

IRWA Railroad Symposium

Railroad Surveying and Safety Issues

Chapter 10

International Right of Way Association

Indianapolis, Indiana

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Schneider

Safety on and near Railroad Right of Way and Property

- The days of surveyors being able to occupy the railroad right of way whenever it is convenient for them are gone
- Unless you are properly trained and credentialed and have the railroads permission you should not be on their property



Safety on and near Railroad Right of Way and Property

- Railroads must comply with all Federal Railroad Administration (FRA) regulations
- All railroad employees, independent contractors and their employees are governed by the same Federal Railroad Administration (FRA) regulations
- The majority of these regulations are aimed at protecting railroad workers and the general public



Safety on and near Railroad Right of Way and Property

- Railroads operate some of the largest most dangerous equipment on the planet and even their small equipment can cause fatal injuries
- Safety is very important to railroads and they have specific requirements concerning the following:



Safety on and near Railroad Right of Way and Property

Personal Protective Equipment

Clothing and Jewelry

High Visibility Apparel

Substance Abuse

Operating Tools and Equipment

Slip, Trip and Fall Prevention



Safety on and near Railroad Right of Way and Property

CSX's area of operation is all of
North America east of the
Mississippi and parts of Canada

A few years ago CSX went one
whole year without an employee
fatality



Environmental Safety

- Safety and the protection of human health and the environment are fundamental to railroads management principles and good business practices
- It is their policy to protect the environment, and the health and safety of employees and communities in which they operate



Environmental Safety

- Their daily decisions and actions are guided by the following environmental principles:
 - Comply with environmental laws and regulations
 - Conduct operations safely, with care regarding environmental risks to employees, customers and the public
 - Minimize waste, prevent pollution and incorporate recycling in all practices and operations



Environmental Safety

- Strive to eliminate releases that may cause harm to the environment
- Train employees to be aware of and responsive to environmental responsibilities
- Strive to continually improve environmental performance



National Security and the Railroad

- Terrorist attacks have drawn attention to the importance of the security of hazardous materials in America's transportation system
- Hazardous materials move safely by plane, train, truck and pipeline in quantities ranging from ounces to thousands of gallons
- Over 800,000 shipments of Hazardous Materials are made daily



National Security and the Railroad

- In the wrong hands hazardous materials can pose a significant threat
- Addressing this threat is vital to protecting our citizens and our economy
- The Department of Homeland Security and law enforcement agencies alone cannot



National Security and the Railroad

- They need the help of carriers, shippers, producers and citizens to report suspicious activities on and along railroad right of ways
- At the present time there are more people and agencies monitoring and reporting activities on and along railroads that at



e-RAILSAFE Certification

- The e-RAILSAFE program is a nationally recognized railroad safety and security compliance program now required by most Railroads
- The entire process of e-RAILSAFE badging is done on line
- The following are the basic steps



e-RAILSAFE Certification

- Setup an account with e-RAILSAFE
- Submit employee information and consent form
- Submit employee photo
- Take two online tests: Rail Security Awareness and Contractor Orientation
- A criminal background check will be automatically ordered after both tests



e-RAILSAFE Certification

- Once your e-RAILSAFE credential is issued you will still need the permission of a railroad to enter their property
- In some situation a railroad may require you to be escorted by one of their employees
- In the case of CSX and some others you will be required to have training and badging specific to that Railroad and in some situation you may still be require to be escorted by one of their employees



CSX Contractor Safety and Roadway Worker Training

Federal Railroad Administration (FRA) regulation 49 CFR Part 214 and CSX Engineering Department Policy require that all independent contractors and their employees who are Roadway Workers on Railroad property receive annual *On-Track Safety Training*



CSX Contractor Safety and Roadway Worker Training

CSX's Policy states that you must have this training if you will be on or near track, within 25' from the outside of the rail or with the potential of fouling the track.

CSX policy also requires that all contractors have current e-RAILSAFE credentials as well as a current Roadway Worker Protection Certification card demonstrating that they have met the current requirement for CSX Contractor Safety training.



