

**NTRAK T-TRAK Helix**

# Requirements

- **Helix**
  - **Connects NTRAK to T-TRAK**
  - **3 turns**
  - **21 inch radius**

# Height Difference

## NTRAK

- **NTRAK Standard: 39"- 41"**  
**Above floor**

**Minimum height difference:**

**Maximum height difference:**

## T-TRAK

- **Table height: 28.75"**  
**Above floor**
- **T-Trak Standard: 2.75"-4"**  
**Table top to Unitrak base**
- **Unitrak height: 0.25"**
- **Total: 31.75"- 33"**  
**Above floor**

**6"**

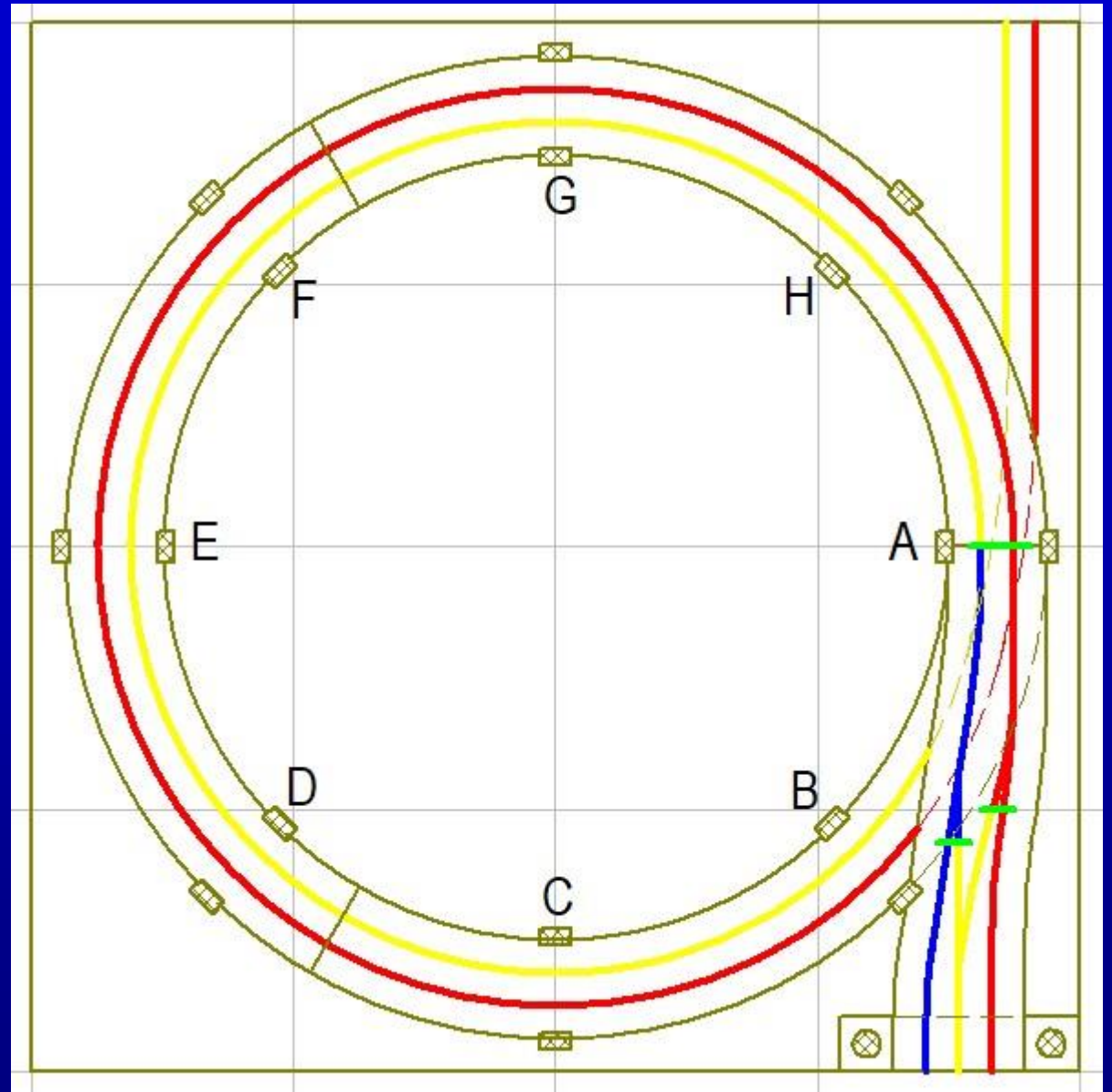
**9.25"**

# Height Considerations

- **Overall height variation: 3.25"**
- **Top of helix to NTRAK interface: 24"**
  - 0.5" vertical rise = 2.1% grade
- **Helix required variable vertical rise**
  - 0.5" increments

# Planform Plan

- **Module size: 4' by 4'**
- **Outer track radius: 21"**
- **Inner track radius: 19.5"**
- **Eight replaceable side support pairs (A thru H)**
- **NTRAK**
  - Three turnouts
  - Adjustable height



# Helix Grades

Helix Height	Outer Grade	Inner Grade
6"	1.52%	1.63%
6.5"	1.64%	1.77%
7"	1.77%	1.90%
7.5"	1.89%	2.04%
8"	2.02%	2.18%
8.5"	2.15%	2.31%
9"	2.27%	2.45%

