



STRUCTURAL ENGINEERING			
AUG 17 2005			
WJK <input type="checkbox"/>	SM <input type="checkbox"/>	TJK <input type="checkbox"/>	JEM <input type="checkbox"/>
JAC <input type="checkbox"/>	RZ <input type="checkbox"/>	AW <input type="checkbox"/>	<input type="checkbox"/>
MT <input type="checkbox"/>	DAG <input type="checkbox"/>	JCR <input type="checkbox"/>	<input type="checkbox"/>
AD <input type="checkbox"/>	SS <input type="checkbox"/>	JS <input type="checkbox"/>	FILE <input type="checkbox"/>

**SCI-823-0.00 (PID No. 19415)**

**PORTSMOUTH BYPASS**

**RETAINING WALL JUSTIFICATION STUDY**

*Prepared for:*  
**OHIO DEPARTMENT OF TRANSPORTATION**

**JULY 14, 2005**

*Prepared by:*



*5747 Perimeter Drive, Suite 240  
Dublin, Ohio 43017*

**SCI-823-0.00**  
**PID No. 19415**  
**PAVR SUBMISSION**  
**Retaining Wall Justification Study**

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**Retaining Wall Location No. 1**

**Sta. 118+25 to Sta. 120+00 Right**

**Property Description:** Residential Land: Herschel E Burke, Thomas & Diane Phillips, Mark D & Teresa Harrison

**Without Retaining Wall:** 0.77 AC of grading at 2:1 Slope  
1 small building demolition

**With Retaining Wall:** Possible Type of Retaining Wall – Reinforced Concrete on Piles (poor soil)  
Approximately 175 ft. long  
Approximately 63 ft. high

**Cost Summary:**

**Without Retaining Wall:**

Embankment  
10,000 Cu. Yds. At \$9.00= \$90,000.00  
1 demolition At \$4,000= \$4,000.00  
Residential Take At \$4,500/ ac= \$3,465.00

Without retaining wall total cost= \$97,465.00

**With Retaining Wall**

Retaining Wall Cost  
175 Long by 63 Ft. High at \$100/ SF=  
\$1,102,500.00

With Retaining Wall Total Cost= \$1,102,500.00

**Retaining Wall Location No. 2**

**Sta. 117+75 to Sta. 121+00 Left**

**Property Description:** Residential land west of bridge  
Sta. 117+75 to Sta. 121+00 Left

**Without Retaining Wall:** 0.38 AC of grading and 5 total lots at 2:1 Slope  
6 building demolitions

**With Retaining Wall:** Possible Type of Retaining Wall – Reinforced  
Concrete on Piles (poor soil)  
Approximately 325 ft. long  
Approximately 68 ft. high

**Cost Summary:**

**Without Retaining Wall:**

Embankment	
20,000 Cu. Yds. At \$9.00=	\$180,000.00
6 demolition At \$4,000=	\$24,000.00
Residential Take At \$4,500/ ac=	\$1,710.00
Lot Take At \$52,000/ lot=	\$260,000.00

Without retaining wall total cost= \$465,710.00

**With Retaining Wall**

Retaining Wall Cost	
325 Long by 68 Ft. High at \$100/ SF=	\$2,210,000.00

With Retaining Wall Total Cost= \$2,210,000.00

**Retaining Wall Location No. 3**

**Sta. 124+50 to Sta. 132+00 Right**

**Property Description:** Residential land west of bridge  
Sta. 124+50 to Sta. 132+00 Right

**Without Retaining Wall:** 1.55 AC of grading and 1 total lot at 2:1 Slope  
1 building demolitions

**With Retaining Wall:** Possible Type of Retaining Wall –  
MSE  
Approximately 750 ft. long  
Approximately 44 ft. high

**Cost Summary:** Without Retaining Wall:

Embankment	
40,000 Cu. Yds. At \$9.00=	\$360,000.00
1 demolition At \$4,000=	\$4,000.00
Residential Take At \$4,500/ ac=	\$6,975.00
Lot Take At \$52,000/ lot=	\$52,000.00

