



# **Leveraging Track Profiles to Model the Northern Pacific Railway**

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**September 2021**

# Topics

- **Part 1 – Long Track Profiles**
  - What Are Long Track Profiles?
  - Common Layout, Legends for Markings
  - Basic Tangent Track
  - Signs
  - Small Stations
  - Sidings
  - Buildings
  - Tunnels
  - Bridges And Elevations
  - Curvature of Track
- **Modeling summary**
- **Where can I get this resource?**
- **Part 2 – Condensed Track Profiles**

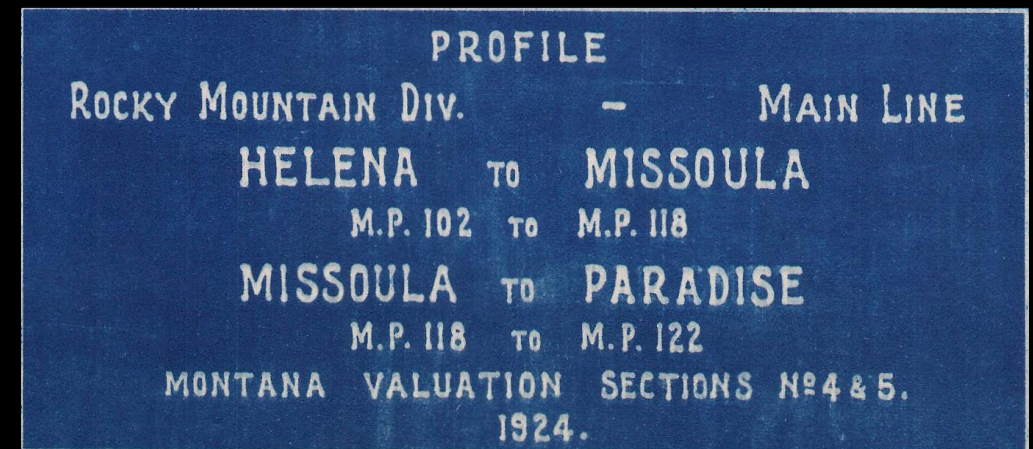
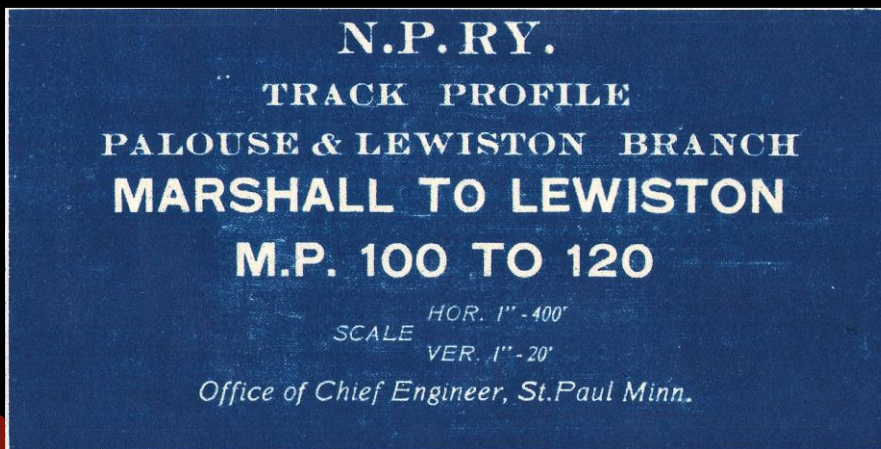
# What Are Long Track Profiles?

- Published internally by NPRy, earliest available dates to 1907
- Technically labeled “Track Profile”, but “Long” often prepended to differentiate between Condensed Track Profiles
- Rolled – 10.5 inches x several feet long, some up to 41 ft
  - Longest - Rocky Mountain Div - First Subdivision - Bozeman to Logan Alternative Main Line - MP 141 to 173 – 1924
- Trivia – “MADE IN GERMANY” on many/most originals



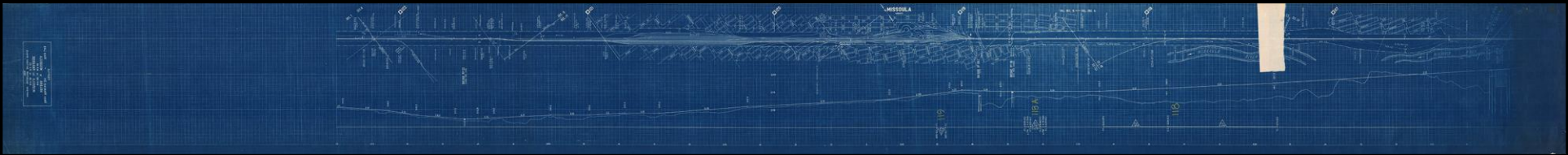
# How are they organized?

- NPRy Published by
  - Division
  - Main Line or Branch
  - Milepost to Milepost

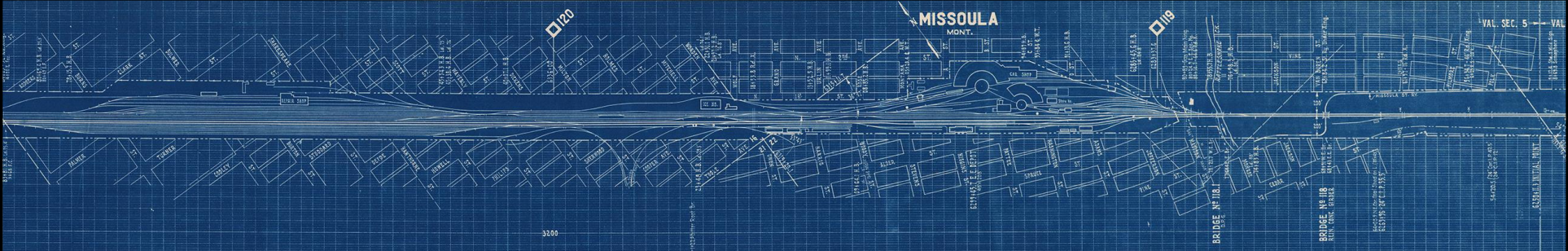




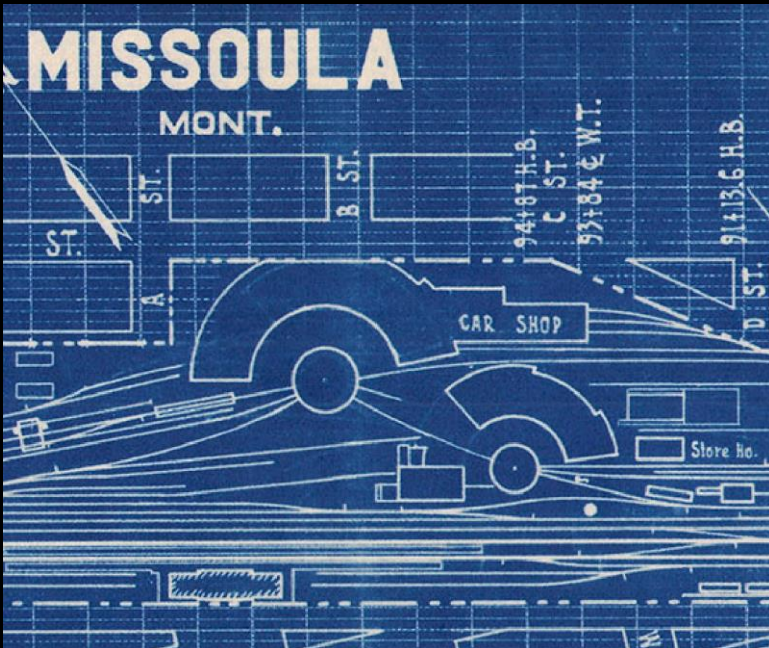
Full View



Zoom In



Detail



- **Layout**
  - Mainline/branch always straight line
  - Title/Legend at one or both ends
  - Horizontal: 1 inch = 400 feet
  - Vertical: 1 inch = 20 feet

