

# A Review of Noise Policy, and Noise Barrier Design & Construction

## **I-390 / I-490 INTERCHANGE IMPROVEMENTS PROJECT**

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June 25, 2018

Presented & Developed by Joe Van Kerkhove, P.E. (Bergmann)

Assisting Presentation Developers: Dominic Fekete, P.E., Marie Hauser (Bergmann)

NYSDOT Reviewer: Terry Smith

# Presentation Agenda

NOISE POLICY – DESIGN APPROVAL STAGE

PROJECT PHASES 1 & 2: DESIGN – BID - BUILD

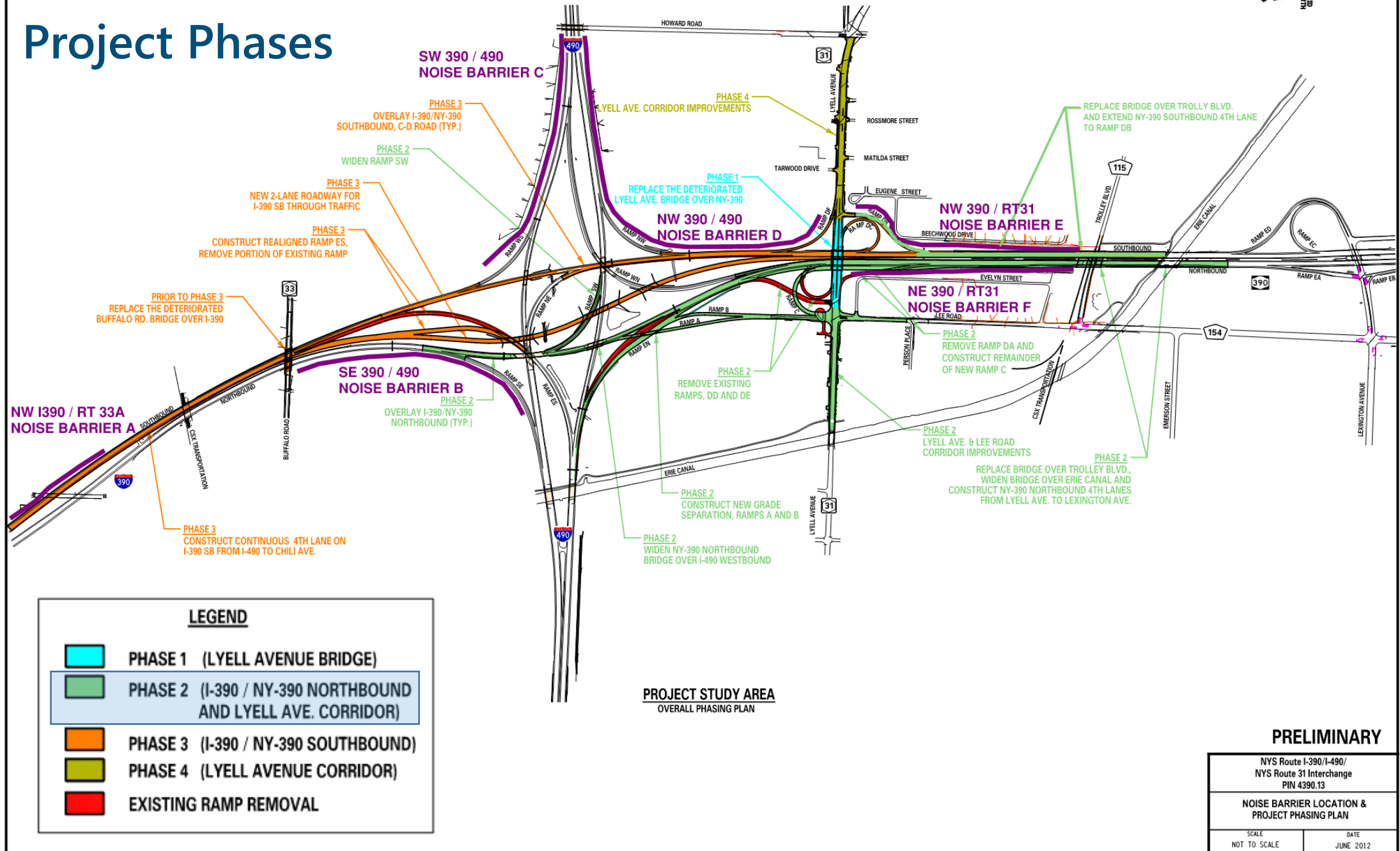
PROJECT PHASE 3: DESIGN BUILD


DRAFT NOISE POLICY UPDATES

QUESTIONS



# Project Phases



The background is a stylized illustration of a racetrack scene. In the foreground, a dark blue track curves from the bottom left towards the right. Two horses are depicted in mid-stride on the track. Behind the track is a white wooden fence with vertical posts. To the right of the fence, a dark-colored car is partially visible. In the background, there are green trees and a light blue sky. The entire image is overlaid with a semi-transparent dark blue filter.

# NYSDOT Noise Policy Design Approval Phase Documentation

Project followed the NYSDOT 2011 Noise Policy (TEM 4.4.18)

Step 1 – Is this a TYPE 1 Project?

YES – Meets the following requirement:

- Significant changes in alignment (horizontal or vertical)



## Step 2 – Noise Measurements / TNM & Impact Determination



Measure Existing and Develop TNM Model  
to Predict Future Traffic Noise Levels

**NYSDOT Policy**  
(Impact Determination)

**66 dBA**  
(Residential)

Or

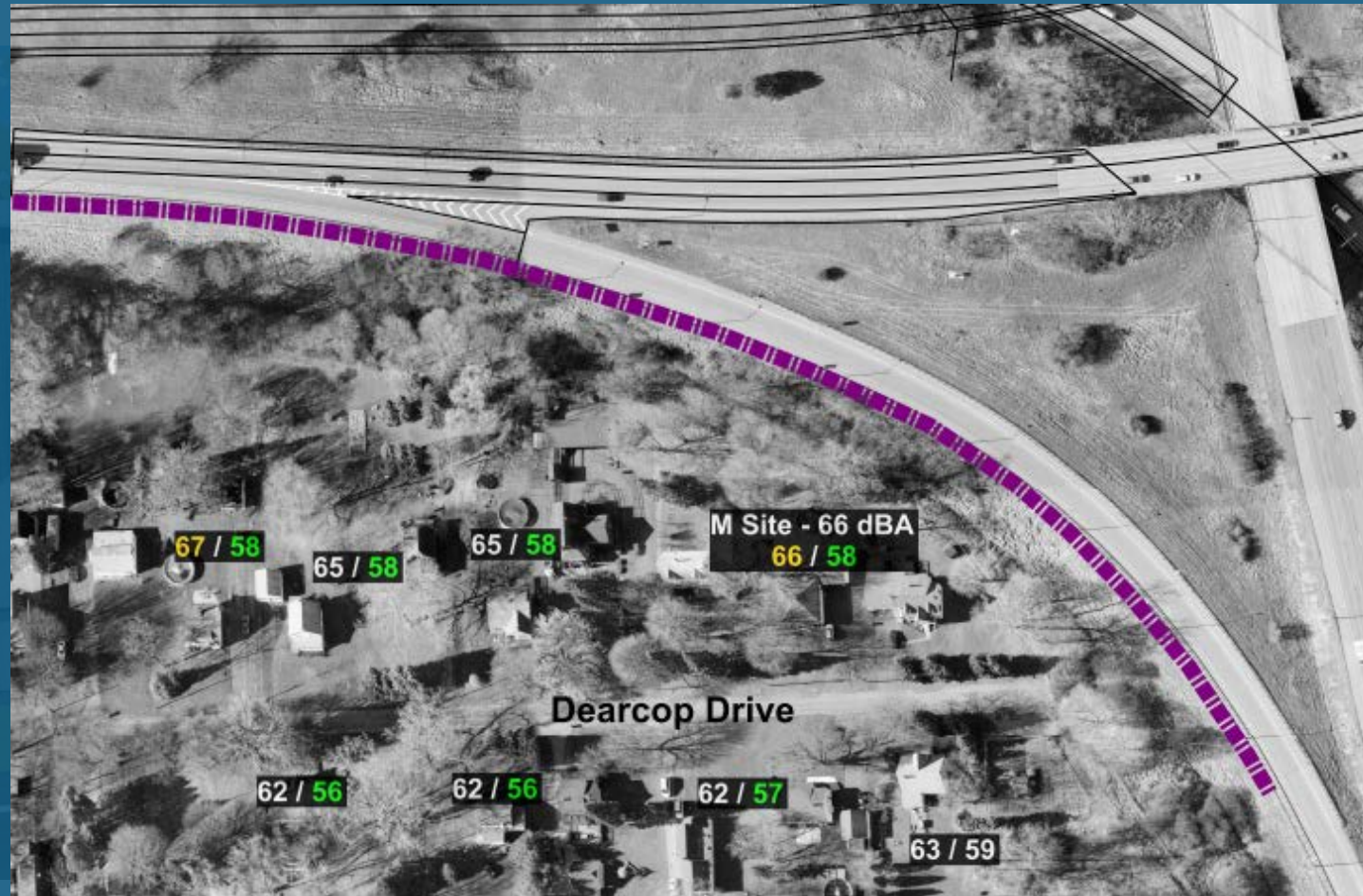
**Increase of 6 dBA**



## Step 3 – Is a Noise Barrier Feasible and Reasonable to Build?

### TNM Model Results

M Site = Noise Measurement Location  
Predicted 2035 Traffic Noise Level  
(WITHOUT Barrier / WITH Barrier) dBA  
Orange Font Indicates Noise Level Impact  
Green Font Indicates Benefitted Receptor



- Decibel Level Reduction of at least 5 dBA (Benefitted Receptor)
- Max of 2,000 SF of noise barrier per benefitted receptor

NB-B = 43,075 SF  
22 Benefitted Receptors Req'd  
30 Benefitted Receptors Actual  
Cost Index = 1,435SF/Receptor



# Step 4 – Does the Public Want a Noise Barrier?

## Public Meeting

### New York State Department of Transportation



John R. Williams, P.E.  
Regional Director

Joan McDonald  
Commissioner

PIN 950080  
Interstate 81 / NYS Route 17 Interchange  
Reconstruction, Phase 2  
Town of Dickinson, City of Binghamton, & Town of Kirkwood  
Broome County, New York



**Public Information Meeting # 1**  
November 5<sup>th</sup> 2014 - 6:30 PM  
Theodore Roosevelt Elementary School  
9 Ogden Street, Binghamton

or

**Public Information Meeting # 2**  
November 6<sup>th</sup> 2014 - 6:30 PM  
Woodrow Wilson Elementary School  
287 Prospect Street, Binghamton



## Vote

### Ballot

Regarding the construction of noise barriers in your neighborhood  
January 26 – February 7, 2012

1. Name \_\_\_\_\_
2. Do you Rent or Own the Property? (Circle One) Rent Own
3. Property Address \_\_\_\_\_
4. Mailing Address  
(if different than above) \_\_\_\_\_
5. Are you in favor and support the construction of a noise barrier? (Circle one) YES NO

### Comments

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Please return ballot in prepaid envelope  
Prior to Tuesday, February 7, 2012

