



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

December 9, 2005

SUBJECT: FAI Route 80/94  
Section 2626.2 R-2  
Cook County  
Contract No. 62114  
Item No. 4P, December 16, 2005 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 Table of Contents.
2. Revised pages 2 – 3, 10 – 12, 30, 51 – 58, 106 – 109, 115 – 124, 152, 167 – 168 and 362 – 363 of the Special Provisions.
3. Added pages 482 - 506 to the Special Provisions.
4. Revised pages 2, 6, 7, 10, 14, 19 and 22 of the Schedule of Prices.
5. Revised sheets 3, 6 – 10, 13, 194, 362 and 364 of the Plans.
6. Added sheet 362A to 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,

Michael L. Hine  
Engineer of Design  
and Environment

A handwritten signature in cursive script, reading "Ted B. Walschleger" followed by a small "P.E." to the right.

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

cc: Diane O'Keefe, Region 1, District 1; N. R. Stoner; Roger Driskell; R. E. Anderson; Estimates; Design & Environment File

TBW:TK:jc

## TABLE OF CONTENTS

GENERAL INFORMATION.....	1
LOCATION OF PROJECT .....	1
DESCRIPTION OF PROJECT.....	1
COMPLETION DATE PLUS GUARANTEED WORKING DAYS.....	2
INDIANA SPECIFICATIONS AND SUPPLEMENTS.....	2
COORDINATION WITH CONCURRENT CONTRACTS.....	2
PROGRESS SCHEDULE .....	3
FAILURE TO COMPLETE THE WORK ON TIME.....	9
INCENTIVE PAYMENT PLAN .....	10
MAINTENANCE OF ROADWAYS.....	12
STATUS OF UTILITIES TO BE ADJUSTED .....	13
MAINTENANCE OF TRAFFIC.....	16
ACCIDENT INVESTIGATION SITES .....	16
CHANGEABLE MESSAGE SIGNS .....	17
CONCRETE GLARE SCREEN, SPECIAL .....	17
FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC:.....	18
KEEPING THE EXPRESSWAY OPEN TO TRAFFIC .....	18
STAGING AND INTERCHANGE RESTRICTIONS .....	20
TEMPORARY INFORMATION SIGNING.....	21
TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS).....	22
TRAFFIC CONTROL AND PROTECTION (SPECIAL).....	25
TRAFFIC CONTROL FOR WORK ZONE AREAS .....	26
TRAFFIC CONTROL PLAN.....	26
TRAFFIC CONTROL SURVEILLANCE, EXPRESSWAYS .....	28
TRAFFIC STAGING.....	28
PRE-STAGE A - I-80/94 WB.....	29
PRE-STAGE A - I-80/94 EB.....	29
STAGE 1 – I-80/94 EB.....	29
STAGE 2A – I-80/94 EB .....	29
WORK RESTRICTIONS .....	30

Revised 12/09/2005

CIVIL .....	30
APPROACH SLAB REMOVAL .....	30
BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH) .....	31
CONCRETE BARRIER.....	31
CONCRETE BARRIER REMOVAL .....	34
CONCRETE FILLED STEEL POST REMOVAL.....	34
CONCRETE FILLED STEEL POST .....	35
CONCRETE MEDIAN SURFACE, 100MM (SPECIAL) .....	35
CONCRETE SIDEWALK, SPECIAL WITH NAME PLATE .....	36
CONSTRUCTION AIR QUALITY - DUST CONTROL .....	37
CONSTRUCTION NOISE MITIGATION.....	43
ENVIRONMENTAL DEFICIENCY DEDUCTION.....	44
EMBANKMENT.....	44
EXTENDED LIFE CONCRETE PAVEMENT (30 YEAR).....	45
FENCE REMOVAL .....	49
IMPACT ATTENUATOR REMOVAL .....	50
LIGHT POLE ANCHOR ROD ASSEMBLY, INSTALL ONLY .....	50
NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY.....	58
NON-SPECIAL WASTE WORKING CONDITIONS.....	59
OVERHEAD SIGN STRUCTURE-SPAN, ANCHOR ROD ASSEMBLY.....	60
PAINT PAVEMENT MARKING - LINE 125 MM (SPECIAL) .....	60
PAVEMENT BREAKING.....	61
PLANTING MIX FURNISH AND PLACE .....	61
RECLAIMED ASPHALT PAVEMENT FOR NON-POROUS EMBANKMENT AND BACKFILL.....	65
REMOVAL OF EXISTING NOISE ABATEMENT WALL .....	66
ROADWAY CLEANING (SPECIAL) .....	66
SPECIAL SIGNING.....	67
SUPER-HIGH EFFICIENCY FULL CUBE RETROREFLECTIVE SHEETING.....	68
TEMPORARY CONCRETE BARRIER .....	71
TEMPORARY PAVEMENT.....	72
ELECTRICAL .....	73
COILABLE NON-METALLIC CONDUIT .....	73
CONDUIT ATTACHED TO STRUCTURE, PVC.....	78

EXPOSED RACEWAYS ..... 78

GENERAL ELECTRICAL REQUIREMENTS..... 81

HIGHWAY ADVISORY RADIO FLASHING BEACON ASSEMBLY, SOLAR ..... 85

HIGHWAY ADVISORY RADIO STATION (FIO)..... 89

JUNCTION BOX TYPE “J” ..... 94

JUNCTION BOX, STAINLESS STEEL ..... 94

RACEWAYS EMBEDDED IN STRUCTURE ..... 95

TRENCH AND BACKFILL FOR ELECTRICAL WORK ..... 95

UNDERGROUND RACEWAYS..... 96

DRAINAGE & UTILITIES ..... 96

CATCH BASINS (OF THE SIZE SPECIFIED) SPECIAL, TYPE 20 FRAME AND GRATE ..... 96

CATCH BASINS (OF THE SIZE SPECIFIED) SPECIAL, TYPE 22 FRAME AND GRATE ..... 97

CLEANING EXISTING DRAINAGE STRUCTURES ..... 97

DRAINAGE STRUCTURE TO BE REMOVED..... 97

DRAINAGE STRUCTURES, TYPE 1 SPECIAL WITH TWO TYPE 20 FRAME AND GRATES ..... 98

DUCTILE IRON PIPE, STORM SEWER OF THE DIAMETER SPECIFIED ..... 98

DRAINAGE SYSTEM..... 98

EXISTING OUTFALL HEADWALL (FOR INFORMATION ONLY) ..... 101

FRAMES AND GRATES TO BE REMOVED..... 102

JUNCTION CHAMBER, NO. (SPECIFIED)..... 102

PROPOSED STORM SEWER CONNECTION TO EXISTING MANHOLE ..... 102

REMOVAL OF PUMPING STATION (FIO)..... 103

REMOVE AND PLUG ABANDONED WATER MAIN ..... 106

SEWER OUTFALL SEPARATOR SYSTEM..... 106

SLIP-ON FLAT BOTTOM CHECK VALVE ..... 109

STEEL CASINGS..... 111

STEEL PLATES TO BE INSTALLED ON DRAINAGE STRUCTURE..... 111

STORM SEWERS TO BE GROUTED..... 111

STORM SEWERS, RUBBER GASKET ..... 112

STRUCTURAL ..... 113

BARRIER SUPPORT STRUCTURE FOR NOISE ABATEMENT WALL ..... 113

DRILLED SHAFTS..... 115

ERECTING STRUCTURAL STEEL..... 124

FURNISHING STRUCTURAL STEEL AND BEARINGS (FIO) ..... 126

PIPE UNDERDRAINS FOR STRUCTURES ..... 128

REMOVE MECHANICALLY STABILIZED EARTH WALL.....	129
REMOVE STEEL SHEET PILING .....	130
EROSION CONTROL .....	130
ARTICULATED BLOCK MATS.....	130
EROSION AND SEDIMENT CONTROL CALL OUT.....	131
EROSION AND SEDIMENT CONTROL MANAGER .....	132
EROSION AND SEDIMENT CONTROL SCHEDULE.....	132
EROSION AND SEDIMENT CONTROLS .....	133
GEOTEXTILE FABRIC MATERIALS.....	141
SEDIMENT CONTROL, SILT CURTAIN (LOW CURRENT).....	141
SURFACE ROUGHENING .....	143
INDIANA DEPARTMENT OF TRANSPORTATION (DOT) SPECIAL PROVISIONS .....	145
INDOT - ANCHOR BOLT.....	145
INDOT - AUTOMATIC DRAINAGE GATE.....	145
INDOT - B BORROW.....	145
INDOT - BARRIER CONCRETE (OF THE TYPE SPECIFIED).....	146
INDOT - BARRIER DELINEATOR.....	146
INDOT - BEARING ASSEMBLY, ELASTOMERIC TYPE 1.....	146
INDOT - BORROW .....	146
INDOT - CASTING, 5, FURNISH AND ADJUST TO GRADE.....	147
INDOT - COMPACTED AGGREGATE, NO. 73 .....	148
INDOT - CONCRETE BARRIER, TRANSITION.....	148
INDOT - CONCRETE FOUNDATION WITH GROUNDING.....	148
INDOT - CONCRETE, A, SUBSTRUCTURE .....	149
INDOT - CONCRETE, C, SUPERSTRUCTURE .....	149
INDOT - CURB AND GUTTER, C, CONCRETE, SPECIAL.....	149
INDOT - DROP MANHOLE OF THE TYPE SPECIFIED.....	150
INDOT - EXCAVATION COMMON.....	150
INDOT - EXCAVATION DRY .....	150
INDOT - EXCAVATION FOUNDATION, UNCLASSIFIED .....	151
INDOT - EXCAVATION WET.....	151
INDOT - EXCAVATION, UNCLASSIFIED .....	151
INDOT - FENCE GATE, CHAIN LINK, 1220 MM X 3.7 M.....	151
INDOT - FENCE, CHAIN LINK, 1220 MM .....	152
INDOT - FIELD WELDED STUD SHEAR CONNECTOR .....	152

