

August 2022 Volume 15, Number 8

Sunrise Division Officers

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Layout of the Month

This month's photographs are from Dennis Jackson's Denver & Rio Grande HOn3 themed layout.



We need more layout photos.

If you have photos of your layout that you would like to see in the Herald, please send them to the Editor.

August Meeting Notes

Signing in to the hybrid meeting began about 6:45 p.m. on August 4, 2022. The meeting began at 7:04 p.m. with 19 participants in attendance at the church and 2 attending via Zoom. The meeting began with introductions followed by Announcements, Tool Time, Show 'n' Tell, and the Clinic, all of which are reported on in greater detail in this edition. The meeting concluded at 9:05 p.m.

Next Meeting

The next meeting will be Thursday, September 1, 2022 in person at Holy Love Lutheran Church, 4210 S Chambers Road, Aurora, Colorado. Mask wearing is optional for all attendees. The meeting will start at 7:00 p.m. The meeting will also be streamed on Zoom with sign-in between 6:30 and 7:00.

URL of the Month

This month's featured YouTube video is of the railroads of Chicagoland, a subject near and dear to me, as I lived there for the first 24 years of my life. (Ed.)

A Teen Explores Chicago's Railroads - The Sequel
1975-78

<https://www.youtube.com/watch?v=Gz-SUeVdnik>

Upcoming Tool Time

Odd Tools—William Boorman

Upcoming Clinic

Athearn bits, weathering trucks and sound—
Larry Stephens

Upcoming Show 'n' Tell Themes for 2022

September-Mining

October-Steam

November-2000's Era

December-Holiday Theme

Announcements

In an attempt to reduce problems, we continue to ask that Show 'n' Tell photos, Clinic presentations, and Tool Time photos be taken before the meeting and sent to Gary Myers (garymyers06@comcast.net) for presentation at the meeting and to the editor

for inclusion in the Sunrise Herald
(rlhoch422@gmail.com). (Ed.)

The Foothills Society of Model Railroaders swap meets have resumed at Green Mountain Presbyterian Church, 12900 W. Alameda Pkwy, Lakewood, CO. The meets are held on the third Saturday of odd numbered months.

Rail Fair at the State Fair Grounds (TECO Train Expo Colorado, Pikes Peak Region) October 15 and 16, 2022.

The Front Range Division sent this invitation to the Sunrise Division.

Details for the FRD annual picnic to be held in the month of August are below. Please invite your members and friends. Date for the picnic is Sunday August 28th at 5:00 pm at the Green Gables Reserve Clubhouse. The FRD will supply KFC chicken, soft drinks, and paper plates and eating utensils. Attendees should bring pot luck (salads, desserts, chips, beans, etc) for sharing, also, they should bring serving utensils. The Club House has tables and chairs but it would be a good idea to bring a lawn chair or two. There are no awnings so a hat is advisable. Address for the club house is 2139 S Reed St, Lakewood, CO 80227.

Module Update

Larry Stephens reported that the current project involves matching up the scenery from one module to the next, especially at the junction of two modules.

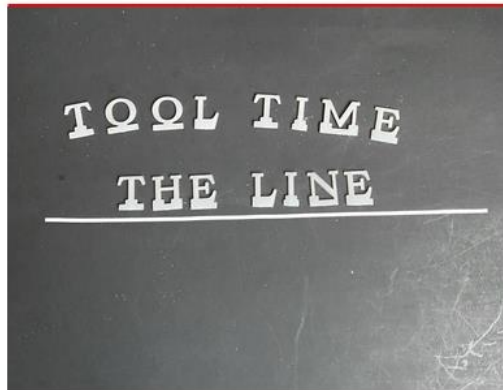
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Tool Time

Rich Flammini gave a PowerPoint presentation on making road markings. Here is his presentation in its entirety:

Tool Time
The Line



Tool Time
The Line



Tool Time
The Line



Tool Time
The Line



Rich now uses this masking tape for his road stripes.

