

Elgin O'Hare – West Bypass (EO-WB): Commuter Rail and High Speed Rail Analysis from the Milwaukee West Line to O'Hare New West Terminal

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Introduction

An analysis has been conducted to determine the feasibility of both high speed rail service and commuter rail service (Metra) extending from Metra's Milwaukee West Line ROW to the proposed transit center on the west side of O'Hare Airport. For both commuter service and high speed service, five routes were examined at a feasibility level of detail. Routing service from the east or from the west is challenged by numerous conflicts that include the convergence of the proposed new Runway 10R-28L, the proposed EO-WB, the relocation of Union Pacific Railroad (UPRR) tracks, the existing Canadian Pacific Railroad (CPRR) tracks, the relocation of Irving Park Road, and the relocation Bensenville Ditch. Other issues include consideration of air space requirements at the ends of Runways 10R, 10C, and 10L, as well as maintenance of the navigation aids for these runways.

The evaluation focused on alternative routes, their respective requirements for structures, tunnels, and their potential to displace buildings. Some cost information is included, but only for those elements that are considered high cost. A brief discussion also references other related commuter rail concepts that are relevant to this work. All of the routes considered in the evaluation use Metra's Milwaukee West ROW and several routes use existing CPRR tracks for the leg from the Milwaukee West Line to the West Terminal. In instances where existing tracks are shared by other services an agreement would be negotiated allowing shared usage (a common practice in the Chicago area). Each of the routes from the east and from the west are described on the following pages and the feasibility of each route is determined in the *Conclusion* at the end of the document.

Commuter Rail (CR) Route Descriptions

Five Commuter Rail (CR) routes were analyzed from Metra's Milwaukee West Line ROW to the proposed Western Terminal at O'Hare Airport. The first two routes are from the east (from Chicago) and the last three are from the west. All five routes would have the same 4,600' tangent approach to the proposed West Terminal complex at O'Hare and would have a design speed of 80 mph for this tangent approach.

East Routes

CR-Route 1

CR-Route 1 diverges from Metra's ROW approximately 7,000' east of the proposed West Bypass and would cross over the proposed Taft Road and then travel between the relocated UPRR tracks and the relocated Irving Park Road (see Exhibit MTR-1). In this area, the route would be at the same elevation as the UPRR tracks and would have 15' track centers with the UPRR. Also, this route would require the south retaining wall along side Irving Road to be relocated closer to Irving Park Road for approximately 800'. It would then cross over Irving Park Road and then be parallel to the proposed north bound West Bypass. The curve to the west of Taft Road would be designed for 80 mph, the curve around Runway 10R would be limited to 40 mph, but all other segments would have a design speed of 80 mph. This route would also require the taking of one building along Irving Park Road. The route would travel north to a proposed CR station east of the West Bypass.

CR-Route 2

CR-Route 1 diverges from Metra's ROW approximately 50' west of the proposed West Bypass (see Exhibit MTR-2). The route would utilize the CPRR connection at the B17 Interlocking. The route would then travel north to a proposed CR station west of the proposed West Bypass. Pedestrian access will be needed across the proposed West Bypass to O'Hare's planned West Terminal and transit center. The design speed of the route would be 80 mph east of the B-17 Interlocking, 30 mph for the turnouts at the B17 Interlocking and 40 mph to the north of the B-17 Interlocking.

West Routes

CR-Route 3

CR-Route 3 would diverge from the Metra's ROW approximately 3,200' west of the proposed West Bypass (see Exhibit MTR-3). The route requires curved aerial structures over Main Street, York Road, the CPRR tracks, the UPRR tracks, Irving Park Road and the Bensenville Ditch. The aerial structures would be approximately 2,300' in total length and would impact the Bensenville Metra Station's parking, as well as 17 downtown Bensenville properties. The curve of the aerial structure would allow a design speed of 60 mph. The route would then travel north to a proposed CR east of the proposed West Bypass.

CR-Route 4A

CR-Route 4A would diverge from the Metra's ROW approximately 2,700' west of the proposed West Bypass (see Exhibit MTR-4A). This route would require curved aerial structures over both Main Street and York Road and would connect to the CPRR tracks south of Irving Park Road. The aerial structures would be approximately 500' and 200' respectively in length and impacts approximately 100' of the Bensenville Metra Station's north platform, as well as 14 downtown Bensenville properties at the northwest corner of Main Street and York Road. The curve of the aerial structure would allow a design speed of 40 mph. The route would then travel north to a proposed CR station west of the proposed

West Bypass. Pedestrian access would be needed across the proposed West Bypass to the planned West Terminal and transit center.

CR-Route 4B

CR-Route 4B is similar to CR-Route 4A, but has a sharper curve (lower speed) to lessen the impact to downtown Bensenville, but will increase the impact to the Bensenville Metra Station. This CR Route diverges from the Metra's ROW approximately 2,300' west of the proposed West Bypass (see Exhibit MTR-4B). This route requires curved aerial structures over both Main Street and York Road and will connect to the CPRR tracks south of Irving Park Road. The aerial structures would be approximately 350' and 200' respectively in length and impacts approximately 350' of the Bensenville Metra Station's north platform as well as seven downtown Bensenville properties at the northwest corner of Main Street and York Road. The curve of this route would allow a design speed of 25 mph. The route would then travel north to a proposed CR station west of the Elgin O'Hare Expressway. Pedestrian access would be needed across the Elgin O'Hare Expressway to O'Hare's Western Access.

