



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 26, 2015

SUBJECT: FAI Route 90/94 (I-90/94)
Project ACNHPP-000V(011)
Section 2013-012R
Cook County
Contract No. 60W30
Item No. 193, March 6, 2015 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised the Table of Contents to the Special Provisions
2. Revised pages 2, 3, 66-70, 73-75, 87-92, 97-104, 110, 111, 116, 117, 250, 251, 382, 385-387, 462-473 and 524 of the Special Provisions
3. Revised sheets 254 and 271 of the Plans

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

John D. Baranzelli, P.E.
Acting Engineer of Design and Environment

A handwritten signature in black ink, appearing to read "Ted B. Walschleger" with a small "P.E." to the right.

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: John Fortmann, Region 1, District 1; Tim Kell; D. Carl Puzey; Estimates

MS/kf

TABLE OF CONTENTS

LOCATION OF PROJECT 1
 DESCRIPTION OF PROJECT 1
 SOILS INFORMATION 1
 CONTRACTOR COOPERATION 2
 PROGRESS SCHEDULE 3
 WINTER WORK..... 9
 RESTRICTION ON WORKING DAYS AFTER A COMPLETION DATE 10
 FAILURE TO COMPLETE THE WORK ON TIME 10
 COMPLETION DATE PLUS WORKING DAYS 10
 SUBMITTALS 11
 STATUS OF UTILITIES TO BE ADJUSTED 12
 MAINTENANCE OF ROADWAYS 14
 TRAFFIC CONTROL PLAN 14
 STAGING AND INTERCHANGE RESTRICTIONS 15
 KEEPING THE EXPRESSWAY OPEN TO TRAFFIC 17
 FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC..... 19
 TRAFFIC CONTROL SURVEILLANCE, EXPRESSWAYS 19
 TEMPORARY INFORMATION SIGNING 20
 TRAFFIC CONTROL FOR WORK ZONE AREAS 23
 TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS) 23
 TRAFFIC CONTROL AND PROTECTION (ARTERIALS)..... 27
 ROAD CONSTRUCTION REPORTING AND SIGNING FOR VEHICLE WIDTH
 RESTRICTIONS 28
 AGGREGATE FOR CONCRETE BARRIER (D-1) 30
 AGGREGATE SUBGRADE IMPROVEMENT (D-1) 31
 COARSE AGGREGATE FOR BACKFILL, TRENCH BACKFILL AND BEDDING (D-1) 33
 DRAINAGE AND INLET PROTECTION UNDER TRAFFIC (DISTRICT 1) 34
 EMBANKMENT I 35
 GROUND TIRE RUBBER (GTR) MODIFIED ASPHALT BINDER (D-1) 37
 HEAT OF HYDRATION CONTROL FOR CONCRETE STRUCTURES (D-1) 38
 HMA MIXTURE DESIGN REQUIREMENTS (D-1) 38

PUBLIC CONVENIENCE AND SAFETY (D-1)	54
RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1).....	55
HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)	66
WARM MIX ASPHALT (BDE)	67
HOT MIX ASPHALT QUANTITY CORRECTION (BMPR)	71
SLIPFORM PAVING (D-1).....	71
NON-SPECIAL WASTE CERTIFICATION	72
ADJUSTMENTS AND RECONSTRUCTIONS	72
REMOVAL OF EXISTING STRUCTURES NO. 2.....	75
FORM LINER TEXTURED SURFACE	77
APPROACH SLAB REMOVAL	78
DRAINAGE SCUPPERS TO BE ADJUSTED.....	79
AIR QUALITY COMPLIANCE	79
CONSTRUCTION AIR QUALITY – DUST CONTROL	81
TEMPORARY PAVEMENT	83
TEMPORARY SOIL RETENTION SYSTEM	84
GATE REMOAL	86
REMOVAL OF ASBESTOS CEMENT CONDUIT.....	87
ROD AND CLEAN EXISTING CONDUIT	93
VIDEO TAPING OF MAIN DRAIN	94
MAIN DRAIN CLEANING	95
TELEVISION INSPECTION OF SEWER.....	96
CONSTRUCTION VIBRATION MONITORING	104
PLUG EXISTING PIPE	107
COMBINED SEWER REMOVAL.....	108
SOIL RETENTION SYSTEM	108
COMBINATION CURB AND GUTTER TYPE B V.12 (CDOT)	112
CONCRETE CURB, TYPE B (SPECIAL) (CDOT).....	112
DETECTABLE WARNINGS (SPECIAL)	113
CONCRETE MEDIAN SURFACE REMOVAL	113
CLEANING EXISTING SEWERS AND DRAINAGE STRUCTURES	114
CONCRETE MEDIAN SURFACE, 4 INCH (SPECIAL)	114
CONCRETE BARRIER, SINGLE FACE, 32 INCH HEIGHT (SPECIAL)	115

CHAIN LINK FENCE REMOVAL	115
ENGINEER’S FIELD OFFICE TYPE A (SPECIAL)	117
SIGN PANEL - TYPE 1 (SPECIAL)	118
TELESCOPING STEEL SIGN SUPPORT (SPECIAL)	120
TEMPORARY EPOXY PAVEMENT MARKING	120
HOT DIP GALVANIZING FOR STRUCTURAL STEEL	121
DYNAMIC MESSAGE SIGN (DMS) PROTECTION	124
GENERAL ELECTRICAL REQUIREMENTS.....	127
UNDERPASS LUMINAIRE, HPS, STAINLESS STEEL HOUSING.....	131
MAINTENANCE OF LIGHTING SYSTEMS.....	147
EXPOSED RACEWAYS.....	150
UNDERGROUND RACEWAYS.....	154
UNIT DUCT.....	155
WIRE AND CABLE	156
INSTALL LIGHT POLE, MAST ARM AND LUMINAIRE, CHICAGO	157
REMOVAL OF LIGHTING UNIT, SALVAGE	158
RACKING CABLES IN MANHOLE OR HANDHOLE (CDOT)	159
GROUND ROD, 3/4” DIA. X 10.0’-0” LENGTH (CDOT)	159
CABLE IN CONDUIT, TRIPLEX 2-1/C NO. 6 AND 1-1/C NO. 8 GROUND	160
UNDERGROUND CONDUIT, PVC, 2” DIA. SCHEDULE 80 (CDOT)	161
UNDERGROUND CONDUIT, PVC, 3” DIA. SCHEDULE 80 (CDOT)	161
UNDERGROUND CONDUIT, PVC, 4” DIA. SCHEDULE 80 (CDOT)	161
MAINTENANCE OF LIGHTING SYSTEM (CDOT).....	163
ELECTRICAL MANHOLE 3’X 4’X 4’ WITH 30” FRAME AND LID (CDOT)	167
REMOVING MANHOLES, SPECIAL	168
INSTALL MAST ARM AND LUMINAIRE (CDOT).....	168
REMOVE AND SALVAGE EXISTING MAST ARM AND LUMINAIRE (CDOT).....	170
ELECTRIC CABLE IN CONDUIT, COMMUNICATION	171
CLEANING EXISTING MANHOLE OR HANDHOLE.....	172
REMOVAL OF TOWER FOUNDATION	173
REMOVE AND REINSTALL EXISTING MAST ARM AND LUMINAIRE (CDOT).....	173
TRAFFIC SURVEILLANCE. – GENERAL (TSC T 400#02)	174