Tool Time
The Line



Tool Time
The Line



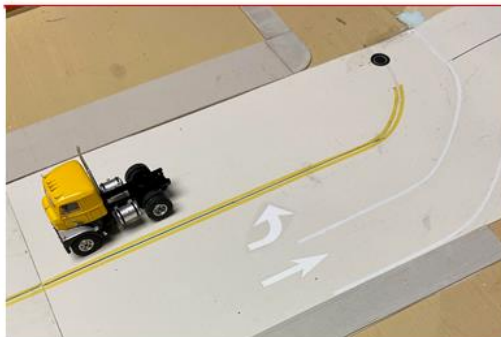
These additional widths and colors are also available.

Rich has used this product in the past but noted that it is no longer available.

Tool Time
The Line



Tool Time
The Line



Show 'n' Tell

This month's Show 'n' Tell subject was 1970s Era. Stu Jones showed this liquid oxygen tank car.



Stu said "This Liquid Oxygen Tank Car was built in the 1960s but was prevalent in the '70s. It was built by the Union Tank Car Co. and leased to Canadian Liquid Air Co. It was designed to carry super cooled cryogenic liquids such as liquid oxygen that must be kept at -279° Fahrenheit. It has two concentric tanks or shells separated with Perlite insulating material. The inner tank requires special supports to allow it to shrink by

as much as 1½ inches when cold. Although I don't have any shipping information, I suspect that it was used to ship oxygen between large cities and small distant Canadian towns for medical and light industrial use where oxygen separation facilities didn't exist.

I became intrigued by this car when I saw an N scale model advertised. Nothing is available in HO, so I scratchbuilt it. The main tank is a 1¼ inch wood dowel, with 1¼ inch elliptical domes on the ends from Plastruct. Several coats of sanding sealer make the wood metal-smooth. Other details were fabricated from styrene, brass wire, and ladder stock. Trucks, couplers and brake gear are commercial. The walkways are Kadee roofwalks that don't adhere with any kind of adhesive. The lettering is also commercial, although no decals are available for the corporate logo. The logo has to be white so I couldn't make my own."

Gary Myers showed these PowerPoint slides.

Show n Tell August 2022 - 1970s Era
D&RGW 3 Bay Hoppers – Gary Myers



The Rio Grande had 500 70 ton 3 bay hoppers (18500-18999) built by Pressed Steel Mt Vernon Division in 1952, mostly welded construction, with 10 exterior side stakes.

The decals were updated with rebuilt dates of 9-77 and added the black box stencil decals to be appropriate for the 70s.

These cars were upgraded to the 70s for my Tunnel motor trains.

Show n Tell August 2022 - 1970s Era
D&RGW 3 Bay Hoppers – Gary Myers



The lettering was scratched with an exacto blade to match photos of weathered cars, with burnt sienna paint added to simulate some rust in the removed decal area.

Bragdon weathering powders were applied to car bodies and trucks. Wheels were painted a dirty rust.

Show n Tell August 2022 - 1970s Era
D&RGW 3 Bay Hoppers – Gary Myers



These are Athearn cars with coal loads. Real coal was added on top of the provided loads.

Kadee #58 scale couplers replaced the Athearn stock couplers. Uncoupler bars and train line glad hands were added.

Show n Tell August 2022 - 1970s Era
D&RGW International Caboose – Gary Myers



International Car Company built 15 all steel off-centered cupola cabooses (1501-1514) for the D&RGW (10/66), and 10 centered cupola cabooses (1515-1524) (3/76).

Starting in 1972, Rio Grande painted their cabooses in Safety Orange and applied the "Action Road" herald.

Show n Tell August 2022 - 1970s Era
D&RGW International Caboose – Gary Myers



This is an Atlas Caboose, with 1972 livery and rebuilt date of 3/74.

Trucks and wheels were painted, and with body weathered using Bragdon powders.

Show n Tell August 2022 - 1970s Era
D&RGW All Steel Caboose – Gary Myers



This is an Athearn Caboose, which resembles the D&RGW caboose, with 1972 livery and rebuilt date of 6/76. Caboose 01435 was built by D&RGW in 1944.

The ends, ladders, stack, railings were painted. Windows need glass! Stack needs tie-down. The ladder ends above the roof line should be changed to look like D&RGW ladders.

Bill Johnson's model was this SD40-2

Show n Tell August 2022 - 1970s Era
SD40-2 – Bill Johnson



Bill said "There were big changes in American railroads during the 1970's. The creation of Amtrak and the many mergers that continue to the consolidation of the nation's railroads were the major ones. There was also the change in motive power.

