Design Update Training 2013

John Mauthner, P.E. Design Standards Manager

Patrick Overton, P.E. Design Standards Engineer

Agenda

- Design Bulletins
- Index 430
- Permanent Crash Cushions
- PPM, Volume 1 – Chapter 4
- PPM, Volume 1 – Chapter 10
- Key Sheet Revisions

Design Bulletins

2013

- http://www.dot.state.fl.us/rddesign/
  - 12-05 — Crash Cushion Selection, Pay Items and Index 430 Removal.
  - 12-13 — Crash Cushion Selection without Extrapolation.
  - 13-01 — Index 430 and Exhibit SQ-4.

Design Bulletins

12-05

REQUIREMENTS:

This Design Bulletin suspends the requirements in the Plans Preparation Manual (PPM) Volume 1, Sections 4.5.2 and 10.11.5, and rescinds Design Standard 430. Crash Cushions shall be selected as follows:

1. Crash Cushion performance for both permanent and temporary installations shall be specified as TL-3 for speeds of 60mph or greater. Specifying Crash Cushions based on a specific posted speed or design speed is appropriate for speeds from 30 mph to 60 mph in 5 mph increments. Extrapolating for speeds above 60 mph will not be allowed.

2. Only for unusual situations shall a specific Crash Cushion Vendor/Model be specified by plan note. These situations should only be for the geometric uniqueness of the site and the reasons for selecting a specific Crash Cushion brand shall be documented in the project design file.

Design Bulletins

12-5 cont' – Pay Item Example

544-75- AA Crash Cushion **AA=40 (Optional)** Repairs at cost + 20% Supplemental Specification SS5440000 for all projects not meeting the requirements of the Special Provision below.	**45 mph or less (TL-2):** 544-75-50 Crash Cushion TL-2, Optional
	50 mph to 60 mph (TL-3): 544-75-51 Crash Cushion TL-3, Optional

Design Bulletins

12-13

Recently, the Department has required manufacturers to modify their vendor drawings for both temporary and permanent crash cushions to specify whether the crash cushions are TL-2 or TL-3. TL-2 crash cushions are required on low speed facilities (45 mph or less). TL-3 crash cushions are required on high speed facilities (50 mph or greater). Configurations developed by manufacturers that had FHWA Acceptance Letters for speeds less than 45 mph and for speeds 50 mph to 60 mph were allowed in 5 mph increments. Extrapolating for speeds above 60 mph is no longer allowed. This will be reflected on the revised manufacturers' vendor drawings.

Design Bulletins

13-01

- Response to FHWA FAQ
- Released New Index 430

Index 430

Reason for adding the Index

- FHWA - FAQ

2. **OUR HIGHWAYS ARE SIGNED FOR 75 MPH. SHOULDN'T WE USE CRASH CUSHIONS THAT HAVE BEEN CRASH TESTED AT SPEEDS HIGHER THAN 100 KM/HR (62.5 MPH)?**

   A. No. The FHWA Office of Safety considers that a 100 km/hr test is representative of worst case run-off-road crashes.

   Early on in the panel discussions related to the NCHRP project for the updating of NCHRP Report 350, there was much discussion involving the need to increase test speeds over the 100 km/h (62.2 mph) maximum speed now used. Based on data available to the research team, it was concluded that regardless of posted speeds, most impacts with fixed objects occurred at somewhat reduced speeds, probably because most drivers are braking hard as they are about to run off the road or into some fixed object. Historically (from FARS data), crash cushions have been directly responsible for very few fatalities and even fewer of these can be attributed directly to inadequate cushion capacity. Granted, a longer cushion will perform better in some head-on full-speed crashes, but the cost-effectiveness of a 70 mph cushion over a 62 mph design is far from clear. FHWA's position is that highway features tested to Report 350 TL-3 (i.e., 100 km/h) are sufficient, but if any DOT wishes to use longer designs, they may. The best question to ask is whether or not there has been a performance problem with existing installations.

Index 430

History

- Removal of Index 430 from the 2012/2013 Design Standards eBooklet was due to designers/contractors not using it as intended

- The information in the tables were outdated and limited the contractor to the crash cushions listed in the tables.

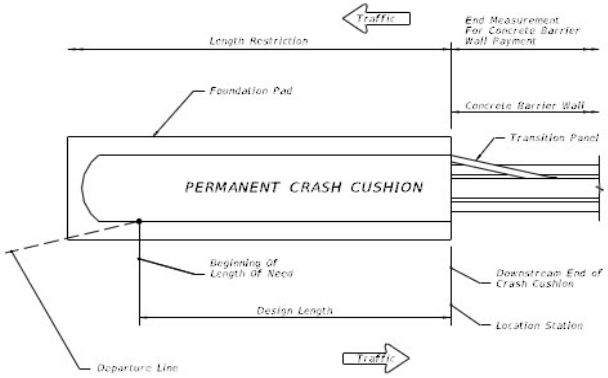
Index 430

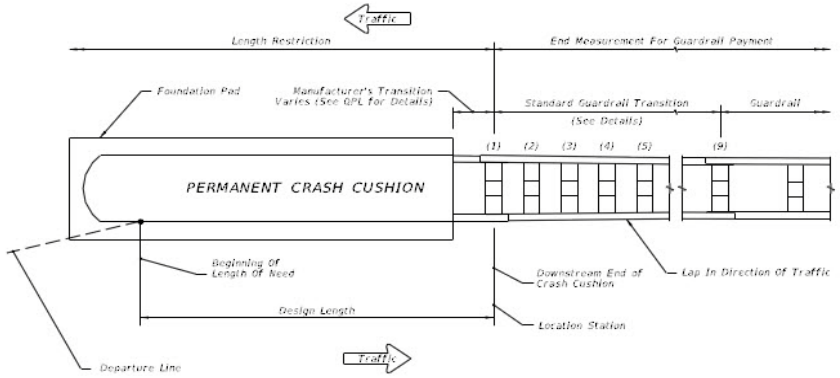
Reason for adding the Index

- To have a tool for designers and contractors, that provides the minimum design length for a given design speed.

