

DATE: October 10, 2000

TO: Basis of Estimate Handbook Holders

FROM: Cheryl Adams, CES Coordinator

COPY: Ken Morefield, Freddie Simmons, Bill Albaugh, Greg Xanders, Lex Chance, William Nickas, Duane Brautigam, Billy Hattaway, District Design Engineers, District Project Management Engineers, District Structures Design Engineers, District Construction Engineers, District Traffic Operations Engineers and District Specifications Engineers

SUBJECT: **2001 - Basis of Estimate Handbook Summary of Major Changes**

The Coordination Team has made recommendations on the implementation of changes to pay items and specifications that have been developed within the last six months. The implementation plan for each issue has been approved by the appropriate office and concurred in by the Directors for the Offices of Design and Construction. The following is a summary of the issues addressed in this update:

Group	Issue Description	Effective Letting	Section	Page No.
MOT	Motorist Awareness System	July 2001 *	102	2-4
Roadway	Pedestrian/Bicycle Railing	July 2001	515	5-6
Structures	42" F-Shape Traffic Barrier	July 2001	521	7
Structures	Anti-Graffiti Coating	July 2001	563	8
Signalization	Steel Strain Poles	July 2001	649	9-10
Signalization	Steel Monotube Assemblies	July 2001	649	11-12
Lighting	Aluminum Roadway Light Poles	July 2001	715	13-14
Pavement Markings	Traffic Stripes, Thermoplastic, Inverted Profile	July 2001 *	702	15-16
Roadway Misc.	Concrete Curb, Curb and Gutter, Separator, Sidewalk and Fencing	July 2001	520, 522 550	17-18
Memorandum				
Selection of Temporary Crash Cushions (Attenuators)		See Memo	102	19-20

* May be used by Construction prior to July 2001

Issue: Motorist Awareness System

History: The purpose of a Motorist Awareness System (MAS) is to increase the motorist awareness of the presence of active work and provide emphasis on reduced speed limits in the active work area. A MAS is created by using a combination of several different traffic control devices to draw attention to the legal speed and inform the motorist of their vehicle speed. Descriptions of some MAS devices are provided below. ***Interim Index 670, Roadway and Traffic Design Standards***, provides details on the most effective combination and placement of MAS traffic control devices. This Index has been issued as an Interim Index and can be found on the Department's Roadway Design web site.

The MAS is intended for use on rural high-speed high AADT highways, which have lane closures with no more than two lanes open to traffic, and when the active work zone is less than one mile in length.

The MAS is new and its effectiveness is still being evaluated. Trial pay items and developmental specifications have been created for several of the devices used in a MAS. As with all trial pay items, a phone call or E-mail must be placed to the moderator to have the pay item(s) opened for use on an individual project. The moderator of MAS trial pay items is Cheryl Adams, 850-414-4327, SC 994-4327, RD960CA or cheryl.adams@dot.state.fl.us.

Prior to requesting the opening of MAS pay items, designers should consult with experienced construction personnel on the likelihood of excessive speeds in the work zones for their projects. If the project meets the recommended guidelines stated above, the designer should include the standard drawing in the plans. If the designer wants to modify the standard drawing for the MAS, special details on the setup of the MAS must be developed and included in the plans. In addition the designer must work with construction to perform and document a speed study prior to and after setting up the MAS. The results of the speed study shall be forwarded to Central Office Construction in accordance with ***Construction Project Administration Manual (CPAM), Section 5.7***. If a speed reduction is documented on several projects, a standard will be developed for the modified MAS setup.

Implementation Plan:

Central Office Design:

Place Interim Index 670 on the Internet in October 2000:

Establish the following new trial pay items October 2000:

Sign, Portable Regulatory	900-102-1	ED
	2900-102-1	ED

Radar Speed Display Unit	900-102-2	ED
	2900-102-2	ED
Transmitter, Safety Warning	900-102-3	ED
	2900-102-3	ED
Radio, Highway Advisory	900-102-4	ED
	2900-102-4	ED

Permanently block the following pay item on June 30, 2001

102-50	Highway Advisory Radio (Furnish and Install)	EA
2102-50	<i>Highway Advisory Radio (Furnish and Install)</i>	EA
102-51	Highway Advisory Radio (Operate and Maintain)	ED
2102-51	<i>Highway Advisory Radio (Operate and Maintain)</i>	ED

Basis of Estimate: Design should work with construction to determine the estimated days for each component of the motorist awareness system to be included in the contract. Consideration should be given that it may not be cost effective to use the MAS system on projects where it would be used for 20 days or less.

