

IOWA

Civil and Environmental
Engineering

Truck Rerouting and Pavement Replacement

Trident Infrastructure

Nick Simpson, Sarah Hilgendorf, Andrew Heim

Introductions



Nick Simpson - PM
Hydraulics

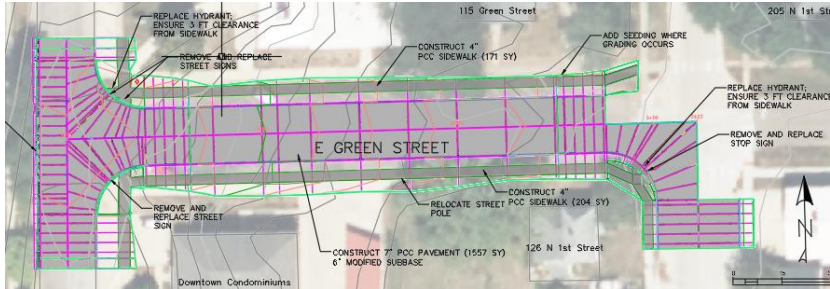


Sarah Hilgendorf
Structures



Andrew Heim
Transportation

Project Overview and Design Alternatives



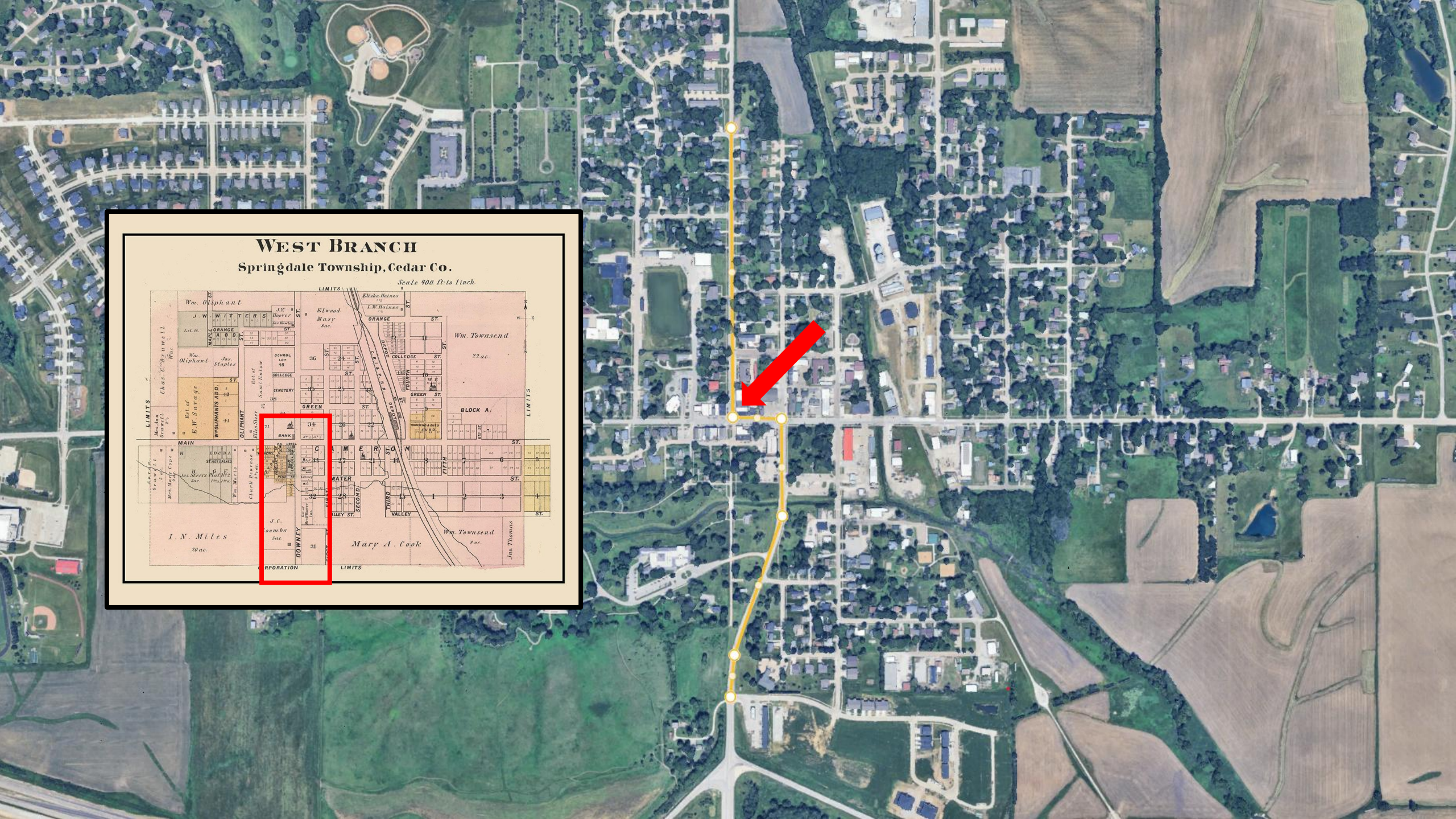
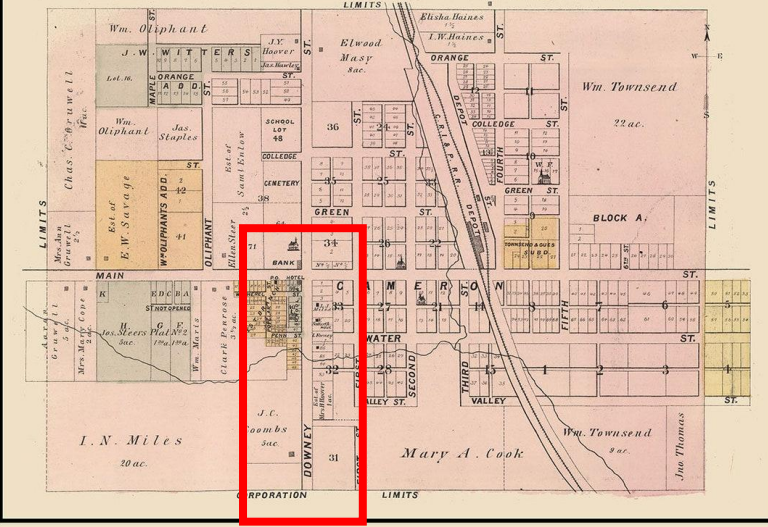
Green Street Design



4th Street Design

WEST BRANCH
Springdale Township, Cedar Co.

Scale 400 ft. to inch



Main Street Intersection

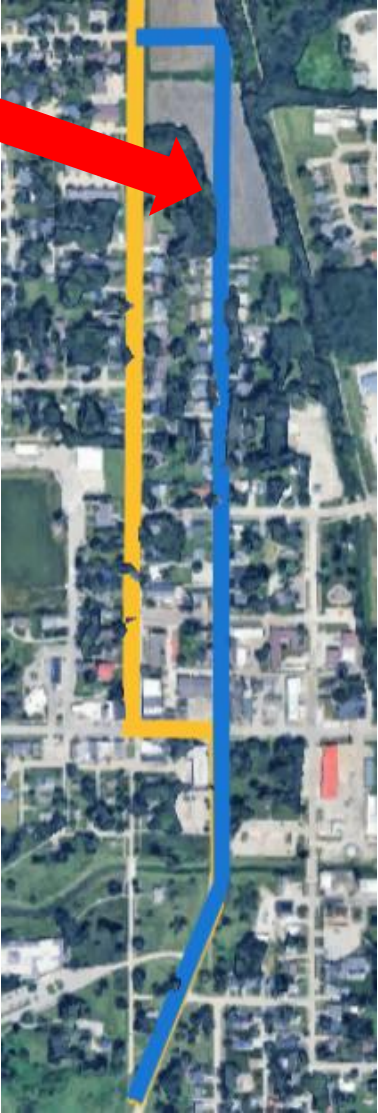


Alt #1 – Green St.

