



# Southern Pacific's Cascade Crossing in HO Scale

Design, Construction, and  
Initial Operation of a  
Dream Layout

**Bill Decker**

PDX2015 NMRA National Convention

August 23-30, 2015

# Outline

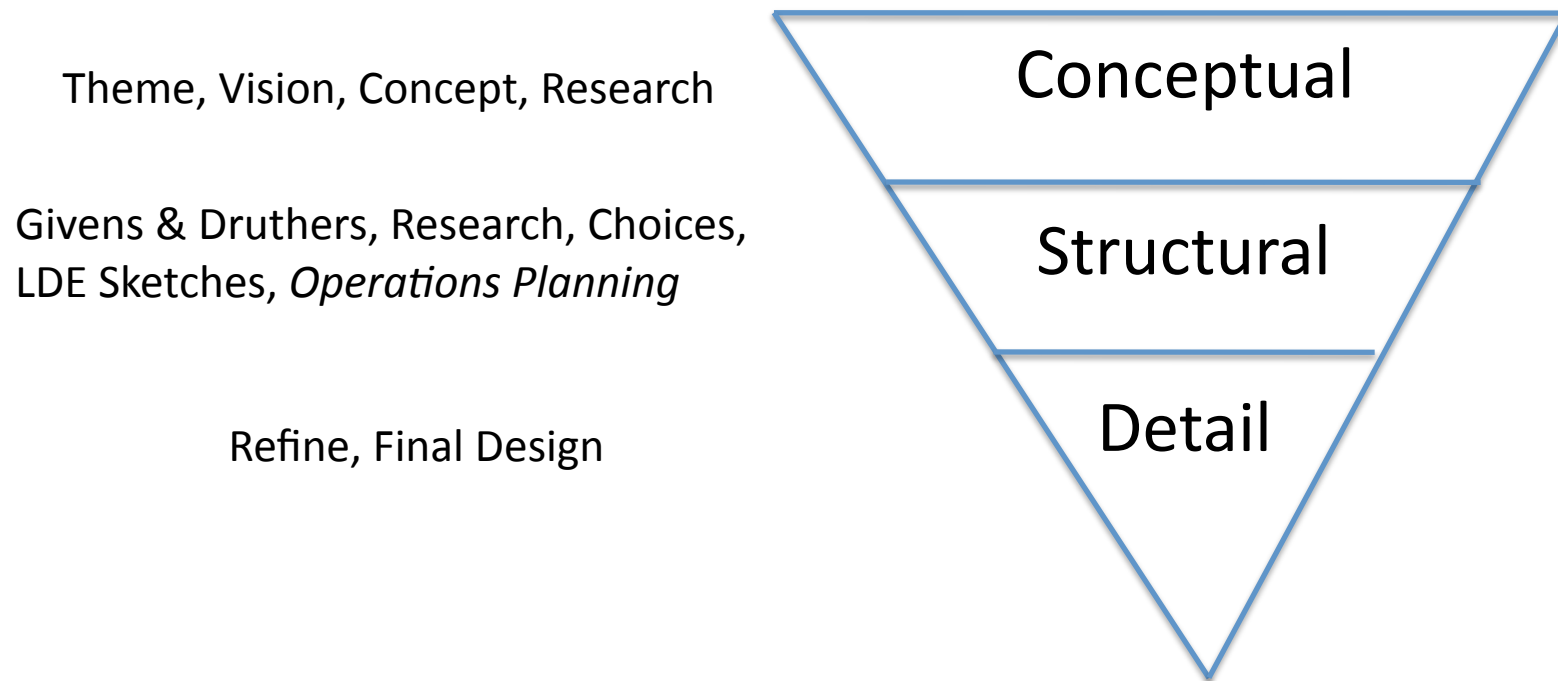
- Introduction
- Layout Design
  - Concept
  - Structural Design
  - Detail Design
- Construction
  - Valley Core
  - Mountain Grade
  - Upper Level
- First Operations
- Layout Tour

# Introduction

- Five decades of Model Railroading
- Retirement and return to native Oregon
- Dream House, Dream Space, Dream Layout



# Byron Henderson Thematic Approach to Layout Design



*Byron Henderson, Layout Design Journal # 40*

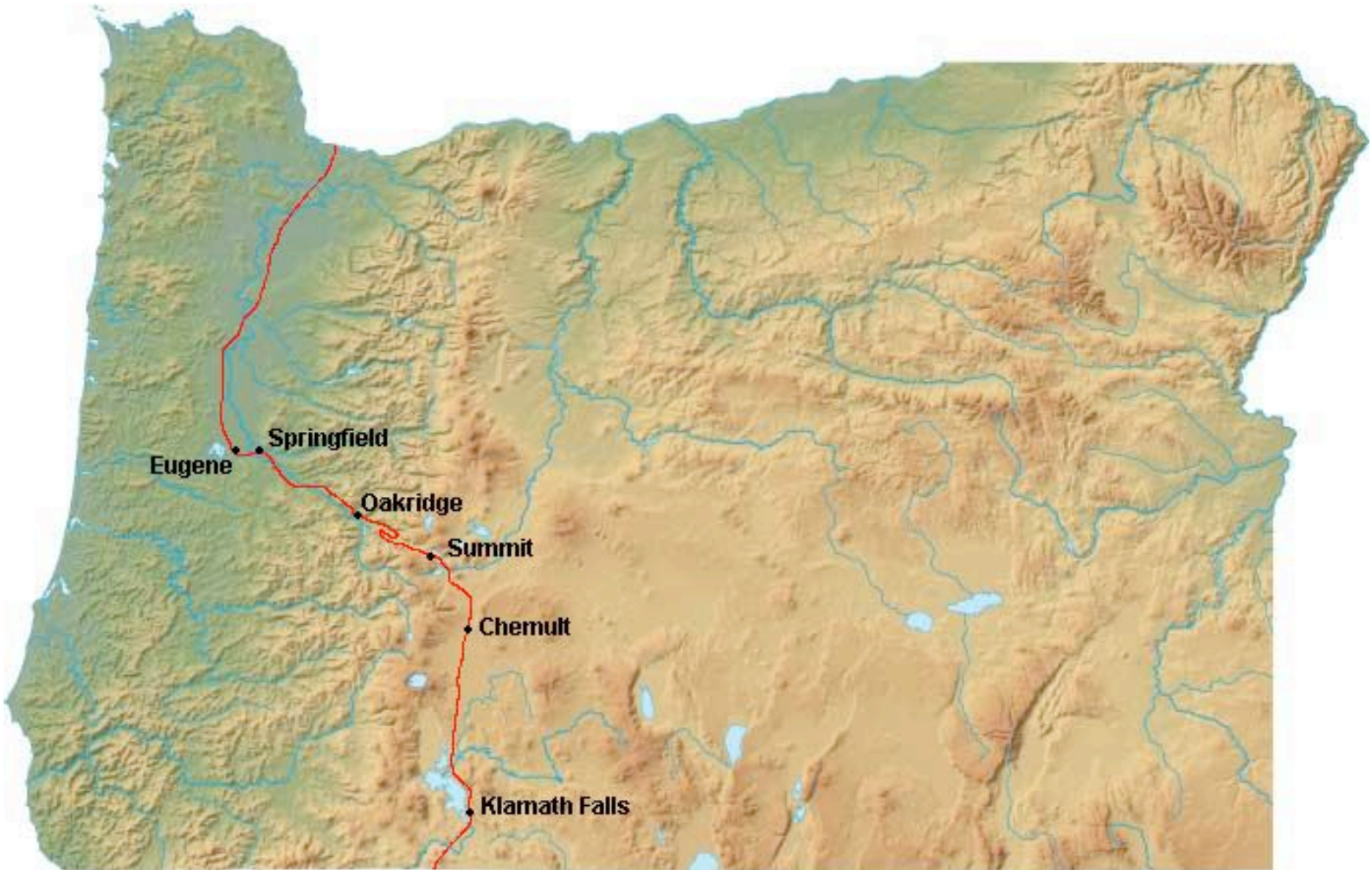
*Also used by Steve Moore, 2012 NMRA National: Track Planning and Layout Design*

# Concept: Theme Selection

- Southern Pacific Railroad
- Mountain and Valley Railroading
- North To Oregon
- Concept Selection Sequence
  - Shasta Division (2 years)
  - SP Cascade Line (1 year)
  - SP Santiam Line (4 years)
    - Proto-freelance diversion
  - SP Cascade Line (2012)



# Southern Pacific Oregon Mainline



Mark Lestico LDSIG Wiki: [http://www.macrodyn.com/ldsig/wiki/index.php?title=Cascade\\_Subdivision\\_-\\_N\\_-\\_Mark\\_Lestico](http://www.macrodyn.com/ldsig/wiki/index.php?title=Cascade_Subdivision_-_N_-_Mark_Lestico)