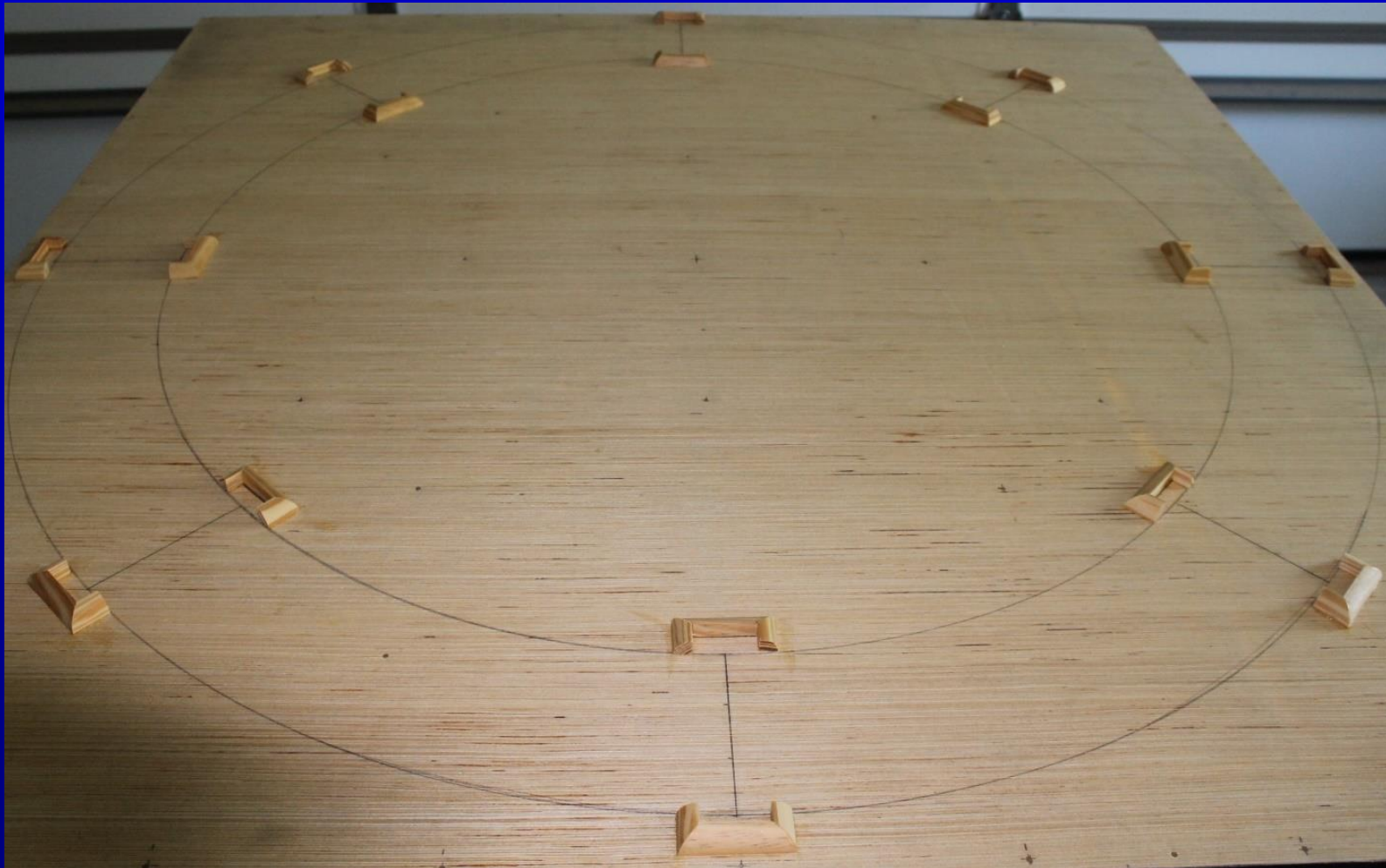
# Helix Framework

- **NTRAK framework**
- **Shorter legs to match the T-TRAK height**
- **1 X 4 outer frame**
- **1 X 3 inner cross supports**