First introduced in 1972 the EMD SD40-2 would become one of the most numerous locomotives in the country by the end of the decade. An interesting side note from the modelers perspective was that by 1980 no one offered a model of the now very popular SD40-2. Alas, a company named GSB announced in Model Railroader that they were going to produce it. There were some big names in the hobby associated with GSB and expectations were high. Every month new ads would appear in the model railroad press telling how great the GSB model would be, but still no model. Finally in March of 1983, almost 3 years after being announced, the long anticipated model was released, but Athearn had already released theirs a month earlier and captured the market. GSB sold a few but soon was out of business.

Not only did Athearn beat them to market, but had the better model. This was Athearn's first use of a flat can motor that allowed a prototypical correct hood width and dual fly wheels to improve running



Dave Clifford showed this HO scale model of a GG1. While it would no longer have been painted this way in the 1970s, it would still have been in operation.

And finally, what conveys the 1970's railroad scene better than these 1975-1976 American Freedom train models presented by John Kies'.



Clinic

Stu Jones presented this PowerPoint presentation.

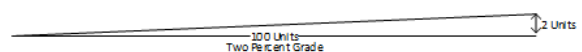


Track and Roadbed Engineering and Design

Stewart Jones MMR

Grades

- Grades are calculated in percent: the amount of rise for a given length
- Railroads prefer grades of two percent or less
- The "Ruling Grade" is the maximum grade in a particular track district
 - Used to calculate needed locomotive power



Establishing Grade

- Manual level



Digital Level Grade Degrees



Digital Level % Grade



Angle vs Grade

Angle	Grade		Angle	Grade
0.1	0.17%		1.1	1.92%
0.2	0.34%		1.2	2.09%
0.25	0.43%		1.25	2.18%
0.3	0.52%		1.3	2.27%
0.4	0.70%		1.4	2.44%
0.5	0.87%		1.5	2.62%
0.6	1.05%		1.6	2.80%
0.7	1.22%		1.7	2.97%
0.75	1.30%		1.75	3.06%
0.8	1.40%		1.8	3.14%
0.9	1.57%		1.9	3.32%
1	1.75%		2	3.49%

Establishing Grade

Establishing a Reference



Vertical Curves

- Joins different grades
- Provides a smooth transition from one grade to the next
- In the field, the ground is the roadbed
- Vertical curves follow a parabolic form

Vertical Curves

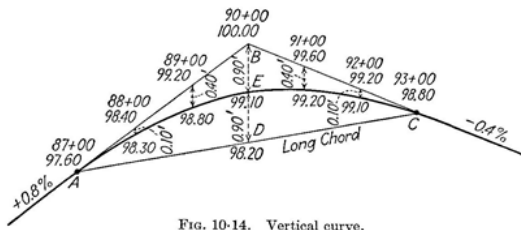
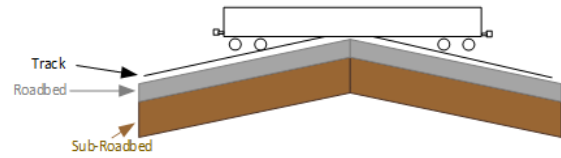
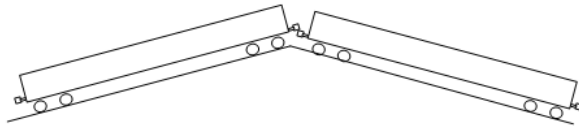


Fig. 10-14. Vertical curve.

