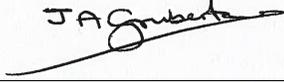




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## **1 Phase Description**

### **1.1 Design Package Description**

This Technical Appraisal Form (TAF) accompanies the Phase 3 **IFC** submission. The content is focused primarily on the geometric design criteria and requirements of this particular Phase. Other sections of the TAF describe how Traffic, Drainage, Structural, Geotechnical and Environmental challenges were taken into consideration and incorporated into the roadway design.

Separate Review Submissions and accompanying TAFs will be issued for each structure, retaining walls, utilities, and ATMS/Electrical designs. Drainage reports are also to be provided for the design of all culverts, the drainage networks and ponds.

Phase 3 forms the western section of the Windsor-Essex Parkway (WEP) project which will provide a freeway between the existing 401 and the proposed border inspection plaza in the Brighton Beach area of the City of Windsor. The limits of the WEP project extend from 0.20km West of Ojibway Parkway/E.C. Row intersection (Sta. 10+209) in the City of Windsor, easterly to 0.36km east of North Talbot Road (Sta 12+577) in the Town of La Salle. The WEP project was identified as part of the Recommended Plan for the Detroit River International Crossing (DRIC).

Immediately east of the WEP project, Contract 2007-3043 (G.W.P 62-00-00) is currently nearing completion to widen 7.8km of Highway 401 to six lanes, with tall wall median barrier. This project also includes the replacement of the Dougall Parkway, Walker Road, Provincial Road and CAO/Conrail structures, interchange improvements at Provincial Road, rehabilitation of other side road crossings, and the installation of high mast lighting, traffic control signals and ATMS cameras.

The Planning and Preliminary Design Study for Highway 3 immediately east of WEP project, Contract 2009-3005 (G.W.P. 315-98-00) recommended in January 2006 4-laning Highway 3 with a centre two-way left turn from 1.6km west of Essex Road 11 to 0.2km east of Essex Road 34. This project also includes localized intersection improvements at Walker Road and Oldcastle Road.

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<b>Project:</b>	Windsor-Essex Parkway	<b>Date:</b>	December 18 <sup>th</sup> 2012
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## 1.2 Phase Alignment Identification

*Highway Alignment Name:*

*Alignment No. and Stationing:*

<b>Alignment No.</b>	<b>Description</b>	<b>STA start</b>	<b>STA end</b>
HWY401	Highway 401.	9+556.322 (Windsor)	12+200 (Windsor)
EBR1	Ramp Hwy 401 (From West) to Ojibway Parkway N, S.	9+831.899	10+318.533
EBR2	Ramp Ojibway Parkway N, S to Hwy 401(To East).	9+561.532	10+001.006
EBR3	Transfer Lane Hwy 401 (From West) to E.C. Row Expressway East bound lane.	9+739.307	10+233.378
WBR1	Ramp Ojibway Parkway N, S to Hwy 401 (To West).	9+791.218	10+000
WBR2	Ramp Hwy 401 (From East) to Ojibway Parkway.	9+995.337	10+290.762
WBR3	Transfer Lane E.C. Row Expressway (From East) to Hwy 401 West bound lane.	9+834.904	10+294.840
ECROWE	E.C. Row Expressway East Bound Collector Lanes.	10+000.000	12+669.820
RAMP N/S-E	Ramp from Matchette Road to E.C. Row Expressway East bound lane	9+717.280	10+005.952
RAMP E-N/S	Ramp from E.C. Row Expressway West bound lane to Matchette Road.	10+000	10+367.753
ECROWOJ	Ojibway Parkway/E.C. Row	9+219.116	10+000.018
OJRAMP	Ojibway Parkway Ramp	11+093.001	11+379.190
OJPKWY	Ojibway Parkway	10+00.018	10+229.270
BECHST	Beech Street	9+955.000	10+016.647
BRODST	Broadway Street	9+850.839	10+000.000
ECROWW	E.C. Row WBL	10+000.000	10+399.690

*Station Equations:*

The whole of Phase 3 lies within the City of Windsor station area.

**Project:** Windsor-Essex Parkway

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### 1.3 Phase Description

The main improvements to be provided as part of the Phase 3 works comprise:

1. Highway 401 – a new 6-lane freeway with interchanges/grade separations provided where required.
2. Highway 401 – to be integrated into the existing E.C. Row Expressway corridor from Huron Church Road westerly to Ojibway Parkway in the City of Windsor.
3. Community Connections – 4 new bridges will provide community connections across the WEP corridor.

<b>Alignment No.</b>	<b>Operational Functions</b>
HWY401	Highway 401
EBR1	Ramp Hwy 401 (From West) to Ojibway Parkway N, S.
EBR2	Ramp Ojibway Parkway N, S to Hwy 401 (To East).
EBR3	Transfer Lane Hwy 401 (From West) to E.C. Row Expressway East bound lane.
WBR1	Ramp Ojibway Parkway N, S to Hwy 401 (To West).
WBR2	Ramp Hwy 401 (From East) to Ojibway Parkway.
WBR3	Transfer Lane E.C. Row Expressway (From East) to Hwy 401 West bound lane.
<b>ECROWE</b>	E.C. Row Expressway East Bound Collector Lanes.
<b>ECROWW</b>	<b>E.C. Row Expressway Westbound Lane</b>
RAMP N/S-E	Ramp from Matchette Road to E.C. Row Expressway East bound lane
RAMP E-N/S	Ramp from E.C. Row Expressway West bound lane to Matchette Road.
<b>ECROWOJ</b>	<b>Ojibway Parkway/E. C. Row</b>

### 1.4 Geometric Changes Since Previous Submission

The following geometric changes were identified at the time of the 90% Review Submission:

- EBR2 - Minimum Crest K for ramp increased from 75 to 120 and the minimum Sag K factor reduced from 120 to 75.
- EBR1 – Max grade increased from 5.00% to 5.50%.
- EBR2 – Min crest K factor changed from 50 to 70.  
Min sag K factor changed from 12 to 18.  
Max grade decreased from 3.70% to 3.36%.  
Min radius increased from 109m to 109.50m
- EBR3 – Max grade increased from 0.86% to 1.50%.  
Min sag K factor changed from 75 to 100  
Crest curve eliminated therefore min crest K factor not applicable
- WBR2 – Max grade decreased from 3.50% to 3.30%.
- WBR3 – Crest curve change to sag curve, therefore min sag K factor for not applicable

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Min sag K factor equal to 135  
Max grade change to from -0.48% to 0.53%

In addition to the geometric changes identified above the following geometric changes have been made since the 90% Review Submission:

- The vertical alignment of ramps WBR3 and EBR3 have been changed to make lengths of vertical curves compliant with the design speed.

## 2 Design Criteria

### 2.1 Highway Design Criteria

*PA Reference:*

Alignment No.	PA Reference
General	Project Agreement, Schd 15-2, Part 1, Article 1 – Reference Documents.
General	Project agreement, Schd 15-2, Part 2, Article 1 – Highway Geometrics Design Criteria.
HWY401	Project Agreement, Schd 15-2, Part 2, Article 1, Section 1.2 & 1.3 (a) -Tables 1.3.1.1 (A) & (B)
ECROWE, ECROWW, EBR1 EBR2, EBR3 WBR1, WBR2 WBR3 Ramp N/S-E Ramp E-N/S	Project Agreement, Schd 15-2, Part 2, Article 1, Section 1.3 (c) -Table 1.3.3.1.and Sections 1.3 (d) and (e).

## 2.2 Geometric Design Criteria Tables

### 2.2.1 Alignment HWY401- Highway 401

STA 9+556.322 Windsor to STA 12+200 Windsor

Parameter	Design Standards	Proposed Standards
Design Classification	UFD 100	UFD 100
Basic Lanes	6	6
Minimum Stopping Sight Distance	185 m	185 m
Min. "K" Factor – Crest	70	70
Min. "K" Factor - Sag	45	45
Grades Maximum	3%	3%
Minimum Radius	850 m	850 m
Lane Width	6 @ 3.75m	6 @ 3.75
Shoulder Width - Median	3.00 m	3.00 m
Shoulder Width - Outside	3.00 m	3.00 m Fully Paved
Shoulder Rounding	1.00 m	1.00 m
Median Width	6.80 m	6.80 m
Right of Way Width	Varies	Varies
Posted Speed	80 km/h	80 km/h
Clear Zone Width	7 m	7 m

#### **Notes:**

1. Where embankment warrant dictates, embankments have been protected with barrier.

2.2.2 Alignment EBR1 – Ramp from Highway 401 East bound to Ojibway Parkway.  
STA 9+831.899 to STA **10+318.533**

Parameter	Design Standards	Proposed Standards
Design Classification	Urban 70 km/h	Urban 40 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	110 m	50 m <sup>(1)</sup>
Min. "K" Factor - Crest	25	25
Min. "K" Factor - Sag	12	12
Grades Maximum	8%	5.50%
Minimum Radius	190 m	55 m <sup>(2)</sup>
Lane Width	4.75 m	4.75 m
Shoulder Width - Left	1.00 m	1.00 m Fully Paved
Shoulder Width - Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (inc taper)	290 m	Continuous Auxiliary Lane
Exit SCL Taper	80 m	Continuous Auxiliary Lane
Sight Distance at Exit Bullnose	300 – 390 m	136 m <sup>(3)</sup>
Entrance SCL (inc taper)	N/A	N/A <sup>(4)</sup>
Entrance SCL Taper	N/A	N/A <sup>(4)</sup>
Sight Distance at Entrance B/N	N/A	N/A <sup>(4)</sup>
Right of Way Width	Varies	Varies
Advisory Speed	TBD	TBD <sup>(5)</sup>
Clear Zone Width	4 m	4 m

**Notes:**

- The reduced stopping sight distance is the result of the smaller than standard ramp radius (see note 3).*
- A smaller than standard radius is acceptable here due to the close proximity of the ramp to the exit from the inspection plaza.*
- A crest which is located outside the scope of this project is obscuring the sight distance to the exit bullnose. It is anticipated that adequate advance signing will be installed in the adjacent project to warn of the 'must exit' lane. In addition an oversized bullnose marker sign (Wa-33LR) will be installed.*
- There is no entrance speed change lane as the ramp terminal ends at the intersection with Ojibway Parkway.*
- The advisory speed will be determined by ball bank testing after construction.*

2.2.3 Alignment EBR2 – Ramp from Ojibway Parkway to Highway 401 Eastbound.

STA 9+561.532 to STA 10+001.006

Parameter	Design Standards	Proposed Standards
Design Classification	Urban 70 km/h	Urban 70 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	110 m	110 m
Min. "K" Factor - Crest	25	70
Min. "K" Factor - Sag	12	18
Grades Maximum	8%	3.36%
Minimum Radius	190 m	109.50 m <sup>(1)</sup>
Lane Width	4.75 m	4.75 m
Shoulder Width - Left	1.00 m	1.00 m Fully Paved
Shoulder Width - Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (inc taper)	N/A	N/A
Exit SCL Taper	80m	N/A
Sight Distance at Exit Bullnose	N/A	N/A
Entrance SCL (inc taper)	400 m	Continuous Auxiliary Lane
Entrance SCL Taper	85 m	Continuous Auxiliary Lane
Sight Distance at Entrance B/N	340 – 430 m	430 m <sup>(2)</sup>
Right of Way Width	Varies	Varies
Advisory Speed	TBD	TBD <sup>(3)</sup>
Clear Zone Width	4 m	4 m

**Notes:**

1. *A smaller than standard radius is acceptable here as it is located close to the ramp entrance terminal.*
2. *The auxiliary lane is longer than 430 m. The sight distance to the Ramp EBR3 exit bullnose is 243 m. To mitigate substandard sight distance, advance signing has been installed to warn of the exit lane; in addition an oversized bullnose marker sign (Wa-33LR) has been installed.*
3. *The advisory speed will be determined by ball bank testing after construction.*

2.2.4 Alignment EBR3 – Transfer Lane Hwy 401W to E.C. Row Expressway EBL.  
STA 9+739.307 to STA 10+233.378

Parameter	Design Standards	Proposed Standards
Design Classification	Rural 100 km/h	Rural 100 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	185 m	230 m
Min. "K" Factor - Crest	70	N/A
Min. "K" Factor - Sag	45	100
Grades Maximum	5%	1.50%
Minimum Radius	250 m	1504.75 m
Lane Width	4.75 m	4.75 m
Shoulder Width - Left	1.00 m	1.00 m Fully Paved
Shoulder Width - Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (inc taper)	290 m	Continuous Auxiliary Lane
Exit SCL Taper	80 m	Continuous Auxiliary Lane
Sight Distance at Exit Bullnose	300 – 390 m	246 m <sup>(1)</sup>
Entrance SCL (inc taper)	300 m	314 m
Entrance SCL Taper	80 m	80 m
Sight Distance at Entrance B/N	300 – 390 m	127 m <sup>(2)</sup>
Right of Way Width	Varies	Varies
Advisory Speed	TBD	TBD <sup>(3)</sup>
Clear Zone Width	7 m	7 m

**Notes:**

- Sight line is obscured by right-side concrete barrier installed at 4.00 m distance from the edge of travelled lane and bridge B-3 East abutment. To mitigate substandard sight distance, advance signing has been installed to warn of the exit lane; in addition an oversized bullnose marker sign (Wa-33LR) along with exit signing have been installed.*
- The sight line is obscured by a crest vertical curve. To mitigate substandard sight distance, warning signs, in conjunction with delineator posts, have been installed to warn of the termination of the entrance lane.*
- The advisory speed will be determined by ball bank testing after construction.*

2.2.5 Alignment WBR1 – Ramp Ojibway Parkway N, S to Hwy 401 W  
STA 9+791.218 to STA 10+000

Parameter	Design Standards	Proposed Standards
Design Speed	Urban 70 km/h	Urban 40 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	110 m	49 m <sup>(1)</sup>
Min. "K" Factor - Crest	25	15 <sup>(2)</sup>
Min. "K" Factor - Sag	12	5 <sup>(2)</sup>
Grades Maximum	8%	5.95%
Minimum Radius	190 m	55 m <sup>(3)</sup>
Lane Width	4.75 m	4.75 m
Shoulder Width Left	1.00 m	1.00 m Fully Paved
Shoulder Width Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (incl taper)	N/A	N/A
Exit SCL Taper	N/A	N/A
Sight Distance at Exit Bullnose	N/A	N/A
Entrance SCL (incl taper)	400 m	Continuous Auxiliary Lane
Entrance SCL Taper	85 m	Continuous Auxiliary Lane
Sight Distance at Entrance B/N	340 – 430 m	380 m <sup>(4)</sup>
Advisory Speed	TBD	TBD <sup>(5)</sup>
Clear Zone Width	4 m	4 m

**Notes:**

1. *The reduced stopping sight distance is the result of the smaller than standard ramp radius (see note 3).*
2. *The vertical curves meet the requirements for achieved design speed (see note 3).*
3. *A smaller than standard radius is acceptable here as it is located close to the ramp entrance terminal.*
4. *The auxiliary lane ends at the beginning of the toll plaza area about 380 m from the bullnose.*
5. *The advisory speed will be determined by ball bank testing after construction.*

2.2.6 Alignment WBR2 - Ramp Hwy 401E to Ojibway Parkway  
STA 9+995.337 to STA 10+290.762

Parameter	Design Standards	Proposed Standards
Design Speed	Urban 80 km/h	Urban 60 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	135 m	85 m
Min. "K" Factor - Crest	35	60
Min. "K" Factor - Sag	15	g <sup>(1)</sup>
Grades Maximum	8%	3.44%
Minimum Radius	250 m	190 m <sup>(2)</sup>
Lane Width	4.75 m	4.75 m
Shoulder Width Left	1.00 m	1.00 m Fully Paved
Shoulder Width Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (incl taper)	345 m	Continuous auxiliary lane
Exit SCL Taper	90 m	Continuous auxiliary lane
Sight Distance at Exit Bullnose	340-430 m	234 m <sup>(3)</sup>
Entrance SCL (incl taper)	N/A	N/A <sup>(4)</sup>
Entrance SCL Taper	N/A	N/A <sup>(4)</sup>
Sight Distance at Entrance B/N	N/A	N/A <sup>(4)</sup>
Advisory Speed	TBD	TBD <sup>(5)</sup>
Clear Zone Width	5 m	5 m

**Notes:**

1. The sag curve meets the requirements for achieved design speed (see note 2).
2. The 190m radius curve works well at this location due to the deceleration required in the short length of the ramp available between the exit and the intersection with Ojibway Parkway.
3. The sight line is obscured by crest vertical curve at Hwy 401. To mitigate substandard sight distance, advance signing has been installed to warn of the exit lane; in addition an oversized bullnose marker sign (Wa-33LR) has been installed
4. There is no entrance speed change lane as the ramp terminal ends at the intersection with Ojibway Parkway.
5. The advisory speed will be determined by ball bank testing after construction.