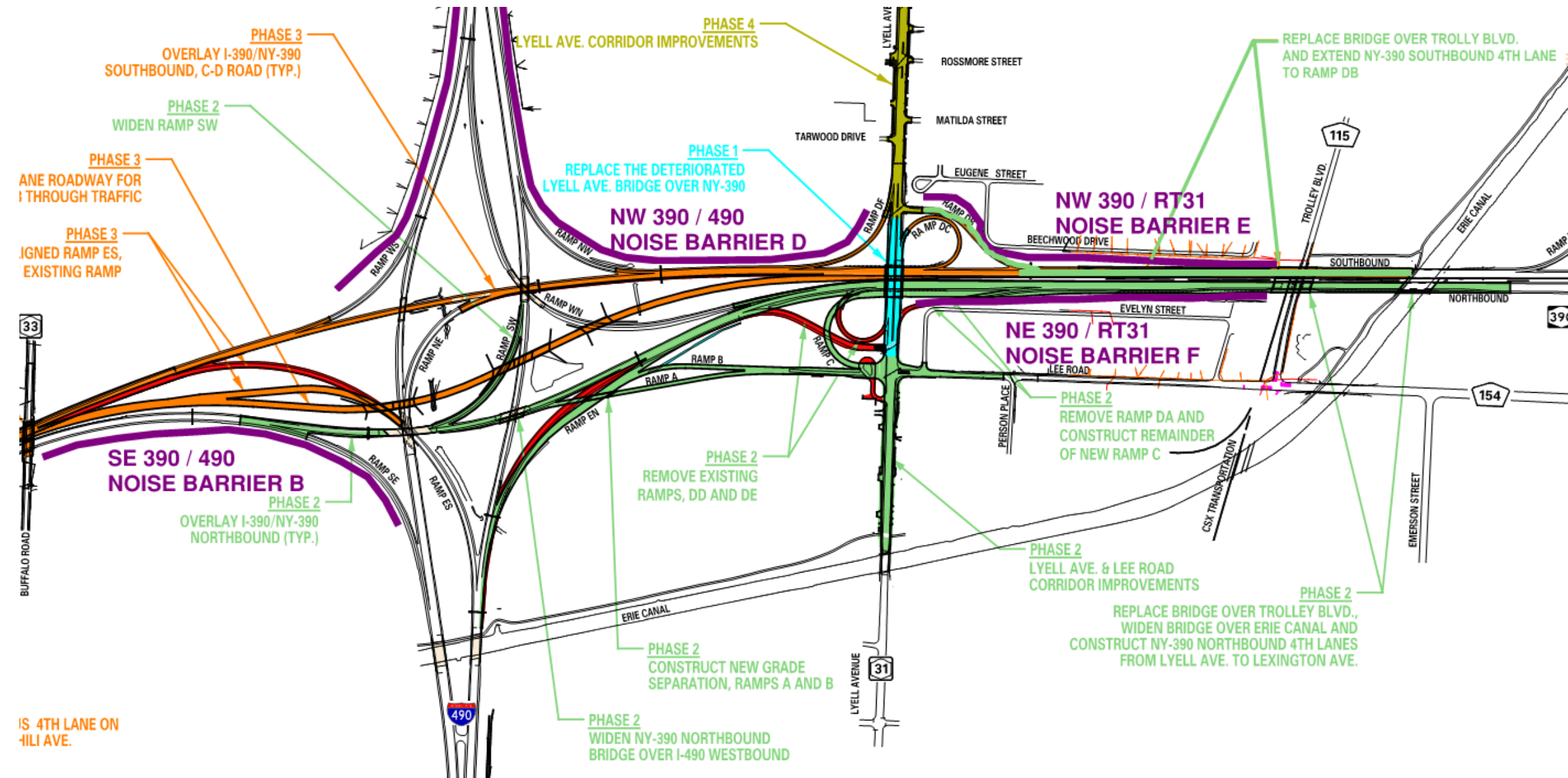
## Photo Sims



The background is a blue-tinted illustration of a stable. It features a long building with several stalls, some of which have horses inside. In the foreground, there is a paved area and a dark-colored car parked on the right. The overall style is clean and modern, with a focus on the architectural and functional aspects of the facility.

