

# Stribling Avenue Cost Estimate Analysis

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City of Charlottesville Public Works Engineering

# Typical Planning/ Design/Estimate Process:

Identification

->Prioritization

->Planning Study

->Cost Estimate #1 w/Heavy Contingencies

->30% Design with Alternates

->60% Design & New Cost Estimates

->90% Design and New Cost Estimates

-> Construction/Bid Phase Cost Established



# This Exercise Is an Expedited “Over/Under” more so than an Estimate.

- This is not an existing priority project so background info is minimal
- Includes 20% Contingency
- Has not gone through community engagement/stakeholder meetings
- Projects of this type are not insignificant undertakings nor are they “cookie-cutter” in design typology or execution.
- The revised layout is preliminary, the estimate should not be considered final.**

# Considerations for Designing Streetscapes in Developed Corridors

1- ROW takes

2-Driveway tie in costs/temporary easements

3-Drainage requirements

4-SWM impacts

5-Utility Relocation

6-Roadway improvements

**Other non-priced impacts:**

7-Existing Parking Reductions

8-Tree canopy removal

# Steps Taken:

1. Analyze existing corridor for physical constraints (width, retaining walls, challenging driveway tie ins, etc) as well as safe crossing zones to revise layout to sidewalk on one side
2. Review estimate in comparison with revised concept layout for areas where costs are likely to escalate and qualify non-cost related impacts.
3. Revise estimate for likely escalations found above

Provided Concept:





# Existing Corridor Analysis

- Physical Constraints
  - utility poles
  - grading challenges
  - trees
  - driveway/parking conflicts











# Revised Sidewalk Layout



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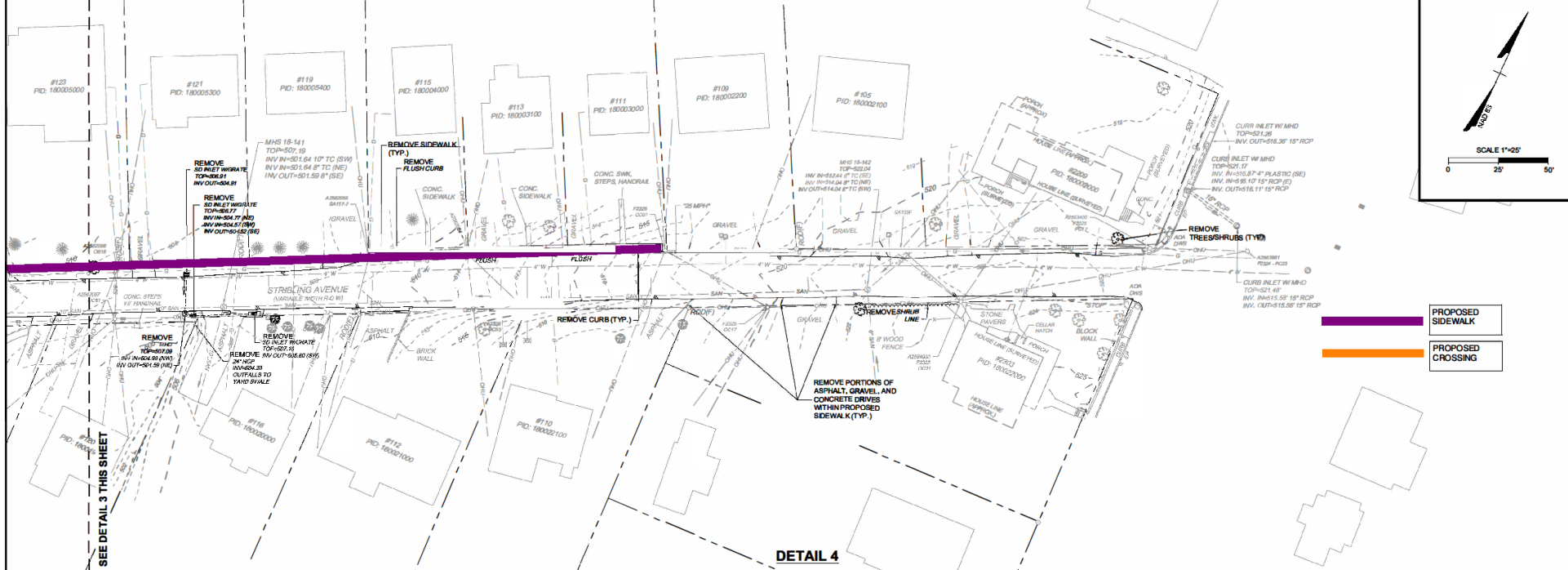
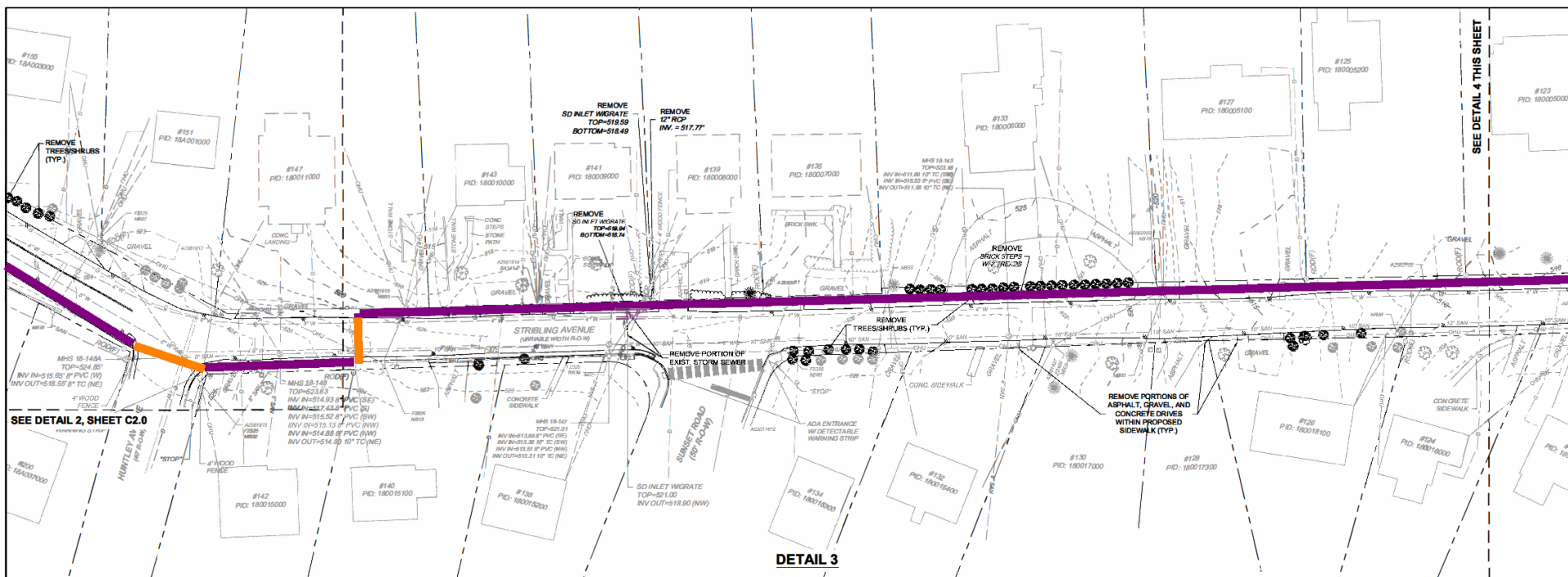
DATE	REVISION DISPOSITION
09/09/2021	YOUR VISION ACHIEVED THROUGH OURS

**TIMMONS GROUP**

STRIBLING AVE. ROADWAY IMPROVEMENTS  
 CITY OF CHARLOTTESVILLE - VIRGINIA  
 EXISTING CONDITIONS & DEMOLITION PLAN

DATE: 09/09/2021  
 DRAWN BY: K. ROESER  
 DESIGNED BY: K. ROESER  
 CHECKED BY: C. SHIFFLETT  
 SCALE: 1"=25'

JOB NO. 45193  
 SHEET NO. C2.1



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# Cost Escalations

1- ROW takes

2-Driveway tie in costs/temporary easements

3-Drainage requirements

4-SWM impacts

5-Utility Relocation

6-Roadway improvements

Other non-priced impacts: Existing Parking and Tree removal

RIGHT-OF-WAY DEDICATION SUMMARY	
PARCEL ID	ROW DEDICATION (SF)
18A021000	3.90
18A028000	0.22
18A029000	6.17
18A030000	2.38
18A012000	50.50
18A011000	154.79
18A032100	63.59
18A010000	183.52
18A009000	177.32
18A008000	126.23
18A007000	124.77
18A006000	103.68
18A005000	17.17
18A033000	263.77
180011000	182.90
180010000	41.58
180009000	34.15
180008000	35.26
180007000	64.97
180015000	63.59
180015100	160.61
180015200	138.17
180015300	114.78
180015400	114.97
180017000	93.21
180017300	49.35
180006000	30.73
180005100	95.54
180005200	167.64
180005000	217.43
180005300	204.38
180005400	218.98
180004000	216.91
180003100	255.87
180003000	255.17
180002200	307.64
180002100	297.43
180002000	389.72
180018100	125.30
180018000	22.58
180020000	128.26
180021000	36.04
180022000	249.06

## 1-ROW TAKES

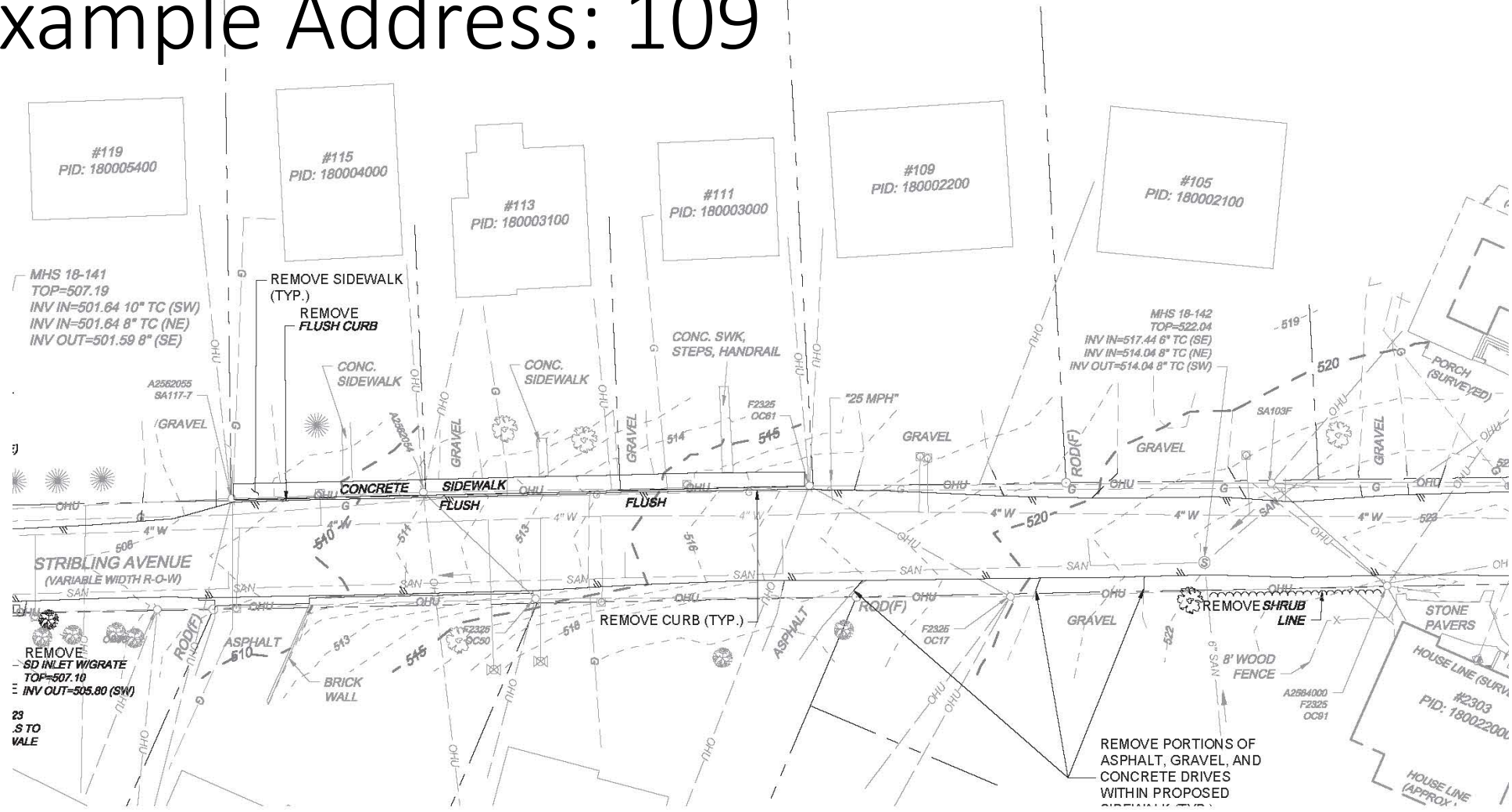
Represents permanent ROW takes necessary for 33' ROW.

