

HEAD-TO-HEAD COMPARISON USING PAVEMENT DAMAGE ASSESSMENT DATA

EMC SQUARED SYSTEM STABILIZER PRODUCTS VERSUS CALCIUM-BASED STABILIZER PRODUCTS IH 635 EAST BOUND AND WEST BOUND FRONTAGE ROADS BETWEEN BELT LINE ROAD NORTH AND MACARTHUR BOULEVARD NORTH

Overview – The following is an assessment of two sections of IH 635 frontage roads as described below:

Eastbound Frontage Road Section – Between the intersection of the frontage road with Beltline Road North east to the merge point of the frontage road off-ramp with the frontage road that is located just west of MacArthur North Boulevard. Total length of the pavement section constructed on top of 24" EMC SQUARED System treated subgrade is 1.6 mile.

Westbound Frontage Road Section – Between the intersection of the frontage road with Northbound Beltline Road east to the merge point of the frontage road on-ramp with the frontage road that is located just west of North MacArthur Boulevard. Total length of the pavement section constructed on top of 24" subgrade treated with Calcium-Based products (cement, fly ash and lime) is 1.58 mile.

Information Utilized – Current Google Map aerial views and 2011, 2012 and 2013 vintage Google Map street views were used to formulate this assessment.

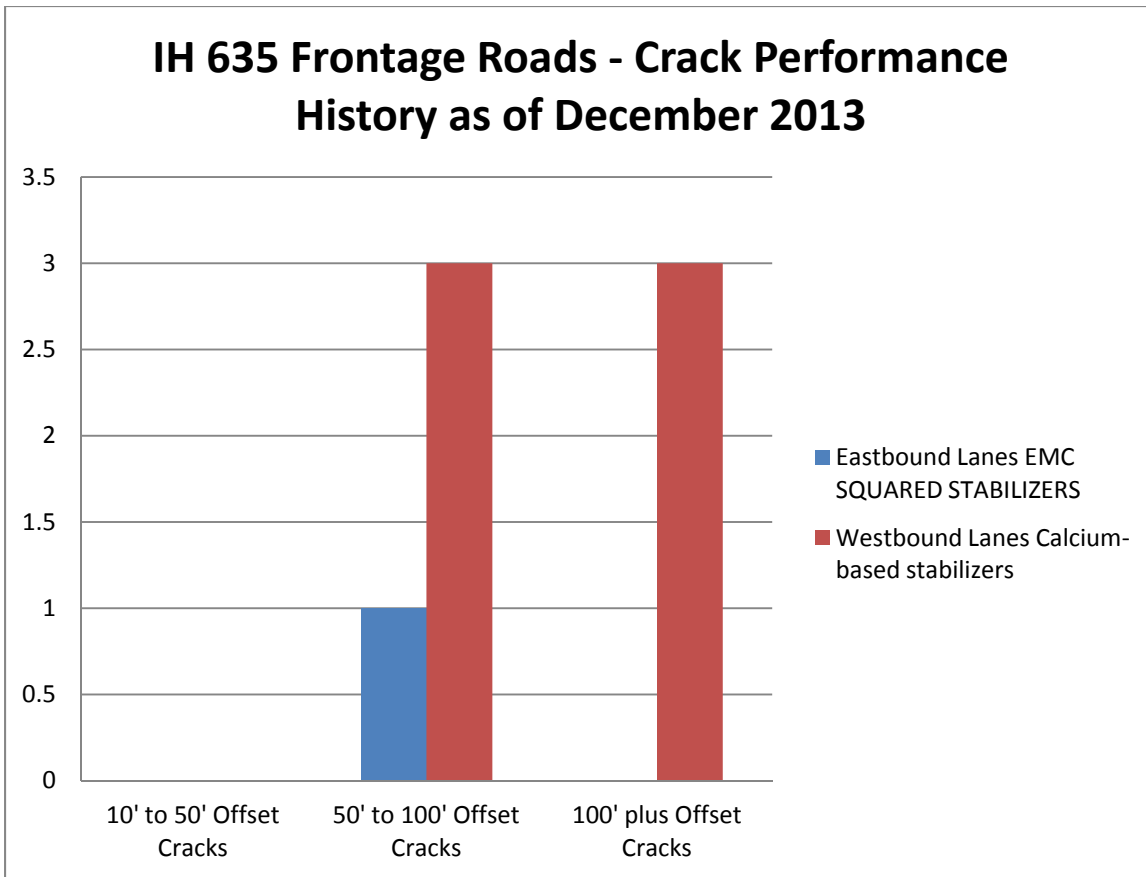
Types of Damage Observed - Below are the damage types that were observed:

Cracks – This type of damage was categorized into lengths and labeled as offset (vertical or horizontal movement).

Concrete Patches – This damage type are areas that have been patched according to various vintages of Google Map street view and current Google Map aerial views. These areas have been categorized into square foot sized areas.

Note: No curb or curb drain damage was obvious, although curb replacement might have occurred simultaneously with full lane width replacement of the three areas on the northern lane of the westbound frontage road.

Damage Tables – The data from each type of damage has been entered into the following two tables and summaries:

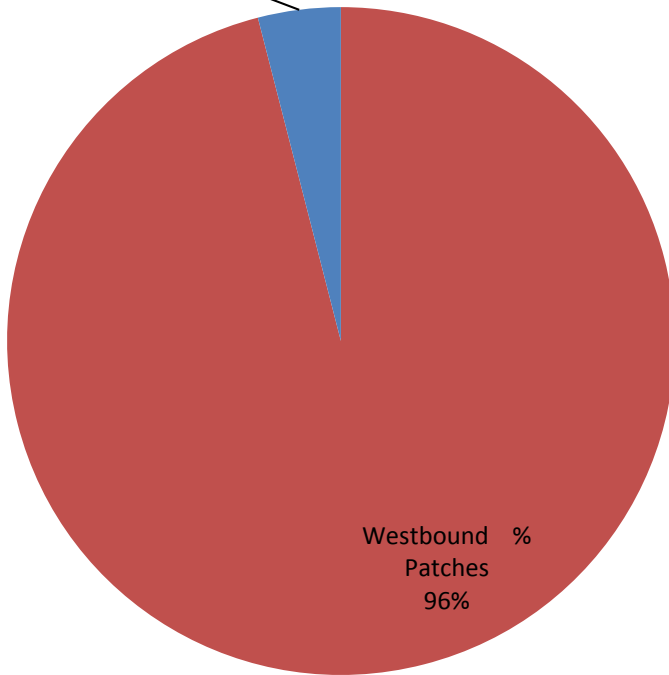


CRACK DAMAGE

| Eastbound Frontage Road EMC SQUARED System Products | | Westbound Frontage Road Calcium-based Products | |
|--|----------|---|----------------------------------|
| Category 1 = $\geq 10'$ - $< 50'$ <i>shortest</i> | | | |
| | 0 | | 0 |
| Category 2 = $\geq 50'$ - $< 100'$ | | | |
| | 1 | | 3 |
| Category 3 = $\geq 100'$ <i>longest</i> | | | |
| | 0 | | 3 (149', 267' & 878') |
| Total Cracks | 1 | | 6 |
| | | | |
| Total Offset | 1 | | 6 |

COMPARING TOTAL AREA OF PATCH REPAIRS IN SQ FT. IH 635 FRONTAGE ROADS

Eastbound
% Patches
4%



Westbound %
Patches
96%

CONCRETE PATCHES

| Eastbound Frontage Road EMC SQUARED System Product | Westbound Frontage Road Calcium-based Products |
|---|---|
| Category 1 = <2000 sq. ft. | |
| 1 (1,500 sf) | 0 |
| Category 2 = >2000 – <14,000 sq. ft. | |
| 0 | 2 (2,235 sf & 13,170 sf) |
| Category 3 = <14,000 sq. ft. | |
| 0 | 1 (22,815 sf.) |

