

Final Report

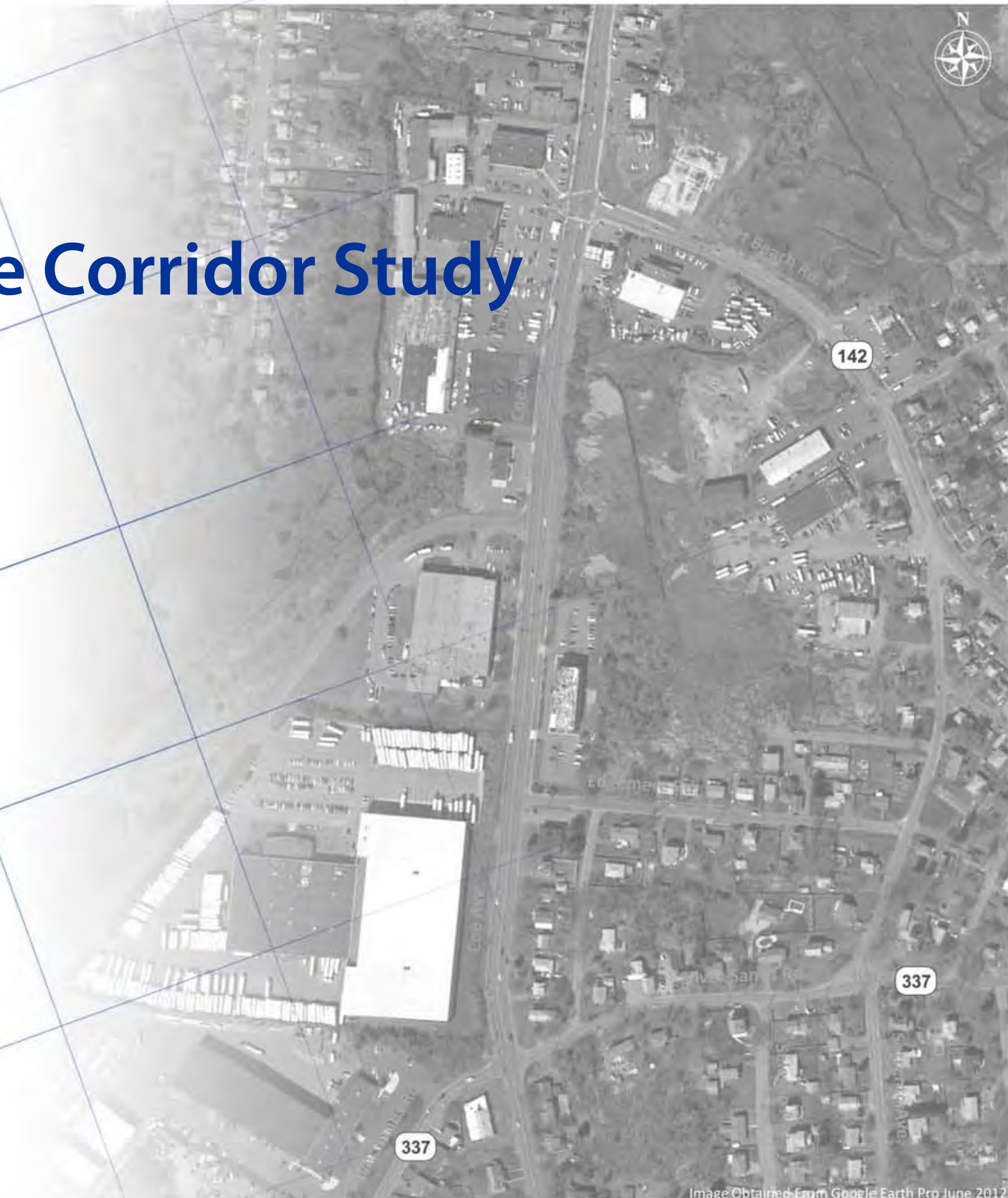
# Hemingway Coe Avenue Corridor Study



Final Report

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June 2012



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# 1 INTRODUCTION

This chapter provides an introduction on the study process and contents of this report.

## 1.1 Study Background

The South Central Regional Council of Governments (SCRCOG) is the designated Metropolitan Planning Organization (MPO) for the New Haven area. The SCRCOG has undertaken the Hemingway Avenue/Coe Avenue Corridor Study at the request of the Town of East Haven. CDM Smith is the prime consultant to assist the SCRCOG and the Town of East Haven on this project.

## 1.2 Study Purpose

The purpose of this study was to work with the Town of East Haven to identify solutions on an existing flooding issue on Hemingway Avenue and Coe Avenue. In addition, the town is seeking assistance to explore potential re-alignment options for Proto Drive in order to better accommodate development in the existing industrial park.

The specific study objectives are:

- Inventory existing roadway and geometric conditions.
- Identify existing flooding issues in order to elevate the intersection of Hemingway Avenue and Short Beach Road (Routes and 142) to reduce flooding and improve safety, emergency response, and access to portions of East Haven during storm events.
- Conduct a high level evaluation of the roadway grades and identify potential mitigation options on the Hemingway Avenue and Coe Avenue corridor that alleviate flood impacts to regional travel while minimizing grading impacts and maintaining safe access to existing properties adjacent to the roadways.
- Conduct level of service and safety analysis on the Hemingway and Coe Avenue corridors.
- Suggest alternative re-alignment options for Proto Drive based on available engineering data and existing environmental resource mapping.
- Develop an order of magnitude cost estimate for roadway work.
- Develop a list of action items or “Next Steps” for the town to advance the design and implement construction.

## 1.3 Study Area

The study limits for this project are Hemingway Avenue and Coe Avenue between Short Beach Road and Proto Drive (see **Figure 1.1**). A portion of Proto Drive has been included to study the potential re-alignment options.

## 1.4 Meetings with Town

The following is a list of meetings conducted with the town during the study process:

- Project Kick-off Meeting – May 24, 2012
- Project Meeting with Town Engineer – June 15, 2012
- Final Presentation to the Town – June 29, 2012

## 1.5 Report Contents

This report is broken into the following sections:

- **Existing Conditions** – This chapter documents the existing conditions along the Hemingway and Coe Avenue corridors relative to roadway conditions, traffic conditions, safety, environmental resources, and land use.
- **Realignment of Proto Drive** – This chapter studies the potential options to realign Proto Drive in order that the town can optimize future industrial development (new construction and expansion of existing uses) along Proto Drive. This analysis will also provide an initial determination of potential wetland impacts based on available wetland mapping.
- **Hemingway Avenue – Coe Avenue Concept Plan** – This chapter reviews the existing geometric conditions (plan and profile) as well as drainage and flooding issues associated with the existing roads, and provides a preliminary recommendation of a plan and profile that could alleviate flooding while minimizing property impacts.
- **Next Steps** – This chapter summarizes the results of the preliminary analysis and outlines next steps to advance this project to enable further review and discussions with state and federal land use and environmental protection agencies (DEEP, U.S. Army Corps of Engineers, and others) and to prepare engineering and design documents.

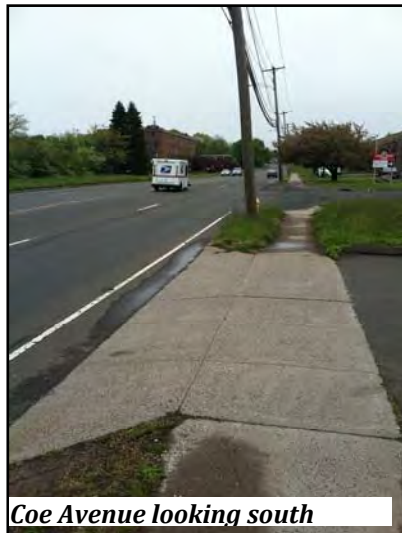
## 2 EXISTING CONDITIONS

This chapter discusses existing conditions in the project area.

### 2.1 Roadway Conditions

The following is a list of roadways within the study area:

#### Hemingway Avenue (S.R. 142)



Hemingway Avenue (also known as S.R. 142) is a four lane arterial roadway that is oriented in a north-south direction. It provides the principal means of access to the southern portion of the Town of East Haven and connects this shoreline area to the town center and to Interstate 95 to the north. Land uses in the area primarily consist of industrial, commercial and retail properties. The posted speed limit on Hemingway Avenue is 35 miles per hour. The travel lanes are 11 feet wide; in addition, 2 foot wide paved shoulders are generally provided on the outside of each travel lane. The intersection of Hemingway Avenue/Coe Avenue (S.R. 337)/Short Beach Road (S.R. 337) is signalized.

#### Coe Avenue (S.R. 337)

Coe Avenue (also known as S.R. 337) is the continuation of the Hemingway Avenue arterial and maintains a north-south orientation. It begins at the southerly terminus of Hemingway Avenue at its intersection with Short Beach Road. Coe Avenue is also a four lane roadway. Land uses in the area primarily consist of industrial, commercial, retail, and residential properties. The posted speed limit on Coe Avenue is 35 miles per hour. The travel lanes are 11 feet wide; in addition, 2 foot wide paved shoulders are generally provided on the outside of each travel lane.

#### Proto Drive

Proto Drive is a two-lane, town owned road which provides access to several industrial properties from Hemingway and Coe Avenues. It is a dead-end street that is paved for most of its length but becomes a dirt road at its western terminus. There are no posted speed limit signs or pavement markings on Proto Drive. On the northwesterly side of Proto Drive, there is a large tidal wetland area that affects the realignment



options of Proto Drive. Traffic at the intersection of Proto Drive and Coe Avenue is controlled with a stop-sign.

#### Short Beach Road (S.R. 142)

Short Beach Road (also known as S.R. 142) is a two lane roadway in the project area. This roadway is oriented in an east-west direction. It connects with Hemingway Avenue and provides principal access to the Farm River shoreline of East Haven and to the southern portion of the Town of Branford. Land uses in the area are primarily commercial and retail properties. The posted speed limit on Short Beach Road is 35 miles per hour. Lane and shoulder widths vary on Short Beach Road.



### 2.2 Traffic Conditions

The following details the traffic conditions at the study area intersections:

#### Existing (2012) Traffic Volumes

Manual traffic counts were conducted at the following intersections on Thursday, May 10, 2012 during the weekday A.M. peak hour (7:00-9:00 A.M.) and P.M. peak hour (4:00-6:00 P.M.) periods:

- Hemingway Avenue/Coe Avenue/Short Beach Road
- Coe Avenue/Proto Drive

Figure 2.1 shows the existing (2012) traffic volumes at the study area intersections.

#### Existing (2012) Level of Service Analysis

Level of Service (LOS) is a qualitative measure of driver satisfaction with a number of factors that influence mobility and reflect the degree of traffic congestion. These factors include speed and travel time, traffic interruption, freedom of maneuverability, safety, driving comfort and convenience, and delay.

In general, there are six levels of service describing traffic flow conditions. **LOS A** describes a condition of “free flow”, with low volumes and high speeds. **LOS B** represents a stable traffic flow with operating speeds beginning to be restricted somewhat by traffic conditions. **LOS C** describes stable traffic operations. **LOS D** reflects a condition of more restricted movements for motorists as

congestion becomes more noticeable. LOS E is representative of the actual capacity of a roadway or an intersection and reflects delay to all motorists due to congestion. LOS F is described as “force flow” and is characterized by traffic volumes that exceed what the roadway can handle. This causes a “breakdown” of traffic conditions on the roadway; therefore, LOS F is considered an unacceptable traffic operating condition.

For this analysis, LOS was estimated for signalized and un-signalized intersections. The traffic analysis software Synchro 7 was used to determine the existing peak hour LOS at the study intersections. Table 2.1 and Table 2.2 highlight the LOS criteria for signalized and un-signalized intersections, respectively. The LOS criterion for signalized and un-signalized intersections is based on control delay per vehicle measured in seconds. Control delay is defined as the amount of time a vehicle has to wait at an intersection due to a stop-sign or a traffic signal.

Table 2.1  
Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	> 80

Source: 2000 Highway Capacity Manual, Transportation Research Board

Table 2.2  
Level of Service Criteria for Un-signalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

Source: 2000 Highway Capacity Manual, Transportation Research Board

LOS was determined for the study area intersections under existing conditions during the weekday A.M. and P.M. peak hour periods using the existing traffic volumes shown in Figure 2.1. The results of the analyses for signalized intersections are presented in Table 2.3. Error! Reference source not found..

Table 2.3  
Level of Service Analysis

Intersection	Existing Year (2012)	
	A.M. Peak	P.M. Peak
<b>Hemingway Avenue/Coe Avenue/Short Beach Road</b>	<b>B(10.1)</b>	<b>B(10.6)</b>
Coe Avenue Northbound	B(14.9)	B(16.6)
Hemingway Avenue Southbound	A(5.8)	A(6.4)
	<i>Left</i>	A(5.9)
	<i>Through-Right</i>	A(8.9)
Short Beach Road Westbound	A(5.7)	A(4.8)
	<i>Left-Through</i>	A(9.7)
	<i>Right</i>	B(17.0)
Plaza Drive Eastbound	A(9.2)	A(8.1)
<b>Coe Avenue/Proto Drive</b>	<b>B(12.0)</b>	<b>B(19.5)</b>
Coe Avenue Northbound Left	A(0.7)	A(0.2)
Proto Drive Westbound	B(13.7)	C(23.7)

As indicated above, the LOS at the study area intersections is LOS C or better for a specific movement, approach, or as an overall intersection.

### 2.3 Safety Conditions

Accident data available through the Connecticut Department of Transportation (CTDOT) was reviewed for the most recent three year period, i.e. between January 2006 and December 2008. The following section summarizes the accident data for the segment of Coe Avenue between Proto Drive and Short Beach Road/Hemingway Avenue and the intersection of Coe Avenue/Hemingway Avenue/Short Beach Road.

**Segment: Coe Avenue – Between Short Beach Road and Proto Drive**

Table 2.4 summarizes results of the accident analysis on the Coe Avenue segment.

**Table 2.4**  
Accident Analysis – Coe Avenue Segment

	Category	Number
Accident Type	Rear End	3
	Turning Maneuver	5
	Backing	1
	Sideswipe	2
	Fixed Object	1
	Angle	1
	<b>TOTAL</b>	<b>13</b>
Road Surface	Dry	11
	Wet	1
	Snow/Slush	1
	<b>TOTAL</b>	<b>13</b>
Accident Severity	Injury	5
	Property Damage Only	8
	<b>TOTAL</b>	<b>13</b>

As indicated in the above table, a total of 13 accidents were reported on the Coe Avenue segment over the most recent three year period. Of the 13 accidents, the predominant types were collisions resulting from improper turning maneuvers (approximately 38 percent) and rear-end collisions (approximately 23 percent). Of the 13 accidents, five (approximately 38 percent) resulted in a personal injury, the remainder of accidents resulted in property damage only.

**Intersection: Coe Avenue/Hemingway Avenue/Short Beach Road**

Table 2.5 summarizes results of the accident analysis at the Coe Avenue/Hemingway Avenue/Short Beach Road intersection.

**Table 2.5**  
Accident Analysis – Coe Avenue/Hemingway Avenue/Short Beach Road Intersection

	Category	Number
Accident Type	Rear End	15
	Turning Maneuver	7
	Sideswipe	1
	Fixed Object	1
	<b>TOTAL</b>	<b>24</b>
Road Surface	Dry	16
	Wet	5
	Ice	1
	Unknown	2
	<b>TOTAL</b>	<b>24</b>
Accident Severity	Injury	4
	Property Damage Only	20
	<b>TOTAL</b>	<b>24</b>

As indicated in the above table, a total of 24 accidents were reported at the Coe Avenue/Hemingway Avenue/Short Beach Road intersection over the most recent three year period. Of the 24 accidents, the predominant type was rear end collisions (approximately 63 percent). Of the 24 accidents, four (approximately 17 percent) resulted in a personal injury, the remainder of accidents resulted in property damage only

**2.4 Environmental Conditions**

The project area is situated in the Town of East Haven near its western border with the City of New Haven in a highly developed area that is primarily comprised of industrial, commercial and retail properties and utilities. The East Haven Industrial Park abuts the site to the south and to the northwest is Tweed-New Haven Airport. Undeveloped areas surrounding the Site include inland wetlands, tidal wetlands, coastal waters, drainage channels and other coastal resources. The project area is located in the 100 year floodplain of Long Island Sound (elevation 10.7 NGVD).

Stormwater from the project area flows either west to Morris Creek or east to Tuttle Brook. Both watercourses are tidal estuaries and flow south to Long Island Sound. Large areas of these estuaries are degraded wetlands. The dominant vegetation in these estuaries is *Phragmites australis* (common reed), an invasive weedy species of limited value to wildlife that is associated with a degraded wetland environment.

The degraded condition of the wetlands is believed to be caused by constriction of the natural flow of tidal waters due to construction of roads, culverts, tidal gates, fill materials or other manmade interventions that altered or restricted the natural flow of tidal waters and prevents saltwater from

inundating upstream wetland areas. Prior to these interventions the wetland areas were reportedly dominated by *Spartina alterniflora* and *Spartina patens*, both indigenous tidal wetland plant species. The lack of adequate saltwater inundation caused the *Spartina* grasses to die and allowed *Phragmites*, which tolerates low salinity, to be the dominant species. According to several environmental studies of the area, the degraded *Phragmites*-dominated wetland system is extremely limited in terms of functions and values and provides little value to wildlife.

The mapping used in this effort was obtained from available sources such as Department of Energy and Environmental Protection (DEEP).

#### **Wetlands**

The project area is impacted by wetlands to the west of Coe Avenue and north of Proto Drive as shown in **Figure 2.2**. Field reviews conducted by various members of the project team indicate that the areas labeled “water feature” should be classified as wetlands.

#### **Flood Zone**

The 100 year flood zone is shown in **Figure 2.3**. As shown in the figure, the majority of the project area lies within the 100 year flood zone associated with Long Island Sound.