2.2.7 Alignment WBR3 – Transfer Lane E.C. Row Expressway WBL to Hwy 401W  
STA 9+834.904 to STA 10+294.840

Parameter	Design Standards	Proposed Standards
Design Speed	Rural 100 km/h	Rural 100 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	185 m	198 m
Min. "K" Factor - Crest	70	N/A
Min. "K" Factor - Sag	45	135
Grades Maximum	5%	0.53%
Minimum Radius	450 m	3504.75 m
Lane Width	4.75 m	4.75 m
Shoulder Width Left	1.00 m	1.00 m Fully Paved
Shoulder Width Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (incl taper)	290 m	315 m
Exit SCL Taper	90 m	85 m
Sight Distance at Exit Bullnose	340-430 m	390 m
Entrance SCL (incl taper)	300 m	Continuous Auxiliary Lane
Entrance SCL Taper	80 m	Continuous Auxiliary Lane
Sight Distance at Entrance B/N	300-390 m	239 m <sup>(1)</sup>
Advisory Speed	TBD	TBD <sup>(2)</sup>
Clear Zone Width	7 m	7 m

**Notes:**

1. *The auxiliary lane is 782 m longer than the required SCL length of 390 m. The sight distance to the ramp WBR2 exit bullnose is 239 m. To mitigate substandard sight distance, advance signing has been installed to warn of the exit lane; in addition an oversized bullnose marker sign (Wa-33LR) has been installed.*
2. *The advisory speed will be determined by ball bank testing after construction.*

2.2.8 Alignment E.C. Row Expressway EB Collector Lanes  
STA 10+000 to STA 12+669.820

Parameter	Design Standards	Proposed Standards
Design Speed	UFD 100 km/h	UAFD100 km/h
Basic Lanes	2	2
Minimum Stopping Sight Distance	155 m	155 m
Min. "K" Factor - Crest	70	70
Min. "K" Factor - Sag	45	25 <sup>(1)</sup>
Grades Maximum	4%	3.06%
Minimum Radius	420 m	420 m
Lane Width	2 @ 3.75 m	2 @ 3.75 m
Shoulder Width Median	1.00 m	1.00 m Fully Paved
Shoulder Width Outside	2.50 m	2.50 m Fully Paved
Shoulder Rounding	1.00 m	1.00 m
Recovery Slope	4:1	3:1 <sup>(2)</sup>
Median Width	N/A	N/A
Posted Speed	80 km/h	80 km/h
Clear Zone Width	7 m	7 m

**Notes:**

1. *The sag curve meets the requirements for comfort control and is located within an illuminated area.*
2. *High embankments have been protected with barrier.*

2.2.9 Alignment Ramp N/S-E Matchette Road to E.C. Row Expressway EBL.  
STA 9+717.280 to STA 10+005.952

Parameter	Design Standards	Proposed Standards
Design Speed	Urban 50 km/h	Urban 50 km/h
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	65 m	100 m
Min. "K" Factor - Crest	8	35
Min. "K" Factor - Sag	5	12
Grades Maximum	8%	5.00%
Minimum Radius	90 m	250 m
Lane Width	4.75 m	4.75 m
Exit SCL – Direct Taper	N/A	N/A
Exit SCL Taper	N/A	N/A
Bullnose Radius	N/A	N/A
Shoulder Width Left	1.00 m	1.00 m Fully Paved
Shoulder Width Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Entrance SCL (incl taper)	300 m	448 m
Entrance SCL Taper	80 m	84 m
Sigh Distance at Entrance B/N	300-390 m	315 m
Advisory Speed	TBD	TBD <sup>(1)</sup>
Clear Zone Width	3 m	3 m

**Notes:**

1. *The advisory speed will be determined by ball bank testing after construction.*

2.2.10 Alignment Ramp E-N/S – E.C. Row Expressway to Matchette Road  
STA 10+000 to STA 10+367.753

Parameter	Design Standards	Proposed Standards
Design Speed	Urban 70 km/h	Urban 70 km/h <sup>(Existing)</sup>
Basic Lanes	Single Lane Ramp	Single Lane Ramp
Minimum Stopping Sight Distance	110 m	Unrestricted
Min. "K" Factor - Crest	25	100 <sup>(Existing)</sup>
Min. "K" Factor – Sag (Comfort)	12	20 <sup>(Existing)</sup>
Grades Maximum	8%	1.20%
Minimum Radius	190 m	Tangent
Lane Width	4.75 m	3.75 m <sup>(Existing)</sup>
Shoulder Width Left	1.00 m	1.00 m Fully Paved
Shoulder Width Right	2.50 m	2.50 m Fully Paved
Shoulder Rounding	0.50 m	0.50 m
Exit SCL (direct taper)	345 m	310 m <sup>(Existing)</sup>
Exit SCL Taper	90 m	90 m <sup>(Existing)</sup>
Sight Distance at Exit Bullnose	300-390 m	290 m <sup>(Existing)</sup>
Entrance SCL (incl taper)	300 m	N/A <sup>(1)</sup>
Entrance SCL Taper	80 m	N/A <sup>(1)</sup>
Sight Distance at Entrance B/N	300-390 m	N/A <sup>(1)</sup>
Advisory Speed	TBD	TBD <sup>(2)</sup>
Clear Zone Width	5 m	5 m

**Notes:**

1. *No entrance speed change lane is required as the ramp terminates at the intersection with Matchette Road.*
2. *The advisory speed will be determined by ball bank testing after construction.*

2.2.11 Alignment Ojibway Parkway

STA 9+340 to STA 10+000.018

Parameter	Design Standards	Proposed Standards
Design Classification	UAU 100	UAU 100
Basic Lanes	4	4
Minimum Stopping Sight Distance	185 m	Existing
Min. "K" Factor - Crest	70	Existing
Min. "K" Factor - Sag	45	Existing
Grades Maximum	3%	Existing
Minimum Radius	420 m	505 m
Lane Width	4 @ 3.75 m	4 @ 3.75 m
Shoulder Width	2.50 m	2.50 m Fully Paved
Shoulder Rounding	N/A	N/A
Median Width	1.00 m Flush	Varies <sup>(1)</sup>
Left Turn Lane Width	3.50 m	3.50 m <sup>(2)</sup>
Left Turn Parallel Lane Length	50 m	30 m <sup>(3)</sup>
Left Turn Taper Lane Length	130 m	140 m <sup>(3)</sup>
Right Turn Lane Width	3.50 m	3.50 m
Right Turn Parallel Lane Length	85 m	85 m
Right Turn Taper Lane Length	80 m	80 m
Posted Speed	80 km/h	80 km/h
Clear Zone Width	7 m	7 m

**Notes:**

1. *The median width varies and the majority of the median is raised.*
2. *The left turn lane width is reduced to 3.00 m at the intersections with Broadway Street and Ojibway Parkway where adjacent to the painted median.*
3. *Due to the spacing of the north and south ramp terminal intersections parallel and taper lengths for the left turn lanes between the intersections shall be designed to meet or exceed the requirements for the 80 km/h Advisory speed of the Ojibway Parkway.*

### 2.3 Municipal Design Criteria

Design Speeds of Municipal Roads intersecting the WEP Corridor

Municipal Road	Required Value	Achieved Value
Broadway Street	50 km/h	50 km/h
Malden Road	60 km/h	60 km/h
Matchette Road	60 km/h	60 km/h

### 2.4 Road Safety Audit Report and Response

The 60% and 90% Phase 3 Highway design has been subject to an independent Road Safety Audit (RSA), conducted by Geoffrey Ho and Julian Rozental. Response reports for both Stage 1 and Stage 2 Audits have been prepared. Issues identified by the Auditor have been resolved and closed out, after consultation with HMQ representatives by the Designer. A Signed-off RSA Certificate for the Stage 1 audit has been issued upon incorporation of the accepted (and /or modified) suggestions as outlined in the Response Report. The Certificate for the Stage 2 audit will be issued as soon as the agreed Response Report has been finalized with MTO and WEMG. For details of documents prepared refer to Section 11.1.2.

## 3 Analysis and Design Methodology

Guiding principles and criteria for the roadway design can be found in the Reference Documents. Particularly relevant to the roadway design are:

- The criteria listed in the Project Agreement (PA) Schedule 15-2;
- The Geometric Design Standards for Ontario Highways;
- The MTO Roadside Safety Manual;
- Longer Commercial Vehicle A-Train and B-Train Turning Templates; and
- The standards and manuals included in Reference Documents identified in Schedule 15/2 of the PA.

### 3.1 Other Design Elements

**General** -The geometric roadway design has been developed initially with reference to the design presented as part of the WEMG Design Submission in reply to the RFP. The current design has been further refined to suit the level of detail required for this submission. Scope revisions in the Project Agreement have also been incorporated. Proposed horizontal, vertical and cross section design elements have been fully documented in the Phase 3 Design Criteria.

Both Highway 401 and E.C. Row are to be constructed within a single right-of-way that will be designated as controlled access highway. Within Phase 3 there will be no direct access from

private or commercial entrances to either roadway. Access to Highway 401 will be provided via interchanges and transfer lanes with E.C. Row, at approved locations.

Traffic signal controlled intersections are to be provided at the intersections of Ojibway Parkway with the east and westbound ramps linking to Highway 401. A traffic signal controlled intersection is also to be provided at Matchette Road and the East – North/South ramp from E. C. Row Expressway. The intersection of Matchette Road and North/South – East ramp to E.C. Row Expressway is the only intersection which is not to be signal controlled.

**Utilities** – Many of the existing utilities located within the proposed right-of-way can be abandoned or removed. A further reduction was accomplished by having the utility companies review their existing plants to determine where they could be relocated outside the proposed right-of-way, or where existing crossings could be eliminated or combined.

It is proposed that all aerial utilities between Ojibway Parkway and the Howard Avenue Diversion will be relocated underground for aesthetic reasons along the trail system.

BP Canada Pipelines – Two BP Canada pipelines run within an existing Hydro One corridor. Prior to the award of the WEP contract the pipelines were replaced and works undertaken to mitigate future subsidence resulting from the construction of the proposed Highway 401 embankment.

A Hydro One transmission tower is located adjacent to ramp WBR2. Maintenance access is to be provided to the tower and at least minimum clearances provided to overhead cables and around the tower structure.

Memorandums of Understanding are being obtained from the utility owners which contain details of the proposed utility corridors, clearances and required provision for all diversion works.

## **4 Traffic Design Considerations**

### **4.1 Traffic Data**

A detailed traffic analysis (micro-simulation analysis) of the traffic operations for Highway 401 between the new inspection plaza and North Talbot Road has been undertaken using a VISSIM model. This VISSIM model also incorporated Highway 3 and all key intersections and ramp terminals for the purpose of obtaining travel times, anticipated speeds, level-of-service (LOS) and traffic queues. Micro-simulation analysis was performed for the 2035 horizon year for both AM and PM peak hours. Left turn storage lengths were derived from Section B.7.2.5 and B.t.8.5 of the GDSOH.

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## 4.2 Projected Traffic Volumes

Based on the micro-simulation analysis, the section of Highway 401 that carries the most traffic is between Labelle Street and Grand Marais Road in the eastbound direction, just downstream from the first on-ramp from the southbound Highway 3. This section carries approximately 3,000 vehicles per hour during the PM peak hour (2035) with 23% commercial vehicles in the traffic flow, which corresponds to the LOS 'C' operations. All other freeway mainline segments are anticipated to operate at LOS 'C' or better.

Projected AADT volumes along Highway 401 and Highway 3 for the 2025 and 2035 horizon years are summarized in the following tables.

### Highway 401 AADTs – 2025 and 2035 Horizon Years

Highway 401 Section	2025 Horizon Year		2035 Horizon Year	
	AADT (WB/NB)	AADT (EB/SB)	AADT (WB/NB)	AADT (EB/SB)
Ojibway Parkway to Labelle St.	9650	19050	11200	22900
Labelle St to Todd Lane/ Cabana Rd West	26150	36600	29200	40600
Todd Lane/ Cabana Road to Howard Ave. Diversion	18150	26500	21450	29450
Howard Ave. Diversion to North Talbot Road	24650	27450	28850	32300

### Highway 3 AADTs – 2025 and 2035 Horizon Years

Highway 3 Section	2025 Horizon Year		2035 Horizon Year	
	AADT (WB/NB)	AADT (EB/SB)	AADT (WB/NB)	AADT (EB/SB)
E.C. Row Expressway to Labelle St	28300	28700	30550	32150
Labelle St to Todd Lane/ Cabana Rd West	6650	4900	7100	5650
Todd Lane/ Cabana Road to Howard Ave. Diversion	9450	8350	9800	9250

A weaving analysis was also undertaken for Highway 401 using the Highway Capacity Software (HCS) and VISSIM micro-simulation. The PM peak hour traffic volumes for the 2035 horizon year were generally used in the analysis as they were determined to be the worst of the two peak periods. The weaving analysis illustrated that Highway 401 will operate at good levels of service (LOS A/B) during the PM peak hour by the 2035 horizon year.

### 4.3 Left Turn Lane Storage Lengths

2035 traffic projections were also utilized to determine 95<sup>th</sup> percentile queue lengths at intersections. Left turn storage lengths at all intersections were derived from the GDSOH. And are summarized below. At the Geraedts Drive (St Clair College Entrance), Howard Avenue and Outer Drive intersections where there are proposals for future road extensions, the left turn design has incorporated these future requirements to eliminate the need to reconstruct the intersections when the extensions are constructed.

#### Left Turn Storage at Other Intersections

Intersection	Left turn Storage Length (m)			
	Left Turn 1	Left Turn 2	Left Turn 3	Left Turn 4
Ojibway Parkway/Broadway Street	NB to WB = 15	WB to SB = 50	SB to EB = 30	EB to NB = 15
Ojibway Parkway/E.C. Row Expressway/North Ramp terminal	NB/EB to NB/WB = 90/lane	NB/WB to SB/WB = 30	SB/WB to SB/EB = 15	SB/EB to NB/EB = 83

## 5 Drainage Design Considerations

Design standards and criteria defined in the PA (Schedule 15-2, Part 2 – Design and Construction Requirements, Article 7 Drainage and Erosion Control Design Criteria) have been followed in the design of drainage elements for the Project. In addition to the project criteria the following Reference Documents were used:

- Highway Drainage Design Standards, 2008 (MTO);
- Canadian Highway Bridge Design Code (CHBDC);
- MOE Stormwater Management Planning and Design Guidelines, 2003;
- Drainage Act (Ontario);
- MTO Gravity Pipe Design Guidelines for Circular Culverts and Storm Sewers, 2007;
- MTO Drainage Directives;
- MTO Drainage Manual, 1997;
- Ontario Provincial Standards (OPS);
- Municipal design criteria for the City of Windsor, Town of Lasalle, and Town of Tecumseh;
- NFPA 502 – Standard for Road Tunnels, Bridges, and Other Limited Access Highways, 2008, Section 7, Clause 7.11 – Tunnel Drainage Systems.

The drainage design criteria and standards contained in Article 7 provide targets for the overall Parkway stormwater management plan and guidance with respect to the design of drainage features such as storm sewers, roadside ditches, pump stations, stormwater management facilities and watercourses. The design of these features will be integrated into the design of the highway to allow safe access from the travelled lanes to the drainage feature,

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accommodate the geometric constraints and sizing of drainage features within the highway corridor, and to efficiently drain and convey storm runoff away from the travelled lanes.

The drainage design for the storm sewer system is in accordance with the criteria listed below:

- The minor system associated with the new Roads shall be designed to capture and convey the 10-year storm event. When the road is below-grade, the sewer system shall be designed to capture and convey the 100-year storm event;
- In areas where the major system cannot be maintained to a reasonable outlet, the minor system shall convey the 100-year storm without flooding to the travelled six (6) lanes. Highway Drainage Design Standards SD-7 (Depressed Roadways and Underpasses) will be followed for any drainage and pumping station requirements.
- All storm discharge to municipal storm sewers will be designed in accordance with applicable municipal design criteria.

Design calculations for inlet spacing, deck drainage, and storm sewer sizing is provided in the "Highway and Roadway Drainage Design Report – Calculations Submission Package – Phase 3", dated December 2012 (Doc. 285380-70-119-0010\_Rev\_B).

Major drainage features within Phase 3 include:

- SWM Pond 6; and
- SWM Pond 7.

The design of the following individual stormwater reports will be submitted to HMQ for review, in the following order:

- Basin and Youngstown Drains SWM Report (Doc 285380-70-119-0006\_Rev\_B).
- McKee Drain SWM Report (Doc 285380-70-119-0007\_Rev\_C).

Design modelling of the pipe culverts and non-structural concrete culverts is included in the SWM Reports.

## **6 Structural Design Considerations**

The Phase 3 section of the Parkway extends from 0.20 km west of Ojibway Parkway/E.C. Row intersection to the termination of the E.C. Row eastbound diversion and the West - North/South ramp to Huron Church Road. There will be 4 new highway structures and numerous retaining walls required for the construction of Phase 3. Site numbers for these structures will be assigned by the MTO.

The following tables summarize the clearance constraints for each structure.

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## Bridges

Name	No.	Vertical Clearance		Horizontal Clearance	
		Required	Provided	Required	Provided
Matchette Road Overpass	B-2	5000	5459		
Realigned E.C. Row – EBL Expressway Underpass Near Matchette Road	B-3	4800	4900	-	-
Malden Road Overpass	B-4	5000	5504	-	-
Realigned E.C. Row –EBL – Malden Road Overpass	B-5	5000	5340		

## Retaining Walls

In addition to the structures listed above MSHP (Mechanically Stabilised High Performance) walls, MSEW (Mechanically Stabilised Earth Walls) and HRW (High Retaining Walls) are to be constructed to allow the Parkway to be built within the land available and with the required geometric sight lines.

## 7 Geotechnical Design Considerations

### 7.1 Design/Assessment Considerations

A full description of the geotechnical properties of the soils within Phase 3 area and the ground investigation and testing that has been undertaken to determine geotechnical design parameters, is covered in detail in the 'Geotechnical Investigation and Design Report High Embankments (Sta 10+030W to Sta 12+290W) (Doc Ref 285380-04-119-0003). The report also discusses the anticipated soil properties and details geotechnical considerations that should be addressed for the design and construction of Phase 3 of the Windsor Essex Parkway.

- Separate Geotechnical reports are also to be submitted for each structure and retaining wall within the Phase 3 area.

## 8 Environmental Design Considerations

### 8.1 Environmental Considerations

**General** -This project was conducted as an Individual Environmental Assessment. An Environmental Assessment Report (EAR) was prepared and submitted to the Ontario Ministry of Environment on December 31, 2008 (approved August 24, 2009). During detail design all applicable requirements and commitments contained in the approved EAR will be applied.

As this project is being jointly funded with Transport Canada, there will be a need to meet any commitments outlined in the Environmental Screening Report under CEEA (approved August 24, 2009) during detail design.

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A Design and Construction Report will be prepared to document detail design.

The PA and specimen design provided with the Request for Proposals impose several landscape requirements on the geometric design of the Parkway. As well as the below ground profile of the majority of the 401 the PA also requires that the below grade portions incorporate open cut sections with vegetated side slopes.

**Lighting** -Roadway lighting is to be provided for the Parkway and all cross streets within the limits of The Windsor-Essex Parkway. The PA states that there shall not be any high-mast illumination within the limits of The Windsor-Essex Parkway. Lighting for guidance and security is also required on the entire length of the park pathways/bikeways.