INDOT - GRATES, BASINS, AND FITTINGS, CAST IRON..... 152

INDOT - HANDRAIL, STEEL ..... 153

INDOT - IMPACT ATTENUATORS ..... 153

INDOT - INLET OF THE TYPE SPECIFIED..... 153

INDOT - MANHOLE OF THE TYPE SPECIFIED ..... 154

INDOT - MASONRY COATING ..... 155

INDOT - MONUMENT, D..... 155

INDOT - OVERHEAD SIGN STRUCTURE - SPAN, ANCHOR ROD ASSEMBLY ..... 156

INDOT - OVERHEAD SIGN STRUCTURES ..... 156

INDOT - PAVEMENT TRAFFIC MARKINGS ..... 157

INDOT - PILE, CONCRETE, STEEL SHELL ENCASED, 6.35MM, 356MM ..... 158

INDOT - PIPE INSTALLATION, TRENCHLESS, 600 MM ..... 158

INDOT - PIPE, SLOTTED DRAIN, 300 MM..... 158

INDOT - PIPE TYPE 2, CIRCULAR, OF THE DIAMETER SPECIFIED ..... 159

INDOT - PIPE, TYPE 2, DEFORMED, MIN. AREA OF THE DIAMETER SPECIFIED..... 160

INDOT - PIPE TYPE 4, CIRCULAR, OF THE DIAMETER SPECIFIED ..... 160

INDOT - PIPE, UNDERDRAIN, PERFORATED, 1.63MM, 150MM..... 161

INDOT - PRESENT STRUCTURE, STR. NO. (AS SPECIFIED), REMOVE..... 161

INDOT - QC/QA - PCCP OF THE THICKNESS SPECIFIED..... 162

INDOT - REINFORCED CONCRETE BRIDGE APPROACHES..... 162

INDOT - REINFORCING BARS, EPOXY COATED ..... 163

INDOT - RIPRAP REVETMENT ..... 163

INDOT - RIPRAP, UNIFORM..... 163

INDOT - SIDEWALK, CONCRETE ..... 164

INDOT - SIGN LIGHTING MAINTENANCE SYSTEM, INDIANA (FIO)..... 164

INDOT - SIGN POSTS..... 165

INDOT - SIGNING..... 165

INDOT - SLOPEWALL ..... 166

INDOT - SNOWPLOWABLE RAISED PAVEMENT MARKERS ..... 166

INDOT - SOUND BARRIER SYSTEMS - SECTION 620 ..... 168

INDOT - STRUCTURAL EXPANSION JOINT, SS ..... 181

INDOT - STRUCTURE BACKFILL ..... 182

INDOT - SUBBASE FOR PCCP ..... 182

INDOT - SUBGRADE TREATMENT, TYPE 1A..... 182

INDOT - SURFACE SEAL ..... 184

INDOT - TEST PILE, 356MM..... 184

INDOT - THREADED TIE BAR ASSEMBLY, EPOXY COATED..... 184

INDOT - TUBULAR TRAFFIC SIGN POST ..... 185

INDOT - WIM STATION, 10 LANE SLC ..... 185

INDIANA DOT RECURRING SPECIAL PROVISIONS ..... 239

APPROVED EXPANSION JOINT SS DEVICES ..... 239

BASIS FOR USE OF APPROVED OR PREQUALIFIED MATERIALS ..... 239

BEARING ASSEMBLIES ..... 239

EXTENSION OF CAST IRON FLOOR DRAINS..... 241

GENERAL BRIDGE REQUIREMENTS ..... 241

MASONRY COATING..... 242

RECYCLED FOUNDRY SAND..... 247

RECYCLING EXISTING CONCRETE PAVEMENT ..... 255

REFLECTIVE LENSES FOR SNOWPLOWABLE RAISED PAVEMENT MARKERS..... 255

REINFORCED BARS..... 256

SNOWPLOWABLE RAISED PAVEMENT MARKERS..... 256

STOCKPILED MATERIALS ..... 256

VILLAGE OF LANSING SPECIAL PROVISIONS..... 258

DUCTILE IRON WATER MAIN RESTRAINED JOINT TYPE ..... 258

DUCTILE IRON WATER MAIN RESTRAINED JOINT TYPE, 600MM IN STEEL CASING PIPE, 1050MM  
 AUGURED ..... 259

TAPPING VALVES AND SLEEVES ..... 261

BLIND FLANGE CAP ..... 262

FIRE HYDRANT WITH AUXILIARY VALVE, VALVE BOX AND TEE..... 262

STORM SEWER (WATER MAIN REQUIREMENTS) 300MM ..... 262

REMOVE AND PLUG ABANDONED WATER MAIN ..... 262

ABANDON WATER MAIN IN PLACE ..... 263

VALVE VAULTS TO BE REMOVED ..... 263

VALVE BOXES TO BE REMOVED ..... 263

PERMITS ..... 264

ACOE NATIONWIDE PERMIT ..... 264

ACOE LITTLE CALUMET BRIDGE ..... 278

ACOE OUTFALL WORK..... 291

IDEM RULE 5 NOI ..... 307

INDNR CONSTRUCTION IN A FLOODWAY ..... 315

STORM WATER POLLUTION PLAN FORM..... 321

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ..... 334

INDOT PAY ITEMS CONTRACTOR PROVIDED INFORMATION ..... 337

CHAIN LINK FENCE, CHAIN LINK FENCE GATE ..... 338

DRILLED SHAFTS ..... 338

FLOATING BEARINGS..... 348

CLEANING AND PAINTING NEW METAL STRUCTURES..... 352

SURFACE PREPARATION AND PAINTING REQUIREMENTS FOR WEATHERING STEEL ..... 359

TEMPORARY SHEET PILING..... 359

RUSTICATION FINISH ..... 361

PIPE UNDERDRAINS FOR STRUCTURES ..... 362

BITUMINOUS BASE COURSE / WIDENING SUPERPAVE (BDE)..... 363

BITUMINOUS CONCRETE SURFACE COURSE (BDE)..... 368

BITUMINOUS EQUIPMENT, SPREADING AND FINISHING MACHINE (BDE) ..... 369

BRIDGE DECK CONSTRUCTION (BDE) ..... 369

CHAIR SUPPORTS (BDE) ..... 371

COARSE AGGREGATE FOR TRENCH BACKFILL, BACKFILL AND BEDDING (BDE) ..... 371

CONCRETE ADMIXTURES (BDE) ..... 378

CURING AND PROTECTION OF CONCRETE CONSTRUCTION (BDE) ..... 382

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION ..... 389

ELASTOMERIC BEARINGS (BDE)..... 397

EPOXY PAVEMENT MARKING (BDE) ..... 401

EROSION AND SEDIMENT CONTROL DEFICIENCY DEDUCTION (BDE) ..... 402

FLAGGER VESTS (BDE) ..... 403

FREEZE-THAW RATING (BDE)..... 403

FURNISHED EXCAVATION (BDE)..... 404

HAND VIBRATOR (BDE)..... 405

IMPACT ATTENUATORS, TEMPORARY (BDE)..... 405

INLET FILTERS (BDE) ..... 407

ORGANIC ZINC RICH PAINT SYSTEM..... 409

PARTIAL PAYMENTS (BDE)..... 412

PAVEMENT THICKNESS DETERMINATION FOR PAYMENT (BDE)..... 413

PAYMENTS TO SUBCONTRACTORS (BDE) ..... 420

PERSONAL PROTECTIVE EQUIPMENT (BDE) ..... 421

POLYUREA PAVEMENT MARKING (BDE)..... 421



PORTABLE CHANGEABLE MESSAGE SIGNS (BDE) .....	428
PORTLAND CEMENT (BDE).....	429
PORTLAND CEMENT CONCRETE (BDE) .....	429
PRECAST CONCRETE PRODUCTS (BDE).....	430
PRECAST, PRESTRESSED CONCRETE MEMBERS (BDE).....	430
PREFORMED RECYCLED RUBBER JOINT FILLER (BDE).....	432
RAP FOR USE IN BITUMINOUS CONCRETE MIXTURES (BDE).....	433
REINFORCEMENT BARS (BDE) .....	436
SEEDING AND SODDING (BDE).....	438
SELF-CONSOLIDATING CONCRETE FOR CAST-IN-PLACE CONSTRUCTION (BDE).....	440
SELF-CONSOLIDATING CONCRETE FOR PRECAST PRODUCTS (BDE).....	446
SHOULDER RUMBLE STRIPS (BDE) .....	447
STABILIZED SUBBASE AND BITUMINOUS SHOULDERS SUPERPAVE (BDE).....	449
SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE).....	454
SUBGRADE PREPARATION (BDE) .....	455
SUPERPAVE BITUMINOUS CONCRETE MIXTURES (BDE).....	455
SURFACE TESTING OF PAVEMENTS (BDE) .....	461
SUSPENSION OF SLIPFORMED PARAPETS (BDE).....	468
TEMPORARY CONCRETE BARRIER (BDE) .....	468
TRAFFIC CONTROL DEFICIENCY DEDUCTION (BDE) .....	470
TRUCK BED RELEASE AGENT (BDE) .....	471
VARIABLY SPACED TINIING (BDE).....	471
WEIGHT CONTROL DEFICIENCY DEDUCTION.....	472
WORK ZONE PUBLIC INFORMATION SIGNS (BDE) .....	473
WORK ZONE SPEED LIMIT SIGNS (BDE) .....	474
WORK ZONE TRAFFIC CONTROL DEVICES (BDE) .....	475
PAYROLLS AND PAYROLL RECORDS (BDE).....	476
STEEL COST ADJUSTMENT (BDE).....	477
TEMPORARY MODULE GLARE SCREEN SYSTEM (BDE).....	482
NOISE ABATEMENT WALL (ABSORPTIVE WITH SOIL PROFILES) .....	483
INDOT – SOUND BARRIER SYSTEM, TYPE 2.....	497
PILASTER SUPPORT MODIFICATION .....	505
INTERIM 3-LANE CROSSOVER.....	506

Revised 12-09-2005

Calumet Interchange on the south and from the State Line to the Calumet Interchange on the north. The work to be performed under this contract also includes earth excavation, furnished excavation, construction of storm sewers and drainage structures, pavement markings, landscaping, signing, erosion control and all incidental and collateral work necessary to complete the project as shown on the plans and described herein. Roadway Lighting and surveillance is being performed under a separate contract.

## **COMPLETION DATE PLUS GUARANTEED WORKING DAYS**

The Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 PM, November 15, 2006, except as specified herein.”

The Contractor will be allowed to complete all clean-up work, punch list items, and landscaping within 20 guaranteed 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 guaranteed working days allowed for clean-up work and punch list items. Temporary lane closures for this work may be allowed during the allowable hours as provided in the Special Provision “Keeping the Expressway Open to Traffic” at the discretion of the Engineer.

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

## **INDIANA SPECIFICATIONS AND SUPPLEMENTS**

It is the intent of this contract that work in the State of Indiana shall be controlled by the State of Indiana Standard Specifications, Standard Drawings, Recurring Special Provisions and Supplemental Specifications. Transient work including removals and Maintenance of Traffic will be governed by the Illinois Standard Specifications and related documents regardless of the location of the work. In the event of a conflict or redundancy in the specifications for the permanent work in Indiana the Indiana Documents shall control the work.

## **COORDINATION WITH CONCURRENT CONTRACTS**

This contract abuts and /or overlaps prior contracts, which may not be completed at the start date of this Contract. Close coordination is required regarding the sequence and timing for execution of work items that affect the future staging of traffic on the entire project. Some of the critical work items on these prior contracts that may affect the staging of traffic and the completion date of this Contract #62114 are listed after each contract.

1. Contract #62110 - I-80/94 from west of Torrence Ave. to Burnham Ave. Mainline paving and bridge reconstruction during 2005/2006

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- A. The I-80/94 WB lanes need to be completed between Railroad Ave. and Burnham Ave and I-80/94 WB traffic shifted to the new lanes prior to this contractor shifting the I-80/94 EB traffic into the I-80/94 WB lanes and starting Stage 1 work west of state line.
2. Contract #62113 - I-80/94 from Burnham Ave. to Calumet Ave. (US 41). Mainline paving and bridge reconstruction during 2005/2006
    - A. The I-80/94 WB lanes need to be completed near Burnham Ave and the I-80/94 WB traffic needs to be shifted to the new lanes prior to this contractor shifting the I-80/94 EB traffic into the I-80/94 WB lanes and starting Stage 1 work west of the state line.

## **PROGRESS SCHEDULE**

Description. 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.

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**INCENTIVE PAYMENT PLAN**

The Contractor shall be entitled to an incentive payment for completing all contract items and safely opening all roadways, in accordance with the requirements of the special provision "Completion Date Plus Guaranteed Working Days".

The incentive payment shall be paid at the rate of \$21,000 per calendar day for completion of work, as specified above, each day prior to the completion date, as indicated in TABLE A. The maximum payment under this incentive plan will be limited to 30 calendar days.

TABLE A

<u>Date Completed</u>	<u>Incentive Payment</u>	<u>Cooperative Payment</u>	<u>Date Completed</u>	<u>Disincentive Deduction</u>
November 15, 2006	*	*	November 15, 2006	*
November 14, 2006	\$21,000	\$21,000	November 16, 2006	\$21,000
November 13, 2006	\$42,000	\$42,000	November 17, 2006	\$42,000
November 12, 2006	\$63,000	\$63,000	November 18, 2006	\$63,000
November 11, 2006	\$84,000	\$84,000	November 19, 2006	\$84,000
November 10, 2006	\$105,000	\$105,000	November 20, 2006	\$105,000
November 9, 2006	\$126,000	\$126,000	November 21, 2006	\$126,000
November 8, 2006	\$147,000	\$147,000	November 22, 2006	\$147,000
November 7, 2006	\$168,000	\$168,000	November 23, 2006	\$168,000
November 6, 2006	\$189,000	\$189,000	November 24, 2006	\$189,000
November 5, 2006	\$210,000	\$210,000	November 25, 2006	\$210,000
November 4, 2006	\$231,000	\$231,000	November 26, 2006	\$231,000
November 3, 2006	\$252,000	\$252,000	November 27, 2006	\$252,000
November 2, 2006	\$273,000	\$273,000	November 28, 2006	\$273,000
November 1, 2006	\$294,000	\$294,000	November 29, 2006	\$294,000
October 31, 2006	\$315,000	\$315,000	November 30, 2006	\$315,000
October 30, 2006	\$336,000	\$336,000		**
October 29, 2006	\$357,000	\$357,000		
October 28, 2006	\$378,000	\$378,000		
October 27, 2006	\$399,000	\$399,000		
October 26, 2006	\$420,000	\$420,000		
October 25, 2006	\$441,000	\$441,000		
October 24, 2006	\$462,000	\$462,000		
October 23, 2006	\$483,000	\$483,000		
October 22, 2006	\$504,000	\$504,000		
October 21, 2006	\$525,000	\$525,000		
October 20, 2006	\$546,000	\$546,000		
October 19, 2006	\$567,000	\$567,000		
October 18, 2006	\$588,000	\$588,000		
October 17, 2006	\$609,000	\$609,000		
October 16, 2006	\$630,000	\$630,000		

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\* The completion date specified in the contract.

\*\*The disincentive deduction shall be charged until work is completed.

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

Should the Contractor be delayed in the commencement, prosecution or completion of the work for any reason, there shall be no extension of the incentive payment completion date even though there may be granted an extension of time for completion of the work. No incentive will be paid if the Contractor fails to complete the work before the specified completion date. Failure by the Contractor to complete all work as specified above before November 15, 2006 shall release and discharge the State, the Department and all of its officers, agents and employees from any and all claims and demands for payment of any incentive amount or damages arising from the refusal to pay an incentive amount.

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Revised 12-09-2005

## **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.

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Stage 3– I-80/94 WB

Traffic: Shift I-80/94 WB traffic from the existing WB lanes to the newly constructed EB inside lanes from east of Calumet Ave. (US 41) to west of Burnham Ave. Signing and barricading shall be according to the MOT, Stage 3 Plan sheets. Additional lane closures will be needed on the night of the stage change to revise the pavement markings at each crossover. These closures and the shifting of traffic shall be coordinated with the adjacent contractors. Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.

Work: Reconstruct all westbound lanes and bridges.

Upon completion of all westbound work, the Contractor shall move traffic back to the final conditions, as shown on the plans, in the reverse order of setting up. The proposed westbound left lane remains closed (three lanes open) until the crossovers are removed and the permanent shoulders and concrete barrier are installed. Signing and barricading for this lane closure shall be according to State Standards 701400, 701401, 701411, and 701446. The opening of the I-80 WB lanes shall be coordinated with the three mainline I-80 Contractors.

This suggested sequence of operations and summary for Traffic Staging does not, nor is it intended to, depict all the work that will be required by the Contractor for the maintenance of traffic during this Contract. This summary is given as an aid and guide for the Contractor's use to establish the necessary guidelines to insure a safe and as smooth as possible traffic operation during the duration of the Contract.

**WORK RESTRICTIONS**

The Contractor shall not proceed with any construction operations, which would require permanent (24 hour per day) lane closures, lane shifts and / or shoulder closures on the expressway, arterial routes and local streets, prior to the dates listed in the following table:

Arterial routes and local streets:	March 4, 2006
I-80 EB work, east of Wentworth Ave:	March 4, 2006
I-80/94 EB work, west of Wentworth Ave.:	April 1, 2006

The Engineer's written approval shall be obtained by the Contractor before proceeding with any work that interferes with traffic prior to the above dates. Off-road work may proceed prior to the above date if approved by the Engineer.

The Contractor, the Erosion and Sediment Control Manager, and all sub-contractors are required to attend an Erosion and Sediment Control/Environmental Training meeting. The Department will present this meeting at a location to be determined by the Department. No work shall be performed on the contract before this meeting has taken place and all erosion control and environmental issues have been completed to the satisfaction of the Engineer.

**CIVIL**

**APPROACH SLAB REMOVAL**

**Description.** This item shall consist of full depth approach slab removal and disposal at locations designated on the plans and in accordance with the applicable portions of Sections 440 and 501 of the Standard Specification.

Revised 12/09/2005

The Contractor will obtain the anchor bolt assemblies from the Department as provided under a concurrent contract. The Contractor is required to coordinate the proper installation and location of the anchor bolts in the concrete median wall light pole foundation with the contractor that is to install the light poles.

**Method of Measurement.** The orientation and installation of the LIGHT POLE ANCHOR ROD ASSEMBLY, INSTALL ONLY will not be measured for payment.

**Basis of Payment.** No payment will be made for LIGHT POLE ANCHOR ROD ASSEMBLY, INSTALL ONLY. This work shall be considered as part of cost CONCRETE FOUNDATION WITH GROUNDING, 750mm DIAMETER X 1500MM (INDIANA) which will include all labor and coordination to properly install the work.

Revised 12/08/2005



FAI Route 80/94  
EB & WB Lanes (Mainline) East of Burnham to US 41  
IL Section 2626.2-4-2 – IN Des. No. 0100987  
Cook County, IL; Lake County, IN  
Contract 62114

Deleted 12/08/2005

FAI Route 80/94  
EB & WB Lanes (Mainline) East of Burnham to US 41  
IL Section 2626.2-4-2 – IN Des. No. 0100987  
Cook County, IL; Lake County, IN  
Contract 62114

Deleted 12/08/2005

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Contract 62114

Deleted 12/08/2005

## **NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY**

**Description.** This item shall consist of fabricating, furnishing and installing noise abatement wall anchor rod assemblies for retaining wall or other roadway structure in accordance with applicable portions of Section 505 of the Standard Specifications as shown on the plans or as directed by the Engineer.

**General.** The Contractor shall furnish and install anchor rod assemblies for noise abatement walls according to Article 1006.09 of the standard specifications and as modified elsewhere in these Special Provisions.

**Materials.** Anchor rods shall be in accordance with AASHTO specifications as shown in the plans.

**Method of Measurement.** NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY shall be counted, per each assembly complete.

**Basis of Payment.** This item shall be paid at the contract unit price each for NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY, which shall be payment in full for the furnishing, installing, materials, identification and delivery to the jobsite.

Revised 12/08/2005

**Basis of Payment.** This work will be paid at the contract price each for REMOVAL OF PUMPING STATION as specified, which shall be payment in full for all material, labor, equipment, tools and all incidentals necessary for the completion of this work as described herein, performed to the satisfaction of the Engineer.

## **REMOVE AND PLUG ABANDONED WATER MAIN**

**Description.** This work shall consist of the removal and disposal of the existing water main at the locations as shown on the plans. The water main shall be disposed of in accordance with 202.03. Portions of the water main to remain in place shall be plugged or capped with the installation of a mechanical joint or push on restrained joint.

Trenches resulting from the removal of the water main shall be backfilled according to the applicable requirements of Article 550.07.

**Method of Measurement.** Storm sewer removal of the various diameters will be measured for payment in meters (feet), measured as removed.

Trench backfill will be measured for payment as specified in Article 208.03.

**Basis of Payment.** This work will be paid for at the contract unit price per meter (foot) for REMOVE AND PLUG ABANDONED WATER MAIN, which work shall also include any required cutting of the existing main including for the various stages of construction.

Trench Backfill will be paid for as specified in Article 208.04.

## **SEWER OUTFALL SEPARATOR SYSTEM**

**Description.** This work shall consist of furnishing and installing a storm water screening unit (SWSU) at the sewer out fall location as shown on the plans and in accordance with the applicable portions of Section 602 of the Standard Specifications. The storm water screening unit shall be a unit manufactured by CDS Technologies, Inc or an approved equivalent. The Contractor, and manufacturer shall furnish all labor, materials, equipment and items required to install the SEWER OUTFALL SEPARATOR SYSTEM and all necessary appurtenances including the weir, in accordance with the plans, specifications, its respective manufacturer's specifications and as approved by the Engineer. The units shall be as described below meeting the specifications as stated herein. Removal of portions of the existing concrete pump station shall consist of the removal and satisfactory disposal in accordance with the applicable portion of Section 501 of the Standard Specifications.

### **General**

The SWSU shall be non-mechanical and gravity driven, requiring no external power requirements. The SWSU shall be equipped with a stainless steel expanded metal screen having a screen opening of 4700 microns (4.7 mm or 0.185 inches). The separation screen

Revised 12/08/2005



shall be self-cleaning and non-blocking for all flows diverted to it, even when flows within the storm drain pipeline exceed the SWSU's design treatment flow capacity. When storm flows exceed the SWSU's design treatment flow capacity, a portion of this flow will bypass the SWSU system over the diversion weir.