OPERATION OF EXISTING TRAFFIC SURVEILLANCE/SPEED/COUNT STATIONS (TSC T400#03)..... 181

INDUCTION LOOP (TSC T418#1) 182

GROUNDING OF ITS SUBSYSTEMS (TSC T 420#8)..... 187

ELECTRIC CABLE NO. 19 - 6 CONDUCTORS OR 12 CONDUCTORS (TSC T421#2) 188

ELECTRICAL CABLE IN CONDUIT, 4C/NO. 18 SHIELDED LOOP LEAD-IN (TSC T 421#14) 190

LIGHTNING PROTECTION FOR INDUCTION LOOP DETECTORS (TSC T426 #13) 192

HANDHOLE (TSC T428#1) 193

tone EQUIPMENT – PROGRAMMABLE (TSCT454#1) 195

tone EQUIPMENT - POWER SUPPLY (TSCT454#2) 196

tone EQUIPMENT - 3 FREQUENCY PROGRAMMABLE RECEIVER (TSC-T454#3)..... 197

tone EQUIPMENT - 3 FREQUENCY PROGRAMMABLE TRANSMITTER (TSC T454#4)... 198

tone EQUIPMENT-MOUNTING FRAME (TSC T454#7)..... 199

CABINET HOUSING EQUIPMENT, MOUNTING AND SIZE AS SPECIFIED (TSC T637#2).. 200

CONCRETE FOUNDATION (TSC T 427#01) 203

DIGITAL LOOP DETECTOR SENSOR UNIT (TSC T638#1)..... 205

INTERCEPT EXISTING CONDUIT 207

STEP-DOWN TRANSFORMER INSTALLATION IN SURVEILLANCE CABINET 208

FIBER OPTIC CABLE, SINGLE MODE..... 209

FIBER OPTIC SPLICE..... 223

MAINTAINING ITS DURING CONSTRUCTION..... 225

REMOVE EXISTING TRAFFIC SURVEILLANCE EQUIPMENT..... 227

REMOVE AND REINSTALL FIBER OPTIC CABLE IN CONDUIT 228

DRILL EXISTING HANDHOLE, HEAVY DUTY HANDHOLE OR MEDIAN WALL JUNCTION BOX 229

TEMPORARY WOOD POLE, 40 FT., CLASS 4..... 229

REMOVAL OF AERIAL CABLE 230

REMOVAL OF CABLE IN CONDUIT..... 230

ELECTRIC CABLE, AERIAL INSTALLATION, NO. 19, 25-PAIR AND NO. 19, 6/C..... 230

BUDGETARY ALLOWANCE FOR TIME-LAPSE CAMERA..... 231

FIBER OPTIC INNERDUCT 1 1/4" DIA. 231

CDOT TRAFFIC SIGNAL SPECIFICATIONS..... 233

TEMPORARY TRAFFIC SIGNAL INSTALLATION.....	233
TEMPORARY TRAFFIC SIGNAL INSTALLATION (SPECIAL)	241
MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION	242
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 3-SECTION, BRACKET MOUNTED....	243
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 5-SECTION, BRACKET MOUNTED....	243
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 3-SECTION, MAST ARM MOUNTED...	244
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 5-SECTION, MAST ARM MOUNTED...	244
PEDESTRIAN SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE, BRACKET MOUNTED WITH COUNT DOWN TIMER.....	245
REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT.....	246
REMOVE EXISTING HANDHOLE	247
REMOVE EXISTING CONCRETE FOUNDATION.....	248
POLE, STEEL, ANCHOR BASE, 10" DIAMETER, 7 GAUGE, 34'-6" (CDOT)	248
POLE, STEEL, ANCHOR BASE, 12.5" DIAMETER, 3 GAUGE, 34'-6" (CDOT).....	248
JUNCTION BOX, POLE OR POST MOUNTED	249
CONCRETE FOUNDATION FOR TYPE "P" BASE MOUNTED TRAFFIC SIGNAL CONTROLLER (CDOT).....	250
CONCRETE FOUNDATION, 24" DIAMETER, 1 1/4" ANCHOR RODS, 15" BOLT CIRCLE, 9 FEET (CDOT)	250
CONCRETE FOUNDATION, 30" DIAMETER, 1 1/2" ANCHOR RODS, 16 1/2" BOLT CIRCLE (CDOT)	250
ELECTRIC CABLE IN CONDUIT, NO. 14, 19/C (CDOT)	251
MANHOLE, ELECTRIC, 3'X4'X4', WITH 24" FRAME AND LID.....	253
HARNESS CABLE, NO. 16, 8/C (CDOT)	254
ADVANCED TRANSPORTATION CONTROLLER, TRAFFIC, 16 LOAD BAY, "P" CABINET (CDOT)	255
ELECTRIC CABLE IN CONDUIT, NO. 42/C (CDOT)	256
MAST ARM, STEEL, MONOTUBE, 35 FOOT (CDOT)	257
MAST ARM, STEEL, MONOTUBE, 40 FOOT (CDOT)	257
MAST ARM, STEEL, MONOTUBE, 44 FOOT (CDOT)	257
ELECTRICAL HANDHOLE, 30", 24" FRAME AND LID (CDOT).....	259
ROD AND CLEAN DUCT IN EXISTING CONDUIT SYSTEM (CDOT).....	260
DRILL MANHOLE OR HANDHOLE (CDOT)	261

CLEAN MANHOLE OR HANDHOLE (CDOT)262

CIRCUIT BREAKER, 1 POLE, 70 AMPERE, 600 VOLT IN STREET LIGHT CONTROLLER 263

APPENDIX A – CITY OF CHICAGO DEPARTMENT OF TRANSPORTATION DIVISION OF ELECTRICAL OPERATIONS264

APPENDIX B – STORM WATER POLLUTION PREVENTION PLAN355

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES.....370

TEMPORARY TRAFFIC SIGNAL TIMING371

CATCH BASINS TO BE RECONSTRUCTED WITH NEW TYPE 1 FRAME, OPEN LID (CITY OF CHICAGO)372

TEMPORARY CHAIN LINK FENCE WITH SCREENING372

FOUNDATION CONSTRUCTION AT EXISTING OBSTRUCTIONS373

REMOVAL OF EXISTING STRUCTURES NO. 1.....375

CROSSHOLE SONIC LOGGING378

LOUVERS.....383

DECORATIVE RAILING (PARAPET MOUNTED).....388

DRAINAGE SYSTEM389

CLEANING AND PAINTING EXISTING STEEL STRUCTURES391

CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES412

DECK SLAB REPAIR438

BRIDGE DECK LATEX CONCRETE OVERLAY.....444

DRILLED SOLDIER PILE RETAINING WALL.....454

PIPE UNDERDRAINS FOR STRUCTURES460

STRUCTURAL REPAIR OF CONCRETE462

GRANULAR BACKFILL FOR STRUCTURES.....473

BRIDGE DECK CONSTRUCTION474

COATED GALVANIZED STEEL CONDUIT (BDE).....477

COILABLE NONMETALLIC CONDUIT (BDE).....478

CONCRETE GUTTER, CURB, MEDIAN, AND PAVED DITCH (BDE)478

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)478

CONTRACT CLAIMS (BDE).....480

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE).....481

FRICTION AGGREGATE (BDE)493

HOT MIX ASPHALT – PRIME COAT (BDE)496

LRFD STORM SEWER BURIAL TABLES (BDE) 500
PAVED SHOULDER REMOVAL (BDE) 509
PAVEMENT PATCHING (BDE) 510
PAVEMENT STRIPING - SYMBOLS (BDE) 510
PRECAST CONCRETE HANDHOLE (BDE) 511
PROGRESS PAYMENTS (BDE) 511
RETROREFLECTIVE SHEETING FOR HIGHWAY SIGNS (BDE) 512
REINFORCEMENT BARS (BDE) 514
SIDEWALK, CORNER, OR CROSSWALK CLOSURE (BDE) 515
SPEED DISPLAY TRAILER (BDE)..... 516
TEMPORARY CONCRETE BARRIER (BDE) 517
TRACKING THE USE OF PESTICIDES (BDE)..... 518
TRAINING SPECIAL PROVISIONS (BDE) 518
IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION
(TPG) 521
UNDERPASS LUMINAIRE (BDE) 523
WEEKLY DBE TRUCKING REPORTS (BDE)..... 524
STEEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)..... 525

The reports below are available for inspection at IDOT District 1, 201 W. Center Court, Schaumburg, Illinois.

Structure Geotechnical Report
Performed for Taylor Street Bridge over Interstate 90/94
Existing SN 016-1165, Proposed SN 016-1165
Section 2013-012R
IDOT D-91-232-13, PTB 163/ITEM 001
Cook County, Illinois
Prepared by: Wang Engineering
Original: September 26, 2013
Revised: November 4, 2013

Structure Geotechnical Report
Retaining Wall 17
Proposed SN 016-1806
Section 2013-012R
IDOT D-91-227-13, PTB 163/ITEM 001
Cook County, Illinois
Prepared by: Wang Engineering
Original: August 8, 2014
Revised: November 24, 2014

CONTRACTOR COOPERATION

The Contractor's attention is directed to the fact that other separate contracts may be under construction during the duration of this Contract. Adjacent contracts may consist of, but are not limited to projects near:

- Contract 60W26 – Harrison Street Bridge (West) at I-90/94 and Halsted Street Bridge at I-290 (Circle Interchange)
- Contract 60W29 – Peoria Street Bridge at I-290 / Congress Pkwy (Circle Interchange)
- Contract 60W28 – Northwest Flyover Bridge at I-90/94 and I-290 / Congress Pkwy (Circle Interchange)
- Contract 60W71 – Harrison Street Bridge (East) at I-90/94 (Circle Interchange)
- Contract 60X61 - I-290 Mainline Outbound Lanes (WB) (Peoria St To Racine Ave)
- Future Westbound I-290 Reconstruction Project(s) Between Canal Street and Racine Avenue
- Future Eastbound I-290 Reconstruction Project(s) Between Canal Street and Loomis Street
- Bridge Painting Projects Within the I-90/94 and I-290 Corridors
- I-55 / Lake Shore Drive Interchange
- And others.

