Designer Note: The subject special provision is intended for use on resurfacing contracts or contracts with bridge repair. This is to be used in lieu of using normal pavement repair procedures on these structural slabs. No details are required on the plans other than showing estimated locations of approach slab repair in a plan view similar to that being done with bridge deck repairs. If the contract includes other bridge repairs then the appropriate pay items should appear on the bridge's total bill of material in addition to the summary of quantities.

The Bureau of Bridges and Structures will monitor implementation through the plan review process.

Approach Slab Repair

Effective: March 13, 1997

Description.
This work shall consist of bituminous surface removal, when required, the removal and disposal of all loose and deteriorated concrete and the replacement with new concrete to the original top of approach slab. The work shall be done according to the applicable requirements of Sections 501, 503 and 1020 of the Standard Specifications and this Special Provision.

Approach slab repairs will be classified as follows:

(a) Partial-Depth. Partial-depth repairs shall consist of removing the loose and unsound approach slab concrete, disposing of the concrete removed and replacing with new concrete. The removal may be performed by chipping with power driven hand tools or by hydro-equipment. The depth shall be measured from the original concrete surface, at least 20 mm (3/4 inch) but not more than 140 mm (5 1/2 inches) unless otherwise specified on the plans.

(b) Full-Depth. Full-depth repairs shall consist of removing concrete full-depth of the slab, disposing of the concrete removed, and replacing with new concrete to the original approach slab surface. The removal may be performed with power driven hand tools or by hydro-equipment.

Materials.

All materials shall comply with the requirements of Sections 503 and 1020 of the Standard Specifications.

Concrete for partial and full-depth repairs shall be proportioned and mixed according to the applicable portions of Section 1020 of the Standard Specifications except as follows:

No calcium chloride will be permitted in the mix.

	Per Bag of Cement kg.	(Lbs.)	Per Cu M (Cu. Yd.) of Concrete kg.	(Lbs.)
Portland Cement	43	(94)	436	(735)
Fine Aggregate*	77	(170)	787	(1,326)
Coarse Aggregate *	80	(175)	810	(1,365)
Water *	19	(42)	193	(325)
	18.5 L (4.9 gals.)		194 L (39.2 gals.)	
Air entrainment	6 to 9%		6 to 9%	

*Based on saturated surface-dry aggregate with a specific gravity of 2.65. The mix will be adjusted by the Engineer to compensate for aggregate specific gravity and moisture. Coarse aggregate shall be gradation CA 13, CA 14 or CA 16, subject to approval of the mix design. Fine aggregate shall be gradation FA 1 or FA 2.

Grout. The grout for bonding new concrete to old concrete shall be proportioned with equal parts by mass (weight) of portland cement and sand, mixed with sufficient water to form a slurry. The grout may be ready-mixed or mixed at the job site. The bonding grout shall have a consistency allowing it to be scrubbed onto the prepared surface with a stiff brush or broom leaving a thin, uniform coating that will not run or puddle in low spots.

Equipment:

The equipment used shall be subject to the approval of the Engineer and shall meet the following requirements:

(a) Surface Preparation Equipment. Surface preparation and concrete removal equipment shall comply with the applicable portions of Section 1100 of the Standard Specifications and the following:

(1) Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

(2) Blast Cleaning Equipment. The blast cleaning may be performed by wet sandblasting, high-pressure waterblasting, abrasive blasting, or other methods approved by the Engineer. Blast cleaning equipment shall be capable of removing rust and old concrete from exposed reinforcement bars. Oil traps will be required.

(3) Power-Driven Hand Tools. Power-driven hand tools will be permitted including jackhammers lighter than the nominal 20 kg. (45 pound) class. Chipping hammers heavier than a nominal 6.8 kg. (15 pound) class shall not be used for removing concrete from below any reinforcing bar for partial depth repairs or final removal at the boundary of full-depth repairs. Jackhammers or chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

(4) Hydro-Scarification Systems. The hydro-scarification equipment shall consist of filtering and pumping units operating with a remote-controlled robotic device. The equipment may use river, stream or lake water. Operation of the equipment shall be performed and supervised by qualified personnel certified by the equipment manufacturer. Evidence of certification shall be presented to the Engineer. The equipment shall be capable of removing concrete to the specified depth and removing rust and concrete particles from exposed reinforcing bars. Hydro-scarification equipment shall be calibrated before being used and shall operate at a minimum of 124 MPa (18,000 psi).

(b) Concrete Equipment: Equipment for proportioning and mixing the concrete shall comply with the applicable requirements of Section 1103 of the Standard Specifications.

(c) Placing and Finishing Equipment: Placing and finishing equipment shall be according to Article 503.17 of the Standard Specifications. Adequate hand tools will be permitted for placing and consolidating concrete in the patch areas and for finishing small patches.

Construction Requirements:

(a) Bituminous Surface Removal.

The bituminous concrete surface course shall be removed and disposed of according to applicable portions of Articles 440.03 and 440.06 of the Standard Specifications. If the overlay contains asbestos fibers, removal shall be according to the Special Provision for "Asbestos Waterproofing Membrane or Asbestos Bituminous Concrete Surface Removal". Removal of the bituminous surface by the use of radiant or direct heat will not be permitted.

(b) Surface Preparation:

All loose, disintegrated and unsound concrete shall be removed from portions of the approach slab shown on the plans or as designated by the Engineer. The Engineer will determine the limits of removal as the work progresses.

If the Contractor elects to use hydro-scarification equipment, he/she shall be responsible for collecting and properly disposing of the runoff water generated. Runoff water will not be allowed to constitute a hazard on adjacent or underlying roadways, waterways, drainage areas or railroads nor be allowed to erode existing slopes.

The Contractor shall take care not to damage reinforcement bars or expansion joints which are to remain in place. Any damage to reinforcement bars or expansion joints shall be corrected at the Contractor's expense. All loose reinforcement bars, as determined by the Engineer, shall be retied at the Contractor's expense.

(1) Partial-Depth. Areas to be repaired will be determined and marked by the Engineer. A concrete saw shall be used to provide vertical edges approximately 20 mm (3/4 inch) deep around the perimeter of the area to be patched when an overlay is not specified. Where high steel is present, the depth may be reduced as directed by the Engineer. A saw cut will not be required on those boundaries along the face of the curb, parapet or joint or when sharp vertical edges are provided by hydro-scarification. The saw cut may be omitted if the deck is to receive an overlay.

The loose and unsound concrete shall be removed by chipping, with power driven hand tools or by hydro-equipment. All exposed reinforcing bars and newly exposed concrete shall be thoroughly blast cleaned. Where, in the judgment of the Engineer, the bond between existing concrete and reinforcement steel within the patch area has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 25 mm (1-inch) clearance will be required. The Engineer may require enlarging a designated removal area should inspection indicate deterioration beyond the limits previously designated. In this event, a new saw cut shall be made around the extended area before additional removal is begun. The removal area shall not be enlarged solely to correct debonded reinforcement or deficient lap lengths.

(2) Full-Depth. Concrete shall be removed as determined by the Engineer within all areas designated for full-depth repair and in all designated areas of partial depth repair in which unsound concrete is found to extend below a depth of 140 mm (5 1/2 inches) unless otherwise specified on the plans. Full depth removal shall be performed according to Article 501.03 of the Standard Specifications. A concrete saw shall be used to provide vertical edges approximately 20 mm (3/4 inch) deep around the perimeter of the area to be patched when an overlay is not specified. A saw cut will not be required on those boundaries along the face of the curb, parapet or joint or when sharp vertical edges are provided by hydro-scarification. The saw cut may be omitted if the deck is to receive an overlay.

All voids under full depth repair areas shall be filled with a suitable material that meets the approval of the Engineer.

(3) Reinforcement Treatment. Care shall be exercised during concrete removal to protect the reinforcement bars from damage. Any damage to the reinforcement bars to remain in place shall be repaired or replaced to the satisfaction of the Engineer at the Contractor's expense. All existing reinforcement bars shall remain in place except as herein provided for corroded bars. Tying of loose bars will be required. Any existing reinforcement bars which have a loss of more than 25% of their cross section through corrosion shall be replaced in kind with new steel as directed by the Engineer. No welding of bars will be permitted and new bars shall be lapped a minimum of 32 bar diameters to existing bars. An approved “squeeze type” mechanical bar splicer capable of developing in tension at least 125 percent of the yield strength of the existing bar shall be used when it is not feasible to provide the minimum bar lap.

(4) Cleaning. Immediately after completion of the concrete removal and reinforcement repairs, the repair areas shall be cleaned of dust and debris. Once the initial cleaning is completed, the repair areas shall be thoroughly blast cleaned to a roughened appearance free from all foreign matter. Particular attention shall be given to removal of concrete fines. Any method of cleaning which does not consistently produce satisfactory results shall be discontinued and replaced by an acceptable method. All debris, including water, resulting from the blast cleaning shall be confined and shall be immediately and thoroughly removed from all areas of accumulation. If concrete placement does not follow immediately after the final cleaning, the area shall be carefully protected with well-anchored polyethylene sheeting.

Exposed reinforcement bars shall be free of dirt, detrimental scale, paint, oil, or other foreign substances which may reduce bond with the concrete. A tight non-scaling coating of rust is not considered objectionable. Loose, scaling rust shall be removed by rubbing with burlap, wire brushing, blast cleaning or other methods approved by the Engineer.

(c) Placement & Finishing of Concrete Repair:

(1) Grout Placement. After the repair areas have been cleaned and immediately prior to concrete placement, the grout shall be applied to a dampened surface. A thin layer of grout shall be thoroughly scrubbed into the deck surface. All vertical as well as horizontal surfaces shall receive a thorough, even coating. The rate of grout placement shall be limited so the brushed grout does not dry out before it is covered

with concrete. Grout that has become dry and chalky shall be blast cleaned and replaced at the Contractor's expense. No concrete shall be placed over dry grout.

(2) Concrete Placement.

The concrete shall be placed and compacted according to Article 503.07 of the Standard Specifications and as herein specified.

All concrete shall be vibrated internally with hand-held vibrators. When an overlay system is not specified, the patches shall be finished according to Article 503.17 of the Standard Specifications, followed by a light brooming.

(d) Curing.

Concrete patches shall be cured by the Wetted Burlap Method as per Article 1020.13 of the Standard Specifications. The curing period shall be 72 hours followed by a 72-hour minimum drying period before scarifying or surfacing.

(e) Opening to Traffic.

No traffic or construction equipment will be permitted on the repairs until after the specified cure period and the concrete has obtained a minimum compressive strength of 27.6 MPa (4000 psi) or flexural strength of 4.65 MPa (675 psi) unless permitted by the Engineer.

Method of Measurement.

When specified, bituminous surface removal and full or partial depth repairs will be measured for payment and computed in square meters (square yards).

Basis of Payment.

The bituminous concrete surface removal will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS CONCRETE REMOVAL (DECK). Areas removed and replaced up to and including a depth of 140 mm (5 1/2-inch) or as specified will be paid for at the contract unit price per square meter (square yard) for APPROACH SLAB REPAIR (PARTIAL). Areas requiring removal greater than a depth of 140 mm (5 1/2-inch) shall be removed and replaced full depth and will be paid for at the contract unit price per square meter (square yard) for APPROACH SLAB REPAIR (FULL DEPTH).

When corroded reinforcement bars are encountered in the performance of this work and replacement is required, the Contractor will be paid according to Article 109.04 of the Standard Specifications.

No payment will be allowed for removal and replacement of reinforcement bars damaged by the Contractor in the performance of his/her work or for any increases in dimensions needed to provide splices for these replacement bars.

Removal and disposal of asbestos waterproofing and/or asbestos bituminous concrete will be paid for as specified in the Special Provision for “Asbestos Waterproofing Membrane or Asbestos Bituminous Concrete Surface Removal”.

Designer Note: This special is for use on overlay projects where there will not be adequate IDOT staff to mark the stationing on lathe until the surface course will be placed and stations can be stamped in the pavement. The pay item corresponding to this is XZ013798, Construction Station Layout.

CONSTRUCTION STATION LAYOUT

Effective July 30, 2010

This work shall consist of all labor, materials, and equipment necessary to temporarily stake, maintain, and remove the roadway stationing for all mainline and ramp pavements to be overlaid within the project limits.

Prior to any cold milling or other operations that will destroy the existing stationing stamped in the existing pavement, the Contractor shall have the stationing temporarily marked beyond the edge of shoulder or as directed by the Engineer. Unless otherwise allowed, the stationing shall be legibly written on wooden lathe marked with a ribbon and driven into the ground at 200′ (100 meter) intervals. On 2, 3, and 5 lane pavements, the stationing shall be marked on the right edge of pavement in the direction of increasing stationing. On ramp pavements, the stationing shall be marked along the baseline. On multi-lane divided roadways, the stationing shall be marked along the outside edge of shoulder in both directions. The stationing to be used shall be as shown on the plans. The beginning and ending station and location shall be confirmed with the Engineer prior to staking. Once the surface course has been stamped, the lathe shall be removed and disposed of in accordance with the Standard Specifications.

This work will be paid for at the contract unit price per lump sum for CONSTRUCTION STATION LAYOUT and no other compensation will be allowed.

Designer Note: To be included in complex-multiple stage projects. Check with Construction before including.

PRESTAGE SITE CONSTRUCTION MEETINGS

Effective June 1, 1992

This work shall consist of meetings with all concerned parties prior to each construction stage. The meetings shall be set up and conducted by the Contractor and shall include all Subcontractors connected with the particular stage. The Department's project staff and all concerned parties, as directed by the Engineer, shall be invited to attend.

The meetings are intended to help improve the coordination and quality of construction, personnel safety on the project site, and safety of the traveling public.

At each meeting, the Contractor shall indicate the current construction schedule for the particular stage, discuss maintenance of traffic, traffic control, project site personnel safety, compliance with the plans and specifications including quality construction, and all other pertinent subjects. Minutes of the meetings will be taken by the Resident Engineer and distributed to those persons in attendance.

The prestage site construction meetings will not be paid for separately but shall be included in the cost of the traffic control item(s) in the contract.

Designer Note: Intended for use where utility pipelines, structures, other underground facilities are abandoned/need to be removed during construction. Discuss usage with Project Support and your Project Engineer. Include plan information on utility locations to be abandoned and label all abandoned utilities.

REMOVAL OF ABANDONED UNDERGROUND UTILITIES

Effective January 15, 1996 Revised November 21, 1996

This work shall be completed in accordance with Article 105.07 of the Standard Specifications and the items outlined herein:

The cost of removal of abandoned or to be abandoned underground utilities shown on the plans are the responsibility of the owner. The Contractor shall make arrangements with the utility owner for removal and payment. The utility owner is listed in the plans under Status of Utilities.

Prior to removal of the abandoned facility, the owner shall be notified so that representatives can be present during the removal operation.

If an unknown abandoned utility is encountered, the Contractor will be paid for any removal required by the Engineer as extra work in accordance with Article 109.04 of the Standard Specifications.

Designer Note: **This special provision is for use on Local Roads projects only.** Projects prepared by Program Development shall continue to use the Status of Utilities supplied by the Utilities Section and placed in the front of the plans.

STATUS OF UTILITIES/UTILITIES TO BE ADJUSTED

Effective: January 21, 2005

The following utilities are located within the project limits. For relocations, the utility companies have provided the estimated dates.

Name, Contact, Address And Phone Number of Utility	Type	Location	Relocation Needed	Estimated Date Relocation Completed

The above represents the best information of the Department and is only included for the convenience of the bidder. The applicable provisions of Recurring Special Provisions LRS1, LRS6 and Articles 105.07, 107.20, 107.31 and 108.02 of the Standard Specifications for Road and Bridge Construction shall apply.

The estimated utility relocation dates should be part of the progress schedule submitted by the Contractor. If any utility adjustments or relocations have not been completed by the above dates specified and when required by the Contractor's operations after these dates, the Contractor should notify the Engineer in writing. A request for an extension of time will be considered to the extent the Contractor's critical path schedule is affected.

Designer Note: Use in all contracts with potential utility involvement.

UTILITIES – LOCATIONS/INFORMATION ON PLANS

Effective: November 8, 2013

The locations of existing water mains, gas mains, sewers, electric power lines, telephone lines, and other utilities as shown on the plans are based on field investigation and locations provided by the utility companies, but they are not guaranteed. Unless elevations are shown, all utility locations shown on the cross sections are based on the approximate depth supplied by the utility company. It shall be the Contractor's responsibility to ascertain their exact location from the utility companies and by field inspection.

Designer Note: Place this special provision in all projects which involve structure replacement over a stream or other waterway. Your project will require a Corps of Engineers' 404 permit and a copy of that permit is to be submitted with your special provisions at PS&E for inclusion in the project bidding package.

NATIONWIDE 404 PERMIT REQUIREMENTS

Effective January 22, 2001 Revised August 2, 2002

This bridge replacement or rehabilitation included with this project is authorized under a Nationwide Permit, provided all terms and conditions of the Nationwide Permit and any special conditions outlined in the Corps of Engineers' verification letter are met. A copy of the permit should be included within these special provisions. If they are not, a copy of these can be requested from the Department.

The Contractor will not be allowed to complete the structure replacement or rehabilitation using any in-stream access fill, cofferdams, or causeways unless shown on the plans or unless the proper permits are acquired by the Contractor for these activities. The existing permit may be amended to include these activities once the contractor determines the plan for completion of the work and it is submitted to the Department for submission to the Corps of Engineers'. The Department will not be held responsible for any delays incurred due to acquisition of additional permits or amending the existing permit. Determination of allowable methods for completion of this work under the current permit can be obtained from the Corps of Engineers.

Designer Note: Insert into all contracts.

LOCATION OF UNDERGROUND STATE MAINTAINED FACILITIES

Effective August 3, 2007 Revised July 31, 2009

The Contractor shall be responsible for locating existing and proposed IDOT electrical facilities (traffic signal, overhead lighting, Intelligent Transportation System, etc.) prior to performing any work at his/her own expense if required. The Contractor shall also be liable for any damage to IDOT facilities resulting from inaccurate locating.

The Contractor may obtain, on request, plans for existing electrical facilities from the Department.

The Contractor shall also be responsible for locating and providing protection for IDOT facilities during all phases of construction. If at any time the facilities are damaged, the Contractor shall immediately notify the Department and make all necessary arrangements for repair to the satisfaction of the Engineer. This work will not be paid for separately, but shall be included in the contract bid price.

Designer Note: To be used on Interstates, Freeways, and Expressways only. You should check with Project Implementation (Construction) and your Project Engineer before including this special provision in your project. The District Engineer has requested that discretion be utilized when selecting projects for this special provision. A common sense approach should be used in developing the limitations included in this special provision.

RIGHT-OF-WAY RESTRICTIONS

Effective July 1, 1994

Add to Article 107.32: The Contractor shall be permitted to use the State right-of-way adjacent to closed lanes or spread median areas for short periods of time (Designer to pick 1, 2, 3 and/or 4).

1) between (Lt., Rt., Median) Sta. to
2) within the interchange of and
3) the intersection of and
4) throughout the project limits

(then the Designer picks 1, 2, 3 and/or 4)

1) to store materials;
2) to stockpile salvaged materials;
3) to park construction machinery;
4) or to park or allow parking of any workman's vehicles

during the duration of this project.

When lanes are reopened to traffic, the Contractor shall arrange within a reasonable time period to clean up and restore areas where equipment or material has been stored on the right-of-way.

Designer Note: Insert only when directed to do so by your project engineer. Implementation and Program Development will jointly decide if use is appropriate for projects on certain lettings and date to be inserted for *.

DELAYED START OF MULTIPLE CONTRACTS

Effective: November 1, 2001

Add the following after the first paragraph of Article 108.03 of the Standard Specifications:

"Contractors who are the apparent low bidders on multiple contracts in one letting, may submit a written request for waiver within 10 days after bid opening to each of the District Engineers in whose district the affected contract is located. The request shall include specific reasons for the delay in a contract prosecution coordination plan and a proposed progress schedule for each contract. Each District Engineer will schedule a meeting with the Contractor within 5 working days after receipt of the request for waiver. Schedules for the prosecution of each contract and exact starting dates, as well as dates for preconstruction conferences, for each contract shall be established. Consideration of waivers will not affect award decisions or the procedures followed to execute awarded contracts.

By submission of a delayed start plan, the Contractor understands and agrees that the granting of a delayed start shall not be reason for an extension of time to complete the contract, and that the decision to approve a waiver for any or all contracts will reside with the Department, whose decision will be final.

All delayed working day contracts shall be scheduled for completion, except for off-pavement and/or cleanup work, by _____. However, upon starting a working day contract, working days will be charged according to Article 108.04 of the Standard Specifications until the contract is complete.

Completion date contracts will not be extended beyond the date included in the plans due to the granting of a request for delayed start.

Designer Note: Either this special provision or the one titled “Date of Completion (Plus Working Days)” should generally be used on all projects anticipated to take a full construction season or more to complete. Consult with your project engineer for use on your project. Select projects may also use incentive/disincentive clauses. Refer to BDE Manual Chapter 66-2.04, “Policy for Incentive and Disincentive Clauses”. There are three subjects in this special and each subject requires additional data to be supplied.

DATE OF COMPLETION

Effective March 1, 1990 Revised April 25, 2008

The Contractor shall schedule his operations so as to complete all work and open all the roadway to traffic on or before _____. The Contractor shall note that this completion date is based on an expedited work schedule.

Designer Note: Either this special provision or the one titled “Date of Completion” should generally be used on all projects anticipated to take a full construction season or more to complete. Consult with your project engineer for use on your project. Select projects may also use incentive/disincentive clauses. Refer to BDE Manual Chapter 66-2.04, “Policy for Incentive and Disincentive Clauses”. There are three subjects in this special and each subject requires additional data to be supplied.

DATE OF COMPLETION (PLUS WORKING DAYS)

Effective March 1, 1990 Revised July 1, 1994

The Contractor shall schedule his operations so as to complete all work, except as specified below, and open all the roadway to traffic on or before . The Contractor shall note that this completion date is based on an expedited work schedule. The Contractor will be allowed working days, after the completion date, to complete any remaining planting, seeding and sodding work.

20400 204.00

Designer Note: This special provision is to be used on any project using the pay items Borrow Excavation or Furnished Excavation.

BORROW AND FURNISHED EXCAVATION

Effective March 7, 2000 Revised April 27, 2007

Add the following to the requirements of Article 204:

"Soils which demonstrate the following properties shall be restricted to the interior of the embankment and shall be covered on both sides and top with a minimum of 3 feet (900mm) of non-restricted soil not considered detrimental in terms of erosion potential or excess volume change. A restricted soil is defined as having any one of the following properties:"

A grain size distribution with less than 35% passing the number 75um (#200) sieve.
A plasticity index of less than 12.
A liquid limit in excess of 50.

"All restricted and non-restricted embankment materials shall have the following minimum strengths for the indicated moistures:"

Immediate Bearing Value	Shear Strength At 95% Density *	Moisture
3.0	1000PSF (50 Kpa)	120%
4.0	1300 PSF (62 Kpa)	110%

*Granular Soils ϕ=35°

Designer Note: If your project's soils report requires geotechnical reinforcement, check with the Geotechnical Engineer prior to using this provision. There is also a CADD drawing "Geotechnical Reinforcement for Side Slopes" which is to be used with this provision and the Geotechnical Engineer will need to furnish additional data to complete that drawing. Assure treatment areas are shown on both the plans and cross sections. 7-1-94 Revised D.S.P. for Section and metrics.

GEOTECHNICAL REINFORCEMENT

Effective June 10, 1993 Revised January 1, 2007

This work shall consist of furnishing and installing a geogrid reinforcement system in the manner depicted in the bid documents and the applicable portions of Section 3.5 - Geogrid Soil Reinforcement - of the FHWA "Interim Guidelines for Design, Specifications, & Contracting of Geogrid Mechanically Stabilized Earth Slopes on Firm Foundation" dated December 1991.

The geogrid shall develop an allowable design force (T_a) in the roll direction of 2000 lb/ft. (29,000 N/m) width of grid based on the following allowable stress:

$$T_a = \frac{Tult}{FS_{cr} \times FS_{id} \times FS_{cd} \times FS_{bd} \times FS_{jnt}}$$

Where:

T_a = allowable strength, plf (Nm), for use in stability analyses.

T_{ult} = ultimate strength, plf (Nm), which is an index value used for quality control (QC) purposes

FS_{cr} = partial factor of creep deformation, ratio of QC strength to creep limiting strength.

FS_{id} = partial factor of safety for installation damage.

FS_{cd} = partial factor of safety for chemical degradation.

FS_{bd} = partial factor of safety for biological degradation, used in environments where biological degradation may exist.

FS_{jnr} = partial factor of safety for joints (seams and connections).

Total creep strain of the reinforcement shall be less than 10% over the design life of 75 years, for reinforced slopes.

In no case shall an installation damage factor (FS_{id}) less than 1.05 be used.

In no case shall a chemical durability factor (FS_{cd}) less than 1.1 be used, per Task Force 27 recommendations.

The geotechnical reinforcement rolls do not have to be connected or fastened to the ground other than to assure the grid stays in place during placement of the fill material.

Equipment will not be allowed directly on the geotechnical reinforcement. The first lift of embankment shall be placed on the geotechnical reinforcement without equipment tracking over it. Discing of the first lift of embankment will not be required.

The Contractor shall compact the embankment as specified in Section 205 of the Standard Specifications. Care shall be taken during compaction to prevent damage to the geotechnical reinforcement. Any damage shall be repaired immediately prior to continuing with the embankment. Costs for repair or geogrid replacement are the responsibility of the Contractor.

Before shipment of geogrid to the site for storage or use, the Contractor shall submit for approval the 10,000 hour creep test data, pullout test data, calculations and product literature showing compliance with the Special Provision. The data shall be submitted and sealed by an engineer licensed in Illinois.

Wide width tensile testing in accord with ASTM D4595 shall be submitted from the specific lot of material shipped to the project. Field samples may be taken by the Project Engineer to verify ASTM D4595 results.

This work will be measured in place and the area computed in square yards (square meters). The work will be paid for at the contract unit price per square yard (square meter) for GEOTECHNICAL REINFORCEMENT.

Designer Note: Use on all contracts with earth excavation, furnished excavation, or borrow excavation. This was developed by Materials to eliminate potential for trapping water in porous layers of embankment. Make sure to include “Borrow and Furnished Excavation” District Special Provision.

EMBANKMENT (RESTRICTIONS)

Effective January 21, 2005 Revised August 3, 2007

Add the following to the requirements of Article 205.04:

Gravel, crushed stone or soils having less than 35% passing the number 200 sieve and other materials as allowed by Article 202.03 of the standard specifications are further restricted. These further restricted materials are also limited to the interior of the embankment and shall have a minimum cover of 3’ (1 m) of non-restricted soil (see “Borrow and Furnished Excavation” Special Provision). Alternating layers of further restricted material and cohesive soil will not be permitted. The further restricted materials may only be incorporated into the embankment by using one of the following procedures:

a. The further restricted materials shall be placed in 4” lifts and disked with the underlying lift material until a uniform and homogenous material is formed having more than 35% passing the number 200 sieve.

b. Sand, gravel or crushed stone embankment when placed on the existing ground surface will be drained using a 10' (3 m) by 10' (3 m) french drain consisting of nonwoven geotechnical fabric with 12” (0.3 m) of B-3 riprap. This shall be constructed on both sides of the embankment at the toe of the foreslope spaced 150’ (46 m) apart. At locations requiring a French drain the 3’ (1 m) cohesive cap shall not be installed within the 10' by 10' riprap area. If the Engineer determines that the existing ground is a granular free draining soil, the french drain may be deleted.

c. Sand, gravel or crushed stone embankment when placed on top of a cohesive embankment will be drained with a permanent 4” (100 mm) underdrain system. The underdrain system shall consist of a longitudinal underdrain on both sides of the embankment and transverse underdrains spaced at 250’ (75 m) centers. The underdrain shall consist of a 2’ (0.6 m) deep by 1’ (0.3 m) wide trench, backfilled with FA4 sand and a 4” (100 mm) diameter underdrain. In addition, both sides of the embankment will have a 6” (150 mm) diameter pipe drain which will drain the underdrain system and outletted into a permanent drainage structure or outletted by a headwall at the toe of the embankment.

The above work will not be paid for separately but shall be included in the cost of Earth Excavation, Furnished Excavation, or Borrow Excavation.

Designer Note: Discuss usage on your project with Materials. Use on all projects with earthwork which do not fall under the guidelines given for the DSP entitled Embankment (Small Embankments).

EMBANKMENT

Effective: July 1, 1990 Revised: November 1, 2007

Revise the third paragraph of Article 205.06 of the Standard Specifications to read:

> All embankment shall be constructed with not more than 110% of optimum moisture content, determined according to AASHTO T 99 (Method C). The 110% of optimum moisture limit may be waived in free draining granular material when approved by the Engineer.
>
> The Contractor may, at his option, add a drying agent to lower the moisture content as specified above. The drying agent must be approved by the Engineer prior to use. Extra compensation will not be allowed for the use of a drying agent but will be considered included in the cost of the various items of excavation.

Designer Note: Discuss usage on your project with Materials. Use with relatively small embankments, such as sliver fills, turn lane construction, etc.

EMBANKMENT (SMALL EMBANKMENT)

Effective October 1, 1999 Revised January 1, 2007

Revised the third paragraph of Article 205.06 of the Standard Specifications to read:

> All material used for embankment shall not contain more than 120% of the optimum moisture except for the top 2 ft. (600 mm).
>
> The top 2 ft. (600 mm) of all embankments shall not contain more than 110% of the optimum moisture determined according to AASHTO T99 (Method C). The 110% of optimum moisture limit may be waived in free draining granular material when approved by the Engineer.

Designer Note: Use for seeding small disturbed areas. Discuss with the District Landscape Architect before using.

Consider EROSION CONTROL BLANKET, and make this work incidental to the EROSION CONTROL BLANKET if cover is required. Do not mulch if EROSION CONTROL BLANKET is used.

*Figure approximate acres (hectare).

**Make everything incidental to one specified item of work.

SEEDING, MINOR AREAS

Effective July 1, 1990 Revised January 1, 2007

Seeding, fertilizing, and mulching shall be done in accordance with Article 250 of the Standard Specifications except for the following revisions:

All areas disturbed by the work performed shall be seeded, fertilized, and mulched in accordance with Article 251.03(a). The materials may be purchased locally and placed as directed by the engineer.

The estimated area is approximately _____ acres (_____ hectare). The seed mixture shall be applied at 100 pounds/acre (110 kg/ha). The mixture shall be one that contains a high percentage of Kentucky Blue Grass. All seeds shall meet the purity and noxious weed requirements of Article 1081.04 of the Standard Specifications, and be approved by the engineer.

The fertilizer nutrients shall be applied at a rate of 270 lbs. (300 kg) of actual nutrients per acre (hectare). The fertilizer furnished shall be ready mixed material having a ratio of (1-1-1).

The contractor shall provide the engineer with the test results from the seed container and the chemical analysis of the fertilizer nutrients.

The seed, fertilizer, and mulch will not be measured for payment but will be considered included in the cost of .

Designer Note: Include on all interstate or four-lane highway projects that have thirty (30) working days or more. Calculate quantities assuming one mowing per fifty (50) working days. Do not use on new construction since mowing would have to be done only in areas where vegetation has been established.

MOWING

Effective December 11, 2001 Revised August 2,2013

This work shall consist of mowing the entire median up to 60' (20m) in width and the roadway foreslopes of the outside lanes to the ditchline or for a width of 15' (4.572 meters) from the edge of pavement or paved shoulder, whichever is less. At intersecting roadways, the mowing shall extend to the proposed right of way for a distance of 150' (45 m) on either side of the intersection. The height of the mowing shall not be more than 6" (150 mm). Equipment used shall be capable of completely severing all growth at the cutting height and distributing it evenly over the mowed area. The Contractor will not be required to mow continuously wet ditches and drainage ways, slopes greater than 1:3 (V:H), or areas which may be designated by the Engineer as not mowable. Mowing shall be done within the project limits during the construction of the project as directed by the Engineer and prior to the final inspection of the project. Any subsequent mowing required to disperse mowed material shall be considered as included in the cost of the mowing. Debris encountered during mowing, which interferes with the mowing operation or is visible from the roadway shall be removed and disposed of according to Article 202.03.

Method of Measurement: Mowing will be measured for payment in acres of surface area mowed.

Basis of Payment: This work will be paid for at the contract unit price per acre for MOWING.

Designer Note: Include on all rural two lane highway projects that have thirty (30) working days or more. Calculate quantities assuming one mowing per fifty (50) working days. Generally not appropriate for use on 3R or ditch grading projects – vegetation is not established enough to require mowing of the entire project limits. Mowing will generally still be needed on these projects, but should be paid for on an acre (hectare) basis.

MOWING

Effective December 11, 2001 Revised August 2, 2013

This work shall consist of mowing the roadway foreslopes to the ditchline or for a width of 15' (4.572 meters) from both edges of pavement or paved shoulder, whichever is less. At intersecting roadways, the mowing shall extend to the proposed right of way for a distance of 150' (45 m) on either side of the intersection. The height of the mowing shall not be more than 6" (150 mm). Equipment used shall be capable of completely severing all growth at the cutting height and distributing it evenly over the mowed area. The Contractor will not be required to mow continuously wet ditches and drainage ways, slopes greater than 1:3 (V:H), or areas which may be designated by the Engineer as not mowable. Mowing shall be done within the project limits during the construction of the project as directed by the Engineer and prior to the final inspection of the project. Any subsequent mowing required to disperse mowed material shall be considered as included in the cost of the mowing. Debris encountered during mowing, which interferes with the mowing operation or is visible from the roadway shall be removed and disposed of according to Article 202.03.

Method of Measurement: Mowing will be measured for payment in acres of surface area mowed.

Basis of Payment: This work will be paid for at the contract unit price per acre for MOWING.

