



PROJECT ROUTE: IL 47 at Burlington Road  
LIMITS: 750ft NW to 750ft SE of IL 47(Burlington), & 1000ft S to 1000ft N of Burlington (IL47)  
MUNICIPALITY/COUNTY: Kane County  
JOB NUMBER: CMM-8003(829) Local Area Section No. 07-00357-00-CH

PREPARED FOR: District One  
Bureau of Programming  
Hydraulics Section

DATE: July 2011

PREPARED BY: Burns & McDonnell  
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**LOCATION DRAINAGE STUDY CHECKLIST**

Project Route: IL 47 at Burlington Rod

Limits: 750ft Northwest to 750ft Southeast of IL 47 on Burlington; 1000ft South to 1000ft North of Burlington on IL 47

Municipality/County: Kane County

Job Number: CMM – 803(829)

**1-00 EXISTING DRAINAGE SYSTEM** (see Exhibit 1-00a, General Location Drainage Map;  Exhibit 1-00b, Existing Drainage Plan)

1-01 IDENTIFIED DRAINAGE PROBLEMS (see Appendix C)

Yes  No

1-01.1 Description: Flooding record of IL 47 at Burlington in February of 2009 described 1 inch of flooding on all pavement at the Intersection. IDOT also stated that the ditches and culverts are in need of cleaning.

Responsibility  IDOT  Others (explain)

Action (describe recommendation below)  
No action is proposed at this time. The regrading of ditches and replacement of culverts will address this issue.

Incorporate into the Study as data base  
(See Section 2-05 and/or Section 2-07)

Refer to others  
 Bureau of Maintenance  
 Local Agency

1-02 IDENTIFIED BASE FLOODPLAINS (see Exhibit 1-02a Flood Boundary and Floodway Map or Flood Insurance Rate Map and Section 3-00)

The Flood Boundary and Floodway Map for the County of Kane was examined for identified base floodplains which were either traversed by or adjacent to IL 47 at Burlington Road.

Floodplains  Yes  No

Floodways  Yes  No

1-03 MAJOR DRAINAGE FEATURES (see Exhibit 1-00a)

1-03.2 Major Culvert Crossings

**Location: Station 98+90**

Structure No.:

Hydraulic Report Prepared by N/A

Waterway Information Table Available:

- Yes (Exhibit 1-03.1a)  
 No

Narrative Summary:

While this 3 foot wide by 2 foot high box culvert is not considered a major drainage feature in existing conditions, the proposed culvert (2-2.5 foot wide by 2 foot high) has a cross sectional area greater than 7 feet, and is thus considered a major drainage feature. The reason for the increase in size is to reduce the 50 year headwater elevation and reduce the amount of right of way needed for the detention facilities on the upstream ditches. Information on overtopping, freeboard clearance, etc. is included in the Small Culvert Waterway Information Table in Appendix B, as well as in the calculations in Appendix D.

**Location: Station 105+90**

Structure No.:

Hydraulic Report Prepared by N/A

Waterway Information Table Available:

- Yes (Exhibit 1-03.1a)  
 No

Narrative Summary:

This existing culvert is a 3 foot wide by 4 foot high box culvert, and as such is considered a major drainage feature. Information on overtopping, freeboard clearance, etc. is included in the Small Culvert Waterway Information Table in Appendix B, as well as in the calculations in Appendix D.

**2-00 PROPOSED DRAINAGE SYSTEM** ( Exhibit 2-00a, Proposed Drainage Plan)

2-01 DESIGN CRITERIA ( Exhibit 2-01a - Typical Existing Cross Section.

Exhibit 2-01b - Typical Proposed Cross Sections

Construction       Reconstruction       Rehabilitation

The intersection is to be reconstructed as a roundabout. The termini of the project are 750 feet northwest to 750 feet southeast of Illinois Route 47 on Burlington Road, and 1000 feet north to 1000 feet south of Burlington Road on Illinois Route 47.

1. Proposed storm sewer conveyance systems will be designed for a 10 year storm frequency with a velocity between 900mm/sec (3 ft/sec) and 3000mm/sec (10 ft/sec). For storm sewers oversized for detention minimum velocity is 2 ft/sec.

Yes    No    N/A

Justification for non-compliance:

2. Proposed ditches will be designed for a 50 year storm frequency and desirable ditch grades will be no less than 0.5%.

Yes    No    N/A

Justification for non-compliance: Ditches will be designed for a 50 year storm frequency. Ditch grades will be a minimum of 0.3% to accommodate detention within the ditches.

3. The roadway edge of pavement at the low grade point in a floodplain area for highways with a DHV of 100 or more shall be a minimum of three feet above design headwater elevation.

Yes    No    N/A

Justification for non-compliance:

4. It is required that a minimum clearance of two (2) feet be established between the design high water and the low beam elevation of bridge structures. The bottom of the bridge super structure shall not be below the all-time high water elevation for the new freeway and expressway construction.

Yes    No    N/A

Justification for non-compliance:

5. The waterway openings of bridges and culverts will be designed for a 50 year storm frequency.

Yes    No    N/A

Justification for non-compliance:

6. The vertical alignment for curbed pavements will have a minimum grade of 0.3% and a drainage maximum "K" value of 51 (167 English Unit).

Yes    No    N/A

Justification for non-compliance: Flat terrain makes minimum profile expensive. Substandard profile section is superelevated as much as 6%. All curbed pavements have a slope exceeding 0.2%. Some uncurbed sections have a flatter longitudinal slope but feature significant superelevation.

A drainage design exception is not required at this stage based on the proposed scope of

work. If the scope of work is changed during the P.S. & E. stage, the appropriate drainage design exemption approval, if any, will be processed through the Hydraulics Section by the District's Bureau of Design.

2-02 OUTLET EVALUATION

Unless otherwise noted below, the various outlets within the limits of the subject improvement were determined to be suitable for continued use under proposed conditions without modifications or the provision of storm water detention.

Unsuitable outlets:  Yes  No

Location: **Outlet #1**, at Station 105+90 in IL 47  
**Outlet #2**, at the East Quadrant Farm Entrance on the East side of Burlington Road.  
**Outlet #3**, at the South Quadrant Farm Entrance on the West side of Burlington Road.

Source:

Evaluation: **Outlet #1** has a minimal amount of cover over top of it. This outlet will require the provision of storm water detention in order to maintain existing discharges. Further, the existing culvert will need to be extended to accommodate the proposed roadway width in its vicinity.

**Outlet #2** is currently a corrugated metal pipe which is in disrepair. This outlet will also require the provision of storm water detention in order to maintain existing discharges. Further, the farm entrance will be replaced as part of the project, so the pipe will need to be replaced.

**Outlet #3** is currently a corrugated metal pipe which is in disrepair. This outlet will also require the provision of storm water detention in order to maintain existing discharges. Further, the farm entrance will be replaced as part of the project, so the pipe will need to be replaced.

Recommendation: **Outlet #1** – the culvert under IL 47 will be replaced to provide adequate cover over the structure, and also extended to accommodate the roadway widening in its vicinity. In addition, required detention will be provided upstream of the culvert in an oversized ditch restricted in flow by a ditch check.

**Outlet #2** – the culvert under the East Quadrant Farm Entrance will be replaced with a reinforced concrete pipe to provide adequate capacity and strength. Required detention will be provided upstream of the culvert in an oversized ditch restricted in flow by a ditch check.

**Outlet #3** – the culvert under the South Quadrant Farm Entrance will be replaced with a reinforced concrete pipe to provide adequate capacity and strength. Required detention will be provided upstream of the culvert in oversized ditches both upstream and downstream of IL 47. Each of these ditches will be restricted in flow by a ditch check.

Sensitive outlets:  Yes  No

**Outlet #1** – This outlet is not considered sensitive because it discharges to an open field which does not have any flooding concerns. There are no structures in the vicinity downstream of this outfall.

**Outlet #2** – This outlet is not considered sensitive because it discharges to a roadside ditch which does not have any flooding concerns. There are no structures in the vicinity downstream of this outfall.

**Outlet #3** – This outlet is not considered sensitive because it discharges to a roadside ditch which does not have any flooding concerns. There are no structures in the immediate vicinity downstream of this outfall.

## 2-03 STORM WATER DETENTION ANALYSIS

This project has been reviewed in accordance with Drainage Manual, Section 1-303.03 "Storm Water Storage".

### 2-03.1 Evaluation

No storm water detention required

Storm water detention required

Unsuitable outlets (see Section 2-02)

Location: Detention is required as part of this project for all of the outlets identified in Section 2-02, Outlets 1, 2, and 3.



2-.03.2 Recommendation

Detention Ponds       Yes     No

Storage Pipes       Yes     No

Oversizing storm sewers/ditches     Yes     No

**For Outlet #1 at Station 105+90:**

470 Cu. Yds.    50 year storm frequency

Oversizing storm sewers/ditches location:

Upstream of IL 47 in the North Quadrant from Station 624+25 to Station 629+00 (See Ditch Design Cross Section Key Map in Appendix D) Proposed cross sections are also located in Appendix D. The required and actual release rate is 7.16 cfs.

Control structure schematics (see Exhibit 2-03.2a)

Yes     No

Detailed evaluation and supporting calculations are included in Appendix D.

Yes     No

**For Outlet #2 at East Quadrant Farm Entrance on east side of Burlington Road:**

40 Cu. Yds.    50 year storm frequency

Oversizing storm sewers/ditches location:

In the East Quadrant from Station 612+50 to Station 614+66 (See Ditch Design Cross Section Key Map in Appendix D) Proposed Cross Sections are also located in Appendix D. The required and actual release rate in the 50 year storm is 3.9 cfs.

Control structure schematics (see Exhibit 2-03.2a)

Yes     No

Detailed evaluation and supporting calculations are included in Appendix D.

Yes     No

**For Outlet #3 at South Quadrant Farm Entrance on west side of Burlington Road:**

174 Cu. Yds.    50 year storm frequency

Oversizing storm sewers/ditches location:

The required storage is provided Upstream of IL 47 in the West Quadrant from Station 630+00 to Station 637+00 (See Ditch Design Cross Section Key Map in Appendix D) and downstream of IL 47 in the South Quadrant from Station 600+00 to 607+00. Proposed cross sections are also located in Appendix D. The required and actual release rate for Subarea 3-1 is 3.1 cfs; Subarea 3-2 is 8.6 cfs; Subarea 3-3 is 2.80 cfs; and Subarea 3-4 is 3.40 cfs,

Control structure schematics (see Exhibit 2-03.2a)

Yes  No

Detailed evaluation and supporting calculations are included in Appendix D.

Yes  No

2-04 RIGHT OF WAY ANALYSIS

Yes  No

Additional right of way is required to accommodate the proposed drainage system.

Location: The limits of the proposed right of way are identified by station and offset in the Intersection Design Study. The first page of the IDS, containing all of the proposed right-of-way information, is included as Exhibit 2-04a. The right of way requirements are based entirely on the need to provide detention.

Yes  No

A drainage easement(s) is required to accommodate the proposed drainage system

2-05 DRAINAGE ALTERNATIVES  
N/A

2-06 LOCAL AND OTHER AGENCY COORDINATION (see Appendix C)

Yes  No

Local ordinances considered

Yes  No

Joint participation

Yes  No

Sewer separation

Yes  No

Jurisdictional transfer

Yes  No

Letter of intent required/processed/approved

Yes  No

Coordination completed and comments provided.

Comments:

Kane County Division of Transportation was consulted with respect to compliance with the Kane County Stormwater Ordinance. An email summarizing differences in methodologies was sent to Kane County, and per their direction, all stormwater facilities were designed using IDOT methodologies. The email citing concurrence with this direction is included in Appendix C. In addition, the Village of Campton Hills' Stormwater Ordinance was consulted. They have adopted Kane County's Ordinance. IDOT Coordination and emails from the Bureau of Local Roads are also included in Appendix C.

2-07 PROPOSED DRAINAGE PLAN

2-07.1 Roadway Drainage

Yes  No Utilize Existing Drainage System

Limits:

Comments:

Yes  No Utilize existing storm sewers with minor extensions and/or adjustment of existing drainage structures

Limits:

Comments:

Yes  No Utilize existing combined sewers with minor extensions and/or adjustment of existing drainage structures

Limits:

Comments:

Yes  No Regrade/reestablish existing ditches

Limits: Throughout the intersection area, as shown in the proposed ditch cross sections and Key Map included in Appendix D.

Comments: Proposed ditches will also serve as detention areas to compensate for the additional runoff created by the additional impervious areas attributed to the construction of the project.

Yes  No Regrade/reestablish existing swales

Limits:

Comments:

Yes  No Replace/relocate existing storm sewers

Limits and sizes:

Comments:

Yes  No Replace/relocate existing combined sewers

Limits and sizes:

Comments:

Yes  No Abandon existing storm sewers

Limits and sizes:

Comments:

Yes  No Abandon existing combined sewers

Limits and sizes:

Comments:

Yes  No Regrade/reestablish/maintain existing outlets

Limits and sizes: Existing outlet locations will be maintained, with some improvements to the structures themselves, as described in Section 02-02. These outlets are depicted in the Existing Drainage Plan (Exhibit 1-00b), as well as the Proposed Drainage Plan (Exhibit 2-00a)

Comments:

Yes  No Maintain/replace/extend existing cross road culverts

Limits and sizes: Existing culvert at Station 98+90 under IL 47 is to be replaced with two 2.5 feet wide by 2 feet high box culverts; existing culvert at Station 105+90 under IL 47 is to be replaced with a 4 feet wide by 2 feet high box culvert. Both of the farm entrance culverts on either side of Burlington at approximately Station 23+00 are to be replaced with a 15 inch culvert.

Comments:

Yes  No Construct new storm sewers

Limits and sizes: Within the roundabout area, as depicted in Exhibit 2-07.1. All proposed sewers will be 12". Calculations for this area were based on a Hydraflow model which was prepared for the sewer with the largest tributary area. This model is included in Appendix D. It should be noted that the proposed storm sewer will be constructed as shown in the interim condition, and then construction of the ultimate build out will require cutting back the storm sewers and relocating the interim conditions inlets to the proposed conditions locations, and hooking the interim storm sewer into the relocated inlets in the new Curb and gutter in the ultimate build out condition.

Comments:

Yes  No Construct new combined sewers

Limits and sizes:

Comments:

Yes  No Construct special drainage structures

Limits and types:

Comments:

Yes  No Construct new ditches (standard ditches desired)

Limits:

Comments:

Yes  No Construct new swales

Limits:

Comments:

Yes  No Construct new outlets

Locations and types:

Comments:

Yes  No Construct new cross road culverts

Locations and sizes:

Comments:

Yes  No Stormwater detention to be provided (see Section 2-03)

Yes  No Compensatory storage for floodway to be provided  
(See Section 3-00)

2-07.2 Proposed Action for Major Drainage Features (include hydraulic data such as waterway opening, clearance, freeboard, backwater, permitting requirements, etc.)

Replacement of culverts at Station 98+90 and 105+90 as discussed in Section 2-07.2. See also the Small Culvert Waterway Information Tables included as Exhibits 1-03.1a and 1-03.1b, as well as the calculations located in Appendix D.

### 3-00 FLOODPLAIN ENCROACHMENT EVALUATION

The proposed project has been reviewed in accordance with Executive Order 11988 "Floodplain Management"; Section 26-7.05(d) "Assessment and Documentation of Floodplain Encroachments" as contained in the Illinois Department of Transportation, Bureau of Design and Environment Manual; Drainage Manual; and 17 Illinois Administration Code 3708 "Floodway Construction in Northeastern Illinois."

No Potential Floodplain Encroachment

### 4-00 ILLINOIS DEPARTMENT OF NATURAL RESOURCES OFFICE OF WATER RESOURCES (IDNR-OWR) PERMIT

Required  Not Required

**5-00 Appendix A: Source Data Reviewed**

USGS Maps\* - Quadrangle Map and/or Hydrologic Atlas - See Exhibit 1-00

Survey notes\*

Scoping Report\*\*

Proposed Geometrics\*\* (location, originator, date)

\* On file in the Hydraulics Section

\*\* On file in the Project and Environmental Studies Section

\*\*\* Transmitted to the Bureau of Design

**5-00 Appendix B: Exhibits**

General Location Drainage Map, Exhibit 1-00a

Existing Drainage Plan, Exhibit 1-00b

Flood Insurance Rate Map, Exhibit 1-02a

Station 98+90 Small Culvert Waterway Information Table, Exhibit 1-03.1a

Station 105+90 Small Culvert Waterway Information Table, Exhibit 1-03.1b

Proposed Interim Conditions Drainage Plan, Exhibit 2-00a

Proposed Build Out Conditions Drainage Plan, Exhibit 2-00b

Typical Existing Cross Sections, Exhibit 2-01a

Typical Proposed Cross Sections, Exhibit 2-01b

Control Structure Schematic, Exhibit 2-03.2a

Proposed IDS, Exhibit 2-04a

Proposed Inlet and Storm Sewer Layout - Interim, Exhibit 2-07.1a

Proposed Inlet and Storm Sewer Layout – Proposed, Exhibit 2-07.1b



**5-00 Appendix C: Correspondence**

Drainage Evaluation Meeting Minutes

IDOT Flooding records

IDOT Local Roads Coordination

Kane County Direction for methodology

**5-00 Appendix D: Supporting Documents**

Calculations

Ditch design with Final Build Out Key Map

Proposed Ditch Cross Sections in each quadrant stationed as per Key Map

5-00 Appendix E: Erosion and Sediment Control Data References

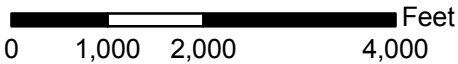
REQUIRED DATA	SOURCE LOCATION														Hydraulic Report	Comment
	LDS Exhibits				LDS Sections							LDS Appdx				
	1-00A	1-00B	1-02A	2-00A	1-01	1-03	2-02	2-03	2-07	3-00	4-00	C	D			
Drainage patterns and areas	x	x		x												
Receiving waters		x		x												
Floodway and floodplain boundaries			x													
Identified areas of flooding					x								x			
Critical erosion and siltation areas																N/A
Inlet(s) and Outlet(s)		x		x	x		x	x	x				x			
Off-site flow adjacent to site		x														
Bridge and culvert location & size		x		x			x	x	x				x			
Storm sewer and/or ditch system							x	x	x				x			
Subsurface drainage tile																N/A
Detention facilities							x	x	x				x			
Existing erosion control facilities																N/A
Compensatory storage area																N/A
Potential erosion/scour problems																N/A
Erosion/scour prevention measures																N/A
High water elevation													x			
Normal water elevation																N/A
Release rates													x			
Runoff coefficients													x			
Peak flows													x			
Velocities													x			
Commitments																N/A

**5-0 Appendix F: Water Quality/Best Management Practices (BMPs) White Paper**

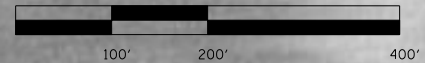
Stormwater runoff generated in the project area will be directed to roadside ditches, and discharged at a rate less than or equal to the existing condition. Roadside ditches will be planted with deep rooted native vegetation to encourage infiltration as the runoff is conveyed through the site. Detention will be provided to attenuate the flows leaving the site and to encourage deposition of sediments within the roadside ditches before the runoff leaves the site.

During construction, a sedimentation and erosion control plan will be put in place and maintained on a regular basis to prevent erosion and discourage sedimentation off site. This plan will be developed as part of Phase 2 of this project.

\\chisrv\data\projects\Kane County\46159\_Burlington\Deliverables\GIS\MXD\Drainage\_Location\_Map.mxd 09-22-2010 L SAUCEDO



GENERAL LOCATION DRAINAGE MAP  
EXHIBIT 1-00  
ROUTES: IL 47 AND BURLINGTON AVE  
COUNTY: Kane  
USGS Hydrologic Investigation Atlas HA-229  
DATED: 1966



**LEGEND**

- OUTLET
- PROPOSED SHEET FLOW
- INTERPRETED DRAINAGE AREA TO OUTLET
- PROPOSED SWALE
- PROPOSED DITCH
- PROPOSED CULVERT
- TIME OF CONCENTRATION LONGEST PATH

	EXISTING R.O.W.
	PROPOSED R.O.W.

FILE NAME =	USER NAME = \$USER\$	DESIGNED -	REVISED -
\$FILEL\$		DRAWN -	REVISED -
	PLOT SCALE = \$SCALE\$	CHECKED -	REVISED -
	PLOT DATE = \$DATE\$	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXHIBIT 1-00b  
BURLINGTON ROAD AT IL 47  
EXISTING DRAINAGE PLAN**

SCALE:      SHEET NO.      OF      SHEETS      STA.      TO      STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

## EXHIBIT 1-03.1A

### SMALL CULVERT WATERWAY INFORMATION TABLE

Route: IL Route 47

Computed By: DEB

Date: 5/2011

Section: 07-00357-00-CH

Checked By:

Rev. Date:

County: Kane

Station: 98+90

Existing Structure Number:

Drainage Area =7.31 acres				
Existing Low Grade Elevation= 1002.73 @ Station 98+90				
Proposed Low Grade Elevation = 1002.94 @ Station 98+00				
Flood	Frequency Year	Discharge cfs	Headwater Elevation	
			Existing	Proposed
10 year Design	10	17.33	1002.43	1002.16
Base Flood	50	25.28	1002.95	1002.50
Max Calc	100	29.61	1003.24	1002.67
	500	34.31	1003.59	1002.86

10 Year Velocity through Existing Culvert: 4.8 ft/sec

10 Year Velocity through Proposed Culvert: 4.8 ft/sec

#### Scope of Work

##### Existing Culvert

Type: 3 ft wide by 2 ft high rc box culvert

Length: 54 feet

U/S Flowline: 1000.73

D/S Flowline: 1000.21

##### Proposed Culvert

Type: 2-2.5 ft wide by 2 ft high rc box culvert

Length: 130 feet

U/S Flowline: 1000.94

D/S Flowline: 1000.18

## EXHIBIT 1-03.1B

### SMALL CULVERT WATERWAY INFORMATION TABLE

Route: IL Route 47

Computed By: DEB

Date: 5/2011

Section: 07-00357-00-CH

Checked By:

Rev. Date:

County: Kane

Station: 105+90

Existing Structure Number:

Drainage Area =13.23 acres				
Existing Low Grade Elevation=		1002.61	@ Station 105+90	
Proposed Low Grade Elevation =		1000.9	@ Station 105+90	
Flood	Frequency Year	Discharge cfs	Headwater Elevation	
			Existing	Proposed
10 year Design	10	20.32	1000.51	1000.46
Base Flood	50	27.94	1000.95	1000.83
Max Calc	100	33.02	1001.22	1001.08
	500	41.78	1001.66	1001.53

10 Year Velocity through Existing Culvert: 2.68 ft/sec

10 Year Velocity through Proposed Culvert: 2.91 ft/sec

#### Scope of Work

##### Existing Culvert

Type: 3 foot wide by 4 foot high rc box culvert

Length: 61 feet

U/S Flowline: 998.61

D/S Flowline: 997.54

##### Proposed Culvert

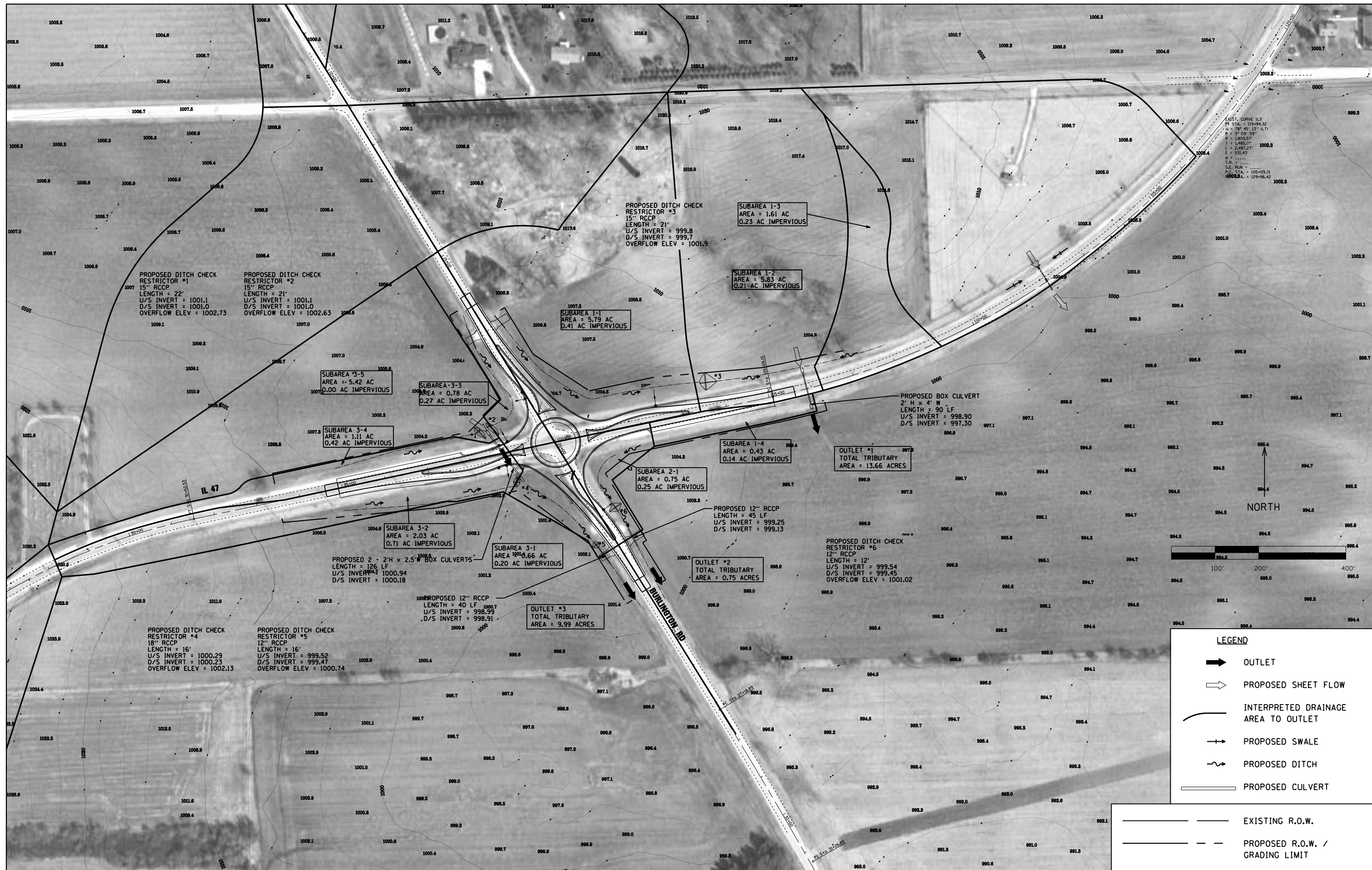
Type: 4 feet wide by 2 feet high rc box culvert