#### **Soil Classes**

The project area has poorly drained soils in several locations due to wetlands as shown in **Figure 2.4**.



## 3 REALIGNMENT OF PROTO DRIVE

This chapter discusses the alternatives reviewed for the possible realignment of Proto Drive and the preferred option selected by Town officials.

### 3.1 Development of Conceptual Alternatives

A set of conceptual alternatives associated with the realignment of Proto Drive were developed for review by Town officials. Based on this review and discussions with Town officials, these concepts were refined and depicted on available GIS mapping. **Figures 3.1** through **3.4** illustrate the concept-level sketches of these alternatives. As shown in the figures, all four alternatives required the relocation of the intersection of Proto Drive and Coe Avenue to the north of the vacant, town-owned building that is situated at the northwest corner of the existing intersection of Proto Drive and Coe Avenue.

Each conceptual alternative shows a variation in the roadway alignment between the starting point on Proto Drive and the ending point at the intersection with Coe Avenue. Since these alternatives shift Proto Drive to the west, they create additional development opportunities for the town on the east side of Proto Drive; however, most of the land west of the current alignment of Proto Drive is believed to be tidal wetlands, accordingly, the reconstruction of the street will result in direct impacts to wetlands and watercourses associated with Morris Creek.

### 3.2 Evaluation Criteria

The following evaluation criteria were selected in discussions with the town and the SCRCOG for comparing and evaluating the conceptual alternative road alignments.

- **Development Potential** – how can parcel dimensions be maximized?
- **Environmental Impacts** – how can environmental impacts be minimized?

The evaluation criteria, in conjunction with information in the decision matrix detailed below, were used to assist in developing and refining conceptual sketches of the four potential realignments of Proto Drive.

### 3.3 Decision Matrix

To assist in the decision-making process to identify the most viable alternative, a matrix was created to tabulate and assess the various benefits and negative impacts associated with each of the four alternatives considered (refer to **Table 3.1**). Three indicators aligned with the above-mentioned criteria were identified, including:

- **Length of New Roadway** – Assessed for total estimated cost

- **Development Area Gain** – Assessed for acreage that would be “opened” for development on/adjacent to the site
- **Potential Impact to Wetlands** – Assessed for potential acreage that would be disturbed and likely need to be mitigated

As shown in **Table 3.1**, the methodology developed to assess and rank the Conceptual Alternatives factors the relative cost of constructing the various realignment options and the relative impacts that each alignment option has on wetland resources. Table 3.1 tabulates the statistics of each of the three indicators listed above (refer to Columns 1, 2 and 3) and depicts the methodology developed to derive the final score (shown in the rightmost column). The final score is the product of ratios that reflect the expected road costs relative to the development area gained and the area of potential impacts to wetlands relative to the area if development gained. Following is a step-by-step explanation of this methodology.

The cost impact is presented relative to the area of potential new development that would be gained. This is determined by dividing the roadway cost (Col. 4) by the development gain (Col. 2) to derive the cost per acre of development gained (Column 5). The resulting ratios for each alternative were then converted to a “Cost Factor” (Col. 7) by comparing each alternative to a reference case; the reference case is the least costly (per development acre gained) of the four Alternatives (Alternative 4 in this analysis). Therefore, Alternative 4 is established as the Reference Case and assigned a value of 1.0; the Cost Factors for the remaining three alternatives were determined by dividing the respective cost per acre of development gained (Col. 5) by the Reference Case cost per acre of development gained or the relative cost of the Reference Case (highlighted cell of Col. 5).

The wetland impact is also presented relative to development gain. This is determined by dividing the area of wetland impact (Col. 3) by the area of development gained (Col. 2) to derive the ratio of wetland impact per acre of development gain (Col. 6). The resulting ratios for each alternative were then converted to a “Wetland Disruption Factor” (Col. 8) by comparing each alternative to a reference case; the reference case is the least wetland impacting (per development acre gained) of the four Alternatives (Alternative 1 in this analysis). Therefore, Alternative 1 is established as the Reference Case and assigned a value of 1.0; the Wetland Disruption Factors for the remaining three alternatives were determined by dividing the respective ratio of wetland impact and development gained (Col. 6) by the Reference Case ratio of wetland impact and development gained or the relative impact of the Reference Case (highlighted cell of Col. 6).

To determine the final “Score” of each alternative (rightmost column of Table 3.1), the Cost Factor (Col. 7) is multiplied by the Wetland Disruption Factor (Col. 8). The resulting product is a number

that represents the optimal alternative considering relative development and relative environmental impacts. Since this product is the result of ratios that compare each alternative to a Reference case that is assigned a value of 1.0, the lower the value or score represents a better performing alternative; accordingly, Alternative 1 received the best score and is ranked first, Alternative 4 is

ranked second, Alternative 2 is ranked third, and Alternative 3 received the lowest score and is ranked fourth.

**Table 3.1**  
Decision Matrix

Alternative	Column 1 Length of New Roadway (miles)	Column 2 Development Gain (acres)	Column 3 <sup>(1)</sup> Wetland Impact (acres)	Column 4 Potential Roadway Cost (\$1M per mile)	Column 5 Roadway Cost per Acre of Development Gained	Column 6 Ac. of Wetland Impact per Ac. of Development Gained	Column 7 Cost Factor based on Column 5	Column 8 Wetland Disruption Factor based on Column 6	Column 7 x Column 8 Score (Rank)
Alternative 1	0.11	1.12	0.63	\$109,848	\$98,079	0.563	1.69	1.00	1.69 (1)
Alternative 2	0.262	3.72	3.36	\$262,311	\$70,514	0.903	1.21	1.61	1.95 (3)
Alternative 3	0.303	3.35	2.90	\$303,030	\$90,457	0.866	1.55	1.54	2.39 (4)
Alternative 4	0.453	7.78	7.92	\$452,652	\$58,181	1.018	1.00	1.81	1.81 (2)

**Note:** (1) Area of wetland impacts estimated from available GIS mapping layers (wetland soils, surface waters) and field observation. Future delineation of wetlands would be required.

**Source:** CDM Smith

**Reference Case**

This scoring methodology reveals that Alternative 1 attained the highest score even though it results in the least amount of development gain because it has the lowest potential wetland impact. Alternative 4 scored the second even though it represents the greatest potential impact to wetlands (and the highest Wetland Disruption Factor) and has the highest absolute cost of road construction (Col. 4) because it results in the greatest gain in development area and because it has the lowest road costs relative to the acreage of potential development that can be gained (Col. 5).

**3.4 Preferred Option**

Based on discussions with Town officials, the preferred alternative or option selected for further consideration based on this study is **Alternative 4**. It should be noted that this option would not require demolition of the vacant, town-owned building at the northwest corner of Proto Drive and Coe Avenue. The rationale for the town’s selection is that the gain of development area creates more viable options for redevelopment of the properties located on the southeast offside of the potential Proto Drive realignment and will result in greater square footage of future industrial development, higher increases to the Town’s tax base and more potential jobs.

The Town recognizes that there will be a significant impact to wetlands under this alternative and considerable environmental analysis and permitting requirements with local, state and federal review agencies will need to be conducted. The Town also understands that more detailed studies of the location, characteristics and functional values of environmental resources, analysis of the wetland impacts and determination of road construction and environmental mitigation costs, may require the Town to reconsider the realignment of Proto Drive.

## 4 HEMINGWAY AVENUE – COE AVENUE CONCEPT PLAN

This chapter discusses the design elements of the existing Hemingway Avenue/Coe Avenue corridor. A conceptual plan and profile was developed to alleviate flooding issues based upon available floodplain and hydrological data and other engineering documentation and discussions with the Town officials.

As discussed in Section 2 of this report, Hemingway and Coe Avenues are principal arterials serving the southern areas of the Town of East Haven as well as portions of the Town of Branford. Regional arterials serve many functions; therefore, the design of arterial routes in East Haven must address numerous considerations including highway and pedestrian safety, maintenance of vehicular access to broad areas of the shoreline, supporting adjacent economic activity that is vital to the regional economy, and facilitating access to adjoining properties and businesses. In addition, and critical to the safety of shoreline residents, these arterials provide the principal routes of evacuation in the event of a hurricane or other coastal storm. Therefore, an important objective of this study is to determine the maximum height that the roadways can be elevated to raise the travel lanes as close as possible to the elevation of floodwaters (i.e. the 100-year flood elevations associated with the floodplain of Long Island Sound) without negatively affecting access or causing undue grading impacts to adjacent properties.

### 4.1 Existing Survey

A detailed survey was conducted on Hemingway Avenue/Coe Avenue between Short Beach Road and Proto Drive with the following limits - 850 feet on Coe Avenue plus 250 feet on either direction of the intersection for a total of 1,350 linear feet. The survey included 100 feet on side roads and mapped the following elements:

- **Horizontal Control** – survey baseline and control points
- **Vertical Control** – Spot elevations, contours, elevations of crown line, gutter line, top of curb, front and back of walk, and header elevations of driveway aprons.
- **Property Line information** – based on parcel data obtained from the Town.
- **Field Survey** - The topographic survey of edges of road, sidewalks, and other pavements, top and bottom of curbs, spot elevations, PC and PT points, bridge/culvert crossing locations, light poles, surface utilities, and signage.
- **Drainage** - Drainage structures, inverts, flow lines, and pipe sizes.
- **Utilities** - Underground utilities based on field observation, field notes, and mapping provided by various utility companies.

### 4.2 Existing Plan and Profile

The following are few of the key findings of the existing conditions of Hemingway Avenue/Coe Avenue:

- **Horizontal Alignment (plan view)** – Coe Avenue has a straight section for a predominant portion of this roadway segment. The travel lanes are 11-12 feet wide with approximately 2 foot shoulders on either side. Roadway crown lies on the centerline of Coe Avenue.
- **Vertical Control (profile view)** – The existing profile of Coe Avenue varies between the lowest point at EL 4.12 and the highest point at EL 6.99. There are three low points on Coe Avenue within the project area – around Station 12+00 – EL 5.85, around Station 18+75 – EL 4.58, and around Station 23+00 – EL 4.12.
- **Property Line information** – Based on the property line information obtained from the Assessor's maps of the Town of East Haven, the right of way on Coe Avenue is approximately 80 feet.
- **Drainage** - Drainage structures exist along Coe Avenue on both sides of the roadway. Based on field observations, the roadway experiences ponding during major rain events and it appears that the current drainage system cannot accommodate the run-off during these events.
- **Utilities** – Overhead utilities (i.e. power lines) exist on the west side of the roadway. Sanitary and gas lines run on the east side of the roadway.

### 4.3 Conceptual Plan and Profile

The conceptual plan and profile (included in the appendix) is based on the following design assumptions:

- The 100-year flood elevation is at EL 10.7<sup>1</sup>. Due to grade impacts that would be created on adjacent commercial and industrial properties along the corridor, it was determined that the maximum amount that Coe Avenue could be elevated at Station 23+00 (Intersection of Short Beach Road/Plaza Drive) is 2.0 ft. This would result in an elevation of EL 6.12 at the center of the intersection, well below the 100-year flood elevation but a great improvement over existing conditions

<sup>1</sup> Flood Insurance Study, Town of East Haven, Federal Emergency Management Agency, January 2003.

- Maintain the remaining existing low points on Coe Avenue (i.e. Station 12+00 and Station 18+75). Based on the conceptual review, these low points could be raised in elevation based on further discussions with the Connecticut Department of Transportation staff.
- Proposed drainage is conceptual in nature and shows suggestions for relocation or new catch basins/manholes based on available data. Detailed drainage analysis was not conducted as part of this effort.
- The design speed on Coe Avenue is 45 miles per hour (however, the posted speed limit will be maintained at the current limit of 35 miles per hour).

Based on these design assumptions and criteria, cross-sections for the conceptual plan were prepared at 20 foot intervals on Coe Avenue. The design assumptions were discussed with the Town Engineer and agreed upon at the meeting held on June 15, 2012. The concept plan and profile is a preliminary effort and could be adjusted as this project moves into preliminary design.

#### 4.4 Conceptual Cost Estimate

A conceptual order of magnitude cost estimate was developed based on the concept plan. Table 4.1 provides a breakdown of the cost by design elements.

**Table 4.1  
Conceptual Cost Estimate**

Description	Cost
Roadway Quantities	\$724,500
Drainage Quantities	\$225,500
Traffic Quantities	\$150,000
<b>Subtotal A (Roadway + Traffic + Drainage)</b>	<b>\$1,100,00</b>
<u>Lump Sum Items</u>	
Mobilization (7.5% of subtotal)	\$82,500
Maintenance and Protection of Traffic (4% of subtotal)	\$44,000
<b>Subtotal B (Lump Sum Items)</b>	<b>\$126,500</b>
<u>Engineering Percentages</u>	
Incidentals (25%)	\$306,625
Contingencies (10%)	\$122,650
<b>Subtotal C (Engineering Percentages)</b>	<b>\$429,275</b>
<b>TOTAL CONCEPTUAL COST (A+B+C)</b>	<b>\$1,655,775</b>

## 5 NEXT STEPS

This chapter provides a series of next steps for the town to undertake such as discussions with reviewing agencies, wetland mapping, and identification of permits.

### 5.1 Meeting with Review Agencies

The Town would require meetings with reviewing agencies before advancing final design of the realignment of Proto Drive and the re-design of Cove Avenue. Regarding the Proto Drive realignment, it is our understanding that the Town has initiated discussions with the U.S. Army Corps of Engineers. The Town should also meet with property owners along Proto Drive i.e. Calabro Cheese and Town Fair Tire. The re-design of Coe Avenue will also require discussions with the Connecticut Department of Transportation staff.

### 5.2 Wetland and Stormwater Management

To compensate for the environmental impacts that would result from the placement of fill in the wetlands for the proposed relocation of the northerly portion of Proto Drive, a wetland restoration plan will be required (potentially for an area of two to three times the area of wetlands that are proposed to be impacted). The restoration plan could include modifying the hydrological systems in the vicinity of the project through a combination of all or some of the following strategies: enhancing tidal creeks and channels to allow for improved tidal flows; removing Phragmites vegetation within specified areas to allow for the reintroduction of indigenous species and the creation of more diverse habitats for native wildlife; preventing of the reestablishment of Phragmites; dredging or removal of fill within limited areas of wetlands to result in an increase in wetlands; and undertaking a 5 year program to monitor the tidal wetland restoration efforts to ensure that the intended results are being achieved and to determine if modifications to the program are necessary to attain the desired results.

The placement of fill for the construction of the relocation of Proto Drive will also require hydraulic modeling and engineering analysis to demonstrate that the activity will not increase the 10 year and 100 year water surface elevation over existing conditions or diminish the flood storage capacity or flood control value of the floodplain. This analysis may indicate the need to excavate historic fills elsewhere in the Morris Creek/Tuttle Brook watersheds to compensate for loss of flood storage capacity.

The proposed construction of new or relocated impervious surfacing associated with the relocation of Proto Drive will also trigger the need to prepare a stormwater management plan since the stormwater discharges or surface runoff from the new pavement will be discharged into a tidal wetland. The CT Stormwater Quality Manual requires that the first inch of runoff from impervious surfaces that discharge into tidal waters be retained to reduce potential negative impacts of road

surface pollutants to natural systems. This retention requirement will necessitate the construction of stormwater detention basins or holding ponds.

### 5.3 List of Permits and Agencies

A preliminary list of permits and the agency involved is provided in the appendix. The agencies involved are the Town of East Haven, the Connecticut Department of Energy and Environmental Protection (DEEP), the Office of Long Island Sound Programs (OLISP), the U.S. Army Corps of Engineers, the Connecticut Department of Transportation, and others.

