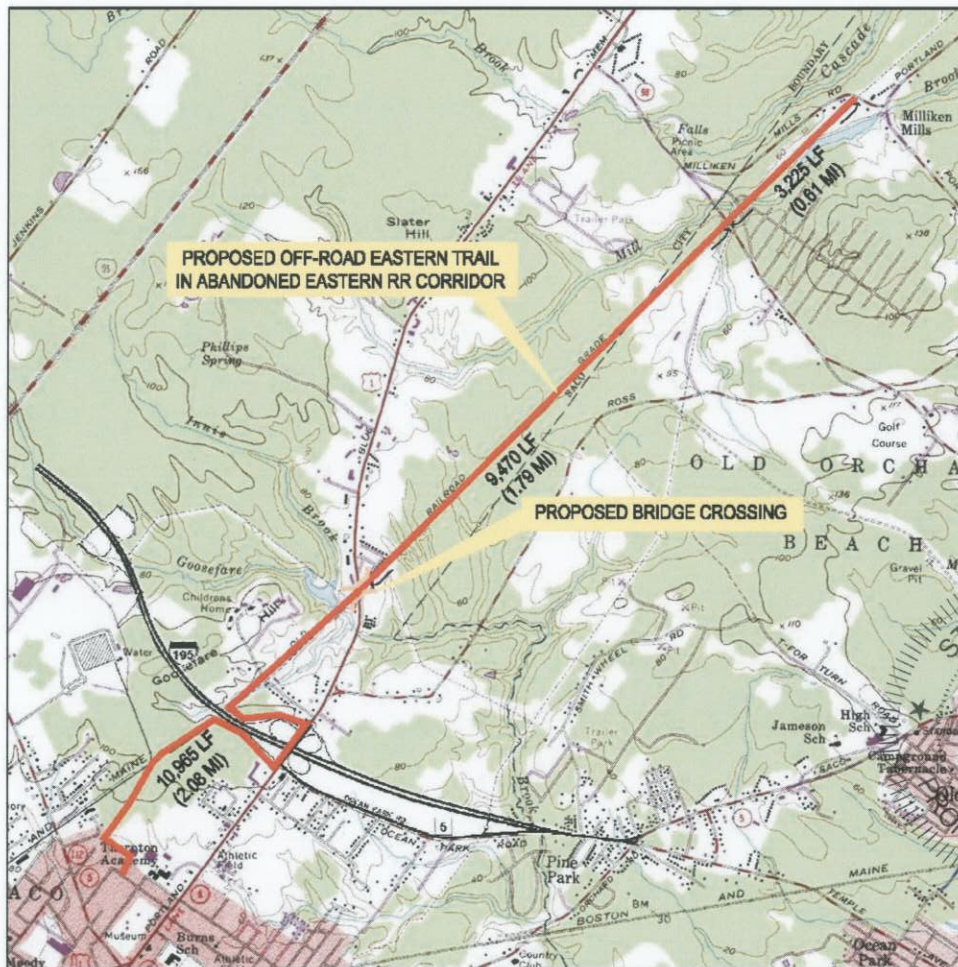


**THE EASTERN TRAIL –  
A MULTI-USE TRAIL CONSTRUCTION PROJECT  
PRELIMINARY DESIGN REPORT**

**SEGMENTS IN THE TOWN OF  
OLD ORCHARD BEACH AND THE CITY OF SACO**

November 2009



STATE OF MAINE  
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Maine Department of Transportation

MDOT Pin: 13340.00  
County: York  
Community: Old Orchard Beach & Saco  
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## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

In accordance with our scope of services dated February 10, 2009 and June 10, 2009, DeLuca-Hoffman Associates, Inc. has completed a Preliminary Design Report (PDR) for the construction of the Eastern Trail located within the communities of Saco and Old Orchard Beach.

The Eastern Trail in Southern Maine is a 60-mile off-road transportation corridor proposed to connect Kittery and South Portland. Only non-motorized means of transportation are permitted on the trail system, including, but not limited to, walking, running, bicycling, snowshoeing, skiing, and horseback riding. The specific study area covered in this report was previously identified as part of segments 16, 17 and 18 within the 2001 Eastern Trail Engineering Feasibility Study prepared by Wilbur Smith Associates. This study area extends from the Thornton Academy campus at Clark Street northerly to Milliken Mills Road in Old Orchard Beach. This trail length covers approximately 4.37 miles.

The findings of the Preliminary Design Report shall be used to complete final design during the winter of 2009-2010 in advance of anticipated trail construction during summer 2010.

### **1.2 Historical Introduction & Timeline**

After 100 years of operation, the Eastern Railroad was derailed in 1944. Tracks and bridges were literally removed, leaving a cleared, level corridor now utilized by public utilities including Unitil for their 8" natural gas transmission line, the Biddeford & Saco Water Company, and Central Maine Power. These three utilities, plus the Thornton Academy Trustees, are the primary landowners within the study area. The Eastern Trail is in the process of moving from paved roadways to off-road routes, primarily utilizing the abandoned Eastern Railroad corridor. Construction is phased; as off-road segments are completed, users of on-road routes are directed to the off-road routes. The off-road Eastern Trail is open across South Portland from Bug Light Park, along the Nonesuch River, across Scarborough Marsh to Milliken Mills Road in Old Orchard Beach. Sections with funding for design and construction include sections in Biddeford, Kennebunk, and Saco. The segments between Thornton Academy in Saco and the constructed trail at Milliken Mills Road in Old Orchard Beach are the subject sections of this study. Pending funding, the Eastern Trail Management District (ETMD) has set 2015 as the target date for completion of the entire 60-mile off-road route.

### **1.3 Purpose & Goals**

The purpose of this Preliminary Report is to study and provide preliminary layout of off-road routes between Milliken Mills Road in Old Orchard Beach and Thornton Academy, a public secondary school campus, in Saco, Maine. Currently between these points, users of the Eastern Trail system depart from the constructed trail at

Milliken Mills Road and travel on rural paved roads that gradually build to busier, less safe urban conditions. The off-road segments, the subject of the study, would provide alternative, safer, all-season, more natural resources connecting the communities and continuing the existing off-road segments of the Eastern Trail.

This Preliminary Report has been developed through the collaboration and input of several consultants: DeLuca-Hoffman Associates, Inc. (DHAI) (Civil Engineering and Landscape Architecture), StudioVerde (Landscape Architects), Normandeu Associates (Environmental and Wetland Assessment), R. W. Gillespie & Associates, Inc. (Preliminary Geotechnical Investigation), Lincoln-Haney (Structural Engineers) and Dow & Coulombe (Surveyors). The Maine Department of Transportation (MDOT), on behalf of the Eastern Trail Management District, seeks specific alignment recommendations utilizing primarily the Eastern Railroad corridor, proposed connections to adjacent residential neighborhoods and commercial developments, design recommendations for stream and street crossings, potential property or easement acquisitions for the most feasible off-road route from Thornton Academy northward to the end of the existing trail at Milliken Mills Road.

Specifically, the approximately 4.37-mile route under study may be divided into the following Trail Segments as identified on Figure 1 (color-coded Segment Map) following section 1.3, Existing Conditions:

- Segment A:** From Clark Street and Thornton Academy (south sports field parking lot) to Intersection of U.S. Route 1 & Interstate 195 (1.06 miles)
- Segment B:** Intersection of U.S. Route 1 & south side of Interstate 195 to Moody Street – MDOT property & Eastern RR corridor (0.46 miles)
- Segment C:** Moody Street to the west side of U.S. Route 1 – follows Eastern RR corridor (0.43 miles)
- Segment D:** U.S. Route 1 Crossing
- Segment E:** East side of U.S. Route 1 to Cascade Road – follows Eastern RR corridor (1.81 miles)
- Segment F:** Cascade Road to Milliken Mills Road – follows Eastern RR corridor (0.61 miles)

The trail alignments should be aesthetically interesting, accessible for a wide range of users, provide connections to adjacent neighborhoods, developments, and other areas of interest, discourage use by motorized vehicles, and provide a safe means of travel between connection points.



The elements of the design should emphasize the use of high quality materials that blend harmoniously with the surrounding conditions. Attractiveness, ease of maintenance, and safety are important.

### **1.3 Existing Conditions**

For ease of description, the off-road route from Thornton Academy to Milliken Mills Road is divided into segments described previously. Paved road crossings characterize the dividing line between segments. The following references are offered to illustrate detailed Existing Conditions by segment:

- Figure 1 – Segment Map for the graphic location of the segments, overlaid on an aerial photograph.
- Figure 2 – Photo Key Map. Photos of existing conditions appear within this report, keyed to Figure 2.
- Figure 3 – Abutting Properties Map. Municipal property tax map information for properties abutting the proposed trail alignment.
- Preliminary Plan Drawings 1 through 21 for proposed alignments placed on surveyed topography, boundaries, utilities, etc.

Figures 1 and 3 follow this section. Preliminary Plan Drawings may be found in Section 4.0. Figure 2 follows Section 5.0.

The study area for this Preliminary Design Report begins at Clark Street, located on the south side of the Thornton Academy campus. The trail is envisioned to be located on the westerly side of Thornton's property and then fall within the abandoned rail corridor north to the I-195 corridor.

The trail will fall within the I-195 right-of-way as it proceeds from the railroad right-of-way easterly to U.S. Route 1. In order to cross the I-195 corridor it will be necessary for the trail to pass beneath the U.S. Route 1 overpass. This will also require at-grade crossings at the three I-195 ramps that enter/exit from U.S. Route 1. Alternatives to crossing the I-195 highway, including both above-grade and below-grade options, have been reviewed and found to be prohibitively expensive.

Generally, north of Moody Street to the Milliken Mills Road intersection the proposed route follows the abandoned Eastern Railroad right-of-way, a straight corridor usually 66 feet in width, with some variation. The rails, ties, most of the gravel bed, and bridges have been removed.



The following descriptions of the project segments highlight each length's existing conditions.

**Clark Street to I-195 (south side) – Station 10+00 to Station 66+25**

**Segment A** begins on the Thornton Academy (TA) campus off Clark Street. A short segment of approximately 1,500 l.f. will extend from Clark Street along the parking lot edge and very close to residential properties until reaching play field space just southwest of the Middle School building. From there, it follows the perimeter of the athletic fields, beneath large Oak canopies, until it weaves around wooded wetlands to the heavily forested western property boundary. The trail continues northward on TA property, paralleling an active rail spur and R.O.W. operated by Boston and Maine Corporation's PanAm Railways to the northwest corner of an undeveloped portion of TA property. Near this point, the active rail spur and R.O.W. have turned westward, away from the abandoned RR corridor that continues northward to the I-195 corridor. To avoid wetlands within the RR corridor, the trail will remain on Thornton Academy land until reaching the northwest corner of the property. The former RR corridor becomes enclosed between sheer rock walls or rocky inclines, and is spanned almost entirely by created wetlands, most of the length between the PanAm line and the I-195 corridor. For this reason, the trail alignment should be placed on higher ground paralleling the former railroad bed. From the Thornton property to the I-195 R.O.W., the rail corridor has a 100' wide R.O.W., thus allowing the opportunity to keep the trail on higher ground. Once within the I-195 R.O.W., the trail then follows the base of slope along the highway and the eastbound exit ramp and the wetlands bordering the Hannaford store before connecting to Segment B at U.S. Route 1.

The TA boundary shared with the active Railroad R.O.W. is not fenced at this time, but would require fencing should this portion of the trail be constructed. Tree clearing would be fairly extensive, including several hardwood trees exceeding 12" in caliper. Special attention to avoid several large-diameter pine trees should be prioritized during final design. Unutil's gas line parallels the eastern edge of the RR corridor and would generally not be near the proposed trail alignment. This trail segment is within land owned by the Thornton Academy Trustees, Unutil/Granite State Transmission Co., and the State of Maine.

**I-195 to Moody Street – Station 66+25 to Station 92+20**

**Segment B** begins on the south side of the I-195 interchange with U.S. Route 1 or Main Street and ends at Moody Street. U.S. Route 1 has 4 travel lanes, a concrete sidewalk on the east side, an unpaved footpath on the west side, and entrance and exit ramps to I-195 on both sides; I-195 passes overhead between ramps on the west side. Currently there is only a 12-foot-wide bituminous sidewalk on the west side of U.S. Route 1 directly beneath the overpass. A narrow, concrete median separates the

direction of travel on U.S. Route 1 except at the signalized intersection of U.S. Route 1, Route 5 and the I-195 eastbound exit ramp.

The MDOT owns a 6-acre, triangularly shaped parcel of land at the north edge of the ramped interchange with U.S. Route 1. The parcel has frontage on U.S. Route 1 and Moody Street and abuts residential lots accessed from Moody Street. Opportunities for trail head parking and access from Moody Street at the U.S. Route 1 intersection should be explored more fully during final design. The RR corridor to the west borders the MDOT property, private residential properties and Sweetser School to the west. The MDOT I-195 right-of-way bisects the former RR corridor at an elevation approximately 18 feet above the grade of the corridor. On the I-195 corridor's north side, the property is heavily wooded with a large wetland located at the toe of slope of the westbound on-ramp. This area borders the grassed side slopes of the elevated MDOT ramp and is placed behind the residential lots along Moody Street. This wetland will require unique design measures to minimize impacts including either a raised trail supported by a retaining wall along the westbound on-ramp slope or an elevated trail deck that could be installed over the wetland to minimize impacts. Further west, additional wetlands have been identified within the RR corridor as well.

The Sweetser School owns a significant amount of property accessed from Moody Street west of the trail corridor. The Sweetser School property is partially developed with several campus buildings, parking, and paved circulation ways. Several trail systems cross through undeveloped private land connecting to the Saco Industrial Park to Spring Hill Road near Funtown/Splashtown USA. The southern edge of Moody Street west of the trail crossing is demarcated with a painted shoulder and crosswalk that connects to the graveled section of the RR corridor leading northward.

### **Moody Street to U. S. Route 1 – Station 92+20 to Station 115+00**

**Segment C** begins with a graveled section at Moody Street and follows a straight, level alignment to the top of embankment overlooking U.S. Route 1. On both sides, the 66-foot wide R.O.W. corridor borders undeveloped woodlands. The corridor widens and steep side embankments drop off on both sides as the north end is approached. Scenic overlooks of Goosefare Pond can be viewed to the west. Unutil's 8" gas line parallels the eastern edge of the corridor. A fenced natural gas regulator station is accessed by the graveled section near the southern end of this segment. This trail segment is owned by Unutil/Granite State Gas Transmission Co. up to U.S. Route 1.



### **U.S. Route 1 Crossing – Station 115+00 to Station 116+30**

**Segment D** is the U.S. Route 1 crossing. U.S. Route 1 consists of a 50-foot-wide paved section within a variable-width R.O.W. that is approximately 90 feet wide at the crossing location. U.S. Route 1 has four travel lanes and narrow shoulders at this location. The former railroad R.O.W. crosses U.S. Route 1 at a skewed angle of about 48 degrees. The crossing is at a vertical sag on a broad horizontal curve in the road alignment with limited visibility in both north and south directions. If the elevation of the RR corridor was maintained (the bridge abutments no longer exist), then the alignment would be about 12 feet above the road. Thus, the future bridge abutments are expected to rise at least 6 feet above embankment grade. On the east side of U.S. Route 1, Seacoast RV Sales can be readily accessed to the north. A narrow pathway provides connection to the Silver Springs Campground to the south. On the west side, a paved driveway provides service access to the Saco Inn Motel and pathway access to Goosefare Pond owned by Saco Valley Land Trust (Saco Trails). The former RR corridor on this side can be accessed by climbing up a steep path along land owned by A&N, LLC. The property south of the RR corridor is privately owned. The RR corridor passes under both overhead transmission lines and 3-phase primary power lines owned by Central Maine Power (CMP). The overhead transmission lines are the primary controlling factor influencing the proposed bridge crossing alignment. CMP representatives have stated their objection to placement of a bridge directly beneath the power lines. However, they have agreed that placing the bridge at the outer edge of the corridor is acceptable. The 3-phase power lines parallel U.S. Route 1 on the west side. These lines will require relocation to underground facilities to avoid conflict with the proposed pedestrian bridge. Additional utilities include Unitil's 8" gas line; the Water Company's water mains in the U.S. Route 1 right-of-way and within the Trail Corridor east of U.S. Route 1; and sanitary sewer within the U.S. Route 1 right-of-way. Several very large White Pines retain the eastern embankment and buffer views of the busy road from the Silver Springs Campground.

There have been past discussions between MDOT, the City of Saco, and the abutting property owners regarding the realignment of U.S. Route 1, to widen the right-of-way and straighten the curve through property acquisitions. For the purposes of the PDR it has been assumed that any future modifications will take place within the U.S. Route 1 right-of-way and these improvements could include up to an 82' wide road width.

### **U. S. Route 1 to Cascade Road – Station 116+30 to Station 211+35**

**Segment E** is approximately 9,505 feet (1.80 miles) in length. This segment begins with a steep footpath and embankment on the east side overlooking U.S. Route 1, as well as a footpath leading to an RV campground to the southeast, all of which lie beneath overhead CMP transmission lines. From this point northward, the RR



corridor alignment is straight and level, passing over multiple granite box culverts beneath the former railroad bed. The corridor passes by primarily undeveloped, wooded properties at lower elevations to the west and undeveloped wooded land to the east. A western side trail connects to the Mill Brook Business Park, a commercial subdivision owned by the City of Saco, as well as to other ATV trails. One of these ATV trails parallels the RR corridor and is heavily used to bypass a very wet area of the corridor, immediately south of the Mill Brook Business Park connection. North of the Mill Brook Business Park, residential backyards and side streets can be seen along the east side; several paths provide access to the corridor. The Unitil gas line follows the eastern edge the entire length of this segment. High-voltage transmission lines centered within a 135' wide easement owned by Central Maine Power cross the RR corridor at an angle near U.S. Route 1. The Biddeford & Saco Water Company owns this segment of the former railroad R.O.W. beginning at U.S. Route 1 north to the Cascade Road extension. They maintain a 20" water transmission main within this trail segment.

### **Cascade Road to Milliken Mills Road – Station 211+35 to Station 244+03**

**Segment F** lies between Cascade Road and Milliken Mills Road. Between Cascade Road and Old Cascade Road, the shape of the corridor expands to include 2 acres of scrubby vegetation and sparse woodlands owned by the Eastern Trail Management District (EMTD); the majority of the property owned by the EMTD is at lower elevations west of the railroad corridor. The bridge abutments remain on both sides of Old Cascade Road and worn, eroded footpaths climb beside the abutments to provide access between the trail and paved road. The route descends steeply to cross Mill Brook, and then ascends to follow the wooded banks of the Mill Brook Pond to the east and behind a residential neighborhood to the west. It continues northward to connect with the southerly end of the constructed Eastern Trail at Milliken Mills Road. The natural gas line follows the eastern edge the entire length of this segment except for the crossing of Mill Brook where the gas line was reconstructed following the culvert washout. The gas line now passes below the stream bed and it has multiple bends in its alignment as it passes through this stream crossing. Central Maine Power has transmission lines that follow the western edge of the corridor. CMP owns the corridor between Old Cascade Road to Milliken Mills Road.

This concludes the general description of existing conditions, divided into the proposed Trail Segments.

## **1.4 Challenges/Design Issues**

### **1.4.1 Street Crossings**

Creating safe pedestrian crossings for all public streets is a priority; traffic flows vary seasonally as well as by location, U.S. Route 1 and the I-195 interchanges being the busiest. Signage does not exist at any location,

including cautionary, street name, trail identification, or wayfinding signage. The most significant crossing includes the pedestrian crossings at the three I-195 access ramps on the west side of U.S. Route 1. Refer to the Street Crossing Report contain in Appendix B.

The following items will require close evaluation during final design at the crossings:

- I-195 Eastbound Off-Ramp – The trail crossing is planned at the intersection of this ramp with U.S. Route 1. This intersection is currently signalized; however, there is no pedestrian activities signal for the crossing. The ramp currently has separate left-thru and right-turn lanes. The final design will need to consider the crossing locations of each lane, the divider island configuration and pedestrian ramp design to ensure safety and comfort for trail users. The City of Saco is also advised to consider the construction of a sidewalk along the westerly side of U.S. Route 1, extending south to the Hannaford Plaza driveway intersection.
- I-195 Westbound Off-Ramp – This trail crossing should be generally perpendicular to the ramp alignment and placed to ensure adequate sight lines for oncoming traffic using the ramp to access U.S. Route 1.
- I-195 Westbound On-Ramp – This trail crossing will require additional traffic review to determine the crossing's impact on traffic exiting U.S. Route 1 onto the ramp. A specific evaluation of approach speed and specific signage measures should be prioritized during final design.
- The U.S. Route 1 crossing north of I-195 will require an elevated bridge crossing as the former railroad corridor previously contained a bridge at this location. The bridge should be designed to allow for the future widening of U.S. Route 1 to a possible maximum future width of 82 feet (4 travel lanes, CTWLT lanes, 5-foot shoulders and 5-foot sidewalk each side).
- The Old Cascade Road crossing is currently contemplated as an at-grade crossing rather than a bridge crossing as outlined in the original Eastern Trail Feasibility Study. Reuse of the existing concrete abutments is not recommended unless a thorough assessment of their structural integrity is performed as part of the final design process. The preliminary alignment makes use of the existing bypass trails that are on the west side of the abutment structures.



#### *1.4.2 Stream Crossings*

Mill Brook is the primary challenging stream crossing. Although shallow and not wide, it flows easterly through a valley at an elevation almost 20 feet below the typical level RR corridor grade, with 3H:1V sandy slopes leading down to it on both sides. These conditions are a result of the former railroad box culvert washing out during a past storm event. These steep slopes are eroded and the stream crossing needs to be made accessible to the public. The stream is identified as being within a Zone A designated area on the FEMA Flood mapping. The new culvert installation is eligible for permitting under the Maine Department of Environmental Protection Natural Resources Protection Act (NRPA) Permit by Rule Standards; however, due to the flood plain designation, the culvert will need to be sized to pass a 100-year storm event flow rate. The proposed crossing is expected to be a pipe arch or concrete arch culvert in order to maintain the natural stream bottom. The stream crossing is constrained by the natural gas line alignment which makes several changes of direction in the vicinity of the stream crossing; therefore, careful placement of the culvert and embankment fills will be required.

The project study area also contains five existing granite box culvert crossings generally located within the trail north of the U.S. Route 1 crossing. The box culverts range in size from 2'x'2 to 3'x3'. These granite box structures all appear to be culverts constructed as part of the original railroad and are therefore relatively old and present potential risk for failure etc. These structures are each located within a ravine and each conveys a regulated stream watercourse. Several of the structures appear to be in poor condition with slope sloughing and partially blocked inlet/outlet conditions. Internal inspection of these culverts has not been performed as part of the PDR. Maintenance of these culverts has not been performed according to the property owner, The Biddeford and Saco Water Company. Long term consideration should be given to a maintenance program for the culverts that might include relining with a circular pipe or lining the box with a cured in place pipe lining such as Insituform®. The location of each of the culverts within a relatively deep ravine will make access for equipment challenging. The condition of these culverts should be considered closely during final design given the potential risk associated with each. Both the Water Company and Unutil may also share interest in the long term condition of these culverts. The preliminary opinion of costs does not include activities associated with repairs or rehabilitation of these culvert crossings.

#### *1.4.3 Environmental Impacts*

Wetlands and vernal pools have been delineated within the study area by Normandeau Associates. Several isolated wetland pockets have been identified on the Thornton Academy property; however, it is felt that these can be avoided or the impact generally minimized. More extensive wetlands have



been identified within the railroad corridor west of Thornton Academy all the way north to Moody Street. Within the I-195 corridor wetlands are also very extensive, generally at the toe of slope of the highway on/off ramps. Extensive retaining wall systems are currently contemplated to minimize impact to both the side slopes and the adjacent wetlands.

North of U.S. Route 1, more wetlands have been identified both at the inlets/outlets of multiple existing culvert crossings as well as within the corridor itself. Within the corridor the wetlands are largely a result of the removal of the former railroad ballast stone, etc. In several locations ATV traffic has created minor routes around these wet areas. The proposed trail design will need to minimize impacts to the extent practicable while also minimizing impact to the nearby natural gas line. The preliminary trail alignment results in an impact of 0.68 acres of delineated wetland.

Normandeau Associates has also identified ten seasonal pools within the study corridor. These pools were documented to contain breeding habitat for vernal pool species. None of the pools is considered natural, as they all formed as a result of the rail corridor construction or corridor activity. None of the pools would be considered a significant vernal pool habitat under MeDEP Chapter 335. A preliminary discussion with Mr. Jay Clement of the U.S. ACOE has yielded his understanding that the pools would be regulated by the Corps; however, based on the previous activities of the railroad corridor and apparent low productivity of the pools, it is his opinion that the Corps and Federal agencies would be flexible in allowing trail activity on or near these pool areas.

Refer to Appendix D for the Wetlands and Natural Resources Assessment Report by Normandeau Associates.

#### 1.4.4 Utilities

Unitil's 8" steel high-pressure natural gas line follows most of the proposed trail route within the railroad corridor. The primary design requirement for the trail is to maintain at least a 5-foot separation from the trail edge to the pipeline. Of equal importance is the need to place the trail to avoid the operation of heavy equipment over the pipeline during construction. Unitil maintains two regulator stations located at the south end of **Segment C** at Moody Road and a station just south of Cascade Road. Access is to be maintained to these stations and to the gas line. The markers placed for the gas line do not always indicate the alignment of the pipe, nor do they indicate the depth at which it is buried. The gas line may be between 8 and 36 inches deep throughout its length; its depth and alignment affect fence post placement, the trail pavement section, and drainage swales that may be necessary to accommodate stormwater runoff. Currently, the preliminary trail

alignment crosses the gas line at four at-grade locations. The first is just south of Moody Street, where the trail exits the I-195 R.O.W. corridor and re-enters the former RR R.O.W. The second crossing is just north of the U.S. Route 1 Pedestrian Bridge Crossing. The third and fourth crossings are at the Mill Brook culvert crossing. Continued close coordination with Unutil representatives is required during final design.

Overhead electric transmission lines and separate three-phase primary power lines owned by Central Maine Power are encountered in both **Segment F** and **Segment D**, the U.S. Route 1 crossing. The transmission lines have a 135' wide easement to access the lines; structures are not permitted without CMP authorization within the easement and paved access through the easement must cross the lines as directly as possible. Discussions with CMP have resulted in a concession to allow the proposed U.S. Route 1 bridge crossing structure to be placed within the outer limits of the easement, but not directly beneath the transmission lines. Any relocation or adjustment of the transmission lines is very cost prohibitive, but alterations to the 3-phase distribution lines are allowed, albeit with costs. CMP's representatives have stated that the distribution lines could be placed underground within a concrete-encased conduit system for a segment along U.S. Route 1 in order to avoid the proposed bridge crossing.

U.S. Route 1 is at a significantly lower elevation than the railroad corridor and the proposed trail; a street-level pedestrian crossing within several hundred feet of a crossing aligned with the railroad corridor is not feasible due to unsafe traffic conditions and restricted visibility. Therefore, U.S. Route 1 must be crossed by way of an overhead pedestrian bridge, in a location that respects existing easements and accommodates overhead clearances to the transmission lines. The existing three-phase line along U.S. Route 1 will require relocation to underground facilities.

The Biddeford & Saco Water District maintains a 20" water supply main within their corridor between U.S. Route 1 north to Cascade Road. Based on its existing burial depth and the anticipated trail improvements, we anticipate no major impacts to these facilities. The water company also maintains a 24" transmission main that crosses the corridor near the northwest corner of the Thornton campus. Again, no impacts to this main are anticipated.

#### *1.4.5 Stormwater Management and Treatment*

Approximately 2.97 miles of the proposed trail length are located within the Goosefare Brook Watershed. Goosefare Brook is listed under the Maine DEP's Chapter 502 Urban Impaired Streams; therefore, project activities are subject to the requirements set forth in the DEP's Chapter 500 regulations.



Preliminary discussions with DEP representatives have yielded the following basic assumptions to be applied during final design:

- All trail segments to be constructed within the former railroad bed will be considered as redevelopment activity of impervious area that was in existence as of November 16, 2005; therefore, these segments are exempt from needing to meet either the General Standards or Urban Impaired Stream Standards. This will apply to the trail section beginning just south of Moody Street, north to Milliken Mills Road (Station 88+00 to Station 244+03)
- The trail segment beginning at Clark Street north to Station 88+00 (approximately 7,548 LF of new trail) will be considered as new impervious area. Approximately 3,400 LF is located within the Thornton Academy property and 4,148 LF is located within the former RR corridor or the I-195 ROW. DEP staff has stated that the Thornton trail section will require review under the existing Site Location of Development Permit coverage for the property. On that basis, 75% of the Thornton trail section or approximately 2,550 LF of trail will need to have water quality treatment measures. The following treatment measures are currently contemplated in the preliminary plan.
  - The preliminary plan currently identifies at least 1,800 LF of Thornton trail that can be treated with a 35' wide forested buffer. The provisions for the 35' wide wooded buffer are subject to approval of the Thornton Trustees as this area will require a permanent conservation easement.;
  - An additional 500 LF of trail will shed runoff that is captured by existing onsite drainage systems and an existing stormwater treatment basin;
  - A treatment system consisting of a Filterra/StormTech Isolator Row treatment train is recommended for the parking lot adjacent the Thornton Academy Middle School. A 4x6 Filterra bioretention treatment system and StormTech isolator row appears to be an ideal candidate to provide treatment of approximately 0.29 acres of parking and sidewalk surface. This area will exceed the 75% treatment threshold for the Thornton campus. (See figures below.)





**Figure 1 – Filterra Unit**



**Figure 2 – Filterra Unit**

The portion of trail within the railroad corridor and I-195 is 4,148 LF and according to DEP staff is eligible for an exemption for water quality treatment under the Memorandum of Agreement between the DEP, The Maine Turnpike Authority and the Department. Activities in existing transportation corridors are considered as redevelopment under Chapter 500 Section 4(B)(3)(e). The DEP considers both the I-195 ROW and the former Eastern Railroad ROW as existing transportation corridors. This interpretation should be verified during Final Design. Additional opportunities to provide water quality treatment of either new or existing impervious surfaces should be explored during final design. The specific challenge for providing water quality treatment of the trail segment from Thornton through the I-195 corridor is related to the trail's proximity to wetlands and the use of retaining walls to avoid wetland impacts.

#### *1.4.6 Construction Access*

The proposed project is unique due to the linear nature and relatively narrow disturbance width for the trail construction. Equipment access during the course of work may be significantly constrained; therefore, the following considerations shall be evaluated during final design:

- Heavy equipment access through Thornton Academy will be required.
- Access off the I-195 highway and ramps may require partial or full lane closures during peak traffic periods.
- Other potential construction access points including, but not limited to, the Hannaford parking lot, Moody Street, Seacoast RV Sales, and the Mill Brook Business Park access road should be further explored during final design.

- Heavy equipment operations on or near the gas line must be minimized and will require full-time oversight by Unitil representatives.