High Speed Rail Route Descriptions

Five High Speed Rail (HSR) routes were analyzed from Metra's Milwaukee West Line ROW to the proposed Western Terminal at O'Hare Airport. The first three routes are from the east (from Chicago) and second two are from the west. All five routes would have the same 4,600' tangent approach to the proposed West Terminal complex at O'Hare and would have a design speed of 110 mph for this tangent approach.

East Routes

HSR-Route 1

HSR-Route 1 is similar to CR-Route 1. This HSR-Route would diverge from Metra's ROW approximately 7,000' east of the proposed West Bypass and would cross over the proposed Taft Road and then travel between the relocated UPRR tracks and the relocated Irving Park Road (see Exhibit HSR-1). In this area, the route would be at the same elevation as the UPRR tracks and would have 15' track centers with the UPRR. Also, this route would require the south retaining wall along side Irving Park Road to be relocated closer to Irving Park Road for approximately 800'. It would then cross over Irving Park Road and would travel parallel to the proposed north bound West Bypass. The curve to the west of Taft Road would be designed for 80 mph, the curve around Runway 10R would be limited to 40 mph, but all other segments would have a design speed of 110 mph. This route would also require the displacement of one building along Irving Park Road.

HSR-Route 2

HSR-Route 2 diverges from Metra's ROW approximately 4,600' east of the proposed West Bypass (see Exhibit HSR-2). The route would utilize a mined tunnel under the relocated UPRR Milwaukee Sub., the relocated Irving Park Road, the relocated Bensenville Ditch, and the proposed Runway 10R. The route would then parallel the proposed West Bypass to the planned transit center at O'Hare's West Terminal. The speed of the route from the Metra ROW to the Western Access would be 110 mph. The length of the tunnel is approximately

3,000' and would add an additional cost of approximately \$200 million due to the depth of the Bensenville Ditch, the skew of the tunnel to the runway, and the very conservative profile, which is designed for 110 mph.

HSR-Route 3

HSR-Route 3 is similar to CR-Route 2. This HSR route diverges from Metra's ROW approximately 50' west of the Elgin O'Hare Extension (see Exhibit HSR-3). The route would utilize the CPRR connection at the B-17 Interlocking. The route would then travel north to a proposed HSR station west of the Elgin O'Hare Expressway. Pedestrian access will be needed across the Elgin O'Hare Expressway to O'Hare's Western access. The design speed of the route would be 110 mph east of the B-17 Interlocking, 30 mph for the turnouts at the B-17 Interlocking, and 40 mph north of the B-17 Interlocking.

West Routes

HSR-Route 4

HSR-Route 4 would diverge from the Metra's ROW approximately 3,200' west of the proposed West Bypass (see Exhibit HSR-4). This route would require a curved aerial structure over York Road, the CPRR tracks, the UPRR tracks, Irving Park Road and the Bensenville Ditch. This aerial structure would be approximately 2,000' in length and would impact the existing Bensenville Metra Station, as well as 17 downtown Bensenville properties at the northwest corner of Main Street and York Road. The curve of the aerial structure would only allow a design speed of 60 mph. The route would then travel north to the proposed transit center at O'Hare's planned West Terminal.

HSR-Route 5

HSR-Route 5 would have the same approximate alignment as HSR-Route 4, but would use a mined tunnel instead to cross under Main Street, York Road, the CPRR tracks, the UPRR tracks, Irving Park Road and the Bensenville Ditch (see Exhibit HSR-5). This route would impact 17 downtown Bensenville properties at the northwest corner of Main Street and York Road. The length of the tunnel is approximately 2,200', which would add an additional cost of approximately \$150 million.

Other Regional High Speed Concepts

The City of Chicago recently proposed a high speed rail concept connecting downtown Chicago and O'Hare Airport. Similar, to the routes described above the Milwaukee West Line would be the primary conduit from downtown to the airport. In the vicinity of the airport the proposed rail line would be routed north along either the east or west side of the airport via the North Central Line on the east and the CPRR line on the west side. Terminal points of service at the airport would be the North Central Station at Rosemont on the east side of the airport with connectivity to the airport's people mover, or the proposed West Terminal on the west side of the airport. Associated with this concept, an interim plan has been developed that would introduce Amtrak service between downtown and the airport. As these concepts continue to evolve, the work in this document is

consistent with the plan envisioned by the City of Chicago and provides further specificity on the connection to the proposed West Terminal.

