What the Track Team Does

The Goal of the Track Team is to do everything necessary before Ballasting

Track Team

1. Basics
2. Lay Track Panels
3. Install Solar Posts
4. Install Enclosure
5. Install Intermediate Signals
6. Install Wyes
7. Install Sidings
8. Install Mainline Meet Tracks
9. Install Queuing Tracks
10. Witcombe
11. Ballast

2. Lay Track Panels

- **Mark Foul Points and Signal Points**

- **Make sure we have 140'**
  - Wyes must have 140 feet minimum of track beyond the switch at which the 2 legs of the Wye Join. The standard is 160' to allow 20' for storage of equipment.
  - Queuing Tracks must have 180 feet minimum length approaching the Signal Points (250' or more better)
  - Sidings & Mainline Meet Tracks must have 140' feet minimum between Signal Points

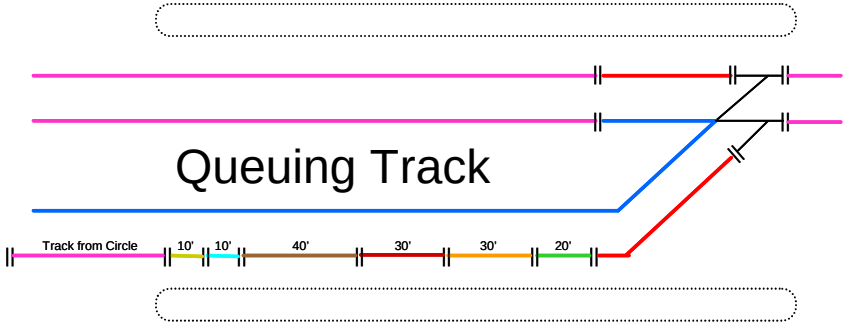
- **100' Radius Switches on Mainline**
  - Wyes
  - Mainline Meet Tracks
  - Queuing Tracks

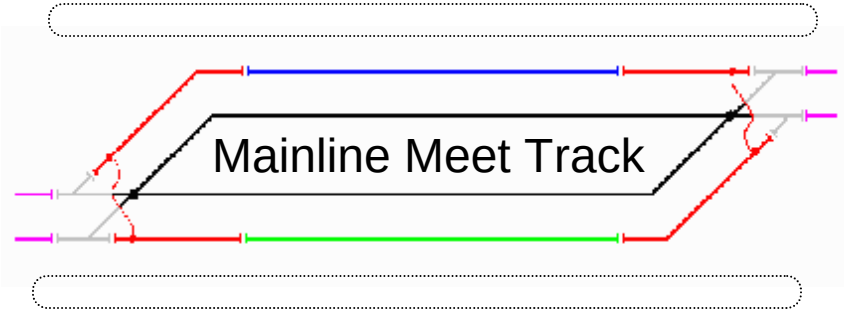
- **75' Radius Switches on Sidings & Yards**

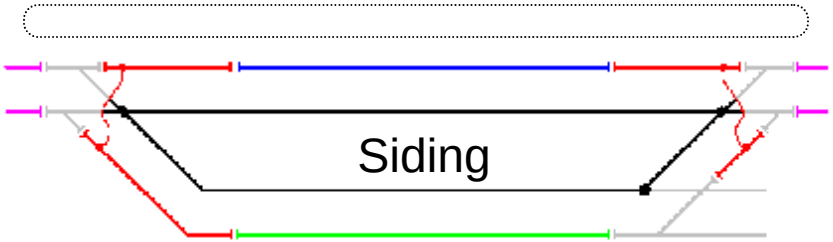
- **Spring Operated Switches - Mainline Meet Tracks & Queuing Tracks**
  - Switches on Mainline Meet Tracks & Queuing Track must be spring operated -- No Kick plates, No Switch Stands.

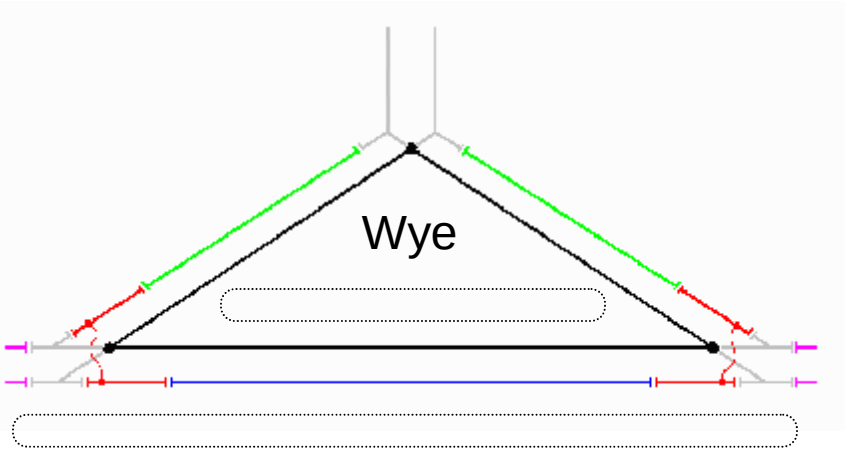
- **Switch Stands - Wyes & Sidings**
  - Mainline Switches to Wyes and Sidings get Switch Stands
  - Storage track off Sidings gets a kick plate operated switch

3. Install Solar Post









Solar Post Must Be In The Sun

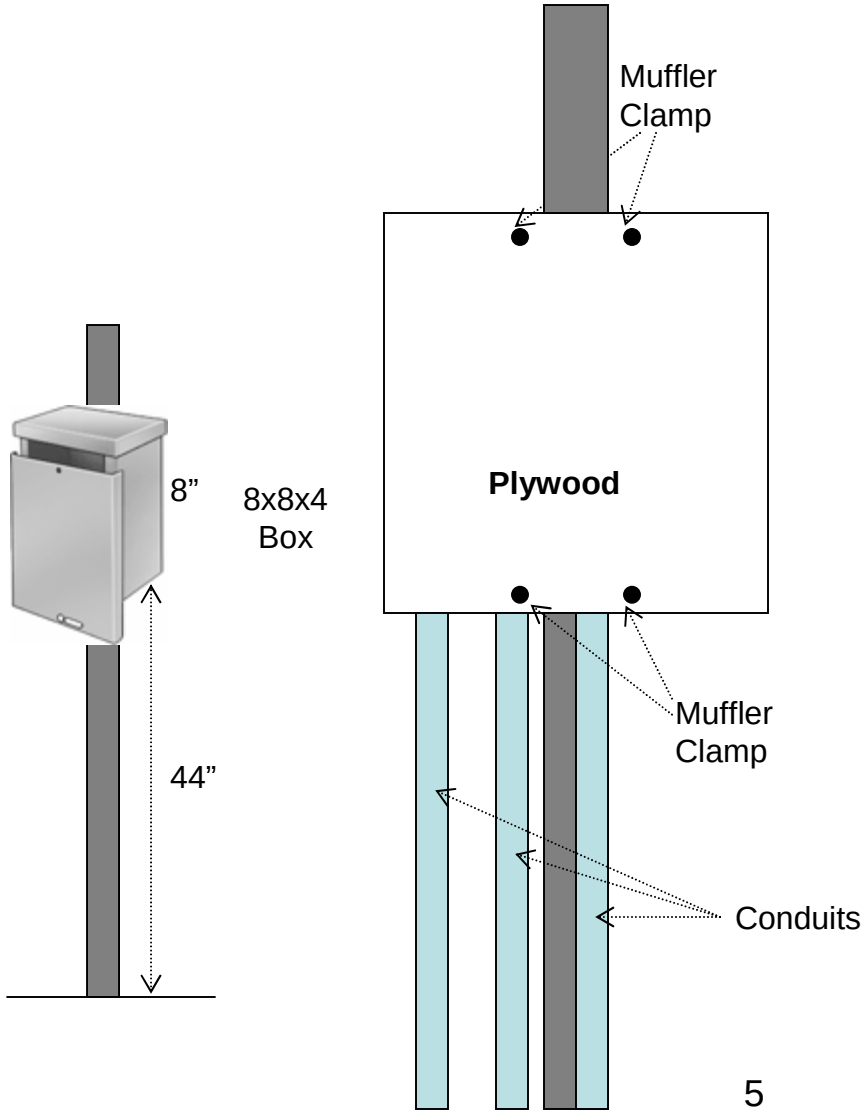
Best Locations
- Toward the center is easier

Only One Solar Post is Needed.
- 8' from the Tracks, 10' Post
- 2' in Concrete, 8' above the ground.

If no Sun can be found in Best Locations, then :
- Put a Remote Solar Post in Nearby Sun
  - Put a Box for Battery on Post
    - Solar Panel must be within 20' of Battery
  - Run Red & Black 18 AWG in conduit to Enclosure
- Put an Enclosure Post in a Best Location
  - 8' from Tracks, 7' Post
  - 2' in Concrete, 5' above ground
  - Bottom out of Round so it won't Rotate

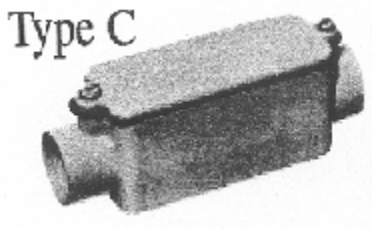
4. Install Enclosure

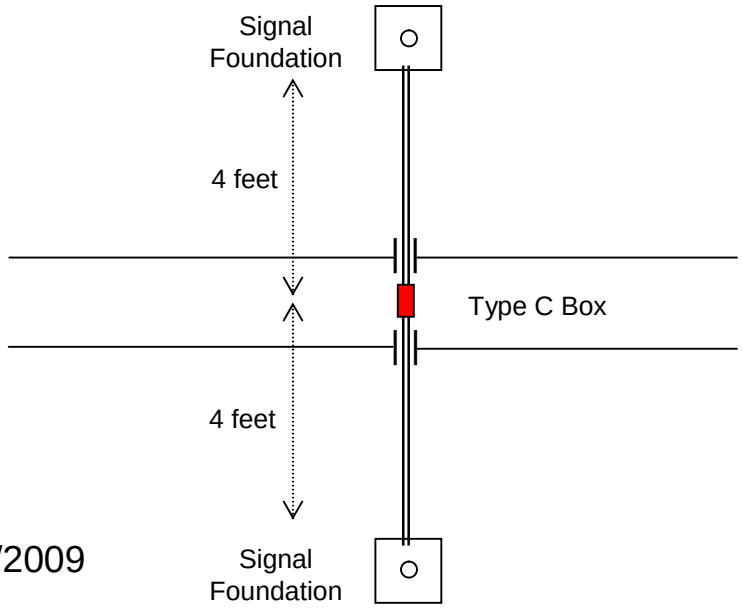
- On the Solar Post or Enclosure Post
- 8”x8”x4” Enclosure
- 44” above Ground
- Held to Posts with Muffler Clamps
- Conduits enter from Bottom

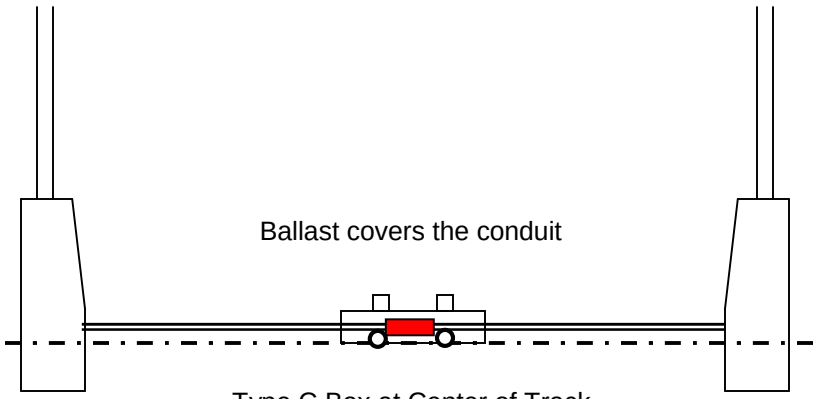


5. Intermediate Signals - Install Foundations, Insulators, and Conduit

- Intermediate Signals go at Block Boundaries
- One Signal Mast must be in Sun 4 hours a day
- Foundation Blocks 4’ from center line of track
- Both rails get insulators
- Conduit lies directly on plastic
- Type C box at center of track
  - Conduit rests on two 2” bits of conduit
- Signal Mast screwed into top of Foundation Block
  - 18” rigid ¾” metal conduit threaded both ends







Type C Box at Center of Track
Conduit on 2 bits of Conduit
Conduit lies on plastic

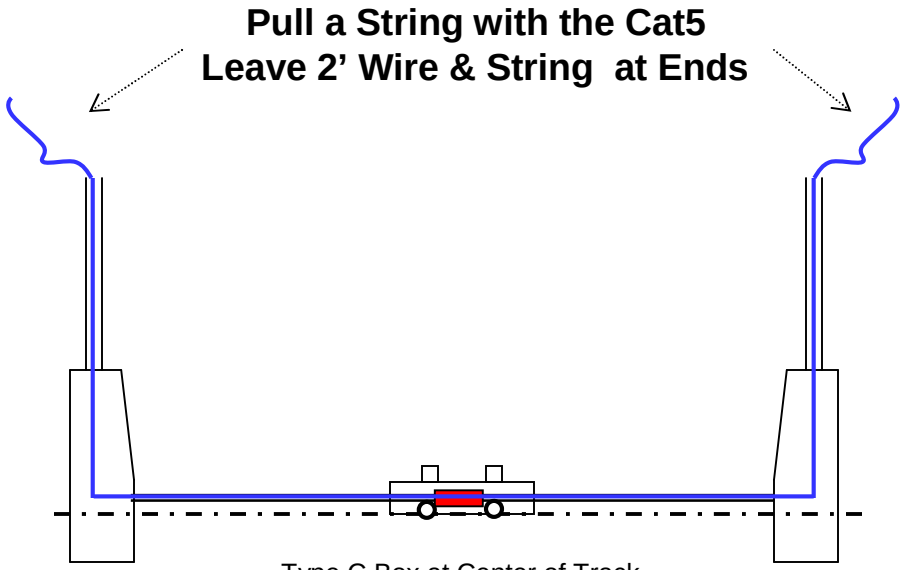
5. Intermediate Signals - Pull Wire

Cat5 Pulls

• Signal Mast to Signal Mast - Blue Cat5

Blue Cat5 Wire

Note : The Track Team pulls all the wire that goes through an Expansion Joint. The Signal Team pulls the rest of the wire which includes all the 18 AWG wire. If there is a Remote Solar Panel, the Track Team pulls Red and Black 18AWG From the Solar Panel to the CP Board Enclosure.

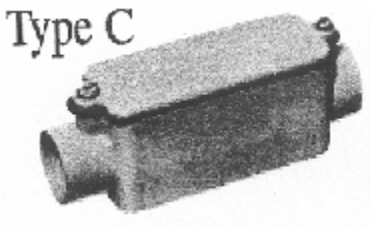


5. Intermediate Signals - Pre Ballast Checklist

Insulators
- ___ Track Insulators Both Rails

Signal Foundations
- ___ 2 Foundation Blocks
- ___ One Foundation in Sun 4+ hours a day
- ___ 4’ from centerline of Track
- ___ 18” threaded Mast in each Foundation Block

Flex Conduit
- ___ Between Joints



Conduit
- ___ Conduit between Foundation Blocks
- ___ Conduit on top of Plastic
- ___ Type C Track Box between rails
- ___ Type C Track Box on 2” pieces of conduit

Washers
- ___ 2” Washer marks Track Box - Top of Tie at End

Wire Pull
- ___ Blue Cat5 between Signal Masts
- ___ String between Signal Masts
- ___ 2’ string & Cat5 on each end

