

## **VIII. KANE COUNTY MINIMUM DESIGN STANDARDS**

### **Plan Preparation**

To provide consistency from project to project, the plan sheets shall be assembled in the sequence below. The designer should note that not all plans will have all sheets and that several sheets can be combined together. All units shall be English. Sheet size shall be 24" x 36". Final plans shall be submitted in hard copy format and digital format (CDROM). The digital data file shall be provided to the County in one of the following formats:

- a. DGN (Micro-station Design format)
- b. ESRI ArcGIS format
- c. Other format (i.e.: AutoCAD) as approved by the County Engineer.

The required plan sequence is as follows:

1. Cover Sheet
2. Index of Sheets – Numerical order starting with Sheet 1, 2, 3. Listing of applicable Highway Standards, General Notes, Commitments
3. Summary of Quantities
4. Typical Sections
5. Schedules of Quantities
6. Alignment, Ties, and Benchmarks
7. Suggested Stages of Construction and Traffic Control
8. Plan and Profile Sheets
9. Drainage and Utilities Sheets
10. Intersection Details
11. Pavement Marking & Landscaping Details
12. Erosion Control Plans and SWPPP
13. Traffic Signal Details
14. Lighting Details
15. Structural Sheets
16. Wetland Details
17. Culvert Details
18. IDOT District 1 details (as applicable)
19. Cross Sections
20. Highway Standards

### **Survey Control Datum**

The Kane County Department of Transportation will make available all Geodetic Control information to be used for survey purposes. All coordinate values for these survey points shall be in Illinois State Plane System using the North American Datum (NAD83) with a 1997 HARN adjustment, Illinois East Zone 1201. All measurements shall be in US Survey Feet. For more documentation of the County's Geodetic Control network, see <http://www.co.kane.il.us/Geodetic/kanegps.htm>.

For all projects the basis of bearing for the plans shall be in NAD83 (1997) coordinate system. For Major Access, Subdivision, and Utility Modification or New Construction projects, the surveyor or engineer preparing the plans shall tie the boundary into at least two of the above mentioned survey control networks.

### **Pavement Widening Design (Superpav and Polymer Superpav)**

- Saw cut edge (one foot) of pavement prior to bituminous widening.
- 6" Subbase Granular Material, Type B – Asphalt Pavement Design.
- 12" Subbase Granular Material, Type B – Concrete Pavement Design.
- 8" to 12" Bituminous Base Course – ADT dependent.
- 2 ½" Bituminous Binder Course.
- 2" Bituminous Concrete Surface Course, (Mixture type is dependant on ADT).
- 12" Aggregate Subgrade.
- 8" Bituminous Shoulder (consisting of 6" Bituminous Base Course, 2" Bituminous Concrete Surface Course).
- Bituminous shoulders shall be constructed on a 6" granular sub-base.
- Aggregate shoulders shall be 8" in thickness.
- RAP will not be allowed for use as an aggregate for shoulder stone.
- Subbase Granular Material – Can be CA-6 gradation of crushed stone, crushed gravel, asphalt (RAP), concrete or bituminous.

### **Overlay Existing Pavement – (Superpav mix only)**

- Remove existing bituminous surface (2" depth).
- Strip Reflective Crack Control Treatment.
- Prime (tack coat) exposed surface.
- Bituminous Concrete Surface Course (2" minimum).

### **Cross Section Requirements**

- A 2% cross slope shall be used. (If existing cross slope is greater than 2% leveling binder shall be used to attain 2% prior to surface overlay. This applies to a tangent section of highway. An electronic leveling device must be used for all bituminous lifts).
- If on a horizontal curve it shall be the designer's responsibility to insure super elevation rate of existing pavement meets minimum standards. If substandard the designer shall correct this to minimum standards in his design.
- Minimum 4:1 fore slopes and 3:1 back slopes (maximum 2:1 back slope may be allowed).
- Shoulder width 8 feet. (Minimum 4-foot bituminous and 4 foot aggregate, rap will not be allowed as a shoulder stone aggregate). In some cases an 8-foot bituminous shoulder will be required. Example of this would be a County freeway such as Randall Road or traffic volume of 25,000 ADT or greater.

- Proposed ditch grades shall be dimensioned to nearest one tenth of a foot.
- When curb and gutter is included top of curb elevation shall be dimensioned to nearest hundredth of a foot.

### **Traffic Control**

- Electronic message boards – ADT > 5000 (minimum 72 hours in advance).
- Temporary Information signing – No minimum ADT.
- All Type One and Type two barricades will require ballast (minimum 2 sandbags per barricade) to hold them in place “Sandbags will be placed on barricade legs, over striped bottom rails not facing traffic, over unstriped bottom rails, or suspended from the barricade rail or frame in such a manner so the bulk of the sand is at least 18 inches below the top of the barricade”.

### **Landscape Restoration**

- Minimum 6“ Topsoil Placement.
- All disturbed areas shall receive a Minimum - Seeding Class 2A, fertilizer nutrients, and Erosion Control Blanket (North American Brand, or approved equivalent, or salt tolerant sod with fertilizer nutrients).