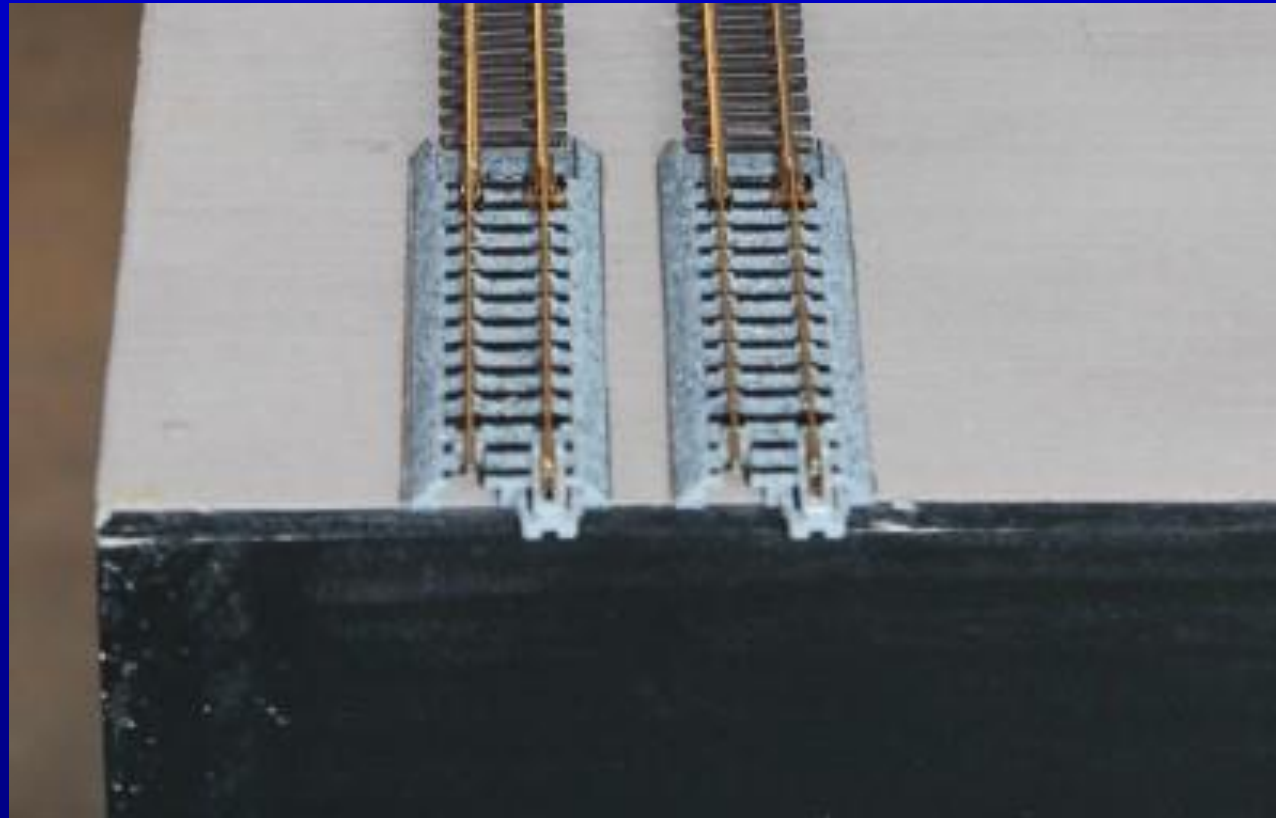


# Side Support Notches





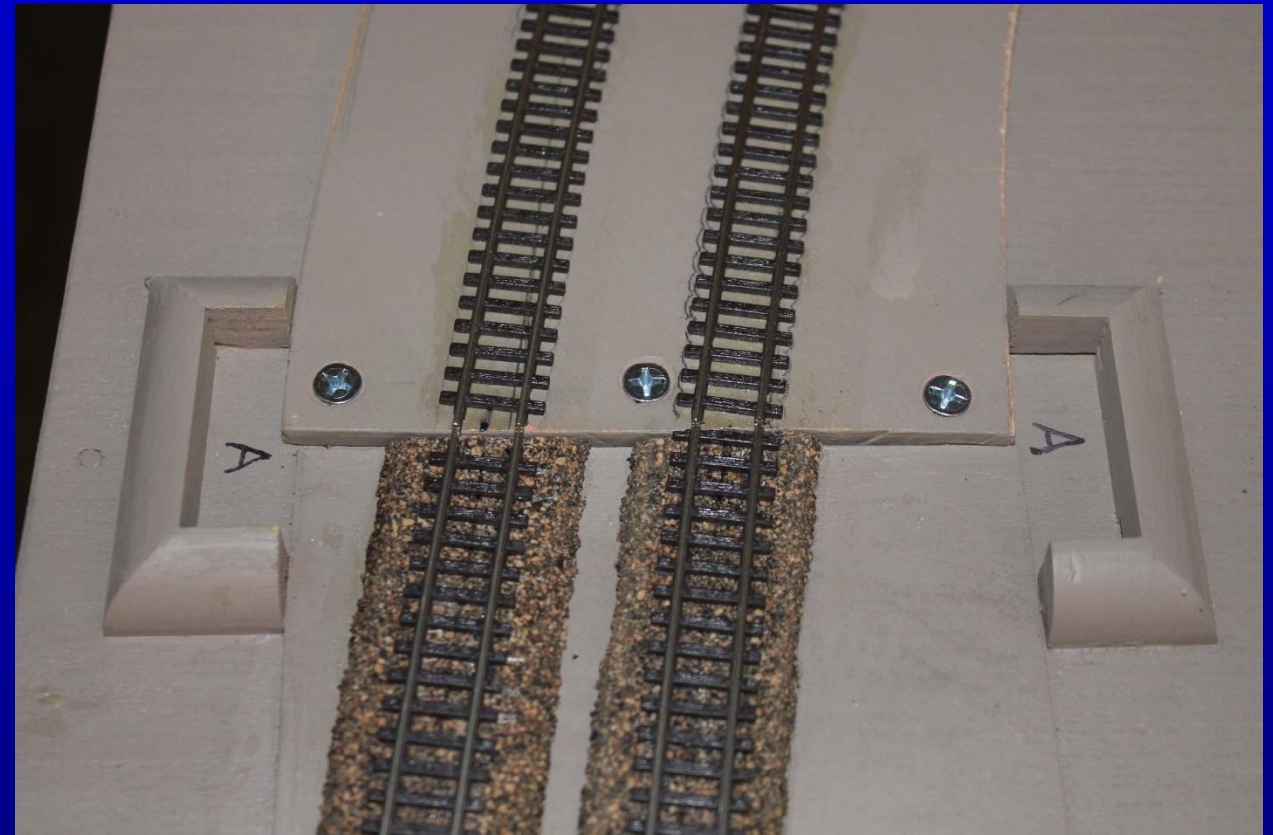
# T-TRAK Track Interface



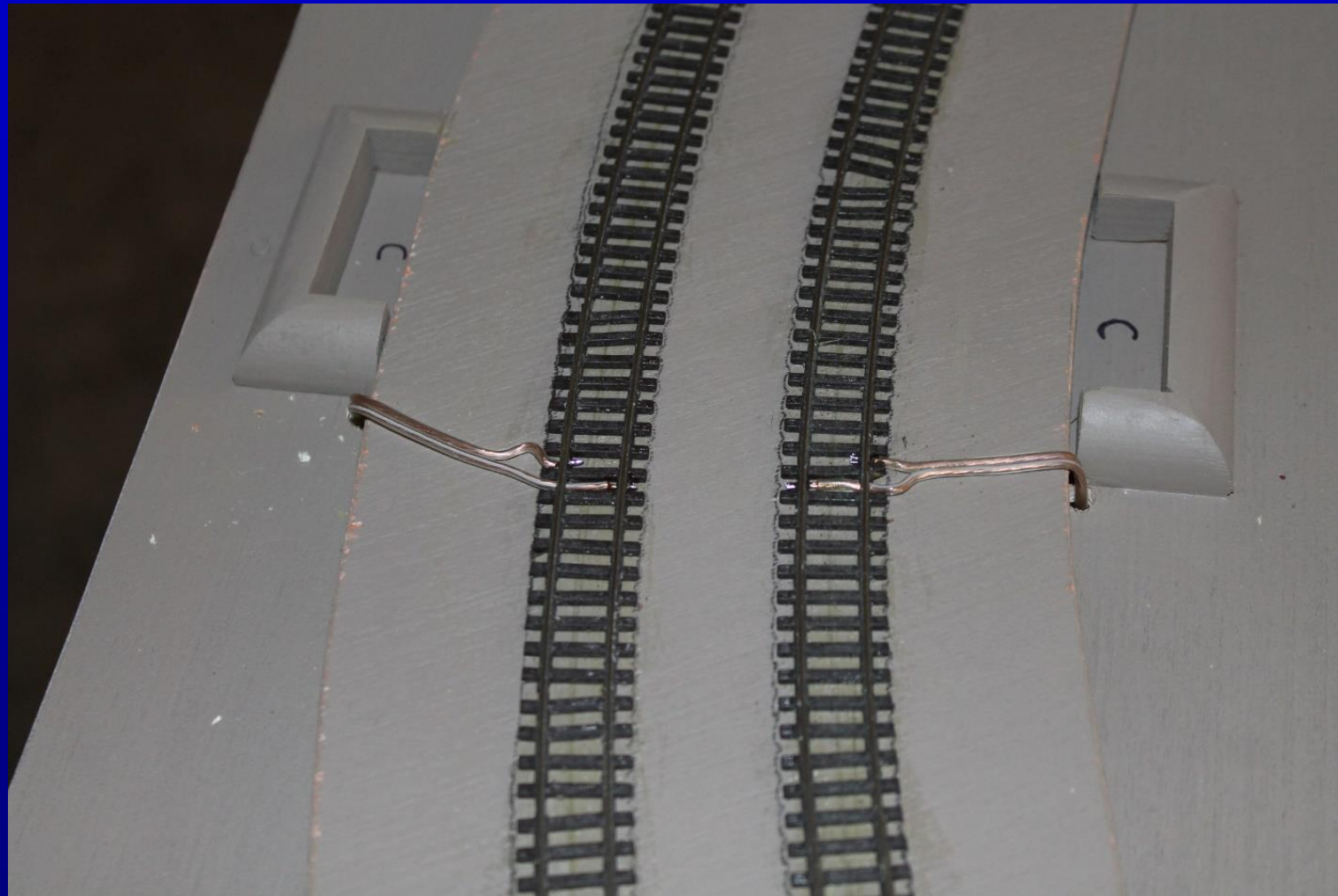
- **Kato Conversion Track pieces (20-045)**

# Start of Helix

- Helix subroadbed pieces
  - 120° arc
  - 3/16" thick plywood
  - 4.5" wide (18" inside radius, 22.5" outside radius)
- Flat head machine screws and keep nuts
- Peco code 55 flex track
- Directly on subroadbed
- Min 22.5' N scale clearance
- Rail gap for block junction

