THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Commissioner

David Rodrigue, P.E.
Assistant Commissioner
Andre Briere, Colonel, USAF (RET)
Deputy Commissioner

March 11, 2024

Mr. Karl Benedict
Public Works Supervisor, Wetlands Bureau
Land Resources Management, Water Division
NH Department of Environmental Services
29 Hazen Drive, PO Box 483
Concord, NH 03302

RE: NHDES File Number: 2018-03134/ NHDOT Project # Derry-Londonderry 13065
Standard Dredge and Fill Wetlands Permit Application (RSA 482-A)
Interstate 93 Exit 4A Interchange Project, Derry and Londonderry, NH

Dear Mr. Benedict,

The NH Department of Transportation (NHDOT) would like to request an amendment to the existing Wetlands and Non-Site Specific Permit 2018-03134 that was issued on May 5, 2020, to account for recent design modifications. The design changes associated with Shields Brook to accommodate the proposed future expansion of the Derry Rail Trail have prompted this permit amendment request. However, it is worth noting that the overall impacts for the Interstate 93 Exit 4A Interchange Project have been reduced from the previously permitted quantities. Please refer to the attached 13065B Wetland Impact Update Memorandum for detailed information regarding the design updates and impact modifications.

Suggested Revised Permit Description: NHDOT proposes to dredge and fill a total of 262,539 square feet (SF), which includes 206,115 SF of palustrine forested, scrub shrub, or emergent wetlands and 9,925 SF / 3,826 linear feet (LF) of impacts along intermittent and perennial streams for construction of a new interchange off of I-93 (known as I-93 Exit 4A Derry-Londonderry) and other transportation improvements along Tsienneto Road and State Route 102 (NH 102). Total impact area includes 46,499 SF / 2,052 LF of temporary impacts. Previous compensatory mitigation included a one-time payment in the amount of $3,769,086.39 to the Aquatic Resource Mitigation (ARM) Fund, and construction of a tributary stream referred to as Trolley Car Stream Relocation. No additional mitigation is proposed.

As always, please don't hesitate to call or email if you have any additional questions or concerns.

Sincerely,

Andrew O'Sullivan

Andrew O'Sullivan
Wetlands Program Manager
Room 109 – Tel (603) 271-0556
E-mail – andrew.m.osullivan@dot.nh.gov

Attachments:

NHDES Amendment Request Form (NHDES-W-06-081)
13065B Wetland Impact Update Memorandum (and associated attachments)

cc: Wendy Johnson, NHDOT
Marc Laurin, NHDOT
Peter J. Walker, VHB
Peter Clary, VHB
Town of Londonderry Clerk
Town of Londonderry Conservation Commission
Town of Derry Clerk
Town of Derry Conservation Commission

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March 8, 2024

Mr. Michael Hicks
US Army Corps of Engineers, New England District, Regulatory Division
Permit Project Manager
696 Virginia Rd
Concord, MA 01742-2751

RE: File No. NAE-2005-03061
NH Department of Transportation Interstate 93 Exit 4A Derry-Londonderry
Federal Project IM-0931(201); NHDOT Project 13065

Dear Mr. Hicks,

The NH Department of Transportation (NHDOT) is providing the attached permitting update pursuant to existing permit NAE-2005-03061 that was issued on August 5, 2020, to account for recent design modifications. The update includes design changes associated with Shields Brook to accommodate the proposed future expansion of the Derry Rail Trail, as well as other minor changes. Please refer to the attached 13065B Wetland Impact Update Memorandum for detailed information regarding the design updates and impact modifications.

The overall impacts for the Interstate 93 Exit 4A Interchange Project have been reduced from the previously permitted quantities. Relative to the existing permit description, note that the permitting update results in a decrease in total project impacts of 24, 601 sq. ft (from 287,289 sq. ft. to 262,688 sq. ft.) based on the final design plans for 13065A and 13065B.

As part of the 13065B Wetland Impact Update, this memo serves to address Special Condition #5 of NAE-2005-03061, which states the following:

The Applicant shall fully compensate for any and all lost flood storage volume in current Federal Emergency Management Agency (FEMA) identified 100-year floodplain and floodway due to this project. Prior to this compensation, the Applicant shall provide the Corps of Engineers with all calculations of all lost flood storage volume in current FEMA identified 100-year floodplain and floodway and a compensation plan for review and approval.

Two FEMA mapped floodplains/floodways occur within the 13065 project area: one associated with Shields Brook for the 13065B project and another associated with Tributary E for the 13065C project. The permitted impacts associated with Shields Brook and its FEMA mapped floodplains/floodways have been updated to accommodate the most recent design plans. The enclosed wetland impact update memorandum summarizes the December 2023 hydraulic report which shows that the proposed crossing complies with a “no-rise” at

Shields Brook. The proposed crossing lowers the Base Flood Elevation compared to the existing crossing. Consequently, we consider the 13065B portion of this project to comply with Special Condition #5. This will be reevaluated for the Tributary E crossing in the 13065C portion of the project once that design progresses.

Section 106 review was reopened by FHWA to evaluate the minor design modifications associated with proposed impacts to the M&L Railroad Historic District. The NHSHPO has concurred with the previous finding of *Adverse Effect* to this cultural resource. A Draft *Amended Adverse Effect Memorandum* and *Updated Memorandum of Agreement* are currently being reviewed by NHSHPO and FHWA. The finalized and signed documents will be forwarded to ACOE.

It should be noted that the wetlands were delineated based on the pre 2023 Waters of the United States rule and the ACOE impacts are likely far less based on current regulations.

As always, please don't hesitate to call or email if you have any additional questions or concerns.

Sincerely,

Wendy A. Johnson

Wendy A. Johnson, PE
Project Manager

Room 208 – Tel (603) 271-3909
E-mail – wendy.a.johnson@dot.nh.gov

Attachments:
13065B Wetland Impact Update Memorandum (and associated attachments)

cc: Marc Laurin, NHDOT
Andy O'Sullivan, NHDOT
Peter J. Walker, VHB
Peter Clary, VHB
Town of Londonderry Clerk
Town of Londonderry Conservation Commission
Town of Derry Clerk
Town of Derry Conservation Commission

AMENDMENT REQUEST FORM
FOR A WETLANDS APPLICATION OR PERMIT
Water Division/Land Resources Management
Wetlands Bureau

RSA/Rule: RSA 482-A:3, XIV(e)/ Env-Wt 311.13; Env-Wt 314.07

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

Any request for an amendment to a wetlands application or permit must be submitted to the Department on this form. An applicant may request an amendment to a pending permit application or an existing permit, provided the proposed change does not constitute a "**significant amendment**." A "**significant amendment**" means an amendment which changes the proposed or previously approved acreage of the permitted fill or dredge area by 20 percent or more, includes a prime wetland, or elevates the project's impact classification. This meaning of "significant amendment" shall not apply to an application amendment that is in response to a request from the Department (RSA 482-A:3, XIV(e)).

SECTION 1 - REQUESTED AMENDMENT TYPE AND AMENDMENT CRITERIA

Does the proposed change constitute a "significant amendment" as provided in RSA 482-A:3, XIV(e) and described above? ☐ Yes ☒ No

If you answered "yes" to the previous question, then you cannot request an amendment using this form and must file a new permit application.

☐ AMENDMENT TO PENDING PERMIT APPLICATION, NHDES FILE NUMBER: _____ (proceed to Section 2)

☒ AMENDMENT TO EXISTING PERMIT NUMBER: 2018-03134 (proceed to Section 3)

SECTION 2 - AMENDMENT TO A PENDING PERMIT APPLICATION

☒ Not applicable

To request an amendment to a pending permit application, the applicant must:

- Submit the information required by Env-Wt 311.03, showing the changes prior to the Department's issuance of a final decision on the application, including but not limited to, a revised set of plans and revised application fees for any additional square footage of impacts calculated pursuant to RSA 482-A:3, I(b) or (c) as applicable, and
- Provide notice to each person to whom notice of the original application was sent prior to filing the amended application with the Department (Env-Wt 311.13).

☐ By checking this box, you confirm that you have provided all information required pursuant to Env-Wt 311.03 to the Department and provided the required notice(s) as described above.

SECTION 3 - AMENDMENT TO AN EXISTING PERMIT

☐ Not applicable

To request an amendment to an existing permit, the permittee must:

- Submit the information required and filed with the original permit application, including but not limited to a revised set of plans, and revised application fees for any additional square footage of impacts calculated pursuant to RSA 482-A:3, I(b) or (c) as applicable, and
- Provide notice to all who received notice of the original application prior to filing the amended application with the Department (Env-Wt 314.07).

☒ By checking this box, you confirm that you have provided all necessary information to the Department and provided the required notice(s) as described above.

Memorandum

To: Wendy Johnson, PE
Project Manager

Marc Laurin
Senior Environmental Manager

Date: February 28, 2024

Project #: Derry-Londonderry 13065B
VHB #52768.00

From: Peter J. Walker
Nicole Martin, CWS
Annique Fleurock, PE

Re: NHDES Wetlands Permit No. 2018-03134
Interstate 93 Exit 4A Interchange Project
13065B - Project Update

This memorandum provides an update regarding the Exit 4A project design (Derry-Londonderry 13065B) relative to the NH Department of Environmental Services (NHDES) and US Army Corps of Engineers (Corps) wetland approvals issued on May 5, 2020 (NHDES File #2018-03134), and August 5, 2020 (NAE-2005-03061), respectively. As you know, the design team has recently submitted Preliminary Plans, Specifications, and Estimates (PPS&E), in preparation for a May 2024 bid advertising. Given that the PPS&E submittal is a major design milestone, it provides an opportunity to present updated impact plans and other related information for agency review prior to advancing into the bid and construction phase.

The overall Exit 4A project has been subdivided into separate design contracts to facilitate the right-of-way (ROW) process and to foster a more competitive bidding environment. Specifically, three such construction contracts (13065A, 13065B, and 13065C) have been defined based on the status of ROW acquisition, as well as the location and scope of construction in each segment. **Figure 1** depicts the approximate limits of each contract.

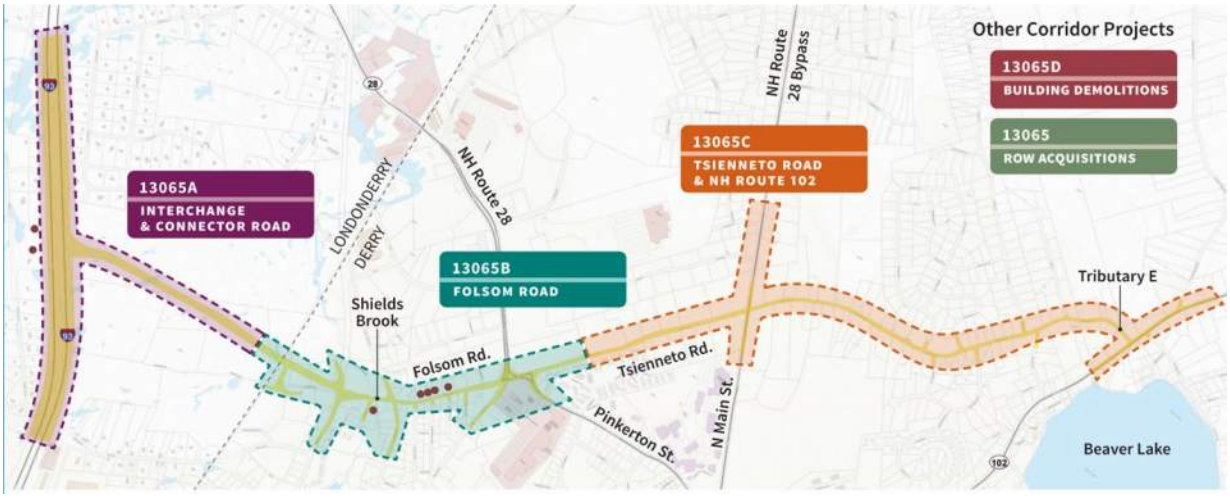

Figure 1. Derry-Londonderry 13065 (Exit 4A) Construction Contract Breakout

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- **Project 13065A** (Interchange and Connector Road) includes Interstate 93 and the new connector road to the east and ends just before the Londonderry-Derry town line. A final wetland impact update was submitted for 13065A on April 4, 2022. This contract was advertised in April 2022 and construction began in the summer of 2022 and continues as of this update.
- **Project 13065B** (Folsom Road) begins at the end of 13065A just west of the Londonderry-Derry town line, extends along Folsom Road and down some intersecting roadways, and ends approximately 800 feet east of the Tsienneto Road and Pinkerton Street Intersection near Sunview Drive. 13065B is expected to be advertised in May 2024 and constructed in 2024-2026. The most current 13065B plans are PPS&E plans dated December 15, 2023; this plan set forms the basis for the updated wetland impact calculations discussed below.
- **Project 13065C** (Tsienneto Road and NH Route 102) begins at the end of 13065B and extends along Tsienneto Road up to and including the work on NH Route 102 (Chester Road). This contract also includes some work along NH Route 28 Bypass north and south of its intersection with Tsienneto Road. 13065C is scheduled to be advertised in March 2025 and constructed in 2025-2027. 13065A and 13065C are being designed by VHB, while 13065B is being designed by our teammate, McFarland-Johnson, Inc. (MJ). We expect to prepare a wetland impact update for 13065C in late 2024 after the slope limits are finalized.

This memorandum focuses on 13065B, the second of the three design segments scheduled for construction. Project 13065B includes construction of:

- A segment of Old Rum Trail, on new alignment, connecting the new Exit 4A interchange to Folsom Road in the Town of Derry;
- New traffic signals at the intersections of the Folsom Road with High Street and Franklin Street;
- Intersection expansion and new traffic signal at the intersection of Folsom Road with NH Route 28, Tsienneto Road, and Pinkerton Street;
- Stormwater treatment to meet Municipal Separate Storm Sewer System (MS4) and Alteration of Terrain (AoT) standards;
- A new bridge carrying Folsom Road over Shields Brook; and
- Construction of a new path for accommodation of the future Derry Rail Trail by others, which would pass under the new bridge that carries Folsom Road over Shields Brook as well as an accommodation for a future at-grade Rail Trail crossing of Folsom Road at the intersection with North High Street.

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A. Wetland Impact Update

An updated wetland impact plan set with a corresponding impact summary table is provided as **Attachment A.** These impact plans were prepared by overlaying the 13065B PPS&E slope limits onto the previously delineated wetlands. The wetlands are as depicted in the plans prepared by Fuss & O'Neill (F&O) dated February 6, 2020, and referenced in the NHDES and Corps approvals (the "approved plans"). MJ used CAD (OpenRoads) to identify the revised wetland impacts and calculate the updated impact totals. Some important considerations include:

- Aside from Wetland 40, detailed in **Section B** below, there have been no other changes or edits to the delineated wetland boundaries for 13065B, so differences in the proposed impacts can largely be attributed to design changes.
- Permanent impacts are based on the actual proposed limits of grading – whether a cut or a fill slope.
- To determine temporary impacts, a 5-foot buffer from the slope limits was applied, like the previous wetland impact plans prepared by Fuss & O'Neill. (This temporary impact buffer was applied conservatively since NHDOT practices do not allow for the contractor to clear within wetlands.)

Overall, based on the current limits, permanent and temporary wetland/stream impacts have decreased by about 24,601 square feet (sq ft), from 287,289 sq ft to 262,688 sq ft. This includes an approximate 28,090 sq ft reduction of permanent jurisdictional wetland and stream impacts (from 244,186 sq ft to 216,096 sq ft). Temporary impacts have increased by approximately 3,489 sq ft (from 43,103 sq ft to 46,592 sq ft) – due in part to the revised design for the relocation of Wheeler Pond Tributary in the 13065A portion of the project (which was detailed in the April 2022 wetland impact update) and the updated Shields Brook design in the 13065B portion of the project detailed in **Section C** of this memo below. A summary of the impacts is presented in **Table 1** provided as **Attachment B.** This table is formatted to align with the NHDES Wetlands Permit Application Form Table and compares the current 13065B wetland impact update with both the 13065A wetland impact update and the permitted/approved impacts.

We reviewed the current plans to identify any notable changes, which are described below.

- **Vernal Pools:** Although not a change from the approved conditions, no impacts to vernal pools are proposed within the 13065B portion of the project. Vernal Pool 9 (VP9) is located within 13065A within the Town of Londonderry but adjacent to 13065B and assessment of potential impacts to VP9 was pending the 13065B design. The result is that previously approved impacts to VP9 have been eliminated. Additionally, impacts to Wetland 35 (W35) and VP8 were assessed during the 13065A update; however, the southern slope line through these resources was adjusted which increased the proposed impacts slightly. See further discussion of the Madden Road Slope Line below for more information.
- **13065B Wetlands:** According to the approved plans and within the 13065B area, approximately 18,426 sq ft of permanent wetland impact (23,331 sq ft of total permanent impact minus 4,905 sq ft of permanent stream impact) and 2,756 sq ft of temporary wetland impact (3,288 sq ft of total temporary impact minus 532 sq ft of temporary stream impact) was approved within 13065B. The current PPS&E plans show approximately 18,767

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sq ft of permanent wetland impact (24,495 sq ft of total permanent impact minus 5,728 sq ft of permanent stream impact) and approximately 3,399 sq ft of temporary wetland impact (3,762 sq ft of total temporary impact minus 363 sq ft of temporary stream impact) within the 13065B area based on the final slope lines. This results in a permanent wetland impact increase (within the 13065B portion of the project only) of approximately 341 sq ft (the current 18,767 sq ft minus the approved 18,426 sq ft) and a temporary wetland impact increase of approximately 643 sq ft (the current 3,399 sq ft minus the approved 2,756 sq ft) within 13065B. Some of the notable wetland impact changes are detailed below.

- **Wetland 40**: Based on the final design, the delineated boundary of Wetland 40 was expanded to account for new additional proposed impacts beyond the previously proposed slope line. VHB Environmental Scientist and NH Certified Wetland Scientist Jacob Tinus (CWS #228) performed this delineation on February 8, 2024. Despite the time of year, snow cover was minimal to absent, and the ground was not frozen so the soils could be assessed. Notes pertaining to this resource are provided in **Section B** of this memo below. As a result of the proposed stormwater outfalls and updated slope limits, Impact BI increased by approximately 1,753 sq ft (was previously 852 sq ft in the approved plans) and a new temporary Impact TCW (215 sq ft) was added by buffering the permanent impact by 5 feet, consistent with how temporary impacts were calculated elsewhere for this project. On the eastern side of the wetland near the paved driveway, a new permanent Impact CW (56 sq ft) and temporary Impact TCX (93 sq ft) were added.
    - For ease in calculating impacts (specifically Impact BI), the previously delineated portion of W40 was quantified as scrub-shrub wetland impact due to its previous PSS1E classification. The expanded portion of Impact BI and new temporary Impact TCW within the expanded delineated area were quantified as forested wetland impact which was the dominant cover class noted in the field for that location (see **Attachment B** and **Section B** of this memo below for more information).

› **Prime Wetlands:** <u>All approved impacts to Prime Wetlands</u> within the 13065B portion of the project (i.e., Impacts BK and TAR) <u>have been eliminated</u>.

› **Madden Road Slope Line Revisions:**

- **W64 and VP9:** Impacts to W64 and VP9 (Impacts BC, BD, BE, and BF) have been eliminated, resulting in an impact reduction of approximately 5,037 sq ft (3,335 sq ft of which were to VP9 with Impact BC). The approved plans showed a cut slope line along the eastern edge of these resources, which led to concern that the entire resources may be drained and lost. Consequently, the entire resource areas were quantified as permanent impact and were accounted for in the mitigation payment. However, given the current design, the Madden Road slope lines are approximately 8 to 10 feet away from the wetland and vernal pool edges so <u>no impacts to those resources are proposed</u>.
- **W35 and VP8:** Impacts to W35 (Impacts AW, BB, and TAL) and VP8 (Impacts AX and TAN) have changed slightly from the 13065A areas in Londonderry due to its proximity to 13065B/Derry, resulting in a total permanent impact increase of approximately 926 sq ft from the approved quantities. That grading was

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revised due to ditch capacity concerns. Only the impacts that changed from the 13065A update are represented on the attached plans and all areas in the Wetland Impact Tables reflect the current design.

- Despite this small permanent impact increase, the overall vernal pool impacts have decreased from the approved quantities by approximately 12,638 sq ft (from 61,615 sq ft to 48,977 sq ft).

› **New Permanent Impacts:**

- A new permanent impact (Impact CU) totaling approximately 79 sq ft is proposed to W85 and the previously approved temporary impact (Impact TAY) to W85 was increased from approximately 63 sq ft to approximately 180 sq ft. This is due to the proposed drainage outlet and associated riprap apron for BMP 1062 which is located north of Folsom Road and east of the Franklin Street Extension behind the Franklin Place Condominiums. Drainage from BMP 1062 will exit through that pipe and discharge into W85 which borders intermittent Stream 72.
- A new permanent Impact (Impact CV) totaling approximately 38 sq ft is proposed to W39 to account for the proposed outfall riprap apron that overlaps the delineated wetland. The temporary impact around the riprap is now labeled as Impact TCV, to separate it from Impact TAP. However, permanent Impact BG within W39 was reduced by approximately 274 sq ft (from 4,379 sq ft to 4,105 sq ft).
- A new permanent Impact (Impact CW) was added to W40, as detailed in the Wetland 40 bullet above.

› **Notable Impact Reduction:** The approved plans showed a permanent impact (Impact BP) of approximately 2,561 sq ft and a temporary impact (Impact TAZ) of approximately 646 sq ft to W46. W46 is located between Folsom Road and Crystal Avenue, north of Laconia Avenue. The current plans show Impact BP to be approximately 1,492 sq ft – which represents an approximate 1,069 sq ft permanent impact reduction. While the temporary Impact TAZ increased slightly by approximately 46 sq ft to a new total of approximately 692 sq ft.

Notable Impact Increases:

› **Shields Brook & Wetland 41:** An update to the approved design of the Shields Brook crossing is proposed to accommodate the future expansion of the Derry Rail Trail. The proposed geomorphically incompatible crossing in this location will be replaced with a compatible crossing. Refer to **Section C** below for more information. This will result in additional impact to Shields Brook (also labeled as Stream 2 or S2 on the plans) and bordering W41 through permanent impacts BL, BM, BN, and BO and temporary impacts TAS, TAT, TAU, TAV, and TAW. The cumulative permanent impact increase is approximately 1,308 sq ft (119 lin ft) and the cumulative temporary impact increase is approximately 205 sq ft.

› **13065B Streams:** Overall, permanent perennial stream impacts (bank and channel) were increased by approximately 823 sq ft (119 lin ft) within 13065B, largely resulting from the design updates associated with Shields Brook, further described in **Section C** below. According to the approved plans, approximately 4,905 sq ft (835 lin ft) of permanent stream impact (Impacts BH, BL, and BO) and 532 sq ft (112 lin ft) of temporary stream impact (Impacts TAQ, TAS, TAU, TAW, and TAX) was approved within the 13065B area. The current PPS&E plans

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show approximately 5,728 sq ft (954 lin ft) of permanent stream impact and approximately 363 sq ft (45 lin ft) of temporary stream impact within the 13065B area based on the final slope lines.

- **Temporary Impacts:** The large overall temporary impact increase from the approved plans resulted from the Wheeler Pond Tributary work that was addressed in the April 2022 wetland impact update. Temporary impact increases resulting from the proposed work within 13065B are minimal.

Additionally, the mitigation calculation was updated with the current impact numbers using the 2018 Aquatic Resource Mitigation (ARM) Fund Calculator (the same calculator that was used for the original permit application). Based on this assessment, no additional mitigation payment is required (in fact, the current calculation shows that NHDOT's previous mitigation payment exceeds the current required mitigation amount by approximately ~$127k due to the total project impact reductions). A table detailing the mitigation calculation and updated NHDES and USACE permit application forms are provided as **Attachments C** and **D**, respectively.

B. Wetland 40

Wetland 40 is a narrow forested and scrub-shrub wetland, with a narrow manmade stormwater swale/detention area dominated by herbaceous and scrub-shrub vegetation that drains directly to the forested wetland. Wetland hydrology is provided by an intermittent stream channel (Stream 11) that emerges within a boulder strewn surface (possibly a dilapidated stone wall) to the west of the property. Stream 11 appears to be fed by an area of ponded water further to the south and west, which was viewed only from a distance due to the proximity of a residential property. The stream channel flattens and widens into the western edge of the wooded portion of the wetland, which is classified as Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated (PFO1E) in that area. Several inches of water were observed across the surface of the wetland in places, and other portions were saturated to the surface. In addition to receiving drainage from Stream 11, Wetland 40 receives hydrology from groundwater seepage along the northern and southern edges of the wetland, and direct drainage from the stormwater swale which meets the wooded portion of the wetland. Dominant vegetation observed within the stormwater swale includes sedges, grasses, asters, cattail (*Typha* sp.), sensitive fern (*Onoclea sensibilis*), and the invasive species, common reed (*Phragmites australis*), and purple loosestrife (*Lythrum salicaria*). Hydrologic indicators observed within the entirety of Wetland 40 include surface water (A1), high water table (A2), saturation (A3), water marks (B1), sediment deposits (B2), and drainage patterns (B10).

Further to the east, the natural wetland transitions to an area of shrub dominated wetland classified as Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated (PSS1E). There, the wetland substrate is sunken, or depressional, and water depths exceed one foot in places, though the wetland drains via a narrow channel from this area that runs parallel to Madden Road then through a culvert that discharges to the north off site.

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Dominant wetland vegetation within the forested and shrub portions of Wetland 40 includes eastern cottonwood (*Populous deltoides*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), winterberry holly (*Ilex verticillata*), gray willow (*Salix cinerea*), silky dogwood (*Cornus amomum*), speckled alder (*Alnus incana*), glossy buckthorn (*Rhamnus frangula*), common buckthorn (*Rhamnus cathartica*), sedge species (*Carex* spp.), and sensitive fern. Hydric soils within Wetland 40 were observed to consist mostly of sandy mucky mineral (S1). Within the stormwater swale, sandy redox (S5) was also observed. The general functions and values of the wooded portions of Wetland 40 include groundwater discharge/recharge, wildlife habitat, and flood storage. Within the stormwater swale sediment/toxicant retention and nutrient uptake may also be provided. Photos of Wetland 40 are provided as **Attachment E**.

Jurisdictional Note: Based on a review of historic plans for American Excavating Corporation (dating back to 1998-2003), the stormwater swale that drains to the natural wetland (in the southeastern portion of the delineated area) was previously constructed and, therefore, may be maintained (dredged) as allowed under NHDES rules. Future maintenance activities of that nature would also be allowed within the previously constructed swale without a permit. This does not apply to the forested and scrub-shrub portions of Wetland 40 which have long established hydrology, hydric soils, and hydrophytic plant communities. Should permanent impacts to the stormwater swale portion of the wetland be necessary to construct elements of the NHDOT Derry/Londonderry 13065 Project (as represented with Impacts CW and TCX), NHDES would likely consider the stormwater swale jurisdictional based on its current unmaintained state, direct hydrologic connectivity to the wooded wetland, and established wetland plant community and soils.

C. Shields Brook

An update to the design of the Shields Brook crossing is proposed to accommodate the future expansion of the Derry Rail Trail and design changes to Folsom Road within the Exit 4A project area. Specifically, the NH Department of Transportation (NHDOT) proposes to provide a grade separated crossing of Folsom Road using Bridge 053/110 at Shields Brook (aka Beaver Brook), rather than providing a dedicated rail trail connector underpass as described in the February 2020 National Environmental Policy Act (NEPA) Final Environmental Impact Statement (FEIS)/Record of Decision (ROD) and permitted. Updated design plans for Shields Brook are provided as **Attachment F**.

The existing culvert carrying Shields Brook beneath Folsom Road (Sta. 1055+00) is a 6-foot diameter corrugated metal pipe with a 22-degree skew. Shields Brook converges with an unnamed stream approximately 90 feet upstream of the existing structure. Per VHB's Folsom Road/North High Street/Proposed Connector Road over Shields Brook Hydrologic and Hydraulic report dated December 2023, the pipe is undersized, and the road would be overtopped for all storms greater than the 2-year event.

During permitting and final design, additional technical evaluation of the Shields Brook crossing was conducted to evaluate compliance with the NH Department of Environmental Services (NHDES) Stream Crossing Requirements

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(NHDES Administrative Rules Env-Wt 900, *Stream Crossings*). This review resulted in a proposal to replace the existing undersized crossing with a new bridge that would be much larger than the existing culvert. The current design includes a bridge carrying Folsom Road over Shields Brook (Bridge 053/110) with a clear span of 52.5 feet (60 feet skewed at 30 degrees) which meets both NHDOT hydraulic requirements and the NHDES Stream Crossing Guidelines. This larger bridge allows for the routing of the grade-separated path connection to the proposed Derry Rail Trail under the Shields Brook Bridge without increasing the span length. This stream is classified as Riverine, Upper Perennial, Unconsolidated Bottom, Mud (R3UB3).

The proposed replacement crossing meets the standards presented in NHDES Administrative Rules Env-Wt 900, *Stream Crossings*. The proposed bridge design will be a single-span bridge with a simulated natural channel through the crossing. The 2018 Fuss & O'Neill Hydrology and Hydraulics (H&H) analysis and 2019 Normandeau assessment determined that the stream falls within the Rosgen Classification of C4 and is a Tier 3 Stream per the New Hampshire stream crossing guidelines; VHB concurred with this assessment for the reference reach. This determination results in an entrenchment ratio requirement of the flood-prone width to meet 2.2 times the bank full width (BFW). The proposed structure meets this requirement with a clear span of 52.5 feet (60 feet skewed at 30 degrees) which is 2.23 times the BFW. The proposed structure, with a width of approximately 52.5 feet, a vertical opening of at least 11 feet, and a length of about 113 feet will provide an openness ratio of 5.7 feet. Refer to the completed **NHDES Stream Crossing Worksheet** for Shields Brook provided as **Attachment G.**

The proposed channel design includes a 23.5-foot bank full width channel with a low flow 5-point cross section and overbanks that are 2 feet wide on river right and left for wildlife crossing. The overbanks are located approximately at the 2-year design storm elevation. In addition to the wildlife crossing, river right includes the 14-foot-wide path to the proposed Rail Trail located just above the predicted 100-year design storm elevation. The alignment of the path to the proposed Rail Trail upstream of the crossing has been modified from previous design iterations to improve safety and has shifted the path to the north towards Shields Brook. As a result, the alignment of Shields Brook had been modified to reflect this adjustment. This change adjusts the footprint illustrated on the approved plans. The proposed design predicts 9.0 feet and 8.1 feet of freeboard during the 100-year and 500-year design storms, respectively.

Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) 33015CV001 (revised January 29, 2021) and Flood Insurance Rate Map (FIRM) 33015C0339 (effective May 17, 2005) illustrates a FEMA Zone AE and floodway, upstream and downstream of the existing crossing. FEMA Lettered Cross Section B is located just upstream of the existing crossing within the FEMA model. The National Flood Insurance Program (NFIP) regulation Section 60.3 (d) (3) "No-Rise" requires a comparison of the proposed and existing condition model results to confirm there is no negative impact resulting from work in a regulatory floodway. VHB has modeled existing and proposed conditions using the FEMA base flood discharge. **Table 2** below shows the water surface elevation reducing by 2.8 feet during the FEMA 100-year design storm. A conversion of -0.686 feet was used to adjust the FIS elevation data in NGVD29 to the NAVD88 vertical feet. The nearest published FIS cross section along Shields Brook falls within the footprint

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Memorandum

of the proposed bridge, and the next closest published cross sections fall outside of the area of analysis. Using the FIS profile, VHB interpolated the effective elevation at model cross section 4 (cross section 662.3) of this analysis and compared this result to the VHB model using the FEMA effective flows. The downstream boundary condition was set to known water surface elevation based on the FIS profile. The analysis predicts that the proposed base flood elevations will be lower throughout the model domain and meet the NFIP requirements for work in a federally regulated floodway. The proposed encroachment will not result in any increase in flood levels within the community during the base flood discharge. Given this finding, no floodplain compensatory storage is required.