- Provide a plan view and elevation view (typ.) for both guardrail and barrier wall applications with dimension labels.

Index 430





Concrete Barrier Wall Applications		
Design Length (ft.)	Design Speed (mph)	Crash Test Level
6.00	35	TL-2
6.00	40	
6.00	45	
9.00	50	TL-3
12.00	55	
15.00	≥ 60	

GENERAL NOTES

1. Index 430 is applicable for permanent crash cushion installations that shield the ends of Concrete Barrier Wall or Guardrail, only.
2. Design Length is based on a given design speed and the shortest Crash Cushion available on the Qualified Products List (QPL).
3. For High Speed Facilities with a Design Speed greater than 60 mph, use a TL-3 Crash Cushion.
4. Assemble and install Crash Cushions according to the limitations noted on the Qualified Products List (QPL) webpage, the manufacturer's specifications, and the applicable crash cushion drawings posted on the QPL.
5. When subjected to reverse direction hits, construct Transition Panels from Concrete Barrier Walls to Crash Cushions; for additional details refer to the applicable crash cushion drawings on the QPL.
6. Galvanize metallic components to meet the requirements for Steel Guardrail, Section 967 of the Standard Specifications for Road and Bridge Construction.
7. For Guardrail Applications, construct the Manufacturer's Transition between the Permanent Crash Cushion and the Standard Guardrail Transition; refer to all Standard Guardrail Transition details at this Index.
8. For additional information on the End Measurement for Guardrail Payment, refer to the Standard Specifications for Road and Bridge Construction, Section 536.
9. A yellow Type I Object Marker shall be centered 3' in front of the crash cushion nose. Mounting hardware shall be in conformance with Section 993 of the Standard Specifications for Road and Bridge Construction.

   As an option, the contractor may install reflective sheeting on the nose of the crash cushion. The sheeting to be used must be solid yellow, Type III or better and must be a product listed on the Department's Qualified Products List (QPL). The sheeting to be applied to the nose of the crash cushion shall be a minimum of 360 square inches with a minimum height of 15 inches.

Guardrail Applications		
Design Length (ft.)	Design Speed (mph)	Crash Test Level
12.50	35	TL-2
12.50	40	
12.50	45	
15.63	50	TL-3
18.75	55	
18.75	≥ 60	

PERMANENT CRASH CUSHION APPLICATIONS

LAST REVISION	DESCRIPTION:	FDOT DESIGN STANDARDS 2013	CRASH CUSHION DETAILS	INDEX NO.	SHEET NO.
01/01/13	REVISION			430	1

Index 430

General Notes

GENERAL NOTES

1. Index 430 is applicable for permanent crash cushion installations that shield the ends of Concrete Barrier Wall or Guardrail, only.

2. Design Length is based on a given design speed and the shortest Crash Cushion available on the Qualified Products List (QPL).

3. For High Speed Facilities with a Design Speed greater than 60 mph, use a TL-3 Crash Cushion.

4. Assemble and install Crash Cushions according to the limitations noted on the Qualified Products List (QPL) webpage, the manufacturer's specifications, and the applicable crash cushion drawings posted on the QPL.

5. When subjected to reverse direction hits, construct Transition Panels from Concrete Barrier Walls to Crash Cushions; for additional details refer to the applicable crash cushion drawings on the QPL.

6. Galvanize metallic components to meet the requirements for Steel Guardrail, Section 967 of the Standard Specifications for Road and Bridge Construction.

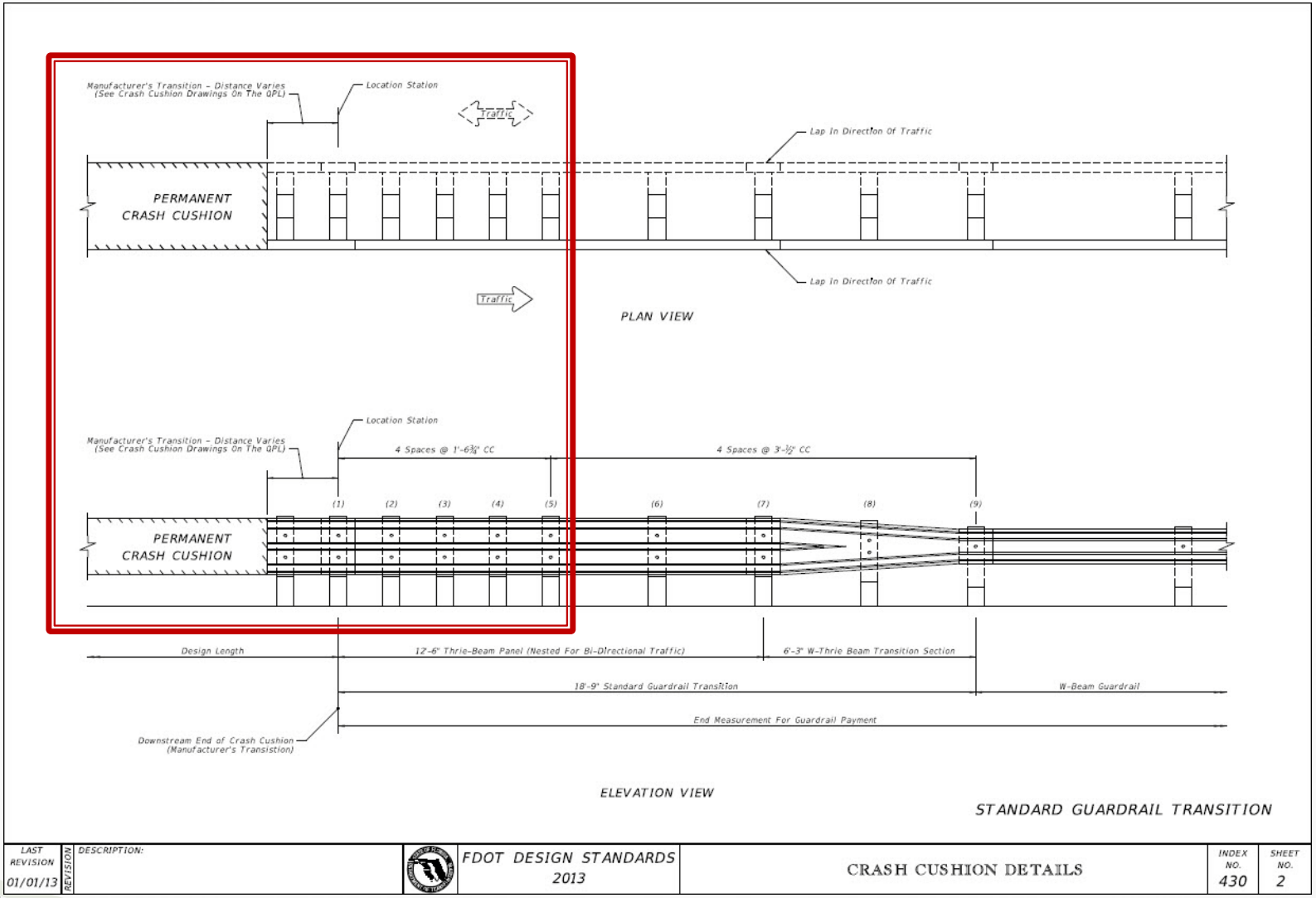
7. For Guardrail Applications, construct the Manufacturer's Transition between the Permanent Crash Cushion and the Standard Guardrail Transition; refer to all Standard Guardrail Transition details of this index.