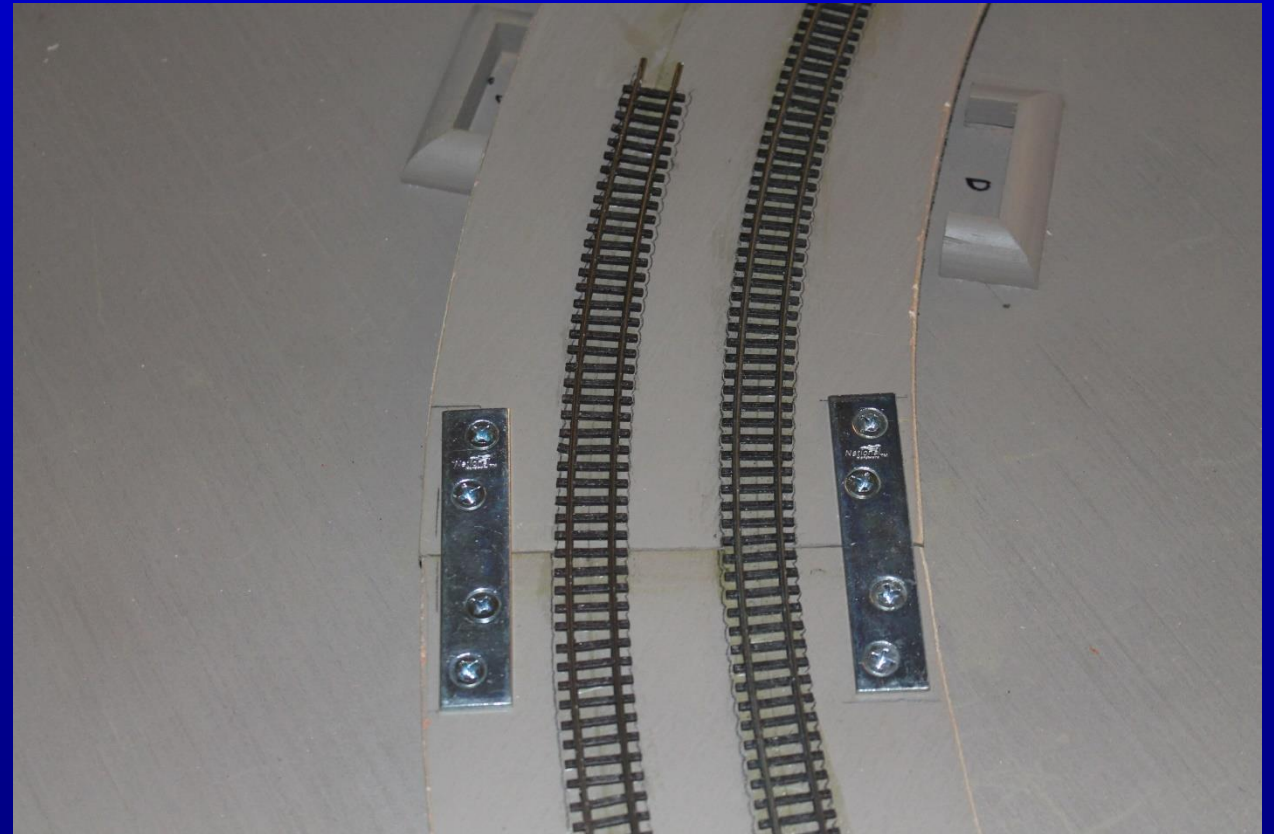


# Track Feed Wires



# Subroadbed Joints

- 3" four hole metal braces
- Flat head machine screws and keep nuts
- Doesn't add any thickness to the middle 3" of the subroadbed





# Side Supports

- Eight pairs of removable 1 X 2 side supports
- Each support is labeled with the helix height and the position
  - Set of side support for 7.5"
- 1/4" deep slots
  - 1/4" Dremel router bit (A)
  - 3/16" Dremel router bit (B-H)
- Hole for threaded rod at top



# Height of the bottom of each slot for the 7.5" support set

**Total Height Delta      7.5**

**1 Turn Height Delta      2.5**

**45° Height Delta          0.31**

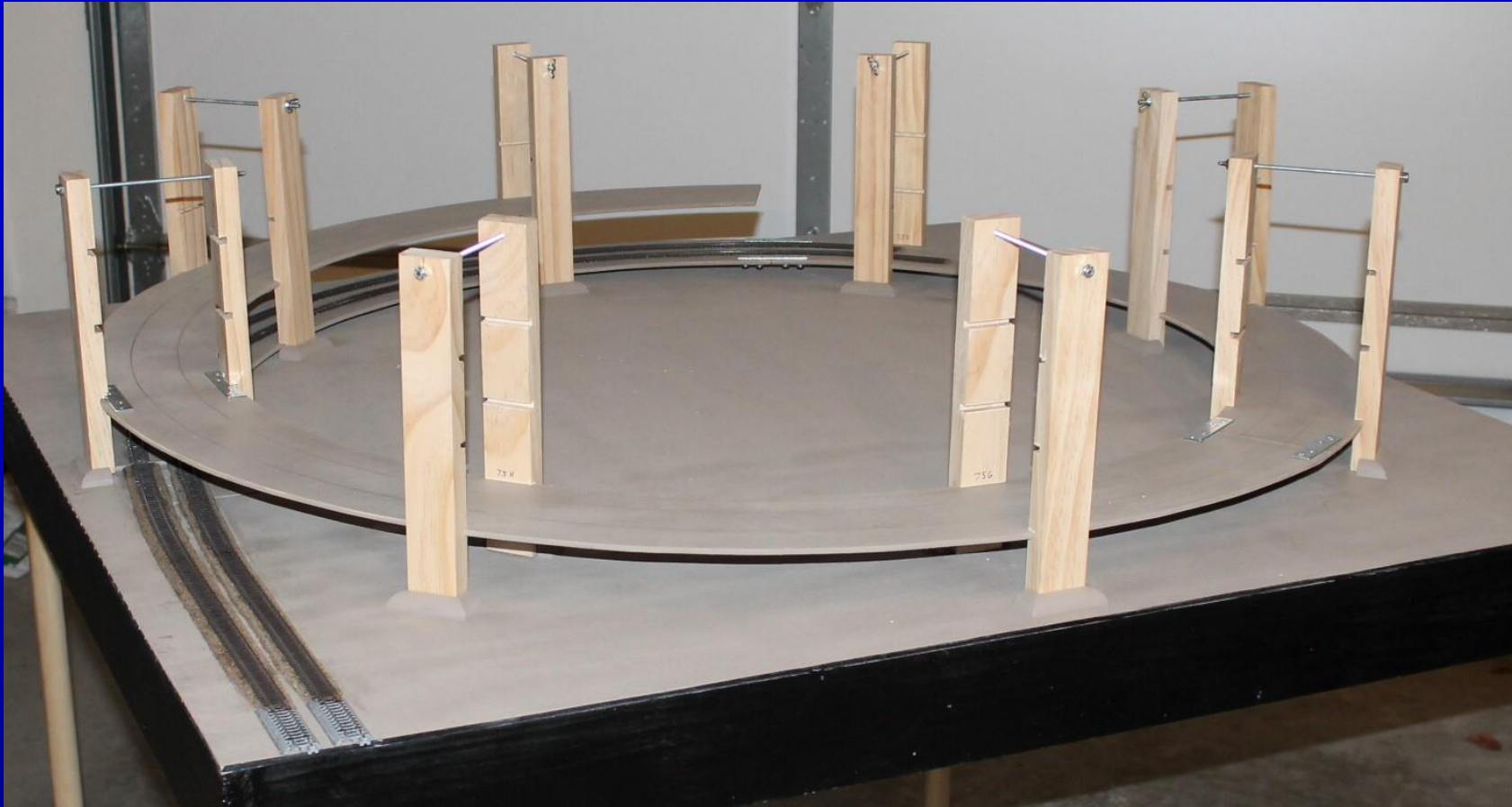
<b>Post</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
<b>1st Loop</b>	<b>0</b>	<b>0.31</b>	<b>0.63</b>	<b>0.94</b>	<b>1.25</b>	<b>1.56</b>	<b>1.88</b>	<b>2.19</b>
<b>2nd Loop</b>	<b>2.50</b>	<b>2.81</b>	<b>3.13</b>	<b>3.44</b>	<b>3.75</b>	<b>4.06</b>	<b>4.38</b>	<b>4.69</b>
<b>3rd Loop</b>	<b>5.00</b>	<b>5.31</b>	<b>5.63</b>	<b>5.94</b>	<b>6.25</b>	<b>6.56</b>	<b>6.88</b>	<b>7.19</b>
<b>End</b>	<b>7.50</b>							