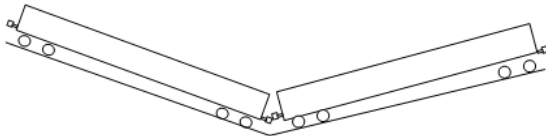
Abrupt Grade Change Bottoming Issues



Abrupt Grade Change Coupling Issue

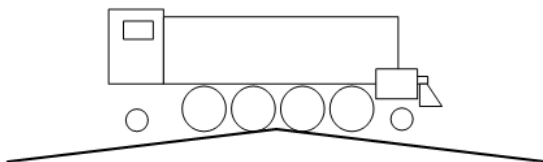


Abrupt Grade Change Coupling Issue



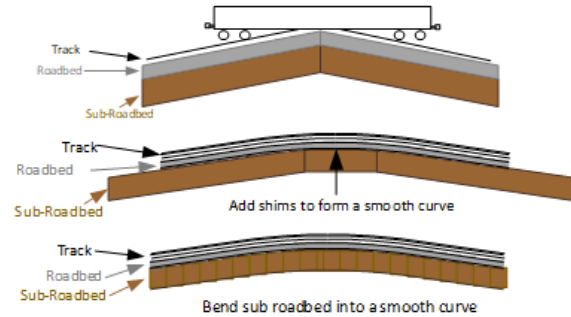
Abrupt Grade Change Locomotive Issue

- Grade Change: Long wheel-base, rigid-frame locomotive (exaggerated)



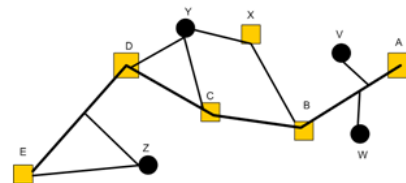
Vertical Curve

- Roadbed Design



Curves and Customers

- A railroad may serve customers that are not in a straight line
- A railroad may serve other customers that are off the main line

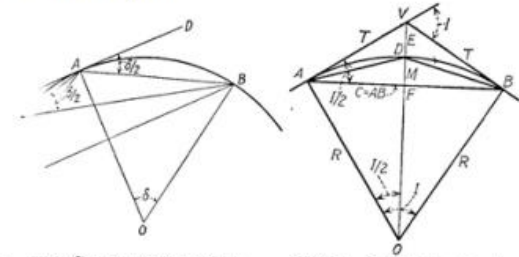


Curves and Terrain



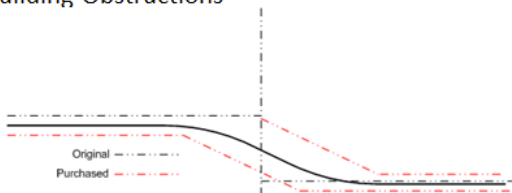
Horizontal Curves

- Curve layout



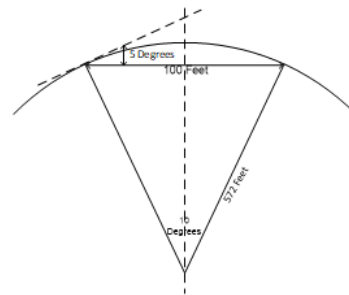
Cultural / Legal Considerations

- Property Rights
- Building Obstructions



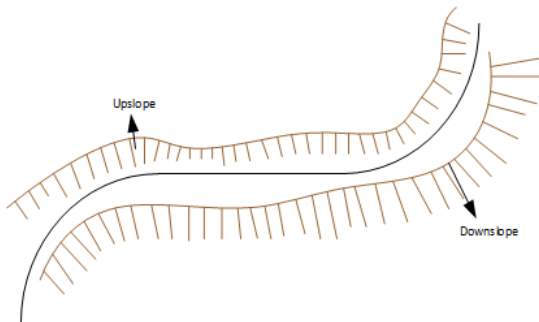
Horizontal Curves

- Degree of Curvature



Terrain vs Horizontal Curves

- Terrain



Degree of Curvature

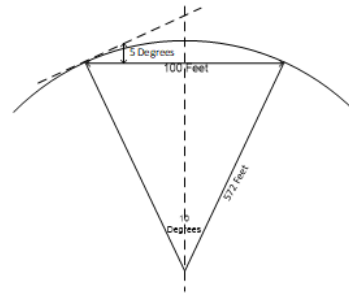
Radius HO feet	Radius Inches	Degree of Curvature
175	24.13	33.2
190	26.2	30.5
205	28.27	28.2
220	30.34	26.3
235	32.41	24.6
250	34.48	23
265	36.55	21.8
280	38.62	20.6
295	40.69	19.5
348	48	16.5
435	60	13.2
573.7	79.1	10

Turnout Radius of Curvature

Turnout #	Degree	HO Radius	Inch Radius
#4	14.4	142	19.5
#5	11.5	208	28.7
#6	9.5	352	48.6
#7	8.2	426	58.8
#8	7.1	603	83.2
#9	6.4	770	106.2
#10	5.7	961	132.6