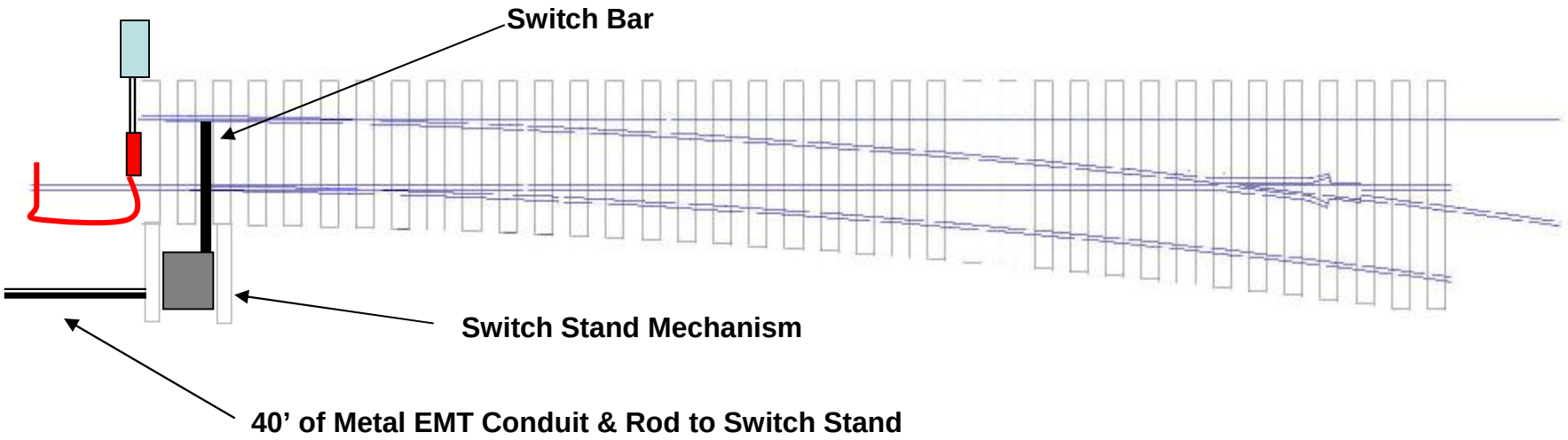
Where_____

By _____

Date_____

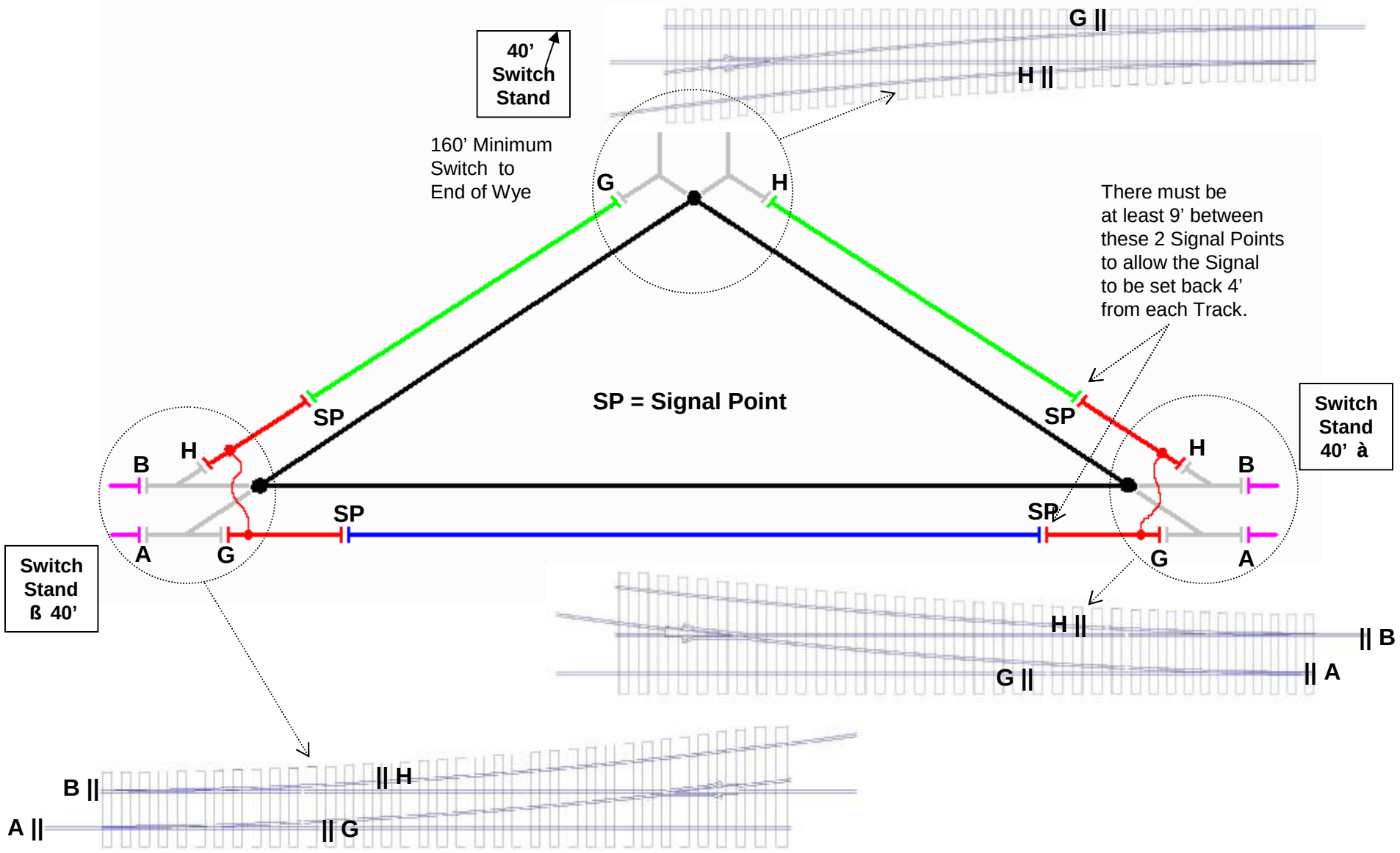
Plywood
- ___ Plywood over Type C box

6. Wyes - Install 2 Mainline Switch Stands First

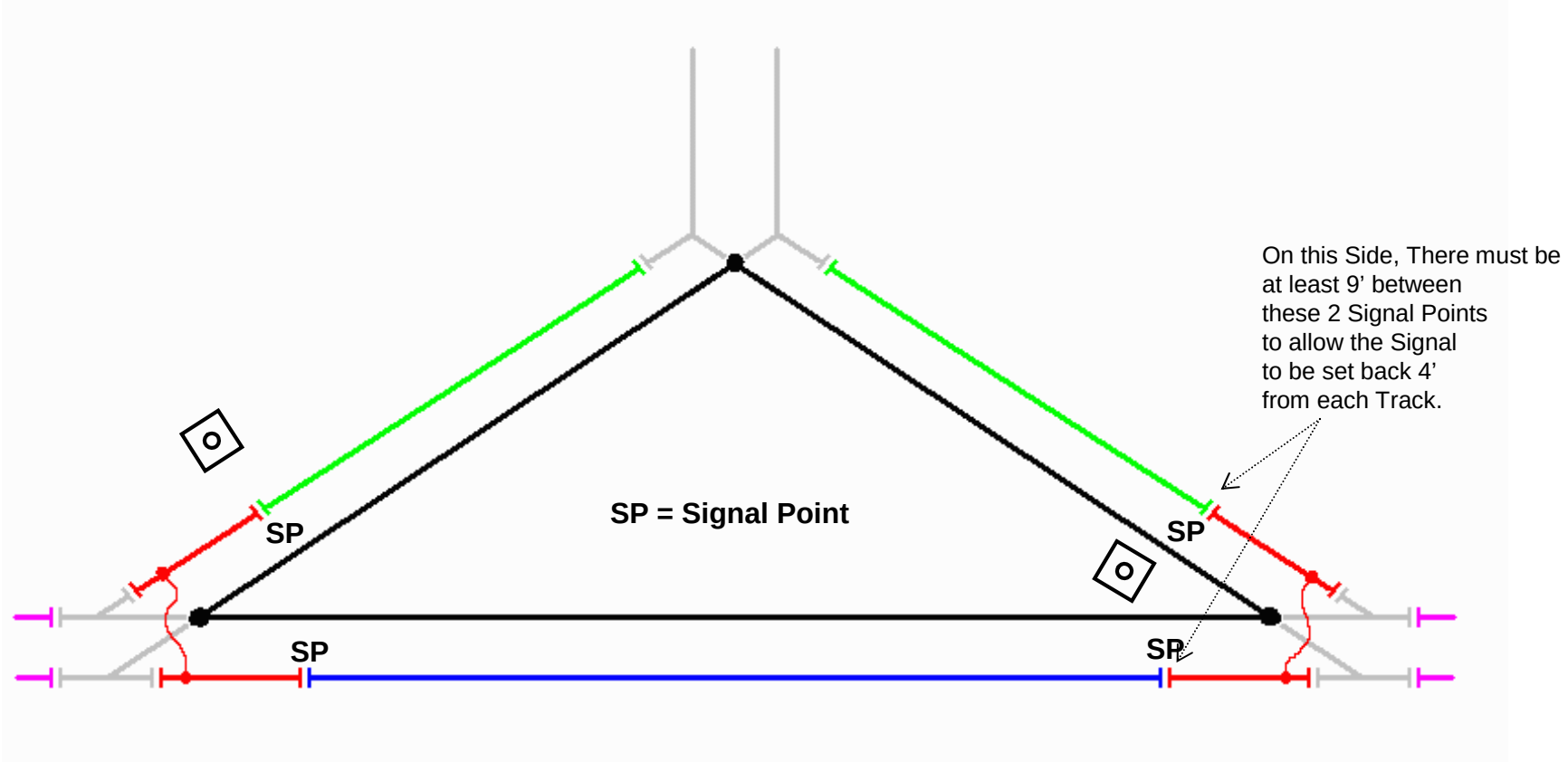


Switch Stand Conduit normally runs away from Signal Conduit

6. Wyes - Install 10 Track Insulators



6. Wyes - Install 2 Signal Foundations

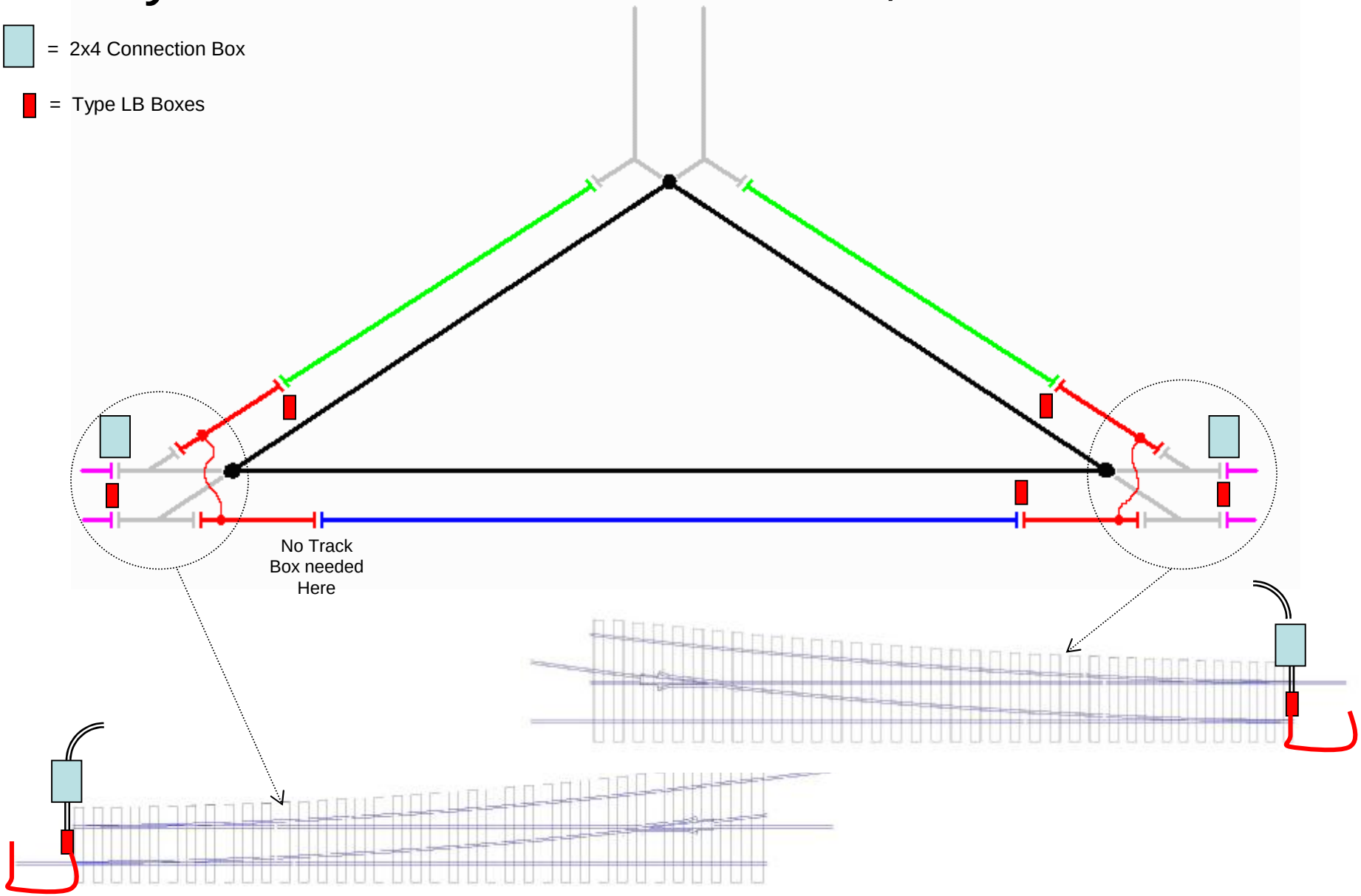


- Signal Foundation 4' from Center Line of Track
- Conduit on top of Plastic

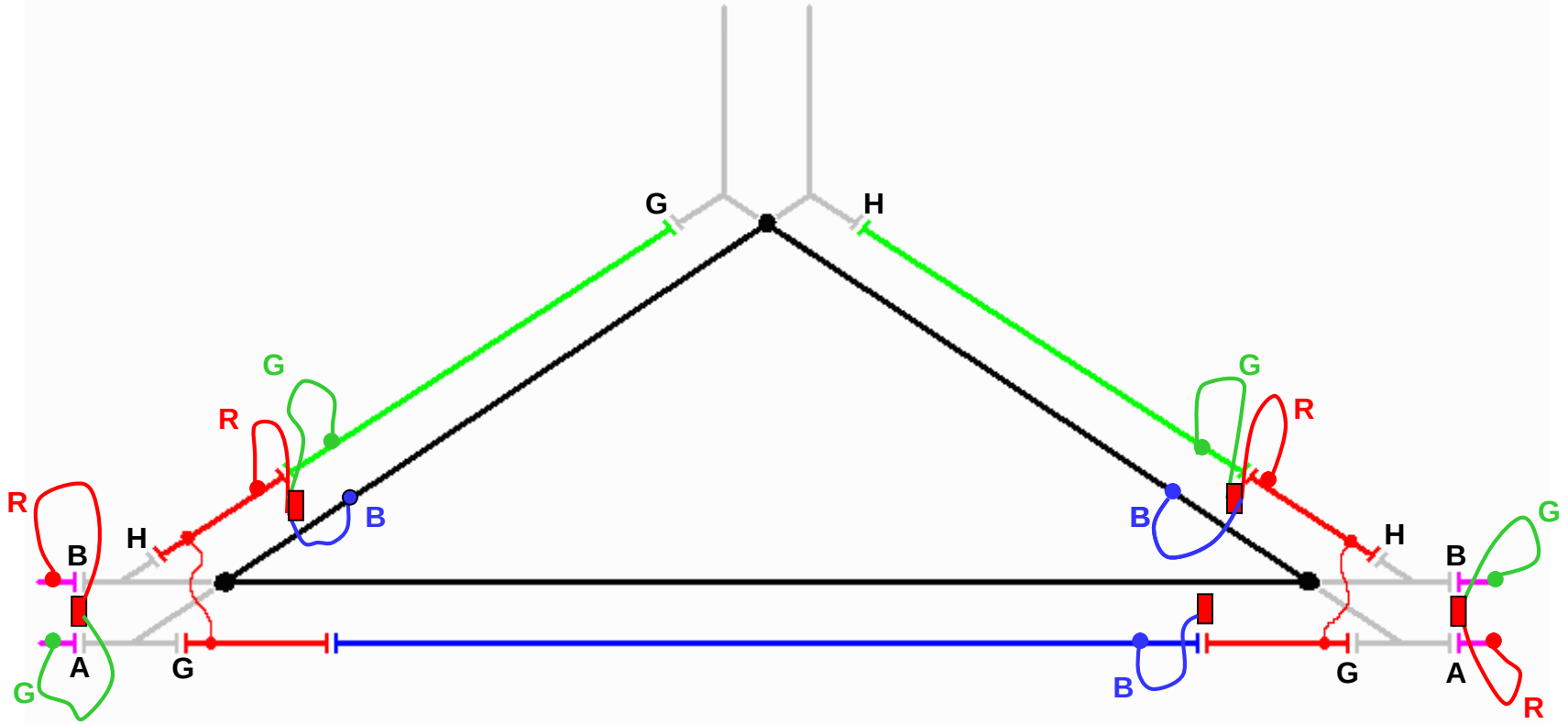
6. Wyes - Install 5 Track Boxes, 2 Flex Conduit

= 2x4 Connection Box

= Type LB Boxes

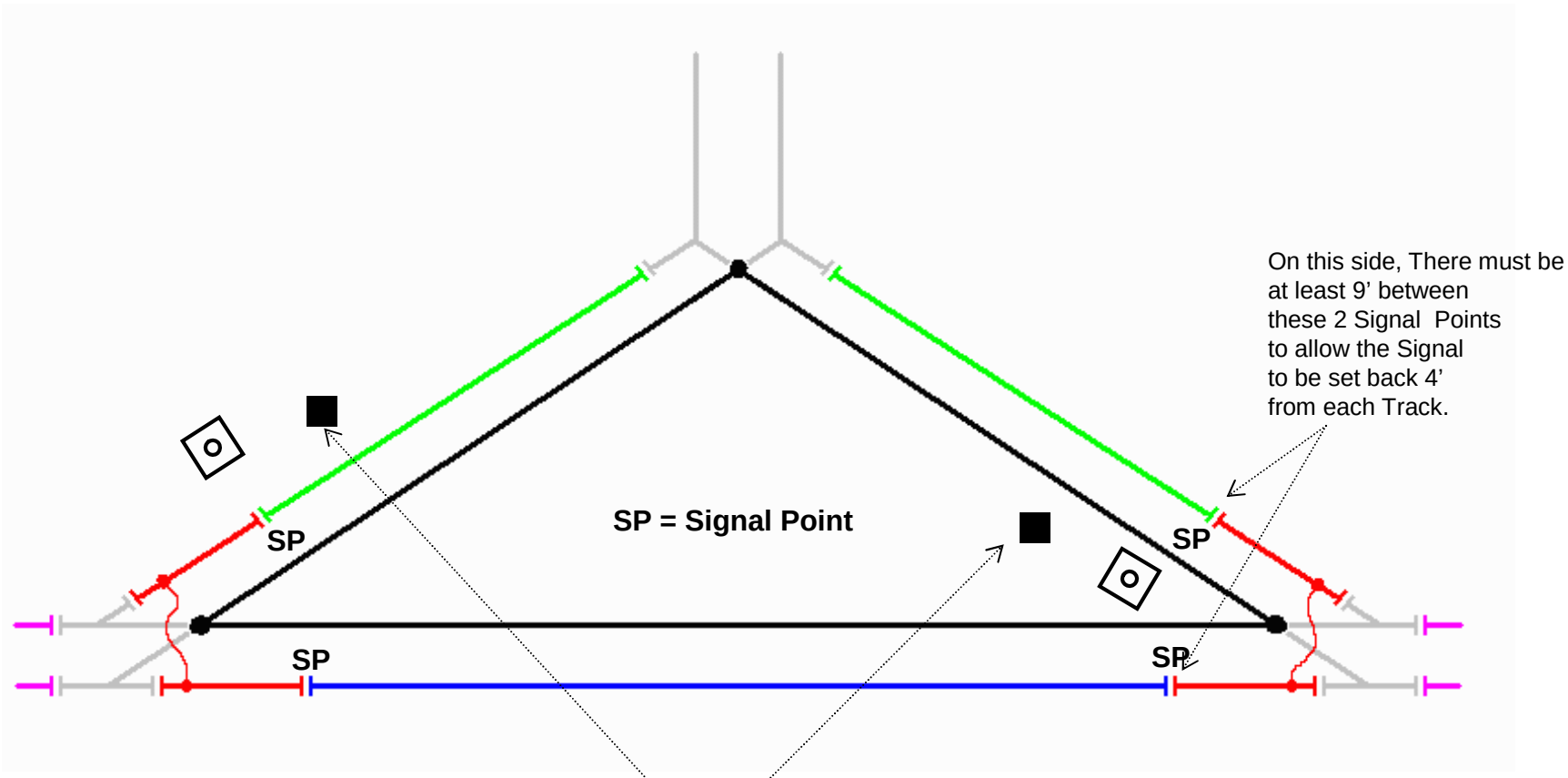


6. Wyes - Where the Wires Go



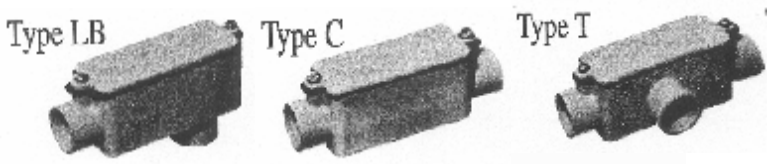
For Your Information -- No Action required