8. For additional information on the End Measurement for Guardrail Payment, refer to the Standard Specifications for Road and Bridge Construction, Section 536.

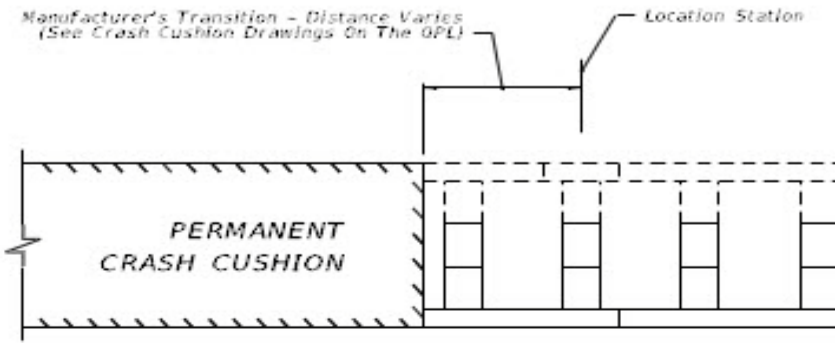
9. A yellow Type I Object Marker shall be centered 3' in front of the crash cushion nose. Mounting hardware shall be in conformance with Section 993 of the Standard Specifications for Road and Bridge Construction.

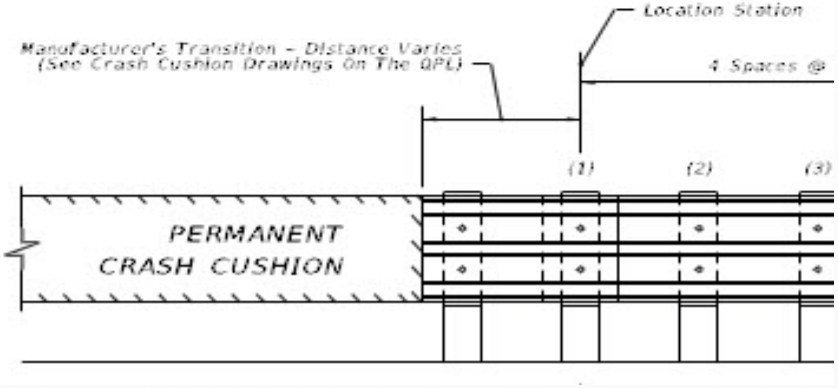
   As an option, the contractor may install reflective sheeting on the nose of the crash cushion. The sheeting to be used must be solid yellow, Type III or better and must be a product listed on the Department's Qualified Products List (QPL). The sheeting to be applied to the nose of the crash cushion shall be a minimum of 360 square inches with a minimum height of 15 inches.

Index 430


Manufacturer's Transition – Distance Varies (See Crash Cushion Drawings On The QPL)
Location Station
Traffic
Lap In Direction Of Traffic
PERMANENT CRASH CUSHION
Lap In Direction Of Traffic
Traffic
PLAN VIEW
Location Station
Manufacturer's Transition – Distance Varies (See Crash Cushion Drawings On The QPL)
4 Spaces @ 1'-6¾" CC
4 Spaces @ 3'-½" CC
(1) (2) (3) (4) (5) (6) (7) (8) (9)
PERMANENT CRASH CUSHION
Design Length
12'-6" Thrie-Beam Panel (Nested For Bi-Directional Traffic)
6'-3" W-Thrie Beam Transition Section
18'-9" Standard Guardrail Transition
W-Beam Guardrail
End Measurement For Guardrail Payment
Downstream End of Crash Cushion (Manufacturer's Transistion)
ELEVATION VIEW
STANDARD GUARDRAIL TRANSITION
LAST REVISION 01/01/13
REVISION
DESCRIPTION:
FDOT DESIGN STANDARDS 2013
CRASH CUSHION DETAILS
INDEX NO. 430
SHEET NO. 2

Index 430


Manufacturer's Transition - Distance Varies
(See Crash Cushion Drawings On The QPL)
Location Station
PERMANENT
CRASH CUSHION


Location Station
Manufacturer's Transition - Distance Varies
(See Crash Cushion Drawings On The QPL)
4 Spaces @
(1)
(2)
(3)
PERMANENT
CRASH CUSHION

Permanent Crash Cushions

QPL

- Drawings have been updated to match new Index 430.
- Crash Cushion Data Table
- Thrie-beam Transition
- Exhibit SQ-4

Permanent Crash Cushions

Crash Cushion Data Table

Permanent Crash Cushion Data Table								
Number of Bays	Model Number	Unit Width	Unit Length	Foundation Length	Design Length	Design Speed	Test Level Designation	Product Specific Data
5	ABC - ##	24"	22'-0"	26'-0"	21'-0"	45 mph	TL-2	
8	XYZ - ##	24"	28'-0"	32'-0"	27'-0"	60 mph	TL-3	

PPM Revisions

Chapter 4 – Volume 1 Revision Summary

- Sand barrels are longer an option for Permanent Crash Cushion Applications.
- Section revised to reflect the new requirements for using Index 430.
- Beginning with July 2012 lettings, the designer shall use pay item 544-75-140 (Crash Cushion Optional).

