



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

July 22, 2009

SUBJECT: FAI Route 55
Project IM-055-6 (233) 258
Section 99 (1 & 2) I-12
Will County
Contract No. 60B04
Item No. 129, July 31, 2009 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 pages 42 - 52 of the Special Provisions
2. Revised sheets 84 & 92 of the Plans.

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

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

Very truly yours,

Charles Ingersoll, Chief
Bureau of Design and Environment

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

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

cc: Diane O'Keefe, Region 1, District 1; Bill Frey; R. E. Anderson; Estimates

TBW:MS:jc

STRUCTURES

CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1)

Effective: September 5, 2008

Revised: July 20, 2009

This work shall consist of furnishing the design, shop drawings, materials, post anchorage, and construction of noise abatement walls (noise walls) in accordance with these special provisions, the contract plans and and/or as directed by the Engineer.

General. The noise abatement walls shall consist of panels spanning between vertical posts supported by concrete foundations (ground mounted) or attached to/supported by another structure (structure mounted) as shown on the plans. The design, material, fabrication and construction shall comply with this Special Provision and the requirements specified by the noise wall supplier selected by the Contractor for use on this project. The walls shall have no omissions or gap except as detailed.

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 inform the Engineer in writing of any conflicts before realigning or redesigning the wall.

Post spacing shall avoid existing and proposed underground utilities and storm sewers.

Wall components shall be fabricated and erected to produce a precast concrete reflective noise wall system and/or an absorptive noise reduction system at the locations indicated herein. The noise reduction system shall satisfy the acoustical requirements stated in these special provisions. An absorptive noise reduction system may be used as an alternate to a reflective noise wall system. Wooden walls will not be allowed as substitutes.

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

Submittals. The Contractor shall prepare a wall and foundation design submittal and submit to the Engineer; the Department's Bureau of Bridges and Structures will review the submittal for approval. The noise walls 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 90 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. All submittals shall be signed and sealed by a Structural Engineer licensed in Illinois and include, but not be limited to, the following items:

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

- (1) A plan view of the wall indicating the stations and offsets required to locate the drilled shaft foundations. The proposed foundation diameter(s) and spacing(s) shall be indicated with all changes to the 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, curb cuts, 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, the finished grade line, and vertical clearances to existing utilities and storm sewers. Each post size and length, panel type and size, and foundation depth shall be designated.
- (3) 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.
- (4) All general notes required for constructing the wall.
- (5) 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 8 in (200 mm) below the finished grade line at front face of the wall for ground mounted noise walls and at the top of the structure for structure mounted noise walls, unless otherwise shown on the contract plans.
- (6) 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 1 ft (300 mm) in height, except within the last 50 ft (15 m) where 2 ft (600 mm) steps will be permitted.
- (7) All panel types shall be detailed. The details shall show panel orientation, 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. The Noise Reduction Coefficient (NRC) of each panel of the absorptive face shall be noted.
- (8) All post types shall be detailed. The details shall show all dimensions necessary to cast and/or fabricate each type of post, the reinforcing steel, connecting plates, and anchorage details. Post spacing for walls shall be limited to a distance that does not over stress the supporting structure.
- (9) Details of wall panels with appurtenances attached to or passing through the wall, as shown on the contract plans, such as utilities, emergency access doors, framed openings, 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.

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- (10) All architectural panel treatment, including color, texture and form liner patterns shall be shown. All joints shall be placed horizontal or vertical.
- (11) The details for the connection between panels and posts as well as their connection to the foundation, independent beam, retaining wall, and/or 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.
- (12) Testing, certifications and reports from independent laboratories showing that the panel's sound Transmission Loss (TL) and NRC for 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.
- (13) Manufacturer recommended installation requirements, a sequence of construction and a detailed bill of materials shall be included.
- (14) The color of the wall panels and support posts identified by Federal Standard 595-B color number.

The Contractor shall deliver to the Department, attention Mr. Rick Wanner (847-705-4172), a 2 ft x 2 ft (600 mm x 600 mm) 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 walls 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.

The Contractor shall submit site access plans showing access and limits of the work areas for the installation of the wall. Any required traffic controls shall be according to the requirements in the special provision for TRAFFIC CONTROL PLAN.

