

WORKBOOK CHANGE(S)

Add D 5340000.D04
Rev Date 11-20-03
F.A. Date 12-22-03
Letting Date 7-04

Move D 5340000
To Deleted File 12-24-03
Rev Date 11-20-03
F.A. Date _____
Letting Date 1-04

Remarks New SS.

Dates

*Copy of Spec to Paul that Impacts

QPL (ONLY)

Added to Nextwb file 12-24-03 sh

Deleted from Nextwb file 12-24-03 sh

History File Updated _____

Rolodexed 4/21/04 sh

Additional back-up see _____

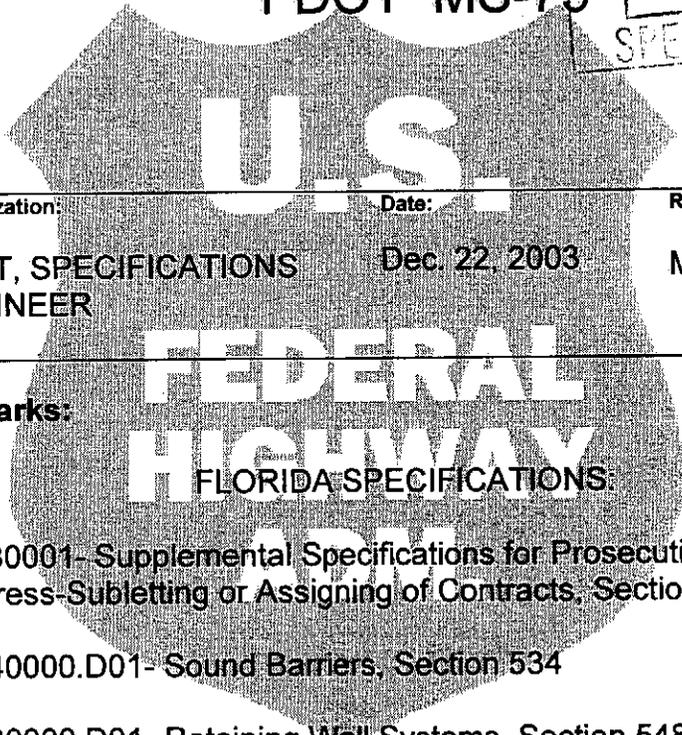
D5340000(1-04)

Route Slip

U.S. Department of Transportation
Federal Highway Administration
Florida Division
227 N. Bronough Street, Room 2015
Tallahassee, FL 32301

Distribution:
FDOT MS-75

RECEIVED
DEC 23
SPECIFICATIONS



To:	Organization:	Date:	Routing Symbol:
MR. DUANE BRAUTIGAM	FDOT, SPECIFICATIONS ENGINEER	Dec. 22, 2003	MS-75

- Per Your Request
- For Your Information**
- Per Our Conversation
- Comment
- Take Appropriate Action
- Note and Return
- Discuss With Me
- For Your Approval
- For Your Signature
- Please Answer
- Prepare Reply
For Signature of

Remarks:

D0080001- Supplemental Specifications for Prosecution and Progress-Subletting or Assigning of Contracts, Section 008

D5340000.D01- Sound Barriers, Section 534

D5480000.D01- Retaining Wall Systems, Section 548

ATTACHMENTS

From:	Telephone Number:	FDOT MS:	Org/Rtg Symbol
FOR: JAMES E. ST. JOHN, DIVISION ADMINISTRATOR	(850) 942-9650, EXT. 3035	# 29	

DON Davis: ANN to file in binders cc: 1 (w/specification)

534 SOUND BARRIERS.

(REV 11-20-03)

SECTION 534 (Pages 603-607) is deleted and the following substituted:

**SECTION 534
SOUND BARRIERS**

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 thru S-1509 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project.

Obtain Precast Concrete Sound Barrier Components from a manufacturing plant that is currently on the Department's list of qualified precast concrete plants

- Deleted: 6-27-03
- Deleted: 10-13-03
- Deleted: 10-16-03
- Deleted: 11-4-03
- Deleted:
- Deleted: (FA 8-6-03) (1-04)
- Inserted: 10-13-03
- Inserted: 10-16-03
- Inserted: 11-4-03

Deleted: Panels

534-2 Materials.

Meet the following requirements:

Portland Cement ConcreteSection 346

534-3 Concrete Sound Barrier Component Construction.

Construct concrete components in accordance with Section 400. Precast wall components are produced using certification acceptance; therefore, assume responsibility for performance of all quality control testing and inspections required by Sections 346 and 400 for the precast component construction. Perform all Quality Control Testing using CTQP qualified testing personnel. Perform compressive strength testing in a laboratory inspected by CCRL or CMEC, with all deficiencies corrected.

Ensure that each Precast Concrete Sound Barrier Panel and Post are permanently and clearly marked by ink stamping the tongue and groove portion of the panel and post. Mark the panel with the panel type, date cast, project number, manufacturer's name or symbol and the post with the date cast, project number and manufacturer's name or symbol.

534-4 Approved Proprietary Sound Barrier Panels and Systems.

Use only approved proprietary panels or systems listed in the plans on Standard S-1502, that have been pre-determined by the Engineer to be in compliance with the project design and aesthetic criteria and are listed on the QPL.

Manufacturers seeking evaluation of products for inclusion on the QPL must submit an application in accordance with Section 6, independently certified test reports, and written certification that the product meets the requirements of this Section, Structures Design Standard Index No.1501 and the Sound Barrier Evaluation Criteria contained in the State Structures Design Office's Structures Manual, which may be viewed at the following URL:

Deleted: 2

www.dot.state.fl.us/structures/structuresmanual/Qualified_Products_List/QPL_Chapter_2_-_Sound_Barriers.htm .

534-5 Product Certification.

Provide written certification from the manufacturer of the panels that the product meets the requirements of this Section and is the same product listed on the QPL.

Deleted: 3

534-6 Shop Drawing Submittal.