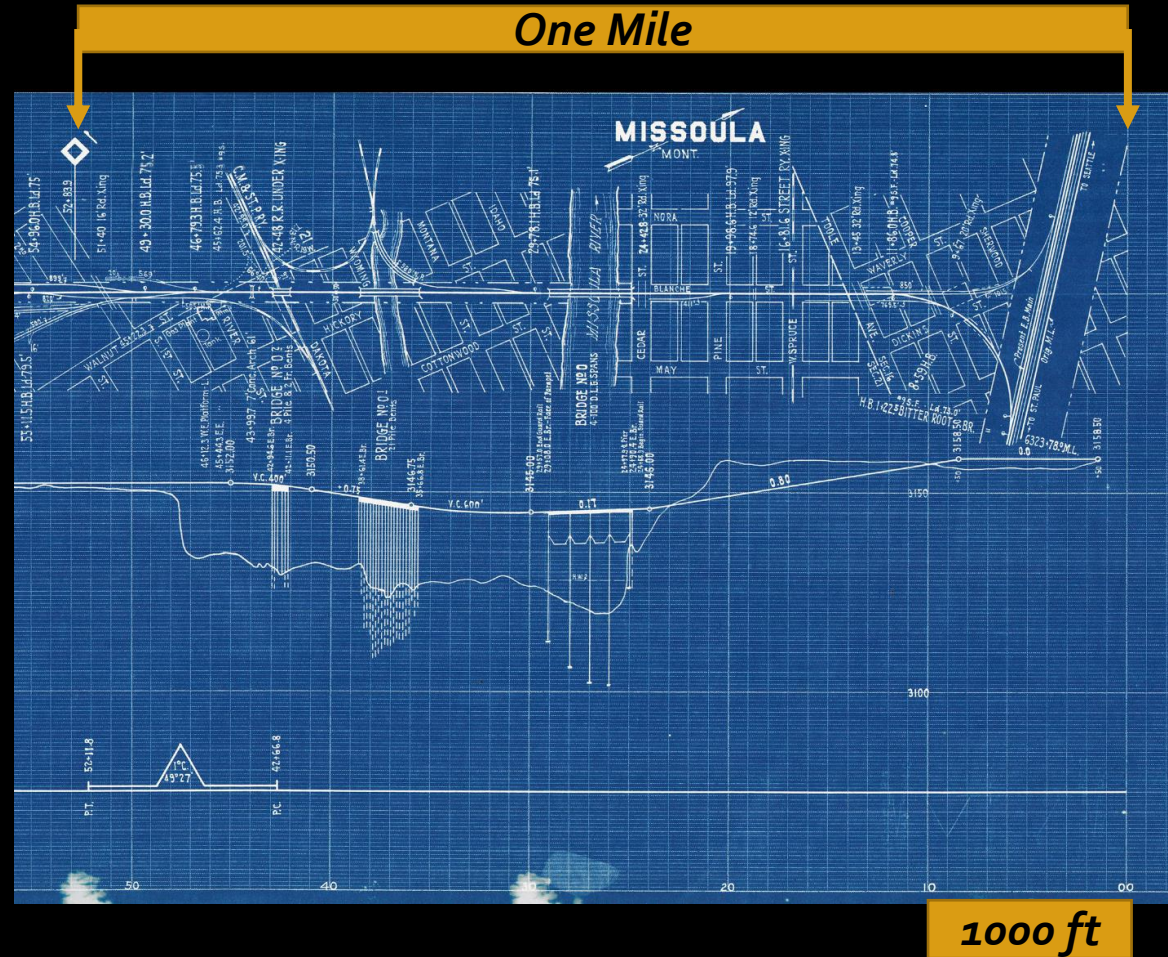


# Common Layout

Top – Track and Features

Middle – Grades and Bridges

Bottom - Curvature



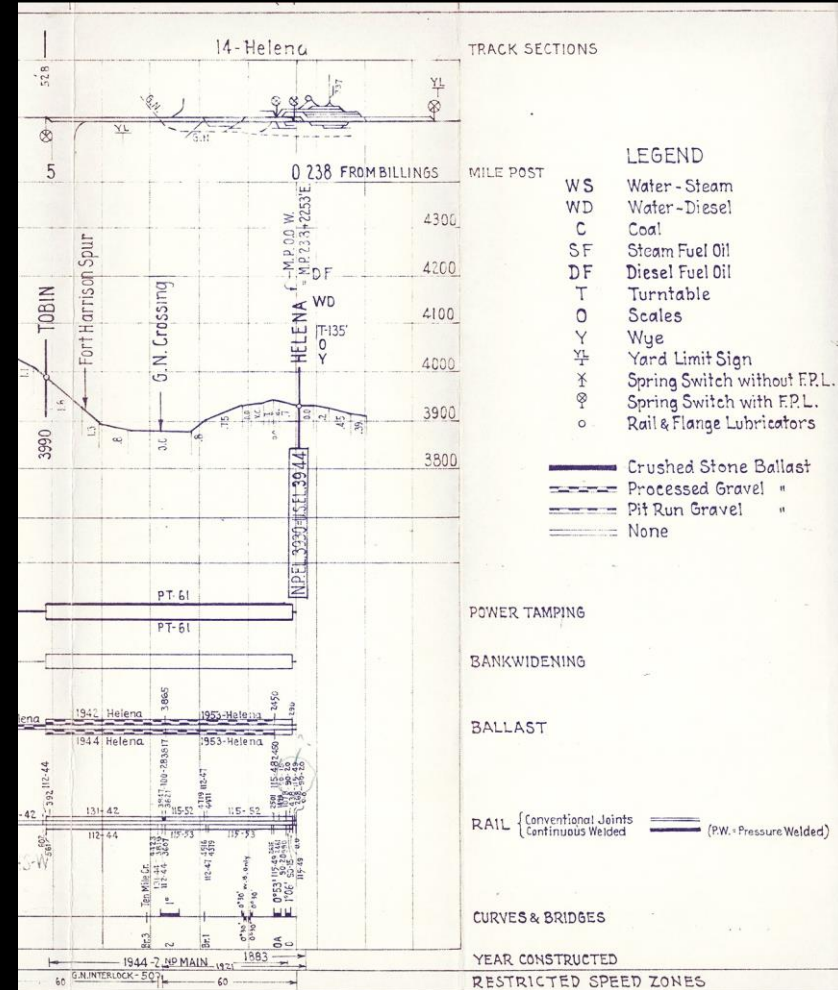


# How do Track Profiles Differ from Condensed Track Profiles?

Long Profile



Condensed Profile



Top - Track Schematics

Middle - Stations and Grades

Lower - Track Details

Bottom - Curves, Bridges, Speed Zones

Top - Track and Features

Middle - Grades and Bridges

Bottom - Curvature

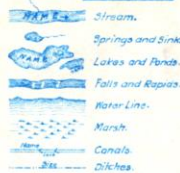


# Legend - Standard Plans Book

9-12-1

Sheet 239

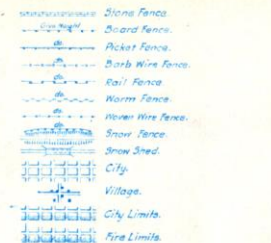
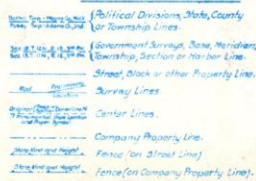
## HYDROGRAPHY



## RELIEF (Brown)



## BOUNDARY & SURVEY LINES



## MINES



## HIGHWAYS OF CROSSINGS



## N.P.R. Standard Plan of Conventional Signs

In four sheets, Sheet No. 1  
Office of Chief Eng. July 23-1914  
Revised Oct 9-1914

Approved: *Frederick M. McManus*  
Chief Engineer

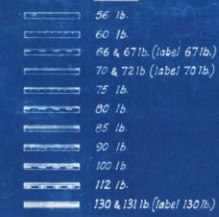
Note: Conventional Signs as recommended by American Railway Engineering Association and adopted by Interstate Commerce Commission, Director of Valuation, Order No. 1

Sheet 241

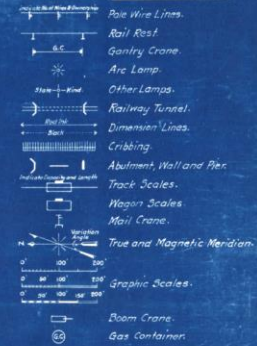
## WATER SUPPLY & PIPE LINES



## RAIL



## MISCELLANEOUS



## ELECTRIFIED LINES



## BALLAST



## N.P.R. Standard Plan of Conventional Signs

In four sheets, Sheet No. 3  
Office of Chief Eng. July 23-1914

Approved: *Frederick M. McManus*  
Chief Engineer

Note: Conventional Signs as recommended by American Railway Engineering Association and adopted by Interstate Commerce Commission, Director of Valuation, Order No. 1

9-12-2

Sheet 260

## RAILWAYS (Topographical Map)



## RAILWAY TRACKS (Track Map)



## For Railway Track and Road Station and Single or Double Lines



## BUILDINGS



+ Indicate Type and Construction by Combination of Letters, as F.F. - Freight Freight Station, S.F. - Brick Freight Station

## SIGNS AND SIGNALS



## BRIDGES



## CULVERTS, SEWERS, ETC.



## N.P.R. Standard Plan of Conventional Signs

In four sheets, Sheet No. 2  
Office of Chief Eng. July 23-1914  
Revised Oct 9-1914

Approved: *Frederick M. McManus*  
Chief Engineer

Note: Conventional Signs as recommended by American Railway Engineering Association and adopted by Interstate Commerce Commission, Director of Valuation, Order No. 1



# Legend – Standard Plans Book

## BOUNDARY & SURVEY LINES.

Bathel Twp. - Wayne Co., Mich. Posey Twp. - Adams Co., Ind.	{ Political Divisions: State, County or Township Lines.
Sec. 18 T. 12 N., R. 1 E., 34 P. Sec. 13 T. 11 N., R. 1 E., 34 P.	{ Government Surveys, Base, Meridian, Township, Section or Harbor Line.
	Street, Block or other Property Line.
	Center Lines.
	Company Property Line.
	Fence (on Street Line)
	Fence (on Company Property Line).