Table 21: Comparison of Hydraulic Performance for the Base Flood Elevation (BFE)

River Station	FIS Cross Section	Effective FEMA[1]	Existing Condition	Proposed Condition	Project Impact
662.3	-	276.1	276.55	273.78	-2.77

1 – Interpolated from Effective FEMA FIS

D. Stream Crossing Analysis – Previously Approved Impact Areas

Condition 2 of the NHDES Permit #2018-03134 requires that:

> *"Final engineered design plans and associated documentation shall be submitted to the NHDES for approval prior to construction. Final analysis and designs for the remaining stream crossings in the project area shall be completed for the final design developed by the Design-Builder of the project in accordance with Env-Wt 900. Any additional impacts for this project are subject to RSA 482-A jurisdiction and will require further permitting."*

The 13065B portion of the project only proposes to impact two streams: intermittent Stream 11 (detailed below) and Stream 2/Shields Brook (detailed above).

Stream 11

Under existing conditions, Stream 11 collects flows from a 10.2-acre watershed consisting of forest and a dirt access road for an excavation company. This stream is classified as Riverine, Intermittent, Streambed, Mud (R4SB5). Based upon the NHDES Administrative Rules Env-Wt 900, *Stream Crossings,* Stream 11 is a Tier 1 stream. Historic excavation activities and the access road have disturbed natural drainage patterns in the past. Based upon field observations and desktop evaluation, the existing drainage patterns flow from southwest towards the northeast where Stream 11 originates. The proposed design will fill approximately 77 linear feet of Stream 11 at the headwaters of the intermittent stream. The proposed fill is a result of the construction of the Connector Road embankment where station 1044+00 will fill on top of the headwaters of Stream 11. The proposed design will provide a 30-inch reinforced concrete pipe (RCP) beneath the Connector Road (Sta. 1043+75) to maintain existing drainage patterns and maintain the watershed draining to Stream 11. The existing watershed for Stream 11 is 10.2 acres and the

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proposed watershed is 9.9 acres. The proposed watershed includes approximately 0.3 acres of new impervious areas associated with the Madden Road. The proposed 30-inch RCP complies with the NHDES Stream Crossing requirements outlined in Env-Wt 900 by conveying the 50-year design storm with a headwater below the proposed upstream invert of 321.5 feet, as well as meeting all other requirements for Tier 1 streams at Env-Wt 904.03. The completed NHDES Stream Crossing Worksheet for Stream 11 is provided as **Attachment G** and photos of Stream 11 are provided as **Attachment H**.

Attachments:

A - Wetland Impact Plans, Erosion Control Plans, and 13065B Construction Sequence
B – Wetland Impact Comparison Table
C – Mitigation Table
D – Updated NHDES and USACE Wetlands Permit Application Forms
E – Wetland 40 Photo Log
F – Updated Design Plans for Shields Brook and Shields Brook Construction Sequence
G – NHDES Stream Crossing Worksheets
H – Stream 11 Photo Log

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Attachment A

Wetland Impact Plans, Erosion Control Plans, and 13065B Construction Sequence

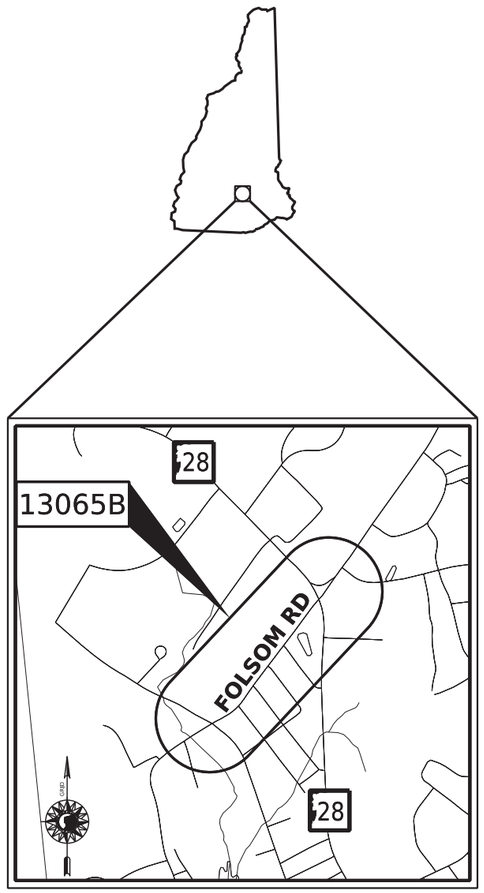
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS
FEDERAL AID PROJECT

A005(207)
N.H. PROJECT NO. 13065B
EXIT 4A INTERCHANGE
OLD RUM TRAIL, FOLSOM ROAD, N. HIGH STREET AND NH ROUTE 28

DESIGN DATA

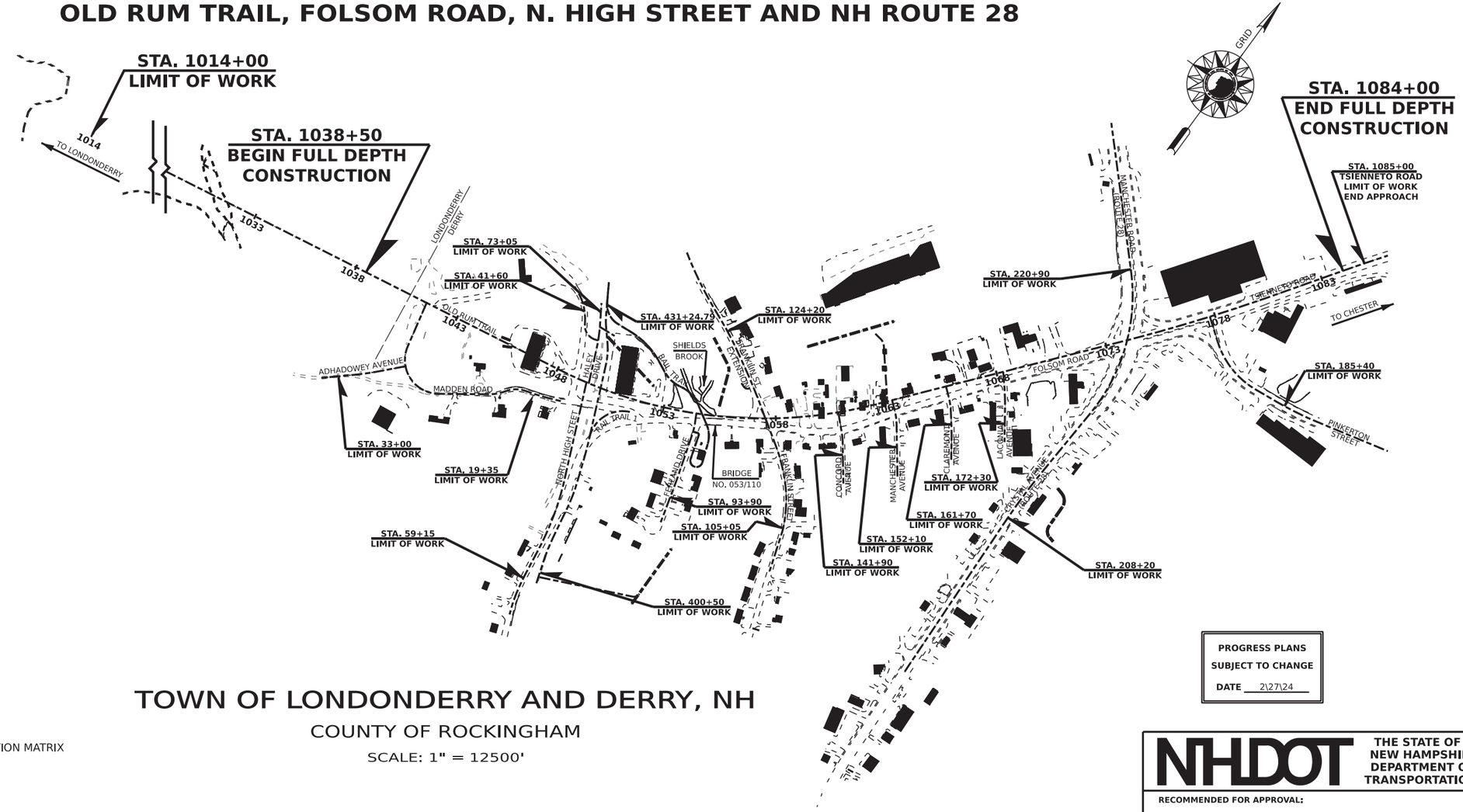
OLD RUM TRAIL / FOLSOM RD / TSIENNETO RD		
AVERAGE DAILY TRAFFIC 20	25	41,330
AVERAGE DAILY TRAFFIC 20	40	53,720
PERCENT OF TRUCKS		6.7%
DESIGN SPEED		40
LENGTH OF PROJECT		XX



LOCATION MAP

¼ ⅛ 0 ¼ ½ mi.

GRAPHIC SCALE



PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

INDEX OF SHEETS

TOWN OF LONDONDERRY AND DERRY, NH

COUNTY OF ROCKINGHAM

SCALE: 1" = 12500'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

McFarland Johnson

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

MUNICIPAL HIGHWAYS ENGINEER
BUREAU OF PLANNING AND COMMUNITY ASSISTANCE — DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

DRAWN BY	DATE	CHECKED BY	DATE
XX	XX	XX	XX

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13065B-FSW	A005(207)	13065B	1	62

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway
(pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)
(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)
(show station, circumference in feet & type)

TREE OR STUMP (CROSS-SECTIONS)

HEDGE — (label type)

MONITORING WELL — mon

WELL

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing — PROPOSED — bgr — cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft — (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 PUB2E
DELINEATED WETLAND — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — COL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FPS500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 31 32
PC, PT, POT (ON CONST BASELINE)
PI (IN CONSTRUCTION BASELINES)
INTERSECTION OR EQUATION OF TWO LINES
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)
CLEARING LINE — SLOPE LINE — CLEARING LINE
SLOPE LINE
SLOPE LINE (FILL)
SLOPE LINE (CUT)
PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	NAME1	DATE1
NEW DESIGN	NAME2	DATE2
SHEET CHECKED	NAME3	DATE3
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
1/7/2021	13065B-Standard Symbols SHEETS	13065B	2	62

MODEL: SHEET 1 OF 2

DRAINAGE

MANHOLE

CATCH BASIN — cb

DROP INLET — di

(existing) — (PROPOSED)

DRAINAGE PIPE (existing) — DP … DP — (label size & type)

DRAINAGE PIPE (PROPOSED)

UNDERDRAIN (existing) W/ FLUSHING BASIN — fb — (label size & type)

UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN

show direction of flow

HEADER (existing & PROPOSED) — (with stone outlet protection)

END SECTION (existing & PROPOSED) — METAL or PLASTIC — RCP

OPEN DITCH (PROPOSED)

EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE — (label type)

RR RIGHT-OF-WAY LINE

PROPERTY LINE — R … R

PROPERTY LINE (COMMON OWNER) — Z … Z

TOWN LINE — BOW / CONCORD

COUNTY LINE — COOS / GRAFTON

STATE LINE — MAINE / NEW HAMPSHIRE

NATIONAL FOREST

CONSERVATION LAND — LC … LC

BENCH MARK / SURVEY DISK

BOUND — (PROPOSED) — bnd

STATE LINE/ TOWN LINE MONUMENT — S/L — T/L

NHDOT PROJECT MARKER

IRON PIPE OR PIN — ip

DRILL HOLE IN ROCK — dh

TAX MAP AND LOT NUMBER — 156 / 14 — 1642/341 — 6.80 Ac. 35/64

PROPERTY PARCEL NUMBER — 12

HISTORIC PROPERTY — H

UTILITIES

existing — PROPOSED

TELEPHONE POLE

POWER POLE

JOINT OCCUPANCY

MISCELLANEOUS/UNKNOWN POLE

GUY POLE OR PUSH BRACE

(plot point at face not center of symbol)

LIGHT POLE

LIGHT ON POWER POLE

LIGHT ON JOINT POLE

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY
AS APPLICABLE e.g.:

R — L — P+04 25.0' — T+04 25.0'

RAILROAD — (label ownership)

RAILROAD SIGN

RAILROAD SIGNAL

UTILITY JUNCTION BOX — jb — JB

OVERHEAD WIRE — OW … OW — (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) — W … W — PW … PW

SEWER — S … S — PS … PS

TELEPHONE — T … T — PT … PT

ELECTRIC — E … E — PE … PE

GAS — G … G — PG … PG

LIGHTING — L … L — PL … PL

INTELLIGENT TRANSPORTATION SYSTEM — ITS … ITS — PITS … PI

FIBER OPTIC — FO … FO — PFO … PFO

WATER SHUT OFF — WSO

GAS SHUT OFF — GSO

HYDRANT — HYD

MANHOLES

SEWER — MHS

TELEPHONE — MHT

ELECTRICAL — MHE

GAS — MHG

UNKNOWN — MHU

TRAFFIC SIGNALS / ITS

existing — PROPOSED

MAST ARM — 30' MA (NOTE ANGLE FROM Å)

OPTICOM RECEIVER

OPTICOM STROBE

TRAFFIC SIGNAL

PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT

SIGNAL CONDUIT — C … C — PC … PC

CONTROLLER CABINET — cc — CC

METER PEDESTAL — mp — MP

PULL BOX — pb — PB

LOOP DETECTOR (QUADRUPOLE) — (label size)

LOOP DETECTOR (RECTANGULAR) — (label size)

CAMERA POLE (CCTV)

FIBER OPTIC DELINEATOR — fod — FOD

FIBER OPTIC SPLICE VAULT — SVF

ITS EQUIPMENT CABINET — its — ITS

MOTOR VEHICLE DETECTION SYSTEM (MVDS)

VARIABLE SPEED LIMIT SIGN

DYNAMIC MESSAGE SIGN

ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	A
DRAINAGE NOTE	1
EROSION CONTROL NOTE	A
FENCING NOTE	A
GUARDRAIL NOTE	1
ITS NOTE	1
LIGHTING NOTE	A
TRAFFIC SIGNAL NOTE	1

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NAME1	DATE1	DATE
NEW DESIGN	NAME2	DATE2	DATE
SHEET CHECKED	NAME3	DATE3	DATE
AS BUILT DETAILS			DATE

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
1/7/2021	13065B-Standard Symbols SHEET	13065B	3	62

MODEL: SHEET 2 OF 2

EROSION CONTROL NOTES AND STRATEGIES

1. Erosion Control/Stormwater Control Selection, Sequencing and Maintenance
   - 1.1. Comply with RSA 485-A:17 Terrain Alteration.
   - 1.2. Install and maintain all erosion control/stormwater controls in accordance with the New Hampshire Stormwater Management Manual, Volume 3, Erosion and Sediment Controls During Construction, December 2008 (BMP Manual), available from the NH Department of Environmental Services (NHDES).
   - 1.3. Install erosion control/stormwater control measures prior to the start of work and in accordance with the manufacturer's recommendations.
   - 1.4. Select erosion control/stormwater control measures based on the size and nature of the project and physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to jurisdictional areas.
   - 1.5. Install perimeter controls prior to earth disturbing activities.
   - 1.6. Install stormwater treatment ponds and drainage swales before rough grading the site.
   - 1.7. Clean, replace, and augment stormwater control measures and infiltration basins as necessary to prevent sedimentation beyond project limits throughout the project duration.
   - 1.8. Inspect erosion and sediment control measures in accordance with Section 645 of the specifications, weekly, and within 24 hours (during normal work hours), of any storm event greater than 0.25 inches of rain in a 24-hour period.
   - 1.9. Contain stockpiles with temporary perimeter controls. Protect inactive soil stockpiles with soil stabilization measures (temporary erosion control seed mix and mulch, soil binder) or cover them with anchored tarps. If the stockpile is to remain undisturbed for more than 14 days, mulch the stockpile.
   - 1.10. Maintain temporary erosion and stormwater control measures in place until the area has been permanently stabilized.
   - 1.11. An area is considered stable if one of the following has occurred:
     - Base course gravels have been installed in areas to be paved;
     - A minimum of 85% vegetative growth has been established;
     - A minimum of 3”of non-erosive material such as stone or rip-rap has been installed;
     - Temporary slope stabilization has been properly installed (see Table 1).
   - 1.12. Direct runoff to temporary practices until permanent stormwater infrastructure is constructed and stabilized.
   - 1.13. Use temporary mulching, permanent mulching, temporary vegetative cover, and permanent vegetative cover to reduce the need for dust control. Use mechanical sweepers on paved surfaces where necessary to prevent dust buildup. Apply water, or other dust inhibiting agents or tackifiers.
   - 1.14. Plan activities to account for sensitive site conditions
     - Sequence construction to limit the duration and area of exposed soils.
     - Clearly flag areas to be protected in the field and provide construction barrier to prevent trafficking outside of work areas.
     - Protect and maximize existing native vegetation and natural forest buffers between construction activities and sensitive areas.
     - When work is undertaken in a flowing watercourse, implement stream flow diversion methods prior to any excavation or filling activity.
   - 1.15. Utilize storm drain inlet protection to prevent sediment from entering a storm drainage system prior to the permanent stabilization of the contributing disturbed area.
   - 1.16. Use care to ensure that sediments do not enter any existing catch basins during construction. Place temporary inlet protection at inlets in areas of soil disturbance that are subject to sedimentation.
   - 1.17. Construct, stabilize, and maintain temporary and permanent ditches in a manner that will minimize scour. Direct temporary and permanent ditches to drain to sediment basins or stormwater collection areas.
   - 1.18. Supplement channel protection measures with perimeter control measures when ditch lines occur at the bottom of long fill slopes. Install the perimeter controls on the fill slope to minimize the potential for fill slope sediment deposits in the ditch line.
   - 1.19. Divert sediment laden water away from drainage inlet structures to the extent possible.
   - 1.20. Install sediment barriers and sediment traps at drainage inlets to prevent sediment from entering the drainage system.
   - 1.21. Clean catch basins, drainage pipes, and culverts if significant sediment is deposited.
   - 1.22. Construct and stabilize dewatering infiltration basins prior to any excavation that may require dewatering.
   - 1.23. Place and stabilize temporary sediment basins or traps at locations where concentrated flow (channels and pipes) discharge to the surrounding environment from areas of unstabilized earth disturbing activities.
   - 1.24. Stabilize, to appropriate anticipated velocities, conveyance channels or pumping systems needed to convey construction stormwater to basins and discharge locations prior to use.
   - 1.25. Size temporary sediment basins to contain the 2-year, 24 hour storm event.
   - 1.26. Size temporary sediment traps to contain 3,600 cubic feet of storage for each acre of drainage area.
   - 1.27. Construct detention basins to accommodate the 2-year, 24-hour storm event.

2. Construction Planning
   - 2.1. Divert off site runoff or clean water away from the construction activities to reduce the volume that needs to be treated on site.
   - 2.2. Divert storm runoff from upslope drainage areas away from disturbed areas, slopes and around active work areas to a stabilized outlet location.
   - 2.3. Construct impermeable barriers, as necessary, to collect or divert concentrated flows from work or disturbed areas.
   - 2.4. Locate staging areas and stockpiles outside of wetlands jurisdiction.
   - 2.5. Do not store, maintain, or repair mobile heavy equipment in wetlands, unless equipment cannot be practicably removed and secondary containment is provided.
   - 2.6. Provide a water truck to control excessive dust, at the discretion of the Contract Administrator.

3. Site Stabilization
   - 3.1. Stabilize all areas of unstabilized soil as soon as practicable, but no later than 45 days after initial disturbance.
   - 3.2. Limit unstabilized soil to a maximum of 5 acres unless documentation is provided that demonstrates that cuts and fills are such that 5 acres is unreasonable.
   - 3.3. Use erosion control seed mix in all inactive construction areas that will not be permanently seeded within two weeks of disturbance and prior to September 15" of any given year in order to achieve vegetative stabilization prior to the end of the growing season.
   - 3.4. Apply, and reapply as necessary, soil tackifiers in accordance with the manufacturer’s specifications to minimize soil and mulch loss until permanent vegetation is established.
   - 3.5. Stabilize basins, ditches and swales prior to directing runoff to them.
   - 3.6. Stabilize roadway and parking areas within 72 hours of achieving finished grade.
   - 3.7. Stabilize cut and fill slopes within 72 hours of achieving finished grade.
   - 3.8. When temporarily stabilizing soils and slopes, utilize the techniques outlined in Table 1.
   - 3.9. Stabilize all areas that can be stabilized prior to opening up new areas to construction activities.
   - 3.10. Utilize Table 1 when selecting temporary soil stabilization measures.
   - 3.11. Divert off-site water through the project in an appropriate manner so as not to disturb the upstream or downstream soils, vegetation or hydrology beyond the permitted area.
   - 3.12. Install and maintain construction exits anywhere traffic leaves a construction site onto a public right-of-way.
   - 3.13. Sweep all construction related debris and soil from the adjacent paved roadways, as necessary.

4. Slope Protection
   - 4.1. Intercept and divert storm runoff from upslope drainage areas away from unprotected and newly established areas and slopes to a stabilized outlet or conveyance.
   - 4.2. Consider how groundwater seepage on cut slopes may impact slope stability and incorporate appropriate measures to minimize erosion.
   - 4.3. Convey storm water down the slope in a stabilized channel or slope drain.
   - 4.4. The outer face of the fill slope should be in a loose, ruffled condition prior to turf establishment.

5. Winter Construction
   - 5.1. To minimize erosion and sedimentation impacts, limit the extent and duration of winter excavation and earthwork activities. The maximum amount of disturbed earth shall not exceed a total of 5 acres from May 1" through November 30", or exceed one acre during winter months, unless the contractor demonstrates to the Department that the additional area of disturbance is necessary to meet the contractor’s Critical Path Method (CPM) schedule, and the contractor has adequate resources available to ensure that environmental requirements will be met.
   - 5.2. Construction performed any time between November 30" and May 1" of any year is considered winter construction. During winter construction:
     - Stabilize all proposed vegetation areas which do not exhibit a minimum of 85% vegetative growth by October 15", or which are disturbed after October 15", in accordance with Table 1.
     - Stabilize all ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15", or which are disturbed after October 15", in accordance with Table 1.
     - Protect incomplete road surfaces, where base course gravels have not been installed, and where work has stopped for the season after November 30", in accordance with Table 1.
     - Unless a winter construction plan has been approved by NHDOT, conduct winter excavation and earthwork such that no more than 1 acre of the project is without stabilization an any one time.

6. Wildlife Protection Measures
   - 6.1. Report all observations of threatened and endangered species on the project site to the Department’s Bureau of Environment by phone at 603-271-3226 or by email at Bureau16@dot.nh.gov, indicating in the subject line the project name, number, and that a threatened/endangered species was found.
   - 6.2. Photograph the observed species and nearby elements of habitat or areas of land disturbance and provide them to the Department’s Bureau of Environment at the above email address.
   - 6.3. In the event that a threatened or endangered species is observed on the project during work, the species shall not be disturbed, handled, or harmed prior to receiving direction from the Bureau of Environment.
   - 6.4. Utilize wildlife friendly erosion control methods when:
     - Erosion control blankets are used,
     - A protected species or habitat is documented,
     - The proposed work is in or adjacent to a priority resource area, and/or when specifically requested by NHB or NHF&G

GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES
TABLE 1

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES1	YES[1]	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. All slope stabilization options assume a slope length ≤ 10 times the horizontal distance component of the slope, in feet.
2. Do not apply products containing polyacrylamide (PAM) directly to, or within 100 feet of any surface water without NHDES approval.
3. Install all methods in Table 1 per the manufacturer’s recommendation for time of year and steepness of slope.

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
07-31-2023	erostrat-ce	13065B	4	62

erosstrat-ce

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	PERMANENT N.H.W.B. & A.C.O.E. (WETLAND)	BANK	CHANNEL	TEMPORARY IMPACTS	TOWN	COMMENTS
			SF	LF	LF	SF		
S1	R4UB3	A			44	336	L	SELF-MITIGATING
S1	R4UB3	B			1651	19469	L	SELF-MITIGATING
14	PFO1/2E	C	21575				L	
14	PFO1/2E	D	14112				L	
15	PFO1E	E	3669				L	
VP2	VP	F	6653				L	
14	PFO1/2E	G	5946				L	
15	PFO1E	H	1294				L	
16	PFO1E	I	2336				L	
VP3	VP	J	5652				L	
16	PFO1E	K	507				L	
S70	R4SB5	L	50		18		L	
14	PFO1/2E	M	13193				L	
14	PFO1/2E	N	36131				L	
16	PFO1E	O	199				L	
VP4	VP	P	8911				L	
16	PFO1E	Q	1537				L	
16	PFO1E	R	1815				L	
S9	R4SB5	S	332		74		L	
17	PFO1E	T	39				L	
S7	R4SB5	U	884		117		L	
17	PFO1E	V	3485				L	
S7	R4SB5	W	360		69		L	
13	PFO1E	X	1820				L	
66	PFO1E	Y	803				L	
11	PFO1E	Z	1502				L	
11	PFO1E	AA	561				L	
67	PFO1E	AB	477				L	
11	PFO1E	AC	7				L	
11	PFO1E	AD	725				L	
19	PFO1E	AE	6979				L	
VP42	VP	AF	1974				L	
18	PEM1E	AG	659				L	
S8	R4SB5	AH	1232		291		L	
20	PFO1E	AI	273				L	
20	PFO1E	AJ	1232				L	
21	PFO1E	AK	276				L	
VP46	VP	AL	628				L	
22	PFO1E	AM	364				L	
24	PFO1E	AN	127				L	
VP6	VP	AO	13815				L	
24	PFO1E	AP	0				L	
24	PFO1E	AQ	452				L	
24	PFO1E	AR	43				L	
24	PFO1E	AS	2526				L	
24	PFO1E	AT	141				L	
90	PFO1E	AU	0				L	
35	PFO1E	AV	0				L	
35	PFO1E	AW	1386				L	
VP8	VP	AX	11344				L	
35	PFO1E	AY	21				L	
35	PFO1E	AZ	302				L	
35	PFO1E	BA	5				L	
35	PFO1E	BB	599				L	
VP9	VP	BC	0				L/D	
64	PFO1E	BD	0				L/D	
64	PFO1E	BE	0				L/D	
64	PFO1E	BF	0				L/D	
39	PEM1F	BG	4105				D	
S11	R4SB5	BH	77		77		D	
40	PSS1E/PFO1E	BI	2605				D	

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	PERMANENT N.H.W.B. & A.C.O.E. (WETLAND)	BANK	CHANNEL	TEMPORARY IMPACTS	TOWN	COMMENTS
			SF	LF	LF	SF		
86	PFO1E	BJ	552				D	
72	PSS1/PEM1/PFO1B	BK	0				D	PRIME WETLAND
S2	R3UB3	BL	4841	482	243		D	
41	PFO1E	BM	636				D	
41	PFO1E	BN	6926				D	
S2	R3UB3	BO	810	107	45		D	
46	PFO1E	BP	1492				D	
73	PEM1/PSS1E	BQ	2278				D	
49	PFO1E	BR	3025				D	
100	PFO1E	BS	311				D	
102	PEM1E	BT	90				D	
S101	R4SB2	BU	54		13		D	
61	PFO1E	BV	582				D	
81	PFO	BW	273				D	
54	PEM1E	BX	62				D	
S3	R4SB5	BY	159		24		D	
S3	R4SB5	BZ	265		33		D	
S4	R4SB5	CA	219		46		D	
S4	R4SB5	CB	196		29		D	
80	PFO1E/PEM1E	CC	941				D	
80	PFO1E/PEM1E	CD	81				D	
80	PFO1E/PEM1E	CE	215				D	
80	PFO1E/PEM1E	CF	598				D	
80	PFO1E/PEM1E	CG	40				D	
S100	R4SB6	CH	125		22		D	
59	PFO1E	CI	815				D	
56	PEM1E	CJ	615				D	
62	PSS/PEM1E	CK	1389				D	PRIME WETLAND
59	PFO1E	CL	1666				D	
62	PSS/PEM1E	CM	172				D	PRIME WETLAND
S5	R3UB3	CN	109	32	11		D	
62	PSS/PEM1E	CO	410				D	PRIME WETLAND
S102	R4SB2	CP	212		41		D	
19	PFO1E	CQ	0				L	
S1	R4UB3	CR			0	0	L	SELF-MITIGATING
9	PFO1	CT	25				L	
85	PSS1E	CU	79				D	
39	PEM1F	CV	38				D	
40	PSS1E/PFO1E	CW	56				D	
S1	R4UB3	TA			5	42	L	
S1	R4UB3	TB			45	145	L	
14	PFO1/2E	TC				1680	L	
15	PFO1E	TD				399	L	
15	PFO1E	TE				137	L	
VP2	VP	TF				644	L	
15	PFO1E	TG				51	L	
14	PFO1/2E	TH				1080	L	
VP3	VP	TI				674	L	
14	PFO1/2E	TJ				2082	L	
14	PFO1/2E	TK				2322	L	
S1	R4UB3	TL			5	114	L	
14	PFO1/2E	TM				1360	L	
S9	R4SB5	TN			11	22	L	
66	PFO1E	TO				316	L	
11	PFO1E	TP				642	L	
11	PFO1E	TQ				363	L	
67	PFO1E	TR				721	L	

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT SUMMARY CHART 1

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln Impact Table 1 (SHT)	13065B-Wetsum SHT	13065B	5	62

NUMBER	DESCRIPTION	DATE	STATION
	REVISIONS AFTER PROPOSAL		

SDR PROCESSED	VHB	DATE	2021
NEW DESIGN	MJ	DATE	8\2023
SHEET CHECKED	EWM	DATE	12\2023
AS BUILT DETAILS		DATE	

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	PERMANENT N.H.W.B. & A.C.O.E. (WETLAND)	BANK	CHANNEL	TEMPORARY IMPACTS	TOWN	COMMENTS
			SF	LF	LF	SF		
9	PFO1	TS				0	L	
9	PFO1	TT				438	L	
11	PFO1E	TU				423	L	
21	PFO1E	TZ				126	L	
VP46	VP	TAA				131	L	
22	PFO1E	TAB				96	L	
VP6	VP	TAC				149	L	
24	PFO1E	TAD				48	L	
24	PFO1E	TAE				14	L	
VP6	VP	TAF				484	L	
24	PFO1E	TAG				19	L	
90	PFO1E	TAH				0	L	
35	PFO1E	TAI				75	L	
VP8	VP	TAJ				0	L	
VP8	VP	TAK				348	L	
35	PFO1E	TAL				136	L	
35	PFO1E	TAM				0	L	
VP8	VP	TAN				287	L	
35	PFO1E	TAO				0	L	
39	PEM1F	TAP				355	D	
S2	R3UB3	TAQ		0	0	0	D	
72	PSS1/PEM1/PFO1B	TAR				0	D	PRIME WETLAND
S2	R3UB3	TAS		10	5	155	D	
41	PFO1E	TAT				306	D	
S2	R3UB3	TAU		10	5	128	D	
41	PFO1E	TAV				162	D	
S2	R3UB3	TAW		10	5	80	D	
S2	R3UB3	TAX		0	0	0	D	
85	PSS1E	TAY				180	D	
46	PFO1E	TAZ				692	D	
73	PEM1/PSS1E	TBA				1240	D	
83	PEM1E	TBB				100	D	
49	PFO1E	TBC				459	D	
102	PEM1E	TBD				53	D	
60	PFO1E	TBE				54	D	
81	PEM1H/PUB5H	TBF				144	D	
81	PEM1H/PUB5H	TBG				260	D	
54	PEM1E	TBH				162	D	
103	PFO1	TBI				9	D	
S3	R4SB5	TBJ			5	19	D	
S3	R4SB5	TBK			5	34	D	
S4	R4SB5	TBL			5	33	D	
S4	R4SB5	TBM			5	15	D	
80	PFO1E/PEM1E	TBN				420	D	
80	PFO1E/PEM1E	TBO				561	D	
80	PFO1E/PEM1E	TBP				213	D	
80	PFO1E/PEM1E	TBQ				130	D	
80	PFO1E/PEM1E	TBR				52	D	
59	PFO1E	TBS				176	D	
56	PEM1E	TBT				112	D	
62	PSS/PEM1E	TBU				1228	D	PRIME WETLAND
59	PFO1E	TBV				92	D	
59	PFO1E	TBW				94	D	
S5	R3UB3	TBX		25	5	135	D	
59	PFO1E	TBY				482	D	
S5	R3UB3	TBZ		18	8	22	D	
62	PSS/PEM1E	TCA				73	D	PRIME WETLAND
62	PSS/PEM1E	TCB				159	D	PRIME WETLAND
54	PEM1E	TCC				27	D	
VP11	VP	TCD				87	D	
S1	R4UB3	TCE			0	0	L	
S1	R4UB3	TCF			128	549	L	