Do not include shop drawings of the basic panel details, submit only the information requested. Submit shop drawings in accordance with Section 5, showing a plan and elevation of the sound walls with the following project specific information provided:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Fire hose access hole locations
4. Drainage panel locations and type
5. Graphic details and graphic panel location
6. Panel locations
7. Post locations
8. Elevations of top of panel, bottom of panel, and panel joints
9. Existing and proposed ground elevations
10. Utility locations
11. Special post and panel details
12. Post and pile connection details
13. Lifting devices

Deleted: 534-

Deleted: 4

Deleted: 6 Post-Auger Cast Pile Connection¶
 . Construct Sound Barriers only in accordance with FDOT Sound Barrier Pile/Post Connection Options contained in the Contract Documents. The Department will not accept Value Engineering Change Proposals or Contractor Redesigns related to Sound Barriers, unless concepts have been reviewed by the State Structures Design Office. Due to pending patent litigation, the Department will not consider proposals utilizing precast posts with reinforcing bars extending into auger cast piles from other than State Contracting & Engineering Corp. and only as authorized by the Department's June 25, 2002 letter to State Contracting & Engineering Corp. (a copy of the 6/25/02 letter can be viewed on the State Structures Office website: www.dot.state.fl.us/structures/default.htm)
 ¶

534-7 Construction Methods.

A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final ground line elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

B. Do not mix wall types or colors at any one site. Install the walls in accordance with the plans, and in accordance with shop drawings submitted to and approved by the Engineer. Secure joints and connections in such a manner as to be structurally sound with no visible openings for sound transmission. Ensure metal walls do not produce a secondary source of noise transmission due to vibration.

C. Repair marred, chipped, scratched, or spalled areas of walls at no expense to the Department in accordance with the manufacturer's recommendations or at the Engineer's direction.

Inserted: 6

Deleted: 5

Deleted: 6

D. The Contractor may substitute welded for fixed bolt connections or vice versa on metal walls, where applicable, provided load calculations are submitted for the specific modified connection and uses a minimum safety factor of 3.0.

E. Place trench backfill for wall construction in accordance with 125-8. Use select materials for the trench backfill.

If, in the opinion of the Engineer, the trench is too narrow to compact, backfill the trench excavation with concrete grout to the satisfaction of the Engineer at no expense to the Department.

F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

H. Stain concrete walls the color shown in the plans.

I. After erecting the wall, leave the disturbed area in a finished condition at the direction of the Engineer, and grass or sod the area as indicated in the plans.

J. Erection Tolerances:

1. Variation from plumb: $\pm 1/4"$ [6mm]
2. Panel alignment: $\pm 1/4"$ [6mm]
3. Top of panel elevation: $\pm 3/4"$ [20mm]
4. Elevation difference of adjacent panels: $\pm 1/2"$ [13mm]
5. Joint taper over panel length: $\pm 1/2"$ [13mm]
6. Top of collar elevation: $\pm 3/4"$ [20mm]
7. Post alignment: $\pm 1"$ [25mm]
8. Post placement:
 - a. Variation from specified location $\pm 1/2"$ [13mm]
 - b. variation from specified elevation $\pm 1/4"$ [6mm]
9. Continuity of graphics, fracture fins, etc across joints: $1/4"$ [6mm]

K. When building sound barriers on top of earth berms, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T 99.

L. Provide the concrete wall (Precast or Cast-in-Place) with a uniform color, pattern, and texture.

534-8 Test Wall.

Deleted: 7

Erect a test wall section not less than 50 feet [15.0 m] in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to determine if the Contractor's methods and equipment are sufficient to produce a sound barrier that meets the requirements of the Contract Documents. The Contractor may revise his methods and equipment as necessary, at any time during the positioning of the test wall, in order to satisfactorily meet all Contract requirements. Build the test wall at a permanent wall location, as directed by the Engineer. If the test wall does not meet the construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the sound barrier.

534-9 Method of Measurement.

Deleted: 8

The quantity to be paid for will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the area bounded by the top of the top panel and the bottom of the bottom panel without deductions for openings in the panels, and the beginning to end limits shown in the control drawings. The pay area for anti-graffiti coating will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the wall without allowances for striations or openings.

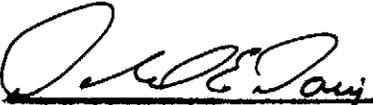
534-10 Basis of Payment.

Deleted: 9

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars, reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

- Item No. 534-72- Sound Barrier . - per square foot.
- Item No. 2534-72- Sound Barrier . - per square meter.

APPROVED:  **DATE:** 12/22/03
For the Division Administrator



Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JOSÉ ABREU
SECRETARY

MEMORANDUM

DATE: October 17, 2003
TO: Specification Review Distribution List
FROM: Duane F. Brautigam, P.E., State Specifications Engineer
SUBJECT: Proposed Specifications Change – D5340000 – Sound Barriers.

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change to Sound Barriers.

This change was proposed by Ghulam Mujtaba, State Materials Office to add personnel qualification requirements of incidental precast concrete facilities.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via e-mail at SP965DB or duane.brautigam@dot.state.fl.us. Comments received after November 14, 2003 may not be considered. Your input is encouraged.

DFB/jho

Attachment

COMMENTS: 534-1 Do not require of manufactures to be on a qualified precast plant. The contractor should be able to cast for own plants. Pipes & piles of these plants have been cast by the contractor in the past with no problems.

Submitted by: *R. [Signature]* Phone #: 561 748-2358

TO: SPECIFICATION DEVELOPMENT

NO COMMENTS
 COMMENTS-PLEASE PROCESS
DATE 12/12/03

NOTE: Please include as a LATE comment. Received 12/10/03 at FTBA Structures Mtg. *in file* DFB



Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JOSÉ ABREU
SECRETARY

November 21, 2003

Mr. Donald Davis
Program Operations Engineer
Federal Highway Administration
227 N. Bronough Street, Suite 2015
Tallahassee, Florida 32301

Re: Office of Design, Specifications
Section 534
Proposed Specification: D5340000.D01 – Sound Barriers.

Dear Mr. Davis:

We are resubmitting, for your approval, two copies of a proposed Supplemental Specification for Sound Barriers.