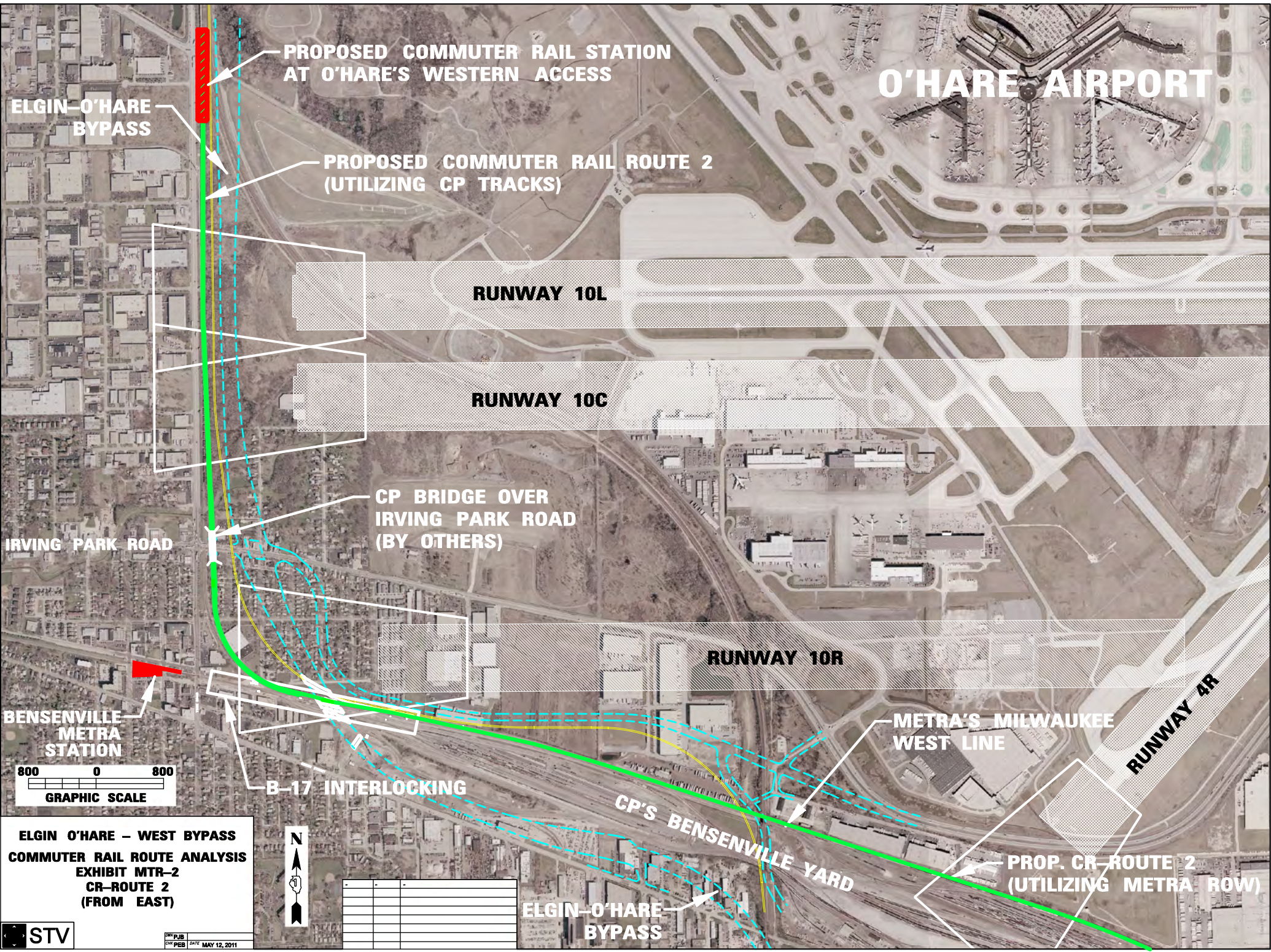
Conclusion

The determination of feasibility for each route is shown in Table 1. Metra and HSR connections from the west are not feasible. All of the routes from the west would have a substantial impact to the center of Bensenville, cause displacements of up to 17 buildings, and in some case have high cost elements.

Routes from the east for both commuter and high speed service are feasible. From an engineering perspective all are feasible, but moving forward other factors such a cost and the reliability of service are important considerations. Some of the routes have expensive elements (bridges/tunnel), while some routes use existing CPRR track that could compromise the desired level of service. Thus, further consideration of these factors is needed to resolve the type of service and the route that is most viable.

