

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2015

This index contains a listing of SUPPLEMENTAL SPECIFICATIONS, frequently used RECURRING SPECIAL PROVISIONS, and LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS.

ERRATA Standard Specifications for Road and Bridge Construction (Adopted 1-1-12) (Revised 1-1-15)

SUPPLEMENTAL SPECIFICATIONS

<u>Std. Spec. Sec.</u>	<u>Page No.</u>
101 Definition of Terms	1
102 Advertisement, Bidding, Award, and Contract Execution	2
105 Control of Work	3
106 Control of Materials	5
107 Legal Regulations and Responsibility to Public	6
108 Prosecution and Progress	14
109 Measurement and Payment	15
202 Earth and Rock Excavation	17
211 Topsoil and Compost	19
250 Seeding	20
253 Planting Woody Plants	21
280 Temporary Erosion and Sediment Control	23
312 Stabilized Subbase	24
406 Hot-Mix Asphalt Binder and Surface Course	25
407 Hot-Mix Asphalt Pavement (Full-Depth)	28
420 Portland Cement Concrete Pavement	32
424 Portland Cement Concrete Sidewalk	34
440 Removal of Existing Pavement and Appurtenances	35
502 Excavation for Structures	36
503 Concrete Structures	37
504 Precast Concrete Structures	40
506 Cleaning and Painting New Steel Structures	41
512 Piling	42
516 Drilled Shafts	43
521 Bearings	44
540 Box Culverts	45
588 Bridge Relief Joint System	46
589 Elastic Joint Sealer	48
602 Catch Basin, Manhole, Inlet, Drainage Structure, and Valve Vault Construction, Adjustment, and Reconstruction	49
603 Adjusting Frames and Grates of Drainage and Utility Structures	50
606 Concrete Gutter, Curb, Median, and Paved Ditch	52
610 Shoulder Inlets with Curb	53
639 Precast Prestressed Concrete Sight Screen	54
642 Shoulder Rumble Strips	55

643	Impact Attenuators	56
644	High Tension Cable Median Barrier	58
669	Removal and Disposal of Regulated Substances	60
670	Engineer's Field Office and Laboratory	64
701	Work Zone Traffic Control and Protection	65
706	Impact Attenuators, Temporary	68
707	Movable Traffic Barrier	71
708	Temporary Water Filled Barrier	73
730	Wood Sign Support	75
780	Pavement Striping	76
816	Unit Duct	81
836	Pole Foundation	82
860	Master Controller	83
1001	Cement	84
1003	Fine Aggregates	85
1004	Coarse Aggregates	87
1006	Metals	91
1011	Mineral Filler	93
1017	Packaged, Dry, Combined Materials for Mortar	94
1018	Packaged Rapid Hardening Mortar or Concrete	95
1019	Controlled Low-Strength Material (CLSM)	96
1020	Portland Cement Concrete	97
1024	Grout and Nonshrink Grout	136
1030	Hot-Mix Asphalt	137
1040	Drain Pipe, Tile, Drainage Mat, and Wall Drain	142
1042	Precast Concrete Products	143
1069	Pole and Tower	144
1070	Foundation and Breakaway Devices	145
1073	Controller	146
1081	Materials for Planting	147
1082	Preformed Bearing Pads	148
1083	Elastomeric Bearings	149
1088	Wireway and Conduit System	150
1095	Pavement Markings	152
1101	General Equipment	155
1102	Hot-Mix Asphalt Equipment	157
1103	Portland Cement Concrete Equipment	159
1105	Pavement Marking Equipment	160
1106	Work Zone Traffic Control Devices	161

RECURRING SPECIAL PROVISIONS

The following RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

<u>CHECK SHEET #</u>	<u>PAGE NO.</u>
1 X Additional State Requirements for Federal-Aid Construction Contracts	163
2 X Subletting of Contracts (Federal-Aid Contracts)	166
3 X EEO	167
4 Specific EEO Responsibilities Non Federal-Aid Contracts	177
5 Required Provisions - State Contracts	182
6 Asbestos Bearing Pad Removal	188
7 Asbestos Waterproofing Membrane and Asbestos HMA Surface Removal	189
8 Temporary Stream Crossings and In-Stream Work Pads	190
9 Construction Layout Stakes Except for Bridges	191
10 X Construction Layout Stakes	194
11 Use of Geotextile Fabric for Railroad Crossing	197
12 Subsealing of Concrete Pavements	199
13 Hot-Mix Asphalt Surface Correction	203
14 Pavement and Shoulder Resurfacing	205
15 Reserved	206
16 Patching with Hot-Mix Asphalt Overlay Removal	207
17 Polymer Concrete	208
18 PVC Pipeliner	210
19 Pipe Underdrains	211
20 X Guardrail and Barrier Wall Delineation	212
21 Bicycle Racks	216
22 Reserved	218
23 Temporary Portable Bridge Traffic Signals	219
24 X Work Zone Public Information Signs	221
25 X Nighttime Inspection of Roadway Lighting	222
26 English Substitution of Metric Bolts	223
27 English Substitution of Metric Reinforcement Bars	224
28 Calcium Chloride Accelerator for Portland Cement Concrete	225
29 Reserved	226
30 X Quality Control of Concrete Mixtures at the Plant	227
31 X Quality Control/Quality Assurance of Concrete Mixtures	235
32 Digital Terrain Modeling for Earthwork Calculations	251
33 X Pavement Marking Removal	253
34 Preventive Maintenance – Bituminous Surface Treatment	254
35 Preventive Maintenance – Cape Seal	260
36 Preventive Maintenance – Micro-Surfacing	275
37 Preventive Maintenance – Slurry Seal	286
38 Temporary Raised Pavement Markers	296
39 Restoring Bridge Approach Pavements Using High-Density Foam	297

BDE SPECIAL PROVISIONS
For the July 31 and September 18, 2015 Lettings

The following special provisions indicated by an "x" are applicable to this contract and will be included by the Project Development and Implementation Section of the BD&E. An * indicates a new or revised special provision for the letting.

<u>File Name</u>	<u>#</u>		<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80240	1		Above Grade Inlet Protection	July 1, 2009	Jan. 1, 2012
80099	2	X	Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2014
80274	3		Aggregate Subgrade Improvement	April 1, 2012	Jan. 1, 2013
80192	4		Automated Flagger Assistance Device	Jan. 1, 2008	
* 80173	5	X	Bituminous Materials Cost Adjustments	Nov. 2, 2006	July 1, 2015
80241	6		Bridge Demolition Debris	July 1, 2009	
5026I	7		Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
5048I	8		Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
5049I	9		Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
5053I	10		Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
* 80360	11	X	Coarse Aggregate Quality	July 1, 2015	
80310	12	X	Coated Galvanized Steel Conduit	Jan. 1, 2013	Jan. 1, 2015
80341	13	X	Coilable Nonmetallic Conduit	Aug. 1, 2014	Jan. 1, 2015
80198	14		Completion Date (via calendar days)	April 1, 2008	
80199	15		Completion Date (via calendar days) Plus Working Days	April 1, 2008	
80293	16		Concrete Box Culverts with Skews > 30 Degrees and Design Fills ≤ 5 Feet	April 1, 2012	April 1, 2015
80294	17		Concrete Box Culverts with Skews ≤ 30 Degrees Regardless of Design Fill and Skews > 30 Degrees with Design Fills > 5 Feet	April 1, 2012	April 1, 2014
80311	18		Concrete End Sections for Pipe Culverts	Jan. 1, 2013	
80334	19	X	Concrete Gutter, Curb, Median, and Paved Ditch	April 1, 2014	Aug. 1, 2014
80277	20		Concrete Mix Design – Department Provided	Jan. 1, 2012	Jan. 1, 2014
80261	21	X	Construction Air Quality – Diesel Retrofit	June 1, 2010	Nov. 1, 2014
80335	22	X	Contract Claims	April 1, 2014	
80029	23	X	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Jan. 2, 2015
80358	24	X	Equal Employment Opportunity	April 1, 2015	
80265	25	X	Friction Aggregate	Jan. 1, 2011	Nov. 1, 2014
* 80229	26	X	Fuel Cost Adjustment	April 1, 2009	July 1, 2015
80329	27		Glare Screen	Jan. 1, 2014	
80304	28		Grooving for Recessed Pavement Markings	Nov. 1, 2012	Aug. 1, 2014
80246	29	X	Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	April 1, 2012
80322	30	X	Hot-Mix Asphalt – Mixture Design Composition and Volumetric Requirements	Nov. 1, 2013	Nov. 1, 2014
80323	31	X	Hot-Mix Asphalt – Mixture Design Verification and Production	Nov. 1, 2013	Nov. 1, 2014
* 80347	32	X	Hot-Mix Asphalt – Pay for Performance Using Percent Within Limits – Jobsite Sampling	Nov. 1, 2014	July 1, 2015
80348	33	X	Hot-Mix Asphalt – Prime Coat	Nov. 1, 2014	
80315	34		Insertion Lining of Culverts	Jan. 1, 2013	Nov. 1, 2013
80351	35		Light Tower	Jan. 1, 2015	
80336	36		Longitudinal Joint and Crack Patching	April 1, 2014	
80324	37	X	LRFD Pipe Culvert Burial Tables	Nov. 1, 2013	April 1, 2015
80325	38	X	LRFD Storm Sewer Burial Tables	Nov. 1, 2013	April 1, 2015
80045	39		Material Transfer Device	June 15, 1999	Aug. 1, 2014
80342	40		Mechanical Side Tie Bar Inserter	Aug. 1, 2014	Jan. 1, 2015
80165	41		Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
80337	42	X	Paved Shoulder Removal	April 1, 2014	
80349	43		Pavement Marking Blackout Tape	Nov. 1, 2014	

File Name	#		Special Provision Title	Effective	Revised
80298	44	X	Pavement Marking Tape Type IV	April 1, 2012	
80254	45	X	Pavement Patching	Jan. 1, 2010	
80352	46	X	Pavement Striping - Symbols	Jan. 1, 2015	
80359	47		Portland Cement Concrete Bridge Deck Curing	April 1, 2015	
80353	48		Portland Cement Concrete Inlay or Overlay	Jan. 1, 2015	April 1, 2015
80338	49		Portland Cement Concrete Partial Depth Hot-Mix Asphalt Patching	April 1, 2014	
80343	50	X	Precast Concrete Handhole	Aug. 1, 2014	
80300	51		Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	
80328	52	X	Progress Payments	Nov. 2, 2013	
34261	53		Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157	54		Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80306	55		Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)	Nov. 1, 2012	April 1, 2014
80350	56	X	Retroreflective Sheeting for Highway Signs	Nov. 1, 2014	
80327	57		Reinforcement Bars	Nov. 1, 2013	
80344	58	X	Rigid Metal Conduit	Aug. 1, 2014	
80354	59	X	Sidewalk, Corner, or Crosswalk Closure	Jan. 1, 2015	April 1, 2015
80340	60	X	Speed Display Trailer	April 2, 2014	
* 80127	61	X	Steel Cost Adjustment	April 2, 2004	July 1, 2015
80317	62	X	Surface Testing of Hot-Mix Asphalt Overlays	Jan. 1, 2013	
* 80355	63	X	Temporary Concrete Barrier	Jan. 1, 2015	July 1, 2015
80301	64	X	Tracking the Use of Pesticides	Aug. 1, 2012	
80356	65		Traffic Barrier Terminals Type 6 or 6B	Jan. 1, 2015	
20338	66	X	Training Special Provisions	Oct. 15, 1975	
80318	67		Traversable Pipe Grate	Jan. 1, 2013	April 1, 2014
80345	68		Underpass Luminaire	Aug. 1, 2014	April 1, 2015
* 80357	69		Urban Half Road Closure with Mountable Median	Jan. 1, 2015	July 1, 2015
80346	70		Waterway Obstruction Warning Luminaire	Aug. 1, 2014	April 1, 2015
80288	71	X	Warm Mix Asphalt	Jan. 1, 2012	Nov. 1, 2014
* 80302	72	X	Weekly DBE Trucking Reports	June 2, 2012	April 2, 2015
80289	73		Wet Reflective Thermoplastic Pavement Marking	Jan. 1, 2012	
80071	74		Working Days	Jan. 1, 2002	

The following special provisions are in the 2015 Supplemental Specifications and Recurring Special Provisions:

File Name	Special Provision Title	New Location	Effective	Revised
80292	Coarse Aggregate in Bridge Approach Slabs/Footings	Articles 1004.01(b) and 1004.02(f)	April 1, 2012	April 1, 2013
80303	Granular Materials	Articles 1003.04, 1003.04(c), and 1004.05(c)	Nov. 1, 2012	
80330	Pavement Marking for Bike Symbol	Article 780.14	Jan. 1, 2014	
80331	Payrolls and Payroll Records	Recurring CS #1 and #5	Jan. 1, 2014	
80332	Portland Cement Concrete – Curing of Abutments and Piers	Article 1020.13	Jan. 1, 2014	
80326	Portland Cement Concrete Equipment	Article 1103.03(a)(5)	Nov. 1, 2013	
80281	Quality Control/Quality Assurance of Concrete Mixtures	Recurring CS #31	Jan. 1, 2012	Jan. 1, 2014
80283	Removal and Disposal of Regulated Substances	Articles 669.01, 669.08, 669.09, 669.14, and 669.16	Jan. 1, 2012	Nov. 2, 2012
80319	Removal and Disposal of Surplus Materials	Article 202.03	Nov. 2, 2012	
80307	Seeding	Article 250.07	Nov. 1, 2012	
80339	Stabilized Subbase	Article 312.06	April 1, 2014	

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80333	Traffic Control Setup and Removal Freeway/Expressway	Articles 701.18(l) and 701.19(a)	Jan. 1, 2014	

The following special provisions require additional information from the designer. The additional information needs to be included in a separate document attached to this check sheet. The Project Development and Implementation section will then include the information in the applicable special provision. The Special Provisions are:

- Bridge Demolition Debris
- Building Removal-Case I
- Building Removal-Case II
- Building Removal-Case III
- Building Removal-Case IV
- Completion Date
- Completion Date Plus Working Days
- DBE Participation
- Material Transfer Device
- Railroad Protective Liability Insurance
- Training Special Provisions
- Working Days

INDEX OF SPECIAL PROVISIONS

GENERAL INFORMATION	1
LOCATION OF PROJECT	2
DESCRIPTION OF PROJECT	2
COORDINATION WITH ADJACENT AND/OR OVERLAPPING CONTRACTS	3
DISTRICT 1 SPECIFICATIONS (BUREAU OF DESIGN)	4
MAINTENANCE OF ROADWAYS	5
RESTRICTION ON WORKING DAYS AFTER A COMPLETION DATE	5
FAILURE TO COMPLETE THE WORK ON TIME	5
COMPLETION DATE PLUS WORKING DAYS	6
RECLAIMED ASPHALT PAVEMENT FOR NON-POROUS EMBANKMENT AND BACKFILL	6
AGGREGATE SURFACE COURSE FOR TEMPORARY ACCESS	7
TRAFFIC CONTROL AND PROTECTION (ARTERIALS)	8
TRAFFIC CONTROL PLAN	8
AGGREGATE SUBGRADE IMPROVEMENT (D-1)	10
COARSE AGGREGATE FOR BACKFILL, TRENCH BACKFILL AND BEDDING (D-1)	12
CALCIUM ALUMINATE CEMENT (BMPR)	12
EMBANKMENT I	12
HMA MIXTURE DESIGN REQUIREMENTS (D-1)	14
HOT MIX ASPHALT QUALITY CONTROL FOR PERFORMANCE (BMPR)	28
PUBLIC CONVENIENCE AND SAFETY (DIST 1)	32
RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1)	33
STATUS OF UTILITIES TO BE ADJUSTED	43
TEMPORARY PAVEMENT	45
WINTERIZED TEMPORARY ACCESS	45
DISTRICT 1 SPECIFICATIONS (BUREAU OF TRAFFIC)	47
TEMPORARY INFORMATION SIGNING	48
KEEPING ARTERIAL ROADWAYS OPEN TO TRAFFIC (LANE CLOSURES ONLY)	49
SPEED DISPLAY TRAILER (D1)	50
MAST ARM SIGN PANELS	50
TRAFFIC SIGNAL GENERAL REQUIREMENTS	51
RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM	60
ELECTRIC SERVICE INSTALLATION	62

GROUNDING OF TRAFFIC SIGNAL SYSTEMS	65
COILABLE NON-METALLIC CONDUIT	66
UNDERGROUND RACEWAYS	67
ROD AND CLEAN EXISTING CONDUIT	67
HANDHOLES	68
GROUNDING CABLE	69
FIBER OPTIC TRACER CABLE	70
MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.....	70
FULL-ACTUATED CONTROLLER AND CABINET	73
UNINTERRUPTABLE POWER SUPPLY, SPECIAL	75
FIBER OPTIC CABLE	79
ELECTRIC CABLE	79
EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C.....	79
TRAFFIC SIGNAL POST	80
MAST ARM ASSEMBLY AND POLE	80
CONCRETE FOUNDATIONS	82
LIGHT EMITTING DIODE (LED) SIGNAL HEAD AND OPTICALLY PROGRAMMED LED SIGNAL HEAD.....	83
LIGHT EMITTING DIODE (LED) PEDESTRIAN SIGNAL HEAD.....	87
TRAFFIC SIGNAL BACKPLATE	89
DETECTOR LOOP	90
EMERGENCY VEHICLE PRIORITY SYSTEM.....	92
ACCESSIBLE PEDESTRIAN SIGNALS	93
TEMPORARY TRAFFIC SIGNAL INSTALLATION	94
TEMPORARY TRAFFIC SIGNAL TIMING	101
REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	101
PROJECT SPECIFIC SPECIAL PROVISIONS	103
TEMPORARY DITCH CHECKS.....	104
MAINTENANCE OF EROSION CONTROL SYSTEM	104
SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE REMOVAL	106
SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE MAINTENANCE.....	106
HEAVY DUTY EROSION CONTROL BLANKET, SPECIAL.....	ERROR! BOOKMARK NOT DEFINED.
EROSION CONTROL BLANKET (MODIFIED)	ERROR! BOOKMARK NOT DEFINED.
PERIMETER EROSION BARRIER, SPECIAL	106
CONCRETE TRUCK WASHOUT.....	108

SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE	109
DUST CONTROL WATERING.....	110
SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER CLEANING.....	111
SEEDING, CLASS 4B.....	111
SEEDING (SPECIAL)	112
FENCE REMOVAL	113
HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 10".....	114
RECESSED REFLECTIVE PAVEMENT MARKERS.....	114
SIGN REMOVAL.....	115
MANHOLES, TYPE A, 4' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE	115
MANHOLES, TYPE A, 8' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE	116
MANHOLES, TYPE A, 9' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE	116
DRAINAGE STRUCTURES, TYPE 3 (MODIFIED)	116
ETHERNET MANAGED SWITCH, TYPE 2.....	117
INTERSECTION VIDEO TRAFFIC MONITORING SYSTEM WITH PTZ CAMERA	119
OUTDOOR RATED NETWORK CABLE	120
NETWORK CONFIGURATION.....	122
REMOVE AND REINSTALL ELECTRIC CABLE FROM CONDUIT	122
LUMINAIRE, LED, HORIZONTAL MOUNT, 190 WATT (SPECIAL).....	123
BDE SPECIAL PROVISIONS*	125
ACCESSIBLE PEDESTRIAN SIGNALS (APS) (BDE).....	126
COATED GALVANIZED STEEL CONDUIT (BDE).....	127
COILABLE NONMETALLIC CONDUIT (BDE).....	128
BITUMINOUS MATERIALS COST ADJUSTMENTS (BDE) (RETURN FORM WITH BID).....	128
COARSE AGGREGATE QUALITY (BDE).....	131
CONCRETE GUTTER, CURB, MEDIAN, AND PAVED DITCH (BDE)	132
CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)	132
CONTRACT CLAIMS (BDE)	134
DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)	135
EQUAL EMPLOYMENT OPPORTUNITY (BDE).....	145
FRICTION AGGREGATE (BDE)	148
FUEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)	151
HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE).....	156
HOT-MIX ASPHALT – MIXTURE DESIGN VERIFICATION AND PRODUCTION (BDE).....	157

HOT MIX ASPHALT - PAY FOR PERFORMANCE USING PERCENT WITHIN LIMITS -	
JOBSITE SAMPLING (BDE)	160
HOT MIX ASPHALT – PRIME COAT (BDE)	165
LRFD PIPE CULVERT BURIAL TABLES (BDE)	169
LRFD STORM SEWER BURIAL TABLES (BDE)	188
PAVED SHOULDER REMOVAL (BDE)	198
PAVEMENT MARKING TAPE TYPE IV (BDE)	199
PAVEMENT PATCHING (BDE)	201
PAVEMENT STRIPING - SYMBOLS (BDE)	201
PRECAST CONCRETE HANDHOLE (BDE)	201
PROGRESS PAYMENTS (BDE)	202
RETROREFLECTIVE SHEETING FOR HIGHWAY SIGNS (BDE)	203
RIGID METAL CONDUIT (BDE)	204
SIDEWALK, CORNER, OR CROSSWALK CLOSURE (BDE)	204
SPEED DISPLAY TRAILER (BDE)	205
STEEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)	206
SURFACE TESTING OF HOT-MIX ASPHALT OVERLAYS (BDE)	210
TEMPORARY CONCRETE BARRIER (BDE)	210
TRACKING THE USE OF PESTICIDES (BDE)	212
TRAINING SPECIAL PROVISIONS (BDE)	212
WARM MIX ASPHALT (BDE)	215
WEEKLY DBE TRUCKING REPORTS (BDE)	217
IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING S.P.	
LOCAL ROADS SPECIAL PROVISION 107-4	
SWPPP	
ROADWAY GEOTECHNICAL REPORT	
BDE SPECIAL PROVISIONS (WILL NOT BE IN INDEX FOR PREFINAL) ***	

THOSE SEEKING THE FULL ROADWAY GEOTECHNICAL REPORT (RGR) OR PRELIMINARY SITE INVESTIGATION (PSI) SHOULD CONTACT THE OWNER OF RECORD. TO MAKE ARRANGEMENTS FOR ACCESS TO THIS INFORMATION PLEASE CONTACT:

FAWAD F. AQUEEL, PE, PTOE – FEDERAL AID PROGRAM ENGINEER
IDOT, DISTRICT ONE, BUREUA OF LOCAL ROADS AND STREET (847) 705-4021

GENERAL INFORMATION

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the “Standard Specifications for Road and Bridge Construction”, adopted January 1, 2012, the latest edition of the “Manual on Uniform Traffic Control Devices for Streets and Highways”, and the “Manual of Test Procedures of Materials” in effect on the date of invitation of bids, and the “Supplemental Specifications and Recurring Special Provisions” indicated on the Check Sheet included here in which apply to and govern the construction of Longmeadow Parkway, West Huntley Road, South Huntley Road, and Boyer Road in Kane County, and in case of conflict with any part, or parts, of said Specifications, the said Special Provisions shall take precedence and shall govern.

LOCATION OF PROJECT

This project is located in Illinois, northeast Kane County, Dundee Township, the Village of Carpentersville, and an unincorporated area. The Township is 42N, the Range is 8E, and the Sections are 6 (south half) and 7 (north half).

After new construction of Longmeadow Parkway, it will be under the jurisdiction of the Kane County Division of Transportation (KDOT). It will be designated as FAP 361 and County Highway XX. West and South Huntley Roads are also under the jurisdiction of KDOT. They are both designated as County Highway 30. Boyer Road is under the jurisdiction of Dundee Township.

The western roadway construction limit is approximately 0.35 mi west of the intersection of South Huntley Road / Boyer Road. The eastern roadway construction limit is approximately 230 feet west of Randall Road. Therefore, the east-west roadway improvement covers a distance of approximately 0.80 mi.

The southern and northern roadway construction limits are approximately 0.25 mi south and 0.15 mi north of the intersection of West Huntley Road / Longmeadow Parkway, respectively. Therefore, the north-south roadway improvement covers a distance of approximately 0.40 mi.

DESCRIPTION OF PROJECT

This project is the first of several projects along the new 6.2-mile east-west corridor known as Longmeadow Parkway. This project includes the construction of Longmeadow Parkway in a farm field between South Huntley Road / Boyer Road (to the west) and Randall Road (to the east). A 2-lane cross section with a paved median will be constructed. Responsibility for future expansion to the ultimate 4-lane cross section with a raised curb median will be put on adjacent developers. The three-legged intersection will be reconstructed and converted into a four-legged intersection with the addition of Longmeadow Parkway. However, the four-legged intersection will not become operational with this project because the connection to Randall Road will be made by others as part of a separate project. Other highlighted improvements include traffic signal modernization, beacon lighting, drainage improvements, and a 10' shared-use path along the south side of Longmeadow Parkway. This project will be stage constructed.

COORDINATION WITH ADJACENT AND/OR OVERLAPPING CONTRACTS

The Longmeadow Parkway Corridor Project encompasses various construction contracts which will be performed concurrently. Contracts may abut and/or overlap others; therefore, each contract includes work items that require close coordination between contractors regarding the sequence and timing for execution of work items.

General Coordination. The contractor is directed and shall comply with Section 105.08 of the Standard Specifications and as herein described.

DISTRICT 1 SPECIFICATIONS (BUREAU OF DESIGN)

MAINTENANCE OF ROADWAYS

Effective: September 30, 1985

Revised: November 1, 1996

Beginning on the date that work begins on this project, the Contractor shall assume responsibility for normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance shall include all repair work deemed necessary by the Engineer, but shall not include snow removal operations. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

If items of work have not been provided in the contract, or otherwise specified for payment, such items, including the accompanying traffic control and protection required by the Engineer, will be paid for in accordance with Article 109.04 of the Standard Specifications.

RESTRICTION ON WORKING DAYS AFTER A COMPLETION DATE

Effective: January 21, 2003

Revised: January 1, 2007

All temporary lane closures during the period governed by working days after a completion date will not be permitted during the hours of 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. Monday through Friday.

All lane closure signs shall not be erected any earlier than one-half (1/2) hour before the starting hours listed above. Also, these signs should be taken down within one-half (1/2) hour after the closure is removed.

Failure to Open Traffic Lanes to Traffic: Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified above, the Contractor shall be liable and shall pay to the Department the amount of \$250 per lane blocked, not as a penalty but as liquidated and ascertained damages, for each and every 15 minute interval or a portion thereof that a lane is blocked outside the allowable time limitations. The Department may deduct such damages from any monies due the Contractor. These damages shall apply during the period governed by working days after a completion date and any extensions of that contract time.

FAILURE TO COMPLETE THE WORK ON TIME

Effective: September 30, 1985

Revised: January 1, 2007

Should the Contractor fail to complete the work on or before the completion date as specified in the Special Provision for "Completion Date Plus Working Days", or within such extended time as may have been allowed by the Department, the Contractor shall be liable to the Department in the amount of \$_____, not as a penalty but as liquidated damages, for each calendar day or a portion thereof of overrun in the contract time or such extended time as may have been allowed.

In fixing the damages as set out herein, the desire is to establish a certain mode of calculation for the work since the Department's actual loss, in the event of delay, cannot be predetermined, would be difficult of ascertainment, and a matter of argument and unprofitable litigation. This

said mode is an equitable rule for measurement of the Department's actual loss and fairly takes into account the loss of use of the roadway if the project is delayed in completion. The Department shall not be required to provide any actual loss in order to recover these liquidated damages provided herein, as said damages are very difficult to ascertain. Furthermore, no provision of this clause shall be construed as a penalty, as such is not the intention of the parties.

A calendar day is every day shown on the calendar and starts at 12:00 midnight and ends at the following 12:00 midnight, twenty-four hours later.

COMPLETION DATE PLUS WORKING DAYS

Effective: September 30, 1985

Revised: January 1, 2007

Revise Article 108.05 (b) of the Standard Specifications as follows:

"When a completion date plus working days is specified, the Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 PM on, _____ except as specified herein.

The Contractor will be allowed to complete all clean-up work and punch list items within _____ working days after the completion date for opening the roadway to traffic. Under extenuating circumstances the Engineer may direct that certain items of work, not affecting the safe opening of the roadway to traffic, may be completed within the working days allowed for clean up work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

(*The completion date for _____ shall be _____.)"

Article 108.09 or the Special Provision for "Failure to Complete the Work on Time", if included in this contract, shall apply to both the completion date and the number of working days.

RECLAIMED ASPHALT PAVEMENT FOR NON-POROUS EMBANKMENT AND BACKFILL

Effective: April 1, 2001

Revised: January 1, 2007

Add the following sentence to Article 1004.05 (a) of the Standard Specifications:

"Reclaimed Asphalt Pavement (RAP) may be used as aggregate in Non-porous Granular Embankment and Backfill. The Rap material shall be reclaimed asphalt pavement material resulting from the cold milling or crushing of an existing hot-mix bituminous concrete pavement structure, including shoulders. RAP containing contaminants such as earth, brick, concrete, sheet asphalt, sand, or other materials identified by the Department will be unacceptable until the contaminants are thoroughly removed.

Add the following sentence to Article 1004.05 (c)(2) of the Standard Specifications:

"One hundred percent of the RAP when used shall pass the 3 inch (75 mm) sieve. The RAP shall be well graded from coarse to fine. RAP that is gap-graded or single-sized will not be accepted."

AGGREGATE SURFACE COURSE FOR TEMPORARY ACCESS

Effective: April 1, 2001

Revised: January 2, 2007

Revise Article 402.10 of the Standard Specifications to read:

"402.10 For Temporary Access. The contractor shall construct and maintain aggregate surface course for temporary access to private entrances, commercial entrances and roads according to Article 402.07 and as directed by the Engineer.

The aggregate surface course shall be constructed to the dimensions and grades specified below, except as modified by the plans or as directed by the Engineer.

- (a) Private Entrance. The minimum width shall be 12 ft (3.6 m). The minimum compacted thickness shall be 6 in. (150 mm). The maximum grade shall be eight percent, except as required to match the existing grade.
- (b) Commercial Entrance. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The maximum grade shall be six percent, except as required to match the existing grade.
- (c) Road. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The grade and elevation shall be the same as the removed pavement, except as required to meet the grade of any new pavement constructed.

Maintaining the temporary access shall include relocating and/or regrading the aggregate surface coarse for any operation that may disturb or remove the temporary access. The same type and gradation of material used to construct the temporary access shall be used to maintain it.

When use of the temporary access is discontinued, the aggregate shall be removed and utilized in the permanent construction or disposed of according to Article 202.03."

Add the following to Article 402.12 of the Standard Specifications:

"Aggregate surface course for temporary access will be measured for payment as each for every private entrance, commercial entrance or road constructed for the purpose of temporary access. If a residential drive, commercial entrance, or road is to be constructed under multiple stages, the aggregate needed to construct the second or subsequent stages will not be measured for payment but shall be included in the cost per each of the type specified."

Revise the second paragraph of Article 402.13 of the Standard Specifications to read:

“Aggregate surface course for temporary access will be paid for at the contract unit price per each for TEMPORARY ACCESS (PRIVATE ENTRANCE), TEMPORARY ACCESS (COMMERCIAL ENTRANCE) or TEMPORARY ACCESS (ROAD).

Partial payment of the each amount bid for temporary access, of the type specified, will be paid according to the following schedule:

- (a) Upon construction of the temporary access, sixty percent of the contract unit price per each, of the type constructed, will be paid.

Subject to the approval of the Engineer for the adequate maintenance and removal of the temporary access, the remaining forty percent of the pay item will be paid upon the permanent removal of the temporary access.”

TRAFFIC CONTROL AND PROTECTION (ARTERIALS)

Effective: February 1, 1996

Revised: March 1, 2011

Specific traffic control plan details and Special Provisions have been prepared for this contract. This work shall include all labor, materials, transportation, handling and incidental work necessary to furnish, install, maintain and remove all traffic control devices required as indicated in the plans and as approved by the Engineer.

When traffic is to be directed over a detour route, the Contractor shall furnish, erect, maintain and remove all applicable traffic control devices along the detour route according to the details shown in the plans.

Method of Measurement: All traffic control (except “Traffic Control and Protection (Expressways)” and temporary pavement markings) indicated on the traffic control plan details and specified in the Special Provisions will be measured for payment on a lump sum basis.

Basis of Payment: All traffic control and protection will be paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL).

Temporary pavement markings will be paid for separately unless shown on a Standard.

TRAFFIC CONTROL PLAN

Effective: September 30, 1985

Revised: January 1, 2007

Traffic Control shall be according to the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and Highway Standards contained in the plans, and the Special Provisions contained herein.

Special attention is called to Article 107.09 of the Standard Specifications and the following Highway Standards, Details, Quality Standard for Work Zone Traffic Control Devices, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

The Contractor shall contact the District One Bureau of Traffic at least 72 hours in advance of beginning work.

STANDARDS:

635011 Reflector Marker and Mounter Details
701101 Off-Road Operations, Multilane, 15' to 24" from Pavement Edge
701106 Off-Road Operations, Multilane, more than 15' from Pavement Edge
701201 Lane Closure, 2L, 2W, Day Only
701301 Lane Closure, 2L, 2W, Undivided
701311 Lane Closure, 2L, 2W, Moving Operations – Day Only
701421 Lane Closure, Multilane, Day Operations Only, for Speeds \geq 45 MPH and 55 MPH
701426 Lane Closure, Multilane, Intermittent or Moving Operation, for Speeds \geq 45 MPH
701427 Lane Closure, Multilane, Intermittent or Moving Operations for Speeds \leq 40 MPH
701501 Urban Lane Closure, 2L, 2W, Undivided
701601 Urban Lane Closure, Multilane, 1W or 2W with Nontraversable Median
701606 Urban Lane Closure, Multilane, 2W with Mountable Median
701701 Urban Lane Closure, Multilane Intersection
701801 Lane Closure, Multilane, 1W or 2W Crosswalk Sidewalk Closure
701901 Traffic Control Devices
704001 Temporary Concrete Barrier

DETAILS:

TC-10 Traffic Control & Protection for Side Roads, Intersections & Driveways
TC-13 District One Typical Pavement Markings
TC-14 Traffic Control and Protection at Turn Bays (to remain open to traffic)
TC-16 Pavement Marking Letters and Symbols for Traffic Staging
TC-18 Signing for Flagging Operations at Work Zone Openings
TC-22 Arterial Road Information Sign
TC-26 Driveway Entrance Signing

SPECIAL PROVISIONS:

Maintenance of Roadways
Restriction on Working Days After A Completion Date
Public Convenience and Safety (District 1)
Traffic Control Plan
Traffic Control and Protection (Arterials)
Permanent Pavement Marking
Aggregate Surface Course for Temporary Access
Temporary Pavement
Winterized Temporary Access
Temporary Information Signing

AGGREGATE SUBGRADE IMPROVEMENT (D-1)

Effective: February 22, 2012

Revised: March 3, 2015

Add the following Section to the Standard Specifications:

"SECTION 303. AGGREGATE SUBGRADE IMPROVEMENT

303.01 Description. This work shall consist of constructing an aggregate subgrade improvement.

303.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004
(b) Reclaimed Asphalt Pavement (RAP) (Notes 1, 2 and 3)	1031

Note 1. Crushed RAP, from either full depth or single lift removal, may be mechanically blended with aggregate gradation CS 01 but shall not exceed 40 percent by weight of the total product. The top size of the Coarse RAP shall be less than 4 in. (100 mm) and well graded.

Note 2. RAP having 100 percent passing the 1 1/2 in (37.5 mm) sieve and being well graded, may be used as capping aggregate in the top 3 in. (75 mm) when aggregate gradation CS 01 is used in lower lifts. When RAP is blended with any of the coarse aggregates, the blending shall be done with mechanically calibrated feeders. The final product shall not contain more than 40 percent by weight of RAP.

Note 3. The RAP used for aggregate subgrade improvement shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".

303.03 Equipment. The vibratory machine shall be according to Article 1101.01, or as approved by the Engineer. The calibration for the mechanical feeders shall have an accuracy of ± 2.0 percent of the actual quantity of material delivered.

303.04 Soil Preparation. The stability of the soil shall be according to the Department's Subgrade Stability Manual for the aggregate thickness specified.

303.05 Placing Aggregate. The maximum nominal lift thickness of aggregate gradation CS 01 shall be 24 in. (600 mm).

303.06 Capping Aggregate. The top surface of the aggregate subgrade shall consist of a minimum 3 in. (75 mm) of aggregate gradations CA 06 or CA 10. When Reclaimed Asphalt Pavement (RAP) is used, it shall be crushed and screened where 100 percent is passing the 1 1/2 in. (37.5 mm) sieve and being well graded. RAP that has been fractionated to size will not be permitted for use in capping. Capping aggregate will not be required when the aggregate subgrade improvement is used as a cubic yard pay item for undercut applications. When RAP is

blended with any of the coarse aggregates, the blending shall be done with mechanically calibrated feeders.

303.07 Compaction. All aggregate lifts shall be compacted to the satisfaction of the Engineer. If the moisture content of the material is such that compaction cannot be obtained, sufficient water shall be added so that satisfactory compaction can be obtained.

303.08 Finishing and Maintenance of Aggregate Subgrade Improvement. The aggregate subgrade improvement shall be finished to the lines, grades, and cross sections shown on the plans, or as directed by the Engineer. The aggregate subgrade improvement shall be maintained in a smooth and compacted condition.

303.09 Method of Measurement. This work will be measured for payment according to Article 311.08.

303.10 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) for AGGREGATE SUBGRADE IMPROVEMENT or at the contract unit price per square yard (square meter) for AGGREGATE SUBGRADE IMPROVEMENT, of the thickness specified.

Add the following to Section 1004 of the Standard Specifications:

“1004.06 Coarse Aggregate for Aggregate Subgrade Improvement. The aggregate shall be according to Article 1004.01 and the following.

- (a) Description. The coarse aggregate shall be crushed gravel, crushed stone, or crushed concrete. The top 12 inches of the aggregate subgrade improvement shall be 3 inches of capping material and 9 inches of crushed gravel, crushed stone or crushed concrete. In applications where greater than 36 inches of subgrade material is required, rounded gravel, meeting the CS01 gradation, may be used beginning at a depth of 12 inches below the bottom of pavement.
- (b) Quality. The coarse aggregate shall consist of sound durable particles reasonably free of deleterious materials. Non-mechanically blended RAP may be allowed up to a maximum of 5.0 percent.
- (c) Gradation.
 - (1) The coarse aggregate gradation for total subgrade thicknesses of 12 in. (300 mm) or greater shall be CS 01.

Grad No.	COARSE AGGREGATE SUBGRADE GRADATIONS				
	Sieve Size and Percent Passing				
	8"	6"	4"	2"	#4
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20

	COARSE AGGREGATE SUBGRADE GRADATIONS (Metric)				
Grad No.	Sieve Size and Percent Passing				
	200 mm	150 mm	100 mm	50 mm	4.75 mm
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20

(2) The 3 in. (75 mm) capping aggregate shall be gradation CA 6 or CA 10.

COARSE AGGREGATE FOR BACKFILL, TRENCH BACKFILL AND BEDDING (D-1)

Effective: November 1, 2011

Revised: November 1, 2013

This work shall be according to Section 1004.05 of the Standard Specifications except for the following:

Reclaimed Asphalt Pavement (RAP) maybe blended with gravel, crushed gravel, crushed stone crushed concrete, crushed slag, chats, crushed sand stone or wet bottom boiler slag. The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". The RAP shall be uniformly graded and shall pass the 1.0 in. (25 mm) screen. When RAP is blended with any of the coarse aggregate listed above, the blending shall be done mechanically with calibrated feeders. The feeders shall have an accuracy of ± 2.0 percent of the actual quantity of material delivered. The final blended product shall not contain more than 40 percent by weight RAP.

The coarse aggregate listed above shall meet CA 6 and CA 10 gradations prior to being blended with the processed and uniformly graded RAP. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

CALCIUM ALUMINATE CEMENT (BMPR)

Effective: July 1, 2013

Revise Article 1001.01(e) to read:

"(e) Calcium Aluminate Cement. Calcium aluminate cement shall be used according to Article 1020.04 or when approved by the Engineer. The cement shall meet the standard physical requirements for Type I cement according to AASHTO M 85, except the time of setting shall not apply. The chemical requirements shall be determined according to AASHTO T 105 and shall be as follows: minimum 37 percent aluminum oxide (Al_2O_3), maximum 42 percent calcium oxide (CaO), maximum 1 percent magnesium oxide (MgO), maximum 0.4 percent sulfur trioxide (SO_3), maximum 1.75 percent loss on ignition, and maximum 7 percent insoluble residue."

EMBANKMENT I

Effective: March 1, 2011

Revised: November 1, 2013

Description. This work shall be according to Section 205 of the Standard Specifications except for the following.

Material. All material shall be approved by the District Geotechnical Engineer. The proposed material must meet the following requirements.

- a) The laboratory Standard Dry Density shall be a minimum of 90 lb/cu ft (1450 kg/cu m) when determined according to AASHTO T 99 (Method C).
- b) The organic content shall be less than ten percent determined according to AASHTO T 194 (Wet Combustion).
- c) Soils which demonstrate the following properties shall be restricted to the interior of the embankment and shall be covered on both the sides and top of the embankment by a minimum of 3 ft (900 mm) of soil not considered detrimental in terms of erosion potential or excess volume change.
 - 1) A grain size distribution with less than 35 percent passing the number 75 um (#200) sieve.
 - 2) A plasticity index (PI) of less than 12.
 - 3) A liquid limit (LL) in excess of 50.
- d) Reclaimed asphalt shall not be used within the ground water table or as a fill if ground water is present.
- e) The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

CONSTRUCTION REQUIREMENTS

Samples. Embankment material shall be sampled, tested, and approved before use. The contractor shall identify embankment sources, and provide equipment as the Engineer requires, for the collection of samples from those sources. Samples will be furnished to the Geotechnical Engineer a minimum of three weeks prior to use in order that laboratory tests for approval and compaction can be performed. Embankment material placement cannot begin until tests are completed and approval given.

Placing Material. In addition to Article 202.03, broken concrete, reclaimed asphalt with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities shall be placed in 6 inches (150 mm) lifts and disked with the underlying lift until a uniform homogenous material is formed. This process also applies to the overlaying lifts. The disk must have a minimum blade diameter of 24 inches (600 mm).

When embankments are to be constructed on hillsides or existing slopes that are steeper than 3H:1V, steps shall be keyed into the existing slope by stepping and benching as shown in the plans or as directed by the engineer.

Compaction. Soils classification for moisture content control will be determined by the Soils Inspector using visual field examination techniques and the IDH Textural Classification Chart.

When tested for density in place each lift shall have a maximum moisture content as follows.

- a) A maximum of 110 percent of the optimum moisture for all forms of clay soils.
- b) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.

Stability. The requirement for embankment stability in Article 205.04 will be measured with a Dynamic Cone Penetrometer (DCP) according to the test method in the IDOT Geotechnical Manual. The penetration rate must be equal or less than 1.5 inches (38 mm) per blow.

Basis of Payment. This work will not be paid separately but will be considered as included in the various items of excavation.

HMA MIXTURE DESIGN REQUIREMENTS (D-1)

Effective: January 1, 2013
Revised: November 1, 2014

1) Design Composition and Volumetric Requirements

Revise the last sentence of the first paragraph of Article 312.05 of the Standard Specifications to read:

“The minimum compacted thickness of each lift shall be according to Article 406.06(d).”

Delete the minimum compacted lift thickness table in Article 312.05 of the Standard Specifications.

Revise the second paragraph of Article 355.02 of the Standard Specifications to read:

“The mixture composition used shall be IL-19.0.”

Revise Article 355.05(a) of the Standard Specifications to read:

“(a) The top lift thickness shall be 2 1/4 in. (60 mm) for mixture composition IL-19.0.”

Revise the Leveling Binder table and second paragraph of Article 406.05(c) of the Standard Specifications to read:

"Leveling Binder	
Nominal, Compacted, Leveling Binder Thickness, in. (mm)	Mixture Composition
≤ 1 1/4 (32)	IL-4.75, IL-9.5, or IL-9.5L
> 1 1/4 to 2 (32 to 50)	IL-9.5 or IL-9.5L

The density requirements of Article 406.07(c) shall apply for leveling binder, machine method, when the nominal compacted thickness is: 3/4 in. (19 mm) or greater for IL-4.75 mixtures; and 1 1/4 in. (32 mm) or greater for IL-9.5 and IL-9.5L mixtures."

Revise the table in Article 406.06(d) of the Standard Specifications to read:

"MINIMUM COMPACTED LIFT THICKNESS	
Mixture Composition	Thickness, in. (mm)
IL-4.75	3/4 (19)
SMA-9.5, IL-9.5, IL-9.5L	1 1/2 (38)
SMA-12.5	2 (50)
IL-19.0, IL-19.0L	2 1/4 (57)"

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

"Test strip mixture will be evaluated at the contract unit price according to the following."

Revise Article 406.14(a) of the Standard Specifications to read:

"(a) If the HMA placed during the initial test strip is determined to be acceptable the mixture will be paid for at the contract unit price."

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 according to the Department's test results, the mixture will not be paid for and shall be removed at the Contractor's expense. An additional test strip shall be constructed and the 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 according to the Department's test results, the mixture shall be removed. Removal will be paid according to Article 109.04.

This initial mixture will be paid for at the contract unit price. An additional test strip shall be constructed and the 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.”

Delete Article 406.14(d) of the Standard Specifications.

Delete Article 406.14(e) of the Standard Specifications.

Delete the last sentence of Article 407.06(c) of the Standard Specifications.

Revise Note 2. of Article 442.02 of the Standard Specifications to read:

“Note 2. The mixture composition of the HMA used shall be IL-19.0 binder, designed with the same Ndesign as that specified for the mainline pavement.”

Delete the second paragraph of Article 482.02 of the Standard Specifications.

Revise the first sentence of the sixth paragraph of Article 482.05 of the Standard Specifications to read:

“When the mainline HMA binder and surface course mixture option is used on resurfacing projects, shoulder resurfacing widths of 6 ft (1.8 m) or less may be placed simultaneously with the adjacent traffic lane for both the binder and surface courses.”

Revise the second sentence of the fourth paragraph of Article 601.04 of the Standard Specifications to read:

“The top 5 in. (125 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density.”

Revise the second sentence of the fifth paragraph of Article 601.04 of the Standard Specifications to read:

“The top 8 in. (200 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density.”

Revise Article 1003.03(c) of the Standard Specifications to read:

“(c) Gradation. The fine aggregate gradation for all HMA shall be FA 1, FA 2, FA 20, FA 21, or FA 22. The fine aggregate gradation for SMA shall be FA/FM 20.

For mixture IL-4.75 and surface mixtures with an Ndesign = 90, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag meeting the FA 20 gradation.

For mixture IL-19.0, Ndesign = 90 the fine aggregate fraction shall consist of at least 67 percent manufactured sand meeting FA 20 or FA 22 gradation. For mixture IL-19.0, Ndesign = 50 or 70 the fine aggregate fraction shall consist of at least 50 percent manufactured sand meeting FA 20 or FA 22 gradation. The manufactured sand shall be stone sand, slag sand, steel slag sand, or combinations thereof.

Gradation FA 1, FA 2, or FA 3 shall be used when required for prime coat aggregate application for HMA.”

Delete the last sentence of the first paragraph of Article 1004.03(b) of the Standard Specifications.

Revise the table in Article 1004.03(c) of the Standard Specifications to read:

“Use	Size/Application	Gradation No.
Class A-1, 2, & 3	3/8 in. (10 mm) Seal	CA 16
Class A-1	1/2 in. (13 mm) Seal	CA 15
Class A-2 & 3	Cover	CA 14
HMA High ESAL	IL-19.0 IL-9.5	CA 11 ^{1/} CA 16, CA 13 ^{3/}
HMA Low ESAL	IL-19.0L IL-9.5L Stabilized Subbase or Shoulders	CA 11 ^{1/} CA 16
SMA ^{2/}	1/2 in. (12.5mm) Binder & Surface IL 9.5 Surface	CA13 ^{3/} , CA14 or CA16 CA16, CA 13 ^{3/}

1/ CA 16 or CA 13 may be blended with the gradations listed.

2/ The coarse aggregates used shall be capable of being combined with stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation and mineral filler to meet the approved mix design and the mix requirements noted herein.

3/ CA 13 shall be 100 percent passing the 1/2 in. (12.5mm) sieve.

Revise Article 1004.03(e) of the Supplemental Specifications to read:

“(e) Absorption. For SMA the coarse aggregate shall also have water absorption ≤ 2.0 percent.”

Revise the nomenclature table in Article 1030.01 of the Standard Specifications to read:

“High ESAL	IL-19.0 binder; IL-9.5 surface; IL-4.75; SMA-12.5, SMA-9.5
Low ESAL	IL-19.0L binder; IL-9.5L surface; Stabilized Subbase (HMA) ^{1/} ; HMA Shoulders ^{2/}

1/ Uses 19.0L binder mix.

2/ Uses 19.0L for lower lifts and 9.5L for surface lift.”

Revise Article 1030.02 of the Standard Specifications and Supplemental Specifications to read:

“1030.02 Materials. Materials shall be according to the following.

Item.....	Article/Section
(a) Coarse Aggregate	1004.03
(b) Fine Aggregate	1003.03
(c) RAP Material	1031
(d) Mineral Filler	1011
(e) Hydrated Lime	1012.01
(f) Slaked Quicklime (Note 1)	
(g) Performance Graded Asphalt Binder (Note 2)	1032
(h) Fibers (Note 3)	
(i) Warm Mix Asphalt (WMA) Technologies (Note 4)	

Note 1. Slaked quicklime shall be according to ASTM C 5.

Note 2. The asphalt binder shall be an SBS PG 76-28 when the SMA is used on a full-depth asphalt pavement and SBS PG 76-22 when used as an overlay, except where modified herein. The asphalt binder shall be an Elvaloy or SBS PG 76-22 for IL-4.75, except where modified herein. The elastic recovery shall be a minimum of 80.

Note 3. A stabilizing additive such as cellulose or mineral fiber shall be added to the SMA mixture according to Illinois Modified AASHTO M 325. The stabilizing additive shall meet the Fiber Quality Requirements listed in Illinois Modified AASHTO M 325. Prior to approval and use of fibers, the Contractor shall submit a notarized certification by the producer of these materials stating they meet these requirements. Reclaimed Asphalt Shingles (RAS) may be used in Stone Matrix Asphalt (SMA) mixtures designed with an SBA polymer modifier as a fiber additive if the mix design with RAS included meets AASHTO T305 requirements. The RAS shall be from a certified source that produces either Type I or Type 2. Material shall meet requirements noted herein and the actual dosage rate will be determined by the Engineer.

Note 4. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, "Warm Mix Asphalt Technologies".