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	PERMANENT N.H.W.B. & A.C.O.E. (WETLAND)	BANK	CHANNEL	TEMPORARY IMPACTS	TOWN	COMMENTS
			SF	LF	LF	SF		
19	PFO1E	TCG				30	L	
19	PFO1E	TCH				164	L	
19	PFO1E	TCI				7	L	
21	PFO1E	TCJ				21	L	
16	PFO1E	TCK				171	L	
16	PFO1E	TCL				89	L	
VP4	VP	TCM				137	L	
VP42	VP	TCN				672	L	
S7	R4SB5	TCO			20	123	L	
S7	R4SB5	TCP			10	4	L	
S9	R4SB5	TCQ			6	17	L	
S9	R4SB5	TCR			6	22	L	
24	PFO1E	TCS				41	L	
24	PFO1E	TCT				3	L	
24	PFO1E	TCU				1	L	
39	PEM1F	TCV				156	D	
40	PSS1E/PFO1E	TCW				215	D	
40	PSS1E/PFO1E	TCX				93	D	

WETLAND CLASSIFICATION CODES

BANK	BANK
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED /SATURATED
PEM1F	PALUSTRINE, EMERGENT, PERSISTENT, SEMIPERMANENTLY FLOODED
PEM1H/PUB5H	PERMANENTLY FLOODED PALUSTRINE EMERGENT, PERSISTENT WETLAND, MIXED WITH OPEN WATER, UNCONSOLIDATED BOTTOM
PFO1/2E	PALUSTRINE, FORESTED, DOMINANTLY BROAD-LEAVED DECIDUOUS, MIXED WITH NEEDLE-LEAVED DECIDUOUS, SEASONALLY FLOODED /SATURATED
PFO1E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED /SATURATED
PFO1E/PEM1E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS WETLAND MIXED WITH SEASONALLY SATURATED EMERGENT PERSISTENT WETLAND
PSS/PEM1E	PALUSTRINE, DOMINANTLY SCRUB-SHRUB, MIXED WITH EMERGENT, PERSISTENT, SEASONALLY FLOODED /SATURATED
PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED /SATURATED
R3UB3	RIVERINE, UPPER PERENNIAL, UNCONSOLIDATED BOTTOM, MUD
R4UB3	RIVERINE, INTERMITTENT, UNCONSOLIDATED BOTTOM, MUD
R4SB	RIVERINE, INTERMITTENT, STREAMBED
R4SB5	RIVERINE, INTERMITTENT, STREAMBED, MUD
VP	VERNAL POOL

TOTAL IMPACTS FOR WETLANDS		
WETLAND AND STREAM IMPACTS (AREA)		
PERMANENT IMPACTS (WETLAND)	206,171	SF
PERMANENT IMPACTS (STREAM)	9,925	SF
TEMPORARY IMPACTS	46,592	SF
TOTAL WETLAND IMPACTS:	262,688	SF
STREAM IMPACTS (LINEAR)		
PERMANENT IMPACTS TO BANKS	621	LF
PERMANENT IMPACTS TO CHANNEL	1,153	LF
TEMPORARY IMPACTS TO BANKS	73	LF
TEMPORARY IMPACTS TO CHANNEL	1,979	LF
TOTAL STREAM IMPACTS:	3,826	LF

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT SUMMARY CHART 2

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln Impact Table 2 [SHT]	13065B-Wetsum SHT	13065B	6	62

STA. 1038+50
BEGIN FULL DEPTH CONSTRUCTION

STA. 1084+00
END FULL DEPTH CONSTRUCTION

STA. 1085+00
TSIENNETO ROAD
LIMIT OF WORK
END APPROACH

TO LONDONDERRY

GRID

STA. 73+20
LIMIT OF WORK

STA. 41+60
LIMIT OF WORK

STA. 124+20
LIMIT OF WORK

STA. 221+15
LIMIT OF WORK

STA. 431+50.68
LIMIT OF WORK

STA. 33+00
LIMIT OF WORK

STA. 19+35
LIMIT OF WORK

STA. 94+00
LIMIT OF WORK

STA. 59+25
LIMIT OF WORK

STA. 400+15
LIMIT OF WORK

STA. 141+50
LIMIT OF WORK

STA. 105+05
LIMIT OF WORK

STA. 171+85
LIMIT OF WORK

STA. 161+70
LIMIT OF WORK

STA. 151+30
LIMIT OF WORK

STA. 208+20
LIMIT OF WORK

STA. 187+00
LIMIT OF WORK

OLD RUM TRAIL
AGHADOWEY AVENUE
MADDEN ROAD
N. HIGH STREET
RAIL TRAIL
FERLAND DRIVE
FRANKLIN STREET
CONCORD AVENUE
MANCHESTER AVENUE
CLAREMONT AVENUE
LACONIA AVENUE
FOLSOM ROAD
MANCHESTER ROAD (NH ROUTE 28)
CRYSTAL AVENUE (NH ROUTE 28)
TSIENNETO ROAD
PINKERTON STREET
TO CHESTER
TO WINDHAM
TO WINDHAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

1038 1043 1048 1053 1058 1063 1068 1073 1078 1083
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
15 20 32 51 56 60 73 94 102 123 126 141 143 151 153 161 171 173 178 185 190 200 205 210 215 220 225 400 401 403 405 423 500 503 601 602 700 702

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	NAME2	DATE2
SHEET CHECKED	NAME3	DATE3
AS BUILT DETAILS		DATE

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

KEY PLAN

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	Keyplan [Sheet]	13065B-Keyplan	13065B	7	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER
WETLAND IMPACT LOCATION
WETLAND MITIGATION AREA
MITIGATION

GRID N

STA. 1038+50
BEGIN FULL DEPTH CONSTRUCTION
WEARING COURSE ONLY
SEE CONTRACT 13065A PLANS IN PROJECT PROPOSAL.

DRAINAGE EASEMENT

35
PFO1E

VP8

AX

LONDONDERRY
DERRY

C.A.R.O.W.

OLD RUM TRAIL

CONSTRUCTION ℄

1037 1038 1039 1040 1041 1042

BB

AW

TAL

TAN

C.A.R.O.W.

psnh
32W4/37

35
PFO1E

23
PILLSBURY REALTY / DEVELOPMENT LLC
####

SOME OF THE IMPACTS TO WETLAND 35 AND VERNAL POOL 8 IN LONDONDERRY WERE QUANTIFIED IN THE PREVIOUS 13065A WETLAND IMPACT UPDATE

DRAINAGE EASEMENT

24
SEVEN HILLS / DEVELOPMENT, LLC
8.84 Ac±

27
ABBOTT, / MARCIA E.
#.## Ac±

R.O.W.

11

MADDEN ROAD

R.O.W.

MATCH TO 1042+75 PLAN 2

MATCH TO 11+40 PLAN 10

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

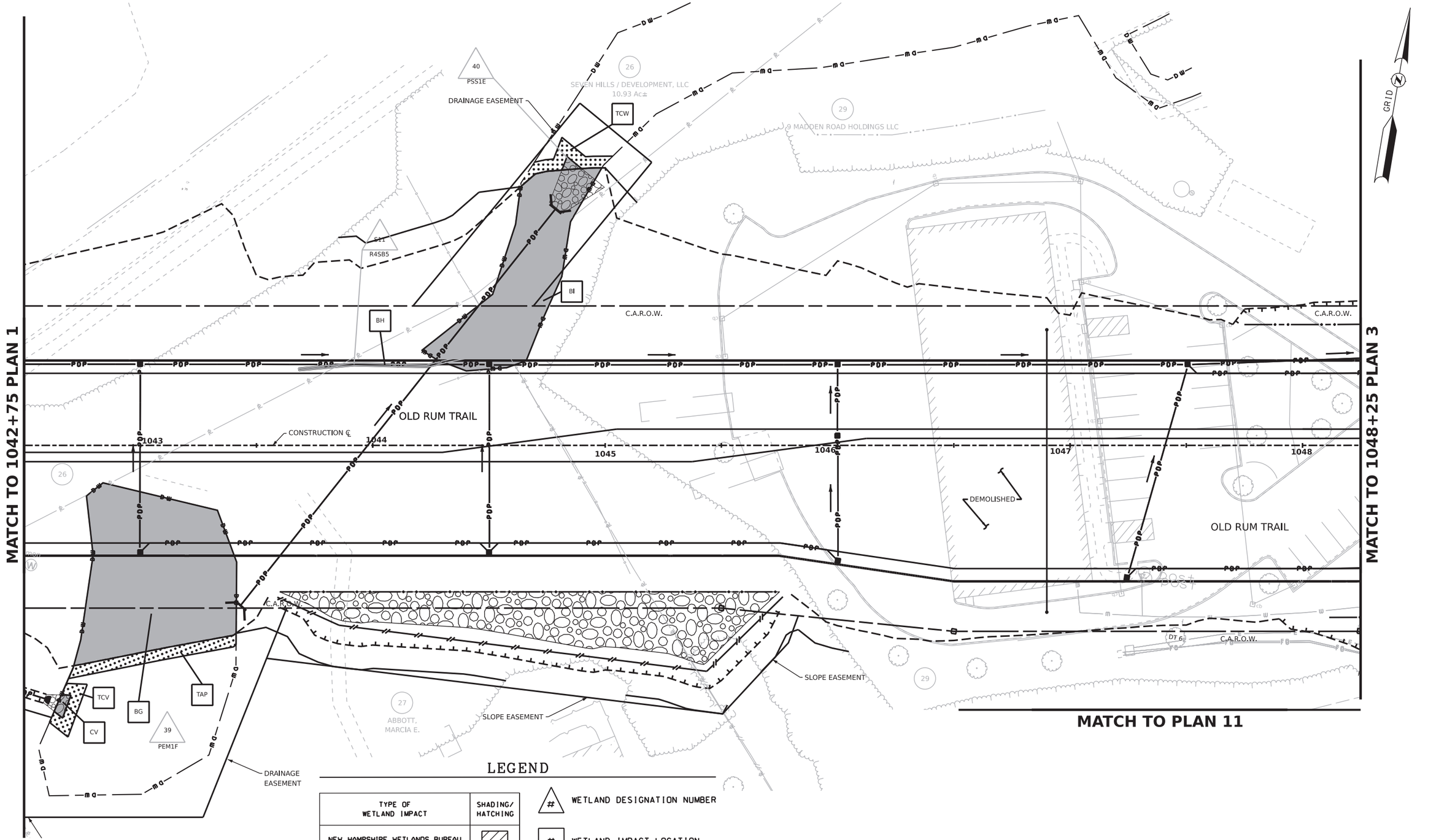
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 1

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln-20 1 [SHT]	13065B-Wetlnd Pln SHT	13065B	8	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 2

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 2 (SHT)	13065B-Wetlnd Pln SHT	13065B	9	62

MATCH TO 71+25 PLAN 12

MATCH TO 427+37 PLAN 12

MATCH TO 1048+25 PLAN 2

MATCH TO 1053+75 PLAN 4

MATCH TO 51+50 PLAN 13

HALEY DRIVE

NORTH HIGH STEET

FOLSOM ROAD

MULTI-USE PATH

OLD RUM TRAIL

CONSTRUCTION ℄

DEMOLISHED

EXISTING R.O.W.

R.O.W.

C.A.R.O.W.

SLOPE EASEMENT

STA. 19+35
LIMIT OF WORK

CENTURY AUTO / PARTS, INC.
####

SEVEN HILLS / DEVELOPMENT, LLC
10.93 Ac±

9 MADDEN ROAD / HOLDINGS LLC
#.## Ac±

HARVARD DERRY
PARTNERS, LLC

GRID

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

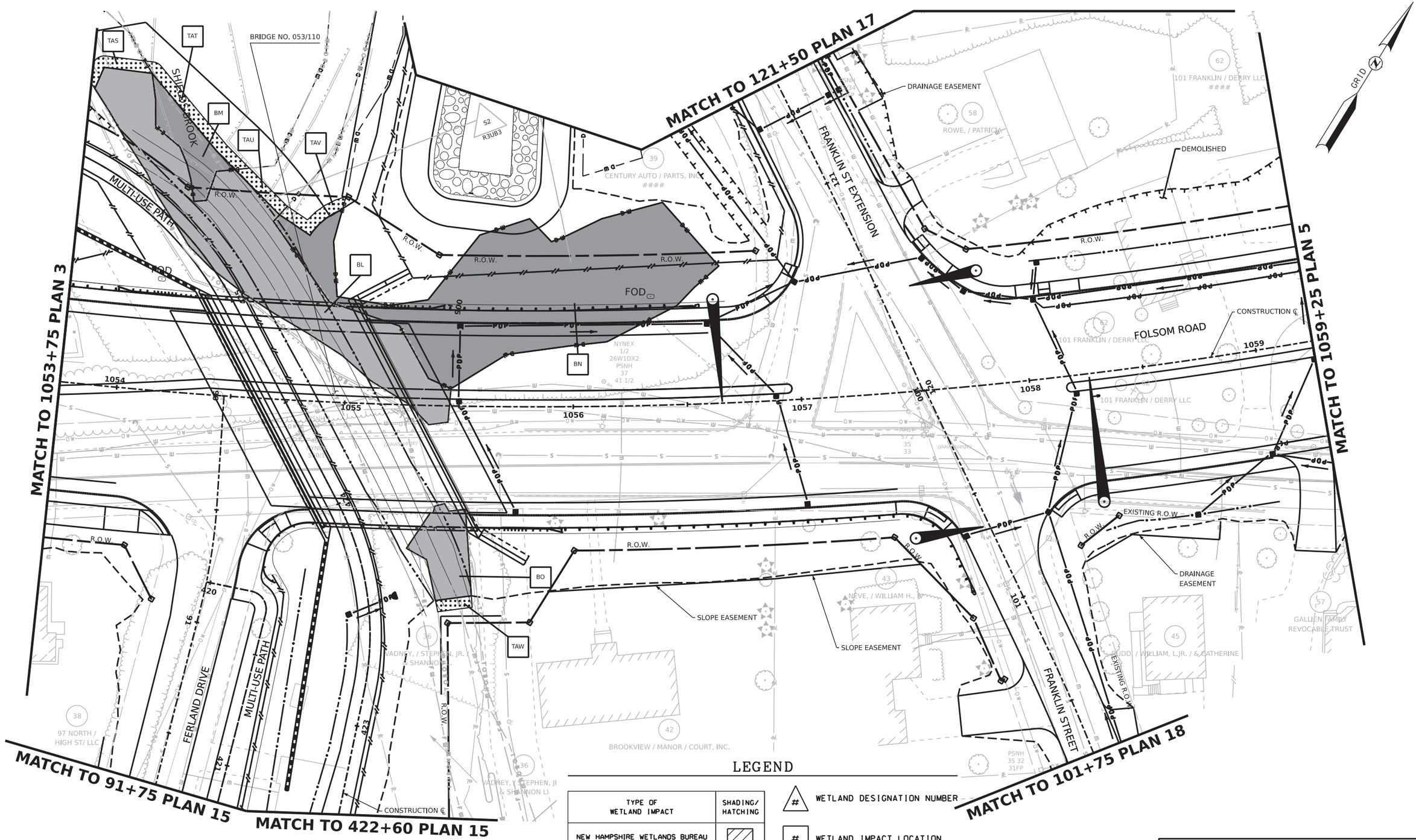
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 3

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 3 [SHT]	13065B-Wetlnd Pln SHT	13065B	10	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

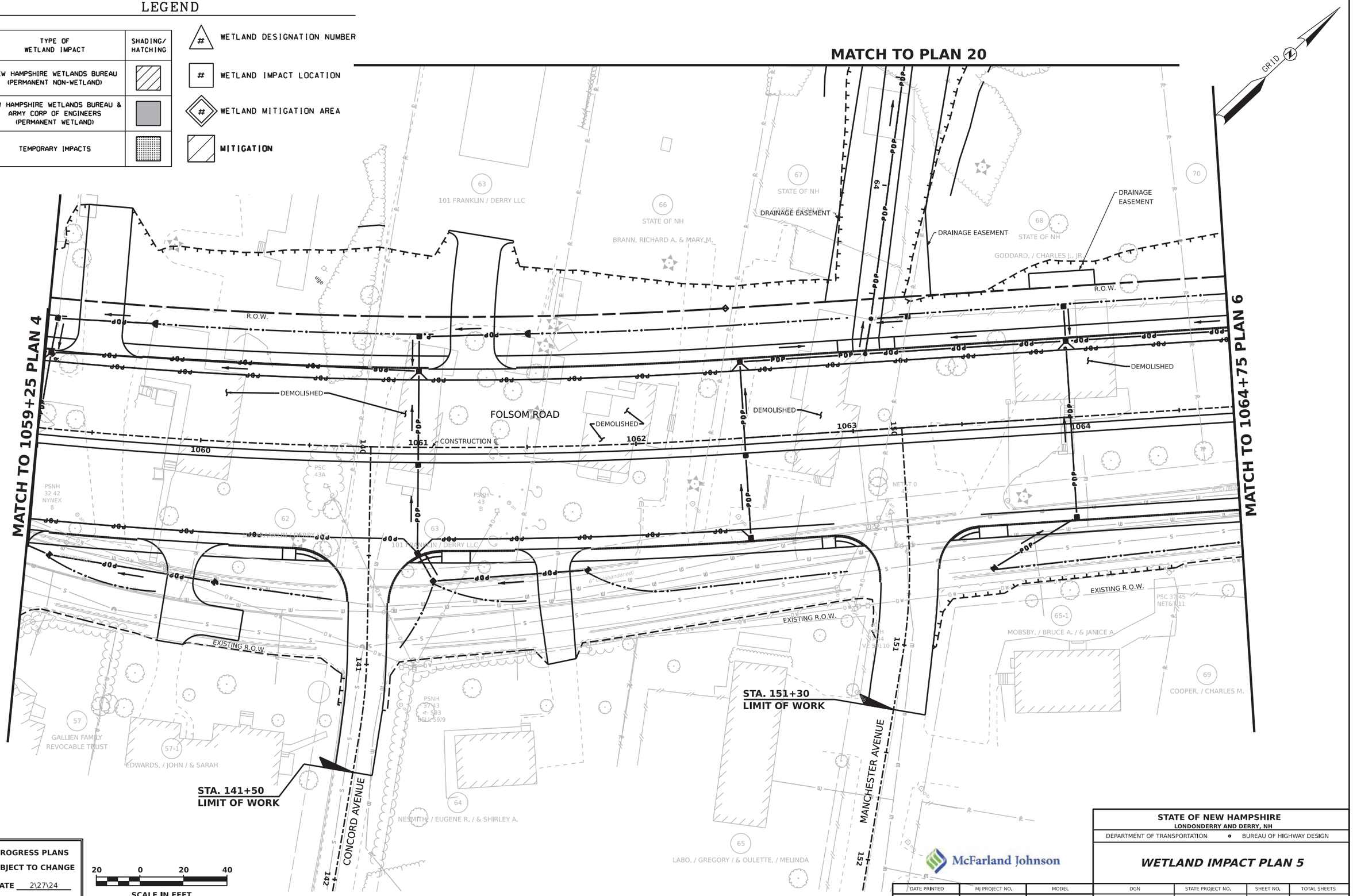
WETLAND IMPACT PLAN 4

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 4 [SHT]	13065B-WetInd Pln SHT	13065B	11	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION



	DESCRIPTION	DATE	NUMBER
REVISIONS AFTER PROPOSAL	STATION		
	STATION		

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

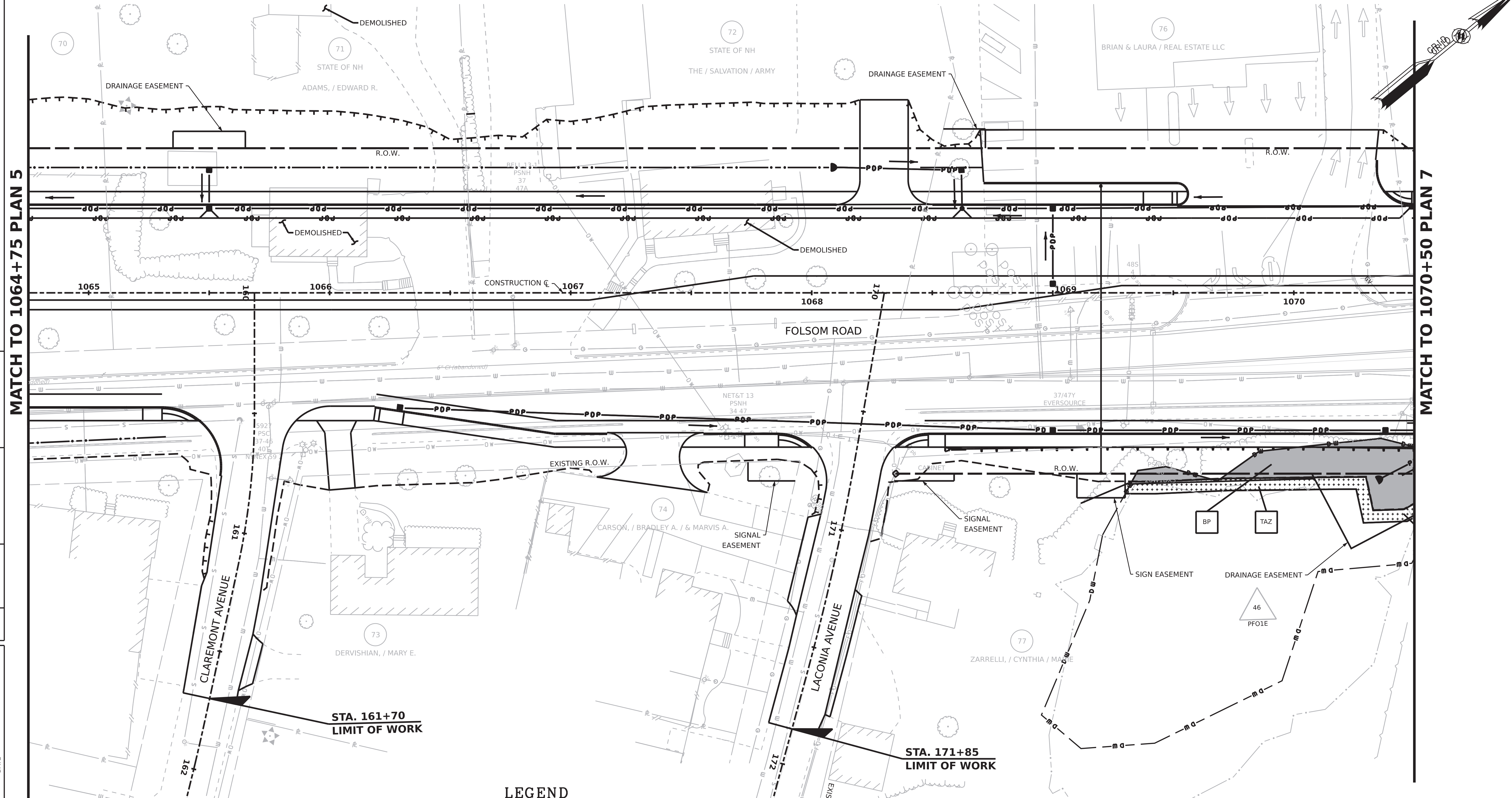
20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 5

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 5 [SHT]	13065B-Wetlnd Pln SHT	13065B	12	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- WETLAND DESIGNATION NUMBER
- WETLAND IMPACT LOCATION
- WETLAND MITIGATION AREA
- MITIGATION

20 0 20 40
SCALE IN FEET

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

NUMBER	DATE	STATION	STATION	DESCRIPTION
				REVISIONS AFTER PROPOSAL

SDR PROCESSED	VHB	DATE	2021
NEW DESIGN	MJ	DATE	8\2023
SHEET CHECKED	EWM	DATE	12\2023
AS BUILT DETAILS		DATE	

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 6

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 6 [SHT]	13065B-Wetlnd Pln SHT	13065B	13	62

MATCH TO 219+25 PLAN 21

MATCH TO 1070+50 PLAN 6

MATCH TO 1075+75 PLAN 8

MATCH TO 215+50 PLAN 22

DRAINAGE EASEMENT

R.O.W.

CONSTRUCTION ℄

FOLSOM ROAD

MANCHESTER ROAD (ROUTE 28)

TSIENNETO ROAD

CRYSTAL AVENUE (ROUTE 28)

EXISTING R.O.W.

78 TOWN OF / DERRY

78-1 TOWN OF / DERRY

79 72 CRYSTAL / AVENUE LLC

87 61 CRYSTAL / AVE. LLC

NYNEX 59/16 PSNH 37 50

NYNEX 59 15 PSNH 37 49

PSNH 505

PSNH 34 37

37 50Y

TAZ

BP

1071 1072 1073 1074 1075

217 218 219 216

12" cmp

EMERGENCY SIGNAL

GRID N

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

PROGRESS PLANS SUBJECT TO CHANGE

DATE 2\27\24

20 0 20 40

SCALE IN FEET

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 7

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 7 (SHT)	13065B-Wetlnd Pln SHT	13065B	14	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # WETLAND DESIGNATION NUMBER
- # WETLAND IMPACT LOCATION
- # WETLAND MITIGATION AREA
- MITIGATION

GRID

MATCH TO 1075+75 PLAN 7

MATCH TO 1081+50 PLAN 9

MATCH TO 181+90 PLAN 24

SIGNAL EASEMENT

SIGN EASEMENT

R.O.W.

TSIENNETO ROAD

CONSTRUCTION ℄

1076 1077 1078 1079 1080 1081

181

PINKERTON STREET

EXISTING R.O.W.

EXISTING R.O.W.

88 FIREYE / INC ####

87 61 CRYSTAL / AVE. LLC ####

89-1 HOODKROFT / CONDOMINIUM / ASSN

90 HOODKROFT / CONDOMINIUM / ASSN

89 HOODKROFT/CONDOMINIUM/ASSN ####

PSNH 3-17 10T

32W2DX1 OVERSOURCE 34/35

(2) 4"

12" PVC

NUMBER	DESCRIPTION	DATE	STATION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS SUBJECT TO CHANGE

DATE 2\27\24

20 0 20 40

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 8

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 8 [SHT]	13065B-Wetlnd Pln SHT	13065B	15	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # WETLAND DESIGNATION NUMBER
- # WETLAND IMPACT LOCATION
- # WETLAND MITIGATION AREA
- **MITIGATION**

GRID N

MATCH TO 1081+50 PLAN 8

88 FIREYE / INC ####

DRAINAGE EASEMENT

SIGN EASEMENT

DRAINAGE EASEMENT

8AS

R.O.W.

R.O.W.

R.O.W.

TSIENNETO ROAD

1082 1083 1084 1085 1086

CONSTRUCTION ℄

R.O.W.

EXISTING R.O.W.

SLOPE EASEMENT

NET&T 8 HSNH 31 31M

STA. 1084+00
END FULL DEPTH CONSTRUCTION

STA. 1085+00
TSIENNETO ROAD
LIMIT OF WORK
END APPROACH

90 HOODKROFT / CONDOMINIUM / ASSN ###

90-1 HOODKROFT / ASSOCIATES, / INC.

20 0 20 40
SCALE IN FEET

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 9

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 9 (SHT)	13065B-Wetlnd Pln SHT	13065B	16	62

MATCH TO 11+40 PLAN 1

MATCH TO 14+25 PLAN 11

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- WETLAND DESIGNATION NUMBER
- WETLAND IMPACT LOCATION
- WETLAND MITIGATION AREA
- MITIGATION

64
PFO1E

VP9

DRAINAGE EASEMENT

DRAINAGE EASEMENT

MADDEN ROAD

12

SLOPE EASEMENT

24
SEVEN HILLS / DEVELOPMENT, LLC
8.84 Ac±

27
ABBOTT, / MARCIA E.
#.## Ac±

CONSTRUCTION ℄

SLOPE EASEMENT

LONDONDERRY
DERRY

CONSTRUCTION ℄

R.O.W.

R.O.W.

R.O.W.

14

℄ AGHADOWEY AVENUE 32

EXISTING R.O.W.

EXISTING R.O.W.

