

INDEX OF DRAWINGS

1) TITLE SHEET

ROADWAY DRAWINGS

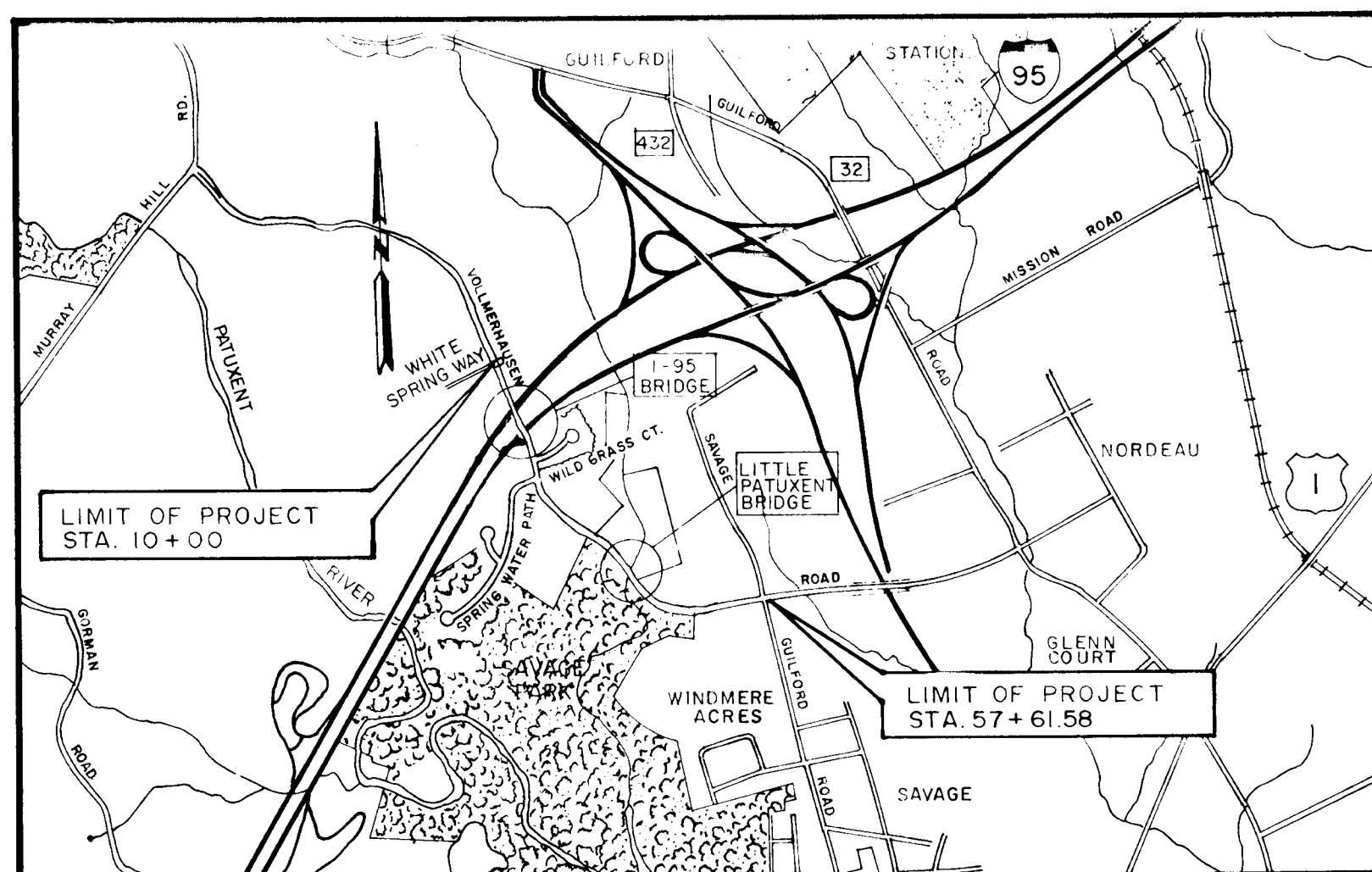
- 2) TYPICAL ROADWAY SECTIONS
- 3) SUPERELEVATION TRANSITION DIAGRAMS
- 4) HORIZONTAL CONTROLS
- 5) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE I STA. 10+00 TO STA. 33+00
- 6) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE I STA. 33+00 TO STA. 57+61.28
- 7) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE II STA. 10+00 TO STA. 33+00
- 8) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE II STA. 33+00 TO STA. 57+61.28
- 9) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE III STA. 10+00 TO STA. 33+00
- 10) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE III STA. 33+00 TO STA. 57+61.28
- 11) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE IV STA. 10+00 TO STA. 33+00
- 12) MAINTENANCE OF TRAFFIC/SEDIMENT AND EROSION CONTROL  
PHASE IV STA. 33+00 TO STA. 57+61.28
- 13,14) SEDIMENT AND EROSION CONTROL DETAILS
- 14A,14B) SEDIMENT AND EROSION CONTROL DETAILS
- 15) PRELIMINARY PLAN AND PROFILE  
STA. 10+00 TO STA. 21+00
- 16) PRELIMINARY PLAN AND PROFILE  
STA. 21+00 TO STA. 33+00
- 17) PRELIMINARY PLAN AND PROFILE  
STA. 33+00 TO STA. 45+00
- 18) PRELIMINARY PLAN AND PROFILE  
STA. 45+00 TO STA. 57+61.28
- 19) STORM DRAIN PROFILES
- 20) STORM DRAIN PROFILES
- 21) DRAINAGE AREA MAP EXISTING CONDITIONS
- 22) DRAINAGE AREA MAP PROPOSED CONDITIONS

BRIDGE DRAWINGS

- 23) VOLLMERHAUSEN ROAD OVER I-95  
GENERAL PLAN AND ELEVATION
- 24) VOLLMERHAUSEN ROAD OVER I-95  
TYPICAL BRIDGE AND ABUTMENT SECTIONS
- 25) VOLLMERHAUSEN ROAD OVER I-95  
TYPICAL ABUTMENT SECTIONS
- 26) VOLLMERHAUSEN ROAD OVER I-95  
JOINT DETAILS
- 27) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
GENERAL PLAN AND ELEVATION
- 28) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
PLAN, ELEVATION AND DETAILS WEST ABUTMENT
- 29) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
PLAN, ELEVATION AND DETAILS EAST ABUTMENT
- 30) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
FOOTING PLAN
- 31) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
FRAMING PLAN
- 32) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
DECK ELEVATIONS
- 33) VOLLMERHAUSEN ROAD OVER LITTLE PATUXENT RIVER  
BORING AND DRIVE TESTS
- 34) STANDARD DETAILS
- 35) STANDARD DETAILS
- 36) STANDARD DETAILS
- 37) STANDARD DETAILS
- 38) STANDARD DETAILS
- 39) STANDARD DETAILS

UTILITY DRAWINGS

- 40) SANITARY SEWER DETAIL OFFSET MANHOLE
- L1 LANDSCAPING PLAN
- L2 LANDSCAPING PLAN
- L3 LANDSCAPING PLAN
- L4 LANDSCAPING PLAN



LOCATION MAP

SCALE: 1" = 2000'

MINOR COLLECTOR  
DESIGN SPEED 35 MPH  
LENGTH 0.9 MILE

HOWARD COUNTY  
CAPITAL PROJECT NO. J-4046  
**VOLLMERHAUSEN ROAD**  
**ROAD IMPROVEMENTS**  
DEPARTMENT OF PUBLIC WORKS

Reviewed for HOWARD S.C.D. and meets Technical Requirements for Soil Erosion and Sediment Control.

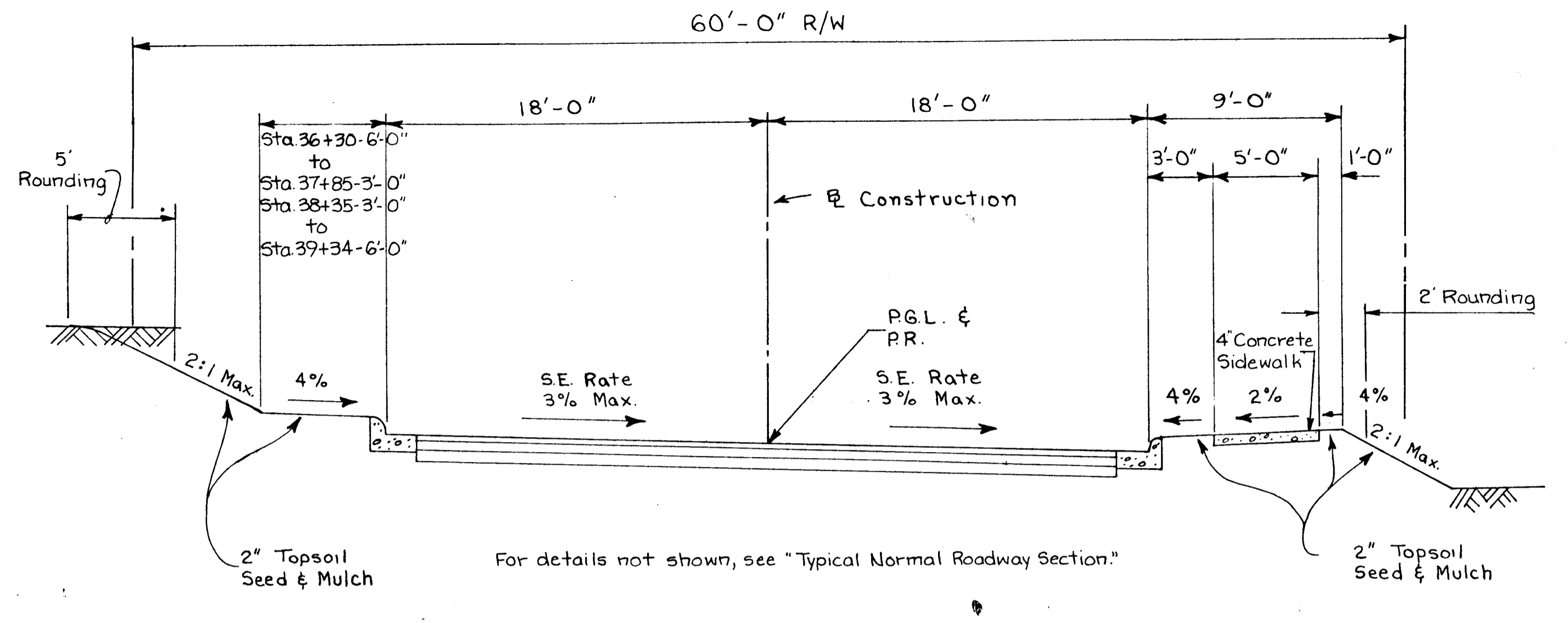
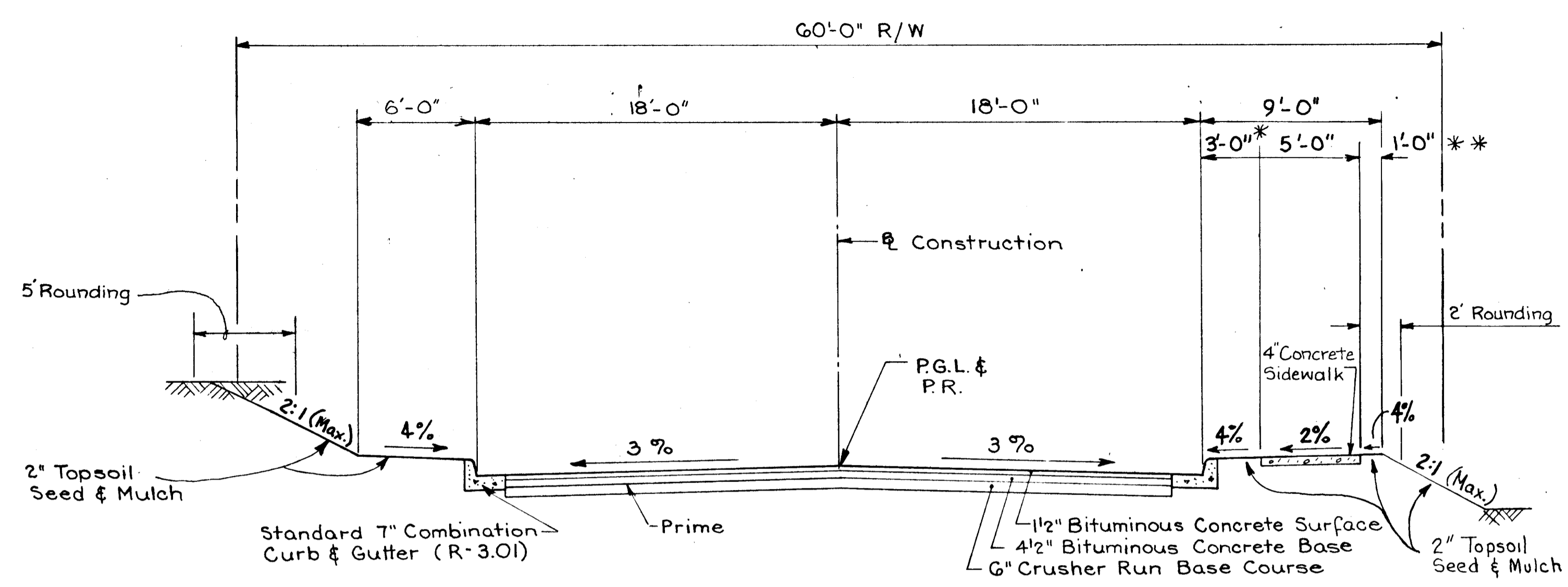
*Howard S. C. D.* 1-10-91  
Soil Conservation Service Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert Z. Zelman* 1-10-91  
Howard S. C. D. Date

1606

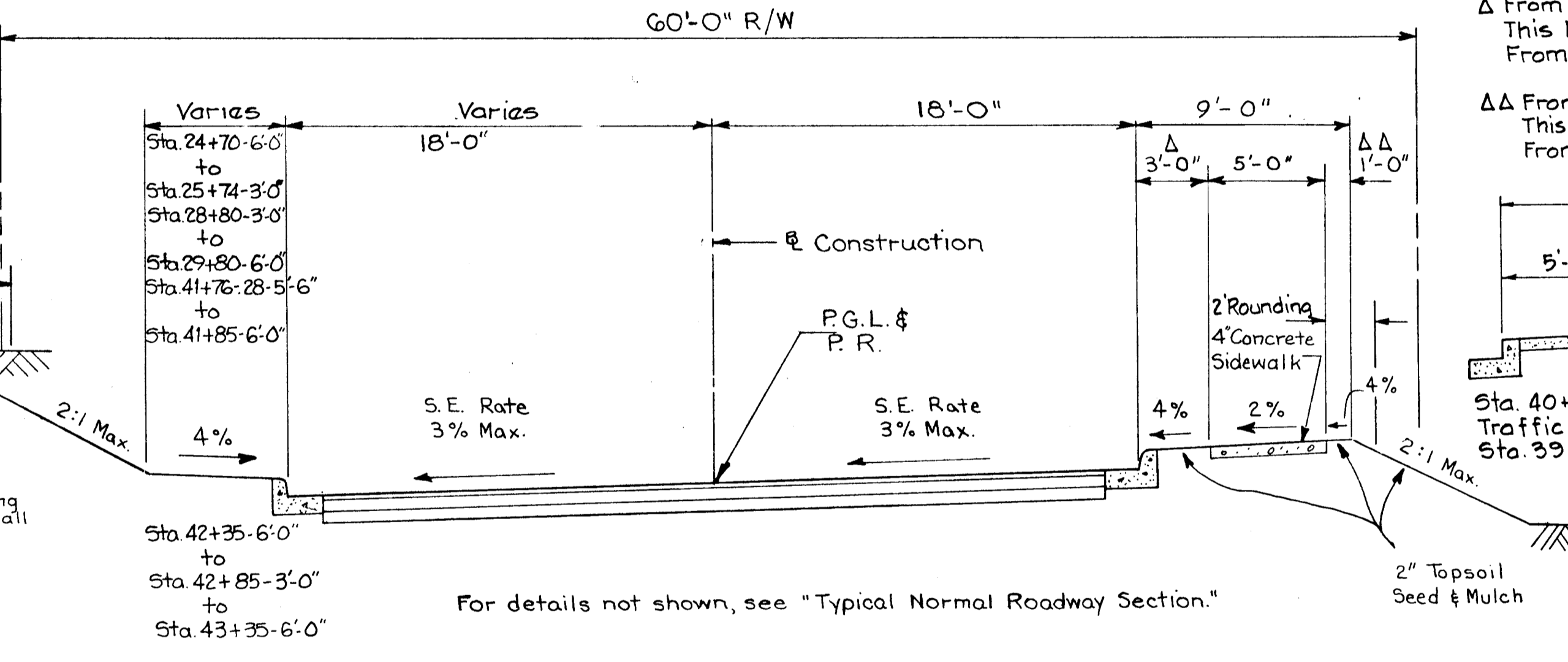
|  |  |  |   |   |  |
|--|--|--|---|---|--|
| <p>DEPARTMENT OF PUBLIC WORKS<br/>HOWARD COUNTY, MARYLAND</p> <p><i>Elizabeth Anderson</i> 1-10-91<br/>DIRECTOR OF PUBLIC WORKS - DATE</p> <p><i>Dr. Robert M. Hellebrand</i> 1/10/91<br/>CHIEF, BUREAU OF HIGHWAYS - DATE</p> | <p><b>BUCHART-HORN INC.</b><br/>CONSULTING ENGINEERS<br/>THE QUADRANGLE<br/>244 WEST BLOCK<br/>VILLAGE OF CROSS KEYS<br/>BALTIMORE, MARYLAND 21210</p> |  | <p><b>TITLE SHEET</b><br/>INDEX OF DRAWINGS</p> | <p>VOLLMERHAUSEN RD. IMPROVEMENTS<br/>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br/>CAPITAL PROJECT J-4046<br/>ELECTION DISTRICT NO. 6<br/>HOWARD COUNTY, MARYLAND</p> | <p>SCALE AS SHOWN</p> <p>SHEET 1 OF 40</p> |
|--|--|--|---|---|--|



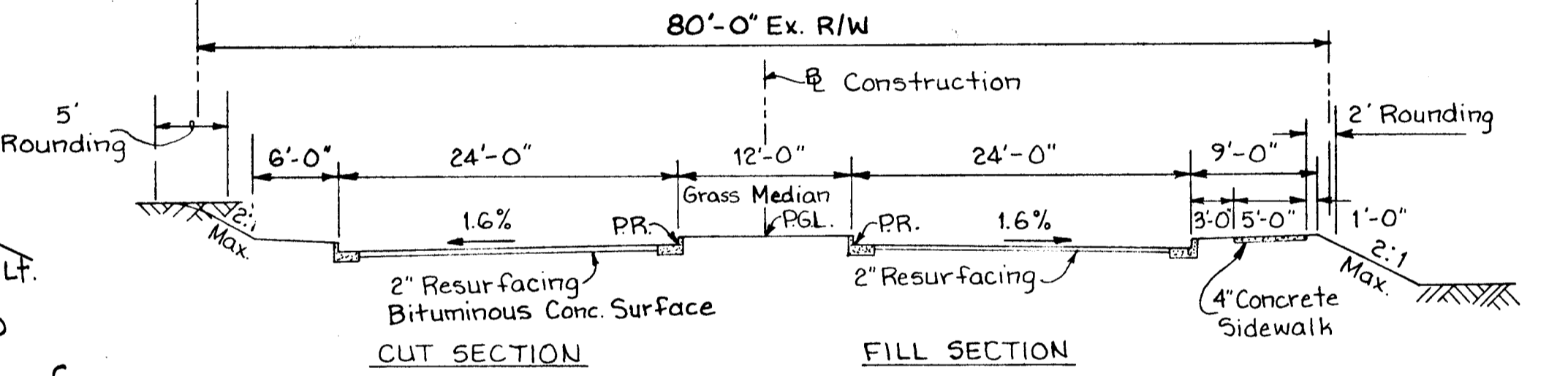
- NOTES:**
- From Sta. 19+12 to Sta. 19+40 the width of each lane is 15'-0". The cross-slope for each lane is -1.6%.
  - From Sta. 19+40 to Sta. 20+15 the width of each lane varies from 15'-0" to 18'-0". The cross-slope for the southbound lane is -1.6% and the cross-slope for the northbound lane is in transition from -1.6% to +0.32%.
  - From Sta. 39+04.84 to Sta. 39+63.50 and from Sta. 40+24 to Sta. 41+76.28 the width of each lane is 18'-0" at a -1.6% cross-slope. From Sta. 39+63.50 to Sta. 40+24, refer to the Little Patuxent Bridge Section.

**TYPICAL NORMAL ROADWAY SECTION**  
 (Sta. 52+95.41 to Sta. 57+45)  
 SCALE: 1" = 5'

**TYPICAL SUPERELEVATED ROADWAY SECTION (CURVE RIGHT)**  
 (Sta. 20+15 to Sta. 24+38.33, Sta. 33+93.92 to Sta. 39+04.84)  
 SCALE: 1" = 5'



Δ From Sta. 40+24 To Sta. 40+99 This Dimension is 0'. Transition From 0' @ 40+99 To 3' @ 41+50.  
 ΔΔ From Sta. 40+24 To Sta. 40+99 This Dimension is 4'. Transition From 4' @ 40+99 To 1' @ 41+50.



**ROADWAY SECTION**  
 STA. 10+60 TO STA. 11+90  
 SCALE: 1" = 10'

**TYPICAL SUPERELEVATED ROADWAY SECTION (CURVE LEFT)**  
 (Sta. 24+38.33 to Sta. 33+93.92, Sta. 41+76.28 to Sta. 52+95.41)  
 SCALE: 1" = 5'

**SILT FENCE PLACEMENT**  
 Bottom Of Fill/Side Ditch

**Curb & Sidewalk Treatment Approaching The I-95 Structure**

Transition the grass strip from 2'-4" at station 12+50 RT to 0 at station 13+30 RT. Maintain 5' sidewalk width. At station 13+00 end the grass strip and extend sidewalk to the back of curb.

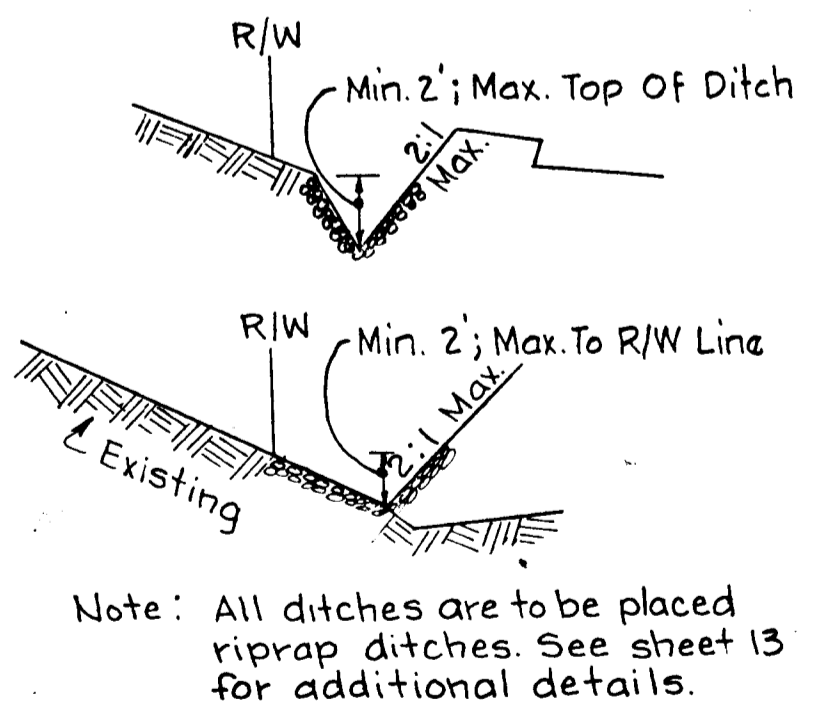
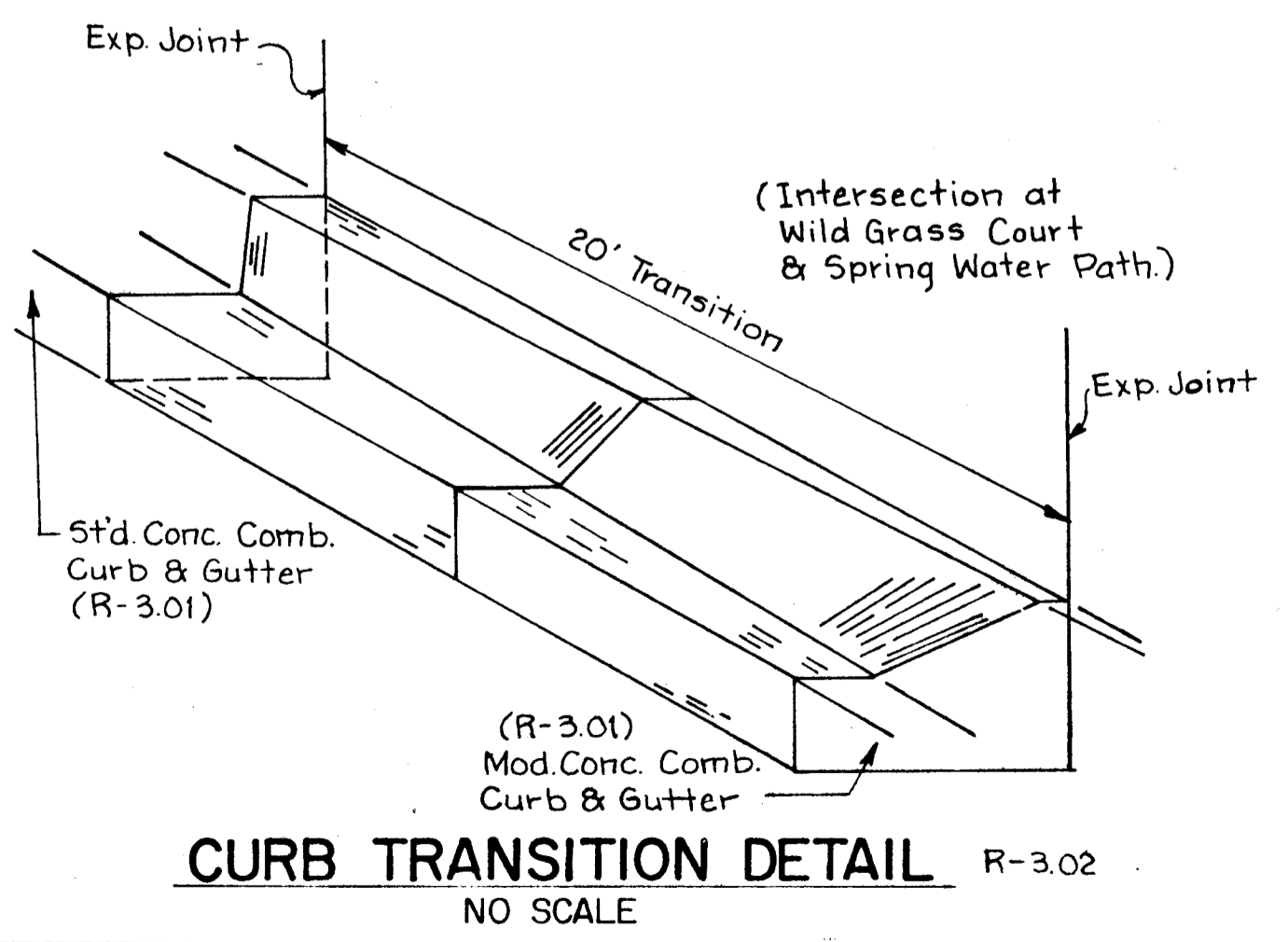
From station 13+45.5 RT to station 13+85± RT (start of bridge wing wall)

- Transition face of curb height from 7 3/4" to 8 3/4"
- Transition sidewalk width from 5' to 4'-5 3/4" (to match width at the wing wall)

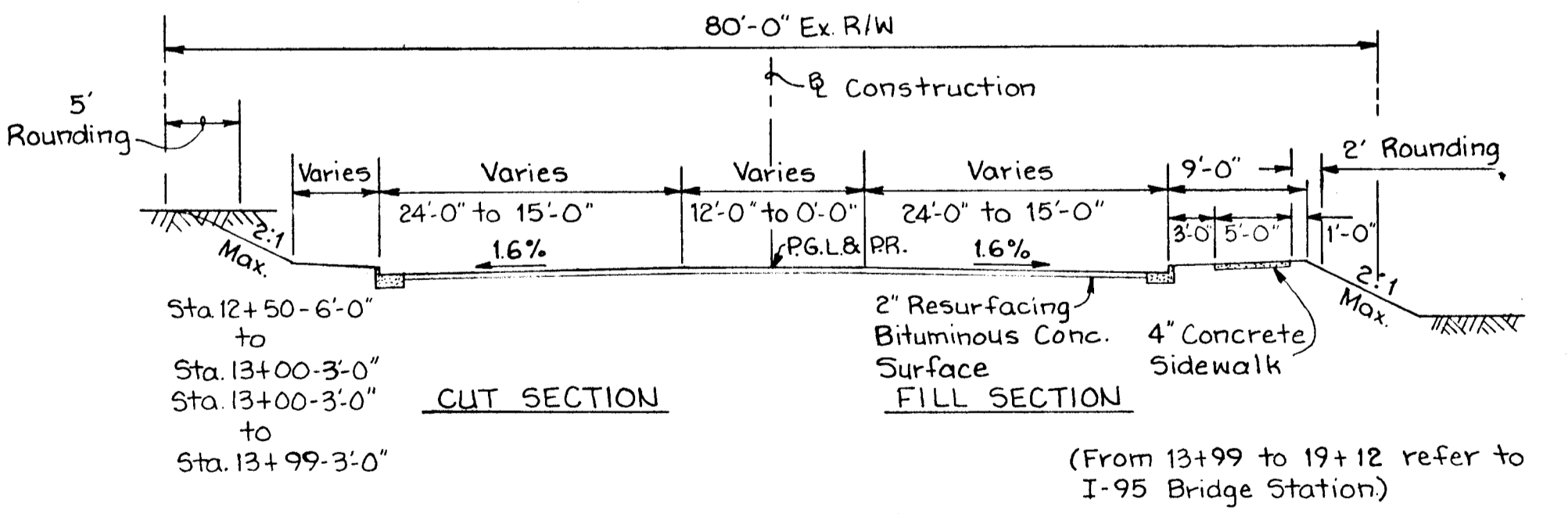
See sidewalk detail for section from the wing wall to expansion joint for the east and west side of structure.

From station 19+55± RT (end of wing wall) to station 19+85 RT

- Transition curb height from 8 3/4" to 7 3/4"
- Transition sidewalk width from 4'-5 3/4" (width at wing wall) to 5'
- Transition grass strip in to normal curb-sidewalk treatment on the typical section.



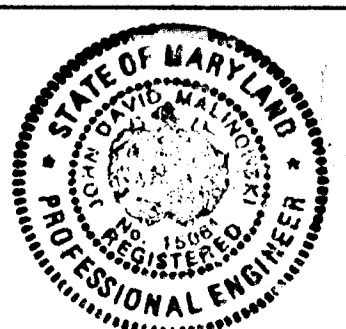
**DITCH SECTIONS**  
 NO SCALE



**ROADWAY SECTION**  
 STA. 11+90 TO STA. 13+99  
 SCALE: 1" = 10'

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

BUCHART-HORN INC.  
 CONSULTING ENGINEERS  
 BALTIMORE, MARYLAND 21210



|             |          |      |                              |
|-------------|----------|------|------------------------------|
| DES: J.D.M. |          |      |                              |
| DRN: E.M.P. |          |      |                              |
| CHK: J.D.M. |          |      |                              |
| DATE: 12/90 |          |      |                              |
| BY: NO.     | REVISION | DATE | 600' SCALE MAP NO. BLOCK NO. |

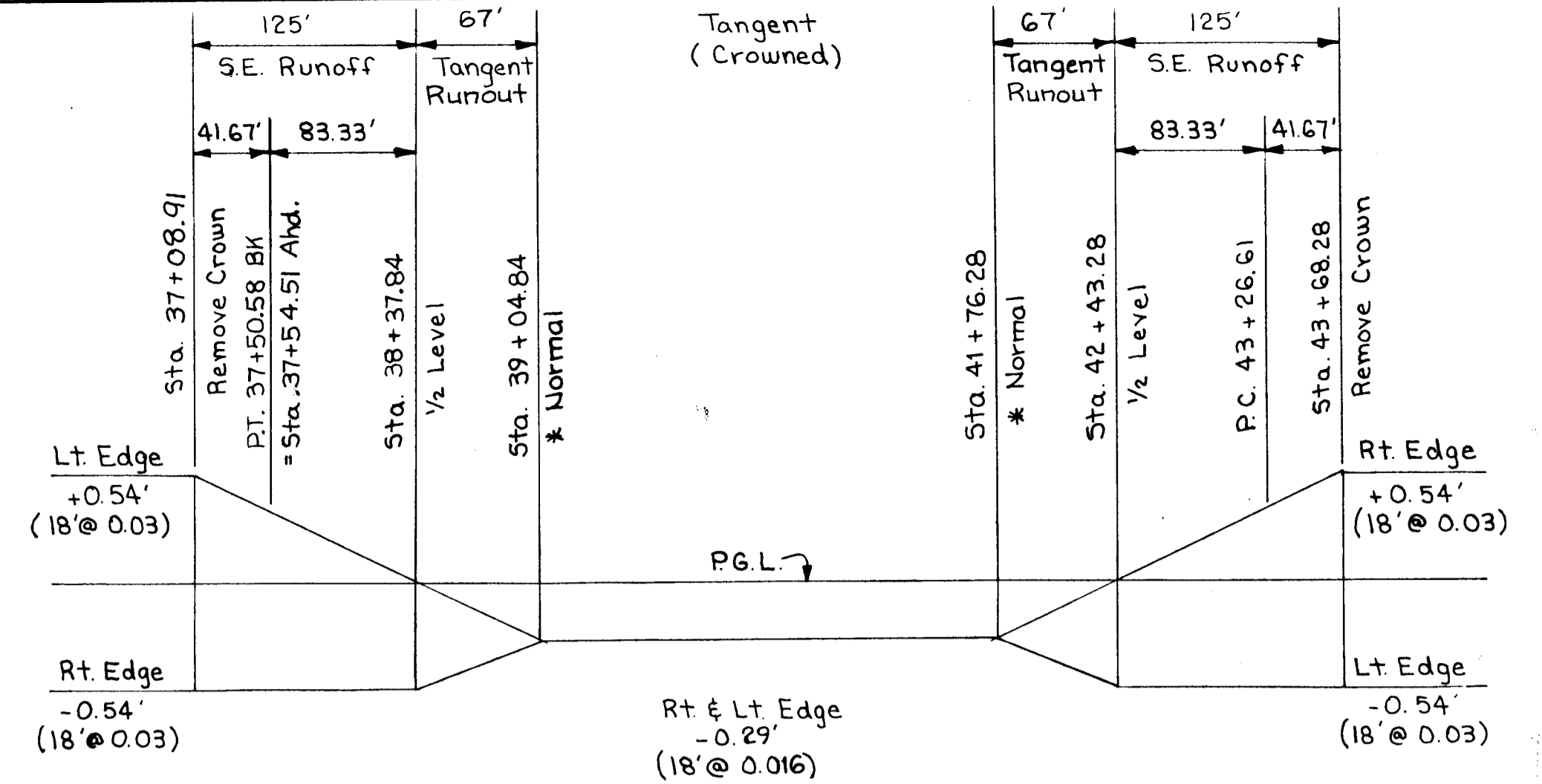
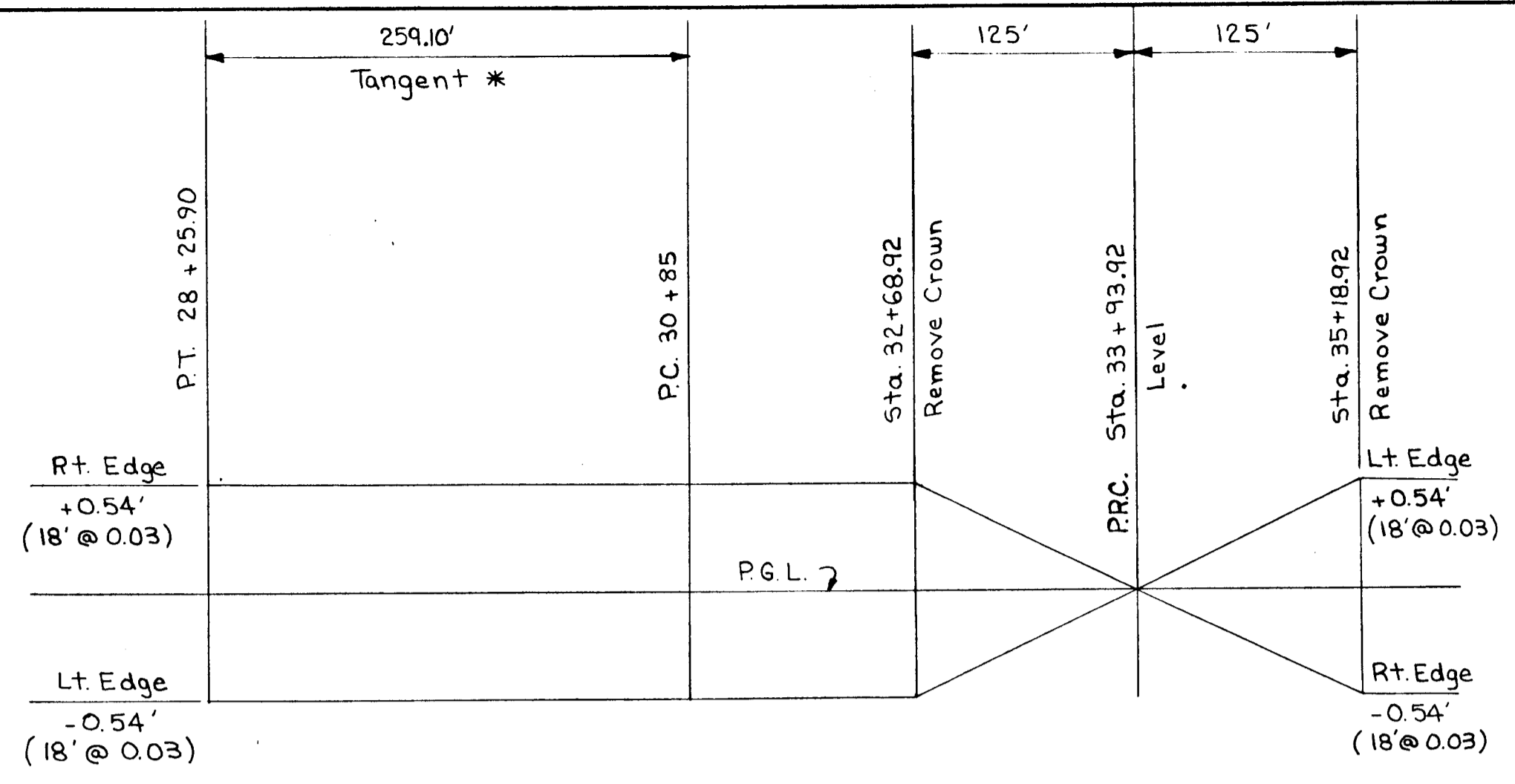
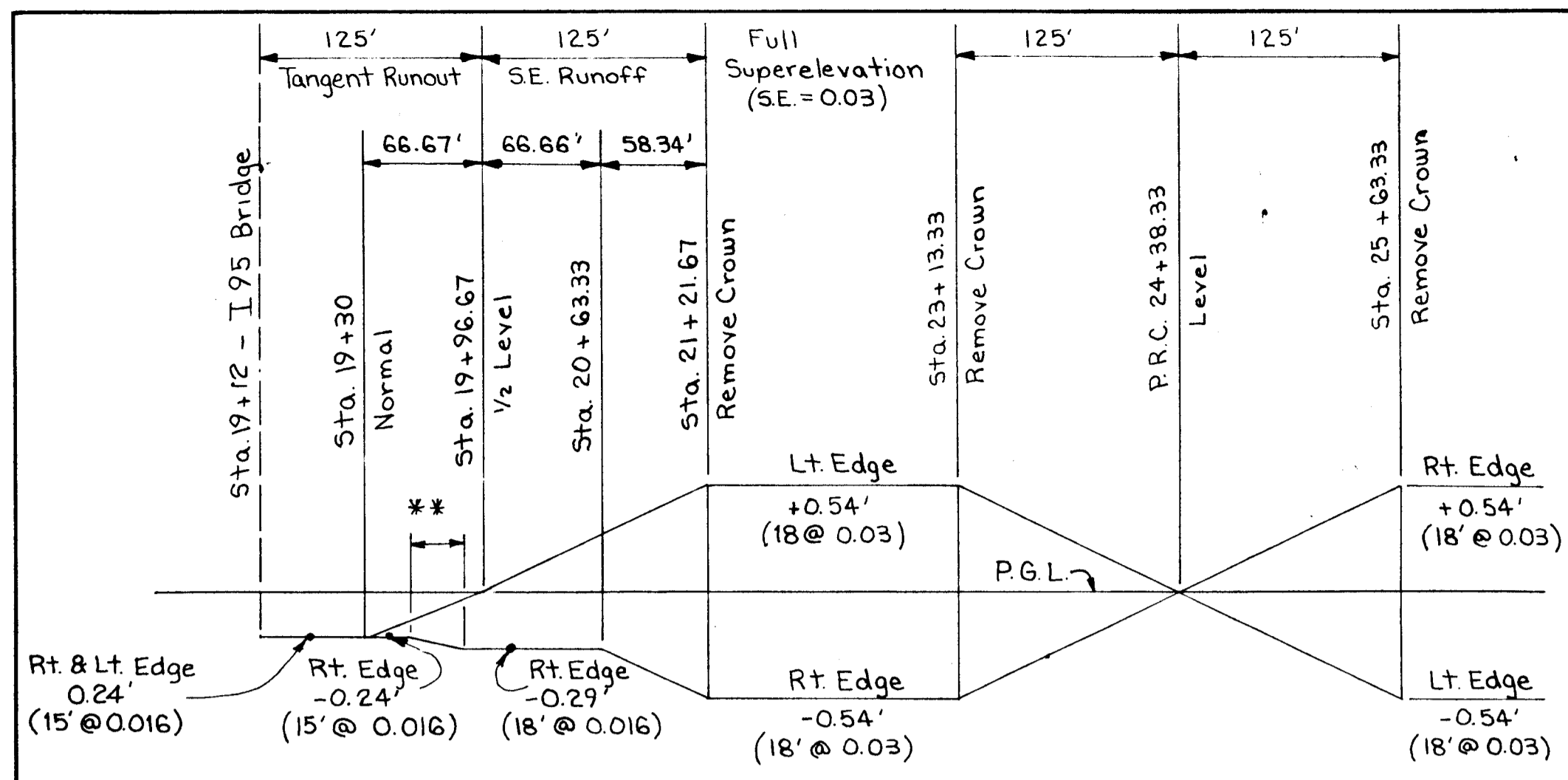
TYPICAL ROADWAY SECTIONS

VOLLMERHAUSEN RD. IMPROVEMENTS  
 WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
 CAPITAL PROJECT J-4046  
 FLECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 2 OF 40

16091

BRUNING 44-132 69150



| LEFT              |                 | Construction Station | RIGHT           |                   | Remarks       |
|-------------------|-----------------|----------------------|-----------------|-------------------|---------------|
| Edge Road 18' Lt. | X-Slope Ft./Ft. |                      | X-Slope Ft./Ft. | Edge Road 18' Rt. |               |
| * -0.24' (15.00)  | -0.0160         | 19+30                | -0.0160         | * -0.24' (15.00)  | Normal        |
| * -0.17' (15.40)  | -0.0112         | +50                  | -0.0160         | * -0.24' (15.00)  |               |
| * -0 (17.27)      | 0               | +96.67               | -0.0160         | -0.29'            | 1/2 Level     |
| * +0.01' (17.40)  | +0.0008         | 20+00                | -0.0160         | -0.29'            |               |
| +0.23'            | +0.0128         | +50                  | -0.0160         | -0.29'            |               |
| +0.29'            | +0.0160         | +63.33               | -0.0160         | -0.29'            | Even X-Slopes |
| +0.36'            | +0.0200         | +80                  | -0.0200         | -0.36'            | P.C.          |
| +0.45'            | +0.0248         | 21+00                | -0.0248         | -0.45'            |               |
| +0.54'            | +0.0300         | +21.67               | -0.0300         | -0.54'            | Crown Removed |
| +0.54'            | +0.0300         | 23+13.33             | -0.0300         | -0.54'            | Crown Removed |
| +0.38'            | +0.0212         | +50                  | -0.0212         | -0.38'            |               |
| +0.17'            | +0.0092         | 24+00                | -0.0092         | -0.17'            |               |
| +0                | 0               | +38.33               | 0               | -0                | P.R.C. Level  |
| -0.05'            | -0.0028         | +50                  | +0.0028         | +0.05'            |               |
| -0.27'            | -0.0148         | 25+00                | +0.0148         | +0.27'            |               |
| -0.48'            | -0.0268         | +50                  | +0.0268         | +0.48'            |               |
| -0.56'            | -0.0300         | +63.33               | +0.0300         | +0.56'            | Crown Removed |

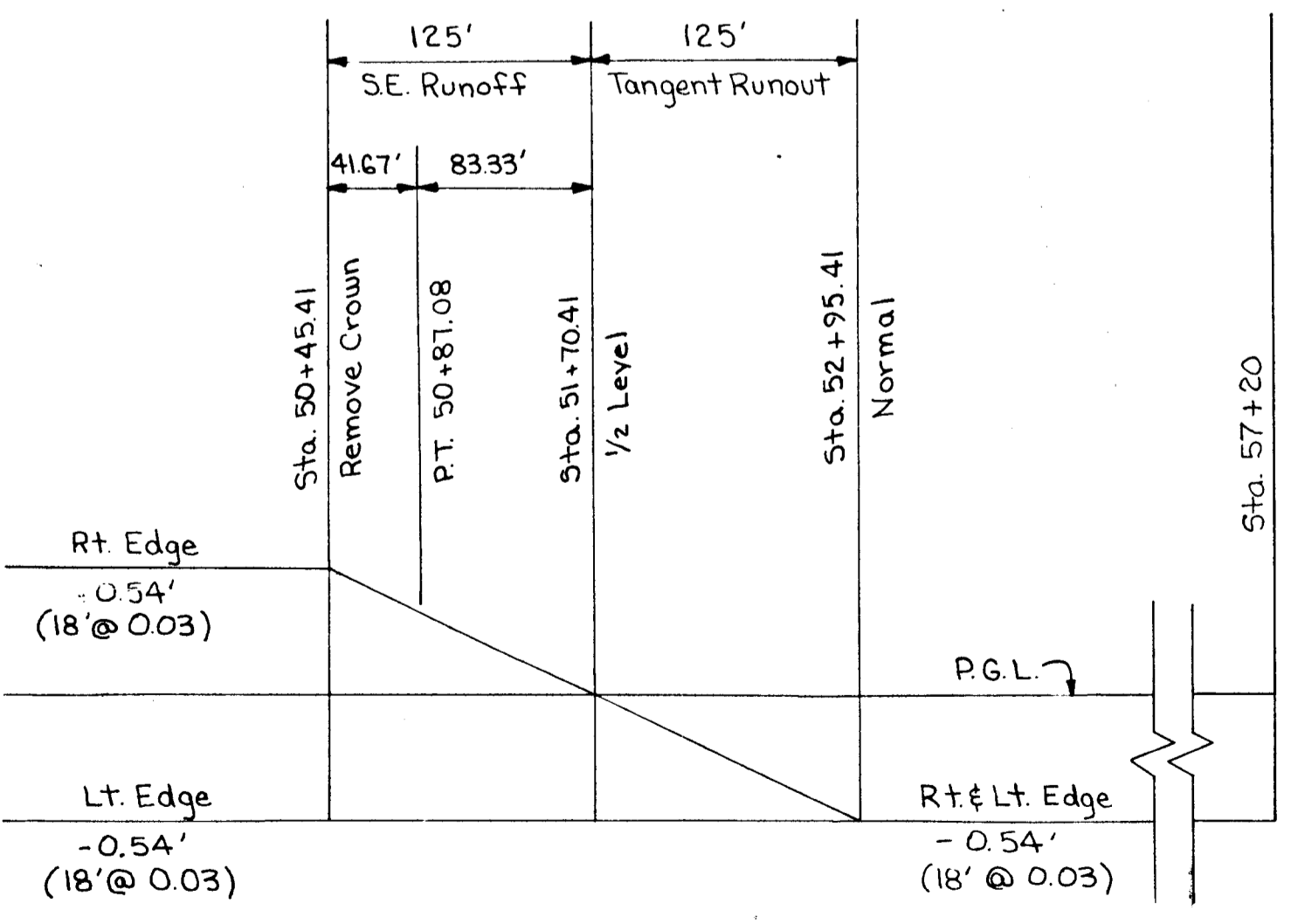
| LEFT              |                 | Construction Station | RIGHT           |                   | Remarks       |
|-------------------|-----------------|----------------------|-----------------|-------------------|---------------|
| Edge Road 18' Lt. | X-Slope Ft./Ft. |                      | X-Slope Ft./Ft. | Edge Road 18' Rt. |               |
| -0.54'            | -0.0300         | 32+68.92             | +0.0300         | +0.54'            | Crown Removed |
| -0.41'            | -0.0225         | 33+00                | +0.0225         | +0.41'            |               |
| -0.19'            | -0.0105         | +50                  | +0.0105         | +0.19'            |               |
| -0                | 0               | +93.92               | 0               | +0                | P.R.C. LEVEL  |
| +0.03'            | 0.0015          | 34+00                | -0.0015         | +0.03'            |               |
| +0.24'            | +0.0135         | +50                  | -0.0135         | -0.24'            |               |
| +0.46'            | +0.0255         | 35+00                | -0.0255         | -0.46'            |               |
| +0.54'            | +0.0300         | +18.92               | -0.0300         | -0.54'            | Crown Removed |

| LEFT              |                 | Construction Station  | RIGHT           |                   | Remarks       |
|-------------------|-----------------|-----------------------|-----------------|-------------------|---------------|
| Edge Road 18' Lt. | X-Slope Ft./Ft. |                       | X-Slope Ft./Ft. | Edge Road 18' Rt. |               |
| +0.54'            | +0.0300         | 37+08.91              | -0.0300         | -0.54'            | Crown Removed |
| +0.36'            | +0.0201         | +50                   | -0.0300         | -0.54'            |               |
| +0.36'            | +0.0200         | +50.58 BK = 54.51 AHD | -0.0300         | -0.54'            | P.T.          |
| +0.16'            | +0.0091         | 38+00                 | -0.0300         | -0.54'            |               |
| +0                | 0               | +37.84                | -0.0300         | -0.54'            | 1/2 Level     |
| -0.05'            | -0.0029         | +50                   | -0.0275         | -0.49'            |               |
| -0.27'            | -0.0149         | 39+00                 | -0.0170         | -0.31'            |               |
| -0.29'            | -0.0160         | +04.84                | -0.0160         | -0.29'            | Normal        |
| -0.29'            | -0.0160         | 41+76.28              | -0.0160         | -0.29'            | Normal        |
| -0.38'            | -0.0210         | 42+00                 | -0.0104         | -0.19'            |               |
| -0.54'            | -0.0300         | +43.28                | 0               | -0                | 1/2 Level     |
| -0.54'            | -0.0300         | +50                   | +0.0016         | +0.03'            |               |
| -0.54'            | -0.0300         | 43+00                 | +0.0136         | +0.24'            |               |
| -0.54'            | -0.0300         | +26.61                | +0.0200         | +0.36'            | P.C.          |
| -0.54'            | -0.0300         | +50                   | +0.0256         | +0.46'            |               |
| -0.54'            | -0.0300         | +68.28                | +0.0300         | +0.54'            | Crown Removed |

\* "Crown Removed" Section To Be Retained Thru Tangent Area Between Curves In Same Direction - Tangent Length Is Too Short To Accomodate Required Transition Length.

\* Crowned Section With -0.016% Cross-Slope.

\* Actual Road Width in Parentheses From Sta 19+40, Lt to Sta 20+15, Lt Vollmerhausen Road Widens From 15'-0" to 18'-0" At A 25:1 Taper. Taper Length is 75'-0"  
 \*\* From Sta. 19+55, Rt to Sta 19+85, Rt, Vollmerhausen Road Widens From 15'-0" to 18'-0" At A 10:1 Taper. Taper Length is 30'-0"



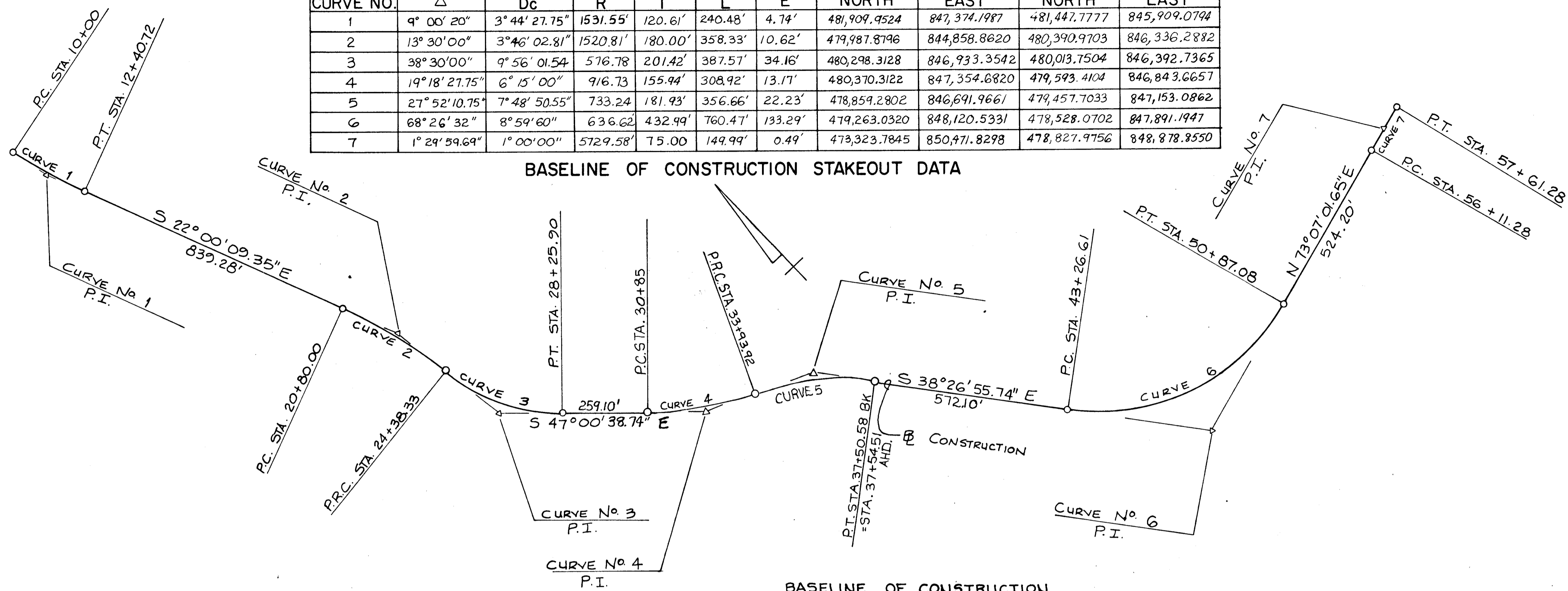
| LEFT              |                 | Construction Station | RIGHT           |                   | Remarks       |
|-------------------|-----------------|----------------------|-----------------|-------------------|---------------|
| Edge Road 18' Lt. | X-Slope Ft./Ft. |                      | X-Slope Ft./Ft. | Edge Road 18' Rt. |               |
| -0.54'            | -0.0300         | 50+45.41             | +0.0300         | +0.54'            | Crown Removed |
| -0.54'            | -0.0300         | +50                  | +0.0289         | +0.52'            |               |
| -0.54'            | -0.0300         | +87.08               | +0.0200         | +0.36'            | P.T.          |
| -0.54'            | -0.0300         | 51+00                | +0.0169         | +0.30'            |               |
| -0.54'            | -0.0300         | +50                  | +0.0049         | +0.09'            |               |
| -0.54'            | -0.0300         | +70.41               | 0               | +0                | 1/2 Level     |
| -0.54'            | -0.0300         | 52+00                | -0.0071         | -0.13'            |               |
| -0.54'            | -0.0300         | +50                  | -0.0191         | -0.34'            |               |
| -0.54'            | -0.0300         | +95.41               | -0.0300         | -0.54'            | Normal        |

1606

|   |  |  |  |  |  |                                    |  |  |  |                               |
|---|--|--|--|--|--|------------------------------------|--|--|--|-------------------------------|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>DATE: 11/19<br>DATE: 11/19 |  | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>BALTIMORE, MARYLAND 21210 |  | DES: J.D.M.<br>DRN: L.M.T.<br>CHK: E.M.P.<br>DATE: 12-90 |  | SUPERELEVATION TRANSITION DIAGRAMS |  | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND |  | NOT TO SCALE<br>SHEET 3 OF 40 |
|---|--|--|--|--|--|------------------------------------|--|--|--|-------------------------------|

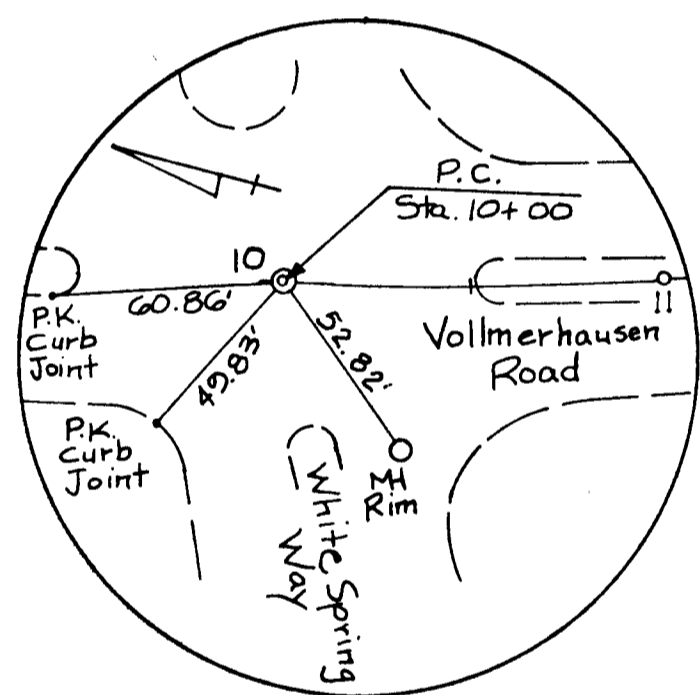
| CURVE NO. | Δ              | Dc            | R        | T       | L       | E       | CENTER CURVE COORDINATES |              | P.I. COORDINATES |              |
|-----------|----------------|---------------|----------|---------|---------|---------|--------------------------|--------------|------------------|--------------|
|           |                |               |          |         |         |         | NORTH                    | EAST         | NORTH            | EAST         |
| 1         | 9° 00' 20"     | 3° 44' 27.75" | 1531.55' | 120.61' | 240.48' | 4.74'   | 481,909.9524             | 847,374.1987 | 481,447.7777     | 845,909.0794 |
| 2         | 13° 30' 00"    | 3° 46' 02.81" | 1520.81' | 180.00' | 358.33' | 10.62'  | 479,987.8796             | 844,858.8620 | 480,390.9703     | 846,336.2882 |
| 3         | 38° 30' 00"    | 9° 56' 01.54" | 576.78'  | 201.42' | 387.57' | 34.16'  | 480,298.3128             | 846,933.3542 | 480,013.7504     | 846,392.7365 |
| 4         | 19° 18' 27.75" | 6° 15' 00"    | 916.73'  | 155.94' | 308.92' | 13.17'  | 480,370.3122             | 847,354.8820 | 479,593.4104     | 846,843.6657 |
| 5         | 27° 52' 10.75" | 7° 48' 50.55" | 733.24'  | 181.93' | 356.66' | 22.23'  | 478,859.2802             | 846,691.9661 | 479,457.7033     | 847,153.0862 |
| 6         | 68° 26' 32"    | 8° 59' 60"    | 636.62'  | 432.99' | 760.47' | 133.29' | 479,263.0320             | 848,120.5331 | 478,528.0702     | 847,891.1947 |
| 7         | 1° 29' 59.69"  | 1° 00' 00"    | 5729.58' | 75.00'  | 149.99' | 0.49'   | 473,323.7845             | 850,471.8278 | 478,821.9756     | 848,878.8550 |

BASELINE OF CONSTRUCTION STAKEOUT DATA

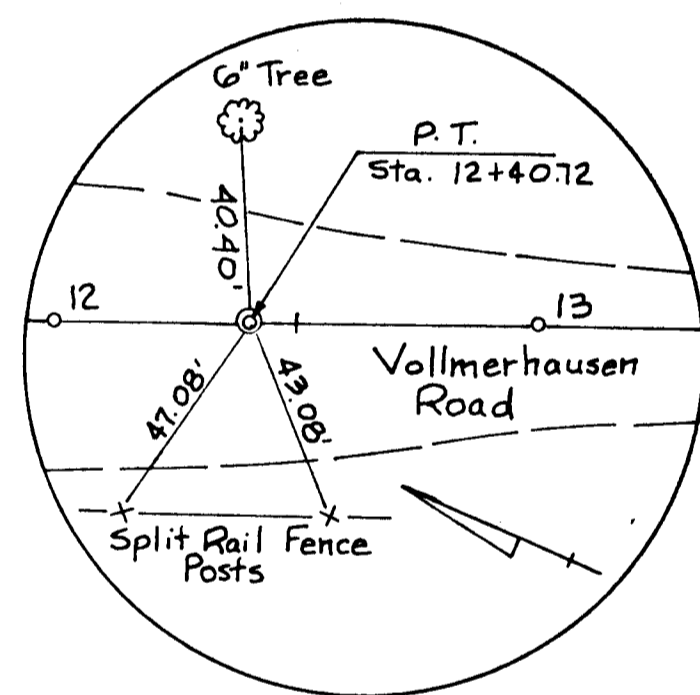


BASELINE OF CONSTRUCTION

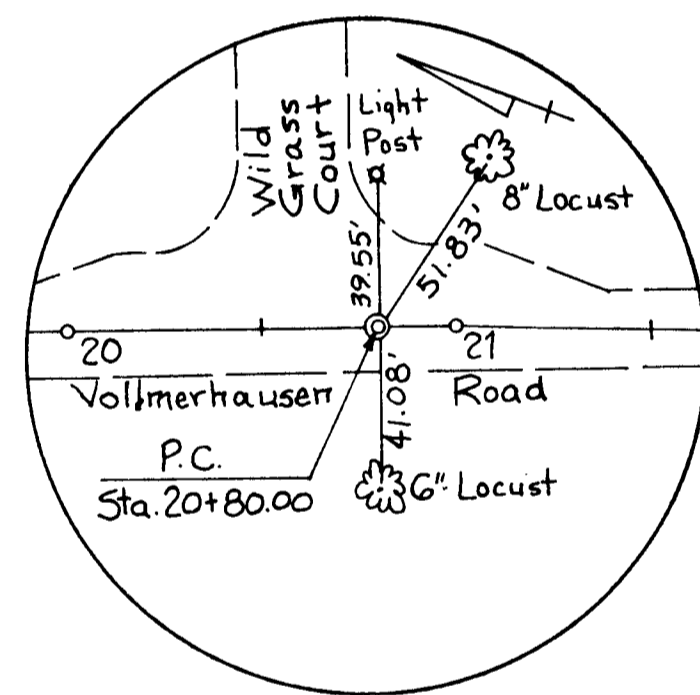
Scale: 1" = 200'



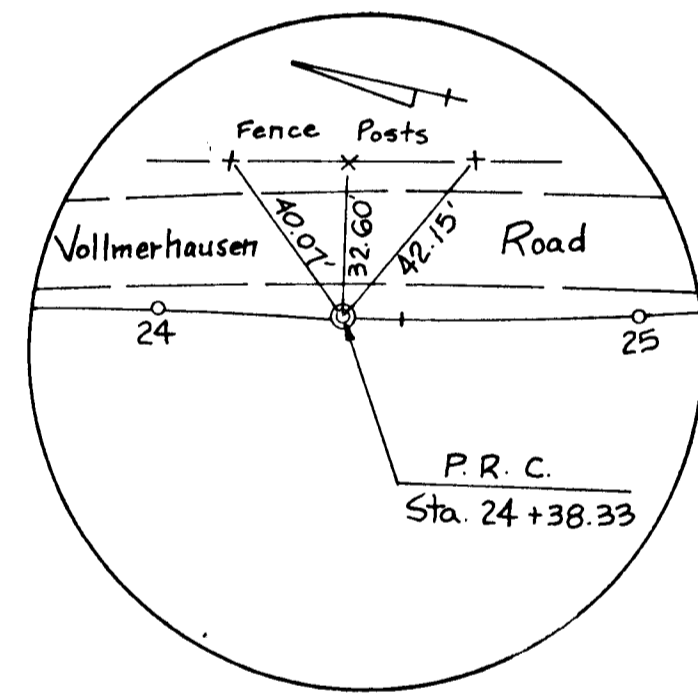
PC. STA. 10+00  
Scale: 1" = 50'  
N 481,565.2940  
E 845,881.9374



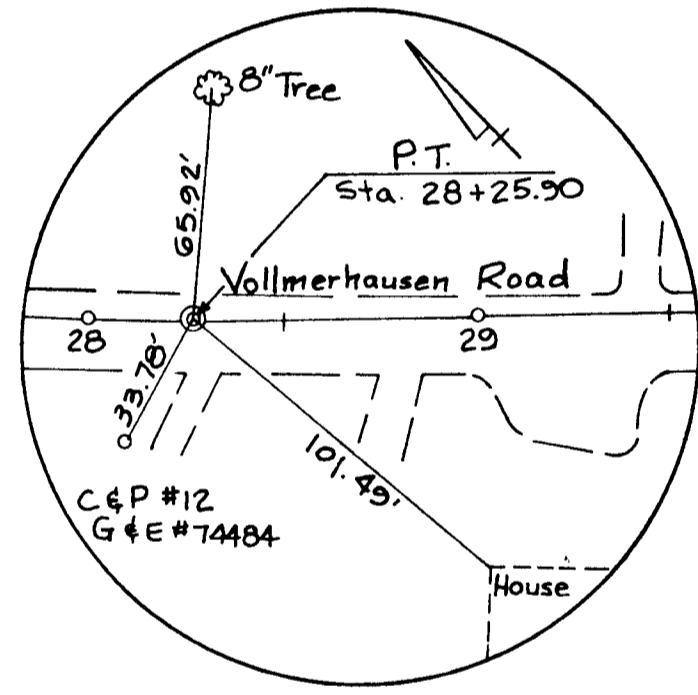
P.T. STA. 12+40.72  
Scale: 1" = 40'  
N 481,335.9585  
E 845,954.2817



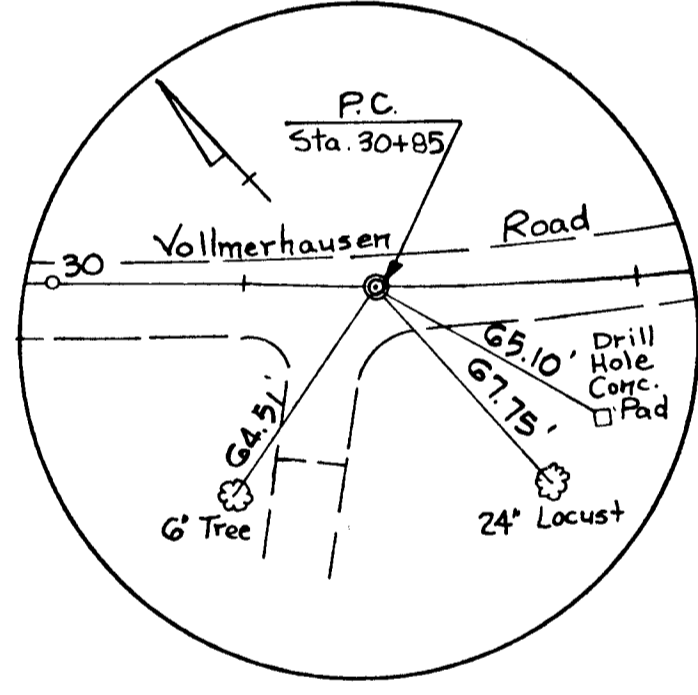
PC. STA. 20+80.00  
Scale: 1" = 50'  
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E 846,268.8276



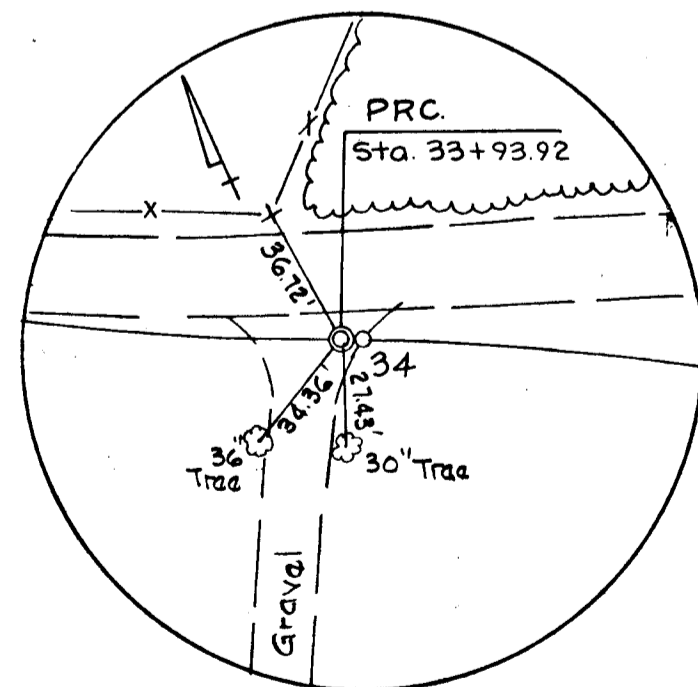
P.R.C. STA. 24+38.33  
Scale: 1" = 40'  
N 480,212.9524  
E 846,362.9273



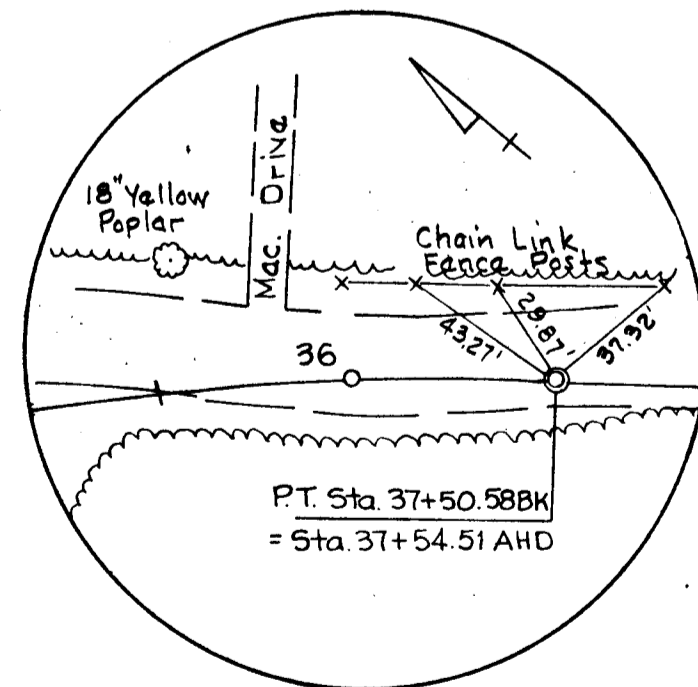
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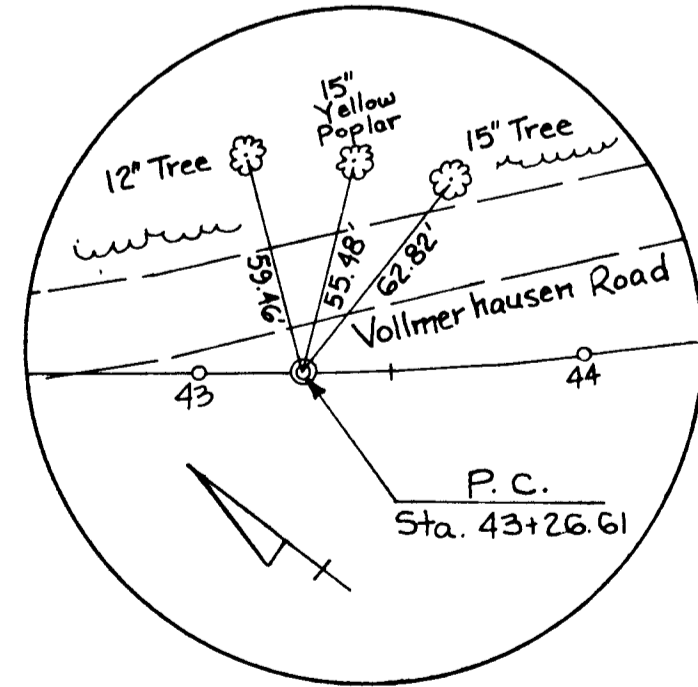
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E 846,729.5985



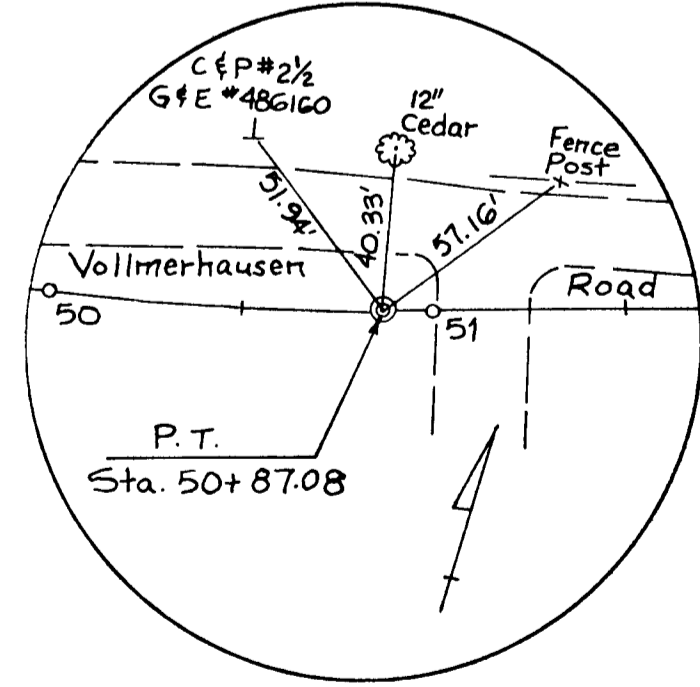
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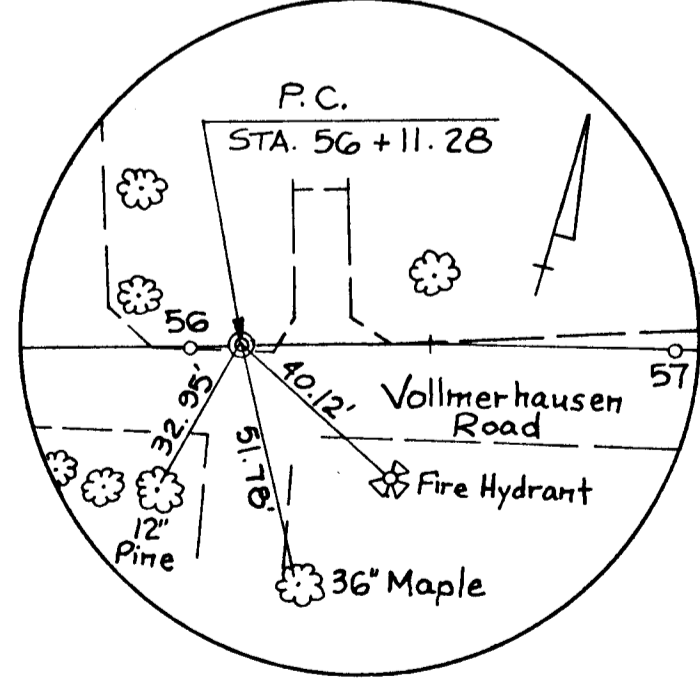
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- STA. 37+54.51 AHD.  
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E 847,266.2142



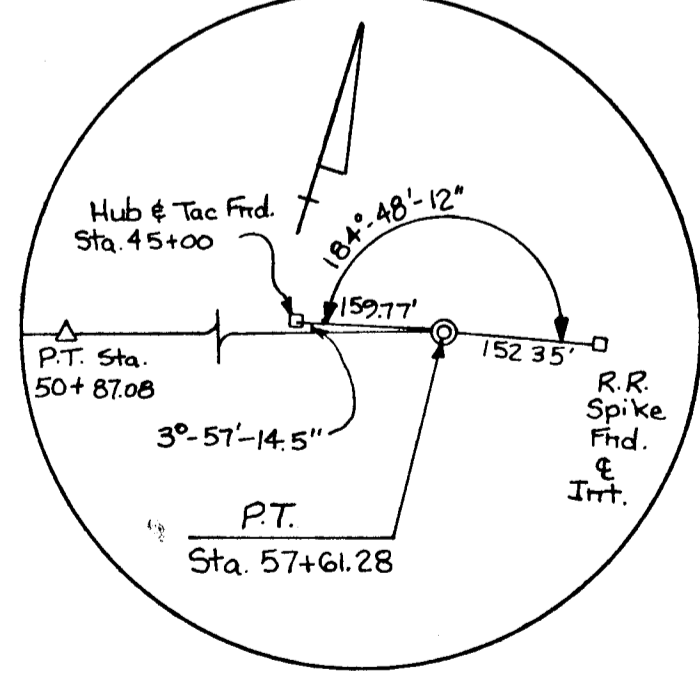
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E 847,621.9552



P.T. STA. 50+87.08  
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PC. STA. 56+11.28  
Scale: 1" = 40'  
N 478,806.1842  
E 848,807.0906

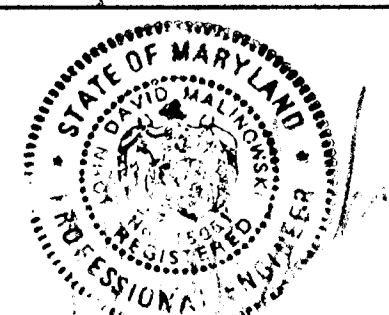


P.T. STA. 57+61.28  
Scale: 1" = 200'  
N 478,847.8810  
E 848,951.1653

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James J. ...*  
DIRECTOR OF PUBLIC WORKS  
*Michael D. ...*  
CHIEF, BUREAU OF ENGINEERING  
*Elizabeth Anderson ...*  
CHIEF, BUREAU OF HIGHWAYS

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



|             |    |     |          |
|-------------|----|-----|----------|
| DES: J.D.M. |    |     |          |
| DRN: L.M.T. |    |     |          |
| CHK: J.D.M. |    |     |          |
| DATE: 12/90 | BY | NO. | REVISION |

HORIZONTAL CONTROLS

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

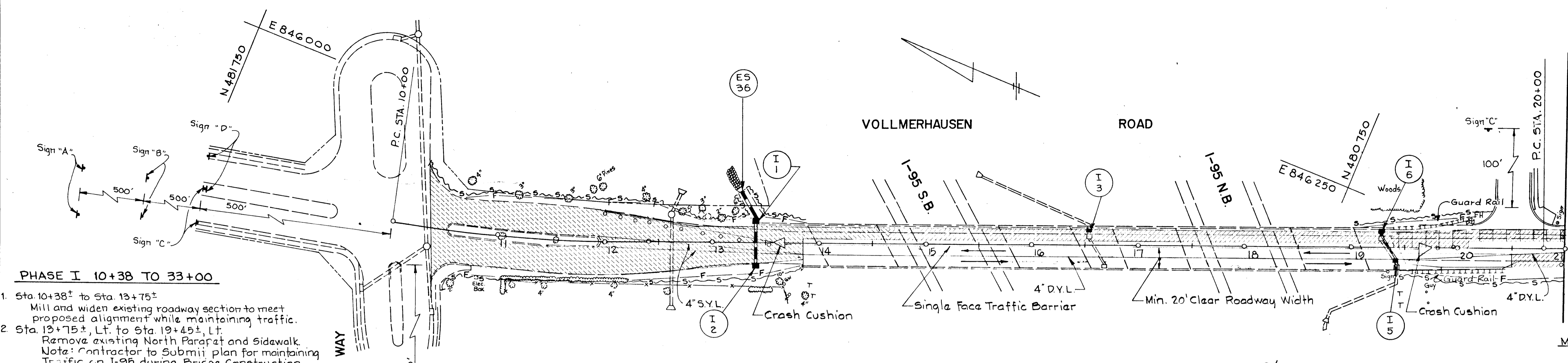
VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 4 OF 40

1606

BRUNING 44-132 691-50

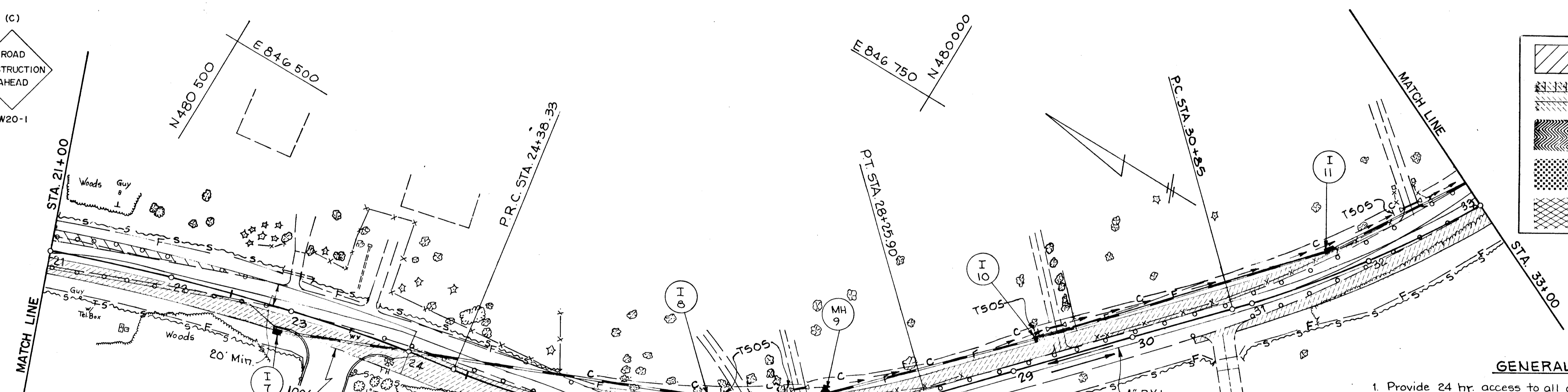
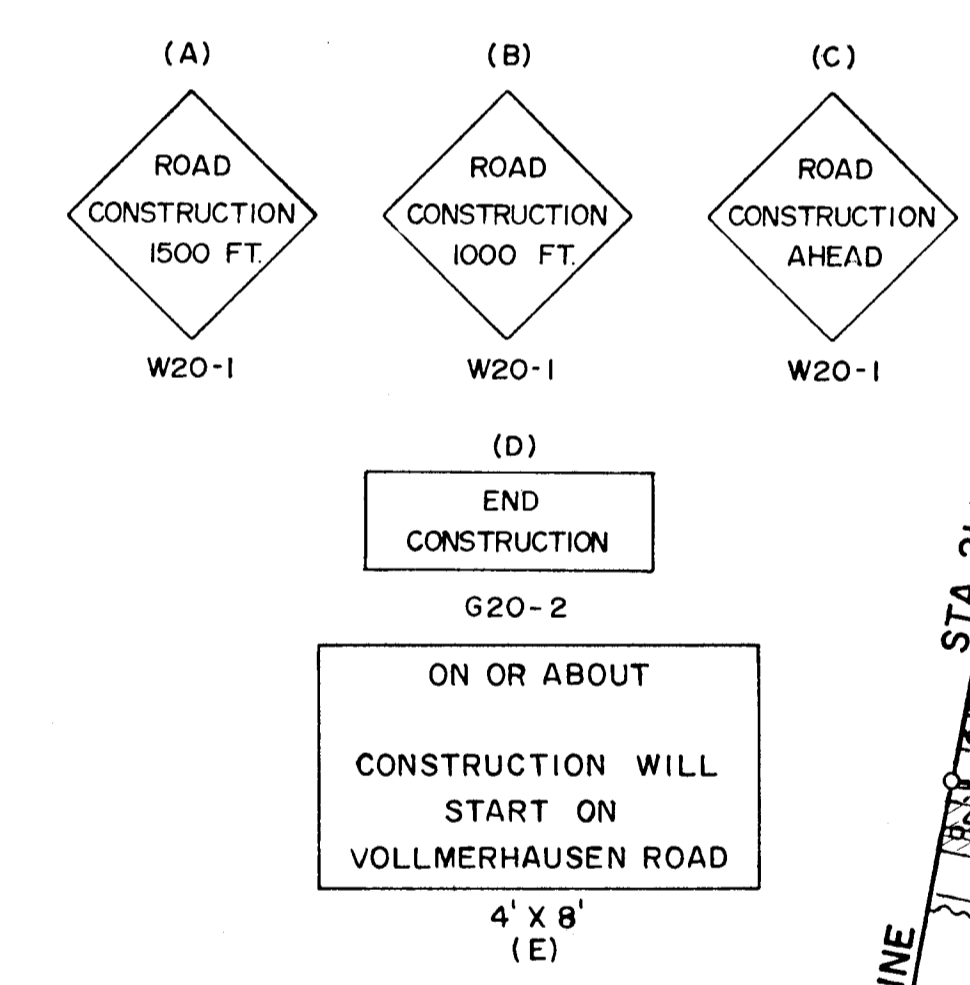
- SOIL EROSION CONTROL**
- PHASE I 10+38 TO 33+00
- 1) Obtain Grading and DOE Permits for the entire project.
  - 2) Install temporary sediment and erosion control devices as follows:
    - A) 10+38 RT & LT to 14+00 RT & LT  
Install silt fence as shown
    - B) 19+00 RT & LT to 24+00 RT & LT  
Install silt fence as shown
    - C) 24+00 RT to 33+00 RT  
Install silt fence as shown
    - D) 24+00 LT to 33+00 LT  
Construct new placed riprap ditch.  
Install straw temporary stone outlet structure (TSOS) upstream of driveway culverts.  
Remove TSOS when ditch is permanently stabilized.
  - 3) Install Permanent Vegetative Stabilization per notes on Sheet No. 14



- PHASE I 10+38 TO 33+00**
1. Sta. 10+38± to Sta. 13+75±  
Mill and widen existing roadway section to meet proposed alignment while maintaining traffic.
  2. Sta. 13+75±, Lt. to Sta. 19+45±, Lt.  
Remove existing North Parapet and Sidewalk. Note: Contractor to Submit plan for maintaining Traffic on I-95 during Bridge Construction.
  3. Sta. 2+00±, Lt. to Sta. 22+05±, Lt.  
Construct temporary pavement section from 8' to 2' wide.
  4. Sta. 24+00± to Sta. 25+15± Right.  
Construct min. 22' of new pavement section.
  5. Sta. 25+15± Rt. to Sta. 26+20± Rt. & 25+50 Lt.± to 26+20± Lt.  
Construct new pavement section from new curb line to existing pavement edge.
  6. Sta. 26+20± Lt. to Sta. 30+30± Lt.  
Construct min. 12' of new pavement section.
  7. Sta. 30+30± Lt. & Rt. to 32+10± Lt. & Rt.  
Construct new pavement section from new curb line to existing pavement edge.
  8. Sta. 32+10± Rt. to Sta. 33+00 Rt.  
Construct min. 16' width of new pavement section.