PPM Revisions

Chapter 4 – Volume 1

- The Designer shall no longer specify a particular brand of crash cushion.

- Changes supersede Roadway Design Bulletin 12-13.

PPM Revisions

Volume 1, Chapter 4, Section 4.5.2 Selection

Various types of ~~crash cushions and attenuation~~ energy absorbing devices ~~approved~~ eligible for use on Department projects can be found on the Qualified Products List (QPL). Detailed information about these systems is provided in the ***Design Standards***, approved QPL drawings, and in each manufacturer's publications. Each system has ~~its own~~ unique physical and functional characteristics.

For permanent crash cushion applications, ~~T~~the designer shall indicate in the plans ~~either the specific system to be used at each location, or the options that may be used when one or more crash cushion system is suitable at a~~ the location (station and side), barrier system (concrete barrier wall or guardrail), design length, design speed, crash test level, hazard width and all length restriction requirements for each given location (in accordance with ***Design Standards, Index 430***, see ***PPM, Volume 2, Chapter 7, Exhibit SQ-4***).

For site specific conditions, t~~T~~he ~~design~~ engineer of record shall consider the following factors when ~~selecting a system for a~~ evaluating each particular site ~~location~~:

1. Site characteristics.
2. Structural and safety characteristics of candidate systems.
3. Initial and replacement/repair costs.
4. ~~Expected~~ Anticipated frequency of collisions.
5. Maintenance characteristics.

Site characteristics and economics ~~dictate~~ dominate ~~the~~ crash cushion ~~selection~~consideration. Space constraints and length restrictions shall be identified by the design engineer and shown in the plans. ~~Sand barrels~~Some crash cushion systems are relatively low in initial cost, but usually must be completely replaced when struck, so are more

Roadside Safety 4-20

PPM Revisions

Volume 1, Chapter 4, Section 4.5.2 Selection

For permanent crash cushion applications, ~~T~~the designer shall indicate in the plans ~~either the specific system to be used at each location, or the options that may be used when one or more crash cushion system is suitable at a~~ the location (station and side), barrier system (concrete barrier wall or guardrail), design length, design speed, crash test level, hazard width and all length restriction requirements for each given location (in accordance with ***Design Standards, Index 430***, see ***PPM, Volume 2, Chapter 7, Exhibit SQ-4***).

PPM Revisions

Chapter 7, Volume 2 – Exhibit SQ-4

SUMMARY OF PERMANENT CRASH CUSHIONS

LOCATION		BARRIER SYSTEM		DESIGN LENGTH (FT)	DESIGN SPEED (MPH)	CRASH TEST LEVEL (TL-2 / TL-3)	HAZARD WIDTH (IN.)	LENGTH RESTRICTION (FT)	QUANTITY		REMARKS
STATION	SIDE	CONCRETE BARRIER WALL	GUARDRAIL						P	F	
100+64.50	LT/RT		SGL FACE	18.75	60	TL-3	15.25	N/A	2		Standard Guardrail Transition
103+77.00	MED		DBL FACE	18.75	60	TL-3	24.50	N/A	1		Standard Guardrail Transition
110+45.00	MED	FULL WALL		15.00	60	TL-3	24.0	23.75	1		Bi-Directional Traffic
125+25.00	RT	HALF WALL		15.00	70	TL-3	15.0	N/A	1		Uni-Directional
775+19.25	RT	BRIDGE WALL		12.50	35	TL-2	15.0	15.50	1		DRIVE ENTRANCE RESTRICTION
995+39.25	RT	N/A	N/A	9.00	50	TL-3	69.0	23.50	1		GORE AREA (EXIT RAMP)
								TOTAL LOCATIONS:	7		

Notes:

1. The "STATION" is measured to the "LOCATION" of the Downstream End of the Crash Cushion.
2. For Length Restrictions, refer to the Crash Cushion Drawings (Design Length) on the Qualified Product List (QPL).
3. For Additional Information on "Permanent Crash Cushion Applications," see Design Standards, Index 430.

PPM Revisions

Volume 1, Chapter 4, Section 4.5.2 Selection

For future lettings, a~~A~~ pay item has been established for Optional ~~Permanent~~ Crash Cushions, Pay Item No. ~~(2)~~ 544-75-140~~, beginning with the January 2006 letting~~. This pay item is applicable ~~ONLY~~ for crash cushions being used to shield the ends of ~~standard~~ concrete barrier wall, standard W-beam guardrail, or thrie-beam guardrail. Use of this pay item for these locations is ~~not mandatory~~required. ~~The designer may still call for a specific system brand and use the corresponding pay item. However, the reasons for restricting to a specific brand must be documented in the project design file.~~ For crash cushions used to shield hazards other than ~~standard~~ concrete barrier wall, standard W-beam guardrail, or thrie-beam guardrail, designers must continue to identify ~~the~~ specific constraints to include; design length, hazard width, and system length restrictions ~~system to be used and use the corresponding pay item, as has been done in the past~~.