Length: 90 feet

U/S Flowline: 998.9

D/S Flowline: 997.3





PROPOSED DITCH CHECK RESTRICTOR #1  
15" RCCP  
LENGTH = 22'  
U/S INVERT = 1001.1  
D/S INVERT = 1001.0  
OVERFLOW ELEV = 1002.73

PROPOSED DITCH CHECK RESTRICTOR #2  
15" RCCP  
LENGTH = 21'  
U/S INVERT = 1001.1  
D/S INVERT = 1001.0  
OVERFLOW ELEV = 1002.63

PROPOSED DITCH CHECK RESTRICTOR #3  
15" RCCP  
LENGTH = 21'  
U/S INVERT = 999.8  
D/S INVERT = 999.7  
OVERFLOW ELEV = 1001.9

SUBAREA 1-3  
AREA = 1.61 AC  
0.23 AC IMPERVIOUS

SUBAREA 1-2  
AREA = 5.83 AC  
0.21 AC IMPERVIOUS

SUBAREA 1-1  
AREA = 5.79 AC  
0.41 AC IMPERVIOUS

SUBAREA 3-5  
AREA = 5.42 AC  
0.00 AC IMPERVIOUS

SUBAREA 3-3  
AREA = 0.78 AC  
0.27 AC IMPERVIOUS

SUBAREA 3-4  
AREA = 1.11 AC  
0.42 AC IMPERVIOUS

PROPOSED BOX CULVERT  
2' H x 4' W  
LENGTH = 90 LF  
U/S INVERT = 998.90  
D/S INVERT = 997.30

SUBAREA 1-4  
AREA = 0.43 AC  
0.14 AC IMPERVIOUS

OUTLET #1  
TOTAL TRIBUTARY  
AREA = 13.66 ACRES

SUBAREA 2-1  
AREA = 0.75 AC  
0.25 AC IMPERVIOUS

PROPOSED 12" RCCP  
LENGTH = 45 LF  
U/S INVERT = 999.25  
D/S INVERT = 999.13

PROPOSED DITCH CHECK RESTRICTOR #6  
12" RCCP  
LENGTH = 12'  
U/S INVERT = 999.54  
D/S INVERT = 999.45  
OVERFLOW ELEV = 1001.02

PROPOSED 2 - 2'H x 2.5' W BOX CULVERTS  
LENGTH = 126 LF  
U/S INVERT = 1000.94  
D/S INVERT = 1000.18

SUBAREA 3-2  
AREA = 2.03 AC  
0.71 AC IMPERVIOUS

SUBAREA 3-1  
AREA = 0.66 AC  
0.20 AC IMPERVIOUS

OUTLET #2  
TOTAL TRIBUTARY  
AREA = 0.75 ACRES

PROPOSED 12" RCCP  
LENGTH = 40 LF  
U/S INVERT = 998.99  
D/S INVERT = 998.91

OUTLET #3  
TOTAL TRIBUTARY  
AREA = 9.99 ACRES

PROPOSED DITCH CHECK RESTRICTOR #4  
18" RCCP  
LENGTH = 16'  
U/S INVERT = 1000.29  
D/S INVERT = 1000.23  
OVERFLOW ELEV = 1002.13

PROPOSED DITCH CHECK RESTRICTOR #5  
12" RCCP  
LENGTH = 16'  
U/S INVERT = 999.52  
D/S INVERT = 999.47  
OVERFLOW ELEV = 1000.74

**LEGEND**

- OUTLET
- PROPOSED SHEET FLOW
- INTERPRETED DRAINAGE AREA TO OUTLET
- PROPOSED SWALE
- PROPOSED DITCH
- PROPOSED CULVERT

- EXISTING R.O.W.
- PROPOSED R.O.W. / GRADING LIMIT

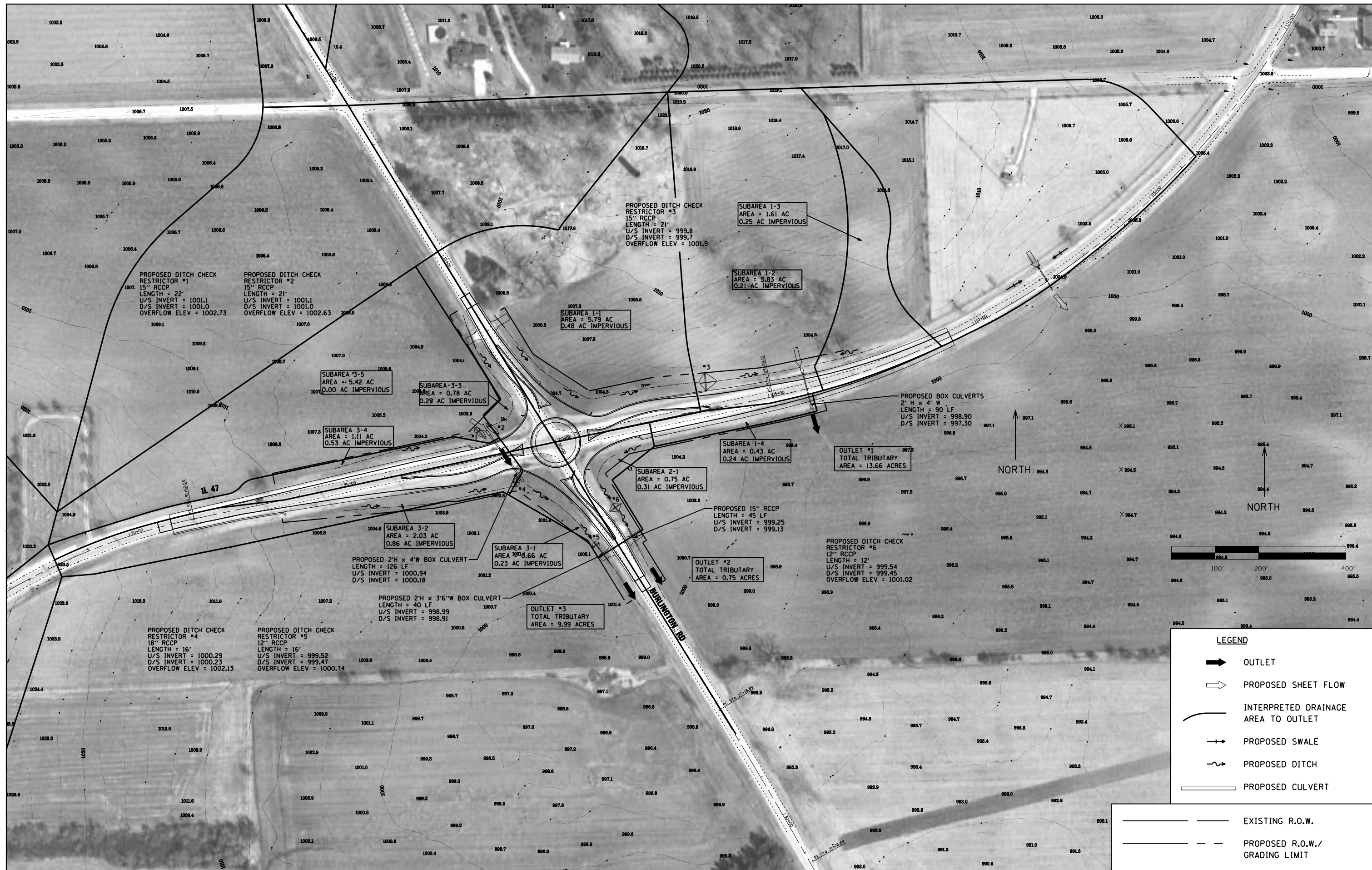
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	PLOT DATE = \$DATE\$	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXHIBIT 2-00a  
BURLINGTON ROAD AT IL 47  
PROPOSED CONDITIONS & DRAINAGE PLAN (INTERIM DESIGN)**

SCALE: SHEET NO. OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT	
CONTRACT NO.				



**LEGEND**

- OUTLET
- PROPOSED SHEET FLOW
- INTERPRETED DRAINAGE AREA TO OUTLET
- PROPOSED SWALE
- PROPOSED DITCH
- PROPOSED CULVERT

- EXISTING R.O.W.
- PROPOSED R.O.W./ GRADING LIMIT

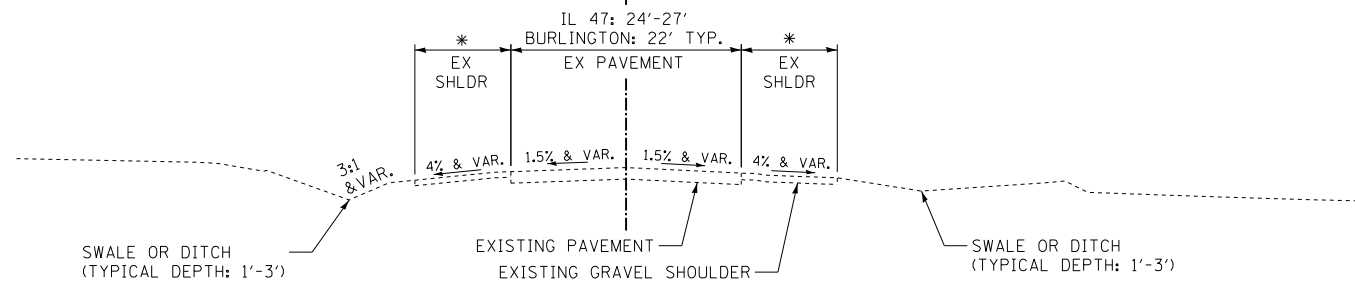
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXHIBIT 2-00b  
BURLINGTON ROAD AT IL 47  
PROPOSED CONDITIONS & DRAINAGE PLAN (BUILD-OUT DESIGN)**

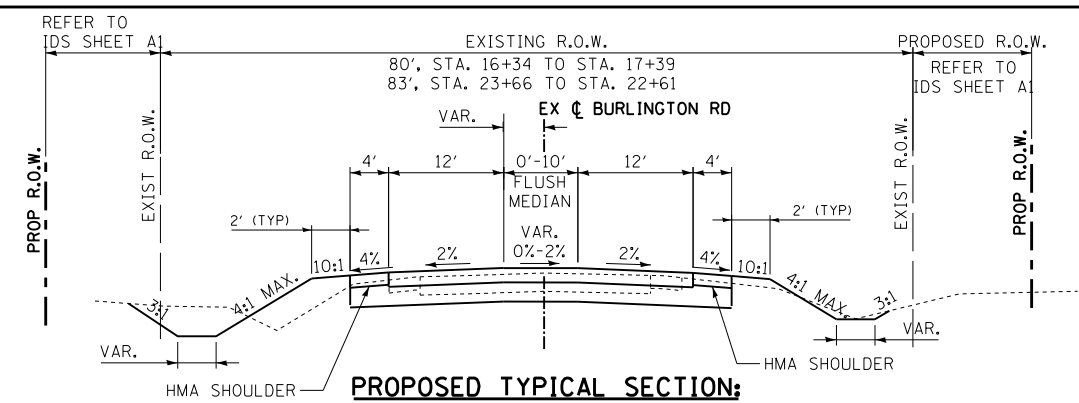
SCALE:      SHEET NO.      OF      SHEETS      STA.      TO      STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
FED. ROAD DIST. NO.      ILLINOIS FED. AID PROJECT				



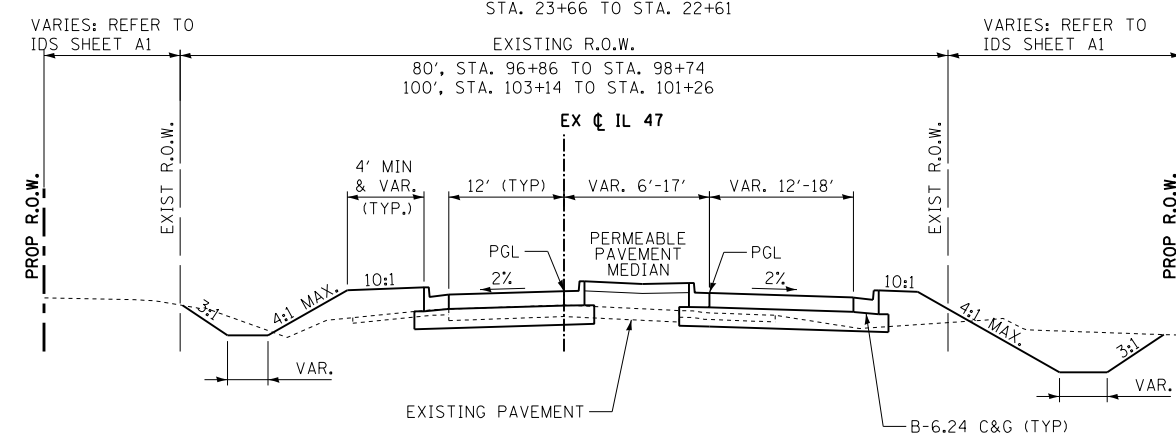
\* IL 47: GRAVEL SHOULDER, WIDTH 10' & VAR.  
 BURLINGTON: TURF/GRAVEL SHOULDER, WIDTH 4' & VAR.

**EXISTING TYPICAL SECTION:  
 IL 47 AND BURLINGTON ROAD**



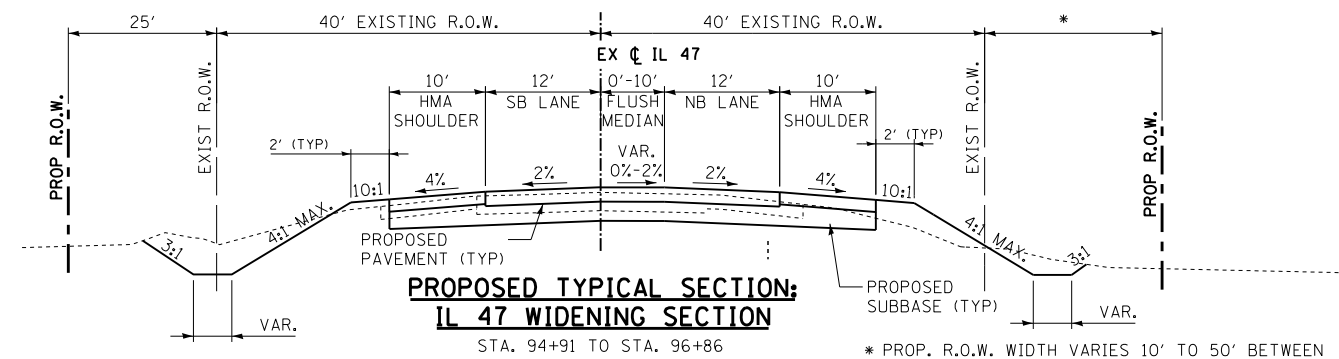
**PROPOSED TYPICAL SECTION:  
 BURLINGTON ROAD WIDENING SECTION**

LOOKING TOWARD THE INTERSECTION:  
 STA. 16+34 TO STA. 17+39  
 STA. 23+66 TO STA. 22+61



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 APPROACHES**

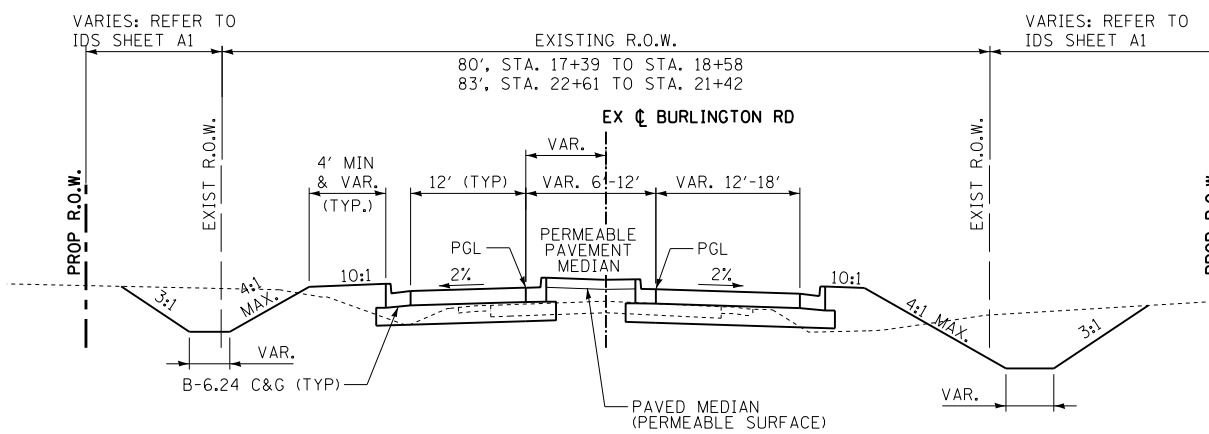
LOOKING TOWARD THE INTERSECTION:  
 STA. 96+86 TO STA. 98+74  
 STA. 103+14 TO STA. 101+26



**PROPOSED TYPICAL SECTION:  
 IL 47 WIDENING SECTION**

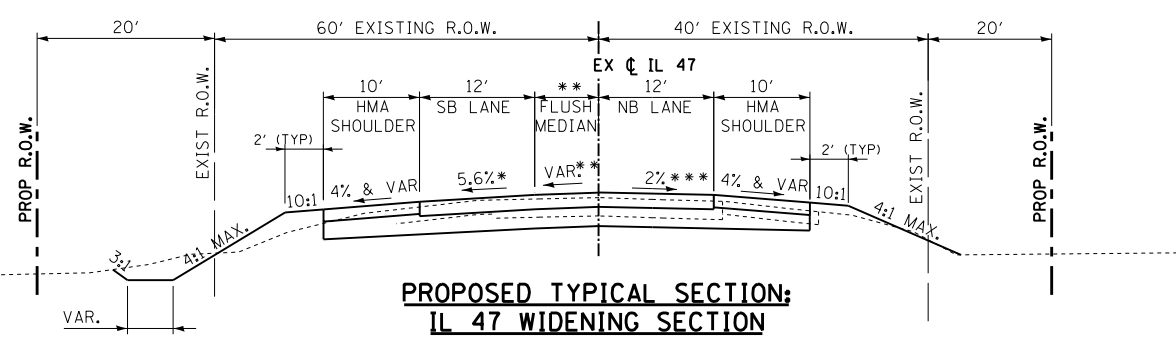
STA. 94+91 TO STA. 96+86

\* PROP. R.O.W. WIDTH VARIES 10' TO 50' BETWEEN  
 STA. 93+50 AND STA. 97+00



**PROPOSED TYPICAL SECTION:  
 BURLINGTON ROAD APPROACHES**

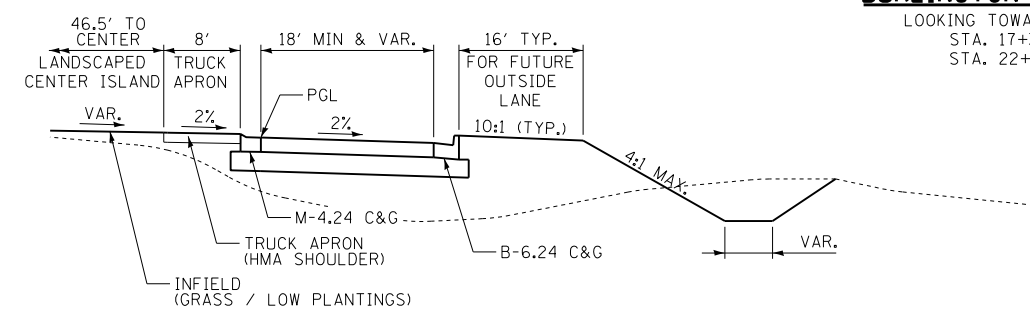
LOOKING TOWARD THE INTERSECTION:  
 STA. 17+39 TO STA. 18+58  
 STA. 22+61 TO STA. 21+42



**PROPOSED TYPICAL SECTION:  
 IL 47 WIDENING SECTION**

STA. 103+14 TO STA. 105+09

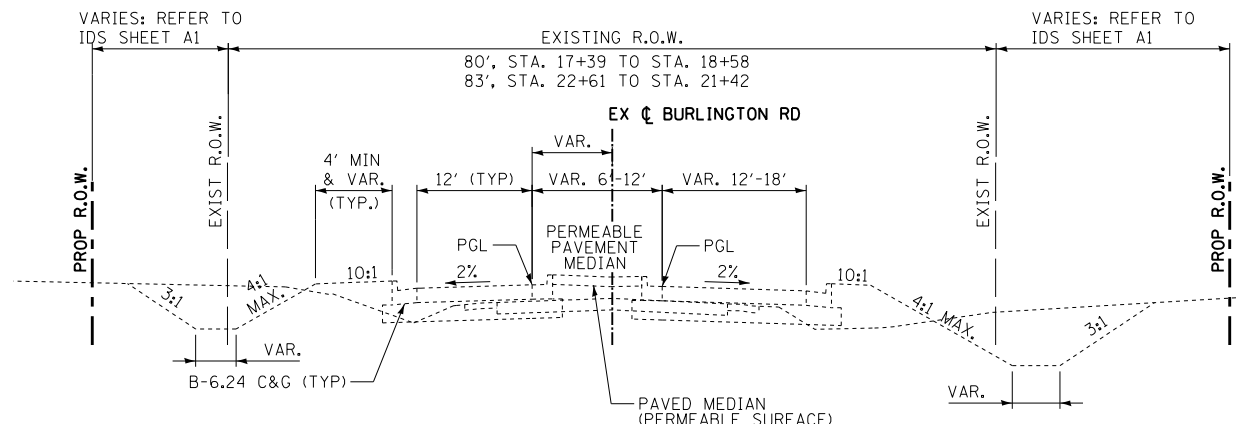
\* SB LANE VARIES 2.0% TO 5.6% BETWEEN  
 STA. 103+14 AND STA. 104+14  
 \*\* MEDIAN SLOPE VARIES 1.0% TO 5.6% AND  
 WIDTH VARIES 10' TO 0' BETWEEN  
 STA. 103+14 AND STA. 105+09  
 \*\*\* NB LANE VARIES 2.0% RT TO 3.75% LT BETWEEN  
 STA. 103+42 AND STA. 105+09  
 SHOULDER SLOPES VARY WITH ADJACENT LANES



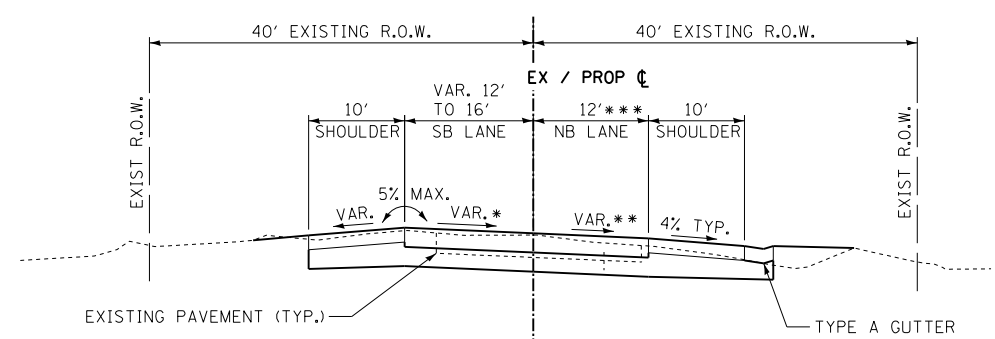
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

EXHIBIT 2-01a:  
 BURLINGTON ROAD AT IL 47  
 EXISTING AND INTERIM CROSS SECTIONS

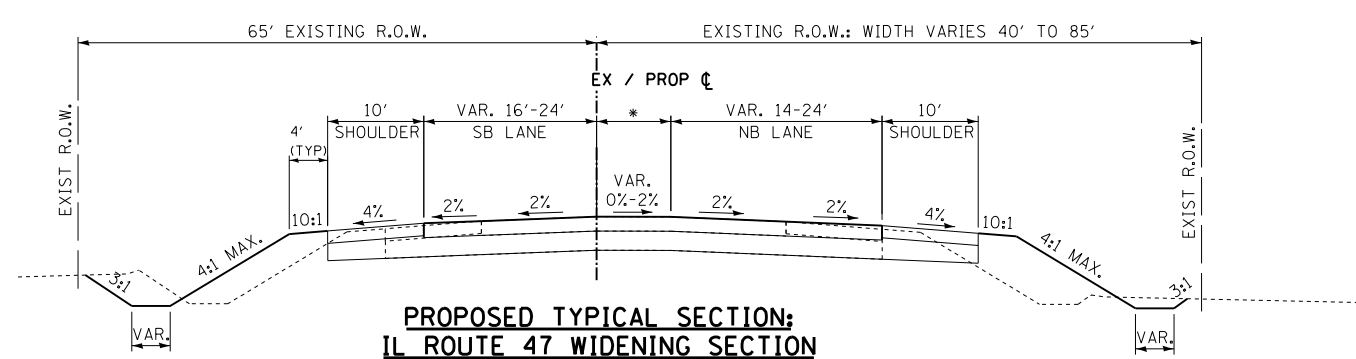
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CONTRACT NO.					FED. ROAD DIST. NO.
					ILLINOIS FED. AID PROJECT



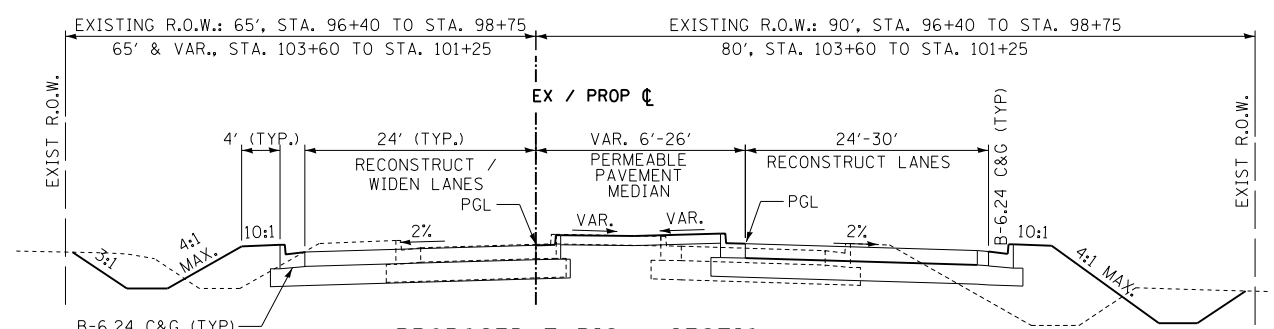
**PROPOSED TYPICAL SECTION:  
BURLINGTON ROAD APPROACHES**  
LOOKING TOWARD THE INTERSECTION:  
STA. 17+39 TO STA. 18+58  
STA. 22+61 TO STA. 21+42  
(UNCHANGED FROM INTERIM CONDITION)



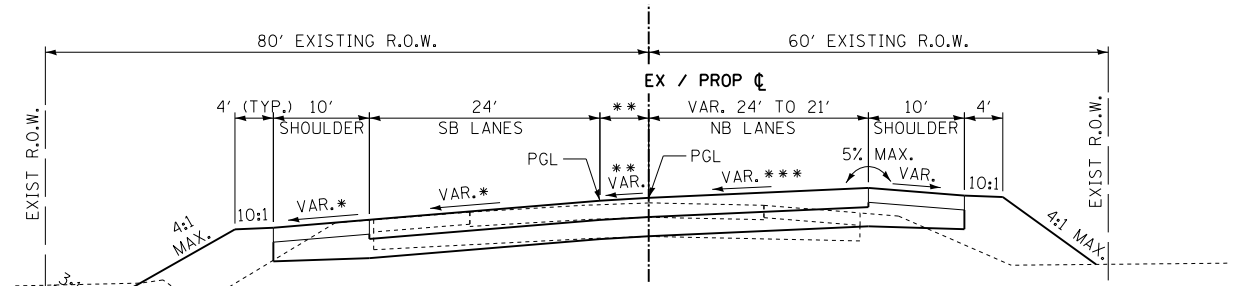
**PROPOSED TYPICAL SECTION:  
IL ROUTE 47 WIDENING SECTION**  
STA. 90+99 TO STA. 93+13  
\* SB LANE VARIES 6.0% LT TO 2.0% RT BETWEEN STA. 90+99 AND STA. 93+13.  
\*\* NB LANE VARIES 6.0% TO 2.0% RT BETWEEN STA. 90+99 AND STA. 92+06.  
\*\*\* TRANSITION TO 2-12' LANES BEGINS AT STA. 92+61.