Horizontal Curve Layout

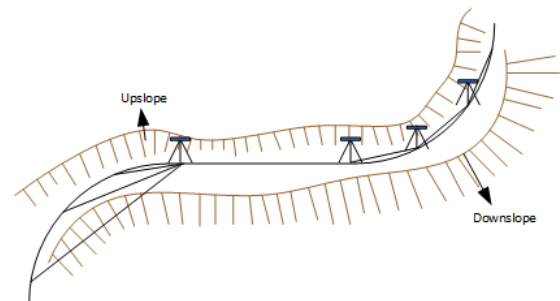
- Degree of Curvature



Big Ten Curves



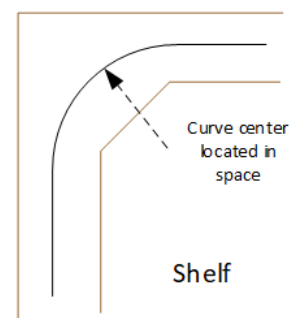
Field Survey Layout



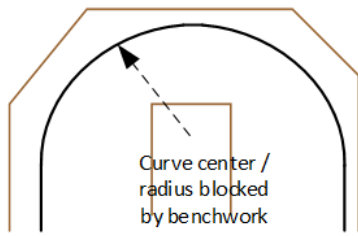
Horizontal Curves

- In the field, curves are usually laid out in 100-foot increments
- A surveyor measures an angle
- A crew stretches a 100-foot tape and places the end along the surveyor's sight line
- The crew now stakes the center line
- Fortunately laying-out curves is much easier for us modelers (with exceptions)