- GENERAL SEQUENCE OF CONSTRUCTION**
- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
  - 2) CONSTRUCT COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE GRADING OF SITE.
  - 3) INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
  - 4) PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
  - 5) PROCEED WITH CONSTRUCTION.

- MAINTENANCE OF TRAFFIC**
- LEDGER**
- Temporary Concrete Traffic Barrier Single or Double Faced
  - D.Y.L. Double Yellow Line
  - Temporary Crash Cushions (Sand Containers)
  - Plastic Drums
  - Direction of Traffic



- PHASE IA 19+00 TO 24+00**
- Divert Traffic to Left side of Roadway using temporary pavement to provide min. 20' Roadway.
1. Sta. 20+50±, Rt. to Sta. 22+90±, Rt. Construct min. of 13' to 14' of new pavement.
  2. Sta. 22+90±, Rt. to Sta. 24+00, Rt. Construct min. of 14' to 22' of new pavement and new connection to Spring Water Path.
- PHASE IB 19+45 TO 22+90**
- Divert Traffic to Right side of Roadway Completed under Phase IA and Maintain min 20' Roadway.
1. Sta. 19+45±, Lt. to Sta. 20+10±, Lt. Construct min. 16' of new pavement.
  2. Sta. 20+10±, Lt. to Sta. 21+00±, Lt. Construct min. 12' of new pavement and new connection to Wild Grass Court.

11. Erosion and Sediment Control must be phased and maintained so as to meet minimum criteria as specified within the 1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Any unforeseen field conditions must be remedied immediately by the contractor As directed by the Engineer.
12. All barrels will be located 25' apart with steady burn lights and have a 4" white or yellow line in front of them.
13. All temporary precast traffic barrier shall have a 4" white or yellow line placed in front of it.
14. The contractor shall square off all pavement transition to obtain the most efficient pavement construction.

- GENERAL NOTES**
1. Provide 24 hr. access to all driveways.
  2. During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
  3. During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
  4. All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
  5. All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to the engineer showing when each is to be installed.
  6. All work off the Roadway, i.e. driveways, sidewalk, cut and fill slope, etc. shall be done in the same phase that the curb work is done.
  7. All traffic control devices shall meet and be placed in accordance with the current MUTCD requirement.

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

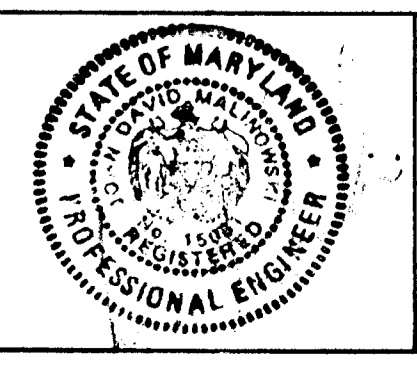
*James P. White* 11/19/91  
DIRECTOR OF PUBLIC WORKS DATE

*Richard B. Ray* 11/19/91  
CHIEF, BUREAU OF ENGINEERING DATE

*Elizabeth Redman Calver* 11/19/91  
CHIEF, ROADS, BRIDGES AND STORM DRAINAGE DIVISION DATE

*Dr. Wallace W. Heiland* 11/19/91  
CHIEF, BUREAU OF HIGHWAYS DATE

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



|             |    |     |          |
|-------------|----|-----|----------|
| DES: J.D.M. |    |     |          |
| DRN: L.M.T. |    |     |          |
| CHK: E.M.P. |    |     |          |
| DATE: 12/90 | BY | NO. | REVISION |

MAINTENANCE OF TRAFFIC /  
SEDIMENT AND EROSION CONTROL  
PHASE I

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD

CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE 1" = 50'

SHEET 2 OF 40

**PHASE I 33+00 TO END**

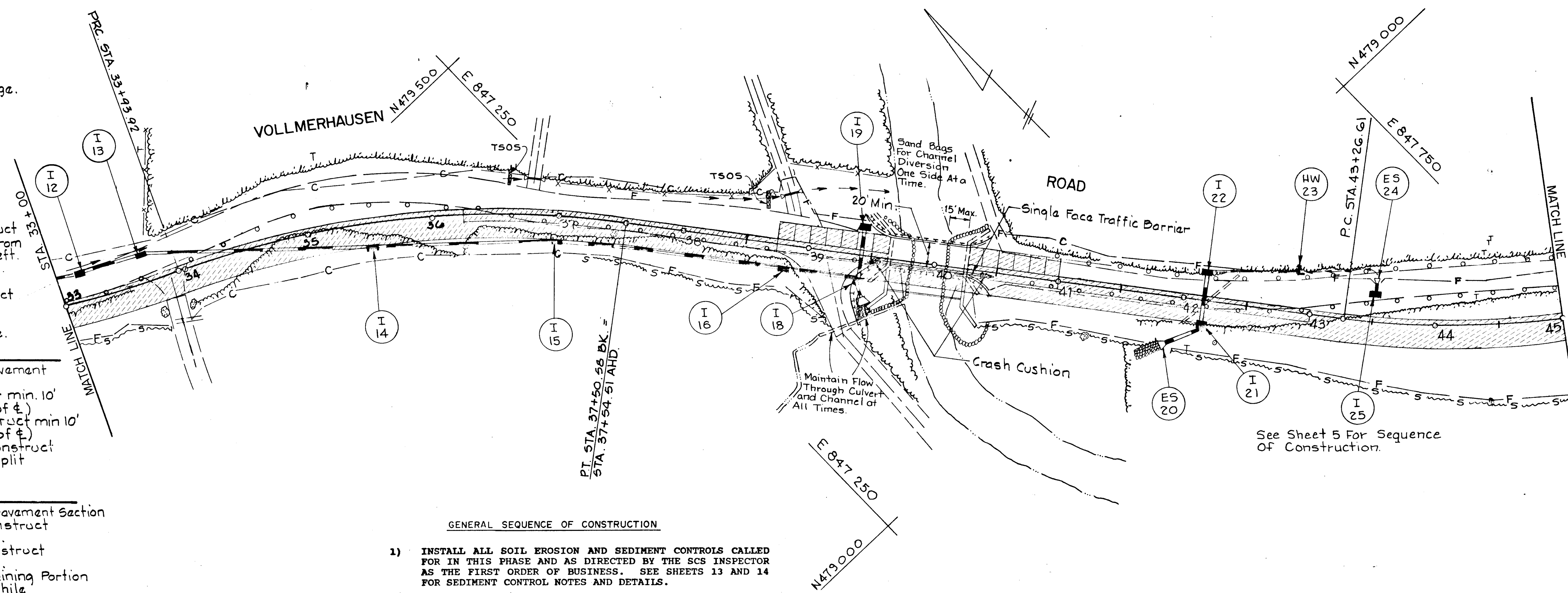
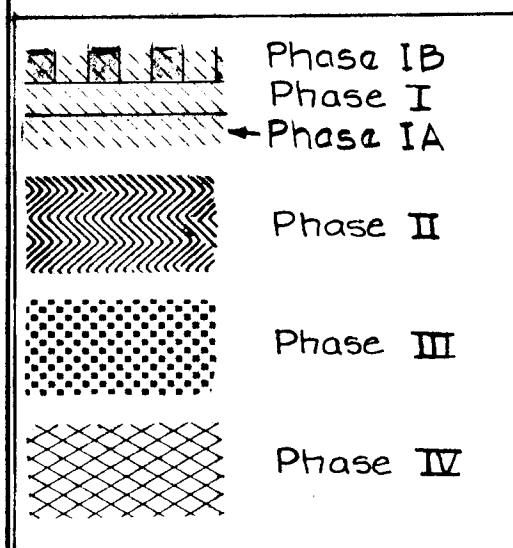
- Sta. 33+00, Rt. to Sta. 36+25±, Rt. Construct min. 22' Width of new pavement.
- Sta. 36+25±, Rt. to Sta. 39+63±, Rt. Construct min. 12' Width of new pavement.
- Sta. 39+63±, Rt. to Sta. 40+24±, Rt. Widen Little Patuxent River Bridge.
- Sta. 40+24±, Rt. to Sta. 43+00±, Rt. Construct min. 12' of new pavement Section.
- Sta. 43+00± to Sta. 52+00±, Rt. Construct min. 22' of new pavement section.
- Sta. 52+00±, Rt. to Sta. 54+70±, Rt. Construct new pavement Width. Varies min. from Edge of Existing pavement to the Right.
- Sta. 53+75±, Lt. to Sta. 57+00 construct new pavement Width. Varies min. from Edge of Existing pavement to the Left.
- Sta. 57+00±, Lt. to End. Construct min. 14' Width of new pavement.
- Sta. 53+00±, Lt. to Sta. 53+75±. Construct Temporary pavement wedge.
- Sta. 54+70±, Rt. to Sta. 55+75±, Rt. Construct Temporary pavement wedge.

**PHASE IA 38+75 TO END**

- Divert East Bound traffic onto new pavement Section
- Sta. 36+25± to Sta. 39+63±. Construct min. 10' Width of pavement. (4' Rt. & Lt. of E.)
  - Sta. 40+24±, Rt. to Sta. 43+00, Rt. Construct min 10' Width of pavement. (4' Rt. & Lt. of E.)
  - Sta. 53+00± Middle to End Middle. Construct new pavement while traffic is split Maintaining two 10' Lanes min.

**PHASE IB 38+75 TO END**

- Divert West Bound traffic onto new pavement Section
- Sta. 38+75±, Lt. to Sta. 39+63±, Lt. Construct Remaining Portion of Roadway.
  - Sta. 40+24±, Lt. to Sta. 41+00±, Lt. Construct Remaining Portion of Roadway.
  - Sta. 53+00 to End. Construct Remaining Portion of Roadway to the Rt. and Lt. while Maintaining two 10' Lanes.



- SOIL EROSION CONTROL**
- PHASE I 33+00 to 57+61.28
- Install temporary sediment and erosion control devices as follows:
    - 33+00 LT to 36+50± LT Maintain flow from new ditch above 33+00 LT into the existing ditch
    - 33+00 RT to 34+00± RT Install silt fence as shown
    - 36+50± LT to 39+50± LT Construct new placed riprap ditch and install driveway culvert. Install TSOS 10' up stream of driveway culverts.
    - 34+00 RT to 37+00± RT Construct new placed riprap ditch. Install TSOS at station 36+50.
    - 37+00± RT to 39+50± RT Install silt fence and clean out existing pipe under driveway at station 39±.
    - 40+50± RT to 48+75± RT Install silt fence as shown
    - 52+00± RT to 55+25± RT Install silt fence as shown
    - 46+00± RT & LT Construct cross culvert
    - 42+15± RT Construct cross culvert
    - 40+50± LT to 43+00± LT Install silt fence as shown
    - 52+50± LT to 57+61.39 LT Install silt fence as shown
  - Install Permanent Vegetative Stabilization per notes on Sheet No. 14

**GENERAL SEQUENCE OF CONSTRUCTION**

- INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
- CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
- INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
- PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
- PROCEED WITH CONSTRUCTION.

**GENERAL NOTES**

- Provide 24 hr access to all driveways
  - During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
  - During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
  - All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
  - All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to engineer showing when each is to be installed.
- For Notes 6, 7, 8, 9, 10 & 11, See Sheet 5.

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

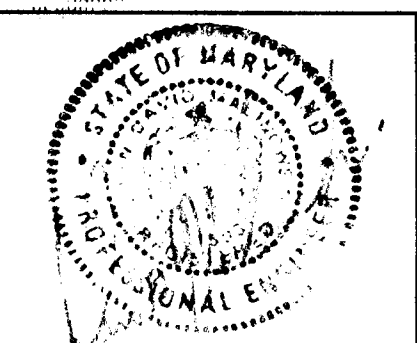
*James P. ...* 1/16/91  
DIRECTOR OF PUBLIC WORKS

*Francis W. ...* 1/16/91  
CHIEF, BUREAU OF ENGINEERING

*Michael Anderson ...* 1/16/91  
CHIEF, VOADS, BRIDGES AND STORM DRAINAGE DIVISION

*Francis W. ...* 1/16/91  
CHIEF, BUREAU OF HIGHWAYS

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



|             |  |
|-------------|--|
| DES: J.D.M. |  |
| DRN: L.M.T. |  |
| CHK: J.D.M. |  |
| DATE: 12/90 |  |
| BY NO.      |  |
| REVISION    |  |
| DATE        |  |

MAINTENANCE OF TRAFFIC /  
SEDIMENT AND EROSION CONTROL  
PHASE I

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

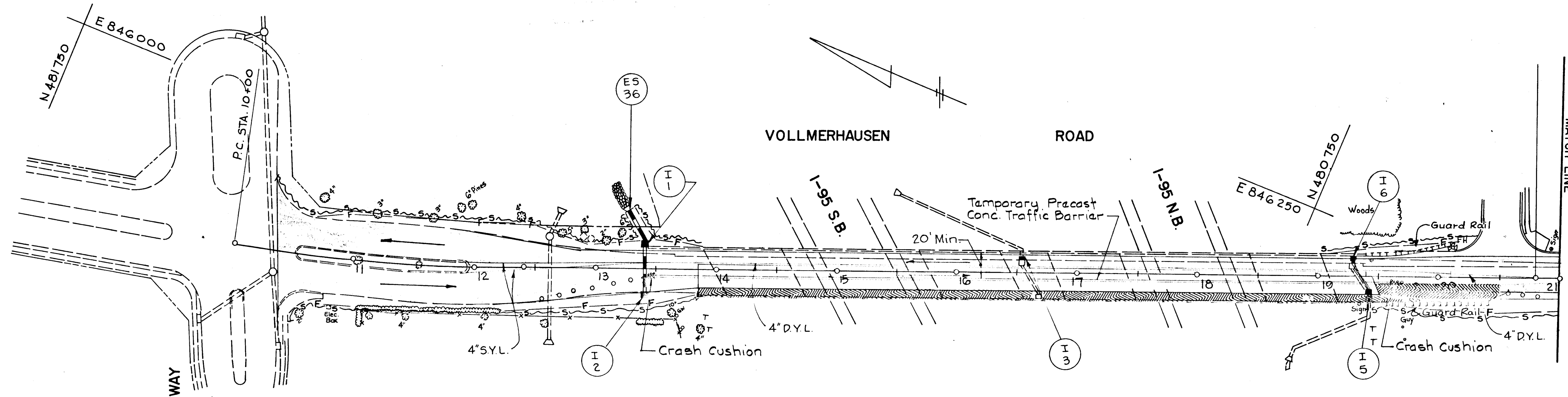
SCALE  
1" = 50'

SHEET  
6 OF 60

SOIL EROSION CONTROL

PHASE II 10+38 TO 33+00

- 1) After approval from the SCS Inspector remove controls installed in the previous phase that are no longer needed for this project.
- 2) Clean, maintain and/or replace controls installed in the previous phase that have been damaged.
- 3) Install Permanent Vegetative Stabilization per notes on Sheet No. 14.



GENERAL SEQUENCE OF CONSTRUCTION

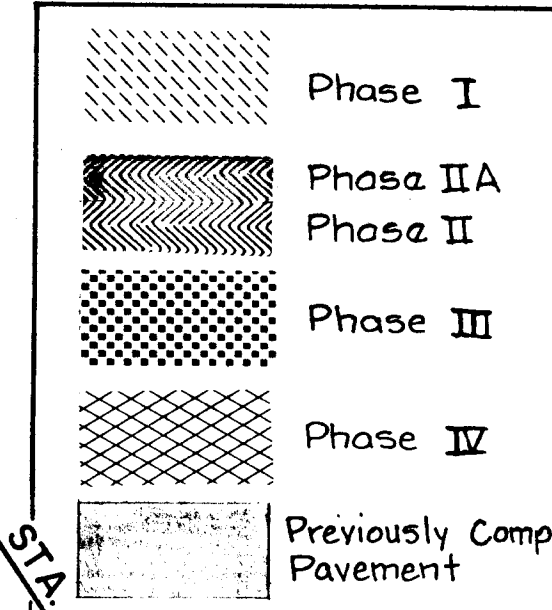
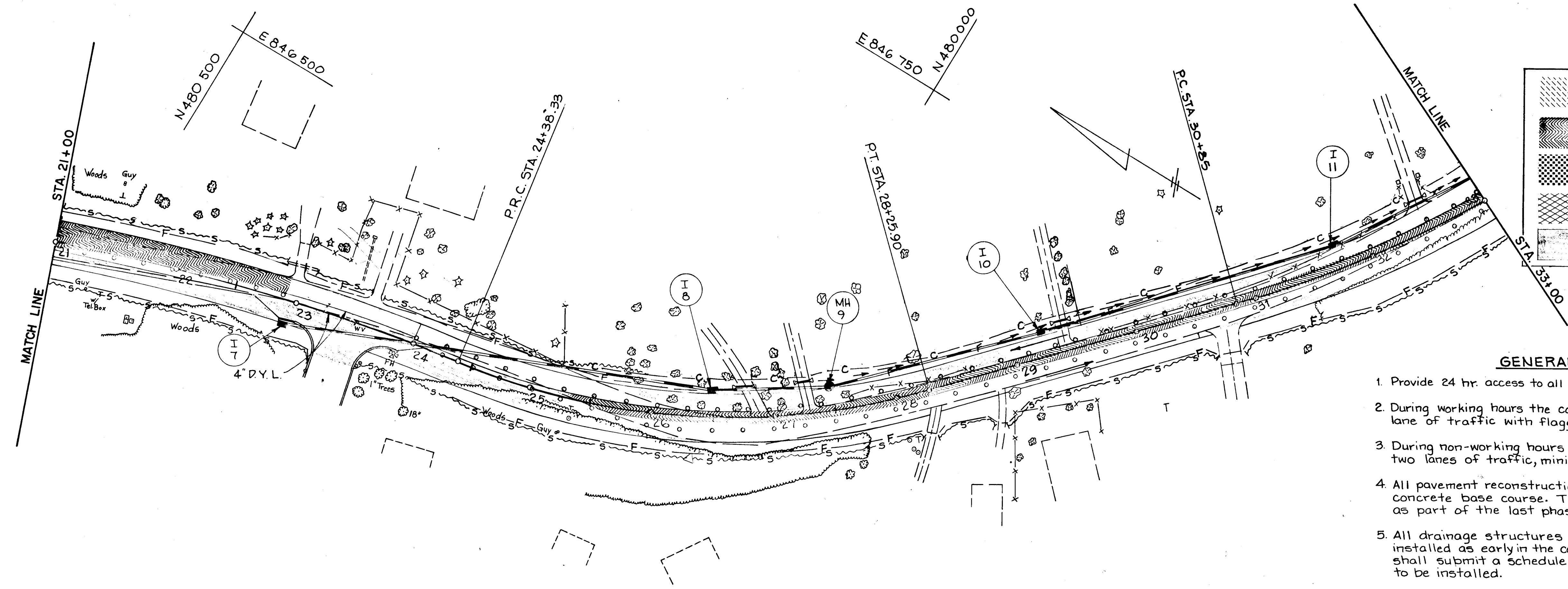
- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
- 2) CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
- 3) INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
- 4) PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
- 5) PROCEED WITH CONSTRUCTION.

PHASE II 10 + 38 TO 33 + 00

1. Sta. 13 + 75 Rt. to Sta. 19 + 45 Rt. Construct new walkway section on bridge.
2. Sta. 25 + 25 ± middle to Sta. 25 + 60 ± middle Construct new pavement section along Phase I section from 2' to 10' wide.
3. Sta. 25 + 60 ± middle to Sta. 33 + 00 ± middle Construct 10' min. new pavement section 6' Lt. and 4' Rt. of baseline.

PHASE II A 19 + 45 TO 22 + 90

1. Sta. 19 + 45 ±, Rt. to Sta. 20 + 50 ±, Rt. Construct min 13' of new pavement.
2. Sta. 21 + 00 ±, Lt. to Sta. 22 + 90 ±, Lt. Construct min of 12' of new pavement.



GENERAL NOTES

1. Provide 24 hr. access to all driveways.
2. During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
3. During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
4. All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
5. All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to engineer showing when each is to be installed.

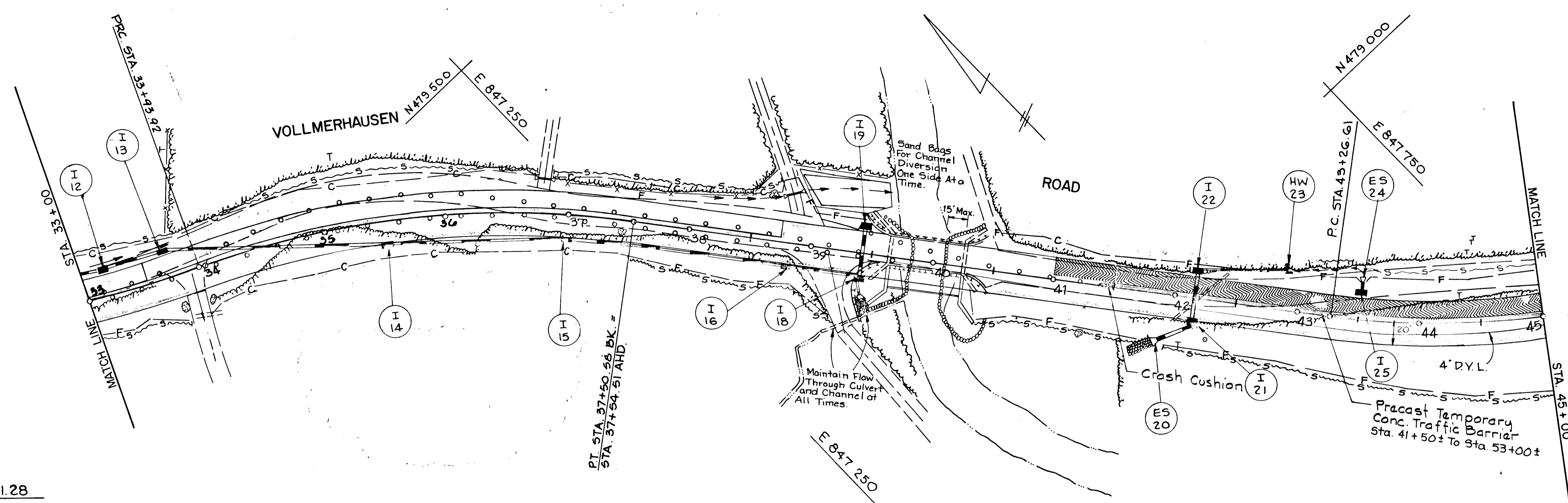
For Notes 6, 7, 8, 9, 10 & 11, See Sheet 5.

1606

|   |  |  |             |             |             |         |          |   |  |  |
|---|--|--|-------------|-------------|-------------|---------|----------|---|--|--|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>Director of Public Works: <i>James P. ...</i><br>Chief, Bureau of Engineering: <i>...</i><br>Chief, Bureau of Highways: <i>Franklin W. Welland</i> | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>BALTIMORE, MARYLAND 21210 |  | DES: J.D.M. |             |             |         |          | MAINTENANCE OF TRAFFIC/<br>SEDIMENT AND EROSION CONTROL<br>PHASE II | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND | SCALE<br>1" = 50'<br><br>SHEET<br>7 OF ... |
|   |  |  | DRN: L.M.T. | CHK: J.D.M. | DATE: 12/90 | BY: NO. | REVISION |   |  |  |

**SOIL EROSION CONTROL**  
 PHASE II 33+00 to 57+61.28

- 1) Install temporary sediment and erosion control devices as follows:
  - A) 40+50± LT to 53+50± LT  
Install silt fence as shown
  - B) 46+25± LT to 48+50± LT  
Construct placed riprap ditch.
  - C) Install TSOS 20' upstream of cross culverts.
- 3) Install Permanent Vegetative Stabilization per notes on Sheet No. 14

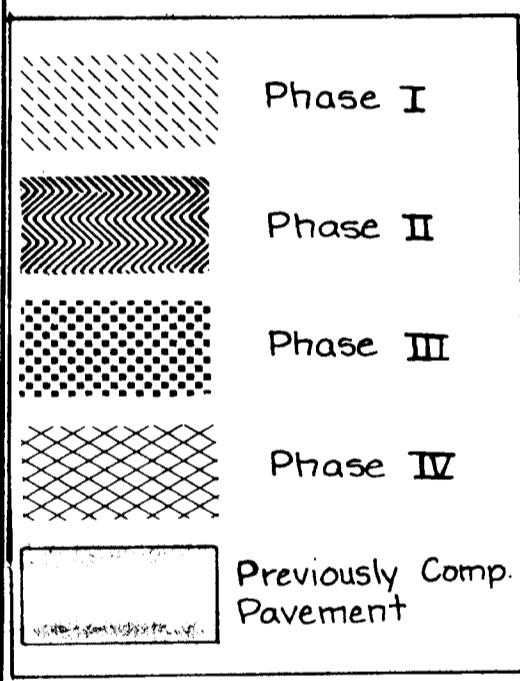


**PHASE II 33 + 00 To 57 + 61.28**

1. Sta. 41+00± LT to Sta. 53+00± LT  
Construct remaining new pavement section.
2. Sta. 40+50± East, move traffic to new portion of road constructed under Phase I.
3. Sta. 33+00± to Sta. 39+50, Split traffic.

**GENERAL SEQUENCE OF CONSTRUCTION**

- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
- 2) CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
- 3) INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
- 4) PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
- 5) PROCEED WITH CONSTRUCTION.



**GENERAL NOTES**

1. Provide 24 hr. access to all driveways.
  2. During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
  3. During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
  4. All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
  5. All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to engineer showing when each is to be installed.
- 6, 7, 8, 9, 10 & 11, See Shee 5.

BRUNING 44-132-69150

1609

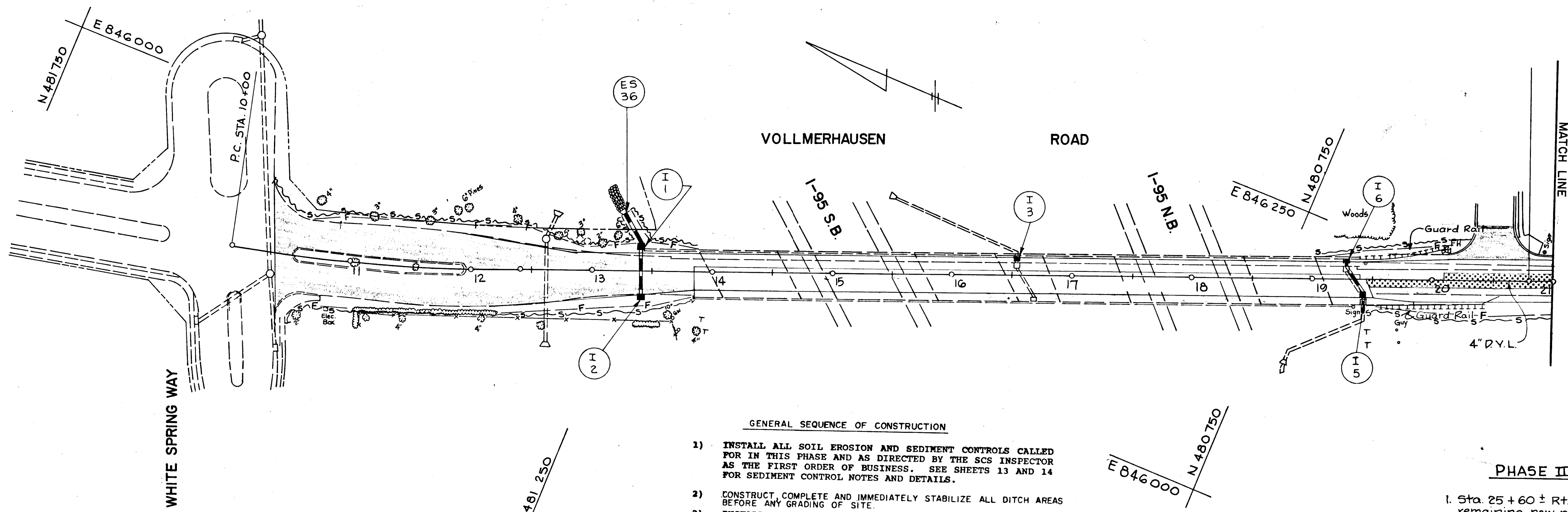
|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>Director of Public Works: <i>James P. ...</i> DATE: 11/31<br>Chief, Bureau of Engineering: <i>William B. ...</i> DATE: 1-10-91<br>Chief, Bureau of Highways: <i>Frederick W. ...</i> DATE: 1/1/91 |  | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>BALTIMORE, MARYLAND 21210 |  | DES: J.D.M.<br>DRN: L.M.T.<br>CHK: J.D.M.<br>DATE: 12/90 | MAINTENANCE OF TRAFFIC /<br>SEDIMENT AND EROSION CONTROL<br>PHASE II | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE GULLFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND | SCALE<br>1" = 50'<br>SHEET<br>8 OF ... |
|--|--|--|--|--|--|--|--|



**SOIL EROSION CONTROL**

PHASE III 10+38 to 33+00

- 1) After approval from the SCS Inspector remove controls installed in the previous phase that are no longer needed for this project.
- 2) Install temporary sediment and erosion control devices as follows:
  - A) 24" x 40" RT to 33+00: RT  
Reset silt fence as required by Engineer.
- 3) Install Permanent Vegetative Stabilization per notes on Sheet No. 14.

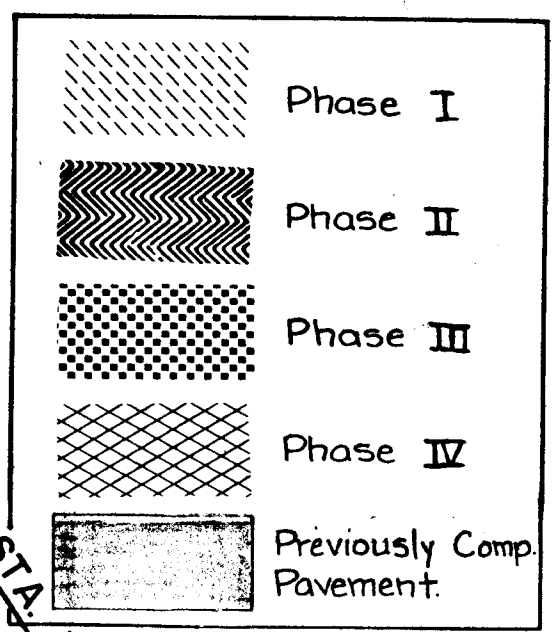
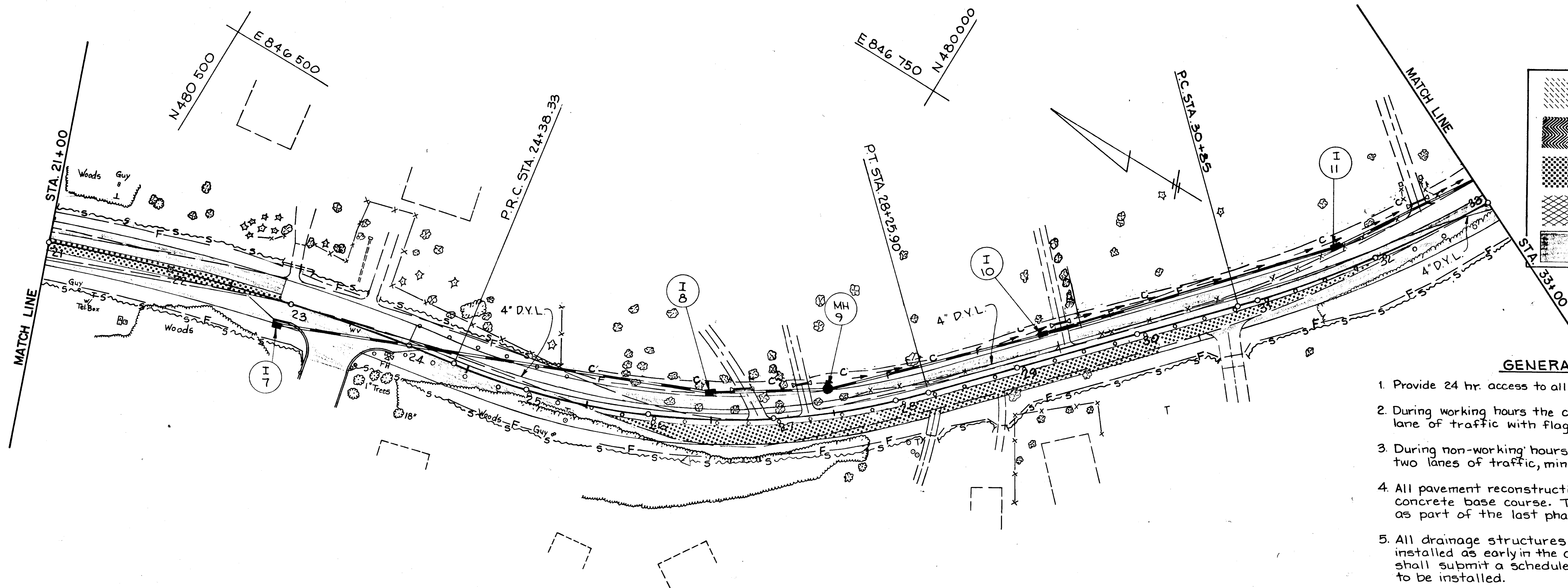


**GENERAL SEQUENCE OF CONSTRUCTION**

- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
- 2) CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
- 3) INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
- 4) PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
- 5) PROCEED WITH CONSTRUCTION.

**PHASE III 10+38 TO 33+00**

1. Sta. 25+60 ± Rt. to Sta. 32+00 ± Rt. Construct remaining new pavement width.
2. Sta. 23+00 ± to Sta. 33+00 ± Shift traffic to pavement constructed under phase I and II.
3. Sta. 19+45 ± Middle to Sta. 22+90 ± Middle. Construct Remaining new pavement. Divert traffic to pavement constructed in previous Phases.



**GENERAL NOTES**

1. Provide 24 hr. access to all driveways.
  2. During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
  3. During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
  4. All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
  5. All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to engineer showing when each is to be installed.
- For Notes 6, 7, 8, 9, 10 & 11, See Sheet 5.

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

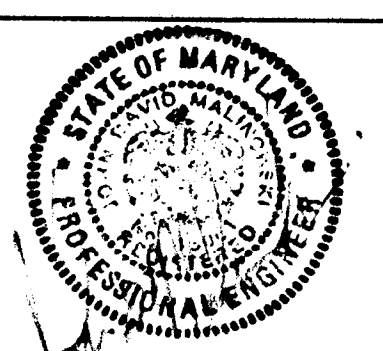
*[Signature]* 1/10/91  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 1/10/91  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 1/10/91  
CHIEF, ROADS, BRIDGES AND STORM DRAINAGE DIVISION DATE

*[Signature]* 1/10/91  
CHIEF, BUREAU OF HIGHWAYS DATE

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



|             |        |          |      |
|-------------|--------|----------|------|
| DES: J.D.M. |        |          |      |
| DRN: L.M.T. |        |          |      |
| CHK: J.D.M. |        |          |      |
| DATE: 12/90 | BY NO. | REVISION | DATE |

MAINTENANCE OF TRAFFIC/  
SEDIMENT AND EROSION CONTROL  
PHASE III

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

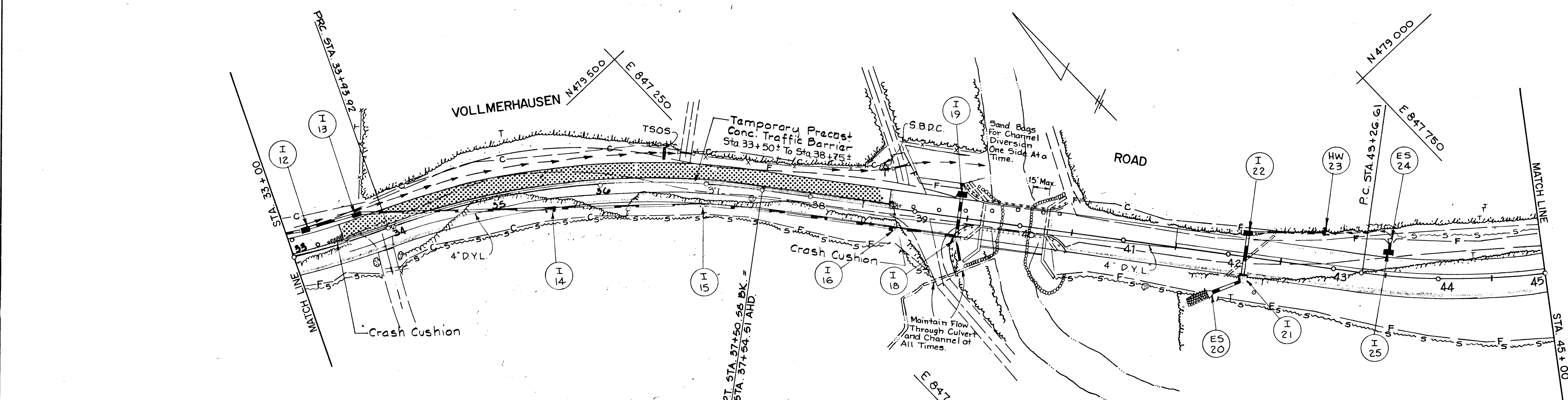
VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE  
1" = 50'

SHEET  
9 OF 10

**SOIL EROSION CONTROL**  
 PHASE III 33+00 to 57+61.28

- 1) Install temporary sediment and erosion control devices as follows:
  - A) 33+50± LT to 38+75± LT  
Construct new placed riprap ditch.
  - B) 38+75± LT to 39+00± LT  
Reinstall TSOS 10' upstream of driveway culverts.
- 2) Install Permanent Vegetative Stabilization per notes on Sheet No. 14

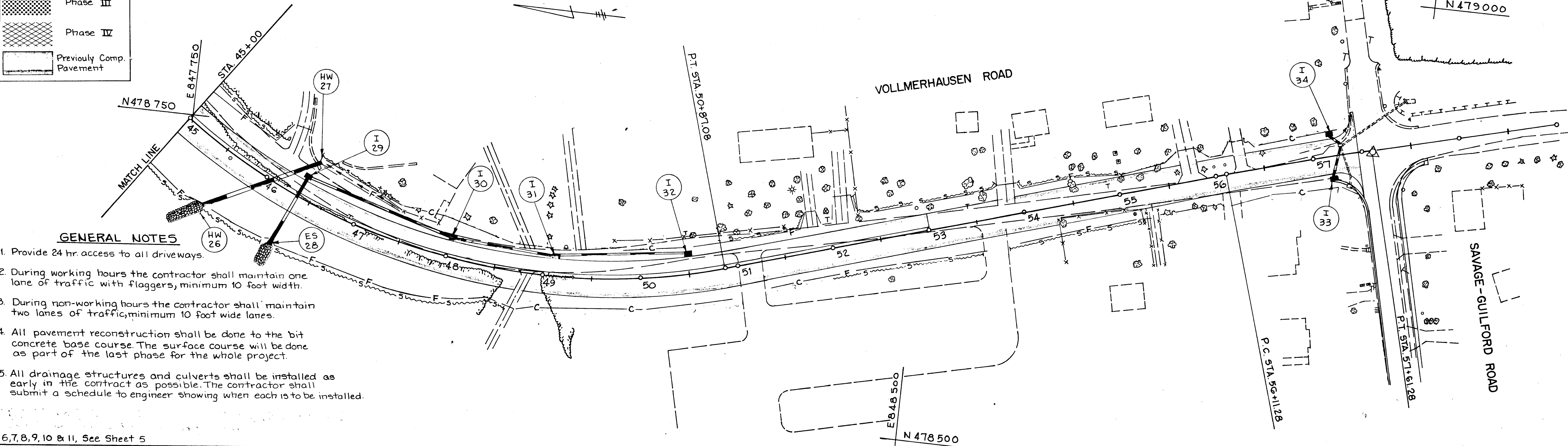
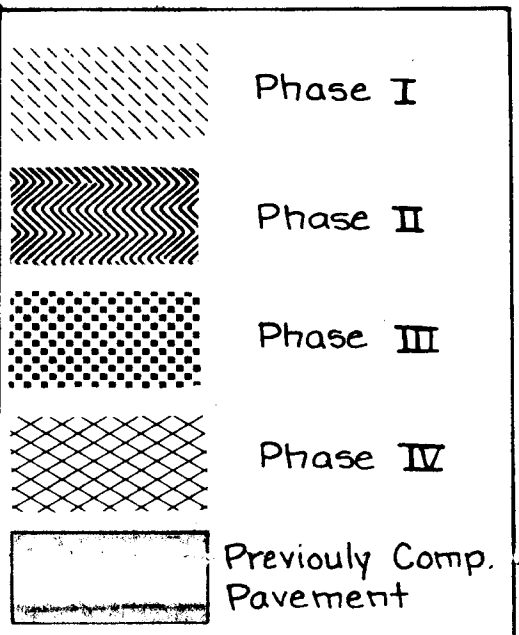


**PHASE III STA. 33+00 TO 38+75± RT.**

1. Sta. 33+50± Rt. to Sta. 38+75± Rt.  
Construct remaining portion of New pavement section.
2. Sta. 33+00 to Sta. 33+50  
Shift all Traffic over to pavement Constructed in Phase I.

**GENERAL SEQUENCE OF CONSTRUCTION**

- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
- 2) CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
- 3) INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
- 4) PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
- 5) PROCEED WITH CONSTRUCTION.



**GENERAL NOTES**

1. Provide 24 hr. access to all driveways.
2. During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
3. During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
4. All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
5. All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to engineer showing when each is to be installed.

6,7,8,9,10 & 11, See Sheet 5

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Thomas P. Allen*  
 DIRECTOR OF PUBLIC WORKS DATE 1-10-91

*William W. Weiland*  
 CHIEF, BUREAU OF HIGHWAYS DATE 1/11/91

*Elizabeth Anderson*  
 CHIEF, ROADS, BRIDGES AND STORM DRAINAGE DIVISION DATE 1/10/91

BUCHART-HORN INC.  
 CONSULTING ENGINEERS  
 BALTIMORE, MARYLAND 21210



|             |        |          |      |
|-------------|--------|----------|------|
| DES: J.D.M. |        |          |      |
| DRN: L.M.T. |        |          |      |
| CHK: J.D.M. |        |          |      |
| DATE: 12/90 | BY NO. | REVISION | DATE |

MAINTENANCE OF TRAFFIC /  
 SEDIMENT AND EROSION CONTROL  
 PHASE III

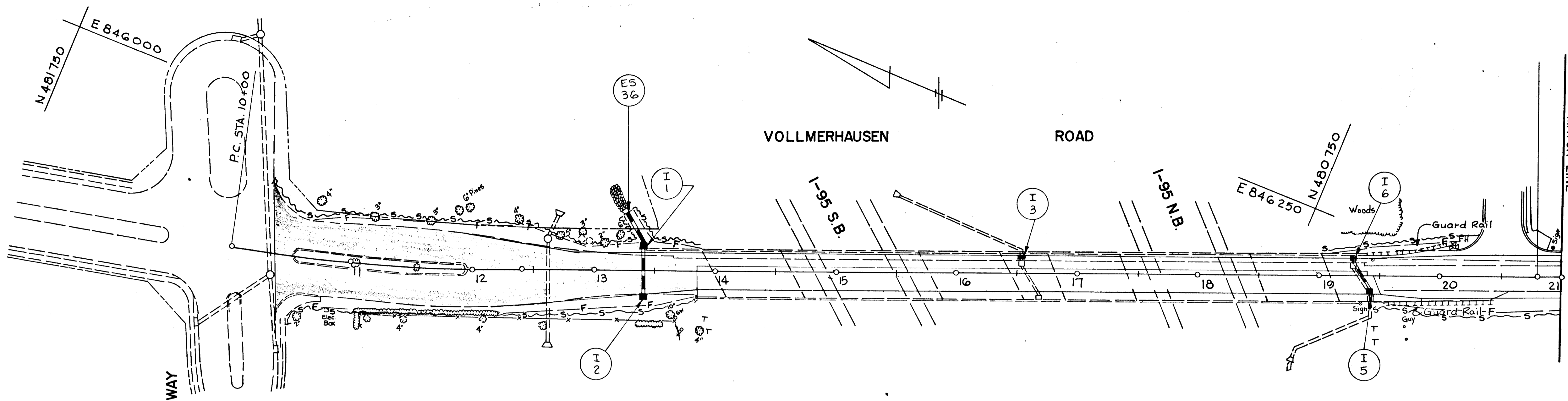
600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
 WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
 CAPITAL PROJECT J-4046  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE  
 1" = 50'

SHEET  
 10 OF 30

1609

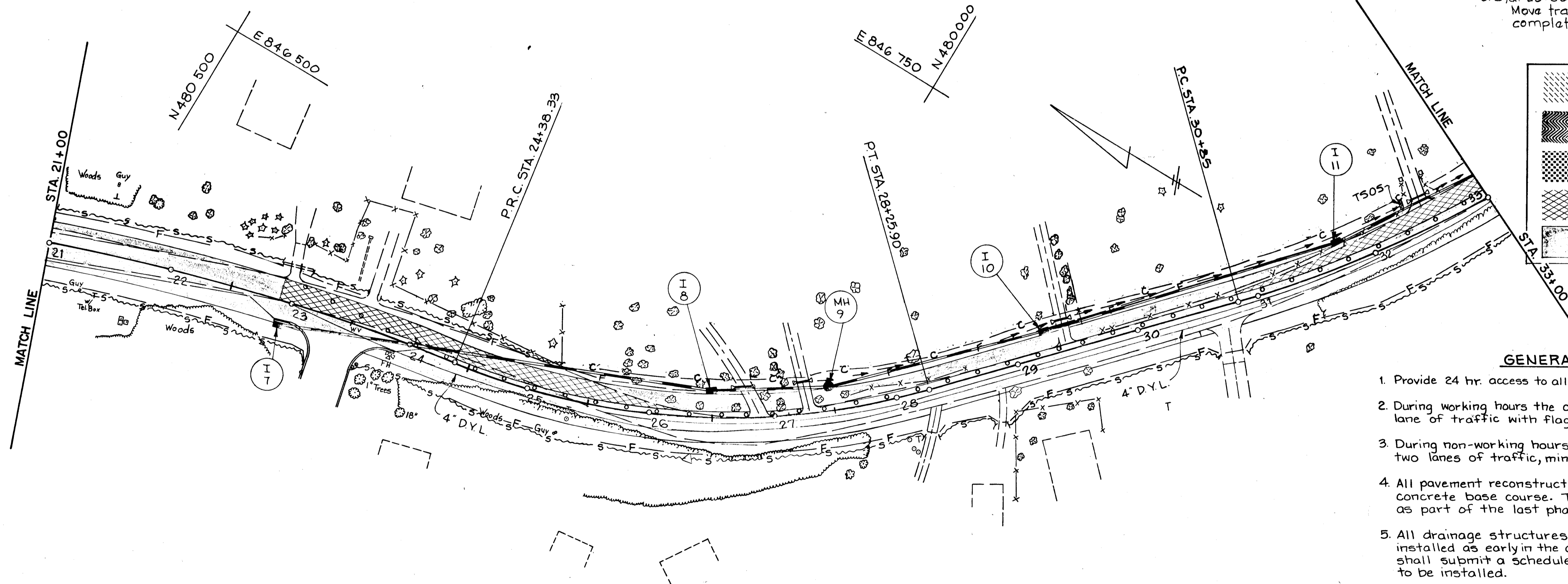
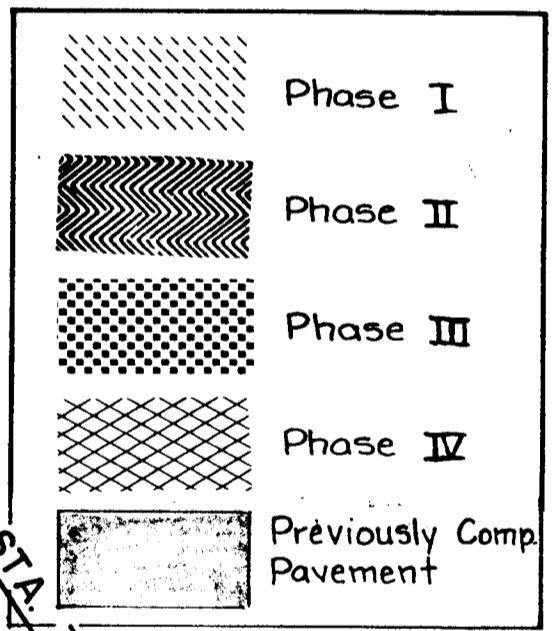


- SOIL EROSION CONTROL**  
 PHASE IV 10+38 TO 33+00
- 1) After approval from the SCS Inspector remove controls installed in the previous phase that are no longer needed for this project.
  - 2) Install temporary sediment and erosion control devices as follows:
    - A) 24+00± LT to 26+00± LT  
Reset silt fence as required by Engineer.
    - B) 31+50± LT to 33+00± LT  
Install new TSOS 10' upstream of driveway culverts.
  - 3) Install Permanent Vegetative Stabilization per notes on Sheet No. 14

- GENERAL SEQUENCE OF CONSTRUCTION**
- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
  - 2) CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
  - 3) INSTALL ALL DRAINAGE STRUCTURES, PIPES, AND CROSS CULVERTS EARLY IN THE CONSTRUCTION.
  - 4) PROVIDE INLET PROTECTION FOR ALL INLETS DURING CONSTRUCTION.
  - 5) PROCEED WITH CONSTRUCTION.

**PHASE IV 10 + 38 To 33 + 00**

1. Sta. 22+90±, Rt. to 26 + 20± Rt.  
Construct remaining portion of new pavement section.
2. Sta. 30 + 85± Rt. to Sta. 33 + 00 Rt.  
Construct remaining portion of new pavement section.
3. Sta. 23+00± to Sta. 33+00±  
Move traffic to right side of roadway completed under phases I, II & III.



**GENERAL NOTES**

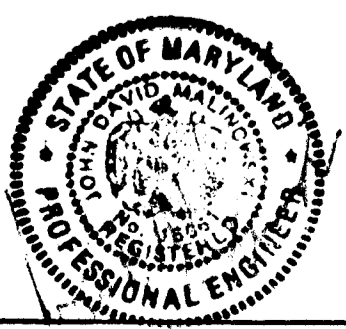
1. Provide 24 hr. access to all driveways.
  2. During working hours the contractor shall maintain one lane of traffic with flaggers, minimum 10 foot width.
  3. During non-working hours the contractor shall maintain two lanes of traffic, minimum 10 foot wide lanes.
  4. All pavement reconstruction shall be done to the bit concrete base course. The surface course will be done as part of the last phase for the whole project.
  5. All drainage structures and culverts shall be installed as early in the contract as possible. The contractor shall submit a schedule to engineer showing when each is to be installed.
- For Notes G, 7, 8, 9, 10 & 11, See Sheet 5.

1606

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

Director of Public Works: *Thomas J. ...* DATE: 11/19/91  
 Chief, Bureau of Engineering: *Michael R. ...* DATE: 11/19/91  
 Chief, Roads, Bridges and Storm Drainage Division: *Elizabeth Anderson ...* DATE: 11/19/91  
 Chief, Bureau of Highways: *Brigitte W. ...* DATE: 11/19/91

BUCHART-HORN INC.  
 CONSULTING ENGINEERS  
 BALTIMORE, MARYLAND 21210



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|-------------|----|-----|----------|------|
| DES: J.D.M. |    |     |          |      |
| DRN: L.M.T. |    |     |          |      |
| CHK: J.D.M. |    |     |          |      |
| DATE: 12/90 | BY | NO. | REVISION | DATE |

MAINTENANCE OF TRAFFIC/  
 SEDIMENT AND EROSION CONTROL  
 PHASE IV

VOLLMERHAUSEN RD. IMPROVEMENTS  
 WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
 CAPITAL PROJECT J-4046  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE  
 1" = 50'  
 SHEET  
 11 OF 14

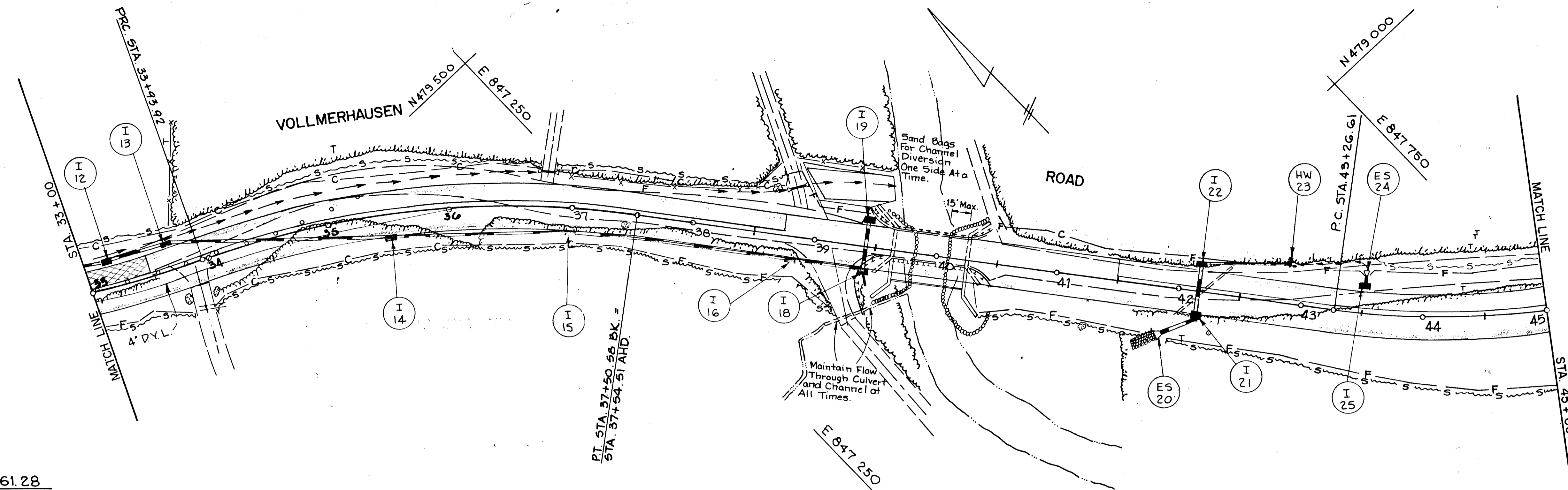
**SOIL EROSION CONTROL**

PHASE IV 33+00 to 57+61.28

1) Install temporary sediment and erosion control devices as follows:

A) 33+00± LT to 33+50± LT  
Construct new placed riprap ditch.

2) Install Permanent Vegetative Stabilization per notes on Sheet No. 14

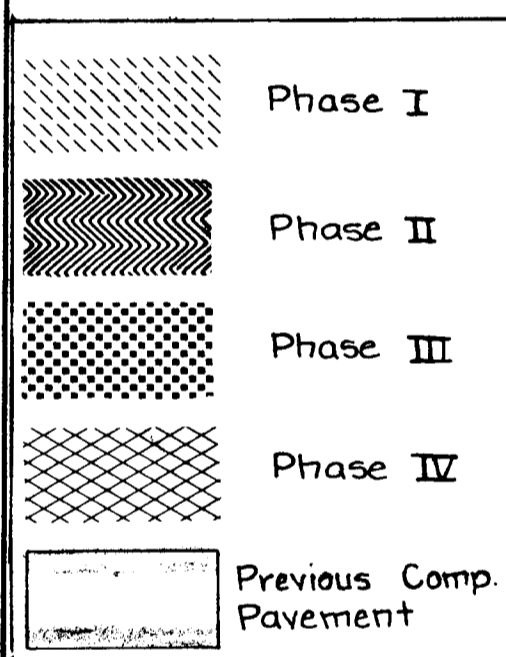


**PHASE IV 33+00 To 57+61.28**

1. Sta. 33+00± Lt. to Sta. 33+50± Lt.  
Construct remaining portion of new pavement section.
2. Sta. 33+00± to Sta. 33+50± move traffic over to right side of roadway completed under phase I.

**GENERAL SEQUENCE OF CONSTRUCTION**

- 1) INSTALL ALL SOIL EROSION AND SEDIMENT CONTROLS CALLED FOR IN THIS PHASE AND AS DIRECTED BY THE SCS INSPECTOR AS THE FIRST ORDER OF BUSINESS. SEE SHEETS 13 AND 14 FOR SEDIMENT CONTROL NOTES AND DETAILS.
- 2) CONSTRUCT, COMPLETE AND IMMEDIATELY STABILIZE ALL DITCH AREAS BEFORE ANY GRADING OF SITE.
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- 5) PROCEED WITH CONSTRUCTION.



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6, 7, 8, 9, 10 & 11. See Sheet 5.

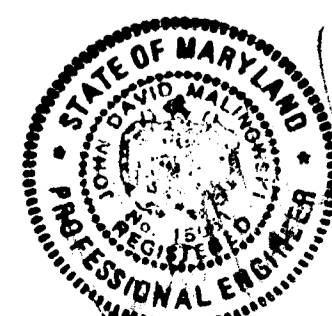
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James P. ...*  
DIRECTOR OF PUBLIC WORKS  
DATE: 11/19/91

*James P. ...*  
CHIEF, BUREAU OF ENGINEERING  
DATE: 11/10/91

*Shawelle W. ...*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 11/19/91

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



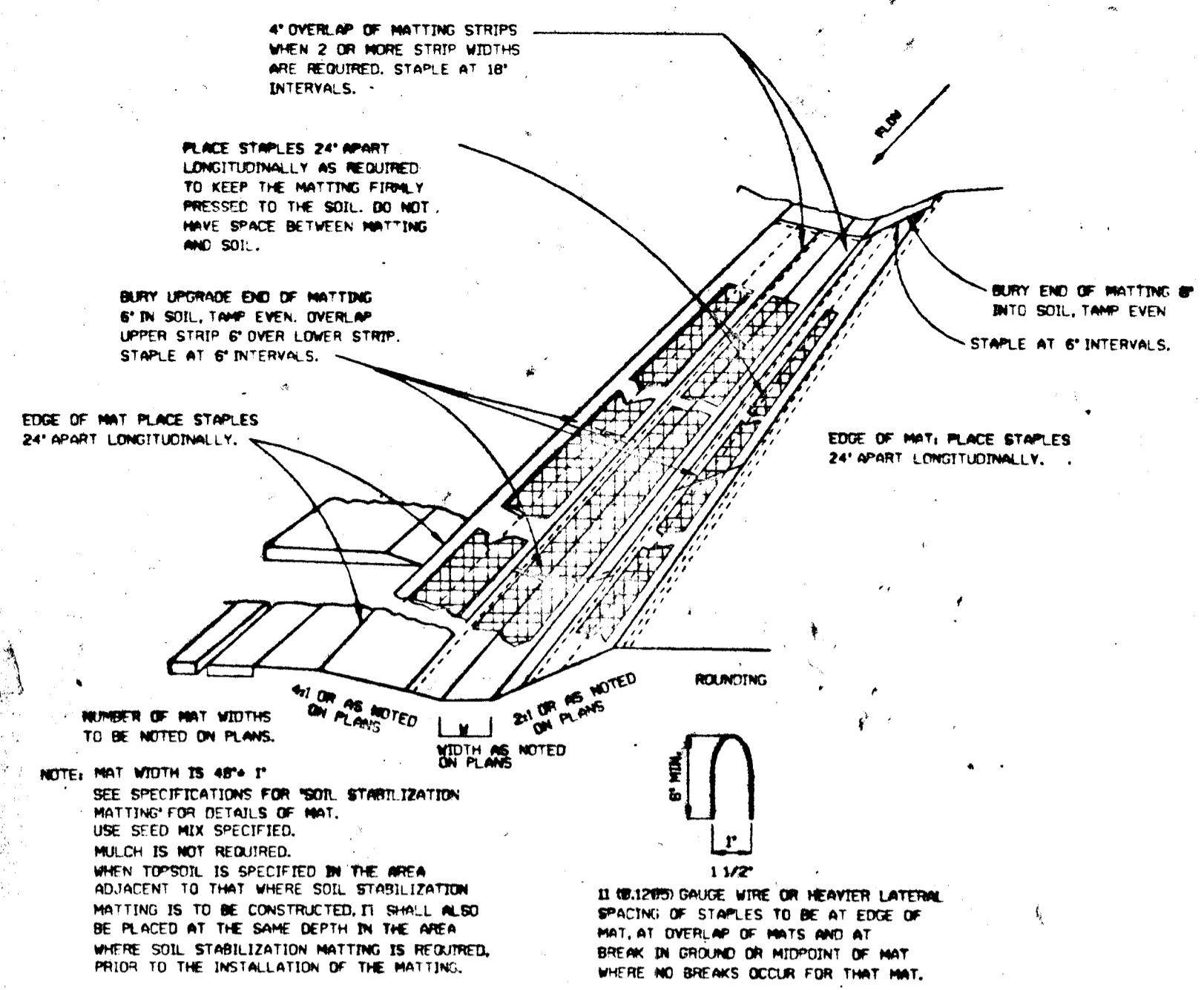
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| DES: J.D.M. |        |          |      |
| DRN: L.M.T. |        |          |      |
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| DATE: 12/90 | BY NO. | REVISION | DATE |

MAINTENANCE OF TRAFFIC /  
SEDIMENT AND EROSION CONTROL  
PHASE IV

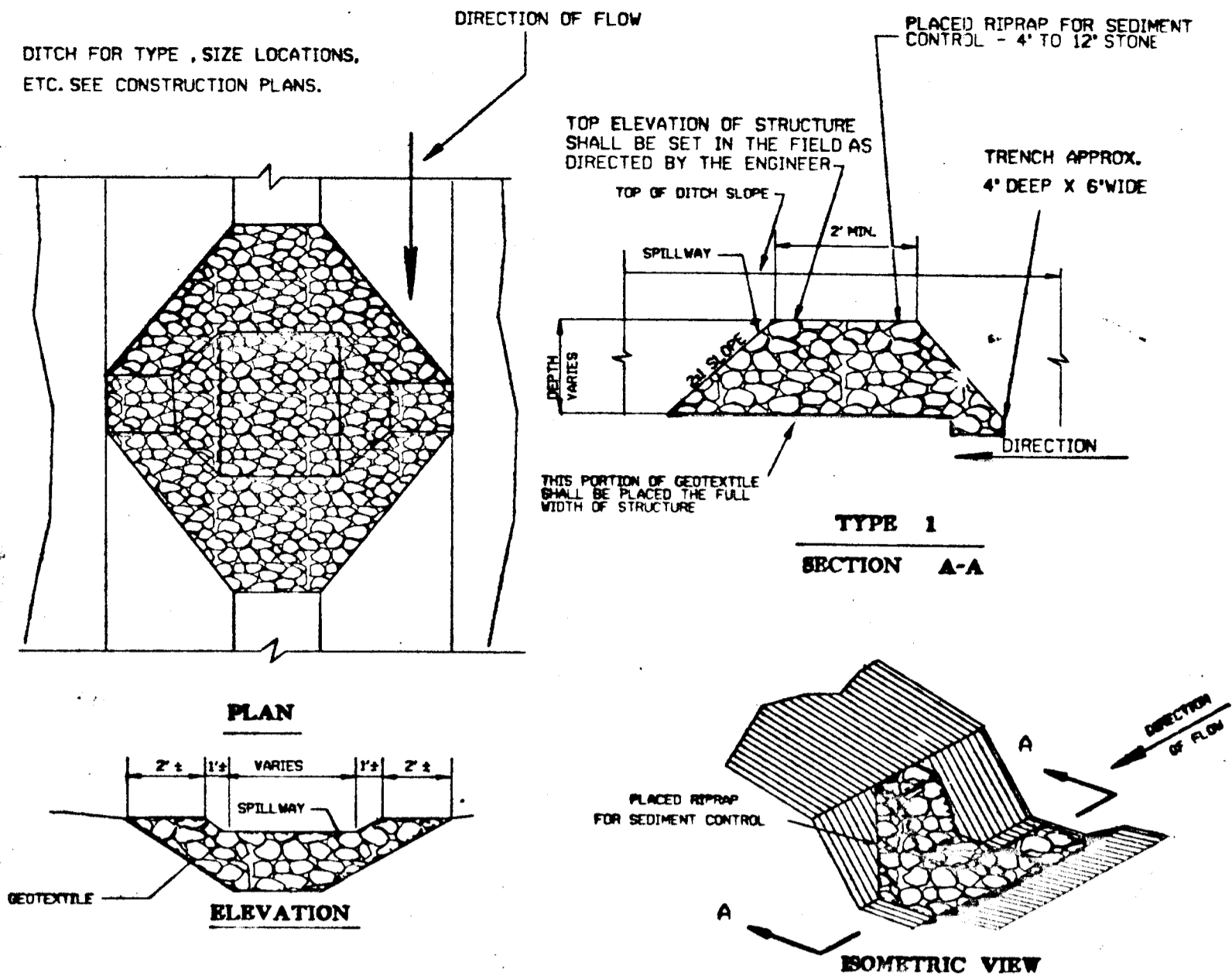
VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE  
1" = 50'  
SHEET  
12 OF 42

1606

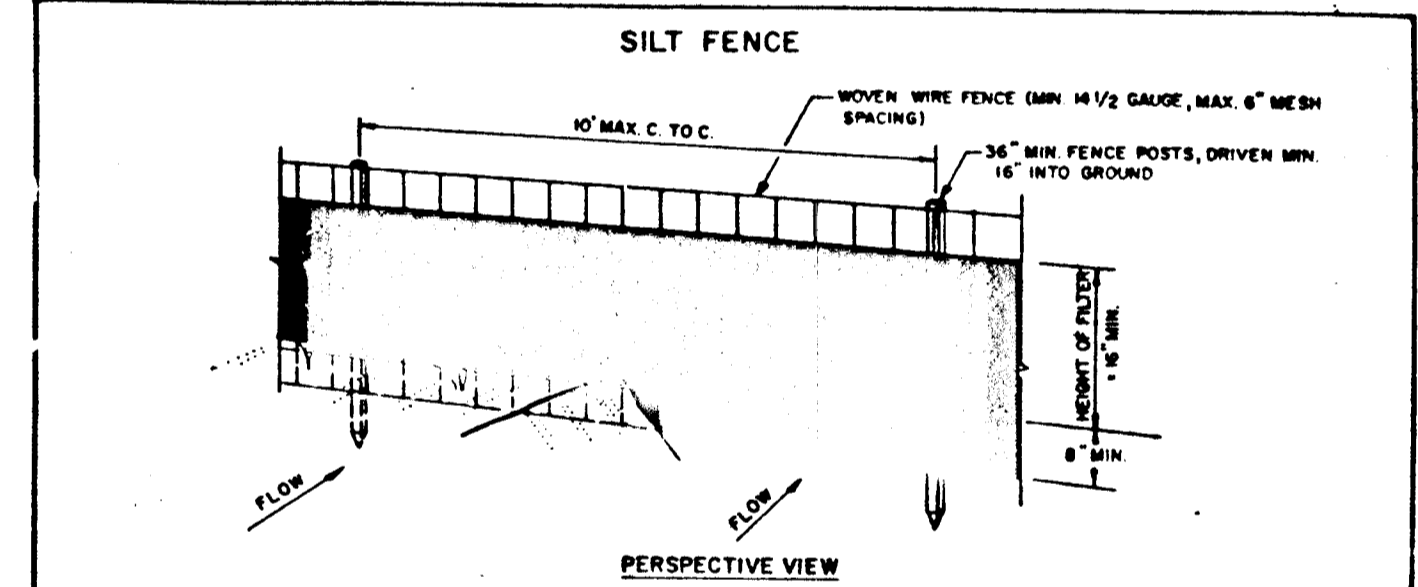


**SOIL STABILIZATION MATTING PLACEMENT**

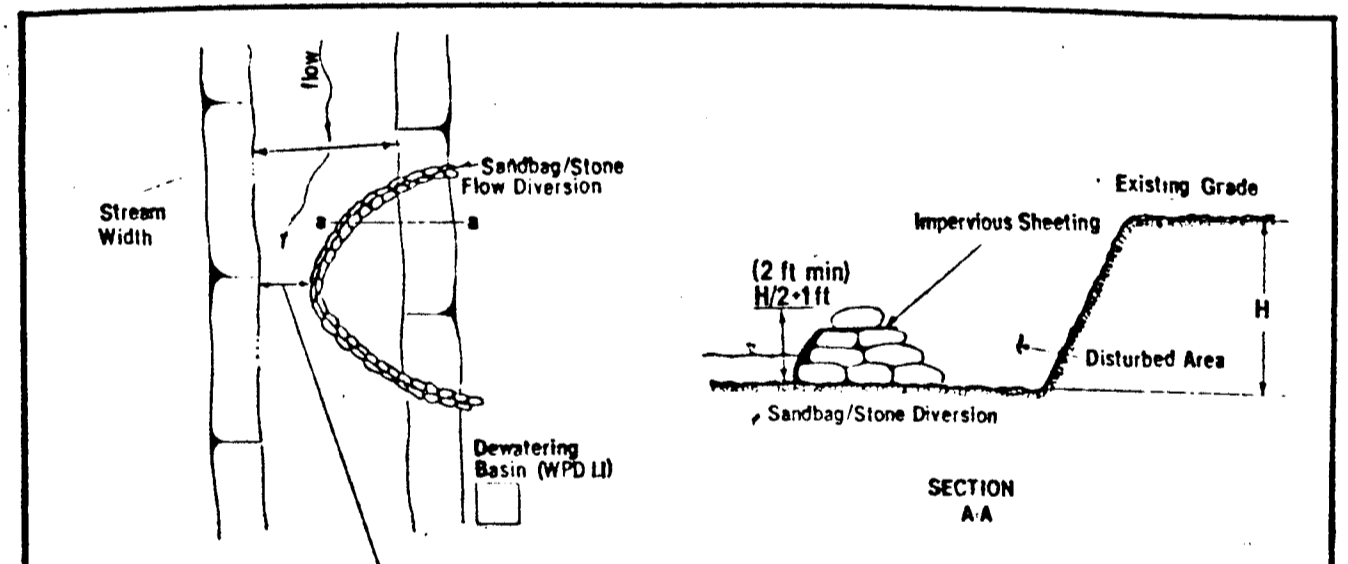


- INTENDED FOR USE IN EXISTING, PROPOSED AND TEMPORARY DITCHES OF ALL TYPES AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
  - FOR LOCATIONS OF OUTLET STRUCTURES REFER TO CONSTRUCTION PLANS
  - THE OUTLET STRUCTURES SHALL BE INSPECTED AFTER EACH RAIN, AND THE STONE SHALL BE REPLACED WHEN THE OUTLET STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, SILT ACCUMULATION AMONG THE STONE, ETC. HOWEVER, IN ANY CASE, THE SILT SHALL BE CLEANED OUT WHEN IT REACHES 50% OF THE HEIGHT OF THE STRUCTURE.
  - TEMPORARY STONE OUTLET STRUCTURES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE. IN CUT AREAS IT SHALL ALWAYS BE REMOVED, SHALLOW FILLS (LESS THAN 20 FEET) AS DIRECTED BY THE ENGINEER, IT WILL NOT BE REMOVED IN STEEPER THAN 20 FOOT FILLS.
  - GEOTEXTILE TO MEET THE REQUIREMENTS OF CLASS \_\_\_\_\_, SEE GENERAL NOTE 16
- PLAN VIEW SYMBOL: TSOS
1. THIS DEVICE IS TO BE USED ONLY AS A VELOCITY CHECK. IT IS NOT INTENDED TO TRAP SEDIMENT RUNOFF.

**TEMPORARY STONE OUTLET STRUCTURE (T.S.O.S.)**

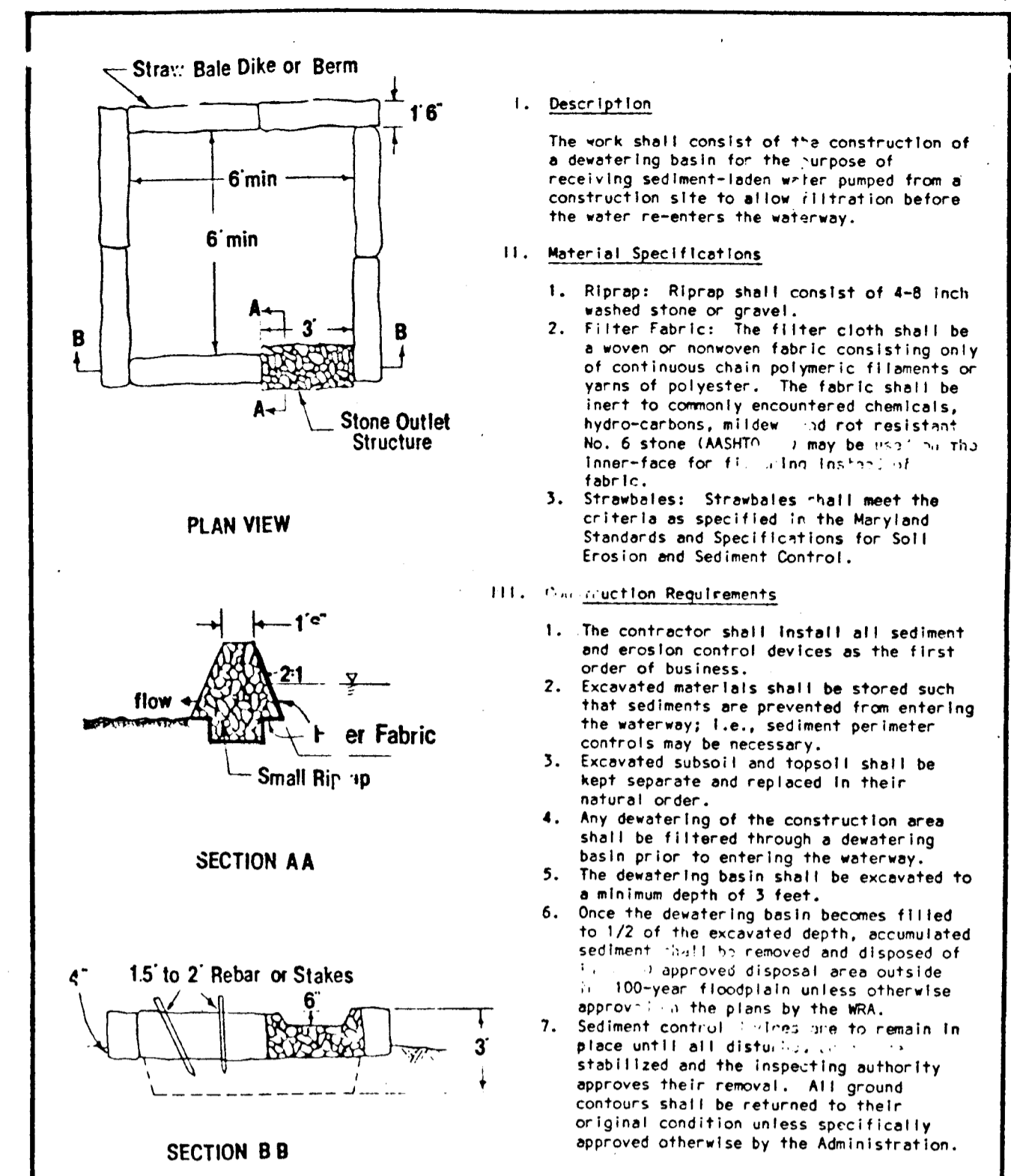


- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
  - FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
  - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
  - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
- POSTS: STEEL CIPHER T OR U TYPE 1 1/2" HARDWOOD
- FENCE: WOVEN WIRE, 14 GA. 6" MAX. MESH OPENING
- FILTER CLOTH: FILTER X, RAFT 1000, STABILINKA 11000 OR APPROVED EQUAL
- PREFABRICATED UNIT: GEOTAB, INVROFENCE, OR APPROVED EQUAL



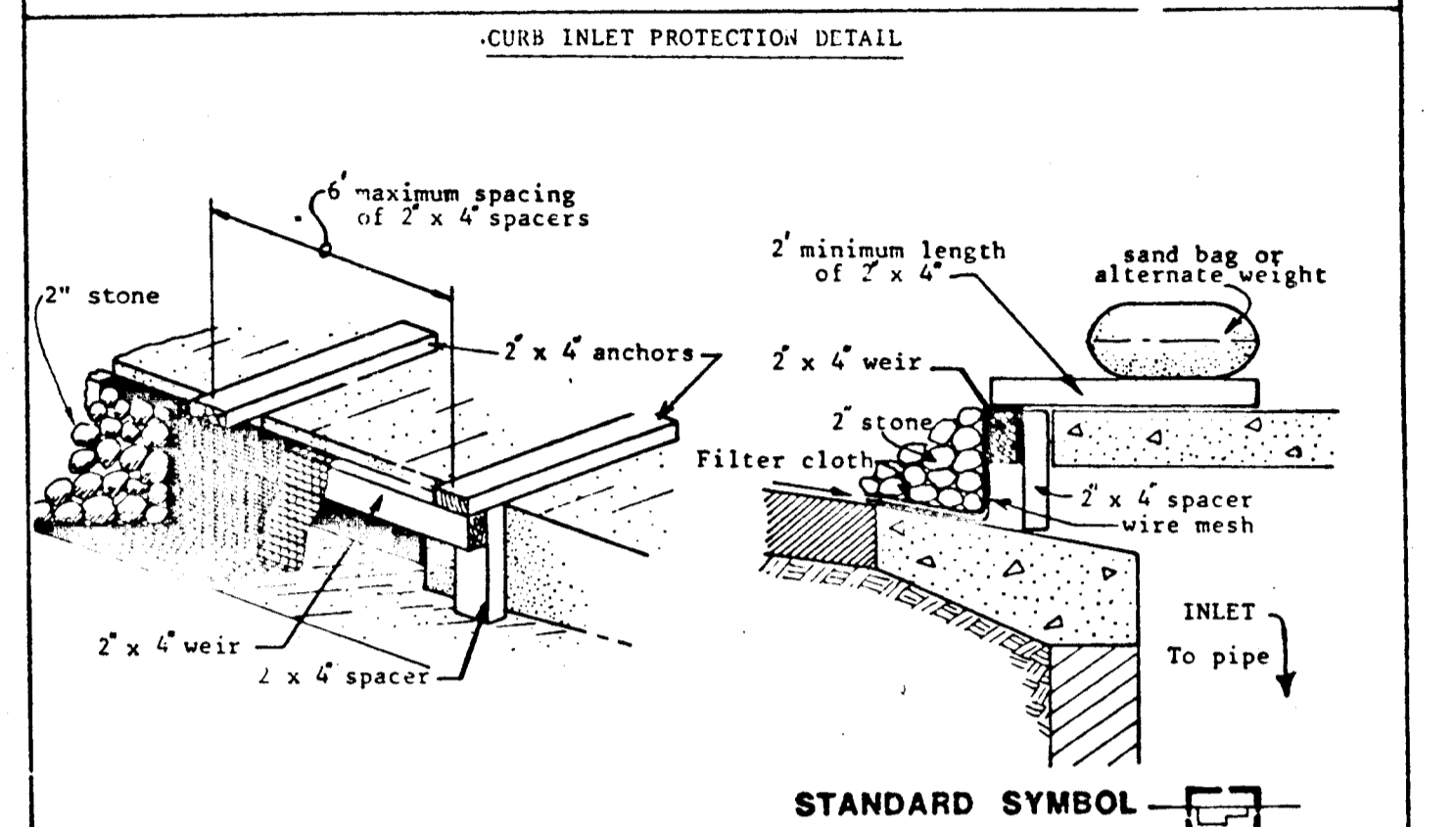
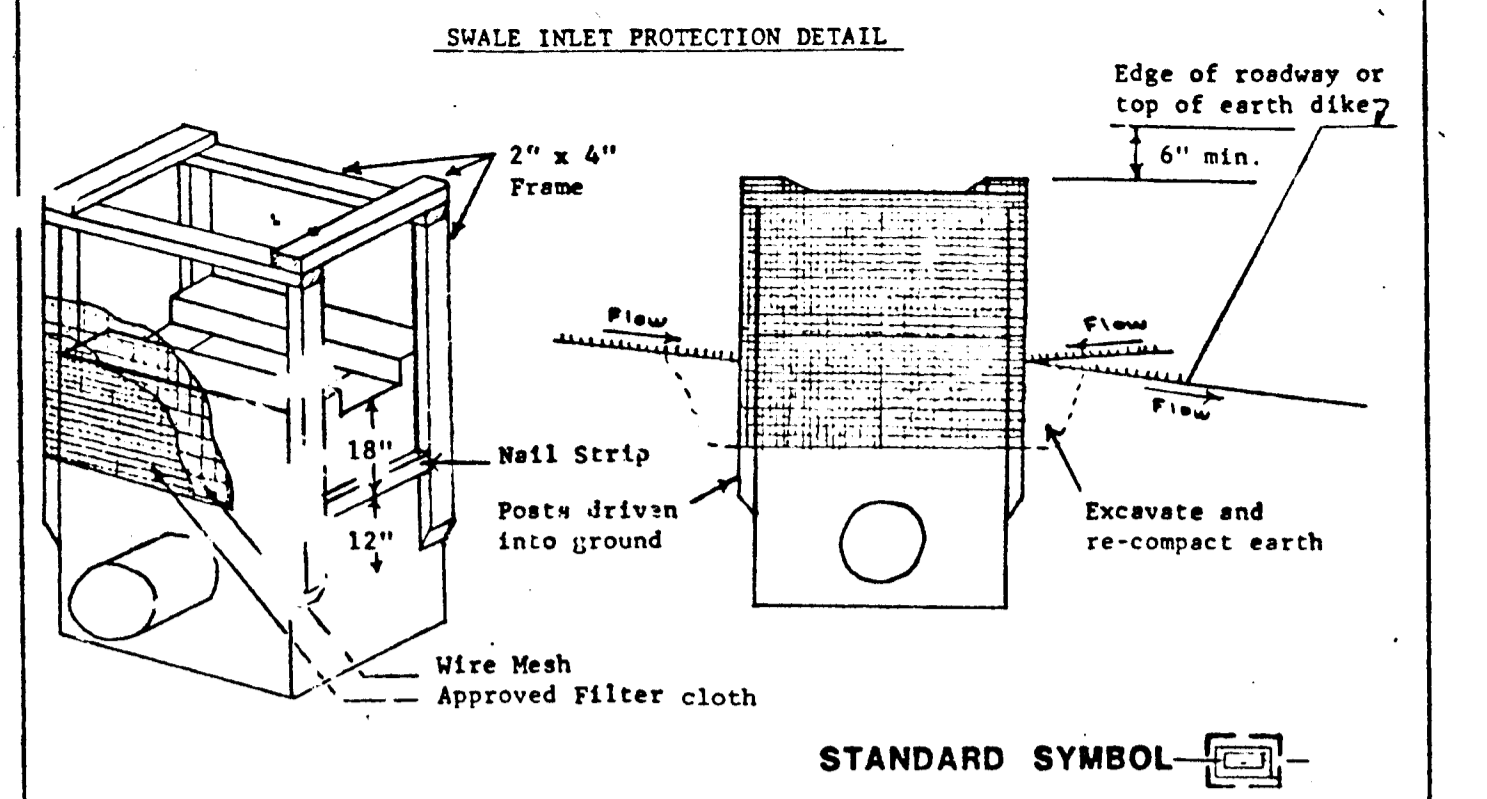
- Description**  
The work shall consist of installing flow diversions for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.
- Material Specifications**  
1. Sandbags: Sandbags shall consist of materials which are resistant to ultraviolet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).  
2. Stone: Stone shall be washed and have a minimum diameter of 6 inches.  
3. Sheeting: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.
- Construction Requirements**  
1. All erosion and sediment control devices shall be installed as the first order of work.  
2. The diversion structure shall be installed from upstream to downstream.  
3. The height of the diversion structure shall be one half the distance from stream bed to stream bank plus one foot, as indicated on the cross-section view.  
4. All excavated materials shall be disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the MRA.  
5. All dewatering of the construction area shall be pumped to a dewatering basin prior to re-entering the stream.  
6. Sheeting shall be overlapped such that the upstream portion covers the downstream portion with at least an 18-inch overlap.  
7. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

WATER RESOURCES ADMINISTRATION Sandbag/Stone Diversion WPD 2.3



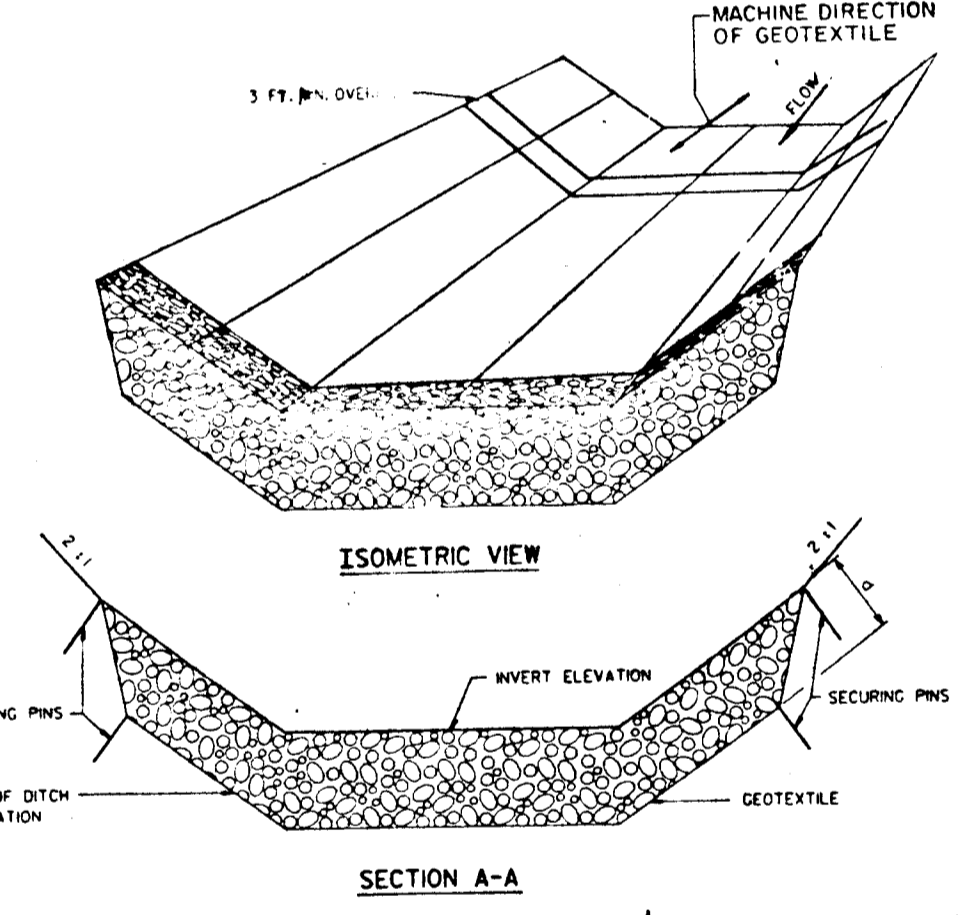
- Description**  
The work shall consist of the construction of a dewatering basin for the purpose of receiving sediment-laden water pumped from a construction site to allow filtration before the water re-enters the waterway.
- Material Specifications**  
1. Riprap: Riprap shall consist of 4-8 inch washed stone or gravel.  
2. Filter Fabric: The filter cloth shall be a woven or nonwoven fabric consisting of continuous chain polymer filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew and rot resistant No. 6 Stone (ASTM # 2) may be used on the inner-face for 11' and less in height fabric.  
3. Strawbales: Strawbales shall meet the criteria as specified in the Maryland Standards and Specifications for Soil Erosion and Sediment Control.
- Construction Requirements**  
1. The contractor shall install all sediment and erosion control devices as the first order of business.  
2. Excavated materials shall be stored such that sediments are prevented from entering the waterway; i.e., sediment perimeter controls may be necessary.  
3. Excavated subsoil and topsoil shall be kept separate and replaced in their natural order.  
4. Any dewatering of the construction area shall be filtered through a dewatering basin prior to entering the waterway.  
5. The dewatering basin shall be excavated to a minimum depth of 3 feet.  
6. Once the dewatering basin becomes filled to 1/2 of the excavated depth, accumulated sediment shall be removed and disposed of in an approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the MRA.  
7. Sediment control devices shall remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal. All ground contours shall be returned to their original condition unless specifically approved otherwise by the Administration.