Approximate cost= \$42,000

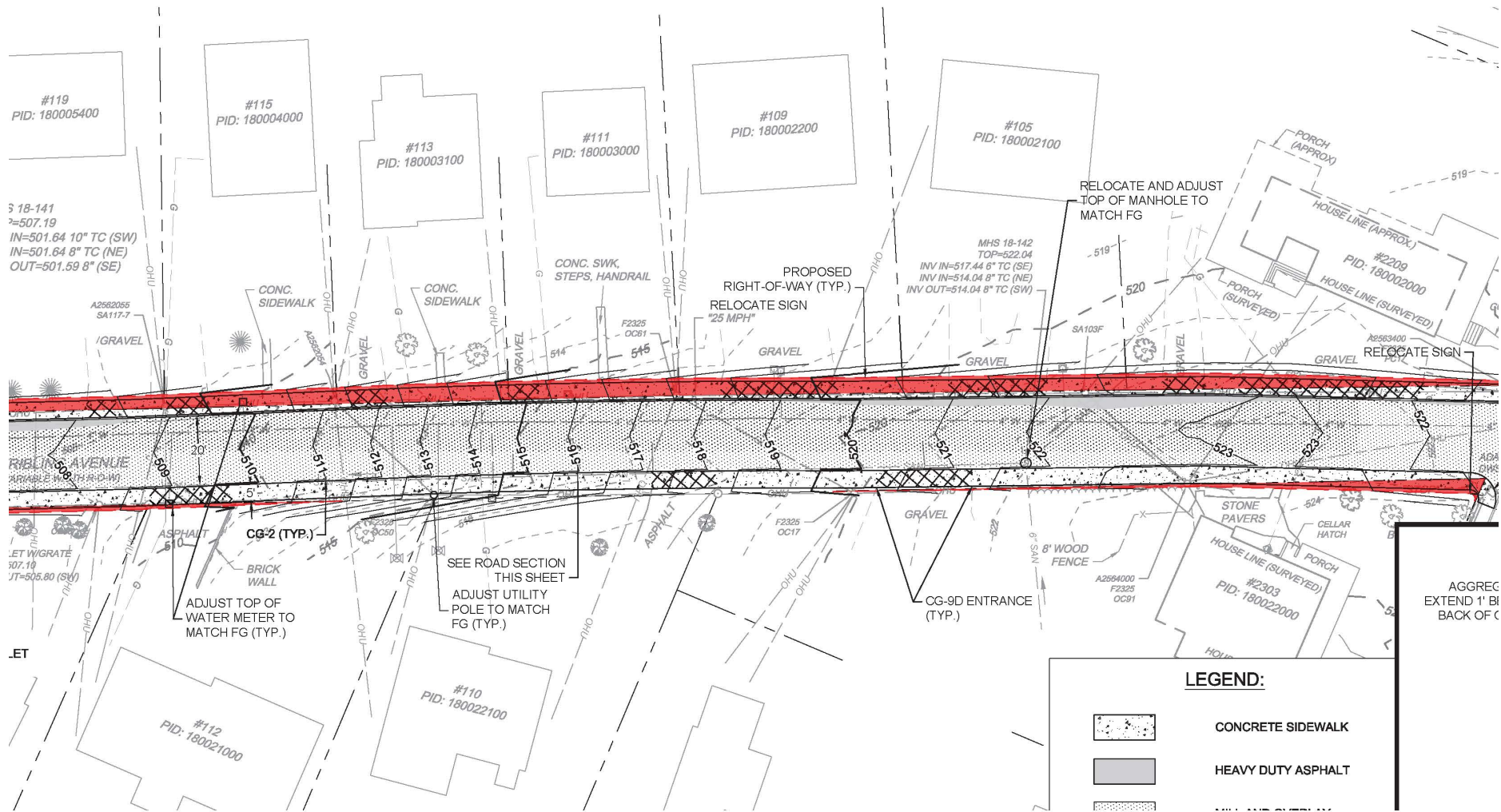
# Cost Escalations

- Driveway tie in costs/temporary easements

# Example Address: 109







#119  
PID: 180005400

#115  
PID: 180004000

#113  
PID: 180003100

#111  
PID: 180003000

#109  
PID: 180002200

#105  
PID: 180002100

5 18-141  
2=507.19  
IN=501.64 10" TC (SW)  
IN=501.64 8" TC (NE)  
OUT=501.59 8" (SE)

A2562055  
SA117-7

CONC. SIDEWALK

CONC. SIDEWALK

CONC. SWK,  
STEPS, HANDRAIL

F2325  
OC81

PROPOSED  
RIGHT-OF-WAY (TYP.)  
RELOCATE SIGN  
"25 MPH"

MHS 18-142  
TOP=522.04  
INV IN=517.44 6" TC (SE)  
INV IN=514.04 8" TC (NE)  
INV OUT=514.04 8" TC (SW)

RELOCATE AND ADJUST  
TOP OF MANHOLE TO  
MATCH FG

PORCH  
(APPROX.)

HOUSE LINE (APPROX.)

HOUSE LINE (SURVEYED)

HOUSE LINE (SURVEYED)

HOUSE LINE (SURVEYED)

HOUSE LINE (SURVEYED)

HOUSE LINE (SURVEYED)

HOUSE LINE (SURVEYED)

FRIBLIN AVENUE  
VARIABLE WIDTH R.O.W.

LET W/GRATE  
507.19  
JT=505.80 (SW)

CG-2 (TYP.)

ADJUST TOP OF  
WATER METER TO  
MATCH FG (TYP.)

SEE ROAD SECTION  
THIS SHEET  
ADJUST UTILITY  
POLE TO MATCH  
FG (TYP.)

CG-9D ENTRANCE  
(TYP.)

AGGREG  
EXTEND 1' BE  
BACK OF C

**LEGEND:**



CONCRETE SIDEWALK



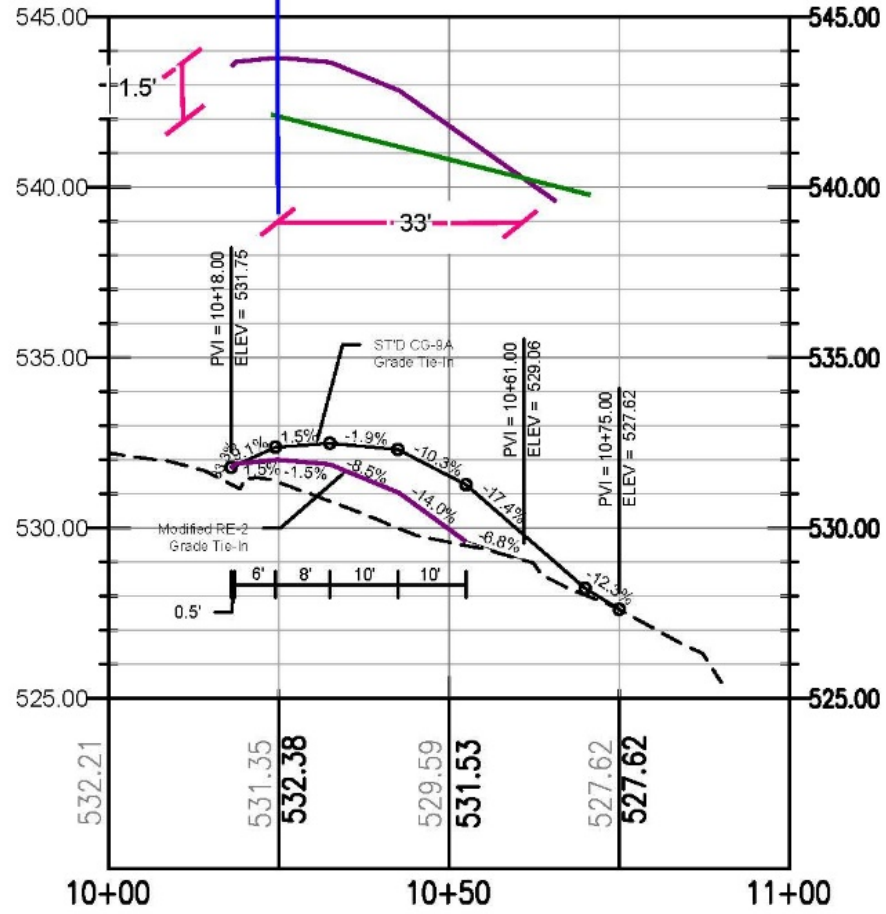
HEAVY DUTY ASPHALT



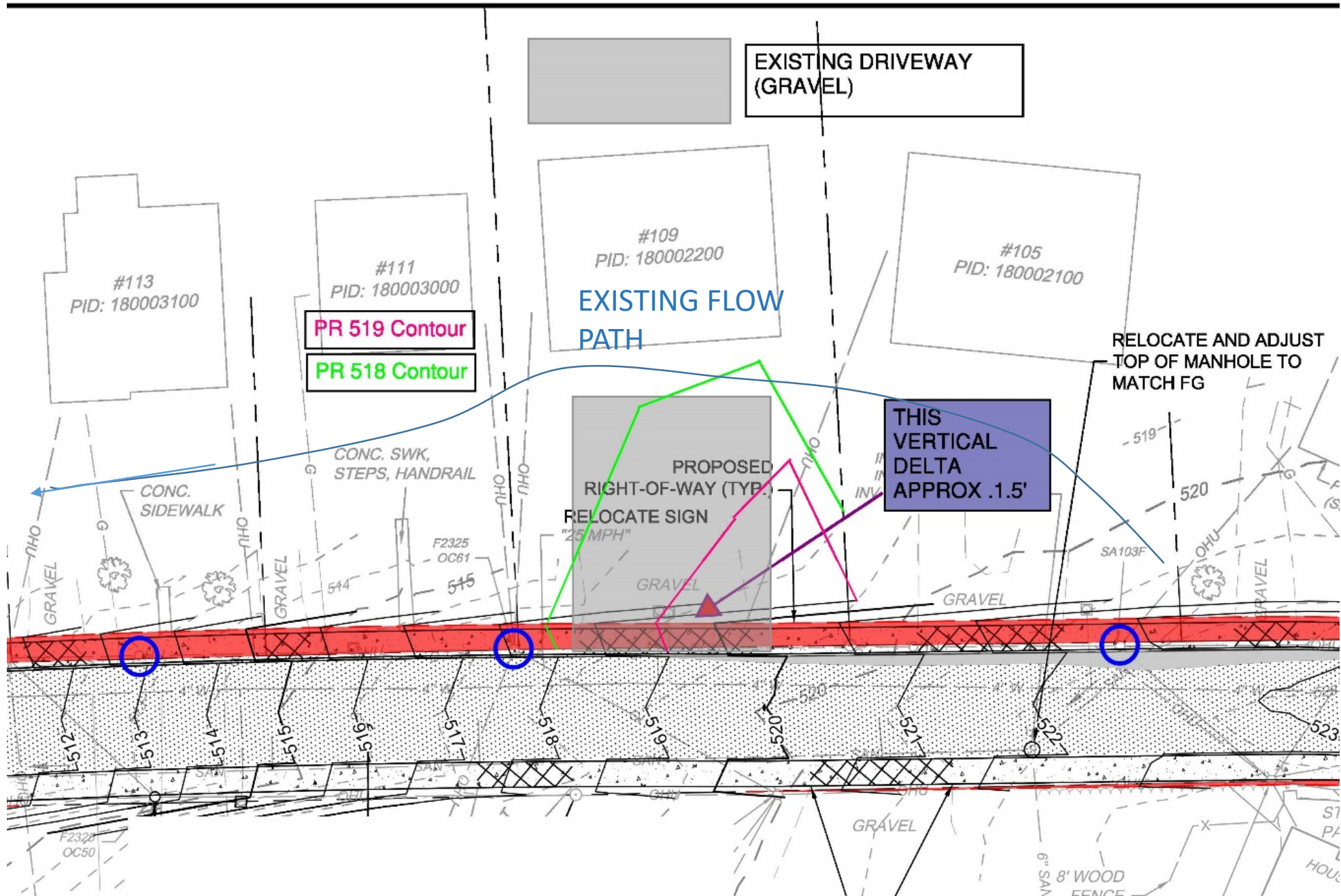
UTILITY LINES

# RE-2

BACK OF  
SIDEWALK/  
ROW



121+33 LT



EXISTING DRIVEWAY  
(GRAVEL)