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, 1989 and interims. The wall system shall be designed to withstand active earth pressure and live load surcharge at locations indicated on the plans. When a wall is also required to support earth pressures, the design active earth pressure shall be based on an equivalent fluid pressure of 40 pcf (641 kg/m³) and a live load surcharge pressure equal to not less than 2 ft (600 mm) of earth pressure. The earth pressure fill height shall be defined by the proposed grade line elevation and the theoretical bottom of panel line.

Concrete and steel components shall be designed according to the 2002 AASHTO Standard Specifications for Highway Bridges (17th Edition), and as specified herein. Prestressed and/or post-tensioned panel concepts will not be permitted. The contractor shall be responsible for the

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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, emergency access doors and other items.

The design wind loading shall be 35 psf (1.7 kN/m²) when attached to a structure. This loading can be reduced to 25 psf (1.2 kN/m²) for ground mounted walls. For structure mounted noise walls, the dead weight shall not exceed 55 psf (2.6 kPa) of wall face area.

Ground mounted posts shall be connected to the foundation by either embedding the post inside the shaft reinforcement cage or by the use of base plates and anchor bolts. Structure mounted posts shall be connected to the support as indicated on the plans. Embedded posts shall extend into the foundations a minimum of 80% of the drilled foundation length. Reinforcement around the embedded posts shall consist of a minimum of 8 - #5 (#15) vertical bars symmetrically placed and tied with #3 (#10) ties at 6 in (150 mm) centers. An additional tie shall be provided at the top and bottom of the foundation. As an alternative to the ties, a #3 (#10) spiral at a 6 in (150 mm) pitch with an additional 1-1/2 turns at the top and bottom of the foundation or an equivalent welded wire fabric may be substituted. Alternatively, posts may be mounted to the foundation shafts with anchor bolts as required by design. The post to foundation connection shall utilize a corrosion protection system that is designed to last 75 years. The minimum number of anchor bolts per post shall be 4 - 1 in (M24) diameter bolts with a minimum embedment of 18 in (450 mm). Shaft reinforcement shall be in accordance with ASTM A706.

The material and construction of the foundations (drilled shafts) for ground mounted noise walls shall be according to Section 516 of the Standard Specifications 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. Soil borings 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	70 pcf (1120 kg/m ³)
Internal friction angle	30 degrees
Cohesion intercept	0 ksf (0 kg/m ³)

Maximum post spacing for structure mounted noise walls shall be 12 ft (3.7 m) center to center. Except where otherwise indicated on the plans, the maximum post spacing for ground mounted noise walls shall be as specified in the Contractor's approved design.

The maximum allowable panel deflection shall be no more than the panel length (L) divided by 240 (L/240). 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.

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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 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. Any bolts or fasteners used to connect material to the supporting panel, posts, or foundations shall be recessed or embedded in concrete, hidden from view and weather exposure. No external mechanical fastening devices such as frames or clips shall be used for these connections.

The noise abatement wall material shall be designed to achieve a sound TL equal to or greater than 20 dB in all one-third octave bands from 100 hertz to 5000 hertz, inclusive, when tested in accordance with ASTM E-90. The sound absorptive material shall have a minimum NRC as indicated in Table 1.

Table 1

Noise Wall No.	From	To	Noise Wall Side	NRC*	Comments
8	Sta. 654+00	Sta. 682+90	I-55	Reflective	Composite wall permitted
	Sta. 654+00	Sta. 682+90	Frontage Road	Reflective	
9A	Sta. 685+50	Sta. 690+50	I-55	Reflective	Composite wall permitted
	Sta. 685+50	Sta. 690+50	Frontage Road	Reflective	
9C	Sta. 728+00	Sta. 767+00	I-55	Reflective	Composite wall permitted
	Sta. 728+00	Sta. 767+00	Frontage Road	Reflective	

* For the side of the wall specified as reflective, no minimum NRC is required.

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.

Access Doors

All access doors shall be designed to fit within the design of the noise wall as shown on the plans. Doors shall be complete with hardware and locking devices. Each door shall provide a 3 ft (0.9 m) wide by 7 ft (2.1 m) high minimum clear access opening. Both door jambs shall be securely fastened to anchored posts. Front and back face of the installed door shall be flush with the faces of the noise wall.