**PROPOSED TYPICAL SECTION:  
IL ROUTE 47 WIDENING SECTION**  
STA. 93+13 TO STA. 96+40  
\* PAINTED MEDIAN; WIDTH VARIES FROM 0' TO 4' BETWEEN STA. 93+13 AND STA. 94+92. NB PGL BEGINS AT STA. 94+92; WIDTH VARIES FROM 4' TO 11' BETWEEN STA. 94+92 AND STA. 96+40.

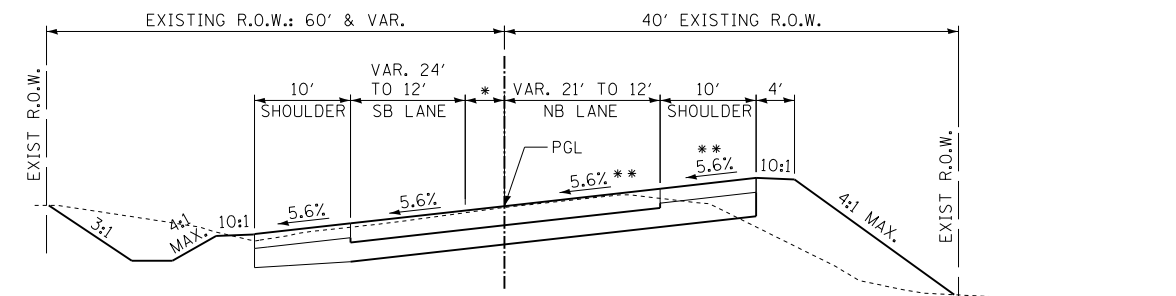


**PROPOSED TYPICAL SECTION:  
IL ROUTE 47 APPROACHES**  
LOOKING TOWARD THE INTERSECTION:  
STA. 96+40 TO STA. 98+75  
STA. 103+60 TO STA. 101+25

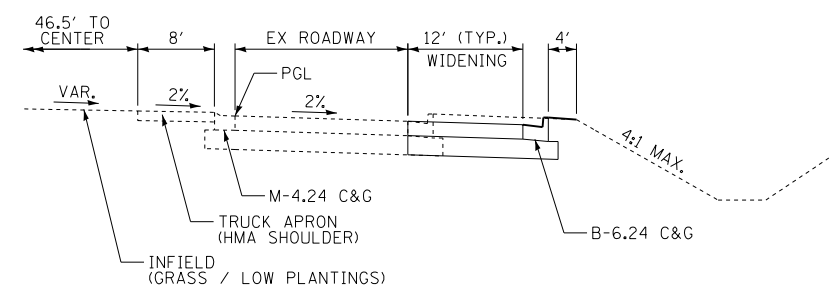


**PROPOSED TYPICAL SECTION:  
IL ROUTE 47 WIDENING SECTION**  
STA. 103+60 TO STA. 105+09

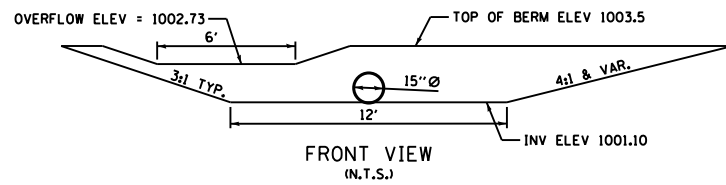
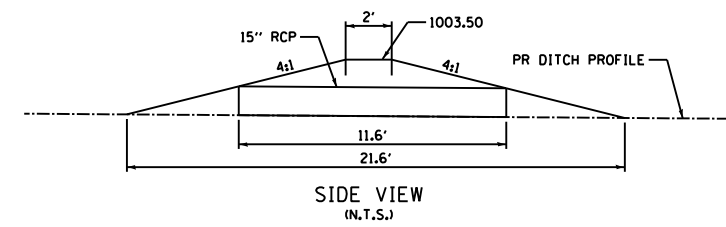
- \* SB LANE VARIES 2.0% TO 5.6% BETWEEN STA. 103+60 AND STA. 105+09
- \*\* MEDIAN SLOPE VARIES 1.0% TO 5.6% AND WIDTH VARIES 11' TO 4' BETWEEN STA. 103+60 AND STA. 105+09
- \*\*\* NB LANE VARIES 0.0% TO 3.75% LT BETWEEN STA. 103+60 AND STA. 105+09
- SHOULDER SLOPES VARY WITH ADJACENT LANES



**PROPOSED TYPICAL SECTION:  
IL ROUTE 47 WIDENING SECTION**  
STA. 105+09 TO STA. 109+40  
\* PAINTED MEDIAN; WIDTH VARIES FROM 4.0' TO 0' BETWEEN STA. 105+84 AND STA. 109+40  
\*\* NB LANE & SHOULDER VARIES 3.75% TO 5.6% BETWEEN STA. 105+09 AND STA. 105+83

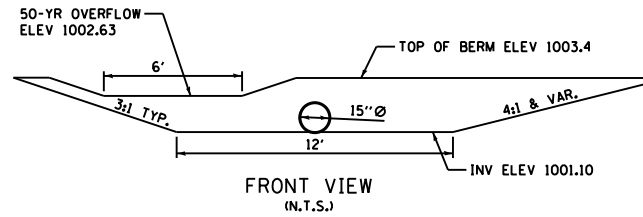
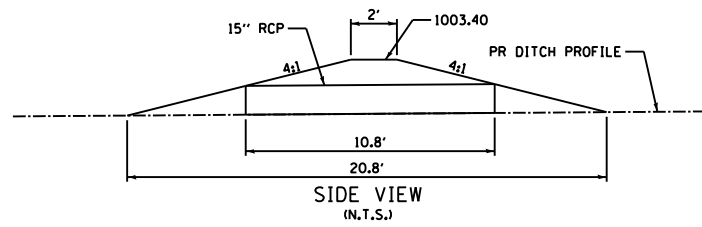


**WEST QUADRANT LEFT (SUBAREA 3-4)  
CONTROL STRUCTURE**



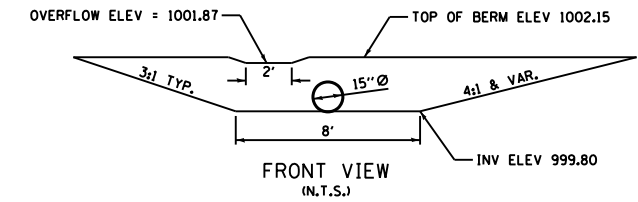
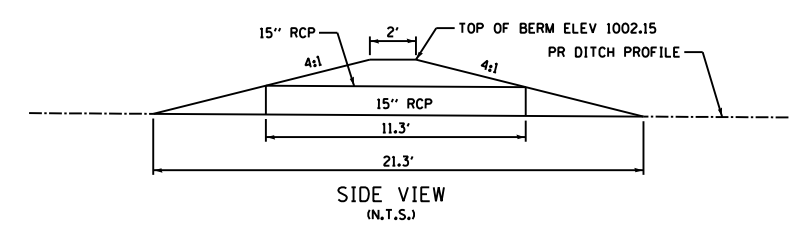
PROPOSED DITCH CHECK  
RESTRICTOR #1  
15" RCCP  
LENGTH = 22'  
U/S INVERT = 1001.1  
D/S INVERT = 1001.0  
OVERFLOW ELEV = 1002.73

**WEST QUADRANT RIGHT (SUBAREA 3-3)  
CONTROL STRUCTURE**



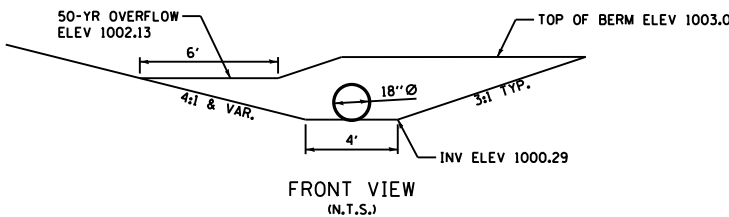
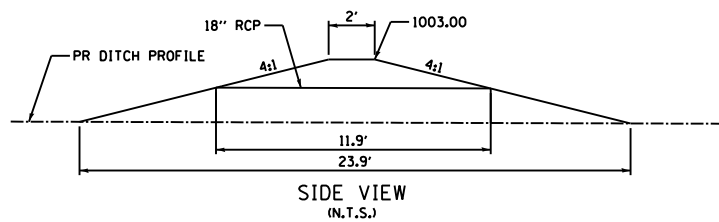
PROPOSED DITCH CHECK  
RESTRICTOR #2  
15" RCCP  
LENGTH = 21'  
U/S INVERT = 1001.1  
D/S INVERT = 1001.0  
OVERFLOW ELEV = 1002.63

**NORTH QUADRANT (SUBAREA 1-1)  
CONTROL STRUCTURE**



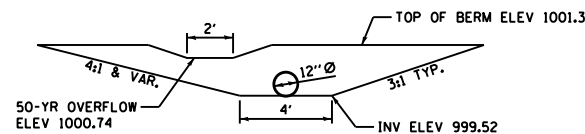
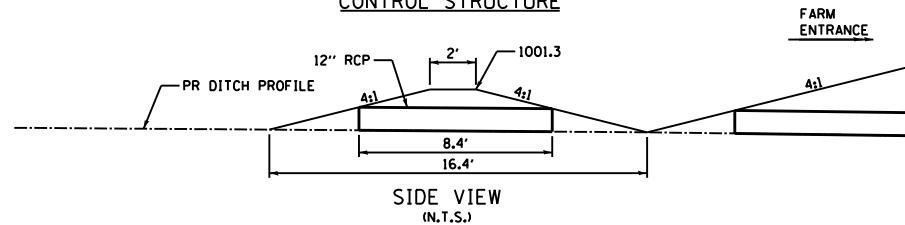
PROPOSED DITCH CHECK  
RESTRICTOR #3  
15" RCCP  
LENGTH = 21'  
U/S INVERT = 999.8  
D/S INVERT = 999.7  
OVERFLOW ELEV = 1001.9

**SOUTH QUADRANT LEFT (SUBAREA 3-2)  
CONTROL STRUCTURE**



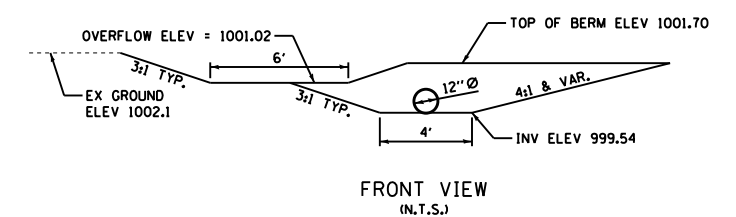
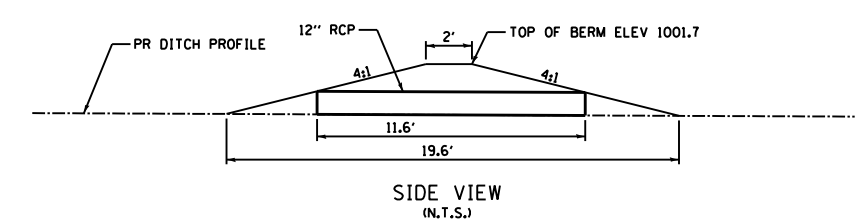
PROPOSED DITCH CHECK  
RESTRICTOR #4  
18" RCCP  
LENGTH = 24'  
U/S INVERT = 1000.29  
D/S INVERT = 1000.23  
OVERFLOW ELEV = 1002.13

**SOUTH QUADRANT RIGHT (SUBAREA 3-1)  
CONTROL STRUCTURE**



PROPOSED DITCH CHECK  
RESTRICTOR #5  
12" RCCP  
LENGTH = 20'  
U/S INVERT = 999.54  
D/S INVERT = 999.45  
OVERFLOW ELEV = 1001.22

**EAST QUADRANT (SUBAREA 2-1)  
CONTROL STRUCTURE**



PROPOSED DITCH CHECK  
RESTRICTOR #6  
12" RCCP  
LENGTH = 20'  
U/S INVERT = 999.54  
D/S INVERT = 999.45  
OVERFLOW ELEV = 1001.22

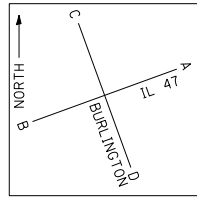
EAST

# ROUNDBOUT CAPACITY ANALYSIS - INITIAL CONSTRUCTION DESIGN

PROGRAM USED: SIDRA VERSION 4.0

INSCRIBED CIRCLE DIAMETER: 150'  
 CENTER ISLAND DIAMETER: 114'  
 PEAK HOUR FACTOR: 0.95 (AM); 0.95 (PM)  
 AREA TYPE: NON-CBD

INTERSECTION LOS, 2025 (AM): C (27.0 SEC DELAY)  
 (PM): C (28.9 SEC DELAY)



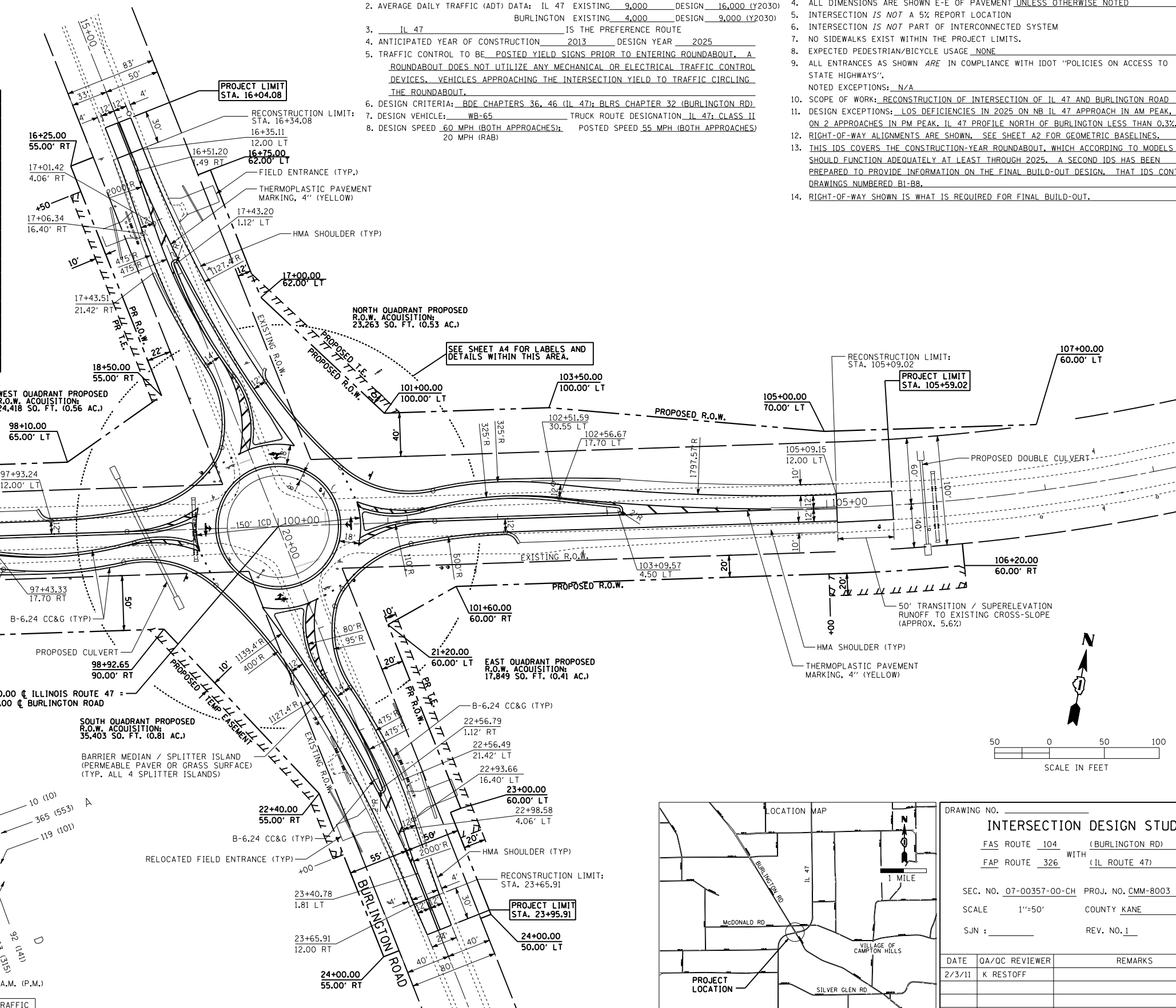
## ELEMENTS CONTROLLING DESIGN

- HIGHWAY DESIGN CLASSIFICATION IL 47: OTHER PRINCIPAL ARTERIAL  
 SRA: YES X NO \_\_\_\_\_  
 HIGHWAY DESIGN CLASSIFICATION BURLINGTON ROAD: MINOR ARTERIAL  
 SRA: YES \_\_\_\_\_ NO X \_\_\_\_\_
- AVERAGE DAILY TRAFFIC (ADT) DATA: IL 47 EXISTING 9,000 DESIGN 16,000 (Y2030)  
 BURLINGTON EXISTING 4,000 DESIGN 9,000 (Y2030)
- IL 47 \_\_\_\_\_ IS THE PREFERENCE ROUTE
- ANTICIPATED YEAR OF CONSTRUCTION 2013 DESIGN YEAR 2025
- TRAFFIC CONTROL TO BE POSTED YIELD SIGNS PRIOR TO ENTERING ROUNDABOUT. A ROUNDABOUT DOES NOT UTILIZE ANY MECHANICAL OR ELECTRICAL TRAFFIC CONTROL DEVICES. VEHICLES APPROACHING THE INTERSECTION YIELD TO TRAFFIC CIRCLING THE ROUNDABOUT.
- DESIGN CRITERIA: BDE CHAPTERS 36, 46 (IL 47); BLRS CHAPTER 32 (BURLINGTON RD)
- DESIGN VEHICLE: WB-65 TRUCK ROUTE DESIGNATION IL 47: CLASS II
- DESIGN SPEED 60 MPH (BOTH APPROACHES); POSTED SPEED 55 MPH (BOTH APPROACHES)  
 20 MPH (RAB)

## GENERAL NOTES

- PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE GREATER THAN 1.0% ON SOME APPROACHES AND NEW PROFILES ARE PROPOSED.
- TYPE B-6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT
- TYPE B-6.24 CURB AND GUTTER TO BE USED ON THE SPLITTER ISLANDS.
- ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED
- INTERSECTION IS NOT A 5% REPORT LOCATION
- INTERSECTION IS NOT PART OF INTERCONNECTED SYSTEM
- NO SIDEWALKS EXIST WITHIN THE PROJECT LIMITS.
- EXPECTED PEDESTRIAN/BICYCLE USAGE NONE
- ALL ENTRANCES AS SHOWN ARE IN COMPLIANCE WITH IDOT "POLICIES ON ACCESS TO STATE HIGHWAYS".  
 NOTED EXCEPTIONS: N/A
- SCOPE OF WORK: RECONSTRUCTION OF INTERSECTION OF IL 47 AND BURLINGTON ROAD
- DESIGN EXCEPTIONS: LOS DEFICIENCIES IN 2025 ON NB IL 47 APPROACH IN AM PEAK, AND ON 2 APPROACHES IN PM PEAK, IL 47 PROFILE NORTH OF BURLINGTON LESS THAN 0.3%.
- RIGHT-OF-WAY ALIGNMENTS ARE SHOWN. SEE SHEET A2 FOR GEOMETRIC BASELINES.
- THIS IDS COVERS THE CONSTRUCTION-YEAR ROUNDABOUT, WHICH ACCORDING TO MODELS SHOULD FUNCTION ADEQUATELY AT LEAST THROUGH 2025. A SECOND IDS HAS BEEN PREPARED TO PROVIDE INFORMATION ON THE FINAL BUILD-OUT DESIGN. THAT IDS CONTAINS DRAWINGS NUMBERED B1-B8.
- RIGHT-OF-WAY SHOWN IS WHAT IS REQUIRED FOR FINAL BUILD-OUT.

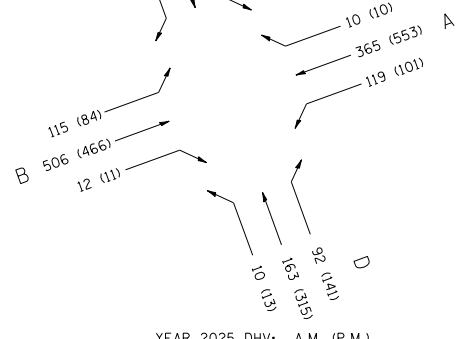
APPROACH	SB IL 47		NB IL 47		SEB BURLINGTON		NWB BURLINGTON			
	A	B	C	D	C	D	C	D		
DHV	AM	119 365 10	115 506 12	16 380 99	10 163 92	AM	101 553 10	84 466 11	18 180 52	13 315 141
	PM	664	561	250	469	PM	664	561	250	469
PEDESTRIANS	--		--		--		--			
ARRIVAL TYPE	C		C		C		C			
BASE SATURATION FLOW	1,900		1,900		1,900		1,900			
LANE GROUP	LTR		LTR		LTR		LTR			
LANE WIDTHS	18'		18'		18'		18'			
95th PERCENTILE QUEUE	AM	147'	881'	292'	97'	AM	912'	264'	112'	447'
	PM	6.6	57.8	16.8	10.4	PM	51.2	10.2	13.3	32.3
LANE GROUP DELAY (seconds)	AM	0.62	1.05	0.80	0.49	AM	1.04	0.78	0.53	0.91
	PM	A	E	B	B	PM	E	B	B	D
V/C RATIO	AM	A	E	B	B	PM	E	B	B	D
	PM	E	B	B	D	PM	E	B	D	D
LEVEL OF SERVICE	AM	A	E	B	B	PM	E	B	B	D



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 USER NAME = #USER#

### TRAFFIC DATA

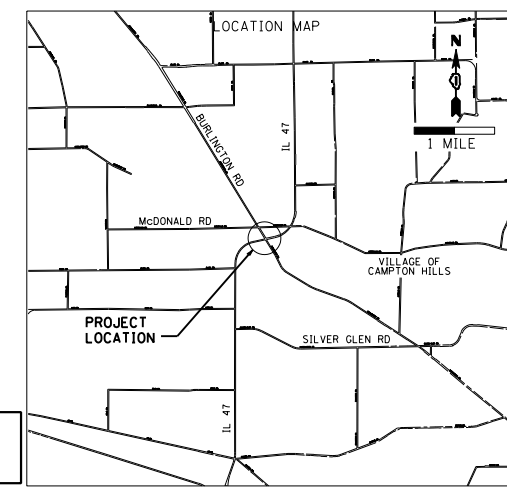
MOVEMENT	YEAR 2010 PEAK HOUR TRAFFIC		PERCENT TRUCK TRAFFIC IN PEAK HOUR (P.M.)		ESTIMATED PERCENT INCREASE BY 2025	YEAR 2025 DESIGN PEAK HOUR TRAFFIC	
	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.
AB	241	366	5%	8%	73% (73%)	365	553
AD	78	66	1%	1%	74% (74%)	119	101
AC	1	3	0%	0%	100% (100%)	10*	10*
BA	318	293	5%	10%	85% (85%)	506	466
BC	72	52	1%	8%	86% (86%)	115	84
BD	7	6	0%	4%	86% (100%)	12	11
CD	178	84	1%	6%	175% (175%)	380	180
CA	7	8	0%	0%	186% (175%)	16	18
CB	46	24	2%	0%	176% (175%)	99	52
DC	96	186	1%	2%	101% (101%)	163	315
DB	2	7	0%	0%	150% (114%)	10*	13
DA	54	83	2%	6%	102% (101%)	92	141
TOTAL A	699	819	-	-	82% (82%)	1108	1289
TOTAL B	686	748	-	-	88% (83%)	1107	1179
TOTAL C	400	357	-	-	141% (123%)	783	659
TOTAL D	415	432	-	-	128% (112%)	776	761



APPROACH	8TH MAX. HOUR TRAFFIC
A (NORTH)	605
B (SOUTH)	483
C (WEST)	193
D (EAST)	480

\* VOLUMES WERE ROUNDED UP TO 10 FOR DESIGN PURPOSES.