The Contractor will be governed by Article 105.08 of the Standard Specifications.

Revised 2/26/15

It is intended that the Contractor for Taylor Street, Contract 60W30, takes over the detour for the Taylor Street Entrance Ramp closure upon handover after the completion and release of the maintenance of the Taylor Street Entrance Ramp detour by the Contractor for Northwest Flyover Bridge Project – Contract 60W28.

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.

The Contractor shall be responsible for the repair and maintenance of the Taylor Street Entrance Ramp detour and all its related appurtenances. No extra payment will be made for systems maintenance, repairs or for damages incurred as a result of vandalism, theft or other criminal activities.

The work zone shall overlap the Contract 60W28 work zone shown on the plans and anticipated to already be in use under the 60W28 Contract. The Contractor shall provide a minimum of fifteen (15) feet wide path at all times to allow the Contract 60W28 Contractor vehicles and equipment to pass through the work zone under Contract 60W30.

The progression of work in Contract 60W28 will restrict construction traffic from exiting the work zone north of the Taylor Street Bridge within the collector-distributor road/Ramp NW.

The Contractor will be required to attend a weekly coordination meeting at a time and location to be determined by the Department.

The Contractor will coordinate proposed project start dates and sequence of construction with the Engineer and other Contractors to present an effective and timely schedule for successful completion of the project.

PROGRESS SCHEDULE

Description. Time is of the essence in this Contract. It may be necessary for the Contractor to work longer hours, use additional crews, and work during weekends in order to complete the work within the required time limit. The Contractor shall submit a Critical Path Method (CPM) Progress Schedule as described below for the Engineer's approval before the work can be started.

The Contractor will not be allowed any compensation for working longer hours or using extra shifts; and working on weekends or during Holidays; working during winter months, etc. to meet the specified Completion Date.

This work shall consist of preparing, revising and updating a detailed progress schedule based upon the Critical Path Method (CPM). This work shall also consist of performing time impact analysis of the progress schedule based upon the various revisions and updates as they occur.

Requirements. The software shall produce an electronic progress schedule for submission to the department that is 100% compatible with Primavera SureTrak 3.0 Project Manager, published by Primavera Systems, Inc.

1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

- (a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except “Non-Quality” and “FRAP”. The testing requirements of Article 1031.03 shall not apply. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research’s Policy Memorandum, “Reclaimed Asphalt Pavement (RAP) for Aggregate Applications”
- (b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders.”

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.”

Revised 2/26/15

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%”

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.

Revised 2/26/15

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.”

Revised 2/26/15

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.

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

REMOVAL OF EXISTING STRUCTURES NO. 2

Description. This item shall consist of furnishing all labor, equipment and materials necessary for the removal and disposal of the existing Southwest Retaining wall structure along South Union Ave. The work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications, as described herein, as detailed in the plans and as directed by the Engineer.

Revised 2/26/15

Method of Measurement. Gate removal shall be measured for payment by each of the gate removed.

Basis of Payment. The work under this Item will be paid for at the Contract unit price each for GATE REMOVAL, as indicated on the Plans and as specified herein.

REMOVAL OF ASBESTOS CEMENT CONDUIT

Description: This work consists of the removal and disposal of friable asbestos cement electrical conduits owned by the City of Chicago. The conduits shall be demolished including conduit supports and hangers. All work shall be done in accordance with the requirements of the U.S. Environmental Protection Agency (USEPA), the Illinois Environmental Protection Agency (IEPA), the Occupational Safety and Health Administration (OSHA), and as outlined herein.

Under the Taylor Street bridge structure, the City of Chicago has a 4 duct package that provides connections for their Office of Emergency Management and Communications across I-90/94. The ducts were installed as part of the bridge reconstruction, which occurred in the 1980's.

The City of Chicago has identified that records are unclear if asbestos concrete is present in the existing conduits, though the chance for asbestos in the ducts along Taylor Street remains low. Prior to any removal of any conduit material, the existing conduits must be tested for the presence of asbestos content by qualified personnel and/or qualified testing firm. Tests should be comprehensive, and include detailed visual inspection, sampling as determined by qualified testing firm or personnel and laboratory testing of samples in order to determine if conduits include asbestos cement. Each of the existing conduits should be independently reviewed due to unknown installation or maintenance improvement records. No separate payment for testing of the existing conduits will be made. The testing of existing conduits shall be included as part of REMOVAL OF EXISTING STRUCTURE NO. 1. All testing records and results shall be provided to the Engineer prior to any removal of existing City of Chicago conduits.

If testing identifies that asbestos cement is not present in the existing conduits, the conduits shall be demolished as part of REMOVAL OF EXISTING STRUCTURES NO. 1. If testing identifies that asbestos cement is present in the existing conduits, the removal of the conduits shall follow the procedures identified within this specification.

The work involved in the removal and disposal of friable or non-friable asbestos done prior to demolition of the Taylor Street bridge structure shall be performed by a qualified Contractor or Sub-Contractor.

The Contractor shall provide a shipping manifest to the Engineer for the disposal of all asbestos containing material wastes.

The Contractor shall coordinate with the City of Chicago for the replacement of their ducts under this contract. The Contractor shall coordinate with ComEd for the removal of their ducts by others. Existing ComEd ducts parallel to the City of Chicago ducts may contain asbestos.

Revised 2/26/15

Permits: The Contractor shall apply for permit(s) in compliance with applicable regulations of the Illinois Environmental Protection Agency. Any and all other permits required by other federal, state, or local agencies for carrying on the work will be the responsibility of the Contractor. Copies of these permits must be sent to the district office and the Engineer.

Notifications: The "Demolition/Renovation Notice" form, which can be obtained from the IEPA office, shall be completed and submitted to the agencies listed below at least 10 days prior to commencement of any asbestos removal or demolition activity.

- A. Asbestos Demolition/Renovation Coordinator
Illinois Environmental Protection Agency
Division of Air Pollution Control
P. O. Box 19276
Springfield, Illinois 62794-9276
(217)785-1743

- B. U. S. Environmental Protection Agency
Air Compliance Branch
77 W. Jackson Blvd.
Chicago, Illinois 60604
Attention: Asbestos Coordinator

Notices must be updated if there is a change in the starting date or the amount of asbestos changes by more than 20 percent

Submittals

- A. All submittals and notices shall be made to the Engineer except where otherwise specified herein.

- B. Submittals that shall be made prior to start of work:
 - 1. Submittals required under Asbestos Abatement Experience.
 - 2. Submit documentation indicating that all employees have had medical examinations and instruction on the hazards of asbestos exposure, on use and fitting of respirators, on protective dress, on use of showers, on entry and exit from work areas, and on all aspects of work procedures and protective measures as specified in Worker Protection Procedures.
 - 3. Submit manufacturer's certification stating that vacuums, ventilation equipment, and other equipment required to contain airborne fibers conform to ANSI 29.2.
 - 4. Submit to the Engineer the brand name, manufacturer, and specification of all sealants or surfactants to be used. Testing under existing conditions will be required at the direction of the Engineer.

5. Submit proof that all required permits, site locations, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials, supplies, and the like have been obtained (i.e., a letter of authorization to utilize designated landfill).
 - Information about vehicles and equipment utilized for transport of material designated for disposal shall be submitted. This should include methods for restricting loose fibers from being released during travel.
 6. Submit a list of penalties, including liquidated damages, incurred through non-compliance with asbestos abatement project specifications.
 7. Submit a project specific Health and Safety plan for the removal operations. The Health and Safety Plan must be approved and signed by sub-contractor and Contractor personnel, and shall be provided to the Engineer prior to commencing site work activities. The Contractor shall be and remain liable for compliance by its employees, agents and subcontractors with the Contractor's Health and Safety Plan and procedures for the site and shall hold Engineer and Department harmless from all claims, damages, suits, losses and expenses in any way arising from non-compliance with the Health and Safety Plan.
 - i. In particular, the Health and Safety Plan shall address personal protection from asbestos fiber releases during asbestos abatement.
 8. Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the plan the location and layout of decontamination units, the sequencing of work, the respiratory protection plan to be used during this work, a site safety plan, a disposal plan including the location of an approved disposal site, and a detailed description of the methods to be used to control pollution. The plan must be submitted to the Engineer prior to the start of work.
 9. Submit proof of written notification and compliance with Paragraph "Notifications."
- C. Submittals that shall be made upon completion of abatement work:
1. Submit copies of all waste chain-of-custodies, trip tickets, and disposal receipts for all asbestos waste materials removed from the work area;
 2. Submit daily copies of work site entry logbooks with information on worker and visitor access;
 3. Submit logs documenting filter changes on respirators. HEPA vacuums, negative pressure ventilation units, and other engineering controls; and
 4. Submit results of any bulk material analysis and air sampling data collected during the course of the abatement including results of any on-site testing by any federal, state, or local agency.