#109  
PID: 180002200  
EXISTING FLOW  
PATH

#105  
PID: 180002100

#113  
PID: 180003100

#111  
PID: 180003000  
PR 519 Contour  
PR 518 Contour

RELOCATE AND ADJUST  
TOP OF MANHOLE TO  
MATCH FG

THIS  
VERTICAL  
DELTA  
APPROX .1.5'

PROPOSED  
RIGHT-OF-WAY (TYP.)  
RELOCATE SIGN  
'25 MPH'  
GRAVEL

CONC.  
SIDEWALK

CONC. SWK,  
STEPS, HANDRAIL

GRAVEL

GRAVEL

F2325  
OC61

544

545

GRAVEL

GRAVEL

GRAVEL

F2325  
OC50

GRAVEL

6" SAN  
8' WOOD  
FENCE

8' WOOD  
FENCE  
HOU

















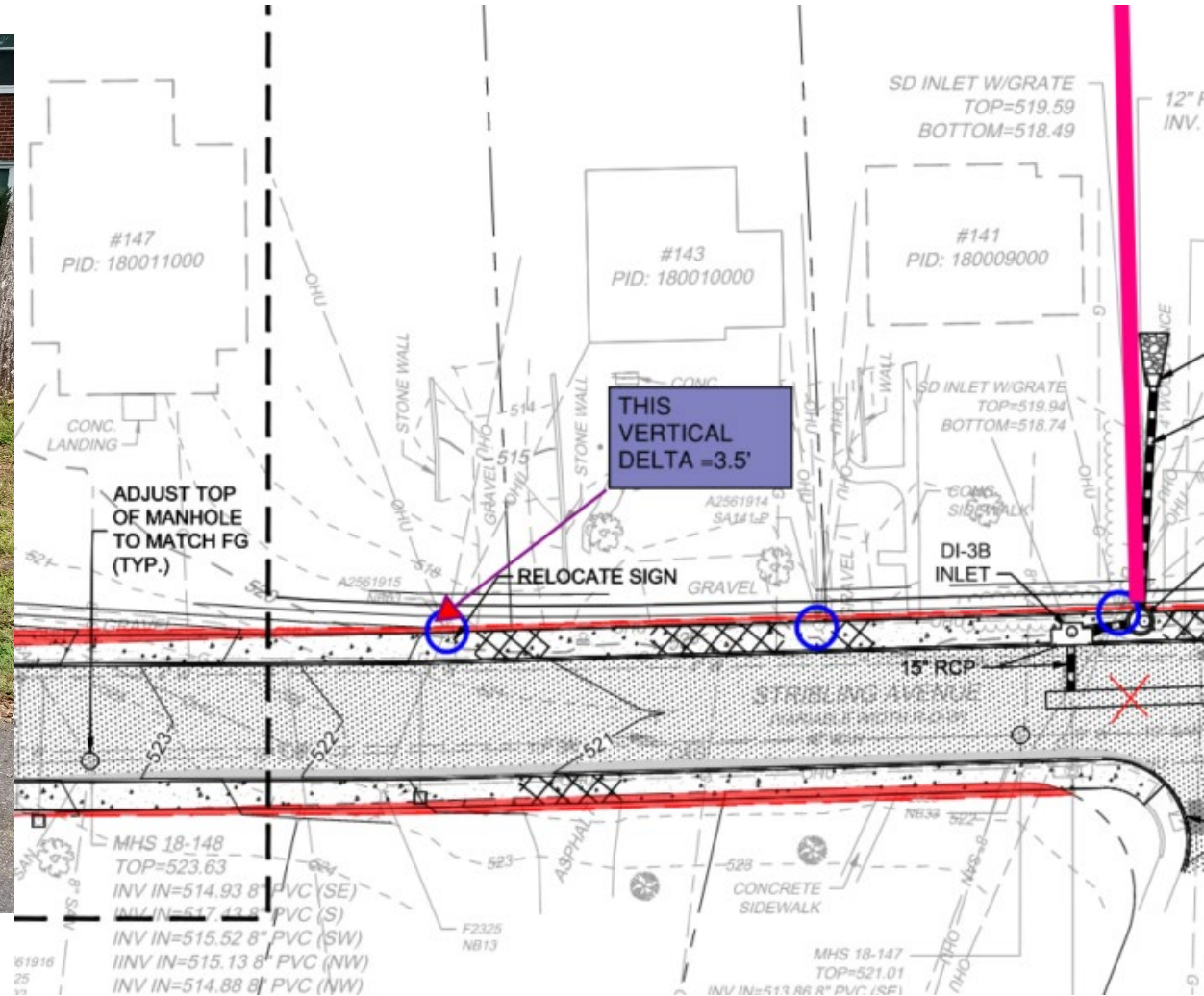




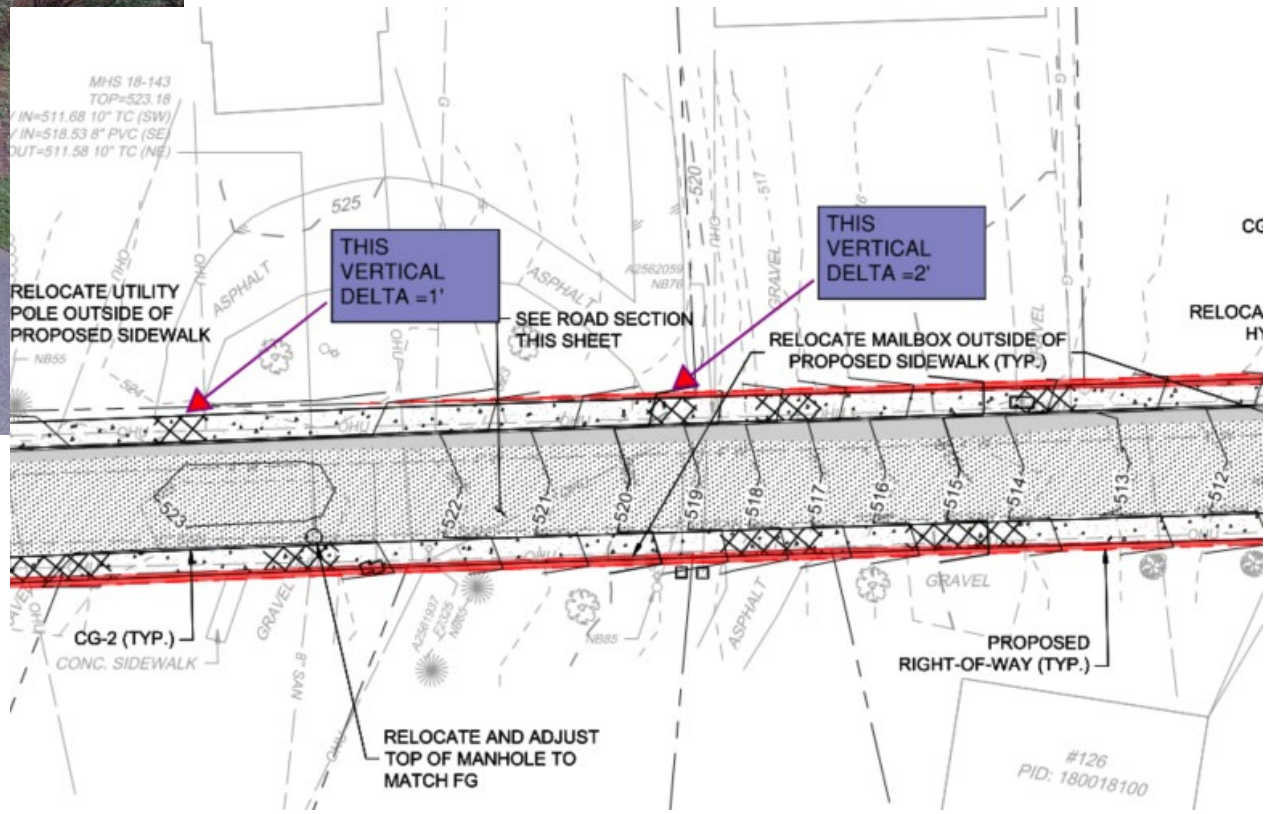




# Other Driveway Examples:







# Cost Escalations

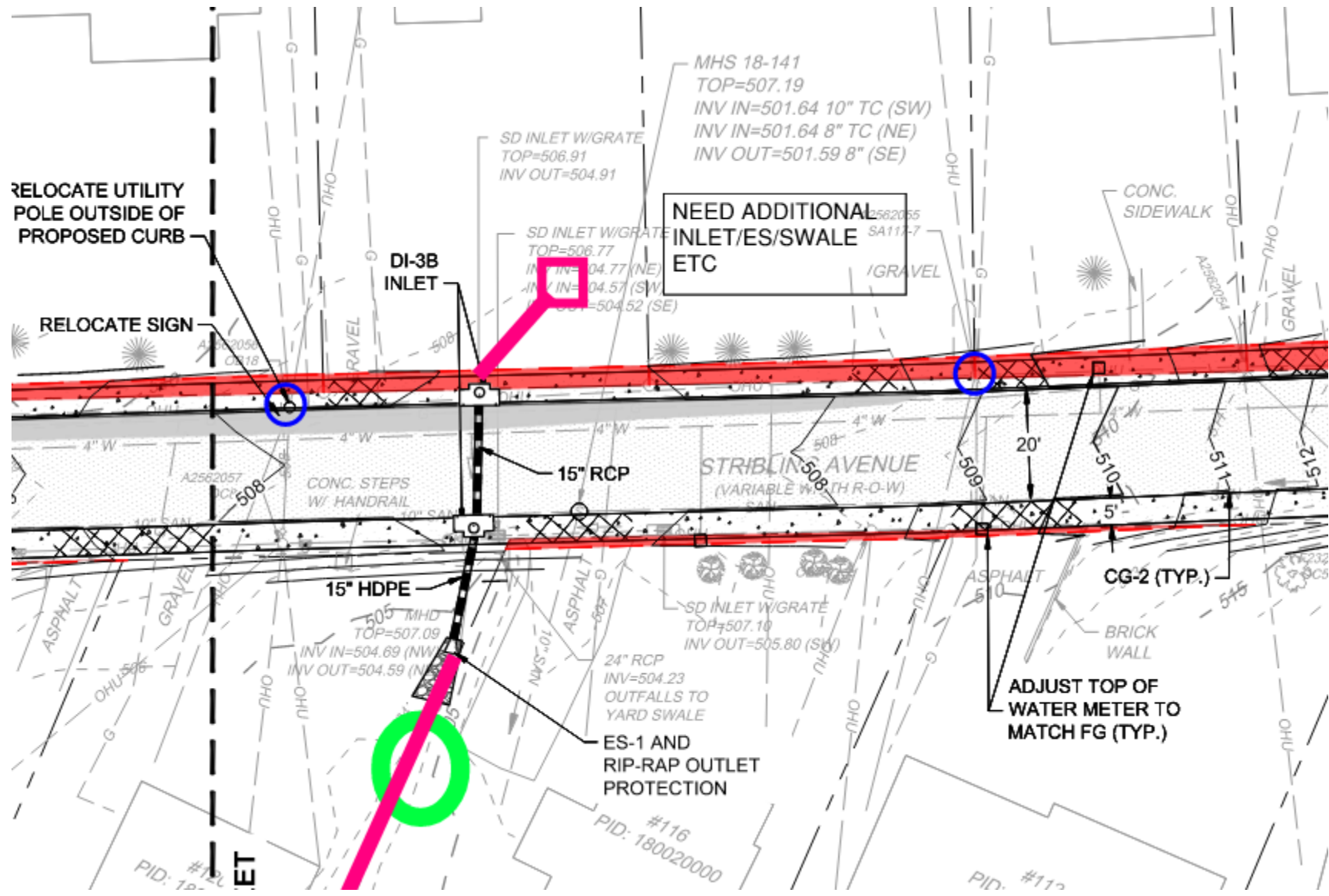
3-Basic Drainage Requirements



Drainage impacts as a result of grading:  
(121 Stribling, Sag/ Outfall #1, Upstream inlet)







RELOCATE UTILITY POLE OUTSIDE OF PROPOSED CURB

RELOCATE SIGN

DI-3B INLET

NEED ADDITIONAL INLET/ES/SWALE ETC

MHS 18-141  
TOP=507.19  
INV IN=501.64 10" TC (SW)  
INV IN=501.64 8" TC (NE)  
INV OUT=501.59 8" (SE)

SD INLET W/GRATE  
TOP=506.91  
INV OUT=504.91

SD INLET W/GRATE  
TOP=506.77  
INV IN=504.77 (NE)  
INV IN=504.57 (SW)  
INV OUT=504.52 (SE)

15" RCP

15" HDPE

SD INLET W/GRATE  
TOP=507.10  
INV OUT=505.80 (SW)

24" RCP  
INV=504.23  
OUTFALLS TO YARD SWALE

ES-1 AND RIP-RAP OUTLET PROTECTION

CONC. SIDEWALK

STRIBLING AVENUE  
(VARIABLE WIDTH R-O-W)

CG-2 (TYP.)

