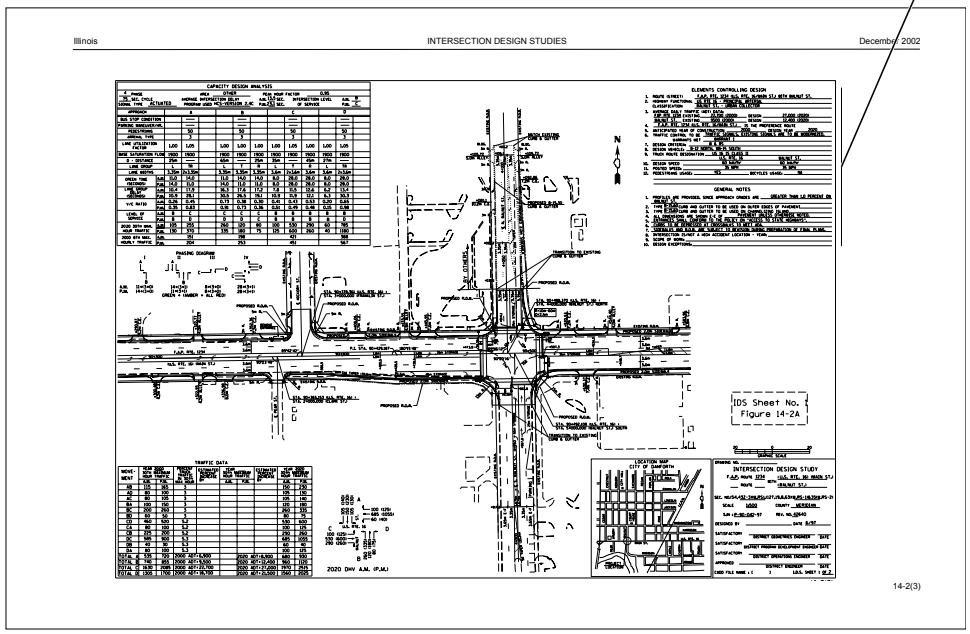
Summary of Comments on chap14Murtha.pdf

Page: 9

Author: clarkme Date: 3/10/2003 12:02:09 PM



Illinois INTERSECTION DESIGN STUDIES December, 2002

CAPACITY DESIGN ANALYSIS

ELEMENTS CONTROLLING DESIGN

GENERAL NOTES

TRAFFIC DATA

PHASING DIAGRAM

IDS Sheet No. Figure 14-2A

LOCATION MAP CITY OF CHAMPAIGN

INTERSECTION DESIGN STUDY

14-2(3)

14-3 DATA REQUIRED FOR INTERSECTION DESIGN STUDIES

Document the following data in the IDS:

1. Elements Controlling Design. Chapter 36 presents the design criteria for intersections. On Sheet No. 1, list all pertinent elements affecting the design of the intersection including:

   - the intersection route designation including highway functional classification, SRA Route designation, if appropriate, proposed design speed, and existing and design traffic (ADT and year) for both intersecting routes;
   - the preferential route;
   - the anticipated year of construction;
   - the type of traffic control including:
     - a statement indicating whether signals will be installed or adjusted;
     - the warrant, or combination of warrants, from the *ILMUTCD* justifying the use of signal control;
   - design criteria;
   - design vehicle;
   - truck route designation;
   - existing and proposed posted speeds (mph) on all intersection approaches (proposed posted speeds should be equal to or less than the design speeds); and
   - pedestrian and bicycle usage at intersection.

2. General Notes. Include the following information in the general notes on Sheet No. 1:

   a. Grades. Where all existing grades to remain are greater than 1% or in all cases with any new or altered grades, include a statement that profiles are shown for both intersecting roads and show them on Sheet No. 3. If existing grades are to remain and are all less than 1%, indicate this fact and state that no profiles are shown.

Page: 13

Author: tmurtha Subject: Inserted Text Date: 7/7/2008 3:35:37 PM
and crossing distances

b. Curb and Gutter. Indicate the type of curb and gutter to be used on the outer edges of the traveled way, shoulders, channelizing islands, and corner islands. Only use mountable type curbing on corner islands.

c. Dimensions. Indicate the type of dimensioning used (e.g., edge-to-edge of pavement, edge-to-edge of traveled way).

d. Design Exceptions. List any deviations from design criteria (see Section 31-8) and typical traffic control practice (e.g., large truck turning encroachments, lane widths less than Department criteria, less than desirable level of service, less than desirable storage length for queued vehicles, angle of intersection less than 60°). Include the justification for design exceptions in the Phase I report.

e. Access to State Highways. State if the design complies with the criteria in Section 36-7 or list any instances of noncompliance.

f. Crashes. Note if the intersection is a high-accident location (HAL) and, if so, what year.

g. Terrain. Describe any unusual terrain features that could affect the design.

h. Cultural Development. Indicate adjacent cultural development that influences the intersection layout.

i. Improvement Type. List the type of improvement (e.g., new construction, reconstruction, 3R, safety).

j. Bicycle Route. Note the existence of designated bicycle routes through the intersection.

k. Sight Distance. On two-way stop-controlled intersections, note if intersection sight distance is met.

l. Verification. Note the method used to verify sufficiency of intersection to accommodate turning movements of the design vehicle.

m. Right-of-Way. Indicate if proposed right-of-way limits for the intersection are preliminary.

n. Truck Routes. Note the existence of designated truck routes through the intersection.

o. Other. Include any additional information not listed elsewhere that will aid in the review of the IDS.