CSX Contractor Safety and Roadway Worker Training

Roadway Worker Training is a 4 hour video and text book presentation with a 25 question final exam that covers the following topics:

- General Safety Rules
- Public Safety & Environment
- Ethics and Policies
- Terms and Definitions



CSX Contractor Safety and Roadway Worker Training

- Job Briefings & Communications
- Working Limits
- Train Approach Warning
- Individual Train Detection
- Use & Operation of On-Track Equipment



Railroad Right of Way

Where is the Railroads Right of Way line?

It's called for in deeds, it's depicted on Track Maps and Valuation Maps?

In more cases than not, it is not monumented

Its general location may be occupied by a fence

Was that fence constructed by the railroad to control their right of way?

Was that fence constructed by the adjoining land owner to keep their livestock off of the right of way?



Railroad Right of Way

I have found some excellent examples of railroad right of way monumentation in the form of concrete right of way markers, cast iron right of way markers, concrete filled pipes and railroad rail set vertically with stationing numbers welded on them and most of these were depicted on track maps.



Railroad Right of Way

Unfortunately the majority of the time there are no monuments and about half of the time there are no fences.

Most of the time the surveyor is going to rely on the location of the existing tracks to re-establish the centerline or survey line and then re-establish the right of way lines in relation to them.

This seems to bring us back to the access issues and the need for the



Valuation Maps and Track Maps

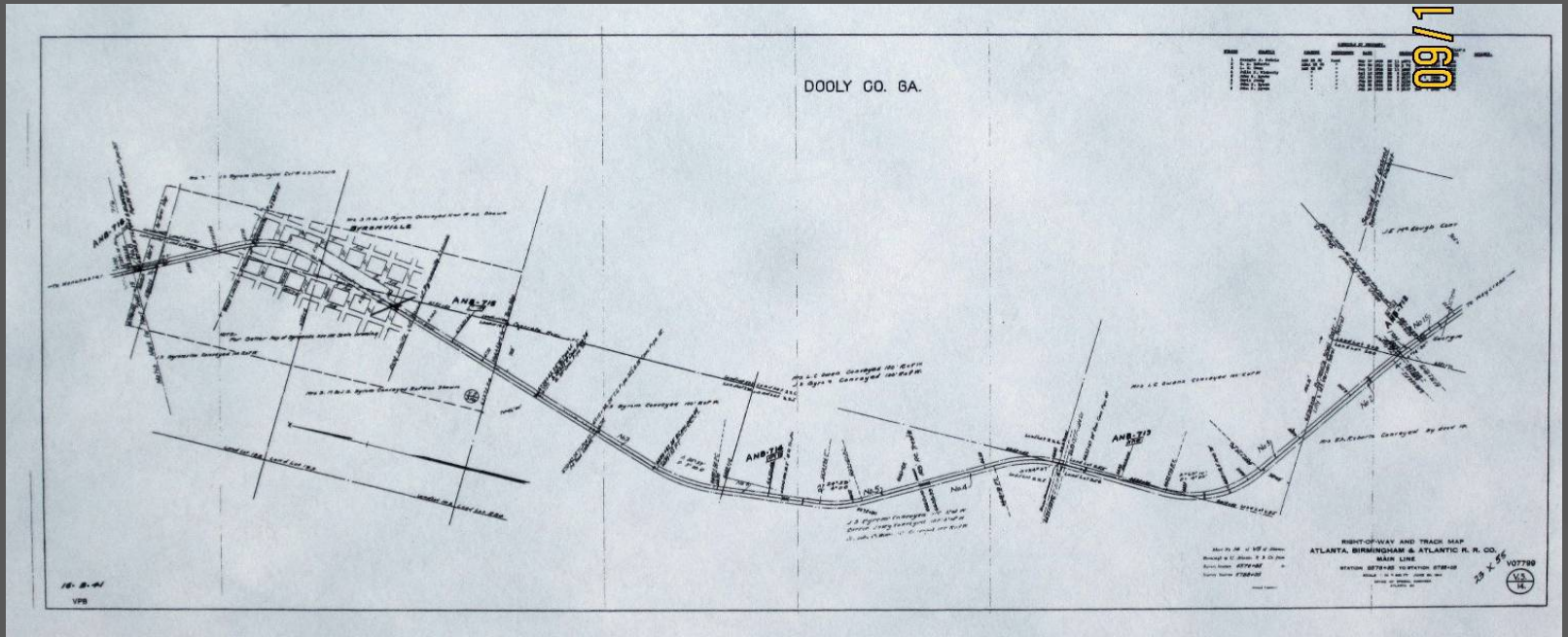
Valuation Maps or what we call Val.

