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Existing Building Code Evaluation Report
Wells Station Expansion – Wells, ME

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1. Introduction

VHB has retained Code Red Consultants to provide fire protection, life safety, and accessibility code consulting services for the NNEPRA Wells Station Expansion project. This report describes our evaluation of the existing station in accordance with the Maine Uniform Building and Energy Code, NFPA 130, and the code compliance approach associated with the new work. This report is required to be included in the submission to the building official as part of the permit package.

Wells Station is situated on the Amtrak Downeaster Rail Line and is located between the Saco, ME and the Dover, NH stations. The station consists of a detached, single-story building that is used for ticket sales and information booths, and a single open platform that serves both inbound and outbound Amtrak Downeaster trains. The existing platform consists of a 150' long low-level platform with a 50' long mini-high platform on the East End. The platform contains two canopies with bench seating, constructed with non-combustible structural elements and a combustible wood roof.

The station is composed primarily of cast/poured concrete and is minimally classified as Type IIA, protected, noncombustible construction. The station is not equipped with a fire alarm and detection system, does not have a sprinkler system, and is not equipped with a standpipe system. Exit signage is not present throughout the station.

1.1 Project Description

The proposed project includes extending the existing No. 2 track, known as the Wells Siding, approximately 6 miles from CPF 228 to MP 234 and addition of a second platform at Wells Station to improve operational flexibility, mitigate the potential for schedule delays and allow for the operation of a sixth roundtrip for the Downeaster service. This report documents the code compliance associated with the proposed second station platform and the ramps, stairs, and walkways associated with the platform.

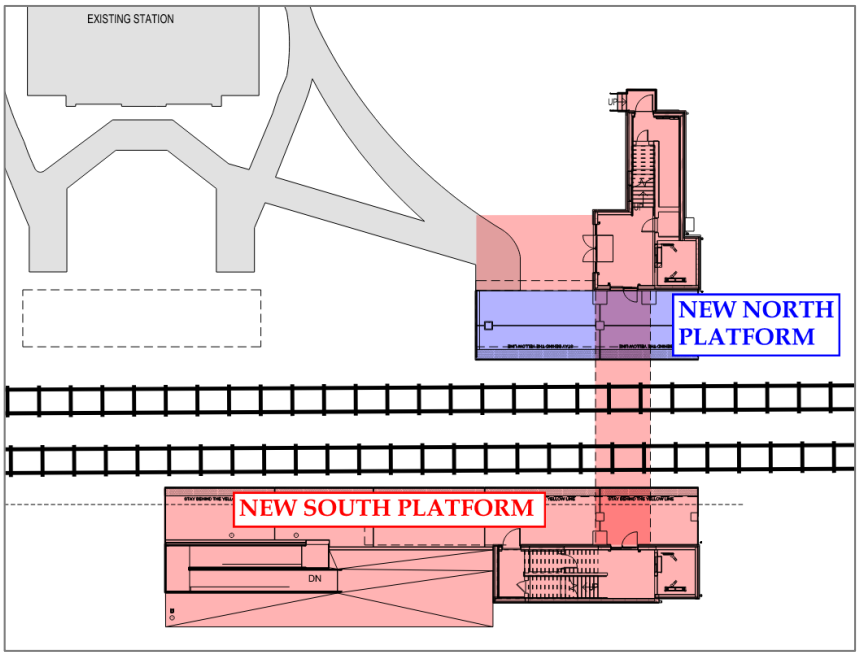

FIGURE 1: PROPOSED PLATFORM & PEDESTRIAN BRIDGE

2. Applicable Codes

Building	Maine Uniform Building Code (MUBC), referenced by the Maine Uniform Building and Energy Code (MUBEC) Chapter 3, which is an amended version of the 2015 International Building Code (IBC) and 2015 International Existing Building Code (IEBC)
Transit & Rail	2017 Edition of NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems as referenced by NFPA 1
Accessibility	2009 ICC A117.1, Accessible And Usable Buildings and Facilities 2010 ADA Standards for Accessible Design 2006 ADA Standards for Transit Facilities
Life Safety	2018 Edition of NFPA 101, *Life Safety Code* as adopted by the Rules of the State Fire Marshal Chapter 20
Fire	2018 Edition of NFPA 1, *Fire Code* as adopted by the Rules of the State Fire Marshal Chapter 30
Electrical	2020 NFPA 70, National Electric Code
Elevator	Maine Elevator & Tramway Rules & Laws (METRL), an amended version of the 2013 ASME A.17.1, Safety Code Fore Elevators And Escalators
Energy	Maine Uniform Energy Code (MUEC), referenced by the MUBEC Chapter 6, which an amended version of the 2015 International Energy Conservation Code (IECC)
Mechanical	2013 ASHRAE 62.1, Ventilation for Acceptable Indoor Air Quality 2015 International Mechanical Code (IMC)
Plumbing	Maine State Plumbing Code which adopts and amends the 2021 Uniform Plumbing Code (UPC)

This Code Report addresses the key fire and life safety features of MUBC, NFPA 130, and NFPA 1 only. Detailed requirements contained within the other applicable codes and standards are outside the scope of this Code Report unless specifically noted otherwise.

The primary intent of this Code Report is to (1) facilitate coordination of the fire and life safety code approach for the project between various design disciplines, (2) document fire and life safety code requirements for the project for the purposes of presenting to the Authorities Having Jurisdiction (AHJ), and (3) serve as a record document for the Owner.

Details of compliance are left to the construction documents prepared by the appropriate Registered Design Professionals and the Installing Contractors. Where there is a conflict between applicable codes, the most restrictive requirements should generally govern.

This Code Report is intended to address code requirements as enforced by the AHJ only.

- It is the responsibility of the design team to ensure that any additional Owner or insurance carrier requirements, which may exceed the provisions of the applicable codes and standards, are also met, as necessary.
- This Code Report does not address requirements of other authoritative agencies such as (but not limited to) the Occupational Health and Safety Administration (OSHA) and the Maine Department of Environmental Protection (ME DEP) / Environmental Protection Agency (EPA) which may apply to the facility. It is the Owner's responsibility to ensure that all such requirements are adhered to, which may exceed the minimum requirements summarized herein for compliance with the applicable codes for the project.
- This Code Report does not address any zoning, permitting, and/or licensing requirements that may apply to the facility based on the applicable codes and/or requirements of the AHJ.

3. Existing Building Code Analysis

3.1 Existing Building Code Scoping Requirements

Portions of an existing building undergoing repair, alteration, addition, or a change in use are subject to the requirements of the IEBC. In general, existing materials are permitted to remain provided they were installed in conformance with the requirements or approvals in effect at the time of original installation and are not deemed a hazardous condition by the authority having jurisdiction (AHJ) (IEBC 302.3). All new work in existing buildings are required to be compliant with the materials and methods in accordance with MUBC or the applicable code for new construction unless otherwise specified by the IEBC (IEBC 302.4). Alterations to an existing building or portion thereof are not permitted to reduce the level of safety currently provided within the building unless portion altered complies with the requirements of MUBC for new construction (IEBC 701.2).

Where compliance with the requirements of the MUBC is impractical due to construction difficulties or regulatory conflicts, building officials are permitted to approve compliance alternatives. Any compliance alternatives being sought are required to be identified on the submittal documents (IEBC 104.11). **No compliance alternatives are planned for this project.**

3.2 Compliance Method & Classification of Work

3.2.1 IEBC Compliance Method & Classification of Work

The **Work Area Method** has been selected for use on this project (IEBC 301.1.2). The project is classified as a **Repair, Level 1 Alteration, Level 2 Alteration and Addition**, under the Work Area Method and is required to comply with IEBC Chapters 6, 7 and 8, and 11 as applicable. The work classifications are defined as follows:

Repairs – The patching or restoration or replacement of damaged materials, elements, equipment or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing loads or performance requirements (IEBC 502.1).

Level 1 Alteration – The removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose (IEBC 503.1).

Level 2 Alteration – The reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment (IEBC 504.1).

Addition – An extension of increase in floor area, number of stories, or height of a building or structure (IEBC 507.1.)

The project does not include a change of occupancy or an addition.

3.2.2 NFPA 101 Classification of Work

1. NFPA 101 43.4: Renovations
   The replacement in kind, strengthening, or upgrading of building elements, equipment, or fixtures for the purpose of maintaining such materials, elements, equipment, or fixtures in good or sound condition.
   - The work completed is not permitted to make the building less conforming with other sections of NFPA 101, or with any previous approved alternative arrangements, than it was before the renovation was undertaken;
   - The capacity of means of egress is sufficient for the occupant load of the work area;
   - New interior finishes are required to meet the requirements for new construction.