# Technical Appendix

**Figure 1.1 – Project Area**

**Figure 2.1 - Existing (2012) Traffic Volumes**

**Figure 2.2 – Wetland Mapping**

**Figure 2.3 – 100 Year Flood Zone Mapping**

**Figure 2.4 – Soil Classes Mapping**

**Figure 3.1 – Realignment of Proto Drive (Alternative 1)**

**Figure 3.2 – Realignment of Proto Drive (Alternative 2)**

**Figure 3.3 – Realignment of Proto Drive (Alternative 3)**

**Figure 3.4 – Realignment of Proto Drive (Alternative 4)**

**Conceptual Plans (Hemingway Avenue/Coe Avenue) – Sheets 1 through 21**

**Table 5.1 - List of Permits and Agencies**

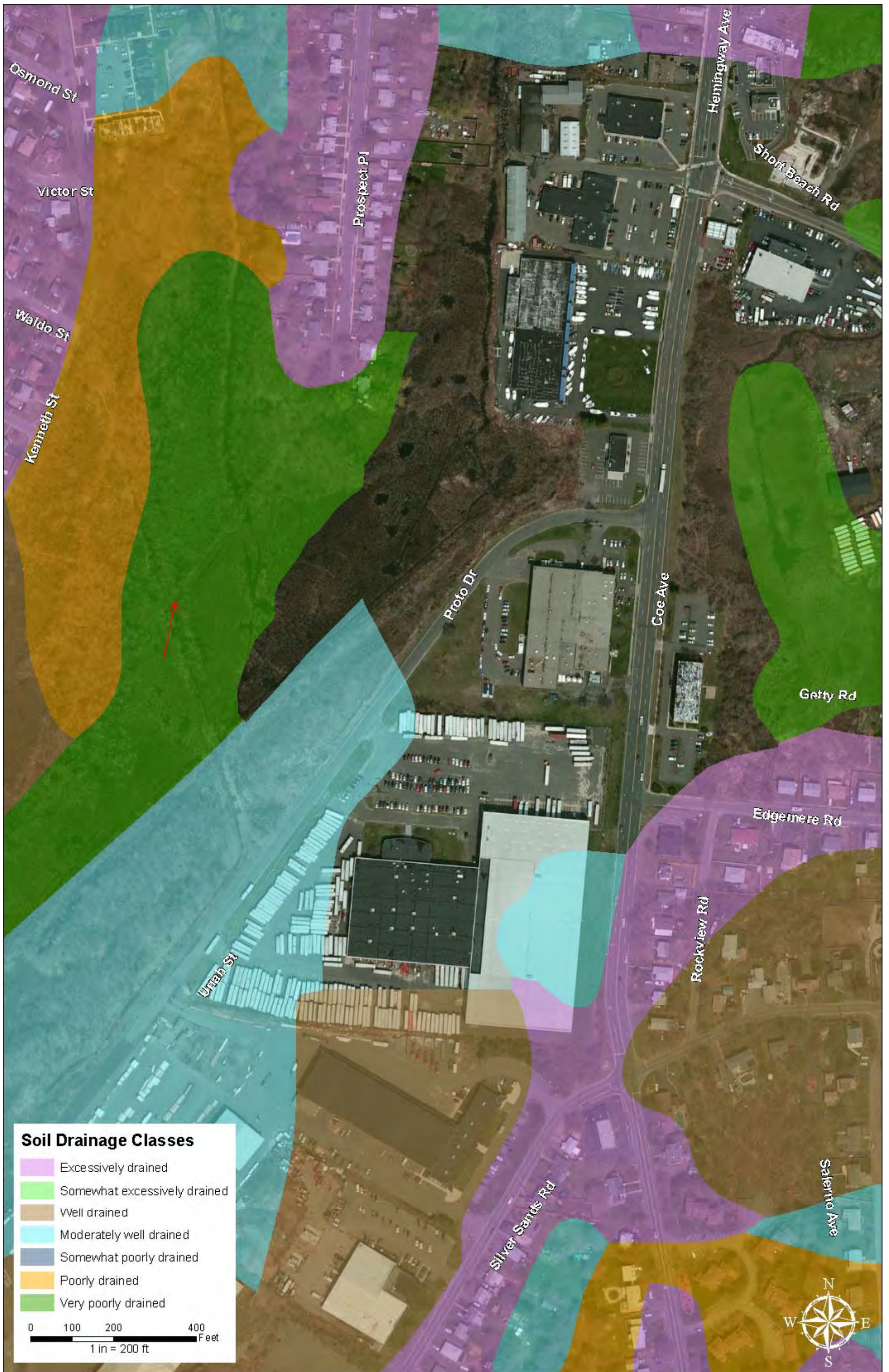


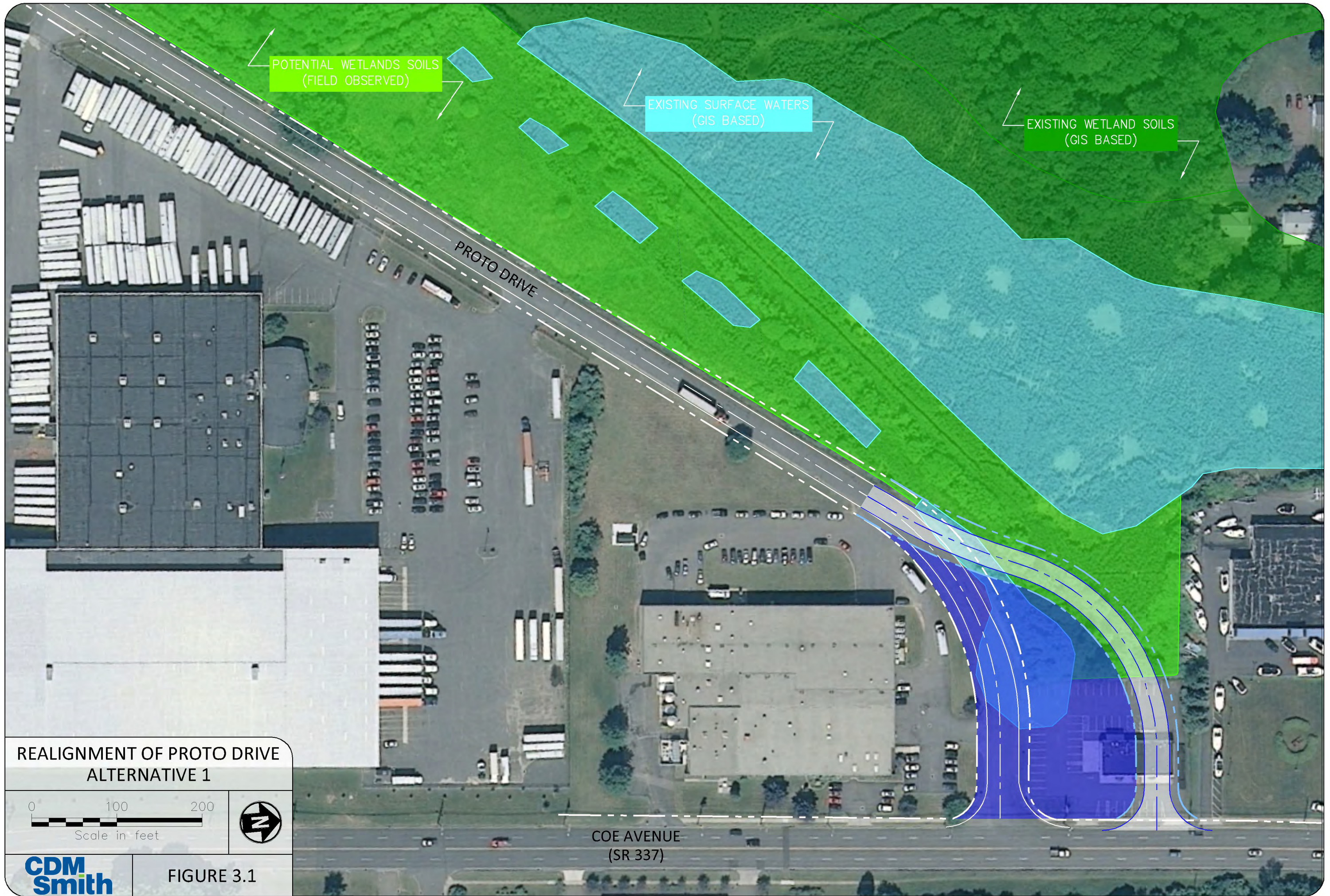


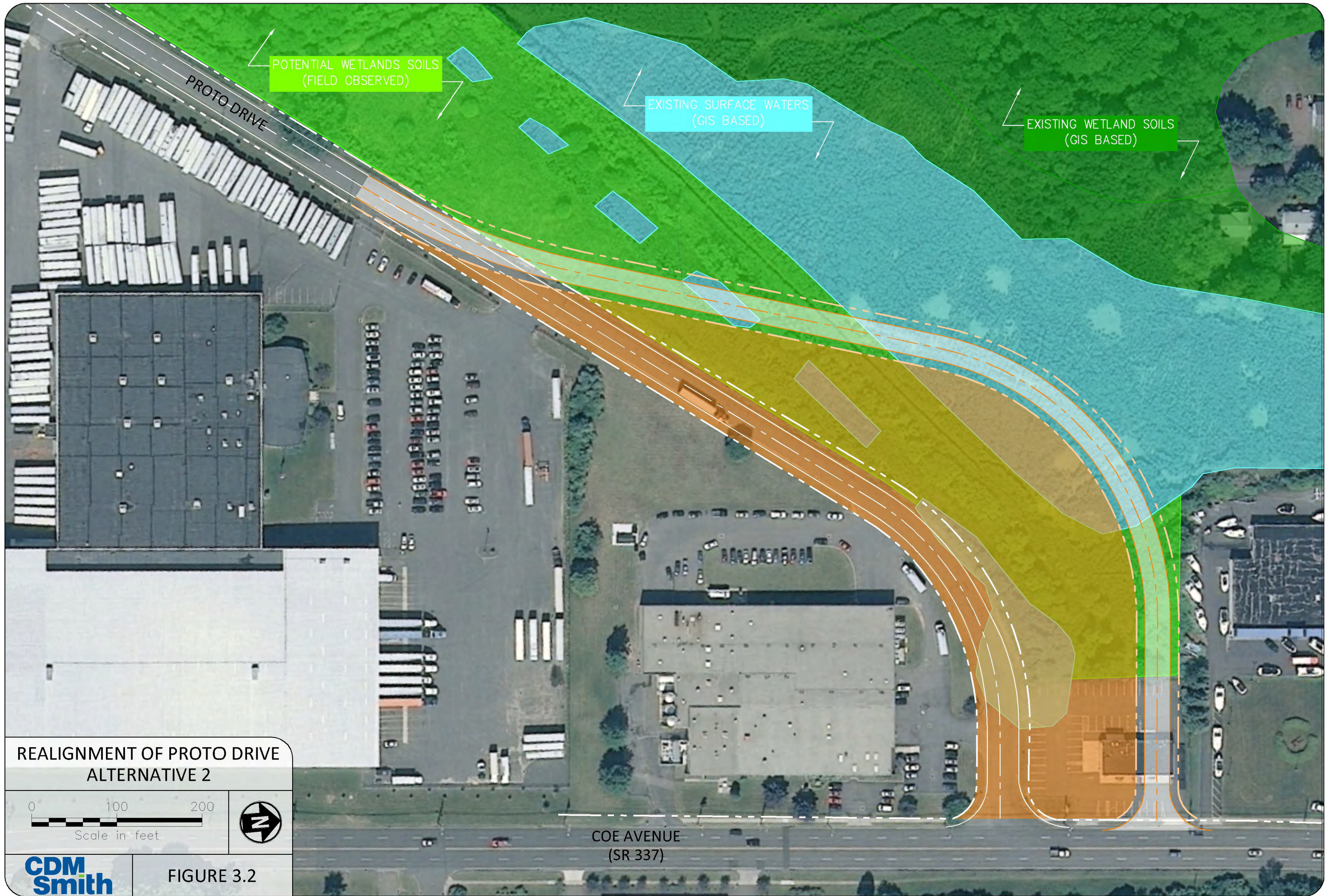


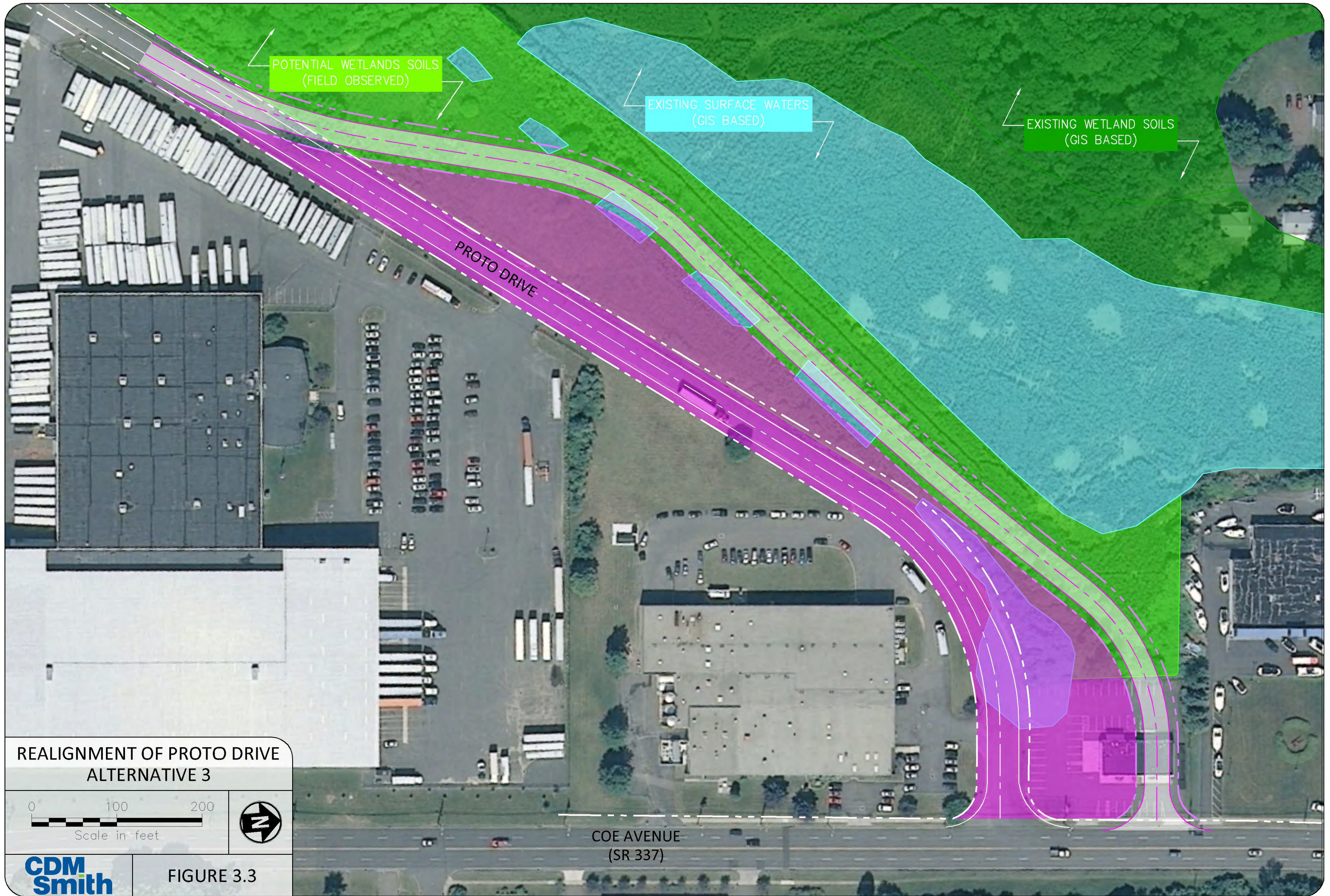








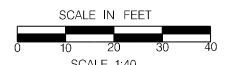







**GENERAL NOTES:**

1. Conceptual plans based on raising the road elevation at the center of the Coe Avenue/Hemingway Avenue/Short Beach Road intersection by 2 feet (EL 4.12' to EL 6.12').
2. The road elevation can be raised by at least 1 foot at the low points around stations 12+00 and 18+70 as project moves into design.
3. Conceptual plan can be adjusted in the future based on discussions with the Connecticut Department of Transportation (CTDOT) and other key stakeholders.
4. Proposed drainage is conceptual and shows suggestions for relocation or new catch basins/manholes based on available data. Detailed drainage analysis was not conducted as part of the concept plan.
5. Conceptual plan can be adjusted to address the existing or proposed location of Proto Drive.

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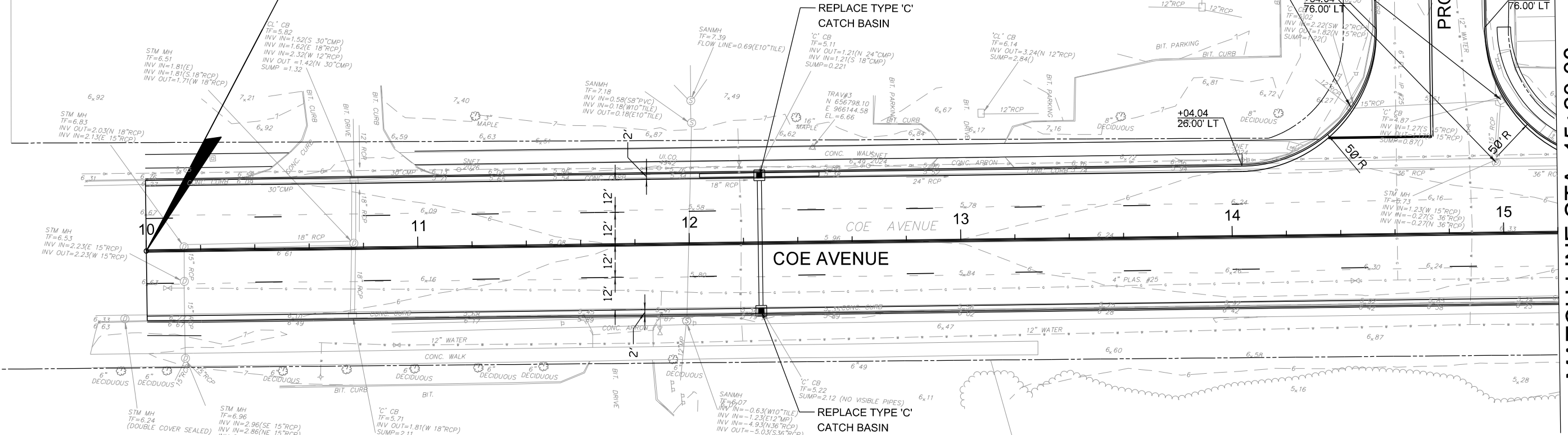


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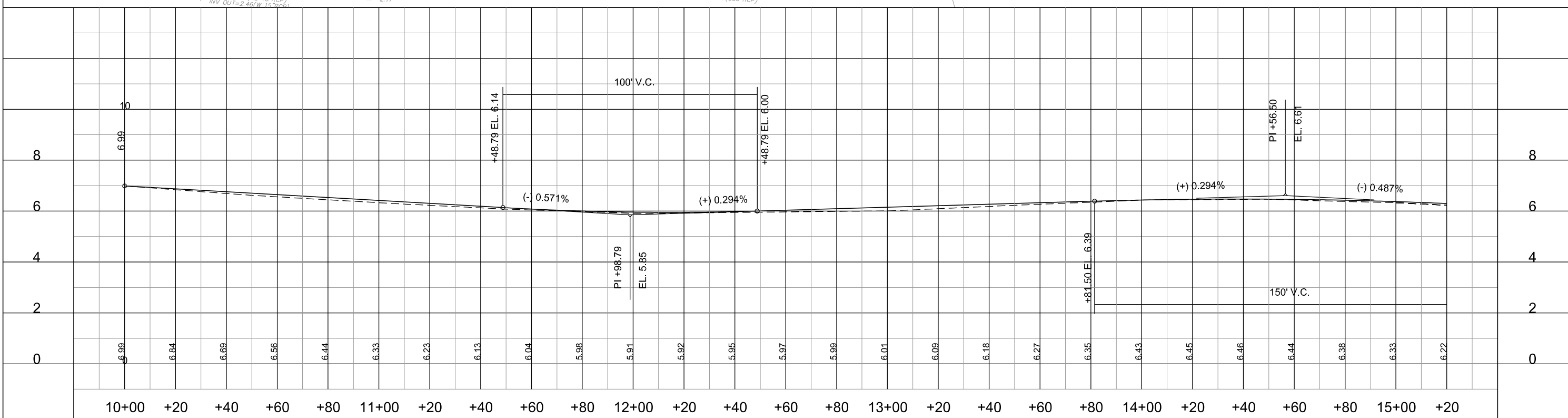