# Oakridge 1954

Tom Dill Collection, Photo by W. Trumbull 1954



<http://spcascades.railfan.net/photosOakridge.html>

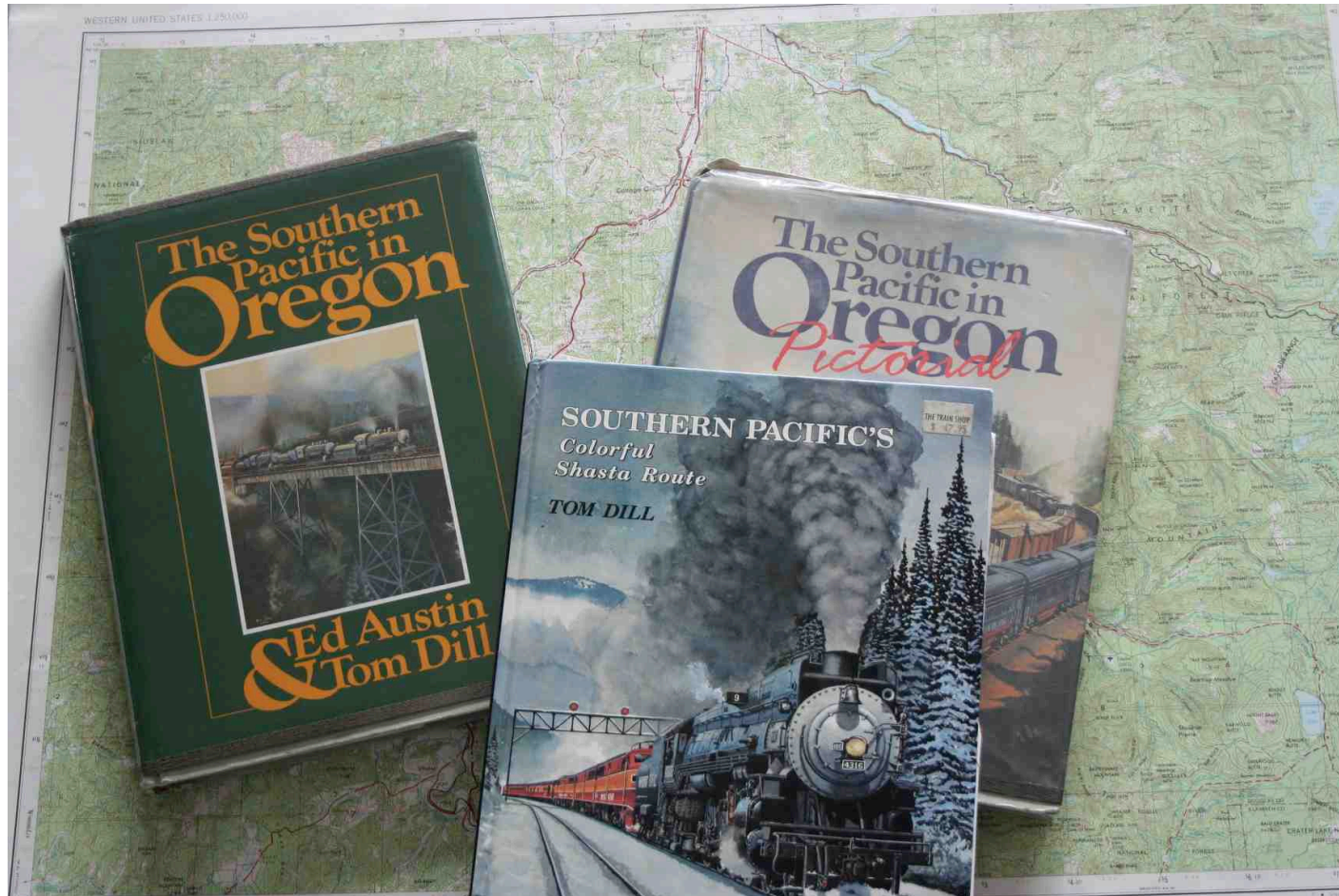
**SP 8529W at Salt Creek Trestle**



## SP 8529W Mid-train Helper: Toledo Hauler Set



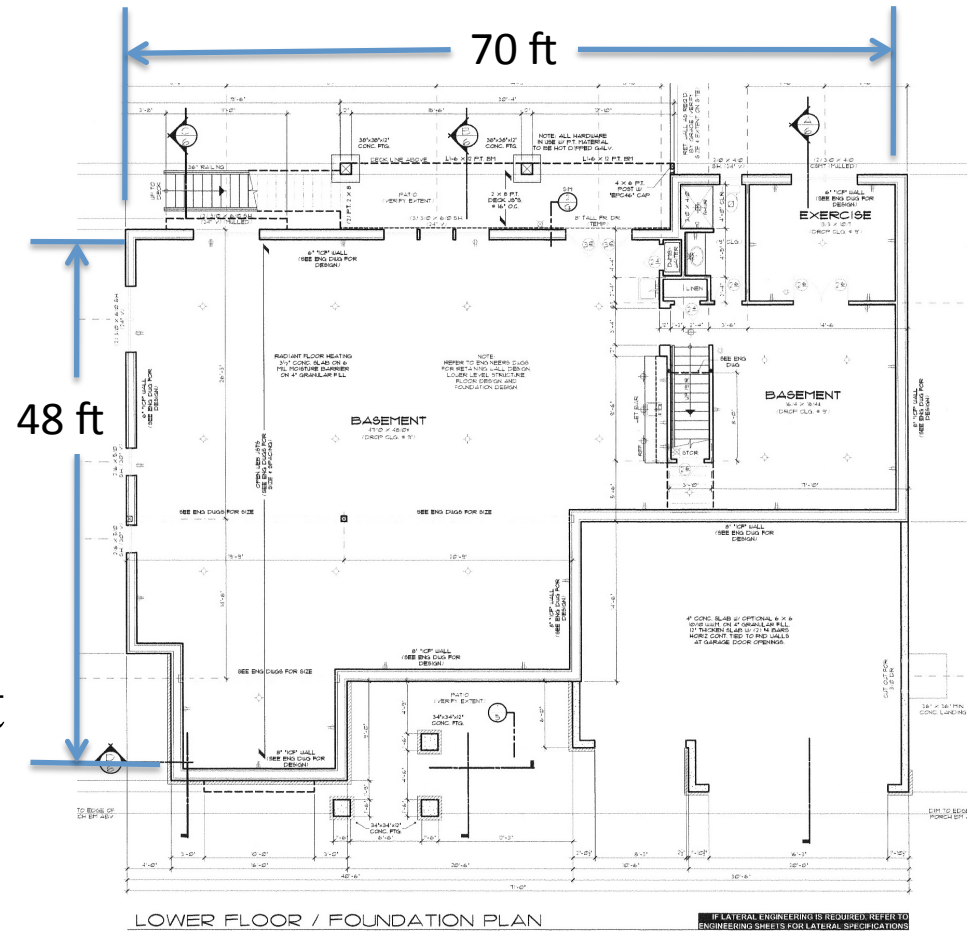
# Concept Research: Books Ed Austin and Tom Dill



# Structural Design

## Givens

- Retirement Project
- New Basement
  - ICF walls
  - Radiant heat in concrete floor
  - Separate ventilation
  - No mechanical systems in basement
  - 9 ft. 6 in. Ceiling
  - Single support post



# Druthers

- HO Scale –Five decades of acquisition
- Location
  - Valley
    - Modest power
    - Industry
  - Mountain
    - Big power
    - Helpers
- Era: Schizophrenic: 1954 vs. 1984

1954

Cab Forwards  
Decks (2-10-2)  
PAs  
F-7s

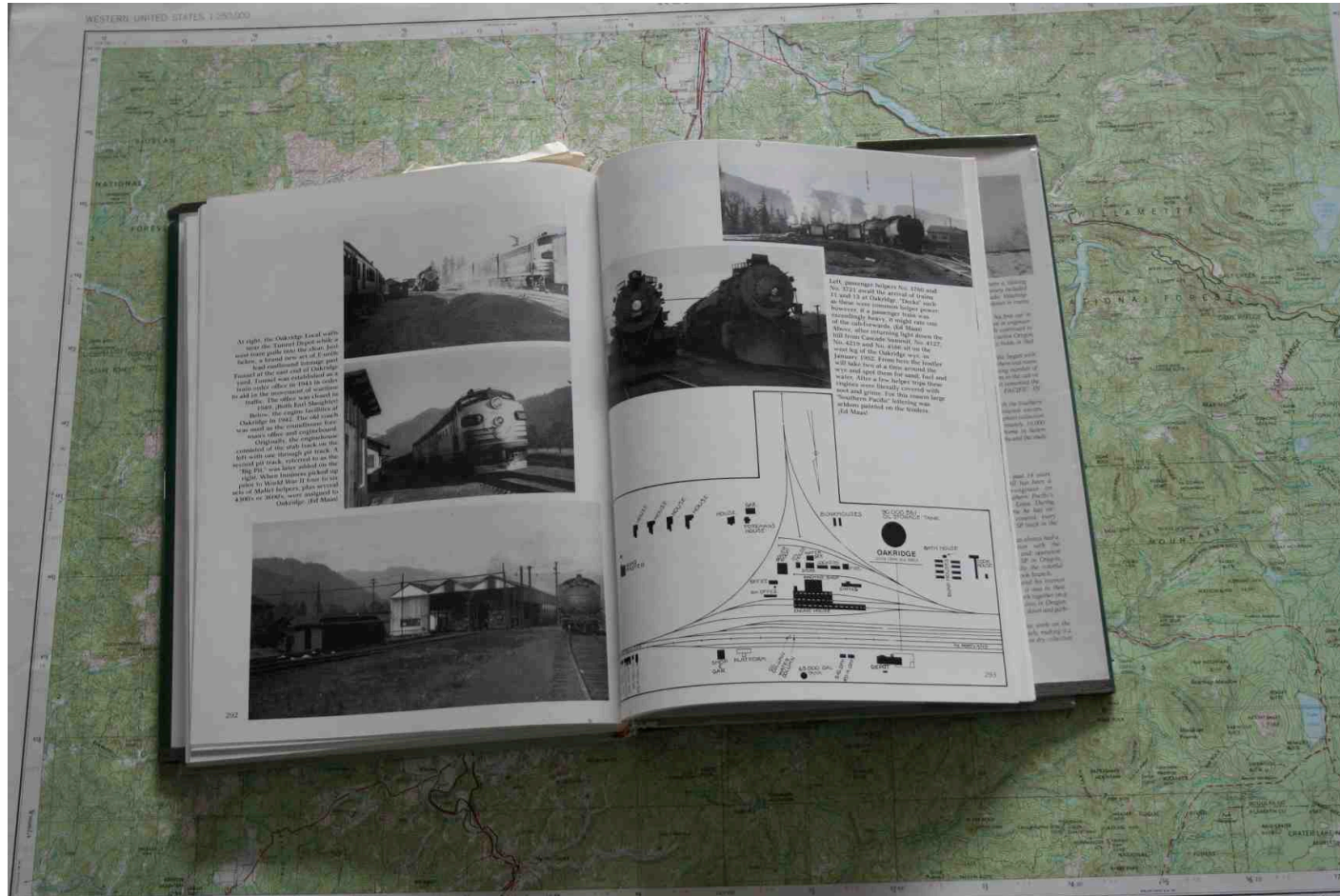
1984

Tunnel Motors  
“Flare” 45s  
Cadillacs (SD9E)  
“Cruds” (SW1500)

