

Appendix B: Project Scoping Report/Design Report

TRANSPORTATION

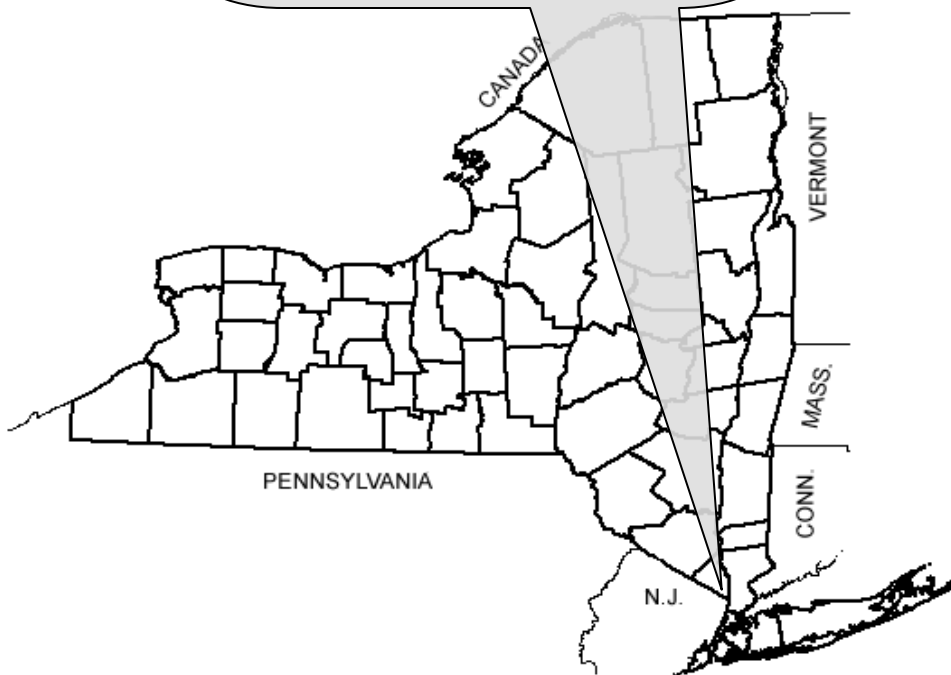
DRAFT PROJECT SCOPING REPORT/ FINAL DESIGN REPORT

February 26, 2016

PIN 8TZ1.00 / BIN: 5513940

Shared Use Path Parking

Village of South Nyack
Rockland County



PROPOSED



ANDREW M. CUOMO
Governor

**Department of
Transportation**

MATTHEW J. DRISCOLL
Commissioner



**U.S. Department of Transportation
Federal Highway Administration**

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CHAPTER 1 - EXECUTIVE SUMMARY

1.1. Introduction

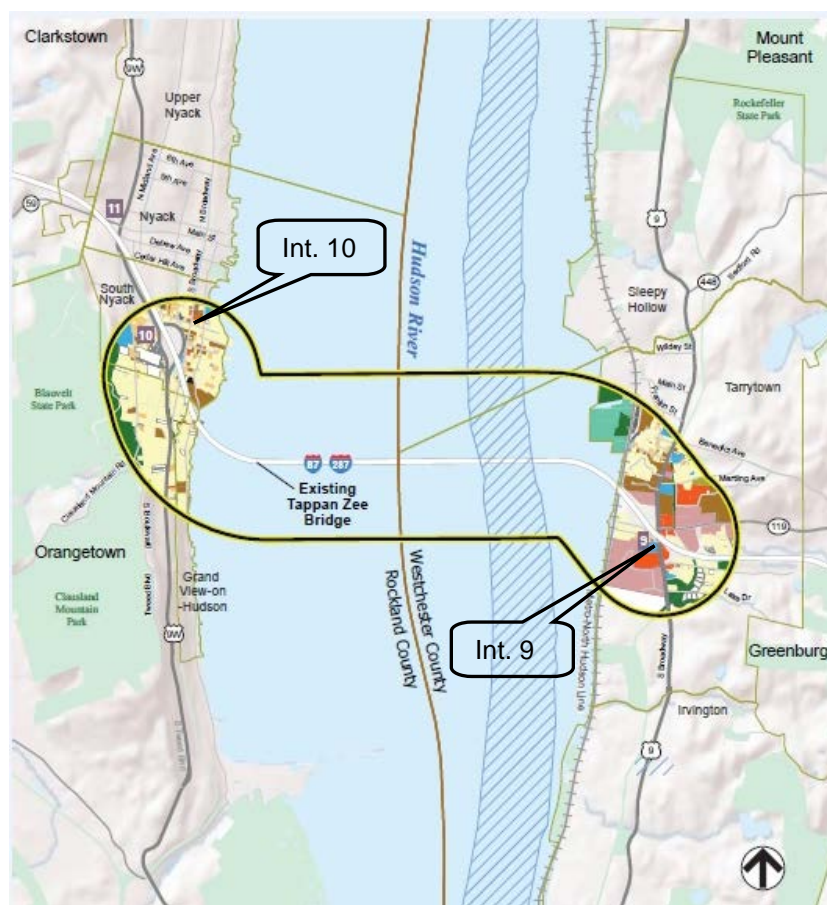
This Project Scoping Report / Final Design Report (PSR/FDR) was prepared to address the need for a western extension of the Shared Use Path (SUP), previously approved in the Tappan Zee Hudson River Crossing (aka New NY Bridge) FEIS and ROD, in the Village of South Nyack, Rockland County, a SUP parking area, and ancillary facilities all of which arose from community input received as part of NYSTA's public outreach program. This PSR/FDR provides documentation on the alternatives considered and identifies two alternatives from which one will be selected to advance to Final Design and Construction.

This report was prepared in accordance with the NYSDOT Project Development Manual, 17 NYCRR (New York Codes, Rules and Regulations) Part 15, and 23 CFR (Code of Federal Regulations) 771. Transportation needs have been identified (section 1.2), objectives established (1.2.3) to address the needs, and cost-effective alternatives developed (1.3). This project is federally funded.

1.2. Purpose and Need

1.2.1. Where is the Project Located?

The SUP Parking Project is located at the western terminus of the SUP in the Village of South Nyack, Rockland County at Interchange 10 of Route I-87/287 (Route Marker (RM) 16.7) and at the eastern terminus of the SUP in the Village of Tarrytown, Westchester County near US Route 9. Interchange 10 is located northwest of the current Tappan Zee Bridge Hudson River crossing which is the site of the planned replacement bridge (New NY Bridge). Interchange 10 is shown on the Project Map below.



Project Map

- A. Route number: I-87/287 (Interchange 10), US Route 9W, and US Route 9
- B. Route name: New York State Thruway, Franklin Street Extension (US Route 9W North), Hillside Avenue (US Route 9W South), South Broadway (US Route 9)*
- C. PIN (Project Identification Number): 8TZ1.00
- D. BIN (Bridge Identification Number): 5513940
- E. City/Village/Township: Village of South Nyack and Village of Tarrytown
- F. County: Rockland and Westchester
- G. Project Length: Approximately 4 mile
- H. I-87/287 RM 16.7 (Rockland), RM 12.9 (Westchester)

*South Broadway (US Route 9) is located in Westchester County

1.2.2. Why is the Project Needed?

Refer to Chapter 1, Section 1-2 of the Project Environmental Assessment.

1.2.3. What are the Objectives/Purposes of the Project?

Refer to Chapter 1, Section 1-3 of the Project Environmental Assessment.

1.3. What Alternative is Being Considered?

A total of eight alternatives aside from the no build alternative were studied for this SUP parking project. Of the eight alternatives, six were eliminated from further study for varying reasons. The eliminated alternatives include Alternative A, Alternative B, Alternative C, Alternative D, Alternative G and Alternative H. The description of each eliminated alternative including the reasons for elimination are discussed in Chapter 2, Section 2-3-1 of the Project Environmental Assessment.

Two of the eight alternatives, Alternatives E and F are being advanced for further study and have been evaluated in the technical chapters of the Project Environmental Assessment. One of these alternatives will be chosen as the preferred alternative and advanced to Final Design and Construction. The descriptions of the No Build Alternative and Alternatives E and F are discussed in Chapter 3, Section 3-2 of the Project Environmental Assessment.

A detailed traffic analysis was performed for the advancing alternatives as well as most of the eliminated alternatives. The traffic data collection efforts are described in section 2.3.1.4 of this report and the analyses are described in section 2.3.1.6 of this report.

For a list of the design criteria and nonstandard features see Sections 2.3.3.2 and 2.3.3.5 of this report.

1.4 Environmental Review

NEPA (National Environmental Policy Act): Refer to Chapter 1, Section 1-1 of the Project Environmental Assessment.

SEQRA (State Environmental Quality Review Act): Refer to Chapter 1, Section 1-1 of the Project Environmental Assessment.

1.5 How will the Alternatives Affect the Environment?

Refer to the following chapters of the Project Environmental Assessment for discussion on how the Alternatives will affect the environment and for the proposed mitigations.

Operations – Chapter 4 “Transportation”

Archaeological – Chapter 8 “Historic and Cultural Resources”

Noise – Chapter 10 “Noise”

Wetlands, Floodplain – Chapter 11 “Natural Resources”
 Section 106/Section 4(f) – Chapter 15 “Draft Section 4(f) Evaluation”

Anticipated Permits/Certifications/Coordination:

New York State Department of Environmental Conservation (NYSDEC):

- State Pollutant Discharge Elimination System (SPDES) General Permit

United States Coast Guard

- N/A

Army Corps of Engineers (USACE):

- N/A

New York State Department of State (NYSDOS)

- N/A

Environmental Protection Agency (EPA)

- N/A

Adirondack Park Agency (APA)

- N/A

Coordination

- Coordination with Federal Highway Administration
- Coordination with New York State Historic Preservation Officer (SHPO)
- Coordination with the US Fish and Wildlife Service
- Coordination with the New York Natural Heritage Program

Others

- Construction Staging Permit
- Local Permits

1.6 What are the Costs & Schedules?

Design approval is scheduled for June 21 of 2016 with construction scheduled to begin in July of 2017 and last 12 months.

Exhibit 1.2 - Project Schedule	
Activity	Date Occurred/Tentative
Scope Approval	5/15/16
Design Approval	6/21/16 PS&E 2/9/17
ROW Acquisition	TBD
Construction Start	7/6/17
Construction Complete	7/7/18

Cost estimates for Alternatives E and F are as follows:

Exhibit 1.3 – Comparison of Alternatives' Project Costs (in millions)			
Activities		Alternative E	Alternative F
Construction Costs	SUP (including underpass & comfort station) ¹	\$4,644,000	\$3,870,500
	Highway (Parking Lot & Int. 10 modifications)	\$2,092,000	\$4,863,500
SPDES Permit Compliance		Included in drainage cost (within Highway items)	Included in drainage cost (within Highway items)
Incidentals (15%) ^{2,3}		\$314,000	\$730,000
Subtotal 1		\$7,050,000	\$9,464,000
Contingency (25%)		\$1,762,500	\$2,366,000
Subtotal 2		\$8,812,500	\$11,830,000
Field Change Order		\$400,000	\$500,000
Subtotal 3		\$9,212,500	\$12,330,000
Mobilization (4%) ³		\$369,000	\$494,000
Subtotal 4		\$9,581,500	\$12,824,000
Expected Award Amount (Inflate current costs/prices at 2%/yr. to midpoint of construction to arrive at \$ amount to be entered here) See HDM 21.6.3.2 B		\$ 9,965,000	\$13,337,000
Construction Inspection (9%)		\$862,500	\$1,154,500
ROW Costs		\$-	\$-
Total Alternative Costs		\$10.8M	\$14.5M

Notes:

- 1 - SUP Cost includes \$75,000 for geotechnical borings
- 2 - Cost for incidentals includes roadway appurtenances, signing, etc.
- 3 - Additional cost for incidentals is based on Highway items only
- 4 - Midpoint of construction is assumed to be Dec. 2017 (2 years)

1.7 Which Alternative is Preferred?

Two feasible build alternatives, Alternatives E and F have been identified that meet the project objectives. The selection of the Preferred Alternative will be made after the environmental determination, the comments on the draft design approval document, as well as comments received from the Public Hearing are evaluated.

1.8 What are the Opportunities for Public Involvement?

Refer to Chapter 2, Sections 2-3 and 2-5 of the Project Environmental Assessment.

The remainder of this report is a detailed technical evaluation of the existing conditions, the proposed alternatives, the impacts of the alternatives, copies of plans and other supporting information.

CHAPTER 2 – PROJECT INFORMATION

2.1 Local Plans for the Project Area

This project is on the approved Transportation Improvement Program (TIP) as project No. 8TZ1.00.

The Regional Planning Group has reviewed the local master plan prepared for the Village of South Nyack and the Village of Tarrytown. This project is consistent with the local master plan.

There are no approved developments planned within the project area that will impact traffic operations.

Refer to Chapter 5 of the Project Environmental Assessment for a discussion on the Community Character. As stated in Section 5-4-3 and 5-4-4 of Chapter 5 Alternatives E and F would not result in any adverse impacts to land use, zoning, public policy, neighborhood character, community facilities and services, and parklands and recreational resources, and would not alter the conclusions of the FEIS.

2.2. Abutting Highway Segments and Future Plans for Abutting Highway Segments

The Thruway Authority has confirmed that there are no plans to reconstruct or widen Route I-87/287 within the project limit, however, as stated in Chapter 5, Section 5-3-3 of the Project Environmental Assessment documentation the Village of South Nyack Comprehensive Planning Board has proposed a Village of South Nyack Economic Sustainability Initiative, focused on changes to the Interstate 87/287 corridor and Interchange 10 in particular. As such the traffic analysis was performed with projected traffic volumes for the Estimated Time of Construction (ETC) (2018) plus ten years (2028).

2.3 Transportation Conditions, Deficiencies and Engineering Considerations

2.3.1 Traffic and Safety and Maintenance Operations

2.3.1.1 Functional Classification and National Highway System (NHS) –

Exhibit 2.1 Classification Data				
Route(s)	I-87 / 287	US Route 9W/ Franklin Street Extension/ Hillside Avenue	South Broadway (Rockland County)	US Route 9 South Broadway (Westchester County)
Functional Classification	Urban Principal Arterial Interstate	Urban Principal Arterial Other	Urban Minor Collector	Urban Principal Arterial Other
National Highway System (NHS)	Yes	Yes	No	No
Designated Truck Access Route	Yes	No	No	No
Qualifying Highway	Yes	No	No	No
Within 1 mile (1.6 km) of a Qualifying Highway	Yes	Yes	Yes	Yes
Within the 16 ft (4.9 m) vertical clearance network	Yes	No	No	No

2.3.1.2 Control of Access

Route I-87/287 is a fully controlled Freeway, US Route 9W is a free access highway, The Route I 87/287 Interchange 10 ramps have limited access, and US Route 9 is a free access highway.

2.3.1.3 Traffic Control Devices

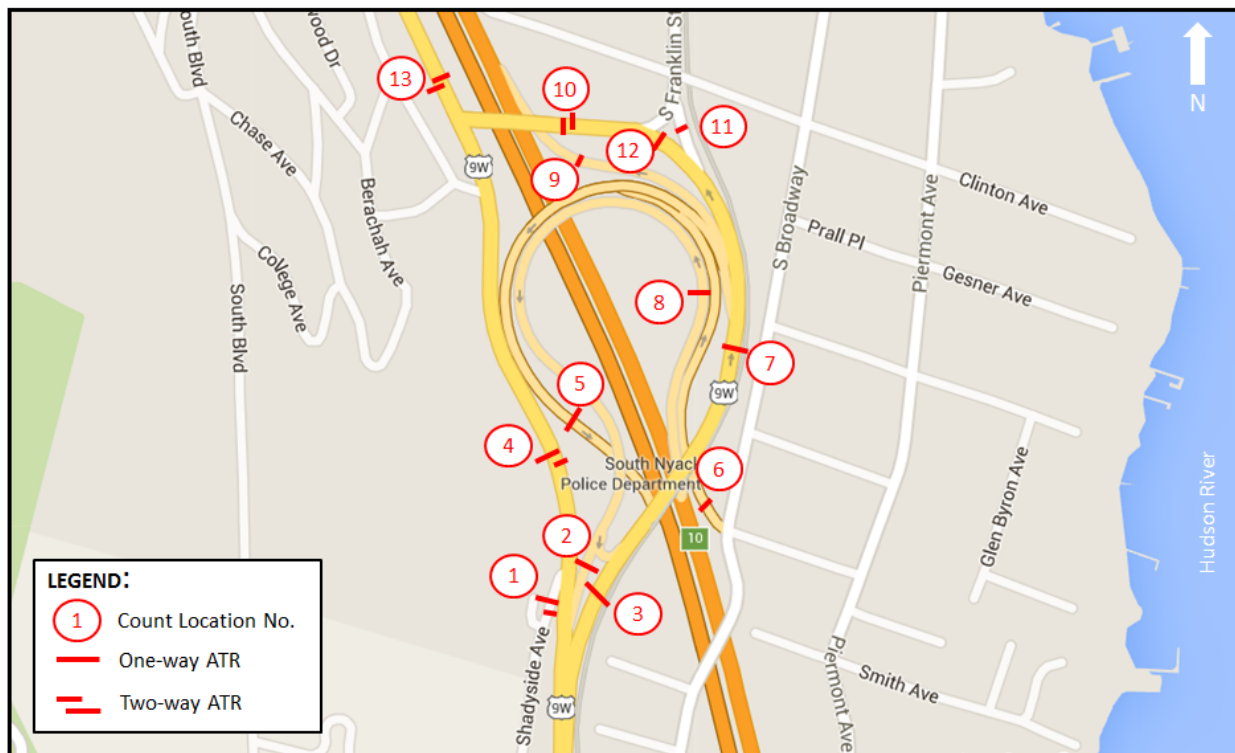
See Section 2.3.1.6 for discussion.

2.3.1.4 Traffic Volumes

Data Collection

As part of the data collection efforts for this project, a combination of 24-hour automatic traffic recorder (ATR) counts, manual turning movement counts (TMC), and bicycle and pedestrian counts were conducted. ATR and TMC data collection was conducted between Saturday, June 6th and Monday, June 15th of 2015. A total of 13 ATR count locations were selected for the analysis depicted in the ATR Location Map.

ATR Location Map



The TMC were conducted concurrently with the ATR counts on Thursday, June 11th of 2015, between 6:00 am – 9:00 am and 4:00 pm – 6:00 pm at the following subject intersections:

- Clinton Avenue and South Broadway
- Clinton Avenue and South Franklin Street
- Franklin Street Extension and Hillside Avenue
- South Broadway and Cornelison Avenue

Bicycle and pedestrian counts were conducted at a total of 11 intersections on Thursday, August 6th through Sunday August 9th of 2015, between 7:00 am – 7:00 pm at the following subject intersections:

- In Rockland:
 - Clinton Avenue and South Franklin Street
 - Clinton Avenue and South Broadway
 - Clinton Avenue and Piermont Avenue
 - Piermont Avenue at TZB
 - Piermont Avenue and Smith Avenue
 - County Road 28 (Old Mountain Road) and US Route 9W

- North Route 9W and Franklin Street
- In Westchester:
 - NY Route 119 and US Route 9
 - NY Route 119 and NY Route 9A
 - NY Route 119 and Vreeland Avenue, Elmsford (at South County Trailway)
 - Warehouse Lane and Ridgewood Drive, Elmsford (at North County Trailway)

The counts were not conducted during inclement weather or any holidays which could affect the data collection and skew results. It is also important to note that traffic counts were conducted when local school districts were still in session. Bicycle/pedestrian counts were conducted over a four day period (Thursday through Sunday) during nice summer weather when school was not in session. Manual turning movement counts were performed during these time periods because traffic volumes at other times of the day are generally lower than during peak hours identified. This is primarily a result of “home-to-work” and “work-to-home” commuting trip patterns during the weekdays. Higher traffic volumes on the roadway system during peak hours result in the minimum available excess capacity. As a result, these time periods are typically the focus of the traffic analysis, which examines conditions at which travel demand is expected to be greatest. Based on existing peak traffic volumes in the study area, the analyses were separated into two separate analysis periods as follows:

- Morning (AM) Peak Hour
- Evening (PM) Peak Hour

The peak hours for each of the analysis periods are depicted in *Appendix 3, Table 4-1*.

The key intersections were inventoried to compile information required for the analyses, such as: pavement width measurements, lane delineation, lane utilization, number of travel lanes, and on-street parking regulations. Signal timing data was collected at signalized intersections during the peak periods.

2.3.1.5 Speeds

Route I-87/287 within the limits of the SUP parking project has a posted speed limit of 55 mph. Alternatives E and F for this project will not affect the mainline roadways of I 87/287, therefore, the posted speed limit within the project limits will remain at 55 mph.

US Route 9W within the confines of the SUP parking project has a posted speed limit of 40 mph from the north and the south. Alternatives E and F for this SUP parking project will not require revision to the posted speed limit.

The exit and entrance ramps within the Route I-87/287 Interchange 10 are not posted but rather have exit curve warning signs. Local streets in the vicinity of the Route I87/287 Interchange 10 have a posted speed limit of 30 mph.

US Route 9 in the Village of Tarrytown has a posted speed limit of 30 mph.

2.3.1.6 Level of Service

The NYSTA does not anticipate capacity improvements within 10-15 years.

Selection of the Weekday Peak Analysis Periods

Of particular importance to this analysis are the changes to weekday commuter peak operations during the AM and PM peak period, given the diversions that various parking lot alternatives would impose upon existing conditions. In Rockland County, and based upon traffic counts obtained specifically for this project, weekday peak hour utilization on the key roadways within the project limits would range from 28% to 72% greater than the weekend peak hour volumes (typically occurring on a Sunday afternoon). Similarly, weekday Average Daily Traffic (ADT) volumes on these roadways would range from 31% to

106% greater than the weekend ADT volumes. Therefore, the commuter peak does not coincide with the SUP user peak times. The above noted traffic demands related to the SUP parking on the Rockland County side of the Tappan Zee Bridge (54 spaces) would only minimally affect these findings, and weekday peak hour assessments of the AM and PM peak hours would continue to govern the operational assessment of these alternatives.

In Westchester County and the vicinity of Interchange 9, traffic data collected along Route 9 near the proposed shared-use path terminus reveals similar findings. Weekday peak hour traffic volumes range from 15 percent to 32 percent greater than the weekend peak hour volumes (typically occurring midday Saturday and Sunday, reflecting local shopping patterns at nearby commercial districts). Similarly, weekday ADT volumes on these roadways would range from 13 percent (Saturday) to 34 percent (Sunday) greater than the weekend volumes. The above noted traffic demands related to the shared-use path parking on the Westchester County side (97 spaces during the weekend (135 provided), 21 spaces estimated during the weekday period (30 provided)) would only minimally affect analysis period volumes. Furthermore, intersections near the Route 9 (Broadway) access to the shared-use path parking area, have two lanes per direction with left-turn lanes, which provide capacity needed for existing through traffic demands, and queue storage for left-turning traffic. Route 9 signalized intersections near the access to the shared-use path parking area will provide gaps in through traffic to allow motorists to enter and exit the parking area. Therefore, intersection analyses were not conducted in Westchester County, and adverse impacts resulting from traffic generated by the shared-use path parking area are not expected. Refer to Chapter 4, Section 4-2-1 of the Project Environmental Assessment for additional information on parking demand estimation.

Capacity Analysis

A level of service analysis was conducted for the following morning and evening peak hour conditions:

- Year 2015 – Existing
- Year 2018 (ETC) – No-Build
- Year 2018 (ETC) – Build
- Year 2028 (ETC + 10) – No-Build
- Year 2028 (ETC + 10) – Build

Detailed capacity analyses were conducted at the key intersections using Synchro 8.0 Traffic Signal Coordination Software, based on analytical procedures described in the 2010 *Highway Capacity Manual (HCM)*. Traffic data required for these analyses include hourly volumes on each approach and various other physical and operational characteristics. Synchro provides volume-to-capacity (v/c) ratio for each signalized intersection approach. The v/c ratio represents the ratio of traffic volumes on an approach to the approach's carrying capacity.

Signalized Intersections

The LOS for a signalized intersection is defined in terms of control delay per vehicle (seconds per vehicle). Control delay is the portion of total delay experienced by a motorist that is attributable to the traffic signal. It is comprised of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The LOS criterion for signalized intersections, as defined in HCM, is shown in *Appendix 2, Table 4-2*. LOS A describes operations with minimal delays, up to 10 seconds per vehicle, while LOS F describes operation with delays in excess of 80 seconds per vehicle. Under LOS F, excessive delays and longer queues are common because of over-saturated conditions (i.e. demand rates exceeding the available capacity of the intersection). Delays experienced at LOS A, B, C, or D (below 55 seconds per vehicle) are generally considered acceptable. LOS E and F represent unacceptable operating conditions.

Unsignalized Intersection

The LOS for a “STOP” controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS is not defined for the intersection as a whole but rather specific movements controlled by the STOP sign. The LOS criteria for unsignalized intersections, as defined in the *HCM* are shown in *Appendix 2, Table 4-3*.

In this study, a signalized or unsignalized lane grouping operating at LOS E or F is identified as congested and represents unacceptable operating conditions.

Roundabouts

Detailed capacity analyses were conducted at the roundabout for Alternative F using SIDRA INTERSECTION 6 (SIDRA) software, based on analytical procedures described in the 2010 *Highway Capacity Manual (HCM)*. SIDRA analyzes capacity using the following two methods:

- SIDRA Standard
- US HCM 2010

The LOS criterion for SIDRA Standard is measured using the same criteria as signalized intersections and US HCM 2010 is measured using the same criteria as unsignalized intersections. If the volume-to-capacity (v/c) ratio is greater than 1.0, the LOS will be represented as LOS F irrespective of movement delay for both methodologies. Both methods of analyses are provided in this report for roundabouts.

Existing Conditions

To determine the existing operating conditions at key intersections in the study area, a detailed LOS analysis was conducted. The analysis was prepared using the volume data collected as part of the data collection program and volumes were balanced accordingly. In addition, the volume data was adjusted using the June seasonal factors obtained from the *NYSDOT Seasonal Adjustment Factors for Traffic Count Processing 2015 (4/30/2015)* for the *Work Week (Suburban)* which is 1.103. As noted in the *NYSDOT Traffic Data Report (2011, latest available)*, the adjustment is performed by dividing the volumes by the seasonal adjustment factors. Observations made during the field inspection, such as lane configurations, traffic control and other physical and operational characteristics of the street network, were also incorporated into the LOS analysis.

Refer to *Appendix 2* for Volume Diagrams.

The following is a brief description of each intersection within the study area:

Clinton Avenue and South Broadway:

The intersection of Clinton Avenue and South Broadway is a four-leg signalized intersection, which operates at a 60 second cycle. All approaches provide a shared left turn/through/right turn lane. Two-hour parking is permitted on all approaches prior to the STOP bar with the exception of southbound South Broadway. A bus stop is located at the near corner adjacent to the STOP bar on the southbound approach and parking is prohibited approximately 100 feet from the intersection. Parking is permitted approximately 75 to 150 feet away from the intersection for the departures to allow for turning movements. In addition, eastbound Clinton Avenue restricts right turns on red (RTOR).

Clinton Avenue and South Franklin Street:

The intersection of Clinton Avenue and South Franklin Street is a four-leg unsignalized intersection. The intersection is STOP controlled at all four approaches. All approaches provide a shared left turn/through/right turn lane. Parking is permitted on eastbound and westbound Clinton Avenue and prohibited on South Franklin Street. In addition, trucks are prohibited on South Franklin Street north of the intersection.

US Route 9W/Hillside Avenue and Franklin Street Extension:

The intersection of US Route 9W/Hillside Avenue and Franklin Street Extension is a three-leg unsignalized intersection. Northbound US Route 9W/Hillside Avenue provides one shared through/right

lane. Southbound US Route 9W/Hillside Avenue provides one shared left turn/through lane. Westbound South Franklin Street Extension is STOP controlled and provides one shared left turn/right turn lane.

US Route 9W/Hillside Avenue and Shadyside Avenue:

The intersection of US Route 9W/Hillside Avenue and Shadyside Avenue is a three-leg unsignalized intersection. US Route 9W/Hillside Avenue is one-way in the south direction at this intersection and provides on shared through/right lane. Eastbound Shadyside Avenue is STOP controlled and provides one shared left/right lane. Parking is prohibited on Shadyside Avenue.

South Broadway and Cornelison Avenue:

The intersection of South Broadway and Cornelison Avenue is a four-leg unsignalized intersection. Northbound South Broadway is STOP controlled and provides one shared left turn/through/right turn lane. Southbound South Broadway provides one shared left turn/through/right turn lane. Westbound Cornelison Avenue is STOP controlled and provides one shared left turn/through/right turn lane. A bus stop is located on southbound South Broadway at the near corner. Parking is permitted approximately 75 feet prior to the bus stop on the southbound South Broadway approach and also permitted on the westbound Cornelison Avenue approach.

South Franklin Street Extension and North US Route 9W Ramp to South Franklin Street and Franklin Street Extension:

The intersection of South Franklin Street and North US Route 9W Ramp to South Franklin Street and the Franklin Street Extension is a three-leg unsignalized intersection. Eastbound and westbound South Franklin Street provides one through lane. Northbound North US Route 9W Ramp is STOP controlled and provides one left turn lane to westbound South Franklin Street Extension.

Appendix 2, Table 6-1 summarizes the intersections' Level of Service. Detailed intersection level of service results for each of the existing condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-2*. The results of the capacity analyses performed for existing conditions indicate favorable levels of service (LOS D or better) are currently maintained during the morning and evening peak hour, with the exception of the following approach:

- Westbound Franklin Street Extension at US Route 9W/Hillside Avenue during the evening peak hour, which operates at a LOS E, with a delay of 36.5 seconds per vehicle and v/c ratio of 0.90

No-Build Conditions

As the anticipated build year for Interchange 10 is year 2018, the future traffic analysis for this "interim" project looks 10 years beyond the build year to year 2028 in order to evaluate the longevity of each intersection. Between the year 2015 and 2028, it is expected that the travel demand will increase due to background growth in South Nyack. As per the *Final Environmental Impact Statement (FEIS)* an annual background growth rate of 0.17% was applied to the first three years (2015-2018) and 0.30% starting in the fourth year (2019 – 2028). These growth rates were applied to the existing traffic street network volumes to create the future 2018 and 2028 traffic volumes. Existing condition lane configurations, geometry, and traffic control were used in the analysis.

Appendix 2, Table 6-3 and *Table 6-5* summarize the intersections' level of service for 2018 and 2028 No-Build conditions, respectively.

Detailed intersection level of service results for the 2018 No-Build condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-4*.

The results of the capacity analyses performed for the 2018 No-Build condition indicate favorable levels of service (LOS D or better) are maintained during the morning and evening peak hour, with the exception of the following approach:

- Westbound Franklin Street Extension at US Route 9W/Hillside Avenue during the evening peak hour, which operates at a LOS E, with a delay of 39.7 seconds per vehicle and v/c ratio of 0.92

The delay for the westbound South Franklin Street Extension approach increases by 3.2 seconds per vehicle compared to existing conditions.

Detailed intersection level of service results for the 2028 No-Build condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-6*.

The results of the capacity analyses performed for the 2028 No-Build condition indicate favorable levels of service (LOS D or better) are maintained during the morning and evening peak hour, with the exception of the following approaches:

- Westbound Franklin Street Extension at US Route 9W/Hillside Avenue during the evening peak hour, which operates at a LOS E, with a delay of 48.7 seconds per vehicle and v/c ratio of 0.96
- Northbound US Route 9W ramp at South Franklin Street during the evening peak hour, which operates at a LOS E, with a delay of 40.8 seconds per vehicle and a v/c ratio of 0.88

The delay for the westbound Franklin Street Extension approach increases by 12.2 seconds per vehicle and the northbound Route 9W ramp increases by 7.9 seconds per vehicle compared to existing conditions.

Traffic Diversion Patterns

Existing traffic patterns would be altered for those alternatives that would consider closure of the existing Interchange 10 entry ramp at the intersection of South Broadway and Cornelison Avenue, specifically Alternative 'F'. Traffic currently using that entry would be diverted to the other existing entry, accessed by way of northbound Route 9W at the south end of Interchange 10. Traffic originating from the north, including those accessing Interchange 10 by way of southbound Route 9W and South Broadway, currently choose to bypass the Interchange 11 entrance to the southbound Thruway. These commuters have determined over time that it would be quicker to bypass queuing along westbound Main Street in Nyack, and along southbound Thruway approaching the bridge, by way of using South Broadway or Route 9W southbound to access Interchange 10. The conditions that underlie these decisions will largely remain valid following completion of the Replacement Bridge; as such, we would not expect these demands to divert to Interchange 11.

Of particular importance are the weekday morning peak period demands, representing the highest volumes seeking access to the interchange during a given week. Current morning peak hour entry demands that utilize the existing South Broadway / Cornelison entry ramp are estimated at approximately 700 vehicles per hour, typically fluctuating on a daily basis in response to queuing experienced along the Tappan Zee Bridge, its southbound Thruway approach, and approaching Interchange 10 from northbound Route 9W. While diversions under Alternative E would not be expected, Alternative F would result in diversions to the remaining entry. These diversions would be most noticeable during the weekday morning peak period. Smaller and less critical diversions would occur during weekday evening peak periods and at other times of the day and week.

Alternative E

Existing traffic patterns entering Interchange 10 from various trip origins would be expected to remain as they currently exist under the No Build condition, as the existing entry to the Tappan Zee Bridge at Interchange 10 would remain. Slight changes in demand patterns could arise as a result of reduced queuing that would be expected to result from geometric and cross sectional improvements resulting from the completion of the New New York Bridge, but these reductions due to traffic pattern changes would be minor compared to the proposed closure of the entrance from Cornelison Avenue.

Alternative F

As determined through project origin – destination, Automatic Traffic Recorder (ATR) and turning movement counts, volumes utilizing the existing Interchange 10 entry ramp at the intersection of South

Broadway and Cornelison Avenue originate from various locations to the north, south and west of that intersection, in various order of magnitude volumes. The closure of the Interchange 10 entrance ramp from Cornelison Avenue would necessitate the diversion of approximately 700 vph during the critical weekday morning peak hour, and additional demands throughout the day. Alternative 'F' Traffic Diversion Patterns, contained in Appendix 2, illustrates the order of magnitude of the changes in traffic volumes (in 25 vph increments) along area local roadways resulting from the closure of this ramp. The Alternative F Balanced Flow Diagrams, also contained in Appendix 2, show the resultant balanced flows, and illustrates the routes of existing and proposed demands, as described below:

- 1) Local traffic from Upper Nyack and Nyack, utilizing the Broadway corridor and traveling south to the Interchange 10 entrance at South Broadway and Cornelison Avenue; this demand is estimated at approximately 250 vph during the critical weekday morning peak period.
- 2) Local demands entering South Nyack by way of Piermont Avenue or South Franklin Street neighborhoods to the north, using Clinton Avenue for access to South Broadway; this demand is estimated at nearly 50 vph during the critical weekday morning peak period.
- 3) Local traffic from Upper Nyack and Nyack, and through traffic from communities further north, utilizing the Route 9W corridor southbound toward Interchange 10; some of this demand also originates along the South Boulevard / South Highland Avenue corridor located between Interchange 10 and Main Street in Nyack; this demand turns left onto eastbound Franklin Street Extension, then turns onto northbound South Franklin Street, eastbound Clinton Avenue and southbound South Broadway to enter the southbound Thruway at Cornelison Avenue. The total demand of these movements is estimated at approximately 250 vph during the critical weekday morning peak period. However, the division between locally generated demands and queue bypass volumes from points north and west of Interchange 11, but bypassing queues along the Thruway at Interchange 11, varies from day to day.
- 4) Local traffic from Piermont and Grand View-On-Hudson, located along the River Road / Piermont Avenue corridor; this demand proceeds north along the riverfront, then turns left (westward) onto Cornelison Avenue and enters Interchange 10 at South Broadway. The total demand of these movements is estimated at approximately 50 vph during the critical weekday morning peak period.
- 5) Through traffic along northbound Route 9W that uses South Broadway and the Cornelison Avenue entrance to bypass queuing that exists along the northbound Route 9W entrance to Interchange 10; this volume fluctuates based on daily conditions and time of day depending upon the expected queue length from the northbound Route 9W approach. Based on the data obtained during the collection program undertaken for this project, this movement has been estimated at approximately 75 vehicles per hour during the morning peak period.
- 6) Locally generated traffic from the South Nyack neighborhoods south of the Thruway or between Clinton and Cornelison Avenues, turning into the interchange at Cornelison Avenue; this demand is estimated at 25 vph during the critical weekday morning peak period.
- 7) Under Alternative F, existing volumes that enter Interchange 10 directly from northbound Route 9W for access to the southbound Thruway and the Tappan Zee Bridge would not be diverted, and would continue their current operation. The magnitude of the average AM peak hour demand from this approach is estimated to be approximately 950 vehicles per hour.

Traffic Distribution

As part of the traffic analyses, Alternative F was analyzed to determine the impacts it would have on the adjacent roadway system network. In order to identify the impacts, it is necessary to estimate the magnitude of traffic volumes that will be redirected during the peak hour periods. An Origin-Destination (O-D) study was performed between 6:30 am – 9:00 am and 3:00 pm – 5:30 pm in order to determine the reduction in vehicles traveling on South Broadway if the local on-ramp from South Broadway and Cornelson Avenue to I-87/287 southbound/eastbound is closed. The Build analyses uses the 2018 and 2028 volumes and redistributes them accordingly.

Refer to *Appendix 2* for roadway network configurations for Alternative F.

Alternative E

Franklin Street Extension and North Route 9W Ramp to South Franklin Street:

- Modified to a three-leg signalized intersection

Appendix 2, Table 6-7 and *Table 6-9* summarize the intersections' level of service for 2018 and 2028 Alternative E conditions, respectively.

Detailed intersection level of service results for the 2018 Alternative E condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-8*.

The results of the capacity analyses performed for the 2018 Alternative E condition indicate favorable levels of service (LOS D or better) are maintained during the morning and evening peak hour, with the exception of the following approaches:

- Westbound Franklin Street Extension at US Route 9W/Hillside Avenue during the evening peak hour, which operates at a LOS E, with a delay of 39.7 seconds per vehicle and v/c ratio of 0.92

Detailed Level of Service results for the 2028 Alternative E condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-10*.

The results of the capacity analyses performed for the 2028 Alternative E condition indicate that there are no additional approaches experiencing unfavorable levels of service compared to 2028 No-Build conditions. During the evening peak hour, westbound Franklin Street Extension at US Route 9W/Hillside Avenue delay and v/c ratio increase by 9.0 seconds per vehicle and 0.04, respectively.

Alternative F

Signal Warrant Analysis

Under Alternative F, a signal warrant analysis was performed for the intersections of S. Franklin Street at Clinton Avenue and at the intersection of US Route 9W (Hillside Avenue) and Franklin Street Extension. Analyses were performed for both year 2018 and Year 2028 AM and PM DHV. Analyses were performed in accordance with the MUTCD 2009 using the Warrants module of the HCS 2010 Software Package. Input information into the signal warrant software module includes volume and unsignalized control movement delays. Future Year 2018 and Year 2028 AM and PM DHV were obtained from Final Year 2018 and Year 2028 Volume Diagrams. Vehicular delay information were obtained from all-way "Stop" unsignalized analyses performed using HCS 2010 for the intersection of S. Franklin Street at Clinton Avenue and two-way stop controlled unsignalized analyses performed using HCS 2010 for the intersection of Route 9W (Hillside Avenue) at Franklin Street Extension.

The results of the analyses for Year 2018 and Year 2028 AM and PM DHV for the intersection of S. Franklin Street at Clinton Avenue are shown in *Appendix 2, Tables 6-15* and *6-16*. Refer to the columns labeled "3A and 3B" which correspond to Warrant 3 – Peak Hour Warrant of the MUTCD 2009. Based on the results for Year 2018 and Year 2028 AM and PM DHV did not meet Warrant No. 3.

The results of the analyses for Year 2018 and Year 2028 AM and PM DHV for the intersection of Route 9W (Hillside Avenue) at Franklin Street Extension are shown in Appendix 2, Tables 6-17 and 6-18. Refer to the columns labeled “3A and 3B” which correspond to Warrant 3 – Peak Hour Warrant of the MUTCD 2009. Based on the results for Year 2018 and Year 2028 AM and PM DHV met Warrant No. 3. For Warrant No. 3, as long as one peak hour meets the criteria, the warrant is met.

Intersection Modifications

The following modifications were made at the following intersections:

Clinton Avenue and South Broadway:

- Modified traffic signal timings

Clinton Avenue and South Franklin Street:

- Modified to a signalized intersection

US Route 9W/Hillside Avenue and Franklin Street Extension:

- Modified to a signalized intersection
- Modified to provide a 150' left turning lane on Southbound Route 9W/Hillside Avenue

US Route 9W/Hillside Avenue and Shadyside Avenue:

- Modified to two coordinated signalized intersections, separated by approximately 100', which allows access to I-87 and I-287 South and East (Tappan Zee Bridge)

South Broadway and Cornelison Avenue:

- Ramp to I-87 and I-287 South and East only (Tappan Zee Bridge) is removed and vehicles are redirected to the new US Route 9W/Hillside Avenue and Shadyside Avenue intersection
- Modified northbound South Broadway from STOP controlled to free movement
- Due to existing intersection sight distance concerns, the existing Cornelison Avenue “Stop” condition, supplemented by an existing flashing signal, would remain.

Appendix 2, Table 6-11 and Table 6-13 summarize the intersections' level of service for 2018 and 2028 Alternative F conditions, respectively.

Detailed intersection level of service results for the 2018 Alternative F condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-12*.

The results of the capacity analyses performed for the 2018 No-Build condition indicate favorable levels of service (LOS D or better) are maintained during the morning and evening peak hour.

Detailed intersection level of service results for the 2028 Alternative F condition analysis periods including LOS for individual approaches, v/c ratios, and queue length, are provided in *Appendix 2, Table 6-14*. Table 6-14 shows a minor though seemingly anomolous improvement in eastbound Clinton Avenue operations at South Broadway, resulting from a more efficient coalescing of this movement as it approaches South Broadway from South Franklin Street. The magnitude of the calculated improvement (between Years 2018 and 2028) is 0.1 second. Overall, however, the aggregate delay for the entire intersection and other individual approaches slightly increases, reflecting the growth over the Year 2018 – 2028 period.

The results of the capacity analyses performed for the 2028 Alternative F condition indicate favorable levels of service (LOS D or better) are maintained during the morning and evening peak hour.

Roadway Weaving Analysis

Under Alternative F, a roadway weaving analysis was performed for the Route 9W bridge over the Thruway. Analyses were performed for both year 2018 and Year 2028 AM and PM DHV. Current practice suggests the use of the methodology documented in the Highway Capacity Manual 2010 (HCM2010) for analysis of weaving segments on freeways and multi-lane highways. Due to the geometric

and operational characteristics of the weaving segment along the Route 9W Bridge being proposed under Alternative F, it was determined that performing a weaving analysis using the Methodology of the HCM2010 would not yield results representative of proposed conditions.

The proposed changes under Alternative F for US Route 9W northbound bridge include the addition of a signalized intersection at the intersection of US Route 9W (Hillside Avenue) and Shadyside Avenue and at the intersection of Route 9W and SB Entrance Ramp from the northbound Thruway. These signalized intersections would operate in coordination to create gaps in the traffic flow, benefitting traffic on the US Route 9W (Hillside Avenue) ramp entering the weaving segment. In addition to this ramp metering effect, speeds along US Route 9W are typically lower (30 mph) than those of freeway or multi-lane highway weaving segments.

In order to perform a weaving analysis that would be comparable to the lower-speed operating conditions observed at this location, HNTB performed a weaving analysis based on the methodologies documented in ACRP Report 40 "Airport Curbside and Terminal Area Roadway Operations". The methodology in this Report suggests that airport roadways operate under slower speeds and provides an estimate of weaving operations for such segments with similar operating speeds and characteristics to that found at airports. The methodology is implemented through an Excel-based application called Quick Analysis Tool for Airport Roadways (QATAR). The results of the analysis provide a comparison of results between the HCM 2010 and those of QATAR. It should be noted that QATAR is not a standard and while it is based on the methodology found in the HCM 2010, it does not replicate that methodology due to the nature of the roadway segments it is intended for. The results presented here are an estimate and are to be interpreted with caution.

The weaving analysis results for Year 2018 and 2028 AM and PM DHV are found Appendix 2, Tables 6-19 through 6-22.

Based on the results given, it is expected that the weaving segment for the Route 9W Bridge over the Thruway would operate at an LOS of "C" or better under Year 2018 and Year 2028 AM and PM DHV if we assume that operations would fall somewhere between the results given under the HCM2010 methodology and that of QATAR.

2.3.1.7 Work Zone Safety & Mobility

No Build (Existing Conditions to remain)

- No Impacts throughout project area interchange ramps, local streets and US Route 9W (Hillside Avenue).

Alternatives E and F

Construction of the proposed Shared Use Path (SUP) and support elements will affect existing ramps, local streets and infield areas to varying extents depending upon the alternative selected and the location of the work. The greatest construction impacts during either of the Build alternatives (Alternative 'E' or 'F') will occur during the construction of the SUP "underpass" behind the north abutment of the existing South Broadway overpass, near Smith Avenue. The sharp skew of the existing span and its approaches to the Thruway and the alignment of the path complicate the ability to maintain two-way traffic on the South Broadway overpass while the underpass segment is constructed. This segment is presently assumed to be constructed through the "open-cut" method with precast underpass sections to lessen construction duration and disruption to the nearby neighborhood.

Under the open cut process, consideration would be given to two methods of maintaining traffic along South Broadway:

1) Full closure of South Broadway between Cornelison Avenue and Elizabeth Place to allow expedited open-cut construction of the new underpass beneath South Broadway. This scenario would require collaboration with the Village of South Nyack regarding time of year for closure, impact on emergency services and further study during final design to determine if an acceptable detour for the residents could be established and what affect a closure has on local traffic.

2) Maintain a minimum single travel lane across a temporary bridge spanning the underpass open-cut section, using temporary traffic signals at either end of the single lane bridge to control the direction of South Broadway traffic. This traffic maintenance would lengthen construction time of the underpass but allow residents along South Broadway south of the bridge to avoid a potentially lengthy detour. Staging for this scenario is further described below.

The open cut would be traversed by a single lane wide temporary bridge spanning the cut section while the trench housing the precast underpass sections is excavated, stabilized with structural foundation material, backfilled and paved. It is expected that construction of the SUP underpass and the sections of the path leading toward the parking lot should be constructed within one construction season (9 months).

Maintaining two-way traffic through the single lane open cut / temporary bridge zone would necessitate temporary traffic control measures to allow safe and orderly passage in one direction while traffic passes in the opposite direction. Based upon existing volumes and sight distance limitations of the bridge approaches (particularly the north approach), it is expected that a temporary traffic signal system with queue storage areas in each direction would be set up during this period. Appendix 3 includes drawings depicting the proposed staging for the construction of the SUP "underpass" beneath South Broadway, and a diagram from the 2009 Manual of Uniform Traffic Control Devices depicting the standard design for a bi-directional, single lane work zone operation.

The staging of the SUP construction at South Broadway will include the following steps (see Drawings SK-22 through 26 within Appendix 3):

Stage 1 Construction – see Drawing SK - 24

- Place temporary barrier along east side of bridge and north approach
- Temporarily relocate electrical and telephone ducts located in sidewalk
- Protect / support / temporarily relocate gas line(s) located within north approach roadway excavation area
- Remove sidewalk and curb and pavement areas behind temporary barriers, provide temporary pavement
- Implement MPT and traffic control for single lane, bi-directional traffic on single lane roadway behind barrier
- Maintain pedestrian passage along the outside of the single lane travelway, physically separated from traffic
- Install temporary walls beyond single lane temporary roadway and sidewalk area.
- Remove north wingwall and approach slab, and excavate behind temporary walls
- Install portable temporary bridge, access from NYS Thruway or South Broadway during an overnight closure period

Stage 2 Construction – see Drawing SK - 25

- Relocate traffic barriers and implement MPT for bi-directional single lane on temporary bridge.
- Shift traffic to temporary bridge.

- Extend temporary walls eastward to complete trench for the SUP precast units
 - Remove south wingwall and excavate
 - Prepare subgrade for placement of precast box underpass sections
 - Install precast box underpass sections, adjust portable temporary bridge and MPT (barriers, temporary signals, etc.) as needed during overnight periods.
 - Construct new permanent wingwalls and portal headwalls
 - Construct underdrains and waterproofing
 - Backfill excavation zone
 - Cut top 2' of all temporary walls
 - Construct new electrical and telephone duct banks, gas mains
 - Install new approach slab, bridge joint, sidewalk and curb on grade, asphalt pavement
 - Reconstruct sidewalk, curb and pavement on bridge
 - Remove temporary bridge and MPT, restore two-lane bi-directional traffic.
- Other work zone activities specific to each alternative are indicated below.

Alternative E

The primary construction efforts for Alternative E entail the construction of the Shared Use Path (SUP) grade separation ("underpass") beneath South Broadway, behind the existing north abutment of that overpass. These efforts are described above, within this section. Other construction / work zone areas:

At South Broadway / Cornelison Avenue intersection:

- Construct remainder of Alternative 'E' SUP landing areas and switchbacks, and supports for grade separation over the Interchange 10 southbound entrance ramp from Cornelison Avenue
- Construct connection of the SUP to the paved side path adjacent to the Esposito Trail
- Erect overpass elements of the SUP spanning the Interchange 10 southbound entrance ramp from Cornelison Avenue; ramp to remain open during "normal" hours, closed for erection during overnight hours as needed
- Construct paved side path adjacent to the Esposito Trail once the Esposito trail has been reconstructed.

At the South Franklin Street / Franklin Street intersection:

- Construct new, signalized "T" intersection at this intersection, maintaining existing movements on channelization ramps. New alignments / pavement in this area to be constructed upon existing roadbeds to use variable depth overlays to avoid full-depth reconstruction where practical.
- Shift intersection traffic onto new South Franklin / Franklin Street Extension alignment, operate signal on "flasher", provide temporary "Stop" traffic control
- Provide temporary concrete barrier protection along south side of Franklin Street Extension, the west side of the US Route 9W northbound ramp, and the north side of Interchange 10 entrance onto northbound Thruway.
- Construct retaining walls, fill embankments, parking lot and comfort station in area bound by temporary barriers under previous step.
- Operate new signal at this intersection once the SUP and parking lot are opened.

Alternative F

Under Alternative 'F', the construction of the SUP "underpass" beneath South Broadway may advance at the start of construction. However, the existing Interchange 10 southbound entrance ramp from

Cornelison Avenue must remain open until improvements at three other intersections would be completed. These intersections and their key work steps include:

1) US Route 9W (Hillside Avenue) / Franklin Street Extension:

- Mine rock cliff along west edge of the intersection, relocate utilities and sidewalk, and construct widened pavement approaches.
- Construct new traffic signal, signing and striping as needed.
- Intersection is ready for closure of Interchange 10 southbound entrance ramp from Cornelison Avenue.

2) South Franklin Street / Clinton Avenue:

- Install new traffic signals
- Minor modifications of curbs and sidewalks as needed
- Mill and resurface intersection, new signing and striping as needed.
- Intersection is ready for closure of Interchange 10 southbound entrance ramp from Cornelison Avenue.

3) US Route 9W (Hillside Avenue) / Shadyside Avenue / Interchange 10 northbound exit to US Route 9W ("Northbound Exit"):

- Construct new turning ramp from Northbound Exit onto northbound Hillside Avenue (north of Shadyside Avenue), and widening of northbound Hillside Avenue within interchange infield and graded areas.
- Shift existing Northbound Exit left turn to existing northbound US Route 9W onto this new right turning ramp to Hillside Avenue, and prevent / close the existing left turn
- Provide temporary barrier along west side of US Route 9W northbound south of Interchange 10 ramp entry, and maintain one lane without shoulders to create a work zone behind the barrier.
- Construct the section of the Northbound Exit connection to southbound US Route 9W (Hillside Avenue) immediately west of its existing alignment and adjacent to the narrowed northbound US Route 9W (above)
- Shift Northbound Exit traffic bound for US route 9W southbound to the new connection.
- Provide a temporary barrier along the east side of the existing US Route 9W northbound (single lane) and the Shadyside Avenue approaches, keeping them in operation, and construct portions of the proposed intersection located within the footprint of the existing Northbound Exit connection to southbound US Route 9W. These portions include the two-lane left turn approach from southbound US Route 9W (Hillside Avenue) onto northbound US Route 9W to enter the Interchange 10 ramp system, and the channelized right turn connection to maintain southbound US Route 9W.
- Shift southbound US Route 9W traffic onto the above noted channelized right turn connection.
- Temporarily close Shadyside Avenue connection to and from Hillside Avenue, maintaining access to driveways along southbound US Route 9W (Hillside Avenue) through the work zone. Vehicular access to driveway of 2 Shadyside Avenue to be shifted to Highland Avenue / South Boulevard / Old Mountain Road detour.
- Complete construction of the reconfigured US Route 9W southbound and Shadyside Avenue approaches to the new intersection.
- Construct and activate new signal controlling the southbound US Route 9W (Hillside Avenue) two-lane left turn onto north Route 9W and interchange 10.
- This area is now ready for closure of Interchange 10 southbound entrance ramp from Cornelison Avenue.

- Complete new curb and milling / resurfacing of the restored northbound Route 9W connection into the Interchange 10 ramp system.

Once these three locations have been reconfigured, the diverted traffic demands can be accommodated within the remaining portions of the street system, and the Interchange 10 southbound entrance ramp from Cornelison Avenue may be closed. At that point, the remainder of the SUP connectivity in the vicinity of Village Hall and the South Broadway / Cornelison Avenue intersection may advance. At that time, these elements will be constructed:

At South Broadway / Cornelison Avenue intersection and within Interchange 10:

- Close the Interchange 10 southbound entrance ramp from Cornelison Avenue
- Construct the shifted alignment of the Interchange 10 northbound exit ramp, creating the corridor for the proposed SUP connection to the new parking area and comfort station (see Note, below)
- Construct remainder of the Alternative 'F' Shared Use Path, including the landing areas and spur to the Esposito Trail, and extending beneath the existing US Route 9W overpass and into the Interchange 10 right-of-way.
- Construct the paved side path adjacent to the Esposito Trail once the Esposito Trail has been reconstructed (see Note, below)
- Construct connection of the SUP to the paved side path along the Esposito Trail

Note: Construction of these elements may begin prior to or independently of the closure of the Interchange 10 southbound entrance ramp from Cornelison Avenue.

In summary, the critical path for the construction of both Alternatives 'E' and 'F' will be the construction of the SUP "underpass" beneath South Broadway, which is expected to extend across an entire single construction season. For Alternative 'E', this construction will pose the primary construction – related issues for MPT and avoidance of impacts to the community and to commuters using the Tappan Zee Bridge. For Alternative 'F', these issues remain, but they are compounded by the multi-staged construction at the south end of Interchange 10, particularly at the intersection of US Route 9W (Hillside Avenue) / Shadyside Avenue / Interchange 10 northbound exit to US Route 9W ("Northbound Exit"). Additional refinement during Final Design, including detailed scheduling of construction elements, will be undertaken to confirm whether Alternative 'F' can be completed within a single construction season.

2.3.1.8 Safety Considerations, Accident History and Analysis

Interchange 10 Roadway Network Intersections

Copies of New York State Department of Motor Vehicles (DMV) police accident reports that occurred between June 2012 and June 2015 (the past three most recent available years) were obtained and analyzed in accordance with NYSDOT Highway Design Manual Chapter 5. Accident rates within the study limits were compared to the New York State average accident rates obtained from *Average Accident Rates for State Highways by Facility Type (Based on Accident Data August 1, 2012 to July 31, 2014)*. Intersection accident rates are based on the number of accidents per intersection and annual average daily traffic entering the intersection within a three year period. Refer to *Appendix 2* for the intersection accident rates measured in accidents per million entering vehicles (ACC/MEV).

Based on the analysis, the following intersections experienced above state average accident rates:

- Route 9W and Shadyside Avenue
- Clinton Avenue and South Franklin Street

Under Alternative F, the intersection of Route 9W and Shadyside Avenue, immediately adjacent to the Interchange 10 northbound exit ramp onto southbound Route 9W, warrants consideration. According to

NYS DMV records, this location experienced three rear-end accidents approximately 100' feet south of Shadyside Avenue within a three year period. A close examination of the available crash information indicates that these accidents involved southbound vehicles crashing south of Shadyside Avenue. Due to existing geometrics, direction of travel and turn prohibitions from Shadyside Avenue (right turns disallowed), these accidents actually involve conflicts with the confusing and awkward left merge/STOP condition existing at the Interchange 10 northbound exit intersection with southbound Route 9W. By including the ramp volumes into the calculations of accident rate, intersection crashes remain 40% greater than statewide averages for this type of intersection, and rear-end accident rates exceed statewide averages by more than four times. Finally, we note that ramp crash data appeared incomplete, indicating that crash history at this combined intersection is likely even higher than the available data indicates. For the overall Route 9W/Shadyside Avenue/Interchange 10 northbound exit area, lane configurations and geometry remain as per existing under Alternative E; therefore, improvements will not be made to alleviate this condition. Alternative F replaces this merge design with controlled signalized intersections having improved sight distance and favoring heavier traffic from Interchange 10.

The intersection of Clinton Avenue and South Broadway experienced two rear-end accidents in the eastbound direction within a three year period which is higher than the state average. One of the accidents occurred while the roadway was milled which impacts the roadway surface conditions. We note that the existing traffic signal does not comply with current Manual on Uniform Traffic Control Devices (MUTCD) and NYSDOT standards. Installing 12" signal lenses and adding signal heads are two potential countermeasures that may reduce the number of rear-end accidents at this intersection and comply with current standards. Updating the traffic signal equipment in compliance with current standards is not currently within the scope of work for this project.

South Broadway intersections at Washington Avenue and at Mansfield Avenue experienced higher than state average accident rates for over-taking and head-on accidents, respectively. However, there was only one accident at each intersection during the three year period, resulting in a limited sample that does not have statistical significance. A larger sample would be needed to identify high hazard locations in order to determine potential countermeasures.

Interchange 10 Ramps

Interchange 10 ramp accident data that occurred on the exit ramp, entry ramp and intersection approach ramps between July 2012 to June 2015 (the past three most recent available years) were obtained and analyzed in accordance with NYSDOT Highway Design Manual Chapter 5. Accident rates within the study limits were compared to the New York State average accident rates obtained from *Average Accident Rates for State Highways by Facility Type (Based on Accident Data August 1, 2012 to July 31, 2014)* for Partial Control of Access, Urban Function Class and Mainline & Juncture Accidents. Ramp accident rates are based on the number of accidents per roadway segment and annual average daily traffic volume for the entire interchange ramp network within a three year period. Refer to *Appendix 2* for the ramp accident rates measured in accidents per million vehicle miles (ACC/MVM).

The accident rate for the Interchange 10 ramp network for all types of collisions is 1.71 accidents per million vehicle miles, which is less than the statewide accident rate average for similar facilities, which is 1.91 accidents per million vehicle miles. The accident rate for the Interchange 10 ramp network for collision with fixed objects is 0.73 accidents per million vehicle miles, which is more than twice the statewide accident rate average of 0.35 for similar facilities.

It is recognized that the methodology to determine accident rates are close but not the best determinate of usual crash activity on freeway ramps. However, the rates do recognize the role played by intersecting vehicles which make them closer to ramp operations to mainline only factors. Depending on the selected alternative, a more detailed investigation of crash forensics may be warranted.

2.3.1.9 Ownership and Maintenance Jurisdiction

See Section 2.3.3.13 of this report.

2.3.2 Multimodal

Refer to Chapter 5 of the Project Environmental Assessment.

2.3.2.1 Pedestrians and Bicyclists

Alternatives E and F

From the Westchester side of the Shared Use Path facility to the Rockland side, Sta. WS 99+00, the facility is considered a Shared Use Path. From Sta. WS 99+00 to the Esposito Trail the facility is considered a pedestrian connection between the Shared Use Path and Esposito Trail. Bicyclists will be required to dismount their bikes and walk them along the switchback (Alternative E). The paved side path along the Esposito Trail to Clinton Avenue is considered a Shared Use Path facility. At the request of the Village of South Nyack, there will be physical separation between the side path and the Esposito Trail. The parking accommodations and limited ancillary facilities do not differ on the Westchester side but differ on the Rockland County side between Alternatives E and F. Refer to Chapter 3 of the Project Environmental Assessment for further detail of this discussion. A Pedestrian Generator Checklist is included in Appendix 9.

2.3.3 Infrastructure

2.3.3.1 Design Standards

Project design standards and critical design elements are provided in Exhibits 2.6.1 through 2.6.2 and are based on the NYSDOT Highway Design Manual Chapter 2.7.1.1 – Interstates, Chapter 2.7.2.2, Urban Arterials, Chapter 2.7.5.2, Ramps (Turning Roadways for Grade-Separated Highways), and the NYSDOT Bridge Design Manual. The New York State Thruway (I-87/287) is classified as Urban Principal Arterial Interstate with a posted speed limit of 55 mph. US Route 9W/Franklin Street Extension/Hillside Avenue is classified as a Urban Principal Arterial with a posted speed limit of 40 mph. The I-87/287 exit and entrance ramps are classified by the highway they serve and as such are considered part of the interstate system. The ramps are not posted for a speed limit but have exit curve warning signs. Local streets in the vicinity of the Route I87/287 Interchange 10 have a posted speed limit of 30 mph.

2.3.3.2 Critical Design Elements

Exhibit 2.6.1 Critical Design Elements for US 9W				
PIN:	8TZ1.00	NHS (Y/N):	Yes	
Route No. & Name:	US 9W	Functional Classification:	Urban Principal Arterial Other	
Project Type:	Major Intersection Reconstruction / Minor Bridge Work (PDM App. 5, Table 5-1)	Design Classification:	Arterial (HDM Exhibit 2-1)	
% Trucks:	3	Terrain:	Rolling	
ADT:	10,500	Truck Access/Qualifying Hwy.	No/No	
Element		Standard	Existing Condition	Proposed Condition
1	Design Speed	40 mph min, 60 mph max. (suburban and developing) 30 mph min, 60 mph max (central business district) HDM Section 2.7.2.2.A.	40 mph posted (design speed generally exceeds posted speed)	40 mph posted (design speed generally exceeds posted speed)
2	Lane Width	11 ft min HDM 2.7.2.2.B. and Exhibit 2-4 and Bridge Manual (BM) Sections 2.3.1 and Table 2-1	12 ft	12 ft
3	Shoulder Width	Uncurbed Right – 8 ft, undivided Right – 8 ft, Left – 4 ft, divided HDM Section 2.7.2.2.C. and Exhibit 2-3 Curbed Right 5-6 ft min, 10 ft desirable Left 0 min, 1 – 2 ft desirable HDM Section 2.7.2.2.C. and Exhibit 2-4	Right varies 4ft to 8ft** Left 4-8 ft	Right varies 4ft to 8ft** Left 0-8 ft (Alt F only)
4	Bridge Roadway Width	Approach Roadway Width (4 ft shoulders desirable) HDM Section 2.7.2.2.D and BM Section 2.3.1 and Table 2-1	Right 8 ft Left 8 ft	Right 8 ft Left 2 ft (Alt F only)
5	Maximum Grade	7% for design speed 45 mph HDM Section 2.7.2.2.E. and Exhibit 2-4	3.5%	4.65% (Alt F only)
6	Horizontal Curvature	711' (at $e_{max}=4\%$) HDM Section 2.7.2.2.F. and Exhibit 2-4 643' (at $e_{max}=6\%$) HDM Section 2.7.5.2.F. and Exhibit 2-10 If designed as 2 lane divided highway (TBD in FD)	402 ft**	402 ft**
7	Superelevation Rate	4% Maximum (4% based on 402' radius) HDM Section 2.7.2.2.G. and Exhibit 2-12 6% Maximum (6% based on 402' radius) HDM Section 2.7.5.2.G. and Exhibit 2-13 If designed as 2 lane divided highway (TBD in FD)	TBD in Final Design	Final Design will meet or exceed standard
8	Stopping Sight Distance	360' min. HDM Section 2.7.2.2.H. and Exhibit 2-4	TBD in Final Design	202 ft (sag vert)** (Alt F only)
9	Horizontal Clearance	1.5 ft without barrier; 0 ft where barrier provided, 3 ft at intersections HDM Section 2.7.2.2.I.	Is satisfied	Is satisfied
10	Vertical Clearance (above traveled way)	14' 6"	Exist. to remain	Exist. to remain
11	Travel Lane Cross Slope	1.5% Min. to 2% Max. HDM Section 2.7.2.2.K.	1.5 to 2.0	1.5 to 2.0

12	Rollover	4% between travel lanes; 8% at edge of traveled HDM Section 2.7.2.2.L.	TBD in Final Design	Final Design will meet or exceed standard
13	Structural Capacity	<u>Buried Structures</u> (Box Culverts, 3-sided Frames and Pipes) NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle HDM 19.5.3	N/A	N/A
16	Pedestrian Accommodation	To comply with HDM Chapter 18, PROWAG	N/A	Yes
17	Median Width	N/A	N/A	N/A
(1) The Regional Traffic Engineer has concurred that the use of a Design Speed of 40 mph is consistent with the anticipated off-peak 85 th percentile speed within the range of functional class speeds for the terrain and volume. **Denotes non-standard feature.				

Exhibit 2.6.2 Critical Design Elements for Interchange 10 Ramps				
PIN:	8TZ1.00	NHS (Y/N):	Yes	
Route No. & Name:	Int. 10 Ramps	Functional Classification:	Urban Principal Arterial Interstate	
Project Type:	Major Intersection Reconstruction / Minor Bridge Work (PDM App. 5, Table 5-1)	Design Classification:	Arterial (HDM Exhibit 2-1)	
% Trucks:	3	Terrain:	Rolling	
ADT:	13,800	Truck Access/Qualifying Hwy.	No/No	
Element		Standard	Existing Condition	Proposed Condition
1	Design Speed	25 mph – loop ramp HDM Section 2.7.5.2.A.	Not posted	Not posted
2	Lane Width	31 ft for two lane one way Case III D1 200 ft radius HDM 2.7.5.2.B. and Exhibit 2-9	30 ft	24 ft** (Alt F only)
3	Shoulder Width	Right – 6 ft Left – 3 ft HDM Section 2.7.5.2.C. and Exhibit 2-10	Right 3 ft & varies Left 8 ft & varies	Right 8 ft & varies Left 8 ft & varies
4	Bridge Roadway Width	Same as lane and shoulder width HDM Section 2.7.5.2.D	Same as approach roadway width	Same as approach roadway width
5	Maximum Grade	7% HDM Section 2.7.5.2.E. and Exhibit 2-10	3.41%	4.97% (Alt F only)
6	Horizontal Curvature	144' (at e _{max} =6%) HDM Section 2.7.5.2.F. and Exhibit 2-10	290 ft	78 ft** (Alt F only)
7	Superelevation Rate	6% Maximum (6% based on 78' radius) HDM Section 2.7.5.2.G. and Exhibit 2-13	TBD in Final Design	Final Design will meet or exceed standard
8	Stopping Sight Distance	155' min. HDM Section 2.7.5.2.H. and Exhibit 2-10	TBD	129 ft** NB Exit 105 ft** NB Exit connection to Hillside Ave. (Alt F only)
9	Horizontal Clearance	Right side greater of shdl width or 6 ft Left side 3 ft min HDM Section 2.7.5.2.I.	Is satisfied	Is satisfied
10	Vertical Clearance (above traveled way)	14' 6"	>14' 6"	>14' 6"

10a	Vertical Clearance (Pedestrian Bridge over roadway)	15' 6"	N/A	15' 6" (Alt E only)
11	Travel Lane Cross Slope	1.5% Min. to 2% Max. HDM Section 2.7.5.2.K.	1.5 to 2.0	1.5 to 2.0
12	Rollover	4% between travel lanes; 8% at edge of traveled way; for 6% superelevation HDM Section 2.7.5.2.L.	TBD in Final Design	Final Design will meet or exceed standard
13	Structural Capacity	<u>Buried Structures</u> (Box Culverts, 3-sided Frames and Pipes) NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle HDM 19.5.3	N/A	N/A
14	Level of Service	Min. C HDM-Section 2.7.5.2.N.	Not conducted	Not conducted
15	Control of Access	Full HDM 2.7.5.2.O.	Full	Full
16	Pedestrian Accommodation	To Comply with HDM Chapter 18	N/A	N/A
(1) The NYSTA NY Division Director of Operations has concurred that the use of a Design Speed of 45 mph for ramp terminals and 25 mph for ramps is consistent with the anticipated off-peak 85 th percentile speed within the range of functional class speeds for the terrain and volume.				
**Denotes non-standard feature.				

2.3.3.3 Other Design Parameters

Exhibit 2.9 Primary Design Values for Paved Shared-Use Path			
Element	Standard Value	Source ¹	Proposed Value
Design Speed	20 mph	AASHTO	20 mph
Shared Use Width	10 ft min.	AASHTO	10 ft.
Adjacent Graded Width	2 ft min.	AASHTO	2 ft.
	1:6 max. cross slope		1:6
Maximum Grade	5% max. or match grade of adjacent roadway	AASHTO	5%
Cross Slope	2% max.	HDM Chapter 18	2%
Horizontal Curvature	74 ft	AASHTO	74 ft.
Stopping Sight Distance	195 ft min.	AASHTO	195 ft.
Horizontal Sight Distance	56 ft min.	AASHTO	56 ft.423 ft.
Crest Vertical Curve	423 ft min.	AASHTO	423 ft.
Horizontal Clearance	2 ft min.	AASHTO	2 ft.
Vertical Clearance	10 ft min.	AASHTO	10 ft.

1 2012 AASHTO Guide for the Development of Bicycle Facilities.

2.3.3.4 Existing and Proposed Highway/Bridge Plan and Section

Typical sections for Alternative E are shown in Appendix 1 on drawings SK-010, SK-011 and SK-012. These typical sections consist of a 6 ft wide pedestrian switchback, a 12 ft wide shared use path and a 10 ft wide side path adjacent to the Esposito trail.

Typical sections for Alternative F are shown in Appendix 1 on drawing SK-020. These typical sections consist of a 12 ft wide shared use path and a 10 ft wide side path adjacent to the Esposito trail.

Typical sections for the required roadway configurations for Alternatives E and F will be developed during final design.

2.3.3.5 Non Standard/Non Conforming Features

The following non-standard features are proposed to be retained:

- Route US 9W
 - Right shoulder (uncurbed) – Required 10 ft, Right Shoulder (curbed) – Required 5-6 ft, Existing and Proposed less than 10 ft (uncurbed)
 - Horizontal Curvature – Required 711 ft based on 4 % max, Required 643 ft based on 6% max, Existing and Proposed 402 ft

The following non-standard features will be created (Alt F only):

- Route US 9W
 - Stopping Sight Distance – Required 360 ft, Proposed 202 ft (sag curve)
- Route I-87/287 NB Exit Ramp Connection to Hillside Avenue
 - Horizontal Curvature – Required 144' based on 4% max, Proposed 78 ft
 - Stopping Sight Distance – Required 155 ft, Proposed 105 ft (sag curve)
 - Ramp Lane Width – Required 31 ft, Proposed 24 ft
- Route I-87/287 NB Exit Ramp Connection to Signalized Intersection with US 9W
 - Stopping Sight Distance – Required 155 ft, Proposed 129 ft (sag curve)

2.3.3.6 Pavement and Shoulder Conditions

Existing pavement and shoulder condition is not considered to be a differentiator in the decision making process regarding the selection of a Shared Use Path (SUP) terminus and parking lot location. It is expected that new or reconstructed roadway elements would be designed to meet NYSDOT and AASHTO criteria for pavement type and thickness, reflecting traffic and truck loadings for the appropriate design life. Pavement design for the Recommended Alternative would be performed at the start of Final Design, and rely upon newly acquired vehicle classification counts of areas being modified, and pavement cores and geotechnical borings as needed to provide the information needed to design the restoration or replacement of affected pavements.

Information regarding pavement condition was sought from the NYSDOT and the NYSTA for the Thruway ramps, US Route 9W and local streets under the jurisdiction of South Nyack within the project limits. The availability of record data and inventory material is uneven, ranging from a Year 2014 pavement inventory summary printout for the Route 9W corridor based on regular evaluations as detailed in the NYSDOT Comprehensive Pavement Design Manual (summary included in Appendix 4), to statements about recently resurfaced interchange ramps (noted below), and including a lack of formal inventory data for local streets. Key points of this information include:

US Route 9W

- The NYSDOT Year 2014 Pavement Inventory indicates that the existing pavements are of a Condition Rating of 6 – 7. Based on Page 2 of the NYSDOT Pavement Condition Assessment Manual, describing the Pavement Surface Condition process, a rating is linked to these descriptions:
 - 9-10 rating; Excellent / New - No surface distress
 - 7-8 rating; Good – Surface distress beginning to show

- 6 rating; Fair – Surface distress is clearly visible
- 1-5 rating; Poor – Distress is frequent and severe
- U rating; Under Construction – not rated due to ongoing work

These roadway sections are considered to be in Fair – Good condition, with rutting and surface pavement distress evident in some areas. The most recent Route 9W restoration efforts within the project area occurred in 2001.

- See photos of existing conditions along US Route 9W at the Franklin Street Extension (left) and south of Shadyside Avenue (right). These areas will be milled / resurfaced and/or reconstructed under Alternative 'F', though unaffected by the "No Build" condition and by Alternative 'E'.



Interchange 10 Ramps

- While the Thruway mainline and shoulders were recently repaved, the Interchange 10 ramps have not been resurfaced in many years. The BMPI (Benchmark Pavement Index) Classification System is used by the NYS Thruway to represent the condition of pavements within their jurisdiction:
 - BMPI rating of 90 to 100 = Excellent
 - BMPI rating of 75 to 90 = Good
 - BMPI rating of 60 to 75 = Fair
 - BMPI rating of 40 to 60 = Poor, and
 - BMPI rating of less than 40 = Very Poor.
- As confirmed by senior NYSTA staff in December 2015, the pavement condition for the Thruway mainline travel lanes and shoulders from TZB to Exit 14 is rated as 90-100. This section was repaved this year. There is no specific data for the Exit 10 ramps - but they appear to be in fair to good condition.
- See photos of existing conditions along the northbound exit immediately downstation of the exit gore with the northbound mainline (left) and approaching the vicinity of Sunnyside Avenue / US Route 9W (right). These photos illustrate the reflective "alligator cracking" on the ramps and their overlays. These areas would be reconstructed in full under Alternative 'F', though unaffected by the "No Build" condition and by Alternative 'E'.



Local Streets

- Formal inventory information was not available for local streets. However, a visual field inventory reveals local pavements in generally Fair – Good condition, similar or slightly better than those conditions found on US Route 9W and the Interchange 10 ramps. Given their comparatively lower volumes and truck utilization than the State roads, this is not unexpected.
- It is noted that the approaches to the Franklin Street Extension viaduct retain their original mid-1950's cement concrete surface.
- See photos of existing conditions along the US Route 9W northbound approaches to the Franklin Street Extension (left) and the South Franklin Street / Clinton Avenue intersection (center). The former will be realigned and reconstructed to its full depth under Alternative 'E', though unaffected by the "No Build" condition and by Alternative 'F'. Milling and resurfacing would be expected at the latter location for both Build Alternatives 'E' and 'F', but not under the "No Build" condition.
- A photo of the existing conditions at the South Broadway / Cornelison Avenue intersection is also shown (right). Following construction and curb / pavement restoration associated with the construction of the SUP (and, for Alternative 'F', closure of the southbound Thruway entry ramp at Cornelison Avenue), this area would be milled and resurfaced.

Based upon the expectations that Interchange 10 would be reconstructed in its entirety in a new configuration in the future, a 20 - 25 year service life would be a reasonable criteria for pavements constructed under either Alternatives 'E' or 'F' at ramps and along the Route 9W corridor. This would be less than the 50 year service life currently used by NYSDOT for Interstate facilities, for example. Where required to restore local streets (for example, at the Clinton Avenue / South Franklin Street intersection or along South Broadway where SUP construction would disturb existing pavements), pavement restoration would include full depth replacement in kind in the immediate disturbance box, with sawcut and sealing to retain sound pavement sections, as well as milling and resurfacing.



2.3.3.7 Drainage Systems, Water Quality and Stormwater Management

For this report, a limited desktop review of Interchange 10 drainage, water quality and stormwater management characteristics has been conducted. The intent of this review is to determine whether additional analyses will be necessary during the early stages of Final Design to:

- Confirm existing hydrology of the existing system;
- Compare the original design of the Interchange 10 system to current design criteria, designed and constructed over sixty years ago, to identify components that could require addressing.
- Determine the existing system can hydraulically serve existing and proposed runoff once either of the Build alternatives would be developed.
- Identify shortcomings in the extent or sizing of the existing system that might necessitate the retention of new flows to avoid overtaxing the existing system (see below re: discharge outlet).

- Confirm if there is a need for water quality basins to handle the flows generated by Alternatives 'E' or 'F';
- Identify potential mitigative measures.

The existing Interchange 10 drainage system was analyzed and constructed over sixty (60) years ago. It is depicted in the record Grading, Drainage and Paving Plans. Copies of these plans, hand-marked to highlight the components of the existing Interchange 10 system including approximate pavement and infield limits, are included in Appendix 6. The Interchange 10 system is connected to the existing Thruway mainline drainage system, which begins at the crest in the mainline profile about one-half mile east of the interchange. It will therefore be necessary to consider the capacity of the Thruway mainline drainage system to evaluate whether modifications proposed under Alternative 'E' or 'F' would require further drainage mitigation measures, and the type and size of these measures. Based upon this review, it is noted that:

- The trunk line for the interchange drainage system is a 24" - 72" Reinforced Concrete Culvert Pipe (RCCP) that is located beneath the median from the vicinity of the US Route 9W overpass near Depew Avenue eastward to Piermont Avenue (River Road). It is 24" - 30" in diameter west of the Franklin Street Extension Viaduct, and 60" - 72" east of that viaduct. The increase in pipe size and capacity at the Franklin Street Extension Viaduct is necessitated by the introduction of drainage from US Route 9W (described below).
- Thruway mainline drainage is collected periodically in inlets, which are connected to the trunk line at manholes by means of (typically) 15" RCCP lateral connections. Inlet spacing along the mainline varies from 300' - 400' apart in the system area, with the greater spacing noted east of the Franklin Street Extension Viaduct.
- Drainage flows are carried in full width shoulders and the median, the original roadway is crowned between the center and right travel lane in each direction to divide flows between the shoulders and median, and the longitudinal grade of the Thruway mainline is 3.00% in this area. While these factors would normally support efficient puddle width design, the 300' - 400' inlet spacing along this Interstate roadway is greater than typically used under current practice.
- There are several spur systems comprised of laterals and/or smaller trunk lines that collect drainage in locations that are within the immediate limits of Interchange 10, including portions of South Broadway (including Elizabeth Place and Hamilton Place) and the entire US Route 9W (Hillside Avenue) corridor between Franklin Street Extension and Shadyside Avenue, including the intersection with Shadyside Avenue. These spur systems enter the Thruway trunk line with pipes that are 30" - 42" in diameter.
- Existing ramp drainage is generally interconnected to other ramp inlets, with these spurs sized with 15" - 18" RCCP pipes.
- The 72" Thruway trunk line meets two separate systems serving the Piermont Avenue (River Road) corridor, and outfalls to the Hudson River (a tidal estuary) by way of a 4' x 8' culvert and outfall constructed as a part of the original Thruway construction approximately sixty years ago.

At the outset of Final Design, it will be necessary to more fully quantify this existing Thruway mainline and Interchange 10 system against current criteria for rainfall intensity, time of concentration, hydraulic gradient and other factors currently used as Measures of Effectiveness (MOE's) for the existing system. If any portion of the existing system east of the Franklin Street Extension fails to meet current hydraulic criteria, it would be expected that proposed drainage remediation would have to account for water retention (despite outfall to a tidal estuary) as well as water quality (discussed below). An initial review of the impacts to water quality and stormwater management of the disturbances associated with Alternatives E and F has been performed for this document, as described below.

The New York State Department of Environmental Conservation (NYSDEC) General Permit GP-0-10-001 regulates the discharge of stormwater runoff from construction activities associated with soil disturbance, including both water quality and quantity controls. NYSDEC requires treatment of stormwater runoff from areas of soil disturbance to improve water quality, as well as a reduction of peak flows of stormwater runoff providing channel protection, overbank flood protection and flood control. The technical standards and design criteria for stormwater management facilities are presented in NYSDEC's New York State Stormwater Management Design Manual (SWMDM) 2010.

The stormwater quality management goals in the SWMDM are to achieve an 80 percent reduction in Total Suspended Solids (TSS) and a 40 percent reduction in Total Phosphorus (TP). Most water quality treatment practices accomplish this goal by collecting the stormwater runoff and detaining it for some length of time, infiltrating it into the ground or filtering it. These practices, commonly referred to as "standard practices," are assumed to meet the required removal efficiencies if designed according to the requirements presented in the SWMDM. Other treatment systems, or proprietary practices, such as hydrodynamic separators and grit chambers, can also be employed for water quality treatment. Typically proprietary practices are used when there are site specific conditions that prohibit the implementation of "standard practices."

The sizing of any stormwater quality treatment practices as outlined in the SWMDM is based on the Water Quality volume (WQv). The WQv is based on the volume of runoff as a result of the 90 percent rainfall event which for Rockland County is 1.3 inches of rainfall. The intent is to maximize the volume of stormwater runoff treated for quality since much of the pollution in stormwater runoff comes during the early stages of a rainfall event. As a result, the smaller, but more frequent, rainfall events that constitute 90 percent of the precipitation events are expected to account for a considerable fraction of the pollution in stormwater runoff.

Stormwater Management Practices (SMPs) are intended to improve the water quality from redeveloped or new impervious surfaces. However, NYSDEC recognizes the difficulties encountered by linear transportation projects, as well as the opportunity to substantially improve water quality through the installation of stormwater treatment practices at sites that currently have no runoff controls, but for which the installation of SMPs is impractical. The SWMDM offers alternative methods of calculating the treatment volume for redevelopment projects to demonstrate compliance with the construction general permit. The following three methods discuss means of calculating treatment volumes for redeveloped portions of the project depending on whether standard or alternative practices (or a combination of the two) are employed:

- Treatment with standard practices—A minimum of 25 percent of the WQv of the total disturbed area would be captured and treated within the standard stormwater management treatment practices. For portions of redevelopment, 25 percent of the existing impervious area and 100 percent of the additional impervious area would be captured and treated within a standard treatment practice.
- Treatment with alternative practices—If the site plan includes alternative water quality practices (or proprietary practices) that treat 75 percent of the WQv from the redeveloped site, plus any additional runoff from any undisturbed areas that are tributary to the practice, no additional treatment of stormwater runoff is required.
- Weighted average approach—If a site plan includes a combination of impervious cover reduction, standard practices and alternative practices that meets the weighted average criteria of the SWMDM, no additional treatment of stormwater runoff is required.