The SWSU shall not raise the Hydraulic Grade Line of the inflow by more than 50 mm (2") and shall treat a minimum of flow as described below.

### **Units Required**

Drainage Structure #, State  
A99, Illinois  
A110, Indiana

### **Storm Water Screening Unit Design**

#### Hydraulic Treatment Capacity and Separation Screen Design:

A98, Illinois: A twin SWSU shall have a minimum treatment flow capacity of 510 l/s (18-cfs). This treatment system capacity shall be achieved without any flow bypassing the overflow weir of the treatment system and will also handle the peak flow of 2560 l/s (90.40 cfs) for the 1980 mm (78") RCP piping system.

A110, Indiana: The single SWSU shall have a minimum treatment flow capacity of 102 l/s (3.61-cfs). This treatment system capacity shall be achieved without any flow bypassing within the structure built in overflow diversion weir of the treatment system and will also handle the peak flow of 616 l/s (21.75 cfs) for the 600 mm (24") RCP piping system.

#### Storm Water Filtration Screening Unit Structure and Design:

The structure shall be designed to withstand H2O traffic and earth loadings to be experienced during the life of the SWSU.

The SWSU shall be furnished with the following sump capacities for each individual unit noted as same capacity for left and right hand orientation:

A98, Illinois: Each of the two SWSU's shall be furnished with a sump that has a minimum volume of 5.69 cubic meters (7.44 cubic yards) for storage of sediments, organic solids, and other settleable trash and debris.

A110, Indiana: The SWSU shall be furnished with a sump that has a minimum volume of 1.60 cubic meters (2.09 cubic yards) for storage of sediments, organic solids, and other settleable trash and debris.

#### Solids Removal Performance Requirements

Revised 12/08/2005

The SWSU shall remove sediment from storm water during frequent wet weather events. The SWSU shall treat sediments, floatable material, gross pollutants, vegetative material without any loss of material at the bypass peak flow rate conditions. The SWSU must be capable of trapping silt and clay size particles in addition to large particles. The SWSU shall capture 100% of the floatables and 100% of all particles equal to or greater than the screen size opening 4.7mm (0.185 inches) for all flow conditions up to the unit's design treatment flow capacity, regardless of the particle's specific gravity. The SWSU shall capture 100% of all neutrally buoyant material equal to or greater than the screen size opening 4.7 mm (0.185 inches) for all flow conditions up to its design treatment flow capacity. There shall be no flow conditions up to the design treatment flow capacity of the SWSU; in which a flow path through the SWSU can be identified, that allows the passage of a particle equal to or larger than the screen for any neutrally buoyant object. The SWSU shall permanently retain all captured material for all flow conditions of the storm drains to include flood conditions. The SWSU shall not allow materials that have been captured within the unit to be flushed through or out of the unit during any flow condition to include flood and/or downstream high water level influences.

### **Materials Design for SWSU Manufacture**

#### **Concrete:**

SWSU shall be manufactured from concrete and have a 28 day compressive strength of not less than 34.500 kPa (5,000 psi), using either Type 1 or Type 3 Portland Cement. Aggregates shall conform to ASTM Designation C33, except the requirement for gradation shall not apply. Reinforcement shall consist of wire conforming to ASTM Designation A185 or A497 of deformed bars Grade 60 steel conforming to ASTM Designation A615.

#### **Hardware/Covers:**

The separation screen shall be fabricated from stainless steel conforming to ASTM Designation A316. Fasteners used to install the screen or support structure shall be stainless steel, 316. PSW series screens may have Ultra high molecular weight (UHMW) or High Density Poly (HDPE) blocks may be fastened to the support structure and embedded into the concrete structure to facilitate screen installation.

The access cover for the unit shall be designed to withstand direct traffic loading (H-20) and shall provide an access cover of the dimensions shown on the drawings. Manholes covers shall include the logo of the manufacture with H-20 loading rates or approved equivalent.

#### **Fiberglass:**

Fiberglass components shall meet the National Bureau of Standards PS-15. Components shall be coated with isophalic polyester gelcoat and hand laid up to 4 layers of 56.7 g (2 oz.) mat and fabric on the mold. Cure 8-16 hours until completely dry before de-molding. The components are to be smoothed; if needed, of any rough edges to provide a clean product.

### **Submittals**

Revised 12/08/2005

### Manufacturers Performance Certificate

The manufacturer of the SWSU shall submit four copies of details and shop drawings of sufficient detail of each unit for the Engineer to confirm that no available flow paths exist that would allow the passage of an object greater than the screen size opening 4.7 mm (0.185 “) used on the SWSU. Additionally, the manufacturer shall submit a “Manufacturers Performance Certificate” certifying that the SWSU shall achieve the specified removal efficiencies listed in these specifications. This Manufacturer’s Performance Certification of removal efficiencies shall clearly and unequivocally state that the listed removal efficiency shall be achieved throughout the entire treatment flow processed by the SWSU with no attenuation of removal efficiency as the flow increase up to the minimum treatment flow capacity specified above. The Contractor shall submit four copies of the operation and maintenance manual and of the maintenance information packet for each unit ordered to the Department.

### Warranty

The manufacturer of the SWSU shall guarantee that the SWSU system is free from defects in materials and workmanship for a period one year following installation. Equipment supplied by the manufacturer shall be installed and used only in the particular application for which it was specifically designed.

**Basis of Payment.** The sewer outfall separator system installed complete in place will be paid for at the contract unit price lump sum for SEWER OUTFALL SEPARATOR SYSTEM or SEWER OUTFALL SEPARATOR SYSTEM (INDIANA), which price shall include all frames, grates, lids, concrete, reinforcement, sand cushion, weir and all excavation, backfilling and adjustments.

The removal of portions of concrete structures conflicting with the installation of the Sewer Outfall Separator System will be removed in the manner specified under Article 501.03 of the Standard Specifications and the disposal of the materials will be paid for at the contract unit price per cubic meter (cubic yard) for CONCRETE REMOVAL.

### **SLIP-ON FLAT BOTTOM CHECK VALVE**

**Description.** This item shall consist of the furnishing of all labor, materials and equipment, transporting, and complete installation of slip-on flat bottom check valve of the size specified at the locations shown on the plans and details, or as directed by the Engineer.

**General Requirements.** The check valve shall operate in such a manner that when line pressure inside the valve exceeds the backpressure outside the valve by a certain amount, the line pressure forces the bills of the valve open, allowing flow to pass. When backpressure exceeds the line pressure by the same amount, the bills of the valve are forced close. The flat bottom allows the valve to be installed where minimal bottom clearance exists.

Revised 12/08/2005

**Method of Measurement.** The barrier support structure for the noise abatement wall will be measured for payment in meters (feet) in place, along the centerline of the barrier face.

Protective coat will be measured for payment according to Article 420.22(b).

**Basis of Payment.** This work will be paid for at the contract unit price per meter for BARRIER SUPPORT STRUCTURE FOR NOISE ABATEMENT WALL measured as provided above. This shall be payment in full for developing the foundation design, preparation of shop drawings, all labor, equipment and material including reinforcement bars and anchor rods required for the design of the concrete barrier drilled shafts and construction of the barrier support structure.

Protective coat will be paid for according to Article 420.23.

## **DRILLED SHAFTS**

Effective: May 1, 2001

Revised: February 7, 2005

Description. This work shall consist of all labor, materials, equipment and services necessary to complete the drilled shaft installation according to the details and dimensions shown on the plans, this specification and as directed by the Engineer.

Submittals. The Contractor shall submit the following:

- (a) Qualifications. At the time of the preconstruction conference, the Contractor shall provide the following documentation:
- (1) A list containing at least 3 projects completed within the 3 years prior to this project's bid date which the Contractor performing this work has installed drilled shafts of similar diameter, length and site conditions to those shown in the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractor's participation on those projects.
  - (2) Name and experience record of the drilled shaft supervisor, responsible for all facets of the shaft installation, and the drill operator(s) who will be assigned to this project. The supervisor and driller shall each have a minimum of 3 years experience in the construction of drilled shafts.
  - (3) A signed statement that the drilled shaft supervisor has inspected both the project site and all the subsurface information available. In addition to the subsurface information in the contract documents, rock core specimens and/or geotechnical reports, when available, should be requested for evaluation.
- (b) Installation Procedure. A submittal detailing the installation procedure will be required for all drilled shafts, unless directed otherwise by the Engineer. The Contractor, meeting the above qualifications, shall prepare the installation procedure, addressing all items shown below and will be responsible for directing all aspects of the shaft construction. The installation procedure shall be submitted to the Engineer at least 45 days prior to drilled shaft construction and shall address each of the following items:

Revised 12/08/2005

- (1) List of proposed equipment to be used including cranes, drill rigs, augers, belling tools, casing, core barrels, bailing buckets, final cleaning equipment, slurry equipment, tremies or concrete pumps, etc.
- (2) Details of the overall construction operation sequence, equipment access, and the sequence of individual shaft construction within each substructure bent or footing group. The submittal shall address the Contractor's proposed time delay and/or the minimum concrete strength necessary before initiating a shaft excavation adjacent to a recently installed drilled shaft.
- (3) A step by step description of how the Contractor anticipates the shaft excavation to be advanced based on their evaluation of the subsurface data and conditions expected to be encountered. This sequence shall note the method of casing advancement, anticipated casing lengths, tip elevations and diameters, the excavation tools used and drilled diameters created. The Contractor shall indicate whether wet or dry drilling conditions are expected or if the water table will be sealed from the excavation.
- (4) When slurry is proposed, details covering the measurement and control of the hardness of the mixing water, agitation, circulation, de-sanding, sampling, testing and chemical properties of the slurry shall be submitted.
- (5) Method(s) and sequence proposed for the shaft cleaning operation as well as recommendations on how the shaft excavation will be inspected under the installation conditions anticipated.
- (6) Details of reinforcement placement including cage centralization devices to be used and method to maintain proper elevation and plan location of cage within the shaft excavation during concrete placement. The method(s) of adjusting the cage length if rock is encountered at an elevation other than as estimated in the plans.
- (7) Details of concrete placement including proposed operational procedures for free fall, tremie or pumping methods. The sequence and method of casing removal shall also be stated along with the top of pour elevation, and method of forming through water above streambed.
- (8) The proposed concrete mix design(s).

The Engineer will evaluate the drilled shaft installation plan and notify the Contractor of acceptance, or if additional information is required, or if there are concerns with the installation's effect on the existing or proposed structure(s).

Materials. The materials used for the construction of the drilled shaft shall satisfy the following requirements:

- (a) The drilled shaft portland cement concrete shall be according to Section 1020, except the mix design shall be as follows:

Revised 12/08/2005

- (1) A Type I or II cement shall be used at 395 kg/cu m (665 lb/cu yd). When specified in the plans that soil and ground water sulfate contaminates exceed 500 parts per million, a Type V cement shall be required.
- (2) Class C or F fly ash may replace Type I or II cement. The cement replacement shall not exceed 15 percent by mass (weight) at a minimum replacement ratio of 1.5:1. The fly ash shall not be used in combination with ground granulated blast-furnace slag.
- (3) Grade 100 or 120 ground granulated blast-furnace slag may replace Type I or II cement. The cement replacement shall not exceed 25 percent by mass (weight) at a minimum replacement ratio of 1:1. The ground granulated blast-furnace slag shall not be used in combination with fly ash.
- (4) The maximum water/cement ratio shall be 0.44.
- (5) The mortar factor shall be a value which produces a coarse aggregate content comprising between 55 and 65 percent of total aggregate by mass (weight).
- (6) The slump at point of placement shall be 175 mm  $\pm$  25 mm (7  $\pm$  1 in.). If concrete is placed to displace drilling fluid, or against temporary casing, the slump shall be 200 mm  $\pm$  25 mm (8  $\pm$  1 in.) at point of placement. The concrete mix shall be designed to remain fluid throughout the anticipated duration of the pour plus 1 hour.
- (7) An air entraining admixture shall be required and the air content range shall be 4.0 to 7.0 percent.
- (8) The minimum compressive strength shall be 27,500 kPa (4000 psi) at 14 days. The minimum flexural strength shall be 4,650 kPa (675 psi) at 14 days.
- (9) A retarding admixture shall be required.
- (10) A water-reducing or high range water-reducing admixture shall be required.
- (11) An accelerating admixture may be used with the permission of the Engineer in extraordinary situations.
- (12) The coarse aggregate shall be a CA 13, CA 14, CA 16 or a blend of these gradations. The fine aggregate shall consist of sand only according to Article 1003.01(a).

At the Engineers discretion, and at no additional cost to the Department, the Contractor may be required to conduct a minimum 0.76 cu m (1 cu yd) trial batch to verify the mix design.

- (b) The sand-cement grout mix used to fill any visible gaps, which may exist between the permanent casing and either the drilled excavation or temporary casing, shall be as follows:

Revised 12/08/2005

- (1) A Type I or II cement shall be used at 110 kg/cu m (185 lb/cu yd). When specified in the plans that soil and ground water sulfate contaminates exceed 500 parts per million, a Type V cement shall be required. The cement shall be according to Section 1001.
  - (2) The fine aggregate shall be according to Articles 1003.01 and 1003.02.
  - (3) The water shall be according to Section 1002.
  - (4) The maximum water shall be sufficient to provide a flowable mixture with a typical slump of 254 mm (10 in.).
- (c) Reinforcement shall be according to Section 508 of the Standard Specifications.
- (d) Drilling slurry, when required, shall consist of a polymer or mineral base material. Mineral slurry shall have both a mineral grain size that will remain in suspension with sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. The percentage and specific gravity of the material used to make the suspension shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement. For polymer slurry, the calcium hardness of the mixing water shall not exceed 100 mg/L.
- (e) Permanent casing, when required, shall be fabricated from steel satisfying ASTM A252 Grade 2, produced by electric seam, butt, or spiral welding to satisfy the outside diameter(s) and lengths shown in the contract plans or as shown in the Contractor's installation procedure. The minimum wall thickness shall be as required to resist the anticipated installation and dewatering stresses, as determined by the Contractor, but in no case less than 6 mm (1/4 in.).

Equipment. The drilling equipment shall have adequate capacity, including power, torque and down thrust, to create a shaft excavation of the maximum diameter specified to a depth of 20 percent beyond the depths shown on the plans. Standby equipment of sufficient capacity shall be available so that there will be no delay in placing of the concrete once the operation has started. Concrete equipment shall be according to Article 1020.03 of the Standard Specifications.

Construction Requirements. Excavation for drilled shaft(s) shall not proceed until written authorization is received from the Engineer. The Contractor shall furnish an installation log for each shaft installed. Excavation by blasting shall not be permitted unless authorized in writing by the Engineer.

No shaft excavation shall be made within 4 shaft diameters center to center of a shaft with concrete that has a compressive strength less than 10,342 kPa (1500 psi) unless otherwise approved in the Contractor's installation procedure. The site-specific soil strengths and installation methods selected will determine the actual required minimum spacing, if any, to address vibration and blow out concerns.

Revised 12/08/2005

Materials removed or generated from the shaft excavations shall be disposed of by the Contractor according to Article 202.03 of the Standard Specifications.

The Contractor's methods and equipment shall be suitable for the anticipated conditions and the following requirements noted below:

(a) Construction Tolerances. The following construction tolerances shall apply to all drilled shafts unless otherwise stated in the contract documents:

- (1) The center of the drilled shaft shall be within 75 mm (3 in.) of the plan station and offset at the top of the shaft.
- (2) The center of the reinforcement cage shall be within 38 mm (1 1/2 in.) of plan station and offset at the top of the shaft.
- (3) The out of vertical plumbness of the shaft shall not exceed 1.5 percent.
- (4) The out of vertical plumbness of the shaft reinforcement cage shall not exceed 0.83 percent.
- (5) The top of the reinforcing steel cage shall be no more than 25 mm (1 in.) above and no more than 75 mm (3 in.) below the plan elevation.
- (6) The top of the shaft shall be no more than 25 mm (1 in.) above and no more than 75 mm (3 in.) below the plan elevation.
- (7) Excavation equipment and methods used to complete the shaft excavation shall have a nearly planar bottom. The cutting edges of excavation equipment used to create the bottom of shafts in rock shall be normal to the vertical axis of the shaft within a tolerance of 6.25 percent.