Without retaining wall total cost= \$422,975.00

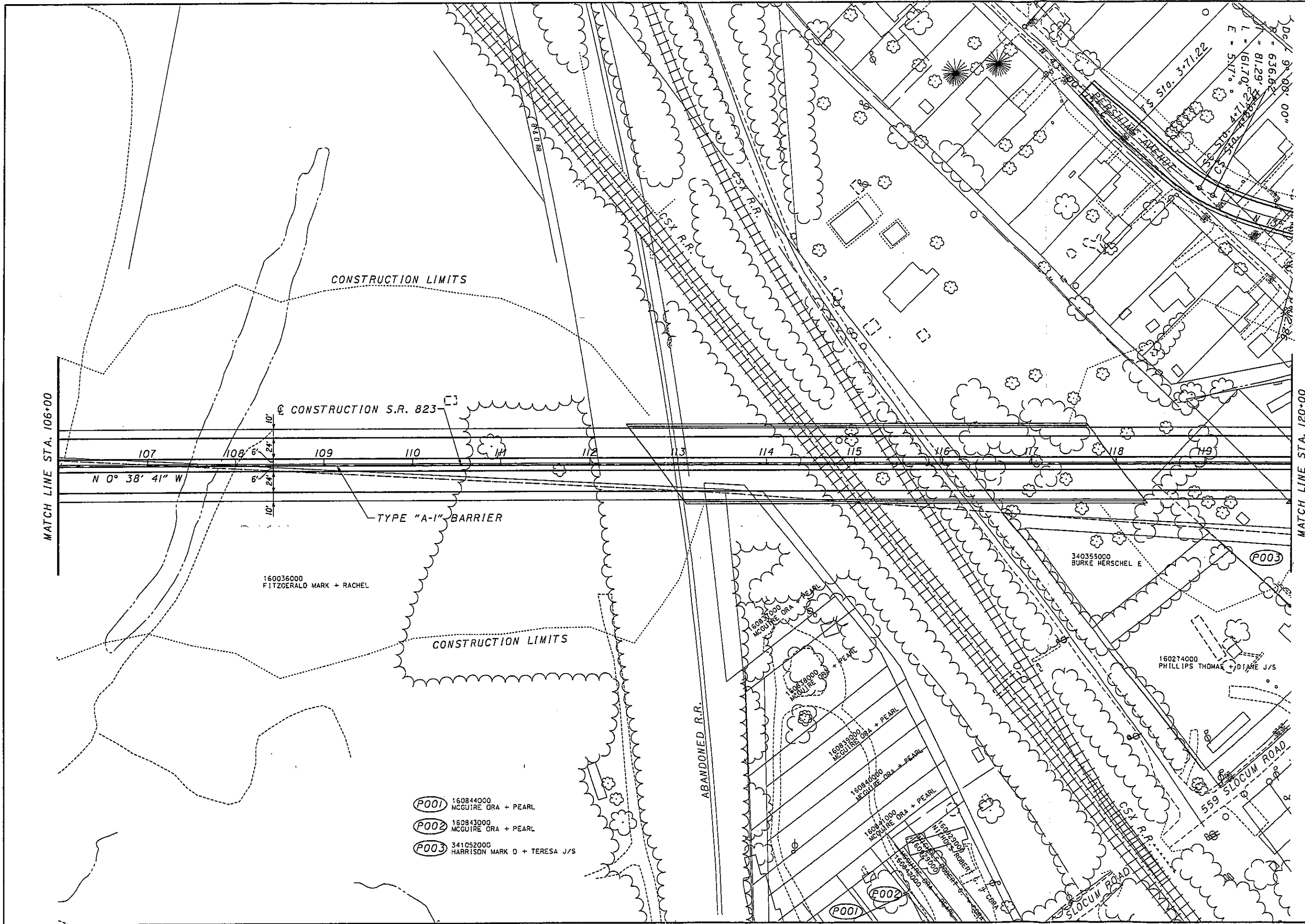
With Retaining Wall

Retaining Wall Cost  
750 Long by 44 Ft. High at \$52/ SF= \$1,716,000.00

With Retaining Wall Total Cost= \$1,716,000.00

# PLAN SHEETS

# NO-WALL OPTION

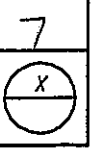


0 25 50 100  
HORIZONTAL  
SCALE IN FEET

CALCULATED  
CHECKED

**NO WALL OPTION**  
**STA. 106+00 TO STA. 120+00**

**SCI-823-0.00**



CONSTRUCTION LIMITS

CONSTRUCTION S.R. 823

N 0° 38' 41" W

TYPE "A-1" BARRIER

160036000  
FITZGERALD MARK + RACHEL

CONSTRUCTION LIMITS

ABANDONED R.R.