	Section Corner.
	Section Center.
	Triangulation Station
	Bench Mark.

## HIGHWAYS & CROSSINGS.

	Public and Main Roads.
	Private and Secondary Roads.
	Trails.
	Street and Public Road Crossings.
	Private Road Crossing.
	Road Crossing at Grade.
	" " under "
	" " overhead.
	Crossing Gate.
	Turnstile.
	Cattle Guard.
	Farm Gate.

## TRACK FIXTURES.

	Turnout or Switch-Stand.
	Interlocked Switch.
	Double Slip Switch.
	Single Slip Switch.
	Derail.
	Bumping Post.

## BRIDGES.

	Girder.
	Truss.
	Trestle.
	Signal Bridge.
	Lift Span.
	Bascule, Double Leaf.
	Bascule, Single Leaf.
	Draw Span.

## CULVERTS, SEWERS, ETC.

	Masonry Arch or Flat Top Culvert.
	Pipe or Wood Box Culvert or Drain.
	Catch Basin.
	Manhole.
	Sump.

## + BUILDINGS.

Indicate Use and Number of Stories.		Stone.
		Frame.
		Brick.
		Concrete.
Indicate Use and Number of Stories.		Corrugated Iron.
		Brick Passenger Station.
		Electrical Sub-Station.
		Lightning Arrester House
Indicate Kind and Character.		Platform or Driveway.
		Turntable.
		Interlocking Tower.
		Ash Pit.
		Coal Chute (Mechanical).
		Coal Chute (Trestle).
		Circular Engine House.
		Square Engine House.



# Legend – Standard Plans Book

## WATER SUPPLY and PIPE LINES.

Give Character, Diam & Height. W.T.

Give Size

Water Tank.

Water Column.

Track Pn.

Give Size

Company Water Pipe.

Other Water Pipe.

Give Size

Steam or Gas.

Give Size

Compressed Air.

H

Fire Hydrant.

V

Valve.

R

Riser.

M

Meter.

Give Size

Sewer or Drain.

## MISCELLANEOUS.

Indicate No. of Wires & Ownership

Pole Wire Lines.

Rail Rest.

Gantry Crane.

Arc Lamp.

Other Lamps.

Railway Tunnel.

Dimension Lines.

Cribbing.

Abutment, Wall and Pier.

Track Scales.

Wagon Scales.

Mail Crane.

True and Magnetic Meridian.

Graphic Scales.

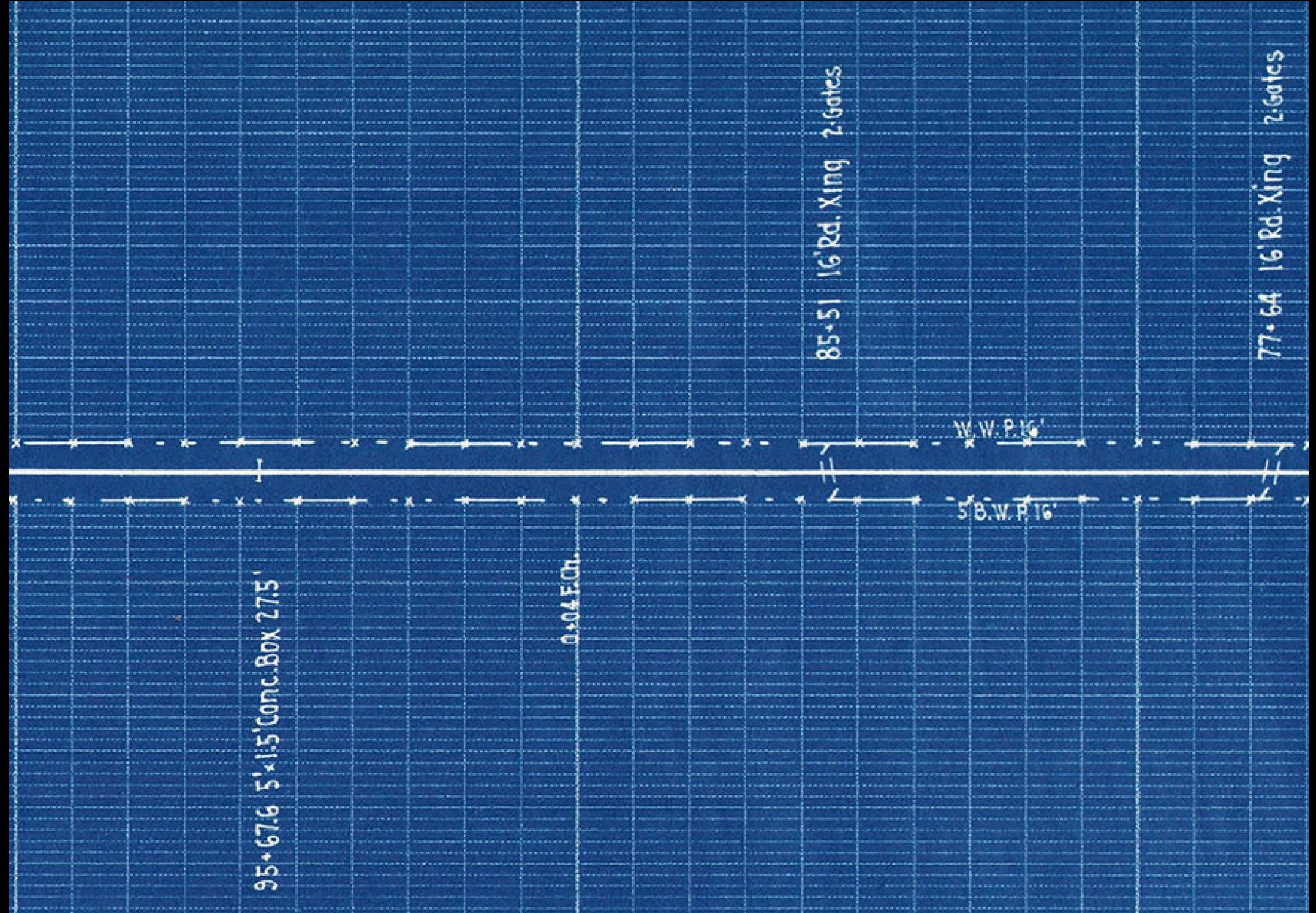
Boom Crane.

Gas Container.



# Basic Tangent Track - Modeling

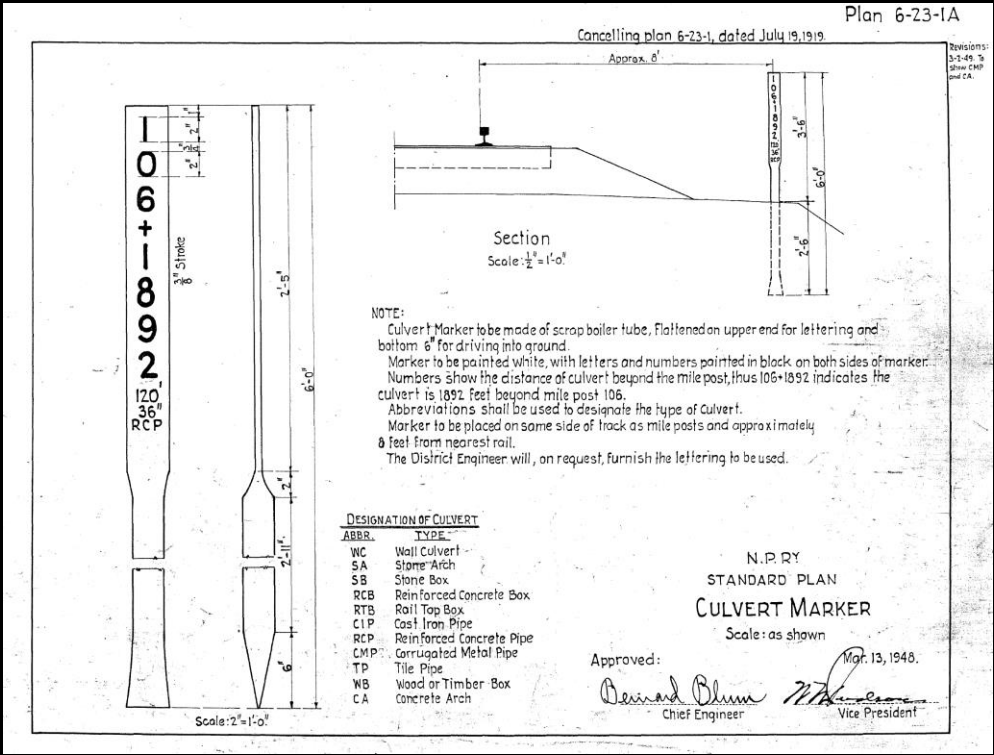
- Culvert
- Fence
- Rd. Xing
- Cattle Guard
- Rail Rest





