

Will It Fit?



Part 4

Introduction to Railroad Clearances

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1

Can You Spot the Clearance Problems?



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Clearances



AREMA Chapter 28

STATE, FEDERAL, PRIVATE
AND FREIGHT ISSUES

- Safety Mandates
- Side Clearances
- Overhead Clearance (* NS Bridge Collision clip with stack train in siding)
- Track Clearances
- Overhead Wires (NEC Code)
- Doorways, Openings, Bridges
- Identifying legacy Issues



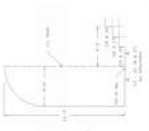

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State Laws

- Fence & Livestock – ILLINOIS 625 ILL Comp. Stat. 5/18c-7504
 - IMPORTANT: ILLINOIS LAWS ARE SPECIFIC TO THAT STATE (LIVESTOCK CROSSING FENCES IN ILLINOIS). ILLINOIS IS NOT IN THE ROOM SAVING THE COUNTRY. ILLINOIS IS NOT IN THE ROOM SAVING THE COUNTRY. ILLINOIS IS NOT IN THE ROOM SAVING THE COUNTRY.
- PUC Side Clearance (ILLINOIS TITLE 92 IAC) AREMA MRE Chapter 28

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Turnouts & Switches (AREMA C-5)

MODULE 3

- Frog Unit Triangle
- Terminology
- Layout Terminology
- Layout Methodology
 - Semi Tangent Method
 - Equivalent Curve Method
 - Significance of long tie / switch ties on grade & alignment



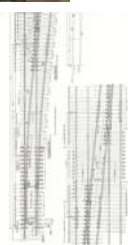


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Switch Components / Familiarizations

No field trip for SLSI today
(Large Group & no time)

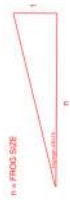
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Track & Switch Geometry

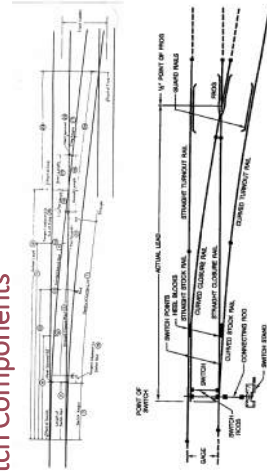
- Headblock, Point of Switch HB/Pt Sw
- Point of Frog (PF) =PT-TO
- Turnout Lead
- Size of Turnout (Unit Triangle = Frog #)
- Equivalent Curve vs Switch & Lead Curves
- Rail Size
- Crossing Frogs / DIAMOND\$



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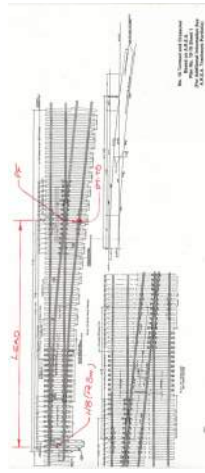
Switch Components



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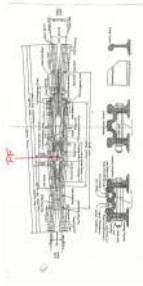
Turnout Standard Plans



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Basic Turnout Geometry



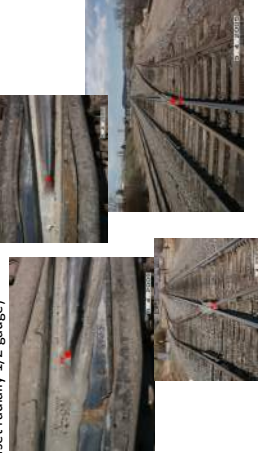
- Simple curves, chord definition (not arc, what's radius good for?)
- The typical boundary surveyor need only be concerned with HB (PTSW), PF, measured lead, frog angle, frog size & description, degree of equivalent curve, switch point length and weight of rail. (This is what you need to communicate to the rail road witch!)
- If elevation is important, please note end of long switch ties! (Defines plane)

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Theoretical PF = PT-TO (Offset radially 1/2 gauge)



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Point of Switch [PTSW] = Headblock [HB]



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Basic Turnout Geometry

- Simple curves, Chord Definition (not arc; what's radius good for?)
- The typical boundary need only be concerned with HB (PISW), PF, measured lead, frog angle, frog size & description, degree of equivalent curve, switch point, length and weight of rail. (This is what you need to communicate to the railroad with!)
- If elevation is important, please note end of long switch ties!



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When Looking at This...



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...Think Like This!



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Turnout Layout: Construction Step "A"

- Pick your tangent baseline to come out of (must match rail)
- Set your PI
- Turn your frog angle delta, using semi-tangent "T" from your standard plans or switch table, establish your PT - TO (Theo. PF)
- Set your PC on the baseline using your semi-tangent distance "T"



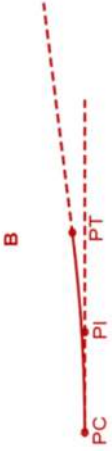
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Turnout Layout: Construction Step "B"

- Lay in your equivalent curve radius ("r") between the PC and PT
 - i.e. "Filler the Curve"
 - Equivalent radius is determined by solving for "r". Using either given semi-tangent distance, lead distance or degree of equivalent curve "D"
 - *** beyond the PT a short piece of tangent (20-45 long depending on frog length, PF to HEEL) because actual component is tangent (fixed) as fabricated in the rail mill.
- Try to avoid curves between the PF and the end of the largest (17 ft) Ties...*



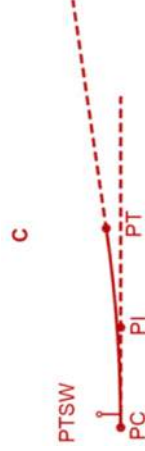
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Turnout Layout: Construction Step "C"

- Lay-in your point of switch/ headblock (PTSW=HB)
- Switch symbol is a 6 ft segment (switch rod) topped off by a 2 ft diameter circle (outline of old base of switch stand (thus the lollipop symbol))



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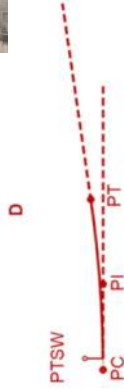
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Turnout Layout: Construction Step “D”



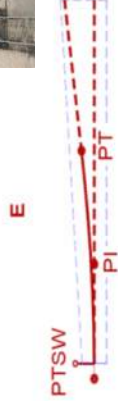
- Remove the short segment of curve between the PC and PTSW
- HB or PTSW is used to label the beginning of a track in a turnout in order to avoid confusion with the Point-of-Spiral (PS) in a spiral curve (i.e. PS-PC-PCS-ST)



Turnout Layout: Construction Step “E”



- Lay out the limits of your long switch ties (8 ft to 17 ft in standard increments) primarily as determined by your standard plan for a given turnout
- ** Switch tie limits (blue dotted line) denotes where both tracks must remain in the same plane and hold the same grade....



ON TO PART 5