The ~~Optional C~~crash ~~Cushion~~ cushion pay item is to be used in conjunction with ***Design Standards, Index 430***. ***Index 430*** includes design information for both concrete barrier wall and guardrail applications. In either case, establish the end of the barrier based on the design length of the shortest crash cushion ~~option~~ for a given design speed ~~crash cushion length information for each of the crash cushion systems approved for use under this pay item~~. ~~Designers~~ For space constraints and length restrictions, designers should note that certain crash cushions ~~options~~ may have lengths that exceed the available space ~~do not provide the proper length of need, and others~~ or may have lengths that ~~exceed the available space at a given~~ do not provide the proper length of need for each location. ~~These should be eliminated from the list of options shown in the plans.~~

PPM Revisions

Volume 1, Chapter 4, Section 4.5.2

The ~~Optional C~~crash ~~Cushion~~ cushion pay item is to be used in conjunction with ***Design Standards, Index 430***. ***Index 430*** includes design information for both concrete barrier wall and guardrail applications. In either case, establish the end of the barrier based on the design length of the shortest crash cushion ~~option~~ for a given design speed~~crash cushion length information for each of the crash cushion systems approved for use under this pay item~~. ~~Designers~~ For space constraints and length restrictions, designers should note that certain crash cushions ~~options~~ may have lengths that exceed the available space ~~do not provide the proper length of need, and others~~or may have lengths that ~~exceed the available space at a given~~do not provide the proper length of need for each location. ~~These should be eliminated from the list of options shown in the plans.~~

PPM Revisions

Volume 1, Chapter 4, Section 4.5.3

Standard details of systems ~~listed on the QPL~~ for typical installations shielding ~~guardrail ends and~~ concrete barrier wall ends and guardrail ends can be found ~~in~~ on the ***~~Design Standards~~*** ~~and~~ approved QPL drawings. In addition, some of these systems have standard details for shielding wide hazards. For non standard applications, crash cushion suppliers normally provide design assistance for their systems. Special designs should be based on providing performance meeting ~~NCHRP 350~~ crash test criteria for the established design speed of the facility. ~~For special designed inertial systems where the **AASHTO Roadside Design Guide** charts are used, the maximum average deceleration level should~~

~~not exceed approximately 7 g's.~~

All terrain within the likely approach of a vehicle should be relatively flat. An impacting vehicle should strike the unit at normal height, with the vehicle's suspension system neither collapsed nor extended. Curbs ~~exceeding 4 inches in height~~ shall not be ~~used~~built in the approach area of a crash cushion.

~~Care must be taken that t~~The design of a crash cushion system ~~does~~ shall not create a hazard to opposing traffic.

The nose of all crash cushions shall be delineated with reflective material or standard object markers, as indicated in the ***Design Standards***.

For additional guidance on the design and selection of temporary crash cushions for ~~temporary~~ use in work zones, see ***Chapter 10***.

PPM Revisions

Volume 1, Chapter 4, Section 4.5.3

Standard details of systems ~~listed on the QPL~~ for typical installations shielding ~~guardrail ends and~~ concrete barrier wall ends and guardrail ends can be found ~~in~~ on the ***~~Design Standards~~*** ~~and~~ approved QPL drawings. In addition, some of these systems have standard details for shielding wide hazards. For non standard applications, crash cushion suppliers normally provide design assistance for their systems. Special designs should be based on providing performance meeting ~~NCHRP 350~~ crash test criteria for the established design speed of the facility. ~~For special designed inertial systems where the ***AASHTO Roadside Design Guide*** charts are used, the maximum average deceleration level should~~

PPM Revisions

Volume 1 Chapter 4, Section 4.7

The Qualified Products List (QPL) includes proprietary devices and products that have been evaluated against implemented FDOT Specifications and Standards, and found to meet those Specifications and/or Standards. The majority of proprietary roadside safety devices ~~needed~~ eligible for use on the State Highway System are identified on the QPL. However, just as FDOT Specifications and Standards do not address every potential highway need, the QPL does not cover every type of roadside safety device that may be available on the market. Unique situations will sometimes require unique devices. Examples of available devices that are not covered by FDOT Specifications and Standards include barrier wall gates, aesthetic guard-rail~~s~~, temporary steel barriers, crashworthy stop gates, cable barrier, and others. When the need arises for a unique crashworthy device not ~~covered~~ included on the QPL, the designer must carefully investigate the applicability of the device for the situation, as well as the crash performance characteristics of the device. For some of these devices, the State Roadway Design Office may have information and be of assistance in establishing the appropriateness of the device for a given situation.

The designer must document the following:

1. FHWA ~~Acceptance~~ Federal-Aid Reimbursement Eligibility Letter
2. Crash Test Reports, including review of all test results. All performance characteristics must be reviewed, including post impact vehicle behavior and post impact test article deflection, debris scatter, etc.
3. Compatibility with adjacent and/or connecting standard roadside safety devices.
4. Maintenance requirements and characteristics, including coordination with the District Maintenance Office.
5. For devices such as barrier gates, operational plans and training as appropriate.

The designer will also be responsible for providing special plan details, technical specifications, and method of pay as appropriate.

PPM Revisions

10.11.5 Temporary ~~Redirective~~ Crash Cushions

Crash cushions are used to protect motorists from the exposed ends of barriers, fixed objects and other hazards within the clear zone. Approved temporary crash cushions for use on Department contracts are listed on the ***Qualified Products List (QPL)*** under Section 102. The designer will determine the need for temporary crash cushions and, if needed, shall complete the following table and include it in the plans:

Summary of Temporary Crash Cushions							
MOT Phase	~~Station~~	Offset (feet)	Side (Lt. or Rt.)	Work Zone Regulatory Speed (mph)**	Test Level (TL-2 or TL-3)	Width of Hazard (inches)	Restricted Length* (feet)

* See ***Design Standard 430*** and related ***IDS***.
** The regulatory speed in the work zone shall be established as described in ***Section 10.13.1***.

The designer shall not specify a particular brand of crash cushion. The table above will provide the necessary information for a contractor to choose a suitable crash cushion from those listed on the ***QPL***.

Two types of temporary crash cushions are used: redirective crash cushions and gating crash cushions. Redirective crash cushions will shield hazards by redirecting errant vehicles impacting the side of the crash cushion and decelerate errant vehicles from a direct, in-line impact at the terminus of the crash cushion by absorbing the energy.