WATER RESOURCES ADMINISTRATION Dewatering Basins WPD 1.1



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND INLET PROTECTION DETAIL STANDARD DRAWING IPD-1

- Materials**  
A. Wooden frame is to be constructed of 2" x 4" construction grade lumber.  
B. Wire mesh must be of sufficient strength to support filter fabric, and stone for curb inlets, with water fully impounded against it.  
C. Filter cloth must be of a type approved for this purpose; resistant to sunlight with sieve size, 60-85, to allow sufficient passage of water and removal of sediment.  
D. Stone is to be 2" in size and clean, since fines would clog the cloth.
- Procedure**  
A. Swale, ditchline or yard inlet protection.  
1. Excavate completely around inlet to a depth of 18" below notch elevation.  
2. Drive 2 x 4 post 1' into ground at four corners of inlet. Place nail strips between posts on ends of inlet. Assemble top portion of 2 x 4 frame using overlap joint shown. Top of frame (weir) must be 6" below edge of roadway adjacent to inlet.  
3. Stretch wire mesh tightly around frame and fasten securely. Ends must meet at post.  
4. Stretch filter cloth tightly over wire mesh. The cloth must extend from top of frame to 18" below inlet notch elev. Fasten securely to frame. Ends must meet at post, be overlapped and folded, then fastened down.  
5. Backfill around inlet in compacted 6" layers until layer of earth is even with notch elevation on ends and top elevation on sides.  
6. If the inlet is not in a low point, construct a compacted earth dike in the ditchline below it. The top of this dike is to be at least 6" higher than the top of frame (weir).  
7. This structure must be inspected frequently and the filter fabric replaced when clogged.  
B. Curb Inlet Protection.  
1. Attach a continuous piece of wire mesh (30" min. width by throat length plus 4") to the 2" x 4" weir (measuring throat length plus 2") as shown on the standard drawing.  
2. Place a piece of approved filter cloth (40-85 sieve) of the same dimensions as the wire mesh over the wire mesh and securely attach to the 2" x 4" weir.  
3. Securely nail the 2" x 4" weir to 9" long vertical spacers to be located between the weir and inlet face (max. 6' apart).  
4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations. Use 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.  
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.  
6. Form the wire mesh and filter cloth to the concrete gutter and against the face of curb on both sides of the inlet. Place clean 2" stone over the wire mesh and filter fabric in such a manner as to prevent water from entering the inlet under or around the filter cloth.  
7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.  
8. Assume that storm flow does not bypass inlet by installing temporary earth or asphalt dikes directing flow into inlet.



- Description**  
The work shall consist of installing flow diversions for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.
- Material Specifications**  
1. Sandbags: Sandbags shall consist of materials which are resistant to ultraviolet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).  
2. Stone: Stone shall be washed and have a minimum diameter of 6 inches.  
3. Sheeting: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.
- Construction Requirements**  
1. All erosion and sediment control devices shall be installed as the first order of work.  
2. The diversion structure shall be installed from upstream to downstream.  
3. The height of the diversion structure shall be one half the distance from stream bed to stream bank plus one foot, as indicated on the cross-section view.  
4. All excavated materials shall be disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the MRA.  
5. All dewatering of the construction area shall be pumped to a dewatering basin prior to re-entering the stream.  
6. Sheeting shall be overlapped such that the upstream portion covers the downstream portion with at least an 18-inch overlap.  
7. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

WATER RESOURCES ADMINISTRATION Placed Riprap Ditch WPD 2.3

1606

**DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND**

DATE 11/19/91  
 DATE 11-10-91  
 DATE 11/19/91  
 DATE 11/19/91

**BUCHART - HORN INC. CONSULTING ENGINEERS BALTIMORE, MARYLAND 21210**



|             |    |     |          |      |                              |
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| DES: SHA    |    |     |          |      |                              |
| DRN: SHA    |    |     |          |      |                              |
| CHK: JDM    |    |     |          |      |                              |
| DATE: 12/90 | BY | NO. | REVISION | DATE | 600' SCALE MAP NO. BLOCK NO. |

**SEDIMENT & EROSION CONTROL DETAILS**

**VOLLMERHAUSEN RD. IMPROVEMENTS WHITE SPRING WAY TO SAVAGE GUILFORD ROAD CAPITAL PROJECT J-4046 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND**

SCALE AS SHOWN SHEET 13 OF 40

**TEMPORARY SEEDING NOTES**

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE-INCHES OF SOIL BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING. IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.)

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2 1/2 BUSHEL ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ. FT.). FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (0.7 LBS/1000 SQ. FT.). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GAL PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

REFER TO THE 1988 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

**PERMANENT SEEDING NOTES**

APPLY TO GRADED OR CLEARED AREA NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE-INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING. IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULE.

- 1) PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQUARE FT) AND 500 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE-INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 SQ. FT.)
- 2) ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE-INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (0.5 LBS/1000 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECTS SITE BY: OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD OPTION (3) SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

**GENERAL SEDIMENT CONTROL NOTES**

No grading can take place until the grading permit has been issued by the Permits and Inspections Department or where an approval letter has been received by the owner from the Howard Soil Conservation District. Three working days notice must be given to the Department of Permits and Licenses, Howard County, prior to the start of any construction.

Structural measures such as berms, dikes, traps, basins, etc. will be installed and stabilized according to this plan and as directed by the SCS inspector and/or the Engineer prior to any other grading, clearing, or disturbance of the existing surface of the site.

On-site inspection and maintenance of all sediment control measures including clean-out of sediment traps and berms and proper establishment of all planned vegetative measures, will be the responsibility of the contractor on the site on a continuing day to day basis.

Sediment trapped behind sediment trapping facilities shall be removed as shown on plans.

Appropriate sediment control measures to be installed prior to an in accordance with stages of related road and other construction according to the plan.

On all diversion dikes positive flow will be established to sediment control structures from planned contributing runoff areas.

Flow from all disturbed areas are to be directed to a sediment control device as shown on approved plans or as directed by the SCS inspector until the area is fully stabilized.

Jute thatching to be applied to all waterways and secured using 8 gauge "U" shaped wire staples six (6) inches long.

All temporary sediment control measures are to be removed and these areas stabilized prior to release of sediment control bond.

Fill areas not being actively filled, graded, etc. for more than 60 days will be seeded with temporary or permanent vegetation as appropriate.

Additional sediment control measures shall be installed as field conditions change and as may be required by the sediment control inspector to arrest control of sediment before it leaves the construction site.

Remove all sediment control measures with approval of sediment control inspector and stabilize remaining disturbed area.

**SEQUENCE OF CONSTRUCTION FOR BRIDGE WORK IN STREAM**

**STAGE I**

1. Place stream diversion from upstream to downstream on the southeast side of the Little Patuxent River. Stream diversions shall consist of sandbags, as specified in WPD2.3. Place slope silt fence downslope of any disturbed area not protected by the sandbags.
2. Construct a dewatering basin and provide dewatering pumps with sufficient capacity and hose length. The basin shall meet the minimum requirements listed in WPD.1.1. All entrapped construction water is to be pumped to the basin prior to re-entering the stream. Pump capacity shall be by the following formula: pump discharge (GPM) = cubic ft. storage ÷ 6
3. Minimize clearing and grubbing to the immediate area of construction protected by sediment control measures.
4. Remove the necessary portion of the existing wingwall. Extend southeast abutment and construct new wingwall.
5. Allow area to stabilize before removing sediment control measures except for silt fence. Restore dewatering basin to original grade.

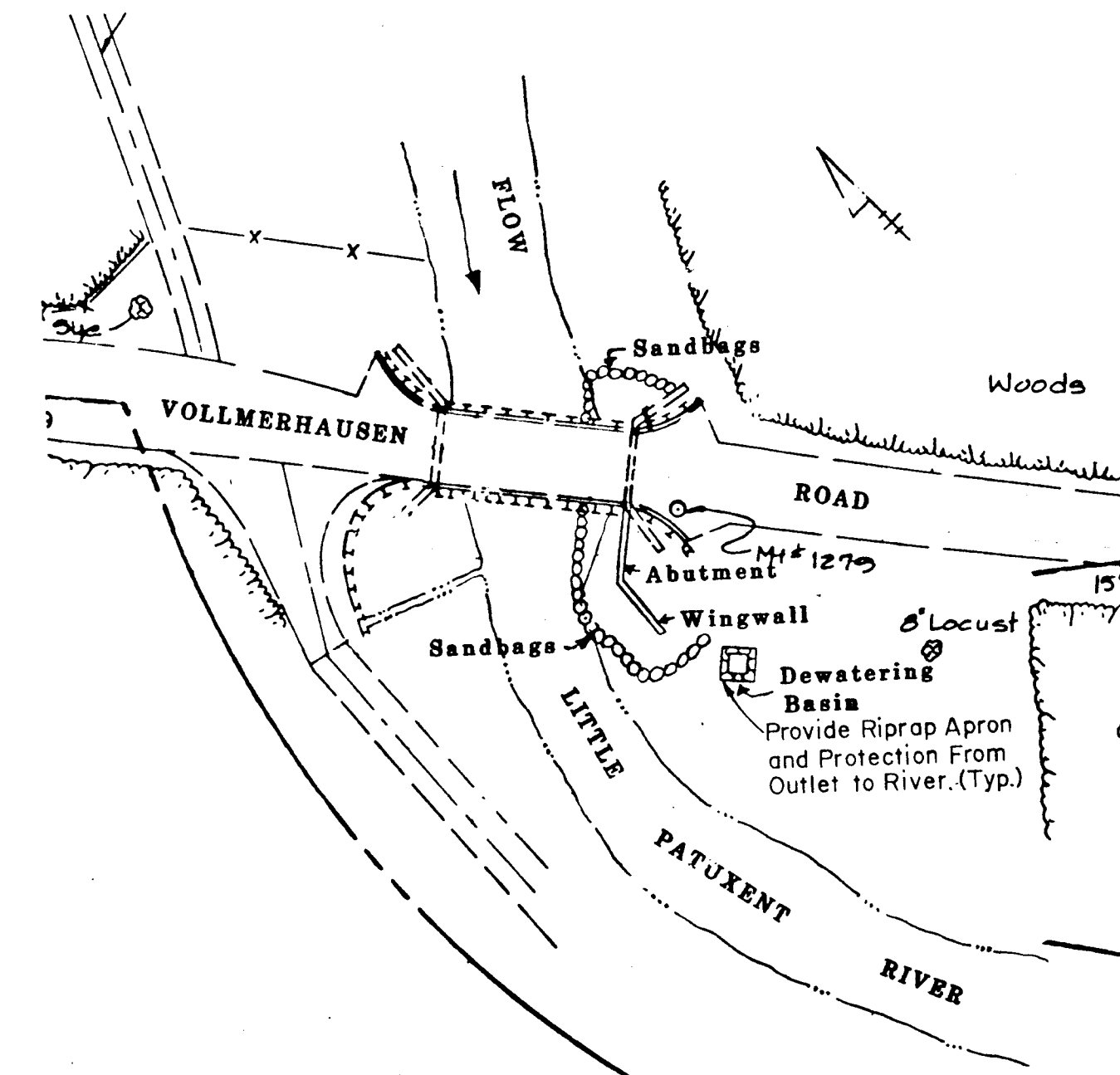
**STAGE II**

1. Follow Stage I sequence of construction for the southwest side of the Little Patuxent River.

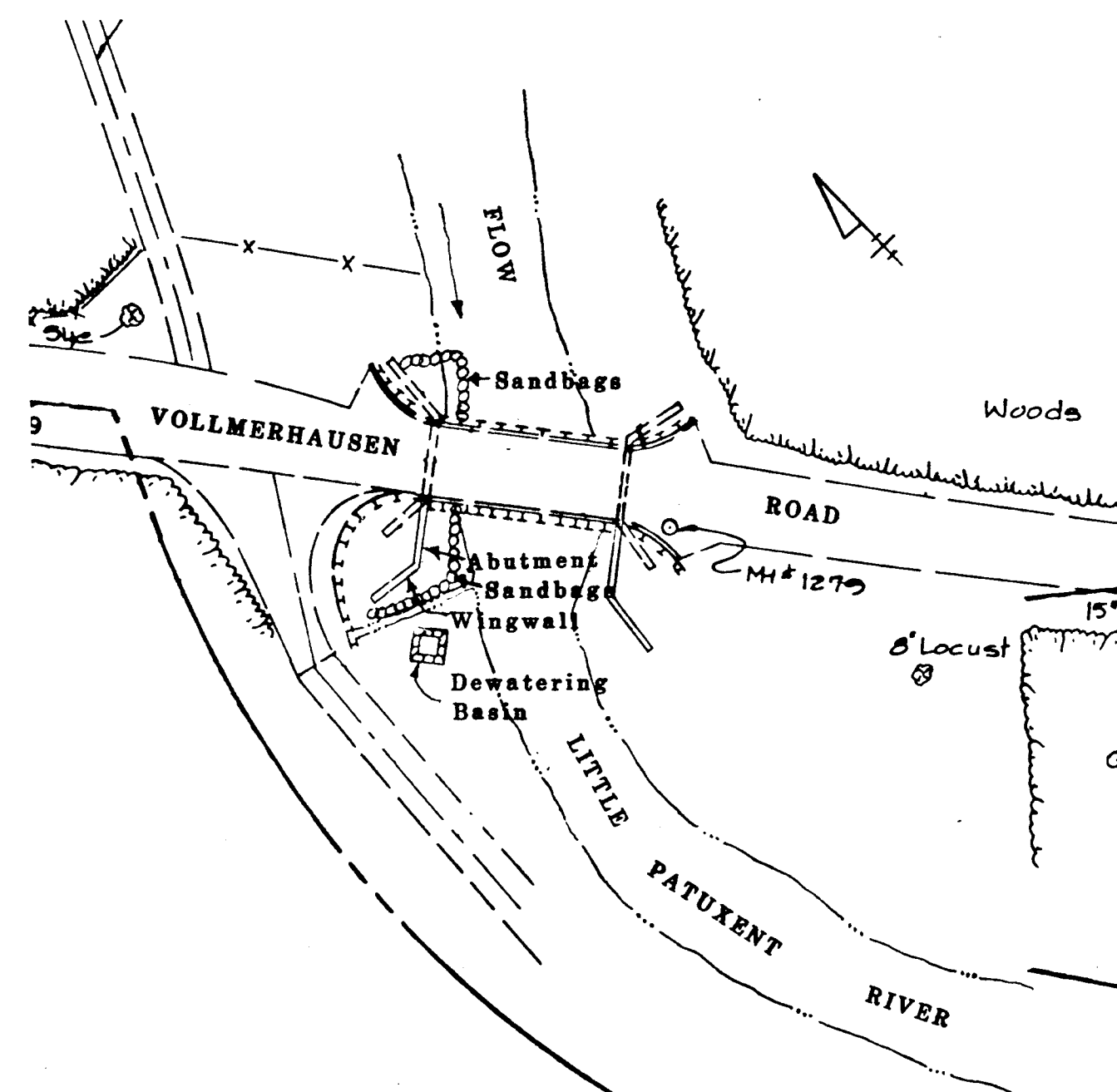
**STAGE III**

1. Construct the new superstructure of the Little Patuxent River Bridge.
2. Slope Silt Fence is to remain downslope of all disturbed areas.
3. After all bridge construction is complete, seed and mulch disturbed areas outside of the immediate baseflow.
4. Allow all disturbed areas to stabilize.
5. Clean up the construction area.
6. Remove slope silt fence.

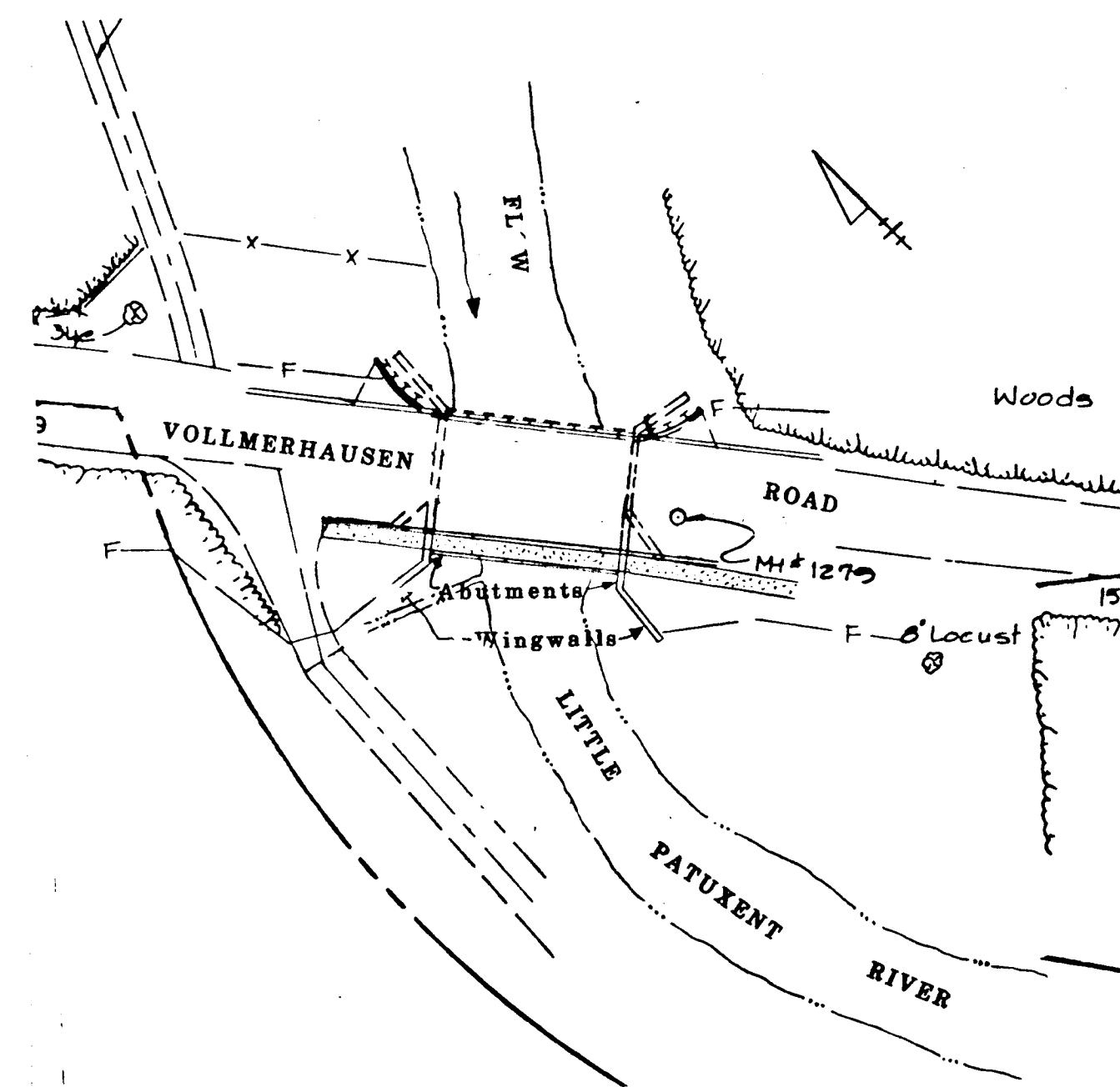
**CONSTRUCTION SEQUENCE STAGE 1**



**CONSTRUCTION SEQUENCE STAGE 2**



**CONSTRUCTION SEQUENCE STAGE 3**



**HOWARD COUNTY SEDIMENT CONTROL NOTES**

1. A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction (992-2437)
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
3. Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days for all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50), and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:
 

|                                    |                 |
|------------------------------------|-----------------|
| Total Area of Site                 | 7.27 Acres      |
| Area Disturbed                     | 7.27 Acres      |
| Area to be roofed or paved         | 4.97 Acres      |
| Area to be vegetatively stabilized | 2.30 Acres      |
| Total Cut                          | 6,500 Cu. yds.  |
| Total Fill                         | 14,510 Cu. yds. |

 Contractor to provide this information for approval before the start of work.
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment controls must be provided, if deemed necessary by the Howard County DPW sediment control inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

*[Signature]* 1-9-91  
Date

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

*[Signature]* 1-9-91  
Date

Reviewed for HOWARD S.C.D. and meets Technical Requirements for Soil Erosion and Sediment Control.

*[Signature]* 1-10-91  
U.S. Soil Conservation Service Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 1-10-91  
Howard S. C. D. Date

16091

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* 1-10-91  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 1/10/91  
CHIEF, BUREAU OF HIGHWAYS DATE

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210

*[Signature]*  
PROFESSIONAL ENGINEER

|             |    |     |          |
|-------------|----|-----|----------|
| DES: JDM    |    |     |          |
| DRN: EMP    |    |     |          |
| CHK: JDM    |    |     |          |
| DATE: 12/90 | BY | NO. | REVISION |

SEDIMENT & EROSION CONTROL DETAILS

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 14 OF 40

**1. DESCRIPTION**

THIS WORK SHALL CONSIST OF THE APPLICATION OF MEASURES THROUGHOUT THE LIFE OF THE PROJECT TO CONTROL EROSION AND MINIMIZE THE SEDIMENTATION OF RIVERS, STREAMS AND IMPOUNDMENTS (LAKES, RESERVOIRS, BAYS AND COASTAL WATERS). THE MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO THE USE OF BERMS, DIKES, DAMS, SEDIMENT BASINS AND/OR TRAPS, GEOTEXTILES, STONE CHECKS, SILT FENCES, SURFACE ROUGHING, MATS & NETS, AGGREGATE, MULCH, GRASSES, SLOPE DRAINS AND OTHER APPROVED METHODS. EROSION AND SEDIMENT CONTROL MEASURES AS DESCRIBED HEREIN AND APPROVED BY M.D.E. SHALL BE APPLIED TO ERODIBLE MATERIAL EXPOSED BY ANY ACTIVITY ON THIS PROJECT.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE COORDINATED WITH THE CONSTRUCTION OF THE PAVEMENT, DRAINAGE FACILITIES SUCH AS PIPES, CULVERTS, HEADWALLS, DITCH PAVING, FLUMES, ETC., WHICH SHALL BE CONSTRUCTED CONCURRENT WITH THE COMMENCEMENT OF THE GRADING OPERATION TO ASSURE ECONOMICAL, EFFECTIVE AND CONTINUOUS EROSION AND SEDIMENT CONTROL.

**2. TEMPORARY CONTROLS**

IN ACCORDANCE WITH THE DEPARTMENT OF THE ENVIRONMENT, TITLE 4, SUBTITLE 106, SEDIMENT CONTROL, ANNOTATED CODE OF MARYLAND REGULATIONS, AND GENERAL PROVISION 7.12 OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, THE CONTRACTOR WILL PROVIDE TEMPORARY POLLUTION CONTROL MEASURES FOR THE PURPOSE OF CORRECTING CONDITIONS THAT DEVELOP DURING CONSTRUCTION NOT FORESEEN DURING THE DESIGN OF THE PROJECT AND FOR THE PURPOSE OF PROVIDING CONTINUOUS EROSION AND SEDIMENT CONTROL FOR THE DURATION OF THE PROJECT.

**3. STANDARD & SPECIFICATIONS**

THIS PLAN WILL BE IN ACCORDANCE WITH THE STATE HIGHWAY ADMINISTRATION'S STANDARD SPECIFICATIONS TITLED "STANDARD SPECIFICATIONS FOR CONSTRUCTION & MATERIALS" DATED JANUARY 1982, AND REVISIONS THEREOF, AND ADDITIONS THERETO INCLUDED IN THESE CONTRACT DOCUMENTS.

THE 1983 "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" (AND AMENDMENTS) WILL BE AN ACCEPTABLE REFERENCE FOR THIS PROJECT.

THIS INFORMATION MUST BE PRESENT ON THE PROJECT AT ALL TIMES

**4. DEFINITIONS**

**CLEARING:** SHALL MEAN THE CLEARING OF TREES, BRUSH, SHRUBS, DOWN TIMBER, ROTTEN WOOD, RUBBISH, AND ANY OTHER VEGETATION (EXCEPT WHERE EXCLUDED BY THE DEFINITION FOR GRUBBING), AS WELL AS THE REMOVAL OF FENCES AND INCIDENTAL STRUCTURES.

**GRUBBING:** SHALL MEAN THE REMOVAL FROM THE GROUND OF STUMPS, ROOTS AND STUBS, BRUSH, FOREST LITTER, ORGANIC MATERIAL AND DEBRIS.

**DISTURBED AREA:** SHALL MEAN AN AREA WHERE GRUBBING AND/OR GRADING HAS BEEN INITIATED.

**STABILIZATION/STABILIZED:** (CASE 1) - TO MEET THE REQUIREMENTS TO PROCEED WITH THE NEXT GRADING UNIT(S) OR OPERATION(S) SHALL MEAN THE PLACEMENT OF SEED AND MULCH, SOD, ETC. (CASE 2) - TO MEET THE REQUIREMENT FOR REMOVAL OF THE CONTROLS SHALL MEAN THAT THE COMPLETE GROWTH OF VEGETATION HAS OCCURRED (I.E.: 3' HEIGHT OF PERMANENT GRASS OVER ALL AREAS).

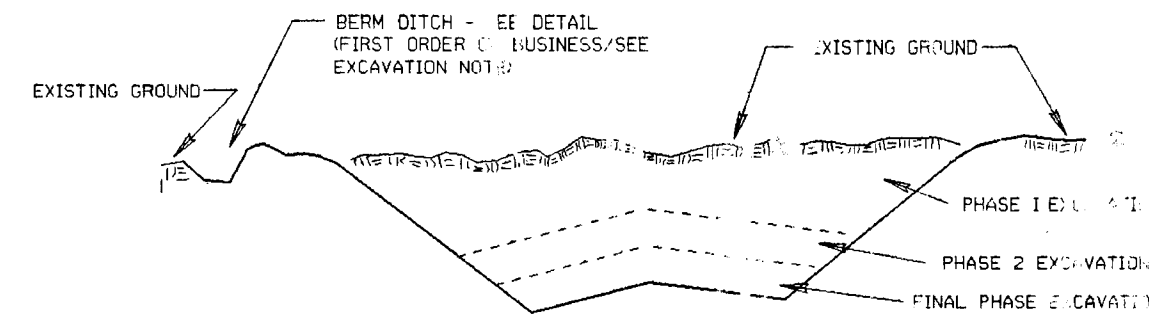
**5. CLEARING AND GRUBBING**

EROSION AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED AT THE BEGINNING OF THE GRUBBING PORTION OF THIS OPERATION. GRUBBING WILL BE RESTRICTED TO THE GRADING UNIT CURRENTLY ACTIVE.

**6. EXCAVATION**

IF BERM DITCHES ARE TO BE USED IN A CUT SECTION, THEY WILL BE EXCAVATED AND STABILIZED AS THE FIRST ORDER OF BUSINESS, AS DIRECTED BY THE ENGINEER.

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 15 FEET.



- CONSTRUCTION SEQUENCE:
- 1) EXCAVATE AND STABILIZE BERM, SIDE AND OUTLET DITCHES.
  - 2) PERFORM PHASE 1 EXCAVATION, DRESS, SEED & MULCH SLOPES WITH PERMANENT SEED & MULCH.
  - 3) PERFORM PHASE 2 EXCAVATION, DRESS, SEED & MULCH SLOPES WITH PERMANENT SEED & MULCH. OVERSEED PHASE 1 SLOPES, IF REQUIRED.
  - 4) PERFORM FINAL PHASE EXCAVATION, DRESS, SEED & MULCH SLOPES WITH PERMANENT SEED & MULCH. STABILIZE SURFACE DRAIN DITCHES, OVERSEED PHASE 1 & 2 SLOPES, IF REQUIRED, AS DETERMINED BY THE ENGINEER.

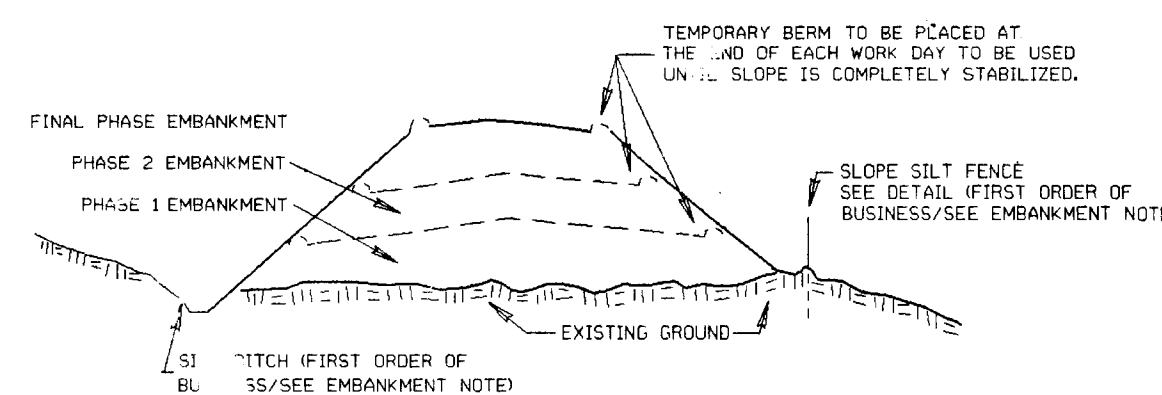
**PHASING PLAN-CUT SECTION**

NOTE: ONCE THE EXCAVATION WITHIN A SPECIFIC AREA HAS BEGUN, THE OPERATION SHALL BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF THE GRADING AND PLACEMENT OF PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OF 14 DAYS OR MORE MUST BE APPROVED BY THE ENGINEER. ANY VIOLATION OF THIS REQUIREMENT WILL RESULT IN THE CONTRACTOR ASSUMING THE RESPONSIBILITY OF PLACING TEMPORARY STABILIZATION AT HIS OWN COST AND EXPENSE.

**7. EMBANKMENT**

THE FIRST ORDER OF BUSINESS WILL BE THE EXCAVATION AND STABILIZATION OF SIDE DITCHES AND PLACEMENT OF PERIMETER CONTROLS (SILT FENCE, ETC.). THE EMBANKMENT WILL BE MADE IN LIFTS MEETING THE SAME HEIGHT REQUIREMENTS AS PREVIOUSLY STATED FOR CUT SECTIONS. THE SLOPES WILL BE STABILIZED IMMEDIATELY FOLLOWING THE COMPLETION OF THE INTERMEDIATE STAGE(S).

AT THE END OF EACH WORK DAY TEMPORARY BERM (EARTH) AND SLOPE DRAINS WILL BE CONSTRUCTED ALONG THE TOP EDGE(S) OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF.



- CONSTRUCTION SEQUENCE:
- 1) EXCAVATE AND STABILIZE SIDE DITCH AND/OR INSTALL PROPOSED CONTROLS AT THE TOE OF SLOPE.
  - 2) PLACE PHASE 1 EMBANKMENT, PROVIDE TEMPORARY SEEDING OF STRAW MULCH.
  - 3) PLACE PHASE 2 EMBANKMENT, DRESS, PROVIDE TEMPORARY SEEDING OR STRAW MULCH.
  - 4) PLACE FINAL PHASE EMBANKMENT, DRESS, PREPARE & PLACE PERMANENT SEED & MULCH ON THE ENTIRE SLOPE.

**PHASING PLAN-FILL SECTION**

**GENERAL NOTES**

**8. STABILIZATION / LIMITS OF DISTURBANCE**

OTHER THAN LISTED BELOW, ONE UNIT EQUALING 20 ACRES (871,200 SQUARE FEET) THAT HAS BEEN CLEARED CAN BE ACTIVELY GRADED AT ONE TIME. ONCE GRADING BEGINS IN THE FIRST UNIT A SECOND UNIT MAY BE GRUBBED. TWO UNITS (ONE GRADED AND ONE GRUBBED) WILL BE ALLOWED PER GRADING OPERATION. A GRADING OPERATION IS DEFINED AS THE CONTRACTOR'S ABILITY TO PROVIDE ADEQUATE RESOURCES TO PERFORM THE GRADING IN A TIMELY MANNER AND PROVIDE AND MAINTAIN THE PROPER EROSION AND SEDIMENT CONTROL MEASURES. THE DISTRICT ENGINEER OR HIS DESIGNATE WILL BE THE FINAL AUTHORITY IN THIS DETERMINATION. A GRADING UNIT NEED NOT BE 20 CONTINUOUS ACRES. ALL APPROPRIATE PERIMETER CONTROLS WILL BE INSTALLED PRIOR TO ANY GRUBBING OPERATION. AREAS ARE TO BE PERMANENTLY OR TEMPORARILY SEEDED AND MULCHED WHEN SITE DEVELOPMENT WORK, GRADING, OR OTHER EARTH DISTURBING ACTIVITIES CEASE TO BE CONTINUOUS FOR A PERIOD TO EXCEED 14 CALENDAR DAYS. UPON COMPLETION OF THE GRADING OR CONSTRUCTION THE AREA WILL BE PERMANENTLY STABILIZED WITHIN 7 CALENDAR DAYS. THIS PERTAINS TO PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES AND OTHER SLOPES GREATER THAN 3:1. SLOPES LESS THAN 3:1 NEED NOT BE TEMPORARILY STABILIZED, HOWEVER, THE PERMANENT STABILIZATION WITHIN 7 DAYS IS REQUIRED. ONCE THE EXCAVATION OR EMBANKMENT REACHES THE "BOTTOM OF SUBGRADE" (I.E., CAPPING MATERIAL OR AGGREGATE SUBGRADE IN PLACE) THOSE AREAS IN WHICH PAVING WILL BE PLACED WILL BE EXEMPT FROM THE STABILIZATION REQUIREMENTS. ROADWAYS AND HAULROADS ACTIVELY BEING USED FOR DAILY CONVEYANCE OF EQUIPMENT WILL ALSO BE EXEMPT FROM THE STABILIZATION REQUIREMENTS. AREAS BETWEEN "TEMPORARY BERMS" EXCEPT MEDIAN AREAS NEED NOT BE STABILIZED UPON COMPLETION OF GRADING. THE 7 / 14 DAY REQUIREMENT IS TAKEN TO MEAN THAT THE STABILIZATION OPERATION IS COMPLETE OR NEARING COMPLETION.

WHEN BALANCING EARTHWORK (BORROW FROM A CUT USED AS FILL AT A LOCATION DISTANT FROM THE CUT) CONSIDERATION WILL BE ALLOWED FOR GREATER THAN ONE UNIT OF GRADING. IN SUCH CASES, ONE UNIT OF CUT AND ONE GRADING UNIT OF FILL WILL BE ALLOWED TO BE GRUBBED AND GRADED. GREATER THAN ONE UNIT OF GRUBBED AND GRADED AREA SHALL BE ALLOWED FOR INTERCHANGE CONSTRUCTION. WHEN WET SOIL CONDITIONS ARE ENCOUNTERED, THE CONTRACTOR WILL BE ALLOWED TO GRUB AND GRADE ANOTHER UNIT PROVIDING THE INITIAL UNIT HAS BEEN PROPERLY STABILIZED.

NO SLOPE SHALL BE LEFT DISTURBED WITHOUT BENEFIT OF SURFACE ROUGHENING FOR MORE THAN 5 DAYS.

THE MOST STRINGENT REQUIREMENTS FOR STABILIZATION UNDER EXCAVATION, EMBANKMENT OR STABILIZATION/LIMITS OF DISTURBANCE WILL BE PREFERENTIALLY ENFORCED.

**9. MAINTENANCE**

SILT TRAPS, SEDIMENT BASINS, DITCHES, STRAW BALES, SILT FENCES, STONE OUTLET STRUCTURES, EARTH BERMS, ETC. SHALL BE MAINTAINED DURING THE CONSTRUCTION SEASON AS WELL AS THE WINTER MONTHS AND OTHER TIMES WHEN THE PROJECT IS CLOSED DOWN. THE MAINTENANCE INTERVAL SHALL BE AS SPECIFIED IN THE DOT/SHA STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS AND PLANS OR WHEN DIRECTED BY THE ENGINEER.

TRAPS WILL BE CLEANED WHEN THEY ARE 50% FILLED. SILT FENCE STONE OUTLET STRUCTURES AND STRAW BALES SHALL HAVE SEDIMENTATION REMOVED WHEN IT REACHES 50% THE HEIGHT OF THE CONTROL DEVICE. THESE SPOILS WILL BE REMOVED TO AN APPROVED SITE.

CONTROLS WILL BE INSPECTED IMMEDIATELY FOLLOWING RAIN STORMS. THE CONTRACTOR WILL IMMEDIATELY REPAIR CONTROLS WHEN DAMAGED.

ACCESS SHALL BE MAINTAINED TO ALL SEDIMENT CONTROL REQUIRING MAINTENANCE UNTIL THOSE CONTROLS ARE NO LONGER REQUIRED.

MAINTENANCE OF THE CONTROL DEVICES IS ESSENTIAL. LACK OF COOPERATION ON THE PART OF THE CONTRACTOR WILL BE CONSIDERED AS A MAJOR VIOLATION TO THE PLAN AND GROUNDS FOR A "SHUT-DOWN" OF THE PROJECT.

**10. EROSION AND SEDIMENT CONTROL EXCAVATION**

THIS ITEM HAS BEEN ESTABLISHED TO INCLUDE THE EXCAVATION, BACKFILLING AND MAINTENANCE OF SEDIMENT TRAPS. IT SHALL ALSO INCLUDE THE REMOVAL OF SILT IN AND AROUND SEDIMENT BASINS, SLOPE AND CHANNEL SILT FENCE, STRAW BALE DITCH CHECKS, TEMPORARY STONE OUTLET STRUCTURE, EARTH BERMS, SWALES DITCHES, ETC. MEASUREMENT AND PAYMENT WILL BE BASED ON THE CUBIC YARD WHICH SHALL INCLUDE ALL EQUIPMENT, TOOLS AND LABOR REQUIRED.

**11. STOCKPILED MATERIAL**

SALVAGED TOPSOIL WILL BE PLACED ON WELL DRAINED LAND AWAY FROM LIVE STREAMS AND IN ACCORDANCE WITH APPROVED EROSION AND SEDIMENT CONTROL MEASURES. IT SHALL BE PLACED IN PILES OF NEAT CONFORMATIONS AND SEEDED WITH TEMPORARY SEED IMMEDIATELY AFTER FINAL SHAPING OF THE PILE IN ACCORDANCE WITH SECTION 703 OF THE DOT/SHA STD. SPECS. THE CONTRACTOR WILL PROVIDE AN ADEQUATE QUANTITY OF OR SILT FENCE TO CONTROL THE PERIMETER OF THE STOCKPILE UNTIL SUCH TIME VEGETATION IS ESTABLISHED. IF HE ELECTS, THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY CONSTRUCT AN EARTH BERM IN LIEU OF SILT FENCE. THE COST FOR THESE CONTROLS WILL BE IN ACCORDANCE WITH THE APPROPRIATE CONTRACT ITEMS.

**12. EXCAVATED MATERIAL**

MATERIALS EXCAVATED FOR THE CONSTRUCTION OF SEDIMENT TRAPS WILL NOT BE STOCKPILED IN THE AREA OF THE TRAP. IT WILL EITHER BE PLACED IN AN EMBANKMENT OR WASTED AS DIRECTED BY THE ENGINEER. EXCAVATION FROM CUTS TO BE USED FOR EMBANKMENTS WILL NOT BE STOCKPILED UNLESS PERIMETER CONTROLS ARE UTILIZED. COSTS FOR THESE CONTROLS WILL BE BORNE BY THE CONTRACTOR. IF THIS MATERIAL IS STOCKPILED UNDER THE DIRECTION OF THE ENGINEER THE ADMINISTRATION WILL ASSUME THE COSTS OF THE CONTROLS.

**13. DEWATERING DISCHARGE**

SEDIMENT - LADEN DEWATERING DISCHARGE MUST BE DIRECTED TO AN APPROVED SEDIMENT TRAPPING MEASURE PRIOR TO RELEASE FROM THE SITE.

**14. TEMPORARY SLOPE DRAINS**

ALL TEMPORARY SLOPE DRAINS WILL DISCHARGE INTO THE BACK OF SEDIMENT TRAPS, INTO SEDIMENT BASINS, OR DITCHES DISCHARGING INTO TRAPS OR BASINS.

**15. INLET SEDIMENT TRAPS**

ALL INLET SEDIMENT TRAPS MUST BE USED IN CONJUNCTION WITH A TEMPORARY SEDIMENT TRAP (T.S.T.), TEMPORARY STONE OUTLET STRUCTURE (T.S.O.S.), CHANNEL SILT FENCE (C.S.F.) OR ANY COMBINATION. TYPICALLY, THE ADDITIONAL CONTROLS WILL BE PLACED 25 FT. (MAX.) UPGRADE OF THE INLET SEDIMENT TRAP.

**EROSION AND SEDIMENT CONTROL DETAIL SHEET**

NOT TO SCALE

1606

|   |   |  |   |   |  |  |
|---|---|--|---|---|--|--|
| <p>DEPARTMENT OF PUBLIC WORKS<br/>HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 11-19-91<br/>DATE</p> <p><i>[Signature]</i> 1-10-91<br/>DATE</p> <p><i>[Signature]</i> 1-10-91<br/>DATE</p> | <p>BUCHART-HORN INC.<br/>CONSULTING ENGINEERS<br/>THE QUADRANGLE<br/>244 WEST BLOCK<br/>VILLAGE OF CROSS KEYS<br/>BALTIMORE, MARYLAND 21210</p> |  | <p>DES: S.H.A.</p> <p>DRN: S.H.A.</p> <p>CHK: J.D.M.</p> <p>DATE: 12/90</p> | <p>SOIL &amp; EROSION CONTROL DETAILS</p> | <p>VOLLMERHAUSEN ROAD IMPROVEMENTS<br/>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br/>CAPITAL PROJECT NO. J-4046<br/>ELECTION DISTRICT NO. 6<br/>HOWARD COUNTY, MARYLAND</p> | <p>SCALE AS SHOWN</p> <p>SHEET 14A OF 40</p> |
|---|---|--|---|---|--|--|

**GENERAL NOTES**

**16. GEOTEXTILE**

GEOTEXTILE WILL BE USED WITH ALL RIPRAP DITCHES (BY TYPE), TEMPORARY STONE OUTLET STRUCTURES (T.S.O.S.), AND STABILIZED CONSTRUCTION ENTRANCES (S.C.E.), BOTH LIGHT AND HEAVY DUTY.

A LIGHT DUTY S.C.E. IS USED WHERE MOST TRAVEL WILL BE SINGLE AXLE VEHICLES WITH AN OCCASIONAL MULTI-AXLE TRUCK AND THE AREA HAS BEEN GRADED TO OR NEAR SUBGRADE. A HEAVY DUTY S.C.E. IS WHERE THE AREA IS ROUGH GRADED AND THE MAJORITY OF THE TRAFFIC IS MULTI-AXLED.

TO PREVENT DAMAGE TO THE GEOTEXTILE THE MAXIMUM DROP HEIGHT FOR THE MATERIALS SHALL BE:

| MATERIAL                    | MAXIMUM DROP HEIGHT     |
|-----------------------------|-------------------------|
| 4" - 12" STONE FOR T.S.O.S. | 3 FT.                   |
| CLASS I RIPRAP              | 3 FT.                   |
| CLASS II, III RIPRAP        | PLACED WITHOUT FREEFALL |

THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS, HYDRO-CARBONS, MILDEW, ROT RESISTANT AND CONFORM TO THE FOLLOWING PROPERTIES:

GEOTEXTILES SHALL MEET THE CLASS SPECIFIED IN THE SPECIAL PROVISIONS, PLANS OR STANDARDS, AND SHALL BE MANUFACTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS, COMPOSED OF AS A MINIMUM OF 85 PERCENT BY WEIGHT OF POLYOLEPHINS, POLYESTERS OR POLYAMIDES. THE GEOTEXTILE SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE. GEOTEXTILES USED IN THE CONSTRUCTION OF SILT FENCE SHALL CONTAIN SUFFICIENT AMOUNTS OF ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 12 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120 F.

ALL VALUES SPECIFIED ARE MINIMUM OR MAXIMUM ROLL VALUES.

CLASS F GEOTEXTILES (SILT FENCE) SHALL HAVE A 50 LB./IN. MINIMUM TENSILE STRENGTH AND A 20 LB./IN. MINIMUM TENSILE MODULUS WHEN TESTED IN ACCORDANCE WITH MSMT 509. THE MATERIAL SHALL ALSO HAVE A 0.3 GAL./FT.2/MINUTE MINIMUM FLOW RATE AND A 75 PERCENT MINIMUM FILTERING EFFICIENCY WHEN TESTED IN ACCORDANCE WITH MSMT 322.

CLASSES A THROUGH E SHALL HAVE A 0.01 CM/SECOND MINIMUM PERMEABILITY WHEN TESTED IN ACCORDANCE WITH MSMT 507, AND AN APPARENT MINIMUM ELONGATION OF 20 PERCENT WHEN TESTED IN ACCORDANCE WITH THE GRAB TENSILE STRENGTH REQUIREMENTS SPECIFIED BELOW. CLASSES A THROUGH E SHALL ALSO MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:

| CLASS | APPARENT OPENING SIZE MM. MAX. | GRAB TENSILE STRENGTH LB. MIN. | BURST STRENGTH PSI. MIN. |
|-------|--------------------------------|--------------------------------|--------------------------|
| A     | 0.30                           | 250                            | 500                      |
| B     | 0.60                           | 200                            | 320                      |
| C     | 0.30                           | 200                            | 320                      |
| D     | 0.60                           | 90                             | 145                      |
| E     | 0.30                           | 90                             | 145                      |

THE PROPERTIES SHALL BE DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:

APPARENT OPENING SIZE-----MSMT 323  
 GRAB TENSILE STRENGTH-----ASTM D 1682, GRAB TEST  
 4 X 8 IN. SPECIMEN, 1 X 2 IN. CLAMPS, 12 IN./MINUTE STRAIN RATE, BOTH PRINCIPAL DIRECTIONS OF GEOTEXT., E.  
 BURST STRENGTH-----ASTM D 3.77

**17. NOTE TO CONTRACTOR**

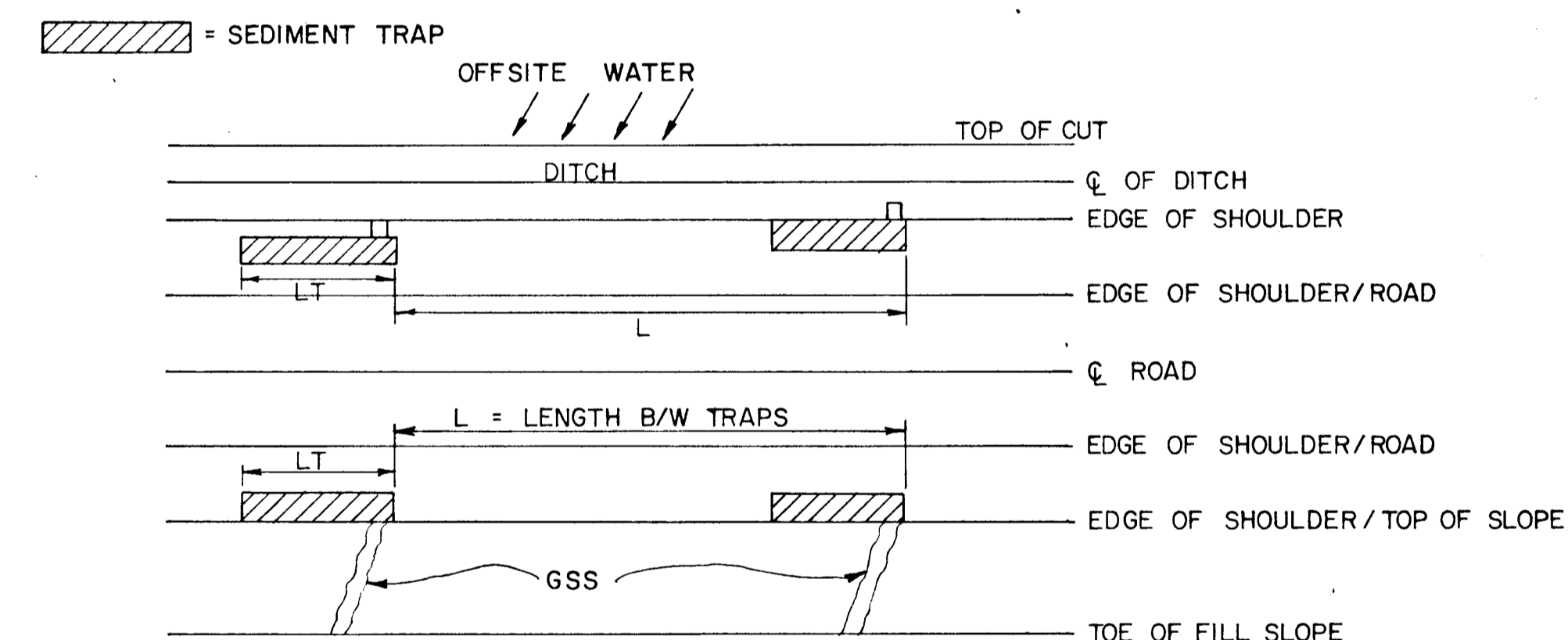
"THE CONTRACTOR WILL NOTE THAT NO CONSTRUCTION ACTIVITIES WILL BE UNDERTAKEN WITHIN SPECIFIED AREAS OF THE PROJECT WITHOUT PRIOR NOTIFICATION OF SUCH ACTIVITIES TO THE ENGINEER. ALL WORK IN THESE AREAS WILL BE MONITORED BY A RESPONSIBLE PARTY DESIGNATED BY THE CONTRACTOR TO ASSURE THAT REASONABLE CARE BE TAKEN WHILE WORKING THESE ENVIRONMENTALLY SENSITIVE AREAS. THESE AREAS ARE AS FOLLOWS:"

**18. CONTRACTOR PAYMENT**

THE CONTRACTOR WILL ONLY BE COMPENSATED FOR WORK THAT IS DONE IN ACCORDANCE WITH THE SPECIFICATIONS, SPECIAL PROVISIONS AND THESE PLANS. ANY CORRECTIONS BROUGHT ABOUT BY NON-COMPLIANCE OR ERRORS BY THE CONTRACTOR WILL BE MADE AT HIS EXPENSE.

**SPECIAL NOTES AND DETAILS**

THE CONTRACTOR SHALL SUBMIT A PLAN TO THE ENGINEER AND THE HOWARD SOIL CONSERVATION DISTRICT, FOR APPROVAL, OUTLINING HOW HE WILL CONSTRUCT THE ROADWAY WITHIN THE STEEP SLOPE AREAS TO MINIMIZE THE POTENTIAL FOR EROSION. IT IS SUGGESTED THAT UNITS OF WORK BE INSTALLED, STARTING FROM THE HIGHER ENDS, SUCH THAT THE NEXT LOWER UNIT CAN BE USED FOR SEDIMENT CONTROL FOR THE UPPERMOST UNITS OF WORK.



TYPICAL TRAP LOCATION FOR CUT AND FILL GRADING NTS

TRAP WIDTH 4  
 TRAP DEPTH 2.5  
 TRAP LENGTH = LT

$$LT = \left( \frac{L * 18}{43560} \right) * 1800$$

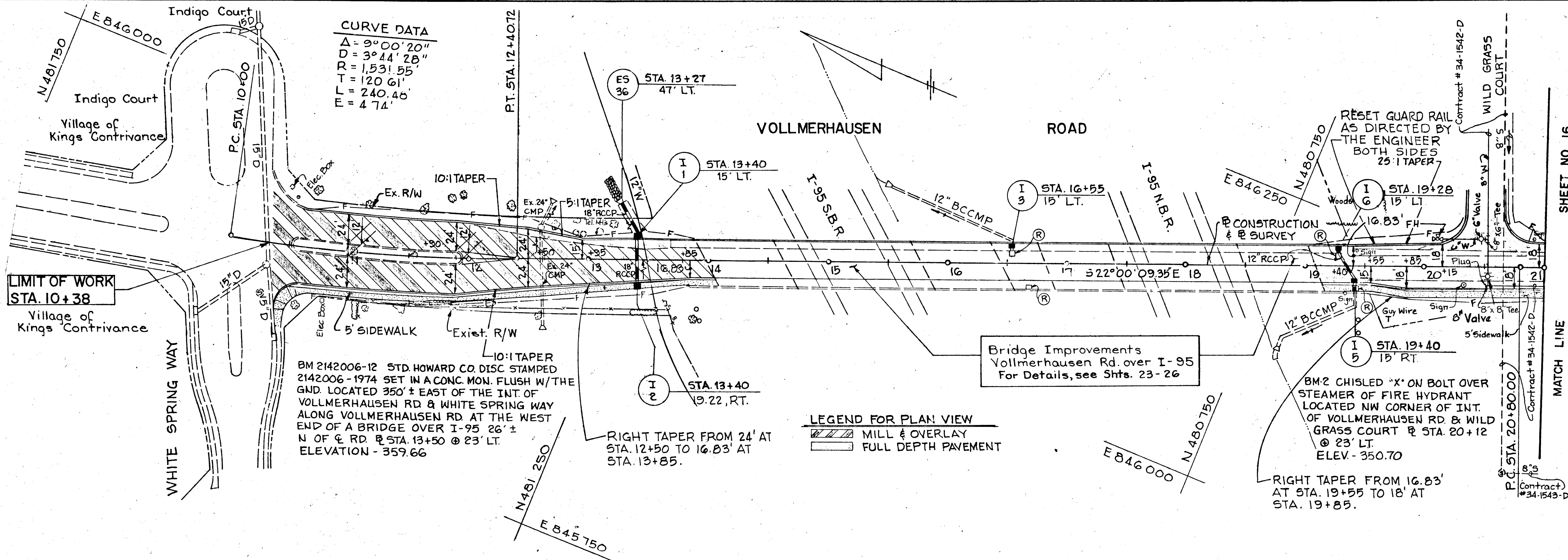
**EROSION AND SEDIMENT CONTROL DETAIL SHEET**

NOT TO SCALE

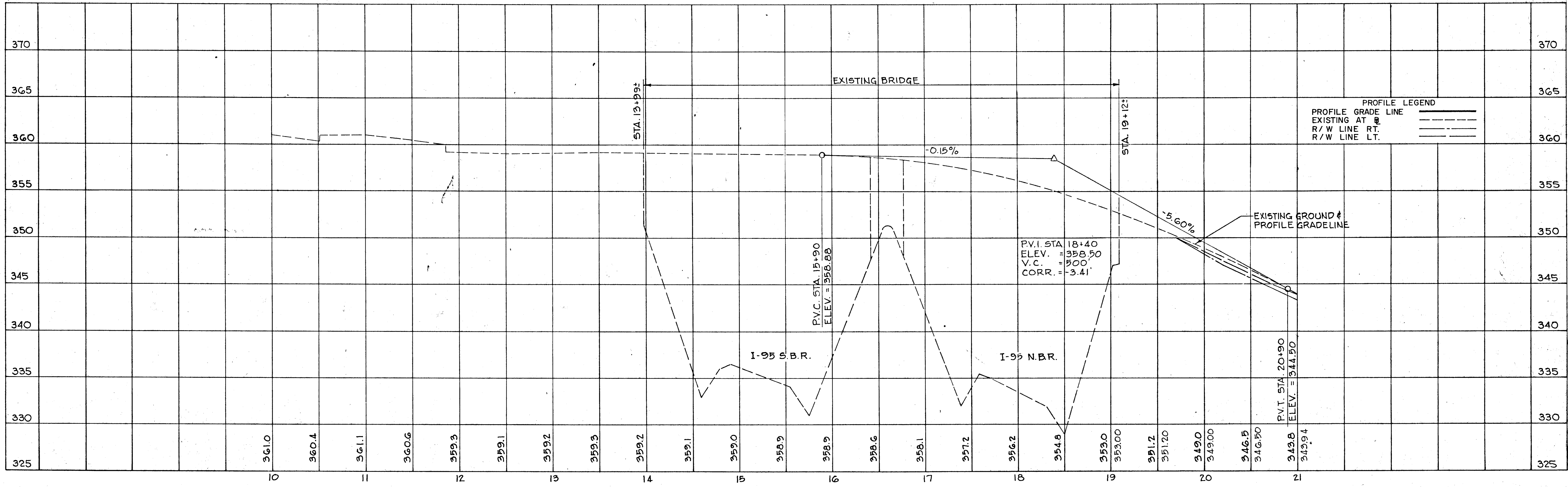
1606

|  |  |  |   |   |  |  |
|--|--|--|---|---|--|--|
| <p>DEPARTMENT OF PUBLIC WORKS<br/>                 HOWARD COUNTY, MARYLAND</p> <p><i>James P. ...</i><br/>                 DIRECTOR OF PUBLIC WORKS DATE 11/11/91</p> <p><i>Elizabeth Anderson</i><br/>                 CHIEF OF DIVISIONS DATE 11/11/91</p> | <p>BUCHART-HORN INC.<br/>                 CONSULTING ENGINEERS<br/>                 THE QUADRANGLE<br/>                 244 WEST BLOCK<br/>                 VILLAGE OF CROSS KEYS<br/>                 BALTIMORE, MARYLAND 21210</p> |  | <p>DES: S.H.A.<br/>                 DRN: S.H.A.<br/>                 CHK: J.D.M.<br/>                 DATE: 12/90</p> | <p>SOIL &amp; EROSION CONTROL DETAILS</p> | <p>VOLLMERHAUSEN ROAD IMPROVEMENTS<br/>                 WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br/>                 CAPITAL PROJECT NO. J-4046<br/>                 ELECTION DISTRICT NO. 6<br/>                 HOWARD COUNTY, MARYLAND</p> | <p>SCALE AS SHOWN<br/>                 SHEET 14B OF 40</p> |
|--|--|--|---|---|--|--|





| STRUCTURE |              | SCHEDULE |         |          |                   |
|-----------|--------------|----------|---------|----------|-------------------|
| NUMBER    | TYPE         | TOP EL.  | INV. IN | INV. OUT | HOW. CO. STD. NO. |
| I-1       | A-5          | 359.06   | 352.99  | 352.50   | SD - 4.01         |
| I-2       | A-5          | 359.01   | -       | 353.50   | SD - 4.01         |
| I-3       | DOUBLE '5'   | 358.45   | -       | 352.5    | SD - 4.23         |
| I-5       | '5' COMB.    | 351.76   | 346.90  | 346.65   | SD - 4.32         |
| I-6       | '5' COMB.    | 351.91   | -       | 347.20   | SD - 4.32         |
| E5-36     | 18' CONCRETE | 353.75   | -       | 352.05   | SD - 5.51         |



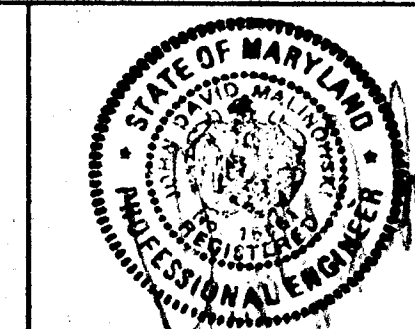
1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Thomas J. ...* 1/14/91  
DIRECTOR OF PUBLIC WORKS

*Francis W. ...* 1/14/91  
CHIEF, BUREAU OF HIGHWAYS

**BUCHART - HORN INC.**  
CONSULTING ENGINEERS  
F. ALTIMORE, MARYLAND 21210



DES: EMP  
DRN: EMP  
CHK: JDM  
DATE: 12-90

PLAN AND PROFILE  
STA. 10+00 TO STA. 21+00

**VOLLMERHAUSEN RD IMPROVEMENTS**  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J - 4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

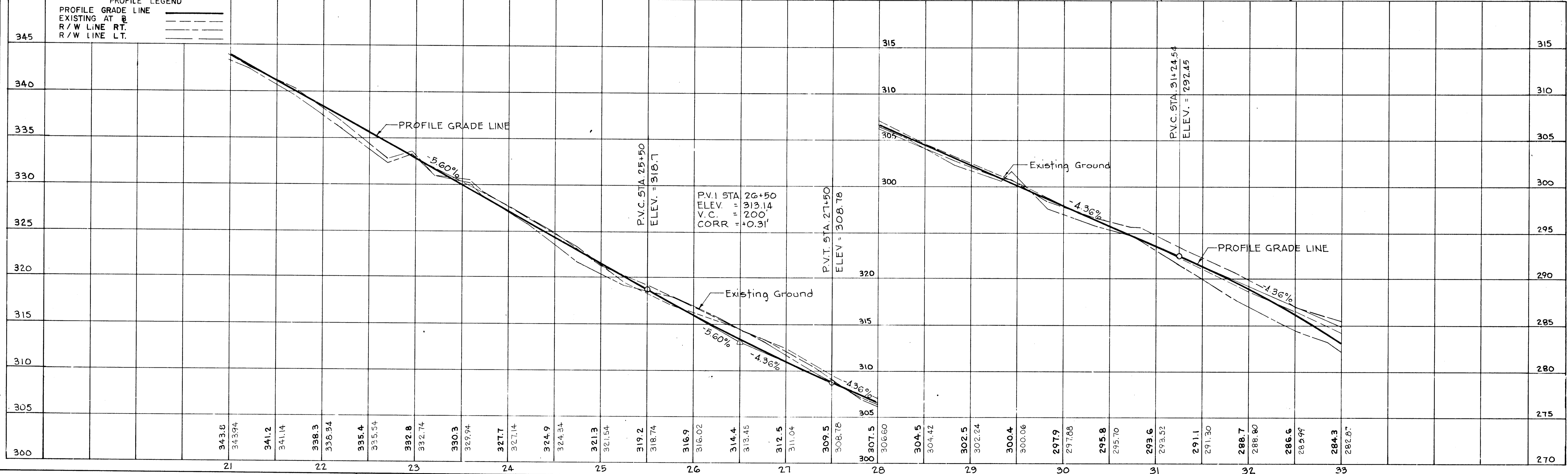
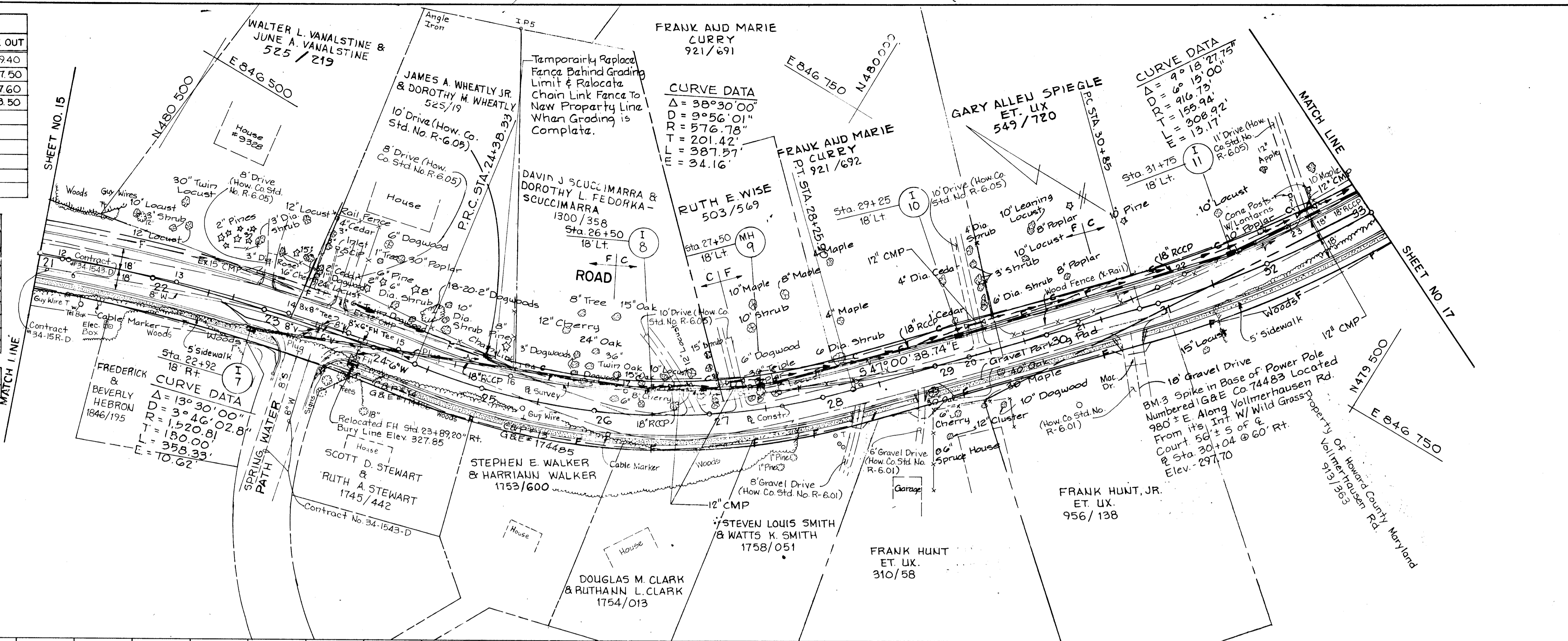
SCALE  
HORIZ. 1"=50'  
VERT. 1"=5'

SHEET  
15 OF 40

| DRIVEWAY CULVERT SCHEDULE |        |      |      |         |          |
|---------------------------|--------|------|------|---------|----------|
| LOCATION                  | LENGTH | SIZE | TYPE | INV. IN | INV. OUT |
| Sta. 26+77, Lt.           | 15'    | 12"  | CMP  | 310.60  | 309.40   |
| Sta. 27+25, Lt.           | 10'    | 12"  | CMP  | 307.90  | 307.50   |
| Sta. 29+43, Lt.           | 10'    | 12"  | CMP  | 298.40  | 297.60   |
| Sta. 32+50, Lt.           | 11'    | 12"  | CMP  | 284.20  | 283.50   |

| STRUCTURE SCHEDULE |                  |         |         |          |                   |  |
|--------------------|------------------|---------|---------|----------|-------------------|--|
| NUMBER             | TYPE             | TOP EL. | INV. IN | INV. OUT | HOW. CO. STD. NO. |  |
| I-7                | A-5 W/DEFLECTORS | 333.20  | -       | 324.66   | 5D-4.01 & 5D-4.83 |  |
| I-8                | A-5 W/DEFLECTORS | 313.46  | 309.00  | 308.50   | 5D-4.01 & 5D-4.83 |  |
| I-10               | A-5 W/DEFLECTORS | 301.16  | 297.38  | 296.95   | 5D-4.01 & 5D-4.83 |  |
| I-11               | A-5 W/DEFLECTORS | 290.10  | 285.97  | 285.60   | 5D-4.01 & 5D-4.83 |  |
| MH-9               | STD. A-O SHALLOW | 308.91  | 304.64  | 304.10   | 6-5.05            |  |

| DITCH SCHEDULE               |                     |
|------------------------------|---------------------|
| STA. 24+00 TO STA. 33+00 LT. | PLACED RIPRAP DITCH |



1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *Elizabeth Anderson-Collie* 1/10/91  
Chief, Bureau of Engineering: *William W. Veneard* 1/10/91

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



DES: EMP  
DRN: EMP  
CHK: JDM  
DATE: 12/90

PLAN AND PROFILE  
STA. 21+00 TO STA. 33+00

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

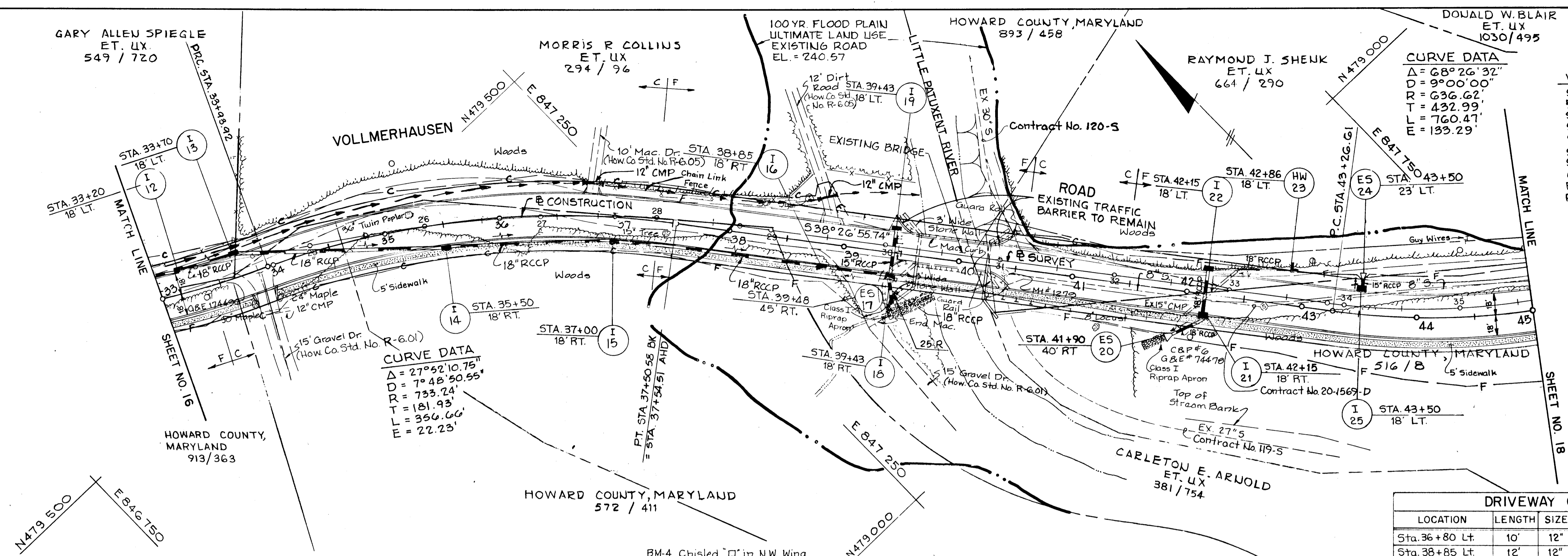
SCALE  
HORIZ. 1"=50'  
VERT. 1"=5'  
SHEET  
16 OF 22

GARY ALLEN SPIEGLE  
ET. UX  
549 / 720

MORRIS R COLLINS  
ET. UX  
294 / 96

RAYMOND J. SHENK  
ET. UX  
664 / 290

DONALD W. BLAIR  
ET. UX  
1030 / 495



**CURVE DATA**

$\Delta = 68^{\circ}26'32''$   
 $D = 9^{\circ}00'00''$   
 $R = 636.62'$   
 $T = 432.99'$   
 $L = 760.41'$   
 $E = 133.29'$

**W-BEAM TRAFFIC BARRIER**

STA. 39+42, LT. TO STA. 39+63.50  
 50' IN LENGTH AT 25' RADIUS WITH  
 STANDARD ENDCAP AT STA. 39+42 AND  
 STANDARD BRIDGE ATTACHMENT AT  
 STA. 39+63.50.

STA. 40+24, LT. TO STA. 40+90, LT.  
 STANDARD TYPE II END FLARE. CHANGE  
 6' OFFSET AT END TO 3.5' FROM  
 BACK OF SIDEWALK.  
 RIGHT SIDE BARRIER TO REMAIN.