Revised 2/26/15

Certificate of Insurance:

- A. The Contractor shall document general liability insurance for personal injury, occupational disease and sickness or death, and property damage.
- B. The Contractor shall document current Workmen's Compensation Insurance coverage.
- C. The Contractor shall supply insurance certificates as specified by the Department.

Asbestos Abatement Experience:

A. Company Experience:

1. Prior to start of work, the Contractor shall supply:

- a. Evidence that he/she has been qualified with the State of Illinois and he/she has been included on the Illinois Department of Public Health's list of approved Contractors.

B. Personnel Experience:

1. For Superintendent, the Contractor shall supply:

- a. Evidence of knowledge of applicable regulations in safety and environmental protection is required as well as training in asbestos abatement as evidenced by the successful completion of a training course in supervision of asbestos abatement as specified in 40 CFR 763, Subpart E, Appendix C, EPA Model Contractor Accreditation Plan. A copy of the certificate of successful completion must be provided to the Engineer prior to the start of work.
- b. Documentation of experience with abatement work in a supervisory position as evidenced through supervising at least two asbestos abatement projects; provide names, contact, phone number, and locations of two projects in which the individual(s) has worked in a supervisory capacity.
- c. The superintendent shall be thoroughly familiar with and experienced at asbestos abatement, characterization, bulking, transportation, and disposal activities and other related work, and shall be familiar with and shall enforce the use of all applicable safety procedures and equipment. The Supervisor shall be knowledgeable of, and enforce, all applicable, USEPA, IEPA, and OSHA requirements and guidelines.

Revised 2/26/15

2. For Workers involved in the Removal of Friable and Nonfriable Asbestos the Contractor shall provide:
 - a. Training as evidenced by the participation and successful completion of an accredited training course for asbestos abatement workers as specified in 40 CFR 763, Subpart E, Appendix C, EPA Model Contractor Accreditation Plan. A copy of the certificate of successful completion must be provided to all employees who will be working on this project.
 - b. Workers shall be familiar with and experienced at asbestos abatement, characterization, bulking, transportation, and disposal activities and other related work; and Asbestos Workers shall be familiar with the use of applicable safety procedures and equipment.

Abatement Air Monitoring:

The Contractor shall comply with the following:

A. Personal Monitoring:

All personal monitoring shall be conducted per specifications listed in OSHA regulation, Title 29, Code of Federal Regulation 1926.58. All area sampling shall be conducted in accordance with 40 CFR Part 763.90. All air monitoring equipment shall be calibrated and maintained in proper operating condition. Excursion limits will be monitored daily. Personal monitoring is the responsibility of the Contractor. Additional personal samples may be required by the Engineer at any time during the project.

B. Contained Work Areas for Removal of Friable Asbestos

1. Area samples shall be collected for the department within the work area daily. A minimum of one sample shall be taken outside of the abatement area removal operations. The Engineer will also have the option to require additional personal samples and/or clearance samples during this type of work.

C. Air Monitoring Professional

1. All air sampling will be conducted by a qualified Air Sampling Professional supplied by the Contractor. The Air Sampling Professional must submit documentation of successful completion of the National Institute for Occupational Safety and Health (NIOSH) course #582 – “Sampling and Evaluating Airborne Asbestos Dust”.
2. Air Sampling will be conducted in accordance with NIOSH Method 7400. The results of these tests will be provided to the Engineer within 24 hours of the collection of air samples.

Revised 2/26/15

Method of Measurement: This work will be measured for payment per foot for REMOVAL OF ASBESTOS CEMENT CONDUIT, as shown for each individual conduit, which price shall include furnishing all labor, materials, equipment and services required to remove and dispose of the friable asbestos cement conduits, hangers, and conduit supports. No separate payment will be made for any testing of existing conduits for the presence of asbestos cement prior to the removal of any conduit material. Removal of concrete encasement is to be included in REMOVAL OF EXISTING STRUCTURES NO. 1.

Basis of Payment: This work will be paid for at the contract unit price per foot for REMOVAL OF ASBESTOS CEMENT CONDUIT for all conduits identified to contain asbestos and removed in conformance with this specification and all current laws and regulations.

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

CONSTRUCTION VIBRATION MONITORING

Revised: January 20, 2015

Description. This work consists of monitoring buildings, structures, tunnels and other locations susceptible to movement. Additional monitoring of facilities may be required and will be determined by the Engineer during the work. Additional monitoring, as determined by the Engineer, is included in the cost of this item.

Revised 2/26/15

Basis of Payment. This item will be paid for at the contract unit price per square foot for SOIL RETENTION SYSTEM.

Payment for any excavation, related solely to the installation of the soil retention system and/or its components, shall not be paid for separately but shall be included in the unit bid price for SOIL RETENTION SYSTEM. Other excavation, performed in conjunction with this work will not be included in this item but shall be paid for as specified elsewhere in this contract. Additionally, designing, furnishing and installing the chain link pedestrian fence shall not be paid for separately but shall be included in the unit bid price for SOIL RETENTION SYSTEM.

Obstruction mitigation shall be paid for according to Article 109.04 of the Standard Specifications.

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

All elements of the Taylor Street to NB I-90/94 Entrance Ramp (SN 016-2535) chain link fence including, but not limited to, wire mesh, posts, connecting elements, bolts, baseplates and anchor bolts shall be included in Chain Link Fence Removal. Associated items attached to the existing chain link fence including, but not limited to, sign structures shall also be included in Chain Link Fence Removal.

The existing chain link fence anchor bolts shall be removed such that no protrusions are present above the top of the existing barrier. All removal operations shall be performed in a manner so as to prevent damage to the existing barrier and/or other elements of the structure to remain. In the event that any bridge element to remain is damaged by the Contractor in the performance of his/her work, that element shall be repaired to the satisfaction of the Engineer and at no additional cost to the Department.

The work shall conform in every respect to all environmental, state and local regulations regarding construction requirements, the protection of adjacent properties, as well as dust and noise control.

All materials removed by the Contractor under this Item shall become the property of the Contractor and shall be disposed of by the Contractor off the site and in a lawful manner meeting all IDOT Policies and Procedures.

Traffic Operations

The traffic on the Interstate 90/94 must remain open to all lanes of traffic during demolition activities unless the Contractor has secured the necessary permits from the Illinois Department of Transportation to allow for temporary closure of lanes.

Method of Measurement. Chain Link Fence Removal shall be measured for payment by linear foot of the fence removed including additional elements noted above.

Basis of Payment. The work under this Item will be paid for at the Contract unit price per linear foot for CHAIN LINK FENCE REMOVAL, as indicated on the Plans and as specified herein.

Revised 2/26/15

ENGINEER'S FIELD OFFICE TYPE A (SPECIAL)

Description. This item shall consist of furnishing all utilities and maintaining in good condition the existing office space and all appurtenances included in it, including but not limited to all communication devices, internet service, water coolers, copy machines, printers, refrigerators, air conditioning and heating systems, water services, furniture, buildings and all appurtenances thereof located at 900 South Des Plaines Street, Chicago, for the exclusive use of the Engineer or Authorized Representative. The Office shall meet the requirements of Article 670.02 of the Standard Specifications. It is intended that the Contractor for Taylor Street, Contract 60W30, takes over the maintenance of the Engineer's Field Office Type A (Special) upon the completion and release of the maintenance and handover of the Engineer's Field Office Type A (Special) by the Contractor for Halsted/Harrison Street – Contract 60W26.

1. The office space shall be maintained and kept in a clean condition at all times. The Contractor shall provide janitorial and/or cleaning service for a minimum of twice a week. Windows and window blinds shall be cleaned as directed by the Engineer. Maintenance shall include, but not limited to supply of paper towels, soap, toilet paper, and other necessary supplies. No additional compensation will be allowed for providing this service.
2. The existing interior walls may require one (1) coat of paint, as directed by the Engineer, at no additional cost.
3. The Contractor shall be responsible for security of the field office building and is liable for damages incurred as a result of vandalism, theft, and other criminal activities. Broken doors, windows or other appurtenances shall be replaced at no additional cost.
4. Four (4) on-site sanitary facilities shall be maintained.
5. The Contractor will be responsible for systems maintenance repairs which shall include the heating, cooling, sanitary and water distribution systems and light bulb replacements.
6. The (10) fire extinguishers meeting City of Chicago requirements shall be maintained.

Revised 2/26/15

CONCRETE FOUNDATION FOR TYPE "P" BASE MOUNTED TRAFFIC SIGNAL CONTROLLER (CDOT)

Description. This item will be for all work necessary for installing a foundation for a "P" cabinet.

