Schnabel ENGINEERING

Lower Longview Lake Dam

Pertinent Dam Data – Existing Dam

- Earthfill
- Structural height of ~20 ft
- Hydraulic height of ~14 feet
- Crest width varies(~20 to ~25 feet)
- Spillway – Box Culvert ~8x16
- Crest elevation varies from El 207 ft to El 210 at abutment contacts.

Project Goals –

- Provide Safe Structure
  - Maintain Right of Way for Albermarle Ave
- Maintain current water quality benefits of lake
- Limited enhancement to water quality
  - Contain “First Flush”

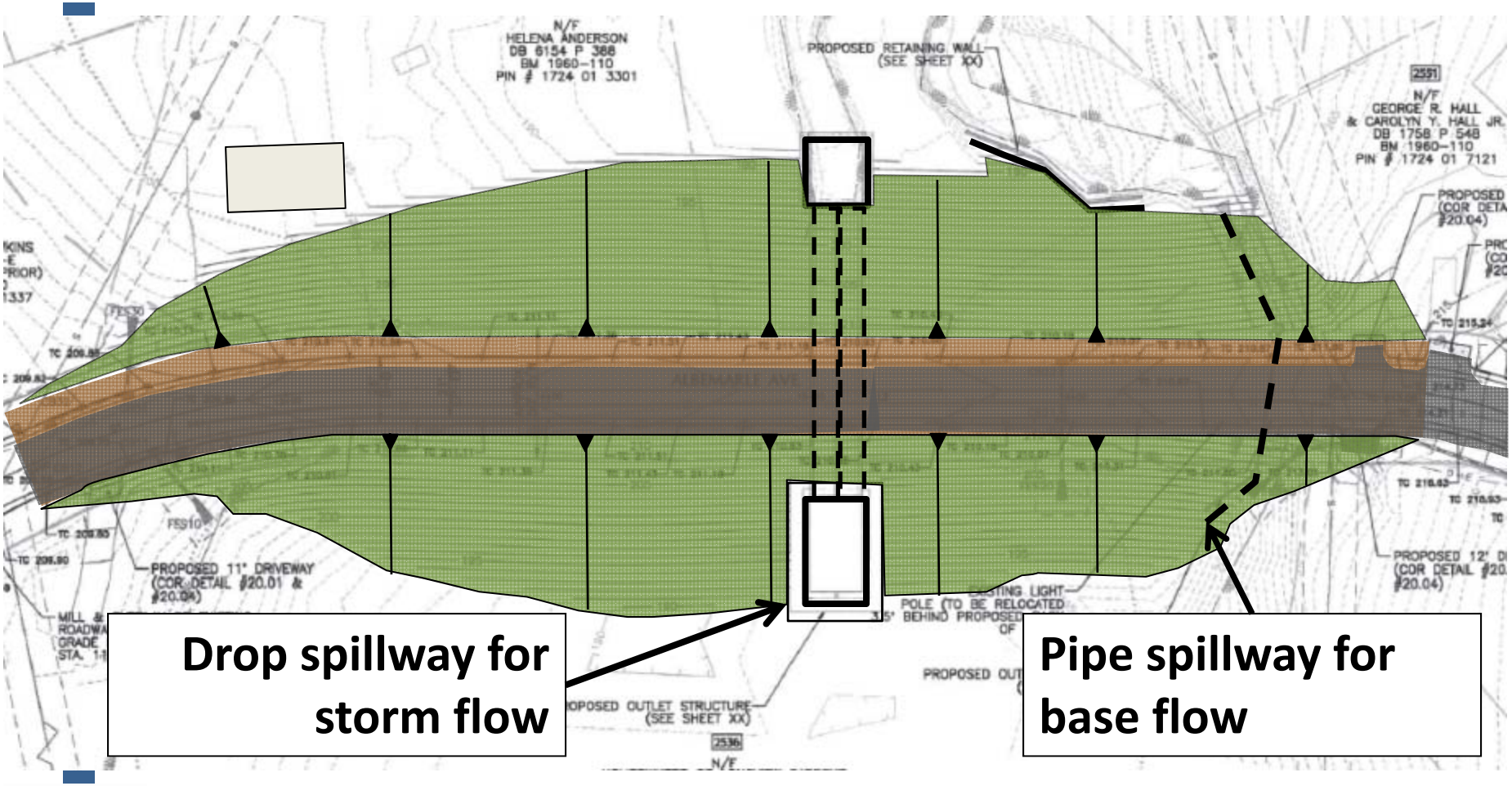
Rehabilitation Design Configuration

- Place 12-inch pipe in existing spillway to pass base flow
- New spillway in center of dam
  - Drop structure and double barrel conduit
  - 3-stage weir – contain “first flush”
  - Pass SDF (1/3 PMP)
- Widen dam crest (road & area for sidewalk)
- Flatten slopes (3H:1V)

Disposition of Utilities

- Water Line Replaced
  - Shut-offs on abutments
  - Encased steel pipe casing with vents/drains
- Install replacement street lights
- Install new storm drains