- (P001) 160844000  
MCGUIRE ORA + PEARL
- (P002) 160843000  
MCGUIRE ORA + PEARL
- (P003) 341052000  
HARRISON MARK D + TERESA J/S

340355000  
BURKE HERSCHEL E

160274000  
PHILLIPS THOMAS + DIANE J/S

559 SLOCUM ROAD

PERKINS AVENUE

SLOCUM ROAD

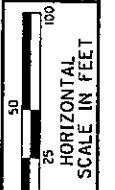
Sta. 3+71.22

Dec. 9' 00' 00"  
R = 636.82  
L = 81.29  
E = 51.71  
L = 161.00  
E = 51.71

MATCH LINE STA. 120+00

MATCH LINE STA. 106+00

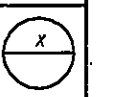




CALCULATED  
CHECKED

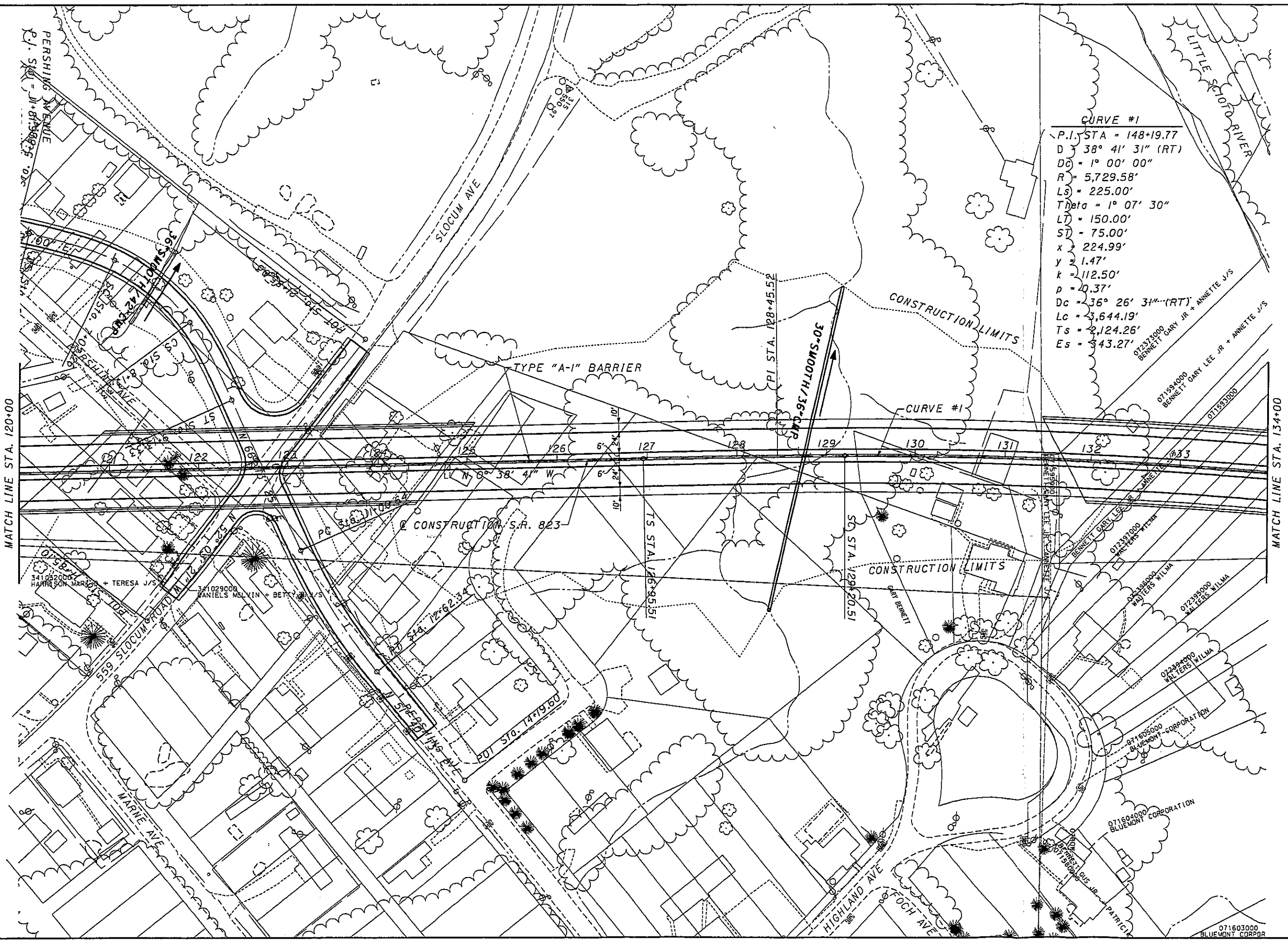
**NO WALL OPTION**  
**STA. 120+00 TO 134+00**

