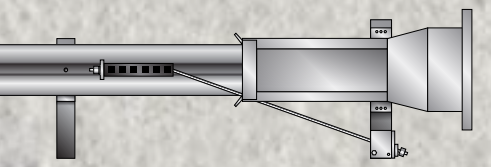
Quality Matters
Vol. II, Issue 2 – Summer 2012
from the Quality Assurance Branch (QAB) of Highway Design



Guardrail UPDATES:
Effective in June 2012 Letting

Below are a few revisions you should be aware of per the 2012 Standard Specifications and Standard Drawings.

- Guardrail heights will increase to 29" (top of rail) from the theoretical pavement elevation (Section 719.03)
- Transition the last 25 feet of 29" guardrail to the 27" Proprietary End Treatments. Do not change the mounting height of the 27" Proprietary End Treatments within its pay limits.
- NEW Method for setting guardrail posts in rock; backfill with stone or flowable fill, NOT Grout (Section 719.03.01)
- For Type 2A End Treatments, revisions to standard drawing RBR-025 will show more defined installation details. Once approved, it will be VOIDED as a Standard Drawing and will become a Sepia drawing
- On projects involving existing systems, if the guardrail is being replaced, it shall be upgraded to the 29" height.
- NEW Requirement – Prior to ordering guardrail materials, the Engineer and the Contractor shall meet on the job site to check the guardrail end treatment locations designated in the plans against the actual field conditions to determine if the locations and end treatment types are appropriate. The Engineer will approve adjustments as appropriate to guardrail locations and end treatment types. If necessary, the Engineer will consult the Division of Highway Design. (Section 719.03 cont.)
- The fill material for Type 2A and Type 3 End Treatments will now be "Earth Fill Material Seeded w/Grass." (Standard Drawings RBI-003 and RBR-030)

Instead of this:

Type 2A Guardrail End Treatments are to be used against a "solid" rock cut – not a partial rock cut or a laid-back slope. At this location, a Type 3 Buried in the Back Slope End Treatment should have been used.

Use this:

On the above project, the End Treatment was converted to a Type 3 – see top picture.

For construction related issues contact Terry Chism (Terry.Chism@ky.gov) in the Division of Construction. For design questions contact Bill Gulick (Bill.Gulick@ky.gov).

by Boday Borres, PE, AVS

Erosion Control... Lump Sum or Bid Items?

A few years ago, the Transportation Cabinet initiated a trial process of making erosion control a lump sum bid item while requiring the awarded contractor to apply for the Kentucky Pollutant Discharge Elimination System (KPDES) permit for the project. This allowed for two methods of erosion control management and permitting: lump sum and broken out bid items. Initially, there was a belief the Cabinet would shed risk where the contractor held the KPDES permit, the contractor would have more incentive to properly execute erosion control, and Cabinet inspection forces would have more time for the inspection of roadway and structural items.

Feelings about the lump sum method varied both within the Cabinet and within the contracting industry. Additionally, the Environmental Protection Agency (EPA) and others weighed in on the extent to which the new method truly limited the Cabinet's responsibility on projects. The reality is the Cabinet does not shed any risk through requiring the contractor to acquire the KPDES permit and is susceptible to fines for improper erosion control practices. This liability means Cabinet forces need to complete regular erosion control inspections even though contractor forces are doing inspections per permitting requirements. To make matters more complicated with projects using the lump sum approach, there have been instances where Cabinet forces suggested additional erosion control measures but met resistance from the contractor. This has led to change orders, arguments, or inaction and therefore risk. The Cabinet can only hope to have documentation to back our case should we encounter fines.