The redevelopment criteria described above apply only to existing areas of impervious cover that are disturbed during construction. If a site redevelopment results in the addition of impervious cover to an area that is currently pervious, then the water quality management criteria for new site development (i.e., 100 percent treatment using standard methods) applies.

Stormwater runoff discharges from the Shared Use Path (SUP) previously planned for the New NY Bridge in South Nyack, Rockland County, a SUP parking area, and ancillary facilities would be ultimately discharged into the Hudson River, a tidal water body. The Hudson River is not on the State's Section 303(d) list of waterbodies impaired by stormwater runoff or within a watershed improvement strategy area. Stormwater quantity or the channel protection volume, and overbank flood protection or flood control sizing criteria will not be required. Post-construction stormwater quality treatment practices will be required for runoff discharging to the Hudson River.

No Build (Existing Conditions to remain)

- No Impact – Existing conditions to remain.

Alternative E

- New impervious areas associated with Alternative 'E' will include:
 - The extent of the extended SUP from Smith Avenue west (areas east of Smith Avenue were included under the TZB FEIS);
 - The paved side path proposed to extend along the Esposito Trail to connect the SUP to the parking lot;
 - The new 54 space (min.) parking lot constructed along the south side of the Franklin Street Extension (within Interchange 10), and;
 - The modification to the South Franklin Street / Franklin Street Extension intersection.These areas are estimated at 62,256 sf, or 1.43 Acres, of new impervious surface.
- Existing impervious areas to be removed from the project area include:
 - Small portions of the existing connections at the to the South Franklin Street / Franklin Street Extension intersection.

These areas are estimated to total 5,490 SF, or 0.13 Acre, of impervious surface being removed.

Total disturbance of 1.56 Acres exceeds the NYSDEC's 1.0 Acre minimum disturbance threshold, therefore requiring mitigation of water quality and stormwater management effects according to their guidelines and practices as described above.

Alternative F

- New impervious areas associated with Alternative 'F' will include:
 - The extent of the extended SUP from Smith Avenue west (areas east of Smith Avenue were included under the TZB FEIS);
 - The paved side path proposed to extend along the Esposito Trail to connect the SUP to the parking lot;
 - The new 54 space (min.) parking lot constructed along the south side of the Franklin Street Extension (within Interchange 10);
 - Realignment and slip ramp additions to the Thruway northbound exit at Interchange 10
 - Modifications in the vicinity of the new signalized intersection for US Route 9W (Hillside Avenue) / Shadyside Avenue / northbound Interchange 10 Thruway exit.

- Approach widening at the intersection of US Route 9W (Hillside Avenue) and Franklin Street Extension.

These areas are estimated to total 75,890 SF, or 1.74 Acres of new impervious surface.

- Existing impervious areas to be removed from the project area include:
 - Portions of the existing intersection for US Route 9W (Hillside Avenue) / Shadyside Avenue / northbound Interchange 10 Thruway exit.
 - Portions of Interchange 10 exit ramp pavement displaced by the new SUP parking lot.

These areas are estimated to total 23,394 SF, or 0.54 Acres of impervious surface being removed.

Total disturbance of 2.28 Acres exceeds the NYSDEC's 1.0 Acre minimum disturbance threshold, therefore requiring mitigation of water quality and stormwater management effects according to their guidelines and practices as described above. The table below provides a comparison of impervious surfaces based on the contributing drainage areas from Interstate 87/287 and Interchange 10 (see Figures in Appendix 6). Under current conditions, the 36.51-acre drainage area consists of approximately 21.65 acres of contributing impervious drainage area, and approximately 14.86 acres of pervious drainage area. The SUP, SUP parking area, and ancillary facilities for Alternative E would increase the impervious drainage area by 1.31 acres, and Alternative F would increase the impervious drainage area by 1.21 acres.

Impervious Surface Comparison

Location	Existing		Alternative E		Alternative F	
	Impervious Surface	Pervious Surface	Impervious Surface	Pervious Surface	Impervious Surface	Pervious Surface
TOTAL(sf)	943,230	647,139	999,996	590,373	995,726	594,643
TOTAL(ac)	21.65	14.86	22.96	13.55	22.86	13.65

Both alternatives will require collection of the water quality volume or "first flush" stormwater runoff from the SUP, SUP parking area, and ancillary facilities and convey it to proposed water quality treatment facilities located in the interchange area.

In summary, both alternatives will require collection of the water quality volume or "first flush" stormwater runoff from the SUP, SUP parking area, and ancillary facilities and convey it to proposed water quality treatment facilities located in the interchange area. This will include a detailed hydrologic and hydraulic analysis of the full system from Depew Avenue eastward, and the likely design of remediative elements including basins and open grassed ditches within Interchange 10. Mitigative measures to be considered will include:

- Green infrastructure practices, such as vegetative swales, filter strips and porous pavement will be incorporated into the portion of the SUP constructed alongside the existing Esposito Trail, which is included in both alternatives, and accounts for up to 30 percent of the new impervious area on the site.
- Green infrastructure practices, such as Green Roofs and Rain Barrels will be considered for the proposed Comfort Stations and Welcome Kiosks.
- Proposed parking lots will incorporate standard stormwater management practices (SMP) which will include perimeter sand filter and vegetative swales for water quality.

Permanent stormwater controls will be designed and constructed in accordance with the NYSDEC's SWMDM, New York State Department of Transportation (NYSDOT) Highway Design Manual, NYSDOT'S *The Environmental Manual* (TEM), and New York State Thruway Authority (NYSTA) engineering guidance. Final locations of permanent controls will be developed as part of the Stormwater Pollution Prevention Plan (SWPPP) for the SUP, SUP parking area, and ancillary facilities.

2.3.3.8 Geotechnical

The project is dominated by shallow rock overlain by glacial till and urban fill. Bedrock outcropping is found to the south of the Thruway where there exists an upland which descends down toward the north to meet the current alignment. Facilities placed in cut may require rock slope stabilization or retaining structures. To the north of the Thruway the bedrock profile deepens, giving way to glacial till and urban fill overburden. The till is dense to very dense and granular in nature. These materials are competent and adequate for the support of structure on shallow foundations. During Final Design, the designer will rely upon the subsurface investigation executed in association with the bridge underpass and in areas where additional data is required a "right sized" subsurface investigation will be proposed which will save both cost and time. A boring program consisting of borings with standard penetration testing as per ASTM D-1586 may be warranted to provide soil classification, location of change in stratum, and groundwater table data to supplement existing information as needed.

2.3.3.9 Structures

Existing Structures

There are currently five separate and distinct bridges comprising the Interchange 10 infrastructure as listed below and summarized in Appendix 6 :

- MP 16.44, BIN 5513940 (South Broadway over NYS Thruway) – Condition Rating = 4.35, General Recommendation =5
- MP 16.56, BIN 1007080 (US Route 9W Northbound over NYS Thruway) – Condition Rating = 4.72, General Recommendation =5
- MP 16.59, BIN 5513950 (US Route 9W Access – NB Exit over SB Entrance) – Condition Rating = 5.48, General Recommendation =6
- MP 16.75, BIN 5513969 (Interchange 10 Ramps over NYS Thruway) – Condition Rating = 5.68, General Recommendation =6
- MP 16.81, BIN 1007090 (Franklin Street Extension over NYS Thruway) – Condition Rating = 4.83, General Recommendations =5

Notes regarding the information contained in the NYSDOT Bridge Data Information System (BDIS):

- BIN = Bridge Identification Number (NYSDOT)
- Condition Rating: As noted in Chapter 10 of the NYSDOT Bridge Inspection Manual, a qualitative assessment of the general condition of the various elements of each structure on a scale from 1-7, with 7 being the highest:
 - 7 – New condition. No deterioration.
 - 6 – Used to shade between ratings of 5 and 7.
 - 5 – Minor deterioration, but functioning as originally designed.
 - 4 – Used to shade between ratings of 3 and 5.
 - 3 – Serious deterioration, or not functioning as originally designed.
 - 2 – Used to shade between ratings of 1 and 3.
 - 1 – Totally deteriorated, or in failed condition.
- General Recommendations – As noted in Chapter 10 of the NYSDOT Bridge Inspection Manual, and pertaining to these project bridges:

- 6 - Only minor deterioration is present. Touch-up painting may be required or other minor repairs to secondary elements. Minor bearing readjustments may be needed. There may be minor cracks or spalls in the substructures.
- 5 - Primary members and substructures are in good condition and do not need major repairs. Bridge load capacity is not reduced, but other parts of the bridge (such as deck elements) may need extensive repairs. The bridge may require repainting because of corrosion starting on steel members. Scour may have exposed, but not undermined footings.

Sources: Information from the NYSDOT Bridge Data Information System (BDIS) the BDIS User Manual and the Bridge Inspection Manual.

For the Rockland County Shared Use Path terminus and parking lot efforts, none of the remaining alternatives (No Build, Alternative 'E' or Alternative 'F') include modifications or rehabilitation to structural components at any of the four existing bridge locations immediately inside Interchange 10. Only under Alternative 'F' will there be construction activity in the vicinity of these structures, wherein the deck surface of BIN 5513950 (US Route 9W Access – NB Exit over SB Entrance) will be scarified, resurfaced and restriped to shift the alignment of travel lanes eastward to accommodate the revised approach alignments. Additionally, roadway approach resurfacing and restriping will extend to the west expansion joint at BIN 1007090 (Franklin Street Extension over NYS Thruway) and at BIN 1007080 (US Route 9W Northbound over NYS Thruway).

At the fifth bridge location, BIN 5513940 (South Broadway over NYS Thruway), modifications will be made to the easterly sidewalk and curb to convert this area into a single lane temporary travel lane. This effort is needed to stage the excavation behind the north abutment as needed to accommodate the construction of the SUP "underpass". Preliminary plans for the construction of the SUP "underpass" are included in Appendix 1 of this report, including staging plans indicating the limits of sidewalk and curb removal, temporary resurfacing, and restoration (Dwg. Nos. SK-24 and SK-25).

Structural Removals

- Overhead Sign Structure at STA W 501+00 – Alternatives E and F: Signs to be relocated to either a new cantilevered sign structure over the deceleration lane at STA W 501+50, a new overhead sign structure at approximately STA W 501+50, or mounted to the existing Route 9 W bridge fascia.
- Noise Barriers – Alternatives E and F: Existing noise barrier located along South Broadway and the existing noise barrier remnant from the South Broadway bridge abutment to STA WS 101+62. Replacement noise barriers will be constructed.
- Stairway - Alternative F: There is potential that the existing concrete stairway connecting South Broadway Avenue to the Esposito Trail may require reconstruction which will be determined once additional survey is obtained during Final Design. If reconstruction is required ADA requirements will be evaluated.
- South Broadway wingwalls and foundations

Proposed Structures

Alternatives 'E' and 'F' will both include the construction of a Shared Use Path "underpass" beneath the north approach of BIN 5513940 (South Broadway over NYS Thruway). In addition, Alternative 'E' would include the construction of a grade separated structure to carry the SUP over the existing Interchange 10 southbound local entrance ramp from Cornelison Avenue, which would remain in operation upon the

completion of Alternative 'E'. In addition to these two grade – separated structures, there are retained earth fill sections supporting:

- A “switchback” structure and stairs approaching the grade separation spanning the above noted southbound entrance ramp (Alternative 'E');
- SUP connections to the Esposito Trail (Alternatives 'E' and 'F', though having different limits and alignments);
- Retaining walls supporting the proposed SUP parking lot (Alternative 'E' in particular, though Alternative 'F' may have short walls to accommodate slope cuts).
- Additional walls may be needed to accommodate other roadway modifications and grading, subject to Final Design and grading studies, in the vicinity of improvements at the Hillside Avenue / Franklin Street Extension intersection and at the US Route 9W (Hillside Avenue) / Shadyside Avenue / Interchange 10 northbound exit to US Route 9W intersection (Alternative 'F').

Preliminary plans for the construction of the SUP “underpass” are included in Appendix 1 of this report.

2.3.3.10 Hydraulics of Bridges and Culverts

Reference is made to discussions in Section 2.3.3.7 – Drainage of this PSR / FDR regarding the overall drainage of Interchange 10 and associated portions of the Thruway mainline drainage system that also serves this interchange. Appendix 5 includes support for that section, as well as Special Plans developed in 1953 for the original Thruway construction for the 4' x 8' box culvert located beneath River Road / Piermont Avenue and extending to the west shore of the Hudson River, discharging into the Hudson River along the south fascia of the existing Tappan Zee Bridge. Discussion of this culvert is also contained in the Project FEIS. This culvert collects flow directly from the Thruway mainline's system (a 72" RCCP at River Road / Piermont Avenue), and from a 36" RCCP storm line combines flows from two – 24" RCCP pipes serving local jurisdictions along Piermont Avenue (south of the TZB) and Bight Lane. It is expected that this culvert will remain in place. Based on preliminary investigations, detention of new flows does not appear to be necessary for either Build Alternative (to be confirmed in Final Design).

2.3.3.11 Constructability Review

A comprehensive accounting of major construction staging and constructability issues has been provided for each alternative under Section 2.3.1.7, Work Zone Safety and Mobility. For this project, the primary issues related to the constructability of each alternative are contingent upon:

- The construction of the Shared Use Path (SUP) “underpass” – see section 2.3.1.7 and Section 2.3.3.9 of this report;
- Impacts to important community connectivity and commuter access with the Tappan Zee Bridge – see Section 2.3.1.7 of this report;
- Refer to Chapter 13 of the Project Environmental Assessment for further discussion.

Beyond these three areas, constructability issues are generally minor because of the Project Purpose and Need of these improvements is limited to providing a suitable terminus within the existing interchange. Full interchange reconstruction in the future would raise a greater variety and magnitude of other issues – but these are not a part of this current project.

2.3.3.12 Utilities

Utility impacts related to the “No Build condition and the two Build alternatives under consideration (Alternatives E and F) are described below. Plans of existing utilities and other documents illustrating the impacts of each alternative upon existing utilities and required remediation are contained in Appendix 7.

No Build (Existing Conditions to remain)

The No-Build Alternative will have no impacts to utilities.

Alternative E

The primary utility effects associated with Alternative E will occur where the Shared Use Path (SUP) structures are being constructed at the South Broadway overpass, the intersection of South Broadway and Cornelison Avenue (including areas behind Village Hall), and the intersection of South Franklin Street / Franklin Street Extension as needed to serve the parking lot, comfort station and traffic signal at that modified intersection.

a. Vicinity of South Broadway underpass, including interface with the Esposito Trail near South Nyack Village Hall;

- Construction of the Shared Use Path (SUP) underpass / portal beneath South Broadway behind the existing north abutment, and affecting the overpass' north roadway approach, will affect:
 - *UG Electrical* ; 4 – 4" A.C. existing electrical conduit and cable (east sidewalk – Record Plans; OR west safety walk area - project CADD files). Remediation: Lines to be relocated or protected in place. Services to SUP lighting are also anticipated.
 - *UG Gas*; 1 or 2 - 6" underground gas lines (east sidewalk area). Remediation: Line to be relocated or protected in place.
 - *UG Telephone / Communications*; 12 – 3½" telephone / communications cable and conduit (east sidewalk and bridge deck). Remediation: Lines to be relocated or protected in place. Services for SUP emergency communications are also anticipated.
- Construction in the vicinity of the South Broadway / Cornelison Avenue intersection and entrance ramp onto southbound NYS Thruway
 - *UG Electrical* conduit continue along South Broadway north of the NYS Thruway overpass and proposed SUP construction; Record Plans indicate conduits near east sidewalk (i.e., distant from the SUP construction); Project CADD files indicate UG Electric along west side of South Broadway (in path of SUP construction) – confirmation to be sought during Final Design. Remediation: Lines to be relocated or protected in place.
 - *UG Telephone / Communications* along east side of South Broadway, intersection with Cornelison Avenue, and points north – distant from SUP construction.
 - *UG Gas* (4" - 6") along east side of South Broadway and through the center of its intersection with Cornelison Avenue – 20' ± minimum from SUP construction, no direct impact.
 - *UG Water* (6") along west side of South Broadway north of Cornelison Avenue, thence along north side of Cornelison Avenue eastward toward Piermont Avenue – distant from SUP construction
 - *UG Water* (8") crosses perpendicularly beneath NYS Thruway from South Broadway / Cornelison intersection; Remediation: SUP supports / walls / fill to avoid / protect / encase as needed.
 - *UG Sanitary Sewer* (Unknown size) along center line of South Broadway north of Cornelison Avenue, thence along center of Cornelison Avenue eastward toward Piermont Avenue – distant from SUP construction. Additionally, an 8" C.I.P. sanitary line crosses the NYS Thruway ROW perpendicularly from the Hillside Avenue / Shadyside Avenue intersection to the South Broadway / Cornelison Avenue intersection. This connection will cross the SUP construction area near the South Broadway / Cornelison intersection; Remediation: SUP supports / walls / fill to avoid / protect / encase as needed.

- Existing overhead lighting supported by bracket arms from wooden poles would be maintained or replaced in kind as appropriate. Additional lighting for the shared use path (SUP) is anticipated. The use of LED fixtures targeted to the path to minimize light spillage beyond the limits of the path is anticipated.
- Other utility features at the northwest corner of the South Broadway / Cornelison intersection include a fire hydrant (water), a wood pole support for the intersection flashing signal (municipal) and a raised control cabinet for the flashing signal. All are distant from the SUP work zone.



b. Existing Esposito Trail between NYS Thruway / entrance to southbound Thruway at Cornelison Avenue, and Clinton Avenue near Franklin Street;

- Modifications and enhancements to the existing Esposito Trail pathway and amenities will affect an unspecified manhole (drainage??) noted along the trail (former railroad ROW) near the existing stairs from the South Broadway / Mansfield Avenue intersection (photo). Presence of the line to be confirmed, and manholes to be reset as needed.

c. Interchange 10 Ramps and Roadways;

- Near the modified intersection of South Franklin Street and Franklin Street Extension, existing underground telephone / communications, gas (6") and electrical services located beneath the Franklin Street Extension will be maintained or modified as necessary to construct the proposed SUP parking lot and the modified roadway intersection.
- Proposed services to the modified South Franklin Street / Franklin Street Extension intersection will require extension of existing electrical and telephone / communications services for proposed lighting and signalization.
- Proposed services to the SUP Parking Lot located at the northern end of Interchange 10 (i.e., Alternative 'E' lot, bound on the north by the Franklin Street Extension), including the proposed comfort station, will require extension of existing electrical, gas and telephone / communications services for proposed lighting, heat and other services. Additionally, existing water (6" – Record Plans) and sanitary sewer (8" – Record Plans) services will be extended to the parking lot and comfort station area from existing lines at the Clinton Avenue / South Franklin Street intersection, subject to future discussions between NYSTA and South Nyack representatives.

d. Local Streets and US Route 9W (Hillside Avenue);

- No Impact other than locations noted above under a. and c. – The vicinity of the existing Shadyside Avenue and Hillside Avenue (US Route 9W) intersection will be unaffected by this alternative, and would remain as at present.

Alternative F

The primary utility effects associated with Alternative F will occur where the Shared Use Path (SUP) structures are being constructed at the South Broadway overpass, the intersection of South Broadway and Cornelison Avenue (including areas near Village Hall), including the extending of existing services to support the Alternative 'F' parking lot and comfort station. Additionally, roadway modifications at the south end of the interchange, including modifications at the Hillside Avenue (US Route 9W) / Shadyside Avenue intersection will be undertaken.

a. Vicinity of South Broadway underpass, including interface with the Esposito Trail near South Nyack Village Hall;

- Construction of the Shared Use Path (SUP) underpass / portal beneath South Broadway behind the existing north abutment, and affecting the overpass' north roadway approach, will affect:
 - *UG Electrical, Gas and Telephone / Communications:* Same as Alternative 'E' – see above
- Construction in the vicinity of the South Broadway / Cornelison Avenue intersection and the existing entrance ramp onto southbound NYS Thruway (which will be closed under Alternative 'F').
 - *UG Electrical, Telephone / Communications, Gas (4" - 6"), Water (6" and 8") and Sanitary Sewers:* Same as or similar to Alternative 'E' – see above.
 - In addition to these features, proposed services to the SUP Parking Lot (for Alternative 'F', located within the center portion of the interchange and along the west side of US Route 9W northbound), including the proposed comfort station, will require extension of existing electrical, gas and telephone / communications services for proposed lighting, heat and other services. Additionally, existing water (8" – Record Plans) and sanitary sewer (8" – Record Plans) services will be extended to the parking lot and comfort station area from existing lines at the South Broadway / Cornelison Avenue, subject to future discussions between NYSTA and South Nyack representatives.
 - Existing overhead lighting supported by bracket arms from wooden poles would be maintained or replaced in kind as appropriate. Additional lighting for the shared use path (SUP) is anticipated. The use of LED fixtures targeted to the path to minimize light spillage beyond the limits of the path is anticipated.
 - Other utility features at the northwest corner of the South Broadway / Cornelison intersection include a fire hydrant (water), a wood pole support for the intersection flashing signal (municipal) and a raised control cabinet for the flashing signal. All are distant from the SUP work zone.

b. Existing Esposito Trail between NYS Thruway / entrance to southbound Thruway at Cornelison Avenue, and Clinton Avenue near Franklin Street;

- Modifications and enhancements to the existing Esposito Trail pathway and amenities will affect an unspecified manhole noted along the trail (former railroad ROW) near the existing stairs from the South Broadway / Mansfield Avenue intersection (photo). Presence of the line to be confirmed, and manholes to be reset as needed.

c. Interchange 10 Ramps and Roadways;

- Modification of Interchange 10 Northbound Exit 'A' exit curve (shifted slightly west to create space for the proposed SUP parking lot and comfort station) will not affect existing utilities. Note that this ramp is currently unlit.
- Modification of Interchange 10 Northbound Exit 'A' terminal at its interface with US Route 9W (shifted east to accommodate new signalized intersection with US Route 9W / Hillside Avenue) will not affect existing utilities. Note that this ramp is currently unlit.
- Utilities at other interchange ramps and structures are unaffected.

d. Local Streets and US Route 9W (Hillside Avenue);

- New signalization proposed at the Clinton Avenue / South Franklin Street intersection will require connections to electrical and (possibly) telephone / communications services that currently exist at that location.
- At the US Route 9W (Hillside Avenue) / Franklin Street Extension intersection, proposed approach widening will be constructed at a profile and cross section that would minimize impacts to existing underground gas and telephone lines and bridge lighting on the Franklin Avenue Extension, and underground gas, sanitary sewer (8" V.T.P.), and water (8") lines along Hillside Avenue. Overhead electrical and telephone / CTV / communications services along the west side of US Route 9W (Hillside Avenue) would be relocated westward (toward the hillside) in the direction that the roadway would be widened. New signalization proposed at the US Route 9W (Hillside Avenue) / Franklin Street Extension intersection will require connections to existing electrical and (possibly) telephone / communications services that currently exist at that location.
- At the proposed US Route 9W (Hillside Avenue) / Shadyside Avenue / Interchange 10 Northbound Exit 'A' terminal intersection, proposed approach realignment and the addition of new turning movements into Interchange 10 will generally be constructed at a profile and cross section that would minimize impacts to existing underground gas, sanitary sewer (8" V.T.P.) and water (6") lines along Shadyside Avenue, but require relocation of existing utility poles supporting overhead lighting, electrical, CTV, telephone and communications services. Relocation of existing utility poles supporting overhead lighting, electrical, CTV, telephone and communications services would also be necessary along portions of US Route 9W (Hillside Avenue) affected by the proposed modifications. New signalization proposed at this intersection will require connections to existing electrical and (possibly) telephone / communications services.

In summary, both Alternatives 'E' and 'F' would require that utility services be maintained during construction and restored to serve the final condition. The impacts upon utilities for either Build alternative are similar in impact and considered to be comparatively minor when compared to the scope of the project.

2.3.3.13 Right of Way

Alternatives associated with the Rockland terminus to the Shared Use Path sought to contain improvements within existing public right-of-way limits wherever practical. A review of existing right-of-way limits, illustrated on the right-of-way plans and project mapping contained in Appendix 8 (including As-Built revisions dated 1958 and indicated in the original construction's General Plans), indicates areas near the South Broadway / Cornelison intersection (vicinity of Village Hall), at the north abutment of the South Broadway overpass (near Smith Avenue) and at the southern end of Interchange 10 (near the US Route 9W (Hillside Avenue) Shadyside Avenue intersection where existing State right-of-way limits are constrained, potentially limiting the design of Build alternatives in those areas. Specifically, it is noted that the rear portion of the South Nyack Village Hall (282 South Broadway) encroaches upon property acquired by the State for the construction of Interchange 10. It is assumed that the parcel that the Esposito Trail is on between the Village Hall and Clinton Avenue is under the ownership of the Village of South Nyack. Additional property acquisition appears necessary at the following two locations for Alternatives E and F:

- SUP connection to the Esposito Trail behind the Village of South Nyack Village Hall
- The side path parallel to the Esposito Trail

In general, the alternatives considered in this study held to the project goals of avoiding new right-of-way acquisition wherever practical. A summary of potential right-of-way impacts associated with the remaining alternatives is provided below.

No Build (Existing Conditions to remain)

- No Impact – Existing conditions to remain.

Alternative E

- Fee Acquisition, Permanent and Temporary Easements are anticipated to construct walls or excavations associated with the side path adjacent to the Esposito Trail. It is assumed that these affected parcels fall under the ownership of the Village of South Nyack. Jurisdictional agreements between the NYSTA and entities (to be determined) to be responsible for the maintenance and operation of the Side Path, the parking lot and the comfort station will be determined during Final Design.

Alternative F

- Fee Acquisition, Permanent and Temporary Easements are anticipated to construct walls or excavations associated with the side path / spur path which is assumed to be under the ownership of the Village of South Nyack. Other Temporary Driveway permits for construction and grading of several driveways may be needed to repair driveways, stairs or landscaped areas at several homes along the west side of US Route 9W (Hillside Avenue) near Shadyside Avenue in a manner necessary to properly drain those areas. Finally, jurisdictional agreements between the NYSTA and entities (to be determined) to be responsible for the maintenance and operation of the side path, the parking lot and the comfort station will be determined during Final Design.
- Widening of the US Route 9W (Hillside Avenue) / Franklin Street Extension intersection approaches is to be performed within existing State right-of-way. According to As-Built of the original construction's General Plans, the State's right-of-way includes the rock slope west of US Route 9W in this area until the easterly Highway Boundary of Lowland Drive.

In summary, both Alternatives 'E' and 'F' will require similar Fee Acquisition and Permanent Easements. Several Temporary Easements for construction access and/or grading purposes may be needed to undertake the construction of walls and other features. Conditions within these easements would be restored to pre-construction conditions ("replace-in-kind"), and would be coordinated with the Village of South Nyack during Final Design. The impacts upon right-of-way for either Build alternative are similar in impact and considered to be comparatively minor when compared to the scope of the project.

2.3.3.14 Landscaping/Environmental Enhancement

Alternatives associated with the Rockland terminus of the Shared Use Path will maintain, restore and/or enhance (where appropriate) existing area landscaping within Interchange 10.

- Landscaping treatments will be enhanced in those areas along sections of the Shared Use Path visible to local residents (along South Broadway near Cornelison Avenue, for example) where these areas are no longer hidden by existing or replacement noise walls necessitated by traffic conditions on the Thruway mainline. The Environmental Assessment (EA) documentation includes architectural renderings of the proposed view sheds associated with the SUP from the South Broadway and Cornelison Avenue corridors for Alternatives 'E' and 'F'.

- Alternative 'F' modifications proposed at the US Route 9W (Hillside Avenue) / Shadyside Avenue / Interchange 10 Northbound Exit 'A' terminal intersection have been represented in architectural renderings of the view from US Route 9W approaching from the south. Renderings are included in the Environmental Assessment (EA) documentation.
- Within the limits of Interchange 10, additional visual screening will be provided to separate the SUP parking lots and comfort stations from the view of the adjacent residential areas (and vice versa), subject to coordination between the NYSTA and project stakeholders and incorporating necessary elements of vegetation based upon suitability to existing conditions, durability, appearance, maintainability, driver sight distance, security and cost.
- Proposed enhancements of the Esposito Trail in areas jointly serving the Shared Use Path will be coordinated between the Authority and local stakeholders.
- Existing local street lighting (luminaires on wood poles and aluminum bracket arms) will be replaced in kind except where new signalization would require the introduction of new intersection lighting to supplement the traffic signal installation. Lighting design would follow the requirements of the New York State Highway Design Manual and associated documents.
- For Build alternatives (Alternatives 'E' and 'F', care will be taken to minimize the encroachment of lighting from the Shared Use Path, parking lot or comfort station upon existing residential areas.
- Signal design would follow the requirements of the New York State Highway Design Manual and associated documents, and crosswalks and amenities would meet appropriate ADAAG and PROWAG requirements as mandated by the NYSDOT.

In summary, both Alternatives 'E' and 'F' will include restoration and/or enhancement of landscaping, lighting, traffic signals and other features as needed to preserve the existing quality of view sheds and recreational features (i.e., Esposito Trail, etc.) directly affected by the Shared Use Path, parking lot and comfort station. Treatments affecting private properties (frontage landscaping and driveways along northbound Hillside Avenue, etc.) will be coordinated with individual property owners during Final Design. Details of landscaping, lighting, and aesthetic treatments will be coordinated in future discussions, both during the environmental assessment process and Final Design, between the NYSTA and local stakeholders.

2.4 Miscellaneous

2.4.1 NYS Smart Growth Public Infrastructure Policy Act (SGPIPA)

Pursuant to ECL Article 6, this project is compliant with the New York State Smart Growth Public Infrastructure Policy Act (SGPIPA).

To the extent practicable this project has met the relevant criteria as described in ECL § 6-0107. The Smart Growth Screening Tool was used to assess the project's consistency and alignment with relevant Smart Growth criteria; the tool was completed by the NYSTA group on February 10, 2016 and reflects the current project scope. A copy of the signed Smart Growth Impact Statement is included in Appendix B of the Project Environmental Assessment documentation.

CHAPTER 3 – SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

3.1 National Environmental Policy Act (NEPA)

Refer to Chapter 2, Section 2-4-1 of the Project Environmental Assessment.

3.2 State Environmental Quality Review Act (SEQRA)

Refer to Chapter 2, Section 2-4-1 of the Project Environmental Assessment.

3.3 Additional Environmental Information

Refer to Chapters 1 through 15 and Appendices A and C through F of the Project Environmental Assessment.

APPENDICES

Appendix 1

Plans, Profiles, and Cross Sections

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DESIGNED BY

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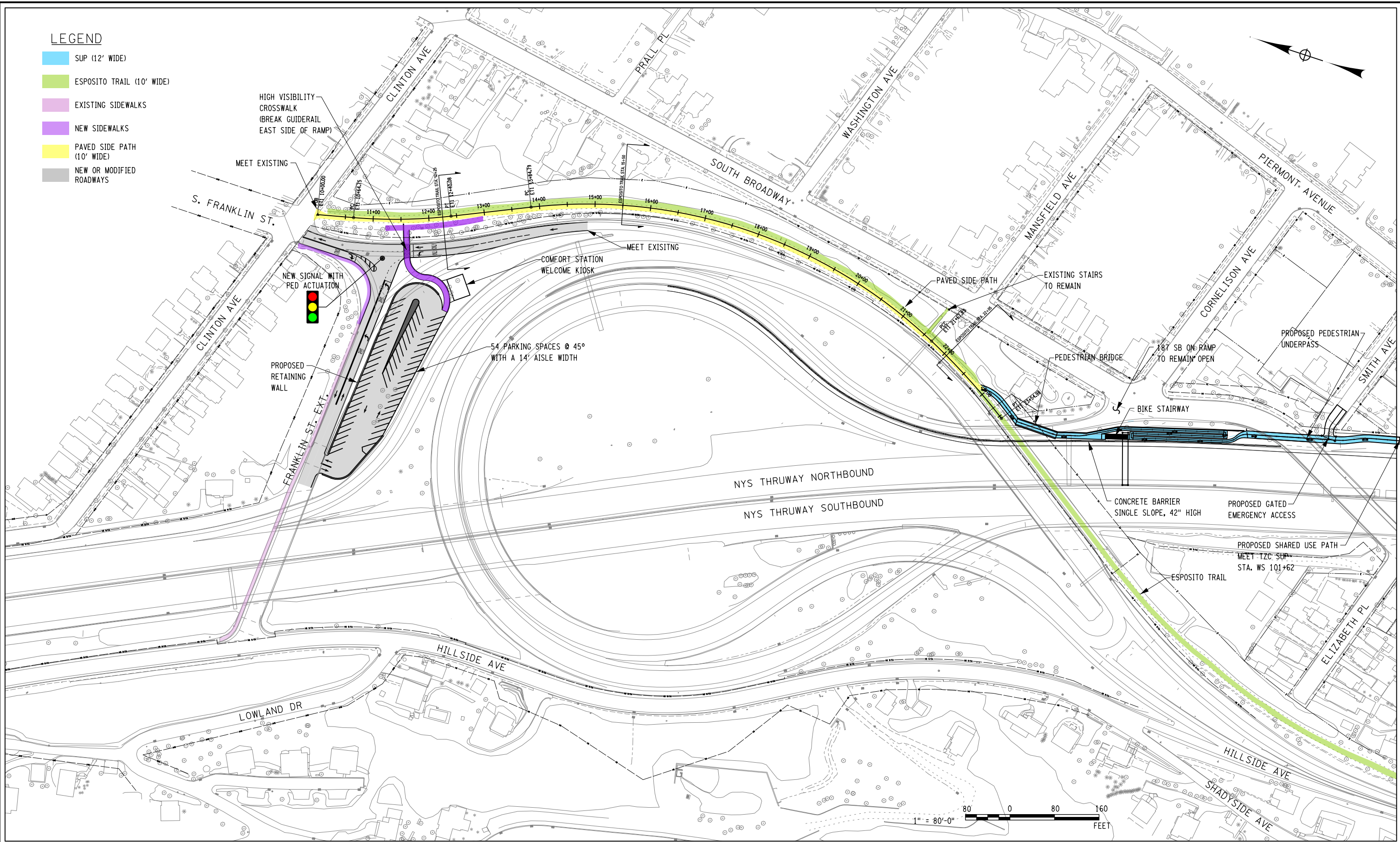
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LEGEND

- SUP (12' WIDE)
- ESPOSITO TRAIL (10' WIDE)
- EXISTING SIDEWALKS
- NEW SIDEWALKS
- PAVED SIDE PATH (10' WIDE)
- NEW OR MODIFIED ROADWAYS



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New York, New York 10001



**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

4	02/22/16	ROW REVISIONS	GW
3	02/03/16	SIDE PATH CHANGES	GW
2	01/15/16	UPDATE SUP SWITCHBACK	GW
1	12/19/15	UPDATE SUP SWITCHBACK	GW
REV	DATE	DESCRIPTION	BY
DATE: 12/18/15			

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		DRAWING NO. SHEET NO. 1 of 1
NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8		

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LEGEND

- SUP (12' WIDE)
- ESPOSITO TRAIL
- EXISTING SIDEWALKS
- NEW SIDEWALKS
- PAVED SIDE PATH
- NEW OR MODIFIED ROADWAYS



S. FRANKLIN ST.

CLINTON AVENUE

FRANKLIN ST. EXT.

FERN AVENUE

LOWLAND DRIVE

CLINTON AVENUE

SOUTH BROADWAY

NYS THRUWAY NORTHBOUND
NYS THRUWAY SOUTHBOUND

SB ENTRANCE

HILLSIDE AVE.

POTENTIAL AREA FOR ADDITIONAL PARKING

54 PARKING SPACES @ 60°
WITH A 14.5' AISLE LENGTH

MEET PAVED SIDE PATH

STAIRS TO REMAIN

SUP SPUR (10' WIDE)

SUP (12' WIDE)

CONCRETE BARRIER
SINGLE SLOPE, 42" HIGH

ELIZABETH PLACE PARK

REMOVE PAVEMENT,
REGRADE AND
LANDSCAPE

ELIZABETH PLACE

CORNELISON AVENUE

PIERMONT AVENUE

SMITH AVENUE

1" = 80'-0"

SCALE



NEW
(COORDINATED/SAME
CONTROLLERS)

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200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

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REV	DATE	DESCRIPTION	BY
DATE: 12/18/15			

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		DRAWING NO. SHEET NO. 1 of 8
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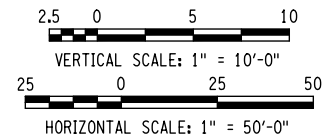
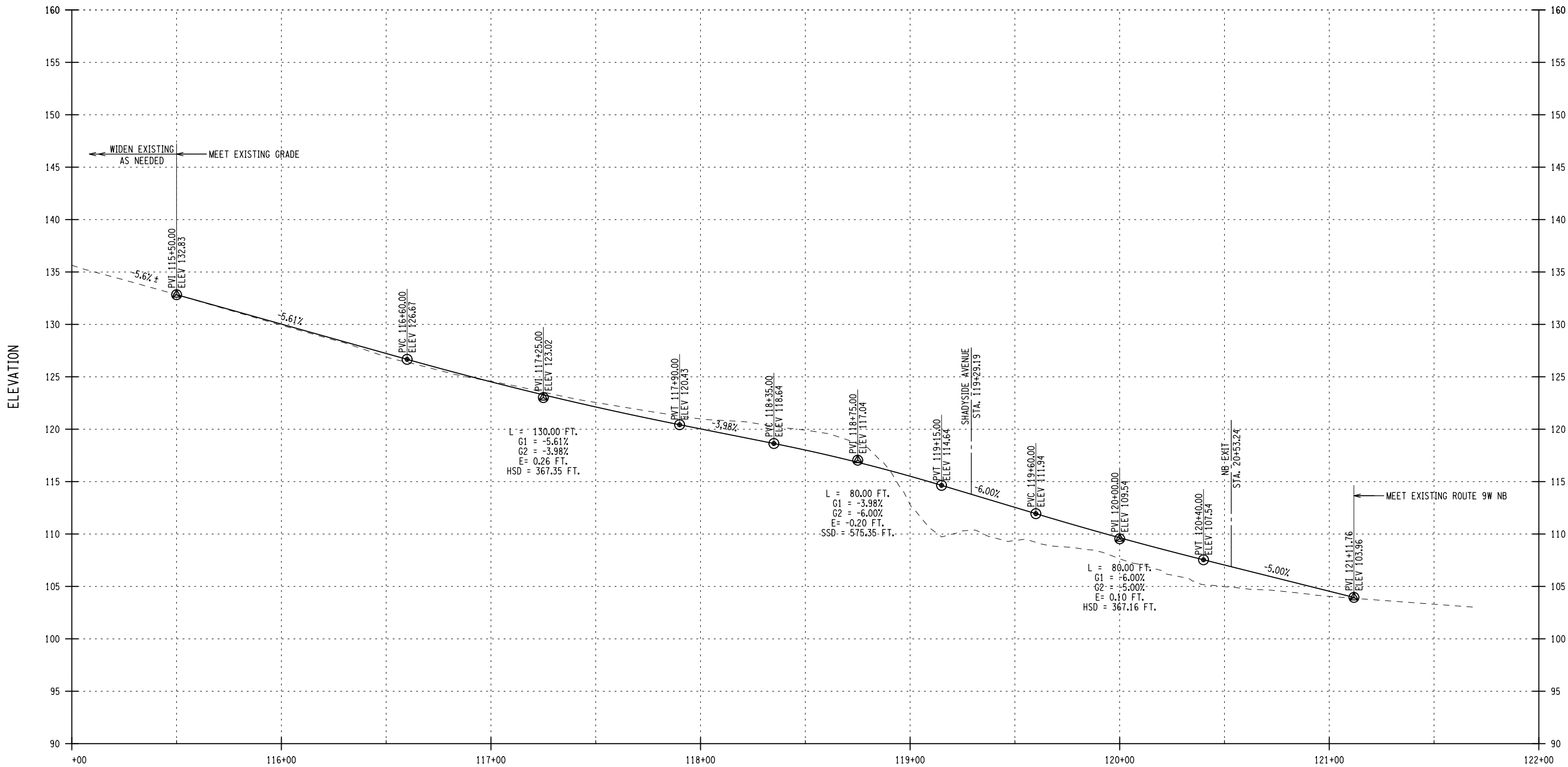
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ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

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JOB MANAGER

DESIGNED BY

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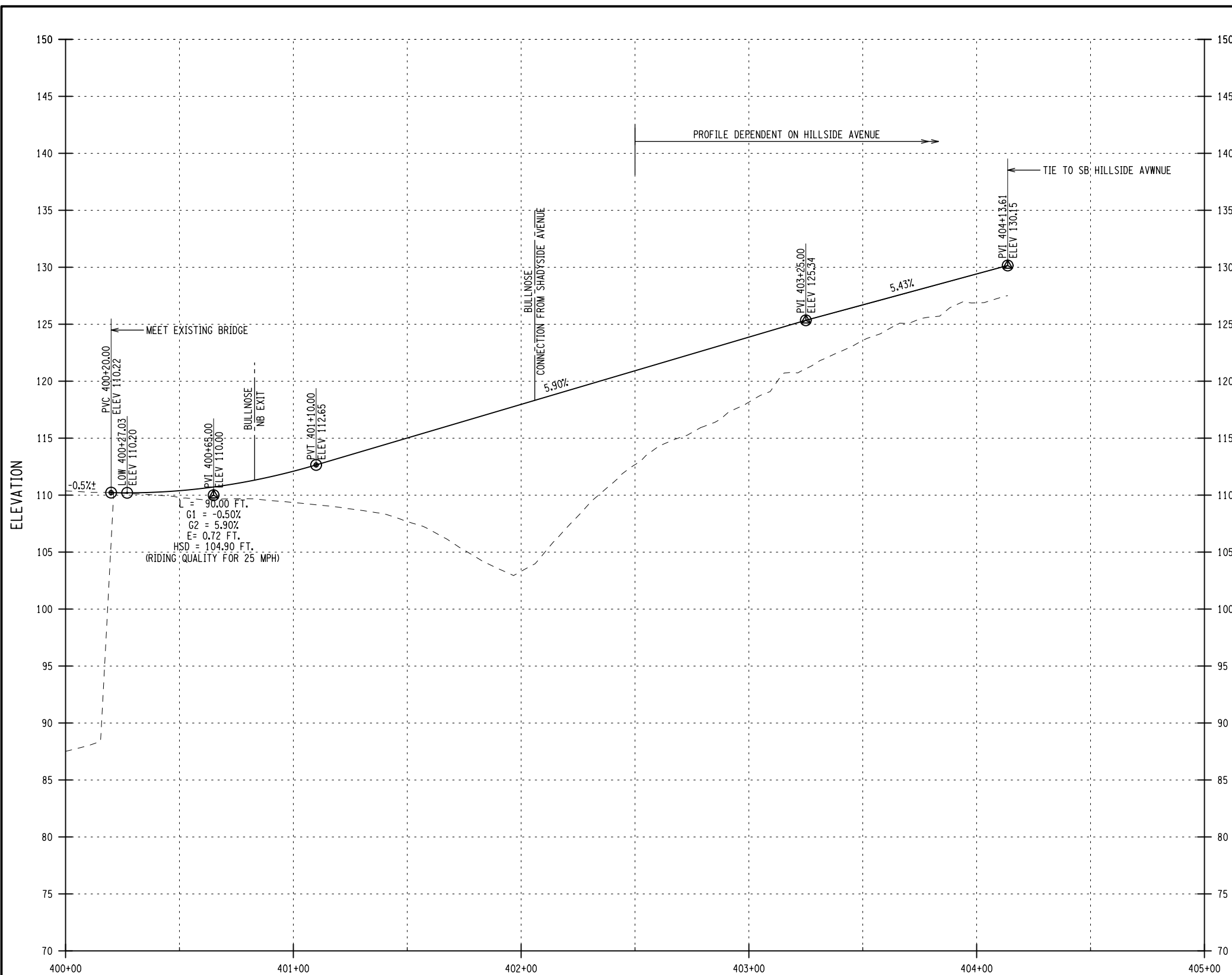
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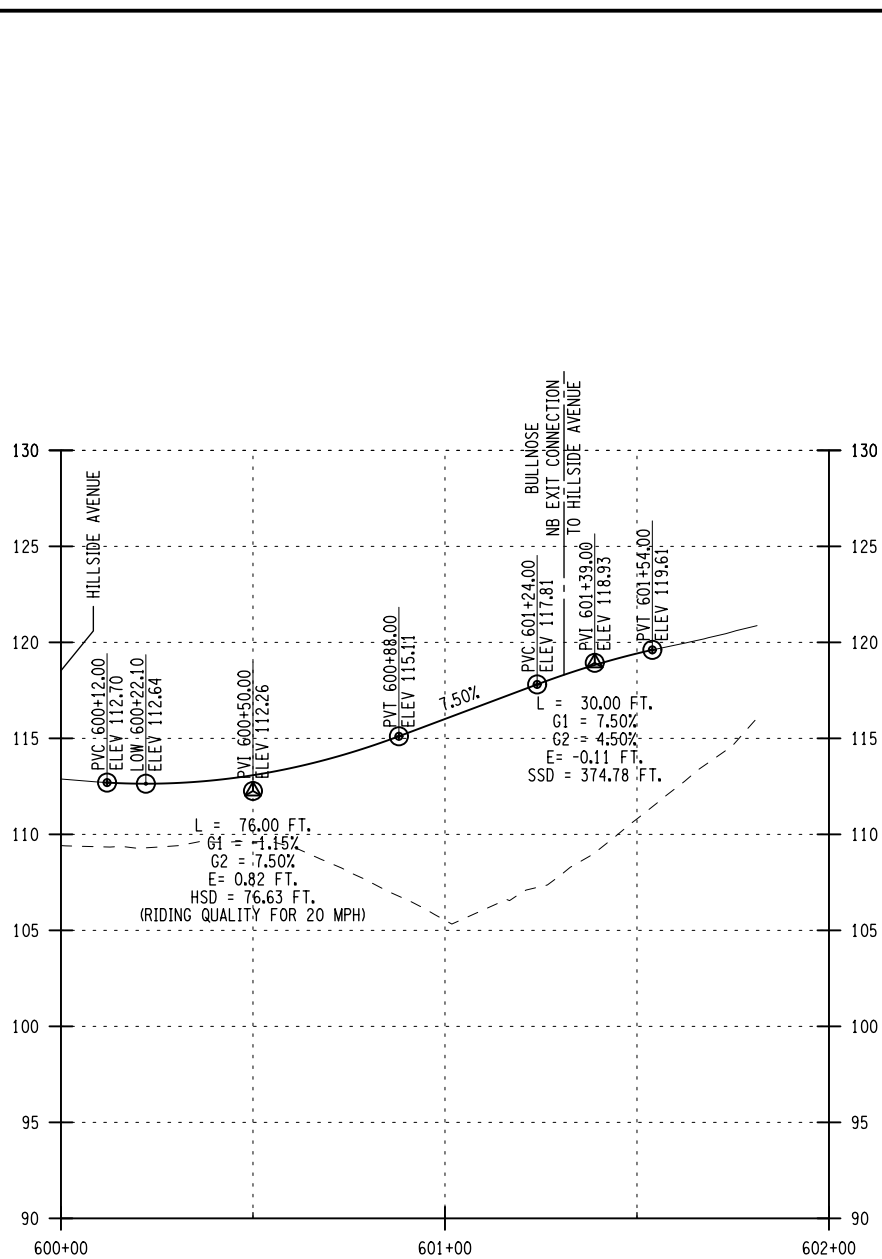
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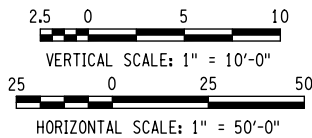
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ALTERNATIVE F - NB EXIT CONNECTION TO HILLSIDE
DESIGN SPEED = 25 MPH UNLESS OTHERWISE NOTED AT INTERSECTION
(HORIZONTAL CURVE RADIUS R=78' IS GOOD FOR 18 MPH DESIGN SPEED)



ALTERNATIVE F - CONNECTION FROM SHADYSIDE AVENUE
DESIGN SPEED = 20 MPH UNLESS OTHERWISE NOTED



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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

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DATE: 12/18/15

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PROFILES
ALTERNATIVE F

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232234-12

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SHEET NO. 3 of 8

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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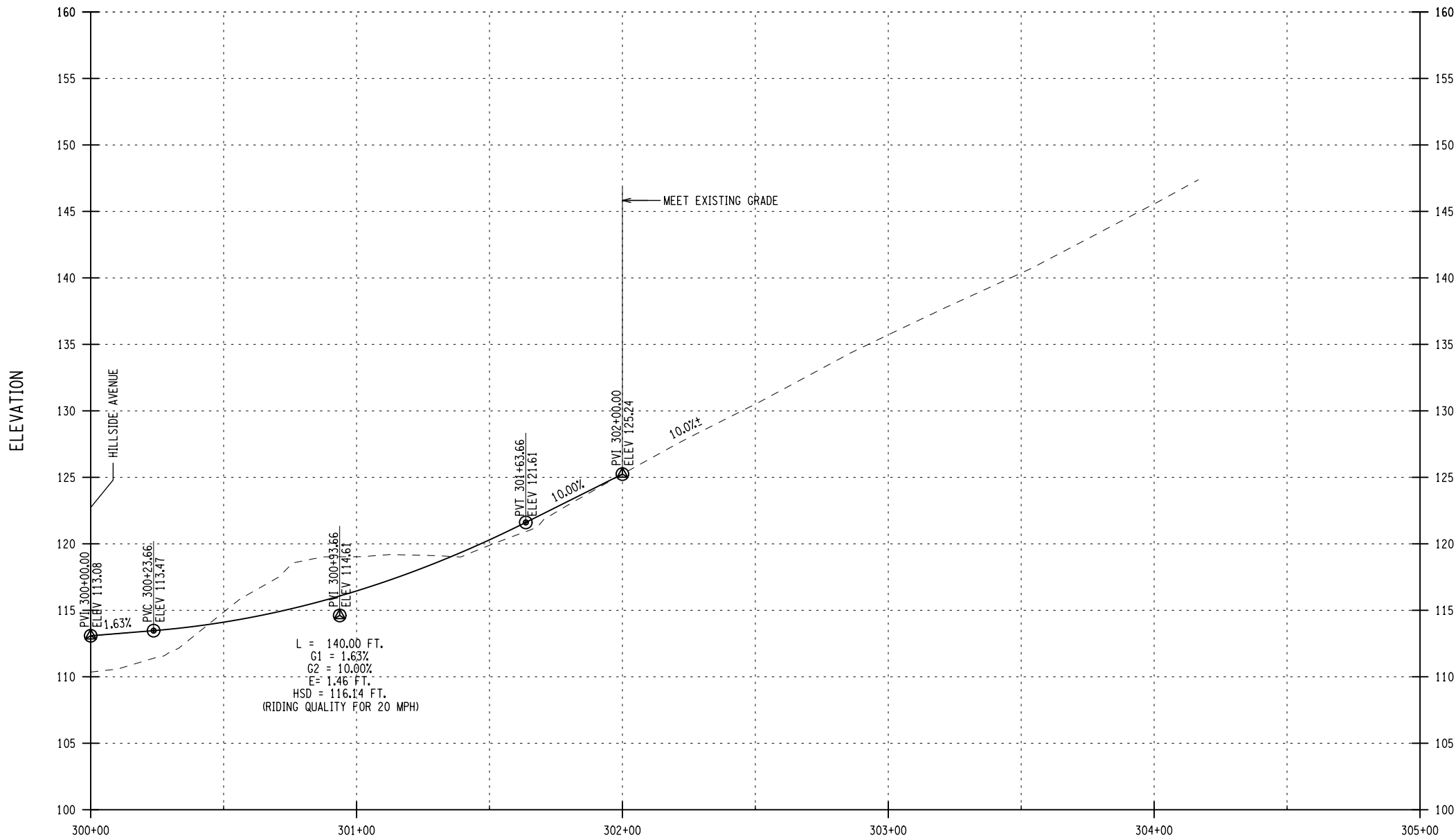
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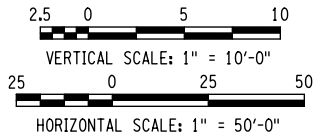
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ALTERNATIVE F - SHADYSIDE AVENUE
DESIGN SPEED = 20 MPH UNLESS OTHERWISE NOTED



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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

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DATE: 12/18/15

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ALTERNATIVE F

CONTRACT NUMBER

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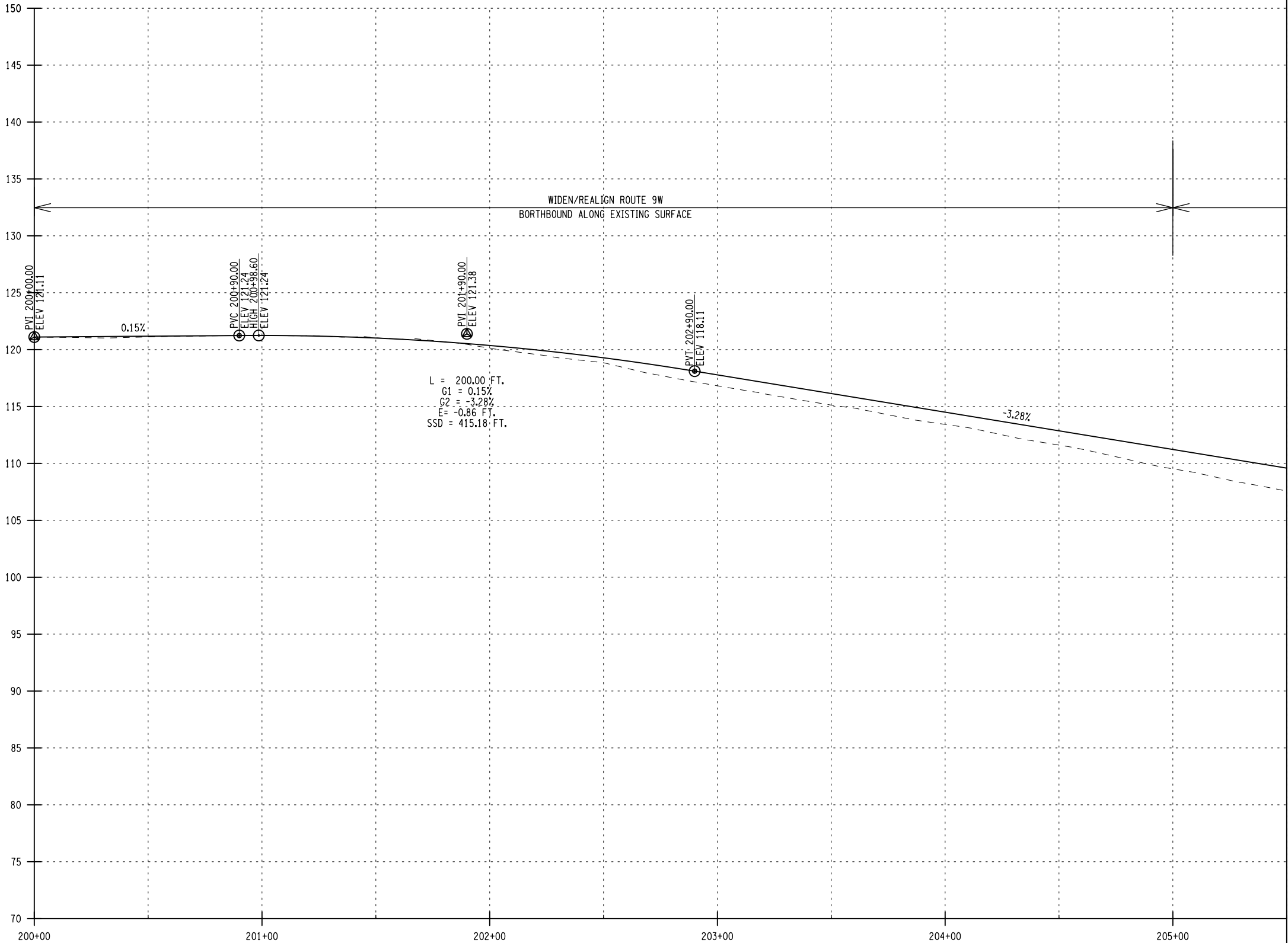
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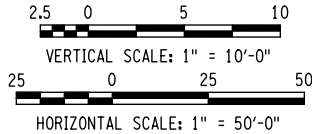
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ELEVATION



ALTERNATIVE F - ROUTE 9W NORTHBOUND
DESIGN SPEED = 45 MPH UNLESS OTHERWISE NOTED



SEE SHEET 6 OF 8



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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

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	12/18/15		

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CONTRACT NUMBER

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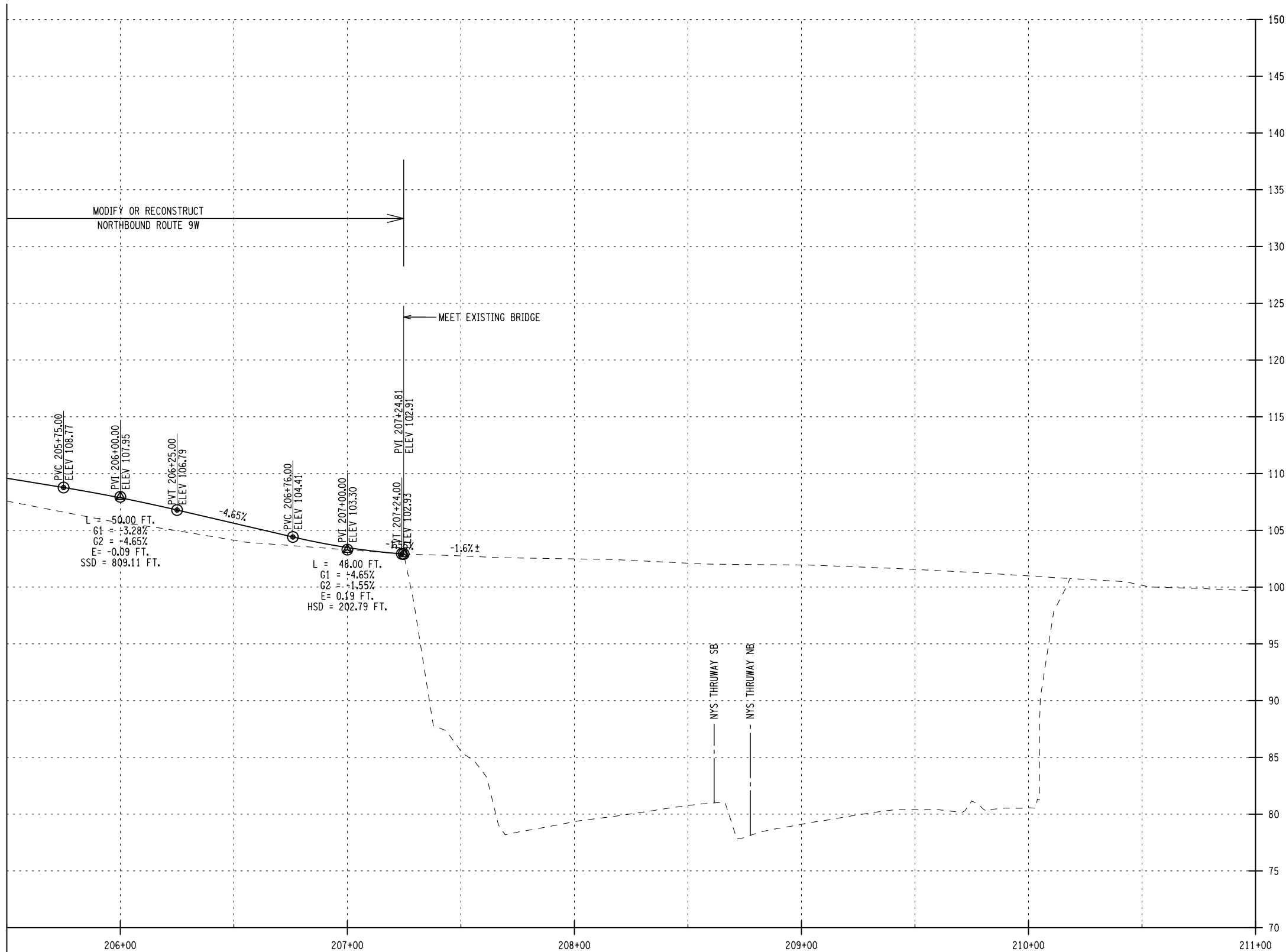
SHEET NO. 5 of 8

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

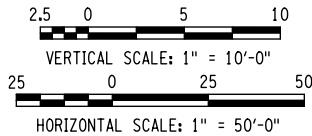
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USER = DGN\$USERNAME

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____

SEE SHEET 5 OF 8



ALTERNATIVE F - ROUTE 9W NORTHBOUND
DESIGN SPEED = 45 MPH UNLESS OTHERWISE NOTED



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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE: 12/18/15

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

PROFILES
ALTERNATIVE F

CONTRACT NUMBER

232234-12

DRAWING NO. FP-5
SHEET NO. 6 of 8

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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USER = DGN\$USERNAME

DESIGN SUPERVISOR

JOB MANAGER

DESIGNED BY

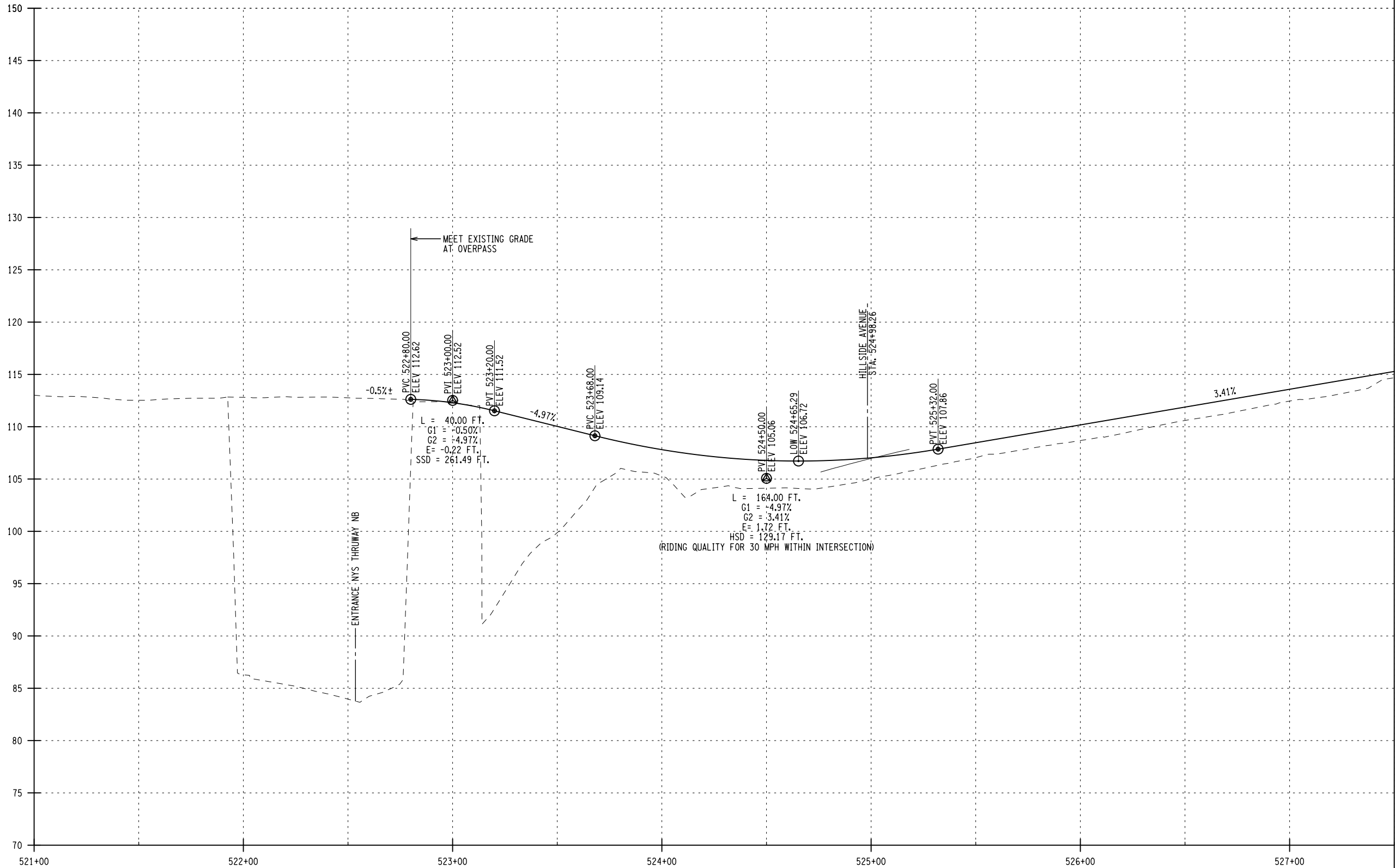
CHECKED BY

ESTIMATED BY

DRAFTED BY

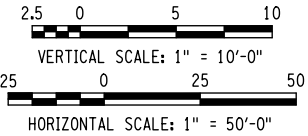
CHECKED BY

ELEVATION



SEE SHEET 8 OF 8

ALTERNATIVE F - NB EXIT
DESIGN SPEED = 30 MPH UNLESS OTHERWISE NOTED



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CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE: 12/18/15

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

PROFILES
ALTERNATIVE F

CONTRACT NUMBER

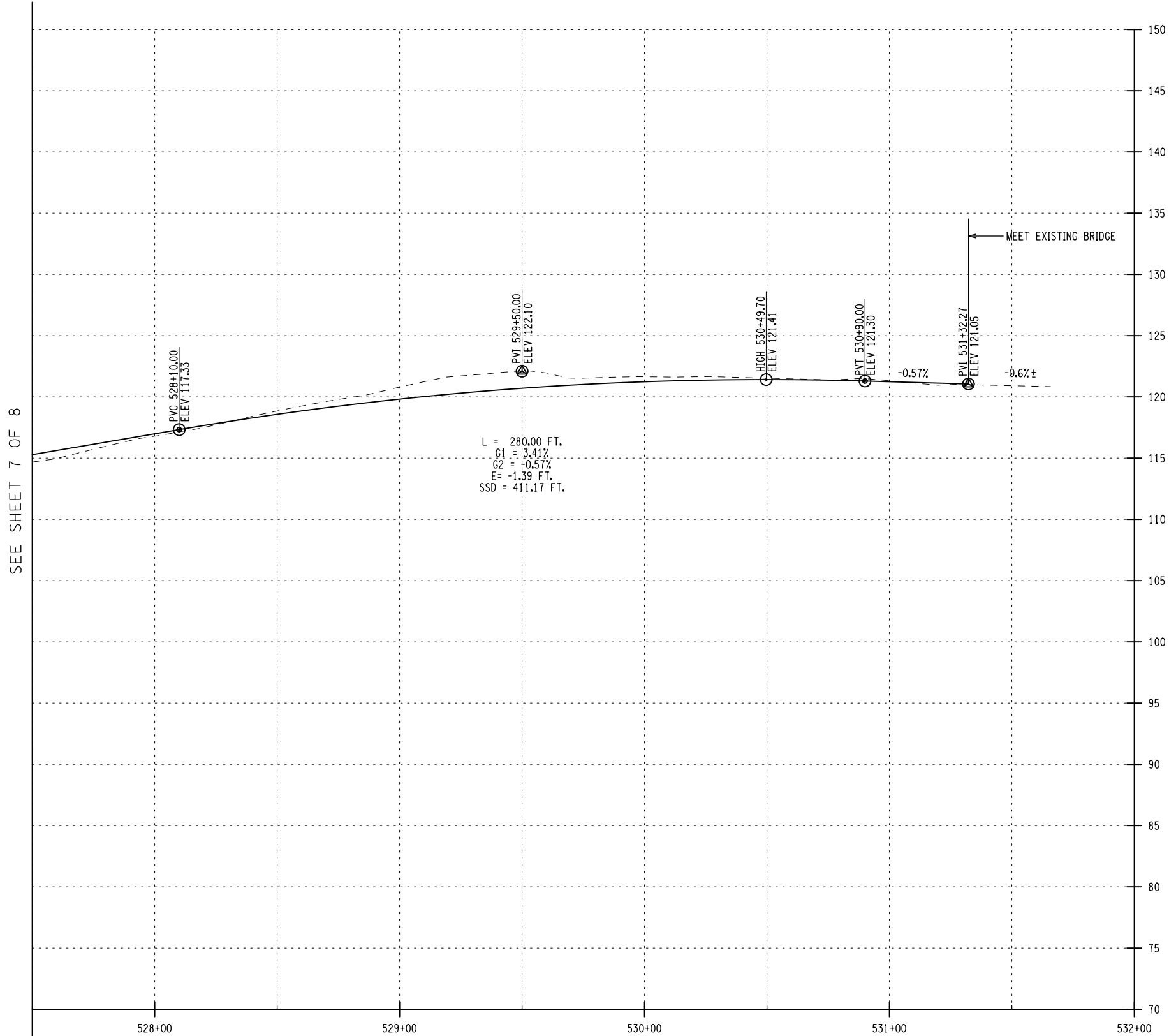
232234-12

DRAWING NO. FP-6
SHEET NO. 7 of 8

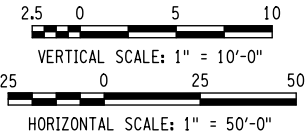
NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

FILE NAME = DGN\$SPEC
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USER = DGN\$USERNAME

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____



ALTERNATIVE F - NB EXIT
DESIGN SPEED = 30 MPH UNLESS OTHERWISE NOTED



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ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY
	12/18/15		

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED		CONTRACT NUMBER	
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		SHEET NO. 8 of 8	
NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

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USER = DGN\$USERNAME

DESIGN SUPERVISOR

DESIGNED BY

CHECKED BY

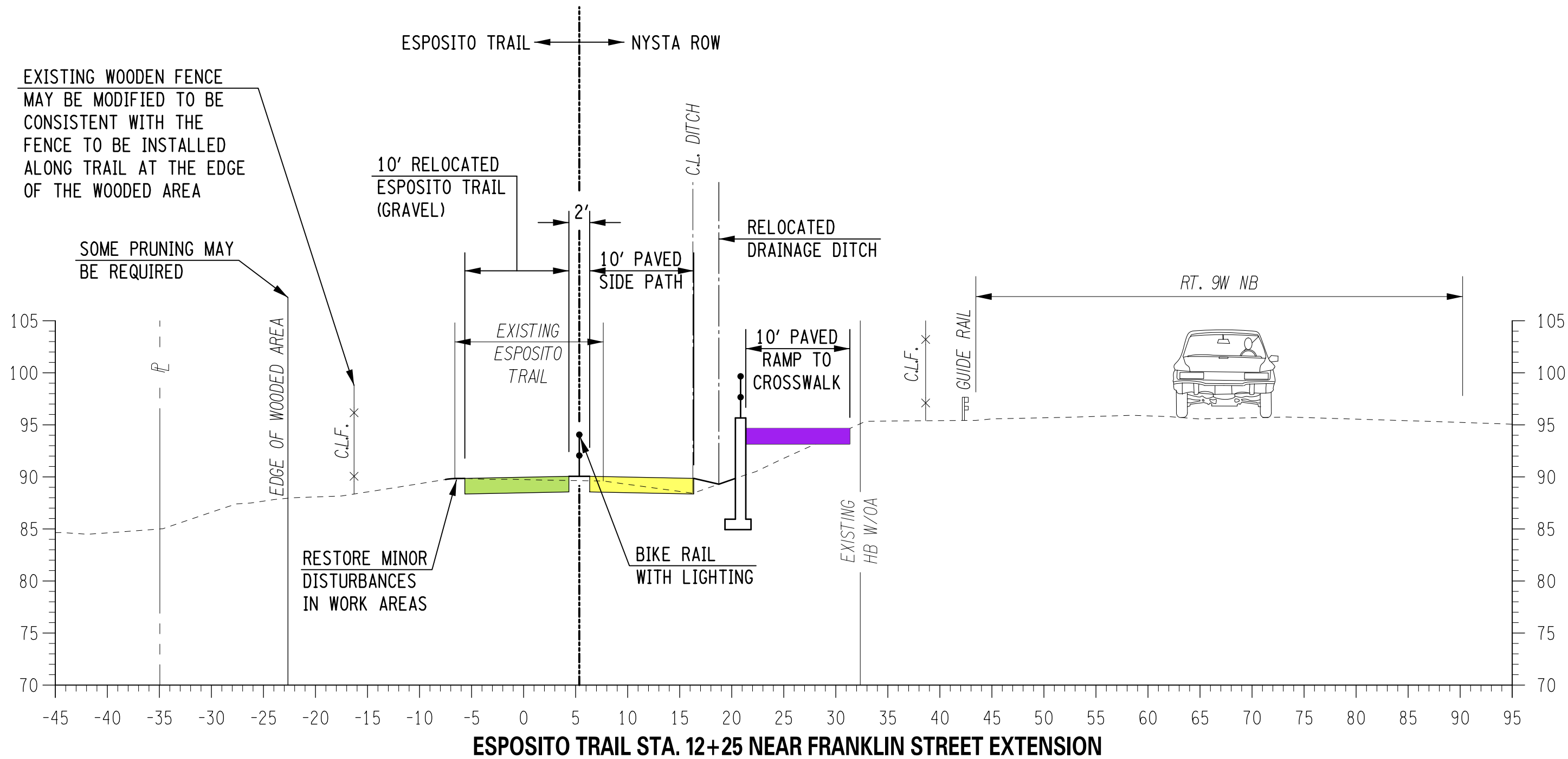
ESTIMATED BY

DRAFTED BY

CHECKED BY

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+



ESPOSITO TRAIL SECTION - ALTERNATIVE E

1" = 10'-0"
SCALE

HNTB

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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY	GW	GW

DATE: 02/22/16

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

CROSS SECTION
ALTERNATIVE E

CONTRACT NUMBER

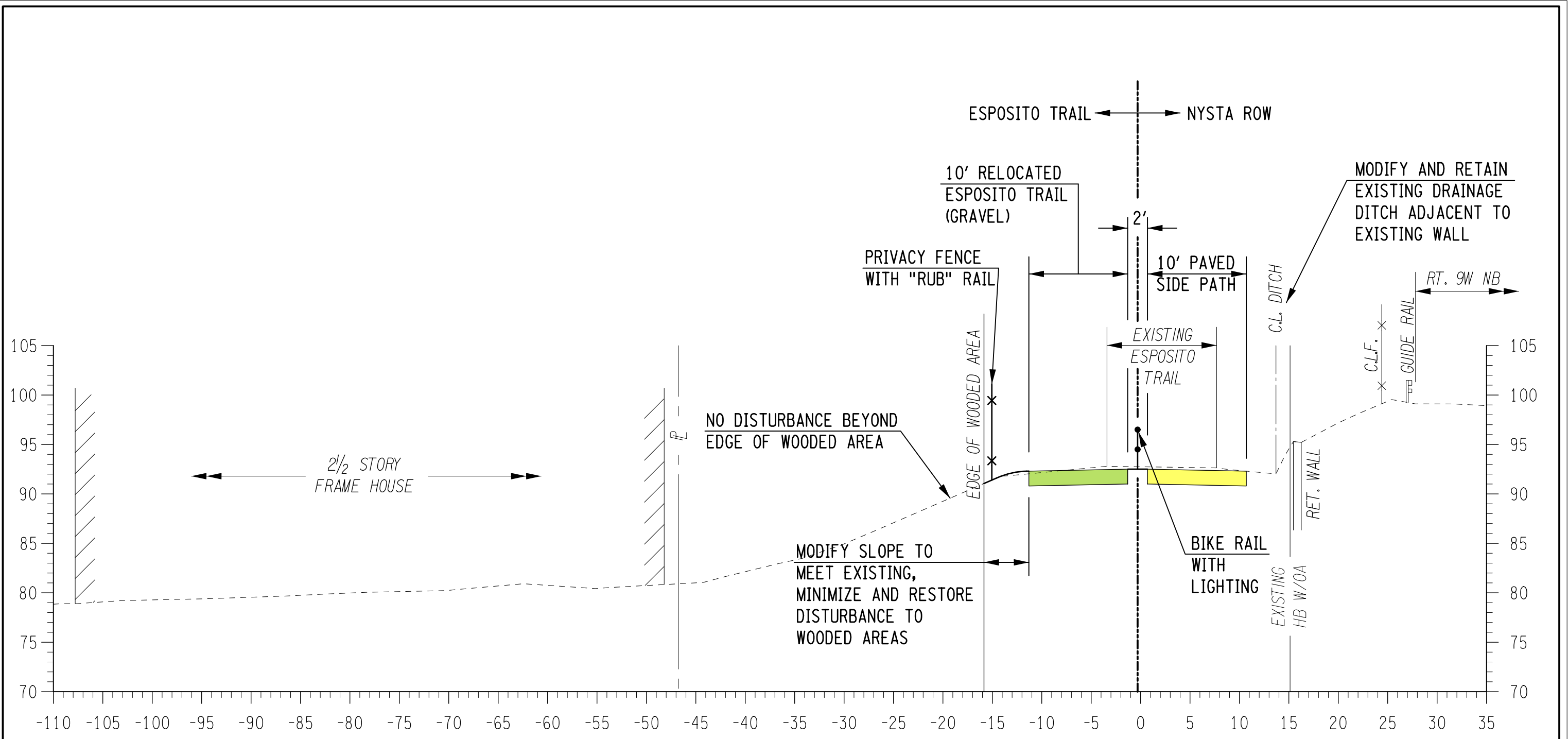
232234-12

DRAWING NO.
SHEET NO. 1 of 6

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

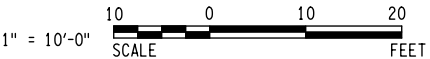
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DATE/TIME = DGN\$SYTIME0123456
USER = DGN\$USERNAME

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____



ESPOSITO TRAIL STA. 15+50 BETWEEN WASHINGTON AVENUE AND PRALL PLACE

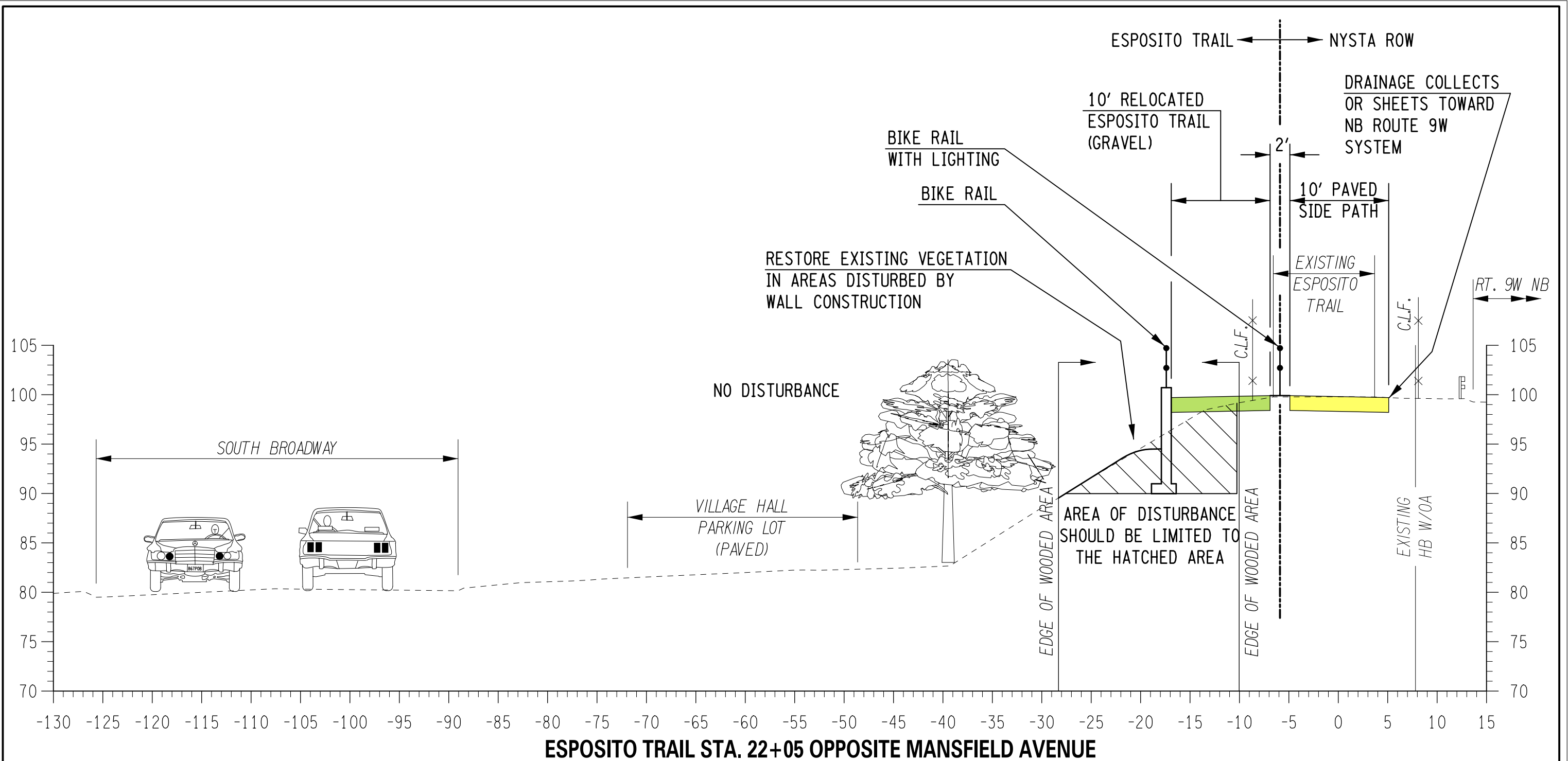
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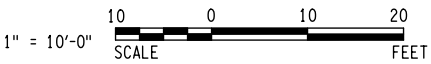
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													CROSS SECTION ALTERNATIVE E	232234-12
														DRAWING NO.
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FILE NAME = DGN\$SPEC
DATE/TIME = DGN\$SYTIME0123456
USER = DGN\$USERNAME

DESIGN SUPERVISOR
JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



ESPOSITO TRAIL SECTION - ALTERNATIVE E



<div> <div>5 Penn Plaza, 6th Floor New York, New York 10001</div></div>	<div><div>Thruway Authority</div><div>NEW YORK STATE THRUWAY AUTHORITY DEPARTMENT OF ENGINEERING 200 SOUTHERN BLVD., ALBANY, N.Y. 12209</div></div>	NEW NY BRIDGE ROCKLAND COUNTY SHARED USE PATH CONNECTION AND PARKING ALTERNATIVES					ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED	CONTRACT NUMBER		
							CROSS SECTION ALTERNATIVE E	232234-12		
								DRAWING NO. SHEET NO.		3 of 6
			REV	DATE	DESCRIPTION	BY				
			DOCUMENT STATUS:							

