



Inter-Office Communication Office of Traffic Engineering

To : Stefan Spinoso, District 8 Production Administrator
From : *David L. Holstein*
David L. Holstein, Administrator, Office of Traffic Engineering
Date : February 26, 2009
Subj. : Write up for Brent Spence

Per your request the Office of Traffic Engineering has evaluated the constructability and Maintenance of Traffic implications of Alternate B (Queensgate) versus those of Alternate E (and the other similar proposed alignment alternatives).

We have reviewed the information provided in the CAS as well as the information provided by the National Constructor's Group. Of particular interest was the conceptual maintenance of traffic strategies proposed by the consultant. In addition we began our normal work zone planning analysis. As you know we have now successfully planned major reconstruction/capacity additions in virtually every major urban center in Ohio.

As part of our analysis we looked at the following:

1. Determining number of lanes that must be maintained;
2. Evaluation of physical and geometric constraints to providing those lanes;
3. Evaluation of demand management strategies (example – closing ramps, diversions, etc)
4. Replacing lost capacity on other facilities;
5. Contractor space, storage, staging limitations;
6. Providing adequate ingress/egress from the CBD

The following is a summary of our observations and analysis. In short we believe Alternate E has several advantages over the Queensgate Alternative.

National Constructor's Group (NCG)

The Office of Traffic Engineering has NCG under contract to provide constructability/MOT planning support services. NCG is uniquely qualified based upon their extensive experience in the heavy construction industry. We have read their opinion and agree with their concerns and conclusions. In addition, I would like to further stress the utility risks associated with the Queensgate Alternative. The relocation of the high power lines would seem to have significant cost and schedule risks associated with them due to the extremely difficult and specialized nature of the required work. In addition, I feel compelled to further stress the

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potential geotechnical risks created by the Queensgate Alternative cutting through the hill side on the southern end of the proposed bridge. While I am not a geotechnical expert, it would seem that unforeseen problems caused by a shale hill side could potentially extend the time and costs of the project completion. Even the best planned work zones cause some hardship and extending the project duration because of unforeseen geotechnical problems would be potentially harmful.

Consultant Team Preliminary Plan

The consultant team is proposing a strategy very similar to what we are planning for the \$1.6B reconstruction of I-70/I-71 in downtown Columbus. Specifically, they are proposing to build the collector distributor system on the north end of the project as a very early phase of construction. We could not agree more as this offers several major advantages. First, its completion will allow us to provide access/egress from the CBD for traffic coming/going from the north. Completion of the collector/distributor system will also allow us to remove existing accesses which in turn will create a significant amount of room for traffic to be maintained as well as for the contractor to perform his work.

This benefit is available to both the Queensgate Alternative and Alternative E. It is relevant in support of forthcoming conclusions.

OTE Analysis

Our analysis indicates that two lanes (north and south bound) for I-75 would be sufficient with proper demand management. To accomplish this we have proposed a multi-point plan that will provide the necessary capacity as well as providing access in and out of the CBD.

Step 1. – All I-75 traffic (north and south bound) would share the upper bridge deck. North bound traffic would be crossed over to south bound side in a profile conform area south of the existing bridge. Northbound traffic that is destined for I-71 north would remain on the lower bridge as they do today. This creates a tremendous MOT/constructability advantage due to the fact that all I-75 traffic (both NB and SB) would be on the same relatively narrow alignment. This “MOT corridor” for I-75 would be very easy to maintain through the project limits while giving the contractor a maximum amount of space for staging and construction.

Step 2. – This will require the loss of the I-71 SB traffic on the existing bridge. This lost capacity would be replaced by literally striping in an additional lane of capacity on I-471 SB. The I-471 SB bridge over the Ohio River has 4 lanes – with the outside lane immediately dropping at an interchange on the south side. This plan would continue the 4 lane section for the length of I-471 SB all the way to IR-275 in Kentucky. We have analyzed this route and there are no apparent physical impediments. In fact, it appears to us that the extra “temporary

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lane” could be continued up onto I-275 by simply widening the existing ramp. This “temporary capacity” would replace the lost I-71SB capacity on the existing Brent Spence Bridge. In addition, the added mileage of this alternate route is very minimal and wouldn’t cause undue hardship to its users. ODOT is using a similar strategy on the I-90 Cleveland Innerbelt project.

Step 3. – The “spaghetti bowl” on the north end of the existing bridge (I-71/I-75/US-50 area) has the potential to be the most problematic area of the project in Alternate E. Reducing the I-75 NB/SB traffic to a single 50’ corridor through the project makes the project constructability and MOT relatively easy. A review of the project plan view shows that the existing R/W in the spaghetti bowl is approximately 1000’ wide in some spots. The existing R/W will provide more than ample room to maintain the I-75 corridor and any temporary local accesses deemed necessary while still giving the contractor more than ample room to complete his work as quickly and inexpensively as possible. It is well known that contractor productivity (and therefore his costs) can be affected by the MOT. The Alternate E concept described above will allow a high degree of contractor productivity.