# Focused Detail Research

- Books
  - Significant Scenes
  - Track Charts
- Maps
- RR Paper
  - Timetables
  - Station Plats
  - SPINS Diagrams
- Internet
- Regional Meets and SPH&TS
- Museums

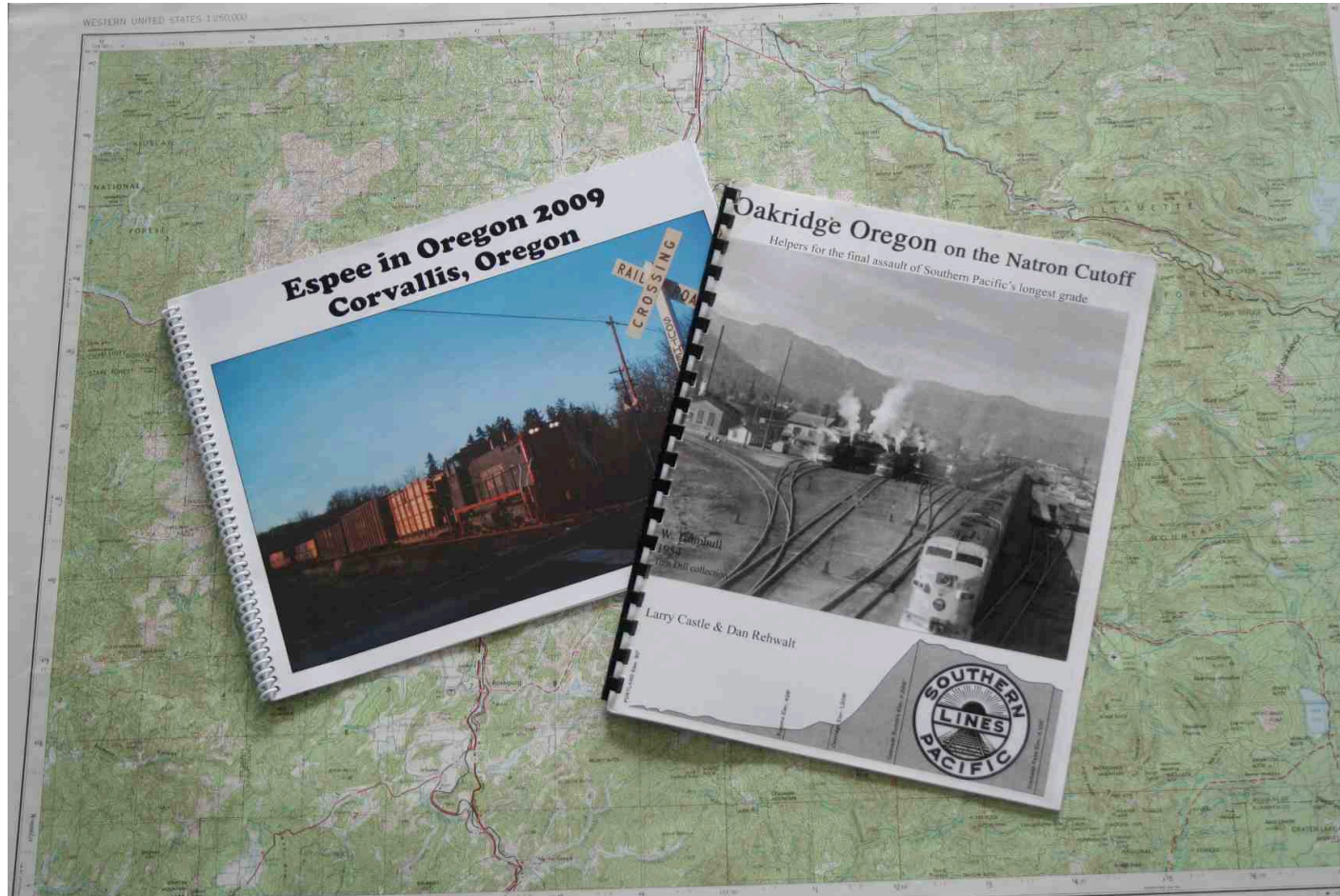
# Oakridge Track Layout



# Internet

- Joel's Southern Pacific in the Cascades Website
  - <http://spcascades.railfan.net/>
- SP Yahoo Group
  - <http://finance.groups.yahoo.com/group/Espee/>
- SP in Oregon Yahoo Group
  - <http://groups.yahoo.com/group/EspeeOR/>

# Espee in Oregon Meets



<http://www.espee-in-oregon.com/>

# Layout Priorities

1. Manned Helper Operation
2. Industry Switching
3. Satisfying 6-man Operations
4. Base Yard Operations
  - a. Depot and Mail Switching
  - b. Classification Yard
  - c. Arrival/Departure Tracks—Open Staging
  - d. City Industry
  - e. Engine Facilities

# **LDEs: Layout Design Elements**

## **Wish List 1**

- Oakridge: Historic helper station
- Cascade Summit: logical top and unique wye
- Mountain sidings: 3 desired between Oakridge and summit
- Base Yard: Eugene greatly condensed
- “Valley” towns: Eugene and Springfield

## **LDE Wish List-2**

### Scenic Vistas

- Salt Creek Trestle
- ‘Mountain’ Trestles
  - Noisy Creek
  - Shady Creek
- Tunnels
- Rock Sheds
- Rooster Rock

# Salt Creek Trestle



# Noisy Creek Trestle



<http://spcascades.railfan.net/photos/HARR/NOISYCREEK9169east-2.jpg>

# Shady Creek Trestle



1995 Joel Ashcroft

<http://spcascades.railfan.net/structures/SHADYCREEKBr-westtoeast.jpg>

# Rock Sheds

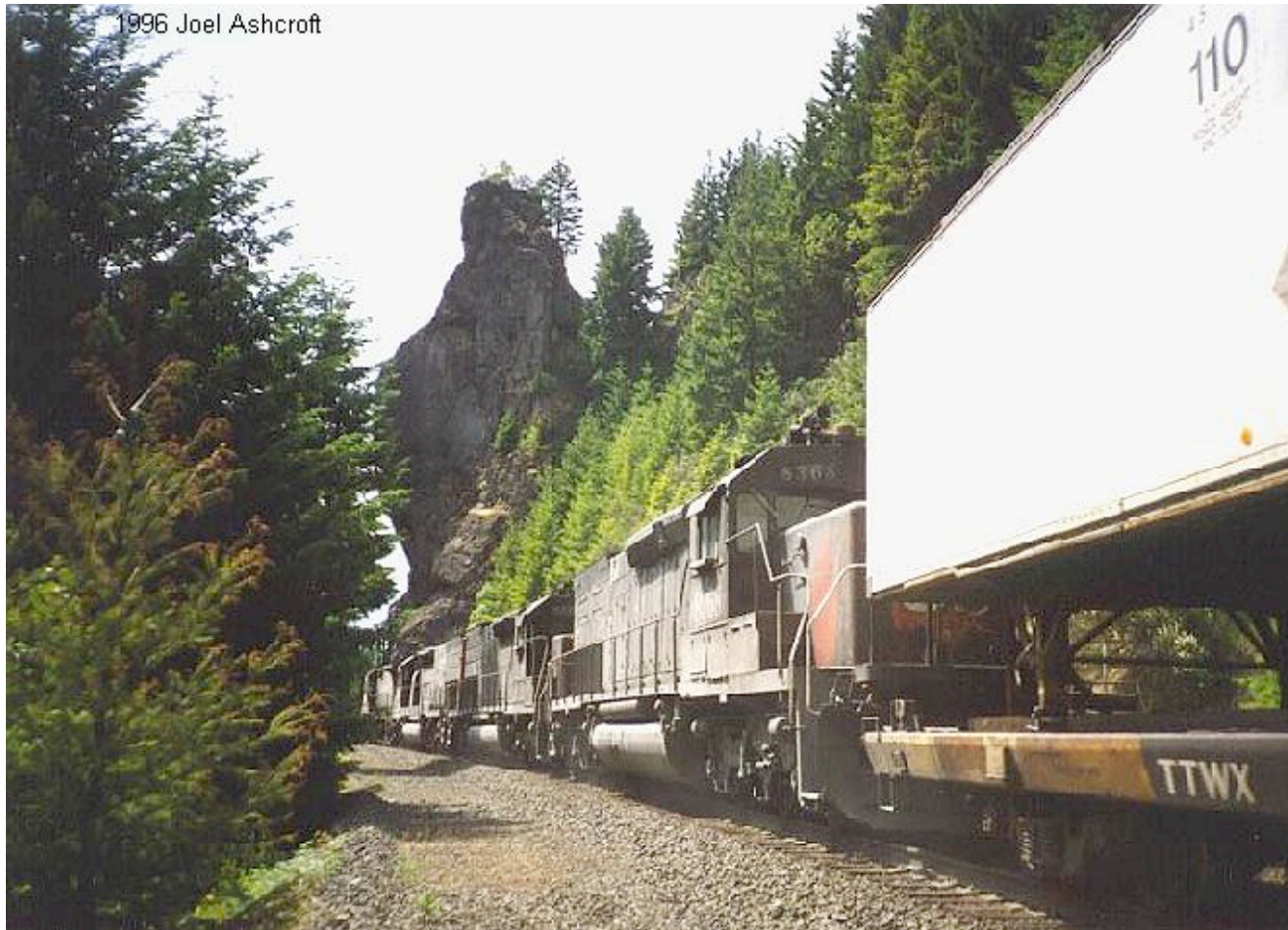


<http://spcascades.railfan.net/photosFrazier-Cruzatte.html>



<http://spcascades.railfan.net/structuresCruzatte-Abernethy.html>

# Rooster Rock



<http://spcascades.railfan.net/photos/SP8035westRoosterRockT21.jpg>

# **LDE Wish List-3**

## **Industry**

- Western Lumber @Westfir
- Pope & Talbot @ Oakridge (geo east)
- Valley forest products mills: large and small
- (Western Kraft)
- Agri-Business
- Infrastructure: Bulk oil, cement, ...