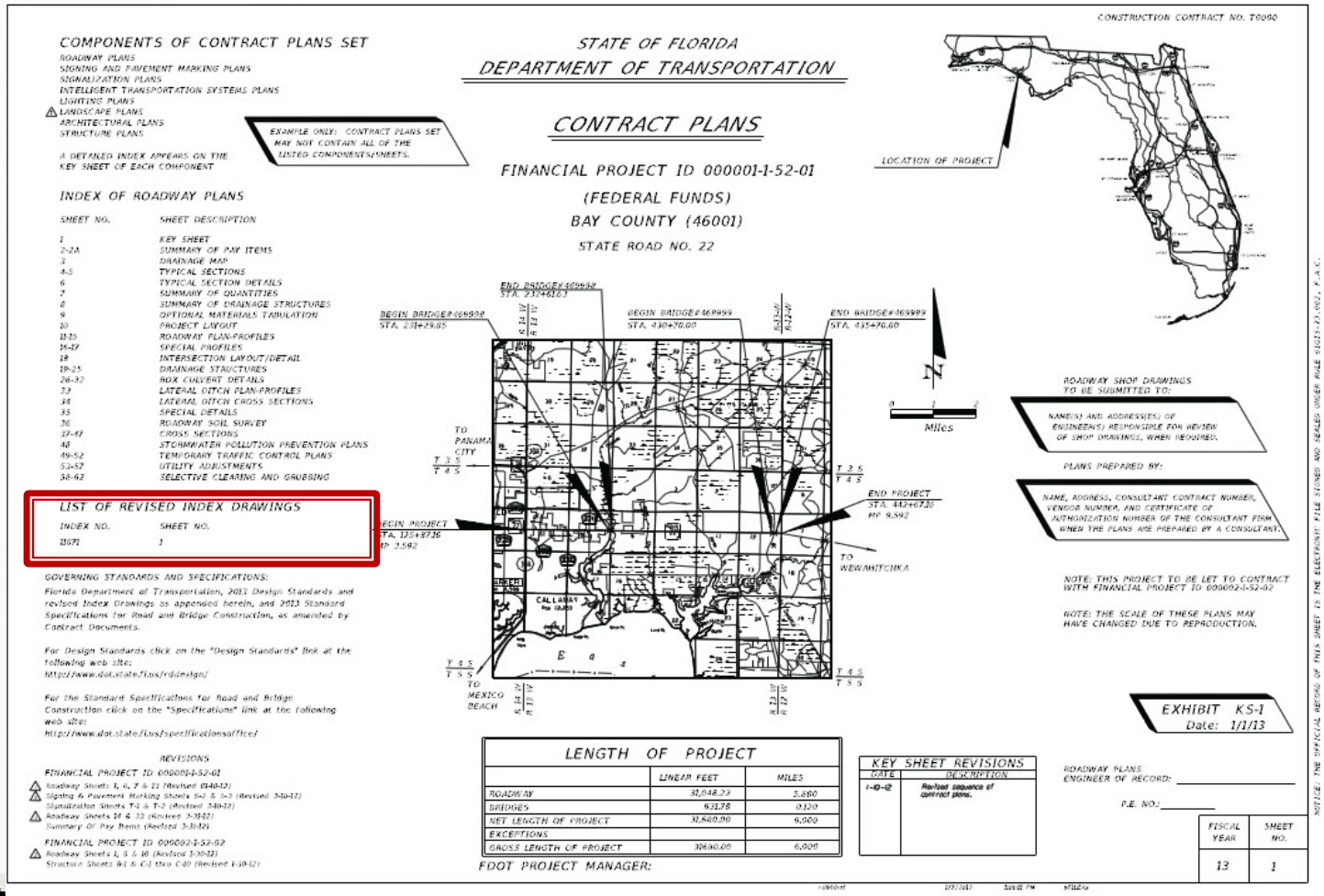
Gating crash cushions are non-redirective and are designed only to decelerate errant vehicles from a direct, in-line impact at the terminus of the crash cushion by absorbing the energy. Gating crash cushions are appropriate on low speed facilities and in work zones with higher speeds where only low impact angle hits are expected. An adequate clear runout area shall be provided beyond the gating crash cushion, between the departure line and the clear zone. Sand barrel gating systems are no longer allowed.

PPM Revisions

Two types of temporary crash cushions are used; redirective crash cushions and gating crash cushions. Redirective crash cushions will shield hazards by redirecting errant vehicles impacting the side of the crash cushion and decelerate errant vehicles from a direct, in-line impact at the terminus of the crash cushion by absorbing the energy.

Gating crash cushions are non-redirective and are designed only to decelerate errant vehicles from a direct, in-line impact at the terminus of the crash cushion by absorbing the energy. Gating crash cushions are appropriate on low speed facilities and in work zones with higher speeds where only low impact angle hits are expected. An adequate clear runout area shall be provided beyond the gating crash cushion, between the departure line and the clear zone. Sand barrel gating systems are no longer allowed.

Key Sheet Revisions



CONSTRUCTION CONTRACT NO. T0090

COMPONENTS OF CONTRACT PLANS SET

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
SIGNALIZATION PLANS
INTELLIGENT TRANSPORTATION SYSTEMS PLANS
LIGHTING PLANS
LANDSCAPE PLANS
ARCHITECTURAL PLANS
STRUCTURE PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

EXAMPLE ONLY: CONTRACT PLANS SET MAY NOT CONTAIN ALL OF THE LISTED COMPONENTS/SHEETS.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

FINANCIAL PROJECT ID 000001-1-52-01
(FEDERAL FUNDS)
BAY COUNTY (46001)
STATE ROAD NO. 22

LOCATION OF PROJECT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2-2A	SUMMARY OF PAY ITEMS
3	DRAINAGE MAP
4-5	TYPICAL SECTIONS
6	TYPICAL SECTION DETAILS
7	SUMMARY OF QUANTITIES
8	SUMMARY OF DRAINAGE STRUCTURES
9	OPTIONAL MATERIALS TABULATION
10	PROJECT LAYOUT
11-15	ROADWAY PLAN-PROFILES
16-17	SPECIAL PROFILES
18	INTERSECTION LAYOUT/DETAIL
19-25	DRAINAGE STRUCTURES
26-32	BOX CULVERT DETAILS
33	LATERAL DITCH PLAN-PROFILES
34	LATERAL DITCH CROSS SECTIONS
35	SPECIAL DETAILS
36	ROADWAY SOIL SURVEY
37-47	CROSS SECTIONS
48	STORMWATER POLLUTION PREVENTION PLANS
49-52	TEMPORARY TRAFFIC CONTROL PLANS
53-57	UTILITY ADJUSTMENTS
58-62	SELECTIVE CLEARING AND GRUBBING