6. Wyes - Install 2 Push Buttons



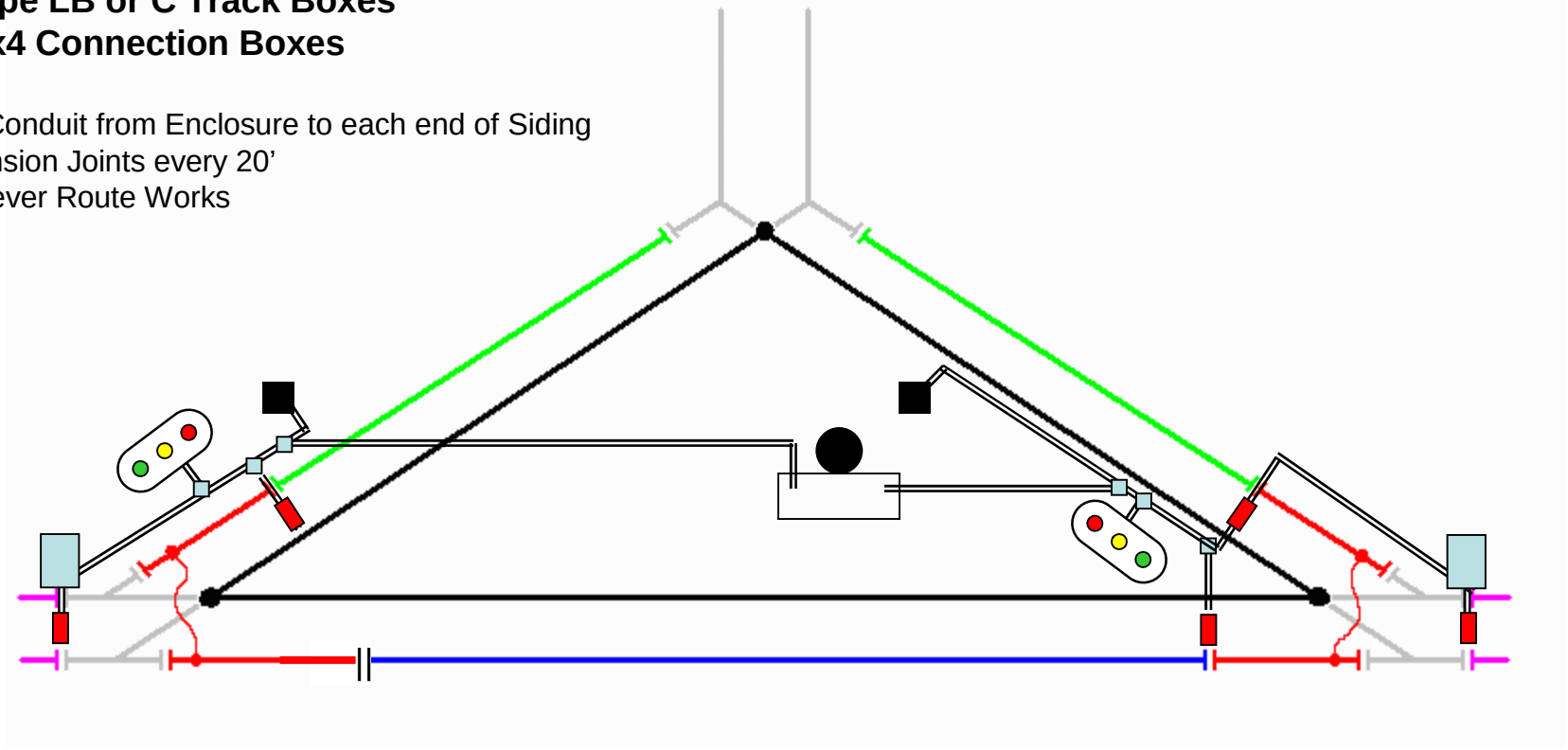
- **Push Buttons**
  - 40' from Signal Foundation
  - Post 27" from track center line
  - All parts 24"+ from track center line
  - 5' Post, Set in Concrete, 3' above ground
  - Bottom out of round so it won't rotate

6. Wyes - Install Conduit



5 Type LB or C Track Boxes
2 2x4 Connection Boxes

One Conduit from Enclosure to each end of Siding
Expansion Joints every 20'
Whatever Route Works



= 2x4 Connection Box

= Type T Box

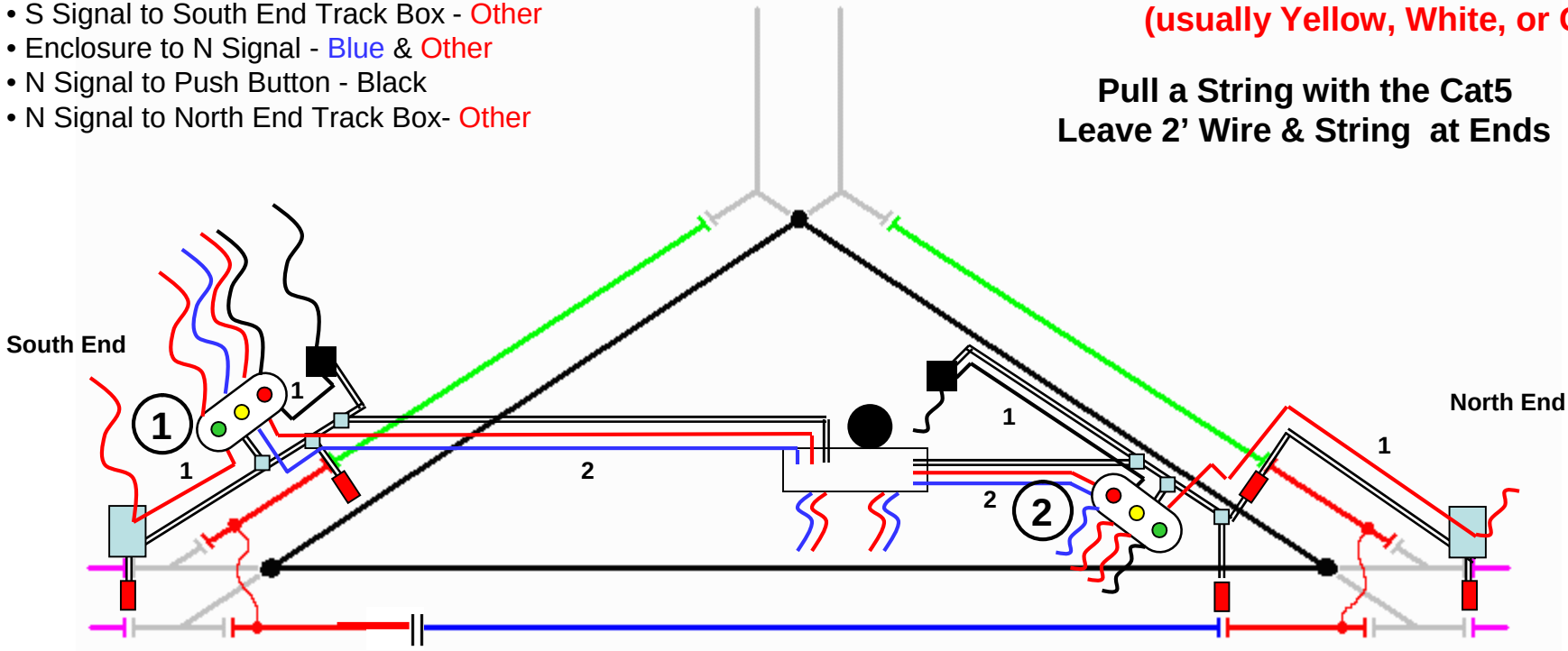
= Type C or LB Box to let wires out between the Rails

6. Wyes - Pull Wire

Cat 5 Pulls
- Enclosure to S Signal - Blue & Other
- S Signal to Push Button - Black
- S Signal to South End Track Box - Other
- Enclosure to N Signal - Blue & Other
- N Signal to Push Button - Black
- N Signal to North End Track Box- Other

Blue Cat5 Wire
Black Cat5 Wire
Other color Cat5
(usually Yellow, White, or Grey)

Pull a String with the Cat5
Leave 2' Wire & String at Ends



= Push Button

= 2x4 Connection Box

= Type T Box

= Type C or LB Box to let wires out between the Rails

Note : The Track Team pulls all the wire that goes through an Expansion Joint. The Signal Team pulls the rest of the wire which includes all the 18 AWG wire. If there is a Remote Solar Panel, the Track Team pulls Red and Black 18AWG From the Solar Panel to the CP Board Enclosure.

6. Wyes - Pre Ballast Checklist

Where_____

By _____

Date_____

Wye
- ___ 160’ plus tail to Wye
- ___ Three 100’ radius Switches

Switch Stands
- ___ Switch Stands on all 3 Switches
- ___ Switch Stands 40’ from Switch Boxes
- ___ Metal EMT Conduit & Rod in
- ___ “Back In Only” on Yellow Switch Stand Disk

Insulators
- ___ 10 Track Insulators per diagram

Track Boxes
- ___ 5 Track Boxes
- ___ All Type C or Type LB
- ___ All on 2” pieces of conduit

Connection Boxes
- ___ 2 Connection Boxes (2”x4”)

Fender Washers (FWs)
- ___ Expansion Joints - 1” FW on Top of Tie at End
- ___ Track Boxes - 2” FW on Top of Tie at End
- ___ T Boxes - Two 2” FWs on top of Ties at End
- ___ Foul Points - 2” FW on Top of Tie at Center
- ___ Signal Points - Two 2” FWs on Top of Tie at Center

Signal Foundations
- ___ 4 Foundation Blocks
- ___ All at Signal Points
- ___ All 4’ from Center Line(s) of Track(s)
- ___ 18” threaded Mast in each Foundation Block

Push Buttons
- ___ 2 Push Button Posts
- ___ 40’ from Signal
- ___ No part <24” from Center Line Track

Flex Conduit
- ___ Flex Conduits per diagram

Conduit
- ___ Enclosure to N End
- ___ Enclosure to S End
- ___ Enclosure to Remote Solar Panel (If Any)
- ___ Connects to 5 Track Boxes
- ___ Connects Signals to Push Buttons
- ___ Type C or LB Track Boxes between rails
- ___ Type C or LB Track Boxes on 2” pieces of conduit
- ___ Conduit on top of Plastic
- ___ Expansion Joints every 20’
- ___ 8”-10” from Tie Ends

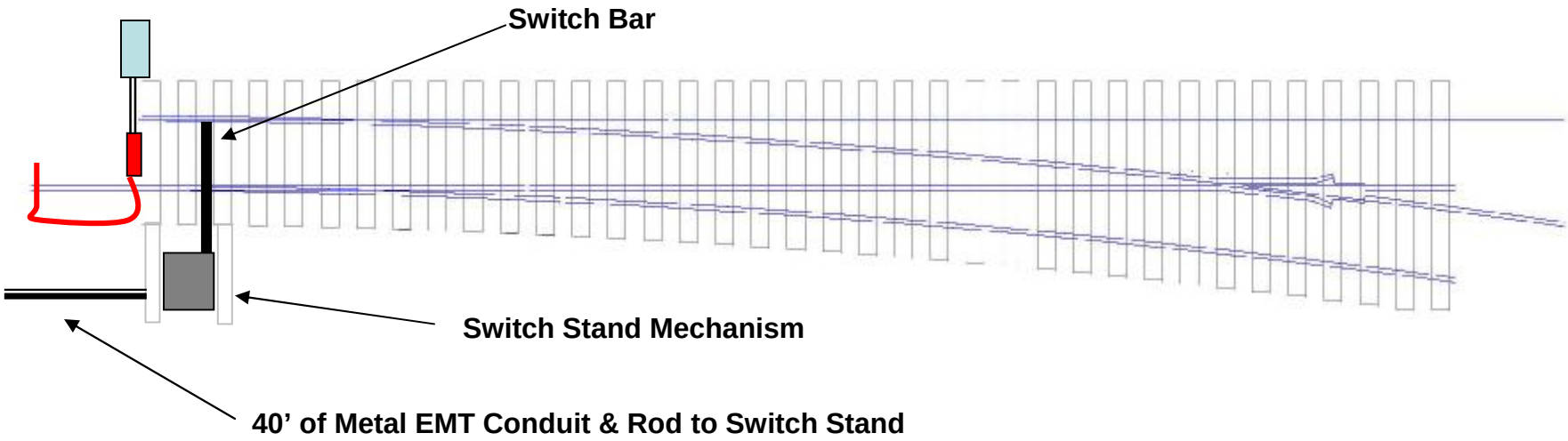
Wire Pull
- ___ Enclosure to S Signal - Blue & Other
- ___ S Signal to Push Button - Black
- ___ S Signal to South End Track Box - Other
- ___ Enclosure to N Signal - Blue & Other
- ___ N Signal to Push Button - Black
- ___ N Signal to North End Track Box- Other
- ___ String in every Conduit
- ___ 2’ wire & string at each end

Wire Pull - If Remote Solar Panel
- ___ White & Black 18AWG wire
- ___ String
- ___ 2’ wire & string at each end

Plywood
- ___ Plywood over Type C box

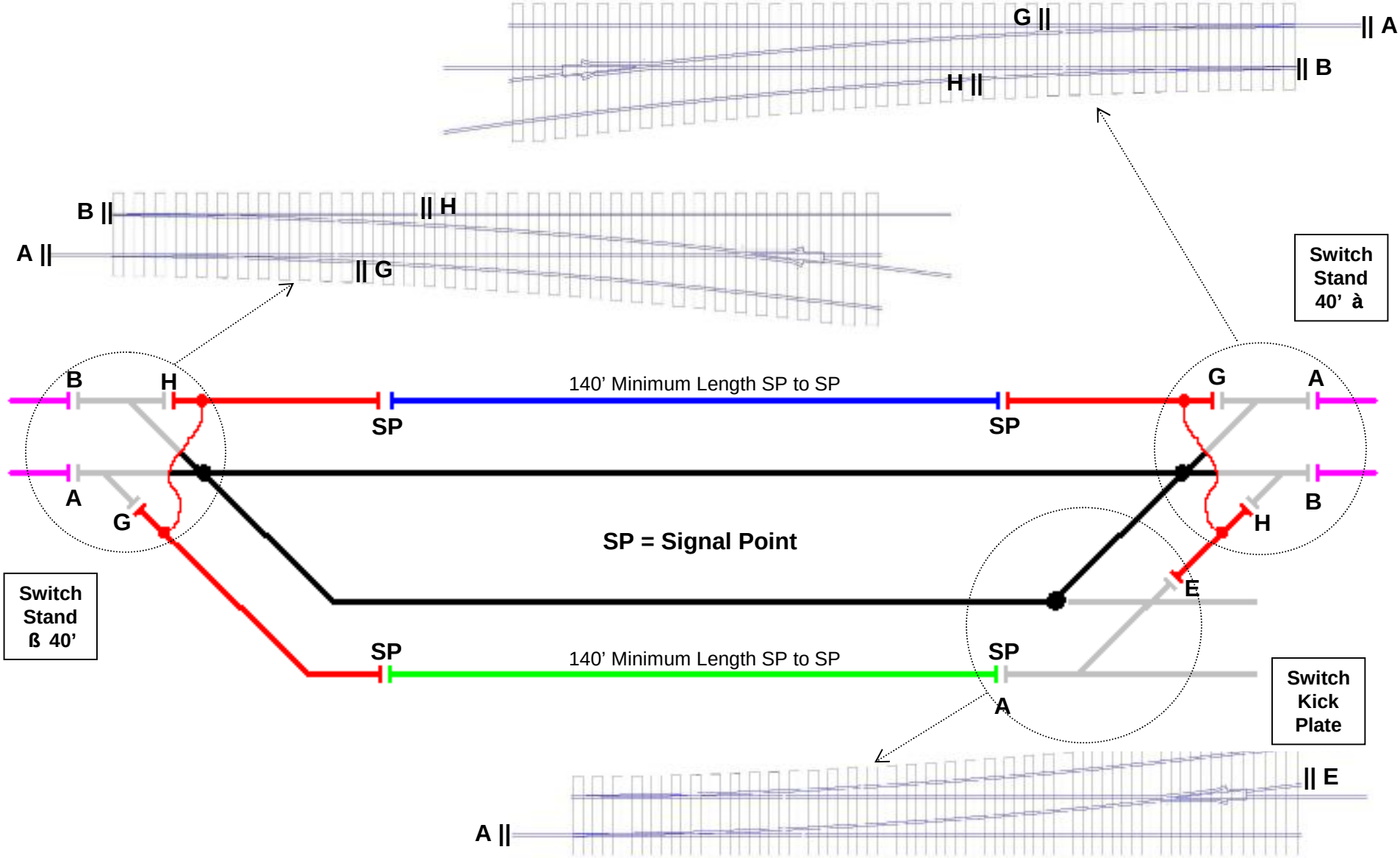
As Builts
- ___ Map of Conduit
- ___ All Changes Noted
- ___ Delivered to Ross