Reference is to be made to the official community plans for the City of Windsor, Town of Tecumseh, Town of LaSalle, and Essex County for additional municipal road lighting guidelines.

**Pathway Lighting** - Continuous pedestrian-height pole lighting are to be provided for the multi-use pathways. Continuous lighting is also to be provided for secondary trails that function as access points to the multi-use trails. The PA limits lighting poles to be from 4.0 to 6.0 m in height. Poles shall be are also to be offset a minimum of 2 m from edge of pathways. Overhead clearance of 3 m shall be maintained through pedestrian tunnels.

Lighting is to be provided, at a minimum, at trailheads, street crossings, entrances and exits of pedestrian bridges, and at rest areas

**Temporary Lighting During Construction** – The PA requires that all existing lighting in each Phase is to be maintained in operational order during performance of the Initial Works on the relevant Phase until such time as replacement temporary or permanent lighting is energized.

Temporary illumination is also to be provided for the Roads to accommodate traffic detours and diversions in accordance with the OPSS 601 and Electrical Engineering Manual.

## **9 Constructability Considerations**

The PA requires that a minimum of 2 lanes in each direction shall be maintained along the Existing Provincial Highways (Highway 401 and Highway 3) and the Existing Major Municipal Highways (Huron Church Road, EC Row Expressway and Ojibway Parkway), except during nighttime hours where reduction to one lane in each direction is permitted. Variations to these permitted closure periods at specific locations may be permitted, subject to plan review and acceptance by the HMQ Representative.

Temporary closure of Existing Minor Municipal Highways is only permitted after safe and reasonable construction methods have been investigated and deemed not feasible. Closure requires acceptance of the HMQ Representative. The Existing Municipal Highways are

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Bethlehem Avenue/Labelle Street, Lambton Road/Grand Marais Road West, Pulford Street, Cabana Road West/Todd Lane, Huron Church Line, Geraedts Drive, Sandwich West Parkway/Cousineau Road, Montgomery Drive, Howard Avenue, Outer Drive Connector and North Talbot Road.

Closure of Other Affected Municipal Highways require liaison with the relevant road authorities.

The full closure of ramps is not permitted with the exception of following two ramps in the construction area:

- A continuous closure of the N/S-E On-Ramp at Matchette Road/EC Row Expressway Interchange is permitted during the construction of bridge B-3, the new N/S-E ramp, and the connector to the new eastbound collector lanes.
- A full closure of the N-W On-Ramp at Huron Church Road/EC Row Expressway Interchange is permitted during the time periods stated in the Project Agreement.

The existing regulatory speed limits are maintained, unless agreed to in writing by the HMQ representative.

## **10 Design Documentation**

See Appendix A

## **11 Checking and Review**

### **11.1 Status of Design Check**

#### 11.1.1 Internal Reviews

The Phase 3 Highways design has undergone Interdisciplinary Design Reviews (IDRs) of both the 60% and 90% design drawings and a Quality Control Review in accordance with the commitments made in the Project Agreement , Schedule 15-2.

#### 11.1.2 External Reviews

In addition to the internal reviews the 60% and 90% design packages have also been the subject of an independent Road Safety Audit (RSA). For the findings of the Stage 1 RSA on the 60% design, refer to document # 285380-20-202-0005; for the findings of the Stage 2 RSA on the 90% design submission refer to document # 285380-20-202-0007 and 285380-20-202-0008. For the Design Team's final responses on Stage 1 RSA report refers to Document No. 285380-20-126-0011, Rev. B. The Team's draft responses on Stage 2 RSA report (Document No. 285380-20-126-0013) has also been issued to HMQ for review.

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## **11.2 Responsible Design Personnel**

Originator: W Sanabria/J Grubert

Checker: S.J. Tarr

Reviewer: S. Majstorovic

**THE ABOVE DESIGN AND CONSTRUCTION PROPOSALS ARE SUBMITTED FOR  
REVIEW**

Signed: *S. Majstorovic*  
Design/~~Construction~~ Manager

Name: Svetozar Majstorovic

Engineering Qualifications: P. Eng.

Date: 2012-12-14

Professional Registration Number: 100056263  
Affix Professional Seal



Signed: *David Wang*  
Project Co. Representative

Name: David Wang

Date: Dec. 21, 2012

Professional Registration Number: \_\_\_\_\_  
Affix Professional Seal

**THE ABOVE TAF IS:**

- i. Received.\*
- ii. Received with comments as follows\*:
- iii. Returned marked "comments" as follows:\*  
\*delete as appropriate.

Signed: \_\_\_\_\_  
Authority's Representative

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## **Appendix A – Design Documentation**

**Highways Phase 3 IFC Submission Drawing List**

File name	Revision	Date	Document number	Plate number	Description
285380-00-000-SEG3-0000	0	14-Dec-12	285380-00-000-SEG3-0000		COVER
285380-20-001-SEG3-0001	0	14-Dec-12	285380-20-001-SEG3-0001	H001	INDEX SHEET
285380-20-025-SEG3-0001	0	14-Dec-12	285380-20-025-SEG3-0001	H002	KEY PLAN - STA 10+030 TO STA 12+200
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0001	H100	ALIGNMENT DATA - HWY 401
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0002	H101	ALIGNMENT DATA - E.C. ROW EBL
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0003	H102	ALIGNMENT DATA - E.C. ROW WBL, E.C. ROW EXPRESSWAY & E.C. ROW EXPRESSWAY WBL/EBL
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0004	H103	ALIGNMENT DATA - RAMP N/S-E, W-N/S & E-N/S
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0005	H104	ALIGNMENT DATA - WBR1, WBR2 & WBR3
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0006	H105	ALIGNMENT DATA - EBR1, EBR2 & EBR3
285380-20-015-SEG3-0000	0	14-Dec-12	285380-20-015-SEG3-0007	H106	ALIGNMENT DATA - BROADWAY STREET, BEECH STREET, OJIBWAY PARKWAY & OJIBWAY RAMP
285380-25-035-SEG3-0002	0	14-Dec-12	285380-25-035-SEG3-0001	T107	ALIGNMENT DATA - TRAILS 07, 68 & 70
285380-20-016-SEG3-0000	0	14-Dec-12	285380-20-016-SEG3-0001	H110	ALIGNMENT - STA 9+800 TO STA 10+500
285380-20-016-SEG3-0000	0	14-Dec-12	285380-20-016-SEG3-0002	H111	ALIGNMENT - STA 10+500 TO STA 11+300
285380-20-016-SEG3-0000	0	14-Dec-12	285380-20-016-SEG3-0003	H112	ALIGNMENT - STA 11+300 TO STA 12+200
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0001	H200	REMOVALS - STA 10+030 TO STA 10+200
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0002	H201	REMOVALS - STA 10+200 TO STA 10+550
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0003	H202	REMOVALS - STA 10+550 TO STA 10+900
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0004	H203	REMOVALS - STA 10+900 TO STA 11+200
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0005	H204	REMOVALS - STA 11+200 TO STA 11+550
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0006	H205	REMOVALS - STA 11+550 TO STA 11+900
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0007	H206	REMOVALS - STA 11+900 TO STA 12+200
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0008	H207	REMOVALS - STA 9+343 TO STA 9+549.62
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0009	H208	REMOVALS - STA 9+549.62 TO STA 9+700
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0010	H209	REMOVALS - STA 9+900 TO STA 10+100
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0011	H210	REMOVALS - STA 10+100 TO STA 10+450
285380-20-017-SEG3-0000	0	14-Dec-12	285380-20-017-SEG3-0012	H211	REMOVALS - STA 10+450 TO STA 10+850
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0000	H299	NEW CONSTRUCTION - SUPPLEMENTAL LEGEND AND NOTES
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0001	H300	NEW CONSTRUCTION - STA 10+030 TO STA 10+200
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0002	H301	NEW CONSTRUCTION - STA 10+200 TO STA 10+550
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0003	H302	NEW CONSTRUCTION - STA 10+550 TO STA 10+900
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0004	H303	NEW CONSTRUCTION - STA 10+900 TO STA 11+200
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0005	H304	NEW CONSTRUCTION - STA 11+200 TO STA 11+550
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0006	H305	NEW CONSTRUCTION - STA 11+550 TO STA 11+900
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0007	H306	NEW CONSTRUCTION - STA 11+900 TO STA 12+200
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0008	H307	NEW CONSTRUCTION - STA 9+269 TO STA 9+550
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0009	H308	NEW CONSTRUCTION - STA 9+549.62 TO STA 9+700
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0010	H309	NEW CONSTRUCTION - STA 9+900 TO STA 10+100
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0011	H310	NEW CONSTRUCTION - STA 10+100 TO STA 10+450
285380-20-019-SEG3-0000	0	14-Dec-12	285380-20-019-SEG3-0012	H311	NEW CONSTRUCTION - STA 10+450 TO STA 10+820
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0001	H400	PROFILES - HIGHWAY 401 EBL - STA 10+067 TO STA 10+200
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0002	H401	PROFILES - HIGHWAY 401 WBL - STA 10+067 TO STA 10+200
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0003	H402	PROFILES - HIGHWAY 401 EBL - STA 10+200 TO STA 10+550
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0004	H403	PROFILES - HIGHWAY 401 WBL - STA 10+200 TO STA 10+550
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0005	H404	PROFILES - HIGHWAY 401 EBL - STA 10+550 TO STA 10+900
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0006	H405	PROFILES - HIGHWAY 401 WBL - STA 10+550 TO STA 10+900
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0007	H406	PROFILES - HIGHWAY 401 EBL - STA 10+900 TO STA 11+200
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0008	H407	PROFILES - HIGHWAY 401 WBL - STA 10+900 TO STA 11+200
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0009	H408	PROFILES - HIGHWAY 401 EBL - STA 11+200 TO STA 11+550
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0010	H409	PROFILES - HIGHWAY 401 WBL - STA 11+200 TO STA 11+550
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0011	H410	PROFILES - HIGHWAY 401 EBL - STA 11+550 TO STA 11+900
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0012	H411	PROFILES - HIGHWAY 401 WBL - STA 11+550 TO STA 11+900
285380-20-020-SEG3-0000	0	14-Dec-12	285380-20-020-SEG3-0013	H412	PROFILES - HIGHWAY 401 EBL - STA 11+900 TO STA 12+200
285380-20-020-SEG3-0001	0	14-Dec-12	285380-20-020-SEG3-0014	H413	PROFILES - HIGHWAY 401 WBL - STA 11+900 TO STA 12+200
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0015	H414	PROFILES - EASTBOUND RAMP 1 - STA 10+000 TO STA 10+319.66
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0016	H415	PROFILES - EASTBOUND RAMP 2 - STA 9+561.68 TO STA 9+800
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0017	H416	PROFILES - EASTBOUND RAMP 2 - STA 9+800 TO STA 10+001
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0018	H417	PROFILES - EASTBOUND RAMP 3 - STA. 10+002.02 TO STA. 10+158.28
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0019	H418	PROFILES - WESTBOUND RAMP 1 - STA 9+790.56 TO STA 10+000
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0020	H419	PROFILES - WESTBOUND RAMP 2 - STA 9+995.33 TO STA 10+301.55
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0021	H420	PROFILES - WESTBOUND RAMP 3 - STA 9+858.14 TO STA 10+000
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0022	H421	PROFILES - RAMP - N/S - E - STA. 9+727.13 TO STA. 10+005.95
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0023	H422	PROFILES - EC ROW EXPRESSWAY EBL - STA. 10+632 TO STA 10+850
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0024	H423	PROFILES - EC ROW EXPRESSWAY EBL - STA. 10+850 TO STA. 11+200
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0025	H424	PROFILES - EC ROW EXPRESSWAY EBL - STA. 11+200 TO STA. 11+550
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0026	H425	PROFILES - EC ROW EXPRESSWAY EBL - STA 11+550 TO STA 11+900
285380-20-020-SEG3-0002	0	14-Dec-12	285380-20-020-SEG3-0027	H426	PROFILES - EC ROW EXPRESSWAY EBL - STA 11+900 TO STA 12+175
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0001	M429	PROFILE - OJIBWAY PARKWAY - STA 9+269.00 TO STA 9+540.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0002	M430	PROFILE - OJIBWAY PARKWAY - STA 9+540.00 TO STA 9+830.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0003	M431	PROFILE - OJIBWAY PARKWAY - STA 9+830.00 TO STA 10+000.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0004	M432	PROFILE - E.C.ROW EXPRESSWAY EBL - STA 10+000.00 TO STA 10+120.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0008	M433	PROFILE - E.C.ROW EXPRESSWAY EBL - STA 10+120.00 TO STA 10+401.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0009	M434	PROFILE - E.C.ROW EXPRESSWAY WBL - STA 10+000.00 TO STA 10+120.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0010	M435	PROFILE - E.C.ROW EXPRESSWAY WBL - STA 10+120.00 TO STA 10+400.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0005	M436	PROFILE - OJIBWAY PARKWAY - STA 10+000.00 TO STA 10+226.24
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0006	M437	PROFILE - BROADWAY STREET - STA 9+850.94 TO STA 10+000.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0007	M438	PROFILE - BEECH STREET CUL-DE-SAC - STA 9+955.00 TO STA 10+000.00
285380-25-040-SEG3-0000	0	14-Dec-12	285380-25-040-SEG3-0011	M439	PROFILE - OJIBWAY RAMP - STA 11+093.00 TO STA 11+259.34
285380-25-040-SEG3-0002	0	14-Dec-12	285380-25-040-SEG3-0020	T450	PROFILES - TRAIL 07 - STA. 10+000 TO STA. 10+131.74

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0	14-Dec-12	285380-25-040-SEG3-0002	M430	PROFILE - OJIBWAY PARKWAY - STA 9+540.00 TO STA 9+830.00
0	14-Dec-12	285380-25-040-SEG3-0003	M431	PROFILE - OJIBWAY PARKWAY - STA 9+830.00 TO STA 10+000.00
0	14-Dec-12	285380-25-040-SEG3-0004	M432	PROFILE - E.C.ROW EXPRESSWAY EBL - STA 10+000.00 TO STA 10+120.00
0	14-Dec-12	285380-25-040-SEG3-0008	M433	PROFILE - E.C.ROW EXPRESSWAY EBL - STA 10+120.00 TO STA 10+401.00
0	14-Dec-12	285380-25-040-SEG3-0009	M434	PROFILE - E.C.ROW EXPRESSWAY WBL - STA 10+000.00 TO STA 10+120.00
0	14-Dec-12	285380-25-040-SEG3-0010	M435	PROFILE - E.C.ROW EXPRESSWAY WBL - STA 10+120.00 TO STA 10+400.00
0	14-Dec-12	285380-25-040-SEG3-0005	M436	PROFILE - OJIBWAY PARKWAY - STA 10+000.00 TO STA 10+226.24
0	14-Dec-12	285380-25-040-SEG3-0006	M437	PROFILE - BROADWAY STREET - STA 9+850.94 TO STA 10+000.00
0	14-Dec-12	285380-25-040-SEG3-0007	M438	PROFILE - BEECH STREET CUL-DE-SAC - STA 9+955.00 TO STA 10+000.00
0	14-Dec-12	285380-25-040-SEG3-0011	M439	PROFILE - OJIBWAY RAMP - STA 11+093.00 TO STA 11+259.34
0	14-Dec-12	285380-25-040-SEG3-0020	T450	PROFILES - TRAIL 07 - STA. 10+000 TO STA. 10+131.74
0	14-Dec-12	285380-25-040-SEG3-0021	T451	PROFILES - TRAIL 68 - STA. 10+000 TO STA. 10+059.62
0	14-Dec-12	285380-25-040-SEG3-0022	T452	PROFILES - TRAIL 70 - STA. 10+000 TO STA. 10+300
0	14-Dec-12	285380-25-040-SEG3-0023	T453	PROFILES - TRAIL 70 - STA. 10+300 TO STA. 10+445
0	14-Dec-12	285380-20-021-SEG3-0001	H500	TYPICAL SECTIONS - NOTES
0	14-Dec-12	285380-20-021-SEG3-0002	H501	TYPICAL SECTIONS - HIGHWAY 401 - SUPERELEVATED CURVE LEFT
0	14-Dec-12	285380-20-021-SEG3-0003	H502	TYPICAL SECTIONS - HIGHWAY 401 - TANGENT
0	14-Dec-12	285380-20-021-SEG3-0004	H503	TYPICAL SECTIONS - HIGHWAY 401 - SUPERELEVATED CURVE RIGHT
0	14-Dec-12	285380-20-021-SEG3-0005	H504	TYPICAL SECTIONS - HIGHWAY 401 - SUPERELEVATED CURVE RIGHT (1 OF 2)
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0	14-Dec-12	285380-20-021-SEG3-0008	H507	TYPICAL SECTIONS - HIGHWAY 401 - TANGENT
0	14-Dec-12	285380-20-021-SEG3-0009	H508	TYPICAL SECTIONS - E.C. ROW EXPRESSWAY EBL - TANGENT
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0	14-Dec-12	285380-20-021-SEG3-0011	H510	TYPICAL SECTIONS - E.C. ROW EXPRESSWAY EBL - SUPERELEVATED CURVE LEFT
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0	14-Dec-12	285380-20-021-SEG3-0014	H513	TYPICAL SECTIONS - RAMP - (2 OF 2)
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0	14-Dec-12	285380-25-041-SEG3-0002	M522	TYPICAL SECTIONS - OJIBWAY PARKWAY
0	14-Dec-12	285380-25-041-SEG3-0007	M523	TYPICAL SECTIONS - OJIBWAY PARKWAY
0	14-Dec-12	285380-25-041-SEG3-0003	M524	TYPICAL SECTIONS - E.C. ROW EXPRESSWAY
0	14-Dec-12	285380-25-041-SEG3-0008	M525	TYPICAL SECTIONS - E.C. ROW EXPRESSWAY
0	14-Dec-12	285380-25-041-SEG3-0004	M526	TYPICAL SECTIONS - BROADWAY STREET AND BEECH STREET CUL-DE-SAC
0	14-Dec-12	285380-25-041-SEG3-0010	T528	TYPICAL SECTIONS - TRAILS
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0	14-Dec-12	285380-20-022-SEG3-0004	H532	MISCELLANEOUS DETAILS - STANDARD DETAILS 1 OF 4
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0	14-Dec-12	285380-20-022-SEG3-0009	H536	MISCELLANEOUS DETAILS - TALL WALL TRANSITION DETAILS STA 10+067 TO STA 12+200
0	14-Dec-12	285380-20-022-SEG3-0013	H537	MISCELLANEOUS DETAILS - PAVEMENT TRANSITION - PAVEMENT TERMINATION
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0	14-Dec-12	285380-20-022-SEG3-0011	H539	MISCELLANEOUS DETAILS - CROSSFALL DETAILS - BULLNOSES 2 OF 3
0	14-Dec-12	285380-20-022-SEG3-0012	H540	MISCELLANEOUS DETAILS - CROSSFALL DETAILS - BULLNOSES 3 OF 3
0	14-Dec-12	285380-20-022-SEG3-0014	H541	MISCELLANEOUS DETAILS - EPS STANDARD DETAILS 1 OF 2
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0	14-Dec-12	285380-25-042-SEG3-0010	T544	MISCELLANEOUS DETAILS - TRAILS
0	14-Dec-12	285380-70-481-SEG3-0001	D545	MISCELLANEOUS DETAILS - DRAINAGE
0	14-Dec-12	285380-70-481-SEG3-0002	D546	MISCELLANEOUS DETAILS - DRAINAGE
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0	14-Dec-12	285380-70-481-SEG3-0004	D548	MISCELLANEOUS DETAILS - DRAINAGE
0	14-Dec-12	285380-70-480-SEG3-0001	D549	DRAINAGE - SUPPLEMENTAL INFORMATION
0	14-Dec-12	285380-70-480-SEG3-0002	D550	DRAINAGE - SUPPLEMENTAL INFORMATION
0	14-Dec-12	285380-70-480-SEG3-0003	D551	DRAINAGE - SUPPLEMENTAL INFORMATION
0	14-Dec-12	285380-70-480-SEG3-0004	D552	DRAINAGE - SUPPLEMENTAL INFORMATION
0	14-Dec-12	285380-20-023-SEG3-0001	H601	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 9+600 TO STA 10+200
0	14-Dec-12	285380-20-023-SEG3-0002	H602	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 10+200 TO STA 10+550