These changes were made Ghulam Mujtaba, State Materials Office to require Contractors to obtain precast concrete Sound Barrier Walls components from a plant that are on the Department's list of qualified precast concrete barrier wall plants. Also, Robert Robertson of the State Structures Office added verbiage and deleted 534-4 to address the settlement between the Department and State Contracting & Engineering Corp..

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965DB or duane.brautigam@dot.state.fl.us.

If you have any questions relating to this specification change, please call Duane F. Brautigam, State Specifications Engineer at 414-4110.

Sincerely,

Signature on file

Duane F. Brautigam, P.E.
State Specifications Engineer

DFB/jho
Attachment

cc: General Counsel
Florida Transportation Builders' Assoc.
State Construction Engineer

534 SOUND BARRIERS.
(REV ~~6-27-03~~ ~~10-13-03~~ ~~10-16-03~~ ~~11-4-03~~ ~~11-20-03~~) (FA-8-6-03) (1-04)

SECTION 534 (Pages 603-607) is deleted and the following substituted:

SECTION 534
SOUND BARRIERS

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 thru S-1509 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project.

Obtain Precast Concrete Sound Barrier Panels/Components from a manufacturing plant that is currently on the Department's list of qualified precast concrete plants

534-2 Materials.

Meet the following requirements:

Portland Cement Concrete.....Section 346

534-3 Concrete Sound Barrier Component Construction.

Construct concrete components in accordance with Section 400. Precast wall components are produced using certification acceptance; therefore, assume responsibility for performance of all quality control testing and inspections required by Sections 346 and 400 for the precast component construction. Perform all Quality Control Testing using CTQP qualified testing personnel. Perform compressive strength testing in a laboratory inspected by CCRL or CMEC, with all deficiencies corrected.

Ensure that each Precast Concrete Sound Barrier Panel and Post are permanently and clearly marked by ink stamping the tongue and groove portion of the panel and post. Mark the panel with the panel type, date cast, project number, manufacturer's name or symbol and the post with the date cast, project number and manufacturer's name or symbol.

534-24 Approved Proprietary Sound Barrier Panels and Systems.

Use only approved proprietary panels or systems listed in the plans on Standard S-1502, that have been pre-determined by the Engineer to be in compliance with the project design and aesthetic criteria and are listed on the QPL.

Manufacturers seeking evaluation of products for inclusion on the QPL must submit an application in accordance with Section 6, independently certified test reports, and written certification that the product meets the requirements of this Section, Structures Design Standard Index No.1501 and the Sound Barrier Evaluation Criteria contained in the State Structures Design Office's Structures Manual, which may be viewed at the following URL:

www.dot.state.fl.us/structures/structuresmanual/Qualified_Products_List/QPL_Chapter_2_-_Sound_Barriers.htm .

534-35 Product Certification.

Provide written certification from the manufacturer of the panels that the product meets the requirements of this Section and is the same product listed on the QPL.

534-46 Post Auger Cast Pile Connection

~~Construct Sound Barriers only in accordance with FDOT Sound Barrier Pile/Post Connection Options contained in the Contract Documents. The Department will not accept Value Engineering Change~~

~~Proposals or Contractor Redesigns related to Sound Barriers, unless concepts have been reviewed by the State Structures Design Office. Due to pending patent litigation, the Department will not consider proposals utilizing precast posts with reinforcing bars extending into auger cast piles from other than State Contracting & Engineering Corp. and only as authorized by the Department's June 25, 2002 letter to State Contracting & Engineering Corp. (a copy of the 6/25/02 letter can be viewed on the State Structures Office website: www.dot.state.fl.us/structures/default.htm)~~

534-56 Shop Drawing Submittal.

Do not include shop drawings of the basic panel details, submit only the information requested. Submit shop drawings in accordance with Section 5, showing a plan and elevation of the sound walls with the following project specific information provided:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Fire hose access hole locations
4. Drainage panel locations and type
5. Graphic details and graphic panel location
6. Panel locations
7. Post locations
8. Elevations of top of panel, bottom of panel, and panel joints
9. Existing and proposed ground elevations
10. Utility locations
11. Special post and panel details
12. Post and pile connection details
13. Lifting devices

534-67 Construction Methods.

A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final ground line elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

B. Do not mix wall types or colors at any one site. Install the walls in accordance with the plans, and in accordance with shop drawings submitted to and approved by the Engineer. Secure joints and connections in such a manner as to be structurally sound with no visible openings for sound transmission. Ensure metal walls do not produce a secondary source of noise transmission due to vibration.

C. Repair marred, chipped, scratched, or spalled areas of walls at no expense to the Department in accordance with the manufacturer's recommendations or at the Engineer's direction.

D. The Contractor may substitute welded for fixed bolt connections or vice versa on metal walls, where applicable, provided load calculations are submitted for the specific modified connection and uses a minimum safety factor of 3.0.

E. Place trench backfill for wall construction in accordance with 125-8. Use select materials for the trench backfill.

If, in the opinion of the Engineer, the trench is too narrow to compact, backfill the trench excavation with concrete grout to the satisfaction of the Engineer at no expense to the Department.

F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

H. Stain concrete walls the color shown in the plans.

I. After erecting the wall, leave the disturbed area in a finished condition at the direction of the Engineer, and grass or sod the area as indicated in the plans.

J. Erection Tolerances:

1. Variation from plumb: $\pm 1/4''$ [6mm]
2. Panel alignment: $\pm 1/4''$ [6mm]
3. Top of panel elevation: $\pm 3/4''$ [20mm]
4. Elevation difference of adjacent panels: $\pm 1/2''$ [13mm]
5. Joint taper over panel length: $\pm 1/2''$ [13mm]
6. Top of collar elevation: $\pm 3/4''$ [20mm]
7. Post alignment: $\pm 1''$ [25mm]
8. Post placement:
 - a. Variation from specified location $\pm 1/2''$ [13mm]
 - b. variation from specified elevation $\pm 1/4''$ [6mm]
9. Continuity of graphics, fracture fins, etc across joints: $1/4''$ [6mm]

K. When building sound barriers on top of earth berms, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T 99.

L. Provide the concrete wall (Precast or Cast-in-Place) with a uniform color, pattern, and texture.

534-78 Test Wall.