Perimeter and internal door frame shall consist of welded hot dip galvanized steel channels and miscellaneous angle stiffeners and plates designed to provide support for noise wall panels to match the noise wall material as specified in this special provision. Infill noise panel geometry and color shall match the adjacent noise wall panels. Noise wall panels shall be fastened to steel frames as per panel manufacturer's recommendations. The door, jambs, head, hinges, door appurtenances, and adjacent ground mounted posts shall be designed to withstand the

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wind pressure of 25 psf (122 kg/m²) with the door in fully open and fully closed positions and support the weight of the door and a 300 lb (136 kg) vertical load on the non-hinged side of the door. Provide steel bracing as required. Door bottom shall be equipped with drainage holes to avoid accumulation of trapped moisture.

Door jambs and head section shall be hot dip galvanized steel. Door hinges shall be barrel type, edge mount, extra heavy-duty, hot dip galvanized steel or stainless steel. The hinges shall be designed to support the weight of door assembly, wind loads on the open door, and a 300 lb (136 kg) vertical load on the non-hinged side of the door.

Door pulls shall be provided on both sides of access door(s). Door locking hardware shall be hasp-type to be used with a padlock and shall be located in accordance with local fire department or ComEd requirements as applicable. A solid steel Knox-Box shall be provided and mounted near the hasp location at the steel post on the locking hardware side of door. The Knox-box for emergency access doors shall be in accordance with local fire department requirements. The Knox-box for access door at the Dynamic Messaging Sign (DMS) shall be in accordance with ComEd requirements.

Doors shall be equipped with lifting bolts or beams as required for safe lifting of door units.

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

- (a) Reinforcement bars satisfy ASTM A706 Grade 60. Welded wire fabric shall be according to AASHTO 55M.
- (b) Anchor bolts shall conform to ASTM F1554 Grade 55 or 105.
- (c) The concrete for the precast elements shall be Class PC according to Section 1020 of the IDOT Standard Specifications (Exception: Coarse Aggregate shall meet the requirements of Article 1004.02(f)). Additionally, dry cast concrete element will not be permitted. The compressive strength at 28 days shall not be less than 4500 psi (30 MPa), according to Article 1042.03 of the IDOT Standard Specifications. Wooden or steel materials will not be allowed as substitutes for the panels.
- (d) For sound absorptive panels, the manufacturer shall provide test information from an independent lab that the panels are durable. This information shall be either a freeze/thaw test according to AASHTO T 161 (ASTM C 666) Procedure A or B, or it shall be a salt scaling test according to ASTM C 672.

For the freeze/thaw test, a minimum of three specimens shall have been tested. The maximum weight (mass) loss after 300 cycles shall be 7.0 percent. The panel shall have no cracks, delamination (applies to composite material panel), or other excessive physical distress upon completion of the test.

For the salt scaling test, the test method shall be modified as outlined in Appendix D of the Guidelines for Evaluating the Performance of Highway Sound Barriers by the Highway Innovative Technology Evaluation Center (HITEC), A Service Center of the Civil Engineering

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Research Foundation, CERF REPORT: HITEC 96-04, Product 24 (October 1996). The maximum weight (mass) loss after 50 cycles using a 3 percent sodium chloride solution shall be 0.2 psf (0.1 kg/m²). The panel shall have no cracks, delamination (applies to composite material panel), or other excessive physical distress upon completion of the test.

For sound reflective panels, evidence of durability by one of the two previously mentioned tests is required for all materials except Class PC concrete.