# **LDE Wish List-4**

## **Railroad Infrastructure**

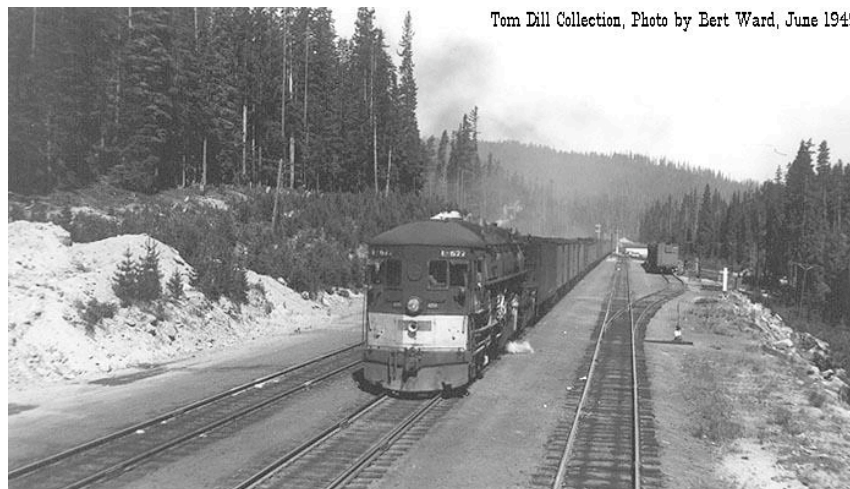
- Depots and Stations
- RR Station “Villages”
- RR Business
  - House tracks
  - Freight House (Eugene)
  - Express (REA at Eugene)
- Eugene Roundhouse and Engine Facilities

# Wicopee



<http://spcascades.railfan.net/photosWicopee-Fields.html>

# Cascade Summit



Tom Dill Collection, Photo by Bert Ward, June 1949

<http://spcascades.railfan.net/photosCascadeSummit.html>



Dan Lynch Collection



Courtesy: Floyd Hulegaard

<http://spcascades.railfan.net/photos/LYNCH/CASCADESUMMITsnowshoe.jpg>

<http://spcascades.railfan.net/hulegaard/CASCADESUMMITwatertanksnow.jpg>

# Cascade Summit



# Cascade Summit



# Operations Planning

## Types of operations requiring track considerations

- Mountain helper operation: manned mid-train helpers
- Individual car movements: on-line industry
- Passenger operations
  - Streamliners: Shasta Daylight and Cascade or Amtrak Coast Starlight
  - Klamath: mail and express
- Other First Class
  - North Coast Perishables
  - CZLAT and LABRT
- Local Freights: Turns and Switch Jobs
- Caboose swaps and loco hostling

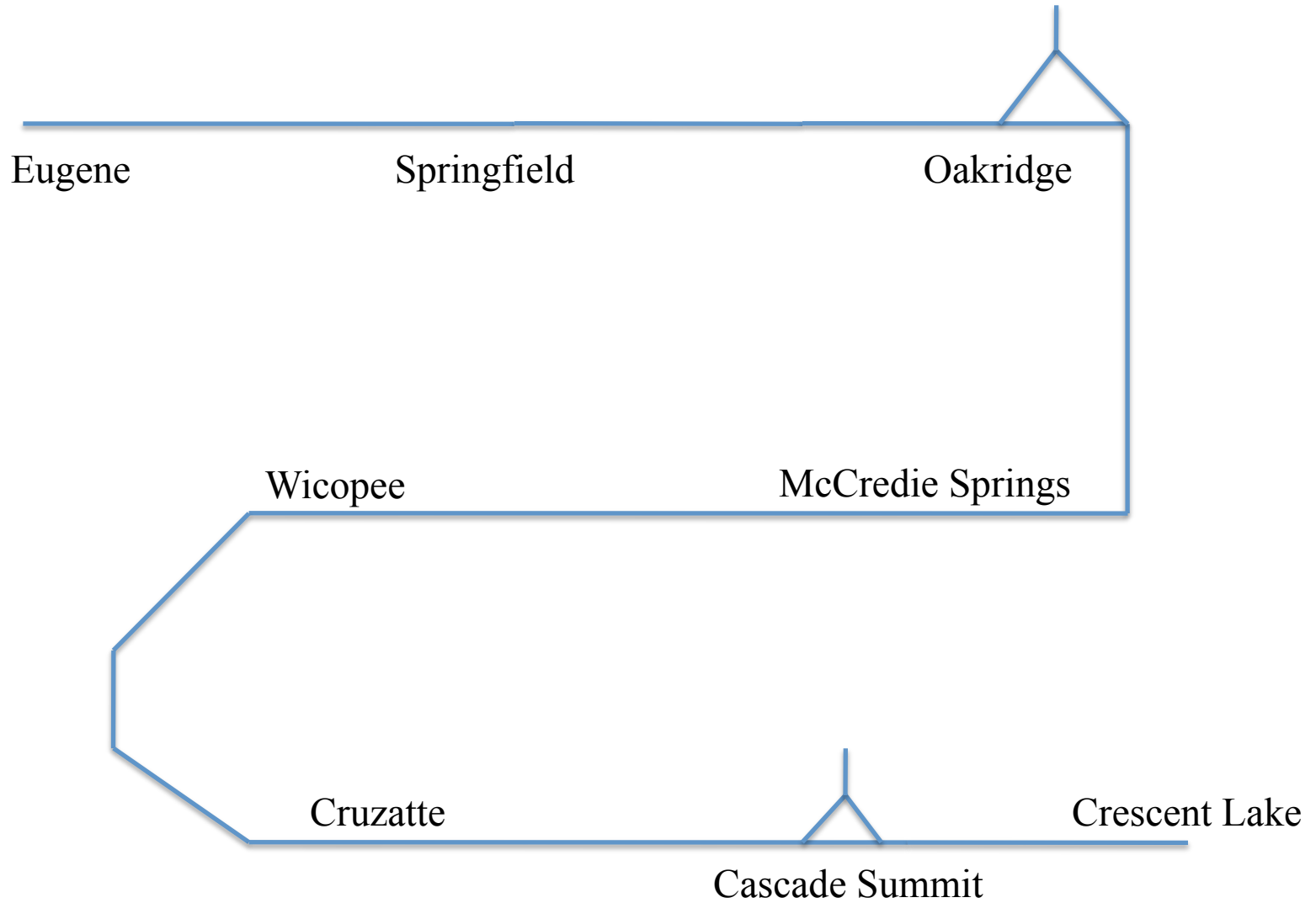
# Crew Considerations

- Crew Size: 6 – 15+
  - “Satisfying” operations with only 6
    - Tough choices for Eugene Yard
    - CTC
  - Expansion to 12-15 or more
    - Aisle Space
    - Potential Timetable and Train Order Operations
- Core Jobs: Dispatcher, Helper engineer(s), Road engineers, local and switch crews, conductors, “Santa Clara” Tower

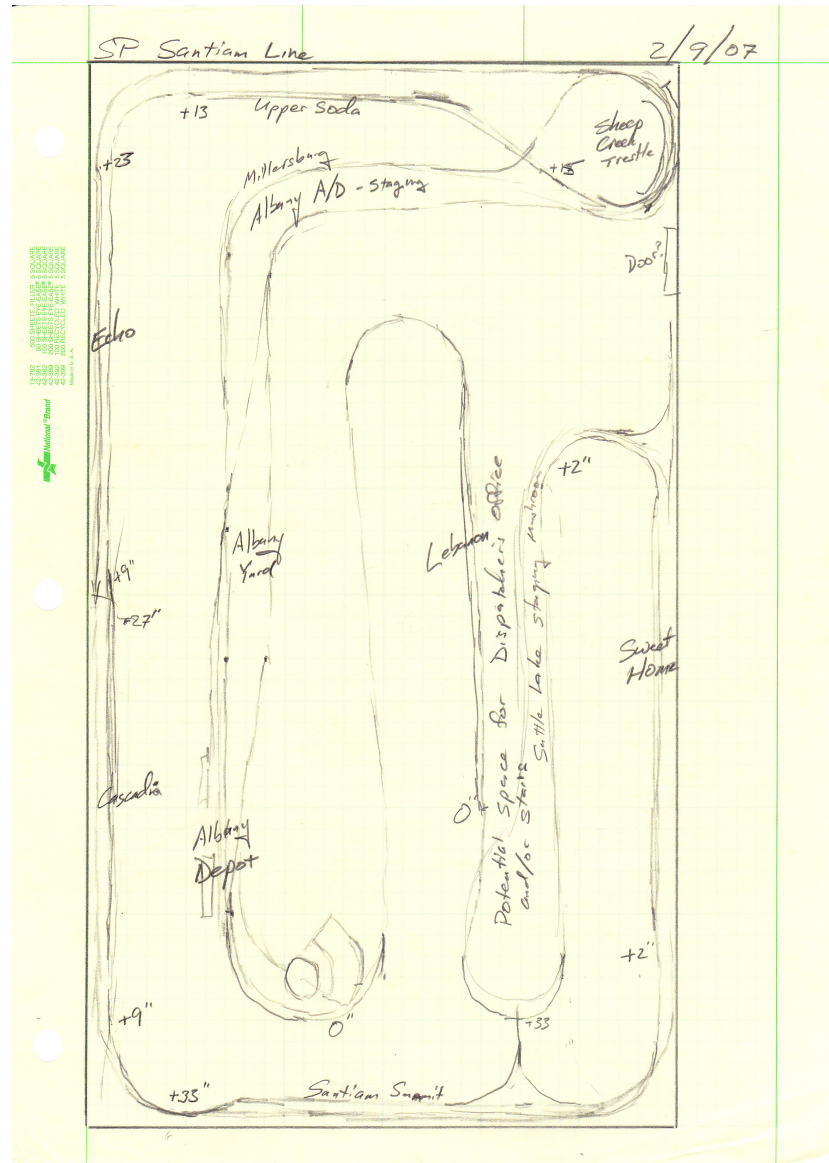
# Layout Planning Factors

- Minimum radius
  - Mainline: 42”
  - Yards and Industry: 36”
- Turnouts
  - Mainline: #8
  - Secondary: #6
- Grade: 1.8%
- “Sincere” Plan (note real Cascade Line giant “S”)
- Aisle Width
  - Desired 48” minimum
  - Settled for 36” minimum

