

To: Nebraska Department of Roads	
From: Andy Wiest	Project: US-75 Plattsmouth to Bellevue Webster Blvd / Haswell Drive
CC:	
Date: December 15, 2009	Job No: NH-75-2(155), CN 21849

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RE: Avoidance, Minimization, and Mitigation of Select Locations on the US-75 – Plattsmouth to Bellevue Project

The purpose of this memorandum is to summarize the alternatives analysis completed as part of the NEPA process and to analyze site specific impacts for avoidance, minimization, and mitigation strategies for the U.S. Highway 75 (US-75) Plattsmouth to Bellevue Improvements Project.

NDOR and HDR have identified four (4) locations where a site-specific review of alternatives that avoids or minimizes impacts is warranted. Those locations are:

- Stream crossing associated with the Fairview Road Interchange
- Stream crossing at Webster Blvd / Haswell Drive (Bay Road Interchange)
- Stream crossing associated with the Platteview Road Interchange
- Wetlands along the new 6th Street Connector alignment (Bay Road Interchange)

This memorandum will address the Webster Blvd / Haswell Drive location only. Subsequent memorandums will be developed for each independent location requiring an avoidance, minimization, and mitigation discussion. Portions of this memorandum are anticipated for use in conjunction with Section 404 permitting when applicable.

1.0 Summary of NEPA Analysis

The original Final Environmental Impact Statement (EIS) was approved on June 6, 1979. A Final Supplemental EIS for the US-75 Project was signed on October 26, 2000. The Record of Decision for the US-75 Project was signed on May 25, 2001.

The Final Supplemental EIS identified an alternatives analysis at the corridor level at three locations along US-75: Murray (N-1) to south of Plattsmouth, through Plattsmouth, and north of Plattsmouth to Bellevue, as well as a No-Build Alternative. Four alternatives for Chicago Avenue to Webster Boulevard within Plattsmouth were analyzed, with a four-lane highway on alignment with a raised median selected as the preferred alternative. Interchange options for the three public roads located within the Platte River to Fairview Road section of US-75 were investigated. One interchange is required and a location between LaPlatte Road and Platteview Road was the preferred location. Platteview Road will be relocated south to meet the need for this new interchange. Additionally, a frontage road from the Normandy Hills subdivision is proposed to provide access to US-75 from Fairview Road.

The No Build Alternative did not meet the need for improvements, did not improve safety, and did not provide adequate capacity to meet the projected traffic volumes within the area.

The Federal Highway Administration (FHWA) and the Nebraska Department of Roads (NDOR) coordinated with resource agencies using the Nebraska Local Operating Procedures for Integrating NEPA/404 concurrence point process. Several agencies including U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), and Nebraska Game and Parks Commission (NGPC) were involved in the NEPA/404 Merge Process. Concurrence from the resource agencies on Purpose and Need, Alternatives Carried Forward, Selected Alternative, and Impact Minimization was met during the NEPA/404 Merge Process.

Subsequent to the Final Supplemental EIS, NDOR has performed reevaluations of the Project as design progressed. FHWA recently reviewed the Project and determined that a NEPA reevaluation was required (FHWA, March 16, 2009). The reevaluation will be based on the change of the impact boundary from the Final Supplemental EIS, compared to the current impact footprint and will consider past reevaluations conducted by NDOR in September 13, 2003 and November 20, 2004. The Project is currently undergoing the NEPA reevaluation, slated for completion in January 2010.

2.0 404 (b)(1) Guidelines

The 404 (b)(1) guidelines as part of the Clean Water Act of 1977 (as amended) requires USACE to approve only the Least Environmentally Damaging Practicable* Alternative (LEDPA). Practicable is generally defined relative to the project as costs, logistics, and best available technology.

Pursuant to these guidelines, NDOR and HDR have identified four (4) locations where a site specific review of alternatives that avoids or minimizes impacts is warranted to identify the LEDPA and to supplement future 404 permitting efforts. Those locations are:

- Stream crossings associated with the Fairview Road Interchange
- Stream crossing at Webster Blvd / Haswell Drive (Bay Road Interchange)
- Stream crossing associated with the Platteview Road Interchange
- Wetlands along the new 6th Street Connector alignment (Bay Road Interchange)

3.0 Screening Criteria

Alternative roadway designs for each of the above locations were considered and evaluated in an effort to avoid or minimize the impacts to waters of the U.S. When considering alternative designs the following general criteria were applied:

- Meet NDOR highway design standards
- Minimize environmental and landowner impacts
- Cost

Evaluation and selection of alternatives are a function of each of these criteria.