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0	14-Dec-12	285380-20-023-SEG3-0006	H606	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 11+550 TO STA 11+900
0	14-Dec-12	285380-20-023-SEG3-0007	H607	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 11+900 TO STA 12+200
0	14-Dec-12	285380-20-023-SEG3-0008	H608	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 9+343 TO STA 9+550
0	14-Dec-12	285380-20-023-SEG3-0009	H609	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 9+550 TO STA 9+700
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0	14-Dec-12	285380-20-023-SEG3-0014	H614	PERMANENT PAVEMENT MARKING AND SIGNAGE - STA 9+900 TO STA 10+075
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0	18-Dec-12	285380-04-092-SEG3-0001	G900	INVESTIGATION PLAN & STRATIGRAPHIC PROFILE - STA 9+700W TO STA 10+300W
0	18-Dec-12	285380-04-092-SEG3-0002	G901	INVESTIGATION PLAN & STRATIGRAPHIC PROFILE - STA 10+300W TO STA 10+900W
0	18-Dec-12	285380-04-092-SEG3-0003	G902	INVESTIGATION PLAN & STRATIGRAPHIC PROFILE - STA 10+900W TO STA 11+500W
0	18-Dec-12	285380-04-092-SEG3-0004	G903	INVESTIGATION PLAN & STRATIGRAPHIC PROFILE - STA 11+500W TO STA 12+200W
0	18-Dec-12	285380-04-092-SEG3-0005	G904	INVESTIGATION PLAN & STRATIGRAPHIC PROFILE - STA 12+100W TO STA 12+800W
0	18-Dec-12	285380-04-093-SEG3-6031	G905	EMBANKMENT DESIGN PLAN - STA 10+030W TO STA 10+500W
0	18-Dec-12	285380-04-093-SEG3-6032	G906	EMBANKMENT DESIGN PLAN - STA 10+500W TO STA 11+000W
0	18-Dec-12	285380-04-093-SEG3-6033	G907	EMBANKMENT DESIGN PLAN - STA 11+000W TO STA 11+500W
0	18-Dec-12	285380-04-093-SEG3-6034	G908	EMBANKMENT DESIGN PLAN - STA 11+500W TO STA 12+100W
0	18-Dec-12	285380-04-093-SEG3-6035	G909	EMBANKMENT DESIGN PLAN - STA 12+100W TO STA 12+600W
0	18-Dec-12	285380-04-093-SEG3-6091	G910	HWY 401 EMBANKMENT DESIGN - PROFILE - STA 10+030W TO STA 10+400W
0	18-Dec-12	285380-04-093-SEG3-6092	G911	HWY 401 EMBANKMENT DESIGN - PROFILE - STA 10+400W TO STA 10+800W
0	18-Dec-12	285380-04-093-SEG3-6093	G912	HWY 401 EMBANKMENT DESIGN - PROFILE - STA 10+800W TO STA 11+300W
0	18-Dec-12	285380-04-093-SEG3-6094	G913	HWY 401 EMBANKMENT DESIGN - PROFILE - STA 11+300W TO STA 11+800W
0	18-Dec-12	285380-04-093-SEG3-6095	G914	HWY 401 EMBANKMENT DESIGN - PROFILE - STA 11+800W TO STA 12+300W
0	18-Dec-12	285380-04-093-SEG3-6111	G915	EC ROW EBL EMBANKMENT DESIGN - PROFILE - STA 10+500E TO STA 11+000E
0	18-Dec-12	285380-04-093-SEG3-6112	G916	EC ROW EBL EMBANKMENT DESIGN - PROFILE - STA 11+000E TO STA 11+500E
0	18-Dec-12	285380-04-093-SEG3-6113	G917	EC ROW EBL EMBANKMENT DESIGN - PROFILE - STA 11+500E TO STA 12+000E
0	18-Dec-12	285380-04-093-SEG3-6114	G918	EC ROW EBL EMBANKMENT DESIGN - PROFILE - STA 12+000E TO STA 12+500E
0	18-Dec-12	285380-04-093-SEG3-6115	G919	EC ROW EBL EMBANKMENT DESIGN - PROFILE - STA 12+500E TO STA 12+700E
0	18-Dec-12	285380-04-093-SEG3-6116	G920	HWY 401 EMBANKMENT DESIGN - SECTIONS - STA 10+050W TO STA 10+525W
0	18-Dec-12	285380-04-093-SEG3-6117	G921	HWY 401 EMBANKMENT DESIGN - SECTIONS - STA 10+600W TO STA 11+775W
0	18-Dec-12	285380-04-093-SEG3-6118	G922	EC ROW EBL EMBANKMENT DESIGN - SECTIONS - STA 10+850E TO STA 12+225E
0	18-Dec-12	285380-04-095-SEG3-6052	G924	EMBANKMENT DESIGN - CONSTRUCTION AND INSTRUMENTATION REQUIREMENTS
0	18-Dec-12	285380-04-095-SEG3-6053	G925	EMBANKMENT CONFIGURATION FOR UTILITY CROSSINGS
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0	12/14/12	285380-20-024-SEG3-0001	H700	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+034.19 TO STA 10+053.42
0	12/14/12	285380-20-024-SEG3-0002	H701	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+056.97 TO STA 10+056.97
0	12/14/12	285380-20-024-SEG3-0003	H702	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+065.58 TO STA 10+076.97
0	12/14/12	285380-20-024-SEG3-0004	H703	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+086.77 TO STA 10+096.78
0	12/14/12	285380-20-024-SEG3-0005	H704	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+100.00 TO STA 10+125.00
0	12/14/12	285380-20-024-SEG3-0006	H705	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+150.00 TO STA 10+200.00
0	12/14/12	285380-20-024-SEG3-0007	H706	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+225.00 TO STA 10+274.00
0	12/14/12	285380-20-024-SEG3-0008	H707	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+275.00 TO STA 10+300.31
0	12/14/12	285380-20-024-SEG3-0009	H708	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+300.45 TO STA 10+300.51
0	12/14/12	285380-20-024-SEG3-0010	H709	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+300.51 TO STA 10+320.32
0	12/14/12	285380-20-024-SEG3-0011	H710	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+325.00 TO STA 10+350.00
0	12/14/12	285380-20-024-SEG3-0012	H711	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+359.13 TO STA 10+375.00
0	12/14/12	285380-20-024-SEG3-0013	H712	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+383.44 TO STA 10+390.80
0	12/14/12	285380-20-024-SEG3-0014	H713	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+394.44 TO STA 10+425.00
0	12/14/12	285380-20-024-SEG3-0015	H714	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+443.44 TO STA 10+458.51
0	12/14/12	285380-20-024-SEG3-0016	H715	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+475.00 TO STA 10+518.51
0	12/14/12	285380-20-024-SEG3-0017	H716	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+525.00 TO STA 10+550.00
0	12/14/12	285380-20-024-SEG3-0018	H717	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+566.52 TO STA 10+590.53
0	12/14/12	285380-20-024-SEG3-0019	H718	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+600.00 TO STA 10+615.00
0	12/14/12	285380-20-024-SEG3-0020	H719	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+625.00 TO STA 10+664.00
0	12/14/12	285380-20-024-SEG3-0021	H720	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+665.00 TO STA 10+694.00
0	12/14/12	285380-20-024-SEG3-0022	H721	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+700.00 TO STA 10+750.00
0	12/14/12	285380-20-024-SEG3-0023	H722	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+775.00 TO STA 10+825.00
0	12/14/12	285380-20-024-SEG3-0024	H723	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+850.00 TO STA 10+900.00
0	12/14/12	285380-20-024-SEG3-0025	H724	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 10+925.00 TO STA 10+975.00
0	12/14/12	285380-20-024-SEG3-0026	H725	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+000.00 TO STA 11+050.00

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0	12/14/12	285380-20-024-SEG3-0027	H726	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+075.00 TO STA 11+125.00
0	12/14/12	285380-20-024-SEG3-0028	H727	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+150.00 TO STA 11+172.60
0	12/14/12	285380-20-024-SEG3-0029	H728	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+172.60 TO STA 11+179.32
0	12/14/12	285380-20-024-SEG3-0030	H729	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+200.00 TO STA 11+225.00
0	12/14/12	285380-20-024-SEG3-0031	H730	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+227.33 TO STA 11+251.34
0	12/14/12	285380-20-024-SEG3-0032	H731	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+255.80 TO STA 11+275.00
0	12/14/12	285380-20-024-SEG3-0033	H732	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+275.80 TO STA 11+325.00
0	12/14/12	285380-20-024-SEG3-0034	H733	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+350.00 TO STA 11+425.00
0	12/14/12	285380-20-024-SEG3-0035	H734	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+450.00 TO STA 11+500.00
0	12/14/12	285380-20-024-SEG3-0036	H735	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+525.00 TO STA 11+575.00
0	12/14/12	285380-20-024-SEG3-0037	H736	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+599.00 TO STA 11+600.00
0	12/14/12	285380-20-024-SEG3-0038	H737	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+625.00 TO STA 11+670.90
0	12/14/12	285380-20-024-SEG3-0039	H738	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+675.00 TO STA 11+700.00
0	12/14/12	285380-20-024-SEG3-0040	H739	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+719.90 TO STA 11+725.00
0	12/14/12	285380-20-024-SEG3-0041	H740	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+750.00 TO STA 11+767.15
0	12/14/12	285380-20-024-SEG3-0042	H741	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+775.00 TO STA 11+800.00
0	12/14/12	285380-20-024-SEG3-0043	H742	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+817.15 TO STA 11+850.00
0	12/14/12	285380-20-024-SEG3-0044	H743	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+875.00 TO STA 11+887.15
0	12/14/12	285380-20-024-SEG3-0045	H744	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+900.00 TO STA 11+950.00
0	12/14/12	285380-20-024-SEG3-0046	H745	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 11+975.00 TO STA 12+025.00
0	12/14/12	285380-20-024-SEG3-0047	H746	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 12+050.00 TO STA 12+075.00
0	12/14/12	285380-20-024-SEG3-0048	H747	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 12+100.00 TO STA 12+150.00
0	12/14/12	285380-20-024-SEG3-0049	H748	INROADS CROSS SECTIONS - HIGHWAY 401 - STA 12+175.00 TO STA 12+200.00
0	12/14/12	285380-20-024-SEG3-0050	H749	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+641.55 TO STA 10+675.00
0	12/14/12	285380-20-024-SEG3-0051	H750	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+700.00 TO STA 10+725.00
0	12/14/12	285380-20-024-SEG3-0052	H751	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+750.00 TO STA 10+775.00
0	12/14/12	285380-20-024-SEG3-0053	H752	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+788.83 TO STA 10+800.00
0	12/14/12	285380-20-024-SEG3-0054	H753	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+803.83 TO STA 10+810.32
0	12/14/12	285380-20-024-SEG3-0055	H754	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+817.48 TO STA 10+831.80
0	12/14/12	285380-20-024-SEG3-0056	H755	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+844.78 TO STA 10+874.78
0	12/14/12	285380-20-024-SEG3-0057	H756	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+874.78 TO STA 10+900.00
0	12/14/12	285380-20-024-SEG3-0058	H757	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+925.00 TO STA 10+931.83
0	12/14/12	285380-20-024-SEG3-0059	H758	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+931.83 TO STA 10+950.00
0	12/14/12	285380-20-024-SEG3-0060	H759	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+975.00 TO STA 10+978.22
0	12/14/12	285380-20-024-SEG3-0061	H760	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+978.23 TO STA 10+999.69
0	12/14/12	285380-20-024-SEG3-0062	H761	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 10+993.69 TO STA 11+009.16
0	12/14/12	285380-20-024-SEG3-0063	H762	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+009.16 TO STA 11+024.62
0	12/14/12	285380-20-024-SEG3-0064	H763	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+025.00 TO STA 11+040.08
0	12/14/12	285380-20-024-SEG3-0065	H764	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+040.09 TO STA 11+055.55
0	12/14/12	285380-20-024-SEG3-0066	H765	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+055.55 TO STA 11+071.01
0	12/14/12	285380-20-024-SEG3-0067	H766	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+075.00 TO STA 11+112.29
0	12/14/12	285380-20-024-SEG3-0068	H767	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+117.41 TO STA 11+125.00
0	12/14/12	285380-20-024-SEG3-0069	H768	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+136.21 TO STA 11+150.00
0	12/14/12	285380-20-024-SEG3-0070	H769	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+152.41 TO STA 11+162.29
0	12/14/12	285380-20-024-SEG3-0071	H770	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+175.00 TO STA 11+201.14
0	12/14/12	285380-20-024-SEG3-0072	H771	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+201.14 TO STA 11+234.13
0	12/14/12	285380-20-024-SEG3-0073	H772	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+234.13 TO STA 11+250.62
0	12/14/12	285380-20-024-SEG3-0074	H773	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+267.11 TO STA 11+283.60
0	12/14/12	285380-20-024-SEG3-0075	H774	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+283.60 TO STA 11+300.10
0	12/14/12	285380-20-024-SEG3-0076	H775	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+325.00 TO STA 11+347.62
0	12/14/12	285380-20-024-SEG3-0077	H776	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+350.00 TO STA 11+378.74
0	12/14/12	285380-20-024-SEG3-0078	H777	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+384.85 TO STA 11+418.45
0	12/14/12	285380-20-024-SEG3-0079	H778	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+425.00 TO STA 11+450.00
0	12/14/12	285380-20-024-SEG3-0080	H779	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+450.19 TO STA 11+452.05
0	12/14/12	285380-20-024-SEG3-0081	H780	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+475.00 TO STA 11+525.00
0	12/14/12	285380-20-024-SEG3-0082	H781	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+550.00 TO STA 11+600.00
0	12/14/12	285380-20-024-SEG3-0083	H782	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+625.00 TO STA 11+630.00
0	12/14/12	285380-20-024-SEG3-0084	H783	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+650.00 TO STA 11+675.00
0	12/14/12	285380-20-024-SEG3-0085	H784	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+685.92 TO STA 11+700.00
0	12/14/12	285380-20-024-SEG3-0086	H785	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+700.80 TO STA 11+730.80
0	12/14/12	285380-20-024-SEG3-0087	H786	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+730.80 TO STA 11+742.42
0	12/14/12	285380-20-024-SEG3-0088	H787	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+745.00 TO STA 11+760.80
0	12/14/12	285380-20-024-SEG3-0089	H788	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+766.10 TO STA 11+775.00
0	12/14/12	285380-20-024-SEG3-0090	H789	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+777.95 TO STA 11+798.07
0	12/14/12	285380-20-024-SEG3-0091	H790	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+798.07 TO STA 11+800.00
0	12/14/12	285380-20-024-SEG3-0092	H791	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+825.00 TO STA 11+837.42
0	12/14/12	285380-20-024-SEG3-0093	H792	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+845.76 TO STA 11+857.55
0	12/14/12	285380-20-024-SEG3-0094	H793	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+857.67 TO STA 11+869.39
0	12/14/12	285380-20-024-SEG3-0095	H794	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+875.00 TO STA 11+881.23
0	12/14/12	285380-20-024-SEG3-0096	H795	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+893.07 TO STA 11+900.00
0	12/14/12	285380-20-024-SEG3-0097	H796	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+924.22 TO STA 11+925.00
0	12/14/12	285380-20-024-SEG3-0098	H797	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+943.00 TO STA 11+955.86