**SCI-823-0.00**



**CURVE #1**

P.I. STA = 148+19.77  
 D = 38° 41' 31" (RT)  
 Dc = 1° 00' 00"  
 R = 5,729.58'  
 Ls = 225.00'  
 Theta = 1° 07' 30"  
 Lt = 150.00'  
 St = 75.00'  
 x = 224.99'  
 y = 1.47'  
 k = 112.50'  
 p = 40.37'  
 Dc = 36° 26' 31" (RT)  
 Lc = 3,644.19'  
 Ts = 2,124.26'  
 Es = 343.27'



MATCH LINE STA. 120+00

MATCH LINE STA. 134+00

PERSHING AVENUE  
P.I. STA = 11+81.38  
D.C. = 1° 00' 00"

SLOCUM AVE

TYPE "A-1" BARRIER

CONSTRUCTION LIMITS

CURVE #1

PI STA. 128+45.52

30' SMOOTH / 36" CURB

LV N 6° 38' 41" W

CONSTRUCTION S.R. 823

TS STA. 126+95.51

SC STA. 128+20.51

CONSTRUCTION LIMITS

07237000  
BENNETT GARY JR + ANNETTE J/S

071594000  
BENNETT GARY LEE JR + ANNETTE J/S

071553000

072397000  
WATERS WILMA

072496000  
WATERS WILMA

072496000  
WATERS WILMA

072496000  
WATERS WILMA

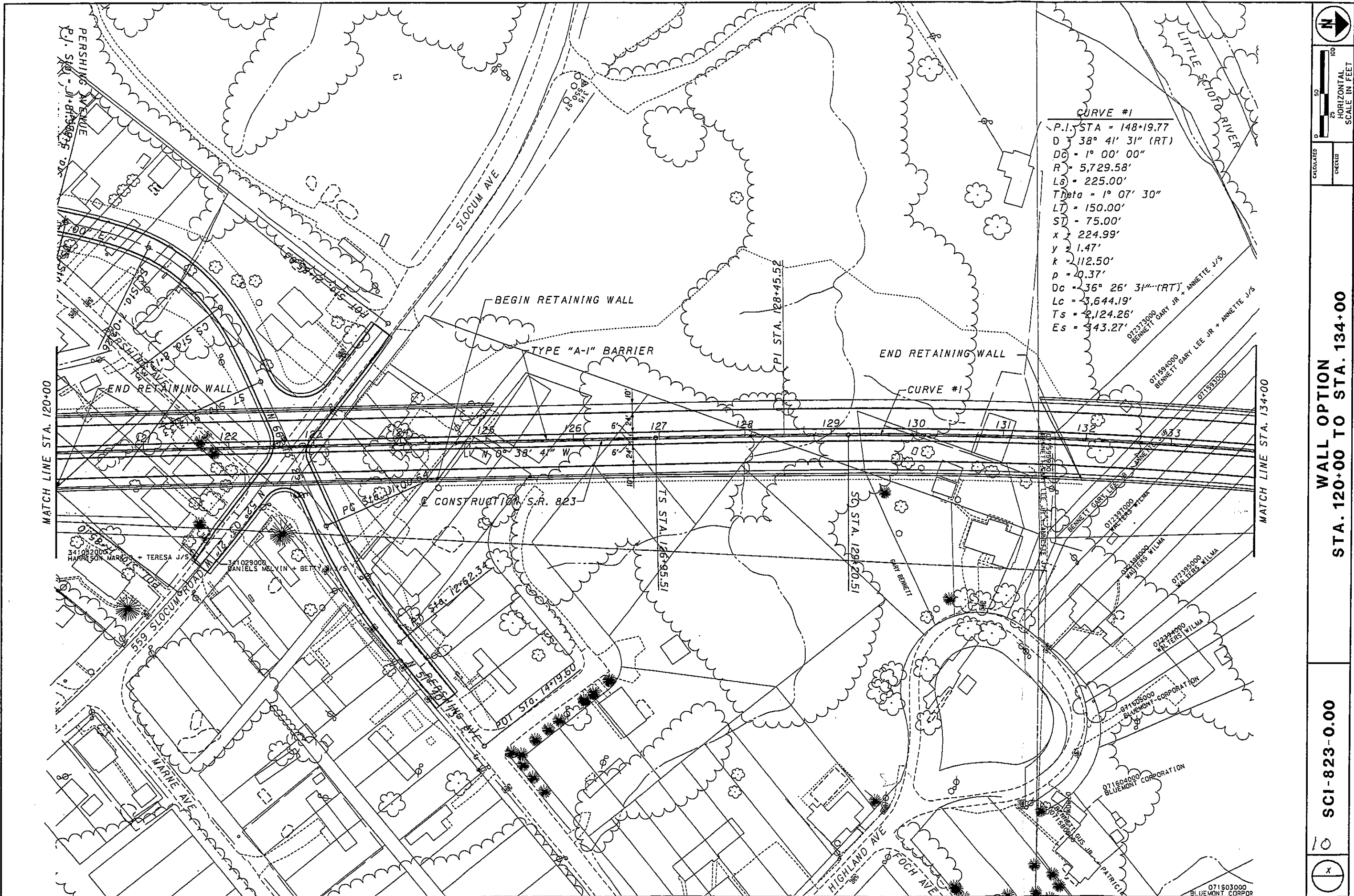
072496000  
WATERS WILMA

072496000  
WATERS WILMA

071605000  
BLUEMONT CORPORATION

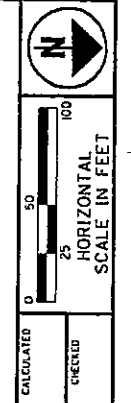
071604000  
BLUEMONT CORPORATION

071603000  
BLUEMONT CORPORA



**CURVE #1**

P.I. STA	= 148+19.77
D	= 38° 41' 31" (RT)
DC	= 1° 00' 00"
R	= 5,729.58'
LS	= 225.00'
Theta	= 1° 07' 30"
LT	= 150.00'
ST	= 75.00'
x	= 224.99'
y	= 1.47'
k	= 112.50'
p	= 40.37'
Dc	= 36° 26' 31" (RT)
Lc	= 3,644.19'
Ts	= 2,124.26'
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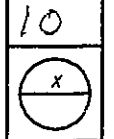