### **1.5 Preliminary Engineer's Opinion of Costs**

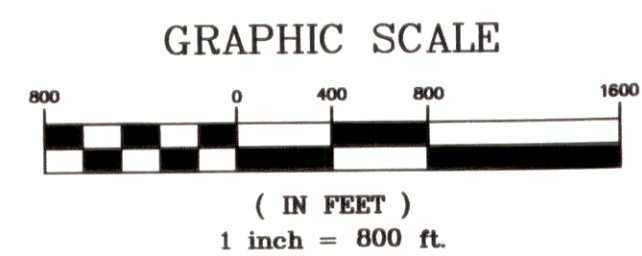
The preliminary engineer's opinion of cost to construct the proposed 4.43 miles of multi-use recreation trail, including the U.S. Route 1 Pedestrian Bridge Crossing, is **\$2,867,606**. A summary of the project costs is as follows:

<b>Item</b>	<b>\$ Value</b>
Trail Construction	\$2,085,540
U.S. Route 1 Bridge	\$ 350,000
Mill Brook Culvert	\$ 150,000
Wetland Mitigation	\$ 114,966
U.S. Route 1 Utility Relocation	\$ 155,000
Stormwater Compensation fee	\$ 12,100
<b>Total Amount</b>	<b>\$2,867,606</b>





- LEGEND**
- SEGMENT A
  - SEGMENT B
  - SEGMENT C
  - SEGMENT D
  - SEGMENT E
  - SEGMENT F
  - EXISTING EASTERN TRAIL
  - MUNICIPAL BOUNDARY



PRELIMINARY - NOT FOR CONSTRUCTION

<b>EASTERN TRAIL</b> SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00		<b>STATE OF MAINE</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
<b>TRAIL SEGMENT MAP</b>		<b>APPROVED</b>	
FIGURE <b>1</b>		COMMISSIONER:	CHIEF ENGINEER:
PROJECT INFORMATION		SIGNATURE	DATE
PROGRAM	MULTIMODAL		
PROJECT MANAGER	JOEL KITTREDGE		
DESIGNER	DHAI	P.E. NUMBER	
CONSULTANT	DHAI		
PROJECT RESIDENT			
CONTRACTOR			





**ABUTTING PROPERTY OWNERS TO EASTERN TRAIL - SACO & OOB**

Parcel ID	Owner Name	Co-Owner Name	Location	Owner Address	Owner City
039-136-001-000	Lorraine Bova	Dorothy Bova	15 Goodale Ave	Saco, ME 04072	
039-146-000-000	Anna Jovanovic	Christopher Jovanovic	5 Northwood Lane	111 Columbia Road Arlington, MA 02474	
039-146-001-000	Estate of Jennie Corbano	John Daphne C. Bova	6 Northwood Lane	877 South Street Baldwin, ME 04005	
039-147-001-000	Conrad R. Doucette	Maria Doucette	75 Clark Street	75 Clark Street Saco, ME 04072	
040-026-000-000	Gagne Realty Holdings LLC		187 North Street	28 Old Route 27 Road Baldwin, ME 04017	
040-028-001-000	George S. Case		15 Friday Ave	15 Friday Ave Saco, ME 04072	
040-028-001-000	Roderick H. Foster	Mary H. Foster	11 Friday Ave	11 Friday Ave Saco, ME 04072	
040-028-002-000	Thompson Academy Trustees		438 Main Street	438 Main Street Saco, ME 04072	
043-003-001-000	Genie State Gas Transmission (ENRTE)	Richard Williams, Inc	Portland Road	8 Liberty Lane Hampden, NH 03042	
044-006-000-000	General Dynamics Amusement Systems	Abn. Finance	291 North Street	291 North Street Saco, ME 04072	
041-010-000-000	Grand Public		Woodland Ave	7 Woodland Ave Saco, ME 04072	
041-010-000-000	Hannaford Bk Co.	Abn. Real Estate	532 Main Street	PO Box 1000 MS 8000 Portland, ME 04104-0005	
041-012-001-000	McDonalds Real Estate Company	chs Bank of America Corp. Assessment	534 Main Street	NC1001081 101 N. Tryon St. Charlotte, NC 28235	
041-013-000-000	State of Maine IRS		Main Street	State House Station 22 Augusta, ME 04333	
042-001-000-000	Sweetser Home		30 Moody Street	30 Moody Street Saco, ME 04072	
041-025-001-000	Chesler Philip		370 North Street	370 North Street Plainfield, CT 06374-1624	
042-002-000-000	Sweetser Home		30 Moody Street	30 Moody Street Saco, ME 04072	
042-010-000-000	Levin M. Foster		PO Box 1036	708 Portland Road Saco, ME 04072	
043-001-000-001	Robert A. Benwick		708 Portland Road	708 Portland Road Saco, ME 04072	
043-002-000-000	Raymond Gaudreau		708 Portland Road	708 Portland Road Saco, ME 04072	
043-003-000-000	James Tolman		710 Portland Road	PO Box 4952 Old Orchard Beach, ME 04064	
043-005-000-000	A & N LLC		720 Portland Road	720 Portland Road Saco, ME 04072	
043-008-000-000	Saco Land Trust, Inc		Portland Road	PO Box 1581 Saco, ME 04072	
043-016-000-000	Silver Springs Campground, Inc.		705 Portland Road	705 Portland Road Saco, ME 04072	
043-015-000-000	Moore LLC		729 Portland Road	729 Portland Road Saco, ME 04072	

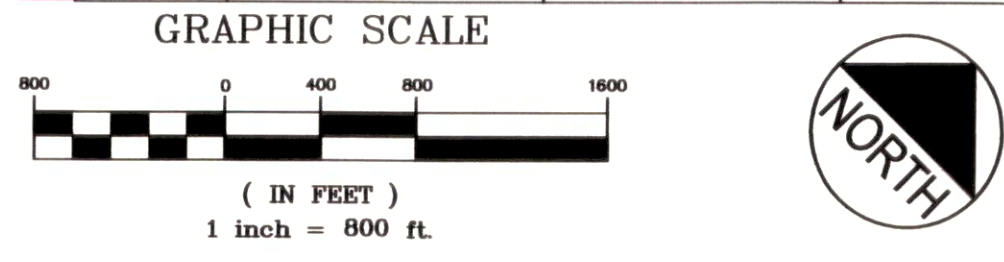
Parcel ID	Owner Name	Co-Owner Name	Location	Owner Address	Owner City
043-013-000-000	John E. Lambert		737 Portland Road	737 Portland Road Saco, ME 04072	
043-012-000-000	Patrice M. Fernald	Steven J. Fernald	Portland Road	742 Portland Road Saco, ME 04072	
043-015-001-000	Baldwin & Saco Water Co.		181 Elm Street	181 Elm Street Baldwin, ME 04005	
044-009-000-000	Raymond J. Bergeson & Rachel Owens	Liz-Robert J. Bergeson	750 Portland Road	750 Portland Road Saco, ME 04072	
044-008-000-000	Shir Henen Inc.	Liz John Mastel	757 Portland Road	757 Portland Road Saco, ME 04072	
044-010-000-000	John A. Benavides		2 Easy Street	2 Easy Street Old Orchard Beach, ME 04064	
044-010-001-000	Richard A. Townsend	Mary Penhaster	8 Easy Street	PO Box 1396 Saco, ME 04072	
044-017-003-000	Karen L. Beaulieu		8 Easy Street	8 Easy Street Saco, ME 04072	
044-024-000-000	763 Portland Road LLC		763 Portland Road	PO Box 817 Saco, ME 04072	
044-017-001-000	Karen L. Beaulieu	Steven N. Beaulieu	8 Easy Street	138 Cascade Road Old Orchard Beach, ME 04064	
045-002-000-000	Karen L. Beaulieu	Steven N. Beaulieu	Portland Road	38 Stockton Ave Saco, ME 04072	
045-003-000-000	Baldwin & Saco Water Co.		181 Elm Street	181 Elm Street Baldwin, ME 04005	
045-019-003-008	City of Saco		303 Main Street	303 Main Street Saco, ME 04072	
045-019-003-007	MM Brook Business Park		24 Mill Brook Road	300 Main Street Saco, ME 04072	
045-019-003-006	MM Brook Business Park		Portland Road	PO Box 148 Old Orchard Beach, ME 04064	
046-003-000-000	John H. Salenbach	John H. Salenbach	Portland Road	PO Box 508 Old Orchard Beach, ME 04064	
046-003-001-000	Robert LaFrance		Portland Road Realty Trust	841 Portland Road Baldwin, ME 04005	
046-017-001-000	Light Harvest Honey Co.		Portland Road Realty Trust	840 Portland Road Saco, ME 04072	
046-002-000-000	Baldwin & Saco Water Co.		181 Elm Street	181 Elm Street Baldwin, ME 04005	
046-003-003-000	Richard J. Thomas	Richard A. Potholme	Portland Rd	1 Foster Lane Old Orchard Beach, ME 04064	
046-001-000-000	Oliver Tarbox		620 Walnut Street	601 Yarmouth, ME 04097	
047-001-000-000	Baldwin & Saco Water Co.		Portland Road	181 Elm Street Baldwin, ME 04005	

**OOB**

Parcel ID	Owner Name	Location	Owner Address	Owner City
103-2-1	Eastern Trail Management District	113 Cascade Road	303 Main Street Saco, ME 04072	
103-2-3	Laura Goff	118 Cascade Road	118 Cascade Road Old Orchard Beach, ME 04064	
103-3-2	Philip E. Townsend, Jr	28 Old Cascade Road	28 Old Cascade Road Old Orchard Beach, ME 04064	
103-3-1	Flawn of Old Orchard Beach	Adcor Street	PO Box 0 Old Orchard Beach, ME 04064	
103-3-11	Philip F. & Barbara Townsend	85-111 Milliken Mills Road	85-111 Milliken Mills Road Old Orchard Beach, ME 04064	
103-3-12	Richard & Debra Townsend	75 Milliken Mills Road	75 Milliken Mills Road Old Orchard Beach, ME 04064	
103-3-13	J Neenan Milliken Trust	Milliken Mills Road	8 Milliken Mills Road Old Orchard Beach, ME 04064	
103-3-38	Gargano B. & Joel L. Neenan	403 Seaside Ave	403 Seaside Ave Saco, ME 04072	
103-5-58	Trustees of B & A Estates	45 Milliken Mills Road	45 Milliken Mills Road Old Orchard Beach, ME 04064	
103-5-39	Anthony & Pascale Eramo TRS	45 Milliken Mills Road	45 Milliken Mills Road Old Orchard Beach, ME 04064	
103-5-40	John & Jeanne Kalkreuth	41 Milliken Mills Road	41 Milliken Mills Road Old Orchard Beach, ME 04064	
103-5-37	Henry L. Ayres	37-39 Milliken Mills Road	13 Highland Street Baldwin, ME 04005	
103-5-54	Ignacio A. Valencia	31 Milliken Mills Road	56 Langley Street Bangor, ME 04401	
103-5-36	Wanda Parfite	27 Milliken Mills Road	27 Milliken Mills Road Old Orchard Beach, ME 04064	
103-5-43	Central Maine Power Co.	Portland Ave	70 Farm View Drive New Gloucester, ME 04263	
103-5-46	Lyn M Townsend	17-23 Milliken Mills Road	78 Milliken Mills Road Old Orchard Beach, ME 04064	
103-5-58	Chase R. Janssen Strubdry	3 Milliken Mills Road	3 Milliken Mills Road Old Orchard Beach, ME 04064	
<b>NEED INFO FROM TOWN</b>				
103-5-35	Kevin Beaulieu	109 Cascade Road	109 Cascade Road Old Orchard Beach, ME 04064	
103-5-15	Scott J. & Lisa Oler	1 Whispering Pines Drive	PO Box 525 Old Orchard Beach, ME 04064	
103-5-16	Timothy J. & Katherine Smith	2 Whispering Pines Drive	2 Whispering Pines Drive Old Orchard Beach, ME 04064	
103-4-49	Charles & Sherrae Salamucha	17 Palatine Pl	17 Palatine Pl Old Orchard Beach, ME 04064	
103-4-35	Richard J. Peaslee	1 Trider Lane	1 Trider Lane Old Orchard Beach, ME 04064	
103-4-36	David R. & Jean F. Greenwood	3 Trider Lane	3 Trider Lane Old Orchard Beach, ME 04064	
103-4-2	Baldwin & Saco Water Co.	Cascade Road	181 Elm Street Baldwin, ME 04005	
103-4-43	Laura P. LaPorte - Trustees	11 Pond View Road	11 Pond View Road Old Orchard Beach, ME 04064	
103-4-44	Keith D. & Gary S. Ray	13 Pond View Road	13 Pond View Road Old Orchard Beach, ME 04064	
103-4-1	Erwin Beaulieu	10 Pond View Road	10 Pond View Road Old Orchard Beach, ME 04064	
103-4-45	James Tomasco III	15 Pond View Road	15 Pond View Road Old Orchard Beach, ME 04064	
103-4-27	Mark L. Gennep	78 Milliken Mills Road	78 Milliken Mills Road Old Orchard Beach, ME 04064	
103-4-28	Mark L. Gennep	26 Pond View Road	26 Pond View Road Old Orchard Beach, ME 04064	
103-4-26	Michael S. & Debra McPherson	101 Cascade Road	101 Cascade Road Old Orchard Beach, ME 04064	

**LEGEND**

- SEGMENT A
- SEGMENT B
- SEGMENT C
- SEGMENT D
- SEGMENT E
- SEGMENT F
- EXISTING EASTERN TRAIL
- MUNICIPAL BOUNDARY



**DH** DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1124  
WWW.DELUCAHOFFMAN.COM

**STATE OF MAINE**  
**DEPARTMENT OF TRANSPORTATION**

**APPROVED**

COMMISSIONER: \_\_\_\_\_  
CHIEF ENGINEER: \_\_\_\_\_

---

**PROJECT INFORMATION**

PROGRAM	MULTIMODAL	SIGNATURE	
PROJECT MANAGER	JOEL KITTREDGE	P.E. NUMBER	
DESIGNER	DHAI	DATE	
CONSULTANT	DHAI		
PROJECT RESIDENT			
CONTRACTOR			

---

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

**ABUTTING PROPERTY MAP**

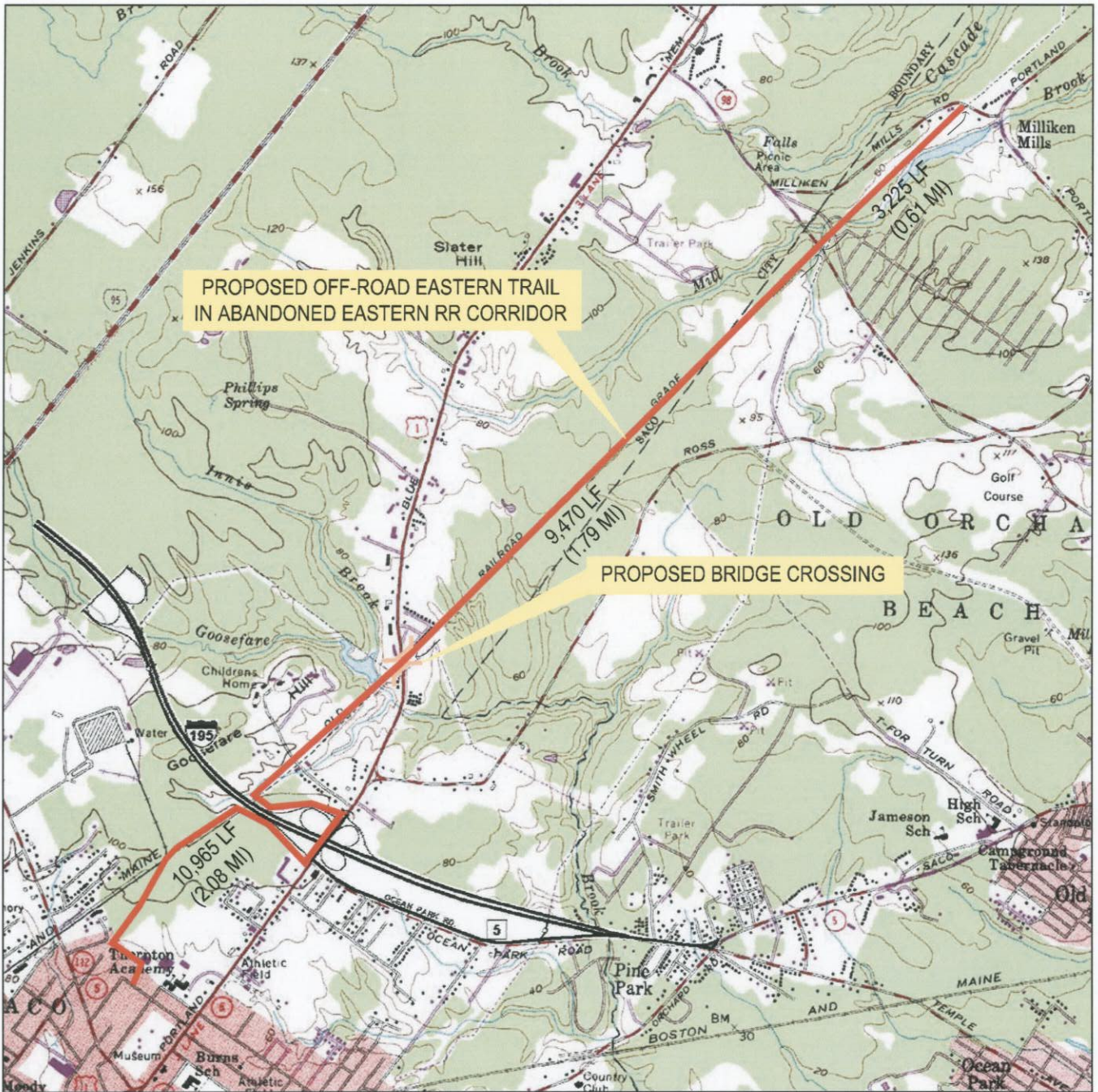
FIGURE **3**



## **2.0 TRAIL RECOMMENDATION FORM**

Refer to Figure 4, USGS Location Map, following this page.

Refer to the Trail Recommendation Form following this page.



**USGS LOCATION MAP**  
**Eastern Trail - Milliken Road to Thornton Academy**  
**Old Orchard Beach - Saco, Maine**

SOURCE: USGS 7.5 MINUTE OOB & BIDDEFORD QUADRANGLES / MDOT EASTERN TRAIL MAP



DeLuca-Hoffman Associates, Inc.  
 778 MAIN STREET, SUITE 8  
 SOUTH PORTLAND, ME 04106  
 207-775-1121  
[www.delucahoffman.com](http://www.delucahoffman.com)

DRAWN: SEB  
 CHECKED: SRB  
 DATE: APRIL 2009  
 FILENAME: 2869 USGSMAP.DWG  
 SCALE: 1" = 2500'

FIGURE  
4



**D-R-A-F-T**  
**TRAIL RECOMMENDATION FORM**

**City/Town:** *Old Orchard Beach and Saco*

**Date:** *October 20, 2009*

**Project:** *Eastern Trail Management District, Multi-Use Trail Construction*

**PIN:** *13340.00*

**Section:** *Milliken Mills Road in Old Orchard Beach to Thornton Academy parking area near sports fields, including bicycle/pedestrian crossings or bridges over Mill Brook and U.S. Route 1. Total length is approximately 4.37 miles.*

**Town Contacts:** *Bob Hamblen, City of Saco  
Jessica Wagner, Town of Old Orchard Beach*

**Project Leaders:** *Stephen Bushey, P.E., DeLuca-Hoffman Associates, Inc.  
Shelley Brunelle, Landscape Architect, DeLuca-Hoffman Associates, Inc.*

**Project Managers:** *Bob Hamblen, ETMD  
Joel Kittredge, MaineDOT Multimodal*

**Project Description:** *The project includes the preliminary design and data collection related to the construction of approximately 4.37 miles of multi-purpose recreational trail. The project purpose is to provide another link within the ETMD trail corridor that is to ultimately extend from Kittery, Maine to South Portland, Maine. The location of the trail is generally within the former Eastern Railroad ROW, portions of which are now owned by Unitil, the Biddeford & Saco Water Company, and Central Maine Power. A portion of the trail will also be within the campus property of Thornton Academy. The U.S. Route 1 bridge crossing will also require easement rights from two abutting private landowners: A&N, LLC and Silver Springs Campground, Inc.*

**Project Termini:** *The south end of the constructed Eastern Trail terminates at Milliken Mills Road; this project extends the off-road trail segments from this point in Old Orchard Beach to this project's terminus at Thornton Academy in Saco. From north to south, the project commences at Milliken Mills Road and continues south to a proposed culvert crossing at Mill Brook. From Mill Brook, the trail proceeds southerly to U.S. Route 1 where a pedestrian bridge crossing is required. South of U.S. Route 1, the route continues southerly to the north side of the I-195 highway corridor. The trail travels across land owned by the State of Maine and within the highway ROW easterly to the west side of U.S. Route 1. The trail then requires two at-grade crossings of the I-195 overpass westbound on/off ramps before the trail uses the existing sidewalk to pass beneath the I-195 overpass of U.S. Route 1. On the south side of the overpass, the trail requires a third at-grade ramp crossing across the I-195 eastbound off ramp. Upon crossing this ramp, the trail turns and proceeds westerly along the highway embankment slope approximately 0.2 miles until rejoining the former railroad ROW. Once within the railroad ROW, the trail proceeds southerly again approximately 0.2 miles until reaching the northwest corner of the Thornton Academy property. At this point the trail moves onto private property*

owned by Thornton Academy. The trail travels through existing woods and along the edge of the campus' athletic fields and parking facilities to its proposed terminus at Clark Street.

**Traffic Data:** NA

**FHRW Oversight:** No

**Applicable Standards:** AASHTO, MaineDOT, and MaineDEP

**Design Life:** Minimum 20 years.

**Proposed Scope of Work:** New construction of a multi-purpose trail within a former railroad corridor that now contains multiple utilities including an 8" high-pressure gas transmission line, 24" and 20" water mains, and overhead power lines. The work will include horizontal and vertical alignment improvements, drainage measures, multiple street crossings, a stream crossing, and a pedestrian bridge span over U.S. Route 1. The trail is intended to be universally accessible to the extent possible. Supplemental parking areas, way-finding, and cautionary and information signage along its length will provide linkages to neighboring communities.

**Proposed Trail Cross Section:**

Trail Width

Minimum: 8'-0"  
 Maximum: 12'-0"  
 Typical: 12'-0"  
 Cross Slope: 2%

Trail Surface Type & Depth

4" Stone Dust  
 2" Asphalt Pavement on Grades >3% or within 15' of Street Crossings  
 Wood or Concrete Decking on Bridge Crossing

Shoulder Width – 6:1 Maximum Slope

Minimum: 0'-0"  
 Maximum: 2'-0"

Shoulder Surface Type & Depth

2" Loam & Seed Over Native Fill or Granular Aggregate Fill

Drainage Swale Side Slopes

2:1 maximum

Subbase Depth

Varies – 0" to 24" depending on section requirements

**Bicycle Design Speeds<sup>1</sup>:**

		<b><u>Horizontal Alignment</u></b>	<b><u>Vertical Alignment</u></b>
		<b><u>Minimum Radii<sup>2</sup></u></b>	<b><u>Rec. Maximum Grade</u></b>
<i>Unpaved:</i>	<i>15 mph</i>	<i>Unpaved: 36'</i>	<i>Unpaved: 3%</i>
<i>Paved:</i>	<i>20 mph</i>	<i>Paved: 56'</i>	<i>Paved: 5%</i>

<sup>1</sup> See AASHTO – Guide for the Development of Bicycle Facilities – 1999, Chapter 2.

<sup>2</sup> When curve radii smaller than the minimum must be used due to limited right-of-way, topography or other considerations, then standard curve warning signs and supplemental trail markings should be installed in accordance with MUTCD.



**Mill Brook Crossing:** *A pipe arch culvert crossing is proposed for the Mill Brook crossing to replace a former granite box culvert that was washed out during a peak rainfall event. The culvert should be designed for a 100-year rainfall event, since Mill Brook is located in a designated Zone A Flood Zone. The preliminary sizing is a 9'-9" span by 6'-7" rise structural plate pipe arch for the 100-year discharge conveyance of 538 cfs.*

**Route 1 Pedestrian Bridge:** *Lincoln-Haney, the structural design consultant, recommends a single-span prefabricated steel truss bridge placed on new, reinforced concrete abutments to be installed on each side of U.S. Route 1. The abutments and bridge will align at a 48-degree angle across U.S. Route 1 in a manner that minimizes impacts to both the natural gas line and overhead power transmission lines. Existing distribution power lines and communications lines will need to be relocated to concrete-encased facilities for a length of approximately 155 linear feet between two existing poles on the west side of U.S. Route 1.*

**Maintenance of Traffic:** *All work will need to be coordinated with Unitil throughout design and construction to ensure that all setbacks, access and maintenance of the 8" steel gas line are satisfactorily provided during and after construction. Traffic maintenance provisions will also be required for all at-grade street crossings including, but not limited to, the U.S. Route 1 bridge crossing, the I-195 ramp crossings, and work along U.S. Route 1. All requirements will need to be coordinated with the MDOT, the City of Saco, and the Town of Old Orchard Beach during final design.*

**Exceptions to Controlling Standards:** *Design exceptions are required where the trail design speed will be less than the recommended 15 mph for unpaved sections. The minimum design speed will be 12 mph, which is based on a minimum horizontal curve radius of 36 feet, which is required to avoid existing facilities including utility poles and guy wires at the U.S. Route 1 crossing. The minimum design speed of 12 mph will also be less than 15 mph for the trail segment along U.S. Route 1, as this corridor will need to be designed to cross multiple highway ramps, and it will also be aligned along the U.S. Route 1 roadway. Finally, the trail segment from Clark Street to the beginning of the athletic field on the Thornton Academy campus shall also have a design speed less than 15 mph, due to the proximity of parking and multiple changes in alignment.*

*A design exception is also needed for a short trail segment between Cascade Road and Old Cascade Road, where a 6%-8% grade will be required on the approach to Old Cascade Road. This design grade exceeds the AASHTO recommended grade of 5% on a multi-use path, although it remains well within the allowable length for trail segments >5%. The final trail surface condition will need to be determined during final design. Recommended surface stabilization measures include paving or the use of a polymer-based emulsion agent such as DirtGlue™ polymer on the stone dust surfaces.*

**Construction Schedule:** *The proposed advertising period for final design is anticipated for the spring of 2010, and trail construction is expected to occur over the course of the 2010 summer season.*

**Public Process:** *A formal preliminary public meeting is scheduled for November 19, 2009*

**Cost Estimate:**

Item	\$ Value
Trail Construction	\$2,085,540
U.S. Route 1 Bridge	\$350,000
Mill Brook Culvert	\$150,000
Wetland Mitigation	\$114,966
U.S. Route 1 Utility Relocation	\$155,000
Stormwater Compensation fee	\$12,100
<b>Total Amount</b>	<b>\$2,867,606</b>

**Anticipated Permits:** *Within the study area, the proposed trail project will involve wetland and natural resource impacts requiring permits from the U.S. Army Corps of Engineers (USACOE) and the MaineDEP. Based on the preliminary design report findings, the wetland impacts will likely require a Natural Resources Protection Act (NRPA) Tier II Permit from the Maine DEP and a USACOE Programmatic General Permit, Category II Permit Authorization. The trail activities will also require an amendment of the Thornton Academy Site Location of Development Permit (#L-17825-06-A-N), which is anticipated to be reviewed by the City of Saco under their delegated review authority. A Maine Construction General Permit from the DEP will be required as the area of disturbance will exceed 1 acre. Finally, a DEP Stormwater Permit will be required as there will be approximately 1.14 acres of new impervious area outside of Thornton Academy and the former RR corridor. Once again, the City will review this application under their delegated review authority. Final permit requirements must be determined during the final design phase.*

- DEP:**
1. Stormwater – Delegated Review by City of Saco
  2. NRPA-Tier II and Permit by Rule for Culvert installation
  3. SLDA – Delegated Review by City of Saco for Activities on the Thornton Academy Campus
- USACOE:** SPGP

**NPDES:** Coverage under the Maine Construction General Permit (MCGP)

**Anticipated NEPA Requirement:** Categorical Exclusion (CE)

**Total Project Area to be Disturbed:** 10.5 acres

	Date	Approved By
Approved for Preliminary Plan	_____	_____
Public Participation Complete	_____	_____
Approved for Final Design	_____	_____



### **3.0 SUMMARY OF PRELIMINARY DESIGN**

#### **3.1 Overview**

DeLuca-Hoffman Associates, Inc. personnel and associated subconsultants have performed data collection and field investigations related to various conditions within the proposed trail corridor extending from Thornton Academy on the south end to Milliken Mills Road at the north end. The following brief summary of the data collected is provided with references to appended materials containing more in-depth discussions on the work performed and findings.

#### **3.2 Field Investigations and Data Collection**

##### *3.2.1 Boundary and Ground Survey*

Boundary, topographic, and location survey data collection was performed by Dow and Coulombe, Inc. during the summer of 2009. Generally, all ground survey was performed within 40 feet each side of the former railroad corridor or at least out to the right-of-way limits, whichever was wider. The survey data collection included ground survey shots for the purpose of locating all existing trail features, utility locations, wetlands flagging (set by others), tree lines, drainage crossings including culvert invert data, street intersections and all apparent right-of-way and/or property boundary markers. Dow and Coulombe Inc. also collected survey data within the Thornton Academy property and the I-195 corridor. The right-of-way boundary conditions and baselines have been survey established using a compilation of railroad valuation mapping and adjacent property surveys.

##### *3.2.2 Preliminary Geotechnical Investigation*

R. W. Gillespie & Associates, Inc. conducted a preliminary boring exploration program at the U.S. Route 1 intersection crossing. The preliminary investigation included a single boring on each side of U.S. Route 1 in the vicinity of the proposed bridge abatement locations. The borings were completed to ascertain subsurface soil conditions and to develop preliminary assessments of soil stability and settlement for the proposed bridge crossing abutment structures. The findings and recommendations of R. W. Gillespie & Associates are contained in their preliminary report appended to this PDR.

##### *3.2.3 Drainage Hydrologic Review for Mill Brook*

A preliminary hydrologic review of the upstream watershed for Mill Brook was conducted. The purpose of the review was to determine preliminary culvert size criteria for the proposed crossing. A preliminary hydrologic and hydraulic review report is contained in the appendix to this PDR.

#### 3.2.4 Utility Coordination

The preliminary design report activities include the commencement of coordination activities with each of the corridor property owners and utility companies operating facilities within the corridor. Most important to the utility coordination effort are communications and approvals from Unutil, the parent company of Granite State Gas Transmission, which operates an 8-inch diameter steel high-pressure natural gas line that is located within the former railroad corridor for the full length of the project study area. The gas line is not located on the Thornton Academy property or within the I-195 corridor (except where the railroad corridor crosses the highway). Prior to the commencement of the survey data collection, Unutil representatives marked out the pipe line location by paint or flagging so that the surveyors could accurately collect the pipe line alignment. Generally speaking, the pipe line's vertical alignment was not determined for this part of the work but will need to be coordinated with Unutil during final design.

The preliminary trail design has proceeded based on minimizing impacts to the existing pipe line alignment. This includes maintenance of minimum setbacks and respect to the operation of heavy equipment over or near the pipe line during construction. Final design of the trail will require full review and approval by Unutil prior to the project release for bidding.

The following utilities also maintain facilities within the project study area:

- Central Maine Power (CMP) – CMP maintains an overhead transmission line crossing at U.S. Route 1 and overhead single and three-phase lines at street crossings at Moody Street, U.S. Route 1 and Cascade Road. CMP also maintains overhead transmission lines in the vicinity of Cascade Road north to the Milliken Mills Road crossing. CMP owns this portion of the former RR corridor. Primary contacts with Central Maine Power have been with Mr. Walter Hart, Transmission Engineer – Augusta (tel. 626-9671) and Mr. Tom Atwood, Distribution Engineer – Portland, (tel. 791-1022).
- FairPoint Communications – FairPoint maintains aerial facilities in the vicinity of Cascade Road, U.S. Route 1 and Moody Street. In the vicinity of U.S. Route 1, several warning signs related to underground communications lines have been identified. Contacts made with FairPoint, Verizon and Sprint currently suggest that any underground communications facilities in the area of U.S. Route 1 at the former railroad crossing or along the former RR R.O.W. have been abandoned.
- Time Warner Cable (TWC) – TWC maintains overhead lines along Cascade Road, U.S. Route 1 and Moody Street. Placement of their U.S.



Route 1 lines underground at the proposed bridge crossing will be required.

- Biddeford & Saco Water Company – The Biddeford & Saco Water Company owns and maintains a 20” water transmission line within the former rail corridor, beginning at U.S. Route 1 and proceeding northerly to Cascade Road (Trail **Segment E**). Trail construction activities including box cut construction, drainage measures and the operation of heavy equipment must account for the location of these existing facilities. The water company also maintains water mains within U.S. Route 1, Cascade Road and Moody Street. Finally, the water company maintains a 24” cross-country water transmission main that crosses the railroad R.O.W. in the vicinity of the northwest corner of the Thornton Academy property. This main traverses private property and the I-195 R.O.W. before entering onto U.S. Route 1 slightly south of the I-195 eastbound off ramp. The primary contact at the water company is Mr. Tom Carr, Superintendent (tel. 282-1543, ext. 74).
- City of Saco Public Works – The City of Saco maintains sanitary sewer facilities in U.S. Route 1 and Moody Street at each of the trail crossings. The primary contact at the City of Saco is Ms. Angela Blanchette, City Engineer (tel. 284-6641).

Each of the utility companies has completed and returned the standard MDOT Utility Contact Information Questionnaire. Copies of each utility’s response are contained in Appendix E to the PDR.

Preliminary survey plans have been sent to all of the utility companies for their review and confirmation of their utility locations on the plans.

### **3.3 Environmental Review**

Normandeau Associates has completed a Wetlands and Natural Resources Assessment for the study area extending from Thornton Academy to Milliken Mills Road. This has included wetland delineation and vernal pool identification. Based on their findings, the proposed trail construction will involve wetland impacts that will require permitting by the Maine Department of Environmental Protection (MeDEP) and the U.S. Army Corps of Engineers (ACOE). Based on the preliminary alignment, the anticipated wetland impacts are approximately 0.68 acres. Generally speaking, wetland impacts greater than 15,000 square feet require avoidance, minimization and compensation for unavoidable impacts. Wetland compensation commonly includes one or more (combination of) options including wetland creation, restoration, enhancement or preservation. Alternatively, the MeDEP offers an In-Lieu Compensation Fee Program. Presently the in-lieu compensation fee for York

County wetland impact activities is \$3.86 per square foot of impact. Based on the preliminary impacts this could amount to \$114,966.24 for the project.