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0	12/14/12	285380-20-024-SEG3-0099	H798	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+955.86 TO STA 11+967.21
0	12/14/12	285380-20-024-SEG3-010C	H799	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+975.00 TO STA 11+989.92
0	12/14/12	285380-20-024-SEG3-0101	H800	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 11+989.92 TO STA 12+016.03
0	12/14/12	285380-20-024-SEG3-0102	H801	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 12+016.03 TO STA 12+050.00
0	12/14/12	285380-20-024-SEG3-0103	H802	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 12+075.00 TO STA 12+125.00
0	12/14/12	285380-20-024-SEG3-0104	H803	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 12+150.00 TO STA 12+175.00
0	12/14/12	285380-20-024-SEG3-0105	H804	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 12+181.41 TO STA 12+189.88
0	12/14/12	285380-20-024-SEG3-010E	H805	INROADS CROSS SECTIONS - E.C. ROW EBL - STA 12+191.29 TO STA 12+200.00
0	12/14/12	285380-20-024-SEG3-0107	H806	INROADS CROSS SECTIONS - E.C. ROW WBL - STA. 11+270.63 TO STA. 11+425.00
0	12/14/12	285380-20-024-SEG3-010E	H807	INROADS CROSS SECTIONS - E.C. ROW WBL - STA. 11+450.00 TO STA. 11+608.28
0	12/14/12	285380-20-024-SEG3-012C	H819	INROADS CROSS SECTIONS - EASTBOUND RAMP 3 - STA. 10+008.90 TO STA. 10+034.44
0	12/14/12	285380-20-024-SEG3-0121	H820	INROADS CROSS SECTIONS - EASTBOUND RAMP 3 - STA. 10+047.22 TO STA. 10+076.60
0	12/14/12	285380-20-024-SEG3-0122	H821	INROADS CROSS SECTIONS - EASTBOUND RAMP 3 - STA. 10+100.00 TO STA. 10+164.16
0	12/14/12	285380-20-024-SEG3-013C	H829	INROADS CROSS SECTIONS - WESTBOUND RAMP 3 - STA. 9+858.14 TO STA. 9+975.00
0	12/14/12	285380-20-024-SEG3-0131	H830	INROADS CROSS SECTIONS - WESTBOUND RAMP 3 - STA. 9+985.26 TO STA. 10+000.26
0	12/14/12	285380-20-024-SEG3-0132	H831	INROADS CROSS SECTIONS - RAMP E-N/S - STA. 10+025.00 TO STA. 10+150.0C
0	12/14/12	285380-20-024-SEG3-0133	H832	INROADS CROSS SECTIONS - RAMP E-N/S - STA. 10+175.00 TO STA. 10+300.0C
0	12/14/12	285380-20-024-SEG3-0134	H833	INROADS CROSS SECTIONS - RAMP E-N/S - STA. 10+325.00 TO STA. 10+350.0C
0	12/14/12	285380-20-024-SEG3-0135	H834	INROADS CROSS SECTIONS - RAMP N/S-E - STA. 9+745.00 TO STA. 9+850.00
0	12/14/12	285380-20-024-SEG3-0136	H835	INROADS CROSS SECTIONS - RAMP N/S-E - STA. 9+875.00 TO STA. 9+950.00
0	12/14/12	285380-20-024-SEG3-0137	H836	INROADS CROSS SECTIONS - RAMP N/S-E - STA. 9+974.41 TO STA. 10+005.95
0	12/21/12	285380-25-043-SEG3-100C	T850	INROADS CROSS SECTIONS - TRAIL 07 - STA. 10+003 TO STA. 10+007.14
0	12/21/12	285380-25-043-SEG3-1001	T851	INROADS CROSS SECTIONS - TRAIL 07 - STA. 10+022.62 TO STA. 10+10C
0	12/21/12	285380-25-043-SEG3-1002	T852	INROADS CROSS SECTIONS - TRAIL 07 - STA. 10+111.34 TO STA. 10+131.7
0	12/21/12	285380-25-043-SEG3-1003	T853	INROADS CROSS SECTIONS - TRAIL 68 - STA. 10+002 TO STA 10+032.6
0	12/21/12	285380-25-043-SEG3-1004	T854	INROADS CROSS SECTIONS - TRAIL 68 - STA. 10+035 TO STA. 10+059.6C
0	12/21/12	285380-25-043-SEG3-1005	T855	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+001 TO STA. 10+005.35
0	12/21/12	285380-25-043-SEG3-1006	T856	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+005.87 TO STA. 10+026
0	12/21/12	285380-25-043-SEG3-1007	T857	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+027 TO STA. 10+031.71
0	12/21/12	285380-25-043-SEG3-1008	T858	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+032 TO STA. 10+037
0	12/21/12	285380-25-043-SEG3-1009	T859	INROADS CROSS SECTIONS - TRAIL 70 - STA 10+037.71 TO STA. 10+055
0	12/21/12	285380-25-043-SEG3-101C	T860	INROADS CROSS SECTIONS - TRAIL 70 - STA 10+060 TO STA. 10+085
0	12/21/12	285380-25-043-SEG3-1011	T861	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+090 TO STA. 10+115
0	12/21/12	285380-25-043-SEG3-1012	T862	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+120 OT STA. 10+145
0	12/21/12	285380-25-043-SEG3-1013	T863	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+150 TO STA. 10+170.41
0	12/21/12	285380-25-043-SEG3-1014	T864	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+175 TO STA. 10+200
0	12/21/12	285380-25-043-SEG3-1015	T865	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+205 TO STA. 10+230
0	12/21/12	285380-25-043-SEG3-1016	T866	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+235 TO STA. 10+260
0	12/21/12	285380-25-043-SEG3-1017	T867	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+265 TO STA. 10+287.59
0	12/21/12	285380-25-043-SEG3-1018	T868	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+290 TO STA. 10+315
0	12/21/12	285380-25-043-SEG3-1019	T869	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+320 TO STA. 10+345
0	12/21/12	285380-25-043-SEG3-102C	T870	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+350 TO STA. 10+375
0	12/21/12	285380-25-043-SEG3-1021	T871	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+360 TO STA. 10+405
0	12/21/12	285380-25-043-SEG3-1022	T872	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+490.38 TO STA. 10+43C
0	12/21/12	285380-25-043-SEG3-1023	T873	INROADS CROSS SECTIONS - TRAIL 70 - STA. 10+435 TO STA. 10+445
0	12/17/12	285380-25-043-SEG3-0001	M875	INROADS CROSS SECTIONS - BEECH STREET CUL-DE-SAC STA 9+955.00 TO STA 10+000.0C

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**Reports, Technical Memos/Sign-offs**

<b>Document No. (or "Not Applicable")</b>	<b>Revision</b>	<b>Report, Technical Memo Name</b>

**Special Provisions**

<b>Document No. (or "Not Applicable")</b>	<b>Revision</b>	<b>Document Name</b>

**Additional Design Drawings/Documents - referenced by this submission**

<b>Drawing No. (or "Not Applicable")</b>	<b>Revision</b>	<b>Drawing Name</b>
285380-04-119-0001	8	The Windsor Essex Parkway Project from Bridge B1 East Abutment Sta. Windsor 10+030 to North Talbot Road Sta. Tecumseh 12+370 EBL Approx Length 11.2km - Pavement Selection Final Report.
285380-04-119-0003	B	The Windsor Essex Parkway Project Geotechnical Investigation and 90% Design Report – High Embankments (Sta. 10+030W to Sta. 12+290W)
285380-20-109-0003	E	Windsor Essex Parkway Project Design Criteria Phase 3: Eastern Abutment of Bridge B-1 to E.C. Row/Huron Church Road.
285380-20-202-0005	0	Windsor Essex Parkway (WEP) Project Phase 3 (Ojibway Parkway to E.C. Row/Huron Church Road) Road Safety Audit 60% Design Stage (Stage 1).
285380-20-126-0011	B	Windsor Essex Parkway Final Response to Stage 1 Road Safety Audit Report (Phase 3)

**Project:** Windsor-Essex Parkway

**Document:** Technical Appraisal Form – Roadways – WEP Phase 3

**Doc No.:** 285380 20-127-0003

**Date:** December 18<sup>th</sup>2012

**Rev:** 0

**Page No.:**

<b>Drawing No. (or "Not Applicable")</b>	<b>Revision</b>	<b>Drawing Name</b>
285380-70-119-0010	B	The Windsor Essex Parkway Highway and Roadway Drainage Design Report – Calculation Submission Package (Phase 3).
285380-70-119-0006	B	Basin and Youngstown Drains Storm Water Management Report.
285380-70-119-0007	C	McKee Drain Storm Water Management Report.
285380-20-202-0007	0	Windsor Essex Parkway (WEP) Project Phase 3 (Ojibway Parkway to E.C. Row/Huron Church Road) Road Safety Audit 90% Design Stage (Stage 2).
285380-20-202-0008	0	Windsor Essex Parkway (WEP) Project Phase 3 (Ojibway Parkway to E.C. Row/Huron Church Road) Road Safety Audit 90% Design Stage (Stage 2) – Addendum 1.
285380-20-126-0013	B	Windsor Essex Parkway response to Stage 2 Road Safety Audit Report (Phase 3)
285380-20-126-0014	A	Windsor Essex Parkway response to Stage 2 Road Safety Audit Report (Phase 3) - Clarification
285380-20-129-0005	0	Stage 1 RSA Certificate (Phase 3)

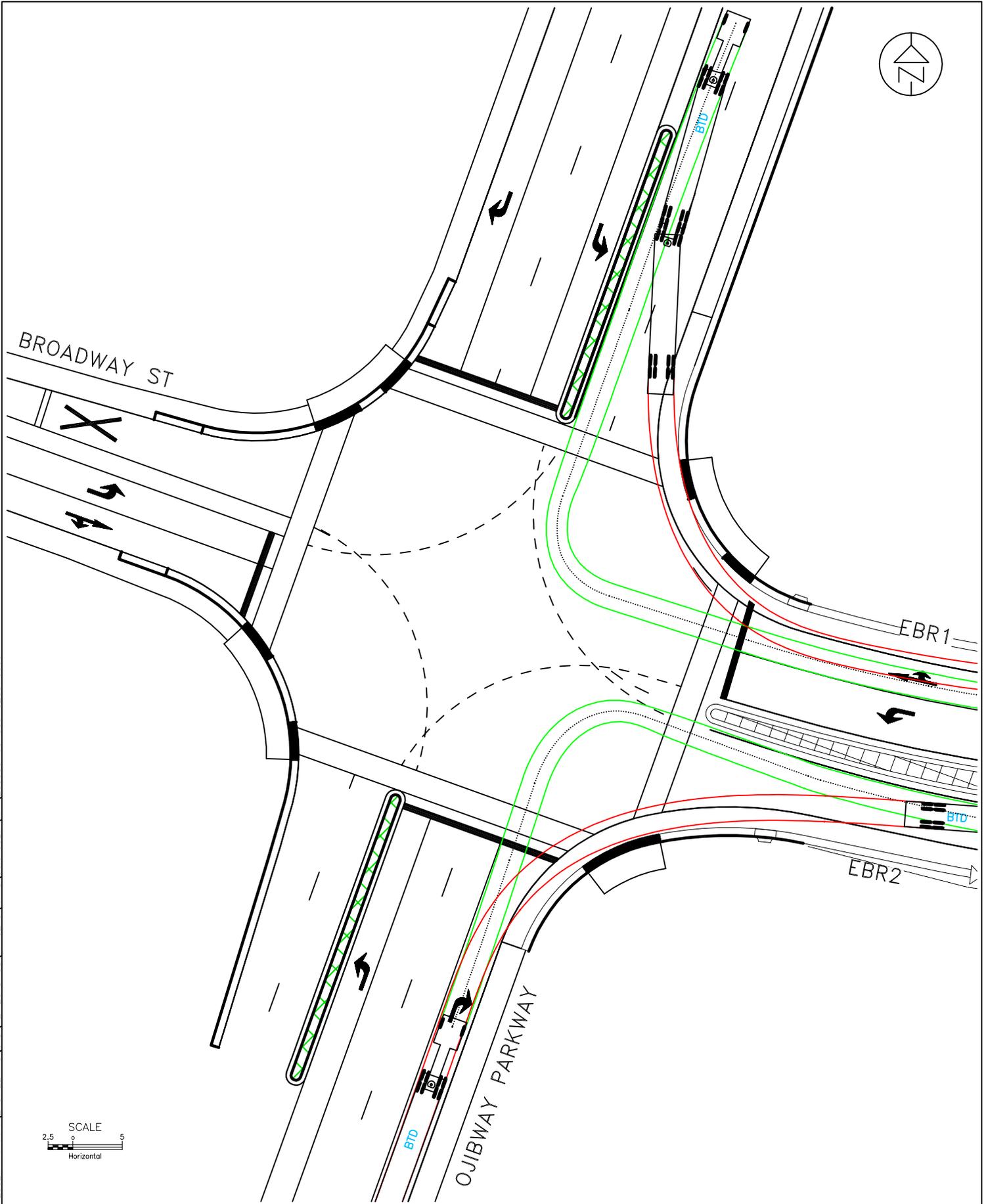
**Certificate(s)**

<b>Certificate No. (or "Not Applicable")</b>	<b>Revision</b>	<b>Certificate Name</b>



## **Appendix B – Truck Turn Movements**

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEC3-0000



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Engineers**

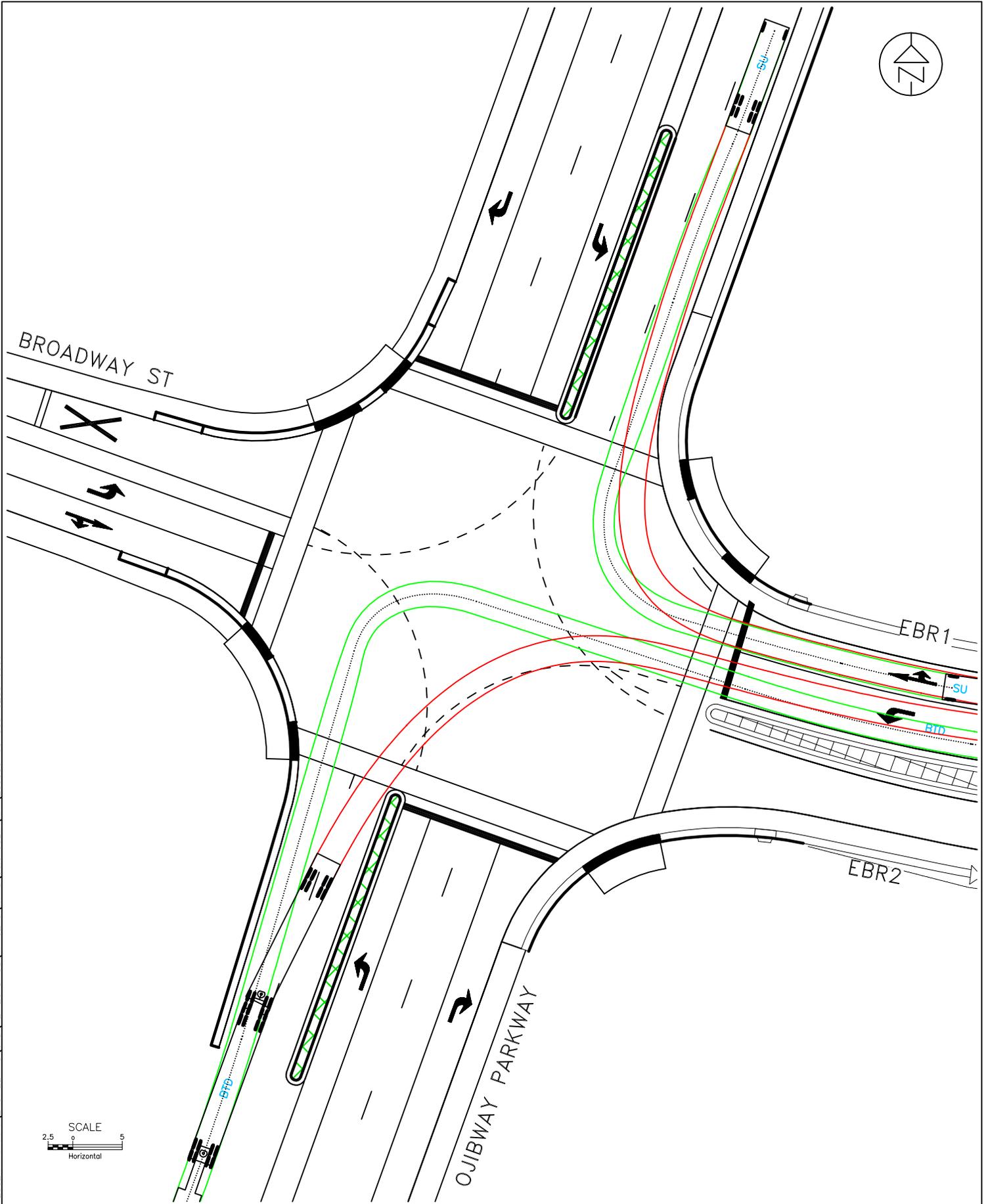


PHASE 3 TURNING DIAGRAM  
RIGHT TURNS OJIBWAY PARKWAY @ BROADWAY ST.  
BTD

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 1 OF 14	

FIG. 1

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES DWGS\PHASE\_3\HWYS\90% SUBM\AT1\285383-60-059-SEC3-0000