Erect a test wall section not less than 50 feet [15.0 m] in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to determine if the Contractor's methods and equipment are sufficient to produce a sound barrier that meets the requirements of the Contract Documents. The Contractor may revise his methods and equipment as necessary, at any time during the positioning of the test wall, in order to satisfactorily meet all Contract requirements. Build the test wall at a permanent wall location, as directed by the Engineer. If the test wall does not meet the construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the sound barrier.

534-89 Method of Measurement.

The quantity to be paid for will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the area bounded by the top of the top panel and the bottom of the bottom panel without deductions for openings in the panels, and the beginning to end limits shown in the control drawings. The pay area for anti-graffiti coating will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the wall without allowances for striations or openings.

534-910 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars, reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

- | | |
|-------------------|------------------------------------|
| Item No. 534-72- | Sound Barrier . - per square foot. |
| Item No. 2534-72- | Sound Barrier. - per square meter. |

**534 SOUND BARRIERS.
(REV 11-20-03)**

SECTION 534 (Pages 603-607) is deleted and the following substituted:

**SECTION 534
SOUND BARRIERS**

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 thru S-1509 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project.

Obtain Precast Concrete Sound Barrier Components from a manufacturing plant that is currently on the Department's list of qualified precast concrete plants

534-2 Materials.

Meet the following requirements:

Portland Cement Concrete..... Section 346

534-3 Concrete Sound Barrier Component Construction.

Construct concrete components in accordance with Section 400. Precast wall components are produced using certification acceptance; therefore, assume responsibility for performance of all quality control testing and inspections required by Sections 346 and 400 for the precast component construction. Perform all Quality Control Testing using CTQP qualified testing personnel. Perform compressive strength testing in a laboratory inspected by CCRL or CMEC, with all deficiencies corrected.

Ensure that each Precast Concrete Sound Barrier Panel and Post are permanently and clearly marked by ink stamping the tongue and groove portion of the panel and post. Mark the panel with the panel type, date cast, project number, manufacturer's name or symbol and the post with the date cast, project number and manufacturer's name or symbol.

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A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final ground line elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

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F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

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8. Post placement:

a. Variation from specified location $\pm 1/2"$ [13mm]b. variation from specified elevation $\pm 1/4"$ [6mm]9. Continuity of graphics, fracture fins, etc across joints: $1/4"$ [6mm]

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534-10 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars, reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

Item No. 534-72-	Sound Barrier . - per square foot.
Item No. 2534-72-	Sound Barrier. - per square meter.



POSTED 10/17/2003
JAB

Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JOSÉ ABREU
SECRETARY

MEMORANDUM

DATE: October 17, 2003

TO: Specification Review Distribution List

FROM: Duane F. Brautigam, P.E., State Specifications Engineer 

SUBJECT: **Proposed Specifications Change – D5340000 – Sound Barriers.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change to Sound Barriers.

This change was proposed by Ghulam Mujtaba, State Materials Office to add personnel qualification requirements of incidental precast concrete facilities.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via e-mail at SP965DB or duane.brautigam@dot.state.fl.us. Comments received after November 14, 2003 may not be considered. Your input is encouraged.

DFB/jho

Attachment

COMMENTS:

Submitted by:

Phone #:

534 SOUND BARRIERS.
(REV ~~6-27-03~~ ~~10-13-03~~ ~~10-16-03~~) (FA ~~8-6-03~~) (1-04)

SECTION 534 (Pages 603-607) is deleted and the following substituted:

SECTION 534
SOUND BARRIERS

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project.

Obtain Precast Concrete Sound Barrier Panels from a manufacturing plant that is currently on the Department's list of qualified precast concrete plants

534-2 Materials.

Meet the following requirements:

Portland Cement Concrete.....Section 346

534-3 Concrete Sound Barrier Component Construction.

Construct concrete components in accordance with Section 400. Precast wall components are produced using certification acceptance; therefore, assume responsibility for performance of all quality control testing and inspections required by Sections 346 and 400 for the precast component construction. Perform all Quality Control Testing using CTQP qualified testing personnel. Perform compressive strength testing in a laboratory inspected by CCRL or CMEC, with all deficiencies corrected.

Ensure that each Precast Concrete Sound Barrier Panel has permanently clear marking, showing the manufacture date, serial number, and manufacturer's name or symbol. The marking may be located on a plate, plaque, or cast in the panel.

534-24 Approved Proprietary Sound Barrier Panels.

Use only approved proprietary panels listed in the plans, that have been pre-determined by the Engineer to be in compliance with the project design and aesthetic criteria and are listed on the QPL.

Manufacturers seeking evaluation of products for inclusion on the QPL must submit an application in accordance with Section 6, independently certified test reports, and written certification that the product meets the requirements of this Section, Structures Design Standard Index No.1501 and the Sound Barrier Evaluation Criteria contained in the State Structures Design Office's Structures Manual, which may be viewed at the following URL:

www.dot.state.fl.us/structures/structuresmanual/Qualified_Products_List/QPL_Chapter_2_-_Sound_Barriers.htm .

534-35 Product Certification.

Provide written certification from the manufacturer of the panels that the product meets the requirements of this Section and is the same product listed on the QPL.

534-46 Post-Augur Cast Pile Connection

Construct Sound Barriers only in accordance with FDOT Sound Barrier Pile/Post Connection Options contained in the Contract Documents. The Department will not accept Value Engineering Change Proposals or Contractor Redesigns related to Sound Barriers, unless concepts have been reviewed by the State Structures Design Office. Due to pending patent litigation, the Department will not consider

proposals utilizing precast posts with reinforcing bars extending into auger cast piles from other than State Contracting & Engineering Corp. and only as authorized by the Department's June 25, 2002 letter to State Contracting & Engineering Corp. (a copy of the 6/25/02 letter can be viewed on the State Structures Office website: www.dot.state.fl.us/structures/default.htm)

534-57 Shop Drawing Submittal.