Phase 2

**Design** / Bid / Build Process

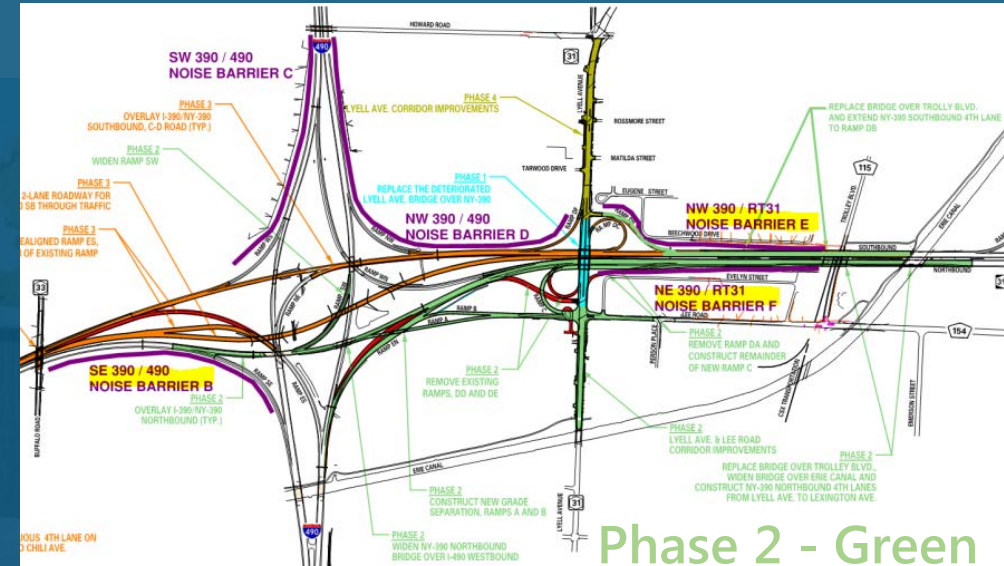




## Phase 2 – Design – Bid - Build

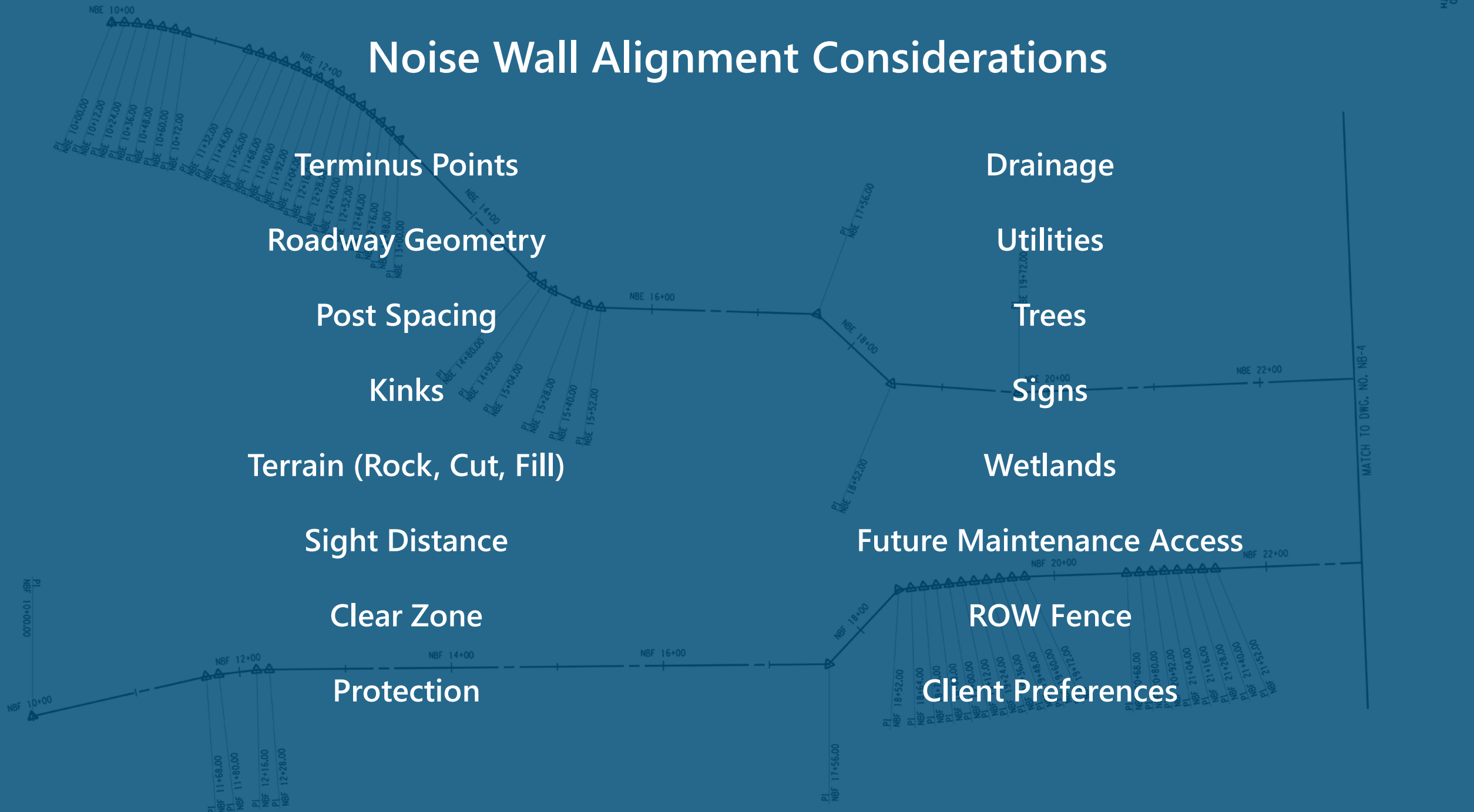
### What is Phase 2

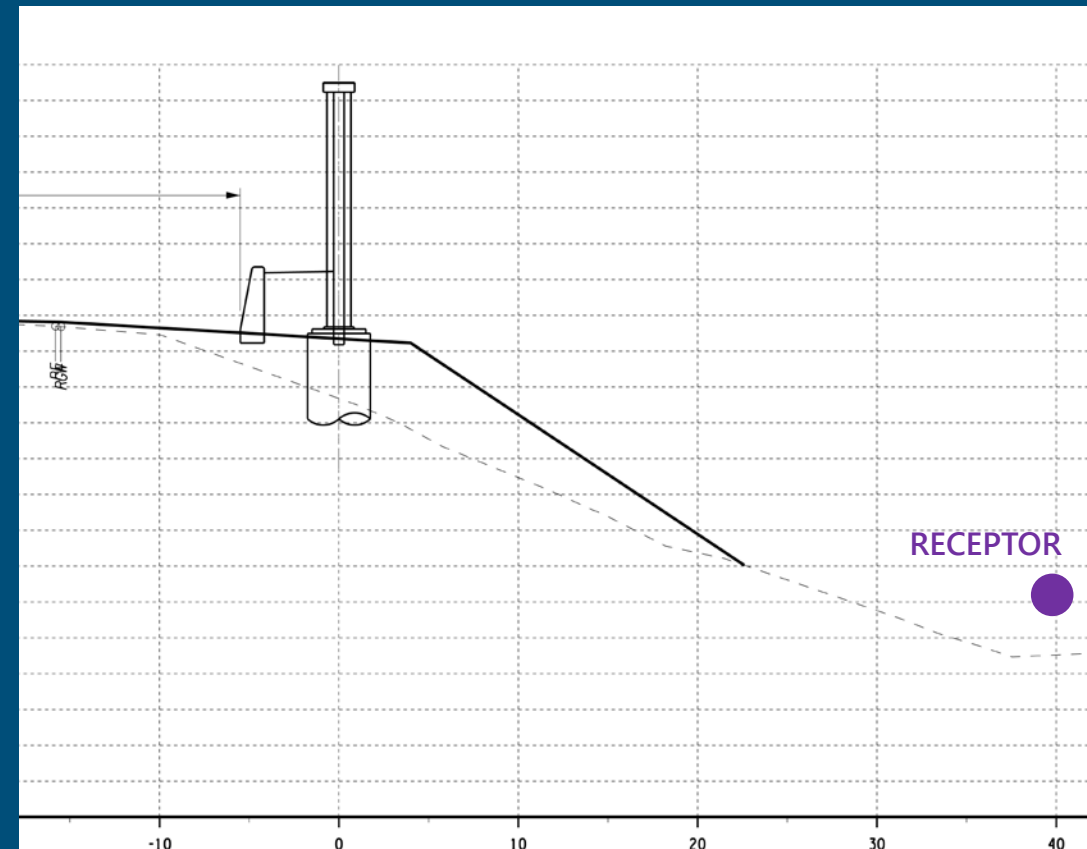
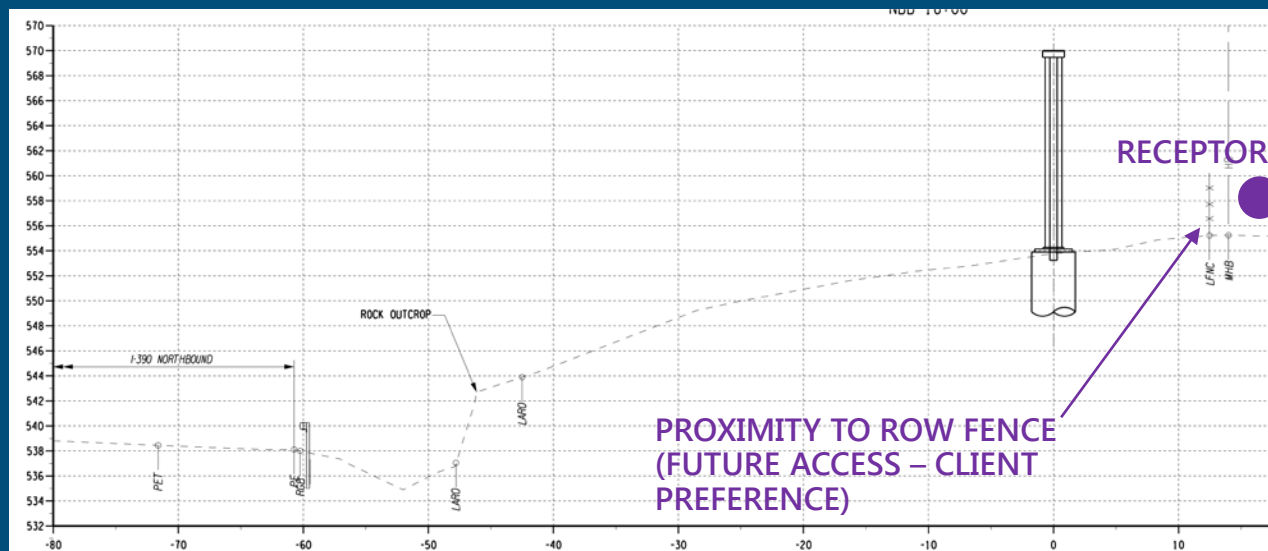
- I-390 / NY-390 Northbound
  - **Noise Barriers B, E and F**
  - Replace Trolley Blvd Bridge
  - Widen Canal Bridge
  - 4 Lanes from Lexington Ave./Canal to Lyell Ave. (SB & NB)
  - New on off ramps / access
    - Dedicated I-390 NB to Lyell Ave
    - Dedicated lanes from I-490 WB to Lyell Ave
    - New ramp from Lyell Ave to NY-390 NB
  - Lyell Ave east of I-390 improvements