Locating Curve Center



Locating Curve Center

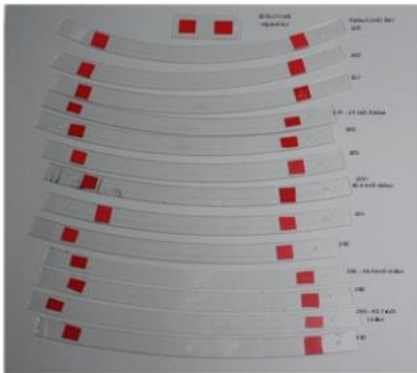


Peninsula

The Finished Curve



Horizontal Curves: Tools



Tracklaying Gang



Laying a Curve with Template

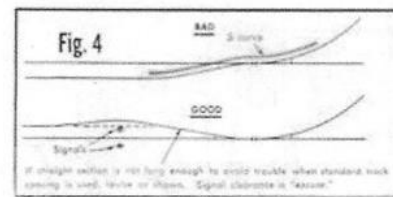


S Curves

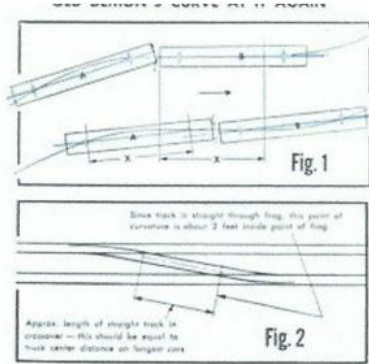


Beware the Demon S Curve

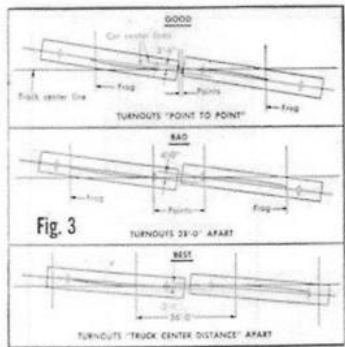
By John Armstrong



S Curves



S Curves

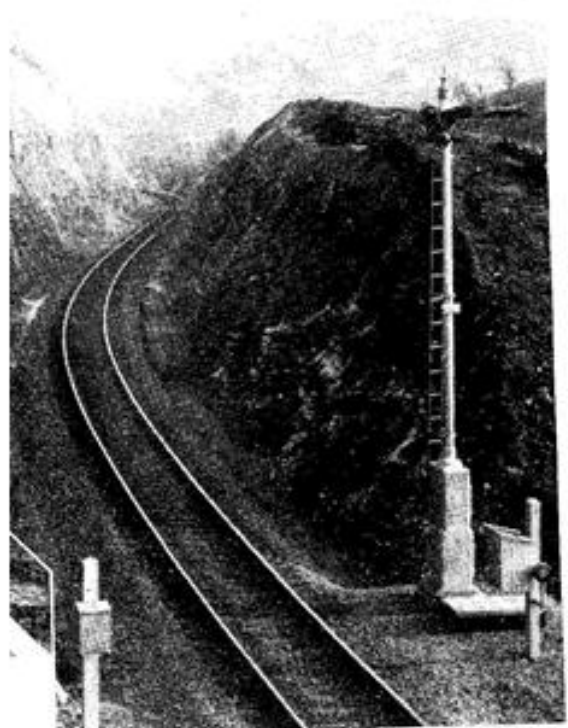


Helix Design



Easements

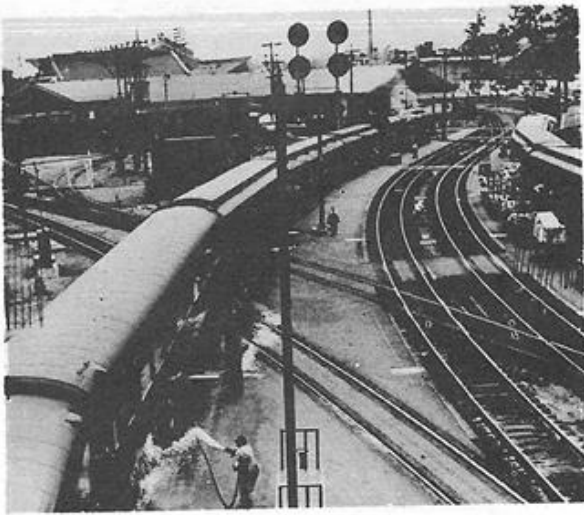
- Easements provide a gentle transition from straight track into a curve
- John Armstrong described a lack of an easement as "the coefficient of lurch"
- Easements are used for both railroads and highways (not needed for low speed routes)
- Easements protect freight and passengers from "lurching" forces