(b) Construction Methods. The construction of drilled shafts may involve the use of one or more of the following methods to support the excavation during the various phases of shaft drilling, cleaning and concrete placement dependent on the site conditions encountered. The following are general descriptions indicating the conditions when these methods may be used:

- (1) Dry Method. The dry method consists of drilling the shaft excavation, removing accumulated water and loose material from the excavation, placing the reinforcing cage, and concrete in a predominately dry excavation. This method shall be used only at sites where the groundwater and soil conditions are suitable to permit the drilling and dewatering of the excavation without causing excessive water infiltration, boiling, squeezing, or caving of the shaft side walls. This method allows the concrete placement by tremie or concrete pumps, or if the excavation can be dewatered, the concrete can be placed by free fall within the limits specified for concrete placement.

Revised 12/08/2005



- (2) Wet Method. The wet construction method may be used at sites where dewatering the excavation would cause collapse of the shaft sidewalls or when the volume and head of water flowing into the shaft is likely to contaminate the concrete during placement resulting in a shaft defect. This method uses water or slurry to maintain stability of the shaft perimeter while advancing the excavation. After the excavation is completed, the water level in the shaft is allowed to seek equilibrium, the base is cleaned, the reinforcing cage is set and the concrete is discharged at the base using a tremie pipe or concrete pump, displacing the drilling fluid upwards.
- (3) Temporary Casing Method. Temporary casing shall be used when either the wet or dry methods provide inadequate support to prevent sidewall caving or ensure excessive deformation of the hole. Temporary casing may also be used to reduce the flow of water into the excavation to allow dewatering, adequate cleaning and inspection, or to insure proper concrete placement. Temporary casing left in place may constitute a shaft defect; no temporary casing will be allowed to remain permanently in place without the specific approval of the Engineer.

Before the temporary casing is broken loose, the level of concrete in the casing shall be a minimum of 1.5 m (5 ft) above the bottom of the casing. After being broken loose and as the casing is withdrawn, additional concrete shall be added to maintain sufficient head so that water and soil trapped behind the casing can be displaced upward and discharged at the ground surface without contaminating the concrete in the shaft or at the finished construction joint.

- (4) Permanent Casing Method. When called for on the plans or proposed as part of the Contractor's accepted installation procedure, the Contractor shall install a permanent casing of the diameter, length, thickness and strength specified. When permanent casings are used, the lateral loading design requires intimate contact between the casing and the surrounding soils. If the installation procedure used to set the permanent casing results in annular voids between the permanent casing and the drilled excavation, the voids shall be filled with a sand-cement grout to maintain the lateral load capacity of the surrounding soil, as assumed in the design. No permanent casing will be allowed to remain in place beyond the limits shown on the plans without the specific approval of the Engineer.
- (5) Removable Forms. When the shaft extends above streambed through a body of water and permanent casing is not shown, the portion above the streambed shall be formed with removable casings, column forms, or other forming systems as approved by the Engineer. The forming system shall not scar or spall the finished concrete or leave in place any forms or casing within the removable form limits as shown on the plans unless approved as part of the installation procedure. The forming system shall not be removed until the concrete has attained a minimum compressive strength of 17,237 kPa (2500 psi) and cured for a minimum of 72 hours. For shafts extending through water, the concrete shall be protected from water action after placement for a minimum of 7 days.

Revised 12/08/2005

- (c) Slurry. If the Contractor proposes to use a method of slurry construction, it shall be submitted with the installation plan. During construction, the level of the slurry shall be maintained at a height sufficient to prevent caving of the hole. In the event of a sudden or significant loss of slurry to the hole, the construction of that foundation shall be stopped and the shaft excavation backfilled or supported by temporary casing, until a method to stop slurry loss, or an alternate construction procedure has been approved by the Engineer.
- (d) Obstructions. Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations etc.) that cannot be removed with normal earth drilling procedures but requires special augers, tooling, core barrels or rock augers to remove the obstruction. When obstructions are encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to core, break up, push aside, or remove the obstruction. Lost tools or equipment in the excavation as a result of the Contractor's operation shall not be defined as obstructions and shall be removed at the Contractor's expense.
- (e) Top of Rock. The actual top of rock will be defined as the point when material is encountered which can not be drilled with a conventional earth auger and/or underreaming tool, and requires the use of special rock augers, core barrels, air tools, blasting or other methods of hand excavation.
- (f) Sidewall overreaming. Sidewall overreaming shall be required when the sidewall of the hole is determined by the Engineer to have either softened due to the excavation methods, swelled due to delay in concreting, or degraded because of slurry cake buildup. It may also be required to correct a shaft excavation which has been drilled out of tolerance. Overreaming thickness shall be a minimum of 13 mm (1/2 in.). Overreaming may be accomplished with a grooving tool, overreaming bucket or other approved equipment. Any extra concrete needed as a result of the overreaming shall be furnished and installed at the Contractor's expense.
- (g) Excavation Inspection. The Contractor shall be responsible for verification of the dimensions and alignment of each shaft excavation as directed by the Engineer. Unless otherwise specified in the contract documents, the Contractor's cleaning operation shall be adjusted so that a minimum of 50 percent of the base of each shaft shall have less than 13 mm (1/2 in.) of sediment or debris at the time of placement of the concrete. The maximum depth of sediment or any debris at any place on the base of the shaft shall not exceed 38 mm (1 1/2 in.).

Shaft cleanliness will be determined by the Contractor using the methods as submitted in their installation procedure. Visual inspection coupled with the use of a weighted tape may also be used to confirm adequate cleanliness.

- (h) Design Modifications. If the top of rock elevation differs from that shown on the plans by more than 10 percent of the length of the shaft above the rock, the Engineer shall be contacted to determine if any drilled shaft design changes may be required. In addition, if the type of soil or rock encountered is not similar to that shown in the subsurface exploration data, the Contractor may be required to extend the drilled shaft length(s) beyond those

Revised 12/08/2005

specified in the plans. In either case, the Engineer will determine if revisions are necessary and the extent of the modifications required.

- (i) Reinforcement Cage Construction and Placement. The shaft excavation shall be cleaned, inspected and accepted prior to placing the reinforcement cage. The reinforcement cage shall be completely assembled prior to drilling and be ready for adjustment in length as required by the conditions encountered. The cage shall be lifted using multiple point sling straps or other approved methods to avoid cage distortion or stress. Additional cross frame stiffeners may also be required for lifting or to keep the cage in proper position during lifting and concrete placement.

The Contractor shall attach suitable centralizes to keep the cage away from the sides of the shaft excavation and ensure that at no point will the finished shaft have less than the minimum concrete cover(s) shown on the plans. The cage centralizes or other approved non-corrosive spacing devices shall be used at sufficient intervals (near the bottom and at intervals not exceeding 3 m (10 ft) throughout the length of the shaft) to ensure proper cage alignment and clearance for the entire shaft.

If the top of rock encountered is deeper than estimated in the plans, and/or if the conditions differ such that the length of the shaft is increased, additional longitudinal bars shall be either mechanically spliced or lap spliced to the lower end of the cage and confined with either hoop ties or spirals to provide the additional length. If the additional shaft length is less than the lap splice shown, subject to the approval of the Engineer, a mechanical splice may be used in lieu of the lap splice in order to take advantage of or utilize that lap length in the extension of the shaft reinforcement. The Contractor shall have additional reinforcement available or fabricate the cages with additional length as necessary to make the required adjustments in a timely manner as dictated by the encountered conditions. The additional reinforcement may be non-epoxy coated at the option of the Contractor. Any reinforcement fabricated in advance but not incorporated into the installed shaft(s) shall not be paid for but shall remain the property of the Contractor.

- (j) Concrete placement. Concrete work shall be performed according to the applicable portions of Section 503 of the Standard Specifications and as specified herein.

Concrete shall be placed as soon as possible after reinforcing steel is set and secured in proper position. The pour shall be made in a continuous manner from the bottom to the top elevation of the shaft as shown on the contract plan or as approved in the Contractor's installation procedure. Concrete placement shall continue after the shaft excavation is full and until good quality, uncontaminated concrete is evident at the top of shaft. The elapsed time from the beginning of concrete placement in the shaft to the completion of the placement shall not exceed 2 hours. The Contractor may request a longer placement time provided the concrete mix maintains the minimum slump requirements over the longer placement time as demonstrated by trial mix and slump loss tests. Concrete shall be placed either by free fall, or through a tremie or concrete pump subject to the following conditions:

- (1) The free fall placement shall only be permitted in shafts that can be dewatered to ensure less than 75 mm (3 in.) of standing water exist at the time of placement

Revised 12/08/2005

without causing side wall instability. The maximum height of free fall placement shall not exceed 18.3 m (60 ft). Concrete placed by free fall shall fall directly to the base without contacting either the rebar cage or hole sidewall. Drop chutes may be used to direct concrete to the base during free fall placement.

Drop chutes used to direct placement of free fall concrete shall consist of a smooth tube of either one continuous section or multiple pieces that can be added and removed. Concrete may be placed through either a hopper at the top of the tube or side openings as the drop chute is retrieved during concrete placement. The drop chute shall be supported so that the free fall does not exceed 18.3 m (60 ft) at all times and to ensure the concrete does not strike the rebar cage. If placement cannot be satisfactorily accomplished by free fall in the opinion of the Engineer, the Contractor shall use either tremie or pumping to accomplish the pour.

- (2) Tremies shall consist of a tube of sufficient length, weight, and diameter to discharge the initial concrete at the base of the shaft. The tremie shall be according to Article 503.08 of the Standard Specifications and contain no aluminum parts that may have contact with the concrete. The inside and outside surfaces of the tremie shall be clean and smooth to permit both flow of concrete and unimpeded withdrawal during concrete placement.
- (3) Concrete pumps: Pumps and lines may be used for concrete placement and shall have a minimum 100 mm (4 in.) diameter.

The tremie or pump lines used for wet method concrete placement shall be watertight and not begin discharge until placed within 250 mm (10 in.) of the shaft base. Valves, bottom plates or plugs may be used only when they can be removed from the excavation or be of a material approved by the Engineer that will not cause a defect in the shaft if not removed. The discharge end shall be immersed at least 1.5 m (5 ft) in concrete at all times after starting the pour. Sufficient concrete head shall be maintained in the tremie at all times to prevent water or slurry intrusion in the shaft concrete.

If at any time during the concrete pour in the "wet" hole, the tremie or pump line orifice is removed from the fluid concrete and discharges through drilling fluid or water above the rising concrete level, the shaft may be considered defective.

Vibration of concrete is not recommended when placed while displacing drilling fluid or water. In dry excavations, vibration is allowed only in the top 3 m (10 ft) of the shaft.

Conformity with Contract. In addition to Article 105.03, the Contractor shall be responsible for correcting all out of tolerance excavations and completed shafts as well as repairing any defects in the shaft to the satisfaction of the Engineer at no additional cost to the Department. No time extensions will be allowed to repair or replace unacceptable work. When a shaft excavation is completed with unacceptable tolerances, the Contractor will be required to submit for approval his/her proposed corrective measures. Any proposed design modification with computations submitted by the Contractor shall be signed and sealed by an Illinois licensed Structural Engineer.

Revised 12/08/2005

Method of Measurement. The items Drilled Shaft in Soil and Drilled Shaft in Rock, will be measured for payment and the length computed in meters (feet) for all drilled shafts installed according to the plans, specifications, and accepted by the Engineer. The length shall be measured at each shaft. The length in soil will be defined as the difference in elevation between the top of the drilled shaft shown on the plans, or as installed as part of the Contractor's installation procedure, and the bottom of the shaft or the top of rock (when present) whichever is higher. The length in rock will be defined as the difference in elevation between the measured top of rock and the bottom of the shaft. When permanent casing is installed as specified on the plans, it will be measured in meters (feet) and shall be the length of casing installed.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for DRILLED SHAFT IN SOIL, and/or DRILLED SHAFT IN ROCK, of the diameter(s) specified. The price shall be payment in full for all labor, materials, equipment, and services necessary to complete the work as specified. When the shaft is detailed with a belled base, furnishing and installing it shall not be paid for separately but shall be included in the cost of the appropriate drilled shaft item(s).

When permanent casing is furnished and installed as specified, it will be paid for at the contract unit price per meter (foot) for PERMANENT CASING. Permanent casing installed at the Contractor's option shall not be included in this item, but shall be considered as included in the appropriate drilled shaft item(s) above.

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

No additional compensation, other than noted above, will be allowed for removing and disposing of excavated materials, for furnishing and placing concrete, bracing, lining, temporary casings placed and removed or left in place, for grouting of any voids, or for any excavation made or concrete placed outside of the plan diameter(s) of the shaft(s) specified.

Reinforcement bars, spirals and ties shall be as specified and paid for under the items, REINFORCEMENT BARS or REINFORCEMENT BARS EPOXY COATED, according to Section 508 of the Standard Specifications.

## **ERECTING STRUCTURAL STEEL**

**Description.** This work shall consist of all labor, materials, tools and equipment necessary for the erection of structural steel, which will be furnished by others under a separate contract, as per the details included in the plans, according to the applicable portions of Section 505 and 506

Revised 12/08/2005

Section 603 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

**Method of Measurement.** The CHAIN LINK FENCE GATE, 1220 MM X 3.7 M (INDIANA) will be measured for payment as each for complete units of the size and type specified.

**Basis of Payment.** This work will be paid for at the contract unit price per each for CHAIN LINK FENCE GATE, 1220 MM X 3.7 M (INDIANA), which price shall include the cost and installation of the fence, post, concrete for posts and any miscellaneous hardware necessary to complete this work as specified herein.

#### **INDOT - FENCE, CHAIN LINK, 1220 MM**

**Description.** This work shall consist of the construction of a chain link fence at the locations and per details shown on the plans, in accordance with the applicable portions of Section 603 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

**Method of Measurement.** The CHAIN LINK FENCE, 1220 MM (INDIANA) will be measured by the meter (linear foot) for the type specified. Measurement will be made along the top of the fence from outside to outside of end posts for each continuous run of fence.

**Basis of Payment.** This work will be paid for at the contract unit price per meter (linear foot) for CHAIN LINK FENCE, 1220 MM (INDIANA), which price shall include the cost and installation of the fence, corner, end, line, pull posts, concrete for posts, braces, anchors and any miscellaneous hardware necessary to complete this work as specified herein.

#### **INDOT - FIELD WELDED STUD SHEAR CONNECTOR**

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 711 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

**Method of Measurement.** FIELD WELDED STUD SHEAR CONNECTOR (INDIANA) will be measured for payment on per each basis.

**Basis of Payment.** Payment for FIELD WELDED STUD SHEAR CONNECTOR (INDIANA) will be at the contract unit price per each, which price shall include all materials, labor and equipment to complete the work.

#### **INDOT - GRATES, BASINS, AND FITTINGS, CAST IRON**

**Description.** This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Sections 702 and 704 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Revised 12/08/2005

**Method of Measurement.** Snowplowable Raised Pavement Markers shall be measured for per each unit installed in place.

**Basis of Payment.** This work will be paid for at the contract unit price per each for SNOWPLOWABLE RAISED PAVEMENT MARKER (INDIANA), in accordance with Section 808 of the ISS which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

Revised 12/08/2005

**INDOT - SOUND BARRIER SYSTEMS - SECTION 620**

R 5-10-05  
620-R-483

**SOUND BARRIER SYSTEMS**

The Standard Specifications are revised as follows:

Revised 12/08/2005



The Contractor shall submit to the Engineer proposed construction procedures to achieve the rustication finish as detailed in the plans. The Contractor's method of obtaining the surface texture specified on the plans shall be subject to approval by the Engineer.

In order to establish procedures to achieve a rustication finish satisfactory to the Engineer, the Contractor shall submit to the Engineer for approval a 610 X 610 (2 foot X 2 foot) sample panel prior to casting the structure to receive the rustication finish. The sample panel shall be cast using the concrete mix and aggregate proposed for use in the work. Concreting and formwork operations, in preparation of the sample panel, shall follow actual work procedures in so far as practical. In any event, the approved panel shall be used as the control for the appearance of the finished work. Any work found to be unsatisfactory to the Engineer shall be corrected as required by the Engineer, at no additional cost to the State.