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DESIGN SUPERVISOR

DESIGNED BY

CHECKED BY

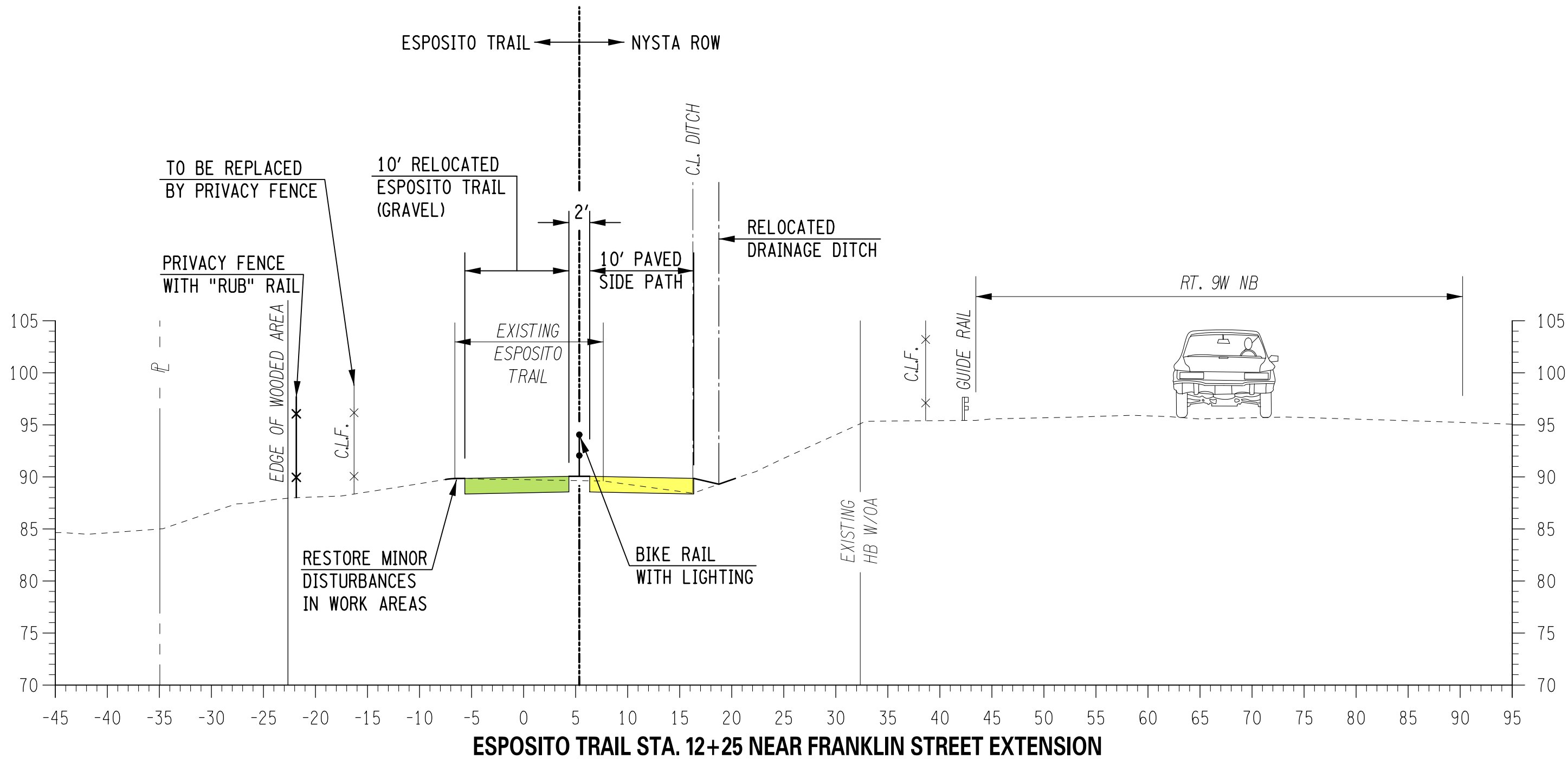
ESTIMATED BY

DRAFTED BY

CHECKED BY

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+



ESPOSITO TRAIL SECTION - ALTERNATIVE F

1" = 10'-0"
SCALE
10 0 10 20
FEET

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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE: 02/22/16

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

CROSS SECTION
ALTERNATIVE F

CONTRACT NUMBER

232234-12

DRAWING NO.
SHEET NO. 4 of 6

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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DESIGN SUPERVISOR

JOB MANAGER

DESIGNED BY

CHECKED BY

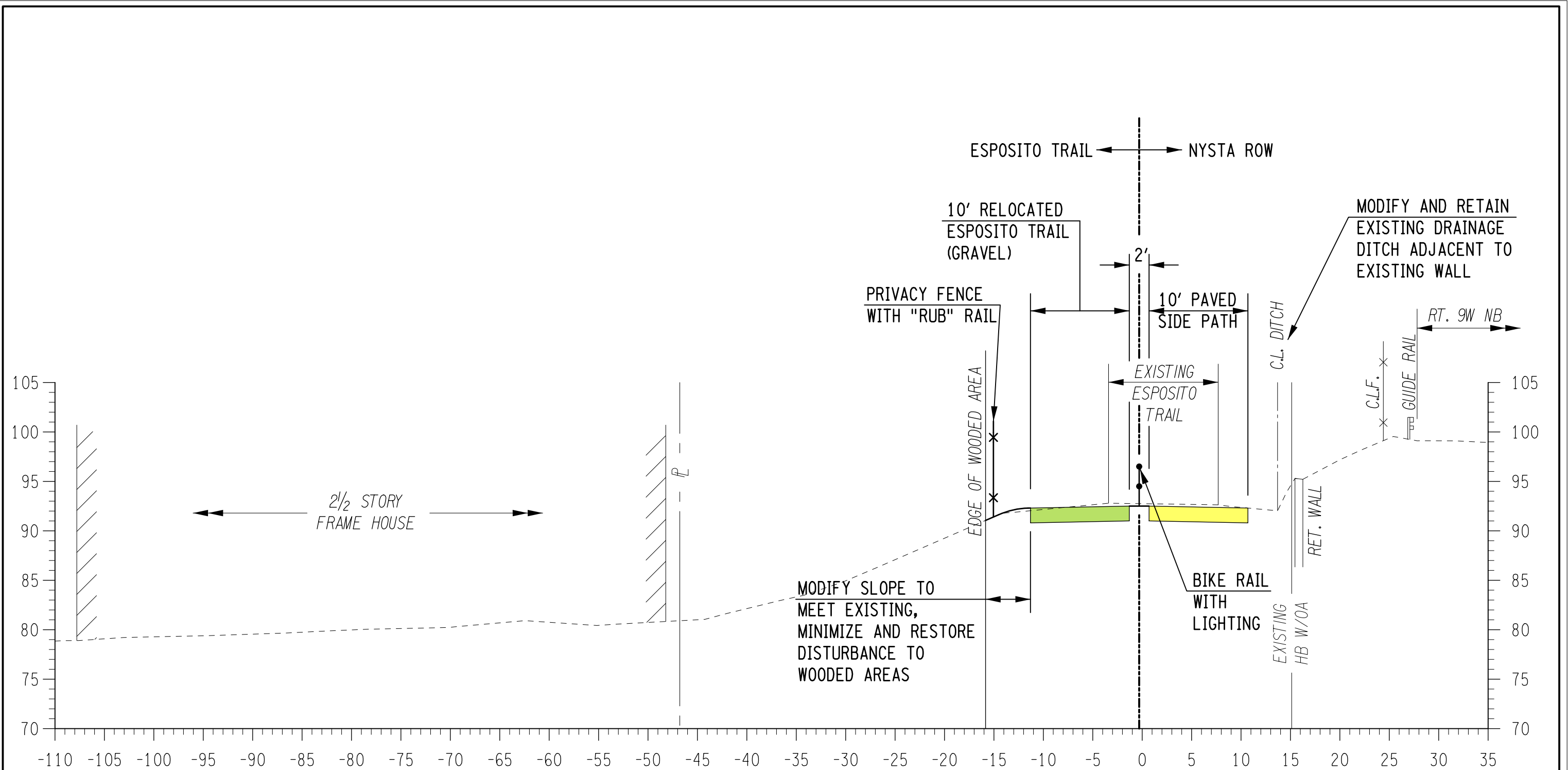
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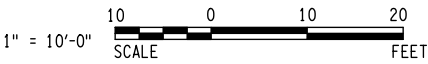
CHECKED BY

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ESPOSITO TRAIL SECTION - ALTERNATIVE F



<div><p>5 Penn Plaza, 6th Floor New York, New York 10001</p></div>	<div><p>Thruway Authority</p><p>NEW YORK STATE THRUWAY AUTHORITY DEPARTMENT OF ENGINEERING 200 SOUTHERN BLVD., ALBANY, N.Y. 12209</p></div>	NEW NY BRIDGE ROCKLAND COUNTY SHARED USE PATH CONNECTION AND PARKING ALTERNATIVES								ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED	CONTRACT NUMBER		
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													DRAWING NO. SHEET NO. 5 of 6
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DOCUMENT STATUS:					DATE: 02/22/16				NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8				

FILE NAME = DGN\$SPEC
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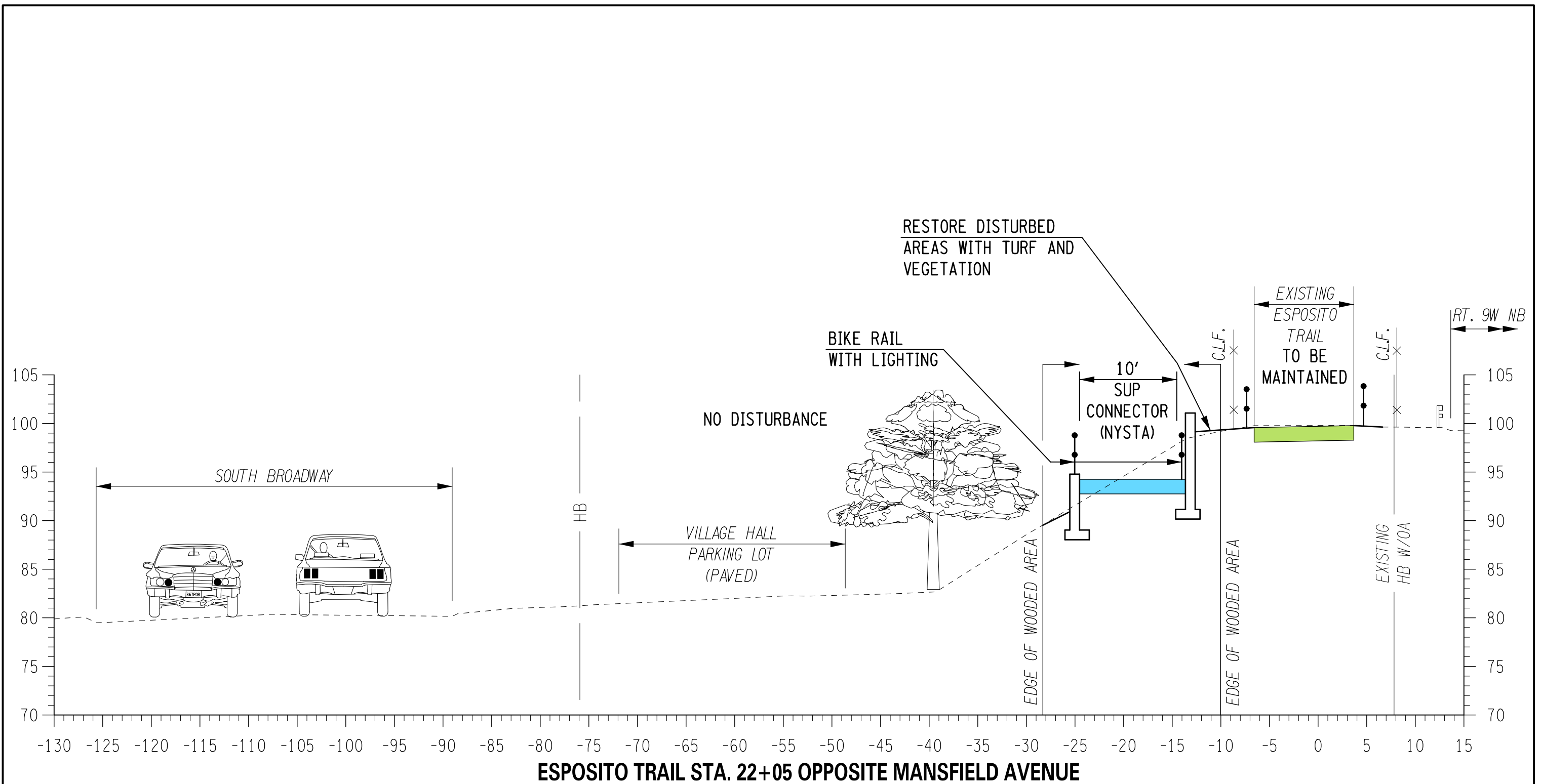
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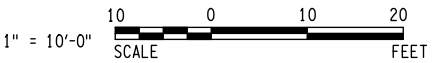
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DRAFTED BY

CHECKED BY



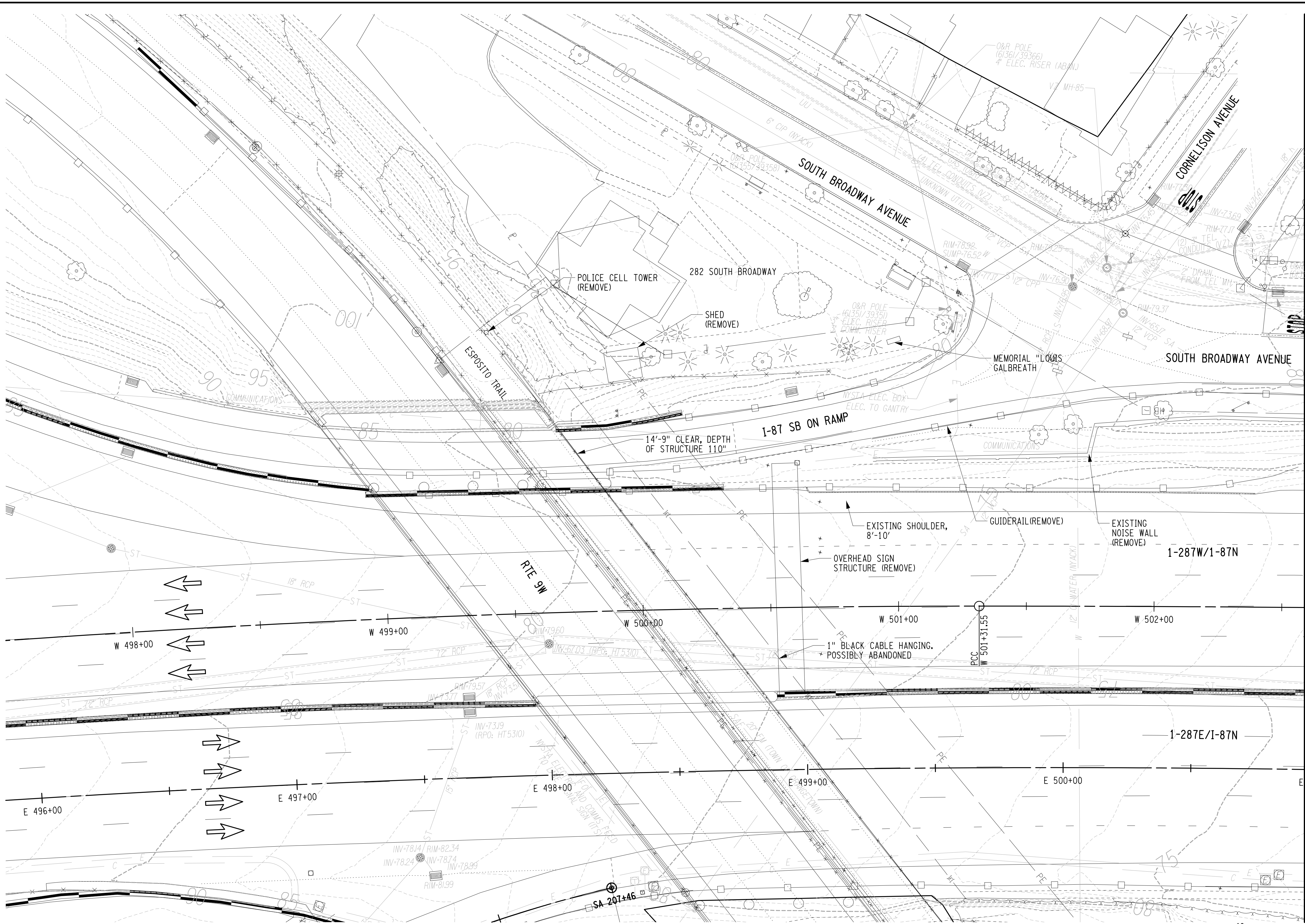
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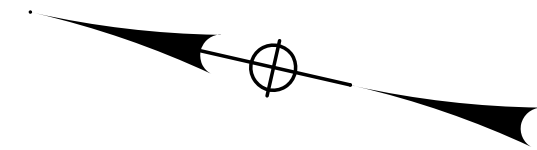
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															232234-12
														CROSS SECTION ALTERNATIVE F	DRAWING NO.
															SHEET NO. 6 of 6
				REV	DATE	DESCRIPTION		BY	NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8						
DOCUMENT STATUS:						DATE: 02/22/16									

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DATE/TIME = 22-FEB-2016 11:04
USER = jody.vukas
DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



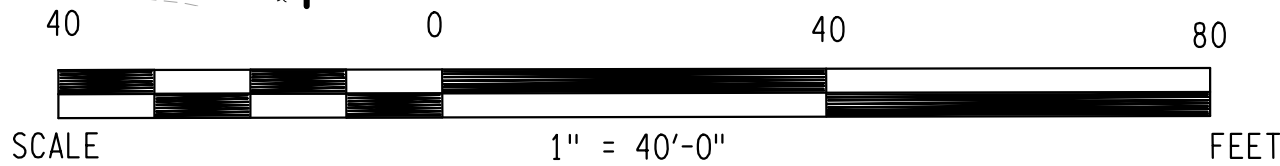
- LEGEND
- | | |
|------|-----------------------------|
| G | GAS |
| T | TELEPHONE |
| OE | OVERHEAD ELECTRIC |
| E | ELECTRIC |
| C | COMMUNICATIONS |
| ST | STORM |
| W | WATER |
| SA | SANITARY SEWER |
| OT | OVERHEAD TELECOMMUNICATIONS |
| OCTV | OVERHEAD CABLE TV |



MATCH DGN SK-002

PLAN VIEW
1" = 40'-0"

PRELIMINARY



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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV
DATE
DESCRIPTION
BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

EXISTING CONDITIONS PLAN

CONTRACT NUMBER

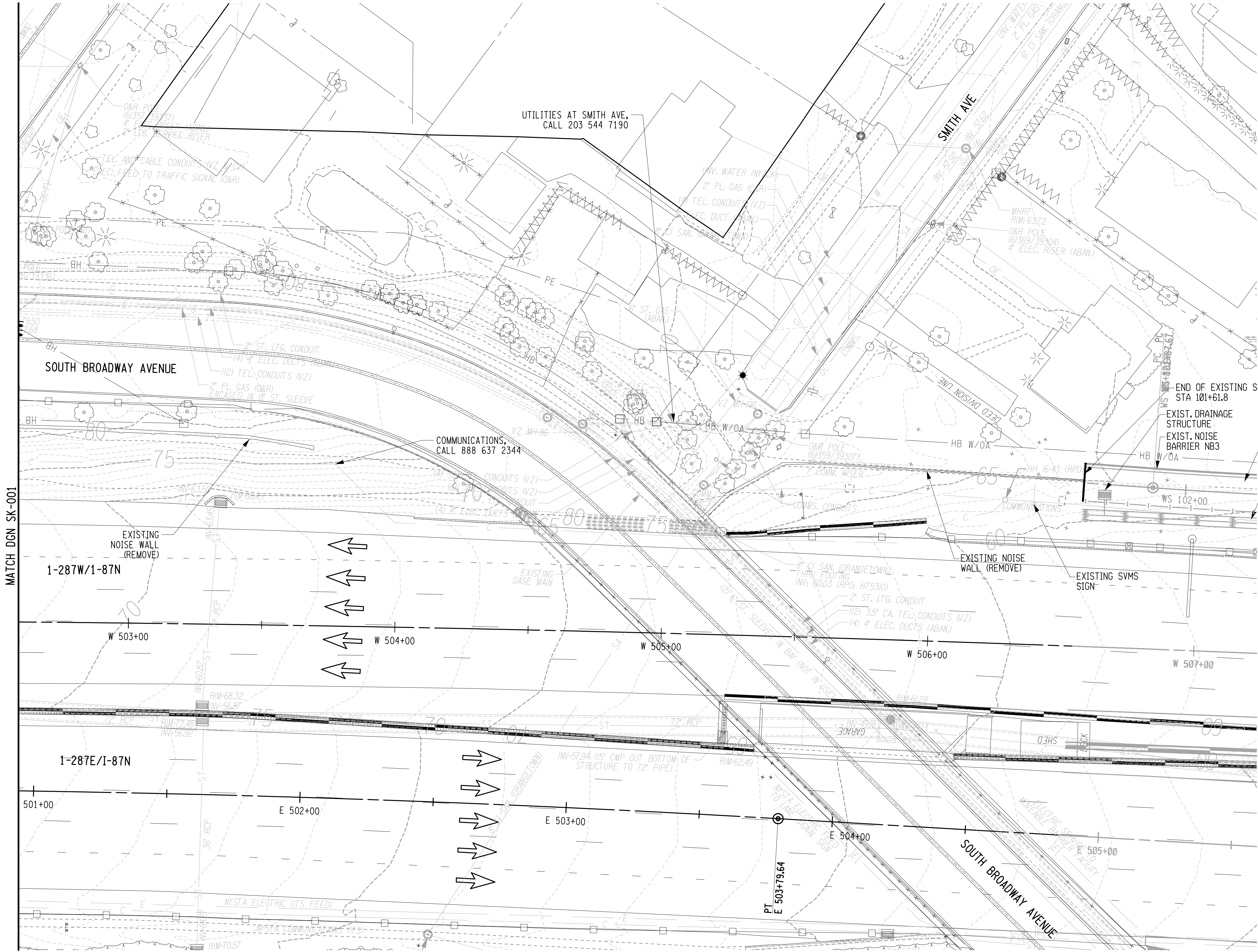
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DRAWING NO. SK-001
SHEET NO. 01 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

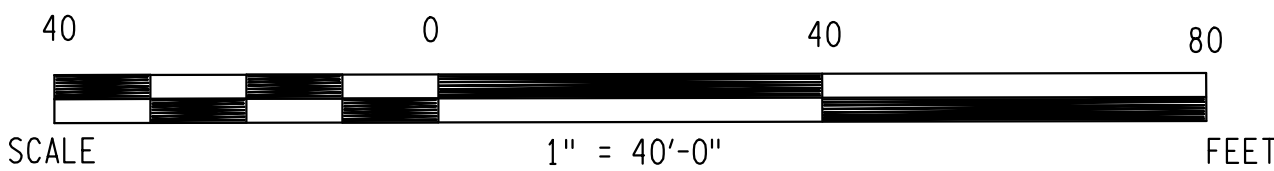
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DATE/TIME = 22-FEB-2016 11:04
USER = jody.vukas

DESIGN SUPERVISOR
JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



PLAN VIEW
1" = 40'-0"

PRELIMINARY



LEGEND	
	GAS
	TELEPHONE
	OVERHEAD ELECTRIC
	ELECTRIC
	COMMUNICATIONS
	STORM
	WATER
	SANITARY SEWER
	OVERHEAD TELECOMMUNICATIONS
	OVERHEAD CABLE TV

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ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

EXISTING CONDITIONS PLAN

CONTRACT NUMBER

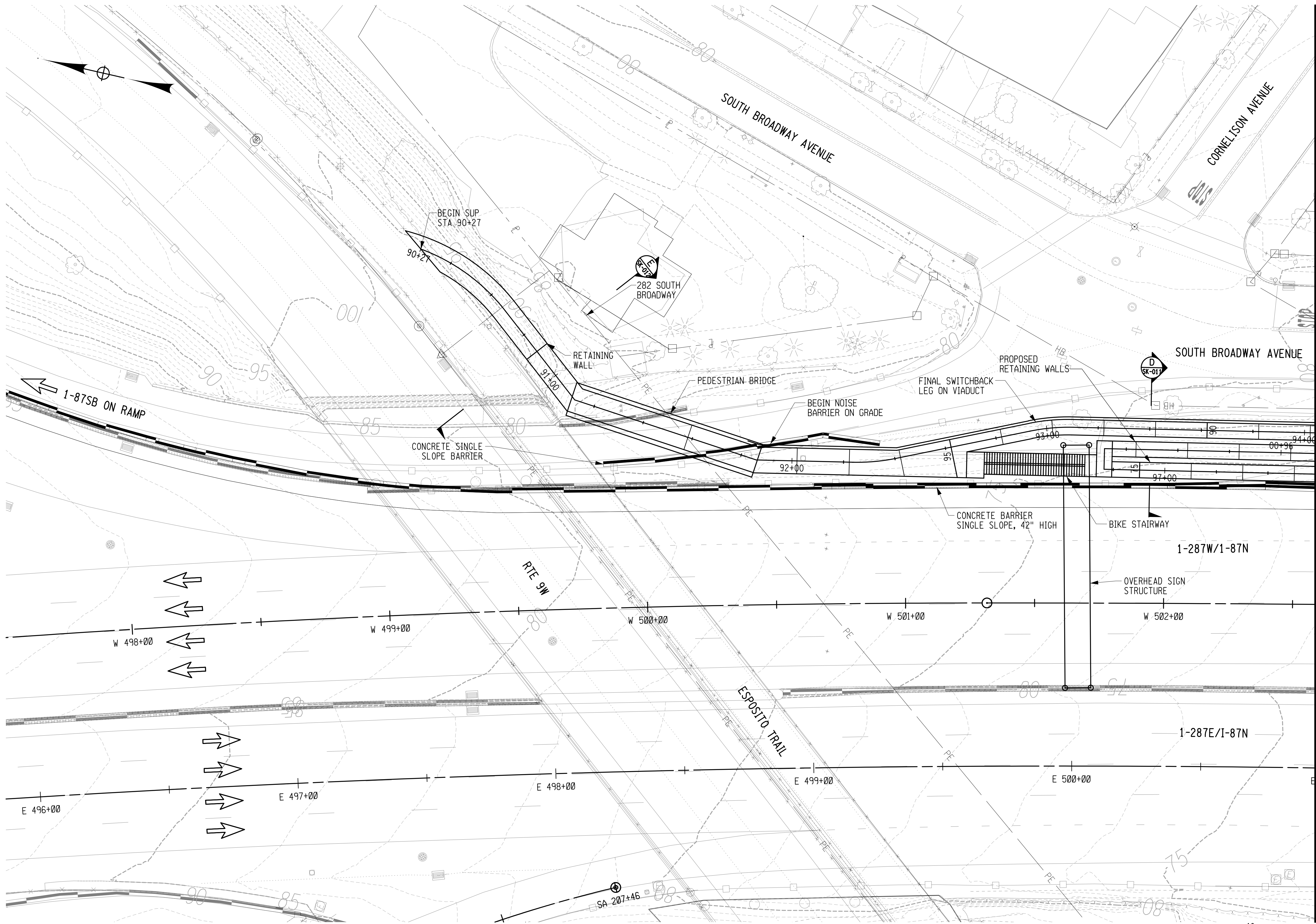
232234-12

DRAWING NO. SK-002
SHEET NO. 02 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



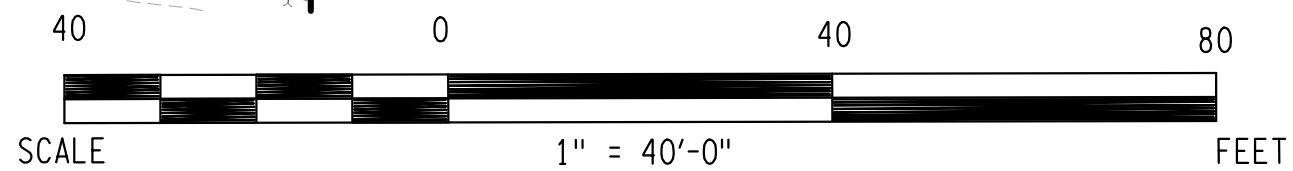
LEGEND

END NOISE WALL AT GRADE, BEGIN NOISE BARRIER ON SUP

MATCH DGN SK-004

PLAN VIEW
1" = 40'-0"

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ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

SITE PLAN
ALTERNATIVE E

CONTRACT NUMBER

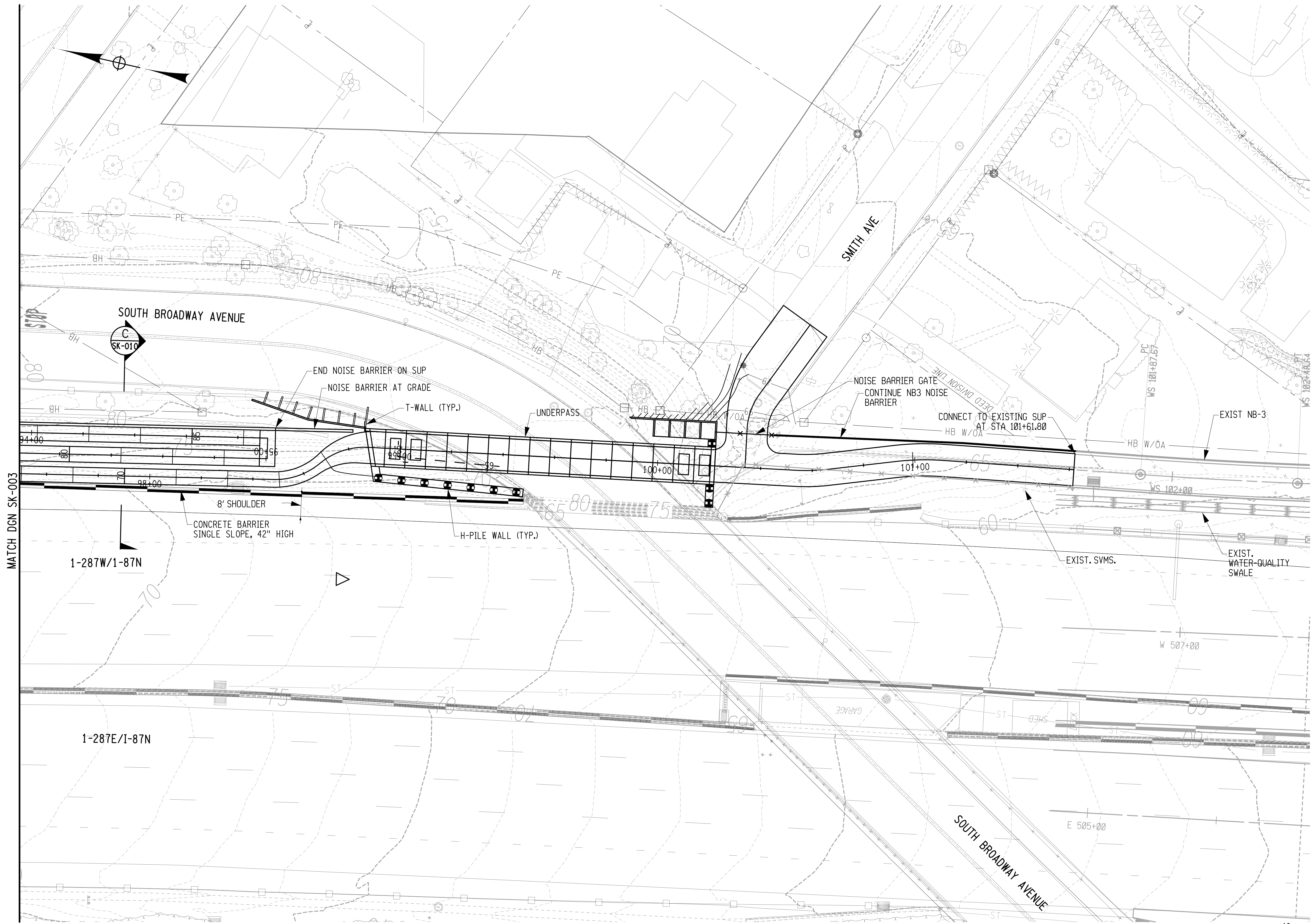
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DRAWING NO. SK-003
SHEET NO. 03 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

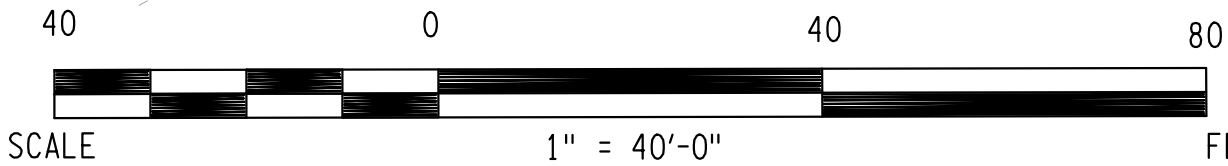
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DATE/TIME = 22-FEB-2016 11:02
USER = jody.vukas
DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



PLAN VIEW
1" = 40'-0"

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ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

SITE PLAN
ALTERNATIVE E

CONTRACT NUMBER

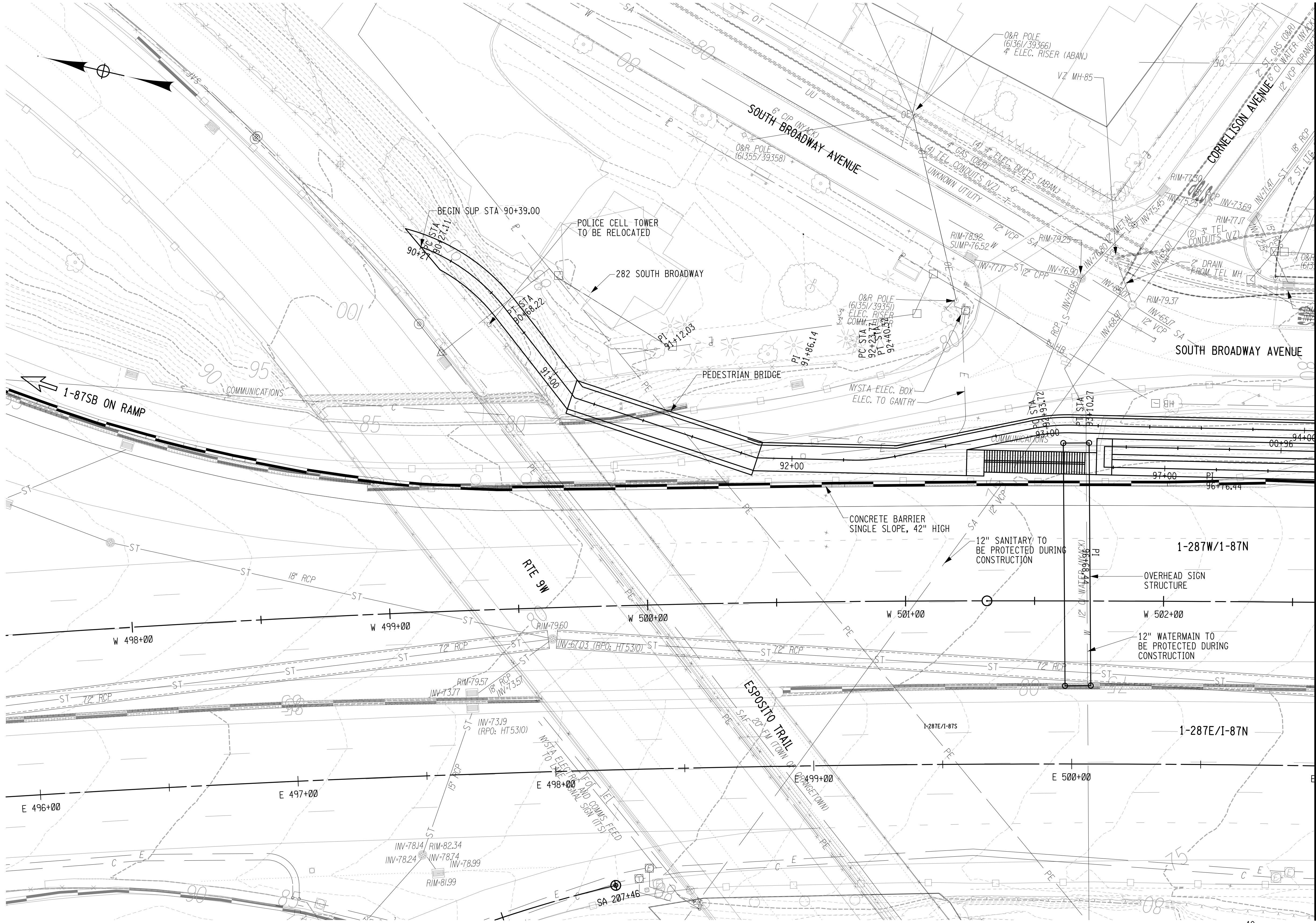
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DRAWING NO. SK-004
SHEET NO. 04 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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JOB MANAGER
DESIGNED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY

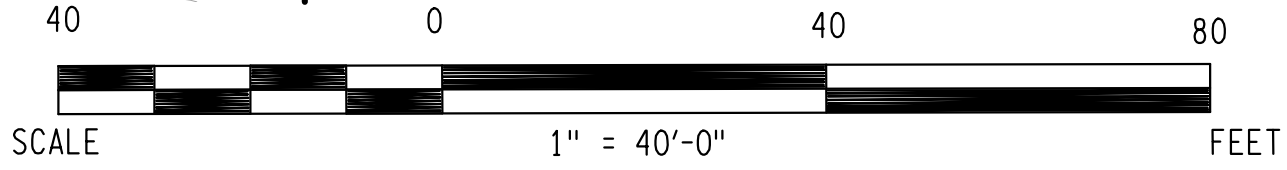


LEGEND	
	GAS
	TELEPHONE
	OVERHEAD ELECTRIC
	ELECTRIC
	COMMUNICATIONS
	STORM
	WATER
	SANITARY SEWER
	OVERHEAD TELECOMMUNICATIONS
	OVERHEAD CABLE TV

MATCH DGN SK-006

PLAN VIEW
1" = 40'-0"

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ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

UTILITY PLAN
ALTERNATIVE E

CONTRACT NUMBER

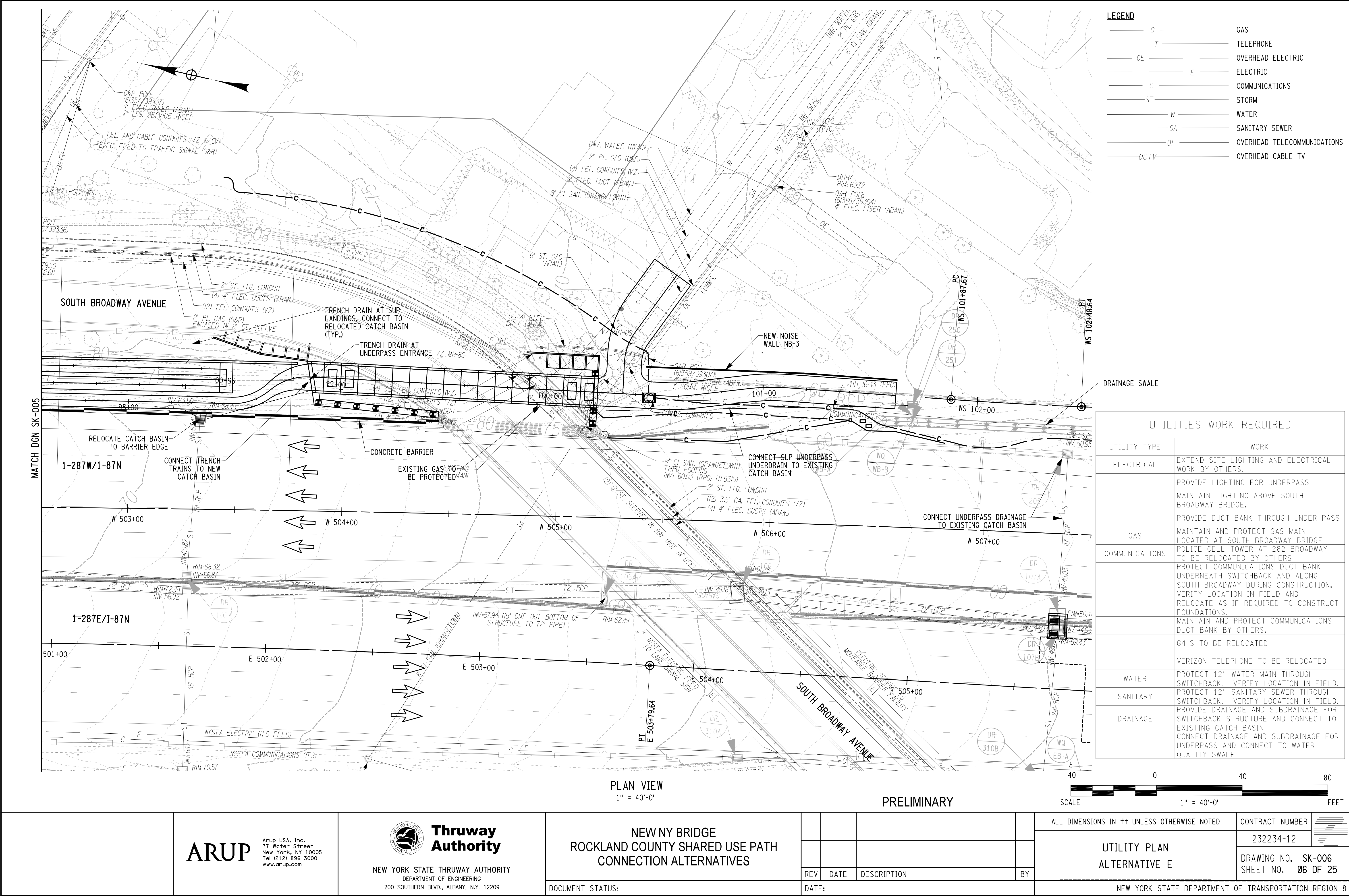
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DRAWING NO. SK-005
SHEET NO. 05 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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DATE/TIME = 22-FEB-2016 11:02
USER = jody.vukas
DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



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DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

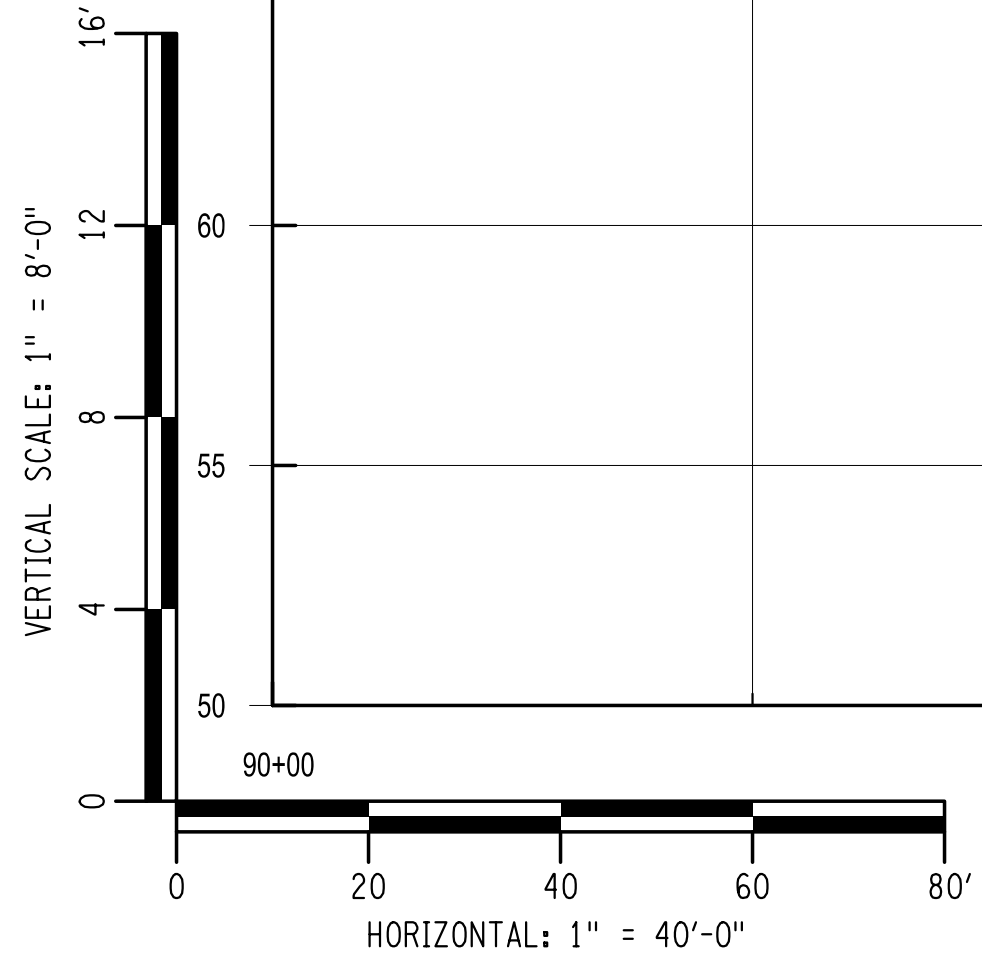
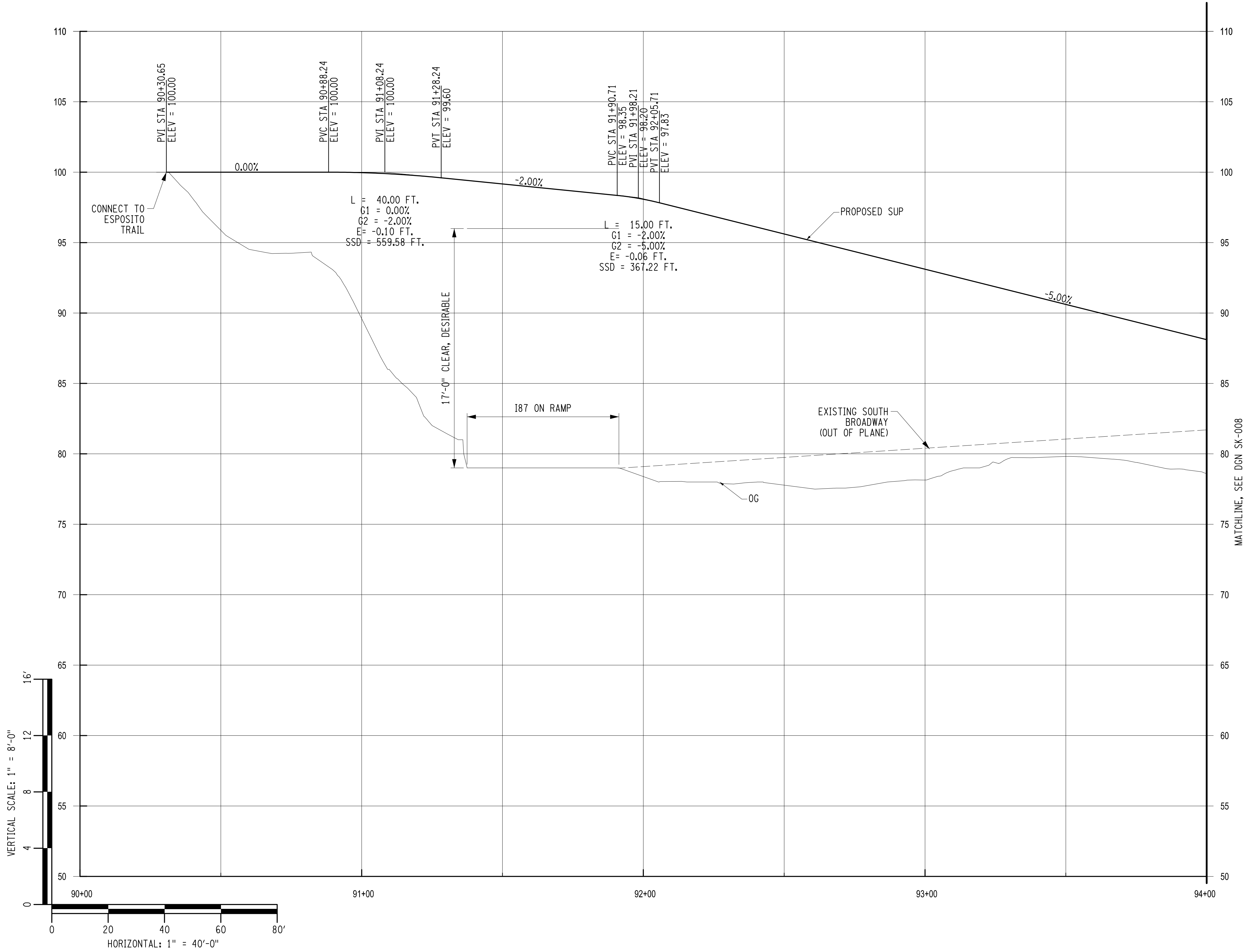
NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

DATE:

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DATE/TIME = 22-FEB-2016 11:01
USER = jody.vukas

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____



PRELIMINARY

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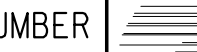
**Thruway
Authority**

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DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

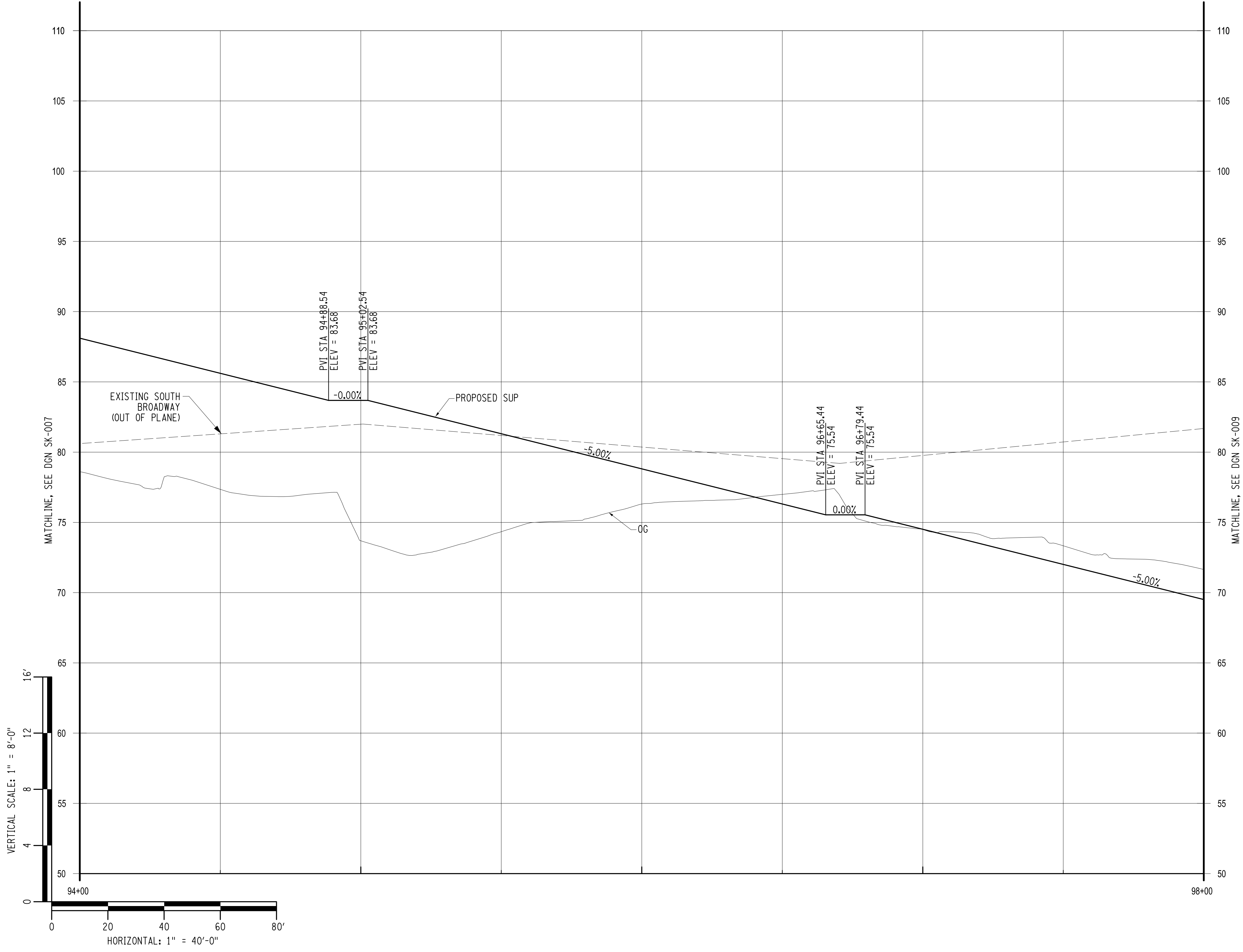
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REV	DATE	DESCRIPTION	BY
DATE:			

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED		CONTRACT NUMBER	
PROFILES ALTERNATIVE E		232234-12	
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NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

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DATE/TIME = 22-FEB-2016 11:01
USER = jody.vukas

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____



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200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

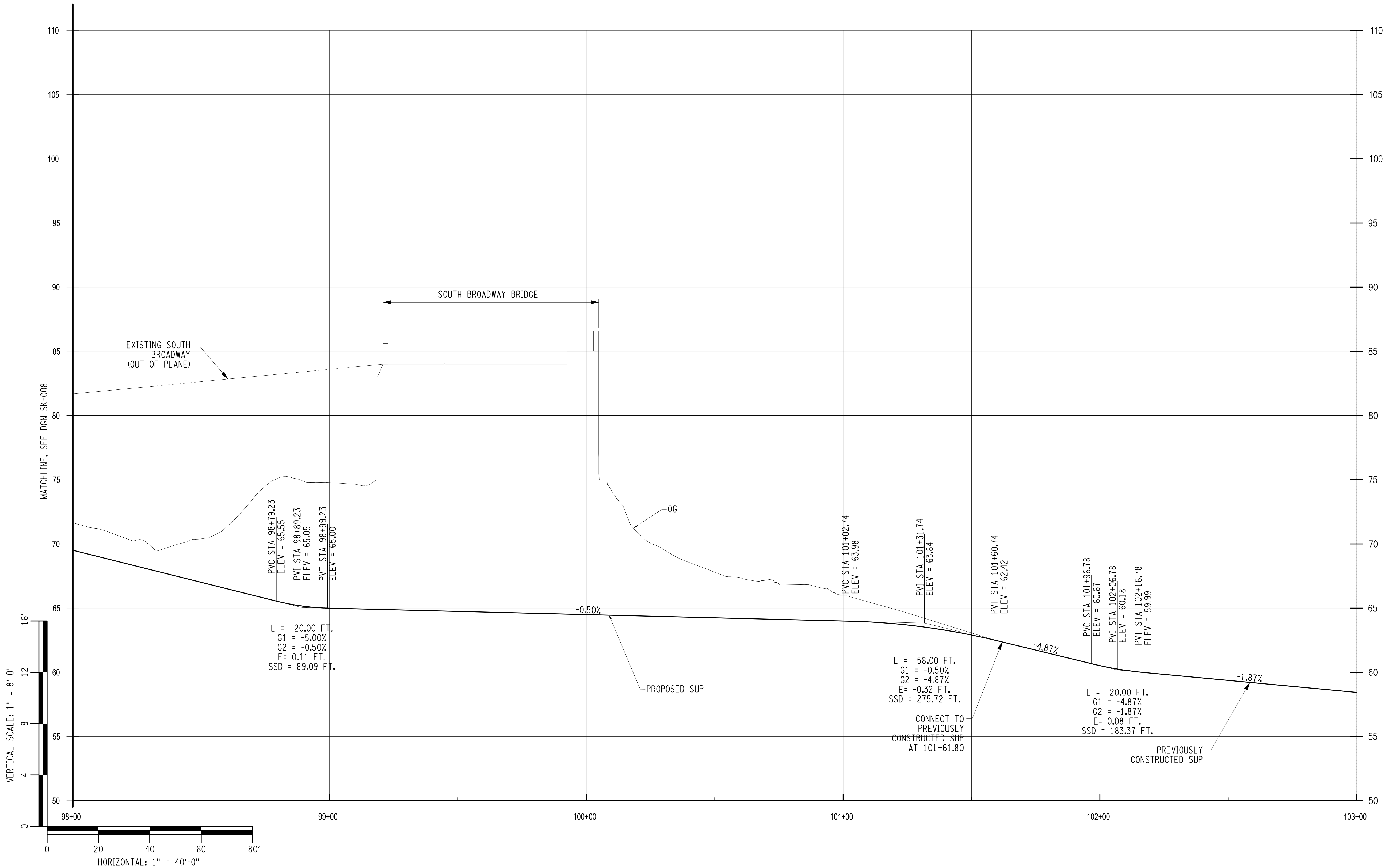
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DATE:

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		DRAWING NO. SK-008 SHEET NO. 08 OF 25	
NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

FILE NAME = J:\0\N\02320000\0232234-00812 Assignment 12 Rockland SUP\012-03 Drawings\012-03-30 Civil\0Sheets\SK-009.dgn
DATE/TIME = 22-FEB-2016 11:00
USER = jody.vukas

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CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY	

DATE:

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PROFILES
ALTERNATIVE E

CONTRACT NUMBER

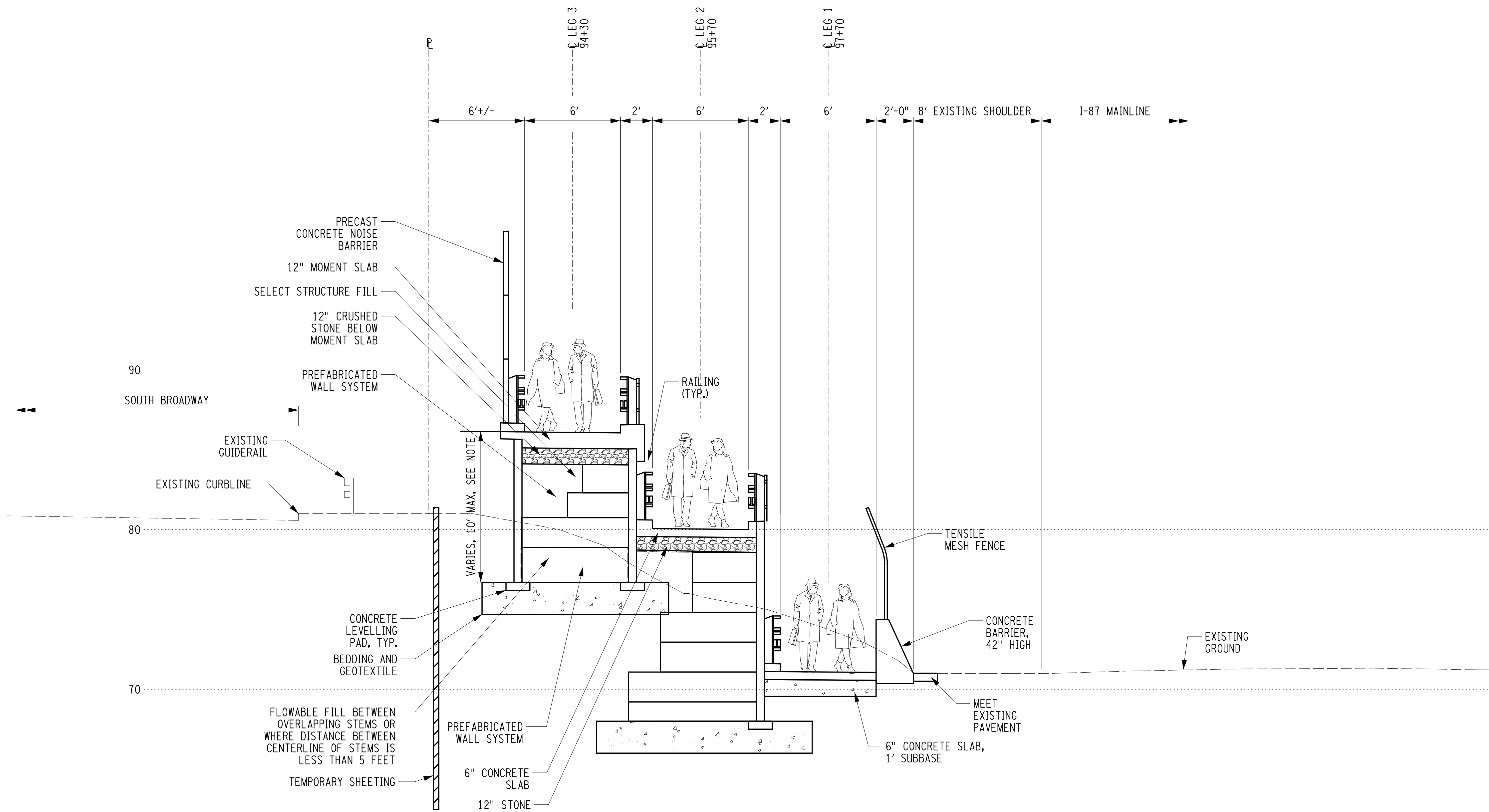
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DRAWING NO. SK-009
SHEET NO. 09 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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DESIGN SUPERVISOR

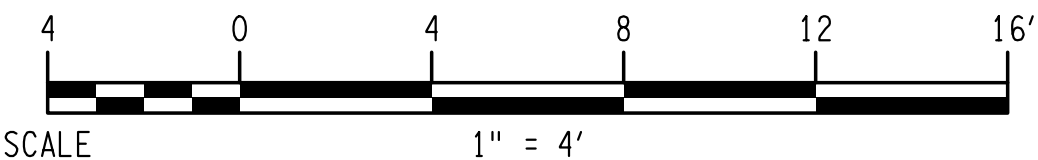
JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY






SWITCHBACK SECTION - SECTION C
1/4" = 1'-0"

NOTES:

- PREFABRICATED WALL SYSTEM FOOTING SHOULD BE EMBEDDED TO A MINIMUM DEPTH OF 3'-0".
- FOR MINIMUM REQUIRED STEM LENGTH AT BOTTOM OF WALLS SEE TABLE.
- T-WALL STEMS TO BE STAGGERED WHERE REQUIRED.
- WALL HAS 3/8" FULL HEIGHT VERTICAL GAP EVERY 5 FT ALONG THE LENGTH OF WALL FOR DRAINING.

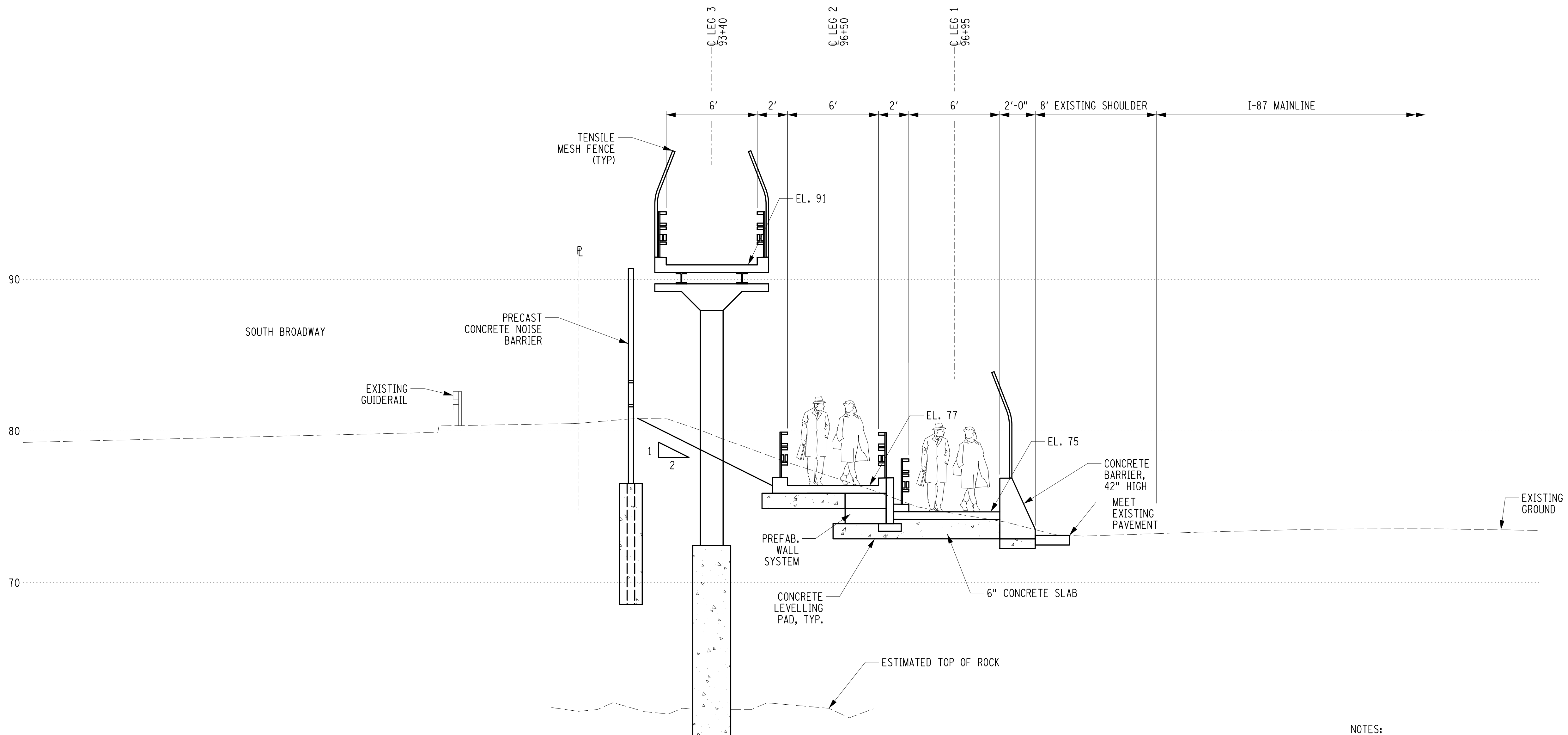


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									NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

FILE NAME = J:\0\N\0230000\0232234-00812 Assignment 12 Rockland SUP\12-03 Drawings\12-03-30 Civil\0Sheets\SK-011.dgn
DATE/TIME = 22-FEB-2016 11:00
USER = jody.vukas
DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



SWITCHBACK SECTION - SECTION D
1/4" = 1'-0"

- NOTES:
- 1. PREFABRICATED WALL SYSTEM FOOTING SHOULD BE EMBEDDED TO A MINIMUM DEPTH OF 3'-0".
 - 2. FOR MINIMUM REQUIRED STEM LENGTH AT BOTTOM OF WALLS SEE TABLE ON SK-10.
 - 3. BACK TO BACK T-WALL STEMS TO BE STAGGERED WHERE REQUIRED.
 - 4. BACK FILL HAS 3/8" FULL HEIGHT VERTICAL GAP EVERY 5 FT ALONG THE LENGTH OF WALL FOR DRAINING.
- 4 0 4 8 12 16'
SCALE 1" = 4'

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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

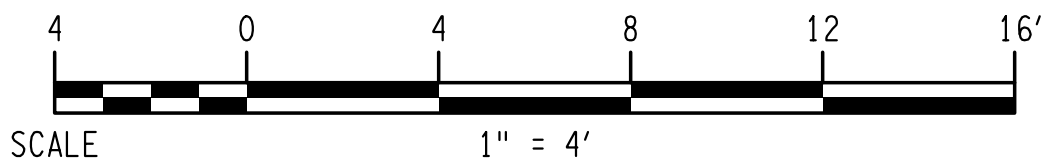
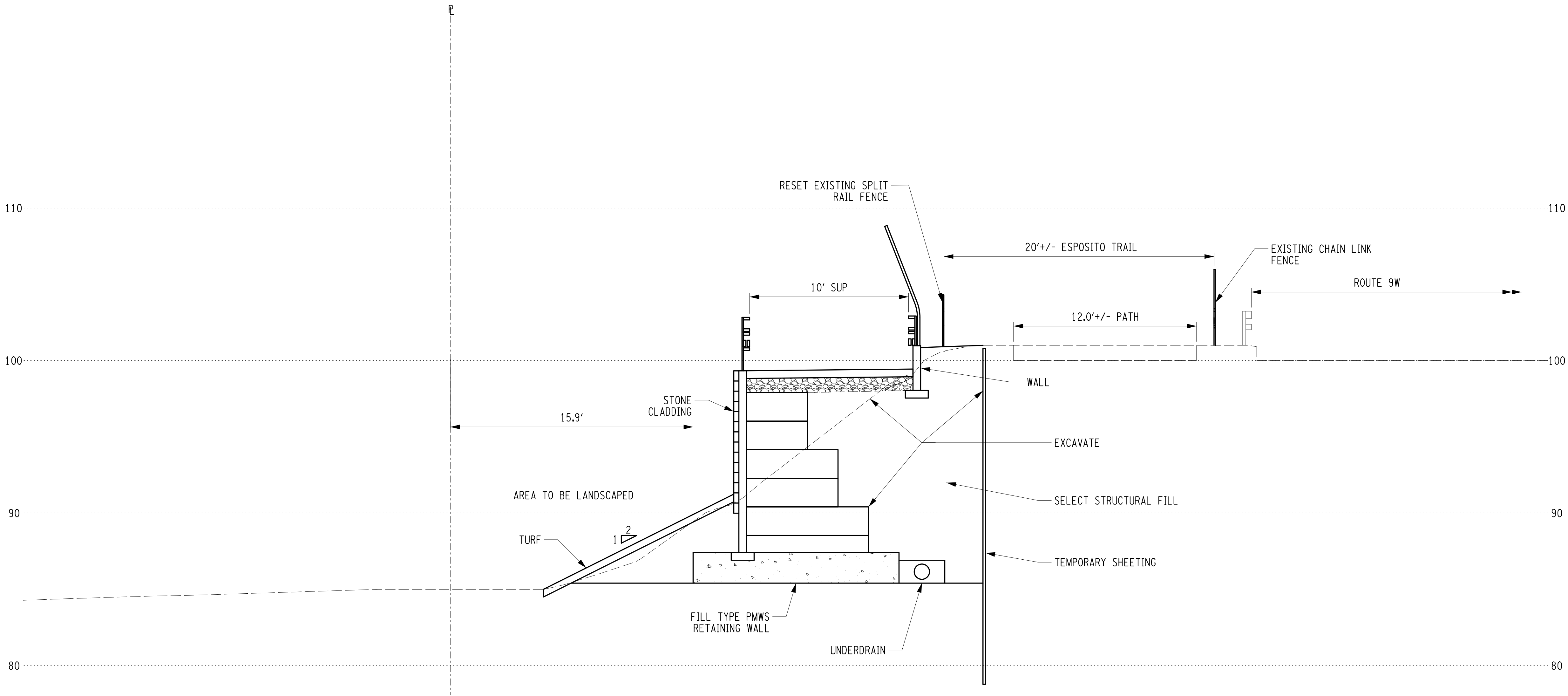
REV	DATE	DESCRIPTION	BY

DATE:


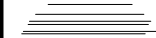
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NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

FILE NAME = J:\9\N\0230000\0232234-00\12 Assignment 12 Rockland SUP\12-03 Drawings\12-03-30 Civil\0Sheets\SK-012.dgn
DATE/TIME = 22-FEB-2016 10:59
USER = jody.vukas

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____

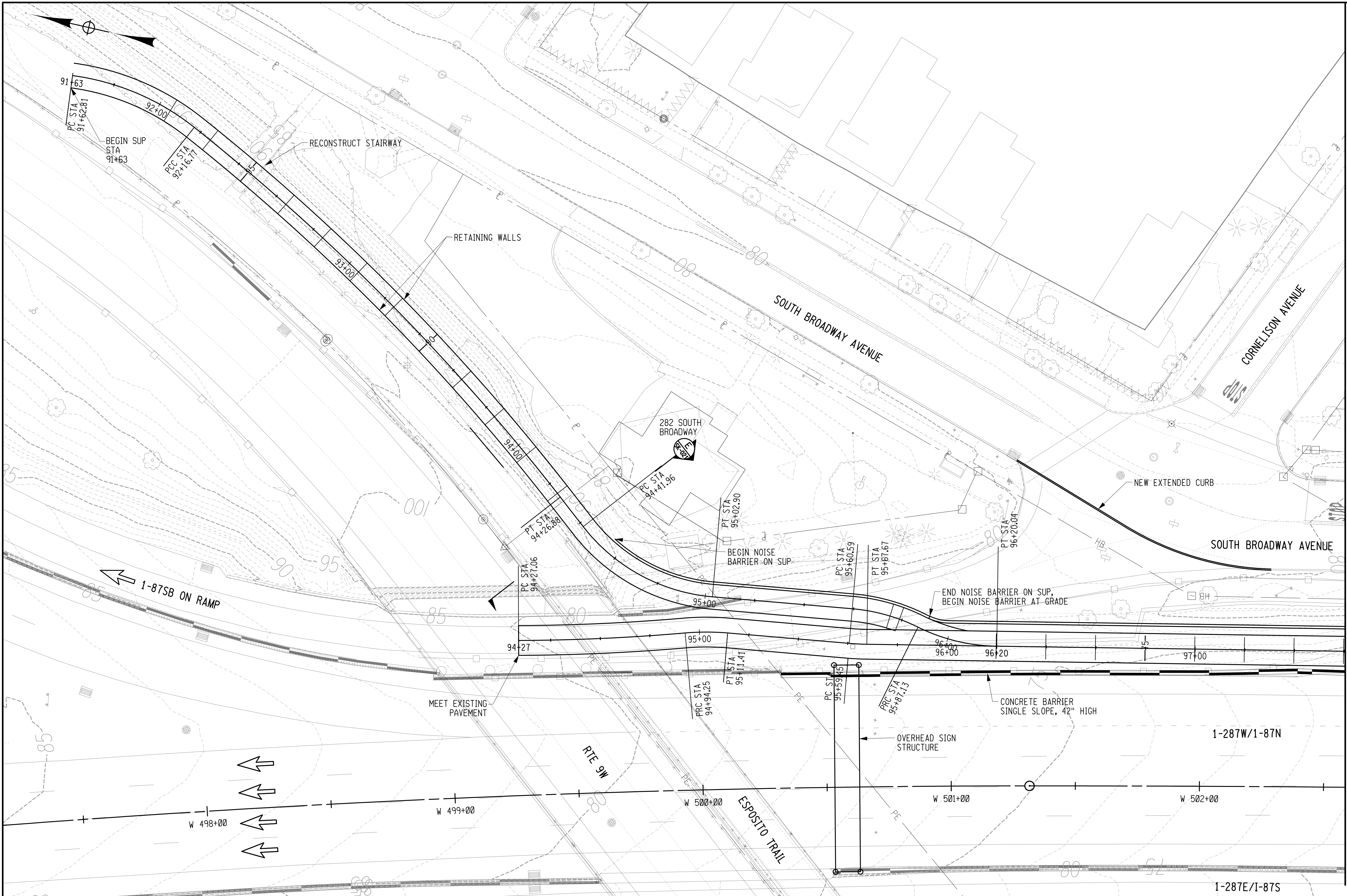


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								232234-12	
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			DOCUMENT STATUS:			DATE:			

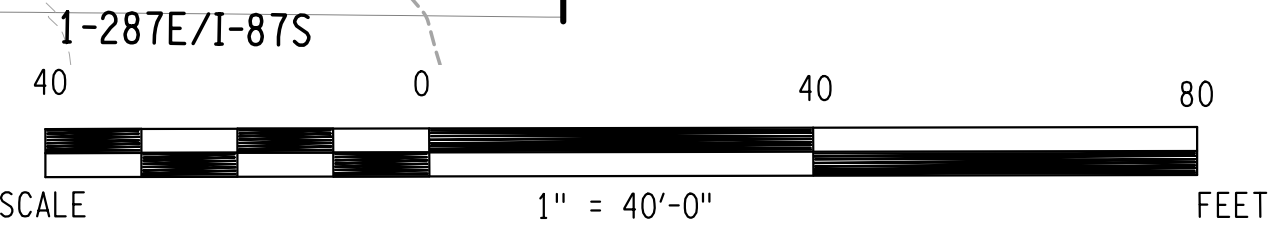
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DATE/TIME = 22-FEB-2016 10:58
USER = jody.vukas
DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



PLAN VIEW
1" = 40'-0"

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LEGEND

MATCH DGN SK-014

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CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

SITE PLAN
ALTERNATIVE F

CONTRACT NUMBER

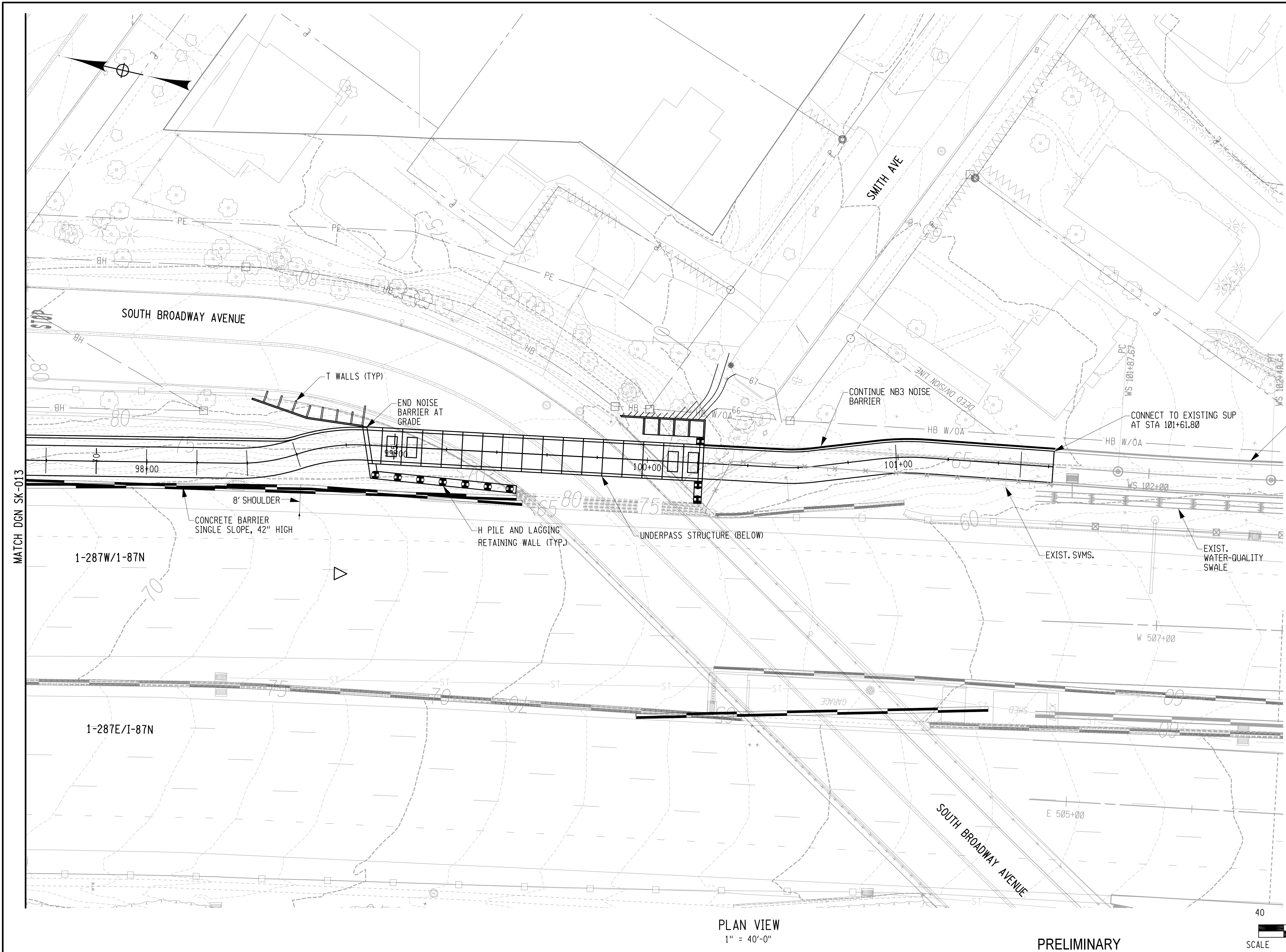
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DRAWING NO. SK-013
SHEET NO. 13 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

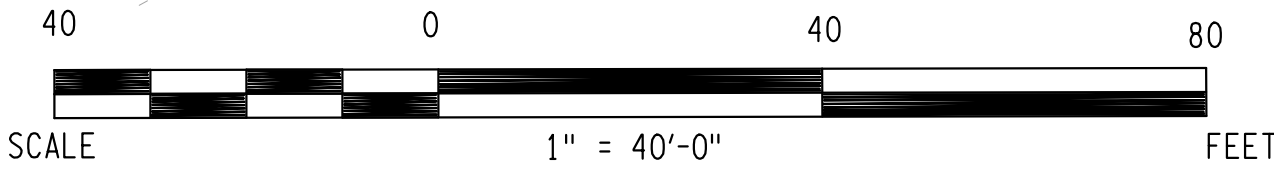
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DATE/TIME = 22-FEB-2016 10:58
USER = jody.vukas

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PLAN VIEW
1" = 40'-0"

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CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