Entering into the final design phase it will be necessary to refine the design alignment to minimize wetland impacts to the least environmentally damaging practicable alternative. This may include the investigation of alternative wetland crossing methods including an elevated boardwalk over certain wetlands in order to minimize wetland disturbances. Other minimization techniques may include steeper side slopes, retaining walls, or adjustments in horizontal alignment. The design should be carefully reviewed with the regulatory agencies and all considerations to jurisdictional status of any impacted areas determined during final design.

### 3.3.1 *Wetlands Investigation*

Normandeau Associates conducted their wetland investigation during the summer of 2009 in accordance with the State and Federal Agency protocols. A copy of their Wetlands and Natural Resources Assessment is contained in Appendix D.

As part of their work, Normandeau Associates conducted the following:

- Wetlands Delineation – Performed in accordance with the 1987 ACOE Delineation Manual.
- Rare, Threatened and Endangered Species – Normandeau contacted the Maine Department of Inland Fisheries and Wildlife (MeIF&W), the United States Fish and Wildlife Service (USFWS) and the Maine Natural Areas Program.
- Historic Resources and Section 4(F) Properties – Normandeau consulted with the Penobscot Indian Nation and the Maine Bureau of Parks and Lands.
- Vernal Pool Assessment – Normandeau conducted a field investigation in accordance with MeDEP and MeIF&W methodologies.



3.3.2 Anticipated Impacts

The project corridor contains approximately 7.08 acres of wetland resource. The preliminary trail alignment results in approximately 0.68 acres of wetland impact. These impacts are highlighted as follows:

<b>Approximate Trail Station Location</b>	<b>Wetland Impact Area (s.f.)</b>
Sta. 15+00	337 s.f.
Sta. 27+00	1,694 s.f.
Sta. 37+00	234 s.f.
Sta. 38+00	300 s.f.
Sta. 41+00	3,161 s.f.
Sta. 42+00	524 s.f.
Sta. 44+00	63 s.f.
Sta. 50+50	27 s.f.
Sta. 62+00	234 s.f.
Sta. 63+00	49 s.f.
Sta. 88+00	826 s.f.
Sta. 89+00	82 s.f.
Sta. 90+00	1,287 s.f.
Sta. 93+00	4 s.f.
Sta. 147+00	5,889 s.f.
Sta. 152+00	3,761 s.f.
Sta. 166+50	60 s.f.
Sta. 159+00	768 s.f.
Sta. 160+00	41 s.f.
Sta. 162+00	5,296 s.f.
Sta. 165+50	1,401 s.f.
Sta. 168+50	30 s.f.
Sta. 193+00	1,921 s.f.
Sta. 198+00	1,382 s.f.
Sta. 199+00	100 s.f.
Sta. 201+00	313 s.f.
<b>Total</b>	<b>29,784 s.f.</b>

The following findings related to other resource impacts are summarized as follows:

- Flood Plains

FEMA mapping indicates several areas of floodplain in the trail corridor. These are associated with Goosefare Brook and Mill Brook. In each location there are no floodplain impacts anticipated resulting from the proposed trail development. It is expected that the installation of a new

culvert crossing at Mill Brook will be properly sized to pass the 100-year storm event flow. This culvert shall be sized to provide a similar or greater conveyance capacity than the former granite box culvert that was previously washed out at this crossing location.

- Historic Resources

The Maine DOT has contacted the Maine Historic Preservation Commission, which has issued a letter containing the recommendation “that there will be no archaeological properties affected by the proposed undertaking”.

- Hazardous Materials

The initial hazardous materials review by Normandeau Associates resulted in no significant findings or areas of concern. If required, any additional hazardous materials review will need to be completed during final design or by the Maine DOT. A copy of Normandeau Associates’ report is contained in Appendix F to this PDR.

- Rare, Threatened and Endangered Species

Initial contacts with the MeIF&W, USFWS, and Maine Natural Areas Program finds no known rare, threatened or endangered animals or ecological habitats within the project’s current study boundaries. Generally speaking, the MeIF&W requests a non-disturbance policy within 100 feet of streams supporting wild Brook Trout populations. Mill Brook and Goosefare Brook fall into this category. Therefore, the culvert crossing at Mill Brook will require consideration to maintaining the natural substrate bottom as well as time of year construction considerations.

Based on the Maine Department of Conservation’s review of their files, no known rare plants or ecological habitats are known to occur near the project.

- Marine Resources

According to the Natural Marine Fisheries Service, there are no endangered fishery habitats in the project area.

### 3.3.3 Permit Requirements

The following permits are anticipated to apply to the project activities:



- State Permits

The project will likely be subject to a MeDEP Natural Resources Protection Act (NRPA) permit authorization for wetland impacts summing to 0.68 acres. A refined evaluation of permitting is required once the project design and permitting progresses with the permitting agencies. The first recommendation is to request the jurisdictional determinations with the state and federal agency representatives.

It is our understanding that the MeDEP is not currently considering cumulative impacts related to the development of the entire Eastern Trail Corridor. On that basis, the project activities within the study area covered by this PDR will not be subject to the Site Location of Development (Site Law) permit review process, since the project will not affect a land or water area in excess of 20 acres, nor will it create a new “structure” in excess of 3 acres with the following exception:

- That portion of the project within the Thornton Academy property will be subject to the existing Site Location of Development Permit Order already in place for the school campus (Permit Order #L-17825-06-A-N). Thus, at a minimum, a Site Law Amendment will be required for that portion of the trail on the Thornton Academy property. Measures to address stormwater and cumulative impacts from the rest of the campus will need to be evaluated and quantified in accordance with the Site Law requirements. The City of Saco maintains delegated review authority and will likely review these application materials as part of the local Planning Board review process.

Based on the state’s stormwater regulations, the project will result in an area of disturbance that will exceed one acre; therefore, a Stormwater Permit will be necessary. The project will not impact any lakes most at risk; however, approximately one-third of the project corridor lies within the Goosefare Brook Watershed. Goosefare Brook is on the MeDEP Chapter 500 List of Urban Impaired Streams; therefore, measures to offset stormwater impacts will be required.

The Chapter 500 regulations state that redevelopment activity of impervious area in existence as of November 16, 2005 is exempt from the water quality treatment standards. For the purposes of this PDR, this has been interpreted as applying to all trail segments within the former railroad R.O.W. This is basically an area from just south of Moody Street in the RR corridor north to Milliken Mills Road. This finding has been discussed and agreed upon by Ms. Christine Woodruff of the DEP, however, this should be reconfirmed with the DEP during final design.

The areas of new impervious area are associated with the trail development commencing at Clark Street, north to approximately Station 88+00 on the proposed trail alignment. Approximately 7,548 l.f. of new trail consisting of paved or stone dust surface will be constructed. Within the general standards, linear projects are required to provide treatment to at least 75% of the new impervious area. For the length of trail on Thornton Academy property this amounts to 2,550 LF. The trail segment within the railroad corridor and the I-195 ROW is approximately 4,148 LF. According to Chris Woodruff of the DEP, the Memorandum of Agreement between the DEP, the Maine Turnpike Authority and the Maine Department of Transportation states as follows:

*Redevelopment of existing impervious area may qualify for the exception in Section 4(B)(3)(e). Linear portions of a project associated with an existing travel corridor constructed prior to the execution of this MOA shall be considered redevelopment under Section 4(B)(3)(e).*

On this basis, Ms. Woodruff has stated that the trail placement within the former Eastern Railroad corridor and within the I-195 ROW is also exempt from needing to provide water quality treatment measures. We have requested a written response from the DEP regarding this finding and will provide it to the involved parties upon receipt.

The preliminary plan currently identifies at least 1,800 LF of Thornton trail that can be treated with a 35' wide forested buffer, while an additional 500 LF of trail will shed runoff that is captured by existing onsite drainage systems and an existing stormwater treatment basin. This total treated trail length is only 2,300 LF which is slightly less than the required 2,550 LF. An additional recommended treatment method is to install a Filterra/StormTech Isolator row treatment train. This bioretention system can be positioned at the downgradient corner of the existing parking area south of the Thornton Academy Middle School building. This approximately 0.29 acre area does not currently shed runoff to any form of treatment system. The installation of this system would result in an overall treatment area greater than 75% of the trail's impervious surface within the Thornton campus. The provisions for the 35' wide wooded buffer are also subject to approval of the Thornton Trustees as this area will require a permanent conservation easement.

As the project will result in the need for a Site Law amendment of the Thornton Academy permit it will also be required to pay a compensation fee based on the amount of new impervious area in the urban impaired watershed. The compensation fee is based on the following:



Type of Surface with or without Required Treatment	Required Compensation Fee (per acre)
Non-roof impervious	\$5,000.00
Landscaped area	\$1,000

The new impervious areas in the Goosefare Brook Watershed will be approximately 2.02 acres, and the new landscaped area will be approximately 2.0 acres. These values yield an estimated compensation fee value of approximately \$12,100.00.

The project activity is also subject to the Maine Construction General Permit (MCGP) authorization that covers the required erosion and sedimentation control measures necessary during construction.

- Federal Permits

The anticipated freshwater wetland impacts will total more than 4,300 sq. ft. and less than 3 acres. These impacts will require a Programmatic General Permit (PGP) Category II from the U.S. ACOE. Since a federal permit will likely be required, a jurisdictional determination from the ACOE is also required on the project's vernal pool adjacencies. These discussions should be prioritized during the initial permitting contact period.

- Local Permits

The proposed activities involve land disturbance activities in the communities of Saco and Old Orchard Beach, thus are potentially eligible for Planning Board review in each community.

Project activities within the public rights-of-way may also require Local Street Opening Permits from the City of Saco and the Town of Old Orchard Beach.

### 3.3.4 Environmental Documents

The project may be at least partially federally funded, with additional funding supplied by the MDOT. The proposed project will be required to be reviewed under the National Environmental Policy Act (NEPA). A documented NEPA Categorical Exclusion is anticipated for the project similar to other sections of the trail. A project is eligible for a Categorical Exclusion if, based on past experience on similar projects, there are no significant environmental impacts, and if the proposed project has similar impacts. A documented Categorical

Exclusion requires administrative approval, which in this case would be made by the Federal Highway Administration.

3.3.5 *Natural Resources Mitigation*

In accordance with MeDEP and NRPA rules and Federal ACOE requirements, the project activities will require a compensation plan based on the area of wetland impacts. As with earlier trail segment permitting efforts, the favored compensation method is the In-Lieu Fee Program adopted by both the MeDEP and ACOE. Assuming all wetlands are jurisdictional within the project corridor, then the resultant impact of 29,784 sq. ft. will result in an in-lieu fee amount of \$114,966.24

3.3.6 *Permit and Documentation Schedule*

To achieve construction commencement in the summer of 2010, it will be necessary to complete final design and permit applications no later than March 2010 to allow construction to commence by August 2010.

A NEPA Categorical Exclusion Request generally takes less than 60 days. Any additional field work, including work related to a Phase 1 Cultural Site Assessment to be overseen by the MDOT, should be completed in the spring of 2010 to ensure completion of work before construction commencement.

**3.4 Trail Design**

3.4.1 *Overview*

The proposed trail design is to be based on the criteria set forth in the AASHTO and MDOT design guideline publications, as well as those guidelines set forth in the original Eastern Trail Feasibility Study prepared by Wilbur Smith Associates in 2001. In addition the design shall adhere to all utility owner requirements and more specifically the requirements of Unitil related to their operation and maintenance of a high-pressure natural gas transmission line within a majority length of the corridor under review in this PDR.

3.4.2 *Horizontal Alignment*

The proposed horizontal alignment shall be set based on the existing right-of-way boundary, as well as specific adherence to maintaining satisfactory setback to the natural gas transmission line and any adjacent wetland resources. Additional considerations include the location of overhead power transmission lines along Trail **Segment D** and **Segment F**. Finally, the horizontal alignment shall be positioned to minimize wetland impacts to the extent practicable.



Generally speaking, the former railroad corridor right-of-way contains just a few broad horizontal curves and tangent sections. To the extent practicable, the preliminary trail alignment parallels the established railroad baseline, with the trail centerline following or slightly offset from the railroad baseline when within the railroad corridor.

The existing trail corridor consists mostly of a variable-width native substrate trail frequented by the gas company maintenance vehicles, and unauthorized recreational ATV, motorbike and snowmobile traffic. Generally the existing trail is 6' to 12' wide within most of the former rail right-of-way.

The proposed trail's horizontal alignment within the I-195 right-of-way to/from the railroad corridor to U.S. Route 1 will be achieved primarily to avoid resource impacts, as well as to maintain minimum design speed. Safety requirements to provide proper alignment at the highway ramp crossings will dictate trail layout along U.S. Route 1 at the I-195 interchange. Within the Thornton Academy campus, the preliminary trail alignment places the trail along the campus perimeter to take advantage of the existing fields and, when placed through the wooded area, to minimize impact to Thornton's developable land or the wetland resources.

### 3.4.3 *Vertical Alignment*

Within the railroad corridor, the typical trail vertical alignment will follow the existing profile grade which is generally on the order of 2% or less. Exceptions include the following trail segments:

- **Segment A** from the south side of the I-195 corridor to Thornton Academy requires the trail be aligned to avoid wetlands and the natural gas line.
- **Segment B** from the rail corridor to/from U.S. Route 1 requires vertical alignment to achieve satisfactory grades and drainage.
- **Segment D** at the U. S. Route 1 Bridge where each approach will require vertical curve transitions to the elevated bridge crossing above Route 1.
- **Segment F** at the Old Cascade Road crossing where the former overhead bridge has been removed and an at-grade trail crossing is contemplated.
- **Segment F** at the Mill Brook crossing where a vertical curve is necessary as part of the new culvert installation.

#### 3.4.4 Typical Sections

To be consistent with other trail sections that have been constructed or are to be constructed, this PDR has been prepared based on a proposed trail section that will generally consist of a twelve (12') foot wide stone dust trail with two-foot-wide grass shoulder areas on each side. In some instances the proposed trail may be narrowed to 8' to 10' wide. Variations on the typical section consist of the following sections that have been previously developed as part of the Eastern Trail Feasibility Study by Wilbur Smith Associates, Inc. These sections are also similar to those used on the currently-under-construction trail segment from Arundel to Biddeford.

- Typical Section A:

This section will be the most common within the railroad corridor and involves the least degree of improvement. The section includes minor surface preparation and the placement of 4" of compacted stone dust surface. Additional base gravel may be required as a leveling surface prior to the placement of surface stone dust.

This trail section will be used along approximately 2.28 miles of the project limits.

- Typical Section B:

This variation of Typical Section A includes a deeper grubbing section (up to 6") to remove unsuitable in-situ material including organics or similar poor bearing material. For this section up to 4" of base course gravel and up to 11" of subbase aggregate gravel will be used to fill in the grubbed area and/or low areas along the trail alignment. As with most trail sections, a 4" stone dust surface will be applied. This typical section will be used along approximately 1.11 miles of the project limits.

- Typical Section C:

This section is to be used where drainage conditions or underlying soils are poor. The section includes at least a 6-inch grubbing depth. Once grubbed, a geotextile fabric shall be used for stability beneath a base gravel and subbase gravel section up to 24" deep. This slightly raised trail section includes improved drainage swales on one or both sides to match into existing slopes. This section will be used along approximately 0.28 miles of the trail.

- Typical Section D:

This section may be used where the existing gas line locations result in a mound on one side of the trail. Like Typical Section C, the work will include grubbing of unsuitable in-situ material, geotextile fabric placement, base gravel and subbase gravel and the 4" stone dust trail



surface. Drainage improvements may include stabilized swales where necessary. This trail section is not currently used on the preliminary plans.

- Typical Section E:  
This section will be used along the I-195 corridor and involves the trail placement along the existing highway side slopes. The section involves an elevated trail to minimize impact to the side slopes. The trail will be supported on the downhill side by a retaining wall in order to minimize fill extensions that would impact adjacent wetland resources. The use of a paved trail surface or polymer stabilized stone dust surface (i.e., DirtGlue™ Polymer) may be desirable to minimize erosion from runoff coming off the uphill road embankment side slopes. A drainage collection system is also proposed on the uphill side of the trail to minimize runoff flow across the trail section. The drainage collection system can consist of Nyloplast® inline drains and a 12" underdrain system designed to capture and convey runoff from the highway sideslopes before it crosses the proposed trail surface.
- Typical Section F:  
This typical section involves a section of trail that will be paved which will include the trail section along U.S. Route 1 in the vicinity of the I-195 interchange. A paved trail section may also be required where the trail profile exceeds 3% since erosion of the trail may be an issue.

Typical section F may involve a trail consisting of an at-grade paved surface that is designed to minimize disturbance to the flow of drainage from adjacent surface areas. This section is primarily contemplated for the Thornton Academy parking area and existing field areas.

#### 3.4.5 Gas Line Requirements

Unitil representatives have met with the project team in the field to review existing conditions and to discuss trail construction issues.

Unitil's 8" steel natural gas main is generally located on the easterly side of the railroad corridor throughout its length. The existing pipe alignment has been identified in the field by Unitil representatives, and they have either flagged or painted the alignment so that the surveyors could accurately locate the pipe.

Unitil representatives have suggested the following basic design measures be followed for the alignment of the proposed trail:

- Minimum setback distance of trail edge to top of pipe – 5 feet.
- Extension of fill slopes over existing pipe is allowed only after review by Unitil’s Engineering staff.
- Excavation of material for ditching above the pipeline is not allowed.
- At-grade crossings should be minimized to the extent practicable. If necessary, the crossing should be as near perpendicular as possible.
- Operation of heavy equipment over the top of the gas main should be avoided.
- All construction activities will require onsite observation and monitoring by Unitil representatives.

#### 3.4.6 Roadway Crossings

The proposed trail corridor discussed in this PDR crosses existing roads at eight locations, each of which is described as follows: All crossings have been inspected and reports are contained in Appendix B to this report.

- Clark Street – This at-grade crossing is the beginning of the project. Clark Street is a residential through street that contains a sidewalk on its south side. The trail beginning is contemplated to start at the existing edge of pavement. Suitable crosswalk markings and signage identifying the trail head will be required.
- I-195 Eastbound Off Ramp – This ramp approaches a signalized intersection on U.S. Route 1. The ramp currently contains separated left-thru and right-turn lanes. The separator island between lanes is small and presents challenges as a refuge island for pedestrian crossings. Careful placement of signage and the introduction of a pedestrian head signal phase into the traffic signal operation must be considered as part of the final design phase.

All roadway crossings are expected to have paved aprons, crosswalk ADA-compliant detectable warning strips, collapsible bollards (except at I-195 ramps), signage, and suitable pavement markings to promote safety.



- I-195 Westbound On and Off Ramps – These are at-grade crossings of the ramps that serve traffic traveling southbound on U.S. Route 1. These crossings will require careful consideration of signage for both vehicular and pedestrian approaches. In particular, the westbound on ramp should be carefully evaluated during final design with respect to the vehicle approach and stop queue.
- Moody Street – The at-grade crossing consists of a 22-foot-wide paved travel way. Moody Street dead-ends to the west of the crossing and primarily serves the Sweetser facility campus. The posted speed limit is 25 mph and the sight lines are greater than 200 feet in each direction.
- U.S. Route 1 – This will be an above-grade bridge crossing that is further described in other sections of this report.
- Cascade Road – This at-grade crossing will require particular consideration due to higher traffic volumes and speeds. The posted speed limit is 45 mph and the sight distances are 475' to the east and 600' to the west.
- Old Cascade Road – This road currently dead ends approximately several hundred feet west of the proposed trail crossing and it serves one single-family residence at this location. The railroad historically had an above-grade crossing at this location. The bridge structure has been removed; however, concrete abutments remain on each side of the road. These abutments are in poor condition. Their re-use would require a full structural review. The span distance between the existing abutments is approximately 22 feet. Currently there are access trails each side of the abutments that provide utility vehicle access from Old Cascade Road to the elevated rail corridor. The use of these existing travel paths for an at-grade crossing of Old Cascade Road appears most suitable based on the lack of an existing bridge structure and uncertain integrity of the existing abutments. The trail approaches to Old Cascade Road have not been fully designed for the PDR; however, a preliminary profile indicates a short length of the trail approach profile may be 8%. Further investigation of the alternatives for the trail's vertical and horizontal alignment, including possible removal of the existing abutments, should be investigated as part of the final design.
- Milliken Mills Road – This will be an at-grade crossing of Milliken Mills Road which consists of a 21-foot-wide travel way. This crossing commences at the current southerly end of the completed Scarborough/Old Orchard Beach trail corridor. The posted speed is 25 mph in the vicinity of this crossing.

3.4.7 Landscape Enhancements/Aesthetics

Most of the proposed trail alignment follows undeveloped, forested land. The existing vegetation should be selectively cut and pruned to open views of natural features, to favor desirable species, and to eliminate hazards and invasive species. Conversely, additional native plantings should be added to enhance buffering between developed private residential properties and public use areas. Barriers, consisting of large boulders, cedar-rail fencing, or guardrails, should be placed for protection along steep slopes, to deter ATV or other motorized vehicles, and to divide between different uses, such as athletic fields. Such barriers could also function as seating for viewing or resting. Boulders, landscaping and signage (discussed later) should highlight trail connections to neighboring developments, attractions, and supplemental parking. Please refer to Appendix I for additional detail regarding aesthetic improvements.

3.4.8 Drainage Improvements

A review of the trail corridor finds drainage conditions vary throughout the project length. A brief summary of conditions through each trail segment follows:

- Thornton Academy to I-195

**Segment A** through the Thornton Academy campus is characterized by athletic field or undisturbed woods. The field areas are moderately sloped with the field edges draining towards lower ground along the property line. The majority of the field space in the vicinity of the trail location drains toward an existing catch basin near the existing baseball practice field and adjacent parking lot. Within the woods the terrain is moderate except for some low, wet areas that have been delineated for wetlands. The preservation of forested buffers along one or both sides of the trail through the Thornton Academy woods and in the railroad R.O.W. will be required to meet water quality treatment measures under the MeDEP Chapter 500 Stormwater regulations.

Within the former railroad corridor, beginning at the PanAm railroad tracks and moving north to the I-195 corridor, the railroad right-of-way is significantly constrained by low wetland conditions, specifically within the former railroad bed. Fortunately the railroad right-of-way broadens to 100' wide for some of this length. The higher ground on the east side of the R.O.W. is characterized by mounds of ledge likely removed during the railroad construction. These ledge spoils are within the area contemplated for the trail alignment. Placement of the trail on this higher ground will



avoid wetland impacts within the former railroad bed and it will also avoid conflict with the natural gas line.

For most of this trail length, Trail Sections B, C, or F are recommended to provide for good drainage.

- **I-195 to Moody Street**

**Segment B** within the I-195 corridor will involve trail placement along the highway embankment slopes. Multiple existing culvert crossings will be required as the trail crosses pipes that serve the highway/ramps. Several culvert extensions may be required as part of the work. Stabilization of the trail surface is also important, as runoff from the highway embankment slopes is expected to flow over much of the trail surface. The use of a polymer emulsion such as DirtGlue™ is recommended on stone dust surfaced; otherwise, paving may need to be considered.

- **Moody Street to U.S. Route 1 Crossing**

**Segment C** from Moody Street to the U.S. Route 1 corridor will rely mostly on proposed Trail Segment A since the majority of this route is on an elevated railroad bed containing steep side slopes. Existing culvert crossings will remain in place and only modest improvements to inlet/outlet conditions may be required to improve flow conditions at those locations. Any improvements to clean out and stabilize existing culvert inlets/outlets will require Permit-By-Rule notification to the DEP.

- **U.S. Route 1 Crossing to Cascade Road**

**Segment E** contains both an elevated railroad bed as well as nearly at-grade conditions as the trail approaches Cascade Road. Multiple deep ravines are crossed at the southerly position of this trail segment. As outlined in the Culvert Inspection Reports, several of the old railroad granite box culverts are in poor but functioning condition to convey flows from west to east. These culverts pose potential long term issues as their internal condition has not been reviewed as part of the PDR. A preliminary assessment of the peak discharge values and capacity of five existing box culverts within this segment was performed. In general, the conveyance capacities of these culverts has been reduced due to poor inlet/outlet conditions. However, each of the culverts appears to continue to pass flow without any evident upstream flooding issues. This is due to the undeveloped nature of the ravines upstream of each box culvert.



Due to the extensive fill embankments associated with the former railroad bed and the existing utilities, it is not practicable to consider trench installation of new culvert measures at these locations. Improvements to inlet/outlet conditions including removal of trees, debris, etc. and stabilization of those locations is recommended during final design. The Biddeford & Saco Water Company has been advised of these culvert conditions and has stated that they have not performed any maintenance of these culverts since owning the R.O.W. They are amenable to inlet and outlet improvements occurring as part of the trail work. Long term consideration should be given to a maintenance program for the culverts that might include relining with a circular pipe or lining the boxes with a cured in place pipe lining such as Insituform®. The location of each of the culverts within a relatively deep ravine will make access for equipment challenging. The condition of these culverts should be considered closely during final design given the potential risk associated with each. Both the Water Company and Unitil may also share interest in the long term condition of these culverts.

For this PDR, the costs for any culvert improvements have not been included. During final design these measures and costs may need to be factored into the construction documents.

For the more at-grade sections of trail **Segment E**, we recommend Typical Sections A, B, C or D be incorporated into the design in order to provide good drainage conditions along the trail's length.

- **Cascade Road to Milliken Mills Road**

**Segment F** includes the Mill Brook Stream crossing. A new culvert is required to replace the former granite box that washed out during a peak rainfall event that occurred within the past 10 years. The remainder of the trail north to Milliken Mills Road has a consistent ditch section along the west side of the trail. The trail is slightly elevated from the easterly side. The use of Typical Sections A or B is recommended for this trail segment.

### 3.4.9 Culvert Crossings

Twenty-one existing culverts and pipes were identified and observed through the project study area. Generally those culverts observed in the I-195 corridor were found to be in good condition. Multiple culvert crossings were observed in the railroad corridor with most of these appearing to be old granite box style structures which are traditional for the railroad. As we have previously described these culverts suffer from disrepair and sloughed ground conditions in/around the inlets and outlets. Tree and debris build-up also impact conveyance conditions at many inlets. Each of these locations continues to



convey flow and the natural upstream ravines tend to offset any capacity issues. For this reason no replacement of the old railroad box culverts is currently contemplated; however, tree removal and inlet/outlet stabilization with riprap is recommended. Further discussion with the Biddeford & Saco Water Company regarding the maintenance and possible long term rehabilitation of these culverts should be pursued during final design.

All culvert locations identified and evaluated are noted in the Culvert Inspection Forms contained in Appendix C.

*3.4.10 Connectivity, Wayfinding and Interpretive Signage*

Have you ever traveled on a path in the woods in the middle of nowhere and asked these questions?

- How far have I traveled?
- How far to the end?
- What street is this?
- Where does this trail lead?
- Where can I park?
- Is there a public bathroom?
- Can I get there from here?

Kiosks at trail heads, wayfinding and interpretive signage placed along the trail and at key junctures will reduce anxiety and make discovery and use of the Eastern Trail a more pleasurable experience. Please refer to Appendix I for recommendations regarding wayfinding and interpretive signage.

*3.4.11 Universal Accessibility*

Various components of the proposed improvements shall be designed to provide full accessibility in accordance with current ADA guidelines. Site planning shall incorporate design measures and accessible features to overcome site conditions to the extent possible. In **Segment D**, the U.S. Route 1 crossing will be fully accessible. Likewise, in **Segment F**, the Mill Brook culvert crossing should be accessible, as well as access up to the trail on the opposite side of Old Cascade Road. In addition, where feasible to create sidepaths, the steeper topography does allow limited opportunity to provide a slightly more aggressive and unique trail experience for its users.

*3.4.12 Deed and Use Agreement Review*

Refer to Appendix A for copies of the Sale Agreements, Utility Easements, and Trail Use Agreements in place for each trail segment considered. The Book and Page numbers are repeated for reference on the attached Chart A – Trail Use Agreements in Appendix A. There are certain portions of the trail that require trail use agreements, or for which ownership records are not



available for attachment to this document. These items are noted in Chart A. Trail use agreements are in place for the following locations:

- Segment E – Use Agreement between Biddeford & Saco Water Company and ETMD.
- Segment F – Use Agreement between Central Maine Power and ETMD. There are no co-location agreements with Unitil for any of the project segments.

### **3.5 U.S. Route 1 Crossing**

The proposed Eastern Trail will cross U.S. Route 1 approximately 0.5 miles north of the I-195 interchange. A new pedestrian bridge is proposed to provide an above-grade crossing of U.S. Route 1. The former railroad similarly crossed the roadway above-grade; however, the former train bridge and abutment structures are no longer in place. For the proposed bridge crossing, Lincoln-Haney Structural Engineers recommends a single span pre-fabricated steel truss bridge placed on new concrete abutment structures. The bridge alignment is to follow the southerly edge of an existing Central Maine Power transmission line corridor while avoiding direct placement of the bridge below the existing transmission lines. This bridge alignment will also avoid significant impacts to the 8" natural gas line.

#### **3.5.1 Design Criteria**

The bridge design is to be developed based on AASHTO CRFD Bridge Design Specifications and the Maine DOT Bridge Design Guide. The bridge is to be designed for pedestrian use only with a 10' wide bridge deck and a live load intensity of 85 pounds per square foot. No allowance for vehicular traffic should be provided and vehicular access to the bridge should be prohibited by means of permanent non-collapsible bollards at each end. ATV and equestrian use shall also be prohibited. The proposed deck surfaces may be treated timber or a concrete deck. Safety ratings shall be provided on each side. Structural steel will be unpainted weathered steel. No winter snow removal is assumed. No utilities are expected to be attached to the bridge.

#### **3.5.2 Site Location and Evaluation**

The U.S. Route 1 crossing is located approximately 0.5 miles north of the I-195 interchange. The remains of the former elevated railroad bed exist on each side of Route 1; however, there no bridge superstructure or abutments are in place. The specifics on the original railroad bridge space are unknown as it is understood the bridge was removed many years ago. The existing road width of U.S. Route 1 at the crossing location is approximately 50 feet (two travel lanes each direction with curbed shoulders).



The existing crossing is complicated by multiple utilities within the crossing area. These include overhead 34.5 KVA transmission lines, three-phase power distribution lines, the 8" steel natural gas transmission line and other underground water, sewer and drainage lines.

The placement of the bridge structure will require review and approval from Central Maine Power as well as easements from landowners on each side of U.S. Route 1, since the alignment will take the bridge out of the former railroad corridor and onto private property on each side of U.S. Route 1.

The bridge span is to be designed to allow future widening of U.S. Route 1 from its current width of about 50 feet to a future road width of 82 feet. The current layout contemplates new concrete abutments constructed on traditional concrete spread footings below frost depth. The abutment spacing will result in a single span of approximately 127 feet.

### 3.5.3 Utility Coordination

The bridge installation involves coordination with Unutil and Central Maine Power. The proposed alignment as currently contemplated minimizes the impact to the natural gas line since the proposed abutments will be located a minimum of 15' from the underground natural gas line. The bridge will complete an aerial crossing of the pipeline, therefore minimizing the trail's at-grade pipeline crossings to only one in this area, which will be on the east side of U.S. Route 1.

The bridge has been aligned to minimize the impact to the transmission corridor. The transmission lines are within a 135' wide easement and the placement of the bridge aligns with the southerly boundary of this easement area. Similar to the gas line, the trail will have only one nearly perpendicular crossing of the overhead transmission lines and this will be on the east side of U.S. Route 1. Fill placement associated with the vertical trail alignment will require review by CMP to determine impacts to wire clearances, guy wire placement and impacts to existing utility poles.

### 3.5.4 Geotechnical

R. W. Gillespie & Associates performed two test borings, one each on both sides of U.S. Route 1. The borings identified a silty clay marine deposit extending to at least a depth of 106 feet below local ground surface. The preliminary calculations of settlement at the proposed abutments are 1 to 1½ inches with soil-supported spread footings. Based on these initial findings, it appears that soil-supported spread footing foundations appear feasible to support the proposed bridge abutments. The complete geotechnical report can be found in Appendix H to this PDR.



### **3.6 I-195 Crossing**

The proposed Eastern Trail will cross the existing I-195 highway corridor by means of an at-grade trail alignment that extends from the existing railroad corridor, easterly to the U.S. Route 1 interchange. The Trail will cross the three existing highway ramps on the west side of Route 1 and it will benefit from the existing I-195 overpass alignment for crossing the highway.