The Contractor shall notify the Engineer at least 40 hours prior to placing concrete. Concrete shall not be placed until the Engineer has inspected the formwork and the placement of reinforcing bars for compliance with the plans.

Method of Measurement. The limits used to measure the area of Rustication Finish will be those dimensions indicated on the plans or as directed by the Engineer and the area computed in square meters (square feet).

Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for RUSTICATION FINISH, which price includes all work as specified herein.

## **PIPE UNDERDRAINS FOR STRUCTURES**

Effective: May 17, 2000

Revised: September 28, 2005

Description. This work shall consist of furnishing and installing a pipe underdrain system as shown on the plans, as specified herein, and as directed by the Engineer.

Materials. Materials shall meet the requirements as set forth below:

The perforated pipe drain shall be according to Article 601.02 of the Standard Specifications. Outlet pipes or pipes connecting to a separate storm sewer system shall not be perforated.

The drainage aggregate shall be a combination of one or more of the following gradations, FA1, FA2, CA5, CA7, CA8, CA11, or CA13 thru 15, according to Sections 1003 and 1004 of the Standard Specifications.

The fabric surrounding the drainage aggregate shall be Geotechnical Fabric for French Drains according to Article 1080.05 of the Standard Specifications.

Construction Requirements. All work shall be according to the applicable requirements of Section 601 of the Standard Specifications except as modified below.

Revised 12/08/2005

The pipe underdrains shall consist of a perforated pipe drain situated at the bottom of an area of drainage aggregate wrapped completely in geotechnical fabric and shall be installed to the lines and gradients as shown on the plans.

Method of Measurement. Pipe underdrains for structures shall be measured for payment in meters (feet), in place. Measurement shall be along the centerline of the pipe underdrains. All connectors, outlet pipes, elbows, and all other miscellaneous items shall be included in the measurement.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for PIPE UNDERDRAINS FOR STRUCTURES of the diameter specified, installed and measured as specified herein. Furnishing and installation of the drainage aggregate, geotechnical fabric, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

### **BITUMINOUS BASE COURSE / WIDENING SUPERPAVE (BDE)**

Effective: April 1, 2002

Revised: August 1, 2005

Description. This work shall consist of constructing bituminous base course Superpave and bituminous concrete base course widening Superpave according to Sections 355 and 356 respectively, of the Standard Specifications and the special provision, "Quality Control/Quality Assurance of Bituminous Concrete Mixtures" except as modified herein.

Revise Article 355.02(d) of the Standard Specifications to read:

"(d) RAP Material (Note 3)"

Revise Note 2 of Article 355.02 of the Standard Specifications to read:

"Note 2. Unless otherwise specified on the plans, the bituminous material shall be performance graded (PG) asphalt cement (AC) , PG58-22. When more than 15 percent RAP is used, a softer PG binder may be required as determined by the Engineer. When the pavement has a structural number ( $D_i$ ) of 3.00 or less, the low temperature grade of the asphalt cement shall be lowered one grade (i.e. PG58-28 replaces PG58-22)."

Add the following to the end Article 355.02 of the Standard Specifications:

"Note 3. RAP shall meet the requirements of the special provision "RAP for Use in Bituminous Concrete Mixtures"."

Revise Article 355.05 of the Standard Specifications to read:

**355.05 Mixture Design.** The Contractor shall submit mix designs for approval, for each required mixture. Mix designs shall be developed by Level III personnel who have completed the course, "Superpave Mix Design Upgrade". The mixtures shall be designed according to the respective Illinois Modified AASHTO references listed below:

Revised 12/08/2005

## TEMPORARY MODULE GLARE SCREEN SYSTEM (BDE)

Effective: January 1, 2000

Description. This work consists of furnishing, installing, and maintaining a temporary modular glare screen system on top of temporary barrier according to the modular glare screen system manufacturer's specifications. The temporary modular glare screen system shall consist of modular base units attached to the top of concrete barrier rail with blades evenly spaced and securely mounted to base units.

### Materials.

(a) Specifications. The modular base units and glare screen blades shall be compatible so the base unit and blades can be securely attached to each other. The base unit and blades shall be supplied from the same manufacturer.

The length of individual modular base units shall be a maximum of 3.05 m (10') or no longer than the nominal 3.05 m (10') length of the individual temporary concrete barrier sections. The width of the modular base units shall be a maximum width of 150 mm (6") or no wider than the top of the temporary concrete barrier rail.

The glare screen blades shall be FHWA highway green in color and made of impact resistant non-metallic high-density plastic material. The blades shall have a height from 600 mm (24") to 750 mm (30") and a width from 150 mm (6") to 225 mm (9"). The same uniform sized blades shall be used throughout the project.

(b) Producers. The following modular glare screen systems may be used:

(1) Carsonite Modular Guidance System

Carsonite International  
1301 Hot Springs Road  
Carson City, NV 89706  
Phone: (800) 327-9647

(2) Safe-Hit Glare System

Safe-Hit Corporation  
1390 W. Winton Avenue  
Building 11  
Hayward, CA 94545  
Phone: (800) 537-8958

(3) FlexStake Glare Screen

FlexStake, Inc.  
2348 Bruner Lane SE  
Ft. Myers, FL 33912  
Phone: (800) 348-9839

Added 12/08/2005

Installation. The contractor shall install the temporary modular glare screen system according to the manufacturer's instructions. The temporary modular glare screen system shall be installed so that it is centered along the longitudinal axis length to the top of the concrete barrier rail and is flush with the rail so that the modular base unit does not extend over the joints between the concrete barrier sections. The glare screen blades shall be installed so the combination of blade width and spacing provide for a minimum 22-degree sight cut-off angle.

The contractor shall, at their own expense, maintain and repair the temporary modular glare screen system throughout the duration of the project.

Method of Measurement. The temporary modular glare screen system will be measured for payment in meters (feet) in place, measured along the centerline of the modular glare screen system.

Basis of Payment. The installation, maintenance, and removal of the temporary modular glare screen system will be paid at the contract unit price per meter (foot) for MODULAR GLARE SCREEN SYSTEM.

#### **NOISE ABATEMENT WALL (ABSORPTIVE WITH SOIL PROFILES)**

This work shall consist of designing, preparation of shop drawings, and the furnishing of materials and equipment necessary to construct noise abatement walls in accordance with these special provisions and at the locations shown on the plans or as directed by the Engineer.

General. The noise abatement wall shall consist of panels spanning between vertical posts supported by concrete foundations (ground mounted), or supported by bridge parapets, retaining walls or traffic barriers (structure mounted) as shown on the plans. The design, fabrication, construction and materials shall comply with these special provisions and the requirements specified by the noise wall supplier selected by the Contractor for use on this project.

The Contractor shall verify the locations for proposed ground mounted wall for conflicts and realign or redesign the wall to avoid any conflicts. The Contractor shall field verify all structure mount locations constructed in prior contracts and adjust the noise abatement wall designs according to the current field conditions. The Contractor shall inform the Engineer in writing of any conflicts before realigning or redesigning the wall.

The wall components shall be fabricated and erected to produce an absorptive noise reduction system satisfying the acoustical requirements stated in these special provisions. Reflective or other abatement systems will not be allowed as equal alternates.

All appurtenances behind, in front of, under, over, mounted upon, or passing through, such as drainage structures, fire hydrant access, highway signage, emergency access and utilities shall be accounted for in design of the wall.

Added 12/08/2005

Submittals. The Contractor shall prepare a wall and foundation design submittal for the Engineer for review and approval. The noise wall shall be designed and constructed to extend to the minimum lines, grades and dimensions of the wall envelope, with no omissions or gaps, as shown on the contract plans and as directed by the Engineer.

Complete design calculations for wall panels, posts, foundations, and all connections and shop drawings shall be submitted to the Department for review and approval no later than 60 days prior to beginning construction of the wall. The time required for the preparation and review of these submittals shall be charged to the allowable contract time. Delays caused by untimely submittals or insufficient data will not be considered justifications for any time extensions. No additional compensation will be made for any additional material, equipment or other items found necessary to comply with the project specifications as a result of the Engineer's review. The Contractor will be required to submit the necessary shop drawings as per Article 105.04 of the Standard Specifications. A Structural Engineer licensed in Illinois shall seal all submittals and include, but not be limited to, the following items:

Submittals shall include all details, dimensions, quantities and cross sections necessary for the construction of the noise abatement wall and will include but not limited to:

(1) A plan view of the wall that indicates the stations and offsets from the centerline to the face of the wall and required to locate the drilled shaft foundations. The proposed foundation diameter(s) and spacing(s) shall be indicated with all changes in the walls horizontal alignment shown. Each panel and post shall be numbered and any changes in type or size shall be noted. The centerline of any utilities passing under the wall and locations of expansion joints, access doors, lighting, signing and drainage structures shall also be shown.

(2) An elevation view of the wall, indicating the elevations of the top of the posts and panels as well as the elevations of the bottom of the panels, tops of the shaft foundations, all steps in wall system and the finished grade line. Each post size and length, panel type and size, and foundation depth shall be designated.

A typical cross section(s) that shows the panel, post, foundation or bridge parapet, and the elevation relationship between existing ground conditions and the finished grade as well as slopes adjacent to the wall.

(3) All general notes required for constructing the wall.

(4) All details for the steps in the bottom of panels shall be shown. The bottom of the panels shall be located at or below the theoretical bottom of panel line shown on the contract plans. The theoretical bottom of panel line is assumed to be 150 mm (6 in.) below the finished grade line at front face of the wall for ground mounted walls and at the top of the structure for structure mounted walls, unless otherwise shown on the contract plans.

(5) Tops of the panels and posts shall extend to or above the theoretical top of wall line shown on the contract plans. All panel tops shall be cast and placed horizontally with any changes in elevation accomplished by stepping adjacent panel sections at posts. Steps shall not exceed 300 mm (1 ft.) in height, except within the last 15 m (50 ft.) where 600 mm (2 ft.) steps will be permitted.

(6) All panel types shall be detailed. The details shall show all dimensions necessary to cast and fabricate each type of panel, the reinforcing steel, and location of post or foundation connection hardware as well as lifting devices embedded in the panels and posts.

Added 12/08/2005

(7) All post types shall be detailed and designed for 3.6 m (12 ft.) spacing unless noted otherwise by the plans, field conditions or manufacturer. Post spacing for barriers on walls shall be limited to a distance that does not over stress the structure or barrier.

Details of wall panels with appurtenances attached to or passing through the wall, as shown on the contract plans, such as utilities, fire or access doors, drainage structures, signs etc. shall be shown. Any modifications to the design or location of these appurtenances to accommodate a particular system shall also be submitted.

(8) All architectural panel treatment, including color, texture and form liner patterns shall be shown. All joints shall be placed horizontal or vertical.

The details for the connection between panels and posts as well as their connection to the foundation and bridge parapet shall be shown. Foundation details including details showing the dimensions, reinforcement and post anchorage system for the drilled shaft foundations shall be shown.

(9) Testing, certifications and reports from independent laboratories showing that the panel's sound transmission loss (STL) and noise reduction coefficient (NRC) for the absorptive noise reduction system as well as the panel and post deflection satisfy the criteria shown in the design criteria section of this specification. The testing for the flame spread, smoke density and freeze-thaw/salt scaling requirements described in the materials section of this specification shall also be submitted.

Manufacturer recommended installation requirements, a sequence of construction and a detailed bill of materials shall be included.

(10) The color of the wall panels and support posts shall be Federal Color Standard color number 595-B.

(11) The Contractor shall deliver to the Department (attention Mr. Rick Wanner 847-705-4172) a 600 mm x 600 mm (2 ft. x 2 ft.) sample of the colors, textures and patterns proposed for use on the project for approval. The samples must be made at the same plant that will be making the product for the noise wall under this contract and be representative of those which will be tested per this specification. Once the color sample is approved, a batch shall be designated by batch number and date and will remain the standard for the entire project.

(12) The Contractor shall submit site access plans showing access and limits of the work areas for the installation of the wall and any required traffic controls are to conform to the requirements in the special provision for TRAFFIC CONTROL PLAN.

(13) The initial submittal shall include three (3) sets of shop drawings and calculations. One set of drawings will be returned to the Contractor with any corrections indicated. The Contractor shall do no work or ordering of materials for the structure until the Engineer has approved the submittal.

Design Criteria. The wall system shall be designed to withstand wind pressure, applied perpendicular to the panels in either direction, according to the AASHTO Guide Specifications for Structural Design of Sound Barriers (latest edition) including interims. The concrete and steel components shall be designed according, to the 2002 AASHTO Standard Specifications for Highway Bridges (17<sup>th</sup> Edition), and as specified herein. The contractor shall be responsible for the structural adequacy of the panels, posts, foundations and connections as well as overall wall overturning stability. The design shall account for the presence of all appurtenances mounted on or passing through the wall such as drainage structures, existing or proposed utilities, fire or access doors and other items.

Added 12/08/2005

The design wind loading shall be  $1.7 \text{ kN/m}^2$  (35 psf.) when located on bridge structures, retaining walls or traffic barriers. This loading can be reduced to  $1.2 \text{ kN/m}^2$  (25 psf.) when ground mounted on drilled shafts. For structure-mounted walls, the panel dead weight must not exceed 2.6 kPa (55 psf.) of wall face area.

For ground mounted noise abatement walls the posts shall be connected to drilled shafts with anchor bolts as required by design. The minimum number of anchor bolts per post shall be four M 30 A449 threaded anchor rods embedded into each foundation, which shall be reinforced in accordance with AASHTO specifications. The anchor rod assembly shall be installed and payment shall be included in the cost for NOISE ABATEMENT WALL, GROUND MOUNTED.

The material and construction of the foundations (drilled shafts) shall be in accordance with the Special Provision for DRILLED SHAFTS except that the payment for the drilled shaft and reinforcement will be included with the payment for the NOISE ABATEMENT WALL, GROUND MOUNTED.

The shaft foundation dimensions shall be determined using Broms method of analysis. Soils profiles from prior soil investigations are shown in the plans. The design shall utilize a factor of safety of 2.0, applied to the soil shear strength if cohesive or the unit weight if granular, and account for the effects of a sloping ground surface and water table indicated on the plans. The following should be assumed for the foundation design:

Effective unit weight	70pct.
Internal friction angle	30 deg.
Cohesion intercept	0 ksf

The maximum allowable panel deflection shall be no more than the panel length (L) divided by 240 (L/240) for ground-mounted panels and panel length (L) divided by 180 (L/180) for structure-mounted panels. The vertical posts shall have a maximum deflection of (H/180) where H is the height of the post above the foundation. A lateral load report shall be submitted to the Engineer indicating that the above noted design lateral loads can be applied to the panels and/or posts without exceeding noted deflection tolerance.

Corrugations, ribs or battens on the panel must be oriented vertically when erected. The panels shall be designed to prevent entrapment and ponding of water. The noise barrier walls shall not have openings allowing the perching or nesting of birds or the collection of dirt, debris or water. The walls shall not have handholds or grips promoting climbing of the walls.

The absorptive noise wall panels shall be designed to provide a sound transmission loss (STL) greater than 20 dB at every frequency, when tested in accordance with ASTM E-90. The sound absorptive material shall have a noise reduction coefficient (NRC) of 0.80 on the roadside and a 0.65 NRC on the residential side. The NRC shall be determined per ASTM E795, tested in accordance with ASTM C423 (mounting type A). The ratio of noise absorptive material on the panel surface to total wall area (including posts) shall be greater than 90%. NRC testing shall be performed on coated samples, utilizing the stain that will be applied for color and anti-graffiti purposes.

Added 12/08/2005

Fire hydrant access points (300mm diameter) shall be designed with additional reinforcement or bracing and protective coating around the opening as necessary to maintain structural integrity in accordance with the details shown in the plans. The Contractor is required to coordinate with the local fire departments to confirm the final placement of the fire hydrant access points. This coordination shall be done prior to the finalization of the shop drawings and the results included in the drawings submitted for approval.

Materials. The wall materials shall conform to the supplier's standards, AASHTO Specifications for noise walls and the following:

Reinforcement bars satisfy AASHTO M 31M, M 42M, or M 53M Grade 60. Welded wire fabric shall be according to AASHTO M 55M.