Revise Article 1030.04(a)(1) of the Standard Specifications and the Supplemental Specifications to read:

“(1) High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

High ESAL, MIXTURE COMPOSITION (% PASSING) ^{1/}										
Sieve Size	IL-19.0 mm		SMA ^{4/} IL-12.5 mm		SMA ^{4/} IL-9.5 mm		IL-9.5 mm		IL-4.75 mm	
	min	max	min	max	min	max	min	max	min	max
1 1/2 in. (37.5 mm)										
1 in. (25 mm)		100								
3/4 in. (19 mm)	90	100		100						
1/2 in. (12.5 mm)	75	89	80	100		100		100		100
3/8 in. (9.5 mm)				65	90	100	90	100		100
#4 (4.75 mm)	40	60	20	30	36	50	34	69	90	100
#8 (2.36 mm)	20	42	16	24 ^{5/}	16	32 ^{5/}	34 ^{6/}	52 ^{2/}	70	90
#16 (1.18 mm)	15	30					10	32	50	65
#30 (600 μm)			12	16	12	18				
#50 (300 μm)	6	15					4	15	15	30
#100 (150 μm)	4	9					3	10	10	18
#200 (75 μm)	3	6	7.0	9.0 ^{3/}	7.5	9.5 ^{3/}	4	6	7	9 ^{3/}
Ratio Dust/Asphalt Binder		1.0		1.5		1.5		1.0		1.0

- 1/ Based on percent of total aggregate weight.
- 2/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with N_{design} = 90.
- 3/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer.
- 4/ The maximum percent passing the #635 (20 μm) sieve shall be ≤ 3 percent.
- 5/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted above the percentage stated on the table.

- 6/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted below 34 percent.

Delete Article 1030.04(a)(3) of the Standard Specifications.

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 and for IL-4.75 it 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.

VOLUMETRIC REQUIREMENTS High ESAL				
	Voids in the Mineral Aggregate (VMA), % minimum			Voids Filled with Asphalt Binder (VFA), %
N _{design}	IL-19.0	IL-9.5	IL-4.75 ^{1/}	
50	13.5	15.0	18.5	65 – 78 ^{2/}
70				65 - 75
90				

1/ Maximum Draindown for IL-4.75 shall be 0.3 percent

2/ VFA for IL-4.75 shall be 72-85 percent”

Revise the table in Article 1030.04(b)(2) of the Standard Specifications to read:

“VOLUMETRIC REQUIREMENTS Low ESAL				
Mixture Composition	Design Compactive Effort	Design Air Voids Target %	VMA (Voids in the Mineral Aggregate), % min.	VFA (Voids Filled with Asphalt Binder), %
IL-9.5L	N _{DES} =30	4.0	15.0	65-78
IL-19.0L	N _{DES} =30	4.0	13.5	N/A”

Replace Article 1030.04(b)(3) of the Standard Specifications with the following:

“(3) 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	17.0 ^{2/}	75 - 83
		16.0 ^{3/}	

1/ Maximum draindown shall be 0.3 percent. The draindown shall be determined at the JMF asphalt binder content at the mixing temperature plus 30 °F.

2/ Applies when specific gravity of coarse aggregate is ≥ 2.760 .

3/ Applies when specific gravity of coarse aggregate is < 2.760 .

4/ Blending of different types of aggregate will not be permitted. For surface course, 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.

Delete Article 1030.04(b)(4) of the Standard Specifications.

Delete Article 1030.04(b)(5) from the Supplemental Specifications.

Delete last sentence of the second paragraph of Article 1102.01(a) (13) a.

Add to second paragraph in Article 1102.01 (a) (13) a.:

“As an option, collected bag-house dust may be used in lieu of manufactured mineral filler, provided; 1) there is enough available for the production of the SMA mix for the entire project and 2) a mix design was prepared with collected bag-house dust.”

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:

"Parameter"	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Test Method See Manual of Test Procedures for Materials
Aggregate Gradation % passing sieves: 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 μm) No. 200 (75 μm)	1 washed ignition oven test on the mix per half day of production Note 3.	Illinois Procedure
Asphalt Binder Content by Ignition Oven Note 1.	1 per half day of production	Illinois-Modified AASHTO T 308
VMA Note 2.	Day's production ≥ 1200 tons: 1 per half day of production Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	Illinois-Modified AASHTO R 35
Air Voids Bulk Specific Gravity of Gyratory Sample Note 4.	Day's production ≥ 1200 tons: 1 per half day of production Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	Illinois-Modified AASHTO T 312
Maximum Specific Gravity of Mixture	Day's production ≥ 1200 tons: 1 per half day of production	Illinois-Modified AASHTO T 209

"Parameter	Frequency of Tests	Test Method See Manual of Test Procedures for Materials
	High ESAL Mixture Low ESAL Mixture	
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	

Note 1. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.

Note 2. The G_{sb} used in the voids in the mineral aggregate (VMA) calculation shall be the same average G_{sb} value listed in the mix design.

Note 3. The Engineer reserves the right to require additional hot bin gradations for batch plants if control problems are evident.

Note 4. The WMA compaction temperature for mixture volumetric testing shall be 270 ± 5 °F (132 ± 3 °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be 270 ± 5 °F (132 ± 3 °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature, it shall be reheated to standard HMA compaction temperatures."

Revise the table in Article 1030.05(d)(2)b. of the Standard Specifications to read:

"Parameter	High ESAL Mixture Low ESAL Mixture
Ratio Dust/Asphalt Binder	0.6 to 1.2
Moisture	0.3 %"

Revise the Article 1030.05(d)(4) of the Supplemental Specifications to read:

"(4) Control Limits. Target values shall be determined by applying adjustment factors to the AJMF where applicable. The target values shall be plotted on the control charts within the following control limits.

"CONTROL LIMITS						
Parameter	High ESAL		SMA		IL-4.75	
	Individual Test	Moving Avg. of 4	Test	Moving Avg. of 4	Individual Test	Moving Avg. of 4
% Passing: ^{1/}						
1/2 in. (12.5 mm)	± 6 %	± 4 %	± 6 %	± 4 %		
3/8 in. (9.5mm)			± 4 %	± 3 %		
No. 4 (4.75 mm)	± 5 %	± 4 %	± 5 %	± 4 %		
No. 8 (2.36 mm)	± 5 %	± 3 %	± 4 %	± 2 %		
No. 16 (1.18 mm)			± 4 %	± 2 %	± 4 %	± 3 %
No. 30 (600 µm)	± 4 %	± 2.5 %	± 4 %	± 2.5 %		
Total Dust Content No. 200 (75 µm)	± 1.5 %	± 1.0 %			± 1.5 %	± 1.0 %
Asphalt Binder Content	± 0.3 %	± 0.2 %	± 0.2 %	± 0.1 %	± 0.3 %	± 0.2 %
Voids	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %
VMA	-0.7 % ^{2/}	-0.5 % ^{2/}	-0.7 % ^{2/}	-0.5 % ^{2/}	-0.7 % ^{2/}	-0.5 % ^{2/}

1/ Based on washed ignition oven

2/ Allowable limit below minimum design VMA requirement

DENSITY CONTROL LIMITS		
Mixture Composition	Parameter	Individual Test
IL-4.75	N _{design} = 50	93.0 - 97.4 % ^{1/}
IL-9.5	N _{design} = 90	92.0 - 96.0 %
IL-9.5, IL-9.5L	N _{design} < 90	92.5 - 97.4 %
IL-19.0	N _{design} = 90	93.0 - 96.0 %
IL-19.0, IL-19.0L	N _{design} < 90	93.0 ^{2/} - 97.4 %
SMA	N _{design} = 80	93.5 - 97.4 %

1/ Density shall be determined by cores or by correlated, approved thin lift nuclear gauge.

2/ 92.0 % when placed as first lift on an unimproved subgrade."

Revise the table in Article 1030.05(d)(5) of the Supplemental Specifications to read:

“CONTROL CHART REQUIREMENTS	High ESAL, Low ESAL, SMA & IL-4.75
Gradation ^{1/3/}	% Passing Sieves: 1/2 in. (12.5 mm) ^{2/} No. 4 (4.75 mm) No. 8 (2.36 mm) No. 30 (600 µm)
Total Dust Content ^{1/}	No. 200 (75 µm)
	Asphalt Binder Content
	Bulk Specific Gravity
	Maximum Specific Gravity of Mixture
	Voids
	Density
	VMA

1/ Based on washed ignition oven.

2/ Does not apply to IL-4.75.

3/ SMA also requires the 3/8 in. (9.5 mm) sieve.”

Delete Article 1030.05(d)(6)a.1.(b.) of the Standard Specifications.

Delete Article 1030.06(b) of the Standard Specifications.

Delete Article 1102.01(e) of the Standard Specifications.

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.

Mix Design Testing. Add the following below the referenced AASHTO standards in Article 1030.04 of the Standard Specifications:

AASHTO T 324 Hamburg Wheel Test

AASHTO T 283 Tensile Strength Test

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 and shall meet the following requirements:

(1)Hamburg Wheel Test criteria. The maximum allowable rut depth shall be 0.5 in. (12.5 mm). The minimum number of wheel passes at the 0.5 in. (12.5 mm) rut depth criteria shall be based on the high temperature binder grade of the mix as specified in the mix requirements table of the plans.

Illinois Modified AASHTO T 324 Requirements ^{1/}

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

1/ When produced at temperatures of 275 ± 5 °F (135 ± 3 °C) or less, loose Warm Mix Asphalt shall be oven aged at 270 ± 5 °F (132 ± 3 °C) for two hours prior to gyratory compaction of Hamburg Wheel specimens.

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 60 psi (415 kPa) for non-polymer modified performance graded (PG) asphalt binder and 80 psi (550 kPa) for polymer modified PG asphalt binder. The maximum allowable unconditioned tensile strength shall be 200 psi (1380 kPa).”

Production Testing. Revise Article 1030.06(a) of the Standard Specifications to read:

“(a) High ESAL, IL-4.75, WMA, and SMA Mixtures. For each contract, a 300 ton (275 metric tons) test strip, except for SMA mixtures 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 T324 (approximately 60 lb (27 kg) total).

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 is being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

The Department may conduct additional Hamburg Wheel tests on production material as determined by the Engineer.”

Revise the title of Article 1030.06(b) of the Standard Specifications to read:

“(b) Low ESAL 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 1500 tons (1350 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.

Method of Measurement:

Add the following after the fourth paragraph of Article 406.13 (b):

“The plan quantities of SMA mixtures shall be adjusted using the actual approved binder and surface Mix Design’s G_{mb} .”

Basis of Payment.

Replace the seventh paragraph of Article 406.14 of the Standard Specifications with the following:

“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.”

HOT MIX ASPHALT QUALITY CONTROL FOR PERFORMANCE (BMPPR)

Effective: January 1, 2012
Revised: December 1, 2014

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.

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), 2 nd Paragraph	(Temperature requirements)
	406.06 (e), 3 rd Paragraph	(Pavers speed requirements)
	406.07(b)	(Rolling)
	406.07(c)	(Density)
	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 subplot 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 subplot.
- (e) Mixture Sublot. A mixture subplot for field VMA, voids, and Dust/AC will be a maximum of 1000 tons (910 metric tons).
 - If the remaining quantity is greater than 200 but less than 1000 tons, a subplot 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 subplot.

- (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 random 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 a core is located within one foot of an unconfined edge, 2.0 percent density will be added to the density of that 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 and QCP 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 subplot 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 % subplot 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
Field VMA	1.0 %

Acceptance by the Engineer: All of the Department's tests shall be within the acceptable limits listed below:

Parameter		Acceptable Limits
Field VMA		-1.0 – +3.0% ^{1/}
Voids		2.0 – 6.0%
Density:	IL-9.5, IL-12.5, IL-19.0, IL-25.0, IL-4.75, IL-9.5FG ^{3/}	90.0 – 98.0%
	SMA	92.0 – 98.0%
Dust / AC Ratio		0.4 – 1.6 ^{2/}

1/ Based on minimum required VMA from mix design

2/ Does not apply to SMA.

3/ 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. If the tested subplot is outside of this range, the Department will test the remaining sublots for Dust / AC pay adjustment.

Dust / AC Pay Adjustment Table^{1/}

Range	Deduct / subplot
$0.6 \leq X \leq 1.2$	\$0
$0.5 \leq X < 0.6$ or $1.2 < X \leq 1.4$	\$1000
$0.4 \leq X < 0.5$ or $1.4 < X \leq 1.6$	\$3000
$X < 0.4$ or $X > 1.6$	Shall be removed and replaced

1/ Does not apply to SMA.

PUBLIC CONVENIENCE AND SAFETY (DIST 1)

Effective: May 1, 2012

Revised: July 15, 2012

Add the following to the end of the fourth paragraph of Article 107.09:

"If the holiday is on a Saturday or Sunday, and is legally observed on a Friday or Monday, the length of Holiday Period for Monday or Friday shall apply."

Add the following sentence after the Holiday Period table in the fourth paragraph of Article 107.09:

"The Length of Holiday Period for Thanksgiving shall be from 5:00 AM the Wednesday prior to 11:59 PM the Sunday After"

Delete the fifth paragraph of Article 107.09 of the Standard Specifications:

"On weekends, excluding holidays, roadways with Average Daily Traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 P.M. Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical."

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1)

Effective: November 1, 2012

Revise: April 2, 2015

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 airfields 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 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).
- (2) Incoming Material. For testing as incoming material, washed extraction samples shall be run at a minimum frequency of one sample per 2000 tons (1800 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 1000 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 1000 tons (900 metric tons). Once a ≤ 1000 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)	$\pm 6 \%$

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 is used alone or FRAP is used in conjunction with RAS, 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 percent.

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 2.300 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).
 - f. RAS and FRAP weight to the nearest pound (kilogram).
 - g. Virgin asphalt binder weight to the nearest pound (kilogram).
 - h. 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"

- (c) 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."

STATUS OF UTILITIES TO BE ADJUSTED

Effective: January 30, 1987

Revised: January 24, 2013

Utilities companies involved in this project have provided the following estimated durations:

Name of Utility	Type(s)	Location(s)	Estimated Duration(s) of Time for the Completion of Relocation or Adjustments
Algonquin, Village of Robert Mitchard, II 110 Meyer Dr. Algonquin, IL 60102 (847) 658-2754 Ref: N/A	Water main (12" dia.)	1. East side of Randall Rd. 2. Crossing of EX. Longmeadow Pkwy at Stonegate Rd.	1. No conflict anticipated for this project 2. No conflict anticipated for this project
AT&T Thomas J. Follin AT&T Civic Eng. Project 1000 Commerce Dr. Oak Brook, IL 60523 (630) 573-6477 Ref: AT&T # DU4446	Cable (B = buried) (A = aerial)	1. South side of W. Huntley Rd. (B and A) 2. West side of S. Huntley Rd. (A) 3. East side of S. Huntley Rd. and Boyer Rd. (B) 4. West side of Randall Rd. (A)	1. Potential conflict, more coordination required 2. No conflict anticipated 3. Potential conflict, more coordination required 4. Potential conflict, more coordination required
Carpentersville, Village of Kevin R. Gray 1200 LW Besinger Dr. Carpentersville, IL 60110 (224) 293-1613 Ref: N/A	Water main (Unknown dia.)	1. West side of S. Huntley Rd. from Deerpath Ln. to the south	1. No conflict anticipated

Name of Utility	Type(s)	Location(s)	Estimated Duration(s) of Time for the Completion of Relocation or Adjustments
Comcast Ted Wyman 688 Industrial Dr. Elmhurst, IL 60126 (630) 600-6349 Ref: N/A	Cable (B = buried) (A = aerial)	1. West side of S. Huntley Rd. (B and A) 2. West side of Boyer Rd. (A)	1. No conflict anticipated 2. Potential conflict, more coordination required
ComEd Noraima Fernandez 123 Energy Ave. Rockford, IL 60109 (815) 490-2335 Ref: H15678CRY	Electric (B = buried) (A = aerial)	1. South side of W. Huntley Rd. (A) 2. West side of S. Huntley Rd. (A) 3. West side of Boyer Rd. (A) 4. West side of Randall Rd. (A)	1. Potential conflict, more coordination required 2. No conflict anticipated 3. Potential conflict, more coordination required 4. Potential conflict, more coordination required
KDOT Michael Zakosek 41W011 Burlington Rd. St. Charles, IL 60175 (630) 584-1170 Ref: N/A	Fiber optic	1. North side of W. Huntley Rd. 2. East side of S. Huntley Rd.	1. Potential conflict, more coordination required 2. Potential conflict, more coordination required
Nicor Gas Constance Lane 1844 Ferry Rd. Naperville, IL 60563 (630) 388-3830 Ref: Engineering #N9359	Gas (6" W)	1. East side of Randall Rd. south of project 2. East side of Stonegate Rd.	1. No conflict anticipated for this project 2. No conflict anticipated for this project

The above represents the best information available to the Department and is included for the convenience of the bidder. The applicable portions of Articles 105.07 and 107.31 of the Standard Specifications shall apply.

In accordance with 605 ILCS 5/9-113 of the Illinois Compiled Statutes, utility companies have 90 days to complete the relocation of their facilities after receipt of written notice from the Department. The 90-day written notice will be sent to the utility companies after the following occurs:

- 1) Proposed right of way is clear for contract award.
- 2) Final plans have been sent to and received by the utility company.

- 3) Utility permit is received by the Department and the Department is ready to issue said permit.
- 4) If a permit has not been submitted, a 15 day letter is sent to the utility company notifying them they have 15 days to provide their permit application. After allowing 15 days for submission of the permit the 90 day notice is sent to the utility company.
- 5) Any time within the 90 day relocation period the utility company may request a waiver for additional time to complete their relocation. The Department has 10 days to review and respond to a waiver request.

TEMPORARY PAVEMENT

Effective: March 1, 2003

Revised: April 10, 2008

Description. This work shall consist of constructing a temporary pavement at the locations shown on the plans or as directed by the engineer.

The contractor shall use either Portland cement concrete according to Sections 353 and 354 of the Standard Specifications or HMA according to Sections 355, 356, 406 of the Standard Specifications, and other applicable HMA special provisions as contained herein. The HMA mixtures to be used shall be specified in the plans. The thickness of the Temporary Pavement shall be as described in the plans. The contractor shall have the option of constructing either material type if both Portland cement concrete and HMA are shown in the plans.

Articles 355.08 and 406.11 of the Standard Specifications shall not apply.

The removal of the Temporary Pavement, if required, shall conform to Section 440 of the Standard Specification.

Method of Measurement. Temporary pavement will be measured in place and the area computed in square yards (square meters).

Basis of Payment. This work will be paid for at the contract unit price per square yard (square meter) for TEMPORARY PAVEMENT and TEMPORARY PAVEMENT (INTERSTATE).

Removal of temporary pavement will be paid for at the contract unit price per square yard (square meter) for PAVEMENT REMOVAL.

WINTERIZED TEMPORARY ACCESS

Effective: January 1, 2012

Revised: March 5, 2012

Description. This work shall consist of constructing, maintaining and removing winterized temporary access for private and commercial entrances and side roads designed for use throughout the winter months.

Materials. Materials shall be according to the following.

ITEM

ARTICLE/SECTION

Hot-Mix Asphalt

1030

Construction Requirements

For projects lasting longer than one construction season, the contractor shall construct and maintain temporary access composed of an HMA surface course over an existing aggregate temporary access. The contractor shall install the winterized temporary access prior to winter shut down at the direction of the engineer. The top 2" of the existing aggregate temporary access should be removed and replaced with 2" of Hot-Mix Asphalt. Compensation will be given for the winterized temporary access at the time of the installation of the Hot-Mix Asphalt surface course.

HMA Surface Course. The Hot-Mix Asphalt surface course shall be 2 in. thick when compacted. HMA Surface Course, Mix "D", N50 shall be used except as modified by the plans or as directed by the Engineer. This work shall be constructed in accordance with the applicable portions of Section 406 of the Standard Specifications and as directed by the Engineer. The material shall conform to the applicable portions of Section 1030 of the Standard Specifications.

The winterized temporary access shall be constructed to the dimensions and grades of the existing aggregate temporary access.

Maintaining the winterized temporary access shall include repairing the HMA surface course after any operation that may disturb or remove the winterized temporary access to the satisfaction of the Engineer.

When use of the winterized temporary access is discontinued, the winterized temporary access shall be removed according to Article 440.03 of the Standard Specifications. The material shall be disposed of according to Article 202.03 of the Standard Specifications or may be utilized in the permanent construction with the approval of the Engineer.

Method of Measurement. Winterized temporary access for private and commercial entrances and roads will be measured for payment at the contract unit price per square yard for every private entrance, commercial entrance or road constructed for the purpose of winterized temporary access.

Basis of Payment. Winterized temporary access for private and commercial entrances and roads will be paid for at the contract unit price per square yard for TEMPORARY ACCESS (WINTERIZE) as specified in the plans.

Partial payment of the square yard amount bid for each winterized temporary access will be paid according to the following schedule:

(a) Upon construction of the winterized temporary access, sixty percent of the contract unit price per square yard will be paid.

(b) Subject to the approval of the Engineer for the adequate maintenance and removal of the winterized temporary access, the remaining forty percent of the pay item will be paid upon the permanent removal of the temporary access.

DISTRICT 1 SPECIFICATIONS (BUREAU OF TRAFFIC)

TEMPORARY INFORMATION SIGNING

Effective: November 13, 1996

Revised: January 2, 2007

Description.

This work shall consist of furnishing, installing, maintaining, relocating for various states of construction and eventually removing temporary informational signs. Included in this item may be ground mount signs, skid mount signs, truss mount signs, bridge mount signs, and overlay sign panels which cover portions of existing signs.

Materials.

Materials shall be according to the following Articles of Section 1000 - Materials:

	<u>Item</u>	<u>Article/Section</u>
a.)	Sign Base (Notes 1 & 2)	1090
b.)	Sign Face (Note 3)	1091
c.)	Sign Legends	1092
d.)	Sign Supports	1093
e.)	Overlay Panels (Note 4)	1090.02

Note 1. The Contractor may use 5/8 inch (16 mm) instead of 3/4 inch (19 mm) thick plywood.

Note 2. Type A sheeting can be used on the plywood base.

Note 3. All sign faces shall be Type A except all orange signs shall meet the requirements of Article 1106.01.

Note 4. The overlay panels shall be 0.08 inch (2 mm) thick.

GENERAL CONSTRUCTION REQUIREMENTS

Installation.

The sign sizes and legend sizes shall be verified by the Contractor prior to fabrication.

Signs which are placed along the roadway and/or within the construction zone shall be installed according to the requirements of Article 701.14 and Article 720.04. The signs shall be 7 ft (2.1 m) above the near edge of the pavement and shall be a minimum of 2 ft (600 mm) beyond the edge of the paved shoulder. A minimum of two (2) posts shall be used.

The attachment of temporary signs to existing sign structures or sign panels shall be approved by the Engineer. Any damage to the existing signs due to the Contractor's operations shall be repaired or signs replaced, as determined by the Engineer, at the Contractor's expense.

Signs which are placed on overhead bridge structures shall be fastened to the handrail with stainless steel bands. These signs shall rest on the concrete parapet where possible. The Contractor shall furnish mounting details for approval by the Engineer.

Method of Measurement.

This work shall be measured for payment in square feet (square meters) edge to edge (horizontally and vertically).

All hardware, posts or skids, supports, bases for ground mounted signs, connections, which are required for mounting these signs will be included as part of this pay item.

Basis Of Payment.

This work shall be paid for at the contract unit price per square foot (square meter) for TEMPORARY INFORMATION SIGNING.

KEEPING ARTERIAL ROADWAYS OPEN TO TRAFFIC (LANE CLOSURES ONLY)

Effective: January 22, 2003

Revised: February 20, 2015

The Contractor shall provide the necessary traffic control devices to warn the public and to delineate the work zone as required in these Special Provisions, the Standard Specifications, the State Standards, and the District Details.

Arterial lane closures shall be in accordance with the Standard Specifications, Highway Standards, District Details, and the direction of the Engineer. The Contractor shall request and gain approval from the Illinois Department of Transportation's Arterial Traffic Control Supervisor at 847-705-4470 seventy-two (72) hours in advance of all long-term (24 hrs. or longer) lane closures. This advance notification is calculated based on a Monday through Friday workweek and shall not include weekends or state holidays.

Arterial lane closures not shown in the staging plans will not be permitted during **peak traffic volume hours**.

Peak traffic volume hours are defined as weekdays (Monday through Friday) from
Choose an item.

Private vehicles shall not be parked in the work zone. Contractor's equipment and/or vehicles shall not be parked on the shoulders or in the median during non-working hours. The parking of equipment and/or vehicles on State right-of-way will only be permitted at locations approved by the Engineer in accordance with Articles 701.08 and 701.11 of the Standard Specifications.

Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified above, the Contractor shall be liable to the Department for the amount of:

One lane or ramp blocked = \$ (Designer to calculate based on Traffic Volumes, but use \$1,000 minimum.)

Two lanes blocked = \$ (If applicable, designer to calculate based on Traffic Volumes, but use \$2,500 minimum.)

Not as a penalty but as liquidated and ascertained damages for each and every 15 minute interval or a portion thereof that a lane is blocked outside the allowable time limitations. Such damages may be deducted by the Department from any monies due the Contractor. These damages shall apply during the contract time and during any extensions of the contract time.

SPEED DISPLAY TRAILER (D1)

Effective: April 1, 2015

Add the following to Article 701.15(l) of the Standard Specifications:

- “(l) Speed Display Trailer. A speed display trailer shall be utilized on freeways and expressways as part of Highway Standard 701400. The trailer shall be placed on the right hand side of the roadway adjacent to, or within 100 ft. (30 m) beyond, the first work zone speed limit sign.

Whenever the speed display trailer is not in use, it shall be considered non-operating equipment and shall be stored according to Article 701.11.”

Add the following to Article 701.20 of the Standard Specifications:

- “(k) Revised. “Speed Display Trailer will NOT be paid for by separate pay item, but it costs shall be included in the contract unit price of the various traffic control pay items.

Add the following to Article 1106.02 of the Standard Specifications:

- “(o) Speed Display Trailer. The speed display trailer shall consist of a LED speed indicator display with self-contained, one-direction radar mounted on an orange see-through trailer. The height of the display and radar shall be such that it will function and be visible when located behind concrete barrier.

The speed measurement shall be by radar and provide a minimum detection distance of 1000 ft (300 m). The radar shall have an accuracy of ± 1 mile per hour.

The speed indicator display shall face approaching traffic and shall have a sign legend of “YOUR SPEED” immediately above or below the speed display. The digital speed display shall show two digits (00 to 99) in mph. The color of the changeable message legend shall be a yellow legend on a black background. The minimum height of the numerals shall be 18 in. (450 mm), and the nominal legibility distance shall be at least 750 ft (250 m).

The speed indicator display shall be equipped with a violation alert that flashes the displayed detected speed when the posted limit is exceeded. The speed indicator shall have a maximum speed cutoff. The display shall include automatic dimming for nighttime operation.

The speed indicator measurement and display functions shall be equipped with the power supply capable of providing 24 hours of uninterrupted service.”

MAST ARM SIGN PANELS

Effective: May 22, 2002

Revised: January 1, 2015

Add the following to Article 720.02 of the Standard Specifications:

Signs attached to poles or posts (such as mast arm signs) shall have mounting brackets and sign channels which are equal to and completely interchangeable with those used by the District Sign Shops.

TRAFFIC SIGNAL GENERAL REQUIREMENTS

Effective: May 22, 2002

Revised: January 1, 2015

These Traffic Signal Special Provisions and the "District One Standard Traffic Signal Design Details" supplement the requirements of the State of Illinois "Standard Specifications for Road and Bridge Construction." The intent of these Special Provisions is to prescribe the materials and construction methods commonly used for traffic signal installations.

- All material furnished shall be new unless otherwise noted herein.
- Traffic signal construction and maintenance work shall be performed by personnel holding current IMSA Traffic Signal Technician Level II certification. A copy of the certification shall be immediately available upon request of the Engineer.
- The work to be done under this contract consists of furnishing, installing and maintaining all traffic signal work and items as specified in the Plans and as specified herein in a manner acceptable and approved by the Engineer.

Submittals.

Revise Article 801.05 of the Standard Specifications to read:

All material approval requests shall be submitted electronically through the District's SharePoint System unless directed otherwise by the Engineer. Electronic material submittals shall follow the District's Traffic Operations Construction Submittals guidelines. General requirements include:

1. All material approval requests shall be made prior to or no later than the date of the preconstruction meeting. A list of major traffic signal items can be found in Article 801.05. Material or equipment which is similar or identical shall be the product of the same manufacturer, unless necessary for system continuity. Traffic signal materials and equipment shall bear the U.L. label whenever such labeling is available.
2. Product data and shop drawings shall be assembled by pay item. Only the top sheet of each pay item submittal will be stamped by the Department with the review status, except shop drawings for mast arm pole assemblies and the like will be stamped with the review status on each sheet.
3. When hard copy submittals are necessary, four complete copies of the manufacturer's descriptive literatures and technical data for the traffic signal materials shall be submitted. For hard copy or electronic submittals, the descriptive literature and technical data shall be adequate for determining whether the materials meet the requirements of the plans and specifications. If the literature contains more than one item, the Contractor shall indicate which item or items will be furnished.
4. When hard copy submittals are necessary for structural elements, four complete copies of the shop drawings for the mast arm assemblies and poles, and the combination mast arm assemblies and poles showing, in detail, the fabrication thereof and the certified mill

- analyses of the materials used in the fabrication, anchor rods, and reinforcing materials shall be submitted.
5. Partial or incomplete submittals will be returned without review.
 6. Certain non-standard mast arm poles and special structural elements will require additional review from IDOT's Central Office. Examples include ornamental/decorative, non-standard length mast arm pole assemblies and monotube structures. The Contractor shall account for the additional review time in his schedule.
 7. The contract number or permit number, project location/limits and corresponding pay code number must be on each sheet of correspondence, catalog cuts and mast arm poles and assemblies drawings.
 8. Where certifications and/or warranties are specified, the information submitted for approval shall include certifications and warranties. Certifications involving inspections, and/or tests of material shall be complete with all test data, dates, and times.
 9. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as 'Approved', 'Approved-As-Noted', 'Disapproved', or 'Incomplete'. Since the Engineer's review is for conformance with the design concept only, it is the Contractor's responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Department's approval thereof. The Contractor must still be in full compliance with contract and specification requirements.
 10. All submitted items reviewed and marked 'APPROVED AS NOTED', 'DISAPPROVED', or 'INCOMPLETE' are to be resubmitted in their entirety, unless otherwise indicated within the submittal comments, with a disposition of previous comments to verify contract compliance at no additional cost to the contract.
 11. Exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

Marking Proposed Locations.

Revise "Marking Proposed Locations for Highway Lighting System" of Article 801.09 to read "Marking Proposed Locations for Highway Lighting System and Traffic Signals."

Inspection of Electrical Systems.

Add the following to Article 801.10 of the Standard Specifications:

- (c) All cabinets including temporary traffic signal cabinets shall be assembled by an approved equipment supplier in District One. The Department reserves the right to request any controller and cabinet to be tested at the equipment supplier facilities prior to field installation, at no extra cost to this contract.

Maintenance and Responsibility.

Revise Article 801.11 of the Standard Specifications to read:

- a. Existing traffic signal installations and/or any electrical facilities at all or various locations may be altered or reconstructed totally or partially as part of the work on this Contract. The Contractor is hereby advised that all traffic control equipment, presently installed at these locations, may be the property of the State of Illinois, Department of Transportation, Division of Highways, County, Private Developer, Municipality or Transit Agency in which they are located. Once the Contractor has begun any work on any portion of the project, all traffic signals within the limits of this contract or those which have the item "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," shall become the full responsibility of the Contractor. The Contractor shall supply the Engineer, Area Traffic Signal Maintenance and Operations Engineer, IDOT ComCenter and the Department's Electrical Maintenance Contractor with two 24-hour emergency contact names and telephone numbers.
- b. Automatic Traffic Enforcement equipment such as red lighting running and railroad crossing camera systems are owned and operated by others and the Contractor shall not be responsible for maintaining this equipment.
- c. Regional transit, County and other agencies may also have equipment connected to existing traffic signal or peripheral equipment such as PTZ cameras, switches, transit signal priority (TSP and BRT) servers and other devices that shall be included with traffic signal maintenance at no additional cost to the contract.
- d. When the project has a pay item for "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," the Contractor must notify both the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, of their intent to begin any physical construction work on the Contract or any portion thereof. This notification must be made a minimum of seven (7) working days prior to the start of construction to allow sufficient time for inspection of the existing traffic signal installation(s) and transfer of maintenance to the Contractor. If work is started prior to an inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection. The Contractor will become responsible for repairing or replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic signal. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted.
- e. Contracts such as pavement grinding or patching which result in the destruction of traffic signal loops do not require maintenance transfer, but require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, at which time arrangements will be made to

adjust the traffic controller timing to compensate for the absence of detection. Damaged Automatic Traffic Enforcement equipment, including cameras, detectors, or other peripheral equipment, shall be replaced by others, per Permit agreement, at no cost to the contract.

- f. The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most essential down time. Any shutdown of the traffic signal installation, which exceeds fifteen (15) minutes, must have prior approval of the Engineer. Approval to shut down the traffic signal installation will only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns shall not be allowed during inclement weather or holiday periods.
- g. The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals and other equipment noted herein. Any inquiry, complaint or request by the Department, the Department's Electrical Maintenance Contractor or the public, shall be investigated and repairs begun within one hour. Failure to provide this service will result in liquidated damages of \$1000 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of \$1000 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The District's Electrical Maintenance Contractor may inspect any signaling device on the Department's highway system at any time without notification.
- h. Any proposed activity in the vicinity of a highway-rail grade crossing must adhere to the guidelines set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) regarding work in temporary traffic control zones in the vicinity of highway-rail grade crossings which states that lane restrictions, flagging, or other operations shall not create conditions where vehicles can be queued across the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a uniformed law enforcement officer or flagger shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.
- i. The Contractor shall be responsible to clear snow, ice, dirt, debris or other condition that obstructs visibility of any traffic signal display.
- j. The Contractor shall maintain the traffic signal in normal operation during short or long term loss of utility or battery back-up power at critical locations designated by the Engineer. Critical locations may include traffic signals interconnected to railroad warning devices, expressway ramps, intersection with an SRA route, critical corridors or other locations identified by the Engineer. Temporary power to the traffic signal must meet applicable NEC and OSHA guidelines and may include portable generators and/or replacement batteries.

Damage to Traffic Signal System.

Add the following to Article 801.12(b) of the Standard Specifications to read:

Any traffic signal control equipment damaged or not operating properly from any cause shall be replaced with new equipment meeting current District One traffic signal specifications and provided by the Contractor at no additional cost to the Contract and/or owner of the traffic signal system, all as approved by the Engineer. Final replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted. Cable splices outside the controller cabinet shall not be allowed.

Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause, shall be the responsibility of the municipality or the Automatic Traffic Enforcement company per Permit agreement.

Traffic Signal Inspection (TURN-ON).

Revise Article 801.15(b) of the Standard Specifications to read:

It is the intent to have all electric work completed and equipment field tested by the vendor prior to the Department's "turn-on" field inspection. If in the event the Engineer determines work is not complete and the inspection will require more than two (2) hours to complete, the inspection shall be canceled and the Contractor will be required to reschedule at another date. The maintenance of the traffic signals will not be accepted until all punch list work is corrected and re-inspected.

When the road is open to traffic, except as otherwise provided in Section 850 of the Standard Specifications, the Contractor may request a turn-on and inspection of the completed traffic signal installation at each separate location. This request must be made to the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 a minimum of seven (7) working days prior to the time of the requested inspection. The Department will not grant a field inspection until written or electronic notification is provided from the Contractor that the equipment has been field tested and the intersection is operating according to Contract requirements. The Contractor must invite local fire department personnel to the turn-on when Emergency Vehicle Preemption (EVP) is included in the project. When the contract includes the item RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM, OPTIMIZE TRAFFIC SIGNAL SYSTEM, or TEMPORARY TRAFFIC SIGNAL TIMINGS, the Contractor must notify the SCAT Consultant of the turn-on/detour implementation schedule, as well as stage changes and phase changes during construction.

The Contractor must have all traffic signal work completed and the electrical service installation connected by the utility company prior to requesting an inspection and turn-on of the traffic signal installation. The Contractor shall be responsible to provide a police officer to assist with traffic control at the time of testing.

The Contractor shall provide a representative from the control equipment vendor's office who is knowledgeable of the cabinet design and controller functions to attend the traffic signal inspection for both permanent and temporary traffic signal turn-ons.

Upon demonstration that the signals are operating and all work is completed in accordance with the Contract and to the satisfaction of the Engineer, the Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each traffic signal installation will assume the maintenance upon successful completion of this inspection.

The District requires the following Final Project Documentation from the Contractor at traffic signal turn-ons in electronic format in addition to hard copies where noted. A CDROM shall be submitted with separate folders corresponding to each numbered title below. The CDROM shall be labelled with date, project location, company and contract or permit number. Record Drawings, Inventory and Material Approvals shall be submitted prior to traffic signal turn-on for review by the Department as described here-in.

Final Project Documentation:

1. Record Drawings. Signal plans of record with field revisions marked in red ink. One hard copy set of 11"x17" record drawings shall also be provided.
2. Inventory. Inventory of new and existing traffic signal equipment including cabinet types and devices within cabinets in an Excel spread sheet format. One hard copy shall also be provided.
3. Pictures. Digital pictures of a minimum 12M pixels of each intersection approach showing all traffic signal displays and equipment. Pictures shall include controller cabinet equipment in enough detail to clearly identify manufacture and model of major equipment.
4. Field Testing. Written notification from the Contractor and the equipment vendor of satisfactory field testing with corresponding material performance measurements, such as for detector loops and fiber optic systems (see Article 801.13). One hard copy of all contract required performance measurement testing shall also be provided.
5. Materials Approval. The material approval letter. A hard copy shall also be provided.
6. Manuals. Operation and service manuals of the signal controller and associated control equipment. One hard copy shall also be provided.
7. Cabinet Wiring Diagram. Five (5) hard copies 11" x 17" of the cabinet wiring diagrams shall also be provided.
8. Controller Programming Settings. The traffic signal controller's timings; backup timings; coordination splits, offsets, and cycles; TBC Time of Day, Week and Year Programs; Traffic Responsive Program, Detector Phase Assignment, Type and Detector Switching; and any other functions programmable from the keyboard. The controller manufacturer shall also supply a printed form, not to exceed 11" x 17" for recording that data noted above. The form shall include a location, date, manufacturer's name, controller model and software version. The form shall be approved by the Engineer and a minimum of three (3) copies must be furnished at each turn-on. The manufacturer must provide all programming information used within the controller at the time of turn-on.

9. Warrantees and Guarantees. All manufacturer and contractor warrantees and guarantees required by Article 801.14.

Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal "turn on", completeness of the required documentation and successful operation during a minimum 72 hour "burn-in" period following activation of the traffic signal. If approved, traffic signal acceptance shall be verbal at the "turn on" inspection followed by written correspondence from the Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until Departmental acceptance is granted.

All equipment and/or parts to keep the traffic signal installation operating shall be furnished by the Contractor. No spare traffic signal equipment is available from the Department.

All punch list work shall be completed within two (2) weeks after the final inspection. The Contractor shall notify the Electrical Maintenance Contractor to inspect all punch list work. Failure to meet these time constraints shall result in liquidated damage charges of \$500 per month per incident.

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid prices, under which the subject materials and signal equipment are paid, and no additional compensation will be allowed. Materials and signal equipment not complying with the above requirements shall be subject to removal and disposal at the Contractor's expense.

Record Drawings.

The requirements listed for Electrical Installation shall apply for Traffic Signal Installations in Article 801.16. Revise the 2nd paragraph of Article 801.16 of the Standard Specifications to read:

"When the work is complete, and seven days before the request for a final inspection, the reduced-size set of contract drawings, stamped "RECORD DRAWINGS", shall be submitted to the Engineer for review and approval and shall be stamped with the date and the signature of the Contractor's supervising Engineer or electrician. The record drawings shall be submitted in PDF format on CDROM as well as hardcopy for review and approval. If the contract consists of multiple intersections, each intersection shall be saved as an individual PDF file with TS# and location name in its file name.

In addition to the record drawings, copies of the final catalog cuts which have been Approved or Approved as Noted shall be submitted in PDF format along with the record drawings. The PDF files shall clearly indicate the pay item either by filename or PDF Table of Contents referencing the respective pay item number for multi-item PDF files. Specific part or model numbers of items which have been selected shall be clearly visible."

As part of the record drawings, the Contractor shall inventory all traffic signal equipment, new or existing, on the project and record information in an Excel spreadsheet. The inventory shall include equipment type, model numbers, software manufacturer and version and quantities.

Add the following to Article 801.16 of the Standard Specifications:

"In addition to the specified record drawings, the Contactor shall record GPS coordinates of the following traffic signal components being installed, modified or being affected in other ways by this contract:

- All Mast Arm Poles and Posts
- Traffic Signal Wood Poles
- Rail Road Bungalow
- UPS
- Handholes
- Conduit roadway crossings
- Controller Cabinets
- Communication Cabinets
- Electric Service Disconnect locations
- CCTV Camera installations
- Fiber Optic Splice Locations

Datum to be used shall be North American 1983.

Data shall be provided electronically and in print form. The electronic format shall be compatible with MS Excel. Latitude and Longitude shall be in decimal degrees with a minimum of 6 decimal places. Each coordinate shall have the following information:

- File shall be named: TSXXX-YY-MM-DD (i.e. TS22157_15-01-01)
- Each intersection shall have its own file
- Row 1 should have the location name (i.e. IL 31 @ Klausen)
- Row 2 is blank
- Row 3 is the headers for the columns
- Row 4 starts the data
- Column A (Date) – should be in the following format: MM/DD/YYYY
- Column B (Item) – as shown in the table below
- Column C (Description) – as shown in the table below
- Column D and E (GPS Data) – should be in decimal form, per the IDOT special provisions

Examples:

Date	Item	Description	Latitude	Longitude
01/01/2015	MP (Mast Arm Pole)	NEQ, NB, Dual, Combination Pole	41.580493	-87.793378
01/01/2015	HH (Handhole)	Heavy Duty, Fiber, Intersection, Double	41.558532	-87.792571
01/01/2015	ES (Electrical Service)	Ground mount, Pole mount	41.765532	-87.543571
01/01/2015	CC (Controller Cabinet)		41.602248	-87.794053
01/01/2015	RSC (Rigid Steel Crossing)	IL 31 east side crossing south leg to center HH at	41.611111	-87.790222

		Klausen		
01/01/2015	PTZ (PTZ)	NEQ extension pole	41.593434	-87.769876
01/01/2015	POST (Post)		41.651848	-87.762053
01/01/2015	MCC (Master Controller Cabinet)		41.584593	-87.793378
01/01/2015	COMC (Communication Cabinet)		41.584600	-87.793432
01/01/2015	BBS (Battery Backup System)		41.558532	-87.792571

Prior to the collection of data, the contractor shall provide a sample data collection of at least six data points of known locations to be reviewed and verified by the Engineer to be accurate within 1 foot. Upon verification, data collection can begin. Data collection can be made as construction progresses, or can be collected after all items are installed. If the data is unacceptable the contractor shall make corrections to the data collection equipment and or process and submit the data for review and approval as specified.

Accuracy. Data collected is to be mapping grade. A handheld mapping grade GPS device shall be used for the data collection. The receiver shall support differential correction and data shall have a minimum 1 foot accuracy after post processing.

GPS receivers integrated into cellular communication devices, recreational and automotive GPS devices are not acceptable.

The GPS shall be the product of an established major GPS manufacturer having been in the business for a minimum of 6 years.”

Delete the last sentence of the 3rd paragraph of Article 801.16.

Locating Underground Facilities.

Revise Section 803 to the Standard Specifications to read:

IDOT traffic signal facilities are not part any of the one-call locating service such as J.U.L.I.E or Digger. If this Contract requires the services of an Electrical Contractor, the Contractor shall be responsible at his/her own expense for locating existing IDOT electrical facilities prior to performing any work. If this Contract does not require the services of an Electrical Contractor, the Contractor may request one free locate for existing IDOT electrical facilities from the District One Electrical Maintenance Contractor prior to the start of any work. Additional requests may be at the expense of the Contractor. The location of underground traffic facilities does not relieve the Contractor of their responsibility to repair any facilities damaged during construction at their expense.

The exact location of all utilities shall be field verified by the Contractor before the installation of any components of the traffic signal system. For locations of utilities, locally owned equipment, and leased enforcement camera system facilities, the local Counties or Municipalities may need to be contacted: in the City of Chicago contact Digger at (312) 744-7000 and for all other locations contact J.U.L.I.E. at 1-800-892-0123 or 811.

Restoration of Work Area.

Add the following article to Section 801 of the Standard Specifications:

801.17 Restoration of work area. Restoration of the traffic signal work area shall be included in the related pay items such as foundation, conduit, handhole, underground raceways, etc. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be replaced in kind. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded. All brick pavers disturbed in the work area shall be restored to their original configuration as directed by the Engineer. All damaged brick pavers shall be replaced with a comparable material approved by the Engineer. Restoration of the work area shall be included in the contract without any extra compensation allowed to the Contractor.

RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM

Effective: May 22, 2002

Revised: January 1, 2015

Description.

This work shall consist of re-optimizing a closed loop traffic signal system according to the following Levels of work.

LEVEL I applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system. The purpose of this work is to integrate the improvements to the subject intersection into the signal system while minimizing the impacts to the existing system operation. This type of work would be commonly associated with the addition of signal phases, pedestrian phases, or improvements that do not affect the capacity at an intersection.

LEVEL II applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system and detailed analysis of the intersection operation is desired by the engineer, or when a new signalized or existing signalized intersection is being added to an existing system, but optimization of the entire system is not required. The purpose of this work is to optimize the subject intersection, while integrating it into the existing signal system with limited impact to the system operations. This item also includes an evaluation of the overall system operation, including the traffic responsive program.

For the purposes of re-optimization work, an intersection shall include all traffic movements operated by the subject controller and cabinet.

After the signal improvements are completed, the signal shall be re-optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the Department, if available and as appropriate. The existing SCAT Report is available for review at the District One office and if the Consultant provides blank computer disks, copies of computer simulation files for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) LEVEL I Re-Optimization

1. The following tasks are associated with LEVEL I Re-Optimization.
 - a. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system.
 - b. Proposed signal timing plan for the new or modified intersection(s) shall be forwarded to IDOT for review prior to implementation.
 - c. Consultant shall conduct on-site implementation of the timings at the turn-on and make fine-tuning adjustments to the timings of the subject intersection in the field to alleviate observed adverse operating conditions and to enhance operations. The consultant shall respond to IDOT comments and public complaints for a minimum period of 60 days from date of timing plan implementation.
2. The following deliverables shall be provided for LEVEL I Re-Optimization.
 - a. Consultant shall furnish to IDOT a cover letter describing the extent of the re-optimization work performed.
 - b. Consultant shall furnish an updated intersection graphic display for the subject intersection to IDOT and to IDOT's Traffic Signal Maintenance Contractor.

(b) LEVEL II Re-Optimization

1. In addition to the requirements described in the LEVEL I Re-Optimization above, the following tasks are associated with LEVEL II Re-Optimization.
 - a. Traffic counts shall be taken at the subject intersection after the traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday and on a Saturday or Sunday, as directed by the Engineer, to account for special traffic generators such as shopping centers, educational institutes and special event facilities. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.
 - b. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
 - c. Traffic responsive program operation shall be evaluated to verify proper pattern selection and lack of oscillation and a report of the operation shall be provided to IDOT.
2. The following deliverables shall be provided for LEVEL II Re-Optimization.

- a. Consultant shall furnish to IDOT one (1) copy of a technical memorandum for the optimized system. The technical memorandum shall include the following elements:
 - (1) Brief description of the project
 - (2) Printed copies of the analysis output from Synchro (or other appropriate, approved optimization software file)
 - (3) Printed copies of the traffic counts conducted at the subject intersection
- b. Consultant shall furnish to IDOT two (2) CDs for the optimized system. The CDs shall include the following elements:
 - (1) Electronic copy of the technical memorandum in PDF format
 - (2) Revised Synchro files (or other appropriate, approved optimization software file) including the new signal and the rest of the signals in the closed loop system
 - (3) Traffic counts conducted at the subject intersection
 - (4) New or updated intersection graphic display file for the subject intersection
 - (5) The CD shall be labeled with the IDOT system number and master location, as well as the submittal date and the consultant logo. The CD case shall include a clearly readable label displaying the same information securely affixed to the side and front.

Basis of Payment.

This work shall be paid for at the contract unit price each for RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL I or RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL II, which price shall be payment in full for performing all work described herein per intersection. Following completion of the timings and submittal of specified deliverables, 100 percent of the bid price will be paid. Each intersection will be paid for separately.

ELECTRIC SERVICE INSTALLATION

Effective: May 22, 2002

Revised: January 1, 2015

Revise Section 805 of the Standard Specifications to read:

Description.

This work shall consist of all materials and labor required to install, modify, or extend the electric service installation. All installations shall meet the requirements of the details in the "District One Standard Traffic Signal Design Details" and applicable portions of the Specifications.

General.

The electric service installation shall be the electric service disconnecting means and it shall be identified as suitable for use as service equipment.

The electric utility contact information is noted on the plans and represents the current information at the time of contract preparation. The Contractor must request in writing for service and/or service modification within 10 days of contract award and must follow-up with the electric utility to assure all necessary documents and payment are received by the utility. The Contractor shall forward copies of all correspondence between the contractor and utility company to the Engineer and Area Traffic Signal Maintenance and Operations Engineer. The

service agreement and sketch shall be submitted for signature to the IDOT's Traffic Operations Programs Engineer.

Materials.