The bottom line is the Cabinet is a responsible party when it comes to erosion control. Rather than try to shed risk, the Cabinet needs to manage it. The use of individual bids items allows the Cabinet's construction forces to better manage our risks. Do not use the lump sum method.

by ***Roy Sturgill, PE***

FAST FACTS

Please use bid items to set up erosion control measures on all projects. Do not include any special notes requiring the contractor to file for permits related to erosion control within project limits. For further guidance on quantities for erosion control bid items, contact the Division of Highway Design, Drainage Branch. Also, see chapter ten of the old Drainage Guidance Manual and Design Memos 03-05 and 3A-05 located at http://transportation.ky.gov/Highway-Design/Pages/Drainage.aspx. A Silt Trap Volumes spreadsheet is located with other resources at http://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx.

Upcoming Training:

2012 Mid America Association of State Transportation Officials (MAASTO) in Lexington, KY!

- July 17-20, 2012 www.maastoconference.org

Kentucky Engineering Center: (kyengcenter.org)

- June 7, 2012 - Spring Dendrology & Native Tree Identification (1-day)
- June 12, 2012 - Modeling in 3D with MicroStation and InRoads (4-days)
- July 10, 2012 - Modeling in 3D with MicroStation and InRoads (4-days)

National Highway Institute: (www.nhi.fhwa.dot.gov)

- July 24, 2012 to July 26, 2012 - Course #: FHWA-NHI-380073 *Fundamentals of Planning, Design and Approval of Interchange Improvements to the Interstate System*

KYTC Training:

- Late June & July - Introduction to KYTC Drainage Design Procedures – for more information contact ***Kevin Martin,P.E.***, Division of Highway Design, 502-564-3280.

KYTC/FHWA/ACEC - KY Partnering Conference

- September 10-12, Louisville, KY

Erosion Control Blanket–Help, Hindrance, or Both?

Various interstate and state route median cable barrier projects have used erosion control blanket (ECB) for seeding protection. The netting in these products is photodegradable and should breakdown within 12 months. This picture shows the ECB had not degraded and became loose. Concerns were brought to KYTC's attention by a farm owner and the Division of Water, as the material was unsightly and could present an environmental nuisance.

Also the matieral had to be removed before the first cycle of our mowing contracts which necessitated a change order.

A collaborative effort of the Divisions of Maintenance, Construction, Highway Design, Environmental Analysis and Construction Procurement devised alternative means to alleviate this issue. These alternatives were used on cable barrier projects in the April letting per the following:

1) Bullitt Co. (5-998.00) – use straw and crimping in median in place of ECB
2) Hardin-Hart Cos. (4-2802.00) – use hydromulch in median in place of ECB
3) Gallatin Co. (6-2801.00) – use rapid photodegradable ECB in place of standard ECB. This material promotes degradation in 2-3 months.

The Quality Assurance Branch will follow up with the Districts to see the outcome after placement. Stay posted for the results, lessons learned and recommendations.

by ***Boday Borres, PE, AVS***

Cable Barrier Project with ECB Issues

Constructability Review

The Constructability Review Program strives to perform reviews at the Preliminary Line and Grade and the Final/Joint Inspection. These are critical milestones of projects originating from Project Development. While working toward this goal, we strive to give consideration to each project prior to letting. This year, we have completed 41 reviews (inclusive of projects for this year's and future lettings). This contributed to the following coverage for this year's lettings thus far:

Letting (# SYP Projects)	Not Reviewed	Reviewed	Missed
January (6)	2	2	2
February (8)	4	3	1
March (5)	2	3	0
April (12)	4	8	0
May (10)	4	5	1

Are those good results? That is a complicated question. The projects labeled as "Missed" are often projects added to the letting very close to the actual letting date. Those labeled "Not Reviewed" are typically small routine maintenance projects that may have little to no traffic impacts. Ultimately, we will inlcude these types of projects in our reviews. Currently, the time of the reviewers is better focused on projects having more complex maintenance of traffic and construction operations.