SITE PLAN
ALTERNATIVE F

CONTRACT NUMBER

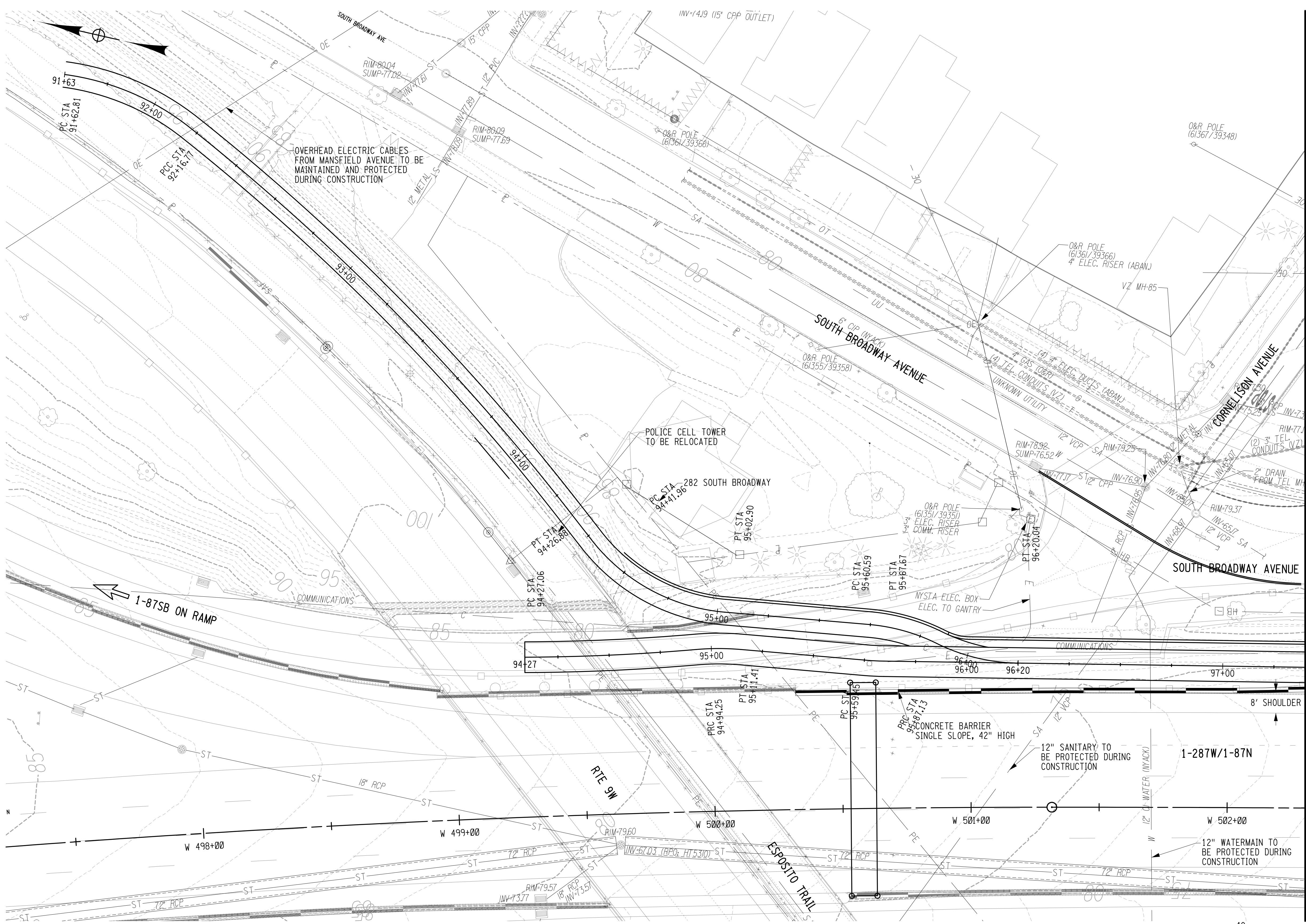
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DRAWING NO. SK-014
SHEET NO. 14 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

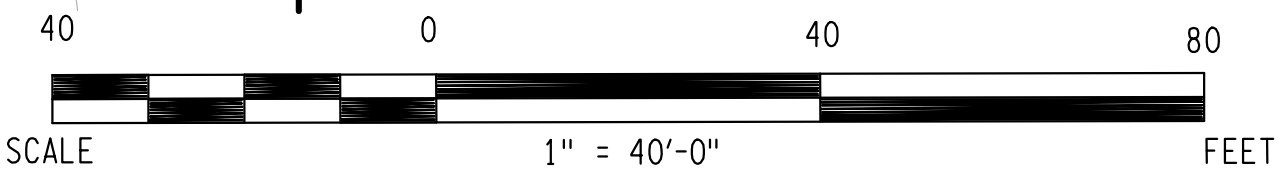
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DATE/TIME = 22-FEB-2016 10:57
USER = jody.vukas
DESIGN SUPERVISOR

JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



PLAN VIEW
1" = 40'-0"

PRELIMINARY



LEGEND	
	GAS
	TELEPHONE
	OVERHEAD ELECTRIC
	ELECTRIC
	COMMUNICATIONS
	STORM
	WATER
	SANITARY SEWER
	OVERHEAD TELECOMMUNICATIONS
	OVERHEAD CABLE TV

MATCH DGN SK-015

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CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

UTILITY PLAN
ALTERNATIVE F

CONTRACT NUMBER

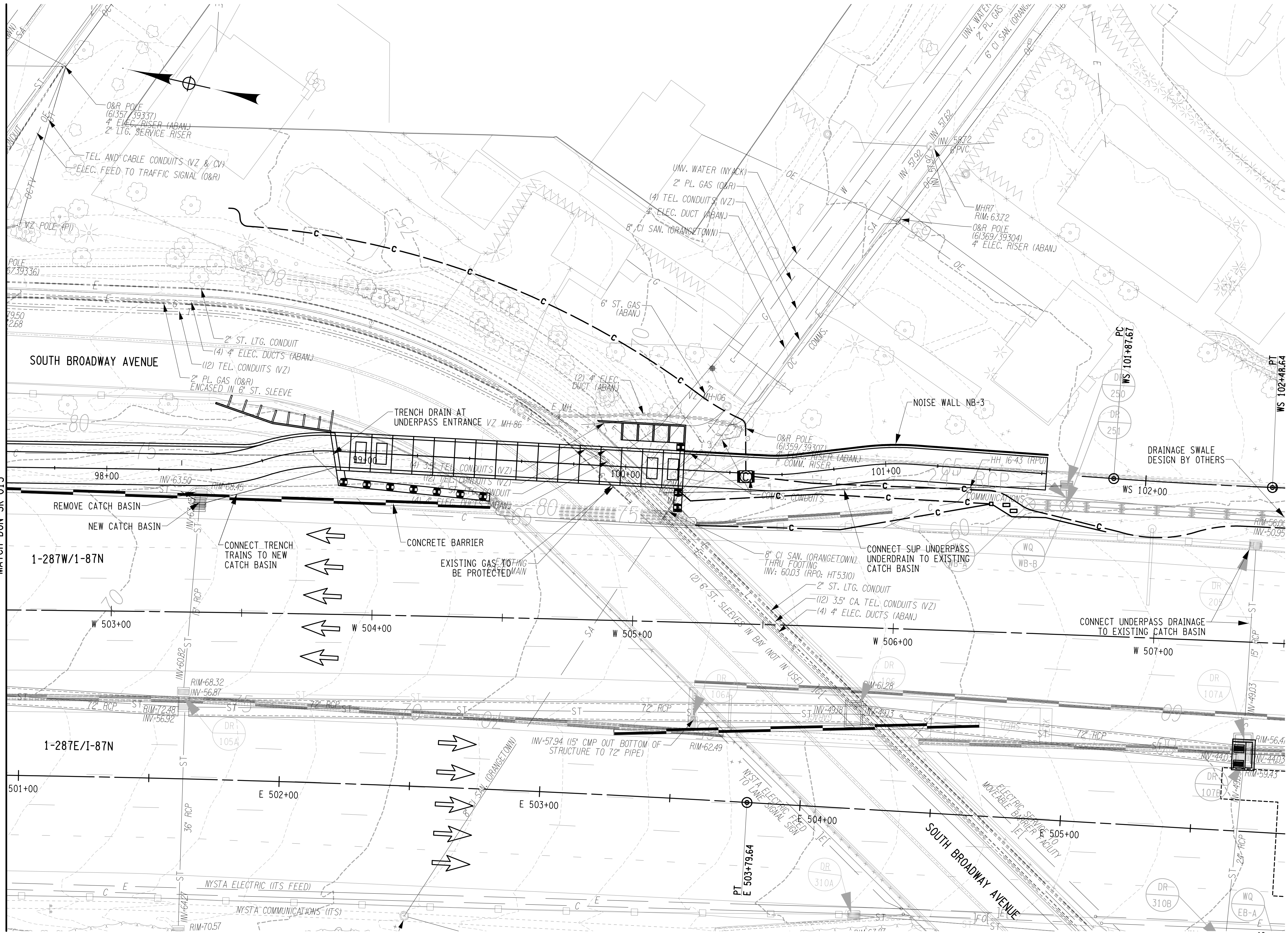
232234-12

DRAWING NO. SK-015
SHEET NO. 15 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

FILE NAME = J:\0\N\02320000\0232234-00812 Assignment 12 Rockland SUP\012-03 Drawings\012-03-30 Civil\Sheets\SK-016.dgn
DATE/TIME = 22-FEB-2016 10:57
USER = jody.vukas
DESIGN SUPERVISOR

CHECKED BY _____ DRAFTED BY _____ ESTIMATED BY _____ CHECKED BY _____ DESIGNED BY _____ JOB MANAGER _____

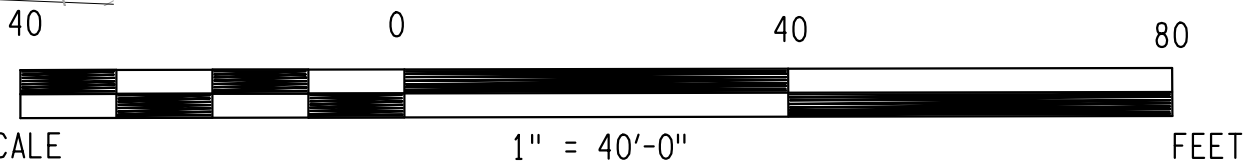


LEGEND	
	G GAS
	T TELEPHONE
	OE OVERHEAD ELECTRIC
	E ELECTRIC
	C COMMUNICATIONS
	ST STORM
	W WATER
	SA SANITARY SEWER
	OT OVERHEAD TELECOMMUNICATIONS
	OCTV OVERHEAD CABLE TV

UTILITIES WORK REQUIRED	
UTILITY TYPE	WORK
ELECTRICAL	EXTEND SITE LIGHTING AND ELECTRICAL WORK BY OTHERS.
	PROVIDE LIGHTING FOR UNDERPASS
	MAINTAIN LIGHTING ABOVE SOUTH BROADWAY BRIDGE.
	PROVIDE DUCT BANK THROUGH UNDER PASS
GAS	MAINTAIN AND PROTECT GAS MAIN LOCATED AT SOUTH BROADWAY BRIDGE
	POLICE CELL TOWER AT 282 BROADWAY TO BE RELOCATED BY OTHERS
	PROTECT COMMUNICATIONS DUCT BANK UNDERNEATH SWITCHBACK AND ALONG SOUTH BROADWAY DURING CONSTRUCTION. VERIFY LOCATION IN FIELD AND RELOCATE AS IF REQUIRED TO CONSTRUCT FOUNDATIONS.
	MAINTAIN AND PROTECT COMMUNICATIONS DUCT BANK BY OTHERS.
COMMUNICATIONS	G4-S TO BE RELOCATED
	VERIZON TELEPHONE TO BE RELOCATED
	PROTECT 12" WATER MAIN THROUGH SWITCHBACK. VERIFY LOCATION IN FIELD.
WATER	PROTECT 12" SANITARY SEWER THROUGH SWITCHBACK. VERIFY LOCATION IN FIELD.
	PROVIDE DRAINAGE AND SUBDRAINAGE FOR SWITCHBACK STRUCTURE AND CONNECT TO EXISTING CATCH BASIN
	CONNECT DRAINAGE AND SUBDRAINAGE FOR UNDERPASS AND CONNECT TO WATER QUALITY SWALE
SANITARY	
DRAINAGE	

PLAN VIEW
1" = 40'-0"

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CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

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UTILITY PLAN
ALTERNATIVE F

CONTRACT NUMBER

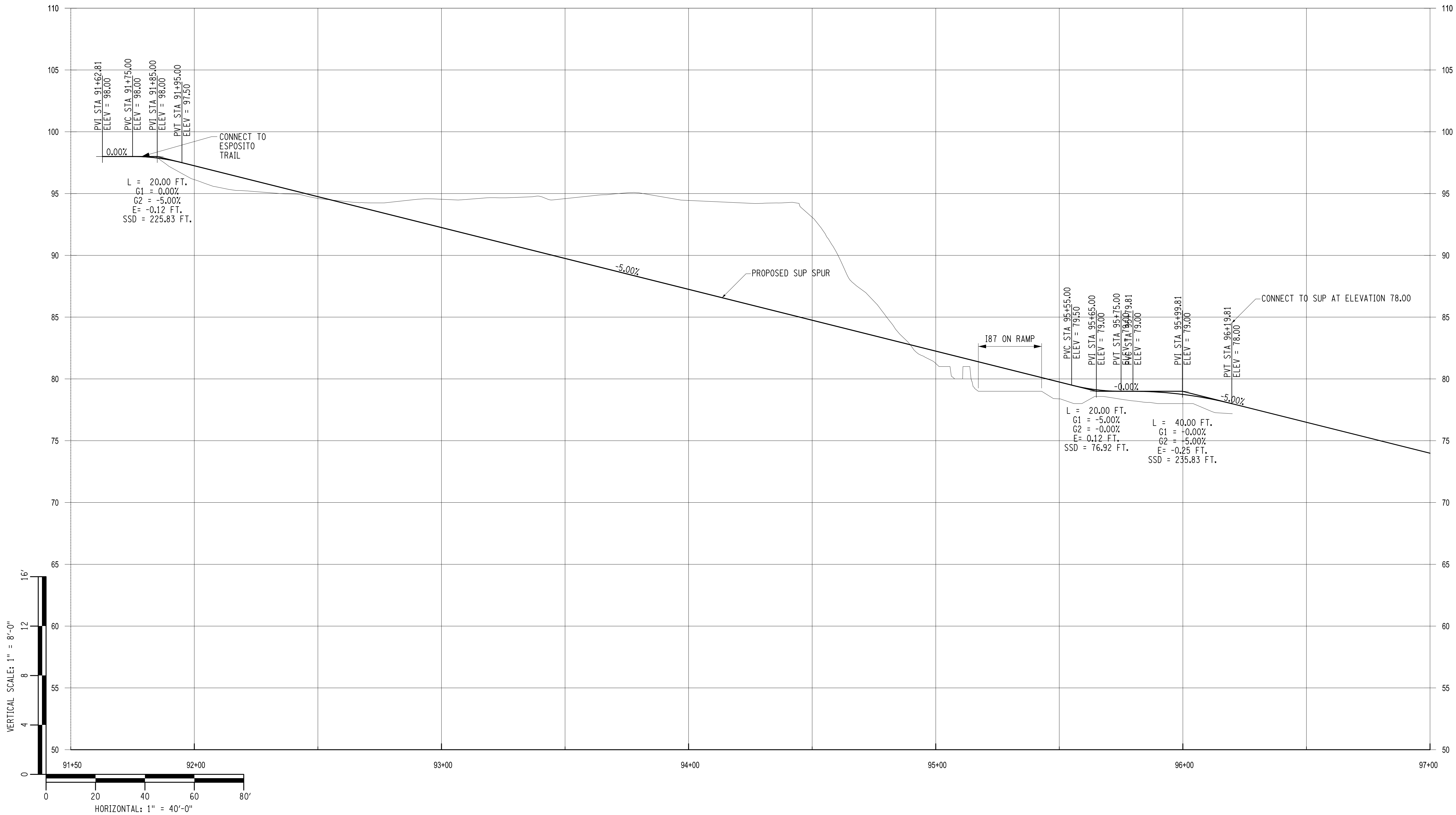
232234-12

DRAWING NO. SK-016
SHEET NO. 16 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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DATE/TIME = 22-FEB-2016 10:56
USER = jody.vukas

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ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

PROFILES
ALTERNATIVE F

CONTRACT NUMBER

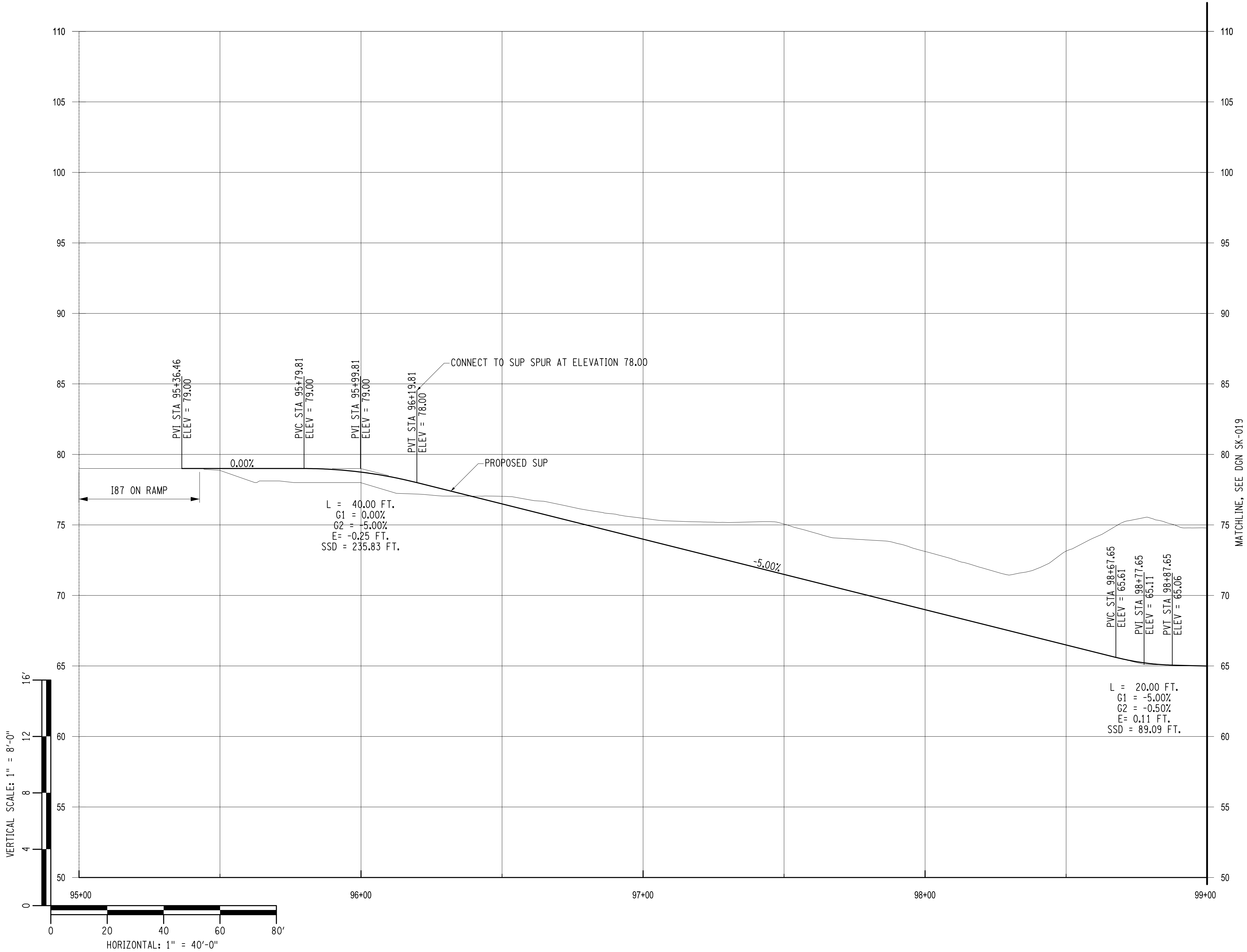
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DRAWING NO. SK-017
SHEET NO. 17 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

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DATE/TIME = 22-FEB-2016 10:56
USER = jody.vukas

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NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

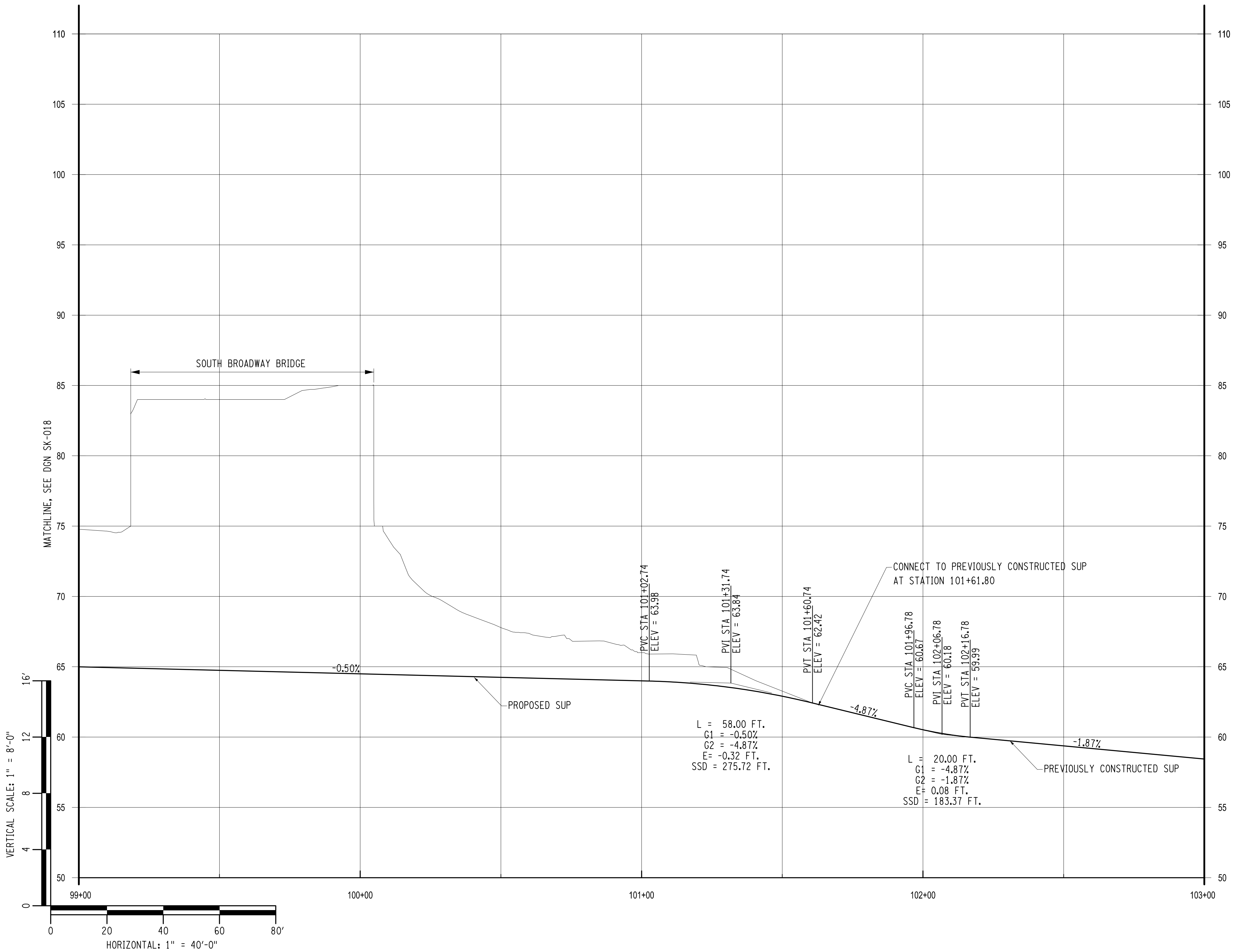
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DATE:			

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NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

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DATE/TIME = 22-FEB-2016 10:56
USER = jody.vukas

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____



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ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

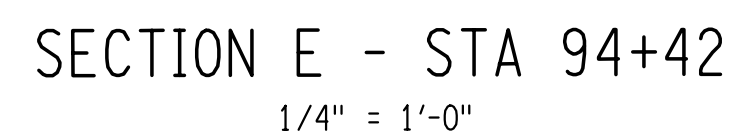
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232234-12

PROFILES AND SECTIONS
ALTERNATIVE F

DRAWING NO. SK-019
SHEET NO. 19 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

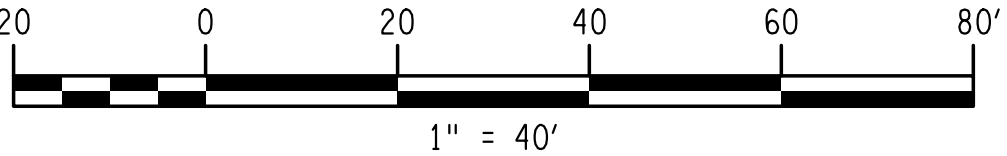
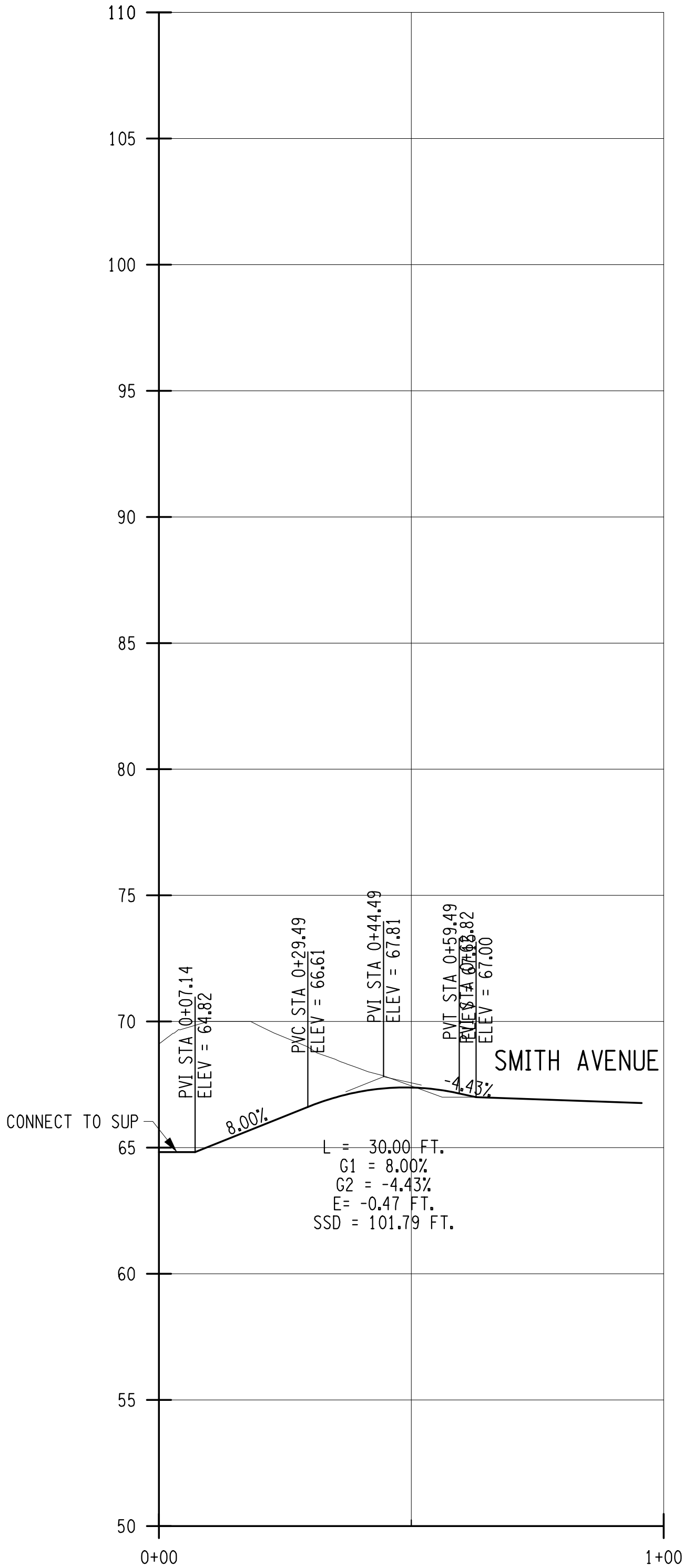


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				REV	DATE	DESCRIPTION	BY		
DOCUMENT STATUS:				DATE:				NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8	



FILE NAME = J:\N-Y\2320000\232234-00\12 Assignment 12 Rockland SUP\12-03 Drawings\12-03-30 Civil\Sheets\SK-021.dgn
DATE/TIME = 22-FEB-2016 10:53
USER = jody.vukas

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____

SMITH AVENUE ACCESS

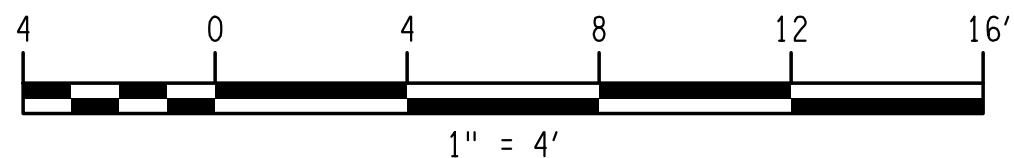
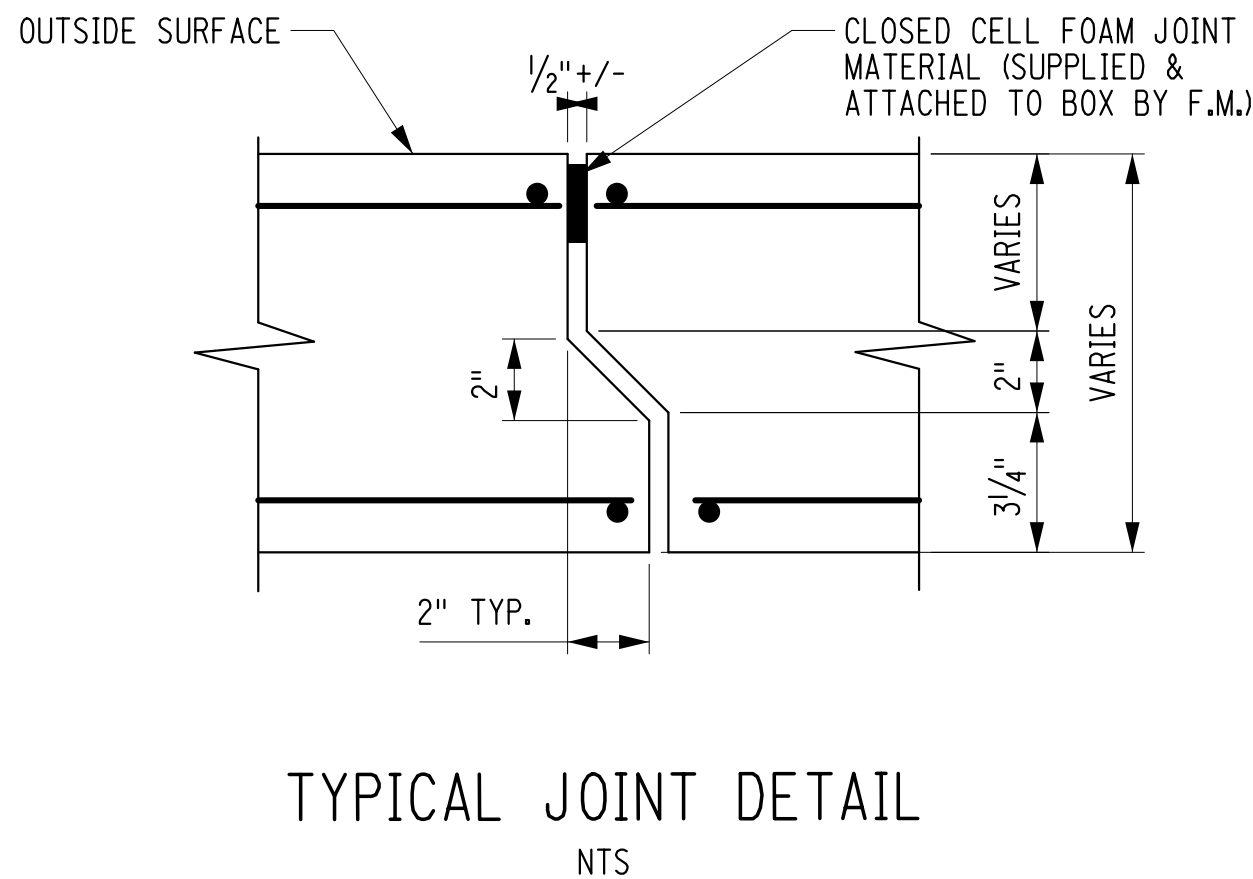
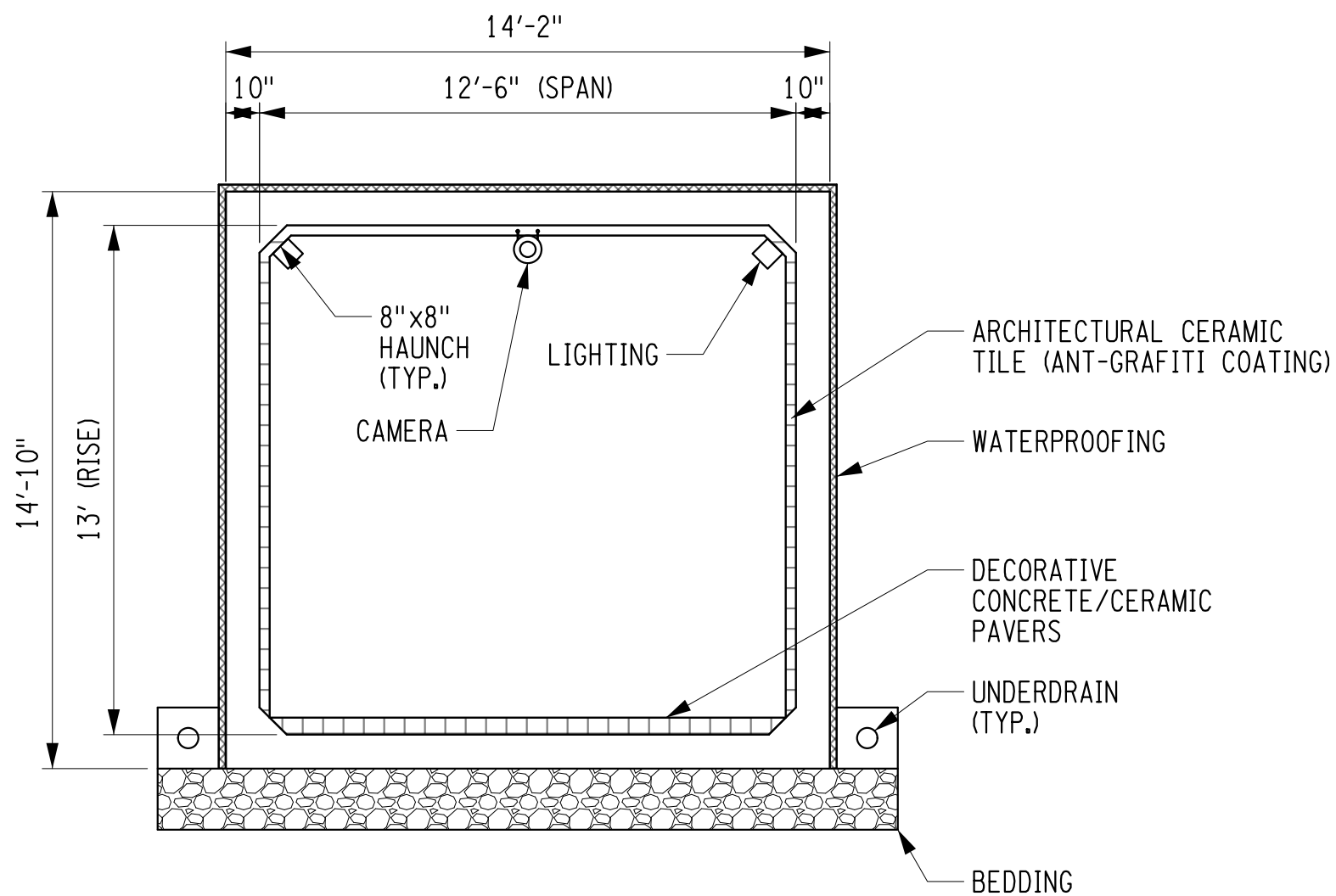
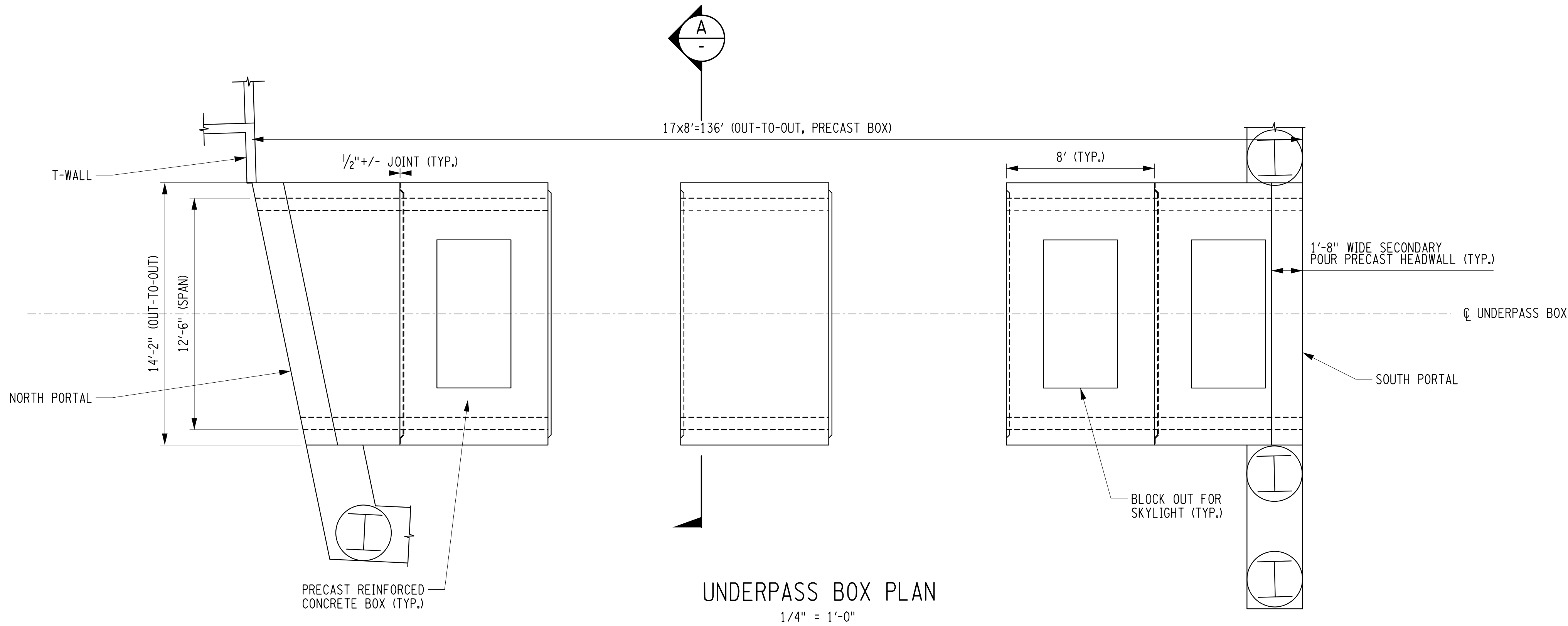


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										232234-12	
										PROFILE - SMITH AVENUE ALTERNATIVE E	DRAWING NO. SK-021 SHEET NO. 21 OF 25
			REV	DATE	DESCRIPTION	BY					
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DATE/TIME = 22-FEB-2016 10:53
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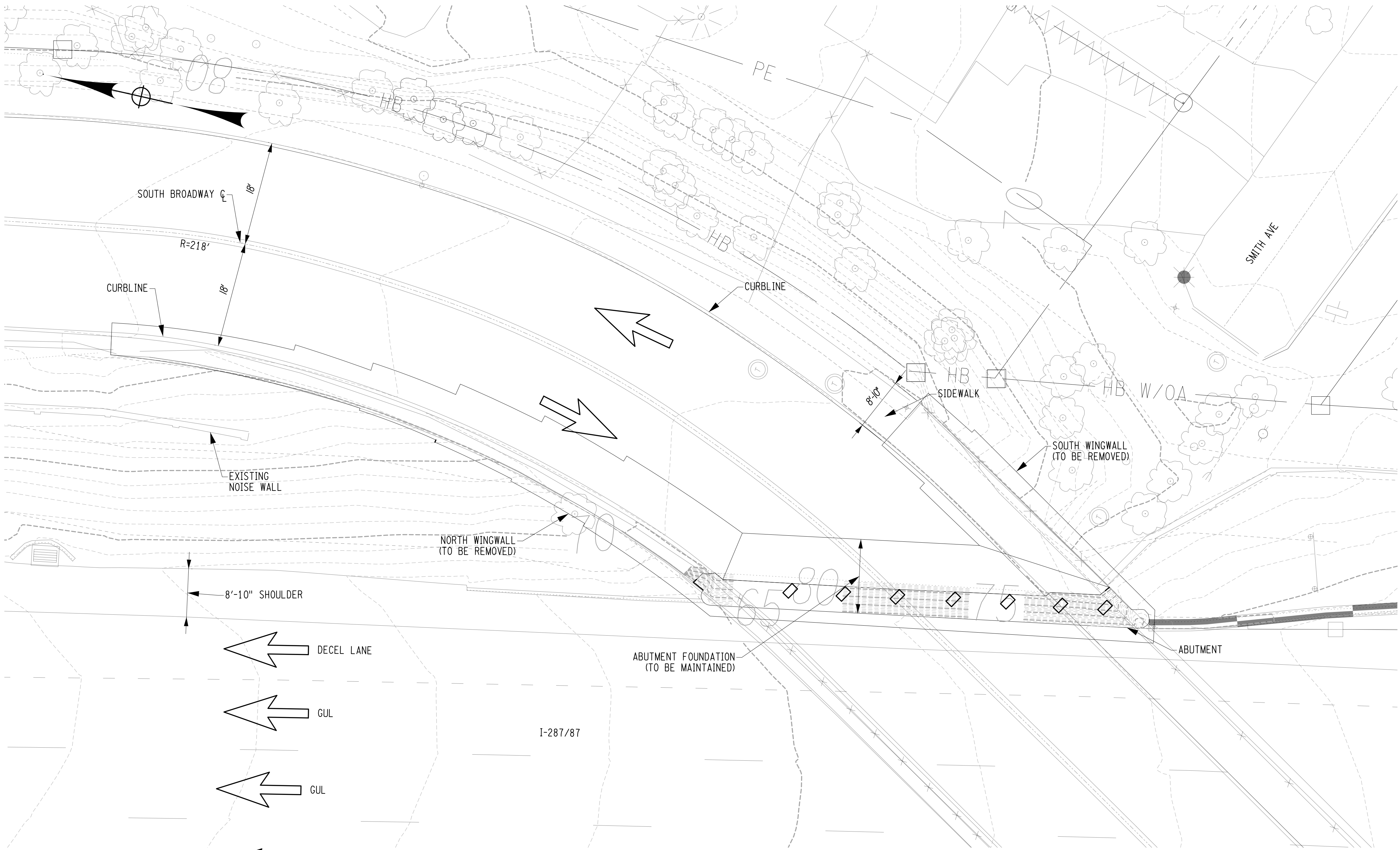


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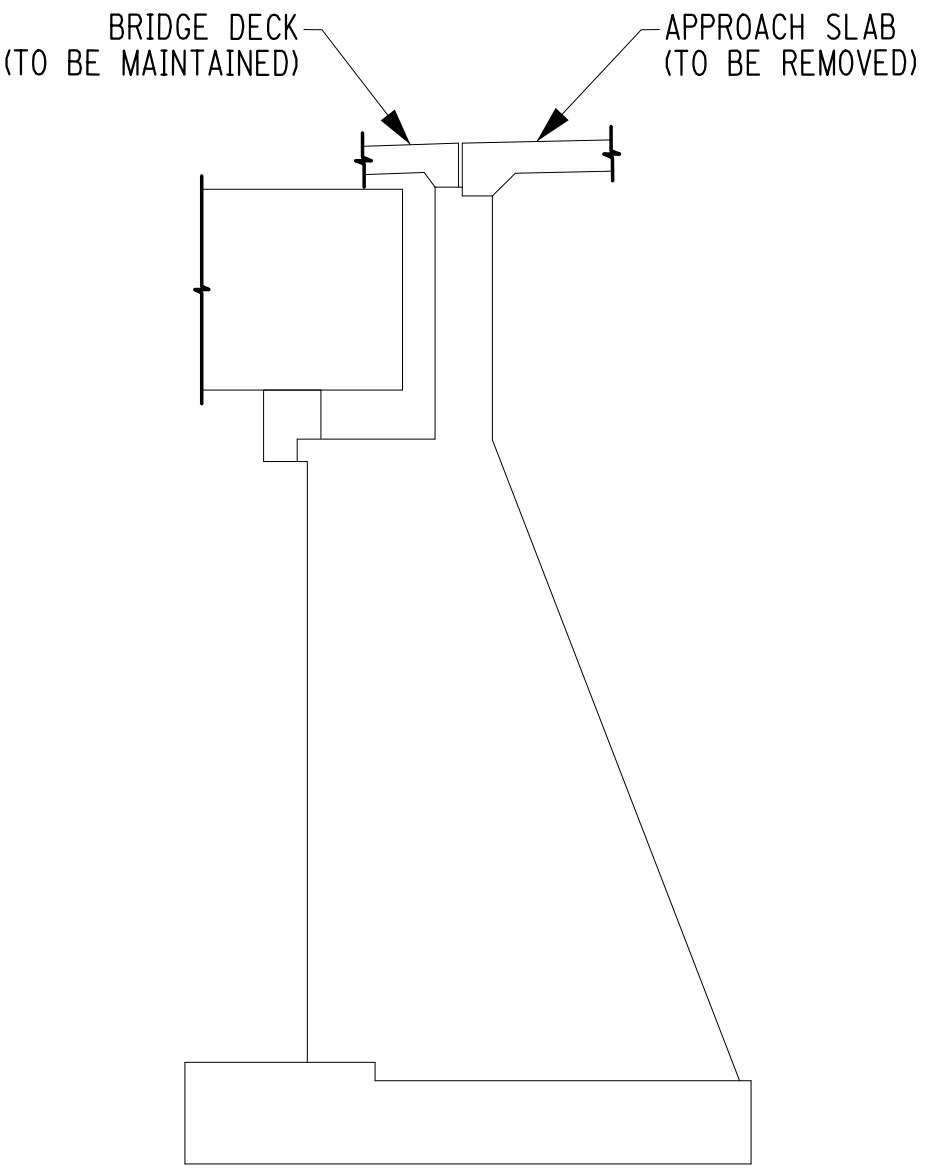
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											DRAWING NO. SK-022
											SHEET NO. 22 OF 25
			DOCUMENT STATUS:			REV	DATE	DESCRIPTION	BY		NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8
			DATE:								

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DATE/TIME = 22-FEB-2016 10:52
USER = jody.vukas

DESIGN SUPERVISOR _____ JOB MANAGER _____ DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____ DRAFTED BY _____ CHECKED BY _____

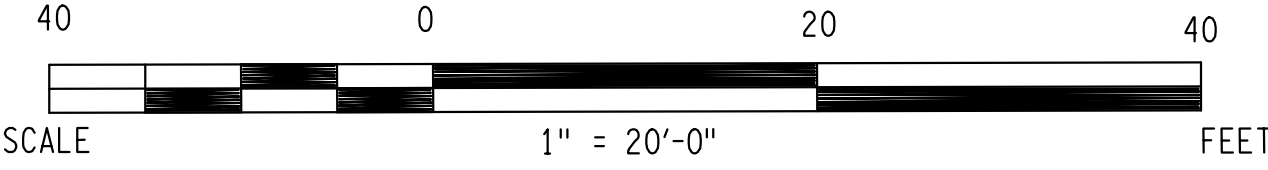


PLAN VIEW
1" = 20'-0"



TYPICAL ABUTMENT SECTION
1" = 10'-0"

PRELIMINARY



ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED		CONTRACT NUMBER	
STAGING PLAN - EXISTING CONDITIONS UNDERPASS		232234-12	
		DRAWING NO. SK-023	NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8
		SHEET NO. 23 OF 25	

ARUP

Arup USA, Inc.
77 Water Street
New York, NY 10005
Tel (212) 896 3000
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**Thruway
Authority**

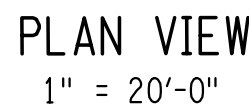
NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:



REV	DATE	DESCRIPTION	BY

DATE:



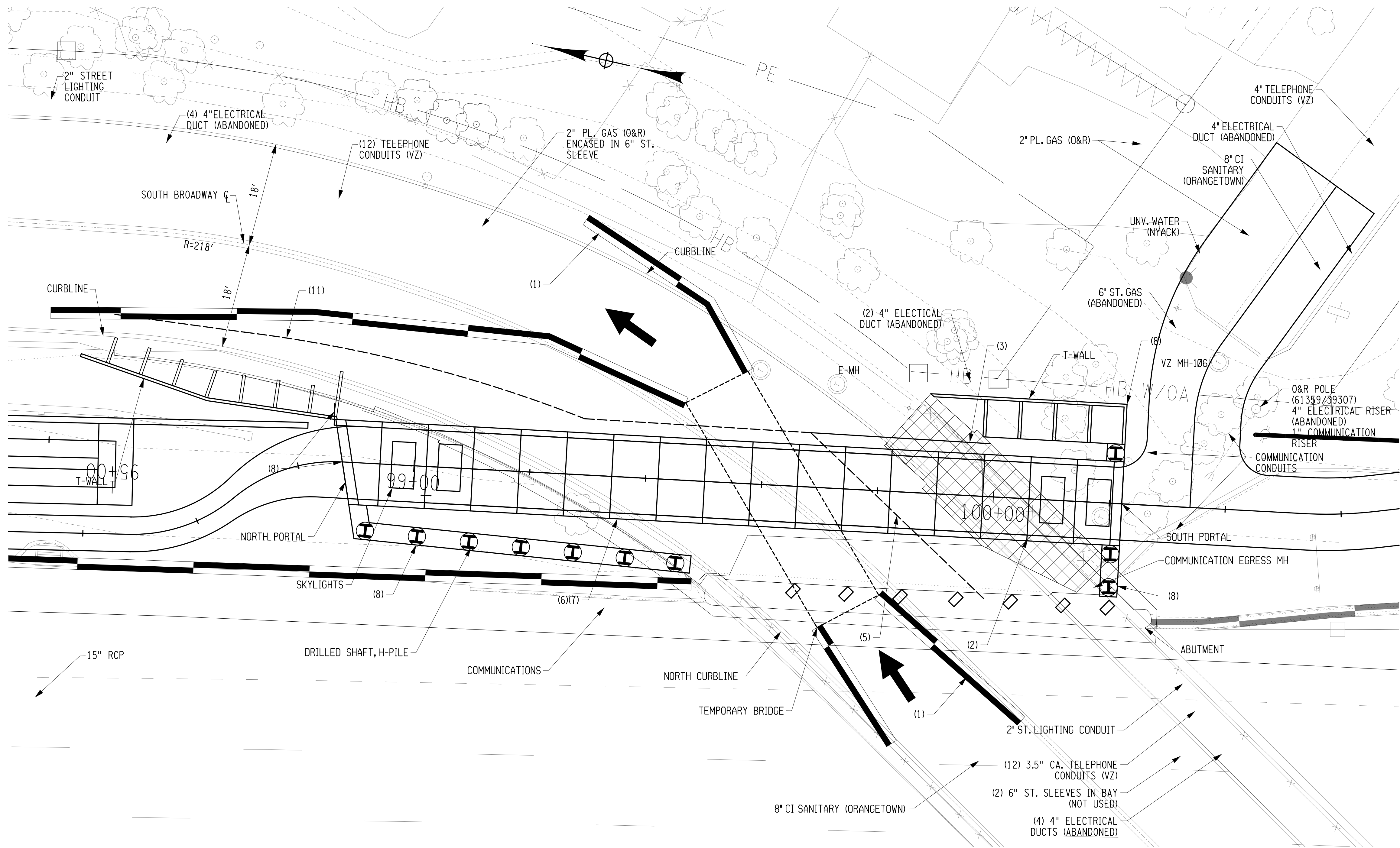
TYPICAL ABUTMENT SECTION
1" = 10'-0"



 <p>Arup USA, Inc. 77 Water Street New York, NY 10005 Tel (212) 896 3000 www.arup.com</p>	 <p>Thruway Authority</p> <p>NEW YORK STATE THRUWAY AUTHORITY DEPARTMENT OF ENGINEERING 200 SOUTHERN BLVD., ALBANY, N.Y. 12209</p>	<p>NEW NY BRIDGE ROCKLAND COUNTY SHARED USE PATH CONNECTION ALTERNATIVES</p>						<p>ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED</p> <p>CONTRACT NUMBER</p> <p>232234-12</p> <p>DRAWING NO. SK-024 SHEET NO. 24 OF 25</p> <p>NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8</p>
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DOCUMENT STATUS:				DATE:				

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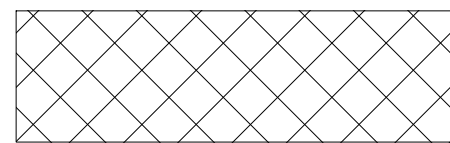
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CHECKED BY
ESTIMATED BY
DRAFTED BY
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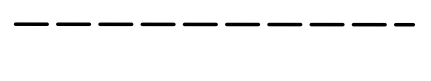
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PLAN VIEW
1" = 20'-0"

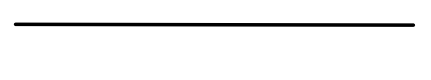
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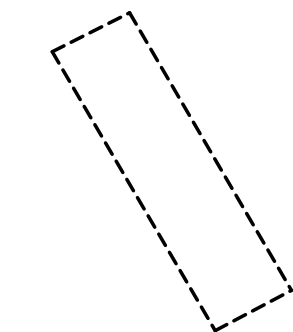
REMOVALS



TEMPORARY WALLS INSTALLED IN PREVIOUS STAGE



TEMPORARY WALLS INSTALLED IN THIS STAGE

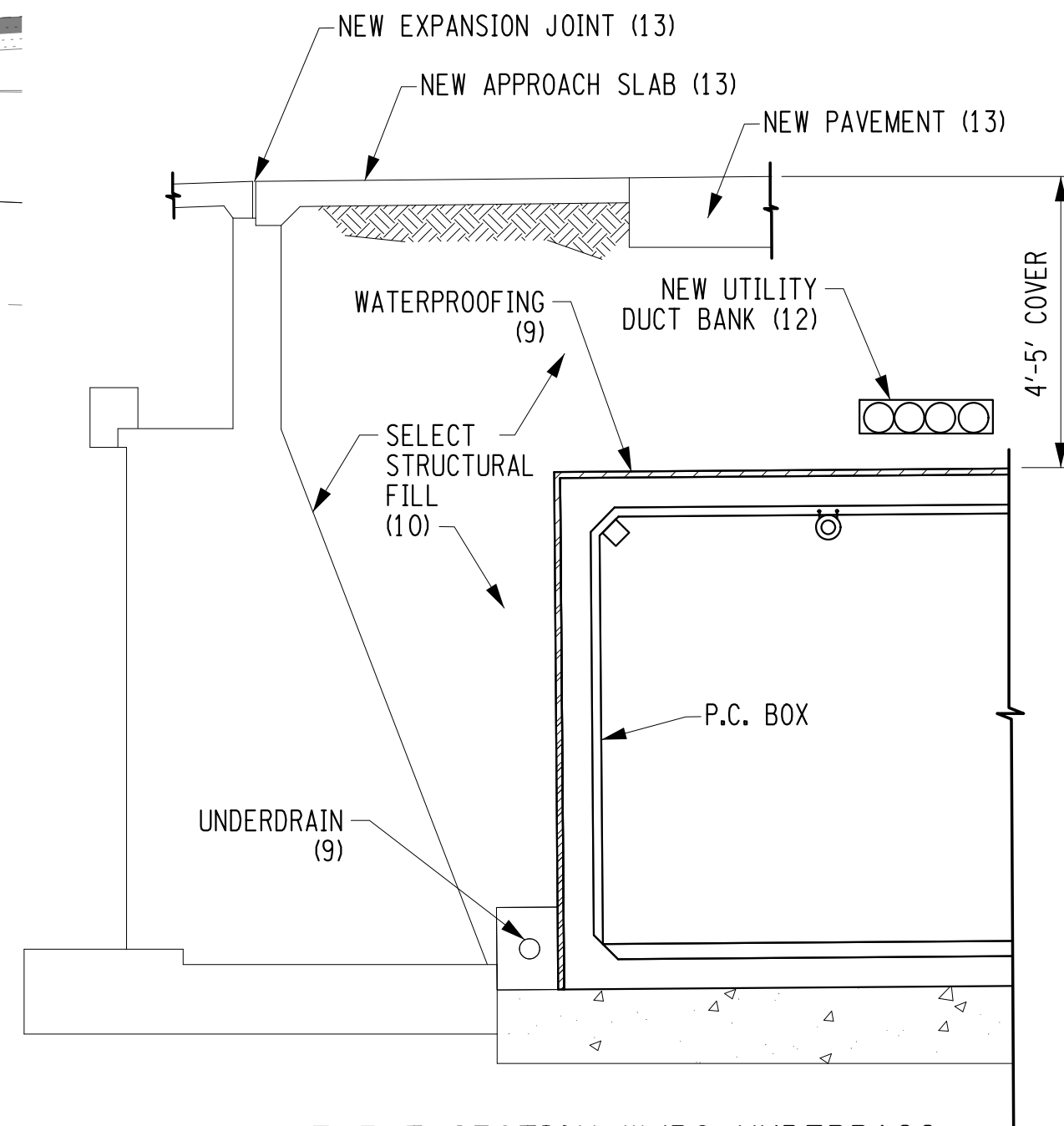


TEMPORARY PORTABLE STEEL
BRIDGE, HS-20 RATED

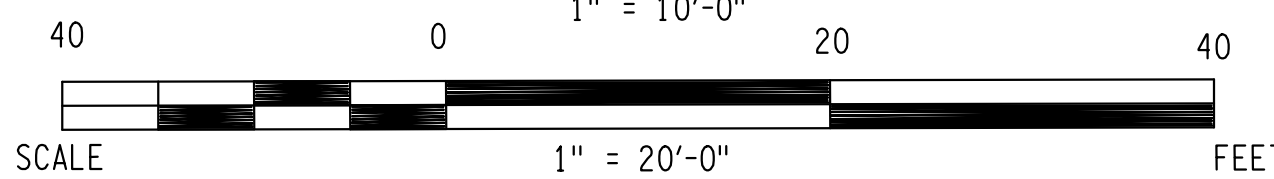
PRELIMINARY

STAGE 2 CONSTRUCTION:

1. PLACE TRAFFIC BARRIERS AND IMPLEMENT MPT FOR SINGLE LANE ON TEMPORARY BRIDGE AND SHIFT TRAFFIC TO TEMPORARY BRIDGE.
2. PROVIDE SUPPORT FOR GAS MAINS.
3. INSTALL TEMPORARY WALLS.
4. REMOVE SOUTH WINGWALL AND EXCAVATE.
5. REMOVE PORTION OF TEMPORARY WALLS.
6. PREPARE SUBGRADE FOR PRECAST BOX.
7. INSTALL PRECAST BOX (ADJUST PORTABLE TEMPORARY BRIDGE AS NEEDED)
8. CONSTRUCT NEW WINGWALLS AND PORTAL HEADWALLS.
9. CONSTRUCT UNDERDRAINS AND WATERPROOFING.
10. BACKFILL
11. CUT TOP 2' OF ALL REMAINING TEMPORARY WALLS.
12. CONSTRUCT NEW UTILITY DUCT BANK, GAS MAINS.
13. INSTALL NEW APPROACH SLAB, BRIDGE JOINT, SIDEWALK ON GRADE, ASPHALT PAVEMENT.
14. RECONSTRUCT SIDEWALK CURB AND PAVEMENT ON BRIDGE.
15. REMOVE TEMPORARY BRIDGE AND MPT.



TYPICAL ABUTMENT SECTION W/PC UNDERPASS



ARUP

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**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

STAGE 2 - CONSTRUCTION STAGING
UNDERPASS

CONTRACT NUMBER

232234-12

DRAWING NO. SK-025
SHEET NO. 25 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

Appendix 2

Traffic Information

Traffic Information

Level of Service Tables, Warrant Analysis
Summaries, and Weaving Analysis Summaries

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Table 4-2 – Signalized Intersection – Level of Service

Table 4-3 – Unsignalized Intersection – Level of Service

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Table 6-2 – Year 2015 – Existing Conditions – Detailed Intersection Level of Service Analysis

Table 6-3 – Year 2018 – No-Build Conditions – Intersection Level of Service

Table 6-4 – Year 2018 – No-Build Conditions – Detailed Intersection Level of Service Analysis

Table 6-5 – Year 2028 – No-Build Conditions – Intersection Level of Service

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Table 6-7 – Year 2018 – Alternative E Conditions – Intersection Level of Service

Table 6-8 – Year 2018 – Alternative E Conditions – Detailed Intersection Level of Service Analysis

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Table 6-15 – Year 2018 AM and PM DHV – S. Franklin Street and Clinton Avenue Warrant Analysis

Table 6-16 – Year 2028 AM and PM DHV – S. Franklin Street and Clinton Avenue Warrant Analysis

Table 6-17 – Year 2018 AM and PM DHV – US Route 9W (Hillside Avenue) at Franklin Street Extension Warrant Analysis

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Table 6-19 – Year 2018 AM DHV – US Route 9W Bridge over the Thruway Weaving Analysis

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Table 6-21 – Year 2028 AM DHV – US Route 9W Bridge over the Thruway Weaving Analysis

Table 6-22 – Year 2028 PM DHV – US Route 9W Bridge over the Thruway Weaving Analysis

Table 4-1 Interchange 10 – Local Roadway Network Peak Hours		
Location	Peak Hour	
	Morning	Evening
Interchange 10 - Local Roadway Network	7:15 am - 8:15 am	4:30 pm - 5:30 pm

Table 4-2 Signalized Intersection – Level of Service	
LOS	Control Delay per Vehicle (secs/veh)
A	≤ 10
B	> 10 to 20
C	> 20 to 35
D	> 35 to 55
E	> 55 to 80
F	> 80

Table 4-3 Unsignalized Intersection – Level of Service	
LOS	Control Delay per Vehicle (secs/veh)
A	≤ 10
B	> 10 to 15
C	> 15 to 25
D	> 25 to 35
E	> 35 to 50
F	> 50

Table 6-1
Year 2015 – Existing Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	B	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	B	C
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave*	-	-
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	A	C

* Northbound and westbound approaches are STOP controlled. Synchro analysis does not provide results under these conditions.

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	V/C RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	60	0.19	12.6	B	23	38	60	0.33	13.7	B	48	76
		Southbound (S Broadway)	LTR		0.47	15.2	B	84	127		0.31	12.2	B	47	83
		Eastbound (Clinton Ave)	LTR		0.59	18.3	B	104	134		0.52	17.3	B	78	135
		Westbound (Clinton Ave)	LTR		0.14	9.6	A	12	20		0.11	9.5	A	12	32
Overall Intersection						15.7	B					14.3	B		
Clinton Avenue & S Franklin Street	STOP Controlled - 4 Way	Northbound (S Franklin St)	LTR	-	0.52	11.6	B	-	-	-	0.62	14.0	B	-	-
		Southbound (S Franklin St)	LTR		0.17	9.1	A	-	-		0.21	9.3	A	-	-
		Eastbound (Clinton Ave)	LTR		0.05	8.6	A	-	-		0.04	8.6	A	-	-
		Westbound (Clinton Ave)	LTR		0.23	10.0	A	-	-		0.21	10.0	A	-	-
Overall Intersection						10.7	B					12.3	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	STOP Controlled	Northbound (Hillside Ave)	TR	-	0.06	0.0	A	-	0	-	0.05	0.0	A	-	0
		Southbound (Hillside Ave)	L		0.19	1.7	A	-	17		0.12	1.0	A	-	10
		T			0.19	5.8	A	-	17		0.12	4.2	A	-	10
		Westbound (Franklin St Extension)	LR		0.58	22.3	C	-	90		0.90	36.5	E	-	296
Overall Intersection						10.6	B					23.0	C		
US Route 9W/Hillside Ave & Shadyside Ave	STOP Controlled	Southbound (US Route 9W/Hillside Ave)	TR	-	0.16	0.0	A	-	0	-	0.18	0.0	A	-	0
		Eastbound (Shadyside Ave)	LR		0.05	10.0	A	-	4		0.06	10.4	B	-	4
Overall Intersection						1.2	A					1.2	A		
S Broadway & Cornelison Ave ^[7]	STOP Controlled - NB & WB	Northbound (S Broadway)	T	-	-	-	-	-	-	-	-	-	-	-	-
		R			-	-	-	-	-		-	-	-	-	-
		Southbound (S Broadway)	L		-	-	-	-	-		-	-	-	-	-
		T			-	-	-	-	-		-	-	-	-	-
		Westbound (Cornelison Ave)	L	-	-	-	-	-	-	-	-	-	-	-	-
		R			-	-	-	-	-		-	-	-	-	-
Overall Intersection						-	-					-	-		
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	STOP Controlled	Northbound (North US Route 9W Ramp)	L	-	0.15	13.6	B	-	13	-	0.82	32.9	D	-	208
		Eastbound (Franklin St Extension)	T		0.22	0.0	A	-	0		0.13	0.0	A	-	0
		Westbound (Franklin St Extension)	T		0.11	0.0	A	-	0		0.12	0.0	A	-	0
Overall Intersection						1.6	A					17.5	C		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

NOTES:

[1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).

[2] Note: in seconds per vehicle

[3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.

[4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.

[5] The approach is above capacity and the queue length could be much longer. Blocking problems may occur.

[6] The 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percent traffic volumes. Unsignalized intersections do not have a 50th percentile queue length.

[7] The northbound and westbound approach are controlled by STOP signs. Synchro analysis does not provide results under these conditions.

Table 6-3
Year 2018 – No-Build Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	B	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	B	C
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave*	-	-
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	A	C

* Northbound and westbound approaches are STOP controlled. Synchro analysis does not provide results under these conditions.

Table 6-4
Year 2018 - No-Build Conditions - Detailed Intersection Level of Service Analysis^[1]

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	V/C RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	60	0.20	12.70	B	24	39	60	0.34	13.7	B	49	78
		Southbound (S Broadway)	LTR		0.48	15.30	B	86	129		0.31	12.3	B	48	84
		Eastbound (Clinton Ave)	LTR		0.60	18.60	B	106	136		0.53	17.5	B	80	138
		Westbound (Clinton Ave)	LTR		0.15	9.60	A	13	20		0.12	9.5	A	13	34
Overall Intersection						15.90	B					14.3	B		
Clinton Avenue & S Franklin Street	STOP Controlled - 4 Way	Northbound (S Franklin St)	LTR	-	0.53	11.90	B	-	-	-	0.63	14.6	B	-	-
		Southbound (S Franklin St)	LTR		0.19	9.20	A	-	-		0.22	9.5	A	-	-
		Eastbound (Clinton Ave)	LTR		0.06	8.70	A	-	-		0.05	8.8	A	-	-
		Westbound (Clinton Ave)	LTR		0.24	10.10	B	-	-		0.22	10.2	B	-	-
Overall Intersection						10.90	B					12.7	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	STOP Controlled	Northbound (Hillside Ave)	TR	-	0.06	0.00	A	-	0	-	0.05	0.0	A	-	0
		Southbound (Hillside Ave)	L		0.19	1.70	A	-	18		0.12	1.1	A	-	10
			T		0.19	5.80	A	-	18		0.12	4.2	A	-	10
		Westbound (Franklin St Extension)	LR		0.60	23.20	C	-	95		0.92	39.7	E	-	315
Overall Intersection						11.00	B					24.9	C		
US Route 9W/Hillside Ave & Shadyside Ave	STOP Controlled	Southbound (US Route 9W/Hillside Ave)	TR	-	0.16	0.00	A	-	0	-	0.18	0.0	A	-	0
		Eastbound (Shadyside Ave)	LR		0.05	10.00	A	-	4		0.06	10.4	B	-	4
Overall Intersection						1.30	A					1.2	A		
S Broadway & Cornelison Ave ^[7]	STOP Controlled - NB & WB	Northbound (S Broadway)	T R	-	-	-	-	-	-	-	-	-	-	-	-
		Southbound (S Broadway)	L		-	-	-	-	-		-	-	-	-	-
			T		-	-	-	-	-		-	-	-	-	-
		Westbound (Cornelison Ave)	L R		-	-	-	-	-		-	-	-	-	-
Overall Intersection						-	-					-	-		
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	STOP Controlled	Northbound (North US Route 9W Ramp)	L	-	0.15	13.70	B	-	13	-	0.83	34.4	D	-	216
		Eastbound (Franklin St Extension)	T		0.22	0.00	A	-	0		0.13	0.0	A	-	0
		Westbound (Franklin St Extension)	T		0.11	0.00	A	-	0		0.12	0.0	A	-	0
Overall Intersection						1.60	A					18.2	C		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

NOTES:

[1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).

[2] Note: in seconds per vehicle

[3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.

[4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.

[5] The approach is above capacity and the queue length could be much longer. Blocking problems may occur.

[6] The 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percent traffic volumes. Unsignalized intersections do not have a 50th percentile queue length.

[7] The northbound and westbound approach are controlled by STOP signs. Synchro analysis does not provide results under these conditions.

Table 6-5
Year 2028 – No-Build Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	B	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	B	D
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave*	-	-
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	A	C

* Northbound and westbound approaches are STOP controlled. Synchro analysis does not provide results under these conditions.

Table 6-6
Year 2028 - No-Build Conditions - Detailed Intersection Level of Service Analysis^[1]

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	V/C RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	60	0.21	12.8	B	25	41	60	0.35	13.9	B	51	81
		Southbound (S Broadway)	LTR		0.49	15.6	B	90	134		0.33	12.5	B	51	88
		Eastbound (Clinton Ave)	LTR		0.62	19.2	B	111	142		0.55	18.1	B	85	144
		Westbound (Clinton Ave)	LTR		0.16	9.7	A	14	22		0.13	9.5	A	14	37
Overall Intersection						16.2	B					14.6	B		
Clinton Avenue & S Franklin Street	STOP Controlled - 4 Way	Northbound (S Franklin St)	LTR	-	0.56	12.7	B	-	-	-	0.67	15.8	C	-	-
		Southbound (S Franklin St)	LTR		0.20	9.4	A	-	-		0.23	9.7	A	-	-
		Eastbound (Clinton Ave)	LTR		0.07	9.0	A	-	-		0.06	9.0	A	-	-
		Westbound (Clinton Ave)	LTR		0.26	10.5	B	-	-		0.23	10.4	B	-	-
Overall Intersection						11.5	B					13.5	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	STOP Controlled	Northbound (Hillside Ave)	TR	-	0.07	0.0	A	-	0	-	0.05	0.0	A	-	0
		Southbound (Hillside Ave)	L		0.20	1.8	A	-	18		0.13	1.1	A	-	11
			T		0.20	5.8	A	-	18		0.13	4.3	A	-	11
		Westbound (Franklin St Extension)	LR		0.64	25.9	D	-	110		0.96	48.7	E	-	367
Overall Intersection						11.9	B					30.2	D		
US Route 9W/Hillside Ave & Shadyside Ave	STOP Controlled	Southbound (US Route 9W/Hillside Ave)	TR	-	0.16	0.0	A	-	0	-	0.19	0.0	A	-	0
		Eastbound (Shadyside Ave)	LR		0.05	10.1	B	-	4		0.06	10.5	B	-	5
Overall Intersection						1.3	A					1.2	A		
S Broadway & Cornelison Ave ^[7]	STOP Controlled - NB & WB	Northbound (S Broadway)	T	-	-	-	-	-	-	-	-	-	-	-	-
			R		-	-	-	-	-		-	-	-	-	-
		Southbound (S Broadway)	L		-	-	-	-	-		-	-	-	-	-
			T		-	-	-	-	-		-	-	-	-	-
		Westbound (Cornelison Ave)	L		-	-	-	-	-		-	-	-	-	-
			R		-	-	-	-	-		-	-	-	-	-
Overall Intersection						-	-					-	-		
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	STOP Controlled	Northbound (North US Route 9W Ramp)	L	-	0.16	14.0	B	-	14	-	0.88	40.8	E	-	250
		Eastbound (Franklin St Extension)	T		0.23	0.0	A	-	0		0.14	0.0	A	-	0
		Westbound (Franklin St Extension)	T		0.11	0.0	A	-	0		0.12	0.0	A	-	0
Overall Intersection						1.7	A					21.6	C		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

NOTES:
[1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).
[2] Note: in seconds per vehicle
[3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.
[4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.
[5] The approach is above capacity and the queue length could be much longer. Blocking problems may occur.
[6] The 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percent traffic volumes. Unsignalized intersections do not have a 50th percentile queue length.
[7] The northbound and westbound approach are controlled by STOP signs. Synchro analysis does not provide results under these conditions.

Table 6-7
Year 2018 – Alternative E Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	B	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	B	C
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave*	-	-
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	A	B

* Northbound and westbound approaches are STOP controlled. Synchro analysis does not provide results under these conditions.

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	V/C RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	60	0.20	12.7	B	24	39		0.34	14.2	B	50	79
		Southbound (S Broadway)	LTR		0.48	15.3	B	86	129		0.32	12.8	A	49	86
		Eastbound (Clinton Ave)	LTR		0.60	18.6	B	106	136		0.45	14.6	B	74	125
		Westbound (Clinton Ave)	LTR		0.13	9.4	A	13	20		0.11	8.8	B	12	33
Overall Intersection						15.9	B					13.5	B		
Clinton Avenue & S Franklin Street	STOP Controlled - 4 Way	Northbound (S Franklin St)	LTR	-	0.53	11.9	B	-	-	-	0.63	14.5	B	-	-
		Southbound (S Franklin St)	LTR		0.19	9.2	A	-	-		0.22	9.4	A	-	-
		Eastbound (Clinton Ave)	LTR		0.06	8.7	A	-	-		0.04	8.7	A	-	-
		Westbound (Clinton Ave)	LTR		0.24	10.1	B	-	-		0.22	10.1	B	-	-
Overall Intersection						10.9	B					12.7	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	STOP Controlled	Northbound (Hillside Ave)	TR	-	0.06	0.0	A	-	0	-	0.05	0.0	A	-	0
		Southbound (Hillside Ave)	L		0.19	1.7	A	-	18		0.12	1.1	A	-	10
			T		0.19	5.8	A	-	18		0.12	4.2	A	-	10
		Westbound (Franklin St Extension)	LR		0.60	23.2	C	-	95		0.92	39.7	E	-	315
Overall Intersection						11.0	B					24.9	C		
US Route 9W/Hillside Ave & Shadyside Ave	STOP Controlled	Southbound (US Route 9W/Hillside Ave)	TR	-	0.16	0.0	A	-	0	-	0.18	0.0	A	-	0
		Eastbound (Shadyside Ave)	LR		0.05	10.0	A	-	4		0.06	10.4	B	-	5
Overall Intersection						1.3	A					1.2	A		
S Broadway & Cornelison Ave ^[7]	STOP Controlled - & WB NB	Northbound (S Broadway)	T	-	-	-	-	-	-	-	-	-	-	-	-
			R		-	-	-	-	-		-	-	-	-	-
		Southbound (S Broadway)	L		-	-	-	-	-		-	-	-	-	-
			T		-	-	-	-	-		-	-	-	-	-
			L		-	-	-	-	-		-	-	-	-	-
		Westbound (Cornelison Ave)	R		-	-	-	-	-		-	-	-	-	-
Overall Intersection															
North US Route 9W Ramp, S Franklin St & Franklin St Extension	Signalized	Northbound (North US Route 9W Ramp)	L	60	0.30	23.9	C	13	16		0.74	19.7	B	72	89
			T		0.38	25.2	C	17	19		0.44	12.7	B	41	53
		Southbound (S Franklin St)	R		0.14	0.2	A	0	0		0.26	0.8	A	0	1
		Eastbound (Franklin St Extension)	L		0.31	6.2	A	51	97		0.38	15.2	B	42	89
Overall Intersection						9.1	A					13.8	B		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

- NOTES:
- [1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).
- [2] Note: in seconds per vehicle
- [3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.
- [4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.

Table 6-9
Year 2028 – Alternative E Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	B	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	B	D
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave*	-	-
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	A	B

* Northbound and westbound approaches are STOP controlled. Synchro analysis does not provide results under these conditions.

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	V/C RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	60	0.21	12.8	B	25	41	60	0.36	14.4	B	52	82
		Southbound (S Broadway)	LTR		0.49	15.6	B	90	134		0.33	13.0	B	52	90
		Eastbound (Clinton Ave)	LTR		0.62	19.1	B	111	141		0.47	15.0	B	78	131
		Westbound (Clinton Ave)	LTR		0.14	9.4	A	14	21		0.12	8.8	A	13	35
Overall Intersection						16.2	B					13.7	B		
Clinton Avenue & S Franklin Street	STOP Controlled - 4 Way	Northbound (S Franklin St)	LTR	-	0.56	12.7	B	-	-	-	0.66	15.6	C	-	-
		Southbound (S Franklin St)	LTR		0.20	9.4	A	-	-		0.23	9.6	A	-	-
		Eastbound (Clinton Ave)	LTR		0.07	9.0	A	-	-		0.05	8.9	A	-	-
		Westbound (Clinton Ave)	LTR		0.26	10.5	B	-	-		0.23	10.4	B	-	-
Overall Intersection						11.5	B					13.4	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	STOP Controlled	Northbound (Hillside Ave)	TR	-	0.07	0.0	A	-	0	-	0.05	0.0	A	-	0
		Southbound (Hillside Ave)	L		0.20	1.8	A	-	18		0.13	1.1	A	-	11
			T		0.20	5.8	A	-	18		0.13	4.3	A	-	11
		Westbound (Franklin St Extension)	LR		0.64	25.9	D	-	110		0.96	48.7	E	-	367
Overall Intersection						11.9	B					30.2	D		
US Route 9W/Hillside Ave & Shadyside Ave	STOP Controlled	Southbound (US Route 9W/Hillside Ave)	TR	-	0.16	0.0	A	-	0	-	0.19	0.0	A	-	0
		Eastbound (Shadyside Ave)	LR		0.05	10.0	B	-	4		0.06	10.4	B	-	5
Overall Intersection						1.2	A					1.2	A		
S Broadway & Cornelison Ave ^[7]	STOP Controlled - NB & WB	Northbound (S Broadway)	T	-	-	-	-	-	-	-	-	-	-	-	-
			R		-	-	-	-	-		-	-	-	-	-
		Southbound (S Broadway)	L		-	-	-	-	-		-	-	-	-	-
			T		-	-	-	-	-		-	-	-	-	-
Westbound (Cornelison Ave)			L		-	-	-	-	-		-	-	-	-	-
			R		-	-	-	-	-		-	-	-	-	-
Overall Intersection															
North US Route 9W Ramp, S Franklin St & Franklin St Extension	Signalized	Northbound (North US Route 9W Ramp)	L	60	0.31	23.9	C	13	16		0.75	19.9	B	75	92
			T		0.39	25.3	C	18	20		0.44	12.6	B	42	54
		Southbound (S Franklin St)	R		0.14	0.2	A	0	0		0.27	1.2	A	0	6
		Eastbound (Franklin St Extension)	L		0.32	6.4	A	54	101		0.40	15.7	B	45	95
Overall Intersection						9.2	A					14.0	B		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

- NOTES:
- [1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).
- [2] Note: in seconds per vehicle
- [3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.
- [4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.

Table 6-11
Year 2018 – Alternative F Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	A	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	C	C
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave	A	A
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	-	-
NB/WB I-87/287 Interchange 10 Exit Ramp & US Route 9W/Hillside Ave	A	B

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	80	0.22	5.0	A	26	44	80	0.25	8.4	A	45	83
		Southbound (S Broadway)	LTR		0.27	1.5	A	5	5		0.20	5.4	A	25	59
		Eastbound (Clinton Ave)	LTR		0.54	29.8	C	48	32		0.73	35.0	D	109	59
		Westbound (Clinton Ave)	LTR		0.36	28.1	C	26	40		0.20	20.6	C	23	50
Overall Intersection						9.3	A					17.0	B		
Clinton Avenue & S Franklin Street	Signalized	Northbound (S Franklin St)	LTR	80	0.23	17.4	B	45	116	80	0.37	7.9	A	80	167
		Southbound (S Franklin St)	LTR		0.16	20.0	C	39	100		0.14	7.2	A	26	50
		Eastbound (Clinton Ave)	LTR		0.06	4.5	A	4	5		0.08	13.5	B	6	10
		Westbound (Clinton Ave)	LTR		0.72	21.3	C	171	26		0.74	37.0	D	114	53
Overall Intersection						19.4	B					16.0	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	Signalized	Northbound (Hillside Ave)	TR	90	0.35	19.5	B	61	62	90	0.74	30.0	C	232	425 ^[4]
		Southbound (Hillside Ave)	L		0.11	13.1	B	11	37		0.43	14.7	B	38	68
			T		0.49	18.1	B	98	221		0.22	12.6	B	58	110
		Westbound (Franklin St Extension)	LR		0.84	29.5	C	191	303		0.89	45.7	D	239	396 ^[4]
Overall Intersection						23.5	C					31.2	C		
US Route 9W/Hillside Ave & Shadyside Ave	Signalized	Northbound (Shadyside Ave)	TR	40	0.08	1.3	A	0	4	40	0.06	1.0	A	0	4
		Eastbound (US Route 9W/Hillside Ave)	TR		0.56	7.7	A	61	100		0.32	7.7	A	28	55
Overall Intersection						7.5	A					7.3	A		
S Broadway & Cornelison Ave	STOP Controlled	Northbound (S Broadway)	T	-	0.14	9.6	A	-	12	-	0.11	9.9	A	-	9
			R		0.14	9.6	A	-	12		0.11	9.9	A	-	9
		Southbound (S Broadway)	L		0.03	0.3	A	-	2		0.07	0.6	A	-	6
			T		0.03	4.7	A	-	2		0.07	4.9	A	-	6
		Westbound (Cornelison Ave)	L		0.06	0.0	A	-	0		0.10	0.0	A	-	0
			R		0.06	0.0	A	-	0		0.10	0.0	A	-	0
Overall Intersection						5.2	A					4.1	A		
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	STOP Controlled	Northbound (North US Route 9W Ramp)	L	-	-	-	-	-	-	-	-	-	-	-	-
		Eastbound (Franklin St Extension)	T		-	-	-	-	-		-	-	-	-	-
		Westbound (Franklin St Extension)	T		-	-	-	-	-		-	-	-	-	-
Overall Intersection						-	-					-	-		
NB/WB I-87/287 Interchange 10 Exit Ramp & US Route 9W/Hillside Ave	Signalized	Southbound (NB/WB I-87/287 Interchange 10 Exit Ramp)	TR	40	0.57	18.2	B	41	72	40	0.69	16.4	B	70	107
		Eastbound (US Route 9W/Hillside Ave)	T		0.53	2.1	A	8	11		0.36	2.5	A	5	8
Overall Intersection						6.9	A					10.6	B		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

NOTES:

[1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).

[2] Note: in seconds per vehicle

[3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.

[4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.

[5] The approach is above capacity and the queue length could be much longer. Blocking problems may occur.

[6] The 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percent traffic volumes. Unsignalized intersections do not have a 50th percentile queue length.

[7] The northbound and westbound approach are controlled by STOP signs. Synchro analysis does not provide results under these conditions.