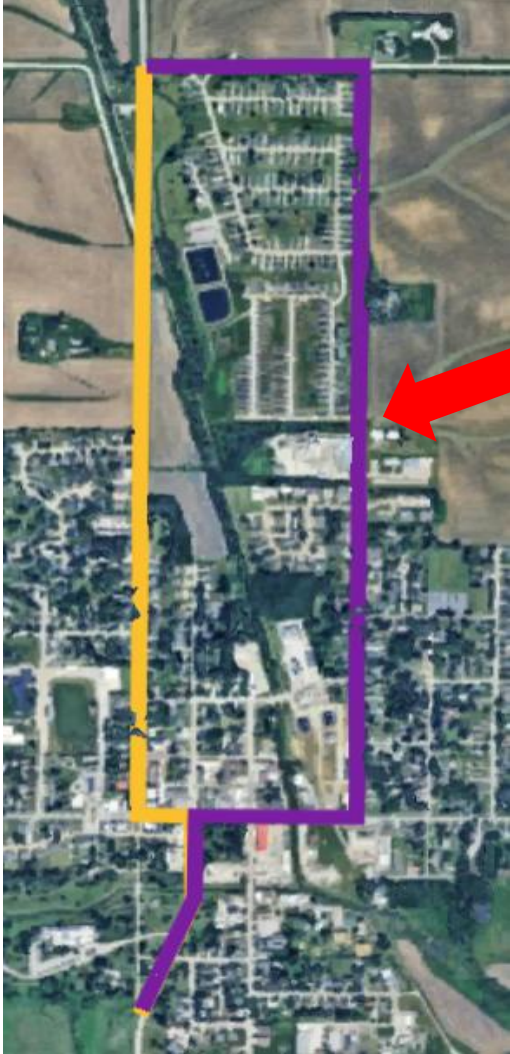
Alt #2 – College St.



Alt #3 – First St.



Alt #4 – Fourth St.

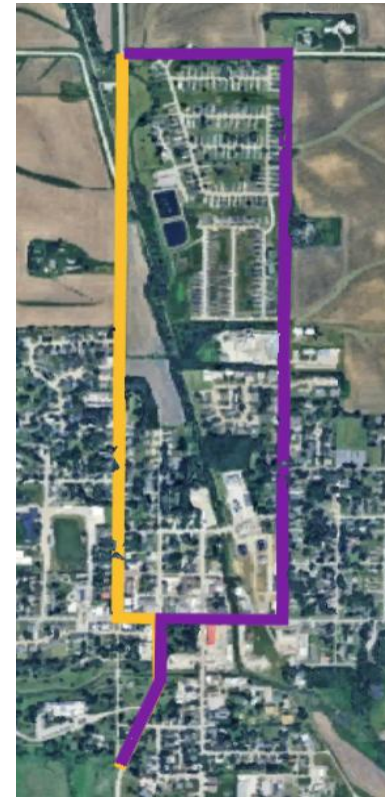


Alternatives for Design

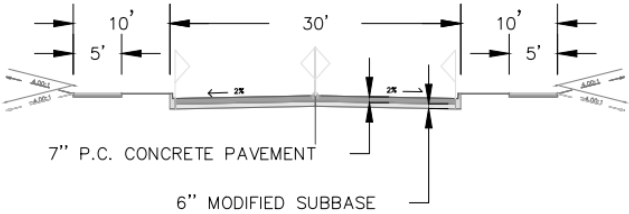
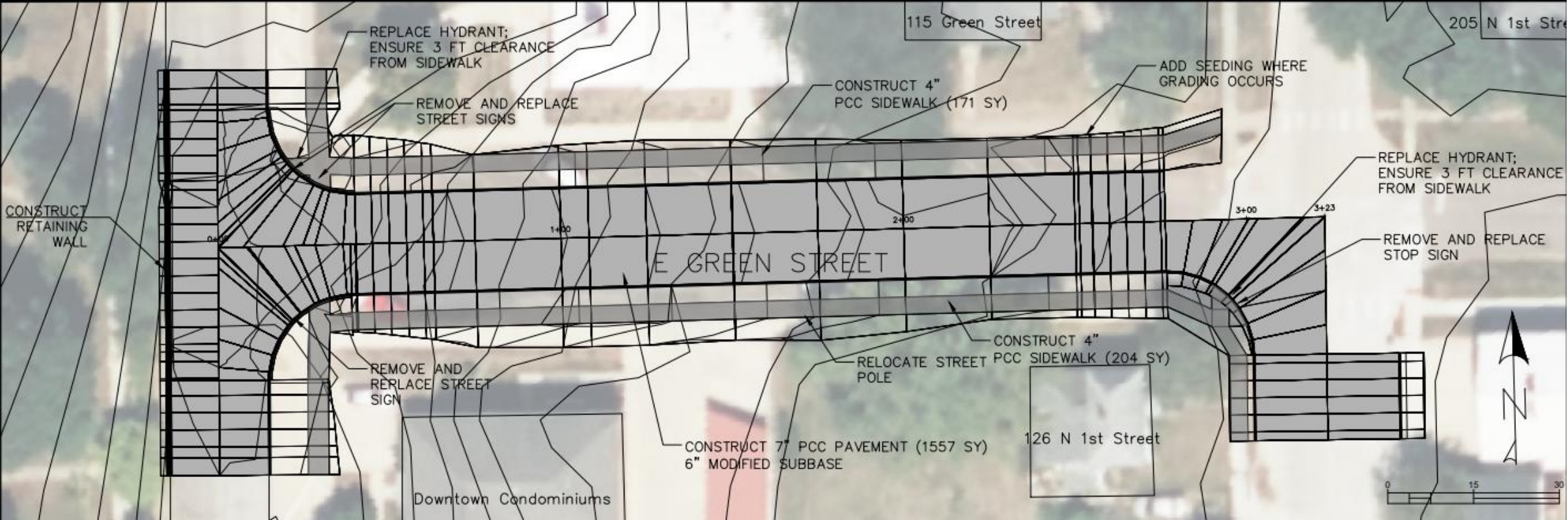
Alternative #1 – Green Street