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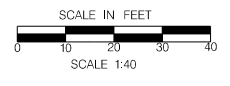
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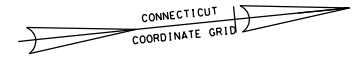
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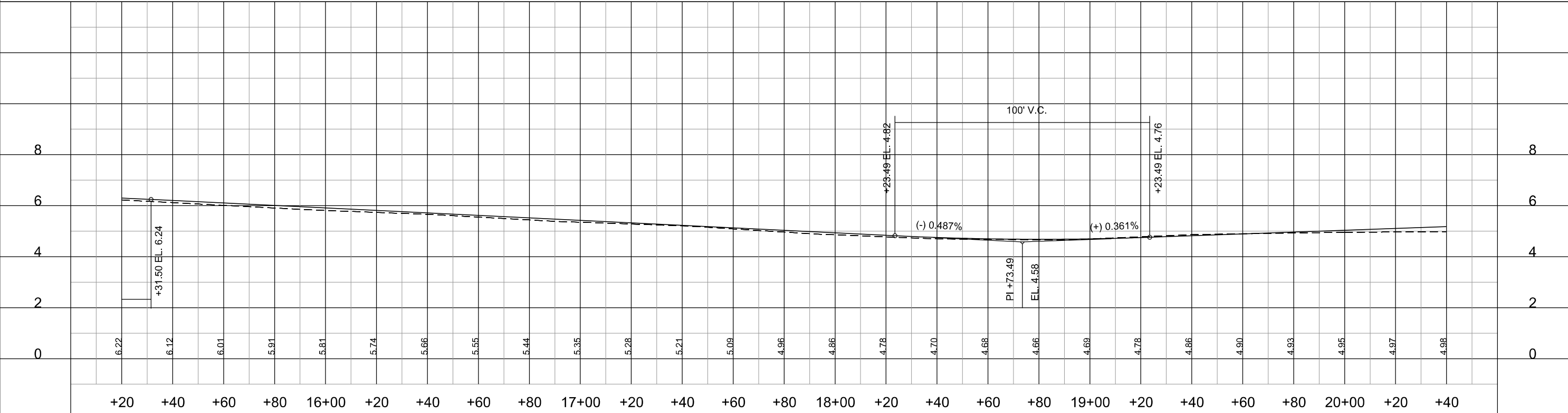
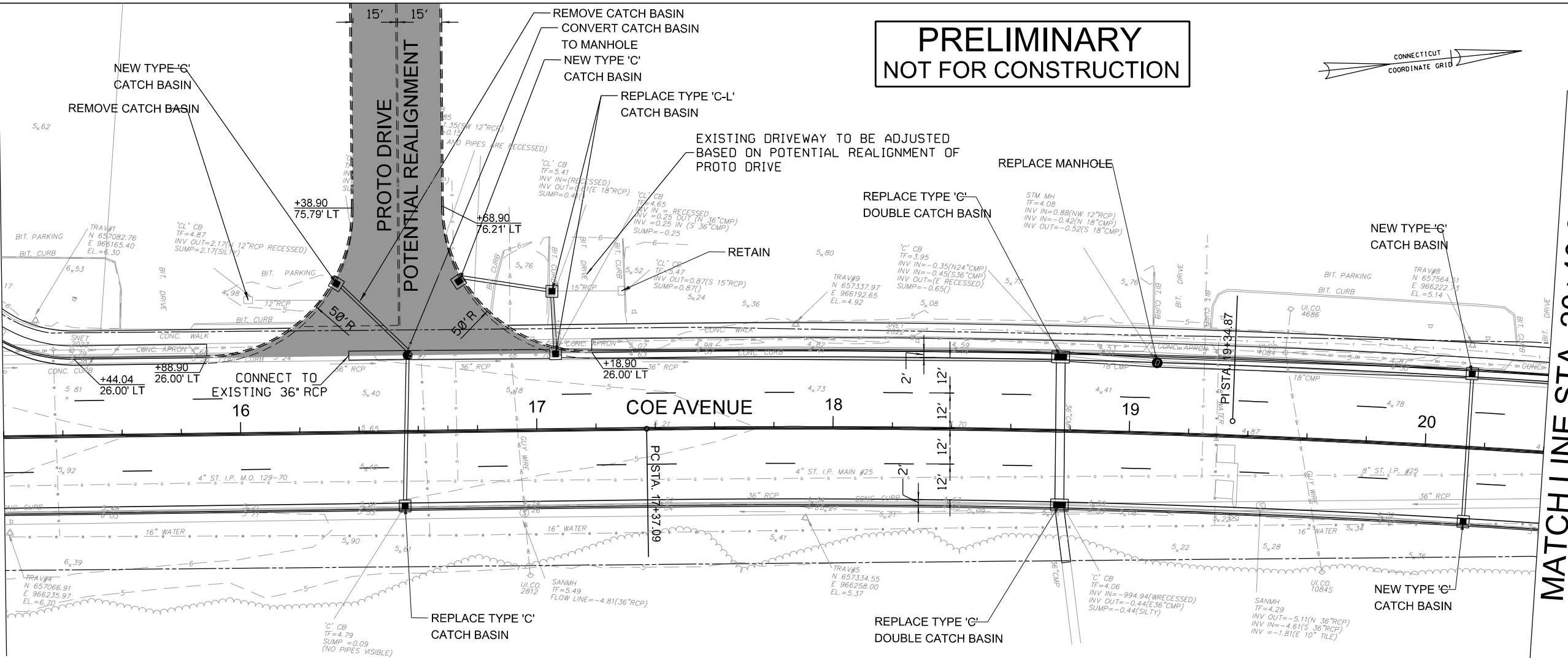
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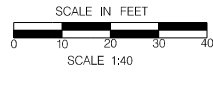


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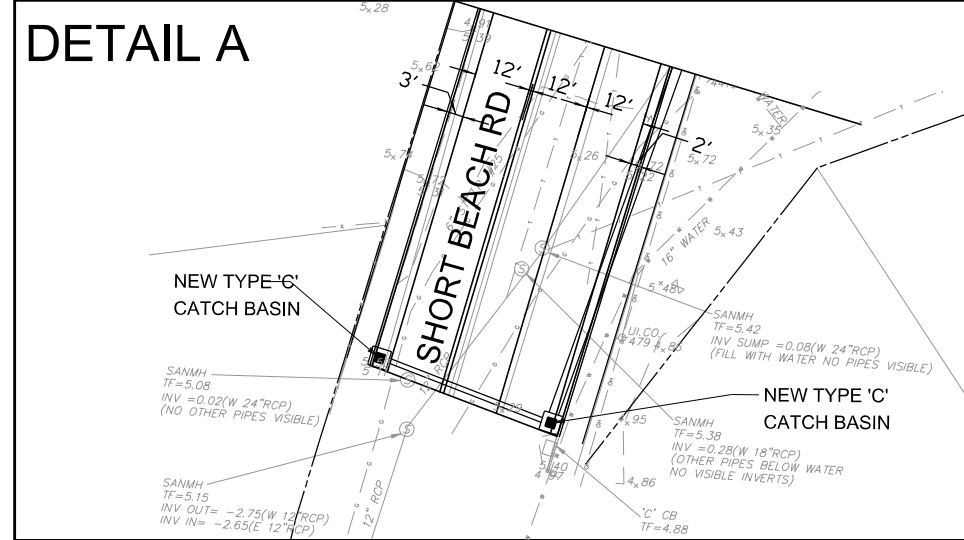
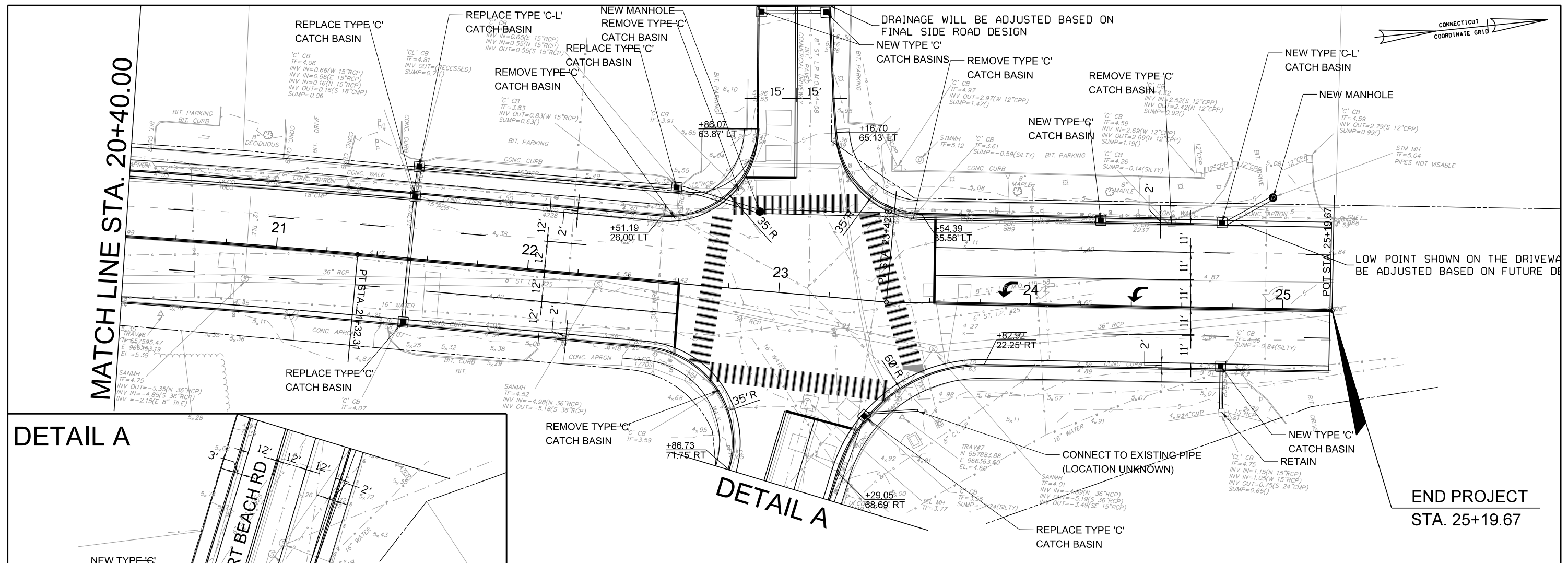
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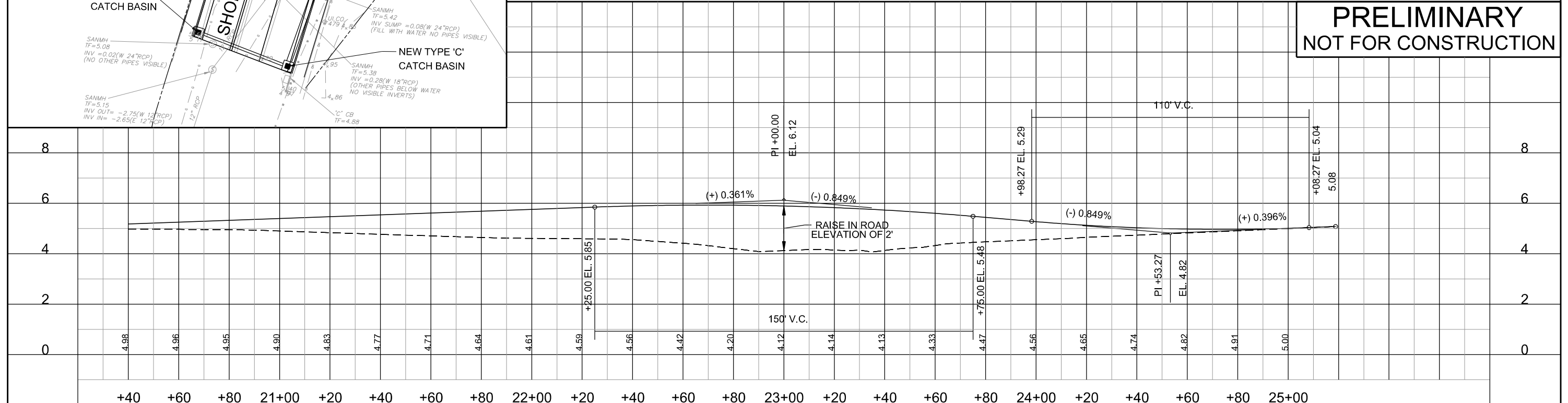
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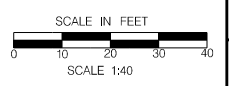


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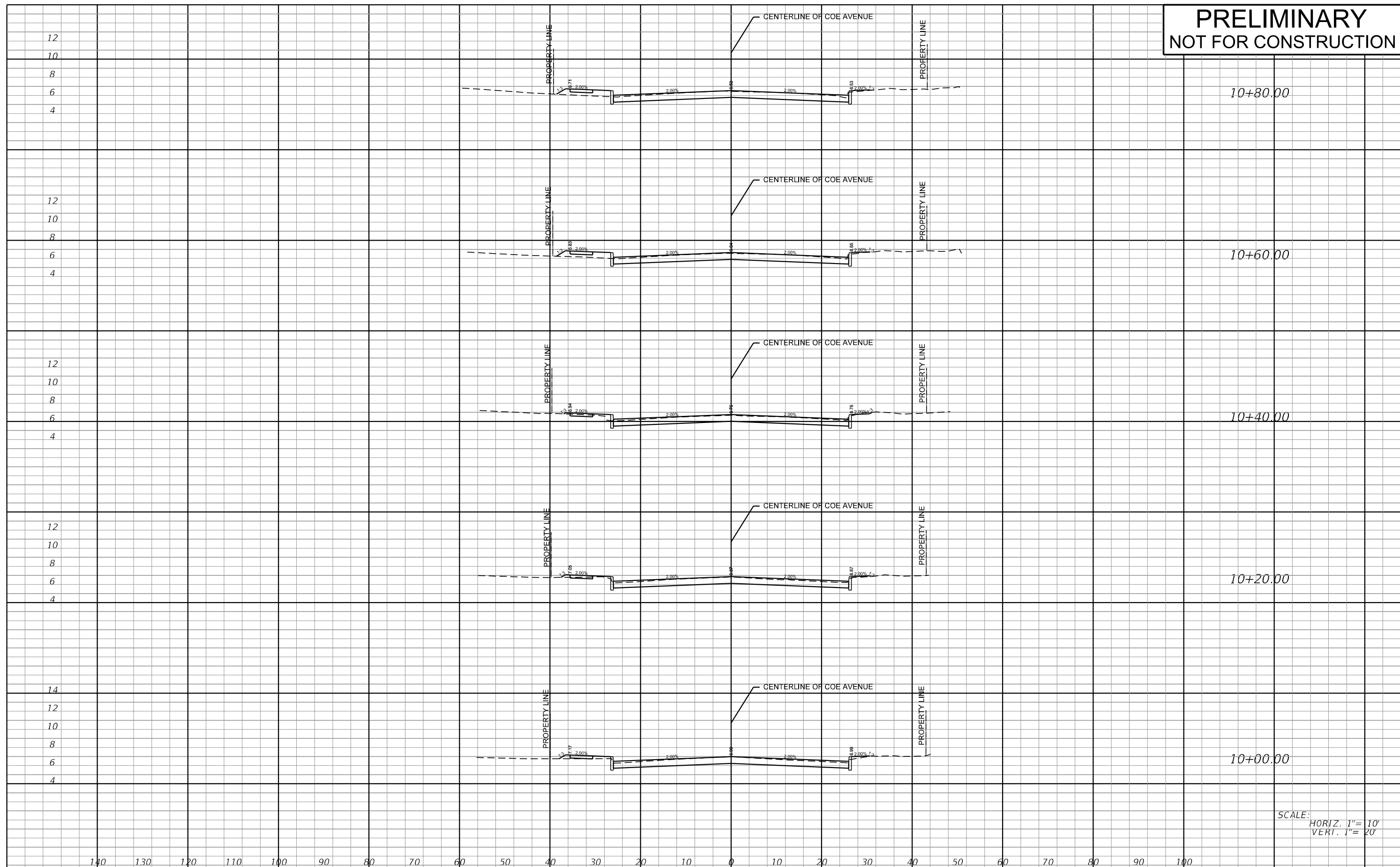