2. NFPA 101 43.5: Modifications
   The reconfiguration of any space; the addition, relocation, or elimination of any door or window; the addition or elimination of load-bearing elements; the reconfiguration or extension of any system; or the installation of any additional equipment
   - Newly constructed elements, components, and systems are required to comply with NFPA 101 for new construction;
   - The work area is greater than 50% of the area of the building and therefore compliance with NFPA 101 43.6 is required.

3. NFPA 101 43.6: Reconstructions
   The reconfiguration of a space that affects an exit or a corridor shared by more than one occupant space, or the reconfiguration of a space such that the rehabilitation work area is not permitted to be occupied because existing means of egress and fire protection systems, or their equivalent, are not in place or continuously maintained.
   - Newly constructed elements, components, and systems are required to comply with NFPA 101 for new construction;
   - Means of egress in rehabilitation work areas shall be provided with illumination, emergency lighting, and marking of means of egress in accordance with the requirements of other sections of this Code applicable to new construction for the occupancy.

4. NFPA 101 43.8: Additions
   An increase in the building area, aggregate floor area, building height, or number of stories of a structure.
   - Newly constructed elements, components, and systems are required to comply with NFPA 101 for new construction;
   - Any repair, renovation, alteration, or reconstruction work within an existing building where an addition is being made must comply with Sections 43.3, 43.4, 43.5, and 43.6;
   - Additions must not increase the height of an existing building beyond that permitted for new building construction.

4. Existing Station Code Summary

The following documents key features associated with the existing station design focusing primarily on the work area.

Use and Occupancy:	Primary Use(s):	Accessory Use(s):
	Group A-3, Assembly	N/A
Construction Type:	Minimally Type IIA Protected, Noncombustible Construction	
Station Classification:	The existing platform is classified as open.	
Fire Separations:	None Provided	
Means of Egress:	The existing platform is provided with two means of egress by means of two (2) open air stairways that discharge to a point of safety.	
Exit Signage & Emergency Lighting:	Not provided.	
Fire Alarm & Detection:	An existing fire alarm and detection system is not provided.	
Automatic Sprinklers:	Automatic sprinklers are not installed.	
Standpipes:	Standpipes are not installed.	
Emergency Ventilation:	Not applicable as platform is open air.	
Fire Extinguishers:	No fire extinguishers were observed in the station.	
Interior Finish & Contents:	No combustible interior finishes were observed in the station.	

5. New Work Code Review

The following sections describes the code compliance approach associated with the project. The requirements specified below apply to the new work only, unless specifically stated otherwise.

5.1 Primary Occupancies

The work area contains the occupancy groups shown in Table 1 (MUBC 302.1, 508.1).

Occupancy Groups			
Description	**MUBC Classification**	**NFPA 101 Classification**	**Location**
Lobby, Platforms	Group A-3	Assembly	All Levels
Station Support	Group B	Business	All Levels

TABLE 1: PRIMARY OCCUPANCY GROUPS

5.2 Building Construction

5.2.1 Construction Classification

The addition will consist of a combination of unprotected steel (Type IIB) and mass timber consistent with Type IV Heavy Timber (HT) construction. **Note due to the combustible components of Type IV construction, an engineering fire hazard analysis has been performed to determine that there is no risk to occupants and to the structure (NFPA 130, 5.2.2.2). The analysis documents that the appropriate level of safety is being achieved with the mixed construction type design. Refer to the fire hazard analysis located in Appendix B for details.**

5.2.2 Station Classification

NFPA 130 requires stations to be classified as open or enclosed (NFPA 130, 3.3.55). An open station is defined as a station that is constructed such that it is directly open to the atmosphere and smoke and heat are allowed to disperse directly into the atmosphere (NFPA 130, 3.3.55.2) Direct dispersion is passing to atmosphere without accumulation of smoke or heat in occupied areas. An enclosed station is defined as a station or portion thereof that does not meet the definition of an open station (NFPA 130, 3.3.55.1).

The station consists of platforms which are located outdoors and covered by canopies which allow smoke and heat to disperse readily. These portions of the station are considered as open. Further, the up-and-over pedestrian walkway, stairs, and ramp will be constructed such that smoke and heat will readily disperse and are considered 'open'.

5.2.3 Structural Fire Resistance

Table 2 indicates the minimum fire-resistance ratings required for any new or altered building structural elements (MUBC 601). Note that the station will consist of a mixed construction type of both Type IIB and Type IV/HT construction. **The station's structure will be designed such that any combustible components and connections minimally comply with the criteria for heavy timber contained in MUBC Section 602.4.**

Fire Resistance Rating of Building Elements		
Building Element	**Type IIB [Type II (000)] Fire Resistance Rating**	**Type IV HT [Type IV (2HH)] Fire Resistance Rating**
Primary structural frame	0 hours	HT
Exterior bearing walls	0 hours	2 hours
Interior bearing walls	0 hours	1/HT
Nonbearing exterior walls	See Section 5.2.5	
Floor construction and secondary members	0 hours	HT
Roof construction and secondary members	0 hours	HT

TABLE 2: FIRE-RESISTANCE RATINGS FOR BUILDING STRUCTURAL ELEMENTS

5.2.4 Building Height and Area

The height and area of the expansion must not exceed the limitations of MUBC 503 and NFPA 130 as determined by the fire hazard analysis of potential fire exposure hazards to the strucutre (NFPA 130, 5.2.2.1). The proposed addition of the station results in a footprint area of approximately 9,325 square feet and a two-story structure. **As the structure is minimally of Type IIB construction (most restrictive), the proposed addition is permitted within the limitations of MUBC 503 which permits 2-stories and 9,500 square feet without including increases for open frontage. Refer to the fire hazard analysis contained in Appendix B for additional details on compliance with NFPA 130.**

5.2.5 Exterior Walls

The opening limitations and ratings for exterior walls are based on the fire separation distance for each wall, measured from the building face to the closest interior lot line, the centerline of a street, alley, or public way, or to an imaginary lot line between two buildings (MUBC 202). MUBC Section 602 and 705.8 indicate the opening limitations and ratings required for the exterior walls based on fire separation distance.

The exterior walls of the station are provided with at least 30 feet of fire separation distance around the perimeter. As such the exterior walls are permitted to be non-fire-resistance rated with unlimited unprotected openings.

5.3 Interior Walls and Partitions

5.3.1 Fire/Smoke Resistive Assemblies

Table 3 identifies the interior walls and partitions within the work area which are required to be composed of fire/smoke resistive assemblies.

Fire/Smoke Resistive Assemblies		
Type of Assembly	**Construction**	**Code Reference**
Public/Non-public occupancy separation[1]	2-hour fire barrier and horizontal assembly	NFPA 130, 5.2.4.2 & MUBC 508.4

TABLE 3: FIRE/SMOKE RESISTIVE ASSEMBLIES

Please refer to the Life Safety Plans for the project for details regarding the locations of fire-resistance rated walls and partitions.

NFPA 130 Section 5.2.4.1(1) permits vertical openings such as stairs and escalators used by passengers to be unenclosed. Further, NFPA 130 Section 5.2.4.1(3) permits public areas on different levels in enclosed stations to be interconnected provided that fire separation is not required for smoke control or other fire protection purposes. In the case of this station, a fire rated separation is not required between the public floor levels for smoke control or fire protection purposes. As such, the new elevator hoistways are permitted to be composed of non-rated construction and will interconnect the public floor levels in accordance with NFPA 130.

5.3.2 Signage/Identification

All new or altered fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions, or any other wall required to have protected openings or penetrations within the work area will be permanently identified with signs or stenciling (MUBC 703.7). The identification will:

- Be located in accessible concealed floor, floor-ceiling, or attic spaces.
- Be located within 15 feet of the end of each wall and at intervals not exceeding 30 feet measured horizontally along the wall or partition.
- Include lettering not less than 3 inches in height, with a minimum 3/8-inch stroke width, in a contrasting color, incorporating the suggested wording "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS".

5.3.3 Doors

New doors and their corresponding components are required to have fire-resistance ratings and meet the required testing standards as specified in Table 4. All doors required to be fire-resistance-rated are required to be designed, installed, and labeled in accordance with NFPA 80 (MUBC 716.5):

[1] A fire-resistance rating is not required for agents' or information booths (NFPA 130, 5.2.4.4).

Door Requirements				
Wall Type	**Required Wall Rating**	**Minimum Fire Door Rating**	**Performance Criteria[2]**	**Code Reference**
Fire barriers	1 hour	3/4 hours	NFPA 252 or UL 10C	MUBC 716.5
	2 hours	1.5 hours		

TABLE 4: DOOR REQUIREMENTS

5.3.4 Penetrations

Penetrations of fire-resistance-rated walls and horizontal assemblies in the work area that are not protected with dampers or a shaft are required to comply with this section. Ducts and air transfer openings in the work area that are protected by dampers are required to comply with the "Ducts and Air Transfer Openings" section of this report.