7. Sidings - Install 2 Switch Stands First

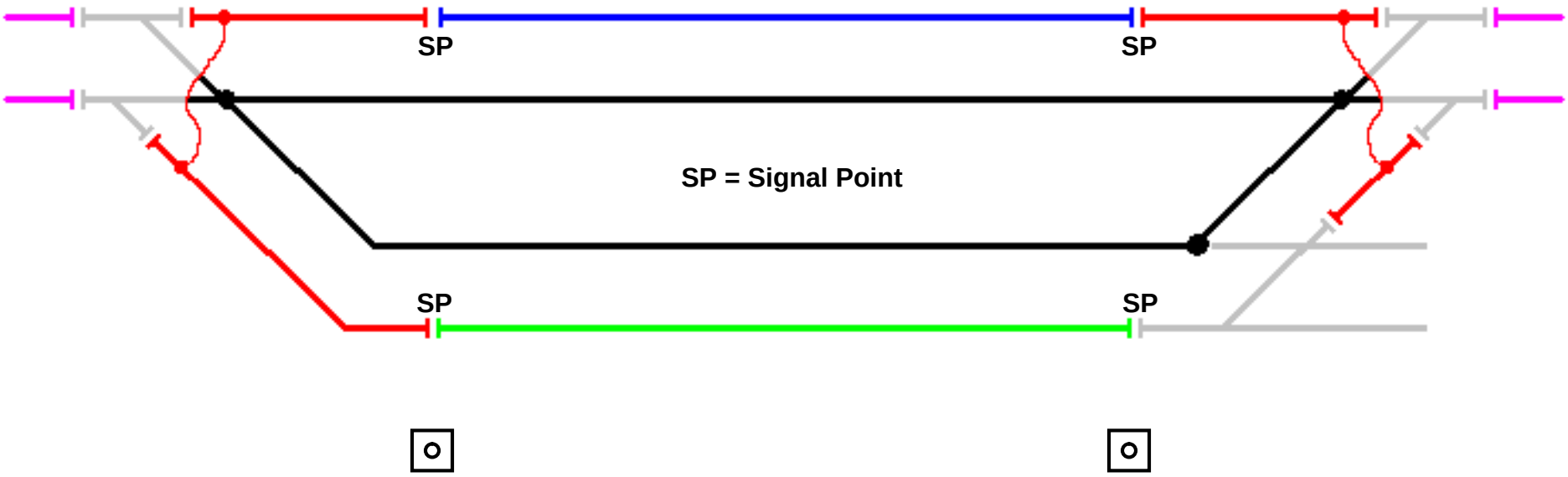


Switch Stand Conduit normally runs away from Signal Conduit

7. Siding - Install Track Insulators

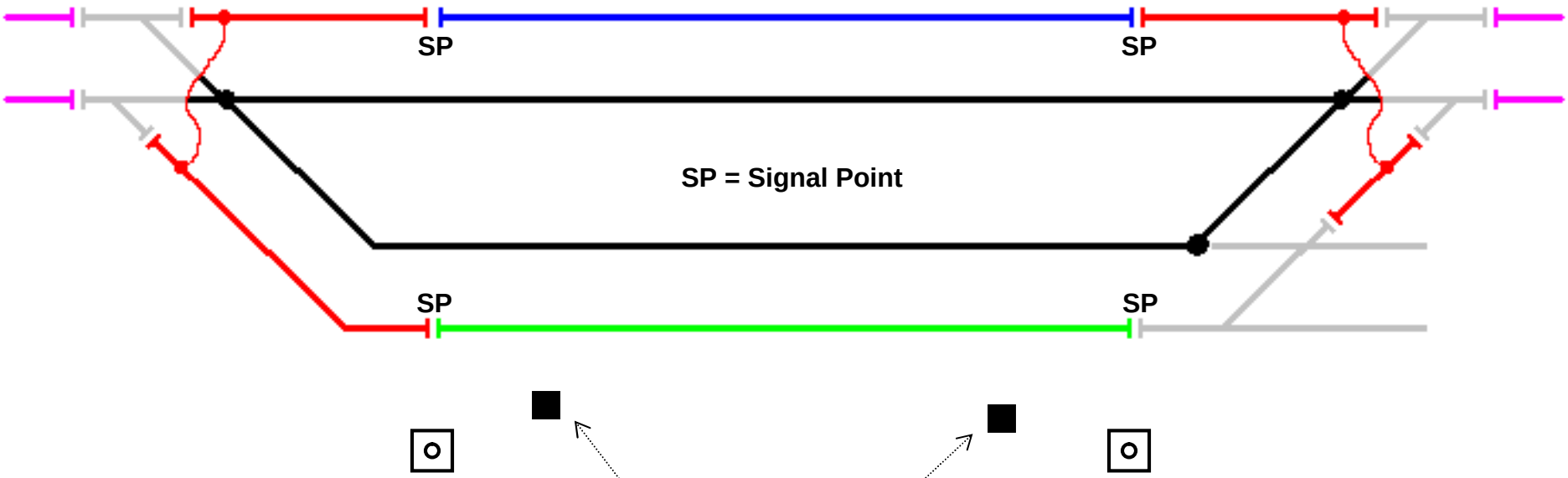


7. Siding - Install 2 Signal Foundations



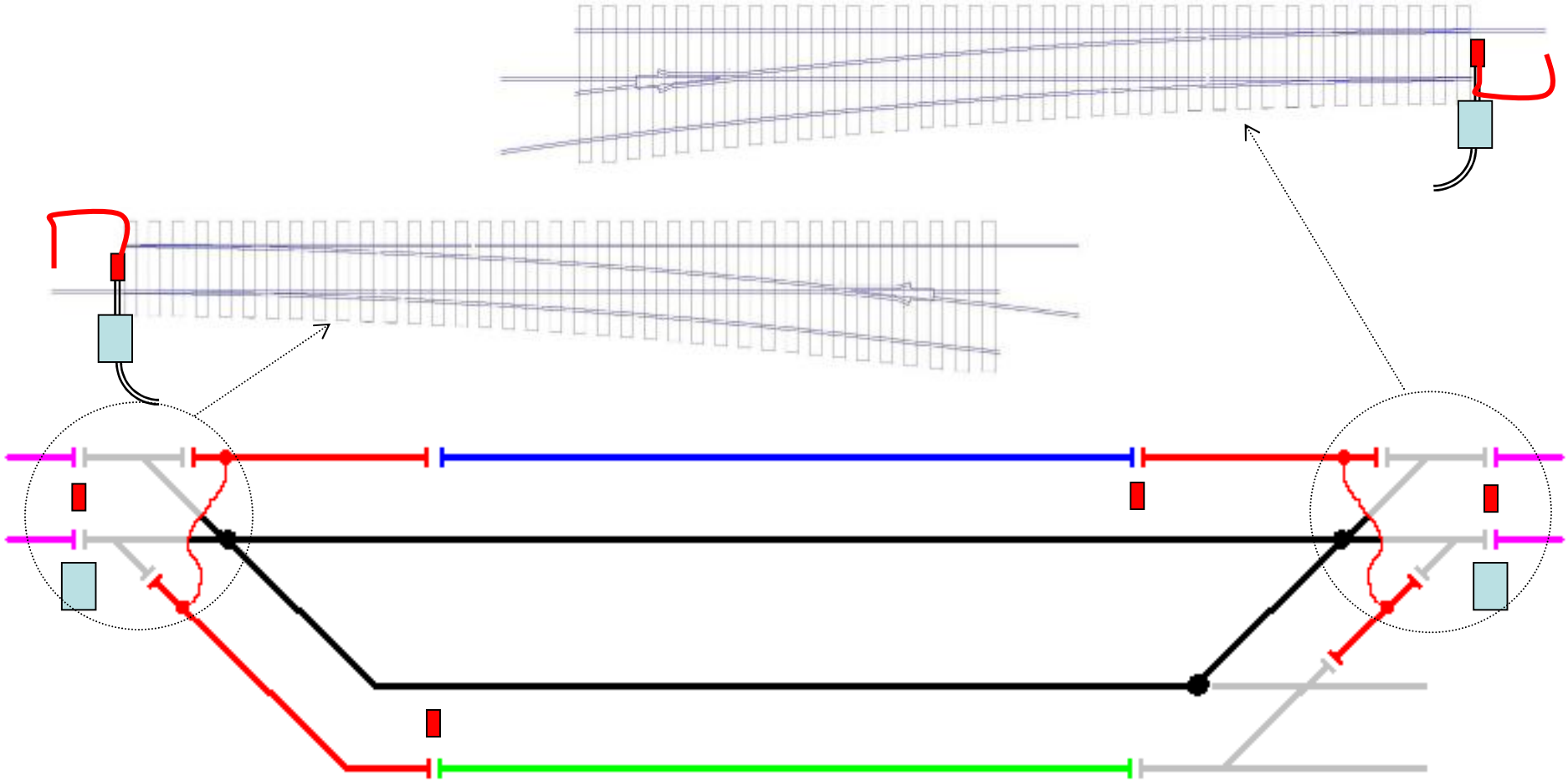
- Signal Foundation 4’ from Center Line of Track
- Conduit on top of Plastic

7. Siding - Install 2 Push Buttons



- **Push Buttons**
  - 40’ from Signal Foundation
  - Post 27” from track center line
  - All Parts 24”+ from track center line
  - 5’ Post, Set in Concrete, 3’ above ground
  - Bottom out of round so it won’t rotate

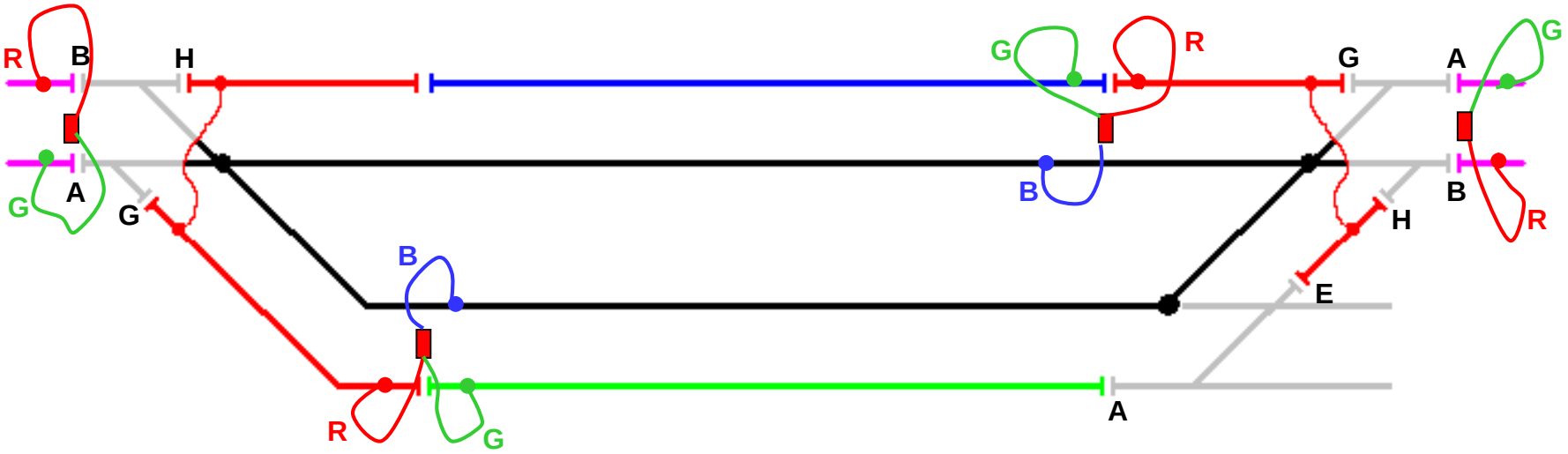
7. Siding - Install 4 Track Boxes, 2 Flex Conduit



= 2x4 Connection Box

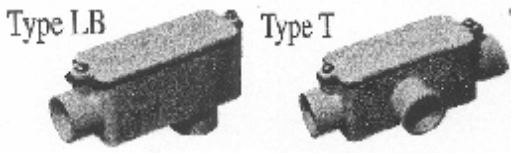
= Type LB Boxes

7. Sidings - Where the Wires Go



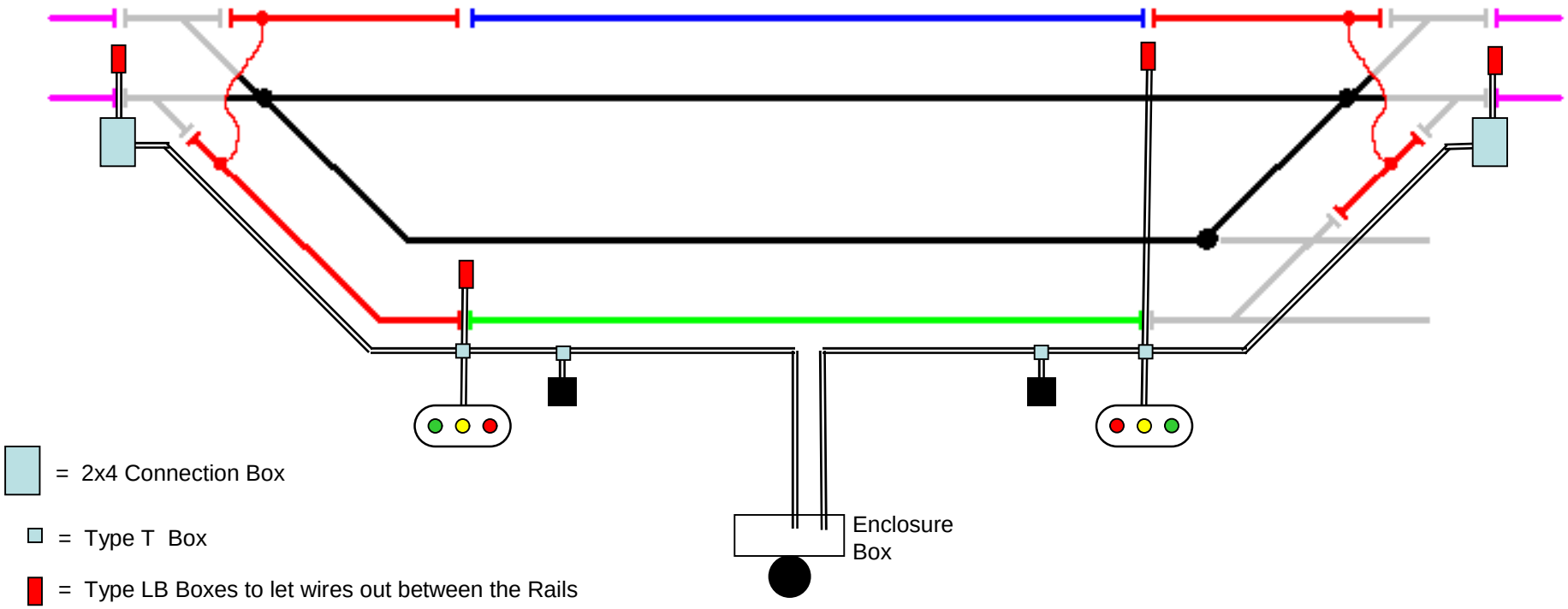
For Your Information -- No Action required

7. Siding - Install Conduit



4 Type LB Track Boxes
2 2x4 Connection Boxes

One Conduit from Enclosure to each end of Siding
Expansion Joints every 20'
Whatever Route Works



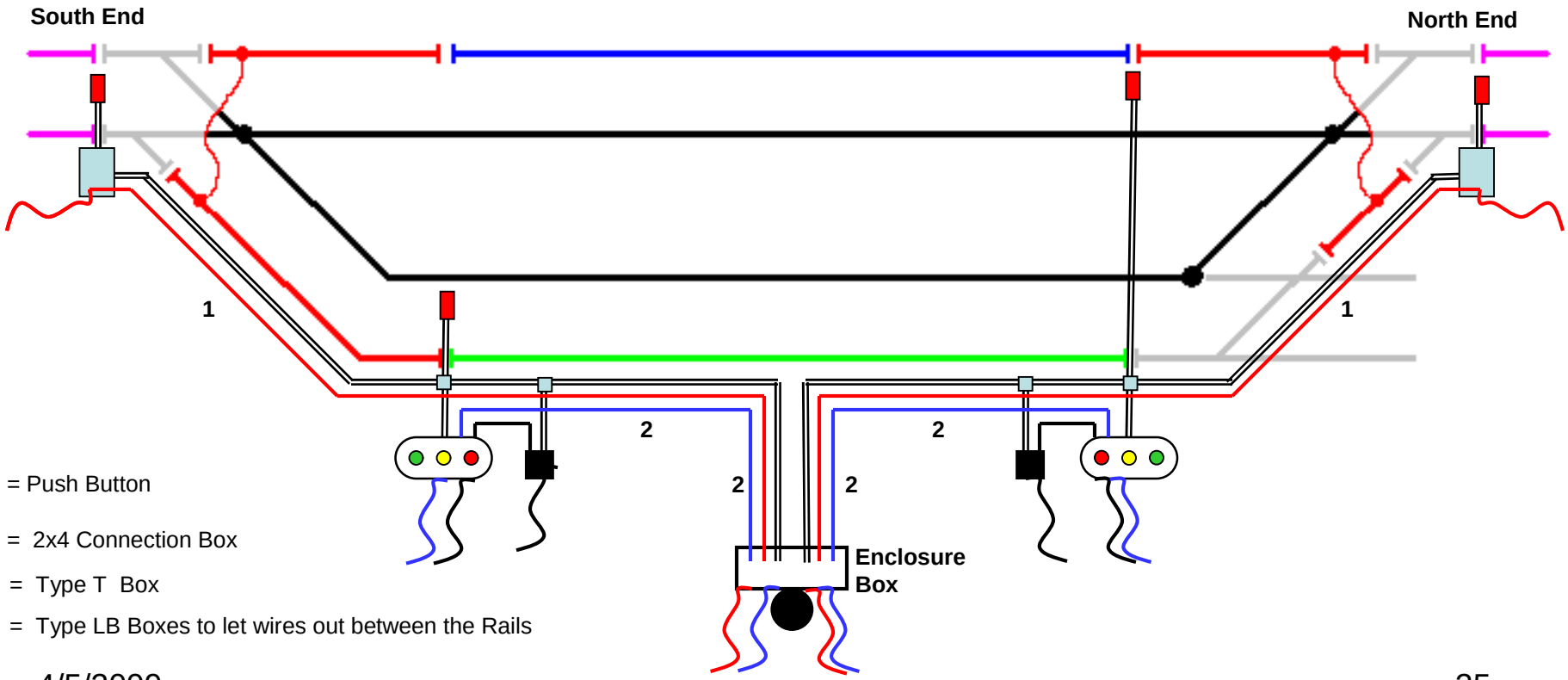
7. Siding - Pull Wire

Blue Cat5 Wire
Black Cat5 Wire
Other color Cat5
(usually Yellow, White, or Grey)

Cat 5 Pulls
- Enclosure to S Signal - Blue & Other
- S Signal to Push Button - Black
- S Signal to South End Track Box - Other
- Enclosure to N Signal - Blue & Other
- N Signal to Push Button - Black
- N Signal to North End Track Box - Other

Pull a String with the Cat5
Leave 2' Wire & String at Ends

Note : The Track Team pulls all the wire that goes through an Expansion Joint. The Signal Team pulls the rest of the wire which includes all the 18 AWG wire. If there is a Remote Solar Panel, the Track Team pulls Red and Black 18AWG From the Solar Panel to the CP Board Enclosure.



7. Sidings - Pre Ballast Checklist

Where_____

By _____

Date_____

Sidings

___ 140’ plus Switch Point to Switch Point
___ Three 75’ radius Switches

Switch Stands

___ Switch Stands on 2 Mainline Switches
___ Switch Stands 40’ from Switch Boxes
___ Metal EMT Conduit & Rod in

Insulators

___ 10 Track Insulators per diagram

Track Boxes

___ 4 Track Boxes
___ All Type C or Type LB
___ All on 2” pieces of conduit

Connection Boxes

___ 2 Connection Boxes (2”x4”)

Fender Washers (FWs)

___ Expansion Joints - 1” FW on Top of Tie at End
___ Track Boxes - 2” FW on Top of Tie at End
___ T Boxes - Two 2” FWs on top of Ties at End
___ Foul Points - 2” FW on Top of Tie at Center
___ Signal Points - Two 2” FWs on Top of Tie at Center

Signal Foundations

___ 2 Foundation Blocks
___ All at Signal Points
___ All 4’ from Center Line(s) of Track(s)
___ 18” threaded Mast in each Foundation Block

Push Buttons

___ 2 Push Button Posts
___ 40’ from Signal
___ No part <24” from Center Line Track

Flex Conduit

___ Flex Conduits per diagram

Conduit

___ Enclosure to N End
___ Enclosure to S End
___ Enclosure to Remote Solar Panel (If Any)
___ Connects to 4 Track Boxes
___ Connects Signals to Push Buttons
___ Type C or LB Track Boxes between rails
___ Type C or LB Track Boxes on 2” pieces of conduit
___ Conduit on top of Plastic
___ Expansion Joints every 20’
___ 8”-10” from Tie Ends

Wire Pull

___ Enclosure to S Signal - Blue & Other
___ S Signal to Push Button - Black
___ S Signal to South End Track Box - Other
___ Enclosure to N Signal - Blue & Other
___ N Signal to Push Button - Black
___ N Signal to North End Track Box- Other
___ String in every Conduit
___ 2’ wire & string at each end