C&NW Track



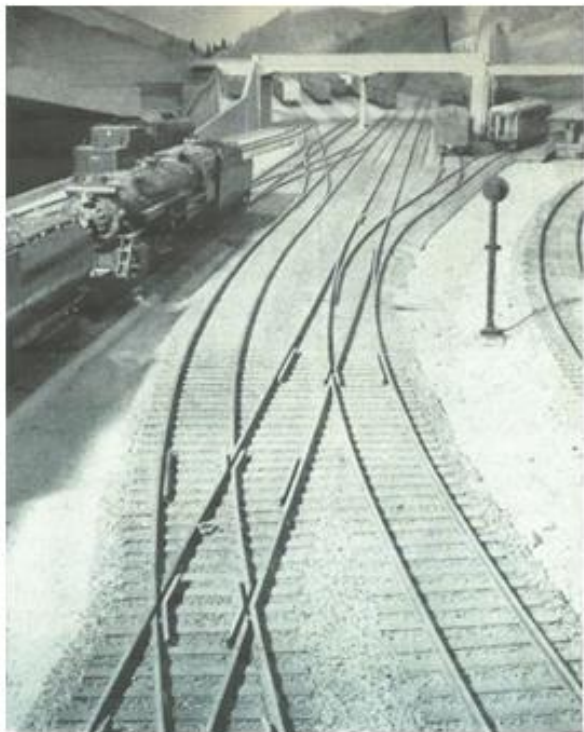
N&W Roanoke VA



Spiral through a Turnout



Easement Example



Easement Example



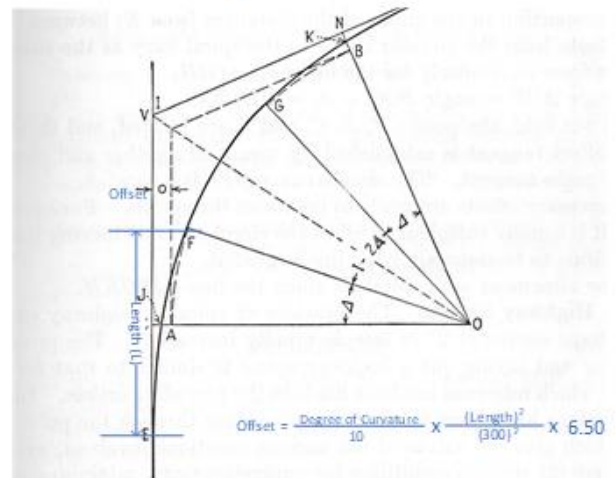
Wexburg Siding



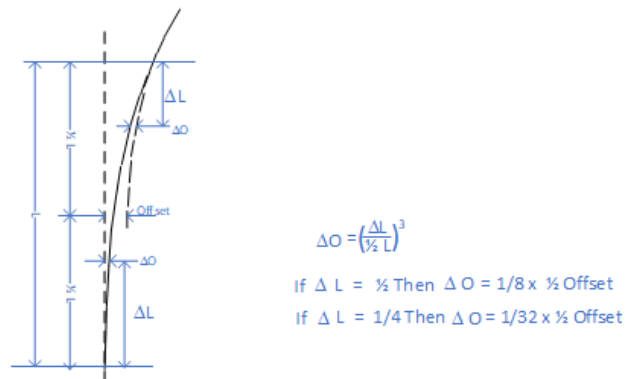
Easement Example



Calculating Easement Offset



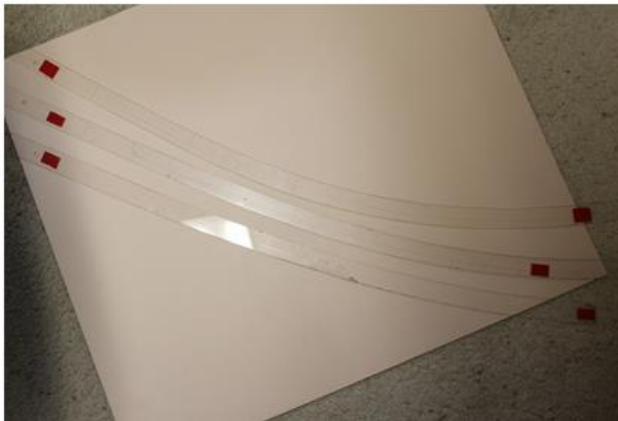
Calculating Easement Curve



-or- The Fast Way



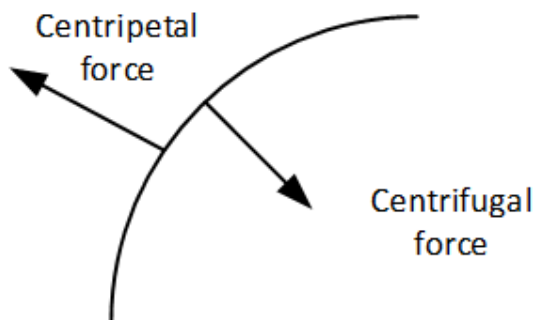
Easement Templates



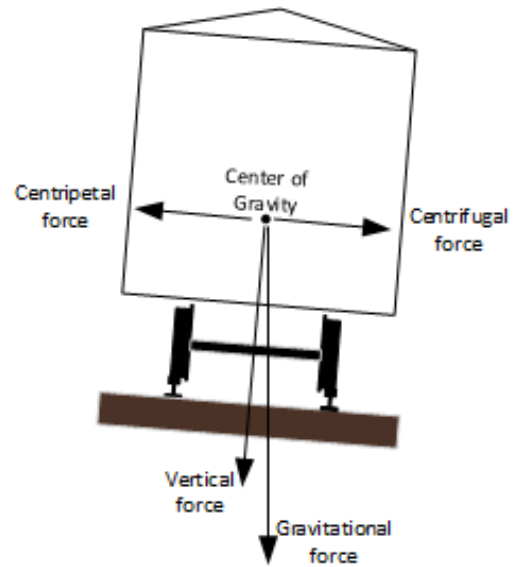
Superelevation

- Counter balances centripetal forces on curves that must be negotiated at speed
- Should not exceed 7-8 inches
 - Must accommodate slow speed trains

Dynamic Curve Forces



Dynamic Curve Forces



Super Elevation