**CURVE DATA**

$\Delta = 27^{\circ}52'10.75''$   
 $D = 7^{\circ}48'50.55''$   
 $R = 733.24'$   
 $T = 181.93'$   
 $L = 356.66'$   
 $E = 22.23'$

**DITCH SCHEDULE**

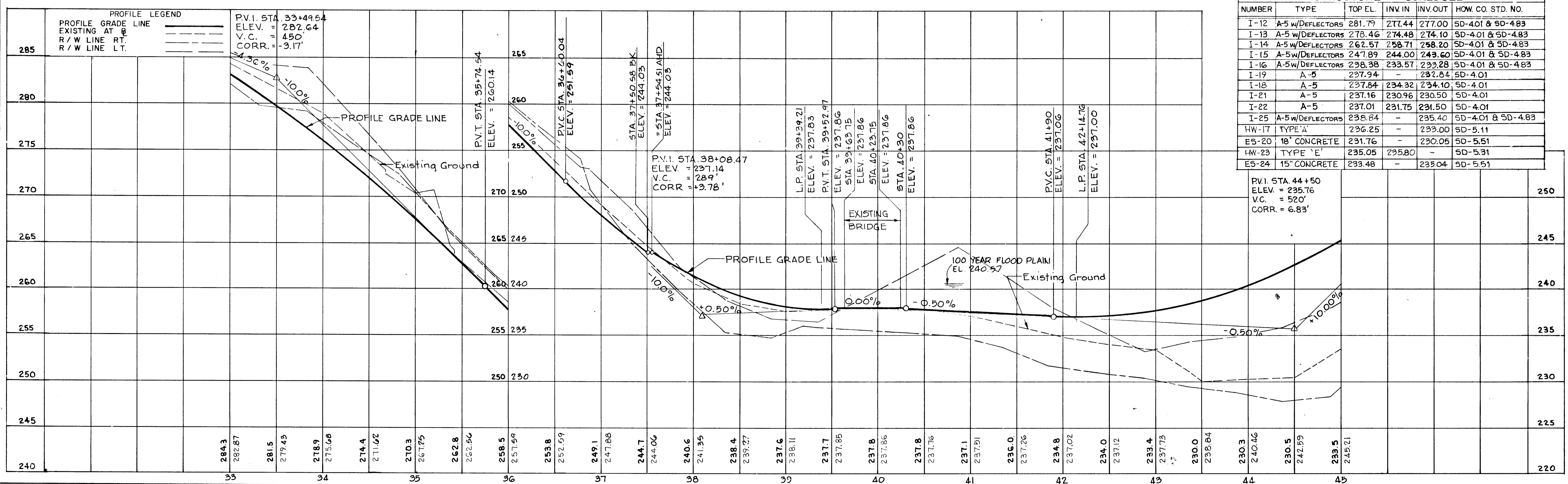
| LOCATION       | LENGTH | SIZE | TYPE | INV. IN | INV. OUT |
|----------------|--------|------|------|---------|----------|
| Sta. 36+80 Lt. | 10'    | 12"  | CMP  | 250.50  | 249.50   |
| Sta. 38+85 Lt. | 12'    | 12"  | CMP  | 235.00  | 234.40   |

**DRIVEWAY CULVERT SCHEDULE**

| LOCATION       | LENGTH | SIZE | TYPE | INV. IN | INV. OUT |
|----------------|--------|------|------|---------|----------|
| Sta. 36+80 Lt. | 10'    | 12"  | CMP  | 250.50  | 249.50   |
| Sta. 38+85 Lt. | 12'    | 12"  | CMP  | 235.00  | 234.40   |

**STRUCTURE SCHEDULE**

| NUMBER | TYPE             | TOP EL. | INV. IN | INV. OUT | HOW. CO. STD. NO. |
|--------|------------------|---------|---------|----------|-------------------|
| I-12   | A-5 w/DEFLECTORS | 281.79  | 277.44  | 277.00   | SD-4.01 & SD-4.83 |
| I-13   | A-5 w/DEFLECTORS | 278.46  | 274.48  | 274.10   | SD-4.01 & SD-4.83 |
| I-14   | A-5 w/DEFLECTORS | 262.57  | 258.71  | 258.20   | SD-4.01 & SD-4.83 |
| I-15   | A-5 w/DEFLECTORS | 247.89  | 244.00  | 243.60   | SD-4.01 & SD-4.83 |
| I-16   | A-5 w/DEFLECTORS | 238.38  | 233.57  | 233.28   | SD-4.01 & SD-4.83 |
| I-19   | A-5              | 237.94  | -       | 232.84   | SD-4.01           |
| I-18   | A-5              | 237.84  | 234.32  | 234.10   | SD-4.01           |
| I-21   | A-5              | 237.16  | 230.96  | 230.50   | SD-4.01           |
| I-22   | A-5              | 237.01  | 231.75  | 231.50   | SD-4.01           |
| I-25   | A-5 w/DEFLECTORS | 238.84  | -       | 235.40   | SD-4.01 & SD-4.83 |
| HW-17  | TYPE 'A'         | 236.25  | -       | 233.00   | SD-5.11           |
| E5-20  | 18" CONCRETE     | 231.76  | -       | 230.05   | SD-5.51           |
| HW-23  | TYPE 'E'         | 235.05  | 235.80  | -        | SD-5.31           |
| E5-24  | 15" CONCRETE     | 233.48  | -       | 233.04   | SD-5.51           |



DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

Director of Public Works: Elizabeth Anderson  
 Chief, Bureau of Engineering: [Signature]  
 Chief, Bureau of Highways: [Signature]

BUCHART-HORN INC.  
 CONSULTING ENGINEERS  
 BALTIMORE, MARYLAND 21210



DES: EMP  
 DRN: EMP  
 CHK: JDM  
 DATE: 12-90

| BY | NO. | REVISION | DATE |
|----|-----|----------|------|
|    |     |          |      |

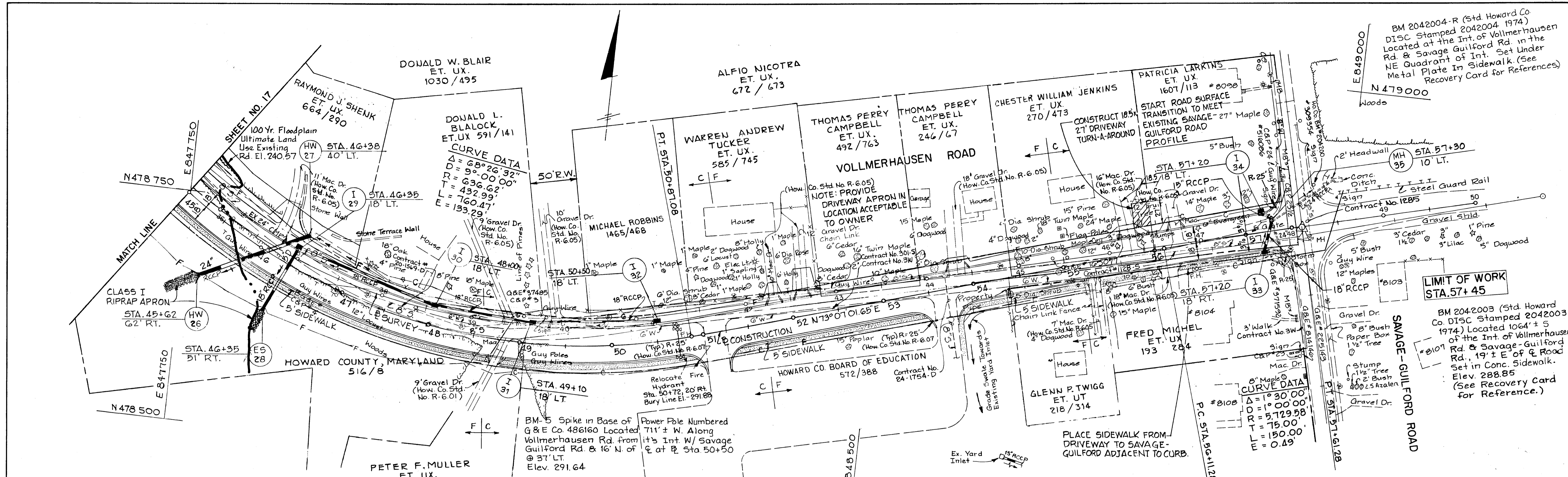
PLAN AND PROFILE  
 STA. 33+00 TO STA. 45+00

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
 WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
 CAPITAL PROJECT V-4046  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE: HORIZ. 1"=50' VERT. 1"=5'  
 SHEET 1 OF 2

1606



**DITCH SCHEDULE**

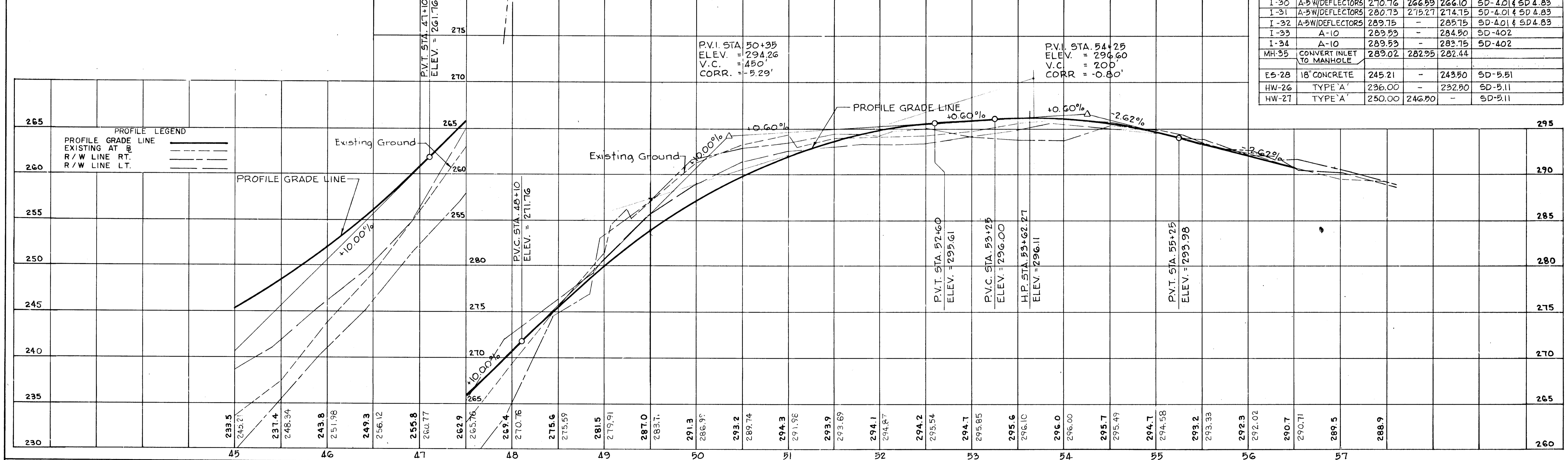
|                              |                     |
|------------------------------|---------------------|
| STA. 45+00 TO STA. 45+50 LT. | PLACED RIPRAP DITCH |
| STA. 46+50 TO STA. 48+50 LT. | PLACED RIPRAP DITCH |

**OUTLET PROTECTION**

|                |                             |
|----------------|-----------------------------|
| STA. 45+62 RT. | 45 S.Y.; L=40'; W=10'; S=0% |
| STA. 46+35 RT. | 22 S.Y.; L=20'; W=10'; S=0% |

**STRUCTURE SCHEDULE**

| NUMBER | TYPE                     | TOP EL. | INV. IN | INV. OUT | HOWARD CO. STD. NO. |
|--------|--------------------------|---------|---------|----------|---------------------|
| I-29   | A-5W/DEFLECTORS          | 254.84  | 250.60  | 250.10   | SD-401 & SD 4.83    |
| I-30   | A-5W/DEFLECTORS          | 270.76  | 266.59  | 266.10   | SD-401 & SD 4.83    |
| I-31   | A-5W/DEFLECTORS          | 280.73  | 275.27  | 274.75   | SD-401 & SD 4.83    |
| I-32   | A-5W/DEFLECTORS          | 289.75  | -       | 285.75   | SD-401 & SD 4.83    |
| I-33   | A-10                     | 289.53  | -       | 284.50   | SD-402              |
| I-34   | A-10                     | 289.53  | -       | 283.75   | SD-402              |
| MH-35  | CONVERT INLET TO MANHOLE | 289.02  | 282.95  | 282.44   |                     |
| ES-28  | 18" CONCRETE             | 245.21  | -       | 243.50   | SD-5.51             |
| HW-26  | TYPE 'A'                 | 236.00  | -       | 232.90   | SD-5.11             |
| HW-27  | TYPE 'A'                 | 250.00  | 246.90  | -        | SD-5.11             |



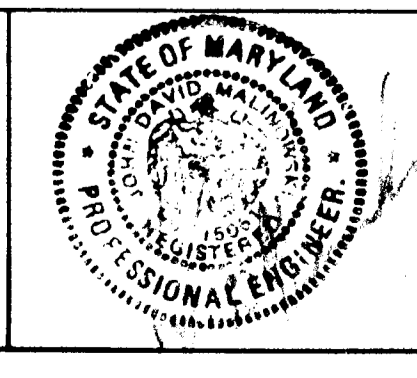
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James W. ...*  
DIRECTOR OF PUBLIC WORKS

*Richard ...*  
CHIEF, BUREAU OF ENGINEERING

*...*  
CHIEF, BUREAU OF HIGHWAYS

**BUCHART-HORN INC.**  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



DES: EMP  
DRN: FMP  
CHK: JDM  
DATE: 12/90

| BY | NO. | REVISION | DATE |
|----|-----|----------|------|
|    |     |          |      |

PLAN AND PROFILE  
STA. 45+00 TO STA. 57+61.28

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

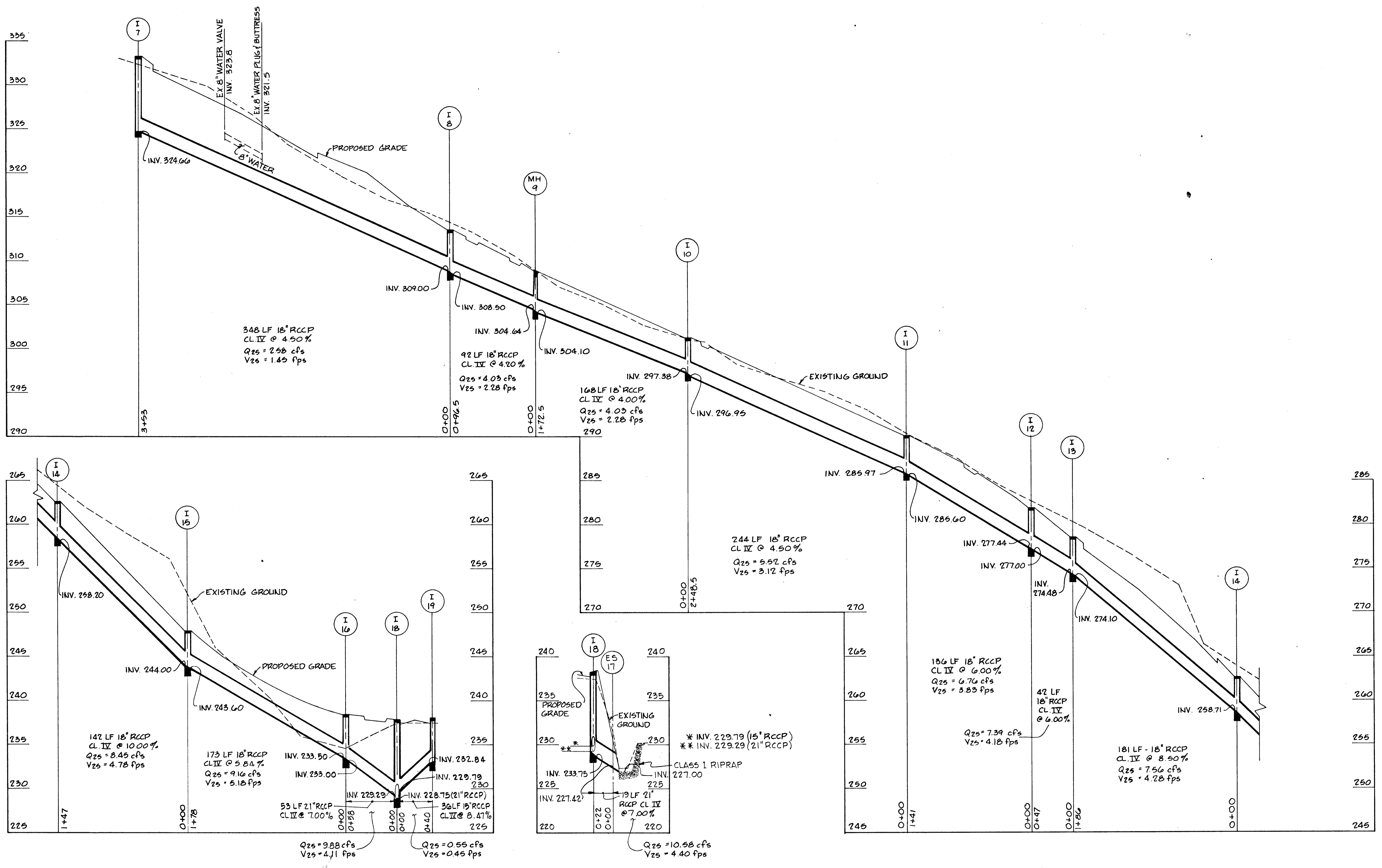
**VOLLMERHAUSEN RD. IMPROVEMENTS**  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE  
HORIZ. 1"=50'  
VERT. 1"=5'

SHEET  
18 OF 40

1606

1606



BRUNING 44-132 691 50

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

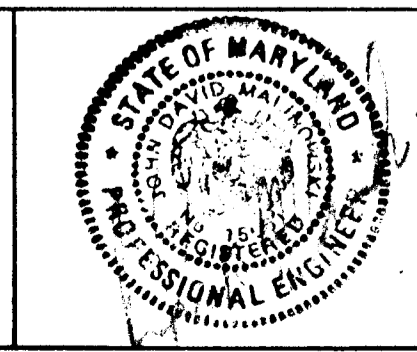
*James W. Anderson* 1/11/91  
DIRECTOR OF PUBLIC WORKS DATE

*James W. Anderson* 1/11/91  
CHIEF, BUREAU OF ENGINEERING DATE

*Elizabeth Anderson* 1/11/91  
CHIEF, ROADS, BRIDGES AND STORM DRAINAGE DIVISION

*James W. Anderson* 1/11/91  
CHIEF, BUREAU OF HIGHWAYS DATE

**BUCHART-HORN INC.**  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



|             |  |
|-------------|--|
| DES: B.H.   |  |
| DRN: A.G.S. |  |
| CHK: JDM    |  |
| DATE: 12-90 |  |
| BY NO.      |  |
| REVISION    |  |
| DATE        |  |

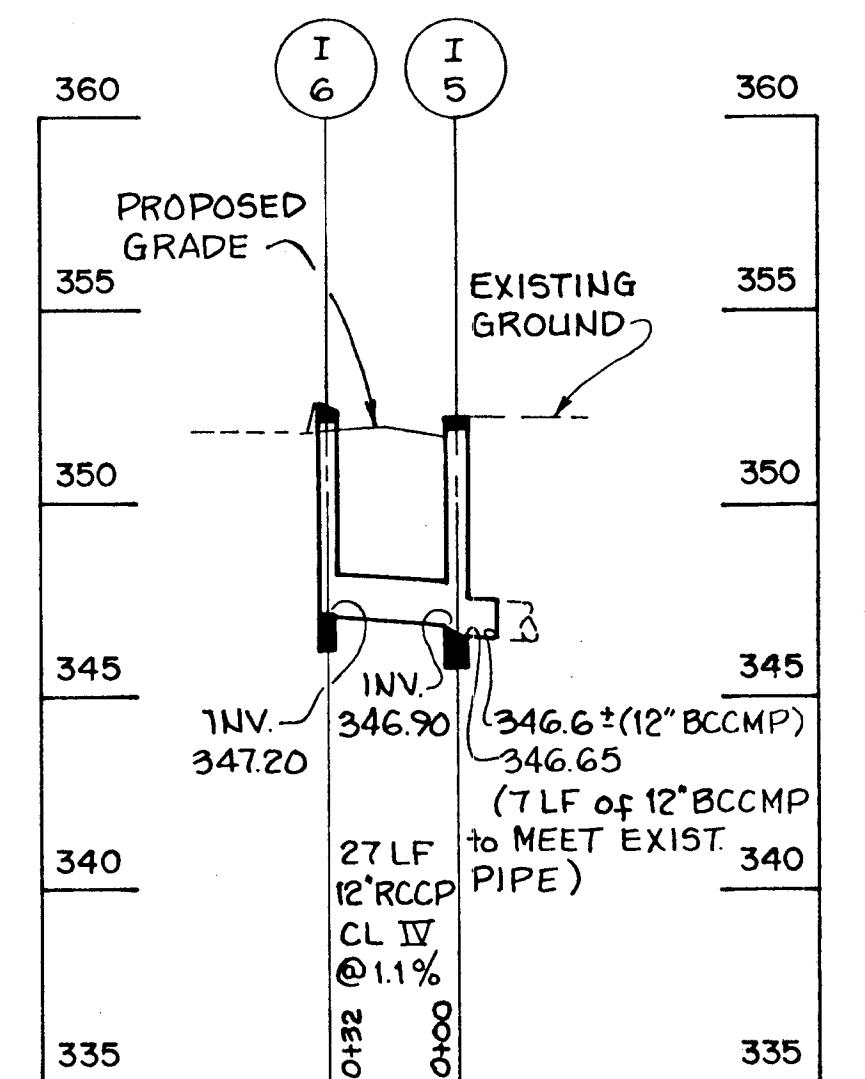
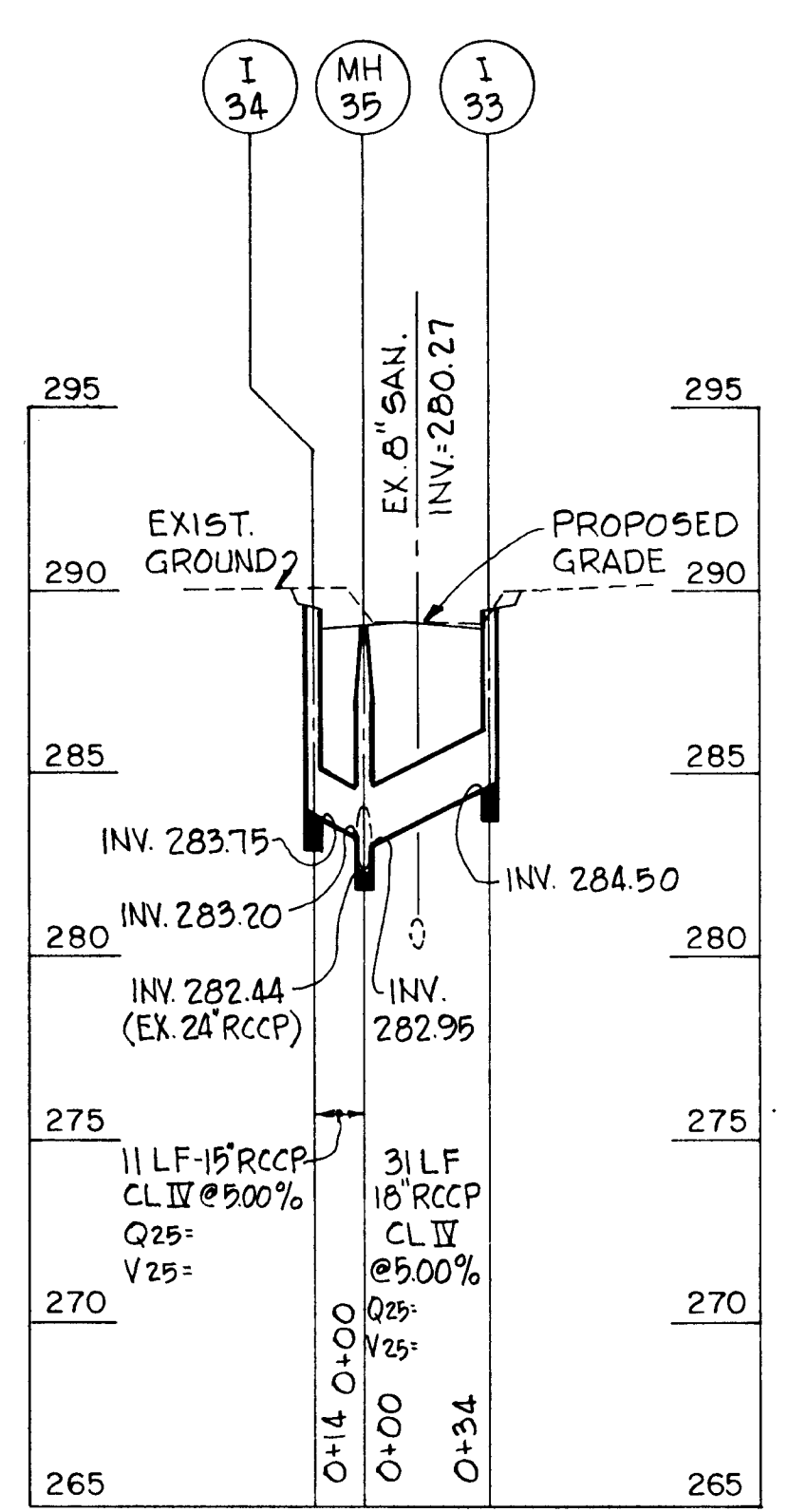
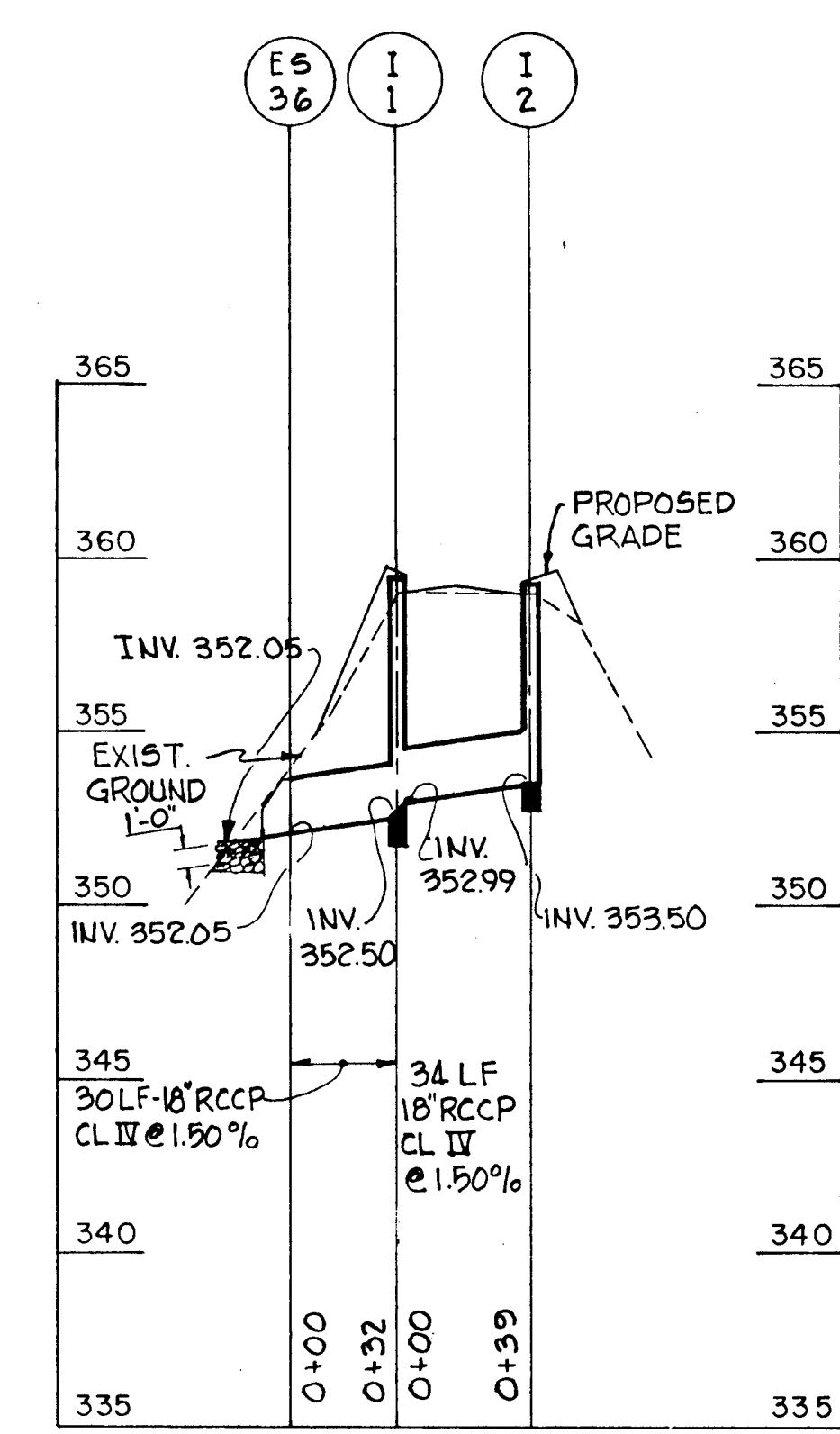
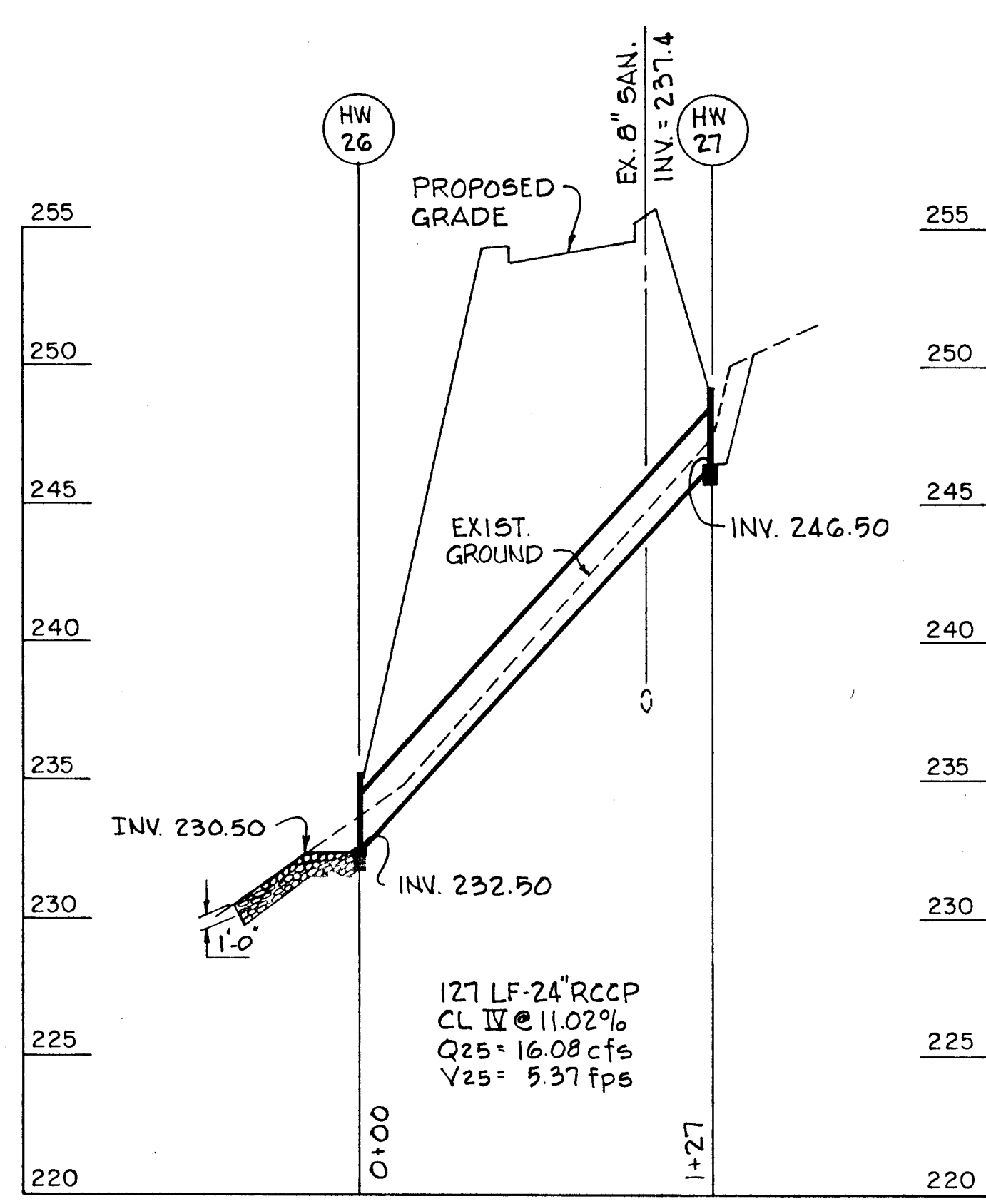
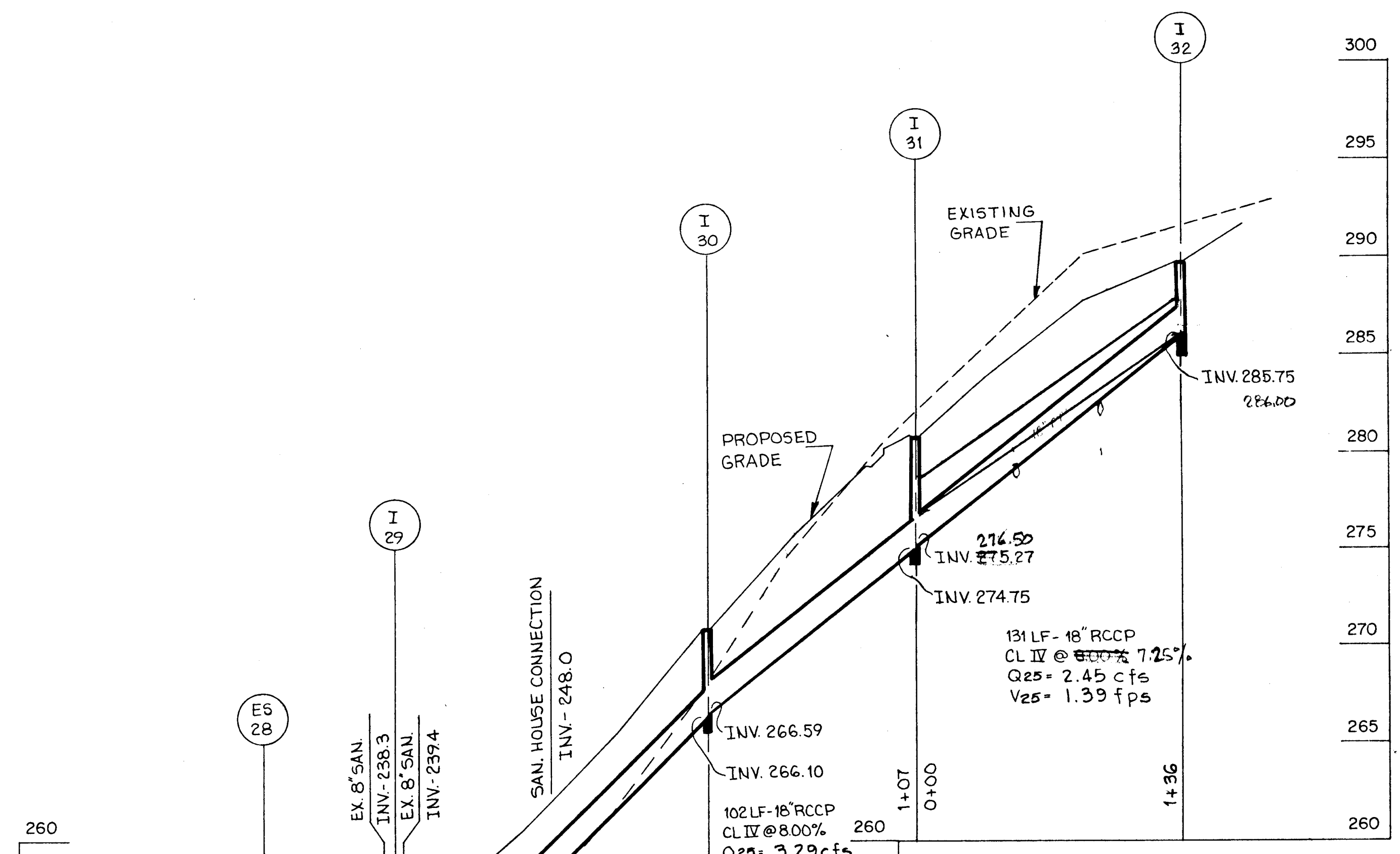
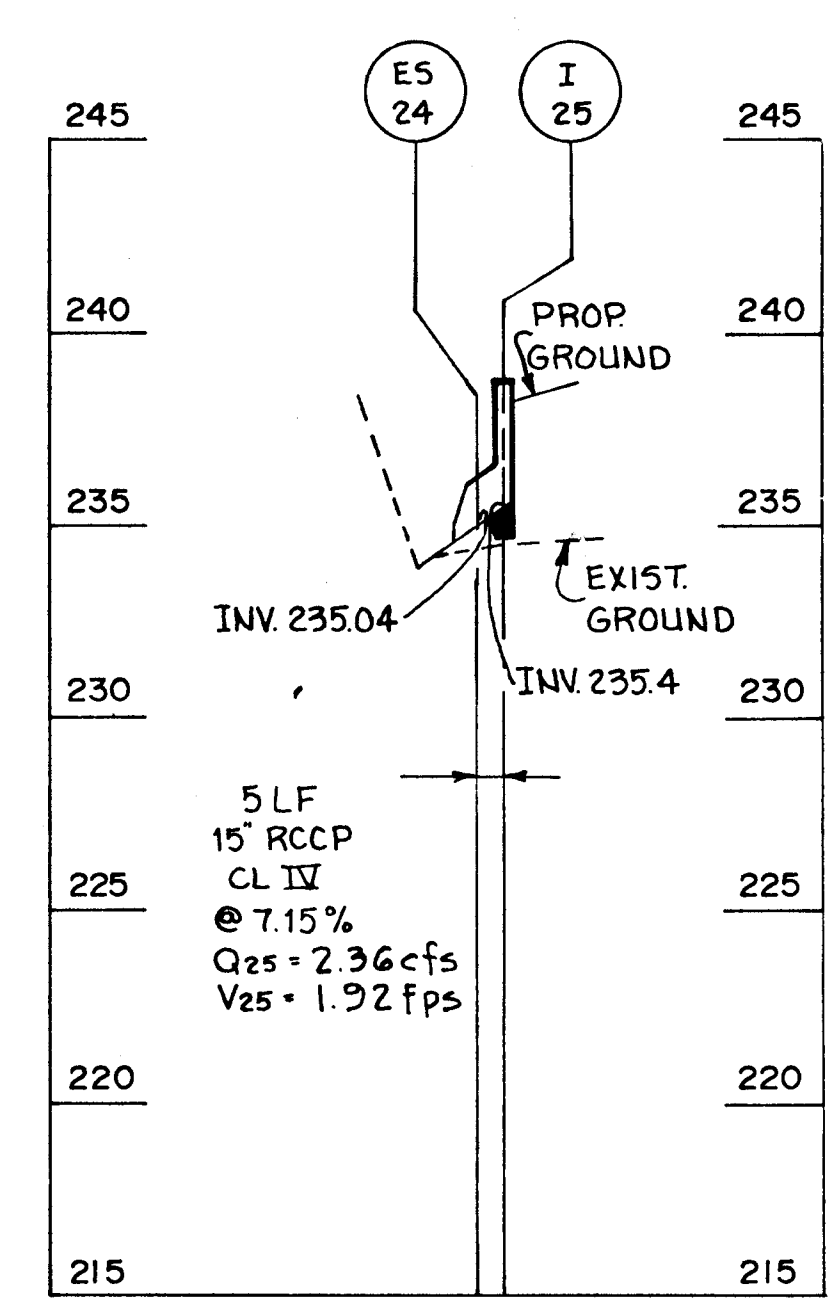
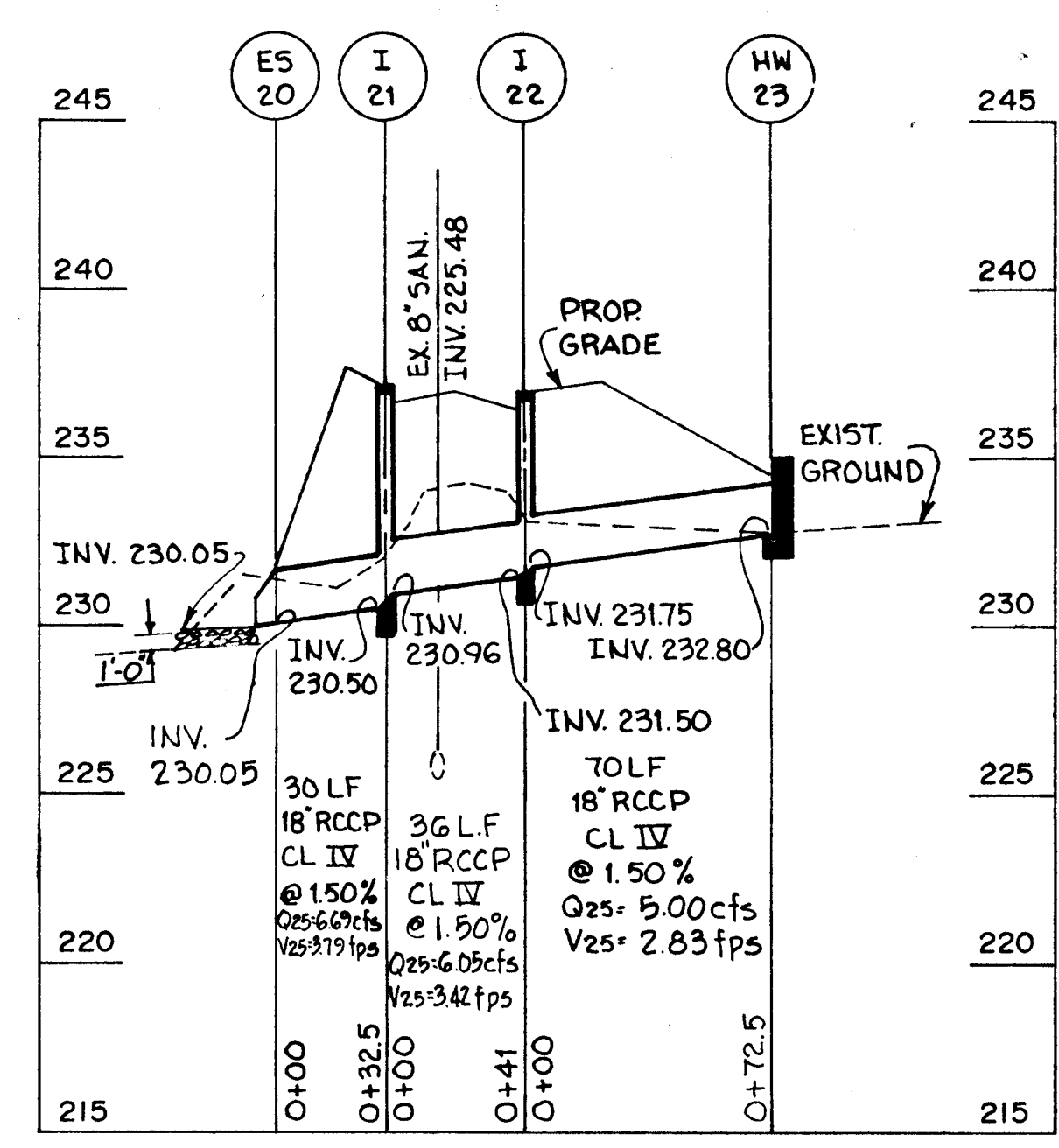
STORM DRAIN PROFILES

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

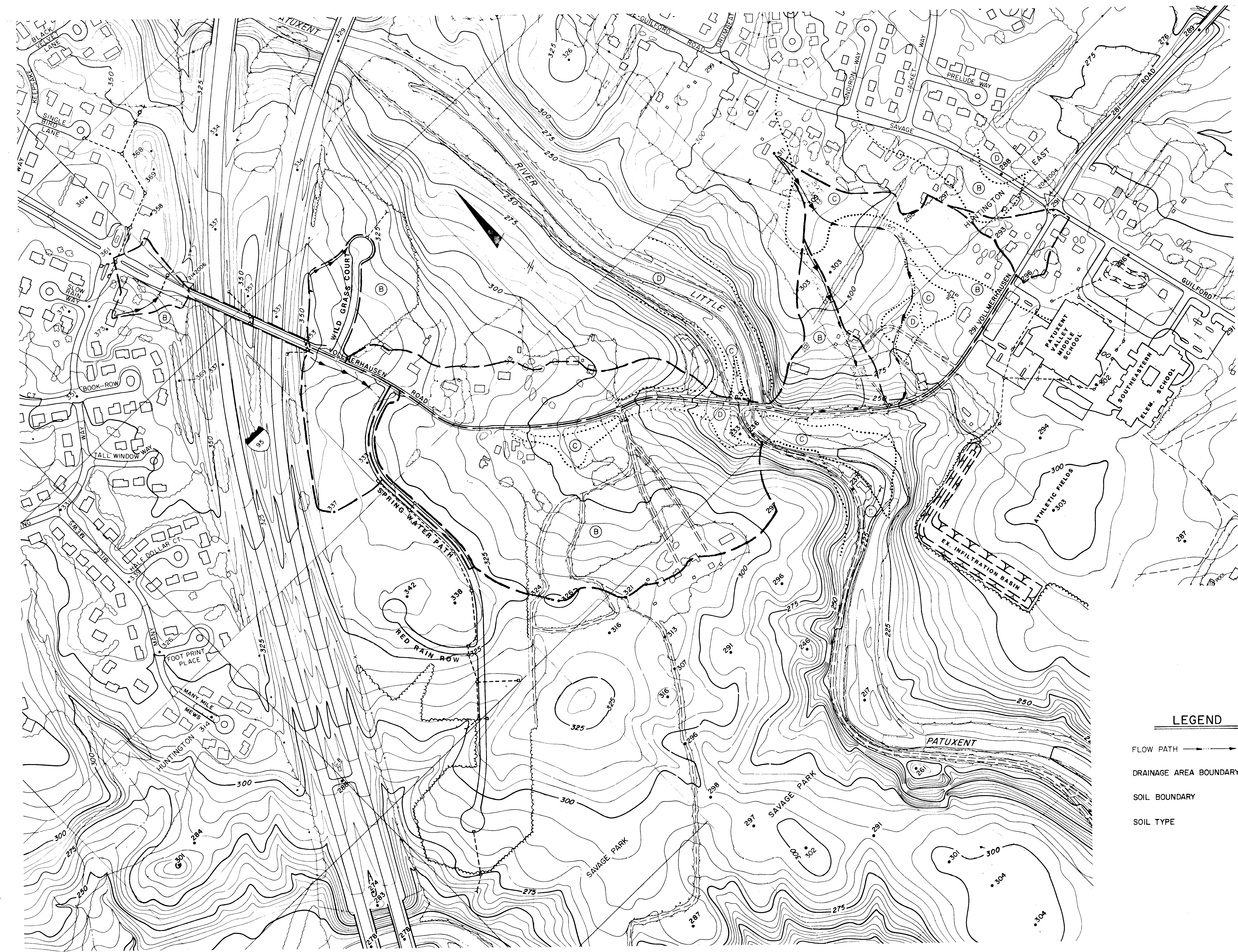
SCALE  
HORIZ.: 1"=50'  
VERT.: 1"=5'

SHEET  
19 OF 40



1606

9091



**LEGEND**

FLOW PATH ———→

DRAINAGE AREA BOUNDARY ———

SOIL BOUNDARY - ·····

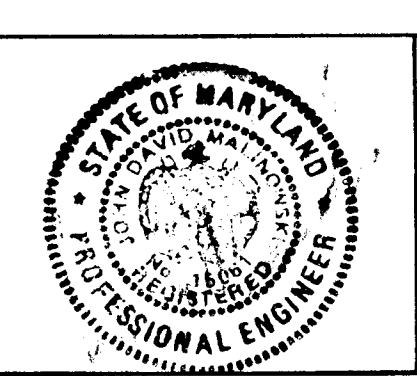
SOIL TYPE - (B)

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Elizabeth Anderson* 1/10/91  
DIRECTOR OF PUBLIC WORKS DATE

*Travis W. Wehner* 1/11/91  
CHIEF, BUREAU OF HIGHWAYS DATE

**BUCHART-HORN INC.**  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



|             |    |     |          |      |
|-------------|----|-----|----------|------|
| DES: BH     |    |     |          |      |
| DRN: LMT    |    |     |          |      |
| CHK: JDM    |    |     |          |      |
| DATE: 12/90 | BY | NO. | REVISION | DATE |

DRAINAGE AREA MAP  
EXISTING CONDITIONS

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE  
1" = 200'

SHEET  
1 OF 40

1606



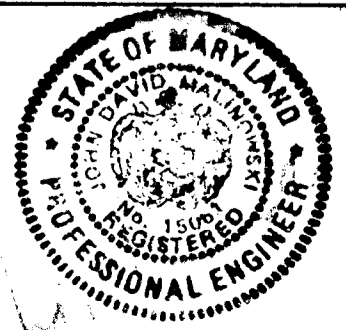
**LEGEND**

- FLOW PATH ———>
- DRAINAGE AREA BOUNDARY ———
- SOIL BOUNDARY - ·····
- SOIL TYPE - (B)
- PROPOSED ROAD WIDENING ———

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *Elizabeth Anderson Patia* 1/10/91  
 Chief, Bureau of Engineering: *Francis W. Wehner* 1/11/91  
 Chief, Bureau of Highways: *Francis W. Wehner* 1/11/91

**BUCHART-HORN INC.**  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



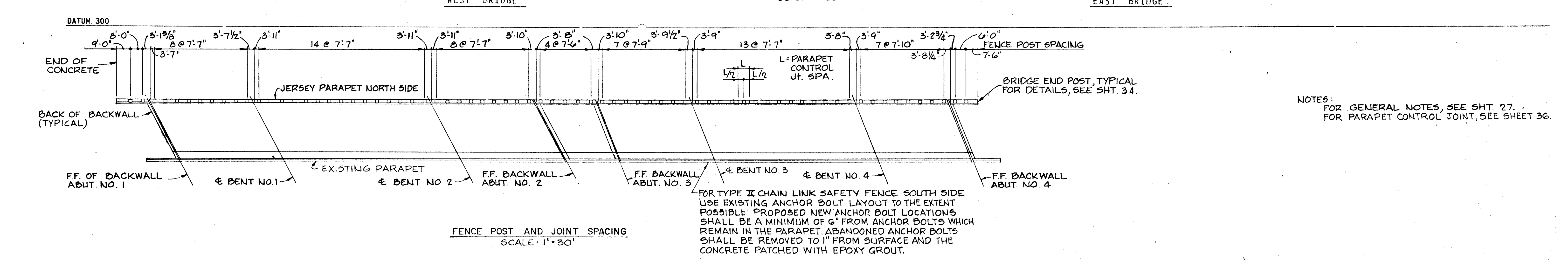
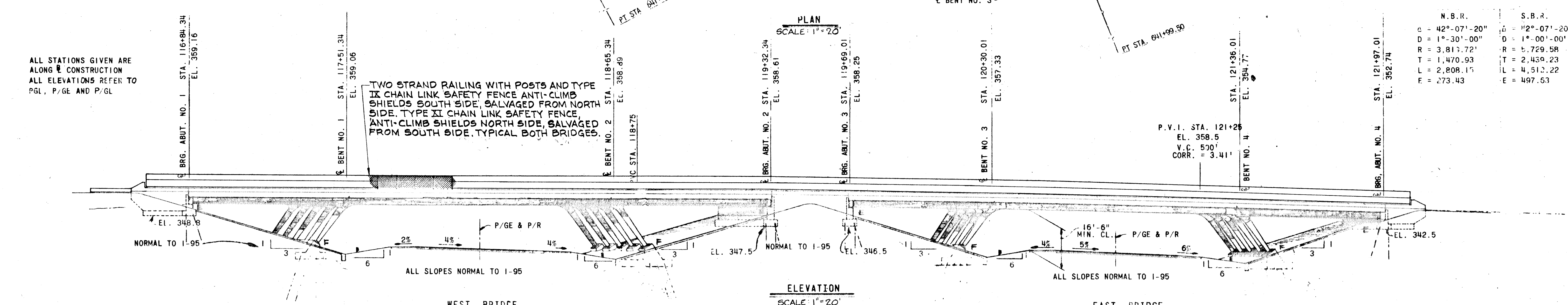
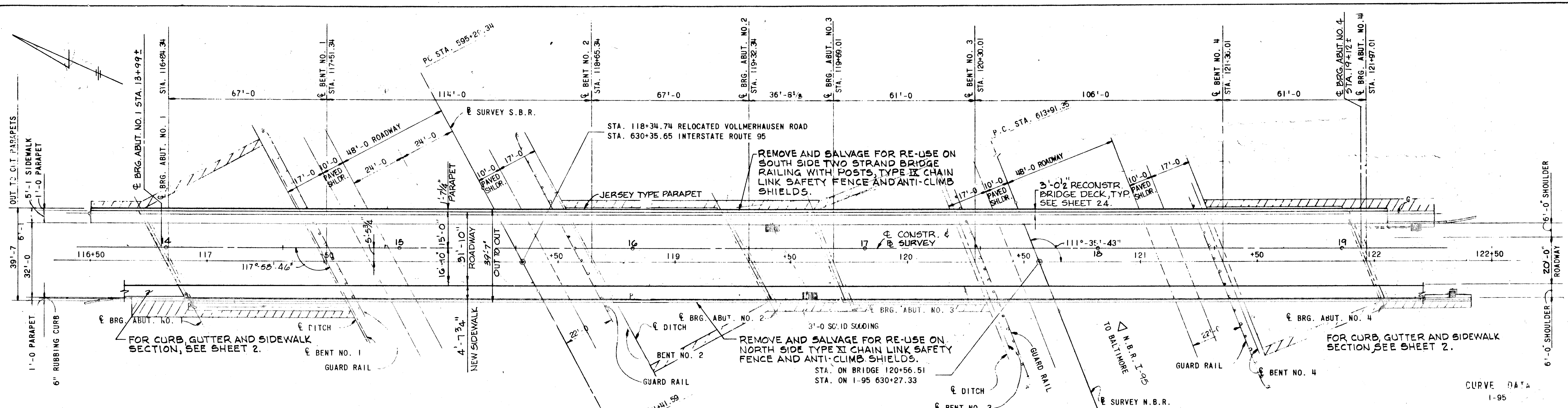
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| DRN: LMT    |    |     |          |      |  |
| CHK: JDM    |    |     |          |      |  |
| DATE: 12/90 | BY | NO. | REVISION | DATE | 600' SCALE MAP NO. _____ BLOCK NO. _____ |

DRAINAGE AREA MAP  
PROPOSED CONDITIONS

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. G  
HOWARD COUNTY, MARYLAND

SCALE  
1" = 200'  
SHEET  
2 OF 40





CURVE DATA  
I-95

| N.B.R.          | S.B.R.          |
|-----------------|-----------------|
| e = 42°-07'-20" | e = 12°-07'-20" |
| D = 1°-30'-00"  | D = 1°-00'-00"  |
| R = 3,813.72'   | R = 5,729.58'   |
| T = 1,470.93'   | T = 2,439.23'   |
| L = 2,808.15'   | L = 4,512.22'   |
| F = 273.43'     | E = 497.53'     |

ALL STATIONS GIVEN ARE ALONG CONSTRUCTION  
ALL ELEVATIONS REFER TO PGL, P/GE AND P/GL

TWO STRAND RAILING WITH POSTS AND TYPE IX CHAIN LINK SAFETY FENCE ANTI-CLIMB SHIELDS SOUTH SIDE, SALVAGED FROM NORTH SIDE. TYPE XI CHAIN LINK SAFETY FENCE ANTI-CLIMB SHIELDS NORTH SIDE, SALVAGED FROM SOUTH SIDE. TYPICAL BOTH BRIDGES.

ELEVATION  
SCALE: 1"=20'

FENCE POST AND JOINT SPACING  
SCALE: 1"=30'

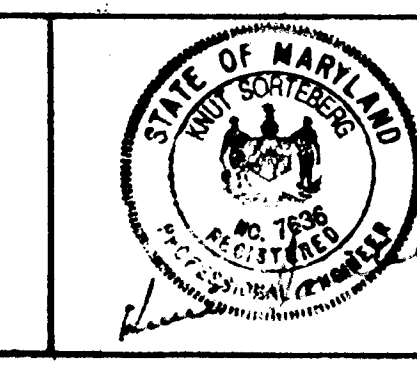
NOTE 6:  
FOR GENERAL NOTES, SEE SHT. 27.  
FOR PARAPET CONTROL JOINT, SEE SHEET 36.

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: Elizabeth H. Anderson  
Chief, Bureau of Engineering: [Signature]

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210



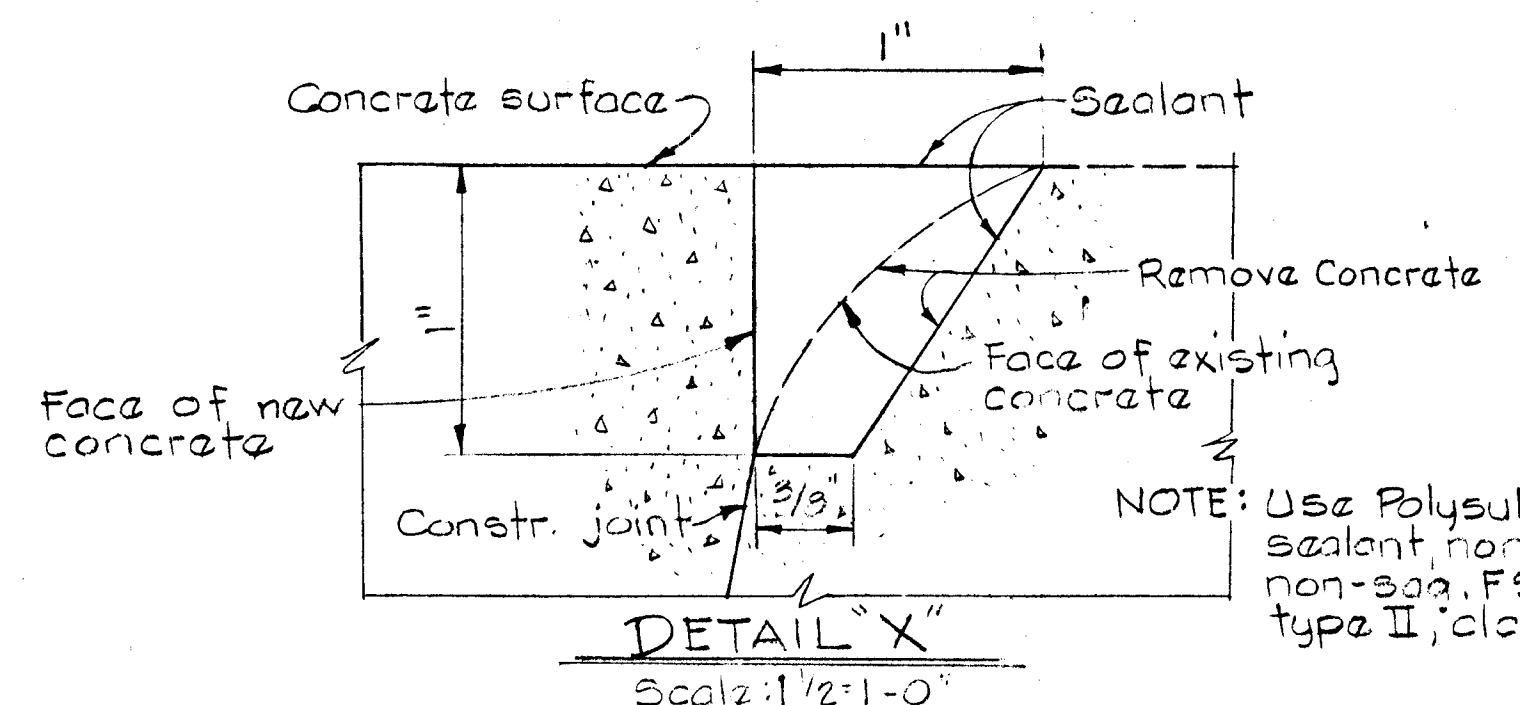
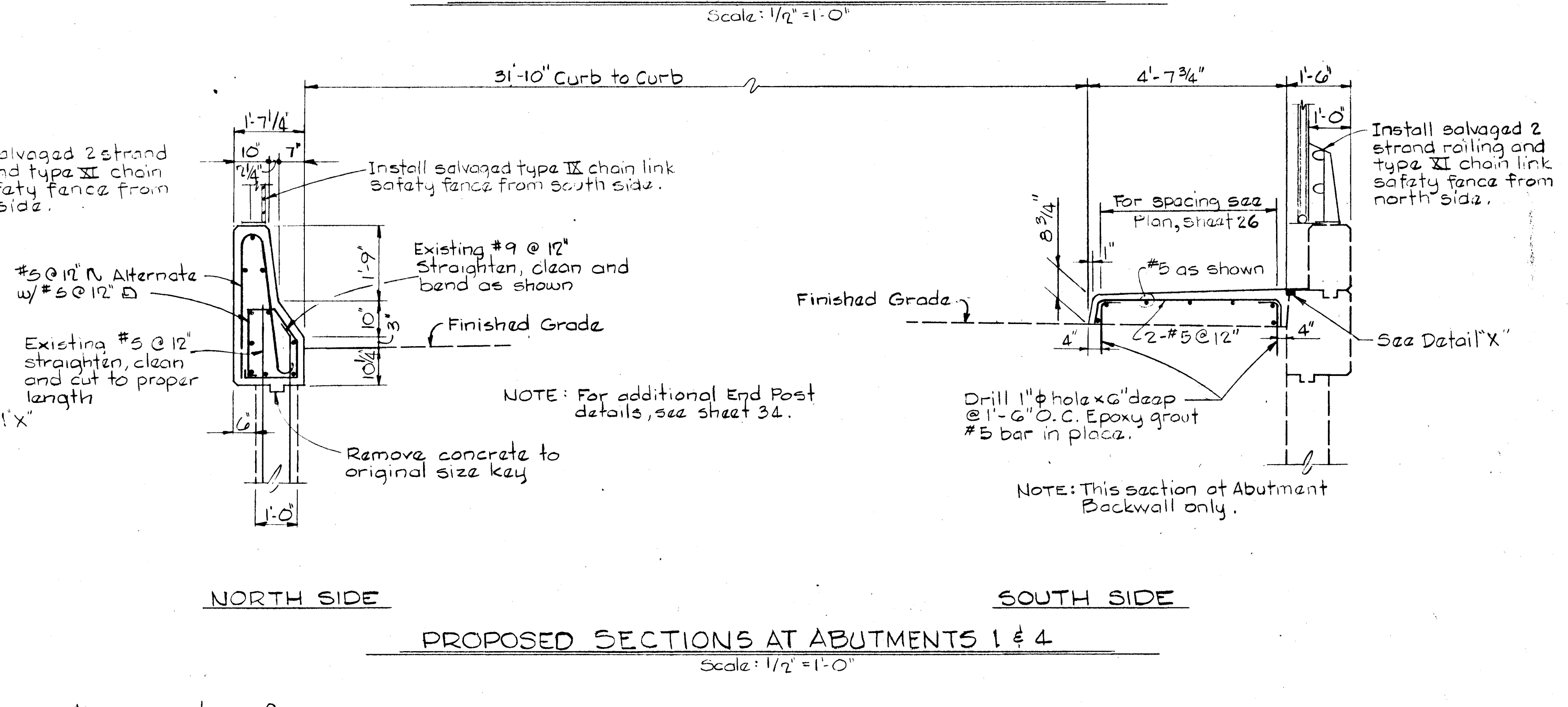
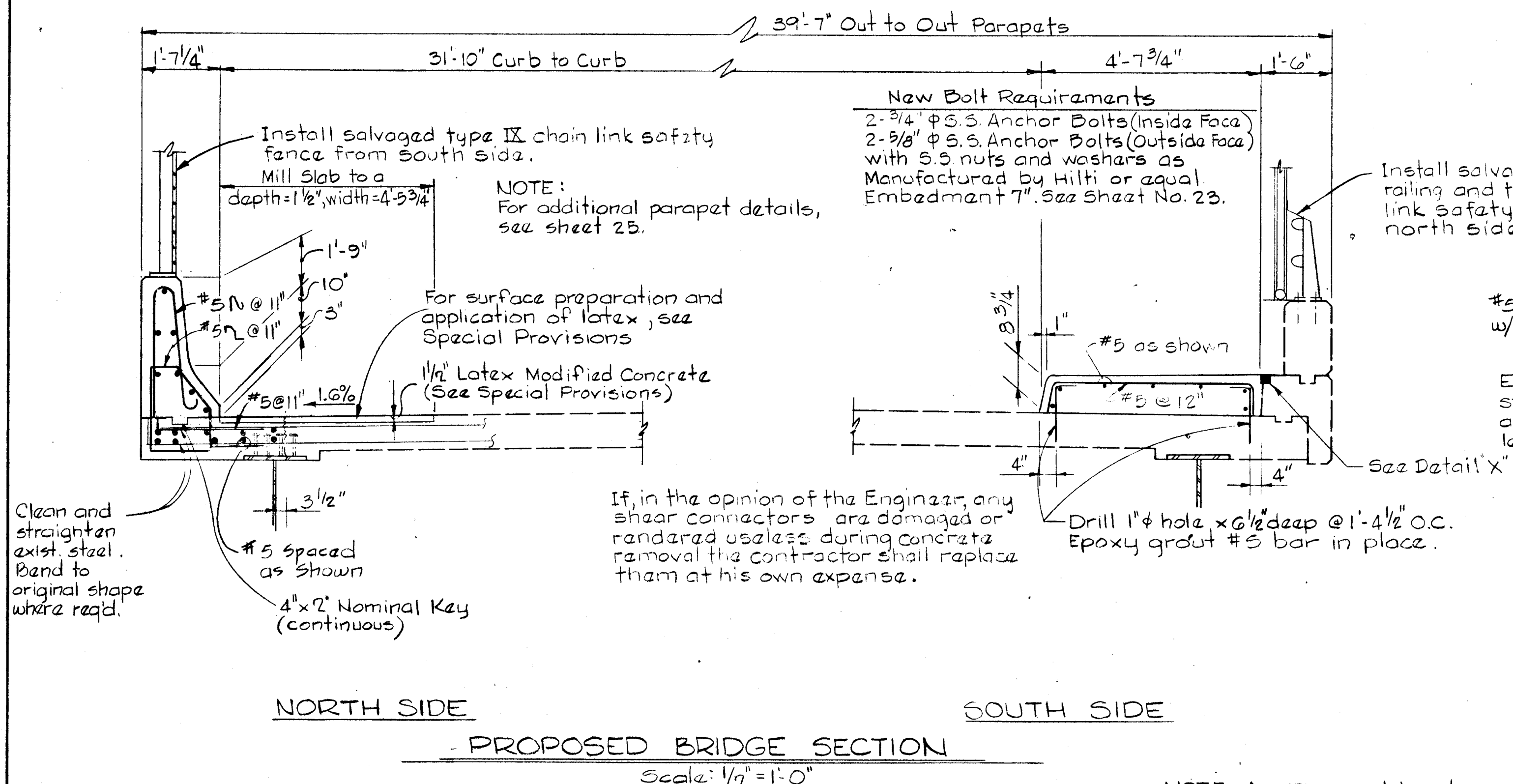
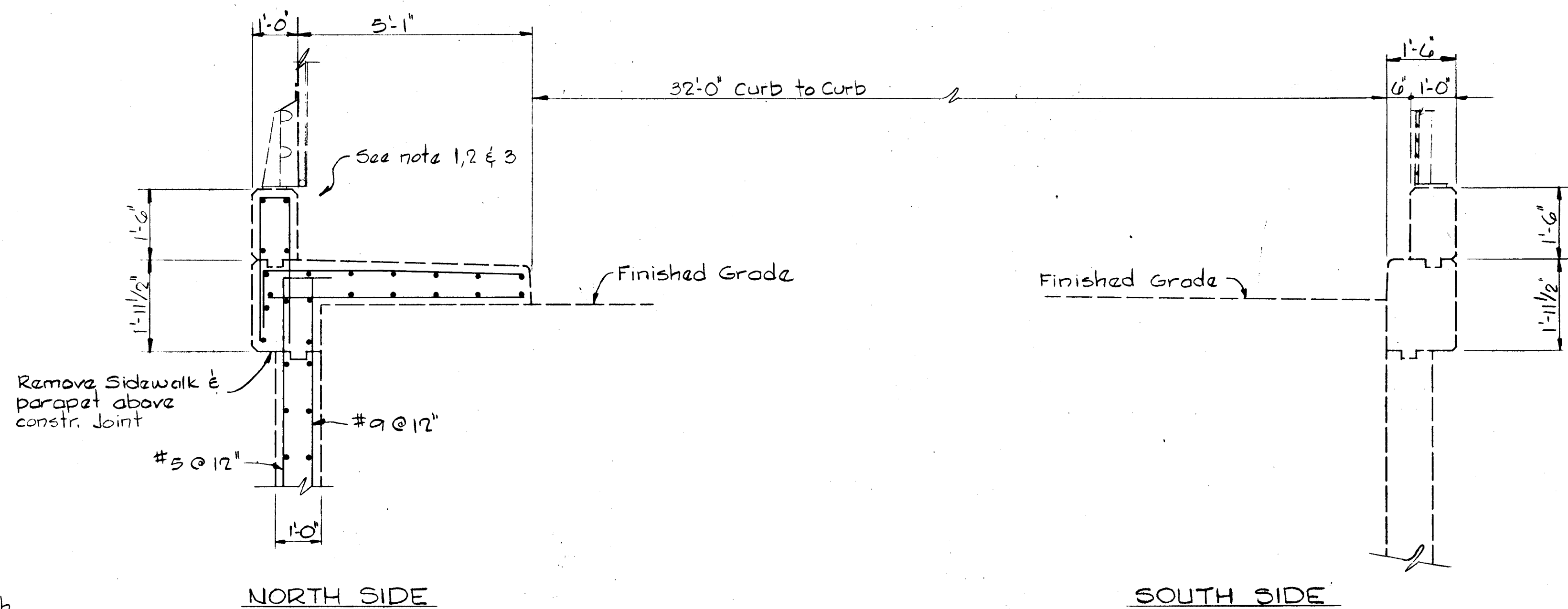
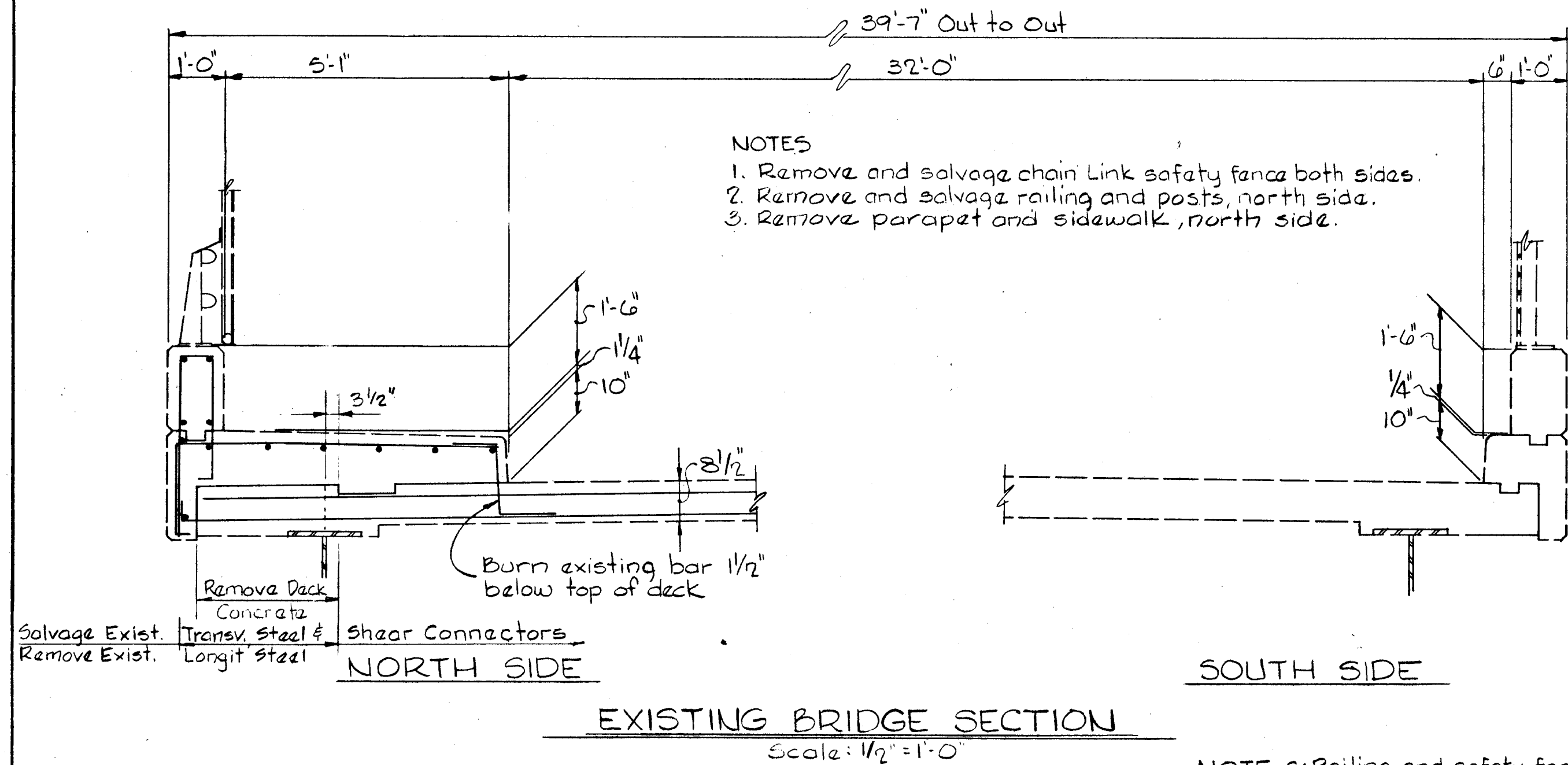
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|-------------|--------|----------|------|
| DES: K.S.   |        |          |      |
| DRN: A.G.S. |        |          |      |
| CHK: K.S.   |        |          |      |
| DATE: 12/90 | BY NO. | REVISION | DATE |

GENERAL PLAN AND ELEVATION  
(VOLLMERHAUSEN RD. OVER I-95)

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 22 OF 40



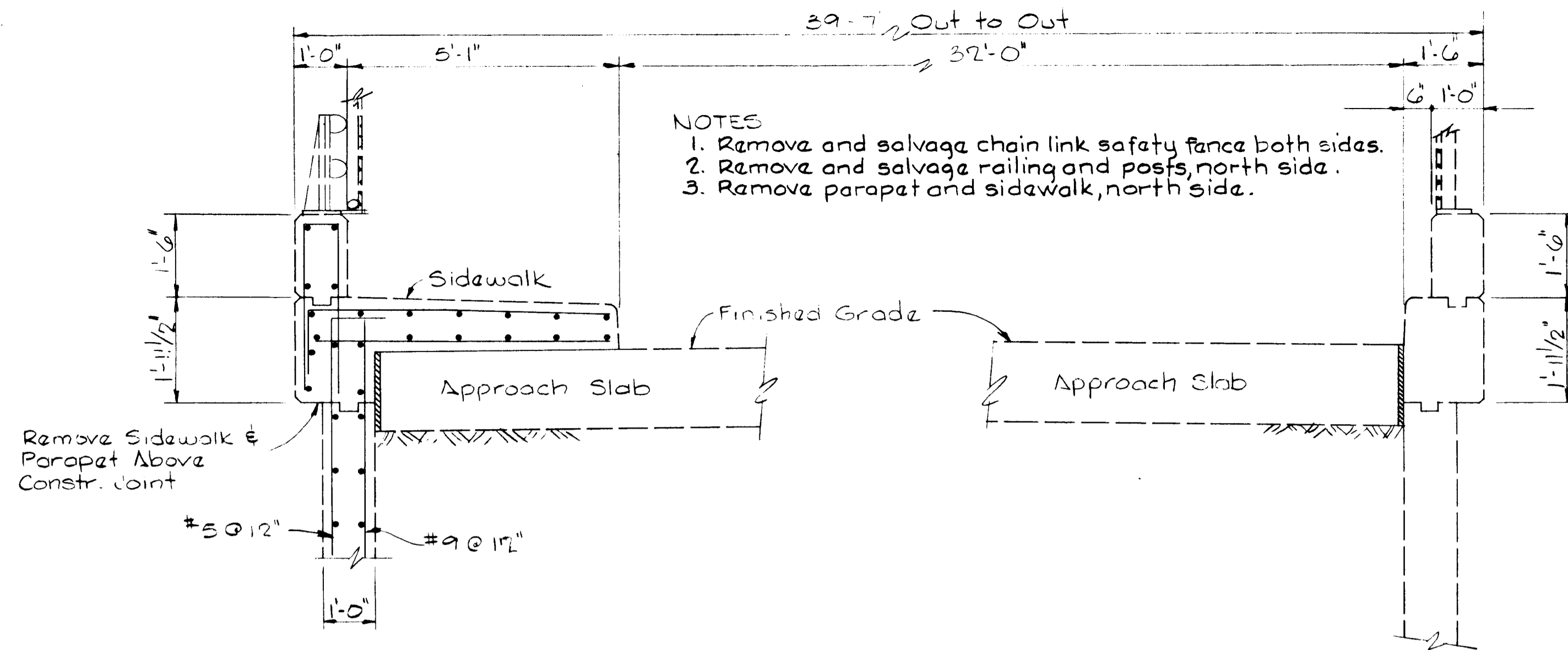
NOTE A: Thoroughly clean existing concrete surfaces which will be in contact with newly placed concrete. Apply epoxy bonding compound. Pour concrete while compound is still tacky.

NOTE B: New reinforcing steel shall be lap spliced with existing reinforcing steel as shown. If full lap splice is not obtainable or during removal of concrete, bars are broken or rendered useless, a mechanical splice is required. See Reinforcing Bar Weld Splice, sheet 25.

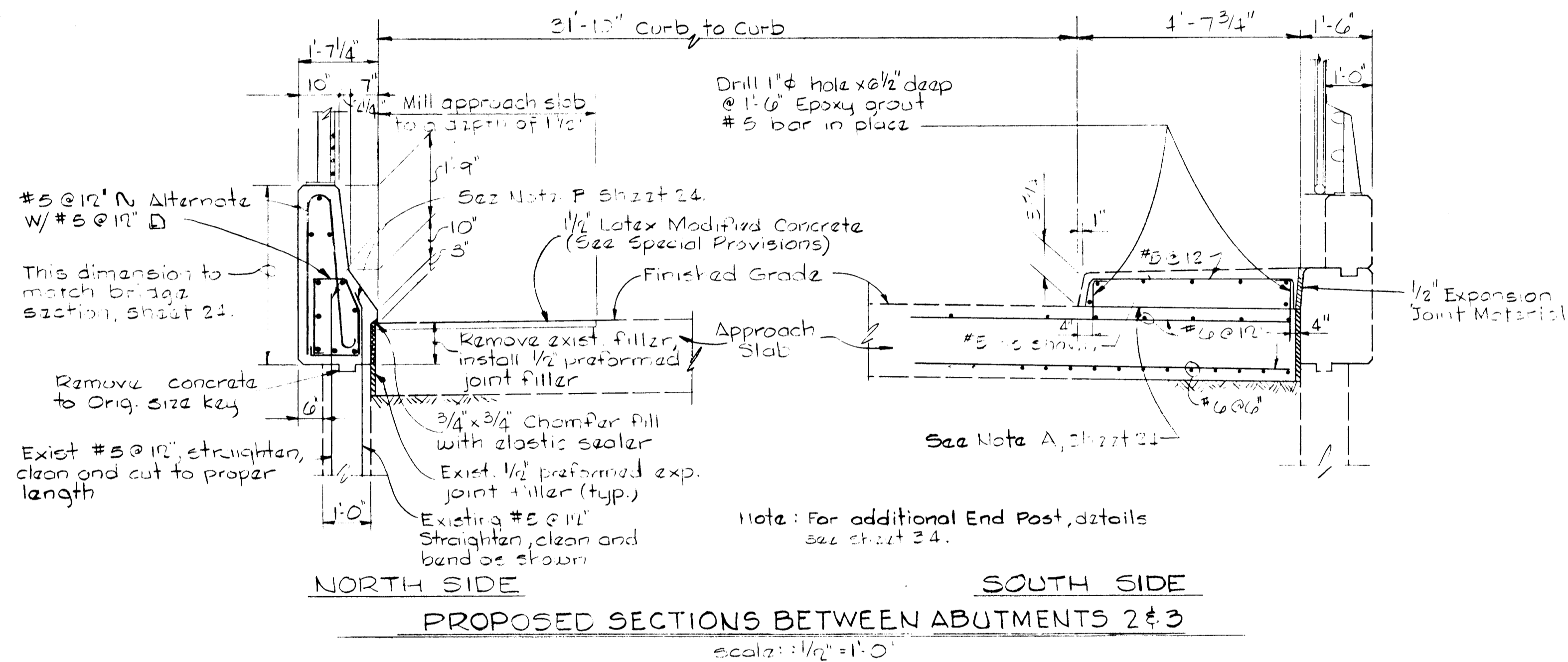
NOTES: For General Notes, see sheet 27.

1606

|   |   |  |             |           |             |         |   |  |                |
|---|---|--|-------------|-----------|-------------|---------|---|--|----------------|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>James A. [Signature] DATE 11/19/91<br>DIRECTOR OF PUBLIC WORKS<br>Elizabeth Anderson [Signature] DATE 11/19/91<br>CHIEF, BRIDGES AND STORM DRAINAGE DIVISION<br>[Signature] DATE 11/19/91<br>CHIEF, BUREAU OF HIGHWAYS | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>THE QUADRANGLE<br>244 WEST BLOCK<br>VILLAGE OF CROSS KEYS<br>BALTIMORE, MARYLAND 21210 |  | DES: K.S.   |           |             |         | TYPICAL BRIDGE & ABUTMENT SECTIONS<br>(VOLLMERHAUSEN RD. OVER I-95) | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND | SCALE AS SHOWN |
|   |   |  | DRN: A.G.S. | CHK: K.S. | DATE: 12/90 | BY: NO. |   |  | REVISION       |

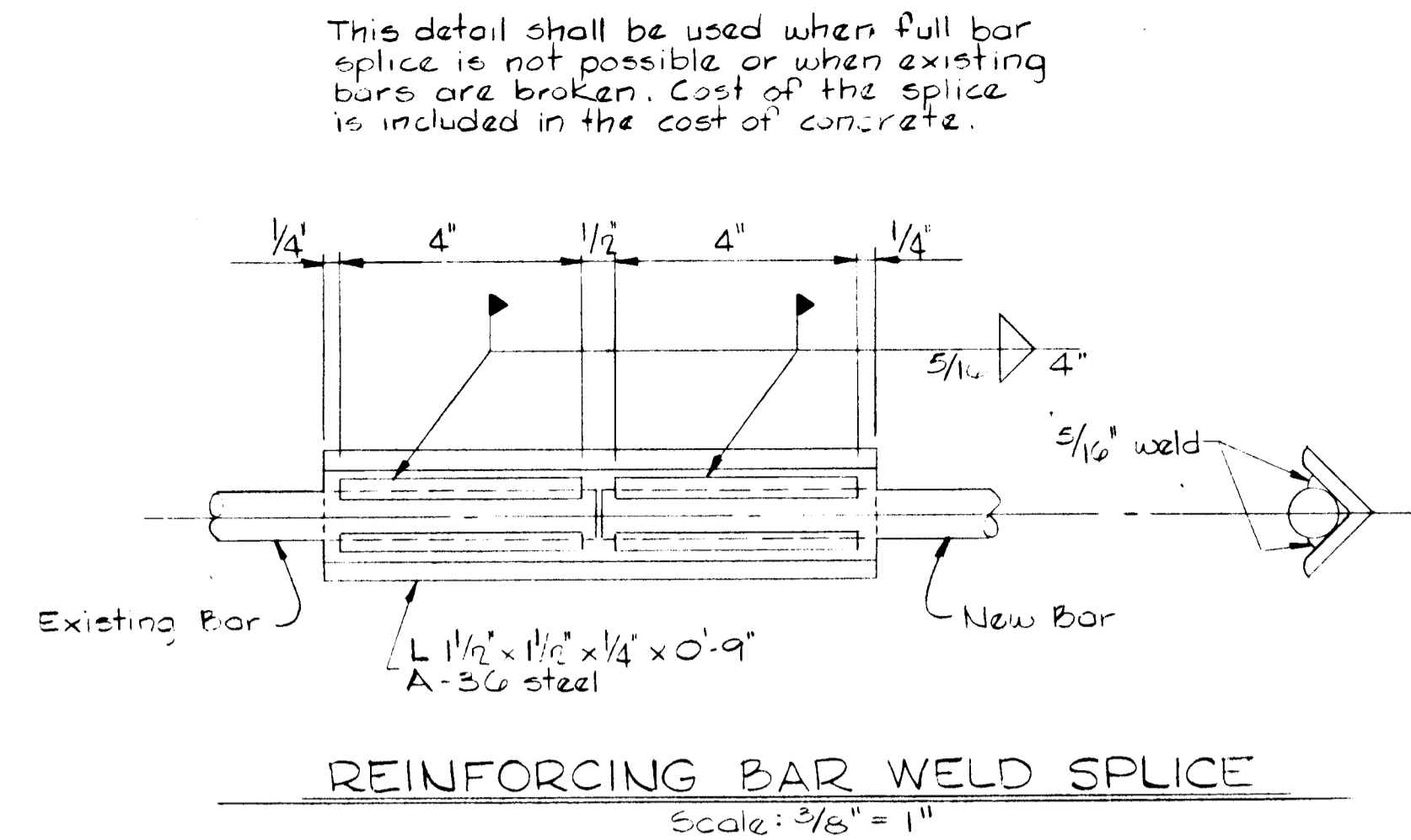


NORTH SIDE SOUTH SIDE  
EXISTING PARAPETS AT ABUTMENTS 2 & 3  
Scale: 1/4" = 1'-0"

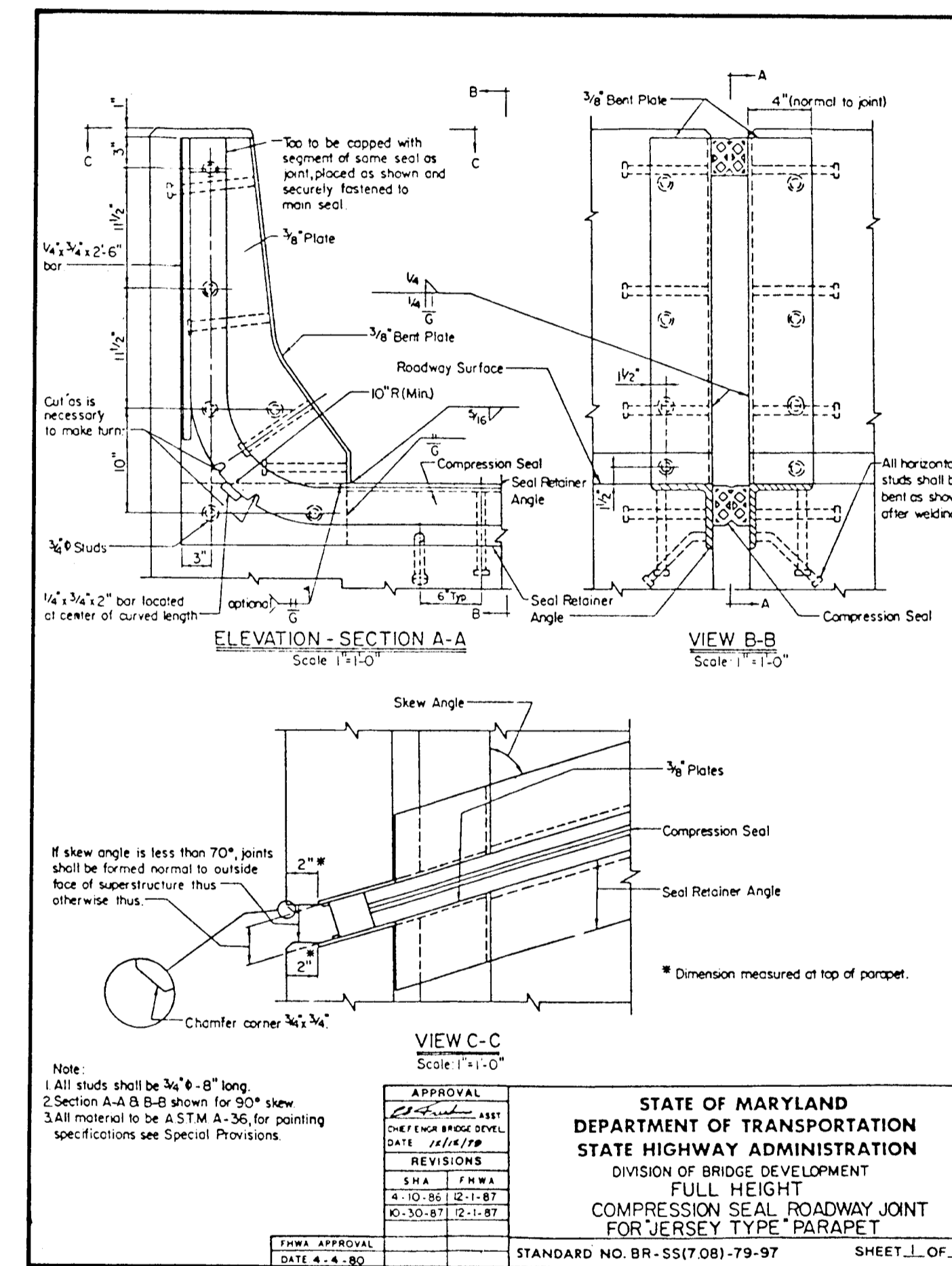


NORTH SIDE SOUTH SIDE  
PROPOSED SECTIONS BETWEEN ABUTMENTS 2 & 3  
Scale: 1/4" = 1'-0"

NOTE: For mechanical splice requirements, see Note B, sheet 24. See notes for railing and safety fence for proposed bridge section, sheet 24.



REINFORCING BAR WELD SPLICE  
Scale: 3/8" = 1"



|          |      |   |              |
|----------|------|---|--------------|
| APPROVAL |      | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT<br>FULL HEIGHT<br>COMPRESSION SEAL ROADWAY JOINT<br>FOR JERSEY TYPE PARAPET |              |
| DATE     | DATE | STANDARD NO. BR-SS(708)-79-97   | SHEET L OF L |

NOTE:  
For General notes, see sheet 27.