# Noise Wall Alignment Considerations

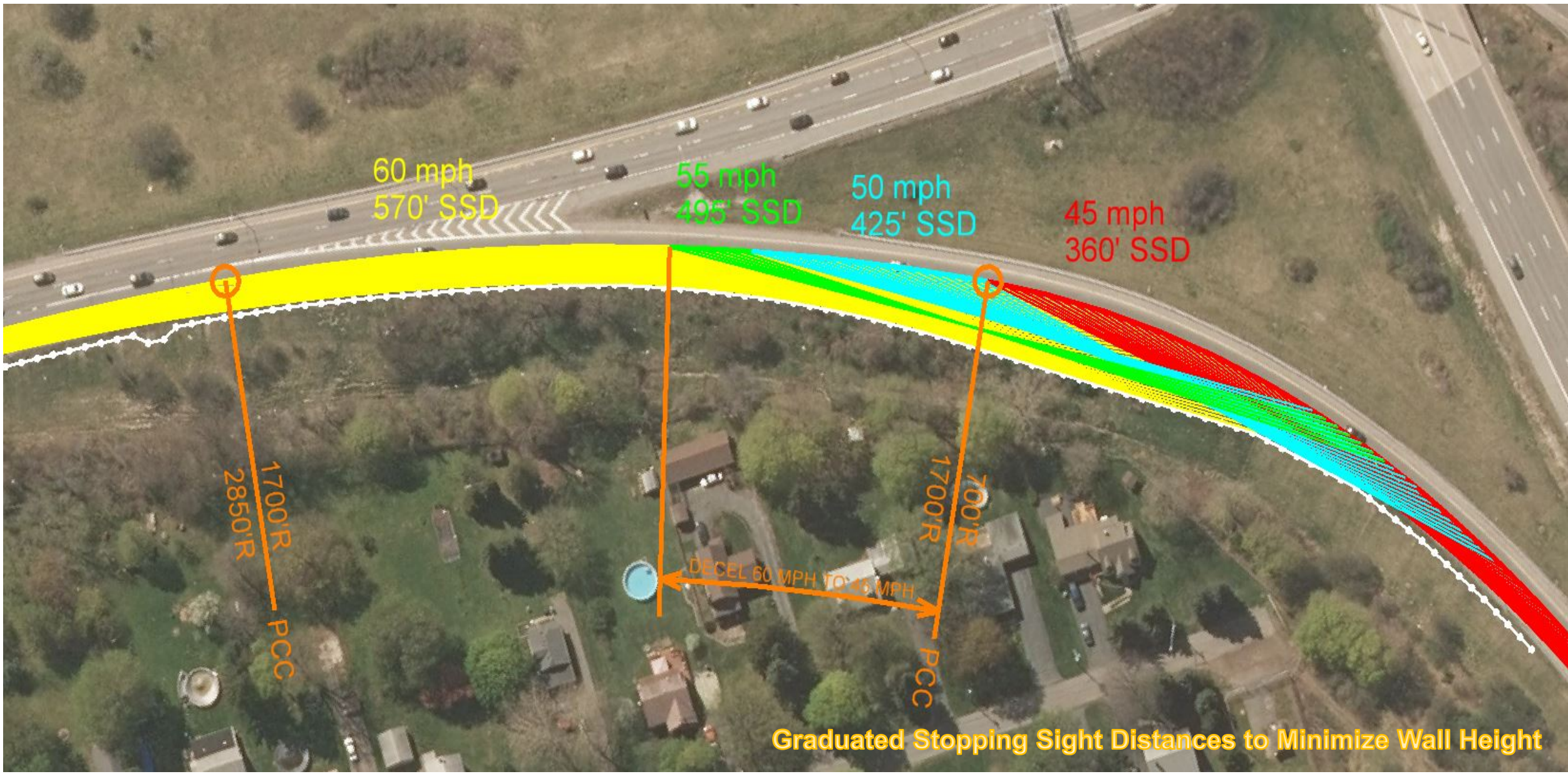




**Minimal Wall Height &  
Minimize Costs based on  
Optimization of Noise Wall**

**TERRAIN**

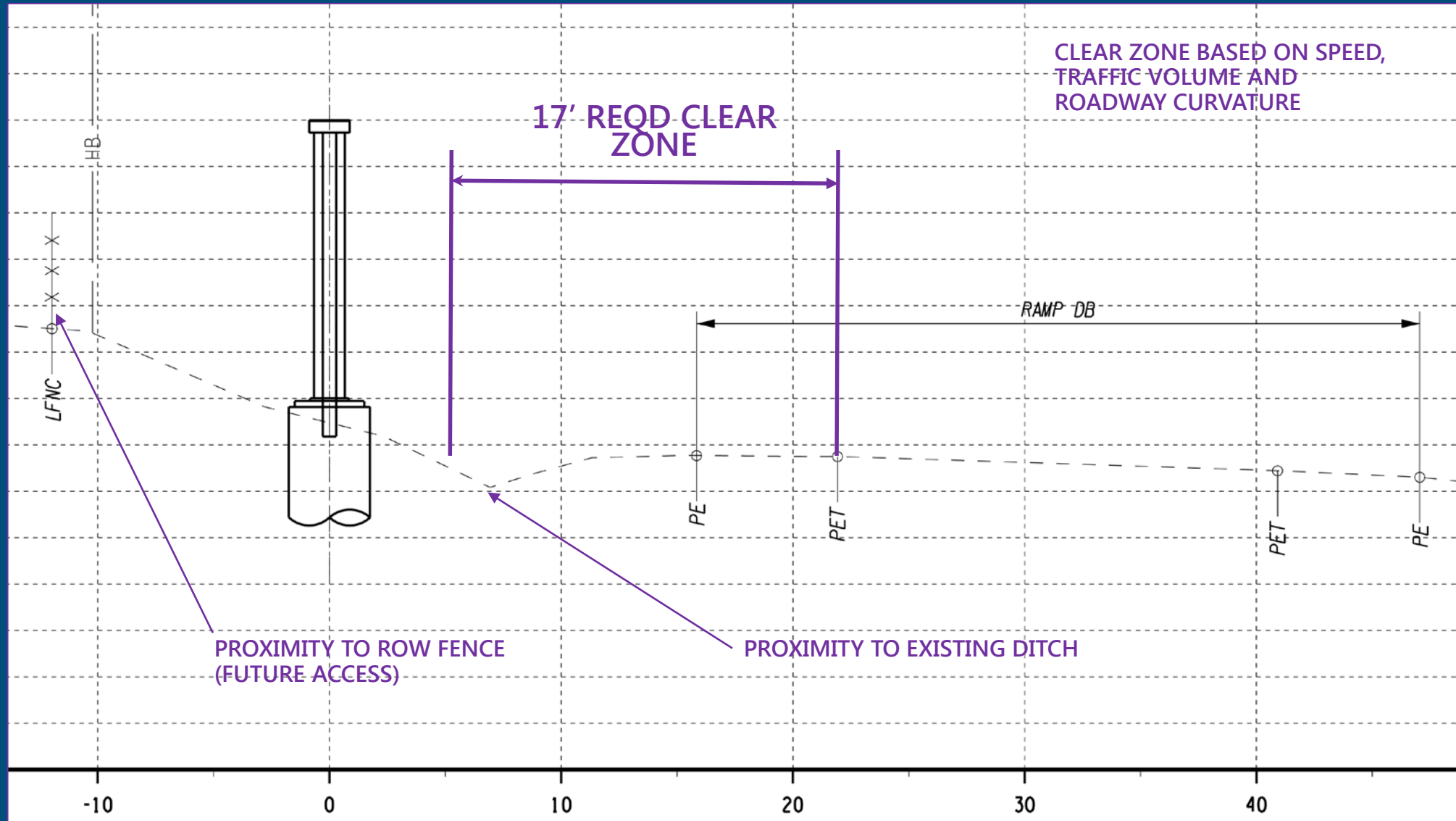




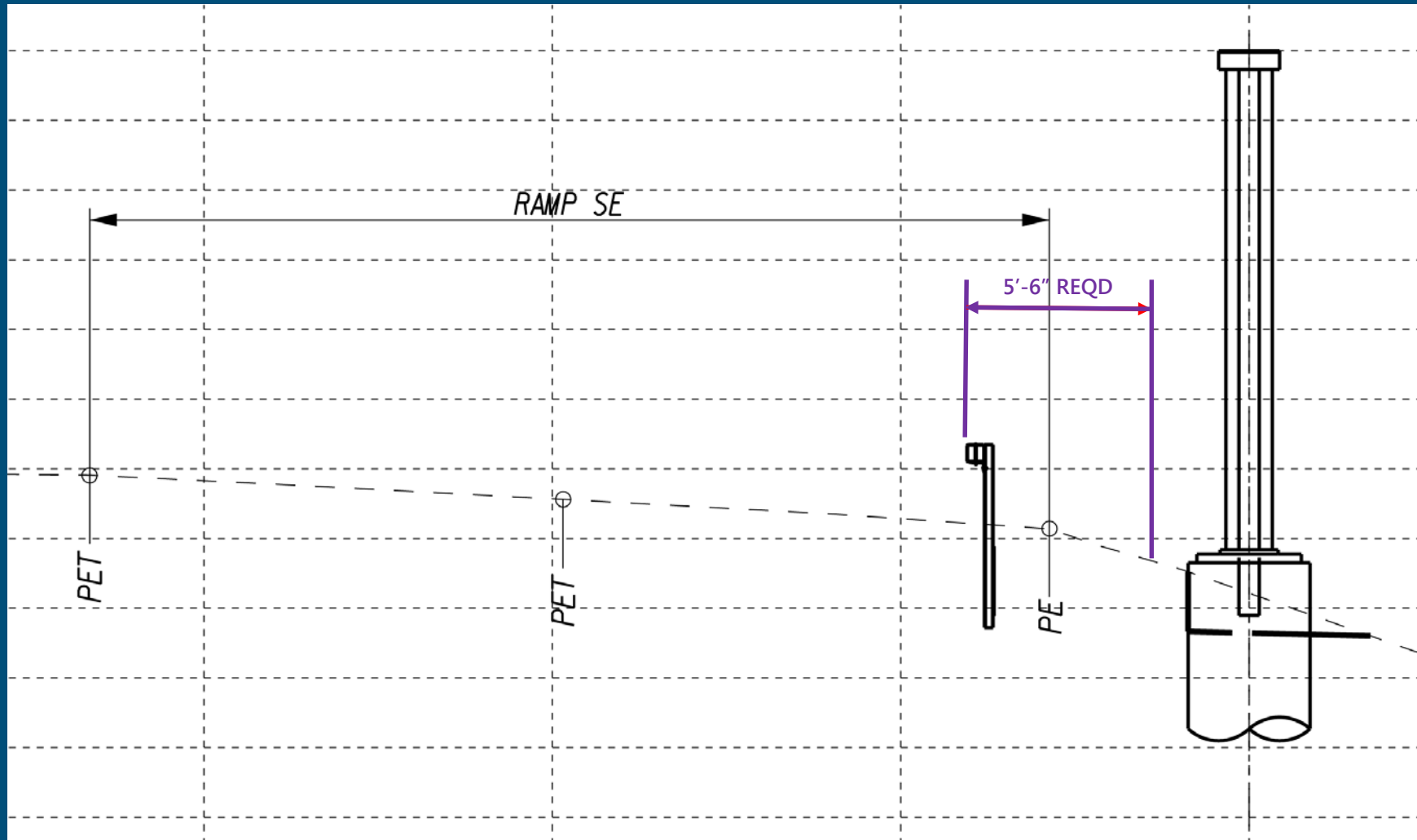
# SIGHT DISTANCE





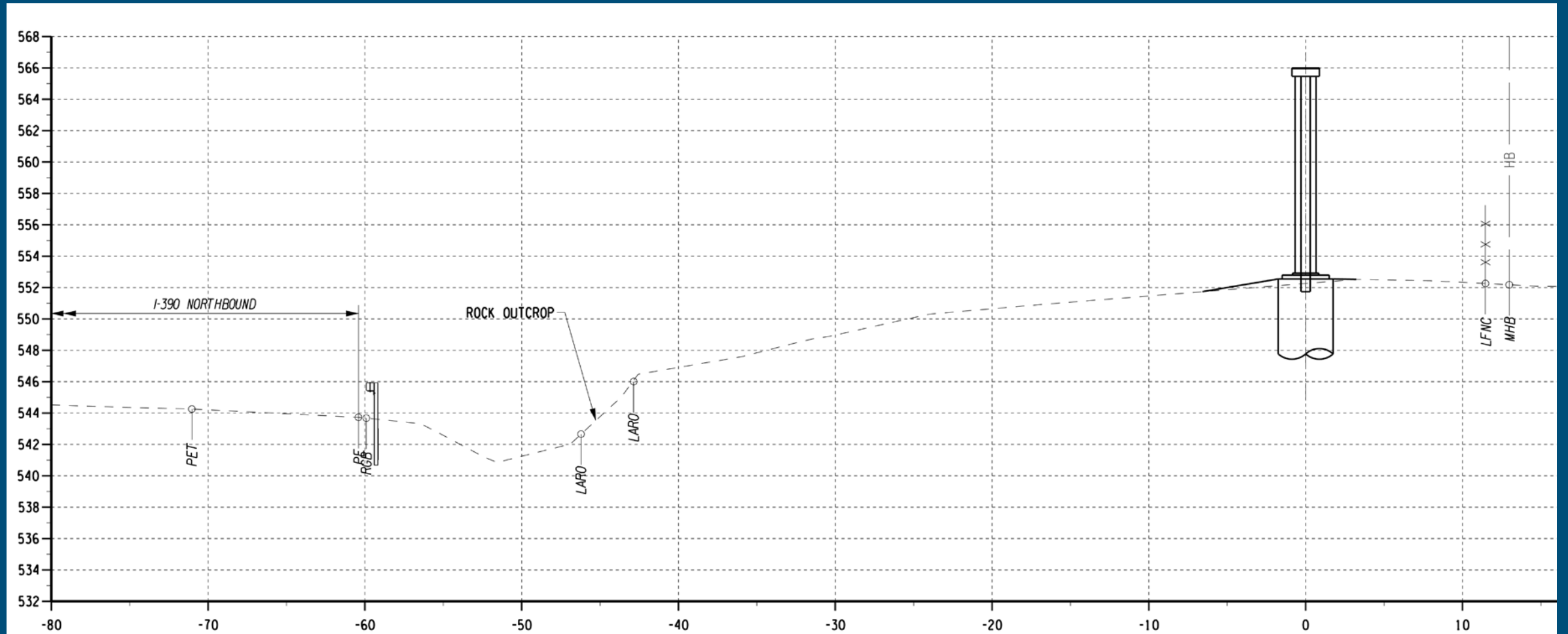


CLEAR ZONE



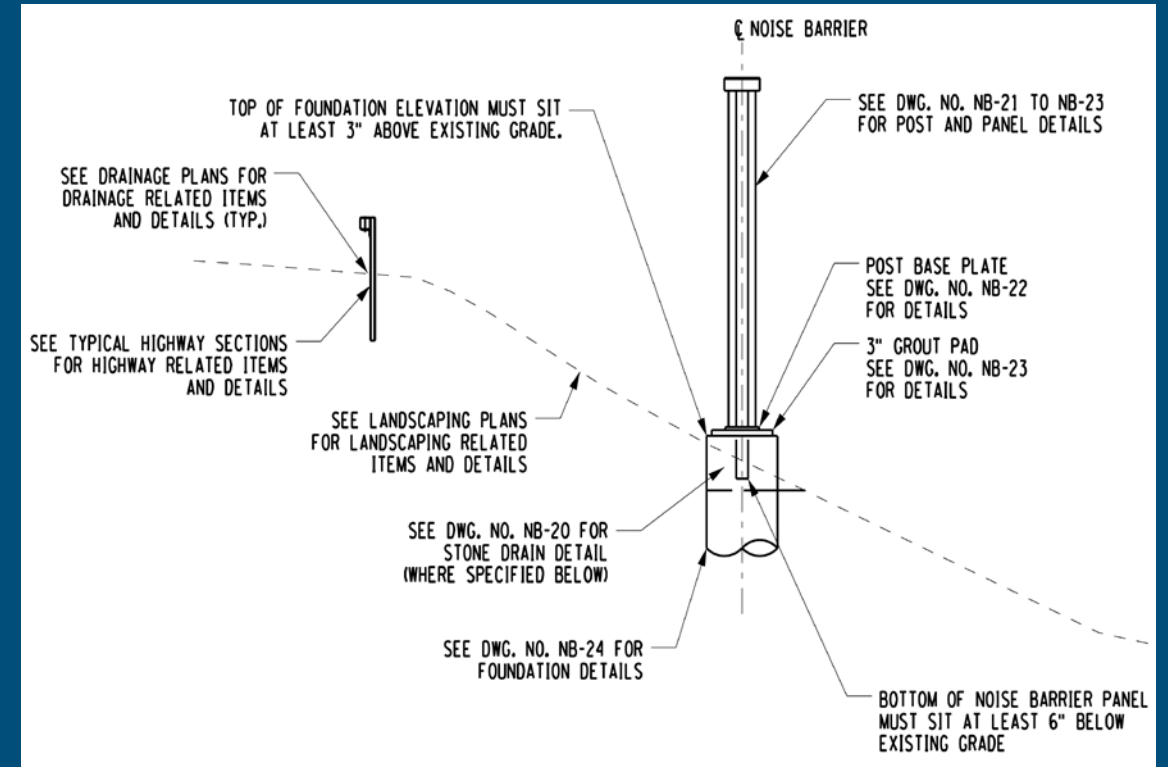
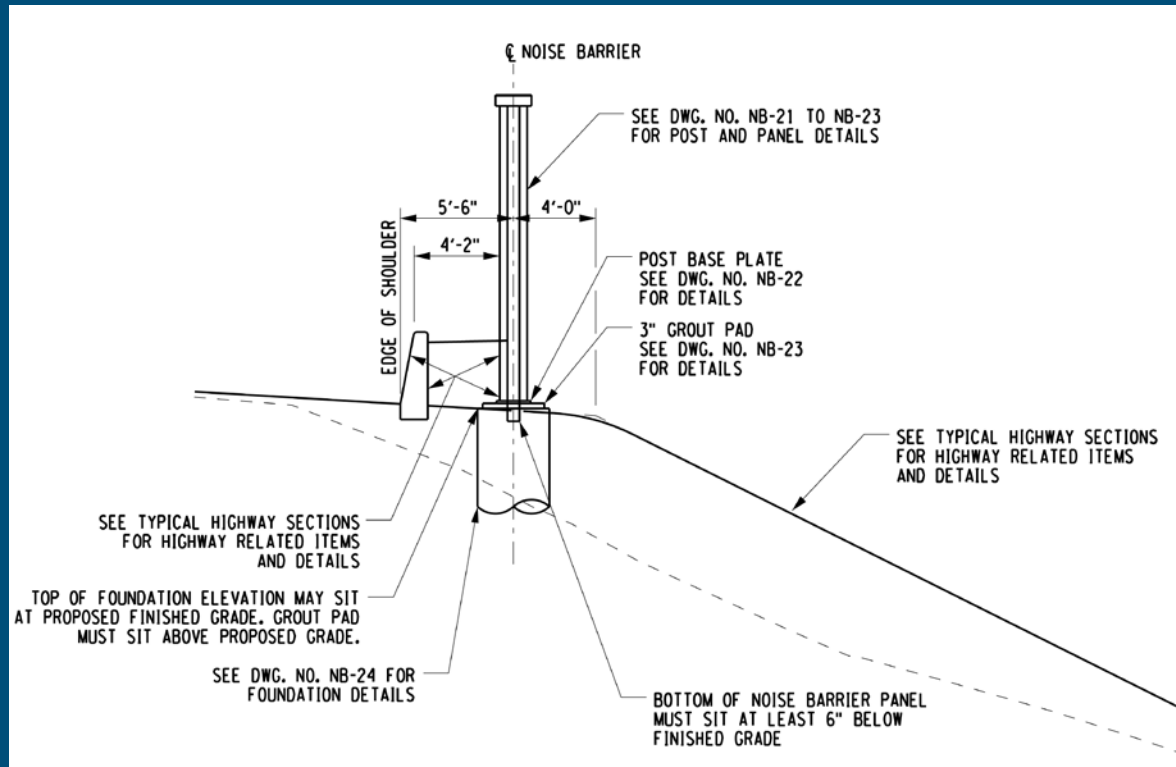
**GUIDE RAIL PROTECTION**