LIST OF REVISED INDEX DRAWINGS

INDEX NO.	SHEET NO.
0071	1

END BRIDGE#469998
STA. 235+40.63

BEGIN BRIDGE#469998
STA. 238+29.85

BEGIN BRIDGE#469999
STA. 430+70.00

END BRIDGE#469999
STA. 435+70.00

TO PANAMA CITY

BEGIN PROJECT
STA. 125+87.36
MP 2.592

END PROJECT
STA. 442+07.20
MP 8.592

TO WEWAHITCHKA

CALLAWAY

TO MEXICO BEACH

Miles

ROADWAY SHOP DRAWINGS TO BE SUBMITTED TO:

NAME(S) AND ADDRESS(ES) OF ENGINEER(S) RESPONSIBLE FOR REVIEW OF SHOP DRAWINGS, WHEN REQUIRED.

PLANS PREPARED BY:

NAME, ADDRESS, CONSULTANT CONTRACT NUMBER, VENDOR NUMBER, AND CERTIFICATE OF AUTHORIZATION NUMBER OF THE CONSULTANT FIRM WHER THE PLANS ARE PREPARED BY A CONSULTANT.

NOTE: THIS PROJECT TO BE LET TO CONTRACT WITH FINANCIAL PROJECT ID 000002-1-52-02

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

EXHIBIT KS-1
Date: 1/1/13

GOVERNING STANDARDS AND SPECIFICATIONS:
Florida Department of Transportation, 2013 Design Standards and revised Index Drawings as appended herein, and 2013 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site:
http://www.dot.state.fl.us/rddesign/

For the Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site:
http://www.dot.state.fl.us/specificationsoffice/

REVISIONS

FINANCIAL PROJECT ID 000001-1-52-01
Roadway Sheets 1, 6, 7 & 11 (Revised 01-10-12)
Signing & Pavement Marking Sheets S-2 & S-3 (Revised 3-30-12)
Signalization Sheets T-1 & T-2 (Revised 3-30-12)
Roadway Sheets 14 & 33 (Revised 3-30-12)
Summary Of Pay Items (Revised 3-30-12)

FINANCIAL PROJECT ID 000002-1-52-02
Roadway Sheets 1, 5 & 10 (Revised 1-30-12)
Structure Sheets B1 & C-1 thru C-10 (Revised 1-30-12)

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	31,048.22	5.880
BRIDGES	631.78	0.120
NET LENGTH OF PROJECT	30,680.00	6.000
EXCEPTIONS		
GROSS LENGTH OF PROJECT	30680.00	6.000

FDOT PROJECT MANAGER:

KEY SHEET REVISIONS

DATE	DESCRIPTION
1-10-12	Revised sequence of contract plans.

ROADWAY PLANS ENGINEER OF RECORD:

P.E. NO.:

FISCAL YEAR	SHEET NO.
13	1

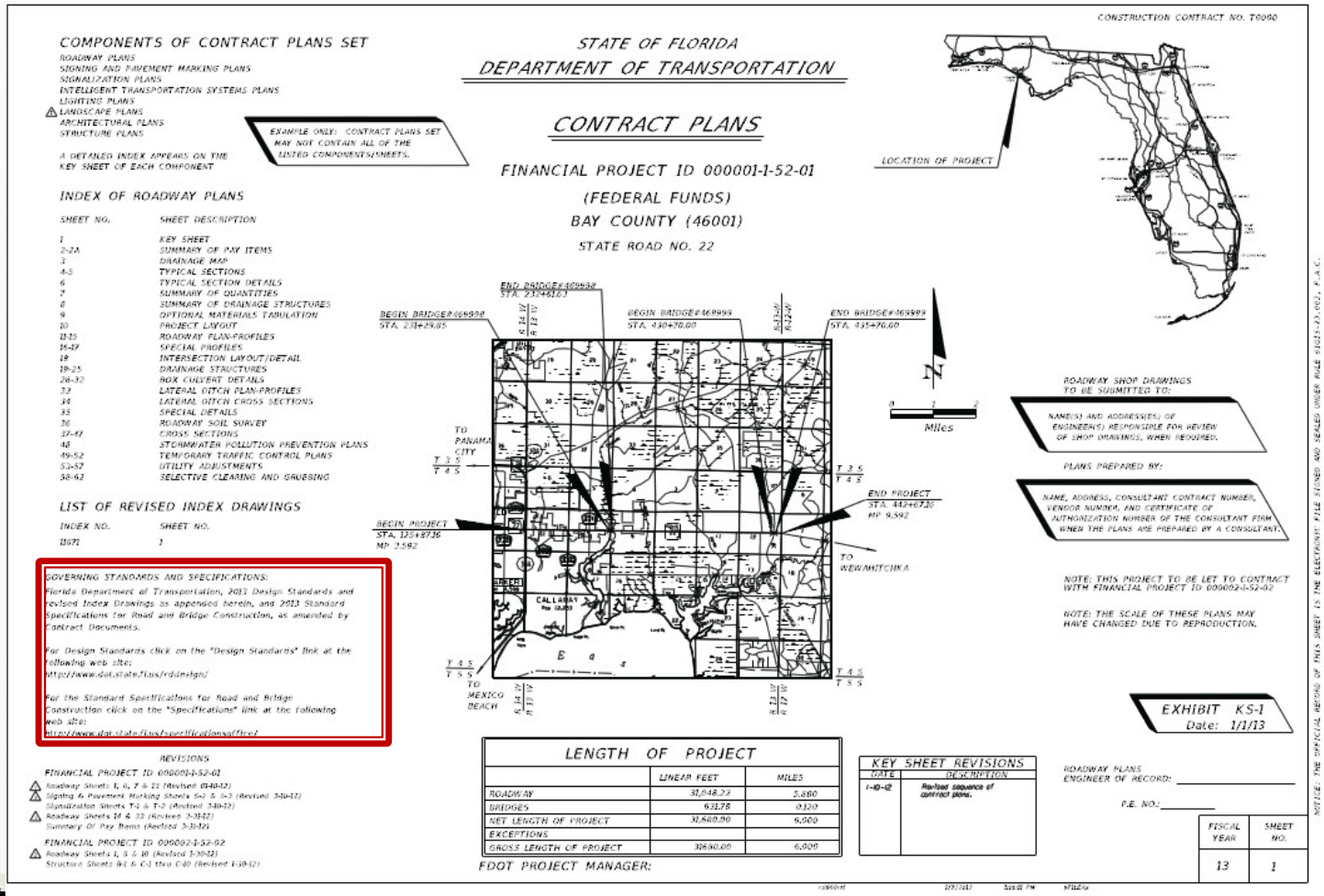
NOTICE: THE ORIGINAL REVISAL OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.002, F.A.C.