BRICK WALL

ADJUST TOP OF WATER METER TO MATCH FG (TYP.)

PID: #116  
ET

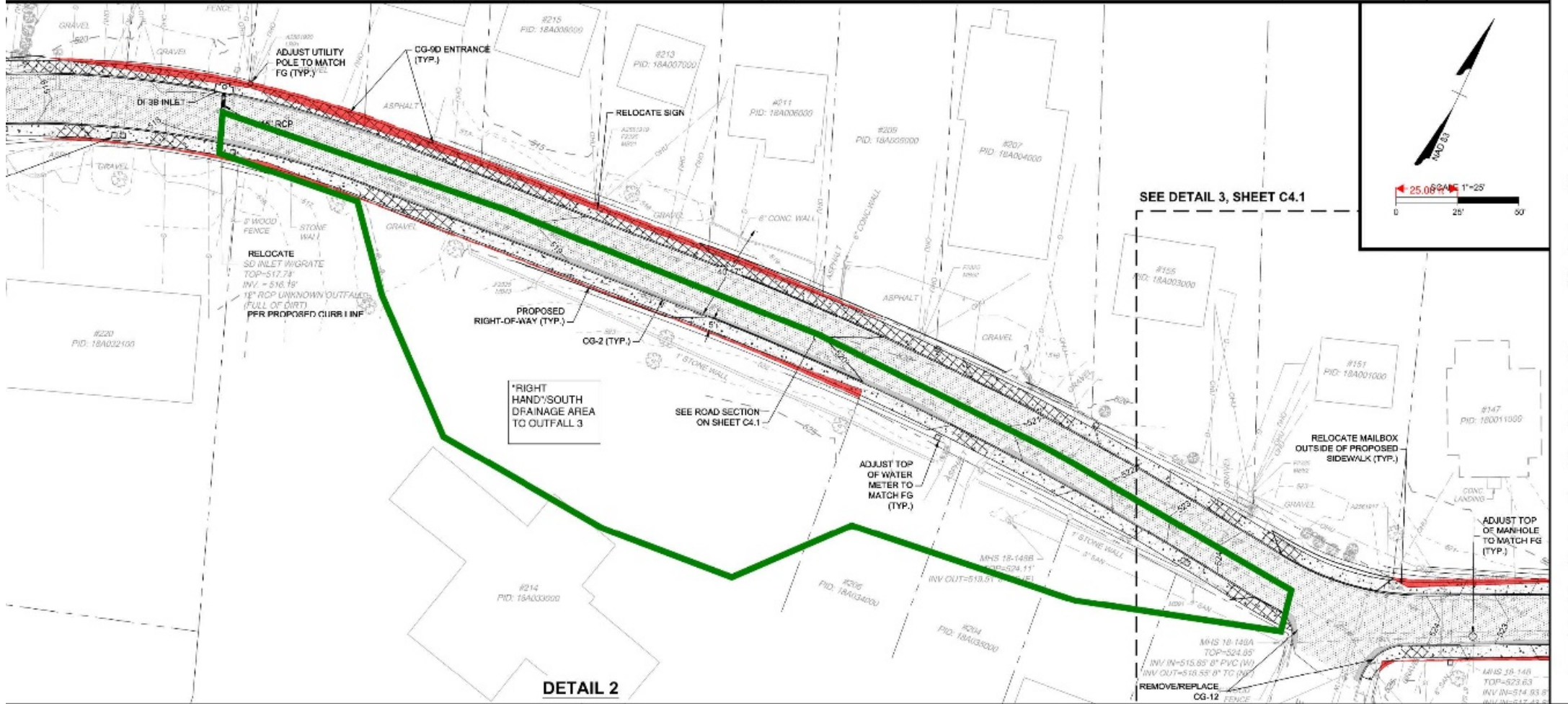
#116  
PID: 180020000

PID: #112

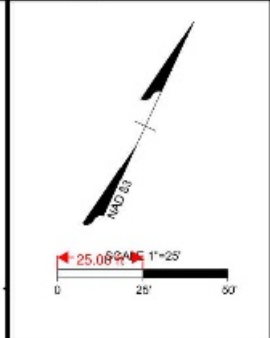
On Road Drainage as a Result Spread Requirements:

DETAIL 1

SEE DETAIL



SEE DETAIL 3, SHEET C4.1



DETAIL 2



User: JAD Date: 10/7/2021  
 Project: Stribling Units: English  
 SubTitle: Areal Units: Acres  
 State: Virginia  
 County: Albemarle ZONE-2 NOAA-D  
 Filename: C:\Users\dawsonj\OneDrive - City of Charlottesville, Virginia\Desktop\Par

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
SUB OUT 3		Outlet	0.53	76	0.100

Total area: .53 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.7	4.7	5.6	6.84	7.94	9.15	3.0

Sub-Area Peak Flow by Rainfall Return Period

Sub-Area or Reach Identifier	2-Yr (cfs)	10-Yr (cfs)	1-Yr (cfs)
SUBAREAS			
SUB OUT 3	0.96	1.93	0.63

Worksheet : Curb Inlet On Grade - 1

Calculations Messages

Solve For: Efficiency

Curb Gutter

Discharge:	0.96	cfs	Intercepted Flow:	0.70	cfs
Slope:	0.008	ft/ft	Bypass Flow:	0.26	cfs
Gutter Width:	0.00	ft	Spread:	6.9	ft
Gutter Cross Slope:	0.000	ft/ft	Depth:	1.7	in
Road Cross Slope:	0.020	ft/ft	Flow Area:	0.5	ft <sup>2</sup>
Roughness Coefficient:	0.013	...	Gutter Depression:	0.0	in
			Total Depression:	0.0	in
			Velocity:	2.03	ft/s
			Equivalent Cross Slope:	0.020	ft/ft
			Length Factor:	0.514	
			Total Interception Length:	19.5	ft

Calculation Successful.

Worksheet : Curb Inlet On Grade - 1

Calculations Messages

Solve For: Efficiency

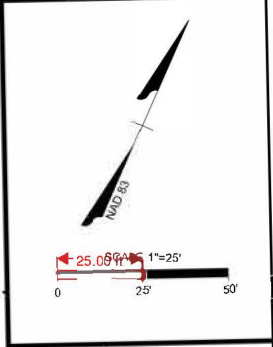
Curb Gutter

Discharge:	0.40	cfs	Intercepted Flow:	0.37	cfs
Slope:	0.008	ft/ft	Bypass Flow:	0.03	cfs
Gutter Width:	0.00	ft	Spread:	5.0	ft
Gutter Cross Slope:	0.000	ft/ft	Depth:	1.2	in
Road Cross Slope:	0.020	ft/ft	Flow Area:	0.2	ft <sup>2</sup>
Roughness Coefficient:	0.013	...	Gutter Depression:	0.0	in
			Total Depression:	0.0	in
			Velocity:	1.63	ft/s
			Equivalent Cross Slope:	0.020	ft/ft
			Length Factor:	0.742	
			Total Interception Length:	13.5	ft

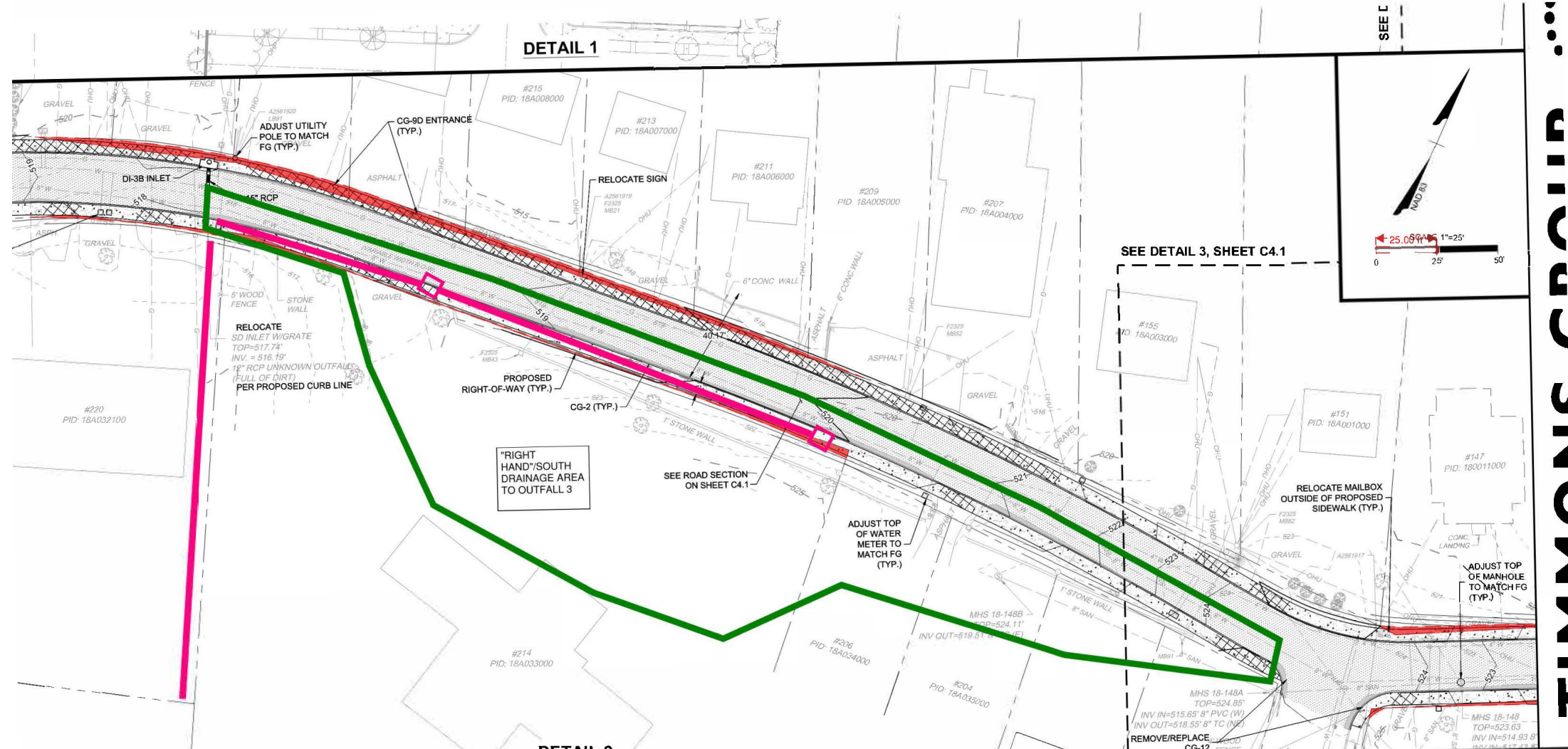
Calculation Successful.

**DETAIL 1**

SEE C



SEE DETAIL 3, SHEET C4.1



ADJUST UTILITY POLE TO MATCH FG (TYP.)

CG-9D ENTRANCE (TYP.)

RELOCATE SIGN

RELOCATE SD INLET W/GRATE  
TOP=517.74'  
INV. = 516.19'  
18" RCP UNKNOWN OUTFALLS  
(FULL OR PART)  
PER PROPOSED CURB LINE

PROPOSED RIGHT-OF-WAY (TYP.)

CG-2 (TYP.)

"RIGHT HAND"/SOUTH DRAINAGE AREA TO OUTFALL 3

SEE ROAD SECTION ON SHEET C4.1

ADJUST TOP OF WATER METER TO MATCH FG (TYP.)

RELOCATE MAILBOX OUTSIDE OF PROPOSED SIDEWALK (TYP.)

ADJUST TOP OF MANHOLE TO MATCH FG (TYP.)