Designer Notes: Revegetation Plan for Bridge Reconstruction Contracts. Discuss with the District Landscape Architect before using.

Purpose:

a) To reestablish vegetation along stream corridors where bridge construction has removed the existing vegetation.

b) To mitigate impacts of tree removal on all bridge projects.

c) To assist in erosion control and establish desirable trees in the area.

Special Considerations:

a) Tree species that grow in the area and naturally grow along stream banks will be selected.

b) Trees will be potted to allow extended planting dates.

c) A clear zone of 12 m (40 ft.) from the structure or edge of pavement must be maintained. This is to prevent shading of the structure during the winter months.

d) Use with bridge reconstruction projects where several or large trees are being removed.

e) A drawing showing proposed tree locations must be included in the plans.

f) Check with Landscaping before using.

7-1-94 Revised D.N., D.S.P. and Article.

TREE WHIP MIXTURE

Effective August 15, 1991 Revised April 25, 2008

Required Tree Species:

The planting shall be an equal mixture of at least five of the nine tree species listed below:

1. Acer rubrum – Red Maple
2. Betula nigra – River Birch
3. Gymnocladus dioicus – Kentucky Coffetree
4. Taxodium distichum – Bald Cypress
5. Tilia Americana – Basswood
6. Platanus occidentalis – America Sycamore
7. Carya illinoensis – Pecan
8. Quercus palustris – Pin Oak
9. Quercus bicolor – Swamp White Oak

Size of the above trees shall be a #5 container at 4'-5'.

Planting shall be done in accordance with Article 253 (Planting Woody Plants) with the following revisions:

Change **Article 253.03** to read:
Because the trees are container grown, the spring planting season can be extended to June 30th and the fall planting season will begin on September 30th.

Add to **Article 253.07:**
Trees shall be planted at an interval of 10 feet by 10 feet with the rows staggered a distance of 5 feet.

Add to the end of **Article 253.08**:
When a drill is used to excavate plant holes, a spade shall be used to score the hole sides. Scoring shall be approximately 1-inch deep to break the smooth sides left from the drilling operation. As directed by the engineer, 30 to 36-inch holes shall be scored at six locations.

Revise the first paragraph of **Article 253.10**:
The existing soil at each location shall be mixed with peat moss and used as the prepared backfill. The soil shall be in a loose, pliable condition at the time of planting. The amount of peat moss shall be as follows:

a) 30-inch holes – 1.00 cu. ft. of peat moss
b) 36-inch holes – 1.50 cu. ft. of peat moss

All plants, except seedlings, shall be fertilized at the time of planting with prolonged release fertilizer tablets having an analysis of 20-110-5 and weight of 21 grams. The tablets shall be placed evenly around each plant at the following rates:

a) 30-inch holes – 8 tablets
b) 36-inch holes – 10 tablets

Add to **Article 253.11**:
The mulch to be used shall be shredded bark mulch.

Delete **Articles 253.12, 253.13 and 253.14**.

Revise **Article 253.15** to read:
Final inspection of all trees will be made at the final inspection of the contract. Plants that do not meet the requirements for acceptance will be replaced at that time.

Revise **Article 253.17** to read:
This work will be paid for at the contract unit price each per tree for TREE WHIP MIXTURE.

Designer Note: The District Landscape Architect should be consulted to determine if tree replacement will be in the form of seedlings or ball and burlap trees. Existing trees to be removed on a project are replaced with ball and burlap trees on a 1:1 basis and a 1:3 basis for seedlings.. Pay item code numbers for the specified trees are contained on the attached sheet.

SEEDLING MIXTURE A

Effective: May 5, 2000
Revised: November 1, 2008

This work shall consist of planting replacement seedling trees at the locations specified in the plans and in accordance with Article 253 of the Standard Specifications. Seedlings shall consist of an equal distribution of the following five species:

Kentucky Coffee
Northern Red Oak
Redbud
White Oak
Washington Hawthorn

This work will be paid for at the contract unit price per unit for SEEDLINGS MIXTURE A.

Designer Note: Use in cases where it is necessary to lock riprap in place due to high velocities. Discuss with your Project Engineer and Construction before using.

GROUT FOR USE WITH RIPRAP

Effective July 30, 2010

Description of work. This work shall consist of furnishing and placing material to grout riprap in place. The riprap, bedding, and filter fabric shall be placed and paid for according to Sections 281 and 282 of the Standard Specifications.

Materials. The grout shall consist of a mixture of 490 lbs cement, 1976 lbs (dry weight) FA 01, 1039 lbs (dry weight) CA 16, and 27.5 gallons of water per cubic yard. Alternatively, a mixture of 430 lbs cement, 115 lbs fly ash, 1937 lbs FA 01, 1028 lbs CA 16, and 27.5 gallons of water per cubic yard may be used. In either mixture, a high-range water reducer shall be used to attain desired consistency of the mix. The hardened grout shall have a minimum compressive strength of 2,000 pounds per square inch at 28 days.

Construction Requirements. The grout shall be pumped and placed throughout the riprap to a depth determined by the Engineer. A uniform rate of 0.22 cubic yards of grout per square yard of riprap was assumed to estimate a quantity. The grout shall fill the lower voids in the riprap and bond the riprap together.

Method of Measurement. The quantity of grout for use with riprap shall be measured in cubic yards, based on the volumes from the individual truck tickets used for the work.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for GROUT FOR USE WITH RIPRAP.

Designer Note: Pay Item *STONE DUMP RIP CL B3 SQ YARD (SQ METER)
*STONE DUMP RIP CL B3 TON (METRIC TON)
STONE DUMP RIPRAP SPL SQ YARD (SQ METER)
STONE DUMP RIPRAP SPL TON (METRIC TON)

* Insert "CL B3" in both heading titles and how paid when requiring RR3 gradation; otherwise make pay item "SPECIAL" and use "SPL" in both areas.

** Insert either 3, 4, or 5 depending on RR gradation requirement per Article 1005.01. Minimum thickness of RR layer is given in Article 281.04.

*** Insert TON (METRIC TON) or SQ YARD (SQ METER) to agree with Pay Item Code.

Use only when you want a "B" quality aggregate and a gradation of RR3, 4, or 5.

This District Special Provision to be used as an erosion control material for backslopes, culvert outlets, etc. but not for river channels. It reduces the aggregate quality requirement (Article 1005.01(b)) as well as requiring a fabric for all RR gradations. Check with Materials for concurrence. Check with the Design Estimator for Code No. when using "SPL" to be paid in tons (metric tons).

STONE DUMPED RIPRAP

Effective April 15, 1991 Revised January 1, 2007

This work shall be performed in accordance with Section 281. The aggregate shall meet an RR gradation and "B" Quality except that the sodium sulfate loss shall not exceed 35%. A bedding layer will not be required. A filter fabric meeting the requirements for an RR 4 material in accordance with Section 282 will be required.

This work will be paid for at the contract unit price per for STONE DUMPED RIPRAP _____. The filter fabric will be measured and paid for separately.

Designer Note: Pay Item *STONE RIP CL B3 SQ YARD (SQ METER)
*STONE RIP CL B3 TON (METRIC TON)

* Insert "CL B3" in both heading titles and how paid when requiring RR3 gradation; otherwise make pay item "SPECIAL" and use "SPL" in both areas.

** Insert either 3, 4, or 5 depending on RR gradation requirement per Article 1005.01. Minimum thickness of RR layer is given in Article 281.04.

*** Insert TON (METRIC TON) or SQ YARD (SQ METER) to agree with Pay Item Code.

Use only when you want a "B" quality aggregate and a gradation of RR3, 4, or 5.

This District Special Provision to be used as an erosion control material for backslopes, culvert outlets, etc. but not for river channels or locations with constant standing water. It reduces the aggregate quality requirement (Article 1005.01(b)) as well as requiring a fabric for all RR gradations. Check with Materials for concurrence. Check with the Design Estimator for Code No. when using "SPL" to be paid in tons (metric tons).

STONE RIPRAP

Effective November 5, 2010

This work shall be performed in accordance with Section 281. The aggregate shall meet an RR gradation and "B" Quality except that the sodium sulfate loss shall not exceed 35%.

This work will be paid for at the contract unit price per for STONE RIPRAP _____. The filter fabric will be measured and paid for separately.

Designer Note: Check with Materials prior to using this provision. Specifications require “A” quality aggregate for erosion control and sediment protection. This provision reduces the required quality to “B” but also increases the permitted soundness loss to 35%. It is intended for use in western areas of the District (approximate dividing line Rte. 97) in order to permit those local stone quarries to furnish this type aggregate. Specifications also require a filter fabric to be paid separately. Thickness of aggregate is to be 300 mm (12 inches).

AGGREGATE DITCH

Effective April 15, 1991 Revised October 15, 2001

This work shall be performed in accordance with Article 283.03 except the aggregate shall meet “B” quality per Article 1005.01 and that the sodium sulfate loss shall not exceed 35%.

Designer Notes: Check with Materials on usage. Generally used on any projects requiring proof rolling of the subgrade prior to sub-base placement or lime modification.

PROOF ROLLING

Effective April 23, 2004 Revised January 1, 2007

This work shall consist of proof rolling the subgrade with a fully loaded tandem axle dump truck and driver at the direction of the Engineer. The truck shall travel the subgrade in all of the proposed lanes of traffic in the presence of the Engineer.

This work will not be paid for separately, but considered included in the various earthwork pay items.

Designer Note: Review your project's Soils Report, and then discuss usage and subgrade treatment and IBV value on your project with Materials - Geotechnical Engineer. Use when removing/replacing existing pavement or in cut sections. Assists in stabilizing subgrade areas. Fill in IBV.

SUBGRADE TREATMENT

Effective July 1, 1990 Revised April 25, 2008

Revise first sentence of first paragraph of Article 301.04 as follows:

> "When compacted, the subgrade shall have a minimum dry density of 95 percent of the standard laboratory dry density and a minimum immediate bearing value (IBV) of _____."

Delete the second paragraph (including subparagraphs a, b, and c) of Article 301.04 of the Standard Specifications and replace it with the following:

> "In cut sections the contractor responsible for the rough grading shall obtain not less than 95% of the standard laboratory density and not more than 110% of the optimum moisture for the top 1' (300mm) of the subgrade.
>
> The Contractor may, at his/her option, add a drying agent to lower the moisture content as specified. The drying agent must be approved by the Engineer prior to use. Additional compensation will not be allowed for the use of a drying agent, but will be considered as included in the cost of the various earthwork items."

In the first sentence of the third paragraph delete "above steps have" and replace with "work has."

Designer Note: To compute quantities, use a rate of 5% by weight of soil for water. Check with Materials before using this special provision and the Soils Report for a % of modifier.

SOIL MODIFICATION

Effective July 1, 1990 Revised July 30, 2010

This work shall consist of the construction of a lime-modified soil layer as described in Section 302 of the Standard Specifications, except as modified herein.

Revise Article 302.04 by adding:

> The depth of treatment shall be based on proof rolling and soil strength (cone index). Proof rolling shall consist of running a loaded tandem truck over the subgrade.

Revise Article 302.08 by adding the following:

> Mixing. The modifier, soil, and water (if necessary) shall be thoroughly blended by rotary speed mixers. The mixing shall continue until it has been determined by the Engineer that a homogeneous layer of the required thickness has been obtained. A disc harrow may be used to supplement the mixing by the rotary mixer.

Add to Article 302.10 Finishing:

> After adequate compaction is obtained, no construction equipment will be permitted on the finished subgrade for a period of 3 days, after which only equipment used for grading prior to placement of paving materials will be permitted.

Designer Note: Check with Materials before using this special provision. Can be used District-wide since this is the lowest quality (B) rock. This special provision is intended to be used when rock fill is recommended for ground stabilization or undercuts. This material may need to be capped with 6” CA 7or CA 11, crushed stone depending upon situation and modify this special provision. Remember when using precast box culverts, a 6" bedding layer is included in the box culvert pay item.

A filter fabric (or bedding material) may be required - discuss with the Geotechnical Engineer. He may want you to provide a pay item/quantity for “Geotechnical Fabric for Ground Stabilization”.

ROCK FILL

Effective October 15, 1995 Revised April 26, 2013

This work shall consist of furnishing, transporting and placing rock fill for ground stabilization.

For Rock Fill depths ≤18", the material shall meet Quality Designation "B" as required in Article 1004.01 of the Standard Specifications for Road and Bridge Construction. The material shall be crushed stone and meet the gradation of CA 7 or CA 11 per Article 1004.01 of the Standard Specifications for Road and Bridge Construction.

The aggregate shall be placed in 6 in. (150 mm) lifts, loose measurements, and compacted in a manner approved by the Engineer, except that if the desired results are being obtained, the compacted thickness of any lift may be increased to a maximum of 8 in. (200 mm).

For Rock Fill depths > 18", the top 6" shall meet the requirements listed above for depths ≤18" and the remaining depth shall meet Quality Designation "B" as required in Article 1005.01 of the Standard Specifications for Road and Bridge Construction and may be shot rock or primary crusher run. It shall not contain objectionable quantities of dirt, sand, clay or rock fines. The material shall be well graded with a maximum stone dimension of 8 inches (200 mm). No more than 35% shall have a dimension less than 2 inches (50 mm).

Rock fill will be measured for payment in tons (metric tons), in accordance with Article 311.08 except that all references to cubic yard (cubic meter) measurement and payment shall be deleted.

This work will be paid for at the contract unit price per ton (metric ton) for ROCK FILL.

Designer Note: Use this special if you have Subbase Granular Material. It will reduce the potential to get materials that meet the gradation and density, but are weak under certain conditions (wet).

SUBBASE GRANULAR MATERIAL

Effective: November 5, 2004

This work shall be in accordance with Section 311 of the Standard Specifications and as specified herein.

All Subbase Granular Material shall have a minimum IBR of 40.

Designer Note: Use whenever temporary pavement is called for on the plans. The intent is to allow the Contractor the option as to the most economical type of pavement to provide. Use with District Special Provision “Hot-Mix Asphalt Base Course” (355.02) or “Hot-Mix Asphalt Base Course Widening” (356.02d).

The Designer should calculate design thicknesses for concrete and bituminous pavements using BDE Manual Sections 54-4.02 and 54-5.02 and insert the thickness into the special provision:

X = thickness in inches (millimeters) of Hot-Mix Asphalt Base Course
Y = thickness in inches (millimeters) of PCC Base Course

TEMPORARY PAVEMENT

Effective October 1, 1995 Revised April 23, 2010

This item shall include all materials, labor and equipment necessary to construct temporary pavement in accordance with applicable sections of the Standard Specifications except as herein specified.

The Contractor shall have the option of constructing temporary pavement made of (X) hot-mix asphalt base course or (Y) PCC base course.

Hot-Mix Asphalt base course shall be placed in accordance with applicable portions of Section 355. Material for Hot-Mix Asphalt base course shall be Hot-Mix Asphalt Binder Course IL-19.0 in accordance with Sections 406 and 407. PCC base course shall be in accordance with Section 353.

This work will be paid for at the contract unit price per square yard (square meter) for TEMPORARY PAVEMENT which price shall be payment in full for all materials, labor and equipment including bituminous and aggregate prime coat necessary to perform the work as herein specified.

Removal of Temporary Pavement will be paid for separately in accordance with Section 440 of the Standard Specifications.

Designer Note: Fill the HMA and PCC depths as the same depth. Use the HMA depth for the pay item name and calculation of the Earth Excavation for Widening quantity. Method of payment is described in the last paragraph of Section 356 of the Standard Specifications.

Use this item when the Contractor may need to construct widening for staging and the type of payment is not required to be as specific material. Make sure there will be adequate coverage with final overlay.

TEMPORARY BASE COURSE WIDENING _____"

Effective April 26, 2013

This item shall include all materials, labor and equipment necessary to construct base course widening in accordance with Section 356 of the Standard Specifications except as herein specified.

The Contractor shall have the option of constructing temporary pavement made of _____" Hot-Mix Asphalt base course or _____" PCC base course.

Hot-Mix Asphalt base course shall be placed in accordance with applicable portions of Section 356 of the Standard Specifications. Material for Hot-Mix Asphalt base course shall be Hot-Mix Asphalt Binder Course IL-19.0 in accordance with Sections 406 and 407 of the Standard Specifications. PCC base course shall be in accordance with Section 354 of the Standard Specifications.

This work will be pad for at the contract unit price per Square Yard (Square Meter) for BASE COURSE WIDENING _____" which price shall be payment in full for all materials, labor and equipment including bituminous and aggregate prime coat necessary to perform the work as herein specified.

Designer Note: This special provision creates a pay item for removing vegetation from the existing edge of pavement joint and is intended for use on resurfacing projects which have existing bituminous shoulders or concrete gutters adjacent to the pavement. In some instances, the joint between the existing pavement and bituminous shoulder will contain a considerable growth of vegetation which must be removed prior to resurfacing. This has led to some substantial extra work bills on some projects, especially interstate resurfacing projects. Field check your project for the presence of vegetation which will need removed prior to resurfacing and use judgement as to whether a pay item should be included in your plans.

CLEAN EXISTING PAVEMENT EDGE JOINT

Effective January 3, 2000 Revised January 1, 2007

Description: This work shall consist of removing loose material and vegetation present in the existing edge of pavement joint between the pavement and hot-mix asphalt shoulders. Any existing vegetation and other loose material shall be removed from the edge joint and deposited on the roadside in a method acceptable to the Engineer. The existing edge joint shall then be cleaned of any loose material using compressed air. After cleaning, any depressions in the edge joint greater than 1” (25 mm) in depth shall be filled with leveling binder placed and compacted by hand methods.

Method of Measurement: Cleaning of existing pavement edge joints will be measured for payment in units of 100' (30 m) along each edge of pavement.

Basis of Payment: This work will be paid for at the contract unit price per unit for CLEAN EXISTING PAVEMENT EDGE JOINT, which price shall include the removal and disposal of all vegetation and loose material and the filling with leveling binder of any resulting voids.

Designer Note: Use in all jobs with hot-mix asphalt pay items from Sections 355, 356, 406 and 407.

ANTI-STRIP ADDITIVE FOR HOT-MIX ASPHALT

Effective July 30, 2010

If an anti-stripping additive is required for any hot-mix asphalt in accordance with Article 1030.04(c), the cost of the additive will not be paid for separately, but shall be considered as included in the contract unit price bid for the hot-mix asphalt item(s) involved.

Designer Note: Include in all contracts with HMA overlays or full-depth HMA pavements.

HOT-MIX ASPHALT – PRIME COAT (BMPR)

Effective: April 25, 2014

Revise Note 1 of Article 406.02 of the Standard Specifications to read:

"Note 1. The bituminous material used for prime coat shall be one of the types listed in the following table.

When emulsified asphalts are used, any dilution with water shall be performed by the emulsion producer. The emulsified asphalt shall be thoroughly agitated within 24 hours of application and show no separation of water and emulsion.

Application	Bituminous Material Types
Prime Coat on Brick, Concrete, or HMA Bases	SS-1, SS-1h, SS-1hP, SS-1vh, CSS-1, CSS-1h, CSS-1hP, HFE-90, RC-70
Prime Coat on Aggregate Bases	MC-30, PEP"

Revise Article 406.05(b) of the Standard Specifications to read:

"(b) Prime Coat. The bituminous material shall be prepared according to Article 403.05 and applied according to Article 403.10. The use of RC-70 shall be limited to air temperatures less than 60ºF (15ºC)."

(1) Brick, Concrete or HMA Bases. The base shall be cleaned of all dust, debris and any substance that will prevent the prime coat from adhering to the base. Cleaning shall be accomplished by sweeping and vacuuming or sweeping and air blasting methods, as approved by the Engineer. The base shall be free of standing water at the time of application. The prime coat shall be applied uniformly and at a rate that will provide a residual asphalt rate on the prepared surface as specified in the following table.

Type of Surface to be Primed	Residual Asphalt Rate lb./sq. ft. (kg/sq. m)
Milled HMA, Aged Non-Milled HMA, Milled Concrete, Non-Milled Concrete & Tined Concrete	0.05
Fog Coat between HMA Lifts, IL-4.75 & Brick	0.025

The bituminous material for the prime coat shall be placed one lane at a time. The primed lane shall remain closed until the prime coat is fully cured and does not pickup under traffic. When placing prime coat through an intersection where it is not possible to keep the lane closed, the prime coat may be covered immediately following its application with fine aggregate mechanically spread at a uniform rate of 2 to 4 lb./sq. yd. (1 to 2 kg/sq. m).

(2) Aggregate Bases. The prime coat shall be applied uniformly and at a rate that will provide a residual asphalt rate on the prepared surface of 0.25 lb./sq. ft. ± 0.01 (1.21 kg/sq. m ± 0.05).

The prime coat shall be permitted to cure until the penetration has been approved by the Engineer, but at no time shall the curing period be less than 24 hours for MC-30 or four hours for PEP. Pools of prime occurring in the depressions shall be broomed or squeegeed over the surrounding surface the same day the prime coat is applied.

The base shall be primed 1/2 width at a time. The prime coat on the second half/width shall not be applied until the prime coat on the first half/width has cured so that it will not pick up under traffic.

The residual asphalt binder rate will be verified a minimum of once per type of surface to be primed as specified herein for which at least 2000 tons of HMA will be placed. The test will be according to the "Determination of Residual Asphalt in Prime and Tack Coat Materials" test procedure.

Prime coat shall be fully cured prior to placement of HMA to prevent pickup by haul trucks or paving equipment. If pickup occurs, paving shall cease in order to provide additional cure time.

Prime coat shall be placed no more than five days in advance of the placement of HMA. If after five days loss of prime coat is evident prior to covering with HMA, additional prime coat shall be placed as determined by the Engineer at no additional cost to the Department."

Revise the second paragraph of Article 406.13(b) of the Standard Specifications to read:

"Aggregate for covering prime coat will not be measured for payment."

Revise the first paragraph of Article 406.14 of the Standard Specifications to read:

"Prime Coat will be paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIME COAT), POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT) or NON-TRACKING BITUMINOUS MATERIALS (PRIME COAT)."

Revise Article 1032.02 of the Standard Specifications to read:

"**1032.02 Measurement.** Asphalt binders, emulsified asphalts, rapid curing liquid asphalt, medium curing liquid asphalts, slow curing liquid asphalts, asphalt fillers, and road oils will be measured by weight.

A weight ticket for each truck load shall be furnished to the inspector. The truck shall be weighed at a location approved by the Engineer. The ticket shall show the weight of the empty truck (the truck being weighed each time before it is loaded), the weight of the loaded truck, and the net weight of the bituminous material.

When emulsion is used, the proportions of emulsion and any water added to the emulsion shall be shown on the Bill of Lading.

Payment will not be made for bituminous materials in excess of 105 percent of the amount specified by the Engineer."

Add the following to the table in article 1032.04 of the Standard Specifications:

"SS-1vh	160 – 180	70 – 80"

Add the following to Article 1032.06 of the Standard Specifications:

"(g) Non Tracking Emulsified Asphalt SS-1vh:

Requirements for SS-1vh			
Test		SPEC	AASHTO Test Method
Saybolt Viscosity @ 25C,	SFS	20-200	T 72
Storage Stability, 24hr.,	%	1 max.	T 59
Residue by Evaporation,	%	50 min.	T 59
Sieve Test,	%	0.3 max.	T 59
Tests on Residue from Evaporation			
Penetration @25°C, 100g., 5 sec.,	dmm	20 max.	T 49
Softening Point,	°C	65 min.	T 53
Solubility,	%	97.5 min.	T 44
Orig. DSR @ 82°C,	kPa	1.00 min.	T 315"

Revise the last table of Article 1032.06 to read:

"Grade	Use
SS-1, SS-1h, CSS-1, CSS-1h, HFE-90, SS-1hP, CSS-1hP, SS-1vh	Prime or fog seal
PEP	Bituminous surface treatment prime
RS-2, HFE-90, HFE-150, HFE-300, CRSP, HFP, CRS-2, HFRS-2	Bituminous surface treatment
CSS-1h Latex Modified	Microsurfacing"

Designer Note: This special requires the Contractor to furnish a person to operate the bump buggy and assist in removing bumps in the surface course while IDOT Construction personnel monitor the bump buggy operation and record bumps that cannot be removed. Discuss the need for this special with Construction prior to insertion.

HOT-MIX ASPHALT SURFACE COURSE SURFACE TESTS

Effective: November 1, 2003 Revised January 1, 2007

The Contractor shall provide a person to operate the straight edge in accordance with Article 406.11 of the Standard Specifications and communicate with IDOT personnel to minimize the surface course bumps. If surface course bumps cannot be removed at this time, IDOT personnel will record the locations and provide deductions as stated in Article 406.11.

Designer Note: Use on all contracts where a Material Transfer Device is required.

Fill in the pay items for which a MTD is required. If using the District Special provision “Hot-Mix Asphalt Shoulder Resurfacing required to be Constructed Simultaneously with Mainline Paving” make sure the tonnage to cover the lanes and shoulder are combined in the MTD quantity.

PAYMENT FOR USE OF MATERIAL TRANSFER DEVICE

Effective April 23, 2010

This work shall be performed as specified in the plans and specifications herein.

No payment will be made for tonnages of HMA items required to be placed with a material transfer device, but were not able to be placed with a material transfer device.

The maximum tonnage eligible for payment when placed with the material transfer device will be limited to the final pay quantity of the pay items placed.

Designer Note: Include in all contracts using Full-Depth Hot-Mix Asphalt Pavement paid for under Section 407.

BITUMINOUS PRIME COAT FOR HOT-MIX ASPHALT PAVEMENT (FULL-DEPTH)

Effective August 3, 2007 Revised April 23, 2010

Revise Article 407.06(b) of the Standard Specifications to read:

"A bituminous prime coat shall be applied between each lift of HMA according to Article 406.05(b) at a residual rate of 0.02 to 0.05 gal/sq. yd. (0.1 to 0.2 L/sq. m), the exact rate to be determined by the Engineer (typically at a rate of 0.025 gal./sq yd)."

Revise the second paragraph of Article 407.12 to read:

"Prime Coat will be paid for at the contract unit price per gallon (liter) or per ton (metric ton) for POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT)."

Designer Note: Use for permanent installation of rumble strips. Check with Traffic on usage/spacing of strips. Include CADD detail on layout of rumble strips. Pay item is Z0055500, Rumble Strip.

GROOVED-IN RUMBLE STRIP

Effective: November 16, 2007
Revised: July 30, 2010

This work shall consist of the construction of grooved-in rumble strips at locations as detailed in the plans.

The equipment shall be a self-propelled milling machine with a rotary-type cutting head(s). The cutting head(s) shall be suspended from the machine such that it can align itself with the slope of the pavement and any surface irregularities. The teeth of the cutting head(s) shall be arranged to provide a smooth cut, with no more than an 1/8 in. (3 mm) difference between peaks and valleys.

Prior to commencement of the work, the Contractor shall demonstrate the ability of the equipment to achieve the desired results without damaging the pavement.

The rumble strips shall be cut to the dimensions shown on the plans. Guides shall be used to ensure consistent alignment, spacing and depth. In Portland cement concrete, rumble strips may be formed according to the details shown on the plans immediately after the application of the final finish.

Rumble strips shall be omitted within the limits of structures, entrances and side roads. In Portland cement concrete pavement, rumble strips shall not be placed within 6 in. (150 mm) of transverse joints.

This work will be measured for payment in square feet (square meters). Measurement will include both the cut and uncut (formed and unformed) sections of the rumble strips.

This work will be paid for at the contract unit price per square feet (square meter) of the actual treated area for RUMBLE STRIP.

Designer Note: Use this special provision when Standard 420501 is used for railroad crossings. The Designer may have to modify if the plan calls for a bituminous taper or other pavement type.

NOTE! Details of the at-grade crossing construction should also be included in the plans.

*(Insert pavement pay item name.)

RAILROAD APPROACH PAVEMENT

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of constructing a railroad approach pavement as shown on the plans.

This work shall be done in accordance with Article 420.17 of the Standard Specifications and Highway Standard 420501.

The reinforcement bars as detailed on Highway Standard 420501 will not be paid for separately but shall be considered included in the cost of .

This work will be paid for at the contract unit price per square yard for .

Designer Note: For use on urban projects with existing drains thru sidewalks. Discuss with your Project Engineer.

SIDEWALK DRAINS

Effective March 1, 1991 Revised January 1, 2007

Drainage troughs and pipes of various designs carry storm water from inlets in commercial entrances across the sidewalk to the gutter. These drainage facilities are to be restored as they are located. The existing pipes and grates shall be salvaged if possible. The cost of any concrete work to restore these drains shall be included in the unit price per square foot (square meter) for PORTLAND CEMENT CONCRETE SIDEWALK, 4" (100 mm). Any pipe or grate materials which have to be replaced will be paid for in accordance with Article 109.04 of the Standard Specifications.

Designer Note: For use on urban projects where sidewalk removal and replacement required and access must be maintained at all times. There are pay items for Temporary Sidewalk and Temporary Ramps if the designer know where and how much quantity will be needed. If using the pay items, provide locations and quantities in the plans and define the material to be used, but do not use this special provision.

TEMPORARY SIDEWALKS

Effective March 1, 1991 Revised February 1, 1996

Temporary sidewalks may be required at various locations as determined by the Engineer to provide access to and from businesses and to provide continuity for pedestrian traffic. The temporary sidewalks shall be constructed using material of the type and thickness as specified by the Engineer. The work, including the subsequent removal of the temporary sidewalk, will be paid for in accordance with Article 109.04 of the Standard Specifications.

Designer Note: Include in contracts with partial depth patching. Discuss depth of patch and replacement lift thicknesses with Construction and Materials. If patches must remain open overnight, remove the paragraph saying they have to be opened the same day.

Fillings:

* Total depth of patch.
** Number of lifts.
*** Thickness of lifts.

PARTIAL DEPTH PATCHING

Effective April 26, 2013

This work shall consist of partial depth patching of the existing pavement structure and replacement with Hot-Mix Asphalt (HMA) material at the locations shown in the plans or as directed by the Engineer. This work will be performed before completion of the cold milling operation and prior to the placement of the HMA overlay.

This work shall include all labor, equipment, and materials necessary to remove the existing HMA overlay to a depth of (_____")*. The removal shall be performed with a cold milling machine of sufficient size and weight to remove the existing HMA. The milling machine must be operated longitudinally with the flow of traffic and will not be permitted to cut transversely across the lane. Disposal of waste materials for the work described herein shall be in accordance with Article 202.03 of the Standard Specifications. After cold milling the patch, all loose material shall be removed and the area air-blast cleaned to the satisfaction of the Engineer. Replacement HMA material shall be as shown in the Mixture Requirements Table in the plans.

Prior to placement of the HMA material, the bottom and sides of the patch shall be primed in accordance with Article 406.05 of the Standard Specifications using an SS-1h or SS-1hP bituminous material. The prime shall be applied at a residual rate of 0.05 gal/s.y. by means of a mechanical distributor, and shall be placed on all surfaces of the milled trench.

The HMA material shall be placed in (_____)**(_____")*** inch lifts and shall match the elevation of the surrounding pavement after final compaction. Bumps greater than ¼" left after compaction shall be removed.

The HMA mixture and density control limits shall conform to Article 1030 of the Standard Specifications. Compaction shall be accomplished using a vibrating roller that conforms to the applicable sections of Article 1101.01 of the Standard Specifications.

The Contractor shall fill all patches with the HMA material in the same day they are milled. No open patches will be allowed to remain overnight.

The patch will be measured for payment in place, and the area computed in Square Yards. The limits will be the area of the patch that measures at least (_____")* in depth, and shall not include the rounded transition at the beginning and end of the patch.

Basis of Payment: Partial depth removal of the pavement will be paid for at the contract unit price per Square Yard for PARTIAL DEPTH REMOVAL (_____")*. The bituminous concrete

placed in the partial depth patches will be paid for at the contract unit price per Ton for PARTIAL DEPTH PATCHING.

Designer Note: Use for bridge deck wearing surface removal only (not included in Section 440 of the Standard Specifications). Do not use in conjunction with GBSP 29, 30 or 31 as it is already covered in these specials.

BRIDGE WEARING SURFACE REMOVAL

Effective July 1, 1990 Revised January 1, 2007

This work shall consist of the removal and satisfactory disposal of the existing bridge wearing surface at the locations shown on the plans or as directed by the Engineer, and shall be done in accordance with the applicable portions of Section 440 of the Standard Specifications.

This work will be paid for at the contract unit price per square yard (square meter) for BRIDGE WEARING SURFACE REMOVAL.

Designer Note: Use on resurfacing projects to address areas which need repair, but do not warrant full depth repair. Joints and cracks, which exhibit environmental distresses, such as, spalling and "D" cracking or contains maintenance patching, are eligible for using this method of repair. Joints and cracks which exhibit load related stresses, such as, pumping, alligator cracking, corner breaks, compression failures, subgrade failures, or punch-outs should not use this method of repair. Discuss use with your Project Engineer.

PORTLAND CEMENT CONCRETE PARTIAL DEPTH HOT-MIX ASPHALT PATCHING (BDE)

Effective: April 1, 2014

Description. This work shall consist of partial depth removal of the existing Portland cement concrete pavement structure and replacement with hot-mix asphalt (HMA).

The partial depth removal on a lane width or less shall be classified by type/size as follows.

Type I	Less than 8 sq yd (9 sq m)
Type II	8 sq yd (9 sq m) or more, but less than 50 sq yd (42 sq m)
Type III	50 sq yd (42 sq m) or more, but less than 100 sq yd (84 sq m)
Type IV	100 sq yd (84 sq m) or more

Materials. Materials shall be according to the following Articles/Sections of the Standard Specifications.

Item	Article/Section
(a) Bituminous Material for Prime Coat	406.02
(b) Hot-Mix Asphalt (Note 1)	1030

Note1. If the patch is going to be resurfaced, the HMA for partial depth patches shall be a surface mixture of the same type as the proposed resurfacing or as approved by the Engineer. If the patch is not going to be resurfaced, the mix shall be as shown on the plans.