Alternative #4 – Fourth Street



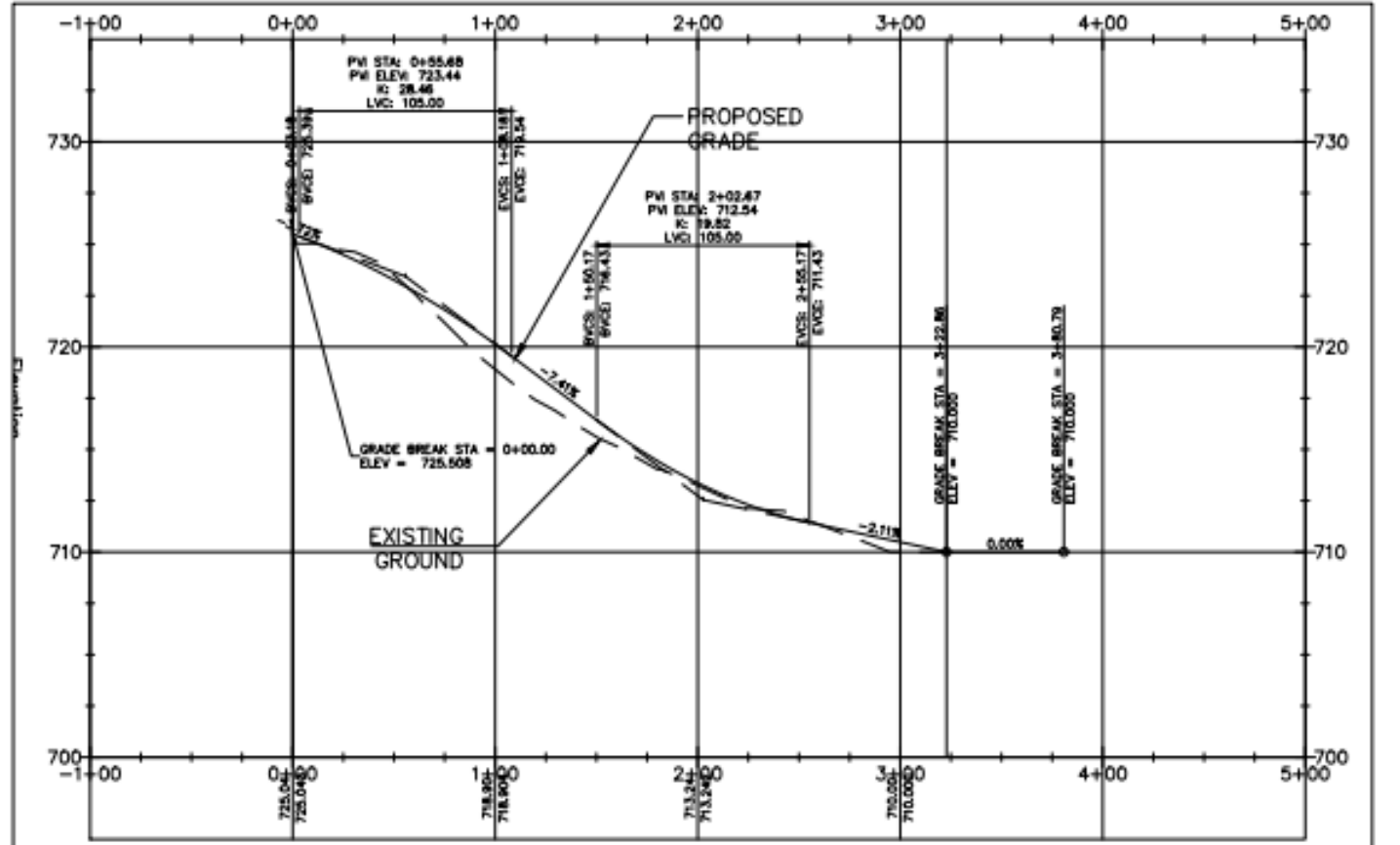
Green Street – Horizontal Alignments



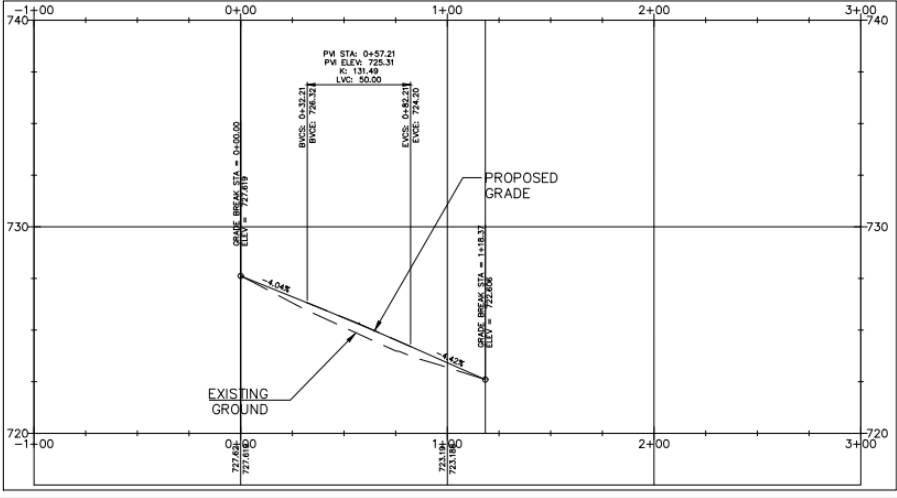
GREEN STREET

Green Street – Vertical Alignments