- a. General. The completed control panel shall be constructed in accordance with UL Std. 508A, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.
- b. Enclosures.
 1. Pole Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 4X, unfinished single door design, fabricated from minimum 0.080-inch (2.03 mm) thick Type 5052 H-32 aluminum. Seams shall be continuous welded and ground smooth. Stainless steel screws and clamps shall secure the cover and assure a watertight seal. The cover shall be removable by pulling the continuous stainless steel hinge pin. The cabinet shall have an oil-resistant gasket and a lock kit shall be provided with an internal O-ring in the locking mechanism assuring a watertight and dust-tight seal. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 14-inches (350 mm) high, 9-inches (225 mm) wide and 8-inches (200 mm) in depth is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.
 2. Ground Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 3R unfinished single door design with back panel. The cabinet shall be fabricated from Type 5052 H-32 aluminum with the frame and door 0.125-inch (3.175 mm) thick, the top 0.250-inch (6.350 mm) thick and the bottom 0.500-inch (12.70 mm) thick. Seams shall be continuous welded and ground smooth. The door and door opening shall be double flanged. The door shall be approximately 80% of the front surface, with a full length tamperproof stainless steel .075-inch (1.91 mm) thick hinge bolted to the cabinet with stainless steel carriage bolts and nylocks nuts. The locking mechanism shall be slam-latch type with a keyhole cover. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 40-inches (1000 mm) high, 16-inches (400 mm) wide and 15-inches (375 mm) in depth is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.
 3. All enclosures shall include a blue external power indicator LED light with circuitry as shown in the Electrical Service-Panel Diagram detail sheet. For pole mounted service enclosures, the power indicator light shall be mounted as shown in the detail. For ground mounted enclosures, the power indicator light shall be mounted on the side of the enclosure most visible from the major roadway.
- c. Electric Utility Meter Housing and Riser. The electric meter housing and meter socket shall be supplied and installed by the contractor. Electric utility required

risers, weather/service head and any other materials necessary for connection shall also be included in the pay item. Materials shall be in accordance with the electric utility's requirements. The electric utility meter housing shall be mounted on the service pole with a pole mounted service and mounted to the enclosure for a ground mounted service.

- d. Surge Protector. Overvoltage protection, with LED indicator, shall be provided for the 120 volt load circuit by the means MOV and thermal fusing technology. The response time shall be <5n seconds and operate within a range of -40C to +85C. The surge protector shall be UL 1449 Listed.
- e. Circuit Breakers. Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type circuit breakers with trip free indicating handles. 120 volt circuit breakers shall have an interrupting rating of not less than 65,000 rms symmetrical amperes. Unless otherwise indicated, the main disconnect circuit breaker for the traffic signal controller shall be rated 60 amperes, 120 V and the auxiliary circuit breakers shall be rated 10 amperes, 120 V.
- f. Fuses, Fuseholders and Power Indicating Light. Fuses shall be small-dimensional cylindrical fuses of the dual element time-delay type. The fuses shall be rated for 600 V AC and shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated voltage. The power indicating light shall be LED type with a green colored lens and shall be energized when electric utility power is present.
- g. Ground and Neutral Bus Bars. A single copper ground and neutral bus bar, mounted on the equipment panel shall be provided. Ground and neutral conductors shall be separated on the bus bar. Compression lugs, plus 2 spare lugs, shall be sized to accommodate the cables with the heads of the connector screws painted green for ground connections and white for neutral connections.
- h. Utility Services Connection. The Contractor shall notify the Utility Company marketing representative a minimum of 30 working days prior to the anticipated date of hook-up. This 30 day advance notification will begin only after the Utility Company marketing representative has received service charge payments from the Contractor. Prior to contacting the Utility Company marketing representative for service connection, the service installation controller cabinet and cable must be installed for inspection by the Utility Company.
- i. Ground Rod. Ground rods shall be copper-clad steel, a minimum of 10 feet (3.0m) in length, and 3/4 inch (20mm) in diameter. Ground rod resistance measurements to ground shall be 25 ohms or less. If necessary additional rods shall be installed to meet resistance requirements at no additional cost to the contract.

Installation.

- a. General. The Contractor shall confirm the orientation of the traffic service installation and its door side with the engineer, prior to installation. All conduit entrances into the service installation shall be sealed with a pliable waterproof material.
- b. Pole Mounted. Brackets designed for pole mounting shall be used. All mounting hardware shall be stainless steel. Mounting height shall be as noted on the plans or as directed by the Engineer.
- c. Ground Mounted. The service installation shall be mounted plumb and level on the foundation and fastened to the anchor bolts with hot-dipped galvanized or stainless steel nuts and washers. The space between the bottom of the enclosure and the top of the foundation shall be caulked at the base with silicone.

Basis of Payment.

The service installation shall be paid for at the contract unit price each for SERVICE INSTALLATION of the type specified which shall be payment in full for furnishing and installing the service installation complete. The CONCRETE FOUNDATION, TYPE A, which includes the ground rod, shall be paid for separately. SERVICE INSTALLATION, POLE MOUNTED shall include the 3/4 inch (20mm) grounding conduit, ground rod, and pole mount assembly. Any charges by the utility companies shall be approved by the engineer and paid for as an addition to the contract according to Article 109.05 of the Standard Specifications.

GROUNDING OF TRAFFIC SIGNAL SYSTEMS

Effective: May 22, 2002

Revised: January 1, 2015

Revise Section 806 of the Standard Specifications to read:

General.

All traffic signal systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC. See IDOT District One Traffic Signal detail plan sheets for additional information.

The grounding electrode system shall include a ground rod installed with each traffic signal controller concrete foundation and all mast arm and post concrete foundations. An additional ground rod will be required at locations where measured resistance exceeds 25 ohms. Ground rods are included in the applicable concrete foundation or service installation pay item and will not be paid for separately.

Testing shall be according to Article 801.13 (a) (4) and (5).

- (a) The grounded conductor (neutral conductor) shall be white color coded. This conductor shall be bonded to the equipment grounding conductor only at the Electric Service Installation. All power cables shall include one neutral conductor of the same size.
- (b) The equipment grounding conductor shall be green color coded. The following is in addition to Article 801.04 of the Standard Specifications.

1. Equipment grounding conductors shall be bonded to the grounded conductor (neutral conductor) only at the Electric Service Installation. The equipment grounding conductor is paid for separately and shall be continuous. The Earth shall not be used as the equipment grounding conductor.
 2. Equipment grounding conductors shall be bonded, using a UL Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers, conduits, and other metallic enclosures throughout the traffic signal wiring system, except where noted herein. Bonding shall be made with a splice and pigtail connection, using a sized compression type copper sleeve, sealant tape, and heat-shrinkable cap. A Listed electrical joint compound shall be applied to all conductors' terminations, connector threads and contact points. Conduit grounding bushings shall be installed at all conduit terminations including spare or empty conduits.
 3. All metallic and non-metallic raceways shall have a continuous equipment grounding conductor, except raceways containing only detector loop lead-in circuits, circuits under 50 volts and/or fiber optic cable will not be required to include an equipment grounding conductor.
 4. Individual conductor splices in handholes shall be soldered and sealed with heat shrink. When necessary to maintain effective equipment grounding, a full cable heat shrink shall be provided over individual conductor heat shrinks.
- (c) The grounding electrode conductor shall be similar to the equipment grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment grounding conductor and is bonded to ground rods via exothermic welding, listed pressure connectors, listed clamps or other approved listed means.

COILABLE NON-METALLIC CONDUIT

Effective: May 22, 2002

Revised: January 1, 2015

Description.

This work shall consist of furnishing and installing empty coilable non-metallic conduit (CNC) for detector loop raceways.

General.

The CNC installation shall be in accordance with Sections 810 and 811 of the Standard Specifications except for the following:

Add the following to Article 810.03 of the Standard Specifications:

CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways to the handholes.

Add the following to Article 811.03 of the Standard Specifications:

On temporary traffic signal installations with detector loops, CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways from the saw-cut to 10 feet (3m) up the wood pole, unless otherwise shown on the plans

Basis of Payment.

All installations of CNC for loop detection shall be included in the contract and not paid for separately.

UNDERGROUND RACEWAYS

Effective: May 22, 2002

Revised: January 1, 2015

Revise Article 810.04 of the Standard Specifications to read:

Installation.

All underground conduits shall have a minimum depth of 30 inches (760 mm) below the finished grade and shall be installed to avoid existing and proposed utilities within the project limits.

ROD AND CLEAN EXISTING CONDUIT

Effective: January 1, 2015

Description.

This work shall consist of inserting a duct rod or electrical fish rod or tape of sufficient length and rigidity into an electrical conduit opening in one electrical handhole, and pushing the said rod through the conduit to emerge at the next or subsequent handhole in the conduit system at the location(s) shown on the plans. The duct rod may be inserted and removed by any standard construction method which causes no damage to the conduit. The size of the conduit may vary, but there shall be no differentiation in cost for the size of the conduit.

The conduit which is to be rodded and cleaned may exist with various amounts of standing water in the handholes to drain the conduit and to afford compatible working conditions for the installation of the duct rods and/or cables. Pumping of handholes shall be incidental to the work of rodding and cleaning of the conduit.

Any handhole which, in the opinion of the Engineer contains excessive debris, dirt or other materials to the extent that conduit rodding and cleaning is not feasible, shall be cleaned at the Engineer's order and payment approval as a separate pay item.

Prior to removal of the duct rod, a duct cleaning attachment such as a properly sized wire brush or cleaning mandrel shall be attached to the duct rod, which by removal of the duct rod shall be pulled through the conduit to remove sand, grit, or other light obstructions from the duct to provide a clean, clear passage for the installation of cable. Whenever the installation of cables is not performed as an adjunct to or immediately following the cleaning of the duct, a light weight pulling line such as a 1/8" polyethylene line or conduit measuring tape shall be placed and shall remain in the conduit to facilitate future work. When great difficulty of either inserting the duct rod or removal of the cleaning mandrel is encountered, the duct may require further cleaning by use of a compressed air gun, or a low pressure water hose. In the case of a broken conduit, the conduit must be excavated and repaired. The existence and location of breaks in the conduit

may be determined by rodding, but the excavation and repair work required will be paid for separately.

This work shall be measured per lineal foot for each conduit cleaned. Measurements shall be made from point to point horizontally. No vertical rises shall count in the measurement.

Basis of Payment.

This work shall be paid for at the contract unit price per lineal foot for ROD AND CLEAN EXISTING CONDUIT for the installation of new electric cables in existing conduits. Such price shall include the furnishing of all necessary tools, equipment, and materials required to prepare a conduit for the installation of cable.

HANDHOLES

Effective: January 01, 2002

Revised: January 01, 2015

Description.

Add the following to Section 814 of the Standard Specifications:

All conduits shall enter the handhole at a depth of 30 inches (762 mm) except for the conduits for detector loops when the handhole is less than 5 feet (1.52 m) from the detector loop. All conduit ends should be sealed with a waterproof sealant to prevent the entrance of contaminants into the handhole.

Steel cable hooks shall be coated with hot-dipped galvanization in accordance with AASHTO Specification M111. Hooks shall be a minimum of 1/2 inch (13 mm) diameter with two 90 degree bends and extend into the handhole at least 6 inches (152 mm). Hooks shall be placed a minimum of 12 inches (305 mm) below the lid or lower if additional space is required.

Precast round handholes shall not be used unless called out on the plans.

The cover of the handhole frame shall be labeled "Traffic Signals" with legible raised letters.

Revise the third paragraph of Article 814.03 of the Standard Specifications to read:

"Handholes shall be constructed as shown on the plans and shall be cast-in-place, or precast concrete units. Heavy duty handholes shall be either cast-in-place or precast concrete units."

Add the following to Article 814.03 of the Standard Specifications:

"(c) Precast Concrete. Precast concrete handholes shall be fabricated according to Article 1042.17. Where a handhole is contiguous to a sidewalk, preformed joint filler of 1/2 inch (13 mm) thickness shall be placed between the handhole and the sidewalk."

Cast-In-Place Handholes.

All cast-in-place handholes shall be concrete, with inside dimensions of 21-1/2 inches (546 mm) minimum. Frames and lid openings shall match this dimension.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (11 mm) diameter stainless steel bolt cast into the frame. The covers shall have a stainless steel threaded stint extended from the eye hook assembly for the purpose of attaching the grounding conductor to the handhole cover.

The minimum wall thickness for heavy duty hand holes shall be 12 inches (305mm).

Precast Round Handholes.

All precast handholes shall be concrete, with inside dimensions of 30 inches (762mm) diameter. Frames and covers shall have a minimum opening of 26 inches (660mm) and no larger than the inside diameter of the handhole.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (11 mm) diameter stainless steel bolt cast into the frame. For the purpose of attaching the grounding conductor to the handhole cover, the covers shall either have a 7/16 inch (11 mm) diameter stainless steel bolt cast into the cover or a stainless steel threaded stint extended from an eye hook assembly. A hole may be drilled for the bolt if one cannot be cast into the frame or cover. The head of the bolt shall be flush or lower than the top surface of the cover.

The minimum wall thickness for precast heavy duty hand holes shall be 6 inches (152 mm).

Precast round handholes shall be only produced by an approved precast manufacturer.

Materials.

Add the following to Section 1042 of the Standard Specifications:

“1042.17 Precast Concrete Handholes. Precast concrete handholes shall be according to Articles 1042.03(a)(c)(d)(e).”

GROUNDING CABLE

Effective: May 22, 2002

Revised: January 1, 2015

The cable shall meet the requirements of Section 817 of the "Standard Specifications," except for the following:

Add the following to Article 817.02 (b) of the Standard Specifications:

Unless otherwise noted on the Plans, traffic signal grounding conductor shall be one conductor, #6 gauge copper, with a green color coded XLP jacket.

The traffic signal grounding conductor shall be bonded, using a UL Listed grounding connector to all proposed and existing traffic signal mast arm poles and traffic/pedestrian signal posts, including push button posts. The grounding conductor shall be bonded to all proposed and existing pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system and noted herein and detailed on the plans. The grounding conductor shall be

bonded to conduit terminations using rated grounding bushings. Bonding to existing handhole frames and covers shall be paid for separately.

Add the following to Article 817.05 of the Standard Specifications:

Basis of Payment.

Grounding cable shall be measured in place for payment in foot (meter). Payment shall be at the contract unit price for ELECTRIC CABLE IN CONDUIT, EQUIPMENT GROUNDING CONDUCTOR, NO. 6 1C, which price includes all associated labor and material including grounding clamps, splicing, exothermic welds, grounding connectors, conduit grounding bushings, and other hardware.

FIBER OPTIC TRACER CABLE

Effective: May 22, 2002

Revised: January 1, 2015

The cable shall meet the requirements of Section 817 of the Standard Specifications, except for the following:

Add the following to Article 817.03 of the Standard Specifications:

In order to trace the fiber optic cable after installation, the tracer cable shall be installed in the same conduit as the fiber optic cable in locations shown on the plans. The tracer cable shall be continuous, extended into the controller cabinet and terminated on a barrier type terminal strip mounted on the side wall of the controller cabinet. The barrier type terminal strip and tracer cable shall be clearly marked and identified. All tracer cable splices shall be kept to a minimum and shall incorporate maximum lengths of cable supplied by the manufacturer. The tracer cable will be allowed to be spliced at handholes only. The tracer cable splice shall use a Western Union Splice soldered with resin core flux and shall be soldered using a soldering iron. Blow torches or other devices which oxidize copper cable shall not be allowed for soldering operations. All exposed surfaces of the solder shall be smooth. The splice shall be covered with a black shrink tube meeting UL 224 guidelines, Type V and rated 600v, minimum length 4 inches (100 mm) and with a minimum 1 inch (25 mm) coverage over the XLP insulation, underwater grade.

Add the following to Article 817.05 of the Standard Specifications:

Basis of Payment.

The tracer cable shall be paid for separately as ELECTRIC CABLE IN CONDUIT, TRACER, NO. 14 1C per foot (meter), which price shall include all associated labor and material for installation.

MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION

Effective: May 22, 2002

Revised: January 1, 2015

General.

1. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the Contract or any portion thereof. If Contract work is started prior to a traffic signal inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection.
2. The Contractor shall have electricians with IMSA Level II certification on staff to provide signal maintenance. A copy of the certification shall be immediately available upon request of the Engineer.
3. This item shall include maintenance of all traffic signal equipment and other connected and related equipment such as emergency vehicle pre-emption equipment, master controllers, uninterruptable power supply (UPS and batteries), PTZ cameras, vehicle detection, handholes, lighted signs, telephone service installations, communication cables, conduits to adjacent intersections, and other traffic signal equipment.
4. Regional transit, County and other agencies may also have equipment connected to existing traffic signal or peripheral equipment such as PTZ cameras, switches, transit signal priority (TSP and BRT) servers, radios and other devices that shall be included with traffic signal maintenance at no additional cost to the contract.
5. Maintenance shall not include Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, or peripheral equipment. This equipment is operated and maintained by the local municipality and should be de-activated while on contractor maintenance.
6. The energy charges for the operation of the traffic signal installation shall be paid for by others.

Maintenance.

1. The Contractor shall check all controllers every two (2) weeks, which will include visually inspecting all timing intervals, relays, detectors, and pre-emption equipment to ensure that they are functioning properly. The Contractor shall check signal system communications and phone lines to assure proper operation. This item includes, as routine maintenance, all portions of emergency vehicle pre-emption equipment. The Contractor shall maintain in stock at all times a sufficient amount of materials and equipment to provide effective temporary and permanent repairs.
2. The Contractor is advised that the existing and/or span wire traffic signal installation must remain in operation during all construction stages, except for the most essential down time. Any shutdown of the traffic signal installation, which exceeds fifteen (15) minutes, must have prior approval of the Engineer. Approval to shut down the traffic signal installation will only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns shall not be allowed during inclement weather or holiday periods.
3. The Contractor shall provide immediate corrective action when any part or parts of the system fail to function properly. Two far side heads facing each approach shall be considered the minimum acceptable signal operation pending permanent repairs. When

repairs at a signalized intersection require that the controller be disconnected or otherwise removed from normal operation, and power is available, the Contractor shall place the traffic signal installation on flashing operation. The signals shall flash RED for all directions unless a different indication has been specified by the Engineer. The Contractor shall be required to place stop signs (R1-1-36) at each approach of the intersection as a temporary means of regulating traffic. When the signals operate in flash, the Contractor shall furnish and equip all their vehicles assigned to the maintenance of traffic signal installations with a sufficient number of stop signs as specified herein. The Contractor shall maintain a sufficient number of spare stop signs in stock at all times to replace stop signs which may be damaged or stolen.

4. The Contractor shall provide the Engineer with 2 (two) 24 hour telephone numbers for the maintenance of the traffic signal installation and for emergency calls by the Engineer.
5. Traffic signal equipment which is lost or not returned to the Department for any reason shall be replaced with new equipment meeting the requirements of the Standard Specifications and these special provisions.
6. The Contractor shall respond to all emergency calls from the Department or others within one (1) hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the contract. The Contractor may institute action to recover damages from a responsible third party. If at any time the Contractor fails to perform all work as specified herein to keep the traffic signal installation in proper operating condition or if the Engineer cannot contact the Contractor's designated personnel, the Engineer shall have the State's Electrical Maintenance Contractor perform the maintenance work. The Contractor shall be responsible for all of the State's Electrical Maintenance Contractor's costs and liquidated damages of \$1000 per day per occurrence. The State's Electrical Maintenance Contractor shall bill the Contractor for the total cost of the work. The Contractor shall pay this bill within thirty (30) days of the date of receipt of the invoice or the cost of such work will be deducted from the amount due the Contractor. The Contractor shall allow the Electrical Maintenance Contractor to make reviews of the Existing Traffic Signal Installation that has been transferred to the Contractor for Maintenance.
7. Any proposed activity in the vicinity of a highway-rail grade crossing must adhere to the guidelines set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) regarding work in temporary traffic control zones in the vicinity of highway-rail grade crossings which states that lane restrictions, flagging, or other operations shall not create conditions where vehicles can be queued across the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a uniformed law enforcement officer or flagger shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.
8. Equipment included in this item that is damaged or not operating properly from any cause shall be replaced with new equipment meeting current District One traffic signal

specifications and provided by the Contractor at no additional cost to the Contract and/or owner of the traffic signal system, all as approved by the Engineer. Final replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted. Cable splices outside the controller cabinet shall not be allowed.

9. Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause, shall be the responsibility of the municipality or the Automatic Traffic Enforcement Company per Permit agreement.
10. The Contractor shall be responsible to clear snow, ice, dirt, debris or other condition that obstructs visibility of any traffic signal display.
11. The Contractor shall maintain the traffic signal in normal operation during short or long term loss of utility or battery back-up power at critical locations designated by the Engineer. Critical locations may include traffic signals interconnected to railroad warning devices, expressway ramps, intersection with an SRA route, critical corridors or other locations identified by the Engineer. Temporary power to the traffic signal must meet applicable NEC and OSHA guidelines and may include portable generators and/or replacement batteries.

Basis of Payment.

This work will be paid for at the contract unit price per each for MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION. Each intersection will be paid for separately.

FULL-ACTUATED CONTROLLER AND CABINET

Effective: January 1, 2002

Revised: January 1, 2015

Description.

This work shall consist of furnishing and installing a traffic actuated solid state digital controller in the controller cabinet of the type specified, meeting the requirements of the current District One Traffic Signal Special Provisions including conflict monitor, load switches and flasher relays, with all necessary connections for proper operation.

If the intersection is part of an existing system and/or when specified in the plans, this work shall consist of furnishing and installing an NTCIP traffic actuated solid state controller as approved by the KDOT Engineer.

Materials.

Add the following to Article 857.02 of the Standard Specifications:

Controllers shall be NTCIP compliant NEMA TS2 Type 1, Econolite ASC/3S-1000 or Eagle/Siemens M50 unless specified otherwise on the plans or elsewhere on these specifications. A NTCIP compliant NEMA TS2 Type 2 controller may be used at a traffic signal interconnected to railroad warning devices but only upon the approval of the Engineer. Only controllers supplied by one of the District One approved closed loop equipment manufacturers

will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer at the time of the approval and include the standard data key. The traffic signal controller shall provide features to inhibit simultaneous display of a circular yellow ball and a yellow arrow display. Individual load switches shall be provided for each vehicle, pedestrian, and right turn over lap phase. The controller shall prevent phases from being skipped during program changes and after all preemption events. **The controller shall include programming to run flashing yellow arrow (FYA) phasing.**

Add the following to Article 1074.03 of the Standard Specifications:

- (a) (6) Cabinets shall be designed for NEMA TS2 Type 1 operation. All cabinets shall be pre-wired for a minimum of eight (8) phases of vehicular, four (4) phases of pedestrian and four (4) phases of overlap operation **and shall include flashing yellow arrow phasing.**
- (b) (1) Revise "conflict monitor" to read "Malfunction Management Unit". **The unit shall be Ethernet capable.**
- (b) (5) Cabinets – Provide 1/8" (3.2 mm) thick unpainted aluminum alloy 5052-H32. The surface shall be smooth, free of marks and scratches. All external hardware shall be stainless steel.
- (b) (6) Controller Harness – Provide a TS2 Type 2 "A" wired harness in addition to the TS2 Type 1 harness.
- (b) (7) Surge Protection – Shall be a 120VAC Single phase Modular filter Plug-in type, supplied from an approved vendor.
- (b) (8) BIU – shall be secured by mechanical means.
- (b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.
- (b) (10) Switch Guards – All switches shall be guarded.
- (b) (11) Heating – One (1) 200 watt, thermostatically-controlled, electric heater.
- (b) (12) Lighting – One (1) LED Panel shall be placed inside the cabinet top panel and one (1) LED Panel shall be placed on each side of the pull-out drawer/shelf assembly located beneath the controller support shelf. The LED Panels shall be controlled by a door switch. The LED Panels shall be provided from an approved vendor.
- (b) (13) The cabinet shall be equipped with a pull-out drawer/shelf assembly. A 1 ½ inch (38mm) deep drawer shall be provided in the cabinet, mounted directly beneath the controller support shelf. The drawer shall have a hinged top cover and shall be capable of accommodating one (1) complete set of cabinet prints and manuals. This drawer shall support 50 lbs. (23 kg) in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 18 inches (610mm) wide.
- (b) (14) Plan & Wiring Diagrams – 12" x 15" (3.05mm x 4.06mm) moisture sealed container attached to door.
- (b) (15) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.
- (b) (16) Field Wiring Labels – All field wiring shall be labeled.
- (b) (17) Field Wiring Termination – Approved channel lugs required.
- (b) (18) Power Panel – Provide a nonconductive shield.

- (b) (19) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.
- (b) (20) Police Door – Provide wiring and termination for plug in manual phase advance switch.
- (b) (21) Railroad Pre-Emption Test Switch – Shall be provided from an approved vendor

Basis of Payment.

This work will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET; FULL-ACTUATED CONTROLLER AND TYPE V CABINET; FULL-ACTUATED CONTROLLER AND TYPE SUPER P CABINET; FULL-ACTUATED CONTROLLER AND TYPE SUPER R CABINET; FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL; FULL-ACTUATED CONTROLLER AND TYPE V CABINET, SPECIAL; FULL-ACTUATED CONTROLLER AND TYPE SUPER P CABINET (SPECIAL); FULL-ACTUATED CONTROLLER AND TYPE SUPER R CABINET (SPECIAL).

UNINTERRUPTABLE POWER SUPPLY, SPECIAL

Effective: January 1, 2013

Revised: January 1, 2015

Add the following to Article 862.01 of the Standard Specifications:

The UPS shall have the power capacity to provide normal operation of a signalized intersection that utilizes all LED type signal head optics, for a minimum of 10 (ten) hours.

Add the following to Article 862.02 of the Standard Specifications:

Materials shall be according to Article 1074.04 as modified in UNINTERRUPTABLE POWER SUPPLY (UPS).

Add the following to Article 862.03 of the Standard Specifications:

The UPS shall additionally include, but not be limited to, a battery cabinet, where applicable. For **Super-P (Type IV)** and **Super-R (Type V)** cabinets, the battery cabinet is integrated to the traffic signal cabinet. For **Super-P** and **Super-R** cabinets, the integrated battery cabinet shall be included in the cost for the traffic signal cabinet of the size and type indicated on the plans.

The UPS shall provide reliable emergency power to the traffic signals in the event of a power failure or interruption.

Revise Article 862.04 of the Standard Specifications to read:

Installation.

When a UPS is installed at an existing traffic signal cabinet, the UPS cabinet shall partially rest on the lip of the existing controller cabinet foundation and be secured to the existing controller cabinet by means of at least four (4) stainless steel bolts. The UPS cabinet shall be completely enclosed with the bottom and back constructed of the same material as the cabinet.

When a UPS is installed at a new signal cabinet and foundation, it shall be mounted as shown on the plans.

At locations where UPS is installed and Emergency Vehicle Priority System is in use, any existing incandescent confirmation beacons shall be replaced with LED lamps in accordance with the District One Emergency Vehicle Priority System specification at no additional cost to the contract. A concrete apron 67 in. x 50 in. x 5 in. (1702mm x 1270mm x 130mm) shall be provided on the side of the existing Type D Foundation, where the UPS cabinet is located. The concrete apron shall follow the District 1 Standard Traffic Signal Design Detail, Type D for Ground Mounted Controller Cabinet and UPS Battery Cabinet. The concrete apron shall follow Articles 424 and 202 of the Standard Specifications.

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the UPS including the addition of alarms.

Materials.

Revise Article 1074.04(a)(1) of the Standard Specifications to read:

The UPS shall be line interactive or double conversion and provide voltage regulation and power conditioning when utilizing utility power. The UPS shall be sized appropriately for the intersection's normal traffic signal operating connected load or at a railroad interconnected signal the load during railroad pre-emption, plus 20 percent (20%). The total connected traffic signal load shall not exceed the published ratings for the UPS. The UPS shall provide a minimum of 10 (ten) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 1000 W active output capacity, with 86 percent minimum inverter efficiency).

Revise the first paragraph of Article 1074.04(a)(3) of the Standard Specifications to read:

The UPS shall have a minimum of four (4) sets of normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) relay contact closures, available on a panel mounted terminal block or locking circular connectors, rated at a minimum 120 V/1 A, and labeled so as to identify each contact according to the plans.

Revise Article 1074.04(a)(10) of the Standard Specifications to read:

The UPS shall be compatible with the District's approved traffic controller assemblies utilizing NEMA TS 1 or NEMA TS 2 controllers and cabinet components for full time operation. **The UPS shall include the capability for remote monitoring and control via RS232 port and Ethernet SNMP interface.**

Revise Article 1074.04(a)(17) of the Standard Specifications to read:

When the intersection is in battery backup mode, the UPS shall bypass all internal cabinet lights, ventilation fans, cabinet heaters, service receptacles, any lighted street name signs, any automated enforcement equipment and any other devices directed by the Engineer.

Revise Article 1074.04(b)(2)b of the Standard Specifications to read:

Batteries, inverter/charger and power transfer relay shall be housed in a separate NEMA Type 3R cabinet. The cabinet shall be Aluminum alloy, 5052-H32, 0.125-inch thick and have a natural mill finish.

Revise Article 1074.04(b)(2)c of the Standard Specifications to read:

No more than three batteries shall be mounted on individual shelves for a cabinet housing six batteries and no more than four batteries per shelf for a cabinet housing eight batteries.

Revise Article 1074.04(b)(2)e of the Standard Specifications to read:

The battery cabinet housing shall have the following nominal outside dimensions: a width of 25 in. (785 mm), a depth of 16 in. (440 mm), and a height of 41 to 48 in. (1.1 to 1.3 m). Clearance between shelves shall be a minimum of 10 in. (250 mm).

End of paragraph 1074.04(b)(2)e

The door shall be equipped with a two position doorstop, one a 90° and one at 120°.

Revise Article 1074.04(b)(2)g of the Standard Specifications to read:

The door shall open to the entire cabinet, have a neoprene gasket, an Aluminum continuous piano hinge with stainless steel pin, and a three point locking system. The cabinet shall be provided with a main door lock which shall operate with a traffic industry conventional No. 2 key. Provisions for padlocking the door shall be provided.

Add the following to Article 1074.04(b)(2) of the Standard Specifications:

j. The battery cabinet shall have provisions for an external generator connection.

Add the following to Article 1074.04(c) of the Standard Specifications:

- (8) The UPS shall include a tip or kill switch installed in the battery cabinet, which shall completely disconnect power from the UPS when the switch is manually activated.
- (9) The UPS shall include standard RS-232 and internal Ethernet interface.
- (10) The UPS shall incorporate a flanged electric generator inlet for charging the batteries and operating the UPS. The generator connector shall be male type, twist-lock, rated as 15A, 125VAC with a NEMA L5-15P configuration and weatherproof lift cover plate. Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.
- (11) The bypass switch shall include an internal power transfer relay that allows removal of the battery back-up unit, while the traffic signal is connected to utility power, without impacting normal traffic signal operation.

Revise Article 1074.04(d)(3) of the Standard Specifications to read:

All batteries supplied in the UPS shall be either gel cell or AGM type, deep cycle, completely sealed, prismatic lead calcium based, silver alloy, valve regulated lead acid (VRLA) requiring no maintenance. All batteries in a UPS installation shall be the same type; mixing of gel cell and AGM types within a UPS installation is not permitted.

Revise Article 1074.04(d)(4) of the Standard Specifications to read:

Batteries shall be certified by the manufacturer to operate over a temperature range of -13 to 160 °F (-25 to + 71 °C) for gel cell batteries and -40 to 140 °F (-40 to + 60 °C) for AGM type batteries.

Add the following to Article 1074.04(d) of the Standard Specifications:

(9) The UPS shall consist of an even number of batteries that are capable of maintaining normal operation of the signalized intersection for a minimum of 10 (ten) hours. Calculations shall be provided showing the number of batteries of the type supplied that are needed to satisfy this requirement. A minimum of four batteries shall be provided.

(10) Battery Heater mats shall be provided, when gel cell type batteries are supplied.

Add the following to the Article 1074.04 of the Standard Specifications:

(e) Warranty. The warranty for an uninterruptable power supply (UPS) and batteries (full replacement) shall cover a minimum of 5 years from date the equipment is placed in operation.

(f) Installation. Bypass switch shall completely disconnect the traffic signal cabinet from the utility provider.

(g) The UPS shall be set-up to run the traffic signal continuously, without going to a red flashing condition, when switched to battery power unless otherwise directed by the Engineer. The Contractor shall confirm set-up with the Engineer. The continuous operation mode when switched to battery may require modification to unit connections and these modifications are included in the unit price for this item.

Revise Article 862.05 of the Standard Specifications to read:

Basis of Payment.

This work will be paid for at the contract unit price per each for UNINTERRUPTABLE POWER SUPPLY, SPECIAL or UNINTERRUPTABLE POWER SUPPLY AND CABINET, SPECIAL. Replacement of Emergency Vehicle Priority System confirmation beacons and any required modifications to the traffic signal controller shall be included in the cost of the UNINTERRUPTABLE POWER SUPPLY, SPECIAL or UNINTERRUPTABLE POWER SUPPLY AND CABINET, SPECIAL item. The concrete apron and earth excavation required shall be included in the cost of the UNINTERRUPTABLE POWER SUPPLY AND CABINET, SPECIAL item.

FIBER OPTIC CABLE

Effective: May 22, 2002

Revised: January 1, 2015

Add the following to Article 871.01 of the Standard Specifications:

The Fiber Optic cable shall be installed in conduit or as specified on the plans.

Add the following to Article 871.02 of the Standard Specifications:

The control cabinet distribution enclosure shall be 24 Port Fiber Wall Enclosure. The fiber optic cable shall provide six fibers per tube for the amount of fibers called for in the Fiber Optic Cable pay item in the Contract. Fiber Optic cable may be gel filled or have an approved water blocking tape.

Add the following to Article 871.04 of the Standard Specifications:

A minimum of six multimode fibers from each cable shall be terminated with approved mechanical connectors at the distribution enclosure. Fibers not being used shall be labeled "spare." Fibers not attached to the distribution enclosure shall be capped and sealed. A minimum of 13.0 feet (4m) of extra cable length shall be provided for controller cabinets. The controller cabinet extra cable length shall be stored as directed by the Engineer.

Add the following to Article 871.06 of the Standard Specifications:

The distribution enclosure and all connectors will be included in the cost of the fiber optic cable.

Testing shall be in accordance with Article 801.13(d). Electronic files of OTDR signature traces shall be provided in the Final project documentation with certification from the Contractor that attenuation of each fiber does not exceed 3.5 dB/km nominal at 850nm for multimode fiber and 0.4 bd/km nominal at 1300nm for singlemode fiber.

ELECTRIC CABLE

Effective: May 22, 2002

Revised: January 1, 2015

Delete "or stranded, and No. 12 or" from the last sentence of Article 1076.04 (a) of the Standard Specifications.

Add the following to the Article 1076.04(d) of the Standard Specifications:

Service cable may be single or multiple conductor cable.

EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C

Effective: January 1, 2013

Revised: January 1, 2015

This work shall consist of furnishing and installing lead-in cable for light detectors installed at existing and/or proposed traffic signal installations as part of an emergency vehicle priority system. The work includes installation of the lead-in cables in existing and/or new conduit. The electric cable shall be shielded and have (3) stranded conductors, colored blue, orange, and yellow with a stranded tinned copper drain wire. The cable shall meet the requirements of the manufacturer of the Emergency Vehicle Priority System Equipment.

Basis of Payment.

This work will be paid for at the contract unit price per foot for EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C, which price shall be payment in full for furnishing, installing and making all electrical connections necessary for proper operations.

TRAFFIC SIGNAL POST

Effective: May 22, 2002

Revised: January 1, 2015

Add the following to Article 1077.01 (d) of the Standard Specifications:

All posts and bases shall be steel and hot dipped galvanized. Washers for post bases shall be sized to fully engage the post base flanges. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with TRAFFIC SIGNAL PAINTING specifications.

MAST ARM ASSEMBLY AND POLE

Effective: May 22, 2002

Revised: January 1, 2015

Revise Article 877.01 of the Standard Specifications to read:

Description.

This work shall consist of furnishing and installing a steel mast arm assembly and pole and a galvanized steel or extruded aluminum shroud for protection of the base plate.

Revise Article 877.03 of the Standard Specifications:

Mast arm assembly and pole shall be as follows.

- (a) Steel Mast Arm Assembly and Pole and Steel Combination Mast Arm Assembly and Pole. The steel mast arm assembly and pole and steel combination mast arm assembly and pole shall consist of a traffic signal mast arm, a luminaire mast arm or davit (for combination pole only), a pole, and a base, together with anchor rods and other appurtenances. The configuration of the mast arm assembly, pole, and base shall be according to the details shown on the plans.
- (1) Loading. The mast arm assembly and pole, and combination mast arm assembly and pole shall be designed for the loading shown on the Highway Standards or elsewhere on the plans, whichever is greater. The design shall be according to AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals"

1994 Edition for 80 mph (130 km/hr) wind velocity. However, the arm-to-pole connection for tapered signal and luminaire arms shall be according to the "ring plate" detail as shown in Figure 11-1(f) of the 2002 Interim, to the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 2001 4th Edition.

- (2) Structural Steel Grade. The mast arm and pole shall be fabricated according to ASTM A 595, Grade A or B, ASTM A 572 Grade 55, or ASTM A 1011 Grade 55 HSLAS Class 2. The base and flange plates shall be of structural steel according to AASHTO M 270 Grade 50 (M 270M Grade 345). Luminaire arms and trussed arms 15 ft (4.5 m) or less shall be fabricated from one steel pipe or tube size according to ASTM A 53 Grade B or ASTM A 500 Grade B or C. All mast arm assemblies, poles, and bases shall be galvanized according to AASHTO M 111.
- (3) Fabrication. The design and fabrication of the mast arm assembly, pole, and base shall be according to the requirements of the Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals published by AASHTO. The mast arm and pole may be of single length or sectional design. If section design is used, the overlap shall be at least 150 percent of the maximum diameter of the overlapping section and shall be assembled in the factory.

The manufacturer will be allowed to slot the base plate in which other bolt circles may fit, providing that these slots do not offset the integrity of the pole. Circumferential welds of tapered arms and poles to base plates shall be full penetration welds.

- (4) Shop Drawing Approval. The Contractor shall submit detailed drawings showing design materials, thickness of sections, weld sizes, and anchor rods to the Engineer for approval prior to fabrication. These drawings shall be at least 11 x 17 in. (275 x 425 mm) in size and of adequate quality for microfilming. All product data and shop drawings shall be submitted in electronic form on CD-ROM
- (b) Anchor Rods. The anchor rods shall be ASTM F 1554 Grade 105, coated by the hot-dip galvanizing process according to AASHTO M 232, and shall be threaded a minimum of 7 1/2 in. (185 mm) at one end and have a bend at the other end. The first 12 in. (300 mm) at the threaded end shall be galvanized. Two nuts, one lock washer, and one flat washer shall be furnished with each anchor rod. All nuts and washers shall be galvanized.
 - (c) The shroud shall be of sufficient strength to deter pedestrian and vehicular damage and shall be constructed and designed to allow air to circulate throughout the mast arm. The shroud shall not extend beyond the beveled edge of the top of the mast arm pole foundation to assure ADA requirements are met and to prevent infestation of insects or other animals. All mounting hardware shall be stainless steel. Where a shroud cannot meet these requirements, a stainless steel screen mesh ¼ inch maximum opening with a minimum wire diameter of AWG 16 with a minimum 2 inch lap shall be installed to enclose the void between the base plate and the foundation. The stainless steel screen wire shall be formed to the shape of the base plate and fasten to the base plate with ¾

inch stainless steel banding. The screen wire shall overlap and be fastened with a ring type connector.

Add the following to Article 877.04 of the Standard Specifications:

The shroud or stainless screen mesh shall not be paid for separately but shall be included in the cost of the mast arm assembly and pole.

Materials.

Add the following to Article 1077.03 (a) of the Standard Specifications:

Traffic signal mast arms shall be one piece construction, unless otherwise approved by the Engineer. All poles shall be galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with TRAFFIC SIGNAL PAINTING specifications.

CONCRETE FOUNDATIONS

Effective: May 22, 2002

Revised: January 1, 2015

Add the following to Article 878.03 of the Standard Specifications:

All anchor bolts shall be according to Article 1006.09, with all anchor bolts hot dipped galvanized a minimum of 12 in. (300 mm) from the threaded end.

Concrete Foundations, Type "A" for Traffic Signal Posts shall provide anchor bolts with the bolt pattern specified within the "District One Standard Traffic Signal Design Details." All Type "A" foundations shall be a minimum depth of 48 inches (1220 mm).

Concrete Foundations, Type "C" for Traffic Signal Cabinets with Uninterruptable Power Supply (UPS) cabinet installations shall be a minimum of 72 inches (1830 mm) long and 31 inches (790 mm) wide. All Type "C" foundations shall be a minimum depth of 48 inches (1220 mm). The concrete apron in front of the Type IV or V cabinet shall be 36 in. x 48 in. x 5 in. (915 mm X 1220 mm X 130 mm). The concrete apron in front of the UPS cabinet shall be 36 in. x 67 in. x 5 in. (915 mm X 1700 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "D" for Traffic Signal Cabinets shall be a minimum of 48 inches (1220 mm) long and 31 inches (790 mm) wide. All Type "D" foundations shall be a minimum depth of 48 inches (1220 mm). The concrete apron shall be 36 in. x 48 in. x 5 in. (910 mm X 1220 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "E" for Mast Arm and Combination Mast Arm Poles shall meet the current requirements listed in the Highway Standards.

Foundations used for Combination Mast Arm Poles shall provide an extra 2-1/2 inch (65 mm) raceway.

No foundation is to be poured until the Resident Engineer gives his/her approval as to the depth of the foundation.

**LIGHT EMITTING DIODE (LED) SIGNAL HEAD AND OPTICALLY PROGRAMMED LED
SIGNAL HEAD**

Effective: May 22, 2002

Revised: January 1, 2015

Materials.

Add the following to Section 1078 of the Standard Specifications:

1. Representatives of LED traffic signal modules shall have a local office and warehouse within IDOT District One for inspection of materials and to handle inquiries and warranty issues.
2. LED modules proposed for use and not previously approved by IDOT District One will require independent testing for compliance to current VTCSH-ITE standards for the product and be Intertek ETL Verified. This would include modules from new manufacturers and new models from IDOT District One approved manufacturers.
3. The proposed independent testing facility shall be approved by IDOT District One. Independent testing must include a minimum of two (2) randomly selected modules of each type of module (i.e. ball, arrow, pedestrian, etc.) used in the District and include as a minimum Luminous Intensity and Chromaticity tests, however, complete module performance verification testing may be required by the Engineer to assure the accuracy of the manufacturer's published data and previous test results. An IDOT representative will select sample modules from the local warehouse and mark the modules for testing. Independent test results shall meet current ITE standards and manufacturer's published data. Any module failures shall require retesting of the module type. All costs associated with the selection of sample modules, testing, reporting, and retesting, if applicable, shall be the responsibility of the LED module manufacturer and not be a cost to this contract.
4. All signal and pedestrian heads shall provide 12" (300 mm) displays with glossy yellow or black polycarbonate housings. All head housings shall be the same color (yellow or black) at the intersection. For new signalized intersections and existing signalized intersections where all signal and/or pedestrian heads are being replaced, the proposed head housings shall be black. Where only selected heads are being replaced, the proposed head housing color (yellow or black) shall match existing head housings. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Post top mounting collars are required on all posts, and shall be constructed of the same material as the brackets.
5. Pedestrian signal heads shall be furnished with the international symbolic "Walking Person" and "Upraised Palm" displays. Egg crate sun shields are not permitted.

6. Signal heads shall be positioned according to the "District One Standard Traffic Signal Design Details."
7. LED signal heads (All Face and Section Quantities), (All Mounting Types) shall conform fully to the requirements of Articles 1078.01 and 1078.02 of the Standard Specifications amended herein.
8. The LED signal modules shall be replaced or repaired if an LED signal module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery. LED signal modules which exhibit luminous intensities less than the minimum values specified in Table 1 of the ITE Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement (June 27, 2005) [VTSCH], or applicable successor ITE specifications, or show signs of entrance of moisture or contaminants within the first 10 years of the date of delivery shall be replaced or repaired. The manufacturer's written warranty for the LED signal modules shall be dated, signed by an Officer of the company and included in the product submittal to the State.

(a) Physical and Mechanical Requirements

1. Modules can be manufactured under this specification for the following faces:
 - a. 12 inch (300 mm) circular, multi-section
 - b. 12 inch (300 mm) arrow, multi-section
 - c. 12 inch (300 mm) pedestrian, 2 sections
2. The maximum weight of a module shall be 4 lbs. (1.8 kg).
3. Each module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.
4. Material used for the lens and signal module construction shall conform to ASTM specifications for the materials.
5. The lens of the module shall be tinted with a wavelength-matched color to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face. Polymeric lens shall provide a surface coating or chemical surface treatment applied to provide abrasion resistance. The lens of the module shall be integral to the unit, convex with a smooth outer surface and made of plastic. The lens shall have a textured surface to reduce glare.
6. The use of tinting or other materials to enhance ON/OFF contrasts shall not affect chromaticity and shall be uniform across the face of the lens.
7. Each module shall have a symbol of the type of module (i.e. circle, arrow, etc.) in the color of the module. The symbol shall be 1 inch (25.4 mm) in diameter. Additionally, the color shall be written out in 1/2 inch (12.7mm) letters next to the symbol.

(b) Photometric Requirements

1. The minimum initial luminous intensity values for the modules shall conform to the values in Table 1 of the VTCSH (2005) for circular signal indications, and as stated in Table 3 of these specifications for arrow and pedestrian indications at 25 °C.
2. The modules shall meet or exceed the illumination values stated in Articles 1078.01 and 1078.02 the Standard Specifications for circular signal indications, and Table 3 of these specifications for arrow and pedestrian indications, throughout the useful life based on normal use in a traffic signal operation over the operating temperature range.
3. The measured chromaticity coordinates of the modules shall conform to the chromaticity requirements of Section 4.2 of the VTCSH (2005) or applicable successor ITE specifications.
4. The LEDs utilized in the modules shall be AlInGaP technology for red and Portland orange (pedestrian) and InGaN for green, amber and white (pedestrian) indications, and shall be the ultra bright type rated for 100,000 hours of continuous operation from -40 °C to +74 °C.

(c) Electrical

1. Maximum power consumption for LED modules is per Table 2.
2. Operating voltage of the modules shall be 120 VAC. All parameters shall be measured at this voltage.
3. The modules shall be operationally compatible with currently used controller assemblies (solid state load switches, flashers, and conflict monitors).
4. When a current of 20 mA AC (or less) is applied to the unit, the voltage read across the two leads shall be 15 VAC or less.
5. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.
6. LED arrows shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

(d) Retrofit Traffic Signal Module

1. The following specification requirements apply to the Retrofit module only. All general specifications apply unless specifically superseded in this section.
2. Retrofit modules can be manufactured under this specification for the following faces:
 - a. 12 inch (300 mm) circular, multi-section

- b. 12 inch (300 mm) arrow, multi-section
 - c. 12 inch (300 mm) pedestrian, 2 sections
3. Each Retrofit module shall be designed to be installed in the doorframe of a standard traffic signal housing. The Retrofit module shall be sealed in the doorframe with a one-piece EPDM (ethylene propylene rubber) gasket.
 4. The maximum weight of a Retrofit module shall be 4 lbs. (1.8 kg).
 5. Each Retrofit module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.
 6. Electrical conductors for modules, including Retrofit modules, shall be 39.4 inches (1m) in length, with quick disconnect terminals attached.
 7. The lens of the Retrofit module shall be integral to the unit, shall be convex with a smooth outer surface and made of plastic or of glass.
- (e) The following specification requirements apply to the 12 inch (300 mm) arrow module only. All general specifications apply unless specifically superseded in this section.
1. The arrow module shall meet specifications stated in Section 9.01 of the Equipment and Material Standards of the Institute of Transportation Engineers (November 1998) [ITE Standards], Chapter 2 (Vehicle Traffic Control Signal Heads) or applicable successor ITE specifications for arrow indications.
 2. The LEDs arrow indication shall be a solid display with a minimum of three (3) outlining rows of LEDs and at least one (1) fill row of LEDs.
- (f) The following specification requirement applies to the 12 inch (300 mm) programmed visibility (PV) module only. All general specifications apply unless specifically superseded in this section.
1. The LED module shall be a module designed and constructed to be installed in a programmed visibility (PV) signal housing without modification to the housing.
- (g) The following specification requirements apply to the 12 inch (300 mm) Pedestrian module only. All general specifications apply unless specifically superseded in this section.
1. The arrow module shall meet specifications stated in VTCSH-ITE 2004 or applicable successor.
 2. Two (2) pedestrian sections shall be installed. The top section shall be wired to illuminate only the upraised hand and the bottom section shall be the walking man.
 3. "Egg Crate" type sun shields are not permitted. All figures must be a minimum of 9 inches (225mm) in height and easily identified from a distance of 120-feet (36.6m).

Basis of Payment.

Add the following to the first paragraph of Article 880.04 of the Standard Specifications:

The price shall include furnishing the equipment described above, all mounting hardware and installing them in satisfactory operating condition.

Revise the second paragraph of Article 880.04 of the Standard Specifications to read:

If the work consists of retrofitting an existing polycarbonate traffic signal head with light emitting diodes (LEDs), it will be paid for as a SIGNAL HEAD, LED, RETROFIT, of the type specified, and of the particular kind of material, when specified. Price shall be payment in full for furnishing the equipment described above including LED modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of signal faces, the number of signal sections in each signal face and the method of mounting.

LIGHT EMITTING DIODE (LED) PEDESTRIAN SIGNAL HEAD

Effective: May 22, 2002

Revised: January 1, 2015

Add the following to the third paragraph of Article 881.03 of the Standard Specifications:

No mixing of different types of pedestrian traffic signals or displays will be permitted.

Add the following to Article 881.03 of the Standard Specifications:

(a) Pedestrian Countdown Signal Heads.

- (1) Pedestrian Countdown Signal Heads shall not be installed at signalized intersections where traffic signals and railroad warning devices are interconnected.
- (2) Pedestrian Countdown Signal Heads shall be 16 inch (406mm) x 18 inch (457mm), for single units with the housings glossy black polycarbonate. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on.
- (3) Each pedestrian signal LED module shall be fully MUTCD compliant and shall consist of double overlay message combining full LED symbols of an Upraised Hand and a Walking Person. "Egg Crate" type sun shields are not permitted. Numerals shall measure 9 inches (229mm) in height and easily identified from a distance of 120 feet (36.6m).

Materials.

Add the following to Article 1078.02 of the Standard Specifications:

General.