4.0 Webster Blvd / Haswell Drive

4.1 Avoidance

An unnamed tributary of the Missouri River is currently conveyed through the existing Webster Blvd / Haswell Drive intersection via two drainage structures.

Total avoidance of impacts to this tributary is not possible due to the need for a new grade separated interchange as discussed in "Preferred Alternative" below. Total avoidance is also not possible due to the need to increase the conveyance capacity of both the channel and the associated drainage structures in order to convey the tributary's 100-yr flow of 4,720 cfs. Increased conveyance would minimize the flood hazard of the intersection during substantial storm events. Due to substantial flows even at lower storm frequency intervals, structures greater than 20 ft in width are required and are classified by NDOR as a bridge or major structure. Due to the bridge or major structure classification, NDOR requires a conveyance of Q_{100} . No consideration would be given to any alternative that did not pass the Q_{100} .

4.2 Minimization

The channel work associated with Relocated Webster Blvd and realigned Haswell Drive was designed in such a manner that the existing channel alignment was utilized to the maximum extent practicable. The following conditions currently exist near the Webster Blvd / Haswell Drive intersection:

Existing Conditions – The existing length of open channel at the location (defined between location points A and B on Figure 2) is 885 ft. Within this area, the tributary is conveyed via the following, existing drainage structures:

- 11 ft x 25 ft structure plate arch which conveys the tributary northwest beneath existing Haswell Drive.
- Single 12 ft x 12 ft x 85 ft box culvert which conveys the tributary northeast beneath existing Webster Blvd.

Fisheries are not a viable resource within this tributary as it feeds the Missouri River, which is protected by a U.S. Army Corps of Engineers 100-year levee system. Furthermore, the outlet of this tributary into the Missouri occurs through a directional gate valve which does not allow Missouri River backwater through the valve and into the tributary; therefore, this tributary has no connection to a viable fishery. Other aquatic habitat is considered viable.

A 0.05 acre palustrine emergent (PEM - Cowardin), riverine channel (Nebraska Wetland Subclass), fringe wetland exists on the tributary's east bank between the UPRR and Haswell Drive crossings.

Table 1 – Existing Conditions

Open Channel (linear ft)	885
Existing Culverts (linear ft)	110
Total Conveyance (linear ft)	995
PEM Wetland (acre)	0.05
Fisheries Habitat	No
Aquatic Habitat	Yes

Alternatives

Two alternatives were considered in association with the Webster Blvd / Haswell Drive intersection: No Build Alternative and Preferred Alternative.

- **No Build Alternative**

The US-75 Roadway Improvement Project-Wide No Build Alternative analysis, as defined in the Final Supplemental EIS, was determined to: not meet the need for improvements, not improve safety, and not provide adequate capacity to meet the projected traffic volumes within the area.

Whether or not the ultimate US-75 Roadway Improvement Project meets its purpose and need is directly contingent upon activities specific to the Webster Blvd / Haswell Drive intersection. That is, the Webster Blvd / Haswell Drive intersection No Build Alternative can not be implemented if the purpose and need of the ultimate US-75 Roadway Improvement Project is to be met.

By not meeting NDOR highway design standards, the No Build Alternative does not satisfy the purpose and need of the ultimate project; therefore, no further analysis of this alternative is warranted.

- **Alternative Considered but not viable**

An alternative that was reviewed but not considered viable was to relocate the existing channel on the east side of Webster Blvd. This would be accomplished by running the channel along the south side of Haswell Drive, constructing a new Triple 12 ft x 12 ft box culvert through Webster Blvd., then diverting the channel northwards. This alternative was not feasible due to the large hill on the east side of Webster Blvd. that would result in excessive property owner impacts.