TABLE 1
Feasibility of Commuter Rail and High Speed Rail Options

	Feasibility	Comments
<i>Commuter Rail</i>		
CP-Route 1	Feasible	Dedicated route to the West Terminal; requires 3 bridges; relocates 1 building
CP-Route 2	Feasible	Shared route on CPRR tracks that could compromise service with conflicting freight traffic; requires 2 bridges; design speed reduces to 30 mph thru B-17 Interlock
CP-Route 3	Not Feasible	Costly curved aerial bridge; 17 displacements in downtown Bensenville
CP-Route 4A	Not Feasible	Bridge length reduced over Route 3, but sharp curve reduces design speed; 14 displacements in downtown Bensenville; route utilizes existing CPRR tracks which could compromise service
CP-Route 4B	Not Feasible	Bridge requirements are the least of the west routes; displacement reduces to 7 buildings, but greater impact to the Metra Station; route uses existing CPRR tracks, which could compromise service
<i>High Speed Rail</i>		
HSR-Route 1	Feasible	Utilizes dedicated route to West Terminal; maintains high design speed except for curve around Runway 10R; requires 3 bridges
HSR-Route 2	Feasible	Maintains high design speed throughout route; costly tunnel (\$200 million) permits high design speed
HSR-Route 3	Feasible	Uses existing CPRR tracks, which would compromise service and design speed (40 mph north of B-17 Interlock); low cost option
HSR-Route 4	Not Feasible	Costly bridge over 2000 feet in length; 17 displacements in downtown Bensenville
HSR-Route 5	Not Feasible	Uses a tunnel in lieu of a bridge, which would offer a visually less intrusive feature in the community; requires displacements of 17 buildings; high cost elements including the tunnel (\$150 million)



O'HARE AIRPORT

PROPOSED COMMUTER RAIL STATION
AT O'HARE'S WESTERN ACCESS

ELGIN-O'HARE
BYPASS

PROPOSED COMMUTER RAIL ROUTE 2
(UTILIZING CP TRACKS)

RUNWAY 10L

RUNWAY 10C

CP BRIDGE OVER
IRVING PARK ROAD
(BY OTHERS)

IRVING PARK ROAD

RUNWAY 10R

BENSENVILLE
METRA
STATION

METRA'S MILWAUKEE
WEST LINE

RUNWAY 4R

B-17 INTERLOCKING

CP'S BENSENVILLE YARD

PROP. CR-ROUTE 2
(UTILIZING METRA ROW)