Equipment. Equipment shall be according to the following Articles/Sections of the Standard Specifications.

Item	Article/Section
(a) Self-Propelled Milling Machine	1101.16
(b) Concrete Saw	442.03(f)
(c) Wheel Saw	442.03(g)
(d) Rollers	442.03
(e) Mechanical Sweeper	1101.03
(f) Air Equipment (Note 1)	

Note 1. The air equipment shall be capable of supplying compressed air at a minimum pressure of 100 psi (690 kPa) and shall have sufficient flow rate to remove all disturbed pavement debris. The equipment shall also be according to ASTM D 4285.

CONSTRUCTION REQUIREMENTS

General. The minimum patch dimension shall be 24 in. x 24 in. (600 mm x 600 mm).

Partial Depth Removal. Partial depth removal of the pavement shall be accomplished by the use of a milling machine and/or the wheel saw. The patch area shall be cleaned by air equipment or mechanical sweeper and all disturbed pavement debris and any loose or unsound concrete shall be removed. Materials resulting from the removal shall be disposed of according to Article 202.03 of the Standard Specifications.

Exposed reinforcement shall be removed back to the point where the steel is in contact with sound concrete. Where high steel is encountered, the depth of the patch may be reduced as directed by the Engineer.

Replacement with HMA. When the Engineer determines the exposed pavement will be suitable for a partial depth patch, a bituminous prime coat shall be applied according to Article 406.05(b) of the Standard Specifications.

The prepared patch shall be filled with HMA with a maximum lift thickness of 3 in. (75 mm). Where more than one lift is needed, the top lift shall be a minimum of 2 in. (50 mm) thick. At the option of the Contractor, the 2 in. (50 mm) top layer may be constructed using HMA surface course. The HMA shall be compacted to the satisfaction of the Engineer.

Patch Maintenance. Patches opened to traffic which are high or become rough by rutting, shoving, or heaving shall be corrected by trimming off high areas and/or filling depressions. Filled areas shall be rolled again.

Areas Unsuitable for a Partial Depth Patch. When the Engineer determines the exposed pavement will not be suitable for a partial depth patch, or removal is one half or more of the pavement thickness, the remaining portion of the pavement shall be removed and a full depth patch shall be constructed according to Section 442 of the Standard Specifications for the Class of full depth patches included in the contract. The exposed area may be filled with HMA and the full depth patch constructed at a later date. HMA shall be placed as specified for the partial depth repair.

Method of Measurement. Partial depth removal of the Portland cement concrete pavement will be measured for payment in place and the area computed in square yards (square meters).

HMA for partial depth patching of the Portland cement concrete pavement and for the backfilling of partial depth removal when it is determined the area is not suitable for a partial depth patch will be measured for payment in Tons (Metric Tons) according to Article 406.13 of the Standard Specifications.

Basis of Payment. Partial depth removal of the Portland cement concrete pavement will be paid for at the contract unit price per Square Yard (Square Meter) for PARTIAL DEPTH REMOVAL, of the type and thickness specified.

HMA for partial depth patching and for backfilling areas unsuitable for a partial depth patch will be paid for at the contract unit price per Ton (Metric Ton) for PARTIAL DEPTH PATCHING.

When the Engineer determines to convert any partial depth patch to a full depth patch after the partial depth removal of the Portland cement concrete pavement has begun, the partial depth removal will still be paid for at the contract unit price for PARTIAL DEPTH REMOVAL. The remaining removal for the full depth patch will be considered as included in the appropriate full depth patching pay item.

Designer Note: Use on urban projects with cold mill depth greater than 1" (25 mm). Provides for longer temporary taper around manhole castings in traffic lanes.

PROTECTION OF FRAMES AND LIDS OF UTILITY STRUCTURES

Effective March 6, 1991 Revised January 1, 2007

This work shall consist of protecting frames and lids of utility structures in the pavement after the adjacent hot-mix asphalt surface has been removed to the required depth by cold milling or by hand methods.

After the area has been swept clean and before the lane is opened to traffic, a hot bituminous mixture shall be placed around the casting, flush with its surface and decreasing to a featheredge in a distance of 4 feet (1.2 m) around the entire surface of the casting. Cold mix or milled material will not be permitted. This mixture shall remain in place until the day surfacing operations are undertaken within the immediate area of the structure. Prior to placing the surface course, the temporary hot-mix asphalt mixture shall be removed and disposed of by the Contractor as specified in Article 202.03 of the Standard Specifications.

The temporary tapers and their removal shall be considered included in the contract unit price per square meter (square yard) for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified, and no additional compensation will be allowed.

Designer Note: This special provision requires a 12' wide milling machine. Check with Construction before using. This provision shall be used in lieu of either DSP 440.03B or Check Sheet #13 "Hot-Mix Asphalt Surface Correction." Intended for use on rural "SMART" and other types of extended length cold milling projects to develop a smooth pavement profile for resurfacing. Do not require on urban or intersection type projects. This special provision should be limited to jobs with more than 25,000 sq. yds. (20,000 square meters) of mainline milling.

The designer should check existing field conditions and as built plans to determine the existing overlay thickness is so that we can eliminate spalling of the bituminous surface that is to remain in place after the cold milling.

Discuss cleanup equipment with Construction, then insert the following: (a) For rural projects, a "mechanical broom" for cleanup is acceptable. (b) For urban projects. it is recommended to require use of a "self-propelled street sweeper with power vacuum capability". If (b) is used, then revise and underline the "cleanup" paragraph and put a revised date on the special provision.

This special as written covers the standard milling and resurfacing situations. If unusual circumstances such as grade correction, cross slope correction, etc. are to be performed, the special may need to be revised and a detail showing the treatment included in the plans.

CADD drawing "Hot-Mix Asphalt Surface Removal" (which includes the required surface texture as written at the end of this special provision as well as the desired cross section of the CM required) shall be included.

**Designer shall insert thickness or range of thickness here.

HOT-MIX ASPHALT SURFACE REMOVAL, " (MM)

Effective March 1, 1993
Revised November 8, 2013

Description: This work shall consist of removing a portion of the existing hot-mix asphalt concrete surface course in accordance with the applicable portions of Section 440 and 1101 of the Standard Specifications, this special provision, details in the plans and as directed by the Engineer. The cold milled salvaged aggregate resulting from this operation shall become the property of the Contractor.

Equipment: The machine used for milling and planing shall be a self-propelled grinding machine having a minimum 12' (3.6 m) wide drum at least 28" (710 mm) in diameter. When a milling width in excess of 12′ is required and the Contractor's milling machine is less than the required width shown in the plans, the remaining area shall be milled with a machine capable of meeting the requirements of this special provision. Milling attachments used with skid steer tractors will not be allowed for longitudinal areas to mill additional widths.

When the teeth become worn so that they do not produce a uniform surface texture, they shall all be changed at the same time (as a unit). Occasionally, individual teeth may be changed if they lock up or break, but this method shall not be used to avoid changing the set of teeth as a unit. Occasional gouges, due to deteriorated pavement condition, or separation of lifts will not

be cause to replace all teeth. The Engineer will be the sole judge of the cause of the pavement gouging and the corrective work required. Corrective work due to negligence or poor workmanship shall be at the Contractor's expense.

The moldboard is critical in obtaining the desired surface texture. It shall be straight, true, and free of excessive nicks or wear, and it shall be replaced as necessary to uniformly produce the required surface texture. Gouging of the pavement by more than 1/4 inch (6 mm) shall be sufficient cause to require replacement of all teeth.

Construction Requirements

General: Weather conditions, when milling work is performed, must be such that short term or temporary pavement markings can be placed the day the surface is milled in accordance with Section 703 "Work Zone Pavement Markings".

An automatic grade control device shall be used when milling mainline pavement and shall be capable of controlling the elevation of the drum relative to either a preset grade control stringline or a grade reference device traveling on the adjacent pavement surface. The automatic grade control device may be utilized only on one side of the machine with a automatic slope control device controlling the opposite side. The traveling grade reference device shall not be less than 30 feet (9 m) in length. When milling cross roads, turn lanes, intersections, crossovers, or other miscellaneous areas, the Engineer may permit the matching shoe. The Contractor, at his option, may also substitute an approved 6' wide (1.8 m) machine for areas other than mainline pavement.

The Contractor shall mill _____ inch (_____ mm) at the centerline and project the proposed cross slope to the edge of pavement. In the event the milling at the outer edge of the lane would exceed _____ inches (_____ mm); then the Contractor shall reduce the cut at the centerline to provide the maximum cut of _____ inches (_____ mm) at the edge of pavement. If deemed necessary, the Contractor may reduce the cross slope from normal 1.5% to 1%.

Surface tests will be performed in accordance with Article 407.09(a) of the Standard Specifications. The longitudinal profile will be taken 3 ft. (0.9 m) from and parallel to each edge of pavement and 3 ft. (0.9 m) from and parallel to the centerline on each side. If a shadow area is found at the 3 ft. (0.9 m) points the pavement smoothness tester will be moved sufficient distance either side to measure the Contractor's milling efforts. Any surface variations exceeding the tolerance of Table 1 of Article 407.09 shall be corrected by reprofiling at no additional expense to the Department. In addition, the Contractor shall be responsible for refilling with approved hot-mix asphalt mixtures any area that lowered the pavement profile as a result of faulty milling operations if directed by the Engineer. The Contractor shall be responsible for providing the pavement smoothness tester described elsewhere to retest the pavement profile obtained.

If the milling depth is intended to expose the original concrete pavement, then additional hand or machine work may be necessary to remove any remaining veneer of bituminous pavement which may be left in place behind the milling machine. Such work will be at the direction of the Engineer and at no extra cost to the Department.

The Contractor shall provide a 10 foot (3 m) straightedge equipped with a carpenter's level or a 7 foot (2.1 m) electronic straightedge to check the cross slope of the roadway at regular intervals as directed by the Engineer.

Surface Texture: Each tooth on the cutting drum shall produce a series of discontinuous longitudinal striations. There shall be 16 to 20 striations (tooth marks) for each tooth for each 6 feet (1.8 m) in the longitudinal direction, and each striation shall be 1.7 inches +/- 0.2 inch (43 +/- 5 mm) in length after the area is planed by the moldboard. Thus, the planed length between each pair of striations shall be 2.3 inches +/- 0.2 inch (58 +/- 5 mm). There shall be 80 to 96 rows of discontinuous longitudinal striations for each 5 feet (1.5 m) in the transverse dimension. The areas between the striations in both the longitudinal and transverse directions shall be flat topped and coplaner. The moldboard shall be used to cut this plane; and any time the operation fails to produce this flat plane interspersed with a uniform pattern of discontinuous longitudinal striations, the operation shall be stopped and the cause determined and corrected before recommencing. Other similar patterns of uniform discontinuous longitudinal striations interspersed on a flat plane may be approved by the Engineer. The drawing titled "Hot-Mix Asphalt Surface Removal" showing the desired surface texture is included in the plans.

The start-up milling speed shall be limited to a maximum of 50 foot (15 m) per minute. The Contractor shall limit his operations to this speed to demonstrate his ability to obtain the striations and ride ability as described above. If the Contractor is able to demonstrate that he can consistently obtain the desired striations and ride ability at a greater speed he will be permitted to run at the increased speed.

Cleanup: After cold milling a traffic lane and before opening the lane to traffic, the pavement shall be swept by a **(a) mechanical broom (b) self-propelled street sweeper with power vacuum capability** to prevent compaction of the cuttings onto the pavement. All loose material shall be removed from the roadway. Before the prime coat is placed, the pavement shall be cleaned of all foreign material to the satisfaction of the Engineer.

This cleanup work shall be considered included in the contract unit price per square meter (square yard) for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified, and no additional compensation will be allowed.

Method of Measurement:

(a) Contract Quantities. The requirements for the use of Contract Quantities shall be Article 202.07(a) of the Standard Specifications.

(b) Measured Quantities. Cold milling and planing will be measured and the area computed in square yards (square meters) of surface.

Areas not milled (shadowed areas) due to rutting in the existing pavement surface will be included in the area measured for payment.

Basis of Payment: The cold milling and planing will be paid for at the contract unit price per square yard (square meter) for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified. Payment as specified will include variations in depth of cuts due to rutting, superelevations, and pavement crown and no additional compensation will be allowed.

Designer Note: This special provision requires use of a 6' milling machine. Check with Construction before using. This provision shall be used instead of either DSP 440.03AD or Check Sheet #13 "Hot-Mix Asphalt Surface Correction." Intended for use on urban project or rural project with less than 25,000 square yards (20,000 square meters) of cold milling and is intended to develop a smooth pavement profile for resurfacing.

The designer should check existing field conditions and as built plans to determine the existing overlay thickness is so that we can eliminate spalling of the hot-mix asphalt surface that is to remain in place after the cold milling.

This special as written covers the standard milling and resurfacing situations. If unusual circumstances such as grade correction, cross slope correction, etc. are to be performed, the special may need to be revised and a detail showing the treatment included in the plans.

CADD drawing "Hot-Mix Asphalt Surface Removal" (which includes the required surface texture as written at the end of this special provision as well as the desired cross section of the CM required) shall be included.

Discuss cleanup equipment with Construction then insert the following: (a) For urban only projects, a "self-propelled street sweeper with power vacuum capability" for cleanup is required. (b) For rural projects, a "mechanical broom" for cleanup is acceptable. If (b) is used, then revise and underline the "cleanup" paragraph and put a revised date on the special provision. You may have a project with both urban and rural characteristics. In that case you would need both (a) and (b) statements.

**Designer shall insert thickness or range of thickness here.

HOT-MIX ASPHALT SURFACE REMOVAL, " (MM)

Effective February 5, 1993 Revised November 8, 2013

Description: This work shall consist of removing a portion of the existing hot-mix asphalt concrete surface course in accordance with the applicable portions of Section 440 and 1101 of the Standard Specifications, this special provision, details in the plans and as directed by the Engineer. The cold milled salvaged aggregate resulting from this operation shall become the property of the Contractor.

When the teeth become worn so that they do not produce a uniform surface texture, they shall all be changed at the same time (as a unit). Occasionally, individual teeth may be changed if they lock up or break, but this method shall not be used to avoid changing the set of teeth as a unit.

The moldboard is critical in obtaining the desired surface texture. It shall be straight, true, and free of excessive nicks or wear, and it shall be replaced as necessary to uniformly produce the required surface texture. Gouging of the pavement by more than 1/4 inch (6 mm) shall be sufficient cause to require replacement of all teeth. Occasional gouges, due to deteriorated pavement condition, or separation of lifts will not be cause to replace all teeth. The Engineer will be the sole judge of the cause of the pavement gouging and the corrective work required. Corrective work due to negligence or poor workmanship will be at the Contractor's expense.

Construction Requirements

General: Weather conditions, when milling work is performed, must be such that short term or temporary pavement markings can be placed the day the surface is milled in accordance with Section 703 "Work Zone Pavement Markings."

An automatic grade control device shall be used when milling mainline pavement and shall be capable of controlling the elevation of the drum relative to either a preset grade control stringline or a grade reference device traveling on the adjacent pavement surface. The automatic grade control device may be utilized on only one side of the machine with an automatic slope control device controlling the opposite side. The traveling grade reference device shall not be less than 30 feet (9 m) in length for rural areas. For urban areas, a device not less than 20 feet (6 m) in length will be required. When milling cross roads, turn lanes, intersections, crossovers, or other miscellaneous areas, the Engineer may permit the use of a matching shoe.

The Contractor shall mill _____ inch (_____ mm) at the centerline and project the proposed cross slope to the edge of pavement. In the event the milling at the outer edge of the lane would exceed _____ inch (_____ mm); then the Contractor shall reduce the cut at the centerline to provide the maximum cut of _____ inch (_____ mm) at the edge of pavement. If deemed necessary, the Contractor may reduce the cross slope from normal to 1.5% to 1%.

Surface tests will be performed according to Article 407.09(a) of the Standard Specifications. The profile will be taken 3 ft. (0.9 m) from and parallel to each edge of pavement and 3 ft. (0.9 m) from and parallel to the centerline on each side. If a shadow area is found at the 3 ft. (0.9 m) points, the pavement smoothness tester will be moved sufficient distance either side to measure the Contractor's milling efforts. If any (milled) surface variations found to be over 1/4" in 10' (6 mm in 3 m), then the roadway shall be reprofiled at no additional cost. In addition, the Contractor shall be responsible for refilling, with approved hot-mix asphalt mixtures, any area that lowered the pavement profile as a result of his faulty milling operations if directed by the Engineer. The Contractor shall be responsible for providing the pavement smoothness tester described elsewhere to retest the pavement profile obtained.

If the milling depth is intended to expose the original concrete pavement, then additional hand or machine work may be necessary to remove any remaining veneer of bituminous pavement which may be left in place behind the milling machine. Such work will be at the direction of the Engineer and at no extra cost to the State.

The Contractor shall provide a 10' (3 m) straightedge equipped with a carpenter's level or a 7' (2.1 m) electronic straightedge to check the cross slope of the roadway at regular intervals as directed by the Engineer.

Surface Texture: Each tooth on the cutting drum shall produce a series of discontinuous longitudinal striations. There shall be 16 to 20 striations (tooth marks) for each tooth for each 6' (1.8 m) in the longitudinal direction, and each striation shall be 1.7 inches +/- 0.2 inch (43 +- 5 mm) in length after the area is planed by the moldboard. Thus, the planed length between each pair of striations shall be 2.3 inches +/- 0.2 inch (58 +/- 5 mm). There shall be 80 to 96 rows of discontinuous longitudinal striations for each 5' (1.5 m) in the transverse dimension. The areas between the striations in both the longitudinal and transverse directions shall be flat topped and coplaner. The moldboard shall be used to cut this plane; and any time the operation fails to produce this flat plane interspersed with a uniform pattern of discontinuous longitudinal striations, the operation shall be stopped and the cause determined and corrected

before recommencing. Other similar patterns of uniform discontinuous longitudinal striations interspersed on a flat plane may be approved by the Engineer.

The startup milling speed shall be limited to a maximum of 50' (15 m) per minute. The Contractor shall limit his operations to this speed to demonstrate his ability to obtain the striations and rideability as described above. If the Contractor is able to demonstrate that he can consistently obtain the desired striations and rideability at a greater speed he will be permitted to run at the increased speed.

Cleanup: After cold milling a traffic lane and before opening the lane to traffic, the pavement shall be swept by a **(a) self-propelled street sweeper with power vacuum capability or (b) mechanical broom** to prevent compaction of the cuttings onto the pavement. All loose material shall be removed from the roadway. Before the prime coat is placed, the pavement shall be cleaned of all foreign material to the satisfaction of the Engineer.

This cleanup work shall be considered included in the contract unit price per square yard (square meter) for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified, and no additional compensation will be allowed.

Method of Measurement:

(a) Contract Quantities. The requirements for the use of Contract Quantities shall be Article 202.07(a) of the Standard Specifications.

(b) Measured Quantities. Cold milling and planing will be measured and the area computed in square yards (square meters) of surface.

Areas not milled (shadow areas) due to rutting in the existing pavement surface will be included in the area measured for payment.

Basis of Payment: The cold milling and planing will be paid for at the contract unit price per square yard (square meter) for HOT-MIX ASHPALT SURFACE REMOVAL of the depth specified. Payment as specified will include variations in depth of cuts due to rutting, superelevations, and pavement crown and no additional compensation will be allowed.

Designer Note: To be used for milling deteriorated pavement longitudinal joints 2-1/2" (65 mm) deep, 3'± (900± mm) wide and placement of bituminous concrete surface course in trench. Discuss width and depth with Construction and modify as needed.

CENTER JOINT REPAIR SYSTEM

Effective March 1, 1991 Revised April 25, 2014

This work shall include all labor, equipment, and material required to mill out an area along and either side of an existing pavement longitudinal joint and replacement with Hot-Mix Asphalt (HMA) material. The removal shall be done with a cold milling machine of sufficient size and weight to remove the concrete to a depth of 2-1/2" (65 mm) and a width of 3 feet (900 mm) in a single operation. After cold milling the existing joint, all loose material shall be removed, and the milled area cleaned with a mechanical sweeper or vacuum to the satisfaction of the Engineer. Replacement HMA material shall be a HMA Binder material for pavements to be resurfaced and a HMA Surface Material for pavements which will not be subsequently overlaid.

Prior to placement of the HMA material, the milled trench shall be primed in accordance with Article 406.05 of the Standard Specifications using an SS-1h or SS-1hP bituminous material. The prime shall be applied at the rate of 0.10 gal./sq.yd. (0.5 L/square meter) by means of a mechanical or hand-held sprayer, and shall be placed on all surfaces of the milled trench. Placement of prime with brooms will not be permitted.

The HMA surface course mixture shall conform to Section 406 of the Standard Specifications. Placement shall be in a single lift by machine methods. Placement of the HMA material shall match the profile of the existing pavement after final compaction. Compaction shall be to the satisfaction of the Engineer.

Roller Requirements: Compaction shall be accomplished using a vibratory roller that conforms to the applicable sections of Article 1101.01 of the Standard Specifications.

Sequence of Operations: The Contractor shall perform work on the centerline joint only when the right lane (driving lane) is open to traffic.

The Contractor shall fill all trenches opened by cold milling in a day with HMA material in the same day. No open trench will be allowed to remain overnight. The barricades and/or drums shall be relocated after the trench is compacted so there is a minimum 12' (3.6 m) lane width in the open lane.

This work will be paid for at the contract unit price per Foot (Meter) for CENTER JOINT REPAIR SYSTEM measured along the pavement centerline joint.

Designer Note: Use whenever we are cold milling the pavement and the possibility exists to trap water on the pavement. In many situations where the shoulder is being overlaid, the milling operation can be extended 2'± onto the shoulder and "Daylight Out"; thereby eliminating the need for this specification.

PAVEMENT DRAINAGE AFTER COLD MILLING

Effective March 15, 1996 Revised January 1, 2007

This work shall consist of cold milling a 1.5" (40 mm) deep and 2' (0.6 m) wide drainage channel through the existing shoulder at locations as directed by the Engineer and replacing the mix after the surface has been placed.

To prevent pooling of water in the milled surface, a drainage channel shall be cut in the shoulder at low spots in superelevated curves and other locations where pooling of water may occur as specified by the Engineer.

After the surface has been placed on the adjacent through lane, the drainage channel shall be primed and then filled with a hot-mix asphalt shoulder mix approved by the Engineer and compacted to the satisfaction of the Engineer.

This work shall be paid for under the provisions of Article 109.04.

Designer Note: This special provision requires the Contractor to mill before patching. It should be discussed with your Project Engineer and Implementation prior to use. Do not use General Note 406.18 “Butt Joint Time Restriction” when this special provision is used.

PAVEMENT PATCHING WITH HOT-MIX ASPHALT SURFACE REMOVAL

Effective March 1, 1997 Revised January 1, 2007

The Contractor shall complete the hot-mix asphalt surface removal prior to pavement patching.

Delete the third paragraph of Article 440.04.

Designer Note: Do not use any longer.

HOT-MIX ASPHALT CONCRETE MILLING MATERIAL

Effective: November 1, 2003 Revised August 3, 2007

All hot-mix asphalt cold millings shall remain the property of the State. The Contractor shall deliver all of the millings to the IDOT facility located at _____. The Contractor shall arrange delivery two days in advance with the Field Technician, _____. The contact phone number is _____.

This special provision shall supersede any reference to ownership of millings in the Hot-Mix Asphalt Surface Removal special provisions.

Designer Note: Intended to be used in urban or high ADT areas where it is desirable to minimize the timeframe for lane closure and open the pavement to traffic. Consult with Implementation and your Project Engineer for applicable areas. Some patching mixtures will not perform as satisfactorily under cooler conditions. Consult with Materials for use on project lettings later in the year where temperatures may be a factor.

The designer should also pay close attention to what Traffic Control Standards to specify since some standards allow overnight lane closures. On some projects, it may be the intent to open all patches at the end of the workday whereas on others it may be the intent to allow overnight lane closure and use the special patching mixture to reduce the lane reduction time frame. Consult with Don Hoffman.

The Class PP-1 Mixture in the Standard Specifications is the standard mixture for patching. If “High Early” or “Hot Patch” is desired, the PP-2 mixture is the one to use.

* Designer will insert type (Class A, B, or C)
** Designer will insert type or range of types here.
*** Designer will insert thickness or range of thicknesses here.

CLASS (*) PATCHES, TYPE (**), (***)"

Effective January 1, 1999 Revised November 1, 2007

This work shall consist of pavement patching in accordance with applicable portions of Section 442 except as herein specified.

The patching mixture as specified in the Standard Specifications shall be either Class PP-2, PP-3, or PP-4.

Designer Note: Construction has expressed concerns about Contractors not placing the bituminous overlay within manufacturer's guideline time limits and about wet weather safety. **Include this special provision whenever area or strip reflective crack control treatment is provided in your plans. Discuss with Construction before using. DO NOT USE the BDE Special of the same name when requiring crack control.**

This revision lowers the prime application rate.

REFLECTIVE CRACK CONTROL TREATMENT

Effective March 1, 1996 Revised January 1, 2007

Revise the 2nd and 3rd sentences of Article 443.01 to read as follows:

"Area reflective crack control treatment shall be System A. Strip reflective crack control treatment shall be System A."

Add the following paragraph to Article 443.04:

"If rain is imminent, the Contractor is to apply a fog coat prime and a fine aggregate blotter, as directed by the Engineer, to all area crack control fabric that has been placed but not overlaid. This work shall be completed in accordance with Article 406.06, and will be paid for in accordance with Article 109.04."

Add the following paragraph to Article 443.05:

"The Hot-Mix Asphalt (HMA) concrete leveling binder, binder course, or surface course mixture placement on the crack control treatment shall be completed within two working days of the time the crack control is installed.

Reflective crack control treatment placed more than two working days in advance of the overlay placement will be inspected by the Engineer prior to placing the overlay. Any corrective work required by the Engineer shall be completed by the Contractor at no cost to the Department."

Revise the first sentence of Article 443.06 to read as follows:

"The area to be covered with fabric shall be sprayed uniformly with asphalt binder at a rate of 0.20 to 0.30 gal./sq. yd. (0.8 to 1.3 L/m^2) as directed by the Engineer.

Add after the first paragraph of Article 443.06:

"If the asphalt cement binder bleeds through the fabric under traffic, then a fine aggregate blotter shall be applied as directed by the Engineer and paid for in accordance with Article 109.04.

After reflective crack control placement and prior to the HMA overlay placement, the Contractor shall furnish, erect and maintain SLIPPERY WHEN WET signs at such locations when required during wet weather. The cost of this work shall be included in the unit prices bid and no additional compensation will be allowed."

Designer Note: Include this special provision in all crack and joint sealing projects.

CRACK AND JOINT SEALING

Effective June 15, 1997 Revised January 1, 2007

“Band-aid” treatments wider than 2 inches (50 mm) that disturb existing pavement markings shall be removed as directed by the Engineer or the pavement marking shall be restored in kind.

The “band-aid” width may be reduced or eliminated in areas adjacent to existing pavement markings as directed by the Engineer.

This work will not be paid for separately but shall be included in the cost of JOINT OR CRACK FILLING or CRACK FILLING.

Designer Note: Use this special provision on projects where the existing HMA shoulders are narrow enough to be paved in the same pass (usually 3 to 4' wide) and it is beneficial to do so. If a wider shoulder is practical to overlay simultaneously revise the 4′ width and remove the effective date to make a project specific special provision. Discuss with Implementation and Project Engineer before using. The designer will need to use the same mix and pay item for the top lift of shoulder as the mainline surface course. Also, if a MTD is specified for the mainline surface course then a tonnage for the shoulder surface course will need to be added to the MTD pay item.

HOT-MIX ASPHALT SHOULDER RESURFACING REQUIRED TO BE CONSTRUCTED SIMULTANEOUSLY WITH MAINLINE PAVING

Effective April 23, 2010

The top lift of Hot-Mix Asphalt Shoulders four feet or less in width shall be resurfaced simultaneously with the mainline pavement resurfacing.

Any surface course placed on shoulders four feet or narrower in width will be paid for as the Hot-Mix asphalt surface course pay item specified n the plans. When the shoulders are specified to be placed simultaneously with the mainline surface course and a Material Transfer Device is required for the mainline surface course, the shoulder will be placed with the Material Transfer Device and both the mainline and shoulder tonnage will be paid for at the contract unit price for Material Transfer Device.

A roller meeting the requirements of Article 1101.01 shall be required. This roller will be in addition to any rollers required for compaction of the mainline roadway resurfacing. This additional roller will not be paid for separately, but shall be included in the contract unit price bid for the Hot-Mix asphalt surface course material being placed.

The various HMA mixtures placed with the material transfer device will be paid for as specified in their respective specifications.

Designer Note: Use this special provision on projects which include bituminous shoulder resurfacing along with mainline paving. Consult Construction and Materials prior to use to determine if substitution of the mainline mix will be allowed for use on the shoulder so the mainline and shoulder may be paved simultaneously.

HOT-MIX ASPHALT SHOULDER RESURFACING CONSTRUCTED SIMULTANEOUSLY WITH MAINLINE PAVING

Effective January 22, 2001 Revised January 1, 2007

If the Department allows resurfacing hot-mix asphalt shoulders simultaneously with the mainline pavement resurfacing, a roller meeting the requirements of Article 1101.01 shall be required. This roller will be in addition to any rollers required for compaction of the mainline roadway resurfacing. This additional roller will not be paid for separately, but shall be included in the contract unit price bid for the mainline bituminous material being placed.

Designer Note: Use for similar type and size headwall removal to simplify documentation of quantities. Use on locations where the headwall is tied to the pipe culvert and a section of pipe must be removed with the headwall for ease of construction.

CONCRETE HEADWALL REMOVAL

Effective July 1, 1990

This work shall consist of the removal of existing concrete headwalls at various locations as shown on the plans and shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications.

The above work shall include the removal of the first section of pipe with the headwall. The removal of the first section of pipe will not be paid for separately, but shall be included in the unit price each for CONCRETE HEADWALL REMOVAL, and no additional compensation will be allowed due to the various sizes of pipes and headwalls.

Note: For use where concrete handrail cannot easily be measured and converted to cubic yards (cubic meters) as specified under Article 501.04.

CONCRETE HANDRAIL REMOVAL

Effective July 1, 1990 Revised January 1, 2007

This work shall consist of the removal and disposal of the concrete handrail as shown on the plans.

This work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications and will be paid for at the contract unit price per foot (meter) for CONCRETE HANDRAIL REMOVAL.

Designer Note: A bin-type retaining wall will normally have been established through a cost analysis in the project report stage. Check with the Bureau of Bridges & Traffic Structures and Materials to assure that the type wall specified has a minimum of 2 suppliers. A detail of the wall shall be included in the plans (Item 3). 7-1-94 Revised D.S.P.

BIN-TYPE RETAINING WALL

Effective July 1, 1990 Revised January 1, 2007

This work shall consist of furnishing and installing a Bin-Type Retaining Wall at locations shown on the plans and in accordance with the details included therein. The Contractor shall be governed by the following provisions:

Before ordering any material, the Contractor shall submit detail plans and specifications for the type of wall he proposes to construct for review and approval by the Engineer.

In excavating for placement of the Bin-Type Retaining Wall, it is recommended that the Contractor use a 1:1 backslope as shown in the plans. However, it shall be the Contractor's responsibility for any slippage that may occur during the construction operations or any damages which may result.

After the Bin-Type Retaining Wall has been constructed, the pipe underdrains placed, and the porous granular backfill brought up to the proper elevation as shown on the detail in the plans; the Contractor shall proceed to place and compact the earth to the lines and grades on the plans. This work shall be done in accordance with the applicable portions of Sections 205, 209, and 601 of the Standard Specifications. The top 2 ft. (600 mm) of the earth backfill shall be select material, satisfactory to the Engineer, so as to insure sod growth on the finished slope.

The porous granular backfill, the gravel cushion under the bin-type retaining wall base plates, and the earth excavation required will not be paid for separately but shall be considered as included in the construction of the BIN-TYPE RETAINING WALL.

The Bin-Type Retaining Wall will be measured for payment in square feet (square meters) based on the surface area. The surface areas will be determined by computing the product of the height of the wall (base to top of wall) and the length of the wall.

This work, including the furnishing of all material, equipment, and labor, shall be paid for at the contract unit price per square foot (square meter) for BIN-TYPE RETAINING WALL complete in place.

Designer Note: Use to repair/replace an existing 4" (100 mm) concrete wearing surface on a bridge deck with a new 4" (100 mm) concrete wearing surface. See CADD Standard 503401 for generic detail. Do not use Bridge Special Provision “Bridge Deck Overlay”. 9-23-96 Revised Article.

CONCRETE WEARING SURFACE

Effective July 1, 1990 Revised January 1, 2007

This item shall consist of a wearing surface of Class BD Concrete, welded wire fabric and slurry seal, constructed on a concrete deck in accordance with these specifications, as shown on the plans, as directed by the Engineer, and conforming to all applicable portions of Section 503 of the Standard Specifications.

Prior to placement of the Class BD Concrete Wearing Surface, the area to be surfaced shall be cleaned and a slurry seal of sand-cement grout placed as herein specified.

Cleaning of the area to be surfaced shall consist of the application of compressed air, followed by washing and brushing. Final cleaning with water under high pressure shall be done sufficiently ahead of concrete placement to permit the surface to become dry. If for any reason concrete placement does not follow immediately after cleaning, the area shall be carefully protected during the interim. The area shall be kept dry so that a final cleaning before surfacing may be accomplished with compressed air, followed by water under pressure.