# Culvert + Marker Profile

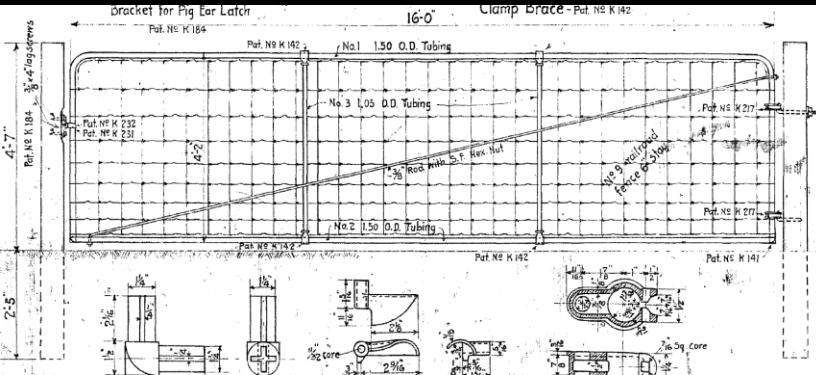
# Modeling



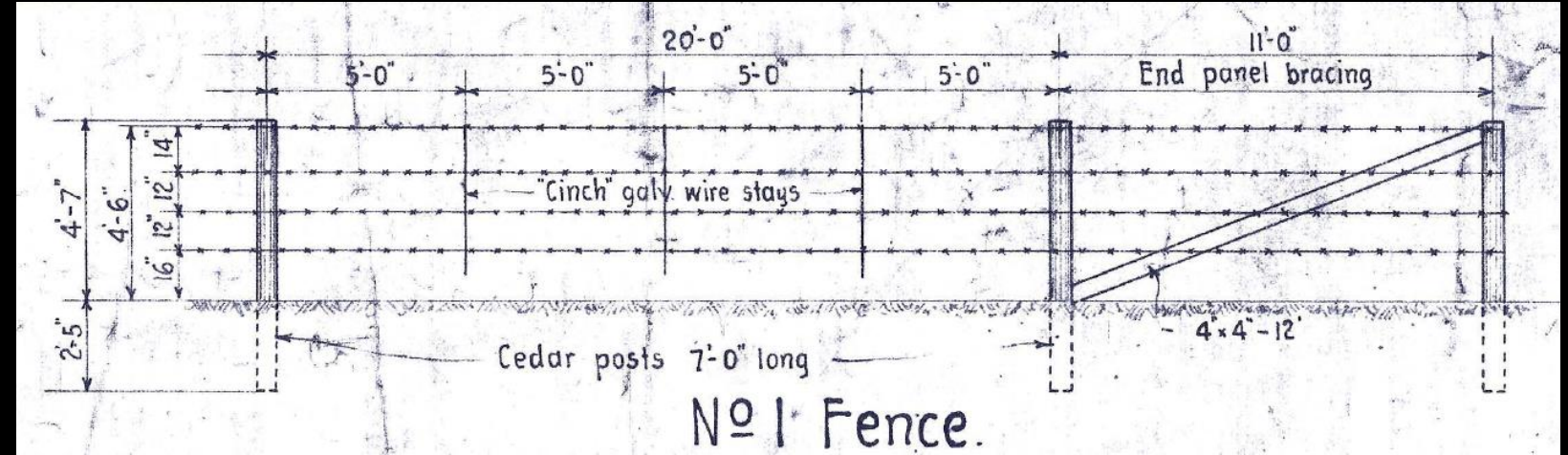
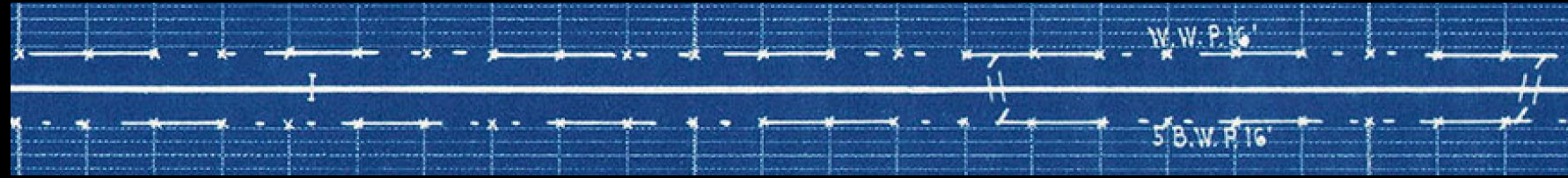


# Fence

Note the gate mark on the fence at the road crossing



# Profile

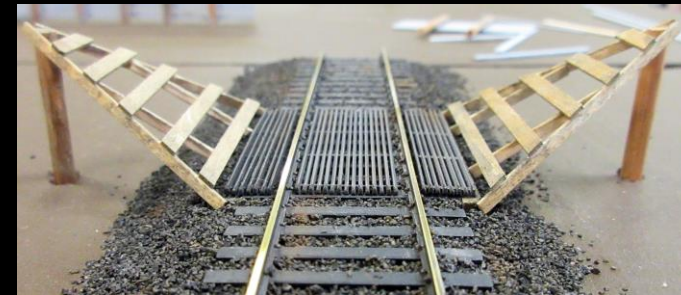
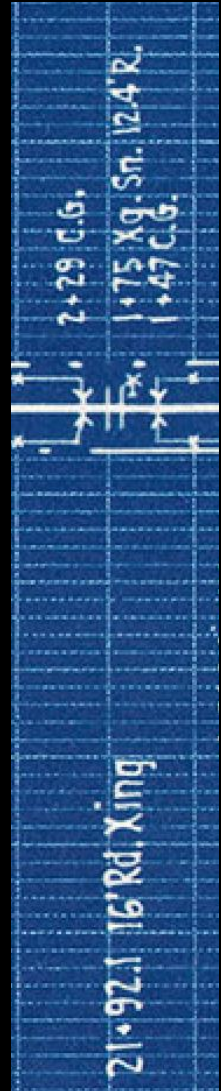


# Modeling

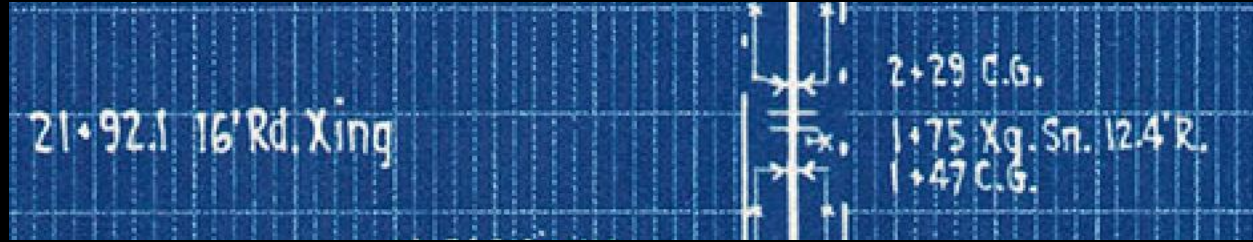




# Cattle Guard - CG Crossing Sign - Xg Sn



## Profile



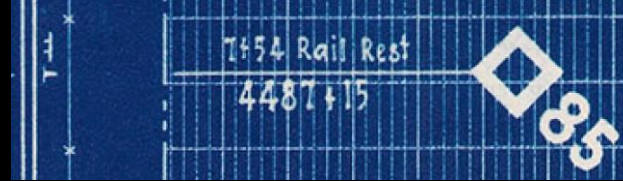
## Modeling

NPRHA Kits:  
N3146-HO  
N3146-N  
N3146-O

NPRHA Decals:  
N3211-HO  
N3211-N  
N3211-O



# Rail Rest



Placed every mile, spare length of rail for repairs

## Modeling



MP 98 East of Auburn

## Some Train Control Signs Included on Long Profiles

- 4498 Dergil 1891 \*

- |                        |   |
|------------------------|---|
| 40+52 Sta. 1 Mile Sign | 1 |
|------------------------|---|

- 6+04.5 Yd. Limit Sh.