Maps are the product of a nationwide inventory of all steam railroad property and equipment which is the direct outcome of the Interstate Commerce Commission Act of 1913

The Val. Maps depict right of way, property parcel lines and much of the same centerline track geometry and stationing that was devised in the original Track Maps and engineering



Valuation Maps and Track Maps



Valuation Maps and Track Maps

Most Val. Maps also have parcel table of original right of way takes that list the prior owners name, deed recording info and date

Many of the parcel tables were maintained by the railroad as additional property was acquired or sold off

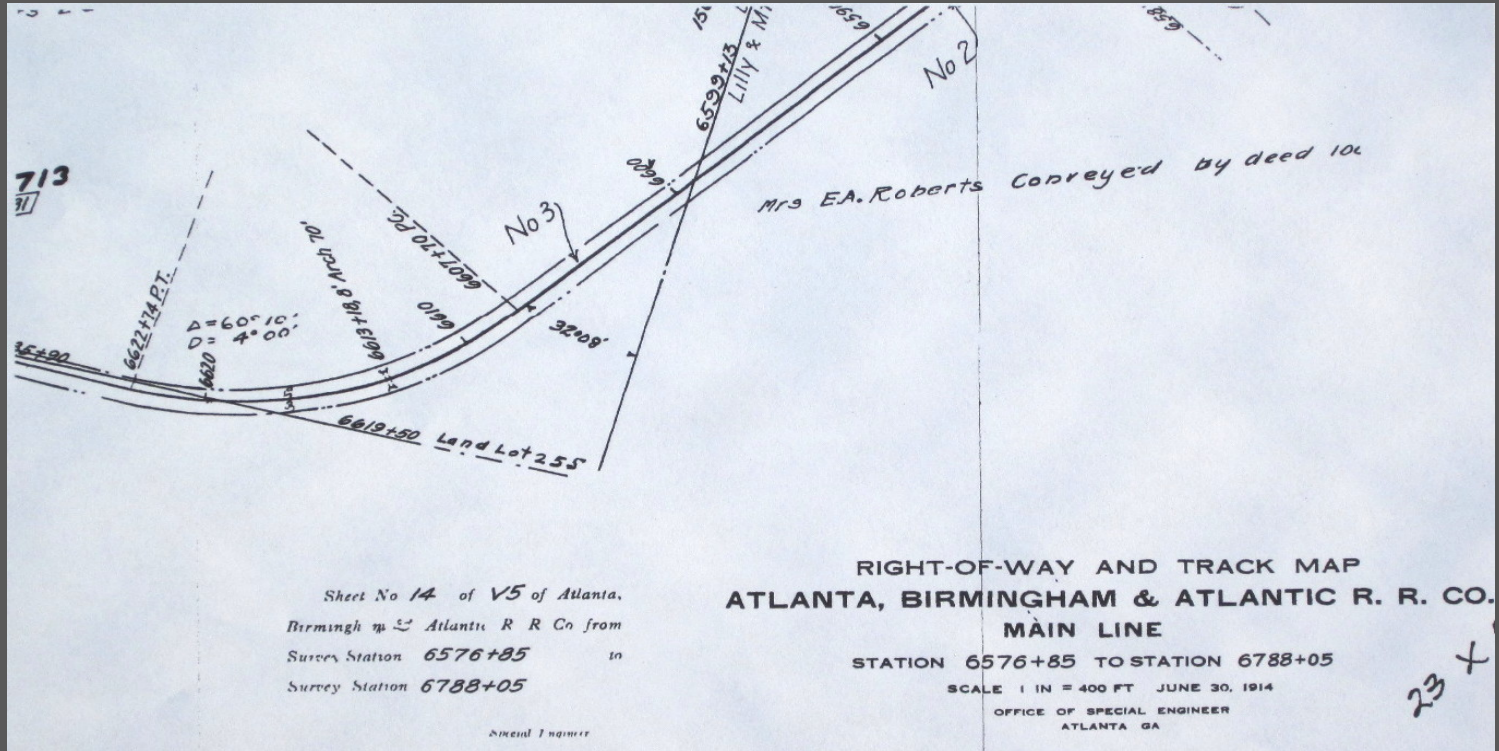
<u>SCHEDULE OF PROPERTY.</u>										
<u>NUMBER</u>	<u>GRANTOR</u>	<u>GRANTEE</u>	<u>INSTRUMENT</u>	<u>DATE</u>	<u>RECORD</u>	<u>CUSTODIAN'S NUMBER</u>	<u>REMARKS.</u>			
1	Georgia J. Gedwin	A&B RR CO	Deed	May 17 1902	DB 11 p476	Sep 6 1910	2502			
2	E. A. Roberts	AB&A RR CO	"	Nov 30 1910	DB 13 p 72	Dec 14 1910	2323			
3	L. C. Owen	A&B RR CO	"	Oct 16 1902	DB 11 p665	Nov 12 1910	2315			
4	Julia E. Wimberly	"	"	Apr 10 1902	DB 2 p151	Nov 2 1902	735			
5	John S. Byrom	"	"	Jul 24 1902	DB 2 p117	Nov 7 1902	706			
6	Carie Jossey	"	"	Jun 28 1902	DB 2 p116	Nov 7 1902	736			
7	John S. Byrom	"	"	Jul 24 1902	DB 2 p117	Nov 7 1902	706			
8	John S. Byrom	"	"	Jul 24 1902	DB 2 p117	Nov 7 1902	706			

