U.S. Department
of Transportation
**Federal Highway
Administration**

1200 New Jersey Avenue, SE
Washington, D.C. 20590

April 14, 2010

In Reply Refer To:
HSSD

Paul Fossier, P.E.
Assistant Bridge Design Administrator
Bridge and Structural Design Section, Rm. 608J
Louisiana Department of Transportation and Development
Baton Rouge, LA 70804-9245

Dear Mr. Fossier:

This is in response to your correspondence dated March 15 requesting the Federal Highway Administration's (FHWA) concurrence of a new alternate design for installing guardrail posts in asphalt or concrete mow strips for use on the National Highway System. The mow-strip is specified with guardrail installations to prevent vegetation growth in the vicinity of a guardrail installation and thereby reducing or eliminating maintenance costs associated with regular mowing or use of herbicides. In support of specifying mow strips, the Roadside Safety Research Pooled Fund Committee (Washington State) evaluated test articles for specification with pavement mow-strips at guardrail posts. This submission includes drawings of the mow strip test articles (enclosed for reference), the proposed product details, and the field test report for static laboratory and dynamic bogie impact testing for the following three (3) products.

A. Two-Part Urethane Foam

Two-part urethane foams are readily available from several manufacturers. These foams can be pre-packaged as a two-part chemical solution to achieve a desired volume with a specified density and strength. Because it is closed cell, the foam is essentially impermeable to water. Inhibitors should be specified to provide resistance to degradation from ultraviolet light. The installation of the foam can be somewhat cumbersome. Once the two parts are mixed, it must be quickly poured into place before is begins to expand. Further, it is difficult to obtain uniform, unconfined expansion of the foam and it may be necessary to overfill the leave out cavity and later cut the foam level with the ground surface for aesthetic purposes. While the foam is relatively easy to cut using any type of saw blade, the shape of a steel guardrail post can make this task more difficult. Alternatively, a temporary form can be placed across the top of the leave out to confine and produce more even expansion of the foam. However, the temporary form would need to be treated with a bond release agent to prevent adherence of the foam, be properly secured to the pavement mow strip or otherwise weighted down, and have some vent holes to permit the release of foam in the event the leave out cavity is significantly overfilled. The field test report concluded that this product is considered suitable for implementation based on an evaluation of the impact performance. We concur that this product should not compromise the crashworthiness of the barrier.

B. Rubber Mat with Insert

The rubber mat with insert is a proprietary product referred as the TopHat™ manufactured by Welch Products, Inc. It is molded from recycled crumb rubber and is designed to be used as a permanent form around the guardrail post. It can reportedly be manufactured in a variety of colors. The lower portion has an insert that is molded to fit inside the perimeter of the leave out. The area inside the insert should be left as void space with no soil backfill. The upper portion consists of a 3/8-inch thick mat that extends over the edges of the leave out to prevent vegetation growth. The mat can be manufactured with a cutout that matches the shape of a particular post (e.g. W6x8.5 steel or 6x8 wood). Alternatively, scribe lines for different post shapes can be incorporated into the mat to facilitate cutting in the field. In either case, the size of the upper mat should be sufficient to overlap onto the pavement mow strip while providing some tolerance for post placement in the leave out section. Because this product is molded in one piece, it must be slid into position over the installed guardrail post, or the post must be driven through it after the product is placed in the leave out. A silicone sealant or other suitable adhesive should be used to help seal the perimeter of the mat to the post and pavement mow strip. The field test report concluded that this product is considered suitable for implementation based on an evaluation of the impact performance. We concur that this product should not compromise the crashworthiness of the barrier.

C. Pop-Out Concrete Wedge:

The pop-out concrete wedge permits the use of conventional concrete as a backfill material in the leave out section around the post. The leave out is constructed with a modified geometry that provides an opportunity for the concrete to displace or "pop-out" of the leave out during an impact. The two sides and rear edge of the leave out are chamfered at a 45 degree angle to allow the concrete wedge to be pushed up and out of the leave out upon loading from the post. The post is then free to rotate within the leave out without any further resistance from the backfill material. Note that a bond breaking material must be applied to all of the internal faces of the leave out to permit the backfill material to readily release from the surrounding pavement mow strip. In the bogie test, roofing tar paper was used as a bond breaker and conventional concrete was used as the backfill material. The use of conventional strength concrete eliminates the difficulty associated with the quality control and inspection of the two-sack grout mixture. However, it does require that the leave out be inspected prior to placement of the concrete backfill to verify proper geometry and application of a bond breaker. The field test report concluded that this product is considered suitable for implementation based on an evaluation of the impact performance. We concur that this product should not compromise the crashworthiness of the barrier.