#### **3.6.1 Alternatives**

During the PDR data collection period, representatives of the consultant team, ETMD and the MDOT met on site to review existing conditions with respect to the I-195 corridor and its impact on the Trail alignment. The primary concern with aligning the Eastern Trail through the I-195/Route 1 interchange relates to the at-grade crossings of three highway on/off ramps and general proximity of the trail to the heavily used U.S. Route 1 corridor. Alternatives to this trail alignment include the use of the railroad corridor for the placement of an overhead bridge, or an underground tunnel crossing of the I-195 corridor. Based on the existing I-195 roadway geometry, the approximate crossing length is 290 linear feet. Several key conditions significantly impact the viability to construct either of the crossing alternatives. These conditions include:

- An existing stream enters a 42" culvert on the south side of the I-195 corridor at the railroad corridor R.O.W. This stream is conveyed under I-195 to the north side of the railroad corridor.
- The stream continues to follow along the westerly side of the railroad corridor from the north side of I-195 several hundred feet until crossing the railroad corridor in an existing box culvert. This stream location significantly constrains trail development within this portion of the former railroad corridor.
- The I-195 highway is significantly elevated above the former railroad corridor, thus exacerbating trail approach conditions on each side of the highway.
- Soils conditions consist of poorly drained clay in the project vicinity. We anticipate that the abutments for an elevated bridge crossing of the highway would require significant soils surcharge measures to reduce settlement to tolerable levels. Like the MTA crossing, this involves significant project costs.
- Wetlands dominate the railroad corridor on the north side of the I-195 R.O.W.



3.6.2 Alternative Costs

Based on the limited information available, a preliminary opinion of costs has been prepared for the above-grade bridge and below-grade tunnels alternatives. These costs are compared to the proposed alignment to Route 1 as summarized below:

Alternative I-195 Crossing Costs			
Alternative/ Evaluation Parameter	Use Route 1	Construct 260' Pedestrian Bridge	Provide 260' Tunnel
Approach Construction	\$0	\$250,000	\$100,000
Trail Construction	\$320,000	\$0	\$0
Retaining Walls	\$675,000	\$0	\$0
Wetland Mitigation	\$0	\$168,141(1 acre)	\$84,070 (0.5 acre)
Bridge Costs	\$0	\$1,500,000	\$0
Tunnel Costs	\$0	\$0	\$2,344,420*
<b>Estimated Costs</b>	<b>\$995,000</b>	<b>\$1,918,141</b>	<b>\$2,528,490</b>

\* Reference *Tunnels on Trails*, Rails to Trails Conservancy, Table 1 Average costs is \$9,017/LF

3.7 Preliminary Engineer's Opinion of Cost

The preliminary Engineer's Opinion of Costs to construct the proposed 4.43 miles of multi-use recreation trail is approximately **\$2,867,606**. This figure includes the installation of a prefabricated steel truss bridge for the U.S. Route 1 crossing, a new stream culvert at Mill Brook, and various sections of stone dust and paved trail surfaces throughout the study area length. A summary of project costs is as follows:

Item	Preliminary Opinion of Costs
Trail Construction	\$2,085,540
U.S. Route 1 Bridge	\$ 350,000
Mill Brook Culvert	\$ 150,000
Wetland Mitigation	\$ 114,966
Utility Relocations	\$ 155,000
Stormwater Compensation fee	\$ 12,100
<b>Total</b>	<b>\$2,867,606</b>

A detailed cost breakdown is contained in Section 10.0 of this PDR.

The Eastern Trail Feasibility Study prepared by Wilbur Smith Associates in 2001 contained preliminary costs for this study area. Their presentation of trail segments



differed from the current study, as they did not contemplate the off-railroad-corridor route through Thornton Academy. The approximate trail costs were \$362,970; the cost for bridges at U.S. Route 1 and Old Cascade Road was \$458,800; and the Mill Brook crossing was estimated at \$175,600. The total was approximately \$997,370.

### **3.8 Preliminary Design Recommendations**

Based on the findings of the preliminary design study, the following Basis of Design Recommendations are provided:

- Construct the multi-use trail commencing at Clark Street, proceeding north through the Thornton Academy campus and a portion of the abandoned Eastern Railroad corridor until reaching I-195. Proceed with trail development within the I-195 R.O.W. easterly to U.S. Route 1 and then northerly beneath the I-195 overpass. Proceed westerly within the I-195 corridor to the former Eastern Railroad corridor. Follow the Eastern Railroad corridor northerly until reaching the southerly end of the previously constructed Scarborough trail section at Milliken Mills Road.
- Construct an approximately 127 l.f. single-span, 10' wide, prefabricated steel truss bridge over U.S. Route 1, supported on concrete abutments with frost-depth reinforced concrete spread footing foundation. This installation lines along U.S. Route 1.
- Coordinate the jurisdictional status of all wetlands with the Maine DEP and the U.S. Army Corps of Engineers.
- Coordinate all trail alignment and design activities with Unutil to verify adequate setbacks and construction provisions.
- Install safety measures including cedar rail fencing or 4-foot PVC-coated chain link fencing for trail sections within the I-195 corridor and other locations including areas with existing or proposed slopes exceeding 3H:1V.
- Install signage and wayfinding measures as outlined in Appendix I to this report.
- Consider and coordinate trail head parking measures at Thornton Academy, Moody Street, Mill Brook Business Park and Cascade Road.
- Coordinate drainage design including measures to comply with MeDEP Chapter 500 requirements for activities within an urban impaired stream (Goosefare Brook). This will involve the permanent preservation of wooded buffer strips adjacent to the proposed trail within the Thornton Academy



property and I-195 corridors, the construction of rain gardens or other bio retention measures and additional discussions with DEP regarding the amount of area treated and potential waivers of the 75% treatment area standard.

- Install a new pipe arch culvert and embankment fills at the Mill Brook stream crossing. Coordinate any impacts to the natural gas line with Unutil representatives prior to release of bid documents.
- Execute all co-location and access agreements with the trail landowners.



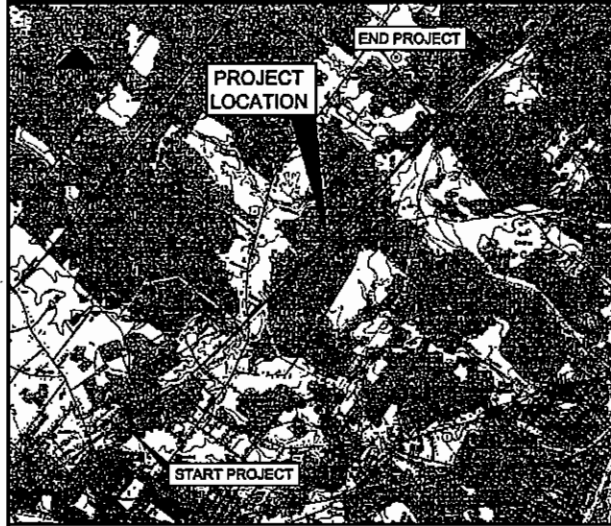
#### 4.0 PRELIMINARY PLANS

##### 4.1 Overview

Preliminary plans based on the boundary and topographic survey data collected and completed by Dow and Coulombe, Inc. have been prepared for the full project length. The plans present the basic geometric trail alignment and approximate cut-and-fill limits based on a preliminary profile alignment and application of the various typical sections. The plans also include all delineated resources including wetlands, seasonal pools, watercourses and ditches as identified by Normandeau Associates. Finally, the plans represent the surveyed locations of existing utilities including Unitil’s natural gas main, the Biddeford & Saco Water Company water main, and overhead utilities. The selection of the applicable trail section for each segment of trail is also identified on each plan. The horizontal alignment as presented on these plans is preliminary and subject to modification based on the final design. Modifications due to vertical alignment adjustments based on costs, impacts to utilities and natural resources may result during final design. The following is a list of plan sheets accompanying this PDR.

<b>Plan Title</b>	<b>Number</b>	<b>Description</b>
Cover Sheet	1	Provides project name and background
General Notes	2	Provides preliminary notes
Typical Sections	3	Presents recommended trail sections
Plan Sheet Sta. 10+00 to 19+30	4	Plan view depicting trail alignment
Plan Sheet Sta. 19+30 to 30+85	5	Plan view depicting trail alignment
Plan Sheet Sta. 30+85 to 44+85	6	Plan view depicting trail alignment
Plan Sheet Sta. 44+85 to 59+35	7	Plan view depicting trail alignment
Plan Sheet Sta. 59+35 to 73+55	8	Plan view depicting trail alignment
Plan Sheet Sta. 73+55 to 87+35	9	Plan view depicting trail alignment
Plan Sheet Sta. 87+35 to 100+90	10	Plan view depicting trail alignment
Plan Sheet Sta. 100+90 to 112+75	11	Plan view depicting trail alignment
Plan Sheet Sta. 112+75 to 121+25	12	Plan view depicting trail alignment
Plan Sheet Sta. 121+25 to 135+10	13	Plan view depicting trail alignment
Plan Sheet Sta. 135+10 to 149+10	14	Plan view depicting trail alignment
Plan Sheet Sta. 149+10 to 163+10	15	Plan view depicting trail alignment
Plan Sheet Sta. 163+10 to 177+10	16	Plan view depicting trail alignment
Plan Sheet Sta. 177+10 to 191+10	17	Plan view depicting trail alignment
Plan Sheet Sta. 191+10 to 205+10	18	Plan view depicting trail alignment
Plan Sheet Sta. 205+10 to 219+35	19	Plan view depicting trail alignment
Plan Sheet Sta. 219+35 to 233+35	20	Plan view depicting trail alignment
Plan Sheet Sta. 233+35 to 244+03	21	Plan view depicting trail alignment





A PORTION OF YORK COUNTY  
LOCATION MAP  
SCALE: 1" = 3,000'

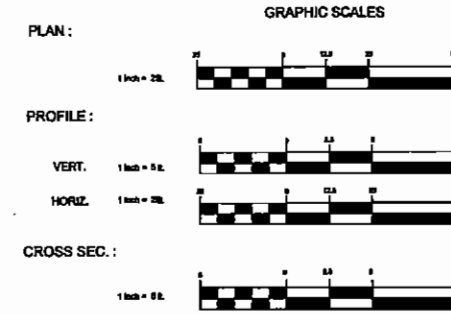
# STATE OF MAINE DEPARTMENT OF TRANSPORTATION SACO AND OLD ORCHARD BEACH, MAINE YORK COUNTY

PIN NO: 13340.00

## EASTERN TRAIL: MULTI-USE RECREATIONAL TRAIL DEVELOPMENT

PROJECT LENGTH: 4.37 MILES

### A GRADING, BASE, SURFACE, TRAIL AND BRIDGE PROJECT



#### INDEX

1. COVER SHEET
2. GENERAL NOTES
3. TYPICAL SECTIONS
4. PLAN SHEET STA. 10+00 TO 19+30
5. PLAN SHEET STA. 19+30 TO 30+85
6. PLAN SHEET STA. 30+85 TO 44+85
7. PLAN SHEET STA. 44+85 TO 59+35
8. PLAN SHEET STA. 59+35 TO 73+55
9. PLAN SHEET STA. 73+55 TO 87+35
10. PLAN SHEET STA. 87+35 TO 100+90
11. PLAN SHEET STA. 100+90 TO 112+75
12. PLAN SHEET STA. 112+75 TO 121+25
13. PLAN SHEET STA. 121+25 TO 135+10
14. PLAN SHEET STA. 135+10 TO 149+10
15. PLAN SHEET STA. 149+10 TO 163+10
16. PLAN SHEET STA. 163+10 TO 177+10
17. PLAN SHEET STA. 177+10 TO 191+10
18. PLAN SHEET STA. 191+10 TO 205+10
19. PLAN SHEET STA. 205+10 TO 219+35
20. PLAN SHEET STA. 219+35 TO 233+35
21. PLAN SHEET STA. 233+35 TO 244+03

Designed by:  
DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET  
SUITE 8  
SOUTH PORTLAND, MAINE 04106  
(207) 775-1121

Survey by:  
DOW AND COULOMBE, INC.  
13 PARK STREET  
SACO, MAINE 04072  
(207) 284-4521

Prepared For:  
EASTERN TRAIL MANAGEMENT DISTRICT  
75 FRANKLIN STREET  
SACO, MAINE 04072-2507  
(207) 284-9260

#### NOTES

1. ALL WORK CONTEMPLATED UNDER THIS CONTRACT SHALL BE GOVERNED BY AND IN CONFORMITY WITH THE MDOT STANDARD SPECIFICATIONS (REVISION OF DECEMBER 2002) FOR HIGHWAYS, BRIDGES, AND SUPPLEMENTS THERETO, EXCEPT AS MODIFIED ON THE PLANS AND IN THE SPECIAL PROVISIONS. NO WORK SHALL BE PERFORMED WITHIN THE ROW UNTIL WRITTEN CONSTRUCTION APPROVAL HAS BEEN ISSUED BY ALL PROPERTY OWNERS.
2. MAINTENANCE OF TRAFFIC TO BE DONE PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL ARE TO BE USED AS MINIMUM STANDARD FOR EROSION AND SEDIMENT CONTROL ON THIS PROJECT.
4. THE IMPROVEMENTS DEPICTED ON THIS PLAN SET HAVE NOT BEEN APPROVED BY THE MAINE DEPARTMENT OF TRANSPORTATION. THE IMPROVEMENTS DEPICTED HEREIN SHALL NOT BE CONSTRUCTED UNTIL AUTHORIZED BY DeLUCA-HOFFMAN ASSOCIATES, INC. AND THE ME.D.O.T.

#### LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BUILDING	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
	CENTER LINE	
	WOODEN FENCE	
	WIRE OR CHAIN LINK FENCE	
	STONE WALL	
	BUTTRESSED CURB	
	SLOPED GRANITE CURB	
	PAINTED DIRECTIONAL TRAFFIC ARROW	
	OVERHEAD ELECTRIC & TELEPHONE	
	OVERHEAD UTILITY	
	UNDERGROUND ELECTRIC	
	SEWER LINE	
	STORM DRAIN LINE	
	WATER LINE	
	GUARD RAIL	
	CUT/FILL LINE	
	HYDRANT	
	MANHOLE	
	CATCH BASIN	
	POLE WITH LIGHT FIXTURE(S)	
	SIGNAL POLE W/ FOUNDATION	
	UTILITY POLE	
	FREESTANDING SIGN	
	IRON PIPE	
	IRON ROD	
	P.K. SPIKE	
	HIGHWAY MONUMENT	
	TREELINE	
	TREES/LANDSCAPING	
	SILT FENCE	
	TRAFFIC SIGNAL	
	LEDGE OUTCROP OR SHALLOW ROCK	
	WETLAND LIMITS	

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		APPROVED	
SIGNATURE		P.E. NUMBER	
DATE		DATE	
PROJECT INFORMATION		COMMISSIONER CHIEF ENGINEER	
PROGRAM	PROJECT MANAGER	DESIGNER	CONSULTANT
MULTIMODAL	JOEL INTYWEDGE	DNAI	DNAI
EASTERN TRAIL		PROJECT RESIDENT	
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00		CONTRACTOR	
TITLE SHEET		SHEET NUMBER	
1		OF 21	

PRELIMINARY NOT FOR CONSTRUCTION II.13.09

COMMISSIONER: \_\_\_\_\_





**GENERAL NOTES**

1. THE MULTI-USE TRAIL IS INTENDED TO BE BUILT ON TOP OF A FORMER RAILROAD EMBANKMENT, EXCEPT FOR THAT PORTION ON LAND OF THORNTON ACADEMY WHERE THE TRAIL IS INTENDED TO BE PLACED THROUGH UNDISTURBED WOOD OR EXISTING PLAY FIELD AREAS. HORIZONTAL TRAIL ALIGNMENT IS APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD HORIZONTALLY OR VERTICALLY TO REDUCE CLEARING AND EARTHWORK REQUIREMENTS OR AVOID UTILITIES. ALL ADJUSTMENTS SHALL BE COORDINATED AND APPROVED BY THE RESIDENT IN ADVANCE OF THE WORK.
2. ALL WORK TO BE DONE UNDER THIS CONTRACT SHALL BE GOVERNED BY THE "STATE OF MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS", REVISION OF DECEMBER 2002, UPDATED AUGUST 2008 AND "STATE OF MAINE DEPARTMENT OF TRANSPORTATION STANDARD DETAILS", REVISION OF DECEMBER 2002, UPDATED FEBRUARY 2006, EXCEPT AS MODIFIED BY THE CONTRACT DOCUMENTS.
3. ALL TREES, BRUSH, VEGETATION, STUMPS, AND OTHER ITEMS WITHIN THE LIMITS OF WORK SHALL BE REMOVED FROM THE AREA. ALL DEBRIS SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS AND CODES.
4. ITEM 203.20 SHALL INCLUDE THE REMOVAL OF EXISTING VEGETATION, TOPSOIL, ROAD SURFACE, MUCK AND OTHER MATERIALS ENCOUNTERED. MUCK SHALL BE EXCAVATED TO THE DEPTHS SHOWN ON THE PLANS AND DISPOSED OF AS DIRECTED BY THE RESIDENT.
5. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. PRIOR TO ANY DIGGING, CONTRACTOR SHALL CONTACT "DIG SAFE" AT 1-800-344-7233 TO DETERMINE LOCATIONS OF EXISTING UNDERGROUND UTILITIES. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
6. UNTIL MAINTAINS AND OPERATES A HIGH PRESSURE NATURAL GAS TRANSMISSION LINE ALONG THE FULL LENGTH OF THE PROPOSED TRAIL CORRIDOR. THE CONTRACTOR IS ADVISED THAT THE RESTRICTIONS OUTLINED IN SPECIAL PROVISION 104 WILL APPLY TO ALL WORK COMPLETED WITHIN THE TRANSMISSION CORRIDOR.
7. ALL UTILITY FACILITIES SHALL BE ADJUSTED BY THE RESPECTIVE UTILITIES UNLESS OTHERWISE NOTED. COORDINATION SHALL BE BY THE DEPARTMENT.
8. THE UTILITIES INVOLVED IN THIS CONTRACT ARE AS FOLLOWS:
  - CITY OF SACO DEPARTMENT OF PUBLIC WORKS  
STREET ADDRESS  
SACO, ME 04072  
207-000-0000  
CONTACT NAME
  - CENTRAL MAINE POWER COMPANY  
STREET ADDRESS  
CITY, ME 04000  
207-000-0000  
CONTACT NAME
  - BIDDEFORD & SACO WATER DISTRICT  
STREET ADDRESS  
CITY, ME 04000  
207-000-0000  
CONTACT NAME
  - FAIRPOINT COMMUNICATIONS  
STREET ADDRESS  
CITY, ME 04000  
207-000-0000  
CONTACT NAME
  - NORTHERN UTILITIES  
STREET ADDRESS  
CITY, ME 04000  
207-000-0000  
CONTACT NAME
  - TOWN OF OLD ORCHARD BEACH - PUBLIC WORKS DEPARTMENT  
STREET ADDRESS  
OLD ORCHARD BEACH, ME 04064  
CONTACT NAME
9. UNLESS DIRECTED BY THE RESIDENT, ALL DISTURBED AREAS SHALL RECEIVE A MINIMUM OF 2" LOAM AND BE SEEDED WITH METHOD #1. MULCH SHALL BE APPLIED IN AREAS SEEDED.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION LAYOUT AND STAGING.
11. PLACE A 2-FOOT-WIDE (MINIMUM) STRIP OF TEMPORARY EROSION CONTROL BLANKET ALONG THE TOP OF ALL RIPRAP SLOPES.
12. BASED ON THE SCOPE OF WORK AND CURRENT CONDITION OF THE PROJECT PROPERTY, NO PETROLEUM OR HAZARDOUS WASTE IS EXPECTED TO BE ENCOUNTERED. HOWEVER, DURING THE DURATION OF THE PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL OF ANY RAILROAD TIES ENCOUNTERED THAT CAN NOT BE REUSED ON SITE. THE CONTRACTOR IS RESPONSIBLE TO HAVE THE UNUSED TIES DISPOSED OF AS DEMOLITION WASTE AT A LANDFILL APPROVED TO ACCEPT DEMOLITION WASTE/DEBRIS. IF THE CONTRACTOR ENCOUNTERS ANY OTHER POTENTIAL DEMOLITION DEBRIS AND IS NOT SURE OF HOW TO DISPOSE OF IT, THE CONTRACTOR SHALL NOTIFY THE RESIDENT. THE RESIDENT SHALL CONTACT THE HYDROGEOLOGIST IN MDT'S ENVIRONMENTAL OFFICE AT 207-624-3103 FOR CLARIFICATION. THE CONTRACTOR SHALL ALSO REMAIN ALERT FOR EVIDENCE OF PETROLEUM AND HAZARDOUS WASTE/MATERIALS CONTAMINATION, IN PARTICULAR, ANY EVIDENCE OF COAL ASH. IF THE CONTRACTOR ENCOUNTERS EVIDENCE OF SOIL OR GROUNDWATER CONTAMINATION, THE CONTRACTOR SHALL SECURE THE EXCAVATION STOP WORK IN THE CONTAMINATED AREA, AND IMMEDIATELY NOTIFY THE RESIDENT. THE RESIDENT SHALL CONTACT THE HYDROGEOLOGIST IN MAINE DOT'S ENVIRONMENTAL OFFICE AT 207-624-3100 AND THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AT 603-482-0777. WORK MAY ONLY CONTINUE WITH AUTHORIZATION FROM THE RESIDENT.

**GENERAL NOTES**

13. BOLLARDS AND POSTS FOR SIGNS, TIMBER GUARDRAIL AND CEDAR RAIL FENCE MUST BE A MINIMUM OF 5 FEET FROM GAS LINE. THE CONTRACTOR SHALL COORDINATE THEIR INSTALLATION WITH THE GAS COMPANY'S REPRESENTATIVES.
14. CLEARING SHALL BE MINIMIZED. HOWEVER, AT SIGNIFICANT EMBANKMENT SECTIONS, CLEARING SHALL BE 6 FEET FROM TOE OF SLOPE, EXCEPT WHERE OTHERWISE NOTED.
15. FOR EASEMENT DESCRIPTIONS, REFER TO RIGHT-OF-WAY MAP.
16. BOULDERS (3" DIAMETER TYPICAL) SHALL BE PLACED AT INTERSECTING PATHS TO PREVENT VEHICULAR ACCESS TO EASTERN TRAIL. LOCATIONS SHALL BE AS SHOWN ON PLANS OR AS DIRECTED BY THE RESIDENT.
17. REMOVAL AND DISPOSAL OF CULVERTS SHOWN ON THE PLANS SHALL BE INCIDENTAL TO SECTION 603. NO EXISTING DRAINAGE SHALL BE ABANDONED, REMOVED, OR PLUGGED WITHOUT PRIOR APPROVAL OF THE RESIDENT.
18. COLLAPSIBLE BOLLARDS, CEDAR RAIL FENCE, AND TIMBER GUARDRAIL SHALL BE INSTALLED AT LEAST 10 FEET FROM THE EDGE OF ANY ROADWAY.
19. EXISTING CULVERTS TO REMAIN SHALL BE CLEANED AS DIRECTED BY THE RESIDENT. PAYMENT WILL BE MADE UNDER ITEM 601.32, CULVERT CLEANER (INCLUDING OPERATOR).
20. ALL WASTE MATERIAL NOT USED ON THE PROJECT SHALL BE DISPOSED OF OFF THE PROJECT IN WASTE AREAS APPROVED BY THE RESIDENT.
21. INLETS AND OUTLETS OF ALL PROPOSED CULVERTS SHALL BE RIPRAPPED IN ACCORDANCE WITH THE DEPARTMENT'S STANDARD DETAILS UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE RESIDENT.
22. ANY DAMAGE TO THE SLOPES CAUSED BY THE CONTRACTOR'S EQUIPMENT, PERSONNEL, OR OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE RESIDENT.
23. NO SEPARATE PAYMENT FOR SUPERINTENDENT OR FOREMAN WILL BE MADE FOR THE SUPERVISION OF EQUIPMENT BEING PAID FOR UNDER THE EQUIPMENT RENTAL ITEMS.
24. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MAINE DEPARTMENT OF TRANSPORTATION'S BEST MANAGEMENT PRACTICES FOR EROSION & SEDIMENTATION CONTROL, FEBRUARY 2006.
25. SUBSURFACE SOILS INFORMATION IS PROVIDED IN THE FOLLOWING REPORTS PREPARED BY R. W. GILLESPIE & ASSOCIATES, INC.
26. THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT EROSION AND SEDIMENTATION CONTROL DEVICES WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION BEST MANAGEMENT PRACTICES. PAYMENT FOR DEVELOPING, INSTALLING, AND MAINTAINING EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE PAID UNDER ITEM 656.75, "TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL".
27. WHERE TYPICAL SECTION CALL-OUTS ARE DESIGNATED ON THE TRAIL PLANS, THE LIMITS SHALL BE CONSIDERED APPROXIMATE. THE LIMIT AND TYPE OF TYPICAL SECTION TO BE USED MAY BE CHANGED BASED ON EXISTING CONDITIONS AS DIRECTED BY THE RESIDENT.

**ESTIMATED QUANTITIES**

ITEM NO.	DESCRIPTION	UNIT	QTY.
201.11	CLEARING	AC	2.2
201.12	SELECTIVE CLEARING AND THINNING	AC	1
203.20	COMMON EXCAVATION (INCLUDES GRUBBING)	CY	6000
203.24	COMMON BORROW	CY	2500
203.25	GRAVULAR BORROW	CY	1000
206.061	STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES BELOW GRADE	CY	60
304.08	AGGREGATE BASE COURSE - CRUSHED	CY	6450.3
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	CY	6714.8
405.200	HOT MIX ASPHALT 8.5 MM HMA	TON	333.3
411.13	STONE DUST SURFACE COURSE	CY	2801.7
602.218	STRUCTURAL CONCRETE ABUTMENTS AND RETAINING WALLS	LS	1
606.12	STEEL STRUCTURAL PLATE PIPE ARCH CULVERT AT MILL BROOK	LS	1
630.01	STEEL PEDESTRIAN BRIDGE	LS	1
603.169	12 INCH CULVERT PIPE OPTION III	LF	1547
603.175	18 INCH REINFORCED CONCRETE PIPE CLASS III	LF	10
603.179	18 INCH CULVERT PIPE OPTION III	LF	40
604.14	30 INCH CATCH BASIN TYPE E	EA	1
604.27	NYLOPLAST 12" DRAIN INLET	EA	15
604.16	ADJUST CB TO GRADE	EA	1
608.011	TIMBER GUARDRAIL	LF	822
607.163	CHAIN LINK FENCE - 4-FOOT PVC COATED	LF	1358
607.173	CHAIN LINK FENCE - 6 FOOT PVC COATED	LF	1893
607.22	CEDAR RAIL FENCE	LF	4173
607.294	BARBER BOULDERS	EA	50
608.28	CURB RAMP DETECTABLE WARNING FIELD	SF	265
609.34	BITUMINOUS CURB	LF	210
610.06	PLAIN RIPRAP	CY	40
613.319	EROSION CONTROL BLANKET	SY	2500
615.07	LOAM	CY	1400
618.13	SEEDING METHOD NUMBER 1	UNIT	207
618.15	TEMPORARY SEEDING	LS	60
619.12	MULCH	UNIT	207
619.1401	EROSION CONTROL MIX	CY	60
620.58	EROSION CONTROL GEOTEXTILE	SY	1500
620.60	SEPARATION GEOTEXTILE	SY	6056
621.037	EVERGREEN TREES (5-FOOT - 8-FOOT) GROUP A	EA	30
621.048	DECIDUOUS SHRUBS (2-FOOT - 3-FOOT) GROUP A	EA	600
621.80	ESTABLISHMENT PERIOD	LS	1
622.10	TRANSPLANTING SHRUB	EA	16
627.75	WHITE OR YELLOW PAVEMENT	SF	720
638.40	MSE RETAINING WALL	SF	10036
639.18	FIELD OFFICE TYPE A	EA	1
641.89	KIOSK	EA	2
652.23	DRUM	EA	60
652.34	CONE	EA	25
652.35	CONSTRUCTION SIGNS	SF	500
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES	LS	1
662.38	FLAGGER	HR	160
668.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LS	1
608.10	MOBILIZATION	LS	1
841.48	BOLLARDS	EA	6
841.49	BOLLARDS - COLLAPSIBLE	EA	28

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED  
COMMISSIONER  
CHIEF ENGINEER

SIGNATURE  
P.E. NUMBER  
DATE  
MULTIMODAL  
PROJECT INFORMATION  
PROGRAM  
PROJECT MANAGER  
DESIGNER  
CONSULTANT  
PROJECT RESIDENT  
CONTRACTOR

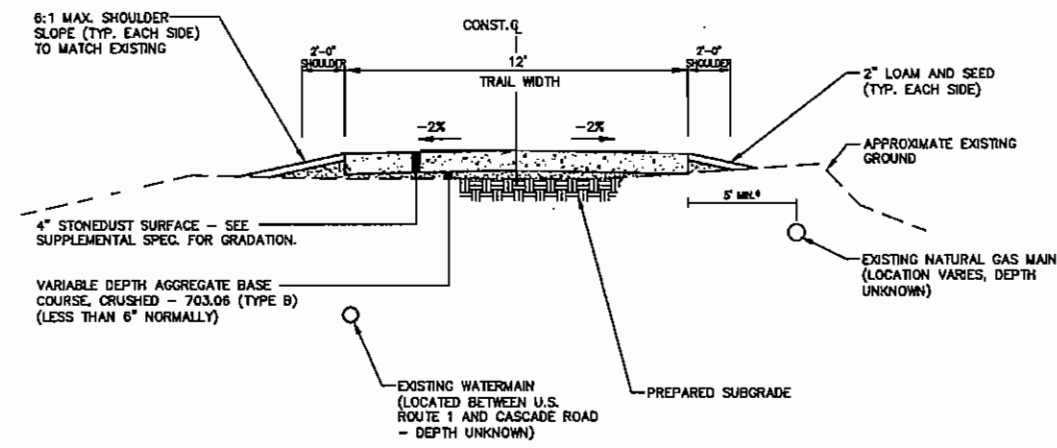
EASTERN TRAIL  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00  
TITLE SHEET

SHEET NUMBER  
2  
OF 21



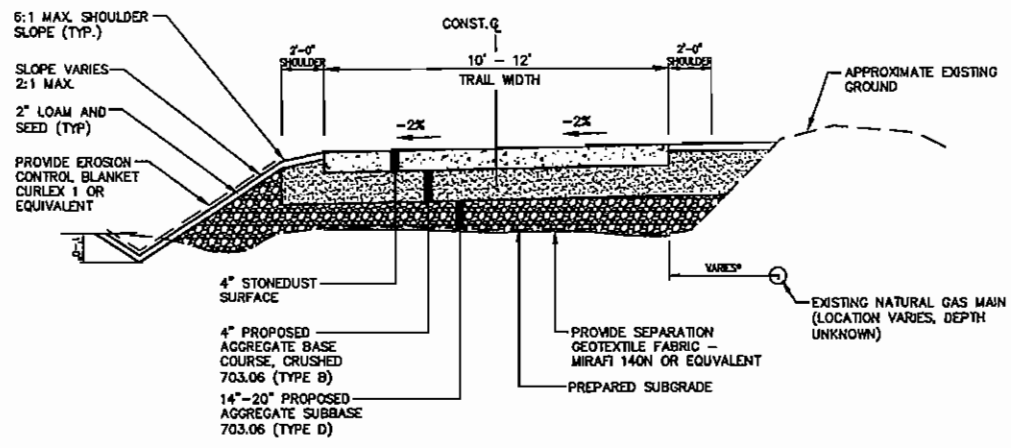
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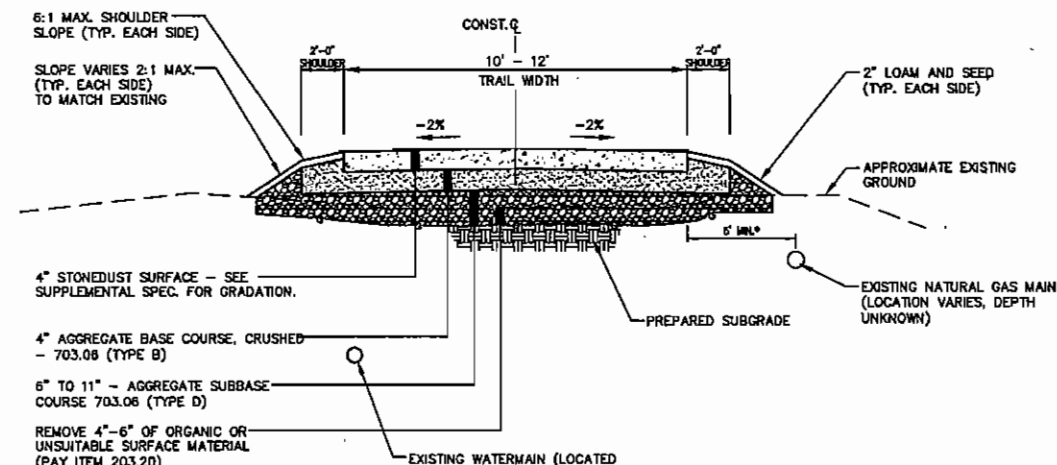
**A** TYPICAL SECTION A  
NTA

\* UNLESS AUTHORIZED BY UNIT.