Handwritten notes on map:

- Second Land District
- Seventh Land District
- JE Mc Gough Conv
- FILE #



Valuation Maps and Track Maps



Val. Maps are accountant's tools

Are you back to the track maps and plans that depict the track or centerline alignment data at the time of the right of way takes?



Railroad Curves – Circular and Spiral

Railroad Curves are Chord Definition not Arc Definition as used in most engineering, right of way and boundary applications

In some cases the main track and centerline of the right of way is devised with a single circular curve and as in tangent conditions the right of way will be the same distance from the

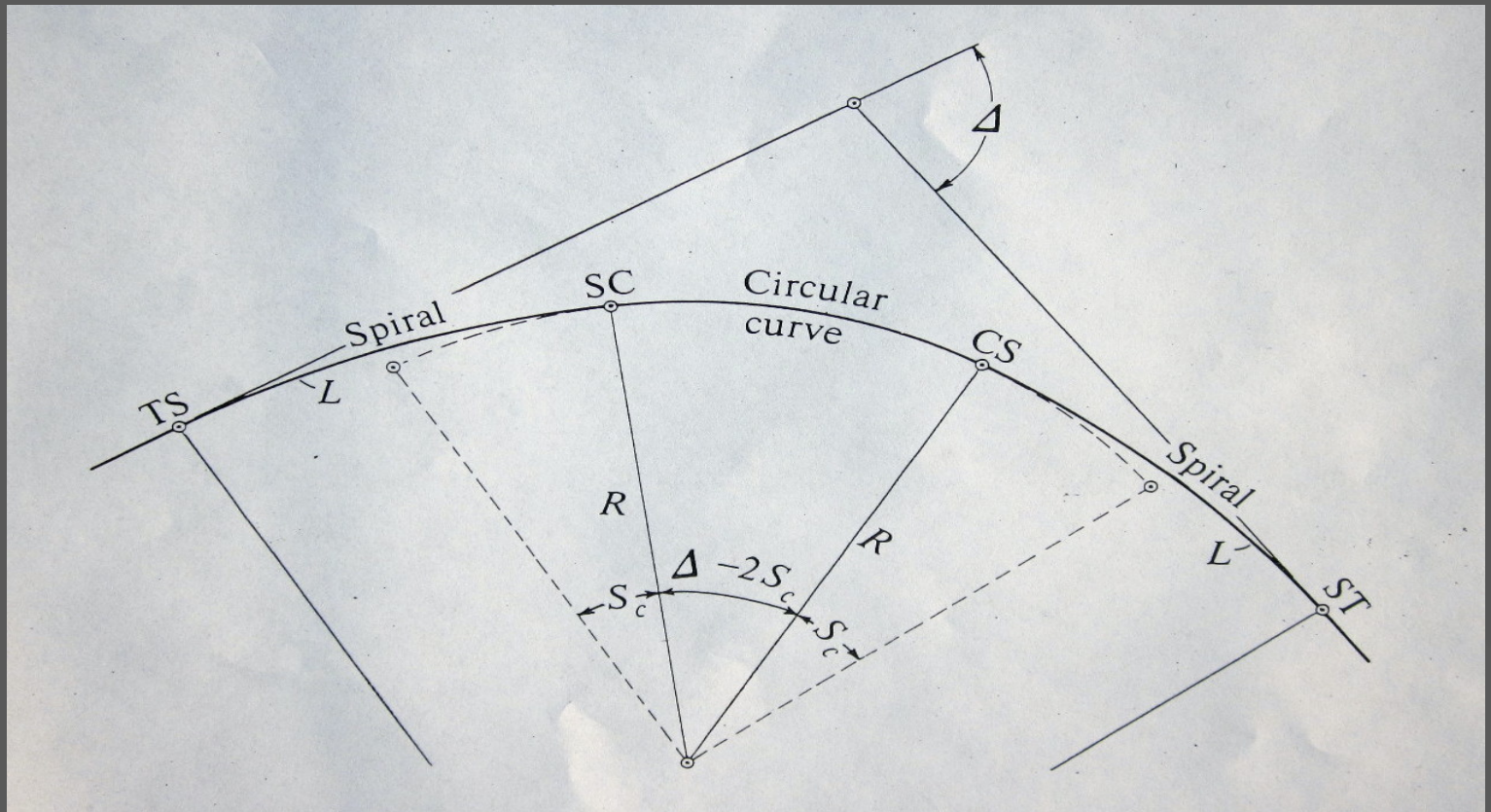


Railroad Curves – Circular and Spiral

In most cases you will find that the main track is spiraled with the Searles Spiral which is a balanced spiral curve, symmetrical with the same spiral or transition on both ends of a central circular curve



Railroad Curves – Circular and Spiral



The spirals are used to make the transition from straight track into the central circular curve and then

Railroad Curves – Circular and Spiral

The centerline may be defined by a spiral but the right of way is not

Spirals should not enter into right of way or boundary work

With the centerline of the tangents and curves located and the spiral geometry solved the right of ways can now be constructed with the use of one circular curve to encompass the entire spiral area from Tangent to Spiral (TS) to the Spiral to Tangent (ST)



Railroad Curves – Circular and Spiral