Before placing the concrete, the area to be surfaced shall be thoroughly covered with a 1:1 sand-cement grout. The area shall be thoroughly scrubbed with the grout to wet it uniformly, to displace air films, and to incorporate any loose particles still on the surface. Sufficient grout for brushing may be mixed to provide material for about an hour. It shall be covered to reduce evaporation of water and remixed as it is being used. A water-cement ratio of 5.5 to 6 gallons (21.0 to 23 L) per sack of cement will produce a grout of proper consistency for use in cool cloudy weather. However, on hot sunny days, a grout of such consistency will not brush out well. Under such conditions, the water-cement ratio may be increased slightly to permit brushing, or the surface may be lightly sprayed to permit uniform spreading of the grout. Wetting of the surface shall be done carefully and free water will not be permitted to collect in hollows and depressions. In cloudy cool weather, the grout may be spread a considerable distance ahead of concrete placement; but in hot dry weather, the two operations will have to follow rather closely in order that the grout does not dry out excessively. Grout that has lost its sheen is in proper condition for concreting operations.

Welded wire fabric [6” X 6” (150 mm X 150 mm)] shall be placed in the concrete wearing surface as shown on the plans. The wire fabric shall conform to the applicable portions of Article 1006.10 of the Standard Specifications.

The Concrete Wearing Surface will be measured for payment as specified in Article 503.21 of the Standard Specifications, except that the sand-cement grout, wire fabric, and the work required for cleaning shall be considered included in the cost of this item. This work will be paid for at the contract unit price per cubic yard (cubic meter) for CONCRETE WEARING SURFACE.

Designer Note: Use this special when using the material listed to fill cracks in existing parapets as required by the Bridge Maintenance Engineer.

SURFACE FILLER, SPECIAL (GALLON)

Effective April 23, 2010

This work shall consist of filling cracks over 1/32" and other surface defects such as popouts with a gun-grade elastomeric sealant prior to overcoating with "Protective Coat, Special".

Material. The material shall be a 1-component, polyurethane-based, non-sag elastomeric sealant that meets ASTM C-920, Type S, Grade NS, Class 100/50, use T, NT, G, M.

The surface filler material shall be as recommended by the Manufacturer for the "Protective Coat, Special" and shall be compatible with the protective coating applied to the concrete parapet as specified in the Special Provision for "Protective Coat, Special".

Construction. All cracks and surface defects to be repaired shall be sound, dry, and clean of any foreign material. Preparation, filling, and tooling shall be according to the Manufacturer's specifications. Curing time shall be as recommended by the manufacturer, but a minimum of one day cure time shall be allowed prior to overcoating with "Protective Coat, Special".

A manufacturer's technical representative shall be present on the first day of surface filling operations to ensure correct interpretation of the Manufacturer's specifications.

Method Measurement. The surface filler will be measured for payment in gallons used in place to the nearest 0.1 gallon.

Basis of Payment. The surface filler will be paid for at the contract unit price per gallons for SURFACE FILLER, SPECIAL (GALLON), which price shall include the furnishing of all materials, crack and surface defect preparation, and the application of the surface filler as specified.

Designer Note: Use where existing bridge deck drains are to be plugged. Discuss proposed work with the Bridge Maintenance Engineer. Modify to fit your situation. Include plan details on proposed work.

PLUG EXISTING DECK DRAINS

Effective January 1, 1996 Revised March 22, 2001

Description.
This work consists of the satisfactory plugging of the existing bridge deck drains at locations and as detailed in the plans.

Construction Requirements.
The threaded rod, nuts and washers shall be galvanized according to AASHTO M 232. The material used to plug the drains shall be Class BD concrete and shall be placed according to Section 503 of the Standard Specifications.

Basis of Payment.
This work will be paid for at the contract unit price each for PLUG EXISTING DECK DRAINS, which price shall include all material and labor to satisfactorily complete the work.

FLOOR DRAIN EXTENSION

Effective: March 22, 2001

Description.
This work consists of the furnishing and installing extensions on the existing bridge deck drains at locations and as detailed on the plans and as directed by the Engineer.

Construction Requirements.
The drains shall be fabricated from material as shown on the plans and is to be bent and/or formed according to the dimensions shown on the plans. The Contractor shall verify all plan dimensions prior to fabrication of the extensions. The extensions shall be braced as shown on the plans and the cost of all supporting members shall be included in the cost of FLOOR DRAIN EXTENSIONS.

Basis of Payment.
This work will be paid for at the contract unit price Each for FLOOR DRAIN EXTENSION, which price shall include all material and labor to satisfactorily complete the work.

Designer Note: If your project includes a full width cast-in-place bridge floor less than 30 m (100') in length, check with Implementation (Construction) to determine if a bridge floor finishing machine should be required as specified in Article 503.16 "Concrete Superstructures." Do not use for staged bridges because there is already a minimum width for pouring with a finishing machine that allows use of a screed.

BRIDGE FLOOR FINISHING MACHINE

Effective May 1, 1995 Revised January 1, 2007

Bridge floors under 100' (30 m) in length, may be finished with a vibrating screed and surface tested in accordance with Article 503.16 of the Standard Specifications.

Designer Note: Use this special when applying the acrylic paint listed below to the parapets of an existing structure. Do not use unless requested by the Bridge Maintenance Engineer. This is **NOT** the standard Boiled Linseed Oil item.

PROTECTIVE COAT, SPECIAL

Effective April 23, 2010

This work consist of applying a protective coat system as specified herein, on concrete parapet surfaces as shown on the plans and as directed by the Engineer.

Materials. The concrete coating shall meet the following material requirements:

Color – Grey
Texture – Smooth
Type – One-component, elastomeric, crack-bridging, anti-carbonation, water vapor permeable, acrylic protective coating.
Weather Resistance – The product shall be intended for exterior applications.

Acceptance of the product will be based on the Manufacturer's Technical Data Sheet or a letter from the Manufacturer stating the product meets the Department's material specifications.

A. Properties of the elastomeric acrylic coating:

1. Pot Life: indefinite.
2. Moisture Vapor permeability (ASTM E96) 14.5 perms.
3. Tensile Properties (ASTM D-412 Modified)
   Elongation at break 700% min at 73°F (23°C)
   300% min at 0°F (-18°C)
4. Resistance to wind-driven rain (TT-C-555B): No passage of water through coating.
5. Weathering (ASTM G-23) 10,000 hours excellent, no chalking or cracking.

Construction. The concrete surface to be coated shall be sound, dry and clean of any foreign material. Surface Preparation shall be according to the Manufacturer's specifications, except blast cleaning or power washing (3000 psi min.) will be required. If the surface becomes soiled as determined by the Engineer, after either the initial cleaning or after the first coating, the Contractor shall clean the surface at no additional cost to the Department. Crack and surface defect repairs to the existing concrete parapet shall be performed prior to coating according to the Special Provision for "Surface Filler, Special". Mixing, application, and curing of the coating shall be according to the manufacturer's specifications, except application by spraying will not be allowed. A manufacturer's technical representative shall be present on the first day of the surface preparation operations and the first day of coating operations to ensure correct interpretation of the Manufacturer's specifications.

Do not apply material if it is raining or snowing, or if such conditions are imminent. Minimum application temperature 40°F (5°C) and rising.

The protective coat shall be applied in two coats. The application rate per coat shall produce a dry film thickness between 200-280 microns (8-11 mils). The final dry film thickness of protective coat system shall be between 400-560 microns (16 and 22 mils). Any additional coatings or removal of

coatings to stay within the total system range shall be the Contractors responsibility and shall be accomplished at no additional cost to the Department.

The Contractor shall protect pedestrian, vehicular, watercraft, or other traffic upon or underneath the structure and/or roadway and also all portions of the structure and/or roadway against damage or disfigurement during surface preparation and protective coat operations. When doing surface preparation or applying the protective coat over waterways, the Contractor shall implement such controls as are necessary to avoid contamination of the water, spills into the water, or films from collecting on the water surface during operations. If the Engineer determines that the protection methods are not effective, the Engineer will withdraw approval of operations until such time when protective measures are approved.

Method of Measurements. This work will be measured for payment and the area computed in square meters (square yards) of parapet wall surface covered, complete in place.

Basis of Payment. The protective coat will be paid for at the contract unit price per square yard for PROCTECTIVE COAT, SPECIAL, which price shall include the furnishing of all materials, surface preparation, and the application of the protective coat as specified.

Designer Note: Discuss your particular situation with your Project Engineer and modify as needed. Traffic control should be included as a separate item.

JACK AND REPOSITION BEARINGS

Effective November 15, 1993 Revised January 1, 2009

This work shall consist of furnishing all labor, materials, and equipment for raising and supporting the existing beams and repositioning the existing bearings at the locations shown in the plans, or as directed by the Engineer.

This work shall be done in accordance with the applicable portions of Sections 505 and 521 of the Standard Specifications and as specified herein.

The Contractor shall submit details of his proposed jacking systems and procedures for approval by the Engineer prior to commencing work. The Contractor's jacking plans shall be prepared and sealed by an Illinois Licensed Structural Engineer.

The jacks shall remain in place until the existing bearings are repositioned in the correct position.

At any time during the bridge raising operations, the Engineer may require the Contractor to provide additional support or other measures in order to furnish an added degree of safety. The Contractor shall provide such additional supports or measures at no extra cost to the Department.

The Contractor shall assume all responsibility and be liable for any damage caused by improper supports for shoring in all cases. Neither added precautions nor the failure of the Engineer to order additional protection will in any way relieve the Contractor of his sole responsibility for the safety of lives, equipment, and structure.

This work will be paid for at the contract unit price each for JACK AND REPOSITION BEARINGS, which price shall be payment in full to complete the work of jacking the beams and repositioning the existing bearings.

Designer Note: Use when cribbing is required for the jacking and support of beams during bridge repair work. Discuss your particular situation with your Project Engineer and modify as needed. Traffic control should be included as a separate item. For Day Labor projects, the requirement for a Structural Engineer can be omitted. 7-1-94 Revised Section.

JACKING AND CRIBBING

Effective January 1, 1994 Revised January 1, 2007

This item shall consist of all work and materials required for the construction and subsequent removal of cribs required to jack and support the beams while specified repairs are being made.

This work shall be done in accordance with the applicable portions of Sections 505 and 521 of the Standard Specifications and as herein specified.

The Contractor shall submit details of his proposed jacking systems and procedures for approval by the Engineer prior to commencing work. The Contractor's jacking plans shall be prepared and sealed by an Illinois Licensed Structural Engineer.

At any time during the bridge raising operations, the Engineer may require the Contractor to provide additional support or other measures in order to furnish an added degree of safety. The Contractor shall provide such additional supports or measures at no extra cost to the Department.

The Contractor shall assume all responsibility and be liable for any damage caused by improper supports for shoring in all cases. Neither added precautions nor the failure of the Engineer to order additional protection will in any way relieve the Contractor of his sole responsibility for the safety of lives, equipment, and the structure.

This work will be paid for at the contract unit price each for JACKING AND CRIBBING at the designated location.

54200 542.00

Designer Note: Use this special provision along with CADD Standard 601401 of 601501 if you are using seepage collars.

SEEPAGE COLLAR

Effective December 1, 1996

This work shall be done in accordance with Section 542 of the Standard Specifications and details shown in the plans.

Basis of Payment. This work will be paid for at the contract unit price per each for SEEPAGE COLLAR.

Designer Note: Do not use this provision without discussing with Operations (Maintenance) to find out if the existing culverts are in good enough condition that they can be reused. This provision does not apply to a “Temporary” pipe culvert that might be specified on your project to be placed in one location then subsequently relocated to another site.

REMOVE AND RELAY PIPE CULVERTS

Effective July 1, 1990 Revised January 1, 2007

The existing pipe culverts, as designated on the plans, shall be removed and re-laid to the lines and grades of the proposed ditches. The Contractor shall use all precautions in removing the pipe. Any pipe damaged by negligence in removing, handling, or relaying shall be replaced by the Contractor at his own expense. The relaying of the pipe shall be done in accordance with the applicable portions of Section 542 of the Standard Specifications.

This work will be paid for at the contract unit price per foot (meter) for REMOVE AND RELAY PIPE CULVERTS of the types and diameters specified.

Designer Note: Use this special when pushing a pipe culvert under the roadway. Always specify Class A in the pay item. Do not use Class C or Class D.

PIPE CULVERTS (JACKED)

Effective January 1, 2014

This work shall be performed in accordance with Section 552 of the Standard Specifications, the plan details and as described herein.

Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations, old wingwalls, etc.) that cannot be removed with normal earth drilling procedures but requires special augers, tooling, core barrels or rock augers to remove the obstruction. When obstructions are encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to core, break up, push aside, or remove the obstruction. Lost tools or equipment in the excavation as a result of the Contractor's operation shall not be defined as obstructions and shall be removed at the Contractor's expense.

This work will be paid for at the contract unit price per Foot for PIPE CULVERTS (JACKED) of the class and size specified in the plans.

Designer Note: Use whenever corrugated metal pipe culvert is an option or a definite pay item.

PIPE CULVERTS

Effective July 1, 1990 Revised January 1, 2007

Add the following sentence to the sixth paragraph of Article 542.04(d): “All connecting bands shall be a minimum of 24" (600 mm) wide”.

Designer Note: Use whenever pipe culverts are to be placed across existing pavements that are to remain in place. Trench backfill is to be measured and paid for separately and this quantity should be included in the plans.

BACKFILL - PIPE CULVERTS

Effective October 15, 1995 Revised January 1, 2007

When trenches or excavation are made across existing pavement to remain in place, revise Article 542.04(f) 4th paragraph as follows:

“The remainder of the trench and excavation shall be backfilled with trench backfill. All backfill material shall be deposited in the trench or excavation in such a manner as not to damage the culvert. Trench backfill above the center of the pipe shall be compacted by either Method 2 or Method 3 specified in Article 550.07, or in accordance with Method 1 specified in Article 550.07, except that the compacted lifts shall not exceed 8" (200 mm) in thickness.

When the trench has been widened for the removal and replacement of unstable or unsuitable material, the backfilling with trench backfill and impervious material will be required for the entire width of the trench or excavation. Each 8" (200 mm) layer for the entire trench width shall be completed before beginning the placement of the next layer.”

Basis of Payment: This work will not be paid for separately but shall be included in the contract unit price per foot (meter) for PIPE CULVERTS, of the type and diameter specified. Trench backfill will be paid for as specified in Article 208.04.

Designer Note: Use in locations where a water main quality pipe is required for storm sewer such as adjacent to water lines.

STORM SEWER, (WATER MAIN QUALITY PIPE)

Effective January 1, 2011
Revised January 1, 2012

This work consists of constructing storm sewer to meet water main standards, as required by the IEPA or when otherwise specified. The work shall be performed in accordance with applicable parts of Section 550 of the Standard Specifications, applicable sections of the current edition of the IEPA Regulations (Title 35 of the Illinois Administrative Code, Subtitle F, Chapter II, Section 653.119), the applicable sections of the current edition of the "Standard Specifications for Water and Sewer Main Construction in Illinois", and as herein specified.

This provision shall govern the installation of all storm sewers which do not meet IEPA criteria for separation distance between storm sewers and water mains. Separation criteria for storm sewers placed adjacent to water mains and water service lines are as follows:

(1) Water mains and water service lines shall be located at least 10 feet (3.05 meters) horizontally from any existing or proposed drain, storm sewer, sanitary sewer, or sewer service connections.

(2) Water mains and water service lines may be located closer than 10 feet (3.05 meters) to a sewer line when:

   (a) Local conditions prevent a lateral separation of 10 feet (3.05 meters); and

   (b) The water main or water service invert is 18 inches (460 mm) above the crown of the sewer; and

   (c) The water main or water service is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

(3) A water main or water service shall be separated from a sewer so that its invert is a minimum of 18 inches (460 mm) above the crown of the drain or sewer whenever water mains or services cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the water main or water services located within 10 feet (3.05 meters) horizontally of any sewer or drain crossed.

When it is impossible to meet (1), (2) or (3) above, the storm sewer shall be constructed of concrete pressure pipe, slip-on or mechanical joints ductile iron pipe, or PVC pipe equivalent to water main standards of construction. Construction shall extend on each side of the crossing until the perpendicular distance from the water main or water service to the sewer or drain line is at least 10 feet (3.05 meters). Storm sewer meeting water main requirements shall be constructed of the following pipe materials:

<u>Concrete Pressure Pipe</u>

Concrete pressure pipe shall conform to the latest ANSI/AWWA C300, C301, C302, or C303.

Joints shall conform to Article 41-2.07B of the "Standard Specifications for Water and Sewer Main Construction in Illinois."

Ductile Iron Pipe

Ductile Iron pipe shall conform to ANSI A 21.51 (AWWA C151), class or thickness designed per ANSI A 21,50 (AWWA C150), tar (seal) coated and/or cement lined per ANSI A 21.4 (AWWA C104), with a mechanical or rubber ring (slip seal or push on) joints.

Joints for ductile iron pipe shall be in accordance with the following applicable specifications.

1. Mechanical Joints - AWWA C111 and C600
2. Push-On Joints - AWWA C111 and C600

Plastic Pipe

Plastic pipe shall be marked with the manufacturer's name (or trademark); ASTM or AWWA specification; Schedule Number, Dimension Ratio (DR) Number or Standard Dimension Ratio (SDR) Number; and Cell Class. The pipe and fittings shall also meet NSF Standard 14, and bear the NSF seal of approval. Fittings shall be compatible with the type of pipe used. The plastic pipe options shall be in accordance with the following:

1. Polyvinyl Chloride (PVC) conforming to ASTM Standard D 1785. Schedule 80 is the minimum required for all pipe sizes, except when the pipe is to be threaded, and then it shall be Schedule 120. It shall be made from PVC compound meeting ASTM D 1784, Class 12454.
2. Polyvinyl Chloride (PVC) conforming to ASTM D 2241. A minimum wall thickness of SDR 26 is required for all pipe sizes (Note: The lower the SDR number, the higher the wall thickness and pressure rating). It shall be made from PVC compound meeting ASTM D 1784, Class 12454.
3. Chlorinated Polyvinyl Chloride (CPVC) conforming to ASTM f 441. A minimum of Schedule 80 is required for all pipe sizes. Threaded joints are not allowed. It shall be made from CPVC compound meeting ASTM D 1784, Class 23447.
4. Chlorinated Polyvinyl Chloride (CPVC) conforming to ASTM F 442. A minimum wall thickness of SDR 26 is required for all pipe sizes (Note: The lower the SDR number, the higher the wall thickness and pressure rating). It shall be made from CPVC compound meeting ASTM D 1784.
5. Polyvinyl Chloride (PVC) conforming to ANSI/AWWA C900. A minimum of wall thickness of DR 25 is required for all pipe sizes (Note: The lower the DR number, the higher the wall thickness and pressure rating). It shall be made from PVC compound meeting ASTM D 1784, Class 12454.
6. Polyvinyl Chloride (PVC) conforming to ANSI/AWWA C905. A minimum of wall thickness of DR 26 is required for all pipe sizes (Note: The lower the DR number, the higher the wall thickness and pressure rating). It shall be made from PVC compound meeting ASTM D 1784, Class 12454.

Joining of plastic pipe shall be by push-on joint, solvent welded joint, heat welded joint, flanged joint, or threaded joint, in accordance with the pipe manufacturer's instructions and industry standards. Special precautions shall be taken to insure clean, dry contact surfaces when making solvent or heat welded joints. Adequate setting time shall be allowed for maximum strength.

Elastotmeric seals (gaskets) used for push-on joints shall comply with ASTM F477.

Solvent cement shall be specific for the plastic pipe material and shall comply with ASTM D 2564 (PVC) or ASTM F 493 (CPVC) and be approved by NSF.

For water-sewer line crossings only, storm sewer meeting water main requirements may also be constructed of reinforced concrete sewer pipe. The pipe shall conform to ASTM C 76 with a joint and rubber gasket meeting ASTM C 443. The joint shall meet the leakage performance test in ASTM C 443. The pipe manufacturer must demonstrate to Illinois Department of Transportation personnel that the joints pass the leakage performance test prior to installation of the pipe. The pipe class shall meet the requirements of Section 550 of the *Standard Specifications for Road and Bridge Construction*.

This work will be measured and paid for at the contract unit price per foot (meter) for STORM SEWER (WATER MAIN QUALITY PIPE) of the diameter and type specified.

Designer Note: Use for building demolition contracts to insure proper backfill material and compaction of areas under the proposed roadway. Check with local building codes for other requirements that may apply.

For each building removal, check with Land Acquisition for asbestos testing/inspections/etc. Also discuss with Land Acquisition any extra debris (garbage/dump items/etc.) that may, by agreement, be left behind for the Contractor to clean up. Include a separate special provision for each building and describe situation/basis of payment.

BACKFILL, BUILDING REMOVAL

Effective August 20, 1991 Revised January 1, 2007

All material furnished for backfilling holes and basements for building removal shall satisfy Article 1003.04 or 1004.05 of the Standard Specifications.

The cavities under the proposed roadway shall be backfilled as outlined under Article 550.07 Method 1, 2, or 3 of the Standard Specifications.

Aggregate used shall contain no frozen matter nor shall the aggregate be placed on snow or ice. Jetting or inundating shall not be done during freezing weather.

After the filling of the void, the site shall be graded and cleaned-up to the satisfaction of the Engineer.

If there is a possibility of trapping of sub-surface drainage, basement floors shall be broken to comply with local building codes to prevent entrapment of water.

A suitable earth cap, minimum 12 inches (300 mm) thick, shall be placed as the final backfill lift on all cavity areas outside the proposed embankment or pavement structure.

This work will not be paid for separately, but shall be included in the cost of the building removal pay items included in the contract.

Designer Note: Use this special provision when a steel pipe is to serve as a pipe culvert that is to be jacked beneath an existing R.R. track. Discuss in detail with the District Project Support Unit (Utilities/Agreements). Check to see that current A.R.E.A. specifications are included herein and are still applicable. Specify the type of material, type of loading and wall thickness required for the steel pipe. *Insert diameter. This steel pipe provision first used on A,T&SF R.R. on Rte. 91 at Princeville in 1994.

10-24-96 Revised measurements to metric.

STEEL PIPE CULVERT, SPECIAL (JACKED) INCHES (MM)

Effective July 1, 1994 Revised January 1, 2007

This work shall consist of jacking a steel pipe under the railroad embankment in accordance with Section 552 of the Standard Specifications and this special provision.

The steel pipe shall meet ASTM A-53 Grade for loading and have a wall thickness of inches (mm).

All joints shall be field welded as approved by the Engineer. Any voids between the pipe and the embankment shall be filled with grout to the satisfaction of the Engineer. The steel pipe culvert shall be installed in accordance with the following portions of Chapter 1, Part 5.2 of the latest edition of the A.R.E.A. manual:

(INCLUDE HERE ALL APPLICABLE SPECIFICATIONS from the latest edition of the “Manual for Railroad Engineering” as listed at the end of this provision.)

A jacking plan shall be provided to the Engineer and Railroad Company for approval.

Method of Measurement. Steel Pipe Culvert, Special jacked in place of the different diameters will be measured for payment in foot (meter) in place.

Excavation in rock will be measured for payment as specified in Article 502.12.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for Steel Pipe Culvert, Special (Jacked) of the diameter specified, which price shall include the steel pipe culvert, including backfilling all voids and all other materials and equipment necessary to install the steel pipe culvert and all excavation except excavation in rock.

Excavation in rock will be paid for as specified in Article 502.13 for Rock Excavation for Structures.

Manual for Railroad Engineering

Manual for Railroad Engineering 1990, current through July 31, 1991

5.2 Specifications for Pipelines Conveying Non-Flammable Substances

5.2.1 SCOPE

Pipelines included under these specifications are those installed to carry steam, water or any non-flammable substance which, from its nature or pressure, might cause damage if escaping on or in the vicinity of railway property. The term “engineer” as used herein means chief engineer of the railway company, or his authorized representative.

5.2.2 GENERAL REQUIREMENTS

Pipelines under railway tracks and across railway rights-of-way shall be encased in a larger pipe or conduit called the casing pipe as indicated in Fig. 5.2.2.1. Casing pipe may be omitted under the following conditions:

(a) Under secondary or industry tracks as approved by the engineer.

(b) On pipelines in streets where joints are of leakproof construction and the pipe material will safely withstand the combination of internal pressure and external loads.

(c) For non-pressure sewer crossings where the pipe strength is capable of withstanding railway loading.

Pipelines shall be installed under tracks by boring or jacking, if practicable.

Pipelines shall be located, where practicable, to cross tracks at approximately right angles thereto but preferably at not less than 45 deg. and shall not be placed within culverts nor under railway bridges where there is likelihood of restricting the area required for the purpose for which the bridges or culverts were built, or of endangering the foundations.

Pipelines laid longitudinally on railway rights-of-way shall be located as far as practicable from any tracks or other important structures. If located within 25 feet (7.5 meters) of the centerline of any track or where there is danger of damage from leakage to any bridge, building or other important structure, the carrier pipe shall be encased or of special design as approved by the engineer.

Any replacement of a carrier pipe shall be considered a new installation, subject to the requirements of these specifications.

Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree of protection so prescribed shall supersede the applicable portions.

Pipelines and casing pipe shall be suitably insulated from underground conduits carrying electric wires on railway rights-of-way.

5.2.3 CARRIER PIPE

Carrier pipe and joints shall be of accepted material and construction as approved by the engineer. Joints for carrier line pipe operating under pressure shall be mechanical or welded type.

The pipe shall be laid with sufficient slack so that it is not in tension.

5.2.4 CASING PIPE

Casing pipe and joints shall be of leakproof construction, capable of withstanding railway loading.

The inside diameter of the casing pipe shall be at least 2" (50 mm) greater than the largest outside diameter of the carrier pipe, joints or couplings, for carrier pipe less than 6" (150 mm) in diameter; and at least 4" (100 mm) greater for carrier pipe 6" (150 mm) and over in diameter. It shall, in all cases, be great enough to allow the carrier pipe to be removed subsequently without disturbing the casing pipe or roadbed.

Table 5.2.4.1.1

Minimum Wall Thickness for Steel Casing Pipe for E 72 Loading

Nominal Thickness inches (mm)	Nominal Diameter inches (mm)
0.188 (5.0)	14 (Under 350)
0.219 (5.5)	14 & 16 (350 & 400)
0.250 (6.4)	18 (450)
0.281 (7.0)	20 (500)
0.312 (8.0)	22 (550)
0.344 (9.0)	24 (600)
0.375 (9.5)	26 (650)
0.406 (10.0)	28 & 30 (700 & 750)
0.438 (11.0)	32 (800)
0.469 (12.0)	34 & 36 (850 & 900)
0.500 (13.0)	38, 40 & 42 (950, 1000 & 1050)

When casing is installed without benefit of a protective coating, and said casing if not cathodically protected, the wall thickness shown above shall be increased to the nearest standard size, which is a minimum of 0.063 in. (1.6 mm) greater than the thickness shown except for diameters under 12-3/4 in. (325 mm).

5.2.4.1 Steel Pipe

Steel pipe shall have a minimum yield strength of 35,000 psi (241,320 kPa).

5.2.4.2 Cast Iron Pipe

Cast iron pipe may be used for a casing provided the method of installation is by open trench. Cast iron pipe shall conform to American National Standards Institute A 21. The pipe shall be of the mechanical-joint type or plan-end pipe with compression-type couplings. The strength of cast iron pipe to sustain external loads shall be computed in accordance with ANSI A 21.1 “Manual for the Computation of Strength and Thickness of Cast Iron Pipe.”

5.2.4.3 Concrete Pipe

For pressure under 100 psi (690 kPa) in the carrier pipe, the casing pipe may be reinforced concrete pipe conforming to the AREA Specifications for Reinforced Concrete Culvert Pipe, Part 10, Chapter 8, or bituminous-coated corrugated metal pipe conforming to the AREA specifications for such pipe, Part 4, this Chapter.

5.2.4.4 Length of Pipe

Casing pipe under railway tracks and across railway rights-of-way shall extend to the greater of the following distances, measured at right angles to centerline of track:

(a) 2' (600 mm) beyond toe of slope.
(b) 3' (1 m) beyond ditch.
(c) A minimum distance of 25' (7.5 m) from centerline of outside track when end of casing is below ground.
(d) If additional tracks are constructed in the future or the railway determines that the roadbed should be widened, the casing shall be extended correspondingly.

5.2.5 CONSTRUCTION

Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length except at ends. Casing shall be so installed as to prevent the formation of a waterway under the railway, with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy).

Where casing and/or carrier pipe is cathodically protected, the engineer shall be notified and suitable test made to ensure that other railway structures and facilities are adequately protected from the cathodic current in accordance with the recommendations of current Reports of Correlating Committee on Cathodic Protection, published by the National Association of Corrosion Engineer.

5.2.5.1 Method of Installation

(a) Installations by open-trench methods shall comply with Installation of Pipe Culverts, Part 4, this Chapter.

(b) Bored or jacked installations shall have a bored hole diameter essentially the same as the outside diameter of the pipe plus the thickness of the protective coating. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (including coating) by more than approximately 1" (30 mm), remedial measures as approved by the chief engineer of the railway company shall be taken. Boring operations shall not be stopped if such stoppage would be detrimental to the railway.

(c) Tunneling operations shall be conducted as approved by the engineer. If voids are caused by the tunneling operations, they shall be filled by pressure grouting or by other approved methods which will provide proper support.

5.2.5.2 Depth of Installation

5.2.5.2.1 Casing Pipe

Casing pipe under railway tracks and across railway rights-of-way shall be not less than 5-1/2 ft. (1.7 m) from base of railway rail to top of casing at its closest point, except that under secondary or industry tracks this distance may be 4-1/2 ft. (1.4 m). On other portions of rights-of-way where casing is not directly beneath any track, the depth from ground surface or from bottom of ditches to top of casing shall not be less than 3 ft. (1 m).

5.2.5.2.2 Carrier Pipe

Carrier pipe installed under secondary or industry tracks without benefit of casing shall be not less than 4-1/2 ft. (1.4 m) from base of railway rail to top of pipe at its closest point nor less than 3 ft. (1 m) from ground surface or from bottom of ditches.

5.2.5.2.3 On Right-of-Way

Pipeline laid longitudinally on railway rights-of-way 50' (15 m) or less from centerline of track, shall be buried not less than 4' (1.2 m) from ground surface to top of pipe. Where pipeline is laid more than 50' (15 m) from centerline of track, minimum cover shall be at least 2' (600 mm).

5.2.5.3 Shut-Off Valves

Accessible emergency shut-off valves shall be installed within effective distances each side of the railway is mutually agreed to by the engineer and the pipeline company. Where pipelines are provided with automatic control stations at locations and within distances approved by the engineer, no additional valves shall be required.

5.2.6 APPROVAL OF PLANS

Plans for proposed installation shall be submitted to and meet the approval of the engineer before construction is begun.

Plans shall be drawn to scale showing the relation of the proposed pipeline to railway tracks, angle of crossing, location of valves, railway survey station, right-of-way lines and general layout of tracks and railway facilities. Plans should also show a cross section (or sections) from field survey, showing pipe in relation to actual profile of ground and tracks. If open-cutting or tunneling is necessary, details of sheeting and method of supporting tracks or driving tunnel shall be shown.

In addition to the above, plans should contain the following data:

	Carrier Pipe	Casing Pipe
Contents to be handled		
Outside diameter		
Pipe material		
Specification and grade		
Wall thickness		
Actual working pressure		
Type of joint		
Coating		
Method of installation		

Protection at ends of casing:

Both ends: One end: Type:

Bury: Base of rail to top of casing m (ft.) mm (in.)

Bury: (Not beneath tracks) m (ft.) mm (in.)

Bury: (Roadway ditches) m (ft.) mm (in.)

5.2.7 EXECUTION OF WORK

The execution of the work on railway rights-of-way, including the supporting of tracks, shall be subject to the inspection and direction of the engineer.

Designer Note: Use this special provision whenever necessary to jack a storm sewer/pipe culvert underneath an existing R.R. track. Jacking pipes under R.R. R.O.W. generally requires using a steel casing and specially designed pipe to meet R.R. loading requirements. This provision is intended as a starting point and should be modified to meet your project and R.R. requirements. Check to see that current A.R.E.A. specifications are included herein and are still applicable. Discuss in detail with the District Project Support Unit (Utilities/Agreements). Specify the length, inside diameter, type of loading, type of material, and wall thickness for the casing pipe. Fill in the following data as applicable to your project:

*Storm Sewer or Pipe Culvert
**Pipe Diameter

10-24-96 Revised measurements to metric.

(STORM SEWER/PIPE CULVERT) JACKED IN PLACE, INCHES (MM)

Effective July 1, 1994 Revised January 1, 2007

This work shall consist of jacking a under the railroad embankment in accordance with Section 552 of the Standard Specifications and this special provision.

A ft. (m) long, inch (mm) diameter steel casing pipe meeting ASTM A-53 Grade for loading and a wall thickness of inches (mm) will be required.

The casing pipe shall be installed in accordance with the following portions of Chapter 1, Part 5 of the latest edition of the A.R.E.A. Manual:

(INCLUDE HERE ALL APPLICABLE SPECIFICATIONS from the latest edition of the "Manual for Railroad Engineering" as listed at the end of this provision).

A jacking plan shall be provided to the Engineer and Railroad Company for approval.

Method of Measurement. jacked in place of the different diameters will be measured for payment in foot (meter) in place.

Excavation in rock will be measured for payment as specified in Article 502.12.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for JACKED IN PLACE, of the diameter specified, which price shall include the , metal liner, including backfilling all voids between the and metal liner, all other materials and equipment necessary to install the _ and all excavation except excavation in rock.

Excavation in rock will be paid for as specified in Article 502.13 for Rock Excavation for Structures.

5.2 Specifications for Pipelines Conveying Non-Flammable Substances

5.2.1 SCOPE

Pipelines included under these specifications are those installed to carry steam, water or any non-flammable substance which, from its nature or pressure, might cause damage if escaping on or in the vicinity of railway property. The term “engineer” as used herein means chief engineer of the railway company, or his authorized representative.