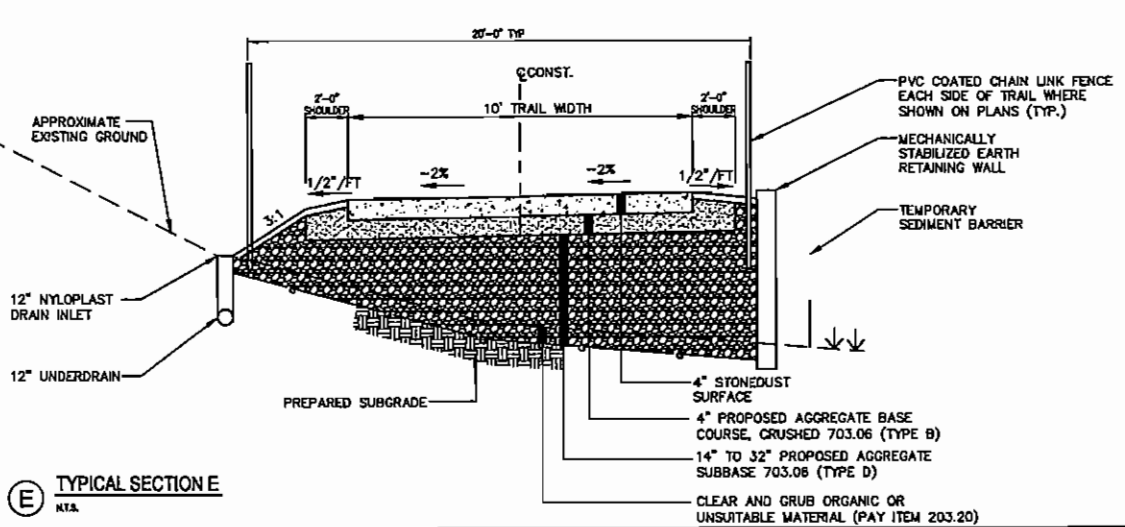
**D** TYPICAL SECTION D  
NTA

\* ACTIVITIES WITHIN 5' OF THE EXISTING NATURAL GAS LINE REQUIRE REVIEW AND APPROVAL FROM UNIT.



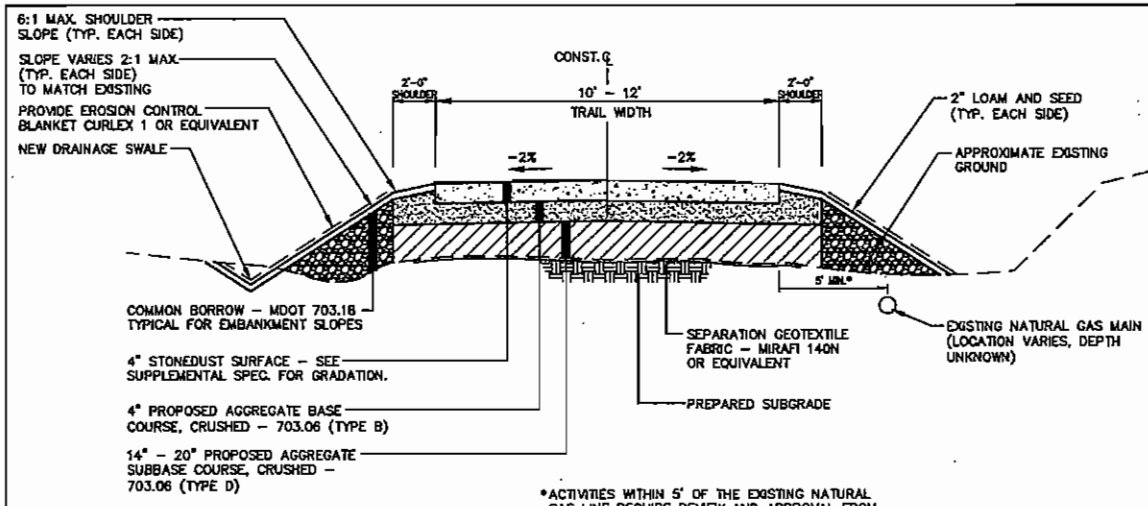
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\* UNLESS AUTHORIZED BY UNIT.



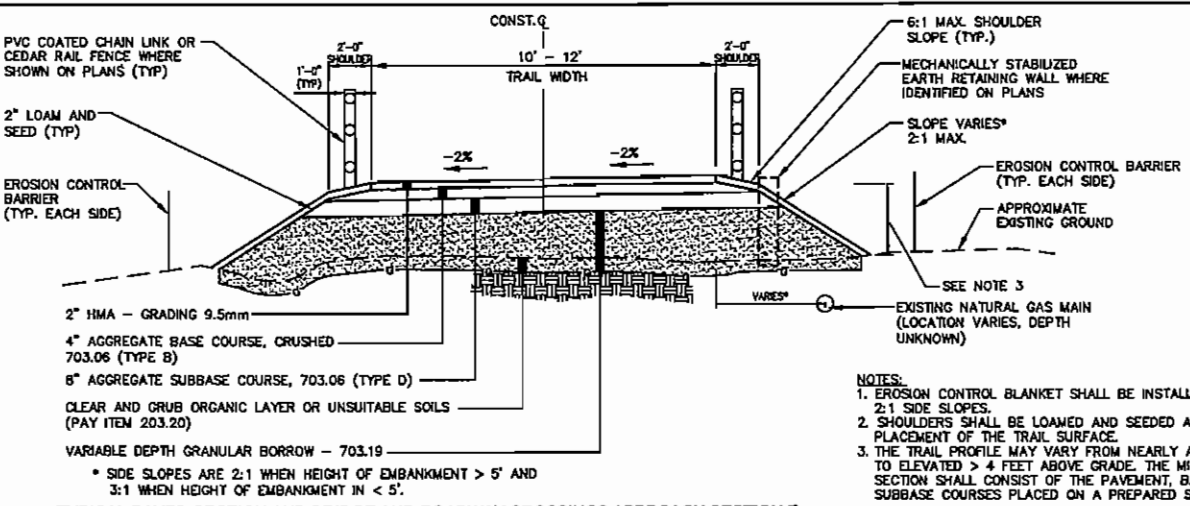
**E** TYPICAL SECTION E  
NTA

CLEAR AND GRUB ORGANIC OR UNSUITABLE MATERIAL (PAY ITEM 203.20)



**C** TYPICAL SECTION C  
NTA

\* ACTIVITIES WITHIN 5' OF THE EXISTING NATURAL GAS LINE REQUIRE REVIEW AND APPROVAL FROM UNIT. THIS INCLUDES BUT IS NOT LIMITED TO, EARTHWORK AND EQUIPMENT OPERATION.



**F** TYPICAL PAVED SECTION AND BRIDGE AND ROADWAY CROSSINGS APPROACH SECTION F  
NTA

- NOTES:
1. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL 2:1 SIDE SLOPES.
  2. SHOULDERS SHALL BE LOAMED AND SEED AFTER PLACEMENT OF THE TRAIL SURFACE.
  3. THE TRAIL PROFILE MAY VARY FROM NEARLY AT GRADE TO ELEVATED > 4 FEET ABOVE GRADE. THE MINIMUM BOX SECTION SHALL CONSIST OF THE PAVEMENT, BASE AND SUBBASE COURSES PLACED ON A PREPARED SUBGRADE.

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED  
COMMISSIONER  
CHIEF ENGINEER

PROJECT INFORMATION	SIGNATURE	DATE
PROGRAM	JOEL KATZBERG	
PROJECT MANAGER	DAN	
DESIGNER	DAN	
CONSULTANT	DAN	
PROJECT RESIDENT		
CONTRACTOR		

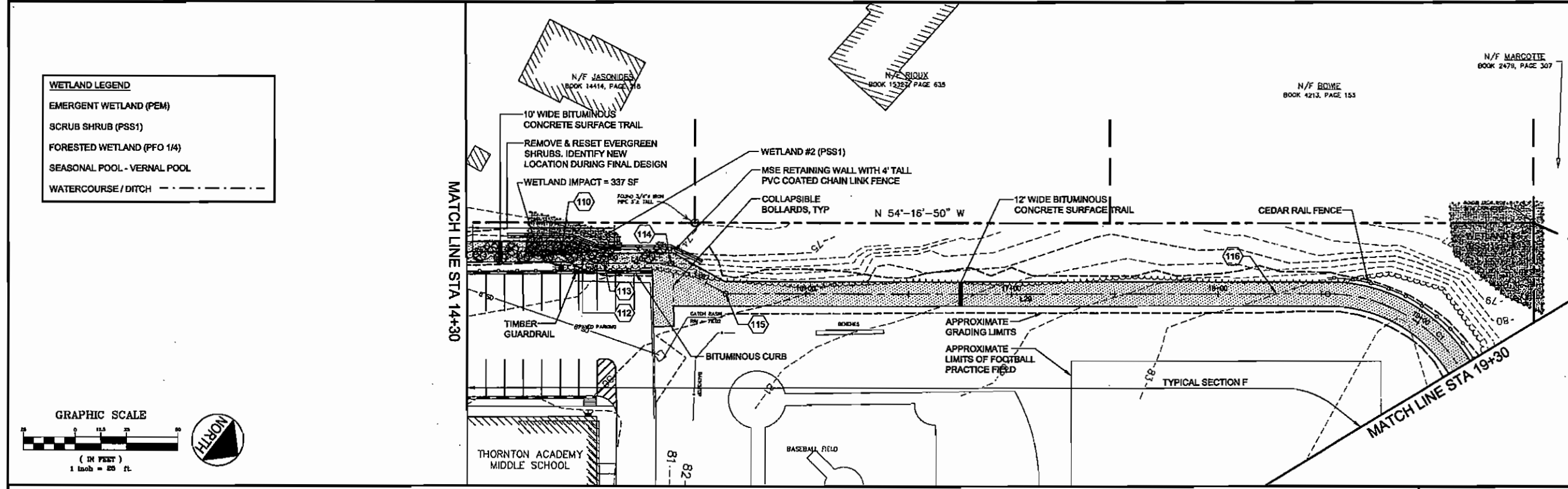
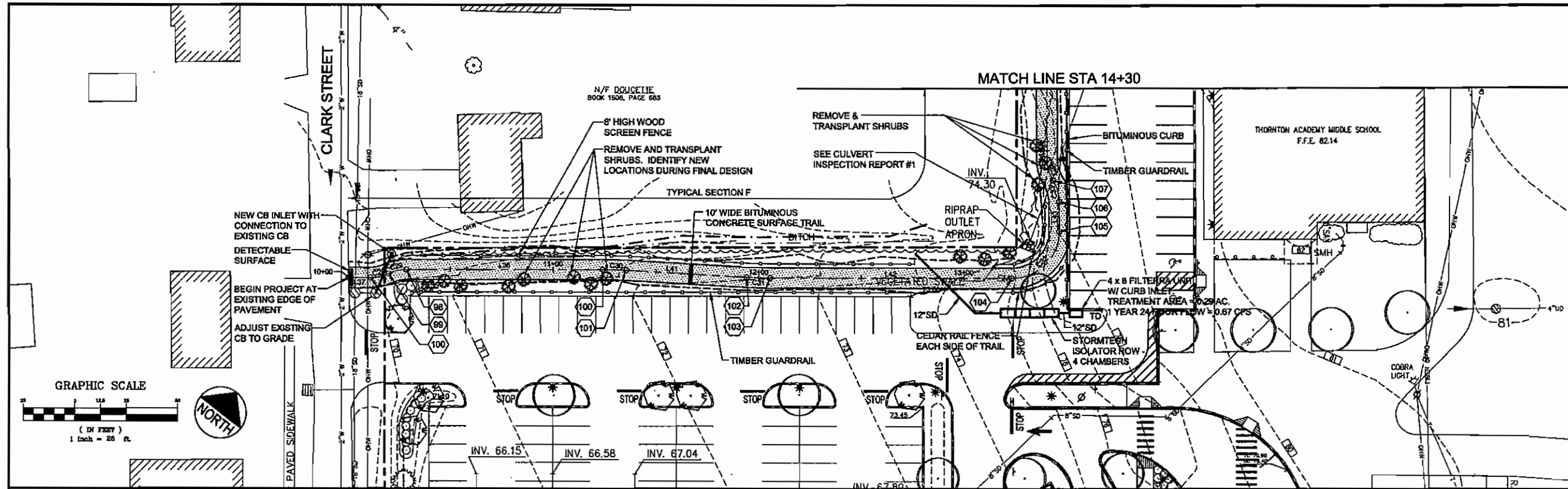
EASTERN TRAIL  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00  
TITLE SHEET

SHEET NUMBER

3  
OF 21

DLH DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 5  
SOUTH PORTLAND, ME 04106  
207.775.1121  
WWW.DELUCAHOFFMAN.COM



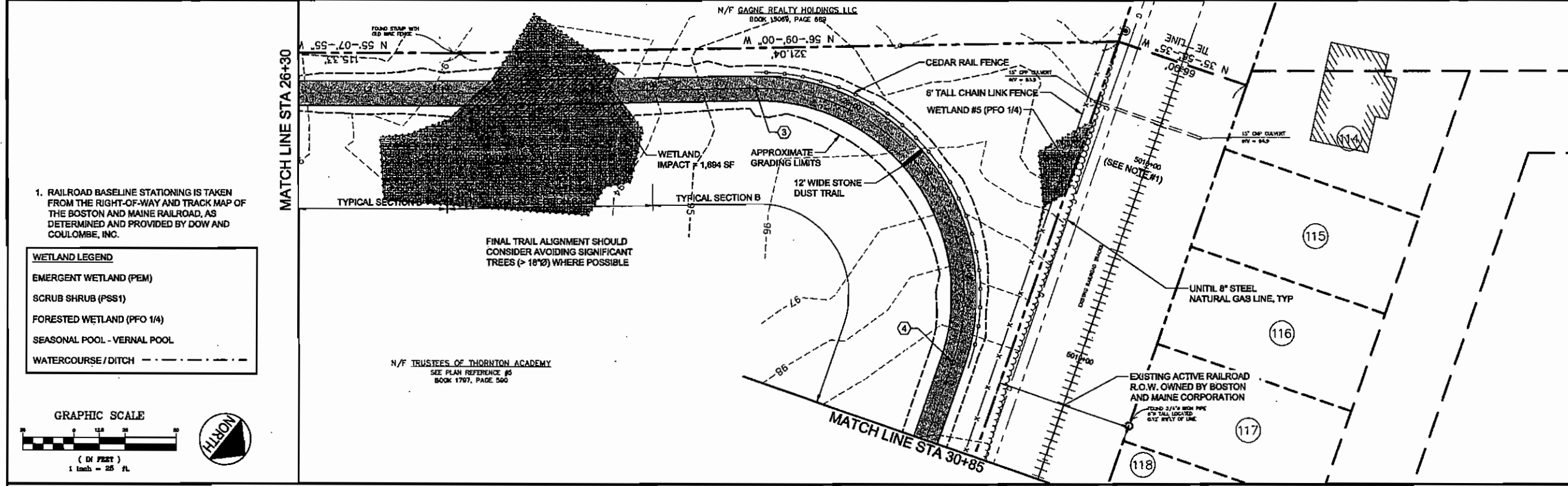
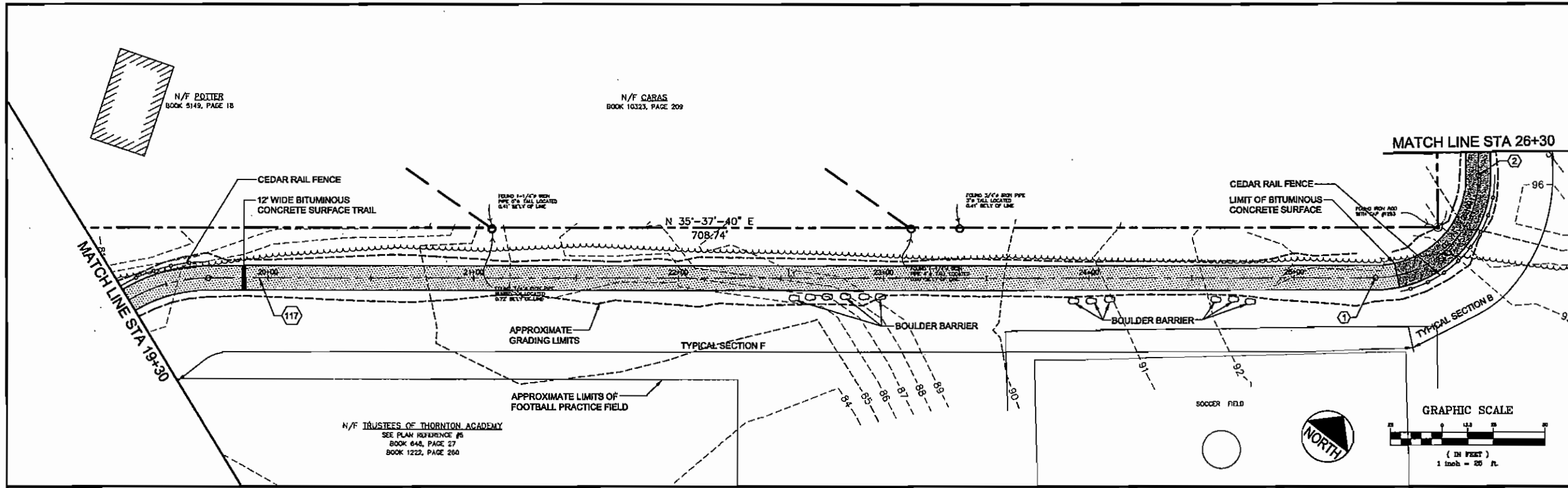


STATE OF MAINE DEPARTMENT OF TRANSPORTATION		APPROVED	
COMMISSIONER		CHIEF ENGINEER	
PROJECT INFORMATION		TITLE SHEET	
PROGRAM	MULTIMODAL	SIGNATURE	DATE
PROJECT MANAGER	JOEL KITTREDGE	P.E. NUMBER	
DESIGNER	DHAI		
CONSULTANT	DHAI		
PROJECT RESIDENT			
CONTRACTOR			
EASTERN TRAIL SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13940.00		SHEET NUMBER	
		4	
		OF 21	

PRELIMINARY NOT FOR CONSTRUCTION II.13.09

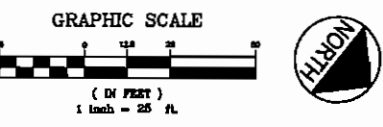
DeLUCA-HOFFMAN ASSOCIATES, INC.  
178 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
WWW.DELUCAHOFFMAN.COM





1. RAILROAD BASELINE STATIONING IS TAKEN FROM THE RIGHT-OF-WAY AND TRACK MAP OF THE BOSTON AND MAINE RAILROAD, AS DETERMINED AND PROVIDED BY DOW AND COULOMBE, INC.

WETLAND LEGEND	
[Symbol]	EMERGENT WETLAND (PEM)
[Symbol]	SCRUB SHRUB (PSS1)
[Symbol]	FORESTED WETLAND (PFO 1/4)
[Symbol]	SEASONAL POOL - VERNAL POOL
[Symbol]	WATERCOURSE / DITCH



STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED

SIGNATURE	FILE NUMBER	DATE

PROJECT INFORMATION	MULTIMODAL
PROGRAM	JOEL KITTREDGE
PROJECT MANAGER	DHAI
DESIGNER	DHAI
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	

**EASTERN TRAIL**  
SACC (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLEN MILLS ROAD) PIN # 13340.00

SHEET NUMBER

**5**  
OF 21

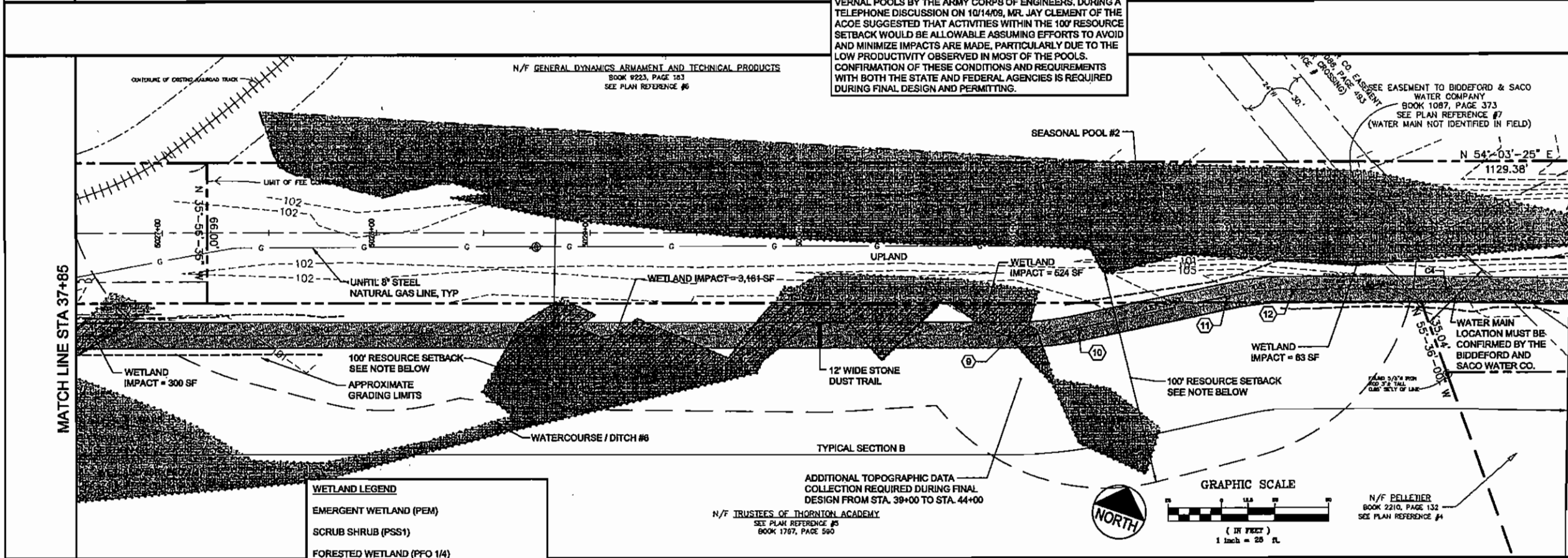
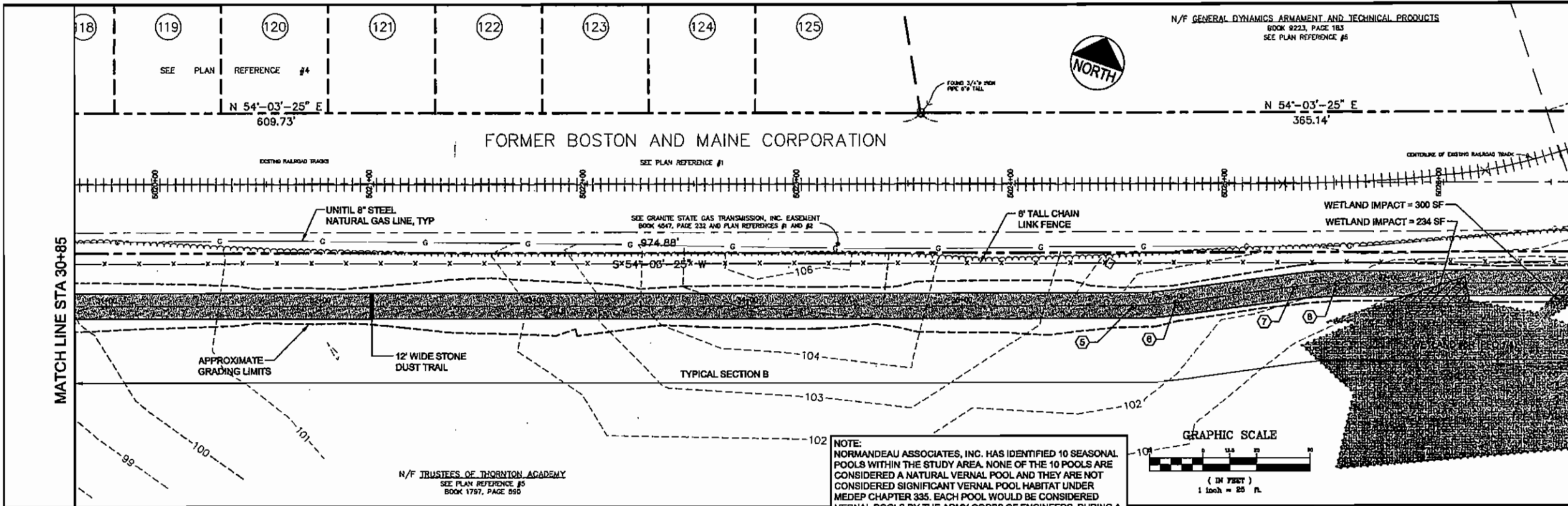
PRELIMINARY NOT FOR CONSTRUCTION II.13.09

**DH** DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 2  
SOUTH PORTLAND, ME 04106  
207.775.1121  
WWW.DELUCAHOFFMAN.COM

CV:2899 - Eastern Trail Sacc-005(DWG)CONCEPT/2899-02.dwg, 19'-30"-18", 11/13/2009 3:20:25 PM, cwh/mtm/ab



G:\1869 - Eastern Trail Saco-006\DWG\CONCEPT\1869-SP.dwg, 30+85-44+85, 11/13/2009 3:23:23 PM, owin@delucahoffman.com



WETLAND LEGEND	
	EMERGENT WETLAND (PEM)
	SCRUB SHRUB (PSS1)
	FORESTED WETLAND (PFO 1/4)
	SEASONAL POOL - VERNAL POOL
	WATERCOURSE / DITCH

**NOTE:**  
 NORMANDEAU ASSOCIATES, INC. HAS IDENTIFIED 10 SEASONAL POOLS WITHIN THE STUDY AREA. NONE OF THE 10 POOLS ARE CONSIDERED A NATURAL VERNAL POOL AND THEY ARE NOT CONSIDERED SIGNIFICANT VERNAL POOL HABITAT UNDER MEDEP CHAPTER 335. EACH POOL WOULD BE CONSIDERED VERNAL POOLS BY THE ARMY CORPS OF ENGINEERS. DURING A TELEPHONE DISCUSSION ON 10/14/09, MR. JAY CLEMENT OF THE ACOE SUGGESTED THAT ACTIVITIES WITHIN THE 100' RESOURCE SETBACK WOULD BE ALLOWABLE ASSUMING EFFORTS TO AVOID AND MINIMIZE IMPACTS ARE MADE, PARTICULARLY DUE TO THE LOW PRODUCTIVITY OBSERVED IN MOST OF THE POOLS. CONFIRMATION OF THESE CONDITIONS AND REQUIREMENTS WITH BOTH THE STATE AND FEDERAL AGENCIES IS REQUIRED DURING FINAL DESIGN AND PERMITTING.

ADDITIONAL TOPOGRAPHIC DATA  
 COLLECTION REQUIRED DURING FINAL  
 DESIGN FROM STA. 39+00 TO STA. 44+00  
 N/F TRUSTEES OF THORNTON ACADEMY  
 SEE PLAN REFERENCE #5  
 BOOK 1787, PAGE 540

STATE OF MAINE  
 DEPARTMENT OF TRANSPORTATION  
 APPROVED  
 COMMISSIONER:  
 CHIEF ENGINEER:

SIGNATURE  
 P.E. NUMBER  
 DATE

PROJECT INFORMATION  
 PROGRAM  
 PROJECT MANAGER  
 DESIGNER  
 CONSULTANT  
 PROJECT RESIDENT  
 PROJECT RESIDENT  
 CONTRACTOR

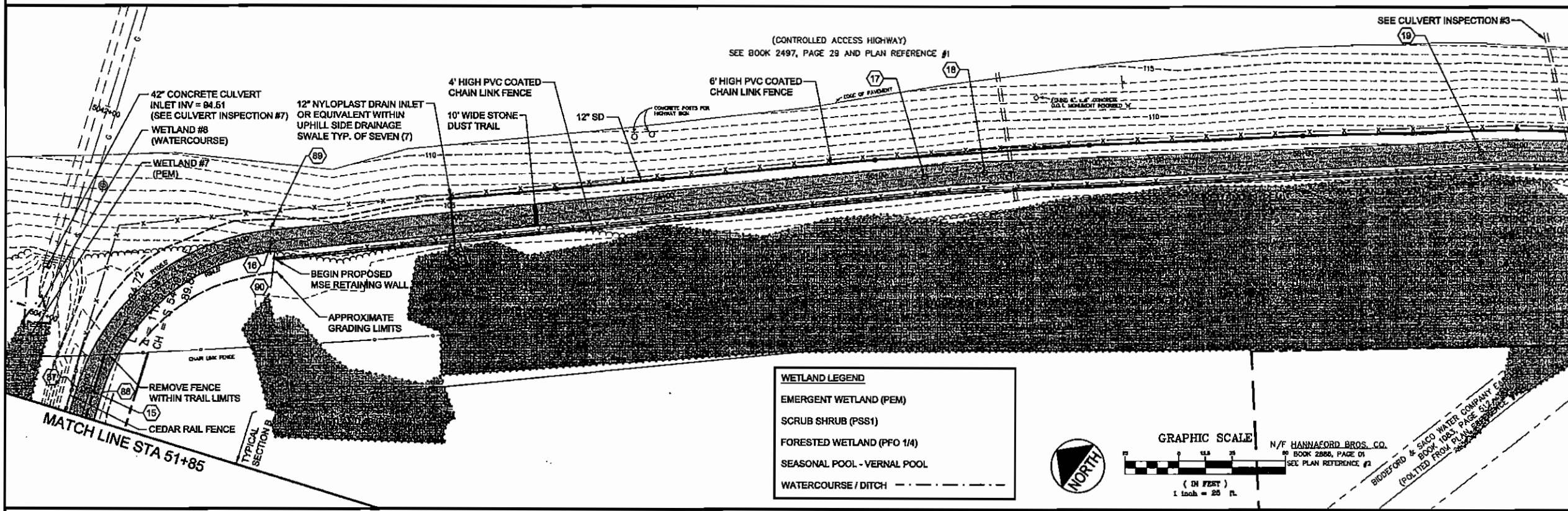
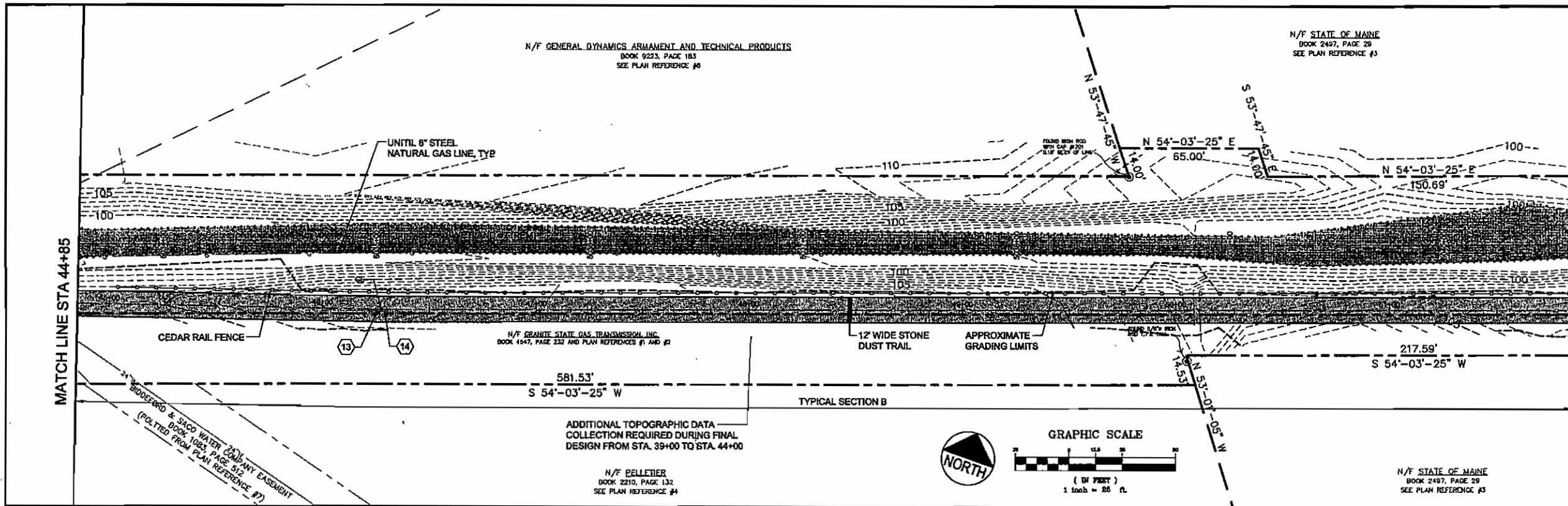
EASTERN TRAIL  
 SACO (THORNTON ACADEMY) TO OLD ORCHARD  
 BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00  
 TITLE SHEET