Table 6-13
Year 2028 – Alternative F Conditions – Intersection Level of Service

Intersection	Peak Hour	
	Morning (AM)	Evening (PM)
Clinton Avenue & S Broadway	A	B
Clinton Avenue & S Franklin Street	B	B
US Route 9W/Hillside Avenue & Franklin Street Extension	C	C
US Route 9W/Hillside Ave & Shadyside Ave	A	A
S Broadway & Cornelison Ave	A	A
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	-	-
NB/WB I-87/287 Interchange 10 Exit Ramp & US Route 9W/Hillside Ave	A	B

INTERSECTION	CONTROL TYPE	APPROACH	LANE GROUP	AM PEAK HOUR						PM PEAK HOUR					
				CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)		CYCLE LENGTH	v/c RATIO	DELAY ^[2]	LOS	QUEUE LENGTH (feet)	
								50th PERCENTILE ^[6]	95th PERCENTILE					50th PERCENTILE ^[6]	95th PERCENTILE
Clinton Avenue & S Broadway	Signalized - RTOR Prohibited EB	Northbound (S Broadway)	LTR	80	0.23	5.2	A	28	46	80	0.26	8.9	A	48	90
		Southbound (S Broadway)	LTR		0.28	1.6	A	6	6		0.21	5.8	A	27	64
		Eastbound (Clinton Ave)	LTR		0.55	29.7	C	49	21		0.74	34.5	C	114	60
		Westbound (Clinton Ave)	LTR		0.38	28.8	C	29	43		0.21	20.3	C	25	53
Overall Intersection						9.5	A					17.1	B		
Clinton Avenue & S Franklin Street	Signalized	Northbound (S Franklin St)	LTR	80	0.25	18.9	B	50	126	80	0.39	8.4	A	86	178
		Southbound (S Franklin St)	LTR		0.18	21.2	C	43	108		0.14	7.5	A	28	54
		Eastbound (Clinton Ave)	LTR		0.06	4.2	A	5	5		0.10	13.4	B	7	11
		Westbound (Clinton Ave)	LTR		0.72	20.1	C	174	25		0.75	36.5	D	116	54
Overall Intersection						19.2	B					16.1	B		
US Route 9W/Hillside Avenue & Franklin Street Extension	Signalized	Northbound (Hillside Ave)	TR	90	0.37	20.4	C	66	66	90	0.78	32.2	C	252	453 ^[4]
		Southbound (Hillside Ave)	L		0.12	13.8	B	12	39		0.48	16.1	B	42	71
		T			0.51	19.2	B	106	239		0.22	12.8	B	63	113
		Westbound (Franklin St Extension)	LR		0.85	29.7	C	200	316		0.90	46.8	D	249	413 ^[4]
Overall Intersection						24.1	C					32.6	C		
US Route 9W/Hillside Ave & Shadyside Ave	Signalized	Northbound (Shadyside Ave)	TR	40	0.08	1.6	A	0	4	40	0.06	1.2	A	0	4
		Eastbound (US Route 9W/Hillside Ave)	TR		0.57	7.9	A	64	104		0.33	7.8	A	29	56
Overall Intersection						7.7	A					7.4	A		
S Broadway & Cornelison Ave	STOP Controlled	Northbound (S Broadway)	T	-	0.06	0.0	A	-	0	-	0.10	0.0	A	-	0
		R			0.06	0.0	A	-	0		0.10	0.0	A	-	0
		Southbound (S Broadway)	L		0.03	0.3	A	-	3		0.08	0.6	A	-	6
		T			0.03	4.7	A	-	3		0.08	4.9	A	-	6
Overall Intersection		Westbound (Cornelison Ave)	L	-	0.15	9.6	A	-	13	-	0.12	10.0	B	-	10
		R			0.05	9.6	A	-	13		0.12	10.0	B	-	10
Overall Intersection						5.2	A					4.2	A		
Franklin St Extension & North US Route 9W Ramp to Franklin St Extension	STOP Controlled	Northbound (North US Route 9W Ramp)	L	-	-	-	-	-	-	-	-	-	-	-	-
		Eastbound (Franklin St Extension)	T		-	-	-	-	-		-	-	-	-	-
		Westbound (Franklin St Extension)	T		-	-	-	-	-		-	-	-	-	-
Overall Intersection						-	-					-	-		
NB/WB I-87/287 Interchange 10 Exit Ramp & US Route 9W/Hillside Ave	Signalized	Southbound (NB/WB I-87/287 Interchange 10 Exit Ramp)	TR	40	0.58	18.5	B	43	74	40	0.70	16.6	A	72	111
		Eastbound (US Route 9W/Hillside Ave)	T		0.55	2.3	A	8	11		0.36	2.5	B	5	8
Overall Intersection						7.1	A					10.8	B		

L: Left, R: Right, T: Through, TR: Shared Through/Right, LT: Shared Left/ Through, LTR: Shared Left/Through/Right

- NOTES:
- [1] Detailed capacity analyses were conducted at the key signalized and unsignalized intersections using Sychro 8 software, based on analytical procedures described in the Highway Capacity Manual (HCM).
- [2] Note: in seconds per vehicle
- [3] m indicates that the volume for the 95th percentile queue is metered by an upstream signal.
- [4] The queue exceeds the approach length and spills over into adjacent intersection/ramp.
- [5] The approach is above capacity and the queue length could be much longer. Blocking problems may occur.
- [6] The 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percent traffic volumes. Unsignalized intersections do not have a 50th percentile queue length.
- [7] The northbound and westbound approach are controlled by STOP signs. Synchro analysis does not provide results under these conditions.

Table 6-15
Year 2018 AM and PM DHV
S. Franklin Street at Clinton Avenue Warrant Analysis

Volume Summary										
Major Street Lanes 1			Minor Street Lanes 1		Speed		30	Population		10000+
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
06-07	0	0	0	No	No	No	No	No	No	No
07-08	261	407	694	No	No	No	No	Yes	No	No
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	480	213	712	No	Yes	No	No	No	No	No
17-18	0	0	0	No	No	No	No	No	No	No
Totals	741	620	1406	0	1	0	0	1	0	0

Table 6-16
Year 2028 AM and PM DHV
S. Franklin Street at Clinton Avenue Warrant Analysis

Volume Summary										
Major Street Lanes 1			Minor Street Lanes 1		Speed		30	Population		10000+
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
06-07	0	0	0	No	No	No	No	No	No	No
07-08	272	421	722	No	No	No	No	Yes	No	No
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	498	221	741	No	Yes	No	No	No	No	No
17-18	0	0	0	No	No	No	No	No	No	No
Totals	770	642	1463	0	1	0	0	1	0	0

Table 6-17
Year 2018 AM and PM DHV
US Route 9W (Hillside Avenue) at Franklin Street Extension Warrant Analysis

<i>Volume Summary</i>										
Major Street Lanes 2+			Minor Street Lanes 1		Speed		30	Population		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
06-07	0	0	0	No	No	No	No	No	No	No
07-08	510	527	1037	No	Yes	No	No	Yes	Yes	Yes
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	804	449	1253	Yes	Yes	No	Yes	Yes	Yes	Yes
17-18	0	0	0	No	No	No	No	No	No	No
Totals	1314	976	2290	1	2	0	1	2	2	2

Table 6-18
Year 2018 AM and PM DHV
US Route 9W (Hillside Avenue) at Franklin Street Extension Warrant Analysis

<i>Volume Summary</i>										
Major Street Lanes 2+			Minor Street Lanes 1		Speed		30	Population		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
06-07	0	0	0	No	No	No	No	No	No	No
07-08	530	545	1075	No	Yes	No	No	Yes	Yes	Yes
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	836	461	1297	Yes	Yes	No	Yes	Yes	Yes	Yes
17-18	0	0	0	No	No	No	No	No	No	No
Totals	1366	1006	2372	1	2	0	1	2	2	2

Table 6-19
Year 2018 AM DHV
US Route 9W Bridge over the Thruway Weaving Analysis

Outputs	
Using the criteria for <u>freeways</u> , the LOS is	D
Using the criteria for <u>Collector-Distributor (C-D) roads</u> , the LOS is	C
Using criteria estimated for airport roads, the LOS is	B
Average speed in weaving area (mph)	25.9

Table 6-20
Year 2018 PM DHV
US Route 9W Bridge over the Thruway Weaving Analysis

Outputs	
Using the criteria for <u>freeways</u> , the LOS is	B
Using the criteria for <u>Collector-Distributor (C-D) roads</u> , the LOS is	A
Using criteria estimated for airport roads, the LOS is	A
Average speed in weaving area (mph)	30.9

Table 6-21
Year 2028 AM DHV
US Route 9W Bridge over the Thruway Weaving Analysis

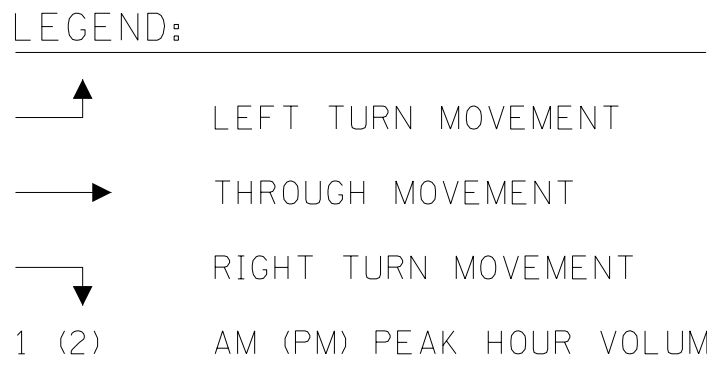
Outputs	
Using the criteria for <u>freeways</u> , the LOS is	D
Using the criteria for <u>Collector-Distributor (C-D) roads</u> , the LOS is	C
Using criteria estimated for airport roads, the LOS is	C
Average speed in weaving area (mph)	25.6

Table 6-22
Year 2028 PM DHV
US Route 9W Bridge over the Thruway Weaving Analysis

Outputs	
Using the criteria for <u>freeways</u> , the LOS is	B
Using the criteria for <u>Collector-Distributor (C-D) roads</u> , the LOS is	B
Using criteria estimated for airport roads, the LOS is	A
Average speed in weaving area (mph)	30.7

Traffic Information


Volume Diagrams



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NEW NY BRIDGE ROCKLAND COUNTY SHARED USE PATH CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED	CONTRACT NUMBER	
2015 UNBALANCED VOLUMES	232234-12	
	DRAWING NO. SHEET NO.	
NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8		

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DATE/TIME = DGN&SYTIME0123456
USER = DGN&USERNAME

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JOB MANAGER

DESIGNED BY

CHECKED BY

ESTIMATED BY

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LEGEND:

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT
- 1 (2) AM(PM) PEAK HOUR VOLUME



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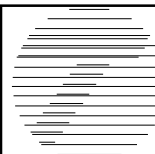
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2015 BALANCED VOLUMES

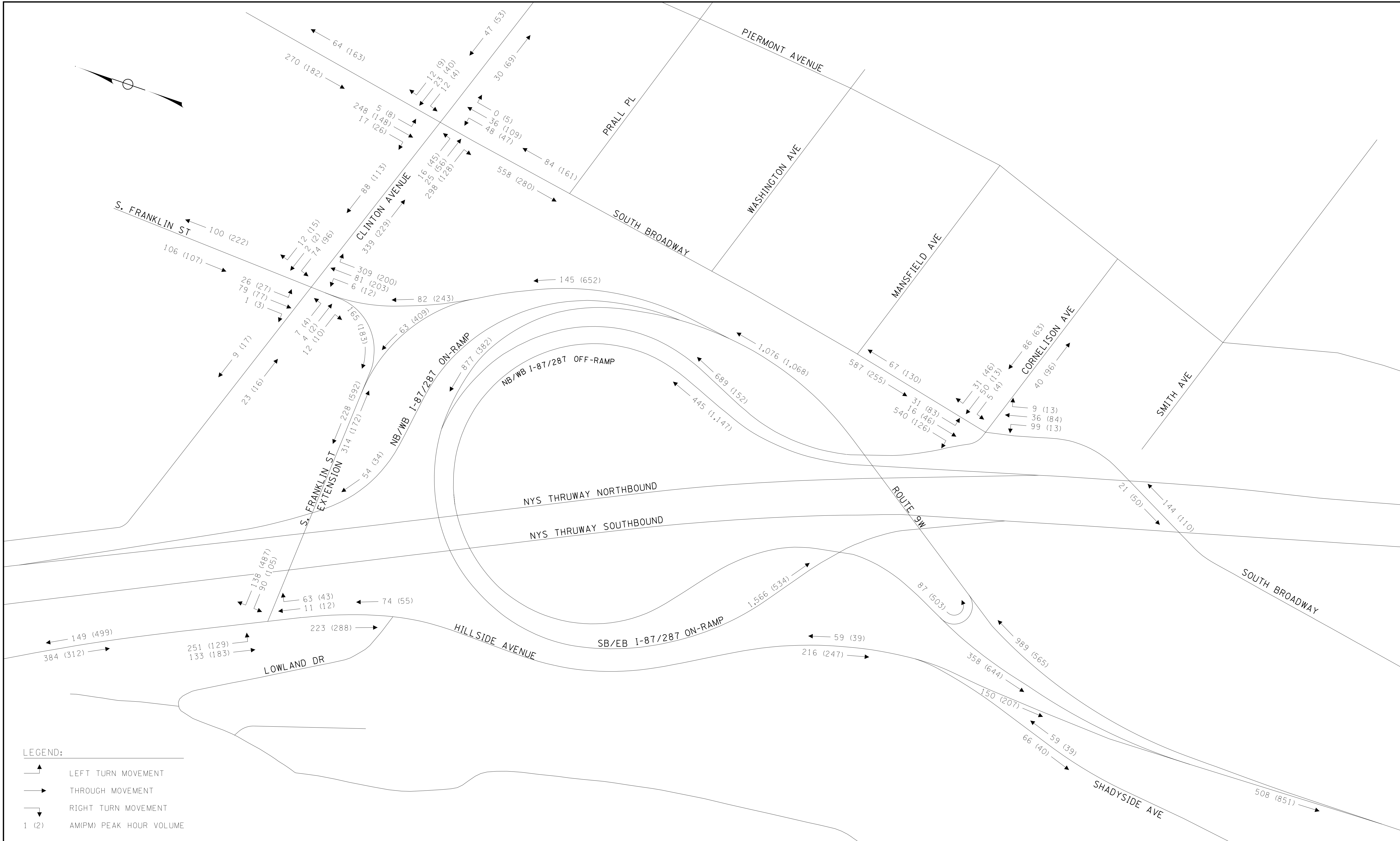
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LEGEND:

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- RIGHT TURN MOVEMENT
- 1 (2) AM (PM) PEAK HOUR VOLUME

NOTE:

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2018 BALANCED VOLUMES

CONTRACT NUMBER

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LEGEND:

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2018 VOLUMES

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LEGEND:

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- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT
- 1 (2) AM (PM) PEAK HOUR VOLUME
- PARKING ACCESS
- CRITICAL DIVERSION VOLUMES

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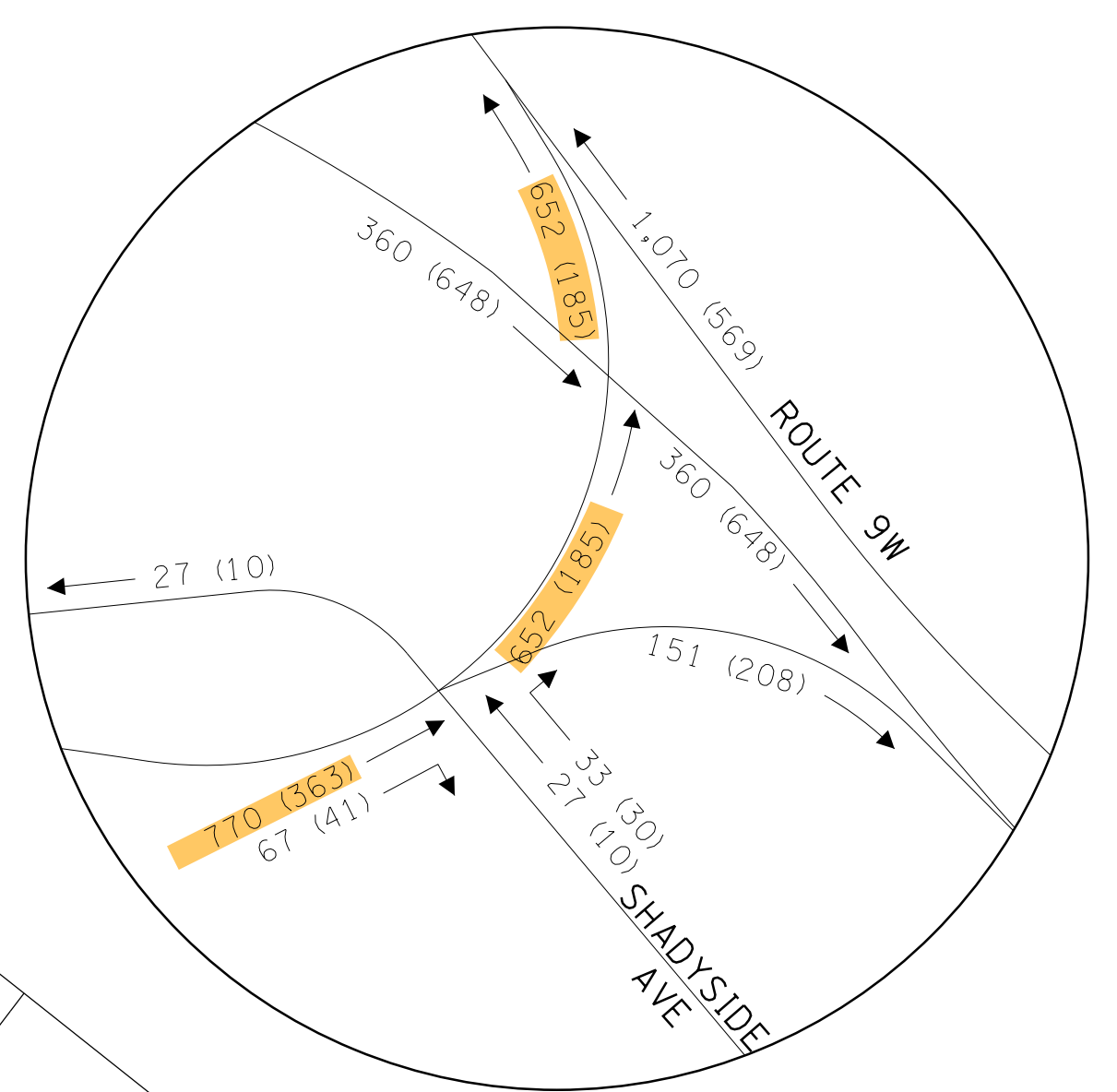
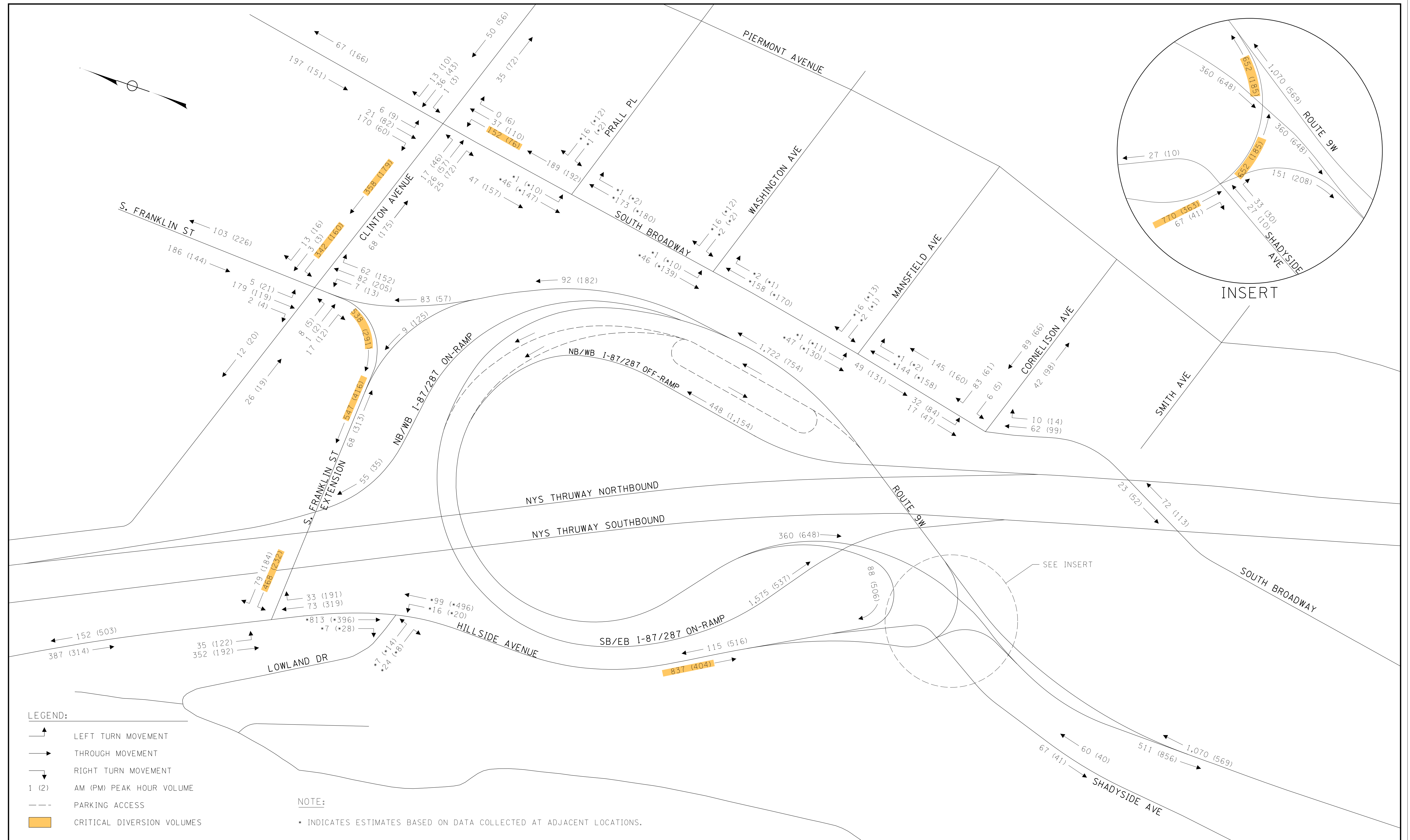
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LEGEND:



LEFT TURN MOVEMENT



THROUGH MOVEMENT



RIGHT TURN MOVEMENT

1 (2)

AM (PM) PEAK HOUR VOLUME

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- RIGHT TURN MOVEMENT
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2028 VOLUMES

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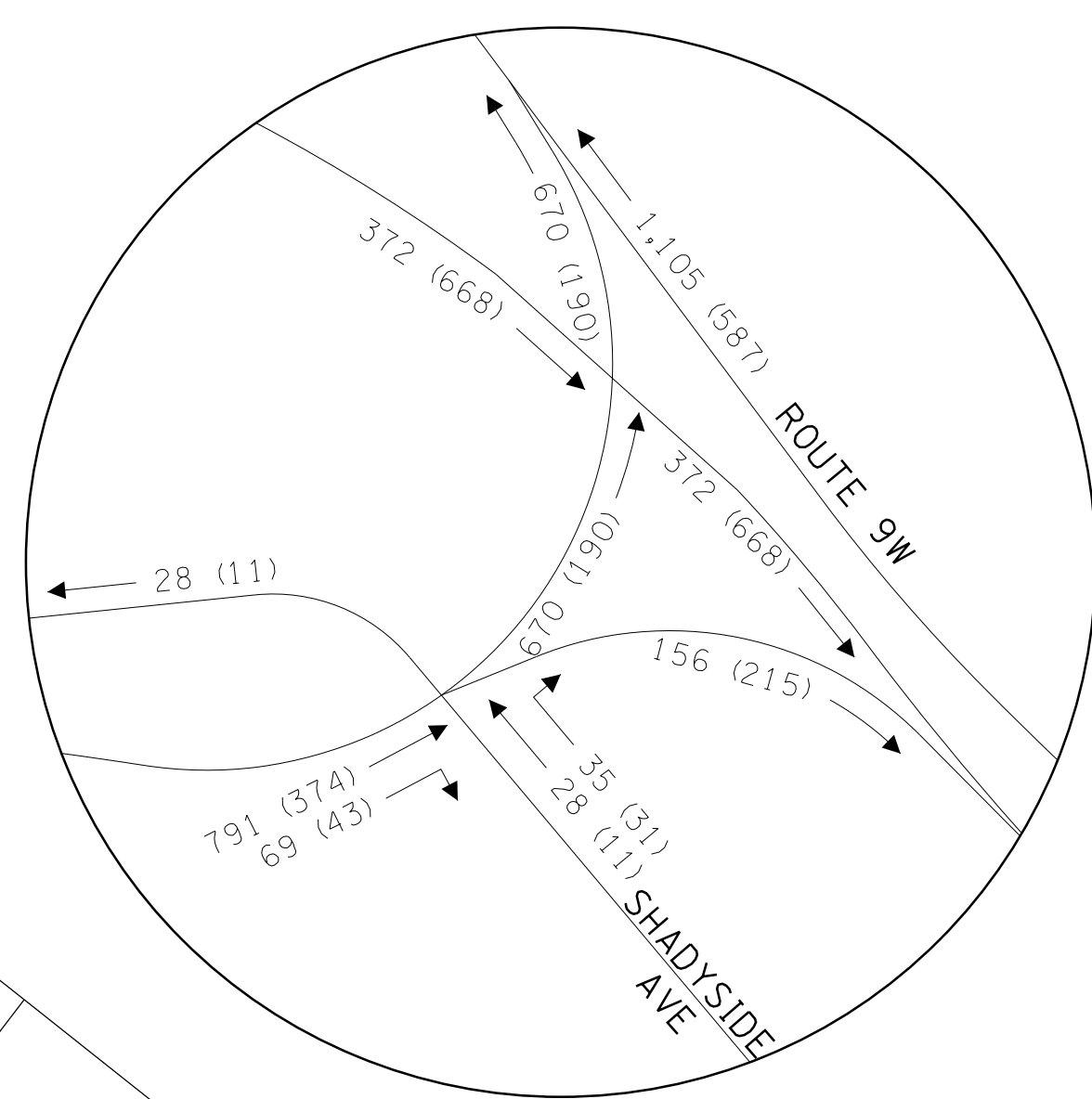
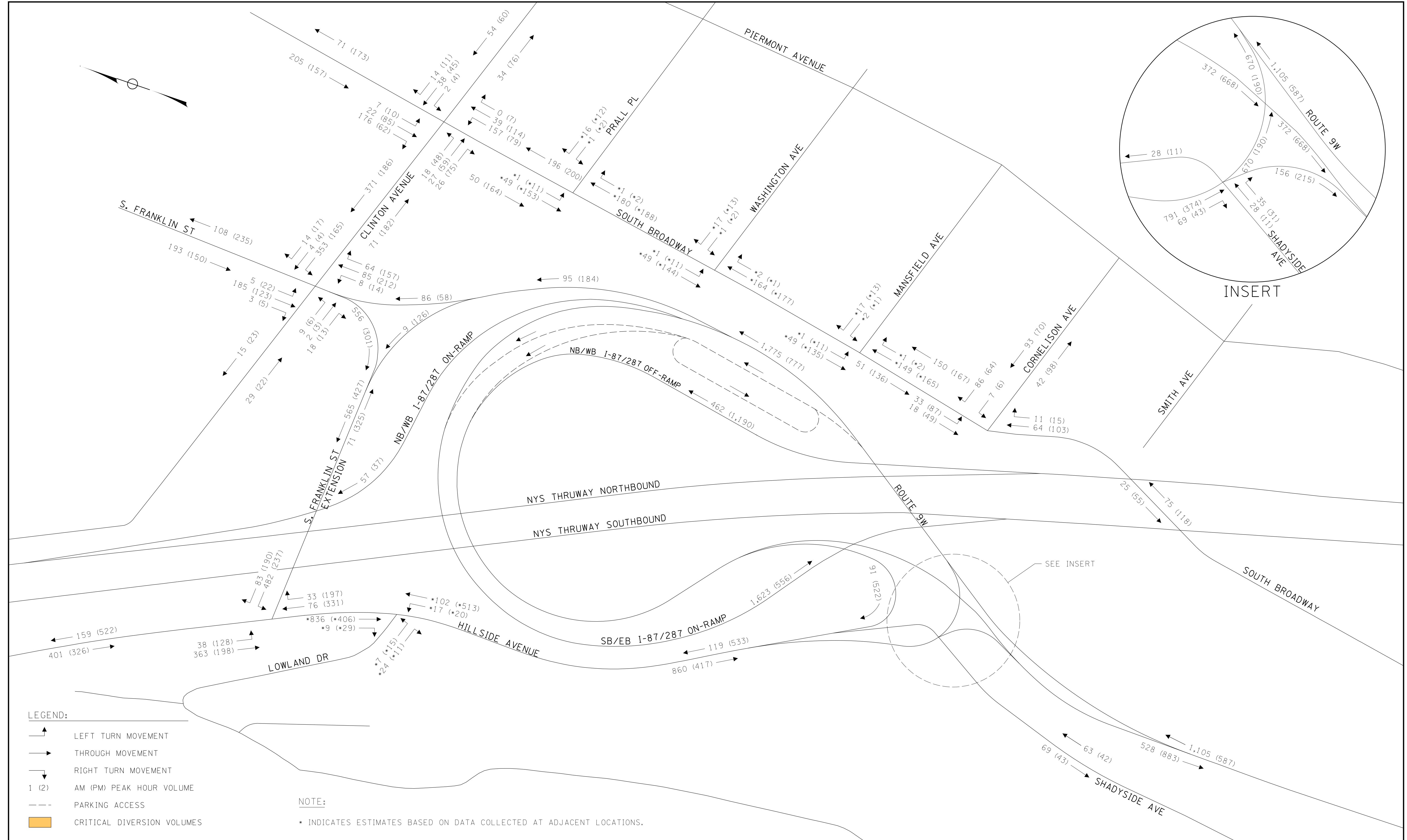
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2028 VOLUMES

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INSERT

SEE INSERT

Traffic Information

Alternative F
Traffic Diversion Patterns

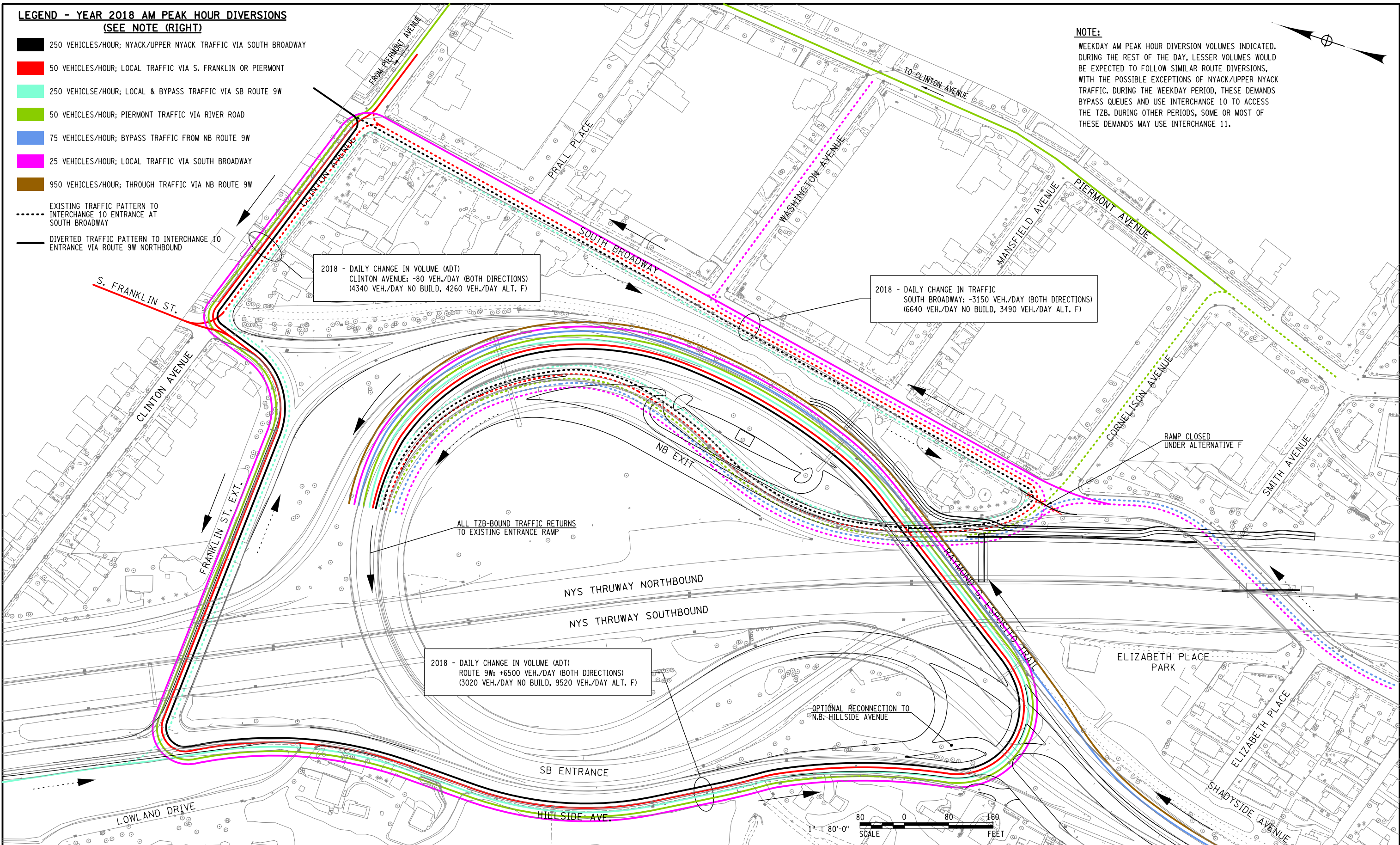
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LEGEND - YEAR 2018 AM PEAK HOUR DIVERSIONS
(SEE NOTE (RIGHT))

- 250 VEHICLES/HOUR; NYACK/UPPER NYACK TRAFFIC VIA SOUTH BROADWAY
- 50 VEHICLES/HOUR; LOCAL TRAFFIC VIA S. FRANKLIN OR PIERMONT
- 250 VEHICLES/HOUR; LOCAL & BYPASS TRAFFIC VIA SB ROUTE 9W
- 50 VEHICLES/HOUR; PIERMONT TRAFFIC VIA RIVER ROAD
- 75 VEHICLES/HOUR; BYPASS TRAFFIC FROM NB ROUTE 9W
- 25 VEHICLES/HOUR; LOCAL TRAFFIC VIA SOUTH BROADWAY
- 950 VEHICLES/HOUR; THROUGH TRAFFIC VIA NB ROUTE 9W
- EXISTING TRAFFIC PATTERN TO INTERCHANGE 10 ENTRANCE AT SOUTH BROADWAY
- DIVERTED TRAFFIC PATTERN TO INTERCHANGE 10 ENTRANCE VIA ROUTE 9W NORTHBOUND

NOTE:
WEEKDAY AM PEAK HOUR DIVERSION VOLUMES INDICATED. DURING THE REST OF THE DAY, LESSER VOLUMES WOULD BE EXPECTED TO FOLLOW SIMILAR ROUTE DIVERSIONS, WITH THE POSSIBLE EXCEPTIONS OF NYACK/UPPER NYACK TRAFFIC. DURING THE WEEKDAY PERIOD, THESE DEMANDS BYPASS QUEUES AND USE INTERCHANGE 10 TO ACCESS THE TZB. DURING OTHER PERIODS, SOME OR MOST OF THESE DEMANDS MAY USE INTERCHANGE 11.



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TRAFFIC DIVERSION PATTERNS

CONTRACT NUMBER

232234-12

DRAWING NO.

SHEET NO. 1 of 1

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

Traffic Information

Crash Data

Intersecton Accident Data Summary

Clinton Avenue / South Broadway

DOT Case No.	Date	Time	Location		No. of Vehicles	No. Injured	No. Killed	Accident Type
			Road on which Accident Occurred	Intersecting Street				
34569302	12/6/2012	13:35	Clinton Avenue	South Broadway	2	0	0	Rear-End
34788964	5/28/2013	13:45	Clinton Avenue	South Broadway	2	0	0	Rear-End
35707124	4/30/2015	15:30	South Broadway	Clinton Avenue	2	0	0	Right-Angle

Clinton Avenue / South Franklin Street

DOT Case No.	Date	Time	Location		No. of Vehicles	No. Injured	No. Killed	Accident Type
			Road on which Accident Occurred	Intersecting Street				
34583681	12/24/2012	18:00	South Franklin Street	Clinton Avenue	2	1	0	Bicycle
34688993	3/9/2013	19:30	Franklin Street	Clinton Avenue	2	0	0	Right-Angle
35693772	3/31/2015	8:30	South Franklin Street	Clinton Avenue	2	0	0	Right-Turn

South Broadway / Cornelison Avenue

DOT Case No.	Date	Time	Location		No. of Vehicles	No. Injured	No. Killed	Accident Type
			Road on which Accident Occurred	Intersecting Street				
34754970	4/29/2013	9:00	South Broadway	Cornelison Avenue	2	0	0	Right-Angle

Route 9W / Shadyside Avenue

DOT Case No.	Date	Time	Location		No. of Vehicles	No. Injured	No. Killed	Accident Type
			Road on which Accident Occurred	Intersecting Street				
34310928	5/22/2012	17:00	Route 9W	Shadyside Avenue	2	2	0	Rear-End
34712556	3/28/2013	14:15	Route 9W	Shadyside Avenue	2	1	0	Rear-End
34937274	9/24/2013	17:14	Route 9W	Shadyside Avenue	2	1	0	Rear-End

South Broadway / Washington Avenue

DOT Case No.	Date	Time	Location		No. of Vehicles	No. Injured	No. Killed	Accident Type
			Road on which Accident Occurred	Intersecting Street				
34376167	7/23/2012	16:05	South Broadway	Washington Avenue	2	0	0	Over-taking

South Broadway / Mansfield Avenue

DOT Case No.	Date	Time	Location		No. of Vehicles	No. Injured	No. Killed	Accident Type
			Road on which Accident Occurred	Intersecting Street				
34556920	12/5/2012	10:45	South Broadway	Mansfield Avenue	2	1	0	Head-On

Collision Summary - All Types				
Intersection	Total No. of Accidents*	AADT (Entering Vehicles)	Accident Rate	State Average
Clinton Avenue / South Broadway	3	7,400	0.37	0.47
Clinton Avenue / South Franklin Street	3	6,510	0.32	0.14
South Broadway / Cornelison Avenue	1	8,170	0.08	0.14
Route 9W / Shadyside Avenue	3	3,270	0.63	0.15
South Broadway / Washington Avenue	1	6,710	0.10	0.16
South Broadway /Mansfield Avenue	1	6,710	0.10	0.16

* Number of Accidents per three (3) year period (July 2012 - June 2015)

Collision Summary					
Clinton Avenue / South Broadway					
Type of Collision	Number*	Percentage	AADT (Entering Vehicles)	Accident Rate	State Average
Rear-End	2	75	13,800	0.25	1.91
Right-Angle	1	25	13,800	0.12	0.35
Clinton Avenue / South Franklin Street					
Type of Collision	Number*	Percentage	AADT (Entering Vehicles)	Accident Rate	State Average
Bicycle	1	33	6,510	0.11	n/a
Right-Angle	1	33	6,510	0.11	0.03
Right-Turn	1	33	6,510	0.11	0.00
South Broadway / Cornelison Avenue					
Type of Collision	Number*	Percentage	AADT (Entering Vehicles)	Accident Rate	State Average
Right-Angle	1	100	8,170	0.08	0.03
Route 9W / Shadyside Avenue					
Type of Collision	Number*	Percentage	AADT (Entering Vehicles)	Accident Rate	State Average
Rear-End	3	100	3,270	0.63	0.05
South Broadway / Washington Avenue					
Type of Collision	Number*	Percentage	AADT (Entering Vehicles)	Accident Rate	State Average
Over-Taking	1	100	6,710	0.10	0.01
South Broadway / Mansfield Avenue					
Type of Collision	Number*	Percentage	AADT (Entering Vehicles)	Accident Rate	State Average
Head-On	1	100	6,710	0.10	0.00

* Number of Accidents per three (3) year period (July 2012 - June 2015)

Interchange 10 Accident Data Summary

Exit Ramp - One Way

Accident Number	Date	Time	Direction	No. of Vehicles	No. of Injuries	No. Killed	Accident Type
NY12-0136	1/13/2012	7:27	North	2	0	0	Side-Swipe
NY12-1427	5/14/2012	17:42	North	1	0	0	Fixed Object
NY13-1108	4/10/2013	12:00	South	2	0	0	Rear-End
NY13-3432	10/12/2013	20:09	North	2	0	0	Side-Swipe
NY13-3986	11/22/2013	10:44	South	1	0	0	Fixed Object
NY13-4107	11/29/2013	22:31	North	1	0	0	Fixed Object
NY13-4553	12/25/2013	18:25	North	2	0	0	Side-Swipe
NY14-0285	1/21/2014	10:42	South	1	0	0	Fixed Object
NY14-0376	1/27/2014	8:05	South	2	0	0	Rear-End
NY14-1336	4/16/2014	19:29	North	2	0	0	Side-Swipe
NY14-2381	7/3/2014	15:33	North	2	0	0	Rear-End
NY14-3009	8/19/2014	8:30	North	1	0	0	Fixed Object
NY14-4469	11/27/2014	5:23	East	1	0	0	Fixed Object
NY14-4508	11/29/2014	11:40	South	2	0	0	Rear-End

Entry Ramp - One Way

Accident Number	Date	Time	Direction	No. of Vehicles	No. of Injuries	No. Killed	Accident Type
NY12-2536	8/7/2012	22:59	South	1	0	0	Fixed Object
NY12-3232	10/3/2012	6:57	South	1	0	0	Fixed Object
NY13-2192	7/8/2013	10:30	South	2	2	0	Side-Swipe
NY13-2354	7/19/2013	11:14	South	2	0	0	Side-Swipe
NY13-3033	9/10/2013	8:30	South	2	0	0	Side-Swipe
NY13-3211	9/25/2013	Unknown	South	2	2	0	Rear-End
NY13-3487	10/16/2013	7:05	South	2	0	0	Rear-End
NY13-3590	10/24/2013	7:49	South	2	0	0	Side-Swipe
NY14-0154	1/10/2014	22:13	South	1	0	0	Fixed Object
NY14-0195	1/15/2014	4:37	South	1	1	0	Fixed Object
NY14-0401	1/29/2014	7:17	South	1	0	0	Fixed Object

Local Road Intersection

Accident Number	Date	Time	Direction	No. of Vehicles	No. of Injuries	No. Killed	Accident Type
NY12-1747	6/9/2012	12:05	North	2	0	0	Rear-End
NY12-1867	6/18/2012	18:08	North	2	0	0	Rear-End
NY13-3285 ^[1]	9/30/2013	Unknown	West	2	Unknown	Unknown	Rear-End

* Number of Accidents per three (3) year period (2012 - 2014)

[1] Accident was not included in crash rate analysis since it occurred at a signalized intersection

Interchange 10 Collision Summary		
Exit Ramp - One Way		
Type of Collision	Number*	Percentage
Rear-End	4	29
Side-Swipe	4	29
Fixed Object	6	42
Entry Ramp - One Way		
Type of Collision	Number	Percentage
Rear-End	2	18
Side-Swipe	4	36
Fixed Object	5	46
Local Road Intersection		
Type of Collision	Number	Percentage
Rear-End	2	100

* Number of Accidents per three (3) year period (2012 - 2014)

Interchange 10 Crash Rate Summary

Type of Collision	Number*	AADT	Accident Rate	State Average
All Types	27	13,800	1.79	1.91
Fixed Object	11	13,800	0.73	0.35

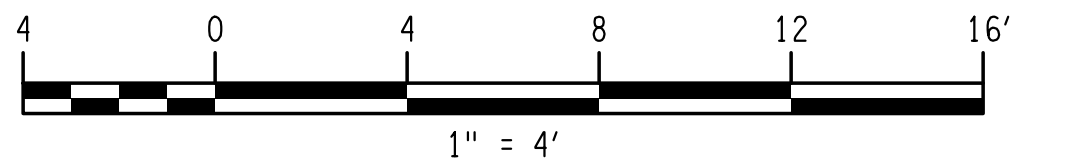
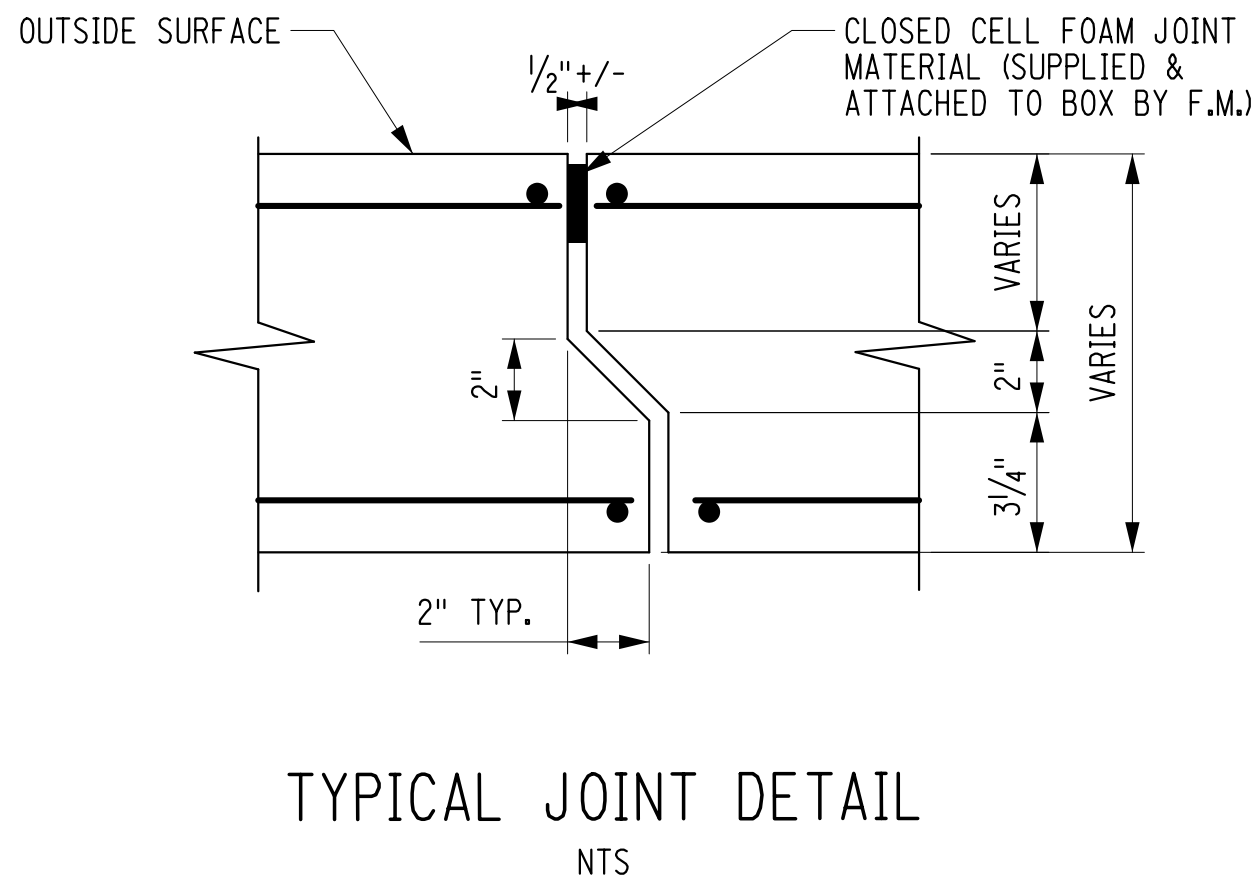
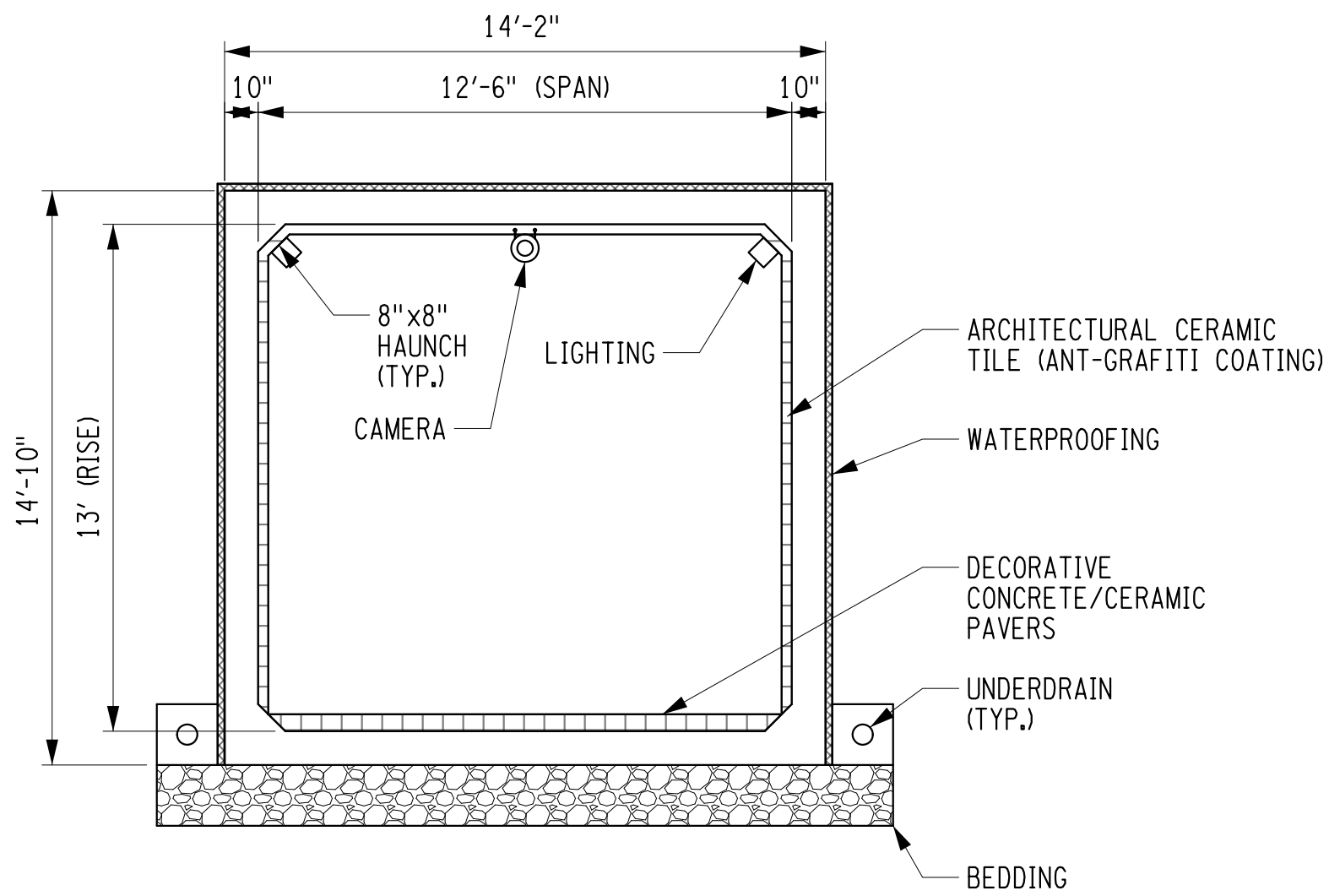
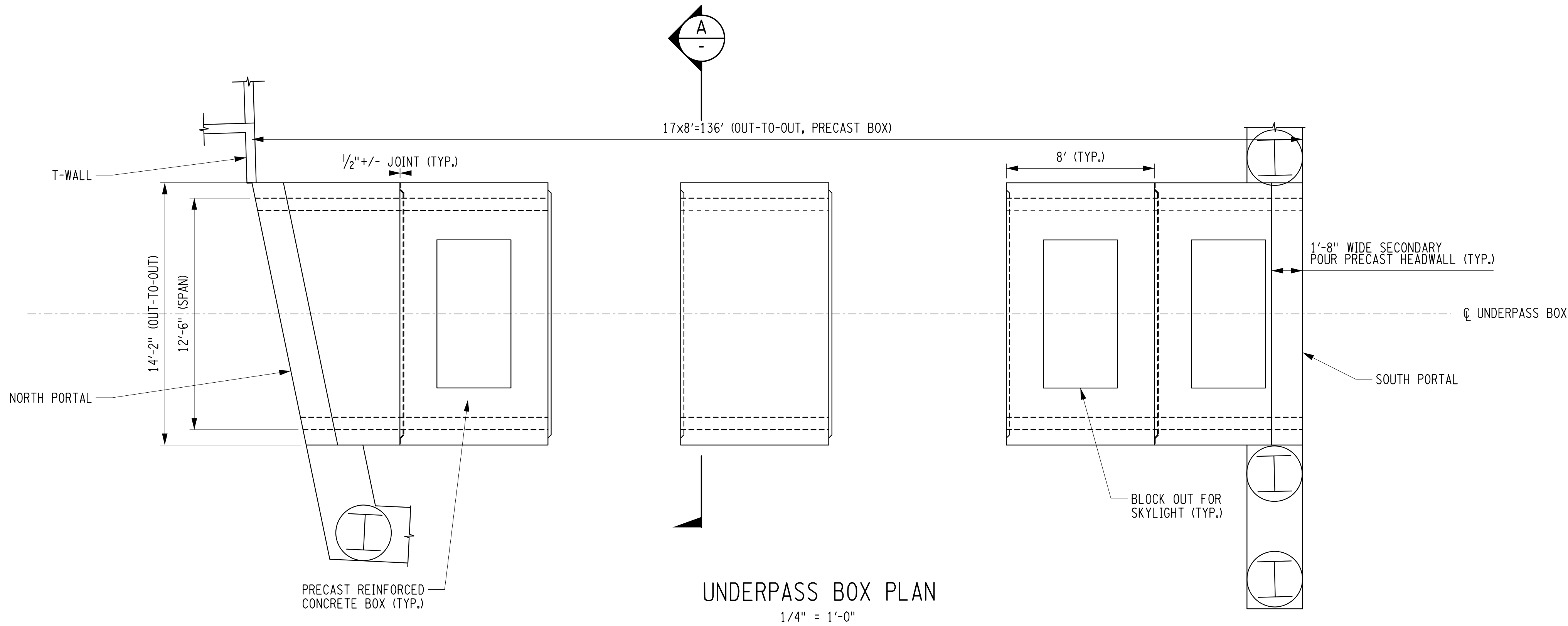
* Number of Accidents per three (3) year period (2012 - 2014)

Appendix 3

MPT Information

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USER = jody.vukas

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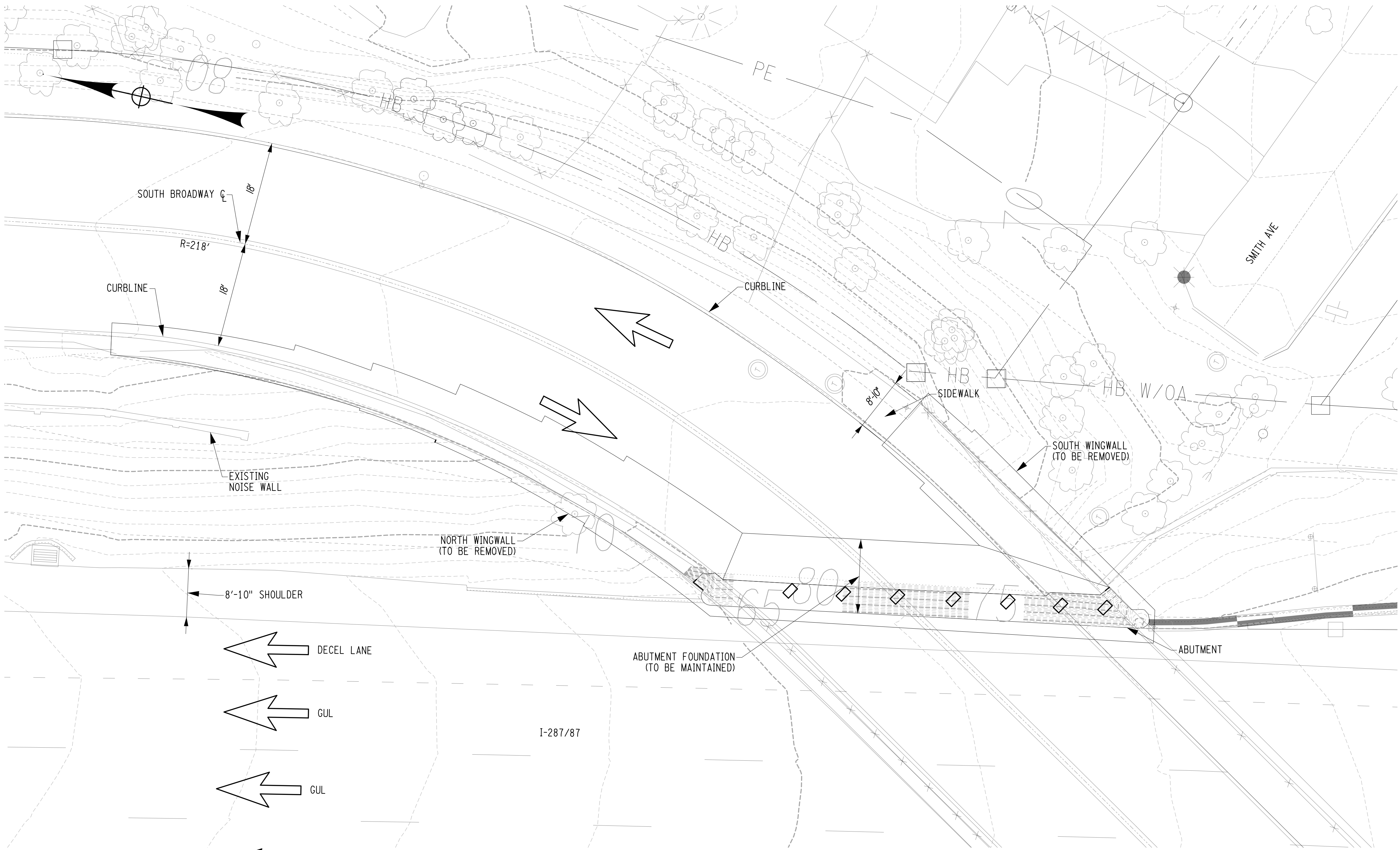


PRELIMINARY

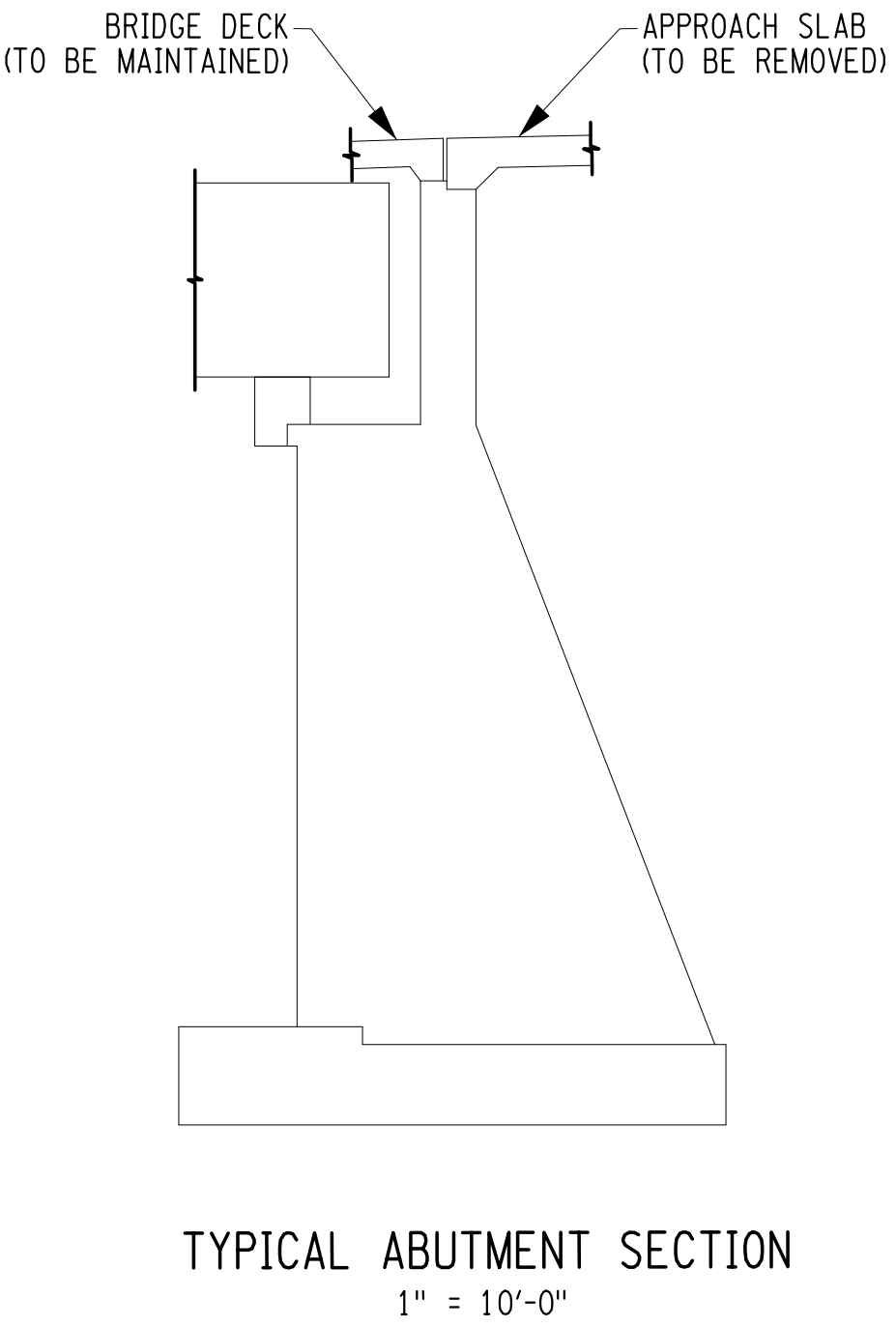
	ARUP Arup USA, Inc. 77 Water Street New York, NY 10005 Tel (212) 896 3000 www.arup.com	 Thruway Authority NEW YORK STATE THRUWAY AUTHORITY DEPARTMENT OF ENGINEERING 200 SOUTHERN BLVD., ALBANY, N.Y. 12209	NEW NY BRIDGE ROCKLAND COUNTY SHARED USE PATH CONNECTION ALTERNATIVES	DOCUMENT STATUS:	REV	DATE	DESCRIPTION	BY	ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED		CONTRACT NUMBER	
									UNDERPASS DETAILS		232234-12	
									DRAWING NO. SK-022 SHEET NO. 22 OF 25			
									NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8			

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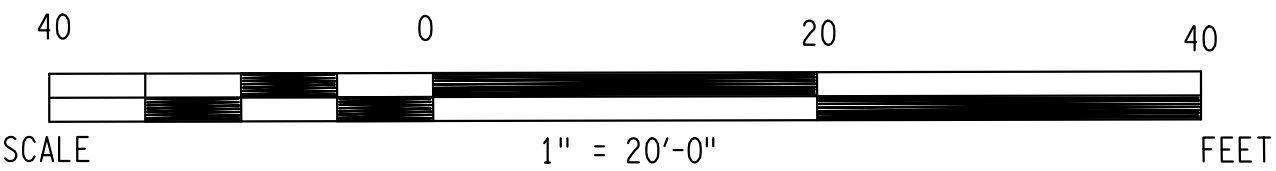


PLAN VIEW
1" = 20'-0"



TYPICAL ABUTMENT SECTION
1" = 10'-0"

PRELIMINARY



ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED		CONTRACT NUMBER	
STAGING PLAN - EXISTING CONDITIONS UNDERPASS		232234-12	
		DRAWING NO. SK-023	NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8
		SHEET NO. 23 OF 25	

ARUP

Arup USA, Inc.
77 Water Street
New York, NY 10005
Tel (212) 896 3000
www.arup.com



**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

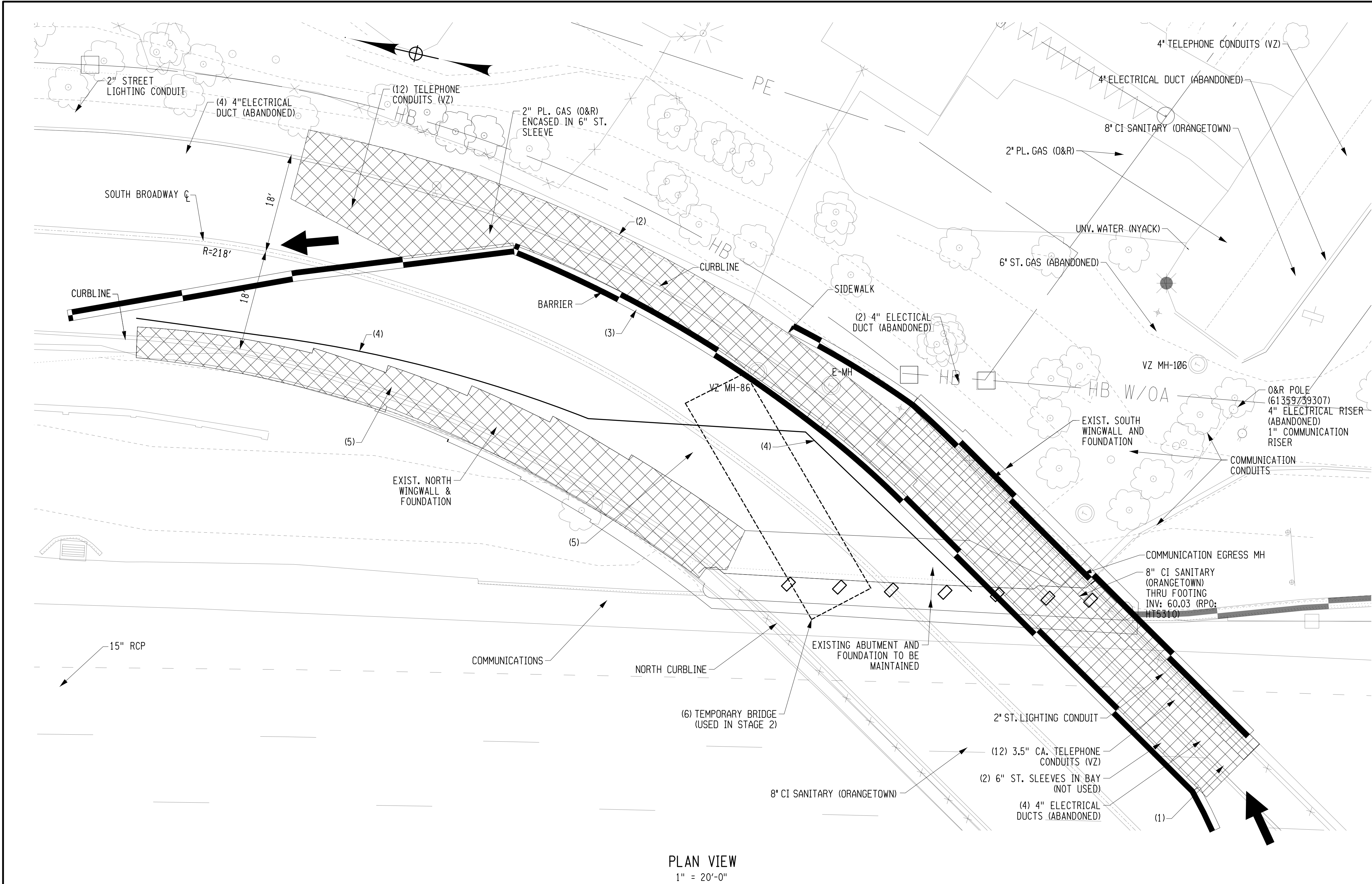
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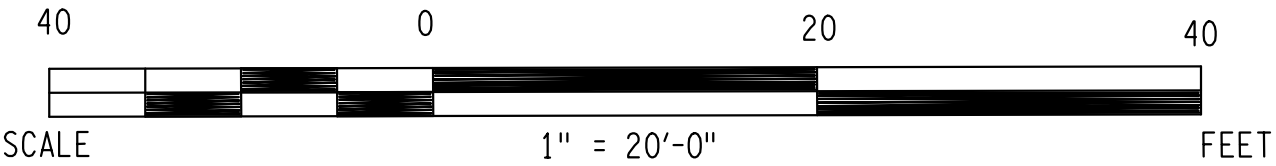
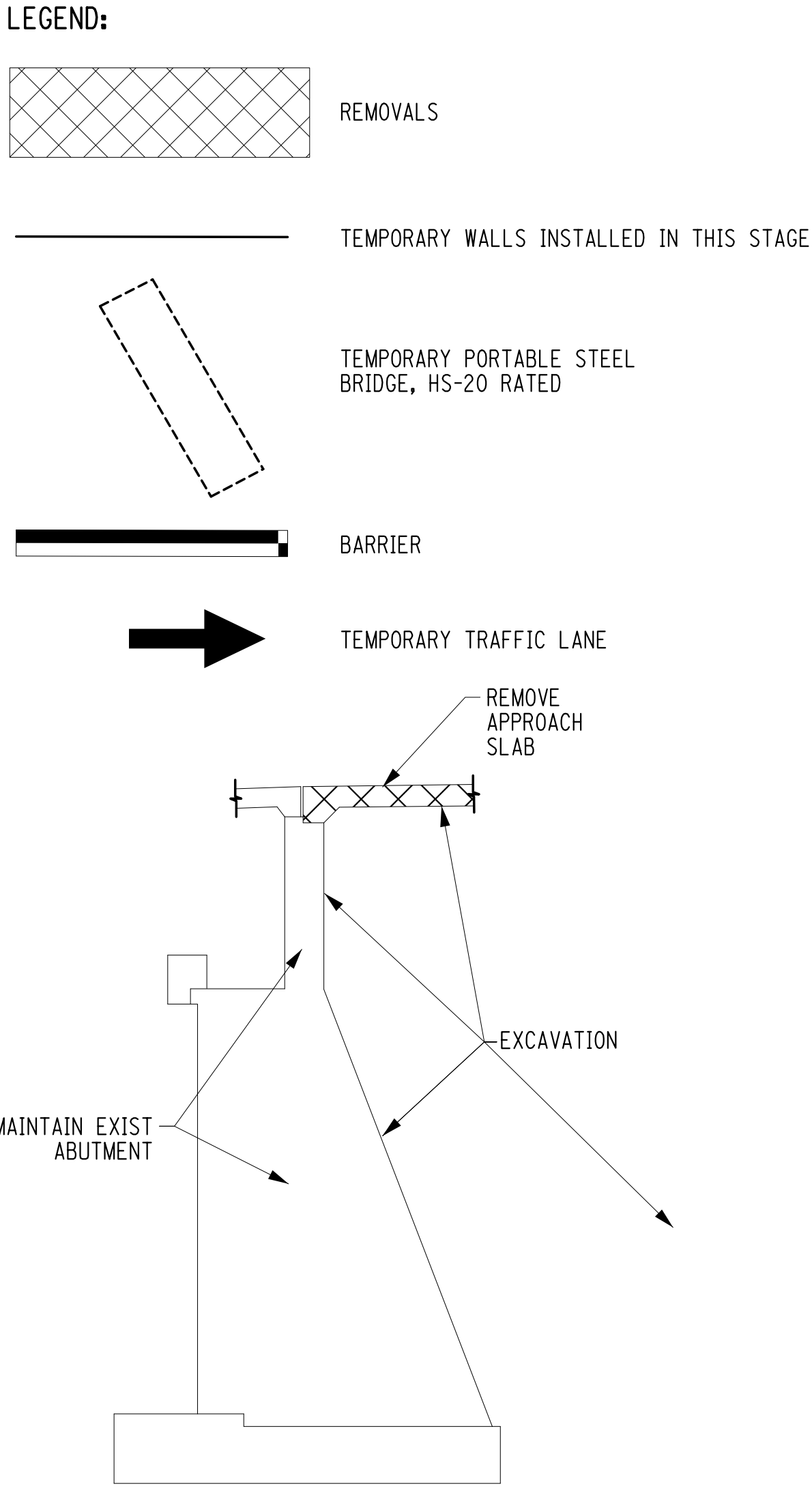
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USER = jody.vukas
DESIGN SUPERVISOR


JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



- STAGE 1 CONSTRUCTION:
1. TEMPORARILY RELOCATE ELECTRICAL AND TELEPHONE DUCTS LOCATED IN SIDEWALK.
 2. REMOVE SIDEWALK AND CURB AND PAVEMENT AND PREPARE FOR VEHICULAR TRAVEL.
 3. PLACE TRAFFIC BARRIER AND IMPLEMENT MPT FOR SINGLE LANE TRAFFIC.
 4. INSTALL TEMPORARY WALLS.
 5. REMOVE NORTH WINGWALL AND APPROACH SLAB AND EXCAVATE.
 6. INSTALL PORTABLE TEMPORARY BRIDGE.

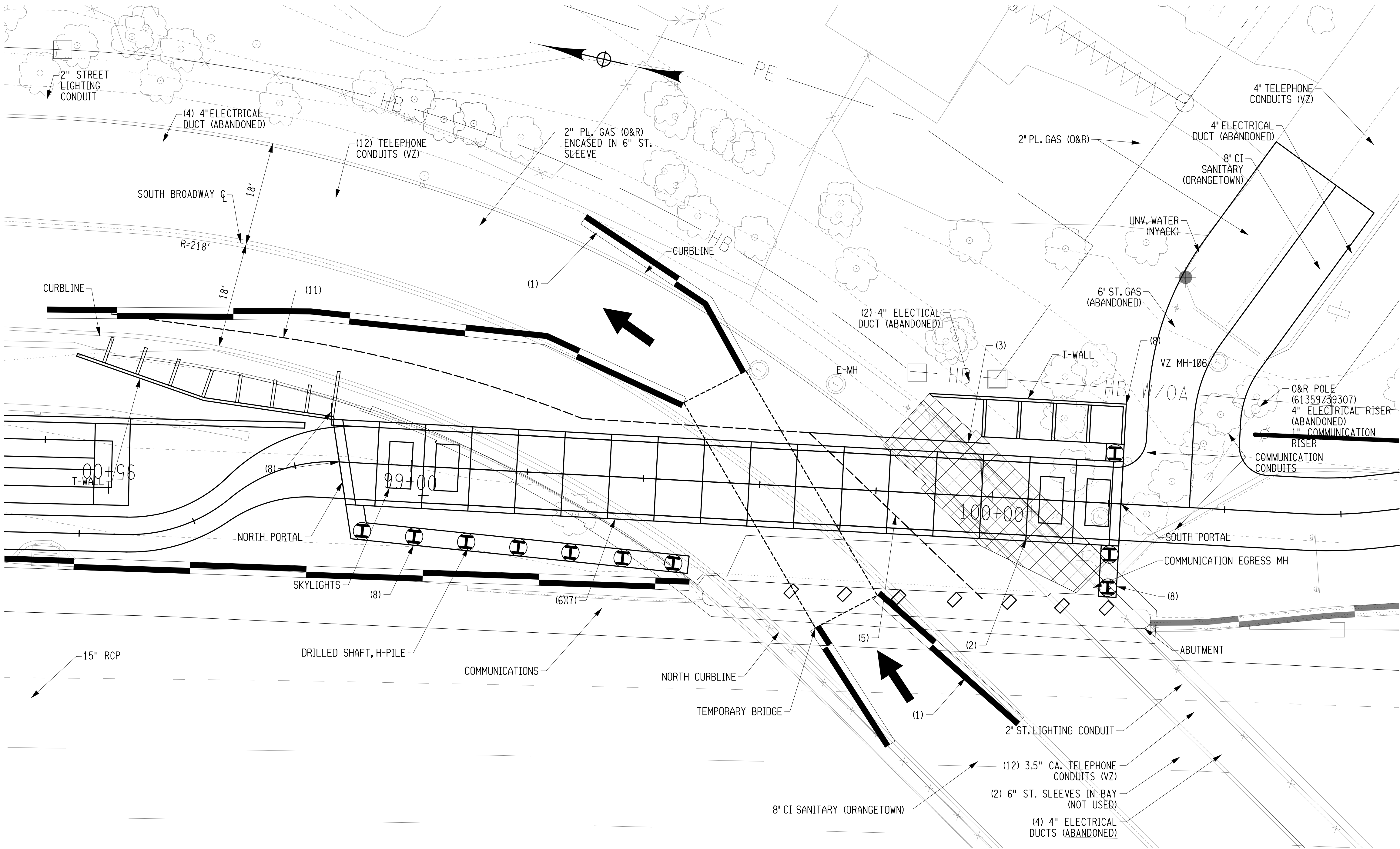


PRELIMINARY

					ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED		CONTRACT NUMBER	
					STAGE 1 - CONSTRUCTION STAGING UNDERPASS		232234-12	
							DRAWING NO. SK-024 SHEET NO. 24 OF 25	
					DOCUMENT STATUS:		DATE:	

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DESIGN SUPERVISOR

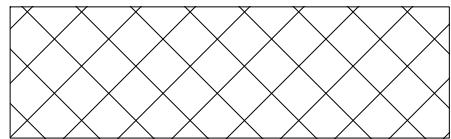
JOB MANAGER
DESIGNED BY
CHECKED BY
ESTIMATED BY
DRAFTED BY
CHECKED BY



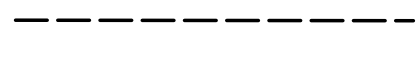
NOTE: CONCEPT E SHOWN AS INDICATIVE. STAGING PLAN IS APPLICABLE FOR BOTH CONCEPT E AND CONCEPT F.

PLAN VIEW
1" = 20'-0"

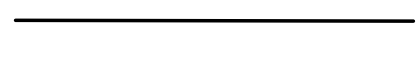
LEGEND:



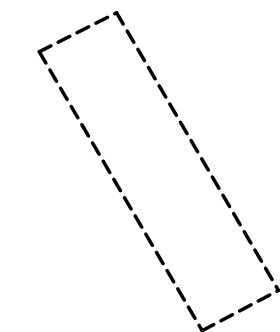
REMOVALS



TEMPORARY WALLS INSTALLED IN PREVIOUS STAGE



TEMPORARY WALLS INSTALLED IN THIS STAGE



TEMPORARY PORTABLE STEEL BRIDGE, HS-20 RATED

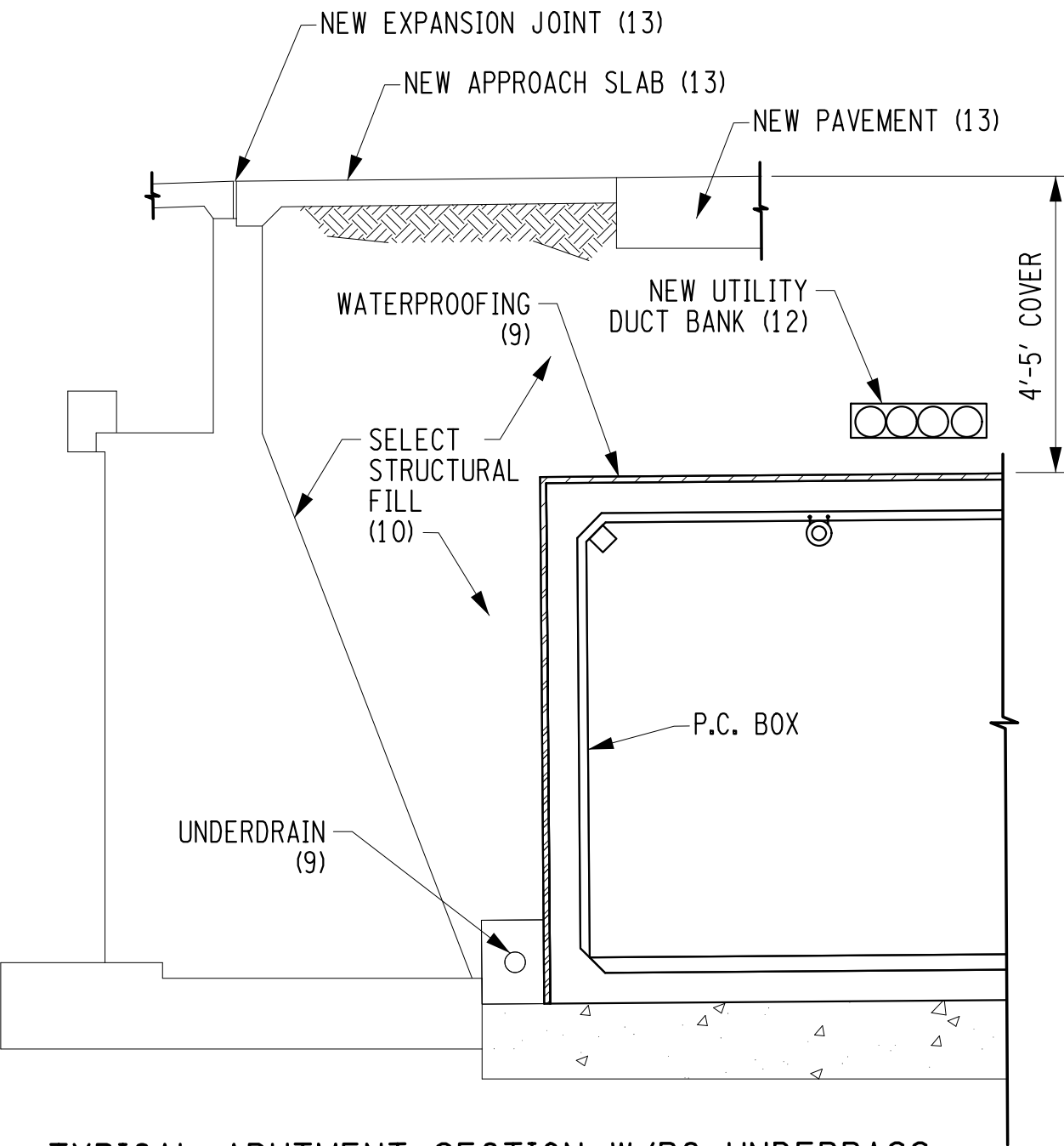


BARRIER

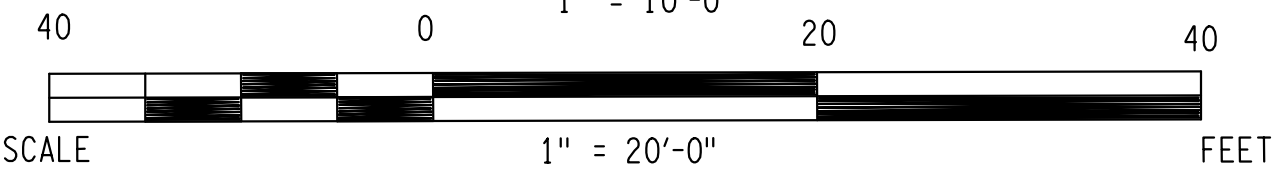
PRELIMINARY

STAGE 2 CONSTRUCTION:

1. PLACE TRAFFIC BARRIERS AND IMPLEMENT MPT FOR SINGLE LANE ON TEMPORARY BRIDGE AND SHIFT TRAFFIC TO TEMPORARY BRIDGE.
2. PROVIDE SUPPORT FOR GAS MAINS.
3. INSTALL TEMPORARY WALLS.
4. REMOVE SOUTH WINGWALL AND EXCAVATE.
5. REMOVE PORTION OF TEMPORARY WALLS.
6. PREPARE SUBGRADE FOR PRECAST BOX.
7. INSTALL PRECAST BOX (ADJUST PORTABLE TEMPORARY BRIDGE AS NEEDED)
8. CONSTRUCT NEW WINGWALLS AND PORTAL HEADWALLS.
9. CONSTRUCT UNDERDRAINS AND WATERPROOFING.
10. BACKFILL
11. CUT TOP 2' OF ALL REMAINING TEMPORARY WALLS.
12. CONSTRUCT NEW UTILITY DUCT BANK, GAS MAINS.
13. INSTALL NEW APPROACH SLAB, BRIDGE JOINT, SIDEWALK ON GRADE, ASPHALT PAVEMENT.
14. RECONSTRUCT SIDEWALK CURB AND PAVEMENT ON BRIDGE.
15. REMOVE TEMPORARY BRIDGE AND MPT.