**DETAIL 2**

MHS 18-148A  
TOP=524.85'  
INV IN=515.65' 8" PVC (W)  
INV OUT=518.55' 8" TC (NF)  
REMOVE/REPLACE  
CG-12 FENCE

MHS 18-148  
TOP=523.63'  
INV IN=514.93 8"

FINAL DESIGN





# Cost Escalations

- SWM impacts: Quality/Quantity/permanent Easements



# Quality:

## Site Information

### Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) →

Maximum reduction required:	10%
The site's net increase in impervious cover (acres) is:	0.35
Post-Development TP Load Reduction for Site (lb/yr):	0.63

Total Runoff Volume Reduction (ft <sup>3</sup> )	0
Total TP Load Reduction Achieved (lb/yr)	0.00
Total TN Load Reduction Achieved (lb/yr)	0.00
Remaining Post Development TP Load (lb/yr)	0.93
Remaining TP Load Reduction Required	0.63

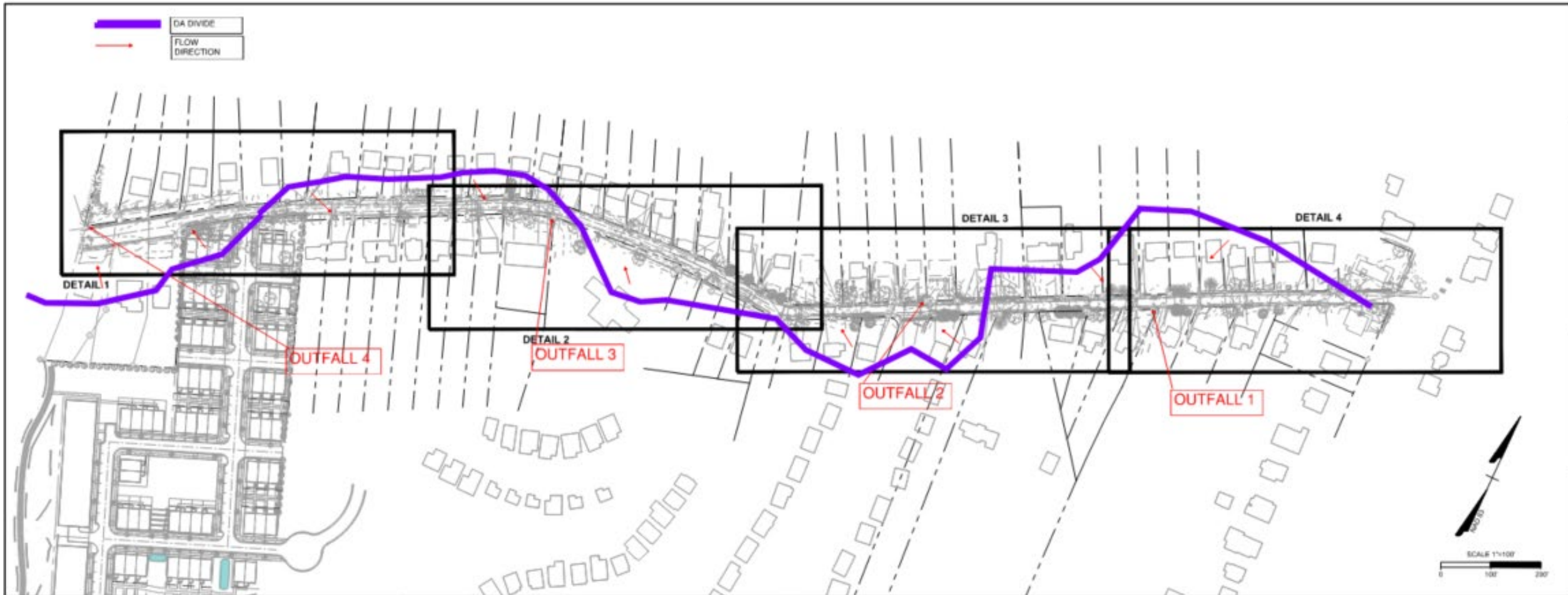
#### Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.42				0.42
Impervious Cover (acres)	0.07				0.07
					0.49

#### Post-Development Land Cover (acres)

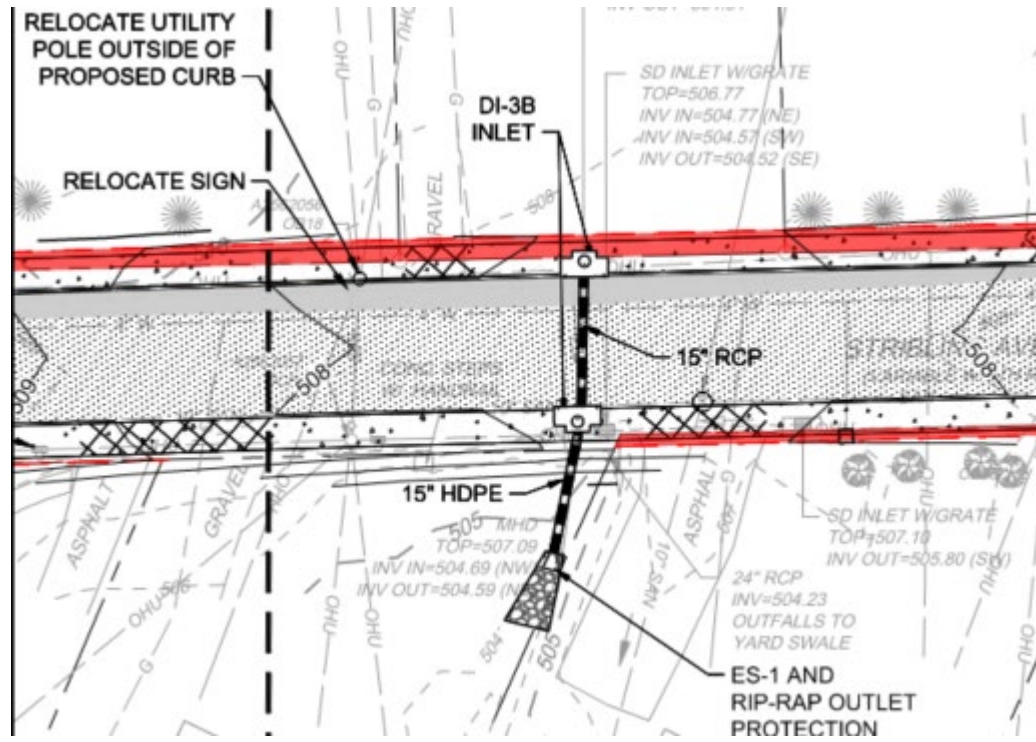
	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.07				0.07
Impervious Cover (acres)	0.42				0.42
Area Check	OK.	OK.	OK.	OK.	0.49