# Tool For Marking The Supports



- Stanley 33-272 tape measure with decimal inches

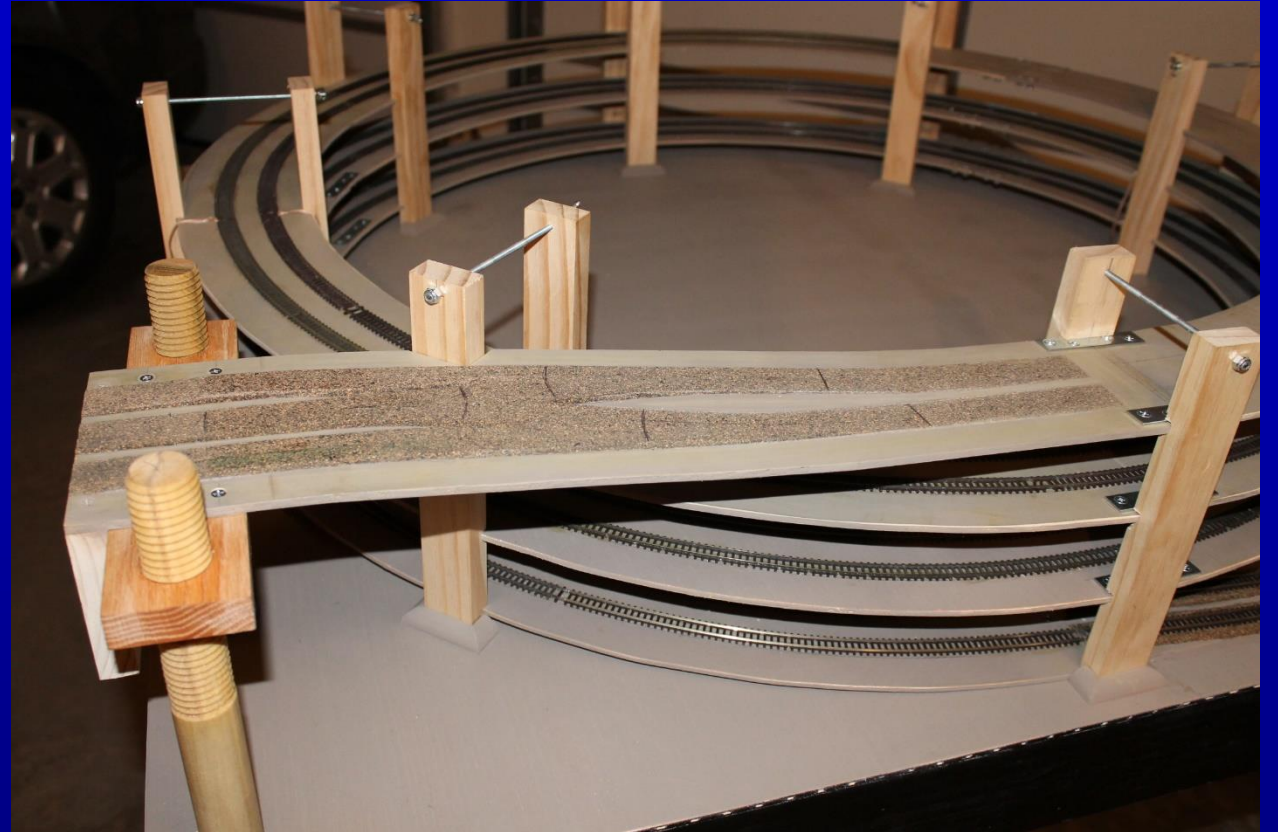




- **Four 120° subroadbed sections**
- **Note threaded rods with keep nut and a wing nut**