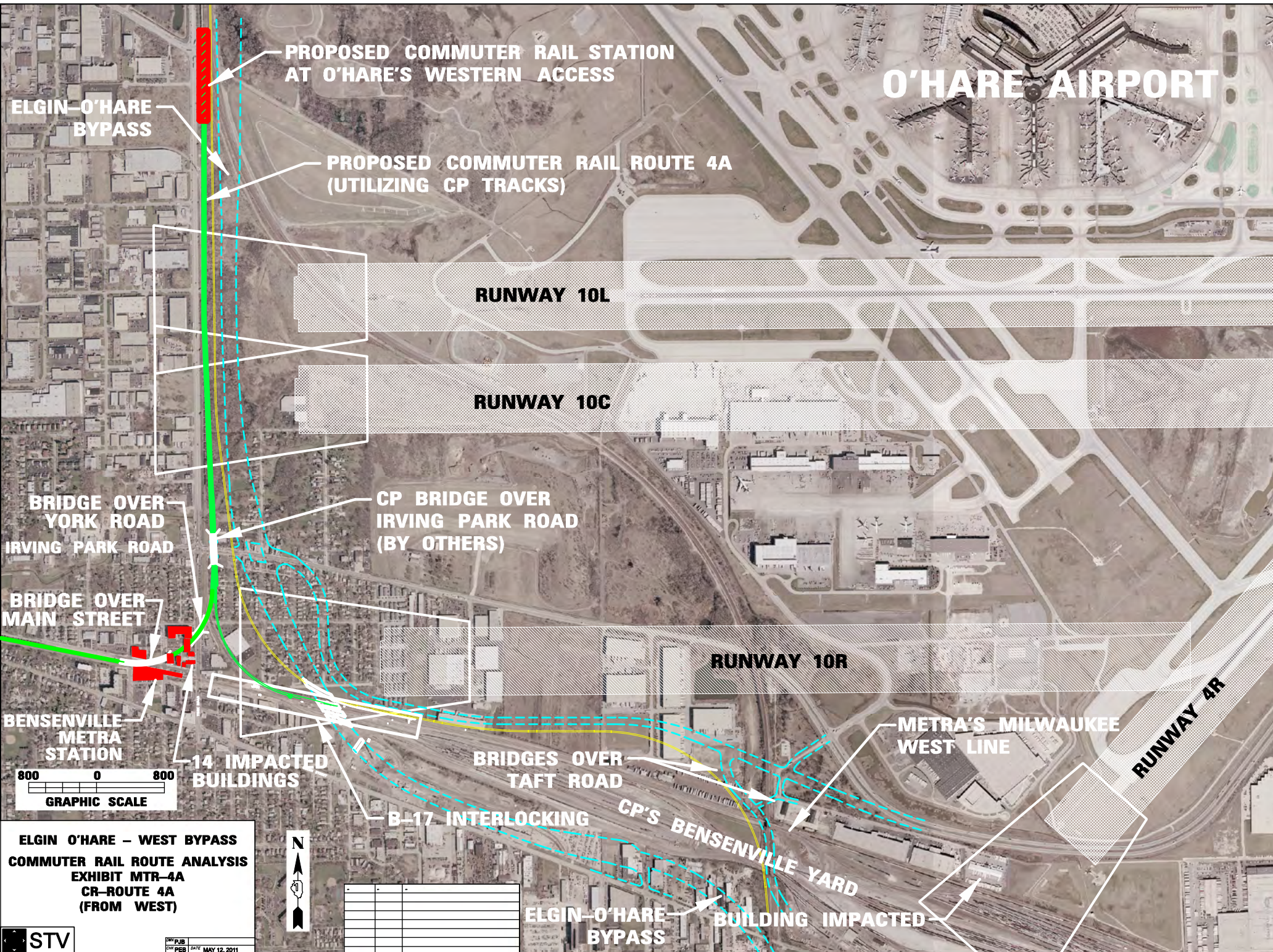
ELGIN-O'HARE
BYPASS



ELGIN O'HARE - WEST BYPASS
COMMUTER RAIL ROUTE ANALYSIS
EXHIBIT MTR-2
CR-ROUTE 2
(FROM EAST)



O'HARE AIRPORT



O'HARE AIRPORT

PROPOSED COMMUTER RAIL STATION
AT O'HARE'S WESTERN ACCESS

ELGIN-O'HARE
BYPASS

PROPOSED COMMUTER RAIL ROUTE 4B
(UTILIZING CP TRACKS)

RUNWAY 10L

RUNWAY 10C

BRIDGE OVER
YORK ROAD
IRVING PARK ROAD

CP BRIDGE OVER
IRVING PARK ROAD
(BY OTHERS)