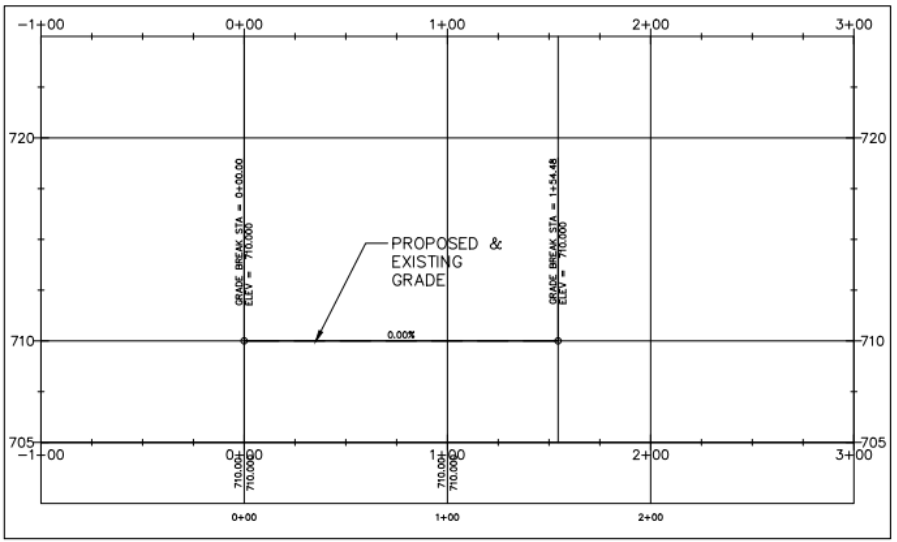
GREEN STREET PROFILE



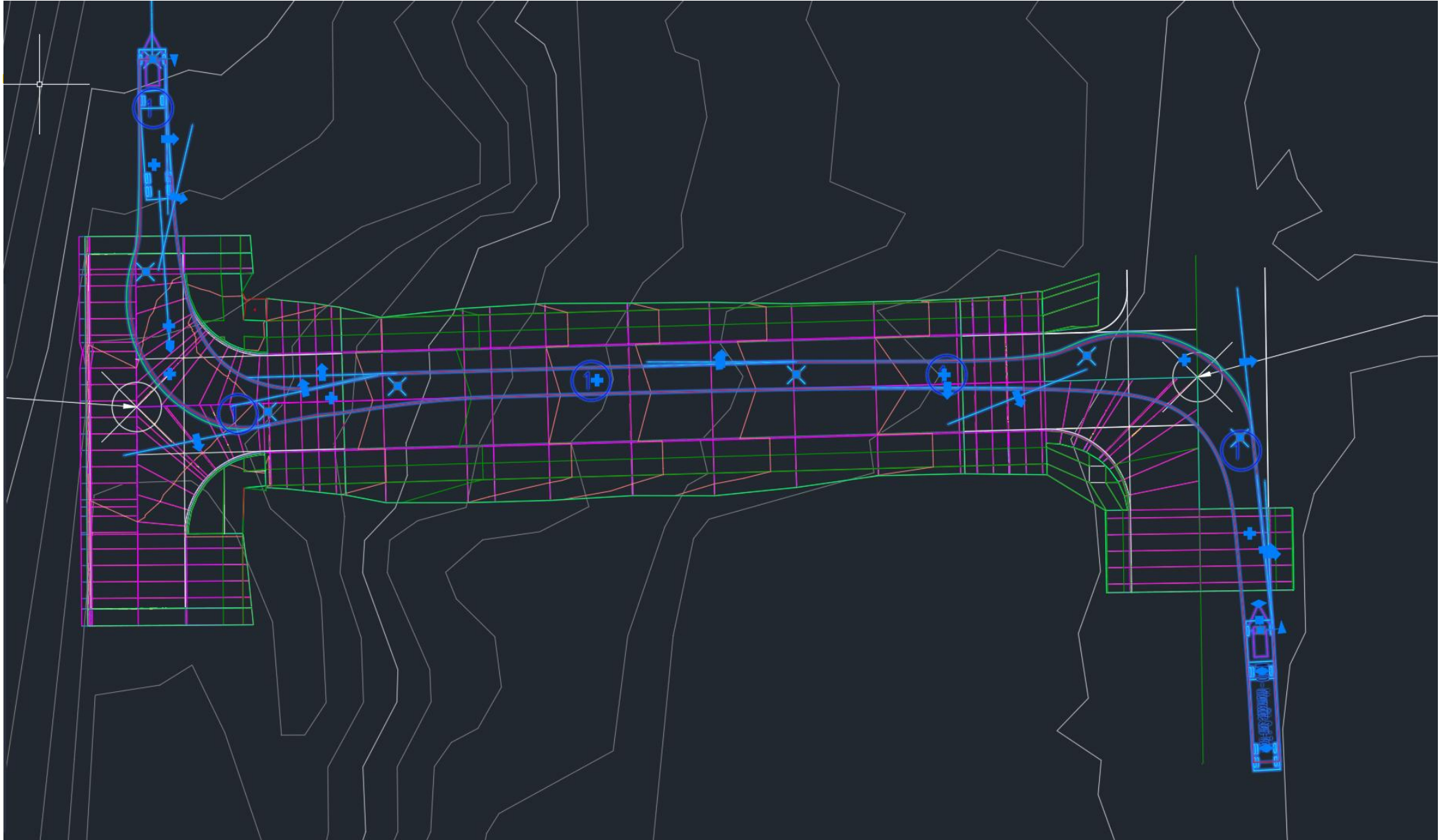
DOWNEY STREET PROFILE



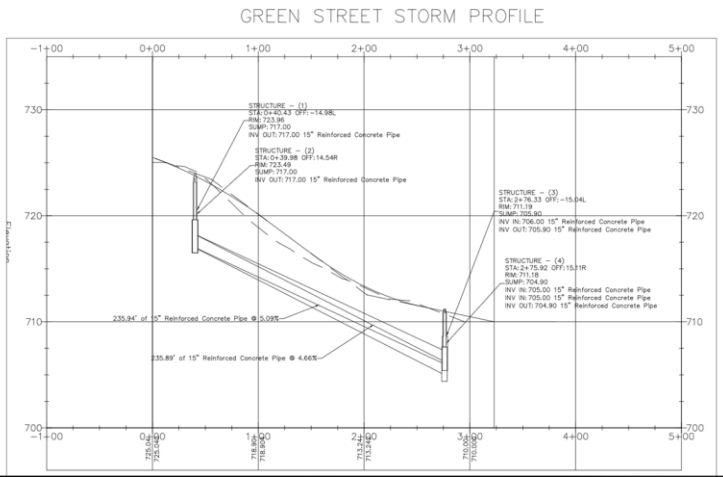
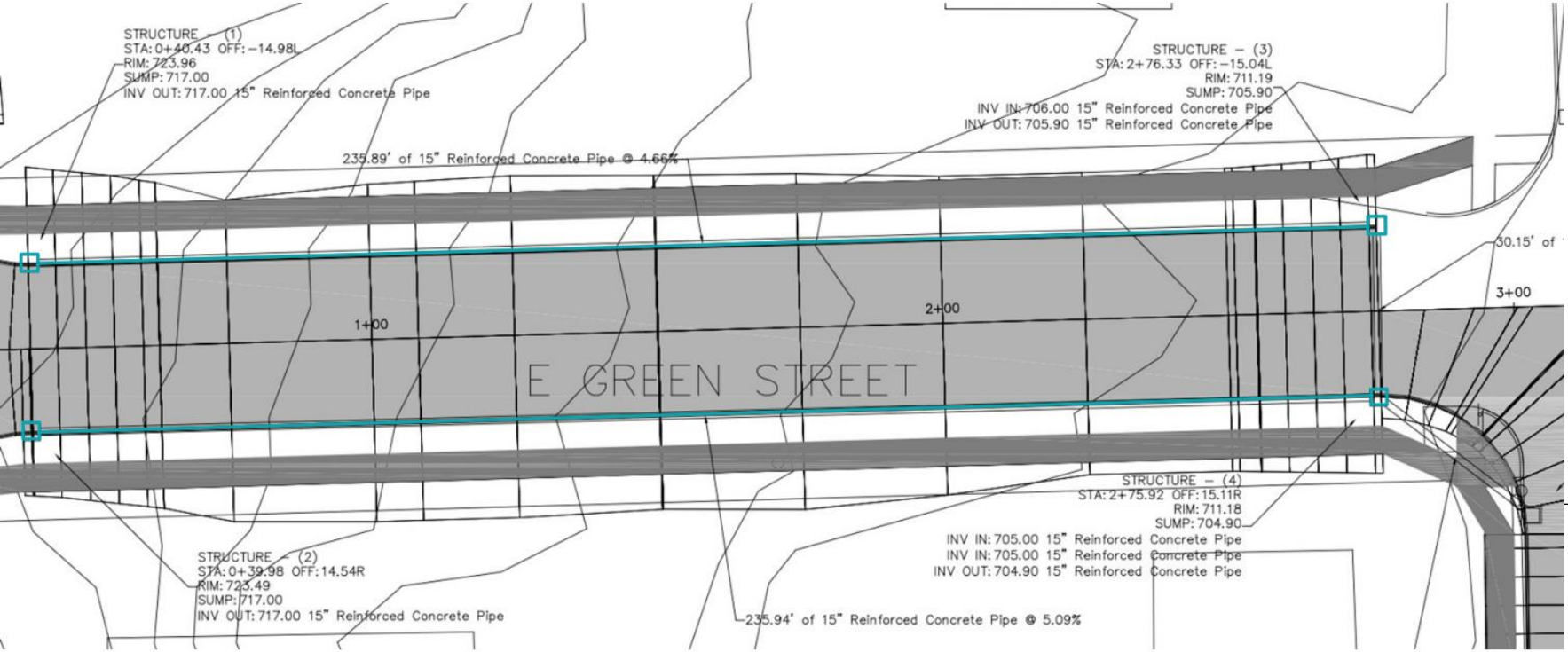
1ST STREET PROFILE