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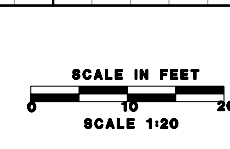
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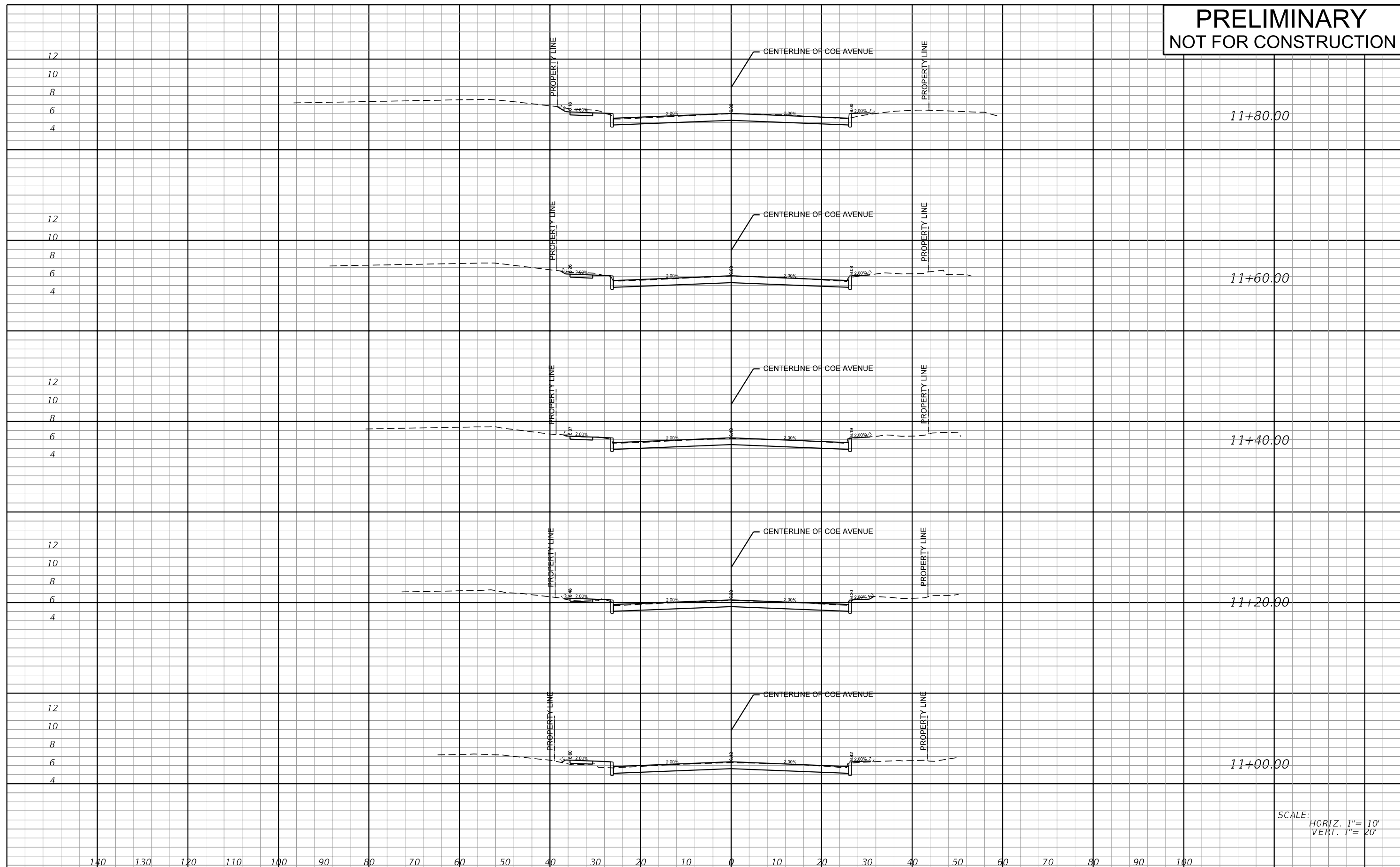
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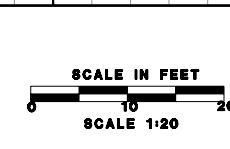
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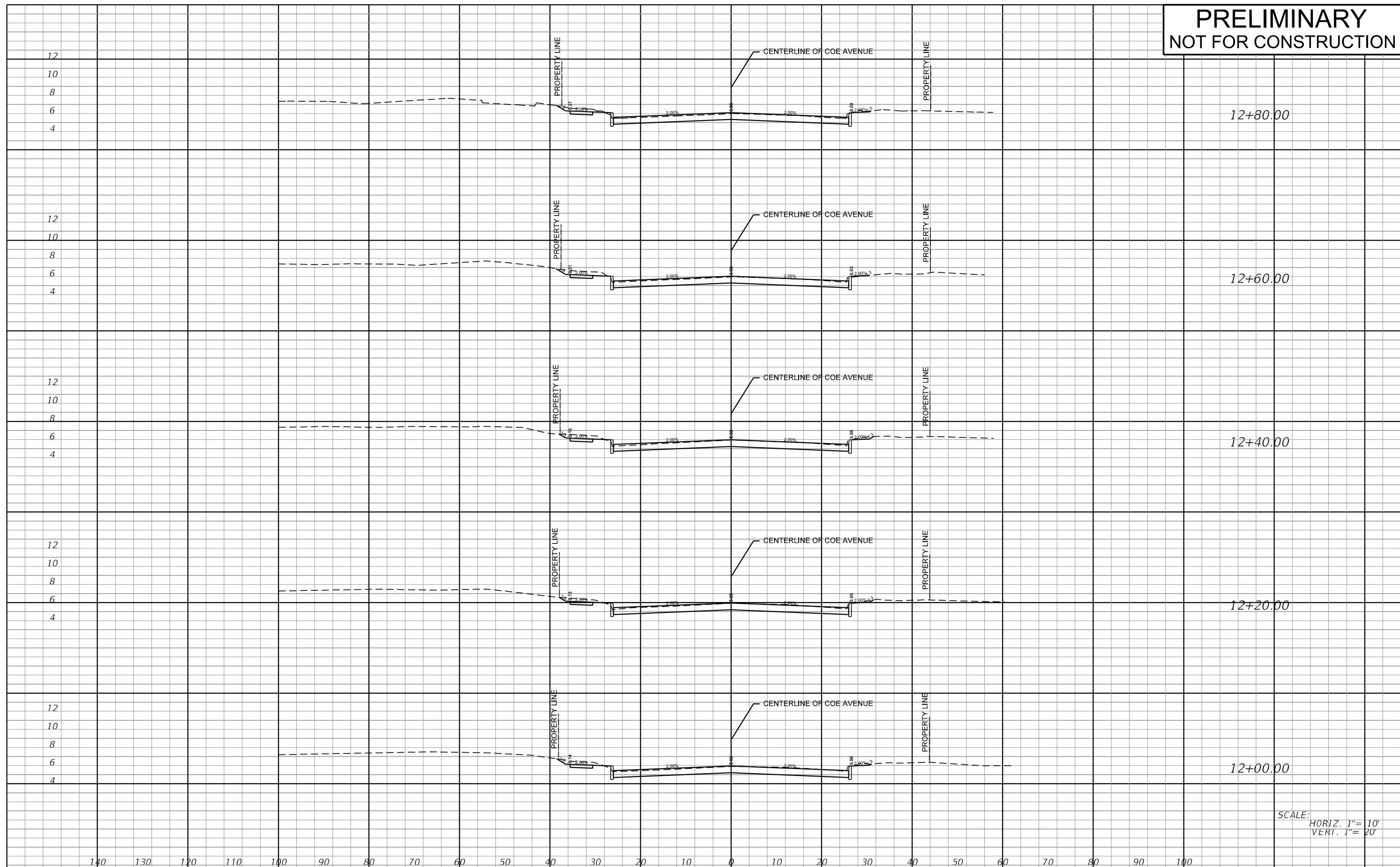
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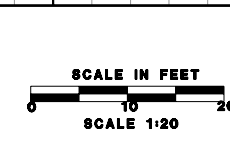
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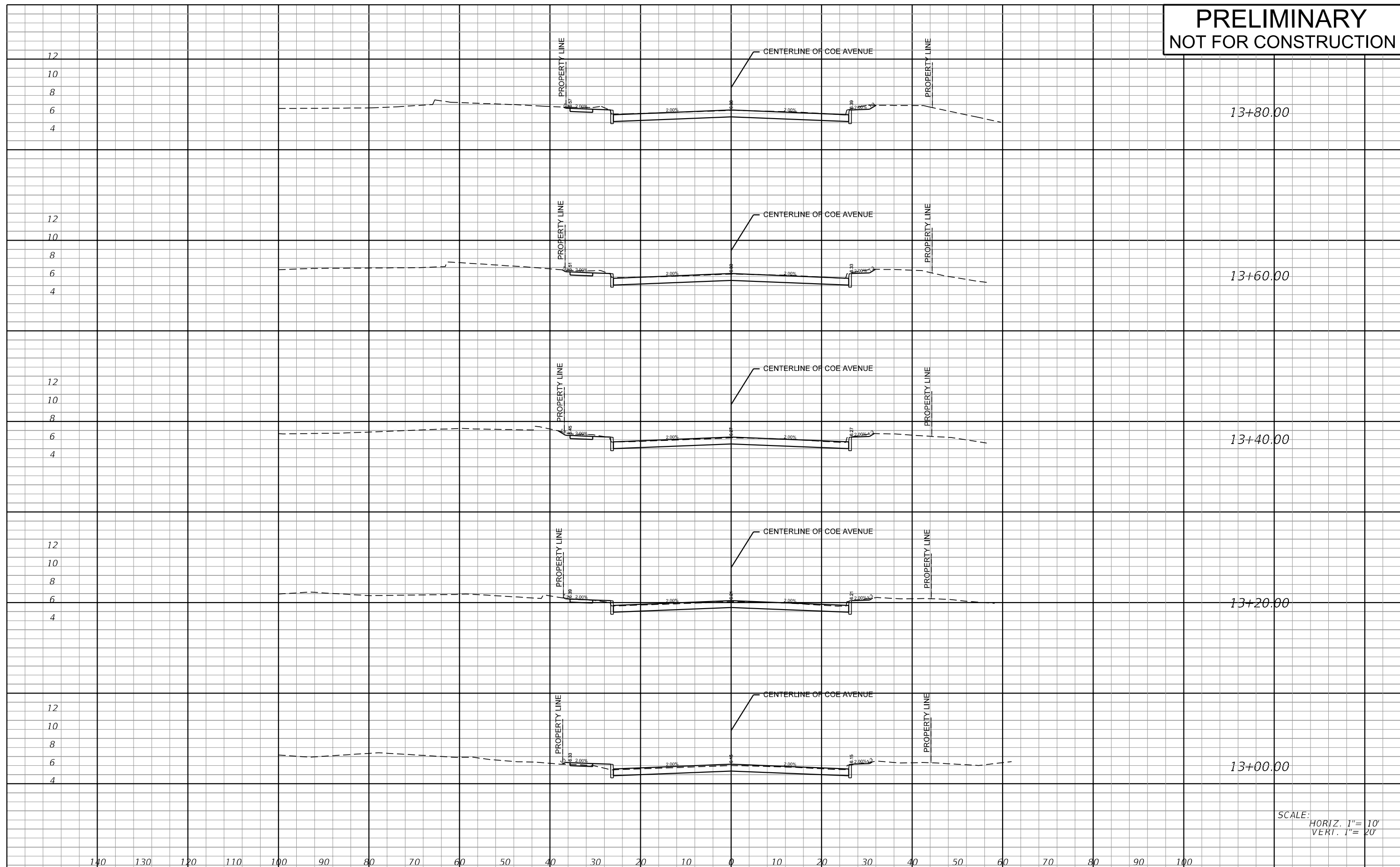
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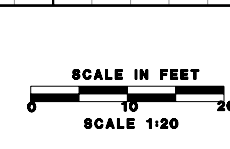
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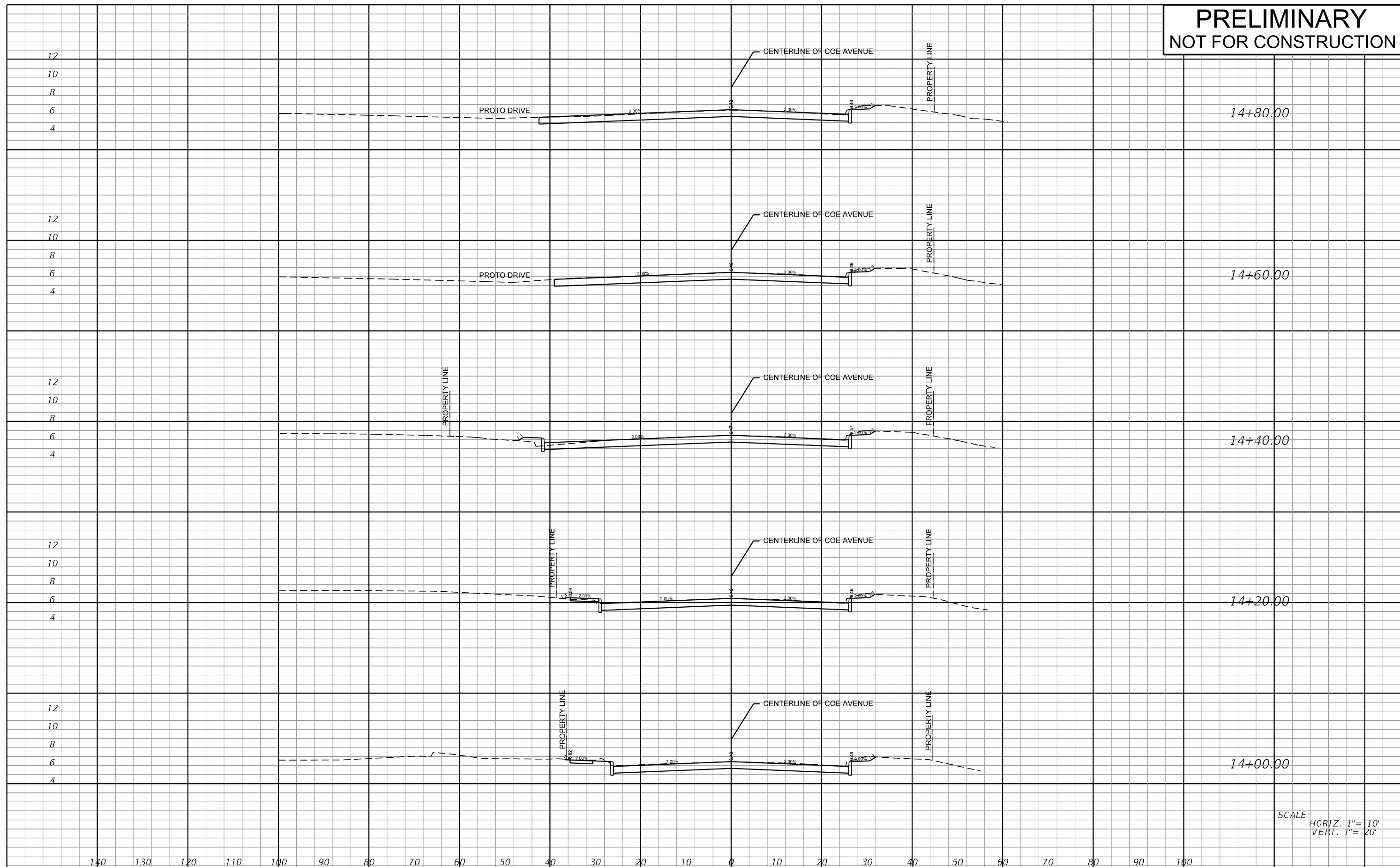
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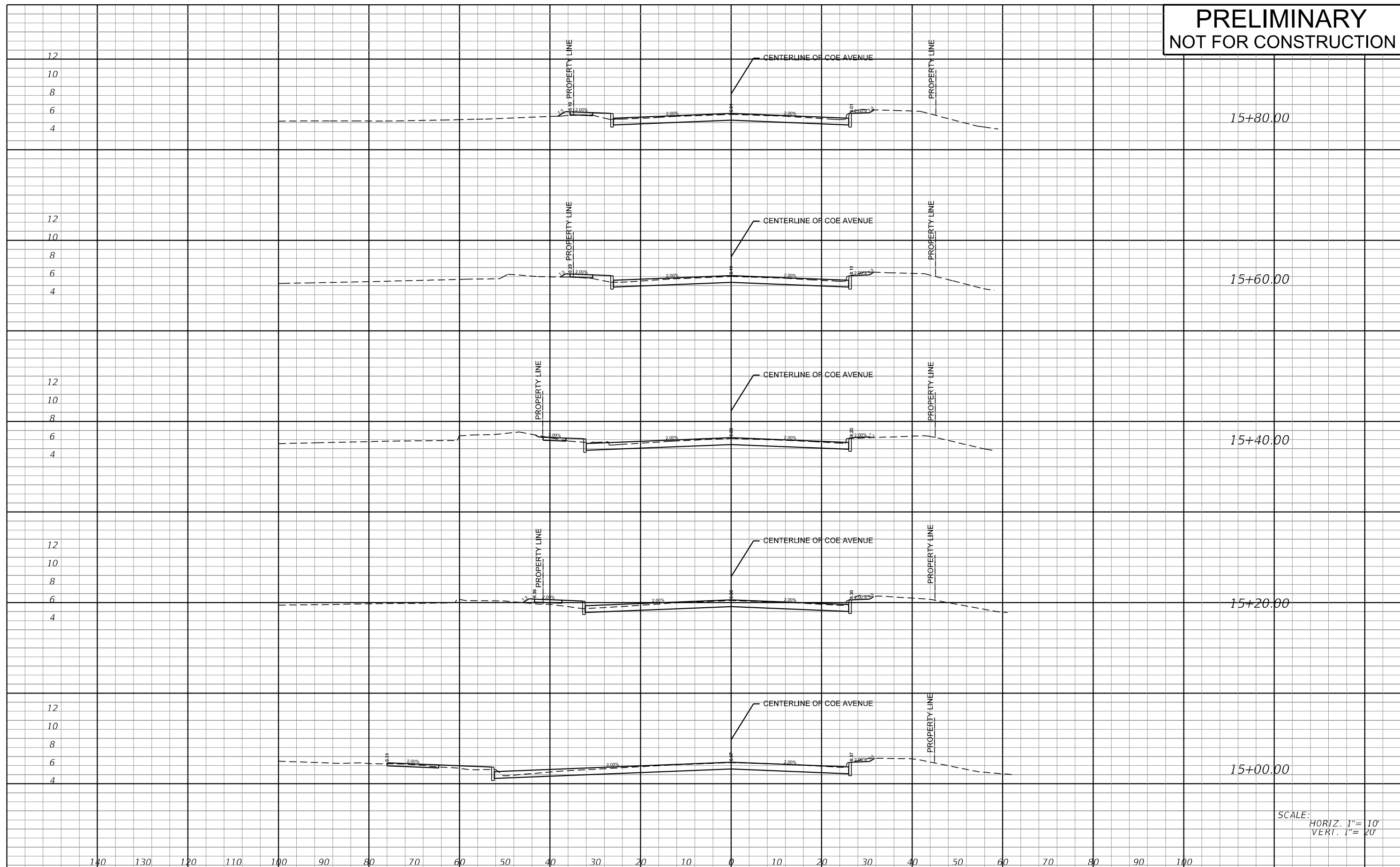
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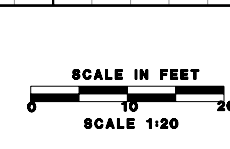