The following is a list of some of the devices that are used as part of a Motorist Awareness System.

Portable Regulatory Signs (PRS) Pay Item No 900-102-1

The purpose of this device is to highlight the regulatory speed for the work zone. A portable regulatory sign is a portable trailer that has the regulatory speed sign mounted with flashing lights on each side of the sign. The lights are used to draw the driver's attention to the regulatory speed.

Radar Speed Display Unit (RSDU) Pay Item No 900-102-2

The purpose of this device is to display the motorist's work zone speed. A radar speed display unit is a portable trailer that displays the speed of approaching motorists on a LED display panel. The radar mounted on the unit detects the speed. A regulatory sign with the posted speed is mounted above the LED display panel. The unit is fitted with a device, which counts the number of vehicles passing the Radar Speed Display Unit. The counter device is capable of:

- Digital readout of the number of vehicles passing the radar speed display unit.
- Digital readout of the number of vehicles exceeding the speed limit shown on the radar speed display unit.

The device can be set that only speeds greater than the work zone speed are displayed.

Highway Advisory Radio (HAR)

Pay Item No 900-102-4

This is a radio transmitter mounted on a portable trailer, which can be set up in the work zone to advise motorists through their car radio of work zone information. Notice of lane closures, reasons for delays, advance warning of work zones, etc. let motorists know what to expect while driving through the work zone. A Variable Message Sign (VMS) is used in conjunction with the HAR to inform the motorist of the AM frequency to tune to on their car radio. The HAR can generally transmit messages in a 2.5 mile radius. It is very important that the messages broadcast be up to date and reflects actual work zone conditions.

The HAR should be considered as a supplement to the MAS, not an integral device. Use of a HAR should be in accordance with the Department’s *Highway Advisory Radio System User Manual*. This manual is available from Maps and Publications. HAR use is restricted to daytime hours, and to the immediate vicinity of areas identified in the HAR manual.

The District Public Information Officer should be consulted prior to use of this device on a project.

Safety Warning Transmitter (SWT)

Pay Item No 900-102-3

The purpose of the SWT is to transmit a message to drivers with radar detectors that have the capability of receiving messages from a transmitter. The SWT can transmit to a radar detector an audible alert such as a ‘beep’, a LED text message, or a synthesized voice message, depending on the type of radar detector a motorist has. This device is a small unit, which can be attached to any other traffic control device within the work zone. The effectiveness of this device is limited to motorists with radar detectors so it is not considered an integral part of a motorist awareness system.

District Design: Update plans and CES to indicate the use of these pay items on applicable projects beginning with the July 2001 letting.

Specifications: Specifications will be available for the July 2001 letting

Central Office Contact Person - Cheryl Adams 850-414-4327 SC 994-4327

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: Pedestrian / Bicycle Railing

History: The Department has developed new standards for these railings. The standards are only available in English units and are contained in the Structures Design Standards numbers 850 and 860. The English Standards may be used on metric projects. These specific rails replace the current two rail system, and are intended to be used when there is a drop off next to a pedestrian or bicycle facility which must be protected. These rails are not intended for use on top of traffic barriers or where vehicular containment is required. These rails may be used on roadways and walls in accordance with the restrictions contained in the standards and various codes. The rail material may be restricted by use of the specific pay item, or the material may be left up to the contractor to choose based on lowest costs.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

515-2-abb	Pedestrian/Bicycle Railing	LF
2515-2-abb	Pedestrian/Bicycle Railing	MI

- a= required material types
 - 1= non-specified material
 - 2= steel only
 - 3= aluminum only
 - 4= special

- bb= rail type
 - 01= 42" Picket Railing
 - 02= 54" Picket Railing
 - 03= special

District Design: Update plans and CES to indicate the use of these pay items on applicable projects beginning with the July 2001 letting.

Specifications: No specification change required.

Central Office Contact Person - Robert Robertson 850-414-4267 SC 994-4267

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: William N. Nickas _____ Date _____
State Structures Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: 42” F – Shape Concrete Traffic Railing Barrier

History: The Department has developed a new standard for a 42” F – shape traffic railing barrier. The standard is currently available and will only be produced using English units. The English Standards may be used on metric projects. For additional information, refer to page 10 of the April 14th special update to the Basis of Estimate Handbook.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

521-5-xxa	Concrete Traffic Railing Barrier (Bridge)	LF
2521-5-xxa	Concrete Traffic Railing Barrier (Bridge)	MI

a = 2 = (42” F-shape)

District Design: Update plans and CES to indicate the new pay item on applicable projects beginning with the July 2001 letting.