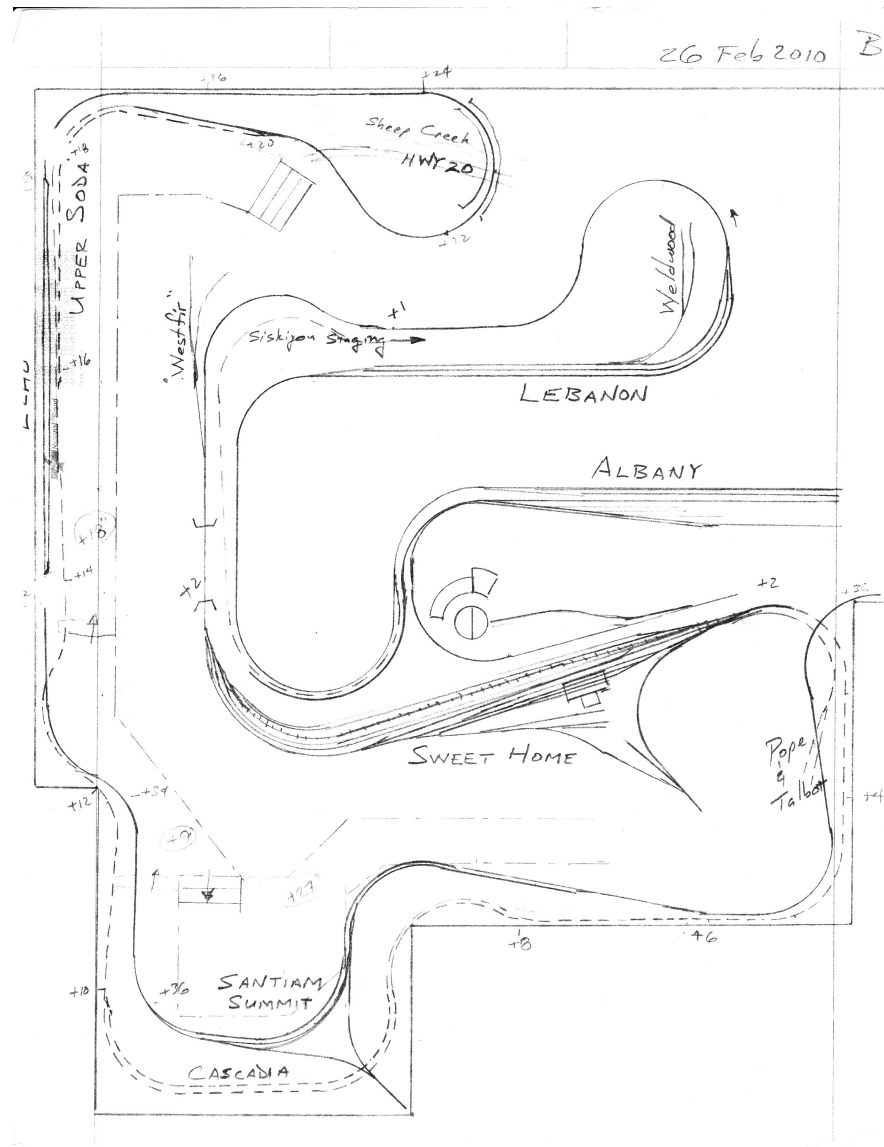
# SP Cascade Line Schematic



# Layout Design Studies



# SP "Santiam Line"

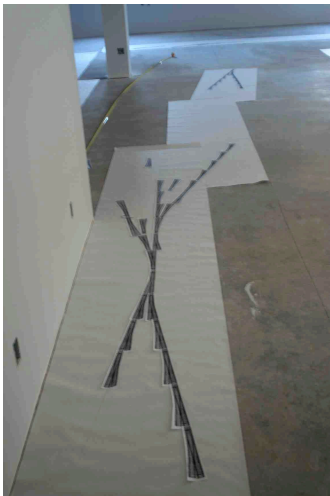


# Layout Design Sequence

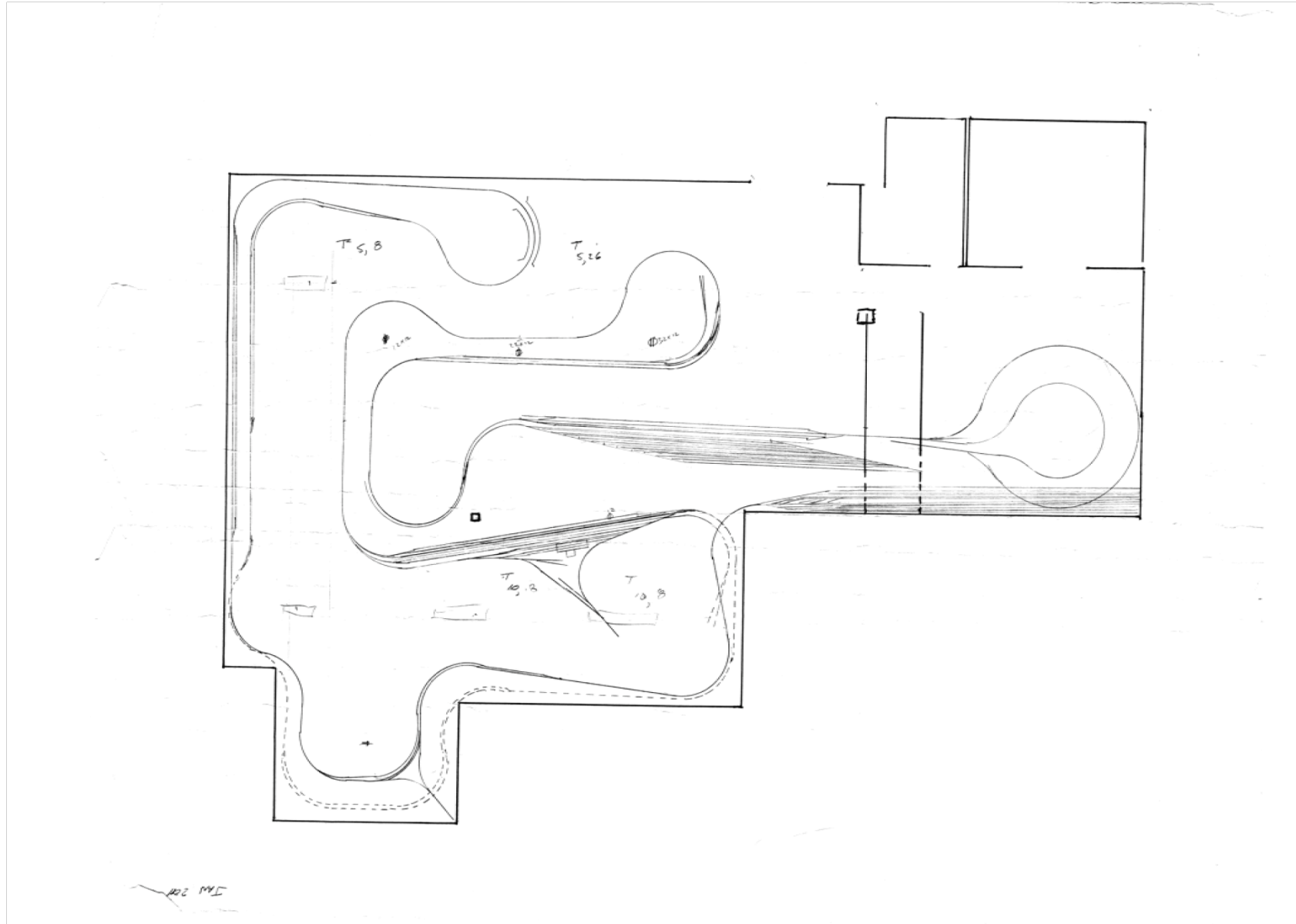
- Locate the Wyes
- Locate the Aisles
- Locate the major turn lobes
- Key Scenic LDE's
  - Salt Creek Trestle
  - Mountain Sidings
- Yard Location and Design
  - Oakridge
  - Eugene (base yard)
- Down Select and De-Scope