Material. Concrete will be Portland cement concrete, SI Class, meeting the requirements of Article 1020 of the Standard Specifications. Ground rods will meet the requirements of Material Specification 1465. Conduit will be PVC meeting the requirements of Material Specification 1533. Anchor rods will meet the applicable requirements of Material Specification 1467.

Construction. The Contractor will install a concrete foundation for a base mounted traffic signal controller cabinet, as shown on City of Chicago Drawing Number 888 for a "P" cabinet. Work under this item will be performed in accordance with Article 800 of the Standard Specifications.

The foundation will have a minimum depth of at least forty inches (40") below grade and must have large radius conduit elbows in quantity, size and type shown. The elbow ends above ground will be capped with standard conduit bushings. The ground rod will be installed adjacent to the foundation, and will be driven straight down with the top to be no higher than 30 inches below finished grade. The Contractor will furnish anchor bolts, hardware, conduit elbows, and all other material shown on the foundation construction drawing.

All excavation and restoration of parkway will be considered as part of this item. If the foundation is in sidewalk, an expansion joint will be required between the sidewalk and the foundation.

Method of Measurement. This work will be measured as CONCRETE FOUNDATION FOR TYPE "P" BASE MOUNTED TRAFFIC SIGNAL CONTROLLER (CDOT) for each unit installed complete.

CONCRETE FOUNDATION, 24" DIAMETER, 1 1/4" ANCHOR RODS, 15" BOLT CIRCLE, 9 FEET (CDOT)
CONCRETE FOUNDATION, 30" DIAMETER, 1 1/2" ANCHOR RODS, 16 1/2" BOLT CIRCLE (CDOT)

Description. The foundation will be a poured in place concrete structure used for structurally supporting street light poles or traffic signal poles.

Material. Every foundation will be installed at the location designated and in the manner herein specified or in special cases as specifically directed. The contractor will locate foundations as per plan or as directed by the Resident Engineer. A hole must be augered for placement of the concrete form.

CONCRETE FOUNDATION, 24" DIAMETER, 1 1/4" ANCHOR RODS, 15" BOLT CIRCLE, 9 FEET (CDOT) is a foundation for arterial street light pole; either steel or aluminum, conventional or davit (Standard Drawing 818).

Revised 2/26/15

CONCRETE FOUNDATION, 30" DIAMETER, 1 1/2" ANCHOR RODS, 16 1/2" BOLT CIRCLE (CDOT) is a foundation for a traffic pole which can accommodate a 35, 40, or 44 foot monotube mast arm (Standard Drawing 817).

Top surface of these foundations in parkway will be at an elevation of two inches (2") above grade or as required by the Engineer. Care must be taken to install a level foundation and to ensure adequate anchor rod projections for double nut installation. The foundations must be centered back from the face of the curb in accordance with dimensions shown on the construction plans. Foundation raceways must consist of large radius conduit elbow(s) in quantity, size and type as specified on the corresponding standard drawing or in the construction plans. Any number of elbows in excess of the number shown on the standard drawing must be paid for under a separate pay item. The elbow ends above ground will be capped with standard conduit bushings. The Contractor must furnish anchor rods, a ground rod, hardware, conduit elbow(s) and all other material shown on applicable foundation construction drawings. Depth of foundation will be as shown on the appropriate drawing. The foundation top must be chamfered 3/4 of an inch. When the foundation is installed in a sidewalk, the foundation must be installed level, with the height of the foundation as close to the height of the sidewalk as possible, or as directed by the Engineer. A proper expansion joint will be installed between the sidewalk and the foundation.

Anchor rods must be set in accordance with applicable construction plans so that when poles are mounted on the foundations, the street lighting mast arm will be properly oriented as indicated on the construction plans. The anchor rods will be set by means of a metal template which shall be submitted for approval before any foundation work is begun. The template must hold the rods vertical, and in proper position. Anchor rods must conform in all respects to the appropriate drawing.

Method of Measurement. This item will be measured per each foundation installed complete.

Basis of Payment. Payment will be made for foundations installed in place, including elbows, in accordance with construction drawings, constructions plans and these specifications. All necessary excavation and restoration of pavement, sidewalk and fill to their original conditions will be included in the unit price. This work will be paid for at the contract unit price per each for CONCRETE FOUNDATION of the diameter and size specified (CDOT).

ELECTRIC CABLE IN CONDUIT, NO. 14, 19/C (CDOT)

Description. This work will consist of furnishing and installing electric cable for traffic signals of the type, size and number of conductors as specified on the plans. The cable will be rated 600 volts and comply with the following requirements.

Traffic Signal Cable. All cable must conform to the requirements of Material Specification number 1537, for Traffic Signal Cable.

Revised 2/26/15

The Data logs for each tube pair tested shall be included along with an analysis of the initial pulse arrival time, velocity, relative pulse energy/amplitude, and stacked waveform plotted versus depth. The Report shall list all zones defined by the Concrete Condition Rating Criteria (CCRC) in a tabular format including the percent velocity reduction and the velocity values used from the nearby zone of good quality concrete. The Report shall discuss each zone defined by the CCRC as appropriate. The Report shall base the results on the percent reduction in velocity value from a nearby zone of good quality concrete with good signal amplitude and energy as correlated to the following:

Concrete Condition Rating Criteria (CCRC)		
CCRC (Rating Symbol)	Velocity Reduction	Indicative Results
Good (G)	≤ 10 %	Good quality concrete
Questionable (Q)	10 % to < 20 %	Minor concrete contamination or intrusion. Questionable quality concrete.
Poor/Defect (P/D)	≥ 20 %	Defects exist, possible water/slurry contamination, soil intrusion, and/or poor quality concrete.
Water (W)	V = 4750 fps (1450 mps) to 5000 fps (1525 mps)	Water intrusion or water filled gravel intrusion with few or no fines present.
No Signal (NS)	No Signal Received	Soil intrusion or other severe defect absorbed the signal (assumes good bond of the tube-concrete interface).

The Contractor shall not grout the CSL tubes or perform any further work on the CSL tested drilled shaft until the Engineer determines whether the drilled shaft is acceptable. Perform tomography in order to further investigate and delineate the boundaries of any defective/unconsolidated zones with 20 percent or more reduction in velocity value as correlated to the CCRC. The Contractor shall process CSL data to construct easy to understand 2D/3D (2D cross-sections between tubes and 3D volumetric images for the entire shaft) color-coded tomographic images indicating velocity variations along the shaft. Location and geometry of defective/unconsolidated zones shall be identified in 3D color images with detailed discussion in the CSL report.

Correction of drilled shaft defect. When the field testing results or report determine that a defect is present, the Engineer will direct the Contractor to submit remedial measures for approval. No compensation will be made for remedial work or losses or damage due to remedial work of drilled shafts found defective or not in accordance with the drilled shaft specifications or the construction plans. Modifications to the drilled shaft design or any load transfer mechanisms required by the remedial action must be designed, plans submitted sealed by an Illinois Licensed Structural Engineer, along with the design computations.

Revised 2/26/15

Repair damaged finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory and refinish entire unit or provide new units.

Protect galvanized and nonferrous-metal surfaces that will be in contact with concrete, masonry or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint.

Caulking Requirements:

- A. Caulk the entire perimeter: Install backer rod and apply caulk between the opening and the louver panels.
- B. Caulk at all exposed horizontal mullions: Install backer rod and apply caulk between the louver panels.
- C. Caulk at all exposed vertical mullions: Apply a bead of caulk at the face of the jamb, so that the entire height of the mullion cover and the adjoining panel are sealed after assembly.

Method of Measurement: This item shall be measured for payment per each louver furnished and successfully installed. The structural steel for the lintel and any additional structural steel framing required for the louver shall not be paid separately and shall be included with LOUVERS.

Basis of Payment: This work shall be paid for at the contract unit price per each for LOUVERS. Payment shall include full compensation for all materials, labor, equipment and incidentals necessary to complete the work.

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

--This page intentionally left blank.--

Revised 2/26/15

STRUCTURAL REPAIR OF CONCRETE

Effective: March 15, 2006

Revised: August 29, 2014

Description. This work shall consist of structurally repairing concrete.

Materials. Materials shall be according to the following.

Item	Article/Section
(a) Portland Cement Concrete (Note 1)	1020
(b) R1 or R2 Concrete (Note 2)	
(c) Normal Weight Concrete (Notes 3 and 4)	
(d) Shotcrete (High Performance) (Notes 5 and 6)	
(e) Reinforcement Bars	1006.10
(f) Anchor Bolts	1006.09
(g) Water	1002
(h) Curing Compound	1022.01
(i) Cotton Mats	1022.02
(j) Protective Coat	1023.01
(k) Epoxy (Note 7)	1025
(l) Mechanical Bar Splicers	508.06(c)

Note 1. The concrete shall be Class SI, except the cement factor shall be a minimum 6.65 cwt/cu yd (395 kg/cu m), the coarse aggregate shall be a CA 16, and the strength shall be a minimum 4000 psi (27,500 kPa) compressive or 675 psi (4650 kPa) flexural at 14 days. A high range water-reducing admixture shall be used to obtain a 5-7 in. (125-175 mm) slump, but a cement factor reduction according to Article 1020.05(b)(8) is prohibited. A self-consolidating concrete mixture is also acceptable per Article 1020.04, except the mix design requirements of this note regarding the cement factor, coarse aggregate, strength, and cement factor reduction shall apply.