Please note the following standard provisions that apply:

- Our acceptance is limited to the crashworthiness characteristics of the products and does not cover their structural features.

- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.

- Should the FHWA discover that that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that is the subject of this letter, it reserves the right to modify or revoke its acceptance.

- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.

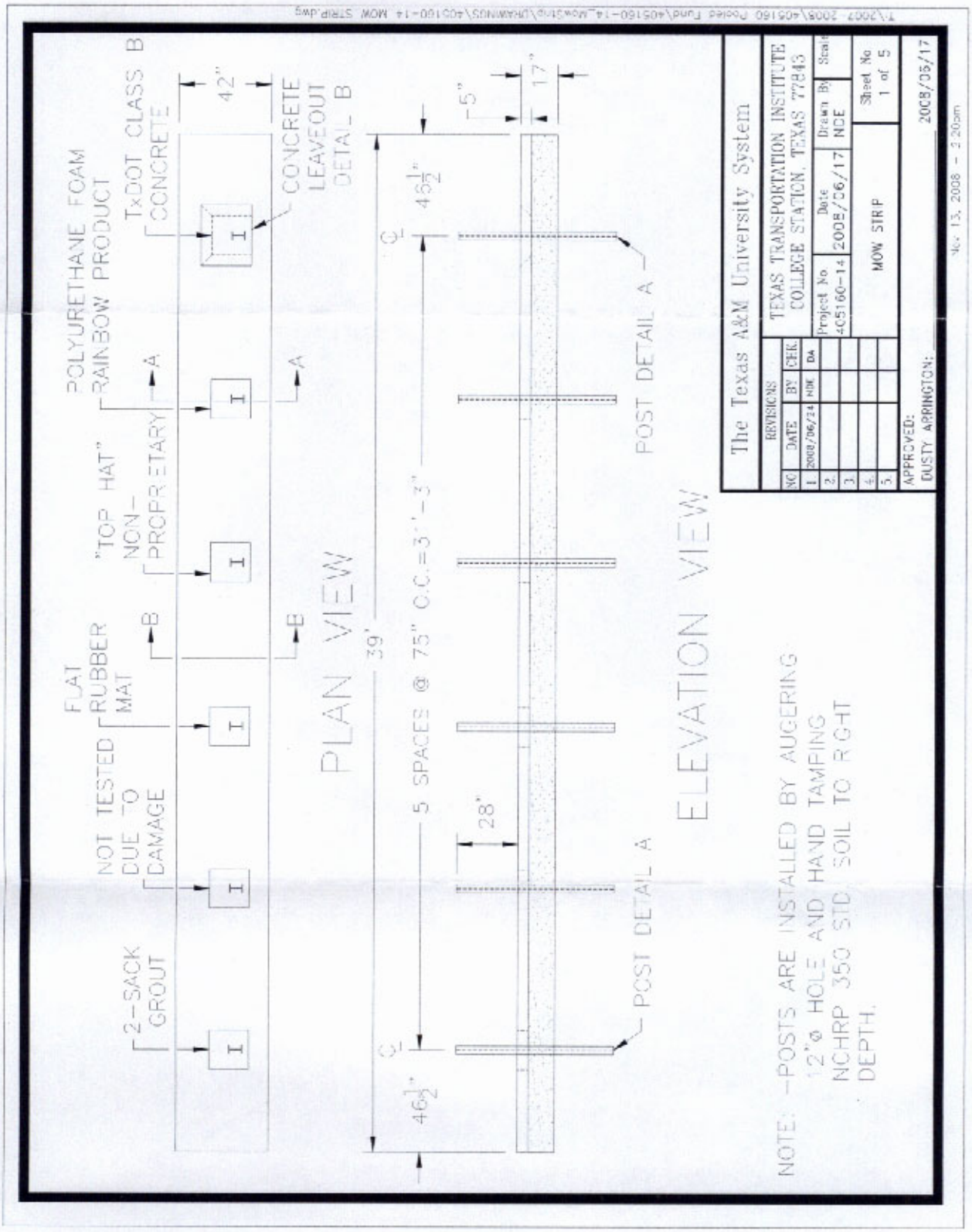
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device. Patent issues are to be resolved by the applicant and the patent owner.