SHEET NUMBER  
**6**  
 OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

DI DeLUCA-HOFFMAN ASSOCIATES, INC.  
 178 MAIN STREET, SUITE 6  
 SOUTH PORTLAND, ME 04106  
 207.776.1121  
 WWW.DELUCAHOFFMAN.COM





**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
APPROVED	
COMMISSIONER	CHIEF ENGINEER

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	JOEL KITTREDGE
DESIGNER	DHAN
CONSULTANT	DHAN
PROJECT RESIDENT	
CONTRACTOR	

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

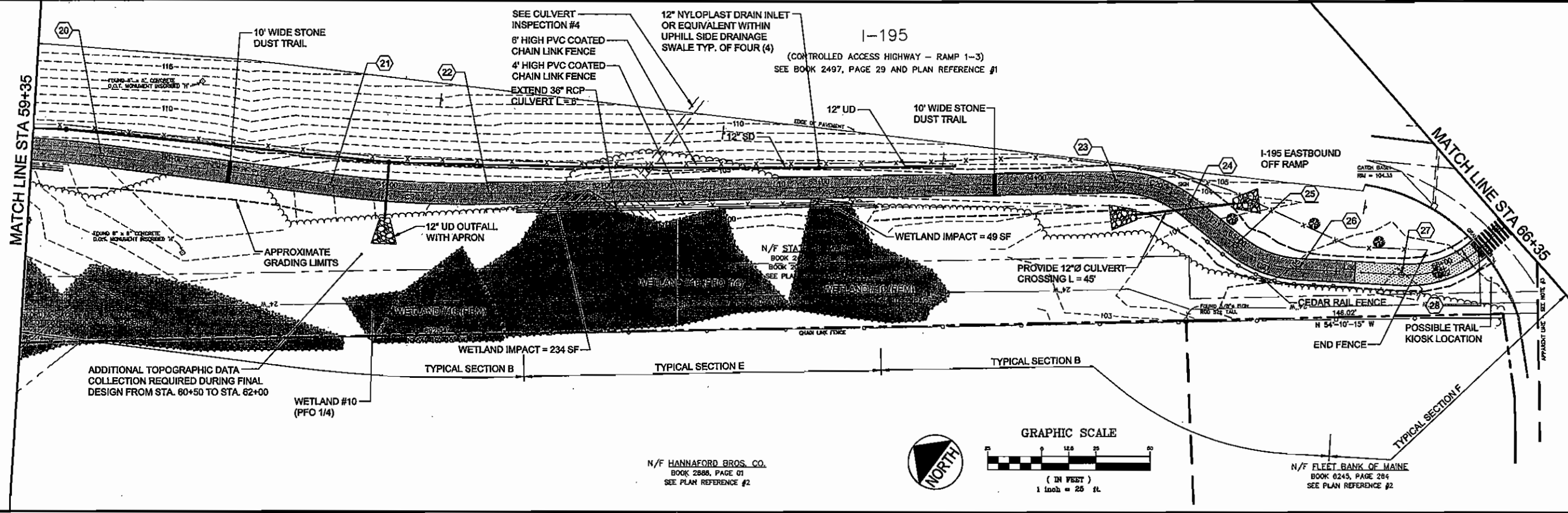
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PRELIMINARY NOT FOR CONSTRUCTION II.13.09



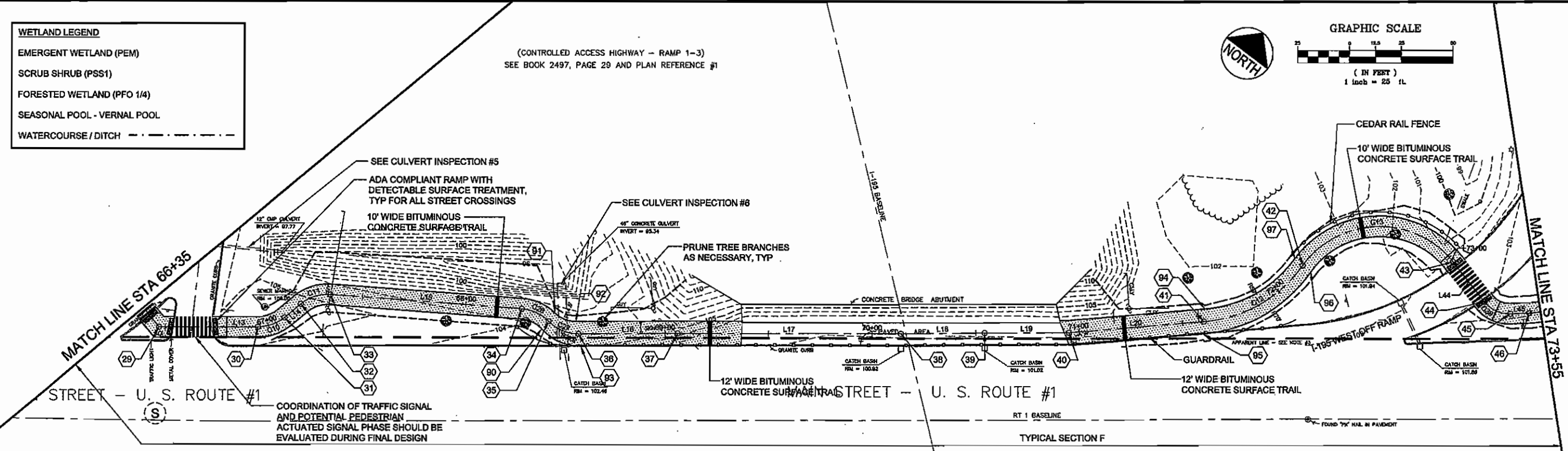
SHEET NUMBER  
**7**  
OF 21





**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH



STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED

COMMISSIONER  
CHIEF ENGINEER

SIGNATURE  
P.E. NUMBER  
DATE

MULTIMODAL  
PROJECT MANAGER  
DESIGNER  
CONSULTANT  
PROJECT RESIDENT  
PROJECT RESIDENT  
CONTRACTOR

JOEL KITTRIDGE  
DHA  
DHA

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

TITLE SHEET

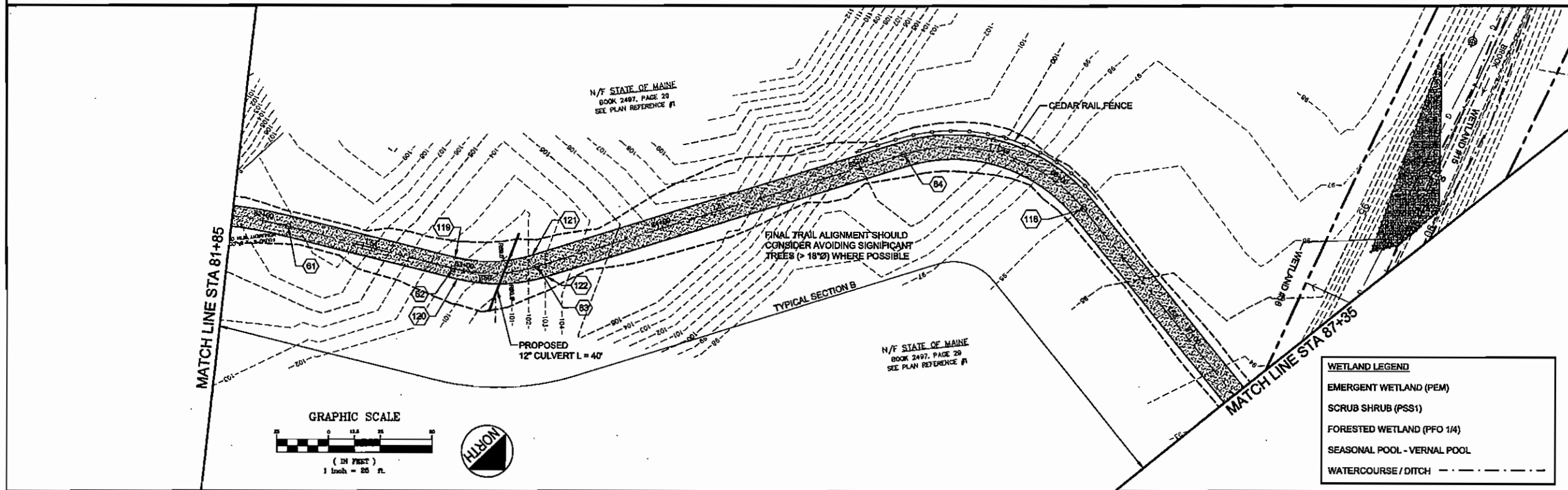
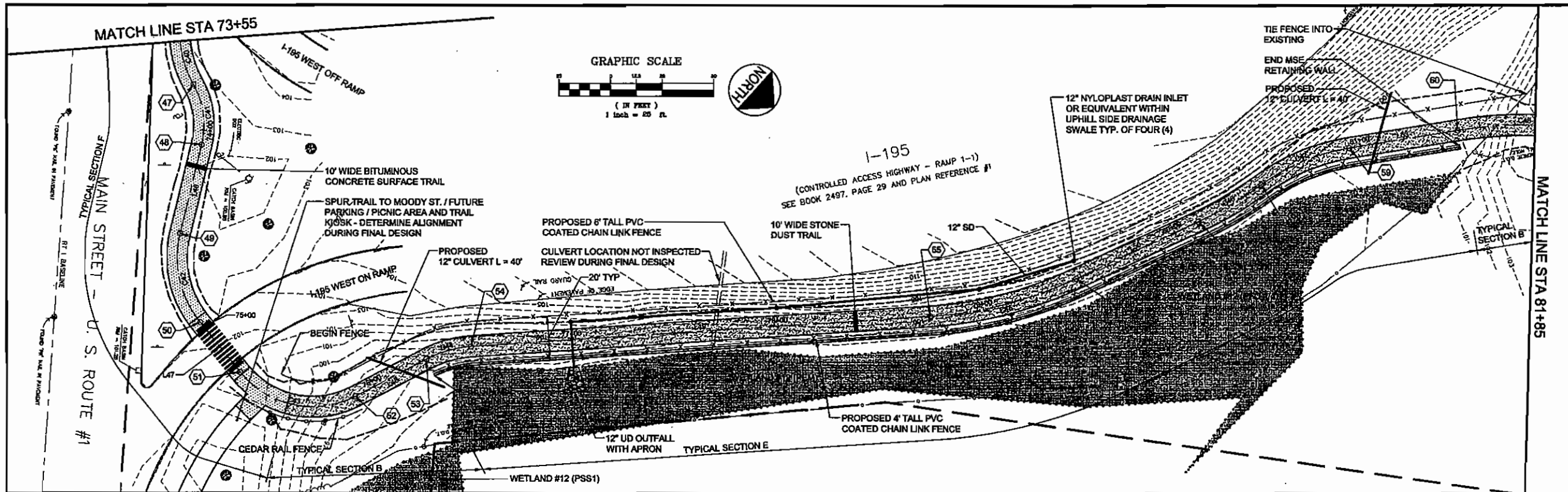
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PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 9  
SOUTH PORTLAND, ME 04106  
207.775.1121  
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8  
OF 21





**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

APPROVED

COMMISSIONER: \_\_\_\_\_  
CHIEF ENGINEER: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_  
P.E. NUMBER: \_\_\_\_\_  
DATE: \_\_\_\_\_

MULTIMODAL: \_\_\_\_\_  
PROGRAM: \_\_\_\_\_  
PROJECT MANAGER: JOEL WITREUXE  
DESIGNER: DAN  
CONSULTANT: DHA  
PROJECT RESIDENT: \_\_\_\_\_  
CONTRACTOR: \_\_\_\_\_

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

**TITLE SHEET**

SHEET NUMBER

9

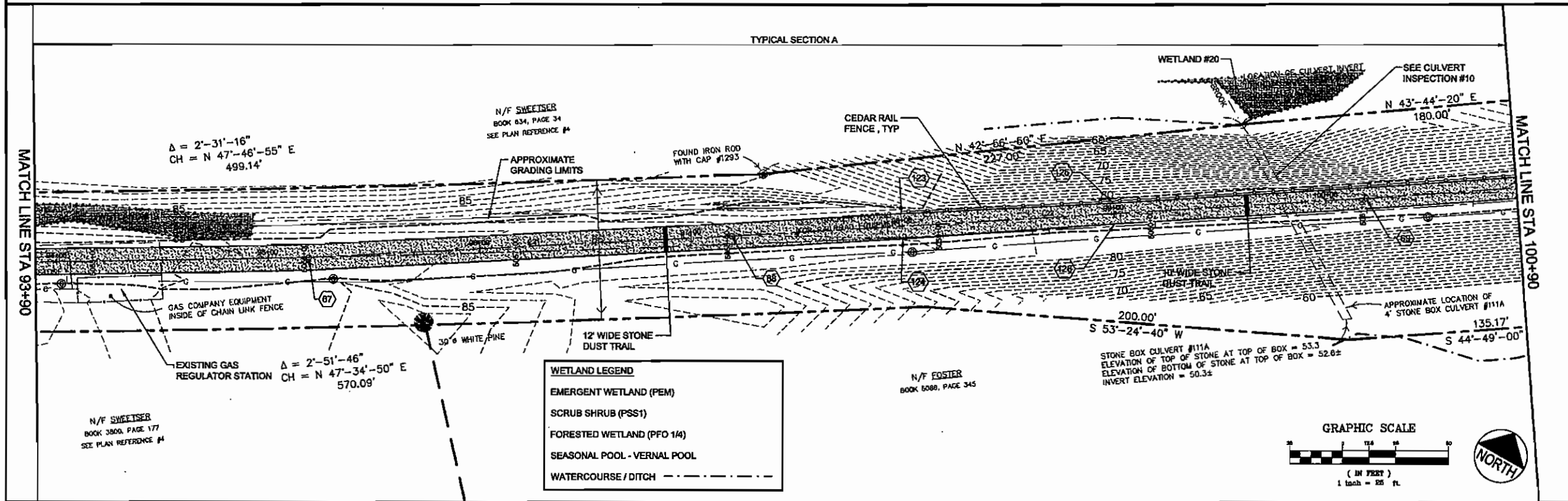
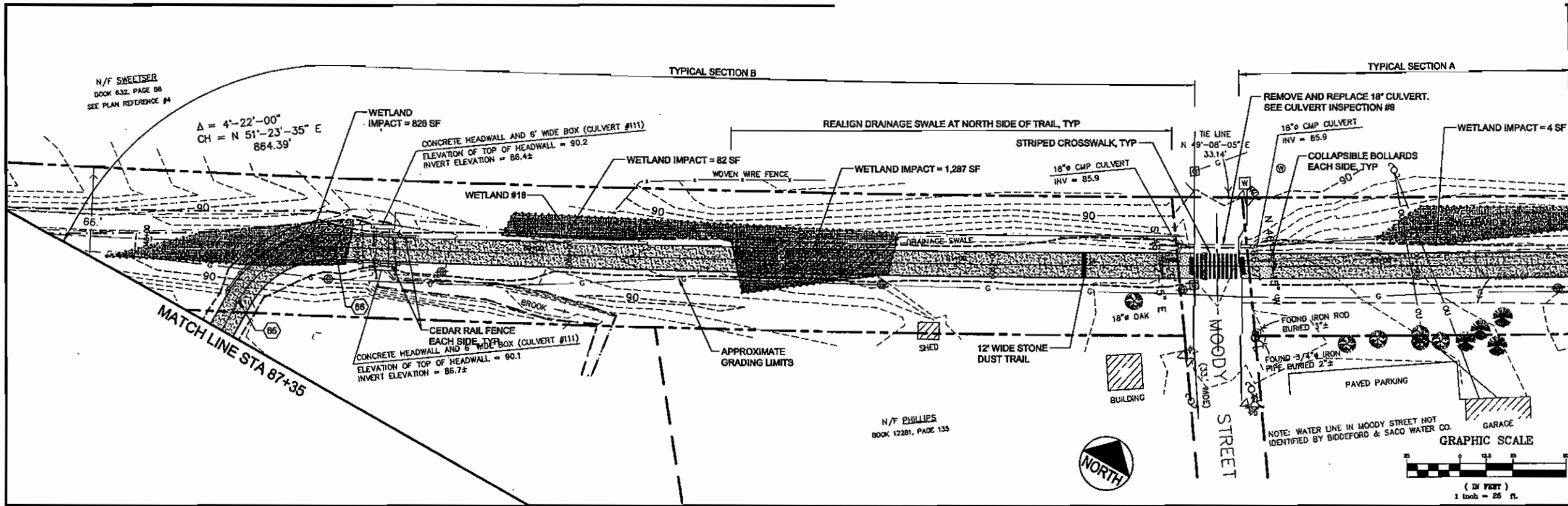
OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

DH DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MARK STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
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G:\1989 - Eastern Trail Saco-OldOrchard\CONCEPT\1289-pp.dwg, 73+55-87+35, 11/13/2009 3:29:56 PM, cwh/teresa





STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
APPROVED	
COMMISSIONER	CHIEF ENGINEER
MATCH LINE STA 93+90	
SIGNATURE	DATE
P.E. NUMBER	

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	JOEL WITTRIDGE
DESIGNER	DHAI
CONSULTANT	DHAI
PROJECT RESIDENT	
CONTRACTOR	
EASTERN TRAIL	
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLEN MILLS ROAD) PIN # 13340.00	
TITLE SHEET	
SHEET NUMBER	

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

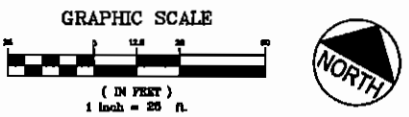
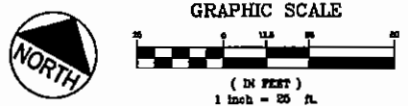
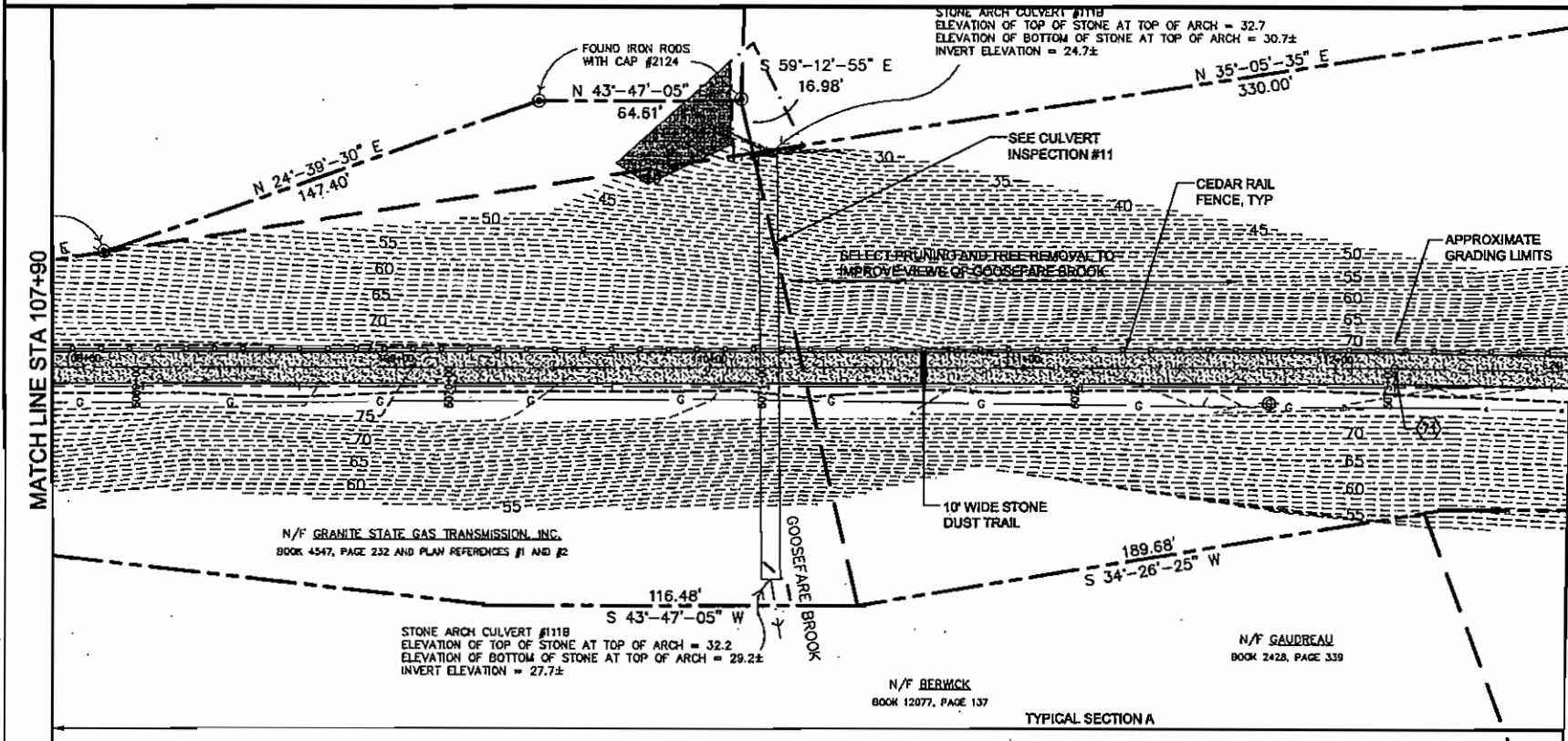
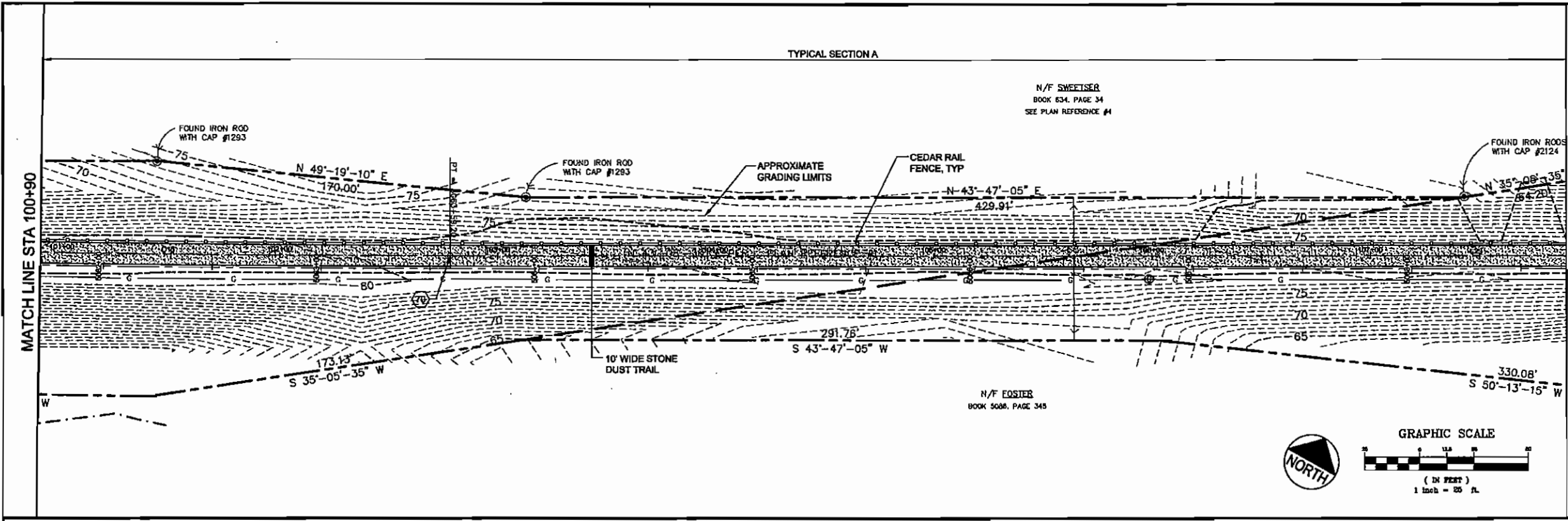
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DeLUCA-HOFFMAN ASSOCIATES, INC.  
170 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
WWW.DELUCAHOFFMAN.COM

6/12/09 - Eastern Trail Saco-Old Orchard Conceptual Design - 11/13/2009 3:32:43 PM, dwh/mtm



G:\2649 - Eastern Trail Sub-COBS\DWG\CONCEPT\2649-59.dwg, 100-99-113-75, 11/13/2009 3:35:53 PM, cwh/abm/uz



**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED

COMMISSIONER  
CHIEF ENGINEER

PROJECT INFORMATION	MULTIMODAL
PROGRAM	JOEL KITTREDGE
PROJECT MANAGER	DHAI
DESIGNER	DHAI
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	

**EASTERN TRAIL**  
SACC (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLEN MILLS ROAD) PIN # 13340.00

SHEET NUMBER

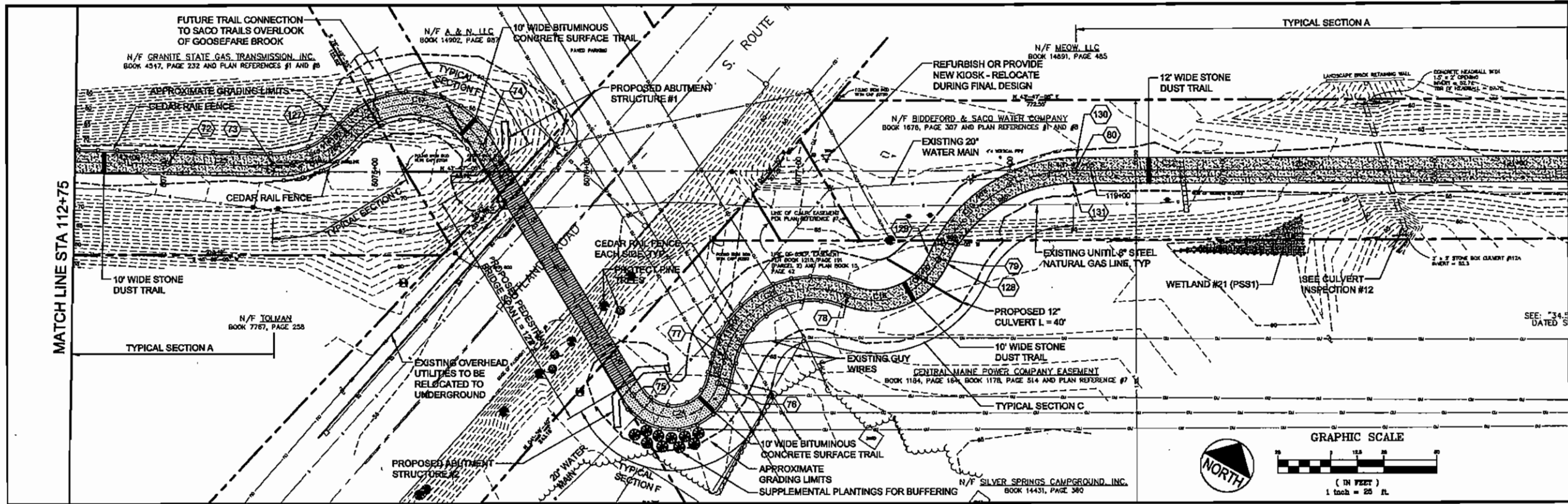
**11**  
OF 21

PRELIMINARY NOT FOR CONSTRUCTION II.13.09

**DH** DeLUCA-HOFFMAN ASSOCIATES, INC.  
178 BAHN STREET, SUITE 3  
SOUTH PORTLAND, ME 04106  
207.775.1121  
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G:\2669 - Eastern Trail Saco-COR\DWG\CONCEPT\2669-EP.dwg, 11/13/2009 3:37:16 PM, cwh/mam



MATCH LINE STA 112+75

MATCH LINE STA 121+25

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

APPROVED

COMMISSIONER

CHIEF ENGINEER

PROJECT INFORMATION

PROGRAM: MULTIMODAL

PROJECT MANAGER: JOEL KITTREDGE

DESIGNER: DHM

CONSULTANT: DHM

PROJECT RESIDENT: DHM

CONTRACTOR: DHM

SIGNATURE

P.L. NUMBER

DATE

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

**TITLE SHEET**

SHEET NUMBER

**12**

OF 21

**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

**DH** DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.275.1121  
WWW.DELUCAHOFFMAN.COM

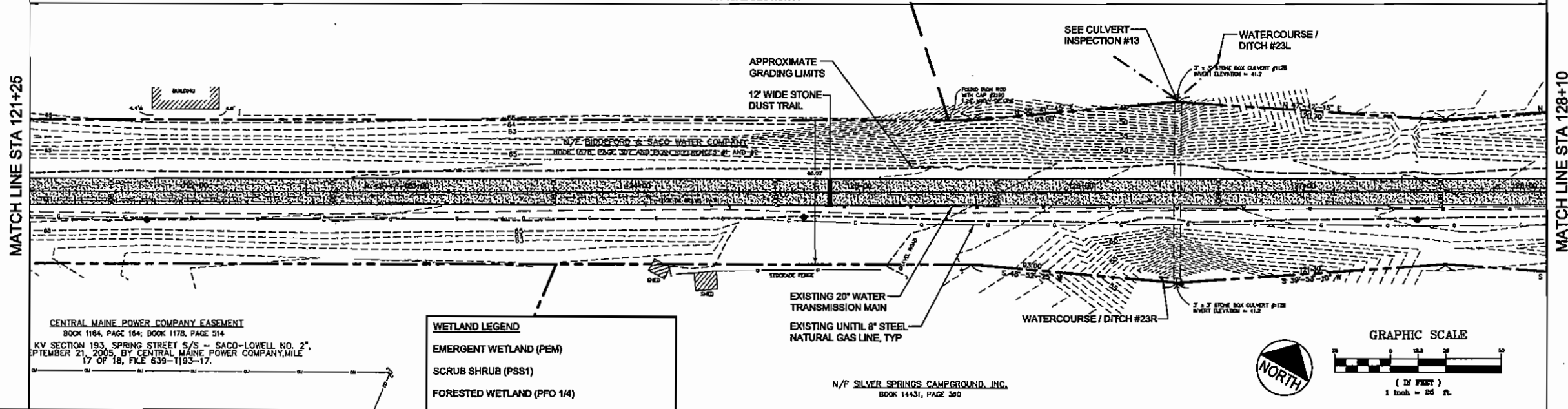
PRELIMINARY NOT FOR CONSTRUCTION 11.13.09



N/F MEADOW, LLC  
 BOOK 14691, PAGE 485  
 SEE: "PLAN SHOWING LAND OF FLORENCE & ALCIDE COTE",  
 DATED SEPTEMBER 8, 1949, BY LIBBY & DOW.

N/F LOMBARD  
 BOOK 3232, PAGE 117  
 BOOK 729, PAGE 395

TYPICAL SECTION A

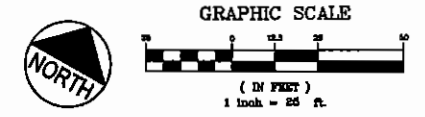


CENTRAL MAINE POWER COMPANY EASEMENT  
 BOOK 1184, PAGE 164; BOOK 1178, PAGE 314  
 KV SECTION 193, SPRING STREET S/S - SACO-LOWELL NO. 2,  
 SEPTEMBER 21, 2005, BY CENTRAL MAINE POWER COMPANY, MILE  
 17 OF 18, FILE 639-1193-17.