Do not include shop drawings of the basic panel details, submit only the information requested. Submit shop drawings in accordance with Section 5, showing a plan and elevation of the sound walls with the following project specific information provided:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Fire hose access hole locations
4. Drainage panel locations and type
5. Graphic details and graphic panel location
6. Panel locations
7. Post locations
8. Elevations of top of panel, bottom of panel, and panel joints
9. Existing and proposed ground elevations
10. Utility locations
11. Special post and panel details
12. Post and pile connection details
13. Lifting devices

534-68 Construction Methods.

A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final groundline elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

B. Do not mix wall types or colors at any one site. Install the walls in accordance with the plans, and in accordance with shop drawings submitted to and approved by the Engineer. Secure joints and connections in such a manner as to be structurally sound with no visible openings for sound transmission. Ensure metal walls do not produce a secondary source of noise transmission due to vibration.

C. Repair marred, chipped, scratched, or spalled areas of walls at no expense to the Department in accordance with the manufacturer's recommendations or at the Engineer's direction.

D. The Contractor may substitute welded for fixed bolt connections or vice versa on metal walls, where applicable, provided load calculations are submitted for the specific modified connection and uses a minimum safety factor of 3.0.

E. Place trench backfill for wall construction in accordance with 125-8. Use select materials for the trench backfill.

If, in the opinion of the Engineer, the trench is too narrow to compact, backfill the trench excavation with concrete grout to the satisfaction of the Engineer at no expense to the Department.

F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

H. Stain concrete walls the color shown in the plans.

I. After erecting the wall, leave the disturbed area in a finished condition at the direction of the Engineer, and grass or sod the area as indicated in the plans.

J. Erection Tolerances:

1. Variation from plumb: $\pm 1/4"$ [6mm]

2. Panel alignment: $\pm 1/4''$ [6mm]
3. Top of panel elevation: $\pm 3/4''$ [20mm]
4. Elevation difference of adjacent panels: $\pm 1/2''$ [13mm]
5. Joint taper over panel length: $\pm 1/2''$ [13mm]
6. Top of collar elevation: $\pm 3/4''$ [20mm]
7. Post alignment: $\pm 1''$ [25mm]
8. Post placement:
 - a. Variation from specified location $\pm 1/2''$ [13mm]
 - b. variation from specified elevation $\pm 1/4''$ [6mm]
9. Continuity of graphics, fracture fins, etc across joints: $1/4''$ [6mm]

K. When building sound barriers on top of earth berms, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T 99.

L. Provide the concrete wall (Precast or Cast-in-Place) with a uniform color, pattern, and texture.

534-79 Test Wall.

Erect a test wall section not less than 50 feet [15.0 m] in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to determine if the Contractor's methods and equipment are sufficient to produce a sound barrier that meets the requirements of the Contract Documents. The Contractor may revise his methods and equipment as necessary, at any time during the positioning of the test wall, in order to satisfactorily meet all Contract requirements. Build the test wall at a permanent wall location, as directed by the Engineer. If the test wall does not meet the construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the sound barrier.

534-810 Method of Measurement.

The quantity to be paid for will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the area bounded by the top of the top panel and the bottom of the bottom panel without deductions for openings in the panels, and the beginning to end limits shown in the control drawings. The pay area for anti-graffiti coating will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the wall without allowances for striations or openings.

534-911 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars, reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

Item No. 534-72-	Sound Barrier . - per square foot.
Item No. 2534-72-	Sound Barrier. - per square meter.

Comments from John Owens 9-15-03 10-7-03

534 SOUND BARRIERS.

~~(REV 6-27-03) (FA 8-6-03) (1-04) (REV 8-29-03) (REV 9-12-54-03)~~

SECTION 534 (Pages 603-607) is deleted and the following substituted:

**SECTION 534
SOUND BARRIERS**

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project. *Obtain precast concrete sound barrier panels from a manufacturing plant that is currently on the Department's list of qualified precast concrete plants and meeting the requirements of Sections 6 and 105.* ~~Are you going to put a qualified precast concrete plant on your list that does not meet Section 6 & 105?~~

534-2 Materials.

Meet the following requirements:

~~Portland Cement Concrete----- - Section 346 ~~is~~
appears that this is covered in Index 1501.~~

~~Steel Strands----- Section 933 Are you
sure there are Steel Strands in this product? It is not called for in Index 1501.~~

~~Other Precast Concrete Materials and Manufacturing Process----- - Section 400 What are
you trying to say?~~

~~Use Department approved concrete mix designs.~~

~~The Department will accept cast in place concrete sound barriers that meet the
requirements of the Contract Documents, Contractor's approved quality control plan, and Department's
verification inspection and testing. This belong elsewhere not in the materials Section.~~

~~Put this in your manual, not the Specifications The acceptance of the precast concrete plant's
quality control plan is based on the Department's satisfactory initial and at least annual plant~~

~~qualification reviews and monthly plant inspections. Department will accept precast concrete sound wall panels based on the manufacturer's certified quality control test results. Perform concrete quality control sampling, testing, and inspections by CTQP qualified personnel meeting the requirements of 105-5.11. Perform the laboratory concrete tests by a sound barrier to provide complete quality control inspections and testing qualification quality control Concrete Field Technician qualification Concrete Field Testing Technician qualification, quality control personnel meeting the requirements of The qualified laboratory, meeting the requirements of 6-9. must perform the laboratory quality control tests.. Department may perform independent verification or independent assurance sampling and testing at the precast concrete plants during the monthly inspections or at any other times that the plants are manufacturing products for the Department projects.- Put this in your manual, not the Specifications~~

534-3 - CONC. SOUND BARRIER PANELS - SEE CONST. - SEE 548-3

534-2/4 Approved Proprietary Sound Barrier Panels.

Use only approved proprietary panels listed in the plans, which that have been pre-determined by the Engineer to be in compliance with the project design and aesthetic criteria and are listed on the QPL.