# Quantity:

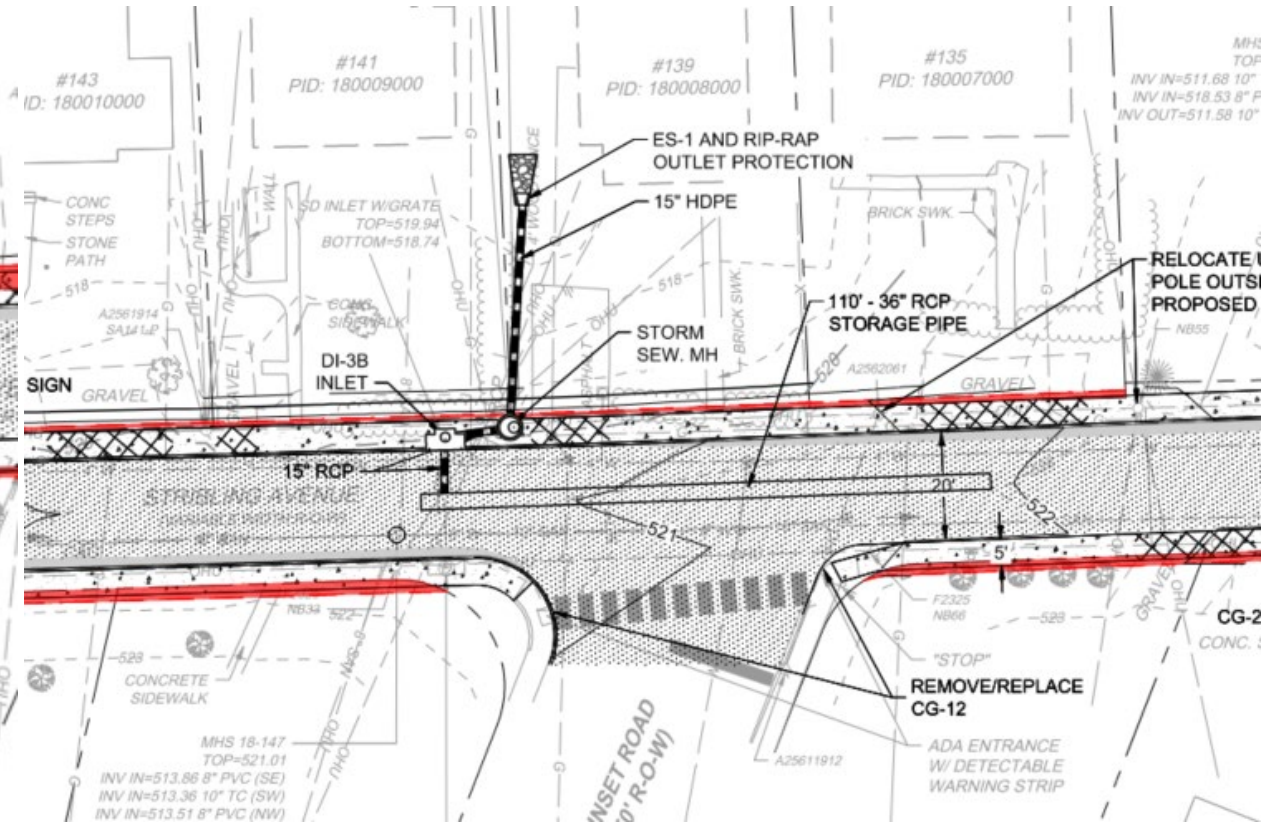


Proposed SWM Quality

# Outfall 1:

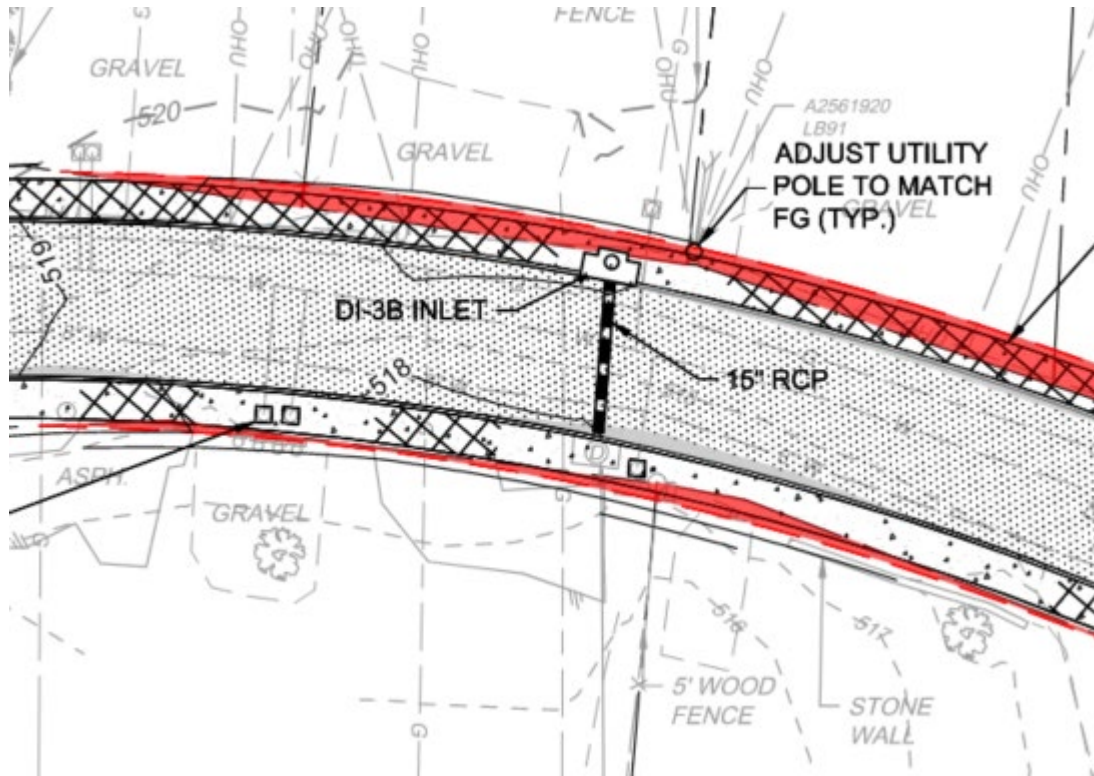


# Outfall 2:

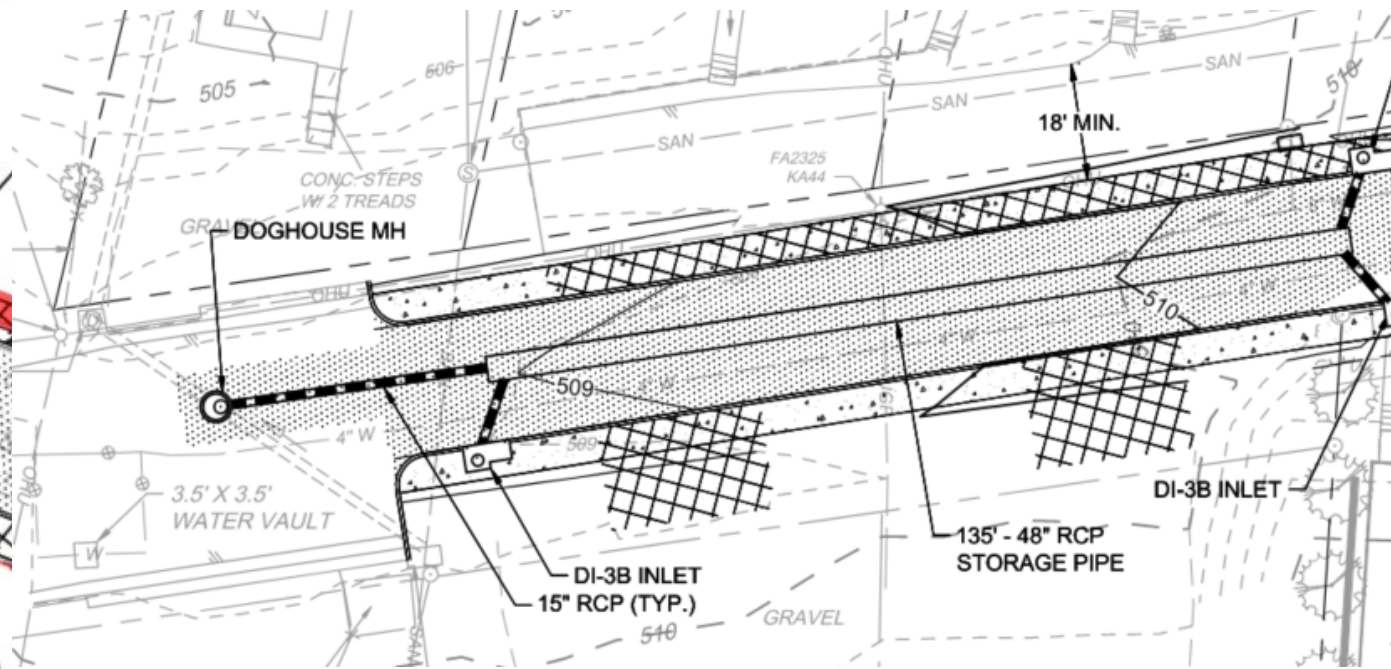


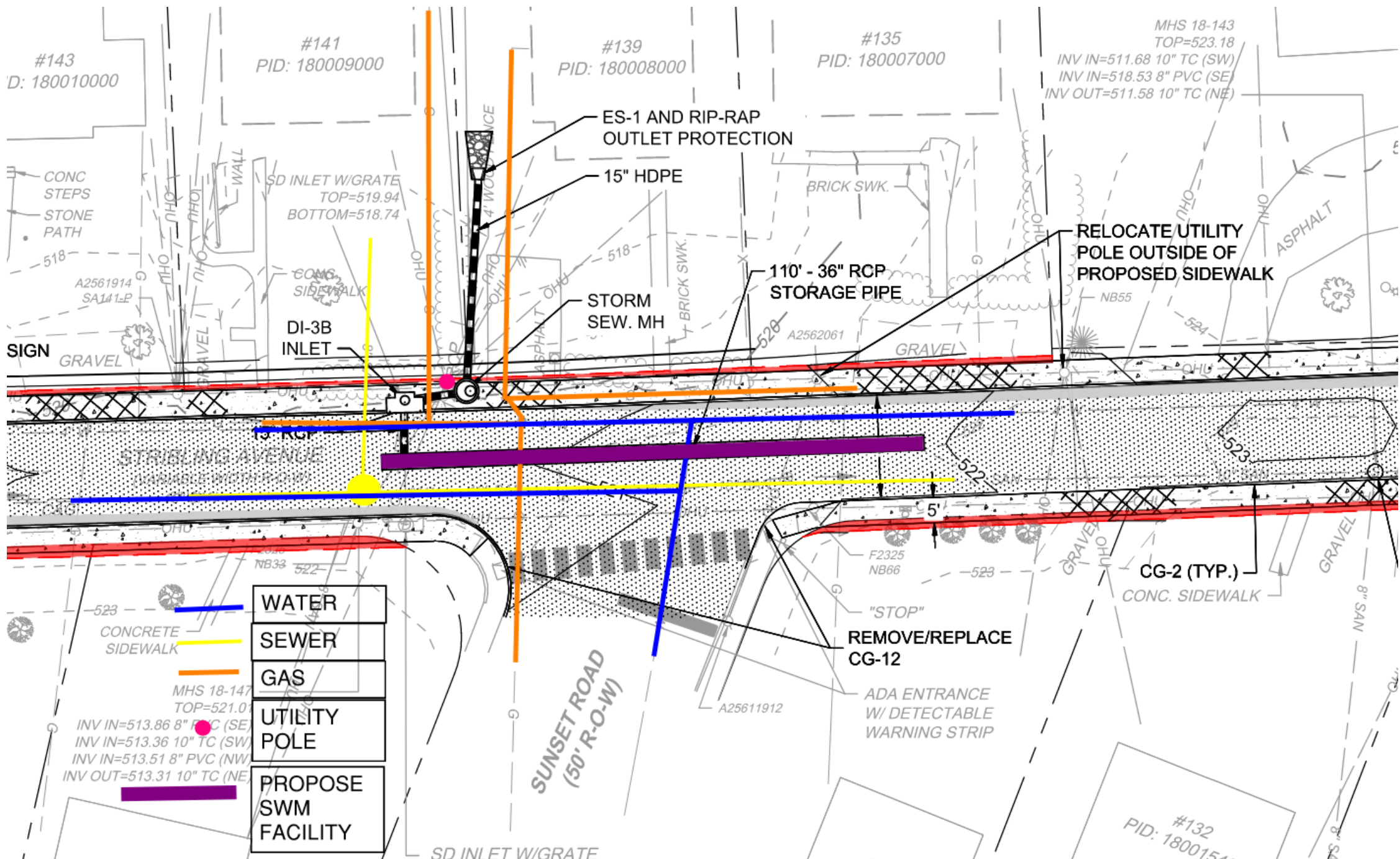







# Outfall 3:



# Outfall 4:



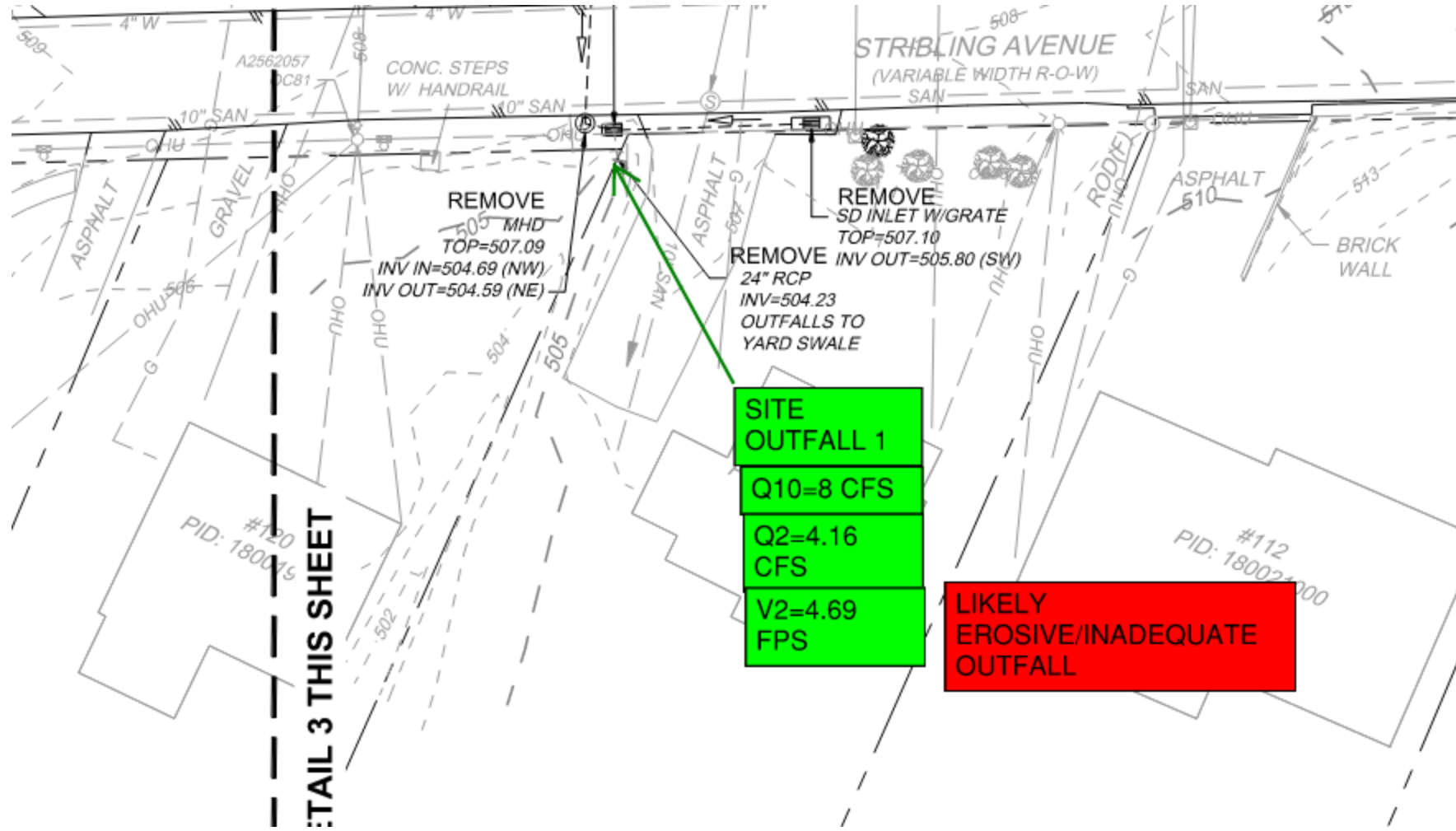


	WATER
	SEWER
	GAS
	UTILITY POLE
	PROPOSE SWM FACILITY

SD INLET W/GRATE

Revised Conceptual Outfalls:

# Outfall #1



**SITE  
OUTFALL 1**  
**Q10=8 CFS**  
**Q2=4.16  
CFS**  
**V2=4.69  
FPS**

**LIKELY  
EROSIVE/INADEQUATE  
OUTFALL**

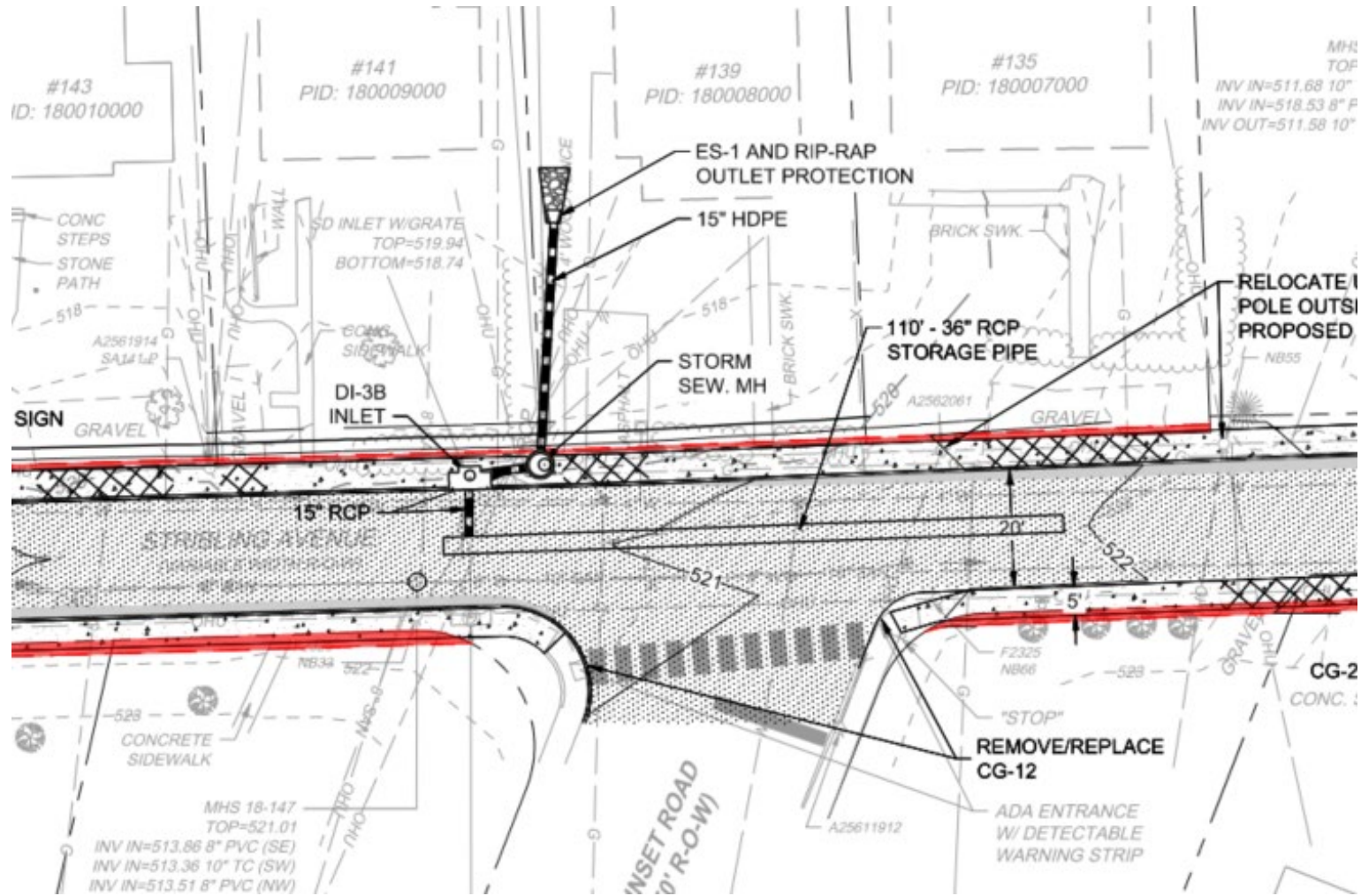








# Outfall #2



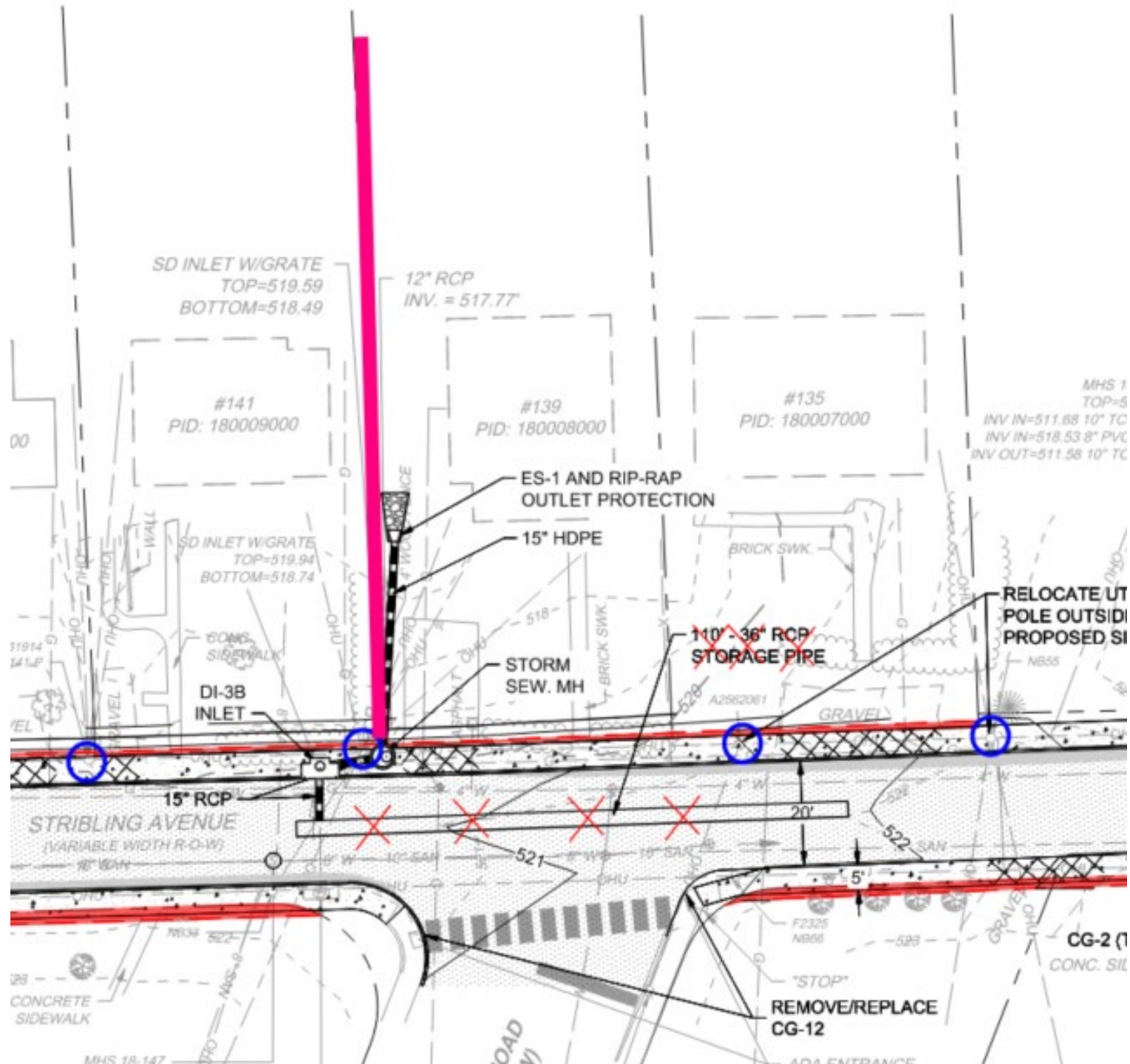


Outfall #2





# Outfall #2



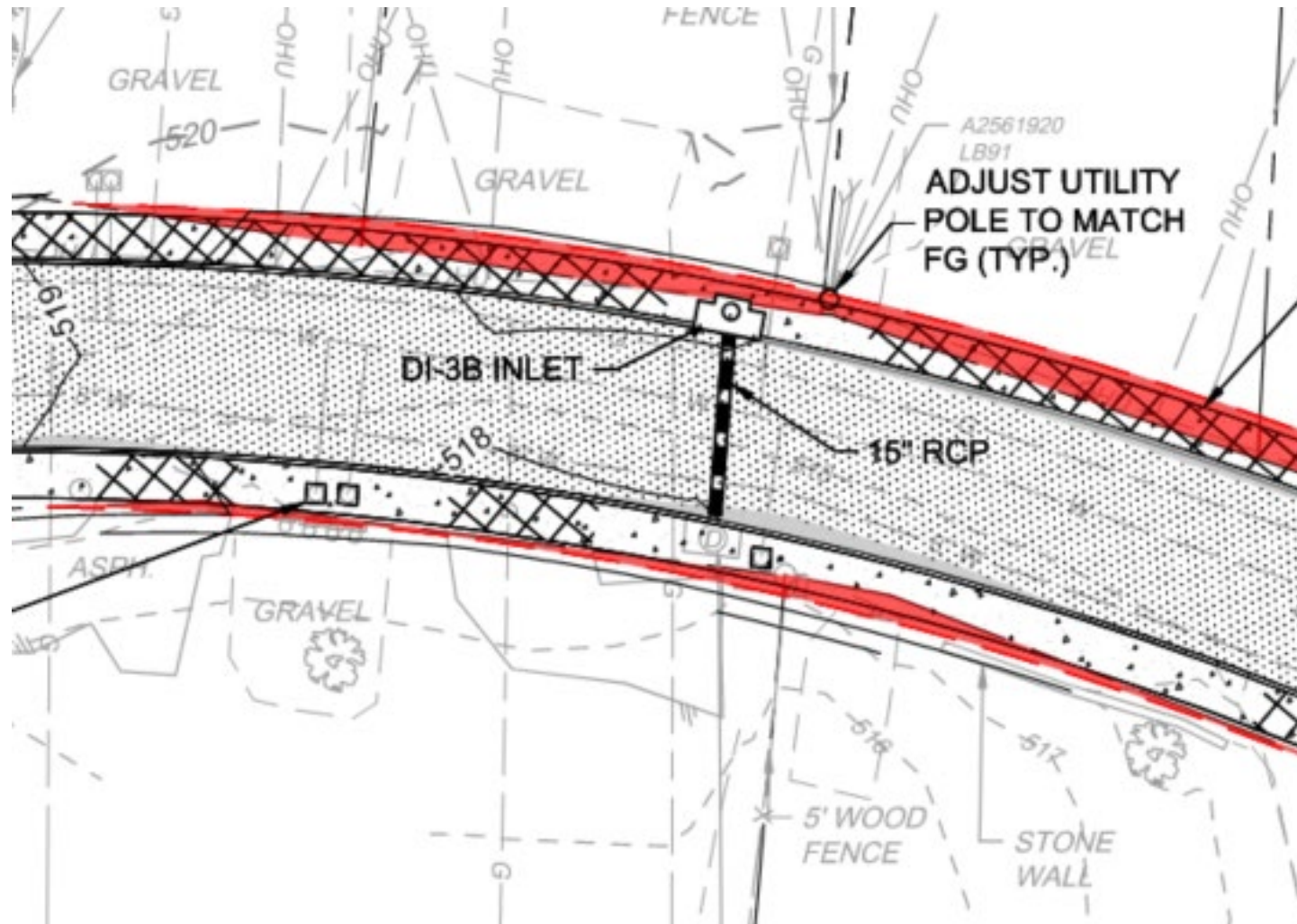


Outfall #2





# Outfall #3





Outfall #3





Outfall #3



**This is the  
only pipe  
'daylight'  
I could find.**

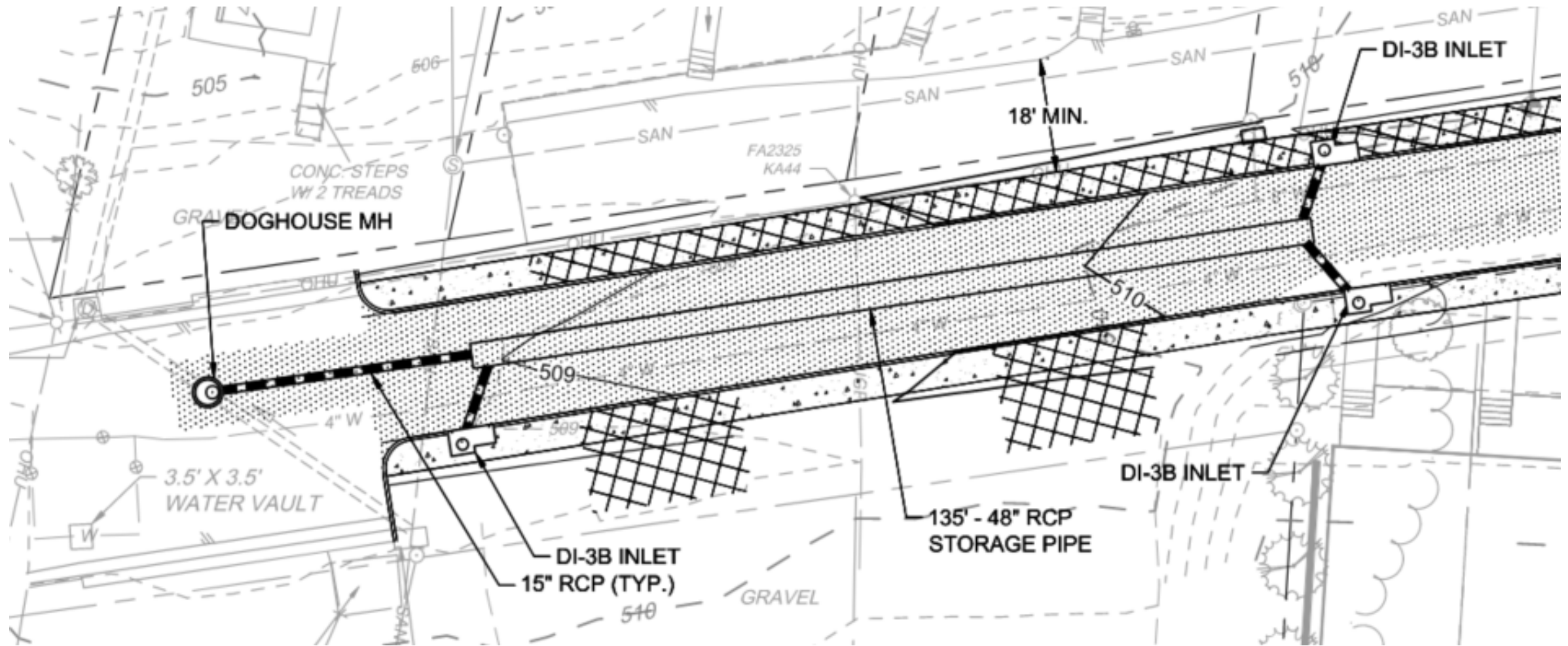


Outfall #3





# Outfall #4



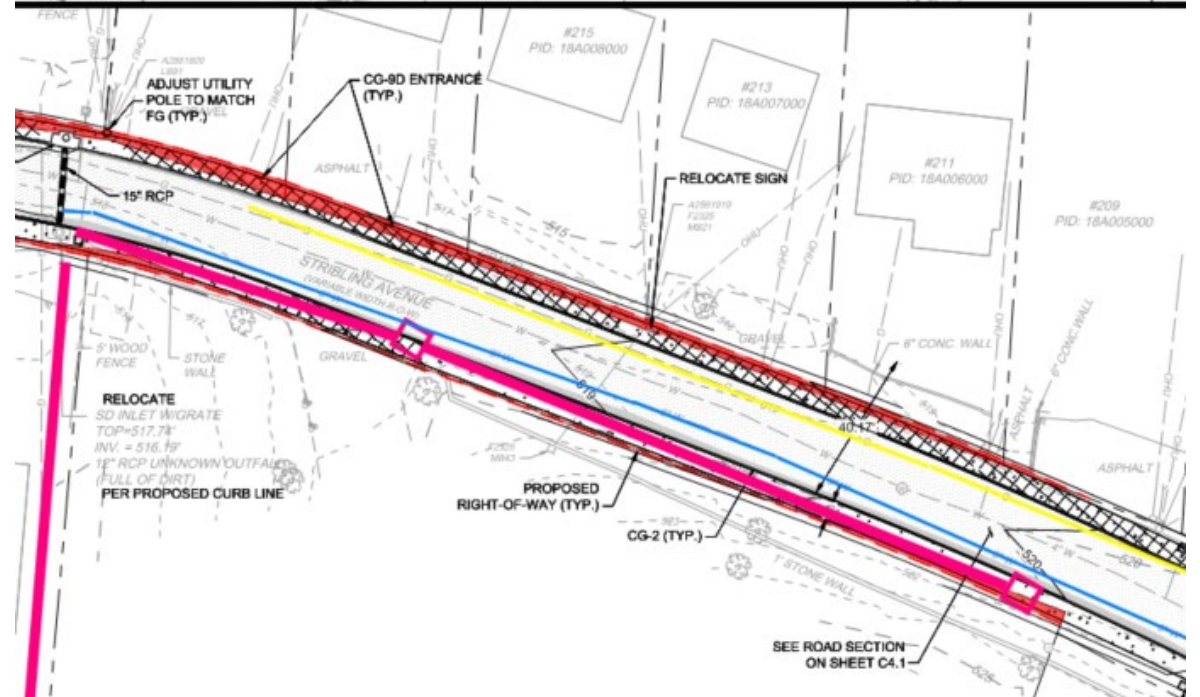
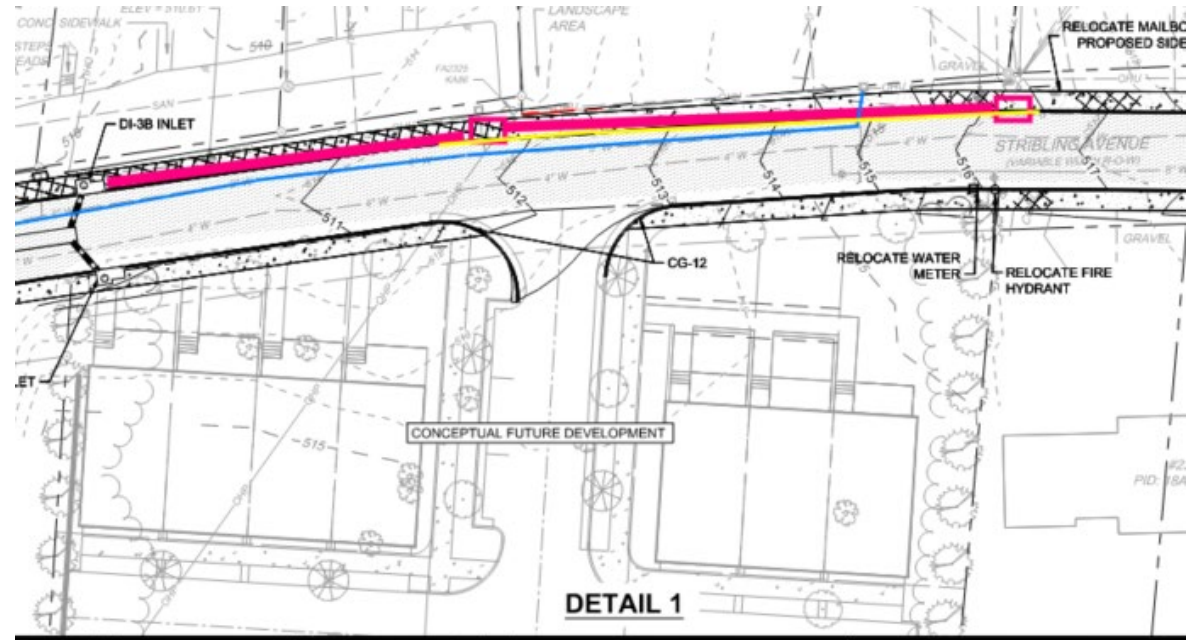