TYPICAL ABUTMENT SECTION W/PC UNDERPASS



ARUP

Arup USA, Inc.
77 Water Street
New York, NY 10005
Tel (212) 896 3000
www.arup.com



**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION ALTERNATIVES

DOCUMENT STATUS:

REV

DATE

DESCRIPTION

BY

DATE:

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

STAGE 2 - CONSTRUCTION STAGING
UNDERPASS

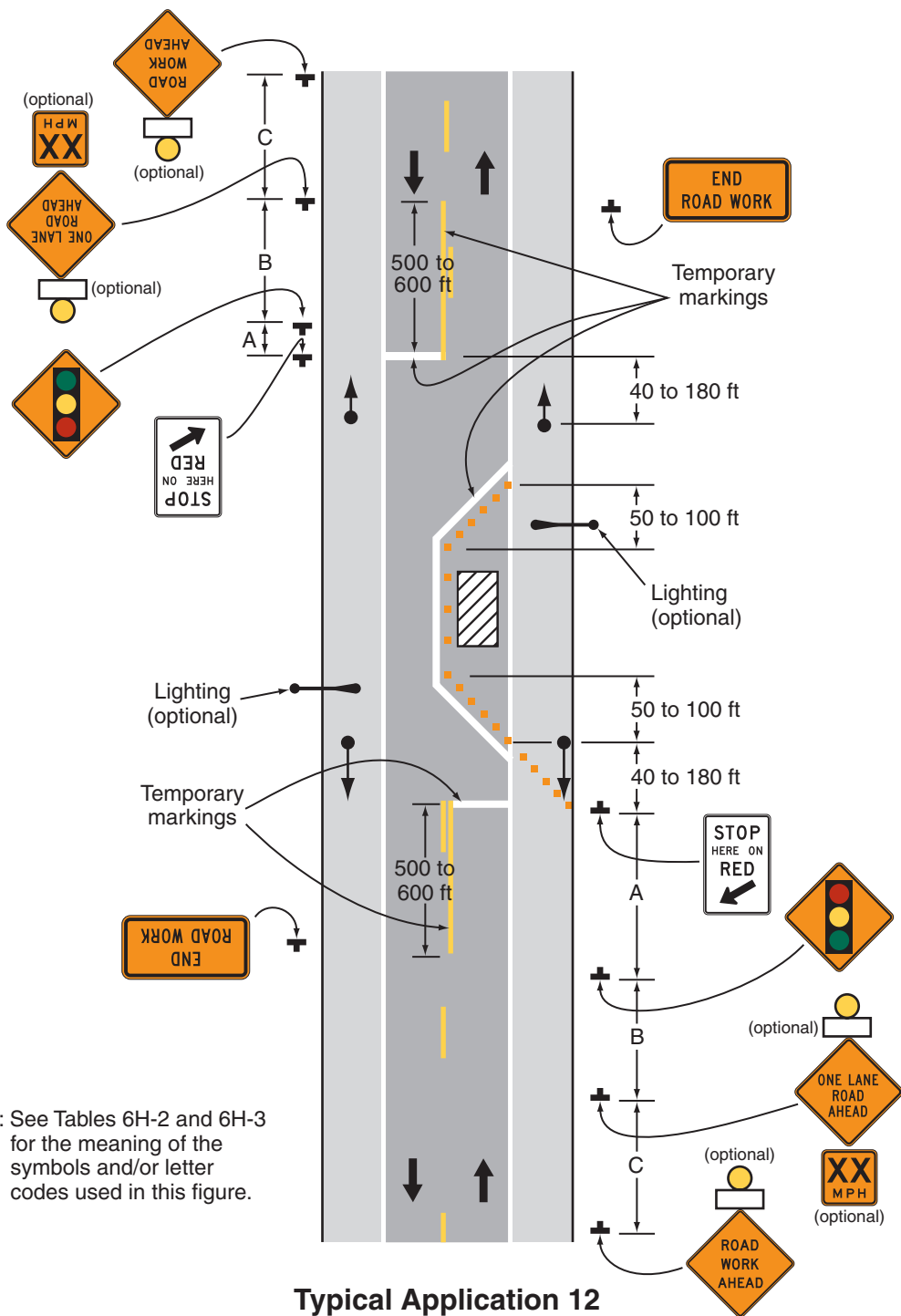
CONTRACT NUMBER

232234-12

DRAWING NO. SK-025
SHEET NO. 25 OF 25

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8

Figure 6H-12. Lane Closure on a Two-Lane Road Using Traffic Control Signals (TA-12)



Typical Application 12

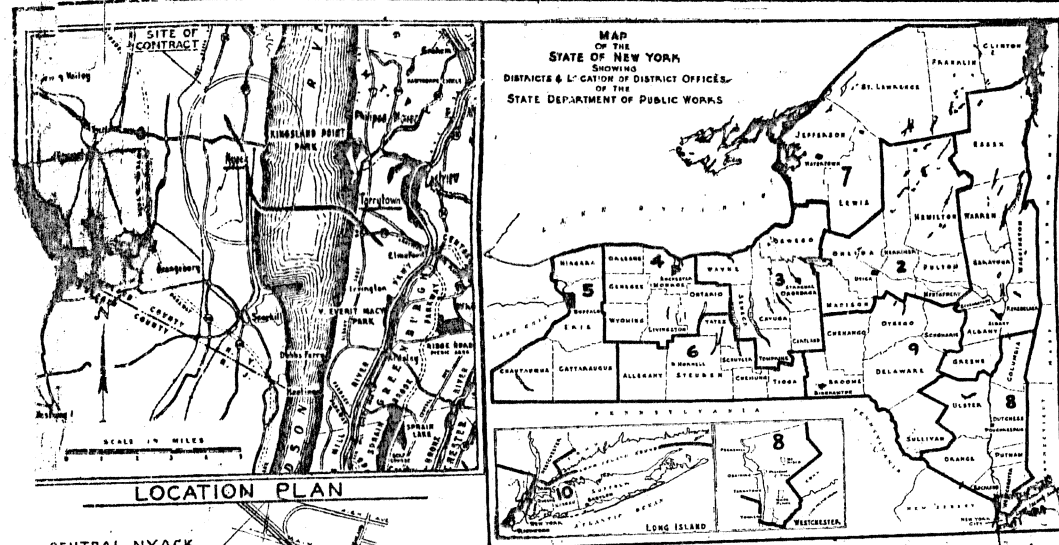
Appendix 4

Pavement Information

LOCATION/IDENTIFICATION				PHYSICAL CHARACTERISTICS								TRAFFIC		CONDITION INFORMATION						WORK														
Route	No	Qualifier	Cnty Name	Reg/Cnty	Primary	Reverse	BMP	End Reference Marker	SH No.	Segment	Total Lanes	Roadways	Paved Shldr Width	Roadside Type	Pvmt Width	Pvmt Type	Subbase	Funct Class	AADT	% Trucks	V/C Ratio	Rating				IRI (in/mi)	Rut (in)	Avg Bump Height (in)	No. Bumps	Dominant Distress	PCI	Yr Last Crack Seal	Yr Last Work	
																						2010	2011	2012	2014									
NY 9H	1		COL 81	18.77	00.00	RT 9 END RT 9H	00.00	RT 9	1832	0.49	2	1	2	4	20	O	5	17		County Order = 01	1270	06	0.07	6	6	6	146	0.2	0.0	14	AgWI 47		95	1
NY 9J	1		COL 81	00.00	10.50	RT 9	10.50		1832	1.19	2	1	2	4	20	O	5	17		1270	06	0.07	6	6	6	150	0.2	0.0	30	AgWI 45		00	1	
NY 9J	1		COL 81	00.49	10.01		10.01		1832	1.80	2	1	2	4	20	O	5	7		1270	06	0.07	6	6	6	141	0.2	0.0	46	AgWI 48		00	1	
NY 9J	1		COL 81	01.68	08.82		08.82		1832	0.22	2	1	2	4	20	O	5	7		1270	06	0.07	6	5	5	211	0.3	0.0	18	AgWI 19		00	1	
NY 9J	1		COL 81	03.48	07.02		07.02		1832	0.15	2	1	2	4	20	O	5	7		1270	06	0.07	6	5	5	148	0.2	0.3	1	AgWI 36		12	1	
NY 9J	1		COL 81	03.70	06.80		06.80		1832	1.17	2	1	2	4	20	O	5	7		1270	06	0.07	6	5	5	153	0.4	0.0	27	AgWI 30		00	1	
NY 9J	1		COL 81	03.85	06.65		06.65		1832																									
NY 9J	1		COL 81	05.02	05.48		05.48	9J81011050	1832																									
NY 9J	1		COL 81	05.02	05.48		05.48	CR 26A STUYVESANT	1723	1.25	2	1	2	4	20	O	2	7		1002	06	0.04	6	5	5	149	0.5	0.0	41	AgWI 28		00	1	
NY 9J	1		COL 81	06.27	04.23		04.23	9J81011104	1723	2.53	2	1	2	4	20	O	2	7		1002	06	0.04	6	6	6	127	0.2	0.0	82	AgWI 51		00	1	
NY 9J	1		COL 81	08.80	01.70		01.70	9J81011104	1723	0.61	2	1	2	4	20	O	2	7		1002	06	0.04	6	6	6	105	0.2	0.0	7	AgWI 56		00	1	
NY 9J	1		COL 81	09.41	01.09		01.09	9J81011104	1723	1.09	2	1	3	4	20	O	2	7		1002	06	0.04	6	6	6	129	0.2	0.0	34	AgWI 51		00	1	
NY 9J	1		COL 81	10.50	00.00		00.00	9J81011104	1723																									
NY 9J	1		COL 81	10.50	00.00		00.00	Coll/Rens Co Line																										
US 9W	1		ROC 85	00.00	26.51		26.51	NEW JERSEY STATE LINE	8250	0.24	2	1	4	4	24	O	2	14		County Order = 01	9340	05	0.35	9	7	7	182	0.2	0.0	4	AI	53	12	08
US 9W	1		ROC 85	00.24	26.27		26.27		8250	0.81	2	1	4	4	24	O	2	14		9340	05	0.35	9	8	7	104	0.2	0.0	3		81	12	08	
US 9W	1		ROC 85	01.05	25.46		25.46	9W85011010	8250	0.32	2	1	3	4	24	O	2	14		9340	05	0.36	9	8	7	91	0.1	0.0	1		85	12	08	
US 9W	1		ROC 85	01.37	25.14		25.14	9W85011022	8250	0.27	2	1	6	4	24	O	2	14		9340	05	0.35	9	8	7	91	0.2	0.0	1		84	08	1	
US 9W	1		ROC 85	01.64	24.87		24.87	9W85011022	8250	0.61	2	1	3	4	24	O	2	14		9340	05	0.36	9	8	7	91	0.1	0.0	10		85	07	4	
US 9W	1		ROC 85	02.25	24.26		24.26	9W85011022	8250	0.06	2	1	4	5	24	O	2	14		9340	05	0.35	9	8	7	89	0.2	0.0	2		84	08	1	
US 9W	1		ROC 85	02.31	24.20		24.20	9W85011023	5714	0.07	2	1	4	5	30	O	7	14		9340	05	0.35	9	8	7	146	0.2	0.0	2		72	08	1	
US 9W	1		ROC 85	02.38	24.13		24.13		5714	0.19	2	1	0	0	30	O	7	14		9340	05	0.37	9	8	7	130	0.2	0.0	6		76	08	1	
US 9W	1		ROC 85	02.57	23.94		23.94	9W85011024	5714	0.06	2	1	0	1	22	A	2	14		9340	05	0.39	9	8	7	161	0.2	0.0	3		67	08	1	
US 9W	1		ROC 85	02.63	23.88		23.88	RT 340 SPUR IRVINGTON	8136	1.33	2	1	3	5	22	O	2	14		13485	05	0.69	9	8	7	137	0.1	0.0	171		76	12	08	
US 9W	1		ROC 85	03.96	22.55		22.55	9W85011038	8136																									
US 9W	1		ROC 85	03.96	22.55		22.55	VILLAGE OF PIERMONT AND TOWN OF ORANGETOWN	8136	1.80	2	1	2	5	22	O	2	14		13485	05	0.69	9	8	7	124	0.2	0.0	393		77	12	09	
US 9W	1		ROC 85	05.76	20.75		20.75		8136	0.02	2	1	2	5	22	O	2	14		13485	05	0.69	9	7	7	151	0.2	0.0	5	AI	62	09	4	
US 9W	1		ROC 85	05.78	20.73		20.73	9W85011054	8136																									
US 9W	1		ROC 85	05.78	20.73		20.73	TOWN OF ORANGETOWN AND VILLAGE OF S NYACK	8136	0.13	2	1	2	4	22	O	2	14		13485	05	0.69	7	7	7	153	0.2	0.0	24	AI	62	01	99	
US 9W	1		ROC 85	05.91	20.60		20.60	9W85011059	8136	0.06	2	2	0	1	49	C	2	14		13485	05	0.69	6	6	6	223	0.2	0.0	7	SI	41	01	99	
US 9W	1		ROC 85	05.97	20.54		20.54	9W85011059	8136	0.02	5	2	5	5	60	C	2	14		13485	05	0.22	6	6	6	223	0.2	0.0	2	SI	41	01	99	
US 9W	1		ROC 85	05.99	20.52		20.52	9W85011057	8136																									
US 9W	1		ROC 85	05.99	20.52		20.52	RT 187 UNDER	8136	0.41	5	2	5	5	60	C	2	14		6863	05	0.15	6	6	6	338	0.4	0.0	80	SI	38	73	99	
US 9W	1		ROC 85	06.40	20.11		20.11	9W85011064	8136	0.04	2	1	0	1	26	C	2	14		6863	05	0.47	7	7	7	153	0.2	0.0	2	SI	59	54	99	
US 9W	1		ROC 85	06.44	20.07		20.07	9W85011064	8136	0.40	2	1	3	5	24	O	2	14		6863	05	0.45	7	7	6	162	0.3	0.0	24	AI	47	97	1	
US 9W	1		ROC 85	06.84	19.67		19.67	9W85011065	8136	0.02	2	1	5	5	22	O	2	14		6863	05	0.77	7	7	7	225	0.3	0.0	1	AI	45	97	1	
US 9W	1		ROC 85	06.86	19.65		19.65	VILLAGE OF SOUTH NYACK AND VILLAGE OF NYACK	5682																									
US 9W	1		ROC 85	06.86	19.65		19.65	VILLAGE OF SOUTH NYACK AND VILLAGE OF NYACK	5682	0.20	2	1	0	1	22	O	2	14		6863	05	0.77	7	7	7	235	0.3	0.0	10	AI	45	07	05	
US 9W	1		ROC 85	07.06	19.45		19.45	9W85011067	5682																									
US 9W	1		ROC 85	07.06	19.45		19.45	RT 59 NYACK	5682																									
US 9W	1		ROC 85	07.62	18.89		18.89	9W85011076	5682	0.56	2	1	0	1	40	O	2	16		10651	05	0.76	7	7	7	119	0.2	0.0	14		78	12	05	
US 9W	1		ROC 85	07.62	18.89		18.89	VILLAGE OF NYACK AND VILLAGE OF UPPER NYACK																										

Appendix 5

Drainage Information



NEW YORK STATE THRUWAY AUTHORITY

PLANS FOR CONSTRUCTING A PORTION OF THE
NEW YORK STATE THRUWAY

HUDSON SECTION - SUBDIVISION 9A (NYACK APPROACH TO TAPPAN ZEE BRIDGE)

From Station 161 + 00 to Station 242 + 69, a Length of 1.55 Miles in the Town of Orangetown of which 0.18 Mile is in the Village of Grandview-on-Hudson, 0.98 Mile in the Village of South Nyack and 0.39 Mile in the Village of Nyack AND

From Station 242 + 69 to Station 244 + 00, a Length of 0.02 Mile in the Town of Clarkstown.

AND FOR CONSTRUCTING THE NYACK INTERCHANGE

A Length of 1.07 Miles in the Town of Orangetown, Village of South Nyack AND FOR CONSTRUCTING

Exit Ramp "B" N.B.

A Length of 0.13 Mile in the Town of Orangetown, Village of Nyack

A TOTAL LENGTH OF 2.77 MILES

AND FOR RECONSTRUCTING PORTIONS OF NEW JERSEY STATE LINE - NYACK, PT. 3, S.H. NO. 8136

Between Station 8 + 15 and Station 59 + 78, a Length of 1.50 Miles in the Town of Orangetown, Village of South Nyack AND THE

NEW JERSEY STATE LINE - NYACK, PT. 4, S.H. #5682

Between Station 59 + 78 and Station 70 + 69, a Length of 0.21 Mile in the Town of Orangetown, Village of Nyack AND

NYACK VILLAGE - MAIN ST., S.H. NO. 8459

Between Station 1 + 71 and Station 10 + 77, a Length of 0.17 Mile in the Town of Orangetown, Village of Nyack AND THE

KNAPPS CORNERS - NYACK, S.H. #5178

Between Station 10 + 77 and Station 12 + 65, a Length of 0.04 Mile in the Town of Clarkstown

A TOTAL LENGTH OF 1.92 MILES

AND FOR CONSTRUCTING PORTIONS OF PIERMONT AVE., a Length of 0.13 Miles

PUBLIC RIGHT OF WAY, a Length of 0.05 Mile

FERRIS LANE, a Length of 0.05 Mile

A Total Length of 0.23 Mile in the Town of Orangetown, Village of Grandview-on-Hudson AND

BROADWAY, a Length of 0.15 Mile

CONNECTION from Clinton Ave. to White Ave., a Length of 0.16 Mile

CONNECTION from Ross Ave. to Maple St., a Length of 0.04 Mile

RELOCATION of Erie R.R. from Sta. 5 + 74 to Sta. 35 + 10, a Length of 0.56 Mile

A Total Length of 0.91 Mile in the Town of Orangetown, Village of South Nyack AND

DEWEY AVE. WEST, a Length of 0.14 Mile

DEWEY AVE. EAST, a Length of 0.06 Mile

A Total Length of 0.20 Mile in the Town of Orangetown, all in the Village of Nyack

A COMBINED LENGTH OF 1.34 MILES

A TOTAL COMBINED LENGTH OF 6.03 MILES

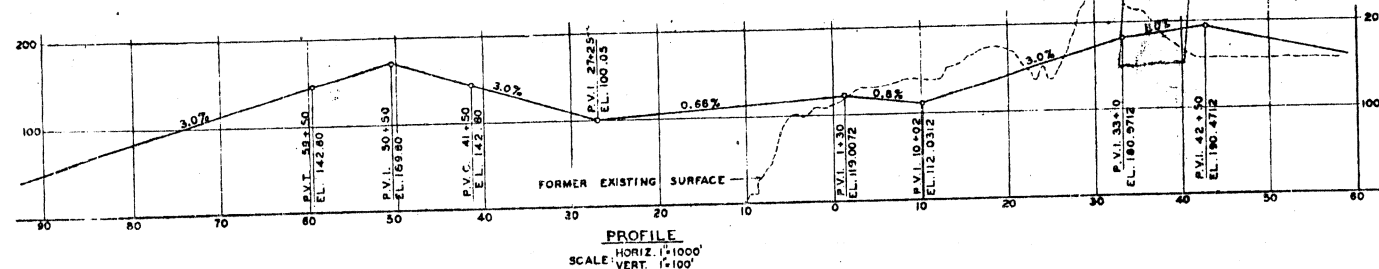
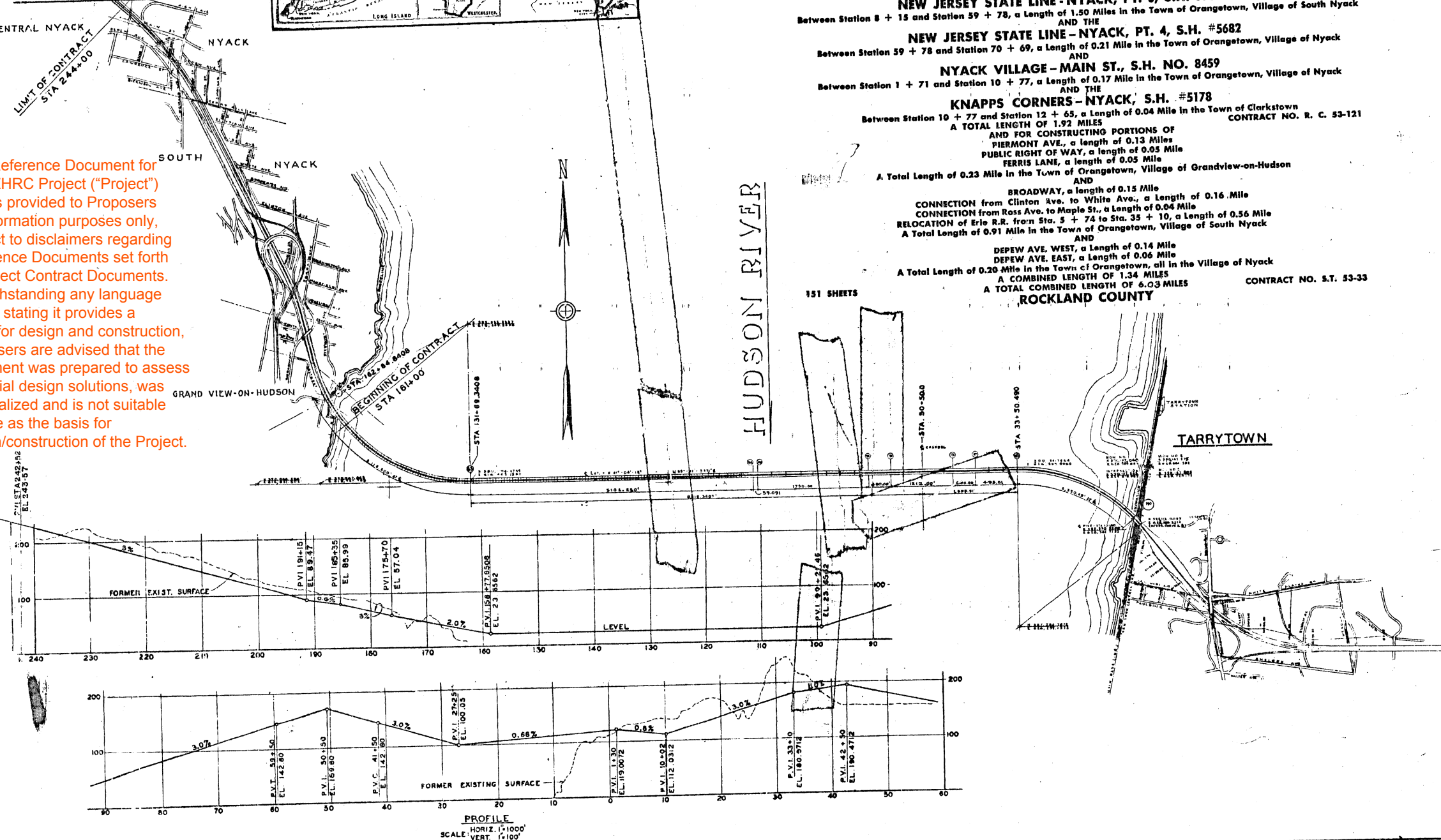
ROCKLAND COUNTY

CONTRACT NO. S.T. 53-33

151 SHEETS

HUDSON RIVER

This Reference Document for the TZHRC Project ("Project") RFP is provided to Proposers for information purposes only, subject to disclaimers regarding Reference Documents set forth in Project Contract Documents. Notwithstanding any language herein stating it provides a basis for design and construction, Proposers are advised that the document was prepared to assess potential design solutions, was not finalized and is not suitable for use as the basis for design/construction of the Project.



TYPE OF CONSTRUCTION			
Reinf. Cem. Conc. Pav't.	1.57 Miles		
Unreinf. Cem. Conc. Pav't.	3.07 Miles		
Asphalt Concrete Type 1A, Opt.	0.78 Mile		
Relocation of Erie R. R.	0.56 Mile		
Misc. Work	0.05 Mile		

- Including
- H.G.S., Broadway over Thruway, Comp. I Beam 2 Spans; 1 @ 104.59' and 1 @ 122.58'
 - R.R.G.S., Erie Railroad and 9W over Thruway, Composite I Beam, through girder, 4 Spans; 2 @ 39.5', 1 @ 101.38' and 1 @ 105.89'
 - H.G.S., Exit from Thruway to 9W over Access from 9W, Composite I Beam 1 Span 60.15'
 - H.G.S., Exit from Thruway and Access to Thruway of 9W, Composite I Beam 3 Spans; 1 @ 54.5', 1 @ 64.5' and 1 @ 61.83'
 - H.G.S., N.B. rte 9W over Thruway, Composite I Beam, 3 Spans; 1 @ 66.23', 1 @ 70.71' and 1 @ 78.62'
 - H.G.S., rte 9W over Thruway, Composite I Beam, 2 Spans; 1 @ 94.78' and 1 @ 85.54'
 - H.G.S. Thruway over rte 59, Composite I Beam, 4 Spans; 1 @ 68.35', 1 @ 82.48', 1 @ 79.14' and 1 @ 60.87'

STANDARD STRUCTURE SHEETS

40-5, 40-101R, 40-103R, 46-4, 47-36, 47-37, 49-65, 49-7, 49-42, 50-1R, 50-34, 51-3, 51-20, 51-21, 52-17A, 52-17B, 52-17C, 52-17D, 52-43, 52-45, 53-11A, 53-11R, 53-11W, 53-41R, 53-46TI, 53-47.

All work contemplated under this contract to be covered by and in conformity with the specifications adopted January 2, 1951, except as modified on these plans and in the Itemized Proposal.

PREPARED AND RECOMMENDED
BY: MADIGAN-HYLAND
CONSULTING ENGINEERS

Edmund 1953

DEPARTMENT OF PUBLIC WORKS

APPROVED *Aug 21 1953*
J.B. MCMORRAN CHIEF ENGINEER

APPROVED 1953
NEW YORK STATE THRUWAY AUTHORITY

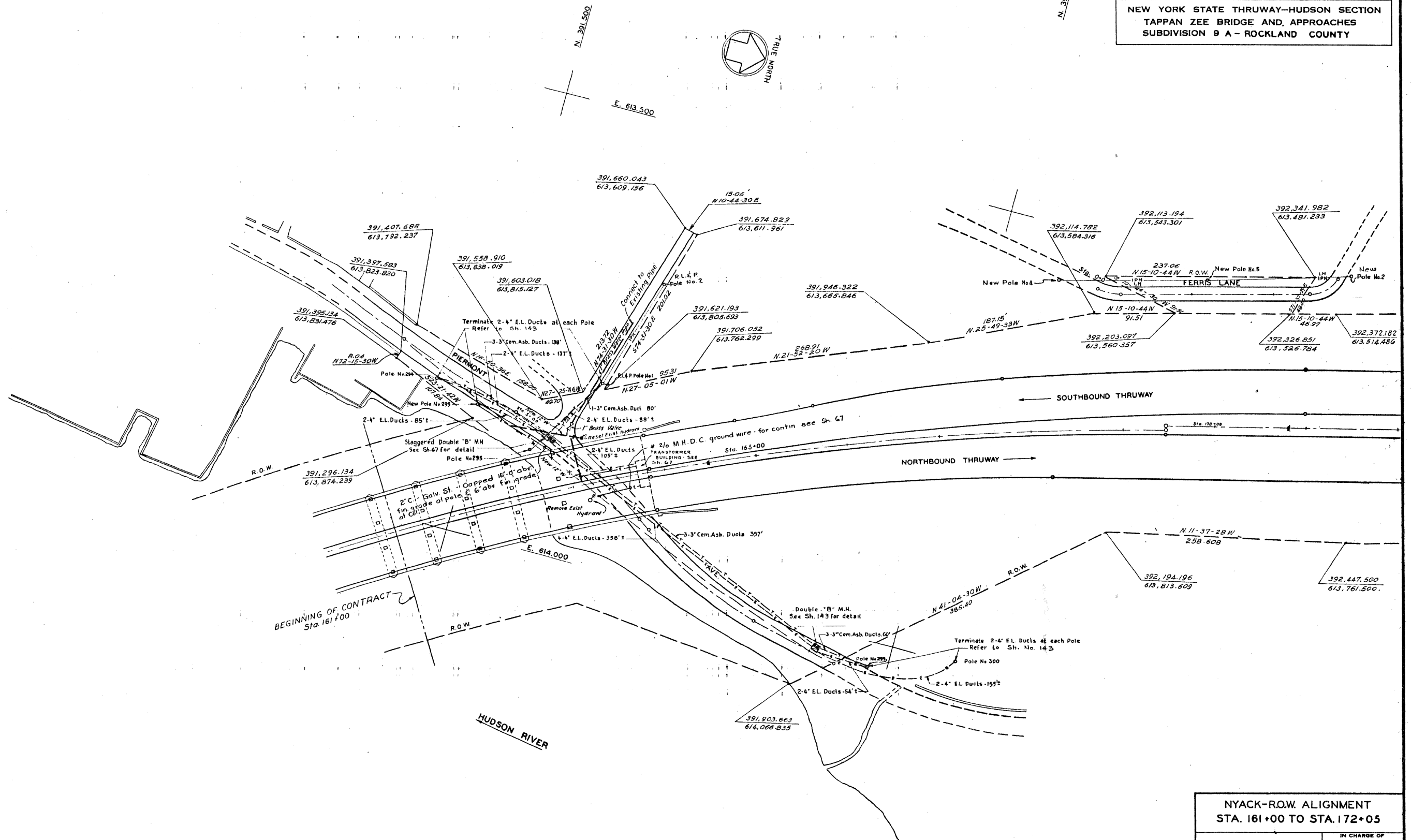
B.D. TALLAMY, CHAIRMAN

BY: C.H. LANG
DEPUTY CHIEF ENGINEER

47

STATE	SHEET No.	TOTAL SHEETS
N. Y.	1	1

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



RECOMMENDED BY
[Signature]

NYACK-R.O.W. ALIGNMENT
STA. 161+00 TO STA. 172+05

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

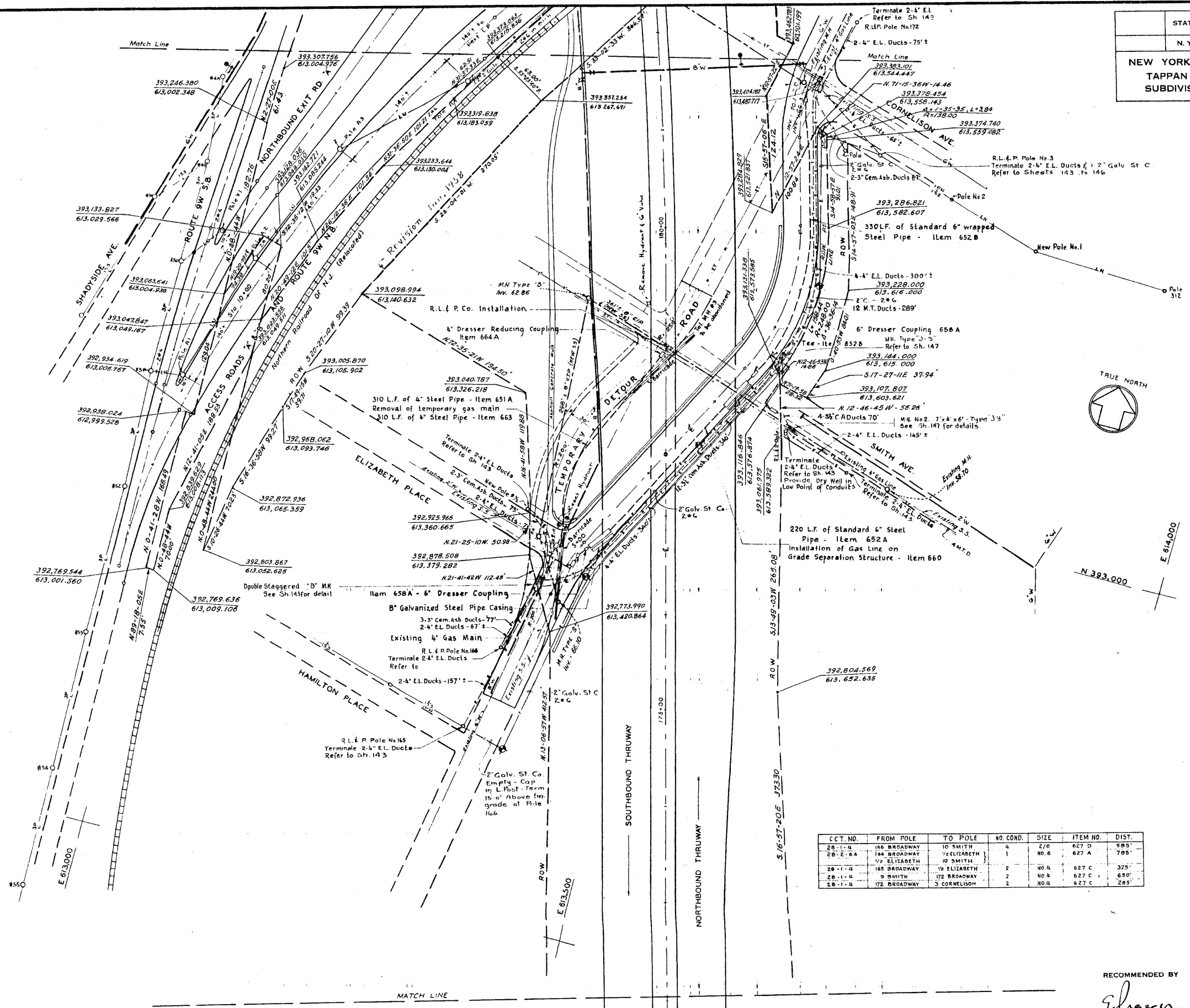
IN CHARGE OF
W. J. SPONTOWITZ
DRAWN BY: C. B. H.
TRACED BY: A. S.
CHECKED BY: A. R. S.
SCALE: 1" = 50'

NR 88

AUG 12 1953

STATE	SHEET No.	TOTAL SHEETS
N. Y.	2	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
28-1-4	166 BROADWAY	10 SMITH	4	2/0	627 D	585'
28-2-6	166 BROADWAY	1/2 ELIZABETH	1	NO. 6	627 A	705'
28-1-4	165 BROADWAY	1/2 ELIZABETH	2	NO. 4	627 C	325'
28-1-4	9 SMITH	172 BROADWAY	2	NO. 4	627 C	650'
28-1-4	172 BROADWAY	3 CORNELISON	2	NO. 4	627 C	265'

See Utility Note, Sheet No. 35

For Legend and General Notes see Sh. N° 35

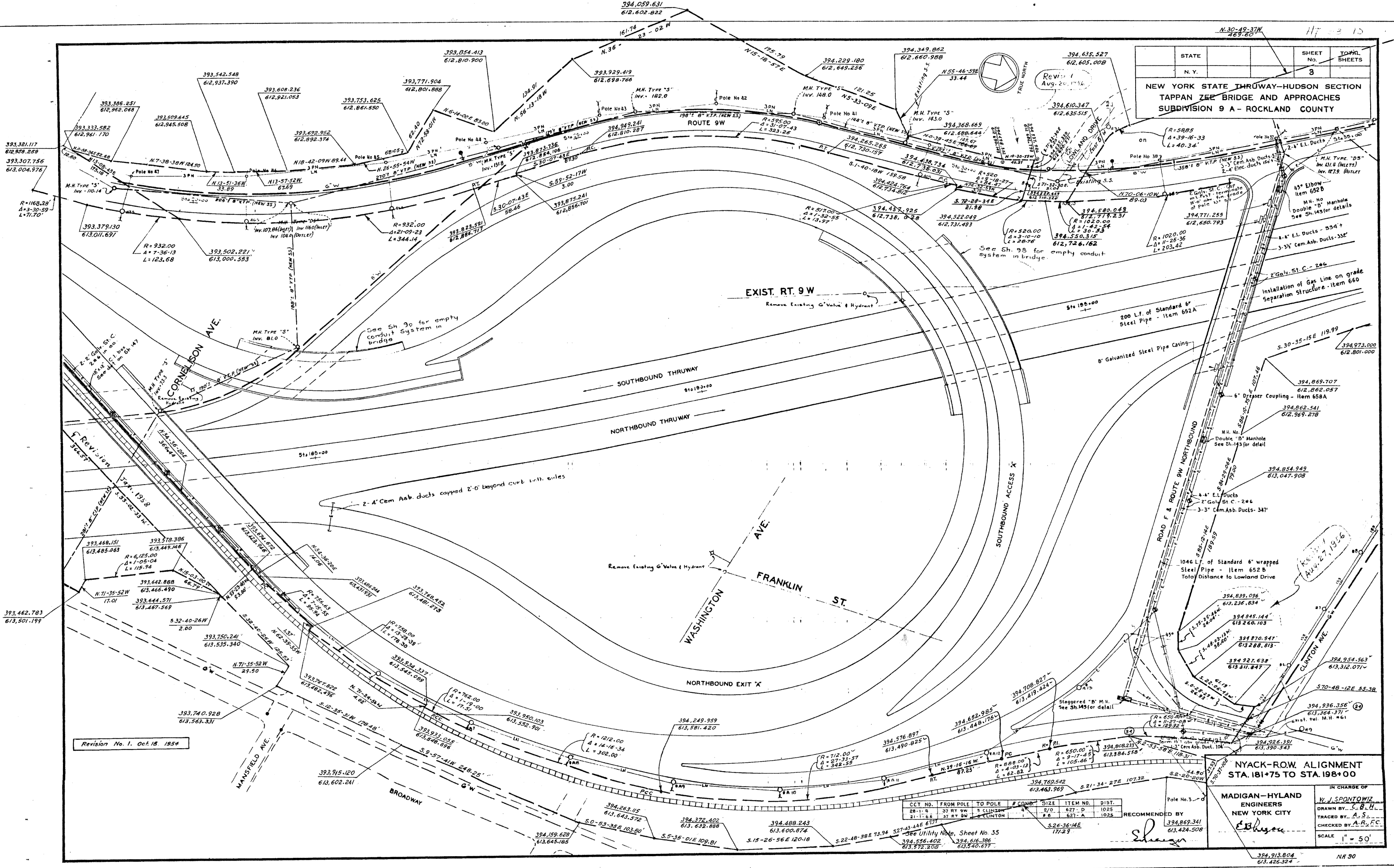
NYACK-R.O.W. ALIGNMENT
STA. 172+05 TO STA. 181+75

IN CHARGE OF MADIGAN-HYLAND ENGINEERS NEW YORK CITY	W. J. SPONTOWITZ DRAWN BY: S. B. H. TRACED BY: A. S. CHECKED BY: A. R. F. C. SCALE 1" = 50'
--	---

RECOMMENDED BY
E. H. Hager

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	3	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	# CONDS.	SIZE	ITEM NO.	DIST.
28-11-4	ST RT 9W	S CLINTON	1	2/D	627-D	1025
21-1-8-6	ST RT 9W	S CLINTON	1	# 6	627-A	1025

RECOMMENDED BY: *E. H. H. H.*
Pole No. 3

NYACK-ROW ALIGNMENT
STA. 181+75 TO STA. 198+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
W. J. SPONTOWICZ
DRAWN BY: C. B. H.
TRACED BY: A. S. L.
CHECKED BY: A. R. E.C.
SCALE: 1" = 50'

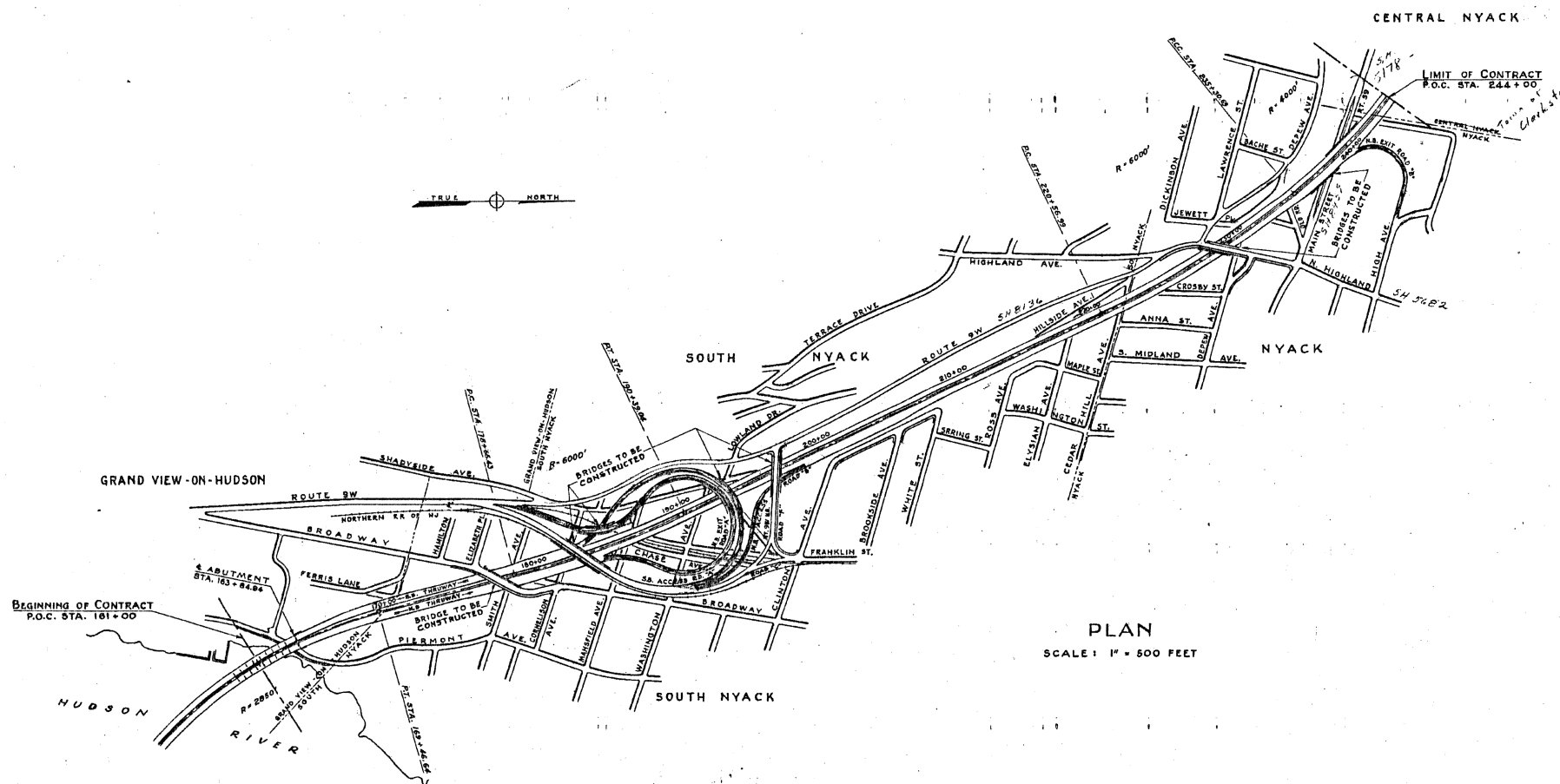
STATE	SHEET No.	TOTAL SHEETS
N. Y.	3 R 151	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY

General Notes

- The Coordinate System used is the New York State Coordinate System, East Zone, a transverse Mercator Projection of the Clarke spheroid of 1866, having a central meridian 74°20' West from Greenwich, on which meridian the scale is set one part in 30,000. The origin of coordinates is at the intersection of the meridian 74°20' west longitude and the parallel 40°00' north latitude. This origin is given the coordinates: E=500,000 feet and N=0 feet.
- Elevations are referred to U.S.C. & G.S. Datum which is Mean Sea Level at Sandy Hook.
- Loads and Stresses are in accordance with A.A.S.H.O. Specification of 1949 for H20-S16 (Modified). This structure has been designed for a series of H20-S16 truck trailers in each traffic lane. Dimensions and Distribution as specified in A.A.S.H.O. truck trailers spaced 30 feet apart between axles.
- Material and fabrication are in accordance with the Specifications of the New York State Dept. of Public Works, Jan. 2, 1951, except as noted in Detail Specifications.
- Adequate keys shall be provided at all construction joints. Construction joints other than those shown on drawings will not be permitted without the written approval of the Engineer.
- N.I.C. denotes "Not in Contract".
- Lap all bars at splices a minimum of 33 diameters, place bars in contact and wire together. No splice will be permitted except where shown on drawing or otherwise directed by Engineer.
- Dimensions on reinforcement are to centerline of bars except as noted.
- All existing structures to remain, to be adjusted where necessary, to final grade.
- Sidewalks to be constructed in location as shown on Typical Sections. Where type of curb changes the transition shall be made in 10'.
- All Water Mains to be cement lined cast iron pipe unless shown otherwise. All existing water mains, gas mains, storm sewers, sanitary sewers within the limits of work to be abandoned unless otherwise directed. Water valves on abandoned mains to be salvaged.
- Where new utility meets existing utility, the connection shall be made in a manner satisfactory to the utility company involved.
- Existing hydrants to be removed shall be reset in new locations as shown on plans.
- All elevations top of concrete pads, except at Bent 1 and the Nyack Abutment, are bush hammered elevations. Pour concrete 1/4" higher and bush hammer to exact elevation.
- All Piles under Item B5 are to be driven to rock. Contractor is to determine the lengths of pile necessary.
- All Piles under Item B5C are to be driven to the design load of 30 tons. Lengths necessary to meet this requirement are to be determined by the contractor.

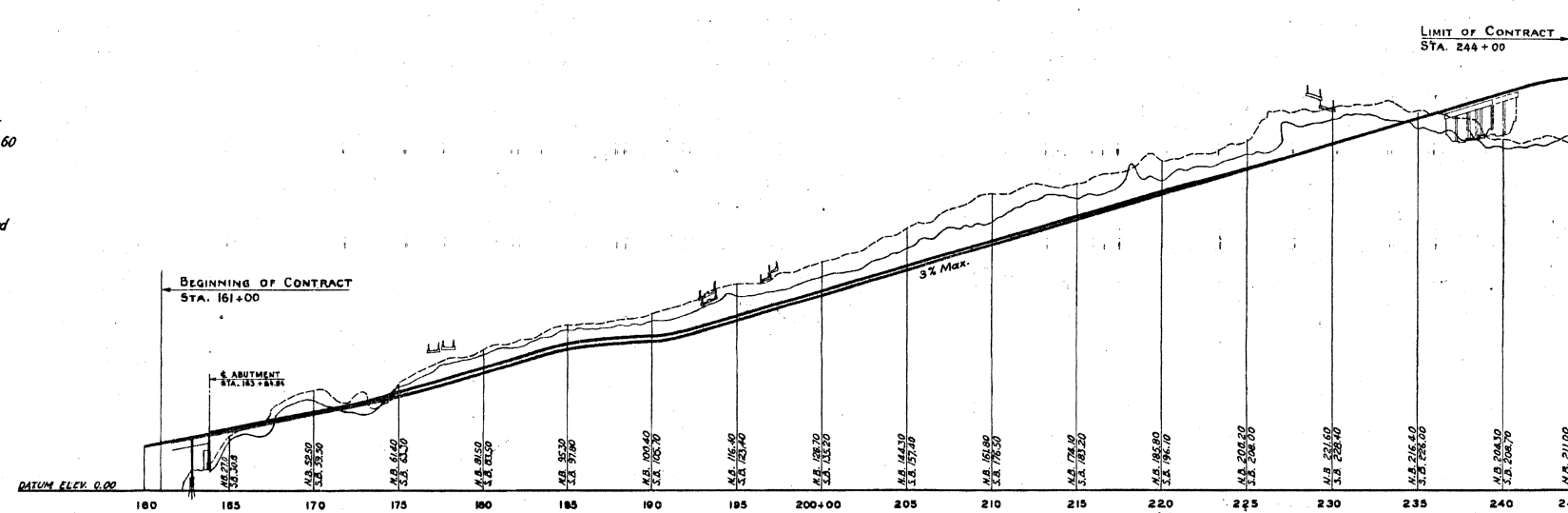
NOTE: PROFILES SHOW FINISHED SURFACE OF PAVEMENT ON CENTER LINE



PLAN
SCALE: 1" = 500 FEET

~ LEGEND ~

- Survey Base Line
- Existing Water Main
- Water Valve & Manhole
- Water Valve
- Hydrant & Valve
- Sanitary Sewer & Manhole
- Storm Sewer
- Gas Main
- Underground Telephone Ducts
- Pole
- Tree
- Right of Way Line
- Reinforced Concrete Culvert Pipe
- Cast Iron Pipe
- Vitrified Tile Pipe
- Location and Number of Boring
- Property Acquisition - For Reputed Owner and Type of acquisition see Sheets Nos. 58, 59 & 60
- Storm Sewer to be Constructed
- Sanitary Sewer to be Constructed
- Gas Main to be Constructed
- Water Main to be Constructed
- Air Cock & Bronze Hose Connection to be Constructed in Water Manhole
- New or Relocated Position of Hydrant
- New Water Valve in Manhole
- Chain Link Fence to be Constructed
- Guide Railing to be Constructed



PROFILE OF NORTH & SOUTH BOUND THRUWAY

SCALE: HOR. 1" = 500 FEET
VER. 1" = 50 FEET

GENERAL PLAN & PROFILE

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF

K. WEIS

DRAWN BY: A.J.S.

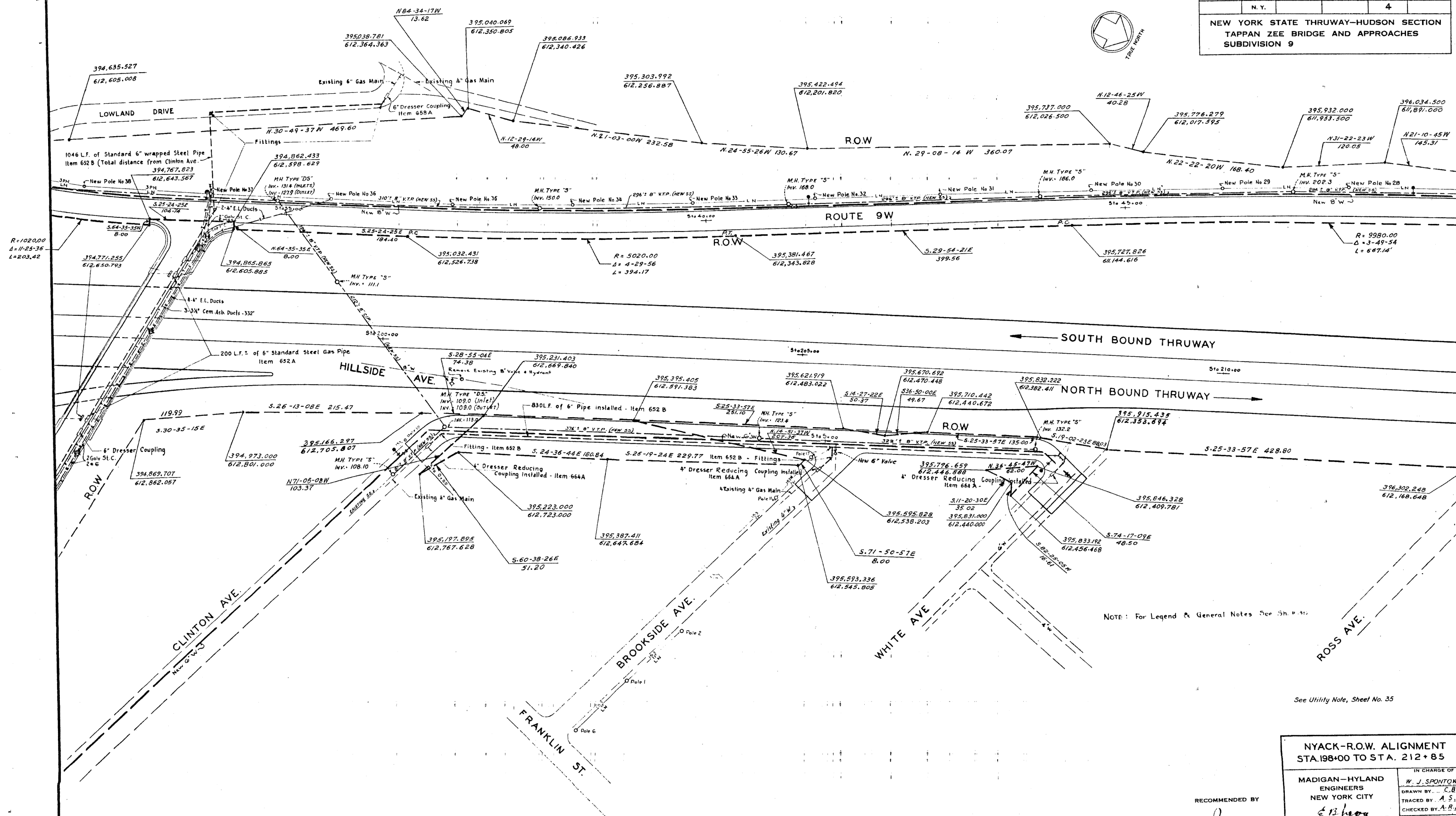
TRACED BY: A.J.S.

CHECKED BY: W.L.S.

SCALE AS NOTED

RECOMMENDED BY

Chapman



See Utility Note, Sheet No. 35

NYACK-R.O.W. ALIGNMENT
STA. 198+00 TO STA. 212+85

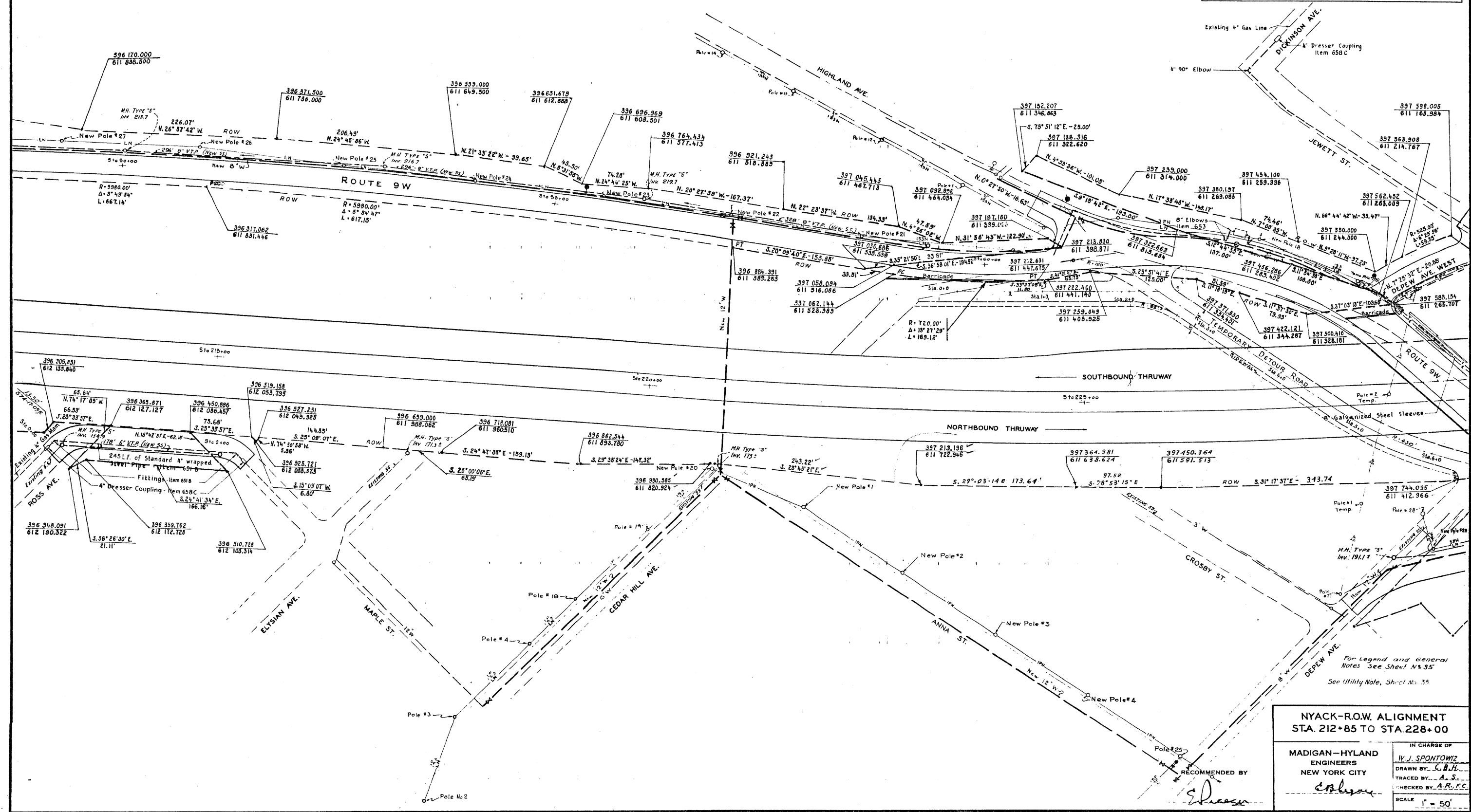
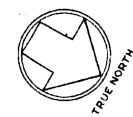
**MADIGAN—HYLAND
ENGINEERS
NEW YORK CITY**

IN CHARGE OF	W. J. SPONTOWIZ
DRAWN BY	C. B. H.
TRACED BY	A. S.
CHECKED BY	A. R. F.
SCALE	1" = 50'

NA 9M

STATE	SHEET No.	TOTAL SHEETS
N. Y.	5	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY

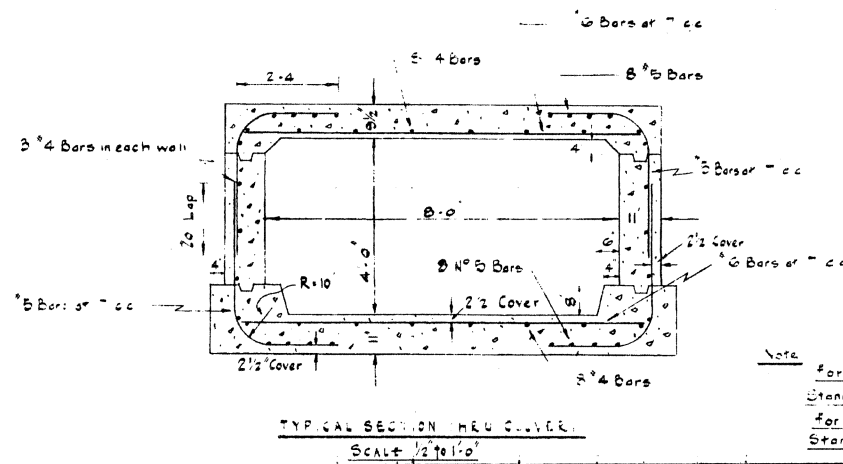
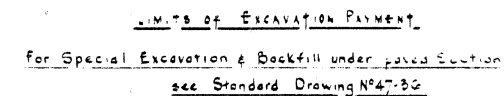
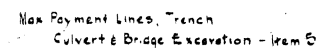
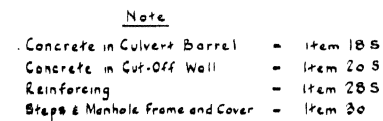


NYACK-R.O.W. ALIGNMENT
STA. 212+85 TO STA. 228+00

IN CHARGE OF
W. J. SPONTOWITZ
DRAWN BY: C. B. H.
TRACED BY: A. S.
CHECKED BY: A. R. F. C.

SCALE 1" = 50'

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



Note for additional construction details see **RECOMMENDED BY**
Standard Drawings Nos 40-103 & 40-101R
 for Identification Plate refer to
Standard Drawing No 52-41

MADIGAN - HYLAND
ENGINEERS
NEW YORK CITY

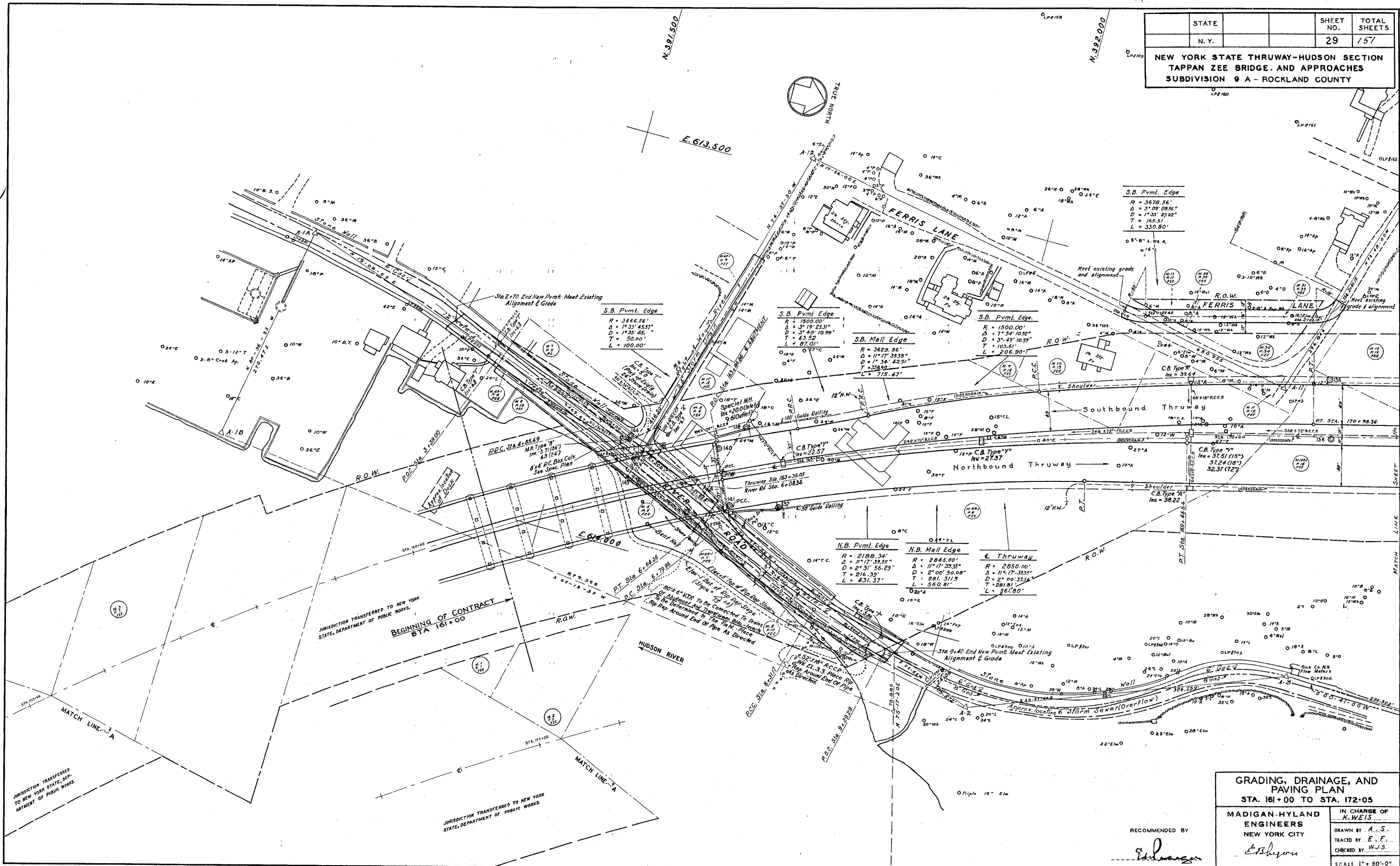
IN CHARGE OF W.J. SPONTOWIZ
DRAWN BY <u>C.B.H.</u>
TRACED BY <u>C.B.H.</u>
CHECKED BY <u>W.J.S.</u>
SCALE AS NOTED

32

44

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	29	157

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE, AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



GRADING, DRAINAGE, AND PAVING PLAN
STA. 161+00 TO STA. 172+05

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WEIS

DRAWN BY A.S.
TRACED BY E.E.
CHECKED BY W.J.S.

SCALE: 1" = 50'-0"

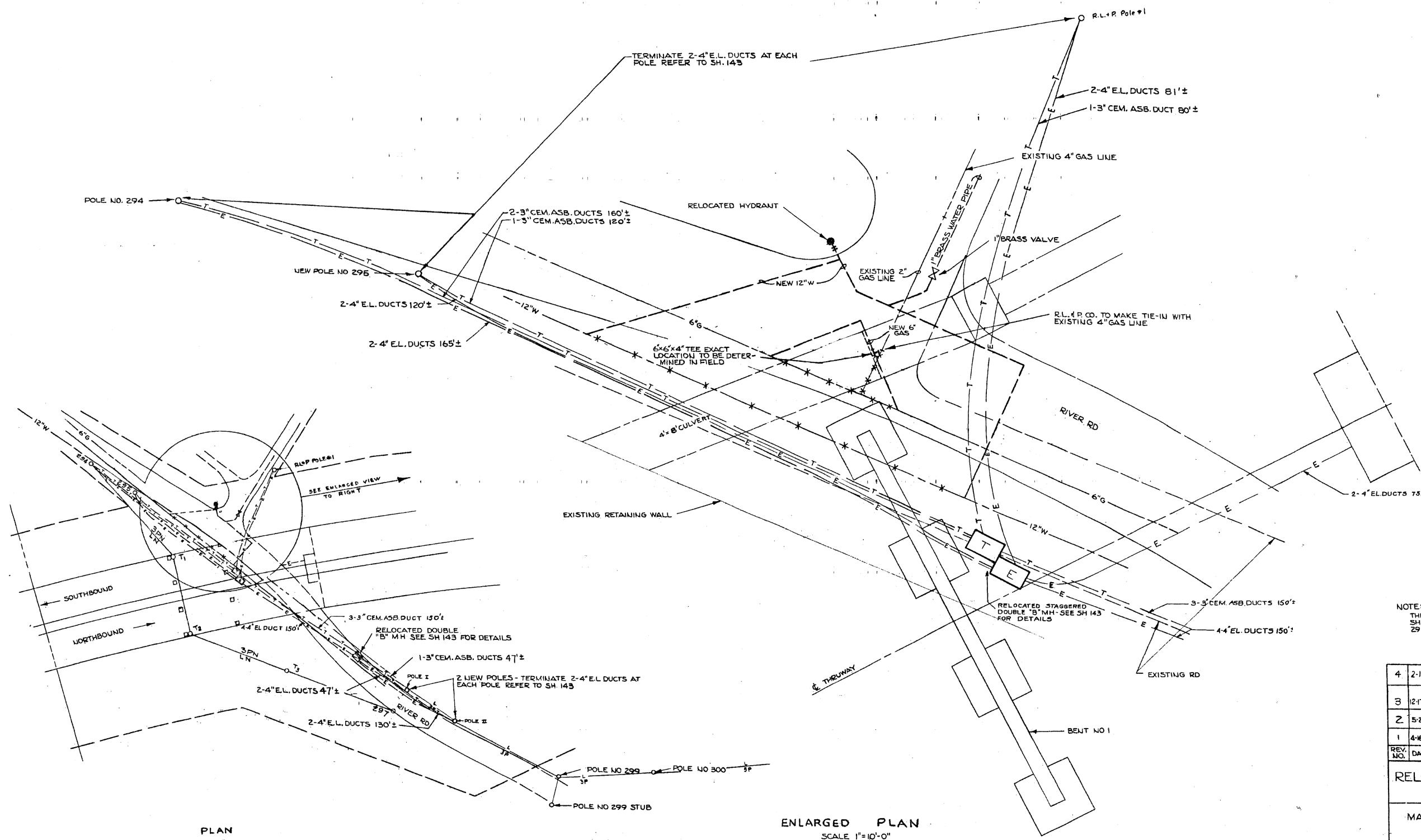
RECOMMENDED BY
E. Shuman

STATE	SHEET NO
NY	535

NEW YORK STATE THRUWAY HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9A - ROCKLAND COUNTY

MF29F1

CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
28-1-4	295 River Road	ADDED I	4	3/4"	627 D	300'
28-2-66	295 River Road	ADDED I	1	NO. 6	627 A	500'
28-1-4	ADDED I	THRU VALLEY	4	NO. 6	627 A	
28-1-4	294 River Road	1. 197' R.W.	2	NO. 4	627 C	383'



PLAN
SCALE 1"=50'-0"

ENLARGED PLAN
SCALE 1"=10'-0"

NOTE:
THIS PLAN MODIFIES PART OF CONTRACT
SHEETS 29 435 ALL OTHER WORK ON SHEETS
29 435 IS TO BE CONSTRUCTED AS SHOWN

REV. NO.	DATE	DRAWN BY	DESCRIPTION
4	2-1-55	WF	MODIFIED TO AGREE WITH ACTUAL FIELD INSTALLATION OF DOUBLE 'D' MANHOLE AND TEL. ELECTRIC DUCTS
3	12-17-54	WFM	DELETED SYMBOLS FOR SAME POLE, AS REQUIRED BY R.L. & P. CO. INDICATED FINAL LOC. OF R.L. & P. CO. FACIL. AT RIVER RD. & TEMP. LOC. OF THESE FACILITIES
2	5-20-54	MB	MODIFIED TO AGREE WITH UTILITY CO. RECOMMENDATIONS
1	4-16-54	MB	MODIFIED TO AGREE WITH ROCKLAND LIGHT & POWER CO.

RELOCATION OF UTILITIES ON RIVER ROAD

MADIGAN - HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
F.C.

DRAWN BY M.B.

TRACED BY M.B.

CHECKED BY F.C.

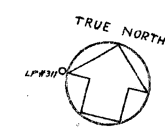
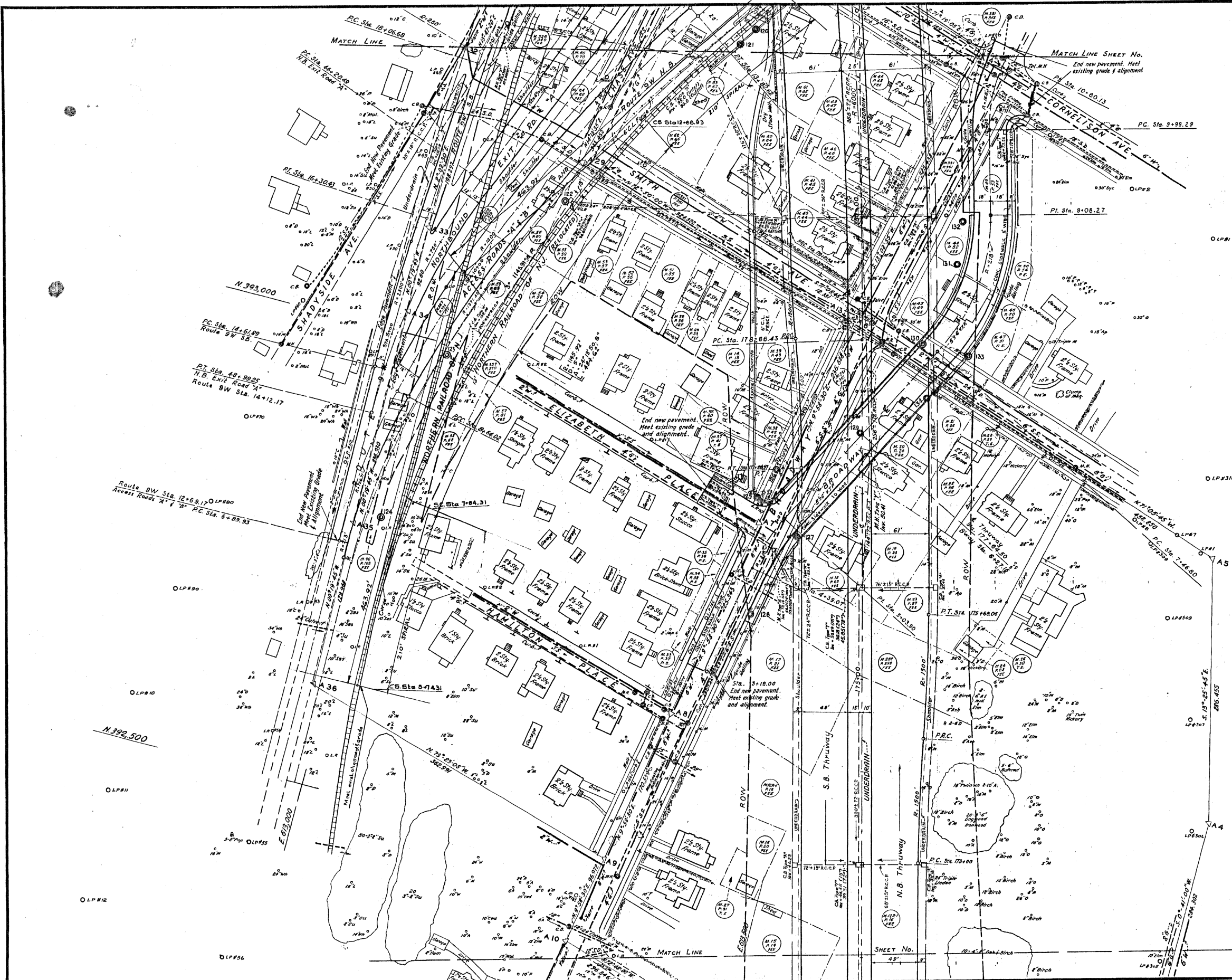
SCALE AS NOTED

HT-53-10-535

832

STATE		SHEET No.	TOTAL SHEETS
N. Y.		30R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



GRADING, DRAINAGE, AND PAVING PLAN
STA. 172+05 TO STA. 181+75

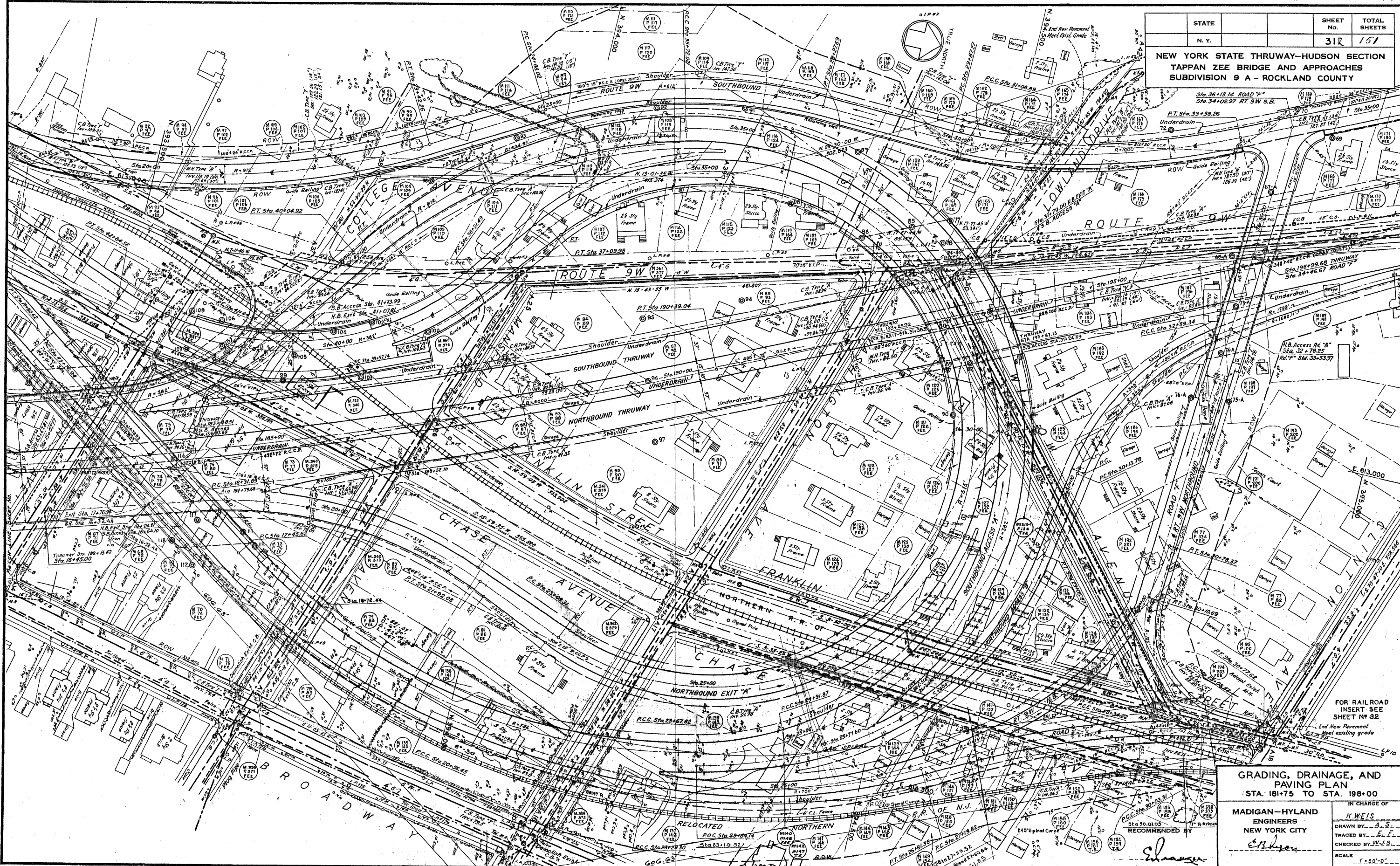
MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WELS

DRAWN BY *D. L.*
TRACED BY *A. S.*
CHECKED BY *M. L. S.*

SCALE 1"=50'-0"

RECOMMENDED BY
Shaw



FOR RAILROAD
INSERT SEE
SHEET NO. 32

GRADING, DRAINAGE, AND
PAVING PLAN
STA. 181+75 TO STA. 198+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WEIS

DRAWN BY: A. S.

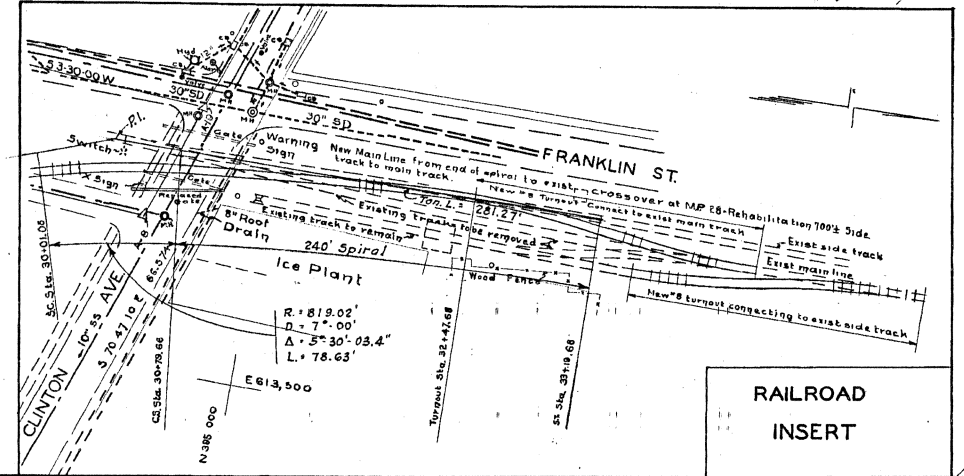
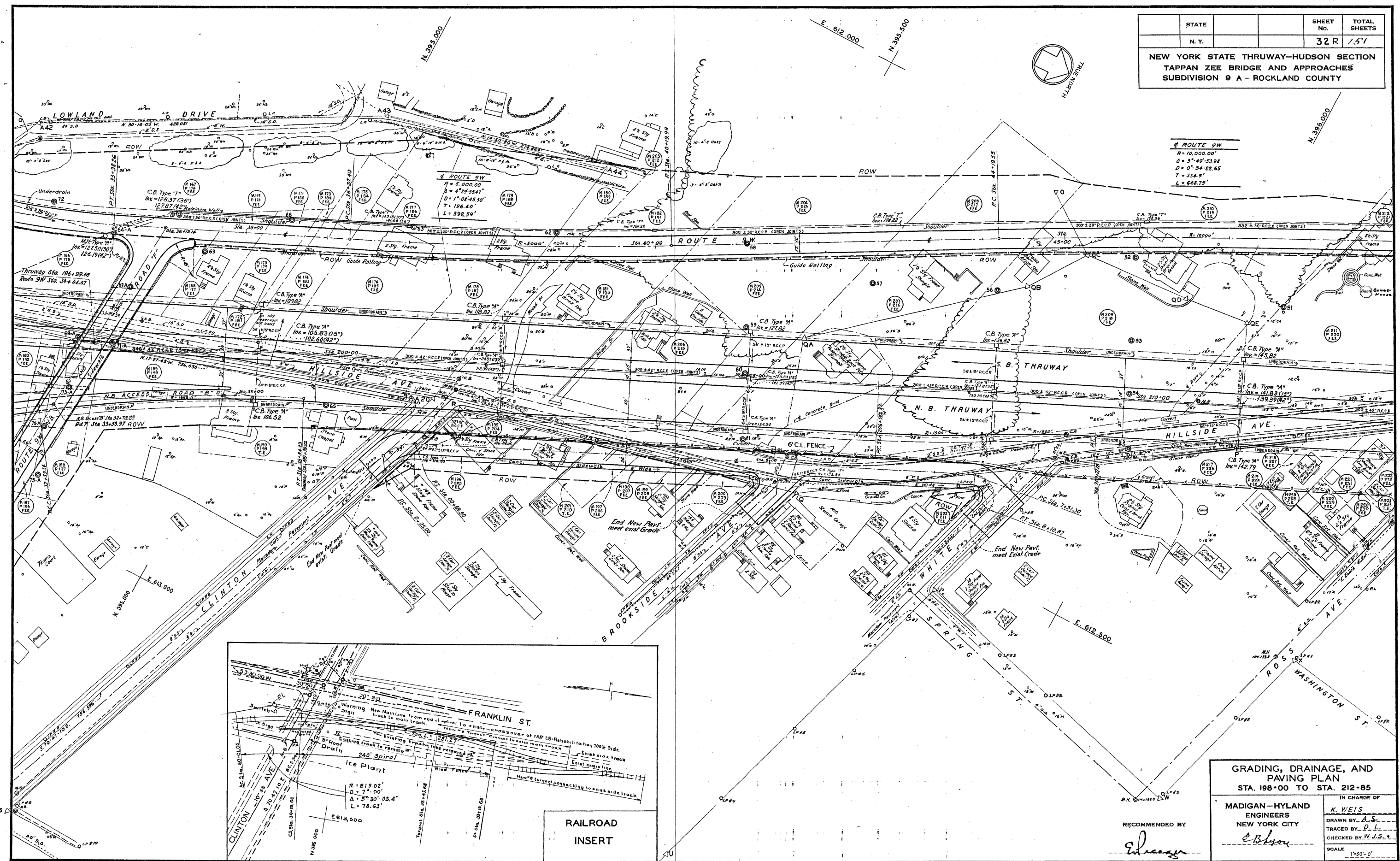
TRACED BY: E. F.