The concrete for the precast elements shall be Class PC according to Section 1020 of the current IDOT Standard Specifications. Cement shall be Type I, II, or III and shall conform to the requirement of AASHTO M-85. Additives containing chloride shall not be used without the approval of the Department. The compressive strength at 28 days shall not be less than 30 MPa (4500 psi), according to Article 504.05 of the current IDOT Standard Specifications. Wooden or steel materials will not be allowed as substitutes for the panels. The concrete elements shall be tested according to ASTM C 672 (as modified in the HITEC report on sound barriers 96-04) and shall not exhibit excessive deterioration (cracks, spalls, aggregate disintegration, or other objectionable features) to demonstrate resistance to deicing chemicals. The concrete elements shall be tested according to ASTM C 666 and shall not exhibit excessive deterioration to demonstrate resistance to freeze-thaw conditions.

Steel plates, posts and doors shall conform to AASHTO M 270M Grade 250 (36) or 345 (50). All portions of the post shall be galvanized according to AASHTO M111 and ASTM A385. The portion of steel posts and doors exposed to view shall then be painted with an acrylic/acrylic paint system in the shop according to the special provision CLEANING AND PAINTING NEW METAL STRUCTURES except that the inorganic zinc rich primer may be omitted. CLEANING AND PAINTING NEW METAL STRUCTURES shall be included in the unit price of the NOISE ABATEMENT WALL of the type required. The color of the acrylic/acrylic paint system shall closely match the panels. Steel bolts, nuts, washers and anchor bolts shall be galvanized according to AASHTO M232.

Coloring of concrete elements shall be accomplished using a single component, water based sound adsorptive penetrating architectural stain satisfying ASTM G155 –Xenon light source.

The Noise Barrier Wall surfaces shall be prepared in accordance with the stain manufacturer's written instructions. Surfaces must be clean and free of oil, grease, laitance, efflorescence and any other contaminants that could prevent good adhesion.

Prior to use, the stain shall be thoroughly mixed using a drill with a "Jiffy" type mixer attachment or other mechanical means suitable for use. Mix approximately 3-5 minutes or until color is uniform throughout and the material is homogeneous. Remix as required to maintain uniformity.

Added 12/08/2005



Penetrating Architectural Concrete Stain must be applied at the manufacturing plant. Staining in the field on site will not be allowed. In order to apply stain, both the Noise Barrier panels and air temperature must be between 45°F and 90°F. Stain shall not be applied unless weather conditions will permit complete drying of material prior to rain, fog, dew or temperatures beyond the prescribed limits. Stain shall not be applied to damp surfaces. Stain shall be applied in one coat and shall provide a uniform appearance. The final color shall be consistent with the quality and appearance of the approved sample area.

The finish will consist of a rolled Ashlar Stone finish. Rolled finishes shall have a minimum 0.75 in. (19 mm) impression.

With the exception of the steel and Portland cement concrete elements of the wall, all materials shall be tested for flame spread and smoke density developed in accordance with ASTM E84. The material must exhibit a flame-spread index less than 10 and a smoke density developed value of 10 or less.

Fabrication. All precast units shall be manufactured according to Section 504 of the Standard Specifications and the following requirements and tolerances with respect to the dimensions shown on the approved shop drawings.

The minimum reinforcement bar cover shall be 40 mm (1½ in.).

All reinforcement shall be epoxy coated.

Panel dimensions shall be within 6 mm (¼ in.).

All hardware embedded in panels or posts shall be within 6 mm (¼ in.).

Angular distortion with regard to panel squareness, defined as the difference between the two diagonals, shall not exceed 13 mm (½ in.).

Surface defects on formed surfaces measured on a length of 1.5 m (5 ft.) shall not be more than 2.5 mm (0.10 in.).

Posts shall be installed plumb to within 13 mm (½ in.) of vertical for every 5 m (15 ft.) of height and to within 13 mm (½ in.) of the station and offset indicated on the approved shop drawings.

Drilled shaft foundations shall be placed within 50 mm (2 in.) of the station and offset indicated on the approved shop drawings.

All lifting inserts cast into the panels shall be hot dipped galvanized.

The date of manufacture, the production lot number, and the piece-mark shall be clearly noted on each panel.

Added 12/08/2005

Both faces of the panels shall provide sound absorptive treatment satisfying the criteria noted in the design section of this specification or otherwise stated in the contract plans. Absorptive material shall be permanently attached to their supporting elements and no external mechanical fastening systems such as frames or clips shall be used. Any bolts or fasteners used shall be recessed or embedded below the surface.

Both sides of the panels shall be light brown in color with a textured Ashlar Stone finish unless stated otherwise on the contract plans.

The panels, posts and other visible elements shall be fabricated with a light brown earth tone color following the procedures noted in the materials section of this specification unless otherwise shown on the contract plans.

Emergency Access Doors:

DESCRIPTION: This work shall consist of furnishing materials and placement of steel doors, frames, finish hardware and signing in accordance with these specifications, in reasonably close conformance to the plans or as directed by the engineer.

LOCATIONS: The emergency access doors shall be located in close proximity to the following locations. The Contractor shall coordinate the identified locations with the local agency fire department emergency officials. The Emergency access doors are not to be located within noise wall panels that are above the retaining wall expansion joints.

1. I-80/94 WB Station 6+973.140 29.780 m left
2. I-80/94 EB Station 7+073.878 26.180 m right
3. I-80/94 WB Station 7+925.744 26.180 m left
4. I-80/94 EB Station 7+949.426 26.180 m right

DESIGN CRITERIA: The assembled emergency access doors shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90.

All materials, except paints and coatings, shall have a minimum predicted maintenance free life span of 20 years. All colorings and coatings shall have a minimum predicted maintenance free lifespan of 10 years.

The finish paint coat color of the acrylic/acrylic paint system shall closely match the panels.

SUBMITTALS: The Contractor shall submit shop drawings for approval with the Sound Barrier System design drawings, and prior to fabrication. The shop drawings shall include all details, dimensions and quantities necessary to construct the emergency access doors.

Added 12/08/2005

The Contractor shall submit all test reports and certifications required herein. All test reports and certifications shall reference materials made at the specific facility, which manufactures the material. Certification shall be in accordance with a type C defined in 916.

**MATERIALS:** Unless noted, materials shall be in accordance with the following:

Steel doors and frames:	Steel sheet, zinc coated (galvanized) by hot dip process; commercial quality, ASTM A 526, G 20.
Bonderizing:	SSPC PT4, hot phosphate surface treatment.
Primer:	Manufacture's standard, rust inhibitive baked on primer.
Protective coating:	Asphalt based coating, FS TT-V-51.

Finish coat: The color of the acrylic/acrylic paint system shall closely match the panels.

Finish Hardware:

1. Hinges shall be 114 mm (4-1/2 inches) by 114 mm (4-1/2 inches), provide sufficient width to permit doors to swing 180° and be flush bearing design. Hinge standards: Hager, McKinney, Stanley and Rixon.
2. Access shall be from the outside of the noisewall only. The door shall be self-latching with a padlockable hasp and provided with a large handle to ease the opening of the door. The latching mechanism shall be of bronze, stainless steel, or nickel silver. One (1) weather resistant stainless steel padlock and two (2) keys shall be provided by the Contractor as approved by the Engineer. The Contractor shall provide the keys to the Engineer once the locks have been placed.
3. Operating trim standards: Brookline, CIPCO and Rockwood.
4. Protective plate standards: Brookline, CIPCO, Hiawatha and Rockwood.
5. Threshold standards: National Guard Products, Pemko, Reese and Zero.
6. Grab bar requirements: Grab bars shall be type 304 (18-8) stainless steel with a safety grip finish. The bar tubing shall be 38 mm (1-1/2") O.D., 18-gauge, and seamless construction. Flanges shall be of minimum 11-gauge steel. Grab bars shall meet or exceed ANSI

Added 12/08/2005

standards and withstand loads in excess of 600 kg (1300 lbs) without failure. Bent ends of the tubing are to pass thru mounting flanges and are heliarc welded into a single structural unit. The bars are to be 600 mm (24 inches) in length and provide 38 mm (1-1/2") safety clearance between bar and door structure that it is mounted on. Grab bars are to be mounted to the surface of the door and to the doorframe per manufactures instructions and at the locations shown on the detail.

7. Keying standard: Master with identical keying.

The steel doors and frames for the emergency access doors shall be fabricated in accordance with NAAMM CHM, except as noted:

Doors shall be full flush seamless type fabricated from 16 gauge (minimum) stretcher leveled cold rolled steel sheets. The doors shall be reinforced and stiffened at 150 mm (6 inch) spaces on center vertically. Vertical edges shall be joined either by a continuous weld extending the full door height or by a 14-gauge (minimum) channel with 2 continuous full height welds. Welds shall be ground, filled and dressed smooth. Edges shall be beveled 3 mm (1/8 inch) in 50 mm (2 inches). A 14-gauge (minimum) reinforcing channel at the top and bottom of the door shall be spot welded within the door. The top and bottom of the door shall be closed flush to the door face sheets.

Minimum reinforcement for the finish hardware shall be:

1. 4.76 mm (3/16 inch) for hinges.
2. 12 gauge for locks, flush bolts, holders and closures.
3. 16 gauge for surface applied items.

Door frames shall be roll formed from 14 gauge (minimum) cold rolled steel sheets. Doorframes shall have mitered corners with contact edges perfectly membered. Corner faces shall be continuously welded. The use of gusset plates will not be allowed. All stops shall be butted. Cope and weld butt joints. Grind welds to a smooth uniform finish.

Minimum reinforcement for finish hardware shall be:

1. 4.76 mm (3/16 inch) by 254 mm (10 inches) by jamb width for hinges.
2. 12 gauge for locks, flush bolts, holders and closures.
3. 16 gauge for surface applied items.

After fabrication, exposed metal parts shall be cleaned of all rust, scale, oil, grease or other foreign matter; then bonderized and one shop coating of primer applied. The finish coat may be field applied. Apply protective coating shall be applied to door frame surfaces, which are concealed.

**GENERAL CONSTRUCTION REQUIREMENTS:** Steel doors and frames for Emergency Access Doors shall be installed in accordance with the approved shop drawings and printed instructions of the manufacture. The finish hardware shall be

Added 12/08/2005

installed in as recommended by the National Builders' Hardware Association and in accordance with the manufacture's installation instructions.

Steel doors and frames shall be protected from continuing construction operations by board covering to a height of 1.5 meters (5 feet).

The integrity of the sound barrier continuity, including the emergency access doors, shall be such that no light passes through any vertical or horizontal joint in the system, nor between the system and the ground.

**SIGNS.**

Signing at each emergency access door: The Contractor shall furnish the signs, which are shown on the table included herein and shall install them on the noise wall or access doors as detailed in the plans.

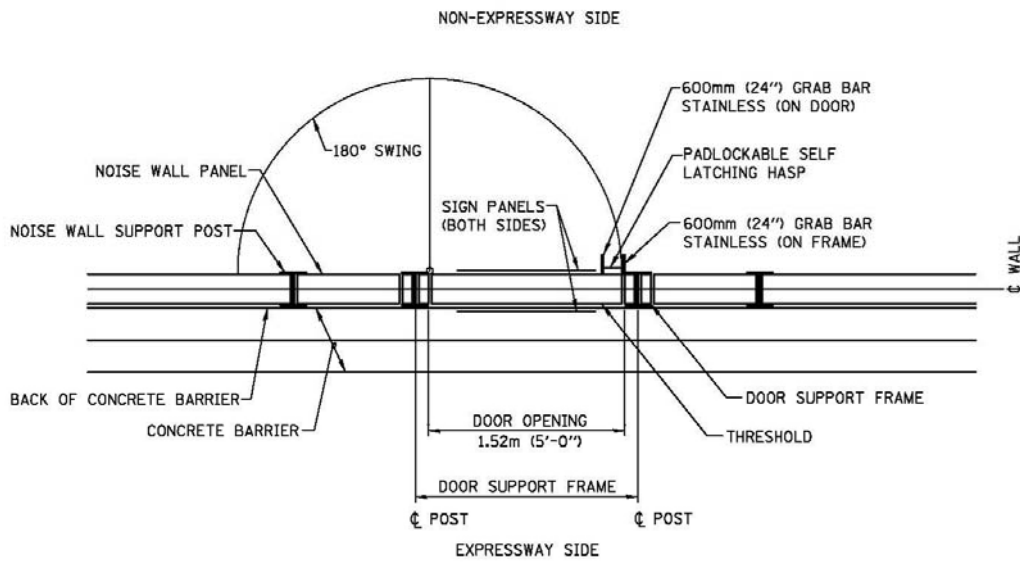
LEGEND LAYOUT	SIZE (MM)	SIGN SIZE & COLOR LEGEND / BACKGROUND BORDER	NUMBER OF SIGNS	
EMERGENCY ACCESS	100 125C 100 125C 100	1050 MM X 450 MM  WHITE / RED  15 MM BORDER	2 per location = 8 signs	
STATE LINE AVE	100 100C 100	1.2 M X 300 MM, WHITE / RED, 15 MM BORDER	2 signs	
COMMUNITY ST.	100 100C 100	1.2 M X 300 MM, WHITE / RED, 15 MM BORDER	2 signs	
RIVER RD.	100 100C 100	450 MM X 300 MM, WHITE / RED, 15 MM BORDER	2 signs	
ROY ST.	100 100C 100	450 MM X 300 MM, WHITE / RED, 15 MM BORDER	2 signs	

Added 12/08/2005

The signs shall be paid for in accordance with Section 720 of the Standard Specifications for Sign Panel, Type 1 and shall include the fabrication and installation of the sign panels to the sound barrier system and emergency access door as shown in the details.

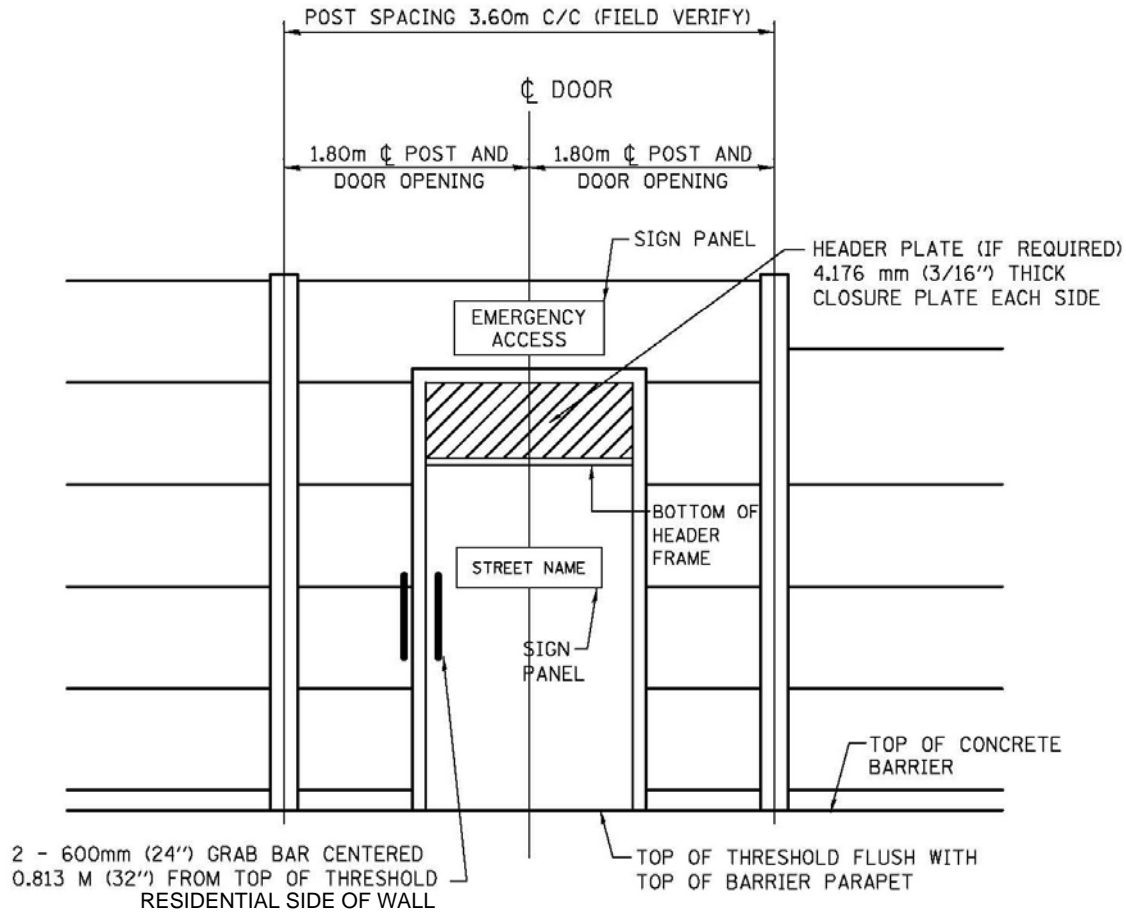
All emergency access door materials, including steel doors, frames, finish hardware, attachments to vertical support posts and incidentals shall be included in the cost of the wall mounted sound barrier panels. All labor and materials required to erect and install emergency access doors shall be included in the unit cost for NOISE ABATEMENT WALL, STRUCTURE MOUNTED.