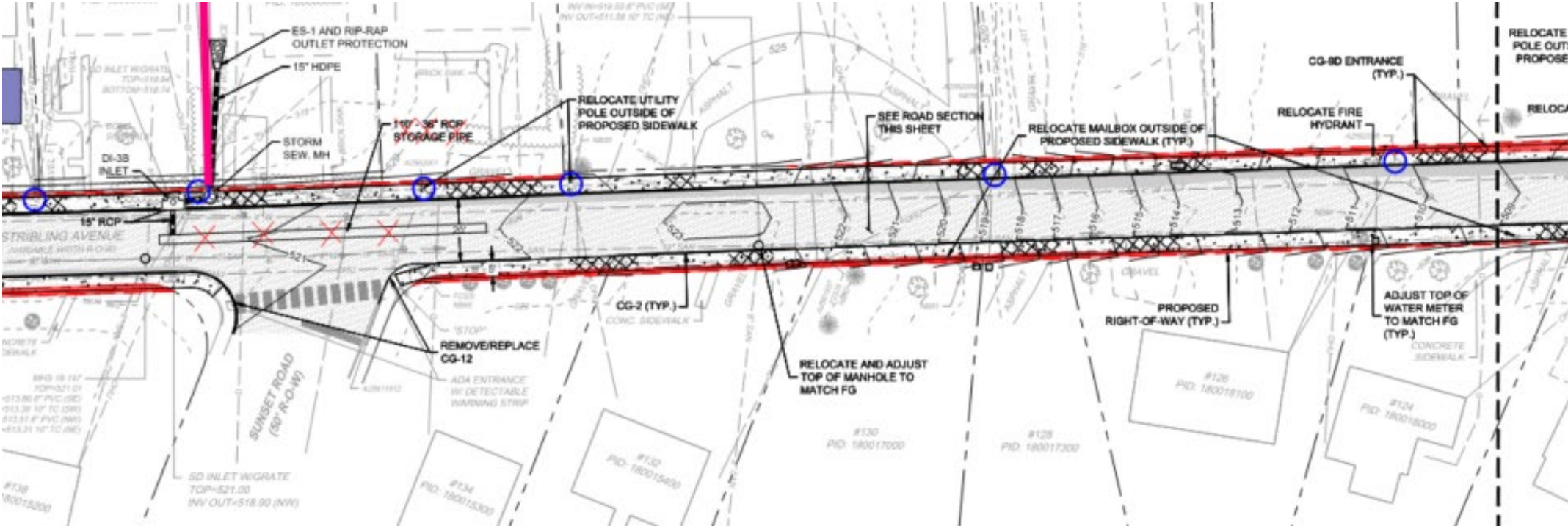


# Utility Relocation





# Utility Relocation



# Roadway Improvement Costs

- Reduced for S/W on one side



# Other Considerations

# Existing Parking Removed

- Minimally, 21 Spaces (4 on-street, 17 Private)-Eliminated:





# Tree Removal

- 19 Trees Removed













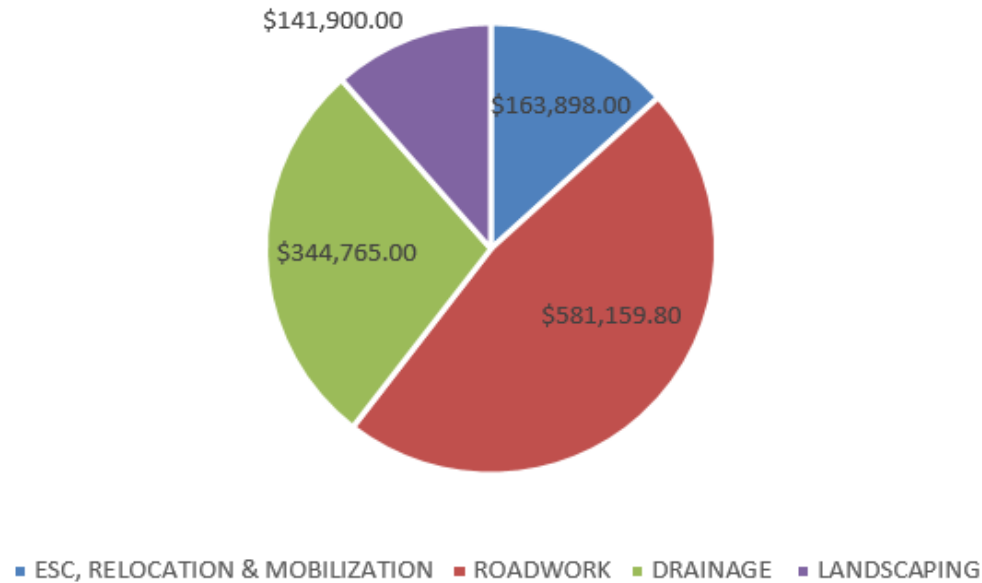






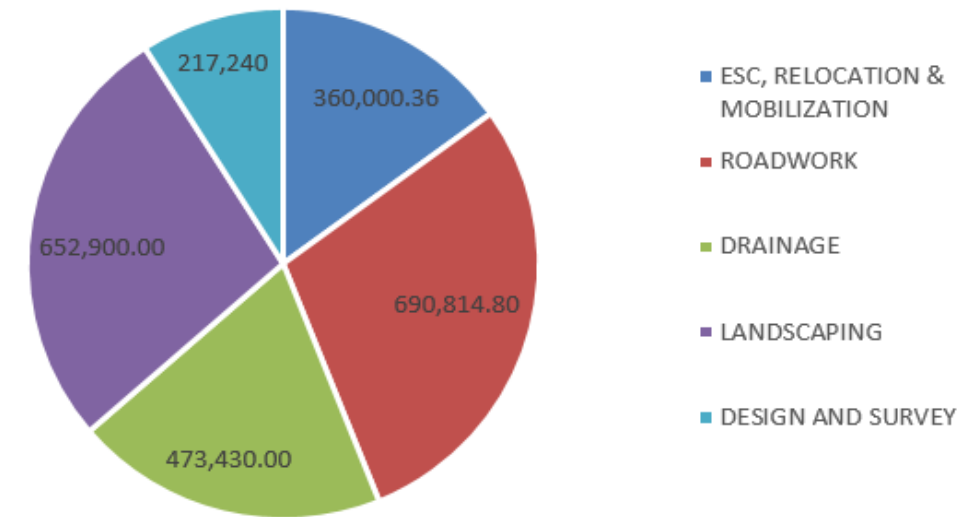
# Cost Summary:

Original:



Total= \$1,231,722+(25% Contingency)=\$1,539,653

Revised Per Analysis:



Total= \$2,394,385+(20% Contingency)=\$2,873,262



Questions ?