5.3.4.1 Fire-Resistance-Rated Walls and Partitions

Through- and membrane-penetrations of fire-resistance-rated walls within the work area are required to comply with the following (MUBC 714.3.1):

- Penetrations are installed as tested in an approved fire-resistance-rated assembly (MUBC 714.3.1.1), or
- Penetrations are protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water and will have an F rating of not less than the required fire-resistance rating of the wall penetrated (MUBC 714.3.1.2)
- Membrane penetrations by electrical boxes are permitted without an approved firestop system when protected in accordance with MUBC 714.3.2.

5.3.4.2 Horizontal Assemblies

Penetrations of fire-resistance rated floor, floor/ceiling assembly, or roof/ceiling assemblies in the work area are required to comply with the following (MUBC 714.4.1):

- Through penetrations are installed as tested in an approved fire-resistance-rated assembly (MUBC 713.4.1.1), or
- Through penetrations are protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water and will have an F rating/T rating of not less than 1 hour but not less than the required fire-resistance rating of the floor penetrated (MUBC 714.4.1.2)

Refer to MUBC Sections 714.4.2 and 714.4.1.2 for various exceptions for through and membrane penetrations of horizontal assemblies.

[2] All doors will be self- or automatic closing and provided with an active latch bolt that will secure the door when it is closed (MUBC 716.5.9)

5.3.5 Ducts and Air Transfer Openings

Fire and smoke dampers are required where ducts and air transfer openings penetrate walls as specified in MUBC. Where dampers are installed, they are required to be listed and bear the label of an approved testing agency (MUBC 717.3.1). Fire dampers are required to be tested in accordance with UL 555 and smoke dampers are required to be tested in accordance with UL 555S. Combination fire/smoke dampers are required to comply with both test standards.

Fire dampers are required to be rated for 1.5 hours unless they are installed in a 3-hour or greater assembly, they are required to be 3-hour rated (MUBC 717.3.2.1). Smoke damper leakage ratings are required to be Class I or II. Elevated temperature ratings are not permitted to be less than 250°F (MUBC 717.3.2.2). Combination fire/smoke dampers are required to comply with both rating requirements (MUBC 717.3.2.3). Refer to MUBC 716.3.3 for required damper actuation methods.

Fire, smoke, and fire/smoke dampers are required to be provided with an approved means of access that permits inspection and maintenance of the damper and its operating parts. Access points are required to have permanent labels with letters that are not less than ½ inch in height that reads "FIRE/SMOKE DAMPER, SMOKE DAMPER, or FIRE DAMPER".

5.4 Interior Finishes, Furnishings, and Contents

5.4.1 Wall and Ceiling Finishes

New interior finishes are required to be noncombustible in enclosed portions of stations, unless they comply with one of the following (NFPA 130, 5.2.5.1):

- Exhibit a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 when tested in accordance with ASTM E 84; or
- Are foam plastic insulation, textile wall or ceiling coverings, polypropylene high-density polyethylene, or another material tested in accordance with NFPA 286 and meeting the following criteria:
    - Flames must not spread to the ceiling during the 40 kW exposure;
    - Flames must not spread to the outer extremities of the sample on any wall or ceiling;
    - Flashover, as described in NFPA 286, must not occur;
    - The peak heat release rate must not exceed 800 kW; and
    - The total smoke released throughout the test must not exceed 1000 m^2.

New interior finishes in open portions of stations are required to comply with the requirements of MUBC Chapter 8 and NFPA 101 Section 10.2. The flame spread and smoke-developed indexes must not be greater than that specified in the Table below based on the occupancy classifications (MUBC 803.11 & NFPA 101, A10.2).

Minimum Interior Wall & Ceiling Finish Requirements			
Occupancy Classification	**Exit Enclosures**	**Corridors, Exit Access Stairways/Ramps**	**Rooms and Enclosed Spaces**
A-3	A	A	B
B	A	B	C

TABLE 5: MINIMUM WALL AND CEILING RATING REQUIREMENTS

5.4.2 Floor Finish

New interior floor finish materials are required to be noncombustible or exhibit a critical radiant flux not less than 0.8 W/cm² when tested in accordance with ASTM E 648 (NFPA 130, 5.2.5.2).

5.4.3 Combustible Furnishings and Contents

New permanent rubbish containers the station must be manufactured of noncombustible materials (NFPA 130, 5.2.7.2).

New seating furniture must be noncombustible or it must have limited rates of heat release when tested in accordance with ASTM E 1537 as follows (NFPA 130, 5.2.7.3):

- The peak rate of heat release for a single seating furniture item must not exceed 80 kW.
- The total energy released by a single seating furniture item during the first 10 minutes of the test must not exceed 25 MJ.

5.5 Fire Protection Systems

5.5.1 Automatic Sprinkler System

The existing station is not protected by an automatic sprinkler system. The existing and proposed expansion is not required to be sprinkler protected as part of the project as the station will not be enclosed (NFPA 130, 5.4.4.2). No new storage rooms or rooms with combustible loading will be created as a result of the project. Therefore, a sprinkler system is not required to be provided.

5.5.2 Standpipe System

The existing station is not served by a standpipe system. A new standpipe system is not required as the work area is not located more than 50 feet above or below the lowest level of fire department access and the station will not be enclosed (IEBC 804.3 & NFPA 130, 5.4.5.1).

5.5.3 Fire Extinguishers

Portable fire extinguishers are required within the work area and are required to be selected and installed in accordance with this section and NFPA 10 (MUBC 906.1). Fire extinguishers are required to be installed in the elevator machine rooms in accordance with MUBC Section 906.

In public areas, portable fire extinguishers are required in such number, size, type, and location as determined by the AHJ (NFPA 130, 5.4.6).

5.6 Emergency Systems

5.6.1 Fire Alarm and Detection Systems

The existing station is not protected by a fire alarm and detection system. The existing and proposed expansion is not required to be protected as part of the project as the station will not be enclosed (NFPA 130, 5.4.1). The station will be provided with a new fire alarm system with emergency voice/alarm capabilities as part of the project.

5.6.2 Emergency Communication

A public address (PA) system and emergency voice/alarm reporting devices, such as emergency telephone boxes or manual fire alarm boxes conforming to NFPA 72, are required in the station (NFPA 130, 5.4.2.1).

The station is required to be equipped with an approved emergency voice/alarm communication system so that appropriate announcements can be made regarding fire alarms, including provisions for giving necessary information and directions to the public upon receipt of any manual or automatic fire alarm signal (NFPA 130, 5.4.3 & 10.1).

5.6.3 Standby/Emergency Power Systems

The existing station is not provided with an emergency power system. An emergency power system will not be installed as the station will not be enclosed (NFPA 130, 5.4.8.1).

5.7 Means of Egress

5.7.1 Hazardous Means of Egress

MUBC Section 102.6.4 states that existing means of egress elements can retroactively be required to be upgraded regardless of the planned scope of work if deemed hazardous by the building official. Additionally, NFPA 1 Section 14.4.1 requires existing means of egress components to be maintained in a safe and operable condition. The following summarizes the hazardous conditions observed on site.

1. There is no exit signage on the platform or in the lobby. **This project will include the addition of exit signs throughout the station in accordance with MUBC 1013.1.**
2. Trash receptacles in the station are combustible (NFPA 130, 5.2.7.2). **The existing trash receptacles will be replaced with noncombustible trash containers as part of the project**.

5.7.2 Evacuation Time

The existing station utilizes two open air stairways from the platform to a point of safety. The proposed expansion would consist of an up-and-over platform that is served by a stair and a ramp on both platforms. The stair utilized by the up-and-over platform egress directly to a

point of safety. A safe dispersal area will also be provided for the new platform to provide an additional means of egress for the platform.

An NFPA 130 emergency egress evaluation was performed for the station. The evaluation concluded that the station passes the 4-minute test and the 6-minute test. Refer to Appendix A for details associated with the station evacuation times.