BRIDGE OVER
MAIN STREET

RUNWAY 10R

BENSENVILLE
METRA
STATION

800 0 800
GRAPHIC SCALE

7 IMPACTED
BUILDINGS

BRIDGES OVER
TAFT ROAD

METRA'S MILWAUKEE
WEST LINE

RUNWAY 4R

B-17 INTERLOCKING

CP'S BENSENVILLE YARD

ELGIN-O'HARE
BYPASS

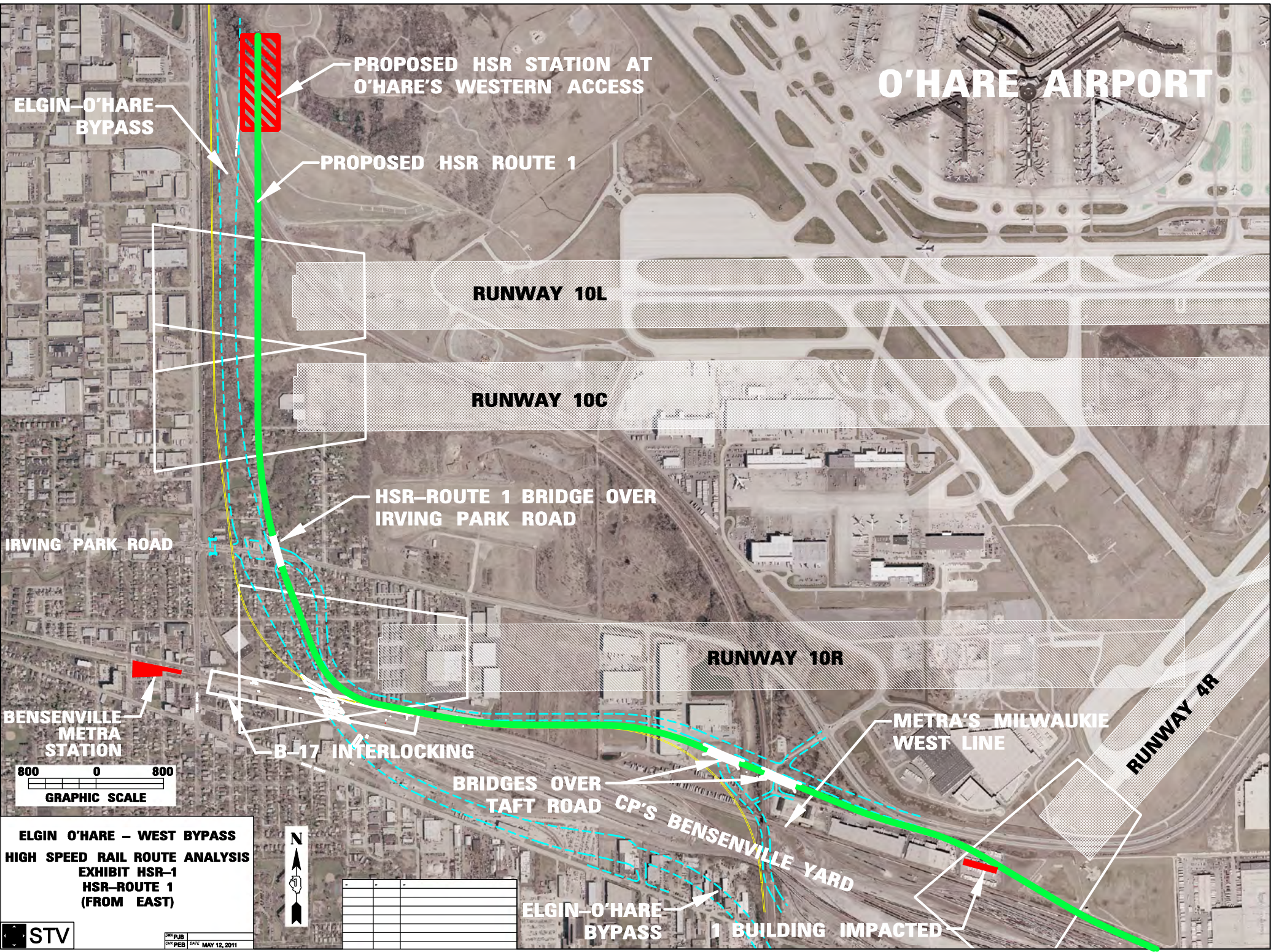
BUILDING IMPACTED

ELGIN O'HARE - WEST BYPASS
METRA TRACK ROUTE ANALYSIS
EXHIBIT MTR-4B
CR-ROUTE 4B
(FROM WEST)



DATE MAY 12, 2011

STV



O'HARE AIRPORT

ELGIN-O'HARE
BYPASS

PROPOSED HSR STATION AT
O'HARE'S WESTERN ACCESS

PROPOSED HSR ROUTE 1

RUNWAY 10L

RUNWAY 10C

HSR-ROUTE 1 BRIDGE OVER
IRVING PARK ROAD

IRVING PARK ROAD

RUNWAY 10R

BENSENVILLE
METRA STATION

B-17 INTERLOCKING

METRA'S MILWAUKIE
WEST LINE

RUNWAY 4R

BRIDGES OVER
TAFT ROAD

CP'S BENSENVILLE YARD

ELGIN-O'HARE
BYPASS

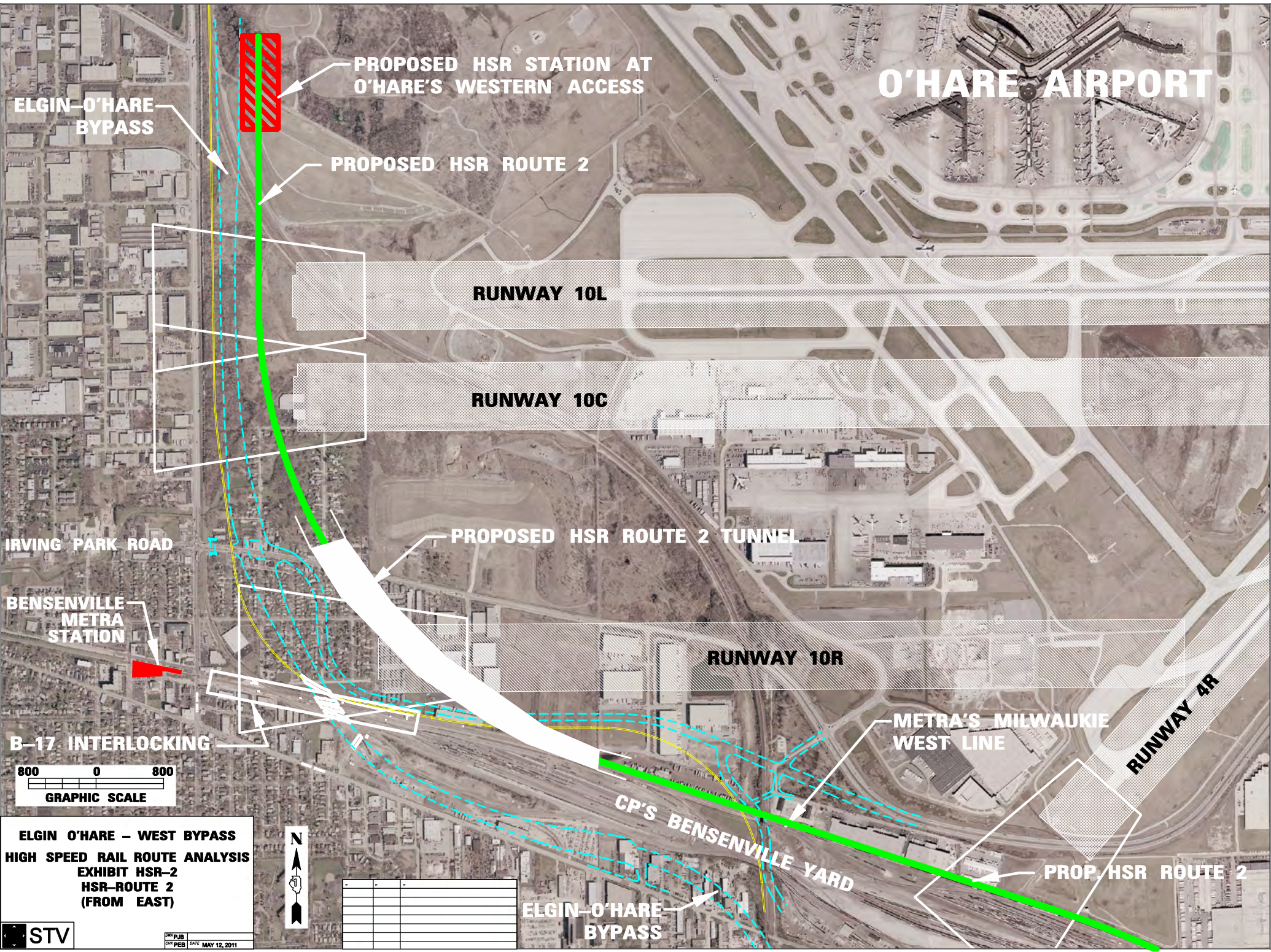
1 BUILDING IMPACTED



ELGIN O'HARE - WEST BYPASS
HIGH SPEED RAIL ROUTE ANALYSIS
EXHIBIT HSR-1
HSR-ROUTE 1
(FROM EAST)

