

Design Relaxation Request

City Project 702620

State Project HSIP-5254(8); Control Number 12928

Superior Street & Interstate 180 East Ramp Safety Project

Lincoln, Nebraska

The City of Lincoln is requesting a relaxation of the interchange ramp shoulder slope standard specified by the Board of Public Roads Classifications and Standards for a safety improvement project on the Superior Street and Interstate 180 East Off-Ramp in Lincoln, Nebraska.

BACKGROUND

Current and future year average daily traffic volumes for the ramp are shown below:

		<u>Year 2008</u>	<u>Year 2028</u>
East Off-Ramp	At Superior St.	33,600	39,000

Superior Street & Interstate 180 East Off-Ramp

The scope of the project consists of the addition of 20 feet of concrete paving for a 12 foot dedicated northbound right turn lane and 8 feet of shoulder on the east side of the east off-ramp at Superior St. and I-180 in Lincoln. Grading of a new shoulder slope with 1V:6H foreslopes, a 5 foot flat-bottom ditch and 1V:3H back slopes will also be completed. The existing asphalt ramp will be milled 3 inches and overlaid in addition to the construction of an asphalt transition section for the new lane from approximately 1,040 feet south of Superior St. to 511 feet south of Superior St. A concrete transition and 20 foot wide concrete section along the east side of the existing ramp pavement, with longitudinal tie bars to the existing section, will be constructed from approximately 511 feet south of Superior St. to 70 feet south of Superior St. A concrete radius and connection to existing Superior St., with longitudinal tie bars to the existing pavement section, will be constructed from approximately 70 feet south of Superior St. to 25 feet south of Superior St. Reconstruction of the existing Superior St. Trail will also be completed in this area. The reconstruction of this trail will be to add Detectable Warning Panels on both of the ramp approaches and to match the grade of the new concrete pavement section of the ramp. In addition to the paving work, reconstruction of the existing traffic signal system and addition of Intelligent Transportation System applications such as camera detection and no right turn on red message signs will be installed at the intersection of the east off-ramp and Superior St. Improved communications infrastructure, which includes a 2" conduit and fiber optic cable, will be installed on Superior St. from 30 feet west of 1st St. to 300 feet west of Odgen Rd.

The purpose of the proposed project is to reduce the amount of vehicle/pedestrian collisions at this intersection as well as to provide additional lane capacity to reduce queue lengths and operational delays for northbound right turning vehicles during the PM peak hour..

The need of this project is due to the 21 collisions involving vehicles and pedestrians during a 3 year period from 2003 to 2005. The need of this project is also due to the 45 second delay that northbound right turning vehicles currently experience during the PM peak hour.

DISCUSSION

The 2002 *Board of Public Roads Classifications and Standards Minimum Design Standards for Municipal Streets* shows a minimum required foreslope of 1V:6H for “Interstate Interchange Ramp”. The City of Lincoln is requesting a relaxation of the minimum foreslope requirement of 1V:6H to 1V:3H for 225 feet at the south end of the ramp reconstruction.

The need for the relaxation from the minimum standard is due to a delineated Floodplain Depressional Wetland (PEMA) which is located on the east side of the off-ramp near the entrance from Interstate 180. The reconstruction and widening of the ramp will require new earth shoulder grading, 1V:6H foreslopes (fill condition) and drainage ditch grading. As shown in Attachment 1, the limits of grading with the required 1V:6H foreslope (Limits of Construction) will directly impact the wetland as it currently exists. By allowing a 1V:3H foreslope and a matching into the existing slope and drainage ditch, for 225 feet on the south end of this project, the impacts to the wetland can be avoided, as shown in Attachment 2. Construction impacts to wetlands can disturb the environmental stability of an area and will also cause added delays and expense in the design and construction phases of this project.