5.2.2 GENERAL REQUIREMENTS

Pipelines under railway tracks and across railway rights-of-way shall be encased in a larger pipe or conduit called the casing pipe as indicated in Fig. 5.2.2.1. Casing pipe may be omitted under the following conditions:

(a) Under secondary or industry tracks as approved by the engineer.

(b) On pipelines in streets where joints are of leakproof construction and the pipe material will safely withstand the combination of internal pressure and external loads.

(c) For non-pressure sewer crossings where the pipe strength is capable of withstanding railway loading.

Pipelines shall be installed under tracks by boring or jacking, if practicable.

Pipelines shall be located, where practicable, to cross tracks at approximately right angles thereto but preferably at not less than 45 deg. and shall not be placed within culverts nor under railway bridges where there is likelihood of restricting the area required for the purpose for which the bridges or culverts were built, or of endangering the foundations.

Pipelines laid longitudinally on railway rights-of-way shall be located as far as practicable from any tracks or other important structures. If located within 25' (7.5 m) of the centerline of any track or where there is danger of damage from leakage to any bridge, building or other important structure, the carrier pipe shall be encased or of special design as approved by the engineer.

Any replacement of a carrier pipe shall be considered a new installation, subject to the requirements of these specifications.

Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree of protection so prescribed shall supersede the applicable portions.

Pipelines and casing pipe shall be suitably insulated from underground conduits carrying electric wires on railway rights-of-way.

5.2.3 CARRIER PIPE

Carrier pipe and joints shall be of accepted material and construction as approved by the engineer. Joints for carrier line pipe operating under pressure shall be mechanical or welded type.

The pipe shall be laid with sufficient slack so that it is not in tension.

5.2.4 CASING PIPE

Casing pipe and joints shall be of leakproof construction, capable of withstanding railway loading.

The inside diameter of the casing pipe shall be at least 2" (50 mm) greater than the largest outside diameter of the carrier pipe, joints or couplings, for carrier pipe less than 6" (150 mm) in diameter; and at least 4" (100 mm) greater for carrier pipe 6" (150 mm) and over in diameter. It shall, in all cases, be great enough to allow the carrier pipe to be removed subsequently without disturbing the casing pipe or roadbed.

Table 5.2.4.1.1

Minimum Wall Thickness for Steel Casing Pipe for E 72 Loading

Nominal Thickness inches (mm)	Nominal Diameter inches (mm)
0.188 (5.0)	14 (Under 350)
0.219 (5.5)	14 & 16 (350 & 400)
0.250 (6.4)	18 (450)
0.281 (7.0)	20 (500)
0.312 (8.0)	22 (550)
0.344 (9.0)	24 (600)
0.375 (9.5)	26 (650)
0.406 (10.0)	28 & 30 (700 & 750)
0.438 (11.0)	32 (800)
0.469 (12.0)	34 & 36 (850 & 900)
0.500 (13.0)	38, 40 & 42 (950, 1000 & 1050)

When casing is installed without benefit of a protective coating, and said casing if not cathodically protected, the wall thickness shown above shall be increased to the nearest standard size, which is a minimum of 0.063 in. (1.6 mm) greater than the thickness shown except for diameters under 12-3/4 in. (325 mm).

5.2.4.1 Steel Pipe

Steel pipe shall have a minimum yield strength of 35,000 psi (241,320 kPa).

5.2.4.2 Cast Iron Pipe

Cast iron pipe may be used for a casing provided the method of installation is by open trench. Cast iron pipe shall conform to American National Standards Institute A 21. The pipe shall be of the mechanical-joint type or plan-end pipe with compression-type couplings. The strength of cast iron pipe to sustain external loads shall be computed in accordance with ANSI A 21.1 “Manual for the Computation of Strength and Thickness of Cast Iron Pipe.”

5.2.4.3 Concrete Pipe

For pressure under 100 psi (690 kPa) in the carrier pipe, the casing pipe may be reinforced concrete pipe conforming to the AREA Specifications for Reinforced Concrete Culvert Pipe, Part 10, Chapter 8, or bituminous-coated corrugated metal pipe conforming to the AREA specifications for such pipe, Part 4, this Chapter.

5.2.4.4 Length of Pipe

Casing pipe under railway tracks and across railway rights-of-way shall extend to the greater of the following distances, measured at right angles to centerline of track:

(a) 2' (600 mm) beyond toe of slope.
(b) 3' (1 m) beyond ditch.
(c) A minimum distance of 25' (7.5 m) from centerline of outside track when end of casing is below ground.
(d) If additional tracks are constructed in the future or the railway determines that the roadbed should be widened, the casing shall be extended correspondingly.

5.2.5 CONSTRUCTION

Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length except at ends. Casing shall be so installed as to prevent the formation of a waterway under the railway, with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy).

Where casing and/or carrier pipe is cathodically protected, the engineer shall be notified and suitable test made to ensure that other railway structures and facilities are adequately protected from the cathodic current in accordance with the recommendations of current Reports of Correlating Committee on Cathodic Protection, published by the National Association of Corrosion Engineer.

5.2.5.1 Method of Installation

(a) Installations by open-trench methods shall comply with Installation of Pipe Culverts, Part 4, this Chapter.

(b) Bored or jacked installations shall have a bored hole diameter essentially the same as the outside diameter of the pipe plus the thickness of the protective coating. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (including coating) by more than approximately 1" (30 mm), remedial measures as approved by the chief engineer of the railway company shall be taken. Boring operations shall not be stopped if such stoppage would be detrimental to the railway.

(c) Tunneling operations shall be conducted as approved by the engineer. If voids are caused by the tunneling operations, they shall be filled by pressure grouting or by other approved methods which will provide proper support.

5.2.5.2 Depth of Installation

5.2.5.2.1 Casing Pipe

Casing pipe under railway tracks and across railway rights-of-way shall be not less than 5-1/2 ft. (1.7 m) from base of railway rail to top of casing at its closest point, except that under secondary or industry tracks this distance may be 4-1/2 ft. (1.4 m). On other portions of rights-of-way where casing is not directly beneath any track, the depth from ground surface or from bottom of ditches to top of casing shall not be less than 3 ft. (1 m).

5.2.5.2.2 Carrier Pipe

Carrier pipe installed under secondary or industry tracks without benefit of casing shall be not less than 4-1/2 ft. (1.4 m) from base of railway rail to top of pipe at its closest point nor less than 3 ft. (1 m) from ground surface or from bottom of ditches.

5.2.5.2.3 On Right-of-Way

Pipeline laid longitudinally on railway rights-of-way 50' (15 m) or less from centerline of track, shall be buried not less than 4' (1.2 m) from ground surface to top of pipe. Where pipeline is laid more than 50' (15 m) from centerline of track, minimum cover shall be at least 2' (600 mm).

5.2.5.3 Shut-Off Valves

Accessible emergency shut-off valves shall be installed within effective distances each side of the railway is mutually agreed to by the engineer and the pipeline company. Where pipelines are provided with automatic control stations at locations and within distances approved by the engineer, no additional valves shall be required.

5.2.6 APPROVAL OF PLANS

Plans for proposed installation shall be submitted to and meet the approval of the engineer before construction is begun.

Plans shall be drawn to scale showing the relation of the proposed pipeline to railway tracks, angle of crossing, location of valves, railway survey station, right-of-way lines and general layout of tracks and railway facilities. Plans should also show a cross section (or sections) from field survey, showing pipe in relation to actual profile of ground and tracks. If open-cutting or tunneling is necessary, details of sheeting and method of supporting tracks or driving tunnel shall be shown.

In addition to the above, plans should contain the following data:

	Carrier Pipe	Casing Pipe
Contents to be handled		
Outside diameter		
Pipe material		
Specification and grade		
Wall thickness		
Actual working pressure		
Type of joint		
Coating		
Method of installation		

Protection at ends of casing:

Both ends: One end: Type:

Bury: Base of rail to top of casing ft. (m) in. (mm)

Bury: (Not beneath tracks) ft. (m) in. (mm)

Bury: (Roadway ditches) ft. (m) in. (mm)

5.2.7 EXECUTION OF WORK

The execution of the work on railway rights-of-way, including the supporting of tracks, shall be subject to the inspection and direction of the engineer.

Designer Note: Use when proposed water mains are to be located under new pavement structures or services requiring casing pipe that is less than 12" in diameter. Check with Utilities/Project Engineer for inclusion. ASTM A53 required for pipe to be ordered by NPS (nominal pipe size, I.D.) and weight class or schedule number, or both; or by outside diameter (O.D.) and nominal wall thickness. This provision has been written to conform with the I.D. ordering requirements. If an outside diameter is needed then the Designer must revise this provision and so reflect the provisions of A53. *Insert diameter __*__ inches.

STEEL CASINGS _____ INCHES

Effective July 1, 1990 Revised January 1, 2013

This work shall consist of furnishing a Schedule 40 Steel Pipe, _____ I.D. to A.S.T.M. Specification A-53 and using it to encase the water main at the location shown on the plans. All joints are to be field welded in a manner approved by the Engineer.

This work will be paid for at the contract unit price per Foot for STEEL CASINGS, _____ inches, which price shall include all material, equipment, and labor necessary to complete the work.

Designer Note: Use when proposed water mains requiring a casing pipe that is 12" ± or larger in diameter are to be located under new pavement structures. Check with Utilities/Project Engineer for inclusion. The specification for the pipe is manufactured to is A.S.T.M. A-252, Grade 2. If an inside diameter is needed then the Designer must revise. *Insert diameter __*__ inches and wall thickness __**__ inches.

An industry contact person is Mark Lible at Pittsburgh Pipe in St. Louis, MO; Phone # (800) 325-2653.

STEEL CASINGS (__*__) INCHES

Effective July 1, 1990 Revised January 1, 2013

This work shall consist of furnishing a all equipment, materials, and labor to install a Steel Pipe, __*__ O.D. to A.S.T.M. Specification A-252, Grade 2 in accordance with Section 542 of the Standard Specifications for watermain encasement at the location shown on the plans. All joints are to be field welded in a manner approved by the Engineer and in accordance with the Standard Specifications.

The inside and outside of the pipe shall be coated with a bituminous based paint system such as BB-99 or approved equivalent.

The Contractor shall furnish mill test reports for the pipe used. Wall thickness shall be a minimum of (__**__).

Each end of the casing shall be capped with concrete block and mortar to the satisfaction of the Engineer.

This work will be paid for at the contract unit price per Foot for STEEL CASINGS, _____ INCHES, which price shall include all material, equipment, and labor necessary to complete the work.

Designer Note: For use on contracts with pipe underdrains. This pipe slot size is experimental and use of this special provision shall be approved by District Bureau of Materials before using.

PIPE UNDERDRAIN

Effective: August 1, 2003

This work shall be according to Section 601 of the Standard Specifications except that FA 4 or FM 4 meeting the following gradations shall be used for backfilling the underdrain trench:

	Percent Passing	
Sieve Size	**FA 4**	**FM 4**
3/8" (9.5 mm)	100	100
No. 4 (4.75 mm)		97 ± 3
No. 8 (2.36 mm)		5 ± 5
No. 10 (2 mm)	21% max	
No. 16 (1.18 mm)	5 ± 5	2 ± 2
No. 200 (75)	2% max	2% max

Only natural sands and gravel shall be used. A pipe slot of 1.75mm± 0.25mm shall be used. The number of slots and the slot length may be manipulated to maintain the inlet flow specified in AASHTO M 252-96 as long as it does not compromise any other requirements specified in AASHTO M 252-96. No fabric envelope for the pipe underdrain or the trench shall be used. The District may conduct a number of Ploog Washer tests, using this pipe with random samples of the backfill material. The loss of fines through the pipe slot in the Ploog Washer tests shall not exceed 4%.

Designer Note: The Type G-1 design encroaches onto the pavement. Therefore, the use of the G-1, Special design, which is recessed, should be considered if topography permits and if it doesn't interfere with a proposed curb line sidewalk.

Designer to include the appropriate District CADD Standard for diagonal or vane grate. Specify left or right in the plans for the vane grate.

INLETS, TYPE G-1

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and material for the construction of Type G-1 Inlets and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLETS, TYPE G-1″ to Article 602.16 of the Standard Specifications. Delete the first paragraph in Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLETS, TYPE G-1″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLETS, TYPE G-1.

Designer Note: Designer to include the appropriate District CADD Standard for diagonal or vane grate. Specify left or right in the plans for the vane grate.

INLETS, TYPE G-1, SPECIAL

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and material for the construction of Type G-1, Special inlets and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLETS, G-1, SPECIAL″ to Article 602.16 of the Standard Specifications. Delete the first paragraph in Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLETS, TYPE G-1, SPECIAL″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLETS, TYPE G-1, SPECIAL.

Designer Note: Designer to include the appropriate District CADD Standard for diagonal or vane grates. Specify left or right in the plans for the vane grates.

INLETS, TYPE G-1, DOUBLE, SPECIAL

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing equipment, labor, and materials for the construction of Type G-1, Double, Special Inlets and Combination Concrete Curb and Gutter in accordance with Section 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLETS, TYPE G-1, DOUBLE, SPECIAL″ to Article 602.16 of the Standard Specifications. Delete the first paragraph in Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLETS, TYPE G-1, DOUBLE SPECIAL″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLETS, TYPE G-1, DOUBLE, SPECIAL.

Designer Note: The Type G-1 design encroaches onto the pavement. Therefore, the use of the G-1, Special design, which is recessed, should be considered if topography permits. Designer to include District CADD Standard in the plans.

INLET-MANHOLE, TYPE G-1, 4' (1.2 M) DIAMETER

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and materials for the construction of Inlet-Manhole, Type G-1, 4' (1.2 m) Diameter and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLET-MANHOLE, TYPE G-1, 4' (1.2 m) DIAMETER″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Curb and Gutter will be included in ″INLET-MANHOLE, TYPE G-1, 4' (1.2 m) DIAMETER″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLET-MANHOLE, TYPE G-1, 4' (1.2 m) DIAMETER.

Designer Note: Designer to include District CADD Standard in the plans.

INLET-MANHOLE, TYPE G-1, 4' (1.2 M) DIAMETER, SPECIAL

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of all labor, equipment, and material for the construction of Inlet-Manhole, Type G-1, 4' (1.2 m) Diameter, Special and Combination Concrete Curb and Gutter in accordance with Section 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLET-MANHOLE, TYPE G-1, 4' (1.2 m) DIAMETER, SPECIAL″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLET-MANHOLE, TYPE G-1, 4' (1.2 m) DIAMETER, SPECIAL″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLET-MANHOLE, TYPE G-1, 4' (1.2 m) DIAMETER, SPECIAL.

Designer Note: The Type G-1 design encroaches onto the pavement. Therefore, the use of the G-1, Special design, which is recessed, should be considered if topography permits. Also consider impact on any curb line sidewalk. Designer is to include District CADD Standards in the plans.

INLET-MANHOLE, TYPE G-1, 5' (1.5 M) DIAMETER

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and materials for the construction of Inlet-Manhole, Type G-1, 5' (1.5 m) Diameter and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER″ in accordance with details shown in the plans.

The work will be paid for at the contract unit price each for INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER.

Designer Note: Designer to include District CADD Standard in the plans.

INLET-MANHOLE, TYPE G-1, 5' (1.5 M) DIAMETER, SPECIAL

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and materials for the construction of Inlet-Manhole, Type G-1, 1.5 m (5') Diameter, Special and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER, SPECIAL″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER, SPECIAL″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER, SPECIAL.

Designer Note: Designer to include District CADD Standard in the plans.

INLET-MANHOLE, TYPE G-1, 5' (1.5 M) DIAMETER, DOUBLE, SPECIAL

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and materials to construct the Inlet-Manhole, Type G-1, 5' (1.5 m) Diameter, Double, Special and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and details in the plans.

Add ″INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER, DOUBLE, SPECIAL″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER, DOUBLE, SPECIAL″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLET-MANHOLE, TYPE G-1, 5' (1.5 m) DIAMETER, DOUBLE, SPECIAL.

Designer Note: Designer to include District CADD Standard in the plans.

INLET-MANHOLE, TYPE G-1, 8' (2.4 M) DIAMETER, DOUBLE, SPECIAL

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and materials to construct the Inlet-Manhole, Type G-1, 8' (2.4 m) Diameter, Double, Special and Combination Concrete Curb and Gutter in accordance with Sections 602 and 606 of the Standard Specifications and details in the plans.

Add ″INLET-MANHOLE, TYPE G-1, 8' (2.4 m) DIAMETER, DOUBLE, SPECIAL″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLET-MANHOLE, TYPE G-1, 8' (2.4 m) DIAMETER, DOUBLE, SPECIAL″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLET-MANHOLE, TYPE G-1, 8' (2.4 m) DIAMETER, DOUBLE, SPECIAL.

Designer Note: Designer to include District CADD Standard for “Inlet-Manhole, G-1 Special and Modified” for precast slab top details. Designer to include special details in the plans.

MANHOLE TO BE ADJUSTED WITH NEW TYPE G-1 FRAME AND GRATE

Effective October 1, 1995 Revised January 1, 2007

This work shall consist of furnishing equipment, labor and material to remove the top of existing drainage structure, to place a precast slab, to mount a new G-1 frame and grate, and to construct Combination Concrete Curb and Gutter.

This work shall be completed in accordance with the applicable portions of Sections 602 and 606 of the Standard Specifications and details in the plans.

Add ″Manhole to be Adjusted with New Type G-1 Frame and Grate″ to Article 602.16 of the Standard Specifications. Delete the first paragraph of Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″Manhole to be Adjusted with New Type G-1 Frame and Grate″ in accordance with details in the plans.

This work will be paid for at the contract unit price each for MANHOLE TO BE ADJUSTED WITH NEW TYPE G -1 FRAME AND GRATE.

Designer Note: This special provision provides a basis of payment for CADD Standard 602401. If there are inlets that do not require a temporary drainage treatment, the plans should clearly show where this standard applies.

TEMPORARY INLET DRAINAGE TREATMENT

Effective January 1, 1997

This work shall consist of providing temporary drainage of the pavement as shown on the plans.

This work will not be paid for separately, but shall be included in the cost of the inlet.

Designer Note: Designer to include the appropriate District CADD Standard for diagonal or vane grate. Specify left or right in the plans for the vane grate.

INLETS, TYPE G-2

Effective: November 1, 2003 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment, and material for the construction of Type G-2 Inlets and Concrete Gutter in accordance with Section 602 and 606 of the Standard Specifications and the details in the plans.

Add “INLETS, TYPE G-2” to Article 602.16 of the Standard Specifications. Delete the first paragraph in Articles 606.14 and 606.15.

Payment for transitional Concrete Gutter will be included in “INLETS, TYPE G-2” in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLETS, TYPE G-2.

60200m 602.00m

Designer Note: Designer to include the appropriate District CADD Standard for diagonal or vane grates. Specify left or right in the plans for the vane grates.

INLETS, TYPE G-1, DOUBLE

Effective July 31, 2009

This work shall consist of furnishing equipment, labor, and materials for the construction of Type G-1, Double Inlets and Combination Concrete Curb and Gutter in accordance with Section 602 and 606 of the Standard Specifications and the details in the plans.

Add ″INLETS, TYPE G-1, DOUBLE″ to Article 602.16 of the Standard Specifications. Delete the first paragraph in Articles 606.14 and 606.15.

Payment for transitional Combination Concrete Curb and Gutter will be included in ″INLETS, TYPE G-1, DOUBLE″ in accordance with details shown in the plans.

This work will be paid for at the contract unit price each for INLETS, TYPE G-1, DOUBLE.

Designer Note: Designer to include the appropriate inlet type and either specify the casting to be installed within this special provision or provide a table in the plans. *Shall be replaced by "A" or "B".

INLETS, TYPE "__*__", WITH SPECIAL FRAME AND GRATE

Effective: August 2, 2013

This work shall consist of furnishing equipment, labor, and materials for the construction of inlets in accordance with Section 602 of the Standard Specifications, Highway Standards 602301 or 602306, and the details in the plans.

Add "INLETS, TYPE "__*__", WITH SPECIAL FRAME AND GRATE" to Article 602.16 of the Standard Specifications.

This work will be paid for at the contract unit price per Each for INLETS, TYPE "__*__", WITH SPECIAL FRAME AND GRATE.

Designer Note: Designer to include the diameter and either specify the casting to be installed within this special provision or provide a table in the plans. "*****" Shall be replaced by the diameter in feet.

MANHOLE, TYPE A, OF THE DIAMETER SPECIFIED WITH SPECIAL FRAME AND GRATE

Effective: August 2, 2013

This work shall consist of furnishing equipment, labor, and materials for the construction of MANHOLE, TYPE A, OF THE DIAMETER SPECIFIED WITH SPECIAL FRAME AND GRATE of the diameter specified in accordance with Section 602 of the Standard Specifications and the details in the plans.

Add "MANHOLE, TYPE A, OF THE DIAMETER SPECIFIED WITH SPECIAL FRAME AND GRATE" of the diameter specified to Article 602.16 of the Standard Specifications.

This work will be paid for at the contract unit price per Each for MANHOLE, TYPE A "__*__", WITH SPECIAL FRAME AND GRATE of the diameter specified.

Note: When inlets are to be filled and it is necessary to connect the existing storm sewer thru the inlet, use the following. 7-1-94 Revised D.S.P. and Article.

FILLING EXISTING INLETS

Effective July 1, 1990 Revised July 1, 1994

Add the following paragraph to Article 605.04 of the Standard Specifications:

The flow of water through the storm sewer passing through the inlet shall not be obstructed after abandonment. This shall be accomplished by pipe or brick and mortar connections acceptable to the Engineer.

Designer Note: For use with small diameter culverts and box culverts. Discuss size/usage with your Project Engineer.

*List culvert location by Station, Size, and Description (temporary culvert or existing).

Example: Station 100+10 - 30" (750 mm) Temporary Culvert

FILLING EXISTING CULVERTS

Effective October 15, 1995 Revised January 1, 2007

This work shall consist of filling existing pipe culverts with controlled Low Strength Material meeting the requirements of Sections 593 and 1019 of the Standard Specifications.

The culverts to be filled are as follows:

The culverts shall be plugged on both ends with a plug material meeting the approval of the Engineer. The plug shall be adequate to withstand the hydrostatic load created during the filling operation. If the plugs fail during the filling operation, the Contractor shall be responsible for the cost of repairing the plugs and filling the remainder of the culvert.

This work, including the cost of plugging the pipe ends, will be paid for at the contract unit price each for FILLING EXISTING CULVERTS. Each culvert location filled will be paid for separately.

Designer Note: Discuss usage with your Project Engineer. For use with large culverts, boxes, or bridges. Also include a plan detail for filling each culvert.

*List drainage structure by Station, Size, and Description.

Example: Station 100+10 - 24' (7 m) span x 56' (17 m) long RC slab bridge
2 @ 30" (750 mm) CMP culverts inserted

FILLING EXISTING DRAINAGE STRUCTURES

Effective October 15, 1995 Revised January 1, 2007

This work shall consist of filling existing drainage structures with granular backfill material and/or Controlled Low Strength Material. Controlled Low Strength Material shall meet the requirements of Sections 593 and 1019 of the Standard Specifications and granular material shall meet the requirements of Article 1003. Drainage structures to be filled are as follows:

*

The Contractor may fill a portion of the structure with granular material where the size of the structure allows conventional placement and compaction methods. Granular material shall be placed in maximum 8" (200 mm) layers, loose measurement, and compacted in a manner approved by the Engineer. The remainder of the structure shall be filled with Controlled Low Strength Material. The structure shall be plugged on both ends with a plug material meeting the approval of the Engineer. The plug shall be adequate to withstand the hydrostatic load created during the filling operation. If the plug fails during the filling operation, the Contractor shall be responsible for the cost of repairing the plugs and filling the remainder of the culvert.

Structures with a vertical height exceeding 3' (1 m) shall be filled in at least two phases, with a minimum 24 hour elapsed period between pours. Structures with a vertical height exceeding 6' (1.8 m) shall be filled in at least three phases, with a minimum 24 hour elapsed period between each pour.

For structures with culvert insertions present, the Contractor shall be responsible for assuring that the insertion culvert is not damaged by the hydrostatic load of the CLSM. Measures shall also be taken to assure that the insertion culvert does not “float” out of position during the filling process. Measures may include internal and/or external bracing of the insertion culvert and placement of the CLSM in stages. The method of placement and protective measures to be used shall be approved by the Engineer prior to the start of the filling operation. Approval by the Engineer shall in no way relieve the Contractor of responsibility for damage to the insertion culvert or failure of the end plugs.

This work, including the cost of the end plugs and any bracing or other protection measures, will be paid for at the contract unit price each for FILLING EXISTING DRAINAGE STRUCTURE. Each structure location filled will be paid for separately.

Designer Note: Use when requiring a solid concrete island to be constructed on an existing pavement. Also include a detail in the plans showing cross sections and any anchor bolts if so required. If anchor bolts are required, include last sentence of special. Otherwise, be sure to remove last sentence for typing. Existing CADD drawing 606301 can be used as an example.

ISLAND PAVEMENT CONSTRUCTED ON EXISTING PAVEMENT

Effective January 1, 1997 Revised January 1, 2007

This work shall consist of constructing a solid concrete island on the existing pavement as shown on the details included in the plans and shall be done in accordance with the applicable portions of Section 606 of the Standard Specifications and the following provisions:

1. All references to Concrete Median shall be interpreted to mean Island Pavement.

2. Add the following to Article 606.09:

   Transverse expansion joints shall be installed in the Island Pavement producing a vertical prolongation of the joints in the underlying pavement. In no case shall the joints be spaced more than 100' (30 m) apart. The expansion joint shall be constructed of 3/4" (20 mm) preformed joint material.

3. Add the following to Article 606.15:

   This work will be paid for at the contract unit price per square foot (square meter), measured as specified, for ISLAND PAVEMENT, which shall include payment for furnishing and installing all joints as required. Anchor bolts will be paid for at the contract unit price per each for ANCHOR BOLTS of the size specified.

Designer Note: Drainage holes should be provided when constructing medians, traffic islands, or curb on existing pavement to facilitate drainage and prevent water ponding.

DRAINAGE HOLES

Effective July 1, 1990 Revised January 1, 2007

At locations where medians, traffic islands, or curbs are to be constructed over the existing pavement, drainage holes shall be broken or cut through the existing pavement along the backs of the curbs at 20 ft. (6 m) intervals and at all low points in the grade. The holes shall each be approximately 1 sq. ft. (0.1 square meter) in area.

This work will not be paid for separately but shall be considered as included in the cost of the various items of construction.

Designer Note: The Bureau of Operations has requested that a method to control erosion be provided at all guardrail locations.

Approved methods are:

1. Guardrail Aggregate Erosion Control - DSP 630_01. (Flat profile grade locations only - less than 1% without bituminous curb treatment.)

2. Treated Timber Curb with Bituminous Wedge (this spec.) or Bituminous Curb with Guardrail Aggregate Erosion Control - (profile grades equal to or greater than 1%).

3. Other (Bridge Appr. Shldr. Pavmt., etc.)

Discuss your proposed methods with your Project Engineer and the Maintenance Field Engineer. If Erosion Control Curb is used, include CADD Std. 630101, Guardrail Erosion Control Treatments, for the proposed shoulder treatment.

EROSION CONTROL CURB

Effective April 1, 1991 Revised January 1, 2007

This work shall include all labor, material, and equipment to construct an erosion control curb in accordance with the details in the plans and at the locations shown on the plans.

The erosion control curb will be measured in feet (meters) along the front face of the board mounted to the guardrail.

This work will be paid for at the contract unit price per foot (meter) of EROSION CONTROL CURB.

Designer Note: The Bureau of Operations has requested that a method to control erosion be provided at all guardrail locations.

Approved methods are:

1. Guardrail Aggregate Erosion Control - this spec. (Flat profile grade locations only - less than 1% without bituminous curb treatment.)

2. Treated Timber Curb with Bituminous Wedge or Bituminous Curb with Guardrail Aggregate Erosion Control - (profile grades equal to or greater than 1%).

3. Other (Bridge Appr. Shldr. Pvmt., etc.)

Discuss your proposed methods with your Project Engineer and the Maintenance Field Engineer. If "Guardrail Aggregate Erosion Control" is used, include CADD Std. 630101-D4, Guardrail Erosion Control Treatments for the proposed shoulder treatment.

GUARDRAIL AGGREGATE EROSION CONTROL

Effective February 1, 1993 Revised January 1, 2007

This work shall consist of furnishing, placing, and shaping crushed aggregate placed around and behind guardrail posts in accordance with plan details.

Method of Measurement: The aggregate for constructing the Guardrail Aggregate Erosion Control will be measured in tons (metric tons).

The Geotextile Fabric will not be measured for payment.

Basis of Payment: Guardrail Aggregate Erosion Control will be paid for at the contract unit price per ton (metric ton) for GUARDRAIL AGGREGATE EROSION CONTROL measured as specified herein. The Geotextile Fabric will not be measured for payment, but shall be included in the cost per ton (metric ton) for GUARDRAIL AGGREGATE EROSION CONTROL.

Designer Note: Use when matching existing rail that is to remain in place and not the MGS type rail. Also include CADD Standard “Non-MGS SPBGR.”

STEEL PLATE BEAM GUARDRAIL, TYPE A, 6.75 FOOT POSTS

Effective July 31, 2009 Revised April 27, 2012

Add the following to Article 630.08 of the Standard Specifications:

“This work will be paid for at the contract unit price per foot for STEEL PLATE BEAM GUARDRAIL, TYPE A, 6.75 FOOT POSTS.”

This work shall consist of installing the Non-Midwest Guardrail System type rail at the locations specified in the plans.

Designer Note: This special is for use on contracts where it is necessary to install the shorter, non-MGS height TBT's to match existing rail heights that are allowed to remain in place. The Designer shall include CADD Standard "Steel Plate Beam Guardrail, Pre-MGS". Also, note in the plans which terminals are MGS and which are not MGS height terminals when both are used on the same contract. The list of suppliers is from December 2004 when the shorter terminals were still in use is provided for the Contractor's information.

TRAFFIC BARRIER TERMINALS, TYPE 1, SPECIAL (FLARED) OR (TANGENT)

Effective July 31, 2009 Revised April 26, 2013

This work shall be completed in accordance with Section 631 of the Standard Specifications, plan details, and as stated herein.

At the locations shown in the plans the traffic barrier terminal shall meet all the requirements of NCHRP 350, but will be installed to match the detail shown in the plans named "Steel Plate Beam Guardrail, Pre-Midwest Guardrail System". These locations are not intended to match the Midwest Guardrail System height and post spacing requirements.

The terminals meeting this specification are listed below:

Traffic Barrier Terminal, Type 1 Special (Tangent)

Road Systems, Inc.
3616 Old Howard County Airport
Big Spring, Texas 79720
Phone: (432) 263-2435
"SKT"
Wood blockouts only. Wood post system only. Posts 1 & 2 to use steel soil tubes (6'-6" or 6'-0" with wood posts). Posts 3 through 8 to use 4'-6" soil tubes with wood posts (soil plates not required), OR posts 3 through 8 may be 6' CRT posts.

Trinity Industries, Inc.
2525 North Stemmons Freeway
Dallas Texas 75207
Phone: (800) 644-7976 or (800) 527-6050
"ET-2000"
Wood blockouts only.
A wood post system may be used. Posts 1 & 2 to use steel soil tubes (6'-6" or 6'-0" with wood posts). Posts 3 through 8 to use 4'-6" soil tubes with wood posts (soil plates not required), OR posts 3 through 8 may be 6' CRT posts.
OR a system using the Steel Yielding Terminal Post (SYTP) (Posts 2 to 8) and one Hinged Break Away Post (HBA) (Post 1) may be used.

Traffic Barrier Terminal, Type 1 Special (Flared)

Energy Absorption Systems, Inc.
One East Wacker Drive
Chicago, Illinois 60601-2076
Phone: (312) 467-6750
"REGENT"

Road Systems, Inc.
3616 Old Howard County Airport
Big Spring, Texas 79720
Phone: (432) 263-2435
"FLEAT"
Wood post system only.

Trinity Industries, Inc.
2525 North Stemmons Freeway
Dallas Texas 75207
Phone: (800) 644-7976 or (800) 527-6050
"SRT-350"
Wood post system only.

Designer Note: This special is for use on contracts where it is necessary to install the shorter, non-MGS height TBT's to match existing rail heights that are allowed to remain in place. The Designer shall include CADD Standard "Steel Plate Beam Guardrail, Pre-MGS." Also, note in the plans which terminals are MGS and which are not MGS height terminals when both are used on the same contract.

TRAFFIC BARRIER TERMINALS, TYPE 6

Effective July 31, 2009

This work shall be completed in accordance with Section 631 of the Standard Specifications, plan details, and as stated herein.

At the locations shown in the plans the traffic barrier terminal shall meet all the requirements of NCHRP 350, but will be installed to match the detail shown in the plans named "Steel Plate Beam Guardrail, Pre-Midwest Guardrail System." These locations are not intended to match the Midwest Guardrail System height and post spacing requirements.

Designer Note: In Spec. book when specified the widening of existing shoulders will be paid as Earth and Rock Excavation, Borrow Excavation. This special provision shall be used when no Earth, Furnished or Borrow Excavation pay items are included in the contract and the contract includes Traffic Barrier Terminals, Type 1, Special. When widening is required for other Traffic Barrier Terminals and no Furnished or Borrow Excavation pay items are included in the contract use this special in conjunction with the Spec. book.

TRAFFIC BARRIER TERMINALS

Effective February 1, 1996 Revised November 5, 2004

Widening of existing shoulders/slopes for the construction of Traffic Barrier Terminals shall be completed as directed by the Engineer and paid for as specified in Article 109.04 of the Standard Specifications.