Added 12/08/2005



**EMERGENCY ACCESS DOOR**  
TOP VIEW

Added 12/08/2005



**EMERGENCY ACCESS DOOR**

ELEVATION VIEW  
 FROM EXPRESSWAY SIDE

Added 12/08/2005



Construction. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include any costs related to this technical assistance in the unit price bid for this item. The instructions provided here are guidelines and do not relieve the contractor of the responsibility to adhere to contract specifications.

It is recommended that all bottom panels be installed for a length of wall prior to placing middle or top panels. After bottom panels are in-place, finish grading can be accomplished with heavy equipment by reaching over the in-place panels. Problems associated with lack of access to the backside of the wall or limited right-of-way can be avoided.

Site excavations and/or fill construction shall be completed to plan elevations and profiles prior to the start of wall foundation construction. All underground utility or drainage structure installation shall be completed prior to foundation installation. The ground elevations as shown on the plans and the approved noise barrier wall shop drawings shall be verified by the contractor and discrepancies corrected prior to material fabrication. The locations of underground utilities and overhead obstructions shown on the plans shall be verified and considered by the Contractor prior to wall erection.

If the soils encountered during drilling of the foundations do not satisfy the design strengths shown on the contract plans, the Engineer shall be notified to evaluate the required foundation modifications. The shaft foundation will normally require additional length, which may be paid separately under Article 104.03 of the Standard Specifications. All drilled shaft excavations shall be filled with concrete within 6 hours of their initiation. The concrete for the drilled shaft foundations shall be Class SI and shall be placed against undisturbed, in-place soils. The concrete at the top of the shaft shall be shaped to provide the panels on each side of the post adequate bearing area and correct elevation per the approved shop drawings.

Units shall be shipped, unloaded, handled and stored in such a manner as to minimize the danger of staining, chipping, spalling, development of cracks, fractures, and excessive bending stresses. Any touch up and repair is at the Contractor's expense and shall be carried out according to the manufacturer's recommendations or as directed by the Engineer.

Method of Measurement. The noise abatement wall will be measured by the square meter (square foot) from the wall envelope, defined by the theoretical top of wall line to the theoretical bottom of panel line for the length of the wall (ground mounted or structure mounted) as shown on the contract plans.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for NOISE ABATEMENT WALL, GROUND MOUNTED and/or NOISE ABATEMENT WALL, STRUCTURE MOUNTED measured as provided above. This shall be payment in full for developing the wall and foundation design, preparation of shop drawings, all labor, equipment and material required for the manufacture, testing, delivery and erection of the panels, concrete or metal posts, all fire hydrant access openings, emergency access doors and coordination, post connection system to the foundation (or structure), and foundations (for the ground mounted walls only). The cost of the signs shall be paid for in accordance with Section

Added 12/08/2005

720 of the Standard Specifications for Sign Panel, Type 1 and shall include the fabrication and installation of the sign panels to the sound barrier system and emergency access door as shown in the details.

## **INDOT – SOUND BARRIER SYSTEM, TYPE 2**

**Description.** This work shall consist of furnishing the design, details, shop drawings, materials and construction of a Type 2 sound barrier system at the locations details shown on the plans, in accordance with the applicable portions of the special provision for Sound Barrier Systems - Section 620, the applicable portions of the referenced Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

**General.** Revise the first paragraph of Article 620.02 General Design Requirements (line 8 through line 10) to read:

“The sound barrier system shall be either wall mounted or bridge mounted and shall consist of wall attachments, vertical support posts and sound barrier panels.”

Revise the eighth paragraph of Article 620.03 Design Criteria, (line 70 through line 75) to read:

“The post spacing for sound barriers mounted on any structure or barrier shall be designed to match the post spacings as designed and constructed for those structures. The Contractor is required to confirm all spacing of the support posts with that as constructed in this contract and from prior contracts. The wall and its supports are to be designed so that it does not overstress the structures. The allowable loads on a structure or barrier will be shown on the plans. If no allowable loads are shown, the Contractor shall contact the project designer for the information.”

Delete paragraphs fourteen and fifteen of Article 620.03 Design criteria (lines 100 through lines 122) with the following:

“The sound barrier system shall consist of a one-color system for the wall panels. The color for the wall panels shall be stained in accordance with the U. S. Federal Standard 595a color number 30233.

The color of the vertical post supports shall be in accordance with U.S. Federal Standard 595a color number 30372.

The wall design shall have a vertical fluted textured finish which closely resembles the existing designs installed along the adjacent INDOT sections of the I-80/94 Borman Expressway.

The Contractor/sound barrier manufacturer shall submit samples to the Department in accordance with the requirements in Article 620.04 Submittals.”

Added 12/08/2005

Add the following to the end of Article 620.04 Submittals (after line 180):

“The Contractor shall provide three samples of both the roadway side and non-roadway side wall textures to the Department. All samples of the wall textures shall be 0.6 m x 0.6 m (2 ft x 2 ft). The Contractor shall provide 3 samples of the vertical support post measuring 0.6 m (2 ft) in length. Each wall and vertical support post samples shall have the selected finish used throughout on either the roadway or non-roadway sides. The sound barrier system will be accepted for color, pattern and texture based on a visual comparison between the samples provided and that of the wall constructed in the adjacent INDOT sections of the I-80/94 Borman Expressway.

The Indiana Department of Transportation contact person for the designs and shop drawings of the sound wall system is Mr. John Wright (312) 232-5147.”

Insert the following at the end of Article 620.05

EMERGENCY ACCESS DOORS:

**DESCRIPTION:** This work shall consist of furnishing materials and placement of steel doors, frames, finish hardware and signing in accordance with these specifications, in reasonably close conformance to the plans or as directed by the engineer.

**LOCATIONS:** The emergency access doors shall be located in close proximity to the following locations. The Emergency access doors are not to be located within noise wall panels that are above the retaining wall expansion joints.

5. I-80/94 EB Station 8+782.072 right
6. I-80/94 WB Station 8+726.774 left

**DESIGN CRITERIA:** The assembled emergency access doors shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90.

All materials, except paints and coatings, shall have a minimum predicted maintenance free life span of 20 years. All colorings and coatings shall have a minimum predicted maintenance free lifespan of 10 years.

The assembled emergency access door shall assembly shall receive a vinyl finish paint coat matching color number 30372, in accordance with Federal Color Standard 595a.

**SUBMITTALS:** The Contractor shall submit shop drawings for approval with the Sound Barrier System design drawings, and prior to fabrication. The shop drawings shall include all details, dimensions and quantities necessary to construct the emergency access doors.

Added 12/08/2005

The Contractor shall submit all test reports and certifications required herein. All test reports and certifications shall reference materials made at the specific facility, which manufactures the material. Certification shall be in accordance with a type C defined in 916.

**MATERIALS:** Unless noted, materials shall be in accordance with the following:

Steel doors and frames:	Steel sheet, zinc coated (galvanized) by hot dip process; commercial quality, ASTM A 526, G 20.
Bonderizing:	SSPC PT4, hot phosphate surface treatment.
Primer:	Manufacture's standard, rust inhibitive baked on primer.
Protective coating:	Asphalt based coating, FS TT-V-51.

Finish coat: Vinyl finish coat in accordance with 909.02(b) except that the color number 30372 of Federal Color Standard 595a will be used.

**Finish Hardware:**

8. Hinges shall be 114 mm (4-1/2 inches) by 114 mm (4-1/2 inches), provide sufficient width to permit doors to swing 180° and be flush bearing design. Hinge standards: Hager, McKinney, Stanley and Rixon.
9. Access shall be from the outside of the noisewall only. The door shall be self-latching with a padlockable hasp and provided with a large handle to ease the opening of the door. The latching mechanism shall be of bronze, stainless steel, or nickel silver. One (1) weather resistant stainless steel padlock and two (2) keys shall be provided by the Contractor as approved by the Engineer. The Contractor shall provide the keys to the Engineer once the locks have been placed.
10. Operating trim standards: Brookline, CIPCO and Rockwood.
11. Protective plate standards: Brookline, CIPCO, Hiawatha and Rockwood.
12. Threshold standards: National Guard Products, Pemko, Reese and Zero.

Added 12/08/2005

13. Grab bar requirements: Grab bars shall be type 304 (18-8) stainless steel with a safety grip finish. The bar tubing shall be 38 mm (1-1/2") O.D., 18-gauge, and seamless construction. Flanges shall be of minimum 11-gauge steel. Grab bars shall meet or exceed ANSI standards and withstand loads in excess of 600 kg (1300 lbs) without failure. Bent ends of the tubing are to pass thru mounting flanges and are heliarc welded into a single structural unit. The bars are to be 600 mm (24 inches) in length and provide 38 mm (1-1/2") safety clearance between bar and door structure that it is mounted on. Grab bars are to be mounted to the surface of the door and to the doorframe per manufactures instructions and at the locations shown on the detail.
  
14. Keying standard: Master with identical keying.

The steel doors and frames for the emergency access doors shall be fabricated in accordance with NAAMM CHM, except as noted:

Doors shall be full flush seamless type fabricated from 16 gauge (minimum) stretcher leveled cold rolled steel sheets. The doors shall be reinforced and stiffened at 150 mm (6 inch) spaces on center vertically. Vertical edges shall be joined either by a continuous weld extending the full door height or by a 14-gauge (minimum) channel with 2 continuous full height welds. Welds shall be ground, filled and dressed smooth. Edges shall be beveled 3 mm (1/8 inch) in 50 mm (2 inches). A 14-gauge (minimum) reinforcing channel at the top and bottom of the door shall be spot welded within the door. The top and bottom of the door shall be closed flush to the door face sheets.

Minimum reinforcement for the finish hardware shall be:

4. 4.76 mm (3/16 inch) for hinges.
5. 12 gauge for locks, flush bolts, holders and closures.
6. 16 gauge for surface applied items.

Door frames shall be roll formed from 14 gauge (minimum) cold rolled steel sheets. Doorframes shall have mitered corners with contact edges perfectly membered. Corner faces shall be continuously welded. The use of gusset plates will not be allowed. All stops shall be butted. Cope and weld butt joints. Grind welds to a smooth uniform finish.

Minimum reinforcement for finish hardware shall be:

4. 4.76 mm (3/16 inch) by 254 mm (10 inches) by jamb width for hinges.
5. 12 gauge for locks, flush bolts, holders and closures.
6. 16 gauge for surface applied items.

After fabrication, exposed metal parts shall be cleaned of all rust, scale, oil, grease or other foreign matter; then bonderized and one shop coating of primer applied. The finish coat may be field applied. Apply protective coating shall be applied to door frame surfaces, which are concealed.

Added 12/08/2005

**GENERAL CONSTRUCTION REQUIREMENTS:** Steel doors and frames for Emergency Access Doors shall be installed in accordance with the approved shop drawings and printed instructions of the manufacture. The finish hardware shall be installed in as recommended by the National Builders' Hardware Association and in accordance with the manufacture's installation instructions.

Steel doors and frames shall be protected from continuing construction operations by board covering to a height of 1.5 meters (5 feet).

The integrity of the sound barrier continuity, including the emergency access doors, shall be such that no light passes through any vertical or horizontal joint in the system, nor between the system and the ground.

**SIGNS**

Signing at each emergency access door: The Contractor shall furnish the signs, which are shown on the table included herein and shall install them on the noise wall or access doors as detailed in the plans.

LEGEND LAYOUT	SIZE (MM)	SIGN SIZE & COLOR LEGEND / BACKGROUND BORDER	NUMBER OF SIGNS	
EMERGENCY  ACCESS	100 125C 100 125C 100	1050 MM X 450 MM  WHITE / RED  15 MM BORDER	4 per location = 8 signs	Bracket Mt. 2 signs to wall support on expwy side of wall (see Fire Hydrant Access Detail). Attach 1 sign to each side of wall over the door.
HARRISON AVE	100 100C 100	1.2 M X 300 MM, WHITE / RED, 15 MM BORDER	2 per door = 4 signs	

The signs shall be paid for in accordance with the special provision for INDOT-Signing and shall include the fabrication and installation of the sign panels to the sound barrier system and emergency access door as shown in the details. The cost of the wall mounted sign brackets shall be included in the cost of the sign panels.

All emergency access door materials, including steel doors, frames, finish hardware, attachments to vertical support posts and incidentals shall be included in the cost of the wall mounted sound barrier panels. All labor and materials required to erect and install emergency access doors shall be included in the unit cost for SOUND BARRIER SYSTEM, TYPE 2 (INDIANA)”

Added 12/08/2005

Delete Article 620.06 Public Information Meeting (from line 240 through line 281).

Revise Article 620.09 Method of Measurement, (from line 368 through line 379) to read:

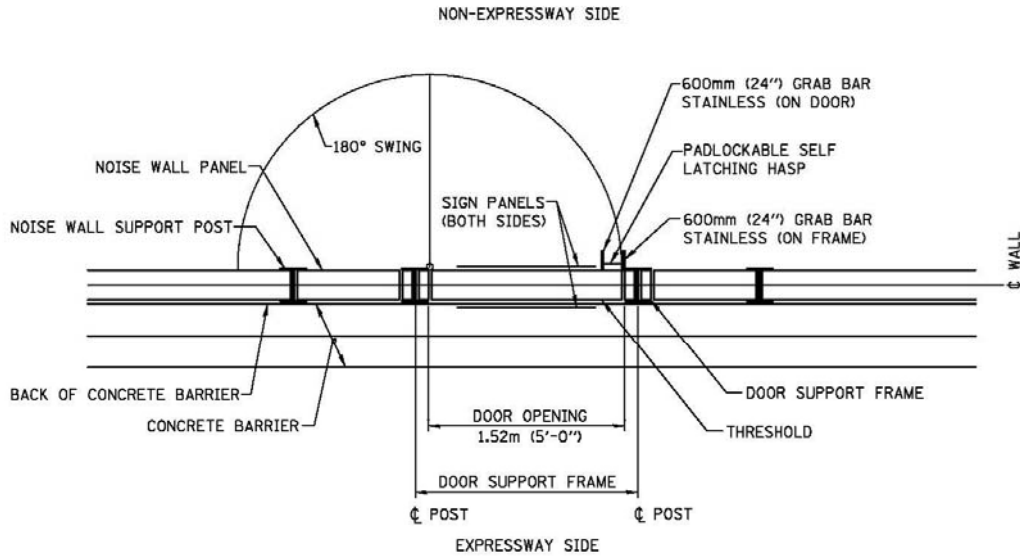
**“Method of Measurement.** The sound barrier system will be measured by the square meter (square foot) from the wall envelope, defined by the theoretical top of wall line to the theoretical bottom of panel line for the length of the wall (structure mounted) as shown of the contract plans.”

Delete Article 620.10 Stockpiling (from line 380 through line 392).

Revise Article 620.11 Basis of Payment, (from line 393 through line 449) to read:

**“Basis of Payment.** This work will be paid for at the contract unit price per square meter for SOUND BARRIER SYSTEM, TYPE 2 (INDIANA) measured as provided above. This shall be payment in full for developing the wall design, preparation of shop drawings, all labor, equipment and material required for the manufacture, sampling and verification of the samples, testing, delivery and erection of the panels, metal posts, all fire hydrant access openings, emergency access doors and coordination and the post connection system to the foundation (or structure).”