Manufacturers seeking evaluation of products for inclusion on the QPL must submit an application in accordance with Section 6. ~~With the application, include~~, independently certified test reports, and written certification that the product meets the requirements of this Section, Structures Design Standard Index No.1501 and the Sound Barrier Evaluation Criteria contained in the State Structures Design Office's Structures Manual, which may be viewed at the following URL:

www.dot.state.fl.us/structures/structuresmanual/Qualified_Products_List/QPL_Chapter_2_-_Sound_Barriers.htm ~~The address to be verified.~~

534-3/5 Product Certification.

Provide written certification from the manufacturer of the panels that the product meets the requirements of this Section and is the same product listed on the QPL. ~~Ensure that each precast concrete sound barrier panel has permanently clear marking, showing the manufacture date, serial number, and manufacturer's name or symbol. The marking may be located on a plate, plaque, or cast in the panel.~~

534-4/6 Post-Auger Cast Pile Connection

Construct Sound Barriers only in accordance with FDOT Sound Barrier Pile/Post Connection Options contained in the Contract Documents. The Department will not accept Value Engineering Change Proposals or Contractor Redesigns related to Sound Barriers, unless concepts have been reviewed by the

State Structures Design Office. Due to pending patent litigation, the Department will not consider proposals utilizing precast posts with reinforcing bars extending into auger cast piles from other than State Contracting & Engineering Corp. and only as authorized by the Department's June 25, 2002 letter to State Contracting & Engineering Corp. (a copy of the 6/25/02 letter can be viewed on the State Structures Office website: www.dot.state.fl.us/structures/default.htm)

⁷~~534-56~~ Shop Drawing Submittal.

Do not include shop drawings of the basic panel details, submit only the information requested. Submit shop drawings in accordance with Section 5, showing a plan and elevation of the sound walls with the following project specific information provided:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Fire hose access hole locations
4. Drainage panel locations and type
5. Graphic details and graphic panel location
6. Panel locations
7. Post locations
8. Elevations of top of panel, bottom of panel, and panel joints
9. Existing and proposed ground elevations
10. Utility locations
11. Special post and panel details
12. Post and pile connection details
13. Lifting devices

^B~~534-67~~ Construction Methods.

A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final ground-line elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

B. Do not mix wall types or colors at any one site. Install the walls in accordance with the plans, and in accordance with shop drawings submitted to and approved by the Engineer. ~~Ensure wall installation~~

~~is performed by persons having a minimum of 2 years of experience in erecting precast concrete panels.~~

Secure joints and connections in such a manner as to be structurally sound with no visible openings for sound transmission. Ensure metal walls do not produce a secondary source of noise transmission due to vibration.

C. Repair marred, chipped, scratched, or spalled areas of walls at no expense to the Department in accordance with the manufacturer's recommendations or at the Engineer's direction.

D. The Contractor may substitute welded for fixed bolt connections or vice versa on metal walls, where applicable, provided load calculations are submitted for the specific modified connection and uses a minimum safety factor of 3.0.

E. Place trench backfill for wall construction in accordance with 125-8. Use select materials for the trench backfill.

If, in the opinion of the Engineer, the trench is too narrow to compact, backfill the trench excavation with concrete grout to the satisfaction of the Engineer at no expense to the Department.

F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

H. Stain concrete walls the color shown in the plans.

~~I. Install the precast barrier walls by the manufacturer or a competent erector with a minimum of 2 years of experience in erecting precast concrete panels. Lift the panels by means of suitable lifting devices at points provided by the manufacturer. Provide temporary shoring and bracing, if necessary, in accordance with the manufacturer's recommendations. See B. above. After erecting the wall, leave the disturbed area in a finished condition at the direction of the Engineer, and grass or sod the area as indicated in the plans.~~

J. Erection Tolerances:

1. Variation from plumb: $\pm 1/4''$ [6mm]
2. Panel alignment: $\pm 1/4''$ [6mm]
3. Top of panel elevation: $\pm 3/4''$ [20mm]
4. Elevation difference of adjacent panels: $\pm 1/2''$ [13mm]
5. Joint taper over panel length: $\pm 1/2''$ [13mm]
6. Top of collar elevation: $\pm 3/4''$ [20mm]
7. Post alignment: $\pm 1''$ [25mm]
8. Post placement:
 - a. Variation from specified location: $\pm 1/2''$ [13mm]

b. variation from specified elevation: $\pm 1/4''$ [6mm]

9. Continuity of graphics, fracture fins, etc across joints: $1/4''$ [6mm]

K. When building sound barriers on top of earth berms, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T 99.

L. Provide the concrete wall (Precast or Cast-in-Place) with a uniform color, pattern, and texture.

9
~~534-78~~ **Test Wall.**

Erect a test wall section not less than 50 feet [15.0 m] in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to determine if the Contractor's methods and equipment are sufficient to produce a sound barrier that meets the requirements of the Contract Documents. The Contractor may revise his methods and equipment as necessary, at any time during the positioning of the test wall, in order to satisfactorily meet all Contract requirements. Build the test wall at a permanent wall location, as directed by the Engineer. If the test wall does not meet the construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the sound barrier.

10
~~534-99~~ **Method of Measurement.**

The quantity to be paid for will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the area bounded by the top of the top panel and the bottom of the bottom panel without deductions for openings in the panels, and the beginning to end limits shown in the control drawings. The pay area for anti-graffiti coating will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the wall without allowances for striations or openings.

11
~~534-910~~ **Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars, reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

Item No. 534-72-	Sound Barrier . - per square foot.
Item No. 2534-72-	Sound Barrier. - per square meter.

WORKBOOK CHANGE(S)

Add D 5340000
Rev Date 11-20-03
F.A. Date _____
Letting Date 1-04

Move D 5340000
To Deleted File 1270-03
Rev Date 6-27-03
F.A. Date 8-6-03
Letting Date 1-04

Remarks New SP. Added
by Mandatory # 2 for
1-04 letting.