OPEN DRAINAGE IN CUT SECTION

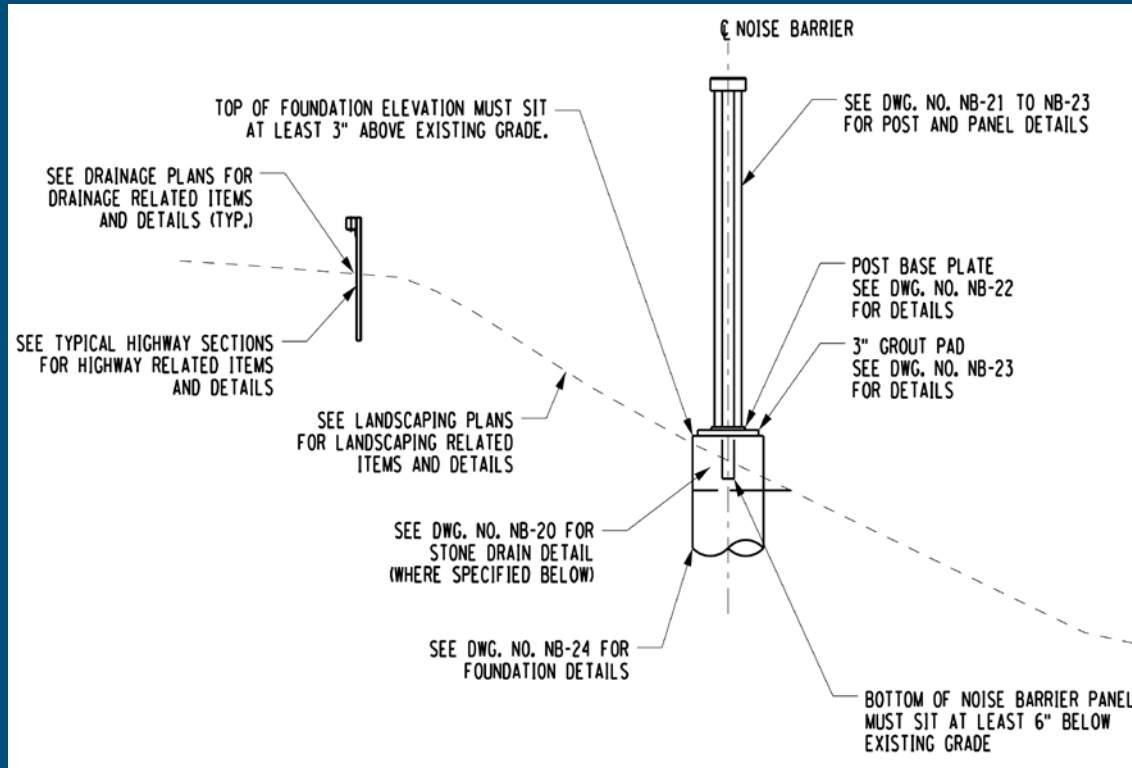
DRAINAGE



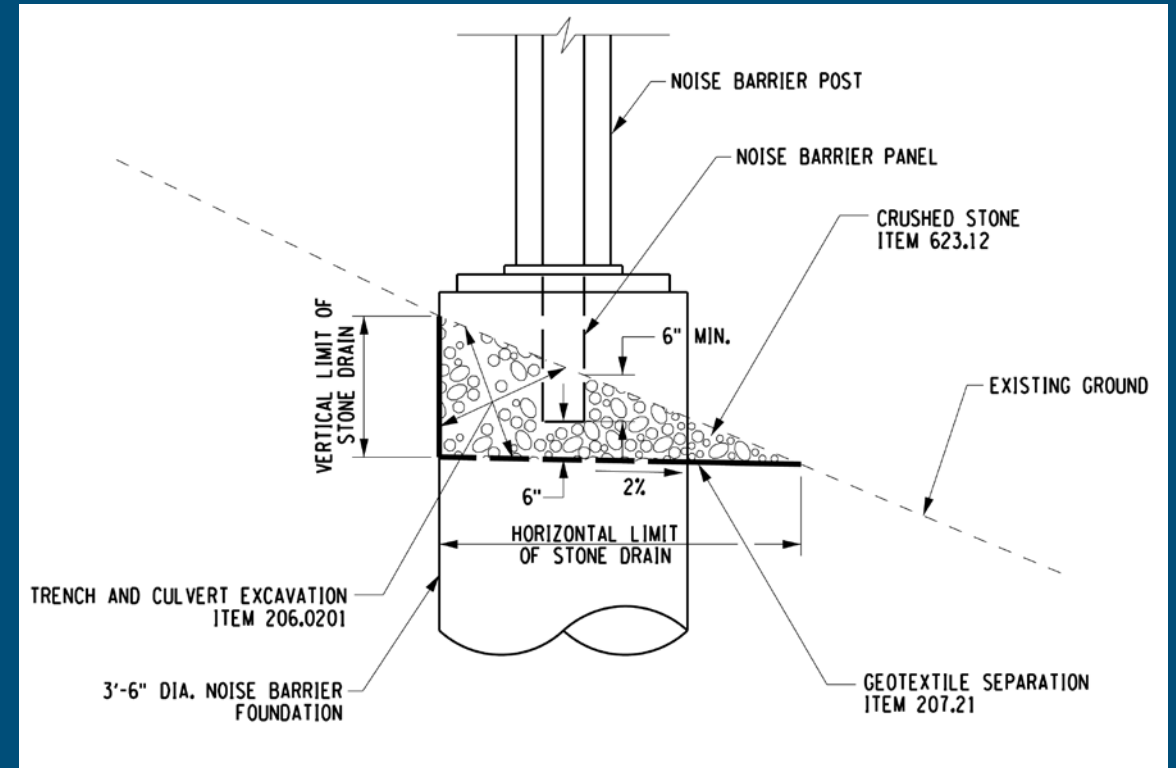
**CLOSED DRAINAGE IN NEW FILL SECTION**

**OPEN DRAINAGE IN EXISTING FILL SECTION**

## DRAINAGE



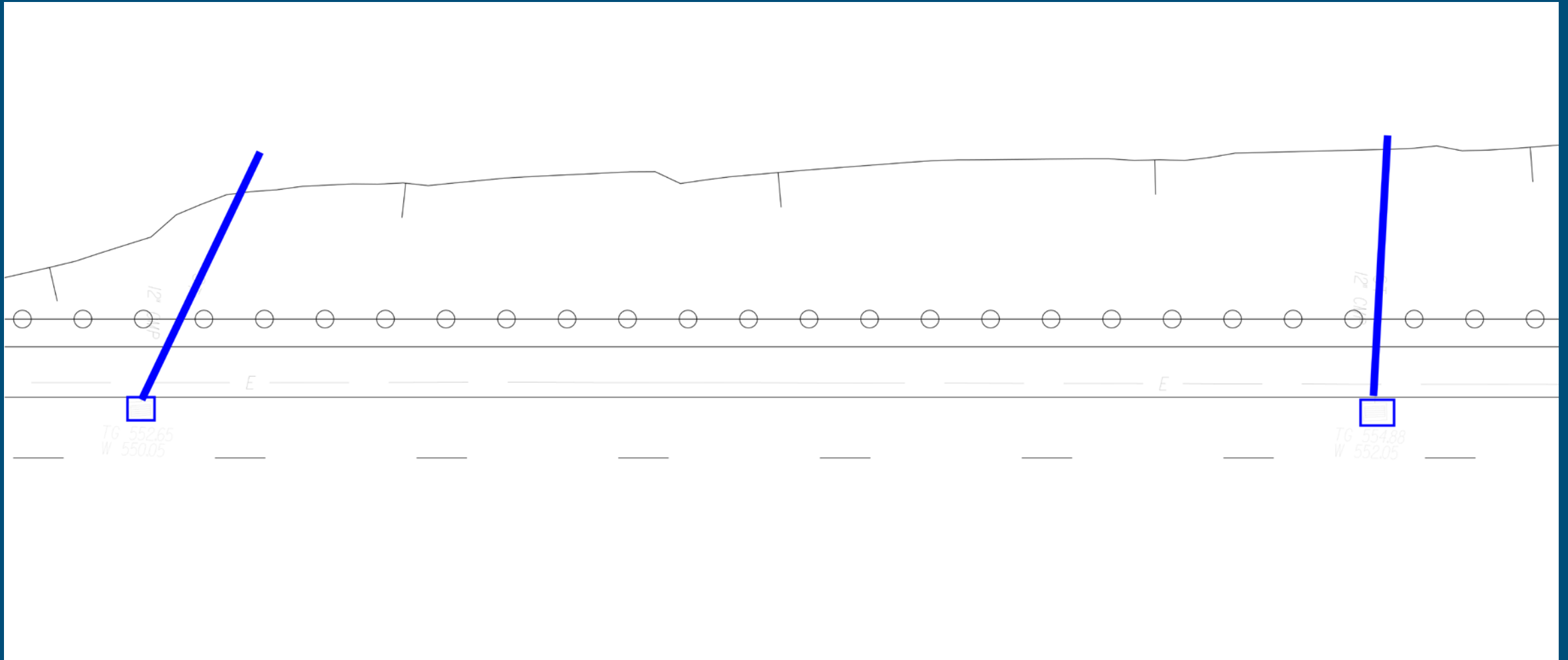
**MOUNTED ON EXISTING EMBANKMENT**



**STONE DRAIN DETAIL**

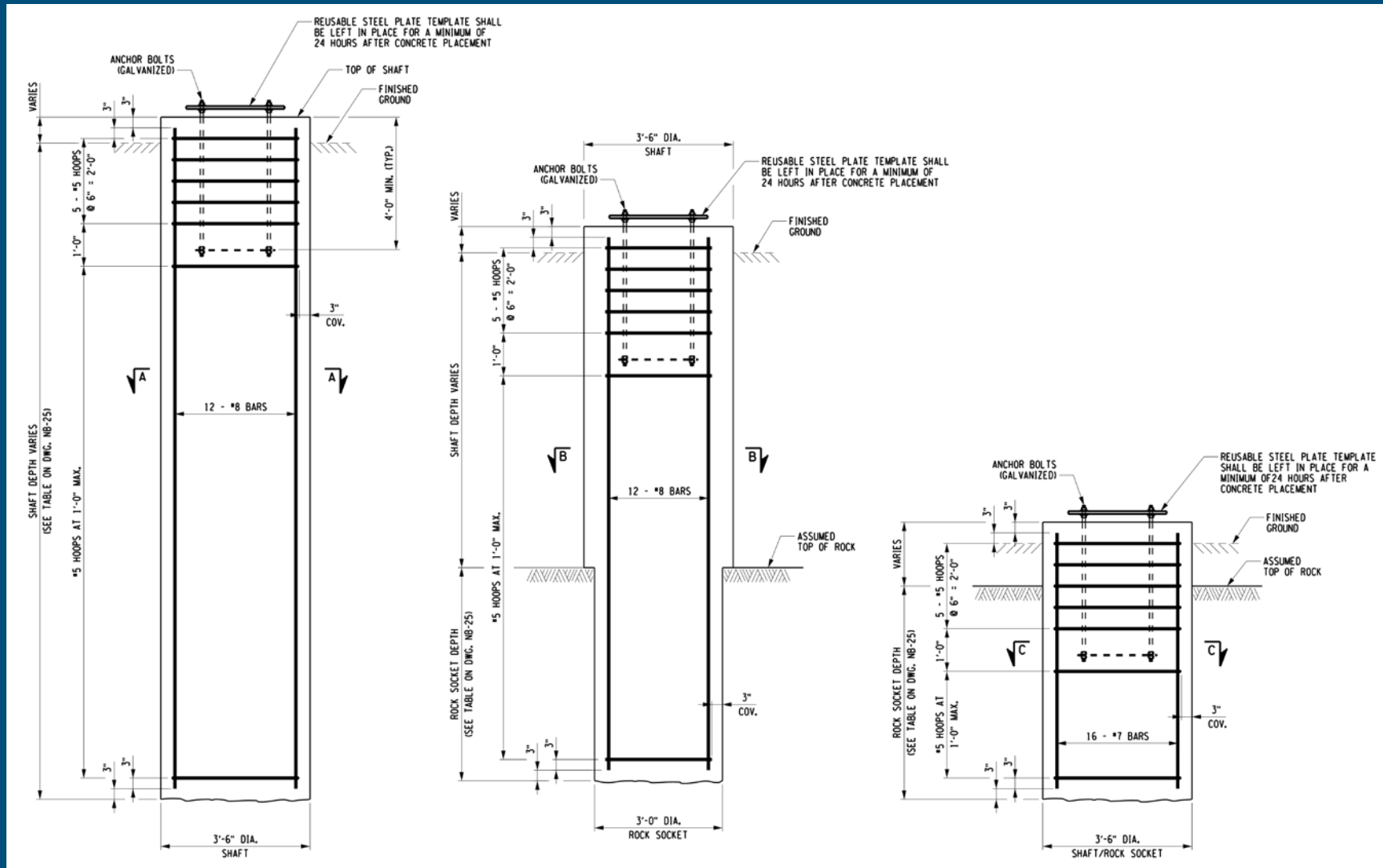
## DRAINAGE





POSTS SET TO AVOID EXISTING STORM PIPES

UTILITY CONFLICTS – DESIGN PHASE



SOIL

ROCK > 3' DEEP

ROCK < 3' DEEP

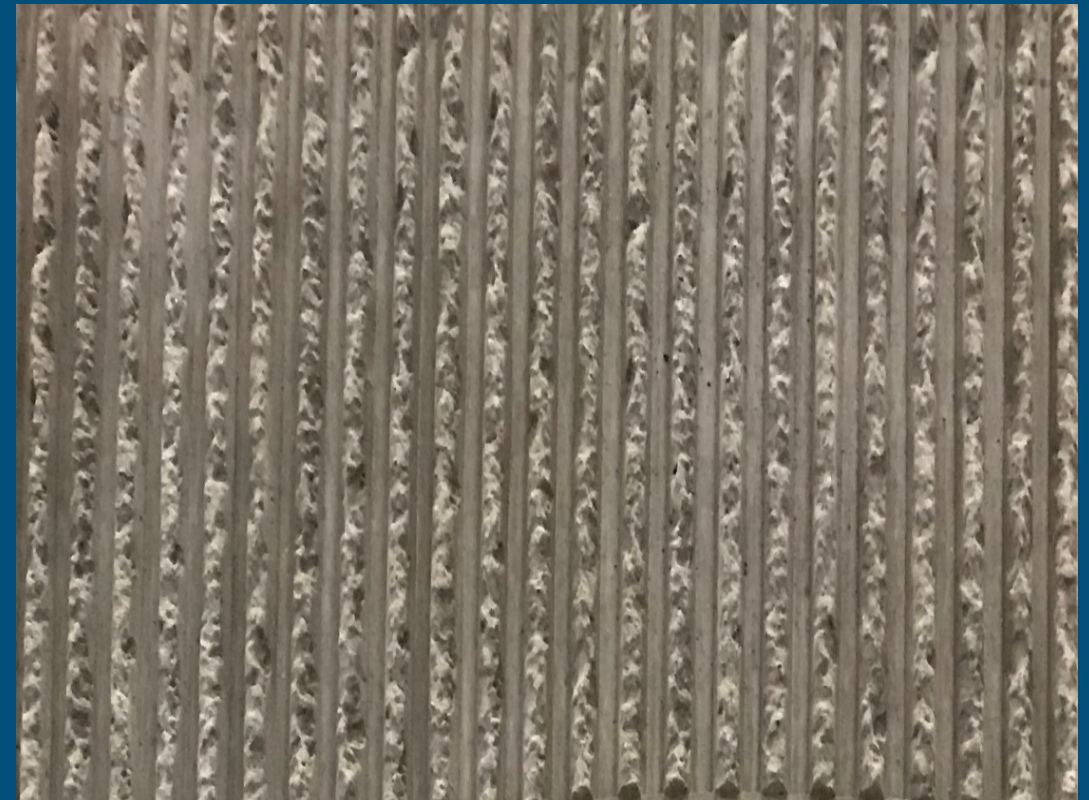
