New drawing & spec
Post by Administrator on 3/17/05 at 12:47

This system is already in the current Guide, but a new drawing/specification (conforming to the new standards) has been posted at http://users.wpi.edu/~skwirl/HardwareGuide/New/Ready/Systems/sgr01a-b.pdf

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Rail Heights and a Median Barrier Version
Post by Malcolm Ray on 3/17/05 at 14:19

There has been testing done on the median barrier version of this system since the old drawing was put in the Guide. I think the most recent tests have used a bottom cable height of 21" and a top rail height of 30" and a few states (I think) use a top rail height of 33". What do we want to do about these different cable heights? The old guide did not have an SGM01 drawings for the median barrier but a number of states (NC, NY, AZ at least) are using this system in the median.

Re: New drawing & spec
Post by Malcolm Ray on 3/17/05 at 14:26

The following comment was provided on the old drawing but it applies here as well:

(submitted 4/4/2000)

The limit on the system length of 30 m is based on the New York State Standards. Some recent testing for Washington DOT has indicated that lengths as long as 600 m may be allowable as long as there are adequate tensioning springs. It may be appropriate to revise or eliminate the language on the length limit.

Re: New drawing & spec
Post by Terry Hale on 5/23/05 at 17:35

The details for SGR01a-b are labeled as Weak-Steel Post Cable Guardrail. SGR01a appears to be drawn as a heavy post. While I do not know it for a fact, I would hope that there are no heavy post cable guide rail systems that are still approved for installation. If that is true, the "Weak" part of the title could be eliminated. For the record and to our shame, several decades ago New York did have cable guardrails that were mounted on impressively stout recycled railroad rails,
but we are still trying to eliminate all of those runs.

The post spacing is shown as 5000 millimeters or 197 inches. When we metricated, we found it convenient to change our normal 16 foot post spacing (192 inches) to an even 5 meters. While they are not identical measures, we do not believe the performance of the system will notice the difference. We also would prefer to see the non-metric measurement shown as a convenient 192 inches (16 feet).

I believe North Carolina has gone to a cable median barrier that
uses six inches as the vertical separation between cables. While New York developed the original cable design with a three inch separation as shown in the posted drawings, my personal feeling is that we should have used a six inch spacing. While it is rare, we have heard reports of vehicles (in other states) not engaging a cable and slipping under the system. This has typically involved sporty vehicles with low, aerodynamic front ends, or installations where the errant vehicle encountered the rail when the vehicle's suspension system was compressed. Spreading the cables to lower the bottom one should help address this problem. As I know of no instance where our cable has ever snapped (a few where the splices have not held) the redundancy provided by having the cables close together is not necessary. Having the cables placed farther apart should improve the likelihood of either low or high (truck) front ends getting captured.

Re: New drawing & spec
Post by Greg Speier on 5/23/05 at 17:54

It is not clear how much space I need to have between the barrier that I am considering and the hard spot that I am shielding.

I like the European approach of considering a working width. EN 1317 does a great job of describing the concept and I think we should set our pride aside and copy this concept.

We on the other hand have done a great job of "stiffening" barriers with additional posts, longer posts etc.

In Chile I have had been faced with the task of using "typical" reductions of dynamic deflection by adding additional posts, double W-Beam etc as tested in USA with strong post systems to the European H-1 barriers which have not been tested with additional posts etc.

Based on the previous comments I am thus recommending
some modifications to the barrier system drawings:

1. All should show the tested dynamic deflection and it would be nice to show how much space should be left between the back of the barrier and the item that is being shielded.

2. Where we have reasonable test data we should show that for a semi-rigid system the doubling of posts results in a revised

dynamic deflection of x.xx ft.

It would be great if we could get FHWA to test all non-proprietary barriers with additional posts, with double W-beam, and with both. It would give the designer a bunch of options not now available. Of course, it just may be that some of this testing has already been done and I am just not aware of it. Should that be the case then we should include this information in the Guide.

Re: New drawing & spec
Post by Terry Hale on 6/14/05 at 12:49

While I agree that it is good to be able to find out design information for barrier systems, The document that is being prepared is for hardware details, not design details. If we start adding information about deflection, we should add information about what slopes the barriers can be used on or adjacent to, and what soil conditions require extra length posts. Slippery slope. We need to stick to just the hardware details.

Re: New drawing & spec
Post by Administrator on 7/12/05 at 13:42

5/23/05 at 17:35, Terry Hale wrote:

The details for SGR01a-b are labeled as Weak-Steel Post Cable Guardrail. SGR01a appears to be drawn as a heavy post....

Both a and b use weak posts. Post PSE01 is an S-shape, and post PFE01 is a flanged channel.