PREPARED BY: BURNS & MCDONNELL  
 1431 OPUS PLACE / DOWNERS GROVE IL 630-724-3200  
 PROJ. MGR. M. PAPIRNIK PROJ. ENG. J. BROCHTRUP

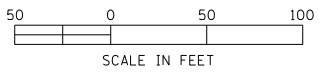


DRAWING NO. \_\_\_\_\_  
**INTERSECTION DESIGN STUDY**  
 FAS ROUTE 104 (BURLINGTON RD.)  
 WITH FAP ROUTE 326 (IL ROUTE 47)  
 SEC. NO. 07-00357-00-CH PROJ. NO. CMM-8003 (829)  
 SCALE 1"=50' COUNTY KANE  
 SJN: \_\_\_\_\_ REV. NO. 1

DATE	QA/QC REVIEWER	REMARKS
2/3/11	K RESTOFF	

CADD FILE NAME: DGN-SPEC  
 REF FILE NAME: \_\_\_\_\_  
 I.D.S. SHEET A1 OF 7

NOTE: ALL CURVES HAVE NORMAL CROWN SUPERELEVATION UNLESS OTHERWISE NOTED.



<b>PROP. CURVE BURLSEB-1</b> PI STA. = 116+37.81 Δ = 3° 39' 01" (RT) D = 2° 51' 53" R = 2,000.00' T = 63.73' L = 127.42' E = 1.02' P.C. STA. = 115+74.08 P.R.C. STA. = 117+01.50	<b>PROP. CURVE BURLSEB-2</b> PI STA. = 117+70.76 Δ = 16° 35' 31" (LT) D = 12° 03' 44" R = 475.00' T = 69.26' L = 137.55' E = 5.02' P.R.C. STA. = 117+01.50 P.R.C. STA. = 118+39.05	<b>PROP. CURVE BURLSEB-3</b> PI STA. = 119+12.75 Δ = 65° 18' 13" (RT) D = 49° 49' 21" R = 115.00' T = 73.69' L = 131.07' E = 21.59' P.R.C. STA. = 118+39.05 P.R.C. STA. = 119+70.13
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<b>PROP. CURVE BURLSEB-4</b> PI STA. = 120+10.13 Δ = 70° 07' 09" (LT) D = 100° 31' 08" R = 57.00' T = 40.00' L = 69.76' E = 12.63' P.R.C. STA. = 119+70.13 P.R.C. STA. = 120+39.88	<b>PROP. CURVE BURLSEB-5</b> PI STA. = 121+62.98 Δ = 12° 19' 56" (RT) D = 5° 01' 42" R = 1,139.43' T = 123.10' L = 245.25' E = 6.63' P.R.C. STA. = 120+39.88 P.R.C. STA. = 122+85.13 e = 5.6% T.R. = N/A S.E. RUN = 100'
---	--

EXIST. CURVE 47-2  
PI STA. = 119+94.32  
Δ = 78° 45' 13" (LT)  
D = 3° 09' 59"  
R = 1,809.57'  
T = 1,485.17'  
L = 2,487.27'  
E = 531.43'  
e = 5.6%  
T.R. = 40'  
S.E. RUN = 149'  
P.C. STA. = 105+09.15  
P.T. STA. = 129+96.42

<b>PROP. CURVE BURLNWB-1</b> PI STA. = 218+65.93 Δ = 12° 19' 56" (LT) D = 5° 01' 42" R = 1,139.43' T = 123.10' L = 245.25' E = 6.63' P.C. STA. = 217+42.83 P.R.C. STA. = 219+88.08	<b>PROP. CURVE BURLNWB-2</b> PI STA. = 220+28.08 Δ = 70° 07' 09" (RT) D = 100° 31' 08" R = 57.00' T = 40.00' L = 69.76' E = 12.63' P.R.C. STA. = 219+88.08 P.R.C. STA. = 220+57.84	<b>PROP. CURVE BURLNWB-3</b> PI STA. = 221+31.53 Δ = 65° 18' 13" (LT) D = 49° 49' 21" R = 115.00' T = 73.69' L = 131.07' E = 21.59' P.R.C. STA. = 220+57.84 P.R.C. STA. = 221+88.91
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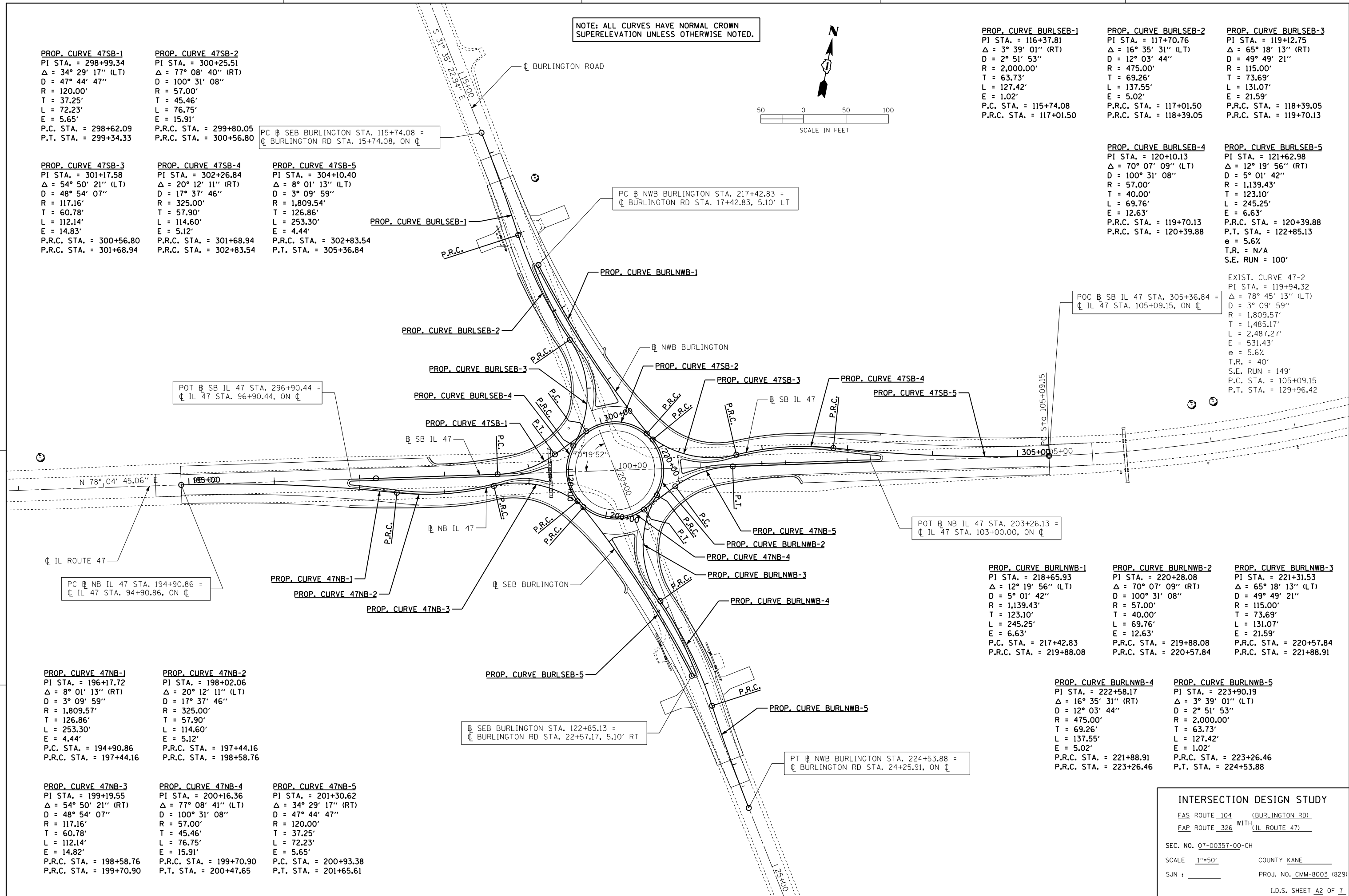
<b>PROP. CURVE BURLNWB-4</b> PI STA. = 222+58.17 Δ = 16° 35' 31" (RT) D = 12° 03' 44" R = 475.00' T = 69.26' L = 137.55' E = 5.02' P.R.C. STA. = 221+88.91 P.R.C. STA. = 223+26.46	<b>PROP. CURVE BURLNWB-5</b> PI STA. = 223+90.19 Δ = 3° 39' 01" (LT) D = 2° 51' 53" R = 2,000.00' T = 63.73' L = 127.42' E = 1.02' P.R.C. STA. = 223+26.46 P.T. STA. = 224+53.88
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<b>PROP. CURVE 47SB-1</b> PI STA. = 298+99.34 Δ = 34° 29' 17" (LT) D = 47° 44' 47" R = 120.00' T = 37.25' L = 72.23' E = 5.65' P.C. STA. = 298+62.09 P.T. STA. = 299+34.33	<b>PROP. CURVE 47SB-2</b> PI STA. = 300+25.51 Δ = 77° 08' 40" (RT) D = 100° 31' 08" R = 57.00' T = 45.46' L = 76.75' E = 15.91' P.R.C. STA. = 299+80.05 P.R.C. STA. = 300+56.80
---	--

<b>PROP. CURVE 47SB-3</b> PI STA. = 301+17.58 Δ = 54° 50' 21" (LT) D = 48° 54' 07" R = 117.16' T = 60.78' L = 112.14' E = 14.83' P.R.C. STA. = 300+56.80 P.R.C. STA. = 301+68.94	<b>PROP. CURVE 47SB-4</b> PI STA. = 302+26.84 Δ = 20° 12' 11" (RT) D = 17° 37' 46" R = 325.00' T = 57.90' L = 114.60' E = 5.12' P.R.C. STA. = 301+68.94 P.R.C. STA. = 302+83.54	<b>PROP. CURVE 47SB-5</b> PI STA. = 304+10.40 Δ = 8° 01' 13" (LT) D = 3° 09' 59" R = 1,809.54' T = 126.86' L = 253.30' E = 4.44' P.R.C. STA. = 302+83.54 P.T. STA. = 305+36.84
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<b>PROP. CURVE 47NB-1</b> PI STA. = 196+17.72 Δ = 8° 01' 13" (RT) D = 3° 09' 59" R = 1,809.57' T = 126.86' L = 253.30' E = 4.44' P.C. STA. = 194+90.86 P.R.C. STA. = 197+44.16	<b>PROP. CURVE 47NB-2</b> PI STA. = 198+02.06 Δ = 20° 12' 11" (LT) D = 17° 37' 46" R = 325.00' T = 57.90' L = 114.60' E = 5.12' P.R.C. STA. = 197+44.16 P.R.C. STA. = 198+58.76
---	--

<b>PROP. CURVE 47NB-3</b> PI STA. = 199+19.55 Δ = 54° 50' 21" (RT) D = 48° 54' 07" R = 117.16' T = 60.78' L = 112.14' E = 14.82' P.R.C. STA. = 198+58.76 P.R.C. STA. = 199+70.90	<b>PROP. CURVE 47NB-4</b> PI STA. = 200+16.36 Δ = 77° 08' 41" (LT) D = 100° 31' 08" R = 57.00' T = 45.46' L = 76.75' E = 15.91' P.R.C. STA. = 199+70.90 P.T. STA. = 200+47.65	<b>PROP. CURVE 47NB-5</b> PI STA. = 201+30.62 Δ = 34° 29' 17" (RT) D = 47° 44' 47" R = 120.00' T = 37.25' L = 72.23' E = 5.65' P.C. STA. = 200+93.38 P.T. STA. = 201+65.61
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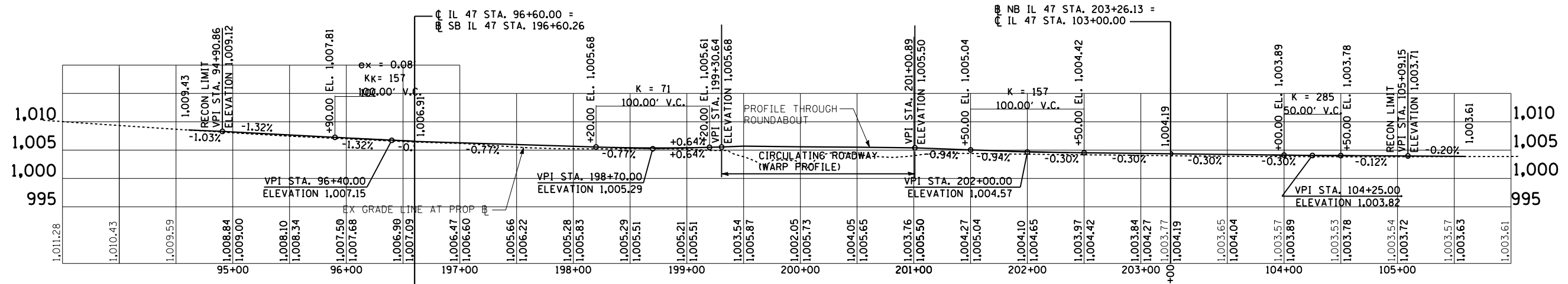
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**INTERSECTION DESIGN STUDY**

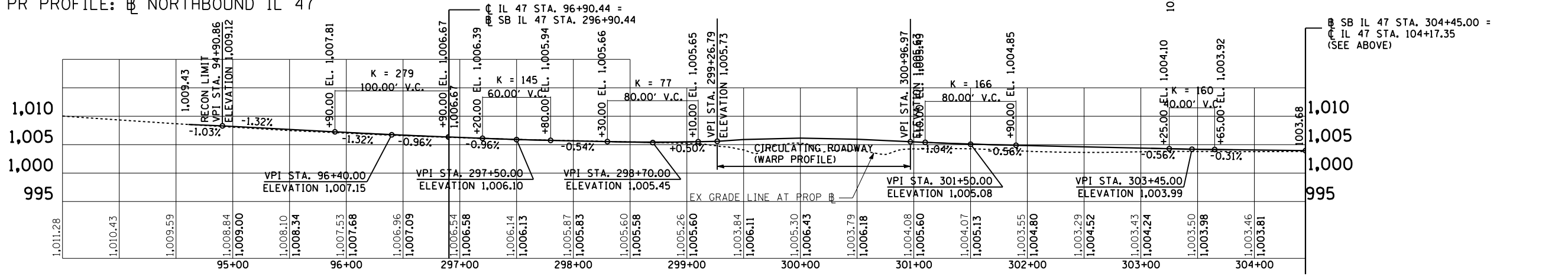
FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

SEC. NO. 07-00357-00-CH  
 SCALE 1"=50' COUNTY KANE  
 SJN : \_\_\_\_\_ PROJ. NO. CMM-8003 (829)  
 I.D.S. SHEET A2 OF 7

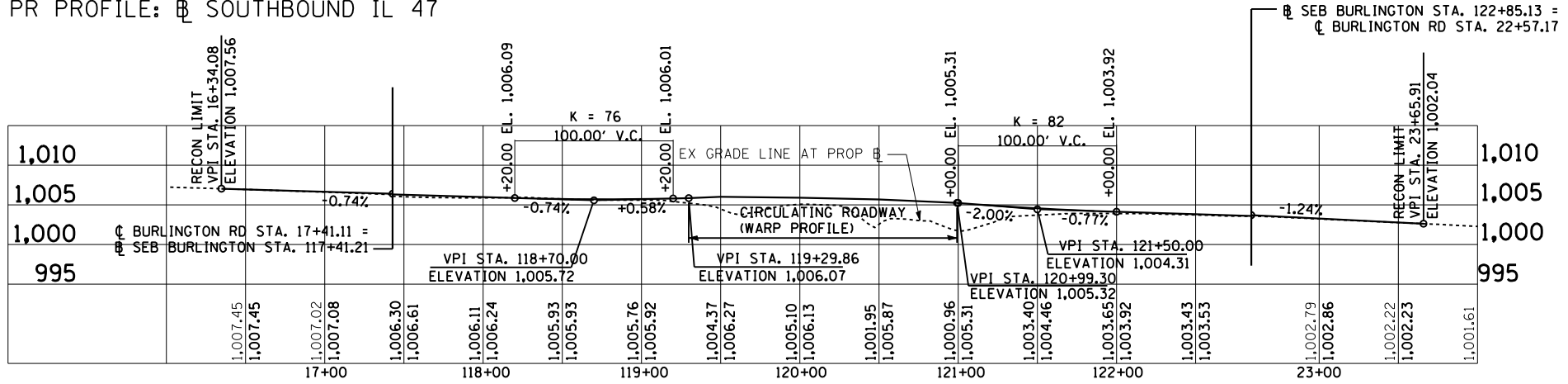
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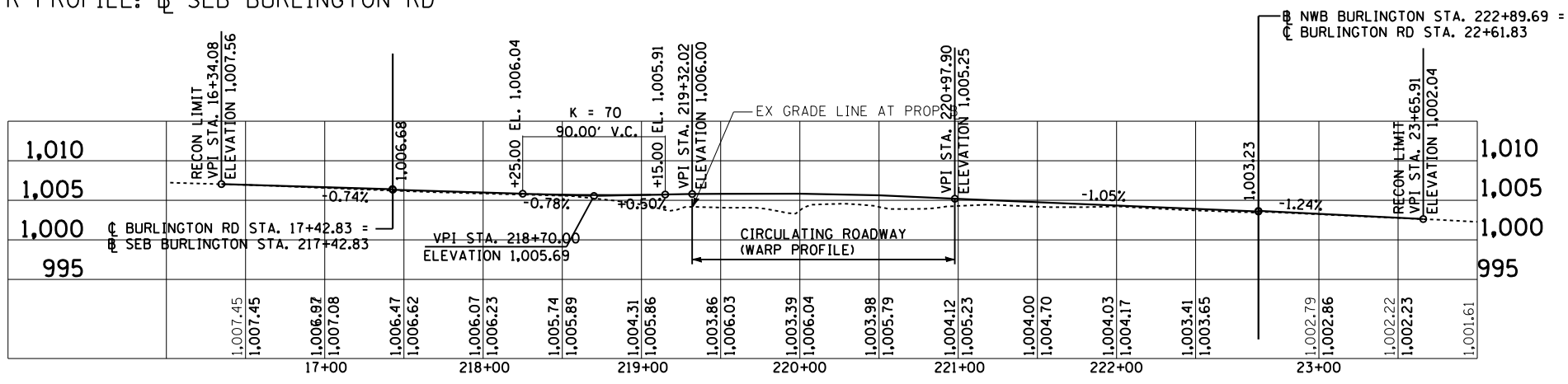
PR PROFILE: NORTHBOUND IL 47



PR PROFILE: SOUTHBOUND IL 47



PR PROFILE: SEB BURLINGTON RD



PR PROFILE: NWB BURLINGTON RD

**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

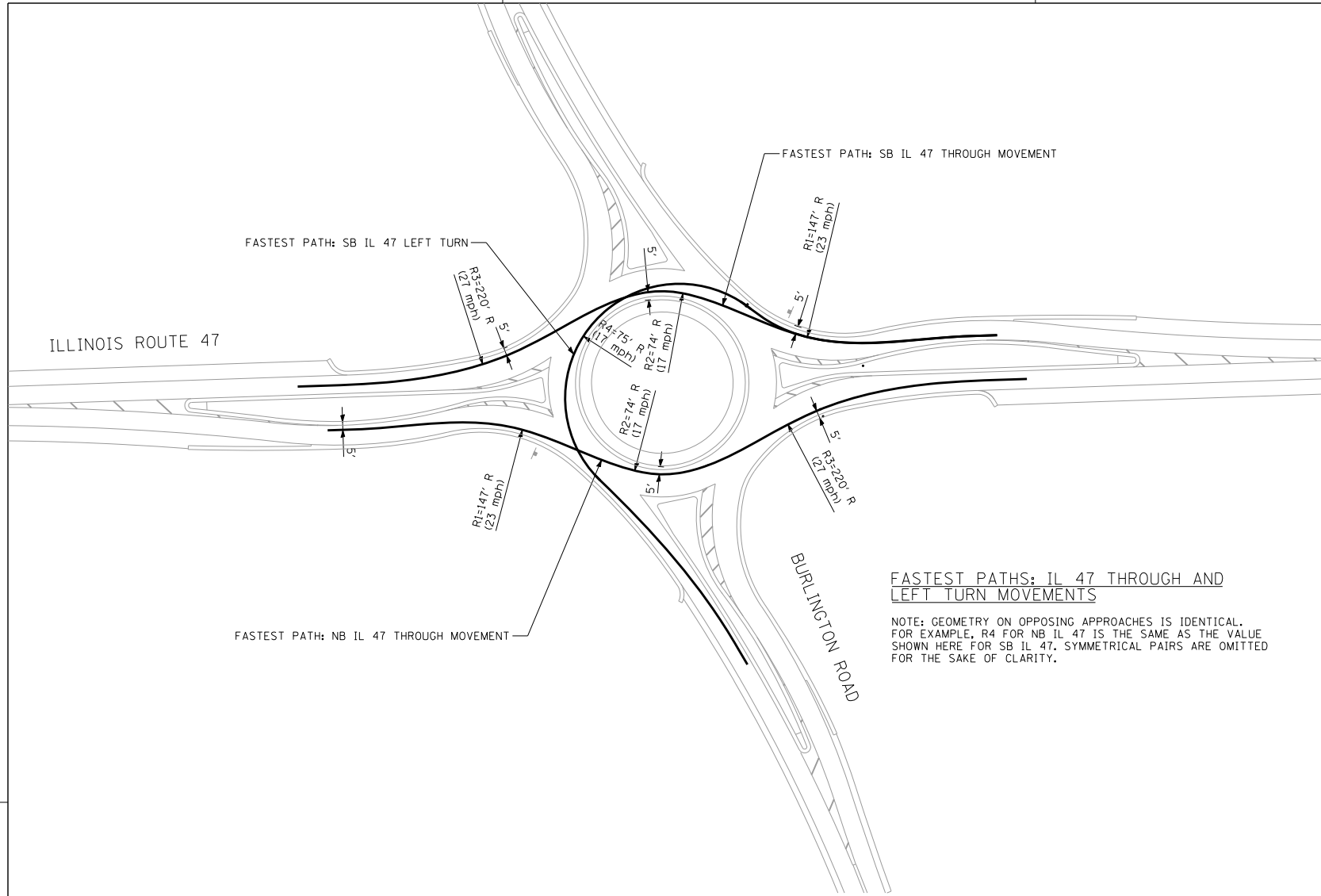
SEC. NO. 07-00357-00-CH  
 SCALE H 1"=50' COUNTY KANE  
 V 1"=10'  
 SJN : \_\_\_\_\_ PROJ. NO. \_\_\_\_\_

I.D.S. SHEET A3 OF 7





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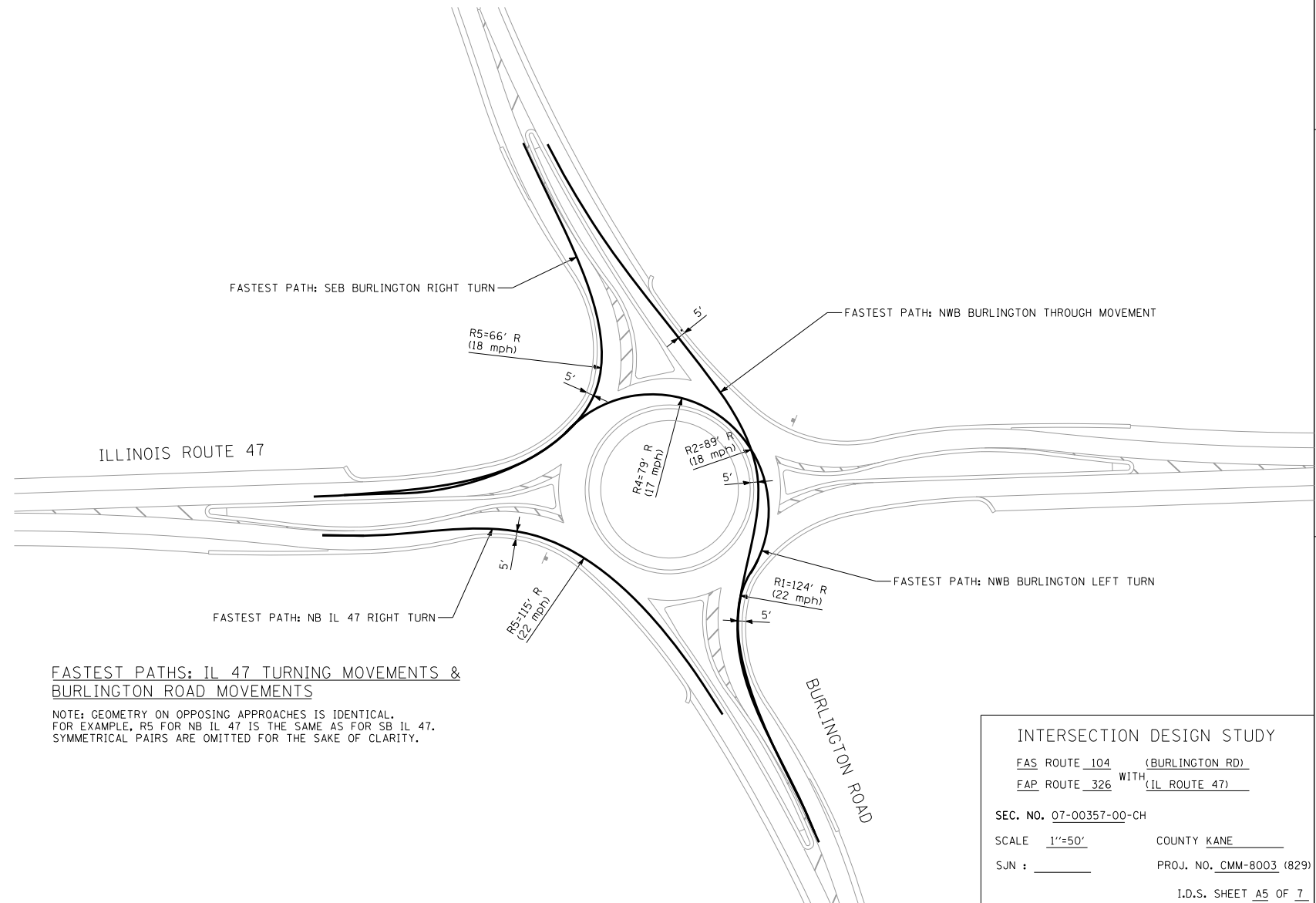
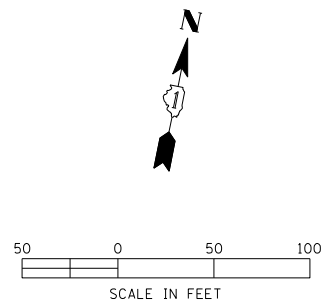


**FASTEST PATHS: IL 47 THROUGH AND LEFT TURN MOVEMENTS**

NOTE: GEOMETRY ON OPPOSING APPROACHES IS IDENTICAL. FOR EXAMPLE, R4 FOR NB IL 47 IS THE SAME AS THE VALUE SHOWN HERE FOR SB IL 47. SYMMETRICAL PAIRS ARE OMITTED FOR THE SAKE OF CLARITY.