NFPA 130 Egress Calculations			
Platform	**Time to Clear Platform**	**Time to Reach a Point of Safety**	**Pass/Fail?**
Existing Platform	0.52 minutes	0.63 minutes	Pass
New Platform	2.69 minutes	4.92 minutes	Pass

TABLE 6: EXISTING STATION NFPA 130 EGRESS TIMES

5.7.3 Number of Means of Egress

At least two remotely located means of egress are required to be provided from the platform (NFPA 130, 5.3.3.6). **The platforms are currently provided with at least two remote means of egress such that the station is compliant with NFPA 130. The safe dispersal area will be separated by 2-hour rated construction where adjacent to the station exit access stair extending to the end of the new south platform in order to afford adequate protection for evacuating passengers (NFPA 130, 3.3.42).**

5.7.4 Common Path of Travel

The common path of travel from the ends of the platforms is not permitted to exceed 82 feet or one car length, whichever is greater (NFPA 130, 5.3.3.5). **The common path of travel distance on both platforms is less than 82 feet which is compliant with NFPA 130.**

5.7.5 Travel Distance

The maximum travel distance from the most remote point on a platform to a point at which a means of egress route leaves the platform is not permitted to exceed 325 feet (NFPA 130, 5.3.3.4). **The maximum platform travel distance for the station platform is 63′ 5″ respectively which is compliant with NFPA 130.**

5.7.6 Stairs

All new or altered stairways are required to be constructed in accordance with NFPA 130 and MUBC 1011 as indicated in this section. The width of stairways is required to be determined as specified in NFPA 130 based on required evacuation times, but is not permitted to be less than 44 inches (NFPA 130, 5.3.5.2). Stairways are required to have a minimum head room clearance of 80 inches, measured vertically from a line connecting the edge of the nosings. Such headroom is required to be continuous above the stairway to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance is required to be maintained the full width of the stairway and landing (MUBC 1011.6).

Stair riser heights are required to be 7 inches maximum and 4 inches minimum. The riser heights are required to be measured vertically between the leading edges of adjacent treads. Rectangular tread depths are required to be 11 inches minimum measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge (MUBC 1011.5.2). Stair treads and risers are required to be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth is not permitted to exceed 3/8 inch in any flight of stairs (MUBC 1011.5.4). A flight of stairs is not permitted to have a vertical rise greater than 12 feet between floor levels or landings (MUBC 1011.8).

A floor or landing is required at the top and bottom of each stairway. The width of landings is not permitted to be less than the width of stairways they serve. Every landing is required to have a minimum dimension measured in the direction of travel equal to the width of the stairway. Such dimension need not exceed 48 inches where the stairway has a straight run. Doors opening onto a landing are not permitted to reduce the landing to less than one-half the required width. When fully open, the door is not permitted to project more than 7 inches into a landing (MUBC 1011.6).

5.7.7 Exit Signage

Exit and exit access doors are required to be marked by an approved exit sign readily visible from any direction of egress travel (MUBC 1013.1). The path of egress travel to exits and within exits is required to be marked by readily visible exit signs to clearly indicate the direction of egress travel where the exit or path of travel is not immediately visible. Exit signs within corridors and exit passageways are required to be placed such that no point is more than 100 feet or the listed viewing distance for the sign, whichever is less, from the nearest visible exit sign. Exit signs are not required in rooms or areas that require only one exit or exit access. **Exit signage compliant with MUBC 1013 will be provided throughout the station.**

5.7.8 Egress Illumination

The means of egress, including the exit discharge, is required to be illuminated at all times the building served by the means of egress is occupied (MUBC 1008.1). The illumination level is not permitted to be less than 1 footcandle (11 lux) at the walking surface (MUBC 1008.2)

In the event of power supply failure, an emergency electrical system is required to automatically illuminate all of the following areas (MUBC 1008.3):

- Aisles and unenclosed egress stairways in rooms and spaces that require two or more means of egress.
- Corridors, interior exit stairways, and exit passageways.
- Exterior egress components at other than the level of exit discharge until exit discharge is accomplished.
- Interior exit discharge elements.
- Exterior landings for exit discharge doorways.

The emergency power system is required to provide power for a duration of not less than 90 minutes and is required to consist of storage batteries, unit equipment, or an on-site generator (MUBC 1008.3). The initial illumination is required to be an average of 1 footcandle (11 lux) and a minimum at any point of 0.1 footcandle (1 lux) measured along the path of egress at the floor level. Illumination levels are permitted to decline to 0.6 footcandle (0.6 lux) average and a minimum of 0.06 footcandle (0.6 lux) at the end of the emergency lighting time duration (MUBC 1008.3.5). **Emergency egress lighting compliant with MUBC 1013 will be provided throughout the station.**

5.7.9 Accessible Means of Egress

Accessible means of egress are not required in alterations to existing buildings (MUBC 1009.1 Exception 1). However, accessible means of egress are required to be provided for the new platform as part of this project. The accessible means of egress will consist of an exit access stairway, an accessible ramp, and the exterior area for assisted rescue (MUBC 1009.2).

The ramp must have a minimum clear width of 36 inches between the handrails to be considered an accessible route (ADA 405.5 & ICC A117.1 405.5). The exit access stair must provide at least 48" clear width between the handrails, however a safe dispersal area is not required since a two-way communication system will be provided at each elevator landing (MUBC 1009.3, Exception 4).

The exterior safe dispersal area must be sized to accommodate one wheelchair space of 30 inches by 48 inches for each 200 occupants or portion thereof, based on the occupant load served by the safe dispersal area (MUBC 1009.7.1). Based on the occupant load of the station, a total of three wheelchair spaces are required within the exterior safe dispersal area. Stairways that are part of the assisted rescue must provide a clear width of 48 inches between handrails (MUBC 1009.7.4).

5.7.10 Exit Discharge

The means of egress on the west end of the new south platform will not provide access to a public way. As such, it will be designed as a safe dispersal area in accordance with MUBC Section 1028.5. The safe dispersal area will comply with the following:

1. Sized to accommodate not less than 5 square feet for each person (**minimum of 795 square feet**). The safe dispersal area will be provided with a total area of 908 sf.
2. Will be permanently maintained and identified as a safe dispersal area.
3. Will be provided with a safe and unobstructed path of travel from the platform.

5.8 Accessibility

5.8.1 ADA Application

All new work will be designed to be fully accessible in accordance with the MUBC and ADA.

Although not enforced by any authority having jurisdiction on the project, the requirements of the 2010 Americans with Disabilities Act Accessibility Guidelines (ADA) are also applicable and enforced through civil litigation only.

ADA requires altered portions of an existing building to be readily accessible to and usable by individuals with disabilities to the maximum extent feasible (ADA 36.402(a)(1)). Further, alterations to primary function areas should be made such that the level of accessibility, including the path of travel to the space, is made accessible to the maximum extent feasible. When determining if the upgrade is feasible, the ADA requirements stat-e that the upgrade to the path of travel is disproportionate to the project ***when the cost to perform the work exceeds 20% of the cost of the alteration to the primary function area***. Primary function areas are not limited to public uses areas and may include lobbies, offices, meeting rooms, etc. In choosing which accessible elements to provide if the cost is disproportionate, priority should be given to those elements that will provide the greatest access, in the following order:

- An accessible entrance
- An accessible route to the altered area
- At least one accessible restroom for each sex or a single unisex restroom
- Accessible drinking fountains
- Accessible telephones

5.9 Energy

The proposed work is required to comply with the commercial provisions of the Maine Uniform Building and Energy Code, which is an amended version of the 2009 International Energy Conservation Code.

Additions, alterations, renovations, or repairs to an existing building, building system, or portion thereof are required to conform to the provisions of the 2015 IECC as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with the 2015 IECC (IECC 503.1).

5.10 Elevator

The new elevators are required to comply with the Maine Elevator & Tramway Rules & Laws (METRL) which is an amended version of ASME A17.1.

-End of Report-

Appendix A: NFPA 130 Egress Calculations

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NFPA 130 Station Egress Evaluation
Wells Station Expansion – Wells, ME

Prepared for:
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500 Southborough Drive, Suite 105B
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January 26, 2024

Prepared by:

Austin Smith

Reviewed by:

Carl Nelson, P.E.

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1. INTRODUCTION

VHB has retained Code Red Consultants to provide fire protection and life safety code consulting services for the Wells Station Expansion Project.

An egress analysis has been performed for the proposed Wells Station expansion which evaluates the adequacy of the existing and proposed means of egress system to safely evacuate occupants based on a worst-case emergency condition in accordance with Section 5.3.3 of NFPA 130, *Fixed Guideway and Passenger Rail Systems* (2017 Edition).

Egress from a station is evaluated in accordance with the performance-based methodology presented in NFPA 130 Section 5.3. This method determines the total time it takes for a representative worst-case occupant load to traverse the necessary travel distances out of the station and to navigate the limiting egress components along their path (i.e. stairs, doors). The egress system is required to allow occupants to evacuate the platform in less than 4 minutes and reach a point of safety in less than 6 minutes (NFPA 130, 5.3.3.1 & 5.3.3.2).

Note: a point of safety is considered as either (1) an at-grade point beyond the station, or (2) the entrance to an enclosed exit enclosure stair that discharges to the public way (NFPA 130, 3.3.35).