Note 2. The R1 or R2 concrete shall be from the Department's approved list of Packaged, Dry, Rapid Hardening, Cementitious Materials for Concrete Repairs. The R1 or R2 concrete shall comply with the air content and strength requirements for Class SI concrete as indicated in Note 1. Mixing shall be per the manufacturer's recommendations, except the water/cement ratio shall not exceed the value specified for Class SI concrete as indicated in Note 1. A high range water-reducing admixture shall be used to obtain a 5-7 in. (125-175 mm) slump, and a retarder may be required to allow time to perform the required field tests. The admixtures shall be per the manufacturer's recommendation, and the Department's approved list of Concrete Admixtures shall not apply.

Revised 2/26/15

Note 3. The “high slump” packaged concrete mixture shall be from the Department’s approved list of Packaged, Dry, Formed, Concrete Repair Mixtures. The materials and preparation of aggregate shall be according to ASTM C 387. The cement factor shall be 6.65 cwt/cu yd (395 kg/cu m) minimum to 7.05 cwt/cu yd (418 kg/cu m) maximum. Cement replacement with fly ash or ground granulated blast-furnace slag shall be according to Section 1020. The “high slump” packaged concrete mixture shall have a water soluble chloride ion content of less than 0.40 lb/cu yd (0.24 kg/cu m). The test shall be performed according to ASTM C 1218, and the “high slump” packaged concrete mixture shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an independent lab a minimum of once every two years, and the test results shall be provided to the Department. The coarse aggregate shall be a maximum size of 1/2 in. (12.5 mm). The packaged concrete mixture shall comply with the air content and strength requirements for Class SI concrete as indicated in Note 1. Mixing shall be per the manufacturer’s recommendations, except the water/cement ratio shall not exceed the value specified for Class SI concrete as indicated in Note 1. A high range water-reducing admixture shall be used to obtain a 5-7 in. (125-175 mm) slump. The admixture shall be per the manufacturer’s recommendation, and the Department’s approved list of Concrete Admixtures shall not apply. A maximum slump of 10 in. (250 mm) may be permitted if no segregation is observed by the Engineer in a laboratory or field evaluation.

Note 4 The “self-consolidating concrete” packaged concrete mixture shall be from the Department’s approved list of Packaged, Dry, Formed, Concrete Repair Mixtures. The materials and preparation of aggregate shall be according to ASTM C 387. The cement factor shall be 6.65 cwt/cu yd (395 kg/cu m) minimum to 7.05 cwt/cu yd (418 kg/cu m) maximum. Cement replacement with fly ash or ground granulated blast-furnace slag shall be according to Section 1020. The “self-consolidating concrete” packaged concrete mixture shall have a water soluble chloride ion content of less than 0.40 lb/cu yd (0.24 kg/cu m). The test shall be performed according to ASTM C 1218, and the “self-consolidating concrete” packaged concrete mixture shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an independent lab a minimum of once every two years, and the test results shall be provided to the Department. The concrete mixture should be uniformly graded, and the coarse aggregate shall be a maximum size of 1/2 in. (12.5 mm). The fine aggregate proportion shall be a maximum 50 percent by weight (mass) of the total aggregate used. The packaged concrete mixture shall comply with the air content and strength requirements for Class SI concrete as indicated in Note 1. Mixing shall be per the manufacturer’s recommendations, except the water/cement ratio shall not exceed the value specified for Class SI concrete as indicated in Note 1. The admixtures used to produce self-consolidating concrete shall be per the manufacturer’s recommendation, and the Department’s approved list of Concrete Admixtures shall not apply. The packaged concrete mixture shall meet the following self-consolidating requirements:

- The slump flow range shall be 22 in. (560 mm) minimum to 28 in. (710 mm) maximum and tested according to Illinois Test Procedure SCC-2.

- The visual stability index shall be a maximum of 1 and tested according to Illinois Test Procedure SCC-2.
- The J-Ring value shall be a maximum of 2 in. (50 mm) and tested according to Illinois Test Procedure SCC-3. The L-Box blocking ratio shall be a minimum of 80 percent and tested according to Illinois Test Procedure SCC-4. The Manufacturer has the option to select either the J-Ring or L-Box test.
- The hardened visual stability index shall be a maximum of 1 and tested according to Illinois Test Procedure SCC-6.

Note 5. Packaged shotcrete that includes aggregate shall be from the Department's approved list of Packaged High Performance Shotcrete, and independent laboratory test results showing the product meets Department specifications will be required. The product shall be a packaged, pre-blended, and dry combination of materials, for the wet-mix shotcrete method according to ASTM C 1480. A non-chloride accelerator may be used according to the shotcrete manufacturer's recommendations. The shotcrete shall be Type FA or CA, Grade FR, and Class I. The fibers shall be Type III synthetic according to ASTM C 1116.

The packaged shotcrete shall have a water soluble chloride ion content of less than 0.40 lb/cu yd (0.24 kg/cu m). The test shall be performed according to ASTM C 1218, and the hardened shotcrete shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an independent lab a minimum of once every two years, and the test results shall be provided to the Department.

Each individual aggregate used in the packaged shotcrete shall have either a maximum ASTM C 1260 expansion of 0.16 percent or a maximum ASTM C 1293 expansion of 0.040 percent. However, the ASTM C 1260 value may be increased to 0.27 percent for each individual aggregate if the cement total equivalent alkali content ($\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$) does not exceed 0.60 percent. As an alternative to these requirements, ASTM C 1567 testing which shows the packaged shotcrete has a maximum expansion of 0.16 percent may be submitted. The ASTM C 1260, C 1293, or C 1567 test shall be performed a minimum of once every two years.

The 7 and 28 day compressive strength requirements in ASTM C 1480 shall not apply. Instead the shotcrete shall obtain a minimum compressive strength of 4000 psi (27,500 kPa) at 14 days.

The packaged shotcrete shall be limited to the following proportions:

The portland cement and finely divided minerals shall be 6.05 cwt/cu yd (360 kg/cu m) to 8.50 cwt/cu yd (505 kg/cu m) for Type FA and 6.05 cwt/cu yd (360 kg/cu. m) to 7.50 cwt/cu yd (445 kg/cu m) for Type CA. The portland cement shall not be below 4.70 cwt/cu yd (279 kg/cu m) for Type FA or CA.

Revised 2/26/15

The finely divided mineral(s) shall constitute a maximum of 35 percent of the total cement plus finely divided mineral(s).

Class F fly ash is optional and the maximum shall be 20 percent by weight (mass) of cement.

Class C fly ash is optional and the maximum shall be 25 percent by weight (mass) of cement.

Ground granulated blast-furnace slag is optional and the maximum shall be 30 percent by weight (mass) of cement.

Microsilica is required and shall be a minimum of 5 percent by weight (mass) of cement, and a maximum of 10 percent. As an alternative to microsilica, high-reactivity metakaolin may be used at a minimum of 5 percent by weight (mass) of cement, and a maximum of 10 percent.

Fly ash shall not be used in combination with ground granulated blast-furnace slag. Class F fly ash shall not be used in combination with Class C fly ash. Microsilica shall not be used in combination with high-reactivity metakaolin. A finely divided mineral shall not be used in combination with a blended hydraulic cement, except for microsilica or high-reactivity metakaolin.

The water/cement ratio as defined in Article 1020.06 shall be a maximum of 0.42.

The air content as shot shall be 4.0 – 8.0 percent.

Note 6 Packaged shotcrete that does not include pre-blended aggregate shall be from the Department's approved list of Packaged High Performance Shotcrete, and independent laboratory test results showing the product meets Department specifications will be required. The shotcrete shall be according to Note 5, except the added aggregate shall be according to Articles 1003.02 and 1004.02 in addition to each individual aggregate meeting the maximum expansion requirements of Note 5. The aggregate gradation shall be according to the manufacturer. The shotcrete shall be batched and mixed with added aggregate according to the manufacturer.

Note 7. In addition ASTM C 881, Type IV, Grade 2 or 3, Class A, B, or C may be used.

Equipment. Equipment shall be according to Article 503.03 and the following.

Chipping Hammer – The chipping hammer for removing concrete shall be a light-duty pneumatic or electric tool with a 15 lb. (7 kg) maximum class or less.