MATCH LINE STA. 120+00

MATCH LINE STA. 134+00

**WALL OPTION**  
**STA. 120+00 TO STA. 134+00**

**SCI-823-0.00**



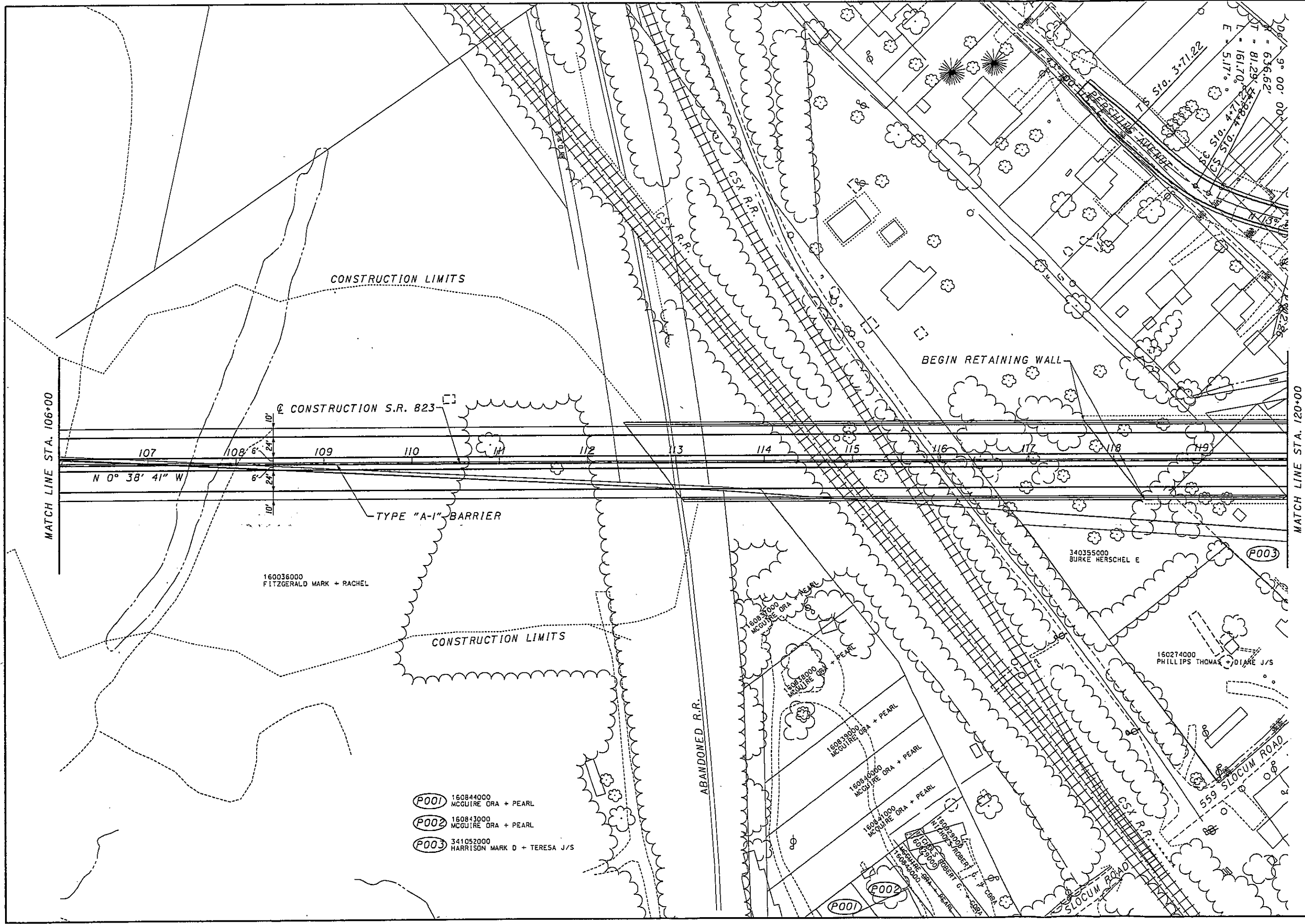


HORIZONTAL SCALE IN FEET  
0 25 50 100

CHECKED  
CALCULATED

WALL OPTION  
STA. 106+00 TO STA. 120+00

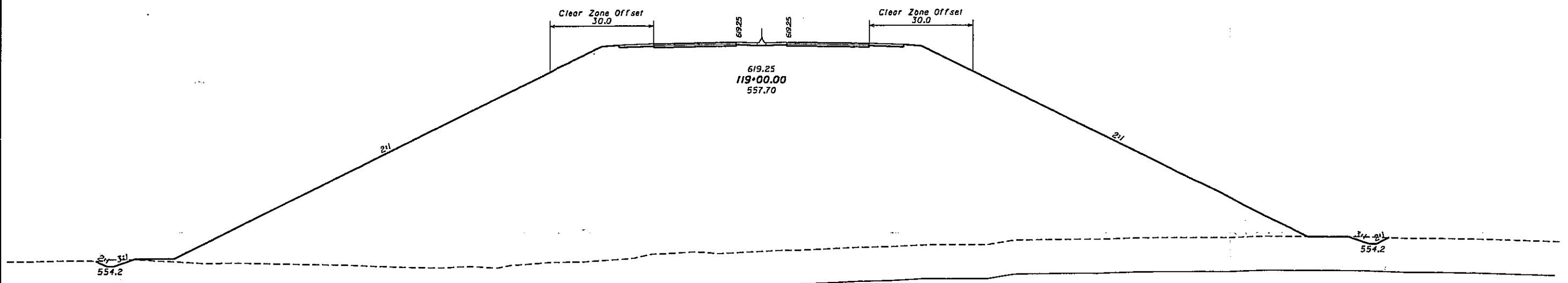
SCI-823-0.00