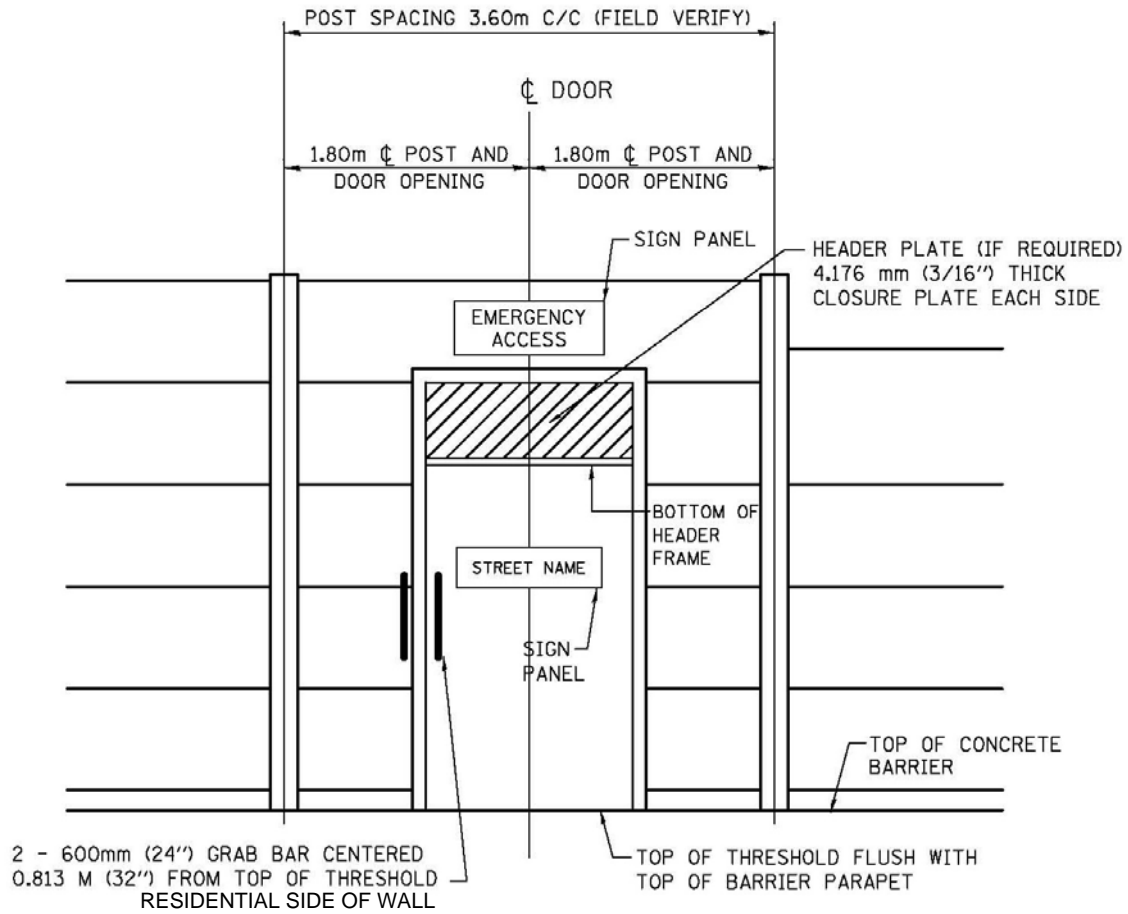
Added 12/08/2005



**EMERGENCY ACCESS DOOR**  
TOP VIEW

Added 12/08/2005





**EMERGENCY ACCESS DOOR**

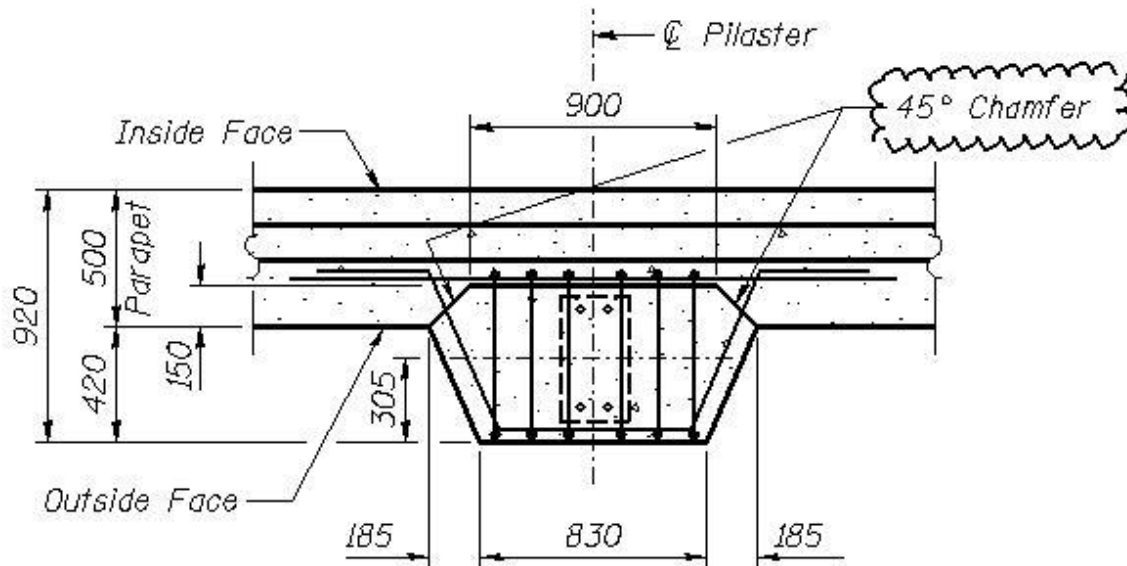
ELEVATION VIEW  
 FROM EXPRESSWAY SIDE

Added 12/08/2005

## PILASTER SUPPORT MODIFICATION

Description: This work shall consist of constructing the pilaster supports according to the revised details included herein.

The changes to the quantities involved in the modifications of the pilaster supports are not reflected in the bills of materials or the summary of quantities; however the Contractor will be paid for the quantities actually furnished at the unit prices bid for the work involved.



**TYPICAL PILASTER SUPPORT – PLAN VIEW**

### NOTES:

All concrete edges shall have a 20 mm chamfer, unless otherwise noted.

All dimensions are in millimeters (mm) except as noted.

Added 12/08/2005

### **INTERIM 3-LANE CROSSOVER**

This work will be necessary if the Contractor elects to start work east of Wentworth Ave. according to the “Work Restriction” Special Provision.

The construction of an interim 3-lane crossover near the state line will be permitted to shift I-80/94 EB traffic into the westbound lanes per Stage 1 Maintenance of Traffic plan sheets. The Contractor shall provide plans for the review and approval of the Engineer. These plans shall address drainage, vertical and horizontal alignment, pavement markings and traffic control devices necessary to construct and operate the 3-lane weave.

This work will be paid for at the contract unit prices for the pay items required to construct the crossover. Any additional items that may be needed will be paid for according to Article 109.04 of the Standard Specifications.

Added 12/08/2005

ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
CONTRACT  
NUMBER -

62114

State Job # - C-91-020-01  
PPS NBR - 1-76843-0400  
County Name - COOK- -  
Code - 31 - -  
District - 1 - -  
Section Number - 2626.2 R-2

Project Number

Route  
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX030514	STRUCT BACKFILL (IN.)	CU M	22,373.700				
MX030515	RIPRAP REVETMNT (IN.)	SQ M	4,314.000				
MX030516	TEST PILE 356MM (IN.)	EACH	22.000				
MX030517	PIL CSSE 6.35 356 IN.	METER	33,311.500				
MX030518	CONC A SUB-STR (IN.)	CU M	11,141.800				
MX030519	CONC C SUP-STR (IN.)	CU M	3,255.900				
MX030520	REINF BARS E-CT (IN.)	KG	1,177,220.000				
MX030521	P UDR PRF 1.63 150 IN	METER	1,248.000				
MX030522	STR EXP JOINT SS IN.	METER	131.100				
MX032159	CON EN RC 100 PVC 1X1	METER	329.000				
MX032160	CON EN RC 100 PVC 2X1	METER	118.000				
* MX032178	TEMP INFO SIGNING	SQ M	93.000				
MX033183	SOIL STABILIZERS	KG	580,885.000				
MX033290	SED CONT SILT FENCE	METER	2,669.700				
MX033291	SED CON SILT FEN MAIN	METER	1,334.900				
			* REVISED : DECEMBER 6, 2005				

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
 NUMBER - 62114

State Job # - C-91-020-01  
 PPS NBR - 1-76843-0400  
 County Name - COOK--  
 Code - 31 - -  
 District - 1 - -  
 Section Number - 2626.2 R-2

Project Number

Route  
 FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033620	IMP ATTN CR W2 TL3 IN	EACH	4.000				
MX033621	BRG ASSY ELAST T1 IN	EACH	48.000				
MX033622	REINF STL SN FDN IN	KG	15,130.000				
MX033623	SN PANEL W LEGEND IN	SQ M	211.000				
MX033624	TBLR TRAFF SN POST IN	EACH	12.000				
MX033625	CONC SIGN FOUNDATN IN	CU M	102.500				
* MX033626	SN SHT ENCLNS 2.54 IN	SQ M	29.000				
MX033627	SN SHT ENCLNS 3.18 IN	SQ M	30.000				
MX033628	LINE EPXY SLD W100 IN	METER	2,915.000				
MX033629	LINE EPXY SLD Y100 IN	METER	4,133.000				
MX033630	LINE EPXY SLD W200 IN	METER	2,741.000				
MX033631	LINE EPXY BRK W125 IN	METER	3,230.000				
MX033632	PVT MSG MKG EPX WD IN	SQ M	10.500				
MX033633	PVT MSG MKG EPX TA IN	SQ M	7.400				
MX033634	SNOWPLOWABLE R PVT MK	EACH	1,162.000				
* REVISED : DECEMBER 6, 2005							

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
 NUMBER -

62114

State Job # - C-91-020-01  
 PPS NBR - 1-76843-0400  
 County Name - COOK- -  
 Code - 31 - -  
 District - 1 - -  
 Section Number - 2626.2 R-2

Project Number

Route  
 FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033635	SEW OUTFL SEPR SYS IN	L SUM	1.000				
MX033636	SURFACE SEAL INDIANA	L SUM	1.000				
MX033637	BLIND FLANGE CAP 600	EACH	5.000				
MX033638	CON ENC RC 100PVC 6X2	METER	22.000				
MX033639	SLPON FB CHK VLV 1950	EACH	1.000				
MX033640	SLPON FB CHK VLV 600	EACH	1.000				
MX033641	PT PVT MK LN 125 SP	METER	114.300				
MX033642	SUBGRADE TRTMNT 1A IN	SQ M	62,501.000				
MX033643	COMPACTED AGG 73 IN	SQ M	1,030.000				
MX033644	QC/QA - PCCP 400 IN	SQ M	57,226.000				
MX033645	QC/QA - PCCP 330 IN	SQ M	3,867.000				
MX033646	RETROFTD TIE BARS IN	EACH	370.000				
MX033647	PROFILOGRAPH PCCP IN	L SUM	1.000				
MX033648	BAR CONC 840 MOD IN	METER	547.000				
* MX033649	RFC BR APP 400 IN	SQ M	3,436.000				
			* REVISED : DECEMBER 6, 2005				

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
 NUMBER - 62114

State Job # - C-91-020-01  
 PPS NBR - 1-76843-0400  
 County Name - COOK- -  
 Code - 31 - -  
 District - 1 - -  
 Section Number - 2626.2 R-2

Project Number

Route  
 FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033681	C&G C CONCRETE SPL IN	METER	340.000				
MX033682	INL HA MOD SLOT DR IN	EACH	6.000				
MX033683	SIGN POST WOOD IN	METER	27.000				
MX033684	SP OVHD SN ST B TR IN	METER	101.000				
MX033685	S OVHD SSTR BT SPL IN	METER	28.000				
MX033686	EXCAV UNCLASSIFIED IN	CU M	3,810.300				
MX033687	PIPE T2 DFRMD 1.68 IN	METER	12.000				
MX033688	PIPE SLOT DRN 300 IN	METER	575.700				
MX033689	CASTINGS 5 FRN/ADJ IN	EACH	4.000				
MX033690	OSS SPAN ANCHOR RA IN	EACH	6.000				
* MX033691	PLANTG MIX F&P 900MM	SQ M	159.000				
MX355200	BIT BC SUPER 200	SQ M	90.000				
MX406012	BC SC SUPER "C" N50	M TON	32.100				
MX406078	P BCSC SUPER "F" N105	M TON	52.200				
MX406220	BCBC SUP IL-19.0 N105	M TON	36.100				
* REVISED : DECEMBER 6, 2005							

ILLINOIS DEPARTMENT OF TRANSPORTATION  
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NUMBER -

62114

State Job # - C-91-020-01  
PPS NBR - 1-76843-0400  
County Name - COOK- -  
Code - 31 - -  
District - 1 - -  
Section Number - 2626.2 R-2

Project Number

Route  
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M4402010	DRIVE PAVEMENT REM	SQ M	37.000				
M4402040	COMB CURB GUTTER REM	METER	1,036.700				
M4402050	SIDEWALK REM	SQ M	252.000				
M4402060	APPROACH SLAB REM	SQ M	2,321.000				
M4402280	CONC BARRIER REMOV	METER	1,405.000				
M4402530	PAVED SHLD REMOVAL	SQ M	19,434.000				
M4402540	PAVT BREAKING	SQ M	8,416.000				
M4428420	CL D PATCH T4 200	SQ M	99.000				
M4428450	CL D PATCH T4 350	SQ M	415.000				
M4830360	PCC SHOULDERS 360	SQ M	15,836.000				
M5010240	CONC REM	CU M	429.700				
* M5020100	STRUCTURE EXCAVATION	CU M	535.100				
M5030350	CONC STRUCT	CU M	279.480				
M5030380	RUSTICATION FINISH	SQ M	4,598.000				
M5030450	PROTECTIVE COAT	SQ M	92.700				
			* REVISED : DECEMBER 6, 2005				



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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M7040210	REL TEMP CONC BAR SPL	METER	8,617.400				
* M7200100	SIGN PANEL T1	SQ M	23.000				
M7200200	SIGN PANEL T2	SQ M	4.000				
M7200300	SIGN PANEL T3	SQ M	154.000				
M7230100	INSTALL EX SIGN PANEL	SQ M	9.000				
M7240330	REMOV SIGN PANEL T3	SQ M	3.000				
M7270100	STR STL SIN SUP BA	KG	540.000				
M7330020	OVHD SIN STR-SPAN T2A	METER	90.700				
M7330030	OVHD SIN STR-SPAN T3A	METER	27.000				
M7330500	OVHD SIN STR WALKWAY	METER	66.600				
M7340100	CONC FOUNDATION	CU M	2.900				
M7340200	DRILL SHAFT CONC FDN	CU M	56.400				
M7800605	EPOXY PVT MK LN 100	METER	8,795.100				
M7800610	EPOXY PVT MK LN 125	METER	2,099.400				
M7800620	EPOXY PVT MK LN 200	METER	1,245.000				
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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0325176	CONC FILL STEEL POST	EACH	14.000				
X0520100	JUNCTION BOX TY J	EACH	1.000				
X6020166	DR STR T1 SP 2T20F&G	EACH	10.000				
X7011015	TR C-PROT EXPRESSWAYS	L SUM	1.000				
X7013820	TR CONT SURVEIL EXPWY	CAL DA	240.000				
X7015000	CHANGEABLE MESSAGE SN	CAL MO	16.000				
X7330360	OVHD SIN STR-SPAN ARA	EACH	2.000				
Z0002600	BAR SPLICERS	EACH	36.000				
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
Z0018700	DRAINAGE STR REMOVED	EACH	24.000				
Z0029999	IMPACT ATTENUATOR REM	EACH	6.000				
Z0030240	IMP ATTN TEMP NRD TL2	EACH	8.000				
Z0030250	IMP ATTN TEMP NRD TL3	EACH	7.000				
* Z0030260	IMP ATTN TEMP FRN TL3	EACH	4.000				
Z0030330	IMP ATTN REL FRD TL3	EACH	1.000				
* REVISED : DECEMBER 6, 2005							