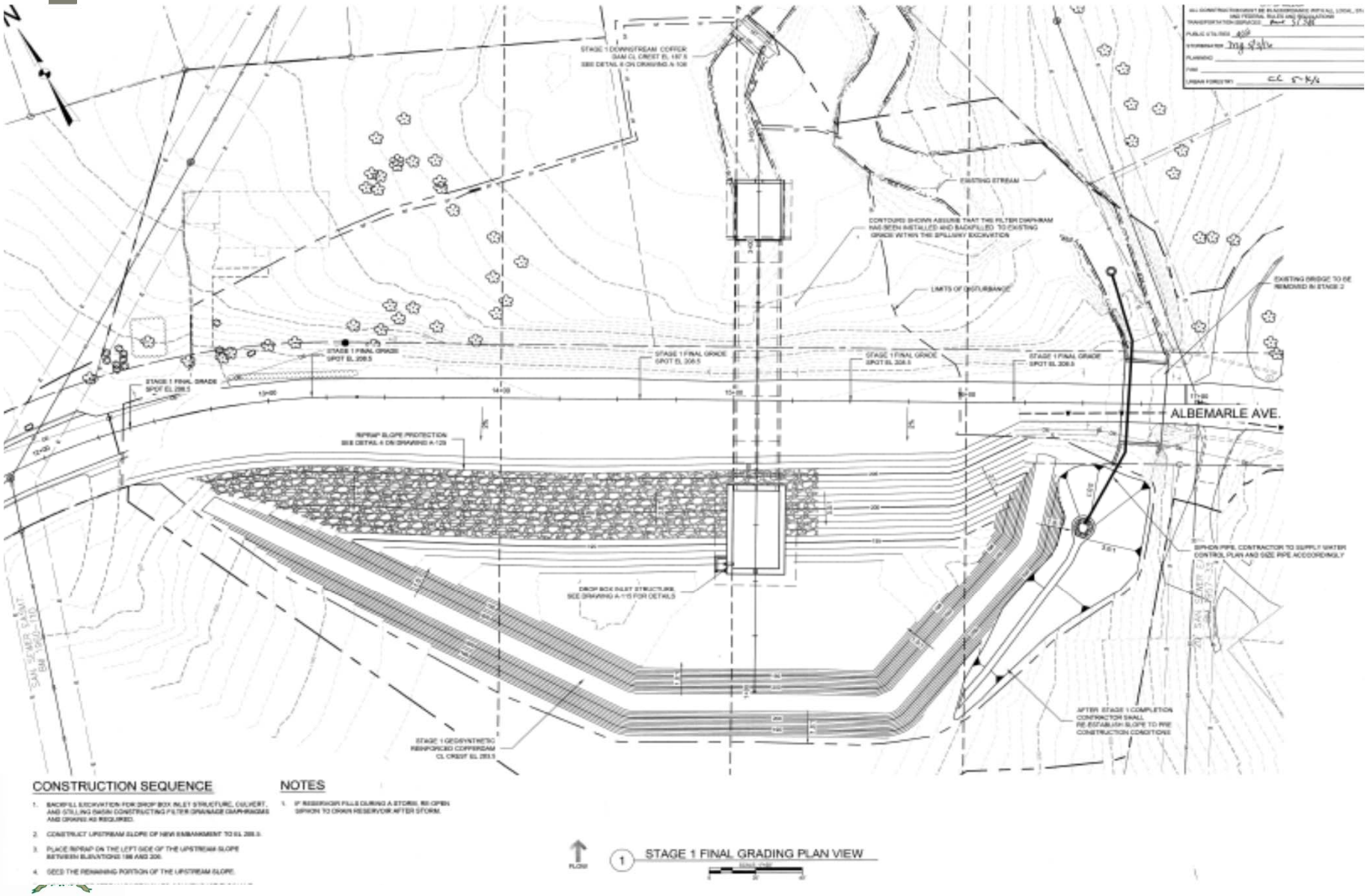
Proposed Embankment Grading



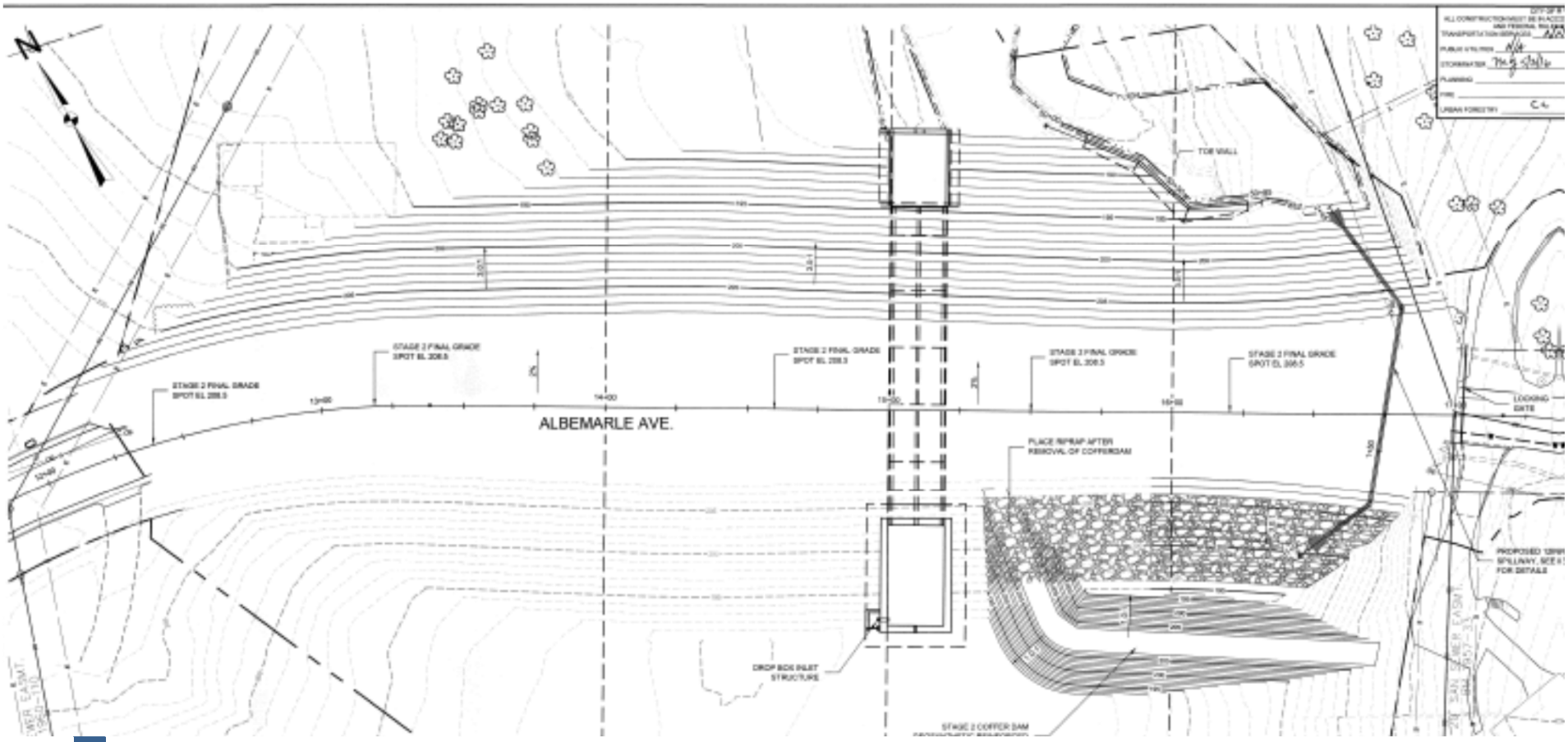
Stream Diversion

- Minimum Requirements Provided on Drawings and Specs
- Cofferdams have been designed
  - Contactor can modify but will need Engineer and NC Dam Safety approval
- Pumping and/or siphon design and details by Contractor