Designer Note: This special is for use on contracts where it is necessary to install the shorter, non-MGS height TBT's to match existing rail heights that are allowed to remain in place. The Designer shall include CADD Standard "Steel Plate Beam Guardrail, Pre-MGS." Also, note in the plans which terminals are MGS and which are not MGS height terminals when both are used on the same contract.

TRAFFIC BARRIER TERMINALS, TYPE 2

Effective July 31, 2009

This work shall be completed in accordance with Section 631 of the Standard Specifications, plan details, and as stated herein.

At the locations shown in the plans the traffic barrier terminal shall meet all the requirements of NCHRP 350, but will be installed to match the detail shown in the plans named "Steel Plate Beam Guardrail, Pre-Midwest Guardrail System." These locations are not intended to match the Midwest Guardrail System height and post spacing requirements.

63200 632.00

Designer Note: Discuss removal, filling holes, and disposal with the Maintenance Field Engineer.

GUARD POST REMOVAL

Effective July 1, 1990 January 1, 2007

This work shall consist of the removal and disposal of the existing guard posts at the locations shown on the plans or as directed by the Engineer in accordance with Section 632.00 of the Standard Specifications.

This work will be measured and paid for at the contract unit price per foot (meter) for GUARD POST REMOVAL.

63500 635.00

Designer Note: To be used in conjunction with Traffic Control and Protection Standards that require flexible delineators. Discuss usage/special requirements and estimate of replacement bases (only) with Operations (Traffic) before including. The replacement/repair of the flexible delineator tube itself is considered as included in the cost of the TC&P standard unit price.

*Fill in appropriate standard number.

FLEXIBLE DELINEATOR MAINTENANCE

Effective May 5, 1992 Revised January 1, 1994

This item shall consist of all material and labor necessary to maintain the base of the flexible delineators required as part of Traffic Control and Protection, Standard *.

The re-attachment of the flexible delineator to the base shall be considered incidental to Traffic Control and Protection, Standard *.

Any unit which needs repair because the attachment of the base to the pavement failed within 120 hours after installation shall be re-attached by the Contractor at his expense.

The quantity listed in the contract is only an estimate of the anticipated number of units requiring repair.

FLEXIBLE DELINEATOR MAINTENANCE will be paid for in accordance with Article 109.04 of the Standard Specifications and shall consist of maintaining the flexible delineator bases required as part of Traffic Control and Protection, Standard *.

Designer Note: To be used in conjunction with Highway Standard 702001 whenever Flexible Delineators are specified. Discuss intended usage with Operations (Traffic). Also consider flexible delineator maintenance requirements/provisions. You may want to include Flexible Delineator Maintenance (glossary 63500).

FLEXIBLE DELINEATORS

Effective October 1, 1995 Revised January 1, 2007

Flexible delineators shall meet the requirements of Traffic Control and Protection Standard 702001 of the Illinois Highway Design Standards for Traffic Control and as modified herein.

Flexible delineators post shall be of a hinged, self recovering design, as manufactured by Flexstake, Inc. or an approved equal.

The top portion of the post is made of a polycarbonate material which shall be resistant to impact, ultraviolet light, ozone hydrocarbons, and shall be self-erecting after withstanding vehicle impacts. Polycarbonate post shall remain dimensionally stable from -150° F (-100° C) (brittleness point) to 285° F (140° C) (melting point).

Post shall remain intact up to seventy-five impacts at a vehicle speed of 55 MPH (90 kph) by a typical American made car from either direction at temperatures from -30° F to 130° F (-35° C to 55° C).

The top section of the post shall be surface mount with a polyurethane hinge. The hinge shall have an internal memory and remain dimensionally stable to from -30° F (-35° C).

The minimum width at the top of the post shall be 3 inches (75 mm) and the maximum wall thickness shall be 0.180 inches (5 mm). Lengths shall be a minimum height of 3 feet (1 m).

The posts shall be orange in color. They shall be colorfast and shall be designed to provide an essential convex surface to accommodate a 100 m (4 inches) wide reflective sheeting on both sides . Sheeting shall meet Article 1097.03 of the Standard Specifications and shall have two alternating, reflectorized white And two alternating orange stripes sloping downward at 45° toward the side on which traffic will pass.

Posts shall be free of surface porosity and other defects that may affect appearance and serviceability.

Posts shall contain a minimum of 40% (by weight) post consumer recycled material, and all material shall be recycled.

Posts shall be field-repairable with a repair kit. Posts and other components shall be field replaceable.

When an existing flexible delineator needs to be replaced due to numerous vehicular hits, the new flexible delineator will be paid for at the contract unit price.

This work will be paid for at the contract unit price per each for FLEXIBLE DELINEATORS.

66701 667.01

Designer Note: Use on projects where new permanent survey markers are being installed.

PERMANENT SURVEY MARKERS

Effective January 1, 2014

The metal tablet used on permanent survey markers shall be made of bronze.

Designer Note: Permanent markers shall be included in all project plans based on the following guidelines. Include CADD drawing 667101-D4. Do NOT include Highway Standard 667101.

1. Permanent survey markers shall be placed to perpetuate the survey lines of divided highways and the centerline of all others where these lines have been established by Survey (see CADD drawing 667101-D4 for locations).

2. Permanent survey markers shall be placed at all land section corners within the State right of way where monuments have been found or relocated by Survey (see CADD drawing 667101-D4 for placement of permanent survey ties).

3. A permanent survey marker shall be placed in all new or reconstructed bridges. The marker shall be cast in the wingwall or abutment nearest the bridge name plate for a permanent bench mark.

Any questions on placement should be directed to the District Chief of Surveys.

PERMANENT SURVEY MARKER, TYPE 1, BRIDGE PLACEMENT

Effective July 1, 1990 Revised March 11, 2011

This work shall consist of furnishing and installing a Permanent Survey Marker as shown on the plans and as specified herein. The survey marker shall be placed in either the abutment seat or in the top of the wingwall. The survey marker shall be located in the same corner as the Bridge Name Plate as shown on the current Standard for Name Plate for Bridges. If the survey marker is to be located on the abutment seat of the structure, it shall be placed in a location with at least 8’-0” (2.4 m) vertical clearance directly above the survey marker, if possible.

After installation, a professional Land Surveyor shall perform a closed loop level circuit to determine the new survey marker elevation and shall stamp the elevation in the face from the temporary bench marker of the survey marker. All level loops used to set the bench mark shall be kept in a field book and shall contain a description and location of the original bench mark used, the temporary bench mark, the proposed bench marker on the survey marker, and the name and license number of the professional land surveyor. Copies of the field book shall be submitted to the District Chief of Surveys or Plats and Plans.

This work will be paid for at the contract unit price each for PERMANENT SURVEY MARKER, TYPE I.

Designer Note: Provide for all section or subsection stones and other markers. Check with the Engineer of Design Surveys on ties required, plan details, CADD drawing 667101 and use of this special provision. Section 668 would permit work to be paid under 109.04 for setting, tieing, recording of markers by Land Surveyor. This item creates an each pay item that can be included in the plans.

PERMANENT SURVEY TIES

Effective April 1, 1991 Revised April 27, 2012

This work shall consist of furnishing and installing a permanent survey tie at the locations shown in the plans and in accordance with the Detail for Permanent Survey Ties included in the plans and Section 668 of the Standard Specifications. Refer to Section 668.02 of the Standard Specifications for information about the survey work required.

The Class SI concrete used in the permanent survey ties shall be in accordance with Section 503 of the Standard Specifications. The reinforcement bars used shall be in accordance with Section 508 of the Standard Specifications.

This work will be paid for at the contract unit price per each for PERMANENT SURVEY TIES.

Designer Note: Discuss with Implementation (Materials) prior to including this provision. Requires the Contractor to provide an acceptable storage area for nuclear density equipment. Would be primarily for major earthwork or bituminous resurfacing projects that require a field laboratory. If Materials requests on-site storage but no field laboratory, then the cost of furnishing the vault shall be included in the Engineer's Field Office of the type specified and the pay item must reflect this change. 7-1-94 Revised Article.

EQUIPMENT VAULT FOR NUCLEAR TESTING EQUIPMENT

Effective June 24, 1993 Revised July 1, 1994

Add the following to the list of equipment and furniture to be furnished under Article 670.05 Engineer's Field Laboratory.

> A cabinet or vault shall be provided for the nuclear density equipment which shall have a suitable barrier system of concrete, steel, lead, or other radiation barrier material and shall remain at the job site. It shall have a dimension capable of holding the number of units being stored at the site and shall have a lock for security to prevent intruders from gaining access to this equipment. All walls and doors of the unit shall be sufficient thickness to prevent any radiation leakage from the equipment should a malfunction result which would allow this leakage.

The cost of furnishing the equipment vault will not be paid for separately but shall be considered as included in the unit cost for ENGINEER'S FIELD LABORATORY.

68000 680.00

Designer Note: Discuss any proposed R.R. track or tie removal with Project Support. If work is to be done by our Contractor, include “Railroad Track Removal” and “Railroad Ties Removal and Disposal” special provisions.

RAILROAD TRACK REMOVAL

Effective November 1, 1994 Revised January 1, 2007

This work shall consist of furnishing all labor, equipment and materials required for the removal and disposal off the right of way of the railroad tracks, ballast, hardware, signals, signal house, signal house foundations, signal foundations, pipe underdrain and PCC curb associated with the crossing at the locations as shown on the plans.

Any holes created by the removal operations shall be backfilled and compacted to the satisfaction of the Engineer.

The Contractor shall take extreme care during the removal operations to keep from disturbing the railroad ties.

Materials resulting from the removal operations shall be disposed of in accordance with Article 202.03 of the Standard Specifications.

The measurement for payment will be per foot (meter) measured down the centerline of the railroad tracks.

This work will be paid for at the contract unit price per foot (meter) for RAILROAD TRACK REMOVAL and no additional compensation will be allowed. Removal of the railroad ties and disposal is covered elsewhere in the special provisions.

Designer Note: Discuss any proposed R.R. track or tie removal with Project Support. If work is to be done by our Contractor, include “Railroad Track Rail Removal” and “Railroad Ties Removal and Disposal” special provisions. If railroad ties are used in a retaining wall which is to be removed, you will also need this special provision. Also see attached EPA policy ruling on creosote treated wood.

RAILROAD TIES REMOVAL AND DISPOSAL

Effective November 1, 1994 Revised October 1, 1995

This work shall consist of furnishing all labor, equipment and materials required for the removal and disposal off the right of way of the railroad ties at the location shown on the plans.

The following situations explain how (weathered) treated wood, when sent for disposal or reuse, are covered by I.E.P.A. regulations.

The waste classification of the railroad ties is dependent upon the physical appearance of the tie. Railroad ties are commonly preserved with Cresol, Pentachlorophenol, or CCA (Copper, Chromium, and Arsenic). These compounds could exhibit the characteristics of a Resource Conversation and Recovery Act (RCRA) hazardous waste.

Each railroad tie that is completely dry and shows no visible wood treatment (Cresol or Pentachlorophenol) residue is considered a solid waste and can be disposed of as demolition debris. Any railroad tie that contains visible wood treatment residue should be sampled and analyzed to determine the toxicity characteristics using the toxicity characteristics leaching procedure (TCLP) test method. The railroad tie is considered an RCRA hazardous waste if the toxicity characteristics exceed 200 milligrams per liter (mg/l) for either o-Cresol, m-Cresol, p-Cresol, or total Cresol; 200 mg/l for Chromium; and 5.0 mg/l for Arsenic (35 Illinois Administration Case 721.124). The Contractor shall be responsible for the proper disposal of RCCA hazardous waste.

This work shall be done in accordance with the applicable portions of Section 202 of the Standard Specifications and as directed by the Engineer.

This work will be paid for as extra work in accordance with Article 109.04 of the Standard Specifications.

Designer Note: For use with CADD Std. 660001. Use should be discussed with your Project Engineer.

MORTARED STONE WALL

Effective March 1, 1991 Revised January 1, 2007

This work shall consist of furnishing and installing mortared stone riprap for the construction of retaining walls at locations specified and in accordance with the details in the plans.

The Contractor shall submit samples of the proposed stone riprap to the Engineer for approval prior to beginning the work. The stone riprap shall have a minimum size per piece of 8 inches (200 mm) wide by 16 inches (400 mm) in length by 2 inches (50 mm) deep. Shorter pieces will be allowed for building the wall around sharp corners at private sidewalks and steps. All riprap should be the same average size so as to fit easily together. The riprap shall be of “flag stone” quality.

The earth slope shall be graded, trimmed, and compacted to the lines and grades shown on the plans before the mortared stone riprap is placed.

The stone shall be stored on the job site to keep it as clean as possible.

Stone is to be carefully selected at the job site so that various colors are evenly distributed throughout the job. Sufficient stone is to be at the job site at all times to permit proper selection and blending of colors. The stone supplier should furnish laying instructions to which the Contractor shall comply unless otherwise approved by the Engineer. All horizontal and vertical joints shall be mortared during placing operations, making sure all joints are properly filled. The vertical joints shall be staggered during the placing operations.

The mortar for setting stone shall consist of one part white non-staining waterproof Portland cement, one part hydrated lime or lime putty, and six parts clean, sharp sand by volume. Materials are to be accurately measured by volume in specially constructed gauge boxes. No mortar shall be retempered after initial set has taken place.

Stone work shall be kept as clean as possible as work progresses. Upon completion, if necessary, foreign material and mortar shall be removed from stone, subject to the Engineer’s approval. If necessary, stone shall be cleaned with scrub brushes used with soap and water and completely rinsed immediately after scrubbing. Fine white sand may be added to water to aid in cleaning.

Basis of Payment: The stone wall will be paid for at the contract unit price per square foot (square meter) for MORTARED STONE WALL with the payment area being calculated as shown in the plan detail. No adjustment will be made in the unit price or method of measurement if the Contractor places Class SI concrete for that portion of the wall which is below ground.

Furnishing and installing 3/4" (20 mm) P.E.J.F., geotechnical fabric for ground stabilization, pipe underdrain, pipe drain including connections to inlets or storm sewer, porous granular backfill, and the excavation of the trench and existing earth required for placement of the stone wall will not be measured for payment but shall be included in the contract unit price for MORTARED STONE WALL.

Designer Note: Do not change the wording in the first two paragraphs of the T.C.P. provision. List the appropriate standards, including CADD standards, needed for your project and assure that the cover sheet listing agrees with this T.C.P. list. The following are options for provisions that should be reviewed for inclusion in your plans. Provide the Secretary with the option number selected and only the heading. **Be sure to include a pay item and quantity for Traffic Control Surveillance if your plans require this item.** Additional provisions may be added to your T.C.P. depending on your project circumstances.

Text to Include in T.C.P.

1. Short Term/Temporary Pavement Marking

*****NOTE: Until further notice, assume any road less than 400 ADT is low volume and any road greater than 400 ADT is not low volume.*****

~~The Designer should include the current ADT and the average daily multiple-unit traffic in percentage of total traffic on the plan cover sheet to inform the Contractor if short term no passing zone exemption is applicable. If the ADT and average daily truck volumes for the roadway are less than those indicated in Table 1, the road is considered low volume and is exempt from the requirements regarding no-passing zone pavement markings.~~

~~Table 1~~

~~Low Volume Roads~~

~~ADT~~	~~Multi-Unit Trucks~~
~~2500~~	~~10%~~
~~2000~~	~~15%~~
~~1500~~	~~20%~~
~~1000~~	~~25%~~

If the roadway does qualify for this exemption, the following note shall be made in the Traffic Control Plan for this project:

Short Term/Temporary Pavement Marking

This project is considered as a low volume road and as such is exempt from the requirements regarding no-passing zone pavement markings.

2. Contractor Access

If your project requires a road closure but the Contractor must have access to the work site, then include the following text in the T.C.P. to stipulate the requirements for the placement and signing of the barricades to permit him access:

Contractor Access

At road closure locations where Type III barricades are installed in a manner that will not allow Contractor access to the project without relocation of one or more of the barricades, the arrangement of the barricades at the beginning of each work day may be relocated, when approved by the Engineer, in the manner shown on Highway Standard 701901 for Road Closed to Through Traffic. "Road Closed" signs (R11-2), supplemented by "Except Authorized Vehicles" signs (R3-I101), shall be mounted on both the near-right and far-left barricade(s). At the end of each work day the barricades shall be returned to their in-line positions. This work will be included in the cost of the contract, and no extra compensation will be allowed.

Designer Reminders

1. Use of Urban "701501 - 701801 Standards and Specials." When any "701501 to 701801 Standards or Specials" are specified, the traffic control plan must spell out how/when/where they are to be used. 701501 to 701801 & "701501 Special to 701801 Special" are covered in work zone traffic control Article 701.19 & 701.20 for measurement and payment. 701501 Special thru 701801 Special, though, require the Designer to specify method of measurement and basis of payment. Use DSP's for these "Special" standards.

2. Traffic Control Surveillance: Review the Supplemental Specifications, Article 701.10 for when to use Traffic Control Surveillance. Also review Method of Measurement, Article 701.19(d) and Basis of Payment, Article 701.20(g) to ensure you are paying for it correctly. Include Traffic Control Surveillance in your contracts when using the traffic control standards outlined below:

   Traffic control surveillance needs to be included as a pay item as outlined below:

Urban Traffic Control

Standard Number	District 4 Traffic Surveillance Status For Inclusion in Contracts
701501	Not Required*
701606	Required for Night Use
701601	Required for Night Use
701701	Required for Night Use
701801	Required for Night Use
BLR-17	Not Required**
BLR-18	Not Required**
BLR-21	Not Required**
BLR-22	Not Required**

* Add if potential exists for open trench for widening, curb and gutter, etc.
** No open holes overnight are anticipated

Rural Traffic Control

Standard Number	District 4 Traffic Surveillance Status For Inclusion in Contracts
701001	Not Required
701006	Not Required
701201	Not Required
701206	Not Required
701011	Not Required
701306	Not Required
701301	Not Required
701311	Not Required
701316	Not Required
701331	Not Required
701326	Required
701336	Not Required
701106	Not Required
701101	Not Required
701406	Not Required
701401	Required
701431	Not Required
701426	Not Required
701321	Not Required
701416	Not Required
701411	Not Required

Discuss any questions you have about the number of calendar days to include with your Project Engineer and the Construction Field Engineer for the various pay items involved.

3. Traffic Control Standard Usage - Designer information only. If your project is very complex and a construction staging plan is required, then a detailed traffic control staging plan would be included in the plans and you would correlate the staging plan with this special provision. If you do not have complex staging with plan details, then your T.C.P. special provision should indicate where and what particular standard is required and how it is intended to be used during the various construction operations.

TRAFFIC CONTROL PLAN

Effective

Traffic control shall be in accordance with the applicable sections of the "Standard Specifications for Road and Bridge Construction," the applicable guidelines contained in the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways," these Special Provisions, and any special details and Highway Standards contained herein and in the plans.

Special attention is called to Section 701 and Articles 107.09 and 107.14 of the "Standard Specifications for Road and Bridge Construction" and the following Highway Standards relating to traffic control:

Designer Note: For use on all projects utilizing traffic control standards with “$XXX FINE MINIMUM” signs.

SPEEDING PENALTY

Effective: January 21, 2005

For traffic control standards containing Illinois Sign Standard R2-I106. The dollar amount to be placed on the sign is $375. Therefore, the sign shall read “$375 FINE MINIMUM.”

The cost of this work shall be included in the cost of the traffic control standard.

Designer Note: Use with rural single lane closures with 2-lane, 2-way run-around adjacent to the existing pavement (District CADD Standard 701331).

TRAFFIC CONTROL AND PROTECTION STANDARD 701331 (SPECIAL)

Effective October 15, 1995 Revised July 31, 2009

This work shall be in accordance with Section 701 of the Standard Specifications and shall include all material, equipment, and labor necessary to install the traffic control items as shown on the plan details or as described in the specifications.

Add the following to the first paragraph of Article 701.20(a):

“Traffic Control and Protection Standard 701331 (Special).”

Designer Note: This special provision is to be used at any time when the width of the traveled lane will be less than 16'-0" due to use of a non-movable device – i.e., concrete barrier. This special provision may also be incorporated into contracts with milling, paving, and/or patching where an oversize load may pose a hazard to either the workers or travelling public. Discuss use, plan layout, and sign width measurements with Bureau of Operations, Traffic Control Supervisor.

Quantity and location of signs shall be placed on the traffic control plan sheets or in the Traffic Control Plan to notify the number of installations required.

WIDTH RESTRICTION SIGNING

Effective: November 1, 2007
Revised: January 1, 2012

Description. This work shall consist of providing, placing, maintaining, and removing width restriction signing as shown on the plans and special provisions. Width restriction signing is required when the roadway width will be less than 16'-0" as measured from face to face of temporary concrete barrier and a concrete parapet, guardrail or other fixed, immovable barrier. The Contractor shall furnish all materials, equipment, labor, and other essentials necessary to accomplish this work and all other work described herein and as directed by the Engineer.

Materials. All sign post materials shall be in accordance with Articles/Sections: 1093.01(a), 10007.05. Galvanizing will not be required. The nominal size of wood posts shall be 4 x 4 in. (100 x 100m).

Equipment. All equipment shall be in accordance with Article/Section 1106.01.

Notification. The Contractor shall notify the Traffic Control Supervisor, in writing, when the Contractor receives an award letter for the contract. The letter shall state the anticipated start date of lane width restrictions. The twenty-one (21) day notice will start from the Award date. No width restrictions will be allowed until twenty-one (21) days after receiving notice from the Contractor. The contractor may elect to provide the anticipated start date of lane width restrictions at the Preconstruction meeting so long as there is a minimum of twenty-one (21) days advanced notice.

Traffic Control Supervisor	Don Hoffman	(309) 671-4488

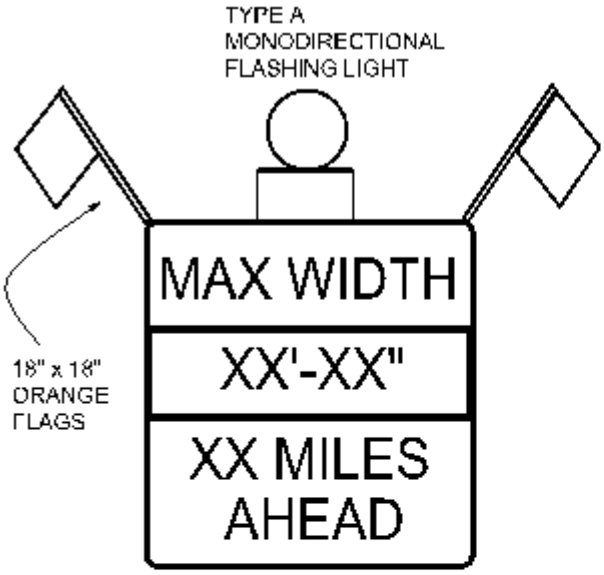
Failure to provide required advanced notice may delay project at the expense of the Contractor.

General. The Contractor shall provide the route and directional (North, South, East and West or NBND, SBND, EBND, or WBND) signage. The route and directional signage shall be placed, maintained, and removed by the Contractor. The route sign shall visually be the same as the existing route signs as posted by IDOT or lettered at a four (4) inch height. The directional signage shall be black lettering on a white background and have a minimum four (4) inch height. The route and directional signage shall be placed below sign W12-I103.

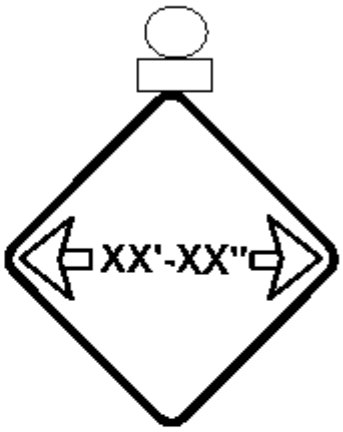
Locations, distances and quantity of signs and shall be as shown on the plan sheets or in the traffic control plan. All final field locations will be marked by the Bureau of Operations, Traffic Control Supervisor.

It shall be the Contractor's responsibility to make arrangements for the J.U.L.I.E. locates.

Basis of Payment: This work will not be paid for separately, but will be included in the cost of Traffic Control and Protection pay items. This work shall consist of providing, placing, maintaining, and removing width restriction signing as shown on the plans and special provisions and no additional compensation will be allowed.



W12-I103



W12-I102

"X" MILE AHEAD

W12-I101 (0)
24" x 18"

EBND IL 116

12" x 18"

EASTBOUND= EBND
WESTBOUND=WBND
NORTHBOUND=NBND
SOUTHBOUND=SBND

Designer Note: Insert into contracts utilizing the pay items for BLR 21 or BLR 21 (Special). Note that BLR 21 can be paid as L Sum or Each.

TRAFFIC CONTROL AND PROTECTION BLR 21 AND BLR 21 (SPECIAL)

Effective April 25, 2008

This work shall be in accordance with Section 701 of the Standard Specifications and shall include all material, equipment, and labor necessary to install the traffic control items as shown on the Highway Standard BLR 21 or as shown and described in the plans and specifications.

Add the following to the first paragraph of Article 701.20(a):

"Traffic Control and Protection Standard BLR 21."

Add the following to the first paragraph of Article 701.20(b):

"Traffic Control and Protection Standard BLR 21 (Special)."

Add the following to the first paragraph of Article 701.20(b):

"Traffic Control and Protection Standard BLR 21."

Designer Note: Insert into contracts utilizing the pay items for BLR 22 or BLR 22 (Special).

TRAFFIC CONTROL AND PROTECTION BLR 22 AND BLR 22 (SPECIAL)

Effective April 25, 2008 Revised July 31, 2009

This work shall be in accordance with Section 701 of the Standard Specifications and shall include all material, equipment, and labor necessary to install the traffic control items as shown on the Highway Standard BLR 22 or as shown and described in the plans and specifications.

Add the following to the first paragraph of Article 701.20(a):

> "Traffic Control and Protection Standard BLR 22 and Traffic Control and Protection Standard BLR 22(Special)."

Add the following to the first paragraph of Article 701.20(b):

> "Traffic Control and Protection Standard BLR 22 and Traffic Control and Protection Standard BLR 22(Special)."

Designer Note: Use with rural single lane closures with 2-lane, 2-way run-around adjacent to the existing pavement (District CADD Standard 701331).

TRAFFIC CONTROL AND PROTECTION STANDARD 701606 (SPECIAL)

Effective July 31, 2009

This work shall be in accordance with Section 701 of the Standard Specifications and shall include all material, equipment, and labor necessary to install the traffic control items as shown on the plan details or as described in the specifications.

Add the following to the first paragraph of Article 701.20(b):

“Traffic Control and Protection Standard 701606 (Special).”

Designer Note: Use when removal of permanent or temporary marking on PCC pavement is necessary. This special requires the use of water blasting instead of grinding.

PAVEMENT MARKING REMOVAL/WORK ZONE PAVEMENT MARKING REMOVAL

Effective: April 29, 2005

Description: This work shall consist of removing all permanent or work zone pavement marking, painted pavement markings, epoxy paint pavement markings, thermoplastic pavement marking, or pavement marking tape type III by hydro-blasting in accordance with the applicable portions of Section 783 and 703 of the Standard Specifications and described herein. Pavement marking tape type III may be peeled or burned off. However, all remnants or burn marks shall be hydro-blasted.

Equipment Requirements: All equipment shall be of sufficient capacity to efficiently and economically clean the roadway surface to the specified cleanliness. Equipment shall be power driven and in good operating condition. Equipment shall utilize moisture and oil traps, in working order, of sufficient capacity to remove contaminants from the water and prevent deposition of oil and other contaminants on the roadway surface.

Removal Requirements: Removal requirements shall be as follows:

a) The existing paint pavement markings or epoxy paint pavement markings shall be removed without pavement surface damage to the satisfaction of the Engineer.

b) A high pressure water spray or "hydro-blast" shall be used during the removal, the pressure at the nozzle shall be approximately 172,000 kPa (25,000 psi) with maximum flow rate of 56 L/min (15 gal/min). The nozzle shall be in close proximity to the pavement surface.

c) Over cleaning to the extent of possible damage to the roadway surface shall be held to a minimum. Very small particles of tightly adhering existing markings may remain in place, if in the opinion of the Engineer, complete removal of the small particles will result in pavement surface damage.

Method of Measurement: The removal of permanent or work zone pavement marking, painted pavement markings, epoxy paint pavement markings, thermoplastic pavement marking, or pavement marking tape type III will be measured in square feet (square meter).

Basis of Payment: This work will be paid for at the contract unit price per square foot (square meter) for PAVEMENT MARKING REMOVAL or WORK ZONE PAVEMENT MARKING REMOVAL.

Designer Note: Contact Traffic about usage. Use the following special provision when the State is to furnish temporary concrete barrier. Add notes as appropriate for source of barrier and special conditions. Fill in (*) source of barrier. CADD Standard 704101 should be included in your project. Review for relevance. Designer shall verify availability of state owned connecting pins. If not enough pins are available a special shall be written to make the contractor supply the pins.

TEMPORARY CONCRETE BARRIER, STATE OWNED AND TEMPORARY CONCRETE BARRIER TERMINAL SECTIONS, STATE OWNED

Effective May 1, 1991 Revised January 1, 2007

This work shall be in accordance with Section 704 of the Standard Specifications.

The temporary concrete barrier shall be obtained by the Contractor from the (*) Maintenance Storage Yard. This work shall consist of picking up and delivering to the worksite, placing, removing and returning the aforementioned barrier and connecting pins to the (*) Maintenance Storage Yard.

Temporary Concrete Barrier shall be installed according to Standard 704001 and applicable portions of the Standard Specifications. The placement and location of the barrier shall be as shown on the plans and as directed by the Engineer.

Designer Note: Use on all contracts with Temporary Concrete Barrier or Temporary Concrete Barrier (State Owned).

TEMPORARY CONCRETE BARRIER REFLECTORS

Effective: January 21, 2005

Installation of reflectors shall be in accordance with the Traffic Control Standards, plan details, and specifications.

Reflectors mounted on temporary concrete barrier will not be measured for payment and shall be included in the cost of pay items associated with temporary concrete barrier.

73300 733.00

Designer Note: Include in contracts with cantilever sign structures.

RE-TIGHTENING ANCHOR BOLTS FOR CANTILEVER SIGN STRUCTURES

Effective April 25, 2014

After the cantilever sign structure has been installed with all required signs for a minimum of 30 calendar days, the Contractor shall re-tighten the anchor bolts to the original specifications shown on the plan details and/or Standard Specifications.

Designer Note: For use on freeways only for thermoplastic pavement marking work. Check with Traffic before using. Central Traffic approved the equipment but stipulated that:

Highway Std. 701406 shall be required for lane closure if the specified unit is used.

Highway Std. 701406 will not be paid for separately as the Contractor has option.

THERMOPLASTIC PAVEMENT MARKING EQUIPMENT

Effective July 1, 1990 Revised January 1, 2007

In lieu of the truck-mounted application equipment required for placing lane and edge lines on freeways by Section 780 of the Standard Specifications, the Contractor may utilize a smaller, self-propelled unit which is capable of maintaining a continuous operating speed of at least 3 MPH (5 km/h). Any such unit shall have a capacity of at least 500 pounds of molten thermoplastic and 150 pounds (80 kg) of beads. The unit shall have at least 4 automobile or truck-sized wheels. The operator shall be positioned on the unit and not on a sulky. The unit shall be capable of applying continuous or broken line without straddling the line. Nursing shall be accomplished without the nurse vehicle encroaching on a through traffic lane. All other requirements of Section 780 shall apply.

If the Contractor elects to use the above stated equipment, he shall only apply the pavement markings while utilizing a lane closure in accordance with Traffic Control and Protection Standard 701406. An arrowboard will be required. Standard 701406 will not be paid for separately but shall be considered included in the cost of the various thermoplastic pavement-marking items.

Designer Note: Use whenever installing Type B tape that should be inlaid in hot-mix-asphalt pavement. If it is a small quantity, it might not be cost effective especially if adjacent markings are in good condition and are not inlaid tape. Discuss use with the Operation's Striping Engineer.

PREFORMED PLASTIC PAVEMENT MARKING, TYPE B – INLAID

Effective August 2, 2013

This work shall include all materials, labor, and equipment necessary to install the preformed plastic pavement marking as specified in Section 780 of the Standard Specifications, as shown in the plans, and as described herein. The Contractor shall have the option to inlay the pavement markings in accordance with the inlaid application procedure behind the paving operation or to install the pavement markings at a later date in accordance with the pavement grooving procedure. The Contractor shall supply the Engineer with a copy of the pavement marking material manufacturer's specifications for the pavement marking material and the application procedure selected prior to the operation.

Revise the first paragraph of Article 780.07(a) to read:

"Type B – Inlaid Application. On freshly placed HMA, the inlaid markings shall be applied before final compaction at the pavement temperature and embedment depth as recommended by the manufacturer and without deforming the markings. In the absence of embedment specifications from the manufacturer, no more than 45% of the thickness of the marking material shall be above the finished pavement elevation. If the Contractor is unable to achieve this depth of embedment, the markings shall be installed separately from the paving operation utilizing a pavement grooving procedure in accordance with the manufacturer's specifications and as specified herein. Markings not meeting embedment requirements shall be removed and then replaced using the pavement grooving procedure. No additional compensation will be allowed for the removal and replacement of markings not meeting embedment requirements."

Delete the last paragraph of Article 780.07(a).

Delete Article 780.07(b).

<u>Pavement Grooving Procedure</u>. If the pavement markings are installed separately from the paving operation, the pavement shall be grooved to create a recess in the surface course and prepared in accordance with the material manufacturer's requirements and as specified in the GROOVING FOR RECESSED PAVEMENT MARKING special provision.

Add the following paragraph after the first paragraph of Article 780.07 of the Standard Specifications.

"The markings shall be capable of being applied in a grooved slot on new and existing Portland cement concrete and HMA surfaces, by means of a pressure-sensitive, precoated adhesive or a liquid contact cement which shall be applied at the time of installation. A primer sealer shall be applied with a roller and shall cover and seal the entire bottom of the groove.