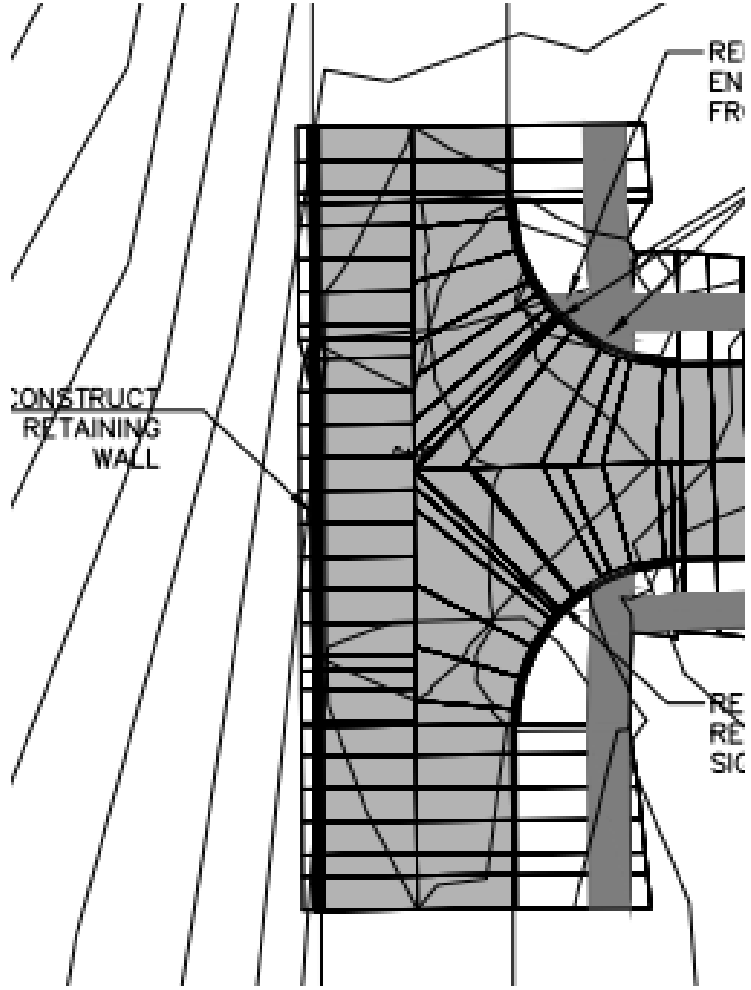
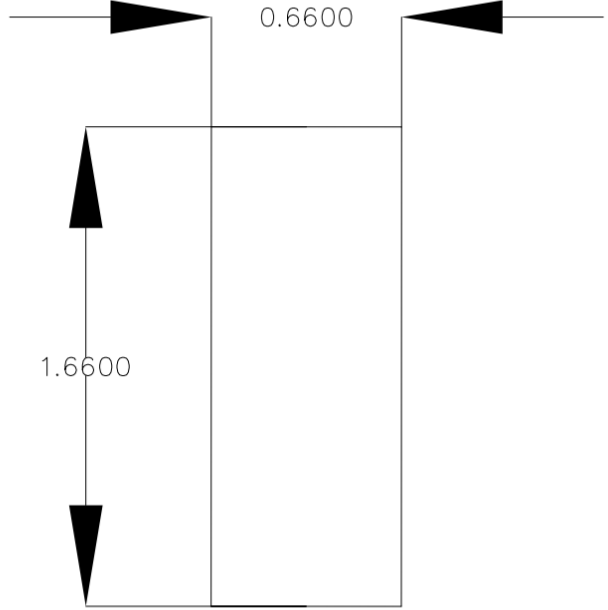
Vehicle Tracking



Stormwater Management



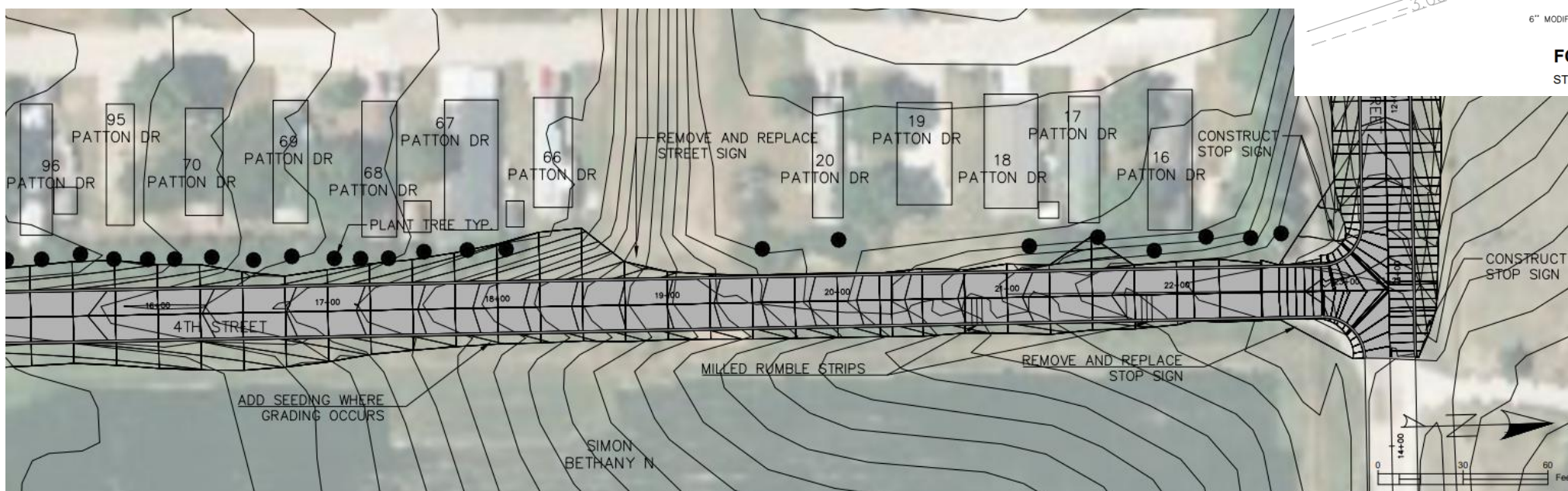
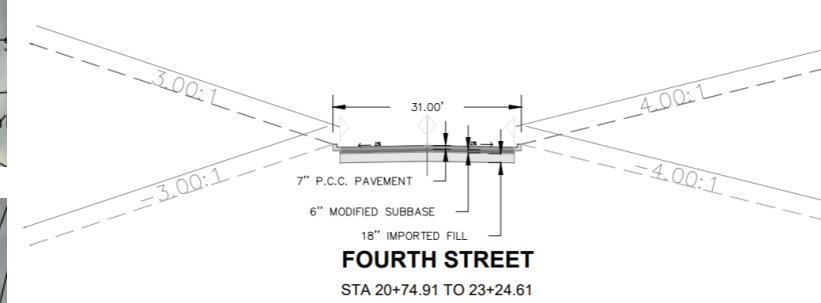
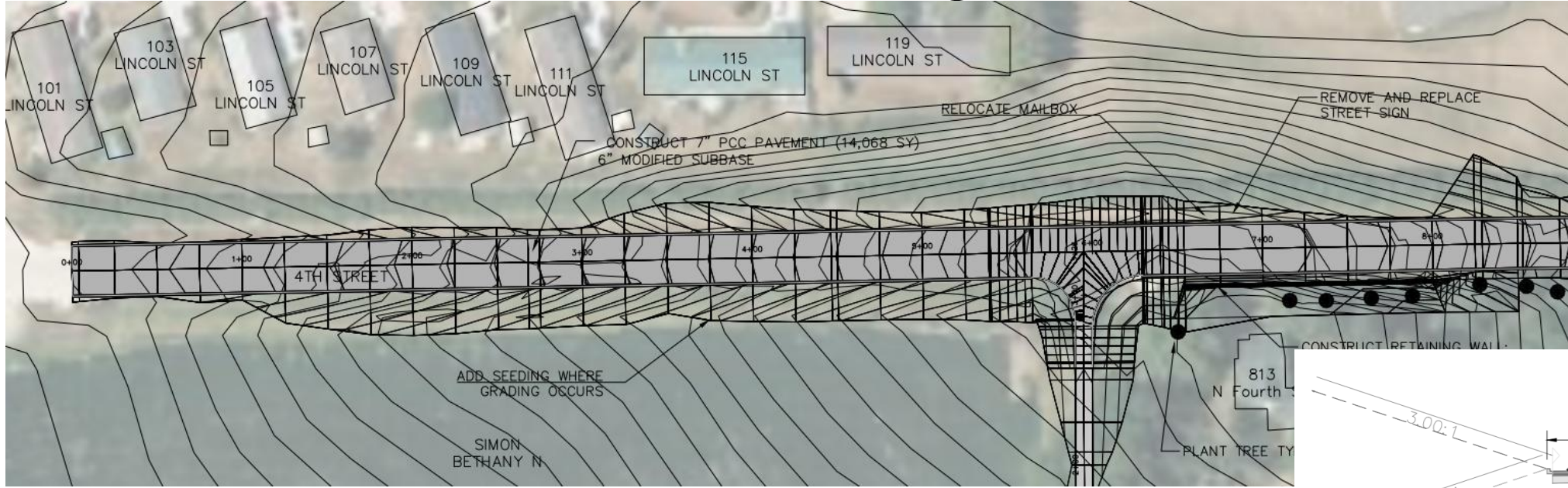
Retaining Wall