Summary

From a purely Maintenance of Traffic standpoint I think it is obvious that building off line has advantages (as in the Queensgate Alternative). I don’t believe, however, that from a constructability stand point that the Queensgate Alternative is superior, in fact, I believe it is far inferior. I believe the NCG comments adequately explain this. I believe from a constructability standpoint Alternate E is clearly superior due to the potential contamination, unknown conditions, utilities and geotechnical issues associated with the Queensgate Alternative.

For Maintenance of Traffic (the ability to provide the number of lanes required) I believe that the conceptual plan developed by the consultant team coupled with the “temporary capacity” developed by this office will make the MOT for Alternate E no harder than that of the Queensgate Alternative.

In summary, we view the MOT of both alternatives to be relatively equal while the constructability strongly favors Alternate E.

DLH:dlj

c: K. Swearingen - J. Gallagher - Reading File



The National Constructor's Group

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MEMORANDUM

TO: Ohio Department of Transportation
Kentucky Transportation Cabinet

FROM: The National Constructor's Group

DATE: February 16, 2009

REF: General Comments from the Review of Conceptual Alternative Study

Observations that may prove to be beneficial are:

- (1) Southbound I-75 in Kentucky provides for two clearly divided "only" truck lanes, thus avoiding the backup of automobiles caused by trucks often occupying three full lanes.
- (2) Consider relocating the 12-inch gas lines crossing the river. Discuss with River Power the possibility of relocating the transformer yard.

Subsequently develop a construction sequence wherein the bridges crossing the river are one level, including the segmental replacement of the existing double deck truss.

While it might appear expensive at first, it may simplify the interchange geometry to meet the future traffic needs with minimum design exceptions.

JPS/srm



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TECHNICAL MEMORANDUM

TO: Ohio Department of Transportation
Kentucky Transportation Cabinet

PREPARED BY: The National Constructor's Group

DATE: February 2009

REF: Brent Spence Bridge Replacement/Rehabilitation Project within the Greater Cincinnati/Northern Kentucky Region. Comparison of Alternative B Queensgate Alignment and Alternative E from a Constructability Program Costs and Risk Assessment Perspective

Introduction

The Ohio Department of Transportation authorizes The National Constructors Group to assess Alternative B, the Queensgate offset alignment and Alternative E, closely adhering to the existing I-71/I-75 alignments in both Ohio and Kentucky.

The Department provided the following documents to NCG: The Conceptual Alternatives Study and Alternative Profiles as prepared by Parsons Brinckerhoff.

A conference was conducted at the Parsons Brinckerhoff office in Cincinnati on Thursday, February 12, 2009. In lieu of a specific site visit, a majority of the proposed alignments could be observed from the Parsons Brinckerhoff offices.

Alternative E Assessment

Alternative E follows closely in the footprint of the existing interstate right-of-way. Access and logistics concerns have been raised relating to space for construction contractors to operate efficiently.

The conceptual construction staging/traffic phasing plan limits the area of concern to the interchange area of I-71/I-75, Washington Way, and US 50. A traffic phasing plan presented at the conference by ODOT's traffic engineering team reduces transportation elements to "open" areas for construction access during construction. The plan includes the relocation of an ODOT traffic communication facility.

The general material handling aspect of a contractor's operation will require additional craft labor and construction equipment for this area. It is estimated not to exceed \$5 million.

From a construction risk standpoint of manmade buried objects, utilities, differing site conditions, and hazardous materials, the footprint is relatively clear when compared to Alternative B Queensgate, due the fact that prior transportation facilities have been constructed in the corridor.

Alternative B Queensgate Assessment

Alternative B Queensgate from the Kentucky side of the river, moves the alignment for I-71/I-75 to the west, as well as the river bridge and the Ohio approach to a point of intersection with existing I-75 near Ezzard Charles Drive.

Once the right-of-way is cleared and ample transverse right-of-way is available for construction, access and logistics along this 4,800-foot corridor would be improved compared to Alternative E. However, one must consider the affect on access and logistics for constructing the I-71 connector ramps to the new bridge alignment.

Nonetheless, Alternative B creates constructability issues relative to disruption and potential delays when considering the greater possibility of encountering manmade buried objects, hazardous materials (old railroad yard), contaminated water, differing site conditions, and unknown utilities, compared to Alternative E.

Further considerations include the procurement of right-of-way, social justice (loss of jobs), relocations and mitigation, and the unknowns of demolition including asbestos removal from industrial buildings.

The Duke Power negotiations for realignment of transmission lines could also add to the project cost and increase delays in completion.

The roadway cut on the south side of the river may be a cause of added costs if slopes are determined to be unstable, thus requiring ground support or additional excavation to provide stability.

To summarize, it is the recommendation of The National Constructors Group that the known costs and the great potential for added costs and delays (risk) during construction clearly identify that, when compared to Alternative E, Alternative B Queensgate is not a reasonable alternative to be carried forward for further study and should therefore be eliminated as a potential alternative.

JPS/srm