**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

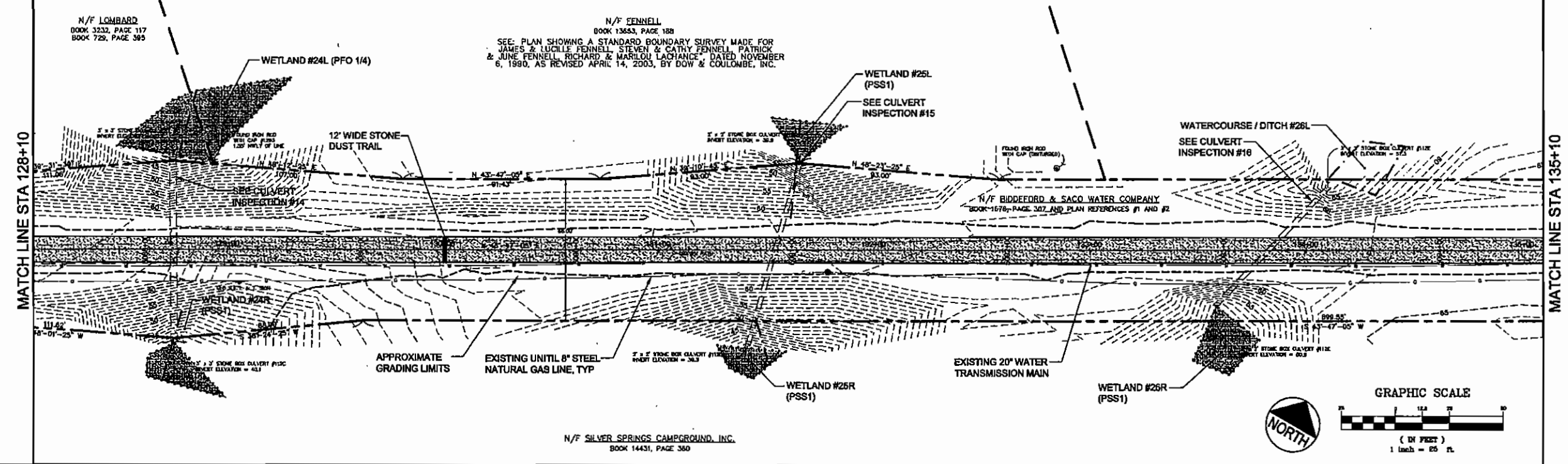
N/F SILVER SPRINGS CAMPGROUND, INC.  
 BOOK 14431, PAGE 360



N/F LOMBARD  
 BOOK 3232, PAGE 117  
 BOOK 729, PAGE 395

N/F FENNEL  
 BOOK 13653, PAGE 188  
 SEE: PLAN SHOWING A STANDARD BOUNDARY SURVEY MADE FOR  
 JAMES & LUCILLE FENNEL, STEVEN & CATRY FENNEL, PATRICK  
 & JUNE FENNEL, RICHARD & MARILOU LACHANCE, DATED NOVEMBER  
 6, 1990, AS REVISED APRIL 14, 2003, BY DOW & COULONBE, INC.

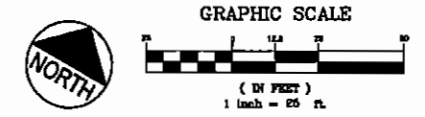
TYPICAL SECTION A



MATCH LINE STA 128+10

MATCH LINE STA 135+10

N/F SILVER SPRINGS CAMPGROUND, INC.  
 BOOK 14431, PAGE 360



STATE OF MAINE  
 DEPARTMENT OF TRANSPORTATION  
 APPROVED

COMMISSIONER:  
 CHIEF ENGINEER:

MULTIMODAL	PROGRAM	PROJECT MANAGER	DESIGNER	CONSULTANT	PROJECT RESIDENT	CONTRACTOR
		JOEL WITTRIDGE	DAVA	DAVA		

**EASTERN TRAIL**  
 SACO (THORNTON ACADEMY) TO OLD ORCHARD  
 BEACH (MILLEN MILLS ROAD) PIN # 13340.00

SHEET NUMBER

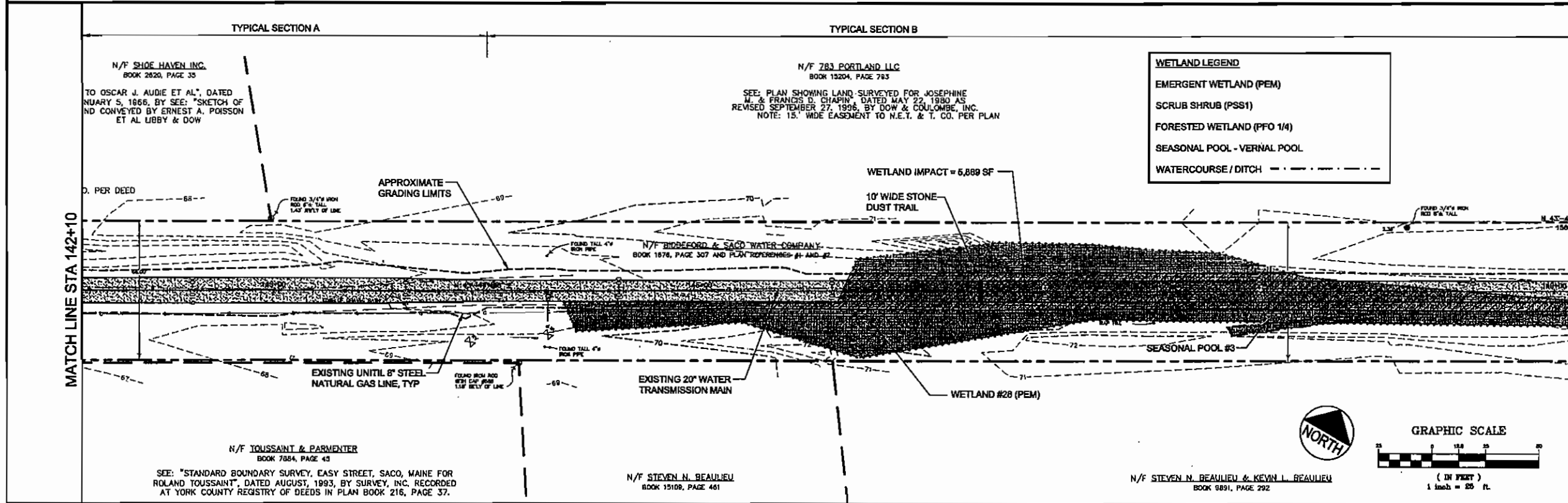
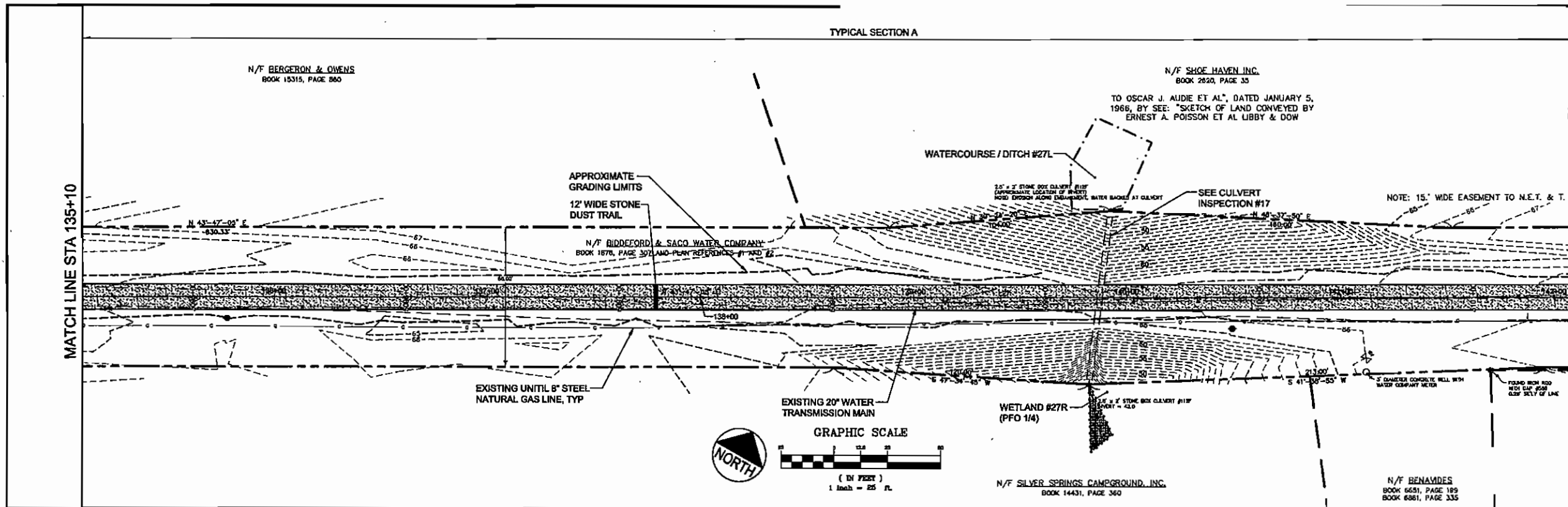
**13**  
 OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

**DH** DeLUCA-HOFFMAN ASSOCIATES, INC.  
 778 MAIN STREET, SUITE 8  
 SOUTH PORTLAND, ME 04106  
 207.778.1121  
 WWW.DELUCAHOFFMAN.COM

G:\2869 - Eastern Trail Saco-Old Orchard\CONCEPT\2869-SP.dwg, 12/14/2009 3:46:00 PM, cwh/mtm/ab





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APPROVED	
COMMISSIONER:	CHIEF ENGINEER:
SIGNATURE	DATE
P.E. NUMBER	

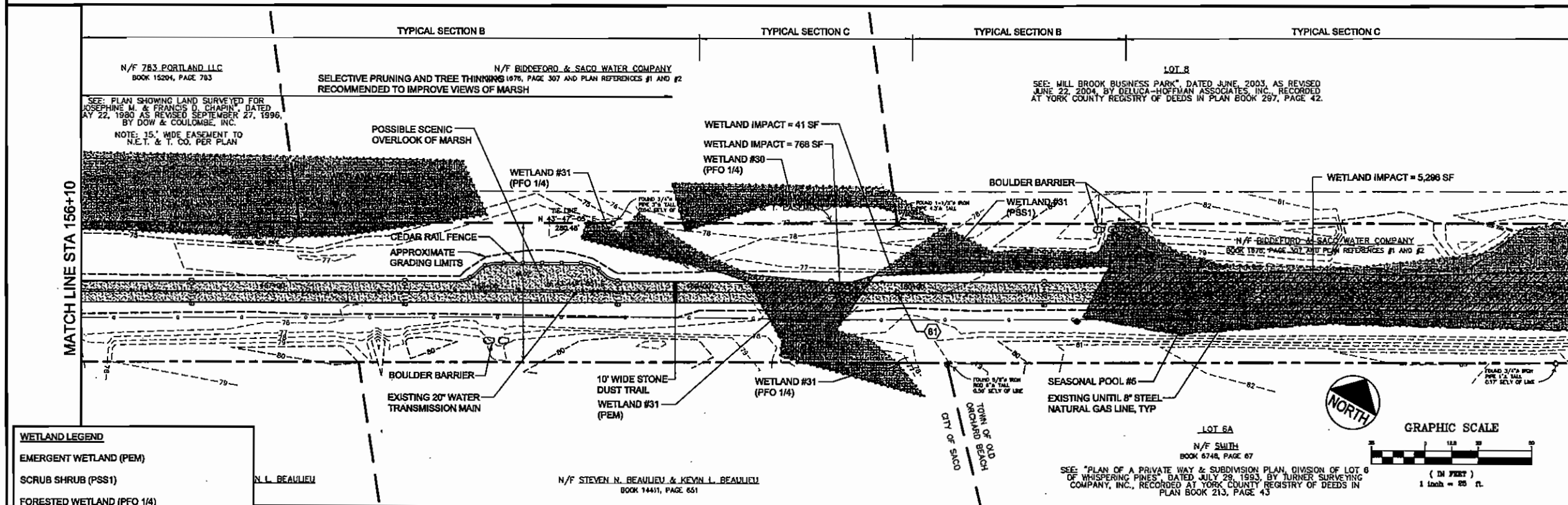
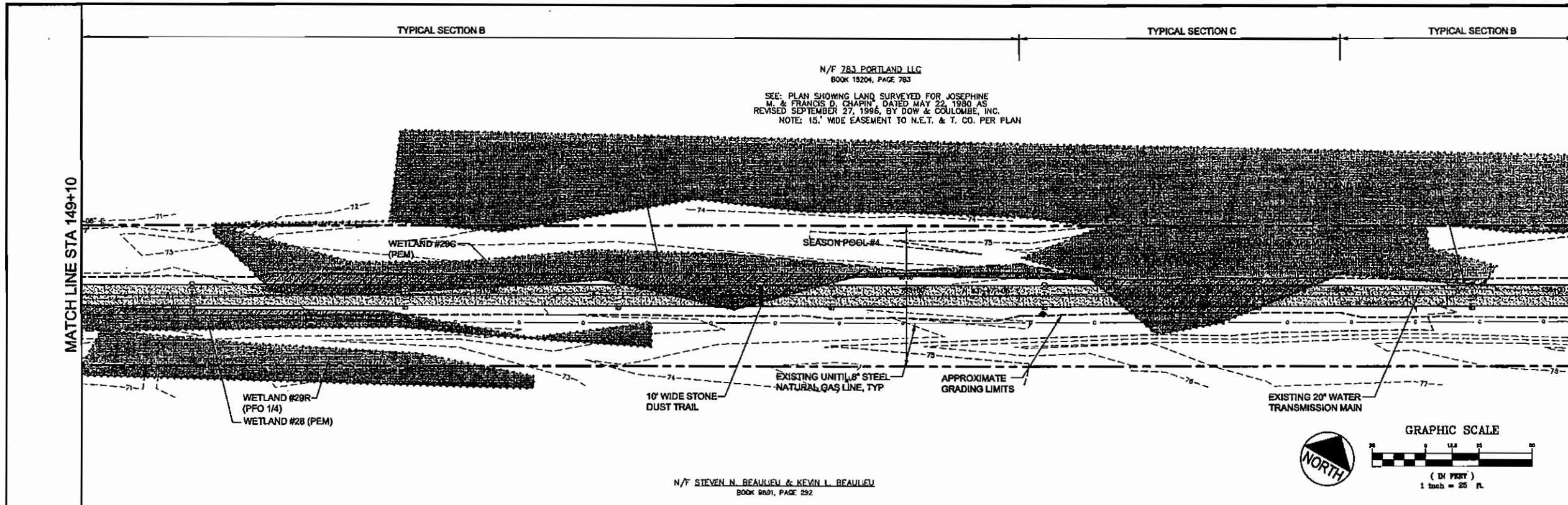
PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	JOEL KITTRIDGE
DESIGNER	DNA
CONSULTANT	DNA
PROJECT RESIDENT	
CONTRACTOR	
EASTERN TRAIL SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00	
TITLE SHEET	
SHEET NUMBER	

14  
OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

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**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

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778 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
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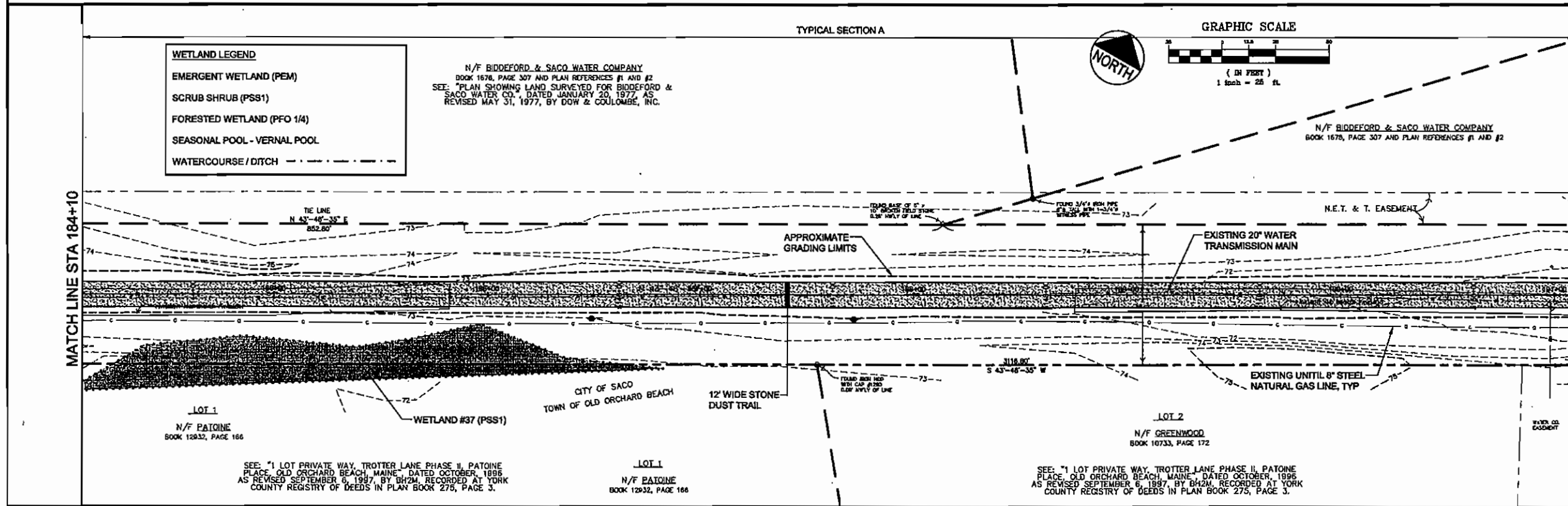
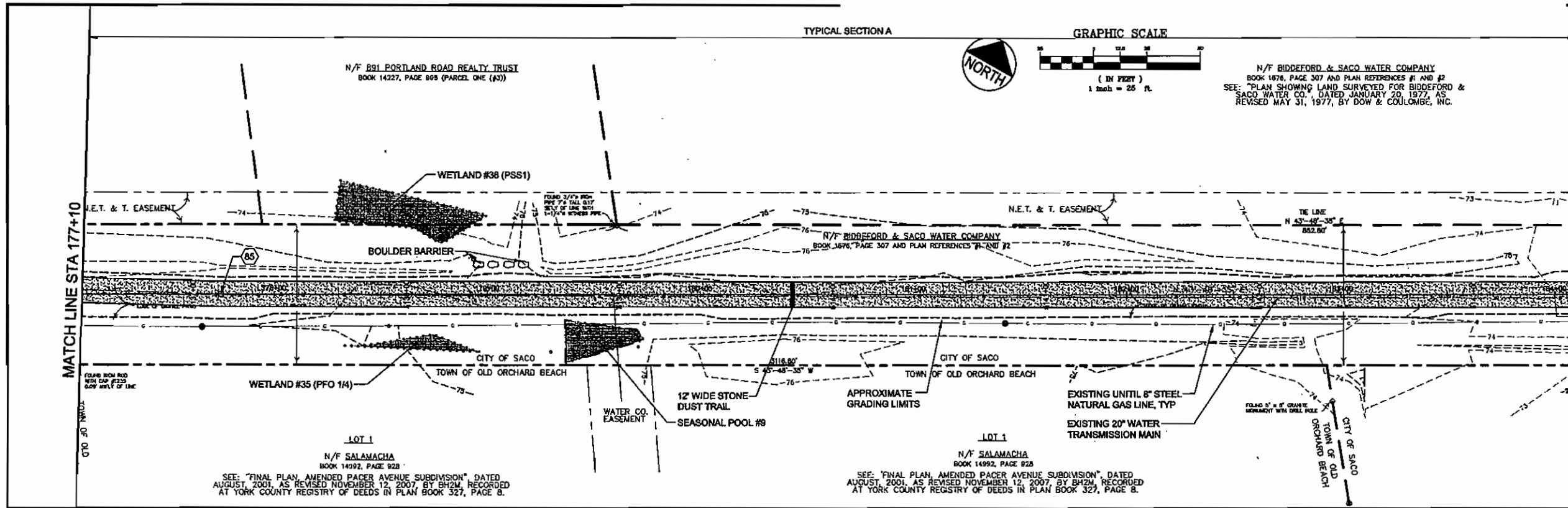
STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
APPROVED	
COMMISSIONER	CHIEF ENGINEER
SIGNATURE	DATE
P.E. NUMBER	DATE
PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	JOEL KITTRIDGE
DESIGNER	DHA
CONSULTANT	DHA
PROJECT RESIDENT	PROJECT RESIDENT
CONTRACTOR	CONTRACTOR
EASTERN TRAIL SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00	
TITLE SHEET	
SHEET NUMBER	
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OF 21	

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STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED

COMMISSIONER:  
CHIEF ENGINEER:

MULTIMODAL  
PROGRAM  
PROJECT MANAGER  
DESIGNER  
CONSULTANT  
PROJECT RESIDENT  
CONTRACTOR

EASTERN TRAIL  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

TITLE SHEET

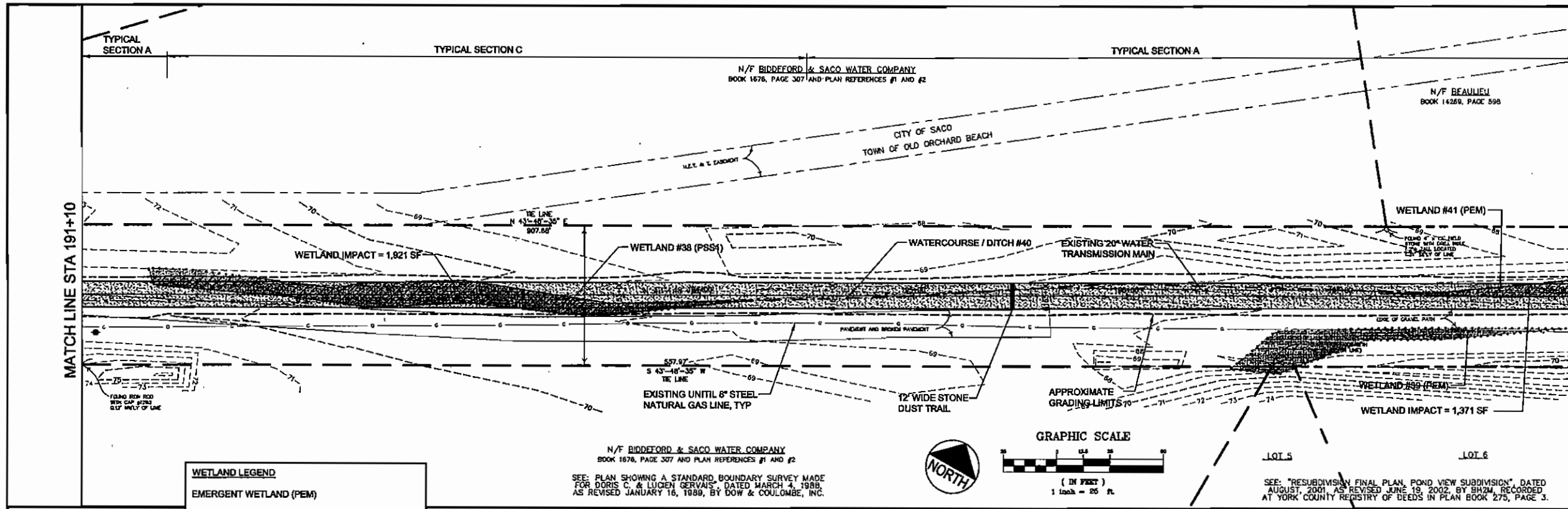
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PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

DII DeLUCA-HOFFMAN ASSOCIATES, INC.  
178 MAIN STREET, SUITE 2  
SOUTH PORTLAND, ME 04106  
207.775.1121  
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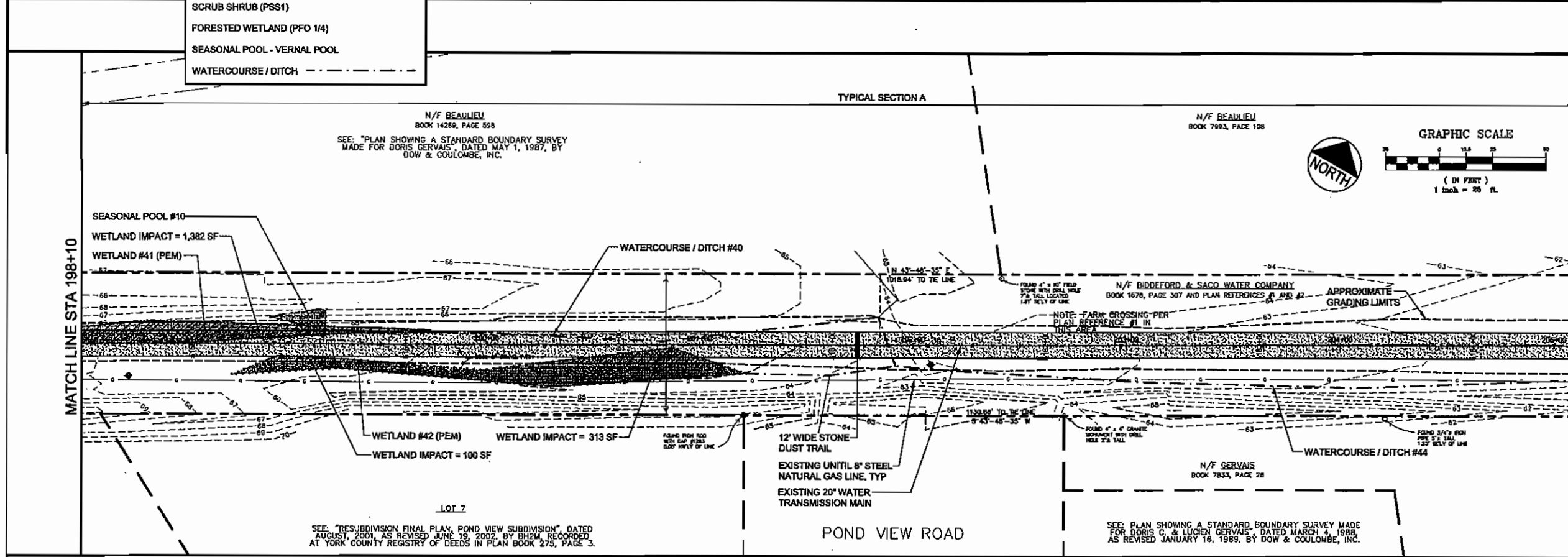
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**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (PSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH



STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED

SIGNATURE  
P.E. NUMBER  
DATE

PROJECT INFORMATION  
PROGRAM  
PROJECT MANAGER  
DESIGNER  
CONSULTANT  
PROJECT RESIDENT  
CONTRACTOR

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

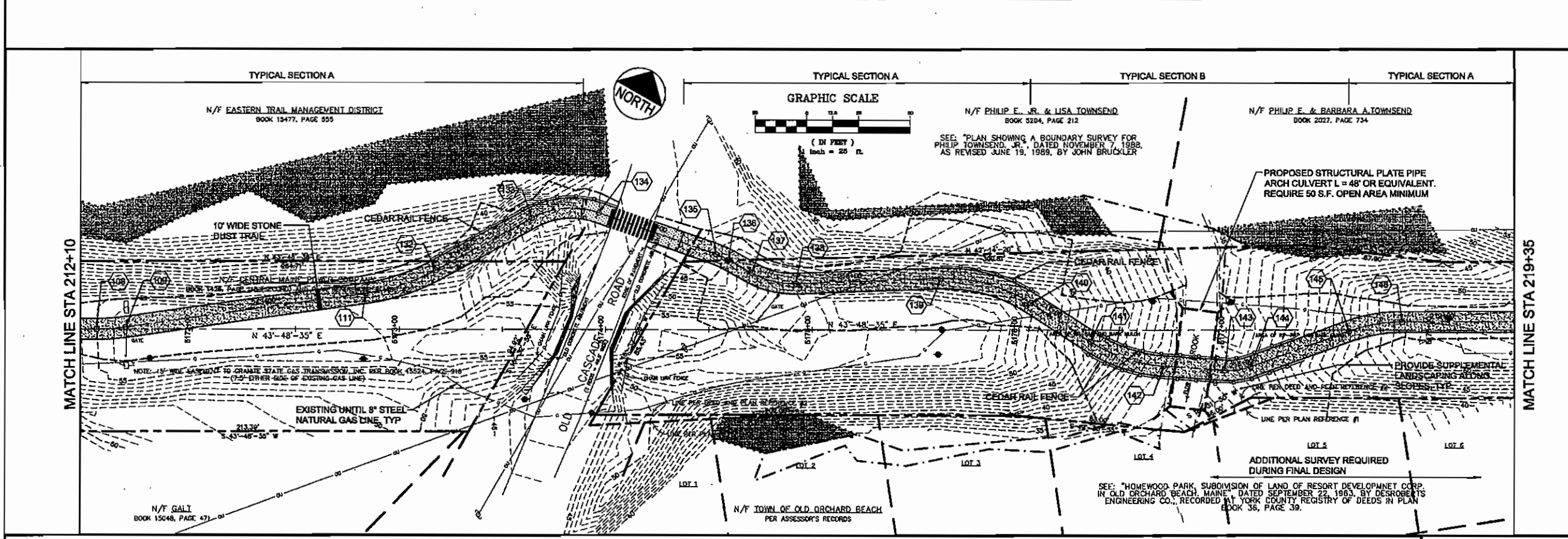
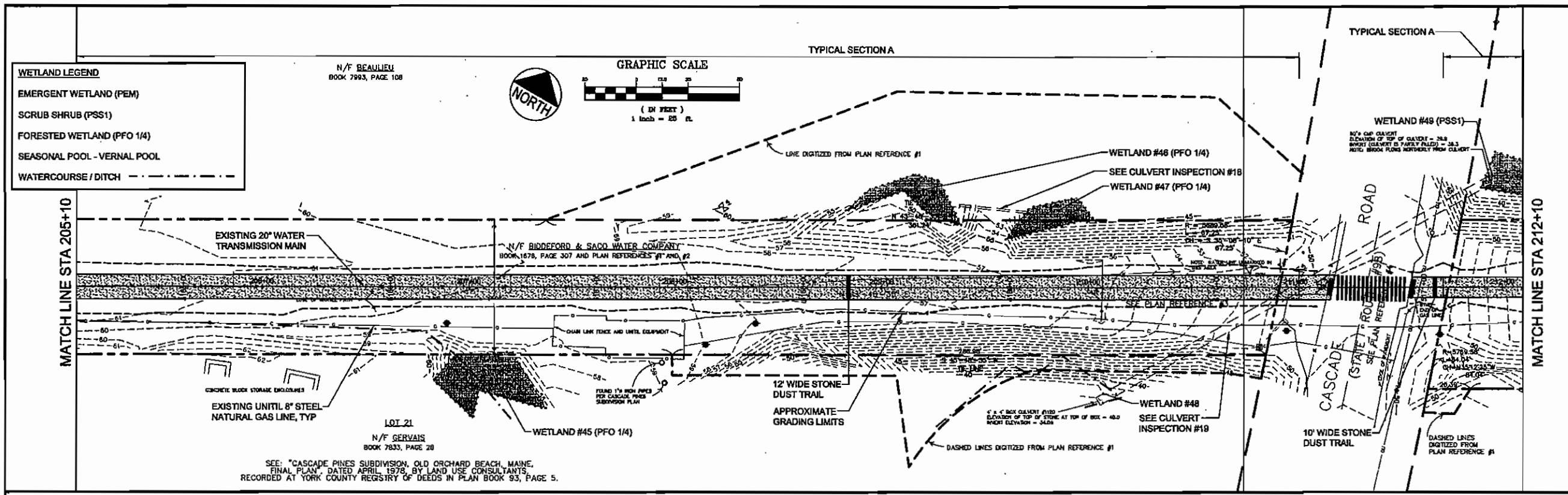
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OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

**DH** DeLUCA-HOFFMAN ASSOCIATES, INC.  
779 MAHAN STREET, SUITE 6  
SOUTH PORTLAND, ME 04106  
207.775.1121  
WWW.DELUCAHOFFMAN.COM