Key Sheet

LIST OF REVISED INDEX DRAWINGS

INDEX NO.	*SHEET NO.*
11871	*1*

Key Sheet Revisions



CONSTRUCTION CONTRACT NO. T0090

COMPONENTS OF CONTRACT PLANS SET

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
SIGNALIZATION PLANS
INTELLIGENT TRANSPORTATION SYSTEMS PLANS
LIGHTING PLANS
LANDSCAPE PLANS
ARCHITECTURAL PLANS
STRUCTURE PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

EXAMPLE ONLY: CONTRACT PLANS SET MAY NOT CONTAIN ALL OF THE LISTED COMPONENTS/SHEETS.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

FINANCIAL PROJECT ID 000001-1-52-01
(FEDERAL FUNDS)
BAY COUNTY (46001)
STATE ROAD NO. 22

LOCATION OF PROJECT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2-2A	SUMMARY OF PAY ITEMS
3	DRAINAGE MAP
4-5	TYPICAL SECTIONS
6	TYPICAL SECTION DETAILS
7	SUMMARY OF QUANTITIES
8	SUMMARY OF DRAINAGE STRUCTURES
9	OPTIONAL MATERIALS TABULATION
10	PROJECT LAYOUT
11-15	ROADWAY PLAN-PROFILES
16-17	SPECIAL PROFILES
18	INTERSECTION LAYOUT/DETAIL
19-25	DRAINAGE STRUCTURES
26-32	BOX CULVERT DETAILS
33	LATERAL DITCH PLAN-PROFILES
34	LATERAL DITCH CROSS SECTIONS
35	SPECIAL DETAILS
36	ROADWAY SOIL SURVEY
37-47	CROSS SECTIONS
48	STORMWATER POLLUTION PREVENTION PLANS
49-52	TEMPORARY TRAFFIC CONTROL PLANS
53-57	UTILITY ADJUSTMENTS
58-62	SELECTIVE CLEARING AND GRUBBING

LIST OF REVISED INDEX DRAWINGS

INDEX NO.	SHEET NO.
0071	1

END BRIDGE#469998
STA. 235+40.63

BEGIN BRIDGE#469998
STA. 238+29.85

BEGIN BRIDGE#469999
STA. 430+70.00

END BRIDGE#469999
STA. 435+70.60

TO PANAMA CITY

BEGIN PROJECT
STA. 125+87.36
MP 2.592

END PROJECT
STA. 442+07.30
MP 9.592

TO WEWAHITCHKA

TO MEXICO BEACH

Miles

ROADWAY SHOP DRAWINGS TO BE SUBMITTED TO:

NAME(S) AND ADDRESS(ES) OF ENGINEER(S) RESPONSIBLE FOR REVIEW OF SHOP DRAWINGS, WHEN REQUIRED.

PLANS PREPARED BY:

NAME, ADDRESS, CONSULTANT CONTRACT NUMBER, VENDOR NUMBER, AND CERTIFICATE OF AUTHORIZATION NUMBER OF THE CONSULTANT FIRM WHER THE PLANS ARE PREPARED BY A CONSULTANT.

GOVERNING STANDARDS AND SPECIFICATIONS:
Florida Department of Transportation, 2013 Design Standards and revised Index Drawings as appended herein, and 2013 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site:
http://www.dot.state.fl.us/rddesign/

For the Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site:
http://www.dot.state.fl.us/specificationsoffice/

NOTE: THIS PROJECT TO BE LET TO CONTRACT WITH FINANCIAL PROJECT ID 000002-1-52-02

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

EXHIBIT KS-1
Date: 1/1/13

REVISIONS

FINANCIAL PROJECT ID 000002-1-52-01
Roadway Sheets 1, 6, 7 & 11 (Revised 01-10-12)
Signing & Pavement Marking Sheets S-2 & S-3 (Revised 3-30-12)
Signalization Sheets T-1 & T-2 (Revised 3-30-12)
Roadway Sheets 14 & 33 (Revised 3-30-12)
Summary Of Pay Items (Revised 3-30-12)

FINANCIAL PROJECT ID 000002-1-52-02
Roadway Sheets 1, 5 & 10 (Revised 1-30-12)
Structure Sheets B1 & C-1 thru C-10 (Revised 1-30-12)

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	31,048.22	5.880
BRIDGES	631.78	0.120
NET LENGTH OF PROJECT	30,680.00	6.000
EXCEPTIONS		
GROSS LENGTH OF PROJECT	30680.00	6.000

FDOT PROJECT MANAGER:

KEY SHEET REVISIONS

DATE	DESCRIPTION
1-10-12	Revised sequence of contract plans.

ROADWAY PLANS ENGINEER OF RECORD:

P.E. NO.:

FISCAL YEAR	SHEET NO.
13	1

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.002, F.A.C.

Key Sheet

GOVERNING STANDARDS AND SPECIFICATIONS:

Florida Department of Transportation, 2013 Design Standards and revised Index Drawings as appended herein, and 2013 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site:
http://www.dot.state.fl.us/rddesign/

For the Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site:
http://www.dot.state.fl.us/specificationsoffice/

Contacts

- John Mauthner, P.E.
  John.mauthner@dot.state.fl.us
- Patrick Overton, P.E.
- Patrick.overton@dot.state.fl.us
- Ezzel Benghuzzi, P.E.
- Ezzel.benghuzzi@dot.state.fl.us