**FASTEST PATH RADII**

Approach	NB IL 47	NWB Burlington	SB IL 47	SEB Burlington
R1	147'	124'	147'	124'
R2	74'	89'	74'	89'
R3	220'	N/A	220'	N/A
R4	75'	79'	75'	79'
R5	115'	66'	115'	66'



**FASTEST PATHS: IL 47 TURNING MOVEMENTS & BURLINGTON ROAD MOVEMENTS**

NOTE: GEOMETRY ON OPPOSING APPROACHES IS IDENTICAL. FOR EXAMPLE, R5 FOR NB IL 47 IS THE SAME AS FOR SB IL 47. SYMMETRICAL PAIRS ARE OMITTED FOR THE SAKE OF CLARITY.

**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

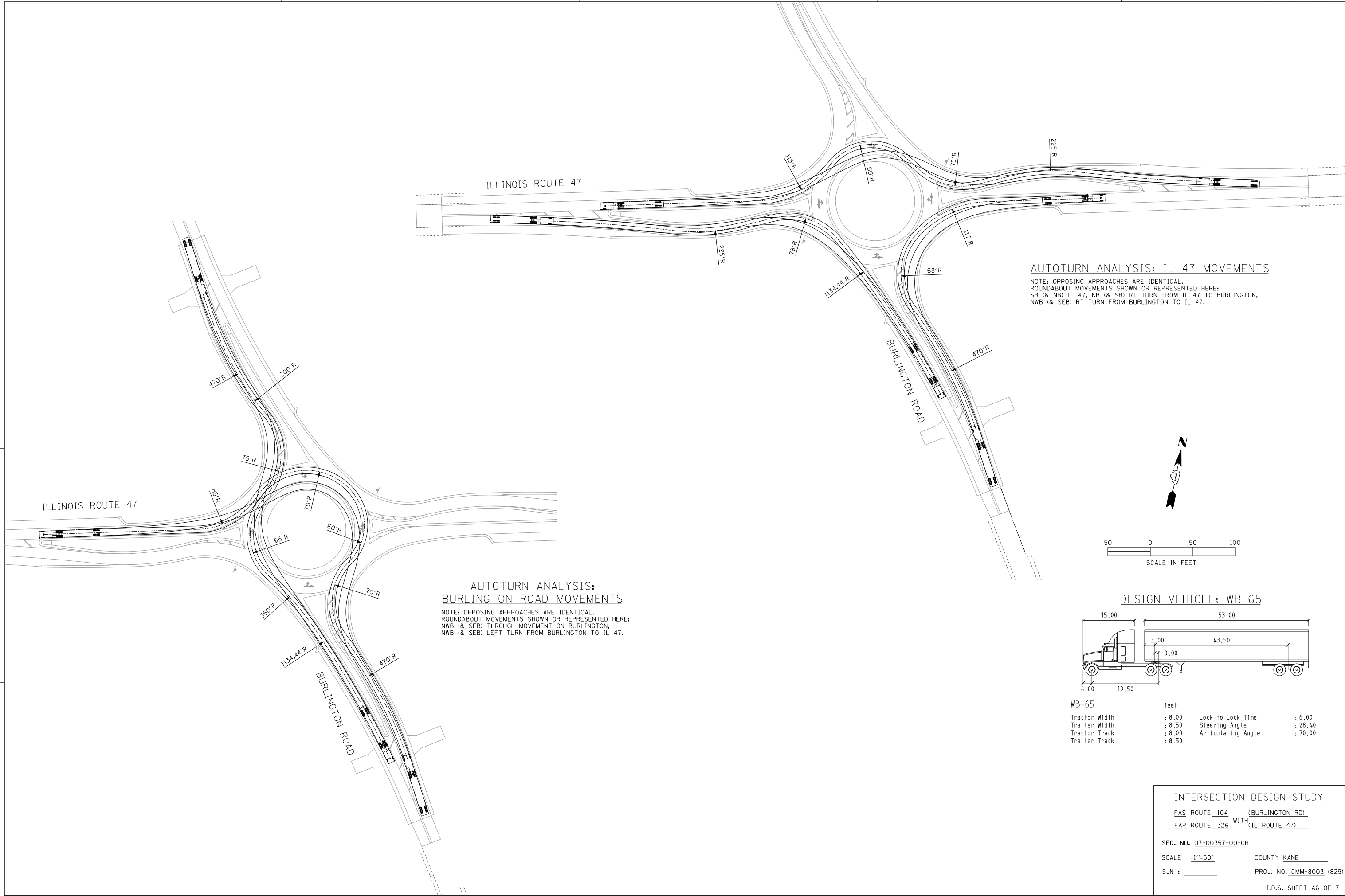
SEC. NO. 07-00357-00-CH

SCALE 1"=50' COUNTY KANE

SJN : PROJ. NO. CMM-8003 (829)

I.D.S. SHEET A5 OF 7

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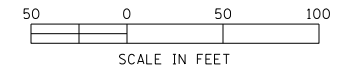


**AUTOTURN ANALYSIS: IL 47 MOVEMENTS**

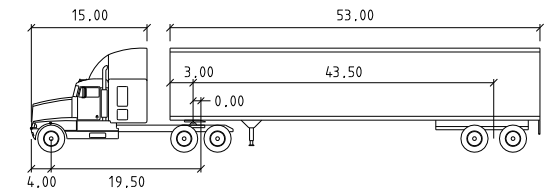
NOTE: OPPOSING APPROACHES ARE IDENTICAL.  
 ROUNDABOUT MOVEMENTS SHOWN OR REPRESENTED HERE:  
 SB (& NB) IL 47, NB (& SB) RT TURN FROM IL 47 TO BURLINGTON,  
 NWB (& SEB) RT TURN FROM BURLINGTON TO IL 47.

**AUTOTURN ANALYSIS:  
 BURLINGTON ROAD MOVEMENTS**

NOTE: OPPOSING APPROACHES ARE IDENTICAL.  
 ROUNDABOUT MOVEMENTS SHOWN OR REPRESENTED HERE:  
 NWB (& SEB) THROUGH MOVEMENT ON BURLINGTON,  
 NWB (& SEB) LEFT TURN FROM BURLINGTON TO IL 47.



**DESIGN VEHICLE: WB-65**



WB-65		feet	
Tractor Width	: 8.00	Lock to Lock Time	: 6.00
Trailer Width	: 8.50	Steering Angle	: 28.40
Tractor Track	: 8.00	Articulating Angle	: 70.00
Trailer Track	: 8.50		

**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

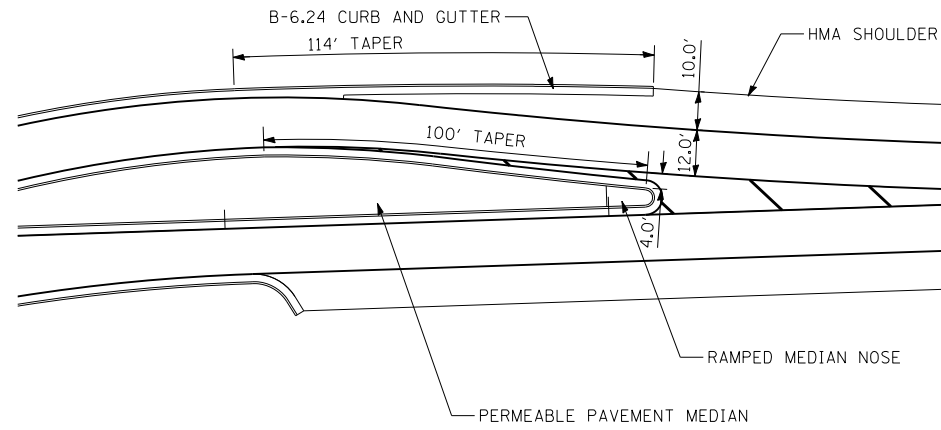
SEC. NO. 07-00357-00-CH

SCALE 1"=50' COUNTY KANE

SUN : PROJ. NO. CMM-8003 (829)

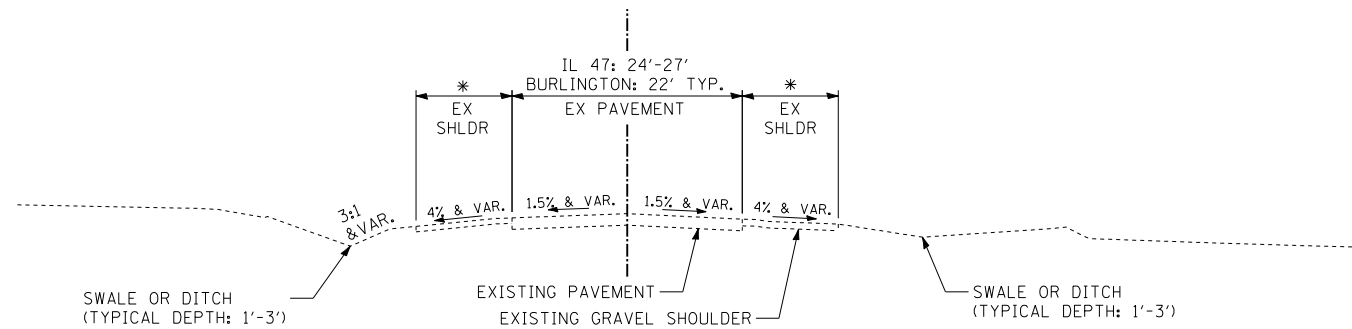
I.D.S. SHEET A6 OF 7

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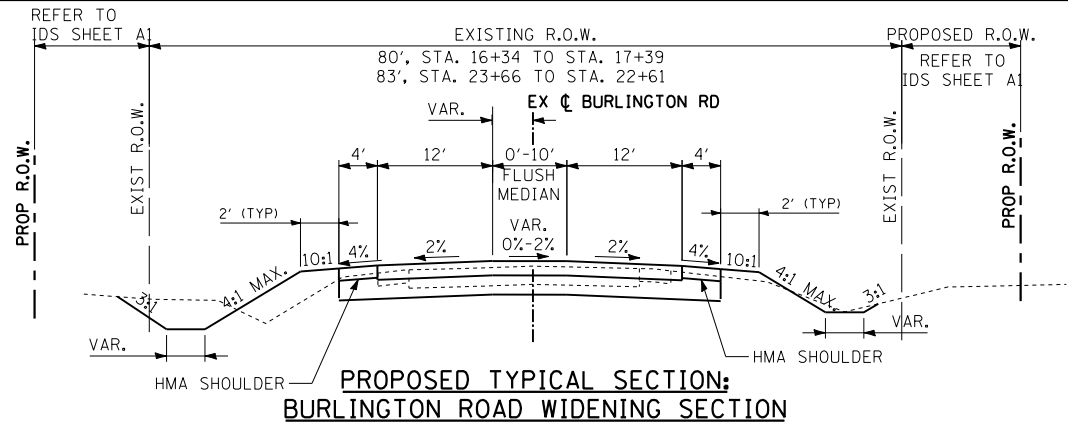
**SPLITTER ISLAND NOSE DETAIL**

**NOTE:**  
 DITCH SLOPES AND WIDTHS VARY SIGNIFICANTLY WITH THE NEED TO PROVIDE DETENTION. REFER TO THE LOCATION DRAINAGE STUDY FOR DETAILS.



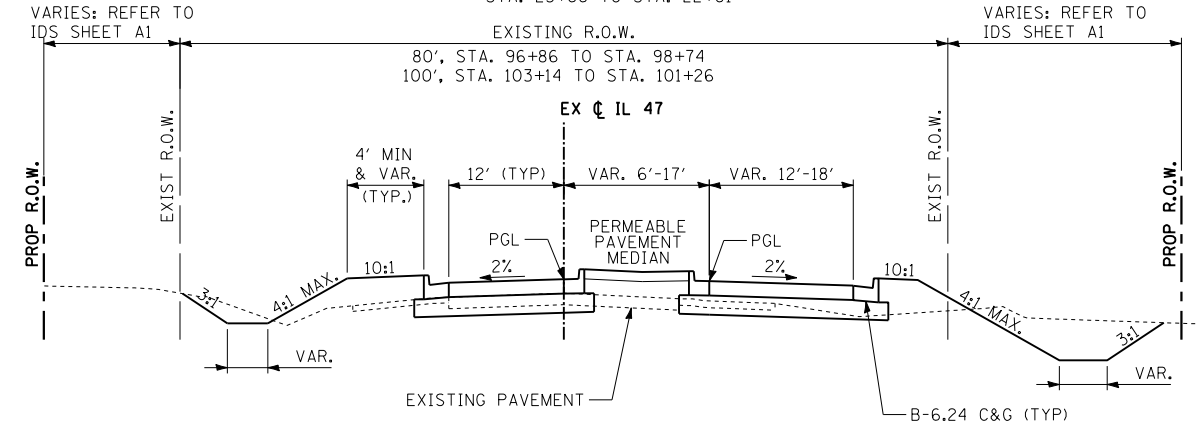
\* IL 47: GRAVEL SHOULDER, WIDTH 10' & VAR.  
 BURLINGTON: TURF/GRAVEL SHOULDER, WIDTH 4' & VAR.

**EXISTING TYPICAL SECTION:  
 IL 47 AND BURLINGTON ROAD**



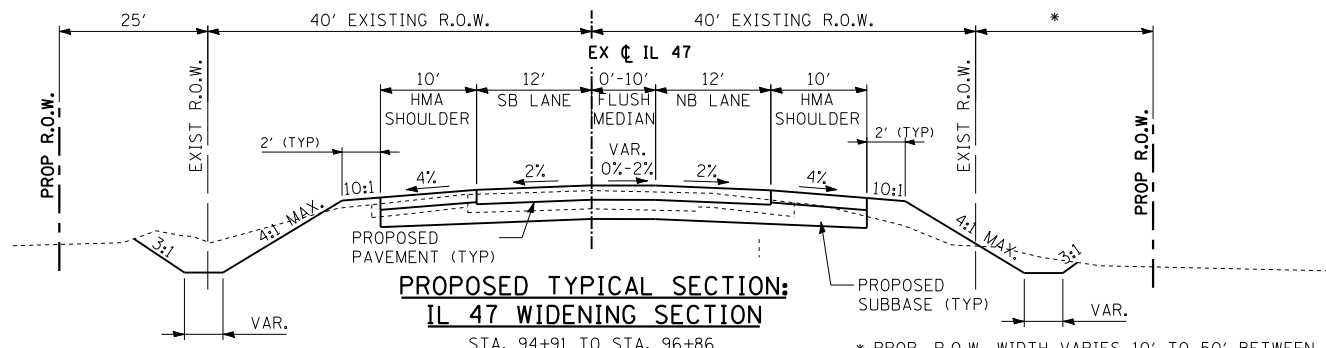
**PROPOSED TYPICAL SECTION:  
 BURLINGTON ROAD WIDENING SECTION**

LOOKING TOWARD THE INTERSECTION:  
 STA. 16+34 TO STA. 17+39  
 STA. 23+66 TO STA. 22+61



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 APPROACHES**

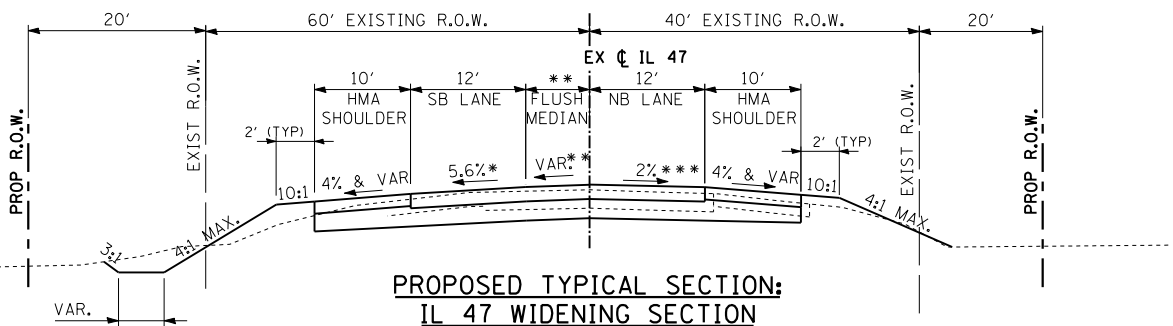
LOOKING TOWARD THE INTERSECTION:  
 STA. 96+86 TO STA. 98+74  
 STA. 103+14 TO STA. 101+26



**PROPOSED TYPICAL SECTION:  
 IL 47 WIDENING SECTION**

STA. 94+91 TO STA. 96+86

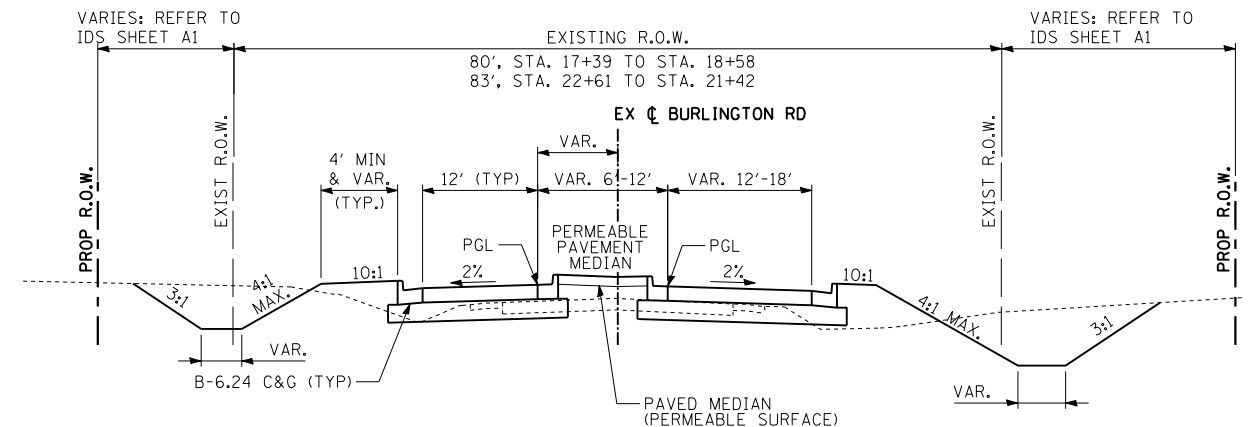
\* PROP. R.O.W. WIDTH VARIES 10' TO 50' BETWEEN STA. 93+50 AND STA. 97+00



**PROPOSED TYPICAL SECTION:  
 IL 47 WIDENING SECTION**

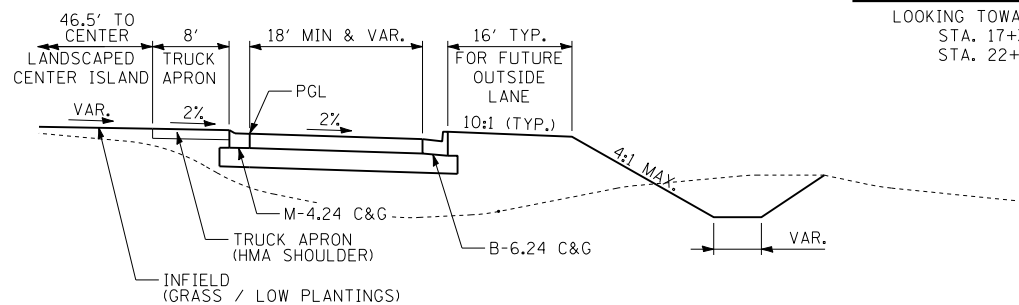
STA. 103+14 TO STA. 105+09

\* SB LANE VARIES 2.0% TO 5.6% BETWEEN STA. 103+14 AND STA. 104+14  
 \*\* MEDIAN SLOPE VARIES 1.0% TO 5.6% AND WIDTH VARIES 10' TO 0' BETWEEN STA. 103+14 AND STA. 105+09  
 \*\*\* NB LANE VARIES 2.0% RT TO 3.75% LT BETWEEN STA. 103+42 AND STA. 105+09  
 SHOULDER SLOPES VARY WITH ADJACENT LANES



**PROPOSED TYPICAL SECTION:  
 BURLINGTON ROAD APPROACHES**

LOOKING TOWARD THE INTERSECTION:  
 STA. 17+39 TO STA. 18+58  
 STA. 22+61 TO STA. 21+42



**PROPOSED TYPICAL SECTION  
 THROUGH CIRCULATING ROADWAY**

LOOKING IN THE DIRECTION OF TRAFFIC

**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

SEC. NO. 07-00357-00-CH

SCALE 1"=50' COUNTY KANE

SJN : PROJ. NO. CMM-8003 (829)

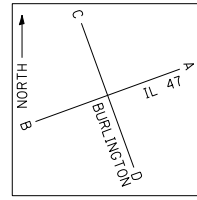
I.D.S. SHEET A7 OF 7

# ROUNDBOUT CAPACITY ANALYSIS - ULTIMATE BUILD-OUT DESIGN

PROGRAM USED: SIDRA VERSION 4.0

INSCRIBED CIRCLE DIAMETER: 174'  
 CENTER ISLAND DIAMETER: 114'  
 PEAK HOUR FACTOR: 0.95 (AM); 0.95 (PM)  
 AREA TYPE: NON-CBD

INTERSECTION LOS (AM): B (13.7 SEC DELAY)  
 (PM): B (10.5 SEC DELAY)