SLOPE EASEMENT

psnh
37/39e

psnh
37/39f

psnh
32w/38

p32w4/38

23
PILLSBURY REALTY / DEVELOPMENT LLC

23-1
PILLSBURY REALTY
DEVELOPMENT LLC

25
DERRY BUSINESS CENTER
UNIT OWNERS ASSN

STA. 33+00
LIMIT OF WORK

GRID N

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

NUMBER	DESCRIPTION	STATION	DATE
	REVISIONS AFTER PROPOSAL		

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

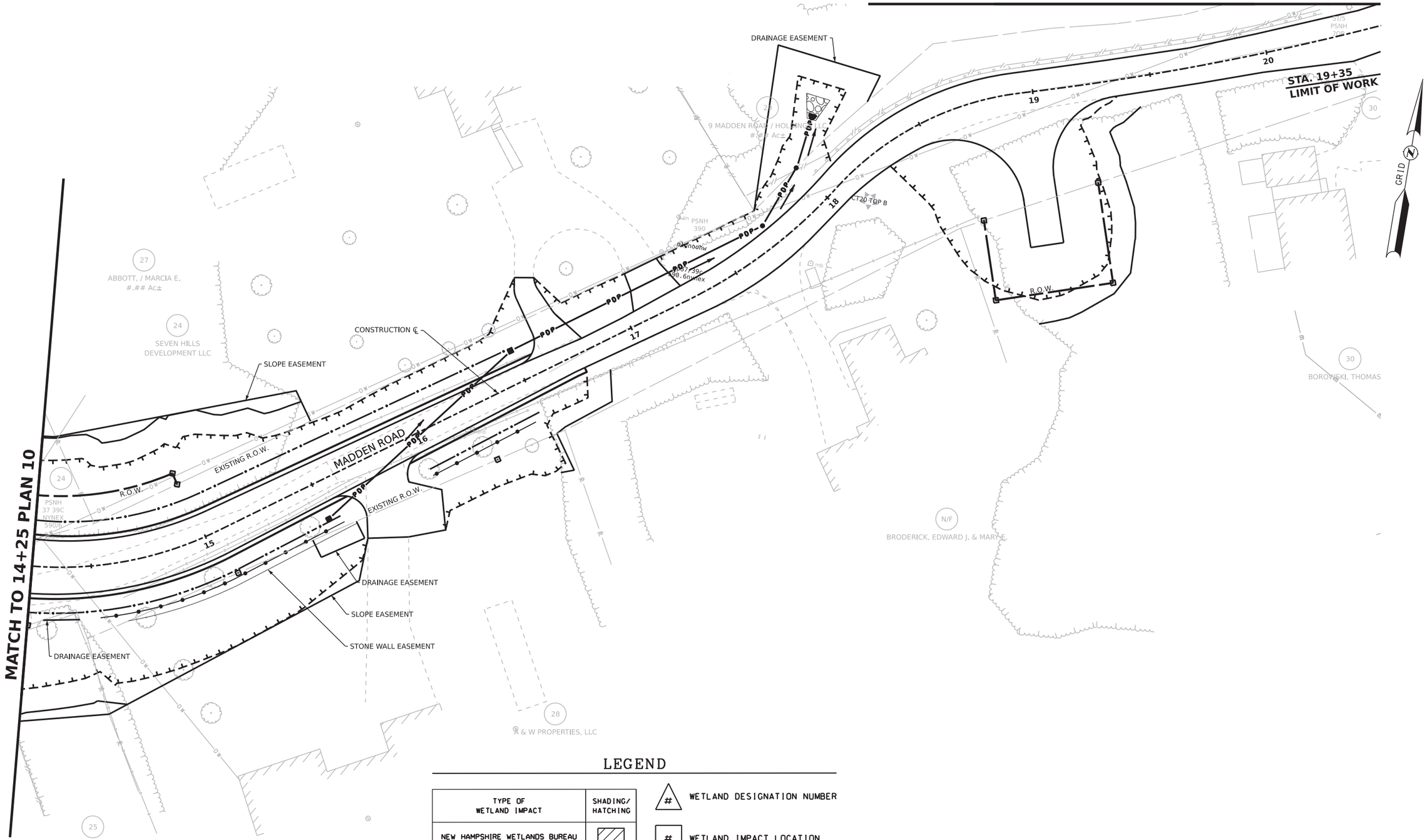
STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 10

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 10 [SHT]	13065B-Wetlnd Pln SHT	13065B	17	62

MATCH TO PLAN 2



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

PROGRESS PLANS SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION	STATION

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 11

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 11 [SHT]	13065B-Wetlnd Pln SHT	13065B	18	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # WETLAND DESIGNATION NUMBER
- # WETLAND IMPACT LOCATION
- # WETLAND MITIGATION AREA
- MITIGATION

GRID N

STA. 431+50.68
LIMIT OF WORK

STA. 73+20
LIMIT OF WORK

STA. 41+60
LIMIT OF WORK

AMERICAN EXCAVATING DRIVEWAY

SEVEN HILLS / DEVELOPMENT, LLC
10.93 Ac±

9 MADDEN ROAD / HOLDINGS LLC
#.### Ac±

HYRAX DERRY PARTNERS, LLC

CONSTRUCTION ℄

DRAINAGE EASEMENT

MULTI-USE PATH

SHIELDS BROOK

HALEY DRIVE

R.O.W.

CW

TCX

IP

MATCH TO 71+25 PLAN 3

MATCH TO 427+37 PLAN 3

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

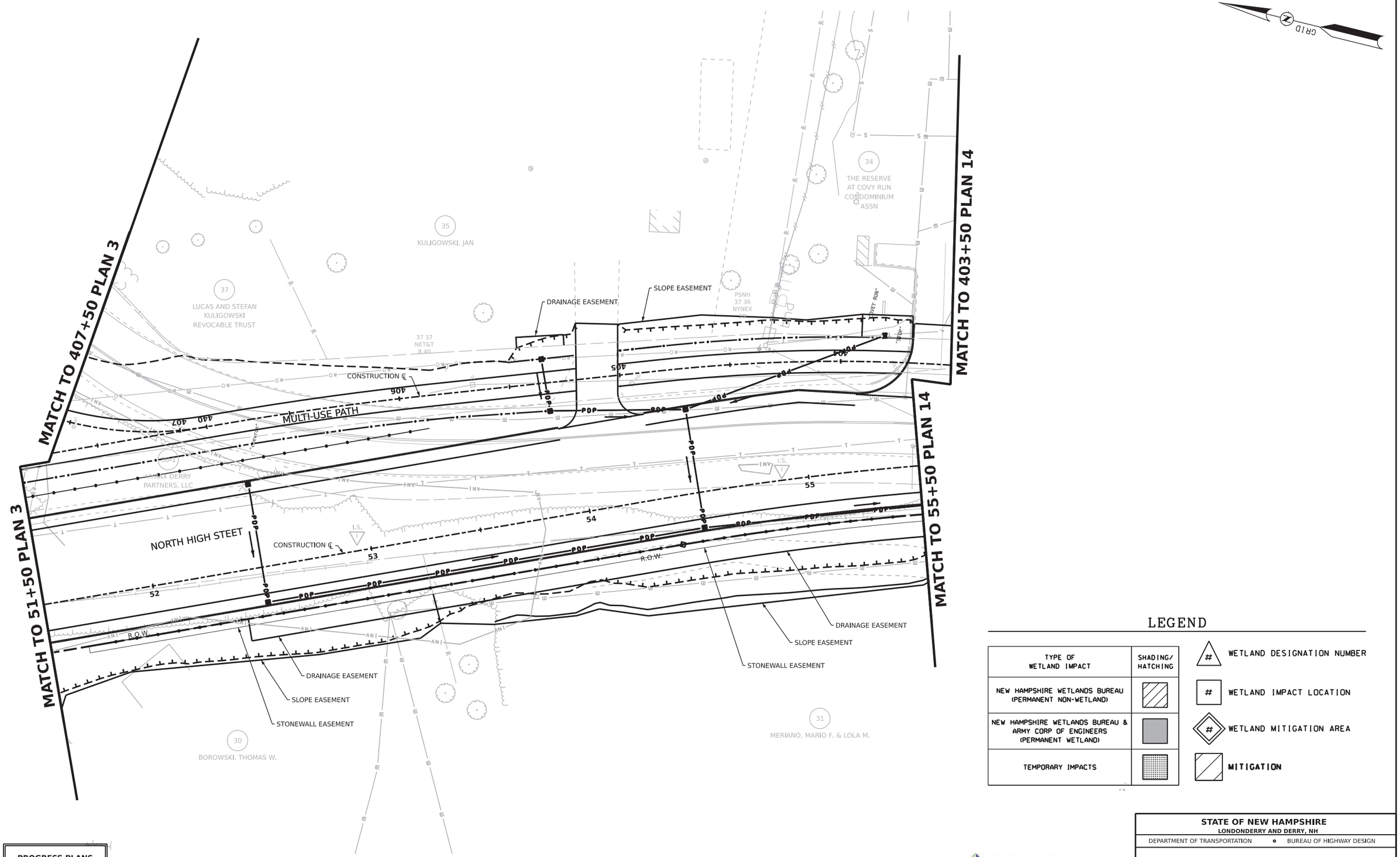
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 12

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 12 [SHT]	13065B-Wetlnd Pln SHT	13065B	19	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

McFarland Johnson

WETLAND IMPACT PLAN 13

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 13 (SHT)	13065B-Wetlnd Pln SHT	13065B	20	62

MATCH TO 403+50 PLAN 13

MATCH TO 55+50 PLAN 13

MATCH TO 1+25.00 PLAN 16

STA. 400+15
LIMIT OF WORK

STA. 59+25
LIMIT OF WORK

SLOPE EASEMENT

DRAINAGE EASEMENT

DRAINAGE EASEMENT

DRAINAGE EASEMENT

DRAINAGE EASEMENT

CONSTRUCTION ℄

CONSTRUCTION ℄

MULTI-USE PATH

EXISTING PATH

NORTH HIGH STEET

R.O.W.

THE RESERVE AT COVY RUN CONDOMINIUM ASSN

MERIANO, MARIO F. & LOLA M.

BRUDZISZ, MARIAN FRASER

PIEC, STEVEN J. & PIEC, JOHN E.

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

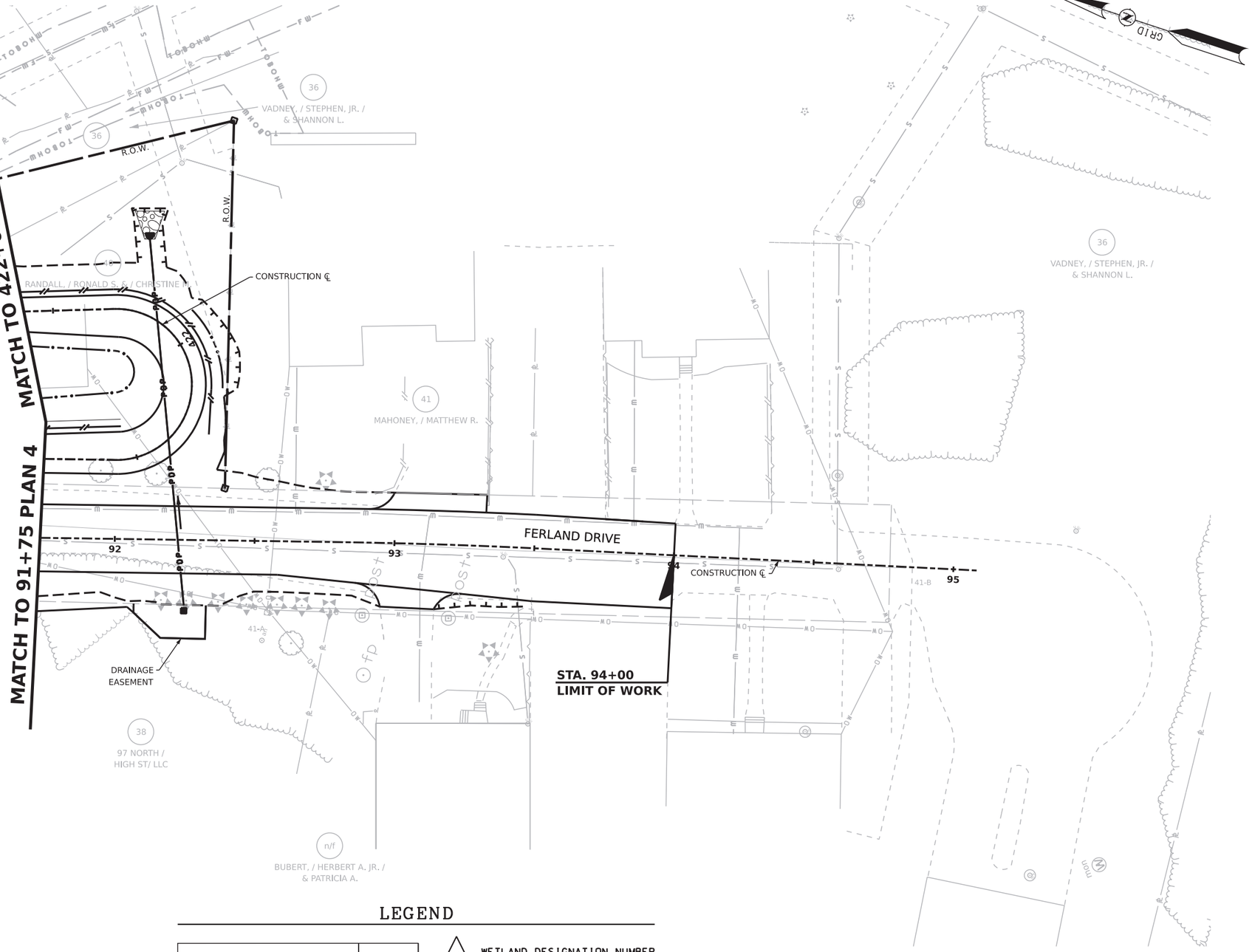
SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 14

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 14 [SHT]	13065B-Wetlnd Pln SHT	13065B	21	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

NUMBER	DESCRIPTION	DATE	STATION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 15

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 15 [SHT]	13065B-Wetlnd Pln SHT	13065B	22	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

PROPOSED FENCE

DRAINAGE EASEMENT

DRAINAGE EASEMENT

DRAINAGE EASEMENT

34
THE RESERVE AT COVY RUN CONDOMINIUM ASSN

34
THE RESERVE / AT COVEY RUN / CONDOMINIUM / ASSN
####

36
YADNEY, / STEPHEN JR. / & SHANNON L.

MATCH TO 1+25.00 PLAN 14

GRID N

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS SUBJECT TO CHANGE

DATE 2\27\24

20 0 20 40

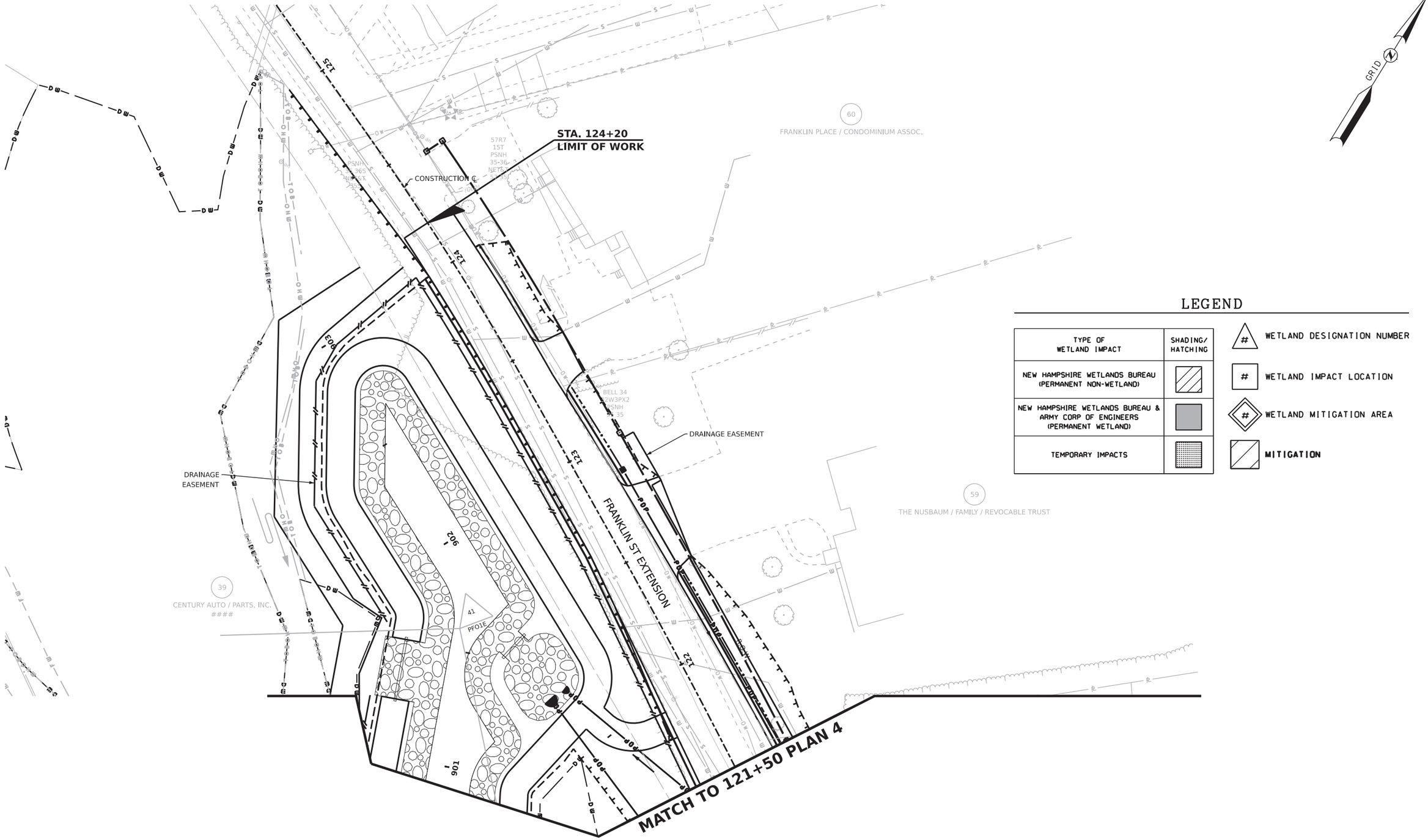
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 16

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 16 [SHT]	13065B-Wetlnd Pln SHT	13065B	23	62



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 17

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 17 [SHT]	13065B-Wetlnd Pln SHT	13065B	24	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

GRID

EXETER ST

FRANKLIN STREET

102

103

104
CONSTRUCTION ℄

105

106

STA. 105+05
LIMIT OF WORK

MATCH TO 101+75 PLAN 4

ANDRADE, / PEDRO M. / & MARIA L.

CHAGARIS, / NICHOLAS

ARCHAMBAULT, / TODD J. & / ALICE L.

ROSE, / ROBERT J. / & KELLY M.

BROOKVIEW / MANOR / COURT, INC.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

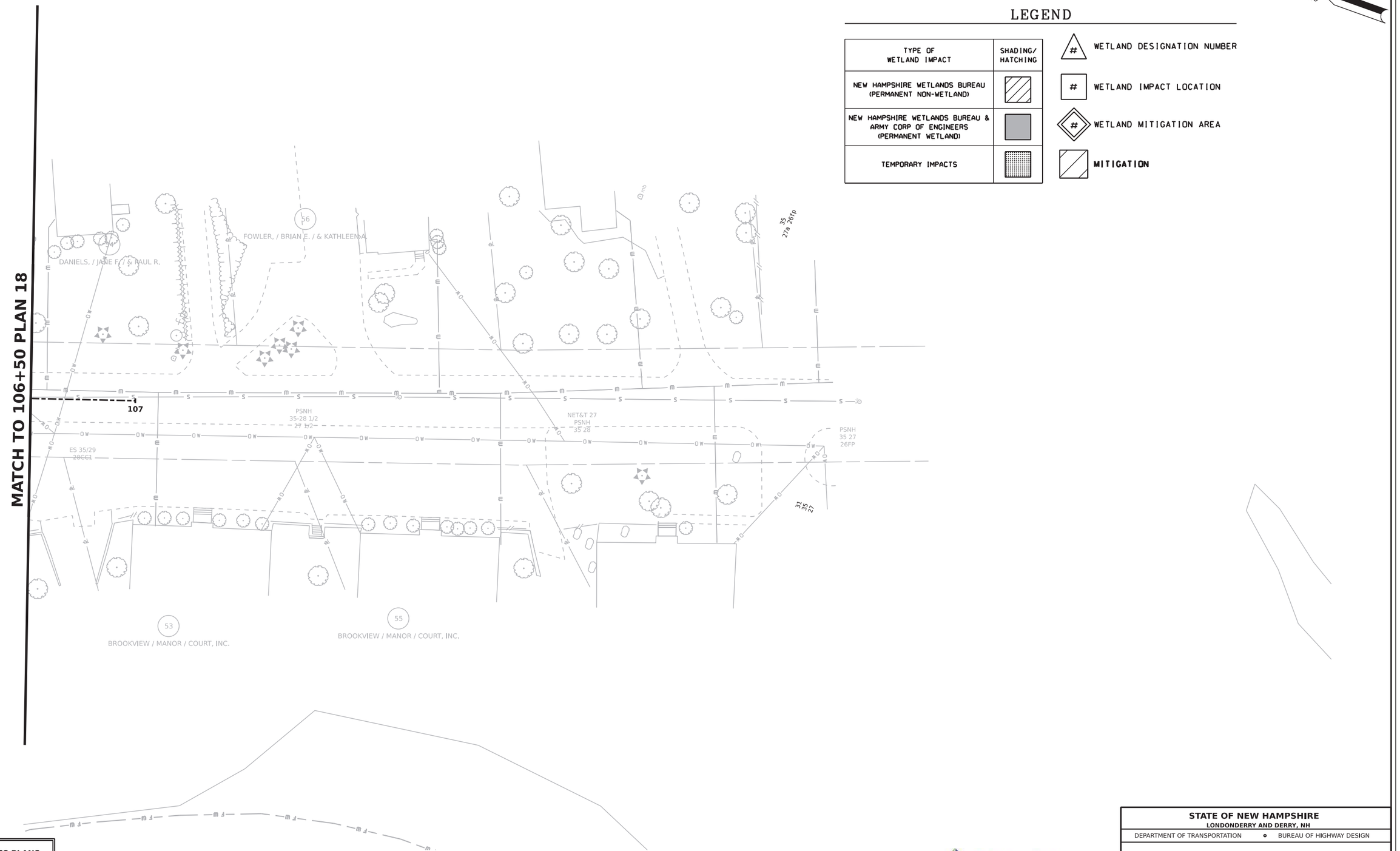
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 18

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 18 [SHT]	13065B-Wetlnd Pln SHT	13065B	25	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

NUMBER	DATE	STATION

REVISIONS AFTER PROPOSAL

DESCRIPTION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 19

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 19 [SHT]	13065B-Wetlnd Pln SHT	13065B	26	62

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & army corp of engineers (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER
WETLAND IMPACT LOCATION
WETLAND MITIGATION AREA
MITIGATION

GRID

TAY
CU
I85
PSS1E
S72
R4SBC
N/F
INNOVATIVE FLEX SPACE, LLC
DRAINAGE EASEMENT
60
FRANKLIN PLACE / CONDOMINIUM ASSOC.
101 FRANKLIN / DERRY LLC
FF
67
STATE OF NH NHDOT
504
503
502
501
500
59
THE NUSBAUM / FAMILY / REVOCABLE TRUST
DRAINAGE EASEMENT
62
101 FRANKLIN / DERRY LLC
####
63
101 FRANKLIN / DERRY LLC
####
66
BRANN, / RICHARD A., JR. / & MARY M.
####
70
STINSON / HILLS LLC
MATCH TO PLAN 5

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE	2021
NEW DESIGN	MJ	DATE	8\2023
SHEET CHECKED	EWM	DATE	12\2023
AS BUILT DETAILS		DATE	

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 20

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 20 [SHT]	13065B-Wetlnd Pln SHT	13065B	27	62

SIGN EASEMENT

MANCHESTER ROAD
(ROUTE 28)

CONSTRUCTION ℄

STA. 221+15
LIMIT OF WORK

MATCH TO 219+25 PLAN 7

R.O.W.

78
TOWN OF / DERRY
####

88
FIREYE / INC

GRID

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 21

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 21 [SHT]	13065B-Wetlnd Pln SHT	13065B	28	62

GRID N

MATCH TO 211+50 PLAN 23

MATCH TO 215+50 PLAN 7

CRYSTAL AVENUE
(ROUTE 28)

CONSTRUCTION ℄

79
72 CRYSTAL / AVENUE LLC

80
KENT NUTRITION / GROUP, INC.

84
CHINA / CASTLE INC

85
HOOD / COMMONS / BSD LLC

86
BANK OF / AMERICA

87

R.O.W.

212

213

214

215

SMH 206

UNKNOWN

4" RGS

12" RGS

PSNH
34 35
BELL
94-25

PSNH
38 36

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

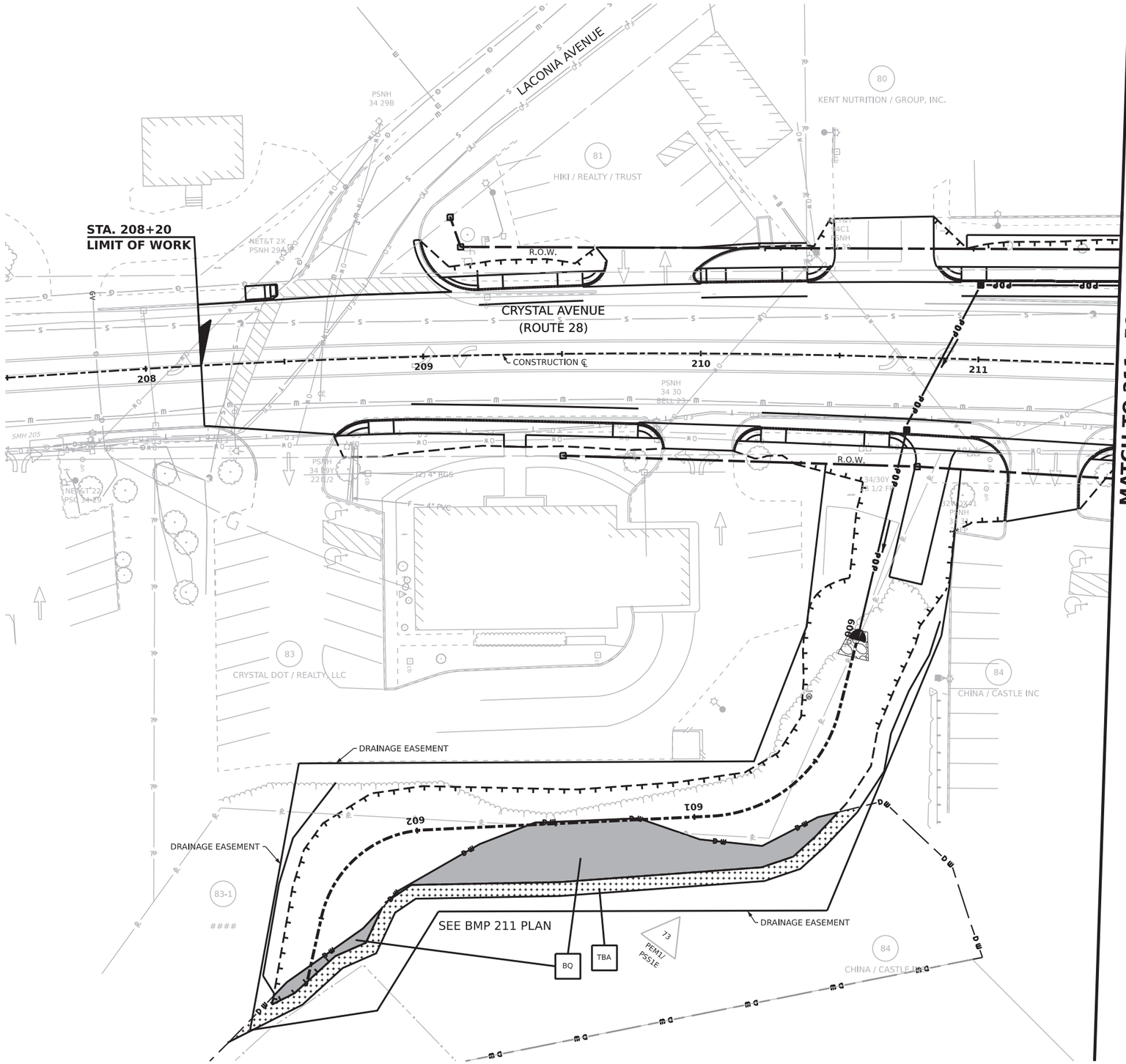
SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 22

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 22 [SHT]	13065B-Wetlnd Pln SHT	13065B	29	62



GRID N

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

	NUMBER	DATE	STATION	STATION
REVISIONS AFTER PROPOSAL				

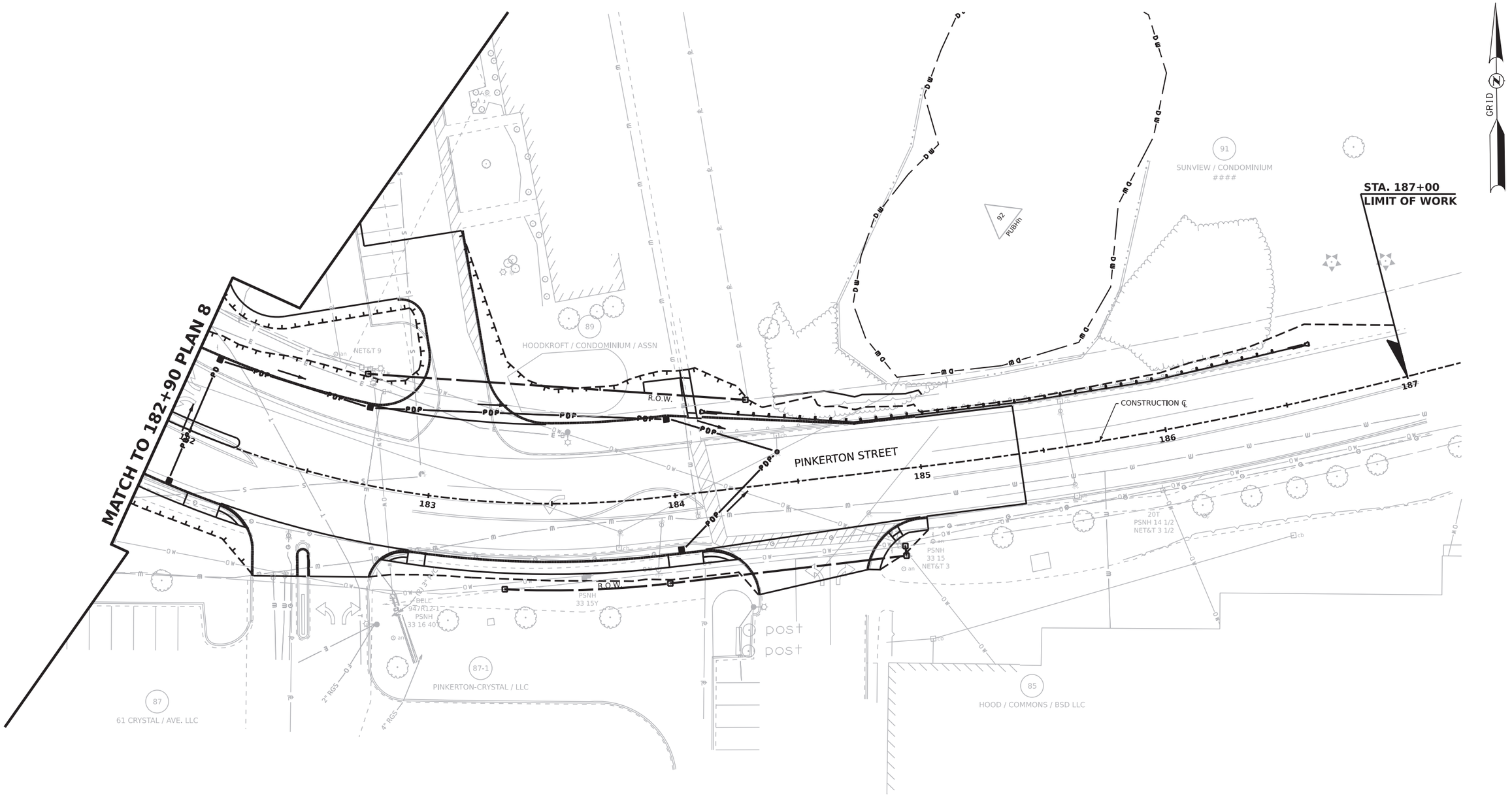
		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 23

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 23 [SHT]	13065B-Wetlnd Pln SHT	13065B	30	62



LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

PROGRESS PLANS SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

NUMBER	DESCRIPTION	DATE	STATION
	REVISIONS AFTER PROPOSAL		

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

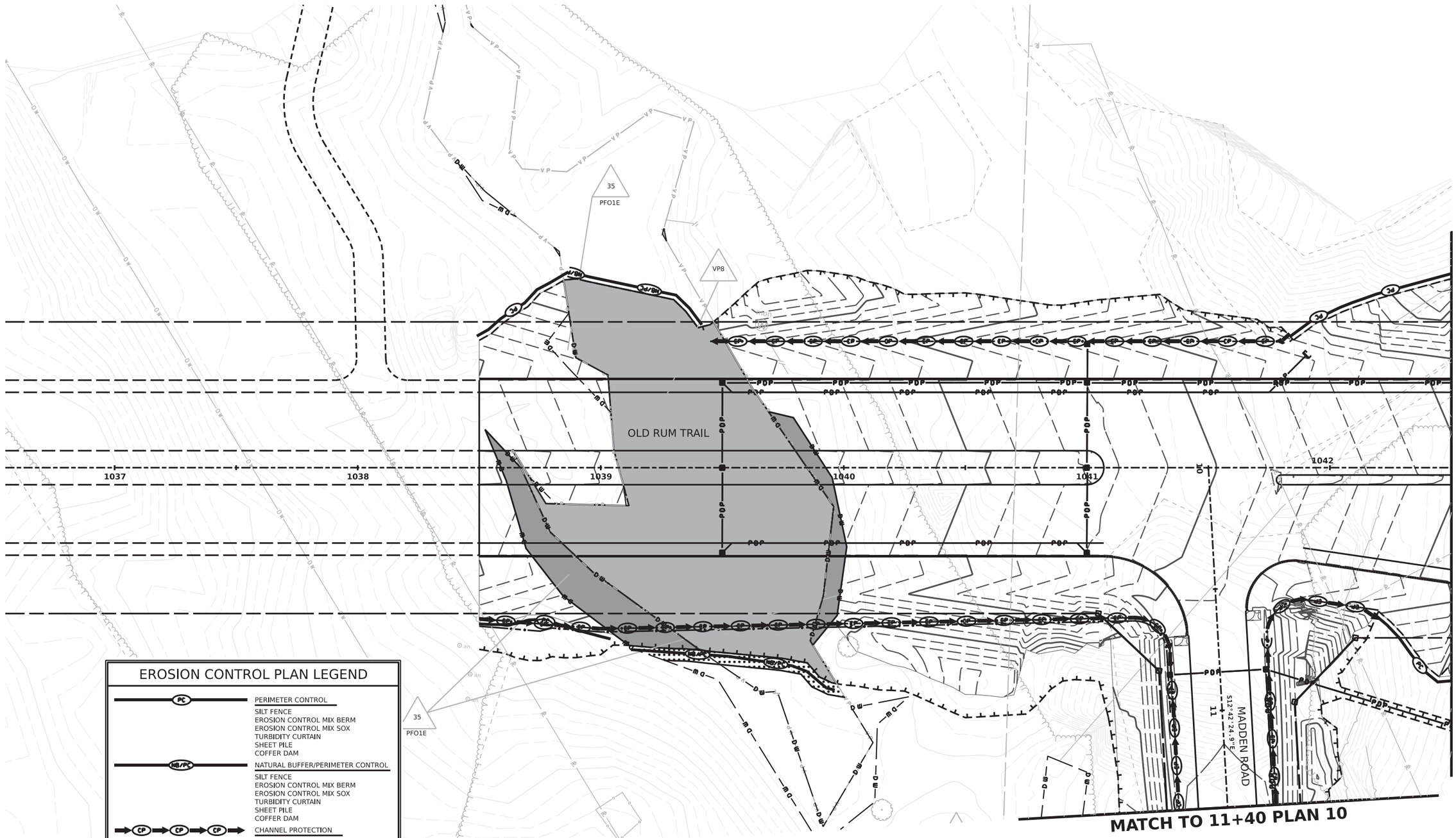
WETLAND IMPACT PLAN 24

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	WetPln20 24 [SHT]	13065B-Wetlnd Pln SHT	13065B	31	62

NUMBER	DESCRIPTION	DATE	STATION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE



EROSION CONTROL PLAN LEGEND

- PC — PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- MB/PC — NATURAL BUFFER/PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- CP — CHANNEL PROTECTION
  - STONE CHECK DAMS
  - STRAW WATTLES
  - CHANNEL MATTING
  - CLASS D EROSION STONE
  - CLASS C STONE
- URS — UNIMPACTED RIVERINE SURFACE WATERS
- ROA — ROUTINE ROADWAY QUALIFYING ACTIVITY
- SD — STREAM DIVERSION

20 0 20 40

SCALE IN FEET

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 1

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 1 (SHT)	13065B-Erosion Control Pln SHT	13065B	32	62

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

MATCH TO 1042+75 PLAN 1

MATCH TO 1048+25 PLAN 3

MATCH TO PLAN 11

OLD RUM TRAIL

1043 1044 1045 1046 1047 1048

DEMOLISHED

40 PSS1E

S11 R4SB5

39 PEM1F

26 27 29

9 MADDEN ROAD HOLDINGS LLC

ABBOTT, MARCIA E.