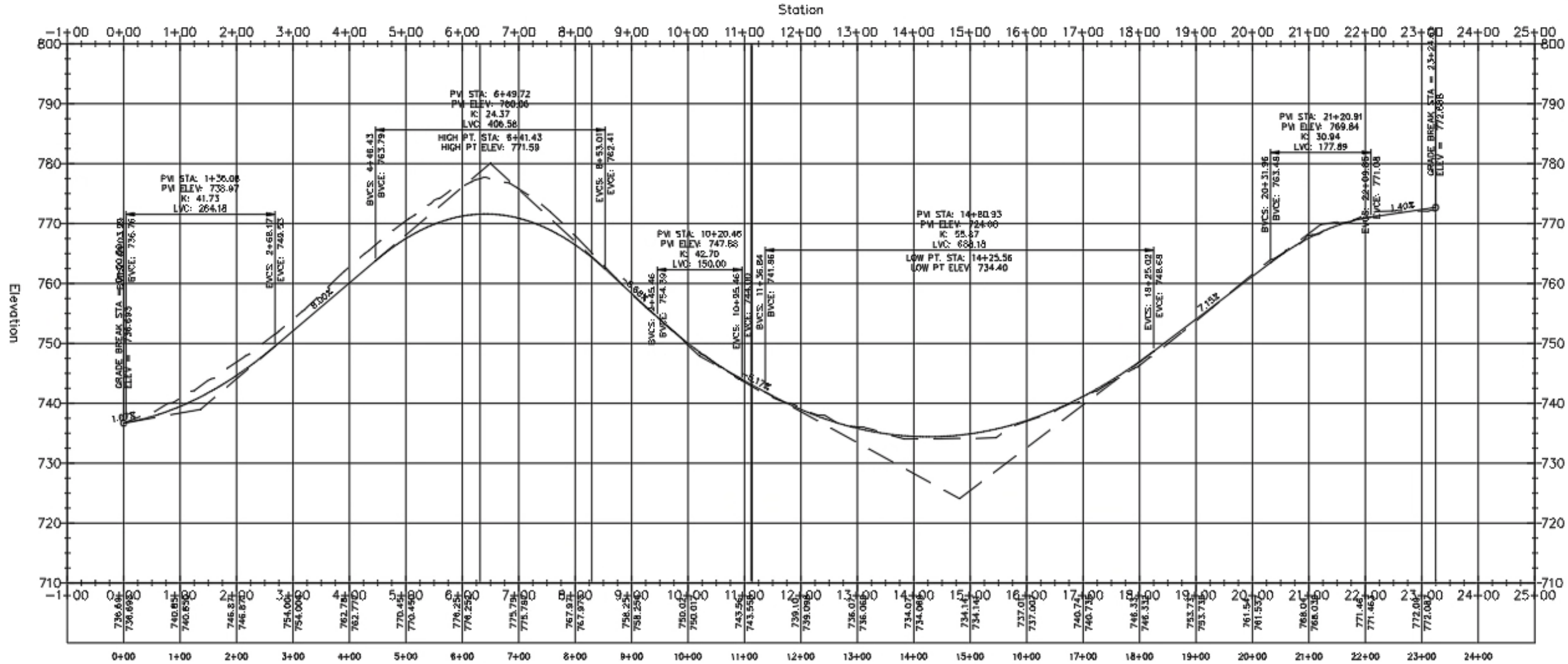
Construction Cost Estimate

Mobilization	\$33,594
Demolition	\$48,273
Earthwork	\$4,980
Transportation Construction	\$143,317
Water + Utility Construction	\$105,742
Structural Construction	\$8,085
Construction Administration	\$67,187
Contingency	\$30,540
TOTAL COST	\$441,718

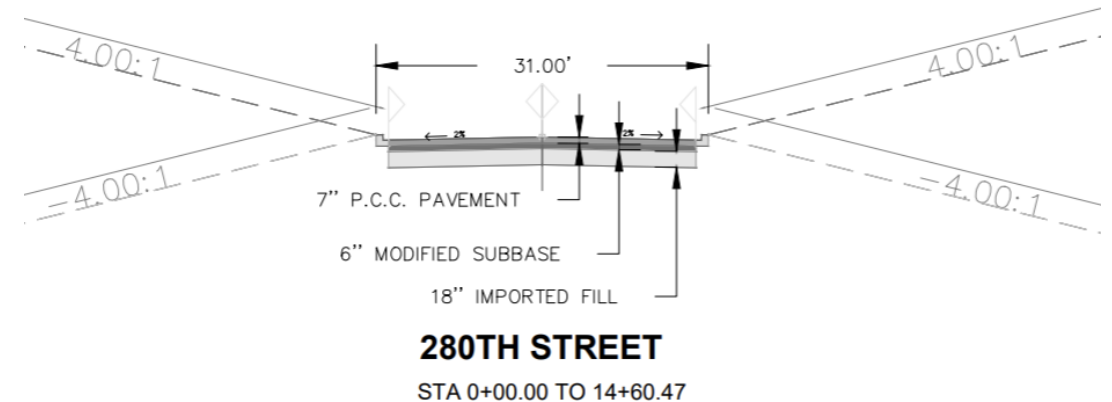
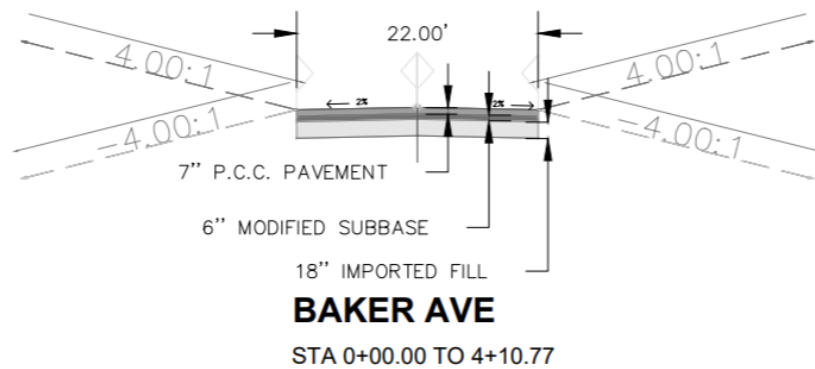
4th Street – Horizontal Alignment