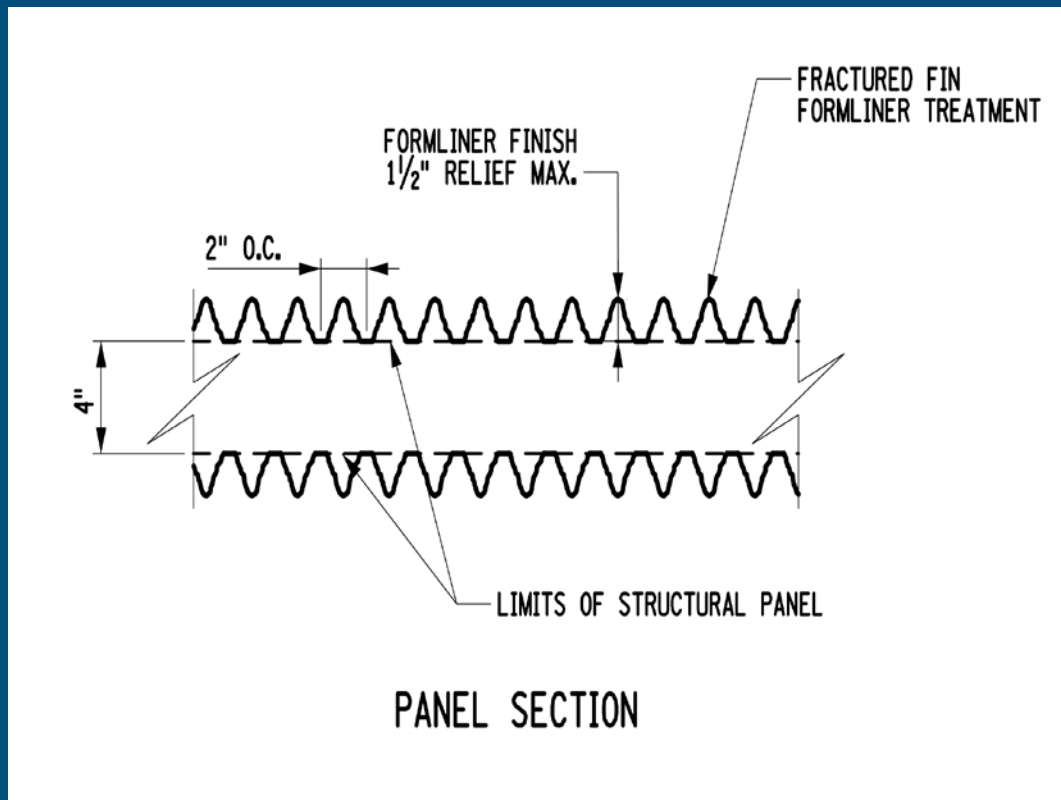
## FOUNDATION TYPES

The background is a stylized illustration of a stable scene. It features a long stable building with several stalls, some of which have horses inside. In the foreground, two horses are running on a grassy area. To the right, a car is partially visible. The entire scene is overlaid with a semi-transparent blue filter.

# Phase 2 Design

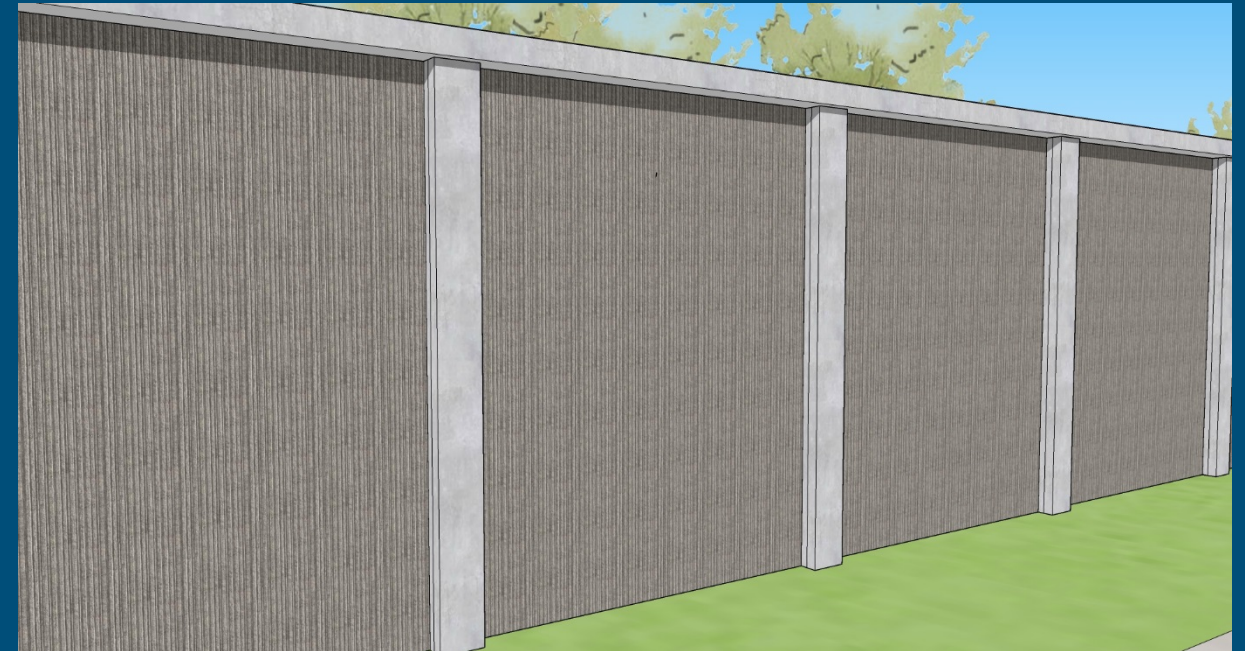
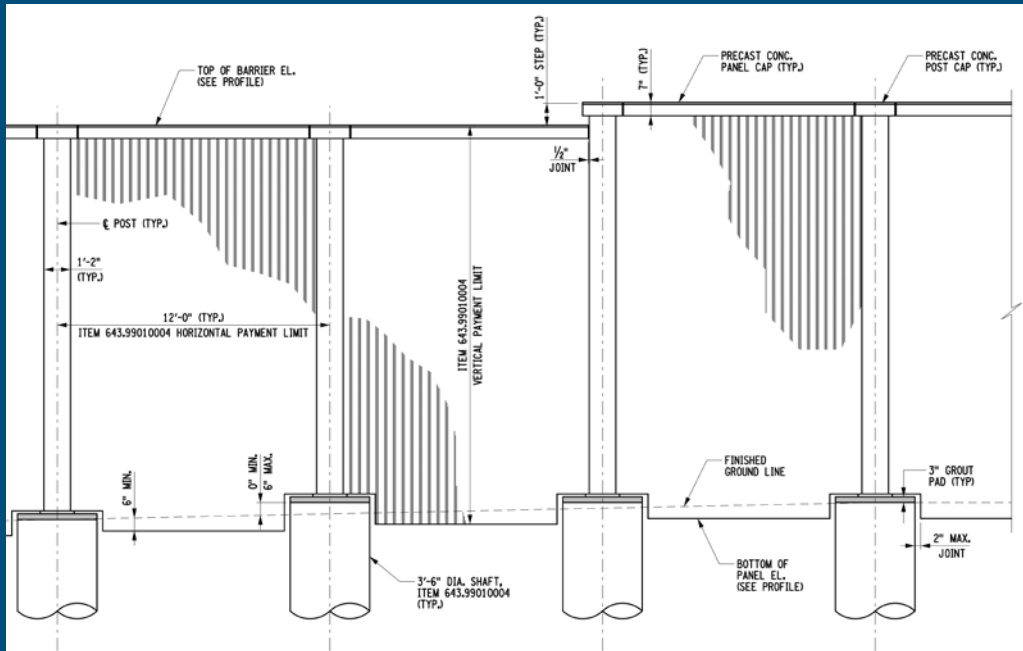
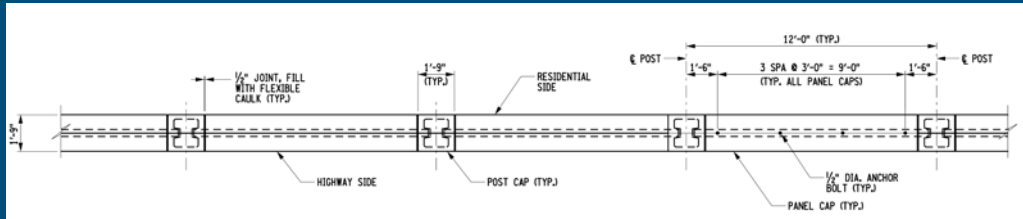
## Aesthetics