# Detail Design

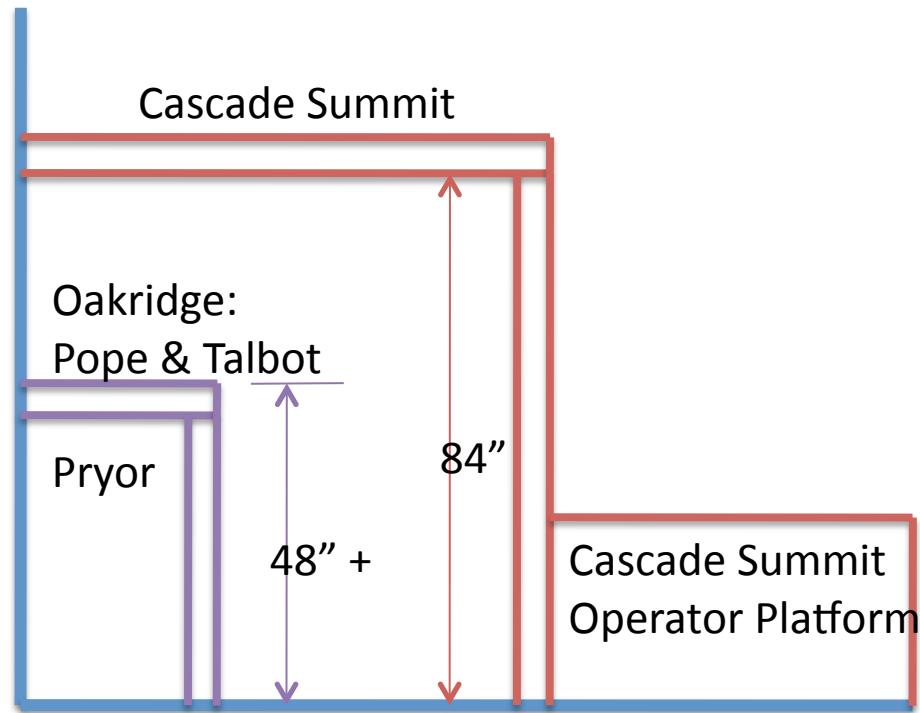
- Rough track configuration during “Structural” phase
- Specific station locations
- Specific track layouts
  - Paper and pencil
  - Full size with newsprint and photo copy track