Blast Cleaning Equipment – Blast cleaning equipment for concrete surface preparation shall be the abrasive type, and the equipment shall have oil traps.

Revised 2/26/15

Hydrodemolition Equipment – Hydrodemolition equipment for removing concrete shall be calibrated, and shall use water according to Section 1002.

High Performance Shotcrete Equipment – The batching, mixing, pumping, hose, nozzle, and auxiliary equipment shall be for the wet-mix shotcrete method, and shall meet the requirements of ACI 506R.

Construction Requirements

General. The repair methods shall be either formed concrete repair or shotcrete. The repair method shall be selected by the Contractor with the following rules.

- (a) Rule 1. For formed concrete repair, a subsequent patch to repair the placement point after initial concrete placement will not be allowed. As an example, this may occur in a vertical location located at the top of the repair.
- (b) Rule 2. Formed concrete repair shall not be used for overhead applications.
- (c) Rule 3. If formed concrete repair is used for locations that have reinforcement with less than 0.75 in. (19 mm) of concrete cover, the concrete mixture shall contain fly ash or ground granulated blast-furnace slag at the maximum cement replacement allowed.
- (d) Rule 4. Shotcrete shall not be used for any repair greater than 6 in. (150 mm) in depth, except in horizontal applications, where the shotcrete may be placed from above in one lift.
- (e) Rule 5. Shotcrete shall not be used for column repairs greater than 4 in. (100 mm) in depth, unless the shotcrete mixture contains 3/8 in. (9.5 mm) aggregate.

Temporary Shoring or Cribbing. When a temporary shoring or cribbing support system is required, the Contractor shall provide details and computations, prepared and sealed by an Illinois licensed Structural Engineer, to the Department for review and approval. When ever possible the support system shall be installed prior to starting the associated concrete removal. If no system is specified, but during the course of removal the need for temporary shoring or cribbing becomes apparent or is directed by the Engineer due to a structural concern, the Contractor shall not proceed with any further removal work until an appropriate and approved support system is installed.

Concrete Removal. The Contractor shall provide ladders or other appropriate equipment for the Engineer to mark the removal areas. Repair configurations will be kept simple, and squared corners will be preferred. The repair perimeter shall be sawed a depth of 1/2 in. (13 mm) or less, as required to avoid cutting the reinforcement. Any cut reinforcement shall be repaired or replaced at the expense of the Contractor. If the concrete is broken or removed beyond the limits of the initial saw cut, the new repair perimeter shall be recut. The areas to be repaired shall have all loose, unsound concrete removed completely by the use of chipping hammers, hydrodemolition equipment, or other methods approved by the Engineer. The concrete removal shall extend along the reinforcement bar until the reinforcement is free of bond inhibiting corrosion. Reinforcement bar with 50 percent or more exposed shall be undercut to a depth of 3/4 in. (19 mm) or the diameter of the reinforcement bar, whichever is greater.

Revised 2/26/15

If sound concrete is encountered before existing reinforcement bars are exposed, further removal of concrete shall not be performed unless the minimum repair depth is not met.

The repair depth shall be a minimum of 1 in. (25 mm). The substrate profile shall be $\pm 1/16$ in. (± 1.5 mm). The perimeter of the repair area shall have a vertical face.

If a repair is located at the ground line, any excavation required below the ground line to complete the repair shall be included in this work.

The Contractor shall have a maximum of 14 calendar days to complete each repair location with concrete or shotcrete, once concrete removal has started for the repair.

The Engineer shall be notified of concrete removal that exceeds 6 in. (150 mm) in depth, one fourth the cross section of a structural member, more than half the vertical column reinforcement is exposed in a cross section, more than 6 consecutive reinforcement bars are exposed in any direction, within 1.5 in. (38 mm) of a bearing area, or other structural concern. Excessive deterioration or removal may require further evaluation of the structure or installation of temporary shoring and cribbing support system.

Surface Preparation. Prior to placing the concrete or shotcrete, the Contractor shall prepare the repair area and exposed reinforcement by blast cleaning. The blast cleaning shall provide a surface that is free of oil, dirt, and loose material.

If a succeeding layer of shotcrete is to be applied, the initial shotcrete surface and remaining exposed reinforcement shall be free of curing compound, oil, dirt, loose material, rebound (i.e. shotcrete material leaner than the original mixture which ricochets off the receiving surface), and overspray. Preparation may be by lightly brushing or blast cleaning if the previous shotcrete surface is less than 36 hours old. If more than 36 hours old, the surface shall be prepared by blast cleaning.

The repair area and perimeter vertical face shall have a rough surface. Care shall be taken to ensure the sawcut face is roughened by blast cleaning. Just prior to concrete or shotcrete placement, saturate the repair area with water to a saturated surface-dry condition. Any standing water shall be removed.

Concrete or shotcrete placement shall be done within 3 calendar days of the surface preparation or the repair area shall be prepared again.

Reinforcement. Exposed reinforcement bars shall be cleaned of concrete and corrosion by blast cleaning. After cleaning, all exposed reinforcement shall be carefully evaluated to determine if replacement or additional reinforcement bars are required.

Reinforcing bars that have been cut or have lost 25 percent or more of their original cross sectional area shall be supplemented by new in kind reinforcement bars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. A mechanical bar splicer shall be used when it is not feasible to provide the minimum bar lap. No welding of bars shall be performed.

Revised 2/26/15

Intersecting reinforcement bars shall be tightly secured to each other using 0.006 in. (1.6 mm) or heavier gauge tie wire, and shall be adequately supported to minimize movement during concrete placement or application of shotcrete.

For reinforcement bar locations with less than 0.75 in. (19 mm) of cover, protective coat shall be applied to the completed repair. The application of the protective coat shall be according to Article 503.19, 2nd paragraph, except blast cleaning shall be performed to remove curing compound.

The Contractor shall anchor the new concrete to the existing concrete with 3/4 in. (19 mm) diameter hook bolts for all repair areas where the depth of concrete removal is greater than 8 in. (205 mm) and there is no existing reinforcement extending into the repair area. The hook bolts shall be spaced at 15 in. (380 mm) maximum centers both vertically and horizontally, and shall be a minimum of 12 in. (305 mm) away from the perimeter of the repair. The hook bolts shall be installed according to Section 584.

Repair Methods. All repair areas shall be inspected and approved by the Engineer prior to placement of the concrete or application of the shotcrete.

- (a) Formed Concrete Repair. Falsework shall be according to Article 503.05. Forms shall be according to Article 503.06. Formwork shall provide a smooth and uniform concrete finish, and shall approximately match the existing concrete structure. Formwork shall be mortar tight and closely fitted where they adjoin the existing concrete surface to prevent leakage. Air vents may be provided to reduce voids and improve surface appearance. The Contractor may use exterior mechanical vibration, as approved by the Engineer, to release air pockets that may be entrapped.

The concrete for formed concrete repair shall be a Class SI Concrete, or a packaged R1 or R2 Concrete with coarse aggregate added, or a packaged Normal Weight Concrete at the Contractor's option. The concrete shall be placed and consolidated according to Article 503.07. The concrete shall not be placed when frost is present on the surface of the repair area, or the surface temperature of the repair area is less than 40 °F (4 °C). All repaired members shall be restored as close as practicable to their original dimensions.

Curing shall be done according to Article 1020.13.

If temperatures below 45°F (7°C) are forecast during the curing period, protection methods shall be used. Protection Method I according to Article 1020.13(d)(1), or Protection Method II according to Article 1020.13(d)(2) shall be used during the curing period.

The surfaces of the completed repair shall be finished according to Article 503.15.

Revised 2/26/15

- (b) Shotcrete. Shotcrete shall be tested by the Engineer for air content according to Illinois Modified AASHTO T 152. The sample shall be obtained from the discharge end of the nozzle by shooting a pile large enough to scoop a representative amount for filling the air meter measuring bowl. Shotcrete shall not be shot directly into the measuring bowl for testing.

For compressive strength of shotcrete, a 18 x 18 x 3.5 in. (457 x 457 x 89 mm) test panel shall be shot by the Contractor for testing by the Engineer. A steel form test panel shall have a minimum thickness of 3/16 in. (5 mm) for the bottom and sides. A wood form test panel shall have a minimum 3/4 in. (19 mm) thick bottom, and a minimum 1.5 in. (38 mm) thickness for the sides. The test panel shall be cured according to Article 1020.13 (a) (3) or (5) while stored at the jobsite and during delivery to the laboratory. After delivery to the laboratory for testing, curing and testing shall be according to ASTM C 1140.