1. The module shall operate in one mode: Clearance Cycle Countdown Mode Only. The countdown module shall display actual controller programmed clearance cycle and shall start counting when the flashing clearance signal turns on and shall countdown to "0" and turn off when the steady Upraised Hand (symbolizing Don't Walk) signal turns on. Module shall not have user accessible switches or controls for modification of cycle.
2. At power on, the module shall enter a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.
3. The module shall re-program itself if it detects any increase or decrease of Pedestrian Timing. The counting unit will go blank once a change is detected and then take one complete pedestrian cycle (with no counter during this cycle) to adjust its buffer timer.
4. The module shall allow for consecutive cycles without displaying the steady Upraised Hand.
5. The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.
6. If the controller preempts during the Walking Person (symbolizing Walk), the countdown will follow the controller's directions and will adjust from Walking Person to flashing Upraised Hand. It will start to count down during the flashing Upraised Hand.
7. If the controller preempts during the flashing Upraised Hand, the countdown will continue to count down without interruption.
8. The next cycle, following the preemption event, shall use the correct, initially programmed values.
9. If the controller output displays Upraised Hand steady condition and the unit has not arrived to zero or if both the Upraised Hand and Walking Person are dark for some reason, the unit suspends any timing and the digits will go dark.
10. The digits will go dark for one pedestrian cycle after loss of power of more than 1.5 seconds.
11. The countdown numerals shall be two (2) "7 segment" digits forming the time display utilizing two rows of LEDs.
12. The LED module shall meet the requirements of the Institute of Transportation Engineers (ITE) LED purchase specification, "Pedestrian Traffic Control Signal Indications - Part 2: LED Pedestrian Traffic Signal Modules," or applicable successor ITE specifications, except as modified herein.
13. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.

14. In the event of a power outage, light output from the LED modules shall cease instantaneously.

15. The LEDs utilized in the modules shall be AlInGaP technology for Portland Orange (Countdown Numerals and Upraised Hand) and GaN technology for Lunar White (Walking Person) indications.

16. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

Electrical.

1. Maximum power consumption for LED modules is 29 watts.

Basis of Payment.

Add the following to the first paragraph of Article 881.04 of the Standard Specifications:

The price shall include furnishing the equipment described above, all mounting hardware and installing them in satisfactory operating condition.

Add the following to Article 881.04 of the Standard Specifications:

If the work consists of retrofitting an existing polycarbonate pedestrian signal head and pedestrian countdown signal head with light emitting diodes (LEDs), it will be paid for as a PEDESTRIAN SIGNAL HEAD, LED, RETROFIT, of the type specified, and of the particular kind of material, when specified. Price shall be payment in full for furnishing the equipment described above including LED modules, all mounting hardware, and installing them in satisfactory operating condition.

TRAFFIC SIGNAL BACKPLATE

Effective: May 22, 2002

Revised: January 1, 2015

Delete 1st sentence of Article 1078.03 of the Standard Specifications and add "All backplates shall be louvered, formed plastic".

Add the following to the third paragraph of Article 1078.03 of the Standard Specifications. The retroreflective backplate shall not contain louvers.

Delete second sentence of the fourth paragraph of Article 1078.03 the Standard Specifications.

Add the following to the fourth paragraph of Article 1078.03 of the Standard Specifications:

When retro reflective sheeting is specified, it shall be Type ZZ sheeting according to Article 1091.03 and applied in preferred orientation for the maximum angularity according to the manufacturer's recommendations. The retroreflective sheeting shall be installed under a controlled environment at the manufacturer/supplier before shipment to the contractor. The

formed plastic backplate shall be prepared and cleaned, following recommendations of the retroreflective sheeting manufacturer.

DETECTOR LOOP

Effective: May 22, 2002

Revised: January 1, 2015

Revise Section 886 of the Standard Specifications to read:

Description.

This work shall consist of furnishing and installing a detector loop in the pavement.

Procedure.

A minimum of seven (7) working days prior to the Contractor cutting loops, the Contractor shall have the proposed loop locations marked and contact the Area Traffic Signal Maintenance and Operations Engineer (847) 705-4424 to inspect and approve the layout. When preformed detector loops are installed, the Contractor shall have them inspected and approved prior to the pouring of the Portland cement concrete surface, using the same notification process as above.

Installation.

Loop detectors shall be installed according to the requirements of the "District One Standard Traffic Signal Design Details." Saw-cuts (homeruns on preformed detector loops) from the loop to the edge of pavement shall be made perpendicular to the edge of pavement when possible in order to minimize the length of the saw-cut (homerun on preformed detector loops) unless directed otherwise by the Engineer or as shown on the plan.

The detector loop cable insulation shall be labeled with the cable specifications.

Each loop detector lead-in wire shall be labeled in the handhole using a water proof tag, from an approved vender, secured to each wire with nylon ties.

Resistance to ground shall be a minimum of 100 mega-ohms under any conditions of weather or moisture. Inductance shall be more than 50 and less than 700 microhenries. Quality readings shall be more than 5.

- (a) Type I. All loops installed in new asphalt pavement shall be installed in the binder course and not in the surface course. The edge of pavement, curb and handhole shall be cut with a 1/4 inch (6.3 mm) deep x 4 inches (100 mm) saw cut to mark location of each loop lead-in.
- (b) Loop sealant shall be two-component thixotropic chemically cured polyurethane from an approved vender. The sealant shall be installed 1/8 inch (3 mm) below the pavement surface, if installed above the surface the overlap shall be removed immediately.
- (c) Detector loop measurements shall include the saw cut and the length of the loop lead-in to the edge of pavement. The lead-in wire, including all necessary connections for proper operations, from the edge of pavement to the handhole, shall be included in the price of the detector loop. Unit duct, trench and backfill, and drilling of pavement or handholes shall be included in detector loop quantities.

- (d) Preformed. This work shall consist of furnishing and installing a rubberized or cross linked polyethylene heat resistant preformed traffic signal loop in accordance with the Standard Specifications, except for the following:
- (e) Preformed detector loops shall be installed in new pavement constructed of Portland cement concrete using mounting chairs or tied to re-bar or the preformed detector loops may be placed in the sub-base. Loop lead-ins shall be extended to a temporary protective enclosure near the proposed handhole location. The protective enclosure shall provide sufficient protection from other construction activities and may be buried for additional protection.
- (f) Handholes shall be placed next to the shoulder or back of curb when preformed detector loops enter the handhole. Non-metallic coilaible duct, included in this pay item, shall be used to protect the preformed lead-ins from back of curb to the handhole.
- (g) Preformed detector loops shall be factory assembled with ends capped and sealed against moisture and other contaminants. Homeruns and interconnects shall be pre-wired and shall be an integral part of the loop assembly. The loop configurations and homerun lengths shall be assembled for the specific application. The loop and homerun shall be constructed using 11/16 inch (17.2 mm) outside diameter (minimum), 3/8 inch (9.5 mm) inside diameter (minimum) Class A oil resistant synthetic cord reinforced hydraulic hose with 250 psi (1,720 kPa) internal pressure rating or a similarly sized XLPE cable jacket. Hose for the loop and homerun assembly shall be one continuous piece. No joints or splices shall be allowed in the hose except where necessary to connect homeruns or interconnects to the loops. This will provide maximum wire protection and loop system strength. Hose tee connections shall be heavy duty high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking. For XLPE jacketed preformed loops, all splice connections shall be soldered, sealed, and tested before being sealed in a high impact glass impregnated plastic splice enclosure. The wire used shall be #16 THWN stranded copper. The number of turns in the loop shall be application specific. Homerun wire pairs shall be twisted a minimum of four turns per foot. No wire splices will be allowed in the preformed loop assembly. The loop and homeruns shall be filled and sealed with a flexible sealant to insure complete moisture blockage and further protect the wire. The preformed loops shall be constructed to allow a minimum of 6.5 feet of extra cable in the handhole.

Materials.

Add the following to Article 1079.01 of the Standard Specifications:

Contracts requiring new cabinets shall provide for rack mounted detector amplifier cards. Detector amplifiers shall provide LCD displays with loop frequency, inductance, and change of inductance readings.

Method of Measurement.

This work will be measured for payment in feet (meters) in place. Type I detector loop will be measured along the sawed slot in the pavement containing the loop and lead-in, rather than the

actual length of the wire. Preformed detector loops will be measured along the detector loop and lead-in embedded in the pavement, rather than the actual length of the wire.

Basis of Payment.

This work shall be paid for at the contract unit price per foot (meter) for DETECTOR LOOP, TYPE I or PREFORMED DETECTOR LOOP as specified in the plans, which price shall be payment in full for furnishing and installing the detector loop and all related connections for proper operation.

EMERGENCY VEHICLE PRIORITY SYSTEM

Effective: May 22, 2002

Revised: January 1, 2015

Revise Section 887 of the Standard Specifications to read:

It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle pre-emption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency.

All new installations shall be equipped with Confirmation Beacons as shown on the "District One Standard Traffic Signal Design Details." The Confirmation Beacon shall consist of a 6 watt Par 38 LED flood lamp with a 30 degree light spread, or a 7 watt Par 30 LED flood lamp with a 15 degree or greater spread, maximum 7 watt energy consumption at 120V, and a 2,000 hour warranty for each direction of pre-emption. The lamp shall have an adjustable mount with a weatherproof enclosure for cable splicing. All hardware shall be cast aluminum or stainless steel. Holes drilled into signal poles, mast arms, or posts shall require rubber grommets. In order to maintain uniformity between communities, the confirmation beacons shall indicate when the control equipment receives the pre-emption signal. The pre-emption movement shall be signalized by a flashing indication at the rate specified by Section 4L.01 of the "Manual on Uniform Traffic Control Devices," and other applicable sections of future editions. The stopped pre-empted movements shall be signalized by a continuous indication.

All light operated systems shall include security and transit preemption software and operate at a uniform rate of 14.035 Hz \pm 0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District.

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the EMERGENCY VEHICLE PRIORITY SYSTEM.

Basis of Payment.

The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be included in the cost of the Light Detector. Any required modifications to the traffic signal controller shall be included in the cost of the LIGHT DETECTOR AMPLIFIER. The preemption detector amplifier shall be paid for on a basis of (1) one each per intersection controller and shall provide operation for all movements required in the pre-emption phase sequence.

ACCESSIBLE PEDESTRIAN SIGNALS

Effective: April 1, 2003

Revised: January 1, 2015

Description.

This work shall consist of furnishing and installing pedestrian push button accessible pedestrian signals (APS) type. Each APS shall consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a light emitting diode (LED) indicator light, a solid state electronic control board, a power supply, wiring, and mounting hardware. The APS shall meet the requirements of the MUTCD and Sections 801 and 888 of the Standard Specifications, except as modified herein.

Electrical Requirements.

The APS shall operate with systems providing 95 to 130 VAC, 60 Hz and throughout an ambient air temperature range of -29 to +160 °F (-34 to +70 °C).

The APS shall contain a power protection circuit consisting of both fuse and transient protection.

Audible Indications.

A pushbutton locator tone shall sound at each pushbutton.

If two accessible pedestrian pushbuttons are placed less than 10 ft (3 m) apart or placed on the same pole, the audible walk indication shall be a speech walk message.

A clear, verbal message shall be used to communicate the pedestrian walk interval. This message shall sound throughout the WALK interval only. The verbal message shall be modeled after: "Street Name." Walk Sign is on to cross "Street Name." No other messages shall be used to denote the WALK interval.

Where two accessible pedestrian pushbuttons are separated by at least 10 ft (3 m), the walk indication shall be an audible percussive tone. It shall repeat at 8 to 10 ticks per second with a dominant frequency of 880 Hz.

Automatic volume adjustments in response to ambient traffic sound level shall be provided up to a maximum volume of 100 dBA. Locator tone and verbal messages shall be no more than 5 dB louder than ambient sound.

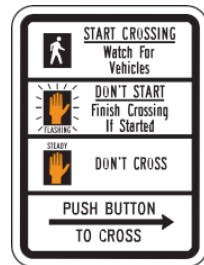
Pedestrian Pushbutton.

Pedestrian pushbuttons shall be at least 2 in. (50 mm) in diameter or width. The force required to activate the pushbutton shall be no greater than 3.5 lb (15.5 N).

A red LED indicator shall be located on or near the pushbutton which, when activated, acknowledges the pedestrians request to cross the street. The recorded messages and roadway designations shall be confirmed with the engineer and included with submitted product data.

Signage.

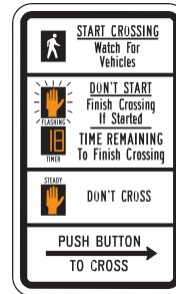
A sign shall be located immediately above the pedestrian pushbutton and parallel to the crosswalk controlled by the pushbutton. The sign shall be one of the following standard MUTCD designs: R10-3b, R10-3d, or R10-3e.



R10-3b



R10-3d



R10-3e

Tactile Arrow.

A tactile arrow, pointing in the direction of travel controlled by a pushbutton, shall be provided either on the pushbutton or its sign.

Vibrotactile Feature.

The pushbutton shall pulse when depressed and shall vibrate continuously throughout the WALK interval.

Training.

The Contractor shall provide APS onsite training for Department personnel and person(s) or group that requested the installation of the APS. APS features and operation shall be demonstrated during the training. The training shall be presented by the APS manufacturer's representative. Time, date, and location of the training and demonstration shall be coordinated with the Engineer.

Basis of Payment.

This work will be paid for at the contract unit price each for a pedestrian push button, ACCESSIBLE PEDESTRIAN SIGNALS type and shall include furnishing, installation, mounting hardware, message programming, and training.

TEMPORARY TRAFFIC SIGNAL INSTALLATION

Effective: May 22, 2002

Revised: January 1, 2015

Revise Section 890 of the Standard Specifications to read:

Description.

This work shall consist of furnishing, installing, maintaining, and removing a temporary traffic signal installation as shown on the plans, including but not limited to temporary signal heads, emergency vehicle priority systems, interconnect, vehicle detectors, uninterruptable power supply, and signing. Temporary traffic signal controllers and cabinets interconnected to railroad traffic control devices shall be new. When temporary traffic signals will be operating within a

county or local agency Traffic Management System, the equipment must be NTCIP compliant and compatible with the current operating requirements of the Traffic Management System.

General.

Only an approved equipment vendor will be allowed to assemble the temporary traffic signal cabinet. Also, an approved equipment vendor shall assemble and test a temporary railroad traffic signal cabinet. (Refer to the "Inspection of Controller and Cabinet" specification). The approved equipment vendor shall be the same as the official controller representative supplied on this project. A representative of the approved controller equipment vendor shall be present at the temporary traffic signal turn-on inspection.

Construction Requirements.

(a) Controllers.

1. Only controllers supplied by one of the District approved closed loop equipment manufacturers will be approved for use at temporary signal locations. All controllers used for temporary traffic signals shall be fully actuated NEMA microprocessor based with RS232 data entry ports compatible with existing monitoring software approved by IDOT District 1, installed in NEMA TS2 cabinets with 8 phase back panels, capable of supplying 255 seconds of cycle length and individual phase length settings up to 99 seconds. On projects with one lane open and two way traffic flow, such as bridge deck repairs, the temporary signal controller shall be capable of providing an adjustable all red clearance setting of up to 30 seconds in length. All controllers used for temporary traffic signals shall meet or exceed the requirements of Section 857 of the Standard Specifications with regards to internal time base coordination and preemption. All railroad interconnected temporary controllers and cabinets shall be new and shall satisfy the requirements of Article 857.02 of the Standard Specifications as modified herein.
2. Only control equipment, including controller cabinet and peripheral equipment, supplied by one of the District approved closed loop equipment manufacturers will be approved for use at temporary traffic signal locations. All control equipment for the temporary traffic signal(s) shall be furnished by the Contractor unless otherwise stated in the plans. On projects with multiple temporary traffic signal installations, all controllers shall be the same manufacturer brand and model number with current software installed.

(b) Cabinets. All temporary traffic signal cabinets shall have a closed bottom made of aluminum alloy. The bottom shall be sealed along the entire perimeter of the cabinet base to ensure a water, dust and insect-proof seal. The bottom shall provide a minimum of two (2) 4 inch (100 mm) diameter holes to run the electric cables through. The 4 inch (100 mm) diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.

(c) Grounding. Grounding shall be provided for the temporary traffic signal cabinet meeting or exceeding the applicable portions of the National Electrical Code, Section

806 of the Standard Specifications and shall meet the requirements of the District 1 Traffic Signal Specifications for "Grounding of Traffic Signal Systems."

(d) Traffic Signal Heads. All traffic signal sections and pedestrian signal sections shall be 12 inches (300 mm). Traffic signal sections shall be LED with expandable view, unless otherwise approved by the Engineer. Pedestrian signal heads shall be Light Emitting Diode (LED) Pedestrian Countdown Signal Heads except when a temporary traffic signal is installed at an intersection interconnected with a railroad grade crossing. When a temporary traffic signal is installed at an intersection interconnected with a railroad grade crossing, Light Emitting Diode (LED) Pedestrian Signal Heads shall be furnished. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Engineer. If no traffic staging is in place or will not be staged on the day of the turn on, the temporary traffic signal shall have the signal head displays, signal head placements and controller phasing match the existing traffic signal, at the time of the turn on. The Contractor shall furnish enough extra cable length to relocate heads to any position on the span wire or at locations illustrated on the plans for construction staging. The temporary traffic signal shall remain in operation during all signal head relocations. Each temporary traffic signal head shall have its own cable from the controller cabinet to the signal head.

(e) Interconnect.

1. Temporary traffic signal interconnect shall be provided using fiber optic cable or wireless interconnect technology as specified in the plans. The Contractor may request, in writing, to substitute the fiber optic temporary interconnect indicated in the contract documents with a wireless interconnect. The Contractor must provide assurances that the radio device will operate properly at all times and during all construction staging. If approved for use by the Engineer, the Contractor shall submit marked-up traffic signal plans indicating locations of radios and antennas and installation details. If wireless interconnect is used, and in the opinion of the engineer, it is not viable, or if it fails during testing or operations, the Contractor shall be responsible for installing all necessary poles, fiber optic cable, and other infrastructure for providing temporary fiber optic interconnect at no cost to the contract.
2. The existing system interconnect and phone lines are to be maintained as part of the Temporary Traffic Signal Installation specified for on the plan. The interconnect shall be installed into the temporary controller cabinet as per the notes or details on the plans. All labor and equipment required to install and maintain the existing interconnect as part of the Temporary Traffic Signal Installation shall be included in the item Temporary Traffic Signal Installation. When shown in the plans, temporary traffic signal interconnect equipment shall be furnished and installed. The temporary traffic signal interconnect shall maintain interconnect communications throughout the entire signal system for the duration of the project. Any temporary signal within an existing closed loop traffic signal system shall be interconnected to that system using similar brand control equipment at no additional cost to the contract.

3. Temporary wireless interconnect, complete. The radio interconnect system shall be compatible with Eagle or Econolite controller closed loop systems. This item shall include all temporary wireless interconnect components, complete, at the adjacent existing traffic signal(s) to provide a completely operational closed loop system. This item shall include all materials, labor and testing to provide the completely operational closed loop system as shown on the plans. The radio interconnect system shall include the following components:

- a. Rack or Shelf Mounted RS-232 Frequency Hopping Spread Spectrum (FHSS) Radio
- b. Software for Radio Configuration (Configure Frequency and Hopping Patterns)
- c. Antennas (Omni Directional or Yagi Directional)
- d. Antenna Cables, LMR400, Low Loss. Max. 100-ft from controller cabinet to antenna
- e. Brackets, Mounting Hardware, and Accessories Required for Installation
- f. RS232 Data Cable for Connection from the radio to the local or master controller
- g. All other components required for a fully functional radio interconnect system

All controller cabinet modifications and other modifications to existing equipment that are required for the installation of the radio interconnect system components shall be included in this item.

The radio interconnect system may operate at 900Mhz (902-928) or 2.4 Ghz depending on the results of a site survey. The telemetry shall have an acceptable rate of transmission errors, time outs, etc. comparable to that of a hardwire system.

The proposed master controller and telemetry module shall be configured for use with the radio interconnect at a minimum rate of 9600 baud.

The radio interconnect system shall include all other components required for a complete and fully functional telemetry system and shall be installed in accordance to the manufacturers recommendations.

The following radio equipment is currently approved for use in Region One/District One: Encom Model 5100 and Intuicom Communicator II.

- (f) Emergency Vehicle Pre-Emption. All emergency vehicle preemption equipment (light detectors, light detector amplifiers, confirmation beacons, etc.) as shown on the temporary traffic signal plans shall be provided by the Contractor. It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle preemption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency. All light operated systems shall operate

at a uniform rate of 14.035 hz \pm 0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District. All labor and material required to install and maintain the Emergency Vehicle Preemption installation shall be included in the item Temporary Traffic Signal Installation.

- (g) Vehicle Detection. All temporary traffic signal installations shall have vehicular detection installed at all approaches of the intersection and as directed by the Engineer. Pedestrian push buttons shall be provided for all pedestrian signal heads/phases as directed by the Engineer. Microwave vehicle sensors or video vehicle detection system shall be approved by IDOT prior to Contractor furnishing and installing. The Contractor shall install, wire, and adjust the alignment of the microwave vehicle sensor or video vehicle detection system in accordance to the manufacturer's recommendations and requirements. The Contractor shall be responsible for adjusting the alignment of the microwave vehicle sensor or video vehicle detection system for all construction staging changes and for maintaining proper alignment throughout the project. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up and maintaining the microwave vehicle sensor or video vehicle detection system. An in-cabinet video monitor shall be provided with all video vehicle detection systems and shall be included in the item Temporary Traffic Signal Installation.
- (h) Uninterruptable Power Supply. All temporary traffic signal installations shall have Uninterruptable Power Supply (UPS). The UPS cabinet shall be mounted to the temporary traffic signal cabinet and meet the requirements of Uninterruptable Power Supply in Divisions 800 and 1000 of these specifications.
- (i) Signs. All existing street name and intersection regulatory signs shall be removed from existing poles and relocated to the temporary signal span wire. If new mast arm assembly and pole(s) and posts are specified for the permanent signals, the signs shall be relocated to the new equipment at no extra cost. Any intersection regulatory signs that are required for the temporary traffic signal shall be provided as shown on the plans or as directed by the Engineer. Relocation, removing, bagging and installing the regulatory signs for the various construction stages shall be provided as shown on the plans or as directed by the Engineer.
- (j) Energy Charges. The electrical utility energy charges for the operation of the temporary traffic signal installation shall be paid for by others if the installation replaces an existing signal. Otherwise charges shall be paid for under 109.05 of the Standard Specifications.
- (k) Maintenance. Maintenance shall meet the requirements of the Standard Specifications and MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION in Division 800 of these specifications. Maintenance of temporary signals and of the existing signals shall be included in the cost of the TEMPORARY TRAFFIC SIGNAL INSTALLATION pay item. When temporary traffic signals are to be installed at locations where existing signals are presently operating, the Contractor shall be fully responsible for the maintenance of the existing signal

installation as soon as he begins any physical work on the Contract or any portion thereof. In addition, a minimum of seven (7) days prior to assuming maintenance of the existing traffic signal installation(s) under this Contract, the Contractor shall request that the Resident Engineer contact the Bureau of Traffic Operations (847) 705-4424 for an inspection of the installation(s).

- (l) Temporary Traffic Signals for Bridge Projects. Temporary Traffic Signals for bridge projects shall follow the State Standards, Standard Specifications, District One Traffic Signal Specifications and any plans for Bridge Temporary Traffic Signals included in the plans. The installation shall meet the Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION specification. In addition all electric cable shall be aerially suspended, at a minimum height of 18 feet (5.5m) on temporary wood poles (Class 5 or better) of 45 feet (13.7 m) minimum height. The signal heads shall be span wire mounted or bracket mounted to the wood pole or as directed by the Engineer. The Controller cabinet shall be mounted to the wood pole as shown in the plans, or as directed by the Engineer. Microwave vehicle sensors or video vehicle detection system may be used in place of detector loops as approved by the Engineer.

(m) Temporary Portable Traffic Signal for Bridge Projects.

1. Unless otherwise directed by the Engineer, temporary portable traffic signals shall be restricted to use on roadways of less than 8000 ADT that have limited access to electric utility service, shall not be installed on projects where the estimated need exceeds ten (10) weeks, and shall not be in operation during the period of November through March. The Contractor shall replace the temporary portable traffic signals with temporary span wire traffic signals noted herein at no cost to the contract if the bridge project or Engineer requires temporary traffic signals to remain in operation into any part of period of November through March. If, in the opinion of the engineer, the reliability and safety of the temporary portable traffic signal is not similar to that of a temporary span wire traffic signal installation, the Contractor shall replace the temporary portable traffic signals with temporary span wire traffic signals noted herein at no cost to the contract.
2. The controller and LED signal displays shall meet the Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION specification.
3. Work shall be according to Article 701.18(b) of the Standard Specifications except as noted herein.
4. General.
 - a. The temporary portable bridge traffic signals shall be trailer-mounted units. The trailer-mounted units shall be set up securely and level. Each unit shall be self-contained and consist of two signal heads. The left signal head shall be mounted on a mast arm capable of extending over

the travel lane. Each unit shall contain a solar cell system to facilitate battery charging. There shall be a minimum of 12 days backup reserve battery supply and the units shall be capable of operating with a 120 V power supply from a generator or electrical service.

- b. All signal heads located over the travel lane shall be mounted at a minimum height of 17 feet (5m) from the bottom of the signal back plate to the top of the road surface. All far right signal heads located outside the travel lane shall be mounted at a minimum height of 8 feet (2.5m) from the bottom of the signal back plate to the top of the adjacent travel lane surface.
- c. The long all red intervals for the traffic signal controller shall be adjustable up to 250 seconds in one-second increments.
- d. As an alternative to detector loops, temporary portable bridge traffic signals may be equipped with microwave sensors or other approved methods of vehicle detection and traffic actuation.
- e. All portable traffic signal units shall be interconnected using hardwire communication cable. Radio communication equipment may be used only with the approval of the Engineer. If radio communication is used, a site analysis shall be completed to ensure that there is no interference present that would affect the traffic signal operation. The radio equipment shall meet all applicable FCC requirements.
- f. The temporary portable bridge traffic signal system shall meet the physical display and operational requirements of conventional traffic signals as specified in Part IV and other applicable portions of the currently adopted version of the Manual on Uniform Traffic Control Devices (MUTCD) and the Illinois MUTCD. The signal system shall be designed to continuously operate over an ambient temperature range between -30 °F (-34 °C) and 120 °F (48 °C). When not being utilized to inform and direct traffic, portable signals shall be treated as nonoperating equipment according to Article 701.11.
- g. Basis of Payment. This work will be paid for according to Article 701.20(c).

Basis of Payment.

This work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL INSTALLATION, TEMPORARY BRIDGE TRAFFIC SIGNAL INSTALLATION, or TEMPORARY PORTABLE BRIDGE TRAFFIC SIGNAL INSTALLATION, the price of which shall include all costs for the modifications required for traffic staging, changes in signal phasing as required in the Contract plans, microwave vehicle sensors, video vehicle detection system, any maintenance or adjustment to the microwave vehicle sensors/video vehicle detection system, the temporary wireless interconnect system complete, temporary fiber optic interconnect system

complete, all material required, the installation and complete removal of the temporary traffic signal. Each intersection will be paid for separately.

TEMPORARY TRAFFIC SIGNAL TIMING

Effective: May 22, 2002

Revised: January 1, 2015

Description.

This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the duration of the temporary signalized condition, as well as impact to existing traffic signal timings caused by detours or other temporary conditions.

All timings and adjustments necessary for this work shall be performed by an approved Consultant who has previous experience in optimizing Closed Loop Traffic signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants.

The following tasks are associated with TEMPORARY TRAFFIC SIGNAL TIMING.

- (a) Consultant shall attend temporary traffic signal inspection (turn-on) and/or detour meeting and conduct on-site implementation of the traffic signal timings. Make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.
- (b) Consultant shall provide monthly observation of traffic signal operations in the field.
- (c) Consultant shall provide on-site consultation and adjust timings as necessary for construction stage changes, temporary traffic signal phase changes, and any other conditions affecting timing and phasing, including lane closures, detours, and other construction activities.
- (d) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

Basis of Payment.

The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMING, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on and/or detour implemented, 50 percent of the bid price will be paid. The remaining 50 percent of the bid price will be paid following the removal of the temporary traffic signal installation and/or detour.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT

Effective: May 22, 2002

Revised: January 1, 2015

Add the following to Article 895.05 of the Standard Specifications:

The traffic signal equipment which is to be removed and is to become the property of the Contractor shall be disposed of outside the right-of-way at the Contractor's expense.

All equipment to be returned to the State shall be delivered by the Contractor to the State's Traffic Signal Maintenance Contractor's main facility. The Contractor shall contact the State's Electrical Maintenance Contractor to schedule an appointment to deliver the equipment. No equipment will be accepted without a prior appointment. All equipment shall be delivered within 30 days of removing it from the traffic signal installation. The Contractor shall provide 5 hard copies and 1 electronic file of a list of equipment that is to remain the property of the State, including model and serial numbers, where applicable. The Contractor shall also provide a copy of the Contract plan or special provision showing the quantities and type of equipment. Controllers and peripheral equipment from the same location shall be boxed together (equipment from different locations may not be mixed) and all boxes and controller cabinets shall be clearly marked or labeled with the location from which they were removed. If equipment is not returned with these requirements, it will be rejected by the State's Electrical Maintenance Contractor. The Contractor shall be responsible for the condition of the traffic signal equipment from the time Contractor takes maintenance of the signal installation until the acceptance of a receipt drawn by the State's Electrical Maintenance Contractor indicating the items have been returned in good condition.

The Contractor shall safely store and arrange for pick up or delivery of all equipment to be returned to agencies other than the State. The Contractor shall package the equipment and provide all necessary documentation as stated above.

Traffic signal equipment which is lost or not returned to the Department for any reason shall be replaced with new equipment meeting the requirements of these Specifications at no cost to the contract.

PROJECT SPECIFIC SPECIAL PROVISIONS

TEMPORARY DITCH CHECKS

Description. This work shall consist of constructing, maintaining, and removing temporary ditch checks.

General. The work shall be performed according to Section 280 of the "Standard Specifications", the details shown in the plans, and the following:

The temporary ditch check shall be triangular shaped, urethane foam covered with a geotextile fabric. The temporary ditch check shall be installed on a geotextile fabric apron. The temporary ditch check shall have a triangle base 16" – 20" wide and a minimum triangle height of 8" – 10". The temporary ditch checks shall be installed at the locations specified on the Erosion Control Plan, and/or as directed by the Engineer. The temporary ditch check installation shall be according to the detail shown on the plans and the manufacturer's recommendations.

The geotextile fabric shall conform to Article 1080.05 of the "Standard Specifications", for Geotechnical Fabric for French Drains.

The temporary ditch checks shall remain in place until just before placing the final landscaping in the ditch area. The Contractor shall not remove the temporary ditch checks if it is raining and/or rain is in the immediate forecast.

The ditch checks shall become the property of the Contractor upon their removal.

Method of Measurement. *Temporary Ditch Checks will be measured in place and the length calculated in feet for each ditch check section actually installed.*

Basis of Payment. This work will be paid for at the contract unit price per foot for TEMPORARY DITCH CHECKS. *The unit price shall include all labor, equipment and materials necessary for their installation and removal. The maintenance of this item shall be included with and paid for as part of the contract total price for MAINTENANCE OF EROSION CONTROL SYSTEM.*

MAINTENANCE OF EROSION CONTROL SYSTEM

Description. This work shall consist of maintaining the temporary erosion control systems installed by the Contractor on the project. The maintenance shall be performed as directed by the Engineer, to control siltation at all times during the duration of the project.

General. The work shall be performed according to Section 280 of the "Standard Specifications" and the following:

The Maintenance of Erosion Control System work item shall include:

- Any repairs to the various temporary erosion control systems.
- The removal of entrapped sediment.
- Cleaning of any silt filter fabric.
- Other items as specified in project special provisions relating to erosion control.

When a temporary erosion control system is in need of maintenance, the Engineer will give the Contractor written notice. If the Contractor fails to maintain the temporary erosion control systems within 48 hours of receiving the written notice, the Engineer may proceed to maintain the systems as deemed necessary. The cost of this maintenance will be deducted from any compensation due, or which may become due the Contractor under this contract.

Sediment basin(s) shall be cleaned out (accumulated silt removed) any time the basin(s) become 75% filled. Any additional materials and work required by the Engineer will be measured and paid for as specified.

Removed sediment and other materials shall be disposed of according to Article 202.03 of the "Standard Specifications".

Method of Measurement. Work performed under this pay item shall be submitted by the Contractor to the Engineer on a lump sum basis. The Engineer may use any, all or none of this pay item.

The quantity for this item is established based on the Engineer's Estimate and the following formula.

Contract Pay Item	Percent of Engineer's Estimate for Pay Item
<i>Temporary Ditch Checks/Rock Check Dams</i>	20%
<i>Perimeter Erosion Barrier, Special</i>	20%
<i>Inlet & Pipe Protection</i>	20%
<i>Erosion Control Blanket (All Types)</i>	5%
<i>Seeding</i>	5%

** if more than one of these items is included in the pay items then the sum is used. Temporary erosion control seeding is not included in the maintenance calculation.*

The plan-measured quantity for MAINTENANCE OF EROSION CONTROL SYSTEM for this contract is **XXXXXX**.

Basis of Payment. The unit price for MAINTENANCE OF EROSION CONTROL SYSTEM will be LUMP SUM according to the formula as established above by plan measured quantities. Therefore the LUMP SUM will equal \$**XXXXXX** of work performed according to Article 109.04 (b) of the "Standard Specifications".

SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE REMOVAL

Description. This work shall consist of the removal of a stabilized construction entrance and all items necessary for removal of the stabilized construction entrance. This includes (but not limited to) excess aggregate for mountable berms, aggregate radii abutting temporary, permanent, or existing pavement; cellular confinement grids; all unnecessary aggregate within 20 feet within the original lines and dimensions in which the original entrance was constructed. All methods of removal shall be approved by the engineer. Material shall be disposed of according to Article 202.03 or as directed by the Engineer.

Basis of Payment. This work shall be measured and paid for at the contract unit price per EACH for SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE REMOVAL and shall include all labor, excavation, and disposal of material used for the stabilized construction entrance.

SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE MAINTENANCE

Description. This work shall consist of maintaining stabilized construction entrances that have become ineffective as a result of standard operations and natural forces. This work will include the removal of proper disposal of excess materials and the delivery and placing of aggregate in the manner described in SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE.

This pay item shall not be paid for each time maintenance is required but shall consist of maintenance over the life of the project for which the entrance is needed.

Basis of Payment. This work shall be measured for payment to the outside dimensions of the material being removed and the area calculated in SQUARE YARDS. All excavation and grading necessary to remove and replace the sediment fill aggregate shall not be paid for separately but included in the cost of SEDIMENT CONTROL, STABILIZED ENTRANCE MAINTENANCE.

PERIMETER EROSION BARRIER, SPECIAL

Description. This work shall consist of constructing, removing, and disposing of perimeter erosion barrier, special as part of the project's temporary erosion control system. Perimeter erosion control barrier, special shall be utilized adjacent to existing wetlands.

General. The work shall be performed according to Section 280 of the "Standard Specifications," special provision 28000400 "PERIMETER EROSION BARRIER" and the following:

Materials:

Geotextile Requirements. The geotextile used for the temporary silt fence shall be classified as supported (with a wire of polymeric mesh backing) or unsupported (no backing). The temporary silt fence geotextile shall meet the requirements of the Table included below. All numeric values except Apparent Opening Size (AOS) represent Minimum Average Roll Values

(MARV as defined in ASTM D4439). The values for AOS are the Maximum Average Roll Values.

Table – Temporary Silt Fence Requirements

Requirements	Test Methods	Wire Backed Supported Silt Fence ^a
Maximum Post Spacing		4 feet
Grab Strength	ASTM D4632	
Machine Direction		90 lbs
X-Machine Direction		90 lbs
Permittivity ^b	ASTM D4491	0.05 sec ⁻¹
Apparent Opening Size	ASTM D4751	0.024in maximum average roll value
Ultraviolet Stability	ASTM D4355	70% after 500 hours of exposure

Notes:

- a) Silt fence support shall consist of 14-gauge steel wire with a mesh backing of 6"x6" or prefabricated polymeric mesh of equivalent strength.
- b) These default filtration property values are based on empirical evidence with a variety of sediments. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotextile tests should be performed to confirm the suitability of these requirements.

The wire support fence shall:

- 1) Be a minimum of 14-gauge
- 2) Have a minimum of six horizontal wires
- 3) The maximum vertical wire spacing shall be 6"

Method of Measurement: This work will be measured for payment in place by FOOT.

Basis of Payment. This work will be paid for at the contract unit price per FOOT for PERIMETER EROSION BARRIER, SPECIAL. The unit price shall include all work and materials necessary to properly install the barrier and to remove and dispose of the used materials at the completion of the project. Maintenance requirements shall be included and paid for according to Section 280 of the "Standard Specifications."

CONCRETE TRUCK WASHOUT

Description. The CONCRETE TRUCK WASHOUT as identified on the plans is used to contain concrete liquids when the chutes of concrete trucks are rinsed out after the delivery of concrete to the construction site. These washout facilities function to consolidate soils for disposal and prevent runoff liquids associated with concrete. Details of the construction of the non-portable facilities are included within the plans as “temporary concrete washout facilities.” Failure to comply with appropriate washout location requirements will result in monetary deficiency deduction against the Contractor.

General Requirements.

- The Contractor must submit a plan of his/her proposed temporary concrete washout facility to the Engineer for his/her approval at least 10 days prior to the first concrete pour.
- Temporary concrete washout facilities are to be in place prior to any delivery of concrete to the construction site.
- Temporary concrete washout facilities are to be located at least 50 feet from storm drain inlets, open drainage facilities, or water bodies. Each facility is to be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign is to be installed adjacent to each temporary concrete washout facility to inform concrete equipment operations of the designated washout facility.

Design. Two types of concrete washout facilities are available for use on this project:

Prefabricated portable facilities (as approved by the Engineer)

Non-portable facilities.

- **Above Grade:** Constructed using barrier wall & polyethylene sheeting. Barrier walls are constructed to create a berm with a single sheet of 10-mil polyethylene sheeting which is free of holes, tears, or other defects which may compromise the impermeability of the material. Sandbags are used to hold the sheeting in place on top of the berm. Sheeting must extend over the entire basin and berm to prevent escape of discharge.
- **Below Grade:** Constructed via excavation and the use of polyethylene sheeting and sandbags. A pit is first excavated in a designated location with a single sheet of 10-mil polyethylene sheeting which is free of holes, tears, or other defects, which may compromise the impermeability of the material. Sandbags are then used to hold the sheeting in place.

Size of Washouts.

Number and size of washout facility is to be determined by the Contractor. It is his/her responsibility to provide enough storage for the excess concrete and water produced on the target. Non-portable facilities are to have a minimum length and width of 10'.

Inspection/Maintenance/Removal.

- Temporary concrete washout facilities are to be inspected by the Engineer during his/her weekly erosion and sediment control inspection per the requirements of the SWPPP.

The inspector is to ensure there are no leaks, spills, and the capacity of the facility has not yet been compromised.

- Any overflowing of the washout facility onto the ground must be cleaned up and removed within 24 hours of discovery.
- If a rain or snow event is forecasted, a non-collapsing, non-water collecting cover shall be placed over the washout facility and secured to prevent accumulation and overflow of precipitation.
- Contents of each facility are not to exceed 75% of design capacity. If contents reach 75% capacity, discontinue pouring concrete into the facility until it has been cleaned out.
- Allow slurry to evaporate or remove the site in a safe manner (i.e. vacuum truck). All hardened material can then be removed or disposed of properly.
- If a lined basin is used, immediately replace the liner if it becomes damaged.
- Remove temporary concrete washout facilities when they are no longer required and restore the disturbed areas to their original condition.
- Note locations of these facilities and any changes to these locations on the SWPPP.

Basis of Payment. This work shall be paid for at the contract unit price LUMP SUM for CONCRETE TRUCK WASHOUT, which price shall be payment in full for all material, labor, excavation, and maintenance of all temporary concrete washout facilities on the project throughout the life of the project.

SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE

Description. This work shall consist of constructing a stabilized construction entrance, including furnishing, installing, maintaining and removing a stabilized pad of aggregate underlain with filter fabric, as shown on the plans or directed by the Engineer.

Materials. The materials used shall meet the requirements of the following:

Aggregate: The aggregate shall be limited to IDOT Coarse Aggregate Gradation CA-1.

Filter Fabric: The filter fabric shall be made of synthetic polymers composed of at least 85 percent by weight polypropylene, polyesters, polyamides, polyethylene, polyolefins, or polyvinylidene-chlorides. The geotextile shall be free of any chemical treatment or coating that significantly reduces its porosity. Fibers shall contain stabilizers and/or inhibitors to enhance resistance to ultraviolet lights.

Construction Requirements. The aggregate shall be at least six inches thick. The aggregate shall not be placed until the entrance area has been inspected and approved by the Engineer.

The aggregate shall be dumped and spread into place in approximately horizontal layers. The layer(s) shall not exceed three feet in thickness. The aggregate shall be placed in such a manner as to produce a reasonably homogeneous stable fill that contains no segregated pockets of larger or smaller fragments or large unfilled space caused by bridging of larger fragments. No compaction shall be required beyond that resulting from the placing and spreading operations.

The construction entrance shall follow the dimensions shown on the plans and/or have a minimum width of 14 feet and a minimum length of 50 feet.

All surface water flowing or diverted toward the construction entrance shall be piped across the entrance. Any pipe used for this will be considered included in the unit price for SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE. The stabilized construction entrance shall have positive drainage away from the roadway.

The entrance shall remain in place and be maintained until the disturbed area is stabilized. Any sediment spilled onto public right-of-way(s) shall be removed immediately. All removed materials shall be disposed of outside the limits of the right-of-way according to Article 202.03 of the "Standard Specifications" and/or as directed by the Engineer.

Method of Measurement. The Stabilized Construction Entrance will be measured in place and the area computed in square yards.

Basis of Payment. The work will be paid for at the contract unit price per square yard for SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE. The unit price shall include all material, including filter fabric, labor, equipment and any other items required to complete the construction entrance.

DUST CONTROL WATERING

Description. This work shall consist of furnishing and applying water to control dust and air-borne dirt generated by construction activities.

General. This work shall be performed according to Article 107.36 of the "Standard Specifications" and the following:

Revise Article 107.36 of the "Standard Specifications" as follows:

Replace sub-paragraph (d) of under the third paragraph with the following:

(d) Dust shall be controlled by the uniform application of sprinkled water and shall be applied only when directed and in a manner approved by the Engineer. All equipment used for this work shall meet with the Engineer's approval and shall be equipped with adequate measuring devices for determining the exact amount of water discharged. All water used shall be properly documented by ticket or other approved means.

The Contractor is reminded of the provisions of Article 107.18 of the "Special Provisions" regarding the procurement of water from fire hydrants.

Method of Measurement. This work will be measured in units of gallons of water applied. One unit is equivalent to 1,000 gallons of water applied.

Basis of Payment. This work will be paid for at the contract unit price per unit for DUST CONTROL WATERING. *The unit price shall include all equipment, materials and labor required to control dust.*

SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER CLEANING

Description. This work shall consist of cleaning sediment out of a drainage structure inlet filter when directed by the Engineer. The Engineer will be the sole judge of the need for cleaning based on the rate that debris and silt is collected at each inlet filter cleaning.

Cleaning of the inlet filter shall consist of inspecting, cleaning (includes removal and proper disposal of debris and silt that has accumulated) by vactoring, removing and dumping, or any other method that has been approved by the engineer.

For purposes of this contract, it is anticipated that inlet filter cleaning will be performed one time for all inlet filters on the project. Some filters will require no cleaning, others will require multiple cleanings. The Contractor may use some or all quantity for this pay item.

Basis of Payment. This work shall be paid at the contract unit price for EACH for SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER CLEANING.

SEEDING, CLASS 4B

Description. This work shall consist of placing seeding in accordance with Sections 250 of the Standard Specifications and the plans and/or as directed by the Engineer.

Construction Requirements. The seeding mixture for Class 4B shall be modified to the following:

MODIFIED- IDOT Class 4B Wetland Grass & Sedge Mixture

Spring Oats	60 lbs. / acre
Wetland Grasses (below)	12.4 lbs. / acre

Wetland Grasses:		
Common Name	Scientific Name	Lbs/Acre
Blue Joint Grass	<i>Calamagrostis canadensis</i>	1.44
Lake-Bank Sedge	<i>Carex lacustris</i>	0.36
Awl-Fruited Sedge	<i>Carex tribuloides</i>	0.36
Tussock Sedge	<i>Carex stricta</i>	0.72
Fox Sedge	<i>Carex stipata</i>	0.72
Needle Spike Rush	<i>Eleocharis acicularis</i>	0.36

Blunt Spike Rush	<i>Eleocharis ovata</i>	0.36
Fowl Manna Grass	<i>Glyceria striata</i>	1.68
Common Rush	<i>Juncus effusus</i>	0.72
Slender Rush	<i>Juncus tenuis</i>	0.36
Torrey's Rush	<i>Juncus torreyi</i>	0.36
Rice Cut Grass	<i>Leersia oryzoides</i>	0.2
Switchgrass	<i>Panicum virgatum</i>	2
Hard-Stemmed Bulrush	<i>Scirpus acutus</i>	0.36
Dark Green Rush	<i>Scirpus atrovirens</i>	0.36
River Bulrush	<i>Scirpus fluviatilis</i>	1.2
Softstem Bulrush	<i>Schoenoplectus tabernaemontani</i>	0.36
Cord Grass	<i>Spartina pectinata</i>	0.48
Total		12.4

Method of Measurement. This work will be measured for payment, complete in place and accepted, in units of ACRE.

Basis of Payment. This work will be paid for at the contract unit price per acre for SEEDING, CLASS 4B installed. Price shall include but not be limited to seeds and all other labor, materials, and equipment needed to perform the work as specified herein.

SEEDING (SPECIAL)

Description. This work shall consist of placing seed and other materials in accordance with Section 250 of the Standard Specifications and the following or as directed by the Engineer.

Construction Requirements. For areas shown on the plans to be seeded with the item Seeding (Special), the areas shall be seeded in accordance with Article 250.07 of the Standard Specifications using both Seeding Class 4A and Seeding Class 4B as modified below.

MODIFIED- IDOT Class 4B Wetland Grass & Sedge Mixture

Spring Oats	60 lbs. / acre
Wetland Grasses (below)	12.4 lbs. / acre

Wetland Grasses:		
Common Name	Scientific Name	Lbs/Acre

Blue Joint Grass	<i>Calamagrostis canadensis</i>	1.44
Lake-Bank Sedge	<i>Carex lacustris</i>	0.36
Awl-Fruited Sedge	<i>Carex tribuloides</i>	0.36
Tussock Sedge	<i>Carex stricta</i>	0.72
Fox Sedge	<i>Carex stipata</i>	0.72
Needle Spike Rush	<i>Eleocharis acicularis</i>	0.36
Blunt Spike Rush	<i>Eleocharis ovata</i>	0.36
Fowl Manna Grass	<i>Glyceria striata</i>	1.68
Common Rush	<i>Juncus effusus</i>	0.72
Slender Rush	<i>Juncus tenuis</i>	0.36
Torrey's Rush	<i>Juncus torreyi</i>	0.36
Rice Cut Grass	<i>Leersia oryzoides</i>	0.2
Switchgrass	<i>Panicum virgatum</i>	2
Hard-Stemmed Bulrush	<i>Scirpus acutus</i>	0.36
Dark Green Rush	<i>Scirpus atrovirens</i>	0.36
River Bulrush	<i>Scirpus fluviatilis</i>	1.2
Softstem Bulrush	<i>Schoenoplectus tabernaemontani</i>	0.36
Cord Grass	<i>Spartina pectinata</i>	0.48
Total		12.4

Method of Measurement. This work will be measured for payment, complete in place and accepted, in acres of surface seeded.

Basis of Payment. This work will be paid for at the contract unit price per acre for SEEDING (SPECIAL) installed. Price shall include but not be limited to seeds and all other labor, materials, and equipment needed to perform the work as specified herein.

FENCE REMOVAL

Description. This work shall consist of the removal of existing fence as shown in the plans or as directed by the Engineer.

Construction Requirements. In the removal of the existing fence, the Contractor shall separate and remove all fence fabric, tension wires, and barbed wire from the fence posts. Tension wires, other barbed wire may remain attached to the fence fabric. The fence fabric shall be rolled. Barbed wire shall be detached and rolled separately from the fence fabric.

Existing posts shall be pulled. If the posts are set in concrete, the posts and concrete foundations shall be removed to a minimum of 6" below proposed ground elevation.

All fence fabric, wire, and posts shall be disposed of at a location provide by the Contractor.

Method of Measurement. This work will be measured for payment in feet, in place and standing, prior to removal.

Basis of Payment. This work will be paid for at the contract unit price per foot for FENCE REMOVAL, which price shall be payment in full for removing and disposing of all existing fence materials including all labor, and equipment needed to perform the work as specified.

HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 10"

Description. This work shall consist of constructing hot-mix asphalt driveway pavement on a prepared aggregate sub-base in accordance with Sections 355 and 406 of the Standard Specifications and the details in the plans and/or as directed by the Engineer.

Construction Requirements. The materials to be included and placed for this work consist of the following:

- Two (2) inches of Polymerized Hot-Mix Asphalt Surface Course, Mix "E", N90
- Eight (8) inches of Polymerized Hot-Mix Asphalt Binder Course, IL-19.0, N90
- Four (4) inches of Sub-base Granular Material, Type B

The manhole shall also be installed with the Trash Guard. Trash Guard construction shall conform to the details shown in the plans, all applicable Standard Drawings, and all applicable portions of Sections 505, 602 and 1006 of the Standard Specifications.

Method of Measurement. This work will be measured for payment in place and the area computed in square yards, complete.

Basis of Payment. This work will be paid for at the contract unit price per square yard for HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 10", which price shall include excavation, aggregate sub-base, hot-mix asphalt materials, and all labor, materials, and equipment to provide a complete and finished driveway.

RECESSED REFLECTIVE PAVEMENT MARKERS

Description. This work shall consist of setting reflective pavement markers in a recessed groove in the pavement. The recessed pavement markers shall be used to supplement other pavement markings, similar to the use of Raised Reflective Pavement Markers. This work shall be done in accordance with Section 781 of the Standard Specifications and the following.

Materials. The reflective pavement markers shall be 3M 190 series pavement markers or Engineer-approved equivalents. The reflector holders shall be MarkerOne Series R10 reflector holders or Engineer-approved equivalents. The epoxy used shall be as recommended by the pavement marker manufacturer.

Construction Requirements. Spacing and orientation of the pavement markers shall be as detailed in the plans or as directed by the Engineer.

A recessed groove shall be cut in the pavement 5.25" wide, 0.9" deep, on a 15.5" diameter radius. An additional 4.5" long groove shall taper from 0" (normal pavement) to 0.3" depth (full-recessed). For one-way markers heading uphill, uphill grind taper may be omitted.

The recessed area shall be cleaned free of all loose material and dry before the placement of the pavement marker. All excess material resulting from the construction of the recessed area shall be removed from the surface of the roadway by means of a vacuum sweeper truck. The pavement marker shall be cemented with epoxy in the center of the 0.9"-deeo recessed groove.