2. APPLICABLE CODES & STANDARDS

Building	Maine Uniform Building Code (MUBC), referenced by the Maine Uniform Building and Energy Code (MUBEC) Chapter 3, which is an amended version of the 2015 International Building Code (IBC) and 2015 International Existing Building Code (IEBC)
Transit & Rail	2017 Edition of NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems as referenced by NFPA 1
Fire	2018 Edition of NFPA 1, Fire Code as adopted by the Rules of the State Fire Marshal Chapter 30

3. PROJECT DESCRIPTION

Wells Station is situated between Dover, NH and Saco, ME stations on the Amtrak Downeaster rail line:

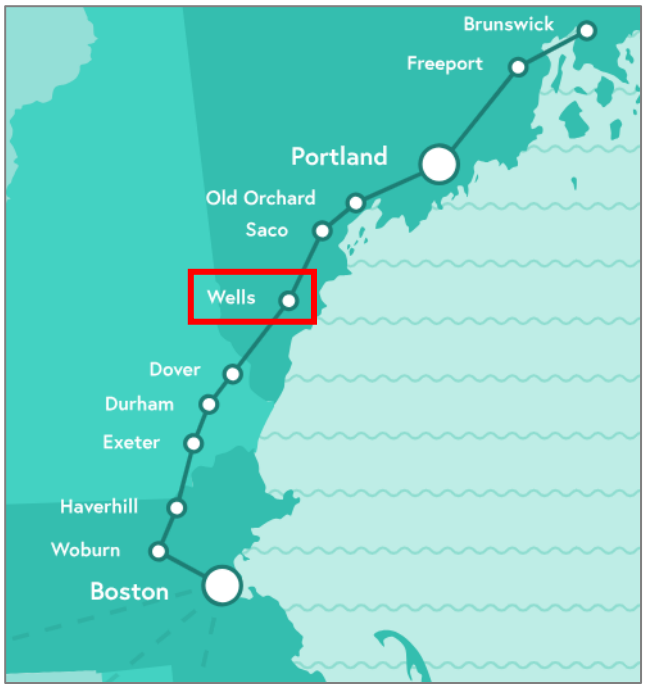

FIGURE 1: AMTRACK DOWNEASTER RAIL LINE

The existing station consists of a single platform that serves Amtrak Downeaster outbound and inbound trains. The existing platform configuration permits a single train to be within the station and is served by two stairs. The proposed expansion would permit two trains to be within the station simultaneously and would be served by a stair leading to a pedestrian bridge to the existing platform and an area of refuge located off of the west end of the proposed platform.

4. EMERGENCY CONDITION OCCUPANT LOAD DETERMINATION – COMMUTER RAIL

This egress analysis is based on a worst-case emergency condition that assumes a single train arrives at each platform, while concurrently the platform is assumed to be occupied based on peak ridership figures (NFPA 130, 5.3.2.1). The total occupant load that must be evacuated from each platform is the sum (1) the platform entraining load and (2) the incoming trainload under consideration (NFPA 130, 5.3.2.5 (3)).

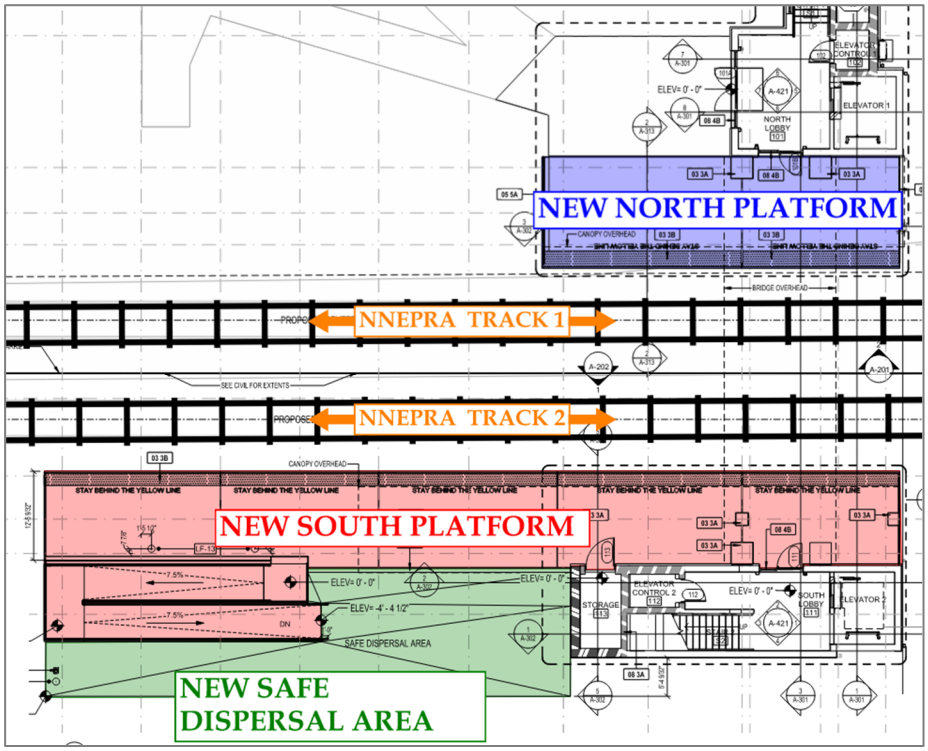

FIGURE 2: EMERGENCY CONDITION TRAINS

The total occupant load that must be evacuated from the platform is the sum of (1) the platform entraining load and (2) the incoming train loads from Dover, NH and Saco, ME stations (NFPA 130, 5.3.2.5(3)).

Occupant load data for the Amtrak Downeaster rail line was obtained by means of an email on April 1, 2019 from Fennick McCredie Architecture architect Agnes Jacob. The data provided consisted of ridership figures based on a 95th percentile scenario with an entraining occupant load of 80 passengers. An additional 10% factor was added to account for increases in ridership resulting in a total entraining occupant load of 88 occupants. Further, the email advised that the crush capacity of trains is 300 occupants.

To account for the worst-case scenario, it is assumed two trains at capacity are within the station with the platforms occupied based on peak ridership figures. Therefore, the total occupant load utilized for this analysis is 688 occupants.

4.1 Crush Capacity

The train loads cannot exceed the crush capacity of trains. Based on information in an email received from Agnes Jacob at Fennick McCredie Architecture on April 1, 2019, the crush capacity of the Amtrak Downeaster rail line is 300 occupants. Therefore, all trains are limited to an occupant load no higher than 300 occupants.

4.2 Platform Staff

It is our understanding that the Commuter Rail platform at Wells Station is normally not occupied by staff. As such, platform staff have not been considered in this analysis.

5. SUMMARY OF RESULTS

The following is a summary of results based upon the existing and proposed conditions at Wells Station and the most conservative ridership figures published by Amtrak:

Commuter Rail Platform – Amtrack Downeaster Line					
Year	**Emergency Condition Occupant Load**	**Time to Clear Platform (Min)**	**Pass/Fail (4-Min Test)**	**Time to Reach a Point of Safety (Min)**	**Pass/Fail (6-Min Test)**
Existing	344	0.52	Pass	0.63	Pass
Proposed	344	2.69	Pass	4.92	Pass

Refer to the life safety plans illustrating the egress system for the station. The full egress calculations for the existing & proposed condition can be found in Appendix A.

APPENDIX A: EGRESS CALCULATIONS

Wells Station - NFPA 130 Egress Calculations - Proposed Station

New Platform - 4-Minute Timed Egress Evaluation (NFPA 130, 5.5.6.1)

Occupant load = **344** persons

Egress Element	in.	pim	p/min
Platform to Pedestrian Walkway (Upward)			
Stair 4	63	1.41	88
(1) Single Leaf Door	-	60	60
		Limiting Capacity =	60
Ramp 1	57	2.08	68
		Total Capacity =	128

F_p (time to clear platform) = Platform Occupant Load / Platform Exit Capacity

$F_p = \frac{344}{128}$

$F_p =$ 2.69 minutes

In Test No. I, the time to clear the platform is found to be 2.69 minutes. This meets the requirement of NFPA 130 Section 5.5.6.1.

6-Minute Timed Egress Evaluation (NFPA 130, 5.5.6.2)

Occupant Load Distribution to Means of Egress

The occupants are distributed to each stair and ramp in a manner that is proportional to the egress components' width.