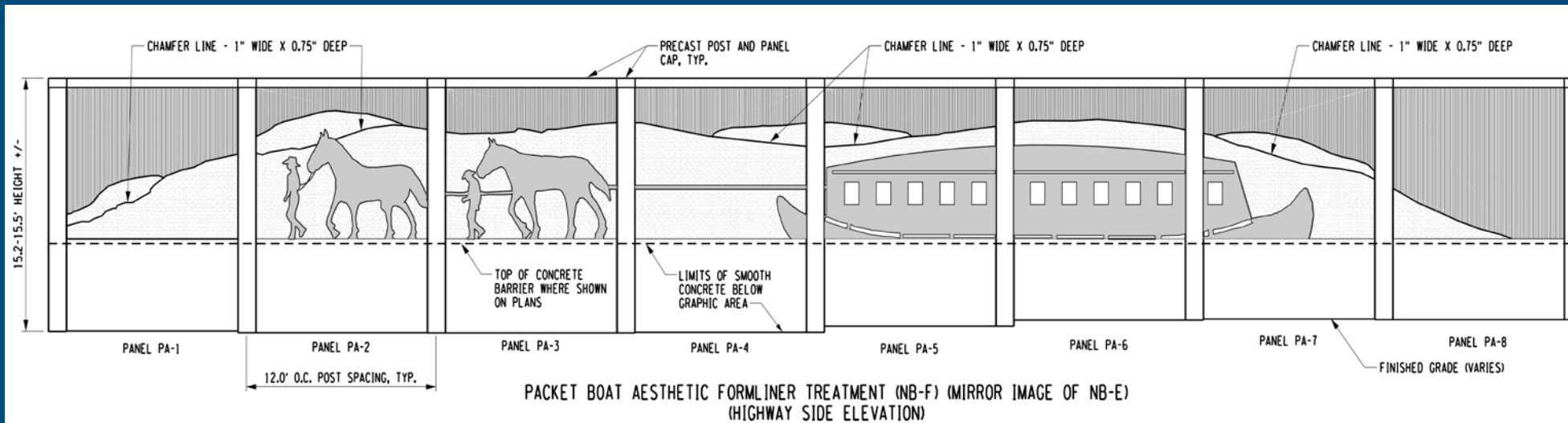
**PRECAST FRACTURED FIN FORMLINER**

**AESTHETIC TREATMENT**



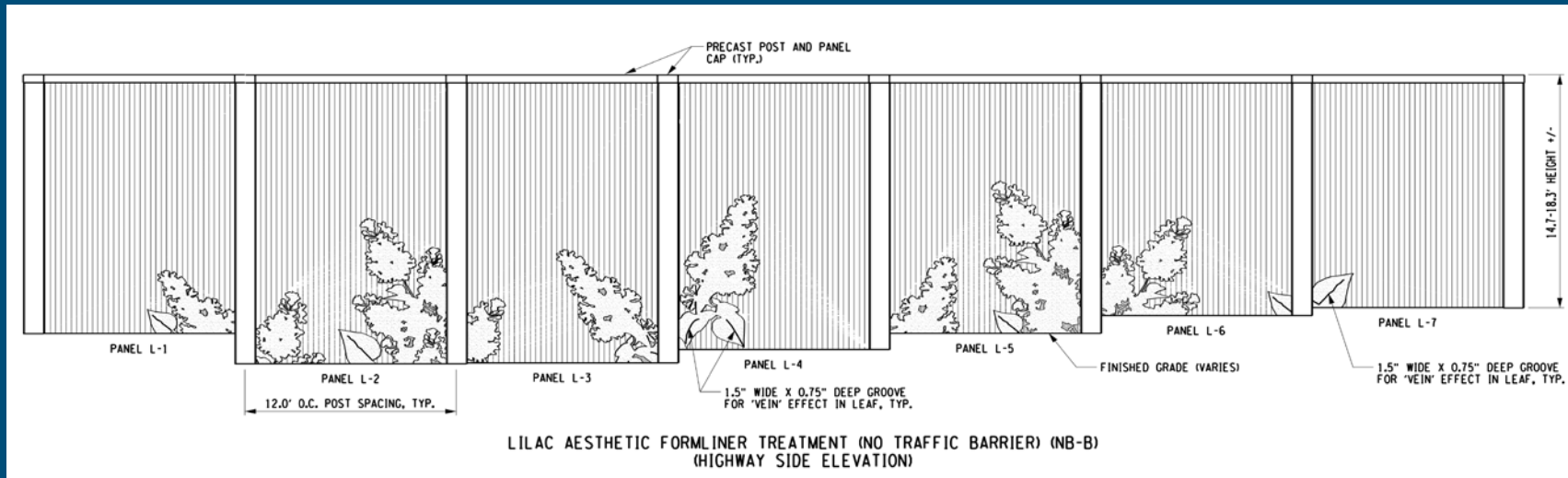
PRECAST PANEL, POST AND CAP

AESTHETIC TREATMENT



## AESTHETIC TREATMENT

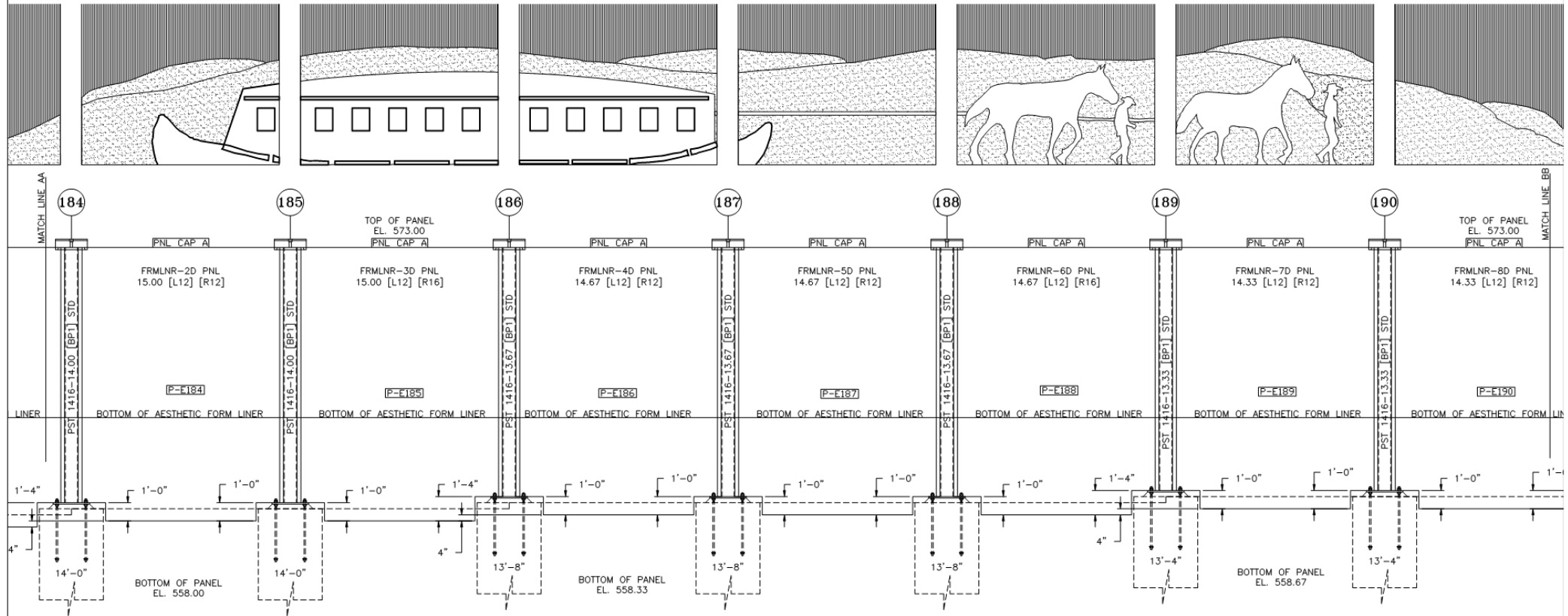




## AESTHETIC TREATMENT

# Fabrication

A blue-tinted illustration of a stable scene. In the foreground, two horses are walking from left to right on a grassy path. Behind them is a long stable building with several stalls, each with a white door. A dark-colored car is parked on the right side of the stable. The background features some trees and a cloudy sky. The word "Fabrication" is written in white text across the center of the image.