- 6431.F1.P. 10

- $W_1 = 7.277 \text{ W.P.}$

[illegible]
$$11419 + 22.8 \cdot \text{Sema}^{\text{ti}} 2164$$

7416.4 Semaphore

12446+37 Dbl. Mast Sema

## Not Shown:

# Fouling Point, Speed Control



## Other Signs Included on Long Profiles

- **Section**
- **Dump Cinders**



- Mile

[illegible]

## Modeling Authentic NP Signs:

- Rick Leach offered decals couple years back
- Project for NPRHA in next year or two. Demand?

# Locations of Signs:

- Sign plans for your era include placement guidance
- Older, complete list: NP Track Maintenance Rules and Plans of 1918

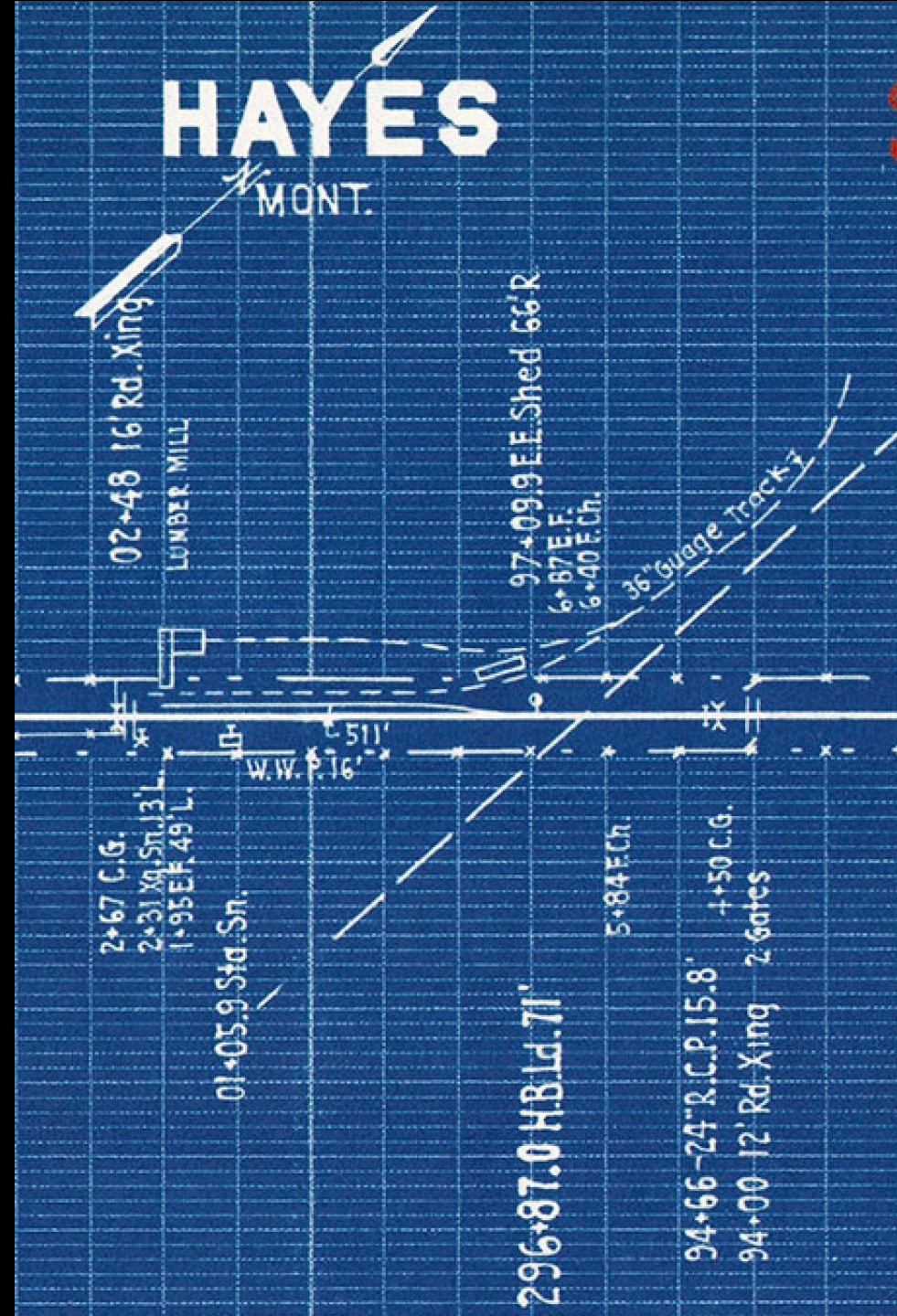
LOCATION OF SIGNS.

KIND	DISTANCE OUT		Top of Sign Above Ground	LOCATION
	From Rail	From Center of Track		
County Line.....		25'	6'6"	On County Line.
Curve Marker.....	8'		18"	As directed.
Draw Span One Mile.....	10'		8'	
Draw Span 800 Feet.....	10'		8'	
Dump Cinders.....	8'		8'	As directed.
Derail.....	8'		5'6"	As directed.
Extra Rail Support.....	8'		4'	Posts 15' apart and opposite Mile Posts where possible.
End Double Track.....	10'		8'	
Flanger.....	8'		8'	50' from obstruction.
Highway Crossing.....	10'		12'	As directed.
Interest.....				As directed.
Mile post.....	6'9"		4'6"	
R. R. Crossing One Mile.....	10'		8'	
R. R. Crossing 800 Feet.....	10'		8'	
Stop.....	10'		8'	As directed.
Station One Mile.....	10'		8'	One Mile from Depot.
Station One Mile Water.....	10'		8'	
Speed Limit.....	10'		8'	As directed.
Station-Blind Siding.....		25'	8'	As directed.
Section Limit.....	8'		2'6"	As directed.
Siding.....	8'		8'	As directed.
Supplemental R. R. Crossing.....			8'	As directed.
Trespass.....			8'	As directed.
Tunnel.....	8'		8'	As directed.
Water One Mile.....	10'		8'	
Whistle.....	8'		8'	As directed.
Yard Limit.....	10'		8'	As directed.



# Small Station - Modeling

- Sidings
- Buildings
- Other

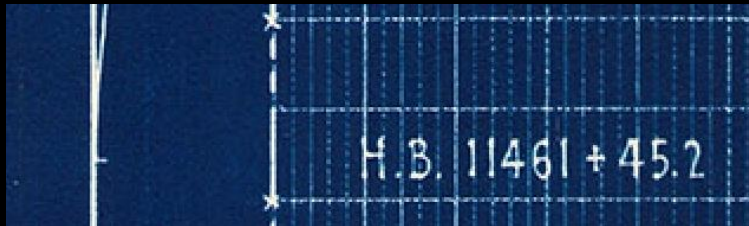




# Sidings – H.B.

- “H.B.” is short for Head Block. NP standard = two 15’ long Head Block ties under switch stand
- “Ld. #” Lead distance from the switch points to the frog point
- #11S is #11 standard plan, Spring Rail Frog
- “22’ Sp.Sw.” is length of switch points, and it’s a spring switch, with electric switch machine
- F.P.L = Facing Point Lock

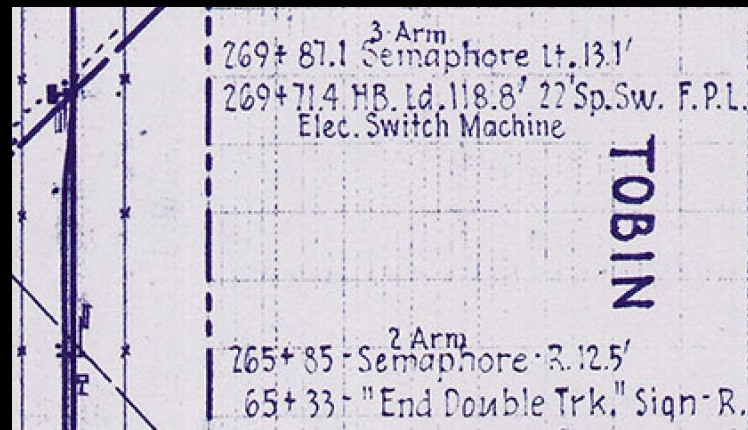
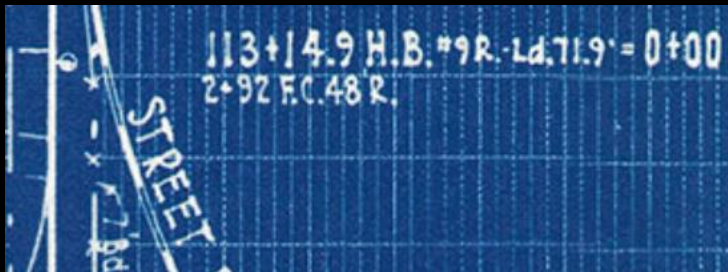
## Simple