New Platform
Total Occupant Load = 344

	Width	Capacity	Occupant Load
Stair 4	62	87	193
Ramp 1 (Safe Dispersal Area)	57	68	151

Stair 4 Path to Point of Safety

Occupant load = **193** persons

Egress Element	in.	pim	p/min
Platform to Pedestrian Bridge (Upward)			
(1) Single Leaf Door	-	60	60
Stair 4	62	1.41	87
		Limiting Capacity =	60
Pedestrian Bridge to Point of Safety			
Stair 3	62	1.41	87
Double Door	66	2.08	137
		Limiting Capacity =	87

Stair 4 Path

Walking Time for Longest Exit Route	ft	fpm	min
Platform to Point of Safety			
On Platform to Stair 4, T_1	64	124	0.52
Stair 4 to Pedestrian Bridgeway, T_2	21	48	0.44
Pedestrian Bridge to Stair 3, T_3	82	200	0.41
Stair 3 to Lobby, T_4	21	48	0.44
Lobby to Pointof Safety, T_5	23	200	0.12
Total Walking Time, $T = T_1 + T_2 + T_3 + T_4 + T_5$			1.93

Test No. 2 . Evacuate the platform occupant load from the most remote point on the platform to a point of safety in 6 minutes or less.

W_p (waiting time on platform exits) = $F_p - T_1$
F_p (time to clear platform) = Platform Occupant Load / Platform Exit Capacity

$F_p = \frac{193}{60}$

$F_p =$ 3.22 minutes

$W_p =$ 3.22 - 0.52 = 2.7 minutes

W_c (waiting time to clear lobby exits) = $F_c - F_p$
F_c (lobby exit flow time) = Lobby Occupant Load / Lobby Egress Capacity

$F_c = \frac{193}{87}$

$F_c =$ 2.22 minutes

$W_c =$ 2.22 - 3.22 = 0 minutes

Total exit time = T + W_p, W_c

Total exit time = 1.93 + 2.7 + 0.29

Total exit time = 4.92 minutes

In Test No. 2, the time to reach a point of safety is found to be 4.92 minutes. This meets the requirement of NFPA 130 Section 5.5.6.2.

Walkway to Safe Dispersal Area

Occupant load = **151** persons

Egress Element	in.	pim	p/min
Platform to Safe Dispersal Area			
Ramp 1	57	2.08	68
		Total Capacity =	68

Walkway Path

Walking Time for Longest Exit Route	ft	fpm	min
Platform to Point of Safety			
On Platform to Ramp 1 , T_1	49	124	0.4
Ramp 1 to Safe Dispersal Area, T_2	79	200	0.4
Total Walking Time, $T = T_1 + T_2$			0.8

Test No. 2 . Evacuate the platform occupant load from the most remote point on the platform to a point of safety in 6 minutes or less.

W_p (waiting time on platform exits) = $F_p - T_1$
F_p (time to clear platform) = Platform Occupant Load / Platform Exit Capacity

$F_p = \frac{151}{68}$

$F_p =$ 2.23 minutes

$W_p =$ 2.23 - 0.4 = 1.83 minutes

Total exit time = T + W_p

Total exit time = 0.8 + 1.83

Total exit time = 2.63 minutes

In Test No. 2, the time to reach a point of safety is found to be 2.63 minutes. This meets the requirement of NFPA 130 Section 5.5.6.2.

Existing Platform - 4-Minute Timed Egress Evaluation (NFPA 130, 5.5.6.1)

Occupant load = **344** persons

Egress Element	in.	pim	p/min
Platform to Point of Safety (Downward)			
Walkway to Point of Safety (Note: 12 inches deducted at the lobby sidewall for capacity calculation)	294	2.08	611
North Lobby to Point of Safety			
(1) Single Leaf Door	-	60	60
Double Door	66	2.08	137
		Limiting Capacity =	60
		Total Capacity =	671

F_p (time to clear platform) = Platform Occupant Load / Platform Exit Capacity

$F_p = \frac{344}{671}$

$F_p =$ 0.52 minutes

In Test No. I, the time to clear the platform is found to be 0.52 minutes. This meets the requirement of NFPA 130 Section 5.5.6.1.

6-Minute Timed Egress Evaluation (NFPA 130, 5.5.6.2)

Occupant Load Distribution to Means of Egress

The occupants are distributed to egress path in a manner that is proportional to the path's width.

Existing Platform
Total Occupant Load = 344

	Width	Capacity	Occupant Load
Platform to Point of Safety	294	611	314
North Lobby Path	-	60	31

Platform to Point of Safety

Occupant load = **314** persons

Egress Element	in.	pim	p/min
Platform to Point of Safety			
Walkway to Point of Safety	294	2.08	611
		Total Capacity =	611

Platform to Point of Safety

Walking Time for Longest Exit Route	ft	fpm	min
Platform to Point of Safety			
On Platform to Point of Safety, T_1	28	124	0.23
Total Walking Time, $T = T_1$			0.23

Test No. 2 . Evacuate the platform occupant load from the most remote point on the platform to a point of safety in 6 minutes or less.

W_p (waiting time on platform exits) = $F_p - T_1$
F_p (time to clear platform) = Platform Occupant Load / Platform Exit Capacity

$F_p = \frac{314}{611}$

$F_p =$ 0.52 minutes

$W_p =$ 0.52 - 0.23 = 0.29 minutes

Total exit time = T + W_p

Total exit time = 0.23 + 0.29

Total exit time = 0.52 minutes

In Test No. 2, the time to reach a point of safety is found to be 0.52 minutes. This meets the requirement of NFPA 130 Section 5.5.6.2.

North Lobby Path

Occupant load = **31** persons

Egress Element	in.	pim	p/min
Platform to Point of Safety			
(1) Single Leaf Door	-	60	60
Double Door	66	2.08	137
		Limiting Capacity =	60
		Total Capacity =	60

North Lobby Path

Walking Time for Longest Exit Route	ft	fpm	min
Platform to Point of Safety			
On Platform to the North Lobby, T_1	31	124	0.25
North Lobby to Point of Safety, T_2	21	200	0.11
Total Walking Time, $T = T_1 + T_2$			0.36

Test No. 2 . Evacuate the platform occupant load from the most remote point on the platform to a point of safety in 6 minutes or less.

W_p (waiting time on platform exits) = $F_p - T_1$
F_p (time to clear platform) = Platform Occupant Load / Platform Exit Capacity

$F_p = \frac{31}{60}$

$F_p =$ 0.52 minutes

$W_p =$ 0.52 - 0.25 = 0.27 minutes

Total exit time = T + W_p

Total exit time = 0.36 + 0.27

Total exit time = 0.63 minutes

In Test No. 2, the time to reach a point of safety is found to be 0.63 minutes. This meets the requirement of NFPA 130 Section 5.5.6.2.

Appendix B: Fire Hazard Analysis

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January 26, 2024

Gordon Edington
Vanasse Hangen Brustlin, Inc.
500 Southborough Drive, Suite 105B
South Portland, ME 04106

RE: Wells Station Expansion
NFPA 130 Fire Hazard Analysis

Code Red Consultants has prepared this analysis for the proposed expansion at Wells Station in Wells, ME. The proposed project includes the use of CLT (cross laminated timber) construction for the interior walls, floors, and canopy roofs of the station. CLT is a combustible material, the use of which requires a fire hazard analysis of potential fire exposure hazards to the structure in accordance with the 2017 Edition of NFPA 130, *Standard for Fixed Guideway Transit and Passenger Rail Systems*.

By means of the below justification and in accordance with NFPA 130 Section 5.2.2.1, the project is proposing to use CLT construction throughout the station.

Project Description

The project consists of the substantial renovation to the existing NNEPRA Wells Station serving the Amtrak Downeaster Rail Line. The project includes the construction of a new fully accessible platform located along the south side of the existing station and a pedestrian bridge that will connect the two platforms together via stairs and elevators on both platforms.