Inspection. A straightedge shall be placed across the recess to check that the top of the marker is below the pavement. Inspection and acceptance shall be according to Article 781.04 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price per each for RECESSED REFLECTIVE PAVEMENT MARKERS.

SIGN REMOVAL

Description. This work shall consist of removing signs and their supports in accordance with Section 724 of the Standard Specifications at the locations shown in the plans or as directed by the Engineer.

Construction Requirements. All holes left by the removal of supports shall be backfilled with suitable material approved by the Engineer. The surface of the filled hole shall be treated to match the surrounding area.

The signs and supports shall be removed and delivered to the Kane County Sign Shop located at 41W011 Burlington Road, St. Charles, IL 60175.

Basis of Payment. This work will be paid for at the contract unit price per each for SIGN REMOVAL, which price shall include all work for removing and delivering the signs as specified herein.

MANHOLES, TYPE A, 4' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE

Description. This work shall consist of constructing a Type A manhole of the diameter specified with restrictor in accordance with Sections 602 and 1006 of the Standard Specifications and the plans and/or as directed by the Engineer.

Construction Requirements. Construction shall conform to the details shown in the plans, all applicable Standard Drawings, and all applicable portions of Sections 602 and 1006 of the Standard Specifications.

Method of Measurement. This work will be measured for payment, complete in place and accepted, in units of each.

Basis of Payment. This work will be paid for at the contract unit price per each for MANHOLES, TYPE A, 4' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR installed. Price shall include but not be limited to all frames, grates, lids, sand cushion, steps, 6" concrete wall, flat slab tops, all excavation and backfilling, and all other labor, materials, and equipment needed to perform the work as specified herein.

MANHOLES, TYPE A, 8' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE

Description. This work shall consist of constructing a Type A manhole of the diameter specified with restrictor in accordance with Sections 602 and 1006 of the Standard Specifications and the plans and/or as directed by the Engineer.

Construction Requirements. Construction shall conform to the details shown in the plans, all applicable Standard Drawings, and all applicable portions of Sections 602 and 1006 of the Standard Specifications.

Method of Measurement. This work will be measured for payment, complete in place and accepted, in units of each.

Basis of Payment. This work will be paid for at the contract unit price per each for MANHOLES, TYPE A, 8' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR installed. Price shall include but not be limited to all frames, grates, lids, sand cushion, steps, 6" concrete wall, flat slab tops, all excavation and backfilling, and all other labor, materials, and equipment needed to perform the work as specified herein.

MANHOLES, TYPE A, 9' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE

Description. This work shall consist of constructing a Type A manhole of the diameter specified with restrictor in accordance with Sections 602 and 1006 of the Standard Specifications and the plans and/or as directed by the Engineer.

Construction Requirements. Construction shall conform to the details shown in the plans, all applicable Standard Drawings, and all applicable portions of Sections 602 and 1006 of the Standard Specifications.

Method of Measurement. This work will be measured for payment, complete in place and accepted, in units of each.

Basis of Payment. This work will be paid for at the contract unit price per each for MANHOLES, TYPE A, 9' DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE installed. Price shall include but not be limited to all frames, grates, lids, sand cushion, steps, 6" concrete wall, flat slab tops, all excavation and backfilling, and all other labor, materials, and equipment needed to perform the work as specified herein.

DRAINAGE STRUCTURES, TYPE 3 (MODIFIED)

Description. This work shall consist of constructing a drainage structure in accordance with Sections 602 of the Standard Specifications and the plans and/or as directed by the Engineer.

Construction Requirements. The drainage structure shall be precast and reinforced according to the IDOT Highway Standard Detail 602101.

The 6" slot opening below the top of the structure may be precast or field cut by the contractor.

The steel grid deck shall consist of the fabrication, assembly, delivery, and installation as specified in the plans. The steel grid deck will not be paid for separately but shall be included in the cost of this item.

The 5" grid deck shall be A709 Grade 50 material with minimum section modulus of 4.2 in³/ft. for the top of the steel and 5.2 in³/ft. for the bottom of the steel. The deck shall be assembled between the bottom and top angles. After fabrication of the grid deck and angles, the assembly shall be hot-dipped galvanized in accordance with ASTM A385 and AASHTO M111. Any variance shall be approved by the engineer.

All bolts, nuts cap screws, washers, and locks washers shall be stainless steel.

Method of Measurement. This work will be measured for payment, complete in place and accepted, in units of each.

Basis of Payment. This work will be paid for at the contract unit price per each for DRAINAGE STRUCTURES, TYPE 3 (MODIFIED) installed. Price shall include but not be limited to all frames, grate, sand cushion, steps, concrete structure, all excavation and backfilling, and all other labor, materials, and equipment needed to perform the work as specified herein.

ETHERNET MANAGED SWITCH, TYPE 2

Description. This work shall include all materials and work necessary to install an Ethernet Managed Switch, Type 2 in a traffic signal cabinet. The Ethernet Managed Switch, Type 2 connects field elements to the Kane County ITS data-comm network; in addition, it acts as an aggregation node and Gigabit Ethernet router.

Materials. The Ethernet Managed Switch, Type 2 is a managed edge switch configured with a minimum of the following ports:

- 12 RJ-45 10/100 Communication ports; a minimum of four (4) ports shall be equipped to provide power over Ethernet (PoE)
- 2 Single-mode 100 base Fiber optic communication ports
- 4 Single-Mode 1000 base fiber optic communication ports

The Ethernet Managed Switch, Type 2 shall satisfy the following:

Dimensions: 6.85" H x 7.5" W x 2.0" D

Power:	88-150 VAC, 47-63 Hz
Power Consumption:	20 W (maximum)
Temperature Range	-40 to +140 degrees F; cooling shall use convection and heat sinking; no fans
Weight:	3 lbs (nominal)

Performance

Filtering / Forwarding Rate:	Ethernet (10Mb): 14,880 pps
Fast Ethernet (100Mb):	148,800 pps
Gigabit Ethernet (1000Mb):	1,488,000 pps
Switching Processing:	Store and Forward with IEEE 802.3x full-duple flow -control, non-blocking
Data Rate:	10Mbps, 100Mbps and 1000Mbps
Address Table Capacity:	4K node, self-learning with address aging
Packet buffer size :	240KB for 10/100 and 120KB for 1000Mb
Latency:	6 μ s + packet time (100 to 100Mbps)
Throughput with	max.- 8.33M pps (Transmit) (8 10/100linls and 4 Glinks)
Back plane-	2.66Gb/s per slot

Network Standards and Compliance, hardware

Ethernet V1.0/V2.0 IEEE 802.3: 10BASE-T,
 IEEE 802.3u: 100Base-TX, 100BASE-FX
 IEEE 802.3z: 1000BASE-X Ethernet (Auto-negotiation)
 IEEE 802.3ab: 1000BASE-X Ethernet
 IEEE 802.1p: Priority protocol
 IEEE 802.1d: Spanning tree protocol
 IEEE 802.1w: Rapid Spanning tree protocol
 IEEE 802.1q: VLAN Tagging
 IEEE 802.3x: Flow Control

IEEE 802.3ad: Link Aggregation (Trunking)

IEEE 802.1x: Port based Network access control

IEEE 802.3af: Power over Ethernet

Compatibility. The switch must be form, fit, and function interchangeable with the legacy Garrettcom 6K32 Ethernet switch. If requested by the Engineer, the Contractor shall provide an off-the-shelf factory model and demonstrate that the proposed switch will operate transparently and with full functionality in the existing ITS data-comm network. The demonstration will take place prior to ordering any data-comm equipment.

Construction. The Contractor shall mount the Ethernet switch on a standard DIN rail or mounting channel in the traffic signal cabinet or as identified on the plans. The Contractor shall secure the Ethernet Switch as appropriate and approved by the engineer. The power supply shall be hard-wired to the cabinet power.

The Contractor shall install all necessary patch cords, optical transceivers, connectors, power supplies, communication transformers, or auxiliary equipment necessary to complete the communication circuits at full functional potential. The Contractor shall connect the switch to the field devices as indicated on the plans.

When requested by the Contractor, the Engineer will provide the necessary IP address assignments and port assignments, including the necessary port provisioning. The contractor shall be responsible for all network programming of the network switches and communicating elements within the traffic signal cabinet.

The Contractor will demonstrate that the switches are correctly installed and configured as specified in other special provisions for this project.

Basis of Payment. This work shall be paid for at the contract unit price each for ETHERNET MANAGED SWITCH, TYPE 2, which price shall be payment in full for furnishing and installing an Ethernet Managed Switch as specified.

INTERSECTION VIDEO TRAFFIC MONITORING SYSTEM WITH PTZ CAMERA

Description. The Contractor shall furnish and install a video surveillance camera system consisting of a special video camera in a dome, a dome mount to the video monitoring pole, all mounting hardware, brackets, outdoor rated network cable (to be paid for separately) supplied to the required length by the video system manufacturer with fast disconnect at the camera mount, video camera controller and special electronics/cabling for video transmission and pan/tilt/zoom (PTZ) controls, video controller unit to link all electronic components between the controller unit and the camera dome to include heater, fan, PTZ camera, video coax, video decoders with video encoding and decoding software.

Materials. The camera shall be designed and optimized for roadway video monitoring. The items shall have a minimum Object Distance: 300mm (wide end), 800mm (tele end), have a minimum mechanical zoom of thirty (30x) and a minimum digital zoom of twelve (12x). The camera, joystick controller (required for field adjustments and video verification), camera

controller and auxiliary devices necessary for a complete and functional video operation shall utilize the Diamond control protocol for pan/tilt/zoom controls. The camera shall be digital with IP port(s) and a built-in encoder for connection to the central office. A separate encoder shall not be required. The camera shall provide for 360-degree rotation on the horizontal plane and 180-degree rotation within the lower hemisphere of the dome. Video resolution of video feed shall have a minimum image quality of HDTV 720p.

The Contractor shall furnish and install the video software for decoding and encoding.

This item includes furnishing and installing the video monitoring camera and power injector (if required), as shown on the intersection wiring diagrams, box prints and fiber optic wiring diagram. This item also includes furnishing, installing and testing all auxiliary cabling, connectors, couplers, in-building hardware and software, jacks, splitters, conversion adapters, equipment racks, power supplies, power strips, surge suppressors, etc., necessary for a complete and fully functional system. The cable to be used for connecting the video monitoring camera to the local Ethernet switch shall be paid for separately under the pay item "Outdoor Rated Network Cable."

The camera shall be installed as shown on the plans, either on the luminaire arm near the luminaire, or on the combination mast arm assembly pole, angled toward the center of the intersection. When installed on the pole, the camera shall be mounted with a 14-inch pendant arm with integral transformer / power supply. When installed on the luminaire arm, the camera shall be installed with a 30-degree tilt-adjustable bracket, and the external power supply shall be installed on the pole. Cameras and external power supplies shall be installed with stainless steel straps.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

In order for the Traffic Engineer to control the camera remotely and view the video signal over a high-speed connection, the intersection video traffic monitoring system with PTZ camera must be connected to the KCDOT Gigabit Ethernet network.

All mounting platforms, connecting hardware and auxiliary devices to test and operate this system to the satisfaction of the Engineer shall be incidental to this pay item and no additional compensation will be allowed.

The contractor shall contact the KCDOT Traffic prior to installing the PTZ camera and associated wiring, to receive final approval on the camera location.

Basis of Payment. This item will be paid for at the contract unit price each for INTERSECTION VIDEO TRAFFIC MONITORING SYSTEM WITH PTZ CAMERA, which price shall be payment in full for furnishing all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of KCDOT Traffic.

OUTDOOR RATED NETWORK CABLE

Description. This work shall consist of furnishing an outdoor-rated 24 AWG, 4-pair data cable. Each cable link that is routed to an external device outside of the area serving ITS cabinet shall be protected by a lightning protection device on the switch side of the link cable for equipment

protection. Contractor shall also provide an outdoor rated Ethernet extender to connect to Radar speed signs and power and connect to PTZ CCTV cameras located throughout the project.

Materials. Shielded polyolefin cable with four 24 AWG twisted pair conductors.

Jacket Material: PE

Conductor Material: Bare Copper

Drain Wire Material: Tinned Copper

Insulation Material: Polyolefin

Separator Material: Polyolefin

Shield (Tape) Material: Aluminum/Poly

Cable shall meet the following electrical criteria:

ANSI/TIA Category: 6

Maximum dc Resistance Unbalance: 5 percent

Maximum dc Resistance: 9.38 ohms/100 m

Mutual Capacitance: 6.0 nF/100 m @ 1 kHz

Nominal Velocity of Propagation (NVP): 62 percent

Maximum Operating Frequency: 250 MHz

Transmission Standards: ANSI/TIA-568-C.2, CENELEC EN 50288-6-1, ISO/IEC 11801 Class E

Cable shall have an operating temperature from -40 degrees Celsius to 70 degrees Celsius, with an insulation temperature from 0 degrees Celsius to 60 degrees Celsius.

Cable shall be type F/UTP (unshielded) with 4 pairs.

Conductor gauge shall be 24 AWG and of solid type. 8 conductors shall be provided.

Maximum pull tension of cable shall be 11 kg.

Nominal cable diameter over jacket shall be no greater than 8.255 millimeters.

The cable shall satisfy the requirements of OUTDOOR RATED NETWORK CABLE.

RJ-45 grounded lightning protection device shall be a DITEK DTK-MRJPOE or approved equal

RJ-45 External Ethernet and POE extender with 60W pass thru shall be a VERACITY OUTREACH MAX XT or approved equal.

Basis of Payment. This work will be paid for at the contract unit price per FOOT for OUTDOOR RATED NETWORK CABLE which price shall include all equipment, labor, and materials

necessary to complete this work as specified including mounting hardware and terminating connectors.

NETWORK CONFIGURATION

Description. This item shall consist of providing a fully operational Ethernet Local Area Network (LAN), which provides remote communication with traffic control field devices from the Kane County Division of Transportation (KDOT) traffic office. Field devices may include traffic signal controllers, Malfunction Management Units (MMU), Uninterruptable Power Supply (UPS) units, video detection systems and CCTV (PTZ) cameras, or other specified ITS field devices as shown on the plans.

This work shall include configuring Ethernet switches, terminal servers, media converters, and video encoders, assigning IP addresses to field devices, troubleshooting, and submitting documentation to KDOT Traffic. The existing KDOT ATMS fiber optic network will serve as the Wide Area Network (WAN) communication backhaul to the KDOT Traffic Office. This work shall also require coordination with each manufacturer of field devices, converters, and networking equipment to ensure successful digital video transmissions, serial-over-copper, serial-over-fiber, and serial-over-Ethernet communications between the LAN and field devices. Coordination with the ATMS provider is required to determine specific central software requirements for the communications including comm. channels, static IP addresses, port forwarding, and TCP ports.

The Contractor shall develop a written testing plan and submit it to the Engineer and KDOT Traffic for approval. The testing plan shall be revised to the satisfaction of the Traffic Engineer for approval. The approved testing plan shall include systematic procedures that demonstrate that the communication network and its subsystems are fully operational. Approved testing procedures will be performed in the presence of KDOT and Contractor representatives. The testing plan shall include forms listing itemized functional checks of the system with signature placeholders for KDOT and Contractor representatives.

Basis of Payment. This work shall be paid for at the contract unit price lump sum for NETWORK CONFIGURATION, which price shall be payment in full for all communication network configuration and coordination necessary to deliver an Ethernet network that provides successful communications between all field devices and the communication backhaul to the KDOT Traffic Office.

REMOVE AND REINSTALL ELECTRIC CABLE FROM CONDUIT

Description. This work will be in accordance with Section 895 of the Standard Specifications. Fiber optic cable and tracer cable will be included in the definition of electric cable.

Construction. The contractor shall test the fiber optic cable prior to removal to ensure it meets or exceeds the minimum performance requirements of the specifications. If the fiber optic cable does not meet the minimum performance specifications, it shall be removed and replaced with new cable as directed by the Engineer.

The fiber optic and tracer cables shall be removed from conduits at locations shown on the plans. The tracer cables shall be coiled in handholes during the temporary interconnect stage.

The fiber optic cables shall be temporarily installed overhead at locations shown on the plans, for use in the temporary interconnect system. The fiber optic cables shall be removed from the temporary overhead locations and reinstalled together with the tracer cables in new conduit and reconnected to the appropriate locations.

The contractor shall again test the fiber optic cable to ensure it meets or exceeds the minimum performance requirements of the specifications. If the fiber optic cable does not meet the minimum performance specifications, it shall be removed and replaced with new cable and re-tested to the satisfaction of the Engineer.

Basis of Payment. This item will be paid for at the contract unit price per foot for REMOVE AND REINSTALL ELECTRIC CABLE FROM CONDUIT, which price shall be payment in full for all labor and equipment required to remove and reinstall the cable and to complete the testing of the cable to the satisfaction of the engineer. Installation and removal of the cable at temporary overhead locations is included in the price of TEMPORARY TRAFFIC SIGNAL INSTALLATION. If new cable is needed due to failure of the first performance test, it will be paid for in accordance with Section 104 of the Standard Specifications. If cable fails the performance test upon permanent installation, it will be considered as damage caused by the contractor.

LUMINAIRE, LED, HORIZONTAL MOUNT, 190 WATT (SPECIAL)

Description. This work shall consist of furnishing and installing Light Emitting Diode (LED) luminaire with photocell at locations shown on the plans. The luminaire will be nominal wattage of 190 watt.

General. Luminaires shall be installed in accordance with Sections 821.02, 821.03, and 821.04 of the Standard Specifications except as modified herein.

Materials. The material requirements shall be in accordance with Sections 1067.01 and 1067.02 of the Standard Specifications except as modified herein. In the case of any conflicting information, this special provision supersedes the Standard Specifications.

Replace Article 1067.01(e) with the following:

Housing. The luminaire shall be gasketed and sealed, and shall be UL listed for wet locations. The luminaire optical assembly shall have a minimum IEC ingress penetration rating of IP65. When furnished with a lens and frame, the lens shall be made of crystal clear, impact and heat resistant flat glass. The lens and frame shall be securely attached to the main housing and be readily removable for servicing the LED assembly. The drivers shall be mounted in the rear of the luminaire on the inside of a hinged removable door or on a removable mounting pad. The removable door or pad shall be secure when fastened in place and all individual components shall be secure upon the removable element. Each component shall be readily removable from the removable element for replacement. The luminaire mounting shall slip fit on a mast arm with a 2-inch tenon (2.375-inch outer diameter), and shall have a barrier to limit the amount of insertion. A tenon guard shall be provided to protect against wildlife intrusion. The luminaire shall be provided with a leveling surface and shall be capable of being tilted by ± 5 degrees and rotated to any degree with respect to the supporting arm. The housing shall be designed for natural removal of dirt and debris and to ensure maximum heat transfer and long LED life.

Replace Article 1067.01(f) with the following:

Electrical. The luminaire shall be suitable for operation at 120 volts. Terminal blocks shall be provided for incoming 10 gauge power wiring. Electronic LED drivers shall be provided for each luminaire. Each electronic driver shall have a power factor of greater than 90% and total harmonic distortion of less than 20%. The wattage of the luminaire shall not exceed 210 watts. The electronic drivers shall be installed in a manner to keep them mechanically and thermally separated for the LED array heat sink. Integral surge protection shall be provided for each luminaire. Surge protection shall be tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario 1 Category High Exposure 10kV/10kA waveforms. The luminaire shall be furnished with NEMA twistlock photo control receptacle and photo electric control sensor.

Basis of Payment. This item will be paid for at the contract unit price per each for LUMINAIRE, LED, HORIZONTAL MOUNT, 190 WATT (SPECIAL), which price shall be payment in full for all materials, labor, and equipment required to perform the work.

BDE SPECIAL PROVISIONS*

ACCESSIBLE PEDESTRIAN SIGNALS (APS) (BDE)

Effective: April 1, 2003

Revised: January 1, 2014

Description. This work shall consist of furnishing and installing accessible pedestrian signals (APS). Each APS shall consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a light emitting diode (LED) indicator light, a solid state electronic control board, a power supply, wiring, and mounting hardware. The APS shall meet the requirements of the MUTCD and Sections 801 and 888 of the Standard Specifications, except as modified herein.

Electrical Requirements. The APS shall operate with systems providing 95 to 130 VAC, 60 Hz and throughout an ambient air temperature range of -29 to +160 °F (-34 to +70 °C).

The APS shall contain a power protection circuit consisting of both fuse and transient protection.

Audible Indications. A pushbutton locator tone shall sound at each pushbutton.

If two accessible pedestrian pushbuttons are placed less than 10 ft (3 m) apart or placed on the same pole, the audible walk indication shall be a speech walk message.

A clear, verbal message shall be used to communicate the pedestrian walk interval. This message shall sound throughout the WALK interval only. The verbal message shall be modeled after: "Street Name.' Walk Sign is on to cross "Street Name.'" No other messages shall be used to denote the WALK interval.

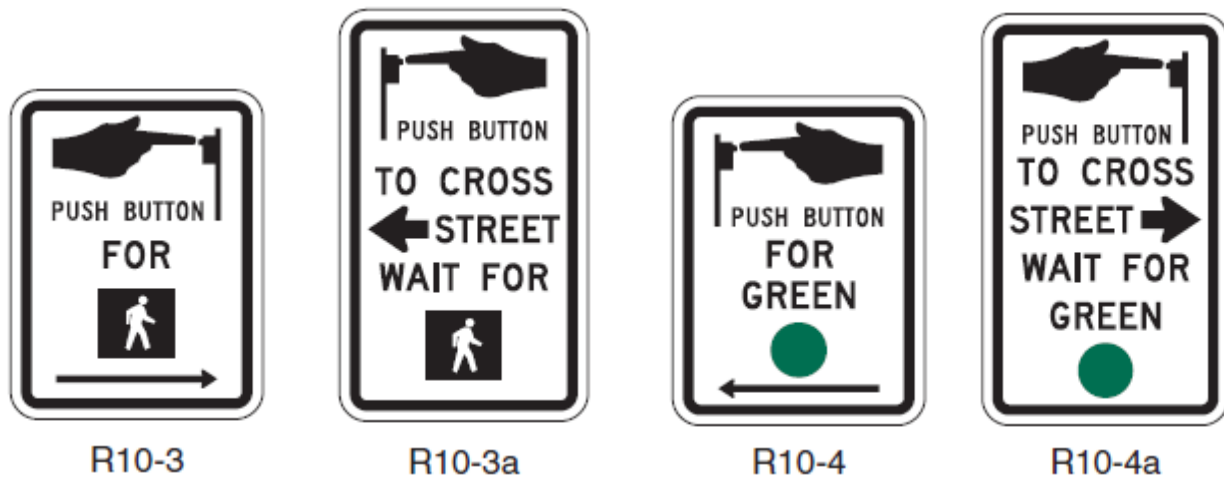
Where two accessible pedestrian pushbuttons are separated by at least 10 ft (3 m), the walk indication shall be an audible percussive tone. It shall repeat at 8 to 10 ticks per second with a dominant frequency of 880 Hz.

Automatic volume adjustments in response to ambient traffic sound level shall be provided up to a maximum volume of 100 dBA. Locator tone and verbal messages shall be no more than 5 dB louder than ambient sound.

Pedestrian Pushbutton. Pedestrian pushbuttons shall be at least 2 in. (50 mm) in diameter or width. The force required to activate the pushbutton shall be no greater than 3.5 lb (15.5 N).

A red LED shall be located on or near the pushbutton which, when activated, acknowledges the pedestrians request to cross the street.

Signage. A sign shall be located immediately above the pedestrian pushbutton and parallel to the crosswalk controlled by the pushbutton. The sign shall be one of the following standard MUTCD designs:



Tactile Arrow. A tactile arrow, pointing in the direction of travel controlled by a pushbutton, shall be provided either on the pushbutton or its sign.

Vibrotactile Feature. The pushbutton shall pulse when depressed and shall vibrate continuously throughout the WALK interval.

Method of Measurement. This work will be measured for payment as each, per pushbutton.

Basis of Payment. This work will be paid for at the contract unit price per each for ACCESSIBLE PEDESTRIAN SIGNALS.

COATED GALVANIZED STEEL CONDUIT (BDE)

Effective: January 1, 2013

Revised: January 1, 2015

Revise Article 811.03(b) of the Standard Specifications to read:

“(b) Coated Galvanized Steel Conduit. In addition to the methods described in Article 810.05(a) the following methods shall be observed when installing coated conduit.

Coated conduit pipe vise jaw adapters shall be used when the conduit is being clamped to avoid damaging the coating.

Coated conduit shall be cut with a roller cutter or by other means approved by the conduit manufacturer.

After any cutting or threading operations are completed, the bare steel shall be touched up with the conduit manufacturer's touch up compound."

COILABLE NONMETALLIC CONDUIT (BDE)

Effective: August 1, 2014
Revised: January 1, 2015

Revise Article 1088.01(c) of the Standard Specifications to read:

"(c) Coilable Nonmetallic Conduit. The conduit shall be a high density polyethylene duct which is intended for underground use can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties or performance. The conduit and its manufacture shall be according to UL 651A for Schedule 40 conduit, except Schedule 80 shall be used under pavement, stabilized shoulder, paved median, paved driveway, curb and/or gutter and sidewalk.

Performance Tests. Testing procedures and test results shall meet the requirements of UL 651A. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the conduit."

BITUMINOUS MATERIALS COST ADJUSTMENTS (BDE) (RETURN FORM WITH BID)

Effective: November 2, 2006
Revised: July 1, 2015

Description. Bituminous material cost adjustments will be made to provide additional compensation to the Contractor, or credit to the Department, for fluctuations in the cost of bituminous materials when optioned by the Contractor. The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form, or failure to fill out the form completely, shall make this contract exempt of bituminous materials cost adjustments.

The adjustments shall apply to permanent and temporary hot-mix asphalt (HMA) mixtures, bituminous surface treatments (cover and seal coats), and preventative maintenance type surface treatments that are part of the original proposed construction, or added as extra work and paid for by agreed unit prices. The adjustments shall not apply to bituminous prime coats, tack coats, crack filling/sealing, joint filling/sealing, or extra work paid for at a lump sum price or by force account.

Method of Adjustment. Bituminous materials cost adjustments will be computed as follows.

$$CA = (BPI_P - BPI_L) \times (\%AC_V / 100) \times Q$$

Where: CA = Cost Adjustment, \$.

BPI_P = Bituminous Price Index, as published by the Department for the month the work is performed, \$/ton (\$/metric ton).

- BPI_L = Bituminous Price Index, as published by the Department for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price, \$/ton (\$/metric ton).
- %AC_V = Percent of virgin Asphalt Cement in the Quantity being adjusted. For HMA mixtures, the % AC_V will be determined from the adjusted job mix formula. For bituminous materials applied, a performance graded or cutback asphalt will be considered to be 100% AC_V and undiluted emulsified asphalt will be considered to be 65% AC_V.
- Q = Authorized construction Quantity, tons (metric tons) (see below).

For HMA mixtures measured in square yards: $Q, \text{ tons} = A \times D \times (G_{mb} \times 46.8) / 2000$. For HMA mixtures measured in square meters: $Q, \text{ metric tons} = A \times D \times (G_{mb} \times 1) / 1000$. When computing adjustments for full-depth HMA pavement, separate calculations will be made for the binder and surface courses to account for their different G_{mb} and % AC_V.

For bituminous materials measured in gallons: $Q, \text{ tons} = V \times 8.33 \text{ lb/gal} \times SG / 2000$
 For bituminous materials measured in liters: $Q, \text{ metric tons} = V \times 1.0 \text{ kg/L} \times SG / 1000$

Where: A = Area of the HMA mixture, sq yd (sq m).
 D = Depth of the HMA mixture, in. (mm).
 G_{mb} = Average bulk specific gravity of the mixture, from the approved mix design.
 V = Volume of the bituminous material, gal (L).
 SG = Specific Gravity of bituminous material as shown on the bill of lading.

Basis of Payment. Bituminous materials cost adjustments may be positive or negative but will only be made when there is a difference between the BPI_L and BPI_P in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(BPI_L - BPI_P) \div BPI_L\} \times 100$$

Bituminous materials cost adjustments will be calculated for each calendar month in which applicable bituminous material is placed; and will be paid or deducted when all other contract requirements for the work placed during the month are satisfied. The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Return With Bid

**ILLINOIS DEPARTMENT
OF TRANSPORTATION**

**OPTION FOR
BITUMINOUS MATERIALS COST ADJUSTMENTS**

The bidder shall submit this completed form with his/her bid. Failure to submit the form, or failure to fill out the form completely, shall make this contract exempt of bituminous materials cost adjustments. After award, this form, when submitted, shall become part of the contract.

Contract No.: _____

Company Name: _____

Contractor's Option:

Is your company opting to include this special provision as part of the contract?

Yes ☐ No ☐

Signature: _____ **Date:** _____

COARSE AGGREGATE QUALITY (BDE)

Effective: July 1, 2015

Revise Article 1004.01(b) of the Standard Specifications to read:

“(b) Quality. The coarse aggregate shall be according to the quality standards listed in the following table.

COARSE AGGREGATE QUALITY				
QUALITY TEST	CLASS			
	A	B	C	D
Na ₂ SO ₄ Soundness 5 Cycle, ITP 104 ^{1/} , % Loss max.	15	15	20	25 ^{2/}
Los Angeles Abrasion, ITP 96 ^{11/} , % Loss max.	40 ^{3/}	40 ^{4/}	40 ^{5/}	45
Minus No. 200 (75 µm) Sieve Material, ITP 11	1.0 ^{6/}	---	2.5 ^{7/}	---
Deleterious Materials ^{10/}				
Shale, % max.	1.0	2.0	4.0 ^{8/}	---
Clay Lumps, % max.	0.25	0.5	0.5 ^{8/}	---
Coal & Lignite, % max.	0.25	---	---	---
Soft & Unsound Fragments, % max.	4.0	6.0	8.0 ^{8/}	---
Other Deleterious, % max.	4.0 ^{9/}	2.0	2.0 ^{8/}	---
Total Deleterious, % max.	5.0	6.0	10.0 ^{8/}	---
Oil-Stained Aggregate ^{10/} , % max	5.0	---	---	

1/ Does not apply to crushed concrete.

2/ For aggregate surface course and aggregate shoulders, the maximum percent loss shall be 30.

3/ For portland cement concrete, the maximum percent loss shall be 45.

4/ Does not apply to crushed slag or crushed steel slag.

5/ For hot-mix asphalt (HMA) binder mixtures, except when used as surface course, the maximum percent loss shall be 45.

6/ For crushed aggregate, if the material finer than the No. 200 (75 µm) sieve consists of the dust from fracture, essentially free from clay or silt, this percentage may be increased to 2.5.

7/ Does not apply to aggregates for HMA binder mixtures.

8/ Does not apply to Class A seal and cover coats.

9/ Includes deleterious chert. In gravel and crushed gravel aggregate, deleterious chert shall be the lightweight fraction separated in a 2.35 heavy media separation. In crushed stone aggregate, deleterious chert shall be the lightweight fraction separated in a 2.55 heavy media separation. Tests shall be run according to ITP 113.

10/ Test shall be run according to ITP 203.

11/ Does not apply to crushed slag.

All varieties of chert contained in gravel coarse aggregate for portland cement concrete, whether crushed or uncrushed, pure or impure, and irrespective of color, will be classed as chert and shall not be present in the total aggregate in excess of 25 percent by weight (mass).

Aggregates used in Class BS concrete (except when poured on subgrade), Class PS concrete, and Class PC concrete (bridge superstructure products only, excluding the approach slab) shall contain no more than two percent by weight (mass) of deleterious materials. Deleterious materials shall include substances whose disintegration is accompanied by an increase in volume which may cause spalling of the concrete."

CONCRETE GUTTER, CURB, MEDIAN, AND PAVED DITCH (BDE)

Effective: April 1, 2014

Revised: August 1, 2014

Add the following to Article 606.02 of the Standard Specifications:

"(i) Polyurethane Joint Sealant1050.04"

Revise the fifth paragraph of Article 606.07 of the Standard Specifications to read:

"Transverse contraction and longitudinal construction joints shall be sealed according to Article 420.12, except transverse joints in concrete curb and gutter shall be sealed with polysulfide or polyurethane joint sealant."

Add the following to Section 1050 of the Standard Specifications:

"1050.04 Polyurethane Joint Sealant. The joint sealant shall be a polyurethane sealant, Type S, Grade NS, Class 25 or better, Use T (T₁ or T₂), according to ASTM C 920."

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)

Effective: June 1, 2010

Revised: November 1, 2014

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term "equipment" refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted using the phased in approach shown below. Equipment that is of a model year older than the year given for that equipment's respective horsepower range shall be retrofitted:

Effective Dates	Horsepower Range	Model Year
June 1, 2010 ^{1/}	600-749	2002
	750 and up	2006
June 1, 2011 ^{2/}	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006
June 1, 2012 ^{2/}	50-99	2004
	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006

1/ Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

2/ Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

- Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (<http://www.epa.gov/cleandiesel/verification/verif-list.htm>), or verified by the California Air Resources Board (CARB) (<http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm>); or
- Retrofitted with a non-verified diesel retrofit emission control device if verified retrofit emission control devices are not available for equipment proposed to be used on the project, and if the Contractor has obtained a performance certification from the retrofit device manufacturer that the emission control device provides a minimum PM emission reduction of 50 percent.

Note: Large cranes (Crawler mounted cranes) which are responsible for critical lift operations are exempt from installing retrofit emission control devices if such devices adversely affect equipment operation.

Diesel powered off-road equipment with engine ratings of 50 hp and above, which are unable to be retrofitted with verified emission control devices or if performance certifications are not available which will achieve a minimum 50 percent PM reduction, may be granted a waiver by the Department if documentation is provided showing good faith efforts were made by the Contractor to retrofit the equipment.

Construction shall not proceed until the Contractor submits a certified list of the diesel powered off-road equipment that will be used, and as necessary, retrofitted with emission control devices. The list(s) shall include (1) the equipment number, type, make, Contractor/rental company name; and (2) the emission control devices make, model, USEPA or CARB verification number, or performance certification from the retrofit device manufacturer. Equipment reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation, prior to being used on the jobsite.

The Contractor shall submit an updated list of retrofitted off-road construction equipment as retrofitted equipment changes or comes on to the jobsite. The addition or deletion of any diesel powered equipment shall be included on the updated list.

If any diesel powered off-road equipment is found to be in non-compliance with any portion of this special provision, the Engineer will issue the Contractor a diesel retrofit deficiency deduction.

Any costs associated with retrofitting any diesel powered off-road equipment with emission control devices shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall not be grounds for a claim.

Diesel Retrofit Deficiency Deduction

When the Engineer determines that a diesel retrofit deficiency exists, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be \$1,000.00 for each deficiency identified.

The deficiency will be based on lack of diesel retrofit emissions control.

If a Contractor accumulates three diesel retrofit deficiency deductions for the same piece of equipment in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of the contract time, waiver of penalties, or be grounds for any claim.

CONTRACT CLAIMS (BDE)

Effective: April 1, 2014

Revise the first paragraph of Article 109.09(a) of the Standard Specifications to read:

“(a) Submission of Claim. All claims filed by the Contractor shall be in writing and in sufficient detail to enable the Department to ascertain the basis and amount of the claim. As a minimum, the following information must accompany each claim submitted.”

Revise Article 109.09(e) of the Standard Specifications to read:

“(e) Procedure. The Department provides two administrative levels for claims review.

Level I Engineer of Construction

Level II Chief Engineer/Director of Highways or Designee

- (1) Level I. All claims shall first be submitted at Level I. Two copies each of the claim and supporting documentation shall be submitted simultaneously to the District and the Engineer of Construction. The Engineer of Construction, in consultation with the District, will consider all information submitted with the claim and render a decision on the claim within 90 days after receipt by the Engineer of Construction. Claims not conforming to this Article will be returned without consideration. The Engineer of Construction may schedule a claim presentation meeting if in the Engineer of Construction's judgment such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. If a Level I decision is not rendered within 90 days of receipt of the claim, or if the Contractor disputes the decision, an appeal to Level II may be made by the Contractor.
- (2) Level II. An appeal to Level II shall be made in writing to the Engineer of Construction within 45 days after the date of the Level I decision. Review of the claim at Level II shall be conducted as a full evaluation of the claim. A claim presentation meeting may be scheduled if the Chief Engineer/Director of Highways determines that such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. A Level II final decision will be rendered within 90 days of receipt of the written request for appeal.

Full compliance by the Contractor with the provisions specified in this Article is a contractual condition precedent to the Contractor's right to seek relief in the Court of Claims. The Director's written decision shall be the final administrative action of the Department. Unless the Contractor files a claim for adjudication by the Court of Claims within 60 days after the date of the written decision, the failure to file shall constitute a release and waiver of the claim.”

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

Effective: September 1, 2000

Revised: January 2, 2015

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise

(DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (a) Withholding progress payments;
- (b) Assessing sanctions;
- (c) Liquidated damages; and/or
- (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform _____% of the work. This percentage is set as the DBE participation

goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

- (a) The bidder documents that enough DBE participation has been obtained to meet the goal or,
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at www.dot.il.gov.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

- (a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.
- (b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.
- (c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:
 - (1) The names and addresses of DBE firms that will participate in the contract;
 - (2) A description, including pay item numbers, of the work each DBE will perform;
 - (3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial

- pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
- (4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;
 - (5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,
 - (6) If the contract goal is not met, evidence of good faith efforts; the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

- (a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.
 - (1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond

to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

- (2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.
- (3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with Section 6 of the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.
- (5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
- (6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

- (7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.
 - (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.
- (b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination.
- (c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217) 785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines

are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

- (a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.
- (b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.
- (c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.
- (d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:
 - (1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
 - (2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement.
- (e) DBE as a material supplier:
 - (1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
 - (2) 100 percent goal credit for the cost of materials or supplies obtained from a DBE manufacturer.
 - (3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan

and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement.

- (a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.
- (b) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, then a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.
- (c) SUBCONTRACT. The Contractor must provide DBE subcontracts to IDOT upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.
- (d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:
 - (1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or
 - (2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute

other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or

- (3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

- (e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a). Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE listed in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

- (1) The listed DBE subcontractor fails or refuses to execute a written contract;
- (2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
- (3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

- (4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
- (5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law.
- (6) You have determined that the listed DBE subcontractor is not a responsible contractor;
- (7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;
- (8) The listed DBE is ineligible to receive DBE credit for the type of work required;
- (9) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;
- (10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

- (f) PAYMENT RECORDS. The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the

Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.

(g) **ENFORCEMENT**. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(h) **RECONSIDERATION**. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

EQUAL EMPLOYMENT OPPORTUNITY (BDE)

Effective: April 1, 2015

FEDERAL AID CONTRACTS. Revise the following section of Check Sheet #1 of the Recurring Special Provisions to read:

"EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act, or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

- (1) That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

- (2) That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (according to the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.
- (3) That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status or an unfavorable discharge from military service.
- (4) That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.
- (5) That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.
- (6) That it will permit access to all relevant books, records, accounts, and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.
- (7) That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations."

STATE CONTRACTS. Revise Section II of Check Sheet #5 of the Recurring Special Provisions to read:

“II. EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

1. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.
2. That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (according to the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.
3. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service.
4. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.
5. That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested

by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

6. That it will permit access to all relevant books, records, accounts and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.
7. That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations."

FRICTION AGGREGATE (BDE)

Effective: January 1, 2011
Revised: November 1, 2014

Revise Article 1004.01(a)(4) of the Standard Specifications to read:

- "(4) Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing undisturbed, consolidated deposits of rock by mechanical means. Crushed stone shall be divided into the following, when specified.
- a. Carbonate Crushed Stone. Carbonate crushed stone shall be either dolomite or limestone. Dolomite shall contain 11.0 percent or more magnesium oxide (MgO). Limestone shall contain less than 11.0 percent magnesium oxide (MgO).
 - b. Crystalline Crushed Stone. Crystalline crushed stone shall be either metamorphic or igneous stone, including but is not limited to, quartzite, granite, rhyolite and diabase."

Revise Article 1004.03(a) of the Standard Specifications to read:

"1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA). The aggregate shall be according to Article 1004.01 and the following.

- (a) Description. The coarse aggregate for HMA shall be according to the following table.

Use	Mixture	Aggregates Allowed
-----	---------	--------------------

Use	Mixture	Aggregates Allowed
Class A	Seal or Cover	<u>Allowed Alone or in Combination</u> ^{5/} : Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete
HMA Low ESAL	Stabilized Subbase Shoulders or	<u>Allowed Alone or in Combination</u> ^{5/} : Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{1/} Crushed Concrete
HMA High ESAL Low ESAL	Binder IL-19.0 or IL-19.0L SMA Binder	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Carbonate Crushed Stone ^{2/} Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Concrete ^{3/}
HMA High ESAL Low ESAL	C Surface and Leveling Binder IL-9.5 or IL-9.5L SMA Ndesign 50 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Carbonate Crushed Stone ^{2/} Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{4/} Crushed Concrete ^{3/}

Use	Mixture	Aggregates Allowed	
HMA High ESAL	D Surface and Leveling Binder IL-9.5 SMA Ndesign 50 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Carbonate Crushed Stone (other than Limestone) ^{2/} Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{4/} Crushed Concrete ^{3/}	
		<u>Other Combinations Allowed:</u>	
		<i>Up to...</i>	<i>With...</i>
		25% Limestone	Dolomite
		50% Limestone	Any Mixture D aggregate other than Dolomite
		75% Limestone	Crushed Slag (ACBF) or Crushed Sandstone
HMA High ESAL	E Surface IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete ^{3/} No Limestone.	
		<u>Other Combinations Allowed:</u>	
		<i>Up to...</i>	<i>With...</i>
		50% Dolomite ^{2/}	Any Mixture E aggregate
		75% Dolomite ^{2/}	Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone

Use	Mixture	Aggregates Allowed	
		75% Crushed Gravel or Concrete ^{3/}	Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF), or Crushed Steel Slag
HMA High ESAL	F Surface IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination</u> ^{5/} :	
		Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag No Limestone.	
		<u>Other Combinations Allowed:</u>	
		<u>Up to...</u>	<u>With...</u>
		50% Crushed Gravel, Crushed Concrete ^{3/} , or Dolomite ^{2/}	Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone

- 1/ Crushed steel slag allowed in shoulder surface only.
- 2/ Carbonate crushed stone shall not be used in SMA Ndesign 80. In SMA Ndesign 50, carbonate crushed stone shall not be blended with any of the other aggregates allowed alone in Ndesign 50 SMA binder or Ndesign 50 SMA surface.
- 3/ Crushed concrete will not be permitted in SMA mixes.
- 4/ Crushed steel slag shall not be used as leveling binder.
- 5/ When combinations of aggregates are used, the blend percent measurements shall be by volume."

FUEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)

Effective: April 1, 2009
Revised: July 1, 2015

Description. Fuel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in fuel prices when optioned by the Contractor. The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form or failure to indicate contract number, company name and sign and date the form shall make this contract exempt of fuel cost adjustments for all categories of work. Failure to indicate

“Yes” for any category of work will make that category of work exempt from fuel cost adjustment.

General. The fuel cost adjustment shall apply to contract pay items as grouped by category. The adjustment shall only apply to those categories of work checked “Yes”, and only when the cumulative plan quantities for a category exceed the required threshold. Adjustments to work items in a category, either up or down, and extra work paid for by agreed unit price will be subject to fuel cost adjustment only when the category representing the added work was subject to the fuel cost adjustment. Extra work paid for at a lump sum price or by force account will not be subject to fuel cost adjustment. Category descriptions and thresholds for application and the fuel usage factors which are applicable to each are as follows:

(a) Categories of Work.

- (1) Category A: Earthwork. Contract pay items performed under Sections 202, 204, and 206 including any modified standard or nonstandard items where the character of the work to be performed is considered earthwork. The cumulative total of all applicable item plan quantities shall exceed 25,000 cu yd (20,000 cu m). Included in the fuel usage factor is a weighted average 0.10 gal/cu yd (0.50 liters/cu m) factor for trucking.
- (2) Category B: Subbases and Aggregate Base Courses. Contract pay items constructed under Sections 311, 312 and 351 including any modified standard or nonstandard items where the character of the work to be performed is considered construction of a subbase or aggregate, stabilized or modified base course. The cumulative total of all applicable item plan quantities shall exceed 5000 tons (4500 metric tons). Included in the fuel usage factor is a 0.60 gal/ton (2.50 liters/metric ton) factor for trucking.
- (3) Category C: Hot-Mix Asphalt (HMA) Bases, Pavements and Shoulders. Contract pay items constructed under Sections 355, 406, 407 and 482 including any modified standard or nonstandard items where the character of the work to be performed is considered HMA bases, pavements and shoulders. The cumulative total of all applicable item plan quantities shall exceed 5000 tons (4500 metric tons). Included in the fuel usage factor is 0.60 gal/ton (2.50 liters/metric ton) factor for trucking.
- (4) Category D: Portland Cement Concrete (PCC) Bases, Pavements and Shoulders. Contract pay items constructed under Sections 353, 420, 421 and 483 including any modified standard or nonstandard items where the character of the work to be performed is considered PCC base, pavement or shoulder. The cumulative total of all applicable item plan quantities shall exceed 7500 sq yd (6000 sq m). Included in the fuel usage factor is 1.20 gal/cu yd (5.94 liters/cu m) factor for trucking.
- (5) Category E: Structures. Structure items having a cumulative bid price that exceeds \$250,000 for pay items constructed under Sections 502, 503, 504, 505, 512, 516 and 540 including any modified standard or nonstandard items where the character of the work to be performed is considered structure work when similar to that performed under these sections and not included in categories A through D.

(b) Fuel Usage Factors.

English Units		
Category	Factor	Units
A - Earthwork	0.34	gal / cu yd
B – Subbase and Aggregate Base courses	0.62	gal / ton
C – HMA Bases, Pavements and Shoulders	1.05	gal / ton
D – PCC Bases, Pavements and Shoulders	2.53	gal / cu yd
E – Structures	8.00	gal / \$1000

Metric Units		
Category	Factor	Units
A - Earthwork	1.68	liters / cu m
B – Subbase and Aggregate Base courses	2.58	liters / metric ton
C – HMA Bases, Pavements and Shoulders	4.37	liters / metric ton
D – PCC Bases, Pavements and Shoulders	12.52	liters / cu m
E – Structures	30.28	liters / \$1000

(c) Quantity Conversion Factors.

Category	Conversion	Factor
B	sq yd to ton	0.057 ton / sq yd / in depth
	sq m to metric ton	0.00243 metric ton / sq m / mm depth
C	sq yd to ton	0.056 ton / sq yd / in depth
	sq m to metric ton	0.00239 m ton / sq m / mm depth
D	sq yd to cu yd	0.028 cu yd / sq yd / in depth
	sq m to cu m	0.001 cu m / sq m / mm depth

Method of Adjustment. Fuel cost adjustments will be computed as follows.

$$CA = (FPI_P - FPI_L) \times FUF \times Q$$

Where: CA = Cost Adjustment, \$
FPI_P = Fuel Price Index, as published by the Department for the month the work is performed, \$/gal (\$/liter)
FPI_L = Fuel Price Index, as published by the Department for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price, \$/gal (\$/liter)
FUF = Fuel Usage Factor in the pay item(s) being adjusted
Q = Authorized construction Quantity, tons (metric tons) or cu yd (cu m)

The entire FUF indicated in paragraph (b) will be used regardless of use of trucking to perform the work.

Basis of Payment. Fuel cost adjustments may be positive or negative but will only be made when there is a difference between the FPI_L and FPI_P in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(FPI_L - FPI_P) \div FPI_L\} \times 100$$

Fuel cost adjustments will be calculated for each calendar month in which applicable work is performed; and will be paid or deducted when all other contract requirements for the items of work are satisfied. The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Return With Bid

**ILLINOIS DEPARTMENT
OF TRANSPORTATION**

**OPTION FOR
FUEL COST ADJUSTMENT**

The bidder shall submit this completed form with his/her bid. Failure to submit the form or properly complete contract number, company name, and sign and date the form shall make this contract exempt of fuel cost adjustments in all categories. Failure to indicate "Yes" for any category of work at the time of bid will make that category of work exempt from fuel cost adjustment. After award, this form, when submitted shall become part of the contract.

Contract No.: _____

Company Name: _____

Contractor's Option:

Is your company opting to include this special provision as part of the contract plans for the following categories of work?

Category A Earthwork.	Yes	<input type="checkbox"/>
Category B Subbases and Aggregate Base Courses	Yes	<input type="checkbox"/>
Category C HMA Bases, Pavements and Shoulders	Yes	<input type="checkbox"/>
Category D PCC Bases, Pavements and Shoulders	Yes	<input type="checkbox"/>
Category E Structures	Yes	<input type="checkbox"/>

Signature: _____ **Date:** _____

HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)

Effective: January 1, 2010

Revised: April 1, 2012

Description. This work shall consist of testing the density of longitudinal joints as part of the quality control/quality assurance (QC/QA) of hot-mix asphalt (HMA). Work shall be according to Section 1030 of the Standard Specifications except as follows.

Quality Control/Quality Assurance (QC/QA). Delete the second and third sentence of the third paragraph of Article 1030.05(d)(3) of the Standard Specifications.

Add the following paragraphs to the end of Article 1030.05(d)(3) of the Standard Specifications:

“Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4 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 in. (125 mm) from the edge of pavement.) Longitudinal joint density testing shall be performed using either a correlated nuclear gauge or cores.

- a. Confined Edge. Each confined edge density shall be represented by a one-minute nuclear density reading or a core density and shall be included in the average of density readings or core densities taken across the mat which represents the Individual Test.
- b. Unconfined Edge. Each unconfined edge joint density shall be represented by an average of three one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. The three one-minute readings shall be spaced ten feet apart longitudinally along the unconfined pavement edge and centered at the random density test location.”

Revise the Density Control Limits table in Article 1030.05(d)(4) of the Standard Specifications to read:

“Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density Minimum
IL-4.75	Ndesign = 50	93.0 – 97.4%	91.0%
IL-9.5, IL-12.5	Ndesign ≥ 90	92.0 – 96.0%	90.0%
IL-9.5, IL-9.5L, IL-12.5	Ndesign < 90	92.5 – 97.4%	90.0%
IL-19.0, IL-25.0	Ndesign ≥ 90	93.0 – 96.0%	90.0%
IL-19.0, IL-19.0L, IL-25.0	Ndesign < 90	93.0 – 97.4%	90.0%
SMA	Ndesign = 50 & 80	93.5 – 97.4%	91.0%
All Other	Ndesign = 30	93.0 - 97.4%	90.0%”

HOT-MIX ASPHALT – MIXTURE DESIGN VERIFICATION AND PRODUCTION (BDE)

Effective: November 1, 2013

Revised: November 1, 2014

Description. This special provision provides 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. This special provision also provides the plant requirements for hydrated lime addition systems used in the production of High ESAL, IL-4.75, and SMA mixes.