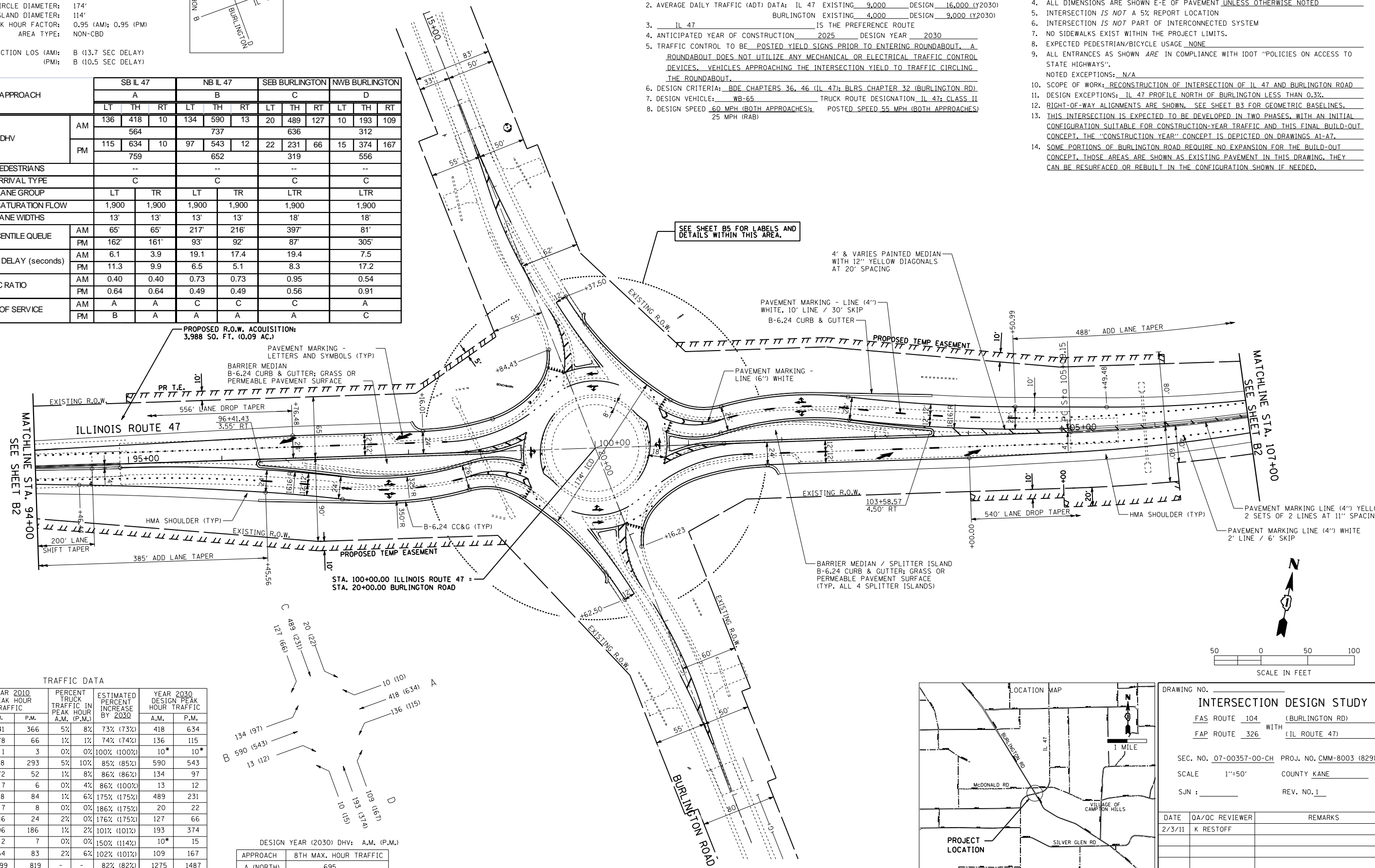
APPROACH	SB IL 47			NB IL 47			SEB BURLINGTON			NWB BURLINGTON				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
DHV	AM			PM			AM			PM				
	136	418	10	134	590	13	20	489	127	10	193	109		
	564			737			636			312				
PM			AM			PM			AM					
115			634			97			543			12		
759			652			319			556					
PEDESTRIANS	--			--			--			--				
ARRIVAL TYPE	C			C			C			C				
LANE GROUP	LT		TR	LT		TR	LTR		LTR					
BASE SATURATION FLOW	1,900		1,900	1,900		1,900	1,900		1,900					
LANE WIDTHS	13'		13'	13'		13'	18'		18'					
95th PERCENTILE QUEUE	AM		PM	AM		PM	AM		PM					
	65'		65'	217'	216'	397'	81'							
LANE GROUP DELAY (seconds)	AM		PM	AM		PM	AM		PM					
	6.1		3.9	19.1	17.4	19.4	7.5							
V/C RATIO	AM		PM	AM		PM	AM		PM					
	0.40		0.40	0.73	0.73	0.95	0.54							
LEVEL OF SERVICE	AM		PM	AM		PM	AM		PM					
	A		A	A	A	C	A							

## ELEMENTS CONTROLLING DESIGN

- HIGHWAY DESIGN CLASSIFICATION IL 47: OTHER PRINCIPAL ARTERIAL  
 SRA: YES X NO  
 HIGHWAY DESIGN CLASSIFICATION BURLINGTON ROAD: MINOR ARTERIAL  
 SRA: YES NO X
- AVERAGE DAILY TRAFFIC (ADT) DATA: IL 47 EXISTING 9,000 DESIGN 16,000 (Y2030)  
 BURLINGTON EXISTING 4,000 DESIGN 9,000 (Y2030)
- IL 47 IS THE PREFERENCE ROUTE
- ANTICIPATED YEAR OF CONSTRUCTION 2025 DESIGN YEAR 2030
- TRAFFIC CONTROL TO BE POSTED YIELD SIGNS PRIOR TO ENTERING ROUNDABOUT. A ROUNDABOUT DOES NOT UTILIZE ANY MECHANICAL OR ELECTRICAL TRAFFIC CONTROL DEVICES. VEHICLES APPROACHING THE INTERSECTION YIELD TO TRAFFIC CIRCLING THE ROUNDABOUT.
- DESIGN CRITERIA: BDE CHAPTERS 36, 46 (IL 47); BLRS CHAPTER 32 (BURLINGTON RD)
- DESIGN VEHICLE: WB-65 TRUCK ROUTE DESIGNATION IL 47: CLASS II
- DESIGN SPEED 60 MPH (BOTH APPROACHES); POSTED SPEED 55 MPH (BOTH APPROACHES)  
 25 MPH (RAB)

## GENERAL NOTES

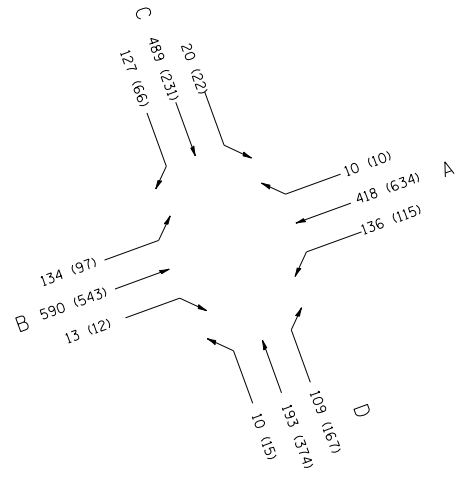
- PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE GREATER THAN 1.0% ON SOME APPROACHES AND NEW PROFILES ARE PROPOSED.
- TYPE B-6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT
- TYPE B-6.24 CURB AND GUTTER TO BE USED ON THE SPLITTER ISLANDS.
- ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED
- INTERSECTION IS NOT A 5% REPORT LOCATION
- INTERSECTION IS NOT PART OF INTERCONNECTED SYSTEM
- NO SIDEWALKS EXIST WITHIN THE PROJECT LIMITS.
- EXPECTED PEDESTRIAN/BICYCLE USAGE NONE
- ALL ENTRANCES AS SHOWN ARE IN COMPLIANCE WITH IDOT "POLICIES ON ACCESS TO STATE HIGHWAYS".  
 NOTED EXCEPTIONS: N/A
- SCOPE OF WORK: RECONSTRUCTION OF INTERSECTION OF IL 47 AND BURLINGTON ROAD
- DESIGN EXCEPTIONS: IL 47 PROFILE NORTH OF BURLINGTON LESS THAN 0.3%.
- RIGHT-OF-WAY ALIGNMENTS ARE SHOWN. SEE SHEET B3 FOR GEOMETRIC BASELINES.
- THIS INTERSECTION IS EXPECTED TO BE DEVELOPED IN TWO PHASES, WITH AN INITIAL CONFIGURATION SUITABLE FOR CONSTRUCTION-YEAR TRAFFIC AND THIS FINAL BUILD-OUT CONCEPT. THE "CONSTRUCTION YEAR" CONCEPT IS DEPICTED ON DRAWINGS A1-A7.
- SOME PORTIONS OF BURLINGTON ROAD REQUIRE NO EXPANSION FOR THE BUILD-OUT CONCEPT, THOSE AREAS ARE SHOWN AS EXISTING PAVEMENT IN THIS DRAWING. THEY CAN BE RESURFACED OR REBUILT IN THE CONFIGURATION SHOWN IF NEEDED.



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### TRAFFIC DATA

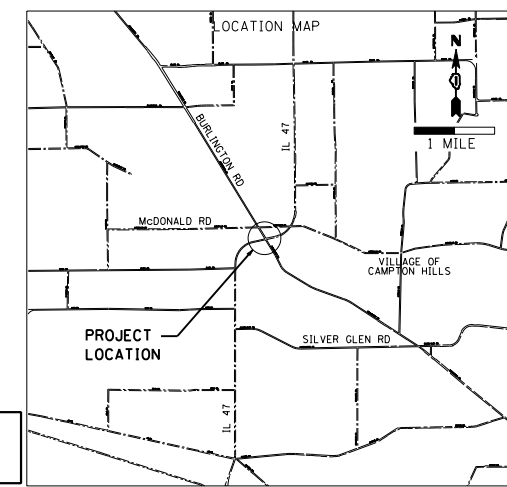
MOVEMENT	YEAR 2010 PEAK HOUR TRAFFIC		PERCENT TRUCK TRAFFIC IN PEAK HOUR		ESTIMATED PERCENT INCREASE BY 2030	YEAR 2030 DESIGN PEAK HOUR TRAFFIC	
	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.
AB	241	366	5%	8%	73% (73%)	418	634
AD	78	66	1%	1%	74% (74%)	136	115
AC	1	3	0%	0%	100% (100%)	10*	10*
BA	318	293	5%	10%	85% (85%)	590	543
BC	72	52	1%	8%	86% (86%)	134	97
BD	7	6	0%	4%	86% (100%)	13	12
CD	178	84	1%	6%	175% (175%)	489	231
CA	7	8	0%	0%	186% (175%)	20	22
CB	46	24	2%	0%	176% (175%)	127	66
DC	96	186	1%	2%	101% (101%)	193	374
DB	2	7	0%	0%	150% (114%)	10*	15
DA	54	83	2%	6%	102% (101%)	109	167
TOTAL A	699	819	-	-	82% (82%)	1275	1487
TOTAL B	686	748	-	-	88% (83%)	1287	1367
TOTAL C	400	357	-	-	141% (123%)	965	796
TOTAL D	415	432	-	-	128% (112%)	945	914



APPROACH	8TH MAX. HOUR TRAFFIC
A (NORTH)	695
B (SOUTH)	564
C (WEST)	248
D (EAST)	572

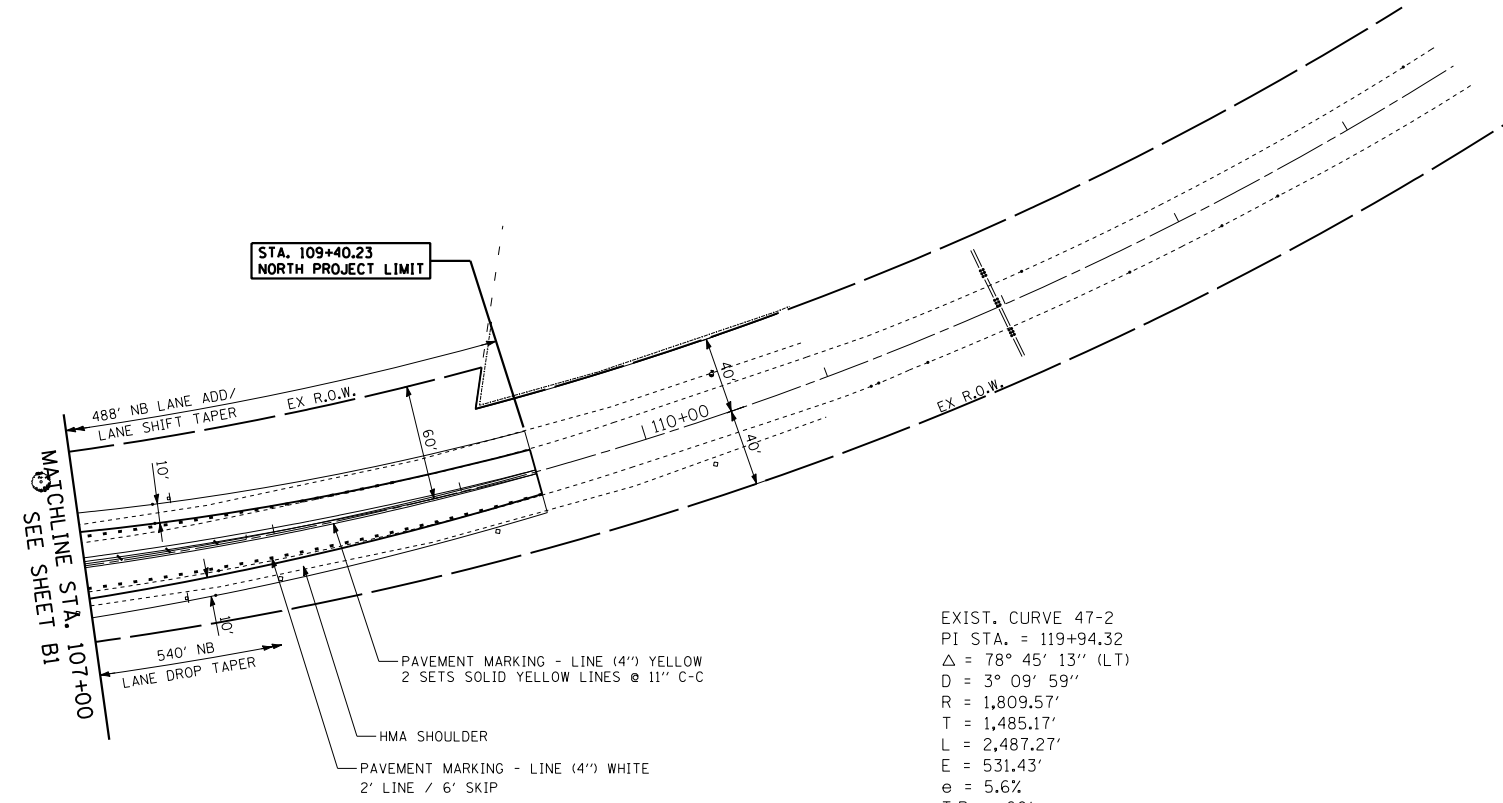
\* VOLUMES WERE ROUNDED UP TO 10 FOR DESIGN PURPOSES.

PREPARED BY: BURNS & MCDONNELL  
 1431 OPUS PLACE / DOWNERS GROVE IL 630-724-3200  
 PROJ. MGR. M. PAPIRNIK PROJ. ENG. J. BROCHTRUP



DRAWING NO. _____		
<b>INTERSECTION DESIGN STUDY</b>		
FAS ROUTE <u>104</u>	(BURLINGTON RD.)	
FAP ROUTE <u>326</u>	WITH (IL ROUTE 47)	
SEC. NO. <u>07-00357-00-CH</u>	PROJ. NO. <u>CMM-8003 (829)</u>	
SCALE <u>1"=50'</u>	COUNTY <u>KANE</u>	
SJN : _____	REV. NO. <u>1</u>	
DATE <u>2/3/11</u>	QA/QC REVIEWER <u>K RESTOFF</u>	REMARKS
CADD FILE NAME <u>*DGN-SPEC*</u>		
REF FILE NAME _____		

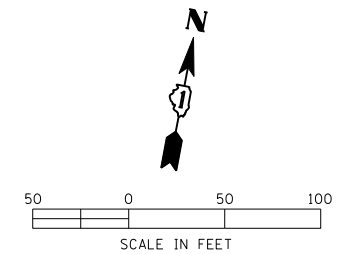
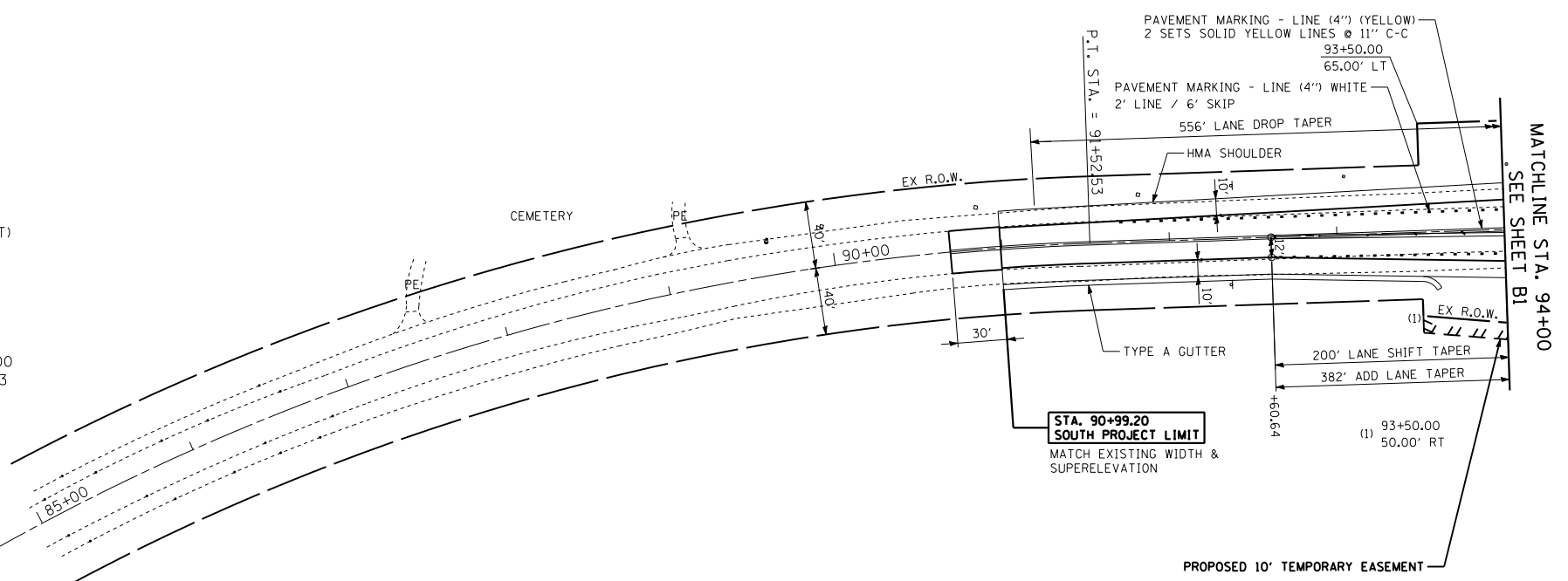
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 PLOT SCALE = #SCALE\*  
 USER NAME = #USER\*



EXIST. CURVE 47-2  
 PI STA. = 119+94.32  
 $\Delta = 78^\circ 45' 13''$  (LT)  
 $D = 3^\circ 09' 59''$   
 $R = 1,809.57'$   
 $T = 1,485.17'$   
 $L = 2,487.27'$   
 $E = 531.43'$   
 $e = 5.6\%$   
 $T.R. = 60'$   
 $S.E. RUN = 224'$   
 $P.C. STA. = 105+09.15$   
 $P.T. STA. = 129+96.42$

\* FOR TWO-LANE APPROACHES WEST OF PC

EXIST. CURVE 47-1  
 PI STA. = 83+61.93  
 $\Delta = 78^\circ 05' 04''$  (RT)  
 $D = 3^\circ 59' 57''$   
 $R = 1,432.70'$   
 $T = 1,161.92'$   
 $L = 1,952.52'$   
 $E = 411.94'$   
 $e = 8.0\%$   
 $P.C. STA. = 72+00.00$   
 $P.T. STA. = 91+52.53$



**INTERSECTION DESIGN STUDY**  
 FAS ROUTE 104 (BURLINGTON RD)  
 WITH FAP ROUTE 326 (IL ROUTE 47)  
 SEC. NO. 07-00357-00-CH  
 H 1"=5'  
 SCALE V 1"=50' COUNTY KANE  
 SJN : \_\_\_\_\_ PROJ. NO. CMM-8003 (829)  
 I.D.S. SHEET B2 OF 8

**CURVE 47SB-1**  
 PI STA. = 298+99.31  
 $\Delta = 34^\circ 28' 02''$  (LT)  
 D = 47° 44' 47"  
 R = 120.00'  
 T = 37.22'  
 L = 72.19'  
 E = 5.64'  
 P.C. STA. = 298+62.09  
 P.T. STA. = 299+34.28

**PROP. CURVE 47SBX-2**  
 PI STA. = 300+30.29  
 $\Delta = 81^\circ 10' 49''$  (RT)  
 D = 100° 31' 08"  
 R = 57.00'  
 T = 48.84'  
 L = 80.76'  
 E = 18.06'  
 P.C. STA. = 299+81.45  
 P.R.C. STA. = 300+62.21

**PROP. CURVE 47SBX-3**  
 PI STA. = 301+18.86  
 $\Delta = 64^\circ 22' 32''$  (LT)  
 D = 63° 39' 53"  
 R = 90.00'  
 T = 56.65'  
 L = 101.12'  
 E = 16.34'  
 P.R.C. STA. = 300+62.21  
 P.R.C. STA. = 301+63.33

**PROP. CURVE 47SBX-4**  
 PI STA. = 302+34.40  
 $\Delta = 24^\circ 40' 09''$  (RT)  
 D = 17° 37' 44"  
 R = 325.01'  
 T = 71.07'  
 L = 139.94'  
 E = 7.68'  
 P.R.C. STA. = 301+63.33  
 P.R.C. STA. = 303+03.26

**PROP. CURVE 47SBX-5**  
 PI STA. = 304+21.89  
 $\Delta = 8^\circ 23' 41''$  (LT)  
 D = 3° 32' 41"  
 R = 1,616.43'  
 T = 118.63'  
 L = 236.83'  
 E = 4.35'  
 P.R.C. STA. = 303+03.26  
 P.T. STA. = 305+40.09  
 e = 5.6%  
 T.R. = N/A  
 S.E. RUN = 100'

**EXIST. CURVE 47-1**  
 PI STA. = 83+61.93  
 $\Delta = 78^\circ 05' 04''$  (RT)  
 D = 3° 59' 57"  
 R = 1,432.70'  
 T = 1,161.92'  
 L = 1,952.52'  
 E = 411.94'  
 e = 6.0%  
 T.R. = 40'  
 S.E. RUN = 160'  
 P.C. STA. = 72+00.00  
 P.T. STA. = 91+52.53

SB IL 47 STA. 296+41.43 =  
 IL 47 STA. 96+41.43, ON CL

NB IL 47 STA. 194+90.86 =  
 IL 47 STA. 94+90.86, 4.00' RT

**PROP. CURVE 47NBX-1**  
 PI STA. = 196+09.49  
 $\Delta = 8^\circ 23' 41''$  (RT)  
 D = 3° 32' 40"  
 R = 1,616.46'  
 T = 118.63'  
 L = 236.83'  
 E = 4.35'  
 P.C. STA. = 194+90.86  
 P.R.C. STA. = 197+27.69

**PROP. CURVE 47NBX-2**  
 PI STA. = 197+98.76  
 $\Delta = 24^\circ 40' 09''$  (LT)  
 D = 17° 37' 46"  
 R = 325.00'  
 T = 71.07'  
 L = 139.93'  
 E = 7.68'  
 P.R.C. STA. = 197+27.69  
 P.R.C. STA. = 198+67.63

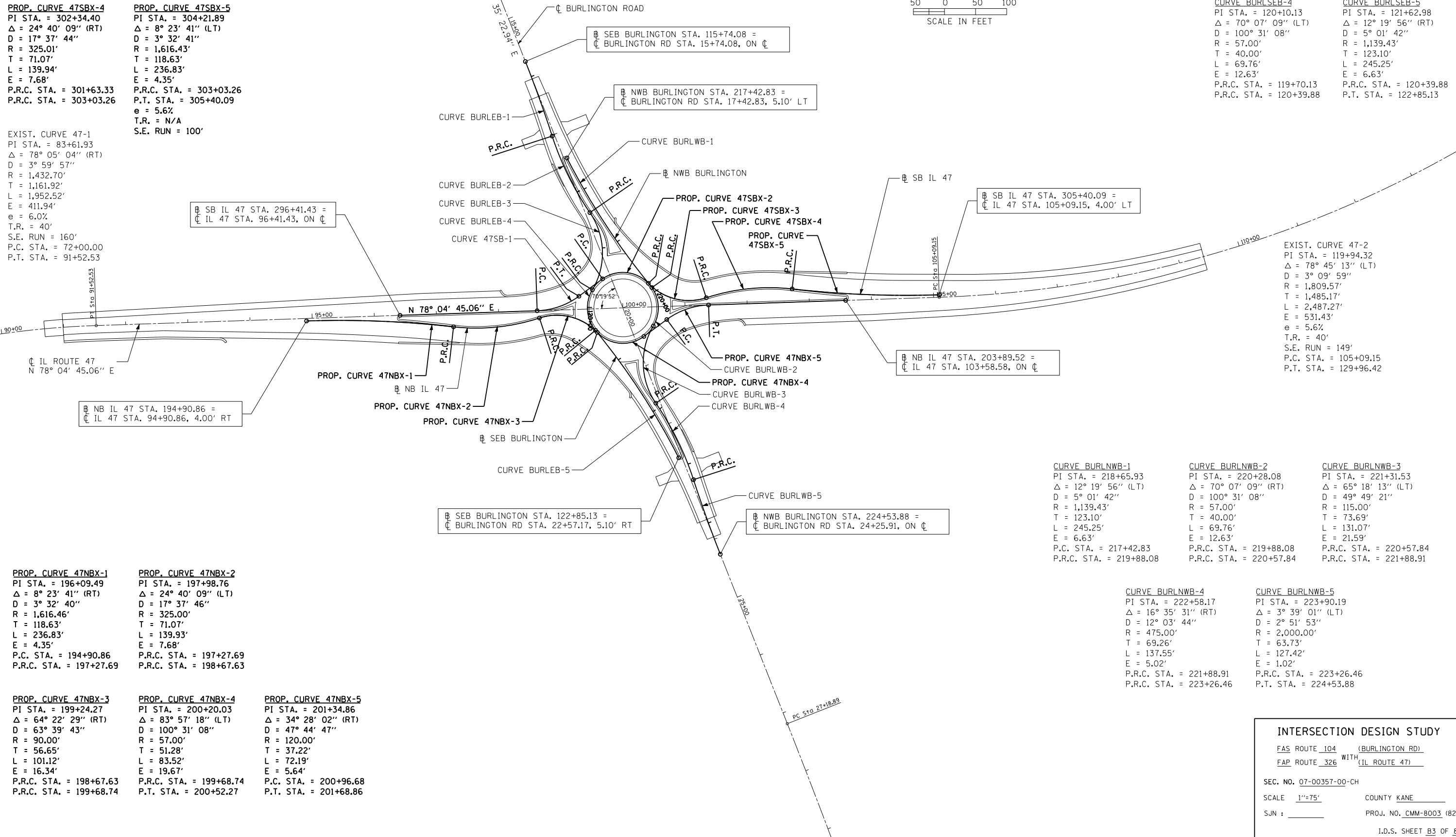
**PROP. CURVE 47NBX-3**  
 PI STA. = 199+24.27  
 $\Delta = 64^\circ 22' 29''$  (RT)  
 D = 63° 39' 43"  
 R = 90.00'  
 T = 56.65'  
 L = 101.12'  
 E = 16.34'  
 P.R.C. STA. = 198+67.63  
 P.R.C. STA. = 199+68.74

**PROP. CURVE 47NBX-4**  
 PI STA. = 200+20.03  
 $\Delta = 83^\circ 57' 18''$  (LT)  
 D = 100° 31' 08"  
 R = 57.00'  
 T = 51.28'  
 L = 83.52'  
 E = 19.67'  
 P.R.C. STA. = 199+68.74  
 P.T. STA. = 200+52.27

**PROP. CURVE 47NBX-5**  
 PI STA. = 201+34.86  
 $\Delta = 34^\circ 28' 02''$  (RT)  
 D = 47° 44' 47"  
 R = 120.00'  
 T = 37.22'  
 L = 72.19'  
 E = 5.64'  
 P.C. STA. = 200+96.68  
 P.T. STA. = 201+68.86

NOTE: THE "X" IN THE NAME OF THE IL 47 ALIGNMENT CURVES REFERS TO ITS REVISION FROM THE CONSTRUCTION-YEAR DESIGN TO THE BUILD-OUT DESIGN DEPICTED HERE. SEVERAL OF THE ALIGNMENT CURVES CHANGED ONLY IN STATIONING.