Concrete Patch Summaries

Total Patch Number = 4

Eastbound Lanes (EMC SQUARED System) Positives:

1 total patch (occupying 1% of total length of frontage road)

Patch is <2000 sq. ft. in size

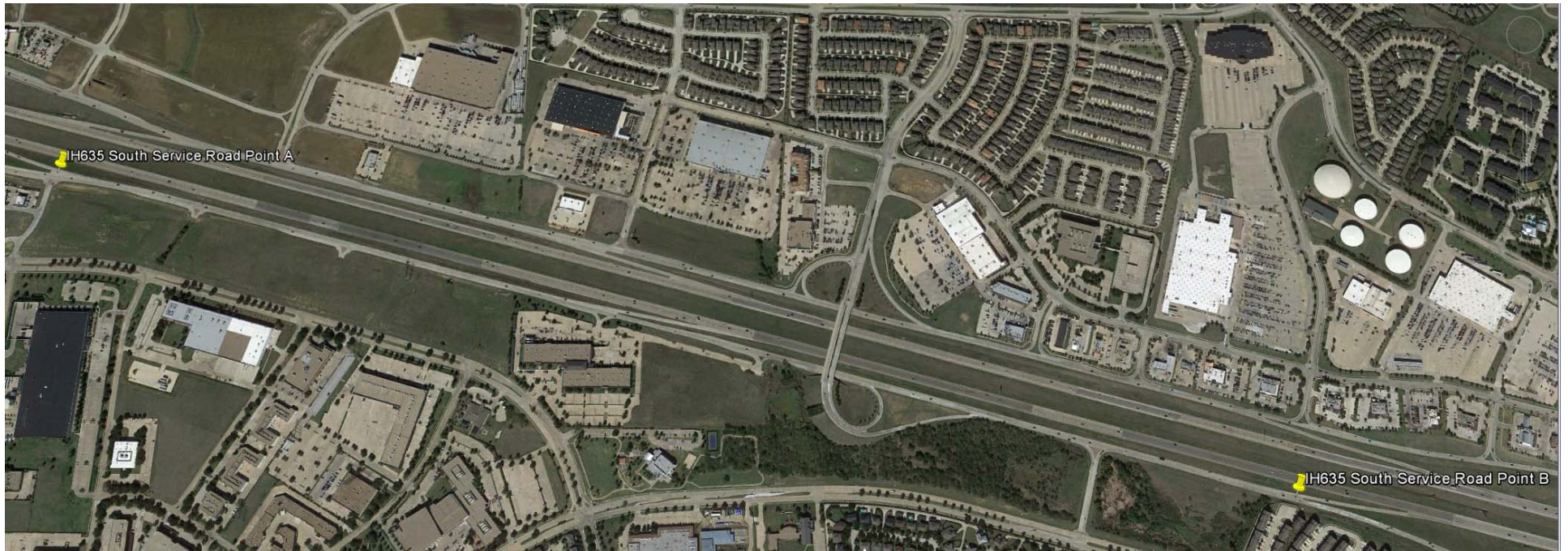
Westbound Lanes (Calcium-based stabilizers) Negatives:

3 total patches (occupying 70% of total length of frontage road)

All patches are >2000 sq. ft. in size (average of all three =12,740 sq. ft. in size)

Four cracks extend outward from the edge of largest patch

EMC SQUARED® Stabilization
IH635 South Service Road, Dallas, TX



Point A

Latitude: 32°55'20.09"N

Longitude: 96°59'28.90"W

Point B

Latitude: 32°54'59.77"N

Longitude: 96°57'58.81"W



Westbound Frontage

Patches

Cracks

Cement Treatment

EMC2 Dual Treatment

Eastbound Frontage

Google earth

Close-up of Westbound I-635 Frontage Road Damage