Wire Pull - If Remote Solar Panel

___ White & Black 18AWG wire
___ String
___ 2’ wire & string at each end

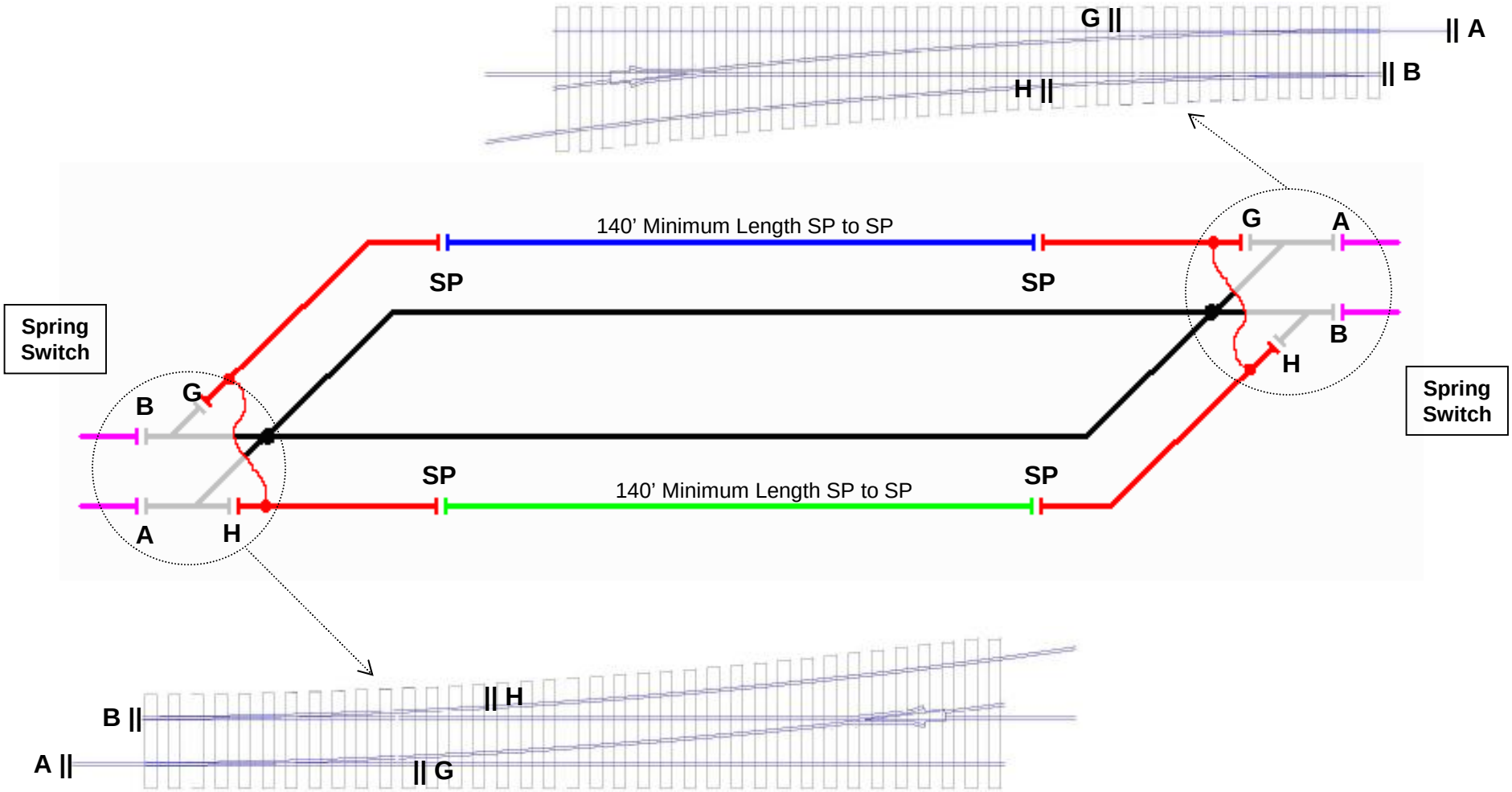
Plywood

___ Plywood over Type C box

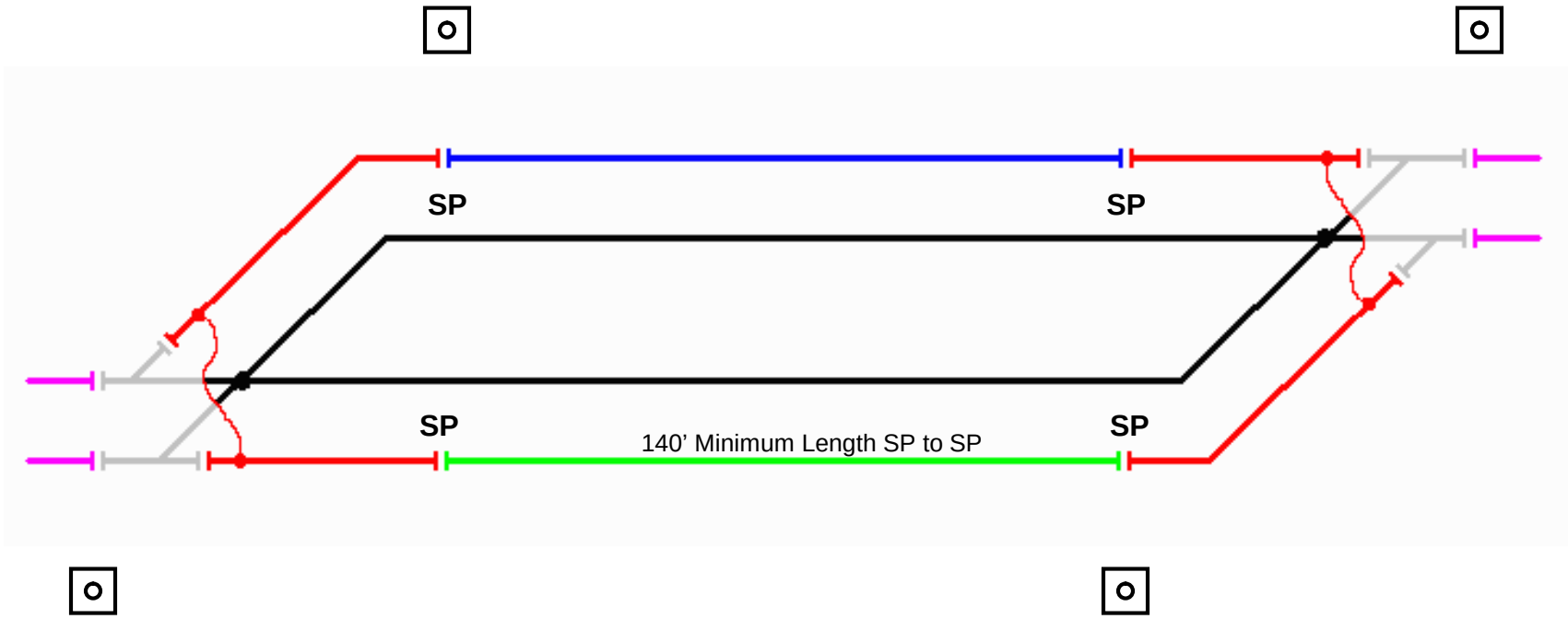
As Builts

___ Map of Conduit
___ All Changes Noted
___ Delivered to Ross

8. Mainline Meet Track - Track Insulators

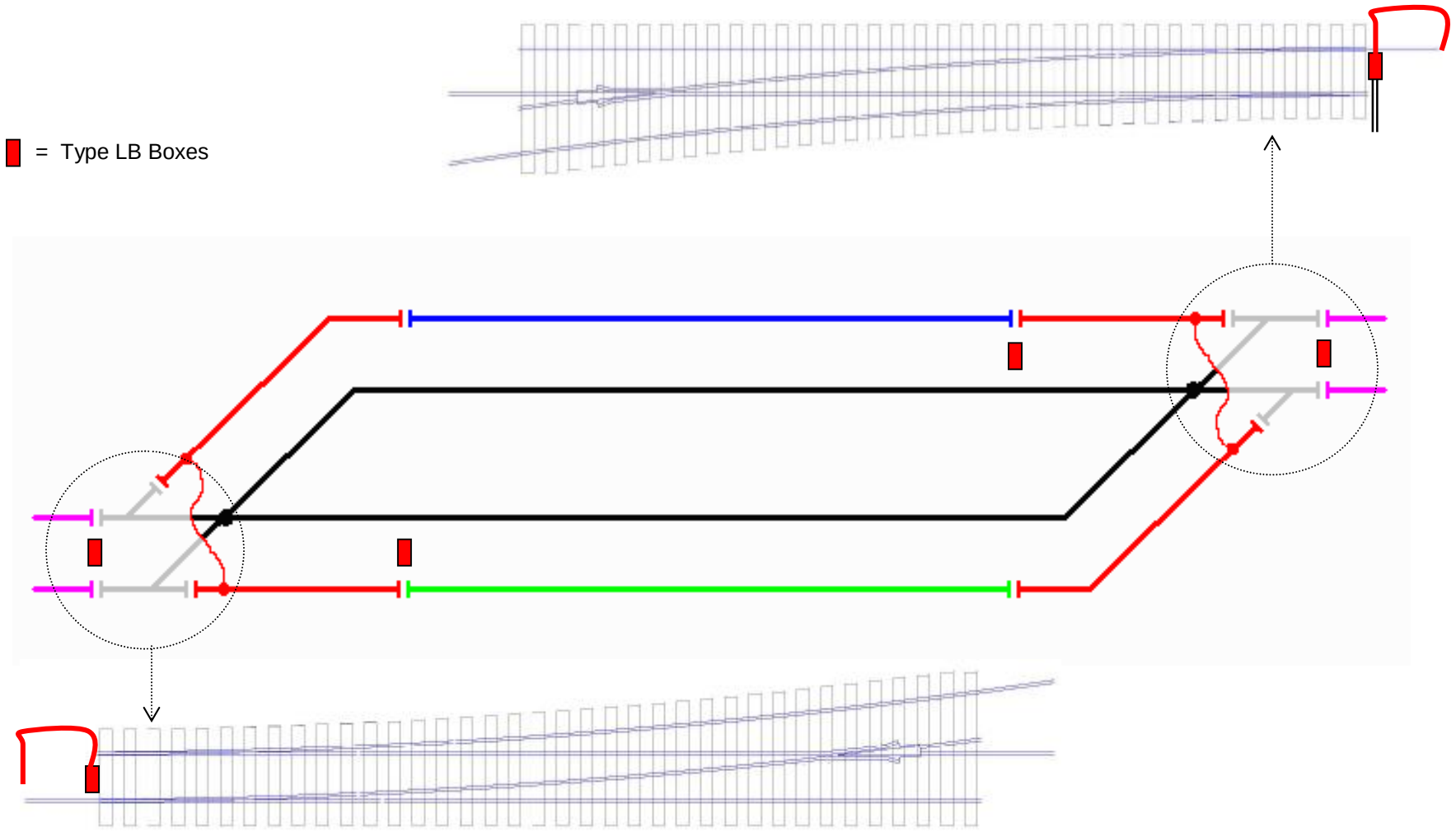


8. Mainline Meet Track - Install 4 Signal Foundations

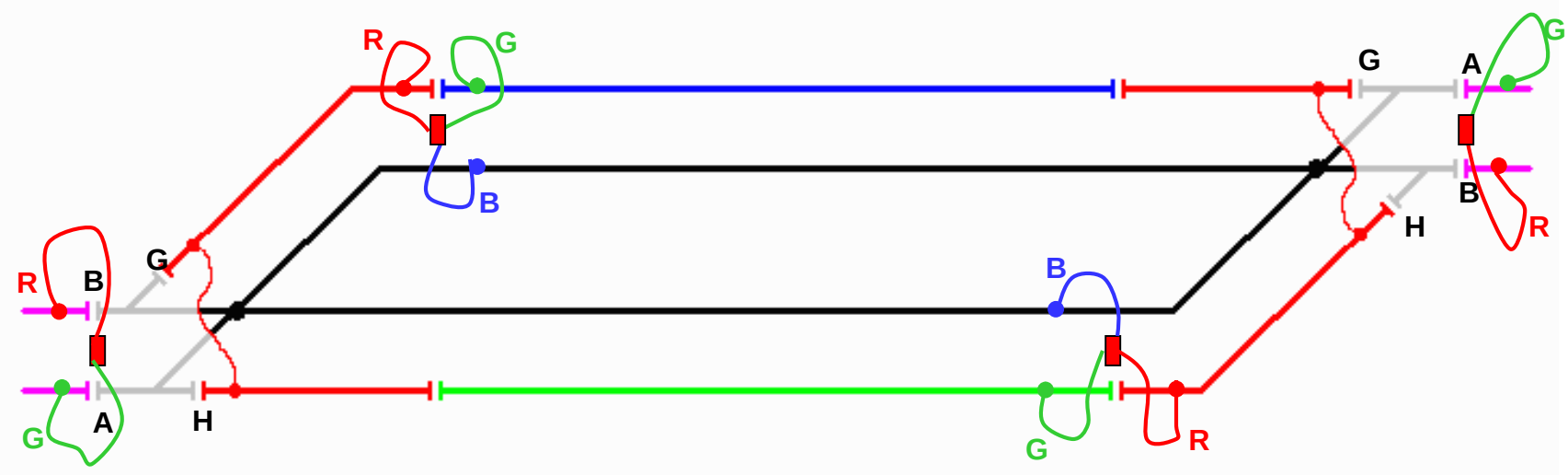


- Signal Foundation 4’ from Center Line of Track
- Conduit on top of Plastic

8. Mainline Meet Track - Install 4 Track Boxes and 2 Flex Conduits



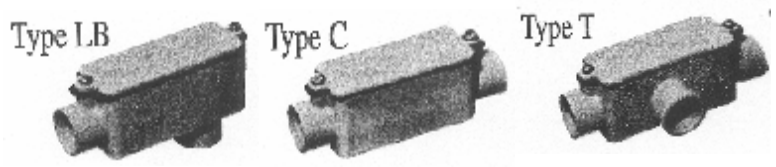
8. Mainline Meet Track - Where the Wires Go



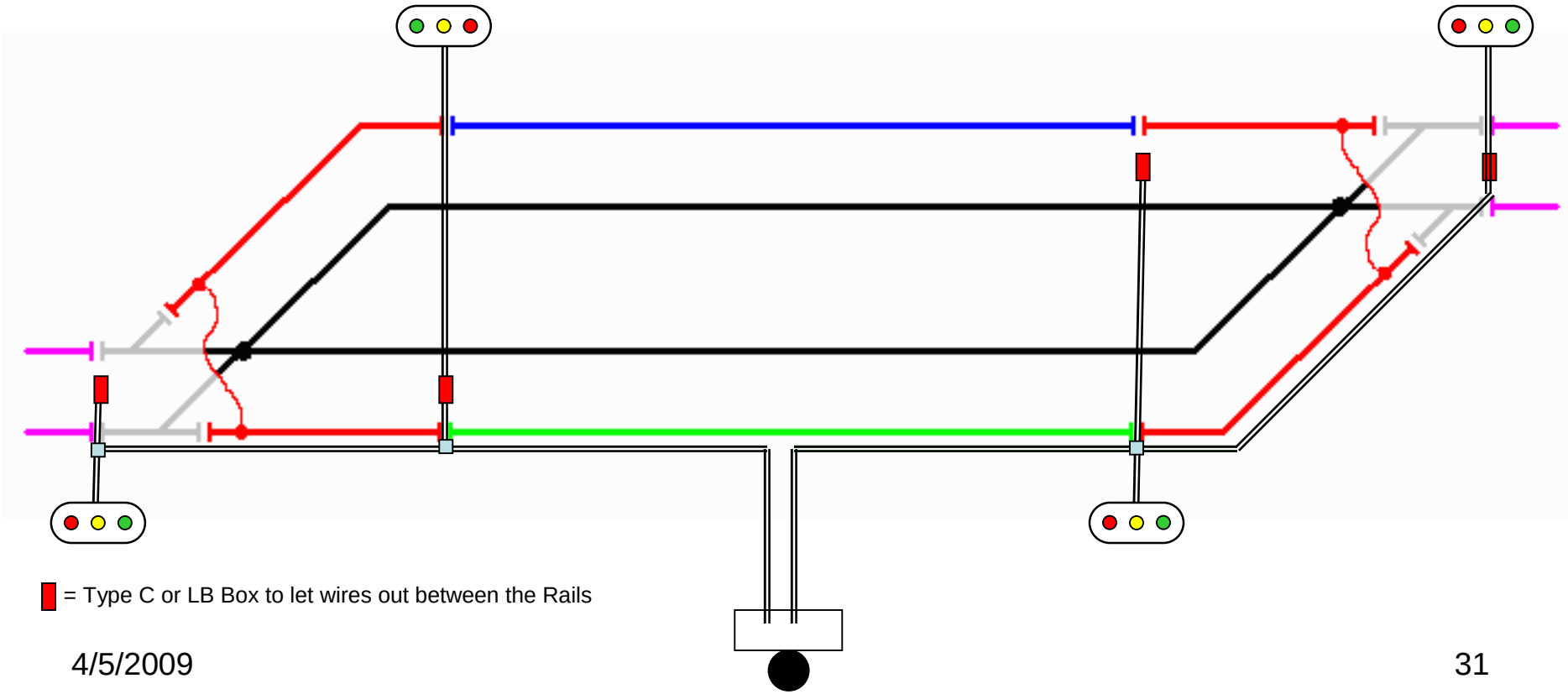
For Your Information -- No Action required

8. Mainline Meet Track - Install Conduit

4 Type LB or C Track Boxes
2 2x4 Connection Boxes



One Conduit from Enclosure to each end of Siding
Expansion Joints every 20'
Whatever Route Works



= Type C or LB Box to let wires out between the Rails

8. Mainline Meet Track - Pull Wire

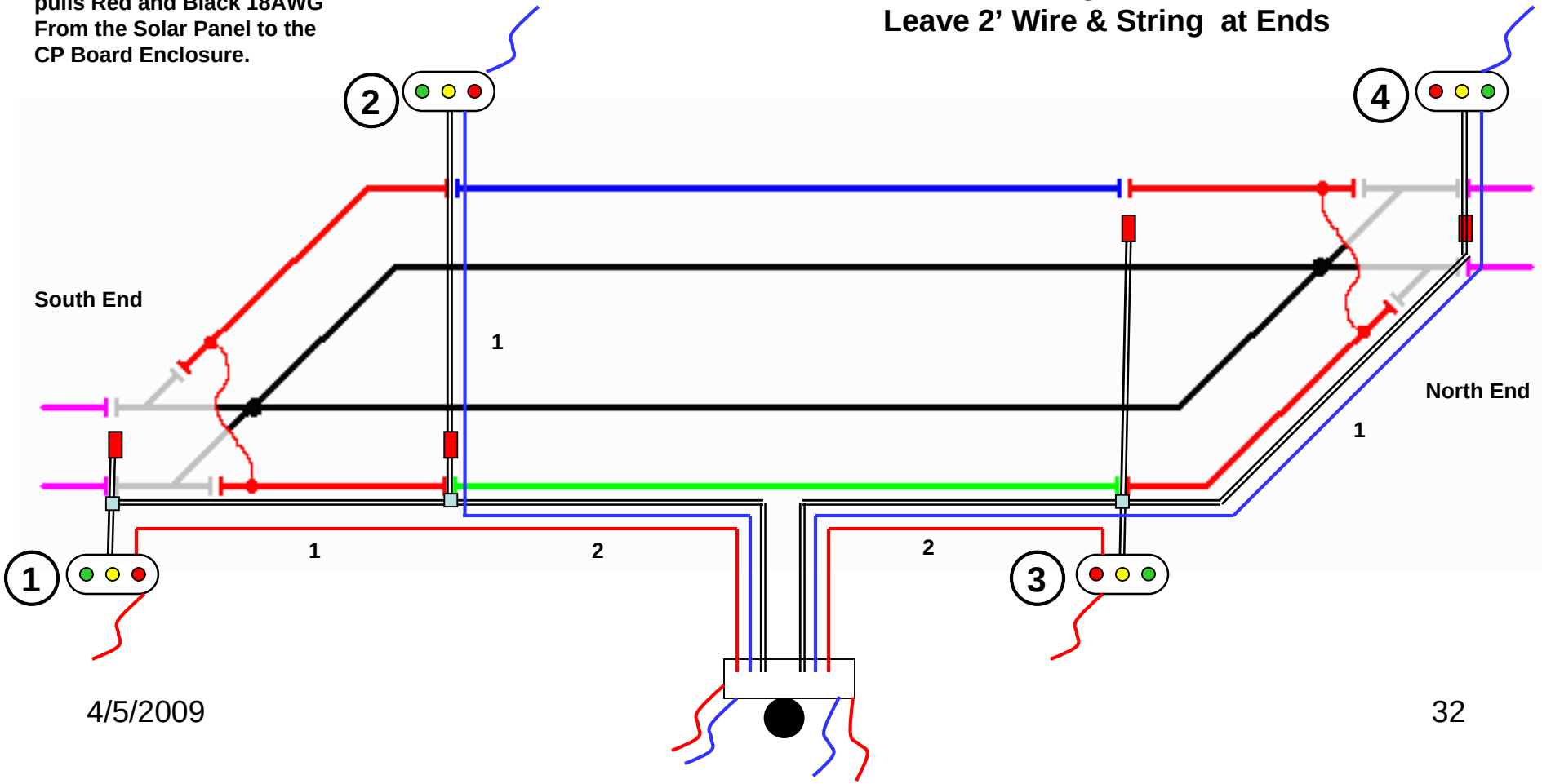
Note : The Track Team pulls all the wire that goes through an Expansion Joint. The Signal Team pulls the rest of the wire which includes all the 18 AWG wire. If there is a Remote Solar Panel, the Track Team pulls Red and Black 18AWG From the Solar Panel to the CP Board Enclosure.