Dates

*Copy of Spec to Paul that Impacts
QPL (ONLY) _____
Added to Nextwb file 12-10-03sh
Deleted from Nextwb file 12-10-03sh
History File Updated _____
Rolodexed _____
Additional back-up see _____
~~05~~ 05340000(7-04)

SOUND BARRIERS.
(REV 11-20-03) (1-04)

SECTION 534 (Pages 603-607) is deleted and the following substituted:

SECTION 534
SOUND BARRIERS

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 thru S-1509 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project.

Obtain Precast Concrete Sound Barrier Components from a manufacturing plant that is currently on the Department's list of qualified precast concrete plants.

534-2 Materials.

Meet the following requirements:

Portland Cement ConcreteSection 346

534-3 Concrete Sound Barrier Component Construction.

Construct concrete components in accordance with Section 400. Precast wall components are produced using certification acceptance; therefore, assume responsibility for performance of all quality control testing and inspections required by Sections 346 and 400 for the precast component construction. Perform all Quality Control Testing using CTQP qualified testing personnel. Perform compressive strength testing in a laboratory inspected by CCRL or CMEC, with all deficiencies corrected.

Ensure that each Precast Concrete Sound Barrier Panel and Post are permanently and clearly marked by ink stamping the tongue and groove portion of the panel and post. Mark the panel with the panel type, date cast, project number, manufacturer's name or symbol and the post with the date cast, project number and manufacturer's name or symbol.

534-4 Approved Proprietary Sound Barrier Panels and Systems.

Use only approved proprietary panels or systems listed in the plans on Standard S-1502, that have been pre-determined by the Engineer to be in compliance with the project design and aesthetic criteria and are listed on the QPL.

Manufacturers seeking evaluation of products for inclusion on the QPL must submit an application in accordance with Section 6, independently certified test reports, and written certification that the product meets the requirements of this Section, Structures Design Standard Index No.1501 and the Sound Barrier Evaluation Criteria contained in the State Structures Design Office's Structures Manual, which may be viewed at the following URL:

www.dot.state.fl.us/structures/structuresmanual/Qualified_Products_List/QPL_Chapter_2_-_Sound_Barriers.htm .

534-5 Product Certification.

Provide written certification from the manufacturer of the panels that the product meets the requirements of this Section and is the same product listed on the QPL.

534-6 Shop Drawing Submittal.

Do not include shop drawings of the basic panel details, submit only the information requested. Submit shop drawings in accordance with Section 5, showing a plan and elevation of the sound walls with the following project specific information provided:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Fire hose access hole locations
4. Drainage panel locations and type
5. Graphic details and graphic panel location
6. Panel locations
7. Post locations
8. Elevations of top of panel, bottom of panel, and panel joints
9. Existing and proposed ground elevations
10. Utility locations
11. Special post and panel details
12. Post and pile connection details
13. Lifting devices

534-7 Construction Methods.

A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final ground line elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

B. Do not mix wall types or colors at any one site. Install the walls in accordance with the plans, and in accordance with shop drawings submitted to and approved by the Engineer. Secure joints and connections in such a manner as to be structurally sound with no visible openings for sound transmission. Ensure metal walls do not produce a secondary source of noise transmission due to vibration.

C. Repair marred, chipped, scratched, or spalled areas of walls at no expense to the Department in accordance with the manufacturer's recommendations or at the Engineer's direction.

D. The Contractor may substitute welded for fixed bolt connections or vice versa on metal walls, where applicable, provided load calculations are submitted for the specific modified connection and uses a minimum safety factor of 3.0.

E. Place trench backfill for wall construction in accordance with 125-8. Use select materials for the trench backfill.

If, in the opinion of the Engineer, the trench is too narrow to compact, backfill the trench excavation with concrete grout to the satisfaction of the Engineer at no expense to the Department.

F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

H. Stain concrete walls the color shown in the plans.

I. After erecting the wall, leave the disturbed area in a finished condition at the direction of the Engineer, and grass or sod the area as indicated in the plans.

J. Erection Tolerances:

1. Variation from plumb: $\pm 1/4''$ [6mm]
2. Panel alignment: $\pm 1/4''$ [6mm]
3. Top of panel elevation: $\pm 3/4''$ [20mm]
4. Elevation difference of adjacent panels: $\pm 1/2''$ [13mm]
5. Joint taper over panel length: $\pm 1/2''$ [13mm]
6. Top of collar elevation: $\pm 3/4''$ [20mm]
7. Post alignment: $\pm 1''$ [25mm]
8. Post placement:
 - a. Variation from specified location $\pm 1/2''$ [13mm]
 - b. variation from specified elevation $\pm 1/4''$ [6mm]
9. Continuity of graphics, fracture fins, etc across joints: $1/4''$ [6mm]

K. When building sound barriers on top of earth berms, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T 99.

L. Provide the concrete wall (Precast or Cast-in-Place) with a uniform color, pattern, and texture.

534-8 Test Wall.

Erect a test wall section not less than 50 feet [15.0 m] in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to determine if the Contractor's methods and equipment are sufficient to produce a sound barrier that meets the requirements of the Contract Documents. The Contractor may revise his methods and equipment as necessary, at any time during the positioning of the test wall, in order to satisfactorily meet all Contract requirements. Build the test wall at a permanent wall location, as directed by the Engineer. If the test wall does not meet the construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the sound barrier.

534-9 Method of Measurement.

The quantity to be paid for will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the area bounded by the top of the top panel and the bottom of the bottom panel without deductions for openings in the panels, and the beginning to end limits shown in the control drawings. The pay area for anti-graffiti coating will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the wall without allowances for striations or openings.

534-10 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars, reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

- Item No. 534- 72- Sound Barrier-per square foot
- Item No. 2534- 72- Sound Barrier-per square meter

534 SOUND BARRIERS.
(REV 6-27-03) (FA 8-6-03) (1-04)

SECTION 534 (Pages 603-607) is deleted and the following substituted:

SECTION 534
SOUND BARRIERS

534-1 Description.