Quote:

The post spacing is shown as 5000 millimeters or 197 inches.... We also would prefer to see the non-metric measurement shown as a convenient 192 inches (16 feet).

I have changed the dimension to 192 inches.

Quote:

I believe North Carolina has gone to a cable median barrier that uses six inches as the vertical separation between cables....

As far as I know, a cable guardrail with six inches between cables has not been approved by FHWA. If there is one, please let me know, and we'll see about adding/changing it.

New component drawings
Post by Administrator on 4/22/05 at 15:25

Drawings have been posted (as PDF files at http://users.wpi.edu/~skwirl/HardwareGuide/New/Components) for the following components associated with the SCR01a-b:

- FBH01-03
- FBH04
- FBX06a-24a
- PFE01
- PLS02
- PSE01
- RCM01

Comments about these components should be discussed in this forum.

Median Barrier
Post by Malcolm Ray on 4/27/05 at 11:01

In the last guide there was no median barrier version of the cable guardrail. Should we add one? There has been testing in Washington and at the FOIL.

PLS01 (Soil Plate)
Post by Administrator on 5/24/05 at 22:11

Message via email from Mark Connolly of NYSDOT:

I received a request from a steel fabricator proposing a universal weak post to be used for WPCB and Cable GR and MB. This same post is being used by VADOT. In evaluating his request, I noticed an inconsistency in the soil plate detail on 1) M606-50 Components, Modified G2 WPCBGR, 2) the details in the PENNDOT drawing RC-53M, and 3) as FHWA accepted in letter B64A (including interpretations concerning the soil plate and converting to metric). The table below describes the differences:

System Soil Plate Dimensions Location
M606-50 200mm x 600mm 50 mm from end
RC-53M 200mm x 600mm 100 mm from end
B64A 200mm x 650mm 50 mm from end

The 2nd to last paragraph in B64A reads "You noted in your letter that several posts pulled out of the ground in each test and that the gas tank of the small car was torn in the test with that vehicle. The test installation used standard length posts that had two inches less embedment than usual as a result of the increased rail height. Consequently, you plan to increase the post lengths to 65 inches and to lengthen the soil plate by 2 inches (to within 2 inches of the bottom of the posts) to increase the soil friction. Although the ruptured gas tank is a cause for concern, we agree with your analysis that found such an event to be rare and not likely repeatable in a crash test. Using longer posts should further minimize the likelihood of a recurrence of this event."

Here lies our dilemma.... If we detail our welded post consistent with my interpretation of the acceptance letter (650 mm x 200 mm, 50 mm from the end) then we will be inconsistent with the posts that other states are using (600 mm x 200 mm, 100 mm from the end). One goal of AASHTO Task Force 13 and the AASHTO-ARTBA-AGC Joint Committee is Standardized Roadside Hardware. If we are inconsistent with the other states then the fabricators will object. On the other hand, we are reluctant to not include any recommendations provided by the FHWA particularly when there are safety issues involved. In this case, it appears as though the FHWA is suggesting the use of the larger soil plate to increase the soil friction and reduce the likelihood of accidents that may cause a gas tank rupture as that which occurred in testing.

... it is our understanding that VADOT is using a post with a soil plate fabricated similarly to the details in PENNDOT RC-53M and that the fabricator indicated that they do not fabricate any posts with soil plates located any closer to 100 mm.

Re: PLS01 (Soil Plate)
Post by Administrator on 5/24/05 at 22:11

Reply via email from D. Powers of FHWA:

As for the gr post, my acceptance letter suggested a 2-inch longer plate would be useful, but if no one actually followed up on that suggestion, I'd recommend going with the current standard - perhaps adding a note that a 650-mm plate could also be used....

Re: New component drawings
Post by Administrator on 7/12/05 at 14:25

These files have been moved to http://users.wpi.edu/~skwirl/HardwareGuide/New/Ready/Components/.

Old comment
Post by Administrator on 5/9/05 at 10:37

(submitted 4/4/2000)

The limit on the system length of 30 m is based on the New York State Standards. Some recent testing for Washington DOT has indicated that lengths as long as 600 m may be allowable as long as there are adequate tensioning springs. It may be appropriate to revise or eliminate the language on the length limit.

Re: Old comment
Post by Terry Hale on 6/14/05 at 12:37

Speaking on behalf of New York State DOT, the 30 m would be a practical MINIMUM length. Our MAXIMUM anchor to anchor length has always been 600 m (originally 2000 feet).

Re: Old comment
Post by Administrator on 7/12/05 at 13:44

Can anyone point me to testing/references for the system length?