CHECKED BY: W. J. S.

SCALE
1" = 50'-0"

NA-5

ROUTE 9W
R = 10,000.00'
S = 3° 49' 53.94"
D = 0° 34' 22.65"
T = 334.51'
L = 668.75'

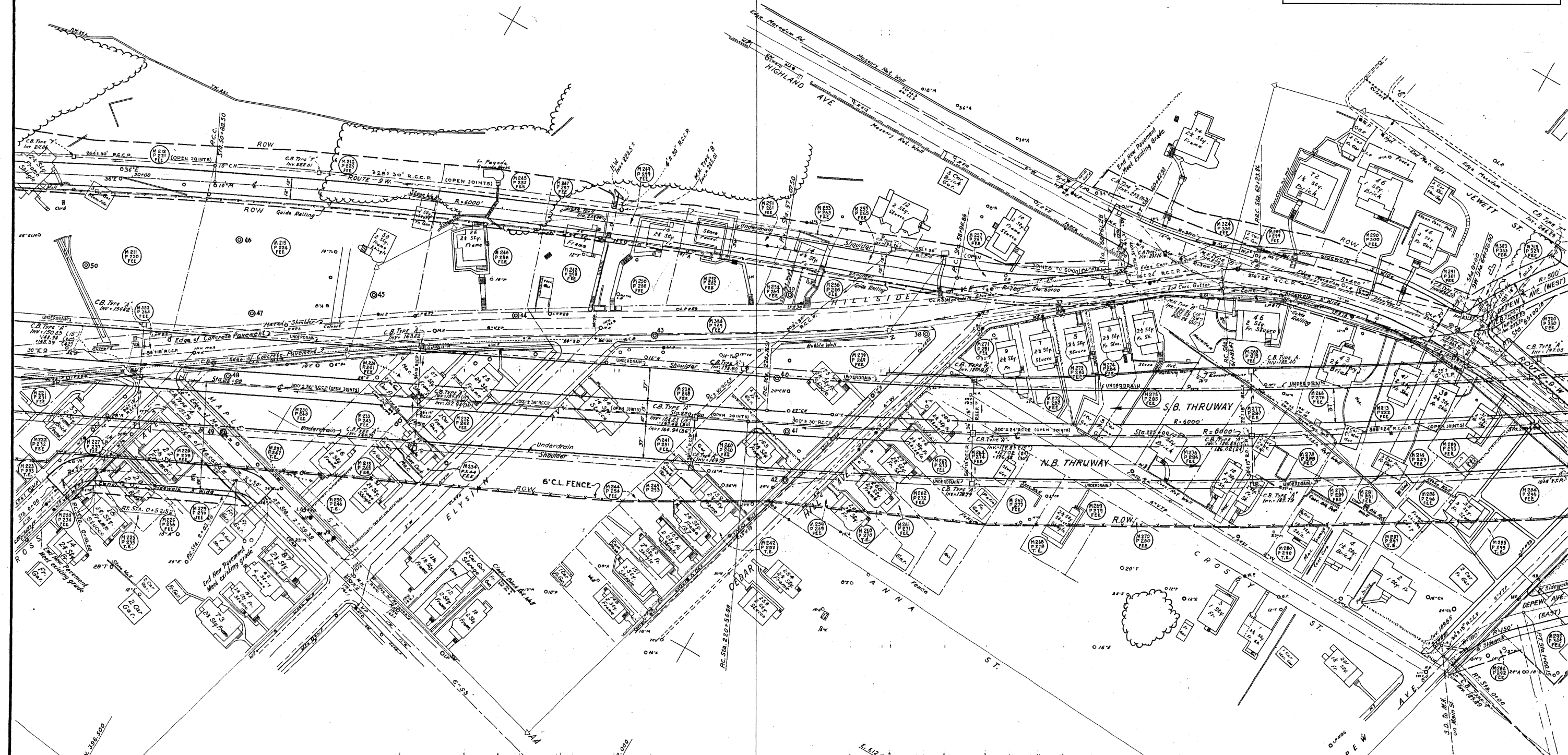


GRADING, DRAINAGE, AND PAVING PLAN
STA. 198+00 TO STA. 212+85

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WEIS
DRAWN BY A.S.
CHECKED BY D.L.
SCALE 1"=50'-0"

RECOMMENDED BY
E. B. H. H.



GRADING, DRAINAGE, AND PAVING PLAN
STA. 212+85 TO STA. 228+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WEIS

DRAWN BY
A. J. J.

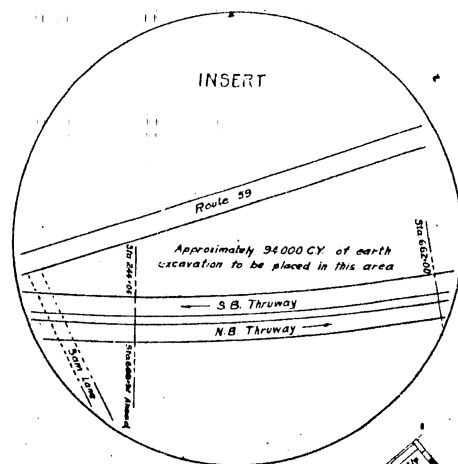
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D. L.

CHECKED BY
M. J. S.

SCALE
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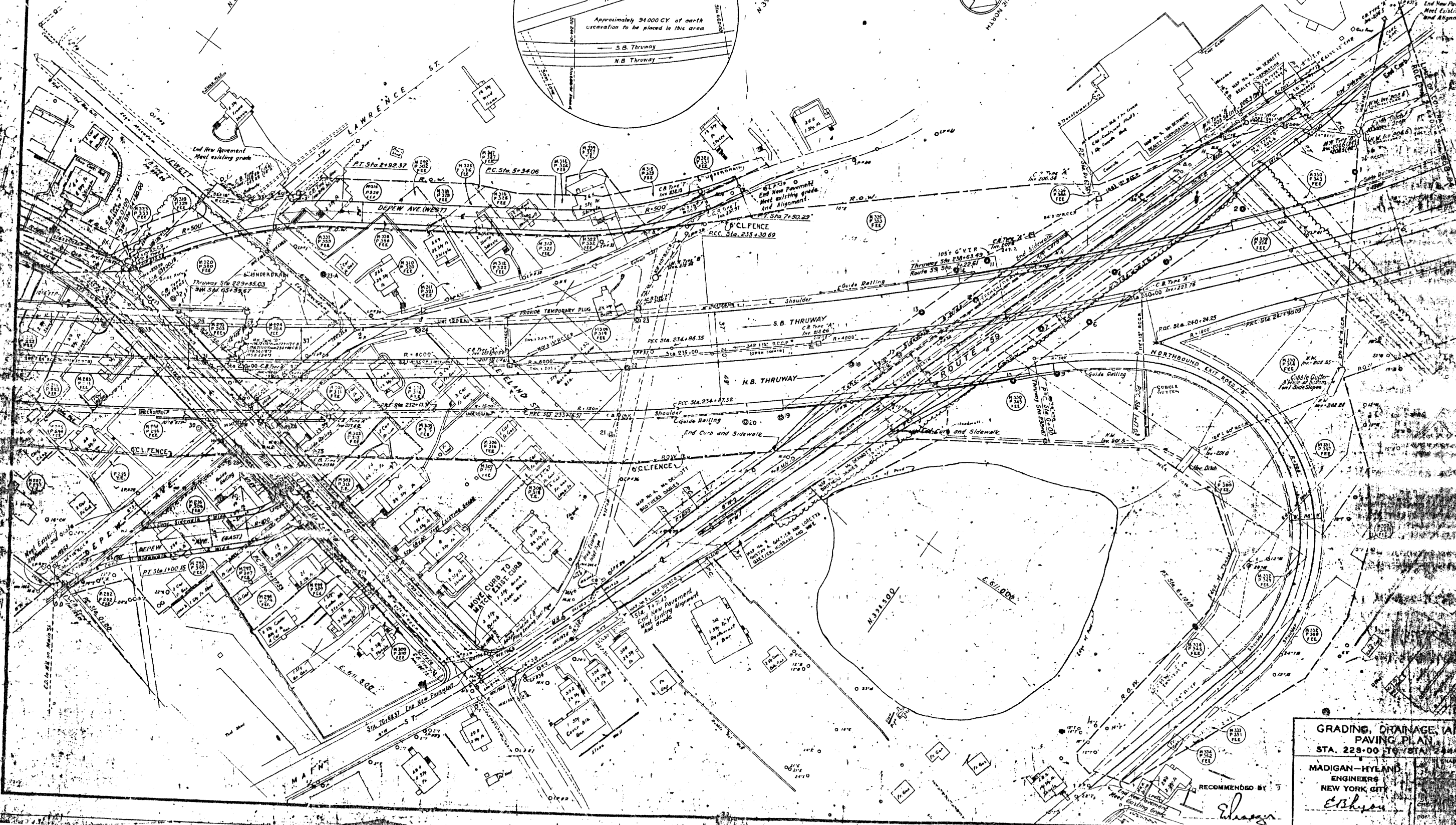
RECOMMENDED BY
[Signature]

228+00



STATE		SHEET	TOTAL SHEETS
N. Y.		34 R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



GRADING, DRAINAGE AND
PAVING PLAN
STA. 225+00 TO STA. 244+00
MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY
RECOMMENDED BY
E. H. H. H.

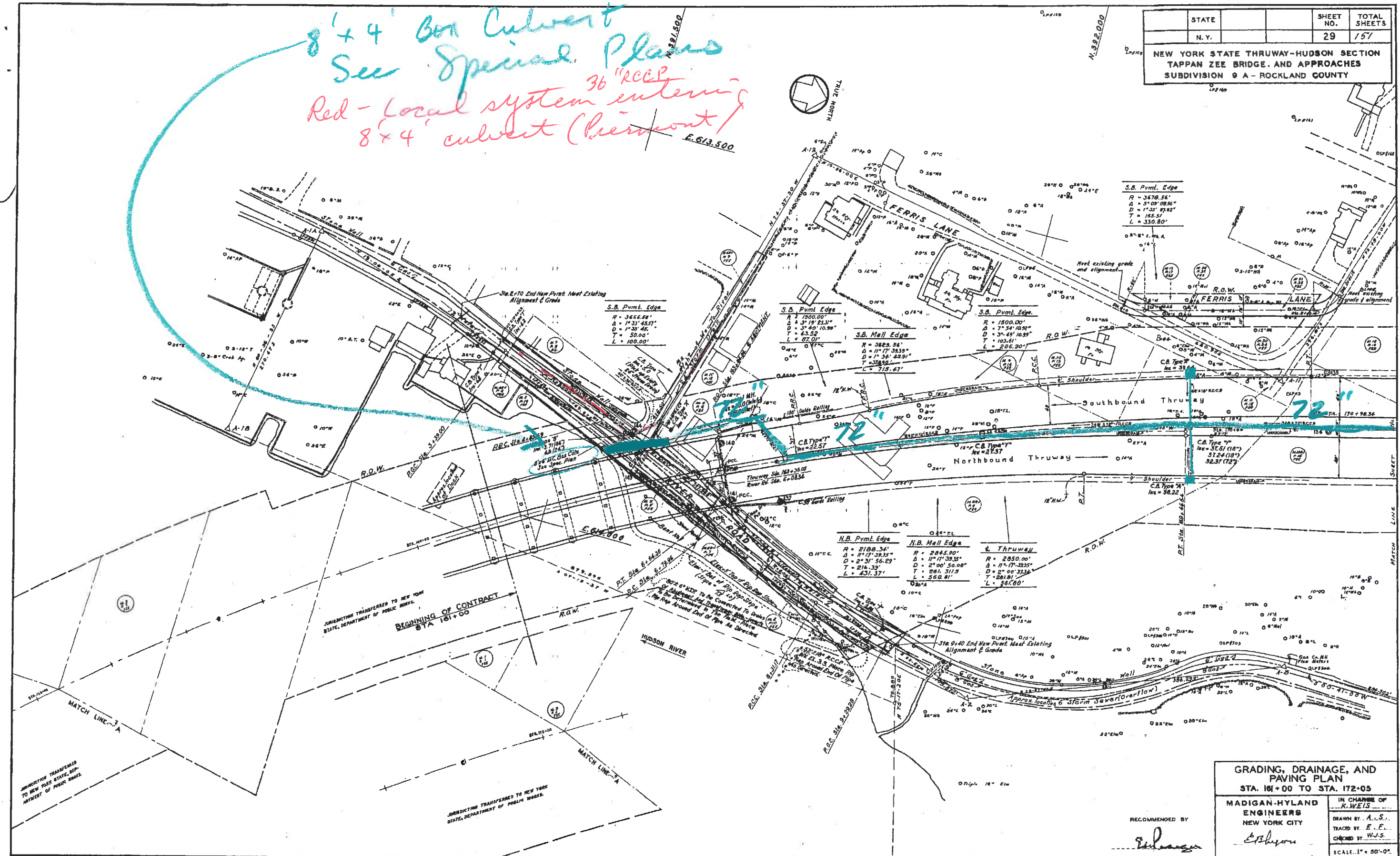
332

64

8' x 4' Box Culvert
See Special Plans
Red - Local system entering
8' x 4' culvert (Piermont)
E. 613.500

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	29	157

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



GRADING, DRAINAGE, AND PAVING PLAN
STA. 161+00 TO STA. 172+05

MADIGAN-HYLAND ENGINEERS
NEW YORK CITY

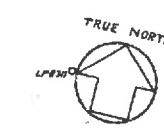
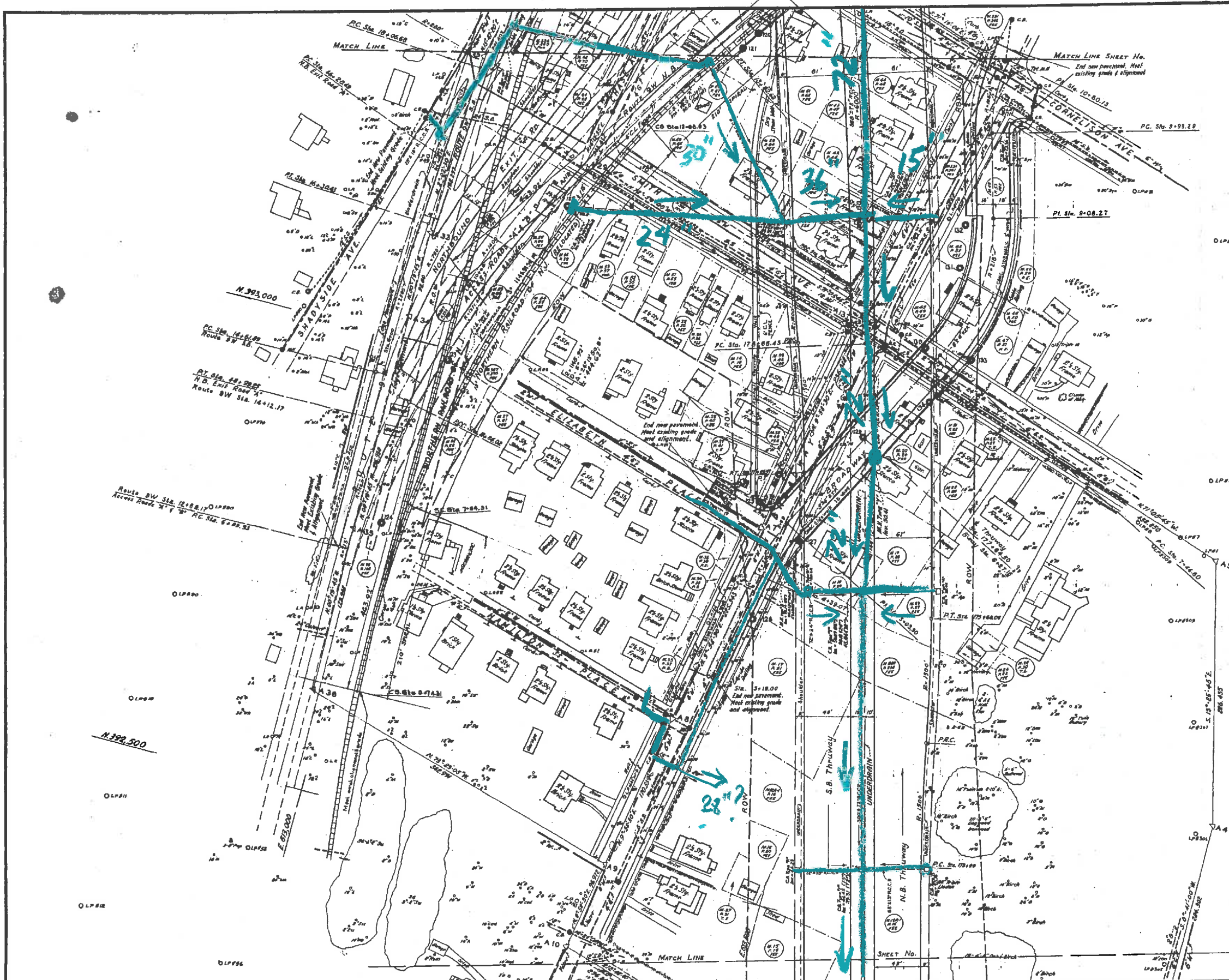
IN CHARGE OF
K. WEIS

DRAWN BY: A.L.S.
CHECKED BY: E.E.L.
SCALE: 1" = 50'-0"

RECOMMENDED BY
[Signature]

STATE	SHEET No.	TOTAL SHEETS
N. Y.	30R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



GRADING, DRAINAGE, AND PAVING PLAN
STA. 172+05 TO STA. 181+75

IN CHARGE OF
MADIGAN-HYLAND ENGINEERS
NEW YORK CITY

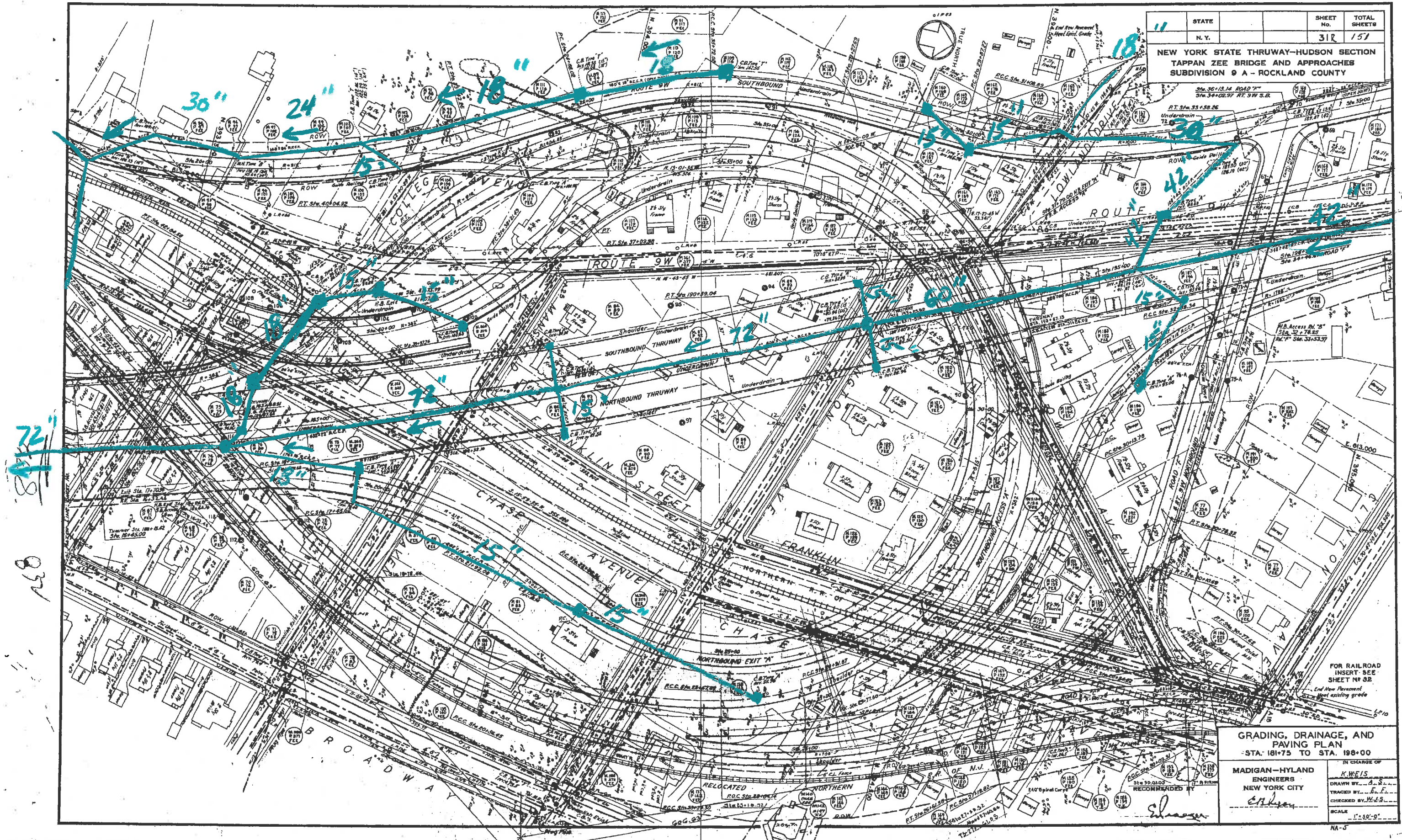
RECOMMENDED BY
Shawyer

DRAWN BY *A. WEIS*
CHECKED BY *M. J. S.*
SCALE 1"=50'-0"

832

STATE	SHEET No.	TOTAL SHEETS
N.Y.	31R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY

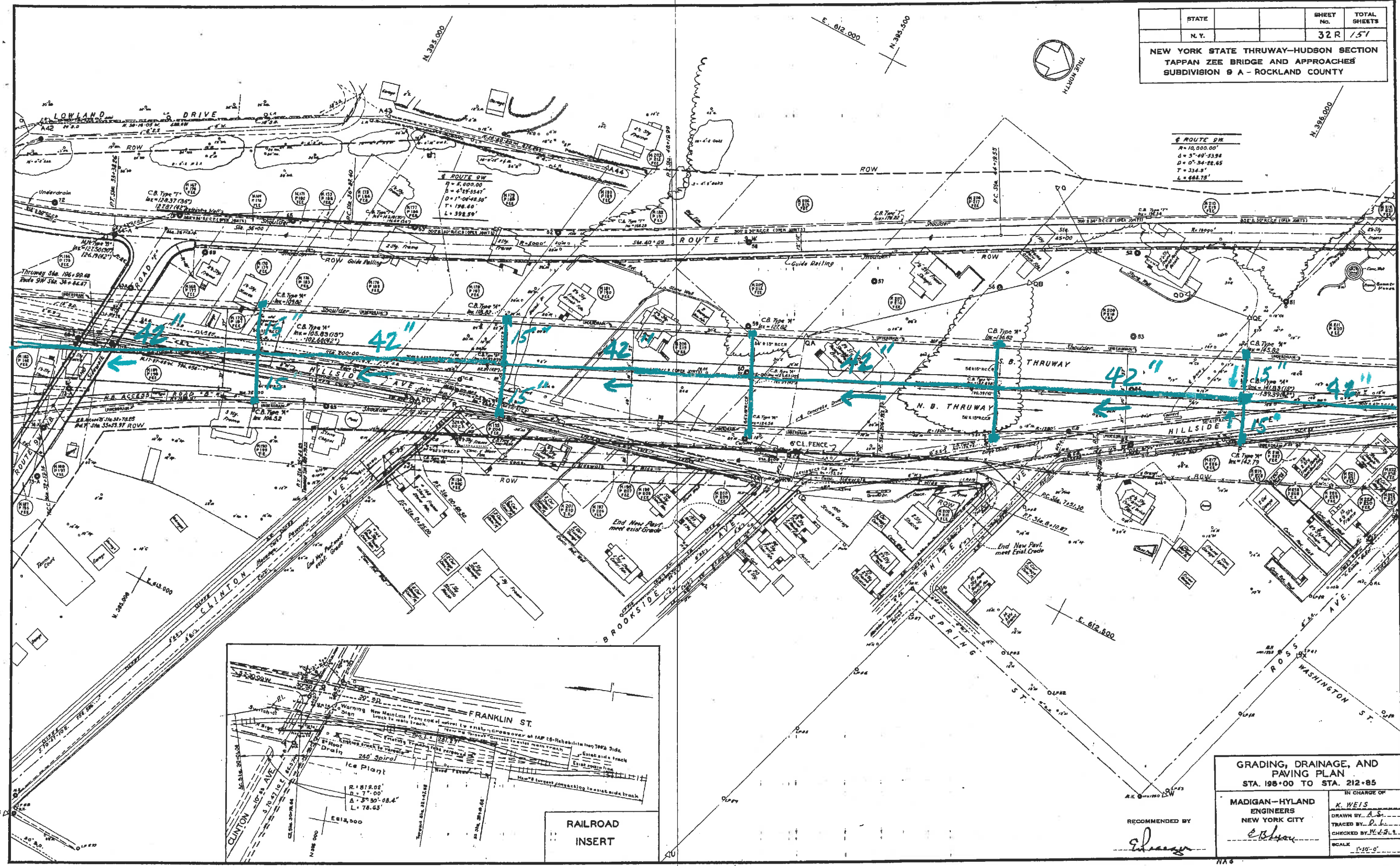


GRADING, DRAINAGE, AND
PAVING PLAN
STA. 181+75 TO STA. 198+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WEIS
DRAWN BY
CHECKED BY
SCALE
1" = 50'-0"

FOR RAILROAD
INSERT SEE
SHEET NO. 32



ROUTE 9W
R=10,000.00'
D=5°-49'-53.94"
D=0°-34'-22.65"
T=334.5'
L=642.75'

GRADING, DRAINAGE, AND
PAVING PLAN
STA. 198+00 TO STA. 212+85

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

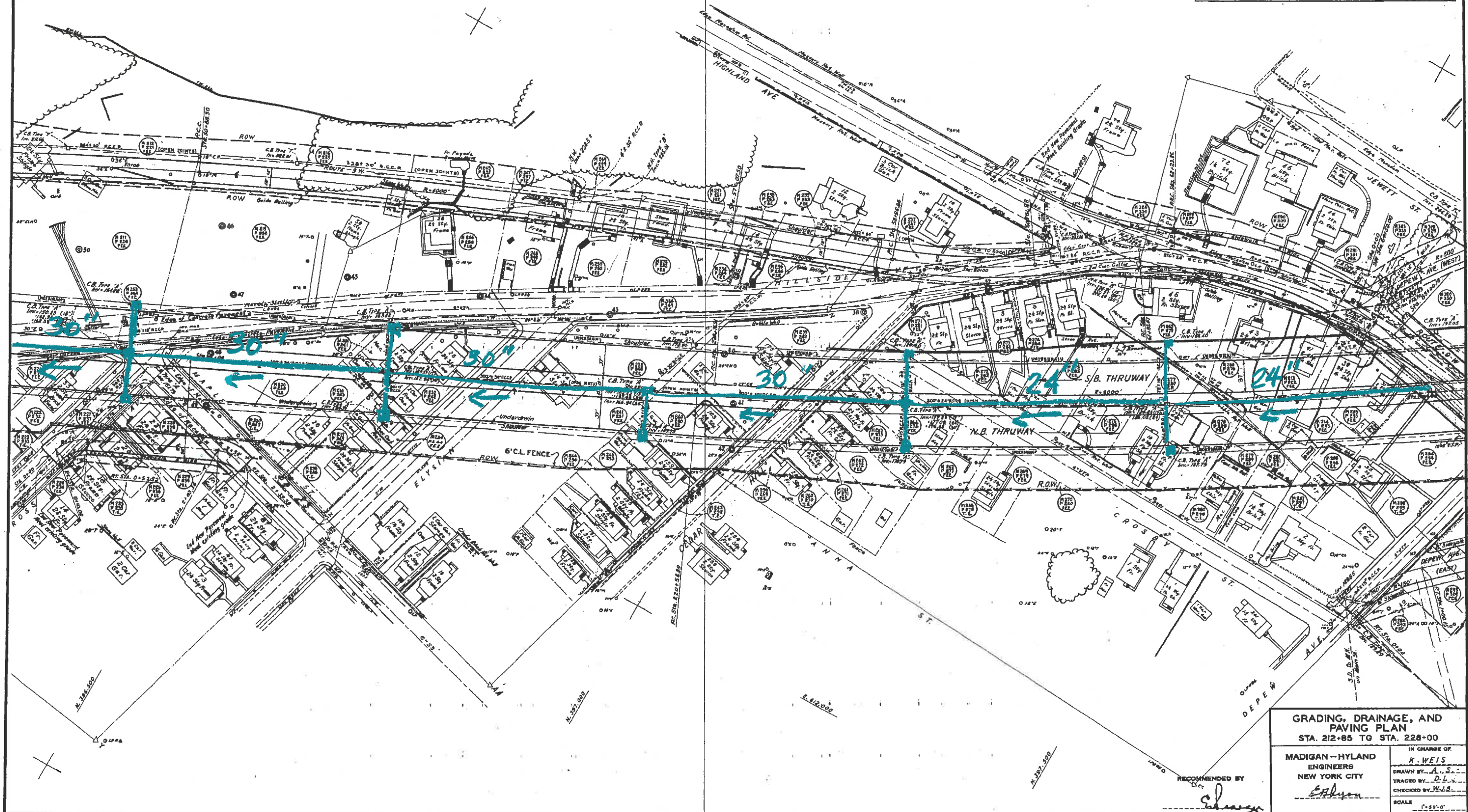
IN CHARGE OF
K. WEIS
DRAWN BY A.S.
TRACED BY P.L.
CHECKED BY M.S.L.
SCALE 1"=50'-0"

RECOMMENDED BY
[Signature]

RAILROAD
INSERT

STATE	SHEET No.	TOTAL SHEETS
N. Y.	33 R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SECTION 8 A - ROCKLAND COUNTY



Q 833

GRADING, DRAINAGE, AND
PAVING PLAN
STA. 212+85 TO STA. 228+00

IN CHARGE OF
K. WEIS

DRAWN BY A.L.S.
TRACED BY D.L.S.
CHECKED BY W.L.S.

SCALE 1"=50'-0"

RECOMMENDED BY
Schuyler

FILE NAME = DGN\$SPEC
DATE/TIME = DGN\$SYTIME0123456
USER = DGN\$USERNAME

DESIGN SUPERVISOR

DESIGNED BY

CHECKED BY

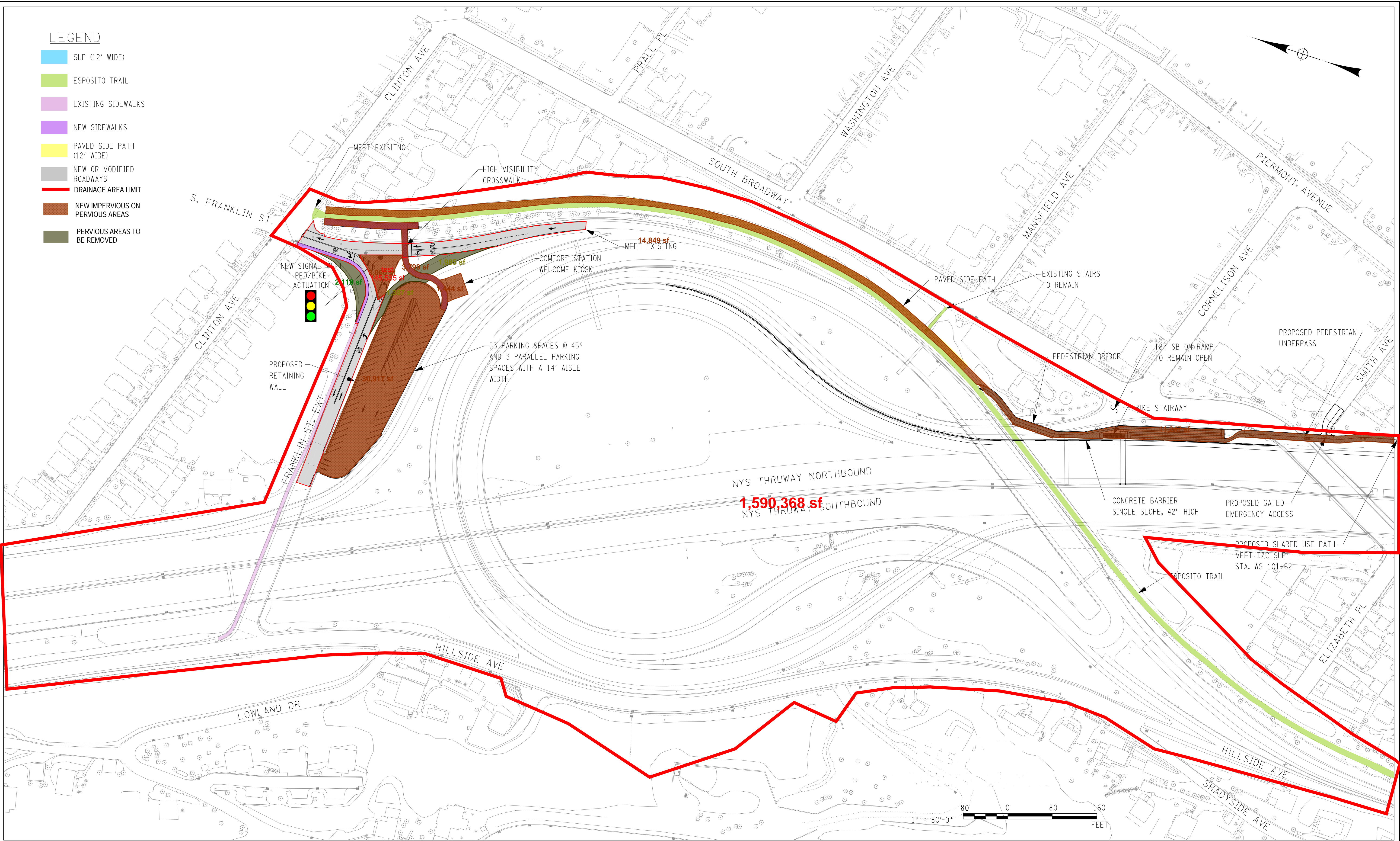
ESTIMATED BY

DRAFTED BY

CHECKED BY

LEGEND

- SUP (12' WIDE)
- ESPOSITO TRAIL
- EXISTING SIDEWALKS
- NEW SIDEWALKS
- PAVED SIDE PATH (12' WIDE)
- NEW OR MODIFIED ROADWAYS
- DRAINAGE AREA LIMIT
- NEW IMPERVIOUS ON PERVIOUS AREAS
- PERVIOUS AREAS TO BE REMOVED



HNTB

5 Penn Plaza, 6th Floor
New York, New York 10001



**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE: 01/25/16

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

DRAINAGE AREAS
ALTERNATIVE E

CONTRACT NUMBER

232234-12

DRAWING NO.

SHEET NO. 1 of 1

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8



Drainage Area and Water Quality Volume Calculations

Overall Pervious

Areas Square

Feet

Alternative E

New Impervious SF

New Pervious SF

30209

11247

1387

5104

3799

1985

44295

1444

2118

23489

30917

25659

14849

60357

62256

5490

56766

1.303168

Acres

20285

Pervious

590373

13.553

Acres

25903

Impervious

999996

22.957

Acres

36333

Total

1590369

36.510

Acres

41993

Alternative F

New Impervious SF

New Pervious SF

55368

16379

3565

28747

10566

4542

27588

13787

15287

130919

8954

17699

17250

60546

8954

12645

75890

23394

52496

1.205142

Acres

Pervious

647139

14.856

Acres

Impervious

943230

21.654

Acres

Pervious

594643

13.651

Acres

Total Project

Area

1590369

36.510

Acres

Impervious

995726

22.859

Acres

Total

1590369

36.510

Acres

Alt F Total

Disturbed Area

SF

9303

126151

77529

6009

34340

Total Sq Ft

253332

5.815702 Acres

Alt E Total

Disturbed Area SF

1387

1985

2118

145534

11247

3800

1444

30917

14378

3060

Total Sq Ft

215870

4.955693 Acres

Alt F Water Quality Volume WQv

I=

15.93%

Rv=

0.1931

Use Minimum

0.2

WQv =

0.7891

Ac-Ft

25%=

0.197275

Ac-Ft

Alt E Water Quality Volume WQv

I=

13.57%

Rv=

0.1724

Use Minimum

0.2

WQv =

0.7891

Ac-Ft

25%=

0.197275

Ac-Ft

Appendix 6

Structures Information

Exit 10 RAMP BRIDGES

<u>MP</u>	<u>BIN</u>	<u>DESCRIPTION</u>	<u>GENERAL REC</u>	<u>COND. RATING</u>
16.44	5513940	BROADWAY OVER TWY	5	4.35
16.56	1007080	9W NORTHBOUND	5	4.72
16.59	5513950	RT 9W ACCESS	6	5.48
16.75	5513969	SO. NYACK INTER.	6	5.68
16.81	1007090	FRANKLIN ST. EXTENTION	5	4.83

Appendix 7

Utility Information

FILE NAME = DGN\$SPEC
DATE/TIME = DGN\$SYTIME0123456
USER = DGN\$USERNAME

DESIGN SUPERVISOR

DESIGNED BY

CHECKED BY

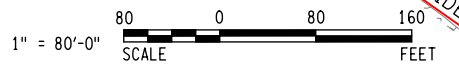
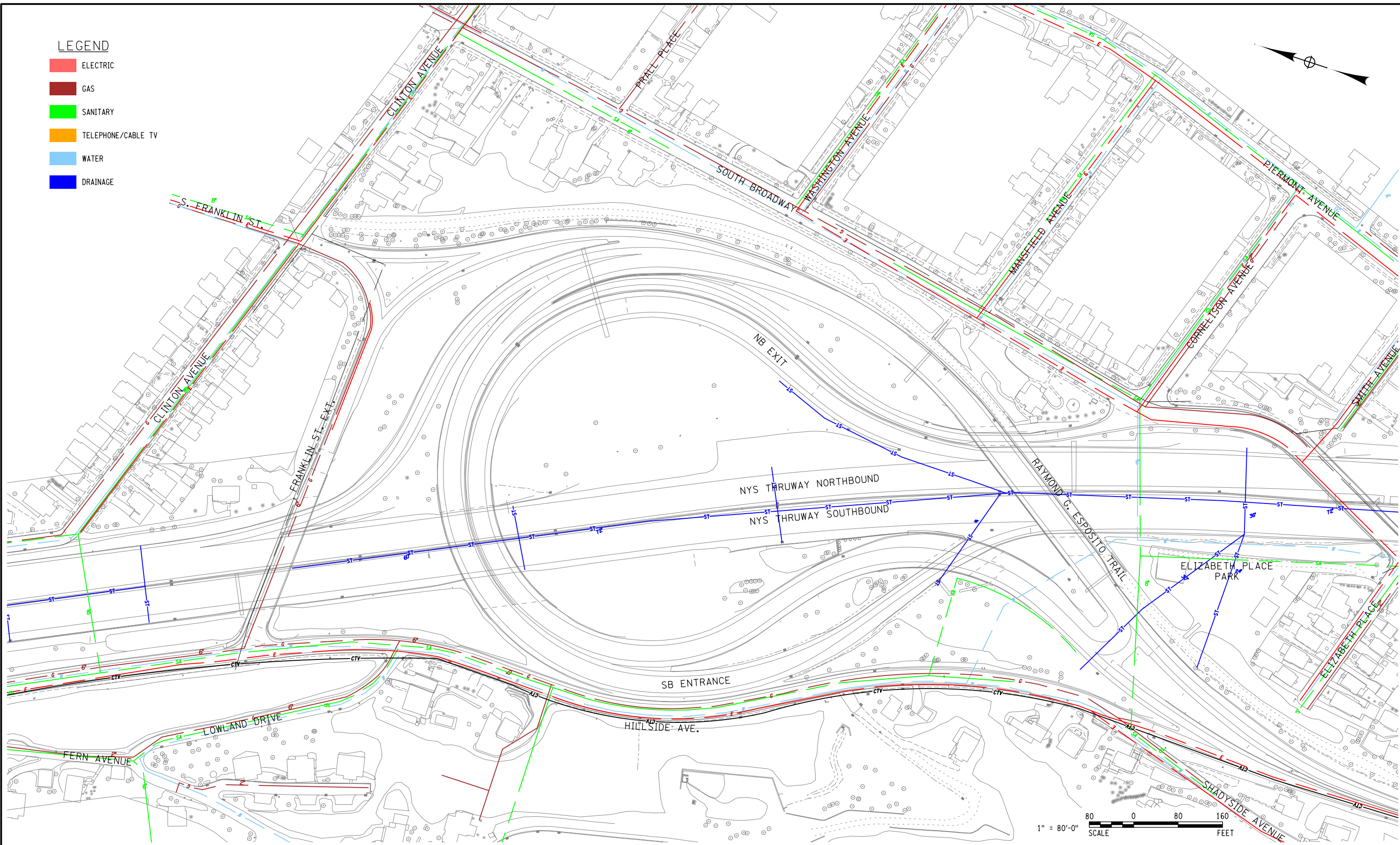
ESTIMATED BY

DRAFTED BY

CHECKED BY

LEGEND

- ELECTRIC
- GAS
- SANITARY
- TELEPHONE/CABLE TV
- WATER
- DRAINAGE



HNTB

5 Penn Plaza, 6th Floor
New York, New York 10001



**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY

DATE: 12/18/15

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

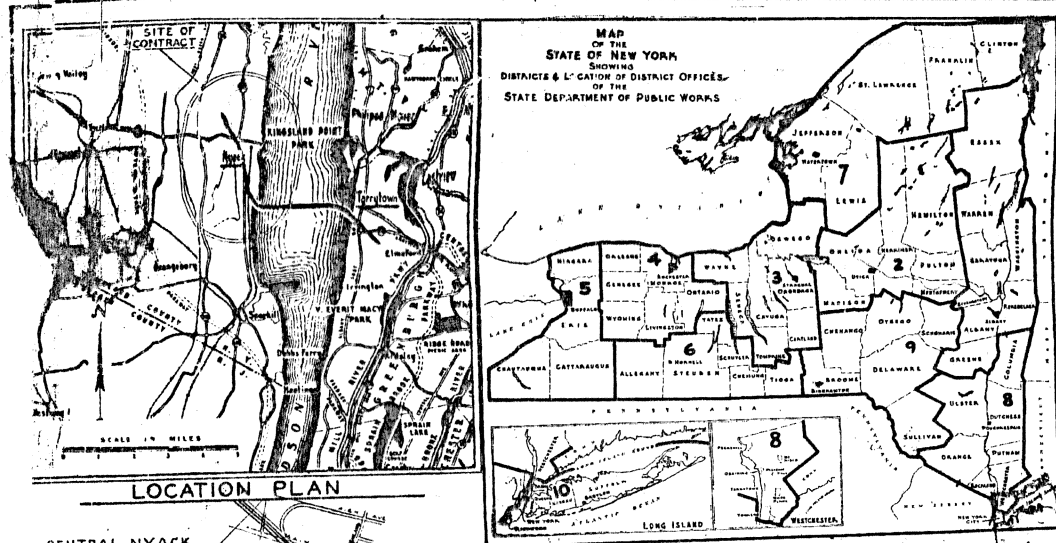
EXISTING UTILITIES PLAN

CONTRACT NUMBER

232234-12

DRAWING NO.
SHEET NO.

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8



NEW YORK STATE THRUWAY AUTHORITY

PLANS FOR CONSTRUCTING A PORTION OF THE
NEW YORK STATE THRUWAY

HUDSON SECTION - SUBDIVISION 9A (NYACK APPROACH TO TAPPAN ZEE BRIDGE)

From Station 161 + 00 to Station 242 + 69, a Length of 1.55 Miles in the Town of Orangetown of which 0.18 Mile is in the Village of Grandview-on-Hudson, 0.98 Mile in the Village of South Nyack and 0.39 Mile in the Village of Nyack AND

From Station 242 + 69 to Station 244 + 00, a Length of 0.02 Mile in the Town of Clarkstown.

AND FOR CONSTRUCTING THE NYACK INTERCHANGE

A Length of 1.07 Miles in the Town of Orangetown, Village of South Nyack AND FOR CONSTRUCTING

Exit Ramp "B" N.B.

A Length of 0.13 Mile in the Town of Orangetown, Village of Nyack

A TOTAL LENGTH OF 2.77 MILES

AND FOR RECONSTRUCTING PORTIONS OF

NEW JERSEY STATE LINE - NYACK, PT. 3, S.H. NO. 8136

Between Station 8 + 15 and Station 59 + 78, a Length of 1.50 Miles in the Town of Orangetown, Village of South Nyack AND THE

NEW JERSEY STATE LINE - NYACK, PT. 4, S.H. #5682

Between Station 59 + 78 and Station 70 + 69, a Length of 0.21 Mile in the Town of Orangetown, Village of Nyack AND

NYACK VILLAGE - MAIN ST., S.H. NO. 8459

Between Station 1 + 71 and Station 10 + 77, a Length of 0.17 Mile in the Town of Orangetown, Village of Nyack AND THE

KNAPPS CORNERS - NYACK, S.H. #5178

Between Station 10 + 77 and Station 12 + 65, a Length of 0.04 Mile in the Town of Clarkstown

A TOTAL LENGTH OF 1.92 MILES

AND FOR CONSTRUCTING PORTIONS OF

PIERMONT AVE., a Length of 0.13 Miles

PUBLIC RIGHT OF WAY, a Length of 0.05 Mile

FERRIS LANE, a Length of 0.05 Mile

A Total Length of 0.23 Mile in the Town of Orangetown, Village of Grandview-on-Hudson AND

BROADWAY, a Length of 0.15 Mile

CONNECTION from Clinton Ave. to White Ave., a Length of 0.16 Mile

CONNECTION from Ross Ave. to Maple St., a Length of 0.04 Mile

RELOCATION of Erie R.R. from Sta. 5 + 74 to Sta. 35 + 10, a Length of 0.56 Mile

A Total Length of 0.91 Mile in the Town of Orangetown, Village of South Nyack AND

DEWEY AVE. WEST, a Length of 0.14 Mile

DEWEY AVE. EAST, a Length of 0.06 Mile

A Total Length of 0.20 Mile in the Town of Orangetown, all in the Village of Nyack

A COMBINED LENGTH OF 1.34 MILES

A TOTAL COMBINED LENGTH OF 6.03 MILES

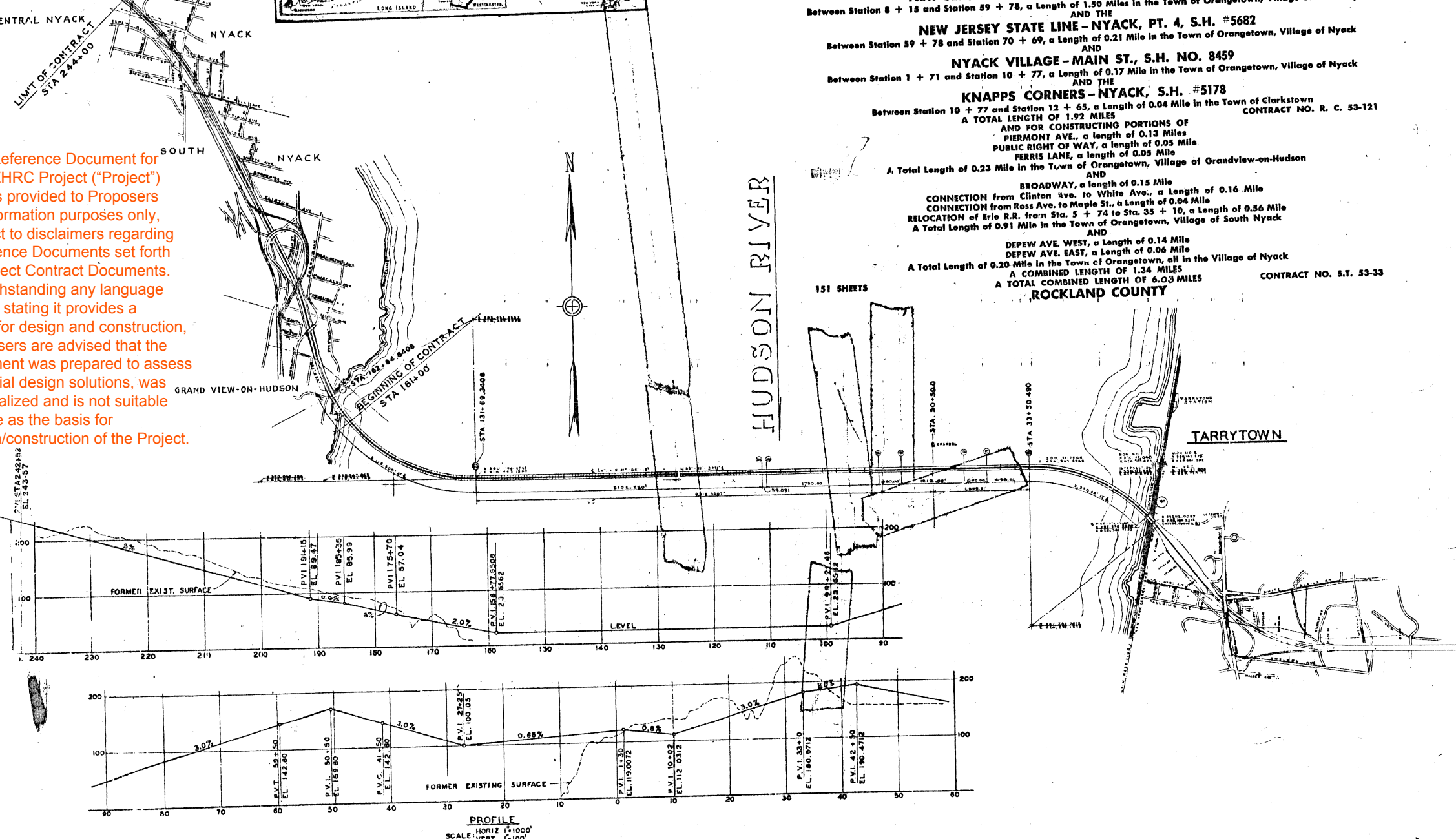
ROCKLAND COUNTY

CONTRACT NO. S.T. 53-33

151 SHEETS

HUDSON RIVER

This Reference Document for the TZHRC Project ("Project") RFP is provided to Proposers for information purposes only, subject to disclaimers regarding Reference Documents set forth in Project Contract Documents. Notwithstanding any language herein stating it provides a basis for design and construction, Proposers are advised that the document was prepared to assess potential design solutions, was not finalized and is not suitable for use as the basis for design/construction of the Project.



TYPE OF CONSTRUCTION			
Reinf. Cem. Conc. Pav't.	1.57 Miles		
Unreinf. Cem. Conc. Pav't.	3.07 Miles		
Asphalt Concrete Type 1A, Opt.	0.78 Mile		
Relocation of Erie R. R.	0.56 Mile		
Misc. Work	0.05 Mile		

- Including
- H.G.S., Broadway over Thruway, Comp. I Beam 2 Spans; 1 @ 104.59' and 1 @ 122.58'
 - R.R.G.S., Erie Railroad and 9W over Thruway, Composite I Beam, through girder, 4 Spans; 2 @ 39.5', 1 @ 101.38' and 1 @ 105.89'
 - H.G.S., Exit from Thruway to 9W over Access from 9W, Composite I Beam 1 Span 60.15'
 - H.G.S., Exit from Thruway and Access to Thruway of 9W, Composite I Beam 3 Spans; 1 @ 54.5', 1 @ 64.5' and 1 @ 61.83'
 - H.G.S., N.B. rte 9W over Thruway, Composite I Beam, 3 Spans; 1 @ 66.23', 1 @ 70.71' and 1 @ 78.62'
 - H.G.S., rte 9W over Thruway, Composite I Beam, 2 Spans; 1 @ 94.78' and 1 @ 85.54'
 - H.G.S. Thruway over rte 59, Composite I Beam, 4 Spans; 1 @ 68.35', 1 @ 82.48', 1 @ 79.14' and 1 @ 60.87'

STANDARD STRUCTURE SHEETS
40-5, 40-101R, 40-103R, 46-4, 47-36, 47-37, 49-65, 49-7, 49-42, 50-1R, 50-34, 51-3, 51-20, 51-21, 52-17A, 52-17B, 52-17C, 52-17D, 52-43, 52-45, 53-11A, 53-11R, 53-11W, 53-41R, 53-46TI, 53-47.

All work contemplated under this contract to be covered by and in conformity with the specifications adopted January 2, 1951, except as modified on these plans and in the Itemized Proposal.

PREPARED AND RECOMMENDED
BY: MADIGAN-HYLAND
CONSULTING ENGINEERS

Edmund 1953

DEPARTMENT OF PUBLIC WORKS

APPROVED *J.B. McMorran* 1953
J.B. MCMORRAN CHIEF ENGINEER

APPROVED _____ 1953
NEW YORK STATE THRUWAY AUTHORITY

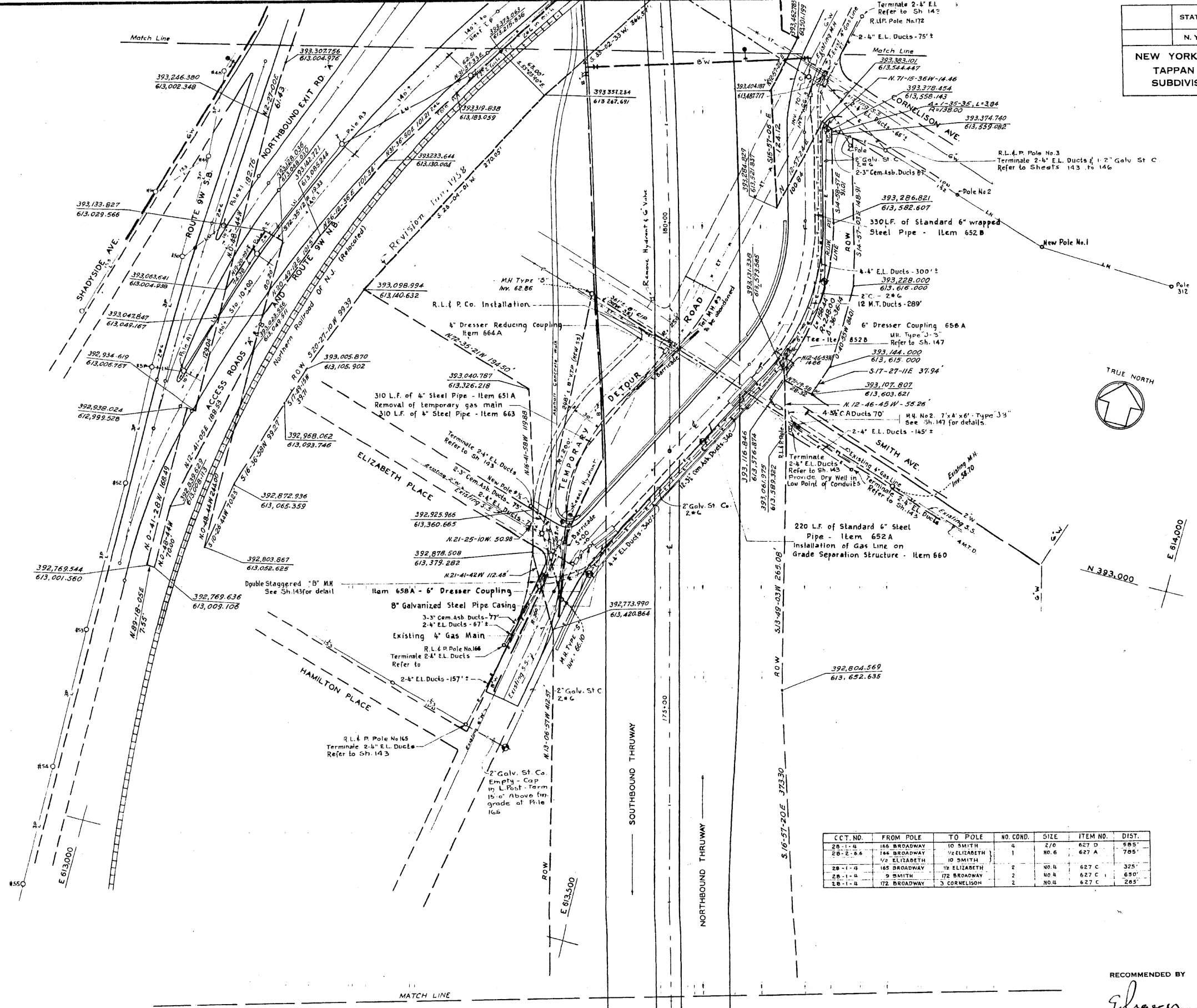
B.D. TALLAMY, CHAIRMAN

BY: C.H. LANG

DEPUTY CHIEF ENGINEER

STATE		SHEET No.	2	TOTAL SHEETS
N. Y.				

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
28-1-4	166 BROADWAY	10 SMITH	4	2/0	627 D	585'
28-2-6	166 BROADWAY	1/2 ELIZABETH	1	NO. 6	627 A	705'
28-1-4	165 BROADWAY	1/2 ELIZABETH	2	NO. 4	627 C	325'
28-1-4	9 SMITH	172 BROADWAY	2	NO. 4	627 C	650'
28-1-4	172 BROADWAY	3 CORNELISON	2	NO. 4	627 C	265'

See Utility Note, Sheet No. 35

For Legend and General Notes see Sh. N° 35

NYACK-R.O.W. ALIGNMENT
STA. 172+05 TO STA. 181+75

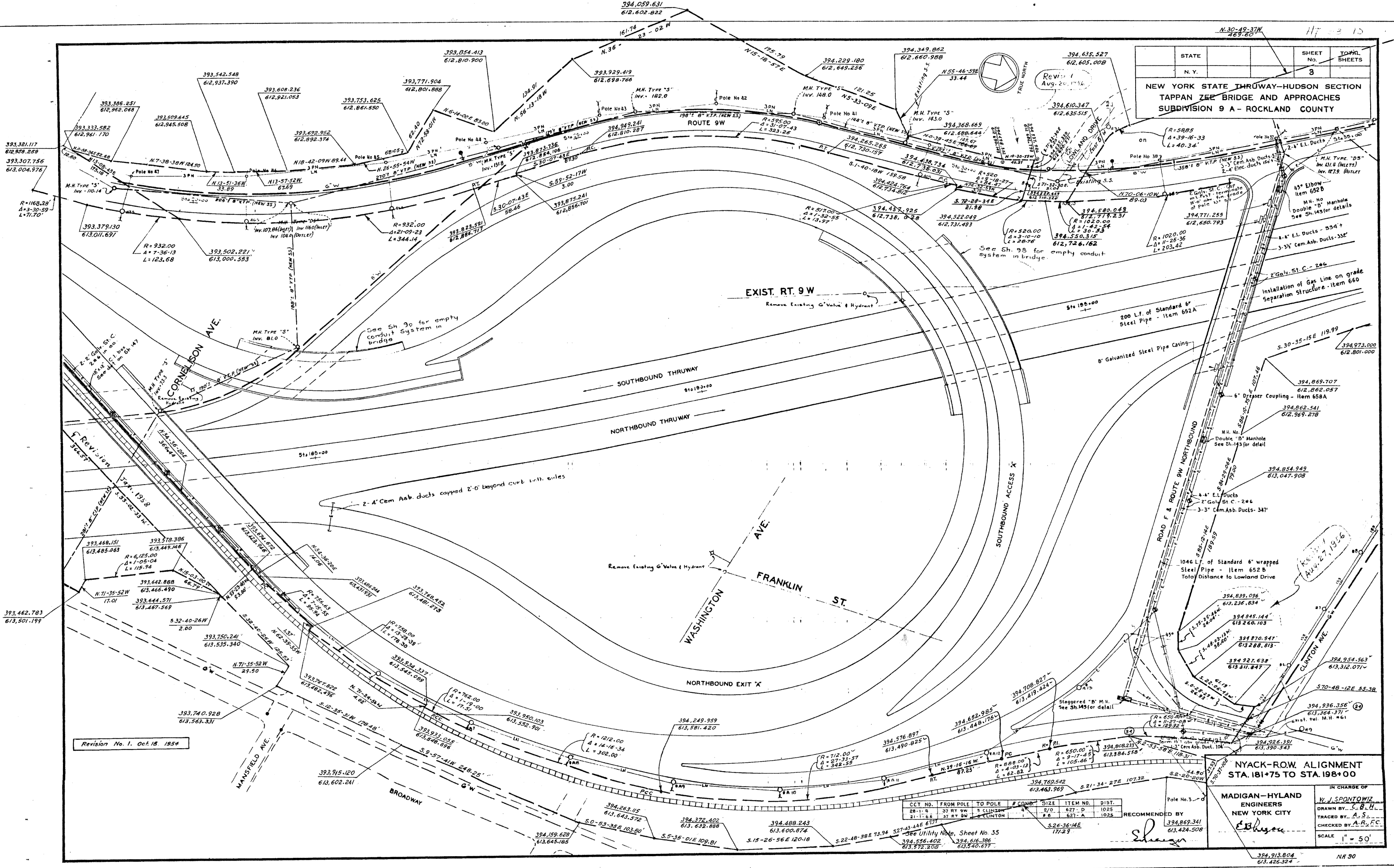
IN CHARGE OF MADIGAN-HYLAND ENGINEERS NEW YORK CITY	W. J. SPONTOWITZ DRAWN BY: S. B. H. TRACED BY: A. S. CHECKED BY: A. R. F. C. SCALE 1" = 50'
--	---

RECOMMENDED BY

E. H. Hager

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	3	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



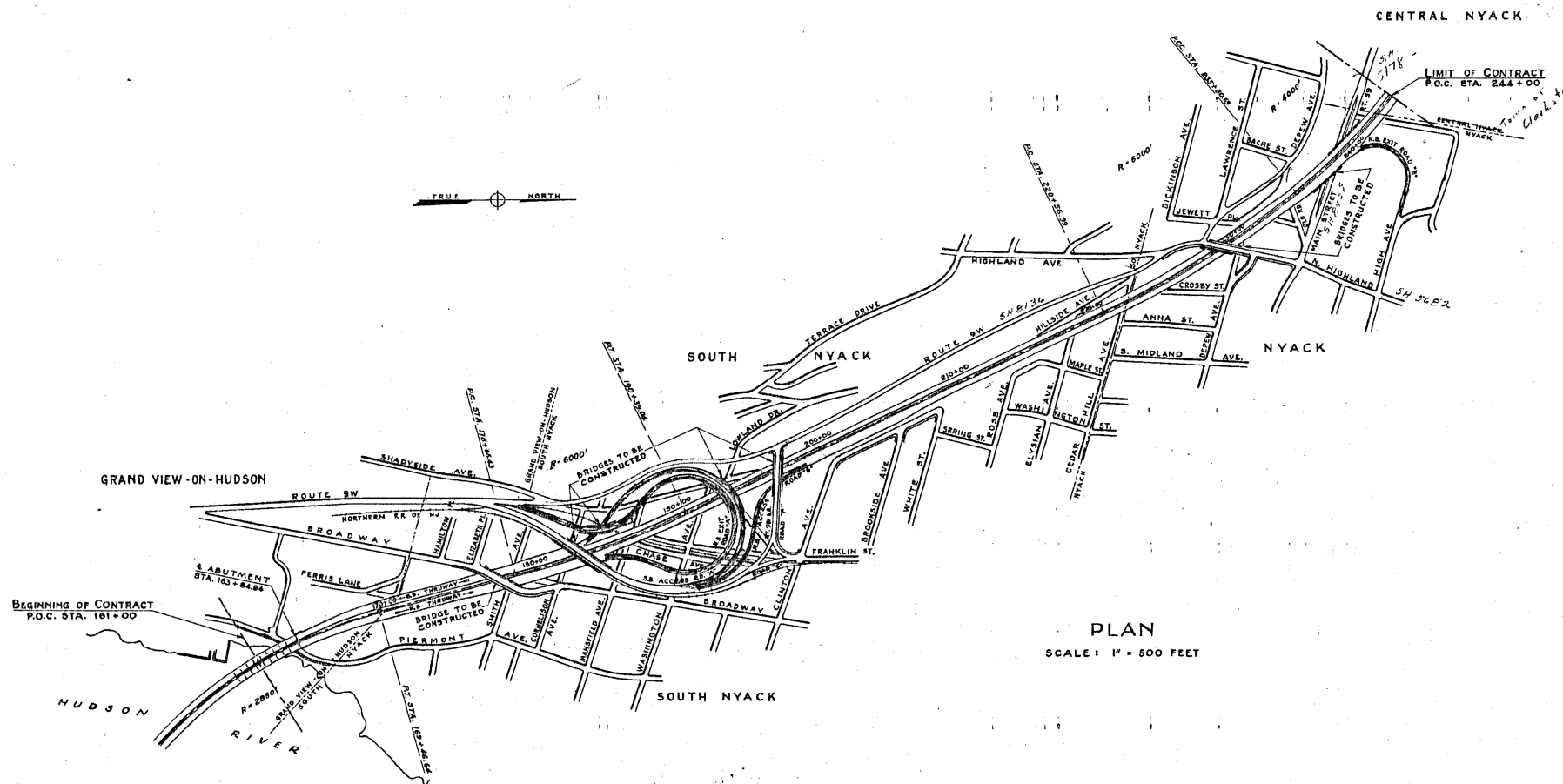
STATE	SHEET No.	TOTAL SHEETS
N. Y.	3 R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY

General Notes

- The Coordinate System used is the New York State Coordinate System, East Zone, a transverse Mercator Projection of the Clarke spheroid of 1866, having a central meridian 74°20' West from Greenwich, on which meridian the scale is set one part in 30,000. The origin of coordinates is at the intersection of the meridian 74°20' west longitude and the parallel 40°00' north latitude. This origin is given the coordinates: E=500,000 feet and N=0 feet.
- Elevations are referred to U.S.C. & G.S. Datum which is Mean Sea Level at Sandy Hook.
- Loads and Stresses are in accordance with A.A.S.H.O. Specification of 1949 for H20-S16 (Modified). This structure has been designed for a series of H20-S16 truck trailers in each traffic lane. Dimensions and Distribution as specified in A.A.S.H.O. truck trailers spaced 30 feet apart between axles.
- Material and fabrication are in accordance with the Specifications of the New York State Dept. of Public Works, Jan. 2, 1951, except as noted in Detail Specifications.
- Adequate keys shall be provided at all construction joints. Construction joints other than those shown on drawings will not be permitted without the written approval of the Engineer.
- N.I.C. denotes "Not in Contract".
- Lap all bars at splices a minimum of 33 diameters, place bars in contact and wire together. No splice will be permitted except where shown on drawing or otherwise directed by Engineer.
- Dimensions on reinforcement are to centerline of bars except as noted.
- All existing structures to remain, to be adjusted where necessary, to final grade.
- Sidewalks to be constructed in location as shown on Typical Sections. Where type of curb changes the transition shall be made in 10'.
- All Water Mains to be cement lined cast iron pipe unless shown otherwise. All existing water mains, gas mains, storm sewers, sanitary sewers within the limits of work to be abandoned unless otherwise directed. Water valves on abandoned mains to be salvaged.
- Where new utility meets existing utility, the connection shall be made in a manner satisfactory to the utility company involved.
- Existing hydrants to be removed shall be reset in new locations as shown on plans.
- All elevations top of concrete pads, except at Bent 1 and the Nyack Abutment, are bush hammered elevations. Pour concrete 1/4" higher and bush hammer to exact elevation.
- All Piles under Item B5 are to be driven to rock. Contractor is to determine the lengths of pile necessary.
- All Piles under Item B5C are to be driven to the design load of 30 tons. Lengths necessary to meet this requirement are to be determined by the contractor.

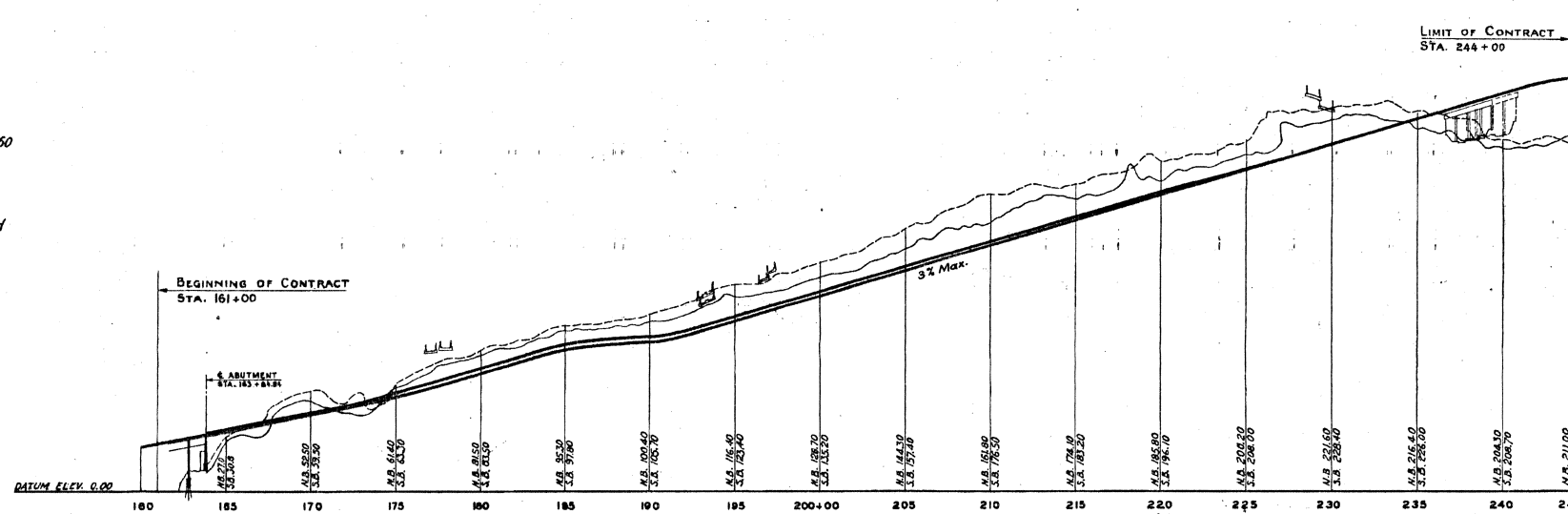
NOTE: PROFILES SHOW FINISHED SURFACE OF PAVEMENT ON CENTER LINE



PLAN
SCALE: 1" = 500 FEET

~ LEGEND ~

- Survey Base Line
- Existing Water Main
- Water Valve & Manhole
- Water Valve
- Hydrant & Valve
- Sanitary Sewer & Manhole
- Storm Sewer
- Gas Main
- Underground Telephone Ducts
- Pole
- Tree
- Right of Way Line
- Reinforced Concrete Culvert Pipe
- Cast Iron Pipe
- Vitrified Tile Pipe
- Location and Number of Boring
- Property Acquisition - For Reputed Owner and Type of acquisition see Sheets Nos. 58, 59 & 60
- Storm Sewer to be Constructed
- Sanitary Sewer to be Constructed
- Gas Main to be Constructed
- Water Main to be Constructed
- Air Cock & Bronze Hose Connection to be Constructed in Water Manhole
- New or Relocated Position of Hydrant
- New Water Valve in Manhole
- Chain Link Fence to be Constructed
- Guide Railing to be Constructed



PROFILE OF NORTH & SOUTH BOUND THRUWAY

SCALE: HOR. 1" = 500 FEET
VER. 1" = 50 FEET

GENERAL PLAN & PROFILE

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF

K. WEIS

DRAWN BY: A.J.S.

TRACED BY: A.J.S.

CHECKED BY: W.L.S.

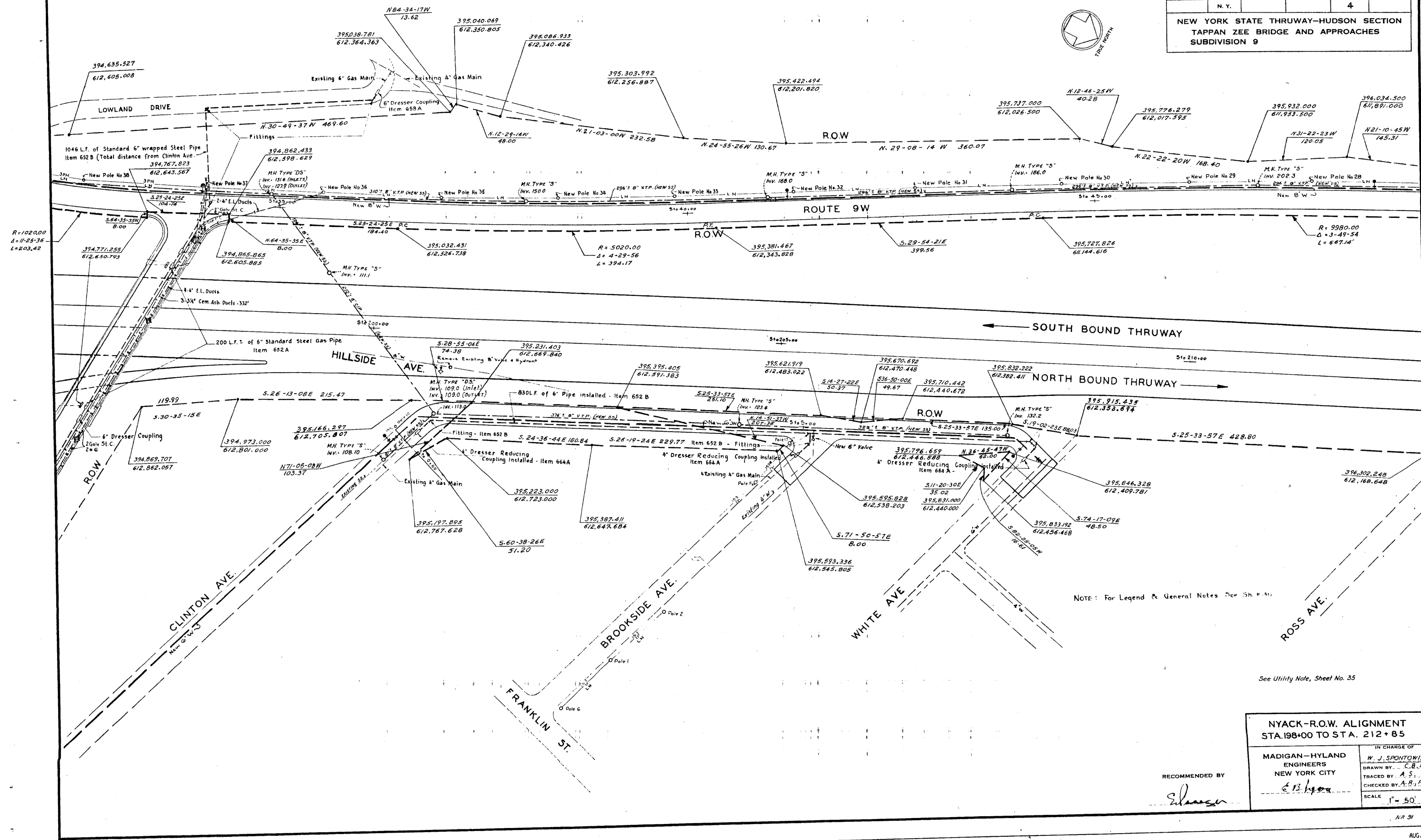
SCALE AS NOTED

RECOMMENDED BY

Shawyer

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	4	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9



NOTE: For Legend & General Notes See Sh. N. 31.

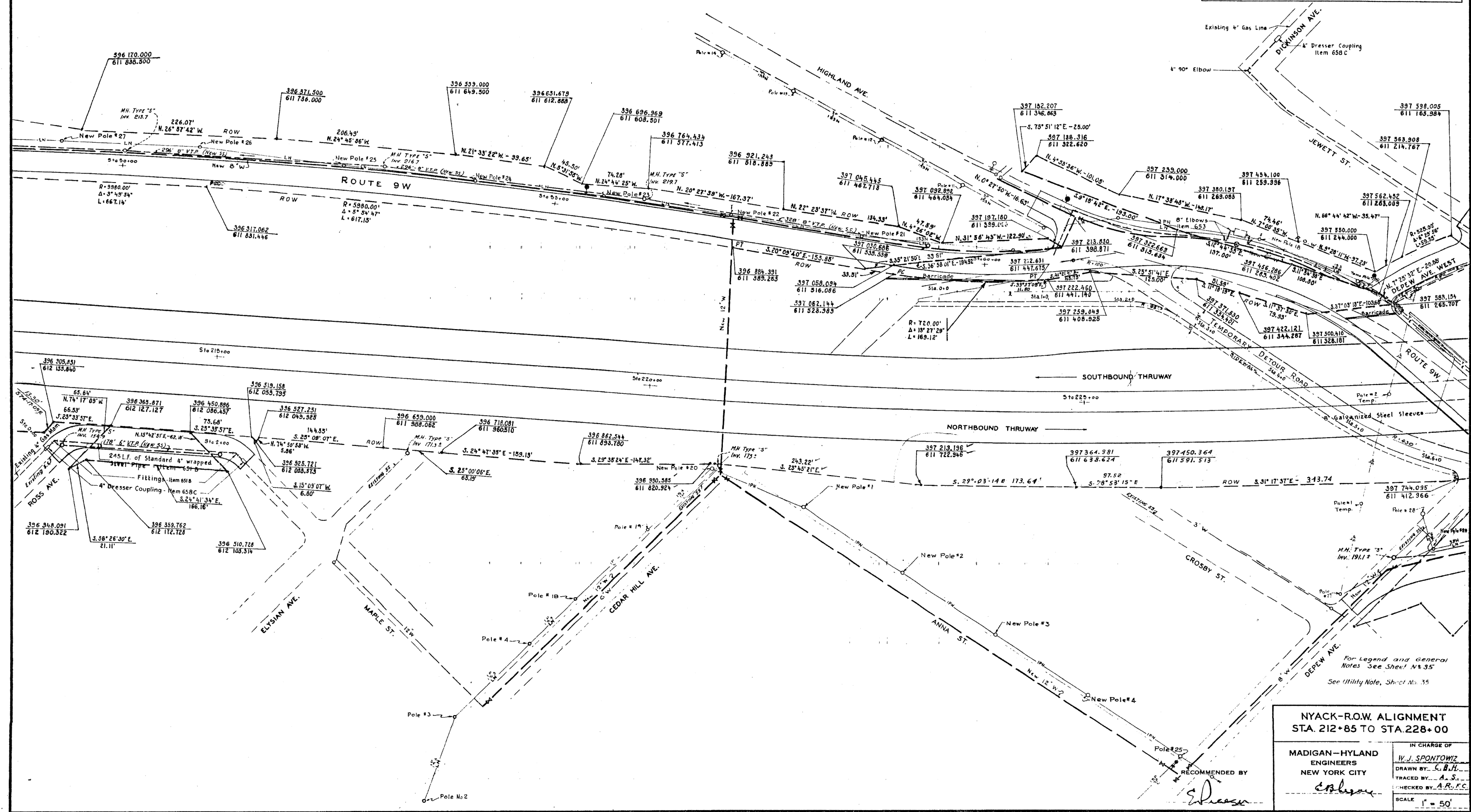
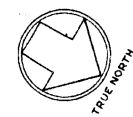
See Utility Note, Sheet No. 35

NYACK-R.O.W. ALIGNMENT
STA. 198+00 TO STA. 212+85

RECOMMENDED BY <i>E. J. Spontowicz</i>	IN CHARGE OF
	MADIGAN-HYLAND ENGINEERS NEW YORK CITY
	DRAWN BY C. B. F.
	TRACED BY A. S.
CHECKED BY A. B. F.	
SCALE 1" = 50'	

STATE	SHEET No.	TOTAL SHEETS
N. Y.	5	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



NYACK-R.O.W. ALIGNMENT
STA. 212+85 TO STA. 228+00

IN CHARGE OF
W. J. SPONTOWITZ
DRAWN BY: C. B. H.
TRACED BY: A. S.
CHECKED BY: A. R. F. C.

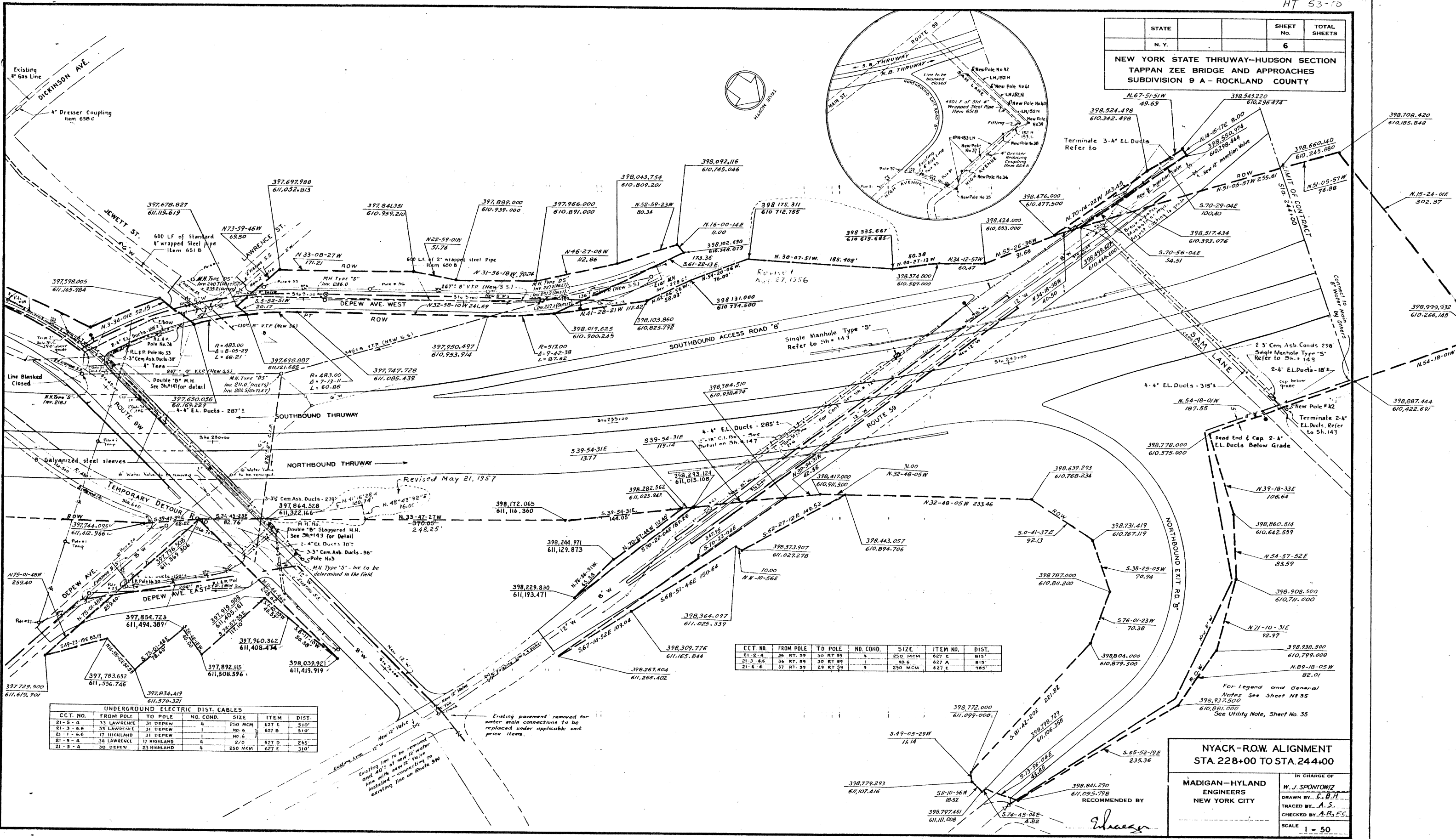
RECOMMENDED BY
[Signature]

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

SCALE 1" = 50'

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	6	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
21-2-4	36 RT. 59	30 RT. 59	4	250 MCM	627 E	615'
21-3-6	36 RT. 59	30 RT. 59	1	NO. 6	627 A	815'
21-4-4	37 RT. 59	29 RT. 59	8	250 MCM	627 E	985'

UNDERGROUND ELECTRIC DIST. CABLES						
CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM	DIST.
21-5-4	33 LAWRENCE	31 DEWEY	4	250 MCM	627 E	510'
21-3-6	33 LAWRENCE	31 DEWEY	1	NO. 6	627 A	510'
21-1-6	17 HIGHLAND	31 DEWEY	4	NO. 6	627 D	265'
21-5-4	30 LAWRENCE	23 HIGHLAND	4	250 MCM	627 E	310'

NYACK-R.O.W. ALIGNMENT
STA 228+00 TO STA. 244+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
W. J. SPONTONIZ

DRAWN BY S. B. H.