- (e) The manufacturer for the noise abatement wall shall provide their quality control plan for testing the product, and test results shall be provided upon request by the Engineer. Manufacturers on the Approved List of Certified Precast Concrete Producers who are approved for noise abatement walls will be considered in compliance with this requirement.
- (f) Steel plates and posts shall conform to AASHTO M 270 (M 270 M) Grade 36 (250) or 50 (345). All portions of the post shall be galvanized according to AASHTO M111 and ASTM A385. Steel bolts, nuts, washers and anchor bolts shall be galvanized according to AASHTO M232. The portion of steel posts 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. The cost for CLEANING AND PAINTING NEW METAL STRUCTURES shall be included in the contract unit price for NOISE ABATEMENT WALL of the type required. The color of the acrylic/acrylic paint system shall closely match the panels.
- (g) Lifting inserts cast into the panels shall be hot dipped galvanized.
- (h) Non shrink grout shall be according to Article 1024.
- (i) Drilled shafts shall be according to Article 516.02.
- (j) The color of both sides of the panels, posts and other visible elements shall be a light brown earth tone unless stated otherwise on the contract plans. Colors shall be achieved through the use of integral pigments or stains, which are in compliance with the environmental regulation of the State of Illinois. Components manufactured with integral pigment shall be tested and certified in conformance to ASTM C979. Stains shall be non film forming, penetrating stains. Stains shall be applied to concrete at the cured age of the manufacturer's recommendation. Surface preparation and application shall be according to manufacturer written recommendations. Coloring of concrete elements shall be accomplished using a single component (water based, sound adsorptive, penetrating, architectural stain that is weather resistant). Stains and/or pigments must be applied at the manufacturing plant; application in the field on site will not be allowed. The final color shall be consistent with the quality and appearance of the approved sample.
- (k) The finish shall consist of a rolled insert pattern finish and shall have a minimum 0.75 in (19 mm) impression.
- (l) 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.

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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.

- (a) The minimum reinforcement bar cover shall be 1½ in (40 mm).
- (b) All reinforcement shall be epoxy coated and meet the requirements of A-706 Steel.
- (c) Panel dimensions shall be within ¼ in (6 mm).
- (d) All hardware embedded in panels or posts shall be within ¼ in (6 mm).
- (e) Angular distortion with regard to panel squareness, defined as the difference between the two diagonals, shall not exceed ½ in (13 mm).
- (f) Surface defects on formed surfaces measured on a length of 5 ft (1.5 m) shall not be more than 0.10 in (2.5 mm).
- (g) Posts shall be installed plumb to within ½ in (13 mm) of vertical for every 15 ft (5 m) of height and to within ½ in (13 mm) of the station and offset indicated on the approved shop drawings.
- (h) Drilled shaft foundations shall be placed within 2 in (50 mm) of the station and offset indicated on the approved shop drawings.
- (i) Panel reinforcement and lifting devices shall be set in place to the dimension and tolerances shown on the plans and these special provisions prior to casting.

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

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.

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 special provision unless otherwise shown on the contract plans.

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 contract unit price for Noise Abatement Wall of the type specified. The instructions provided by the wall supplier are guidelines and do not relieve the contractor of the responsibility to adhere to contract requirements.

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.

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 wall shop drawings shall be verified by the contractor and discrepancies corrected prior to material fabrication. The locations of underground utilities and overhead obstructions shall be verified and considered by the Contractor prior to wall erection.

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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 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 so as to minimize the danger of staining, chipping, spalling, development of cracks, fractures, and excessive bending stresses. Any touch up and repair required shall be at the Contractor's expense and shall be carried out according to the manufacturer's recommendations.

Method of Measurement. Noise abatement walls will be measured in square feet (square meters) 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 foot (square meter) for NOISE ABATEMENT WALL, GROUND MOUNTED and/or NOISE ABATEMENT WALL, STRUCTURE MOUNTED.

Drilled shafts, concrete, reinforcement bars and other elements for structures supporting NOISE ABATEMENT WALL, STRUCTURE MOUNTED will not be paid for under this item, but will be paid as specified elsewhere under their specific pay items.

CONCRETE NOISE ABATEMENT WALLS 7 AND 9B

This work shall consist of furnishing the design, shop drawings, materials, post anchorage, and construction of noise abatement walls with retaining wall panels for Walls 7 and 9B and noise wall panels located on the bridge parapet at S.N. 099-0022 in accordance with these special provisions, the contract plans and and/or as directed by the Engineer.

General. The noise abatement walls shall consist of wall panels (noise panels and/or retaining panels) spanning between vertical posts supported by drilled shafts or bridge parapets as shown on the plans. The design, material, fabrication and construction shall comply with the special provision CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1) as it pertains to NOISE ABATEMENT WALL, STRUCTURE MOUNTED except as modified herein this Special Provision and the requirements specified by the noise wall supplier selected by the Contractor for use on this project. The noise wall panels mounted to the parapet of structure 099-0022 need not be made of concrete but shall be made of materials satisfying the design limitations specified below, and provided with a texture and color to match the adjacent concrete noise wall panels.