## With Size



## Lots of info



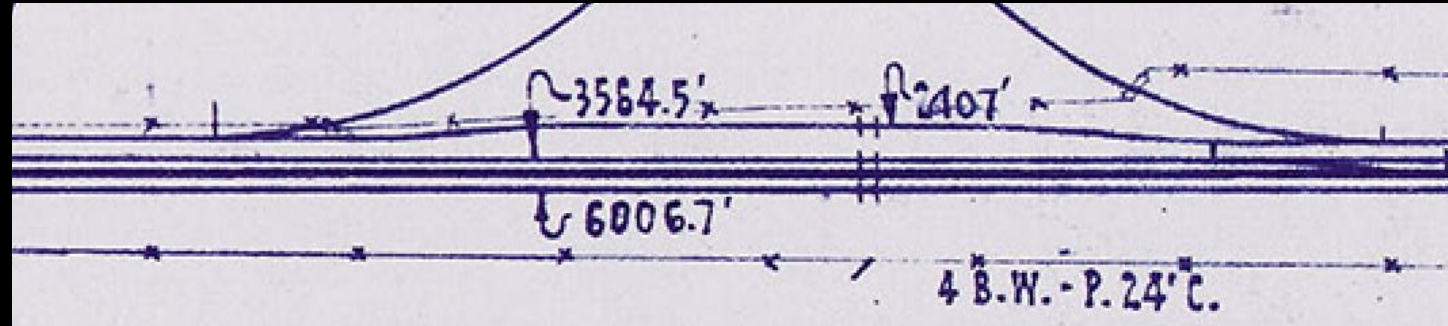


# Sidings – Length

Simple – Hays 511 ft



Multiple – Blossburg  
3,564.5 ft  
6006.7 ft  
2407 ft

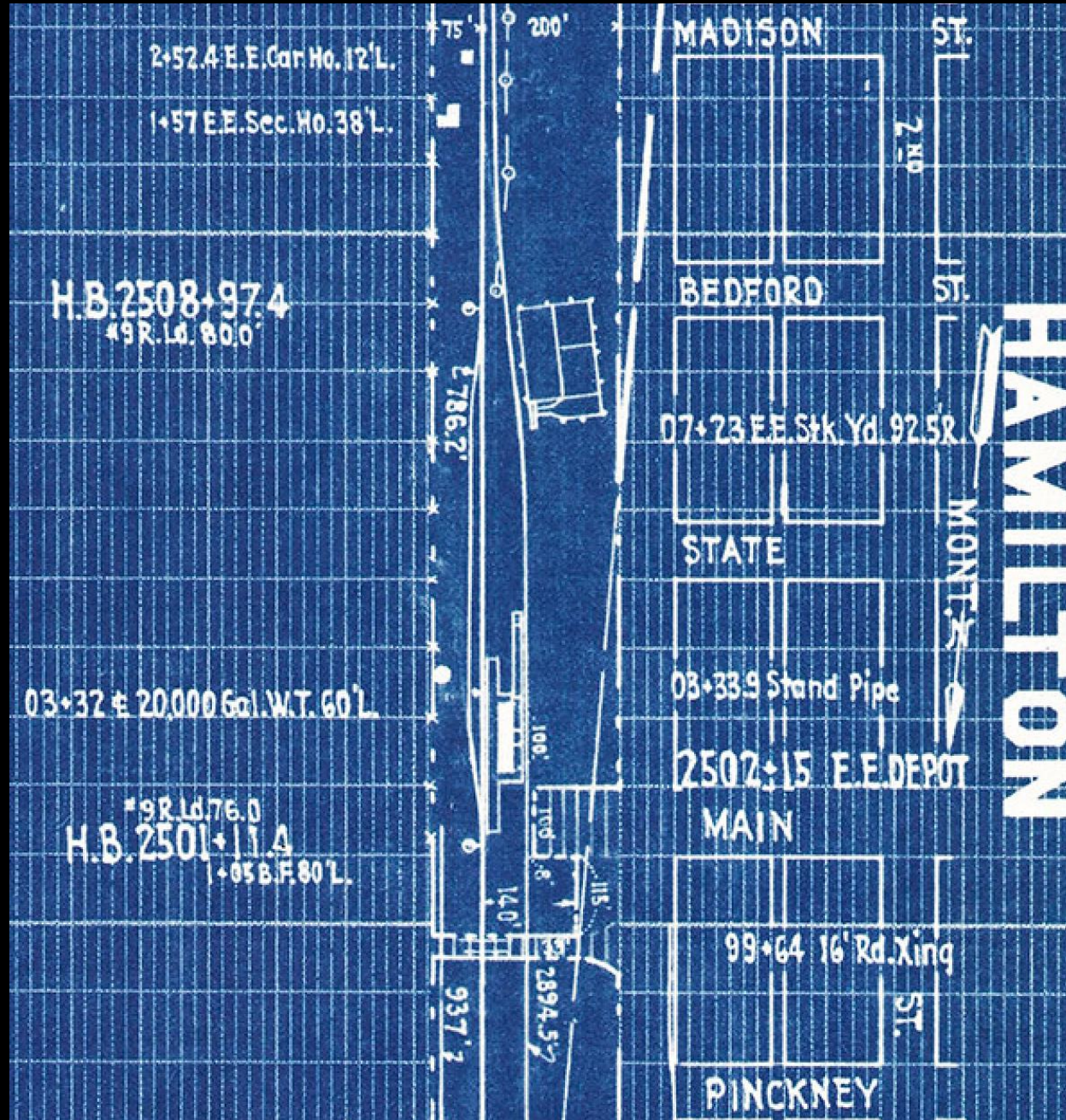


4 B.W. - P. 24' C.

# Buildings - Hamilton

E.E. Car House, 12ft  
E.E. Section House, 38ft

20,000 Gal Water Tank



E.E. Stock Yard

Stand Pipe

E.E. Depot

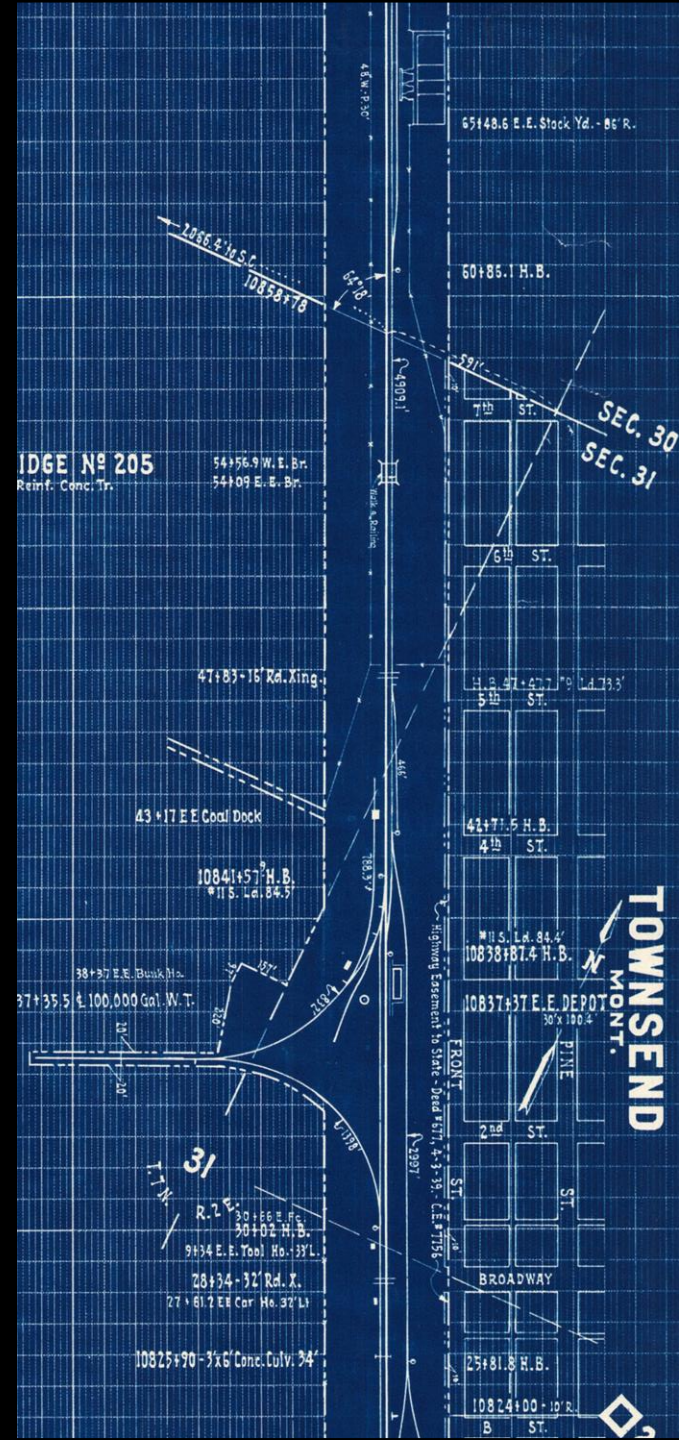


# E.E. Stock Yard

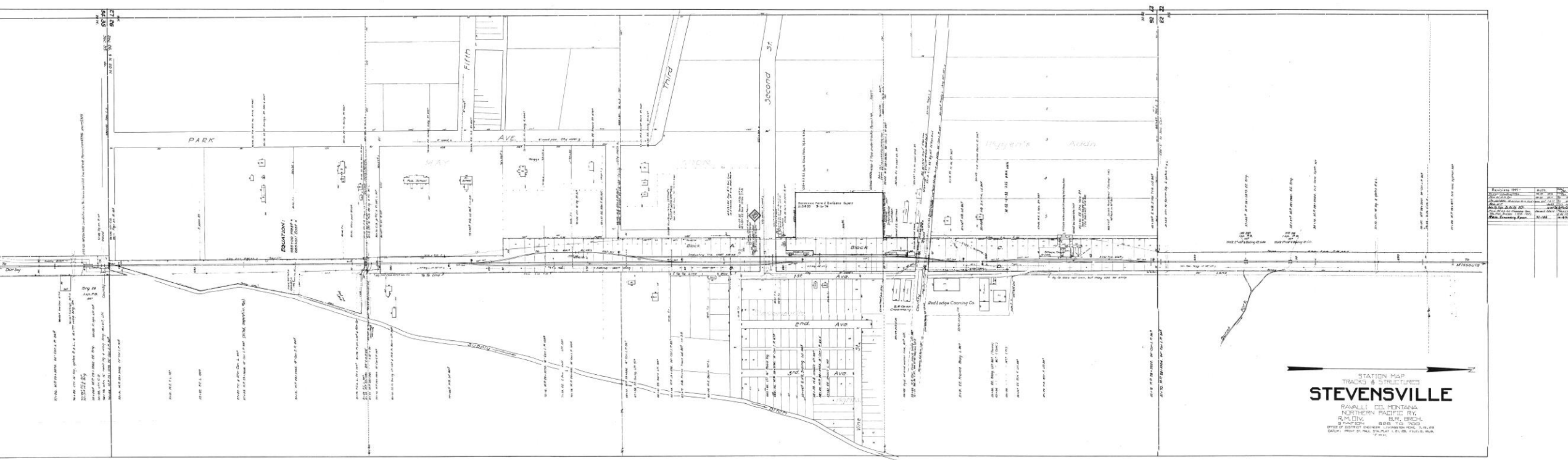