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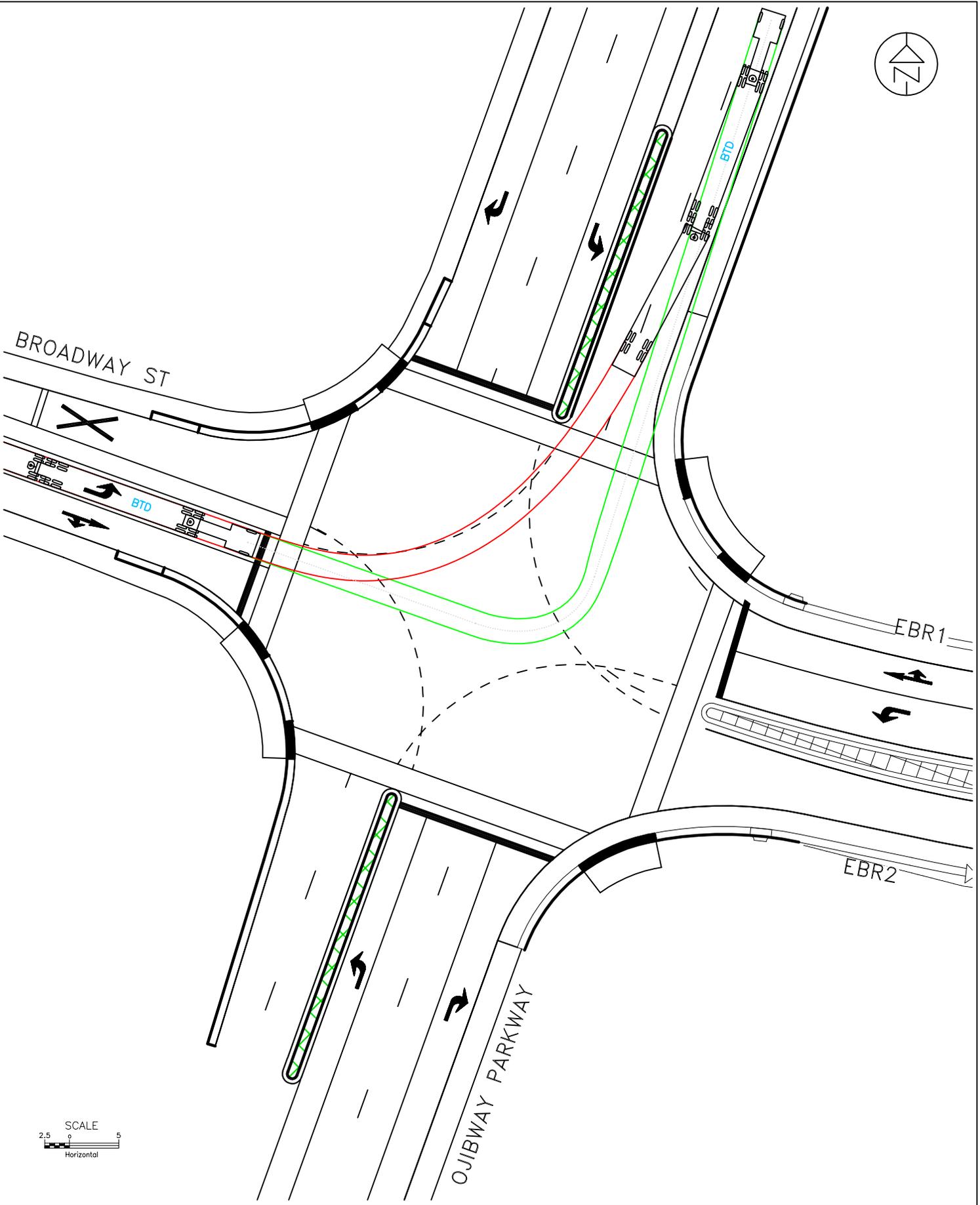


PHASE 3 TURNING DIAGRAM  
LEFT TURN AND RIGHTT TURN EBR1 @ OJIBWAY PARKWAY  
BTU AND SU

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 2 OF 14	

FIG. 2

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEC3-0000



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Engineers**

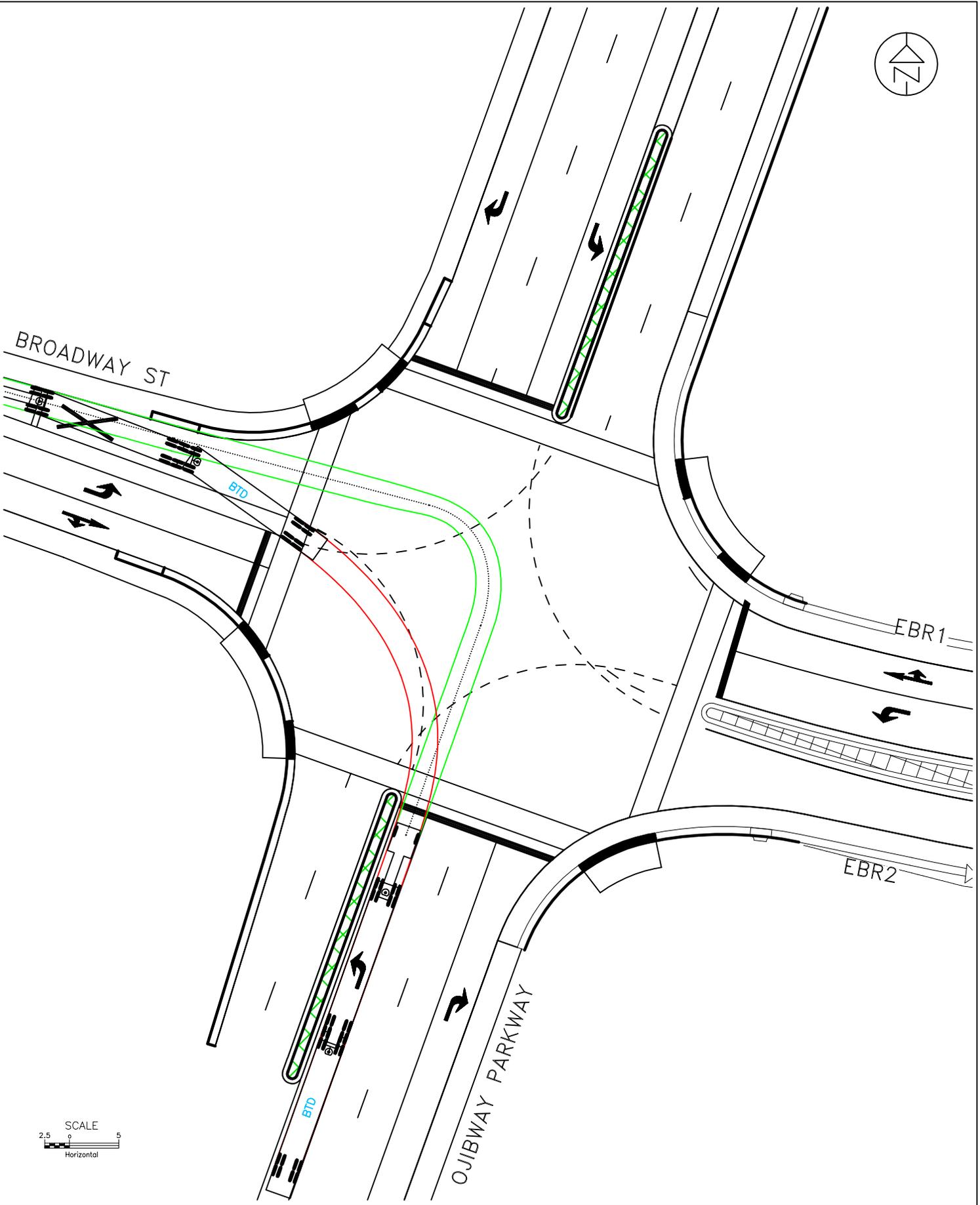


PHASE 3 TURNING DIAGRAM  
LEFT TURN BROADWAY ST. @ OJIBWAY PARKWAY (W-N)  
BTD

DWG. BY: W.S.	CHK. BY: J.G.
DATE: 14-DEC-12	SHEET: 3 OF 14

FIGURE NO.:  
**FIG. 3**

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEC3-0000



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Engineers**

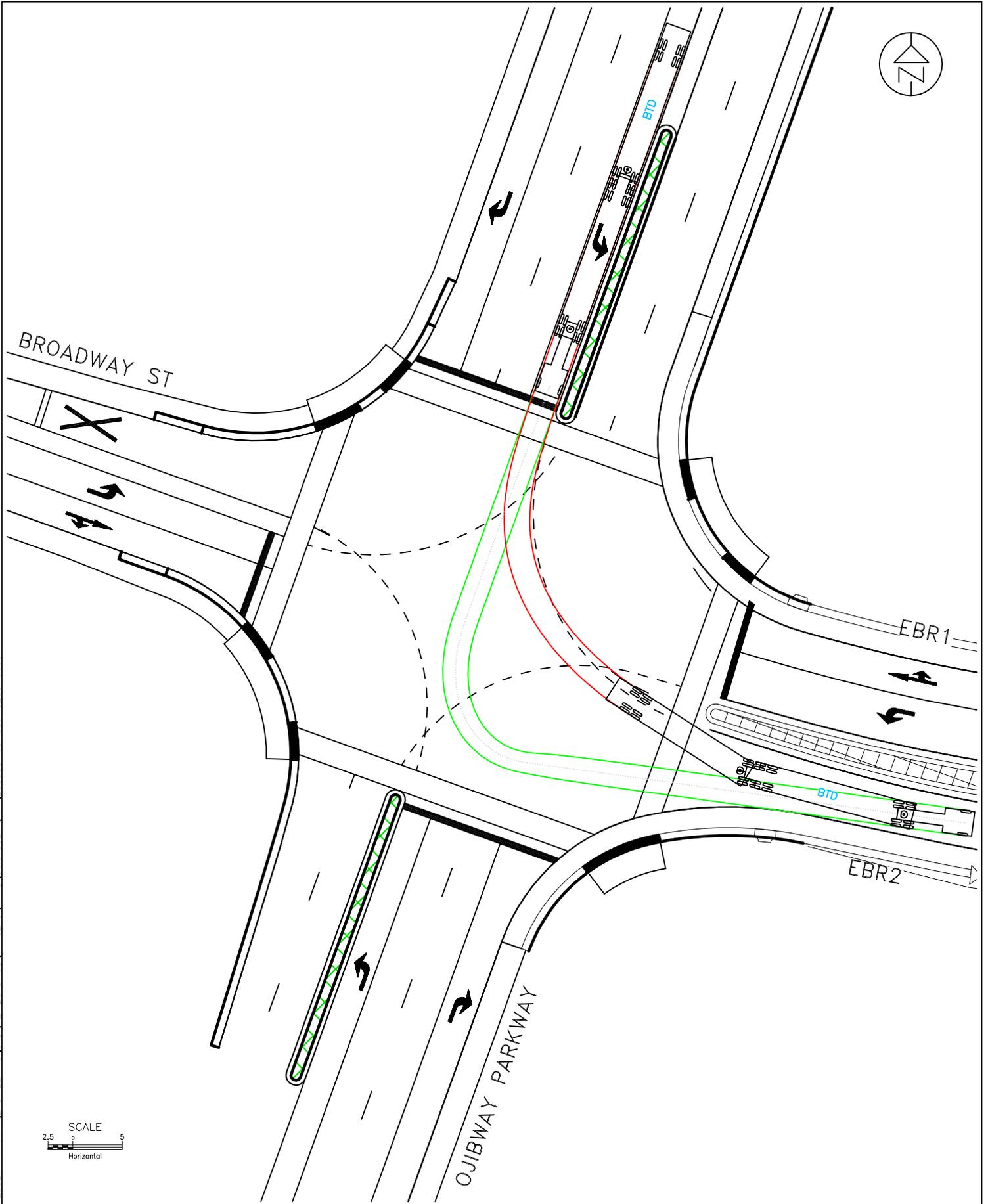


PHASE 3 TURNING DIAGRAM  
LEFT TURN OJIBWAY PARKWAY @ BROADWAY ST. (S-W)  
BTB

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 4 OF 14	

FIG. 4

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEC3-0000



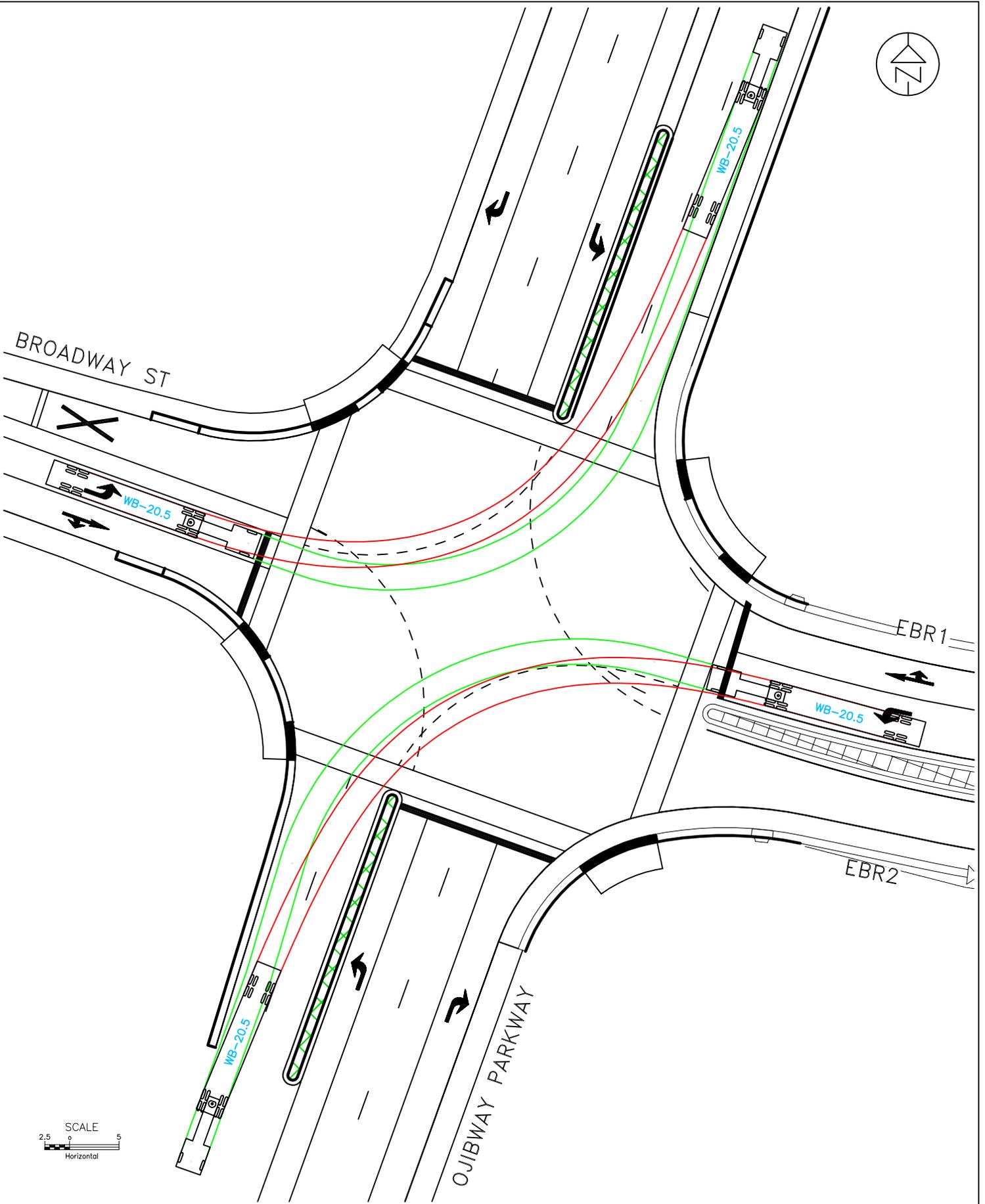
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Infrastructure  
Engineers**



PHASE 3 TURNING DIAGRAM  
LEFT TURN OJIBWAY PARKWAY @ EBR2 (N-E)  
BTD

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:  FIG. 5
DATE: 14-DEC-12	SHEET: 5 OF 14	

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEG3-0000



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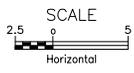
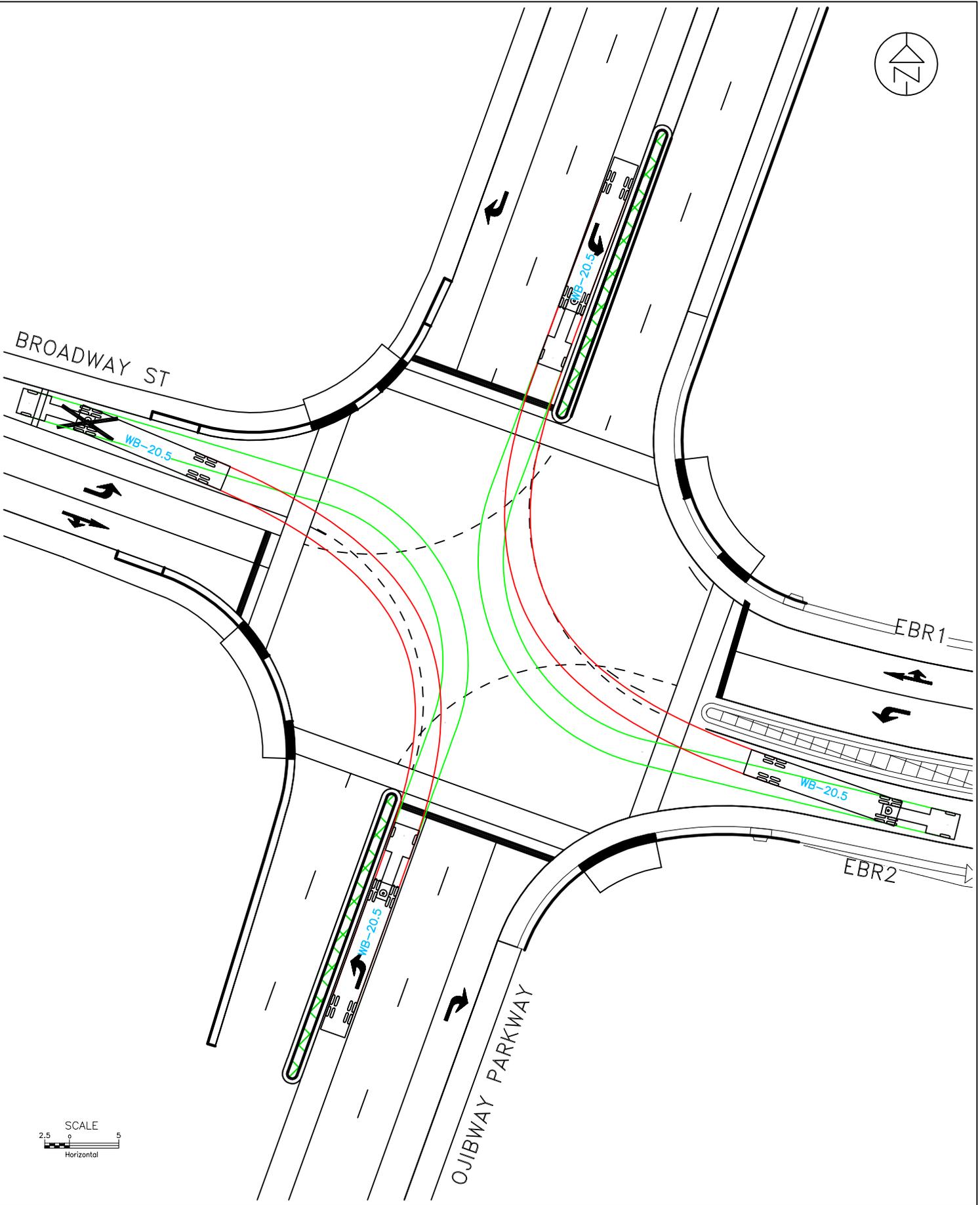