# CROSS SECTIONS

# NO-WALL OPTION

SCALE: 1"=30'



CROSS SECTION - NO WALL OPTION

SCI-823-0.00

14

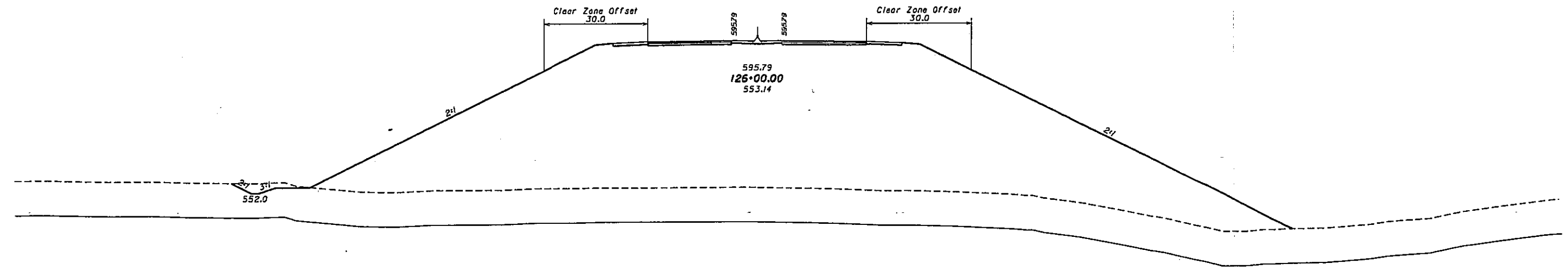
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SCALE: 1"=30'

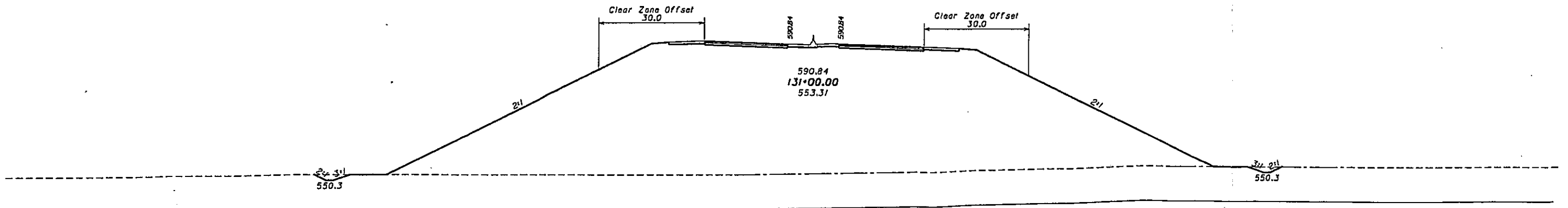
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CROSS SECTION - NO WALL OPTION

SCI-823-0.00



SCALE: 1"=30'