GRID

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 2

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErosPln20 2 [SHT]	13065B-Erosion Control Pln SHT	13065B	33	62

Drawing-2 | 3
1"=20' | 000

MATCH TO 71+25 PLAN 12

MATCH TO 427+37 PLAN 12

MATCH TO 1048+25 PLAN 2

MATCH TO 1053+75 PLAN 4

MATCH TO 51+50 PLAN 13

HALEY DRIVE

NORTH HIGH STEET

FOLSOM ROAD

RAIL TRAIL

RAIL TRAIL 1

DEMOLISHED

CENTURY AUTO PARTS, INC

97 NORTH / HIGH ST/ LLC

HEIRS OF TRACIE LYONS & KULIGOWSKI FAMILY REVOCABLE TRUST

GRID

N23°29'40.8"W

N23°28'29.3"W

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

NUMBER	DATE	STATION	DESCRIPTION	STATION

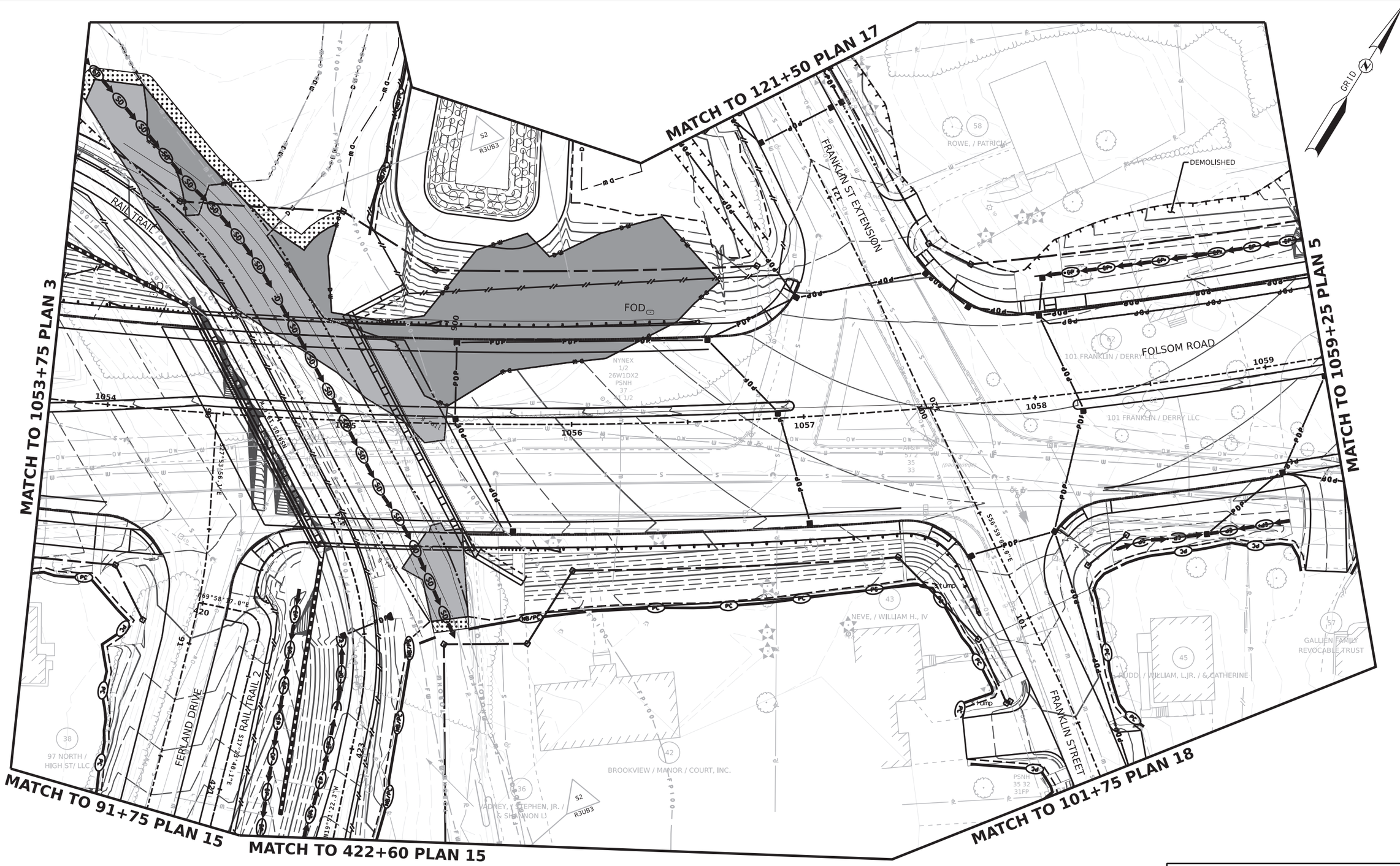
REVISIONS AFTER PROPOSAL

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 3

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 3 [SHT]	13065B-Erosion Control Pln SHT	13065B	34	62



REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

McFarland Johnson

EROSION CONTROL PLAN 4

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErolPln20 4 [SHT]	13065B-Erosion Control Pln SHT	13065B	35	62

MATCH TO PLAN 20

MATCH TO 1059+25 PLAN 4

MATCH TO 1064+75 PLAN 6

GRID

TO BE DEMOLISHED

DEMOLISHED

FOLSOM ROAD

CONCORD AVENUE

MANCHESTER AVENUE

62 101 FRANKLIN / DERRY LLC

63 101 FRANKLIN / DERRY LLC

66 STATE OF NH

67 STATE OF NH
CAREY, SEAN W.

68 STATE OF NH
GODDARD, / CHARLES J., JR.

BRANN, RICHARD A. & MARY M.

57 GALLIEN FAMILY REVOCABLE TRUST

57-1 EDWARDS, / JOHN / & SARAH

64 NESMITH, / EUGENE R. / & SHIRLEY A.

65 LABO, / GREGORY / & OULETTE, / MELINDA

65-1 MOBSBY, / BRUCE A. / & JANICE A.

69 COOPER, / CHARLES M.

PSNH 32 TO TYNEX 8

PSNH 43 B

PSNH 37-13 <- 503 BELL 59/9

PSC 43A

PSC 37-45 NET&T 11

1060 1061 1062 1063 1064

141 142 151 152

END 65+01.67

S45°45'00.6"E

S50°31'40.3"E

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

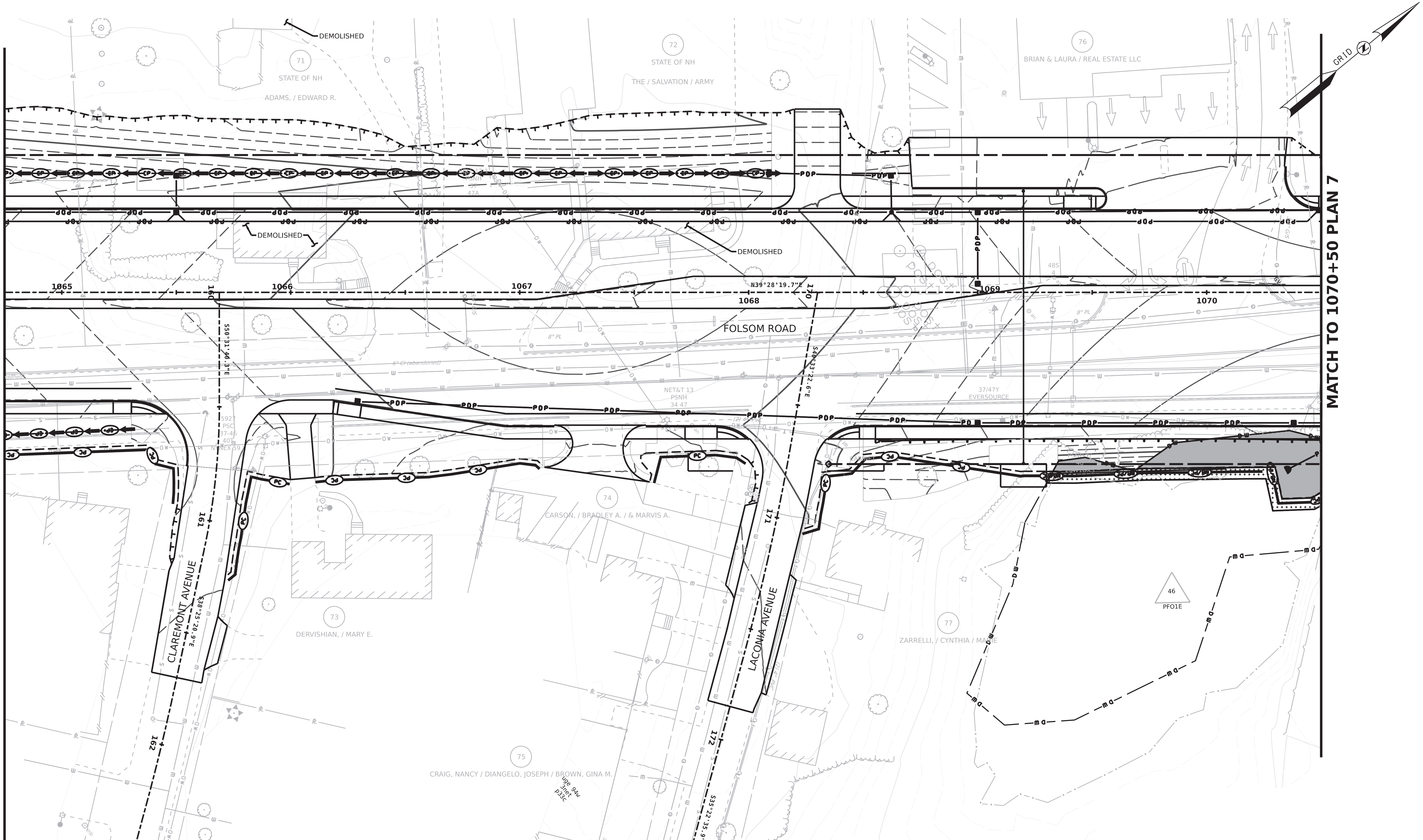
SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 5

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErolPln20 5 [SHT]	13065B-Erosion Control Pln SHT	13065B	36	62



NUMBER	DATE	STATION	STATION	DESCRIPTION
REVISIONS AFTER PROPOSAL				

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 6

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 6 [SHT]	13065B-Erosion Control Pln SHT	13065B	37	62

MATCH TO 1070+50 PLAN 6

MATCH TO 219+25 PLAN 21

MATCH TO 1075+75 PLAN 8

MATCH TO 215+50 PLAN 22

FOLSOM ROAD

MANCHESTER ROAD (ROUTE 28)

TSIENNETO ROAD

CRYSTAL AVENUE (ROUTE 28)

TOWN OF / DERRY

72 CRYSTAL / AVENUE LLC

61 CRYSTAL / AVE. LLC

GRID N

SCALE IN FEET 20 0 20 40

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION
DESCRIPTION			

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 7

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErolPln20 7 [SHT]	13065B-Erosion Control Pln SHT	13065B	38	62

MATCH TO 1075+75 PLAN 7

MATCH TO 1081+50 PLAN 9

MATCH TO 181+90 PLAN 24

TSIENNETO ROAD

PINKERTON STREET

1076 1077 180 1078 1079 1080 1081

181

89-1

HOODKROFT / CONDOMINIUM / ASSN

90

HOODKROFT / CONDOMINIUM / ASSN

PSNH
3-17
10T

131

GRID N

NUMBER	DESCRIPTION	DATE	STATION
	REVISIONS AFTER PROPOSAL		

		DATE
SDR PROCESSED	VHB	2021
NEW DESIGN	MJ	8\2023
SHEET CHECKED	EWM	12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 8

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErolPln20 B (SHT)	13065B-Erosion Control Pln SHT	13065B	39	62

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED VHB DATE 2021
NEW DESIGN MJ DATE 8\2023
SHEET CHECKED EWM DATE 12\2023
AS BUILT DETAILS DATE

MATCH TO 1081+50 PLAN 8

GRID

311
312
1082
1083
1084
1085
1086
N34°17'13.5"E
TSIENNETO ROAD
(6) 4" PVC
(6) 4" BPE
NET&T 8
PSNH 31
31M
HOODKROFT / ASSOCIATES, / INC.
90-1

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 9

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErosPln20 9 [SHT]	13065B-Erosion Control Pln SHT	13065B	40	62

MATCH TO 11+40 PLAN 1

MATCH TO 14+25 PLAN 11

MADDEN ROAD

AGHADOWEY AVENUE

64
PFO1E

VP9

23-1
PILLSBURY REALTY
DEVELOPMENT LLC

25
DERRY BUSINESS CENTER
UNIT OWNERS ASSN

psnh
37/39f

S48°17'37.2"W
S56°09'25.8"W

GRID N

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 10

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln10 10 (SHT)	13065B-Erosion Control Pln SHT	13065B	41	62

MATCH TO PLAN 2

MATCH TO 14+25 PLAN 10

MADDEN ROAD

N54°32'22.6"E

24 SEVEN HILLS DEVELOPMENT LLC

28 R & W PROPERTIES, LLC

30 BOROWSKI, THOMAS

N/F BRODERICK, EDWARD J. & MARY E.

CT20 TOP B

GRID N

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION
DESCRIPTION			
STATION			
STATION			

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

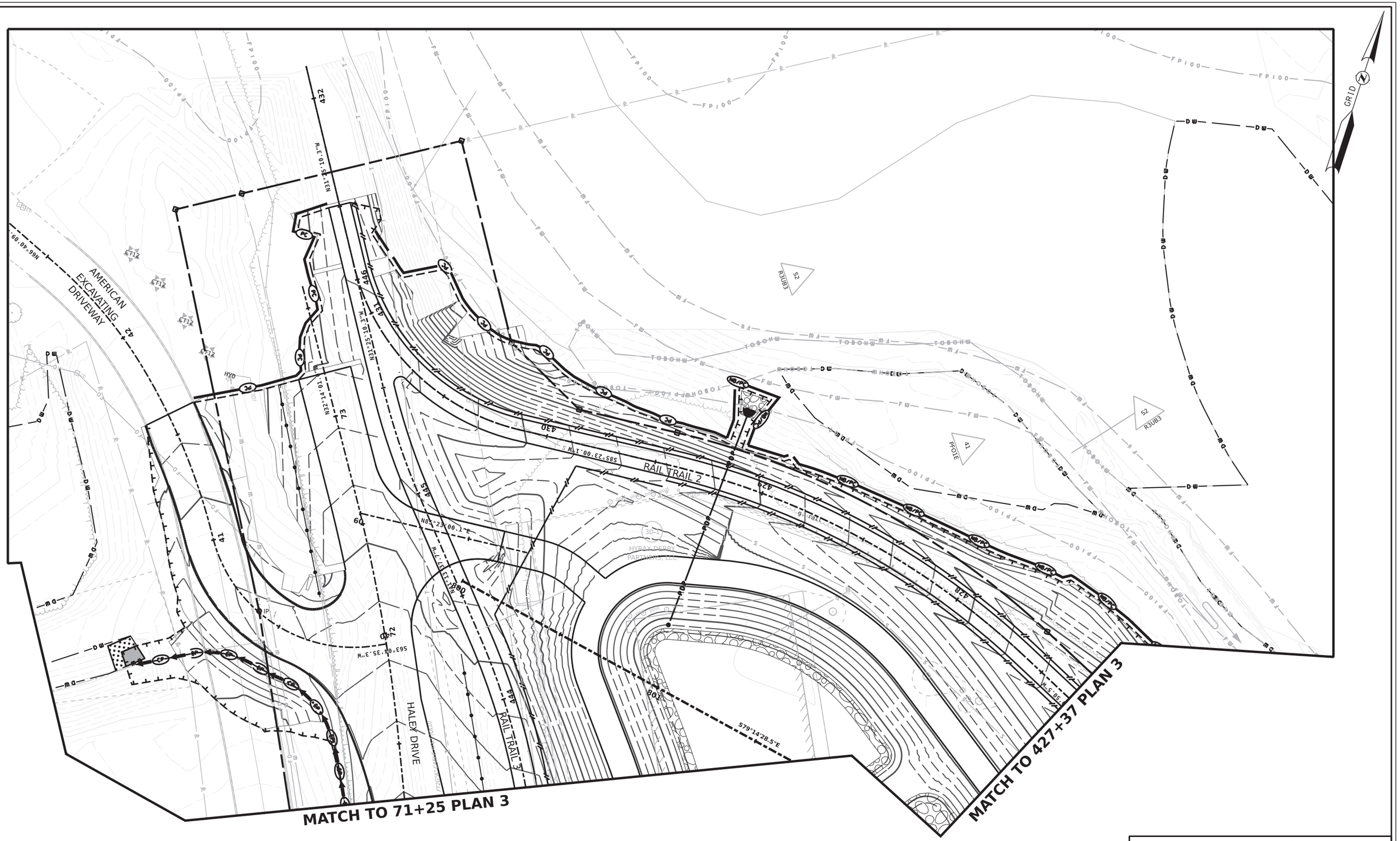
EROSION CONTROL PLAN 11

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErsPln20 11 [SHT]	13065B-Erosion Control Pln SHT	13065B	42	62

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE



PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

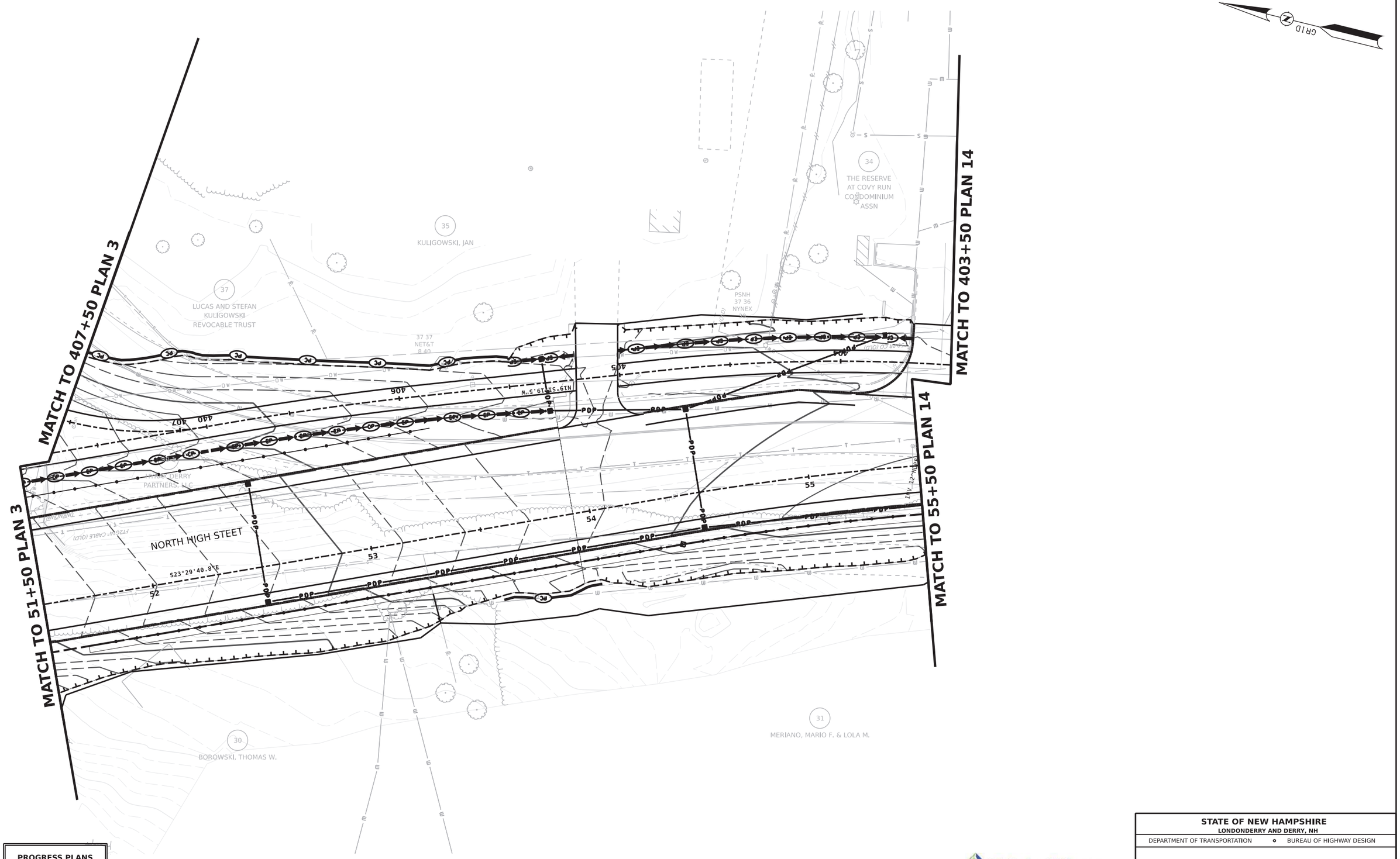
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 12

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EnvPln20 12 [SHT]	13065B-Erosion Control Pln SHT	13065B	43	62



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE	2021
NEW DESIGN	MJ	DATE	8\2023
SHEET CHECKED	EWM	DATE	12\2023
AS BUILT DETAILS		DATE	

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 13

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErsPln20 13 [SHT]	13065B-Erosion Control Pln SHT	13065B	44	62

MATCH TO 403+50 PLAN 13

MATCH TO 55+50 PLAN 13

MATCH TO 1+25.00 PLAN 16

RAIL TRAIL

34
THE RESERVE
AT COVY RUN
CONDOMINIUM
ASSN

31
MERIANO, MARIO F. & LOLA M.

32
BRUDZISZ, MARIAN FRASER

33
PIEC, STEVEN J. & PIEC, JOHN E.

S08°20'04.3"E

N18°13'07.4"W

N39°29'21.8"W

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

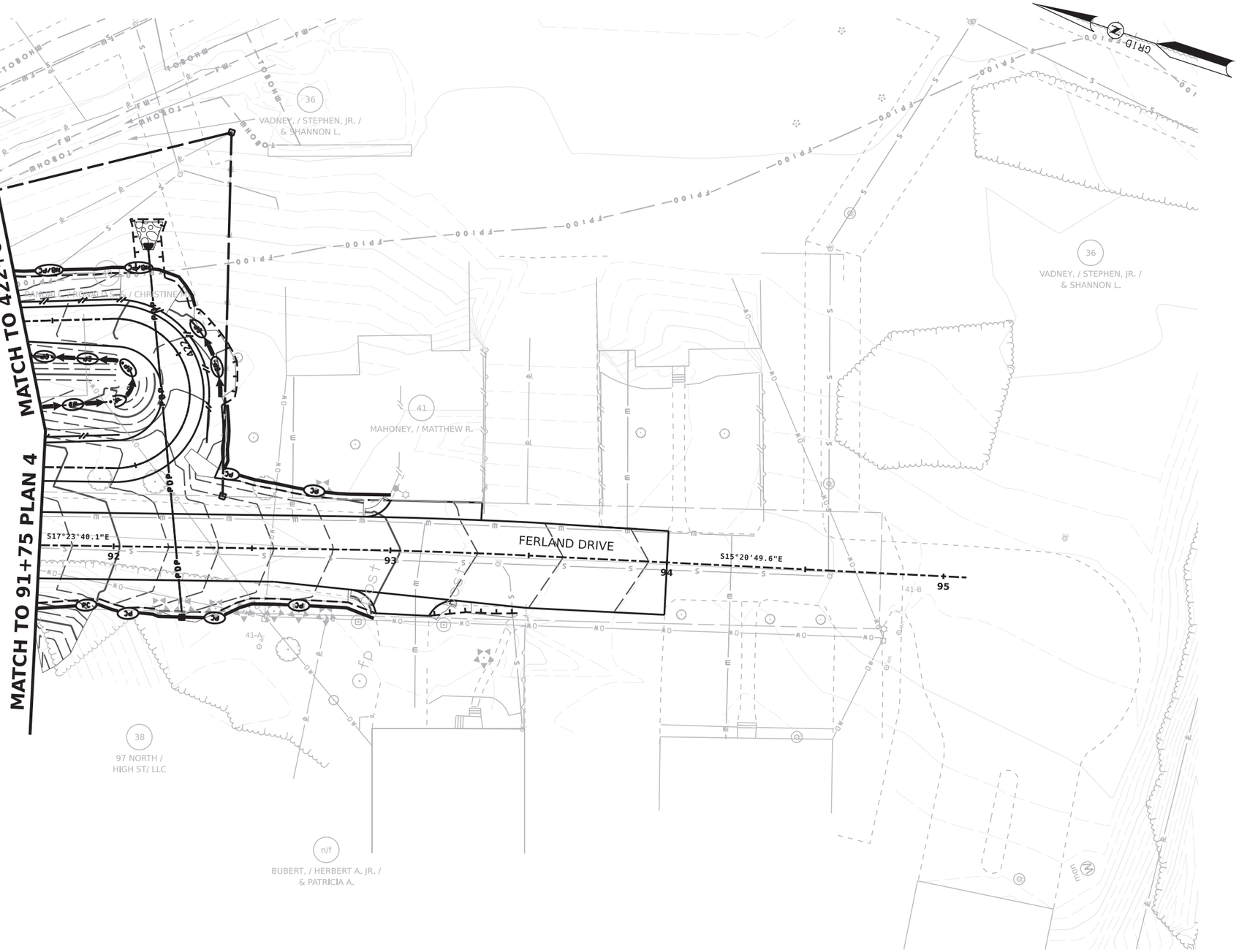
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 14

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 14 [SHT]	13065B-Erosion Control Pln SHT	13065B	45	62



REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 15

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErsPln20 15 [SHT]	13065B-Erosion Control Pln SHT	13065B	46	62

PROPOSED FENCE

SLOPE LINE

ITEM 662.282 - DECOMMISSION MONITORING WELL

ITEM 662.282 - DECOMMISSION MONITORING WELL

SLOPE LINE

MATCH TO 1+25.00 PLAN 14

THE RESERVE AT COVY RUN CONDOMINIUM ASSN

THE RESERVE / AT COVEY RUN / CONDOMINIUM / ASSN

VADNEY, / STEPHEN JR. / & SHANNON L.