PHASE 3 TURNING DIAGRAM  
LEFT TURNS OJIBWAY PARKWAY @ BROADWAY ST. (E-S,W-N)  
WB-20.5

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 6 OF 14	

FIG. 6

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEC3-0000



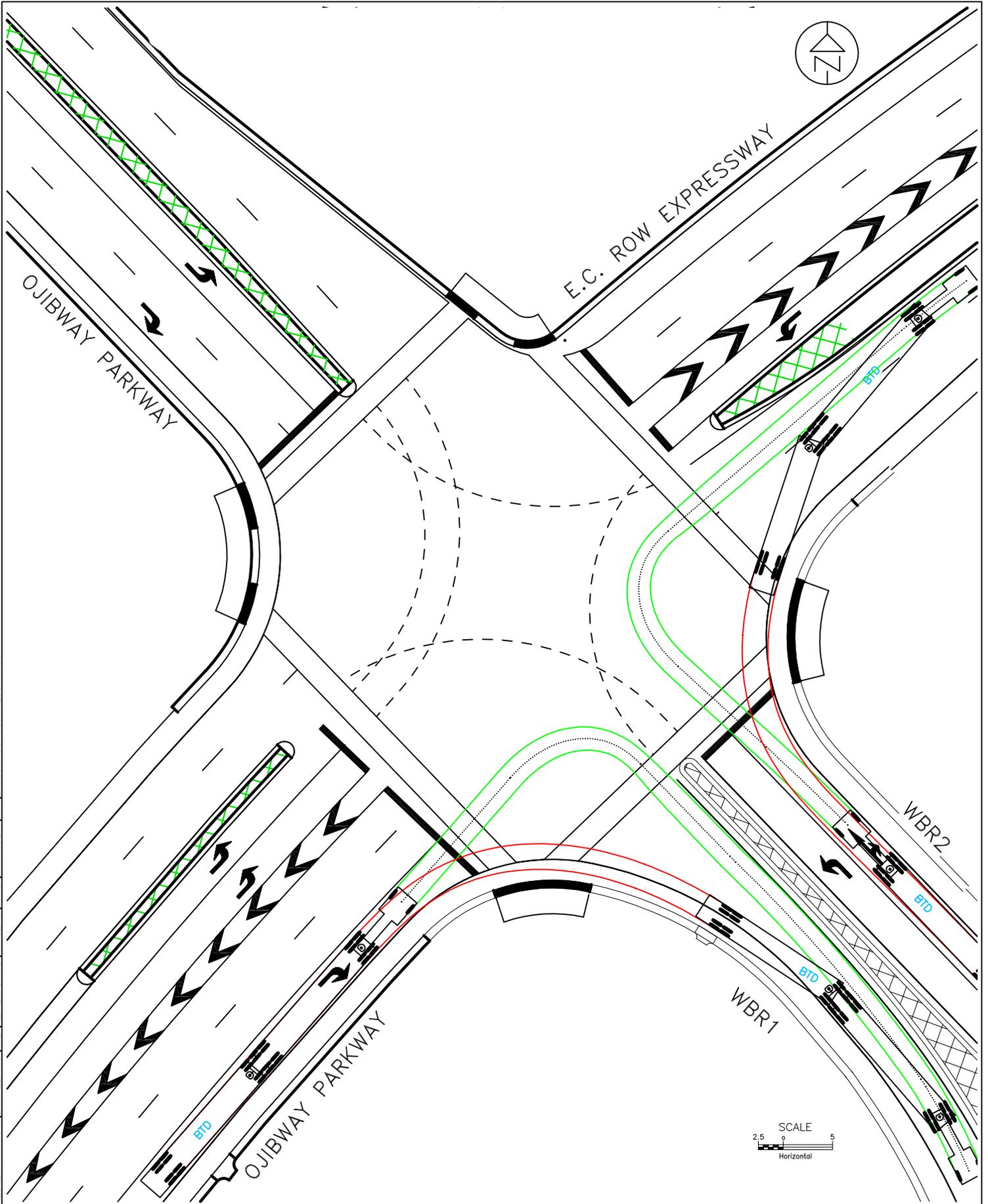
**Parkway  
Infrastructure  
Engineers**



PHASE 3 TURNING DIAGRAM  
LEFT TURNS OJIBWAY PARKWAY @ BROADWAY ST. (S-W,N-E)  
WB-20.5

DWG. BY: W.S.	CHK. BY: J.G.
DATE: 14-DEC-12	SHEET: 7 OF 14

FIGURE NO.:  
**FIG. 7**



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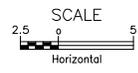
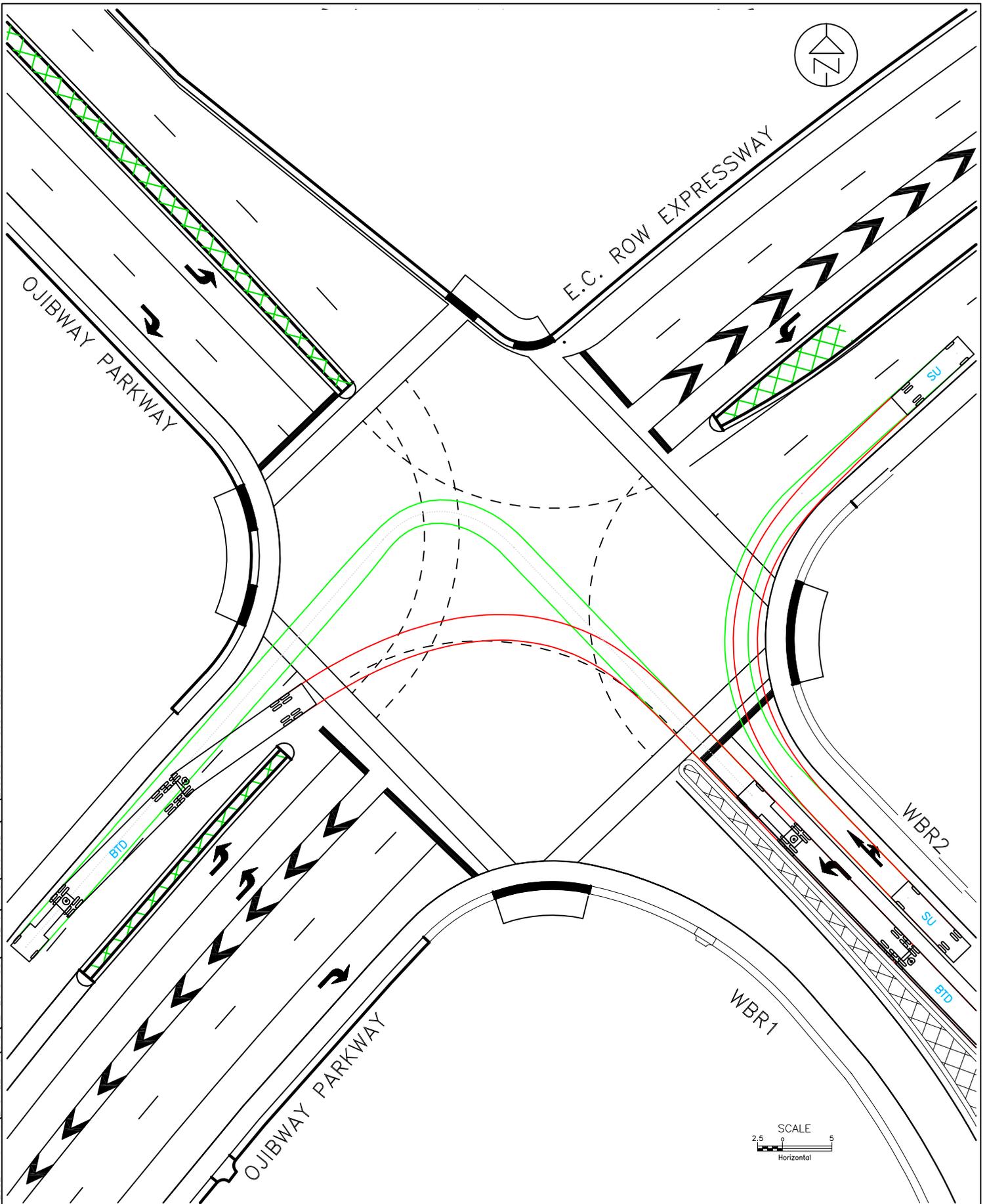


PHASE 3 TURNING DIAGRAM  
RIGHT TURNS OJIBWAY PARKWAY @ E.C. ROW EXPRESSWAY  
BTD

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 8 OF 14	

FIG. 8

DOC: 285380 - WINDSOR, ESSEX, PARKWAY ENGINEERING, CAD, PLATES, DWGS, PHASE 3, HWYS, 90% SUBMITTAL, 285383-60-059-SEC3-0000



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Engineers**

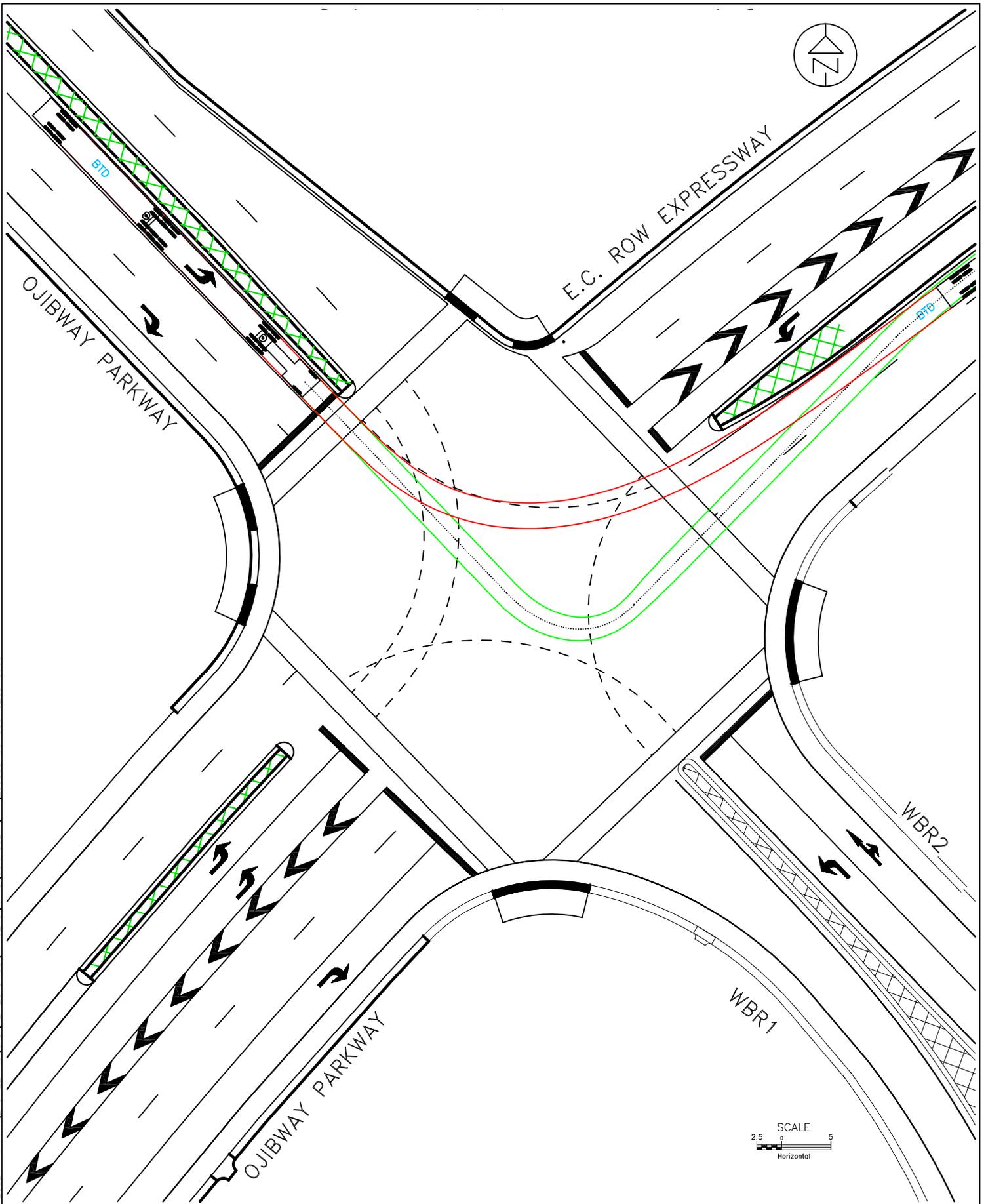


PHASE 3 TURNING DIAGRAM  
LEFT TURN AND RIGHT TURN WBR2 @ OJIBWAY PARKWAY  
BTD AND SU

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 9 OF 14	

FIG. 9

DOC: 285380 - WINDSOR, ESSEX, PARKWAY, ENGINEERING, CAD, PLATES, DWGS, PHASE 3, HWYS, 90% SUBMIT, AT1, 285383-60-059-SEG3-0000



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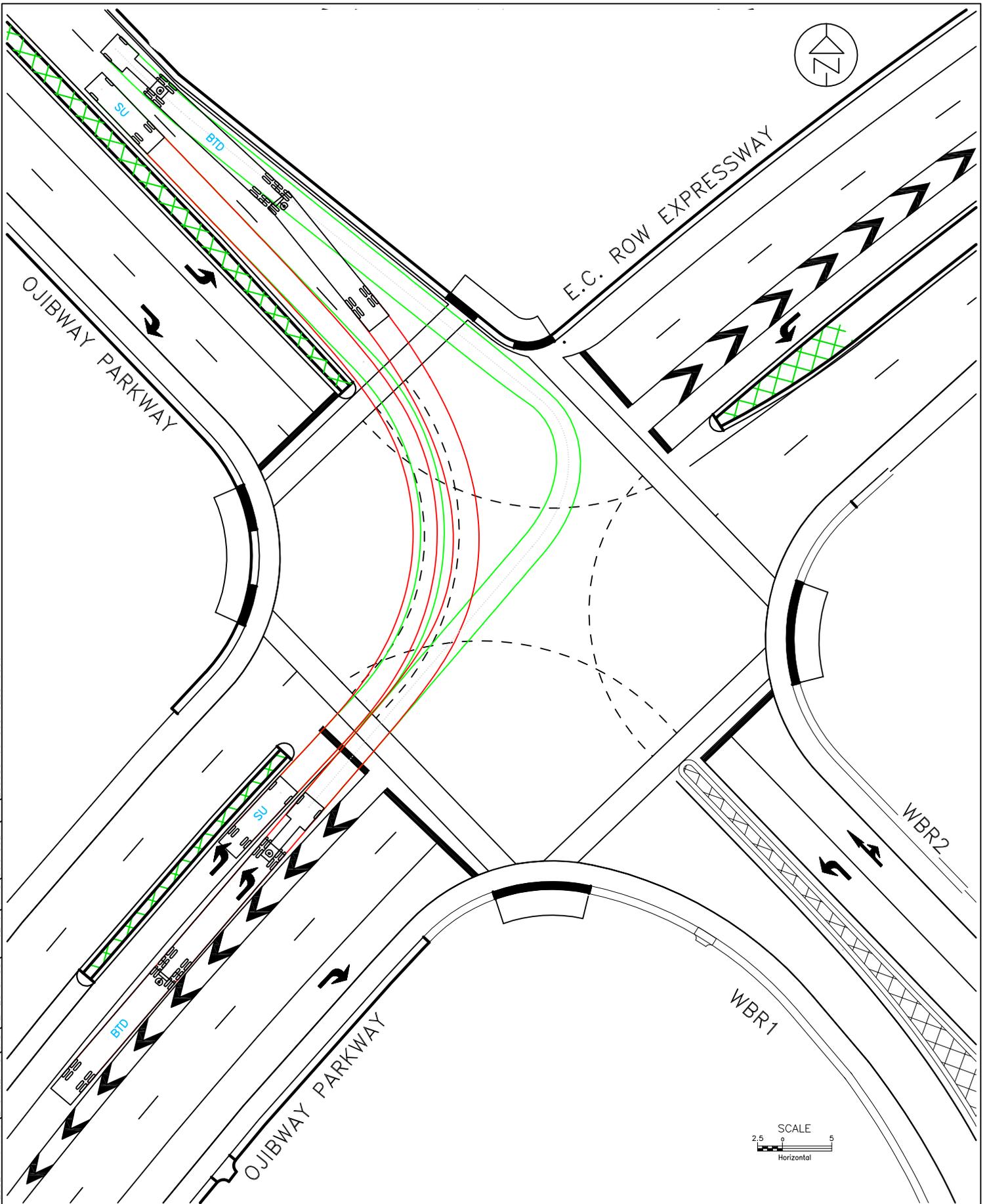