STV

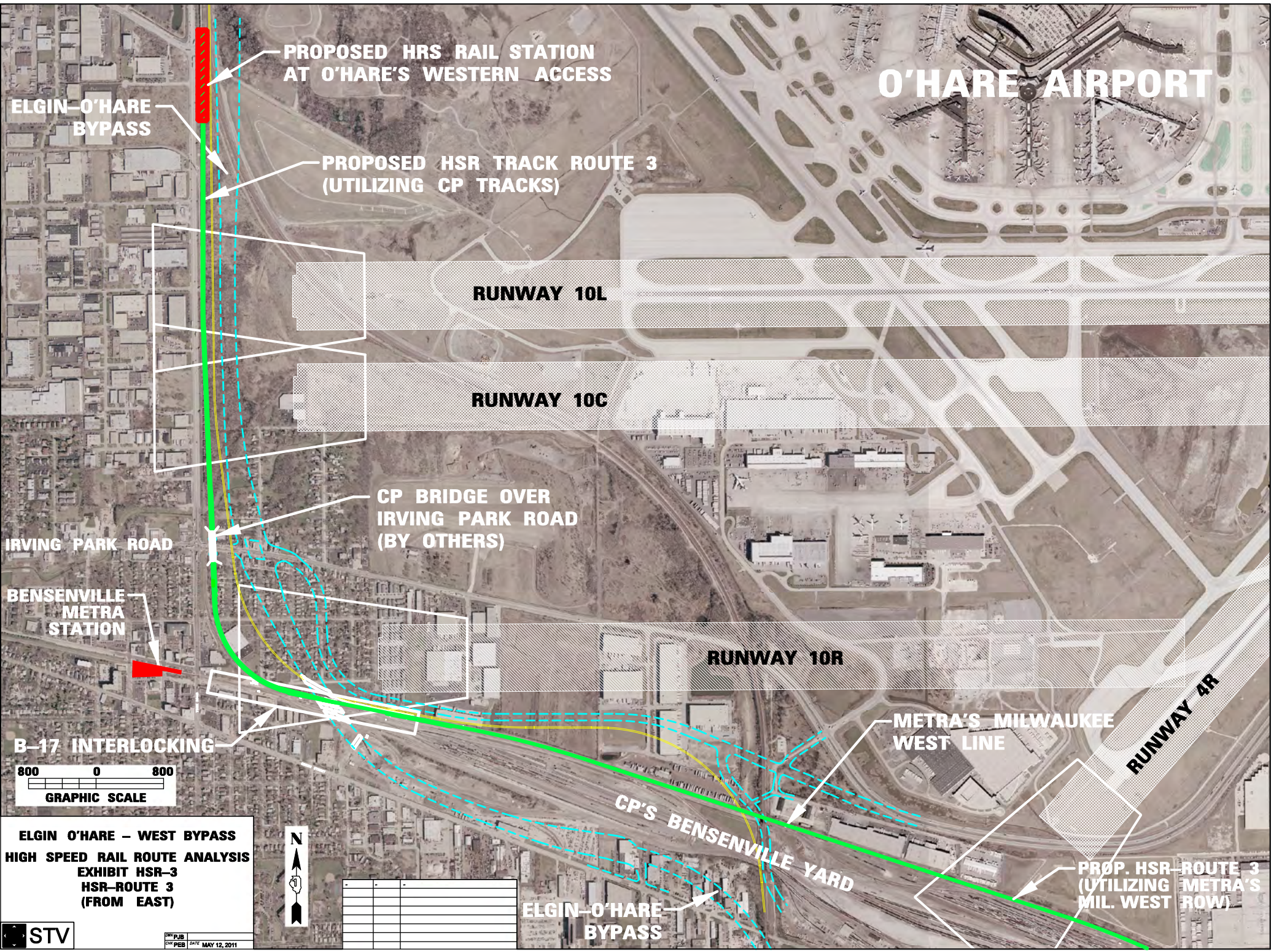
DATE MAY 12, 2011



ELGIN O'HARE - WEST BYPASS
HIGH SPEED RAIL ROUTE ANALYSIS
EXHIBIT HSR-2
HSR-ROUTE 2
(FROM EAST)

STV

DATE MAY 12, 2011



O'HARE AIRPORT

ELGIN-O'HARE
BYPASS

PROPOSED HRS RAIL STATION
AT O'HARE'S WESTERN ACCESS

PROPOSED HSR TRACK ROUTE 3
(UTILIZING CP TRACKS)