GRID

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

NUMBER	DATE	STATION

REVISIONS AFTER PROPOSAL

DESCRIPTION

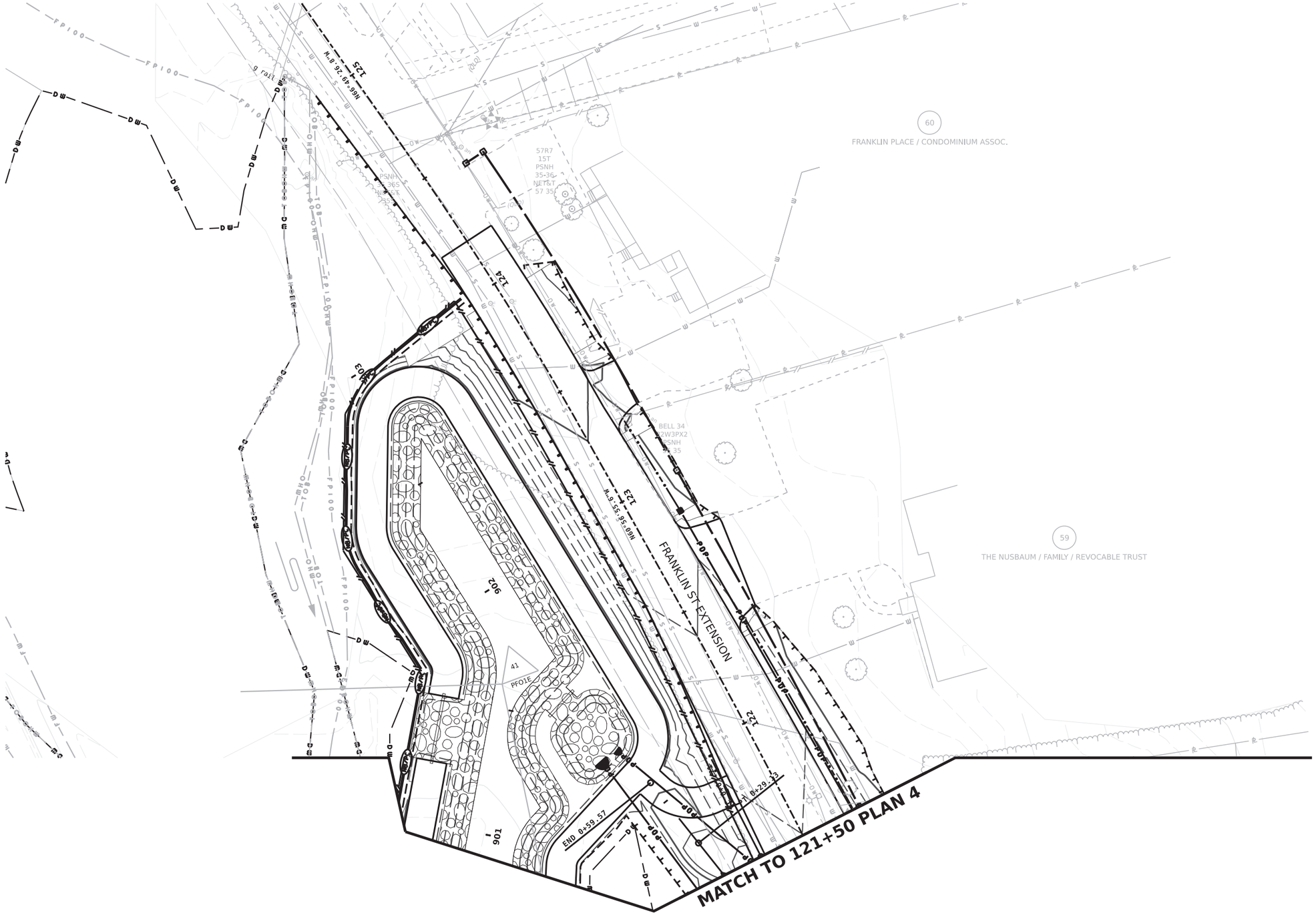
SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 16

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErosPln20 16 [SHT]	13065B-Erosion Control Pln SHT	13065B	47	62



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

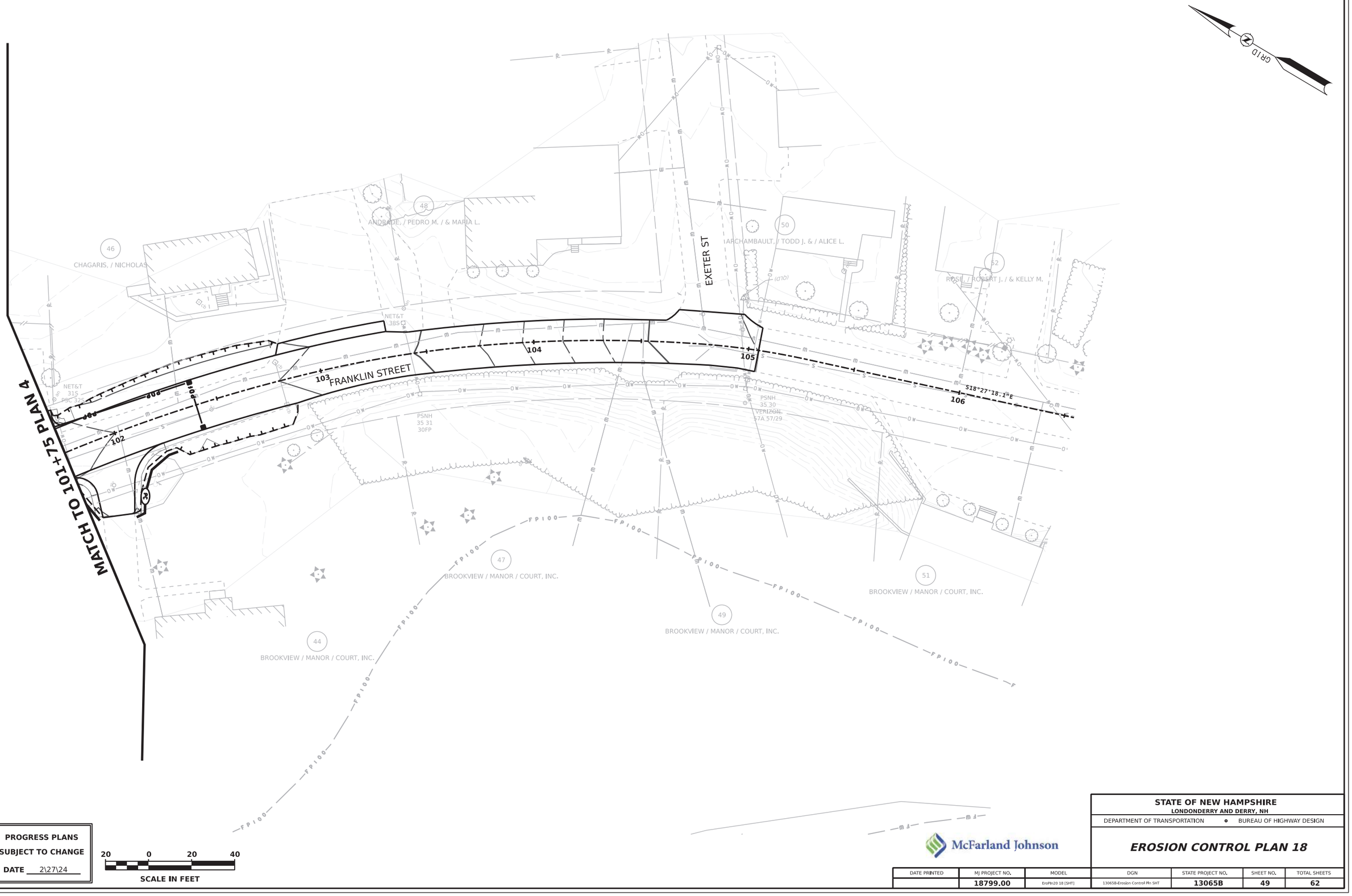
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 17

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 17 [SHT]	13065B-Erosion Control Pln SHT	13065B	48	62



REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	NUMBER	DATE

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

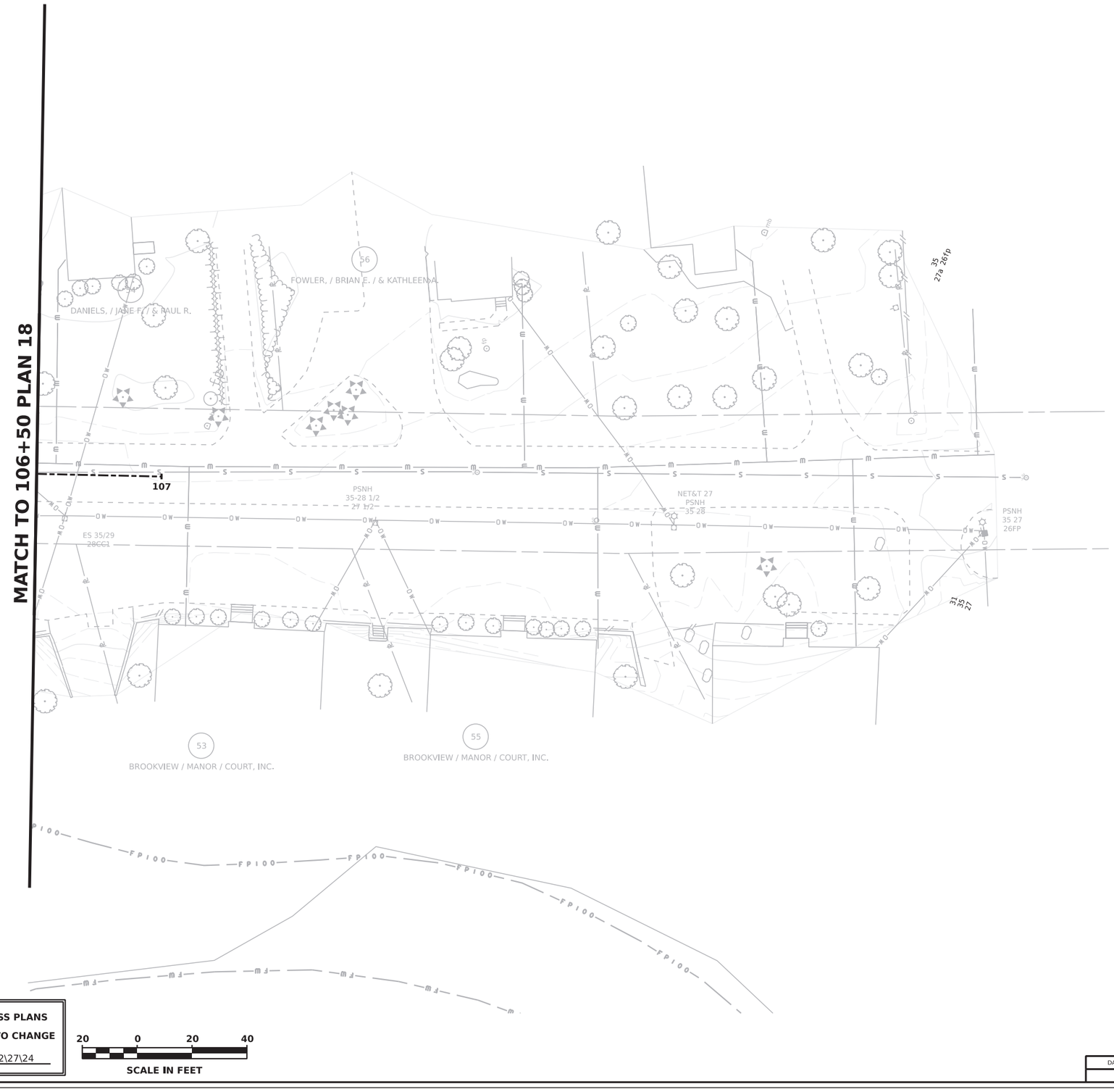
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 18

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 18 [SHT]	13065B-Erosion Control Pln SHT	13065B	49	62



SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

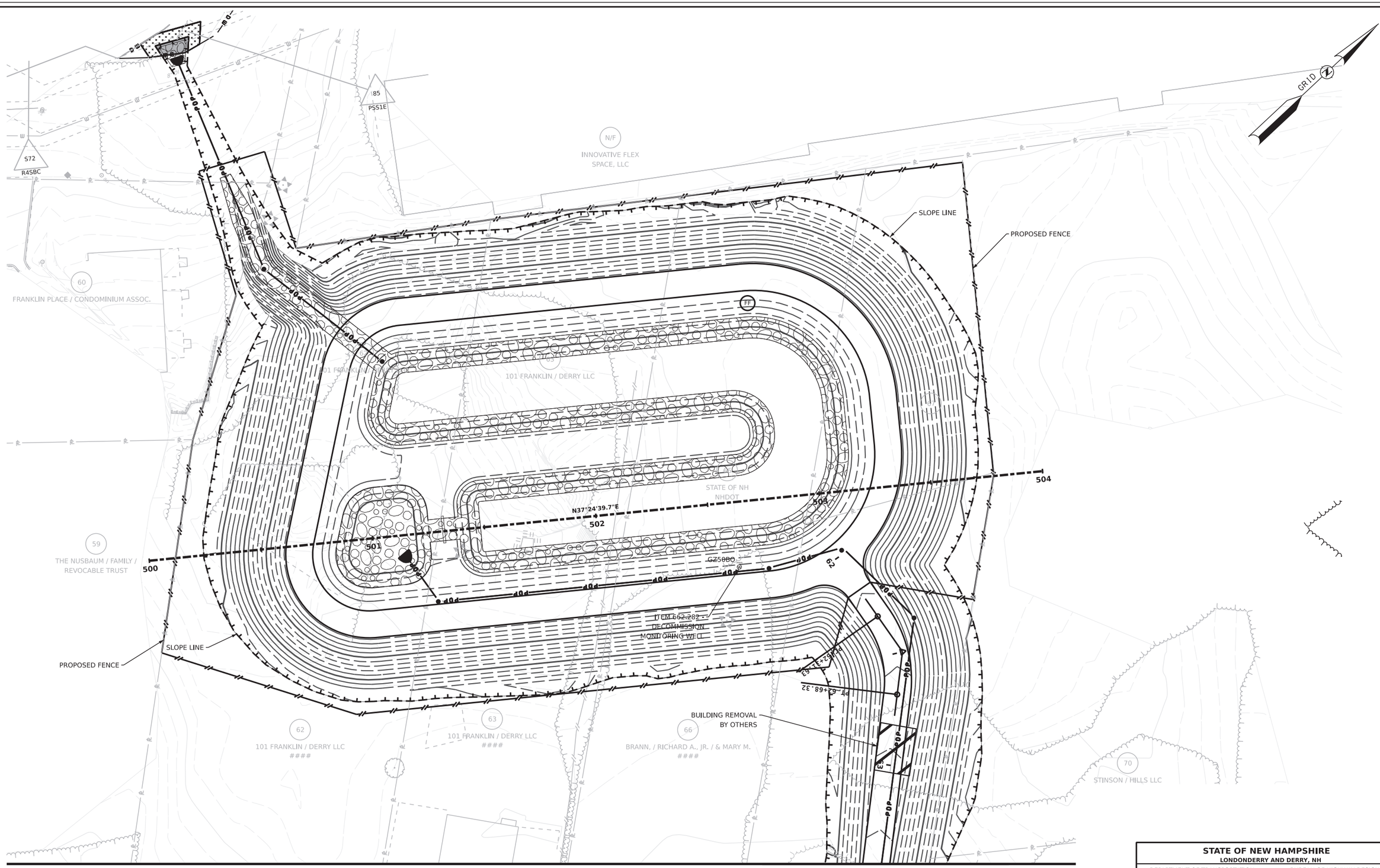
STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 19

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErosPln20 19 [SHT]	13065B-Erosion Control Pln SHT	13065B	50	62

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION
DESCRIPTION			

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE



MATCH TO PLAN 5

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 20

McFarland Johnson

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	ErosPln20 20 [SHT]	13065B-Erosion Control Pln SHT	13065B	51	62

GRID

MANCHESTER ROAD
(ROUTE 28)

PT 220+82.94

MATCH TO 219+25 PLAN 7

FIREYE / INC

McFarland Johnson

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 21

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 21 (SHT)	13065B-Erosion Control Pln SHT	13065B	52	62

GRID N

MATCH TO 211+50 PLAN 23

MATCH TO 215+50 PLAN 7

CRYSTAL AVENUE
(ROUTE 28)

N03°10'44.5"E

212

213

214

215

79
72 CRYSTAL / AVENUE LLC

80
KENT NUTRITION / GROUP, INC.

84
CHINA / CASTLE INC

85
HOOD / COMMONS / BSD LLC

86
BANK OF / AMERICA

PSNH
34 35
BELL
PSNH
94-25
PSNH
34 35

SMH 206

(15) 4"

(OLD)

UNKNOWN

4" RGS

12" RGS

ABANDONED

(2) 2" PVC

2" PVC

14+10.42

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

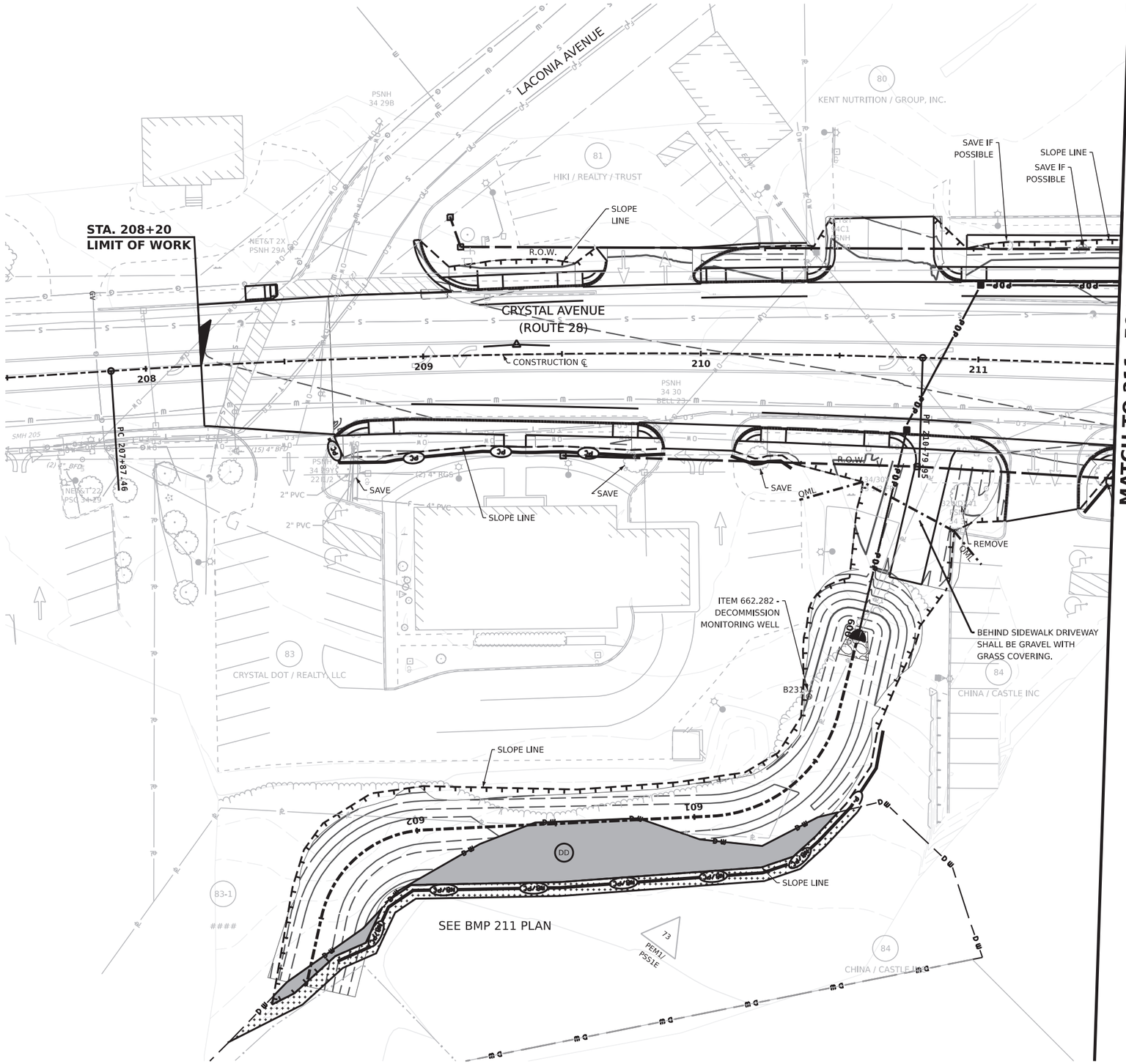
20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 22

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 22 [SHT]	13065B-Erosion Control Pln SHT	13065B	53	62



REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	NUMBER	DATE

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 23

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 23 [SHT]	13065B-Erosion Control Pln SHT	13065B	54	62

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	VHB	DATE 2021
NEW DESIGN	MJ	DATE 8\2023
SHEET CHECKED	EWM	DATE 12\2023
AS BUILT DETAILS		DATE

MATCH TO 182+90 PLAN 8

PINKERTON STREET

HOODKROFT / CONDOMINIUM / ASSN

61 CRYSTAL / AVE. LLC

PINKERTON-CRYSTAL / LLC

HOOD / COMMONS / BSD LLC

GRID

PROGRESS PLANS
SUBJECT TO CHANGE
DATE 2\27\24

20 0 20 40
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
LONDONDERRY AND DERRY, NH
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN 24

DATE PRINTED	MJ PROJECT NO.	MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	18799.00	EroPln20 24 [SHT]	13065B-Erosion Control Pln SHT	13065B	55	62

Interstate I-93 Exit 4A
Contract 13065B

Construction Sequencing

The construction of Contract 13065B will be comprised of three basic phases as described below. The connection to Contact A and Exit 4A is not planned until the completion of Phase 2.

Phase 1

During Phase 1 traffic will be carried on the existing roadways in Derry. There are short term detours allowed for specific activities to facilitate connections to existing roadways. Construction to be completed during Phase 1 includes the following:

- BMP 19, BMP 1051, BMP 1056, BMP 1062, and BMP 211.
- Old Rum Trail from Contract 13065A to the N. High Street Intersection.
- Westbound lanes of Folsom Road between N. High Street and Route 28.
- North portion of the bridge carrying Folsom Road over Shields Brook.
- Widening of Route 28, Tsienneto Road and Pinkerton Street.
- Madden Road, Aghadowey Avenue, Haley Drive, Franklin Street Extension.
- Portions of N. High Street.

Phase 2

During Phase 2 Folsom Road traffic will be placed on its newly constructed westbound lanes including the bridge over Shields Brook. There are short term detours allowed for specific activities to facilitate connections to existing roadways. Construction to be completed during Phase 2 includes the following:

- Eastbound lanes of Folsom Road between N. High Street and Route 28.
- South portion of the bridge carrying Folsom Road over Shields Brook.
- Ferland Drive and Franklin Street.
- Completion of N. High Street.

Phase 3

During Phase 3 traffic will be carried on the new roadways but with reduced lanes on Old Rum Trail and Folsom Road. Construction to be completed during Phase 3 includes the following:

- Complete curbing and median islands.
- Final Paving of the entire project.
- Final Pavement Markings.

Attachment B

Wetland Impact Comparison Table

Table 1: 13065B Wetland Impact Updates (formatted to align with the NHDES Wetlands Permit Application Form Table)

Jurisdictional Area	Current Design - 13065B Impact Update				13065A Impact Update (April 2022)				Change from 13065A Impact Update				Approved Impacts (Fuss and O'Neill)				Change from Approved Impacts			
	Permanent		Temporary		Permanent		Temporary		Permanent		Temporary		Permanent		Temporary		Permanent		Temporary	
	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF
Forested Wetland	**146,389**		**17,172**		146,623		16,763		-234	-	409	-	161,605		13,721		-15,216	-	3,451	-
Scrub-Shrub Wetland (Prime wetlands excluded)	**987**		**273**		852		63		135	-	210	-	852		63		135	-	210	-
Emergent Wetland	**7,847**		**2,609**		8,655		2,495		-808	-	114	-	8,655		2,495		-808	-	114	-
Intermittent Stream Channel	**4,165**	**854**	**20,945**	**1,951**	4,165	854	20,567	1,902	0	0	378	49	4,396	902	21,255	1,885	-231	-48	-310	66
Perennial Stream / River Channel	**5,760**	**299**	**520**	**28**	4,937	258	1,067	102	823	41	-547	-74	4,937	258	689	53	823	41	-169	-25
Bank - Perennial Stream / River		**621**		**73**		543		115	-	78	-	-42		543		115	-	78	-	-42
Prime Wetland	**1,971**		**1,460**		2,126		1,560		-155	-	-100	-	2,126		1,560		-155	-	-100	-
Vernal Pool	**48,977**		**3,613**		51,149		3,645		-2,172	-	-32	-	61,615		3,320		-12,638	-	293	-
TOTAL	216,096	1,774	46,592	2,052	218,507	1,655	46,160	2119	-2,411	119	432	-67	244,186	1,703	43,103	2,053	-28,090	71	3,489	-1

Attachment C

Mitigation Table

DERRY-LONDONDERRY 13065, I-93 Exit 4A - Wetland Mitigation In-Lieu Fee

	Approved			Current							
Resource	**Impact Quantity**	**In Lieu Fee Estimate (Old spreadsheet)**	**Assumptions**	**Impact Quantity (All Contracts)[2 & 3]**	**All Contracts In Lieu Fee Estimate (2018 spreadsheet)**	**Impact Quantity (13065A)[2 & 3]**	**13065A In Lieu Fee Estimate (2018 spreadsheet)**	**Impact Quantity (13065B)[3]**	**13065B In Lieu Fee Estimate (2018 spreadsheet)**	**Impact Quantity 13065C)**	**13065C In Lieu Fee Estimate (2018 spreadsheet)**
All Wetlands[1]	210,643 sf (4.84 acres)	$1,061,965.82	Includes direct impacts to wetlands/vernal pools in accordance with NHDES Rules Wt 800.	181,961 sf (4.18 acres)	$917,364.28	151,909 sf (3.49 acres)	$765,855.81	18,767 sf (0.43 acres)	$94,614.64	11,285 sf (0.26 acres)	$56,893.82
Secondary Impacts "Edge Effects"	89,298 sf (2.05 acres)	$450,199.74	Mitigation for secondary "Edge Effects" are calculated as recommended in the 2016 USACE Mitigation Guidance.	89,298 sf (2.05 acres)	$450,199.74	75,010 sf (1.72 acres)[4]	$378,167.78	8,930 sf (0.21 acres)[4]	$45,019.97	5,358 sf (0.12 acres)[4]	$27,011.98
Vernal Pools Loss	286,000 sf (6.57 acres)	$1,441,881.41	Mitigation for functional loss of 4 medium and 2 high value vernal pools based on ratios recommended in 2016 USACE Mitigation Guidance	286,000 sf (6.57 acres)	$1,441,881.41	286,000 sf (6.57 acres)	$1,441,881.41	0.00	0	0.00	0
Vernal Pools - Secondary	78,000 sf (1.79 acres)	$393,240.38	For partially or indirectly impacted vernal pools, modeled to drop in value	78,000 sf (1.79 acres)	$393,240.38	78,000 sf (1.79 acres)	$393,240.38	0.00	0	0.00	0
Streams	1,703 lf	$421,799.04	Impacts to channels of all streams and banks of perennial streams in accordance with NHDES Rules Wt 800.	1,774 lf	$439,384.32	569 lf	$140,929.92	954 lf	$236,286.72	251 lf	$62,167.68
TOTAL		**$3,769,086.39**			**$3,642,070.13**		$3,120,075.30		$375,921.33		$146,073.48

1- 24,210 sf of wetland impacts permitted under the I-93 Project were subtracted as they have been previously mitigated. This deduction was applied to 13065A impacts.

2 - Based on the 13065A PS&E plans dated 3/21/22.

3 - Based on the 13065B PPS&E plans dated 12/15/23.

4 - Edge effects assigned to 13065A, B, and C in proportion to direct impacts "All Wetlands."

Mitigation Payment Reduction from Approved/Paid Amount = $127,016.26

Attachment D

Updated NHDES and USACE Wetlands Permit Application Forms

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau

Land Resources Management

Check the status of your application: www.des.nh.gov/onestop

RSA/Rule: RSA 482-A/ Env-Wt 100-900

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required, a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if mitigation is required, please refer to the Determine if Mitigation is Required Frequently Asked Questions.

Mitigation Pre-Application Meeting Date: Month: **03** Day: **15** Year: **2019**

☐ N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: **Various**			TOWN/CITY: **Londonderry & Derry**
TAX MAP: **N/A**	BLOCK: **N/A**	LOT: **N/A**	UNIT: **N/A**
USGS TOPO MAP WATERBODY NAME: **Wheeler Pond Tributary, Shields Brook, etc.** ☐ NA		STREAM WATERSHED SIZE: **Various** ☐ NA	
LOCATION COORDINATES (If known): **71°19'17.952"W 42°53'55.785"N**		☒ Latitude/Longitude ☐ UTM ☐ State Plane	

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

The Towns of Londonderry and Derry, New Hampshire (the Towns), and the New Hampshire Department of Transportation (NHDOT), in cooperation with the Federal Highway Administration (FHWA), are proposing the construction of a new interchange with I-93 (known as Exit 4A) and other transportation improvements to reduce congestion and improve safety along Tsienneto Road and State Route 102 (NH 102).

This permitting update accounts for final design through December 2023 PPS&E for 13065B. **Overall, based on the PPS&E limits, permanent and temporary wetland impacts have decreased by about 24,601 square feet (sq ft), from 287,289 sq ft to 262,688 sq ft.** This includes an approximate 28,090 sq ft reduction of permanent wetland and stream impacts (from 244,186 sq ft to 216,096 sq ft). Temporary impacts have increased by approximately 3,489 sq ft (from 43,103 sq ft to 46,592 sq ft) – due in part to the revised design for the relocation of Wheeler Pond Tributary in the 13065A portion of the project (which was detailed in the April 2022 wetland impact update) and the updated Shields Brook design in the 13065B portion (detailed in this wetland impact update).

5. SHORELINE FRONTAGE:

☒ N/A This does not have shoreline frontage. SHORELINE FRONTAGE:

Shoreline Frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line (Env-Wt 101.89).

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application.

To determine if other Land Resources Management Permits are required, refer to the Land Resources Management Webpage.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	☐ YES ☒ NO	_____	☐ APPROVED ☐ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:2	☐ YES ☒ NO	_____	☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval Per RSA 485-A	☐ YES ☒ NO	_____	☐ APPROVED ☐ PENDING ☐ DENIED
Shoreland Permit Per RSA 483-B	☒ YES ☐ NO	**2020-00269**	☒ APPROVED ☐ PENDING ☐ DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:
See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: **NHB19-3453**

b. ☐ This project is within a Designated River corridor. The project is within ¼ mile of: _____; and
date a copy of the application was sent to the Local River Management Advisory Committee: Month: __ Day: __ Year:
☒ N/A – This project is not within a Designated River corridor.

8. APPLICANT INFORMATION (Desired permit holder)

LAST NAME, FIRST NAME, M.I.: **Johnson, Wendy, A.**			
TRUST / COMPANY NAME: **NHDOT**	MAILING ADDRESS: **7 Hazen Drive**		
TOWN/CITY: **Concord**		STATE: **NH**	ZIP CODE: **03302**
EMAIL or FAX: **Wendy.A.Johnson@dot.nh.gov**	PHONE: **(603) 271-3909**		
ELECTRONIC COMMUNICATION: By initialing here: _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			

9. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.:			
TRUST / COMPANY NAME:	MAILING ADDRESS:		
TOWN/CITY:		STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:		
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			

10. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.:	COMPANY NAME:		
MAILING ADDRESS:			
TOWN/CITY:		STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:		
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			

11. PROPERTY OWNER SIGNATURE:
See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for National Historic Preservation Act (NHPA) 106 compliance.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the NHDES is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
Wendy A. Johnson	Wendy A. Johnson	03/08/24

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

	Print name legibly	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.

2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.

3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

Exempt per RSA 482:-A:3 I(a), State Agency, 4 copies sent to town certified mail.	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

14. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact.