The method of alignment control (i.e. ground wires, guide strips, depth gages, depth probes, and formwork) to ensure the specified shotcrete thickness and reinforcing bar cover is obtained shall be according to ACI 506R. Ground wires shall be removed after completion of cutting operations. Guide strips and formwork shall be of dimensions and a configuration that do not prevent proper application of shotcrete. Metal depth gauges shall be cut 1/4 in. (6 mm) below the finished surface. All repaired members shall be restored as close as practicable to their original dimensions.

For air temperature limits when applying shotcrete in cold weather, the first paragraph of Article 1020.14(b) shall apply. For hot weather, shotcrete shall not be applied when the air temperature is greater than 90°F (32°C). The applied shotcrete shall have a minimum temperature of 50°F (10°C) and a maximum temperature of 90°F (32°C). The shotcrete shall not be applied during periods of rain unless protective covers or enclosures are installed. The shotcrete shall not be applied when frost is present on the surface of the repair area, or the surface temperature of the repair area is less than 40°F (4°C). If necessary, lighting shall be provided to provide a clear view of the shooting area.

The shotcrete shall be applied according to ACI 506R, and shall be done in a manner that does not result in cold joints, laminations, sandy areas, voids, sags, or separations. In addition, the shotcrete shall be applied in a manner that results in maximum densification of the shotcrete. Shotcrete which is identified as being unacceptable while still plastic shall be removed and re-applied.

The nozzle shall normally be at a distance of 2 to 5 ft. (0.6 to 1.5 m) from the receiving surface, and shall be oriented at right angles to the receiving surface. Exceptions to this requirement will be permitted to fill corners, encase large diameter reinforcing bars, or as approved by the Engineer. For any exception, the nozzle shall never be oriented more than 45 degrees from the surface. Care shall be taken to keep the front face of the reinforcement bar clean during shooting operations. Shotcrete shall be built up from behind the reinforcement bar. Accumulations of rebound and overspray shall be continuously removed prior to application of new shotcrete. Rebound material shall not be incorporated in the work.

Whenever possible, shotcrete shall be applied to the full thickness in a single layer. The maximum thickness shall be according to Rules 4 and 5 under Construction Requirements, General. When two or more layers are required, the minimum number shall be used and shall be done in a manner without sagging or separation. A flash coat (i.e. a thin layer of up to 1/4 in. (6 mm) applied shotcrete) may be used as the final lift for overhead applications.

Prior to application of a succeeding layer of shotcrete, the initial layer of shotcrete shall be prepared according to the surface preparation and reinforcement bar cleaning requirements. Upon completion of the surface preparation and reinforcement bar treatment, water shall be applied according to the surface preparation requirements unless the surface is moist. The second layer of shotcrete shall then be applied within 30 minutes.

Shotcrete shall be cut back to line and grade using trowels, cutting rods, screeds or other suitable devices. The shotcrete shall be allowed to stiffen sufficiently before cutting. Cutting shall not cause cracks or delaminations in the shotcrete. For depressions, cut material may be used for small areas. Rebound material shall not be incorporated in the work. For the final finish, a wood float shall be used to approximately match the existing concrete texture. A manufacturer approved finishing aid may be used. Water shall not be used as a finishing aid. All repaired members shall be restored as close as practicable to their original dimensions.

Contractor operations for curing shall be continuous with shotcrete placement and finishing operations. Curing shall be accomplished using wetted cotton mats, membrane curing, or a combination of both. Cotton mats shall be applied according to Article 1020.13(a)(5) except the exposed layer of shotcrete shall be covered within 10 minutes after finishing, and wet curing shall begin immediately. Curing compound shall be applied according to Article 1020.13(a)(4), except the curing compound shall be applied as soon as the shotcrete has hardened sufficiently to prevent marring the surface, and each of the two separate applications shall be applied in opposite directions to ensure coverage. The curing compound shall be according to Article 1022.01. Note 5 of the Index Table in Article 1020.13 shall apply to the membrane curing method.

When a shotcrete layer is to be covered by a succeeding shotcrete layer within 36 hours, the repair area shall be protected with intermittent hand fogging, or wet curing with either burlap or cotton mats shall begin within 10 minutes. Intermittent hand fogging may be used only for the first hour. Thereafter, wet curing with burlap or cotton mats shall be used until the succeeding shotcrete layer is applied. Intermittent hand fogging may be extended to the first hour and a half if the succeeding shotcrete layer is applied by the end of this time.

The curing period shall be for 7 days, except when there is a succeeding layer of shotcrete. In this instance, the initial shotcrete layer shall be cured until the surface preparation and reinforcement bar treatment is started.

Revised 2/26/15

If temperatures below 45°F (7°C) are forecast during the curing period, protection methods shall be used. Protection Method I according to Article 1020.13(d)(1), or Protection Method II according to Article 1020.13(d)(2) shall be used during the curing period

Inspection of Completed Work. The Contractor shall provide ladders or other appropriate equipment for the Engineer to inspect the repaired areas. After curing but no sooner than 28 days after placement of concrete or shooting of shotcrete, the repair shall be examined for conformance with original dimensions, cracks, voids, and delaminations. Sounding for delaminations will be done with a hammer or by other methods determined by the Engineer.

The acceptable tolerance for conformance of a repaired area shall be within 1/4 in. (6 mm) of the original dimensions. A repaired area not in dimensional conformance or with delaminations shall be removed and replaced.

A repaired area with cracks or voids shall be considered as nonconforming. Exceeding one or more of the following crack and void criteria shall be cause for removal and replacement of a repaired area.

1. The presence of a single surface crack greater than 0.01 in. (0.25 mm) in width and greater than 12 in. (300 mm) in length.
2. The presence of two or more surface cracks greater than 0.01 in. (0.25 mm) in width that total greater than 24 in. (600 mm) in length.
3. The presence of map cracking in one or more regions totaling 15 percent or more of the gross surface area of the repair.
4. The presence of two or more surface voids with least dimension 3/4 in. (19 mm) each.

A repaired area with cracks or voids that do not exceed any of the above criteria may remain in place, as determined by the Engineer.

If a nonconforming repair is allowed to remain in place, cracks greater than 0.007 in. (0.2 mm) in width shall be repaired with epoxy according to Section 590. For cracks less than or equal to 0.007 in. (0.2 mm) in width, the epoxy may be applied to the surface of the crack. Voids shall be repaired according to Article 503.15.

Publications and Personnel Requirements. The Contractor shall provide a current copy of ACI 506R to the Engineer a minimum of one week prior to start of construction.

The shotcrete personnel who perform the work shall have current American Concrete Institute (ACI) nozzle men certification for vertical wet and overhead wet applications, except one individual may be in training. This individual shall be adequately supervised by a certified ACI nozzle men as determined by the Engineer. A copy of the nozzle men certificate(s) shall be given to the Engineer.

Revised 2/26/15

Method of Measurement. This work will be measured for payment in place and the area computed in square feet (square meters). For a repair at a corner, both sides will be measured.

Basis of Payment. This work will be paid for at the contract unit price per square foot (square meter) for STRUCTURAL REPAIR OF CONCRETE (DEPTH GREATER THAN 5 IN. (125 MM), STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 IN. (125 MM).

When not specified to be paid for elsewhere, the work to design, install, and remove the temporary shoring and cribbing will be paid for according to Article 109.04.

With the exception of reinforcement damaged by the Contractor during removal, the furnishing and installation of supplemental reinforcement bars, mechanical bar splicers, hook bolts, and protective coat will be paid according to Article 109.04.

Revised 2/26/15

GRANULAR BACKFILL FOR STRUCTURES

Effective: April 19, 2012
Revised: October 30, 2012

Revise Section 586 of the Standard Specifications to read:

SECTION 586. Granular Backfill for structures

586.01 Description. This work shall consist of furnishing, transporting and placing granular backfill for abutment structures.

586.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Fine Aggregate.....	1003.04
(b) Coarse Aggregates	1004.05

CONSTRUCTION REQUIREMENTS

586.03 General. This work shall be done according to Article 502.10 except as modified below. The backfill volume shall be backfilled, with granular material as specified in Article 586.02, to the required elevation as shown in the contract plans. The backfill volume shall be placed in convenient lifts for the full width to be backfilled. Unless otherwise specified in the contract plans, mechanical compaction will not be required. A deposit of gravel or crushed stone placed behind drain holes shall not be required. All drains not covered by geocomposite wall drains or other devices to prevent loss of backfill material shall be covered by sufficient filter fabric material meeting the requirements of Section 1080 and Section 282 with either 6 or 8 oz/sq yd (200 or 270 g/sq m) material allowed, with free edges overlapping the drain hole by at least 12 in. (300 mm) in all directions.

Revised 2/26/15

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012

The Contractor shall provide 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 on the jobsite; or used for the delivery and/or removal of equipment/material to and from the jobsite. The jobsite shall also include offsite locations, such as plant sites or storage sites, when those locations are used solely for this contract.

Revised 2/26/15