## E.E. Depot, 30ft x 100ft

## E.E. Tool House, 33ft

## E.E. Car House, 32ft



# Buildings – all that said... use Station Maps!

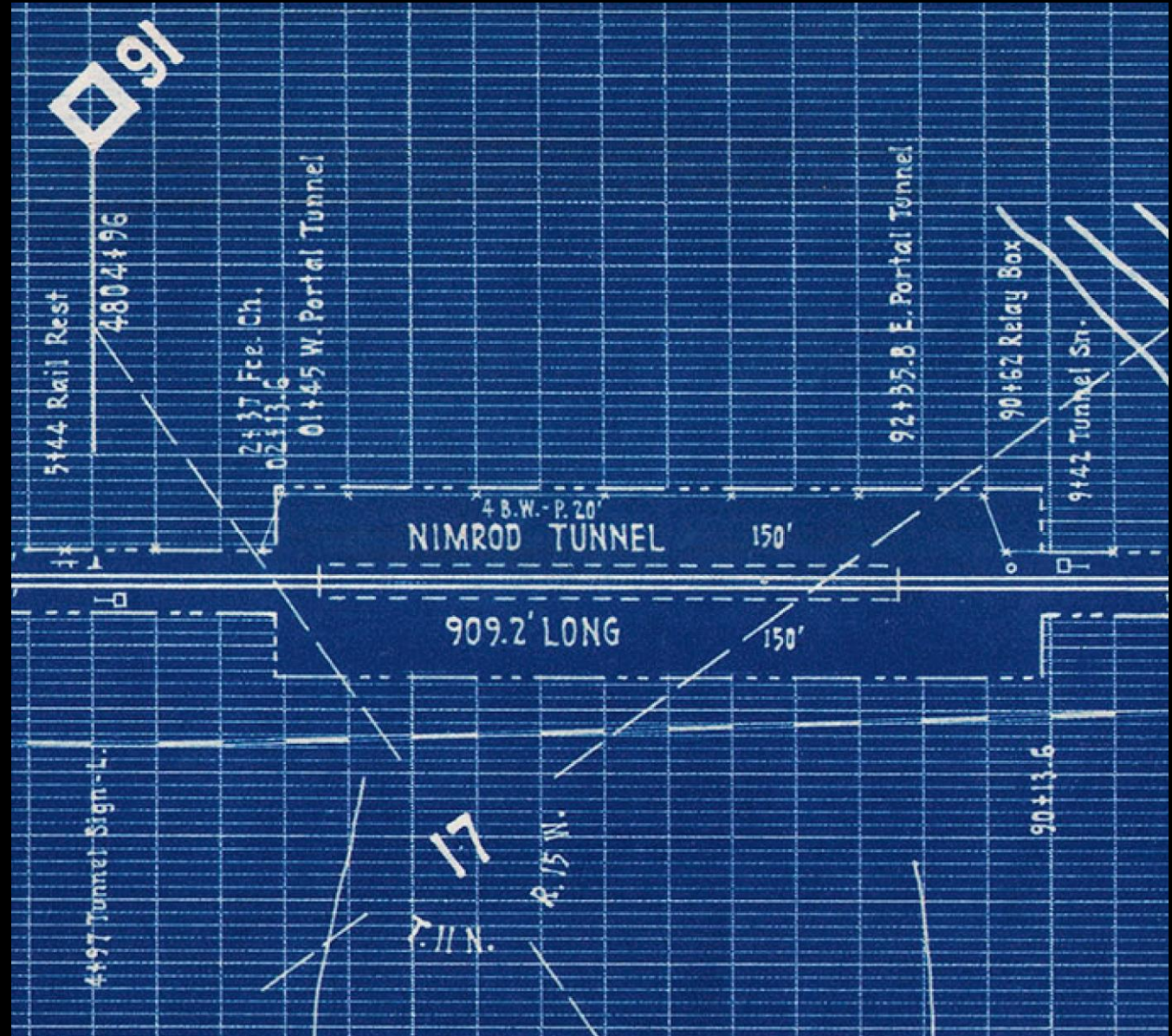


- Most NPR structure sizes
- Telegraph line positions, etc.
- Surrounding industrial and town buildings
- Station revisions in convenient table, even for little stations like Weed



# Tunnel - Modeling

- Tunnel Name
- Tunnel Sign
- Portal Tunnel
- Tell Tale





# Bridges and Elevations

- Bridge Numbers
- Bridge type, piles
- W.E. Br. - E.E. Br. = Length
- Elevation of grade
- Incline/slope of track, point to point