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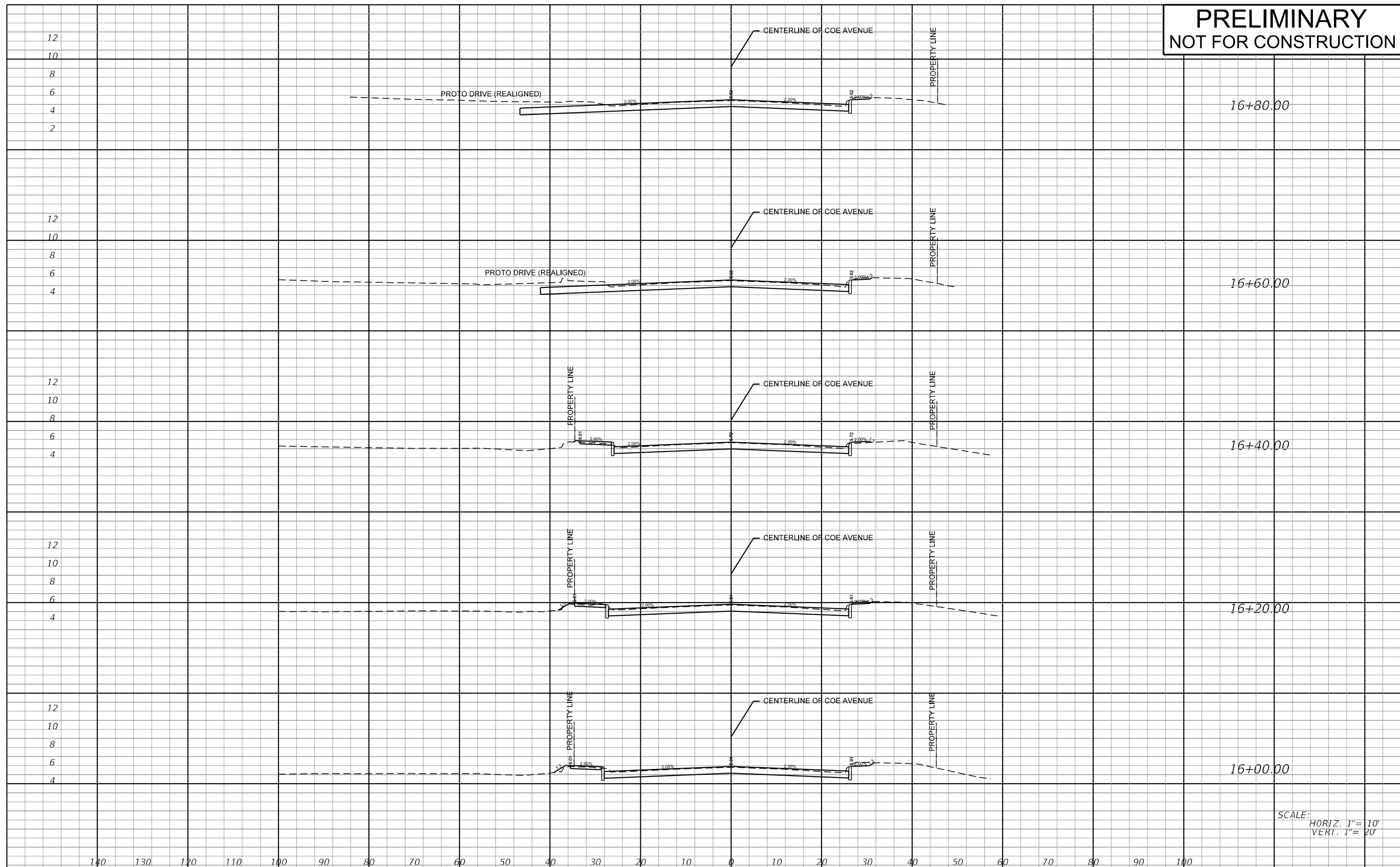
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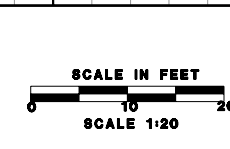
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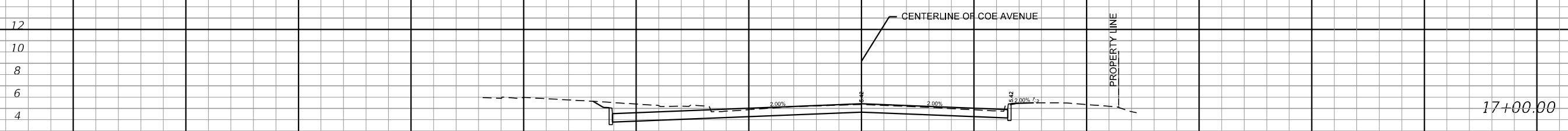
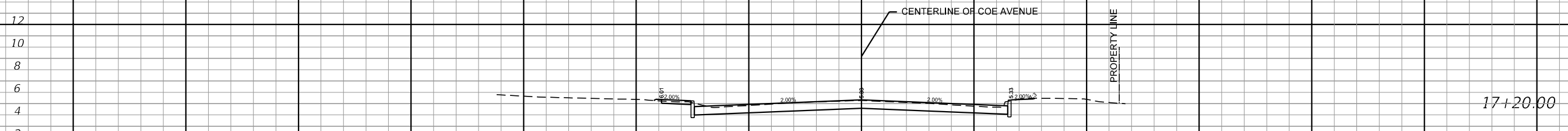
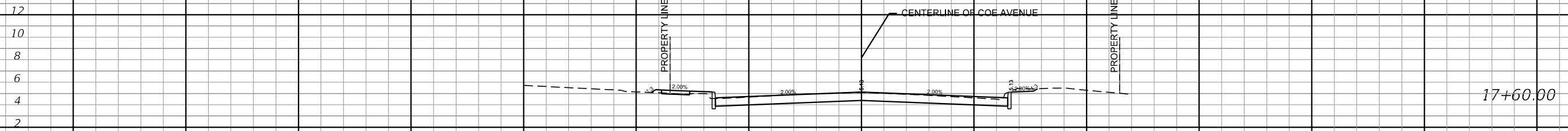
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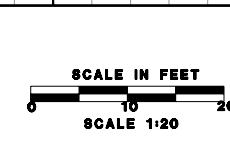
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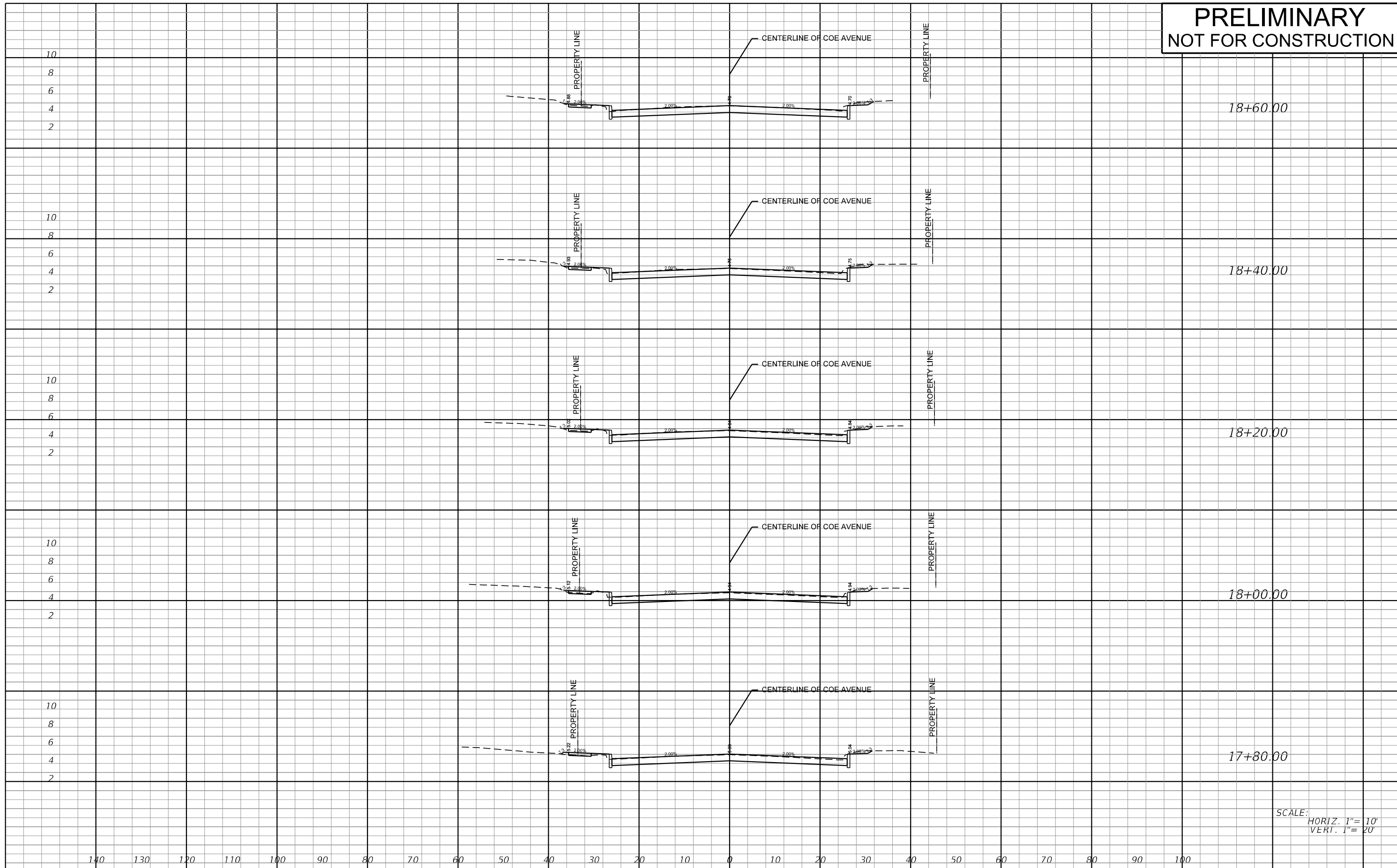
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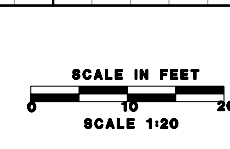
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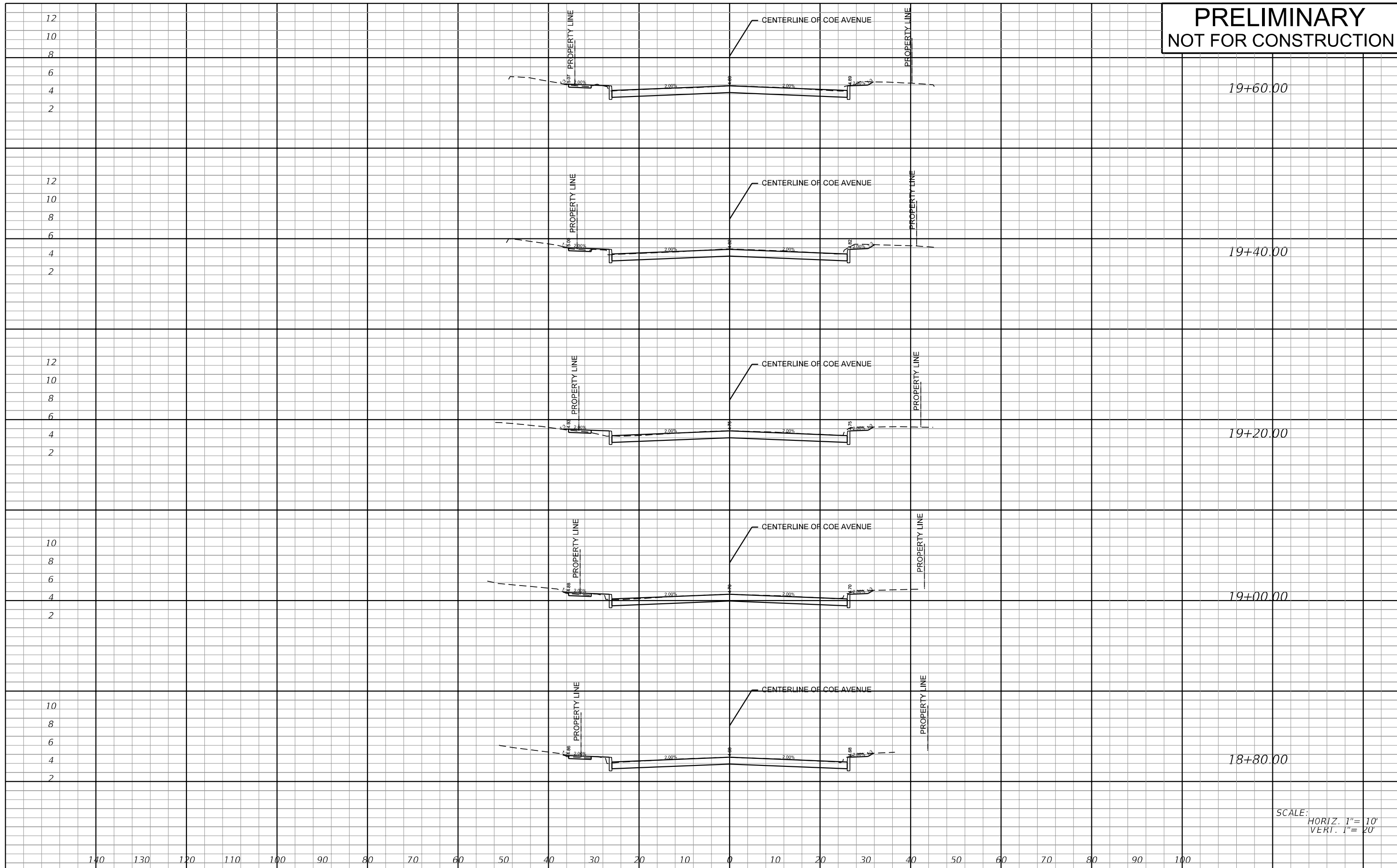
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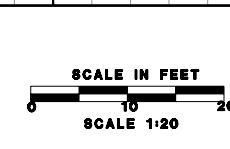
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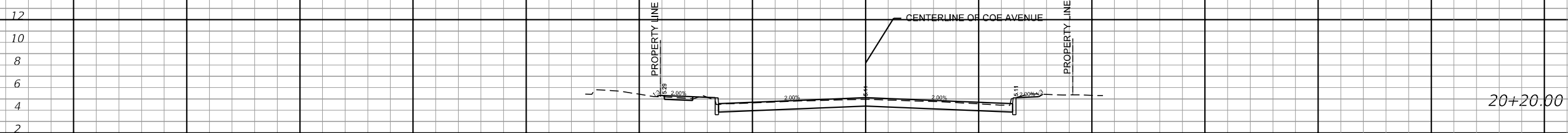
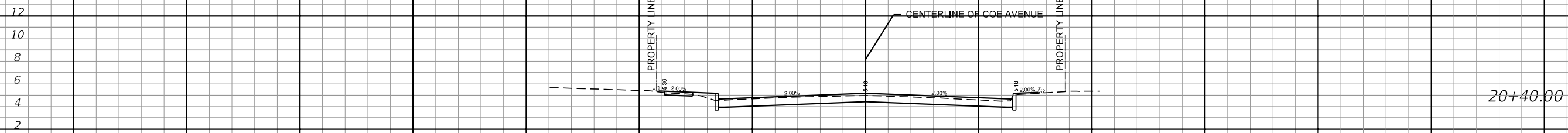
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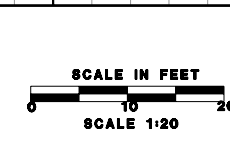
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140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	DESCRIPTION	SHEET NO.



DESIGNER: HEIDY J. BRENES  
DRAFTER: HEIDY J. BRENES  
CHECKED BY: MICHAEL SNYDER  
DATE CHECKED: 07/2012

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION

ENGINEER: CDM SMITH

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT TITLE: HEMINGWAY - COE AVENUE STUDY

PLOTTED: JULY 2012

TOWN: EAST HAVEN

DRAWING TITLE: CROSS SECTIONS

PROJECT NO.: -  
DRAWING NO.: XS-11  
SHEET NO.: 18 of 21

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**PRELIMINARY  
NOT FOR CONSTRUCTION**

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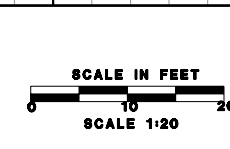
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20+60.00

SCALE: HORIZ. 1" = 10'  
VERT. 1" = 20'

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REV.	DATE	DESCRIPTION	SHEET NO.