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
DIRECTOR OF PUBLIC WORKS  
DATE  
11/10/91  
CHIEF, BUREAU OF ENGINEERING  
DATE  
11/11/91  
CHIEF, BUREAU OF HIGHWAYS  
DATE

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210

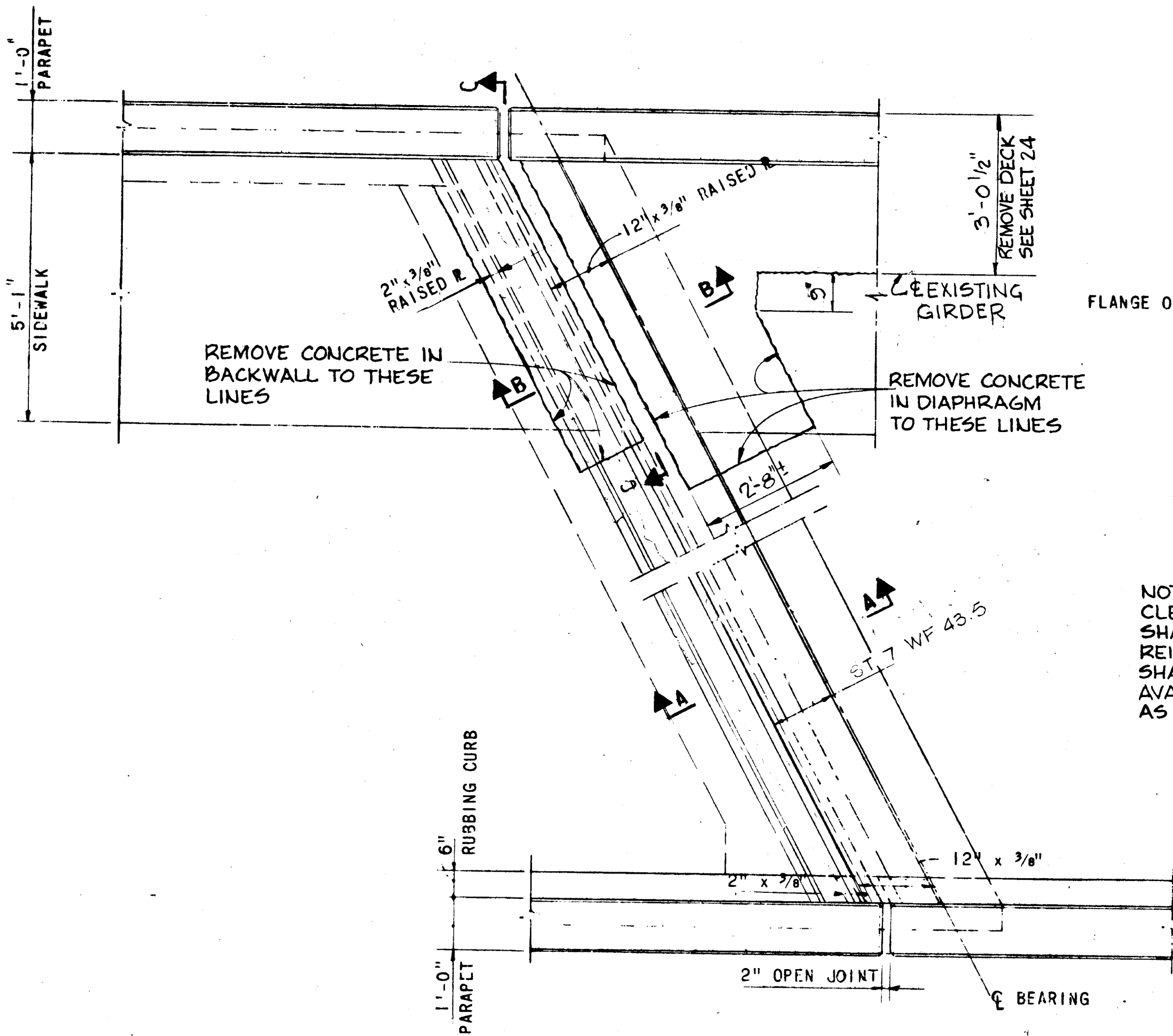


|             |    |     |          |      |                              |
|-------------|----|-----|----------|------|------------------------------|
| DES: K.S.   |    |     |          |      |                              |
| DRN: A.G.S. |    |     |          |      |                              |
| CHK: K.S.   |    |     |          |      |                              |
| DATE: 12/90 | BY | NO. | REVISION | DATE | 600' SCALE MAP NO. BLOCK NO. |

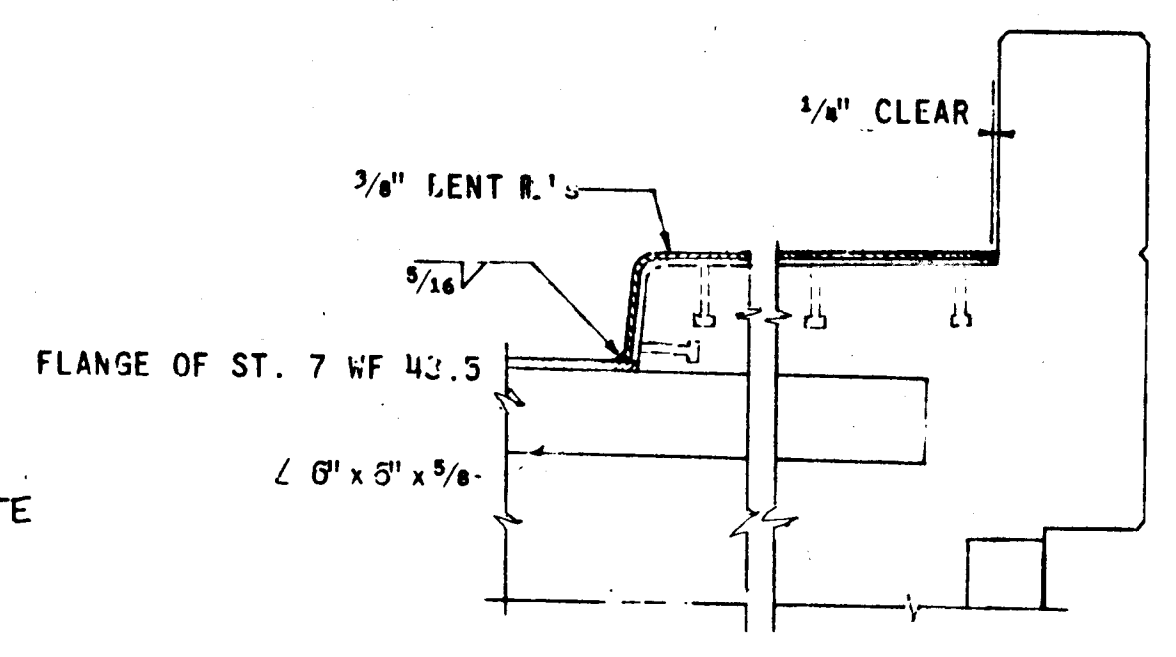
TYPICAL ABUTMENT SECTIONS

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J - 4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 25 OF 40

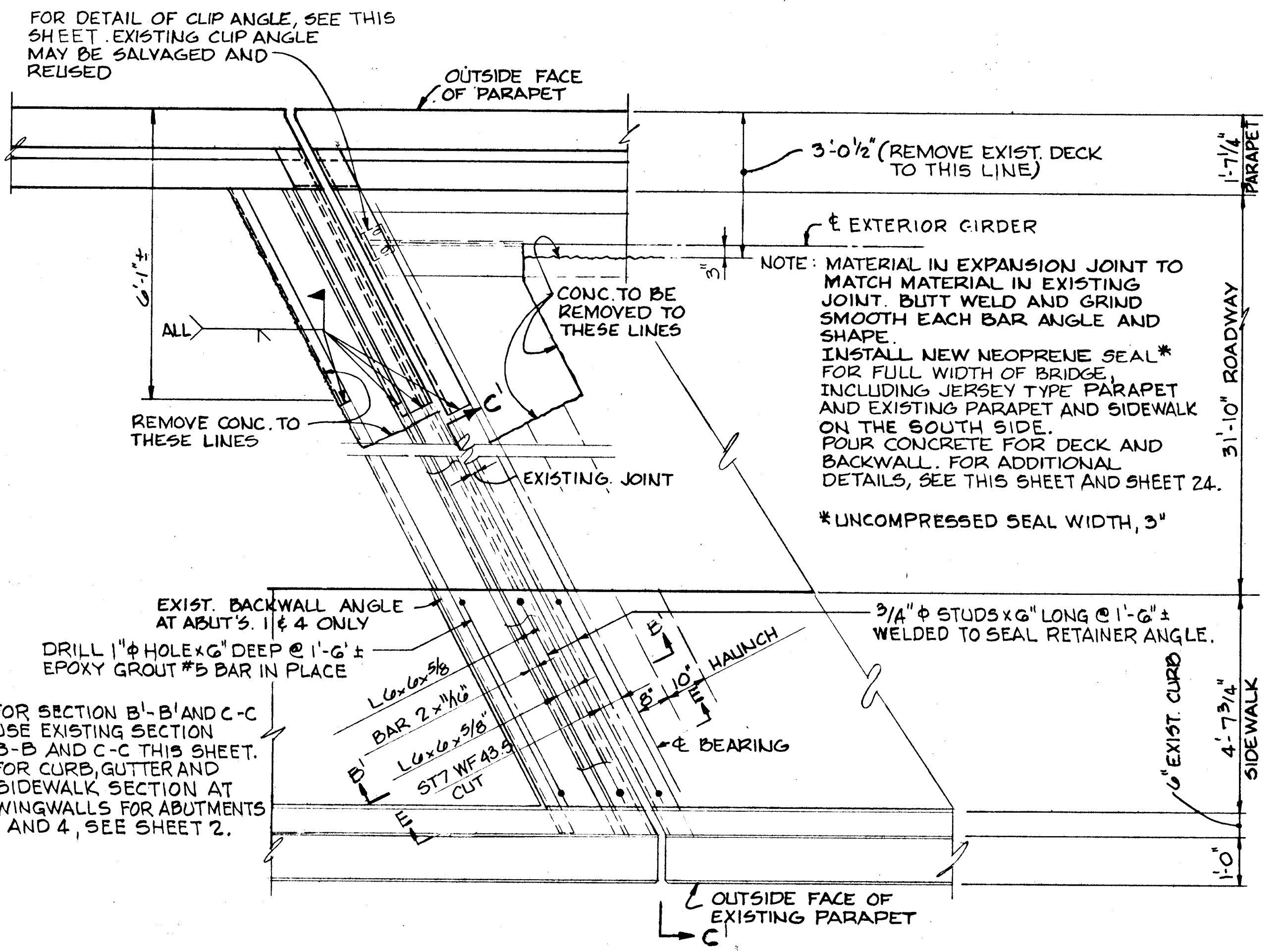


**EXISTING EXPANSION JOINT AT ABUTMENT NO. 1, 2, 3 AND 4**  
SCALE: 1/2" = 1'-0"

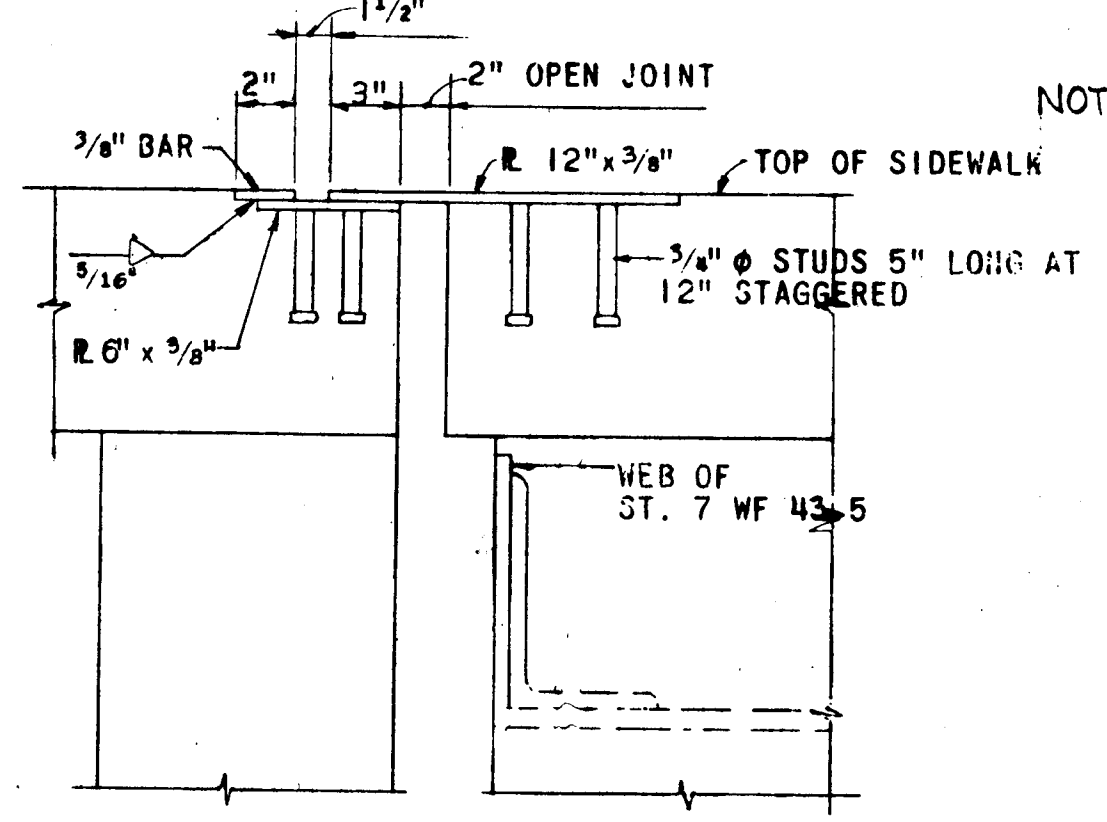


**SECTION C-C**  
SCALE: 3/4" = 1'-0"

NOTE: CLEAN AND RESTORE EXPOSED REINFORCING BARS TO ORIGINAL SHAPE. THE CONTRACTOR MAY AT HIS OPTION, CUT THE EXPOSED REINFORCING BARS AND FURNISH NEW BARS OF THE SAME SIZE, SHAPE AND LENGTH, PROVIDED ADEQUATE SPLICE LAP IS AVAILABLE. FURNISH NEW STIRRUPS OF SAME SIZE AND SHAPE AS EXISTING.



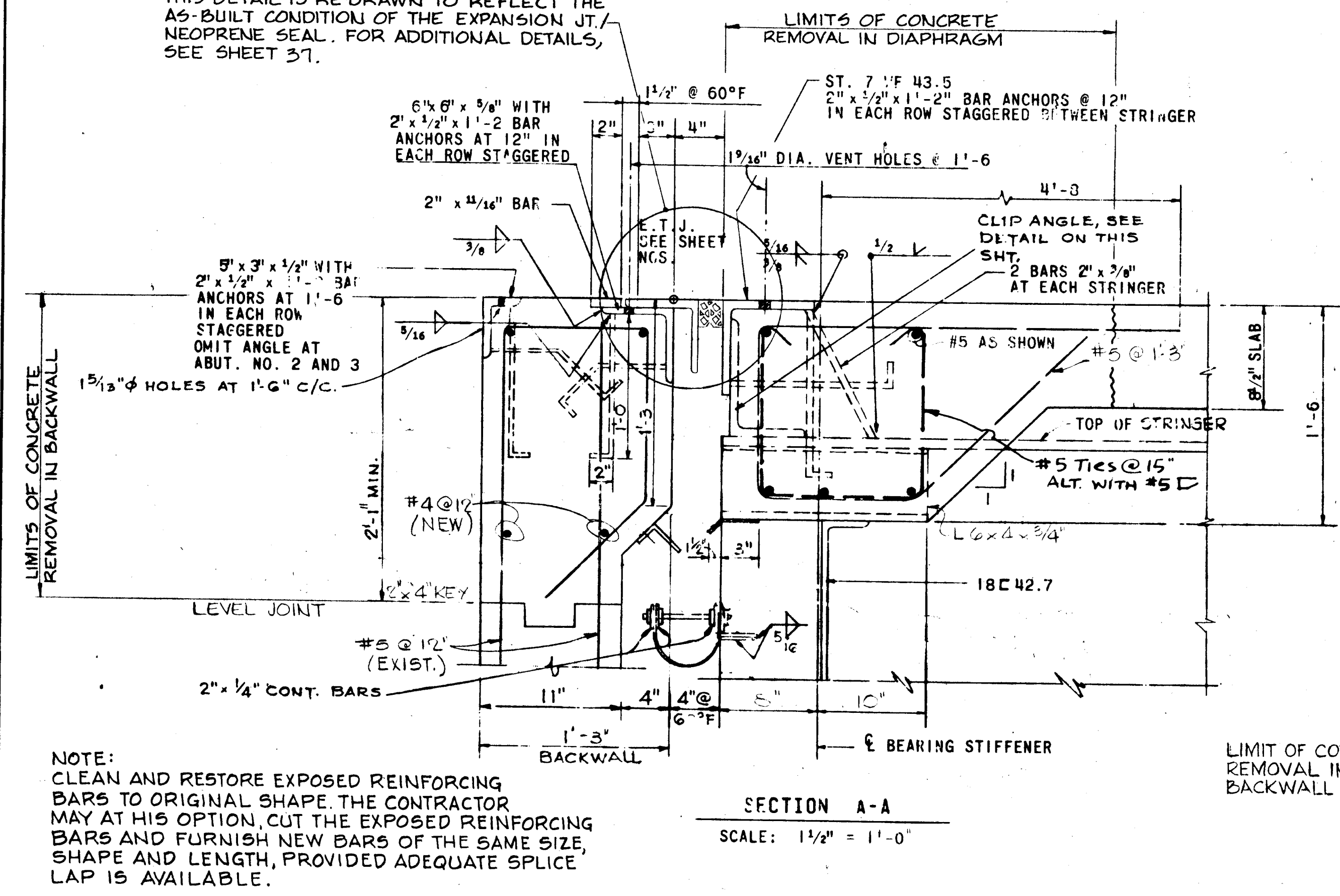
**PROPOSED EXPANSION JOINT PLAN AT ALL ABUTMENTS**  
SCALE: 1/2" = 1'-0"



**SECTION B-B**  
SCALE: 1/2" = 1'-0"

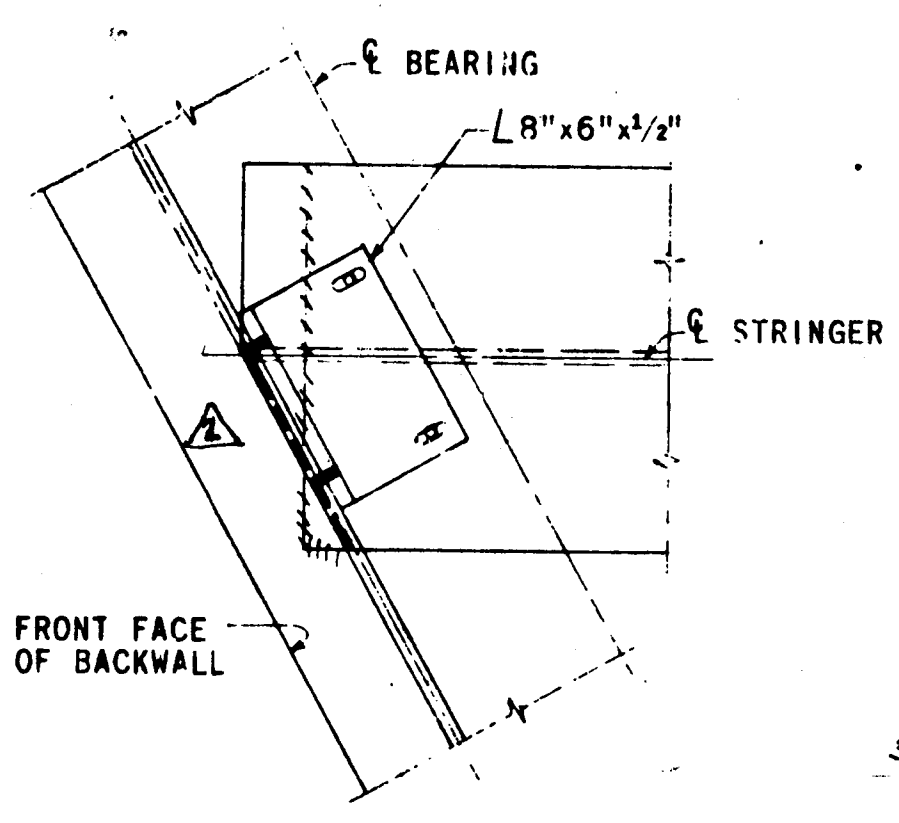
NOTE: FOR SECTION B-B AND C-C USE EXISTING SECTION B-B AND C-C THIS SHEET. FOR CURB, GUTTER AND SIDEWALK SECTION AT WINGWALLS FOR ABUTMENTS 1 AND 4, SEE SHEET 2.

THIS DETAIL IS RE-DRAWN TO REFLECT THE AS-BUILT CONDITION OF THE EXPANSION JT./ NEOPRENE SEAL. FOR ADDITIONAL DETAILS, SEE SHEET 37.



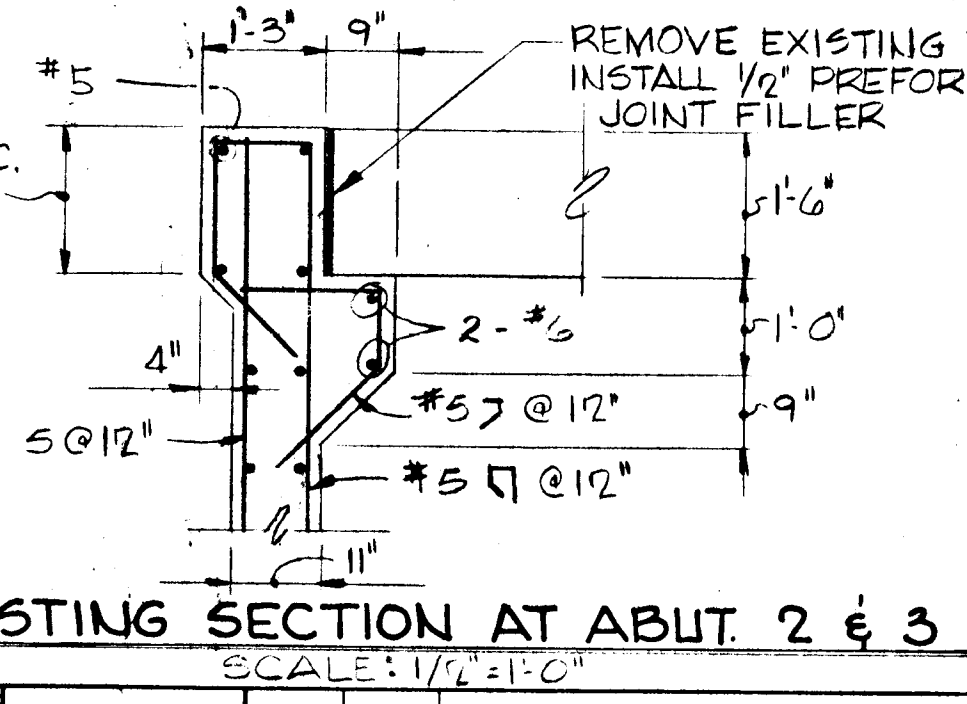
**SECTION A-A**  
SCALE: 1 1/2" = 1'-0"

NOTE: CLEAN AND RESTORE EXPOSED REINFORCING BARS TO ORIGINAL SHAPE. THE CONTRACTOR MAY AT HIS OPTION, CUT THE EXPOSED REINFORCING BARS AND FURNISH NEW BARS OF THE SAME SIZE, SHAPE AND LENGTH, PROVIDED ADEQUATE SPLICE LAP IS AVAILABLE.

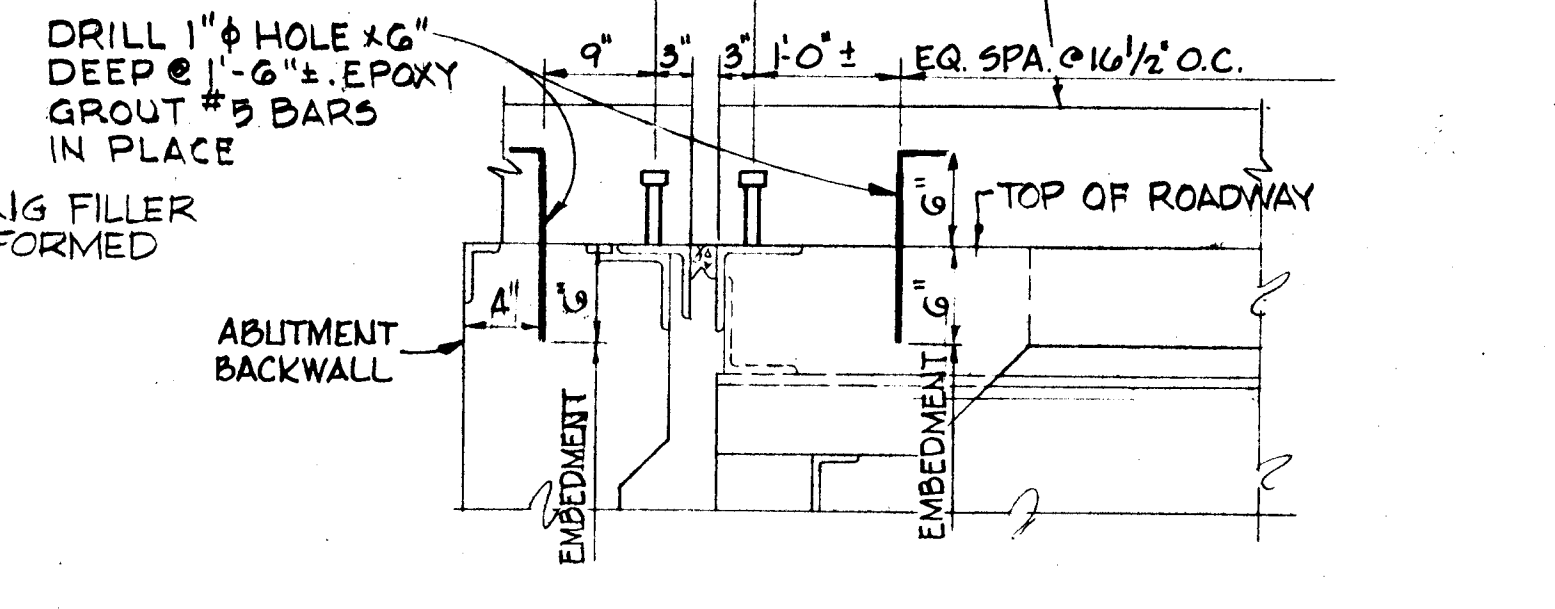


**SECTION E-E AT (ROADWAY LEVEL)**  
SCALE: 1" = 1'-0"

**EXISTING CLIP ANGLE PLAN**  
SCALE: 1 1/2" = 1'-0"



**EXISTING SECTION AT ABUT. 2 & 3**  
SCALE: 1 1/2" = 1'-0"



NOTES: FOR GENERAL NOTES, SEE SHEET 27. FOR COMPRESSION SEAL AT SIDEWALK, SEE SHEET 37. FOR COMPRESSION SEAL AT JERSEY PARAPEIT SEE SHEET 25

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* 1/1/91  
DIRECTOR OF PUBLIC WORKS

*[Signature]* 1/1/91  
CHIEF, BUREAU OF ENGINEERING

*[Signature]* 1/1/91  
CHIEF, BUREAU OF HIGHWAYS

**BUCHART-HORN INC.**  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210



|             |          |
|-------------|----------|
| DES: K.S.   |          |
| DRN: A.G.S. |          |
| CHK: K.S.   |          |
| DATE: 12/90 |          |
| BY NO.      | REVISION |
|             |          |
|             |          |
|             |          |

**JOINT DETAILS**  
(VOLLMERHAUSEN RD. OVER I-95)

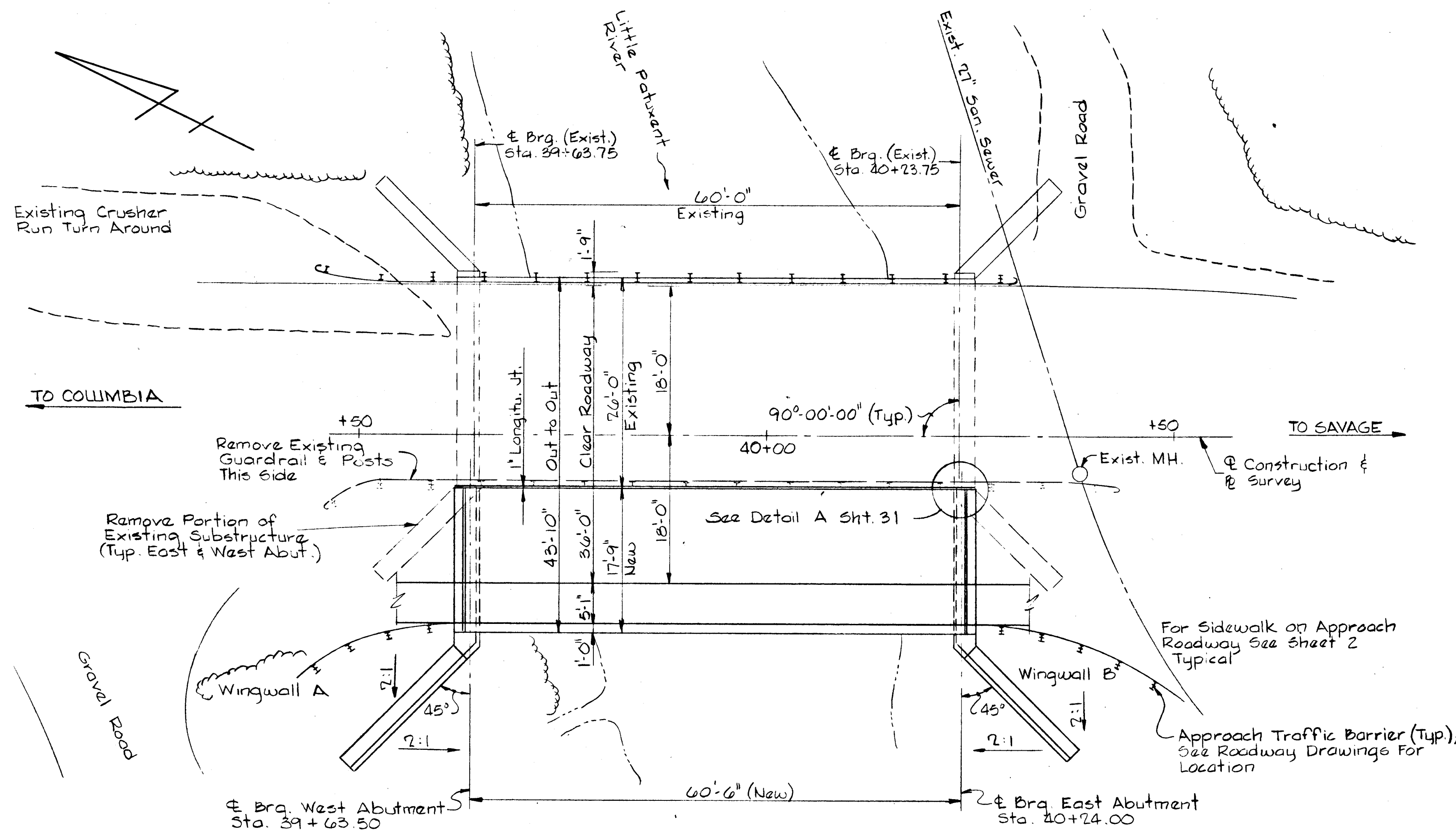
DATE: 600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

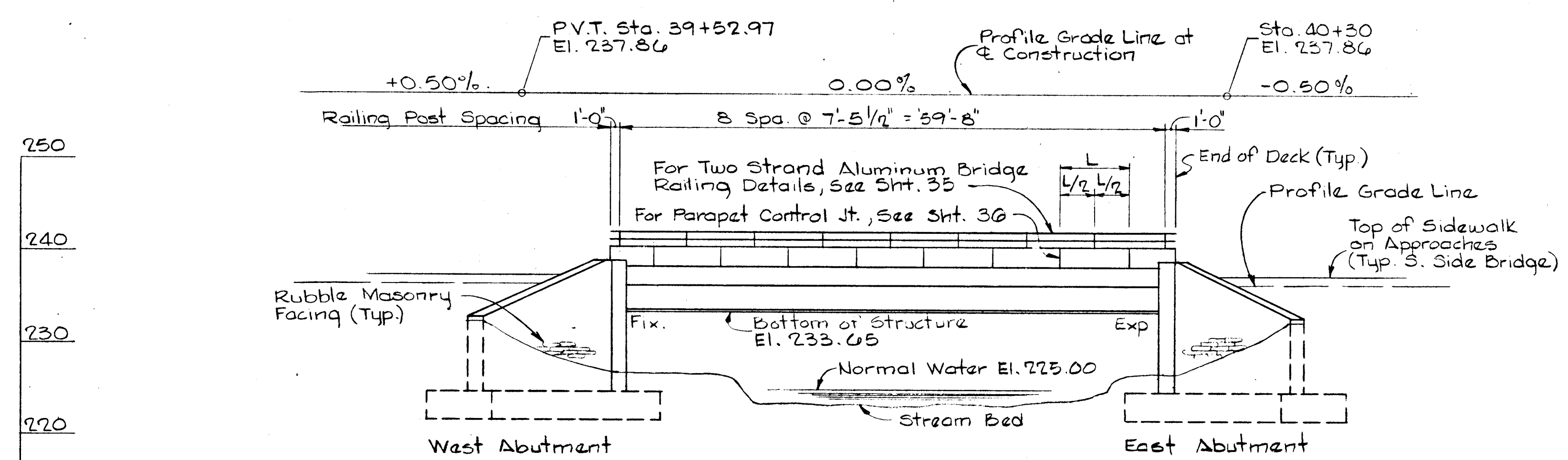
SCALE AS SHOWN  
SHEET OF 1

GENERAL NOTES

- SPECIFICATIONS:** SHA SPECIFICATIONS DATED JANUARY, 1982 AND SUPPLEMENT TO SPECIFICATIONS DATED JANUARY 1988, REVISIONS THEREOF AND ADDITIONS THERETO AND THE SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.
- CONCRETE DESIGN:** SERVICE LOAD DESIGN METHOD  $f_c = 1200$  p.s.i. EXCEPT THAT IN BRIDGE DECK SLABS SUPPORTED BY STRINGERS IT SHALL BE 1350 p.s.i.
- REINFORCING STEEL DESIGN:**  $f_s = 24,000$  p.s.i.
- STRUCTURAL STEEL DESIGN:** ELASTIC DESIGN METHOD
- LOADING:** HS 20-44 WITH PROVISIONS FOR FUTURE 2" WEARING SURFACE AND 15 POUNDS PER SQUARE FOOT FOR USE OF BRIDGE DECK FORMS.
- CONCRETE:** ALL CONCRETE FOR ABUTMENT BACKWALLS AND PARAPETS AT ABUTMENTS AND ENTIRE SUPERSTRUCTURES SHALL BE MIX NO. 6 (4500 p.s.i.) ALL OTHER STRUCTURE CONCRETE SHALL BE MIX NO. 3 (3500 p.s.i.). SEE SPECIAL PROVISIONS.
- CHAMFER:** ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH  $3/4" \times 3/4"$  MILLED CHAMFER STRIPS, EXCEPT ON UNEXPOSED FOOTINGS OR WHERE INDICATED BY THE FOLLOWING NOTATION ON THE PLANS "DO NOT CHAMFER".
- REINFORCING STEEL:** REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615 GRADE 60. ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL FOR SUPERSTRUCTURE, INCLUDING SIDEWALKS, PARAPETS, ABUTMENT BACKWALLS, AND BEARING SEAT PEDESTALS SHALL BE EPOXY COATED. SEE SPECIAL PROVISIONS.
- KEY:** ONLY GRADE 60 CAN BE USED ON THIS PROJECT.
- STRUCTURAL STEEL:** ALL KEYS ARE NOMINAL SIZE. STRUCTURAL STEEL SHALL CONFORM TO A.S.T.M. A-36. SEE SPECIAL PROVISIONS.
- EXISTING STRUCTURES:** ALL DIMENSIONS AFFECTED BY THE GEOMETRICS, AND/OR LOCATION OF THE EXISTING STRUCTURE ARE TO BE CHECKED IN THE FIELD BY THE CONTRACTOR, BEFORE ANY CONSTRUCTION IS DONE, AND BEFORE ANY REINFORCING STEEL, ETC., IS ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS.
- EXISTING PLANS:** INFORMATIONAL DRAWINGS OF THE EXISTING STRUCTURES WILL BE AVAILABLE UPON REQUEST, AT NO COST TO THE CONTRACTOR, IN THE ENGINEER'S OFFICE. THE ENGINEER DISCLAIMS ANY RESPONSIBILITY FOR THE ACCURACY OF SUCH DRAWINGS COMPARED TO ACTUAL FIELD CONDITIONS.
- UTILITIES:** THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND CONDUCT HIS OPERATIONS SO THAT THEY ARE NOT DISTURBED OR ENDANGERED. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE RESULTING TO UTILITIES DURING HIS OPERATIONS.
- EPOXY BONDING:** ALL EXISTING CONCRETE THAT WILL BE IN CONTACT WITH NEW CONCRETE SHALL BE COATED WITH AN EPOXY BONDING COMPOUND UNLESS NOTED OTHERWISE. SEE SPECIAL PROVISIONS.
- EXCAVATING:** DEPOSITION OF EXCAVATED MATERIALS AND ALL EARTHWORK OPERATIONS SHALL BE CARRIED OUT IN SUCH A WAY THAT SEDIMENT RUNOFF AND SOIL EROSION ARE CONTROLLED AND MINIMIZED. AS THE WORK PROGRESSES AND UPON COMPLETION OF EARTHWORK OPERATIONS, ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE PROTECTED FROM SUBSEQUENT SOIL EROSION BY MATERIALS AND METHODS OF CONSTRUCTION SHOWN ON THE DRAWINGS OR SPECIAL PROVISIONS. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT OR CONTROL SPILLS FROM FUEL AND LUBRICANTS. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT DUMPING OF EXCESS CONSTRUCTION MATERIAL AND DEBRIS FROM CLEAN-UP OPERATIONS INTO THE RIVER.
- HYDROLOGICAL AND HYDRAULIC DATA:** NOT REQUIRED
- BORINGS:** BORINGS AND DRIVE TESTS WERE TAKEN IN JANUARY, 1989.
- DATUM:** ELEVATIONS ARE BASED ON U.S.C. & G.S. MEAN SEA LEVEL OF 1929 (E.L. 0.00).



PLAN  
Scale: 1" = 10'



ELEVATION  
Scale: 1" = 10'

1609

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

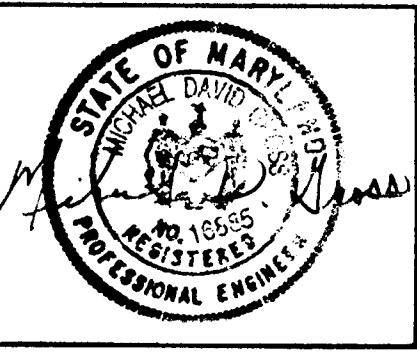
*James P. Elm*  
DIRECTOR OF PUBLIC WORKS  
DATE: 11/1/91

*William E. Ray*  
CHIEF, BUREAU OF ENGINEERING  
DATE: 11/1/91

*Shepherd Anderson Calia*  
CHIEF, BRIDGES AND STORM DRAINAGE DIVISION  
DATE: 11/1/91

*Franklin W. Weiland*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 11/1/91

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210



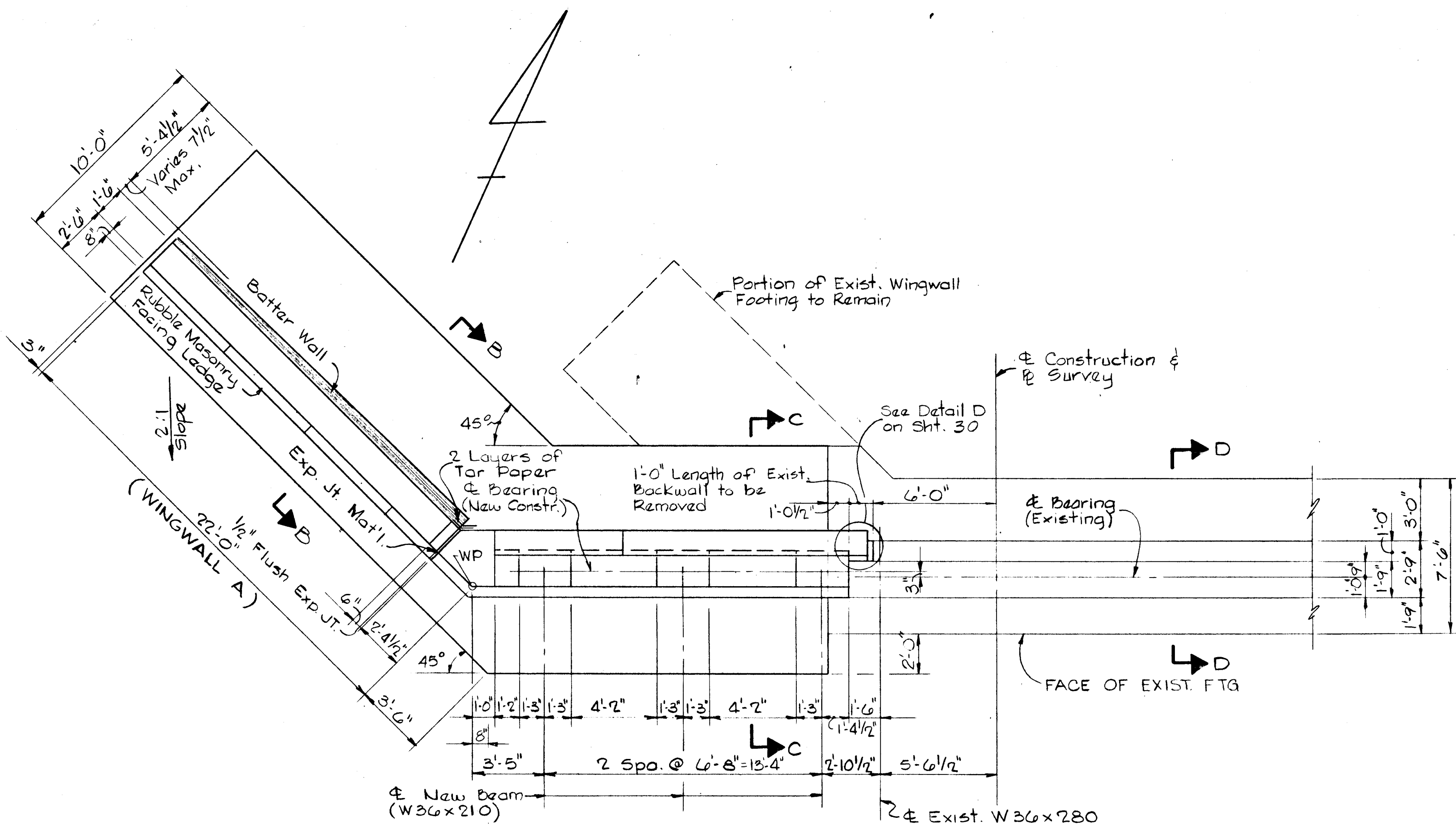
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|-------------|----|-----|----------|
| DES: M.D.G. |    |     |          |
| DRN: A.G.S. |    |     |          |
| CHK: M.D.G. |    |     |          |
| DATE: 12/90 | BY | NO. | REVISION |

GENERAL PLAN AND ELEVATION  
(VOLLMERHAUSEN RD. OVER LITTLE PATUXENT RIVER)

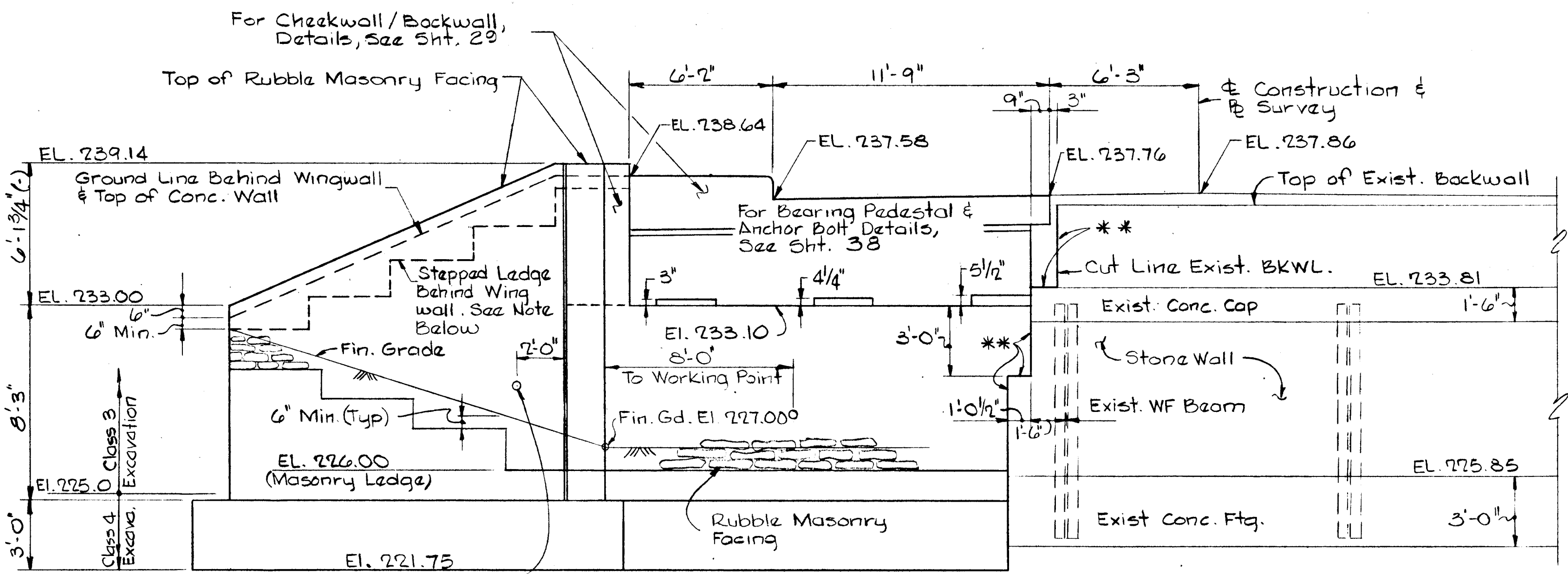
600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 27 OF 40

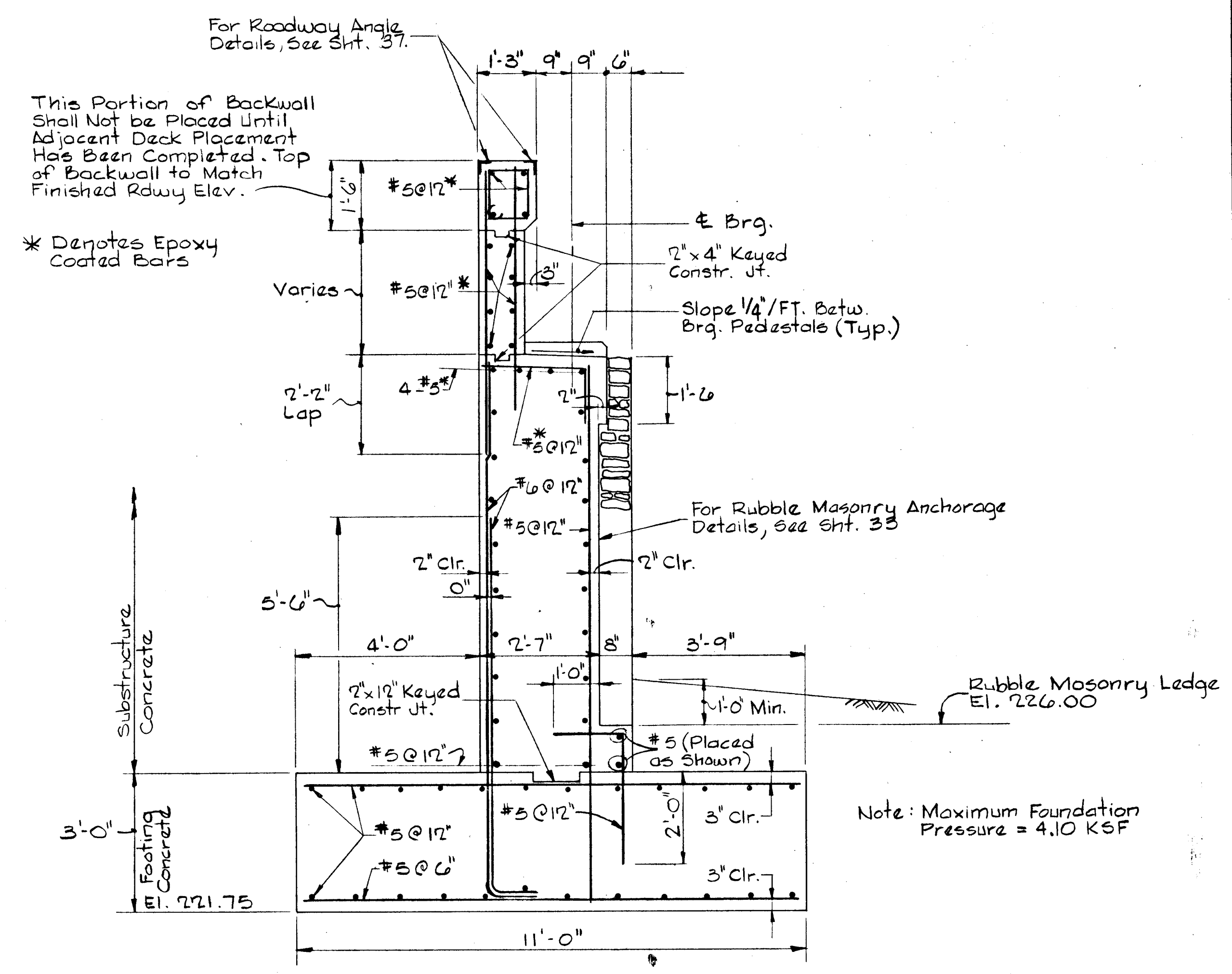


**PLAN**  
Scale: 1/4" = 1'-0"

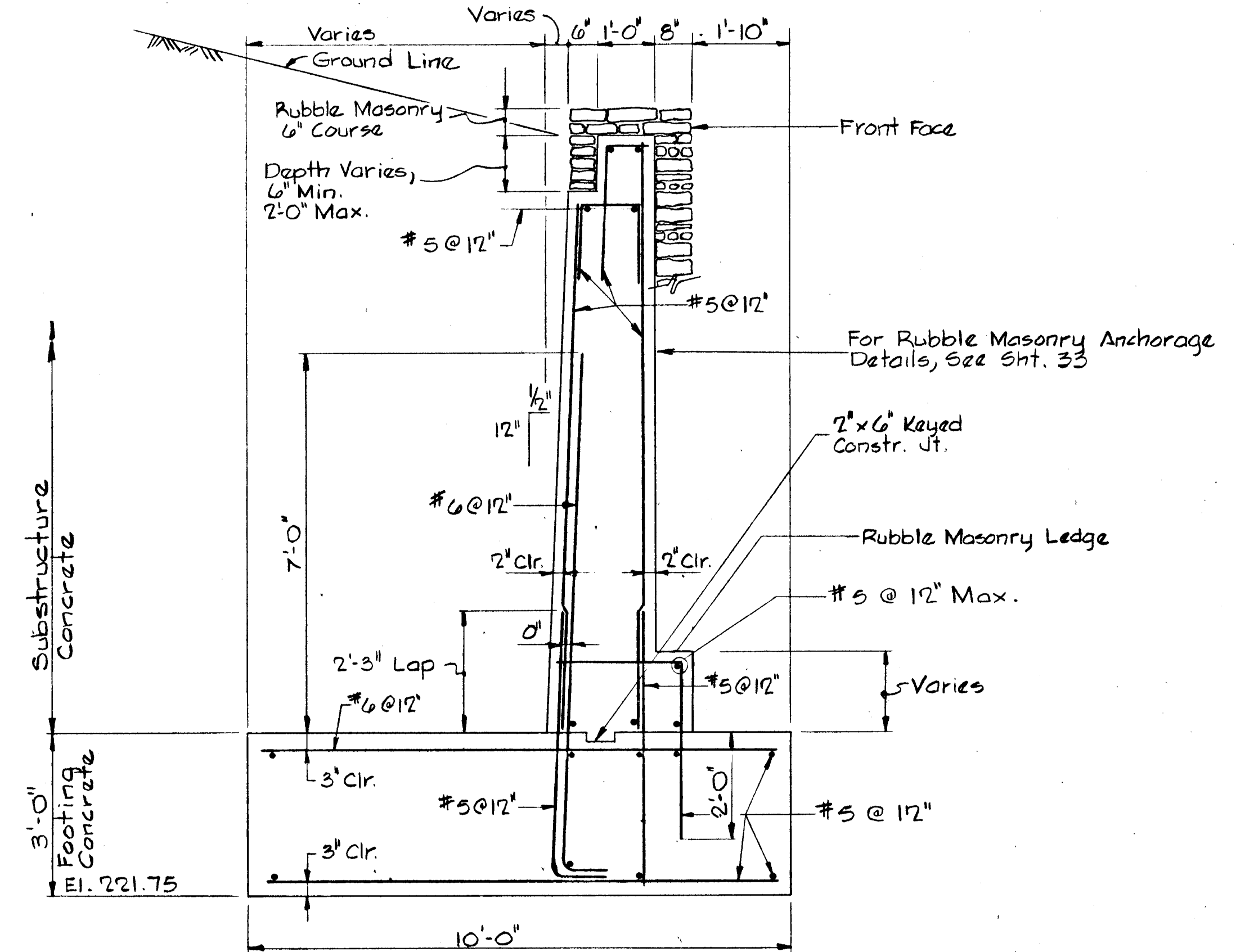


**ELEVATION**  
Scale: 1/4" = 1'-0"

**Notes:**  
1. For General Notes, See Sht. 27.  
2. For Abutment Footing Plan, See Sht. 30.  
3. The Abbreviation WP Denotes Working Point.



**SECTION C-C**  
Scale: 1/2" = 1'-0"



**SECTION B-B**  
Scale: 1/2" = 1'-0"

16091

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James P. ...*  
DIRECTOR OF PUBLIC WORKS DATE 1/11/91

*Gregory ...*  
CHIEF, BUREAU OF ENGINEERING DATE 1/11/91

*Charles ...*  
CHIEF, BUREAU OF HIGHWAYS DATE 1/11/91

**BUCHART - HORN INC.**  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210

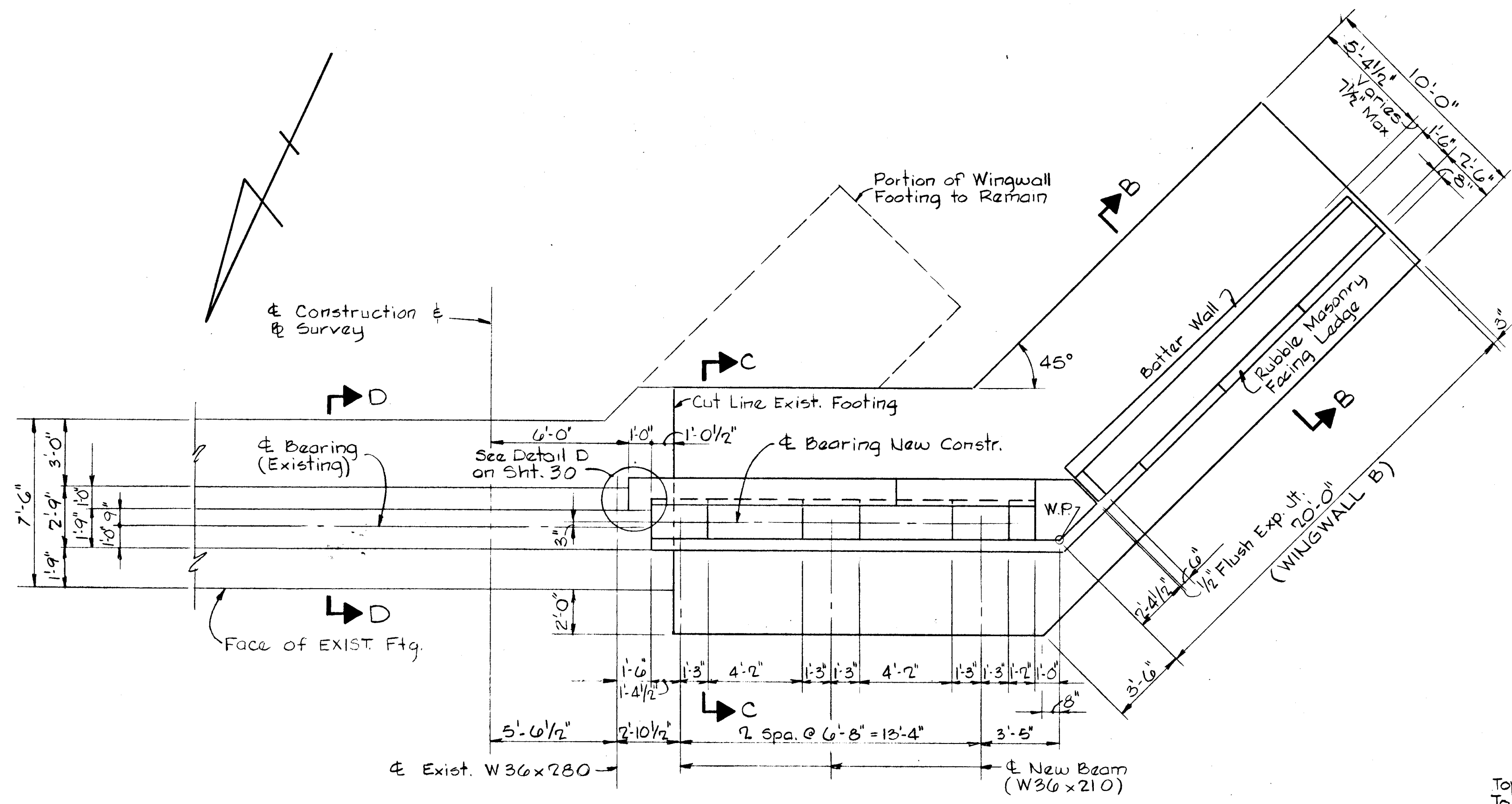


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|-------------|--|
| DES: M.D.G. |  |
| DRN: A.G.S. |  |
| CHK: M.D.G. |  |
| DATE: 12/90 |  |
| BY NO.      |  |
| REVISION    |  |
| DATE        |  |

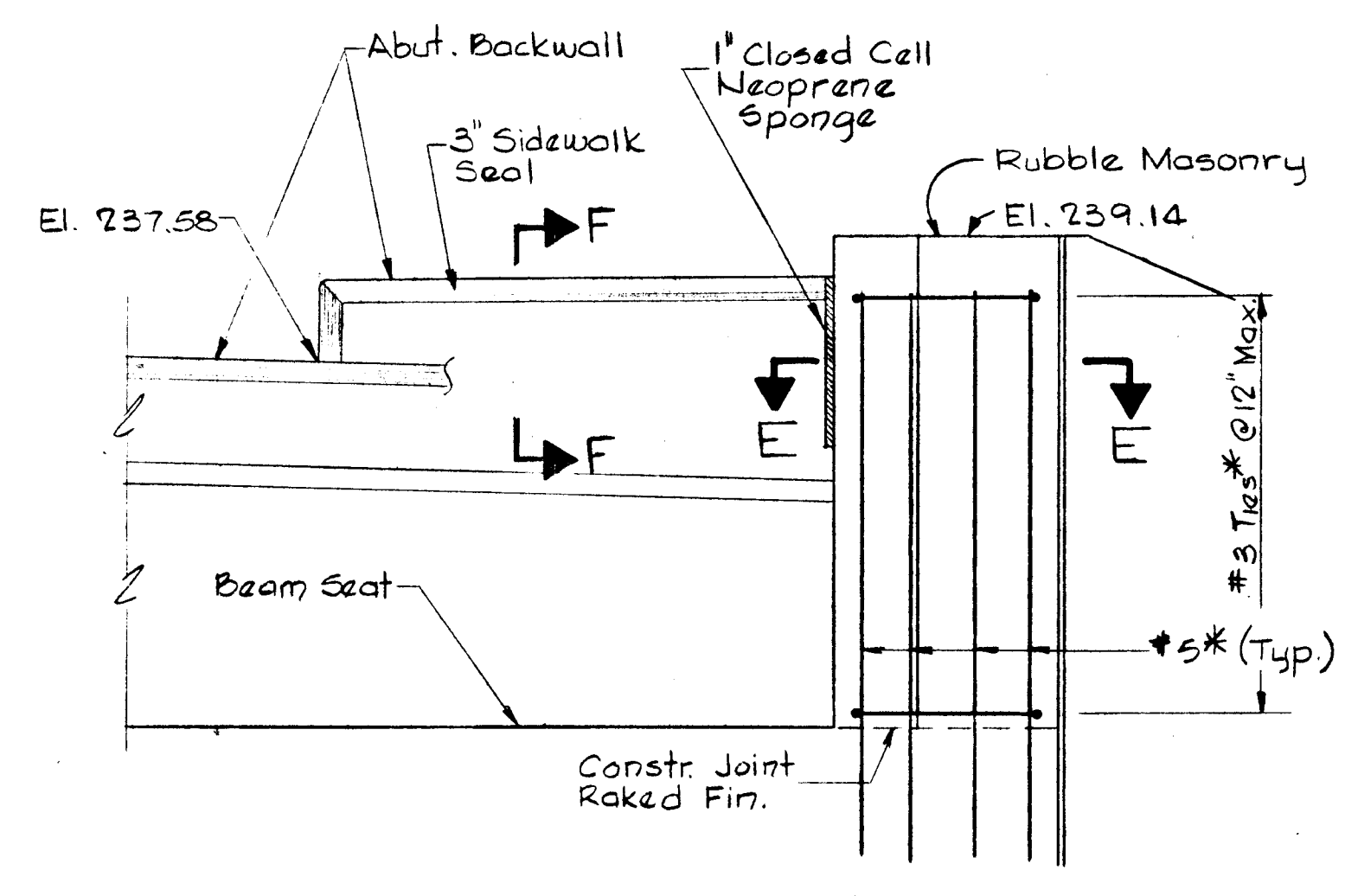
**PLAN, ELEVATION & DETAILS**  
**WEST ABUTMENT**  
(VOLLMERHAUSEN RD. OVER LITTLE PATUXENT RIVER)

**VOLLMERHAUSEN RD. IMPROVEMENTS**  
**WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD**  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

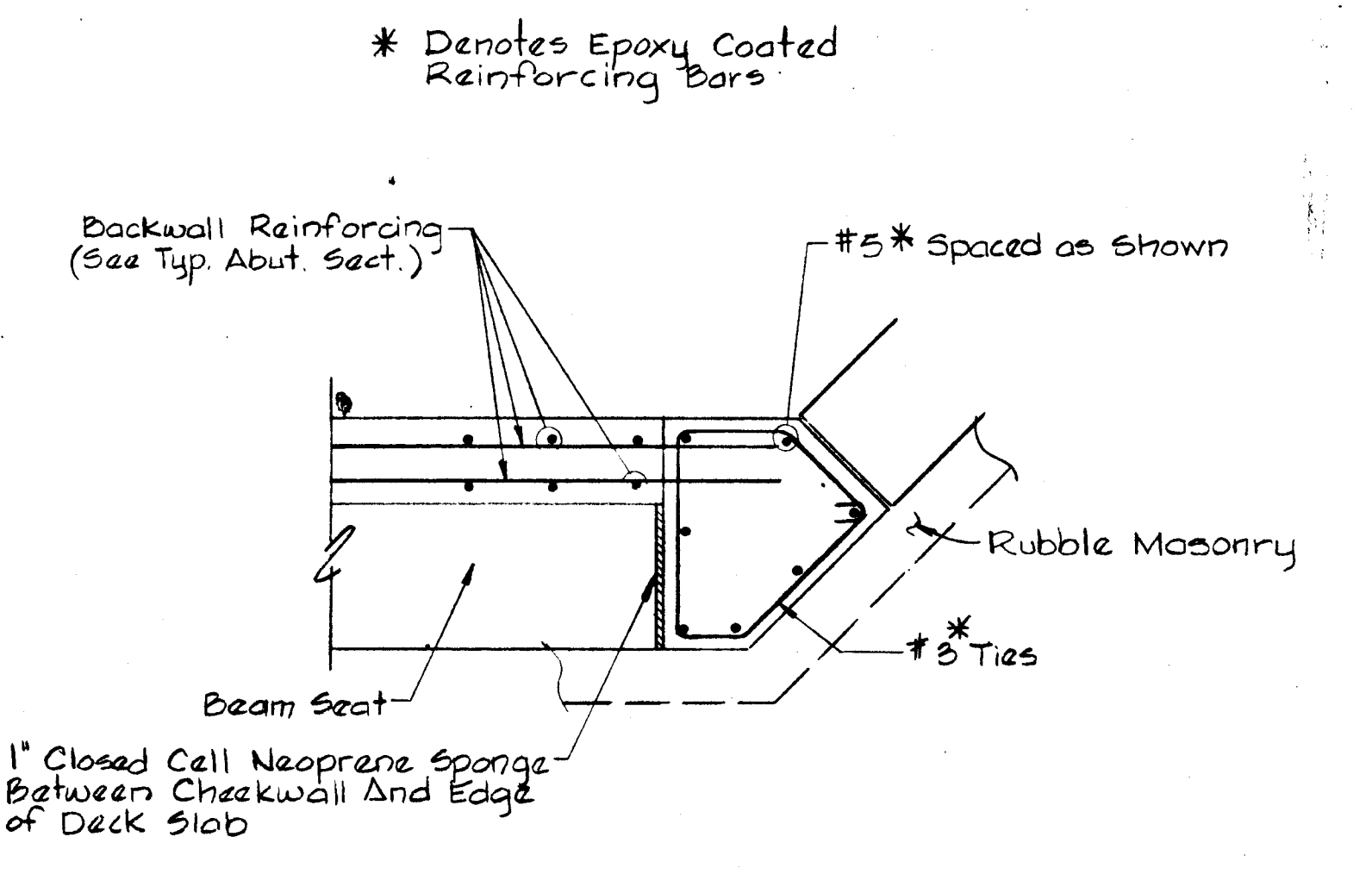
SCALE AS SHOWN  
SHEET 22 OF 40



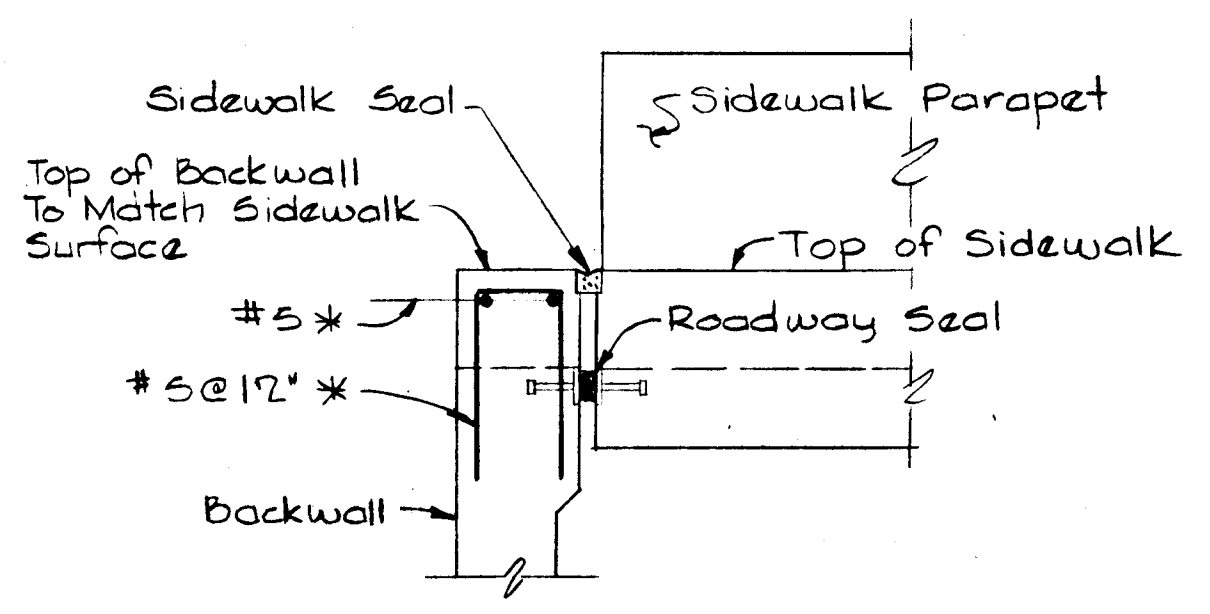
PLAN  
Scale: 1/4"=1'-0"



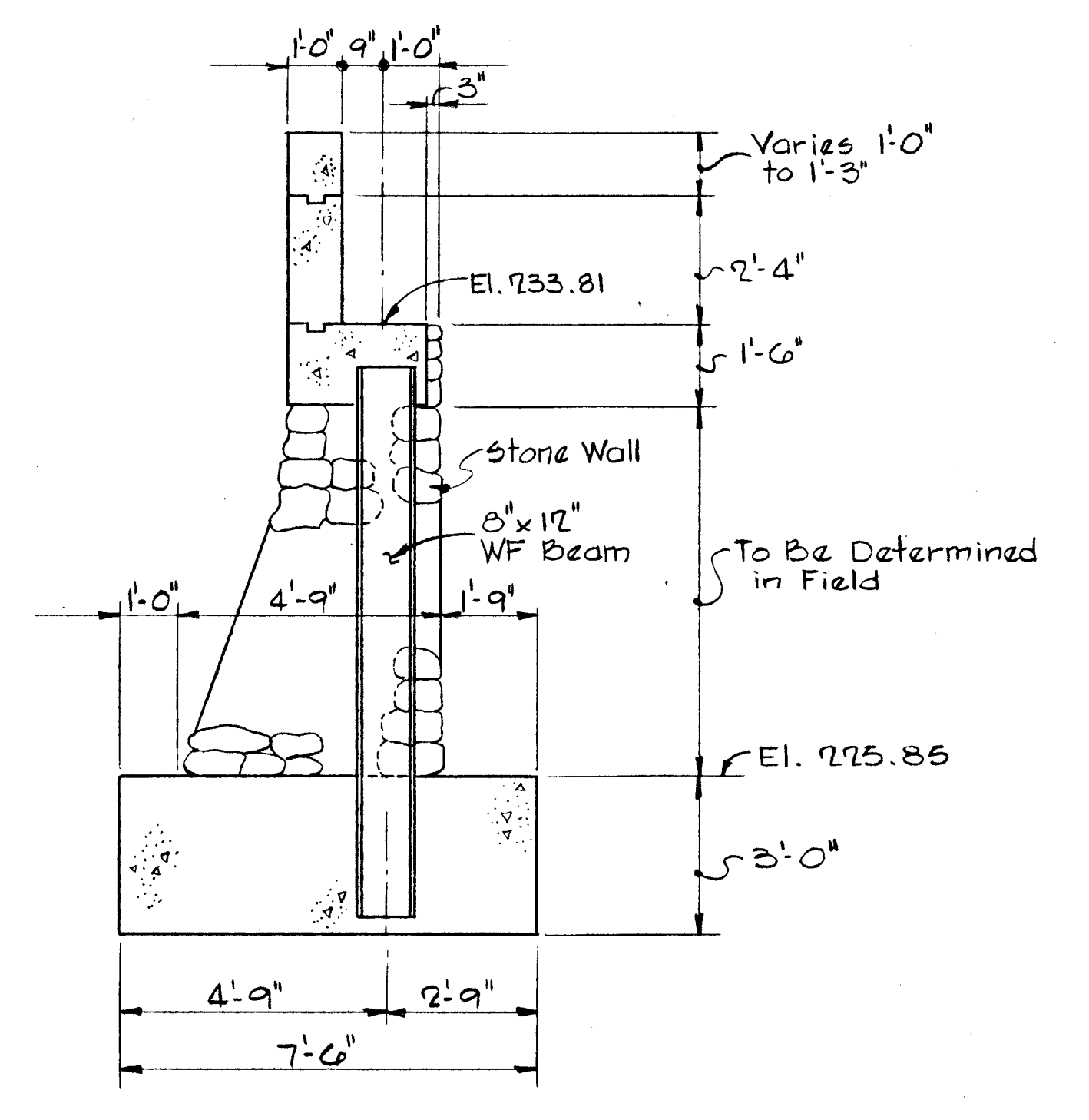
TYPICAL CHEEKWALL / BACKWALL DETAILS  
Scale: 1/2"=1'-0"  
(Note: Detail Shown Above is Opposite Hand For West Abutment)



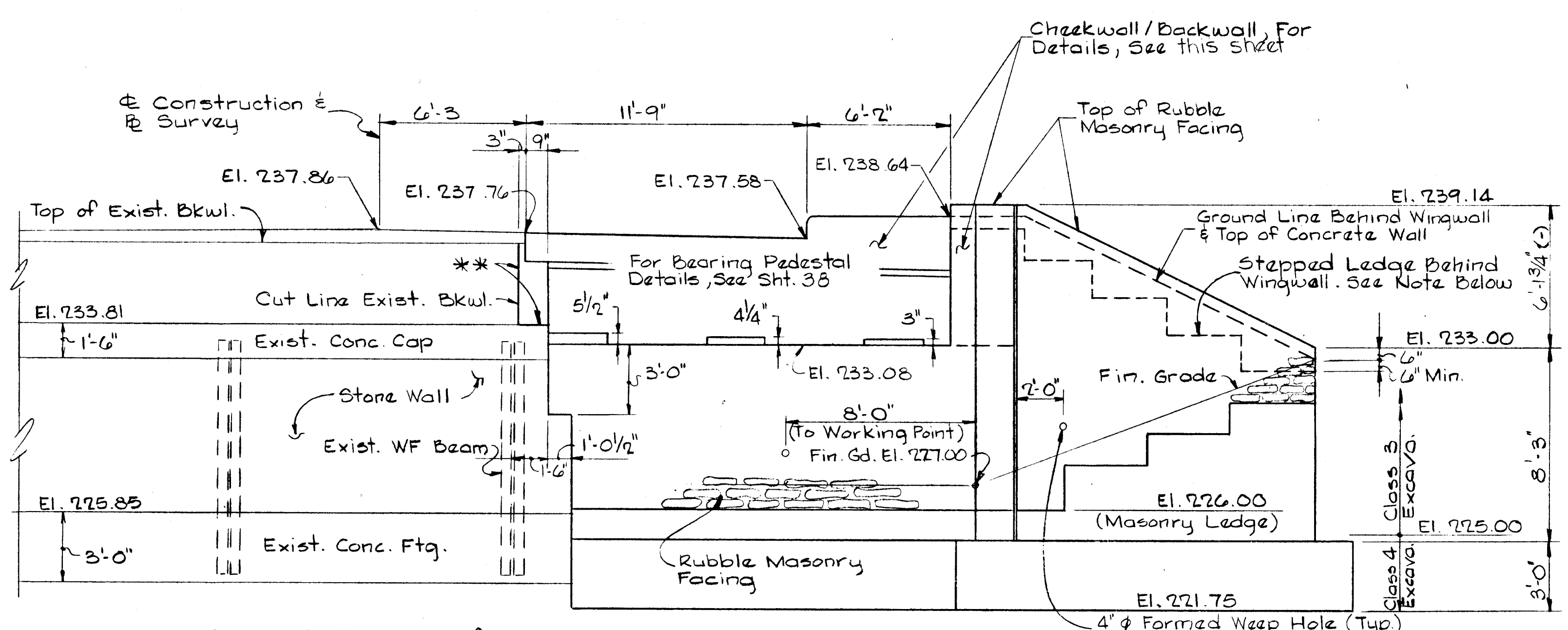
SECTION E-E  
Scale: 1/2"=1'-0"



SECTION F-F  
Scale: 1/2"=1'-0"  
(For Details Not Shown, See Sht. 37)



SECTION D-D  
Scale: 3/8"=1'-0"



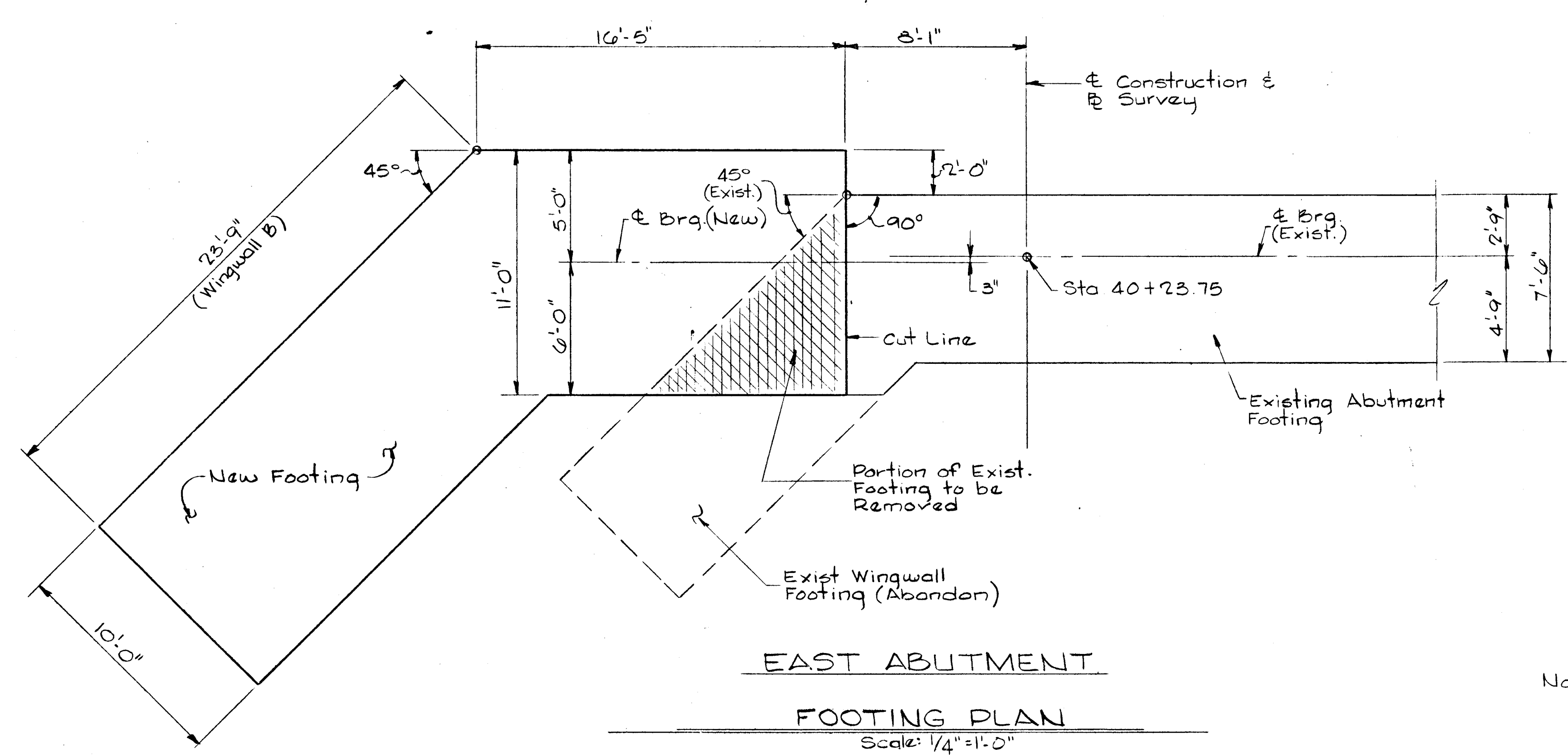
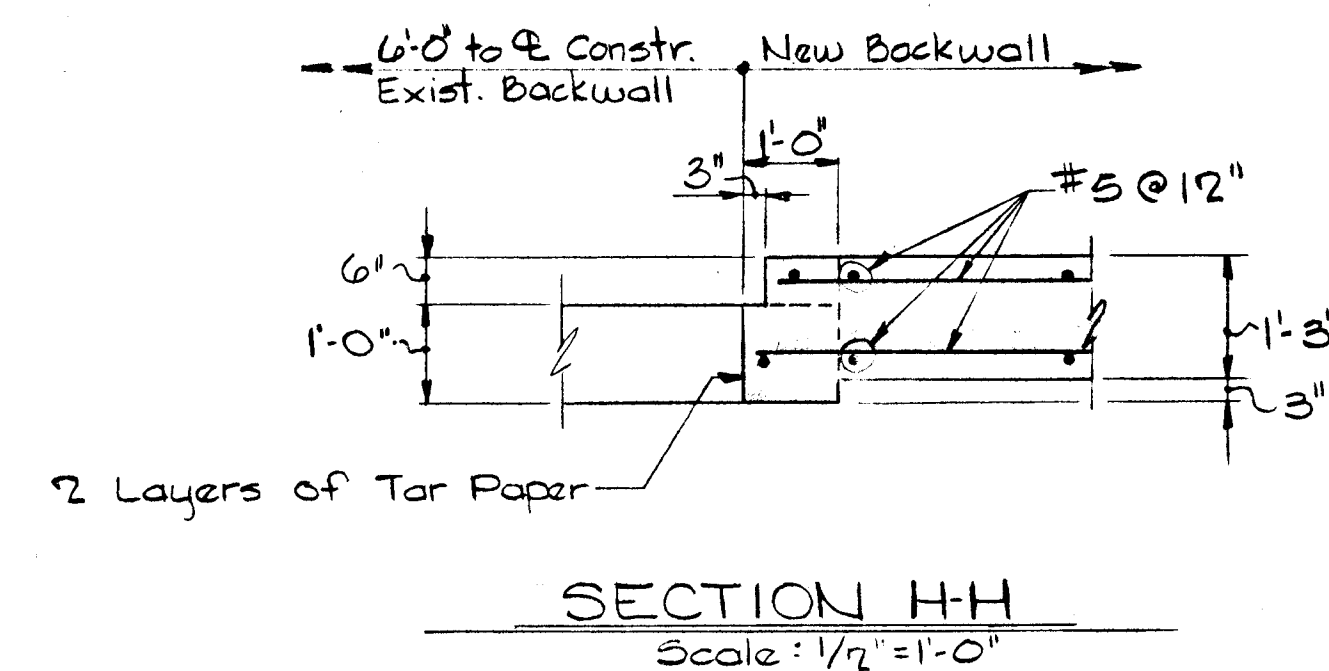
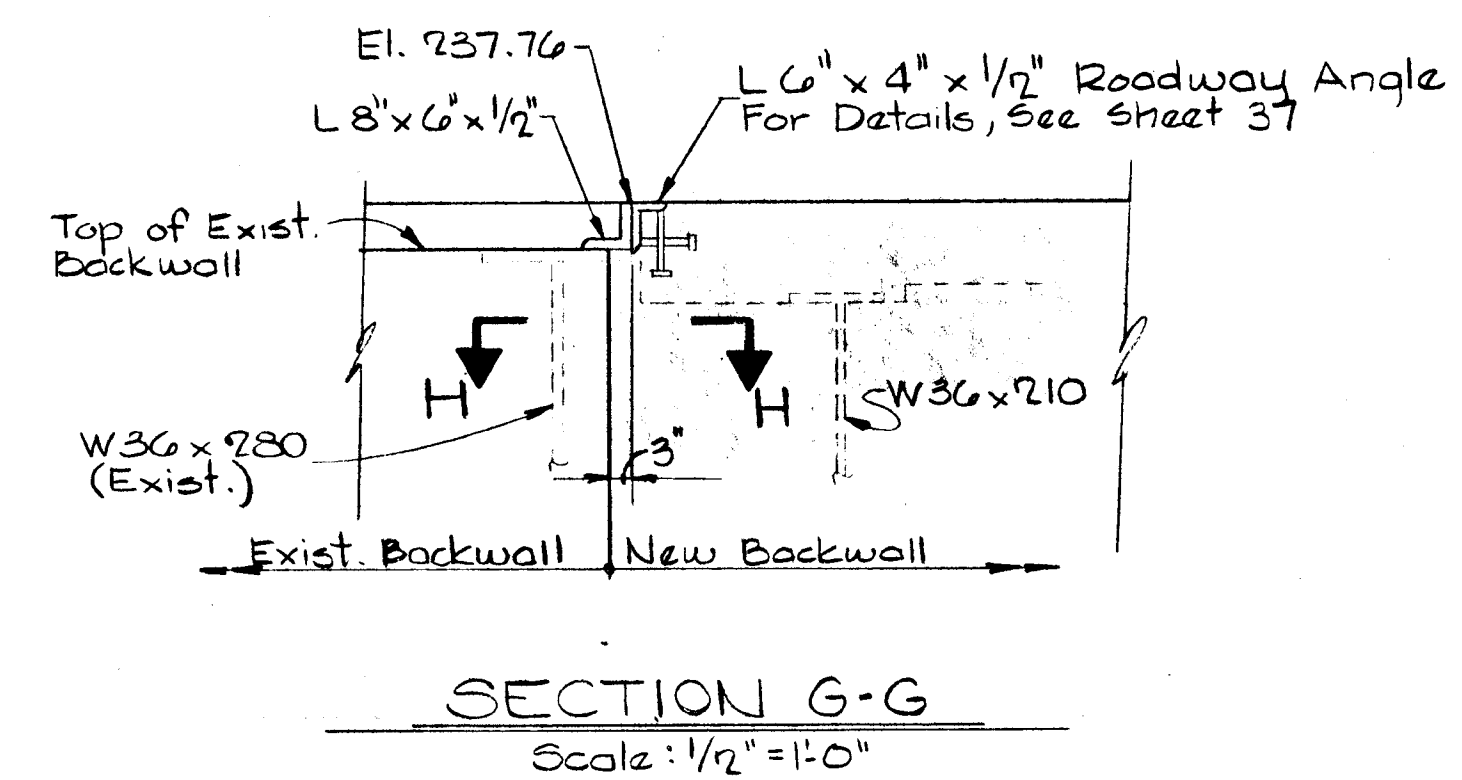
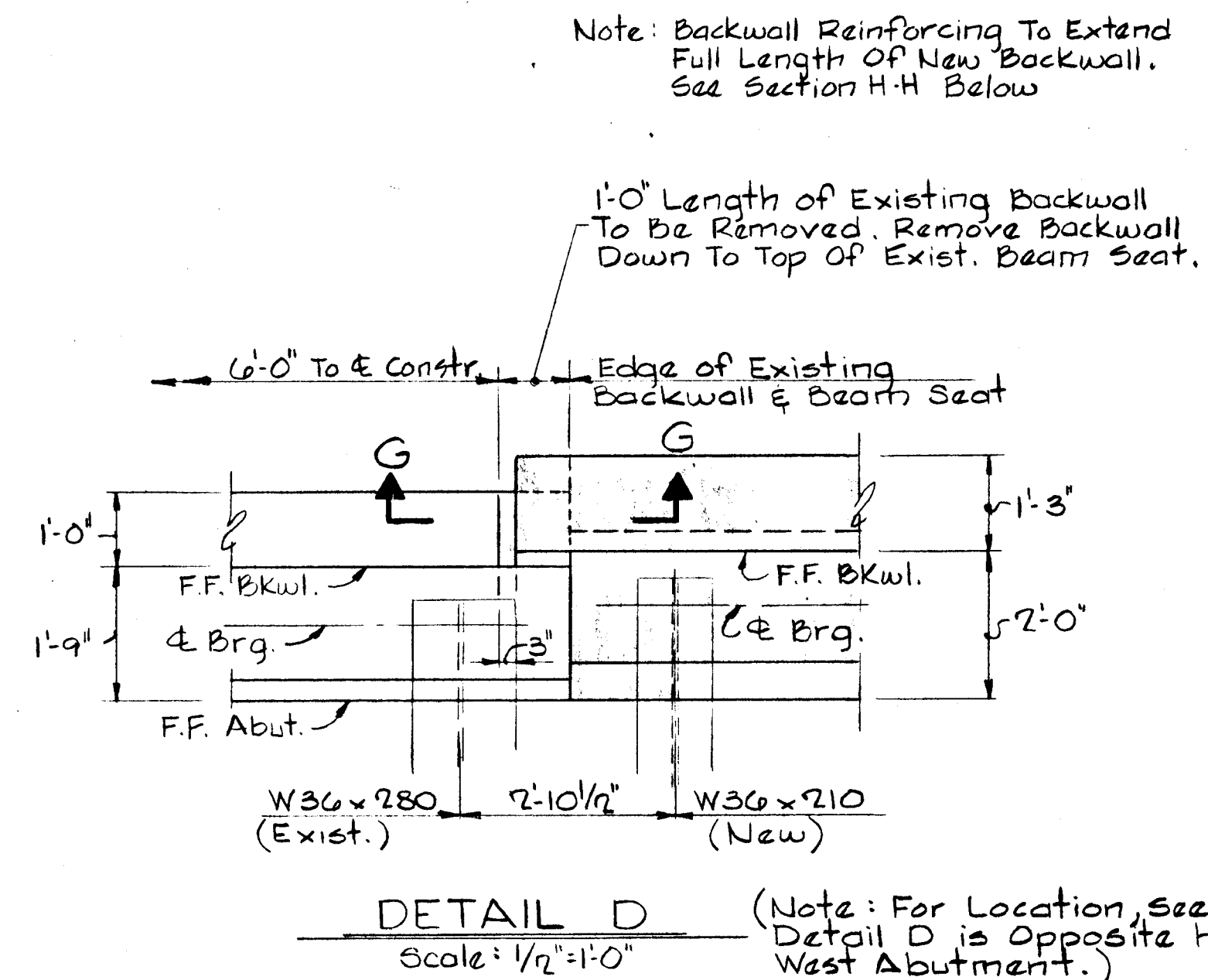
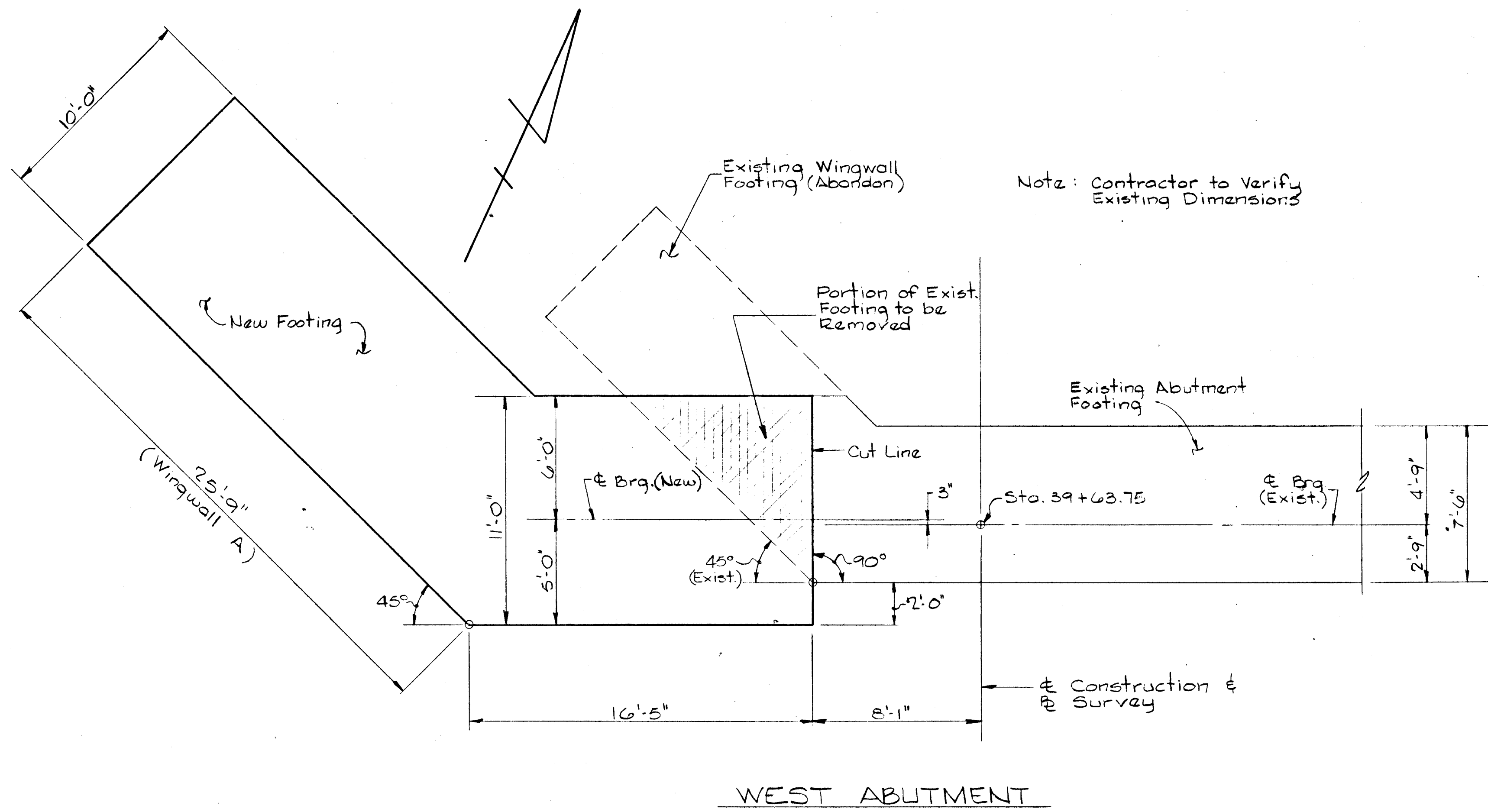
ELEVATION  
Scale: 1/4"=1'-0"

\*\* Provide 2 Layers of Tor Paper Betw. New & Exist. Concrete. Fasten to Exist. Concrete With Asphaltic Cement.