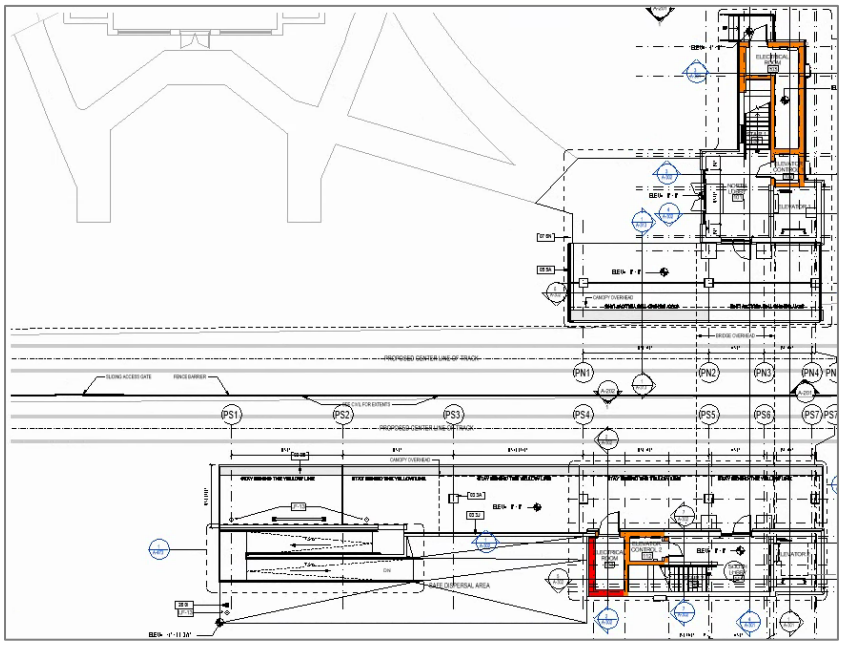


FIGURE 1: PROPOSED STATION CONFIGURATION

Features of the proposed design include:

- Platforms that are open-to-air;
- Construction of an over-build pedestrian bridge that connects the north and south platforms;
- Accessibility upgrades including the installation of elevators on each platform, creating an accessible route throughout the station;
- A new safe dispersal area located off of the new south platform that is accessed via a ramp & stair;
- NFPA 130 compliant egress times such that occupants safely exit the station within 6 minutes;

The proposed renovations will consist of a new south platform that is open-to-air and a pedestrian bridge to connect the new platform to the existing platform (also open-to-air). The existing platform will have approximately 50 lineal feet of canopy coverage and the new platform will have approximately 76 lineal feet of canopy coverage. The new south platform will have a stair that leads to the up-and-over pedestrian walkway bridge and a ramp with slopes not exceeding 8% that leads to an exterior safe dispersal area. Both platforms will be provided with new elevators, a connecting pedestrian bridge to connect the two platforms via stairs, and associated support rooms for the infrastructure required to operate the station. The station will not have an automatic sprinkler system as allowed by NFPA 130 Section 5.4.4. Figures within this report are sourced from the 100% Design Submittal by VHB dated January 2024.

The project design includes the use of CLT for the construction of the new canopy and pedestrian bridge structures of the station. Excerpts are below from the design documentation illustrating where the CLT is to be utilized.

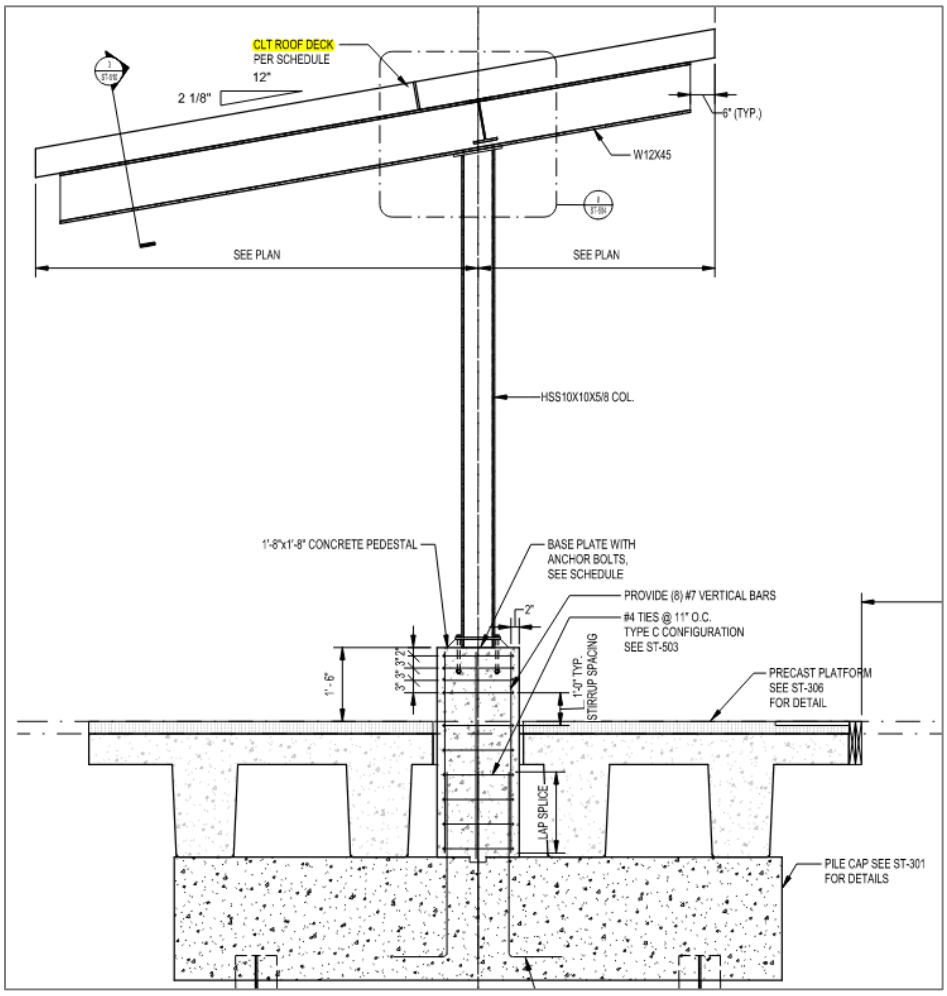


FIGURE 2 - TYPICAL PLATFORM CANOPY DETAIL, SHEET ST-104 BY VHB

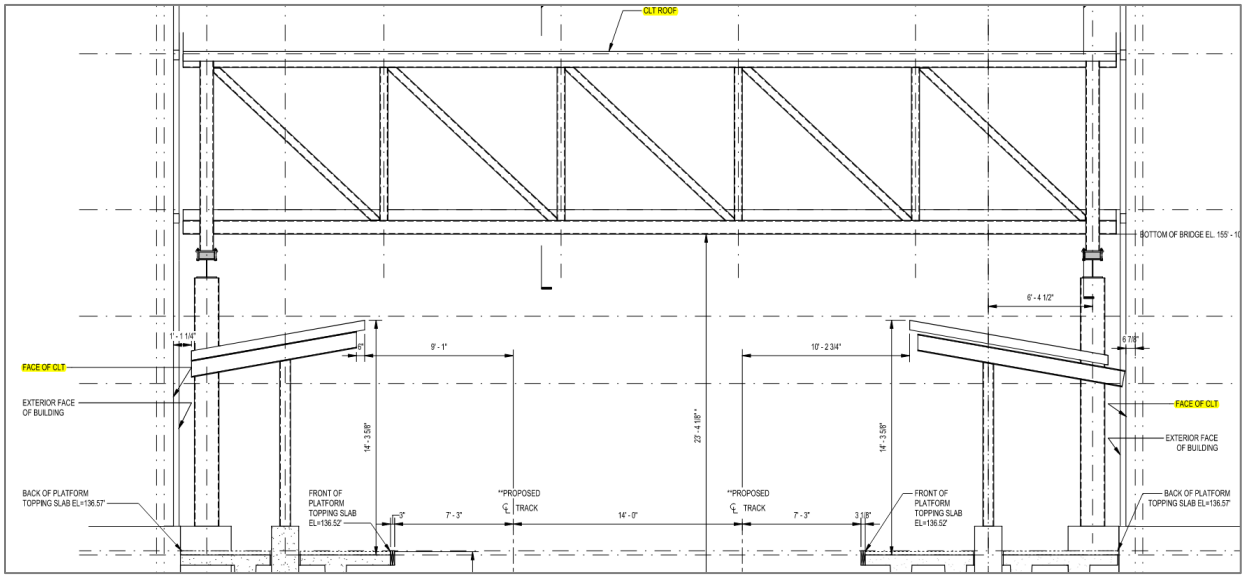


FIGURE 3 – ELEVATION VIEW OF STATION STRUCTURE, SHEET ST-201 BY VHB

Applicable Code Requirements

NFPA 130 requires Type I or Type II noncombustible construction unless as otherwise permitted for open stations in accordance with the provisions of NFPA 101, or as determined by fire hazard analysis of potential fire exposure hazards to the structure (NFPA 130, 5.2.2.1). Due to the mostly combustible nature of the building elements, the station has been submitted as a mix of Type IIB [Type II (000)] and Type IV/HT construction. The Maine Uniform Building Code and NFPA 220 defines Type IV/HT construction as exterior walls of noncombustible materials and interior building elements are of solid or laminated wood without concealed spaces except as otherwise permitted in the applicable codes.

It should be noted that the height and area of the station otherwise complies with the allowable height and area provisions of MUBC Chapter 5 based on the proposed mixed construction type.