The primer sealer shall be recommended by the manufacturer of the pavement marking material and shall be compatible with the material being used. The Contractor shall install the markings in the groove as soon as possible after the primer sealer cures according to the manufacturer's recommendations. The markings placed in the groove shall be rolled or tamped into the groove with a roller or tamper cart cut to fit the groove and loaded with or weighing at least 200 lb (90kg). Vehicle tires shall not be used for rolling. The Contractor shall roll or tamp the material with a minimum of 6 passes to prevent easy removal or peeling."

Method of Measurement. This work will be measured for payment in accordance with Article 780.12.

Delete the last paragraph of Article 780.12.

Basis of Payment. Regardless of the procedure of installation, this work will be paid for at the contract unit price per foot (meter) of applied line width, as specified, for PREFORMED PLASTIC PAVEMENT MARKING, TYPE B – INLAID – LINE. If the pavement grooving procedure is used, any grooving of the pavement for the pavement markings will be paid for according to the GROOVING FOR RECESSED PAVEMENT MARKING special provision. If the inlaid application is used, no payment will be made for grooving.

Designer Note: Use the Grooving for Recessed Pavement Marking special provision when you are using the Preformed Plastic Pavement Marking, Type B – Inlaid District special provision.

GROOVING FOR RECESSED PAVEMENT MARKING

Effective August 2, 2013

Description. This work shall consist of grooving the pavement surface in accordance with the material manufacturer's requirements and as specified herein in preparation for the application of recessed pavement markings.

Equipment. Equipment shall be according to the following.

Pavement Marking Tape Installations: The grooving equipment shall have a free-floating saw blade cutting head equipped with gang-stacked diamond saw blades. The diamond saw blades shall be of uniform wear and shall produce a smooth textured surface. Any ridges in the groove shall have a maximum height of 15 mils (0.38 mm).

CONSTRUCTION REQUIREMENTS

General. Prior to the operation, the Contractor shall supply the Engineer with a copy of the pavement marking material manufacturer's recommendations for constructing a groove.

Pavement Grooving Methods. The grooves for recessed pavement markings shall be constructed using the following methods.

(a) Wet Cutting Head Operation. When water is required or used to cool the cutting head, the groove shall be flushed with high pressure water immediately following the cut to avoid build up and hardening of slurry in the groove. The pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking material.

(b) Dry Cutting Head Operation. When used on HMA pavements, the groove shall be vacuumed or cleaned by blasting with high-pressure air to remove loose aggregate, debris, and dust generated during the cutting operation. When used on PCC pavements, the groove shall be flushed with high pressure water or shot blasted to remove any PCC particles that may have become destabilized during the grooving process. If high pressure water is used, the pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking material.

Pavement Grooving. Grooving shall not cause ravels, aggregate fractures, spalling or disturbance of the joints to the underlying surface of the pavement. Grooves shall be cut into the pavement prior to the application of the pavement marking material. Grooves shall be cut such that the width is 1 in. (25 mm) greater than the width of the pavement marking line as specified on the plans. The length of the groove shall be cut such that the pavement marking

material can be applied meeting the installation requirements for the entire length of the marking material. Grooving between skip dashes will not be allowed. Grooves for letters, numbers and symbols shall be cut in a square or rectangular shape so that the entire marking will fit within the limits of the grooved area. The position of the edge of the grooves shall be a minimum of 4 in. (100 mm) from the edge of all longitudinal joints. The cutting head shall be operated at the appropriate speed in order to prevent undulation of the cutting head and grooving at an inconsistent depth. The depth of the groove shall be in accordance with the manufacturer's recommendations for the pavement marking material specified. In the absence of manufacturer recommendations, the entire thickness of the marking material shall be below the finished pavement elevation, but in no case shall the groove depth be greater than 200 mils.

At the start of grooving operations, a test section of 4 properly spaced skip dashes shall be installed and embedment measurements shall be made on each of the skip dashes. The individual depth measurements shall be within the allowable ranges according to this special provision. If it is determined the test section has not been grooved at the appropriate depth or texture or that deformation of the markings has occurred during the installation, adjustments shall be made to the cutting head or the installation procedure, and another test section of 4 skip dashes shall be installed and checked. This process shall continue until the test section meets the requirements of this special provision. Markings not meeting installation requirements shall be removed and then replaced using the pavement grooving procedure. No additional compensation will be allowed for the removal and replacement of markings not meeting installation requirements.

For new HMA pavements, grooves shall not be installed within 14 days of the placement of the final course of pavement.

Final Cleaning. Immediately prior to the application of the pavement marking material or primer sealer, the groove shall be cleaned with high-pressure air blasts.

Method of Measurement. This work will be measured for payment as follows.

(a) Contract Quantities. The requirements for the use of contract quantities shall be according to Article 202.07(a).

(b) Measured Quantities. Grooves will be measured for payment in place in feet (meters) for the length of grooving with pavement marking material applied. Double grooves will be measured as two separate grooves. Grooving in excess of the applied marking material, including any transition lengths, will not be measured for payment.

Grooving for letters, numbers and symbols will be measured for payment in place in square feet (square meters).

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for GROOVING FOR RECESSED PAVEMENT MARKING of the groove width specified and per square foot (square meter) for GROOVING FOR RECESSED PAVEMENT MARKING, LETTERS, NUMBERS AND SYMBOLS.

Designer Note: Discuss with Operations (Traffic) before using this special. Allows the Department the option of a 100 mm (4”) open trench cut if utility congestion prevents a push beneath the pavement, which often occurs during urban signal installation/rehabilitation projects. On new pavement construction, not being overlaid, the conduit should be in place prior to paving. Also permits the Contractor to use either coilable polyethylene conduit or PVC conduit.

CONDUIT, PUSHED OR TRENCHED

Effective October 1, 1991 Revised January 1, 2007

This work shall consist of furnishing and installing conduit under an existing roadway, driveway, or sidewalk, or trenched into the ground. The Contractor may substitute coilable polyethylene conduit of equal size.

In urban areas where the existing pavement is to be overlaid, if utility conflicts or other circumstances make a push impossible, then the Engineer may direct the Contractor to saw cut the pavement to install the conduit. This work shall consist of using a wheel saw to cut a 4" (100 mm) wide cut through the pavement and installing the conduit just below the pavement structure. The Contractor shall then backfill the cut with an approved bituminous concrete mixture. This work shall be performed before any rotomilling or overlaying of the pavement. The work of saw cutting the pavement and backfilling the cut will be paid for according to Article 109.04 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for CONDUIT of the size and type specified, which price shall be payment in full for furnishing and installing the conduit and fittings complete.

Designer Note: Check with Operations (Traffic) prior to including this special provision. Intended to be used when conduit is trenched through stabilized shoulder to access detector loop.

TRENCH AND BACKFILL, SPECIAL FOR CONDUIT INSTALLATION BENEATH HOT-MIX ASPHALT SHOULDERS

Effective March 21, 1994 Revised January 1, 2007

This work shall consist of constructing a trench beneath the hot-mix asphalt paved shoulder and backfilling it.

The trench shall be constructed in accordance with and at the locations specified in the plans or as directed by the Engineer. The sides of the trench shall be saw-cut through the full depth of the hot-mix asphalt shoulder material.

The trench shall be not less than 24" (600 mm) in depth. The width shall be as required to accommodate the appropriate number of conduits required at each specified location. The bottom of the trench shall be tamped and the trench inspected by the Engineer before the conduits are placed in the trench.

All trenches shall be backfilled as soon as possible after the installation of the conduits. The trench shall be backfilled in accordance with Section 208 of the Standard Specifications. Cinders, rocks, or other deleterious materials will not be permitted in the backfilling material.

Backfilling materials shall be deposited in the trench in layers not to exceed 6" (150 mm) in depth, and shall be thoroughly compacted with a mechanical tamper before the next layer is deposited in the trench.

Hot-Mix Asphalt surfacing shall be used to restore the shoulders to the existing grade. The bituminous material shall be compacted and finished as directed by the Engineer.

This work will be paid for at the contract unit price per foot (meter), measured in place along a line perpendicular to the roadway centerline and between the edge of pavement and the outside edge of the shoulders, for TRENCH AND BACKFILL, SPECIAL. The price for this item shall include the cost of all excavation, furnishing, and placing all backfill material, the disposal of surplus material, and the Hot-Mix Asphalt surfacing.

Designer Note: Check with Programming (Ron Hegwood) prior to including this special provision. Intended to be used with traffic counter installations District wide/var. routes. Also include 87300d and 88600d. Include CADD Standard 836002-D4.

TERMINAL FACILITY

Effective March 21, 1994 Revised January 1, 2007

This item shall consist of furnishing and installing a loop terminal facility at the location indicated on the plans, or as directed by the Engineer.

The terminal facility shall be provided and wired as shown on the plans. The metal moisture-proof mounting box shall have a keyed entry and shall be mounted on a 4” x 6” x 6’ (102 mm x 152 mm x 1.83 m) or 4” x 4” x 6’ (102 mm x 102 mm x 1.83 mm) treated wood post (as directed by the Engineer) meeting the requirements of Section 1007 of the Standard Specifications. The treated wood post shall be installed at the location indicated on the plans or as directed by the Engineer. The P.V.C. conduit will be of the same type used in P.V.C. Conduit in Trench.

The #18 multi-pair twisted shielded wire loop leads shall be placed in the box to provide slack as necessary to connect to the terminal strip. The two lead wires from each loop shall be connected to their respective terminals on the terminal strip.

The metal moisture-proof mounting box shall be fastened to the treated wood post through at least two lugs with 1-1/2” (38 mm) #8 round head wood screws. The metal moisture-proof mounting box shall be attached with a reducing adapter to the vertical section of P.V.C. conduit. The P.V.C. conduit shall be held in place against the treated wood post with a clamp located approximately 9" (229 mm) above the ground line.

Care should be taken during the backfilling of the trench to not put excessive pressure on the conduit and cause a separation of conduit and reducing adapter.

This work will be paid for at the contract unit price each for TERMINAL FACILITY, which price shall be payment in full for all necessary labor, equipment, backfilling, disposal of surplus materials, and furnishing all materials for completion of the facility.

87300d 873.00

Designer Note: Check with Programming (~~John Fent~~em) prior to including this special provision. Intended to be used with traffic counter installations District wide/var. routes. Also include 88600d and 86300d.

ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 18

Effective March 21, 1994 Revised October 15, 2001

This work shall consist of furnishing and installing loop detector lead-in cables of interconnect cables of the number of pairs specified in the conduit in accordance with the requirements of Section 873 of the Standard Specifications and the following exceptions or additions:

Each end of the cable shall be identified with wire markers as directed by the Engineer.

The drain wire of each pair shall be grounded to chassis ground in the terminal facility junction box for surge suppression.

The electrical values of the cable shall be metered by the Contractor, in the presence of the Engineer, after they are spliced to the detector loop. Acceptance of the cable as metered will be determined by the Engineer.

This work will be paid for at the contract unit price per meter (foot) for ELECTRICAL CABLE IN CONDUIT, LEAD-IN, NO. 18, 1-PAIR or ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 18, 3-PAIR, which price shall be payment in full for furnishing the material and making all electrical connections and installing the cable complete, measured as specified.

Designer Note: Check with Programming (Ron Hegwood) prior to including this special provision. Intended to be used with traffic counter installations District wide/var. routes. Also include 873.00d and 863.00d.

DETECTOR LOOP, SPECIAL FOR TRAFFIC COUNTERS

Effective March 21, 1994 Revised January 1, 2007

This work shall consist of furnishing, installing, and testing detector loops in the pavement in conformance with the requirements of the plans, Section 886 of the Standard Specifications for Type I Detector Loops with the following exceptions:

If the saw slot was dry cut, water does not have to be used in the cleaning of the sawed slot. The slot may be cleaned by air pressure alone. If water is used, all water must be cleaned from slots by compressed air before wire installation.

Drilled holes shall be made at all corners to prevent sharp bends in the wire. Diagonal saw cuts shall not be used. The diameter of the holes shall be 1-1/4” (32 mm). The sharp corners where the drilled holes intersect the saw slots shall be knocked off with a chisel.

The resistance shall be a minimum of 100 megohms above ground under any conditions of weather or moisture. The loop and lead-in circuit shall have an inductance between 50 and 350 microhenries, 175 microhenries nominal. The quality factor (Q) shall be greater than 5. The Contractor shall provide the necessary instruments and do all the testing in the presence of the Engineer, and shall provide a copy of test results.

Each detector lean-in shall be installed in a separate P.V.C. conduit as shown in the plans. This conduit extends from the edge of pavement to the nearest gulfbox or terminal facility. The lead-in wires from each loop shall be twisted a minimum of 5 turns per 12" (305 mm).

Detector loops shall be centered in traffic lanes unless designated otherwise on the plans or by the Engineer. Traffic lanes shall be referred to by number as shown on the plans, and loop wires shall be color-coded accordingly. Color code shall be: Lane #1 - red, Lane #2 - white, Lane #3 - green, and Lane #4 - blue.

At all locations where pavement joints that are not doweled or pavement separation cracks (including areas where bituminous pavement abuts concrete pavement) are encountered by the slots sawed for the placement of the detector loops or lead-ins, a cored expansion hole shall be made per Standard 886001. The cored expansion holes are included in this pay item and no additional compensation will be made.

This work will be paid for at the contract unit price per foot (meter) of DETECTOR LOOP, SPECIAL of the type specified, measured along the sawed slot in the pavement containing the loops and lead-in, rather than the actual length of wire in the slot, which price shall be payment in full for furnishing, installing, and testing the detector loop complete in place.

Designer Note: Insert into contracts with existing detector loops that are to be replaced after bituminous surface removal destroys the loops.

*Show detector loop locations on the plans.

DETECTOR LOOPS, TYPE 1

Effective March 1, 1996 Revised August 3, 2007

This work shall be in accordance with Sections 886 and 1079 of the Standard Specifications except as modified herein.

All detector loops shall utilize a separate pair of lead-ins and a Type II splice shall be used for all detector lead-ins.

All proposed detector loops shall be cut in the proposed binder course or milled surface prior to the final overlay. The riser area shall be chipped out and filled with epoxy.

All loop risers that are affected by construction shall be modified as needed and reflected through the new pavement. The cost of performing this work shall be considered incidental to this pay item and shall be taken into consideration in the bid price. There will be no additional compensation.

All detector loops shall be re-installed in the original locations. The Engineer of Traffic shall be notified prior to detector loop installation. Please contact Randy Laninga at (309) 671-4477 forty-eight hours prior to milling. Operations will alter the signal timing when the loops are removed.

The above work will be paid for at the contract unit price per foot (meter) for DETECTOR LOOP, TYPE I and shall be payment in full for all labor, materials, and equipment required to perform the work and install the detector loops described above.

Designer Note: Insert into any project with Concrete Pavement pay items.

AGGREGATE OPTIMIZATION OF CLASS PV MIX FOR SLIPFORM PAVING

Effective August 3, 2012

Delete Note 8/ of Article 1004.01(c) and replace Article 1004.02(d)(1) with the following:
For the slipform paving of concrete pavement, the Class PV concrete shall be uniformly graded. This may be accomplished by using a uniformly graded single coarse aggregate, or by blending two or more coarse aggregate sizes. As a minimum for multiple coarse aggregate sizes, CA 7 or CA 11 shall be blended with CA 13, CA 14, or CA 16. The final single coarse aggregate or combined coarse aggregate gradation shall have minimum 45 percent and maximum 60 percent passing the 1/2 in. (12.5 mm) sieve. However, the Contractor may propose for approval by the Engineer an alternate uniformly graded concrete mixture using the information in the “Portland Cement Concrete Level III Technician Course – Manual of Instructions for Design of Concrete Mixtures”.

Designer Note: Check with Materials before using this special provision. This special can be used Districtwide since this is the lowest quality (B) rock. This special provision is intended to be used when Coarse Aggregate Fill is recommended for ground stabilization, undercuts less than 18" in thickness, or as a capping material for Rockfill. Remember when using precast box culverts, a 6" bedding layer is included in the box culvert pay item.

A filter fabric may be required. Discuss with the District Geotechnical Engineer (DGE). The DGE may want you to provide a pay item/quantity for "Geotechnical Fabric for Ground Stabilization."

You will need to include a detail and quantity table in the plans showing the depth and location. This could be on the typical or cross-sections.

COARSE AGGREGATE FILL

Effective April 29, 2011

This work shall consist of furnishing, transporting and placing Coarse Aggregate Fill for ground stabilization.

The material shall meet Quality Designation "B" as required in Article 1004.01 of the Standard Specifications for Road and Bridge Construction. The material shall be crushed stone and meet the gradation of CA 7 or CA 11 per Article 1004.01 of the Standard Specifications for Road and Bridge Construction.

The aggregate shall be placed in 6 in. (150 mm) lifts, loose measurement, and compacted in a manner approved by the Engineer, except that if the desired results are being obtained, the compacted thickness of any lift may be increased to a maximum of 8 in. (200 mm).

Coarse Aggregate Fill will be measured for payment in tons (metric tons), in accordance with Article 311.08 except that all references to cubic yard (cubic meter) measurement and payment shall be deleted.

This work will be paid for at the contract unit price per ton (metric ton) for COARSE AGGREGATE FILL.

Designer Note: Insert into all new construction bridge projects involving the Concrete Superstructure and Concrete Wearing Surface pay items.

CONCRETE SUPERSTRUCTURE AGGREGATE OPTIMIZATION

Effective: August 4, 2006 Revised: August 3, 2012

Delete Note 8/ of Article 1004.01(c) and replace Article 1004.02(d)(1) with the following:

For the bridge superstructure and bridge approach slab, the Class BS concrete shall be uniformly graded.

This may be accomplished by using a uniformly graded single coarse aggregate, or by blending two or more coarse aggregate sizes. As a minimum for multiple coarse aggregate sizes, CA 7 or CA 11 shall be blended with CA 13, CA 14, or CA 16. The final single coarse aggregate or combined coarse aggregate gradation shall have minimum 45 percent and maximum 60 percent passing the 1/2 in. (12.5 mm) sieve. However, the Contractor may propose for approval by the Engineer an alternate uniformly graded concrete mixture using the information in the “Portland Cement Concrete Level III Technician Course – Manual of Instructions for Design of Concrete Mixtures”.

Concrete Superstructures Aggregate Optimization will not be paid for separately, but shall be considered as included in the unit cost of CONCRETE SUPERSTRUCTURES.

Designer Note: Permits sub-standard coarse aggregate for use in Bituminous Surface Treatment (Class A-1, A-2, A-3). Used for stone quarries (local aggregates) in western section of District. Approximate dividing line is Route 97. Check with Materials prior to using this provision.

COARSE AGGREGATE FOR BITUMINOUS COURSES, CLASS A

Effective June 29, 1993 Revised January 1, 2007

The aggregate shall conform to Article 1004.03 of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation, except that one, but not both, of the following revisions to Article 1004.03(c) will apply:

1. Revise the maximum allowable percentage of weighted average loss when the material is subjected to 5 cycles of the sodium sulfate soundness test from 20% as shown under Class C of the quality chart in Article 1004.01(b) of the Standard Specifications to 30%.

2. Revise the maximum allowable percentage of wear as determined by the Los Angeles Abrasion Method from 40%, as shown under Class C of the quality chart in Article 1004.01(b) of the Standard Specifications to 60%.

Designer Note:

1. In order to facilitate the use of available local crushed stone aggregates, which do not meet the Standard Specifications, the following Special Provision should be considered when you have the following pay items:

   A. Granular Embankment, Special
   B. Sub-base Granular Material
   C. Aggregate Shoulders
   D. Aggregate Surface Course
   E. Aggregate Base Course
   F. Erosion Control Aggregate

2. Check with the District Bureau of Materials to see if this Special Provision should be used. Intended for the western area of District - approximate dividing line is Route 97.

3. Be sure to include this Special Provision when you have incidental aggregate items, such as the granular sub-base under approach slabs when in the areas as specified in E. above.

4. When constructing large quantities of new roadway pavement, consider modifying the first paragraph of the special and removing items, such as, Granular Embankment, Special and Sub-base Granular Material. This will allow the local aggregates to be used where they won't impact the long-term pavement support.

9-23-96 Revised Article.

AGGREGATE QUALITY

Effective July 1, 1990 Revised April 26, 2013

Coarse aggregate for Granular Embankment Special, Sub-base Granular Material, Aggregate Shoulders, Aggregate Surface and Base Courses, and Erosion Control Aggregate shall conform to Article 1004.04 of the Standard Specifications for Road and Bridge Construction except that all of the following revisions to Article 1004.04(b) shall apply unless the Contractor chooses to use RAP for aggregate shoulders:

1. Revise the maximum allowable percentage of weighted average loss when the material is subjected to 5 cycles of sodium sulfate soundness test from 25%, as shown under the Class D of the Quality Chart in Article 1004.01(b) of the Standard Specifications, to 40%; and

2. Revise the maximum allowable percentage of wear as determined by the Los Angeles Abrasion Method from 45%, as shown under Class D of the Quality Chart in Article 1004.01(b) of the Standard Specifications, to 65%; and

3. The sum of the percentages of weighted average loss when the material is subjected to 5 cycles of the sodium sulfate soundness test and the percentage of wear as determined by the Los Angeles Abrasion Method shall not exceed 95%.

Designer Note: Include this special for HMA overlay quantities less than 8,000 Tons after discussing with Steve Worsfold in Materials. It could be used on full-depth pavement projects with between 4,000 and 8,000 tons, but discuss with Steve Worsfold. Fill in the Mix Design Table.

HOT MIX ASPHALT QUALITY CONTROL FOR PERFORMANCE (D4)

Effective: April 26, 2013

Description. This special provision describes the procedures for production, placement and payment of hot-mix asphalt (HMA). This work shall be according to the Standard Specifications except as modified herein. This special provision shall apply to HMA mixtures as listed in the following table.

Mixture/Use:	
Location:	
Mixture/Use:	
Location:	
Mixture/Use:	
Location:	

Exceptions may be approved for small tonnage less than 800 (725 metric) tons and miscellaneous mixture applications as defined by the Engineer.

Delete Articles:	406.06(b)(1), 2nd Paragraph	(Temperature requirements)
	406.06 (e), 3rd Paragraph	(Pavers speed requirements)
	406.07	(Compaction)
	1030.05(a)(4, 5, 9,)	(QC/QA Documents)
	1030.05(d)(2)a.	(Plant Tests)
	1030.05(d)(2)b.	(Dust-to-Asphalt and Moisture Content)
	1030.05(d)(2)d.	(Small Tonnage)
	1030.05(d)(2)f.	(HMA Sampling)
	1030.05(d)(3)	(Required Field Tests)
	1030.05(d)(4)	(Control Limits)
	1030.05(d)(5)	(Control Charts)
	1030.05(d)(7)	(Corrective Action for Field Tests (Density))
	1030.05(e)	(Quality Assurance by the Engineer)
	1030.05(f)	(Acceptance by the Engineer)
	1030.06(a), 3rd paragraph	(Before start-up…)
	1030.06(a), 7th paragraph	(After an acceptable…)
	1030.06(a), 8th paragraph	(If a mixture…)
	1030.06(a), 9th paragraph	(A nuclear/core…)

Definitions:

(a) Quality Control (QC): All production and construction activities by the Contractor required to achieve the required level of quality.

(b) Quality Assurance (QA): All monitoring and testing activities by the Engineer required to assess product quality, level of payment, and acceptability of the product.

(c) Pay Parameters: Pay Parameters shall be field Voids in the Mineral Aggregate (VMA), voids, and density. Field VMA will be calculated using the combined aggregates bulk specific gravity (G_{sb}) from the mix design.

(d) Mixture Lot. A lot shall begin once an acceptable test strip has been completed and the AJMF has been determined. If the test strip is waived, a sublot shall begin with the start of production. A mixture lot shall consist of four sublots unless it is the last or only lot, in which case it may consist of as few as one sublot

(e) Mixture Sublot. A mixture sublot for field VMA, voids, and Dust/AC shall be 1000 tons (910 metric tons).

- If the remaining quantity is greater than 200 tons but less than 1,000 tons, a sublot will consist of that amount.
- If the remaining quantity is less than or equal to 200 tons, the quantity shall be combined with the previous sublot.

(f) Density Interval. Density Intervals shall be every 0.2 mile (320 m) for lift thickness equal to or less than 3 in. (75 mm) and 0.1 mile (160 m) for lift thickness greater than 3 in. (75 mm).

(g) Density Sublot. A sublot for density shall be the average of five consecutive Density Intervals. If a Density Interval is less than 200 ft. (60 m), it will be combined with the previous Density Intervals.

- If one or two Density Intervals remain outside a sublot, they shall be included in the previous sublot.

- If three or more Density Intervals remain, they shall be considered a sublot.

(h) Density Test: A density test consists of a core taken at a random longitudinal and transverse offset within each Density Interval. The HMA maximum theoretical gravity (G_{mm}) will be based on the running average of four Department test results. Initial G_{mm} will be based on the average of the first four test results. If less than four G_{mm} results are available, use an average of all available Department G_{mm} test results.

The random transverse offset excludes a distance from each outer edge equal to the lift thickness or a minimum of 4 in. (100 mm). If within one foot of an unconfined edge, 2.0 percent density will be added to the density of any core.

Quality Control (QC) by the Contractor:

The Contractor's QC plan shall include the schedule of testing for both pay parameters and non-pay parameters required to control the product such as asphalt binder content and mixture gradation. The minimum test frequency shall be according to the following table.

Minimum Quality Control Sampling and Testing Requirements

Quality Characteristic		Minimum Test Frequency
Mixture Gradation		1 per sublot
Asphalt Binder Content		
Dust/AC Ratio		
Field VMA		
Voids	G_{mb}	
	G_{mm}	

The Contractor's splits in conjunction with other quality control tests shall be used to control production.

The Contractor shall submit split jobsite mix sample test results to the Engineer within 48 hours of the time of sampling. All QC testing shall be performed in a qualified laboratory by personnel who have successfully completed the Department's HMA Level I training.

Quality Assurance (QA) by the Engineer:

Voids, field VMA and Dust/AC ratio: The Engineer will determine the random tonnage and the Contractor shall be responsible for obtaining the sample according to the "PFP Hot-Mix Asphalt Random Jobsite Sampling" procedure.

Density: The Engineer will identify the random locations for each density testing interval. The Contractor shall be responsible for obtaining the four inch cores within the same day and prior to opening to traffic unless otherwise approved by the Engineer according to the "PFP Random Density Procedure". The locations will be identified after final rolling and cores shall be obtained under the supervision of the Engineer. All core holes shall be filled immediately upon completion of coring. All water shall be removed from the core holes prior to filling. All core holes shall be filled with a rapid hardening mortar or concrete which shall be mixed in a separate container prior to placement in the hole. Any depressions in the surface of the filled core holes greater than 1/4 inch at the time of final inspection will require removal of the fill material to the depth of the lift thickness and replacement.

The Engineer will witness and secure all mixture and density samples. The Contractor shall transport the secured sample to a location designated by the Engineer.

The Engineer will test one or all of the randomly selected split samples from each lot for voids, field VMA and dust/AC ratio. The Engineer will test a minimum of one sample per project. The Engineer will test all of the pavement cores for density. All QA testing will be performed in a qualified laboratory by personnel who have successfully completed the Department's HMA Level I training. QA test results will be available to the Contractor within 10 working days from receipt of secured cores and split mixture samples.

The Engineer will maintain a complete record of all Department test results and copies will be provided to the Contractor with each set of sublot results. The records will contain, as a minimum, the originals of all Department test results and raw data, random numbers used and resulting calculations for sampling locations, and quality level analysis calculations.

If the QA results do not meet the 100% sublot pay factor limits or do not compare to QC results within the precision limits listed below, the Engineer will test all split mix samples for the lot.

Test Parameter	Limits of Precision
G_{mb}	0.030
G_{mm}	0.026
Dust/Asphalt AC Ratio	0.20
Field VMA	1.0 %

Acceptance by the Engineer: All tests shall be within the acceptable limits listed below:

Parameter	Acceptable Limits
Field VMA	-1.0 – +3.0%[1/]
Voids	2.0 – 6.0% [2/]

Density:	IL-9.5, IL-12.5, IL-19.0, IL-25.0, IL-4.75, IL-9.5FG[4/]	90.0 – 98.0%
	SMA	92.0 – 98.0%
Dust / AC Ratio		0.4 – 1.6[3/]

1/ Based on minimum required VMA from mix design
2/ The acceptable range for SMA mixtures shall be 2.0% - 5.0%
3/ Does not apply to SMA.
4/ Acceptable density limits for IL-9.5FG placed less than 1.25 in. shall be 89.0% - 98.0%

In addition, no visible pavement distresses shall be present such as, but not limited to, segregation, excessive coarse aggregate fracturing or flushing.

Basis of Payment: Payment will be based on the calculation of the Composite Pay Factor using QA results for each mix according to the "QCP Payment Calculation" document.

Dust/AC Ratio: A monetary deduction will be made using the pay adjustment table below for dust/AC ratios that deviate from the 0.6 to 1.2 range.

Dust / AC Pay Adjustment Table[1/]

Range	Deduct / sublot
$0.6 \le X \le 1.2$	$0
$0.5 \le X < 0.6$ or $1.2 < X \le 1.4$	$1000
$0.4 \le X < 0.5$ or $1.4 < X \le 1.6$	$3000
$X < 0.4$ or $X > 1.6$	Shall be removed and replaced

1/ Does not apply to SMA.

The QCP Pay Calculation (Manual of Test Procedures for Materials, Appendix E6) is available online at the IDOT website, Materials Section, BMPR Specifications.

Designer Note: Include in overlay and full-depth projects with more than 8,000 Tons after discussing with Steve Worsfold in Materials.

HOT MIX ASPHALT – PAY FOR PERFORMANCE USING PERCENT WITHIN LIMITS - JOBSITE SAMPLING (D4)

Effective: April 26, 2013

Description. This special provision describes the procedures used for production, placement and payment for hot-mix asphalt (HMA). This special provision shall apply to all pay items for High ESAL and Low ESAL HMA and SMA mixtures that individually have a minimum quantity of 8000 tons (7260 metric tons) and are placed at a minimum nominal thickness equal to or greater than three times the nominal maximum aggregate size. Mixture quantity may be less than 8,000 tons provided the sublot size is adjusted to achieve a minimum of 10 mixture tests. This special provision shall not apply to shoulders, temporary pavements and patching. This work shall be according to the Standard Specifications except as specified herein.

Delete Articles:	406.06(b)(1), 2nd paragraph	(Temperature requirements)
	406.06 (e), 3rd paragraph	(Pavers speed requirements)
	406.07	(Compaction)
	1030.04, last two sentences of first paragraph	(Mix design verification)
	1030.05(a)(4, 5, 7, 8, 9, & 10)	(QC/QA Documents)
	1030.05(d)(2)a.	(Plant Tests)
	1030.05(d)(2)b.	(Dust-to-Asphalt and Moisture Content)
	1030.05(d)(2)d.	(Small Tonnage)
	1030.05(d)(2)f.	(HMA Sampling)
	1030.05(d)(3)	(Required Field Tests)
	1030.05(d)(4)	(Control Limits)
	1030.05(d)(5)	(Control Charts)
	1030.05(d)(6)	(Corrective Action for Required Plant Tests)
	1030.05(d)(7)	(Corrective Action for Field Tests (Density))
	1030.05(e)	(Quality Assurance by the Engineer)
	1030.05(f)	(Acceptance by the Engineer)
	1030.06(a), 3rd paragraph	(Before start-up…)
	1030.06(a), 7th paragraph	(After an acceptable…)
	1030.06(a), 8th paragraph	(If a mixture…)
	1030.06(a), 9th paragraph	(A nuclear/core…)

Definitions:

(a) Quality Control (QC): All production and construction activities by the Contractor required to achieve the required level of quality.

(b) Quality Assurance (QA): All monitoring and testing activities by the Engineer required to assess product quality, level of payment, and acceptability of the product.

(c) Percent Within Limits (PWL): The percentage of material within the quality limits for a given quality characteristic.

(d) Quality Characteristic: The characteristics that are evaluated by the Department for payment using PWL. The quality characteristics for this project are field Voids in the

Mineral Aggregate (VMA), voids, and density. Field VMA will be calculated using the combined Aggregates Bulk Specific Gravity (G_{sb}) from the mix design

(e) Quality Level Analysis (QLA): QLA is a statistical procedure for estimating the amount of product within specification limits.

(f) Sublot: A sublot for field VMA, and voids, will be 1000 tons (910 metric tons), or adjusted to achieve a minimum of 10 tests. If a sublot consists of less than 200 tons (180 metric tons), it shall be combined with the previous sublot.

(g) Density Testing Interval: The interval for density testing will be 0.2 mile (320 m) for lift thickness equal to or less than 3 in. (75 mm) and 0.1 mile (160 m) for lift thickness greater than 3 in. (75 mm). If a density testing interval is less than 200 ft (60 m), it will be combined with the previous test interval.

(h) Lot: A lot consists of 10 sublots or 30 density intervals. If seven or less sublots or 19 or less density intervals remain at the end of production of a mixture, the test results for these sublots will be combined with the previous lot for evaluation of percent within limits and pay factors. Lots for mixture testing are independent of lots for density testing.

(i) Density Test: A density test consists of a core taken at a random longitudinal and transverse offset within each density testing interval. The HMA maximum theoretical gravity (G_{mm}) will be based on the running average of four including the current day of production. Initial G_{mm} will be based on the average of the first four test results. The random transverse offset excludes the outer 1.0 ft (300 mm) from an unconfined edge. For confined edges, the random transverse offset excludes a distance from the outer edge equal to the lift thickness or a minimum of 4 in. (100 mm).