Note: Rubble Masonry Facing Behind Wingwall Shall Extend A Min. of 1 Ft. Below Top of Wall.

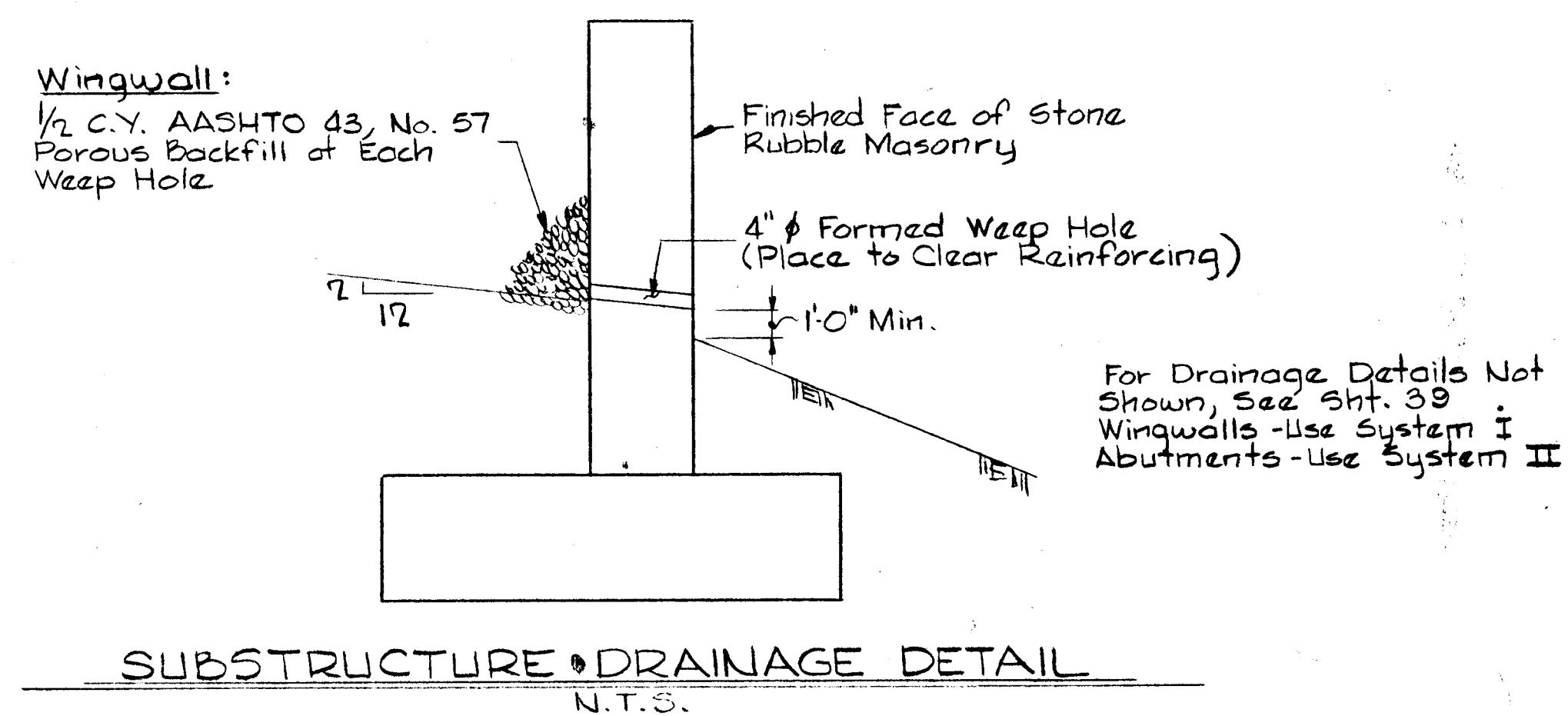
- Notes:
1. For General Notes, See Sht. 27
  2. For Abutment Footing Plan, See Sht. 30
  3. For Section B-B; See Sht. 28
  4. For Section C-C; See Sht. 28
  5. The Abbreviation W.P. Denotes Working Point

1606



Shaded Areas Indicate New Construction

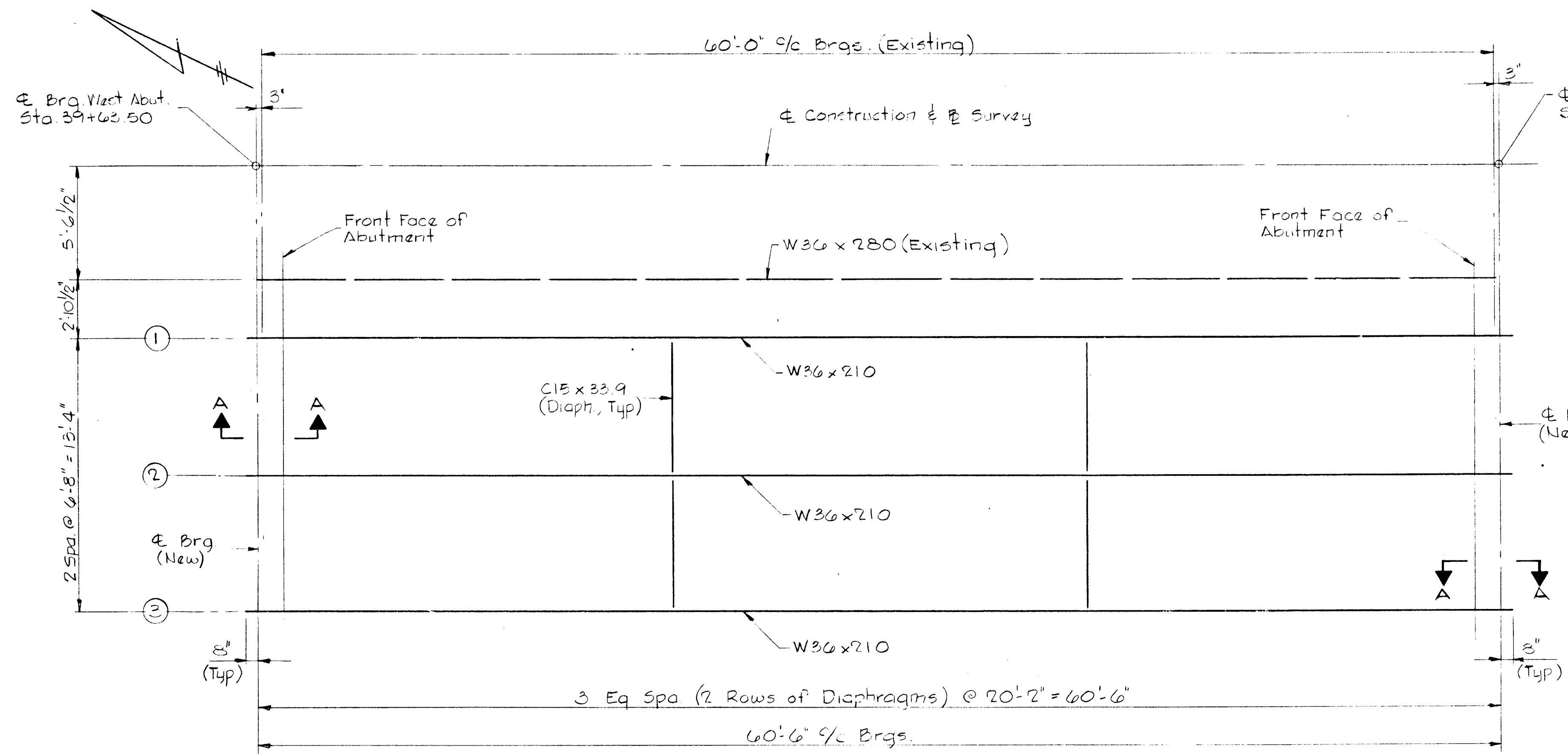
Notes: For General Notes, See Sht. 27



1606

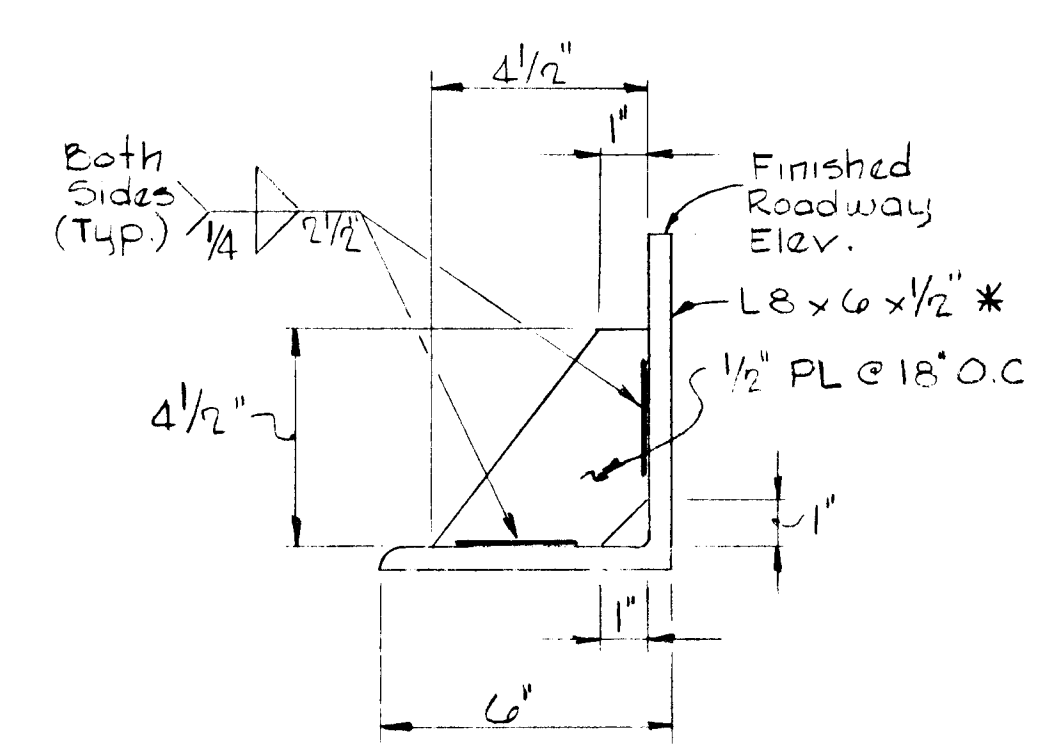
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|---|--|---|--|--|--|--|--|--|--|--|--|----------------------------------|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>Director of Public Works: <i>James M. ...</i> DATE: 1/11/91<br>Chief, Bureau of Engineering: <i>Michael S. ...</i> DATE: 1/11/91<br>Chief, Bureau of Highways: <i>Drumville W. ...</i> DATE: 1/11/91 |  | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>THE QUADRANGLE<br>244 WEST BLOCK<br>VILLAGE OF CROSS KEYS<br>BALTIMORE, MARYLAND 21210 |  |  |  | DES: M.D.G.<br>DRN: A.G.S.<br>CHK: M.D.G.<br>DATE: 12/90 |  | FOOTING PLAN<br>(VOLLMERHAUSEN RD. OVER LITTLE PATUXENT RIVER) |  | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND |  | SCALE AS SHOWN<br>SHEET 30 OF 40 |
|---|--|---|--|--|--|--|--|--|--|--|--|----------------------------------|



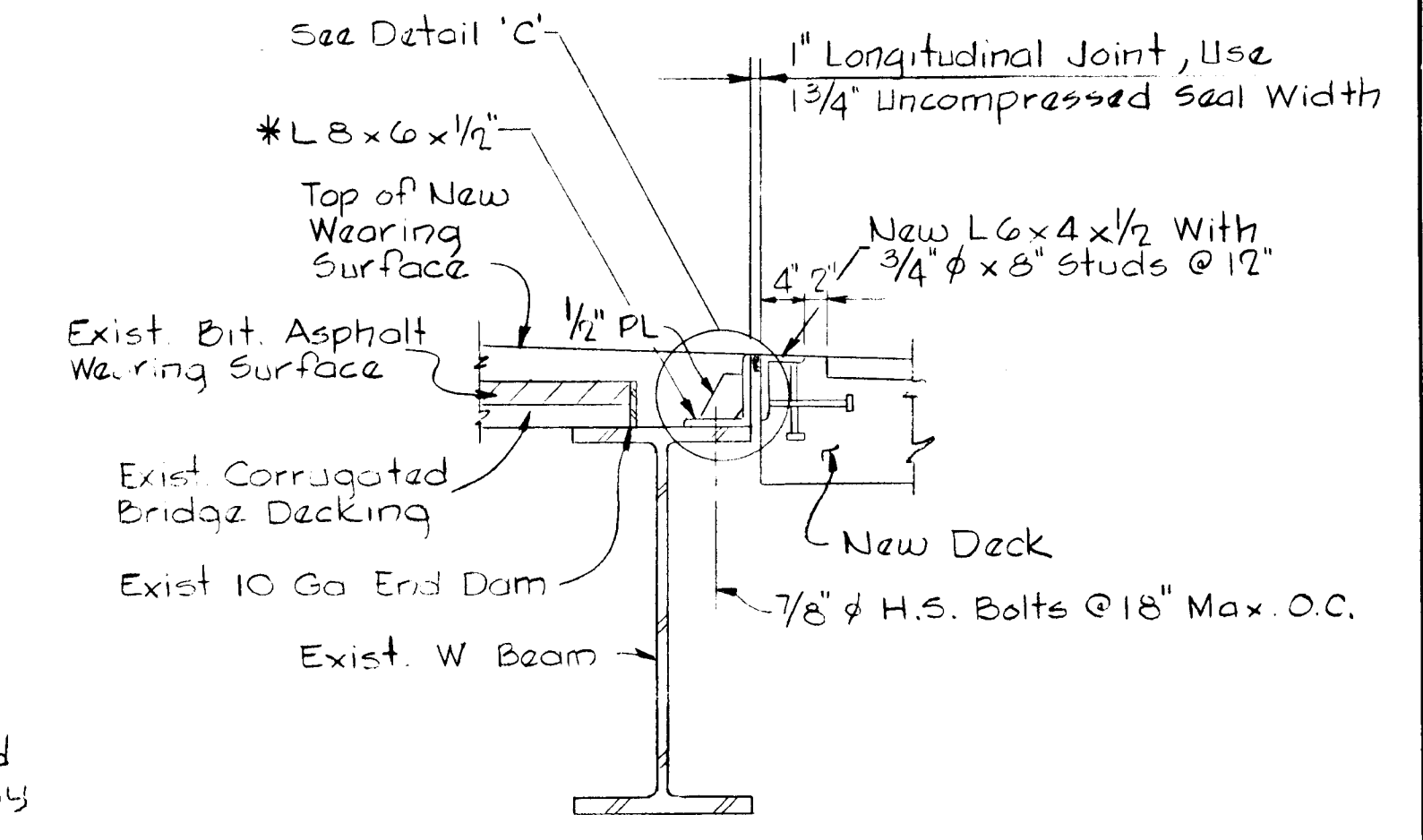


**FRAMING PLAN**  
Scale: 1/4" = 1'-0"

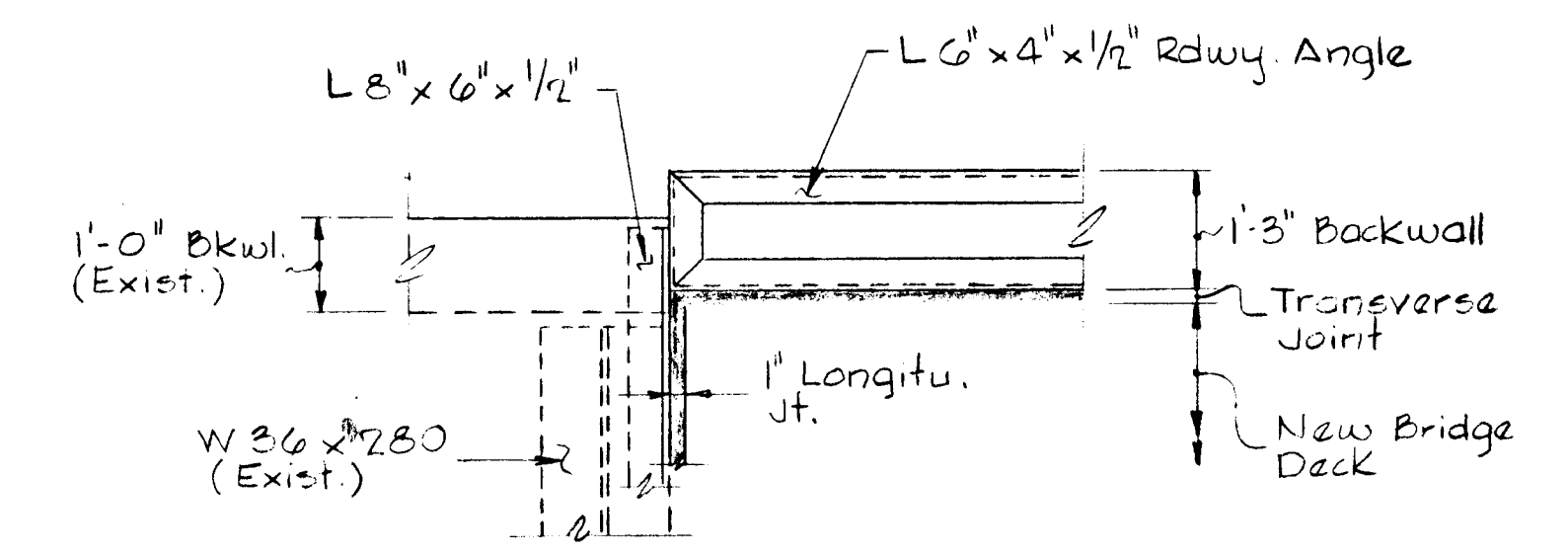
\* Cut 8" Leg of L8 x 6 x 1/2  
Flush With Finished  
Roadway Surface And  
Grind Smooth.



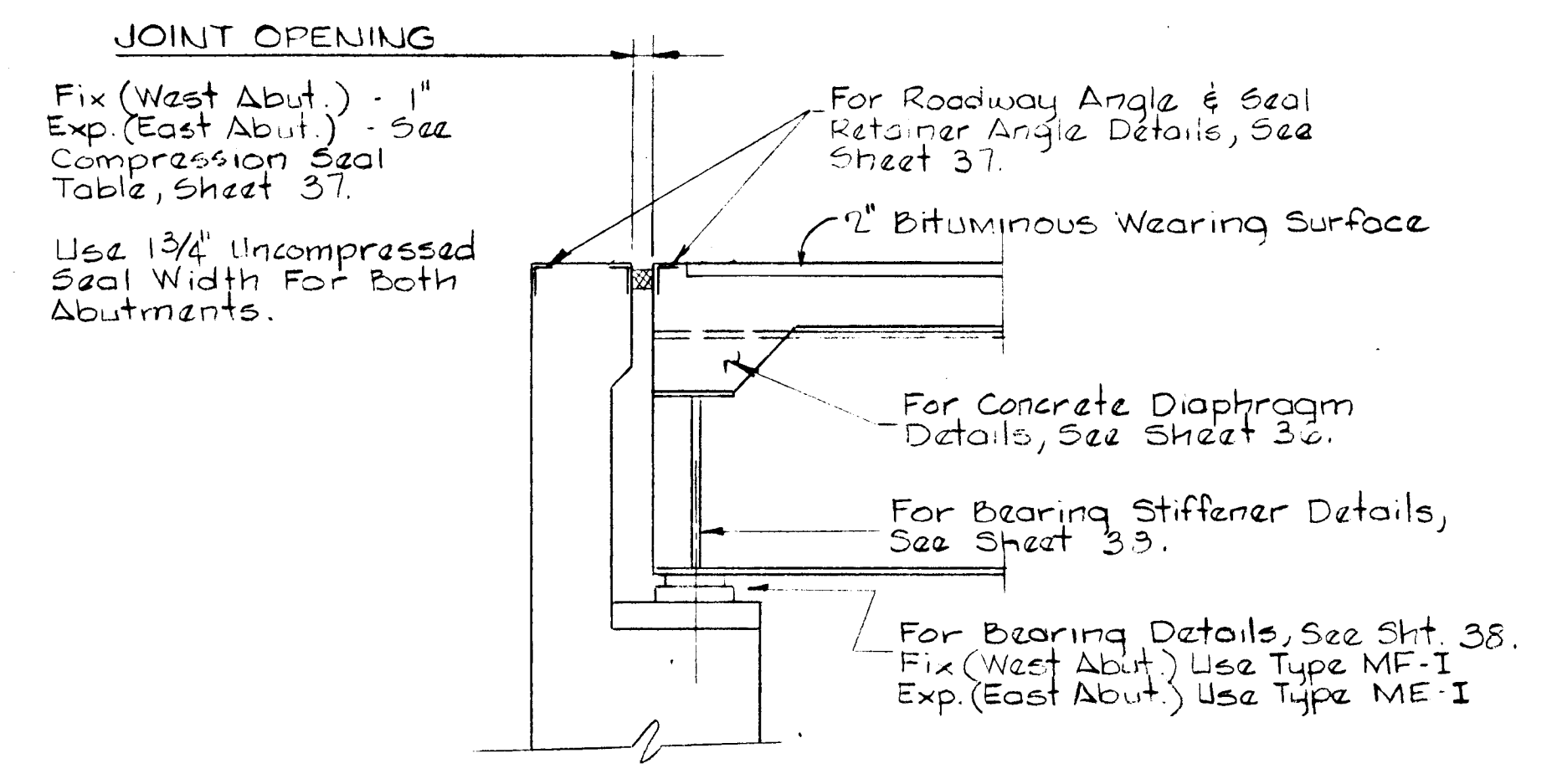
**DETAIL C**  
Scale: 3/8" = 1'-0"



**DETAIL B**  
Scale: 3/4" = 1'-0"

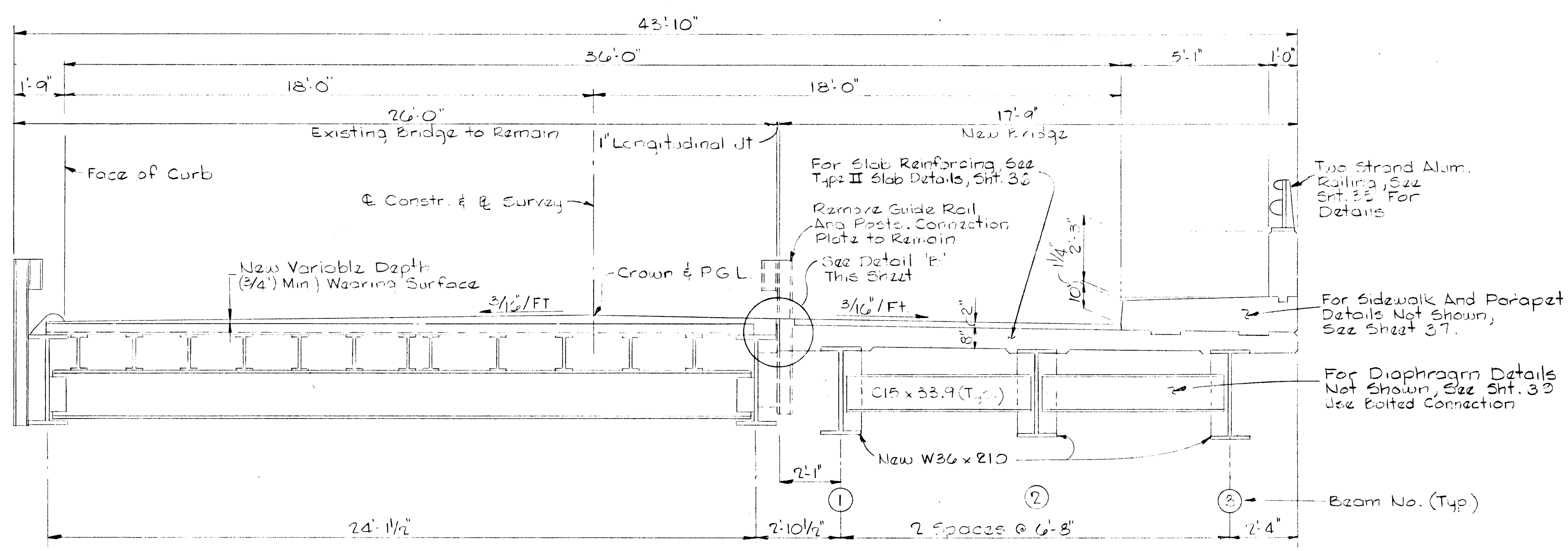


**DETAIL A**  
Scale: 1/2" = 1'-0"  
(See Sht. 27 for Location)



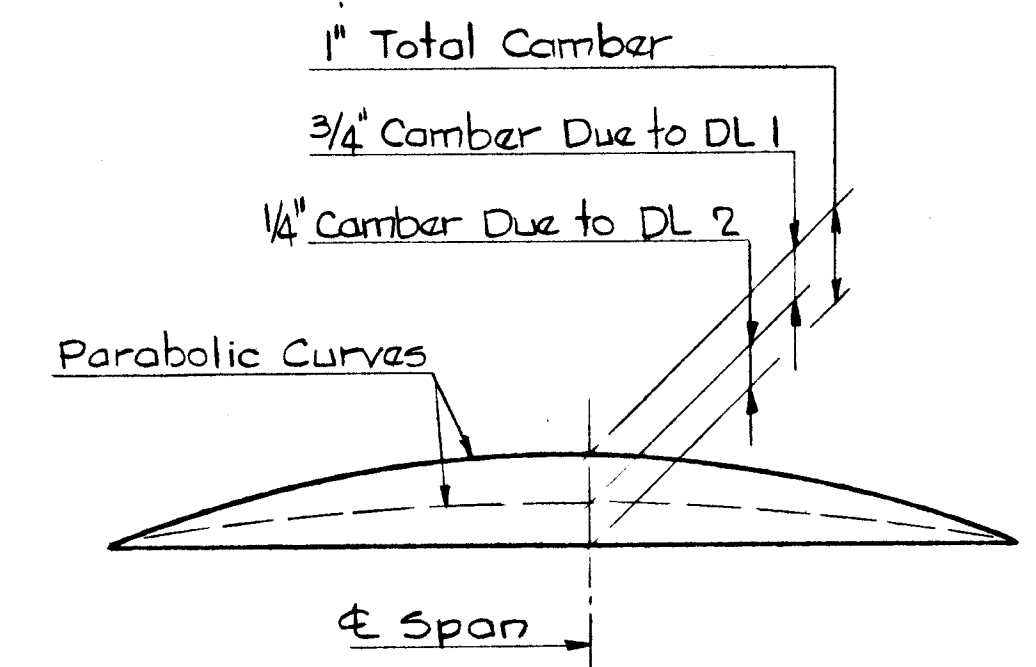
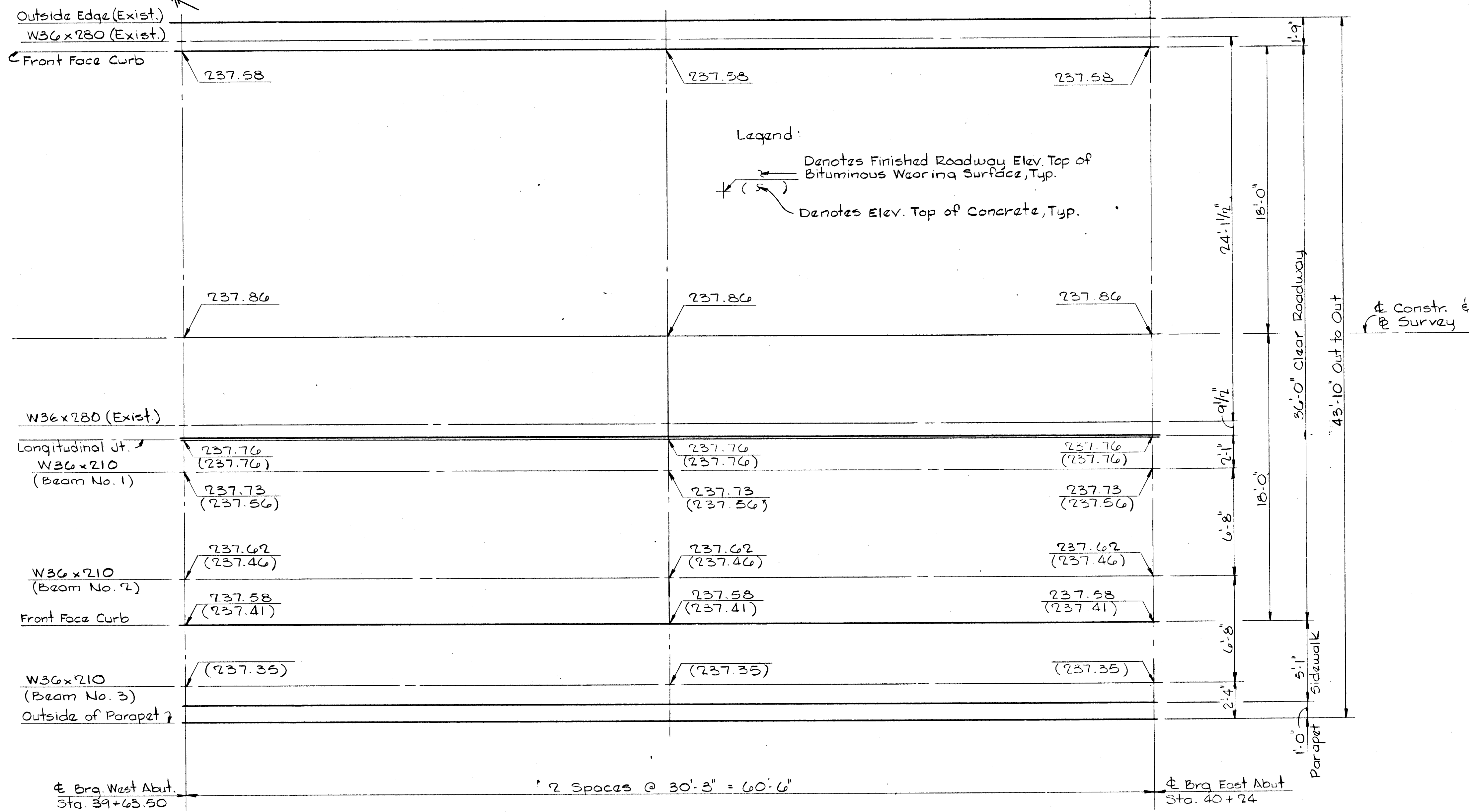
**SECTION A-A**  
Scale: 1/2" = 1'-0"

Notes: For General Notes, See Sht. 27.



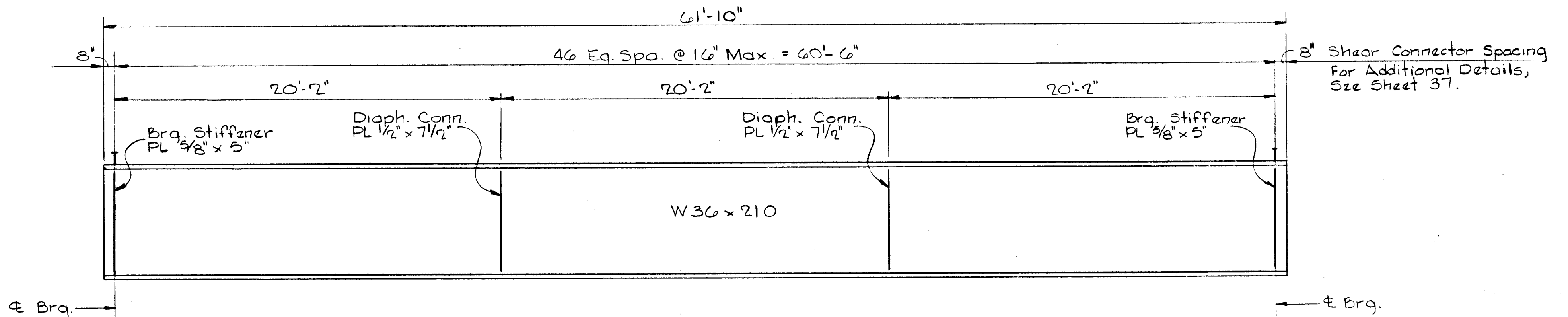
**TYPICAL SECTION - LOOKING AHEAD STA.**  
Scale: 3/8" = 1'-0"

1606



Beam No's 1, 2, & 3 shall be Cambered For Dead Load Deflection to The Dimensions Shown on These Plans. The Camber Tolerance is Nothing Under to One-Half (1/2") Inch Over.

**FINISHED GRADE ELEVATION**  
 Scale: 1/4" = 1'-0"



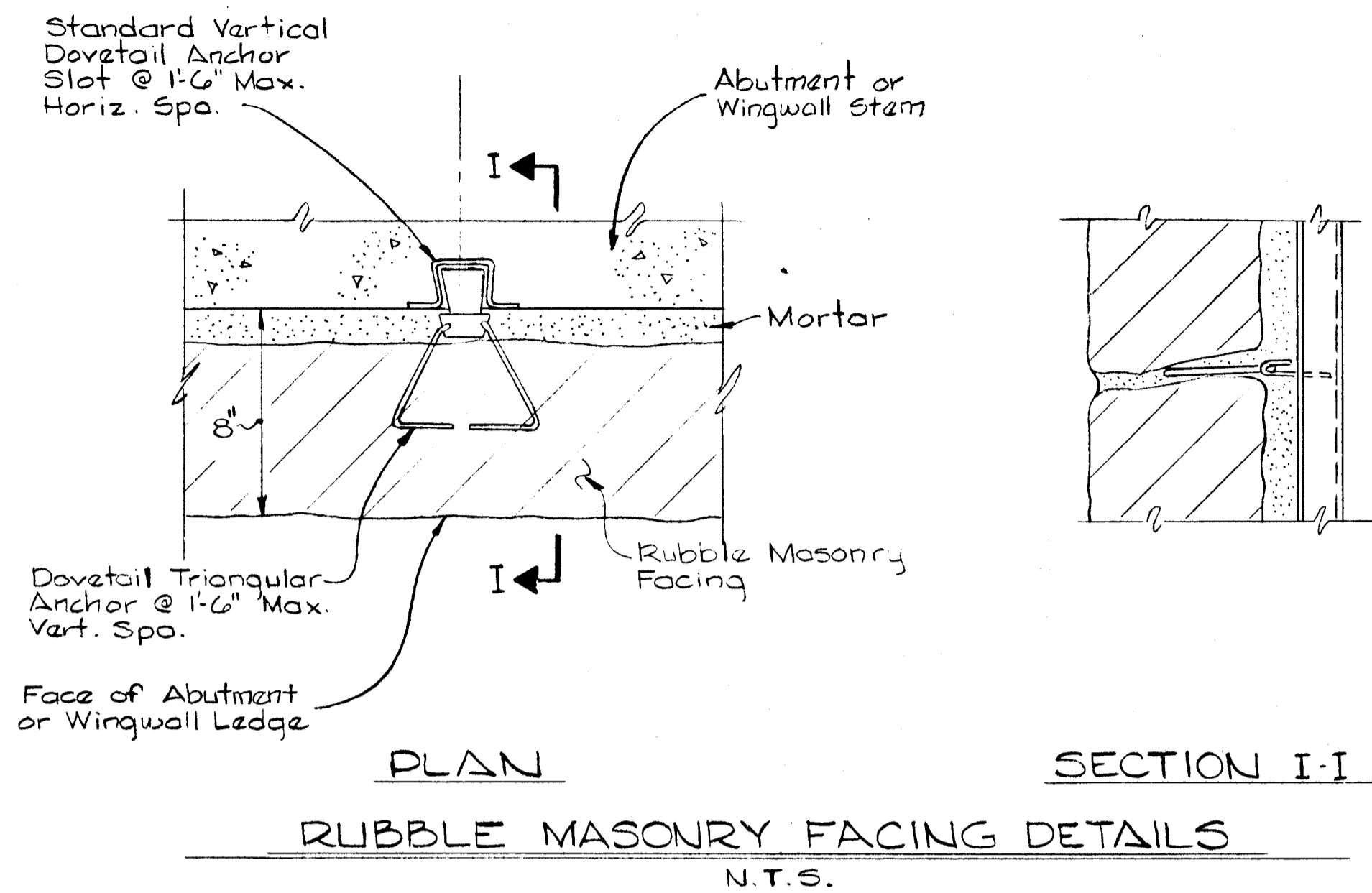
**TYPICAL BEAM ELEVATION**  
 Scale: 1/2" = 1'-0" Vert.  
 Scale: 1/4" = 1'-0" Horiz.

Notes:  
 For General Notes, See Sht. 27.

1606

|  |  |   |  |  |  |   |  |  |  |                                  |
|--|--|---|--|--|--|---|--|--|--|----------------------------------|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>Director: <i>[Signature]</i> 1/1/91<br>Chief, Bureau of Engineering: <i>[Signature]</i> 1/10/91<br>Chief, Bureau of Highways: <i>[Signature]</i> 1/1/91 |  | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>THE QUADRANGLE<br>244 WEST BLOCK<br>VILLAGE OF CROSS KEYS<br>BALTIMORE, MARYLAND 21210 |  | DES: M.D.G.<br>DRN: A.G.S.<br>CHK: M.D.G.<br>DATE: 12/90 |  | DECK ELEVATIONS<br>(VOLLMERHAUSEN RD. OVER LITTLE PATUXENT RIVER) |  | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br>CAPITAL PROJECT J - 4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND |  | SCALE AS SHOWN<br>SHEET 22 OF 40 |
|--|--|---|--|--|--|---|--|--|--|----------------------------------|

Note: Dovetail Anchor slot & Dovetail Anchor shall be Hot Dipped Galvanized.

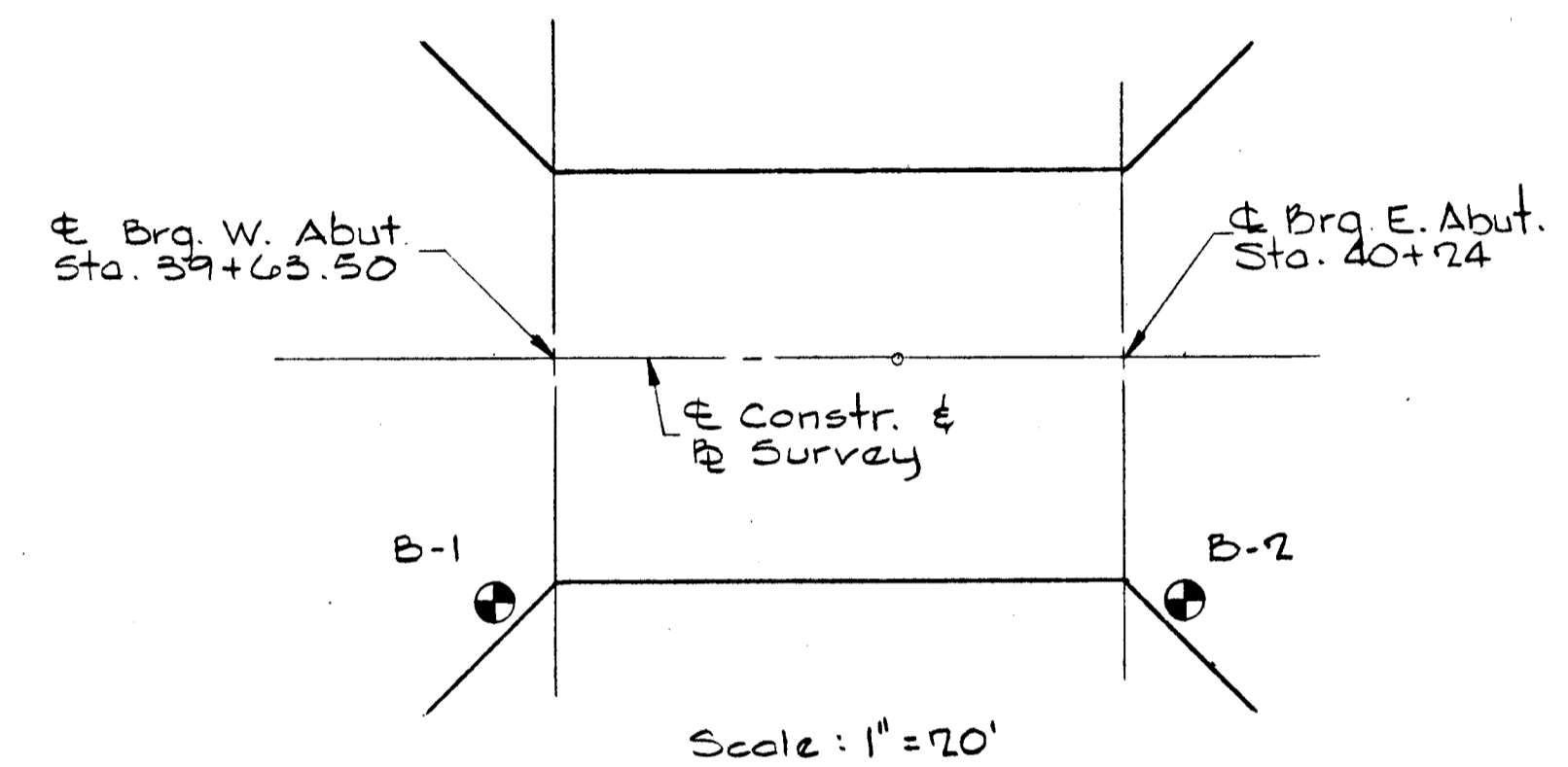


BORING NO. 1  
West Abutment  
Sta. 39+57, 26' Rt.

BORING NO. 2  
East Abutment  
Sta. 40+30.50, 26' Rt.

| Depth (ft) | N          | C | V | Remarks                                    |
|------------|------------|---|---|--|
| 731        |            |   |   | Surface El. 731.10                         |
| 730        | 2-12-17-10 |   |   | Dark Brown Silty Sand / Gravel With Roots  |
| 729        |            |   |   | 2.0  |
| 728        |            |   |   | Dark Brown Sandy Silt / Some Clay / Gravel |
| 727        |            |   |   |  |
| 726        | 2-3-3-6    |   |   | Refusal at 5.0 Ft.                         |
| 725        |            |   |   |  |
| 724        |            |   |   |  |

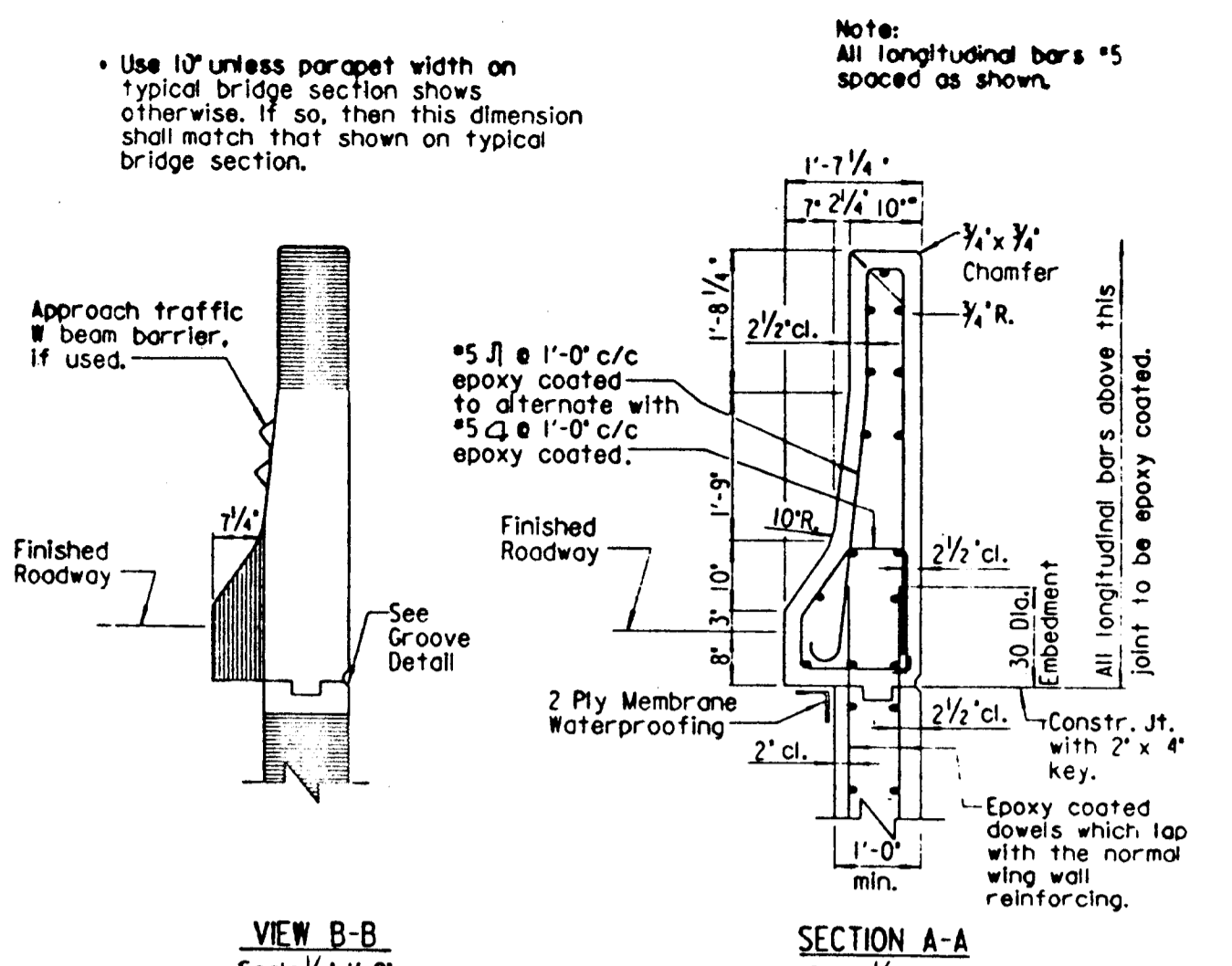
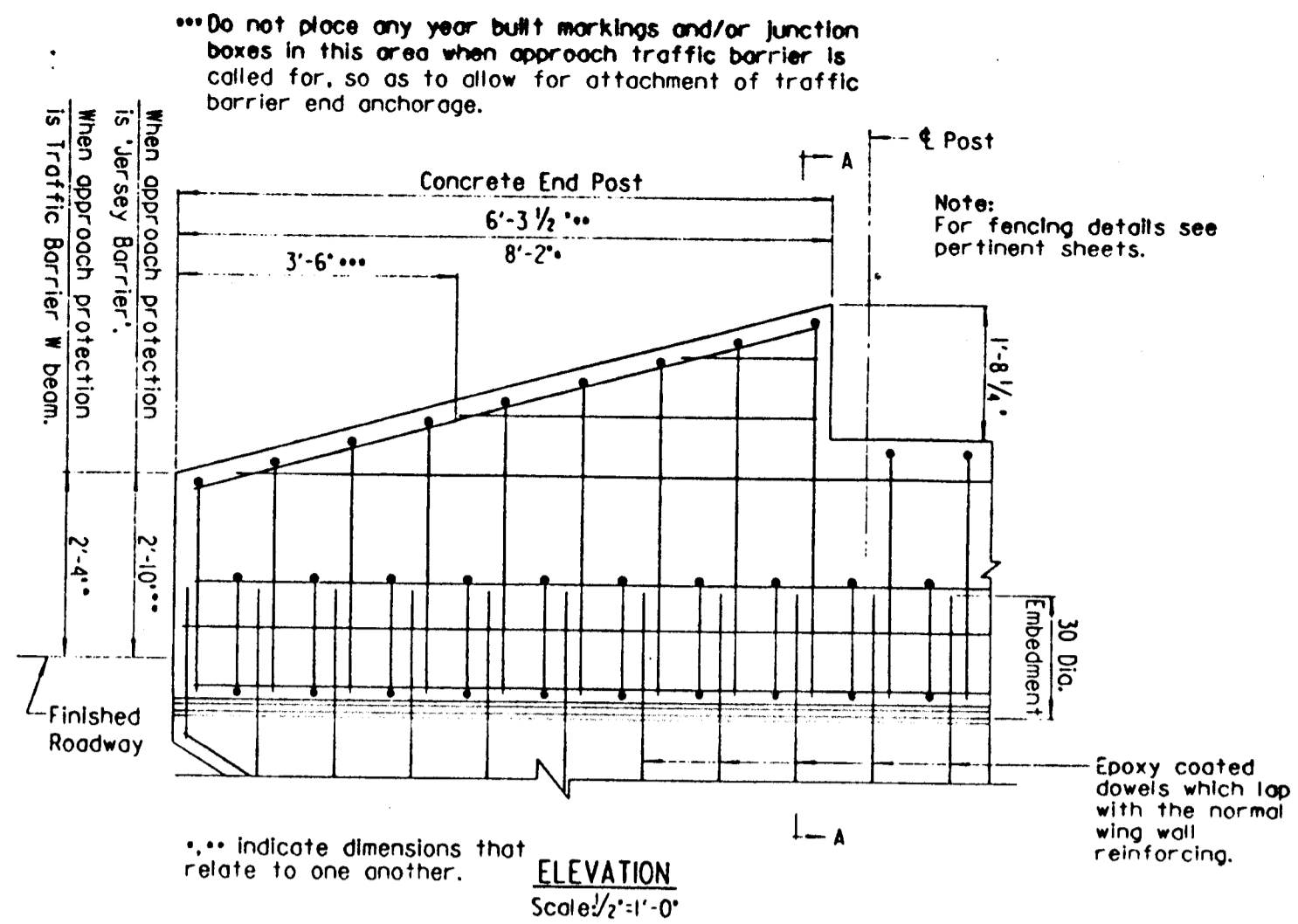
| Depth (ft) | N | C | V | Remarks                        |
|------------|---|---|---|--------------------------------|
|            |   |   |   | Surface El. 727.90             |
| 3-7-10-31  |   |   |   | Dark Brown Silty Sand / Gravel |
| 50/2       |   |   |   | Refusal at 3.2 Ft.             |



Notes:  
 Borings And Drive Tests Were Taken in January 1989.  
 Boring And Sampling Conforms to AASHTO Designation T-206 And/or T-231.  
 N = Blows on Sampling Spoon by 140 Lb. Weight Falling 30" Indicating Successive Six (6) Inch Increments of Penetration in Lieu of Blows Per Foot. Spoon Diameter = 2"  
 C = Blows Per Foot on 2 1/2" Casing by 300 Lb. Weight Falling 30".  
 V = Variance in Soil Material.  
 WL = Water Table Level - N/A -  
 Soil Has Been Classified by The Driller.

1606

|   |  |   |  |  |   |  |                                  |
|---|--|---|--|--|---|--|----------------------------------|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>Director of Public Works: <i>James H. Allen</i> 1/19/91<br>Chief, Bureau of Engineering & Survey: <i>Kevin J. Ray</i> 1-10-91<br>Chief, Roads, Bridges and Storm Drainage Division: <i>Elizabeth B. Latta</i> 1/10/91<br>Chief, Bureau of Highways: <i>Danielle W. Weisand</i> 1/11/91 |  | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>THE QUADRANGLE<br>244 WEST BLOCK<br>VILLAGE OF CROSS KEYS<br>BALTIMORE, MARYLAND 21210 |  | DES: M.D.G.<br>DRN: A.G.S.<br>CHK: M.D.G.<br>DATE: 12/90 | BORINGS AND DRIVE TESTS<br>(VOLLMERHAUSEN RD. OVER LITTLE PATUXENT RIVER) | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 8<br>HOWARD COUNTY, MARYLAND | SCALE AS SHOWN<br>SHEET 33 OF 40 |
|---|--|---|--|--|---|--|----------------------------------|



Notes:  
For details not shown see sheet 2 of 2.

|           |   |
|-----------|---|
| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>OFFICE OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SB(6)5187-186 SHEET 1 OF 2

Notes:  
Use 10\"/>

Method of Measurement and Basis of Payment:

Method of Measurement and Basis of Payment:

|           |   |
|-----------|---|
| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>OFFICE OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SB(6)5187-186 SHEET 2 OF 2

**GENERAL NOTES**

Specifications: Latest SMA Specifications and Special Provisions for materials and construction. Latest AASHTO Standard Specifications for Highway Bridges for design.

Materials: The ends of the fabric shall be knuckled selvage at the bottom and twisted and barbed selvage at the top. Fabric shall be 5 gauge, 2' PVC coated mesh meeting the requirements of Section 912.02.

All posts, braces, fittings and hardware shall be PVC coated and meet the requirements of Section 912.03 except that nuts, bolts and washers shall also be PVC coated and touched up after installation.

All plates shall be steel conforming to ASTM A 36. Precoated longitudinal rails, if cut, shall have the cut end coated with PVC touch up material supplied by the manufacturer prior to erection.

Anchor Studs or Anchor Bolts: Material for anchor studs or anchor bolts shall meet ASTM A 276, Type 430 or Type 304 stainless steel annealed, hot-finished, ultimate strength 70,000 psi min., 20% min. elongation. Threads may be rolled or cut.

Post Spacing: For post spacing see pertinent structure sheets.

Construction Requirements: All longitudinal rails shall be parallel to top of parapet. All posts shall be set normal to top of parapet for roadway grades 6% or less. For grades over 6% posts shall be set plumb. The chain link fence shall be true to line, taut and shall comply with the best practice for fence construction of this type. Post and rails shall be permanently positioned before fabric is placed.

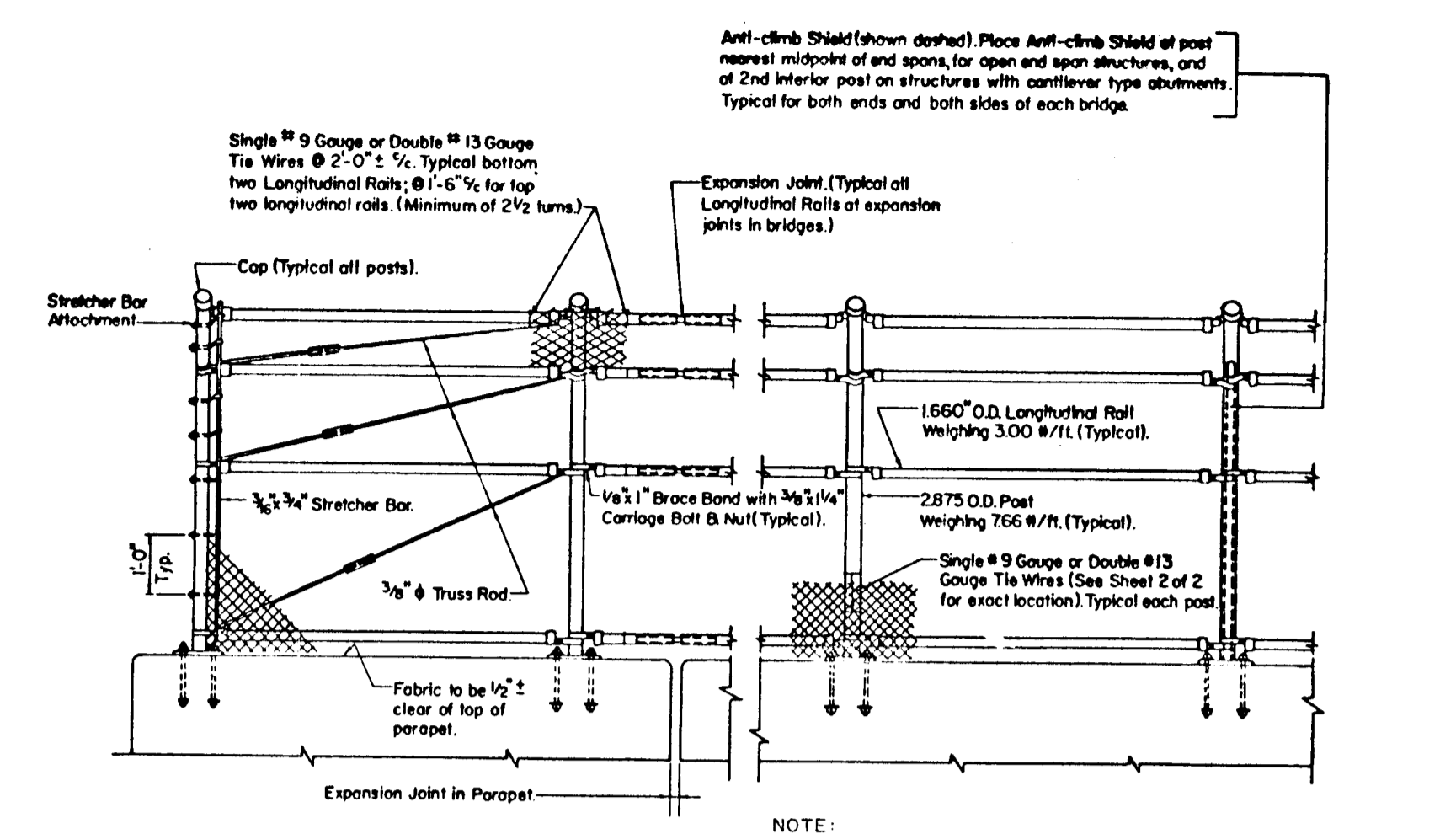
The furnishing, fabricating, erecting, etc. of all new chain link fence on the bridges, complete in place, will not be measured for payment but all costs thereof shall be included in the Contract lump sum prices bid on the pertinent Chain Link Safety Fence For Bridge Items.

The furnishing, fabricating, erecting, etc. of all new chain link fence anti-climb shields, complete in place, will be measured and paid for on the Contract unit prices bid per each on the pertinent Chain Link Safety Fence Anti-Climb Shield Items.

Any defects uncovered by the inspection of welds on base plates and poles shall be repaired or replaced by new members at the sole expense of the Contractor.

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| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>OFFICE OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

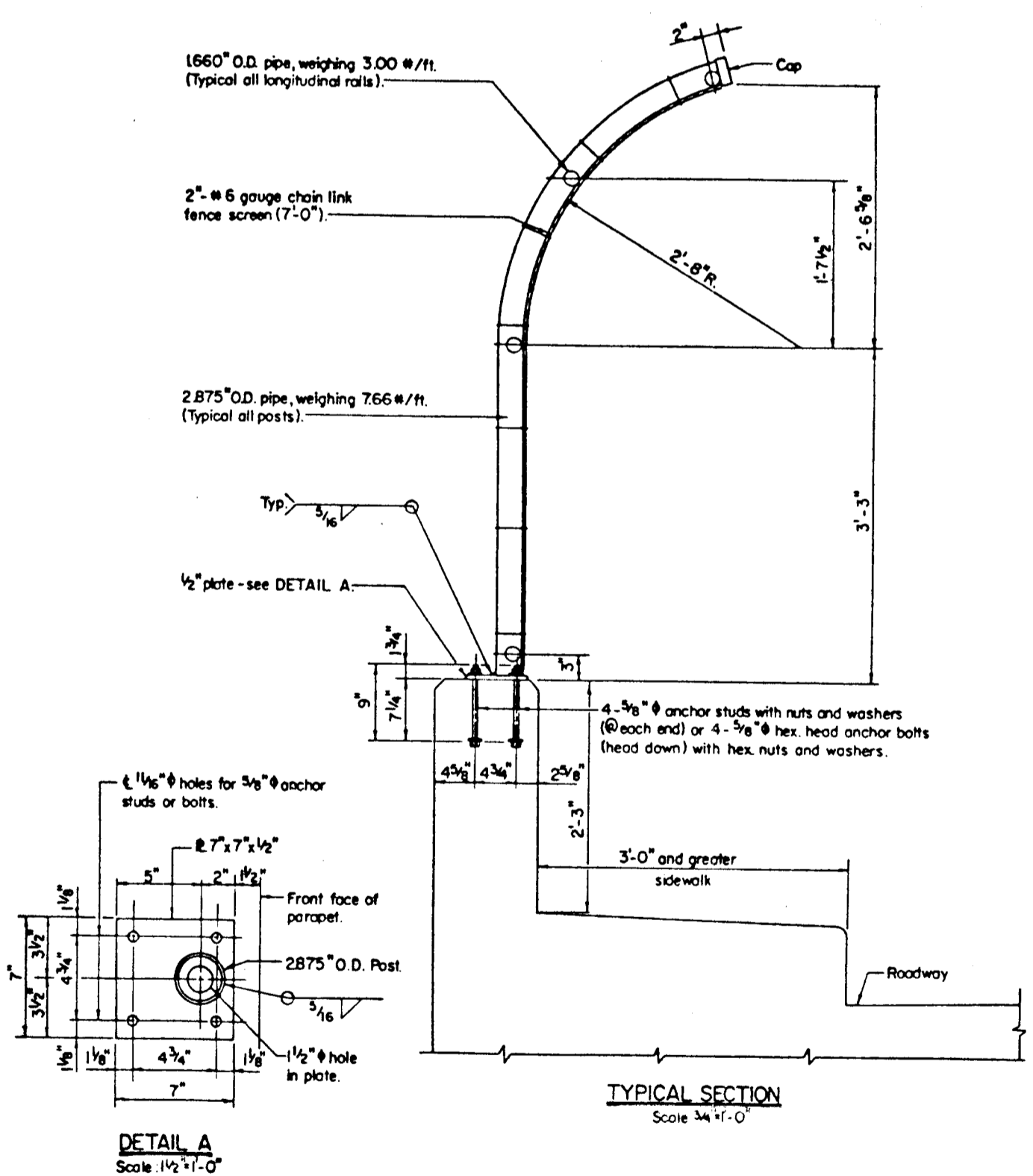
STANDARD NO. BR-SS(3)01-75-21 SHEET 1 OF 2



Notes:  
This rail only to be used adjacent to sidewalks 3'-0\"/>

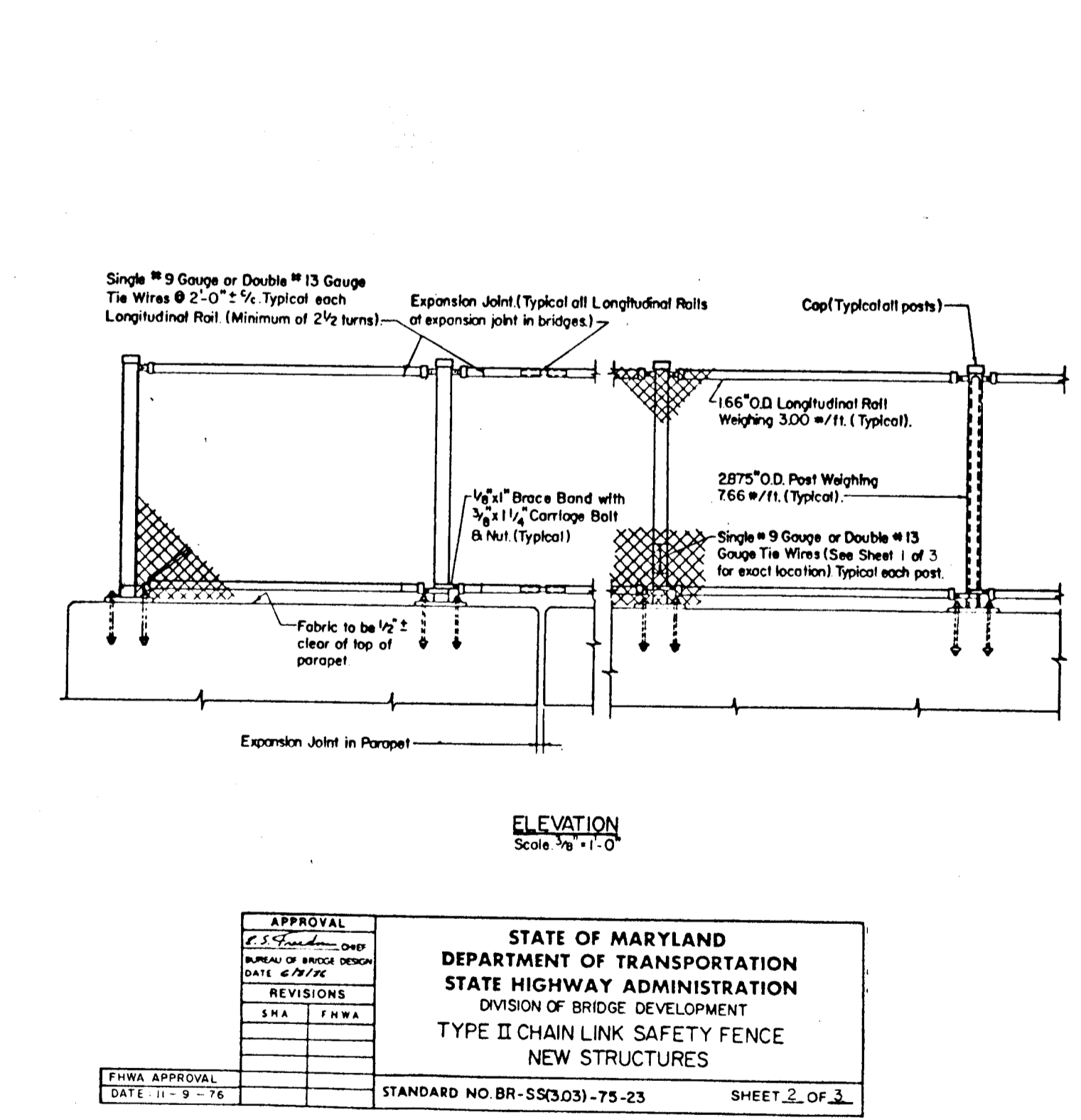
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| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SS(3)02-75-22 SHEET 1 OF 2



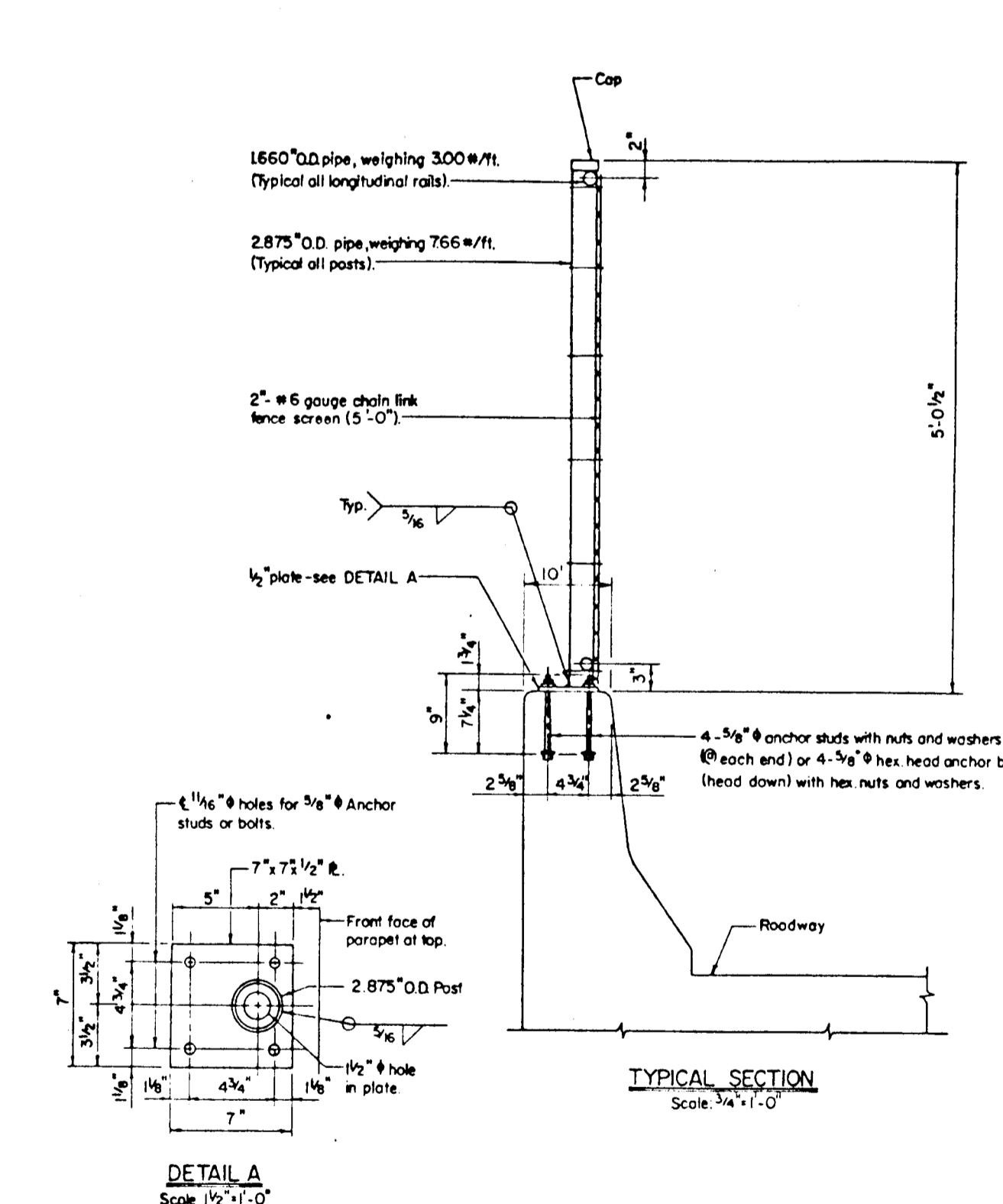
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| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SS(3)02-75-22 SHEET 2 OF 2



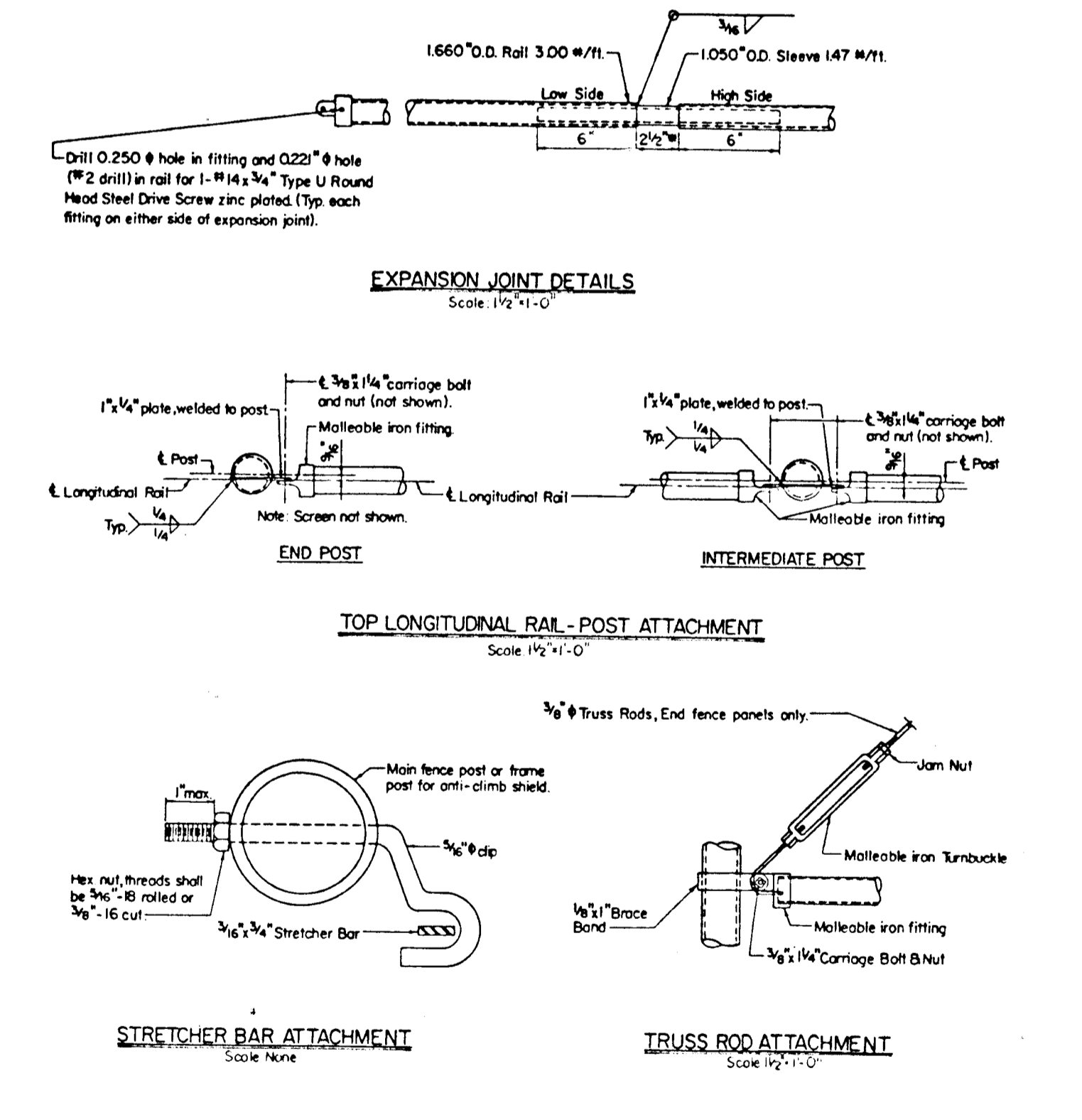
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| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SS(3)03-75-23 SHEET 2 OF 2



|           |   |
|-----------|---|
| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SS(3)03-75-23 SHEET 1 OF 3



Notes:  
If opening in parapet is 2 1/2\"/>

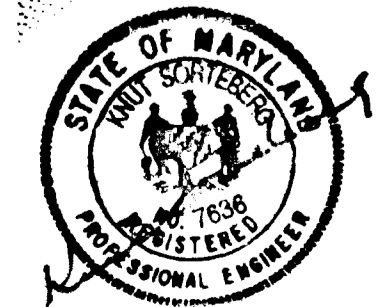
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| APPROVAL  | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT |
| DESIGNER  | DATE  |
| REVISIONS |   |
| DATE      |   |
| DATE      |   |

STANDARD NO. BR-SS(3)04-75-24 SHEET 1 OF 1

1606

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210



|          |       |      |     |
|----------|-------|------|-----|
| DES:     | SHA   |      |     |
| DRN:     | SHA   |      |     |
| CHK:     | KS    |      |     |
| DATE:    | 12/90 | BY:  | NO. |
| REVISION |       | DATE |     |

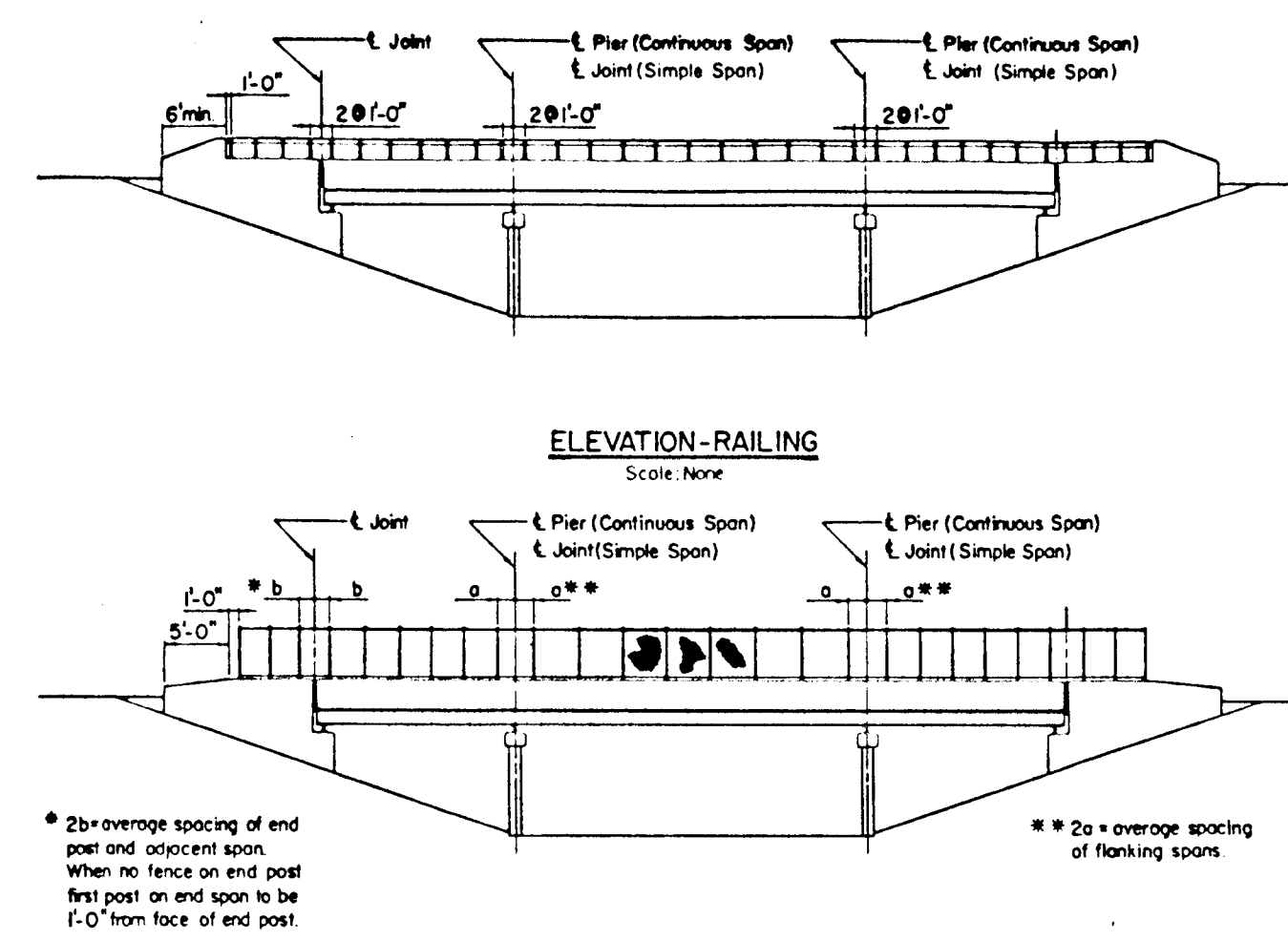
**STANDARD DETAILS**

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 2 OF 22

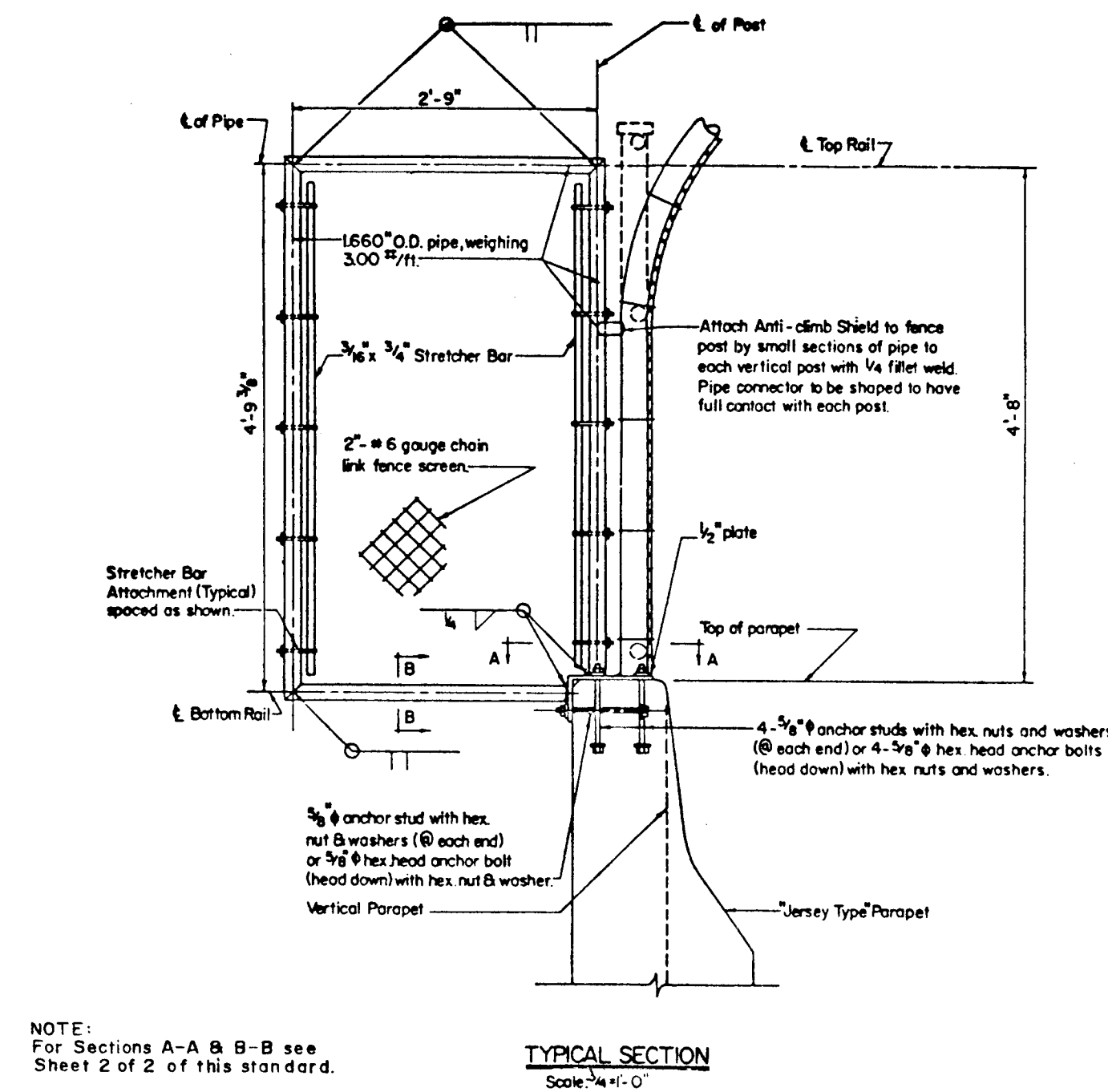
**GENERAL NOTES**

- All railings shall be fabricated and erected as indicated on the Plans.
- Posts shall be set perpendicular to top of parapet. For post spacing see Plans. (Maximum 8'-0" Spacing).
- Rolls shall be parallel to the grade of the roadway. Roll section shall be attached to as many posts as possible, but not less than three (except where indicated otherwise on Plans).
- The centerline of any splice and/or expansion joint shall be located at least 2'-0" away from centerline of a post except where indicated otherwise on Plans. Expansion and/or splice joints for each strand of two strand railing shall be placed in the same location and in the same plane.
- Material for rails, posts (including bases), splices and clamp bars shall meet the requirements of ASTM B 221, Alloy 6061 T6. Rails shall have a mill finish. Posts shall have a mill finish except that any sawed surfaces shall have a finish comparable to 250 micronch. Rails and splices may meet the requirements of ASTM B 221, Alloy 6351 T5 for chemical composition only.
- Material for rail end plates shall meet the requirements of ASTM B 209, Alloy 6061 T6. Material for cast rail end caps shall meet the requirements of ASTM B 108, Alloy 50.70A, 55A and STA for chemical composition only.
- Material for anchor studs shall meet the requirements of ASTM A 276, Type 304 Stainless Steel, annealed, hot finished, ultimate strength 70 000 psi, 20 percent minimum elongation. Threads may be rolled or cut.
- Material for heavy hex nuts shall meet the requirements of ASTM B 211, Alloy 6061 T6 or 6351 T5.
- Material for steel nuts shall meet the requirements of ASTM A 307.
- Material for aluminum washers shall be Alcad meeting the requirements of ASTM B 209, Alloy 6061 T6 or 7075 T6.
- Material for rivets shall meet the requirements of ASTM B 316, Alloy 6061 T6 and 6063 T6 for chemical composition only, and M16-1.50 in other respects. The rivets shall be button head and cone point and shall be cold driven.
- Bolts may be used in lieu of rivets for connecting post to post base plate. Material for bolts shall be of stainless steel meeting the requirements of ASTM A 193 Identification Symbol BB. Nuts shall meet the requirements of ASTM A 194, Type 8 or 8 NA. Material for washers shall meet the requirements of ASTM A 276, Type 304. Specified torque level for bolts connecting base plate to post shall be 150 to 115 ft-lb. Burr threads by centerpunching at top of nut. Punch marks shall be spaced at 120 degrees.
- Material for clamp bar top screws and cap screws shall be stainless steel meeting the requirements of ASTM A 193, Identification Symbol BB.
- Material for anchor plates shall be steel meeting the requirements of ASTM A 36.
- Material for pins shall be Alloy 6061 T6 and pins shall be press fit.
- Bottom of post bases shall be thoroughly coated with a bituminous paint meeting the requirements of M-7-6883.
- Weld metal for the welded base plate shall be 5356 A-1.