Cat5 Pulls

- Enclosure to Signal 1 - Other
- Enclosure to Signal 2 - Blue
- Enclosure to Signal 3 - Other
- Enclosure to Signal 4 - Blue

Blue Cat5 Wire
Black Cat5 Wire
Other color Cat5
(usually Yellow, White, or Grey)

Pull a String with the Cat5
Leave 2' Wire & String at Ends



8. Mainline Meet - Pre Ballast Checklist

Mainline Meet Track
- ___ 140’ plus Switch Point to Switch Point
- ___ Two 100’ radius Switches

Spring Switches
- ___ 2 Spring Switches

Insulators
- ___ 10 Track Insulators per diagram

Track Boxes
- ___ 4 Track Boxes
- ___ All Type C or Type LB
- ___ All on 2” pieces of conduit

Fender Washers (FWs)
- ___ Expansion Joints - 1” FW on Top of Tie at End
- ___ Track Boxes - 2” FW on Top of Tie at End
- ___ T Boxes - Two 2” FWs on top of Ties at End
- ___ Foul Points - 2” FW on Top of Tie at Center
- ___ Signal Points - Two 2” FWs on Top of Tie at Center

Signal Foundations
- ___ 2 Foundation Blocks
- ___ All at Signal Points
- ___ All 4’ from Center Line(s) of Track(s)
- ___ 18” threaded Mast in each Foundation Block

Where_____

By _____

Date_____

Flex Conduit
- ___ Flex Conduits per diagram

Conduit
- ___ Enclosure to N End
- ___ Enclosure to S End
- ___ Enclosure to Remote Solar Panel (If Any)
- ___ Connects to 4 Track Boxes
- ___ Type C or LB Track Boxes between rails
- ___ Type C or LB Track Boxes on 2” pieces of conduit
- ___ Conduit on top of Plastic
- ___ Expansion Joints every 20’
- ___ 8”-10” from Tie Ends

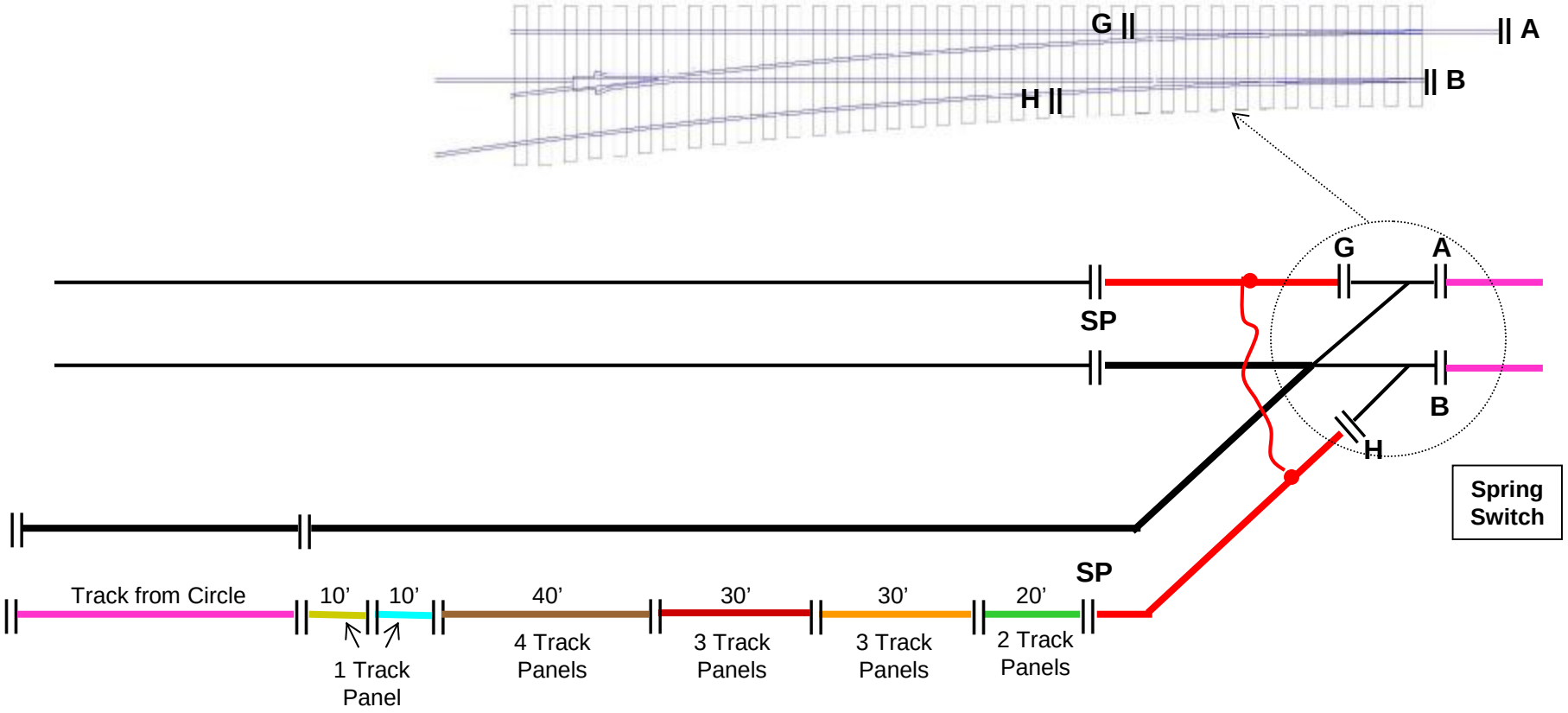
Wire Pull
- ___ Enclosure to Signal 1 - Other
- ___ Enclosure to Signal 2 - Blue
- ___ Enclosure to Signal 3 - Other
- ___ Enclosure to Signal 4 - Blue
- ___ String in every Conduit
- ___ 2’ wire & string at each end

Wire Pull - If Remote Solar Panel
- ___ White & Black 18AWG wire
- ___ String
- ___ 2’ wire & string at each end

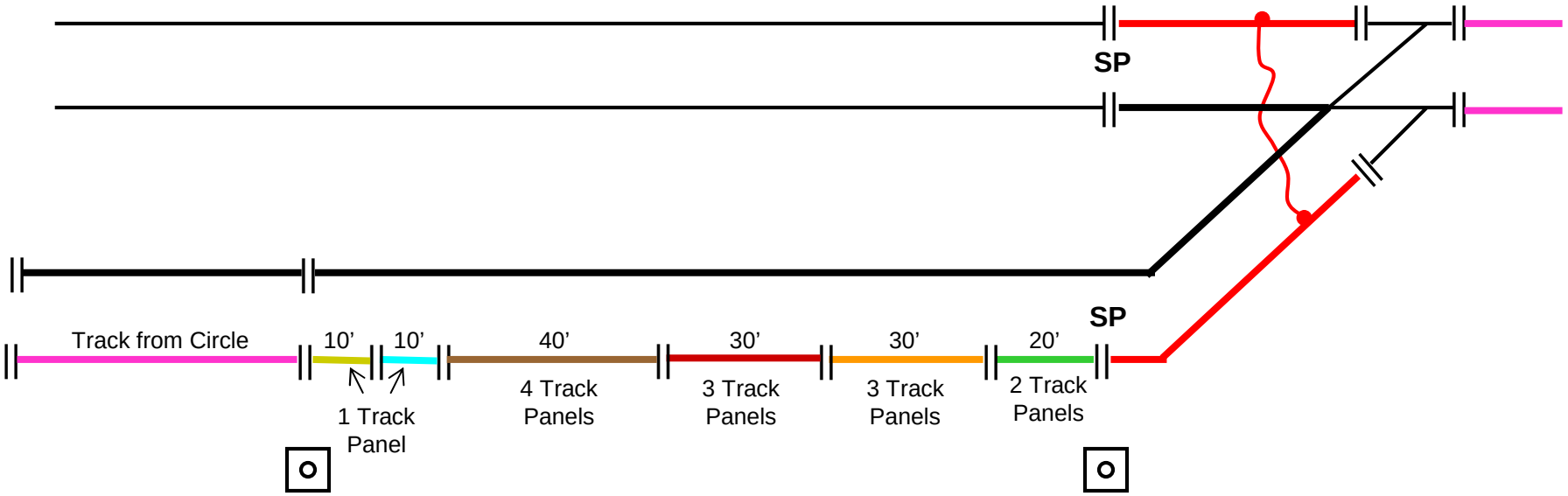
Plywood
- ___ Plywood over Type C box

As Builts
- ___ Map of Conduit
- ___ All Changes Noted
- ___ Delivered to Ross

9. Queuing Track - Install Track Insulators

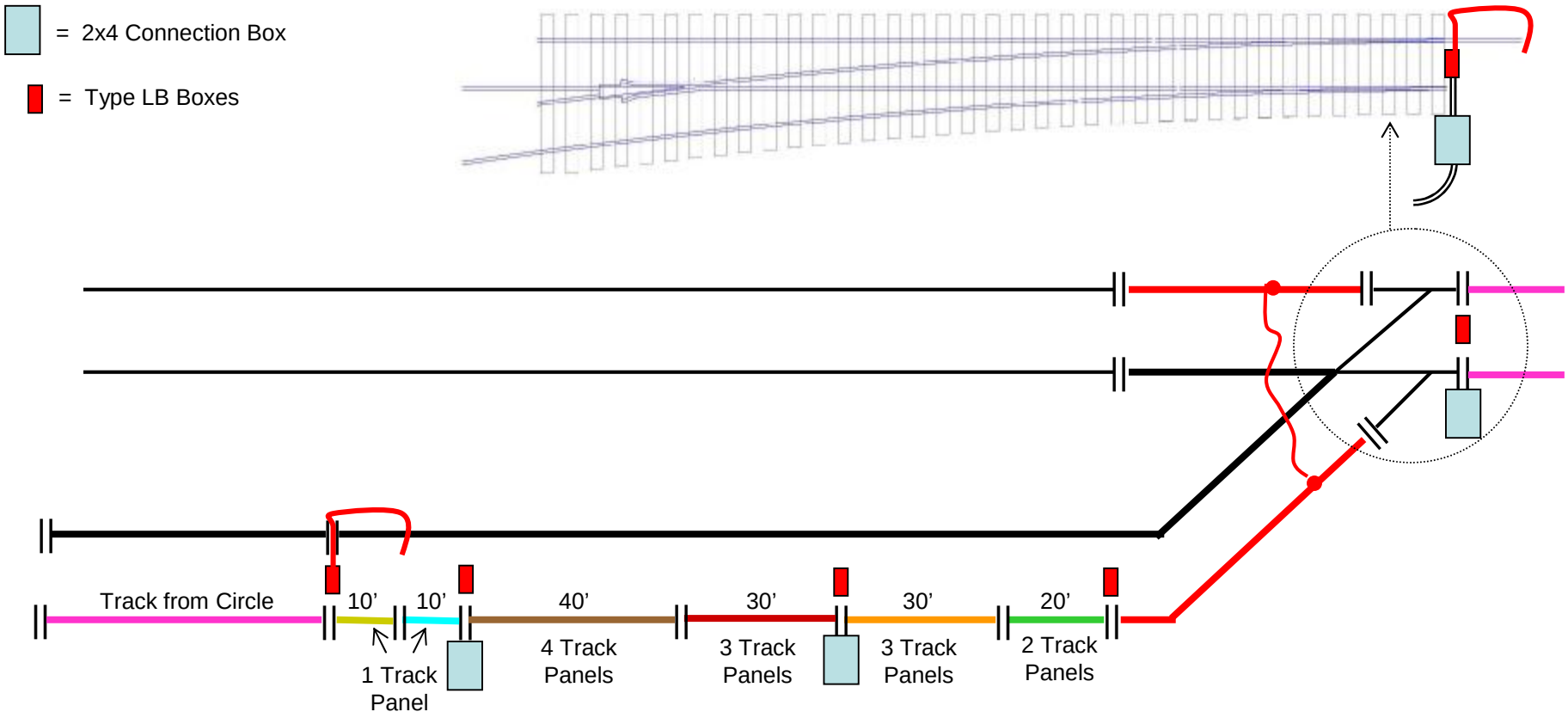


9. Queuing Track - Install 2 Signal Foundations

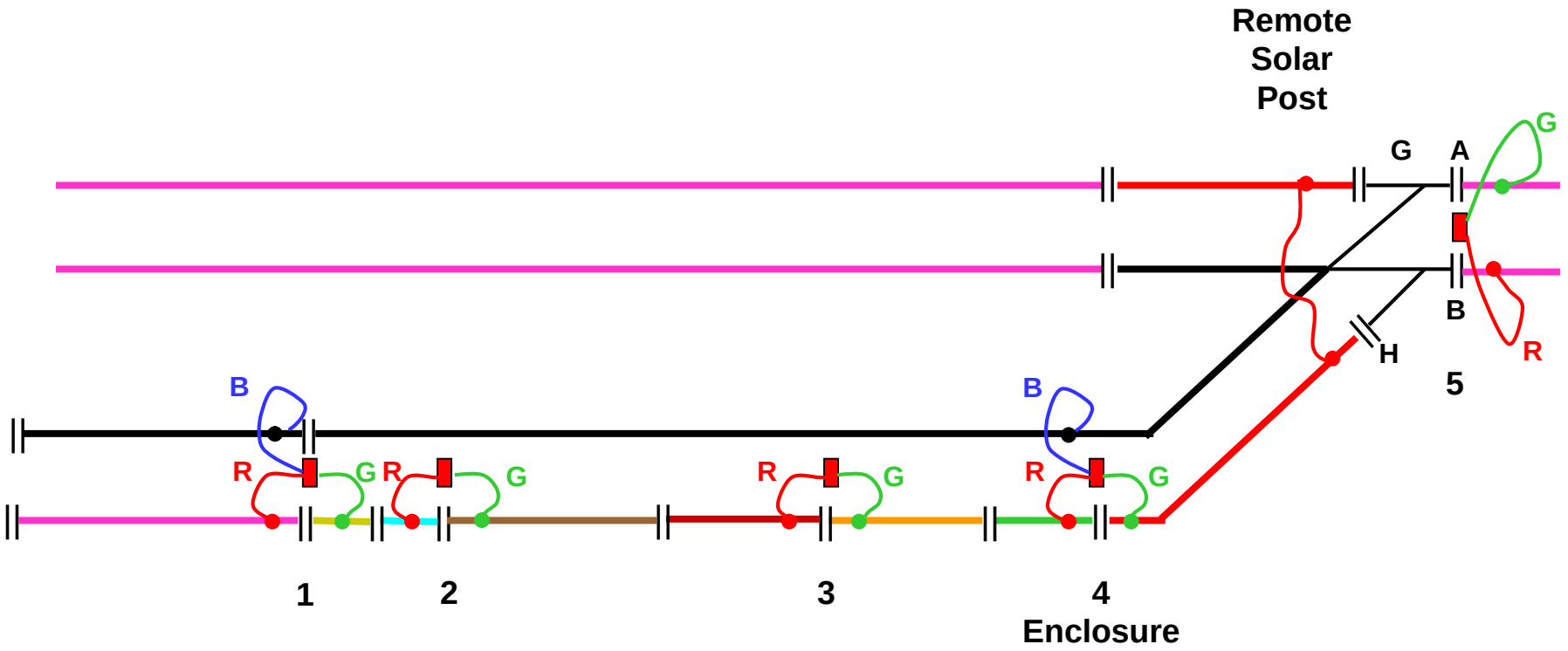


- Signal Foundation 4’ from Center Line of Track
- Conduit on top of Plastic

9. Queuing Track - Install 5 Track Boxes and 2 Flex Conduits



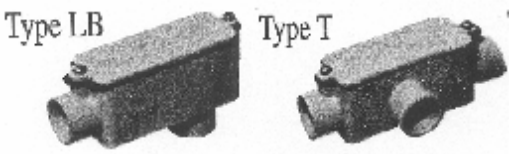
9. Queuing Track - Where the Wires Go



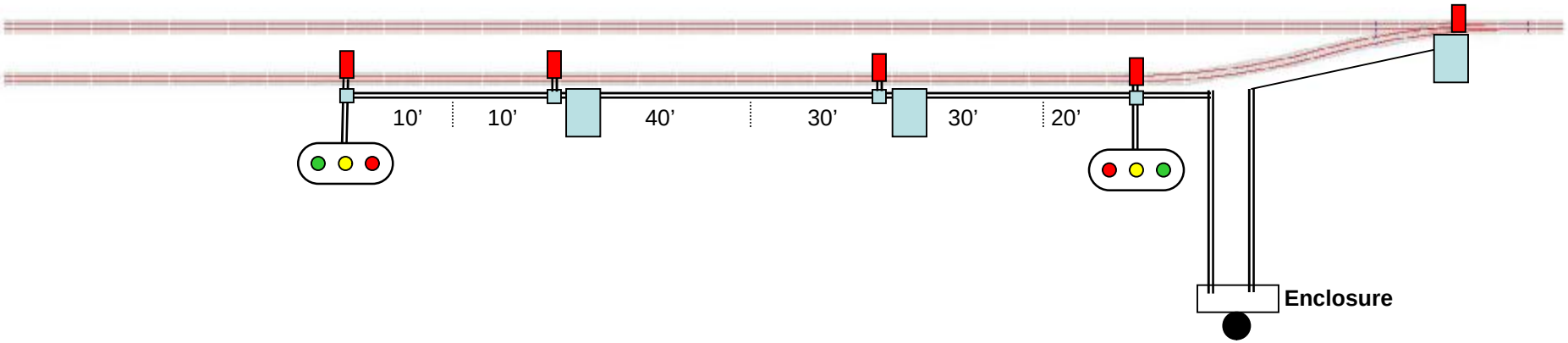
For Your Information -- No Action required

9. Queuing Track - Install Conduit

5 Type LB or C Track Boxes
3 2x4 Connection Boxes



One Conduit from Enclosure to each end of Siding
Expansion Joints every 20’
Whatever Route Works



= 2x4 Connection Box

= Type T Box

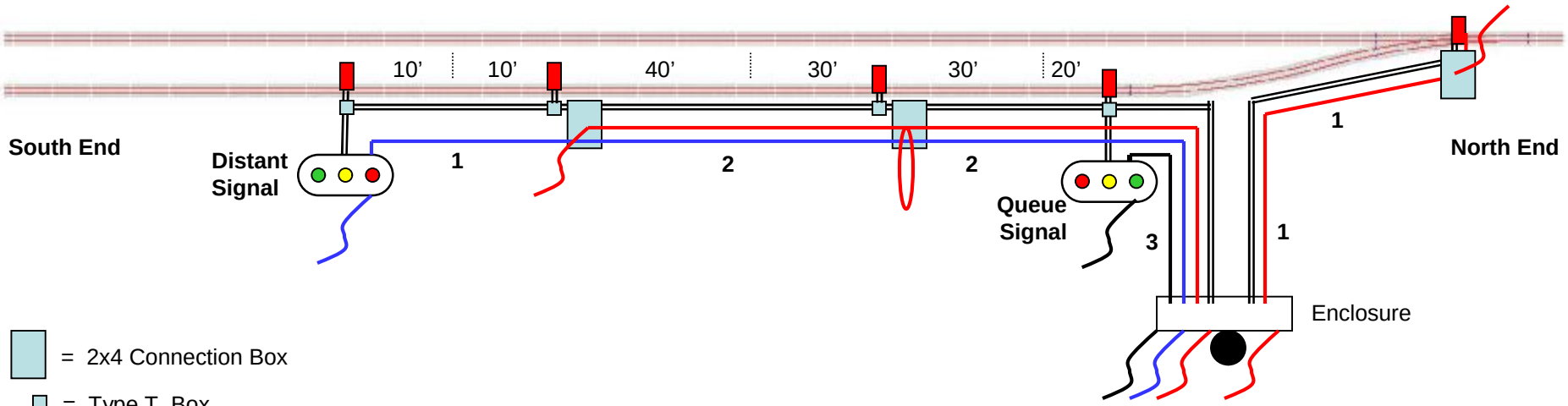
= Type C or LB Box to let wires out between the Rails

9. Queuing Track - Pull Wire

Cat5 Pulls
- Enclosure to Queue Signal - Black
- Enclosure to N Track Box - Other
- Enclosure to Dist Signal - Blue & Other
- 6” Loops of wire in 2 Track Connection Boxes

Blue Cat5 Wire
Black Cat5 Wire
Other color Cat5
(usually Yellow, White, or Grey)

Pull a String with the Cat5
Leave 2’ Wire & String at Ends



= 2x4 Connection Box

= Type T Box

= Type C or LB Box to let wires out between the Rails

Note : The Track Team pulls all the wire that goes through an Expansion Joint. The Signal Team pulls the rest of the wire which includes all the 18 AWG wire. If there is a Remote Solar Panel, the Track Team pulls Red and Black 18AWG From the Solar Panel to the CP Board Enclosure.