Analysis

The fire-life safety principles outlined in NFPA 130 aim to ensure safe conditions for the evacuation of passengers, as described below (NFPA 130, A.4.2.1):

1.) Implementing fire-hardened materials in stations, tunnels, and trains to control fire hazards.
2.) Providing fire detection systems, alarm notifications, communication systems, and clear evacuation routes.
3.) Ensuring tenability by either natural ventilation or mechanical ventilation systems that effectively control smoke.
4.) Enhancing fire safety system reliability by incorporating redundancy and increasing the safety of emergency system wires and cables that may be exposed to fire.

The following analysis is being offered in consideration of the CLT construction within the station based on the principles identified above:

1. **Equivalent Allowable Construction Materials.** The building code has evolved based on the concept of "equivalent risk." As stated in Chapter 3 of the IBC Commentary:

   This concept [of equivalent risk] maintains that, in part, an acceptable level of risk against the damages of fire respective to a particular occupancy type (group) can be achieved by limiting the height and area of buildings containing such occupancies according to the building's construction type.

   The code categorizes and mitigates risk by controlling the allowable height, area, and construction type (materials) of buildings and structures based on occupancy classification.

   For Group A-3 occupancies such as this station, the allowable height and area of Type IIB (noncombustible, unprotected) construction is *less* than the allowable height and area of Type IV/HT (combustible, unprotected) construction (i.e. reduced risk in the context of the code). This is based on the large nominal dimensions of heavy timber charring instead

of readily burning and also providing a degree of fire-resistance based on the robustness of its building elements.

Type IV/HT construction allows for building materials to consist of CLT so long as they meet the requirements of MUBC Section 602.4.

2. **Open Air Station.** The station is an open-air station with platforms. Besides elevators and supporting infrastructure rooms (e.g. elevator machine rooms), the station is exposed to the elements with canopy shelters provided on the platforms for protection of the occupants from weather. The station structural elements also include noncombustible steel components with the platforms consisting of precast concrete.

   The nature of an open-air station is to allow smoke and byproducts of any fire that might occur to escape freely to the atmosphere. The risk of occupants being exposed to built-up levels of smoke, heat, and toxic fire gases is significantly reduced in such a scenario.

3. **Additional Fire-Resistive Protection**. Although CLT is a combustible material, CLT does not readily propagate a fire as it has a charring mechanism. Additionally, all CLT components and connections within the station will be designed such that they meet the minimum nominal dimensions specified by the MUBC. Typically, this would result in a fire-resistance rating of at least 2-hours which is a substantial improvement over Type IIB that is explicitly permitted by NFPA 130. As no fire-resistance rating is required for the structural frame, a floor, roof, or bearing wall system in Type IIB construction, these features provide an additional level of protection creating a more robust building structure compared to a building consisting entirely of Type IIB constructiqon.

4. **Egress Times.** The station's egress system is designed using a prescriptive approach in accordance with NFPA 130 Section 5.3.3, with the full analysis provided under separate cover.

   NFPA 130 requires that a station's means of egress be sized to evacuate occupants off of the platform in no more than 4 minutes and to an approved point of safety in no more than 6 minutes, respectively. An NFPA 130 emergency egress evaluation was performed for the proposed station to evaluate compliance with the 4-minute and 6-minute egress tests. The evaluation concluded that the proposed station not only passes, but is substantially below, both the 4-minute and 6-minute tests. It can be expected that even if the heavy timber is directly exposed to a fire from a train or a combustible material within the station such as a trash barrel, occupants will be able to evacuate the station and reach a point of safety far before the heavy timber materials will begin to propagate a fire. See a summary of the NFPA 130 egress times for the proposed station below:

Commuter Rail Platform – Amtrack Downeaster Line					
Year	**Emergency Condition Occupant Load**	**Time to Clear Platform (Min)**	**Pass/Fail (4-Min Test)**	**Time to Reach a Point of Safety (Min)**	**Pass/Fail (6-Min Test)**
Existing	344	0.52	Pass	0.63	Pass
Proposed	344	2.69	Pass	4.92	Pass

5. **Noncombustible Components & Structures.** The structural framing of the pedestrian bridge along with the foundation & platforms will consist of noncombustible construction consistent with Type IIB construction as permitted by NFPA 130. Additionally, there are no other adjacent structures that would pose a hazard to the station or vice versa.

Conclusion

Based on the information noted above, it is our professional opinion that the use of CLT does not adversely impact the level of safety for passengers or the structure as prescribed by NFPA 130. As such, this fire hazard analysis concludes that the materials proposed are sufficient and meet the intent of the code.

Sincerely,
CODE RED CONSULTANTS

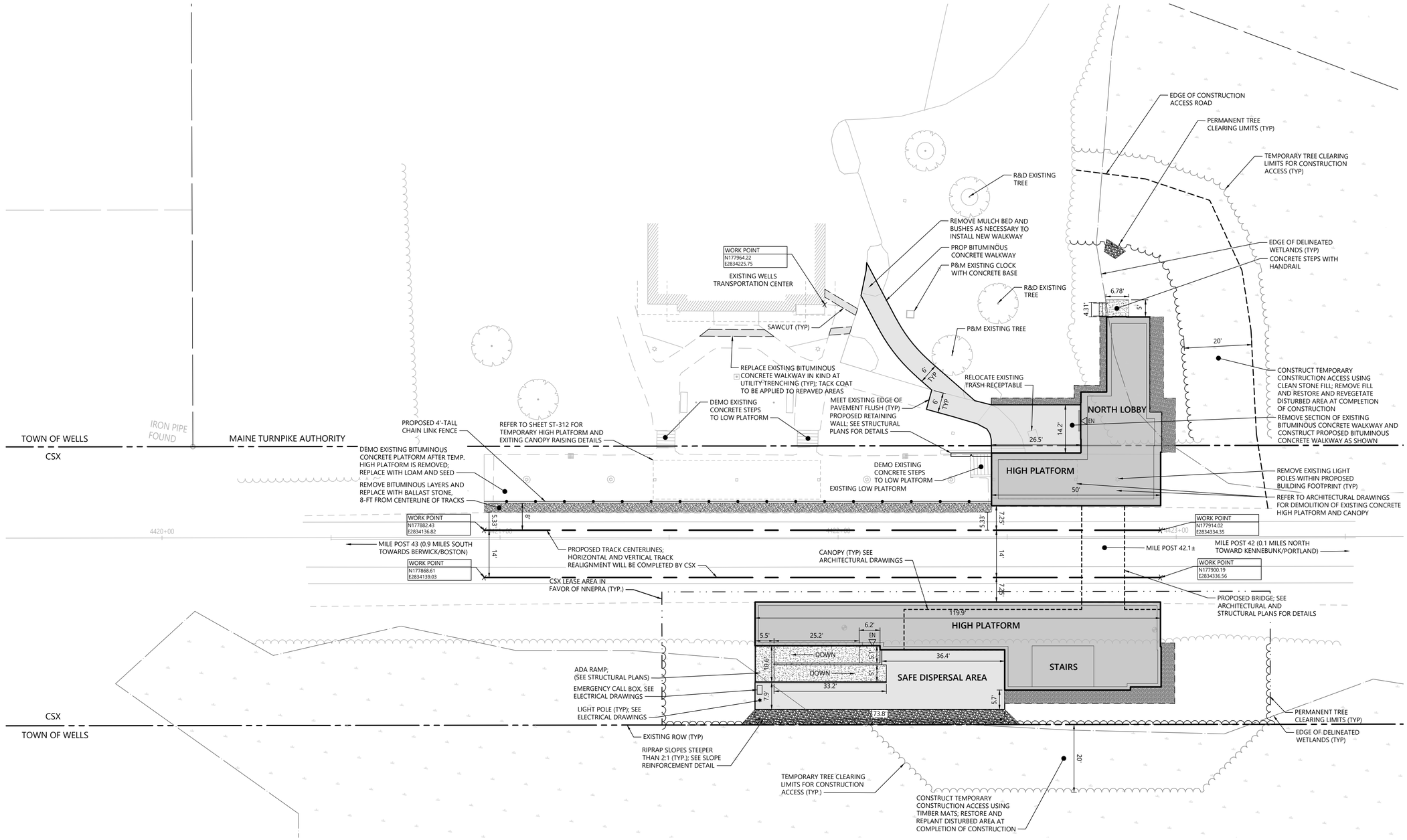
Prepared by:

Austin Smith

Reviewed by:

Carl Nelson, P.E.

ATTACHMENT A – PROJECT SITE PLAN



NNEPRA DOWNEASTER
WELLS AREA IMPROVEMENTS PROJECT
WELLS, MAINE

PROJECT INFORMATION	
DATE	01/19/2024
DESIGNER	VHB
RAILROAD OWNER	CSX
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
REVISIONS 5	
PROJECT COMPLETION DATE	

WELLS TRANSPORTATION CENTER
WELLS STATION EXPANSION

CIVIL SITE PLAN

SHEET NUMBER

C-102