Page: 14

Author: tmurtha Subject: Cross-Out Date: 7/7/2008 3:36:52 PM

Author: tmurtha Subject: Inserted Text Date: 7/7/2008 3:42:15 PM

o. Pedestrian Movements. Note likely pedestrian movements based on nearby generators such as schools, parks, business districts, etc. Also note the pedestrian crossing distances and pedestrian crossing times as defined in the current and any proposed MUTCD.

Author: tmurtha Subject: Replacement Text Date: 7/7/2008 3:36:44 PM

p

3. Capacity Analysis. Perform and document the capacity analysis of the IDS according to the following guidelines:

   a. Source Document. Use the *Highway Capacity Manual* and the *Highway Capacity Software* (distributed by the McTrans Center for Microcomputers in Transportation) for the capacity analyses. The use of any other capacity techniques and software must be first approved by BDE; see Section 36-1.07.

   b. Signal Phasing. In diagrammatic form, illustrate the proposed signal phasing required to obtain the desired level of service. Orient the signal phasing diagram to be consistent with the plan view of the intersection and any other pertinent diagrams.

   c. Results. Document the data and results of the capacity analysis on Sheet No. 1 for each leg of the intersection in a table as illustrated in Figure 14-3A.

4. Traffic Data. Provide the following traffic data on Sheet No 1:

   a. Traffic Movements. Provide a tabular listing of all movements to and from each leg of the intersection. Use the format illustrated in Figure 14-3B. Also, prepare a traffic diagram for the design year showing all DHV movements within the intersection. Orient the traffic diagram to be consistent with the plan view of the intersection and any other pertinent diagrams.

   b. Existing Volumes. Calculate the 8th maximum hourly volume per day from actual traffic counts to determine whether traffic signal warrants are met. See the *ILMUTCD* for additional guidance.

   c. Proposed Volumes. For new intersections or where proposed intersection improvements for large developments will significantly increase traffic volumes, traffic signals may be justified where the 8th maximum hourly volume three years after construction exceeds the values stated in the warrants. The three years time frame should be increased in the event of staged development. The 8th maximum daily hourly volume may be considered as 55% of the projected 30th maximum hour volume. See the *ILMUTCD* for additional guidance.

   d. Pedestrians. Where pedestrian control signal heads are proposed, provide a pedestrian count.

5. Intersection Layout and Design. Provide the following intersection layout and design information on Sheets No. 1 and No. 2:

   a. Centerline. Show the centerline information for all proposed and existing curves within the immediate area of the intersection. Include superelevation rates and transition stations. Label the station equation for all intersecting side roads.

Page: 15

Author: tmurtha Subject: Inserted Text Date: 7/7/2008 3:43:27 PM
and plans expected to affect future counts.

Page: 18

Author: tmurtha Subject: Inserted Text Date: 7/7/2008 3:47:46 PM
volumes, crossing distances (see MUTCD), and times

CAPACITY DESIGN ANALYSIS

_____ PHASE AREA _____ PEAK HOUR FACTOR _____
_____ SEC. CYCLE AVERAGE INTERSECTION DELAY A.M. _____ SEC. INTERSECTION LEVEL A.M. _____
SIGNAL TYPE _____ PROGRAM USED _____ P.M. _____ SEC. OF SERVICE P.M. _____

APPROACH		A			B			C			D		
BUS STOP CONDITION													
PARKING MANEUVER/HR.													
PEDESTRIANS													
ARRIVAL TYPE													
THROUGH LANE UTILIZATION FACTOR													
BASE SATURATION FLOW RATE													
D-DISTANCE													
LANE GROUP													
LANE WIDTHS													
GREEN TIME (SECONDS)	A.M.												
	P.M.												
G/C Ratio	A.M.												
	P.M.												
LANE GROUP DELAY (SECONDS)	A.M.												
	P.M.												
V/C RATIO	A.M.												
	P.M.												
LEVEL OF SERVICE	A.M.												
	P.M.												
20__ 30TH MAX. HOUR TRAFFIC	A.M.												
	P.M.												
20___ 8TH MAX. HOURLY TRAFFIC	A.M.												
	P.M.												

CAPACITY DESIGN ANALYSIS SUMMARY
Figure 14-3A