Mix Design Testing. Add the following below the referenced AASHTO standards in Article 1030.04 of the Standard Specifications:

AASHTO T 324 Hamburg Wheel Test

AASHTO T 283 Tensile Strength Test

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 (Illinois Modified AASHTO T 324) and the Tensile Strength Test (Illinois Modified 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 necessary changes to the mix and provide passing Hamburg Wheel and tensile strength test results from a private lab. The Department will verify the passing results.

All new and renewal mix designs shall meet the following requirements for verification testing.

(1) Hamburg Wheel Test Criteria. The maximum allowable rut depth shall be 0.5 in. (12.5 mm). The minimum number of wheel passes at the 0.5 in. (12.5 mm) rut depth criteria shall be based on the high temperature binder grade of the mix as specified in the mix requirements table of the plans.

Illinois Modified AASHTO T 324 Requirements ^{1/}

PG Grade	Number of Passes
PG 58-xx (or lower)	5,000
PG 64-xx	7,500
PG 70-xx	15,000
PG 76-xx (or higher)	20,000

^{1/} When produced at temperatures of 275 ± 5 °F (135 ± 3 °C) or less, loose Warm Mix Asphalt shall be oven aged at 270 ± 5 °F (132 ± 3 °C) for two hours prior to gyratory compaction of Hamburg Wheel specimens.

- (2) Tensile Strength Criteria. The minimum allowable conditioned tensile strength shall be 60 psi (415 kPa) 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 200 psi (1380 kPa)."

Production Testing. Revise Article 1030.06(a) of the Standard Specifications to read:

- "(a) High ESAL, IL-4.75, WMA, and SMA Mixtures. For each contract, a 300 ton (275 metric tons) test strip 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 T324 (approximately 60 lb (27 kg) total).

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 is being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

The Department may conduct additional Hamburg Wheel tests on production material as determined by the Engineer."

Revise the title of Article 1030.06(b) of the Standard Specifications to read:

"(b) Low ESAL Mixtures."

System for Hydrated Lime Addition. 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. Replace the seventh paragraph of Article 406.14 of the Standard Specifications with the following:

"For 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.

If an anti-stripping additive is required for any other HMA mix, the cost of the additive will be paid for according to Article 109.04. The cost incurred in introducing the additive into 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."

HOT MIX ASPHALT - PAY FOR PERFORMANCE USING PERCENT WITHIN LIMITS - JOBSITE SAMPLING (BDE)

Effective: November 1, 2014

Review: July 1, 2015

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 as specified in the plans. This work shall be according to the Standard Specifications except as specified herein.

Delete Articles:	406.06(b)(1), 2 nd paragraph	(Temperature requirements)
	406.06(e), 3 rd paragraph	(Paver speed requirements)
	406.07(b)	(Rolling)
	406.07(c)	(Density)
	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), 3 rd paragraph	(Before start-up...)
	1030.06(a), 7 th paragraph	(After an acceptable...)
	1030.06(a), 8 th paragraph	(If a mixture...)
	1030.06(a), 9 th 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). If the quantity is less than 8000 tons (7260 metric tons), the sublot size will be adjusted to achieve a minimum of 8 tests. If the last sublot consists of less than 200 tons (180 metric tons), it will 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 ten 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 ft (300 mm) 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 1/2 mile (800 m) 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.

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 asphalt 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.

Table 1
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 48 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. 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.

Quality Assurance (QA) by the Engineer. The Engineer will test each subplot for field VMA, voids, and dust/AC ratio; and each density interval for density to determine payment for each lot. A subplot shall begin once an acceptable test-strip has been completed and the AJMF has been determined. 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. For each subplot, the Engineer will determine the random tonnage for the sample 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 sample 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 4 in. (100 mm) diameter 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 in. (6 mm) 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's test results for the first subplot, or density testing interval, of every lot will be available to the Contractor within three working days from the time the secured sample was delivered, by the Contractor, to the Department's testing facility or a location designated by the Engineer. Test results for a completed lot will be available to the Contractor within ten working days from the time the secured sample from the last subplot or density testing interval was delivered to the Department's 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, at 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 the Contractor submits their split sample test results prior to receiving Department split sample test results and: 1) the difference between the Contractor and Department split test results exceed the precision limits shown in Table 2 below; or 2) the Department's test results are outside the acceptable limits shown in Table 4. For density disputes, the Contractor shall use the Department's running average for G_{mm} when determining compliance with the Limits of Precision.

Table 2

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. Density dispute resolution will replace original density test results.

If three or more consecutive mix sublots are contested, corresponding density results will be recalculated with the new G_{mm} .

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.

Table 3

Test	Cost
Mix Testing	\$1000.00 / subplot
Core Density	\$300.00 / core

Acceptance by the Engineer. All of the Department's tests shall be within the acceptable limits listed below:

Table 4

Acceptable Limits	
Parameter	Acceptable Range
Field VMA	-1.0 – +3.0 % ^{1/}
Voids	2.0 – 6.0 %
Density: IL-19.0, IL-9.5	90.0 – 98.0 %
IL-4.75, SMA	92.0 – 98.0 %
Dust / AC Ratio	0.4 – 1.6 ^{2/}

1/ Based on minimum required VMA from mix design

2/ 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 Composite Pay Factor for each mix, monetary deductions will be made for dust/AC ratios and unconfined edge densities as shown in Tables 5 and 6 as follows.

Table 5

Dust / AC Pay Adjustment Table ^{1/}	
Range	Deduct / subplot
$0.6 \leq X \leq 1.2$	\$0
$0.5 \leq X < 0.6$ or $1.2 < X \leq 1.4$	\$1000
$0.4 \leq X < 0.5$ or $1.4 < X \leq 1.6$	\$3000
$X < 0.4$ or $X > 1.6$	Shall be removed and replaced

1/ Does not apply to SMA.

Table 6

Unconfined Edge Density Adjustment Table	
Density	Deduct / 0.5 mile (800 m)
$\geq 90\%$	\$0
89.0% to 89.9%	\$1000
88.0% to 88.9%	\$3000
$< 88.0\%$	Outer 1.0 ft (300 mm) will require remedial action acceptable to the Engineer

HOT MIX ASPHALT – PRIME COAT (BDE)

Effective: November 1, 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, RS-1, RS-2, CSS-1, CSS-1h, CSS-1hp, CRS-1, CRS-2, HFE-90, RC-70
Prime Coat on Aggregate Bases	MC-30, PEP”

Add the following to Article 406.03 of the Standard Specifications.

“(i) Vacuum Sweeper1101.19

(j) Spray Paver1102.06”

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 60 °F (15 °C).

(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 to remove all large particles and air blasting to remove dust. As an alternative to air blasting, a vacuum sweeper may be used to accomplish the dust removal. 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 (0.244)
Fog Coat between HMA Lifts, IL-4.75 & Brick	0.025 (0.122)

The bituminous material for the prime coat shall be placed one lane at a time. If a spray paver is not used, 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 pickup under traffic.

The residual asphalt rate will be verified a minimum of once per type of surface to be primed as specified herein for which at least 2000 tons (1800 metric 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, and all areas where the pickup occurred shall be repaired.

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 last sentence of the first paragraph of Article 406.13(b) of the Standard Specifications to read:

“Water added to emulsified asphalt, as allowed in Article 406.02, will not be included in the quantities measured for payment.”

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:

“406.14 Basis of Payment. Prime Coat will be paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIME COAT), or POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT).”

Revise Article 407.02 of the Standard Specifications to read:

“407.02 Materials. Materials shall be according to Article 406.02, except as follows.

Item	Article/Section
(a) Packaged Rapid Hardening Mortar or Concrete	1018”

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

“(b) A bituminous prime coat shall be applied between each lift of HMA according to Article 406.05(b).”

Delete the second paragraph of Article 407.12 of the Standard Specifications.

Revise the first paragraph of Article 408.04 of the Standard Specifications to read:

“408.04 Method of Measurement. Bituminous priming material will be measured for payment according to Article 406.13.”

Revise the first paragraph of Article 408.05 of the Standard Specifications to read:

“408.05 Basis of Payment. This work will be paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIME COAT) or

POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT) and at the contract unit price per ton (metric ton) for INCIDENTAL HOT-MIX ASPHALT SURFACING.”

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 an emulsion or cutback is used for prime coat, the percentage of asphalt residue of the actual certified product shall be shown on the producer’s bill of lading or attached certificate of analysis. If the producer adds extra water to an emulsion at the request of the purchaser, the amount of water shall also 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
RS-1, CRS-1	75-130	25-55”

Add the following to Article 1032.06 of the Standard Specifications.

“(g) Non Tracking Emulsified Asphalt SS-1vh shall be according to the following.

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 in Article 1032.06(f)(2)d. of the Standard Specifications to read:

"Grade	Use
SS-1, SS-1h, RS-1, RS-2, CSS-1, CRS-1, CRS-2, 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"

Add the following to Article 1101 of the Standard Specifications.

"1101.19 Vacuum Sweeper. The vacuum sweeper shall have a minimum sweeping path of 52 in. (1.3 m) and a minimum blower rating of 20,000 cu ft per minute (566 cu m per minute)."

Add the following to Article 1102 of the Standard Specifications:

"1102.06 Spray Paver. The spreading and finishing machine shall be capable of spraying a rapid setting emulsion tack coat, paving a layer of HMA, and providing a smooth HMA mat in one pass. The HMA shall be spread over the tack coat in less than five seconds after the application of the tack coat during normal paving speeds. No wheel or other part of the paving machine shall come into contact with the tack coat before the HMA is applied. In addition to meeting the requirements of Article 1102.03, the spray paver shall also meet the requirements of Article 1102.05 for the tank, heating system, pump, thermometer, tachometer or synchronizer, and calibration. The spray bar shall be equipped with properly sized and spaced nozzles to apply a uniform application of tack coat at the specified rate for the full width of the mat being placed."

LRFD PIPE CULVERT BURIAL TABLES (BDE)

Effective: November 1, 2013

Revised: April 1, 2015

Revise Article 542.02 of the Standard Specifications to read as follows:

"Item	Article/Section
(a) Galvanized Corrugated Steel Pipe	1006.01
(b) Galvanized Corrugated Steel Pipe Arch	1006.01
(c) Bituminous Coated Corrugated Steel Pipe	1006.01
(d) Bituminous Coated Corrugated Steel Pipe Arch	1006.01
(e) Reserved	
(f) Aluminized Steel Type 2 Corrugated Pipe	1006.01
(g) Aluminized Steel Type 2 Corrugated Pipe Arch	1006.01
(h) Precoated Galvanized Corrugated Steel Pipe	1006.01
(i) Precoated Galvanized Corrugated Steel Pipe Arch	1006.01
(j) Corrugated Aluminum Alloy Pipe	1006.03
(k) Corrugated Aluminum Alloy Pipe Arch	1006.03

(l) Extra Strength Clay Pipe	1040.02
(m) Concrete Sewer, Storm Drain, and Culvert Pipe	1042
(n) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	1042
(o) Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe	1042
(p) Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe	1042
(q) Polyvinyl Chloride (PVC) Pipe	1040.03
(r) Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior	1040.03
(s) Corrugated Polypropylene (CPP) pipe with smooth Interior	1040.08
(t) Corrugated Polyethylene (PE) Pipe with a Smooth Interior	1040.04
(u) Polyethylene (PE) Pipe with a Smooth Interior	1040.04
(v) Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe	1056
(w) Mastic Joint Sealer for Pipe	1055
(x) External Sealing Band	1057
(y) Fine Aggregate (Note 1)	1003.04
(z) Coarse Aggregate (Note 2)	1004.05
(aa) Packaged Rapid Hardening Mortar or Concrete	1018
(bb) Nonshrink Grout	1024.02
(cc) Reinforcement Bars and Welded Wire Fabric	1006.10
(dd) Handling Hole Plugs	1042.16

Note 1. The fine aggregate shall be moist.

Note 2. The coarse aggregate shall be wet."

Revise the table for permitted materials in Article 542.03 of the Standard Specifications as follows:

"Class	Materials
A	Rigid Pipes: Extra Strength Clay Pipe Concrete Sewer Storm Drain and Culvert Pipe, Class 3 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
C	Rigid Pipes: Extra Strength Clay Pipe Concrete Sewer Storm Drain and Culvert Pipe, Class 3 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe Flexible Pipes: Aluminized Steel Type 2 Corrugated Pipe Aluminized Steel Type 2 Corrugated Pipe Arch Precoated Galvanized Corrugated Steel Pipe Precoated Galvanized Corrugated Steel Pipe Arch Corrugated Aluminum Alloy Pipe Corrugated Aluminum Alloy Pipe Arch Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polypropylene (CPP) Pipe with Smooth Interior
D	Rigid Pipes: Extra Strength Clay Pipe Concrete Sewer Storm Drain and Culvert Pipe, Class 3 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe Flexible Pipes: Galvanized Corrugated Steel Pipe Galvanized Corrugated Steel Pipe Arch Bituminous Coated Corrugated Steel Pipe Bituminous Coated Corrugated Steel Pipe Arch Aluminized Steel Type 2 Corrugated Pipe Aluminized Steel Type 2 Corrugated Pipe Arch Precoated Galvanized Corrugated Steel Pipe Precoated Galvanized Corrugated Steel Pipe Arch Corrugated Aluminum Alloy Pipe Corrugated Aluminum Alloy Pipe Arch Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior Corrugated Polyethylene (PE) Pipe with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior" Corrugated Polypropylene (CPP) Pipe with Smooth Interior

Revise Articles 542.03(b) and (c) of the Standard Specifications to read:

- “(b) Extra strength clay pipe will only be permitted for pipe culverts Type 1, for 10 in., 12 in., 42 in. and 48 in. (250 mm, 300 mm, 1050 mm and 1200 mm), Types 2, up to and including 48 in. (1200 mm), Type 3, up to and including 18 in. (450 mm), Type 4 up to and including 10 in. (250 mm), for all pipe classes.
- (c) Concrete sewer, storm drain, and culvert pipe Class 3 will only be permitted for pipe culverts Type 1, up to and including 10 in (250 mm), Type 2, up to and including 30 in. (750 mm), Type 3, up to and including 15 in. (375 mm); Type 4, up to and including 10 in. (250 mm), for all pipe classes.”

Replace the pipe tables in Article 542.03 of the Standard Specifications with the following:

"Table IA: Classes of Reinforced Concrete Pipe for the Respective Diameters of Pipe and Fill Heights over the Top of the Pipe							
Nominal Diameter in.	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
	Fill Height: 3' and less 1' min cover	Fill Height: Greater than 3' not exceeding 10'	Fill Height: Greater than 10' not exceeding 15'	Fill Height: Greater than 15' not exceeding 20'	Fill Height: Greater than 20' not exceeding 25'	Fill Height: Greater than 25' not exceeding 30'	Fill Height: Greater than 30' not exceeding 35'
12	IV	II	III	IV	IV	V	V
15	IV	II	III	IV	IV	V	V
18	IV	II	III	IV	IV	V	V
21	III	II	III	IV	IV	V	V
24	III	II	III	IV	IV	V	V
30	IV	II	III	IV	IV	V	V
36	III	II	III	IV	IV	V	V
42	II	II	III	IV	IV	V	V
48	II	II	III	IV	IV	V	V
54	II	II	III	IV	IV	V	V
60	II	II	III	IV	IV	V	V
66	II	II	III	IV	IV	V	V
72	II	II	III	IV	V	V	V
78	II	II	III	IV	2020	2370	2730
84	II	II	III	IV	2020	2380	2740
90	II	II	III	1680	2030	2390	2750
96	II	III	III	1690	2040	2400	2750
102	II	III	III	1700	2050	2410	2760
108	II	III	1360	1710	2060	2410	2770

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.

Design assumptions; Water filled pipe, Type 2 bedding and Class C Walls

Table IA: Classes of Reinforced Concrete Pipe for the Respective Diameters of Pipe and Fill Heights over the Top of the Pipe (Metric)							
Nominal Diameter mm	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
	Fill Height:	Fill Height:	Fill Height:	Fill Height:	Fill Height:	Fill Height:	Fill Height:
	1 m and less 0.3 m min cover	Greater than 1 m not exceeding 3 m	Greater than 3 m not exceeding 4.5 m	Greater than 4.5 m not exceeding 6 m	Greater than 6 m not exceeding 7.5 m	Greater than 7.5 m not exceeding 9 m	Greater than 9 m not exceeding 10.5 m
300	IV	II	III	IV	IV	V	V
375	IV	II	III	IV	IV	V	V
450	IV	II	III	IV	IV	V	V
525	III	II	III	IV	IV	V	V
600	III	II	III	IV	IV	V	V
750	IV	II	III	IV	IV	V	V
900	III	II	III	IV	IV	V	V
1050	II	II	III	IV	IV	V	V
1200	II	II	III	IV	IV	V	V
1350	II	II	III	IV	IV	V	V
1500	II	II	III	IV	IV	V	V
1650	II	II	III	IV	IV	V	V
1800	II	II	III	IV	V	V	V
1950	II	II	III	IV	100	110	130
2100	II	II	III	IV	100	110	130
2250	II	II	III	80	100	110	130
2400	II	III	III	80	100	110	130
2550	II	III	III	80	100	120	130
2700	II	III	70	80	100	120	130

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.

Design assumptions; Water filled pipe, Type 2 bedding and Class C Walls

TABLE IB: THICKNESS OF CORRUGATED STEEL PIPE
FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3"x1/2", 3"x1" AND 5"x1" CORRUGATIONS

Nominal Diameter in *	Type 1			Type 2			Type 3			Type 4			Type 5			Type 6			Type 7		
	Fill Height:			Fill Height:			Fill Height:			Fill Height:			Fill Height:			Fill Height:			Fill Height:		
	3' and less 1' min. cover			Greater than 3' not exceeding 10'			Greater than 10' not exceeding 15'			Greater than 15' not exceeding 20'			Greater than 20' not exceeding 25'			Greater than 25' not exceeding 30'			Greater than 30' not exceeding 35'		
	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"
12	0.064			0.064			0.064			0.064			0.064			0.064			0.064		
15	0.064			0.064			0.064			0.064			0.064			0.064			(0.079)		
18	(0.079)			0.064			0.064			0.064			0.064			(0.079)			(0.079)		
21	(0.079)			0.064			0.064			0.064			(0.079)			(0.079)			(0.079)		
24	(0.079)			0.064			0.064			0.064			(0.079)			(0.079)			(0.109)		
30	(0.109E)			0.064			0.064			(0.079)			(0.079)			(0.109)			0.109		
36	(0.109E)			0.064			(0.079)			(0.079)			(0.109)			0.109			(0.138E)		
42	0.079			0.064			(0.079)			(0.079)			(0.109)			(0.109E)			(0.109E)		
48	0.109	(0.109)	0.109	(0.109)	0.079	0.079	(0.109)	0.079	(0.109)	0.109	(0.109)	0.109	(0.138)	(0.109)	0.109	(0.138E)	0.109	0.109	(0.138E)	0.109	(0.138)
54	0.109	(0.109)	0.109	(0.109)	0.079	0.079	0.109	(0.109)	0.109	0.109	(0.109)	0.109	(0.138)	0.109	0.109	(0.138E)	0.109	(0.138)	(0.138E)	0.138	0.138
60	0.109	0.109	0.109	0.109	0.079	(0.109)	0.109	(0.109)	0.109	0.109	(0.109)	0.109	(0.138)	0.109	0.109	(0.138E)	(0.138)	(0.138)	0.138E	(0.138E)	(0.138E)
66	(0.138)	0.109	0.109	0.109	0.079	(0.109)	0.109	(0.109)	0.109	0.109	(0.109)	0.109	(0.138)	0.109	(0.138)	(0.138E)	0.138	0.138	0.138E	(0.138E)	0.138E
72	0.138	0.109	(0.138)	0.138	(0.109)	(0.109)	0.138	(0.109)	0.109	0.138	(0.109)	0.109	0.138	(0.138)	(0.138)	(0.168E)	(0.138E)	0.138E	(0.168E)	(0.138E)	0.138E
78	0.168	0.109	(0.138)	0.168	(0.109)	0.109	0.168	0.109	0.109	0.168	0.109	(0.138)	0.168	(0.138)	(0.138)	H0.168E	(0.138E)	0.138E	H0.168E	0.138E	(0.168E)
84	0.168	(0.138)	(0.138)	0.168	(0.109)	0.109	0.168	0.109	0.109	0.168	0.109	(0.138)	0.168	(0.138)	0.138	H0.168E	(0.138E)	0.138E	H0.168E	(0.168E)	(0.168E)
90		(0.138)	(0.138)		(0.109)	0.109		0.109	0.109		(0.138)	(0.138)		(0.138)	0.138		0.138E	(0.168E)		(0.168E)	(0.168E)
96		(0.138)	(0.138)		(0.109)	0.109		0.109	0.109		(0.138)	(0.138)		(0.138)	0.138		(0.168E)	(0.168E)		(0.168E)	(0.168E)
102		0.109Z	0.109Z		(0.109)	0.109		0.109	(0.138)		(0.138)	(0.138)		(0.138)	0.138		(0.168E)	(0.168E)		H0.138E	H0.168E
108		0.109Z	(0.138Z)		0.109	0.109		0.109	(0.138)		(0.138)	0.138		0.138	(0.168)		(0.168E)	(0.168E)		H0.138E	H0.168E
114		0.109Z	(0.138Z)		0.109	0.109		0.109	(0.138)		(0.138)	0.138		(0.168)	(0.168)		(0.168E)	0.168E		H0.138E	H0.168E
120		0.109Z	(0.138Z)		0.109	0.109		0.109	(0.138)		(0.138)	0.138		(0.168)	(0.168)		H0.138E	H0.168E		H0.168E	H0.168E
126		0.138Z	0.138Z		0.138	0.138		0.138	0.138		0.138	(0.168)		(0.168)	(0.168)		H0.138E	H0.168E		H0.168E	H0.168E
132		0.138Z	0.138Z		0.138	0.138		0.138	0.138		(0.168)	(0.168)		0.168	0.168		H0.138E	H0.168E		H0.168E	H0.168E
138		0.138Z	0.138Z		0.138	0.138		0.138	0.138		(0.168)	(0.168)		(0.168E)	H0.168E		H0.168E	H0.168E		H0.168E	
144		0.168Z	0.168Z		0.168	0.168		0.168	0.168		0.168	0.168		H0.168E	H0.168E		H0.168E	H0.168E		H0.168E	

Notes:

* Aluminized Type 2 Steel or Precoated Galvanized Steel shall be required for diameters up to 42" according to Article 1006.01, 1 1/2" x 1/4" corrugations shall be used for diameters less than 12".

Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.

A thickness preceded by "H" indicates only helical seam fabrication is allowed.

E Elongation according to Article 542.04(e)

Z 1'-6" Minimum fill

TABLE IB: THICKNESS OF CORRUGATED STEEL PIPE
FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 68 mm x 13 mm, 75 mm x 25 mm AND 125 mm x 25 mm CORRUGATIONS
(Metric)

Nominal Diameter mm *	Type 1 Fill Height:			Type 2 Fill Height:			Type 3 Fill Height:			Type 4 Fill Height:			Type 5 Fill Height:			Type 6 Fill Height:			Type 7 Fill Height:		
	1 m and less 0.3 m min. cover			Greater than 1 m not exceeding 3 m			Greater than 3 m not exceeding 4.5 m			Greater than 4.5 m not exceeding 6 m			Greater than 6 m not exceeding 7.5 m			Greater than 7.5 m not exceeding 9 m			Greater than 9 m not exceeding 10.5 m		
	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm
300	1.63			1.63			1.63			1.63			1.63			1.63			1.63		
375	1.63			1.63			1.63			1.63			1.63			1.63			(2.01)		
450	(2.01)			1.63			1.63			1.63			1.63			(2.01)			(2.01)		
525	(2.01)			1.63			1.63			1.63			(2.01)			(2.01)			(2.01)		
600	(2.01)			1.63			1.63			1.63			(2.01)			(2.01)			(2.77)		
750	(2.77E)			1.63			1.63			(2.01)			(2.01)			(2.77)			2.77		
900	(2.77E)			1.63			(2.01)			(2.01)			(2.77)			2.77			(3.51E)		
1050	2.01			1.63			(2.01)			(2.01)			(2.77)			(2.77E)			(2.77E)		
1200	2.77	(2.77)	2.77	(2.77)	2.01	2.01	(2.77)	2.01	(2.77)	2.77	(2.77)	2.77	(3.51)	(2.77)	2.77	(3.51E)	2.77	2.77	(3.51E)	2.77	(3.51)
1350	2.77	(2.77)	2.77	(2.77)	2.01	2.01	2.77	(2.77)	2.77	2.77	(2.77)	2.77	(3.51)	2.77	2.77	(3.51E)	2.77	(3.51)	(3.51E)	3.51	3.51
1500	2.77	2.77	2.77	2.77	2.01	(2.77)	2.77	(2.77)	2.77	2.77	(2.77)	2.77	(3.51)	2.77	2.77	(3.51E)	(3.51)	(3.51)	3.51E	(3.51E)	(3.51E)
1650	(3.51)	2.77	2.77	2.77	2.01	(2.77)	2.77	(2.77)	2.77	2.77	2.77	2.77	(3.51)	2.77	(3.51)	(3.51E)	3.51	3.51	3.51E	(3.51E)	3.51E
1800	3.51	2.77	(3.51)	3.51	(2.77)	(2.77)	3.51	(2.77)	2.77	3.51	2.77	2.77	3.51	(3.51)	(3.51)	(4.27E)	(3.51E)	3.51E	(4.27E)	(3.51E)	3.51E
1950	4.27	2.77	(3.51)	4.27	(2.77)	2.77	4.27	2.77	2.77	4.27	2.77	(3.51)	4.27	(3.51)	(3.51)	H 4.27E	(3.51E)	3.51E	H 4.27E	3.51E	(4.27E)
2100	4.27	(3.51)	(3.51)	4.27	(2.77)	2.77	4.27	2.77	2.77	4.27	2.77	(3.51)	4.27	(3.51)	3.51	H 4.27E	(3.51E)	3.51E	H 4.27E	(4.27E)	(4.27E)
2250		(3.51)	(3.51)		(2.77)	2.77		2.77	2.77		(3.51)	(3.51)		(3.51)	3.51		3.51E	(4.27E)		(4.27E)	(4.27E)
2400		(3.51)	(3.51)		(2.77)	2.77		2.77	2.77		(3.51)	(3.51)		(3.51)	3.51		(4.27E)	(4.27E)		(4.27E)	(4.27E)
2550		2.77Z	2.77Z		(2.77)	2.77		2.77	(3.51)		(3.51)	(3.51)		(3.51)	3.51		(4.27E)	(4.27E)		H 3.51E	H 4.27E
2700		2.77Z	(3.51Z)		2.77	2.77		2.77	(3.51)		(3.51)	3.51		3.51	(4.27)		(4.27E)	(4.27E)		H 3.51E	H 4.27E
2850		2.77Z	(3.51Z)		2.77	2.77		2.77	(3.51)		(3.51)	3.51		(4.27)	(4.27)		(4.27E)	4.27E		H 3.51E	H 4.27E
3000		2.77Z	(3.51Z)		2.77	2.77		(3.51)	(3.51)		(3.51)	3.51		(4.27)	(4.27)		H 3.51E	H 4.27E		H 4.27E	H 4.27E
3150		3.51Z	3.51Z		3.51	3.51		3.51	3.51		3.51	(4.27)		(4.27)	(4.27)		H 3.51E	H 4.27E		H 4.27E	H 4.27E
3300		3.51Z	3.51Z		3.51	3.51		3.51	3.51		(4.27)	(4.27)		4.27	4.27		H 3.51E	H 4.27E		H 4.27E	H 4.27E
3450		3.51Z	3.51Z		3.51	3.51		3.51	3.51		(4.27)	(4.27)		(4.27E)	H 4.27E		H 4.27E	H 4.27E		H 4.27E	
3600		4.27Z	4.27Z		4.27	4.27		4.27	4.27		4.27	4.27		H 4.27E	H 4.27E		H 4.27E	H 4.27E		H 4.27E	

Notes:

* Aluminized Type 2 Steel or Precoated Galvanized Steel shall be required for diameters up to 1050 mm according to Article 1006.01, 38 mm x 6.5 mm corrugations shall be used for diameters less than 300 mm.

Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.

A thickness preceded by an "H" indicates only helical seam fabrication is allowed.

E Elongation according to Article 542.04(e)

Z 450 mm Minimum Fill

TABLE IC: THICKNESS OF CORRUGATED ALUMINUM ALLOY PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3"x1/2" AND 3"x1" CORRUGATIONS														
Nominal Diameter in.	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7	
	Fill Height: 3' and less 1' min. cover		Fill Height: Greater than 3' not exceeding 10'		Fill Height: Greater than 10' not exceeding 15'		Fill Height: Greater than 15' not exceeding 20'		Fill Height: Greater than 20' not exceeding 25'		Fill Height: Greater than 25' not exceeding 30'		Fill Height: Greater than 30' not exceeding 35'	
	2 2/3"x1/2"	3"x1"	2 2/3"x1/2"	3"x1"	2 2/3"x1/2"	3"x1"	2 2/3"x1/2"	3"x1"	2 2/3"x1/2"	3"x1"	2 2/3"x1/2"	3"x1"	2 2/3"x1/2"	3"x1"
12	(0.075)		0.060		0.060		0.060		0.060		0.060		0.060	
15	(0.075)		0.060		0.060		0.060		0.060		0.060		(0.075)	
18	(0.075)		0.060		0.060		0.060		0.060		(0.075)		H 0.060	
21	H 0.060E		0.060		0.060		0.060		(0.075)		H 0.060		H 0.060E	
24	(0.105E)		0.060		0.060		(0.075)		(0.105)		(0.105)		(0.105E)	
30	H 0.075E	H 0.060	0.075	H 0.060	0.075	H 0.060	(0.105)	H 0.060	(0.105)	H 0.060	H 0.075E	H 0.060	H 0.075E	H 0.060
36	(0.135E)	H 0.060E	0.075	H 0.060	(0.105)	H 0.060	(0.105)	H 0.060	(0.135)	H 0.060	H 0.075E	H 0.060	H 0.075E	H 0.060E
42	0.105E	(0.075)	0.105	0.060	0.105	0.060	0.105	0.060	0.105	(0.075)	0.105E	0.105	0.105E	(0.105E)
48	0.105E	(0.075)	0.105	0.060	0.105	0.060	0.105	(0.075)	0.105	(0.105)	0.105E	(0.105E)	0.105E	(0.135E)
54	0.105E	(0.105)	0.105	0.060	0.105	0.060	0.105	(0.075)	0.105	(0.105)	0.105E	(0.105E)	(0.135E)	(0.135E)
60	0.135E	(0.105)	0.135	0.060	0.135	(0.075)	0.135	(0.105)	0.135	(0.105)	0.135E	(0.135E)	(0.164E)	(0.135E)
66	0.164E	(0.105)	0.164	0.060	0.164	(0.075)	0.164	(0.105)	0.164	(0.135)	0.164E	(0.135E)	H 0.164E	(0.135E)
72	0.164E	(0.105)	0.164	0.060	0.164	(0.075)	0.164	(0.105)	0.164	(0.135)	H 0.164E	(0.135E)	H 0.164E	(0.164E)
78		(0.135)		0.075		(0.105)		(0.105)		(0.135)		(0.135E)		(0.164E)
84		(0.135)		0.105		0.105		(0.135)		(0.135)		(0.164E)		(0.164E)
90		(0.135)		0.105		0.105		(0.135)		(0.135)		(0.164E)		(0.164E)
96		(0.135)		0.105		0.105		(0.135)		(0.135)		(0.164E)		H 0.135E
102		0.135Z		0.135		0.135		0.135		(0.164)		(0.164E)		H 0.135E
108		0.135Z		0.135		0.135		0.135		(0.164)		(0.164E)		H 0.164E
114		0.164Z		0.164		0.164		0.164		0.164		H 0.164E		H 0.164E
120		0.164Z		0.164		0.164		0.164		0.164		H 0.164E		H 0.164E

Notes:

Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.

A thickness preceded by an "H" indicates only helical seam fabrication is allowed.

E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 1'-6"

Z 1"-6" Minimum fill

TABLE IC: THICKNESS OF CORRUGATED ALUMINUM ALLOY PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 68 mm x 13 mm AND 75 mm x 25 mm CORRUGATIONS (Metric)														
Nominal Diameter mm	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7	
	Fill Height:		Fill Height:		Fill Height:		Fill Height:		Fill Height:		Fill Height:		Fill Height:	
	1 m and less 0.3 m min. cover		Greater than 1 m not exceeding 3 m		Greater than 3 m not exceeding 4.5 m		Greater than 4.5 m not exceeding 6 m		Greater than 6 m not exceeding 7.5 m		Greater than 7.5 m not exceeding 9 m		Greater than 9 m not exceeding 10.5 m	
	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm
300	(1.91)		1.52		1.52		1.52		1.52		1.52		1.52	
375	(1.91)		1.52		1.52		1.52		1.52		1.52		(1.91)	
450	(1.91)		1.52		1.52		1.52		1.52		(1.91)		H 1.52	
525	H 1.52E		1.52		1.52		1.52		(1.91)		H 1.52		H 1.52E	
600	(2.67E)		1.52		1.52		(1.91)		(2.67)		(2.67)		(2.67E)	
750	H 1.91E	H 1.52	1.91	H 1.52	1.91	H 1.52	(2.67)	H 1.52	(2.67)	H 1.52	H 1.91E	H 1.52	H 1.91E	H 1.52
900	(3.43E)	H 1.52E	1.91	H 1.52	(2.67)	H 1.52	(2.67)	H 1.52	(3.43)	H 1.52	H 1.91E	H 1.52	H 1.91E	H 1.52E
1050	2.67E	(1.91)	2.67	1.52	2.67	1.52	2.67	1.52	2.67	(1.91)	2.67E	2.67	2.67E	(2.67E)
1200	2.67E	(1.91)	2.67	1.52	2.67	1.52	2.67	(1.91)	2.67	(2.67)	2.67E	(2.67E)	2.67E	(3.43E)
1350	2.67E	(2.67)	2.67	1.52	2.67	1.52	2.67	(1.91)	2.67	(2.67)	2.67E	(2.67E)	(3.43E)	(3.43E)
1500	3.43E	(2.67)	3.43	1.52	3.43	(1.91)	3.43	(2.67)	3.43	(2.67)	3.43E	(3.43E)	(4.17E)	(3.43E)
1650	4.17E	(2.67)	4.17	1.52	4.17	(1.91)	4.17	(2.67)	4.17	(3.43)	4.17E	(3.43E)	H 4.17E	(3.43E)
1800	4.17E	(2.67)	4.17	1.52	4.17	(1.91)	4.17	(2.67)	4.17	(3.43)	H 4.17E	(3.43E)	H 4.17E	(4.17E)
1950		(3.43)		1.91		(2.67)		(2.67)		(3.43)		(3.43E)		(4.17E)
2100		(3.43)		2.67		2.67		(3.43)		(3.43)		(4.17E)		(4.17E)
2250		(3.43)		2.67		2.67		(3.43)		(3.43)		(4.17E)		(4.17E)
2400		(3.43)		2.67		2.67		(3.43)		(3.43)		(4.17E)		H 3.43E
2550		3.43Z		3.43		3.43		3.43		(4.17)		(4.17E)		H 3.43E
2700		3.43Z		3.43		3.43		3.43		(4.17)		(4.17E)		H 4.17E
2850		4.17Z		4.17		4.17		4.17		4.17		H 4.17E		H 4.17E
3000		4.17Z		4.17		4.17		4.17		4.17		H 4.17E		H 4.17E

Notes:

Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.

A thickness preceded by an "H" indicates only helical seam fabrication is allowed.

E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 450 mm.

Z 450 mm Minimum fill

Table IIA: THICKNESS FOR CORRUGATED STEEL PIPE ARCHES AND CORRUGATED ALUMINUM ALLOY PIPE ARCHES FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE																											
Equivalent Round Size in	Corrugated Steel & Aluminum Pipe Arch 2 2/3" x 1/2"		Corrugated Steel & Aluminum Pipe Arch 3" x 1"		Corrugated Steel Pipe Arch 5" x 1"		Min. Cover	Type 1					Type 2					Type 3									
								Fill Height:					Fill Height:					Fill Height:									
								3' and less					Greater than 3' not exceeding 10'					Greater than 10' not exceeding 15'									
								Steel			Aluminum		Steel			Aluminum		Steel			Aluminum						
Span (in.)*	Rise (in.)		Span (in.)	Rise (in.)		Span (in.)	Rise (in.)	Steel & Aluminum	2 2/3" x 1/2"	3"x1"	5" x 1"	2 2/3" x 1/2"	3"x1"		2 2/3" x 1/2"	3"x1"	5" x 1"	2 2/3" x 1/2"	3"x1"	5" x 1"	2 2/3" x 1/2"	3"x1"	5" x 1"	2 2/3" x 1/2"	3"x1"		
15	17	13						1'-6"	0.064				0.060			0.064				0.060			0.064			0.060	
18	21	15						1'-6"	0.064				0.060			0.064				0.060			0.064			0.060	
21	24	18						1'-6"	0.064				(0.075)			0.064				0.060			0.064			0.060	
24	28	20						1'-6"	(0.079)				(0.105)			0.064				0.075			0.064			0.075	
30	35	24						1'-6"	(0.079)				(0.105)			0.064				0.075			(0.079)			(0.105)	
36	42	29						1'-6"	(0.079)				0.105			0.064				0.105			0.064			0.105	
42	49	33						1'-6"	0.109				0.105		(0.109)					0.105			(0.109)			0.105	
48	57	38	53	41	53	41		1'-6"	0.109	(0.109)	(0.109)	0.135	0.060	0.109	0.079	0.079	0.135	0.060	0.109	0.079	(0.109)	0.135	0.060	0.109	0.079	0.135	0.060
54	64	43	60	46	60	46		1'-6"	0.109	(0.109)	0.109	0.164	(0.075)	0.109	0.079	0.079	0.164	0.060	0.109	(0.109)	0.109	0.164	(0.075)	0.109	(0.075)	0.164	(0.075)
60	71	47	66	51	66	51		1'-6"	0.138	(0.109)	0.109	0.164	(0.075)	0.138	0.079	(0.109)	0.164	0.060	0.138	(0.109)	0.109	0.164	(0.075)	0.109	(0.075)	0.164	(0.075)
66	77	52	73	55	73	55		1'-6"	0.168	(0.109)	0.109		0.075	0.168	0.079	(0.109)		0.075	0.168	(0.109)	0.109		0.075	0.109		0.075	0.109
72	83	57	81	59	81	59		1'-6"	0.168	(0.109)	0.109		0.105	0.168	0.079	(0.109)		0.105	0.168	(0.109)	0.109		0.105	0.109		0.105	0.109
78			87	63	87	63		1'-6"		0.109	0.109		0.105		(0.109)	0.109		0.105		0.109	0.109		0.105			0.105	0.109
84			95	67	95	67		1'-6"		0.109	0.109		0.105		(0.109)	0.109		0.105		0.109	0.109		0.105			0.105	0.109
90			103	71	103	71		1'-6"		0.109	0.109		0.135		(0.109)	0.109		0.135		0.109	0.109		0.135			0.135	0.109
96			112	75	112	75		1'-6"		0.109	(0.138)		0.164		0.109	0.109		0.164		0.109	(0.138)		0.164			0.164	0.109
102			117	79	117	79		1'-6"		0.109	(0.138)		0.164		0.109	0.109		0.164		0.109	(0.138)		0.164			0.164	0.109
108			128	83	128	83		1'-6"		0.138	0.138				0.138	0.138				0.138	0.138					0.138	0.138
114			137	87	137	87		1'-6"		0.138	0.138				0.138	0.138				0.138	0.138					0.138	0.138
120			142	91	142	91		1'-6"		0.168	0.168				0.168	0.168				0.168	0.168					0.168	0.168

Notes:

* Aluminized Type 2 Steel or Precoated Galvanized Steel shall be required for steel spans up to 42" according to Article 1006.01.

Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.

The Type 1 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 3 tons per square foot.

The Type 2 and 3 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 2 tons per square foot.

This minimum bearing capacity will be determined by the Engineer in the field.

Table IIA: THICKNESS FOR CORRUGATED STEEL PIPE ARCHES AND CORRUGATED ALUMINUM ALLOY PIPE ARCHES
FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE
(Metric)

Equivalent Round Size (mm)	Corrugated Steel & Aluminum Pipe Arch 68 x 13 mm		Corrugated Steel & Aluminum Pipe Arch 75 x 25 mm		Corrugated Steel Pipe Arch 125 x 25 mm		Min. Cover		Type 1					Type 2					Type 3				
									Fill Height:					Fill Height:					Fill Height:				
									1 m and less					Greater than 1 m not exceeding 3 m					Greater than 3 m not exceeding 4.5 m				
									Steel			Aluminum		Steel			Aluminum		Steel			Aluminum	
	Span (mm)*	Rise (mm)	Span (mm)	Rise (mm)	Span (mm)	Rise (mm)	Steel & Aluminum		68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	125 x 25 mm	68 x 13 mm	75 x 25 mm
375	430	330					0.5 m		1.63			1.52		1.63			1.52		1.63			1.52	
450	530	380					0.5 m		1.63			1.52		1.63			1.52		1.63			1.52	
525	610	460					0.5 m		1.63			(1.91)		1.63			1.52		1.63			1.52	
600	710	510					0.5 m		(2.01)			(2.67)		1.63			1.91		1.63			1.91	
750	870	630					0.5 m		(2.01)			(2.67)		1.63			1.91		(2.01)			(2.67)	
900	1060	740					0.5 m		(2.01)			2.67		1.63			2.67		1.63			2.67	
1050	1240	840					0.5 m		2.77			2.67		(2.77)			2.67		(2.77)			2.67	
1200	1440	970	1340	1050	1340	1050	0.5 m		2.77	(2.77)	(2.77)	3.43	1.52	2.77	2.01	2.01	3.43	1.52	2.77	2.01	(2.77)	3.43	1.52
1350	1620	1100	1520	1170	1520	1170	0.5 m		2.77	(2.77)	2.77	4.17	(1.91)	2.77	2.01	2.01	4.17	1.52	2.77	(2.77)	2.77	4.17	(1.91)
1500	1800	1200	1670	1300	1670	1300	0.5 m		3.51	(2.77)	2.77	4.17	(1.91)	3.51	2.01	(2.77)	4.17	1.52	3.51	(2.77)	2.77	4.17	(1.91)
1650	1950	1320	1850	1400	1850	1400	0.5 m		4.27	(2.77)	2.77		1.91	4.27	2.01	(2.77)		1.91	4.27	(2.77)	2.77		1.91
1800	2100	1450	2050	1500	2050	1500	0.5 m		4.27	(2.77)	2.77		2.67	4.27	2.01	(2.77)		2.67	4.27	(2.77)	2.77		2.67
1950			2200	1620	2200	1620	0.5 m			2.77	2.77		2.67		(2.77)	2.77		2.67		2.77	2.77		2.67
2100			2400	1720	2400	1720	0.5 m			2.77	2.77		2.67		(2.77)	2.77		2.67		2.77	2.77		2.67
2250			2600	1820	2600	1820	0.5 m			2.77	2.77		3.43		(2.77)	2.77		3.43		2.77	2.77		3.43
2400			2840	1920	2840	1920	0.5 m			2.77	(3.51)		4.17		2.77	2.77		4.17		2.77	(3.51)		4.17
2550			2970	2020	2970	2020	0.5 m			2.77	(3.51)		4.17		2.77	2.77		4.17		2.77	(3.51)		4.17
2700			3240	2120	3240	2120	0.5 m			3.51	3.51				3.51	3.51				3.51	3.51		
2850			3470	2220	3470	2220	0.5 m			3.51	3.51				3.51	3.51				3.51	3.51		
3000			3600	2320	3600	2320	0.5 m			4.27	4.27				4.27	4.27				4.27	4.27		

Notes:

* Aluminized Type 2 Steel or Precoated Galvanized Steel shall be required for steel spans up to 1060 mm according to Article 1006.01.
Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.
The Type 1 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 290 kN per square meter.
The Type 2 and 3 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 192 kN per square meter.
This minimum bearing capacity will be determined by the Engineer in the field.

Table IIB: CLASSES OF REINFORCED CONCRETE ELLIPTICAL AND REINFORCED CONCRETE ARCH PIPE FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE											
Equivalent Round Size (in.)	Reinforced Concrete Elliptical pipe (in.)		Reinforced Concrete Arch pipe (in.)		Minimum Cover	Type 1		Type 2		Type 3	
						Fill Height: 3' and less		Fill Height: Greater than 3' not exceeding 10'		Fill Height: Greater than 10' not exceeding 15'	
	Span	Rise	Span	Rise	RCCP HE & A	HE	Arch	HE	Arch	HE	Arch
15	23	14	18	11	1' -0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
18	23	14	22	13 1/2	1' -0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
21	30	19	26	15 1/2	1' -0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
24	30	19	28 1/2	18	1' -0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
27	34	22	36 1/4	22 1/2	1' -0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
30	38	24	36 1/4	22 1/2	1' -0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
36	45	29	43 3/4	26 5/8	1' -0"	HE-II	A-II	HE-III	A-III	HE-IV	A-IV
42	53	34	51 1/8	31 5/16	1' -0"	HE-I	A-II	HE-III	A-III	HE-IV	A-IV
48	60	38	58 1/2	36	1' -0"	HE-I	A-II	HE-III	A-III	1460	1450
54	68	43	65	40	1' -0"	HE-I	A-II	HE-III	A-III	1460	1460
60	76	48	73	45	1' -0"	HE-I	A-II	HE-III	A-III	1460	1470
66	83	53	88	54	1' -0"	HE-I	A-II	HE-III	A-III	1470	1480
72	91	58	88	54	1' -0"	HE-I	A-II	HE-III	A-III	1470	1480

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.

Design assumptions; Water filled pipe, AASHTO Type 2 installation per AASHTO LRFD Table 12.10.2.1-1

Table IIB: CLASSES OF REINFORCED CONCRETE ELLIPTICAL AND REINFORCED CONCRETE ARCH PIPE FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE (Metric)											
Equivalent Round Size (mm)	Reinforced Concrete Elliptical pipe (mm)		Reinforced Concrete Arch pipe (mm)		Minimum Cover	Type 1		Type 2		Type 3	
						Fill Height: 1 m and less		Fill Height: Greater than 1 m not exceeding 3 m		Fill Height: Greater than 3 m not exceeding 4.5 m	
	Span	Rise	Span	Rise	RCCP HE & A	HE	Arch	HE	Arch	HE	Arch
375	584	356	457	279	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
450	584	356	559	343	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
525	762	483	660	394	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
600	762	483	724	457	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
686	864	559	921	572	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
750	965	610	921	572	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
900	1143	737	1111	676	0.3 m	HE-II	A-II	HE-III	A-III	HE-IV	A-IV
1050	1346	864	1299	795	0.3 m	HE-I	A-II	HE-III	A-III	HE-IV	A-IV
1200	1524	965	1486	914	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1350	1727	1092	1651	1016	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1500	1930	1219	1854	1143	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1676	2108	1346	2235	1372	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1800	2311	1473	2235	1372	0.3 m	HE-I	A-II	HE-III	A-III	70	70

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.

Design assumptions; Water filled pipe, AASHTO Type 2 installation per AASHTO LRFD Table 12.10.2.1-1

TABLE IIIA: PLASTIC PIPE PERMITTED
FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE

Nominal Diameter (in.)	Type 1					Type 2					Type 3					Type 4			
	Fill Height: 3' and less, with 1' min					Fill Height: Greater than 3', not exceeding 10'					Fill Height: Greater than 10', not exceeding 15'					Fill Height: Greater than 15', not exceeding 20'			
	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPP
10	X	X	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	X	X	X	NA
12	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA
15	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	NA	X	X	X	NA	X
18	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA
21	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA
24	X	X	X	X	X	X	X	X	X	X	X	X	NA	NA	NA	X	X	X	NA
30	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA
36	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	NA	X	X	X	NA
42	X	NA	X	X	NA	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	X	NA
48	X	NA	X	X	X	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	X	NA

Notes:

PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
PE Polyethylene (PE) pipe with a smooth interior
CPE Corrugated Polyethylene (PE) pipe with a smooth interior
CPP Corrugated Polypropylene (CPP) pipe with a smooth interior
X This material may be used for the given pipe diameter and fill height
NA Not Available

TABLE IIIA: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE (Metric)																			
Nominal Diameter (mm)	Type 1					Type 2					Type 3					Type 4			
	Fill Height: 1 m and less, with 0.3 m min. cover					Fill Height: Greater than 1 m, not exceeding 3 m					Fill Height: Greater than 3 m, not exceeding 4.5 m					Fill Height: Greater than 4.5 m, not exceeding 6 m			
	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPP
250	X	X	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	X	X	X	NA
300	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA
375	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	NA	X	X	X	NA	X
450	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA
525	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA
600	X	X	X	X	X	X	X	X	X	X	X	X	NA	NA	NA	X	X	X	NA
750	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA
900	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	NA	X	X	X	NA
1000	X	NA	X	X	NA	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	X	NA
1200	X	NA	X	X	X	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	X	NA

Notes:

PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
PE Polyethylene (PE) pipe with a smooth interior
CPE Corrugated Polyethylene (PE) pipe with a smooth interior
CPP Corrugated Polypropylene (CPP) pipe with a smooth interior
X This material may be used for the given pipe diameter and fill height
NA Not Available

TABLE IIIB: PLASTIC PIPE PERMITTED								
FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE								
Nominal Diameter (in.)	Type 5			Type 6			Type 7	
	Fill Height: Greater than 20', not exceeding 25'			Fill Height: Greater than 25', not exceeding 30'			Fill Height: Greater than 30', not exceeding 35'	
	PVC	CPVC		PVC	CPVC		CPVC	
10	X	X		X	X		X	
12	X	X		X	X		X	
15	X	X		X	X		X	
18	X	X		X	X		X	
21	X	X		X	X		X	
24	X	X		X	X		X	
30	X	X		X	X		X	
36	X	X		X	X		X	
42	X	NA		X	NA		NA	
48	X	NA		X	NA		NA	

Notes:

PVC Polyvinyl Chloride (PVC) pipe with a smooth interior

CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior

X This material may be used for the given pipe diameter and fill height

NA Not Available

TABLE IIIB: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE (metric)								
Nominal Diameter (mm)	Type 5			Type 6			Type 7	
	Fill Height: Greater than 6 m, not exceeding 7.5 m			Fill Height: Greater than 7.5 m, not exceeding 9 m			Fill Height: Greater than 9 m, not exceeding 10.5 m	
	PVC	CPVC		PVC	CPVC		CPVC	
250	X	X		X	X		X	
300	X	X		X	X		X	
375	X	X		X	X		X	
450	X	X		X	X		X	
525	X	X		X	X		X	
600	X	X		X	X		X	
750	X	X		X	X		X	
900	X	X		X	X		X	
1000	X	NA		X	NA		NA	
1200	X	NA		X	NA		NA	

Notes:

PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
PE Polyethylene (PE) pipe with a smooth interior
X This material may be used for the given pipe diameter and fill height
NA Not Available"

Revise the first sentence of the first paragraph of Article 542.04(c) of the Standard Specifications to read:

“Compacted aggregate, at least 4 in. (100 mm) in depth below the pipe culvert, shall be placed the entire width of the trench and for the length of the pipe culvert, except compacted impervious material shall be used for the outer 3 ft (1 m) at each end of the pipe culvert.”