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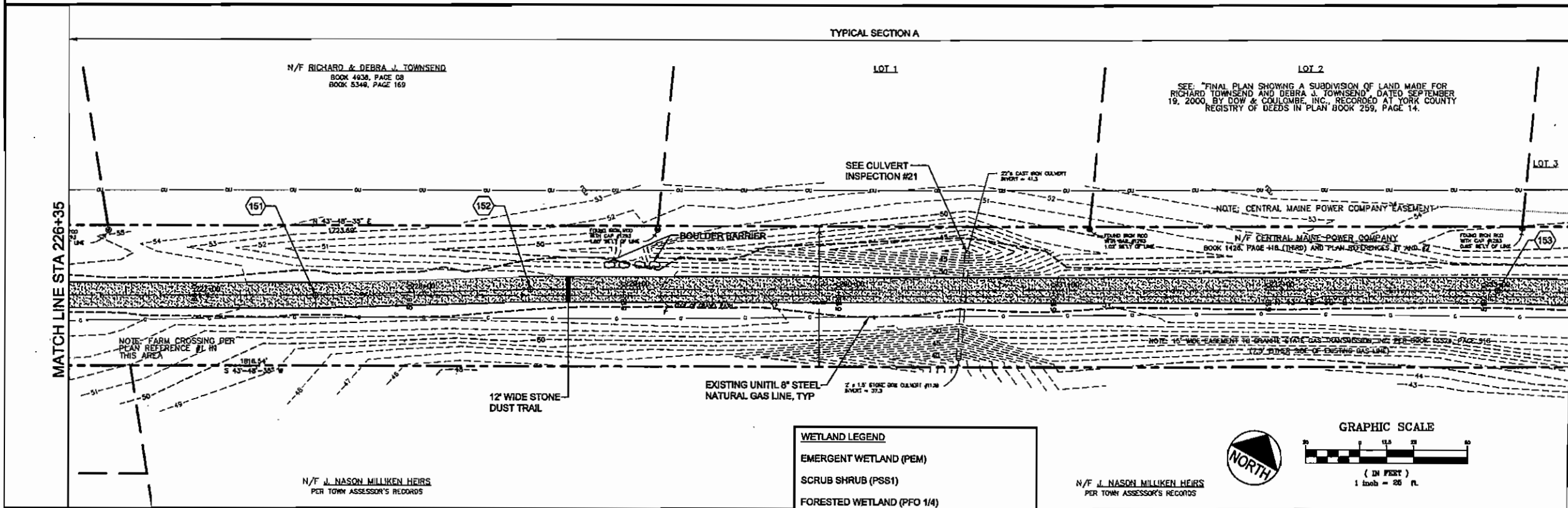
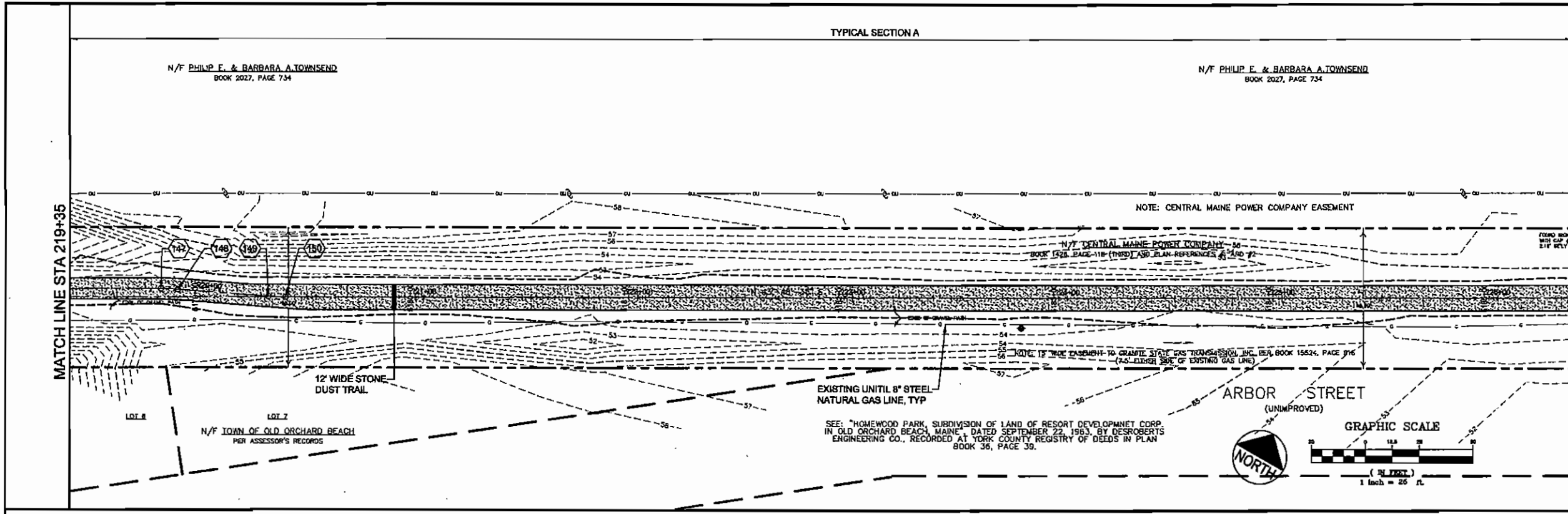


STATE OF MAINE		APPROVED	
DEPARTMENT OF TRANSPORTATION		COMMISSIONER	
SIGNATURE		DATE	
MULTIMODAL		PROJECT RESIDENT	
PROGRAM		CONTRACTOR	
PROJECT MANAGER		PROJECT RESIDENT	
DESIGNER		CONTRACTOR	
CONSULTANT		CONTRACTOR	
PROJECT RESIDENT		CONTRACTOR	
CONTRACTOR		CONTRACTOR	
EASTERN TRAIL			
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00			
TITLE SHEET			
SHEET NUMBER			
19			
OF 21			

PRELIMINARY NOT FOR CONSTRUCTION II.13.09

DeLUCA-HOFFMAN ASSOCIATES, INC.  
779 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.778.1131  
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STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
APPROVED	
COMMISSIONER:	CHIEF ENGINEER:
SIGNATURE	DATE
P.E. NUMBER	

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	JOEL KITTREDGE
DESIGNER	DMA
CONSULTANT	DMA
PROJECT RESIDENT	
CONTRACTOR	

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

**TITLE SHEET**

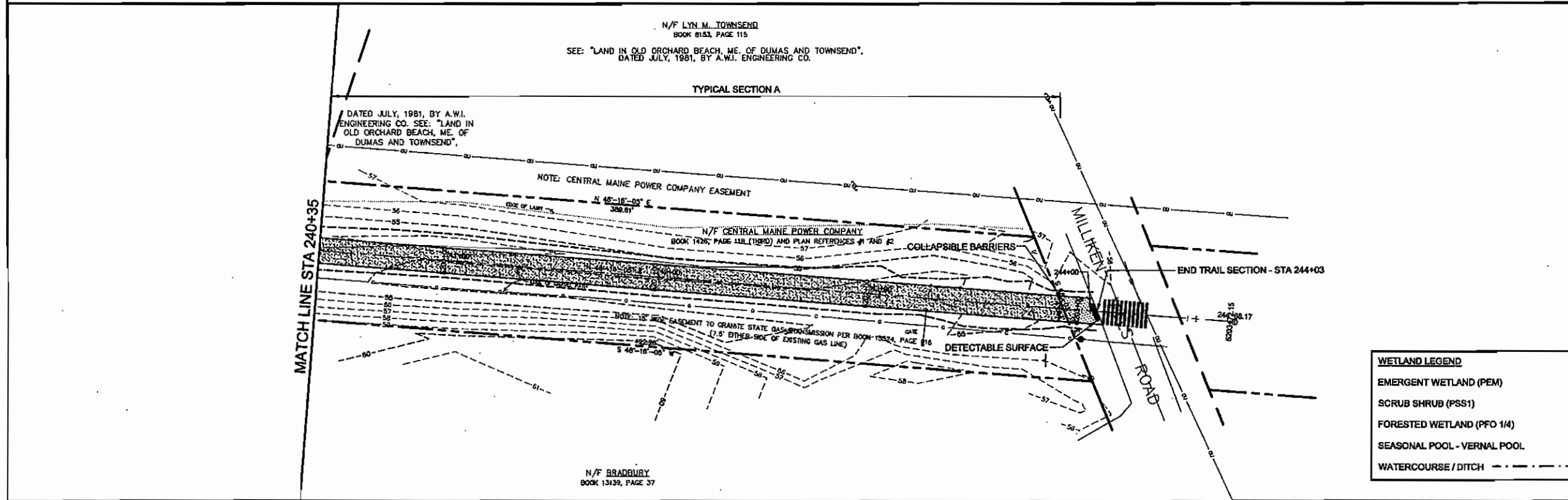
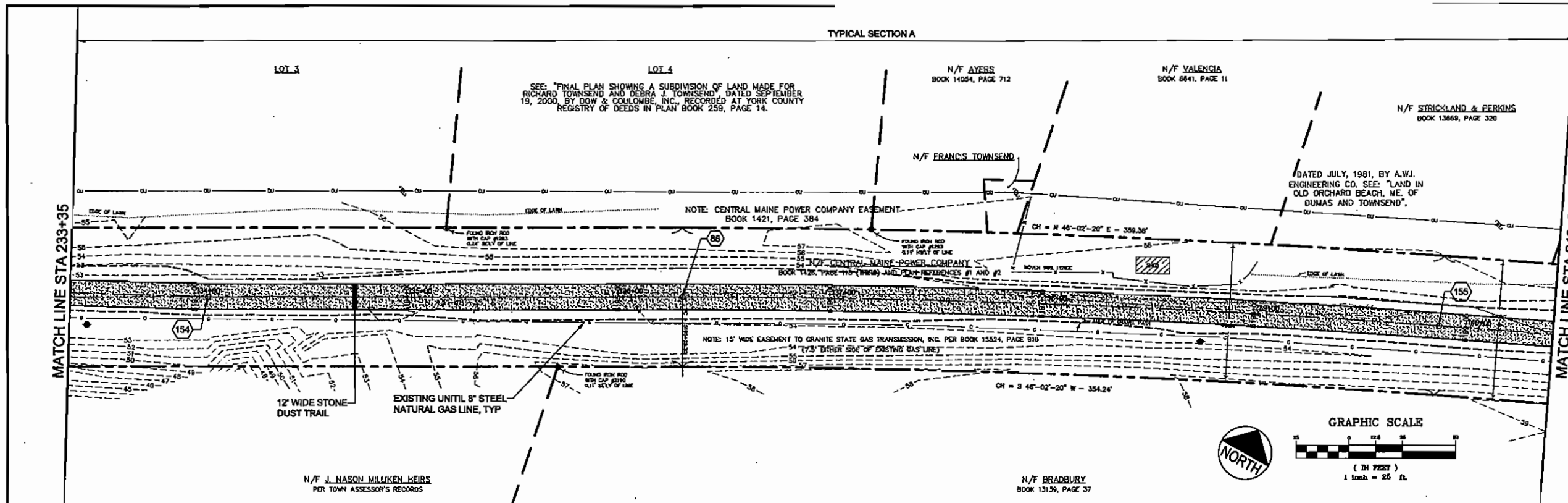
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OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

WETLAND LEGEND	
EMERGENT WETLAND (PEM)	-----
SCRUB SHRUB (PSS1)	-----
FORESTED WETLAND (PFO 1/4)	-----
SEASONAL POOL - VERNAL POOL	-----
WATERCOURSE / DITCH	-----

**DH** DeLUGA-HOFFMAN ASSOCIATES, INC.  
779 MARK STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.776.1121  
WWW.DELUGAHOFFMAN.COM





**WETLAND LEGEND**

- EMERGENT WETLAND (PEM)
- SCRUB SHRUB (FSS1)
- FORESTED WETLAND (PFO 1/4)
- SEASONAL POOL - VERNAL POOL
- WATERCOURSE / DITCH

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED

SIGNATURE  
P.E. NUMBER  
DATE

PROJECT INFORMATION  
PROGRAM  
PROJECT MANAGER  
DESIGNER  
CONSULTANT  
PROJECT RESIDENT  
CONTRACTOR

**EASTERN TRAIL**  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

SHEET NUMBER

**21**  
OF 21

PRELIMINARY NOT FOR CONSTRUCTION 11.13.09

**DH**  
DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
WWW.DELUCAHOFFMAN.COM

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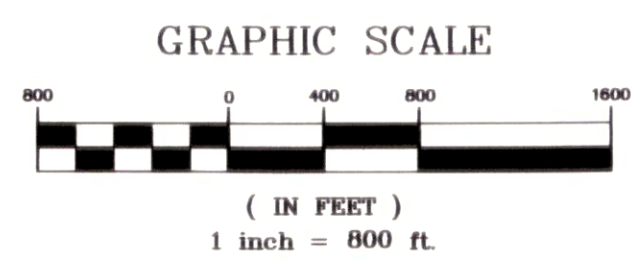
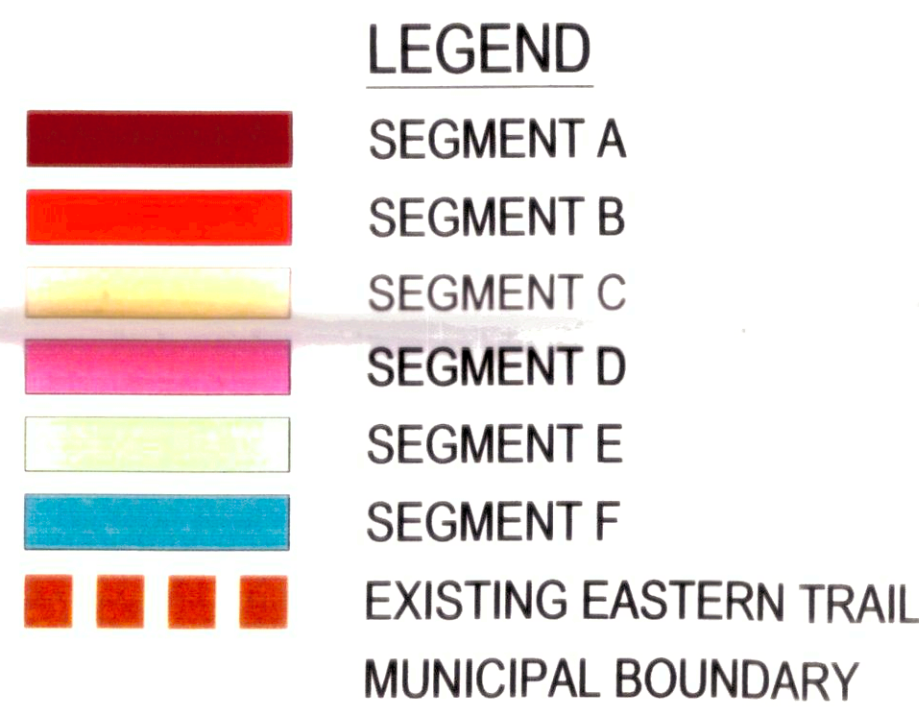
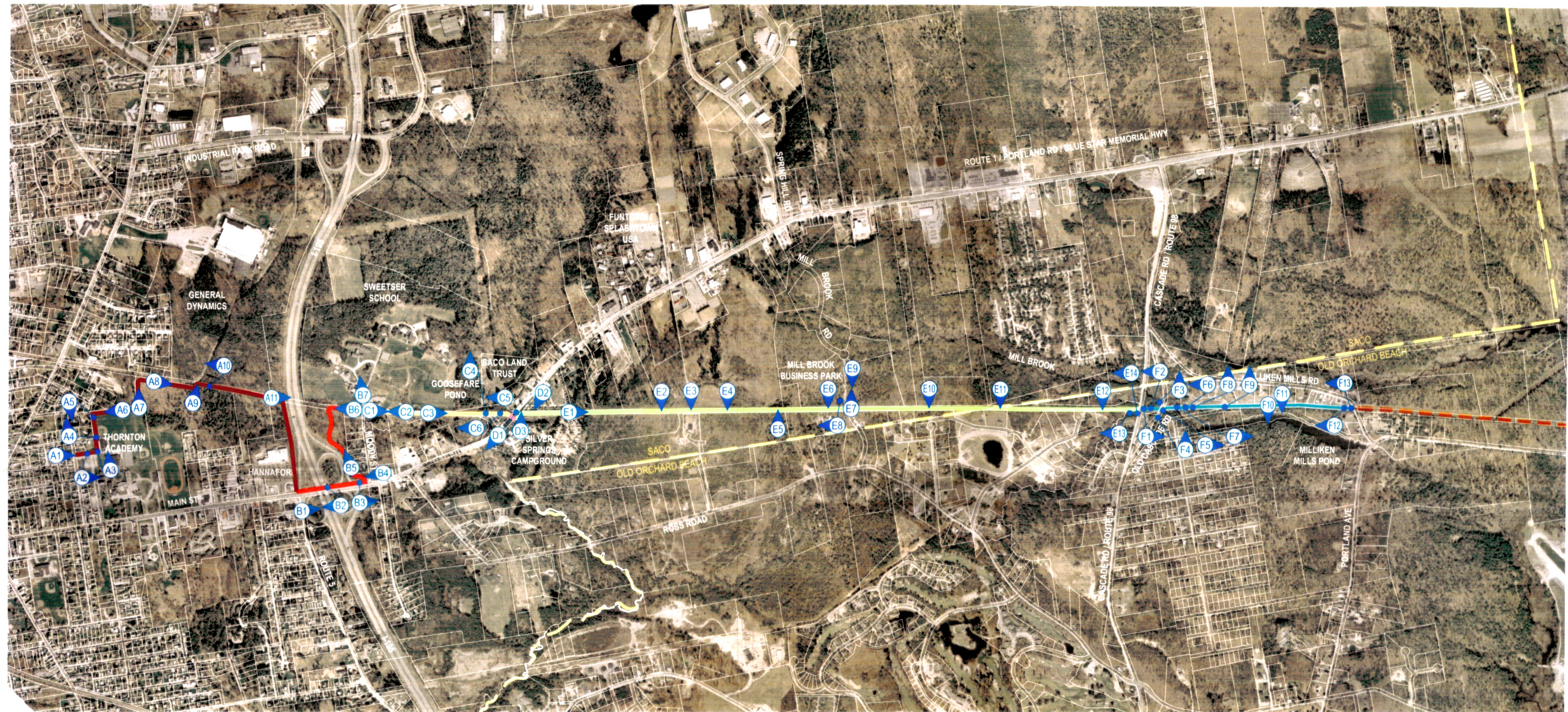


## **5.0 STUDY AREA PHOTOGRAPHS**

### **5.1 Overview**

Figure 2 – Photo Map Key provides an overall guide to the locations and descriptions given to the features and areas photographed. Specific photographs appear following this section and also within Appendix I, Aesthetic Improvements, Connectivity & Signage, to illustrate the features and topics addressed.





- A1: Trailhead: Clark Street & existing parking area
- A2: Trail section, looking north, between residential abutters and Thornton Academy parking
- A3: Trail section, looking west, between residential abutters and Thornton Academy parking
- A4: Trail section, entering Thornton Academy athletic fields
- A5: Trail section, looking east along Thornton Academy athletic fields
- A6: Trail section looking south, along elevated edge of Thornton Academy athletic fields
- A7: Trail junction entering forested section along Thornton Academy property line
- A8: Trail section along active railroad ROW
- A9: Vernal pool - potential location for interpretive signage
- A10: Trail section, looking south, at junction where trail enters abandoned railroad ROW
- A11: Trail section along top of slope parallel to abandoned railroad ROW
- B1: Trail section, looking north, Route 1 ramp crossings
- B2: Trail section, looking south, passing under I-195 overpass
- B3: Trail section, looking north, along Route 1, considerations for tree removal or pruning of lower branches for visibility
- B4: Potential secondary trailhead parking area at Route 1/Moody Street intersection on MDOT property
- B5: Trail section, looking west, along I-195 connector embankment
- B6: Trail section, looking south, at Moody Street crossing
- B7: Moody Street crossing
- C1: Trail section, looking north, at Moody Street crossing, potential location for parking and wayfinding signage
- C2: Unilt regulator station near Moody Street crossing
- C3: Trail section, looking north, along border of Sweetser School fields
- C4: Looking west, view of Goosefare Pond from elevated section of trail
- C5: View of Goosefare Pond from Saco Valley Land Trust property adjacent to trail
- C6: Trail section, looking south, along elevated section above Goosefare Pond
- D1: Route 1, looking south. Location of potential pedestrian bridge overpass
- D2: Vegetated buffer to be retained along southeast side of potential pedestrian bridge overpass
- D3: Location of existing kiosk on southeast side of Route 1 crossing

- E1: Trail section, looking north, along forested section adjacent to the Silver Springs Campground abutting property
- E2: Deep ravine with older growth pines and oaks with stream on east side of trail
- E3: Land use adjacent to trail, on east side, which will require screening
- E4: Example of ATV and private property access trail connection
- E5: View of bog adjacent to trail on west side
- E6: Land use adjacent to trail, on east side, which will require screening
- E7: Looking west to potential connection trail section to Mill Brook Business Park
- E8: Existing alternative trail on Mill Brook Business Park property to avoid large wetland area
- E9: Potential location for bike trail parking and facilities at Mill Brook Business Park
- E10: Example of potential neighborhood connection linkage on east side of trail
- E11: Land use adjacent to trail, on east side, which will require screening
- E12: Land use adjacent to trail, on east side, which will require screening
- E13: Unilt regulator station near Cascade Road crossing
- E14: Trail section, looking south, at Cascade Road crossing
- F1: Trail section, looking north, at Cascade Road crossing
- F2: Elevated portion of trail between Cascade Road and Old Cascade Road crossings
- F3: Example of ATV access to trail (west side) adjacent to Old Cascade Road crossing
- F4: Old Cascade Road crossing bridge abutments
- F5: Example of steep sections of trail that may require regrading, ramps, railings
- F6: Trail section, looking south, at Mill Brook stream crossing
- F7: Mill Brook Stream crossing streambanks to be revegetated
- F8: Evidence of dumping from adjacent residential properties on the west side of trail
- F9: Land use adjacent to trail, on west side, which will require screening
- F10: Potential trail connection, on east side of trail, to Milliken Mills Basin
- F11: View of Milliken Mills Basin looking north
- F12: View of trail section, looking south, that will benefit from additional screening measures along west side
- F13: Trail head and trail, looking south, from Milliken Mills Road

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

APPROVED

COMMISSIONER:  
CHIEF ENGINEER:

PROJECT INFORMATION	MULTIMODAL	SIGNATURE
PROGRAM	JOEL KITTRIDGE	
PROJECT MANAGER	DHAI	P. E. NUMBER
DESIGNER	DHAI	DATE
CONSULTANT		
PROJECT RESIDENT		
CONTRACTOR		

EASTERN TRAIL  
SACO (THORNTON ACADEMY) TO OLD ORCHARD BEACH (MILLIKEN MILLS ROAD) PIN # 13340.00

PHOTO MAP

FIGURE

2

DeLUCA-HOFFMAN ASSOCIATES, INC.  
778 MAIN STREET, SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
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## **6.0 ENVIRONMENTAL ASSESSMENT DOCUMENTS**

Normandeau Associates has completed environmental review investigations for the following:

- Wetland Resources Delineation and Flagging
- Vernal Pool Survey
- Contacts with State and Federal agencies Regarding Rare, Threatened and Endangered Species
- Environmental Data Base Search

Copies of their reports and findings are contained in Appendices D and F to this Preliminary Design Report.

In general, their findings include the identification of wetland resources through the study area corridor, as well as low-value seasonal pools that provide habitat for vernal pool species. The vernal pool areas do not qualify as habitats of special significance under the MeDEP rules; however, they remain jurisdictional by the Federal agencies.

No rare, threatened or endangered species were identified in the study area, and the environmental data base search uncovered no information suggesting issues related to hazardous materials conditions in the corridor.



## **7.0 TRAIL-STREET CROSSING REPORTS AND CULVERT INSPECTION REPORTS**

Refer to Appendix B for the Trail-Street Crossing Reports and Appendix C for the Culvert Inspection Reports.

At each at-grade road crossing, notes and measurements were made regarding safety and visibility concerns including, but not limited to, enforced speed limits, signage, sight distances from street to trailhead, from trailhead in each direction down the street, from the street down the trail, distances to intersections, lighting, condition of pavement, visibility obstructions, utilities, drainage features, etc.

Similarly, each culvert crossing beneath the existing railroad bed was assessed regarding its condition, function, size, direction of flow, sedimentation, etc.



## **8.0 PRELIMINARY GEOTECHNICAL REPORT**

R. W. Gillespie & Associates, Inc. has performed a preliminary geotechnical investigation for the purpose of evaluating subsurface ground conditions in the vicinity of the proposed U.S. Route 1 bridge crossing. Their findings are presented in the report contained in Appendix H to this Preliminary Design Report.



## **9.0 PRELIMINARY MILL BROOK HYDROLOGIC AND HYDRAULIC ANALYSIS**

DeLuca-Hoffman Associates, Inc. has prepared a preliminary Hydrologic and Hydraulic Analysis of the Mill Brook stream crossing in accordance with the MDOT's Highway Design Guide, Chapter 12, dated January 2008. The purpose of this analysis is to provide the estimated design flow and preliminary crossing structure size for the installation of a new culvert where the proposed Eastern Trail crosses Mill Brook in Old Orchard Beach. This analysis is contained in Appendix G of this report.



**10.0 PRELIMINARY ENGINEER'S OPINION OF COST**

See following spreadsheet.



Quantities by Sheet

Thornton Academy to

Cascade Road

Cascade to

Milliken Mills Road

Station to  
Station

Station to  
Station

Item No.	Description	Unit	ADD'L																Total	Unit Price	Amount from Thornton to Cascade Road	ADD'L			Total	Unit Price	Amount from Cascade Road to Milliken Mills Road	Average Unit Price Pin # 013341.00
			1000	1925	3075	4475	5925	7345	8725	10090	11275	12090	13490	14890	16290	17690	19090	20490				21110	21110	21930				
201.11	Clearing	AC	0.05	0.29	0.8	0.48		0.39	0.03									2.2	\$4,200.00	\$9,240.00					0	\$4,200.00	\$0.00	\$4,200.00
201.12	Selective Clearing and Thinning	AC																0	\$4,500.00	\$0.00				1	\$4,500.00	\$4,500.00	\$4,500.00	
203.20	Common Excavation (includes grubbing)	CY																7650	\$15.00	\$114,750.00				1350	\$15.00	\$20,250.00	\$13.75	
203.24	Common Borrow	CY																1000	\$18.00	\$18,000.00				1500	\$18.00	\$27,000.00	\$17.38	
203.25	Granular Borrow	CY																750	\$20.00	\$15,000.00				250	\$20.00	\$5,000.00	\$0.00	
208.061	Structural Earth Excavation - Drainage and minor structures below grade	CY																0	\$20.00	\$0.00				50	\$20.00	\$1,000.00	\$0.00	
304.09	Aggregate Base Course - Crushed	CY	168	225	274	284	209	242.5	256.2	307	142	415	356	274	384	415	387.5	185.2	4534.4	\$28.00	\$126,963.20	182.9	415	318	915.9	\$28.00	\$25,645.20	\$24.50
304.10	Aggregate Subbase Course - Gravel	CY	336	529	760	812	701	1020	507.5		315		266	760.5	306		272		6585	\$24.00	\$158,040.00	129.6			129.6	\$24.00	\$3,110.40	\$21.25
403.209	Hot Mix Asphalt 9.5 mm HMA	TON	127.8	96			54.5	24.1	4.6		16						2		325	\$200.00	\$65,000.00	6		2.3	8.3	\$200.00	\$1,660.00	\$227.50
411.13	Stone Dust Surface Course	CY		77	206	213	81	152.8	186.3	145	74	205	205	205	205	205	89.5		2454.6	\$28.00	\$68,728.80	86.9	205	155.2	447.1	\$28.00	\$12,518.80	\$24.64
502.219	Structural Concrete, Abutments and Retaining Walls	LS									1							1	\$175,000.00	\$175,000.00				0	\$175,000.00	\$0.00	\$0.00	
509.12	Steel Structural Plate Pipe Arch Culvert at Mill Brook	LS																0	\$150,000.00	\$0.00		1		1	\$150,000.00	\$150,000.00	\$0.00	
530.01	Steel pedestrian Bridge	LS									1							1	\$175,000.00	\$175,000.00				0	\$175,000.00	\$0.00	\$0.00	
603.158	12 inch Culvert Pipe Option III	LF	18			615	484	390			40							1547	\$55.00	\$85,085.00				0	\$55.00	\$0.00	\$0.00	
603.175	18-inch Reinforced Concrete Pipe Class III	LF				10												10	\$75.00	\$750.00				0	\$75.00	\$0.00	\$73.75	
603.179	18-inch Culvert Pipe Option III	LF																40	\$70.00	\$2,800.00				0	\$70.00	\$0.00	\$69.25	
604.14	30 inch catch basin type E	EA	1															1	\$1,500.00	\$1,500.00				0	\$1,500.00	\$0.00	\$0.00	
604.27	Nyloplast 12" drain inlet	EA				7	4	4										15	\$750.00	\$11,250.00				0	\$750.00	\$0.00	\$0.00	
604.19	Adjust CB to grade	EA	1															1	\$800.00	\$800.00				0	\$800.00	\$0.00	\$0.00	
606.611	Timber Guardrail	LF	442				380											822	\$39.00	\$32,058.00				0	\$39.00	\$0.00	\$39.00	
607.163	Chain Link Fence - 4-foot PVC Coated	LF	98			575	170	525										1369	\$23.00	\$31,464.00				0	\$23.00	\$0.00	\$21.50	
607.173	Chain Link Fence - 6 foot PVC Coated	LF				705	653	625										1983	\$28.00	\$55,524.00				0	\$28.00	\$0.00	\$0.00	
607.22	Cedar Rail Fence	LF							290	1185	750		460					2685	\$15.00	\$40,275.00	400		1088	1488	\$15.00	\$22,320.00	\$13.33	
607.294	Barrier Boulders	EA															40	40	\$240.00	\$9,600.00			10	10	\$240.00	\$2,400.00	\$205.75	
608.26	Curb Ramp Detectable Warning Field	SF	16			96	32	32									16	192	\$75.00	\$14,400.00	48		16	64	\$75.00	\$4,800.00	\$60.00	
609.34	Bituminous Curb	LF	210															210	\$8.00	\$1,680.00				0	\$8.00	\$0.00	\$0.00	
610.08	Plain Riprap	CY					10	30										40	\$60.00	\$2,400.00				0	\$60.00	\$0.00	\$55.25	
613.319	Erosion Control Blanket	SY																1000	\$2.50	\$2,500.00				1500	\$2.50	\$3,750.00	\$1.98	
615.07	Loam	CY																1190	\$30.00	\$35,700.00				210	\$30.00	\$6,300.00	\$28.75	
618.13	Seeding Method Number 1	UNIT																161.5	\$20.00	\$3,230.00				45.5	\$20.00	\$910.00	\$17.25	
618.15	Temporary Seeding	LB																42.5	\$20.00	\$850.00				7.5	\$20.00	\$150.00	\$19.63	
619.12	Mulch	UNIT																161.5	\$15.00	\$2,422.50				45.5	\$15.00	\$682.50	\$13.50	
619.1401	Erosion Control Mix	CY																42.5	\$50.00	\$2,125.00				7.5	\$50.00	\$375.00	\$40.00	
620.56	Erosion Control Geotextile	SY																1275	\$3.00	\$3,825.00				225	\$3.00	\$675.00	\$2.14	
620.60	Separation Geotextile	SY		222	445			222				756	3111	689		611		6056	\$3.00	\$18,168.00				0	\$3.00	\$0.00	\$2.63	
621.037	Evergreen Trees (5-foot - 6-foot) Group A	EA															15	30	\$175.00	\$5,250.00			0	0	\$175.00	\$0.00	\$133.50	
621.546	Deciduous Shrubs (2-foot - 3-foot) Group A	EA															600	600	\$30.00	\$18,000.00			0	0	\$30.00	\$0.00	\$20.25	
621.80	Establishment Period	LS															1	1	\$2,500.00	\$2,500.00			0	0	\$2,500.00	\$0.00	\$0.00	
622.10	Transplanting Shrub	EA	18															18	\$250.00	\$4,500.00				0	\$250.00	\$0.00	\$0.00	
627.75	White or Yellow Pavement	SF				300										150		450	\$3.00	\$1,350.00	150		120	270	\$3.00	\$810.00	\$2.75	
638.40	MSE Retaining Wall	SF	392			3900	1295	4452										10039	\$70.00	\$702,730.00				0	\$70.00	\$0.00	\$0.00	
639.18	Field Office Type A	EA																1	\$12,000.00	\$12,000.00				0	\$12,000.00	\$0.00	\$15,675.00	
641.89	Kiosk	EA																2	\$4,000.00	\$8,000.00				0	\$4,000.00	\$0.00	\$3,717.50	
652.23	Drum	EA																50	\$65.00	\$3,250.00				0	\$65.00	\$0.00	\$64.50	
652.34	Cone	EA																25	\$25.00	\$625.00				0	\$25.00	\$0.00	\$28.75	
652.35	Construction Signs	SF																500	\$14.00	\$7,000.00				0	\$14.00	\$0.00	\$0.00	
652.381	Maintenance of Traffic Control Devices	LS																1	\$15,000.00	\$15,000.00				0	\$15,000.00	\$0.00	\$20,025.00	
652.38	Flegger	HR																160	\$35.00	\$5,600.00				0	\$35.00	\$0.00	\$0.00	
656.75	Temporary Soil Erosion and Water Pollution Control	LS																1	\$60,000.00	\$60,000.00				0	\$60,000.00	\$0.00	\$55,626.00	
659.10	Mobilization	LS																1	\$100,000.00	\$100,000.00				0	\$100,000.00	\$0.00	\$211,098.00	
841.48	Bollards	EA									6							6	\$500.00	\$3,000.00				0	\$500.00	\$0.00	\$438.75	
841.49	Bollards - Collapsible	EA	4						6								3	13	\$1,350.00	\$17,550.00	9		3	12	\$1,350.00	\$16,200.00	\$1,325.00	

Subtotal \$2,250,483.50 Subtotal \$310,056.90

Additional Costs

	Unit	Quantity	Unit \$	Amount
Relocate Overhead Utilities along US Route 1	LF	155	\$1,000.00	\$155,000.00