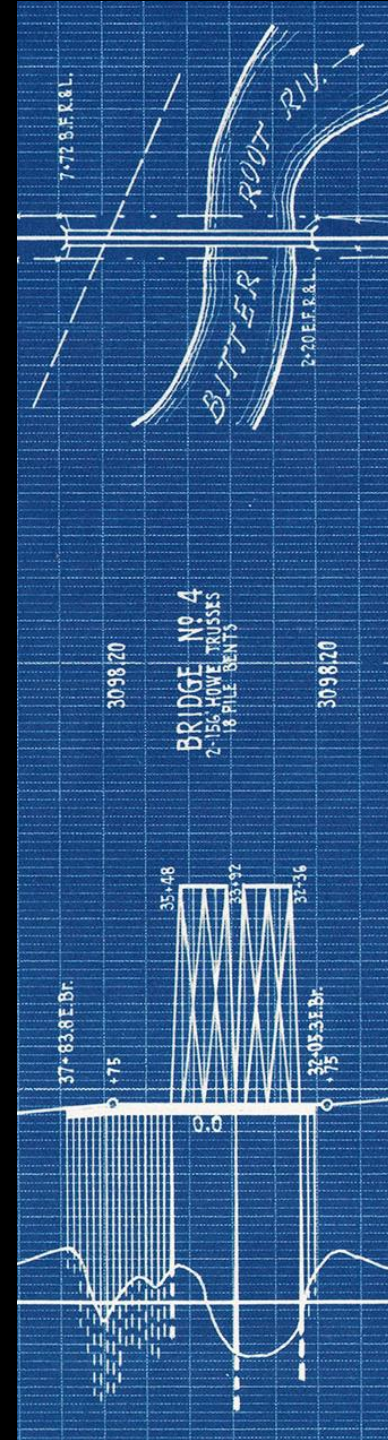


*50ft of  
Elevation*



# Bridge Example

- Two 156ft Howe Trusses +
- 18 Pile Bents
- $37.83.8 - 32.05.3 = 578.5$  ft



# Elevations

- Elevation of grade
- Incline/slope of track, point to point



## 50ft of Elevation



# Curvature

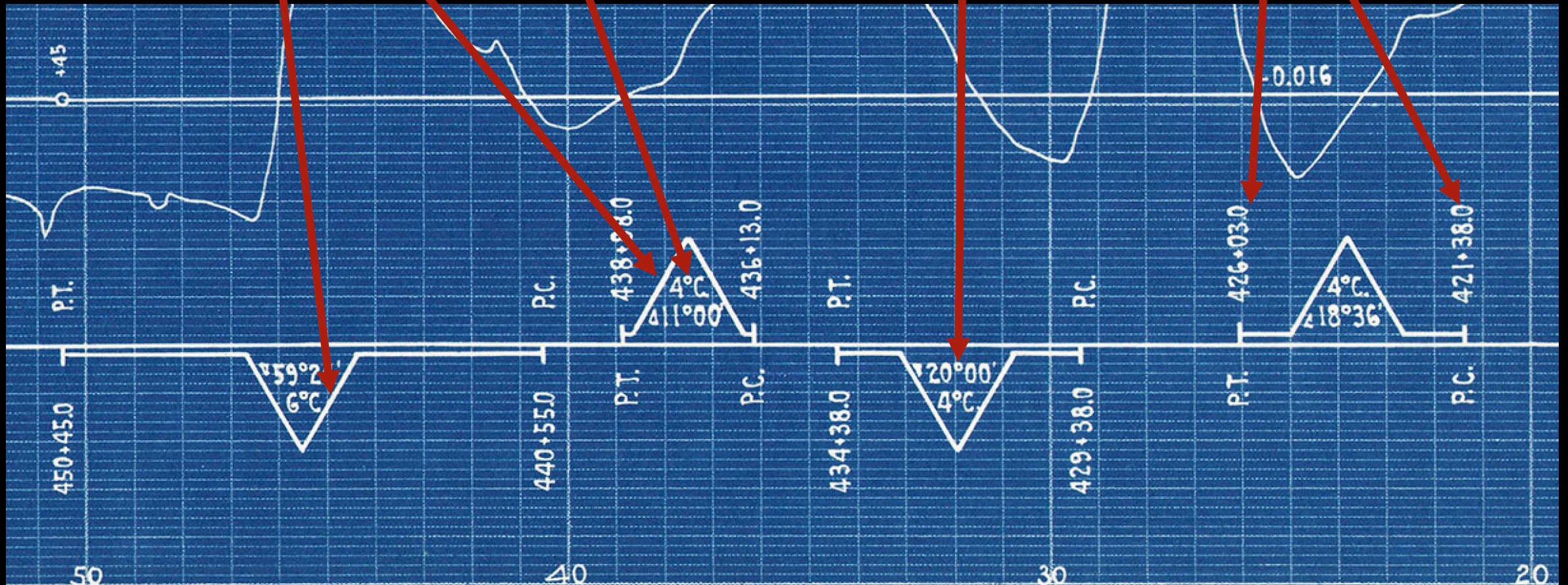
Degree of curvature

Curvature left, right

Length in  
Degrees

Length in Feet Curve  
= PT - PC

42,603.0 -  
42,138.0 = 465 ft  
= 5.3 ft in HO... yikes





# Modeling Summary

- Profiles are a great resource to help make your layout AUTHENTIC NP
- Authentic Kits available today – Cattle Guards, Crossing Signs, Whistle Sign (HO)
- Signage needed – Semaphore, train control signs, structure signs, bridge/tunnel
- Structures needed – Stock yard, water tanks (wood, modern flat top), blow out basin
- Others needed – battery box, phone box, mail crane, telltale





# 2017 Structure Survey

## NPRHA 2017 Structure Survey

All Scales		HO Scale		N Scale		O Scale	
Cattle Guard	108	Cattle Guard ✓	76	Boxcar Shed	38	Watchmans House	9
Boxcar Shed	86	Wood Platform	58	Bunk House	32	Hose House	7
Small Tellegraph	77	Concrete Platform	57	Cattle Guard ✓	28	Small Tellegraph	7
Bunk House	76	Eng House A ✓	51	Watchmans House	25	Eng House B	6
Wood Platform	75	Stock Yard - Basics	50	Hose House	22	Pump House	6
Concrete Platform	73	Small Tellegraph ✓	48	Small Tellegraph	22	Combo Depot	6
Eng House A	67	Two Post Tower	45	Toston Depot	19	Office @ Jct	6
Watchmans House	67	Boxcar Shed ✓	44	Pump House	19	Portable Bunk	5
Stock Yard - Basics	65	Bunk House ✓	43	Combo Depot	18	WT 48K HF	5
Hose House	64	Stock Yard - Bonus	42	Boxcar Cottages	16	Cattle Guard ✓	4
Two Post Tower	61	Toston Depot ✓	36	Two Post Tower	15	Boxcar Shed	4
Combo Depot	60	Combo Depot	36	Eng House B	15	WT 100K MF	4
Toston Depot	55	Hose House ✓	35	Concrete Platform	15	Boxcar Cottages	3
Eng House B	53	Coal Shed ✓	34	Wood Platform	15	Coal Dock	3
Pump House	53	WT 100K MF	34	WT 100K HF	15	Eng House A	3
Stock Yard - Bonus	53	Watchmans House ✓	33	WT Metal	15	Ice House	3
Coal Shed	47	Eng House B	32	Eng House A	13	Coal Shed	3
Office @ Jct	46	Ice House ✓	30	Freight Depot	13	Blow Off Basin	2
WT 100K MF	46	Pump House	28	Office @ Jct	13	Wood Platform	2
Ice House	45	Office @ Jct	27	Stock Yard - Basics	13	WT 48K MF	2
WT Metal	43	WT Metal	25	Ice House	12	WT Metal	2
Coal Dock	38	Coal Dock	24	WT 48K HF	12	Stock Yard - Basics	2
Freight Depot	38	Freight Depot	24	Coal Dock	11	Stock Yard - Bonus	2
WT 100K HF	35	WT 48K MF	22	Portable Bunk	11	Two Post Tower	1
WT 48K HF	35	Section House	21	Coal Shed	10	Bunk House	1
WT 48K MF	31	WT 100K HF	19	Stock Yard - Bonus	9	Freight Depot	1
Boxcar Cottages	30	WT 48K HF	18	Blow Off Basin	8	Section House	1
Section House	30	Blow Off Basin	13	Section House	8	Concrete Platform	1
Portable Bunk	29	Portable Bunk	13	WT 100K MF	8	WT 100K HF	1
Blow Off Basin	23	WT 20K LF	13	WT 20K LF	8	WT 20K LF	1
WT 20K LF	22	Boxcar Cottages	11	WT 48K MF	7	WT 48K LF	1
WT 48K LF	13	WT 48K LF	9	WT 48K LF	3	Toston Depot	0



# Where can I get Long Track Profiles?

- Vista Dome Package has:
  - Condensed Profiles - 17 from 1928 set, 26 from 1969 set. All main line
  - Long Profiles – **187** from various era's, branch and main lines. All are WEST of Glendive
    - **Roughly 4986 FEET** of Long Track profiles!
  - Long profiles are too big to go on NPRHA site, VDP only way
- Get yours today – SEE IT ALL!





# End of Part 1 of 2

Part 1 – Long Track Profiles

Part 2 – Condensed Track Profiles