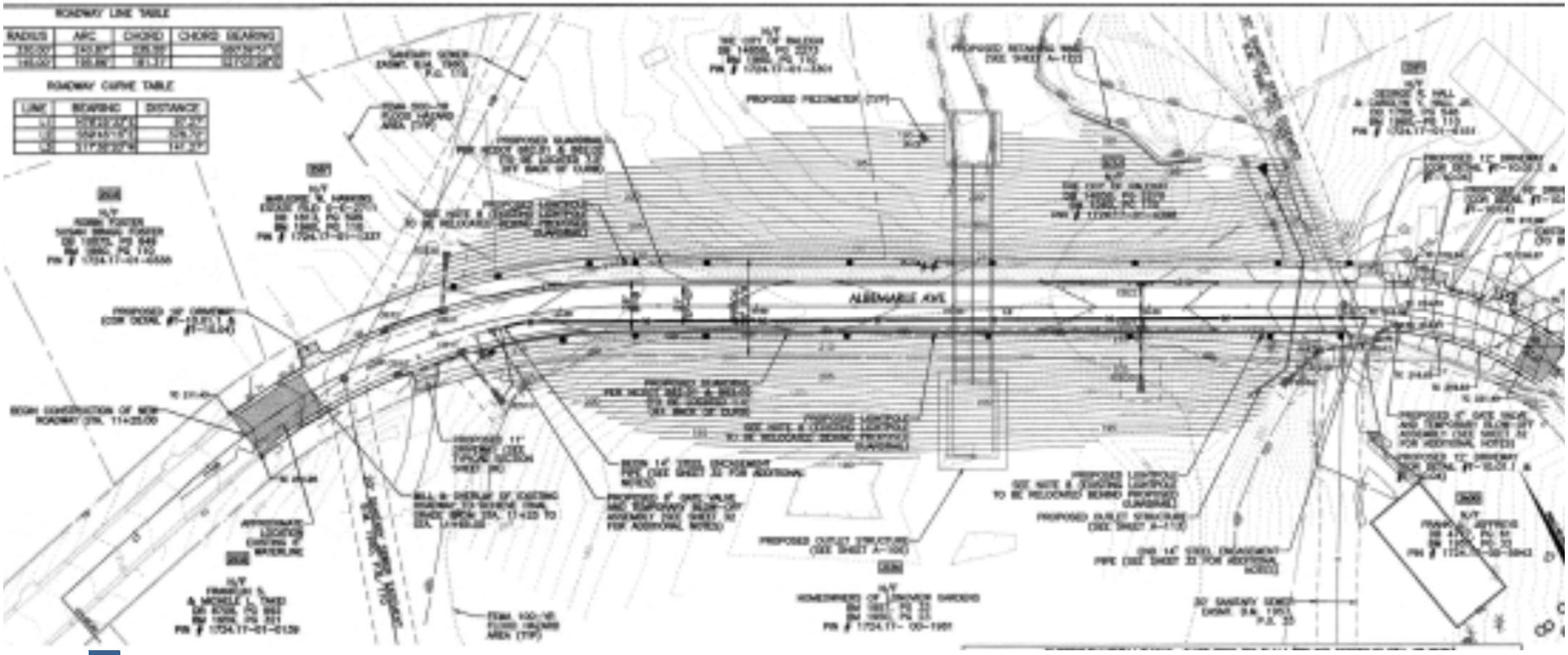
Stage 1 Stream Diversion & Grading



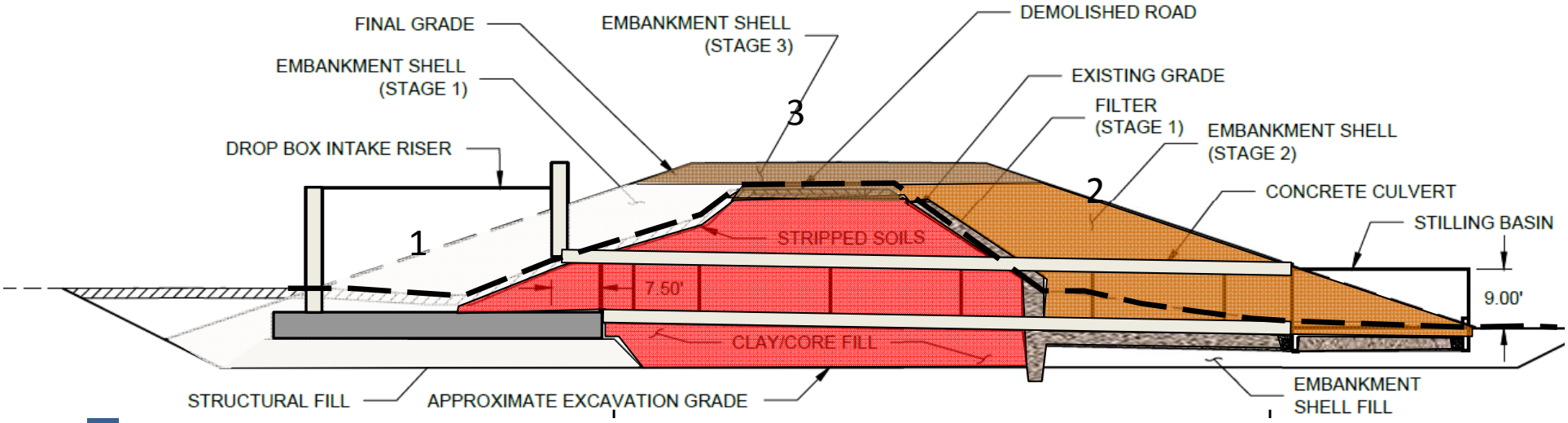
Stage 2 Stream Diversion & Grading



Stage 3 Road & Utility Construction



Section Through Dam & Drop Inlet Spillway



Erosion & Sediment Control

- Permit requirements
  - Addenda to include revised detail and skimmer size as required by Mod 5 below.

Modifications:

(1) All proposed construction entrances must be extended as necessary to abate tracking of sediment on public roads.
(2) All dewatering operations associated with skimmer basin removal and from areas within cofferdams discharge through an appropriate silt bag or other acceptable sediment control device.
(3) Please ensure that all self-monitoring requirements are met during each phase of the construction activity.
(4) Please provide a suitable concrete washout station onsite for containment of waste concrete materials.
(5) Please note that the emergency spillway for the skimmer basin will not be a rock dam (as noted in detail 2 on Sheet 38. It will be an armored weir over the embankment. Please specify this (as well as the skimmer and orifice size) on the final drawings.

Imported Shell Fill

- Lab testing by Contractor required
  - Gradation, plasticity, and strength requirements
    - Imported Embankment Shell Fill shall have an effective strength envelope equal to or higher than a failure envelope corresponding to an effective stress friction angle of at least 30 degrees with a cohesion intercept of at least 100 psf.
    - Imported Embankment Shell Fill shall have a total stress envelope equal to or higher than a failure envelope corresponding to total stress friction angle of at least 25 degrees with a cohesion intercept of 250 psf.

Contractor Testing of Imported Fill

TABLE 1: Testing of Off-Site Borrow Soils

Material Property	Contractor's Testing Frequency	Design Engineer's Testing Frequency
Gradation w/ Hydrometer (ASTM D422)	1 test/source before importing to site	3 test during placement
Atterberg Limits (ASTM D 4318)	1 test/source before importing to site	3 test during placement
Moisture Content (ASTM 2216)	1 test/source before importing to site	3 test during placement
Moisture - Density (ASTM D698, or D1557)	1 test/source before importing to site	3 test during placement
Triaxial Compression with Pore Pressure Measurement (ASTM D4767, 3remolded specimens tested at confining stress of 5, 10 and 20 psi)	1 set of tests/source before importing to site	1 set of tests before importing to site

Questions