Specifications: No specification changes required.

Central Office Contact Person - Robert Robertson 850-414-4267 SC 994-4267

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: William N. Nickas _____ Date _____
State Structures Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: Anti-Graffiti Coating

History: The Department has developed a new specification for anti-graffiti coatings. The designer should coordinate with the District Maintenance Office when selecting sacrificial or non-sacrificial coating.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

563-xxa	Anti-Graffiti Coating	SF
2563-xxa	Anti-Graffiti Coating	M2
a=	coating type	
3	=	sacrificial coating
4	=	non- sacrificial coating

Permanently block the following pay items on June 30, 2001:

563-2	Anti-Graffiti Coating
2563-2	Anti-Graffiti Coating

District Design: Update plans and CES to indicate the new pay item on applicable projects beginning with the July 2001 letting.

Specifications: Specifications will be available for the July 2001 letting.

Central Office Contact Person - Robert Robertson 850-414-4267 SC 994-4267

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: William N. Nickas _____ Date _____
State Structures Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: *Steel Strain Poles*

History: The Department has developed a new standard for steel strain poles. The standards are only available in English units. The English Standards may be used on metric projects. The required pole is selected by the Designer and noted on the plans.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

- 649-xxa-bcc Steel Strain Poles EA
- 2649-xxa-bcc *Steel Strain Pole* EA
- a= operation
 - 1= furnish and install
 - 2= furnish
 - 3= install
- b= pole type
 - 1= Type NS – IV
 - 2= Type NS – V
 - 3= Type NS – VI
 - 4= Type NS – VII
 - 5= Type NS – VIII
 - 6= Type NS – IX
 - 7= Type NS – X
 - 0= special
- cc= pole height in even integers 20' to 50'

Permanently block the following pay items June 30, 2001:

- 642-abb-xcc Steel Strain Poles
- 2642-abb-xcc *Steel Strain Poles*

District Design: Update plans and CES to indicate the use of the new pay items on applicable projects beginning with the July 2001 letting.

Specifications: Specifications will be available for the July 2001 letting.

Central Office Contact Person - Robert Robertson 850-414-4267 SC 994-4267

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: William N. Nickas _____ Date _____
State Structures Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: Steel Monotube Assemblies

History: The Department has developed standard designs and details for monotube structures that carry signals. If a monotube assembly is required which differs from the standards, then a special design would be performed and the details placed in the plans. The standards are only available in English units. The English Standards may be used on metric projects. For additional information, refer to Chapters 7 and 29 of the Plans Preparation Manual, Volume 1.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

649-x1a-bbb Steel Monotube Assemblies EA
2649-x1a-bbb *Steel Monotube Assemblies* EA

a= operation

- 1= furnish and install
- 2= furnish
- 3= install

bbb=

- 001= special
- 110= standard 110' span or less
- 135= standard 111' to 135' span
- 160= standard 136' to 160' span
- 185= standard 161' to 185' span

District Design: Update plans and CES to indicate the use of these pay items on applicable projects beginning with the July 2001 letting.

Specifications: Specifications will be available for the July 2001 letting.

Central Office Contact Person - Robert Robertson 850-414-4267 SC 994-4267

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: William N. Nickas _____ Date _____
State Structures Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: *Light Poles Complete (Aluminum, Standard)*

History: The Department has developed new standards for aluminum light poles used along the roadway. These standards are not for poles attached to walls or bridges. The standards are only available in English units. The English Standards may be used on metric projects. For additional information, refer to Chapters 7 and 29 of the Plans Preparation Manual, Volume 1. Specially designed poles will be bid under the current pay item 715-5ab-cdd and will require the submittal of shop drawings.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

715-abc-dee	Light Poles Complete (Aluminum, Standard)	EA
2715-abc-dee	<i>Light Poles Complete (Aluminum, Standard)</i>	EA

a = operation

- 6 = furnish and install
- 7 = furnish
- 8 = install

b= mounting height

- 1= 40'
- 2= 45'
- 3= 50'

c=pole case no.

- =1 thru 9

d=luminaire arm length

- 1= 8'
- 2= 10'
- 3= 12'
- 4= 15'

ee=arm case no.