9. Queuing Tracks - Pre Ballast Checklist

Queuing Track
- ___ 140’ plus to Signal Point
- ___ Two 100’ radius Switches

Spring Switches
- ___ 1 Spring Switch

Insulators
- ___ 10 Track Insulators per diagram

Track Boxes
- ___ 5 Track Boxes
- ___ All Type C or Type LB
- ___ All on 2” pieces of conduit

Connection Boxes
- ___ 3 or more Connection Boxes (2”x4”)

Fender Washers (FWs)
- ___ Expansion Joints - 1” FW on Top of Tie at End
- ___ Track Boxes - 2” FW on Top of Tie at End
- ___ T Boxes - Two 2” FWs on top of Ties at End
- ___ Foul Points - 2” FW on Top of Tie at Center
- ___ Signal Points - Two 2” FWs on Top of Tie at Center

Signal Foundations
- ___ 2 Foundation Blocks
- ___ All at Signal Points
- ___ All 4’ from Center Line(s) of Track(s)
- ___ 18” threaded Mast in each Foundation Block

Where_____

By _____

Date_____

Flex Conduit
- ___ Flex Conduits per diagram

Conduit
- ___ Enclosure to Dist Signal
- ___ Enclosure to Queue Signal
- ___ Enclosure to Remote Solar Panel (If Any)
- ___ Connects to 5 Track Boxes
- ___ Type C or LB Track Boxes between rails
- ___ Type C or LB Track Boxes on 2” pieces of conduit
- ___ Conduit on top of Plastic
- ___ Expansion Joints every 20’
- ___ 8”-10” from Tie Ends

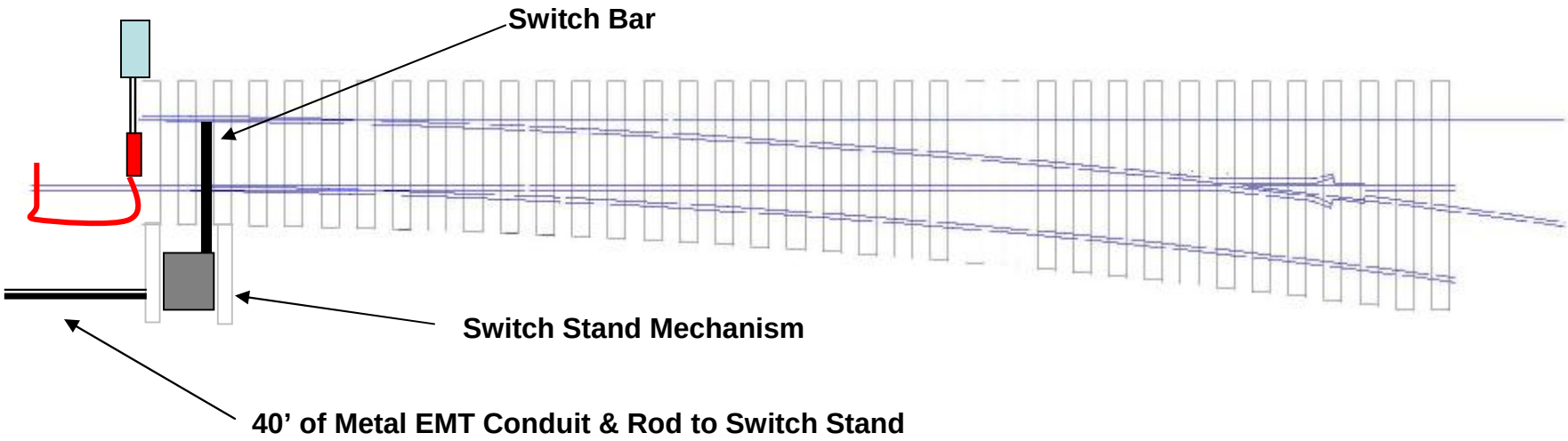
Wire Pull
- ___ Enclosure to Queuing Signal - Black
- ___ Enclosure to N Track Box - Other
- ___ Enclosure to Dist Signal - Blue & Other
- ___ String in every Conduit
- ___ 2’ wire & string at each end

Wire Pull - If Remote Solar Panel
- ___ Red 18AWG wire
- ___ Black 18AWG wire
- ___ String
- ___ 2’ wire & string at each end

Plywood
- ___ Plywood over Type C box

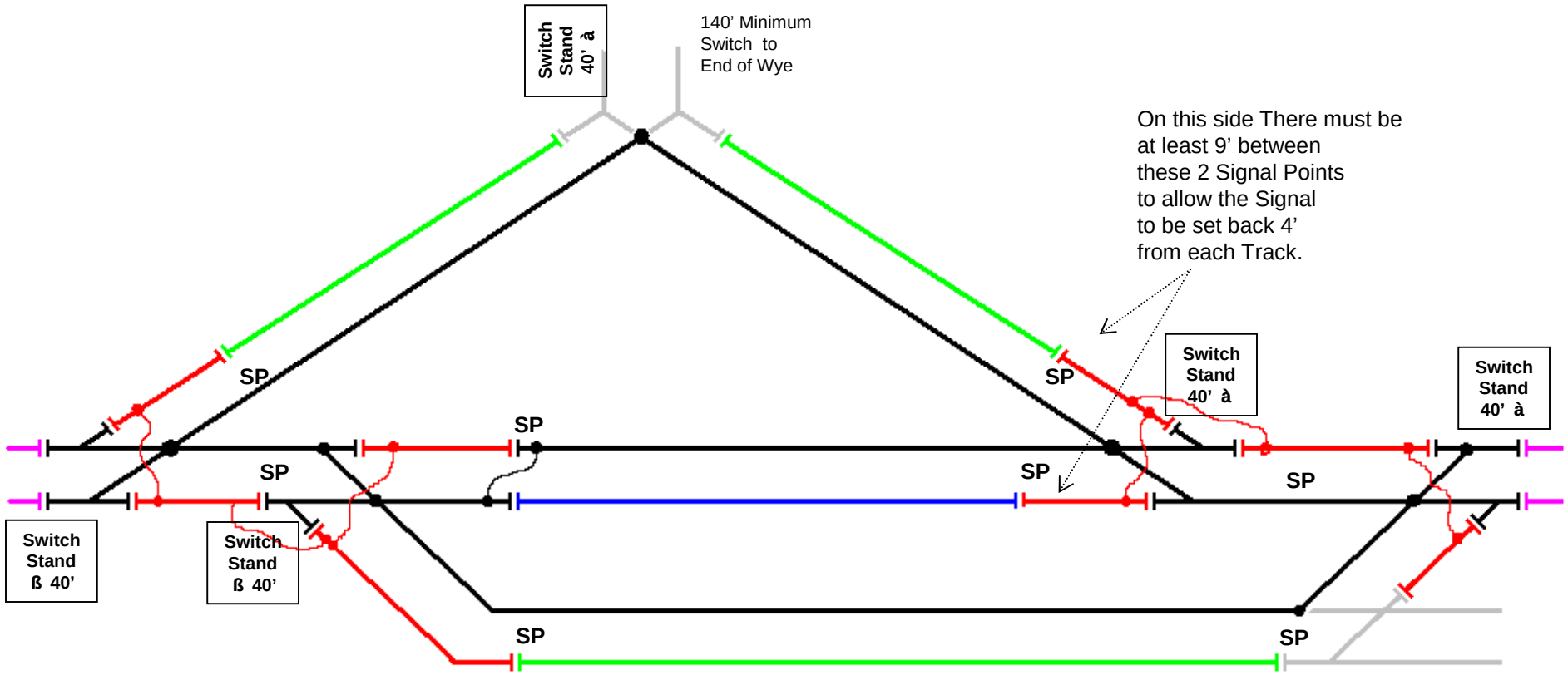
As Builts
- ___ Map of Conduit
- ___ All Changes Noted
- ___ Delivered to Ross