NOTE: ALL CURVES HAVE NORMAL CROWN SUPERELEVATION UNLESS OTHERWISE NOTED.



**CURVE BURLEB-1**  
 PI STA. = 116+37.81  
 $\Delta = 3^\circ 39' 01''$  (RT)  
 D = 2° 51' 53"  
 R = 2,000.00'  
 T = 63.73'  
 L = 127.42'  
 E = 1.02'  
 P.C. STA. = 115+74.08  
 P.R.C. STA. = 117+01.50

**CURVE BURLEB-2**  
 PI STA. = 117+70.76  
 $\Delta = 16^\circ 35' 31''$  (LT)  
 D = 12° 03' 44"  
 R = 475.00'  
 T = 69.26'  
 L = 137.55'  
 E = 5.02'  
 P.R.C. STA. = 117+01.50  
 P.R.C. STA. = 118+39.05

**CURVE BURLEB-3**  
 PI STA. = 119+12.75  
 $\Delta = 65^\circ 18' 13''$  (RT)  
 D = 49° 49' 21"  
 R = 115.00'  
 T = 73.69'  
 L = 131.07'  
 E = 21.59'  
 P.R.C. STA. = 118+39.05  
 P.R.C. STA. = 119+70.13

**CURVE BURLEB-4**  
 PI STA. = 120+10.13  
 $\Delta = 70^\circ 07' 09''$  (LT)  
 D = 100° 31' 08"  
 R = 57.00'  
 T = 40.00'  
 L = 69.76'  
 E = 12.63'  
 P.R.C. STA. = 119+70.13  
 P.R.C. STA. = 120+39.88

**CURVE BURLEB-5**  
 PI STA. = 121+62.98  
 $\Delta = 12^\circ 19' 56''$  (RT)  
 D = 5° 01' 42"  
 R = 1,139.43'  
 T = 123.10'  
 L = 245.25'  
 E = 6.63'  
 P.R.C. STA. = 120+39.88  
 P.T. STA. = 122+85.13

**EXIST. CURVE 47-2**  
 PI STA. = 119+94.32  
 $\Delta = 78^\circ 45' 13''$  (LT)  
 D = 3° 09' 59"  
 R = 1,809.57'  
 T = 1,485.17'  
 L = 2,487.27'  
 E = 531.43'  
 e = 5.6%  
 T.R. = 40'  
 S.E. RUN = 149'  
 P.C. STA. = 105+09.15  
 P.T. STA. = 129+96.42

**CURVE BURLNB-1**  
 PI STA. = 218+65.93  
 $\Delta = 12^\circ 19' 56''$  (LT)  
 D = 5° 01' 42"  
 R = 1,139.43'  
 T = 123.10'  
 L = 245.25'  
 E = 6.63'  
 P.R.C. STA. = 217+42.83  
 P.R.C. STA. = 219+88.08

**CURVE BURLNB-2**  
 PI STA. = 220+28.08  
 $\Delta = 70^\circ 07' 09''$  (RT)  
 D = 100° 31' 08"  
 R = 57.00'  
 T = 40.00'  
 L = 69.76'  
 E = 12.63'  
 P.R.C. STA. = 219+88.08  
 P.R.C. STA. = 220+57.84

**CURVE BURLNB-3**  
 PI STA. = 221+31.53  
 $\Delta = 49^\circ 49' 21''$  (LT)  
 D = 49° 49' 21"  
 R = 115.00'  
 T = 73.69'  
 L = 131.07'  
 E = 21.59'  
 P.R.C. STA. = 220+57.84  
 P.R.C. STA. = 221+88.91

**CURVE BURLNB-4**  
 PI STA. = 222+58.17  
 $\Delta = 16^\circ 35' 31''$  (RT)  
 D = 12° 03' 44"  
 R = 475.00'  
 T = 69.26'  
 L = 137.55'  
 E = 5.02'  
 P.R.C. STA. = 221+88.91  
 P.R.C. STA. = 223+26.46

**CURVE BURLNB-5**  
 PI STA. = 223+90.19  
 $\Delta = 3^\circ 39' 01''$  (LT)  
 D = 2° 51' 53"  
 R = 2,000.00'  
 T = 63.73'  
 L = 127.42'  
 E = 1.02'  
 P.R.C. STA. = 223+26.46  
 P.T. STA. = 224+53.88

**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

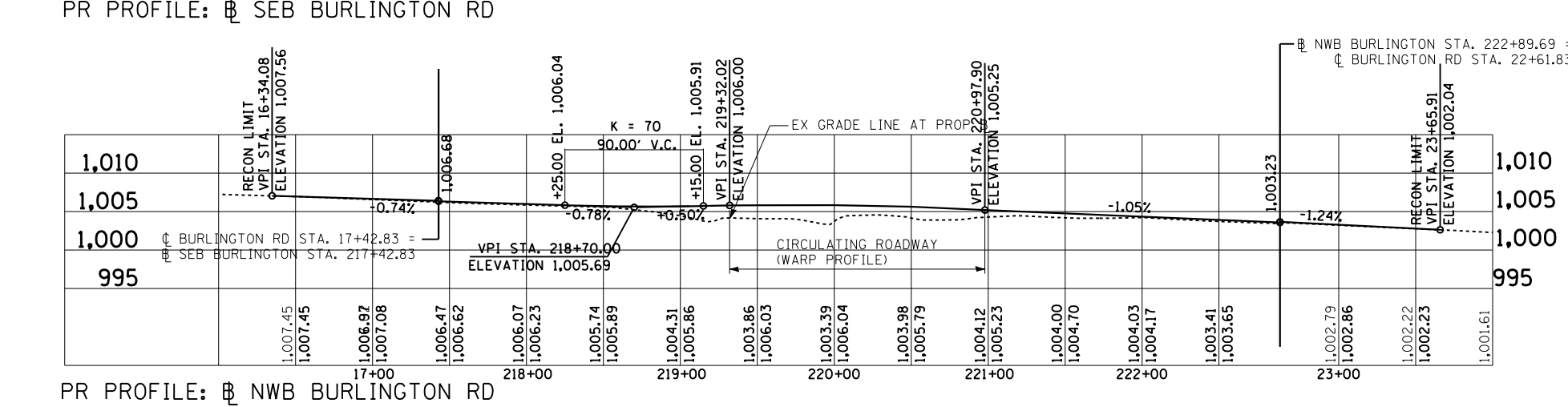
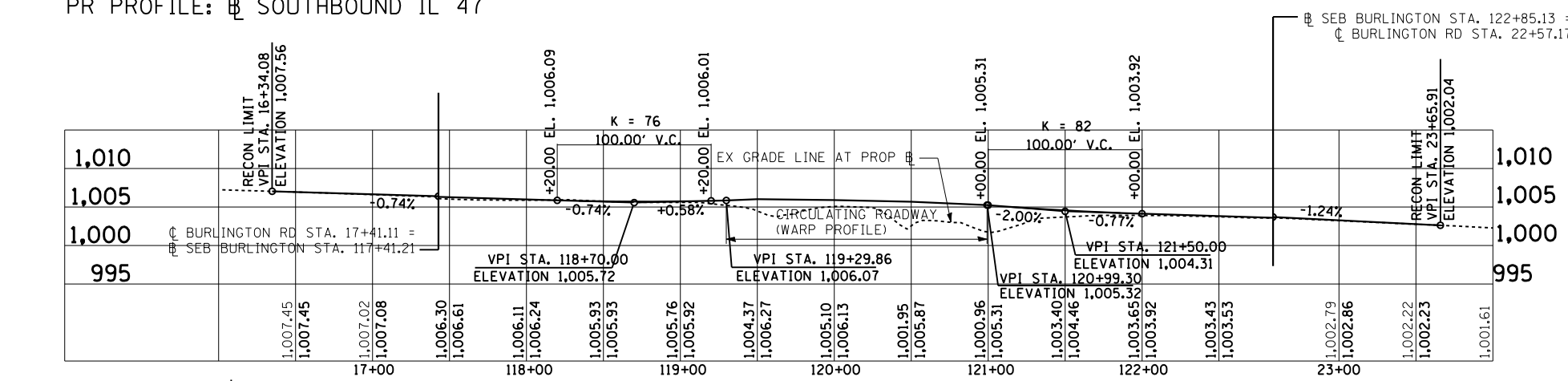
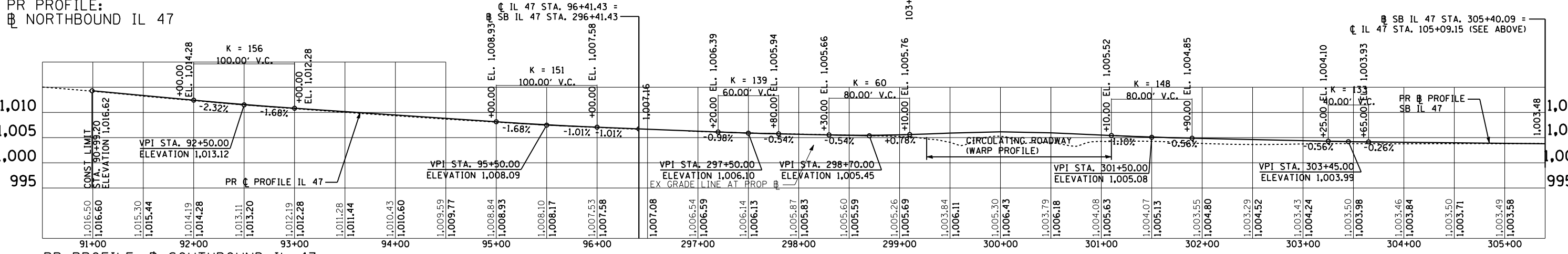
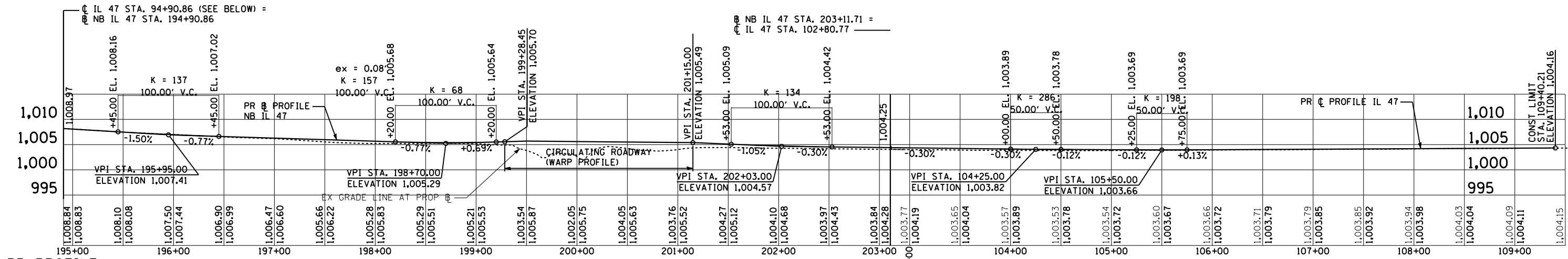
SEC. NO. 07-00357-00-CH

SCALE 1"=75' COUNTY KANE

SJN : PROJ. NO. CMM-8003 (829)

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 USER NAME = #USER#

PLOT DATE = #DTE#  
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 PLOT SCALE = #SCALE#  
 USER NAME = #USER#



NOTE: PROFILES FOR BURLINGTON ROAD WILL BE UNCHANGED FROM INITIAL-BUILD DESIGN, EXCEPT FOR SOME MINOR MODIFICATIONS AT THE ENTRY AND EXIT POINTS OF THE CIRCULATING ROADWAY.

**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

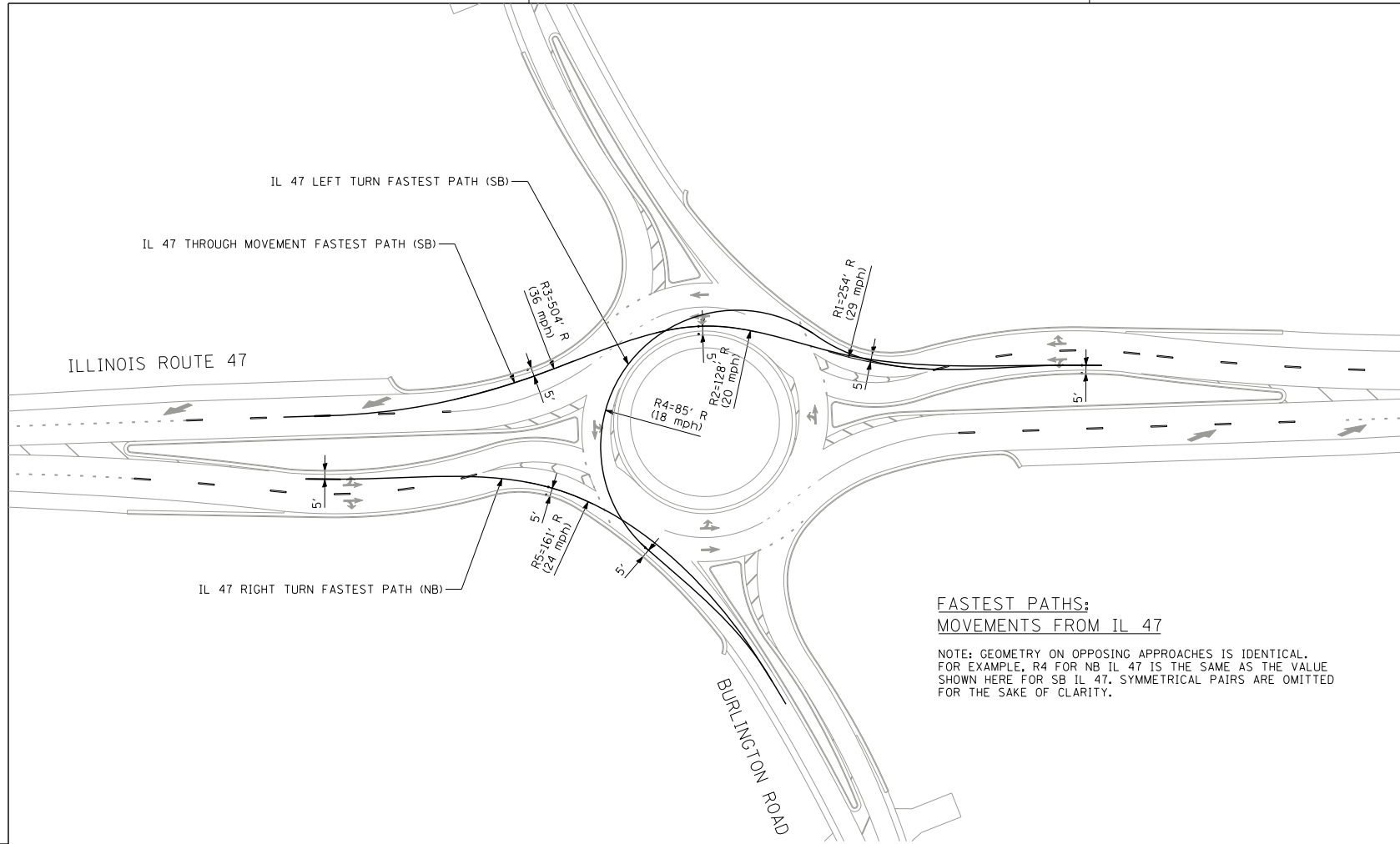
SEC. NO. 07-00357-00-CH  
 SCALE H 1"=50'  
 V 1"=10' COUNTY KANE  
 SJN : \_\_\_\_\_ PROJ. NO. \_\_\_\_\_

I.D.S. SHEET B4 OF 8





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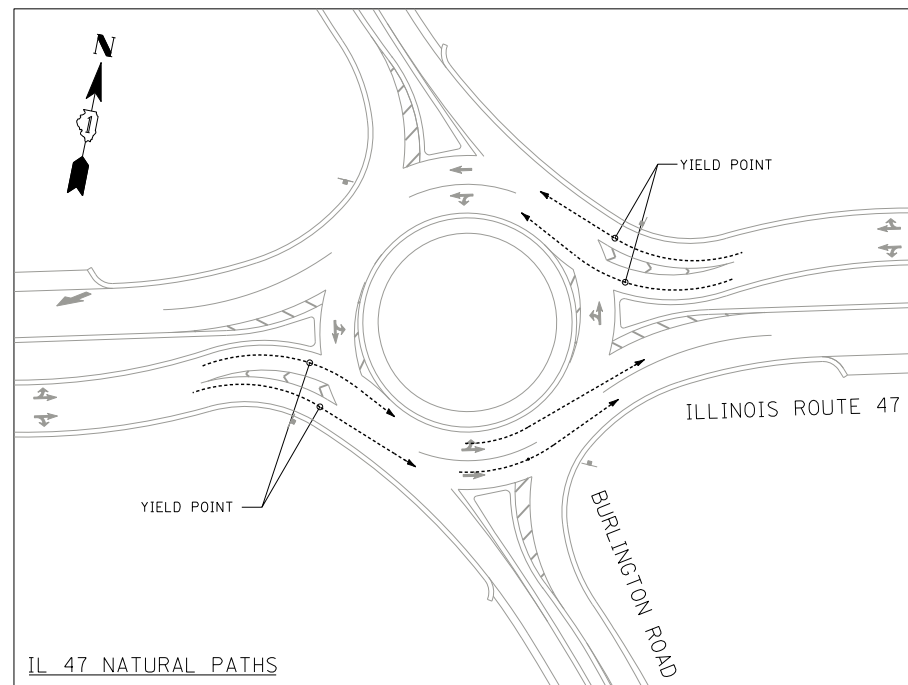


**FASTEST PATHS:  
 MOVEMENTS FROM IL 47**

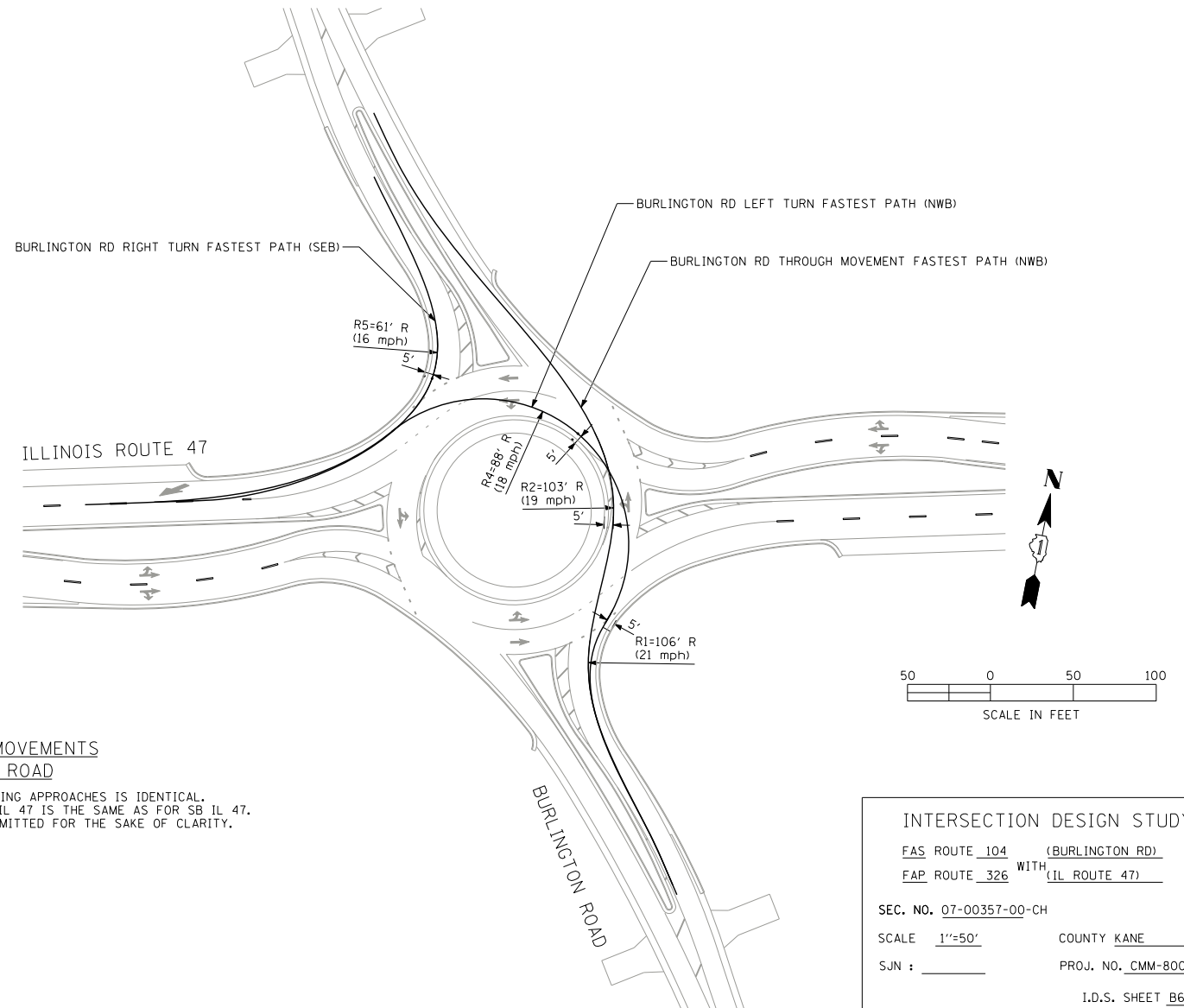
NOTE: GEOMETRY ON OPPOSING APPROACHES IS IDENTICAL. FOR EXAMPLE, R4 FOR NB IL 47 IS THE SAME AS THE VALUE SHOWN HERE FOR SB IL 47. SYMMETRICAL PAIRS ARE OMITTED FOR THE SAKE OF CLARITY.

**TURNING MOVEMENT RADII**

Approach	NB IL 47	NWB Burlington	SB IL 47	SEB Burlington
R1	275'	108'	254'	108'
R2	121'	103'	128'	103'
R3	538'	N/A	504'	N/A
R4	85'	85'	85'	85'
R5	172'	73'	172'	73'

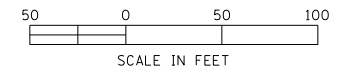


**IL 47 NATURAL PATHS**



**FASTEST PATHS: MOVEMENTS  
 FROM BURLINGTON ROAD**

NOTE: GEOMETRY ON OPPOSING APPROACHES IS IDENTICAL. FOR EXAMPLE, R5 FOR NB IL 47 IS THE SAME AS FOR SB IL 47. SYMMETRICAL PAIRS ARE OMITTED FOR THE SAKE OF CLARITY.