- **Preferred Alternative**

The Preferred Alternative would facilitate the ultimate US-75 Roadway Improvement Project of creating a freeway with controlled access interchanges that would greatly increase traffic safety through the corridor. The Preferred Alternative would accomplish this by effectively routing increased traffic densities, on connecting country roads within the immediate location, through an improved intersection at Webster Blvd and Haswell Drive. Ultimately, the Preferred Alternative would allow improved access to US-75 via a grade separated diamond interchange at Relocated Webster Blvd. The following design components would be implemented:

- In order to facilitate increased traffic densities, resulting from closures of US-75 at-grade intersections with Bay Road, 3rd Street, and School Road, Haswell Drive would be widened from 12 ft to 20 ft and will have a 6 inch bituminous surface (asphalt millings) and 3 ft shoulders on both sides. Improved Haswell Drive would provide adequate connectivity to the proposed US-75 interchange at Relocated Webster Blvd for residents and businesses affected by existing intersection closures. The proposed widening of Haswell Drive requires an alignment shift from existing Haswell Drive at the grade separated crossing of Haswell Drive under the Union Pacific Railroad (UPRR) (see Figure 2). The alignment of existing Haswell Drive is located beneath UPRR between bents 6 and 7 that are 20 ft apart. Improved/widened Haswell Drive will not fit between these bents; therefore, the proposed alignment has been shifted north between bents 7 and 8 that are 27 ft apart.

The alignment shift also allows a greater separation between Haswell Drive and the existing tributary.

In association with the realignment of Haswell Drive, the existing 11 ft x 25 ft structure plate arch, which conveys the tributary northwest beneath existing Haswell Drive, would be removed and replaced with a Triple 12 ft x 12 ft x 55 ft box culvert which would convey the tributary under realigned Haswell Drive.

- Webster Blvd would be relocated in order to facilitate local traffic to and from the proposed diamond interchange at US-75 and Relocated Webster Blvd (see Figure 1).

In association with Webster Blvd relocation, the existing single 12 ft x 12 ft x 85 ft box culvert which conveys the tributary beneath Webster Blvd would be removed and replaced with a Triple 12 ft x 12 ft x 84 ft box culvert which would convey the tributary's 100-yr event under Relocated Webster Blvd.

- Existing channel dimensions (generally 5 ft bottom width, 12 ft high banks, and 3:1 sideslopes) and structure sizes (as noted in previous bullets) are not sufficient to convey the Q_{100} of 4,720 cfs for the tributary. As flow conveyance of the Q_{100} is required by NDOR, the channel will be modified to include a 36 ft bottom width, 3:1 side slopes, and will be contained within a 7 ft channel depth. The new channel would be graded at 1.3% and 50 foot vegetative buffers would be established from top of bank on both sides of the new channel. Open weave textile blankets consisting of coir will line the new channel bottom and Turf Reinforcement Mats, Type 2C will line the banks. Energy dissipaters will be required at the outlet end of the new box culverts to protect the outlet during significant storm events from scour.

With minor exceptions, the Preferred Alternative maintains existing tributary alignment through the location; however, the following channel modifications and box culvert installations would be required of the Preferred Alternative:

- The profile of the entire tributary length within the location would be modified in order to convey the Q_{100} (as noted in the previous bullet).
- 55 linear feet of channel would be impacted by the proposed triple box culvert under realigned Haswell Drive and 25 linear feet of open channel would be created where the existing structure plate arch under Haswell Drive would be removed. A net loss of 30 linear feet of channel would result at the Haswell Drive crossing.
- 84 linear feet of channel would be impacted by the proposed triple box culvert under Relocated Webster Blvd and 85 linear feet of open channel would be created where the existing single box culvert under Webster Blvd would be removed. A net gain of one linear foot of channel would result at the Webster Blvd crossing.

In addition to the above noted channel modifications, the entire 0.05 acre PEM, Riverine Channel fringe wetland, located along the tributary's east bank between the UPRR and Haswell Drive crossings, would be permanently filled as a result of the Preferred Alternative.