10. Witcombe - Install 4 Switch Stands First

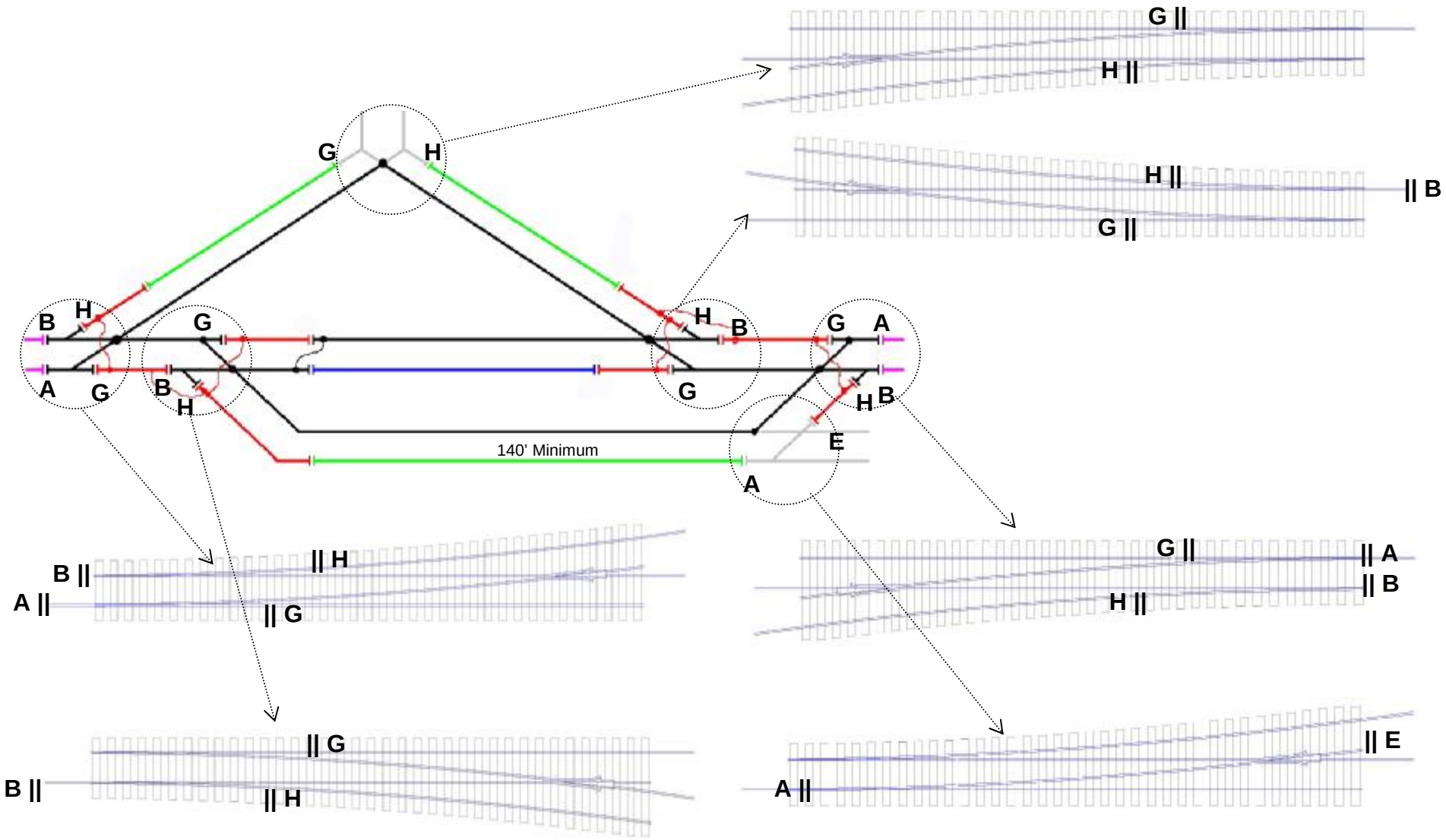


Switch Stand Conduit normally runs away from Signal Conduit

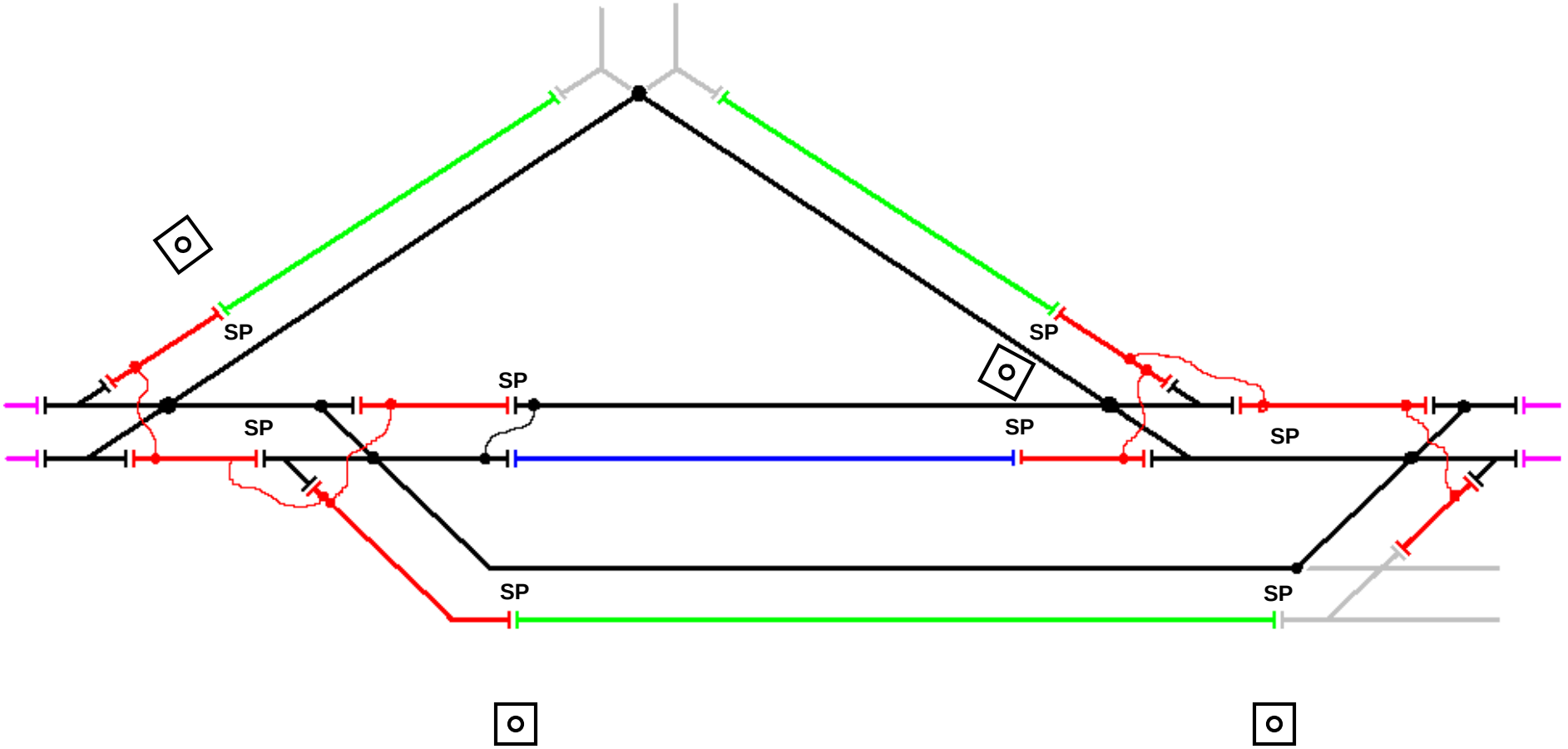
10. Witcombe - Design



10. Witcombe - Install 18 Track Insulators

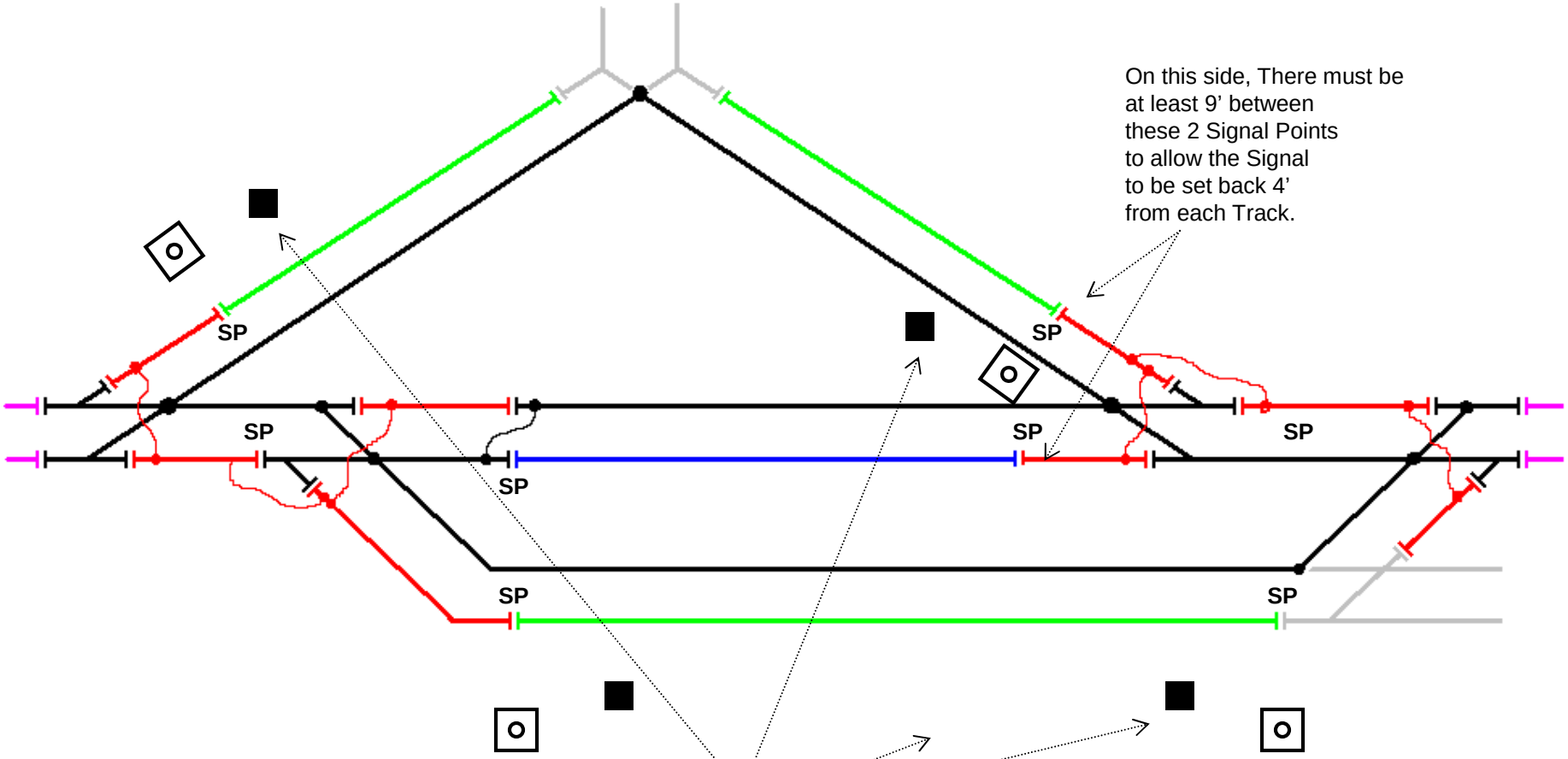


10. Witcombe - Install 4 Signal Foundations



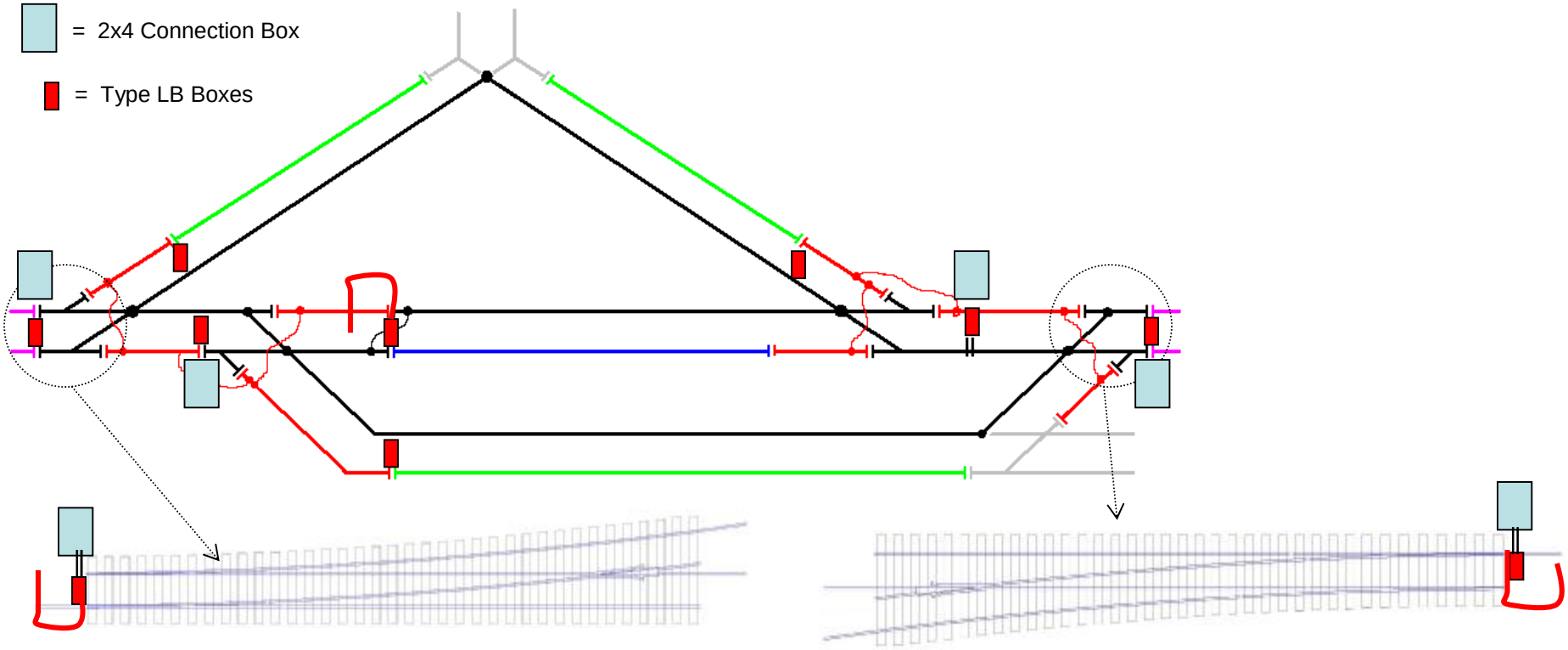
- Signal Foundation 4’ from Center Line of Track
- Conduit on top of Plastic

10. Witcombe - Install 4 Push Buttons



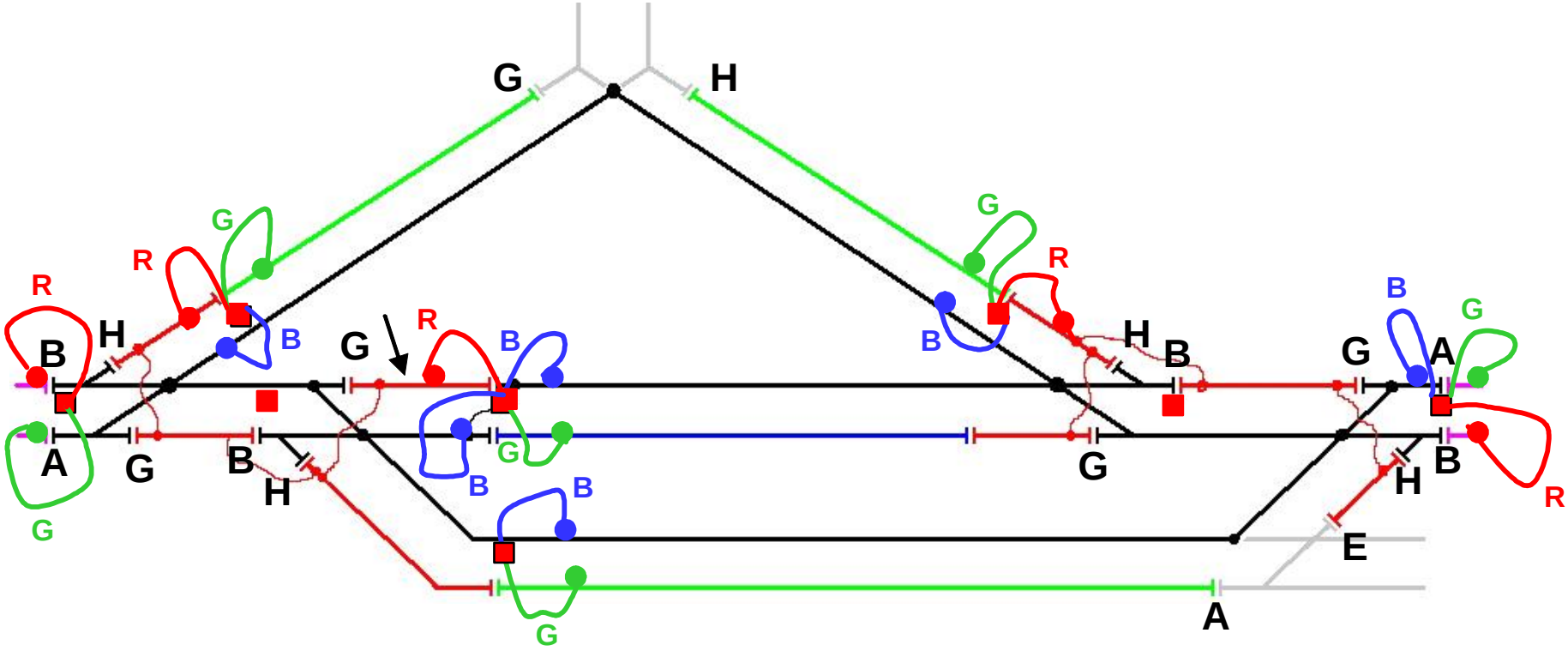
- **Push Buttons**
  - 40' from Signal Foundation
  - Post 27" from center line track
  - All parts 24"+ from center line track
  - 5' Post, Set in Concrete, 3' above ground
  - Bottom out of round so it won't rotate

10. Witcombe - Install 8 Track Boxes and 3 Flex Conduits



10. Witcombe - Where the Wires Go

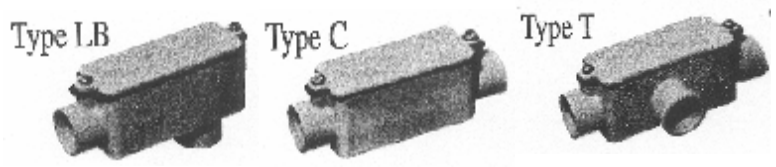
|| = Insulated Joint



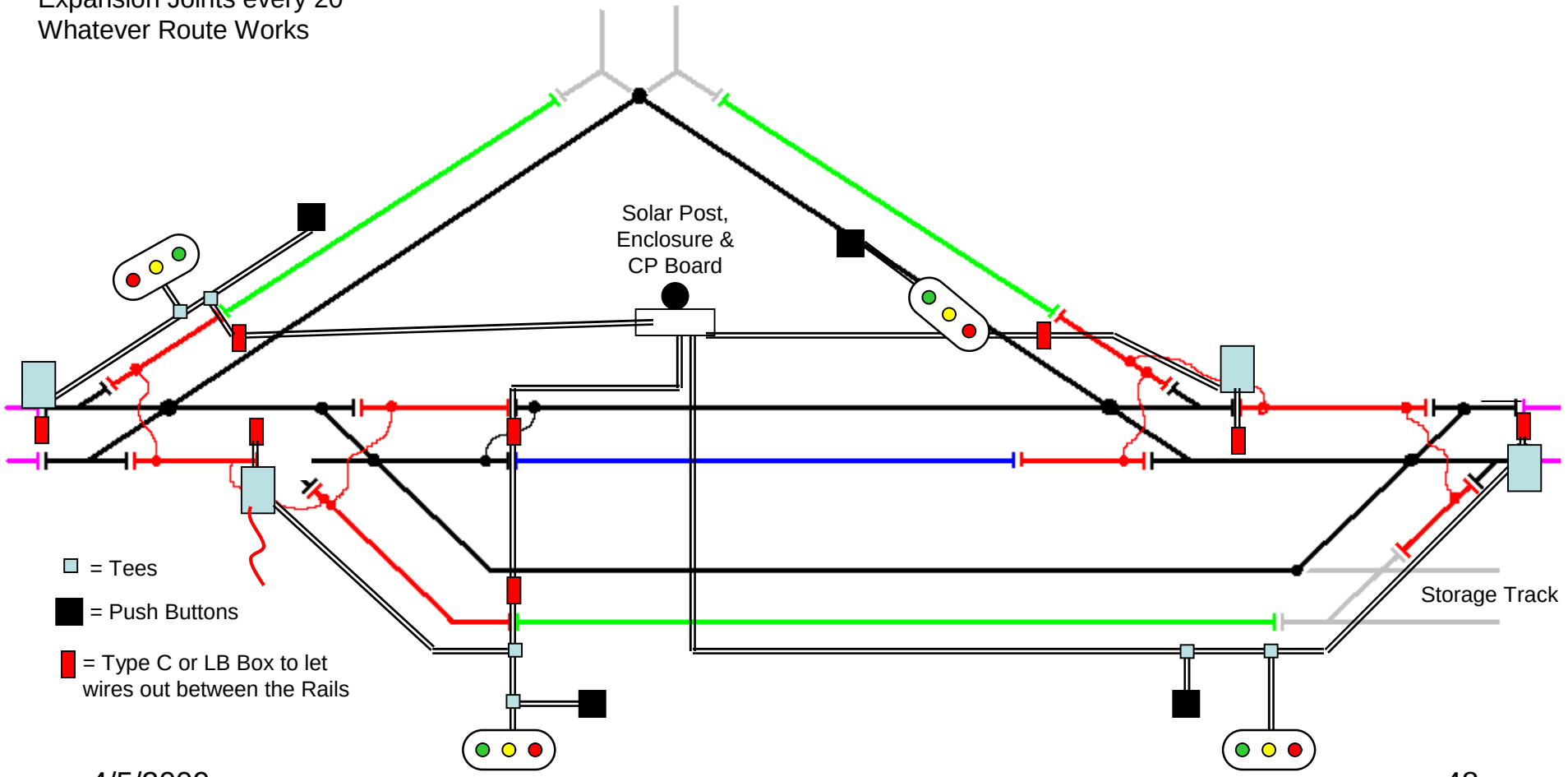
For Your Information -- No Action required

10. Witcombe - Install Conduit

8 Type LB or C Track Boxes
4 2x4 Connection Boxes



One Conduit from Enclosure to each end of Siding
Expansion Joints every 20'
Whatever Route Works



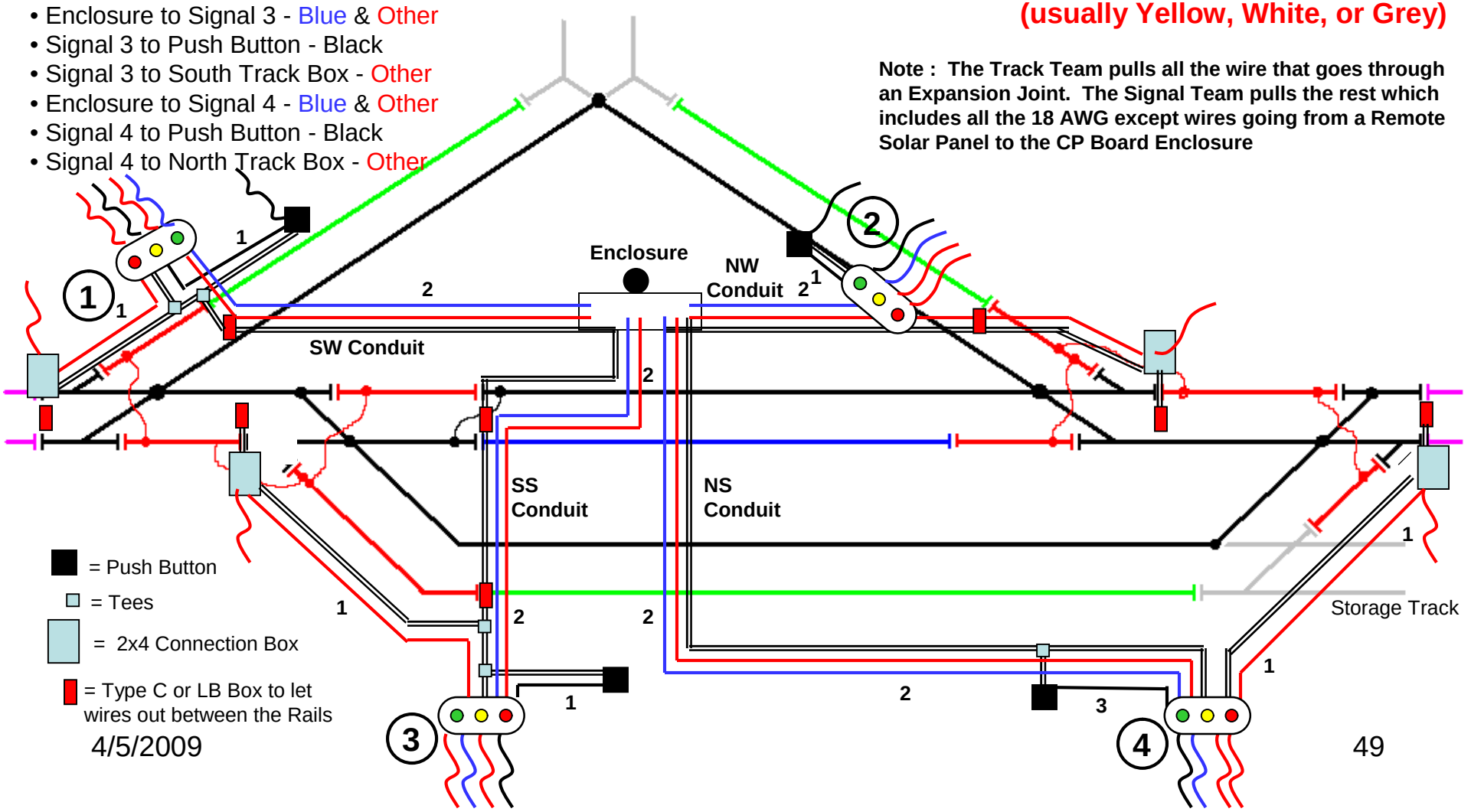
10. Witcombe - Pull Wire

Cat5 Pulls

- Enclosure to Signal 1 - Blue & Other
- Signal 1 to Push Button - Black
- Signal 1 to South Track Box - Other
- Enclosure to Signal 2 - Blue & Other
- Signal 2 to Push Button - Black
- Signal 2 to North Track Box - Other
- Enclosure to Signal 3 - Blue & Other
- Signal 3 to Push Button - Black
- Signal 3 to South Track Box - Other
- Enclosure to Signal 4 - Blue & Other
- Signal 4 to Push Button - Black
- Signal 4 to North Track Box - Other

Blue Cat5 Wire
Black Cat5 Wire
Other color Cat5
(usually Yellow, White, or Grey)

Note : The Track Team pulls all the wire that goes through an Expansion Joint. The Signal Team pulls the rest which includes all the 18 AWG except wires going from a Remote Solar Panel to the CP Board Enclosure



10. Witcombe - Pre Ballast Checklist

Sidings
- ___ 140’ plus Switch Point to Switch Point
- ___ Five 75’ radius Switches

Switch Stands
- ___ Switch Stands on 4 Mainline Switches
- ___ Switch Stands 40’ from Switch Boxes
- ___ Metal EMT Conduit & Rod in
- ___ “Back In Only” on Wye Switch Stands

Insulators
- ___ 18 Track Insulators per diagram

Track Boxes
- ___ 8 Track Boxes
- ___ All Type C or Type LB
- ___ All on 2” pieces of conduit

Connection Boxes
- ___ 4 Connection Boxes (2”x4”)

Fender Washers (FWs)
- ___ Expansion Joints - 1” FW on Top of Tie at End
- ___ Track Boxes - 2” FW on Top of Tie at End
- ___ T Boxes - Two 2” FWs on top of Ties at End
- ___ Foul Points - 2” FW on Top of Tie at Center
- ___ Signal Points - Two 2” FWs on Top of Tie at Center

Signal Foundations
- ___ 4 Foundation Blocks
- ___ All at Signal Points
- ___ All 4’ from Center Line(s) of Track(s)
- ___ 18” threaded Mast in each Foundation Block

Push Buttons
- ___ 4 Push Button Posts
- ___ 40’ from Signals
- ___ No part <24” from Center Line Track

Where_____

By _____

Date_____

Wye
- ___ 160’ tail on Wye

Flex Conduit
- ___ Flex Conduits per diagram

Conduit
- ___ Enclosure to N End Siding
- ___ Enclosure to S End Siding
- ___ Enclosure to N End Wye
- ___ Enclosure to S End Wye
- ___ Enclosure to Remote Solar Panel (If Any)
- ___ Connects to 7 Track Boxes
- ___ Connects Signals to 4 Push Buttons
- ___ Type C or LB Track Boxes between rails
- ___ Type C or LB Track Boxes on 2” pieces of conduit
- ___ Conduit on top of Plastic
- ___ Expansion Joints every 20’
- ___ 8”-10” from Tie Ends

Wire Pull
- ___ Enclosure to S Signal - Blue & Other
- ___ S Signal to Push Button - Black
- ___ S Signal to South End Track Box - Other
- ___ Enclosure to N Signal - Blue & Other
- ___ N Signal to Push Button - Black
- ___ N Signal to North End Track Box- Other
- ___ String in every Conduit
- ___ 2’ wire & string at each end

Wire Pull - If Remote Solar Panel
- ___ White & Black 18AWG wire
- ___ String
- ___ 2’ wire & string at each end

Plywood
- ___ Plywood over Type C box

As Builts
- ___ Map of Conduit
- ___ All Changes Noted
- ___ Delivered to Ross

11. Ballast

- Please, No Ballast where a box is between the Ties. Plywood pieces should assure this.
- Keep Gators off Conduit till there is Ballast over it
- Cover Conduit crossings with Ballast before driving over
- Ballast 3” deep… 2” over Conduit

Signage

Signage

- At Farmersville Queuing Tracks At first Signal
  - A Box for Information Flyers for Northbound Track
  - A recycling box for Southbound Track
- “Back In Only” on Yellow Disk of Switch Stands on Wyes
- “Push When Ready to Depart” on Push Button Posts
- “End of Track” signs
  - Tail of Wyes
  - End of Storage Tracks
- Mileposts
- Place Names