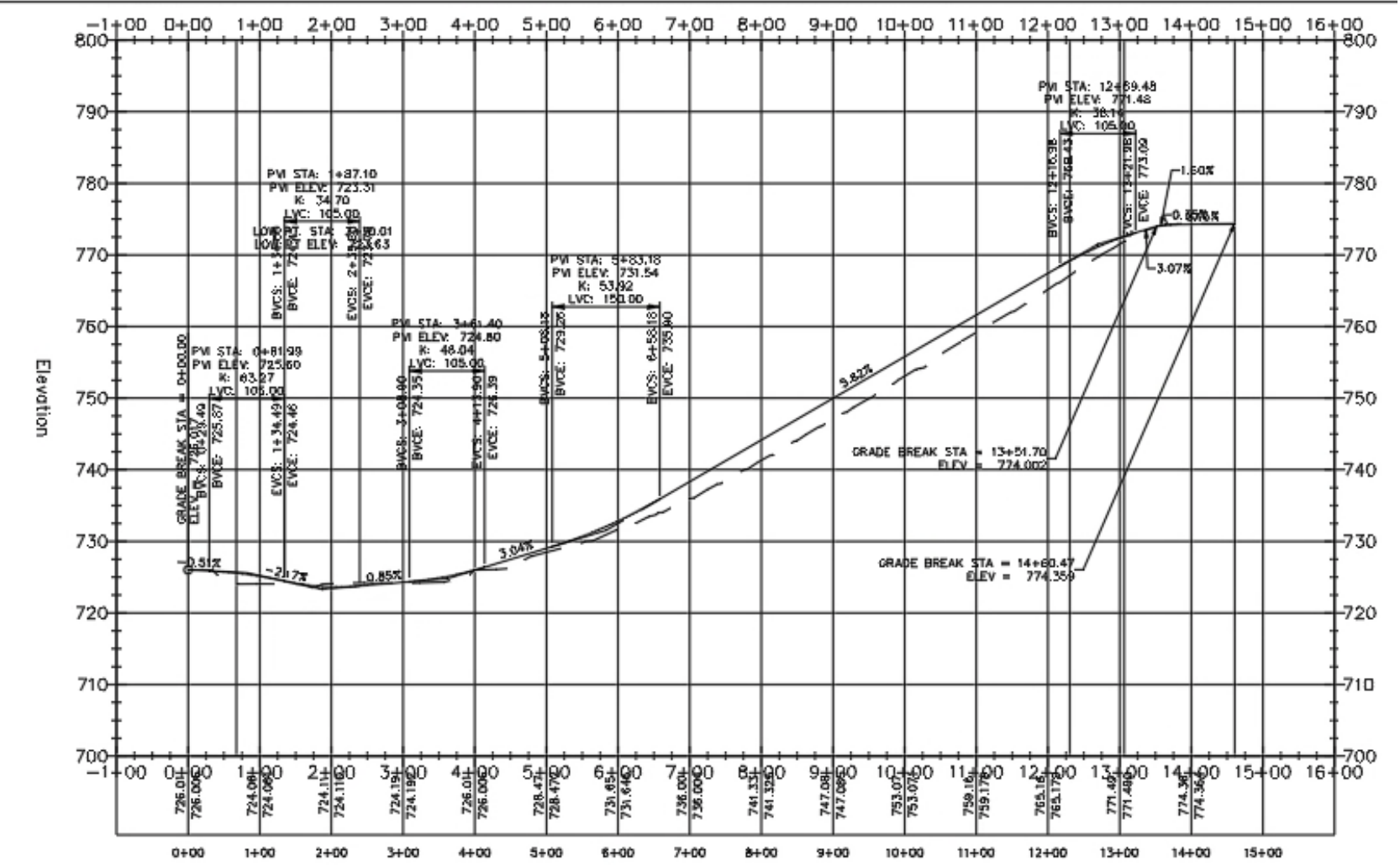
4th Street – Vertical Alignment



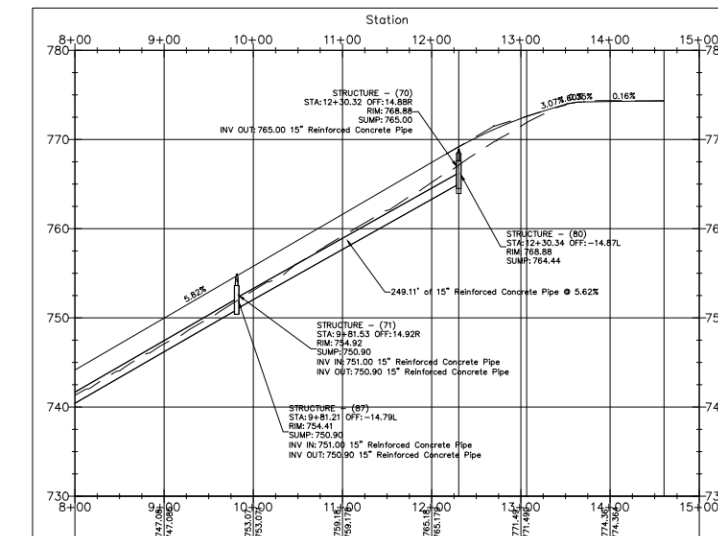
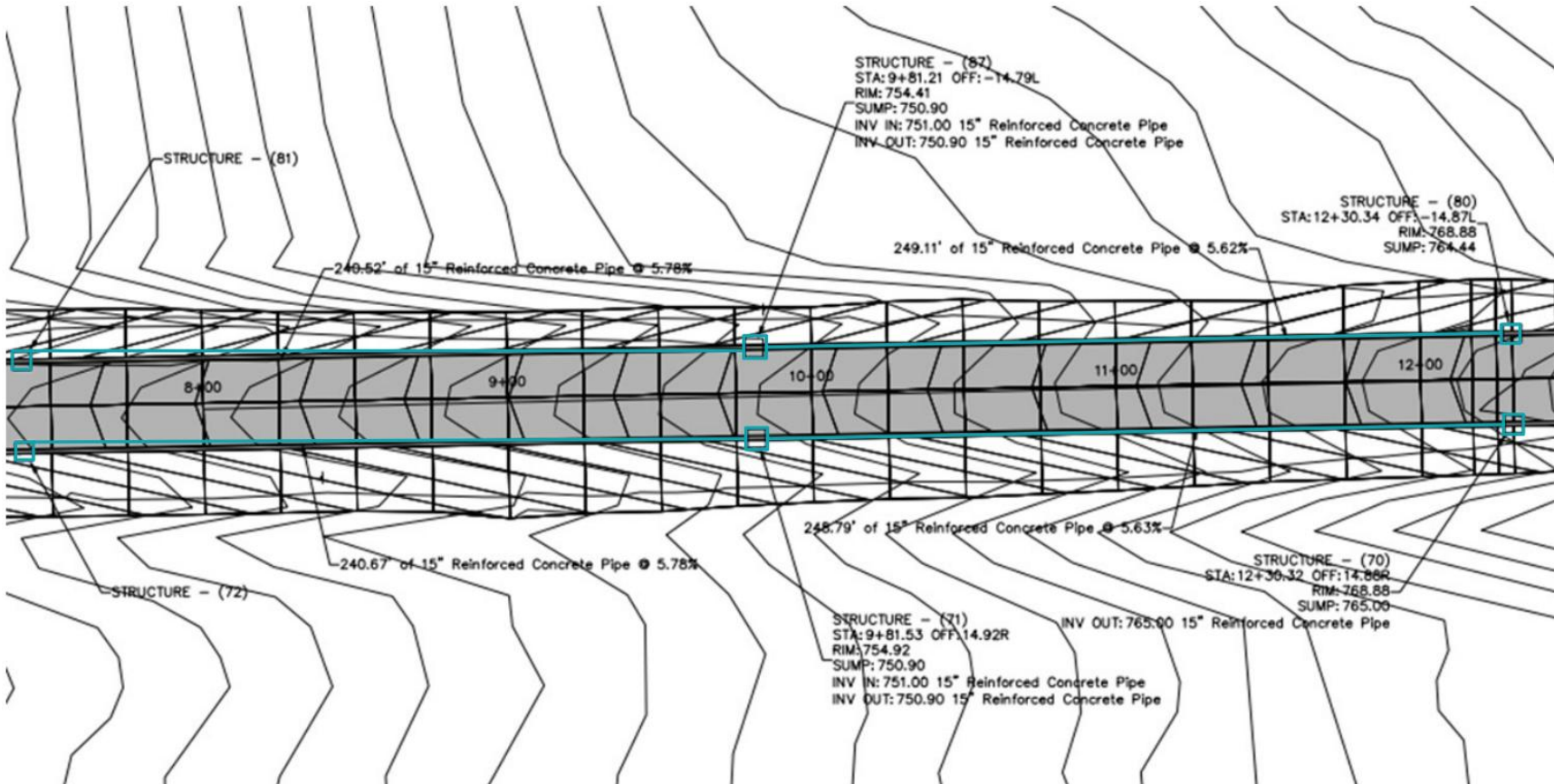
280th Street – Horizontal Alignment