TRACED BY A. S.

CHECKED BY A. R. F.

SCALE 1" = 50'

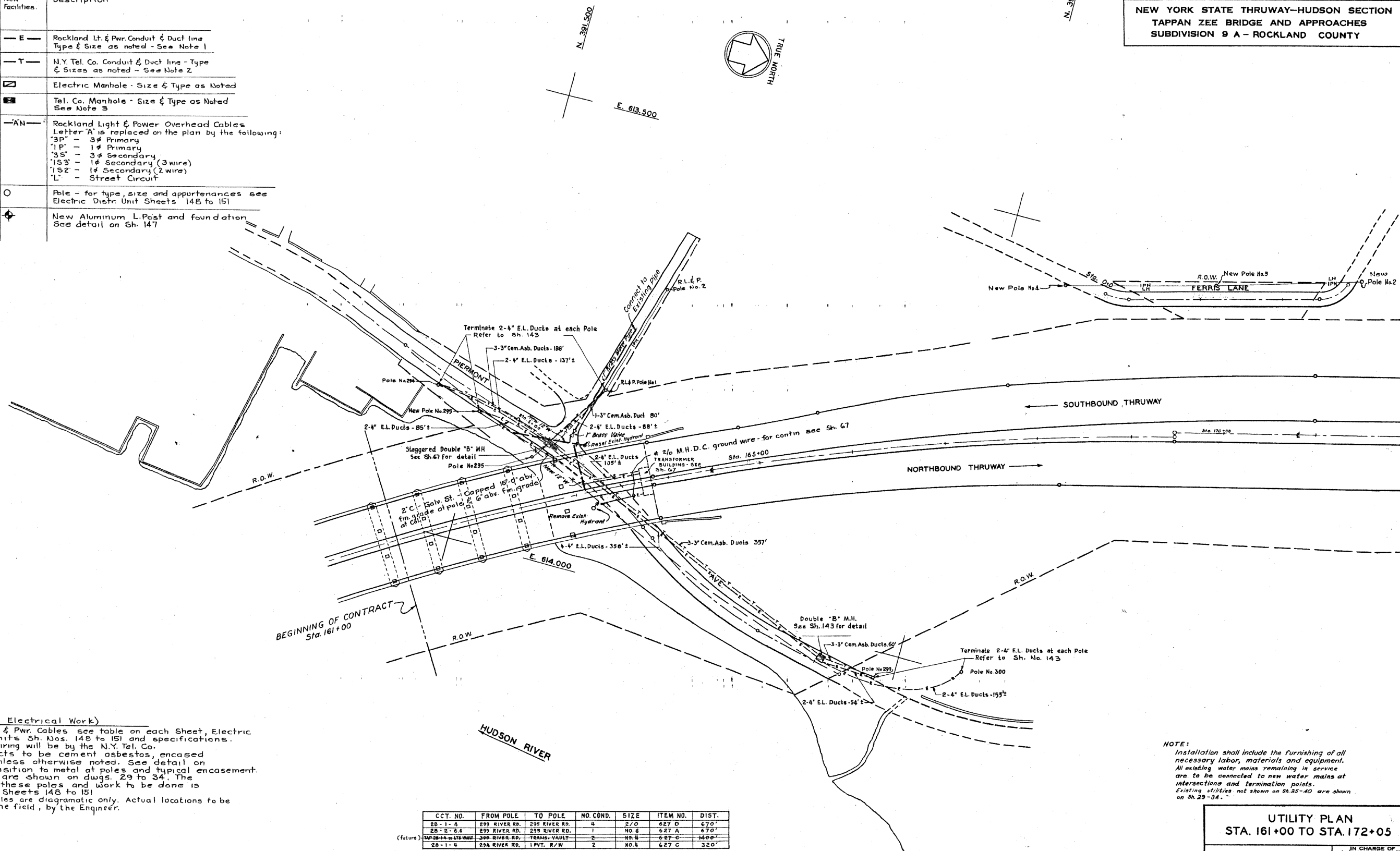
NR.33

LEGEND- (For Electrical Work)

Existing Facilities to Remain.	Existing Facilities to be Removed or Abandoned.	New Facilities.	Description
—E—	—X—	—E—	Rockland Lt. & Pwr. Conduit & Duct line Type & Size as noted - See Note 1
—ET—	—X—	—T—	N.Y. Tel. Co. Conduit & Duct line - Type & Sizes as noted - See Note 2
⊠		⊠	Electric Manhole - Size & Type as Noted
⊠	⊠	⊠	Tel. Co. Manhole - Size & Type as Noted See Note 3
—A—		—AN—	Rockland Light & Power Overhead Cables Letter 'A' is replaced on the plan by the following: 3P - 3# Primary 1P - 1# Primary 3S - 3# Secondary 1S3 - 1# Secondary (3 wire) 1S2 - 1# Secondary (2 wire) L - Street Circuit
○	○	○	Pole - for type, size and appurtenances see Electric Distr. Unit Sheets 148 to 151
		⬢	New Aluminum L. Post and foundation See detail on Sh. 147

STATE	SHEET No.	TOTAL SHEETS
N. Y.	35	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



NOTES: (For Electrical Work)

- For Rockland Lt. & Pwr. Cables see table on each Sheet, Electric Distribution Units Sh. Nos. 148 to 151 and specifications.
- All telephone wiring will be by the N.Y. Tel. Co.
- All Electric ducts to be cement asbestos, encased in concrete, unless otherwise noted. See detail on Sh. 67 for transition to metal at poles and typical encasement.
- Existing poles are shown on dwgs. 29 to 34. The disposition of these poles and work to be done is tabulated on Sheets 148 to 151.
- Locations of Poles are diagrammatic only. Actual locations to be determined in the field, by the Engineer.

CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
28-1-4	299 RIVER RD.	299 RIVER RD.	4	2/O	627 D	670'
28-2-6.6	299 RIVER RD.	299 RIVER RD.	1	NO. 6	627 A	670'
(future) 28-3-1-4	299 RIVER RD.	TRANS. VAULT	2	NO. 8	627 C	1400'
28-1-4	299 RIVER RD.	1 PVT. R/W	2	NO. 8	627 C	320'

NOTE:
Installation shall include the furnishing of all necessary labor, materials and equipment.
All existing water mains remaining in service are to be connected to new water mains at intersections and termination points.
Existing utilities not shown on Sh. 35-40 are shown on Sh. 29-34.

UTILITY PLAN
STA. 161+00 TO STA. 172+05

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF

W. J. SPONTOWIZ

DRAWN BY: G. B. L.

TRACED BY: A. S.

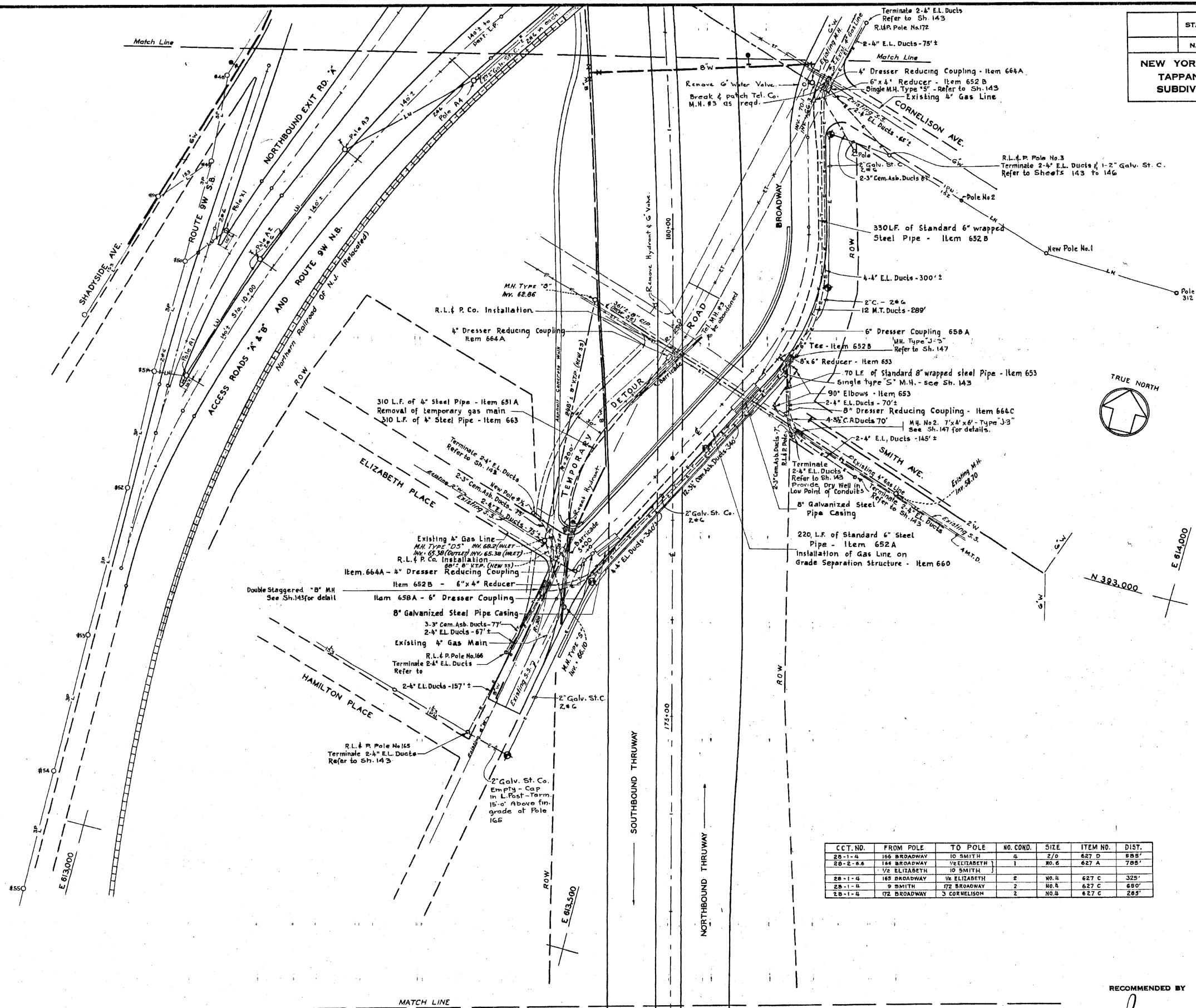
CHECKED BY: A. B. F. C.

SCALE 1" = 50'

RECOMMENDED BY

E. H. H. H.

	STATE		SHEET No.	TOTAL SHEETS
	N. Y.		36	151
<p>NEW YORK STATE THRUWAY-HUDSON SECTION TAPPAN ZEE BRIDGE AND APPROACHES SUBDIVISION 9 A - ROCKLAND COUNTY</p>				



CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
28-1-4	166 BROADWAY	10 SMITH	4	2/0	627 D	585'
28-2-6.6	166 BROADWAY	1/2 ELIZABETH	1	NO. 4	627 A	705'
	1/2 ELIZABETH	10 SMITH				
28-1-4	165 BROADWAY	1/2 ELIZABETH	2	NO. 4	627 C	325'
28-1-4	9 SMITH	172 BROADWAY	2	NO. 4	627 C	690'
28-1-4	72 BROADWAY	3 CORNELISON	2	NO. 4	627 C	265'

See Utility Note, Sheet No. 35

For Legend and General Notes see Sh. N° 35

UTILITY PLAN
STA. 172+05 TO STA. 181+75

**MADIGAN-HYLAND
ENGINEERS**

IN CHARGE OF

J. SPONTOWIZ

AWN BY C. B. H.

PLACED BY A.S.

HECKED BY A. R. J. F. C.

SCALE 1" = 50'

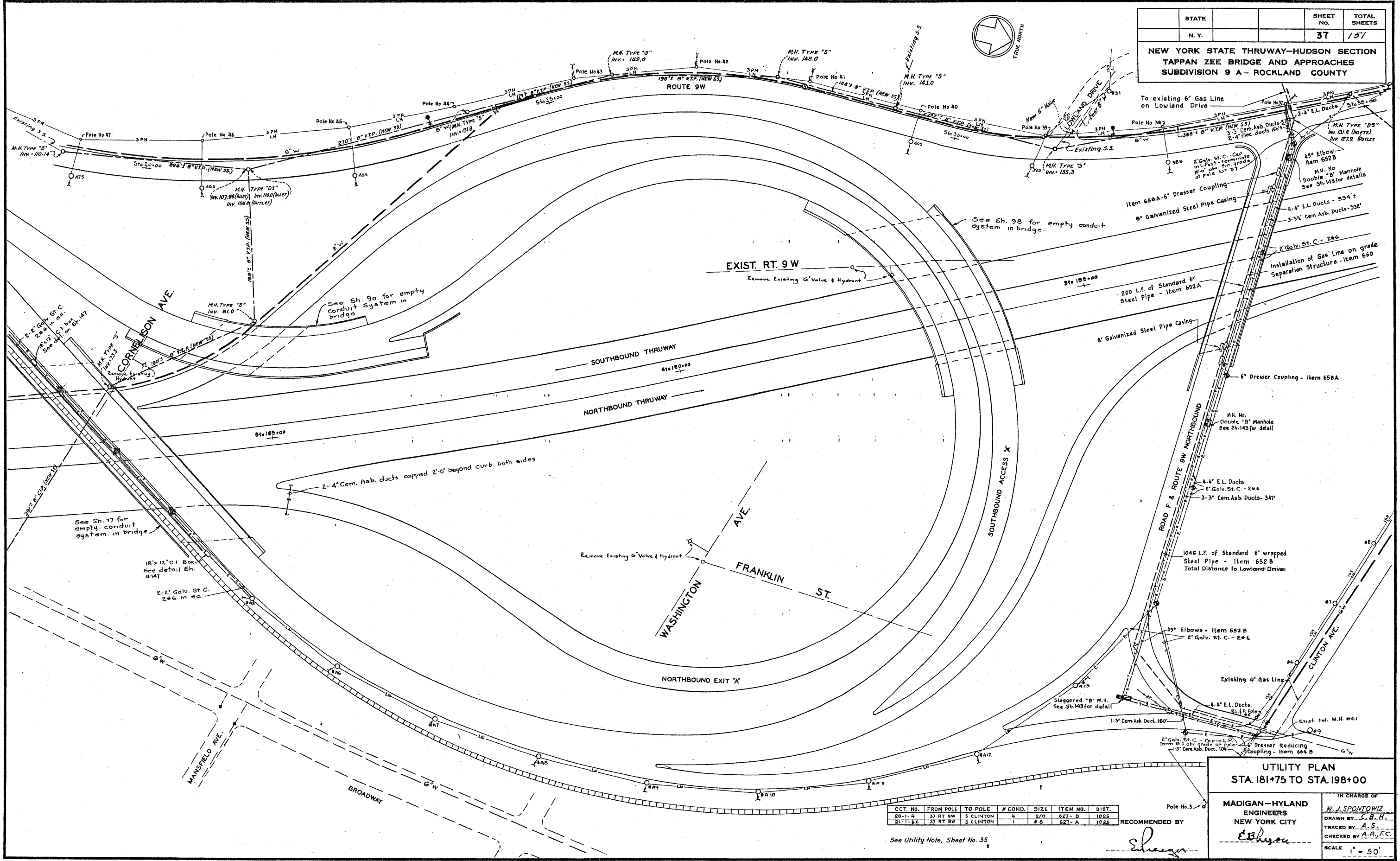
1A 74

RECOMMENDED BY

Ehrlich

STATE	SHEET No.	TOTAL SHEETS
N. Y.	37	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	# COND.	SIZE	ITEM NO.	DIST.
20-1-4	37 RT 9W	5 CLINTON	4	2/0	627-D	1025
21-1-6.6	37 RT 9W	5 CLINTON	1	# 6	627-A	1025

See Utility Note, Sheet No. 35

RECOMMENDED BY
Shanahan

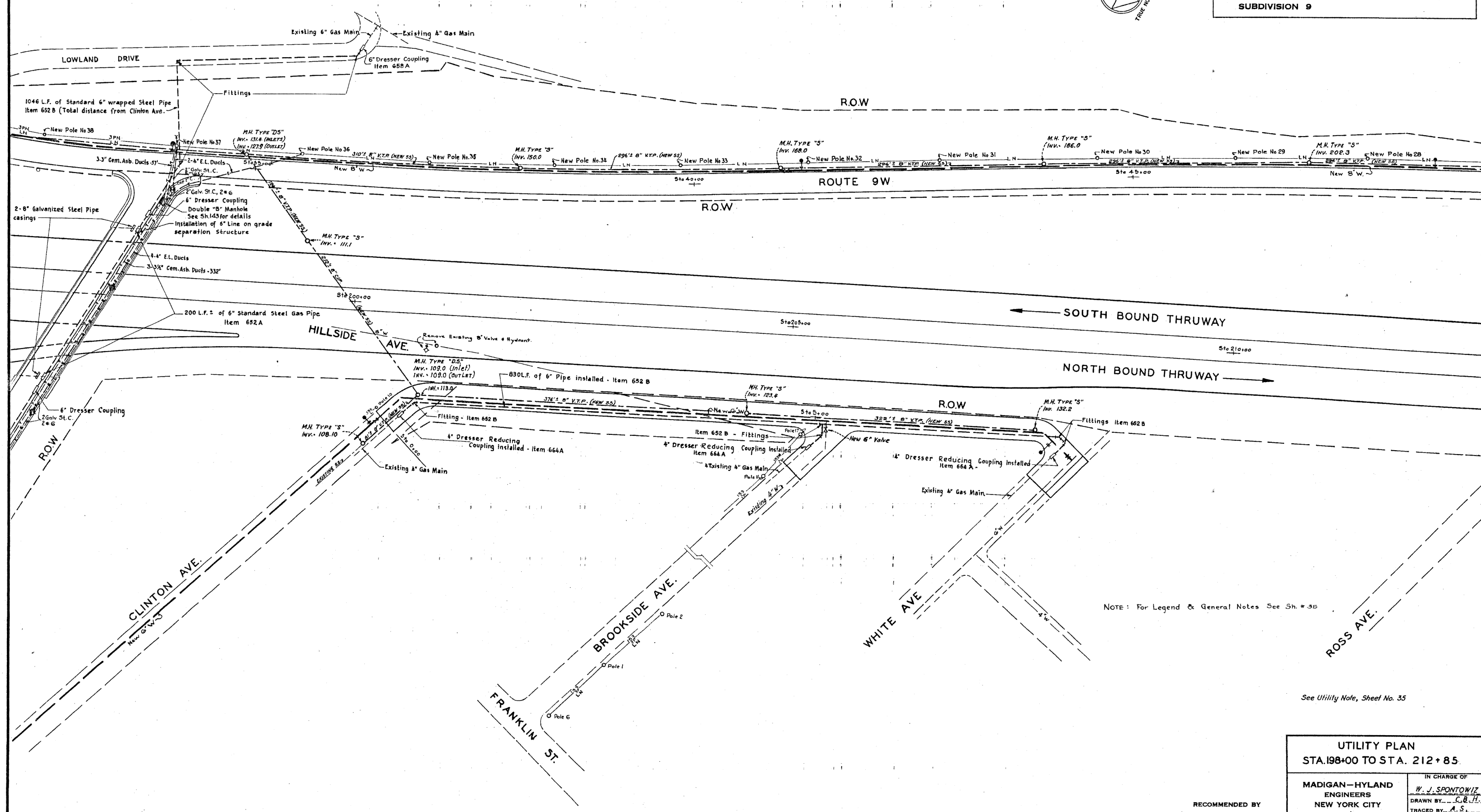
UTILITY PLAN
STA. 181+75 TO STA. 198+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
W. J. SPONTOWITZ
DRAWN BY
C. B. H.
TRACED BY
A. S.
CHECKED BY
A. R. E.C.
SCALE
1" = 50'

STATE	SHEET No.	TOTAL SHEETS
N. Y.	38	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9

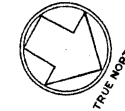


NOTE: For Legend & General Notes See Sh. # 35

See Utility Note, Sheet No. 35

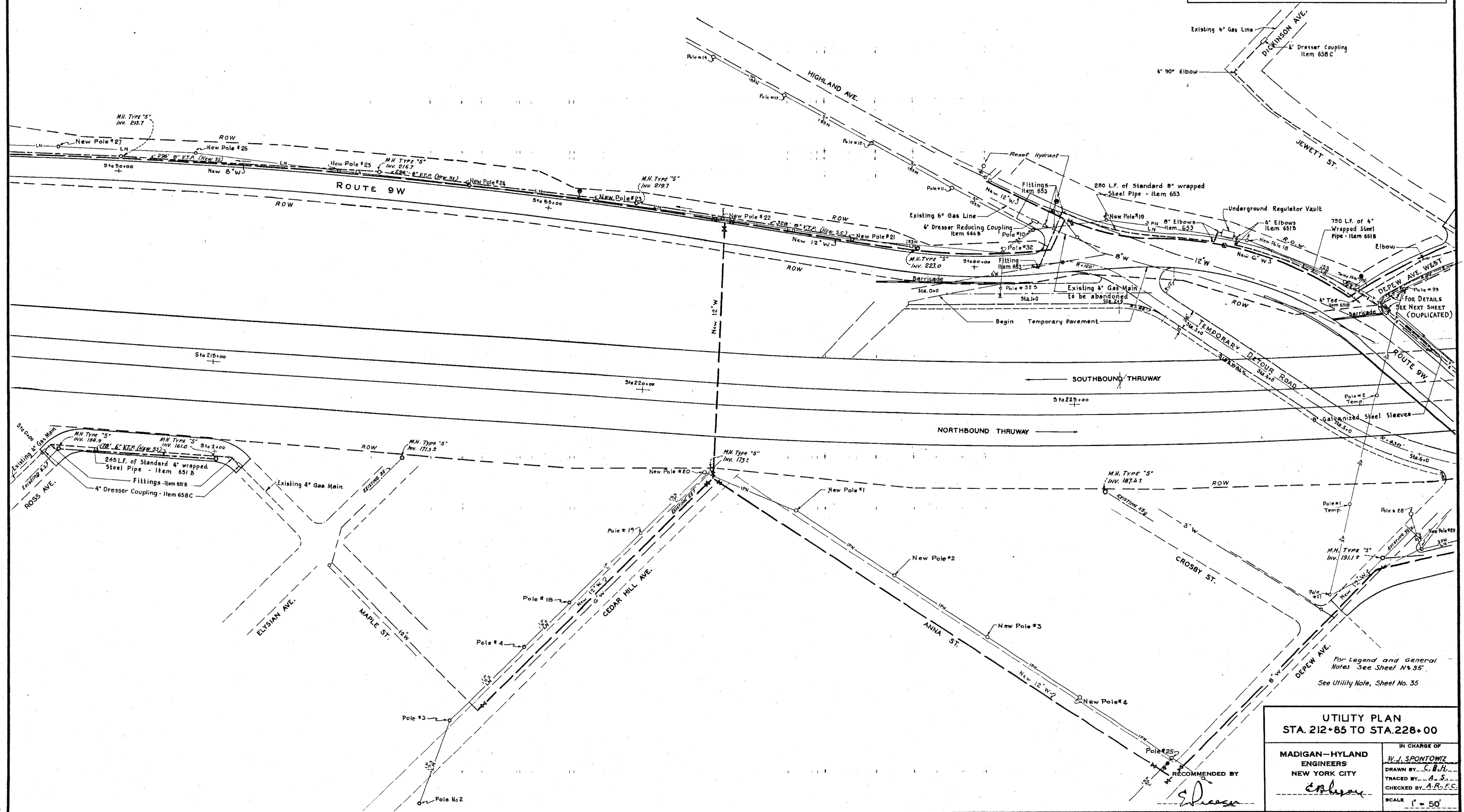
UTILITY PLAN	
STA. 198+00 TO STA. 212+85	
MADIGAN-HYLAND ENGINEERS NEW YORK CITY	IN CHARGE OF W. J. SPONTOWITZ
	DRAWN BY... C.B.H.
	TRACED BY... A.S.L.
	CHECKED BY... A.B.J.C.
	SCALE 1" = 50'

RECOMMENDED BY
E. J. [Signature]



STATE	SHEET No.	TOTAL SHEETS
N. Y.	39 R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



UTILITY PLAN
STA. 212+85 TO STA. 228+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF

DRAWN BY

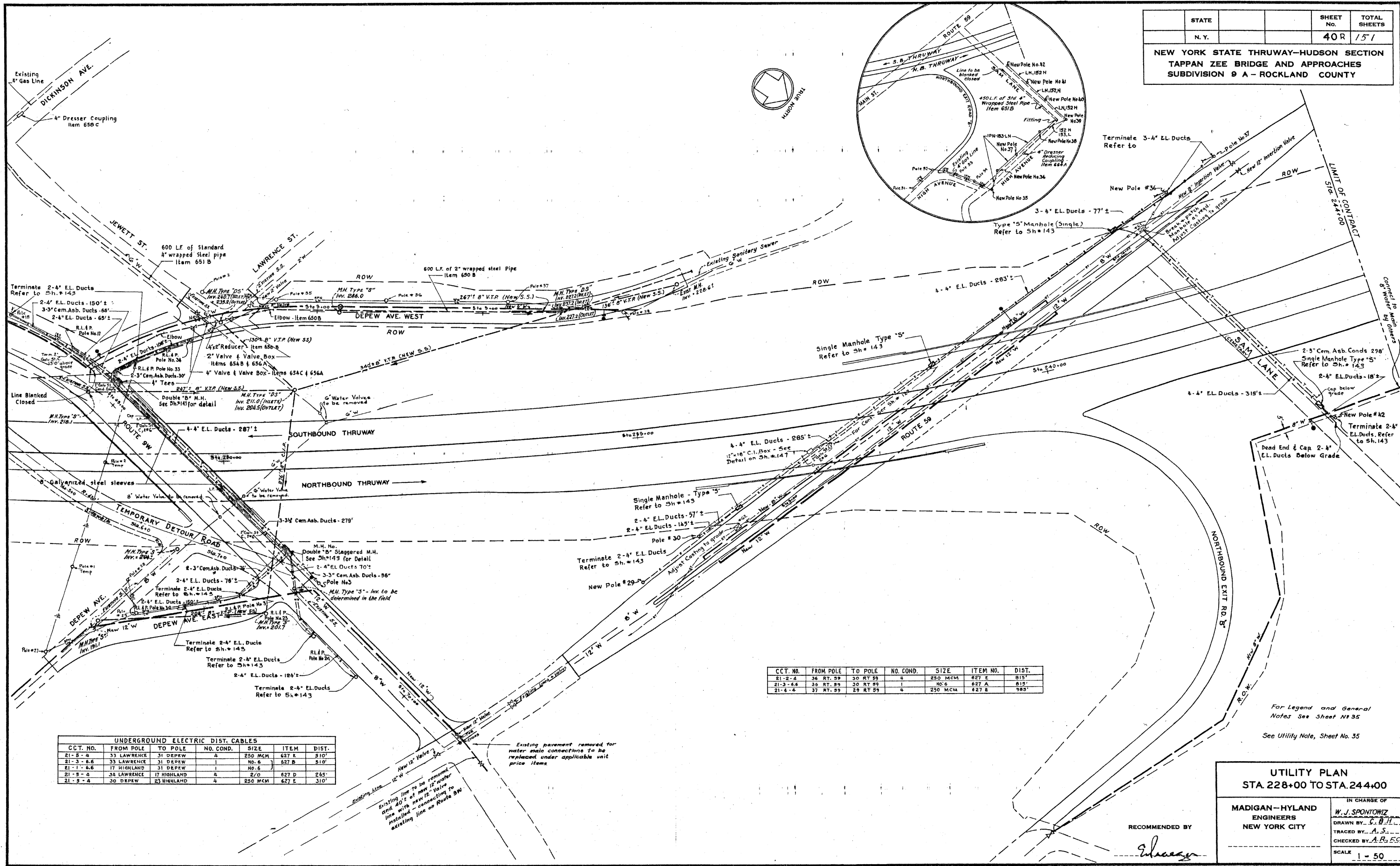
TRACED BY

CHECKED BY

SCALE 1" = 50'

STATE		SHEET No.	TOTAL SHEETS
N. Y.		40R	151

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



UNDERGROUND ELECTRIC DIST. CABLES						
CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
21-5-4	33 LAWRENCE	31 DEPEW	4	250 MCM	627 E	510'
21-3-6.6	33 LAWRENCE	31 DEPEW	1	No. 6	627 B	510'
21-1-6.6	17 HIGHLAND	31 DEPEW	1	No. 6	627 A	615'
21-5-0	38 LAWRENCE	17 HIGHLAND	2	2/0	627 D	265'
21-5-4	30 DEPEW	23 HIGHLAND	4	250 MCM	627 E	310'

CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
21-2-4	36 RT. 59	30 RT. 59	4	250 MCM	627 E	615'
21-3-6.6	36 RT. 59	30 RT. 59	1	No. 6	627 A	615'
21-4-4	37 RT. 59	29 RT. 59	4	250 MCM	627 B	985'

UTILITY PLAN
STA. 228+00 TO STA. 244+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
W. J. SPONTOWIZ
DRAWN BY
C. B. J.
TRACED BY
A. S.
CHECKED BY
A. R. E.
SCALE
1" = 50'

RECOMMENDED BY
[Signature]

For Legend and General
Notes See Sheet No. 35
See Utility Note, Sheet No. 35

Appendix 8

ROW Information

FILE NAME = DGN\$SPEC
DATE/TIME = DGN\$SYTIME0123456
USER = DGN\$USERNAME

DESIGN SUPERVISOR

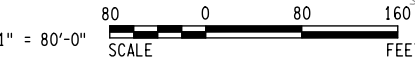
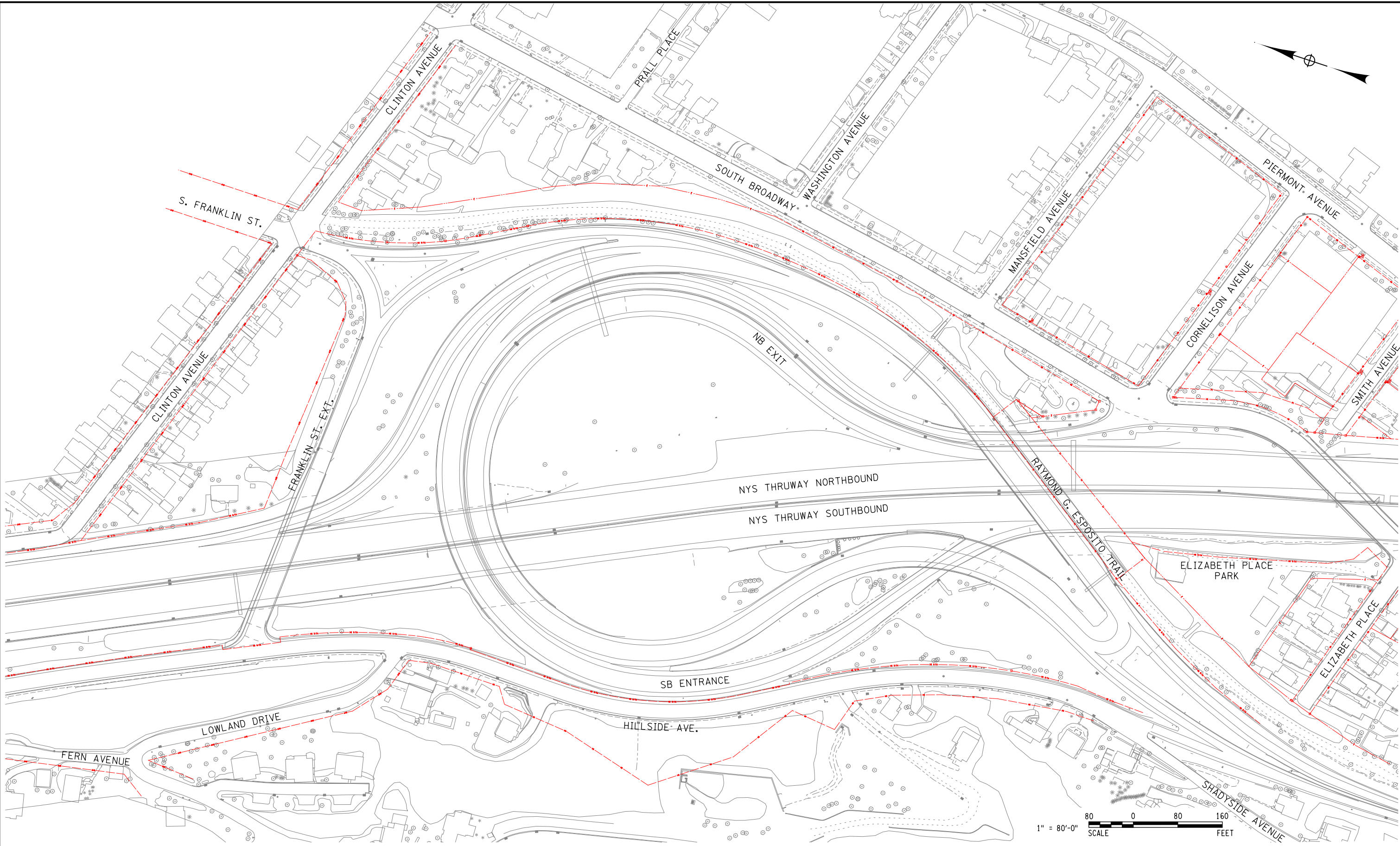
DESIGNED BY

CHECKED BY

ESTIMATED BY

DRAFTED BY

CHECKED BY



5 Penn Plaza, 6th Floor
New York, New York 10001



**Thruway
Authority**

NEW YORK STATE THRUWAY AUTHORITY
DEPARTMENT OF ENGINEERING
200 SOUTHERN BLVD., ALBANY, N.Y. 12209

NEW NY BRIDGE
ROCKLAND COUNTY SHARED USE PATH
CONNECTION AND PARKING ALTERNATIVES

DOCUMENT STATUS:

REV	DATE	DESCRIPTION	BY
	12/18/15		

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

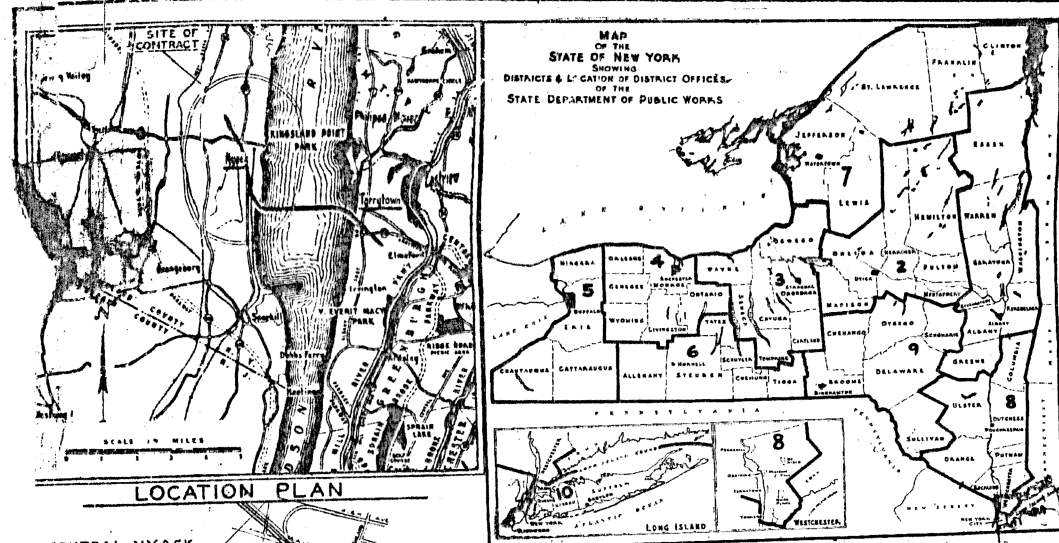
EXISTING ROW
AND BOUNDARY LINES

CONTRACT NUMBER

232234-12
DRAWING NO.
SHEET NO.



NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 8



NEW YORK STATE THRUWAY AUTHORITY

PLANS FOR CONSTRUCTING A PORTION OF THE
NEW YORK STATE THRUWAY

HUDSON SECTION - SUBDIVISION 9A (NYACK APPROACH TO TAPPAN ZEE BRIDGE)

From Station 161 + 00 to Station 242 + 69, a Length of 1.55 Miles in the Town of Orangetown of which 0.18 Mile is in the Village of Grandview-on-Hudson, 0.98 Mile in the Village of South Nyack and 0.39 Mile in the Village of Nyack AND

From Station 242 + 69 to Station 244 + 00, a Length of 0.02 Mile in the Town of Clarkstown.

AND FOR CONSTRUCTING THE NYACK INTERCHANGE

A Length of 1.07 Miles in the Town of Orangetown, Village of South Nyack AND FOR CONSTRUCTING

Exit Ramp "B" N.B.

A Length of 0.13 Mile in the Town of Orangetown, Village of Nyack

A TOTAL LENGTH OF 2.77 MILES

AND FOR RECONSTRUCTING PORTIONS OF

NEW JERSEY STATE LINE - NYACK, PT. 3, S.H. NO. 8136

Between Station 8 + 15 and Station 59 + 78, a Length of 1.50 Miles in the Town of Orangetown, Village of South Nyack AND THE

NEW JERSEY STATE LINE - NYACK, PT. 4, S.H. #5682

Between Station 59 + 78 and Station 70 + 69, a Length of 0.21 Mile in the Town of Orangetown, Village of Nyack AND

NYACK VILLAGE - MAIN ST., S.H. NO. 8459

Between Station 1 + 71 and Station 10 + 77, a Length of 0.17 Mile in the Town of Orangetown, Village of Nyack AND THE

KNAPPS CORNERS - NYACK, S.H. #5178

Between Station 10 + 77 and Station 12 + 65, a Length of 0.04 Mile in the Town of Clarkstown

A TOTAL LENGTH OF 1.92 MILES

AND FOR CONSTRUCTING PORTIONS OF

PIERMONT AVE., a Length of 0.13 Miles

PUBLIC RIGHT OF WAY, a Length of 0.05 Mile

FERRIS LANE, a Length of 0.05 Mile

A Total Length of 0.23 Mile in the Town of Orangetown, Village of Grandview-on-Hudson AND

BROADWAY, a Length of 0.15 Mile

CONNECTION from Clinton Ave. to White Ave., a Length of 0.16 Mile

CONNECTION from Ross Ave. to Maple St., a Length of 0.04 Mile

RELOCATION of Erie R.R. from Sta. 5 + 74 to Sta. 35 + 10, a Length of 0.56 Mile

A Total Length of 0.91 Mile in the Town of Orangetown, Village of South Nyack AND

DEWEY AVE. WEST, a Length of 0.14 Mile

DEWEY AVE. EAST, a Length of 0.06 Mile

A Total Length of 0.20 Mile in the Town of Orangetown, all in the Village of Nyack

A COMBINED LENGTH OF 1.34 MILES

A TOTAL COMBINED LENGTH OF 6.03 MILES

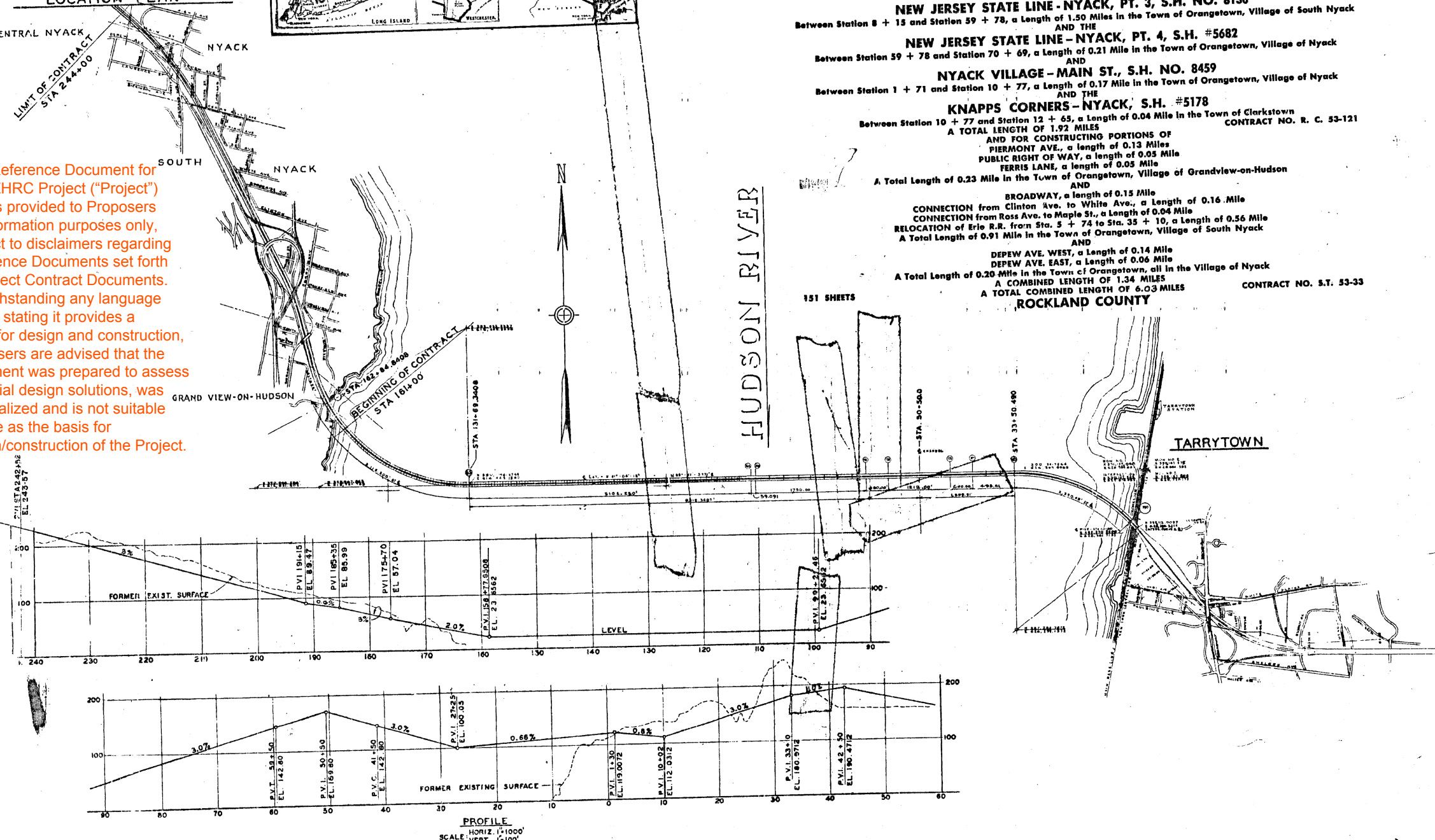
ROCKLAND COUNTY

CONTRACT NO. S.T. 53-33

151 SHEETS

HUDSON RIVER

This Reference Document for the TZHRC Project ("Project") RFP is provided to Proposers for information purposes only, subject to disclaimers regarding Reference Documents set forth in Project Contract Documents. Notwithstanding any language herein stating it provides a basis for design and construction, Proposers are advised that the document was prepared to assess potential design solutions, was not finalized and is not suitable for use as the basis for design/construction of the Project.



TYPE OF CONSTRUCTION			
Reinf. Cem. Conc. Pav't.	1.57 Miles		
Unreinf. Cem. Conc. Pav't.	3.07 Miles		
Asphalt Concrete Type 1A, Opt.	0.78 Mile		
Relocation of Erie R. R.	0.56 Mile		
Misc. Work	0.05 Mile		

- Including
1. H.G.S., Broadway over Thruway, Comp. I Beam 2 Spans; 1 @ 104.59' and 1 @ 122.58'
 2. R.R.G.S., Erie Railroad and 9W over Thruway, Composite I Beam, through girder, 4 Spans; 2 @ 39.5', 1 @ 101.38' and 1 @ 105.89'
 3. H.G.S., Exit from Thruway to 9W over Access from 9W, Composite I Beam 1 Span 60.15'
 4. H.G.S., Exit from Thruway and Access to Thruway of 9W, Composite I Beam 3 Spans; 1 @ 54.5', 1 @ 64.5' and 1 @ 61.83'
 5. H.G.S., N.B. rte 9W over Thruway, Composite I Beam, 3 Spans; 1 @ 66.23', 1 @ 70.71' and 1 @ 78.62'
 6. H.G.S., rte 9W over Thruway, Composite I Beam, 2 Spans; 1 @ 94.78' and 1 @ 85.54'
 7. H.G.S. Thruway over rte 59, Composite I Beam, 4 Spans; 1 @ 68.35', 1 @ 82.48', 1 @ 79.14' and 1 @ 60.87'

STANDARD STRUCTURE SHEETS
40-5, 40-101R, 40-103R, 46-4, 47-36, 47-37, 49-65, 49-7, 49-42, 50-1R, 50-34, 51-3, 51-20, 51-21, 52-17A, 52-17B, 52-17C, 52-17D, 52-43, 52-45, 53-11A, 53-11R, 53-11W, 53-41R, 53-46TI, 53-47.

All work contemplated under this contract to be covered by and in conformity with the specifications adopted January 2, 1951, except as modified on these plans and in the Itemized Proposal.

PREPARED AND RECOMMENDED
BY: MADIGAN-HYLAND
CONSULTING ENGINEERS

Edmund 1953

DEPARTMENT OF PUBLIC WORKS

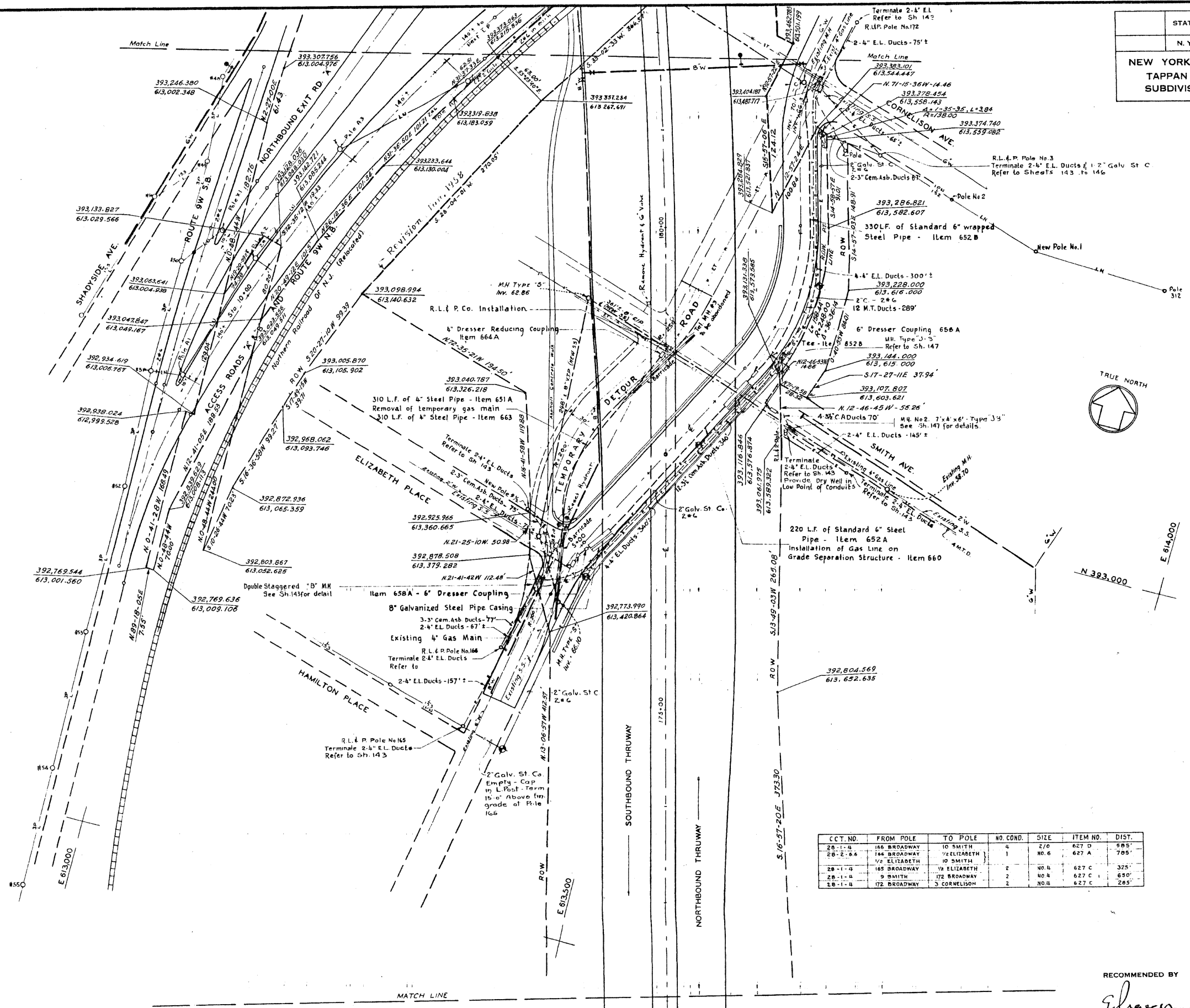
APPROVED *Aug 21 1953*
J.B. MCMORRAN CHIEF ENGINEER

APPROVED _____ 1953
NEW YORK STATE THRUWAY AUTHORITY

B.D. TALLAMY, CHAIRMAN
BY: C.H. LANG
DEPUTY CHIEF ENGINEER

STATE		SHEET No.	2	TOTAL SHEETS
N. Y.				

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
28-1-4	165 BROADWAY	10 SMITH	4	2/0	627 D	585'
28-2-6	164 BROADWAY	1/2 ELIZABETH	1	NO. 6	627 A	705'
28-1-4	165 BROADWAY	1/2 ELIZABETH	2	NO. 4	627 C	325'
28-1-4	9 SMITH	172 BROADWAY	2	NO. 4	627 C	650'
28-1-4	172 BROADWAY	3 CORNELISON	2	NO. 4	627 C	265'

See Utility Note, Sheet No. 35

For Legend and General Notes see Sh. N° 35

NYACK-R.O.W. ALIGNMENT STA. 172+05 TO STA. 181+75	
MADIGAN-HYLAND ENGINEERS NEW YORK CITY	IN CHARGE OF W. J. SPONTOWITZ DRAWN BY S. B. H. TRACED BY A. S. CHECKED BY A. R. F. C. SCALE 1" = 50'

RECOMMENDED BY

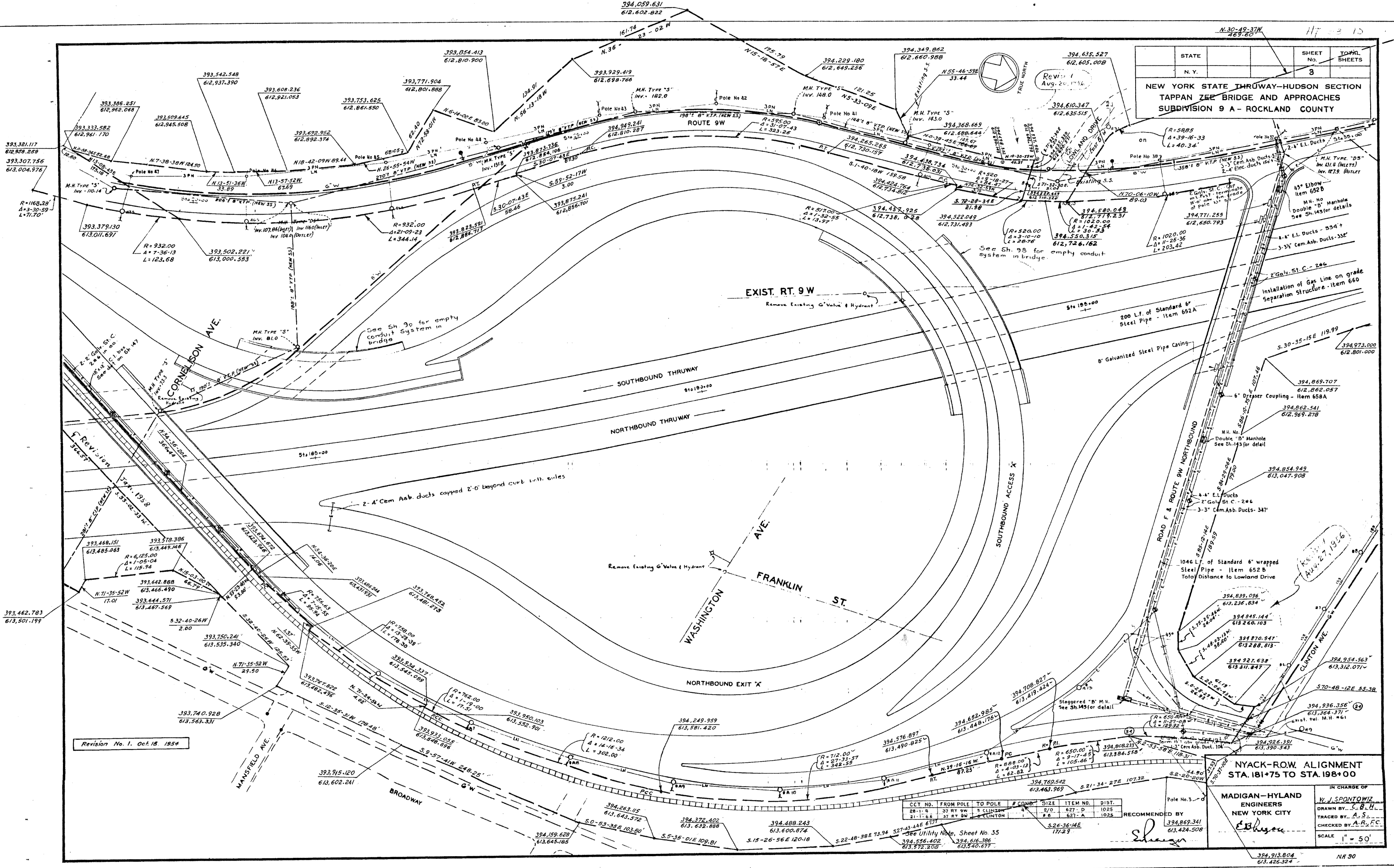
E. H. Hager

STATE
N. Y.

SHEET NO.
3

TOTAL SHEETS
10

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	# COMB.	SIZE	ITEM NO.	DIST.
28-11-4	ST RT 9W	S CLINTON	1	2/D	627-D	1025
21-1-8-6	ST RT 9W	S CLINTON	1	# 6	627-A	1025

RECOMMENDED BY
394,869.341
613,424.508

See Utility Note, Sheet No. 35
394,556.402
613,572.308

NYACK-ROW ALIGNMENT
STA. 181+75 TO STA. 198+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
W. J. SPONTOWICZ

DRAWN BY
C. B. H.

TRACED BY
A. S.

CHECKED BY
A. R. E.

SCALE
1" = 50'

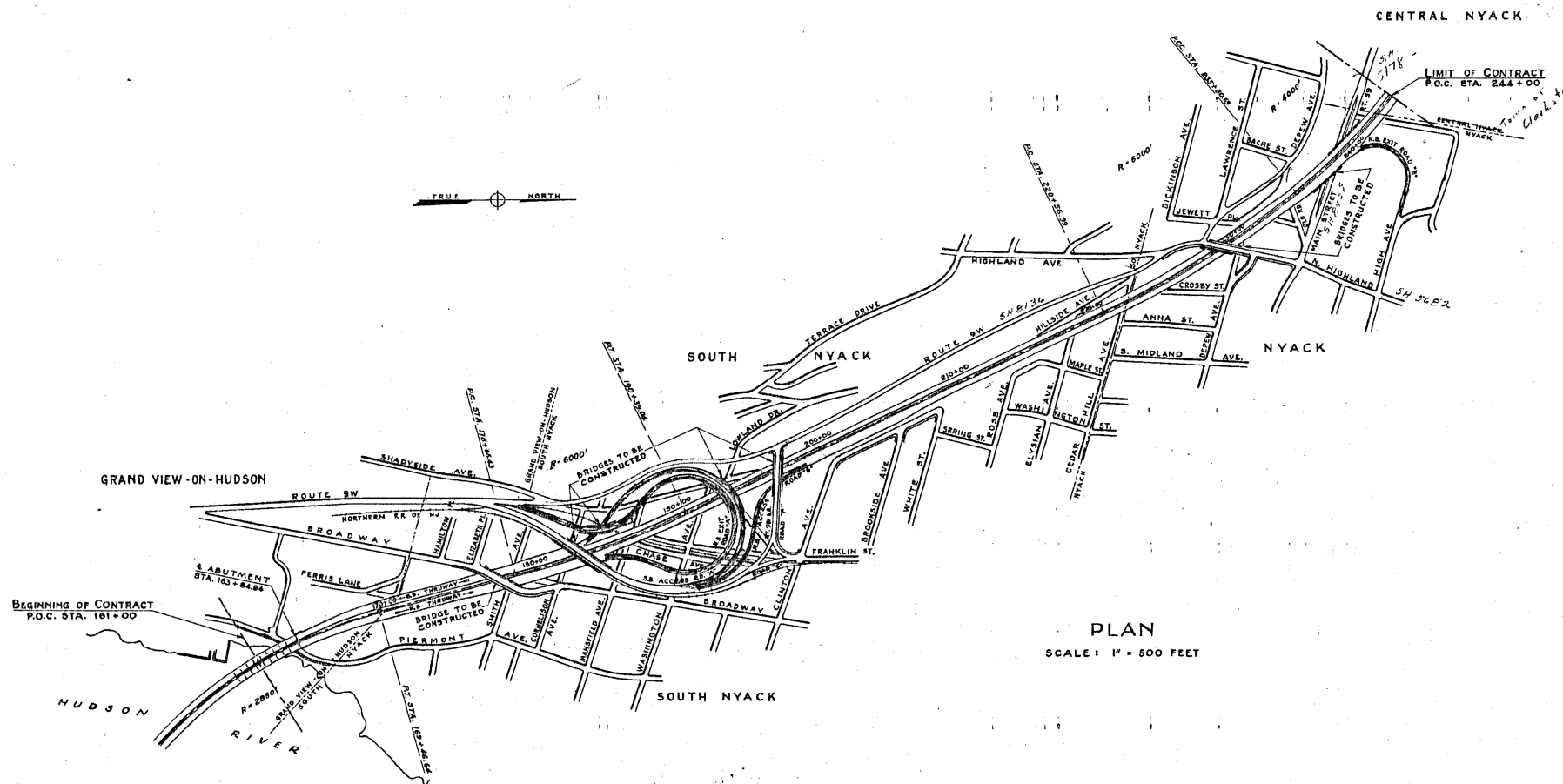
STATE	SHEET No.	TOTAL SHEETS
N. Y.	3 R 151	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY

General Notes

- The Coordinate System used is the New York State Coordinate System, East Zone, a transverse Mercator Projection of the Clarke spheroid of 1866, having a central meridian 74°20' West from Greenwich, on which meridian the scale is set one part in 30,000. The origin of coordinates is at the intersection of the meridian 74°20' west longitude and the parallel 40°00' north latitude. This origin is given the coordinates: E=500,000 feet and N=0 feet.
- Elevations are referred to U.S.C. & G.S. Datum which is Mean Sea Level at Sandy Hook.
- Loads and Stresses are in accordance with A.A.S.H.O. Specification of 1949 for H20-S16 (Modified). This structure has been designed for a series of H20-S16 truck trailers in each traffic lane. Dimensions and Distribution as specified in A.A.S.H.O. truck trailers spaced 30 feet apart between axles.
- Material and fabrication are in accordance with the Specifications of the New York State Dept. of Public Works, Jan. 2, 1951, except as noted in Detail Specifications.
- Adequate keys shall be provided at all construction joints. Construction joints other than those shown on drawings will not be permitted without the written approval of the Engineer.
- N.I.C. denotes "Not in Contract".
- Lap all bars at splices a minimum of 33 diameters, place bars in contact and wire together. No splice will be permitted except where shown on drawing or otherwise directed by Engineer.
- Dimensions on reinforcement are to centerline of bars except as noted.
- All existing structures to remain, to be adjusted where necessary, to final grade.
- Sidewalks to be constructed in location as shown on Typical Sections. Where type of curb changes the transition shall be made in 10'.
- All Water Mains to be cement lined cast iron pipe unless shown otherwise. All existing water mains, gas mains, storm sewers, sanitary sewers within the limits of work to be abandoned unless otherwise directed. Water valves on abandoned mains to be salvaged.
- Where new utility meets existing utility, the connection shall be made in a manner satisfactory to the utility company involved.
- Existing hydrants to be removed shall be reset in new locations as shown on plans.
- All elevations top of concrete pads, except at Bent 1 and the Nyack Abutment, are bush hammered elevations. Pour concrete 1/4" higher and bush hammer to exact elevation.
- All Piles under Item B5 are to be driven to rock. Contractor is to determine the lengths of pile necessary.
- All Piles under Item B5C are to be driven to the design load of 30 tons. Lengths necessary to meet this requirement are to be determined by the contractor.

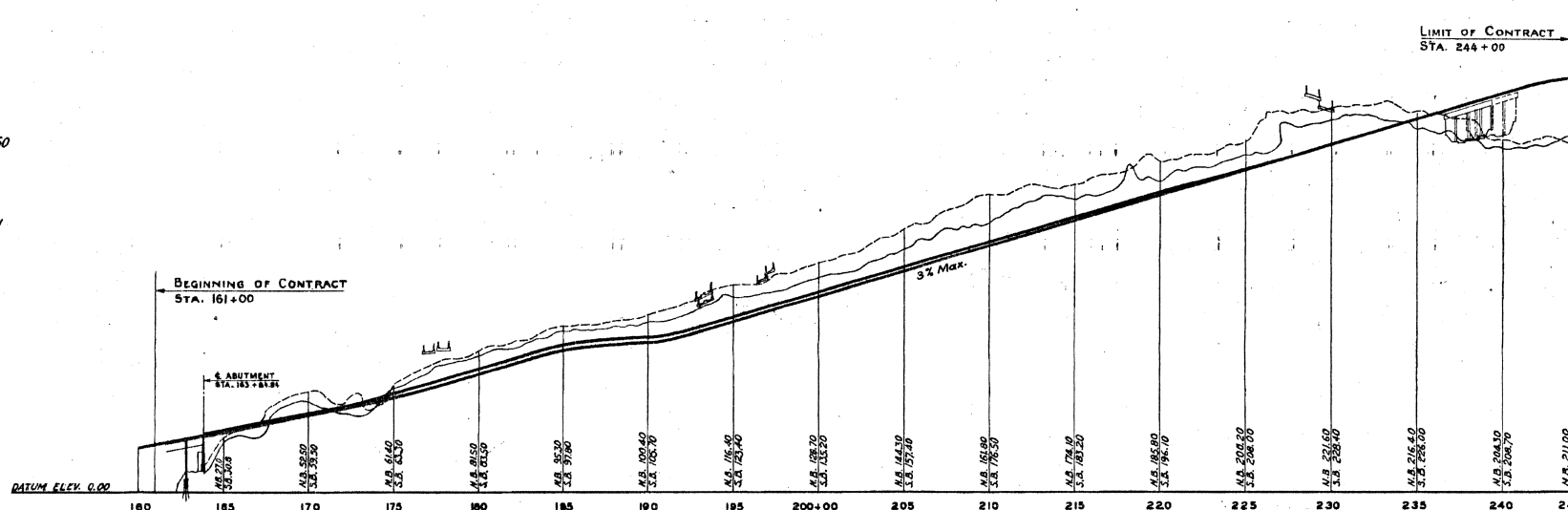
NOTE: PROFILES SHOW FINISHED SURFACE OF PAVEMENT ON CENTER LINE



PLAN
SCALE: 1" = 500 FEET

~ LEGEND ~

- Survey Base Line
- Existing Water Main
- Water Valve & Manhole
- Water Valve
- Hydrant & Valve
- Sanitary Sewer & Manhole
- Storm Sewer
- Gas Main
- Underground Telephone Ducts
- Pole
- Tree
- Right of Way Line
- Reinforced Concrete Culvert Pipe
- Cast Iron Pipe
- Vitrified Tile Pipe
- Location and Number of Boring
- Property Acquisition - For Reputed Owner and Type of acquisition see Sheets Nos. 58, 59 & 60
- Storm Sewer to be Constructed
- Sanitary Sewer to be Constructed
- Gas Main to be Constructed
- Water Main to be Constructed
- Air Cock & Bronze Hose Connection to be Constructed in Water Manhole
- New or Relocated Position of Hydrant
- New Water Valve in Manhole
- Chain Link Fence to be Constructed
- Guide Railing to be Constructed



PROFILE OF NORTH & SOUTH BOUND THRUWAY

SCALE: HOR. 1" = 500 FEET
VER. 1" = 50 FEET

GENERAL PLAN & PROFILE

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
K. WEIS

DRAWN BY: A.J.S.

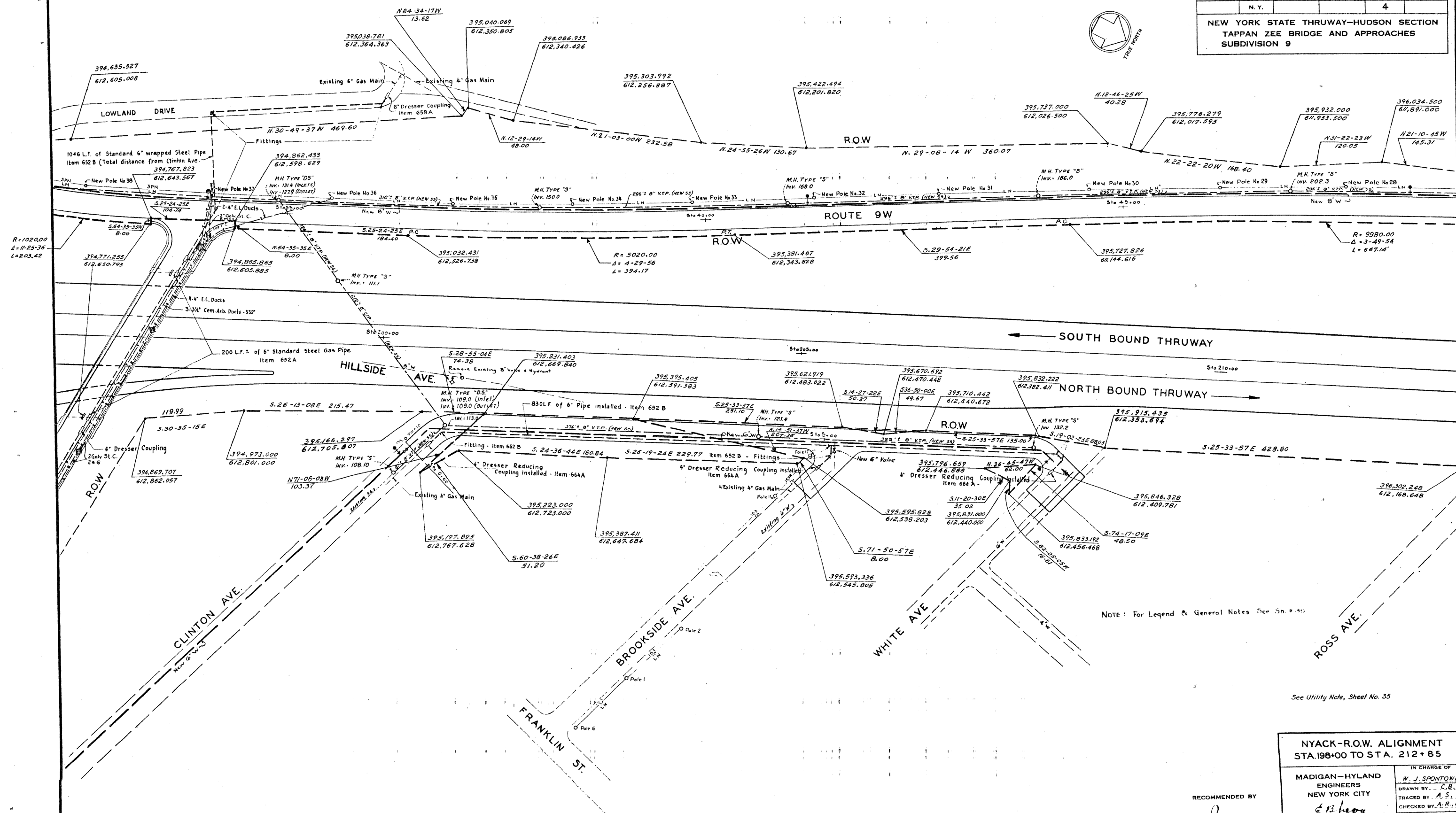
TRACED BY: A.J.S.

CHECKED BY: W.L.S.

SCALE AS NOTED

RECOMMENDED BY

Signature



See Utility Note, Sheet No. 35

NYACK-R.O.W. ALIGNMENT
STA. 198+00 TO STA. 212+85

**MADIGAN—HYLAND
ENGINEERS
NEW YORK CITY**

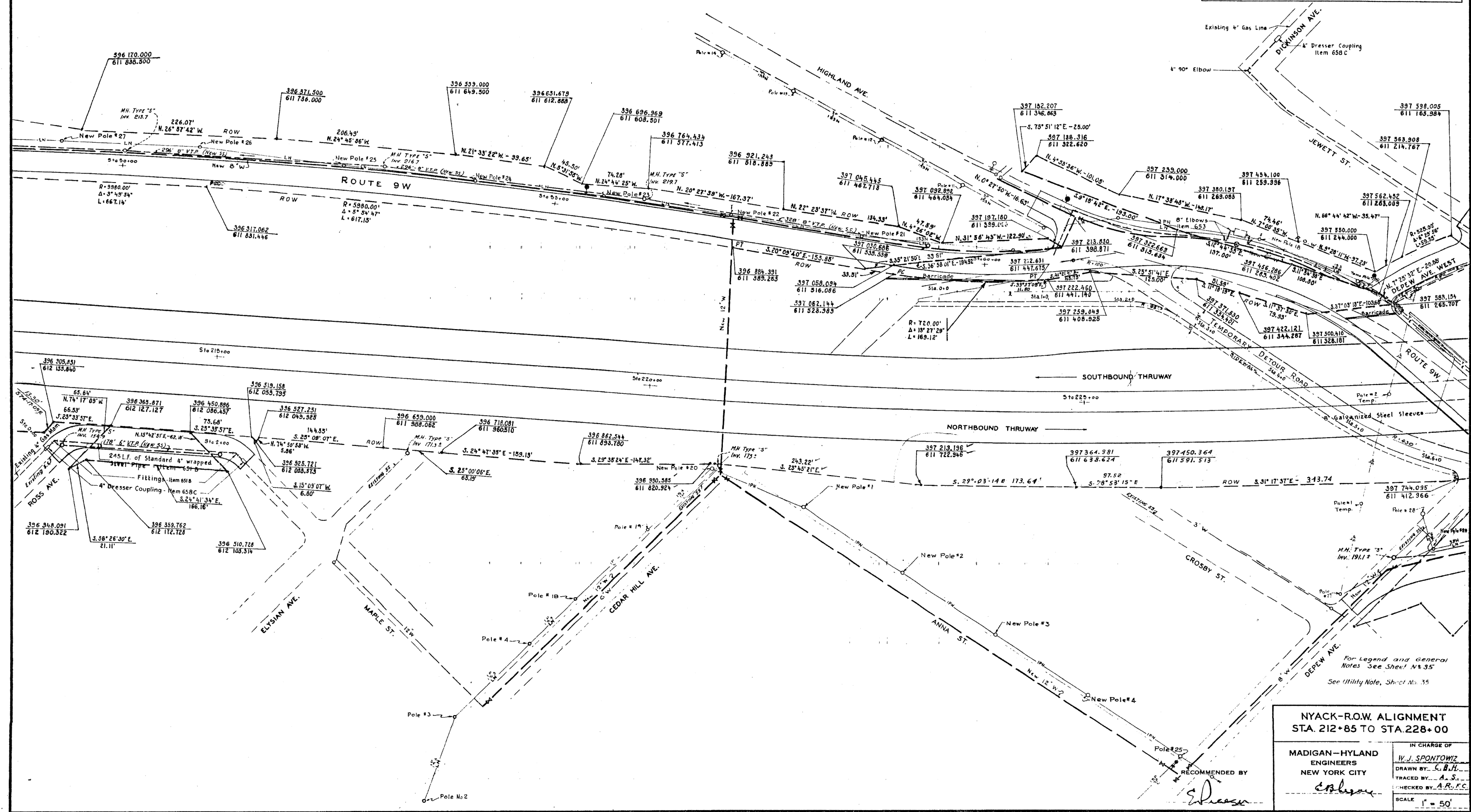
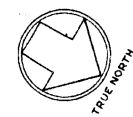
IN CHARGE OF	
W. J. SPONTOWIZ	
DRAWN BY	C. B. H.
TRACED BY	A. S.
CHECKED BY	A. R. F.
SCALE	1" = 50'

RECOMMENDED BY

NA 9M

STATE	SHEET No.	TOTAL SHEETS
N. Y.	5	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



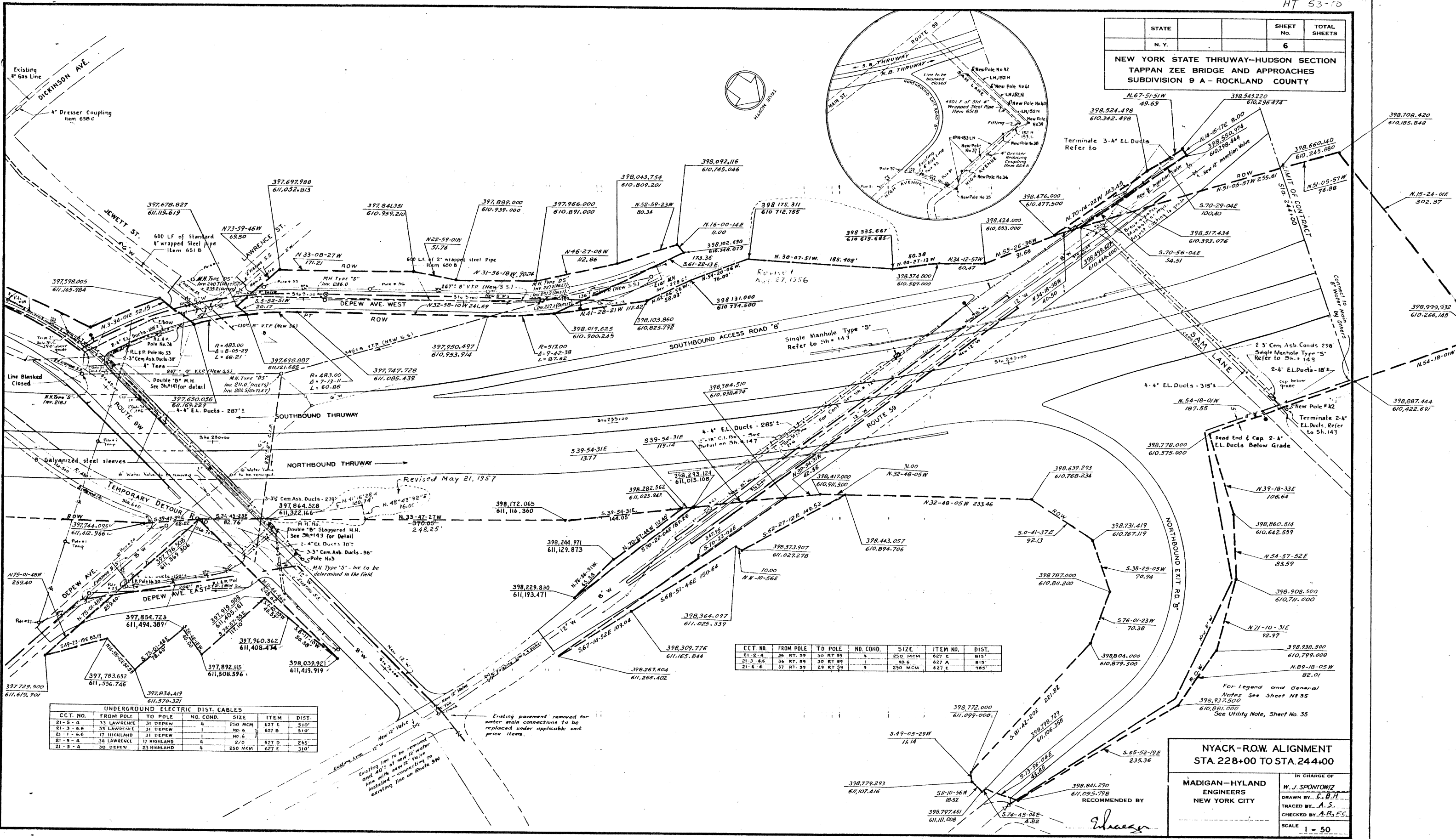
NYACK-R.O.W. ALIGNMENT
STA. 212+85 TO STA. 228+00

IN CHARGE OF
W. J. SPONTOWITZ
DRAWN BY: C. B. H.
TRACED BY: A. S.
CHECKED BY: A. R. F. C.

SCALE 1" = 50'

STATE	SHEET NO.	TOTAL SHEETS
N. Y.	6	

NEW YORK STATE THRUWAY-HUDSON SECTION
TAPPAN ZEE BRIDGE AND APPROACHES
SUBDIVISION 9 A - ROCKLAND COUNTY



CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM NO.	DIST.
21-2-4	36 RT. 59	30 RT. 59	4	250 MCM	627 E	615'
21-3-6	36 RT. 59	30 RT. 59	1	NO. 6	627 A	815'
21-4-4	37 RT. 59	29 RT. 59	8	250 MCM	627 E	985'

UNDERGROUND ELECTRIC DIST. CABLES						
CCT. NO.	FROM POLE	TO POLE	NO. COND.	SIZE	ITEM	DIST.
21-5-4	33 LAWRENCE	31 DEWEY	4	250 MCM	627 E	510'
21-3-6	33 LAWRENCE	31 DEWEY	1	NO. 6	627 A	510'
21-1-6	17 HIGHLAND	31 DEWEY	4	NO. 6	627 D	265'
21-5-4	30 LAWRENCE	23 HIGHLAND	4	250 MCM	627 E	310'

NYACK-R.O.W. ALIGNMENT
STA 228+00 TO STA. 244+00

MADIGAN-HYLAND
ENGINEERS
NEW YORK CITY

IN CHARGE OF
W. J. SPONTONIZ

DRAWN BY S. B. H.

TRACED BY A. S.

CHECKED BY A. R. F.

SCALE 1" = 50'

NR.33

Appendix 9

Pedestrian Generator Checklist

NYSDOT Pedestrian Generator Checklist

PEDESTRIAN GENERATOR CHECKLIST		
PIN: 8TZ1.00	Project Name: Shared Use Path Parking	
	Location: Village of South Nyack, Rockland County	
<i>Note: The term generator in this document refers to both pedestrian generators (where pedestrians originate) and destinations (where pedestrians travel to). A check of "yes" indicates a potential need to accommodate pedestrians and coordination with the Regional Bicycle and Pedestrian Coordinator is necessary during project scoping. Answers to the following questions should be checked with the local municipality to ensure accuracy.</i>		
1.	Is there an existing or planned sidewalk, trail, or pedestrian-crossing facility?	YES x NO <input type="checkbox"/>
2.	Are there bus stops, transit stations or depots/terminals located in or within 800 m of the project area?	YES x NO <input type="checkbox"/>
3.	Is there more than occasional pedestrian activity? Evidence of pedestrian activity may include a worn path.	YES x NO <input type="checkbox"/>
4.	Are there existing or approved plans for generators of pedestrian activity in or within 800m of the project that promote or have the potential to promote pedestrian traffic in the project area, such as schools, parks, playgrounds, places of employment, places of worship, post offices, municipal buildings, restaurants, shopping centers, or other commercial areas, or shared-use paths?	YES x NO <input type="checkbox"/>
5.	Are there existing or approved plans for seasonal generators of pedestrian activity in or within 800 m of the project that promote or have the potential to promote pedestrian traffic in the project area, such as ski resorts, state parks, camps, amusement parks?	YES x NO <input type="checkbox"/>
6.	Is the project located in a residential area within 800 m of existing or planned pedestrian generators such as those listed in 4 above?	YES x NO <input type="checkbox"/>
7.	From record plans, were pedestrian facilities removed during a previous highway reconstruction project?	YES <input type="checkbox"/> NO x
8.	Did a study of secondary impacts indicate that the project promotes or is likely to promote commercial and/or residential development within the intended life cycle of the project?	YES <input type="checkbox"/> NO x
9.	Does the community's comprehensive plan call for development of pedestrian facilities in the area?	YES <input type="checkbox"/> NO <input type="checkbox"/> See comments
10.	Based on the ability of students to walk and bicycle to school, would the project benefit from engineering measures under the Safe-Routes-To-School program? Eligible infrastructure-related improvements must be within a 3.2 km radius of the project.	YES x NO <input type="checkbox"/>
<i>Note: This checklist should be revisited due to a project delay or if site conditions or local planning changes during the project development process.</i>		
Comments: 9) The Village was recently provided a grant to study Interchange improvements in conjunction with their vision of development within the Interchange 10 footprint. Also, the Project Team has been working with the Village to enhance connectivity of pedestrians and bicyclists with the SUP / Esposito Trail. Therefore, it is difficult to say if the communities comprehensive plan calls for development of pedestrian facilities.		
Regional Bicycle and Pedestrian Coordinator:		
Project Designer: HNTB Corporation		