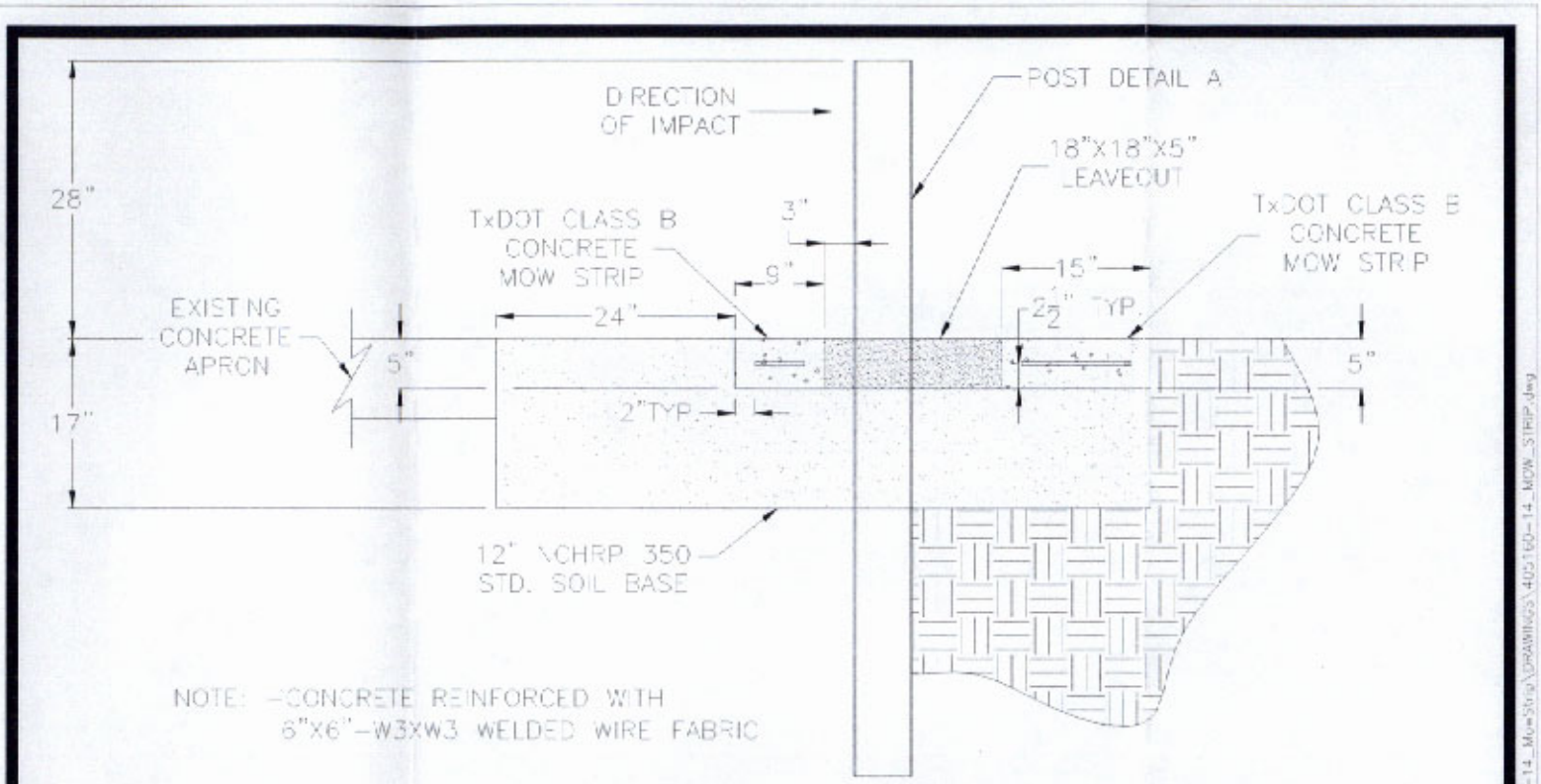
Sincerely yours,

David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

APPENDIX A. TEST ARTICLE DETAILS





SECTION A-A

The Texas A&M University System

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TEXAS TRANSPORTATION INSTITUTE
COLLEGE STATION, TEXAS 77843

Project No.	Date	Drawn By	Scale
405160-14	2008/06/17	NDE	

MOW STRIP