PHASE 3 TURNING DIAGRAM  
LEFT TURN OJIBWAY PARKWAY @ E.C. ROW EXPRESSWAY (W-N)  
BTD

DWG. BY: W.S.	CHK. BY: J.G.
DATE: 14-DEC-12	SHEET: 10 OF 14

FIGURE NO.:  
**FIG. 10**

DOC: 285380 - WINDSOR ESSEX PARKWAY ENGINEERING CAD PLATES DWGS\PHASE 3\HWYS\90% SUBMIT\1\285383-60-059-SEG3-0000



**Parkway  
Infrastructure  
Engineers**

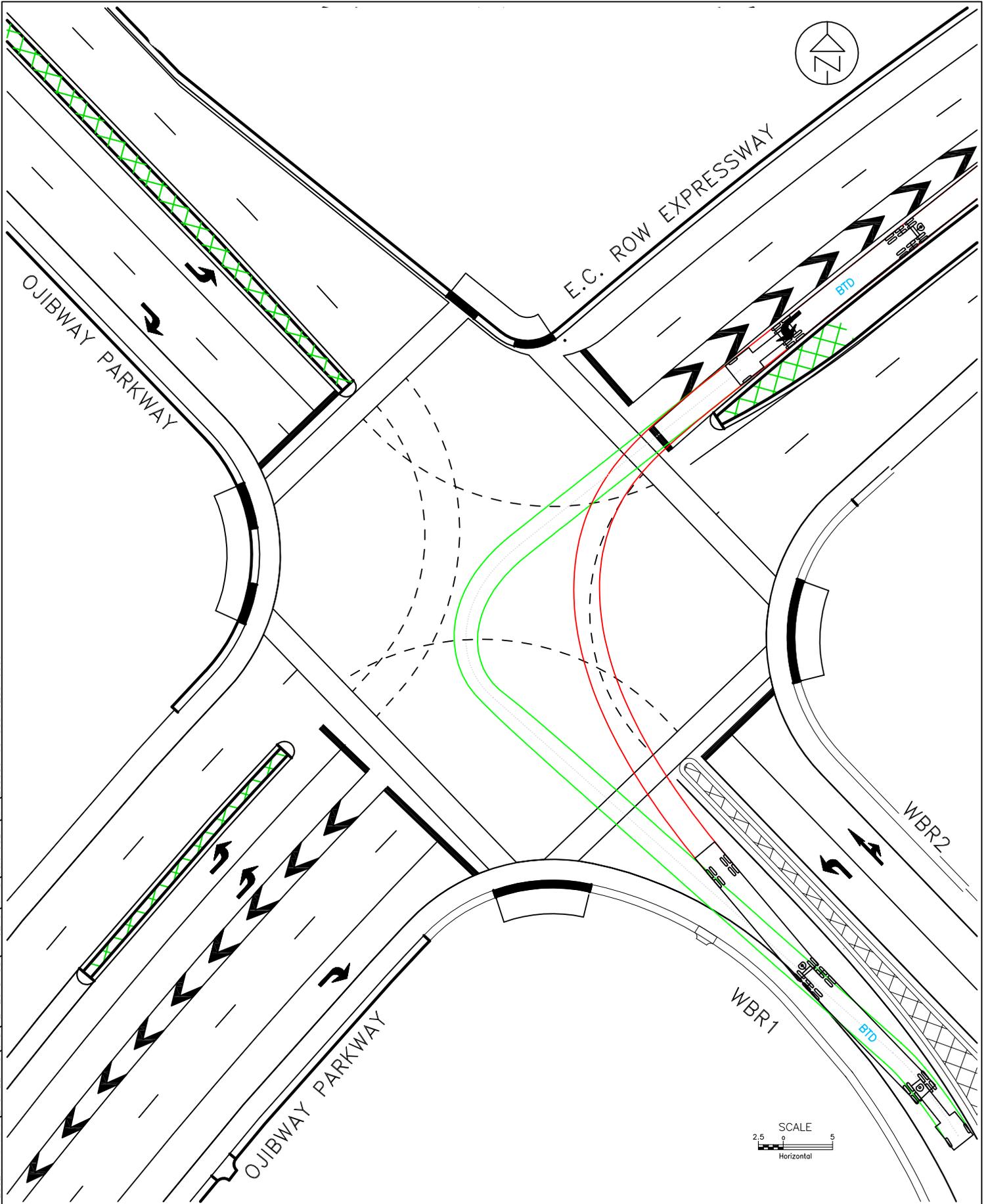


PHASE 3 TURNING DIAGRAM  
DOUBLE LEFT TURN OJIBWAY PARKWAY (S-W)  
BTD AND SU

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 11 OF 14	

FIG. 11

DOC: 285380 - WINDSOR\_ESSEX\_PARKWAY\_ENGINEERING\CAD\PLATES\_DWGS\PHASE\_3\HWYS\90%\_SUBM\AT1\285383-60-059-SEC3-0000



**Parkway  
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Engineers**

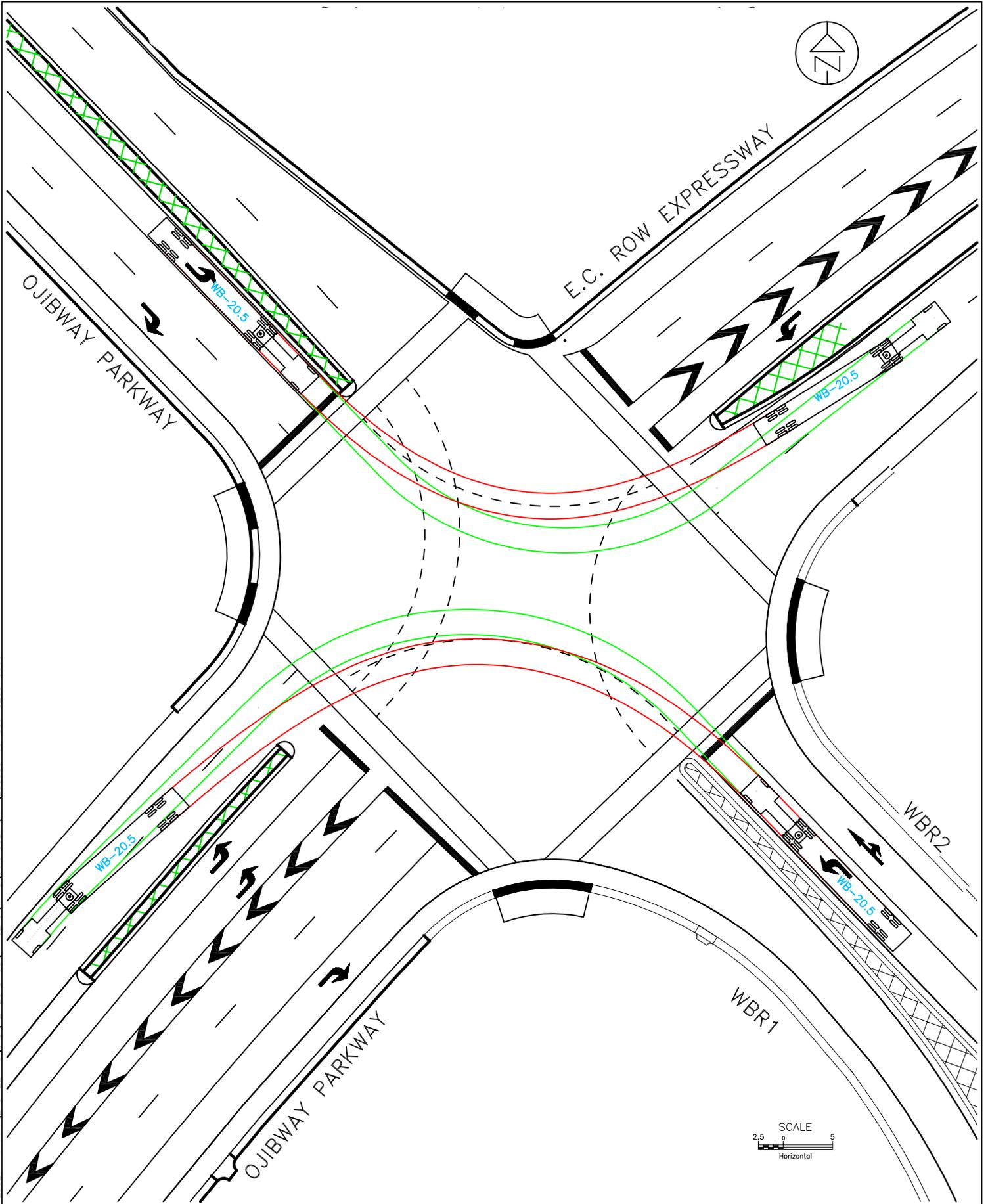


PHASE 3 TURNING DIAGRAM  
LEFT TURN E.C. ROW EXPRESSWAY @ WBR1 (N-E)  
BTD

DWG. BY: W.S.	CHK. BY: J.G.
DATE: 14-DEC-12	SHEET: 12 OF 14

FIGURE NO.:  
**FIG. 12**

DOC: 285380 - WINDSOR ESSEX PARKWAY ENGINEERING CAD PLATES DWGS PHASE 3 HWYS 90% SUBMIT 1 285383-60-059-SEC3-0000



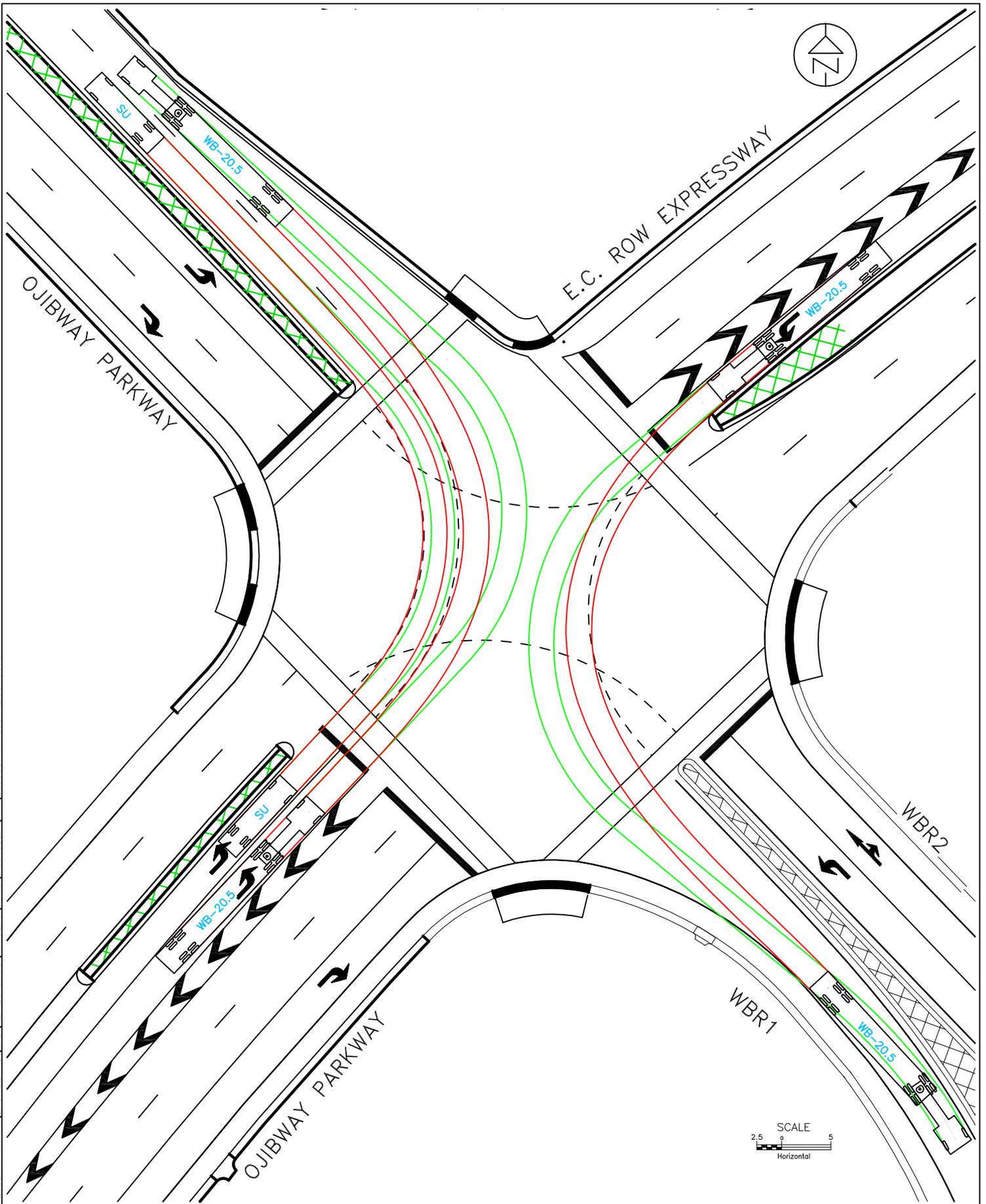
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Infrastructure  
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PHASE 3 TURNING DIAGRAM  
LEFT TURNS OJIBWAY PARKWAY @ E.C. ROW EXPRESSWAY (E-S, W-N)  
WB-20.5

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 13 OF 14	

FIG. 13



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PHASE 3 TURNING DIAGRAM  
LEFT TURNS OJIBWAY PARKWAY @ E.C. ROW EXPRESSWAY (S-W, N-E)  
WB-20.5 AND SU

DWG. BY: W.S.	CHK. BY: J.G.	FIGURE NO.:
DATE: 14-DEC-12	SHEET: 14 OF 14	

FIG. 14

## **Appendix C – Barrier Warrant and Length-of-Need Calculations**

### Barrier Warrant and Length-of-Need Calculations (Phase 3)

Number	Roadway	Station (Start of Barrier)	Station (Hazard)	A	B			E	La Required (Calculated)	La Available (Measured)	Hazard	Check	Notes
					Clear Zone	Hazard	Lesser						
1	Hwy 401 EBL (Rt)	11+570.	11+639.	3	7	7.4	7.0	120	68.6	69.0	Kink of concrete barrier installed alongside E.C. Row EBL (beginning of taper)	Ok	Sheet H305
2	Hwy 401 EBL (Rt)	12+152.	12+222.	3	7	7.0	7.0	120	68.6	70.0	Cross Embankment and bridge Bridge B-6 abutment	Ok	Sheet H306
3	Hwy 401 WBL (Rt)	12+005.	11+950.	3	7	5.5	5.5	120	54.5	55.0	VMS 08	Ok	Sheet H306
4	Hwy 401 WBL (Rt)	11+830.	11+761.	3	7	7.0	7.0	120	68.6	69.0	Bridge B-4 barrier wall and embankment drop	Ok	Sheet H305
5	Hwy 401 WBL (Rt)	11+100.	11+155.	3	7	5.0	5.0	120	48.0	55.0	OHS 12; also shields OHS12, VMS06, and Bridge B-3 abutment	Ok	Sheet H303
6	E.C. Row WBL (Rt)	11+961.	11+900.	2.5	7	5.0	5.0	120	60.0	61.0	OHS 44	Ok	Sheet H306
7	E.C. Row WBL (Lt)	11+986.	11+900.	1	7	3.5	3.5	120	85.7	86.0	OHS 44	Ok	Sheet H306
8	E.C. Row WBL	11+471.	11+390.	1	7	3.0	3.0	120	80.0	81.0	OHS 43	Ok	Sheet H304
9	E.C. Row WBL (Rt)	11+090.	11+025.	2.5	7	4.5	4.5	120	53.3	65.0	OHS 42	Ok	Sheet H304
10	E.C. Row WBL (Lt)	11+108.	11+025.	1	7	3.0	3.0	120	80.0	83.0	OHS 42	Ok	Sheet H303
11	E.C. Row WBL (Lt)	10+545.	10+589.	2.5	7	3.0	3.0	120	53.3	44.0	OHS 41; continuation from guiderail at Matchette Rd bridge	OK	Sheet H311
12	E.C. Row WBL (Rt)	10+140.	10+190.	2.5	9	4.2	4.2	120	48.6	50.0	OHS 40; inside R=540 m curve	Ok	Sheet H310
13	E.C. Row EBL (Lt)	10+650.	10+923.	1.0	7	3.50	3.50	120	85.71	273.00	Ditch at toe of slope; continuation from guiderail at exist. Matchette Rd bridge	Ok	Sheet H311
14	E.C. Row EBL (Lt)	10+637.	10+798.	2.5	7	9.0	7.0	120	n/a	161.0	Retaining wall HRV03L; continuation from guiderail at exist. Matchette Rd bridge	Ok	Sheet H311
15	E.C. Row EBL (Lt)	11+118.	11+263.	4.5	10	10.0	10.0	120	66.0	145.0	Ditch at toe of slope; inside R=420 m horizontal curve; starts at Bridge B-3	Ok	Sheet H304
16	E.C. Row EBL (Lt)	11+574.	11+696.	1	7	7.0	7.0	120	102.9	122.0	Bridge B-5 barrier wall and embankment drop	Ok	Sheet H305
17	E.C. Row EBL (Lt)	11+836.	11+931.	1	7	4.7	4.7	120	94.5	95.0	OHS 36	Ok	Sheet H306
18	E.C. Row EBL (Rt)	11+118.	11+263.	2.5	10	10.0	10.0	120	90.0	145.0	Ditch at toe of slope; outside R=420 m horizontal curve; starts at Bridge B-3	Ok	Sheet H304
19	E.C. Row EBL (Rt)	11+402.	11+444.	2.5	7	3.8	3.8	120	41.1	42.0	Noise barrier installed behind concrete barrier	Ok	Sheet H304
20	E.C. Row EBL (Rt)	11+745.	12+219.	2.5	9	9.0	9.0	120	86.7	474.0	Ditch at toe of slope; outside R=600 m curve	Ok	Sheet H305
21	EBR1 (Rt)	10+020.	10+058.	2.5	4	26.0	4.0	60	22.5	38.0	Continuous hazard (ditch at toe of slope) ends	Ok	Sheet H300
22	EBR2 (Rt)	9+625.	9+652.	2.5	4	3.8	3.8	75	26.0	27.0	Noise barrier installed behind concrete barrier; also shields VMS 01, OHS 02; OHS 03, and OHS 04	Ok	Sheet H308
23	WBR1 (Rt)	9+958.	10+013.	2.5	4	4.0	4.0	60	22.5	55.0	High embankment	Ok	Sheet H300
24	WBR2 (Rt)	10+142.	10+165.	2.5	4	4.0	4.0	60	22.5	23.0	Retaining wall MSHP40L; inside R=190 m curve	Ok	Sheet H309
25	Ramp N/S-E (Rt)	9+825.	9+836.	2.5	3	15.4	3.0	60	10.0	11.0	Ditch at toe of slope; Bridge B-3 approach	Ok	Sheet H303
26	Matchette Rd (Rt)	9+882.	9+913.	1.5	3	8.5	3.0	61	30.5	31.0	Culvert #53	Ok	Sheet H302
27	Matchette Rd (Lt)	9+945.	9+913.	1.5	3	8.5	3.0	62	31.0	32.0	Culvert #53	Ok	Sheet H302