Submittals. The Contractor shall prepare a wall and foundation design submittal As specified under the specification CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1) with the exception of the following:

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

- (1) A typical cross section(s) that shows wall panels (noise panels and retaining panels if applicable), post, foundation or bridge parapet, clearance to existing utility lines (ComEd, etc.) and the elevation relationship between existing ground conditions and the finished grade (interim and ultimate condition) as well as slopes adjacent to the wall. Additionally, typical cross sections shall show limits of retaining panels for the maximum earth retention condition based on the ultimate or proposed condition.
- (2) 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 2'-0" (600 mm) below the finished grade line at front face of the wall, and at the top of the bridge parapet as shown on the contract plans.

Design Criteria. The wall system shall be designed as specified under the specification CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1) except that the earth pressure fill height shall be defined by the proposed grade line elevation (the greater of the interim or ultimate condition) and the theoretical bottom of panel line as shown on the contract plans.

The design wind loading shall be 35 psf (1.7 kN/m²). The dead weight of the wall panels mounted on the bridge parapet for structure 099-0022 shall not exceed 30 psf (1.44 kPa) of wall face area. For the remainder of the structure mounted noise abatement walls the 55 psf (2.6 kPa) weight limit shall not apply.

The material and construction of the foundations (drilled shafts) shall be according to Section 516 of the Standard Specifications except that the payment for the drilled shafts, concrete, reinforcement bars, retaining panels, anchor bolts and all other elements required to construct the walls will be included with the payment for the NOISE ABATEMENT WALL, STRUCTURE MOUNTED.

The noise abatement wall material shall be designed to achieve a sound TL equal to or greater than 20 dB in all one-third octave bands from 100 hertz to 5000 hertz, inclusive, when tested in accordance with ASTM E-90. The sound absorptive material shall have a minimum NRC as indicated in Table 1.

Table 1

Noise Wall No.	From	To	Noise Wall Side	NRC	Comments
7	Sta. 611+35	Sta. 629+51	I-55	Reflective	Composite wall permitted
	Sta. 611+35	Sta. 629+51	Frontage Road	Reflective	
9B	Sta. 689+00	Sta. 730+05	I-55	Reflective	Composite wall permitted
	Sta. 689+00	Sta. 730+05	Frontage Road	Reflective	

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Materials. Noise wall materials shall conform to the supplier's standards, AASHTO Specifications for noise walls and as specified under the specification CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1).

Fabrication. All precast units shall be manufactured according to Section 504 of the Standard Specifications and as specified under the specification CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1).

Construction. As specified under the specification CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1).

Method of Measurement. Noise abatement walls will be measured by the square foot (square meter) 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 as shown on the contract plans.

Basis of Payment. This work will be paid for at the contract unit price per square foot for 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 precast concrete noise and retaining panels, precast or metal posts, post connection system to the foundation (or structure), geotextile/filter cloth, structure excavation, granular backfill, and foundations.

NOISE ABATEMENT EMERGENCY ACCESS GATE, GROUND MOUNTED

This work shall consist of designing, preparing shop drawings, and furnishing of materials and equipment necessary to construct a noise abatement emergency access gate in accordance with these special provisions, plan details, and locations shown on the plans or as directed by the Engineer. The Contractor shall coordinate the design and construction of the gate with the respective manufacturer so that it meets the applicable requirements stated in the special provision CONCRETE NOISE ABATEMENT WALLS (ABSORPTIVE AND REFLECTIVE) (DIST 1)

The noise abatement emergency access gate shall be designed to fit within the design of the noise barrier wall as shown on the plans. The gate shall accommodate a 30 foot access opening, which is utilized by emergency vehicles entering the interstate.

A 30-foot wide access gate shall be provided at Sta. 686+50 for the full height of the noise abatement wall. The design details and shop drawings shall be provided by the manufacturer. The gate shall be designed and constructed in a manner that allows one person to open and close the gate.

Gate jambs shall be securely fastened to anchored posts. The front and back face of the installed door shall be flush with the faces of the noise abatement wall. Perimeter and internal gate frame shall consist of welded hot dip galvanized steel channels and miscellaneous angle stiffeners and plates designed to provide support for noise panels to match the noise abatement wall material as specified in the special provision CONCRETE NOISE ABATEMENT WALLS

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