Sheet No. 2 of 5

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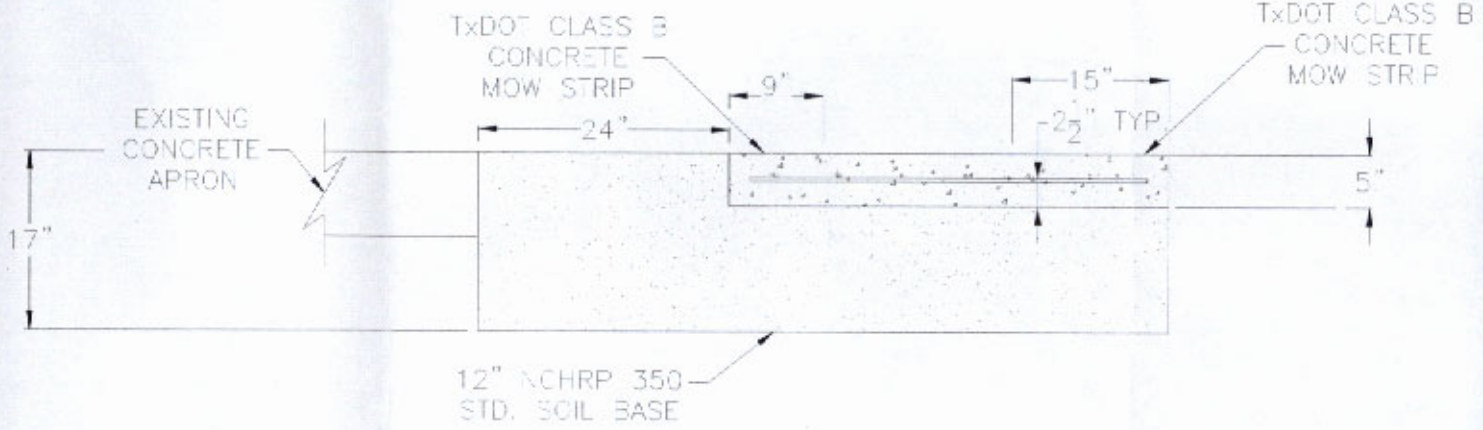

NOTE: -CONCRETE REINFORCED WITH
6"X6"-W3XW3 WELDED WIRE FABRIC

SECTION B-B

The Texas A&M University System

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MOW STRIP

Sheet No
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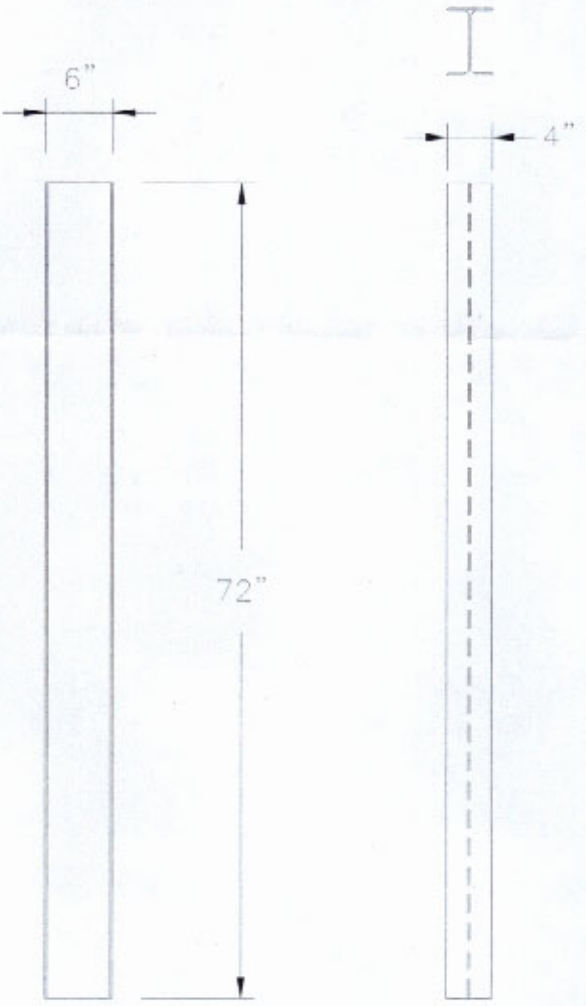