**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

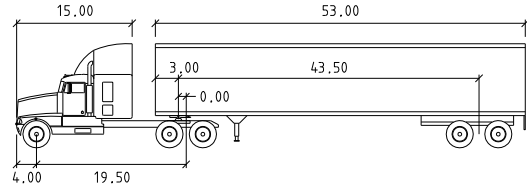
SEC. NO. 07-00357-00-CH

SCALE 1"=50' COUNTY KANE

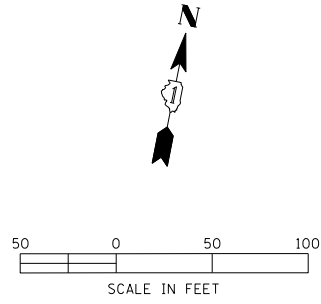
SJN : PROJ. NO. CMM-8003 (829)

I.D.S. SHEET B6 OF 8

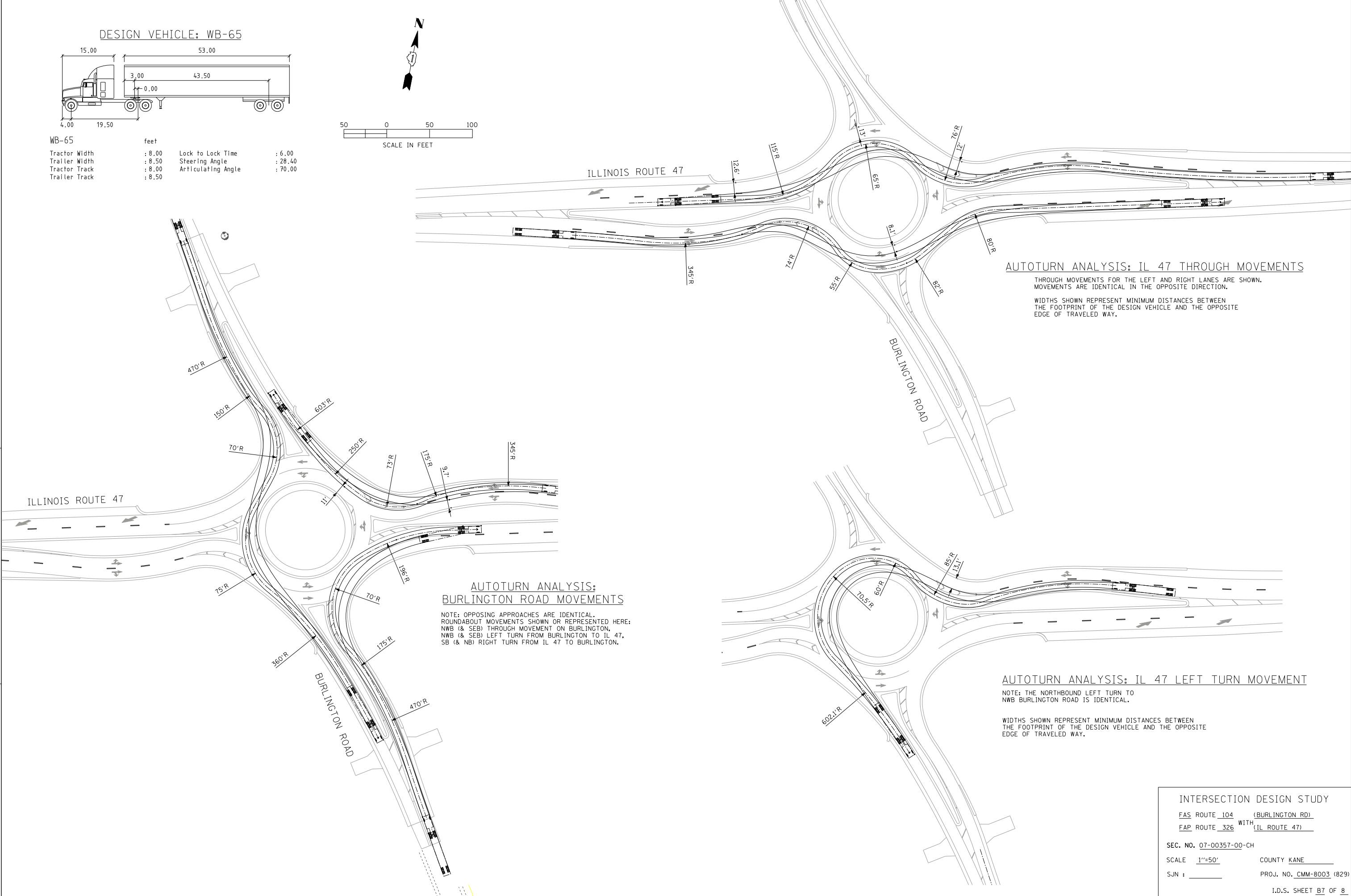
DESIGN VEHICLE: WB-65



WB-65		feet	
Tractor Width	: 8.00	Lock to Lock Time	: 6.00
Trailer Width	: 8.50	Steering Angle	: 28.40
Tractor Track	: 8.00	Articulating Angle	: 70.00
Trailer Track	: 8.50		



PLOT DATE = #DATE\*  
 FILE NAME = #FILEL\*  
 PLOT SCALE = #SCALE\*  
 USER NAME = #USER\*



AUTOTURN ANALYSIS: IL 47 THROUGH MOVEMENTS

THROUGH MOVEMENTS FOR THE LEFT AND RIGHT LANES ARE SHOWN.  
 MOVEMENTS ARE IDENTICAL IN THE OPPOSITE DIRECTION.  
 WIDTHS SHOWN REPRESENT MINIMUM DISTANCES BETWEEN  
 THE FOOTPRINT OF THE DESIGN VEHICLE AND THE OPPOSITE  
 EDGE OF TRAVELED WAY.

AUTOTURN ANALYSIS:  
 BURLINGTON ROAD MOVEMENTS

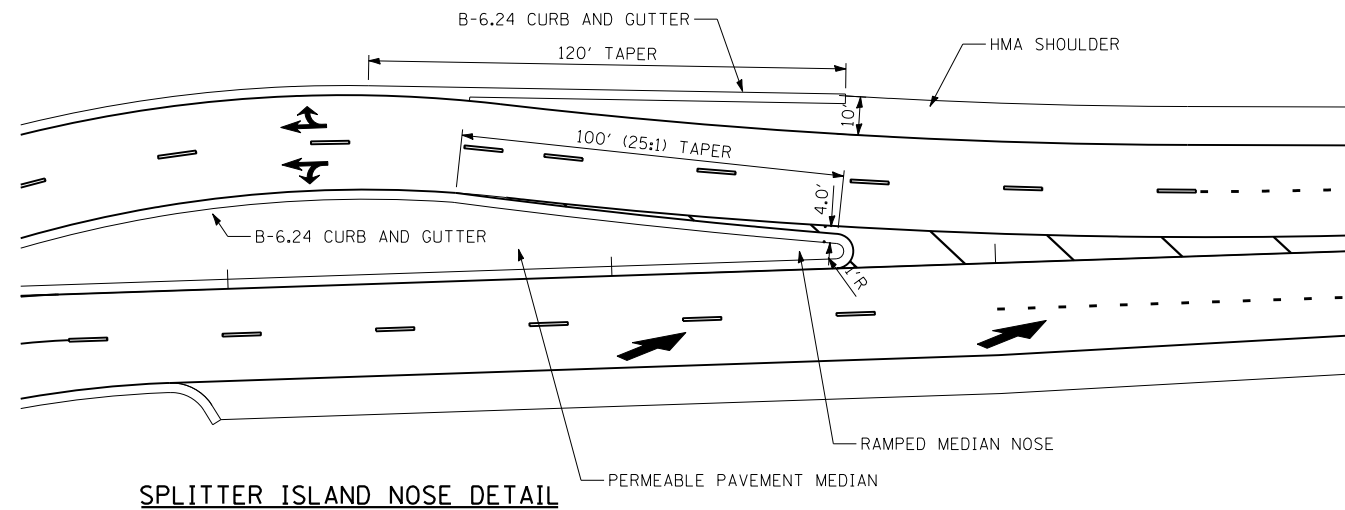
NOTE: OPPOSING APPROACHES ARE IDENTICAL.  
 ROUNDABOUT MOVEMENTS SHOWN OR REPRESENTED HERE:  
 NWB (& SEB) THROUGH MOVEMENT ON BURLINGTON,  
 NWB (& SEB) LEFT TURN FROM BURLINGTON TO IL 47,  
 SB (& NB) RIGHT TURN FROM IL 47 TO BURLINGTON.

AUTOTURN ANALYSIS: IL 47 LEFT TURN MOVEMENT

NOTE: THE NORTHBOUND LEFT TURN TO  
 NWB BURLINGTON ROAD IS IDENTICAL.  
 WIDTHS SHOWN REPRESENT MINIMUM DISTANCES BETWEEN  
 THE FOOTPRINT OF THE DESIGN VEHICLE AND THE OPPOSITE  
 EDGE OF TRAVELED WAY.

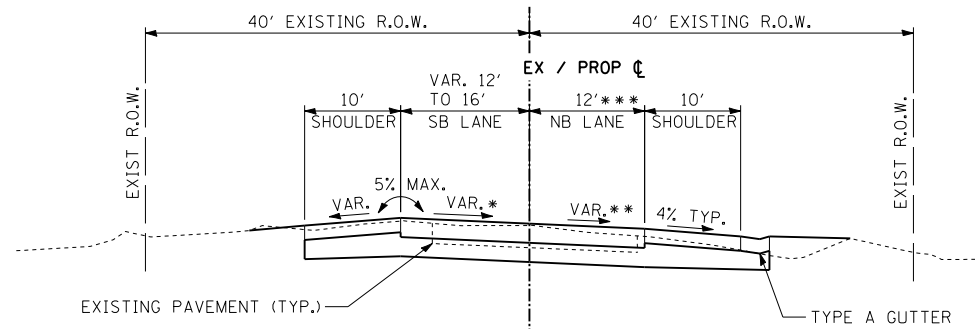
INTERSECTION DESIGN STUDY  
 FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)  
 SEC. NO. 07-00357-00-CH  
 SCALE 1"=50' COUNTY KANE  
 SJN : \_\_\_\_\_ PROJ. NO. CMM-8003 (829)  
 I.D.S. SHEET B7 OF 8

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**SPLITTER ISLAND NOSE DETAIL**

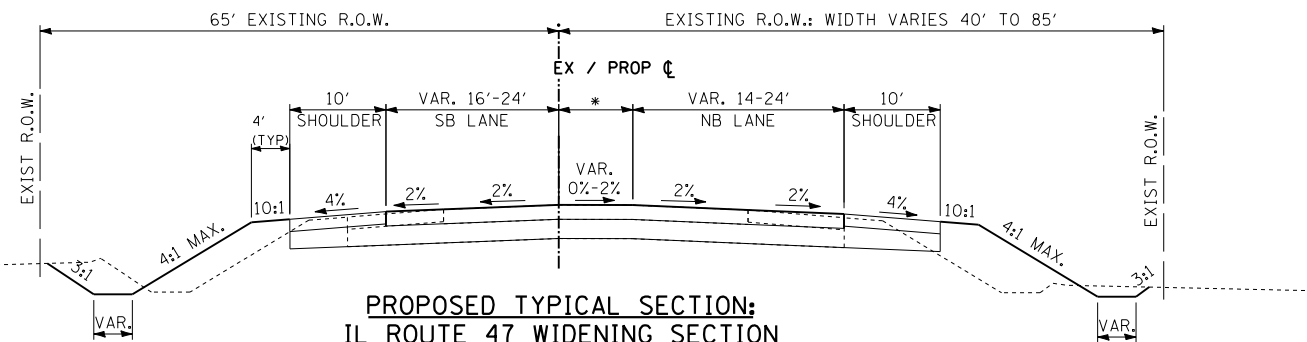
REFER TO DRAWING A7 FOR "EXISTING" CROSS SECTIONS TO BE BUILT DURING THE INTERIM PHASE.



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 WIDENING SECTION**

STA. 90+99 TO STA. 93+13

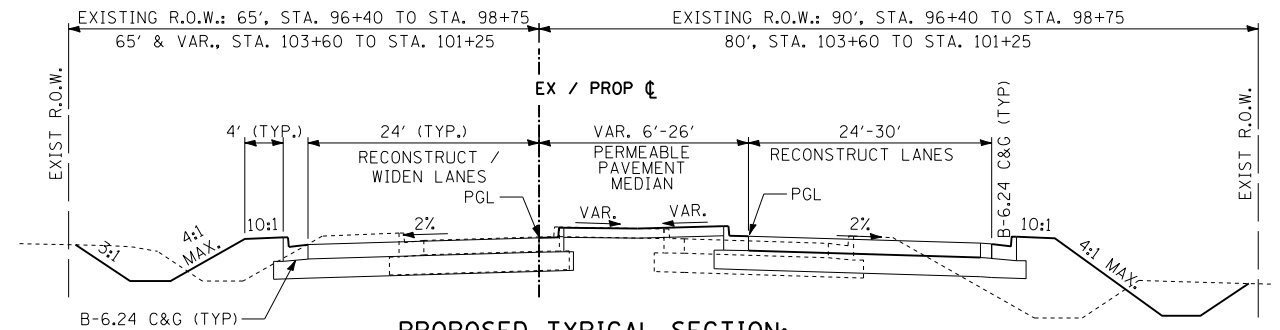
- \* SB LANE VARIES 6.0% LT TO 2.0% RT BETWEEN STA. 90+99 AND STA. 93+13.
- \*\* NB LANE VARIES 6.0% TO 2.0% RT BETWEEN STA. 90+99 AND STA. 92+06.
- \*\*\* TRANSITION TO 2-12' LANES BEGINS AT STA. 92+61.



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 WIDENING SECTION**

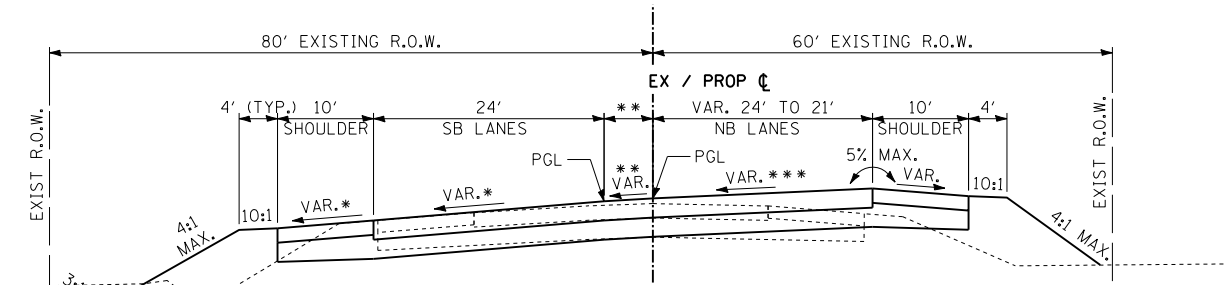
STA. 93+13 TO STA. 96+40

- \* PAINTED MEDIAN; WIDTH VARIES FROM 0' TO 4' BETWEEN STA. 93+13 AND STA. 94+92. NB PGL BEGINS AT STA. 94+92; WIDTH VARIES FROM 4' TO 11' BETWEEN STA. 94+92 AND STA. 96+40.



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 APPROACHES**

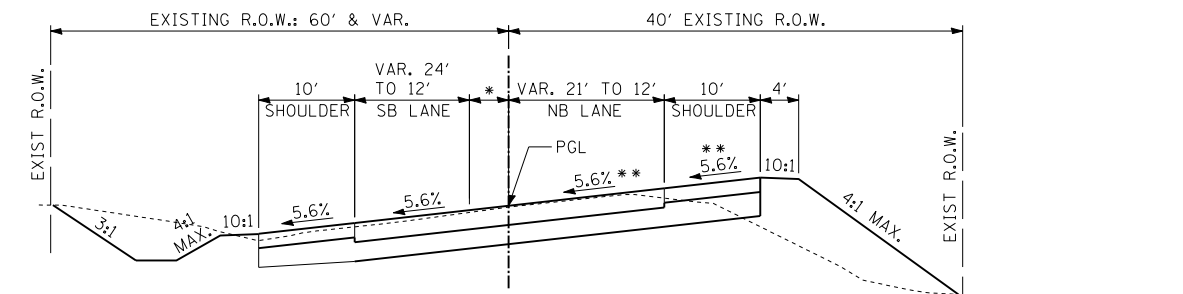
LOOKING TOWARD THE INTERSECTION:  
 STA. 96+40 TO STA. 98+75  
 STA. 103+60 TO STA. 101+25



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 WIDENING SECTION**

STA. 103+60 TO STA. 105+09

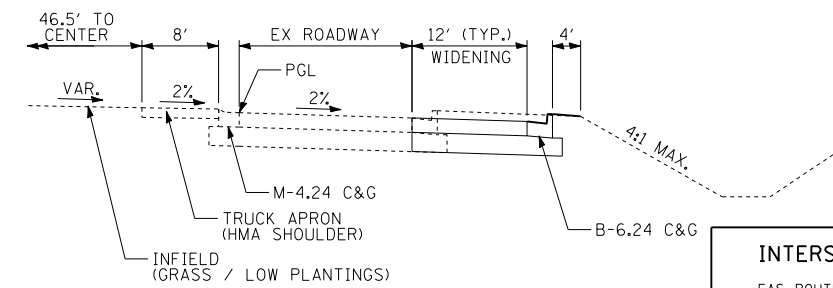
- \* SB LANE VARIES 2.0% TO 5.6% BETWEEN STA. 103+60 AND STA. 105+09
- \*\* MEDIAN SLOPE VARIES 1.0% TO 5.6% AND WIDTH VARIES 11' TO 4' BETWEEN STA. 103+60 AND STA. 105+09
- \*\*\* NB LANE VARIES 0.0% TO 3.75% LT BETWEEN STA. 103+60 AND STA. 105+09
- SHOULDER SLOPES VARY WITH ADJACENT LANES



**PROPOSED TYPICAL SECTION:  
 IL ROUTE 47 WIDENING SECTION**

STA. 105+09 TO STA. 109+40

- \* PAINTED MEDIAN; WIDTH VARIES FROM 4.0' TO 0' BETWEEN STA. 105+84 AND STA. 109+40
- \*\* NB LANE & SHOULDER VARIES 3.75% TO 5.6% BETWEEN STA. 105+09 AND STA. 105+83



**PROPOSED TYPICAL SECTION  
 THROUGH CIRCULATING ROADWAY**

LOOKING IN THE DIRECTION OF TRAFFIC

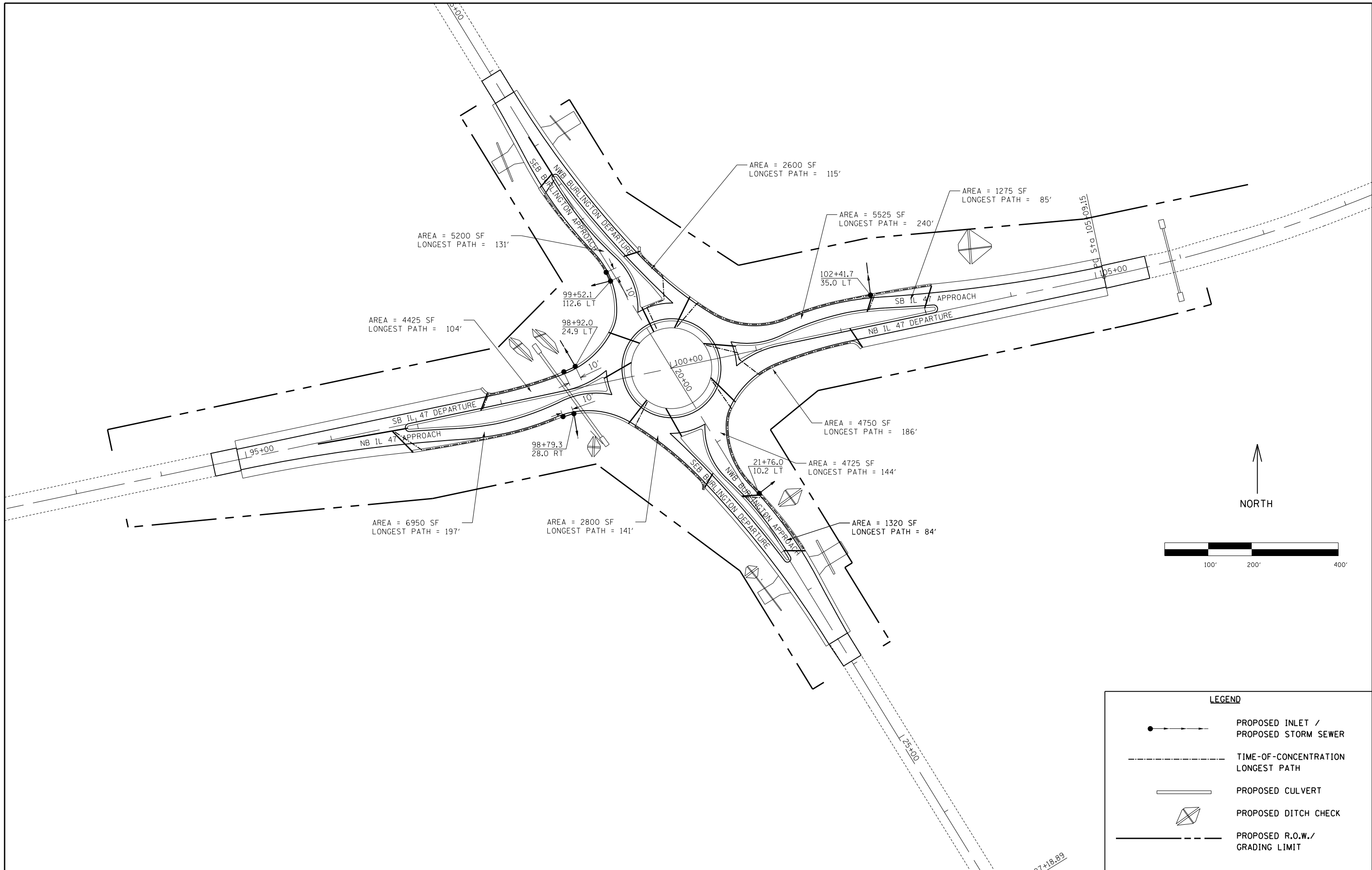
**INTERSECTION DESIGN STUDY**

FAS ROUTE 104 (BURLINGTON RD)  
 FAP ROUTE 326 WITH (IL ROUTE 47)

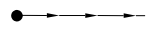




SEC. NO. 07-00357-00-CH

SCALE N/A COUNTY KANE

SJN : PROJ. NO. CMM-8003 (829)



**LEGEND**

-  PROPOSED INLET / PROPOSED STORM SEWER
-  TIME-OF-CONCENTRATION LONGEST PATH
-  PROPOSED CULVERT
-  PROPOSED DITCH CHECK
-  PROPOSED R.O.W./ GRADING LIMIT

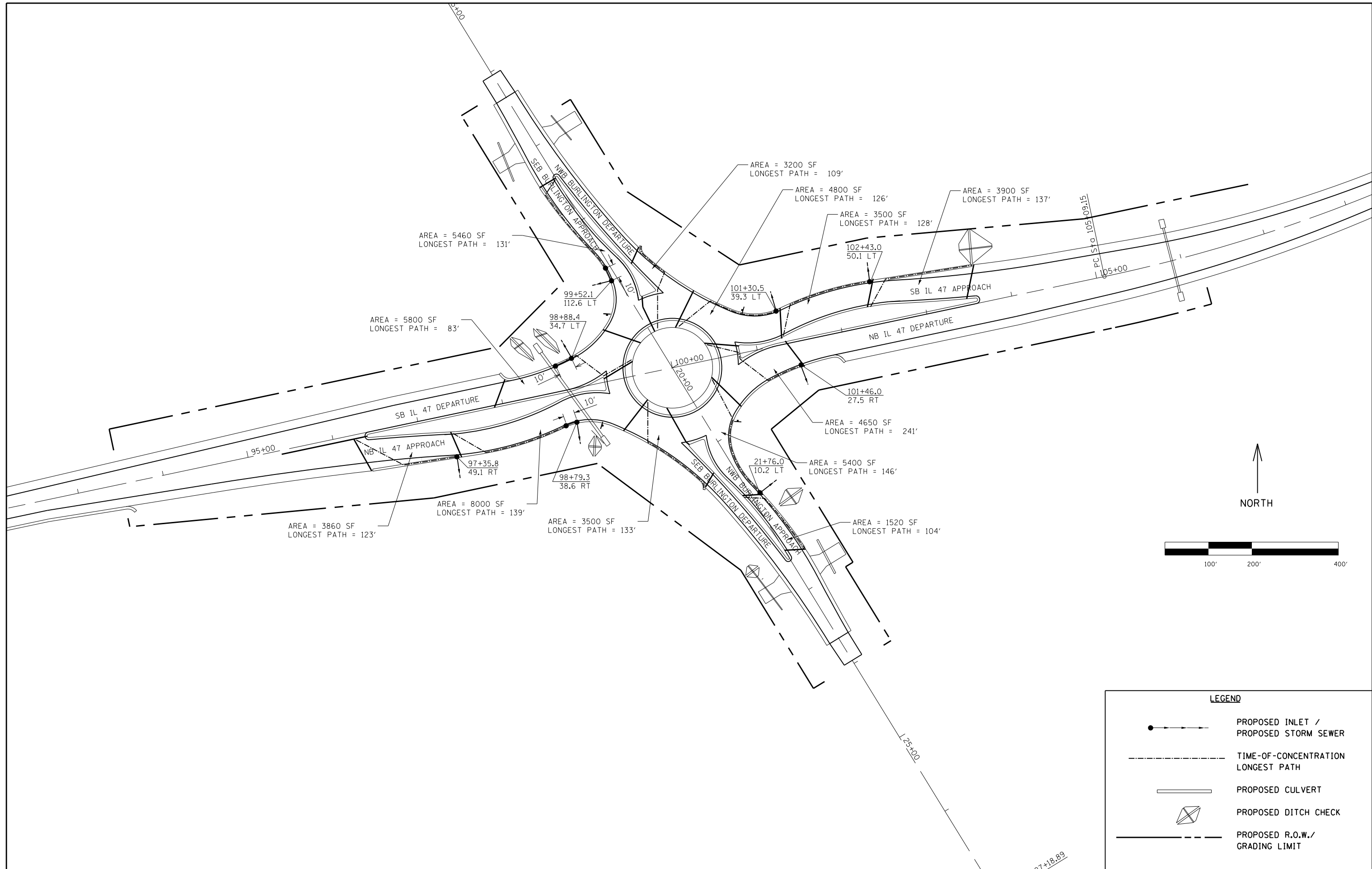
FILE NAME =	USER NAME = \$USER*	DESIGNED -	REVISED -
\$FILEL\$		DRAWN -	REVISED -
		CHECKED -	REVISED -
		DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXHIBIT 2-07.1a  
BURLINGTON ROAD AT IL 47  
PROPOSED INLETS & STORM SEWER PLAN (INTERIM DESIGN)**

SCALE: SHEET NO. OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



LEGEND				
	PROPOSED INLET / PROPOSED STORM SEWER			
	TIME-OF-CONCENTRATION LONGEST PATH			
	PROPOSED CULVERT			
	PROPOSED DITCH CHECK			
	PROPOSED R.O.W./ GRADING LIMIT			

FILE NAME =	USER NAME = \$USER*	DESIGNED -	REVISED -
*FILEL*		DRAWN -	REVISED -
	PLOT SCALE = \$SCALE*	CHECKED -	REVISED -
	PLOT DATE = \$DATE*	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXHIBIT 2-07.1b  
BURLINGTON ROAD AT IL 77  
PROPOSED INLETS & STORM SEWER PLAN (BUILD-OUT DESIGN)**

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

SCALE: SHEET NO. OF SHEETS STA. TO STA.