- = 01 thru 20

District Design: Update plans and CES to indicate the new pay item on applicable projects beginning with the July 2001 letting.

Specifications: Specifications will be available for the July 2001 letting.

Central Office Contact Person - Robert Robertson 850-414-4267 SC 994-4267

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: William N. Nickas _____ Date _____
State Structures Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Issue: Traffic Stripes, Thermoplastic, Inverted Profile

History: The Inverted Profile Markings provide increased visibility during inclement weather. They are intended for use at locations where the Districts determine the specific need exist for this type marking. Project selection should consider crash history and geometric features. Inverted Profile Markings, because of the significantly higher cost, should be used selectively and only as determined by the District.

Implementation Plan:

Central Office Design:

Establish the following new pay items October, 2000:

702-7	Remove Existing Pavement Markings	SF
2702-7	<i>Remove Existing Pavement Markings</i>	<i>SM</i>
702-31	Skip Traffic Stripe, Inverted Profile (White)	GM
2702-31	<i>Skip Traffic Stripe, Inverted Profile (White)</i>	<i>GK</i>
702-32	Skip Traffic Stripe, Inverted Profile (Yellow)	GM
2702-32	<i>Skip Traffic Stripe, Inverted Profile (Yellow)</i>	<i>GK</i>
702-33	Skip Traffic Stripe, Inverted Profile (White)	LF
2702-33	<i>Skip Traffic Stripe, Inverted Profile (White)</i>	<i>MI</i>
702-34	Skip Traffic Stripe, Inverted Profile (Yellow)	LF
2702-34	<i>Skip Traffic Stripe, Inverted Profile (Yellow)</i>	<i>MI</i>
702-35	Solid Traffic Stripe, Inverted Profile (White)	LF
2702-35	<i>Solid Traffic Stripe, Inverted Profile (White)</i>	<i>MI</i>
702-36	Solid Traffic Stripe, Inverted Profile (Yellow)	LF
2702-36	<i>Solid Traffic Stripe, Inverted Profile (Yellow)</i>	<i>MI</i>
702-37	Solid Traffic Stripe, Inverted Profile (White)	NM
2702-37	<i>Solid Traffic Stripe, Inverted Profile (White)</i>	<i>NK</i>
702-38	Solid Traffic Stripe, Inverted Profile (Yellow)	NM
2702-38	<i>Solid Traffic Stripe, Inverted Profile (Yellow)</i>	<i>NK</i>

District Design: Update plans and CES to indicate the new pay item on applicable projects beginning with the July 2001 letting.

Specifications: Specifications will be available for the July 2001 letting.

Central Office Contact Person - Cheryl Adams 850-414-4327 SC 994-4327

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

Effective with the July 2001 letting

Issue: Miscellaneous Items - Concrete Curb, Curb and Gutter, Separator and Sidewalk, Fencing

History: The department is in the process of cleaning up the current pay item structure, by eliminating many pay items that are no longer used.

Implementation Plan:

Central Office Design:

Permanently Block the following section of existing pay items after the July 2001 letting:

(Note: The ENTIRE pay item is NOT being blocked, only SELETED SECTIONS noted below will be blocked)

520-1-xaa Concrete Curb and Gutter LF
aa = 1 (6" Curb, 1.5' Gutter)
2 (6" Curb, 2' Gutter)
3 (9" Curb, 1.5' Gutter)
4 (9" Curb, 2' Gutter)
5 (10.5" Curb, 2' Gutter)
6 (Variable Height)
9 (4" Curb, 1.5' Gutter)

520-2-xaa Concrete Curb LF
aa = 3 (Type C)
5 (Header 8"x 20")
6 (Barrier)
7 (Special 9")
8 (Special 6"x18")
12 (Variable Curb Height)

520-5-xab Concrete Traffic Separator LF
a = 3 (Type III)
6 (Type VI)
8 (Special)
9 (Type IX)
b = 3 (8' Wide)
4 (5' Wide)
5 (2' Wide)
7 (3.5' Wide)
8 (9.5' Wide)
0 (7' Wide)

2520 - 5 - xab Concrete Traffic Separator MI
a = 3 (Type III)

520-5-810 Concrete Traffic Separator (Special Type – 3’ Wide) LF

522 - 71 Concrete Sidewalk 5” Thick SY
2522 - 71 Concrete Sidewalk 125mm Thick M2

550 - 3 - xxa Corner Post Assembly EA
a = 3 (Type D Fence)

2550 - 3 - xxa Corner Post Assembly EA
a = 3 (Type D Fence)

District Design: Update plans and CES on applicable projects beginning with the July 2001 letting.