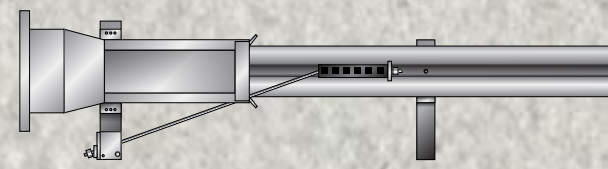
What are our findings? The typical and most recent recommendations include:

- Use the "Remove Pavement" bid item over the "Scarifying Pavement" bid item when you want it gone
- Be consistent in using DGA or CSB and include additional quantity for wedging and drop offs
- Include fabric quantities where stone is used for stabilization in soft areas
- Don't forget Type III barricades to indicate closed bridges, etc., even behind the barrels
- If construction signs will be up more than three days, include a quantity for "Temporary Signs"
- Edge of pavement or curbs should be flush with the face of guardrail
- Guardrail End Treatments -> look at existing sections, design speed, ADT's, and then decide

We will continue to track Constructability Reviews and report statistical information and trends for future use. Until then, please keep us in the loop so we can assist you and continue toward our goal.

by ***Roy Sturgill, P.E.***

Lessons Learned



This is the second installment in our series entitled Lessons Learned from the Post Construction Review Circuit. The Quality Assurance Branch has been traveling from district to district listening to input from KYTC staff, design consultants, and contractors. Here are just a few of the interesting tidbits from our conversations.

Using Plastic Sheeting for Temporary Stream Diversion

Recently we were informed about a situation where there were no erosion control items included in a set of plans to minimize a stream disturbance during construction of a structure. Consequently, the contractor was informed they needed to develop a mechanism to temporarily divert the stream away from the work area. They decided to use a 4-mil plastic liner to create a temporary diversion ditch channel. Reportedly, this method worked very well in this specific instance, as well as a few other previous occasions, and was recommended for use elsewhere. No standard bid item currently exists for this practice, because until now, this approach has always been implemented through Change Order. The need of this method is situationally determined on a project-by-project basis.

Tubular Marker Maintenance

During Post Construction Review discussions, concerns have been raised by both contractors and district personnel regarding the amount of maintenance effort required with the use of tubular markers. While proven effective safety mechanisms, tubular markers frequently need repair and replacement due to damage caused by wayward vehicles. A recommendation was made that unless visual delineation is imperative for safety purposes, rumble strips represent a preferable alternative. A potential compromise of viewpoints could involve using rumble strips in conjunction with tubular markers in an attempt to reduce the frequency of marker damage and thus also reduce the time and effort needed to maintain them.

Tying Curb and Gutter into Approach Roads

The Quality Assurance Branch has been told by contractor and district personnel that tying curb and gutter from the mainline into an approach can be very challenging unless the design plans include detail sheets or typical sections illustrating the connection. A recommendation was made that it would be helpful if designers would at least include abbreviated intersection development sheets showing spot elevations at the beginning, middle, and end of approach road curb lines. It was also suggested that this information could be contained within an inset, which would not require the same level of detail as a full blown intersection development sheet.

Eliminating Guardrail by Widening Fill Slopes

We recently reviewed an interstate project where existing guardrail had been hit repeatedly. During the winter prior to this project, three damaged end treatments had been replaced while two more were still awaiting replacement. A review of accident records indicated that over the previous five years, approximately forty accidents had occurred within this section of roadway, many of which involved collisions with fixed objects. During construction, a decision was made to eliminate guardrail throughout this entire section. The bifurcated median was excavated and fill slopes were widened to create a minimum of 4:1 traversable slopes in an attempt to reduce the amount of accidents in this area. It was suggested that when warranted by crash data and sufficient area is available, these types of safety improvements be considered during the design process.

by Nathan Wilkinson

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Lessons Learned Database Available Online

You can now view, search, and find Lessons Learned information from over 300 KYTC projects using the new GIS web mapping application located on the Lessons Learned webpage (http://transportation.ky.gov/Highway-Design/Pages/Lessons-Learned.aspx). New projects and information are being added weekly so be sure to check back periodically. If you have comments or questions regarding the new mapping application, please contact the Lessons Learned Database Coordinator, Nathan Wilkinson.