Permanent: *impacts that will remain after the project is complete.*

Temporary: *impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.*

Intermittent Streams: *linear footage distance of disturbance is measured along the thread of the channel.*

Perennial Streams/ Rivers: *the total linear footage distance is calculated by summing the lengths of disturbance to the channel and each bank.*

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland	146,389	☐ ATF	17,172	☐ ATF
Scrub-shrub wetland	987	☐ ATF	273	☐ ATF
Emergent wetland	7,847	☐ ATF	2,609	☐ ATF
Wet meadow		☐ ATF		☐ ATF
Intermittent stream channel	4,165 / 854	☐ ATF	20,945 / 1,951	☐ ATF
Perennial Stream / River channel	5,760 / 299	☐ ATF	520 / 28	☐ ATF
Lake / Pond	/	☐ ATF	/	☐ ATF
Bank - Intermittent stream	/	☐ ATF	/	☐ ATF
Bank - Perennial stream / River	/ 621	☐ ATF	/ 73	☐ ATF
Bank - Lake / Pond	/	☐ ATF	/	☐ ATF
Tidal water	/	☐ ATF	/	☐ ATF
Salt marsh		☐ ATF		☐ ATF
Sand dune		☐ ATF		☐ ATF
Prime wetland	1,971	☐ ATF	1,460	☐ ATF
Prime wetland buffer		☐ ATF		☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)		☐ ATF		☐ ATF
Previously-developed upland in TBZ		☐ ATF		☐ ATF
Docking - Lake / Pond		☐ ATF		☐ ATF
Docking - River		☐ ATF		☐ ATF
Docking - Tidal Water		☐ ATF		☐ ATF
Vernal Pool	48,977	☐ ATF	3,613	☐ ATF
TOTAL	216,096 / 1,774		46,592 / 2,052	

15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200

☒ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking)	**262,688** sq. ft.	X $0.20 =	$ **52,537.60**
Temporary (seasonal) docking structure:	**0** sq. ft.	X $1.00 =	$ **0**
Permanent docking structure:	**0** sq. ft.	X $2.00 =	$ **0**
Projects proposing shoreline structures (including docks) add $200 =			$ **0**
Total =			$ **0**
The Application Fee is the above calculated Total or $200, whichever is greater =			**FEE PAID WITH PREV. PERMIT AP. (IN EXCESS OF CURRENT AMOUNT).**

We are proposing to amend permit NAE-2005-03061. The impact numbers throughout this form were updated to reflect the current project design.

U.S. Army Corps of Engineers (USACE)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 01-08-2018

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Wendy Middle - A Last - Johnson	First - Middle - Last -
Company - NH Department of Transportation	Company -
E-mail Address - Wendy.A.Johnson@dot.nh.gov	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 7 Hazen Drive	Address-
City - Concord State - NH Zip - 03302 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business (603) 271-3909 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ SIGNATURE OF APPLICANT _____ DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Interstate 93 Exit 4A Project, Derry-Londonderry, 13065, IM-0931(201)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Unnamed wetlands and streams, Wheeler Pond Trib, Shields Brook	Address Various
15. LOCATION OF PROJECT	
Latitude: °N 42°53'55.785" Longitude: °W 71°19'17.952"	City - Derry and Londonderry State- NH Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Various Municipality Derry and Londonderry, NH

Section - Township - Range -

17. DIRECTIONS TO THE SITE

The project area for the preferred alignment (Alternative A) encompasses the area of a new interchange along Interstate 93 (I-93) in the Towns of Londonderry, and a new corridor that runs eastward from the interchange location to the intersection of Folsom Road, North High Street, and Madden Road in Derry. The interchange is located north of the existing Exit 4 on I-93. The project then follows Tsienneto Road to its intersection with Route 102. A complete description of the project location is provided in Section "3.6.2 Build Alternatives" of the 1-93 Exit 4A Final Environmental Impact Statement (FEIS), and accompanying Figures 3.6-1 and 3.6-2.

18. Nature of Activity (Description of project, include all features)

Discharge of fill to construct a new interchange with I-93 (known as Exit 4A) in Londonderry, NH, with additional improvements on local roads in Derry and Londonderry, and other transportation improvements to reduce congestion and improve safety along NH Route 102, from I-93 Exit 4 easterly through downtown Derry. The Project is approximately 3.2 miles in length between the new, proposed I-93 Exit 4A interchange and the eastern terminus in Derry. There would be approximately 1 mile of new roadway construction on a new alignment and 2.2 miles of existing roadway reconstruction. The new alignment would originate from the new I-93 Exit 4A interchange location and travel southeast through a wooded area to Folsom Road, near its intersection with North High Street and Madden Road in Derry. This project would continue to follow Folsom Road to Ross Corner (Manchester Road/NH 28) and continue on Tsienneto Road across NH 28 Bypass to its intersection with NH 102, adjacent to Beaver Lake. This project is known as Alternative A, and is fully described in Section "3.6.2 Build Alternatives" of the I-93 Exit 4A FEIS. See also Attachment B, the Wetland Impact Plans of the original permit application submitted 2/21/20

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The project purpose is to reduce congestion and improve safety along NH Route 102 from I-93 easterly through downtown Derry and to promote economic vitality in the Derry/Londonderry area. Please see Section "2.0 Purpose and Need" in the 1-93 Exit 4A FEIS for additional detail.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Approximately 4.73 acres of direct, permanent impacts and 0.58 acre of temporary impacts to vegetated wetlands/vernal pools will result from fill or cuts for construction of new highway access ramps, the 1 mile connector road, 2.2 miles of existing road widening, and stormwater BMPs. These facilities will also have secondary and indirect impacts to wetlands/vernal pools that have also been quantified. Approximately 3,132 LF of total stream channel disturbance (not including banks) or 0.72 acre, will result from installation of new culverts, extension of existing culverts where roads are widened, and stream relocation. 1,979 LF (0.49 acre) of this is temporary stream channel impact in 13065A will be restored. The affected environment and environmental consequences related to wetlands, vernal pools and streams associated with Project are fully described in Sections "4.12. Wetlands and Vernal Pools," and "4.14. Aquatic Life and Essential Fish Habitat" of the I-93 Exit 4A FEIS and in the the original permit application submitted 2/21/20 and the subsequent response dated 4/30/20.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Permanent: 4.73 acres of wetlands, 0.23 acre of stream channel; Temporary: 0.58 acre of wetlands, 0.49 acre of stream channel.

or

Linear Feet Permanent: 1,153 LF of stream channel, 621 LF perennial streambanks; Temporary: 1,979 LF stream channel, 73 LF banks

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Scoping/Alternatives analysis began in 1998, and various routes were reviewed. Of 5 build alternatives in the FEIS, Alternative A was selected in part due to low wetland impacts and no impact on highest ranked wildlife habitat while still meeting project purposes. See Section "3.0 Alternatives Analysis" and "Appendix M" of the 1-93 Exit 4A FEIS for details, and the original permit application submitted 2/21/20. Payment to the Aquatic Resource Mitigation fund is proposed.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Please see Attachment D of the 2/21/20 original permit application for a complete list of adjoining property owners.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
NHDES	Wetlands Bureau	2018-03134	October 3, 2018	May 5, 2020	
NHDES	Water Quality Cert.	2019-404I-002	February 21, 2020	May 28, 2020	
NHDES	Shoreland Program	2020-00269	February 14, 2020	February 19, 2020	
See Attachment G of	the original 2/21/20	permit application for	additional agency	approvals.	

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Wendy A. Johnson — SIGNATURE OF APPLICANT
03/08/24 — DATE
SIGNATURE OF AGENT — DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Attachment E

Wetland 40 Photo Log

Photography Log

PROJECT NUMBER

52768.00

13065B I-93 Exit 4A

CLIENT

NHDOT

LOCATION

Exit 4A Contract B: Wetland 40

Derry, New Hampshire

NO. 1
11.28.2023 09:08 AM

View south of the stormwater swale portion of Wetland 40.

NO. 2
11.28.2023 09:08 AM

View southwest of the stormwater swale convergence with the natural portion of Wetland 40 (just out of frame to the right) around the upland berm.

NO. 3
02.08.2024 01:55 PM

View north of Wetland 40, facing American Excavating Corp. This photo was taken from near the base of the upland berm.

NO. 4
02.08.2024 01:55 PM

View west of Wetland 40, facing the forest.

NO. 5
02.08.2024 01:31 PM

View southeast of Wetland 40, taken from the northern wetland boundary. Note the American Excavating Corp driveway in the background (red arrow).

NO. 6
02.08.2024 01:44 PM

View south of the northernmost portion of Wetland 40, facing away from American Excavating Corp.

NO. 7
02.08.2024 01:17 PM

View east of Wetland 40, with the NHDOT Parcel 29 building in the background.

NO. 8
02.08.2024 12:48 PM

View north of Wetland 40 taken from within the previously delineated area west of the developed portion of NHDOT Parcel 29. Note the American Excavating Corp building in the background.

Attachment F

Updated Design Plans for Shields Brook and Sheilds Brook Construction Sequence

Interstate I-93 Exit 4A
Contract 13065B – Shields Brook Bridge

Shields Brook Bridge Construction Sequencing

Phase 1

- Install the Phase 1 temporary support of excavation (SOE) along the existing roadway. SOE system to be determined by the Contractor. Traffic will be maintained on the existing roadway with one lane of travel for each direction.
- Upstream portions of the existing culvert may require removal to install and maintain Phase 1 water diversion, system shall be selected and designed by the Contractor.
- Construct Phase 1 drilled shafts on the upstream (north) portion of the abutments.
- Construct the Phase 1 abutments, wingwalls, backfill, and other substructure elements. Install Phase 2 SOE behind Phase 1 abutment stems.
- Adjust Phase 1 water diversion to grade channel and rail trail.
- Install Phase 1 beams, deck, and approach slabs.

Phase 2

- Shift traffic to Phase 1 bridge.
- Begin excavation and install Phase 2 water diversion system.
- Remove Phase 1 water diversion system or connect to Phase 2 water diversion system. (Contractor may elect to retain Phase 1 water diversion system and remove it once all channel grading and rail trail construction is complete, depending on material and equipment availability and means and methods.) Remove existing culvert.
- Construct Phase 2 drilled shafts.
- Construct Phase 2 abutments, wingwalls, and other substructure elements.
- Adjust Phase 2 water diversion to grade channel and rail trail.
- Remove water diversion.
- Install Phase 2 beams, deck, and approach slabs.

COFFERDAMS

1. ALL ITEMS COVERED UNDER SECTION 503 OF THE SPECIFICATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF N.H. THE CONTRACTOR SHALL SUBMIT STAMPED WORKING DRAWINGS AND CALCULATIONS FOR REVIEW AND DOCUMENTATION IN ACCORDANCE WITH SECTION 105.02.
2. SHEETING OR A SUPPORT SYSTEM SHALL BE REQUIRED FOR MAINTENANCE OF TRAFFIC AND PROTECTION OF THE EXISTING STRUCTURE AND ROADWAY DURING PHASE 1 CONSTRUCTION OF THE PROPOSED BRIDGE. THE LOCATION AND LIMITS FOR COFFERDAMS DETAILED ON THE PLANS ARE APPROXIMATE AND MAY BE ADJUSTED AS REQUIRED TO ACCOMMODATE THE CONTRACTOR'S MEANS AND METHOD OF CONSTRUCTION. ALL COSTS FOR THIS SUPPORT SYSTEM SHALL BE INCLUDED IN ITEM 503.201.
3. THE COFFERDAM DESIGN SHALL ACCOUNT FOR THE EFFECTS OF UNBALANCED EARTH PRESSURE AND PILE DRIVING ON THE COFFERDAM STABILITY.
4. IT SHOULD BE NOTED THAT IN SOME LOCATIONS PRE-EXCAVATION OF COBBLES AND BOULDERS MAY BE REQUIRED PRIOR TO PLACING STEEL SHEETING. DURING EXCAVATION THE CONTRACTOR SHALL DISTURB THE AREA AS LITTLE AS POSSIBLE AND USE NECESSARY PRECAUTIONS TO MINIMIZE THE IMPACTS TO THE RIVER. ALL COSTS INCLUDED IN ITEM 503.201.
5. EXCAVATION BACKSLOPES BELOW IN-SERVICE ROADWAYS THAT ARE USED IN COMBINATION WITH, OR IN-PLACE OF, A COFFERDAM SHALL MEET THE FOLLOWING CRITERIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL EXCAVATION BACKSLOPES.

   A) THE EXCAVATION BACKSLOPE SHALL BE NO STEEPER THAN 1.5H:1V. A FLATTER BACKSLOPE SHALL BE USED IF THE CONTRACTOR'S CALCULATIONS INDICATE INSUFFICIENT SLOPE STABILITY AT 1.5H:1V.

   B) FOR CASES WHERE THE EXISTING GUARDRAIL IS USED FOR TRAFFIC BARRIER ABOVE THE EXCAVATION, THE CREST OF EXCAVATED BACKSLOPES SHALL BE OFFSET A MINIMUM OF 3 FEET FROM FACE OF EXISTING GUARDRAIL. THE EXISTING GROUND SURFACES BETWEEN THE GUARDRAIL AND THE EXCAVATED BACKSLOPES SHALL BE MAINTAINED IN ITS ORIGINAL CONFIGURATION.

   C) FOR CASES WHERE CONCRETE TRAFFIC BARRIERS ARE USED IN PLACE OF EXISTING GUARDRAIL, THE CREST OF EXCAVATED BACKSLOPES SHALL BE OFFSET A MINIMUM OF 2 FEET FROM THE OUTSIDE EDGE OF THE CONCRETE BARRIER.
6. THE CONTRACTOR SHOULD BE PREPARED TO PERFORM ANY SUBSURFACE INVESTIGATIONS NEEDED FOR THE COFFERDAM DESIGN. ALL COSTS ASSOCIATED WITH THE COMPLETION OF SUBSURFACE INVESTIGATIONS, THE REDESIGN, OR THE REINSTALLATION OF COFFERDAMS DUE TO SUBSURFACE CONDITIONS ENCOUNTERED DURING THE COFFERDAM INSTALLATION THAT ARE DIFFERENT FROM WHAT THE COFFERDAM DESIGNER ASSUMED AND/OR INTERPRETED FROM THE AVAILABLE SUBSURFACE INFORMATION, SHALL BE SUBSIDIARY TO THE ASSOCIATED COFFERDAM ITEM. SECTION 102.05 SHALL BE REFERENCED REGARDING THE SUBSURFACE INFORMATION PROVIDED IN THE CONTRACT.
7. COFFERDAMS LOCATED WITHIN THE DEFLECTION DISTANCE OF THE TRAFFIC BARRIER SHALL BE DESIGNED TO WITHSTAND A TRAFFIC BARRIER COLLISION LOAD OF 2.7 K/FT APPLIED AT 32-IN. ABOVE THE GROUND SURFACE BEHIND THE COFFERDAM. THIS LOAD MAY BE REDUCED LINEARLY BY THE OFFSET OF THE BARRIER TO THE COFFERDAM (E.G., IF THE BARRIER SYSTEM HAS A 4-FT. DEFLECTION AND IT IS SET 2-FT. FROM THE FACE OF THE COFFERDAM, THE COLLISION LOAD MAY BE REDUCED BY ONE HALF). SEE BRIDGE DESIGN MANUAL CHAPTER 7 FOR TRAFFIC BARRIER DEFLECTION DISTANCES. THE COFFERDAM SHALL EXTEND UP TO A HEIGHT THAT IS EQUAL TO OR HIGHER THAN THE TOP OF THE ADJACENT TRAFFIC BARRIER.

WATER DIVERSION NOTES

1. ALL ITEMS INCLUDED UNDER SECTION 503 OF THE SPECIFICATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. THE CONTRACTOR SHALL SUBMIT STAMPED WORKING DRAWINGS AND CALCULATIONS FOR REVIEW AND DOCUMENTATION IN ACCORDANCE WITH SECTION 105.02.
2. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS SHOWING WATER DIVERSION STRUCTURE LOCATIONS, CONSTRUCTION METHOD AND SEQUENCE, AND DEWATERING METHOD. ALL COSTS FOR THE WATER DIVERSION STRUCTURES AND DEWATERING SHALL BE INCLUDED IN ITEM 503.101, WATER DIVERSION STRUCTURES.
3. DEWATERING OF THE WORK AREA SHALL BE CONDUCTED IN A MANNER THAT LIMITS DISCHARGE OF TURBID WATER TO SHIELDS BROOK AND ADJACENT WETLANDS. TURBID DISCHARGE SHALL BE DIRECTED TO A FILTER BAG (AND/OR A STABILIZED ABOVE-GRADE, TEMPORARY SEDIMENT BASIN/TRAP) LOCATED IN ONSITE UPLANDS.
4. THE CONTRACTOR SHALL BE REQUIRED TO POUR SUBSTRUCTURE CONCRETE IN THE DRY.
5. DEWATERING SHALL BE CONTINUOUS UNTIL SUBSTRUCTURES ARE BACKFILLED TO THE ELEVATIONS OF THE SURROUNDING WATER TABLE, UNLESS OTHERWISE DIRECTED.
6. ALL MEANS AND METHODS ASSOCIATED WITH HANDLING WATER DURING CONSTRUCTION OF FOUNDATIONS SHALL BE LOCATED WITHIN THE LIMITS OF WORK SHOWN ON THE WETLANDS PERMIT APPROVED FOR THE PROJECT.

PHASE 1 ANTICIPATED WATER DIVERSION SEQUENCE

1. CONSTRUCT PHASE 1 TEMPORARY SUPPORT OF EXCAVATION ALONG EXISTING ROADWAY.
2. DEMOLISH NORTH PORTION OF EXISTING CULVERT AND INSTALL PHASE 1 TEMPORARY WATER DIVERSION STRUCTURE TO ESTABLISH WATER CONVEYANCE DURING CONSTRUCTION.
3. CONSTRUCT PHASE 1 BRIDGE PORTIONS.
4. INSTALL PHASE 2 SUPPORT OF EXCAVATION.

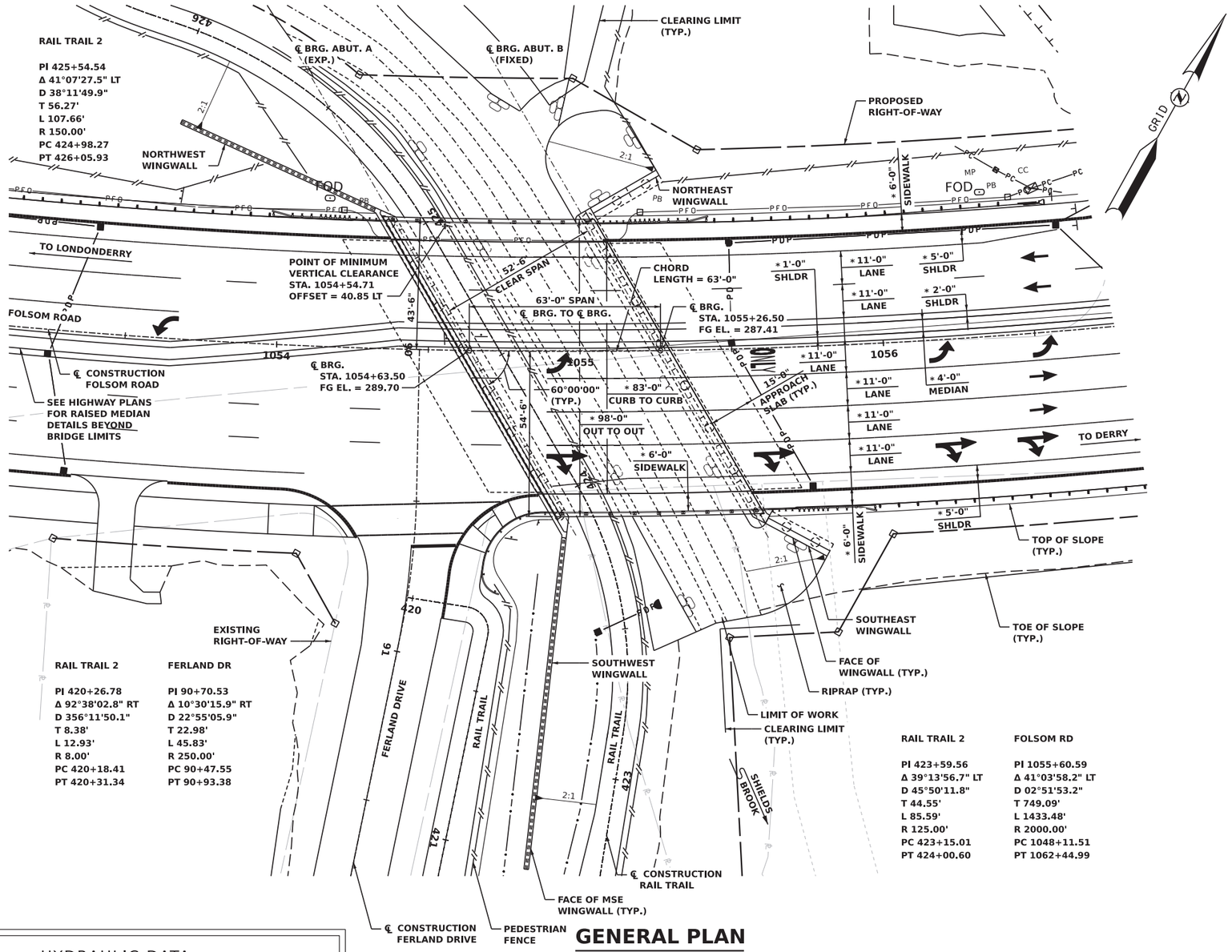
PHASE 2 ANTICIPATED WATER DIVERSION SEQUENCE

1. MOVE TRAFFIC TO PHASE 1 BRIDGE.
2. EXCAVATE FOR PHASE 2 BRIDGE CONSTRUCTION.
3. INSTALL PHASE 2 TEMPORARY WATER DIVERSION STRUCTURE.
4. REMOVE PHASE 1 TEMPORARY WATER DIVERSION STRUCTURE AND EXISTING CULVERT.
5. CONSTRUCT PHASE 2 BRIDGE PORTIONS, CUT DOWN SHEETING BELOW PROPOSED BOTTOM OF APPROACH SLAB GRADE PRIOR TO PHASE 2 APPROACH SLAB CONSTRUCTION.
6. REMOVE PHASE 2 TEMPORARY WATER DIVERSION STRUCTURE.

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
XX	053_110_Notes	AS NOTED

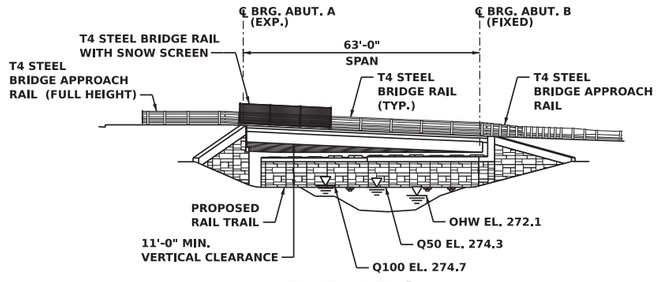
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN	DERRY	BRIDGE NO.	053/110	STATE PROJECT	13065B
LOCATION	FOLSOM ROAD OVER SHIELDS BROOK				



GENERAL PLAN

(PEDESTRIAN RAILING NOT SHOWN)
* DENOTES RADIAL DIMENSION
SCALE: 1" = 20'-0"



ELEVATION

SCALE: 1" = 20'-0"

INDEX OF SHEETS

* SHEETS LEFT INTENTIONALLY BLANK

HYDRAULIC DATA

DRAINAGE AREA	5.9 SQ. MILES
DESIGN FLOOD DISCHARGE (100 YR)	571 CFS
DESIGN FLOOD ELEVATION (100 YR)	274.7 FEET
DESIGN FLOOD VELOCITY (100 YR)	7.2 FPS
SCOUR CHECK DISCHARGE (500 YR)	815 CFS
ANTICIPATED DEPTH OF SCOUR (100 YR)	4.9 FEET (ABUTMENTS)
ANTICIPATED DEPTH OF SCOUR (500 YR)	6.7 FEET (ABUTMENTS)
BRIDGE FULL WATERWAY OPENING ⊥ TO RIVER	645.9 SQ. FEET

PPS&E PLANS
SUBJECT TO CHANGE
DATE 2/15/2024

vhb

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
XX	053_110_Plan&El	AS NOTED

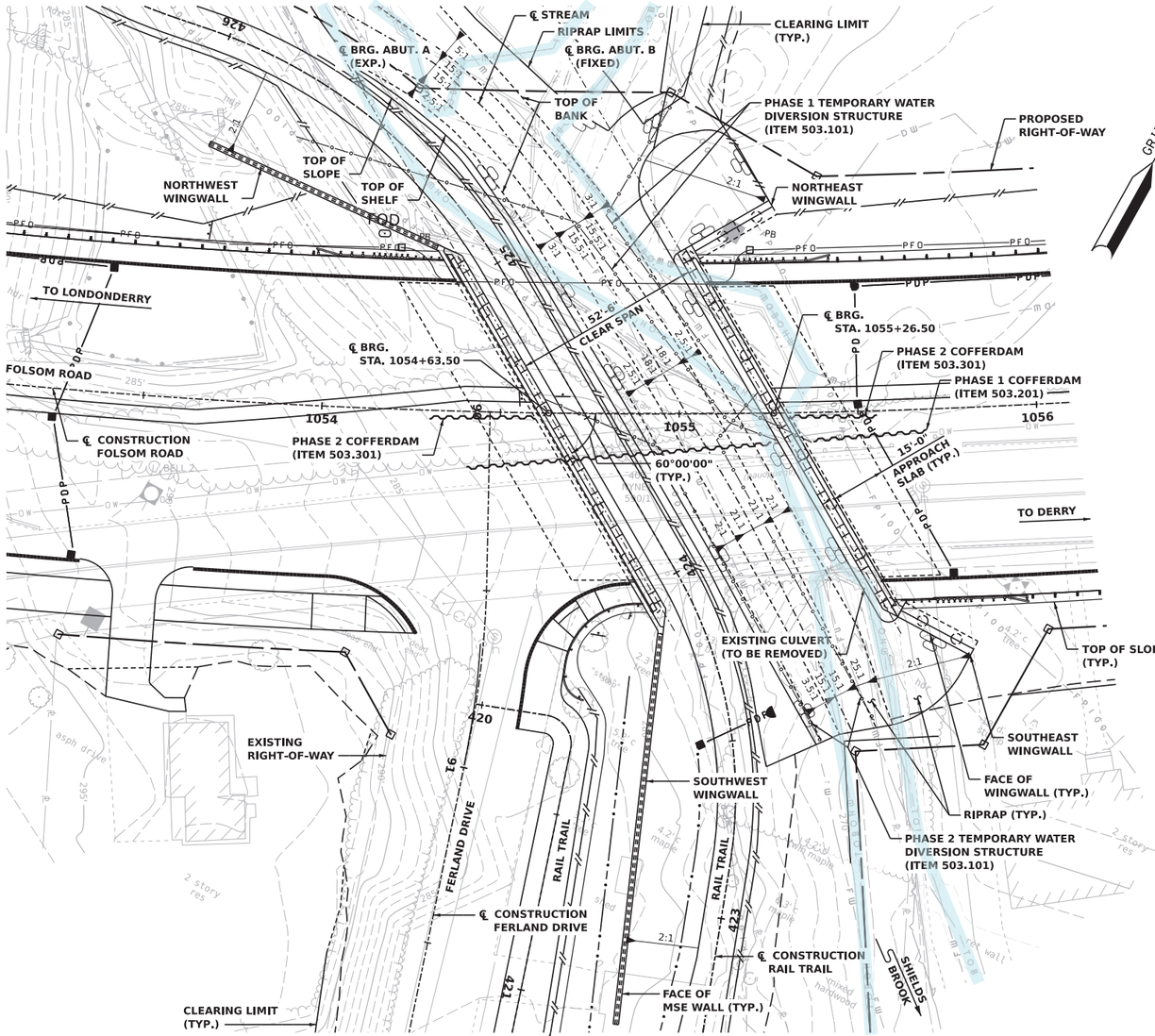
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN DERRY BRIDGE NO. 053/110 STATE PROJECT 13065B
LOCATION FOLSOM ROAD OVER SHIELDS BROOK

GENERAL PLAN AND ELEVATION

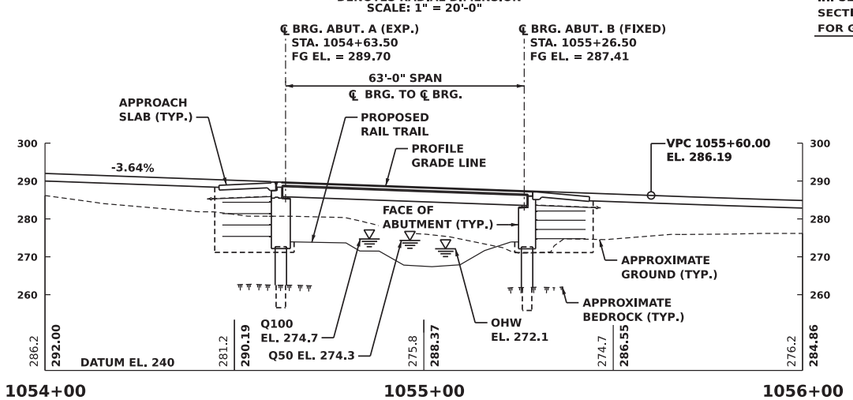
BRIDGE SHEET 1 OF 43
FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	AMS	12/23	CHECKED	JAW	12/23
DRAWN	KDW	12/23	CHECKED	AMS	12/23
QUANTITIES	TAM	12/23	CHECKED	AMS	12/23
ISSUE DATE			FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE			IM-0931(201)	268	525



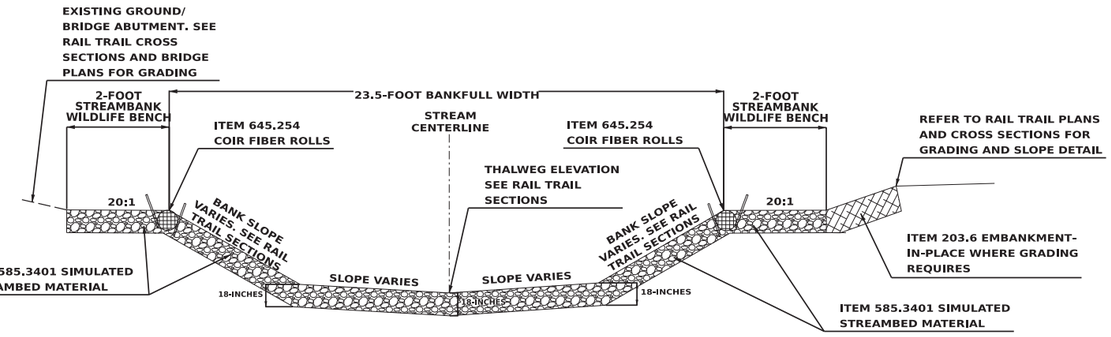
SITE PLAN

* DENOTES RADIAL DIMENSION
SCALE: 1" = 20'-0"



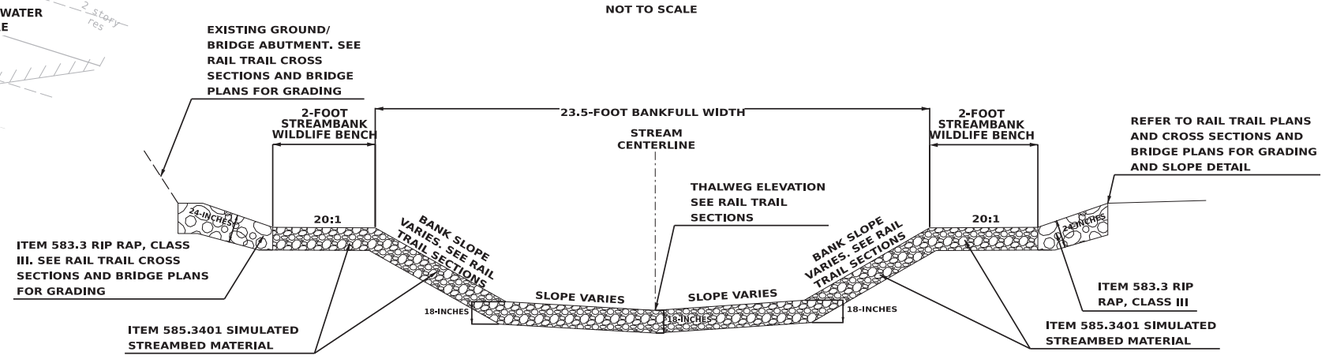
PROFILE

SCALE: 1" = 20'-0"



COIR LOG BANK REACH
TYPICAL SECTION: STATION 425+30 TO 425+90

NOT TO SCALE



STONE BANK REACH
TYPICAL SECTION: STATION 423+50 TO 425+30

NOT TO SCALE

PPS&E PLANS
SUBJECT TO CHANGE
DATE 2/15/2024

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN DERRY | BRIDGE NO. 053/110 | STATE PROJECT 13065B
LOCATION FOLSOM ROAD OVER SHIELDS BROOK

SITE PLAN, PROFILE AND CHANNEL SECTIONS

BRIDGE SHEET: 5 OF 43

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	AMS	12/23	CHECKED	JAW	12/23
	DRAWN	KDW	12/23	CHECKED	AMS	12/23
	QUANTITIES	TAM	12/23	CHECKED	AMS	12/23
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO.: IM-0931(201)
SHEET NO.: 272
TOTAL SHEETS: 525
FILE NUMBER:

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
XX	053_110_Site	AS NOTED

Attachment G

NHDES Stream Crossing Worksheets

NHDOT 13065B - Shields Brook

NHDES-W-06-071

WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET
Land Resources Management
Wetlands Bureau

RSA 482-A/ Env-Wt-900

NOTE: This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

1. Tier Classifications

Determine the contributing watershed size at USGS StreamStats

Note: Plans for Tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location: 3769.6 acres

☐ **Tier 1**: A *tier 1* stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres

☐ **Tier 2**: A *tier 2* stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres

☒ **Tier 3**: A *tier 3* stream crossing is a crossing that meets any of the following criteria:

- ☒ On a watercourse where the contributing watershed is more than 640 acres
- ☐ Within a Designated River Corridor
- ☒ On a watercourse that is listed on the surface water assessment 305(b) report
- ☒ Within a 100-year floodplain (see *section 2* below)
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck)
- ☐ In or within 100 feet of a Prime Wetland

2. 100-year Floodplain

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☐ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☒ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = AE

- ☒ Elevation of the 100-year floodplain at the inlet: 275.6 (FEMA El.) feet (FEMA El. or Modeled El.)

