User Interface Design

for

North Shore Extension

Version 1.0 approved

Prepared by Garrett Grube, Jeff Deely, Ritesh Misra, Spencer Worms, Xavier Torgerson

Blue Team

9/24/2016

Table of Contents

Table of Contents ii

Revision History ii

1. Introduction 1

1.1 Purpose 1

2. User Interface Design 1

2.1 CTC Office 1

2.2 Track Controller 1

2.3 Track Model 1

2.4 Train Model 1

2.5 Train Controller 1

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
| Garrett Grube | 9/24/16 | Document Created | 1.0 |
| Garrett Grube | 9/25/16 | Added Train Controller section | 1.1 |

# Introduction

## Purpose

The purpose of this document is to detail the user interface design of the North Shore Extension project software. This document will include an image of each UI, and describe it.

# User Interface Design

## CTC Office

### Screenshot

### Description

## Track Controller

### Screenshot

A:

B:

C:

D:

E:

### Description

There are 5 sections of the UI labeled on the screenshot. Each has their own components and functionality

Section A: Menu Bar

* Consists of two pull down menus, “File” and “Help”
* Displays file and help menus when clicked on

Section B: PLC Updater

* Allows user to enter PLC code from their computer into the wayside controller
* Consists of the “PLC text box” and the “enter button”
  + The PLC code’s file location is entered into the “PLC text box”
  + When the “enter button” is pressed the wayside controller will find the PLC code and save it into its memory
  + If the PLC code’s file location does not exist then an error message will appear on the text box

Section C: Wayside Controller Selector

* Used to select which wayside controller, will be viewed
* Consists of the “Section Label” and two buttons, “Next section Button (>)” and “Previous Section Button (<)”
  + Section Label: displays the current wayside controller being viewed
  + Next Section Button: Loads in the next wayside controller for viewing, the next controller being the one that controls the section an inbound train will go to next
  + Previous Section Button: Loads in the previous wayside controller for viewing, the previous controller being the one that controls the section an outbound train will go to next

Section D: Block Display

* Displays the internal variables for each block within the wayside controller’s section of track blocks
* Displays blocks in order of a train moving from right to left while going in the inbound direction
* Consists of individual “Block Panels”
  + Each Block Panel consists of labels displaying the following:
    - Block Number: the number assigned to the block by the track model
    - Occupancy: displays information about track occupancy
      * If there is a train it displays that trains’ number
      * If there is no train then it is blank
    - Type: displays what type of track is located on this block
      * If the block is just track then the label is blank
      * If the block contains a railroad crossing then the label displays “crossing” and the current state of the crossing, either “inactive” or “active”
      * If the block contains a station then the label displays “Station”
      * If the block contains a switch then the label displays “Switch” and two numbers indicating which tracks the switch connects to
        + The number with a “>” before it is the block the switch track is connected to
      * If the block contains a light then the label displays “Light” and the current state of the light, either “Green” or “Red”
    - Failure Status: failure status for a given track block
      * If the track is working properly the label is blank
      * If there is a failure detected then the label displays a red “FAILURE”
    - Heater Status: the state of a blocks track heater, is either “ON” or “OFF”
    - Speed Limit: the speed limit for a train on a given section of track, received from the CTC office
    - Authority: the maximum authority of a train on a given section of track, received from the CTC office

Section E: Current Action Label

* Display’s what the wayside controller is doing at any given time
* Consists of the “current action label”

## Track Model

### Screenshot

### Description

## Train Model

### Screenshot

### Description

## Train Controller

### Screenshot

### Description