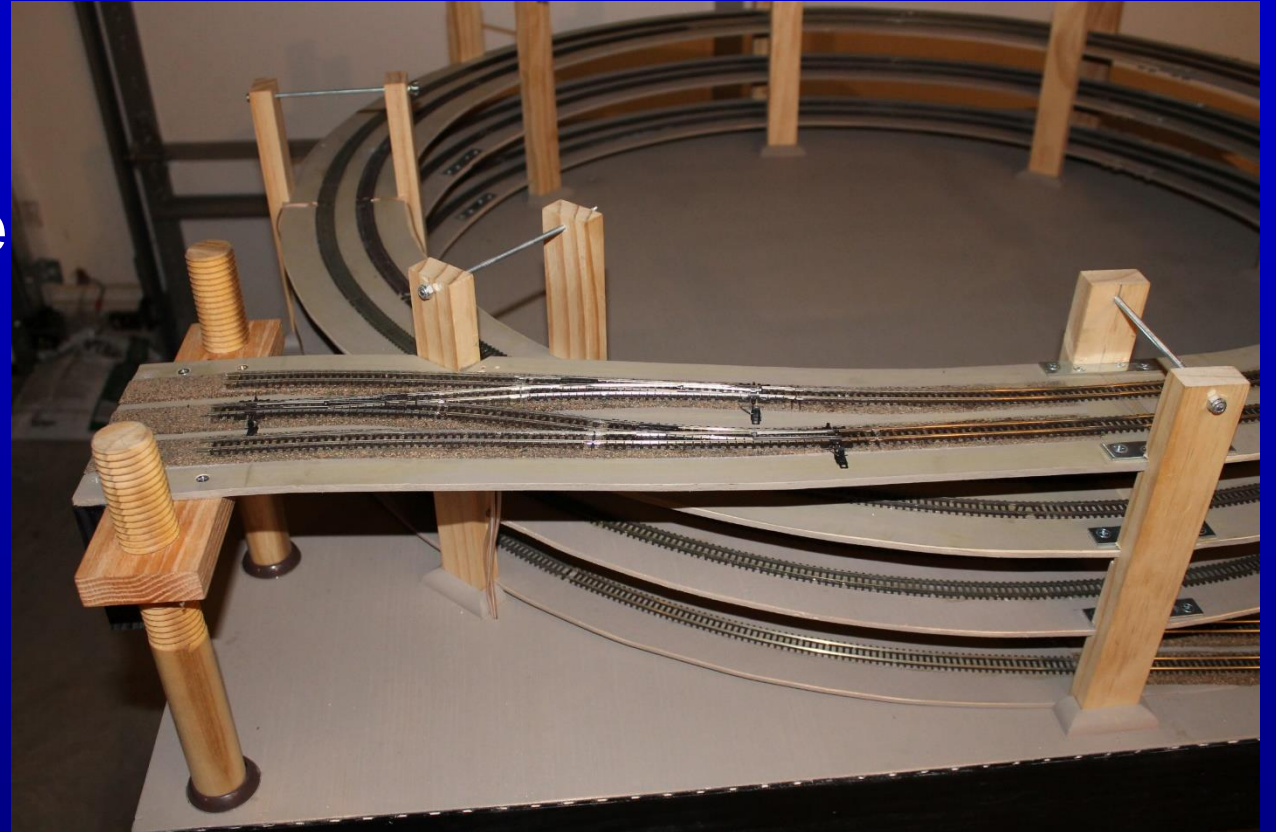
# NTRAK Interface

- Wood screws to make 0 to 1/2 inch adjustment
- Cork roadbed sanded to a taper



# NTRAK Interface With Track

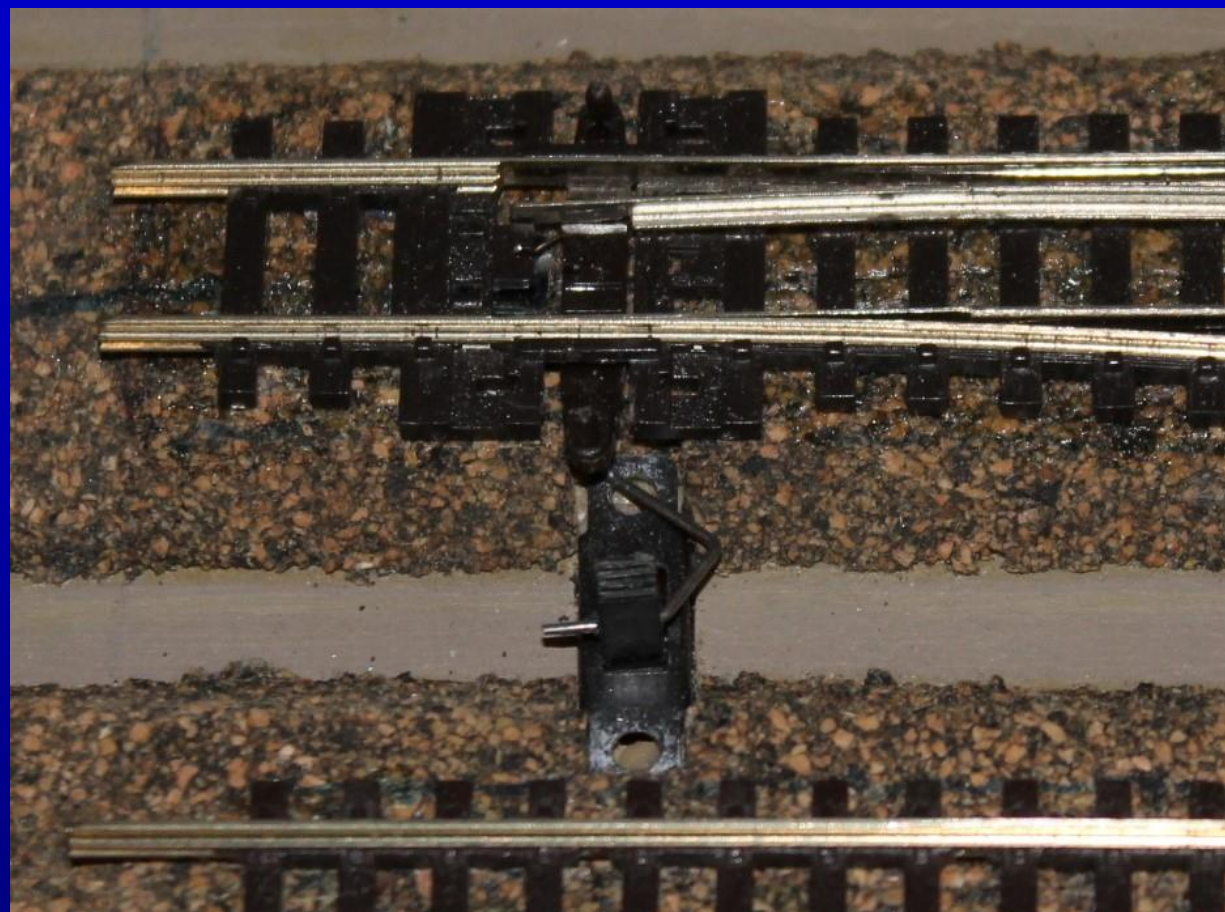
- Another track block junction at position A
- Electrical feed wires for the NTRAK interface section
  - Adjacent to the outside support at position B