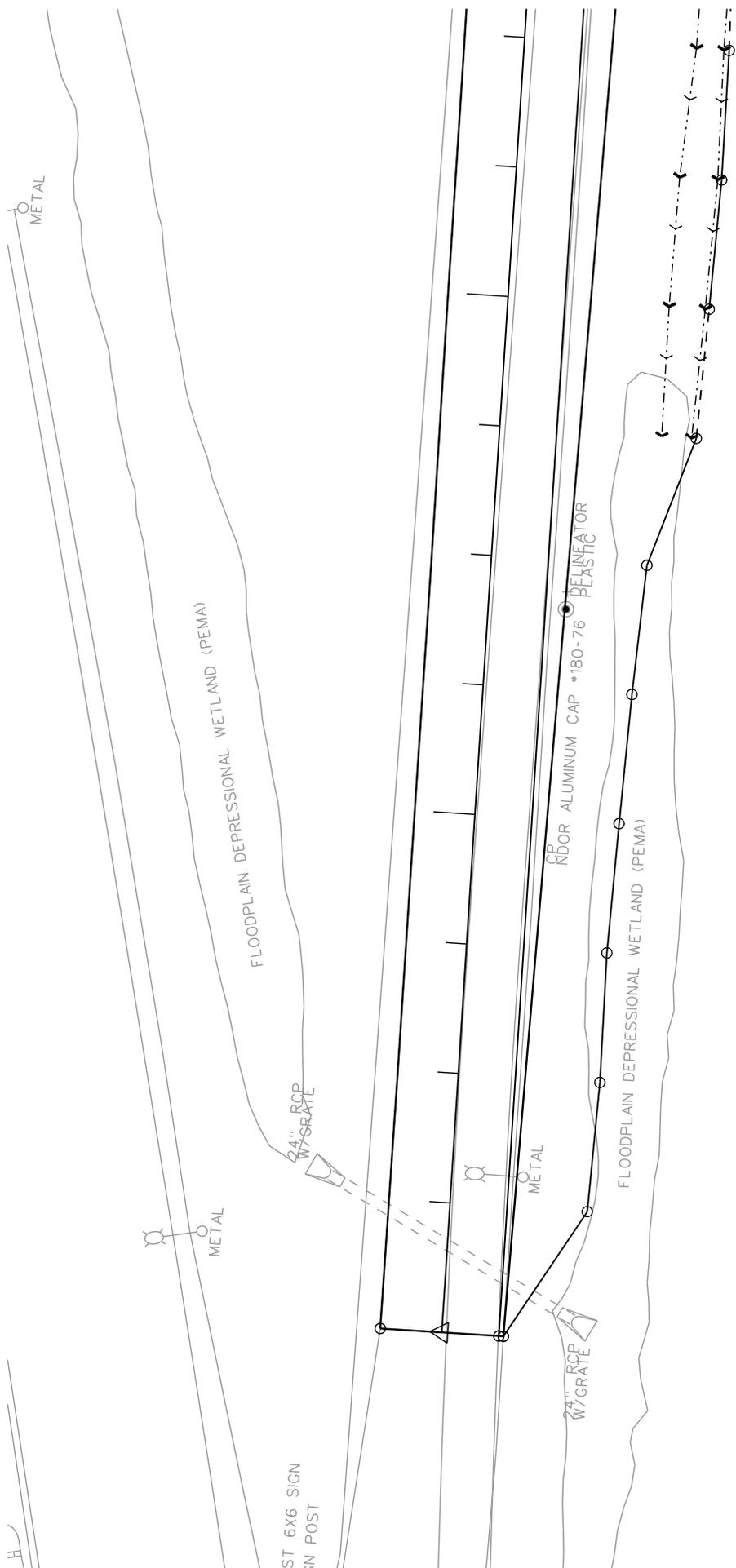
The additional fill material and grading will be less than 1 foot in depth in this area and 1V:3H slopes will not impact the safety of traveling motorists on this facility. AASHTO’s *2002 Roadside Design Guide*, indicates that foreslopes of 1V:3H are considered traversable if they are smooth and free of fixed objects. An existing street light pole is located in the area of grading on the south end of the project. However, this pole will not be relocated as part of this project and will be located within the 2% earth shoulder grading for the new roadway section and not on the 1V:3H foreslope. AASHTO’s *2002 Roadside Design Guide* also states that most vehicles on 1V:3H foreslopes will continue to the bottom of the slope and thus a clear runout area beyond the catch point is desirable. An existing 10 foot flat bottom ditch is present beyond the toe of the foreslope and runs the length of the proposed relaxation area. This ditch will provide an adequate runout area for errant vehicles. An example cross section showing the proposed 1V:3H foreslope and existing 10 foot flat bottom ditch runout area can be seen in Attachment 3.