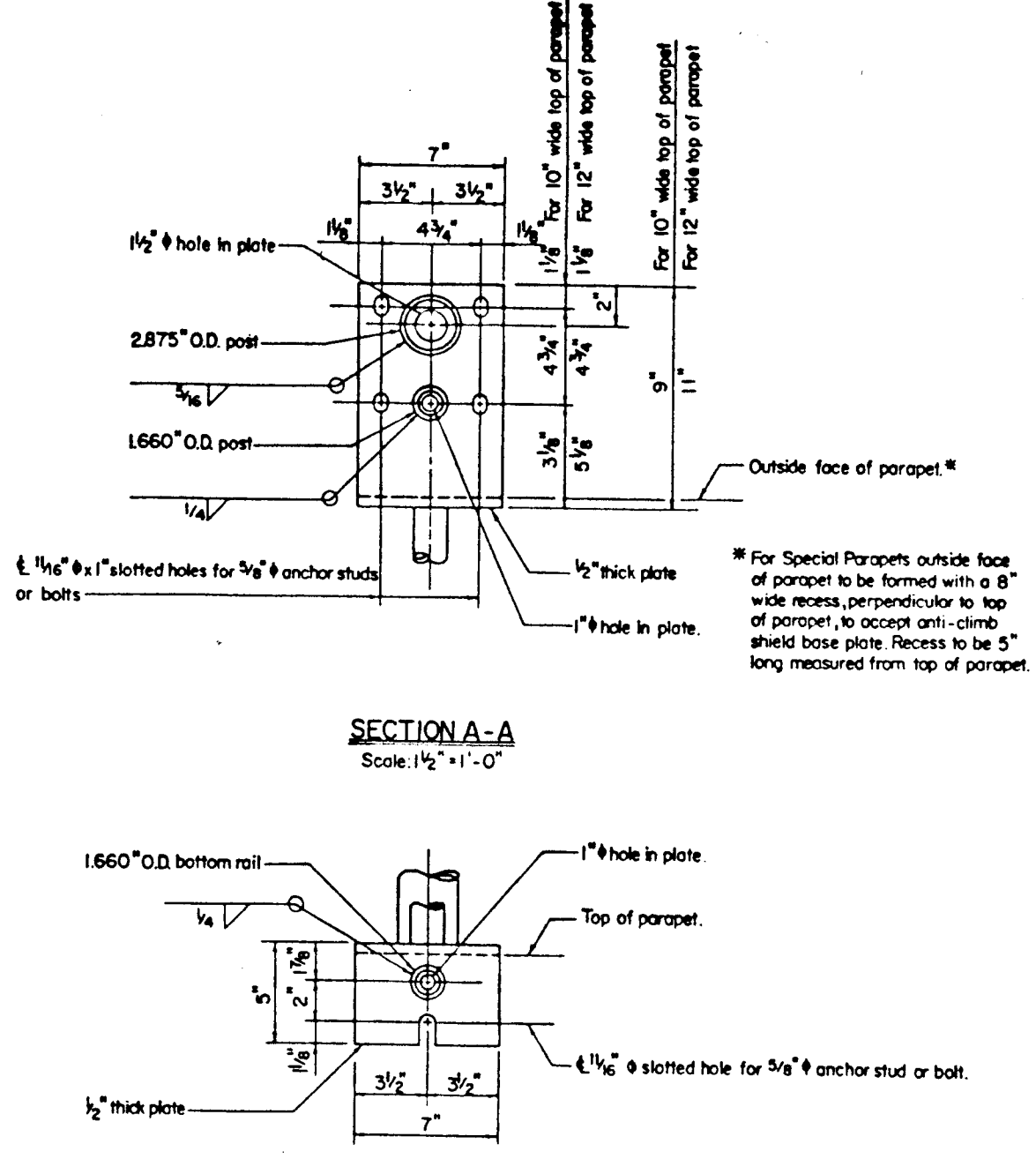
**FOR OFFICE USE ONLY**

|              |  |
|--------------|--|
| APPROVAL     | STATE OF MARYLAND<br>DEPARTMENT OF TRANSPORTATION<br>STATE HIGHWAY ADMINISTRATION<br>DIVISION OF BRIDGE DEVELOPMENT<br>LAYOUT OF RAILING AND FENCING<br>ON BRIDGES |
| DESIGNER     | DATE 7/24/79   |
| REVISIONS    | 3-7-83   |
| SHA          | F.H.W.A.   |
| 3-7-83       | 3-5-83   |
| DATE 2-29-79 | STANDARD NO. BR-SS(3.06)-79-78   |
|              | SHEET 1 OF 1   |



**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
ANTI-CLIMB SHIELD FOR  
CHAIN LINK SAFETY FENCES TYPES I AND II**

|              |                                |
|--------------|--------------------------------|
| APPROVAL     | DATE 4/27/76                   |
| DESIGNER     | DATE 4/27/76                   |
| REVISIONS    |                                |
| SHA          | F.H.W.A.                       |
| 3-3-77       | 10-3-80                        |
| 1-11-88      |                                |
| DATE 11-9-76 | STANDARD NO. BR-SS(3.05)-75-25 |
|              | SHEET 2 OF 2                   |

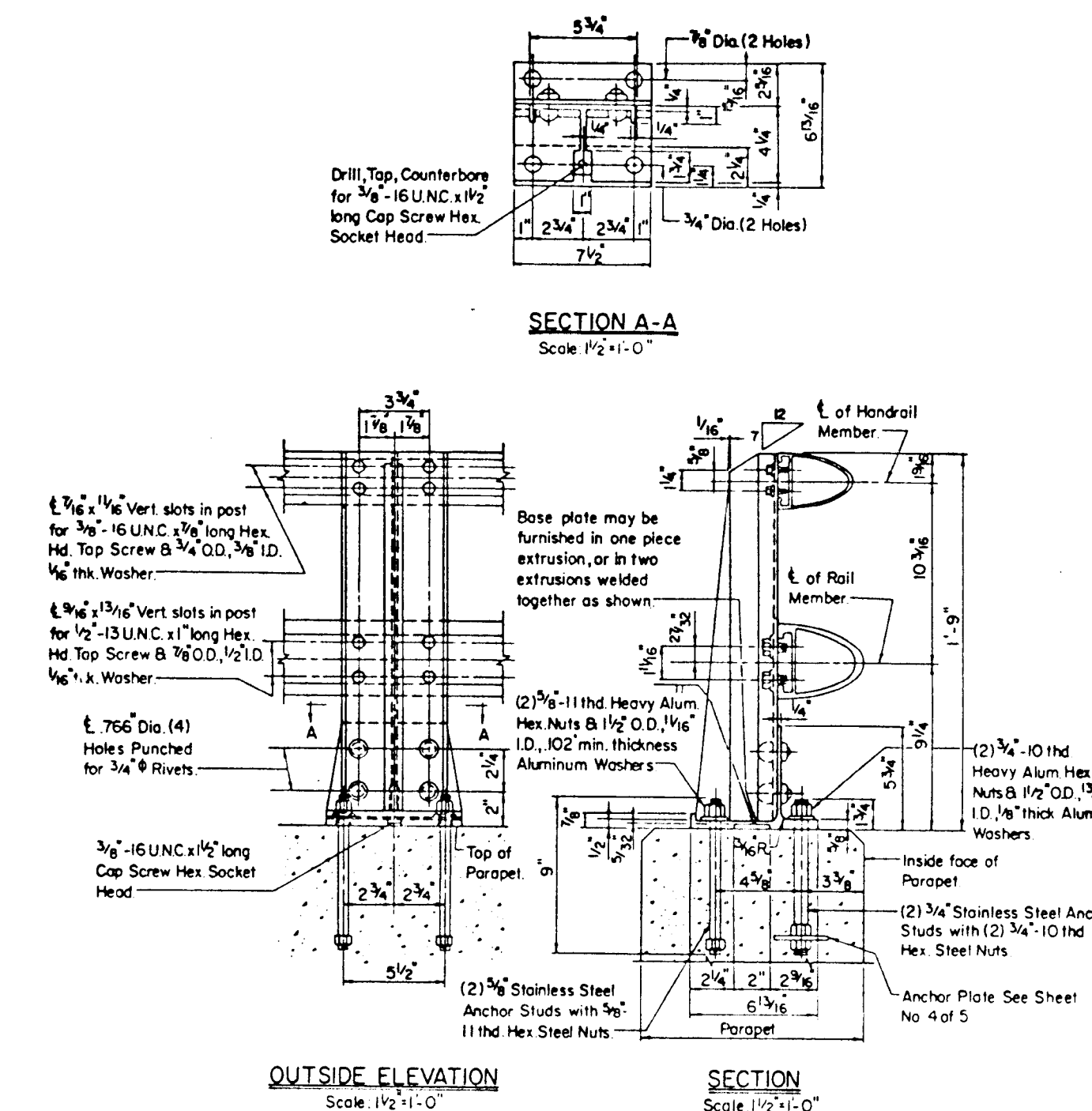


**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
ANTI-CLIMB SHIELD FOR  
CHAIN LINK SAFETY FENCES TYPES I AND II**

|              |                                |
|--------------|--------------------------------|
| APPROVAL     | DATE 4/27/76                   |
| DESIGNER     | DATE 4/27/76                   |
| REVISIONS    |                                |
| SHA          | F.H.W.A.                       |
| 3-3-77       | 10-3-80                        |
| 1-11-88      |                                |
| DATE 11-9-76 | STANDARD NO. BR-SS(3.05)-75-25 |
|              | SHEET 2 OF 2                   |

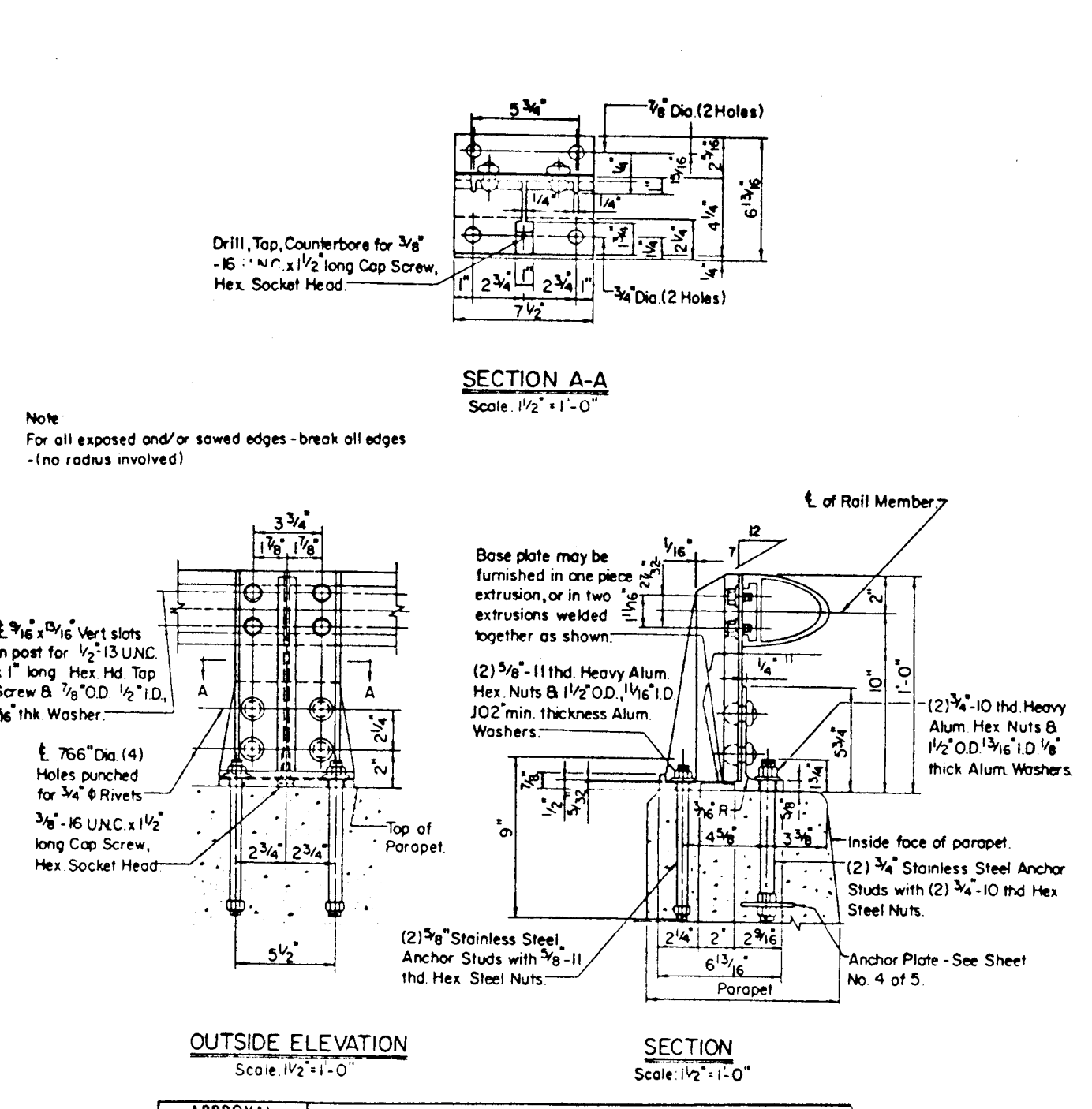
**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT  
GENERAL NOTES  
ALUMINUM BRIDGE RAILING**

|              |                               |
|--------------|-------------------------------|
| APPROVAL     | DATE 2-25-77                  |
| DESIGNER     | DATE 2-25-77                  |
| REVISIONS    |                               |
| SHA          | F.H.W.A.                      |
| 3-7-79       | 7-3-79                        |
| 3-4-80       | 6-18-80                       |
| DATE 2-25-77 | STANDARD NO. BR-SS(5.01)76-35 |
|              | SHEET 1 OF 5                  |



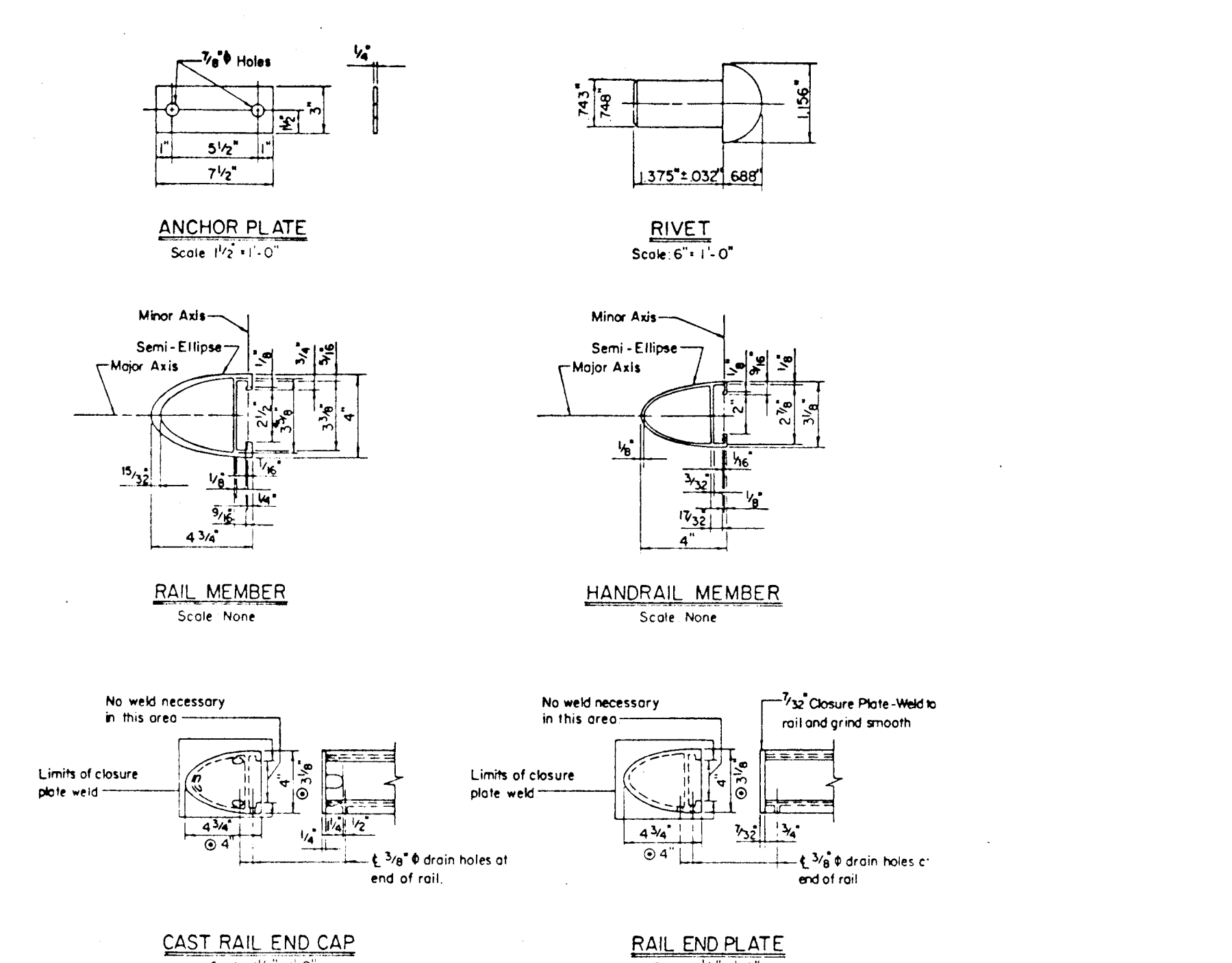
**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
TWO STRAND  
ALUMINUM BRIDGE RAILING**

|              |                                |
|--------------|--------------------------------|
| APPROVAL     | DATE 2-25-77                   |
| DESIGNER     | DATE 2-25-77                   |
| REVISIONS    |                                |
| SHA          | F.H.W.A.                       |
| 10-9-77      | 10-19-77                       |
| DATE 2-25-77 | STANDARD NO. BR-SS(5.01)-76-35 |
|              | SHEET 2 OF 5                   |



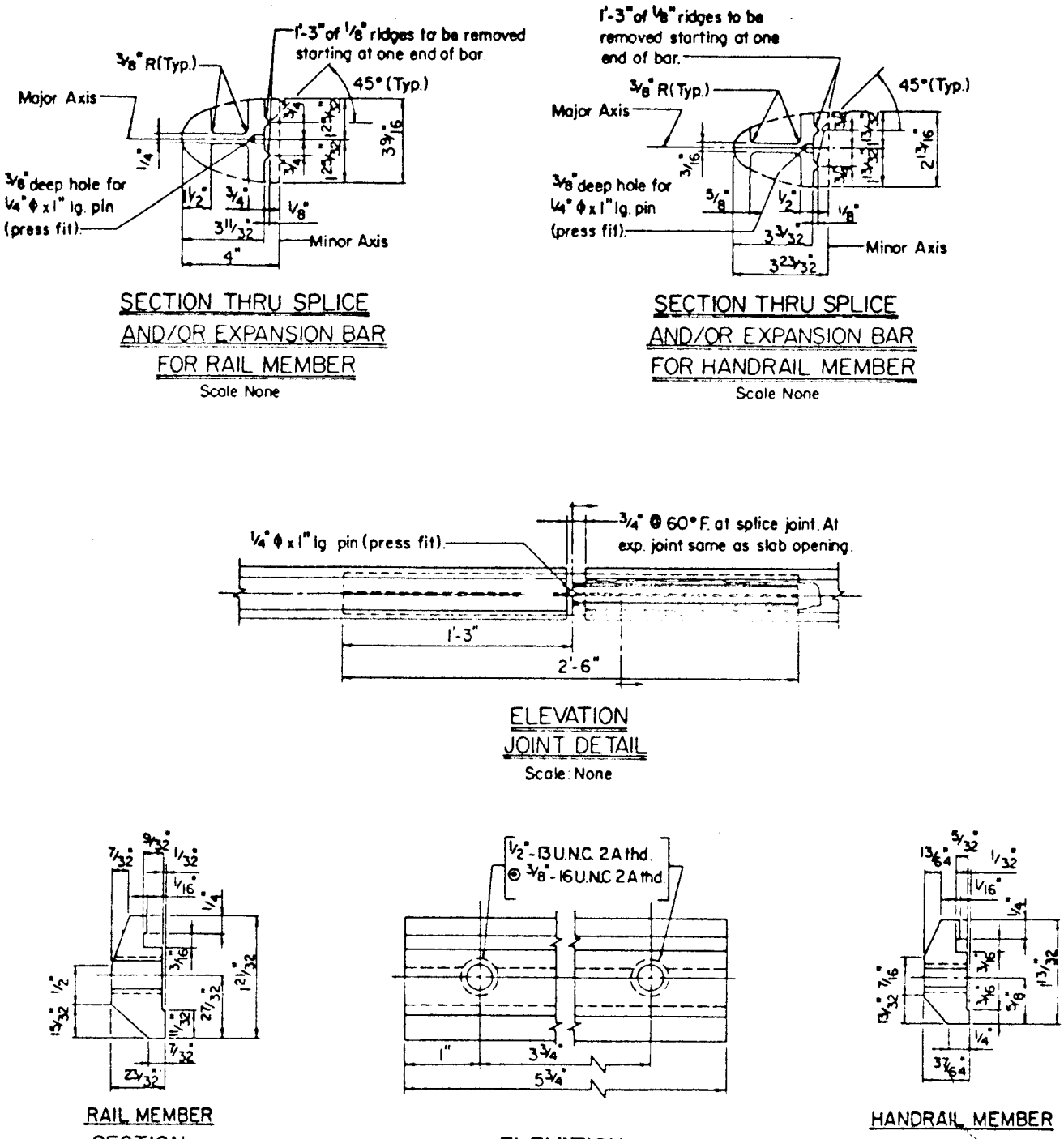
**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
ONE STRAND  
ALUMINUM BRIDGE RAILING**

|              |                               |
|--------------|-------------------------------|
| APPROVAL     | DATE 2-25-77                  |
| DESIGNER     | DATE 2-25-77                  |
| REVISIONS    |                               |
| SHA          | F.H.W.A.                      |
| 10-9-77      | 10-19-77                      |
| DATE 2-25-77 | STANDARD NO. BR-SS(5.01)76-35 |
|              | SHEET 3 OF 5                  |



**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
MISCELLANEOUS DETAILS  
ALUMINUM BRIDGE RAILING**

|              |                               |
|--------------|-------------------------------|
| APPROVAL     | DATE 2-25-77                  |
| DESIGNER     | DATE 2-25-77                  |
| REVISIONS    |                               |
| SHA          | F.H.W.A.                      |
| 10-9-77      | 10-19-77                      |
| DATE 2-25-77 | STANDARD NO. BR-SS(5.01)76-35 |
|              | SHEET 4 OF 5                  |



**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
MISCELLANEOUS DETAILS  
ALUMINUM BRIDGE RAILING**

|              |                               |
|--------------|-------------------------------|
| APPROVAL     | DATE 2-25-77                  |
| DESIGNER     | DATE 2-25-77                  |
| REVISIONS    |                               |
| SHA          | F.H.W.A.                      |
| 10-9-77      | 10-19-77                      |
| DATE 2-25-77 | STANDARD NO. BR-SS(5.01)76-35 |
|              | SHEET 5 OF 5                  |

1606

**DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND**

James P. ...  
DIRECTOR OF PUBLIC WORKS

Francis W. ...  
CHIEF, BUREAU OF HIGHWAYS

**BUCHART - HORN INC.  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210**

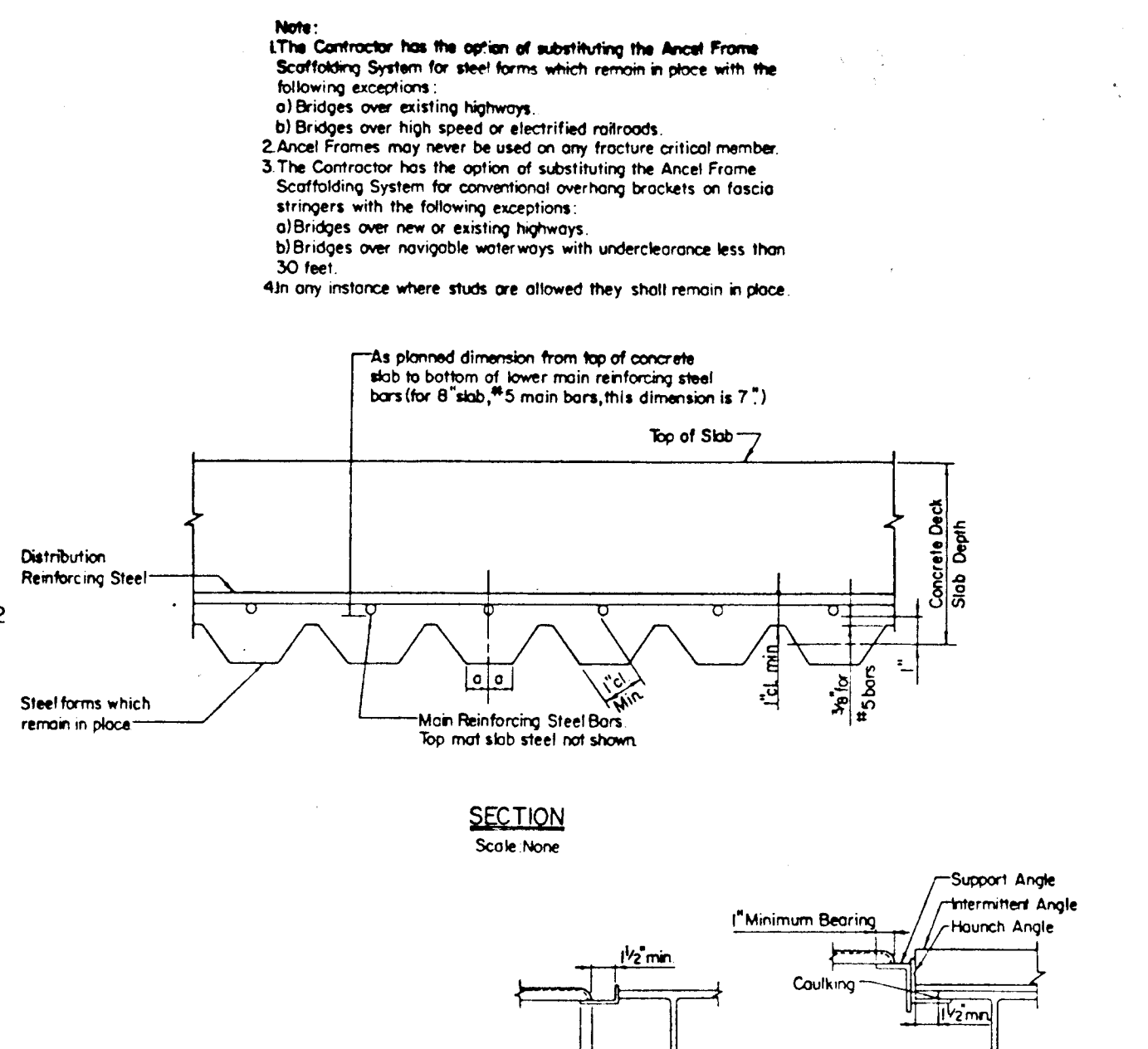
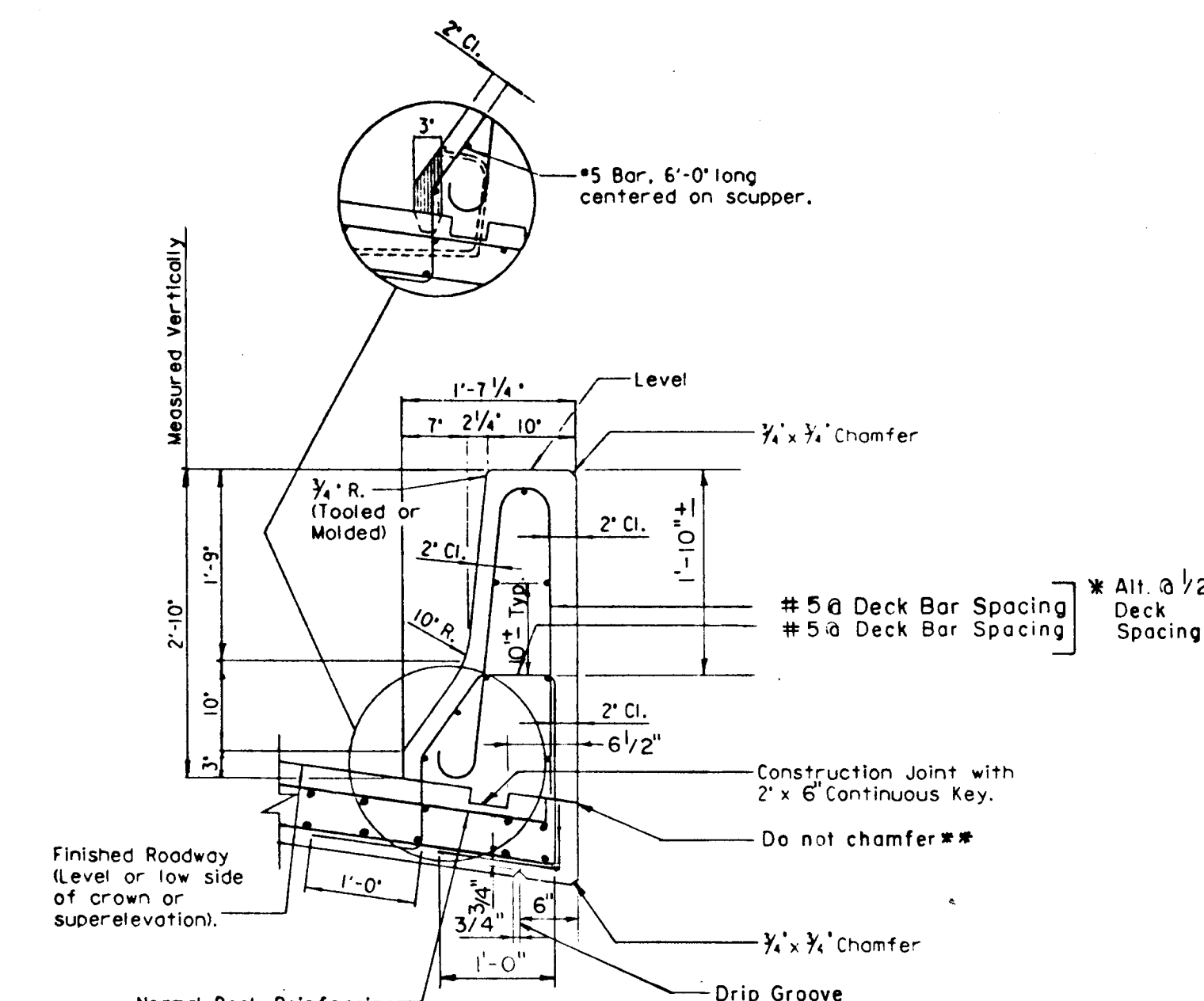


|                   |       |
|-------------------|-------|
| DES:              | SHA   |
| ORN:              | SHA   |
| CHK:              | K5    |
| DATE:             | 12/90 |
| BY:               | NO.   |
| REVISION:         |       |
| DATE:             |       |
| 600 SCALE MAP NO: |       |
| BLOCK NO:         |       |

**STANDARD DETAILS**

**VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND**

SCALE AS SHOWN  
SHEET 2 OF 12



**Notes:**  
 1. All longitudinal bars are #5 spaced as shown.  
 2. If Scupper Types I, IA, IV or V are used they shall be recessed into parapet as shown. Chamfer parapet from face of concrete to face of scupper in 1'-0".  
 3. All keys are nominal size.  
 4. Front and rear faces of parapet to be constructed plumb.

**MODIFIED FOR I-95 BRIDGES**

APPROVAL: [Signature] DATE: 11-19-84  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 2-25-87

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 OFFICE OF BRIDGE DEVELOPMENT

LEVEL OR LOW SIDE OF CROWN OR SUPERELEVATED SECTION OF NORMAL "JERSEY" TYPE PARAPET FOR BRIDGES

STANDARD NO. BR-SS(6.02)-75-27 SHEET 1 OF 2

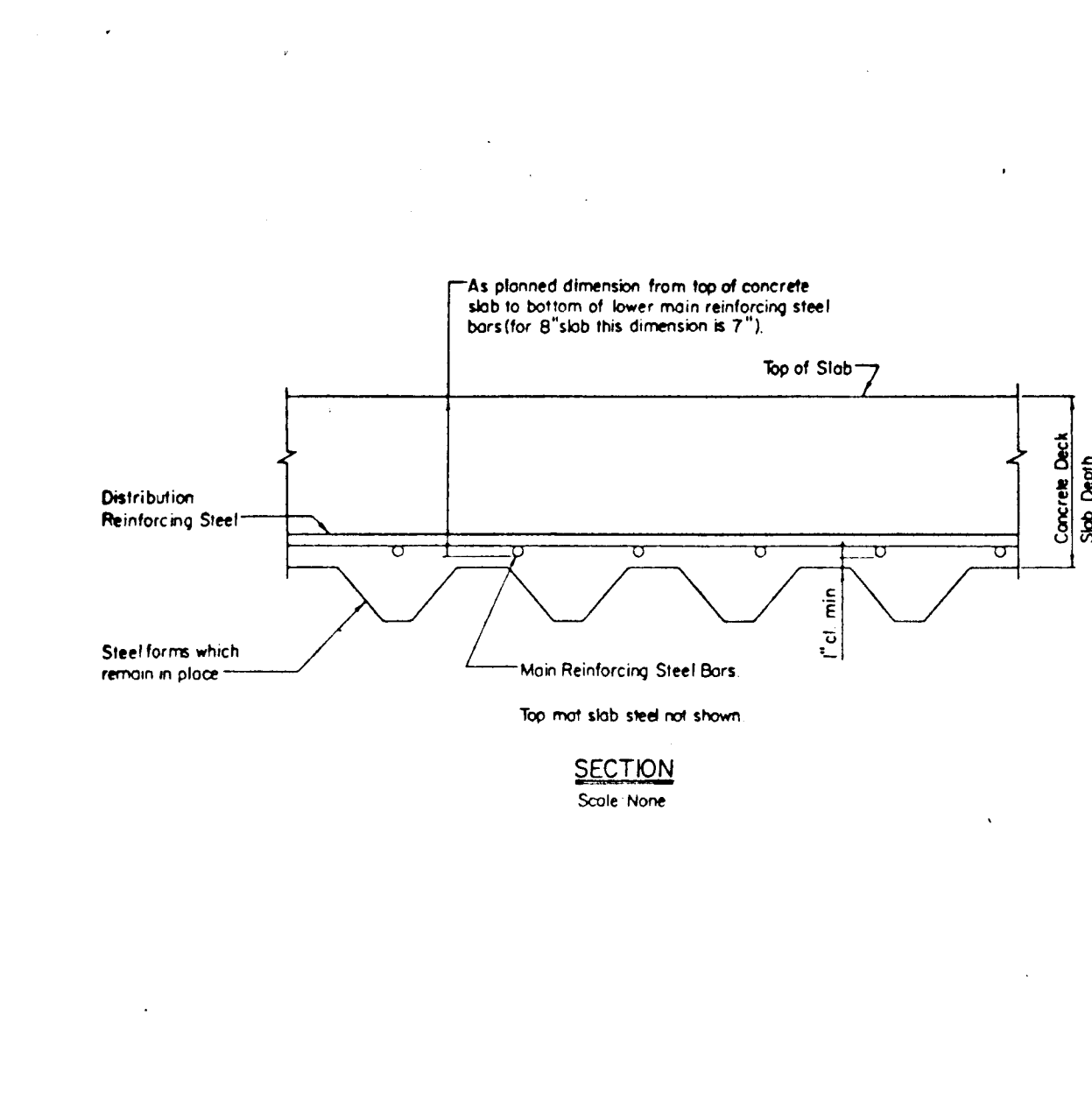
**Note:**  
 1. Permanent steel bridge deck forms and supports shall meet the requirements of Section 914.2 of the Specifications. Design Span shall be the clear distance between beam and/or girder flanges less two (2) inches.  
 2. No welding of these forms to parts carrying tension will be permitted. These forms shall be vertically adjusted to plan line and grade as required.  
 3. Any permanently sooted form metal where the galvanized coating has been damaged shall be thoroughly cleaned, wire brushed and painted with two coats of zinc oxide-zinc dust primer. Federal Specification TT-P-641d, Type B, no color added to the satisfaction of the engineer. Minor heat discoloration in areas of welds need not be touched up.  
 4. Contractor has option of using this detail or that shown on 2 of 2, except for bridge decks with curved stringers or bridge with a flared re-bar pattern for bridge with curved stringers or bridge with a flared re-bar pattern only the detail shown on sheet 2 of 2 can be used.  
 5. Where sheet connections are utilized, normal manufacturer detailing may be utilized at stringer flange.

APPROVAL: [Signature] DATE: 11-9-76  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 11-29-85

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 DIVISION OF BRIDGE DEVELOPMENT

STEEL FORMS WHICH REMAIN IN PLACE FOR CONCRETE SLABS ON STEEL STRINGERS RE-BARS ALIGNED WITH TROUGHS

STANDARD NO. BR-SS(6.06)-75-29 SHEET 1 OF 2



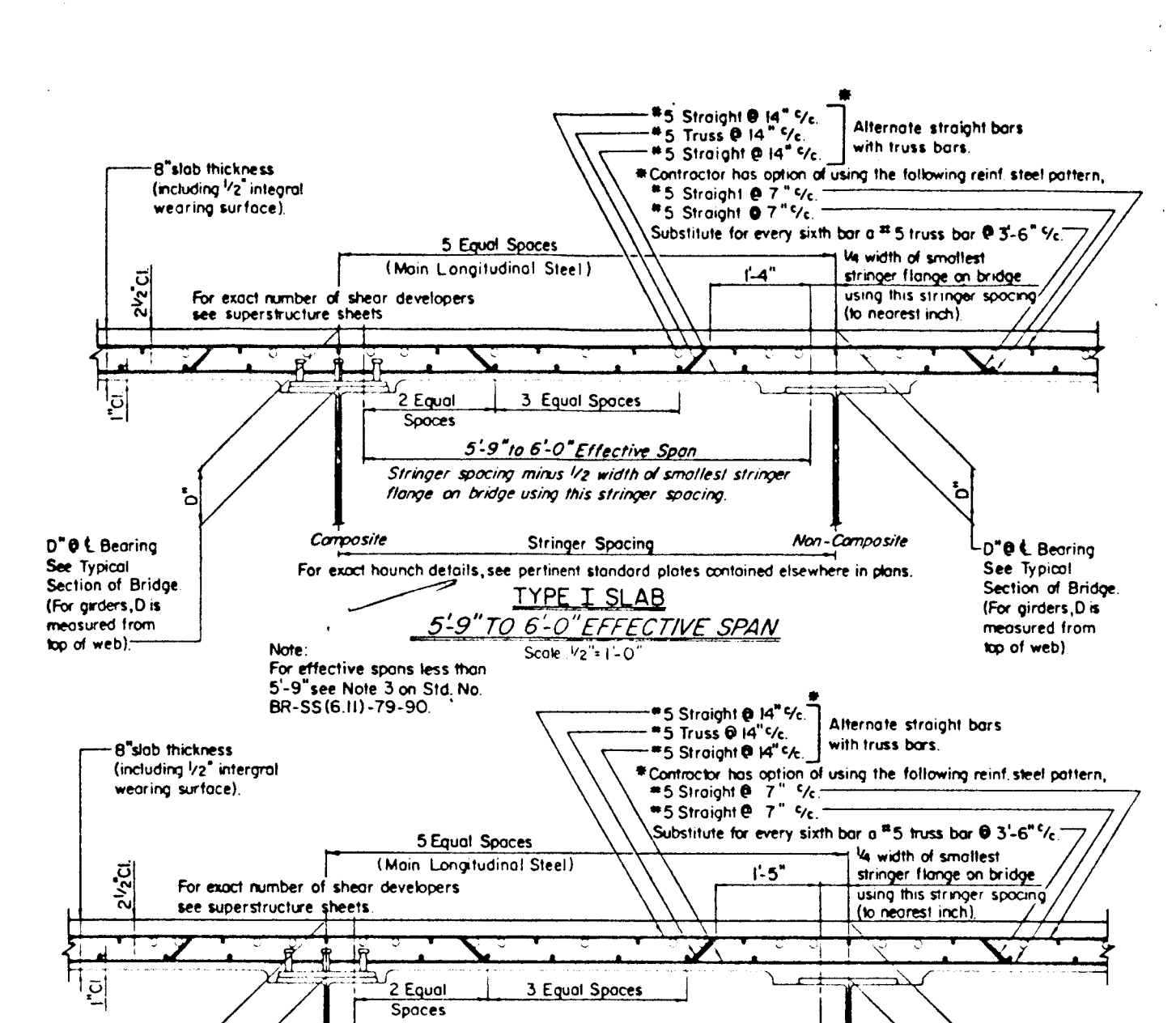
**Note:**  
 1. For notes see sheet 1 of 2.  
 2. This detail is acceptable only on structures where the General Notes under "Loading" states "and 15 pounds per square foot for use of bridge deck forms".

APPROVAL: [Signature] DATE: 6-20-80  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 6-20-80

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 DIVISION OF BRIDGE DEVELOPMENT

STEEL FORMS WHICH REMAIN IN PLACE FOR CONCRETE SLABS ON STEEL STRINGERS RE-BARS INDEPENDENT OF TROUGHS

STANDARD NO. BR-SS(6.06)-75-29 SHEET 2 OF 2



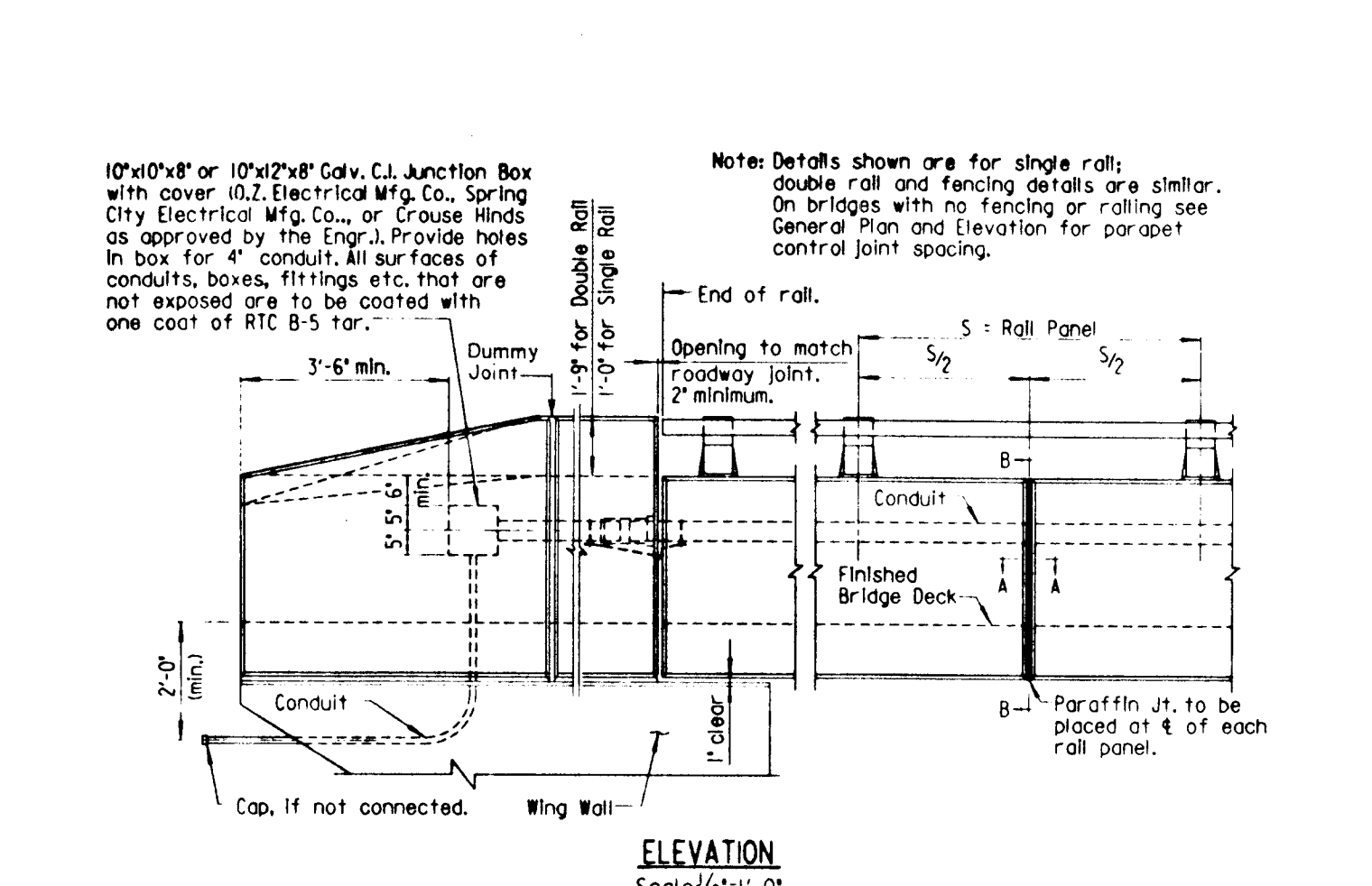
**Note:**  
 For effective spans less than 5'-9" see Note 3 on Std. No. BR-SS(11)-79-90.

APPROVAL: [Signature] DATE: 11-29-85  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 11-29-85

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 DIVISION OF BRIDGE DEVELOPMENT

TYPE I SLAB  
 GREATER THAN 6'-0" TO 6'-3" EFFECTIVE SPAN

STANDARD NO. BR-SS(12)-79-91 SHEET 1 OF 1



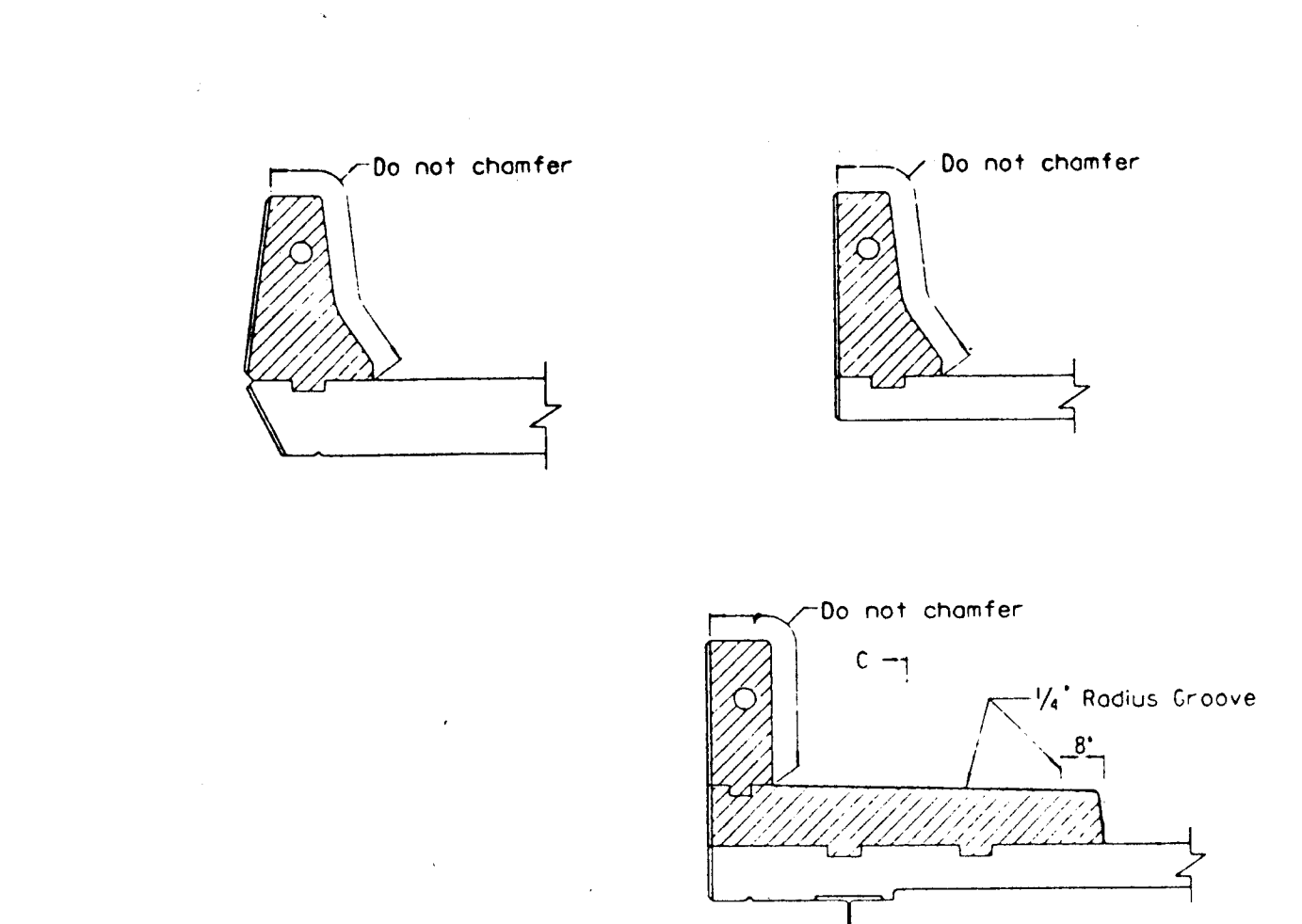
**Notes:**  
 Details shown are for single roll; double roll and fencing details are similar. On bridges with no fencing or railing see General Plan and Elevation for parapet control joint spacing.

APPROVAL: [Signature] DATE: 11-19-84  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 11-19-84

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 OFFICE OF BRIDGE DEVELOPMENT

PARAPET CONTROL JOINTS AND CONDUIT PLACEMENT

STANDARD NO. BR-SS(6.09)-78-70 SHEET 1 OF 2



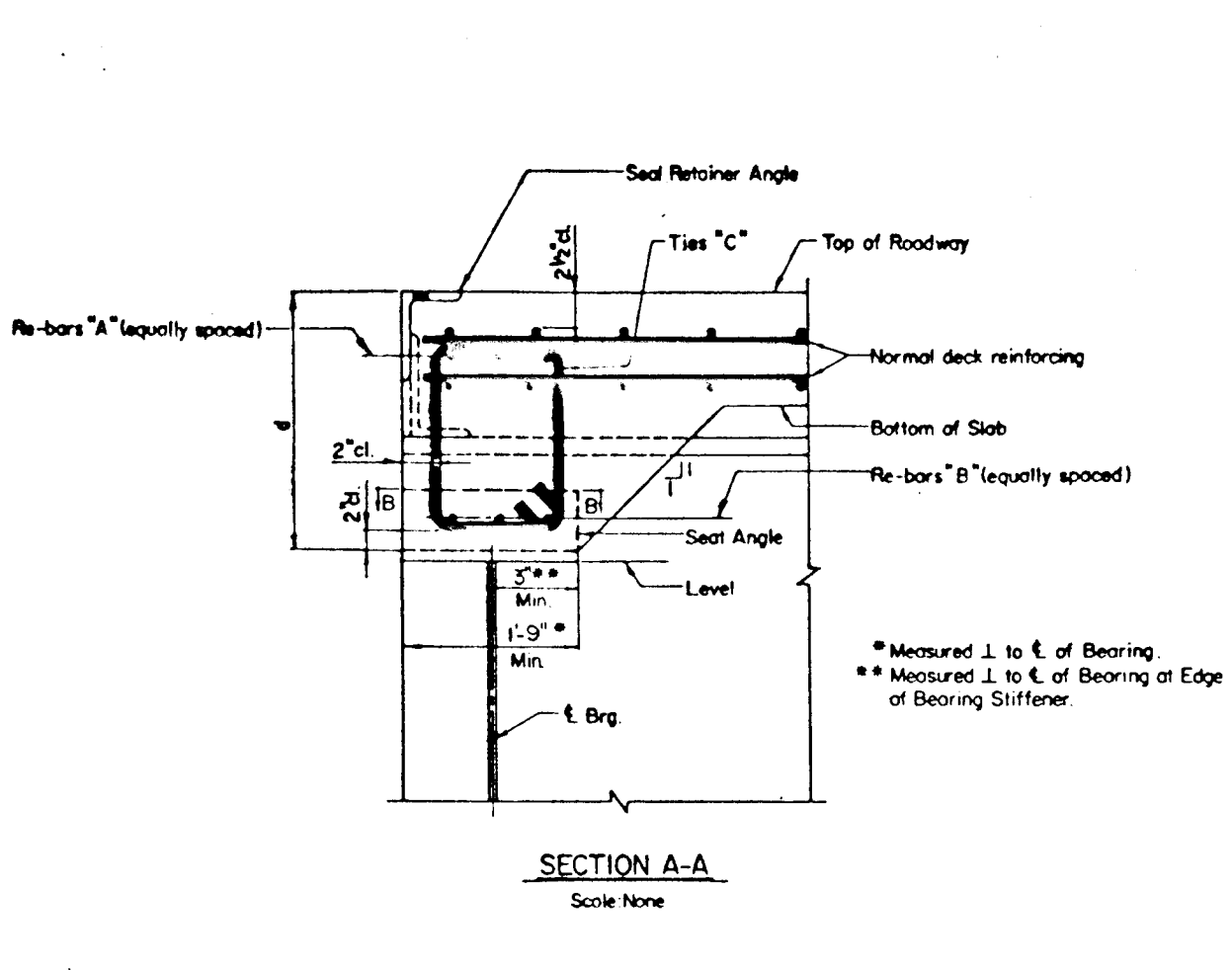
**Notes:**  
 1. Paraffin joint shown hatched.  
 2. Railing and/or fencing not shown.

APPROVAL: [Signature] DATE: 11-19-84  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 11-19-84

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 OFFICE OF BRIDGE DEVELOPMENT

PARAPET CONTROL JOINTS AND CONDUIT PLACEMENT

STANDARD NO. BR-SS(6.09)-84(78)-70 SHEET 2 OF 2



**Note:**  
 1. Slab and anchors for seal retainer angle not shown.  
 2. All reinforcing steel sizes and spacings based on ASTM Designation A-615, Grade 60 (fy = 24,000 p.s.i.).  
 3. For Section B-B see Standard No. BR-SS(12)-85-170.

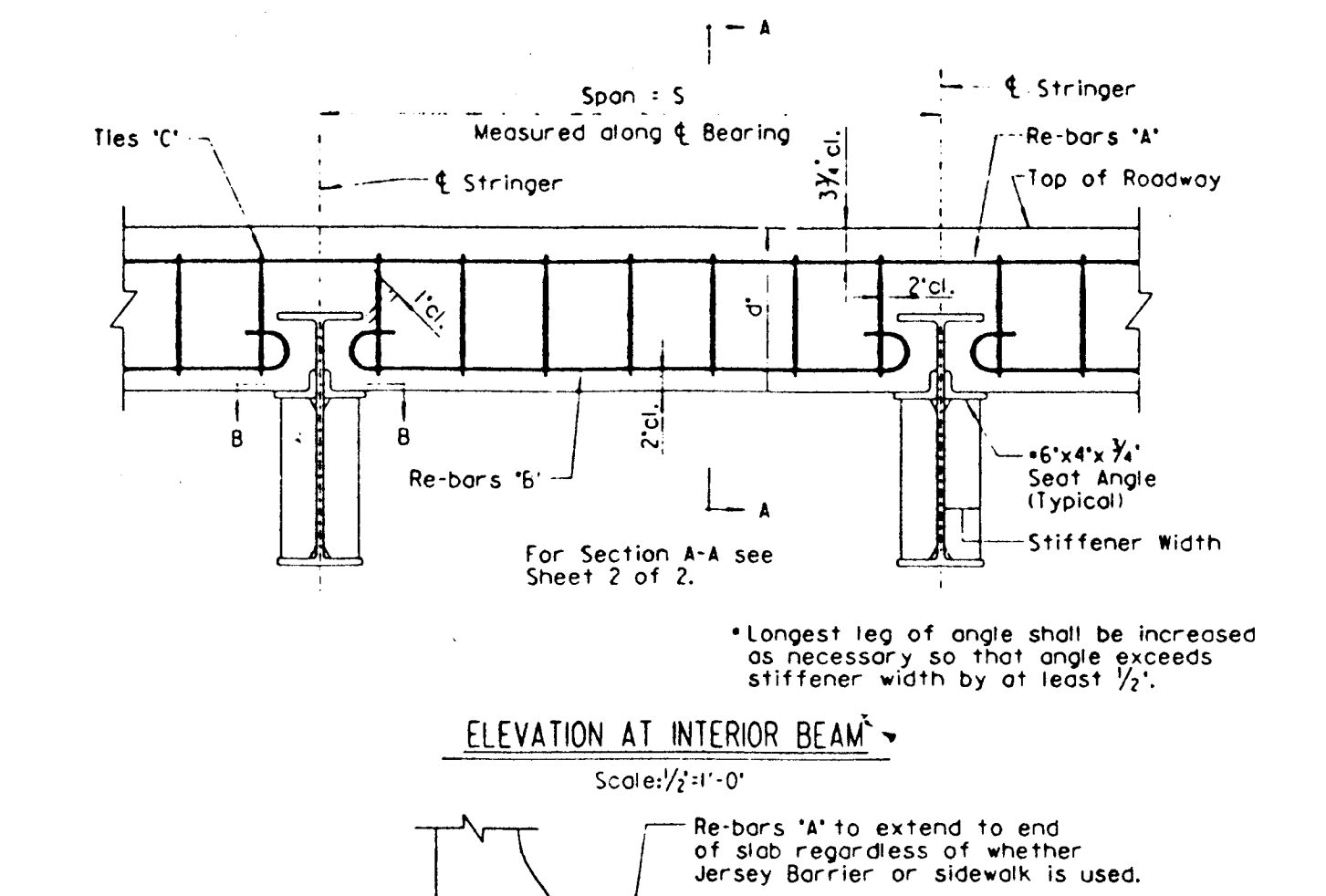
| Span = S        | Depth of Diaphragm | Re-bars "A" | Re-bars "B" | Ties "C" |
|-----------------|--------------------|-------------|-------------|----------|
| Up to 8'        | 1'-11"             | 3-#7        | 3-#7 1/2    |          |
| over 8' to 11'  | 1'-11"             | 3-#8        | 3-#8        |          |
| over 11' to 14' | 2'-0"              | 3-#8 1/2    | 3-#8        |          |
| over 14' to 16' | 2'-1"              | 3-#9        | 3-#9        |          |

APPROVAL: [Signature] DATE: 11-15-85  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 11-29-89

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 DIVISION OF BRIDGE DEVELOPMENT

CONCRETE DIAPHRAGMS AT PIERS (WITH EXPANSION JOINTS) AND AT ALL ABUTMENTS

STANDARD NO. BR-SS(16.22)-80-120 SHEET 2 OF 2



**Note:**  
 1. For Section B-B, see Standard No. BR-SS(12)-85-170.

APPROVAL: [Signature] DATE: 11-29-85  
 REVISIONS: [Table]  
 F.H.W.A. APPROVAL: [Signature] DATE: 11-29-85

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 OFFICE OF BRIDGE DEVELOPMENT

CONCRETE DIAPHRAGMS AT PIERS (WITH EXPANSION JOINTS) AND AT ALL ABUTMENTS

STANDARD NO. BR-SS(16.22)-80-120 SHEET 1 OF 2

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

[Signature] DATE: 11/1/91  
 DIRECTOR OF PUBLIC WORKS

[Signature] DATE: 1/10/91  
 CHIEF, BUREAU OF ENGINEERING

[Signature] DATE: 1/10/91  
 CHIEF, BUREAU OF HIGHWAYS

STATE OF MARYLAND  
 DEPARTMENT OF TRANSPORTATION  
 STATE HIGHWAY ADMINISTRATION  
 OFFICE OF BRIDGE DEVELOPMENT

CONCRETE DIAPHRAGMS AT PIERS (WITH EXPANSION JOINTS) AND AT ALL ABUTMENTS

STANDARD NO. BR-SS(16.22)-80-120 SHEET 2 OF 2

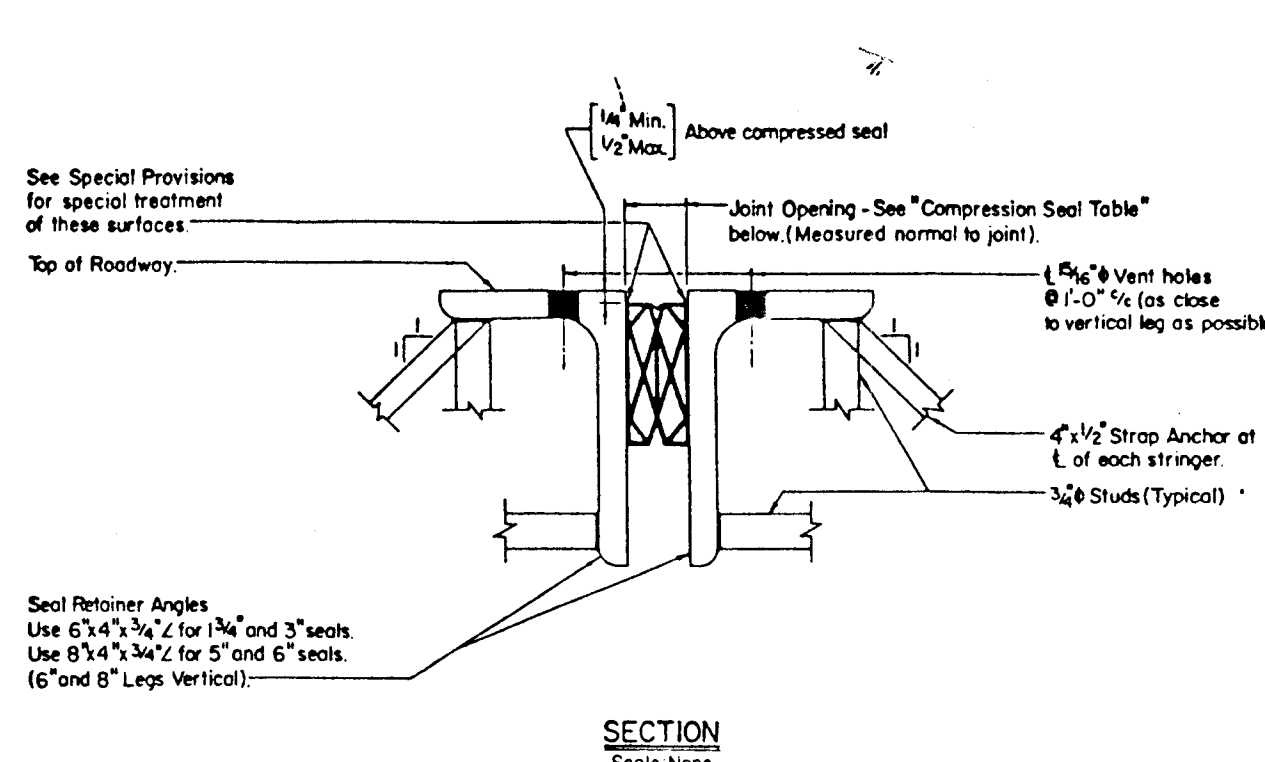
DES: SHA  
 DRN: SHA  
 CHK: KS  
 DATE: 12/90

BY NO REVISION DATE 6:00 SCALE MAP NO BLOCK NO.

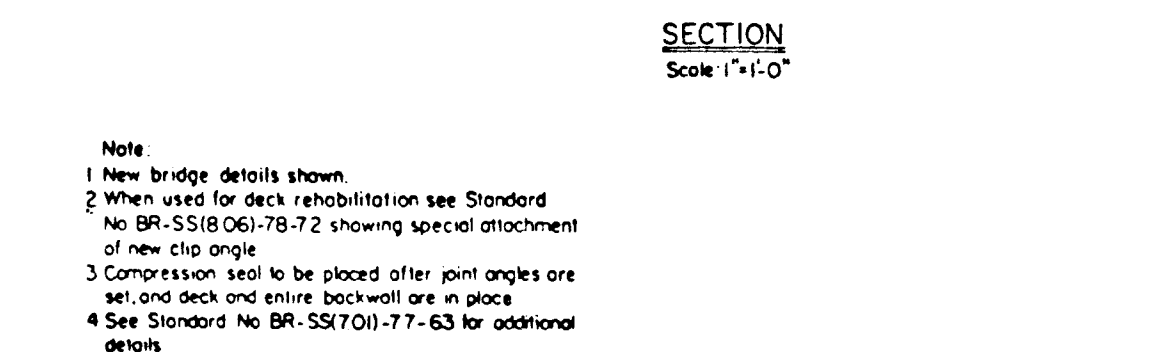
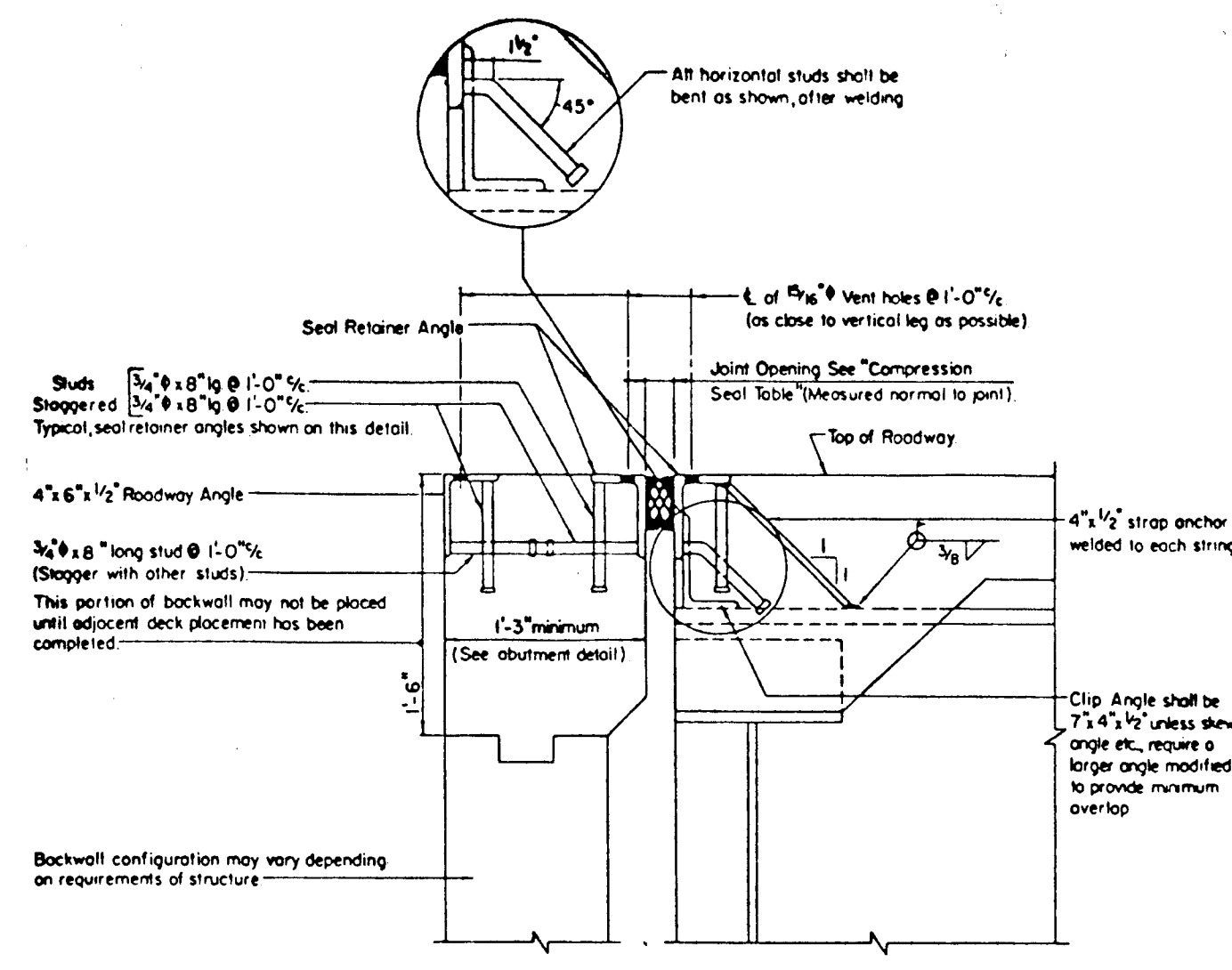
VOLLMERHAUSEN RD. IMPROVEMENTS  
 WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
 CAPITAL PROJECT J-4046  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 2 OF 4

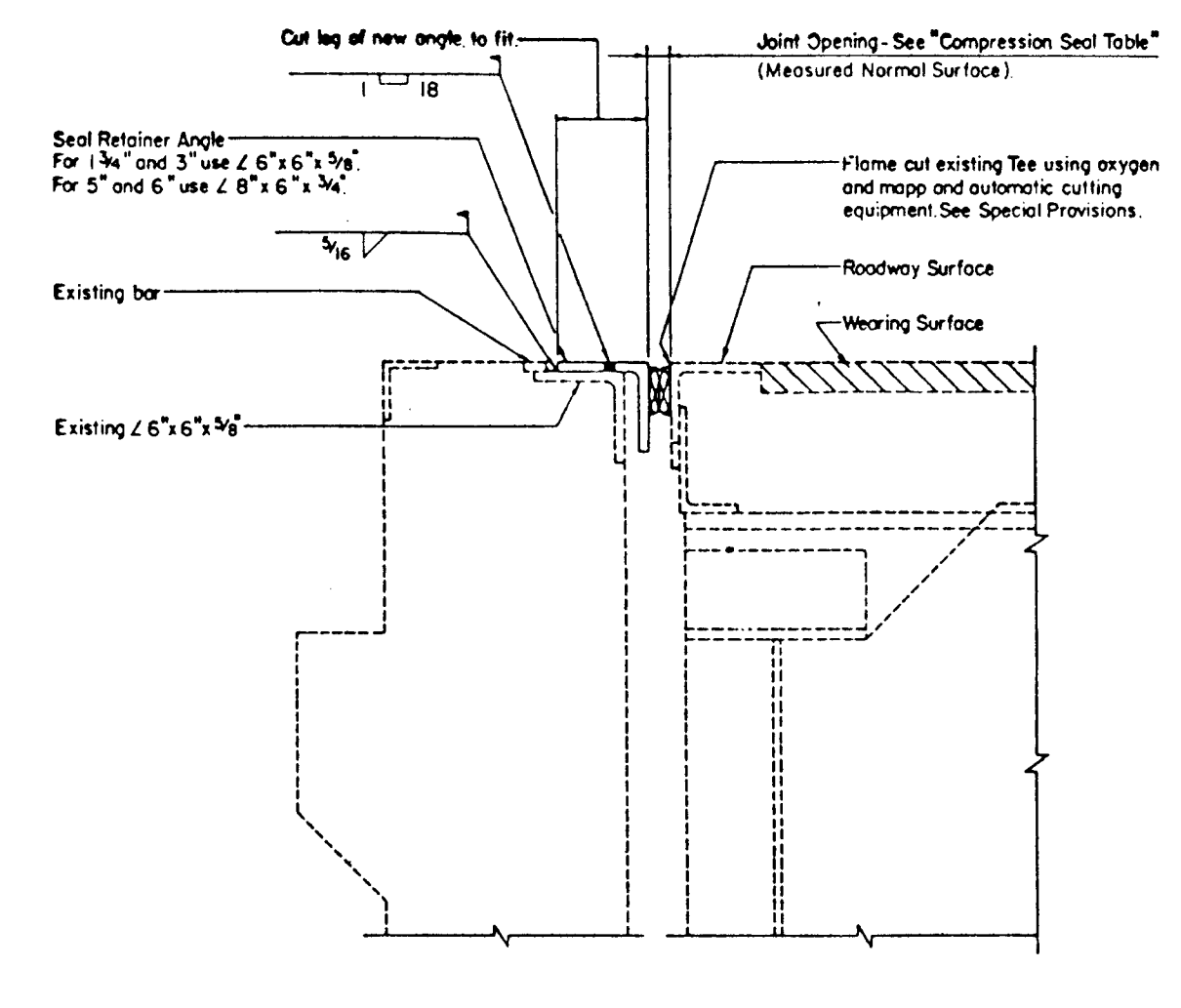
1606



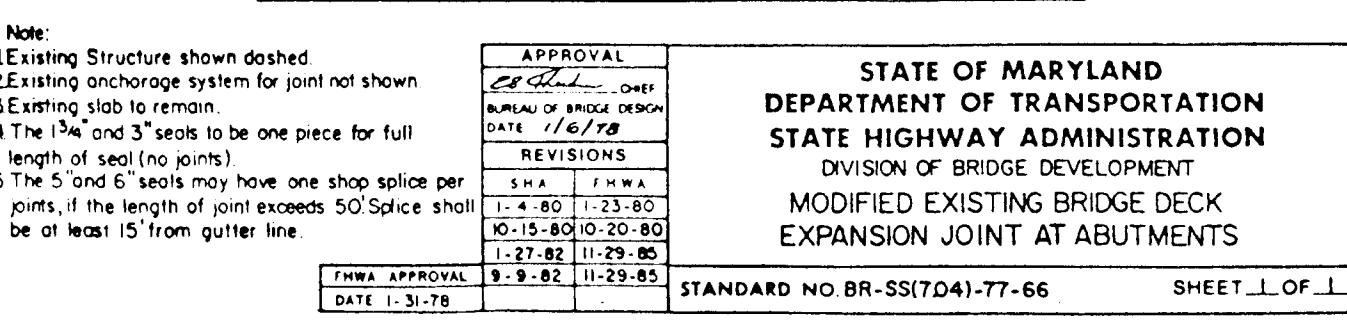
| Location              | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|-----------------------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|                       |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
| LITTLE PATUXENT RIVER | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|                       | 5"                      |                        |        |        |        |        |        |
|                       | 6"                      |                        |        | 3 3/4" |        |        |        |



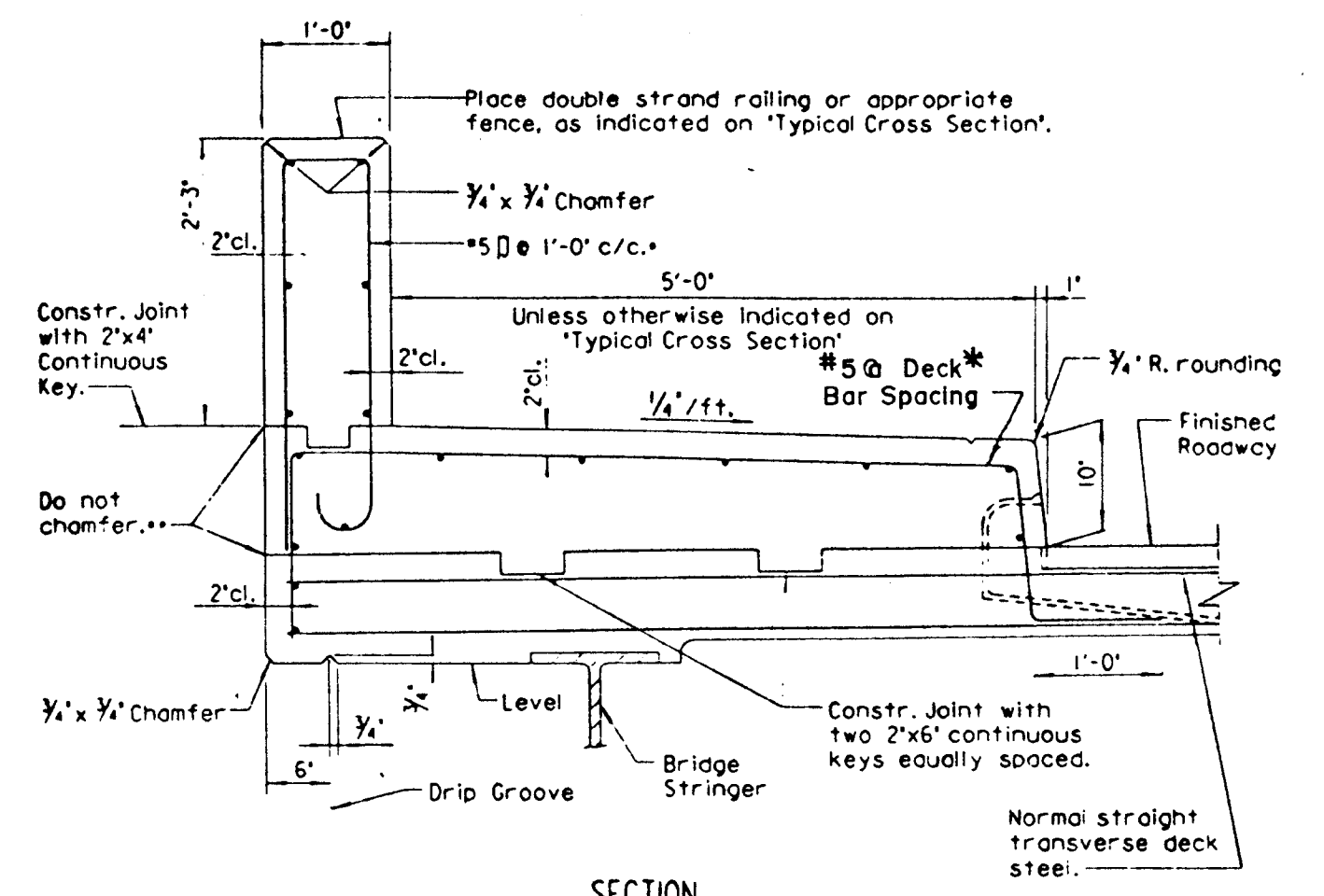
| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |



| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |



| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |



NOTES:

- All longitudinal bars are #5 spaced as shown maximum spacing 1'-3".
- All Keys are nominal size.
- Portions of longitudinal deck steel and truss bars are not shown.