Revise the seventh paragraph of Article 542.04(d) of the Standard Specifications to read:

“PVC, PE and CPP pipes shall be joined according to the manufacturer’s specifications.”

Replace the third sentence of the first paragraph of Article 542.04(h) of the Standard Specifications with the following:

“The total cover required for various construction loadings shall be the responsibility of the Contractor.”

Delete “Table IV : Wheel Loads and Total Cover” in Article 542.04(h) of the Standard Specifications.

Revise the first and second paragraphs of Article 542.04(i) of the Standard Specifications to read:

“(i) Deflection Testing for Pipe Culverts. All PE, PVC and CPP pipe culverts shall be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted. The testing shall be performed in the presence of the Engineer.

For PVC, PE, and CPP pipe culverts with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC, PE, and CPP pipe culverts with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel shall be used.”

Revise Articles 542.04(i)(1) and (2) of the Standard Specifications to read:

“(1) For all PVC pipe: as defined using ASTM D 3034 methodology.

(2) For all PE and CPP pipe: the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications.”

Revise the second sentence of the second paragraph of Article 542.07 of the Standard Specifications to read:

“When a prefabricated end section is used, it shall be of the same material as the pipe culvert, except for polyethylene (PE), polyvinylchloride (PVC), and polypropylene (PP) pipes which shall have metal end sections.”

Revise the first paragraph of Article 1040.03 of the Standard Specifications to read:

“**1040.03 Polyvinyl Chloride (PVC) Pipe.** Acceptance testing of PVC pipe and fittings shall be accomplished during the same construction season in which they are installed. The section properties

shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.”

Delete Articles 1040.03(e) and (f) of the Standard Specifications.

Revise Articles 1040.04(c) and (d) of the Standard Specifications to read:

- “(c) PE Profile Wall Pipe for Insertion Lining. The pipe shall be according to ASTM F 894. When used for insertion lining of pipe culverts, the pipe liner shall have a minimum pipe stiffness of 46 psi (317 kPa) at five percent deflection for nominal inside diameters of 42 in. (1050 mm) or less. For nominal inside diameters of greater than 42 in. (1050 mm), the pipe liner shall have a minimum pipe stiffness of 32.5 psi (225 kPa) at five percent deflection. All sizes shall have wall construction that presents essentially smooth internal and external surfaces.
- (d) PE Pipe with a Smooth Interior. The pipe shall be according to ASTM F 714 (DR 32.5) with a minimum cell classification of PE 335434 as defined in ASTM D 3350. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties and the resin used to manufacture the pipe meets or exceeds the minimum cell classification requirements.”

Add the following to Section 1040 of the Standard Specifications:

“1040.08 Polypropylene (PP) Pipe. Storage and handling shall be according to the manufacturer's recommendations, except in no case shall the pipe be exposed to direct sunlight for more than six months. Acceptance testing of the pipe shall be accomplished during the same construction season in which it is installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.

- (a) Corrugated PP Pipe with a Smooth Interior. The pipe shall be according to AAHSTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type S or D.
- (b) Perforated Corrugated PP Pipe with A Smooth Interior. The pipe shall be according to AASHTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type SP. In addition, the top centerline of the pipe shall be marked so that it is readily visible from the top of the trench before backfilling, and the upper ends of the slot perforations shall be a minimum of ten degrees below the horizontal.”

LRFD STORM SEWER BURIAL TABLES (BDE)

Effective: November 1, 2013

Revised: April 1, 2015

Revise Article 550.02 of the Standard Specifications to read as follows:

“Item

Article Section

(a) Clay Sewer Pipe	1040.02
(b) Extra Strength Clay Pipe	1040.02
(c) Concrete Sewer, Storm Drain, and Culvert Pipe	1042
(d) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	1042
(e) Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe (Note 1)	1042
(f) Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe (Note 1)	1042
(g) Polyvinyl Chloride (PVC) Pipe	1040.03
(h) Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior	1040.03
(i) Corrugated Polypropylene (CPP) Pipe with Smooth Interior	1040.08
(j) Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe	1056
(k) Mastic Joint Sealer for Pipe	1055
(l) External Sealing Band	1057
(m) Fine Aggregate (Note 2)	1003.04
(n) Coarse Aggregate (Note 3)	1004.05
(o) Reinforcement Bars and Welded Wire Fabric	1006.10
(p) Handling Hole Plugs	1042.16
(q) Polyethylene (PE) Pipe with a Smooth Interior	1040.04
(r) Corrugated Polyethylene (PE) Pipe with a Smooth Interior	1040.04

Note 1. The class of elliptical and arch pipe used for various storm sewer sizes and heights of fill shall conform to the requirements for circular pipe.

Note 2. The fine aggregate shall be moist.

Note 3. The coarse aggregate shall be wet.”

Revise the table for permitted materials in Article 550.03 of the Standard Specifications as follows:

"Class	Materials
A	Rigid Pipes: Clay Sewer Pipe Extra Strength Clay Pipe Concrete Sewer, Storm Drain, and Culvert Pipe Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
B	Rigid Pipes: Clay Sewer Pipe Extra Strength Clay Pipe Concrete Sewer, Storm Drain, and Culvert Pipe Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe Flexible Pipes: Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride Pipe (PVC) with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polypropylene (CPP) Pipe with a Smooth Interior"

Replace the storm sewers tables in Article 550.03 of the Standard Specifications with the following:

STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE																
Nominal Diameter in.	Type 1								Type 2							
	Fill Height: 3' and less With 1' minimum cover								Fill Height: Greater than 3' not exceeding 10'							
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP
10	NA	3	X	X	X	X	X	NA	NA	1	*X	X	X	X	X	NA
12	IV	NA	X	X	X	X	X	X	II	1	*X	X	X	X	X	X
15	IV	NA	NA	X	X	NA	X	X	II	1	*X	X	X	NA	X	X
18	IV	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
21	III	NA	NA	X	X	NA	NA	NA	II	2	X	X	X	NA	NA	NA
24	III	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
27	III	NA	NA	NA	NA	NA	NA	NA	II	3	X	NA	NA	NA	NA	NA
30	IV	NA	NA	X	X	X	X	X	II	3	X	X	X	X	X	X
33	III	NA	NA	NA	NA	NA	NA	NA	II	NA	X	NA	NA	NA	NA	NA
36	III	NA	NA	X	X	X	X	X	II	NA	X	X	X	X	X	X
42	II	NA	X	X	NA	X	X	NA	II	NA	X	X	NA	X	NA	NA
48	II	NA	X	X	NA	X	X	X	II	NA	X	X	NA	X	NA	NA
54	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
60	II	NA	NA	NA	NA	NA	NA	X	II	NA	NA	NA	NA	NA	NA	X
66	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
72	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
78	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
84	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
90	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
96	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
102	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
108	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

CSP Concrete Sewer, Storm drain, and Culvert Pipe

PVC Polyvinyl Chloride Pipe

CPVC Corrugated Polyvinyl Chloride Pipe

ESCP Extra Strength Clay Pipe

PE Polyethylene Pipe with a Smooth Interior

CPE Corrugated Polyethylene Pipe with a Smooth Interior

CPP Corrugated Polypropylene pipe with a Smooth Interior

X This material may be used for the given pipe diameter and fill height.

NA This material is Not Acceptable for the given pipe diameter and fill height.

* May also use Standard Strength Clay Pipe

STORM SEWERS (Metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE																
Nominal Diameter in.	Type 1								Type 2							
	Fill Height: 1 m and less With 300 mm minimum cover								Fill Height: Greater than 1 m not exceeding 3 m							
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP
250	NA	3	X	X	X	X	X	NA	NA	1	*X	X	X	X	X	NA
300	IV	NA	X	X	X	X	X	X	II	1	*X	X	X	X	X	X
375	IV	NA	NA	X	X	NA	X	X	II	1	*X	X	X	NA	X	X
450	IV	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
525	III	NA	NA	X	X	NA	NA	NA	II	2	X	X	X	NA	NA	NA
600	III	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
675	III	NA	NA	NA	NA	NA	NA	NA	II	3	X	NA	NA	NA	NA	NA
750	IV	NA	NA	X	X	X	X	X	II	3	X	X	X	X	X	X
825	III	NA	NA	NA	NA	NA	NA	NA	II	NA	X	NA	NA	NA	NA	NA
900	III	NA	NA	X	X	X	X	X	II	NA	X	X	X	X	X	X
1050	II	NA	X	X	NA	X	X	NA	II	NA	X	X	NA	X	NA	NA
1200	II	NA	X	X	NA	X	X	X	II	NA	X	X	NA	X	NA	NA
1350	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
1500	II	NA	NA	NA	NA	NA	NA	X	II	NA	NA	NA	NA	NA	NA	X
1650	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
1800	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
1950	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
2100	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
2250	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
2400	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
2550	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
2700	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
CSP Concrete Sewer, Storm drain, and Culvert Pipe
PVC Polyvinyl Chloride Pipe
CPVC Corrugated Polyvinyl Chloride Pipe
ESCP Extra Strength Clay Pipe
PE Polyethylene Pipe with a Smooth Interior
CPE Corrugated Polyethylene Pipe with a Smooth Interior
CPP Corrugated Polypropylene pipe with a Smooth Interior
X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
* May also use Standard Strength Clay Pipe

STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE															
Nominal Diameter in.	Type 3								Type 4						
	Fill Height: Greater than 10' not exceeding 15'								Fill Height: Greater than 15' not exceeding 20'						
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPP
10	NA	2	X	X	X	X	X	NA	NA	3	X	X	X	X	NA
12	III	2	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
15	III	3	X	X	X	NA	NA	X	IV	NA	NA	X	X	NA	X
18	III	NA	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
21	III	NA	NA	X	X	NA	NA	NA	IV	NA	NA	X	X	NA	NA
24	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
27	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
30	III	NA	NA	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
33	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
36	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
42	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
48	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
54	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
60	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
66	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
72	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
78	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
84	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
90	III	NA	NA	NA	NA	NA	NA	NA	1680	NA	NA	NA	NA	NA	NA
96	III	NA	NA	NA	NA	NA	NA	NA	1690	NA	NA	NA	NA	NA	NA
102	III	NA	NA	NA	NA	NA	NA	NA	1700	NA	NA	NA	NA	NA	NA
108	1360	NA	NA	NA	NA	NA	NA	NA	1710	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

CSP Concrete Sewer, Storm drain, and Culvert Pipe

PVC Polyvinyl Chloride Pipe

CPVC Corrugated Polyvinyl Chloride Pipe

ESCP Extra Strength Clay Pipe

PE Polyethylene Pipe with a Smooth Interior

CPE Corrugated Polyethylene Pipe with a Smooth Interior

CPP Corrugated Polypropylene pipe with a Smooth Interior

X This material may be used for the given pipe diameter and fill height.

NA This material is Not Acceptable for the given pipe diameter and fill height.

* May also use Standard Strength Clay Pipe

Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the D-load to produce a 0.01 in crack.

STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE															
Nominal Diameter in.	Type 3								Type 4						
	Fill Height: Greater than 3 m not exceeding 4.5 m								Fill Height: Greater than 4.5 m not exceeding 6 m						
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPP
250	NA	2	X	X	X	X	X	NA	NA	3	X	X	X	X	NA
300	III	2	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
375	III	3	X	X	X	NA	NA	X	IV	NA	NA	X	X	NA	X
450	III	NA	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
525	III	NA	NA	X	X	NA	NA	NA	IV	NA	NA	X	X	NA	NA
600	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
675	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
750	III	NA	NA	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
825	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
900	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
1050	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
1200	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
1350	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1500	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1650	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1800	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1950	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
2100	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
2250	III	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA
2400	III	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA
2550	III	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA
2700	70	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

CSP Concrete Sewer, Storm drain, and Culvert Pipe

PVC Polyvinyl Chloride Pipe

CPVC Corrugated Polyvinyl Chloride Pipe

ESCP Extra Strength Clay Pipe

PE Polyethylene Pipe with a Smooth Interior

CPE Corrugated Polyethylene Pipe with a Smooth Interior

CPP Corrugated Polypropylene pipe with a Smooth Interior

X This material may be used for the given pipe diameter and fill height.

NA This material is Not Acceptable for the given pipe diameter and fill height.

* May also use Standard Strength Clay Pipe

Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the metric D-load to produce a 25.4 micro-meter crack.

STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE								
Nominal Diameter in.	Type 5			Type 6			Type 7	
	Fill Height: Greater than 20' not exceeding 25'			Fill Height: Greater than 25' not exceeding 30'			Fill Height: Greater than 30' not exceeding 35'	
	RCCP	PVC	CPVC	RCCP	PVC	CPVC	RCCP	CPVC
10	NA	X	X	NA	X	X	NA	X
12	IV	X	X	V	X	X	V	X
15	IV	X	X	V	X	X	V	X
18	IV	X	X	V	X	X	V	X
21	IV	X	X	V	X	X	V	X
24	IV	X	X	V	X	X	V	X
27	IV	NA	NA	V	NA	NA	V	NA
30	IV	X	X	V	X	X	V	X
33	IV	NA	NA	V	NA	NA	V	NA
36	IV	X	X	V	X	X	V	X
42	IV	X	NA	V	X	NA	V	NA
48	IV	X	NA	V	X	NA	V	NA
54	IV	NA	NA	V	NA	NA	V	NA
60	IV	NA	NA	V	NA	NA	V	NA
66	IV	NA	NA	V	NA	NA	V	NA
72	V	NA	NA	V	NA	NA	V	NA
78	2020	NA	NA	2370	NA	NA	2730	NA
84	2020	NA	NA	2380	NA	NA	2740	NA
90	2030	NA	NA	2390	NA	NA	2750	NA
96	2040	NA	NA	2400	NA	NA	2750	NA
102	2050	NA	NA	2410	NA	NA	2760	NA
108	2060	NA	NA	2410	NA	NA	2770	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

PVC Polyvinyl Chloride Pipe

CPVC Corrugated Polyvinyl Chloride Pipe

ESCP Extra Strength Clay Pipe

X This material may be used for the given pipe diameter and fill height.

NA This material is Not Acceptable for the given pipe diameter and fill height.

Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the D-load to produce a 0.01 in crack.

STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE								
Nominal Diameter in.	Type 5			Type 6			Type 7	
	Fill Height: Greater than 20' not exceeding 25'			Fill Height: Greater than 25' not exceeding 30'			Fill Height: Greater than 30' not exceeding 35'	
	RCCP	PVC	CPVC	RCCP	PVC	CPVC	RCCP	CPVC
250	NA	X	X	NA	X	X	NA	X
300	IV	X	X	V	X	X	V	X
375	IV	X	X	V	X	X	V	X
450	IV	X	X	V	X	X	V	X
525	IV	X	X	V	X	X	V	X
600	IV	X	X	V	X	X	V	X
675	IV	NA	NA	V	NA	NA	V	NA
750	IV	X	X	V	X	X	V	X
825	IV	NA	NA	V	NA	NA	V	NA
900	IV	X	X	V	X	X	V	X
1050	IV	X	NA	V	X	NA	V	NA
1200	IV	X	NA	V	X	NA	V	NA
1350	IV	NA	NA	V	NA	NA	V	NA
1500	IV	NA	NA	V	NA	NA	V	NA
1650	IV	NA	NA	V	NA	NA	V	NA
1800	V	NA	NA	V	NA	NA	V	NA
1950	100	NA	NA	110	NA	NA	130	NA
2100	100	NA	NA	110	NA	NA	130	NA
2250	100	NA	NA	110	NA	NA	130	NA
2400	100	NA	NA	120	NA	NA	130	NA
2550	100	NA	NA	120	NA	NA	130	NA
2700	100	NA	NA	120	NA	NA	130	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

PVC Polyvinyl Chloride Pipe

CPVC Corrugated Polyvinyl Chloride Pipe

ESCP Extra Strength Clay Pipe

X This material may be used for the given pipe diameter and fill height.

NA This material is Not Acceptable for the given pipe diameter and fill height.

Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the metric D-load to produce a 25.4 micro-meter crack.

Revise the sixth paragraph of Article 550.06 of the Standard Specifications to read:

“PVC, PE and CPP pipes shall be joined according to the manufacturer’s specifications.”

Revise the first and second paragraphs of Article 550.08 of the Standard Specifications to read:

“550.08 Deflection Testing for Storm Sewers. All PVC, PE, and CPP storm sewers shall be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted. The testing shall be performed in the presence of the Engineer.

For PVC, PE, and CPP storm sewers with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC, PE, and CPP storm sewers with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel shall be used.”

Revise the fifth paragraph of Article 550.08 to read as follows.

“The outside diameter of the mandrel shall be 95 percent of the base inside diameter. For all PVC pipe the base inside diameter shall be defined using ASTM D 3034 methodology. For all PE and CPP pipe, the base inside diameter shall be defined as the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications.”

Revise the first paragraph of Article 1040.03 of the Standard Specifications to read:

“1040.03 Polyvinyl Chloride (PVC) Pipe. Acceptance testing of PVC pipe and fittings shall be accomplished during the same construction season in which they are installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.”

Delete Articles 1040.03(e) and (f) of the Standard Specifications.

Revise Articles 1040.04(c) and (d) of the Standard Specifications to read:

“(c) PE Profile Wall Pipe for Insertion Lining. The pipe shall be according to ASTM F 894. When used for insertion lining of pipe culverts, the pipe liner shall have a minimum pipe stiffness of 46 psi (317 kPa) at five percent deflection for nominal inside diameters of 42 in. (1050 mm) or less. For nominal inside diameters of greater than 42 in. (1050 mm), the pipe liner shall have a minimum pipe stiffness of 32.5 psi (225 kPa) at five percent deflection. All sizes shall have wall construction that presents essentially smooth internal and external surfaces.

(d) PE Pipe with a Smooth Interior. The pipe shall be according to ASTM F 714 (DR 32.5) with a minimum cell classification of PE 335434 as defined in ASTM D 3350. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties and the resin used to manufacture the pipe meets or exceeds the minimum cell classification requirements.”

Add the following to Section 1040 of the Standard Specifications:

“1040.08 Polypropylene (PP) Pipe. Storage and handling shall be according to the manufacturer's recommendations, except in no case shall the pipe be exposed to direct sunlight for more than six months. Acceptance testing of the pipe shall be accomplished during the same construction season in which it is installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.

- (a) Corrugated PP Pipe with a Smooth Interior. The pipe shall be according to AAHSTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type S or D.
- (b) Perforated Corrugated PP Pipe with A Smooth Interior. The pipe shall be according to AASHTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type SP. In addition, the top centerline of the pipe shall be marked so that it is readily visible from the top of the trench before backfilling, and the upper ends of the slot perforations shall be a minimum of ten degrees below the horizontal.”

PAVED SHOULDER REMOVAL (BDE)

Effective: April 1, 2014

Revise the first paragraph of Article 440.07(b) of the Standard Specifications to read:

“(b) Measured Quantities. Pavement removal, driveway pavement removal, and paved shoulder removal will be measured for payment in place and the area computed in square yards (square meters).”

Revise Article 440.07(c) of the Standard Specifications to read:

“(c) Adjustment of Quantities. The quantity of pavement removal and paved shoulder removal will be adjusted if their respective thickness varies more than 15 percent from that shown on the plans. The quantity will be either increased or decreased according to the following table.

% change of thickness	% change of quantity
0 to less than 15	0
15 to less than 20	10
20 to less than 30	15
30 to less than 50	20

If the thickness of the existing pavement varies by 50 percent or more from that shown on the plans, the character of the work will be considered significantly changed and an adjustment to the contract will be made according to Article 104.02.

When an adjustment is made for variations in pavement or shoulder thickness a resulting adjustment will also be made in the earthwork quantities when applicable.

No adjustment will be made for variations in the amount of reinforcement.”

PAVEMENT MARKING TAPE TYPE IV (BDE)

Effective: April 1, 2012

Revise Article 703.02 of the Standard Specifications to read:

“703.02 Materials. Materials shall be according to the following.

(a) Pavement Marking Tape, Type I and Type III	1095.06
(b) Paint Pavement Markings	1095.02
(c) Pavement Marking Tape, Type IV	1095.11”

Revise the second paragraph of Article 703.05 of the Standard Specifications to read:

“Type I marking tape or paint shall be used at the option of the Contractor, except paint shall not be applied to the final wearing surface unless authorized by the Engineer for late season applications where tape adhesion would be a problem. Type III or Type IV marking tape shall be used on the final wearing surface when the temporary pavement marking will conflict with the permanent pavement marking such as on tapers, crossovers and lane shifts.”

Revise the third paragraph of Article 703.07 of the Standard Specifications to read:

“When Pavement Marking Tape, Type III or Pavement Marking Tape, Type IV is specified in the contract other than on a Standard, the work will be paid for at the contract unit price per foot (meter) for PAVEMENT MARKING TAPE, TYPE III or PAVEMENT MARKING TAPE, TYPE IV of the line width specified and at the contract unit price per square feet (square meter) for PAVEMENT MARKING TAPE, TYPE III - LETTERS AND SYMBOLS or PAVEMENT MARKING TAPE, TYPE IV – LETTERS AND SYMBOLS.”

Add the following to Section 1095 of the Standard Specifications:

“1095.11 Pavement Marking Tape, Type IV. The temporary, preformed, patterned markings shall consist of a white or yellow tape with wet retroreflective media incorporated to provide immediate and continuing retroreflection during both wet and dry conditions. The tape shall be manufactured without the use of heavy metals including lead chromate pigments or other similar, lead-containing chemicals.

The white and yellow Type IV marking tape shall meet the Type III requirements of Article 1095.06 and the following.

- (a) Composition. The retroreflective pliant polymer pavement markings shall consist of a mixture of high-quality polymeric materials, pigments and glass beads distributed throughout its base cross-sectional area, with a layer of wet retroreflective media bonded to a durable polyurethane topcoat surface. The patterned surface shall have approximately 40% ± 10% of the surface area raised and presenting a near vertical face to traffic from any direction. The channels between the raised areas shall be substantially free of exposed beads or particles.

(b) Retroreflectance. The white and yellow markings shall meet the following for initial dry and wet retroreflectance.

(1) Dry Retroreflectance. Dry retroreflectance shall be measured under dry conditions according to ASTM D4061 and meet the values described in Article 1095.06 for Type III tape.

(2) Wet Retroreflectance. Wet retroreflectance shall be measured under wet conditions according to ASTM E2177 and meet the values shown in the following table.

Wet Retroreflectance, Initial R_L

Color	R_L 1.05/88.76
White	300
Yellow	200

(c) Color. The material shall meet the following requirements for daylight reflectance and color, when tested, using a color spectrophotometer with 45 degrees circumferential/zero degree geometry, illuminant D65, and a two degree observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.

Color	Daylight Reflectance %Y
White	65 minimum
*Yellow	36-59

*Shall match Federal 595 Color No. 33538 and the chromaticity limits as follows.

x	0.490	0.475	0.485	0.530
y	0.470	0.438	0.425	0.456

(d) Skid Resistance. The surface of the markings shall provide an average minimum skid resistance of 50 BPN when tested according to ASTM E303.

(e) Sampling, Testing, Acceptance, and Certification. Prior to approval and use of the wet reflective, temporary, removable pavement marking tape, the manufacturer shall submit a notarized certification from an independent laboratory, together with the results of all tests, stating that the material meets the requirements as set forth herein. The certification test report shall state the lot tested, manufacturer's name, and date of manufacture.

After approval by the Department, samples and certification by the manufacturer shall be submitted for each batch used. The manufacturer shall submit a certification stating that the material meets the requirements as set forth herein and is essentially identical to the material sent for qualification. The certification shall state the lot tested, manufacturer's name, and date of manufacture.

All costs of testing (other than tests conducted by the Department) shall be borne by the manufacturer."

PAVEMENT PATCHING (BDE)

Effective: January 1, 2010

Revise the first sentence of the second paragraph of Article 701.17(e)(1) of the Standard Specifications to read:

“In addition to the traffic control and protection shown elsewhere in the contract for pavement, two devices shall be placed immediately in front of each open patch, open hole, and broken pavement where temporary concrete barriers are not used to separate traffic from the work area.”

PAVEMENT STRIPING - SYMBOLS (BDE)

Effective: January 1, 2015

Revise the Symbol Table of Article 780.14 of the Supplemental Specifications to read:

“SYMBOLS

Symbol	Large Size sq ft (sq m)	Small Size sq ft (sq m)
Through Arrow	11.5 (1.07)	6.5 (0.60)
Left or Right Arrow	15.6 (1.47)	8.8 (0.82)
2 Arrow Combination Left (or Right) and Through	26.0 (2.42)	14.7 (1.37)
3 Arrow Combination Left, Right, and Through	38.4 (3.56)	20.9 (1.94)
Lane Drop Arrow	41.5 (3.86)	--
Wrong Way Arrow	24.3 (2.26)	--
Railroad "R" 6 ft (1.8 m)	3.6 (0.33)	--
Railroad "X" 20 ft (6.1 m)	54.0 (5.02)	--
International Symbol of Accessibility	3.1 (0.29)	--
Bike Symbol	4.7 (0.44)	--
Shared Lane Symbol	8.0 (0.74)	--“

PRECAST CONCRETE HANDHOLE (BDE)

Effective: August 1, 2014

Revise the third paragraph of Article 814.03 of the Standard Specifications to read:

“Handholes shall be constructed as shown on the plans and shall be cast-in-place, composite concrete, or precast units. Heavy duty handholes shall be either cast-in-place or precast units.”

Add the following to Article 814.03 of the Standard Specifications:

“(c) Precast Concrete. Precast concrete handholes shall be fabricated according to Article 1042.17. Where a handhole is contiguous to a sidewalk, preformed joint filler of 1/2 inch (13 mm) thickness shall be placed between the handhole and the sidewalk.”

Add the following to Section 1042 of the Standard Specifications:

“ **1042.17 Precast Concrete Handholes.** Precast concrete handholes shall be according to Articles 1042.03(a)(c)(d)(e).”

PROGRESS PAYMENTS (BDE)

Effective: November 2, 2013

Revise Article 109.07(a) of the Standard Specifications to read:

“(a) Progress Payments. At least once each month, the Engineer will make a written estimate of the quantity of work performed in accordance with the contract, and the value thereof at the contract unit prices. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than \$1000.00 will be approved for payment other than the final payment.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics' Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610), progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved.”

RETROREFLECTIVE SHEETING FOR HIGHWAY SIGNS (BDE)

Effective: November 1, 2014

Revise the first sentence of the first paragraph of Article 1091.03(a)(3) of the Standard Specifications to read:

“When tested according to ASTM E 810, with averaging, the sheeting shall have a minimum coefficient of retroreflection as show in the following tables.”

Replace the Tables for Type AA sheeting, Type AP sheeting, Type AZ sheeting and Type ZZ sheeting in Article 1091.03(a)(3) with the following.

Type AA Sheeting
Minimum Coefficient of Retroreflection
Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type AA (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	FO
0.2	-4	800	600	120	80	40	200
0.2	+30	400	300	60	35	20	100
0.5	-4	200	150	30	20	10	75
0.5	+30	100	75	15	10	5	35

Type AA (45 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	Yellow	FO
0.2	-4	500	165
0.2	+30	115	40
0.5	-4	140	65
0.5	+30	60	30

Type AP Sheeting
Minimum Coefficient of Retroreflection
Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type AP (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	Brown	FO
0.2	-4	500	380	75	55	35	25	150
0.2	+30	180	135	30	20	15	10	55
0.5	-4	300	225	50	30	20	15	90
0.5	+30	90	70	15	10	7.5	5	30

Type AZ Sheeting
 Minimum Coefficient of Retroreflection
 Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type AZ (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	FYG	FY
0.2	-4	375	280	75	45	25	300	230
0.2	+30	235	170	40	25	15	190	150
0.5	-4	245	180	50	30	20	200	155
0.5	+30	135	100	25	15	10	100	75
1.0	-4	50	37.5	8.5	5	2	45	25
1.0	+30	22.5	20	5	3	1	25	12.5

Type ZZ Sheeting
 Minimum Coefficient of Retroreflection
 Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type ZZ (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	FYG	FY	FO
0.2	-4	570	425	90	60	30	460	340	170
0.2	+30	190	140	35	20	10	150	110	65
0.5	-4	400	300	60	40	20	320	240	120
0.5	+30	130	95	20	15	7	100	80	45
1.0	-4	115	90	17	12	5	95	70	35
1.0	+30	45	35	7	5	2	35	25	15

RIGID METAL CONDUIT (BDE)

Effective: August 1, 2014

Add the following to Article 1088.01(a) of the Standard Specifications:

“(6) Stainless Steel Conduit. The conduit shall be Type 304 or Type 316 stainless steel, shall be manufactured according to UL Standard 6A, and shall meet ANSI Standard C80.1. Conduit fittings shall be Type 304 or Type 316 stainless steel and shall be manufactured according to UL Standard 514B.

All conduit supports, straps, clamps. And other attachments shall be Type 304 or Type 316 stainless steel. Attachment hardware shall be stainless steel according to Article 1006.31.”

SIDEWALK, CORNER, OR CROSSWALK CLOSURE (BDE)

Effective: January 1, 2015

Revised: April 1, 2015

Revise the first sentence of Article 1106.02(m) of the Supplemental Specifications to read:

“The top and bottom panels shall have alternating white and orange stripes sloping 45 degrees on both sides.”

SPEED DISPLAY TRAILER (BDE)

Effective: April 2, 2014

Add the following to Article 701.15(l) of the Standard Specifications:

“(l) Speed Display Trailer. A speed display trailer shall be utilized on freeways and expressways as part of Highway Standard 701400. The trailer shall be placed on the right hand side of the roadway adjacent to, or within 100 ft (30 m) beyond, the first work zone speed limit sign.

Whenever the speed display trailer is not in use, it shall be considered non-operating equipment and shall be stored according to Article 701.11.”

Add the following to Article 701.20 of the Standard Specifications:

“(k) Speed Display Trailer will be paid for at the contract unit price per calendar month or fraction thereof for each trailer as SPEED DISPLAY TRAILER.”

Add the following to Article 1106.02 of the Standard Specifications:

“(o) Speed Display Trailer. The speed display trailer shall consist of a LED speed indicator display with self-contained, one-direction radar mounted on an orange see-through trailer. The height of the display and radar shall be such that it will function and be visible when located behind concrete barrier.

The speed measurement shall be by radar and provide a minimum detection distance of 1000 ft (300 m). The radar shall have an accuracy of ± 1 mile per hour.

The speed indicator display shall face approaching traffic and shall have a sign legend of “YOUR SPEED” immediately above or below the speed display. The digital speed display shall show two digits (00 to 99) in mph. The color of the changeable message legend shall be a yellow legend on a black background. The minimum height of the numerals shall be 18 in. (450 mm), and the nominal legibility distance shall be at least 750 ft (250 m).

The speed indicator display shall be equipped with a violation alert that flashes the displayed detected speed when the posted limit is exceeded. The speed indicator shall have a maximum speed cutoff. The display shall include automatic dimming for nighttime operation.

The speed indicator measurement and display functions shall be equipped with the power supply capable of providing 24 hours of uninterrupted service.”

STEEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)

Effective: April 2, 2004

Revised: July 1, 2015

Description. Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices when optioned by the Contractor. The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form or failure to indicate contract number, company name, and sign and date the form shall make this contract exempt of steel cost adjustments for all items of steel. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment.

Types of Steel Products. An adjustment will be made for fluctuations in the cost of steel used in the manufacture of the following items:

Metal Piling (excluding temporary sheet piling)
Structural Steel
Reinforcing Steel

Other steel materials such as dowel bars, tie bars, mesh reinforcement, guardrail, steel traffic signal and light poles, towers and mast arms, metal railings (excluding wire fence), and frames and grates will be subject to a steel cost adjustment when the pay items they are used in have a contract value of \$10,000 or greater.

The adjustments shall apply to the above items when they are part of the original proposed construction, or added as extra work and paid for by agreed unit prices. The adjustments shall not apply when the item is added as extra work and paid for at a lump sum price or by force account.

Documentation. Sufficient documentation shall be furnished to the Engineer to verify the following:

- (a) The dates and quantity of steel, in lb (kg), shipped from the mill to the fabricator.
- (b) The quantity of steel, in lb (kg), incorporated into the various items of work covered by this special provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment. Steel cost adjustments will be computed as follows:

$$SCA = Q \times D$$

Where: SCA = steel cost adjustment, in dollars

Q = quantity of steel incorporated into the work, in lb (kg)

D = price factor, in dollars per lb (kg)

$$D = MPI_M - MPI_L$$

Where: MPI_M = The Materials Cost Index for steel as published by the Engineering News-Record for the month the steel is shipped from the mill. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

MPI_L = The Materials Cost Index for steel as published by the Engineering News-Record for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price,. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

The unit weights (masses) of steel that will be used to calculate the steel cost adjustment for the various items are shown in the attached table.

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date prior to the letting date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above; however, the MPI_M will be based on the date the steel arrives at the job site. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment. Steel cost adjustments may be positive or negative but will only be made when there is a difference between the MPI_L and MPI_M in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(MPI_L - MPI_M) \div MPI_L\} \times 100$$

Steel cost adjustments will be calculated by the Engineer and will be paid or deducted when all other contract requirements for the items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustment will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Attachment

Item	Unit Mass (Weight)
Metal Piling (excluding temporary sheet piling)	
Furnishing Metal Pile Shells 12 in. (305 mm), 0.179 in. (3.80 mm) wall thickness)	23 lb/ft (34 kg/m)
Furnishing Metal Pile Shells 12 in. (305 mm), 0.250 in. (6.35 mm) wall thickness)	32 lb/ft (48 kg/m)
Furnishing Metal Pile Shells 14 in. (356 mm), 0.250 in. (6.35 mm) wall thickness)	37 lb/ft (55 kg/m)
Other piling	See plans
Structural Steel	See plans for weights (masses)
Reinforcing Steel	See plans for weights (masses)
Dowel Bars and Tie Bars	6 lb (3 kg) each
Mesh Reinforcement	63 lb/100 sq ft (310 kg/sq m)
Guardrail	
Steel Plate Beam Guardrail, Type A w/steel posts	20 lb/ft (30 kg/m)
Steel Plate Beam Guardrail, Type B w/steel posts	30 lb/ft (45 kg/m)
Steel Plate Beam Guardrail, Types A and B w/wood posts	8 lb/ft (12 kg/m)
Steel Plate Beam Guardrail, Type 2	305 lb (140 kg) each
Steel Plate Beam Guardrail, Type 6	1260 lb (570 kg) each
Traffic Barrier Terminal, Type 1 Special (Tangent)	730 lb (330 kg) each
Traffic Barrier Terminal, Type 1 Special (Flared)	410 lb (185 kg) each
Steel Traffic Signal and Light Poles, Towers and Mast Arms	
Traffic Signal Post	11 lb/ft (16 kg/m)
Light Pole, Tenon Mount and Twin Mount, 30 - 40 ft (9 – 12 m)	14 lb/ft (21 kg/m)
Light Pole, Tenon Mount and Twin Mount, 45 - 55 ft (13.5 – 16.5 m)	21 lb/ft (31 kg/m)
Light Pole w/Mast Arm, 30 - 50 ft (9 – 15.2 m)	13 lb/ft (19 kg/m)
Light Pole w/Mast Arm, 55 - 60 ft (16.5 – 18 m)	19 lb/ft (28 kg/m)
Light Tower w/Luminaire Mount, 80 - 110 ft (24 – 33.5 m)	31 lb/ft (46 kg/m)
Light Tower w/Luminaire Mount, 120 - 140 ft (36.5 – 42.5 m)	65 lb/ft (97 kg/m)
Light Tower w/Luminaire Mount, 150 - 160 ft (45.5 – 48.5 m)	80 lb/ft (119 kg/m)
Metal Railings (excluding wire fence)	
Steel Railing, Type SM	64 lb/ft (95 kg/m)
Steel Railing, Type S-1	39 lb/ft (58 kg/m)
Steel Railing, Type T-1	53 lb/ft (79 kg/m)
Steel Bridge Rail	52 lb/ft (77 kg/m)
Frames and Grates	
Frame	250 lb (115 kg)
Lids and Grates	150 lb (70 kg)

Return With Bid

**ILLINOIS DEPARTMENT
OF TRANSPORTATION**

**OPTION FOR
STEEL COST ADJUSTMENT**

The bidder shall submit this completed form with his/her bid. Failure to submit the form or properly complete contract number, company name, and sign and date the form shall make this contract exempt of steel cost adjustments for all items of steel. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment. After award, this form, when submitted shall become part of the contract.

Contract No.: _____

Company Name: _____

Contractor's Option:

Is your company opting to include this special provision as part of the contract plans for the following items of work?

Metal Piling	Yes	<input type="checkbox"/>
Structural Steel	Yes	<input type="checkbox"/>
Reinforcing Steel	Yes	<input type="checkbox"/>
Dowel Bars, Tie Bars and Mesh Reinforcement	Yes	<input type="checkbox"/>
Guardrail	Yes	<input type="checkbox"/>
Steel Traffic Signal and Light Poles, Towers and Mast Arms	Yes	<input type="checkbox"/>
Metal Railings (excluding wire fence)	Yes	<input type="checkbox"/>
Frames and Grates	Yes	<input type="checkbox"/>

Signature: _____ **Date:** _____

SURFACE TESTING OF HOT-MIX ASPHALT OVERLAYS (BDE)

Effective: January 1, 2013

Revise Article 406.03(h) of the Standard Specifications to read:

“(h) Pavement Surface Test Equipment1101.10”

Revise Article 406.11 of the Standard Specifications to read:

“406.11 Surface Tests. The finished surface of the pavement shall be tested for smoothness according to Article 407.09 of the Supplemental Specifications, except as follows:

One wheel track shall be tested per lane. Testing shall be performed 3 ft (1 m) from and parallel to the edge of the lane away from traffic.

SMOOTHNESS ASSESSMENT SCHEDULE (HMA Overlays)		
High-Speed Mainline Pavement Average Profile Index in./mile (mm/km)	Low-Speed Mainline Pavement Average Profile Index in./mile (mm/km)	Assessment per subplot
6.0 (95) or less	15.0 (240) or less	+\$150.00
>6.0 (95) to 10.0 (160)	>15.0 (240) to 25.0 (400)	+\$80.00
>10.0 (160) to 30.0 (475)	>25.0 (400) to 45.0 (710)	+\$0.00
>30.0 (475) to 40.0 (635)	>45.0 (710) to 65.0 (1025)	+\$0.00
Greater than 40.0 (635)	Greater than 65.0 (1025)	-\$300.00”

TEMPORARY CONCRETE BARRIER (BDE)

Effective: January 1, 2015

Revised: July 1, 2015

Revise Article 704.02 of the Standard Specifications to read:

“704.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Precast Temporary Concrete Barrier	1042
(b) Reinforcement Bars	1006.10(a)
(c) Connecting Pins and Anchor Pins (Note 1)	
(d) Connecting Loop Bars (Note 2)	
(e) Packaged Rapid Hardening Mortar or Concrete	1018

Note 1. Connecting Pins and Anchor Pins shall be according to the requirements of ASTM F 1554 Grade 36 (Grade 250).

Note 2. Connecting loop bars shall be smooth bars according to the requirements of ASTM A 36 (A 36M)."

Revise Article 704.04 of the Standard Specifications to read:

"704.04 Installation. The barriers shall be seated on bare, clean pavement or paved shoulder and connected together in a smooth, continuous line at the locations provided by the Engineer.

Except on bridge decks, or where alternate anchoring details are shown on the plans, the barrier unit at each end of an installation shall be anchored to the pavement or paved shoulder using six anchor pins and protected with an impact attenuator as shown on the plans. When pinning of additional barrier units within the installation is specified, three anchor pins shall be installed in the traffic side holes of the required barriers.

Where both pinned and unpinned barrier units are used in a continuous installation, a transition shall be provided between them. The transition from pinned to unpinned barrier shall consist of two anchor pins installed in the end holes on the traffic side of the first barrier beyond the pinned section and one anchor pin installed in the middle hole on the traffic side of the second barrier beyond the pinned section. The third barrier beyond the pinned section shall then be unpinned.

Barriers located on bridge decks shall be restrained as shown on the plans. Anchor pins shall not be installed through bridge decks, unless otherwise noted.

Barriers or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The barriers shall be removed when no longer required by the contract. After removal, all anchor holes in the pavement or paved shoulder shall be filled with a rapid hardening mortar or concrete. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush."

Add the following after the first paragraph of Article 704.05 of the Standard Specifications:

"Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be measured for payment as each, per anchor pin installed."

Add the following after the second paragraph of Article 704.06 of the Standard Specifications:

"Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be paid for at the contract unit price per each for PINNING TEMPORARY CONCRETE BARRIER."

TRACKING THE USE OF PESTICIDES (BDE)

Effective: August 1, 2012

Add the following paragraph after the first paragraph of Article 107.23 of the Standard Specifications:

“Within 48 hours of the application of pesticides, including but not limited to herbicides, insecticides, algaecides, and fungicides, the Contractor shall complete and return to the Engineer, Operations form “OPER 2720”.”

TRAINING SPECIAL PROVISIONS (BDE)

This Training Special Provision supersedes Section 7b of the Special Provision entitled “Specific Equal Employment Opportunity Responsibilities,” and is in implementation of 23 U.S.C. 140(a).

As part of the contractor’s equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved. The number of trainees to be trained under this contract will be _____. In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor’s needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Illinois Department of Transportation and the Federal Highway Administration. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirement of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program.

It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

Method of Measurement. The unit of measurement is in hours.

Basis of Payment. This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

WARM MIX ASPHALT (BDE)

Effective: January 1, 2012

Revised: November 1, 2014

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

“1102.01 Hot-Mix Asphalt Plant. The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, “Approval of Hot-Mix Asphalt Plants and Equipment”. Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing by the Engineer. The plant units shall be so designed, coordinated and operated that they will function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements.”

Add the following to Article 1102.01(a) of the Standard Specifications.

“(13) Equipment for Warm Mix Technologies.

- a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of ± 2 percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.
- b. Additives. Additives shall be introduced into the plant according to the supplier’s recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes.”

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

“(e) Warm Mix Technologies.

- (1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (without WMA additives). However, the foaming technology shall only be used on HMA designs previously approved by the Department.
- (2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification.”

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

“The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C).
WMA shall be delivered at a minimum temperature of 215 °F (102 °C).”

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012

Revised: April 2, 2015

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Engineer on Department form "SBE 723" within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION (TPG)

Effective: August 1, 2012

Revised: February 1, 2014

In addition to the Contractor's equal employment opportunity affirmative action efforts undertaken as elsewhere required by this Contract, the Contractor is encouraged to participate in the incentive program to provide additional on-the-job training to certified graduates of IDOT funded pre-apprenticeship training programs outlined by this Special Provision.

It is the policy of IDOT to fund IDOT pre-apprenticeship training programs throughout Illinois to provide training and skill-improvement opportunities to assure the increased participation of minority groups, disadvantaged persons and women in all phases of the highway construction industry. The intent of this IDOT Training Program Graduate (TPG) Special Provision is to place certified graduates of these IDOT funded pre-apprentice training programs on IDOT project sites when feasible, and provide the graduates with meaningful on-the-job training intended to lead to journey-level employment. IDOT and its sub-recipients, in carrying out the responsibilities of a state contract, shall determine which construction contracts shall include "Training Program Graduate Special Provisions." To benefit from the incentives to encourage the participation in the additional on-the-job training under this Training Program Graduate Special Provision, the Contractor shall make every reasonable effort to employ certified graduates of IDOT funded Pre-apprenticeship Training Programs to the extent such persons are available within a reasonable recruitment area.

Participation pursuant to IDOT's requirements by the Contractor or subcontractor in this Training Program Graduate (TPG) Special Provision entitles the Contractor or subcontractor to be reimbursed at \$15.00 per hour for training given a certified TPG on this contract. As approved by the Department, reimbursement will be made for training persons as specified herein. This reimbursement will be made even though the Contractor or subcontractor may receive additional training program funds from other sources for other trainees, provided such other source does not specifically prohibit the Contractor or subcontractor from receiving other reimbursement. For purposes of this Special Provision the Contractor is not relieved of requirements under applicable federal law, the Illinois Prevailing Wage Act, and is not eligible

for other training fund reimbursements in addition to the Training Program Graduate (TPG) Special Provision reimbursement.

No payment shall be made to the Contractor if the Contractor or subcontractor fails to provide the required training. It is normally expected that a TPG will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project through completion of the contract, so long as training opportunities exist in his work classification or until he has completed his training program. Should the TPG's employment end in advance of the completion of the contract, the Contractor shall promptly notify the designated IDOT staff member under this Special Provision that the TPG's involvement in the contract has ended and supply a written report of the reason for the end of the involvement, the hours completed by the TPG under the Contract and the number of hours for which the incentive payment provided under this Special Provision will be or has been claimed for the TPG.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting its performance under this Special Provision.

METHOD OF MEASUREMENT: The unit of measurement is in hours.

BASIS OF PAYMENT: This work will be paid for at the contract unit price of \$15.00 per hour for certified TRAINEES TRAINING PROGRAM GRADUATE. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

The Contractor shall provide training opportunities aimed at developing full journeyworker in the type of trade or job classification involved. The initial number of TPGs for which the incentive is available under this contract is . During the course of performance of the Contract the Contractor may seek approval from the Department for additional incentive eligible TPGs. In the event the Contractor subcontracts a portion of the contract work, it shall determine how many, if any, of the TPGs are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this Special Provision. The Contractor shall also insure that this Training Program Graduate Special Provision is made applicable to such subcontract if the TPGs are to be trained by a subcontractor and that the incentive payment is passed on to each subcontractor.

For the Contractor to meet the obligations for participation in this TPG incentive program under this Special Provision, the Department has contracted with several entities to provide screening, tutoring and pre-training to individuals interested in working in the applicable construction classification and has certified those students who have successfully completed the program and are eligible to be TPGs. A designated IDOT staff member, the Director of the Office of Business and Workforce Diversity (OBWD), will be responsible for providing assistance and referrals to the Contractor for the applicable TPGs. For this contract, the Director of OBWD is designated as the responsible IDOT staff member to provide the assistance and referral services related to the placement for this Special Provision. For purposes of this Contract, contacting the Director of OBWD and interviewing each candidate he/she recommends constitutes reasonable recruitment.

Prior to commencing construction, the Contractor shall submit to the Department for approval the TPGs to be trained in each selected classification. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. No employee shall be employed as a TPG in any classification in which he/she has successfully completed a training course leading

to journeyman status or in which he/she has been employed as a journeyman. Notwithstanding the on-the-job training purpose of this TPG Special Provision, some offsite training is permissible as long as the offsite training is an integral part of the work of the contract and does not comprise a significant part of the overall training.

Training and upgrading of TPGs of IDOT pre-apprentice training programs is intended to move said TPGs toward journeyman status and is the primary objective of this Training Program Graduate Special Provision. Accordingly, the Contractor shall make every effort to enroll TPGs by recruitment through the IDOT funded TPG programs to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that it has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance and entitled to the Training Program Graduate Special Provision \$15.00 an hour incentive.

The Contractor or subcontractor shall provide each TPG with a certificate showing the type and length of training satisfactorily completed.

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
INSURANCE

Effective: February 1, 2007
Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.



Route	<u>FAP 361</u>	Marked Rte.	<u>Longmeadow Parkway</u>
Section	<u>94-00215-01-ES</u>	Project No.	<u>DPC-M-0019 (008)</u>
County	<u>Kane</u>	Contract No.	<u></u>

This plan has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit No. ILR10 (Permit ILR10), issued by the Illinois Environmental Protection Agency (IEPA) for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

<u>Carl Schoedel, P.E.</u>
Print Name
<u>Director of Transportation</u>
Title
<u>Kane County Division of Transportation</u>
Agency

<u></u>
Signature
<u></u>
Date

I. Site Description:

- A. Provide a description of the project location (include latitude and longitude):

The project limits extend from approximately 0.63 miles west of Boyer and Huntley Road intersection east to the intersection of Longmeadow Parkway and Randall Road. Adjacent land use includes agricultural, residential, mining, industrial, and undeveloped land.

- B. Provide a description of the construction activity which is the subject of this plan:

The project will consist of constructing a new alignment between the intersection of Huntley and Boyer Road and the intersection of Longmeadow Parkway and Randall Road. The project also features stormwater management features including detention basins and a storm sewer system.

- C. Provide the estimated duration of this project:

The estimated duration of this project is approximately 1 year.

- D. The total area of the construction site is estimated to be 47.33 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 47.33 acres.

- E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

Section A: Existing-0.46, Proposed-0.57

- F. List all soils found within project boundaries. Include map unit name, slope information, and erosivity:

Mapped Soils within the Project Limits

Unit	Soil Type	%	Hydric	Inclusion	Landform
67A	Harpster silty clay loam	0-2	Yes	Harpster	Ground moraines
103A	Houghton muck	0-2	Yes	Houghton	Ground moraines
149A	Brenton silt loam	0-2	No	--	--
152A	Drummer silty clay loam	0-2	Yes	Drummer	Outwash plains
318B	Lorenzo loam	2-4	No	--	--
330A	Peotone silty clay loam	0-2	Yes	Peotone	Ground moraines

442A	Mundelein silt loam	0-2	No	--	--
512B	Danabrook silt loam	2-5	No	--	--

G. Provide an aerial extent of wetland acreage at the site:

Please see attached.

H. Provide a description of potentially erosive areas associated with this project:

Based on the Wetland and Waters of the U.S. Investigation there are no likely erosive soils.