Furnish and install sound barriers with either panels constructed in accordance with Structures Design Standard Index No.1501 or with pre-approved alternatives listed on the Department's Qualified Products List (QPL), unless the plans otherwise indicate limitations based on specific design or aesthetic criteria unique to the project.

534-2 Approved Proprietary Sound Barrier Panels.

Use only approved proprietary panels listed in the plans, that have been pre-determined by the Engineer to be in compliance with the project design and aesthetic criteria and are listed on the QPL.

Manufacturers seeking evaluation of products for inclusion on the QPL must submit an application in accordance with Section 6, independently certified test reports, and written certification that the product meets the requirements of this Section, Structures Design Standard Index No.1501 and the Sound Barrier Evaluation Criteria contained in the State Structures Design Office's Structures Manual, which may be viewed at the following URL:
www.dot.state.fl.us/structures/structuresmanual/Qualified_Products_List/QPL_Chapter_2_-_Sound_Barriers.htm .

534-3 Product Certification.

Provide written certification from the manufacturer of the panels that the product meets the requirements of this Section and is the same product listed on the QPL.

534-4 Post-Auger Cast Pile Connection

Construct Sound Barriers only in accordance with FDOT Sound Barrier Pile/Post Connection Options contained in the Contract Documents. The Department will not accept Value Engineering Change Proposals or Contractor Redesigns related to Sound Barriers, unless concepts have been reviewed by the State Structures Design Office. Due to pending patent litigation, the Department will not consider proposals utilizing precast posts with reinforcing bars extending into auger cast piles from other than State Contracting & Engineering Corp. and only as authorized by the Department's June 25, 2002 letter to State Contracting & Engineering Corp. (a copy of the 6/25/02 letter can be viewed on the State Structures Office website: www.dot.state.fl.us/structures/default.htm)

534-5 Shop Drawing Submittal.

Do not include shop drawings of the basic panel details, submit only the information requested. Submit shop drawings in accordance with Section 5, showing a plan and elevation of the sound walls with the following project specific information provided:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Fire hose access hole locations
4. Drainage panel locations and type
5. Graphic details and graphic panel location
6. Panel locations
7. Post locations
8. Elevations of top of panel, bottom of panel, and panel joints
9. Existing and proposed ground elevations
10. Utility locations
11. Special post and panel details
12. Post and pile connection details
13. Lifting devices

534-6 Construction Methods.

A. Prior to beginning earthwork on the project, stake the wall location in the field, and establish the final groundline elevations at the barrier walls. Use these elevations to develop the shop plans, including a complete elevation view of each wall indicating top and bottom elevations as well as the roadway grade. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. Keep to a minimum the clearing and grubbing, and trimming of trees as necessary to construct the walls.

B. Do not mix wall types or colors at any one site. Install the walls in accordance with the plans, and in accordance with shop drawings submitted to and approved by the Engineer. Secure joints and connections in such a manner as to be structurally sound with no visible openings for sound transmission. Ensure metal walls do not produce a secondary source of noise transmission due to vibration.

C. Repair marred, chipped, scratched, or spalled areas of walls at no expense to the Department in accordance with the manufacturer's recommendations or at the Engineer's direction.

D. The Contractor may substitute welded for fixed bolt connections or vice versa on metal walls, where applicable, provided load calculations are submitted for the specific modified connection and uses a minimum safety factor of 3.0.

E. Place trench backfill for wall construction in accordance with 125-8. Use select materials for the trench backfill.

If, in the opinion of the Engineer, the trench is too narrow to compact, backfill the trench excavation with concrete grout to the satisfaction of the Engineer at no expense to the Department.

F. Dispose of all excess excavation in a manner satisfactory to the Engineer.

G. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or, in the opinion of the Engineer, as long as possible.

H. Stain concrete walls the color shown in the plans.

I. After erecting the wall, leave the disturbed area in a finished condition at the direction of the Engineer, and grass or sod the area as indicated in the plans.

J. Erection Tolerances:

1. Variation from plumb: $\pm 1/4''$ [6mm]
2. Panel alignment: $\pm 1/4''$ [6mm]
3. Top of panel elevation: $\pm 3/4''$ [20mm]
4. Elevation difference of adjacent panels: $\pm 1/2''$ [13mm]
5. Joint taper over panel length: $\pm 1/2''$ [13mm]
6. Top of collar elevation: $\pm 3/4''$ [20mm]
7. Post alignment: $\pm 1''$ [25mm]
8. Post placement:
 - a. Variation from specified location $\pm 1/2''$ [13mm]
 - b. variation from specified elevation $\pm 1/4''$ [6mm]
9. Continuity of graphics, fracture fins, etc across joints: $1/4''$ [6mm]

K. When building sound barriers on top of earth berms, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T 99.

L. Provide the concrete wall (Precast or Cast-in-Place) with a uniform color, pattern, and texture.

534-7 Test Wall.

Erect a test wall section not less than 50 feet [15.0 m] in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to determine if the Contractor's methods and equipment are sufficient to produce a sound barrier that meets the requirements of the Contract Documents. The Contractor may revise his methods and equipment as necessary, at any time during the positioning of the test wall, in order to satisfactorily meet all Contract requirements. Build the test wall at a permanent wall location, as directed by the Engineer. If the test wall does not meet the construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the sound barrier.

534-8 Method of Measurement.

The quantity to be paid for will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the area bounded by the top of the top panel and the bottom of the bottom panel without deductions for openings in the panels, and the beginning to end limits shown in the control drawings. The pay area for anti-graffiti coating will be the plan quantity, in square feet [square meters], measured in place, completed and accepted, of the wall without allowances for striations or openings.

534-9 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including but not limited to: furnishing all materials, labor, panels, special panels, posts, collars,

reinforcing steel, foundations, drain holes, fire hose access holes, grating, neoprene pads, equipment, alignment pins, etc. necessary to construct the sound barriers. Include in this price, the cost of any charges for power stoppages, sound barrier wall realignments, special erection methods, etc. required to construct the wall.

Payment will be made under:

- Item No. 534- 72- Sound Barrier . - per square foot.
- Item No. 2534- 72- Sound Barrier. - per square meter.