3. Calculating Peak Discharge

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): 571 CFS	Calculation method: USGS StreamStats
Estimated Bankfull discharge at the crossing location: 134 CFS	Calculation method: USGS StreamStats

→ *Note: If Tier 1 then skip to Section 10* ←

4. Predicted Channel Geometry based on Regional Hydraulic Curves

*For **Tier 2** and **Tier 3** Crossings Only*

Bankfull Width: 23.5 feet	Mean Bankfull Depth: 2 feet
Bankfull Cross Sectional Area: 44 square feet	

5. Cross Sectional Channel Geometry: Measurements of the Existing Stream within a Reference Reach

*For **Tier 2** and **Tier 3** Crossings Only*

Describe the reference reach location: _____

Reference reach watershed size: _____ acres

Parameter	Cross Section 1 Describe bed form Pool (*e.g. pool, riffle, glide*)	Cross Section 2 Describe bed form Pool (*e.g. pool, riffle, glide*)	Cross Section 3 Describe bed form Riffle (*e.g. pool, riffle, glide*)	Range
Bankfull Width	23.5 feet	27.0 feet	15.4 feet	15 to 30 feet
Bankfull Cross Sectional Area	35.0 SF	32.0 SF	13.5 SF	10 to 35 SF
Mean Bankfull Depth	1.47 feet	1.21 feet	0.87 feet	0.8 to 1.5 feet
Width to Depth Ratio	16.0	22.2	17.8	16 to 23
Max Bankfull Depth	1.89 feet	1.64 feet	1.52 feet	1.5 to 2 feet
Flood Prone Width	73.2 feet	- feet	30.5 feet	30 to 75 feet
Entrenchment Ratio	3.11	-	1.98	2 to 3.2

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

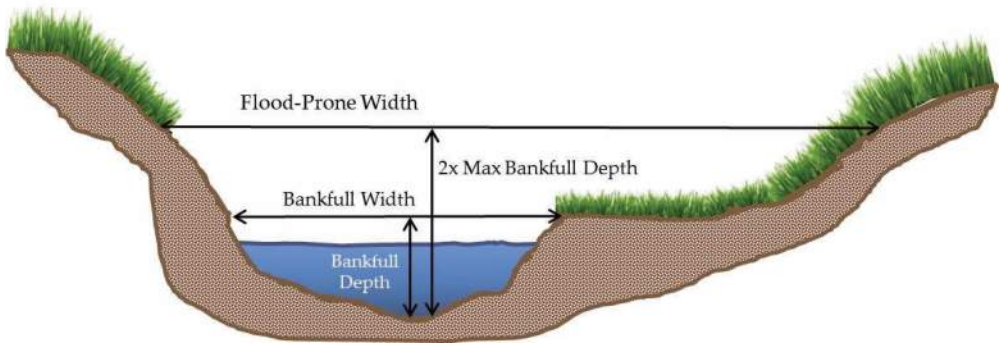


Figure 1: Determining the Reference Reach Attributes

6. Longitudinal Parameters of the Reference Reach and Crossing Location

*For **Tier 2** and **Tier 3** Crossings Only*

Average Channel Slope of the Reference Reach: 0.7 %

Average Channel Slope at the Crossing Location: 0.9 %

7. Plan View Geometry

*For **Tier 2** and **Tier 3** Crossings Only*

Sinuosity of the Reference Reach: 1.04

Sinuosity of the Crossing Location: 1.11

Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths

8. Substrate Classification based on Field Observations *For **Tier 2** and **Tier 3** Crossings Only*	
% of reach that is *bedrock*	_____ %
% of reach that is *boulder*	_____ %
% of reach that is *cobble*	_____ %
% of reach that is *gravel*	45.8 %
% of reach that is *sand*	52.6 %
% of reach that is ~~*silt*~~ *fines*	1.6 %

9. Stream Type of Reference Reach *For **Tier 2** and **Tier 3** Crossings Only*	
Stream Type of Reference Reach:	C4

*Refer to Rosgen Classification Chart (**Figure 2**) below*

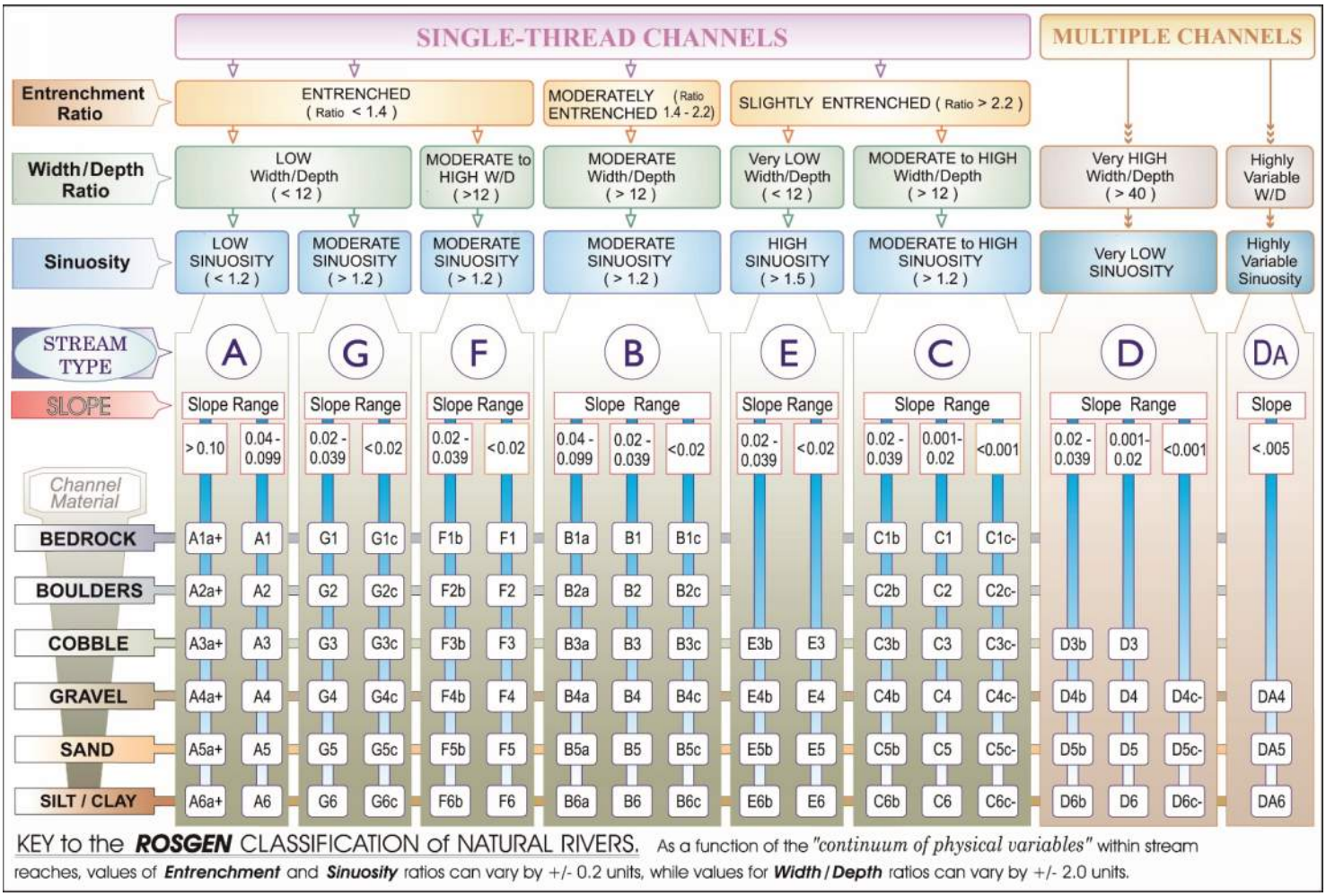


Figure 2. Reference from Applied River Morphology, Rosgen, 1996

10. Crossing Structure Metrics

Existing Conditions

Existing Structure Type:	☐ Bridge Span ☐ Pipe Arch ☐ Open-bottom Culvert ☒ Closed-bottom Culvert ☐ Closed-bottom Culvert with stream simulation ☐ Other: _____	
Existing Crossing Span *(perpendicular to flow)*	6.0 feet	**Culvert Diameter** 6.0 feet **Inlet Elevation** 271.11
Existing Crossing Length *(parallel to flow)*	52 feet	**Outlet Elevation** 267.21 **Culvert Slope** 7.5%

Proposed Conditions

Proposed Structure Type:	**Tier 1**	**Tier 2**	**Tier 3**	**Alternative Design**
Bridge Span	☐	☐	☒	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☐	☐		☐
Open-bottom Culvert	☐	☐	☐	☐
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed structure Span *(perpendicular to flow)*	52.5 feet	**Culvert Diameter** _____ feet **Inlet Elevation** 269.8
Proposed Structure Length *(parallel to flow)*	113 feet	**Outlet Elevation** 268.7 **Culvert Slope** _____
Proposed Entrenchment Ratio* *For **Tier 2** and **Tier 3** Crossings Only*	2.2	*Note: To accommodate the entrenchment ratio, floodplain drainage structures may be utilized*

* *Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.09*

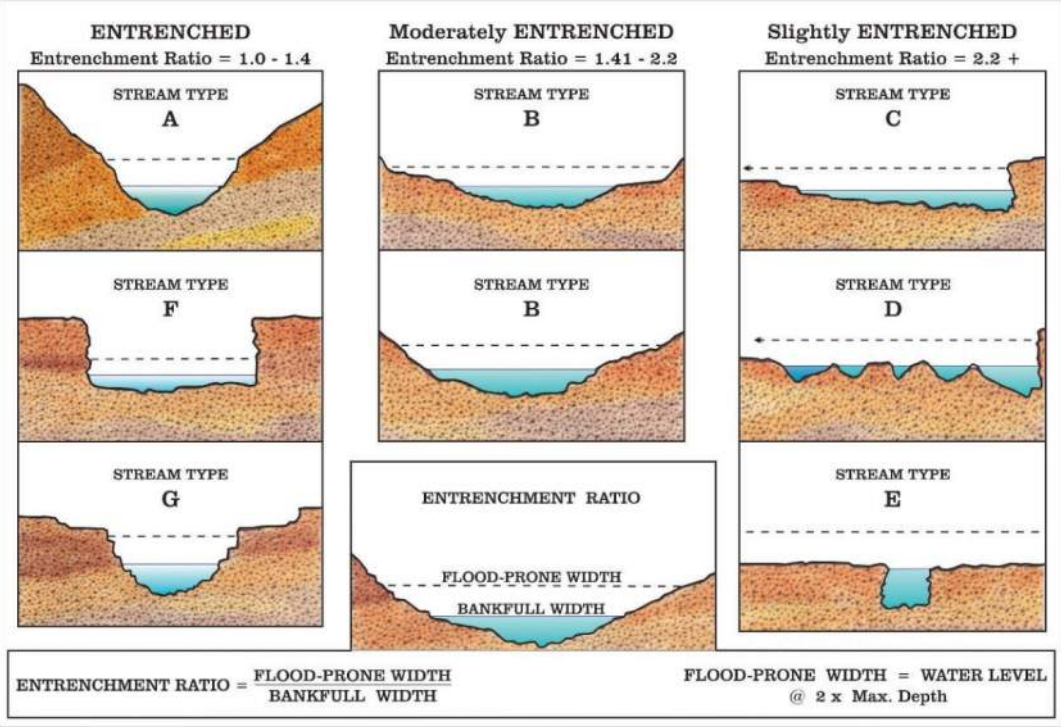


Figure 3. Reference from Applied River Morphology, Rosgen, 1996

lrm@des.nh.gov or (603) 271-2147
NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
www.des.nh.gov

11. Crossing Structure Hydraulics

	Existing	Proposed
100 year flood stage elevation at inlet	277.4	274.1
Flow velocity at outlet in feet per second (FPS) *100 year*	14.5	4.1
Calculated 100 year peak discharge (Q) for the proposed structure in CFS		571
Calculated 50 year peak discharge (Q) for the proposed structure in CFS		472

12. Crossing Structure Openness Ratio

*For **Tier 2** and **Tier 3** Crossings Only*

Crossing Structure Openness Ratio = 5.7

Openness box culvert = (height x width)/length

Openness round culvert = (3.14 x radius^2)/length

13. General Design Considerations

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

- ☒ Not be a barrier to sediment transport.
- ☒ Prevent the restriction of high flows and maintain existing low flows.
- ☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- ☒ Not cause an increase in the frequency of flooding or overtopping of banks.
- ☒ Preserve watercourse connectivity where it currently exists.
- ☒ Restore watercourse connectivity where:
  (1) Connectivity previously was disrupted as a result of human activity(ies); and
  (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.
- ☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.
- ☒ Not cause water quality degradation.

14. Tier Specific Design Criteria

Stream crossings must be designed in accordance with the Tier specific design criteria listed in Part Env-Wt 904.

☒ The proposed project meets the Tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

15. Alternative Design

NOTE: If the proposed crossing does not meet all of the general design considerations, the Tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.09.

☐ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.09

NHDES-W-06-071

WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET
Water Division/Land Resources Management
Wetlands Bureau

RSA/Rule RSA 482-A/ Env-Wt-900

This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

SECTION 1 - TIER CLASSIFICATIONS

Determine the contributing watershed size at USGS StreamStats.

Note: Plans for tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location: 9.9 acres

☒ **Tier 1**: A tier 1 stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres.

☐ **Tier 2**: A tier 2 stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres.

☐ **Tier 3**: A tier 3 stream crossing is a crossing that meets **any** of the following criteria:

- ☐ On a watercourse where the contributing watershed is more than 640 acres.
- ☐ Within a designated river corridor unless:
  - a. The crossing would be a tier 1 stream based on contributing watershed size, or
  - b. The structure does not create a direct surface water connection to the designated river as depicted on the national hydrography dataset as found on GRANIT.
- ☐ Within a 100-year floodplain (see Section 2 below).
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck).
- ☐ In a prime wetland or within a duly-established 100-foot buffer, unless a waiver has been granted pursuant to RSA 482-A:11, IV(b) and Env-Wt 706. Review the Wetlands Permit Planning Tool (WPPT) for town prime wetland and prime wetland buffer maps to determine if your project is within these areas.

☐ **Tier 4**: A tier 4 stream crossing is a crossing located on a tidal watercourse.

SECTION 2 - 100-YEAR FLOODPLAIN

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☒ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☐ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = _____

Elevation of the 100-year floodplain at the inlet: _____ feet (FEMA El. or Modeled El.)

SECTION 3 - CALCULATING PEAK DISCHARGE

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): 28.2 CFS	Calculation method: TR-55: HydroCAD
Estimated bankfull discharge at the crossing location: 3.4 CFS	Calculation method: TR-55: HydroCAD: 2-yr

Note: If tier 1, then skip to Section 10

SECTION 4 - PREDICTED CHANNEL GEOMETRY BASED ON REGIONAL HYDRAULIC CURVES *For **tier 2**, **tier 3** and **tier 4** crossings only.*	
Bankfull Width: feet	Mean Bankfull Depth: feet
Bankfull Cross Sectional Area: square feet (SF)	

SECTION 5 - CROSS SECTIONAL CHANNEL GEOMETRY: MEASUREMENTS OF THE EXISTING STREAM WITHIN A REFERENCE REACH *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Describe the reference reach location:
Reference reach watershed size: acres

Parameter	**Cross Section 1** Describe bed form (*e.g. pool, riffle, glide*)	**Cross Section 2** Describe bed form (*e.g. pool, riffle, glide*)	**Cross Section 3** Describe bed form (*e.g. pool, riffle, glide*)	**Range**
Bankfull Width	feet	feet	feet	feet
Bankfull Cross Sectional Area	SF	SF	SF	SF
Mean Bankfull Depth	feet	feet	feet	feet
Width to Depth Ratio				
Max Bankfull Depth	feet	feet	feet	feet
Flood Prone Width	feet	feet	feet	feet
Entrenchment Ratio				

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

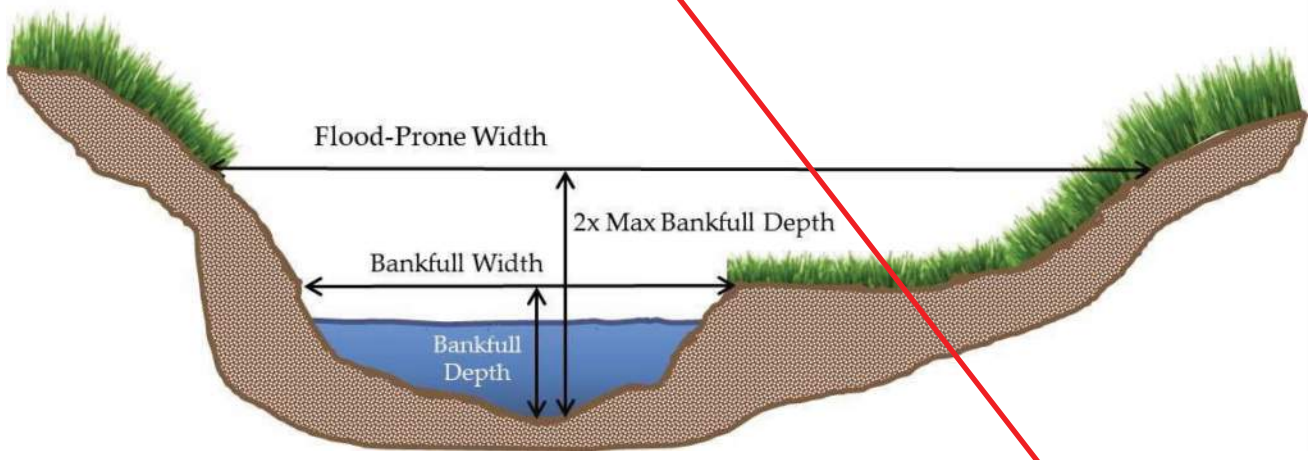


Figure 1: Determining the Reference Reach Attributes.

SECTION 6 - LONGITUDINAL PARAMETERS OF THE REFERENCE REACH AND CROSSING LOCATION *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Average Channel Slope of the Reference Reach:
Average Channel Slope at the Crossing Location:

SECTION 7 - PLAN VIEW GEOMETRY Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths. *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Sinuosity of the Reference Reach:
Sinuosity of the Crossing Location:

SECTION 8 - SUBSTRATE CLASSIFICATION BASED ON FIELD OBSERVATIONS *For **tier 2, tier 3** and **tier 4** crossings only.*	
% of reach that is bedrock:	%
% of reach that is boulder:	%
% of reach that is cobble:	%
% of reach that is gravel:	%
% of reach that is sand:	%
% of reach that is silt:	%
SECTION 9 - STREAM TYPE OF REFERENCE REACH *For **tier 2, tier 3** and **tier 4** crossings only.*	
Stream Type of Reference Reach:	

*Refer to Rosgen Classification Chart (**Figure 2**) below:*

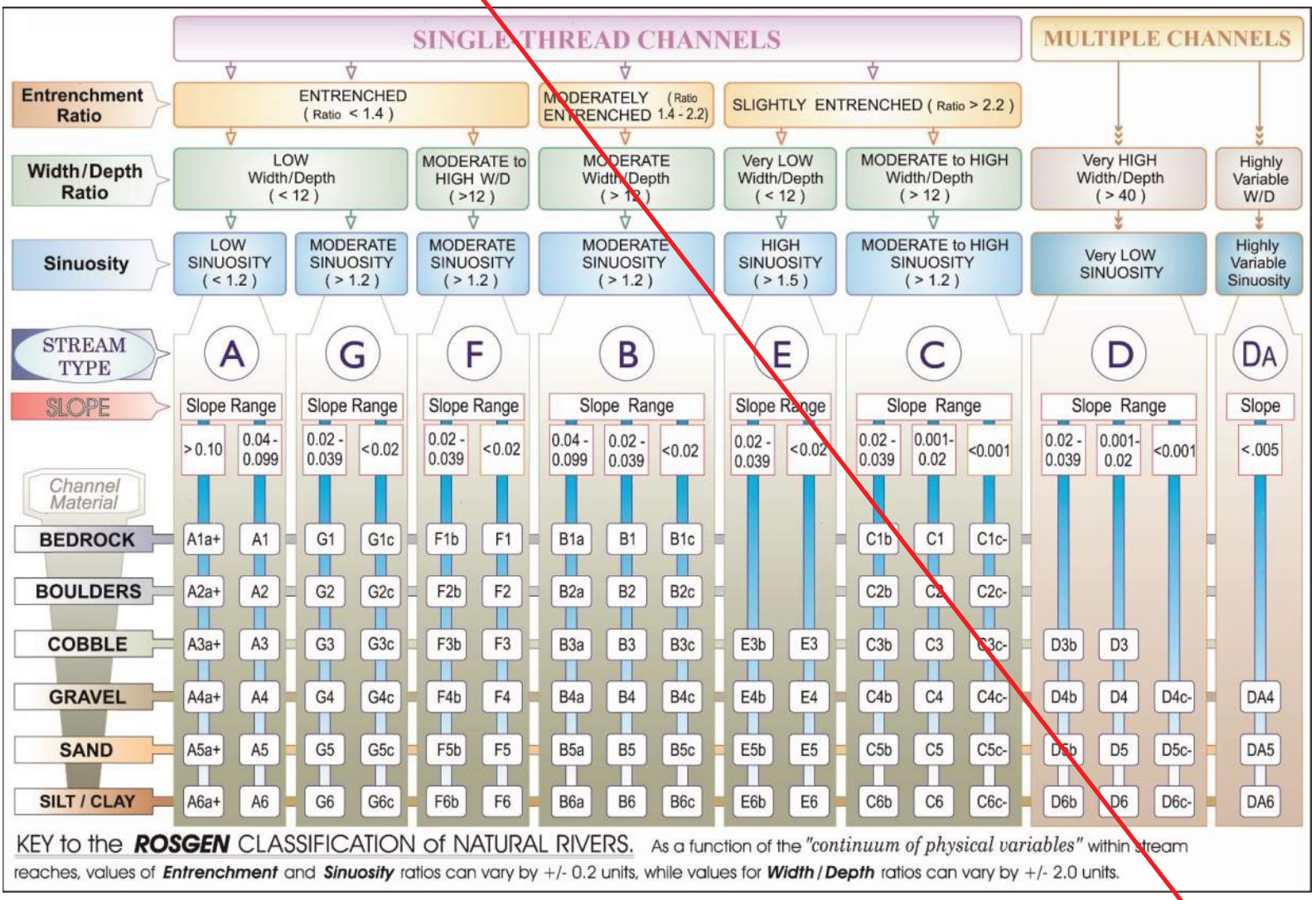


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 10 - CROSSING STRUCTURE METRICS

Existing Conditions

Existing Structure Type:

- ☐ Bridge span
- ☐ Pipe arch
- ☐ Open-bottom culvert
- ☐ Closed-bottom culvert
- ☐ Closed-bottom culvert with stream simulation
- ☒ Other: No Existing Crossing

Existing Crossing Span: *(perpendicular to flow)*	feet
Existing Crossing Length: *(parallel to flow)*	feet
Culvert Diameter:	feet
Inlet Elevation: El.	feet
Outlet Elevation: El.	feet
Culvert Slope:	

Proposed Conditions

Proposed Structure Type:	Tier 1	Tier 2	Tier 3	Alternative Design
Bridge Span	☐	☐	☐	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☒	☐		☐
Open-bottom Culvert	☐	☐	☐	☐
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed Structure Span: 2.5 feet *(perpendicular to flow)*	**Culvert Diameter:** 2.5 feet **Inlet Elevation:** El. 319 feet
Proposed Structure Length: 215 feet *(parallel to flow)*	**Outlet Elevation:** El. 304 feet **Culvert Slope:** 6%

Proposed Entrenchment Ratio:*

*For **Tier 2**, **Tier 3** and **Tier 4** Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.*

** Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.10.*

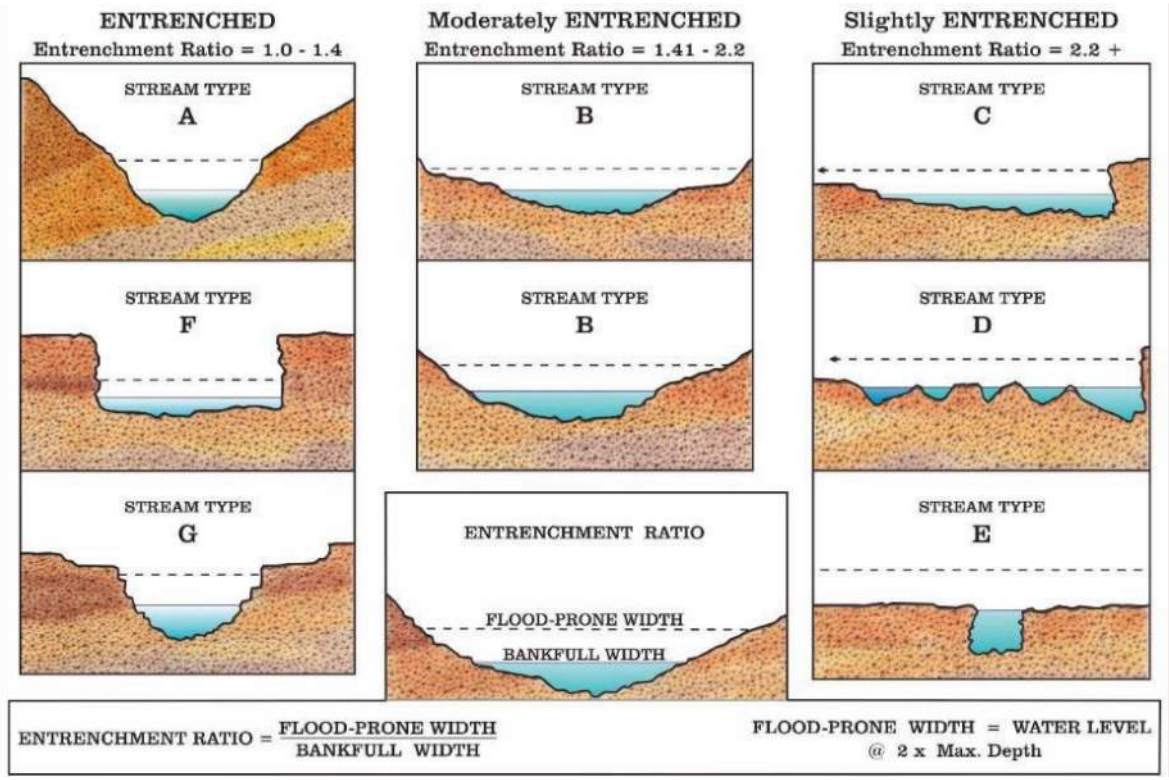


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	**Proposed**
100 year flood stage elevation at inlet:	N/a	322.2
Flow velocity at outlet in feet per second (FPS): 100-Year	N/a	6.5
Calculated 100 year peak discharge (Q) for the *proposed* structure in CFS:		32.9
Calculated 50 year peak discharge (Q) for the *proposed* structure in CFS:		26.2

SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO

*For **tier 2**, **tier 3** and **tier 4** crossings only.*

Crossing Structure Openness Ratio* =

* Openness box culvert = (height x width)/length
Openness round culvert = (3.14 x radius^2)/length

SECTION 13 - GENERAL DESIGN CONSIDERATIONS

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

- ☒ Not be a barrier to sediment transport.
- ☒ Prevent the restriction of high flows and maintain existing low flows.
- ☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- ☒ Not cause an increase in the frequency of flooding or overtopping of banks.
- ☒ Maintain or enhance geomorphic compatibility by:
  a. Minimizing the potential for inlet obstruction by sediment, wood, or debris, and
  b. Preserving the natural alignment of the stream channel.
- ☒ Preserve watercourse connectivity where it currently exists.
- ☒ Restore watercourse connectivity where:
  a. Connectivity previously was disrupted as a result of human activity(ies), and
  b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.
- ☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.
- ☒ Not cause water quality degradation.

SECTION 14 - TIER-SPECIFIC DESIGN CRITERIA

Stream crossings must be designed in accordance with the tier specific design criteria listed in Part Env-Wt 904.

- ☒ The proposed project meets the tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

SECTION 15 - ALTERNATIVE DESIGN

NOTE: If the proposed crossing does not meet all of the general design considerations, the tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.10.

- ☐ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.

Attachment H

Stream 11 Photo Log

Photography Log

PROJECT NUMBER

52768.00

13065B I-93 Exit 4A

CLIENT

NHDOT

LOCATION

Exit 4A Contract B: Stream 11

Derry, New Hampshire

NO. 1
6.21.2021 10:37 AM

Looking upstream toward Wetland 39

NO. 2
6.21.2021 10:37 AM

Looking upstream at the headwaters of Stream 11 toward Wetland 39

NO. 3
6.21.2021 10:38 AM

Stream 11, impacted channel looking downstream from Wetland 39

NO. 4
6.21.2021 10:37 AM

Stream 11, looking upstream toward Wetland 39

NO. 5
6.21.2021 10:34 AM

Stream 11 flag is located where Stream 11 resource is delineated on General Plan 2.

NO. 6
6.21.2021 10:35 AM

Stream 11 where resource is delineated on General Plan 2.