POST DETAIL A
W-6X8.5

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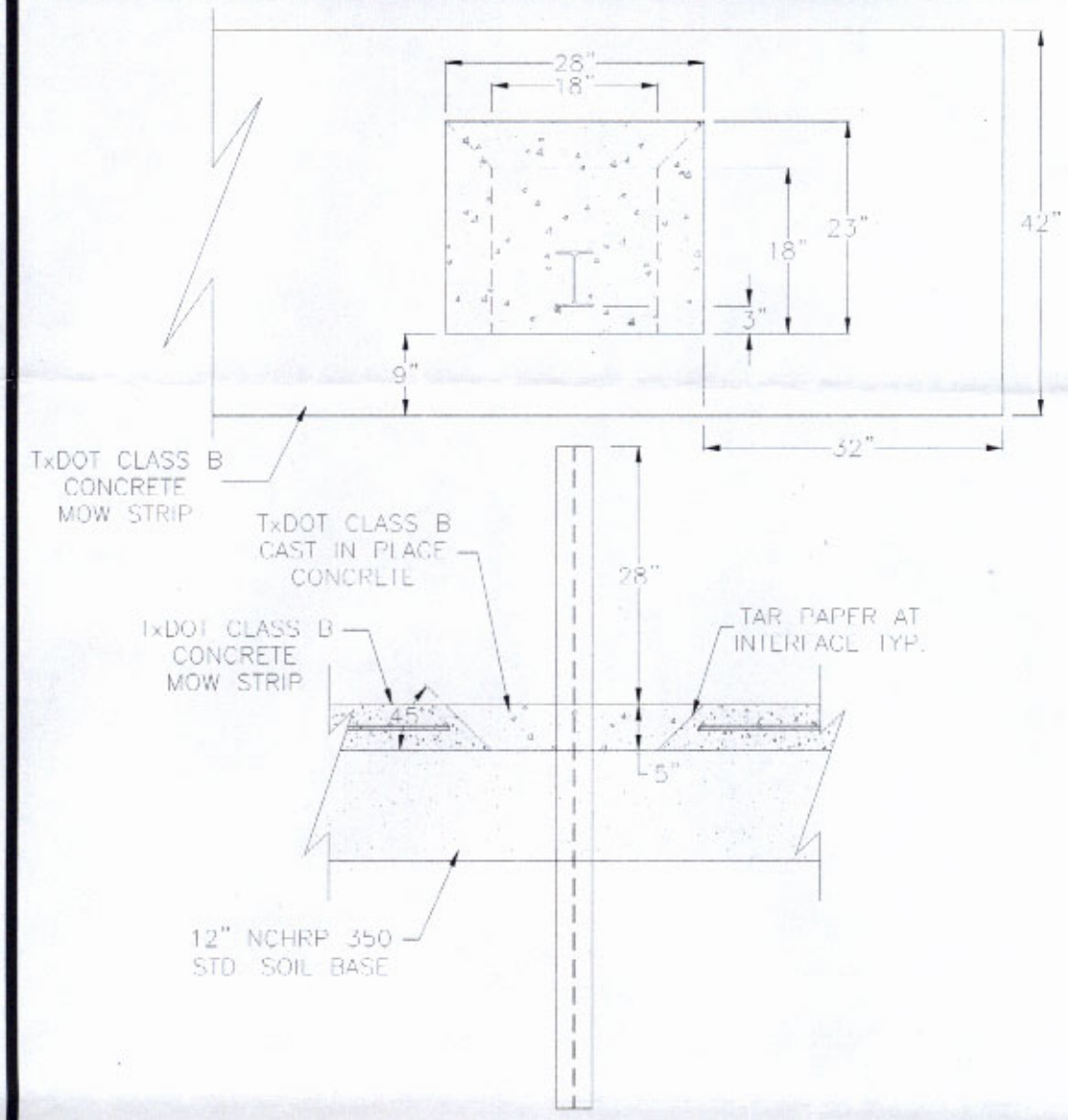

CONCRETE LEAVEOUT DETAIL B

NOTE: CONCRETE REINFORCED WITH 6"X6"–W3XW3 WELDED WIRE FABRIC

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MOW STRIP — Sheet No. 5 of 5

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