Since the proposed foreslope falls within acceptable parameters without compromising safety to the travelling public, the City of Lincoln respectfully requests a relaxation of the Board’s foreslope standards for the Superior Street & Interstation 180 East Ramp Safety project.

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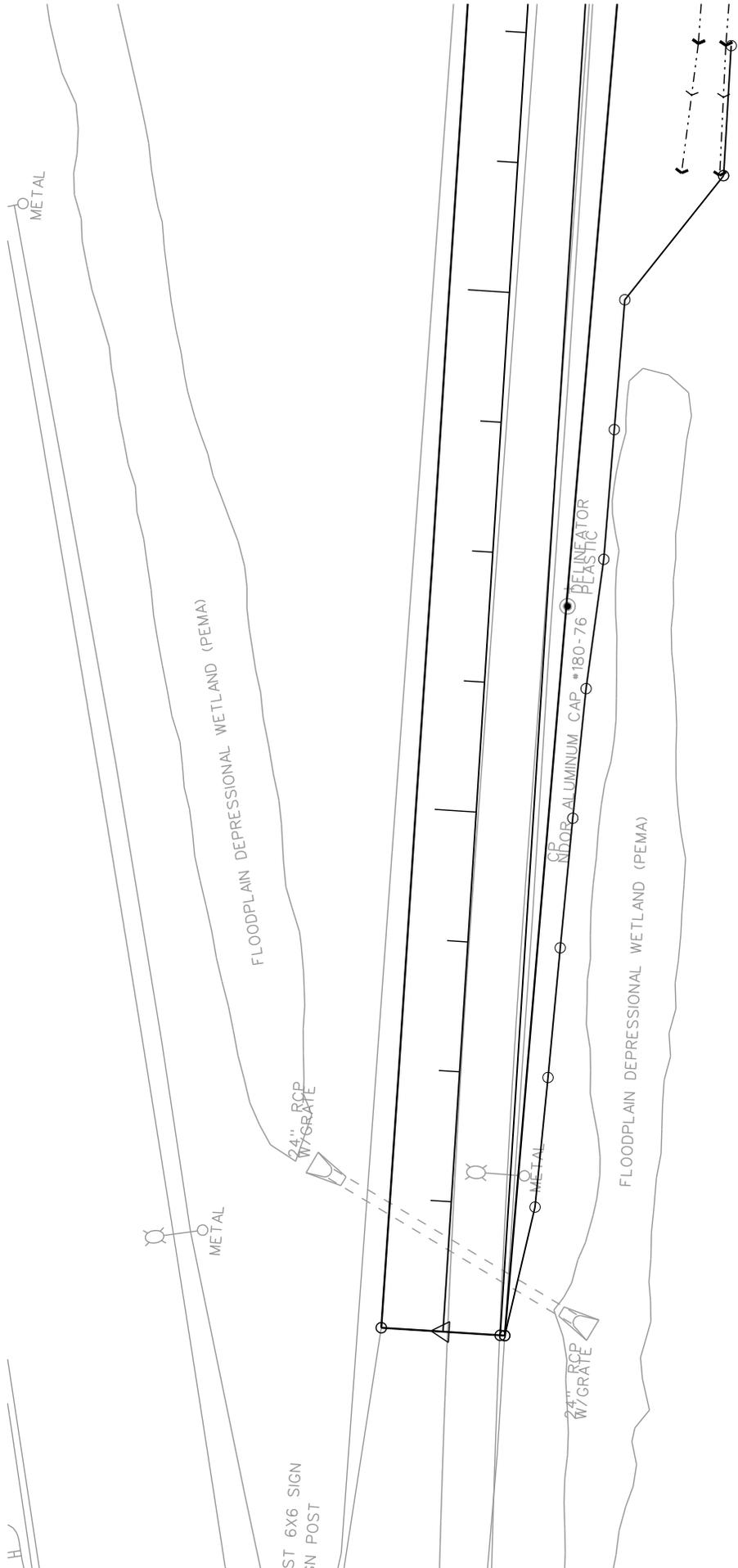


NOTE:
 LIMITS OF CONSTRUCTION SHOWN
 ARE WITH 1V:6H FORESLOPE

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NOTE:
 LIMITS OF CONSTRUCTION SHOWN
 ARE WITH 1V:3H FORESLOPE

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