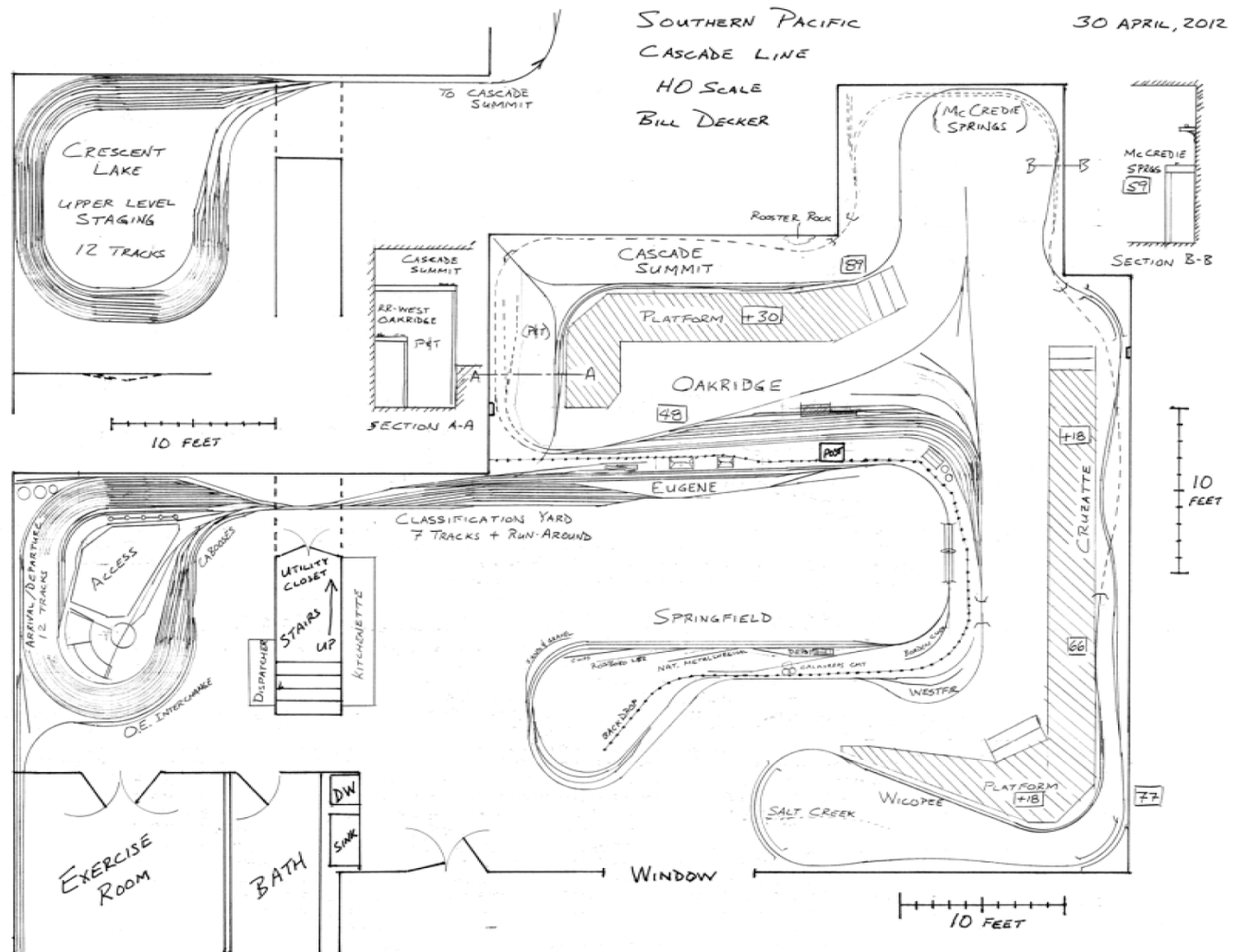
# Cascade (Santiam) Line: January, 2011



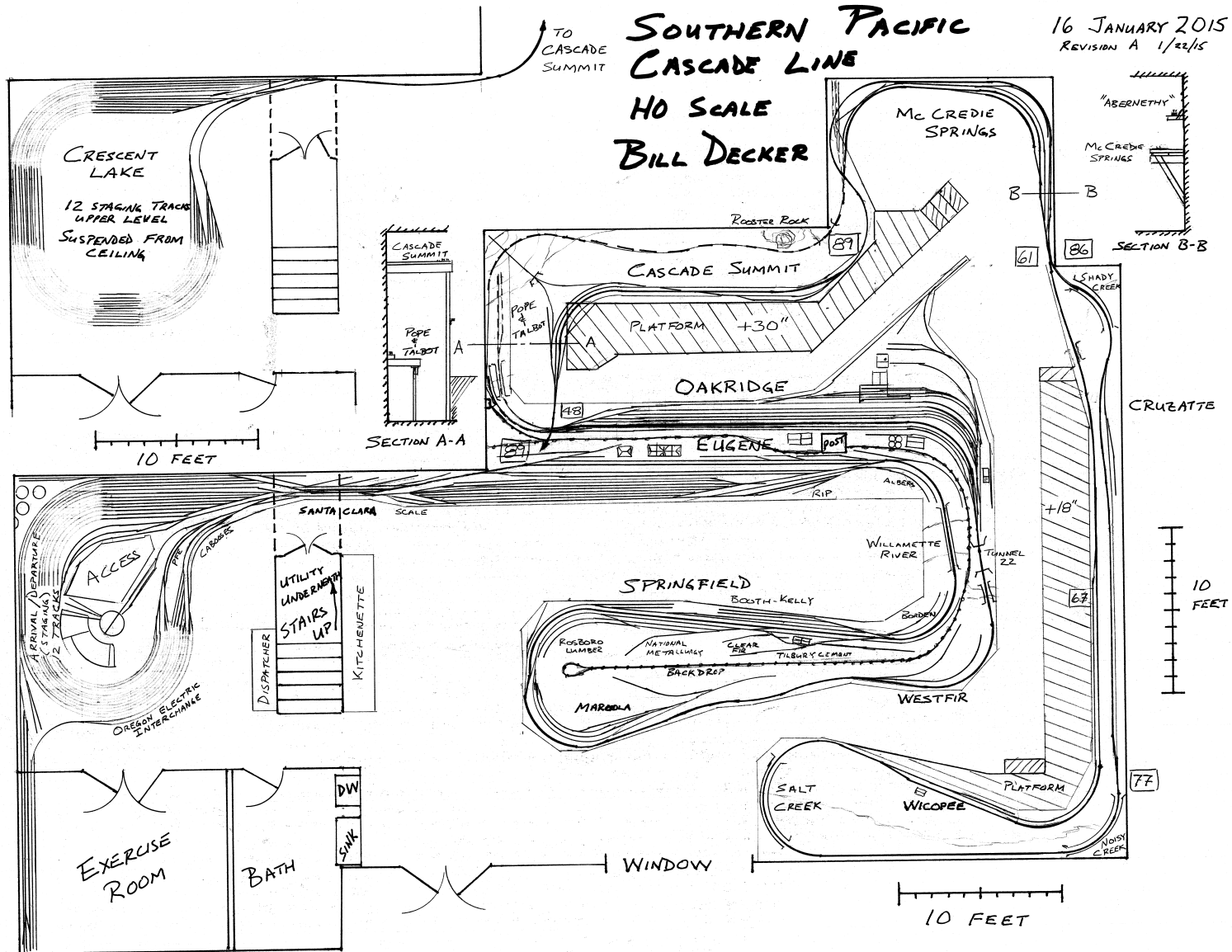
# Cascade Summit Cross Section



# SP Cascade Line: 30 April, 2012



# SP Cascade Line: 16 January, 2015



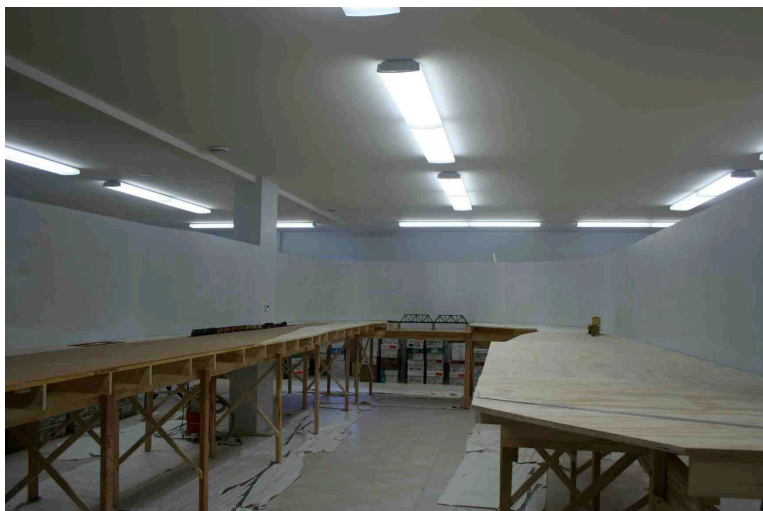
# **Layout Construction**

- **Valley Core**
- **Mountain Grade**
- **Upper Level**

# Valley Core L-Girder



# Backdrop Spine and Sky Treatment



# Track Laying



Springfield



Marcola Branch

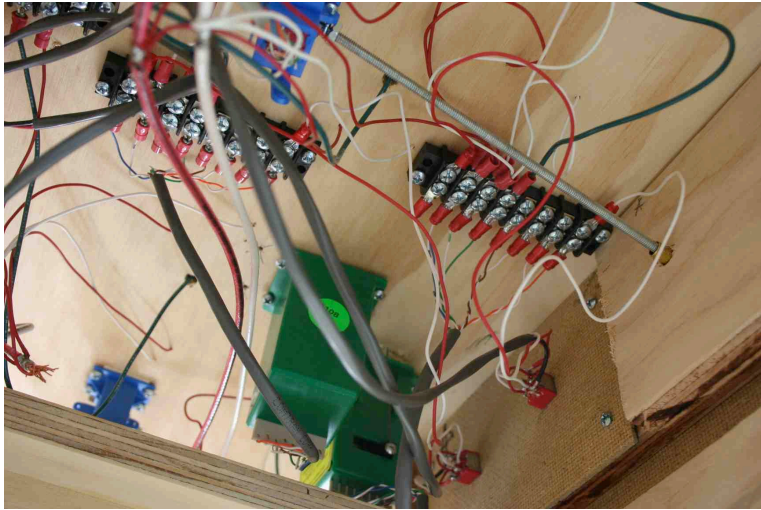


Curves with Micro Engineering Flex

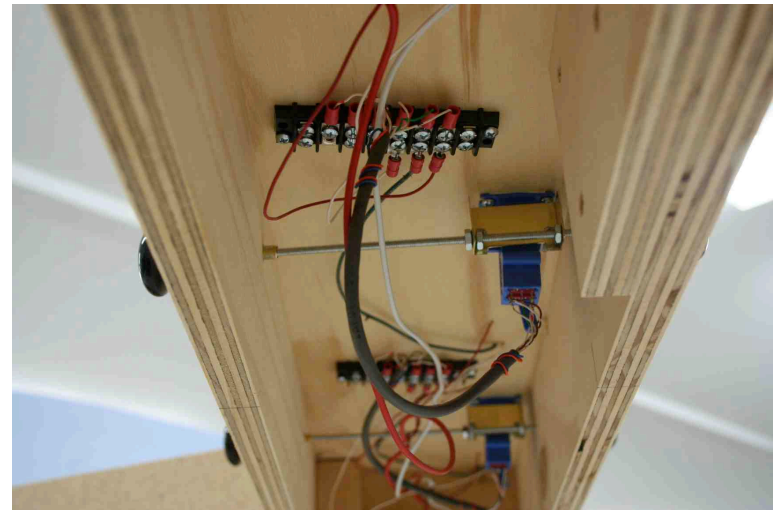


Fast Tracks Turnouts

# Switch Controls



Switch Machines



Wye Blue Point Throws

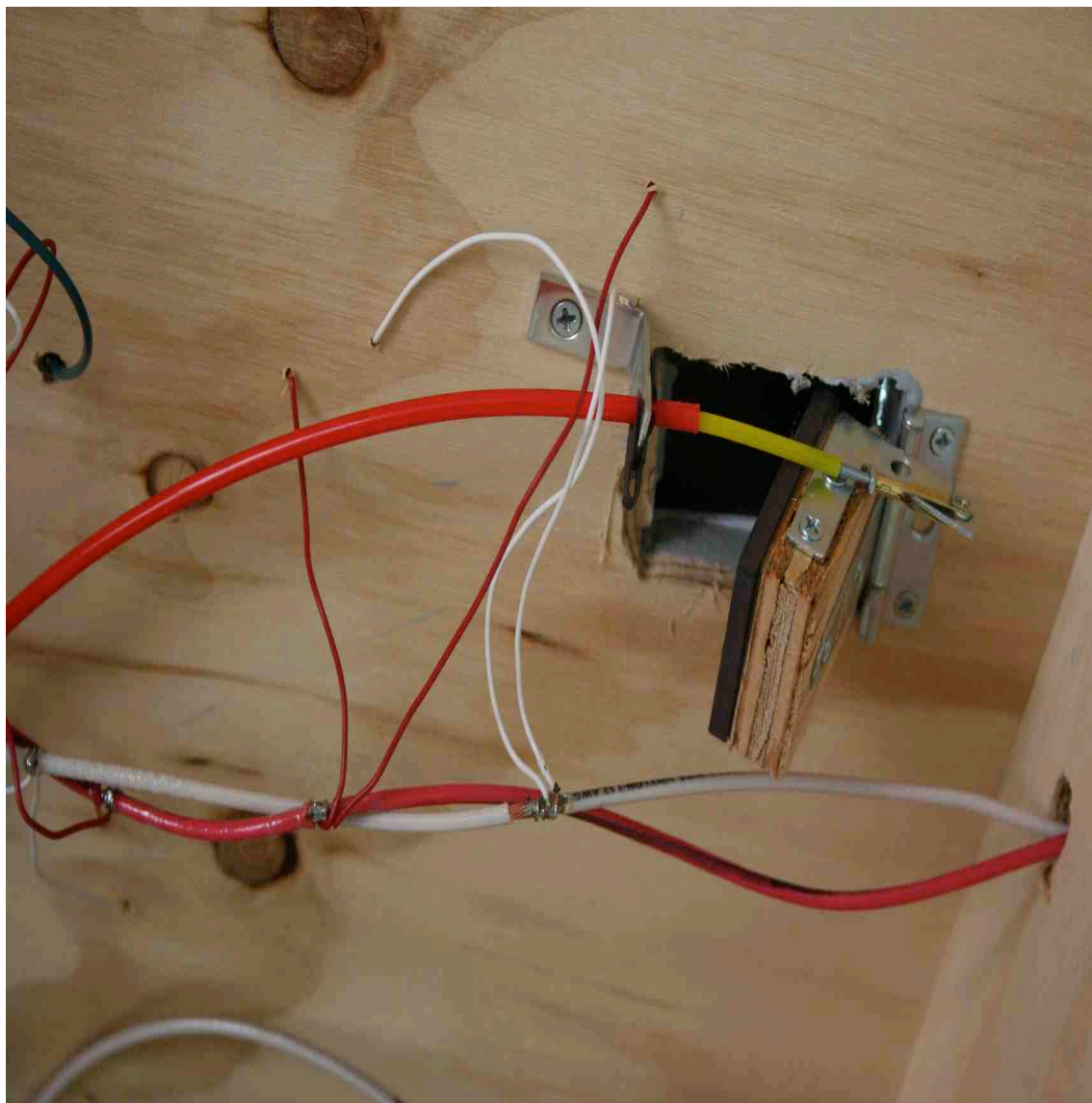


Fascia Switch Controls



Colored Switch Knobs at Eugene

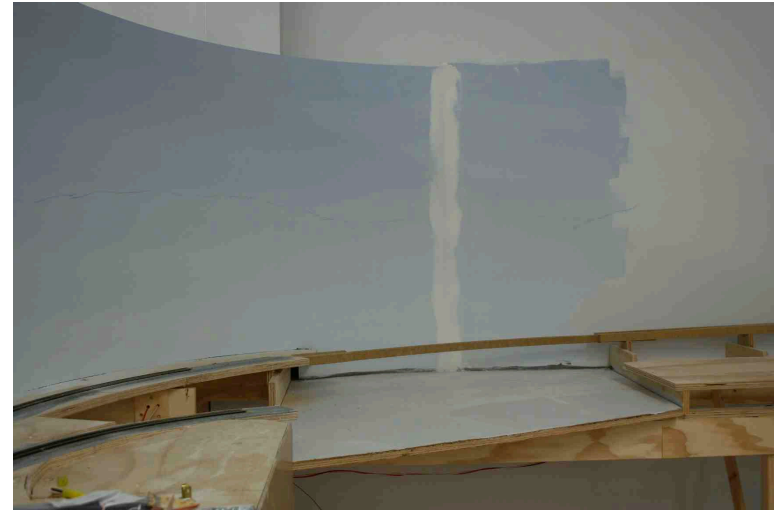
# Uncoupling Magnet Hatches



# Mountain Spline



¼" Spline Roadbed



Salmon Creek Bridge Core



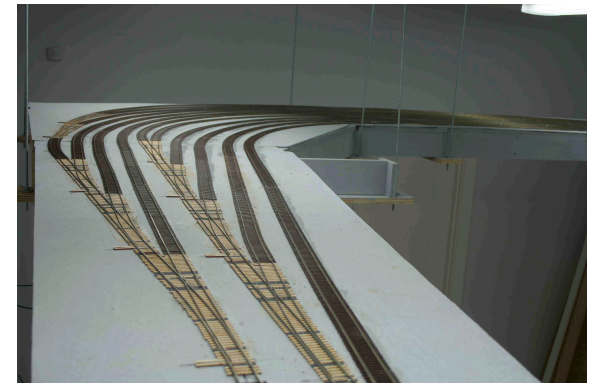
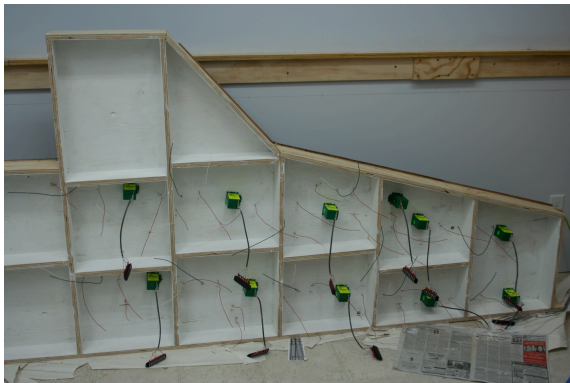
Salmon Creek Bridge Deck and Girders