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CHECKED BY: MICHAEL SNYDER  
DATE CHECKED: 07/2012

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION

ENGINEER: CDM SMITH  
APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT TITLE:  
HEMINGWAY - COE AVENUE STUDY

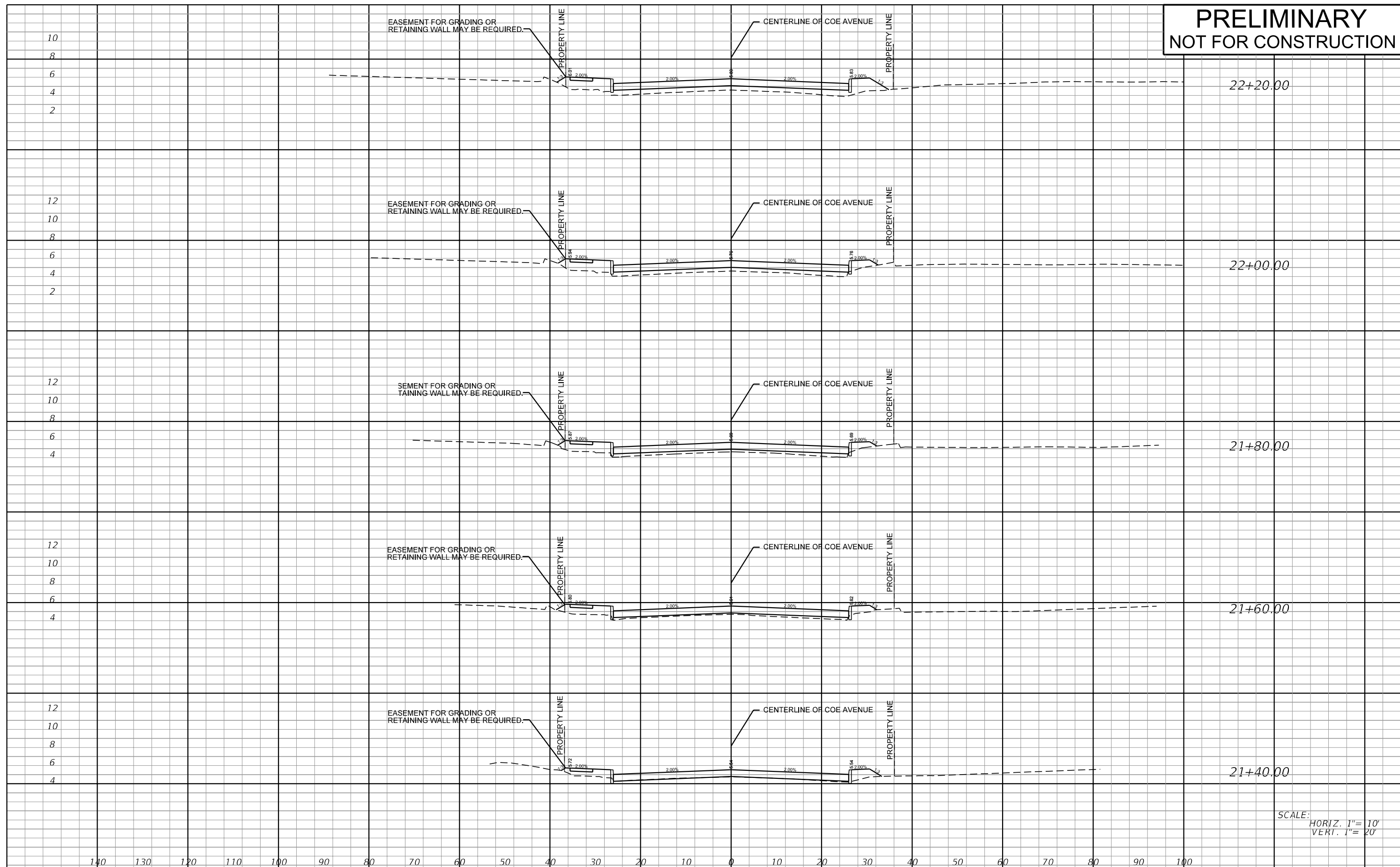
CADDx PLOTTED: JULY 2012

TOWN: EAST HAVEN  
DRAWING TITLE: CROSS SECTIONS

PROJECT NO.: -  
DRAWING NO.: XS-12  
SHEET NO.: 18 of 21

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NOT FOR CONSTRUCTION**



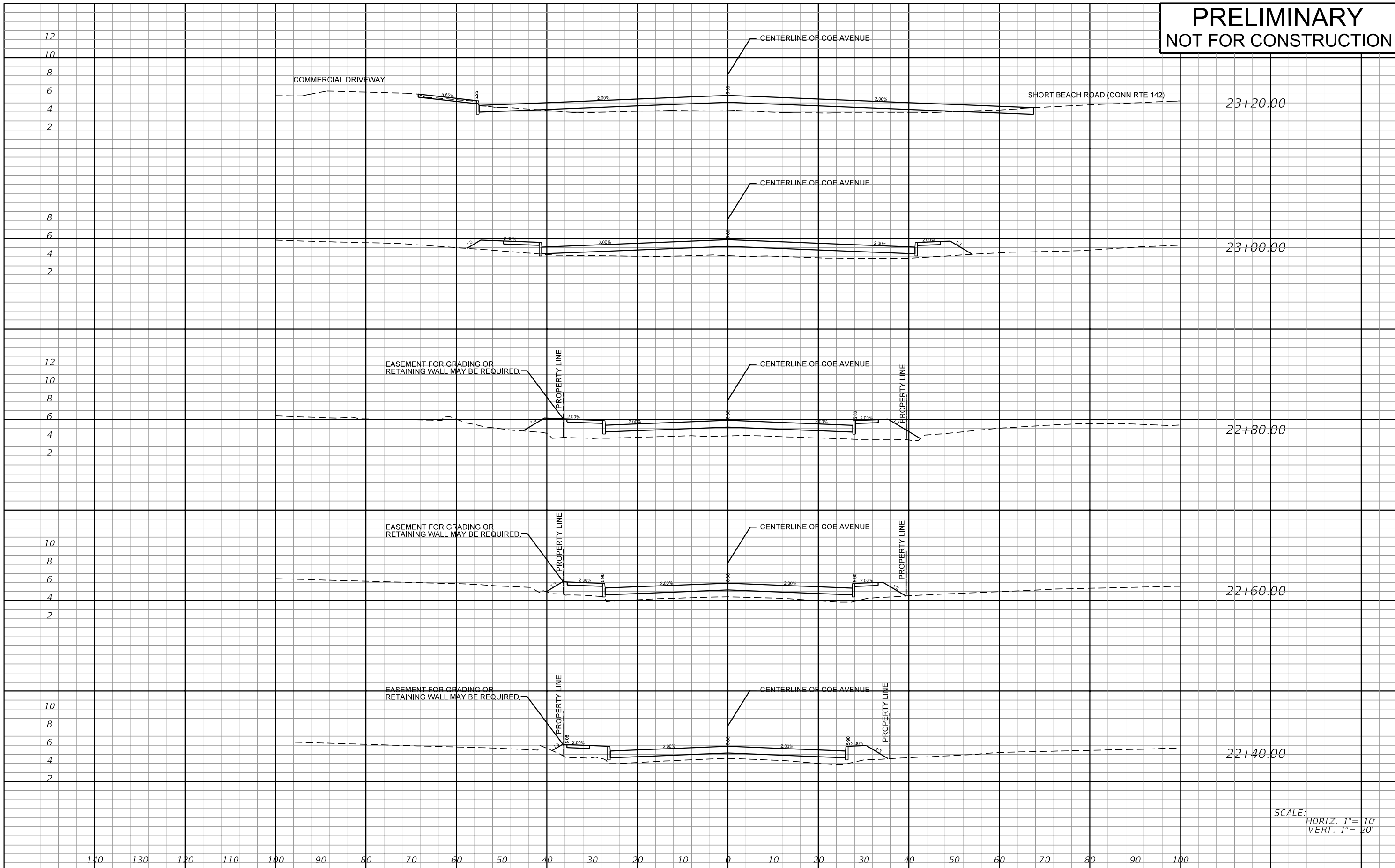
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VERT. 1" = 20'

<b>DESIGNER:</b> HEIDY J. BRENES <b>DRAFTER:</b> HEIDY J. BRENES <b>CHECKED BY:</b> MICHAEL SNYDER <b>DATE CHECKED:</b> 07/2012		 STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION <b>ENGINEER:</b> CDM SMITH <b>APPROVED BY:</b> _____ <b>DATE:</b> _____		<b>PROJECT TITLE:</b> HEMINGWAY - COE AVENUE STUDY <b>CADDx</b>		<b>TOWN:</b> EAST HAVEN <b>DRAWING TITLE:</b> CROSS SECTIONS		<b>PROJECT NO.:</b> - <b>DRAWING NO.:</b> XS-13 <b>SHEET NO.:</b> 17 of 21	
<b>SCALE IN FEET</b>  SCALE 1:20		<b>REV. DATE</b>		<b>DESCRIPTION</b>		<b>REVISIONS</b>		<b>SHEET NO.</b>	

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NOT FOR CONSTRUCTION**

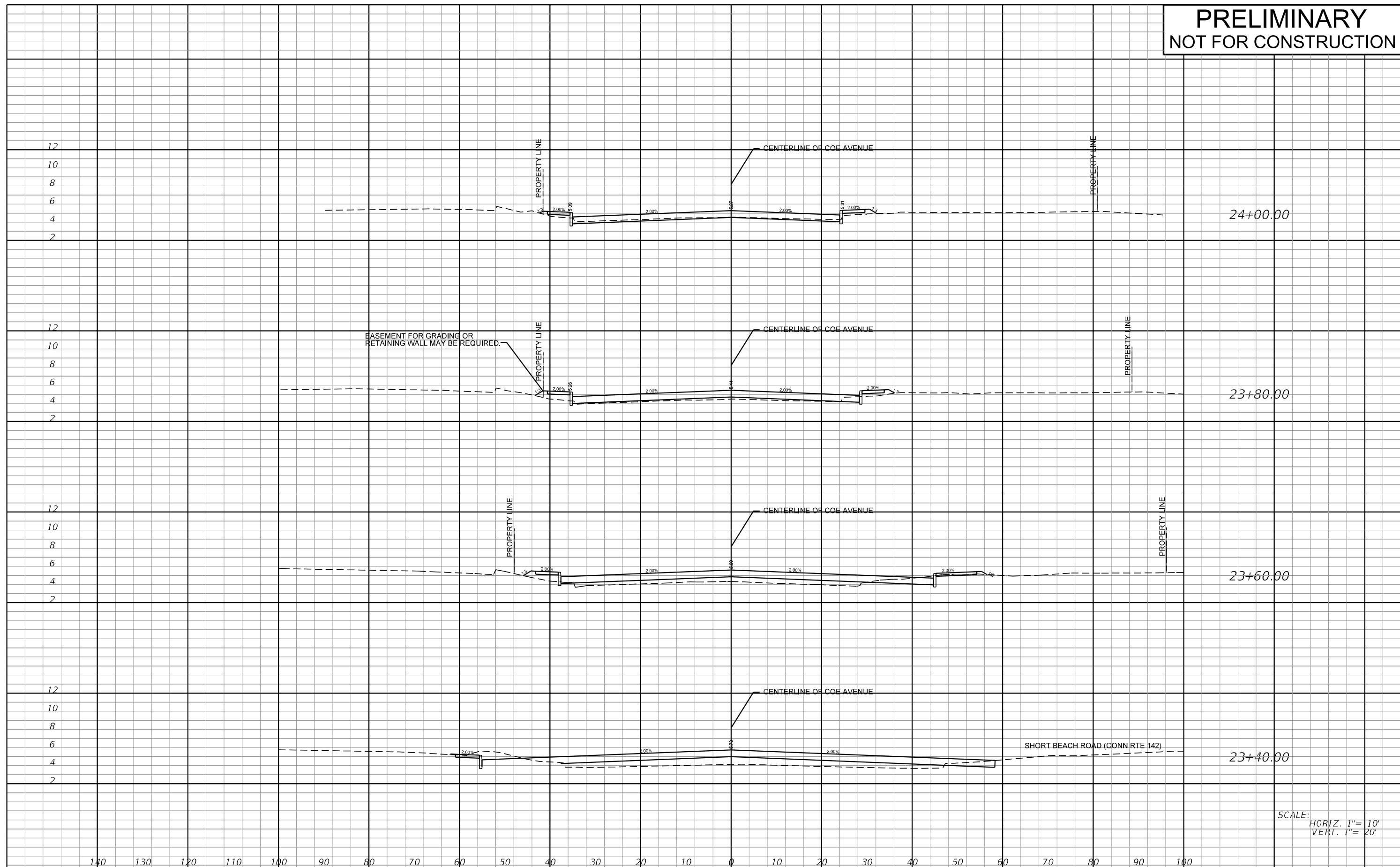


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VERT. 1" = 20'

<b>REV. DATE</b> DESCRIPTION REVISIONS SHEET NO.		<b>SCALE IN FEET</b>  SCALE 1:20		<b>DESIGNER:</b> HEIDY J. BRENES <b>DRAFTER:</b> HEIDY J. BRENES <b>CHECKED BY:</b> MICHAEL SNYDER <b>DATE CHECKED:</b> 07/2012		 <b>STATE OF CONNECTICUT</b> DEPARTMENT OF TRANSPORTATION <b>ENGINEER:</b> CDM SMITH <b>APPROVED BY:</b>		<b>PROJECT TITLE:</b> HEMINGWAY - COE AVENUE STUDY <b>CADDx</b>		<b>TOWN:</b> EAST HAVEN <b>DRAWING TITLE:</b> <b>CROSS SECTIONS</b>		<b>PROJECT NO.:</b> - <b>DRAWING NO.:</b> XS-14 <b>SHEET NO.:</b> 18 of 21	
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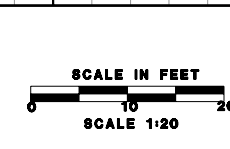
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**PRELIMINARY  
NOT FOR CONSTRUCTION**




SCALE: HORIZ. 1" = 10'  
VERT. 1" = 20'

REV.	DATE	DESCRIPTION	REVISIONS	SHEET NO.



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STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION



ENGINEER: CDM SMITH  
APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

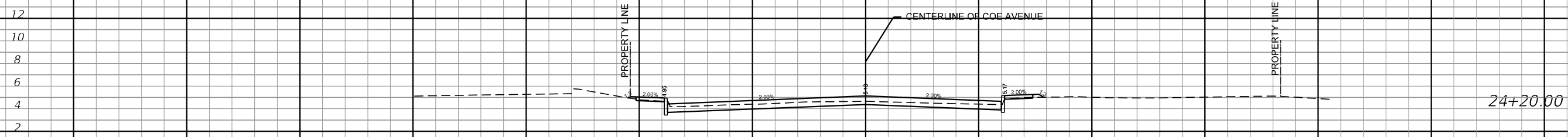
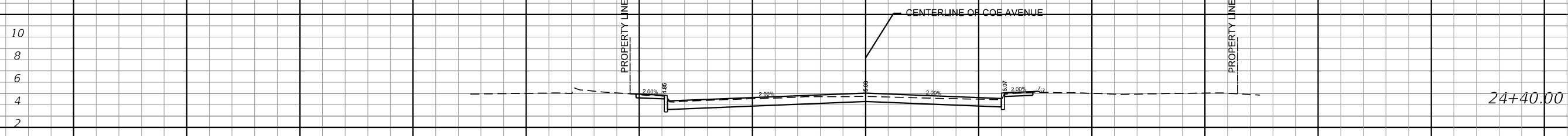
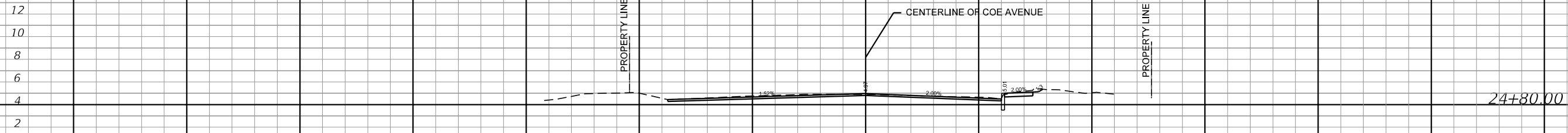
PROJECT TITLE:  
HEMINGWAY - COE AVENUE STUDY  
CADDx PLOTTED: JULY 2012

TOWN: EAST HAVEN  
DRAWING TITLE: CROSS SECTIONS

PROJECT NO.: -  
DRAWING NO.: XS-15  
SHEET NO.: 19 of 21

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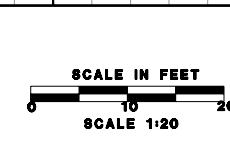
**PRELIMINARY  
NOT FOR CONSTRUCTION**



SCALE: HORIZ. 1" = 10'  
VERT. 1" = 20'

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	DESCRIPTION	SHEET NO.