Table 2 – Preferred Alternative Specifications

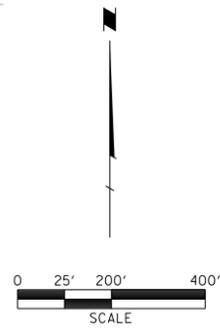
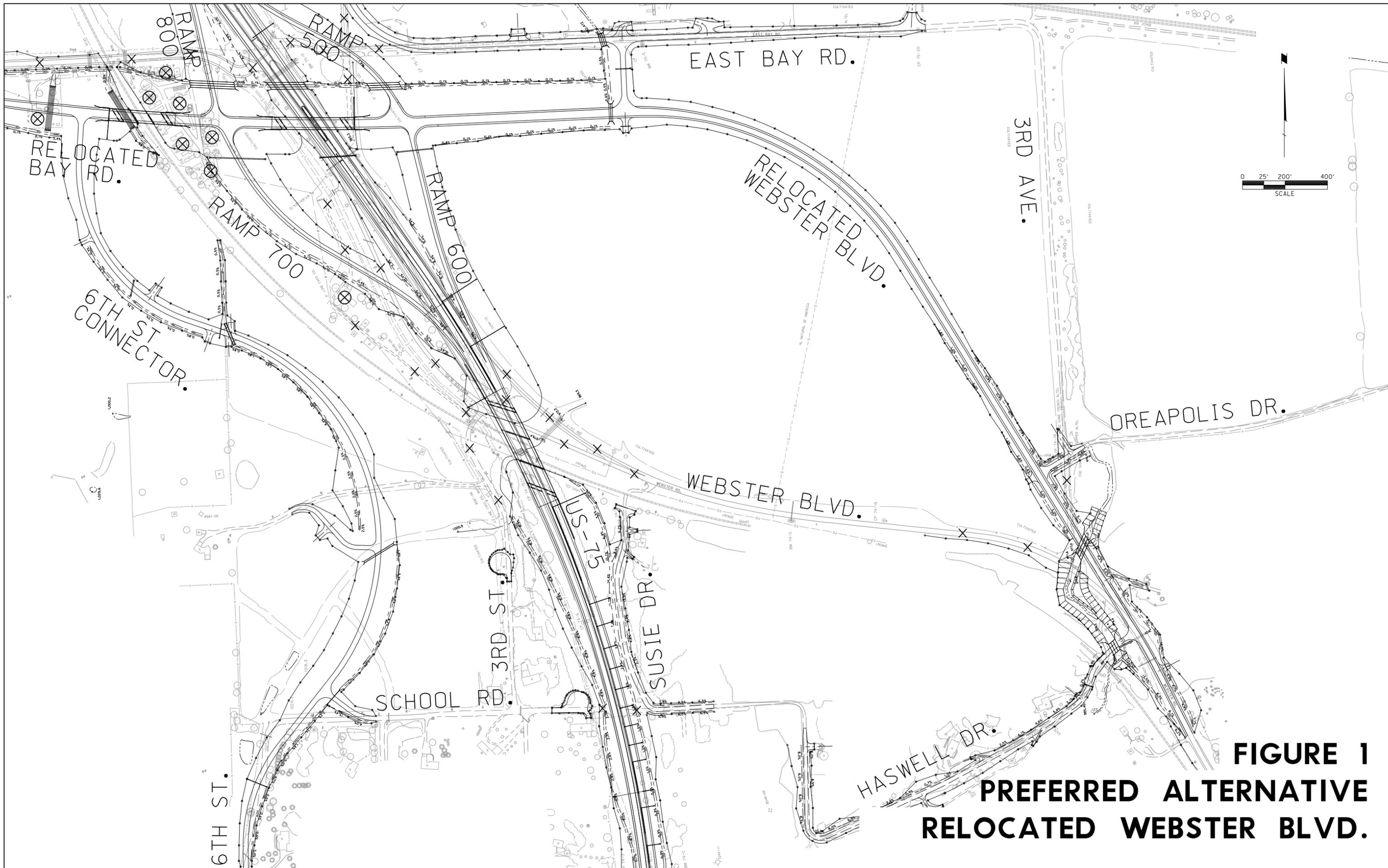
	Preferred Alternative	Existing Conditions	Difference
Conveyance (linear ft)	846	995	-149
Culverts (linear ft)	139	110	29
Open Channel (linear ft)	707	885	-178
PEM Wetland (acre)	0	0.05	- 0.05

4.3 Mitigation

The Preferred Alternative maintains the existing channel's alignment to the maximum extent practicable.

All open channel areas within the Preferred Alternative would be buffered by a 50 ft wide vegetative strip, which would act to filter sediments and nutrients from surface runoff before it reaches the tributary. The channel will be lined with open weave textile blankets and Turf Reinforcement Mats and energy dissipaters will be used at the outlet end of the new box culverts to protect from scour and reduce the outlet velocity.

NDOR is finalizing plans to construct the Oreapolis Wetland Mitigation Site (Site) located in the northeast $\frac{1}{4}$ of the north $\frac{1}{2}$ of Section 1, Township 12 North, Range 13 East, in Cass County, Nebraska. Unavoidable impacts to wetlands and open channel loss associated with relocated Webster Blvd. will be mitigated at the Site.



**FIGURE 1
PREFERRED ALTERNATIVE
RELOCATED WEBSTER BLVD.**