### **Drainage**

- Where applicable, perimeter Erosion barrier shall be placed at the right-of-way during construction and left in place until new Seeding is 90% established.
- Crossroad metal culverts shall be replaced with reinforced concrete pipe culverts including end sections with grates. The minimum size shall be 18” in diameter.
- 6” pipe underdrains will be required in vertical sags and on low side of super-elevations. End sections will be required at all outlets. A flexible marker 3-foot high shall be installed within 6” of outlet to indicate its location.
- All mainline curb and gutter when required, shall be B6.24.
- Drainage frames in curb and gutter shall be Type 24 frame.
- Minimum gradient in ditch shall be 0.5%. Storm sewer may be considered if 0.5% cannot be achieved.
- All outlet pipes shall include a flared end section with grate.
- Applicable setbacks for berms and detention facilities shall be observed in accordance with Section 9-115.1 of the Illinois State Statutes.

### **Traffic Signals (Temporary and Permanent)**

- Designers shall strictly follow the District 1 Traffic Signal Design Guidelines (latest edition).
- Video Camera Detection shall be used instead of in-ground loop detectors. Approved Camera detection devices include the Iteris and Autoscope systems. Traffic Signal plans shall include all video detection zones.
- If a proposed traffic signal is within a mile of an existing signal it shall be interconnected to that signal.

- All traffic lenses including pedestrian heads shall be Light Emitting Diode (LED). This will be based on advanced indium-based LED technology by the Dialight Company (maximum 18 LED's /12" Head) or approved equivalent.
- Provide a full traffic actuated controller, Type 5.
- Emergency Vehicle Pre-Emption (EVP) Systems shall be included on all traffic signals. It shall be the designer's responsibility to check with the Local Municipality on brand type.
- A battery back-up system, Novus XT 1000P Unit or an approved equivalent, capable of 3 hour minimum battery life to provide one hour of full functioning signals and 2 hour of flashing red shall be installed in the controller cabinet (Type IV Cabinet with an external battery enclosure).
- Phone modem shall be provided for standalone signal installations (not interconnected).
- On those intersections that will have a temporary signal installed prior to the permanent Traffic Signals, the Video Camera Detection System and Battery backup system may be transferred to the permanent set of Traffic Signals.

### **Roadway Lighting**

- Designer shall follow The "Guidelines for Lighting Design and Plan Preparation" as issued by IDOT.
- Approach Lighting will be required on SRA routes when traffic signals are to be installed.
- Intersection (beacon lighting) will be required for new subdivision roads intersecting County highways. The cost to erect shall be the Applicant responsibility. The cost to energize and maintain said lighting would be the Applicant's responsibility to resolve with the municipality.

### **Pavement Markings/Signs**

- Polyurea pavement markings. All markings shall be recessed in the pavement.
- Raised Reflective Pavement Markers, recessed in pavement.
- All Signs – Diamond Grade AZ.
- Stop signs minimum 36" x 36".
- Signposts – Telspar steel post (2 inch x 2 inch x 10 foot) using the V-loc socket system by Tapco Traffic Products or approved equivalent. All steel post to be powder coated Dark Bronze.

### **County Right-of-Way**

- All Right-of-Way monumentation shall be marked with 5/8" dia. x 24" long rebar. The rebar shall include a 2-½ inch aluminum diameter cap, Model SK-108-2 ½ D (Dome Top w/plastic insert) supplied by SURV-KAP INC. Web site is <http://surv-kap.com>). An approved equivalent may be used.
- All caps shall be identified as "COUNTY OF KANE" with Surveyors Registration Number such as "PLS 1234".
- All monumentation shall be established under the direct supervision of a Professional Land Surveyor.

## Highway Standards

- Designer shall use latest IDOT standards where applicable on plans. If not readily available, go to the following Internet website - <http://www.dot.state.il.us/desenv/hwystds/stnds.html> for download.

## Record Drawings

- Record Drawings shall include any changes to the approved plans. All field changes to the record drawings will be done electronically in the drawing file. The text and line work will be placed on its own level (or layer) and done in red. Field changes will be identified in the drawing by drawing over, striking through or clouding the change in a manner that will not alter, modify or erase any of the context of the original drawings. The Record Drawings shall include as a minimum the following items:

All geometric changes to roadways and entrances

All alignment changes to new or adjusted utilities

Field verified elevations to:

Outlet structures

Special structures

Overflow structures

Top of berm

Normal water surface elevation

High water surface elevation

Verification of right-of-way marker/property corners

Changes in project benchmarks or control points

- Record Drawings shall be submitted in the form of a burned CD as follows:
  - Drawing format shall be MicroStation (.dgn), AutoCAD (dwg) or other as approved by the County Engineer.
  - Improvements shall be tied into the State Plane Coordinate System-Zone IL E and North American Datum 83 (NAD83). Kane County Geodetic Monuments can be located on the Kane County Web Site at: [www.co.kane.il.us/geodetic/kanegps.htm](http://www.co.kane.il.us/geodetic/kanegps.htm).
  - In addition, plan sheets shall be included as a collection of 24"x36" (full size) scanned files or images as Tagged Information File Format (tif) files.

## Plats of Survey

- Dedications on plat shall include the name of the entity to which the property is entity is dedicated.
- Shall ensure utility easement locations are shown.
- Width of right-of-way shown on the plat meets the requirement based on the roadway classification or the dedication per the rezoning agreement of the ordinance or an existing access agreement.

- Shall ensure easement language does not include dedication areas.
- Vicinity Map.
- Graphic Scale.
- Legend and Abbreviation definition.