I. The following is a description of soil disturbing activities by stages, their locations, and their erosive factors (e.g. steepness of slopes, length of slopes, etc):

Generally all slopes within the project limits will be 3:1 or flatter.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking (to be added after contractor identifies locations), areas of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands) and locations where storm water is discharged to surface water including wetlands.

K. Identify who owns the drainage system (municipality or agency) this project will drain into:

The villages of Algonquin and Carpentersville own the receiving drainage systems.

L. The following is a list of General NPDES ILR40 permittees within whose reporting jurisdiction this project is located.

The project is located in the following MS4 communities: Algonquin Township, Village of Carpentersville, and Kane County.

M. The following is a list of receiving water(s) and the ultimate receiving water(s) for this site. The location of the receiving waters can be found on the erosion and sediment control plans:

There are three waters that are ultimate receiving waters: the South Branch Kishwaukee River, Woods Creek Watershed, and the Fox River.

N. Describe areas of the site that are to be protected or remain undisturbed. These areas may include steep slopes, highly erodible soils, streams, stream buffers, specimen trees, natural vegetation, nature preserves, etc.

Sites 1, 1A, 18 are COE jurisdictional wetlands or WOUS according to the Jurisdictional Determination issued June 2, 2014 by the COE. Sites 1B, 1C, 3, 16, 19, 20 were determined as isolated and non-jurisdictional.

O. The following sensitive environmental resources are associated with this project, and may have the potential to be impacted by the proposed development:

- ☒ Floodplain
- ☒ Wetland Riparian
- ☒ Threatened and Endangered Species
- ☐ Historic Preservation
- ☐ 303(d) Listed receiving waters for suspended solids, turbidity, or siltation
- ☐ Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity or siltation
- ☐ Applicable Federal, Tribal, State or Local Programs
- ☐ Other

1. 303(d) Listed receiving waters (fill out this section if checked above):

N/A

a. The name(s) of the listed water body, and identification of all pollutants causing impairment:

N/A

- b. Provide a description of how erosion and sediment control practices will prevent a discharge of sediment resulting from a storm event equal to or greater than a twenty-five (25) year, twenty-four (24) hour rainfall event:

N/A

- c. Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:

N/A

- d. Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

N/A

2. TMDL (fill out this section if checked above)

- a. The name(s) of the listed water body:

N/A

- b. Provide a description of the erosion and sediment control strategy that will be incorporated into the site design that is consistent with the assumptions and requirements of the TMDL:

N/A

- c. If a specific numeric waste load allocation has been established that would apply to the project's discharges, provide a description of the necessary steps to meet that allocation:

N/A

P. The following pollutants of concern will be associated with this construction project:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Soil Sediment | <input checked="" type="checkbox"/> Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids) |
| <input checked="" type="checkbox"/> Concrete | <input type="checkbox"/> Antifreeze / Coolants |
| <input checked="" type="checkbox"/> Concrete Truck Waste | <input type="checkbox"/> Waste water from cleaning construction equipment |
| <input checked="" type="checkbox"/> Concrete Curing Compounds | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Solid Waste Debris | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Paints | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Solvents | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Fertilizers / Pesticides | <input type="checkbox"/> Other (specify) |

II. Controls:

This section of the plan addresses the controls that will be implemented for each of the major construction activities described in I.C. above and for all use areas, borrow sites, and waste sites. For each measure discussed, the Contractor will be responsible for its implementation as indicated. The Contractor shall provide to the Resident Engineer a plan for the implementation of the measures indicated. The Contractor, and subcontractors, will notify the Resident Engineer of any proposed changes, maintenance, or modifications to keep construction activities compliant with the Permit ILR10. Each such Contractor has signed the required certification on forms which are attached to, and are a part of, this plan:

A. **Erosion and Sediment Controls:** At a minimum, controls must be coordinated, installed and maintained to:

1. Minimize the amount of soil exposed during construction activity;
2. Minimize the disturbance of steep slopes;
3. Maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible;
4. Minimize soil compaction and, unless infeasible, preserve topsoil.

B. **Stabilization Practices:** Provided below is a description of interim and permanent stabilization practices, including site- specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include but are not limited to: temporary seeding, permanent seeding, mulching, geotextiles, sodding, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided below in II(B)(1) and II(B)(2), stabilization measures shall be initiated **immediately** where construction activities have temporarily or permanently ceased, but in no case more than **one (1) day** after the construction activity in that portion of the site has temporarily or permanently ceases on all disturbed portions of the site where construction will not occur for a period of fourteen (14) or more calendar days.

1. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.
2. On areas where construction activity has temporarily ceased and will resume after fourteen (14) days, a temporary stabilization method can be used.

The following stabilization practices will be used for this project:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Preservation of Mature Vegetation | <input checked="" type="checkbox"/> Erosion Control Blanket / Mulching |
| <input checked="" type="checkbox"/> Vegetated Buffer Strips | <input type="checkbox"/> Sodding |
| <input type="checkbox"/> Protection of Trees | <input type="checkbox"/> Geotextiles |
| <input checked="" type="checkbox"/> Temporary Erosion Control Seeding | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Temporary Turf (Seeding, Class 7) | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Temporary Mulching | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Permanent Seeding | <input type="checkbox"/> Other (specify) |

Describe how the stabilization practices listed above will be utilized during construction:

Slopes will be seeded and mulched per IDOT Specifications for Road and Bridge Construction if the area will become inactive for an extended period of time. Otherwise, permanent seeding will be implemented whenever possible.

Roadway slopes immediately adjacent to the proposed curb will be planted IDOT Class 2A (salt tolerant) seed mix. Beyond these areas, IDOT Class 4A (low profile) seed mix will be used. Large cut slopes will be seeded with IDOT Class 4A (low profile) and 5A (large flower) seed mixes to give an aesthetic effect of highly visible slopes. IDOT Class 4A (low profile) and 5A (large flower) seed mixes will also be used within buffers of the proposed detention basins. Areas with steeper slopes will be seeded with IDOT Class 3 seed mix. Refer to Tab 9 Landscaping Plans for the specified seed mix locations.

Erosion control blanket and fertilizing nutrients (nitrogen, phosphorus, and potassium) are to be used in combination for stabilization of transition slopes disturbed during construction.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

The vegetative growth of temporary and permanent seeding, vegetative filters, etc. shall be maintained periodically and supplied adequate watering and fertilizer. The vegetative cover shall be removed and reseeded as necessary.

C. **Structural Practices:** Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include but are not limited to: perimeter erosion barrier, earth dikes, drainage swales, sediment traps, ditch checks, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. The installation of these devices may be subject to Section 404 of the Clean Water Act.

The following structural practices will be used for this project:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Perimeter Erosion Barrier | <input type="checkbox"/> Rock Outlet Protection |
| <input checked="" type="checkbox"/> Temporary Ditch Check | <input checked="" type="checkbox"/> Riprap |
| <input checked="" type="checkbox"/> Storm Drain Inlet Protection | <input type="checkbox"/> Gabions |
| <input type="checkbox"/> Sediment Trap | <input type="checkbox"/> Slope Mattress |

- | | |
|---|--|
| <input type="checkbox"/> Temporary Pipe Slope Drain | <input type="checkbox"/> Retaining Walls |
| <input type="checkbox"/> Temporary Sediment Basin | <input type="checkbox"/> Slope Walls |
| <input type="checkbox"/> Temporary Stream Crossing | <input type="checkbox"/> Concrete Revetment Mats |
| <input checked="" type="checkbox"/> Stabilized Construction Exits | <input type="checkbox"/> Level Spreaders |
| <input type="checkbox"/> Turf Reinforcement Mats | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Permanent Check Dams | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Permanent Sediment Basin | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Aggregate Ditch | <input type="checkbox"/> Other (specify) |
| <input type="checkbox"/> Paved Ditch | <input type="checkbox"/> Other (specify) |

Describe how the structural practices listed above will be utilized during construction:

Perimeter Erosion Barrier

Perimeter erosion barrier will be used to establish perimeter controls as well as serve as a sediment barrier. They will be erected just prior to construction activities per section. These will be installed to control the off-site transport of sediment particles during rain events. Perimeter erosion barrier will meet AASHTO Standard Specification M-288-00

Tempoary Construction Fence

Tempoary construction fence which shall be orange snow fence shall be placed a minimum of one-foot from the boudnary wetlands and WOUS that are not to be impacted. The fence will be a clear indication of all "non-intrusion zones".

Temporary Ditch Checks

Temporary ditch checks will be used throughout the project limit as shown on the plans to reduce runoff velocity and to trap silt before it drains outside the project limit.

Inlet Protection

Inlet filter baskets will be utilized on drainage structures located in pavement to prevent sediment entering existing storm sewer or proposed storm sewer. Inlet baskets will be inspected after every rainfall event and properly maintained. Sediment will be removed when 50% of the storage volume has been filled unless otherwise instructed by the manufacturer. Accumulated material in the filters should be disposed of properly (i.e. not in wetlands or WOUS). Inlet and pipe protection will be installed around all drainage structures located in turf. This will be achieved by surrounding the structure with perimeter erosion barrier.

Stabilized Construction Exits

A stablized pad of aggregate underlain with filter fabric will be located at any point where traffic will be entering or leaving the construction site to or from a public right-of-way, street, alley, sidewalk, or parking area to help reduce vehicle tracking of sediments. Roads shall be swept as needed to reduce excess sediment, dirt or stone tracked from the site. Accumulated sediment and stone shall be removed from the stabilized construction entrance as needed. Water runoff from washing areas will be periodically inspected and repaired as necessary throughout the life of the project. Vehicles hauling erodible material to and from the construction site will be covered with a tarp. Stabilized construction exits shall be installed prior to any soil disturbance.

Stone Riprap

Stone riprap of size and class as indicated on the plans will be placed to prevent erosion and scouring at the flared end sections at the downstream of storm sewer and culvert systems as shown on the plans and maintained as directed by the engineer.

Culvert Inlet Protection

Culvert inlet protection will be provided at locations where surface water is intercepted by a storm sewer culvert as indicated on the plans, this item will consist of stone placed in front of the culvert to prevent the discharge of transported sediment.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

Temporary structural features including perimeter erosion barrier, temporary ditch checks, storm drain inlet protection, culvert inlet protection, and stabalized construction exits shall be removed upon completion of the construction and final grade stabilization. Permanent structural features including stone rip rap shall become permanent features of the proposed improvements.

D. Treatment Chemicals

Will polymer flocculants or treatment chemicals be utilized on this project: ☐ Yes ☒ No

If yes above, identify where and how polymer flocculants or treatment chemicals will be utilized on this project.

E. Permanent Storm Water Management Controls: Provided below is a description of measures that will be installed during the construction process to control volume and pollutants in storm water discharges that will occur after construction operations have been completed. The installation of these devices may be subject to Section 404 of the Clean Water Act.

1. Such practices may include but are not limited to: storm water detention structures (including wet ponds), storm water retention structures, flow attenuation by use of open vegetated swales and natural depressions, infiltration of runoff on site, and sequential systems (which combine several practices).

The practices selected for implementation were determined on the basis of the technical guidance in Chapter 41 (Construction Site Storm Water Pollution Control) of the IDOT Bureau of Design and Environment Manual. If practices other than those discussed in Chapter 41 are selected for implementation or if practices are applied to situations different from those covered in Chapter 41, the technical basis for such decisions will be explained below.

2. Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of permanent storm water management controls:

Vegetated swales will be constructed as shown on the plans. These swales will be made to prevent pollutants from entering the groundwater table and will be vegetated with native plantings. The swales will capture roadway runoff and route it to the naturalized detention basins. The stormwater detention basins will also be impervious to prevent groundwater pollution.

F. Approved State or Local Laws: The management practices, controls and provisions contained in this plan will be in accordance with IDOT specifications, which are at least as protective as the requirements contained in the Illinois Environmental Protection Agency's Illinois Urban Manual. Procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials shall be described or incorporated by reference in the space provided below. Requirements specified in sediment and erosion site plans, site permits, storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under the Permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.

Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

All management practices, controls, and other provisions in this plan are in accordance with "IDOT Standard Specifications for Road and Bridge Construction and the Illinois Urban Manual revised February 2002."

The Kane-Dupage Soil and Water Conservation District (KDSWCD) must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activities, and one week prior to the final inspection.

A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.

Prior to commencing land-disturbing activities in areas other than indicated on these plans (including but no limited to, additional phases of development and off-site borrow or waste areas) a supplementary erosion control plan shall be submitted to the owner for review by the KDSWCD.

The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the KDSWCD.

During dewatering operations, water will be pumped into sediment basins or silt traps. Dewatering directly into field tiles or stormwater structures is prohibited.

Also, please add note to state that, "It is the responsibility of the landowner and/or general contractor to inform any sub-contractor(s) who may perform work on this project, of the requirements in implementing and maintaining these erosion control plans and the National Pollutant Discharge Elimination System (NPDES) permit requirements set forth by the Illinois EPA."

- G. **Contractor Required Submittals:** Prior to conducting any professional services at the site covered by this plan, the Contractor and each subcontractor responsible for compliance with the permit shall submit to the Resident Engineer a Contractor Certification Statement, BDE 2342a.
1. The Contractor shall provide a construction schedule containing an adequate level of detail to show major activities with implementation of pollution prevention BMPs, including the following items:
 - Approximate duration of the project, including each stage of the project
 - Rainy season, dry season, and winter shutdown dates
 - Temporary stabilization measures to be employed by contract phases
 - Mobilization timeframe
 - Mass clearing and grubbing/roadside clearing dates
 - Deployment of Erosion Control Practices
 - Deployment of Sediment Control Practices (including stabilized construction entrances/exits)
 - Deployment of Construction Site Management Practices (including concrete washout facilities, chemical storage, refueling locations, etc.)
 - Paving, saw-cutting, and any other pavement related operations
 - Major planned stockpiling operations
 - Timeframe for other significant long-term operations or activities that may plan non-storm water discharges such as dewatering, grinding, etc.
 - Permanent stabilization activities for each area of the project
 2. The Contractor and each subcontractor shall provide, as an attachment to their signed Contractor Certification Statement, a discussion of how they will comply with the requirements of the permit in regard to the following items and provide a graphical representation showing location and type of BMPs to be used when applicable:

- Vehicle Entrances and Exits – Identify type and location of stabilized construction entrances and exits to be used and how they will be maintained.
- Material Delivery, Storage and Use – Discuss where and how materials including chemicals, concrete curing compounds, petroleum products, etc. will be stored for this project.
- Stockpile Management – Identify the location of both on-site and off-site stockpiles. Discuss what BMPs will be used to prevent pollution of storm water from stockpiles.
- Waste Disposal – Discuss methods of waste disposal that will be used for this project.
- Spill Prevention and Control – Discuss steps that will be taken in the event of a material spill (chemicals, concrete curing compounds, petroleum, etc.)
- Concrete Residuals and Washout Wastes – Discuss the location and type of concrete washout facilities to be used on this project and how they will be signed and maintained.
- Litter Management – Discuss how litter will be maintained for this project (education of employees, number of dumpsters, frequency of dumpster pick-up, etc.).
- Vehicle and Equipment Fueling – Identify equipment fueling locations for this project and what BMPs will be used to ensure containment and spill prevention.
- Vehicle and Equipment Cleaning and Maintenance – Identify where equipment cleaning and maintenance locations for this project and what BMPs will be used to ensure containment and spill prevention.
- Dewatering Activities – Identify the controls which will be used during dewatering operations to ensure sediments will not leave the construction site.
- Polymer Flocculants and Treatment Chemicals – Identify the use and dosage of treatment chemicals and provide the Resident Engineer with Material Safety Data Sheets. Describe procedures on how the chemicals will be used and identify who will be responsible for the use and application of these chemicals. The selected individual must be trained on the established procedures.
- Additional measures indicated in the plan.

III. Maintenance:

When requested by the Contractor, the Resident Engineer will provide general maintenance guides to the Contractor for the practices associated with this project. The following additional procedures will be used to maintain, in good and effective operating conditions, the vegetation, erosion and sediment control measures and other protective measures identified in this plan. It will be the Contractor's responsibility to attain maintenance guidelines for any manufactured BMPs which are to be installed and maintained per manufacture's specifications.

The vegetative growth of temporary and permanent seeding, vegetative filters, etc. shall be maintained periodically and supplied adequate watering and fertilizer. The vegetative cover shall be removed and reseeded as necessary.

Perimeter erosion barrier and temporary ditch checks will be examined regularly and repaired as necessary, sediment shall be removed when it reaches a height equal to or 50% of the height of the barrier.

Temporary seeding for erosion control will be repaired when bare spots and washout occur.

Inlet filters shall be cleaned on a regular basis

Stabilized construction entrances shall have sediment build up removed as necessary.

Temporary and permanent erosion control measures shall be inspected weekly or after any rainfall event in excess of 0.50".

IV. Inspections:

Qualified personnel shall inspect disturbed areas of the construction site which have not yet been finally stabilized, structural control measures, and locations where vehicles and equipment enter and exit the site using IDOT Storm Water Pollution Prevention Plan Erosion Control Inspection Report (BC 2259). Such inspections shall be conducted at least once every seven (7) calendar days and within twenty-four (24) hours of the end of a storm or by the end of the following business or work day that is 0.5 inch or greater or equivalent snowfall.

Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections will recommence when construction activities are conducted, or if there is 0.5" or greater rain event, or a discharge due to snowmelt occurs.

If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Resident Engineer shall notify the appropriate IEPA Field Operations Section office by email at: epa.swnoncomp@illinois.gov, telephone or fax within twenty-four (24) hours of the incident. The Resident Engineer shall then complete and submit an "Incidence of Non-Compliance" (ION) report for the identified violation within five (5) days of the incident. The Resident Engineer shall use forms provided by IEPA and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of non-compliance shall be signed by a responsible authority in accordance with Part VI. G of the Permit ILR10.

The Incidence of Non-Compliance shall be mailed to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Compliance Assurance Section
1021 North Grand East
Post Office Box 19276
Springfield, Illinois 62794-9276

Additional Inspections Required:

V. Failure to Comply:

Failure to comply with any provisions of this Storm Water Pollution Prevention Plan will result in the implementation of a National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction against the Contractor and/or penalties under the Permit ILR10 which could be passed on to the Contractor.



Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the following certification. A separate certification must be submitted by each firm. Attach to this certification all items required by Section II.G of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractor/subcontractor completing this form.

Route _____	Marked Rte. _____
Section _____	Project No. _____
County _____	Contract No. _____

This certification statement is a part of SWPPP for the project described above, in accordance with the General NPDES Permit No. ILR10 issued by the Illinois Environmental Protection Agency.

I certify under penalty of law that I understand the terms of the Permit No. ILR 10 that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

In addition, I have read and understand all of the information and requirements stated in SWPPP for the above mentioned project; I have received copies of all appropriate maintenance procedures; and, I have provided all documentation required to be in compliance with the Permit ILR10 and SWPPP and will provide timely updates to these documents as necessary.

- ☐ Contractor
- ☐ Sub-Contractor

_____ Print Name	_____ Signature
_____ Title	_____ Date
_____ Name of Firm	_____ Telephone
_____ Street Address	_____ City/State/ZIP

Items which this Contractor/subcontractor will be responsible for as required in Section II.G. of SWPPP:

**ROADWAY GEOTECHNICAL REPORT
LONGMEADOW PARKWAY
SECTION A
STATION 2013+45 TO STATION 2072+00
KANE COUNTY, ILLINOIS**

**for
Crawford, Murphy & Tilly, Inc.
550 North Commons Drive
Aurora, IL 60504
(630) 820-0350**

**Design Engineer – Section A
Longmeadow Alliance Consultants**

**submitted by
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148
(630) 953-9928**

March 5, 2015

Technical Report Documentation Page

1. Title and Subtitle Roadway Geotechnical Report Longmeadow Parkway, Section A Station 2013+45 to Station 2072+00		2. Report Date March 05, 2015
4. Kane County Section 13-00215-20-BR		3. Report Type <input type="checkbox"/> SGR <input checked="" type="checkbox"/> RGR <input type="checkbox"/> Draft <input checked="" type="checkbox"/> Final <input type="checkbox"/> Revised
6. PTB / Item No. NA		7. Existing Structure Number(s) NA
8. Proposed Structure Number(s) NA		
9. Prepared by Wang Engineering, Inc. 1145 N Main Street Lombard, IL 60148	Contributor(s) Author: Mohammed Kothawala, PE, D.GE QC/QA: Corina Farez, PE, PG / Jerry Wang, PhD, PE PM: Mohammed Kothawala, PE, D.GE	Contact Phone Number (630) 953-9928 ext 1036
10. Prepared for Crawford, Murphy & Tilly, Inc. 550 North Commons Drive Suite 116 Aurora, IL 60504	Design Section Engineer Longmeadow Alliance Consultants (Hampton, Lenzini and Renwick, Inc Thomas Engineering Group, LLC)	Contact Phone Number (630) 438-6400
11. Abstract <p>The Longmeadow Parkway project extends 5.6 mile west to east, from Huntley Road to IL 62 to accommodate the construction of the new crossing over the Fox River. The project was split in four sections named, from west to east, Section A to Section D. The realignment and construction of Section A of Longmeadow Parkway extend from Stations 2013+45.00 to 2072+00.00. The proposed roadway cross-section will consist of one-lane in each direction separated by flush median to just west of Randall Road and continues east with two-lanes in each direction separated by a landscaped median area. The median area will be utilized at intersections as left turn lanes. Other work included in the project consists of bike path construction, open space preservation, drainage, and floodplain storage. The roadway embankments on both sides are proposed to be with a maximum slope of 1:3 (H:V). The improvements will run on either existing grade or new embankment.</p> <p>Along the improvement, the roadway slopes are covered by vegetation. Existing lane pavement structure includes up to 19.25-inch thick asphalt over granular base. Beneath the surface, the soil consists of up to 3.3 feet of fill, up to 6.5 feet soft to stiff clayey lacustrine deposits, and more than 4.0 feet of medium stiff to hard silty clay to silty clay loam diamicton that interfingers with 1.0 to more than 10.0 feet of loose to very dense sand to gravelly sand outwash deposits.</p> <p>For the entire project length, 12 inches of topsoil should be considered for stripping, and the entire existing pavement should be considered for removal. The pavement thickness varies from 4.0 to 19.25 inches. Temporary drainage ditches should be constructed to maintained positive drainage during construction. We do not anticipate detrimental settlement will occur under the new embankment loads, and we do not foresee global slope stability problems.</p> <p>The proposed exposed subgrade should be proofrolled. Areas identified as unstable during the course of construction should be disked, aerated, and recompacted in accordance with Section 301 of the IDOT Standard Specifications.</p>		
12. Path to archived file S:\Netprojects\3100601\Reports\RGR\RGR Section-A\RPT_Wang_MAK-CLM_3100601LongmeadowPkwySectA_RGR_20150206.pdf		



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG CCDD-A-03

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 918.68 ft
North: 1993522.30 ft
East: 981830.60 ft
Station: 2040+45.19
Offset: 11.91 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	918.1	7-inch thick, black SILTY CLAY LOAM			1	0 2 2 4	0.75 P										
		--TOPSOIL--															
		Medium stiff to stiff, brown SILTY CLAY LOAM, trace gravel			2	3 5 6 5	1.00 P										
	915.2	Medium dense, medium to coarse SAND															
	913.7	--Saturated--			3	4 5 10 12	NP										
	912.7	Medium dense, brown SILTY LOAM															
		Boring terminated at 6.00 ft															
			10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **04-07-2014** Complete Drilling **04-07-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&F** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **4.00 ft**
At Completion of Drilling \blacktriangledown **5.50 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG DBA-01

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 916.04 ft
North: 1993611.22 ft
East: 981579.94 ft
Station: 2037+95.61
Offset: 80.02 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	915.0	12-inch thick, black SILTY CLAY LOAM			1	0 2 4 7	NP	13									
		--TOPSOIL--															
		Loose to medium dense, brown GRAVELLY SANDY LOAM			2	4 8 11 12	NP	14									
		--%Gravel=40.3--															
		--%Sand=32.5--															
		--%Silt=20.8--															
		--%Clay=6.4--															
		--A-2-4 (0)--			3	5 9 7 8	NP	12									
	910.3	Loose, brown, fine SAND, some silt seams			4	3 4 5 7	NP	24									
					5	3 7 13 11	NP	21									
	905.5	Medium dense, gray SILT			6	3 7 9 11	NP	21									
	903.5	Stiff, gray SILTY CLAY			7	3 3 5 8	1.31 B	23									
	901.5	Dense, gray SILT			8	9 13 19 23	NP	22									
	900.0	Boring terminated at 16.00 ft															

GENERAL NOTES

Begin Drilling **04-02-2014** Complete Drilling **04-02-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&J** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **6.00 ft**
At Completion of Drilling **3.00 ft**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG DBA-02

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 920.55 ft
North: 1993629.70 ft
East: 982589.83 ft
Station: 2048+05.65
Offset: 86.32 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	919.6	12-inch thick, black SILTY CLAY LOAM			1	3 5 4 5	1.75 P	22									
		--TOPSOIL--															
	918.3	Stiff, brown SILTY CLAY LOAM, trace gravel			2	3 3 4 4	NP	18									
		Loose, brown SILTY LOAM, trace gravel															
		--%Gravel=5.8-- --%Sand=36.7-- --%Silt=52.2-- --%Clay=5.3--	5		3	3 3 5 5	NP	22									
	914.6	--A-4 (0)--			4	3 4 4 4	NP	19									
		Loose to medium dense, brown, fine to coarse SAND															
	911.6	Loose to medium dense, gray SILT	10		5	3 6 6 8	NP	21									
					6	4 4 4 7	NP	23									
	907.6	Medium stiff, gray SILTY CLAY			7	4 3 3 3	0.66 B	26									
	906.6	Medium dense, gray SILTY LOAM	15		8	4 5 7 9	NP	18									
	904.6	Boring terminated at 16.00 ft															
			20														
			25														

GENERAL NOTES

Begin Drilling **04-02-2014** Complete Drilling **04-02-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&J** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **6.00 ft**
At Completion of Drilling \blacktriangledown **6.00 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-004

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 903.62 ft
North: 1993885.55 ft
East: 978734.07 ft
Station: 2008+08.46
Offset: 12.68 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	902.8	10-inch thick ASPHALT --PAVEMENT--															
	902.1	18-inch thick CRUSHED STONE AGGREGATE --BASE COURSE--			1	6 3 3 6	1.50 P	10									
	900.1	Stiff, dark brown SILTY CLAY LOAM			2	4 7 8 11	1.50 P	31									
		Medium stiff, brown-gray CLAY LOAM	5		3	4 4 4 4	0.50 P	17									
	897.1	Medium dense, saturated, brown GRAVELLY SAND			4	3 6 6 6	NP	18									
			10		5	5 6 7 7	NP	15									
	892.6	Boring terminated at 11.00 ft															
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-01-2005** Complete Drilling **06-01-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **8.00 ft**
At Completion of Drilling **10.50 ft**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-005

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 903.27 ft
North: 1993826.40 ft
East: 979032.44 ft
Station: 2011+99.84
Offset: 28.05 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	902.3	12-inch thick, dark brown SILTY LOAM			1	3 3 3 4	NP	10									
		--TOPSOIL--															
		Medium dense, brown SILTY LOAM			2	3 6 12 11	NP	15									
	899.8	Medium dense, brown GRAVELLY SAND			3	10 17 11 11	NP	6									
			5		4	9 10 10 12	NP	18									
					5	7 10 10 7	NP	15									
	893.3	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-01-2005** Complete Drilling **06-01-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **7.00 ft**
At Completion of Drilling \blacktriangledown **9.50 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-006

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 905.59 ft
North: 1993686.65 ft
East: 979301.39 ft
Station: 2014+99.25
Offset: 19.05 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	905.1	16-inch thick CRUSHED STONE AGGREGATE --SHOULDER AGGREGATE-- Very stiff, brown SILTY CLAY LOAM			1	3 3 5 7	2.50 P	20									
	901.6	Medium dense to dense, brown GRAVELLY SAND	5		2	4 8 15 16	NP	6									
					3	16 16 19 20	NP	5									
					4	5 13 12 12	NP	16									
			10		5	5 12 10 8	NP	12									
	894.6	Boring terminated at 11.00 ft															
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-01-2005** Complete Drilling **06-01-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **8.00 ft**
At Completion of Drilling ∇ **10.00 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-007

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 907.57 ft
North: 1993645.96 ft
East: 979568.72 ft
Station: 2017+66.87
Offset: 24.01 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	907.16	16-inch thick, brown SILTY LOAM --TOPSOIL-- Stiff to very stiff, brown SILTY CLAY LOAM			1	3 4 4 7	1.00 P	20									
	905.1	Medium dense to dense, brown GRAVELLY SAND			2	4 5 6 9	3.00 P	18									
			5		3	6 15 19 23	NP	6									
					4	10 13 13 13	NP	6									
					5	5 10 10 11	NP	12									
	897.6	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **9.00 ft**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-008

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 908.30 ft
North: 1993551.09 ft
East: 979887.36 ft
Station: 2021+0.04
Offset: 0.00 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	907.3	12-inch thick, dark brown SILTY LOAM			1	2 2 3 3	NP	18									
		--TOPSOIL--															
		Very stiff, brown SILTY CLAY LOAM			2	4 5 6 6	3.50 P	20									
	903.3		5		3	4 4 4 10	NP	10									
		Loose to dense, brown GRAVELLY SAND			4	8 17 19 19	NP	4									
					5	6 20 21 21	NP	8									
	898.3	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **10.00 ft**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-009

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 907.47 ft
North: 1993519.17 ft
East: 980185.41 ft
Station: 2023+99.93
Offset: 0.00 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	906.5	12-inch thick, dark brown SILTY LOAM			1	2 3 4 3	NP	15									
		--TOPSOIL--			2	1 2 1 2	NP	15									
		Very loose to loose, brown LOAM			3	5 4 3 4	NP	12									
	901.0				4	4 8 11 14	3.00 P	11									
	899.5	Very stiff, brown SILTY CLAY LOAM			5	4 7 7 7	NP	15									
		Medium dense, brown GRAVELLY SAND															
	897.5		10														
		Boring terminated at 10.00 ft															
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **8.00 ft**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-010

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 910.41 ft
North: 1993516.77 ft
East: 980485.45 ft
Station: 2027+00.06
Offset: 0.02 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	909.4	12-inch thick, dark brown SILTY LOAM			1	2 3 3 3	NP	16									
		--TOPSOIL--															
		Stiff, dark brown SILTY CLAY LOAM			2	3 3 5 6	1.50 P	19									
	905.4	Loose, brown LOAM	5		3	2 2 3 3	NP	13									
					4	1 3 3 3	NP	13									
	901.9	Medium dense, brown GRAVELLY SAND			5	4 11 13 18	NP	10									
	900.4	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **DRY**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-011

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 914.62 ft
North: 1993521.24 ft
East: 980785.35 ft
Station: 2030+00.00
Offset: 0.06 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	913.6	12-inch thick, dark brown SILTY LOAM			1	2 2 2 2 4	1.50 P	18									
		--TOPSOIL--															
	911.6	Stiff to very stiff, brown SILTY CLAY LOAM			2	3 3 7 8	2.00 P	22									
		Medium dense, brown SILT	5		3	5 6 9 13	NP	21									
	907.6	Medium dense, brown LOAM			4	4 18 9 11	NP	12									
	905.6	Medium dense to very dense, brown GRAVELLY SAND	10		5	5 9 20 24	NP	10									
	902.6	Boring terminated at 12.00 ft			6	5 26 28 23	NP	10									
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



BORING LOG R-012

wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**




Datum: NGVD
Elevation: 915.93 ft
North: 1993515.13 ft
East: 981087.09 ft
Station: 2033+01.74
Offset: 2.41 R

[illegible]

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
 Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
 Driller **J&D** Logger **J. Kasnick** Checked by **B. Fugiel**
 Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling		7.50 ft
At Completion of Drilling		DRY
Time After Drilling		NA
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-013

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 916.88 ft
North: 1993519.09 ft
East: 981385.40 ft
Station: 2036+00.10
Offset: 0.15 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	916.4	6-inch thick, black SILTY LOAM --TOPSOIL--			1	3 5 8 12	4.00 P	15									
	915.4	Hard, brown and black SILTY CLAY LOAM			2	11 18 13 13	NP	7									
	913.4	Dense, brown GRAVELLY SAND			3	5 6 6 6	NP	22									
		Loose to medium dense, brown SANDY LOAM	5		4	4 5 4 6	NP	20									
	910.0	Stiff to very stiff, gray CLAY, with interbedded silt lenses			5	4 3 3 5	3.50 P	19									
			10		6	4 3 8 12	1.25 P	24									
	904.9	Boring terminated at 12.00 ft															
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **5.40 ft**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-014

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 916.98 ft
North: 1993522.60 ft
East: 981685.27 ft
Station: 2038+99.98
Offset: 0.05 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	946.73	73-inch thick, black SILTY LOAM															
	916.2	--TOPSOIL--															
		Very stiff, black and gray SILTY CLAY LOAM			1	2589	2.50 P	25									
		Loose to medium dense, brown and gray SANDY LOAM, with gravel			2	686	NP	12									
					3	3433	NP	21									
	910.7	Medium dense, gray SILTY LOAM			4	4667	NP	25									
	909.2	Medium dense, gray, fine SAND			5	5778	NP	21									
	908.5	Medium dense, gray SILTY LOAM															
	907.0	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **4.10 ft**
At Completion of Drilling **3.30 ft**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-015

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**




Datum: NGVD
Elevation: 919.44 ft
North: 1993527.62 ft
East: 981985.24 ft
Station: 2041+99.98
Offset: 0.13 L

[illegible]

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
 Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
 Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
 Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling		7.00 ft
At Completion of Drilling		DRY
Time After Drilling		NA
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-016

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 916.93 ft
North: 1993511.92 ft
East: 982282.48 ft
Station: 2045+00.01
Offset: 19.78 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	946.73	1/2-inch thick, black SILTY LOAM --TOPSOIL--			1	4 5 6 7	1.50 P	24									
	915.4	Stiff, black, brown, and gray SILTY CLAY			2	3 3 5 7	NP	15									
	913.9	Loose, brown and gray SILTY LOAM			3	3 3 4 4	NP	26									
		Loose, gray and brown SANDY LOAM			4	5 6 10 11	NP	17									
	910.4	Medium dense, gray SILT			5	5 6 4 6	2.00 P	20									
	908.7	Very stiff, gray SILTY CLAY															
	906.9	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **4.25 ft**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-017

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 920.65 ft
North: 1993534.15 ft
East: 982572.99 ft
Station: 2047+96.01
Offset: 5.52 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	920.0	8-inch thick, black SILTY LOAM --TOPSOIL--			1	2 7 8 9	4.00 P	20									
	918.4	Hard, black and brown SILTY CLAY			2	4 6 6 5	NP	13									
	916.1	Medium dense, brown and gray SANDY LOAM			3	2 2 2 2	NP	22									
	914.4	Very loose, brown and gray SILTY LOAM	5		4	3 5 4 8	NP	24									
	912.1	Loose, brown and gray SANDY LOAM			5	5 8 7 6	NP	18									
	910.6	Medium dense, gray SILTY LOAM	10														
		Boring terminated at 10.00 ft															
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **5.50 ft**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-018

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 923.11 ft
North: 1993577.83 ft
East: 982886.53 ft
Station: 2050+96.63
Offset: 23.93 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	922.4	9-inch thick, black SILTY LOAM				3											
	921.6	--TOPSOIL--			1	6	2.25	16									
		Very stiff, brown SILTY CLAY				6	P										
		Medium dense, brown GRAVELLY SAND			2	3	NP	10									
						14											
						12											
						10											
			5		3	7	NP	10									
						9											
						6											
						6											
	915.6	Loose, brown, coarse SAND			4	4	NP	14									
						8											
						6											
					5	3	NP	24									
						3											
						3											
			10			4											
						5											
	912.6	Medium dense, brown and gray SILTY LOAM			6	4	NP	22									
	912.1					6											
						12											
	911.1	Medium dense, gray, fine SAND				12											
		Boring terminated at 12.00 ft															
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **2.50 ft**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-019

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 923.59 ft
North: 1993529.85 ft
East: 983185.31 ft
Station: 2053+99.90
Offset: 19.72 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	923.3	3-inch thick, brown SILTY LOAM --TOPSOIL-- Stiff, dark brown SILTY CLAY LOAM			1	3 4 5 6	1.25 P	22									
	920.1	Loose, brown SANDY LOAM			2	3 5 6 5	1.75 P	22									
	918.1	Stiff to very stiff, brown SILTY CLAY LOAM	5		3	3 5 3 5	NP	13									
					4	2 2 4 5	1.25 P	18									
	914.1	Medium dense, brown and gray SILT	10		5	5 6 6 8	2.25 P	24									
	911.6	Boring terminated at 12.00 ft			6	6 10 10 7	NP	25									
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **07-11-2005** Complete Drilling **07-11-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME 55 TMR**
Driller **K** Logger **J. Kasnick** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-099

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 919.90 ft
North: 1992578.45 ft
East: 980939.95 ft
Station: 103+49.98
Offset: 0.16 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	919.46	46-inch thick GRAVEL --FILL-- Medium dense, brown SANDY LOAM			1	3 6 7 5	NP	8									
					2	8 8 11 11	NP	9									
			5		3	8 11 11 11	NP	9									
					4	5 10 12 14	NP	9									
					5	6 10 9 12	NP	9									
	909.9	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-01-2005** Complete Drilling **06-01-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **DRY**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-100

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 914.20 ft
North: 1992878.47 ft
East: 980939.57 ft
Station: 106+50.04
Offset: 0.09 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	913.7	6-inch thick, dark brown SILTY LOAM --TOPSOIL-- Medium dense, brown SANDY LOAM			1	4 7 40 50	NP	10									
					2	8 12 16 19	NP	5									
			5		3	6 9 15 6	NP	10									
	907.7	Medium dense, brown GRAVELLY SAND, with cobbles			4	5 17 9 8	NP	6									
					5	3 5 9 12	NP	5									
	904.2	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling **DRY**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-101

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 915.24 ft
North: 1993178.84 ft
East: 980950.12 ft
Station: 109+50.13
Offset: 20.90 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	914.7	6-inch thick, dark brown SILTY LOAM --TOPSOIL-- Loose to medium dense, brown SANDY LOAM			1	3 4 6 7	NP	12									
					2	3 5 3 4	NP	10									
	909.7	Very dense, brown GRAVELLY SAND, with cobbles	5		3	3 7 9 9	NP	7									
					4	6 5 8 3	NP	5									
					5	40 20 65	NP	5									
			10		6	22 35 33 34	NP	5									
	901.2	Boring terminated at 14.00 ft			7	18 28 29 29	NP	2									
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-102

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 914.99 ft
North: 1993476.84 ft
East: 980897.14 ft
Station: 112+49.03
Offset: 37.68 L

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	914.0	12-inch thick, dark brown SILTY LOAM			1	2 3 3 3	NP	17									
		--TOPSOIL--															
		Loose, brown LOAM			2	4 4 4 8	NP	11									
	910.5																
		Dense to very dense, brown GRAVELLY SAND, with cobbles	5		3	7 27 31 22	NP	4									
					4	14 19 12 14	NP	7									
					5	12 20 16 14	NP	4									
	904.5		10														
		Medium dense, brown SAND			6	7 11 10 12	NP	14									
	902.5																
		Medium dense, brown GRAVELLY SAND			7	13 10 13 11	NP	7									
	901.0																
		Boring terminated at 14.00 ft	15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-103

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 910.86 ft
North: 1993778.78 ft
East: 980955.29 ft
Station: 115+50.39
Offset: 15.50 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	910.1	9-inch thick, black SILTY LOAM --TOPSOIL-- Very stiff, black and dark brown SILTY CLAY			1	1 2 4 4	NP	18									
					2	5 8 7 4	3.50 P	21									
	906.4	Very stiff, brown SILTY CLAY LOAM	5		3	6 10 10 7	2.50 P	23									
					4	3 5 8 5	2.00 P	11									
			10		5	4 10 8 7	2.00 P	10									
	898.9	Boring terminated at 12.00 ft			6	5 6 8 10	2.50 P	9									
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-02-2005** Complete Drilling **06-02-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-104

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 913.10 ft
North: 1994078.47 ft
East: 980950.93 ft
Station: 118+50.09
Offset: 13.54 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	912.3	9-inch thick, dark brown SILTY LOAM			1	2 3 3 4	NP	18									
		--TOPSOIL--															
		Medium stiff, dark brown SILTY CLAY LOAM				5 4 4 5	0.75 P	27									
	910.1	Medium dense, brown SILTY LOAM			2	5 4 4 5											
			5		3	5 4 6 6	NP	16									
	906.1	Medium dense, brown SANDY LOAM			4	4 7 9 14	NP	19									
	904.3	Stiff, brown SILTY CLAY LOAM			5	6 10 10 11	1.75 P	11									
	903.1	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-03-2005** Complete Drilling **06-03-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling \blacktriangledown **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, Illinois 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG R-105

WEI Job No.: 201-23-01

Client **McDonough Associates Inc.**
Project **Longmeadow Parkway over Fox River**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 915.87 ft
North: 1994378.13 ft
East: 980953.89 ft
Station: 121+49.75
Offset: 14.90 R

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	914.9	12-inch thick, black SILTY LOAM --TOPSOIL--			1	2 2 3 3	NP	16									
		Very stiff, brown SILTY CLAY LOAM			2	3 3 6 5	2.00 P	18									
			5		3	3 6 6 7	3.00 P	19									
	908.9	Medium dense, brown SANDY LOAM			4	6 8 9 12	NP	16									
	907.4	Very stiff, gray SILTY CLAY LOAM			5	4 8 7 6	3.00 P	12									
	905.9	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **06-03-2005** Complete Drilling **06-03-2005**
Drilling Contractor **PRECON DRILLING** Drill Rig **CME-75 ATV**
Driller **K** Logger **J. Kosloski** Checked by **B. Fugiel**
Drilling Method **3.25-inch HSA**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling ∇ **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SGB-A-08

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 909.35 ft
North: 1993612.94 ft
East: 979737.03 ft
Station: 2019+39.90
Offset: 32.84 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	908.4	12-inch thick, black SILTY CLAY LOAM			1	3 3 3 4 5	2.50 P	18									
	907.6	--TOPSOIL--															
		Very stiff, brown SILTY CLAY LOAM, trace gravel			2	3 5 7 8	NP	4									
		Medium dense to dense, brown, coarse GRAVELLY SAND			3	8 18 18 14	NP	5									
		--%Gravel=28.6--															
		--%Sand=58.5--															
		--%Silt=11.1--															
		--%Clay=1.8--															
		--A-1-b (0)--			4	15 20 19 19	NP	5									
					5	16 13 13 13	NP	5									
	899.4	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **04-02-2014** Complete Drilling **04-02-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&J** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **DRY**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SGB-A-09

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 911.74 ft
North: 1993562.48 ft
East: 980025.21 ft
Station: 2022+35.81
Offset: 29.89 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	911.26	6-inch thick, black SILTY LOAM --TOPSOIL-- Medium dense to very dense, brown, GRAVELLY SANDY LOAM			1	3 5 6 5	NP	4									
					2	2 8 7 7	NP	6									
		--%Gravel=57.7-- --%Sand=28.8-- --%Silt=11.6-- --%Clay=1.8-- --A-1-a (0)--	5		3	8 11 11 12	NP	6									
					4	14 20 16 14	NP	4									
					5	17 30 28 32	NP	2									
	901.7	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **04-02-2014** Complete Drilling **04-02-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&J** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **DRY**
At Completion of Drilling **DRY**
Time After Drilling **NA**
Depth to Water **NA**
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SGB-A-10

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 905.07 ft
North: 1993554.27 ft
East: 979588.31 ft
Station: 2018+09.76
Offset: 59.23 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	904.5	7-inch thick, black SILTY CLAY LOAM			1	3 4 7 11	NP	9									
		--TOPSOIL--			2	11 23 17 19	NP	6									
		Medium dense to dense, brown, medium to coarse GRAVELLY SAND			3	8 12 12 11	NP	5									
		--%Gravel=30.4--			4	5 8 8 7	NP	11									
		--%Sand=57.2--			5	6 8 8 8	NP	11									
		--%Silt=10.8--															
		--%Clay=1.7--															
		--A-1-b (0)--															
	895.1	Boring terminated at 10.00 ft	10														

GENERAL NOTES

Begin Drilling **04-02-2014** Complete Drilling **04-02-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&J** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **9.00 ft**
At Completion of Drilling \blacktriangledown **9.00 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SGB-A-11

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NAVD 88
Elevation: 909.45 ft
North: 1993554.63 ft
East: 980313.71 ft
Station: 2025+27.93
Offset: 39.57 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	908.9	7-inch thick, black SILTY CLAY LOAM			1	2 2 3 4	1.25 P	13									
		--TOPSOIL--															
		Stiff, brown SILTY CLAY LOAM, trace gravel			2	2 3 4 8	1.25 P	12									
	906.0	Medium dense, brown SILTY LOAM, trace gravel															
			5		3	4 8 11 13	NP	10									
	903.7	Medium dense to dense, brown GRAVELLY SAND, some cobbles			4	10 13 36 38	NP	6									
		--Hard drilling 6' to 8'--															
					5	14 14 12 12	NP	6									
	899.5	Boring terminated at 10.00 ft	10														
			15														
			20														
			25														

GENERAL NOTES

Begin Drilling **04-03-2014** Complete Drilling **04-03-2014**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **N&J** Logger **F. Bozga** Checked by **B. Wilson**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **DRY**
At Completion of Drilling \blacktriangledown **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



BORING LOG SGB-A-12

wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**

Project **Longmeadow Parkway**

Location **Kane County, Illinois**




Datum: NAVD 88
Elevation: 913.46 ft
North: 1993564.93 ft
East: 980622.20 ft
Station: 2028+37.51
Offset: 46.16 LT

[illegible]

GENERAL NOTES

Begin Drilling	04-03-2014	Complete Drilling	04-03-2014
Drilling Contractor	Wang Testing Services	Drill Rig	D-25 ATV
Driller	N&J	Logger	F. Bozga
		Checked by	B. Wilson
Drilling Method	2.25" HSA, boring backfilled upon completion		

WATER LEVEL DATA

While Drilling		DRY
At Completion of Drilling		DRY
Time After Drilling	NA	
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SS-01

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 912.44 ft
North: 1992228.49 ft
East: 980875.09 ft
Station: 100+00.92
Offset: 53.12 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	942.23	23-inch thick, brown SILTY LOAM --TOPSOIL--			1	4 5 5 5	4.00 P	27									
	910.9	Hard, brown SILTY CLAY LOAM, little gravel --FILL--			2	3 7 9 10	NP	11									
		Medium dense, brown SANDY LOAM, trace to some gravel --Moist--	5		3	5 8 8 9	NP	9									
					4	5 5 7 6	NP	15									
					5	4 5 7 9	NP	13									
	902.6	Medium dense, brown GRAVELLY SAND --Moist--	10		6	5 9 9 8	NP	8									
	900.9	Medium dense, brown, fine to coarse SAND, trace to little gravel --Saturated--			7	8 10 15 19	NP	12									
		--occasional SILT and CLAY seams	15		8	5 6 14 16	NP	13									
		--occasional SILT and CLAY seams			9	11 14 15 18	NP	15									
	894.4	Boring terminated at 18.00 ft															
			20														
			25														

GENERAL NOTES

Begin Drilling **02-06-2015** Complete Drilling **02-06-2015**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **P&N** Logger **D. Kolpacki** Checked by **C. Marin**
Drilling Method **2.25" HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **12.00 ft**
At Completion of Drilling \blacktriangledown **DRY**
Time After Drilling **NA**
Depth to Water ∇ **NA**
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SS-02

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 909.02 ft
North: 1991925.37 ft
East: 980876.05 ft
Station: 96+97.82
Offset: 56.94 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	908.91	1-inch thick, dark Brown SILTY CLAY			1	3 2 6 8	2.00 P	24									
	907.2	--TOPSOIL-- Very stiff, dark brown SILTY CLAY			2	3 4 4 3	NP	30									
	905.3	--FILL-- Loose, dark brown SILTY LOAM			3	1 2 3 4	NP	17									
	903.3	--TOPSOIL-- Loose, brown SANDY LOAM, trace gravel			4	3 2 2 4	0.50 P	24									
	901.1	--Moist-- Medium stiff, brown CLAY LOAM, little gravel			5	2 3 2 4	NP	24									
	899.5	--Saturated-- Loose, brown SANDY LOAM, little gravel			6	6 8 10 10	NP	12									
	897.3	Medium dense, brown GRAVELLY SAND	10		7	9 10 11 15	NP	19									
		--Saturated-- Medium dense, brown SAND, trace gravel			8	7 10 13 13	NP	13									
		--occasional SILT interbeds	15		9	8 13 14 14	NP	15									
	891.0	Boring terminated at 18.00 ft	20														
			25														

GENERAL NOTES

Begin Drilling **02-06-2015** Complete Drilling **02-06-2015**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **P&N** Logger **D. Kolpacki** Checked by **C. Marin**
Drilling Method **2.25" HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **4.00 ft**
At Completion of Drilling \blacktriangledown **12.00 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



wangeng@wangeng.com
1145 N Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG SS-03

WEI Job No.: 310-06-01

Client **Crawford, Murphy, & Tilly, Inc.**
Project **Longmeadow Parkway**
Location **Kane County, Illinois**

Datum: NGVD
Elevation: 909.63 ft
North: 1991629.98 ft
East: 980886.08 ft
Station: 94+02.32
Offset: 51.56 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	909.43	4-inch thick, dark brown SILTY LOAM --TOPSOIL--			1	3 4 4	> 4.50 P	20									
	907.9	Hard, dark brown SILTY CLAY, trace gravel --FILL--			2	3 5 6 7	NP	25									
		Medium dense, dark brown SILTY LOAM --BURIED TOPSOIL--			3	3 4 5 6	NP	24									
	904.6	Brown SILTY LOAM	5		4	4 4 4 7	NP	16									
	903.9	Loose, brown SANDY LOAM, trace gravel --Saturated--			5	3 4 4 4	NP	18									
			10		6	2 2 2 2	NP	22									
	897.9	Loose to medium dense, brown GRAVELLY SAND --Saturated--			7	3 4 4 6	NP	18									
			15		8	5 4 7 7	NP	19									
					9	5 6 10 10	NP	11									
	891.6	Boring terminated at 18.00 ft															
			20														
			25														

GENERAL NOTES

Begin Drilling **02-06-2015** Complete Drilling **02-06-2015**
Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
Driller **P&N** Logger **D. Kolpacki** Checked by **C. Marin**
Drilling Method **2.25" HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **6.00 ft**
At Completion of Drilling \blacktriangledown **12.00 ft**
Time After Drilling **NA**
Depth to Water ∇ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.