N Y S D O T

☐ Approved

☐ Approved as noted

By \_\_\_\_\_ Date \_\_\_\_\_

For: Director Materials Bureau

WALL E ELEVATION  
VIEWED FROM TRAFFIC SIDE

REV NO.	DATE	BY	DESCRIPTION
X	XXX	XX XXX	

<b>Precast Post &amp; Panel Wall System (Wall Profile)</b>	Contract sheets used to prepare drawings
Contract #: D263387	Sheet #'s: 300-326
Pay Item #: 643.990100004	Mfr. Location: 17 Thomas Street
County: MONROE	Binghamton, N.Y. 13901
Prepared by: FFIH	Date Prepared: 9-26-17
Checked by:	Drawing #: CO-387 WALL E
	Sheet #: 340 of #35

<b>Binghamton Precast &amp; Supply</b> 18 Phelps Street Binghamton, NY 13901 Ph: (607) 722-0334 Fax: (607) 722-0496
Contr.: COLD SPRING CONST. CO.
Addr.: 3 JACKSON STREET
Addr.: AKRON, NEW YORK 14001



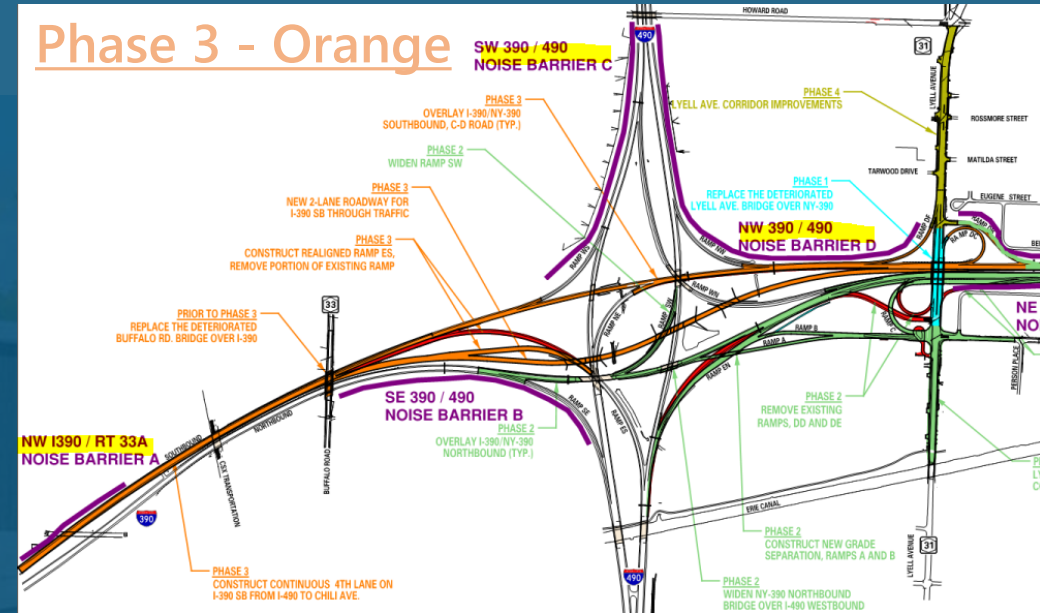
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## Phase 3 – Design Build

# Phase 3 – Design Build

## What is Phase 3

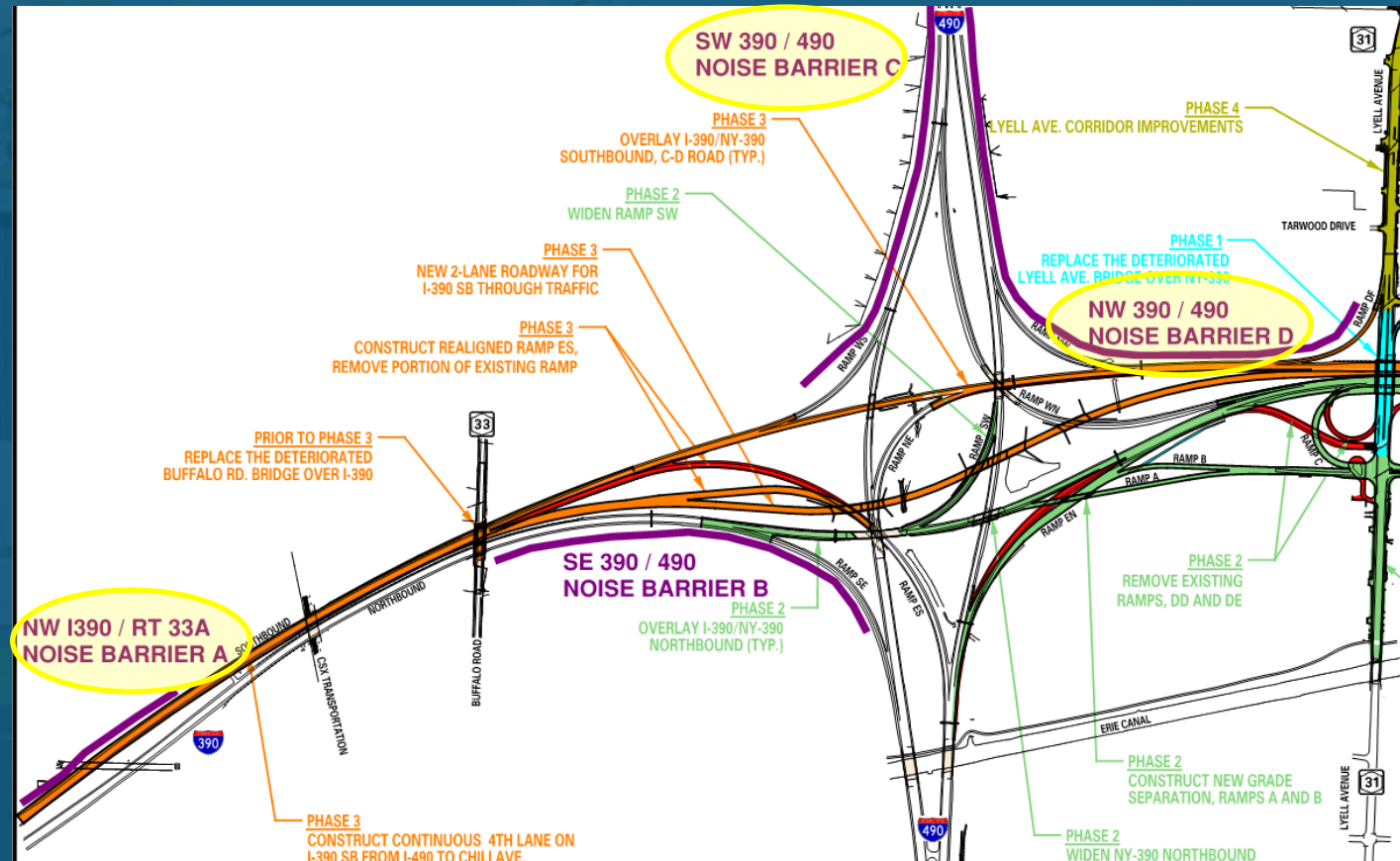
- I-390 / NY-390 Southbound
  - **Noise Barriers A, C, and D**
- 4 lanes from I-490 to Chili Ave
- Replace Buffalo Rd Bridge
- Realignment of ramp
  - I-490 WB to I-390 SB
- New 2-lane flyover of I-390 SB from Lyell Ave to south of I-490



# Phase 3 – Design Build

## Barriers A, C and D

- Bergmann Developed Design Build - Noise Barrier Acoustical Requirements Section of the NYSDOT Project RFP
- The Design-Builder is responsible for the entirety of the noise barrier & acoustical design of Noise Barriers A, C, & D.
- The barriers on the indicative plans are preliminary.

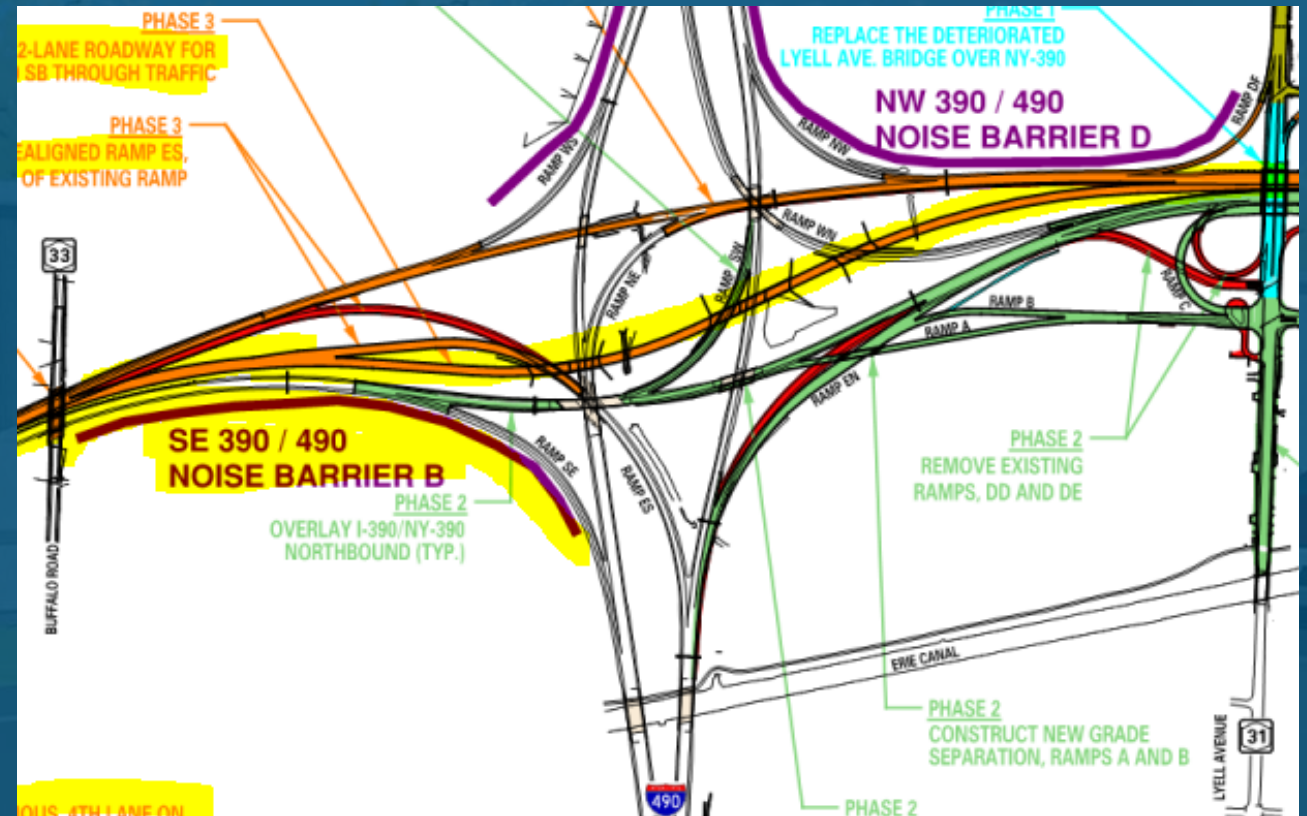




## Phase 3 – Design Build

### How does it affect Barrier B

- Barrier B currently being installed under Phase 2 Construction
- DB usually allows possible realignment / alteration of roadways, however NYSDOT making Directive Plans for DB on specific highway & bridge segments



# Draft Noise Policy Updates

## Highlighted New / Additional Items

- **Multiple Analysis** types
  - (**Narrative** – Qualitative Assessment / No potential for noise impacts); (**Screening** – Simplified Quantitative Analysis, TNM “flat model” with worst case conditions, and abatement clearly not feasible / reasonable - i.e. highway with existing curb cuts & driveways); (**Detailed** – Does not fall under Narrative or Screening)
- **Viewpoints** in Reasonableness Determination
  - Better clarification of how to determine and address during the Project Development Process
- **Design Build Section**
- **Construction Noise** Guidance and NYSDOT Specification on Temporary Noise Barriers

# Draft Noise Policy Updates

## Design Build Section

- **Project Development Phase –**
  - Traffic noise report and TNM “Preliminary Optimized Barrier Analysis”, prepared by NYSDOT during preliminary design phase, is the basis for performing any new acoustical analyses for DB projects
- **Bid Phase –**
  - DB bidders are required to submit the following:
    1. Changes from the indicative drawings (ex. alignment and profile of roadway or barriers, ground elevations, edge of shoulder barriers)
    2. A statement if the changes in design will create new impacted receivers and require a NEPA reevaluation.
- **Award Phase -**
  - Submit the “Final Optimized Noise Barrier” TNM files that represents the D-B Design,
  - Provide a Final Design Noise Study Report based on the policy instructions,
  - Perform any NEPA or SEQR Reevaluations (if required).

# Questions?

For additional information or questions:



**BERGMANN**  
ARCHITECTS ENGINEERS PLANNERS

**JOE VANKERKHOVE, PE**

(585) 498-7913

[jvankerkhove@bergmannpc.com](mailto:jvankerkhove@bergmannpc.com)