

## III. SURVEYING FOR INDUSTRIAL SUBMITTED PLANS

### 3.01 SECURITY AND SAFETY

Anyone contracted by outside (non NS) industry sources that will be surveying for, staking out or inspecting industrial tracks on Norfolk Southern property must obtain a right of entry permit from the Norfolk Southern Industrial Development Manager for that region. Please see the following URL for details:

[http://www.nscorp.com/nscportal/nscorp/Customers/Industrial%20Development/manage\\_contacts.htm](http://www.nscorp.com/nscportal/nscorp/Customers/Industrial%20Development/manage_contacts.htm)

The applicant will be responsible for the costs of NS personnel flagging for their surveyors if such flagging is deemed necessary by the Division Superintendent.

### 3.02 SURVEYING

Accurate field survey information is fundamental for development and approval of an acceptable plan. When performing a survey, or collecting data for use in design preparation, there are several elements that a surveyor must pay particular attention to. These elements fall into four categories: existing track, utilities, structures and topography. The following is a categorized list of information that should be gathered in the field survey and shown on the drawing.

#### 3.02.01 EXISTING TRACK

Proper depiction of the existing track is essential to developing a workable design. The following items should be located and shown on the drawings:

- Centerline of track at top of rail.
  - If track is tangent, measurements should be taken at a maximum interval of 100 feet.
  - If track is curved, measurements should be taken at a maximum of every 50 feet.
- Points of Curve ((PC or Points of Tangent to Spiral (PTS)) and Points of Tangency ((PT) or Points of Spiral to Tangent (PST)) and super-elevation tags, if available, on super-elevated track.
- Point of Switch (PS) for all turnouts. Note whether switch is hand throw or power operated, right hand or left hand thrown.
- Point of Frog (PF), diverging and straight side, for all turnouts.
- Derails and type (HB or double switch point).
- Division of Ownership and Maintenance signs.
- Close Clearance signs.
- Nearest mile post and direction of increasing mile posts.
- Track centerline location of all pipes or utility lines passing under or over track.
- Bumping posts, rail stops, or earth mounds.
- Road Crossing (centerline of track at edge of crossing surface).

- Type, size, or weight of all key track components including compromise joints (used between rails of different sizes).
- Construction of rail, i.e. jointed rail (JTR) or continuously welded rail (CWR).
- Rail lubricators.
- Insulated joints
- Track wires for signal circuits connecting to the rails (including crossing activators).
- Signals and signal structures including AEI tag readers, hot box detectors, dragging equipment detectors, pedestals, signal pole lines, and bungalows.

### **3.02.02 UTILITIES**

Utilities must be accurately depicted. A missed utility pole or manhole can drastically alter project acceptability and cost if not identified until the construction phase of a project. The following items should be located and shown on the drawings:

- All aerial utility and light poles, guy wires, and guy poles.
- Natural Gas line (valves, markers, and/or vents).
- Telephone or Fiber Optic lines (junction boxes, or markers).
- Water lines (taps, valves, meters, markers).
- Sewer lines (taps, cleanouts, manholes, markers).
- Storm water facilities (inlets, outfalls, catch basins, manholes).

Overhead wires should be surveyed for their elevation at the point at which they cross the existing track (if applicable). Their location and elevation should also be located at the point of their greatest sag (and referenced to the corresponding existing ground elevation) along with an additional point at the center line of proposed track.

### **3.02.03 STRUCTURES**

Structures, existing or proposed, have the potential to negatively impact either side and/or overhead clearances. The following clearances must be measured and shown on the drawing:

- Doorways (both sides and top).
- Corners of docks and finished floor elevations.
- Fences and fence gates.
- Unloading apparatus pits and scales (inside and outside walls).
- Corners/sides of buildings and finished floor elevations.
- Roadways.
- Retention pond levees and drainage structures.
- Retaining walls.
- Utility poles for side clearances.
- Any additional structure that may be a clearance issue or impact design.

### **3.02.04 CONTROL POINTS**

All control points set or found by the surveyor during the course of the survey should be labeled and shown on the drawing. These points should be described as the type of point (PK nail, iron pin, survey monument, etc.) along with a Northing, Easting and Elevation of the controlling datum. The controlling datum should be identified (assumed data system, state plane system, etc...).

Real estate information, such as property pins or corners, should also be collected, labeled and shown on the drawings.

### **3.02.05 TOPOGRAPHY**

Although NS does not require submittal of complete grading plans, the collection of adequate topography data to correctly depict the nature of ground surface in vicinity of track, all employee walkways, and roadbed drainage facilities is very important. Large or sudden changes in ground topography adjacent proposed track roadbed must be measured. Adequate ground shots must be taken to properly depict the existing ground topography to insure that a proper grading and drainage plan can be developed.