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CHECKED BY: MICHAEL SNYDER  
DATE CHECKED: 07/2012

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION

ENGINEER: CDM SMITH  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

PROJECT TITLE: HEMINGWAY - COE AVENUE STUDY  
CADDx PLOTTED: JULY 2012

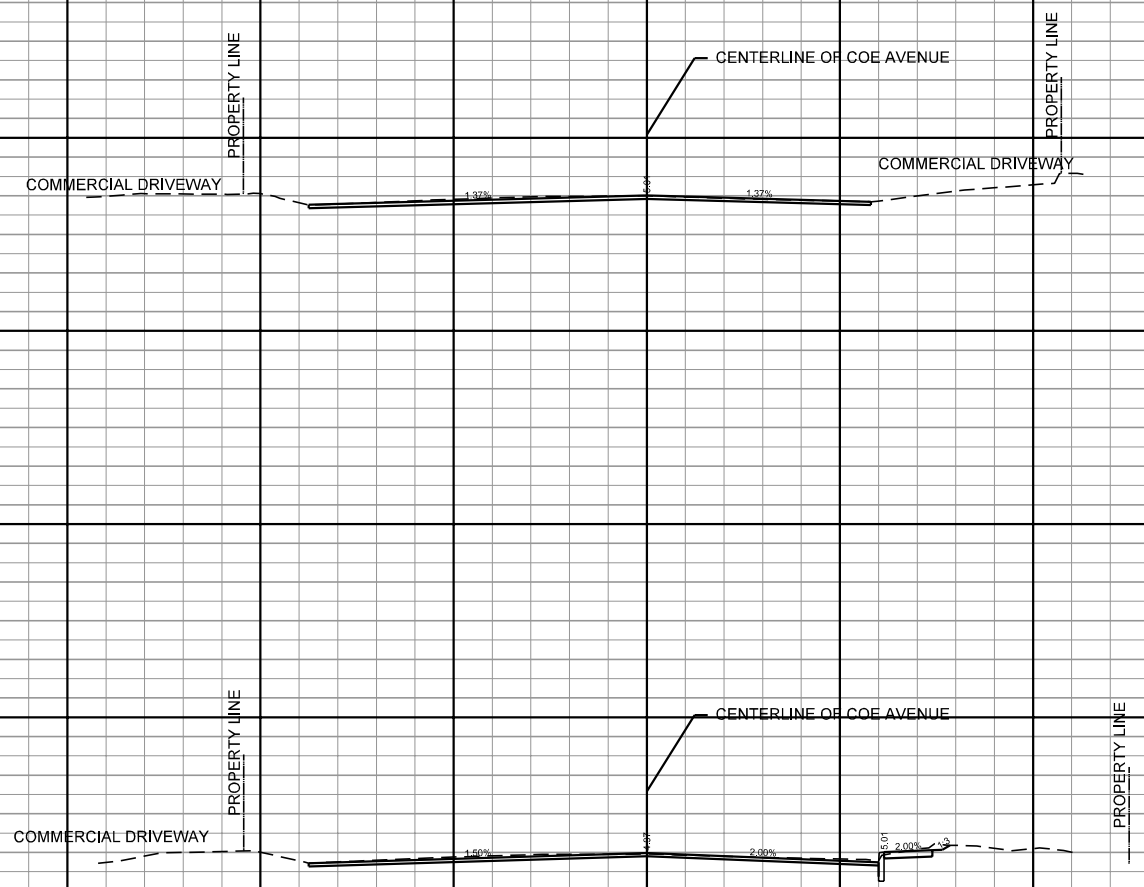
TOWN: EAST HAVEN  
DRAWING TITLE: CROSS SECTIONS

PROJECT NO.: -  
DRAWING NO.: XS-16  
SHEET NO.: 20 of 21

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**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

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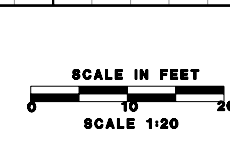
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24+81.56

SCALE: HORIZ. 1" = 10'  
 VERT. 1" = 20'

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	DESCRIPTION	REVISIONS	SHEET NO.



DESIGNER: HEIDY J. BRENES  
 DRAFTER: HEIDY J. BRENES  
 CHECKED BY: MICHAEL SNYDER  
 DATE CHECKED: 07/2012

STATE OF CONNECTICUT  
 DEPARTMENT OF TRANSPORTATION

ENGINEER: CDM SMITH  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT TITLE:  
 HEMINGWAY - COE AVENUE STUDY

CADDx PLOTTED: JULY 2012

TOWN: EAST HAVEN  
 DRAWING TITLE: **CROSS SECTIONS**

PROJECT NO.: -  
 DRAWING NO.: XS-17  
 SHEET NO.: 21 of 21

# List of Permits and Agencies

## Local, State and Federal Permits Which May be Required for the Proto Drive Realignment

Permit	Agency			Permit Citation	Requirement
	Town of East Haven	CTDEEP/OLISP	CT DOT		
<b>Site Development Plan Application</b> Town of East Haven	X			East Haven Zoning Regulations <a href="http://www.townofeasthavenct.org/pdf/planzone/East-Haven-Zoning-Regulations-May2012.pdf">http://www.townofeasthavenct.org/pdf/planzone/East-Haven-Zoning-Regulations-May2012.pdf</a>	Since this project will result in modification of lot sizes, it will likely require a review by the Town's Zoning Administrator under the town's Site Plan of Development process; approval of town-sponsored development activities will occur within the C.G.S. 8-24 statutory provisions.
<b>Re-subdivision Approval</b> Town of East Haven	X			Subdivision regulations of the Town of East Haven <a href="http://www.townofeasthavenct.org/pdf/planzone/subdivision-regulations-may2012.pdf">http://www.townofeasthavenct.org/pdf/planzone/subdivision-regulations-may2012.pdf</a>	As the project will result in changes to approved subdivision maps, it is considered a re-subdivision, requiring a Re-subdivision Approval.
<b>Demolition Permit</b> Town of East Haven	X			Application for Demolition Permit <a href="http://www.townofeasthavenct.org/building.shtml">http://www.townofeasthavenct.org/building.shtml</a>	If the project will require demolition of existing structures.
<b>Town Plan of Conservation and Development</b> Town of East Haven	X			[No permit but review and potential modification to Town Plan of Conservation and Development.]	Review of Town Plan of Conservation and Development and determine whether a modification is necessary to enable the expansion of the industrial district and the reconstruction of the street section.
<b>Special Permit for Farm River Flood Plain</b> Town of East Haven	X			Flood Damage Prevention and Control Ordinance of the Town of East Haven – provisions and standards in Section 29 of the East Haven Zoning Regulations <a href="http://www.townofeasthavenct.org/pdf/planzone/East-Haven-Zoning-Regulations-May2012.pdf">http://www.townofeasthavenct.org/pdf/planzone/East-Haven-Zoning-Regulations-May2012.pdf</a>	The Zoning Administrator and Town Engineer must endorse the application to the general zoning permit as being in compliance with the Farm River Floodplain Overlay District requirements & any required Development Permit under the provisions of the Flood Damage Prevention and Control Ordinance.
<b>CT Coastal Management Act (CMA)</b> Town of East Haven	X			Per Connecticut General Statutes (CGS) Sections 22a-90 through 22a-112. <a href="http://www.ct.gov/dep/lib/dep/long_island_sound/coastal_management_manual/m anual_section_5_08.pdf">http://www.ct.gov/dep/lib/dep/long_island_sound/coastal_management_manual/m anual_section_5_08.pdf</a>	An Application for Review of Coastal Site Plans is required for any plans impacting coastal boundary, which is defined as a continuous line delineated on the landward side by the interior contour elevation of the one hundred year frequency coastal flood zone, as defined and determined by the national Flood Insurance Act, or a one thousand foot linear setback measured from the mean high water mark in coastal waters, or a one thousand foot linear setback measured from the inland boundary of tidal wetlands, whichever is farthest inland. The entire project area lies within the CMA jurisdictional boundaries. Coastal municipalities are required to undertake coastal site plan reviews including, e.g. architectural floor plans and elevations, hydrology report and stormwater pollution control plan. Applications are submitted to the Town.
<b>Inland Wetlands &amp; Watercourses Permit</b> Town of East Haven Inland Wetlands and Water Courses Commission	X			Per CGS Sections 22a-36 to 22a-45(a). <a href="http://cga.ct.gov/2011/pub/chap440.htm">http://cga.ct.gov/2011/pub/chap440.htm</a>	An application to the Inland Wetlands and Water Courses Commission may be required for this project depending on the classification of the wetlands impacted by the road realignment.
<b>Flood Management Certificate</b> CTDEEP Office of Inland Water Resources		X		Per CGS Sections 25-68b through 25-68h. <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324172&amp;depNav_GID=1643">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324172&amp;depNav_GID=1643</a>	Requires preparation of site plans, sedimentation and erosion control plans, stormwater hydrographs, stormwater pollution control plan (pretreatment basins, possible retention basins) and application form. The Permit requirements include that stormwater water from impervious surfaces be collected and treated to remove a minimum of 80% of total suspended solids. Various technical documents in support of the application include, but are not limited to: floodplain management consistency worksheets and hydrology and hydraulics, engineering design reports, plans and specifications describing the project and, where applicable, how fish populations and fish passage will be protected.
<b>Stream Channel Encroachment Line (SCEL) Permit</b> CTDEEP		X		Per CGS Sections 22a-342 to 22a-349(a). <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324176&amp;depNav_GID=1643">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324176&amp;depNav_GID=1643</a>	Prior to placing any encroachment or obstruction riverward of a SCEL established by DEP under CGS Section 22a-342, a permit must be obtained. The following are examples of regulated activities for which a SCEL permit is needed: construction of structures; excavation or deposition of material; land clearing and grading; and substantial maintenance or repair of non-conforming structures (e.g., buildings that existed when the encroachment lines were adopted). DEP has designated about 270 miles of floodplain throughout the state on "SCEL maps". These maps are on file in the Town Clerk's Office.
<b>Tidal Wetlands, Structures, Dredge and Fill</b> CTDEEP/ Office of Long Island Sound Programs (OLISP)		X		Per CGS Sections 22a-359 through 22a-363f. <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324180&amp;depNav_GID=1643">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324180&amp;depNav_GID=1643</a> and <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324222&amp;depNav_GID=1643#LongIslandSound">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324222&amp;depNav_GID=1643#LongIslandSound</a>	For projects that impact tidal wetlands, the statutes require preparation of site plans, sedimentation and erosion control plans, stormwater hydrographs, stormwater pollution control plan (pretreatment basins, possible retention basins) and application form. The Permit requirements include that stormwater water from impervious surfaces be collected and treated to remove a minimum of 80% of total suspended solids.

<b>Water Diversion Permit</b> CTDEEP Office of Inland Water Resources		X		CT Water Diversion Policy Act per CGS Sections 22a-365 to 22a-378(a). <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324178&amp;depNav_GID=1643">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324178&amp;depNav_GID=1643</a>	This program, administered by the Bureau of Water Protection and Land Reuse's Inland Water Resources Division, regulates activities which cause, allow or result in the withdrawal from, or the alteration, modification or diminution of, the instantaneous flow of the waters of the state. In general, any person proposing a diversion which was not registered with the Department and, which is not exempt, must apply for a permit. You must apply for a permit if, among other things, you propose to construct or otherwise modify roadway crossings or culverts which provide detention or retention of watercourse flows either by design or default; or relocate, retain, detain, bypass, channelize, pipe, culvert, ditch, drain, fill, excavate, dredge, dam, impound, dike, or enlarge waters of the state.
<b>Stormwater Permit Associated with Construction Discharges</b> CTDEEP		X		Per CGS Section 22a-430(b); DEP-PERD-GP-015 <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324212&amp;depNav_GID=1643">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324212&amp;depNav_GID=1643</a>	This general permit applies to all discharges of stormwater and dewatering wastewater from construction activities which result in the disturbance of <i>one or more</i> total acres of land area on a site regardless of project phasing. For construction projects with a total disturbed area (regardless of phasing) of between one and five acres, the permittee shall agree to adhere to the erosion and sediment control land use regulations of the town in which the construction activity is conducted. No registration of this general permit shall be required for such construction activity as long as it receives town review and written approval of its erosion and sediment control measures and follows the Guidelines. If no review is conducted by the town, the permittee must register and comply with Section 6 of this general permit. For construction projects with a total disturbed area (regardless of phasing) of greater than five acres, registration is required to be submitted in order for the discharges to be authorized by this general permit.
<b>State Traffic Signal Approval</b> CT Department of Transportation		X		Per CGS Section 14-299. <a href="http://www.ct.gov/dot/cwp/view.asp?A=1394&amp;Q=259542">http://www.ct.gov/dot/cwp/view.asp?A=1394&amp;Q=259542</a>	Permits for the installation, revision, and removal of traffic control signals are issued to the Local Traffic Authority having jurisdiction – in East Haven it is the Police Commission.
<b>Coastal Zone Management (CZM) Consistency</b> CTDEEP Office of Inland Water Resources		X		CZM Concurrence under Section 307 of the Federal CZM Act of 1972, as amended. <a href="http://www.ct.gov/dep/cwp/view.asp?A=2705&amp;Q=441852">http://www.ct.gov/dep/cwp/view.asp?A=2705&amp;Q=441852</a>	Requires applicants to obtain a certification or waiver from the CTDEEP that the activity complies with the CT Coastal Management Program for activities affecting the state's coastal area.
<b>Section 401 of the Federal Clean Water Act</b> (Water Quality Certification) CTDEEP Inland Water Resources Division and OLISP		X		Section 401 of the Federal Clean Water Act (33 U.S.C. 1314) and per CGS Sections 22a-30-1 through 22a-30-17. <a href="http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324168&amp;depNav_GID=1643">http://www.ct.gov/dep/cwp/view.asp?a=2709&amp;q=324168&amp;depNav_GID=1643</a>	The 401 Water Quality Certification program, administered by the, regulates any applicant for a federal license or permit who seeks to conduct an activity that may result in any discharge into the navigable waters, including all wetlands, watercourses, and natural and man-made ponds. Such persons must obtain certification from DEP that the discharge is consistent with the federal Clean Water Act and the Connecticut Water Quality Standards.
<b>Certificate of Operation of a Major Traffic Generator</b> CT Department of Transportation			X	Per CGS Section 14-311. <a href="http://www.ct.gov/dot/cwp/view.asp?A=1394&amp;Q=259538">http://www.ct.gov/dot/cwp/view.asp?A=1394&amp;Q=259538</a>	A certificate of operation is required for all developments of 100,000 square feet of floor area and/or 200 or more parking spaces which abut or adjoin a state highway or which substantially affect state highway traffic. A certificate is required for any new development or an expansion of an existing development which, in its entirety, equals or exceeds the aforementioned thresholds and abuts or adjoins a state highway. A new certificate is required for any development which is already certified, and is increasing its parking facilities by 50 or more parking spaces, increasing in square footage or is proposing any significant change in use from that previously approved (i.e., office-to-retail). Developments which do not abut or adjoin a state highway, but equal or exceed the aforementioned thresholds, must first be evaluated to determine if a Certificate will be required.
<b>State Highway Encroachment</b> CTDOT			X	Per CGS Section 13b-17, Regulations, Delegations of duties and responsibilities of commissioner, Section 13a-143a, Driveway Permits and Section 13a-247, Excavations and Obstructions. <a href="http://www.ct.gov/dot/cwp/view.asp?A=1394&amp;Q=259544">http://www.ct.gov/dot/cwp/view.asp?A=1394&amp;Q=259544</a>	A permit (e.g. curb-cut permit) may be required if any change is made in the structure, layout, drainage or topography of a State highway and its appurtenances. Since Coe Avenue is a state highway, an Encroachment Permit will be required from the Connecticut Department of Transportation.
<b>National Environmental Policy Act (NEPA) and Connecticut Environmental Policy Act (CEPA)</b> EPA Region 1 Office of Environmental Review			X	Full NEPA review, including environmental assessments (EA's) or environmental impact statements (EIS's), may be required if federal agencies' funding is used or if federal agencies must make any permitting decisions. Similarly, CEPA review, EA's or EIS's may also be required if state funds are used for any portion of the project, depending on the threshold requirements of each state agency. <a href="http://www.epa.gov/region1/nepa/">http://www.epa.gov/region1/nepa/</a>	NEPA and CEPA requirements go into effect when airports, buildings, military complexes, highways, parkland purchases and other federal or state sponsored activities with the potential for impacts are proposed. Environmental assessments (EA's) or Environmental Impact Statements (EIS's), which are assessments of the likelihood of impacts from alternative courses of action, are required from all federal and state agencies and are the most visible NEPA/CEPA requirements. NEPA/CEPA requires agencies to disclose these impacts to interested parties and the general public. The central element in the environmental review process is a rigorous evaluation of alternatives including the "no action" alternative.
<b>National laws protecting species</b> EPA and Fish and Wildlife Service			X	Endangered Species Act, Migratory Bird Treaty Act, or Wild Bird Conservation Act <a href="http://www.fws.gov/permits/legacyfs.pdf">http://www.fws.gov/permits/legacyfs.pdf</a>	Review of these laws and the related requirements may be required if the habitat of any of the listed threatened or endangered species is in the impacted location.
<b>Section 404 of the Clean Water Act,</b> Department of the Army New England District - US Army Corps of Engineers (USACOE)			X	The Corps of Engineers regulates work and structures that are located in, under or over navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899; the discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act; and the transportation of dredged material for the purpose of disposal in the ocean (regulated by the Corps under Section 103 of the Marine Protection, Research and Sanctuaries Act). <a href="http://www.nae.usace.army.mil/Regulatory/">http://www.nae.usace.army.mil/Regulatory/</a>	"Waters of the United States" are navigable waters, tributaries to navigable waters, wetlands adjacent to those waters and/or isolated wetlands that have a demonstrated interstate commerce connection. Review is conducted jointly by the ACOE and CTDEEP (see CT 401 Water Quality Permit). Additional review by U.S. Fish and Wildlife, U.S. Environmental Protection Agency and other federal agencies may be conducted based on potential impacts of the wetlands or wildlife habitat. Since the relocation of Proto Drive will require the deposition of fill (or dredged) materials within the jurisdictional limits of the USACOE (i.e. waterward of the high tide line), an Individual permit will likely be required. The National Oceanic and Atmospheric Administration (NOAA) may also be involved for review if federal funds are involved.
<b>Federal Aviation Administration</b>			X		May need review of new street lights by the FAA regarding airfield lighting safety in the vicinity of the New Haven airport.

Note: This permit list is based on a preliminary assessment; actual permitting requirements may vary and will require documentation of existing coastal and environmental resources, preliminary engineering and additional research.