(j) Unconfined Edge Density: The outer 1.0 foot of an unconfined edge will be excluded from the effective pavement width used for calculating random transverse density location. The unconfined edge density will be randomly selected within each ½ mile section for each unconfined edge. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4.0 in. (100 mm), from each pavement edge. (i.e. for a 5 in. (125 mm) lift the near edge of the density gauge or core barrel shall be within 5.0 in. (125 mm) from the edge of pavement.)

Pre-production Meeting:

The Engineer will schedule a pre-production meeting a minimum of seven calendar days prior to the start of production. The HMA QC Plan, test frequencies, random test locations, and responsibilities of all parties involved in testing and determining the PWL will be addressed. Personnel attending the meetings will include the following:

(a) Resident Engineer

(b) District Mixture Control Representative

(c) QC Manager

(d) Contractor Paving Superintendent

(e) Any consultant involved in any part of the HMA sampling or testing on this project

Quality Control (QC) by the Contractor:

The Contractor's quality control plan shall include the schedule of testing for both quality characteristics and non-quality characteristics required to control the product such as binder content and mixture gradation. The schedule shall include sample location. The minimum test frequency shall not be less than outlined in the Minimum Quality Control Sampling and Testing Requirements table below.

Minimum Quality Control Sampling and Testing Requirements

Quality Characteristic	Minimum Test Frequency	Sampling Location
Mixture Gradation	1/day	per QC Plan
Binder Content		
G_{mm}		
G_{mb}		
Density	per QC plan	per QC Plan

The Contractor shall submit QC test results to the Engineer within 24 hours of the time of sampling.

Initial Production Testing: The Contractor shall split and test the first two samples with the Department for comparison purposes regardless of whether a test strip is used. The Contractor shall complete all tests and report all results to the Engineer within two working days of sampling. The Engineer will make Department test results of the initial production testing available to the Contractor within two working days from the receipt of the samples. PFP will begin after an acceptable test strip, if one is used.

Quality Assurance (QA) by the Engineer: The Engineer will test each sublot for field VMA, voids, dust/ac ratio and density interval for density to determine payment for each lot. A sublot shall begin once an acceptable test-strip has been completed and the AJMF has been determined. If the test strip is waived, a sublot shall begin with the start of production. All Department testing will be performed in a qualified laboratory by personnel who have successfully completed the Department HMA Level I training.

Voids, field VMA, and Dust/AC ratio: The mixture sublot size is 1000 tons (910 metric tons). The Engineer will determine the random tonnage and the Contractor shall be responsible for obtaining the sample according to the "PFP and QCP Hot-Mix Asphalt Random Jobsite Sampling" procedure. The Engineer will not disclose the random location of the mixture test until after the truck containing the random tonnage has been loaded and en-route to the project.

Density: The Engineer will identify the random locations for each density testing interval. The Contractor shall be responsible for obtaining the four inch cores within the same day and prior to opening to traffic unless otherwise approved by the Engineer according to the "PFP and QCP Random Density Procedure". The locations will not be disclosed to the Contractor until after final rolling. The cores shall be obtained under the supervision of the Engineer. All core holes shall be filled immediately upon completion of coring. All water shall be removed from the core holes prior to filling. All core holes shall be filled with a rapid hardening mortar or concrete which shall be mixed in a separate container prior to placement in the hole. Any depressions in the surface of the filled core holes greater than 1/4 inch at the time of final inspection will require removal of the fill material to the depth of the lift thickness and replacement.

Test Results: The Department test results for the first sublot, or density testing interval, of every lot will be available to the Contractor within three working days from the time the secured sample from the sublot or density testing interval has been delivered, by the Contractor, to a Department's Testing Facility or a location designated by the Engineer. Test results for the completed lot will be available to the Contractor within 10 working days from the time the last

sublot or density testing interval has been delivered to a Department testing facility or a location designated by the Engineer.

The Engineer will maintain a complete record of all Department test results. Copies will be furnished upon request. The records will contain, as a minimum, the originals of all Department test results and raw data, random numbers used and resulting calculations for sampling locations, and quality level analysis calculations.

Dispute Resolution: Dispute resolution testing will only be permitted when; 1) the Contractor submits their split sample test results prior to receiving Department split sample test results and 2) the difference between the Contractor and Department split test results exceed the precision limits listed below or are outside acceptable limits. For density disputes, the Contractor shall use the Department's running average for G_{mm} when determining compliance with the Limits of Precision.

Test Parameter	Limits of Precision
Voids	1.0 %
VMA	1.0%
Ratio - Dust / Asphalt Binder	0.2
Core Density	1.0 %

If dispute resolution is necessary, the Contractor shall submit a request in writing within four working days of receipt of the results of the quality index analysis for the lot. The Engineer will document receipt of the request. The Bureau of Materials and Physical Research (BMPR) laboratory will be used for dispute resolution testing.

Density cores for dispute resolution testing shall be taken at the same time as the random density core. The density core for dispute resolution testing shall be taken within 1 ft (300 mm) longitudinally of the random density core and at the same transverse offset.

If three or more consecutive mix sublots are contested, corresponding density results will be recalculated with the new G_{mm}.

All dispute resolution results will replace original quality assurance test results for pay factor recalculation. Test results from the dispute resolution testing will replace voids, VMA and Dust/AC results from the original quality assurance testing. The lot pay factor for the lot under dispute resolution will be recalculated. If the recalculated lot pay factor is less than or equal to the original lot pay factor, laboratory costs listed below will be borne by the Contractor. The effect on the lot pay factor will be determined for each individually disputed sample in the order of increasing sublot/density interval.

Test	Cost
Mix Testing	$1000.00 / sublot
Core Density	$300.00 / core

Acceptance by the Engineer: All tests shall be within the acceptable limits listed below:

Acceptable Limits

Parameter	Acceptable Range
Field VMA	-1.0 – +3.0%[1/]
Voids	2.0 – 6.0% [2/]
Density: IL-19.0, IL-25.0,IL-9.5, IL-12.5 IL-4.75, SMA	 90.0 – 98.0% 92.0 – 98.0%
Dust / AC Ratio	0.4 – 1.6[3/]

1/ Based on minimum required VMA from mix design
2/ The acceptable range for SMA mixtures shall be 2.0% - 5.0%
3/ Does not apply to SMA

In addition, the PWL for any quality characteristic shall be 50 percent or above for any lot. No visible pavement distress shall be present such as, but not limited to, segregation, excessive coarse aggregate fracturing or flushing.

Basis of Payment: Payment will be based on the calculation of the Composite Pay Factor for each mix according to the "PFP Quality Level Analysis" document. Payment for full depth pavement will be based on the calculation of the Full Depth Pay Factor according to the "PFP Quality Level Analysis" document.

Additional Pay Adjustments: In addition to the PWL on VMA, voids, and density, monetary deductions will be made using the pay adjustment tables below for dust/AC ratios and unconfined edge densities.

Dust / AC Pay Adjustment Table[1/]

Range	Deduct / sublot
$0.6 \le X \le 1.2$	$0
$0.5 \le X < 0.6$ or $1.2 < X \le 1.4$	$1000
$0.4 \le X < 0.5$ or $1.4 < X \le 1.6$	$3000
$X < 0.4$ or $X > 1.6$	Shall be removed and replaced

1/ Does not apply to SMA.

Unconfined Edge Density Adjustment Table

Density	Deduct / sublot
≥ 90%	$0
89.0% to 89.9%	$1000
88.0% to 88.9%	$3000
< 88.0%	Outer 1.0 foot will require remedial action acceptable to the Engineer

Designer Note: This district special provision shall be included in all projects including HMA. This special shall be used in lieu of the BDE Special Provisions "HMA Mix Design Composition and Volumetric Requirements" and "HMA Mix Design Verification and Production".

HMA MIXTURE DESIGN REQUIREMENTS, VOLUMETRIC REQUIREMENTS, VERIFICATION AND PRODUCTION (D-4)

Effective: April 25, 2014

Design Composition and Volumetric Requirements

Revise the following table in Article 1030.01 of the Standard Specifications to read:

High ESAL	IL-25.0 binder; IL-19.0 binder; IL-12.5 surface; IL-9.5 surface; IL-4.75; SMA
Low ESAL	IL-19.0L binder; IL-9.5L surface
All Other	Stabilized Subbase (HMA), HMA Shoulders

Revise the following table in Article 1030.04(a)(1):

"(1) High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

High ESAL, MIXTURE COMPOSITION (% PASSING) 1/														
Sieve Size	IL-25.0 mm		IL-19.0 mm		IL-12.5 mm		IL-9.5 mm		IL-4.75 mm		SMA 4/ IL-12.5 mm		SMA 4/ IL-9.5 mm	
	Min	max	min	max	min	max	min	max	min	max	min	max	min	max
1 1/2 in (37.5 mm)		100												
1 in. (25 mm)	90	100		100										
3/4 in. (19 mm)		90	82	100		100						100		
1/2 in. (12.5 mm)	45	75	50	85	90	100		100		100	80	100		100
3/8 in. (9.5 mm)						89	90	100		100		65	90	100
#4 (4.75 mm)	24	42 2/	24	50 2/	28	65	32	69	90	100	20	30	36	50
#8 (2.36 mm)	16	31	20	36	28	48 3/	32	52 3/	70	90	16	24 5/	16	32
#16 (1.18 mm)	10	22	10	25	10	32	10	32	50	65				
#30 (600 μm)											12	16	12	18
#50 (300 μm)	4	12	4	12	4	15	4	15	15	30				
#100 (150 μm)	3	9	3	9	3	10	3	10	10	18				
#200 (75 μm)	3	6	3	6	4	6	4	6	7	9 6/	7.0	9.0 6/	7.5	9.5 6/
Ratio Dust/Asphalt Binder		1.0		1.0		1.0		1.0		1.0		1.5		1.5

1/ Based on percent of total aggregate weight.

2/ The mixture composition shall not exceed 40 percent passing the #4 (4.75 mm) sieve for binder courses with Ndesign ≥ 90.

3/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign ≥ 90.

4/ The maximum percent passing the 20 μm sieve shall be ≤ 3 percent.

5/ When establishing the Adjusted Job Mix Formula (AJMF) the #8 (2.36mm) sieve shall not be adjusted above 24 percent.

6/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer."

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise Article 1030.04(b)(1) of the Standard Specifications to read.

"(1) High ESAL Mixtures. The target value for the air voids of the HMA shall be 4.0 percent, except for IL-4.75 which shall be 3.5 percent, at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix, and shall conform to the following requirements.

<table>
<tr><th colspan="7">VOLUMETRIC REQUIREMENTS
High ESAL</th></tr>
<tr><th></th><th colspan="5">Voids in the Mineral Aggregate (VMA),
% minimum</th><th rowspan="2">Voids Filled with Asphalt Binder (VFA), %</th></tr>
<tr><th>Ndesign</th><th>IL-25.0</th><th>IL-19.0</th><th>IL-12.5</th><th>IL-9.5</th><th>IL-4.75 1/</th></tr>
<tr><td>50</td><td rowspan="4">12.0</td><td rowspan="4">13.0</td><td rowspan="4">14.0</td><td rowspan="4">15.0</td><td>18.5</td><td>65 – 78 2/</td></tr>
<tr><td>70</td><td rowspan="3"></td><td rowspan="3">65 - 75</td></tr>
<tr><td>90</td></tr>
<tr><td>105</td></tr>
</table>

1/ Maximum Draindown for IL-4.75 shall be 0.3%

2/ VFA for IL-4.75 shall be 72-85%"

Delete Article 1030.04(b) (4) of the Standard Specifications.

Add table in Article 1030.04(b) as follows:

"(5) SMA Mixtures.

Volumetric Requirements SMA [1/]			
Ndesign	Design Air Voids Target %	Voids in the Mineral Aggregate (VMA), % min.	Voids Filled with Asphalt (VFA), %
80 [4/]	3.5	17 [2/] 16 [3/]	75 - 83

1/ Maximum Draindown shall be 0.3%.

2/ Applies when specific gravity of coarse aggregate is ≥ 2.760.

3/ Applies when specific gravity of coarse aggregate is < 2.760.

4/ For surface course, coarse aggregate shall be Class B Quality; the coarse aggregate can be crushed steel slag, crystalline crushed stone or crushed sandstone. For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel, crystalline crushed stone, or crushed sandstone. Blending of different types of aggregate will not be permitted.

Revise the "Control Limits" table in Article 1030.05(d)(4) of the Standard Specifications to read:

CONTROL LIMITS					
Parameter	High ESAL Low ESAL Individual Test	High ESAL Low ESAL Moving Avg. of 4	All Other Individual Test	IL-4.75 Individual Test	IL-4.75 Moving Avg. of 4
% Passing: [1/]					
1/2 in. (12.5 mm)	± 6 %	± 4 %	± 15 %		
No. 4 (4.75 mm)	± 5 %	± 4 %	± 10 %		
No. 8 (2.36 mm)	± 5 %	± 3 %			
No. 16 (1.18 mm)				± 4 %	± 3 %
No. 30 (600 µm)	± 4 %	± 2.5 %			
Total Dust Content No. 200 (75 µm)	± 1.5 %	± 1.0 %	± 2.5 %	± 1.5 %	± 1.0 %
Asphalt Binder Content	± 0.3 %	± 0.2 %	± 0.5 %	± 0.3 %	± 0.2 %
Voids	± 1.2 %	± 1.0 %	± 1.2 %	± 1.2 %	± 1.0 %
VMA	-0.7 % [2/]	-0.5 % [2/]		-0.7 % [2/]	-0.5 % [2/]

Design Verification and Production

Description. The following states the requirements for Hamburg Wheel and Tensile Strength testing for High ESAL, IL-4.75, and Stone Matrix Asphalt (SMA) Hot-Mix Asphalt (HMA) mixes during mix design verification and production. The following also defines an acceptable test strip. In addition it provides the plant requirements for hydrated lime addition systems used in the production of High ESAL, IL-4.75 and SMA mixtures.

When the options of Warm Mix Asphalt, Reclaimed Asphalt Shingles, or Reclaimed Asphalt Pavement are used by the Contractor, the Hamburg Wheel and tensile strength requirements in this special provision will be superseded by the special provisions for Warm Mix Asphalt and/or by the District special provision for Reclaimed Asphalt Pavement and Reclaimed Asphalt Shingles as applicable.

Mix Design Testing.

Add the following to Article 1030.04 of the Standard Specifications:

"(d) Verification Testing. High ESAL, IL-4.75, and SMA mix designs submitted for verification will be tested to ensure that the resulting mix designs will pass the required criteria for the Hamburg Wheel Test (IL mod AASHTO T-324) and the Tensile Strength Test (IL mod AASHTO T-283). The Department will perform a verification test on gyratory specimens compacted by the Contractor. If the mix fails the Department's verification test, the Contractor shall make the necessary changes to the mix and resubmit compacted specimens to the Department for verification. If the mix fails again, the mix design will be rejected.

All new and renewal mix designs will be required to be tested, prior to submittal for Department verification meeting the following requirements:

(1)Hamburg Wheel Test criteria.

Asphalt Binder Grade	# Repetitions	Max Rut Depth (mm)
PG 70 -XX (or higher)	20,000	12.5
PG 64 -XX (or lower)	10,000	12.5

Note: For SMA Designs (N-80) the maximum rut depth is 6.0 mm at 20,000 repetitions.

For IL 4.75mm Designs (N-50) the maximum rut depth is 9.0mm at 15,000 repetitions.

(2) Tensile Strength Criteria. The minimum allowable conditioned tensile strength shall be 415 kPa (60 psi) for non-polymer modified performance graded (PG) asphalt binder and 550 kPa (80 psi) for polymer modified PG asphalt binder. The maximum allowable unconditioned tensile strength shall be 1380 kPa (200 psi)."

Production Testing.

Revise Article 1030.06(a) to read:

"(a) High ESAL and IL-4.75 Mixtures. For each contract, a 300 ton (275 metric tons) test strip, except for IL -4.75 it will be 400 ton (363 metric ton), will be required at the beginning of HMA production for each mixture with a quantity of 3000 tons (2750 metric tons) or more according to the Manual of Test Procedures for Materials "Hot-Mix Asphalt Test Strip Procedures"."

Before start-up, target values shall be determined by applying gradation correction factors to the JMF when applicable. These correction factors shall be determined from previous experience. The target values, when approved by the Engineer, shall be used to control HMA production. Plant settings and control charts shall be set according to target values.

Before constructing the test strip, target values shall be determined by applying gradation correction factors to the JMF when applicable. After any JMF adjustment, the JMF shall become the Adjusted Job Mix Formula (AJMF). Upon completion of the first acceptable test strip, the JMF shall become the AJMF regardless of whether or not the JMF has been adjusted. If an adjustment/plant change is made, the Engineer may require a new test strip to be constructed. If the HMA placed during the initial test strip is determined to be unacceptable to remain in place by the Engineer, it shall be removed and replaced.

The limitations between the JMF and AJMF are as follows.

Parameter	Adjustment
1/2 in. (12.5 mm)	± 5.0%
No. 4 (4.75 mm)	± 4.0%
No. 8 (2.36 mm)	± 3.0%
No. 30 (600 μm)	*
No. 200 (75 μm)	*
Asphalt Binder Content	± 0.3%

* In no case shall the target for the amount passing be greater than the JMF.

Any adjustments outside the above limitations will require a new mix design.

Mixture sampled to represent the test strip shall include additional material sufficient for the Department to conduct Hamburg Wheel testing according to Illinois Modified AASHTO T 324 (approximately 60 lbs. (27 kg) total).

Revise the title of Article 1030.06(b) of the Standard Specifications to read:

"(b) Low ESAL and All Other Mixtures."

Add the following to Article 1030.06 of the Standard Specifications:

"(c) Hamburg Wheel Test. All HMA mixtures shall be sampled within the first 500 tons (450 metric tons) on the first day of production or during start up with a split reserved for the Department. The mix sample shall be tested according to the Illinois Modified AASHTO T 324 and shall meet the requirements specified herein. Mix production shall not exceed 1,500 tons (1,350 metric tons) or one day's production, whichever comes first, until the testing is completed and the mixture is found to be in conformance. The requirement to cease mix production may be waived if the plant produced mixture demonstrates conformance prior to start of mix production for a contract.

The Department may conduct additional Hamburg Wheel Tests on production material as determined by the Engineer. If the mixture fails to meet the Hamburg Wheel criteria, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria."

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria are being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

Test Strip.

Revise Article 406.14(b) of the Standard Specifications to read.

"(b) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was not produced within 2.0 to 6.0 percent air voids or within the individual control limits of the JMF, the mixture and test strip will not be paid for and the mixture shall be removed at the Contractor's expense. An additional test strip and mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Revise Article 406.14(c) of the Standard Specifications to read.

"(c) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF, the mixture shall be removed. Removal will be paid in accordance to Article 109.04 of the Standard Specifications. This initial mixture and test strip will be paid for at the contract unit prices. The additional mixture will be paid for at the contract unit price, and any additional test strips will be paid for at one half the unit price of each test strip."

Plant Requirements for Hydrated Lime Addition Systems.

Revise the fourth sentence of the third paragraph of Article 1030.04(c) of the Standard Specifications to read:

"The method of application shall be according to Article 1102.01(a)(10)."

Replace the first three sentences of the second paragraph of Article 1102.01(a)(10) of the Standard Specifications to read:

> "When hydrated lime is used as the anti-strip additive, a separate bin or tank and feeder system shall be provided to store and accurately proportion the lime onto the aggregate either as a slurry, as dry lime applied to damp aggregates, or as dry lime injected onto the hot aggregates prior to adding the liquid asphalt cement. If the hydrated lime is added either as a slurry or as dry lime on damp aggregates, the lime and aggregates shall be mixed by a power driven pugmill to provide a uniform coating of the lime prior to entering the dryer. If dry hydrated lime is added to the hot dry aggregates in a dryer-drum plant, the lime shall be added in such a manner that the lime will not become entrained into the air stream of the dryer-drum and that thorough dry mixing shall occur prior to the injection point of the liquid asphalt. When a batch plant is used, the hydrated lime shall be added to the mixture in the weigh hopper or as approved by the Engineer."

Basis of Payment.

Revise the seventh paragraph of Article 406.14 of the Standard Specifications to read:

> "For all mixes designed and verified under the Hamburg Wheel criteria, the cost of furnishing and introducing anti-stripping additives in the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.
>
> No additional compensation will be awarded to the Contractor because of reduced production rates associated with the addition of the anti-stripping additive."

Designer Note: Use this version of the RAP/RAS Special Provision instead of the BDE version of the same name. Also, use the District Special Provision "HMA Mixture Design Requirements (D-4)" when using this RAP/RAS Special Provision.

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-4)

Effective: April 25, 2014

Revise Section 1031 of the Standard Specifications to read:

"**SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES**

1031.01 Description. Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

(a) Reclaimed Asphalt Pavement (RAP). RAP is the material resulting from cold milling or crushing an existing hot-mix asphalt (HMA) pavement. RAP will be considered processed FRAP after completion of both crushing and screening to size. The Contractor shall supply written documentation that the RAP originated from routes or air fields under federal, state, or local agency jurisdiction.

(b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Bureau of Materials and Physical Research Policy Memorandum "Reclaimed Asphalt Shingle (RAS) Sources", by weight of RAS. All RAS used shall come from a Bureau of Materials and Physical Research approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 90 percent passing the #4 (4.75 mm) sieve. RAS shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.

(1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.

(2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

1031.02 Stockpiles. RAP and RAS stockpiles shall be according to the following.

(a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. Additional processed RAP (FRAP) shall be stockpiled in a separate working pile, as designated in the QC Plan, and only added to the sealed stockpile when test results for the working pile are complete and are found to meet

tolerances specified herein for the original sealed FRAP stockpile. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and FRAP) shall be identified by signs indicating the type as listed below (i.e. “Non- Quality, FRAP -#4 or Type 2 RAS”, etc.).

(1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. All FRAP shall be processed prior to testing and sized into fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP in the coarse fraction shall pass the maximum sieve size specified for the mix the FRAP will be used in.

(2) Restricted FRAP (B quality) stockpiles shall consist of RAP from Class I, Superpave (High ESAL), or HMA (High ESAL). If approved by the Engineer, the aggregate from a maximum 3.0 inch single combined pass of surface/binder milling will be classified as B quality. All millings from this application will be processed into FRAP as described previously.

(3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed (FRAP) prior to testing. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.

(4) Conglomerate “D” Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from HMA shoulders, bituminous stabilized subbases or Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture. The coarse aggregate in this RAP may be crushed or round but shall be at least D quality. This RAP may have an inconsistent gradation and/or asphalt binder content. Conglomerate DQ RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.

(5) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as “Non-Quality”.

RAP or FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, plant cleanout etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

(b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall be sufficiently separated to prevent intermingling at the base. Each stockpile shall be signed indicating what type of RAS is present.

However, a RAS source may submit a written request to the Department for approval to blend mechanically a specified ratio of type 1 RAS with type 2 RAS. The source will not be permitted to change the ratio of the blend without the Department prior written approval. The Engineer's written approval will be required, to mechanically blend RAS with any fine aggregate produced under the AGCS, up to an equal weight of RAS, to improve workability. The fine aggregate shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The fine aggregate shall be one that is approved for use in the HMA mixture and accounted for in the mix design and during HMA production.

Records identifying the shingle processing facility supplying the RAS, RAS type and lot number shall be maintained by project contract number and kept for a minimum of three years.

1031.03 Testing. FRAP and RAS testing shall be according to the following.

(a) FRAP Testing. When used in HMA, the FRAP shall be sampled and tested either during processing or after stockpiling. It shall also be sampled during HMA production.

(1) During Stockpiling. For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2,000 tons (1,800 metric tons) and one sample per 2,000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4,000 tons (3,600 metric tons).

(2) Incoming Material. For testing as incoming material, washed extraction samples shall be run at a minimum frequency of one sample per 2,000 tons (1,800 metric tons) or once per week, whichever comes first.

(3) After Stockpiling. For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Before extraction, each field sample of FRAP, shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

(b) RAS Testing. RAS shall be sampled and tested during stockpiling according to Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources". The Contractor shall also sample as incoming material at the HMA plant.

(1) During Stockpiling. Washed extraction and testing for unacceptable materials shall be run at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1,000 tons (900 metric tons) and one sample per 1000 tons (900 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1,000 tons (900 metric tons). Once a ≤ 1,000 ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS shall be in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.

(2) Incoming Material. For testing as incoming material at the HMA plant, washed extraction shall be run at the minimum frequency of one sample per 250 tons (227 metric tons). A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). The incoming material test results shall meet the tolerances specified herein.

The Contractor shall obtain and make available all test results from start of the initial stockpile sampled and tested at the shingle processing facility in accordance with the facility's QC Plan.

Before extraction, each field sample shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

1031.04 Evaluation of Tests. Evaluation of tests results shall be according to the following.

(a) Evaluation of FRAP Test Results. All test results shall be compiled to include asphalt binder content, gradation and, when applicable (for slag), G_{mm}. A five test average of results from the original pile will be used in the mix designs. Individual extraction test results run thereafter, shall be compared to the average used for the mix design, and will be accepted if within the tolerances listed below.

Parameter	FRAP
No. 4 (4.75 mm)	± 6 %
No. 8 (2.36 mm)	± 5 %
No. 30 (600 μm)	± 5 %
No. 200 (75 μm)	± 2.0 %
Asphalt Binder	± 0.3 %
G_{mm}	± 0.03 [1/]

1/ For stockpile with slag or steel slag present as determined in the current Manual of Test Procedures Appendix B 21, "Determination of Reclaimed Asphalt Pavement Aggregate Bulk Specific Gravity".

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the FRAP stockpile shall not be used in Hot-Mix Asphalt unless the FRAP representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

The Contractor shall maintain a representative moving average of five tests to be used for Hot-Mix Asphalt production.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the Illinois Test Procedure, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)" or Illinois Modified AASHTO T-164-11, Test Method A.

(b) Evaluation of RAS Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content and gradation. A five test average of results from the original pile will be used in the mix designs. Individual test results run thereafter, when compared to the average used for the mix design, will be accepted if within the tolerances listed below.

Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 µm)	± 4 %
No. 200 (75 µm)	± 2.5 %
Asphalt Binder Content	± 2.0 %

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the RAS shall not be used in Hot-Mix Asphalt unless the RAS representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

(c) Quality Assurance by the Engineer. The Engineer may witness the sampling and splitting conduct assurance tests on split samples taken by the Contractor for quality control testing a minimum of once a month.

The overall testing frequency will be performed over the entire range of Contractor samples for asphalt binder content and gradation. The Engineer may select any or all split samples for assurance testing. The test results will be made available to the Contractor as soon as they become available.

The Engineer will notify the Contractor of observed deficiencies.

Differences between the Contractor's and the Engineer's split sample test results will be considered acceptable if within the following limits.

Test Parameter	Acceptable Limits of Precision	
% Passing:[1/]	FRAP	RAS
1 / 2 in.	5.0%	
No. 4	5.0%	
No. 8	3.0%	4.0%
No. 30	2.0%	3.0%
No. 200	2.2%	2.5%
Asphalt Binder Content	0.3%	1.0%
G_{mm}	0.030	

1/ Based on washed extraction.

In the event comparisons are outside the above acceptable limits of precision, the Engineer will immediately investigate.

(d) Acceptance by the Engineer. Acceptable of the material will be based on the validation of the Contractor's quality control by the assurance process.

1031.05 Quality Designation of Aggregate in RAP and FRAP.

(a) RAP. The aggregate quality of the RAP for homogenous, conglomerate, and conglomerate "D" quality stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.

(1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B Quality Coarse Aggregate.

(2) RAP from Superpave/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D Quality Coarse Aggregate.

(3) RAP from Class I, Superpave/HMA (High ESAL) binder mixtures, bituminous base course mixtures, and bituminous base course widening mixtures are designated as containing Class C Quality Coarse Aggregate.

(4) RAP from bituminous stabilized subbase and BAM shoulders are designated as containing Class D Quality Coarse Aggregate.

(b) FRAP. If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer.

If the quality is not known, the quality shall be determined as follows. Fractionated RAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5,000 tons (4,500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb. (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant prequalified by the Department for the specified testing. The consultant shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the BMPR Aggregate Lab for MicroDeval Testing, according to Illinois Modified AASHTO T 327. A maximum loss of 15.0 percent will be applied for all HMA applications. The fine aggregate portion of the fractionated RAP shall not be used in any HMA mixtures that require a minimum of "B" quality aggregate or better, until the coarse aggregate fraction has been determined to be acceptable thru a MicroDeval Testing.

1031.06 Use of FRAP and/or RAS in HMA. The use of FRAP and/or RAS shall be a Contractor's option when constructing HMA in all contracts.

(a) FRAP. The use of FRAP in HMA shall be as follows.

(1) Coarse Aggregate Size (after extraction). The coarse aggregate in all FRAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.

(2) Steel Slag Stockpiles. FRAP stockpiles containing steel slag or other expansive material, as determined by the Department, shall be homogeneous and will be approved for use in HMA (High ESAL and Low ESAL) mixtures regardless of lift or mix type.

(3) Use in HMA Surface Mixtures (High and Low ESAL). FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall have coarse aggregate that is Class B quality or better. FRAP shall be considered equivalent to limestone for frictional considerations unless produced/screened to minus 3/8 inch.

(4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP in which the coarse aggregate is Class C quality or better.

(5) Use in Shoulders and Subbase. FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, Restricted FRAP, conglomerate, or conglomerate DQ.

(b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.

(c) FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with FRAP in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

When FRAP, RAS or FRAP in conjunction with RAS is used, the percent of virgin asphalt binder replacement (ABR) shall not exceed the amounts indicated in the table below for a given N Design.

Max Asphalt Binder Replacement for FRAP with RAS Combination

HMA Mixtures 1/ 2/ 4/	Maximum % ABR		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified 3/
30L	50	40	30
50	40	35	30
70	40	30	30
90	40	30	30
4.75 mm N-50			40
SMA N-80			30

1/ For HMA "All Other" (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.

2/ When the binder replacement exceeds 15 percent for all mixes, except for SMA and IL-4.75, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement using a virgin asphalt binder grade of PG64-22 will be reduced to a PG58-28). When constructing full depth HMA and the ABR is less than 15 percent, the required virgin asphalt binder grade shall be PG64-28.

3/ When the ABR for SMA or IL-4.75 is 15 percent or less, the required virgin asphalt binder shall be SBS PG76-22 and the elastic recovery shall be a minimum of 80. When the ABR for SMA or IL-4.75 exceeds 15%, the virgin asphalt binder grade shall be SBS PG70-28 and the elastic recovery shall be a minimum of 80.

4/ When FRAP or RAS is used alone, the maximum percent asphalt binder replacement designated on the table shall be reduced by 10%.

1031.07 HMA Mix Designs. At the Contractor's option, HMA mixtures may be constructed utilizing RAP/FRAP and/or RAS material meeting the detailed requirements specified herein.

(a) FRAP and/or RAS. FRAP and /or RAS mix designs shall be submitted for verification. If additional FRAP or RAS stockpiles are tested and found to be within tolerance, as defined under “Evaluation of Tests” herein, and meet all requirements herein, the additional FRAP or RAS stockpiles may be used in the original design at the percent previously verified.

(b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design. A RAS stone bulk specific gravity (Gsb) of 2.500 shall be used for mix design purposes.

1031.08 HMA Production. HMA production utilizing FRAP and/or RAS shall be as follows.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAS and FRAP feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by the Engineer.

If during mix production, corrective actions fail to maintain FRAP, RAS or QC/QA test results within control tolerances or the requirements listed herein the Contractor shall cease production of the mixture containing FRAP or RAS and conduct an investigation that may require a new mix design.

(a) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.

(b) HMA Plant Requirements. HMA plants utilizing FRAP and/or RAS shall be capable of automatically recording and printing the following information.

(1) Dryer Drum Plants.

a. Date, month, year, and time to the nearest minute for each print.

b. HMA mix number assigned by the Department.

c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

d. Accumulated dry weight of RAS and FRAP in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.

f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.

g. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.

h. Aggregate RAS and FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS and FRAP are printed in wet condition.)

i. When producing mixtures with FRAP and/or RAS, a positive dust control system shall be utilized.

j. Accumulated mixture tonnage.

k. Dust Removed (accumulated to the nearest 0.1 ton)

(2) Batch Plants.

a. Date, month, year, and time to the nearest minute for each print.

b. HMA mix number assigned by the Department.

c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).

d. Mineral filler weight to the nearest pound (kilogram).

e. RAS and FRAP weight to the nearest pound (kilogram).

f. Virgin asphalt binder weight to the nearest pound (kilogram).

g. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

(a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except “Non-Quality” and “FRAP”. The testing requirements of Article 1031.03 shall not apply. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research’s Policy Memorandum, “Reclaimed Asphalt Pavement (RAP) for Aggregate Applications”

(b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders.”

Designer Note: Incorporate into all contracts with PCC items.

PCC QC/QA ELECTRONIC REPORT SUBMITTAL

Effective April 26, 2013

The Contractor's QC personnel shall be responsible for electronically submitting PRO and IND MI 654 Air, Slump, Quantity and PRO MI 655 PCC Strength Reports to the Department. The format for the electronic submittals will be the PCC QC/QA reporting program, which will be provided by the Department. Microsoft Office 2007 or newer is required for this program which must be provided by the Contractor.

Designer Note: Include in all contracts with cast in place concrete items.

PCC AUTOMATIC BATCHING EQUIPMENT

Effective April 23, 2010 Revised November 8, 2013

Portland cement concrete provided shall be produced from batch plants that conform to the requirements of Article 1103.03 (a) and (b) of the Standard Specifications for Road and Bridge Construction. Semi-automatic batching will not be allowed.

In addition, the batching plant shall be a computerized plant interfaced with a printer and shall print actual batch weights, added water, tempering water, mixing time, and amount of each additive per batch. At the discretion of the Engineer, archived electronic versions of batch proportions will be acceptable. Truck delivery tickets will still be required as per Article 1020.11 (a)(7).