Specifications: No Specifications changes are required.

Central Office Contact Person - David Duncan 850-414-4323 SC 994-4323

Approved: Billy L. Hattaway _____ Date _____
State Roadway Design Engineer

Approved: Greg Xanders _____ Date _____
State Construction Engineer

Approved: Lex Chance _____ Date _____
State Estimates Engineer

Approved: Duane F. Brautigam _____ Date _____
State Specifications Engineer

MEMORANDUM (Construction No: 23-00)

DATE: Friday, July 14, 2000

TO: District Design, Construction, Project Management, Structures and Maintenance Engineers

FROM: Billy Hattaway
State Roadway Design Engineer

Greg Xanders
State Construction Engineer

COPIES: Freddie Simmons, Bill Albaugh, Sharon Holmes, Ed Rice, Jack Brown, William Nickas, John Chiarelli, Rowland Lamb, MOTC committee members

SUBJECT: Selection of Temporary Crash Cushions (Attenuators)

Redirective Types are: REACT 350, QuadGuard, ADIEM 350 or TRACC
Inertial Types are: Sand Barrels Arrays

“Redirective crash cushions are the principal (standard) devices to be used for shielding approach ends of temporary concrete barrier walls” (Index 415 sheet 3 of 4, note 1). When the plans call for a redirective type crash cushion, an inertial (gating) crash cushion cannot be substituted. Redirective and inertial crash cushions are not considered equal in performance characteristics; therefore, comparative cost should not be the basis when selecting a temporary crash cushion. Any change from the crash cushion identified in the contract plans is considered an engineering change and must be documented and signed and sealed by a responsible professional engineer.

Also, when the plans identify a specific attenuator such as QuadGuard for a specific location, other redirective attenuators such as REACT 350, ADIEM 350 or TRACC cannot be substituted unless the engineering change is documented and signed and sealed.

Field reviews repeatedly have shown numerous incorrect installations and the improper maintenance of inertial crash cushions (sand barrel arrays). Correct placement and maintenance of each module within an inertial crash cushion array is critical for an array to perform its intended function. Careful analysis of each site-specific location, along with the details, notes, application and restrictive conditions in Index 417 must be completed when utilizing an inertial crash cushion. Any deviation from the standard drawings requires an engineered site-specific attenuator design detail that must be documented and signed and sealed.

Changes to pay items and standards have been made to clarify the difference between attenuator types. Starting with the July 2000 letting the following changes will be reflected in the plans:

- Pay items have been updated to clearly distinguish between the inertial and redirective different types of attenuators

102-81-1 Vehicular Impact Attenuator Modules (Inertial)(Temp) EA

102-89-xxa Vehicular Impact Attenuators – Redirective Option (Temp) LO

- a = 2 (REACT 350)
- 4 (QuadGuard)
- 5 (ADIEM 350)
- 6 (TRACC)
- 7 (Redirective Option)

- Roadway and Traffic Design Standards have also been updated to clearly distinguish between the inertial and redirective different types of attenuators

2000 Metric Standards effective starting with the July 2000 letting.

2000 English Standards effective starting with the January 2001 letting.

Index 415 PRECAST CONCRETE TEMPORARY BARRIER WALL has been updated to show redirective type attenuators only (*Sand barrel array details have been removed from this index*).

Index 415 PRECAST CONCRETE TEMPORARY BARRIER WALL Page 3 of 4 Note #3 will be revised by special provision for projects starting with the January 2001 letting as follows:

Inertial crash cushions are not optional systems for locations designated for redirective crash cushions by the plans; can not be substituted for redirective crash cushions ~~without expressed approval by the Engineer; and, such substitutions are not eligible for VECP consideration.~~

Index 417 INERTIAL CRASH CUSHION is a new index that was created to detail standard module arrays for inertial gating type attenuator. (Sand barrels).

Index 417 INERTIAL CRASH CUSHION Note #1 last sentence will be revised by special provision for projects starting with the January 2001 letting as follows:

These arrays can not be substituted for redirective crash cushions called for in the plans ~~without expressed approval by the Engineer; and, such approved substitutions are not eligible for VECP considerations.~~

Please contact Cheryl Adams at (850) 414-4327 SC 994-4327 with any questions.