# Cascade Summit Benchwork



# Suspending Crescent Lake

## Upper Level Staging



# First Operations!



# Third Test Operations



# Operations Development

- Start two local freights and City Switcher at their stations.
- Split Springfield local into two jobs.
- Provide file dividers for Eugene yard card slots.
- Fully crew Eugene Yard jobs early in crew job selections.
  - Yardmaster
  - Two switch crews
  - City Switcher

# Third Full Mainline Operations August 8, 2015



# Layout Tour – SPX7480W



Departing Eugene Arrival/Departure Yard



Passing the Eugene Depot



Crossing the Willamette River



Rolling through Springfield

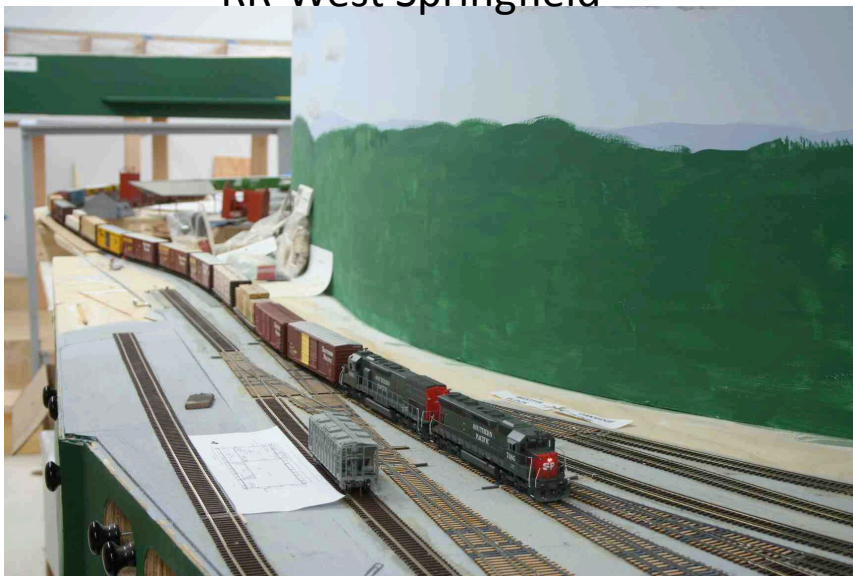
# Springfield to Oakridge



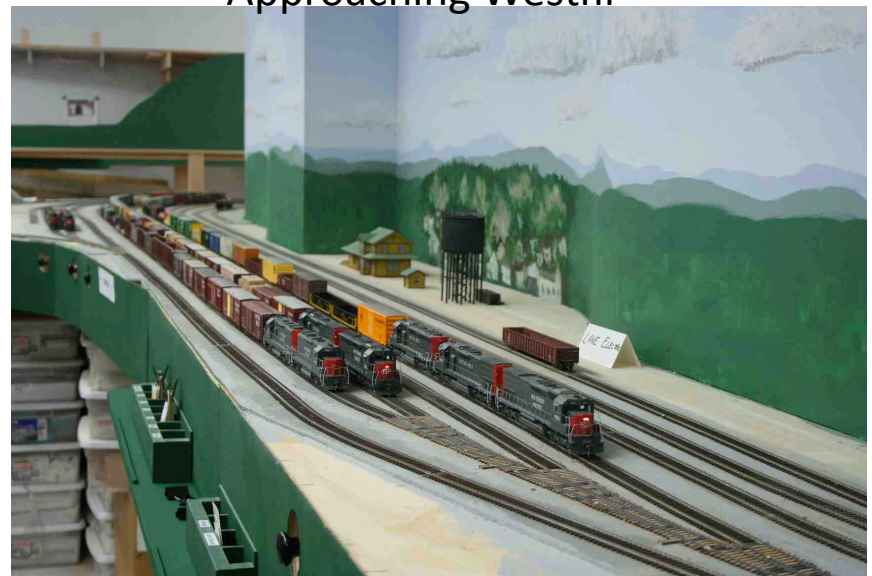
RR-West Springfield



Approaching Westfir



Entering Oakridge



Arrival in Oakridge

# Cutting in the Helper



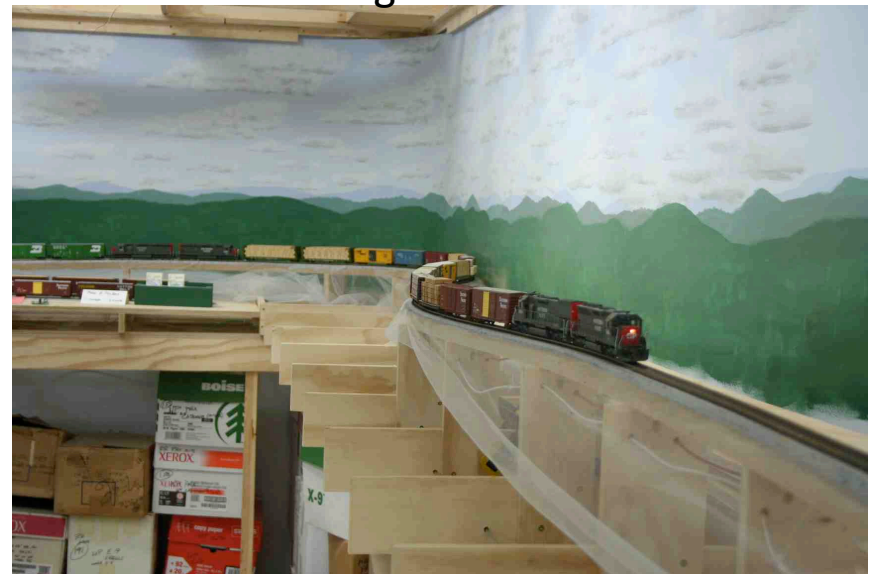
Helper set leaving the engine facility



Cutting in mid-train



Starting out of Oakridge



Starting the climb

# Climbing up the mountain



Climbing through McCredie Springs



Passing through Tunnel 20



Crossing Salt Creek



The helper at Salt Creek

# Reaching the top



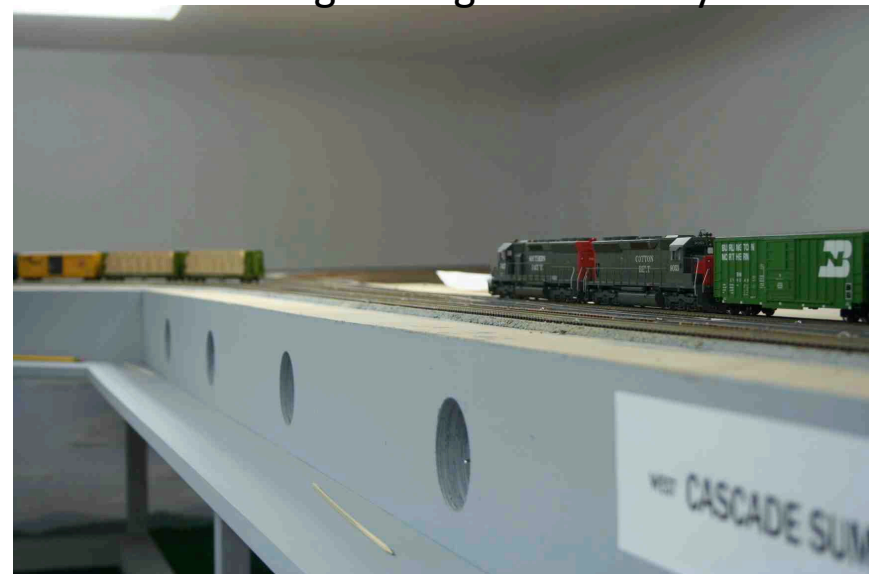
Climbing through Cruzatte



Climbing through Abernethy

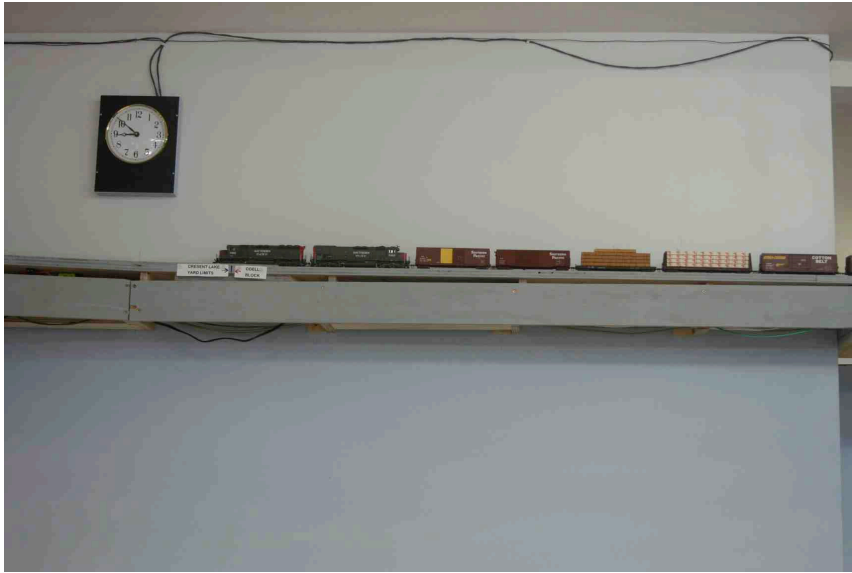


Arriving at Cascade Summit



Cutting out the helper

# Concluding the run



Heading into Crescent Lake



Completing the run at Crescent Lake



Light helper in the Beattie Spur



Helper crosses Trapper Creek

**See my blog:**

**<http://espeecascades.blogspot.com/>**

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# Willamette River