With both sides of the right of way established by concentric circular curves the prescribed right of way width apart, the distances between right of way and spiral can be examined to find that the main line spiral wanders within the right of way

In the majority of cases where spirals are used there is no right of way curve



US - DOT National Highway Rail Crossing Inventory Program

Crossing Numbering System

DOT Numbers are unique to a particular crossing in the USA

The number is a 6-digit number and a check code letter

DOT Numbers are quite helpful to the railroad when ordering maps



US - DOT National Highway Rail Crossing Inventory Program

DOT number tags can be found attached to poles, gates, bridges and equipment at each road crossing

The number tags also indicate the track owners name

These crossing numbers can be looked up online with the use of the FRA's (Federal Railroad Administrations) GIS Mapping application



Railroad Safety and Records Sources and References

e-RAILSAFE

<http://e-railsafe.com/>

Roadway Worker Training

<https://www.rrtrainers.com/>

Railroad Names Database

[http://www.railroadiana.org/pgRRNames.
php](http://www.railroadiana.org/pgRRNames.php)



Railroad Safety and Records Sources and References

CSX System Map

<http://csx.com/index.cfm/about-csx/system-map/>

CSX Valuation Maps

<http://csx.com/index.cfm/customers/non-freight-services/propertyreal-estate/property-maps/>



Railroad Safety and Records Sources and References

Do You Graphics

A private research firm with access to the **United States National Archives**

<http://www.do-you.com/>

Federal Railroad Administration (FRA)

<http://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx>



Questions and Answers



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