CROSS SECTION - NO WALL OPTION

SCI-823-0.00

16

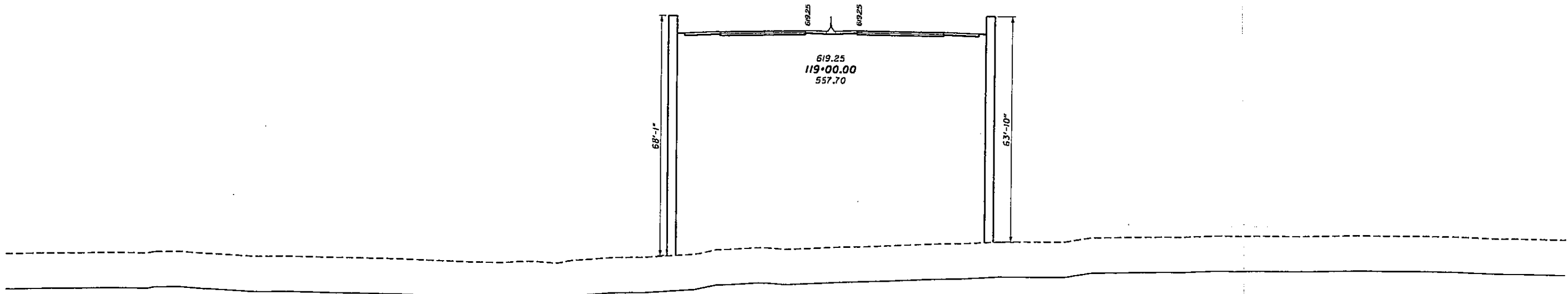
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CALCULATED



# WALL OPTION

SCALE: 1"=30'



CALCULATED

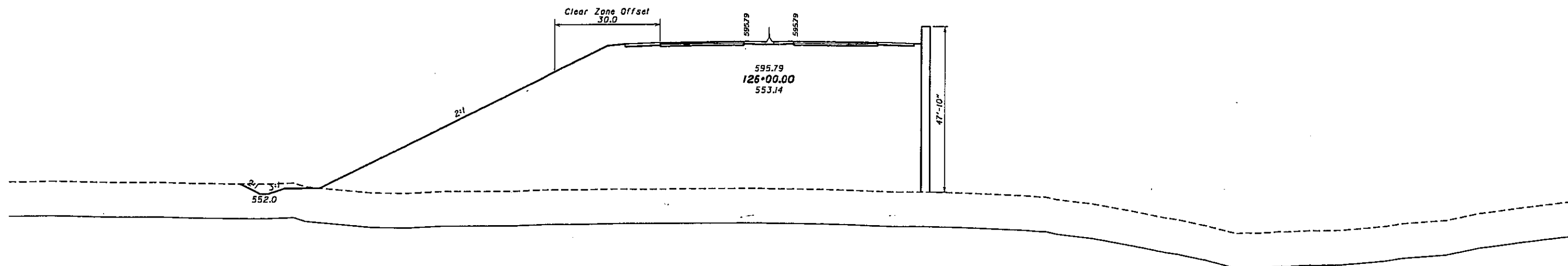
CHECKED

CROSS SECTION - WALL OPTION

SCI-823-0.00

SCALE: 1"=30'

CALCULATED  
CHECKED

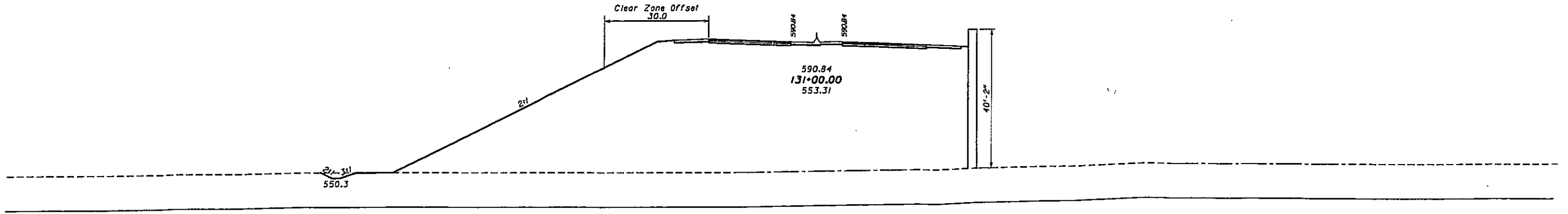


CROSS SECTION - WALL OPTION

SCI-823-0.00

SCALE: 1"=30'

CALCULATED  
CHECKED



CROSS SECTION - WALL OPTION

SCI-823-0.00