RUNWAY 10L

RUNWAY 10C

IRVING PARK ROAD

CP BRIDGE OVER
IRVING PARK ROAD
(BY OTHERS)

BENSENVILLE
METRA
STATION

RUNWAY 10R

B-17 INTERLOCKING

METRA'S MILWAUKEE
WEST LINE

RUNWAY 4R

CP'S BENSENVILLE YARD

PROP. HSR ROUTE 3
(UTILIZING METRA'S
MIL. WEST ROW)

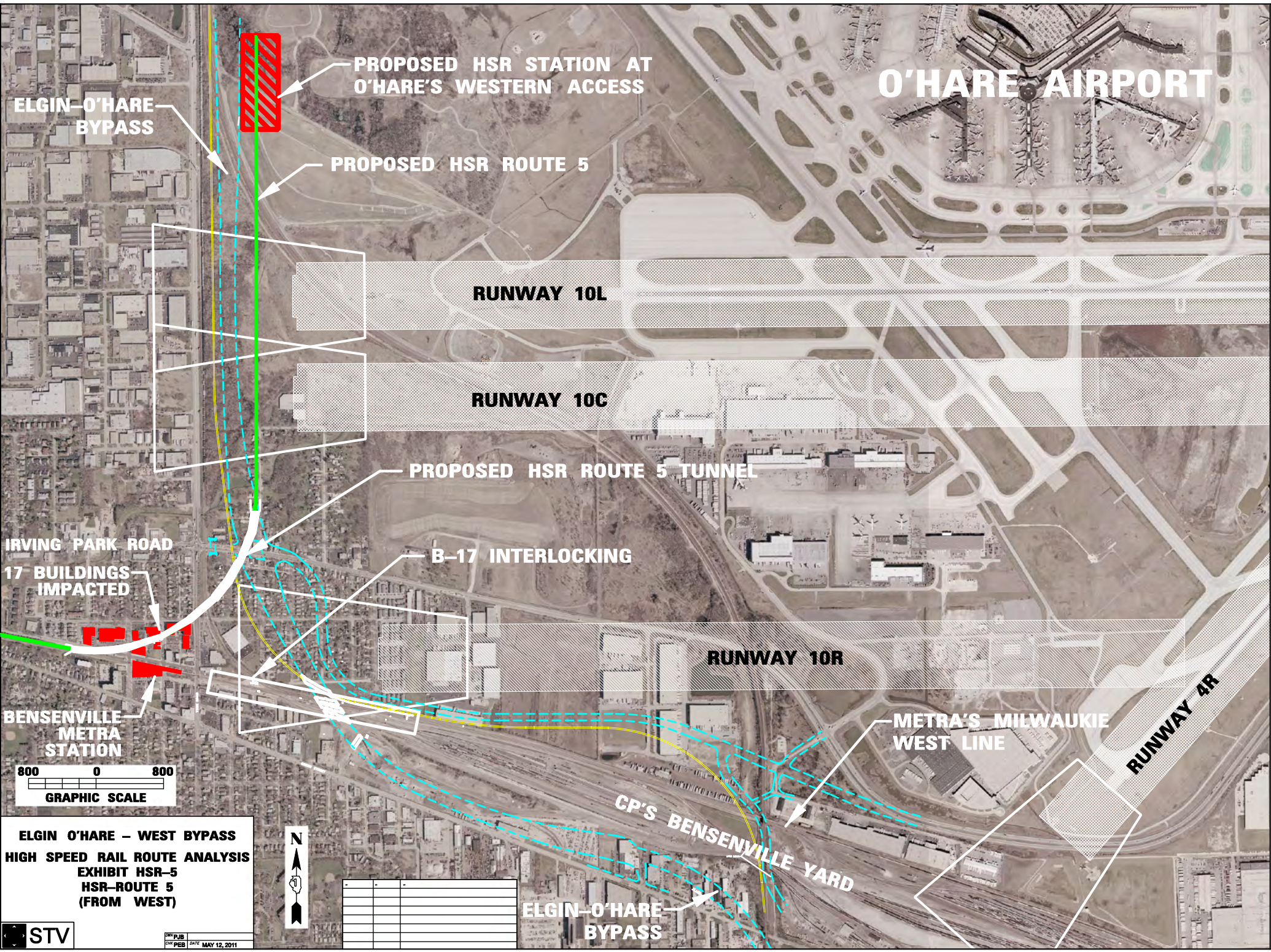
ELGIN-O'HARE
BYPASS



ELGIN O'HARE - WEST BYPASS
HIGH SPEED RAIL ROUTE ANALYSIS
EXHIBIT HSR-3
HSR-ROUTE 3
(FROM EAST)

STV

DATE MAY 12, 2011



ELGIN O'HARE - WEST BYPASS
HIGH SPEED RAIL ROUTE ANALYSIS
EXHIBIT HSR-5
HSR-ROUTE 5
(FROM WEST)

STV

DATE MAY 12, 2011