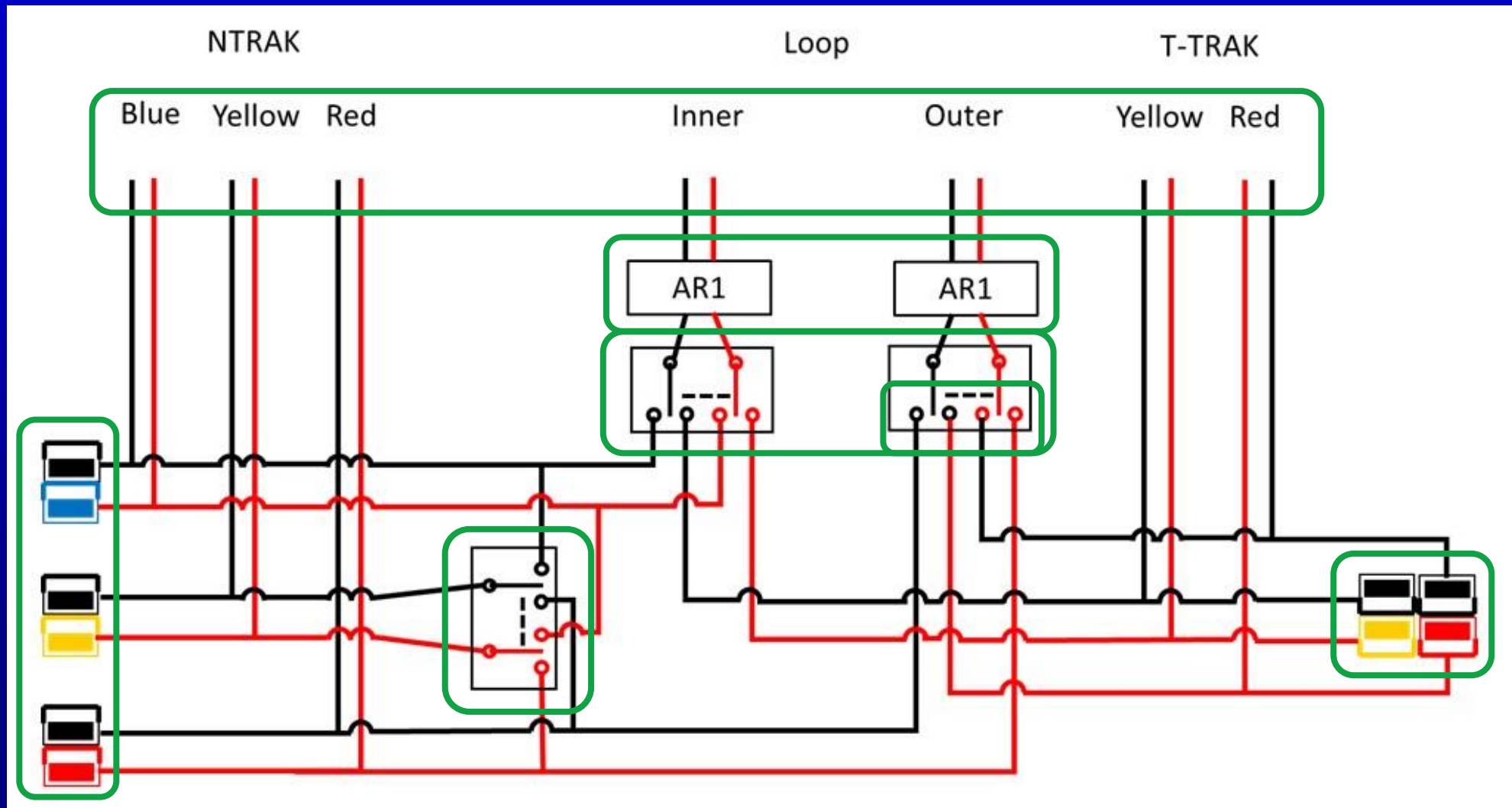


# Manual Turnout Control

- Avoids switch mechanisms below the subroadbed
- SPDT mini slide switches
  - All Electronics # SSW-860
  - 3mm of travel
- 0.025" piano wire
  - Connects to throw bar
  - Angled due to turnout 2mm turnout point travel



# Module Wiring



# Helix Public Debut



- 2019 Oklahoma City Train Show



N-Scale Modular Railroading



# The NTRAK Newsletter

*The voice of N scale modular railroaders for over 45 years.*

July/August 2020

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# Module Wiring Update