280th Street – Vertical Alignment



Stormwater Management



Culvert Design

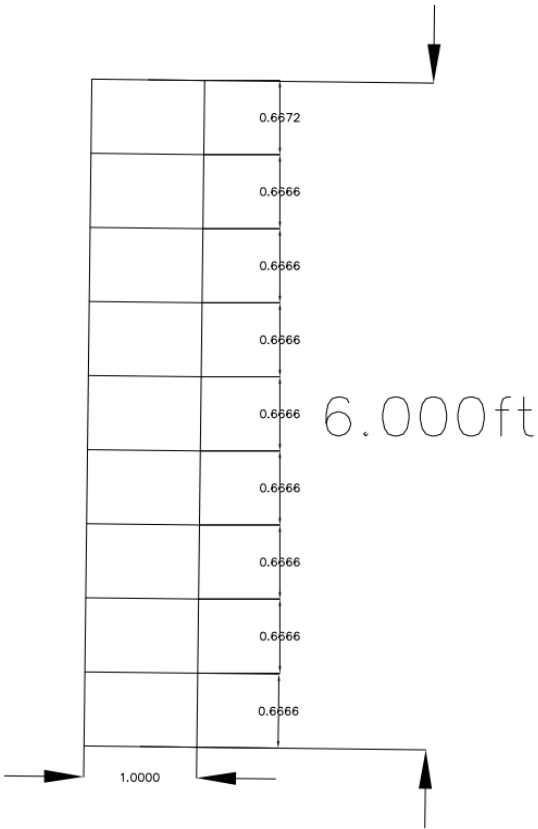


*Existing
Condition*

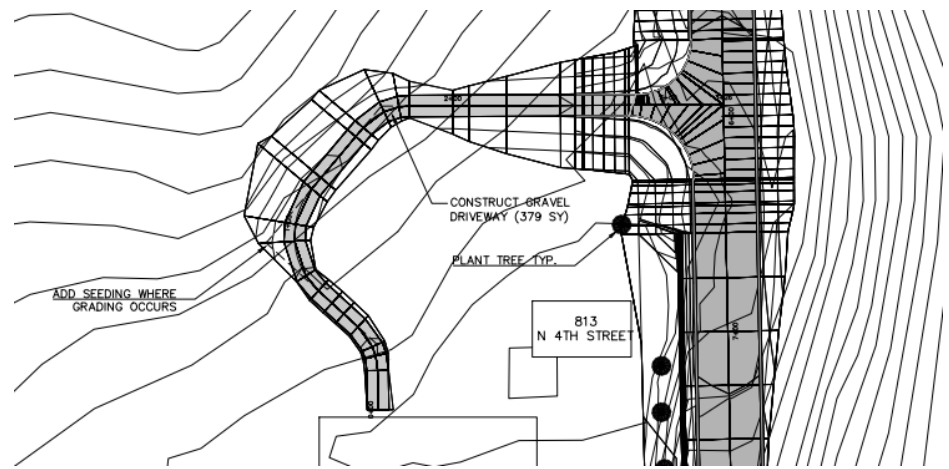


Proposed Culvert

Retaining Wall Design



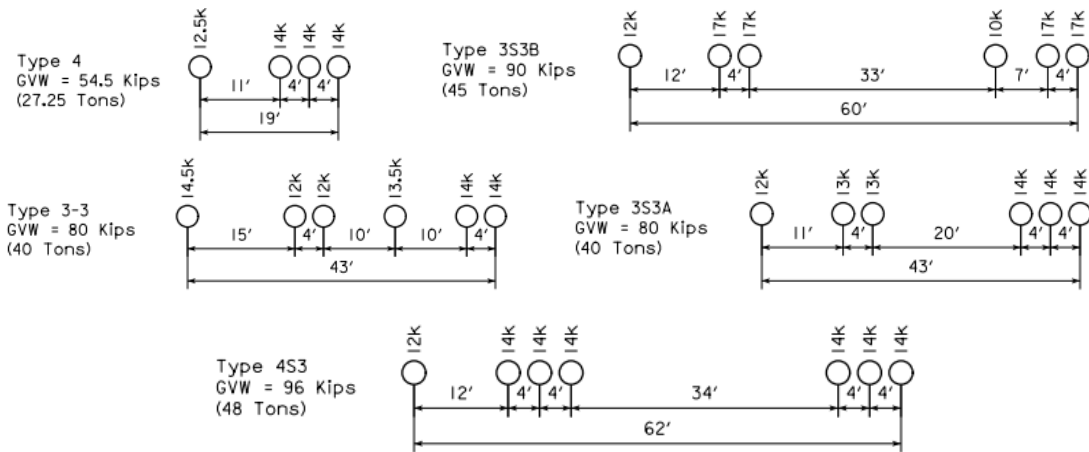
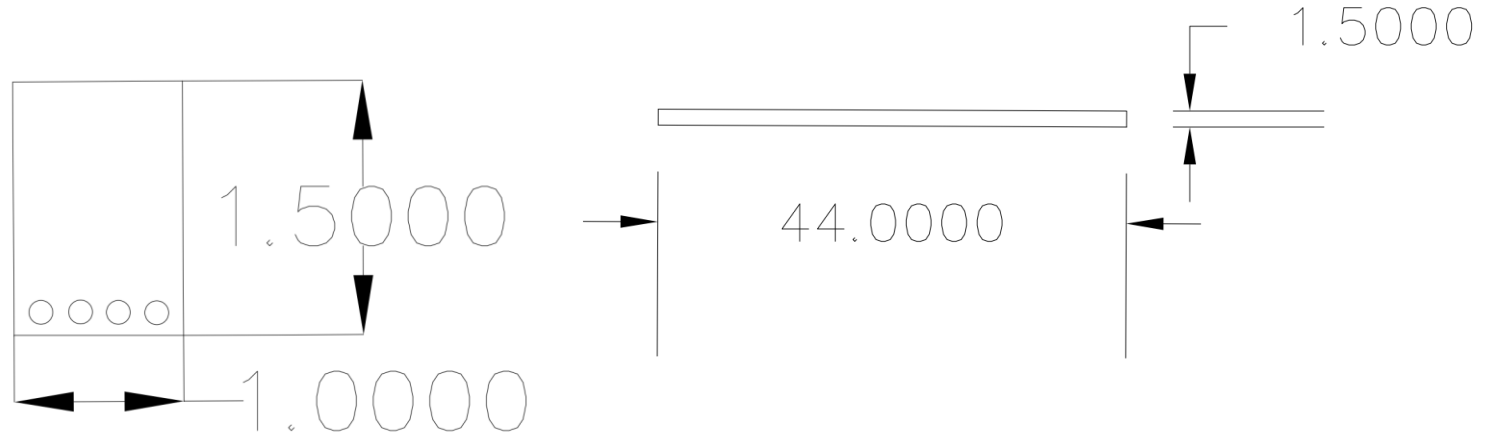
Nine 8" Keystone Compac Blocks



Main Street - Bridge Evaluation

Results:

- With the existing concrete slab there needs to be an equal amount of rebar that is 1.679 in^2 per foot of slab
- The best solution is 4 #6 bars per foot



Iowa DOT Load Rating Vehicles



Construction Cost Estimate

Mobilization	\$300,000
Demolition	\$255,220
Earthwork	\$201,768
Transportation Construction	\$1,155,772
Water + Utility Construction	\$1,005,413
Structural Construction	\$19,259
Construction Administration	\$525,486
Contingency	\$262,743
TOTAL COST	\$3,725,662

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Engineering

Questions?