\*\* In order to insure a smooth and acceptable surface, 608.03.05 (Constr. Joints) of the Specifications shall be strictly adhered to.

| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |

APPROVAL: [Signature] DATE: 1-31-76

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION DIVISION OF BRIDGE DEVELOPMENT COMPRESSION SEAL JOINT AND RETAINING ANGLE DETAIL

STANDARD NO. BR-SS(70)77-63 SHEET 1 OF 1

APPROVAL: [Signature] DATE: 4-4-80

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION DIVISION OF BRIDGE DEVELOPMENT COMPRESSION SEAL ROADWAY JOINTS AT ABUTMENTS

STANDARD NO. BR-SS(70)77-64 SHEET 1 OF 1

APPROVAL: [Signature] DATE: 1-31-76

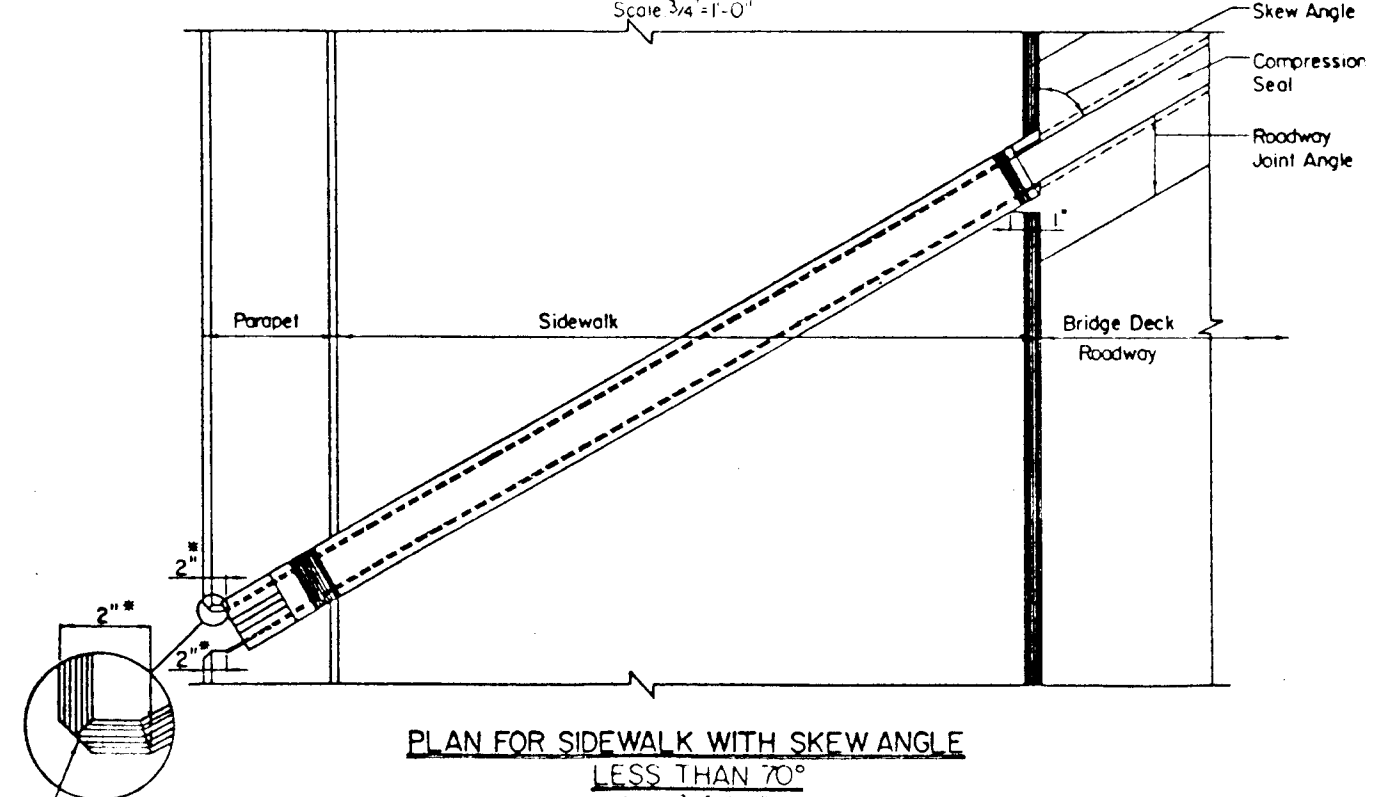
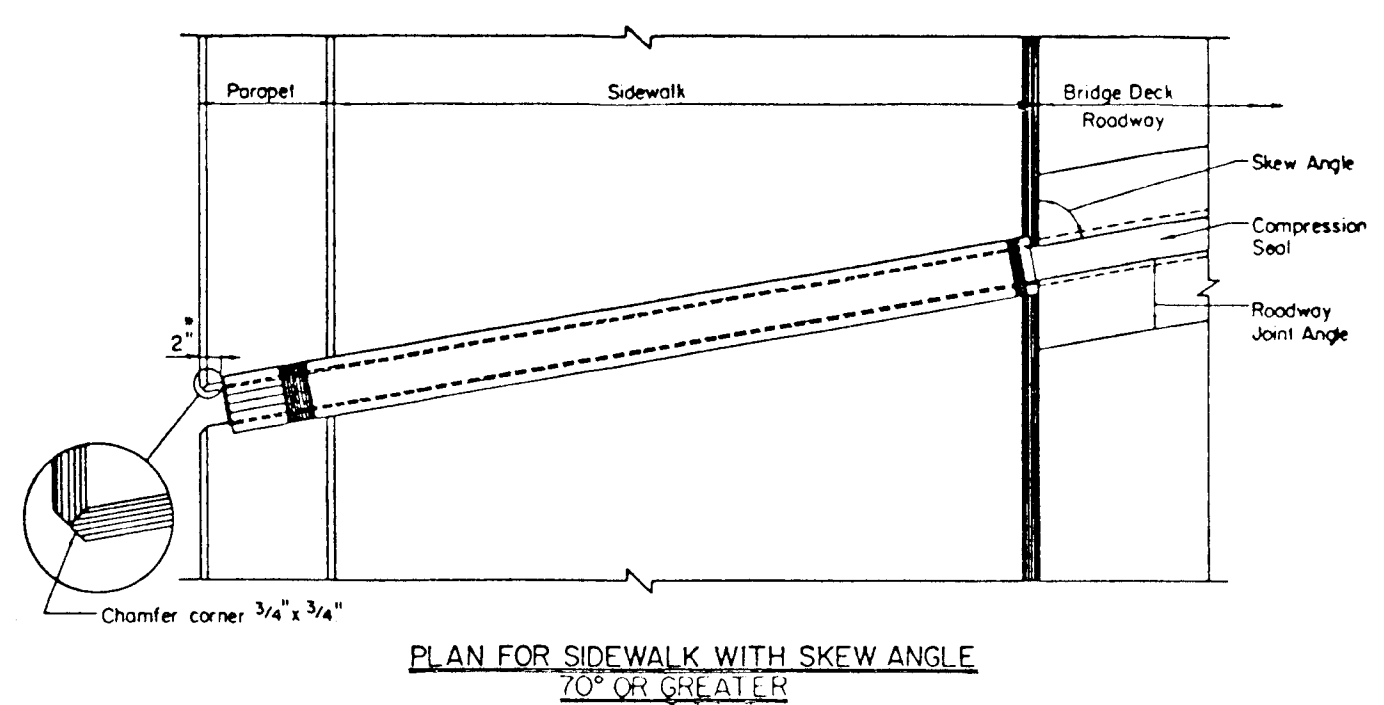
STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION DIVISION OF BRIDGE DEVELOPMENT MODIFIED EXISTING BRIDGE DECK EXPANSION JOINT AT ABUTMENTS

STANDARD NO. BR-SS(74)77-66 SHEET 1 OF 1

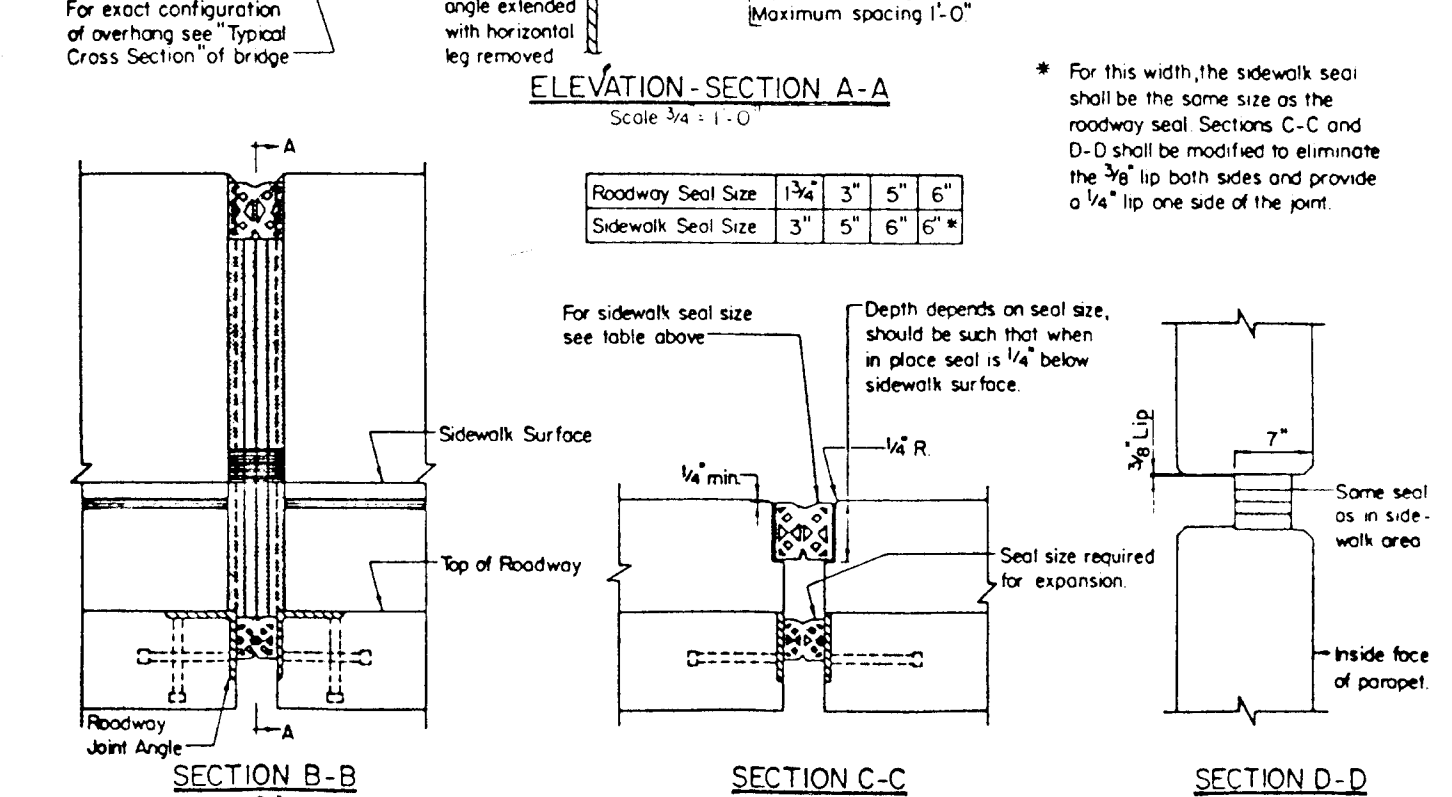
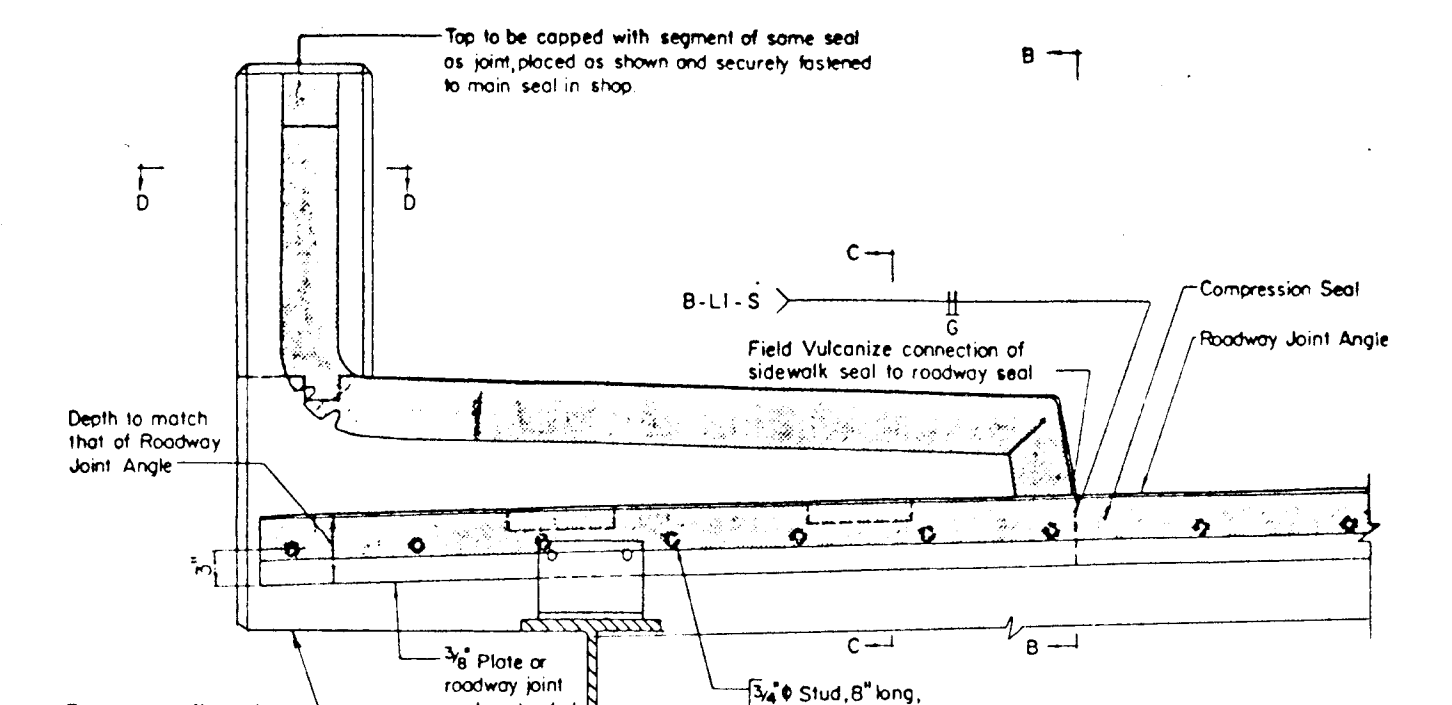
APPROVAL: [Signature] DATE: 1-29-80

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT SIDEWALK WITH PARAPET FOR BRIDGES

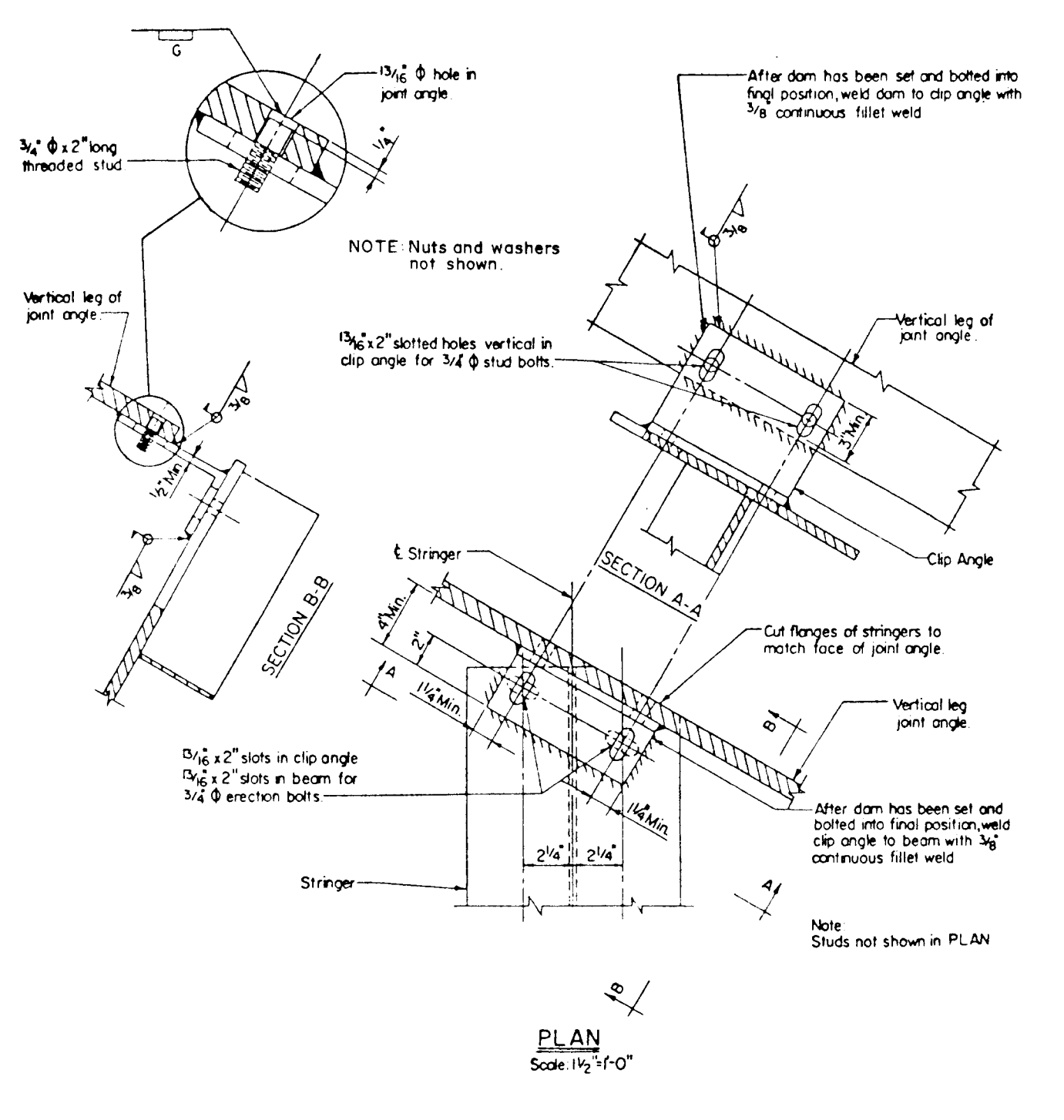
STANDARD NO. BR-SS(16)21-80-106 SHEET 1 OF 1



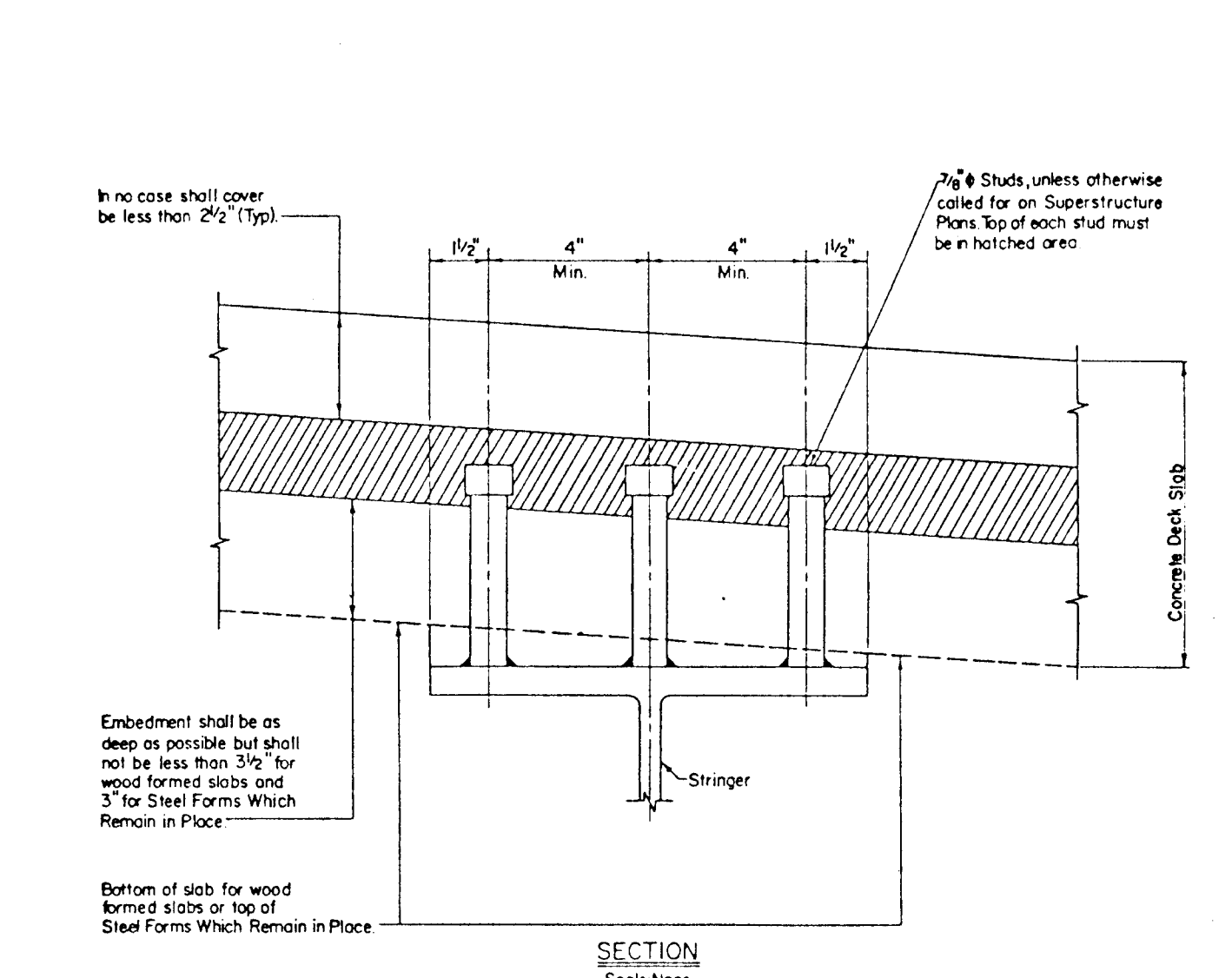
| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |



| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |



| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |



| Location | Uncompressed Seal Width | Joint Opening $\theta$ |        |        |        |        |        |
|----------|-------------------------|------------------------|--------|--------|--------|--------|--------|
|          |                         | 40°                    | 50°    | 60°    | 70°    | 80°    | 90°    |
|          | 3"                      | 1 3/4"                 | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" | 1 3/4" |
|          | 5"                      |                        |        |        |        |        |        |
|          | 6"                      |                        |        | 3 3/4" |        |        |        |

1606

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 1/10/91

Chief, Bureau of Engineering: [Signature] DATE: 1/10/91

Chief, Bureau of Highways: [Signature] DATE: 1/10/91

BUCHART-HORN INC. CONSULTING ENGINEERS THE QUADRANGLE 244 WEST BLOCK VILLAGE OF CROSS KEYS BALTIMORE, MARYLAND 21210

DES: SHA

DRN: SHA

CHK: K S

DATE: 12/90

BY: NO.

REVISION

DATE

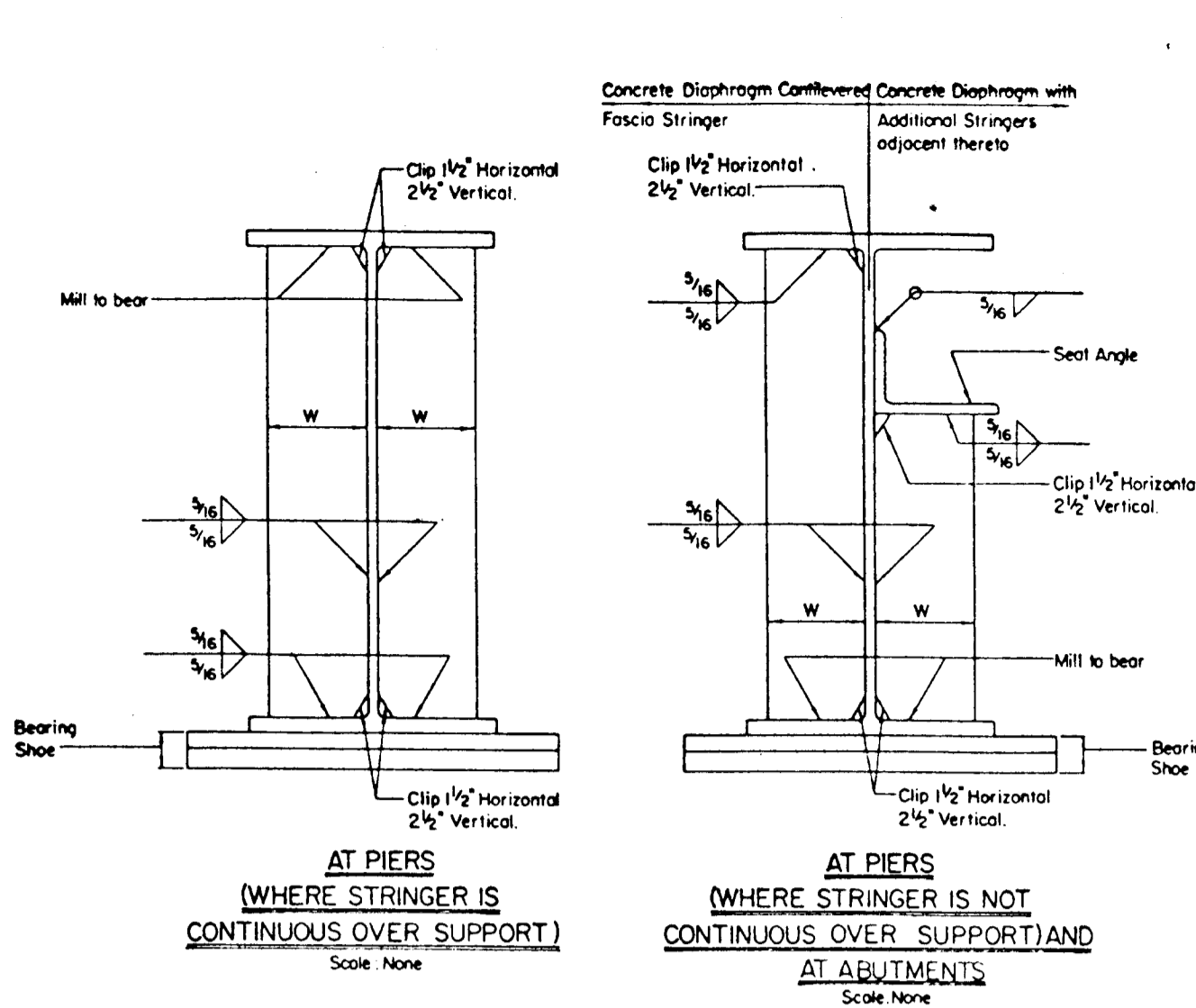
STANDARD DETAILS

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD CAPITAL PROJECT J-4046 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 27 OF 28

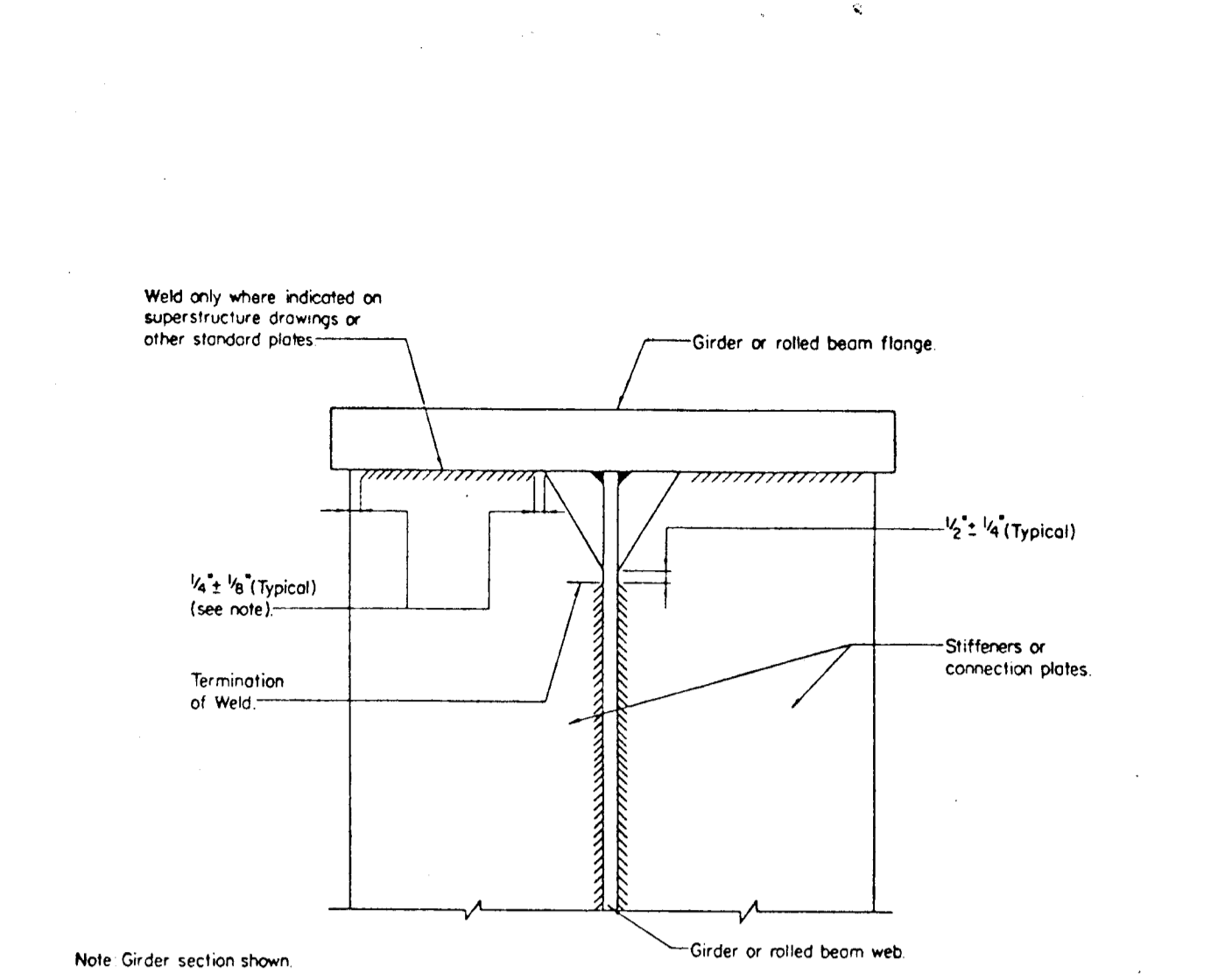


| Location | W<br>Stiffener<br>Width | Stiffener<br>Thickness |
|----------|-------------------------|------------------------|
| Abutment | 5"                      | 5/8"                   |
| Pier     |                         |                        |
| Pier     |                         |                        |
| Abutment |                         |                        |

**APPROVAL**  
DATE: 7-29-80

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
BEARING STIFFENERS FOR  
ROLLED STEEL BEAMS**

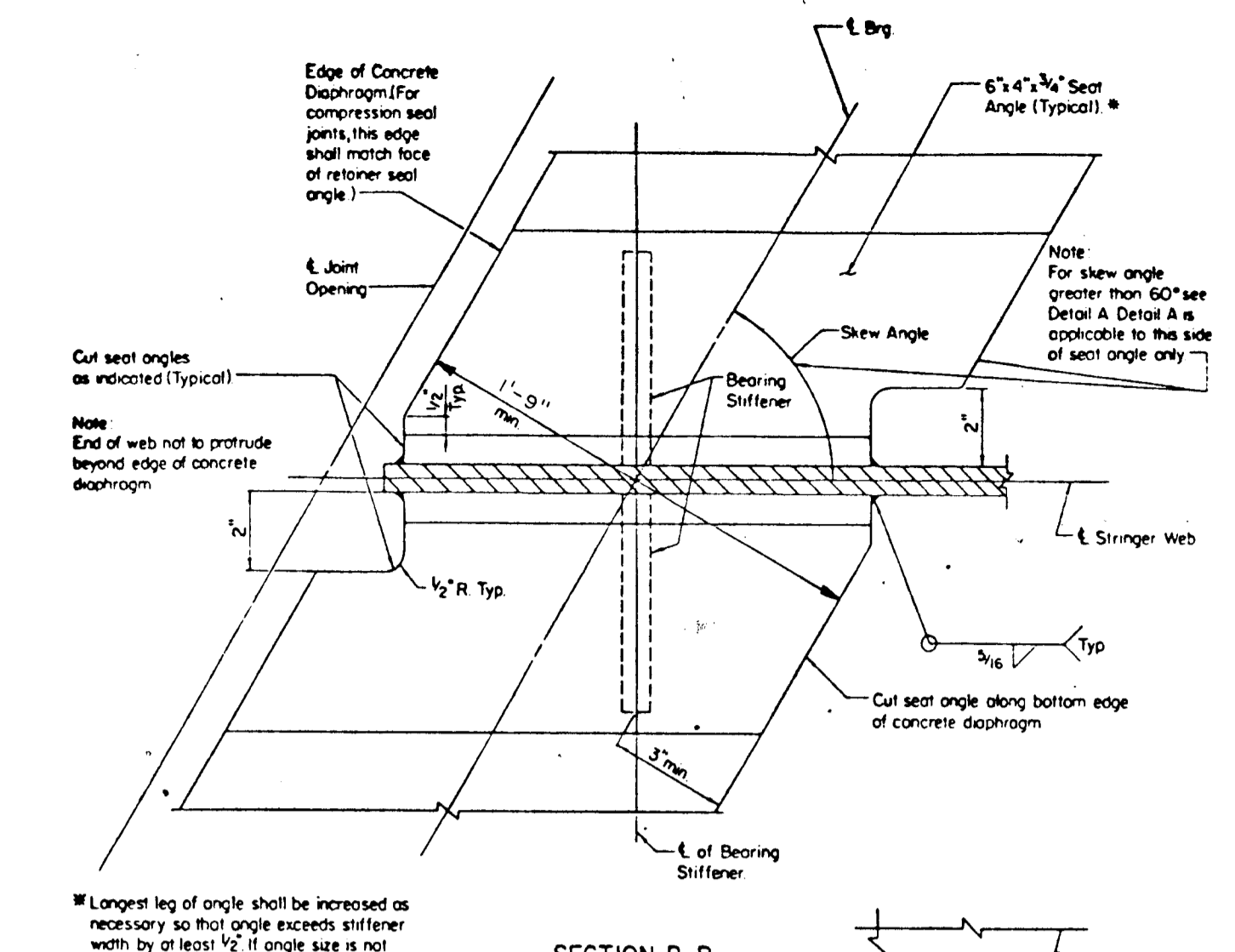
STANDARD NO BR-55(8.08)-80-103 SHEET 1 OF 1



**APPROVAL**  
DATE: 9-83

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
STIFFENER AND STRINGER CONNECTION  
PLATE WELD TERMINATION DETAIL**

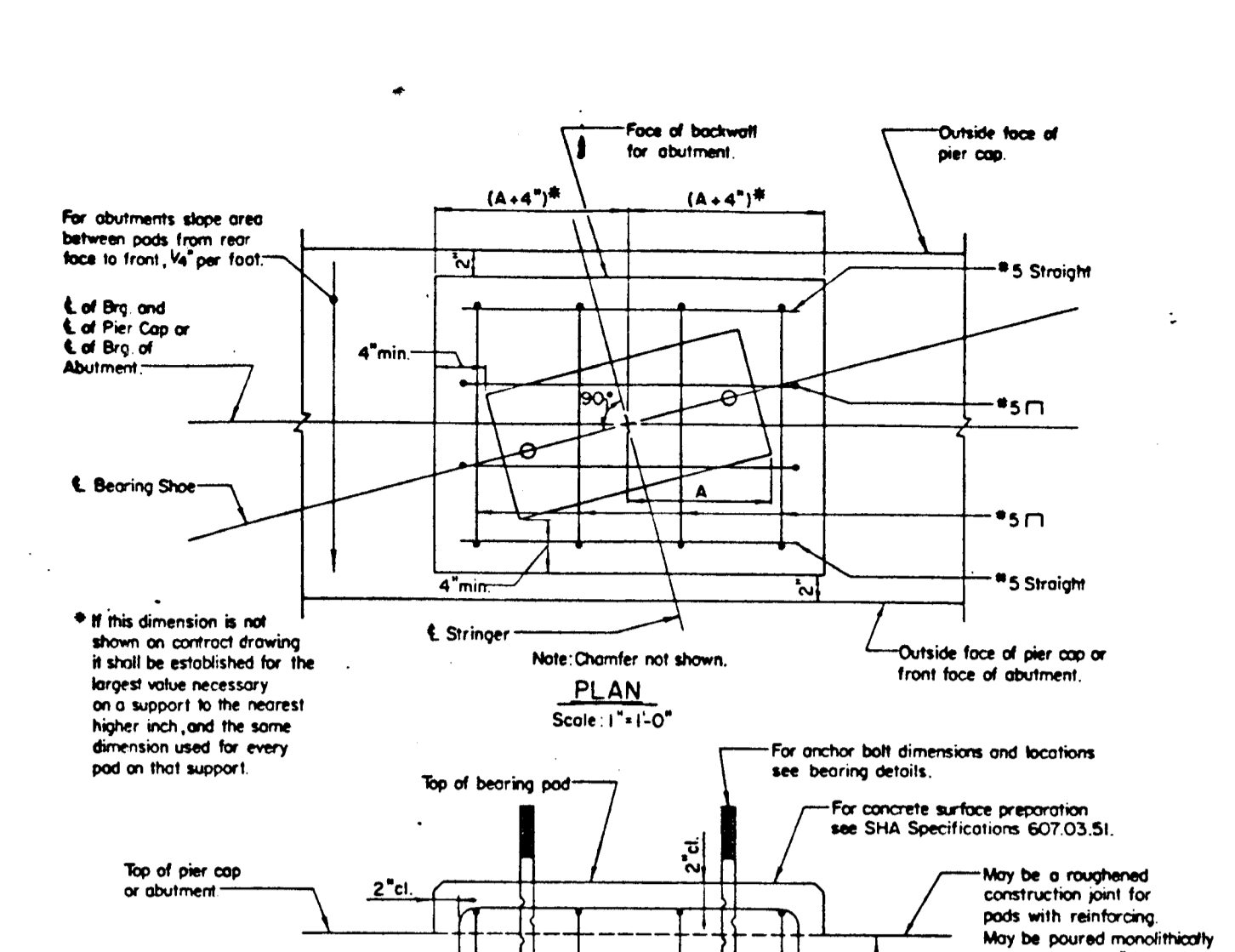
STANDARD NO BR-55(8.10)83-154 SHEET 1 OF 1



**APPROVAL**  
DATE: 5-24-89

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
STEEL SEAT ANGLES FOR  
SKEWED CONCRETE DIAPHRAGMS**

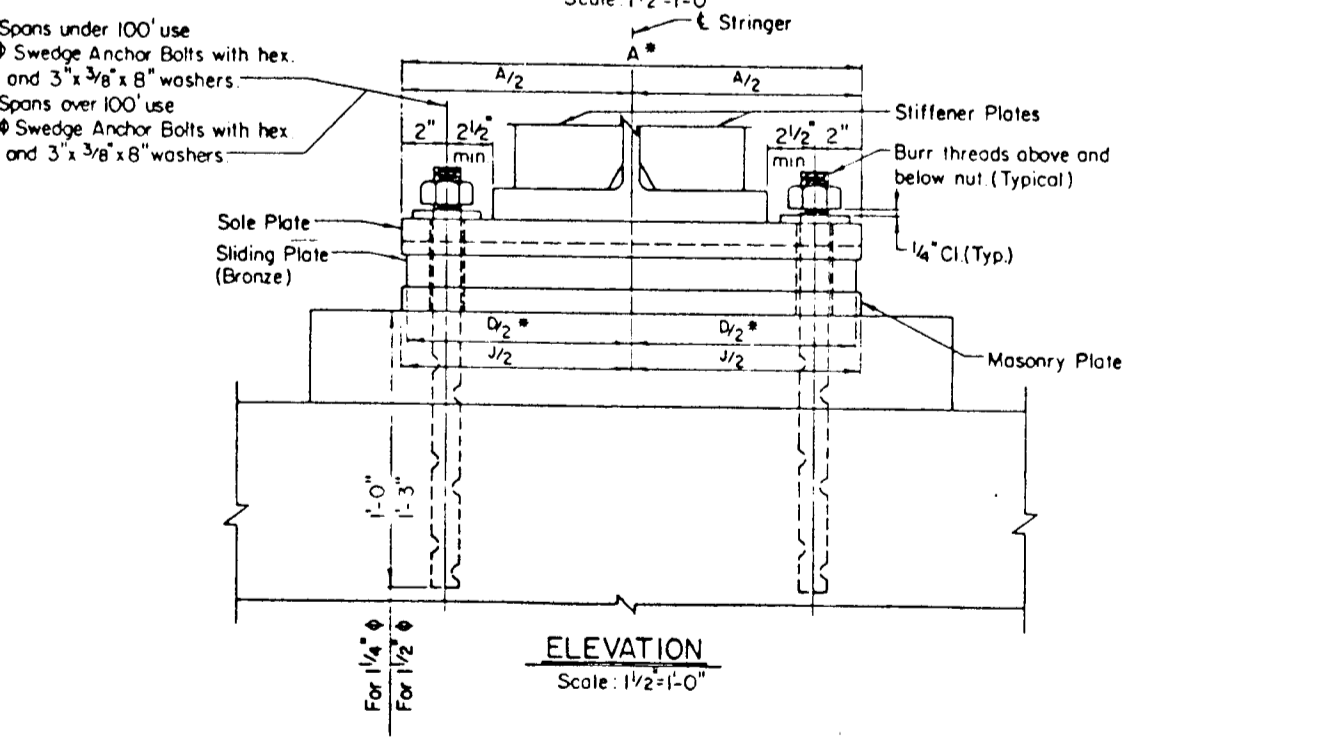
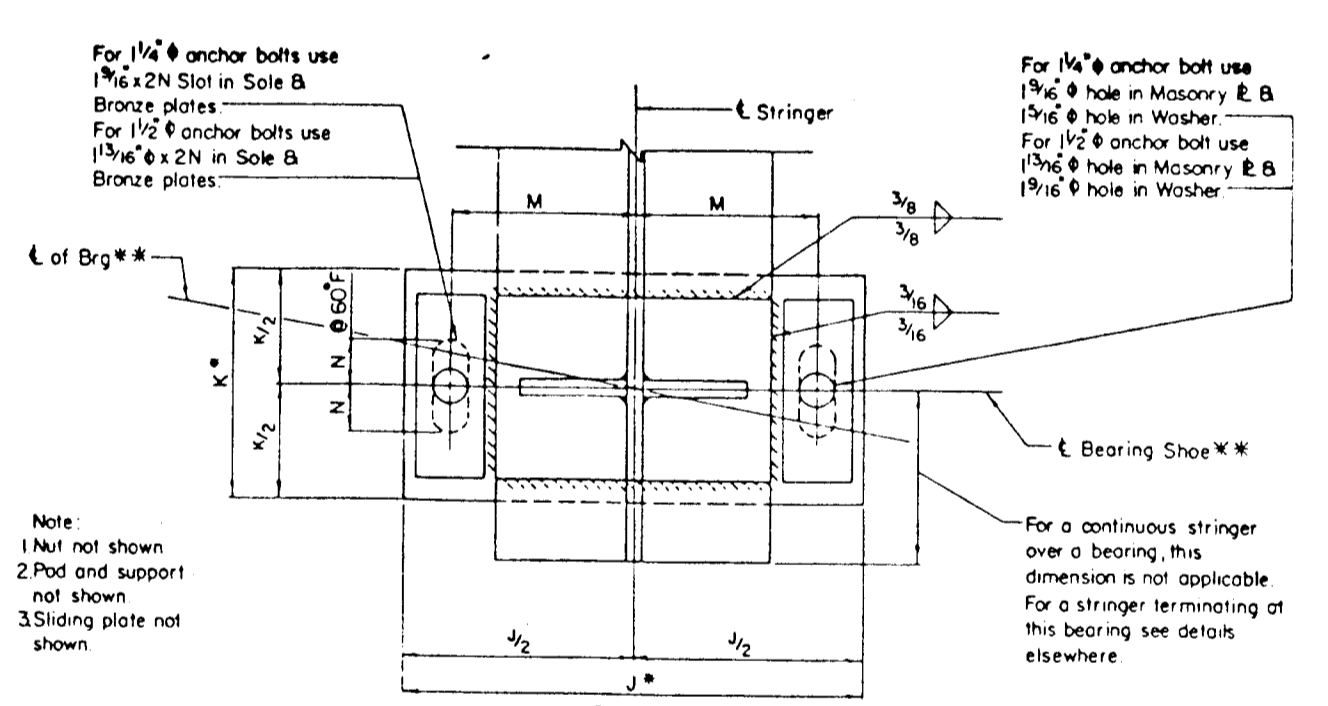
STANDARD NO BR-55(8.12)-85-170 SHEET 1 OF 1



**APPROVAL**  
DATE: 2-27-81

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
BEARING PAD WHERE ONLY A SINGLE SHOE  
IS REQUIRED ON A SUPPORT**

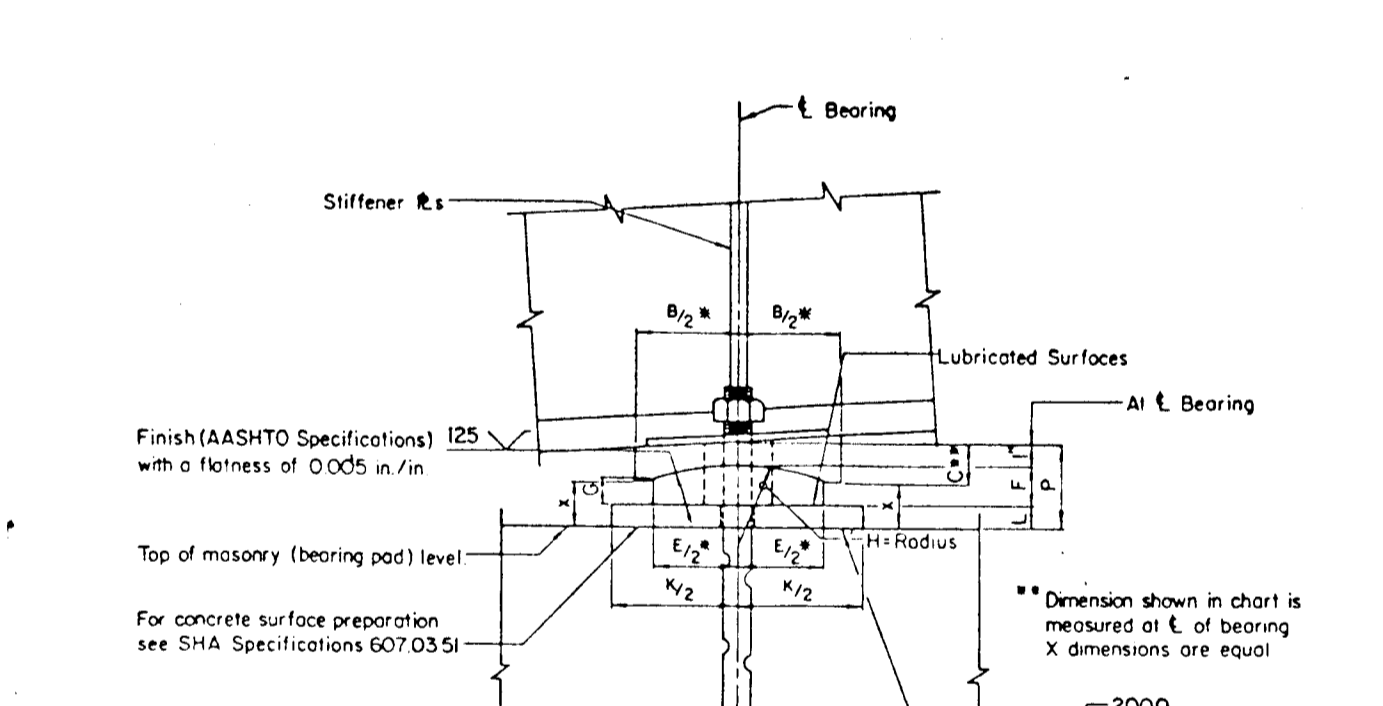
STANDARD NO BR-SB(6.02)-80-121 SHEET 1 OF 1



**APPROVAL**  
DATE: 4-10-86

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
BRONZE EXPANSION BEARING  
MEDIUM LENGTH SPANS**

STANDARD NO BR-55(9.01)-80-114 SHEET 1 OF 2



**DATA SCHEDULE**

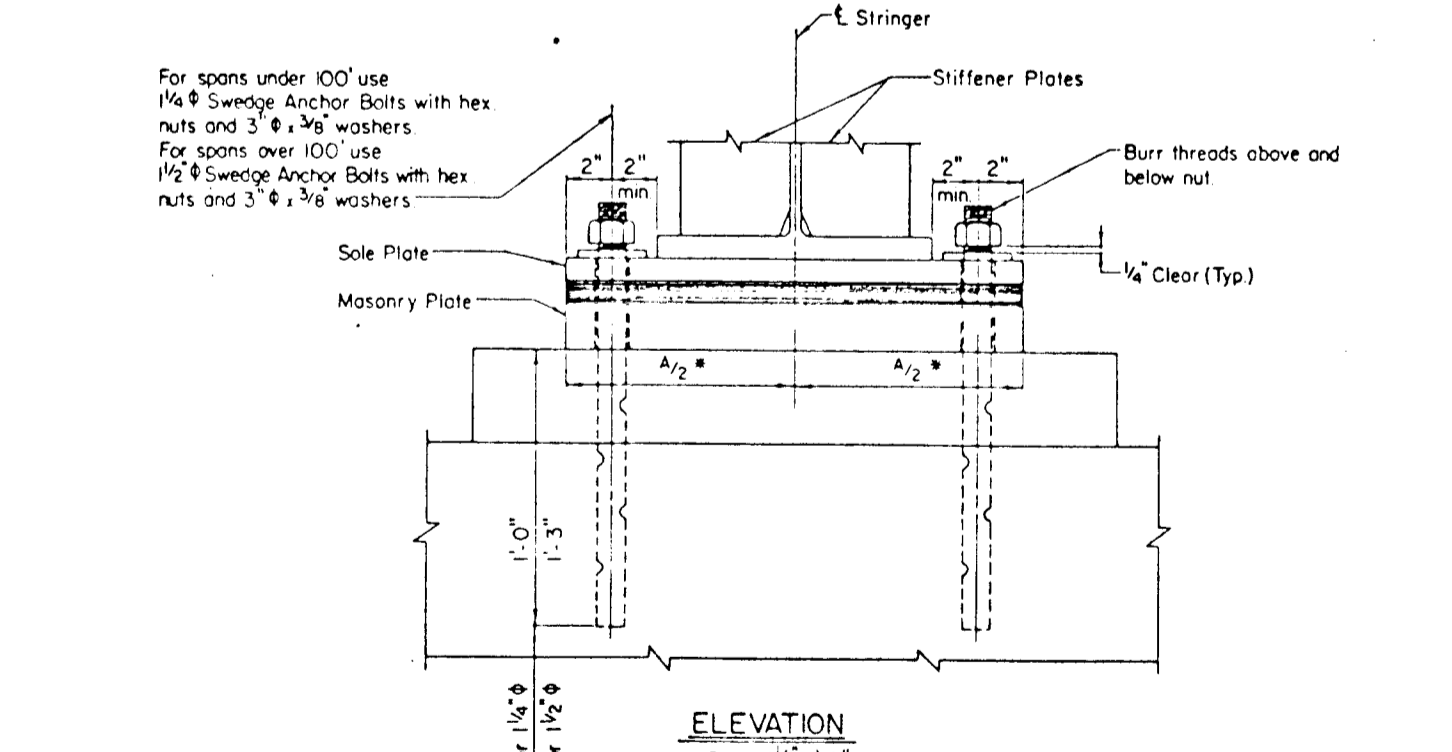
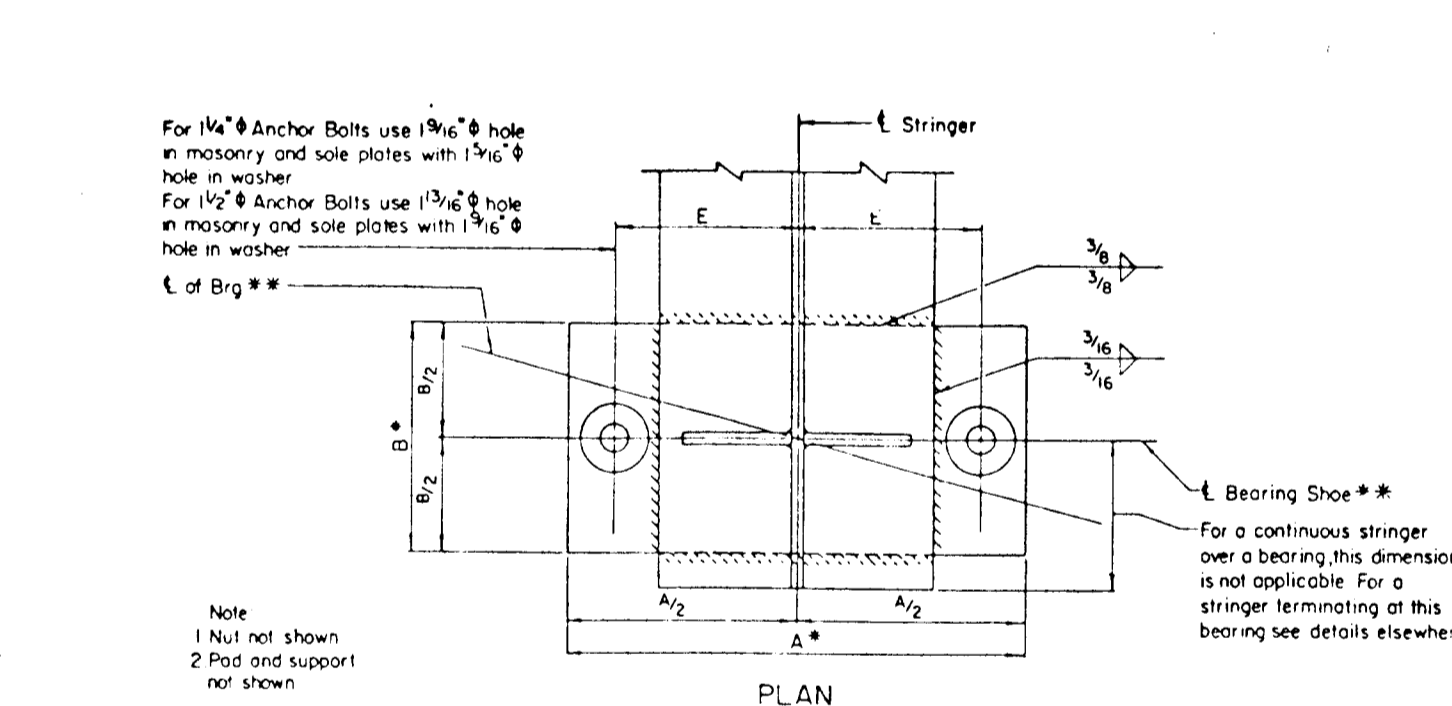
| Type   | Sole Plate | Sliding Plate | Radius | Masonry R | Hole Loc | HGT    | Loads (Kips) | Total Extension ± (OF 20%) |
|--------|------------|---------------|--------|-----------|----------|--------|--------------|----------------------------|
|        | A          | B             | C      | D         | E        | F      | Vert         | Dead                       |
| ME-I   | 21         | 9 1/2         | 20     | 7 1/2     | 11 1/2   | 8 1/2  | 150          | 75                         |
| ME-II  | 23         | 2 1/2         | 22     | 8 1/2     | 11 1/2   | 9 1/2  | 200          | 100                        |
| ME-III | 25         | 1 1/2         | 24     | 9 1/2     | 11 1/2   | 10 1/2 | 250          | 125                        |
| ME-IV  | 26         | 1 1/2         | 25     | 11 1/2    | 11 1/2   | 11 1/2 | 300          | 150                        |
| ME-V   | 29         | 1 1/2         | 28     | 13 1/2    | 11 1/2   | 12 1/2 | 350          | 175                        |
| ME-VI  | 30         | 1 1/2         | 29     | 15 1/2    | 11 1/2   | 13 1/2 | 400          | 200                        |

Note: All dimensions are in inches.

**APPROVAL**  
DATE: 9-25-87

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
BRONZE EXPANSION BEARING  
MEDIUM LENGTH SPANS**

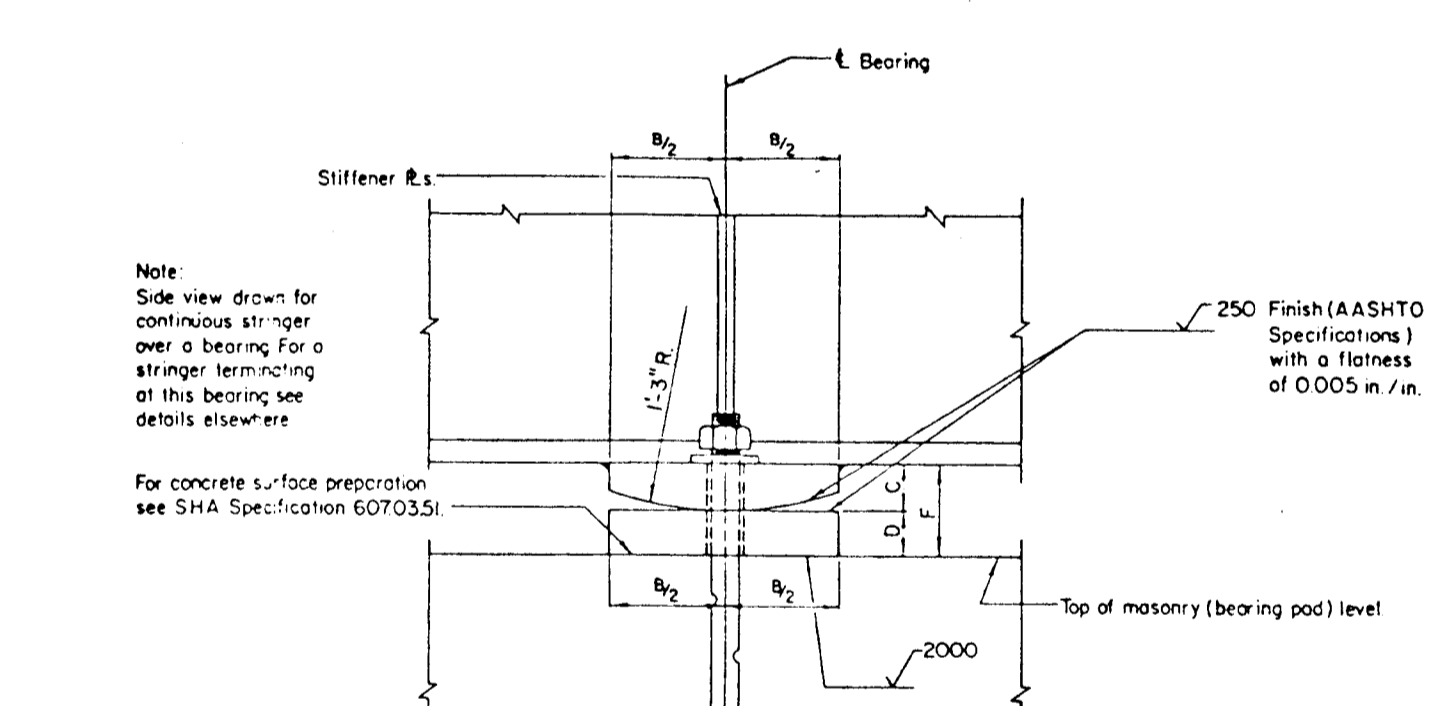
STANDARD NO BR-55(9.01)-80-114 SHEET 2 OF 2



**APPROVAL**  
DATE: 4-5-86

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
FIXED BEARING  
MEDIUM LENGTH SPANS**

STANDARD NO BR-55(9.02)-80-115 SHEET 1 OF 2



**DATA SCHEDULE**

| Type   | Sole Plate | Masonry R | Hole Loc | HGT    | Loads (Kips) |      |
|--------|------------|-----------|----------|--------|--------------|------|
|        | A          | B         | C        | D      | Vert         | Dead |
| MF-I   | 20         | 9 1/2     | 20       | 9 1/2  | 150          | 75   |
| MF-II  | 22         | 11        | 22       | 11     | 200          | 100  |
| MF-III | 24         | 12 1/4    | 24       | 12 1/4 | 250          | 125  |
| MF-IV  | 26         | 13 1/2    | 26       | 13 1/2 | 300          | 150  |
| MF-V   | 30         | 15 1/2    | 30       | 15 1/2 | 350          | 175  |
| MF-VI  | 32         | 16 3/4    | 32       | 16 3/4 | 400          | 200  |

Note: All dimensions are in inches.

**APPROVAL**  
DATE: 9-25-87

**STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
FIXED BEARING  
MEDIUM LENGTH SPANS**

STANDARD NO BR-55(9.02)-80-115 SHEET 2 OF 2

1606

**DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND**

Director of Public Works: *[Signature]* DATE: 1/1/91

Chief Bureau of Engineering: *[Signature]* DATE: 1/1/91

Chief, Bureau of Highways: *[Signature]* DATE: 1/1/91

**BUCHART-HORN INC.  
CONSULTING ENGINEERS  
THE QUADRANGLE  
244 WEST BLOCK  
VILLAGE OF CROSS KEYS  
BALTIMORE, MARYLAND 21210**

**DES: SHA  
DRN: SHA  
CHK: KS  
DATE: 12/90**

**STANDARD DETAILS**

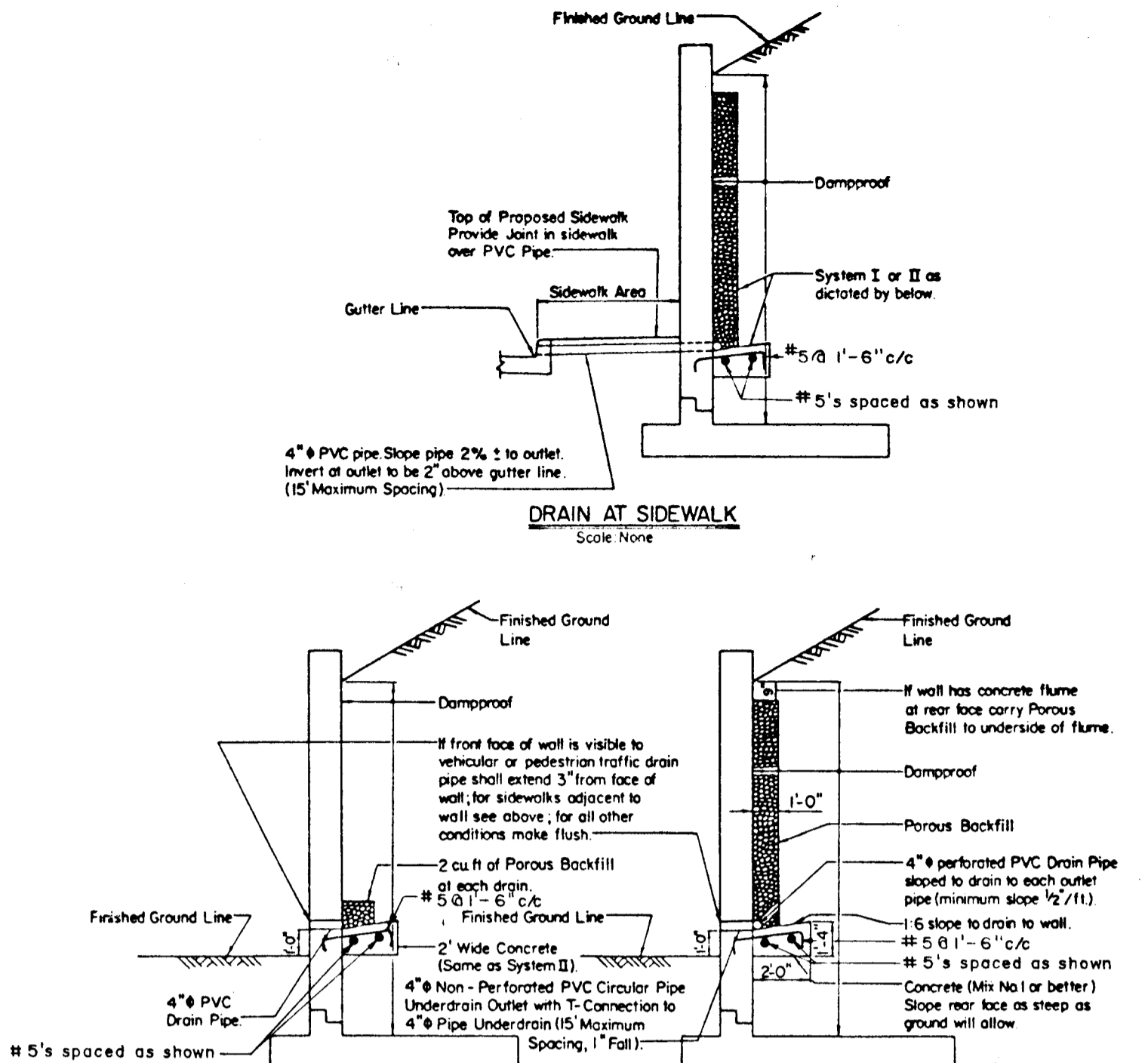
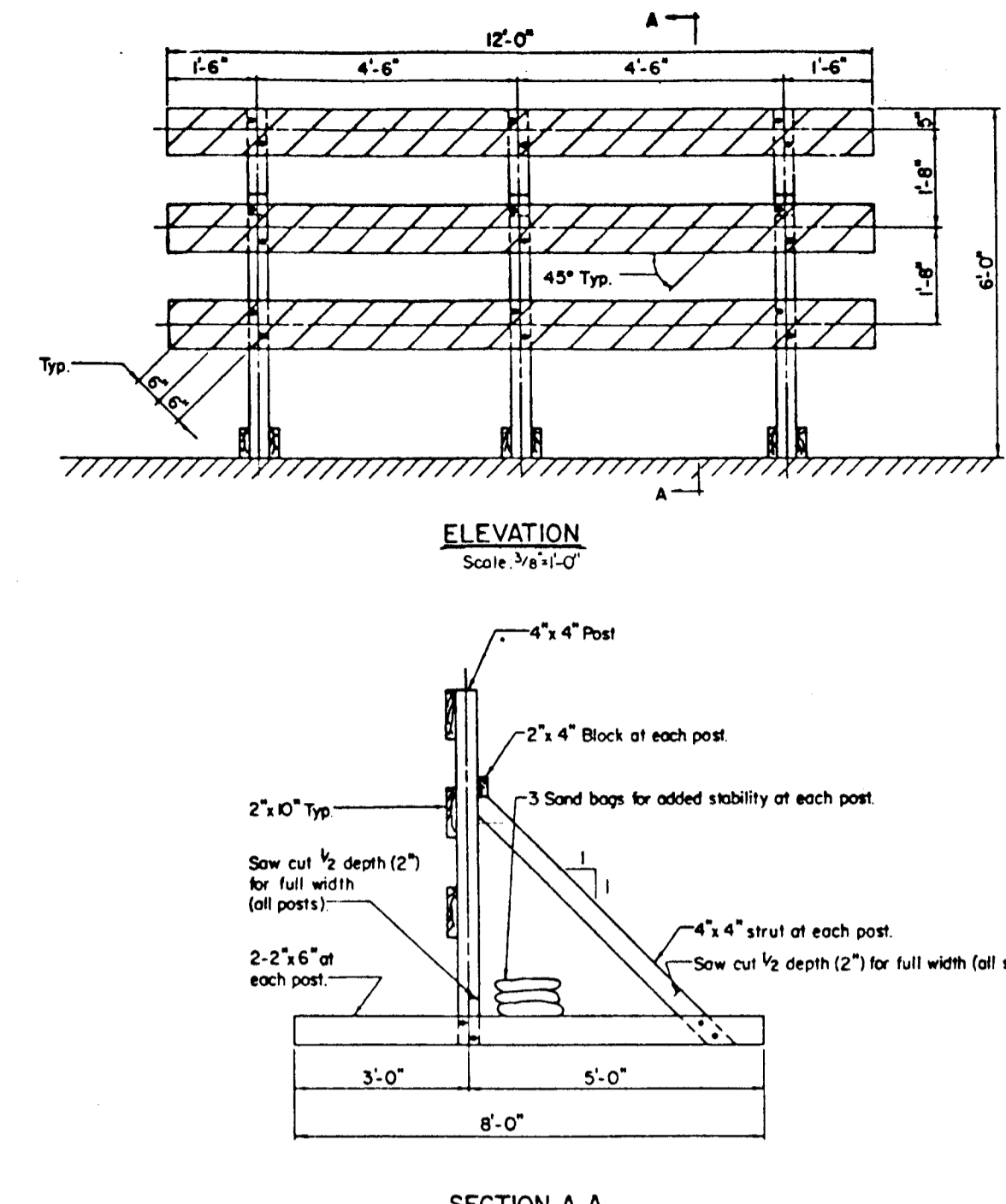
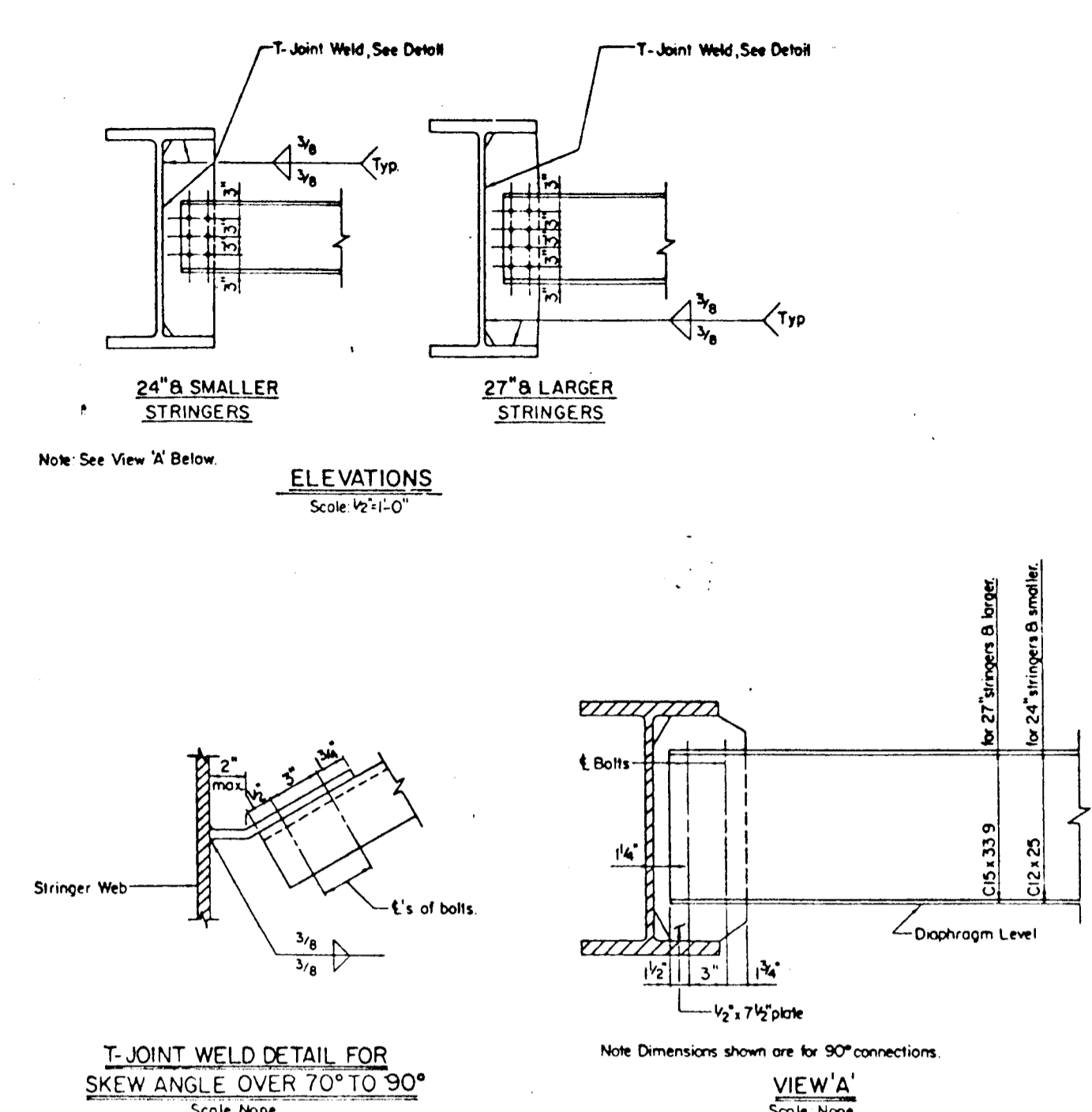
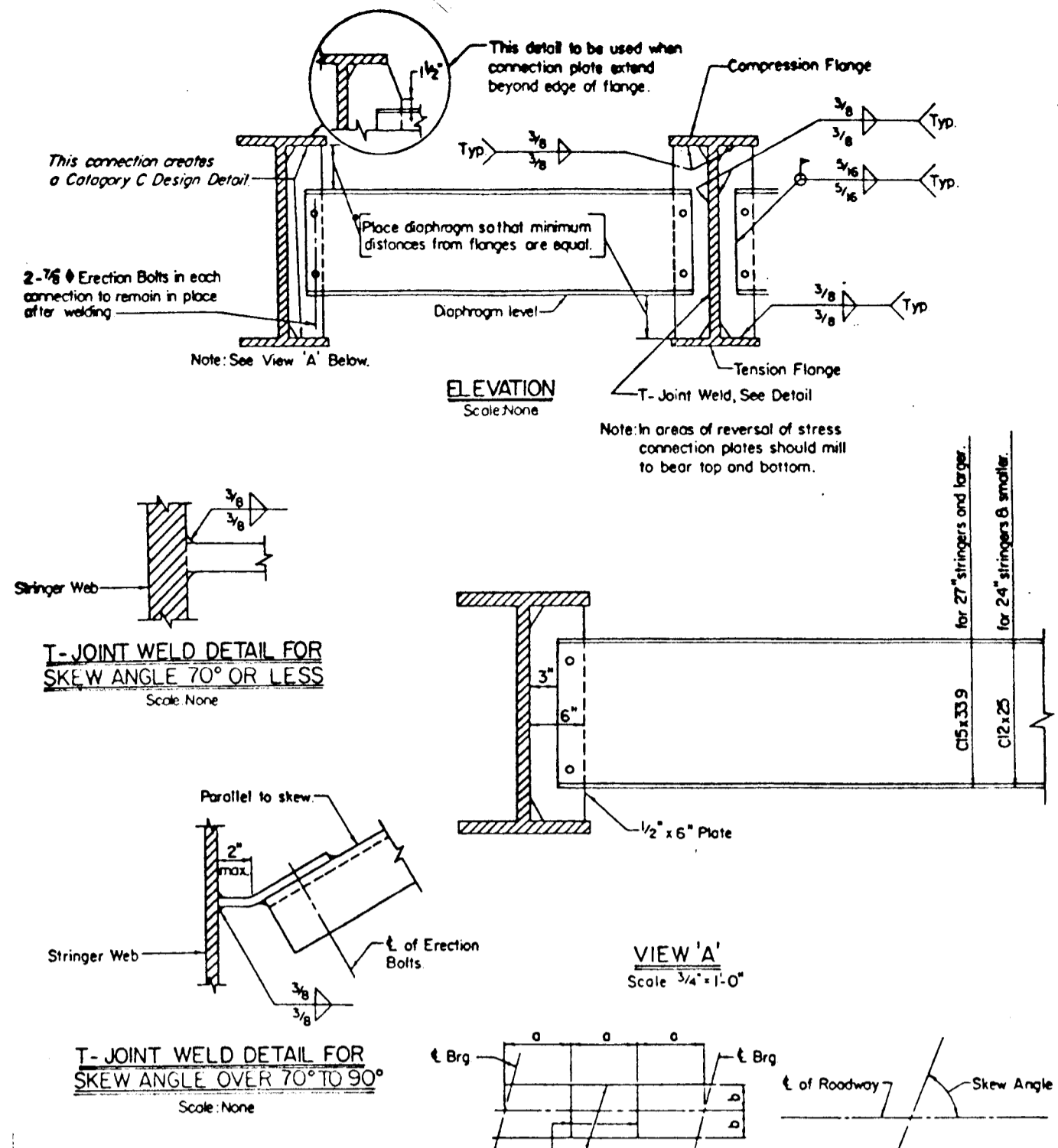
600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

**VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND**

SCALE AS SHOWN

SHEET 2 OF 40





**Notes:**

1. Skew indicating note "For Office Use Only".
2. Where the angle between the center line of roadway and center line of bearing is 70° or less, diaphragms of 50' to the stringers. Diaphragms shall be spaced as shown in detail.
3. Where information angle is greater than 70° the diaphragms shall be parallel to the center line of bearing of the stringers.
4. Space intermediate diaphragms at 20' to 25' ±, i.e. for spans (non-curved bridges only).
5. Up to 25% bearings - No intermediate diaphragm.
6. From 25 to 50% bearings - One intermediate diaphragm.
7. From 50 to 75% bearings - Two intermediate diaphragms, etc.
8. (See Framing Plan).
9. All diaphragms are to be completely connected to stringers before deck slab is poured.

|              |          |          |         |    |
|--------------|----------|----------|---------|----|
| APPROVAL     | DATE     | BY       | DATE    | BY |
| SHA          | 12-1-87  | F.H.W.A. | 12-1-87 |    |
| SHA          | 10-20-87 | F.H.W.A. | 12-1-87 |    |
| SHA          | 3-2-88   | F.H.W.A. | 12-1-87 |    |
| SHA APPROVAL | DATE     | BY       | DATE    | BY |
| SHA          | 11-9-76  |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
ROLLED STEEL BEAMS  
INTERMEDIATE DIAPHRAGM DETAILS  
WELDED CONNECTION

STANDARD NO. BR-SS(8.03)-75-II SHEET 1 OF 2

|              |          |          |         |    |
|--------------|----------|----------|---------|----|
| APPROVAL     | DATE     | BY       | DATE    | BY |
| SHA          | 12-21-87 | F.H.W.A. | 12-1-87 |    |
| SHA          | 10-20-87 | F.H.W.A. | 12-1-87 |    |
| SHA          | 3-2-88   | F.H.W.A. | 12-1-87 |    |
| SHA APPROVAL | DATE     | BY       | DATE    | BY |
| SHA          | 10-17-78 |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
ROLLED STEEL BEAMS  
INTERMEDIATE DIAPHRAGM DETAILS  
BOLTED CONNECTION

STANDARD NO. BR-SS(8.03)-75-II SHEET 2 OF 2

**Notes:**

1. Stripping shall be reflectorized alternate orange and white colors. Right (R) barricade shown Left (L) barricade shall have stripes sloping in opposite direction.
2. All elements shall be securely fastened with 1/2" common nuts and be painted white.
3. The barricade is acceptable as Type III Barricade (MUTCD).
4. Barricade shall be lighted, if required by location - see latest MUTCD.

|              |         |          |         |    |
|--------------|---------|----------|---------|----|
| APPROVAL     | DATE    | BY       | DATE    | BY |
| SHA          | 1-16-80 | F.H.W.A. | 1-16-80 |    |
| SHA          | 1-16-80 | F.H.W.A. | 1-16-80 |    |
| SHA          | 1-16-80 | F.H.W.A. | 1-16-80 |    |
| SHA APPROVAL | DATE    | BY       | DATE    | BY |
| SHA          | 1-16-80 |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
TEMPORARY MOVABLE BARRICADE

STANDARD NO. M(5.08)-79-82 SHEET 1 OF 1

**Notes:**

1. Exact elevation of drain to be determined by Engineer in the field.
2. Porous Backfill shall be stone conforming to AASHTO M 43, Size No. 57.

|              |         |          |         |    |
|--------------|---------|----------|---------|----|
| APPROVAL     | DATE    | BY       | DATE    | BY |
| SHA          | 1-12-88 | F.H.W.A. | 1-12-88 |    |
| SHA          | 1-12-88 | F.H.W.A. | 1-12-88 |    |
| SHA          | 1-12-88 | F.H.W.A. | 1-12-88 |    |
| SHA APPROVAL | DATE    | BY       | DATE    | BY |
| SHA          | 8-20-80 |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
RETAINING WALL, WING WALL,  
AND CANTILEVER ABUTMENT  
DRAINAGE SYSTEMS

STANDARD NO. RW(O.01)-80-100 SHEET 1 OF 1

**GENERAL NOTES**

**MATERIALS**

**Concrete:** All concrete shall meet the requirements of M&I No. 614500.4.1.

**Reinforcing Steel:** All wire fabric shall be 4" x 4" - W4 x W4.

**Structural Steel:** All structural steel shall meet the requirements of ASTM A-36 or better.

**Anchor Bolts:** All anchor bolts shall be as indicated on details. If not specified this shall be A.S.T.M. - A 325.

**Coating:** Face adjacent to roadway and top of concrete barrier to be coated with two coats of white epoxy paint. Cost of coatings to be included in bid price for the barrier, or item which includes barrier.

**METHODS OF ANCHORAGE CONNECTION TO CONCRETE DECKS**

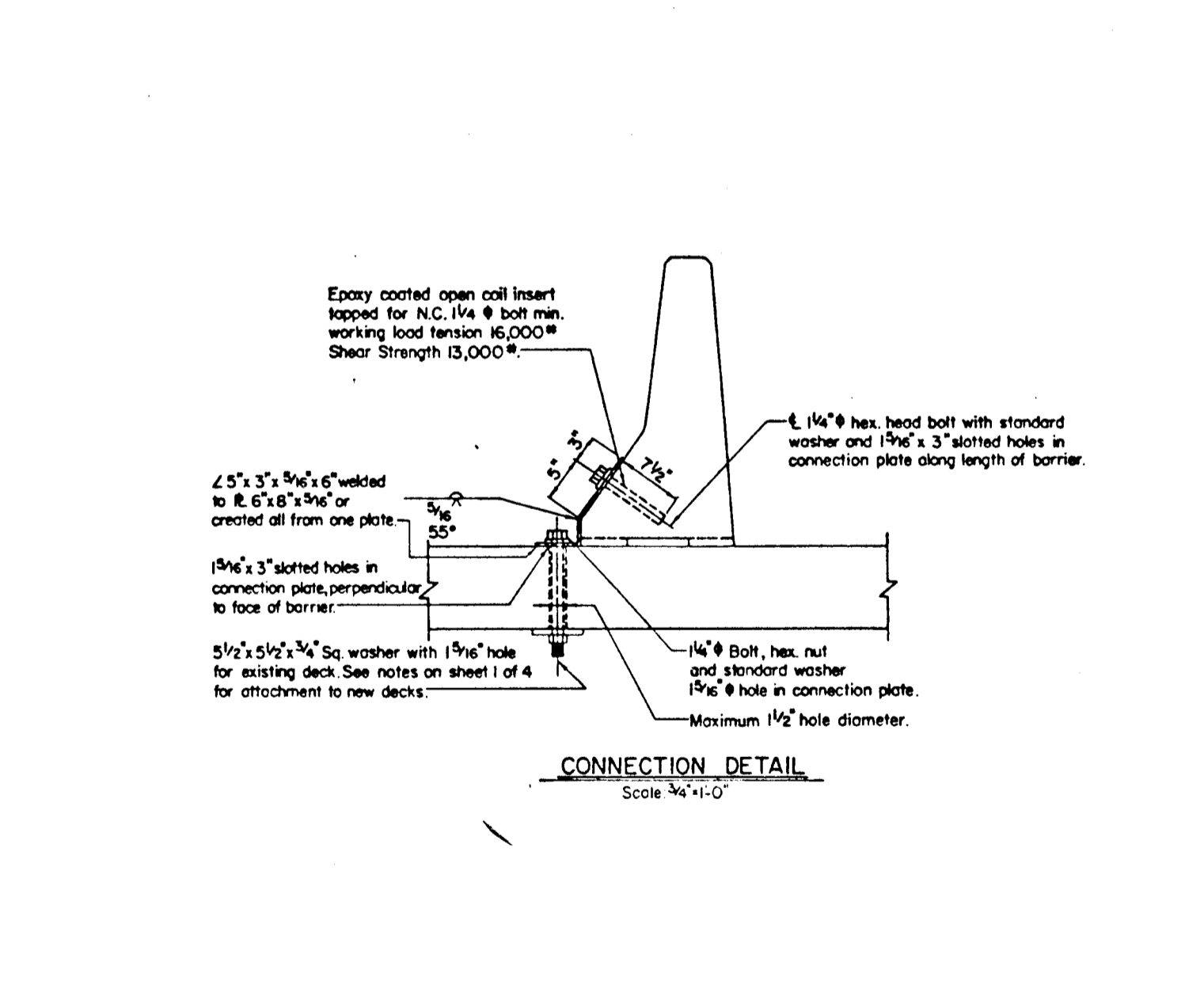
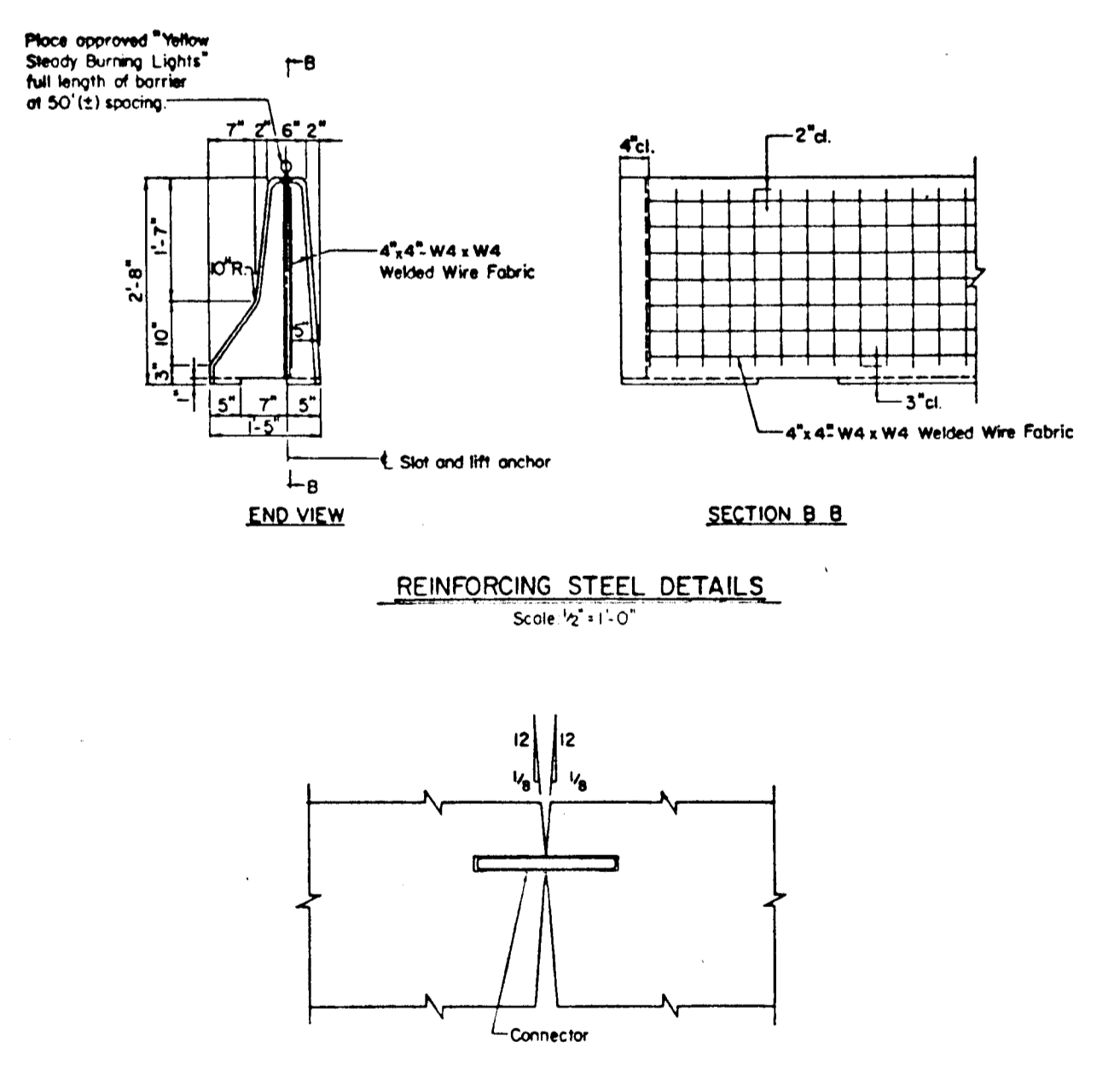
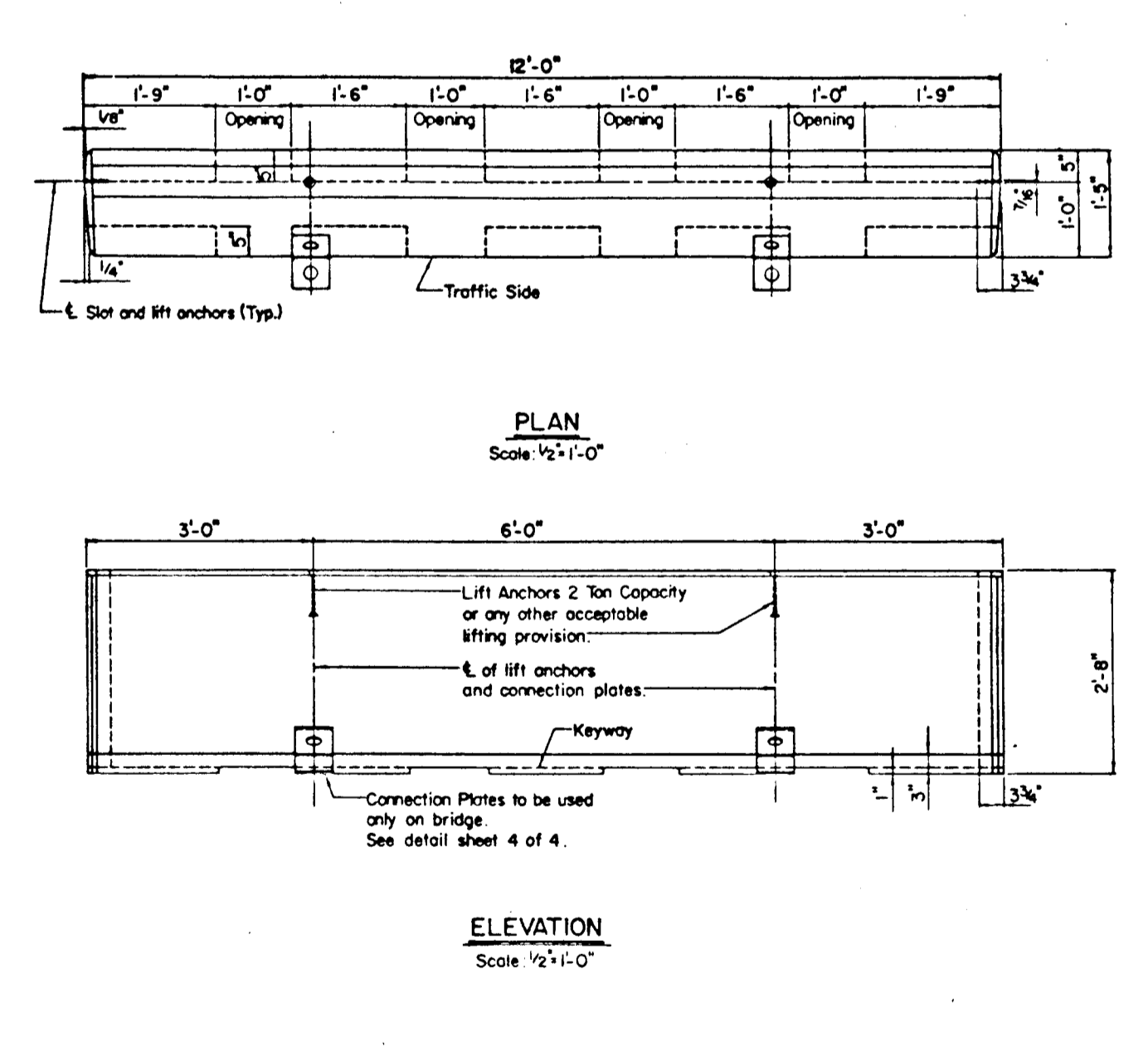
**EXISTING BRIDGE DECK TO BE REMOVED.**  
Holes for anchor bolts in existing bridge deck shall be drilled. Use 1/4" bolts with 5/16" x 5/16" x 3/4" square washers under existing deck slab as shown. Bolts shall be of sufficient length that when nut is tight, all the threads of the nut are engaged. Provide Type 'A' plain washer. SAE N (narrow) for each 1/4" bolt at connection plate.

**EXISTING BRIDGE DECK TO REMAIN.**  
Holes for anchor bolts in existing bridge deck shall be bored. Use 1/4" bolts with 5/16" x 5/16" x 3/4" square washers under existing deck slab as shown. Bolts shall be of sufficient length that when nut is tight, all the threads of the nut are engaged. Provide Type 'A' plain washer. SAE N (narrow) for each 1/4" bolt at connection plate. The Contractor is alerted that it is the intent, that as little damage as possible will be done to the reinforcing steel in the bridge deck. Therefore, the Contractor shall locate the reinforcing steel and space the bolts to miss the reinforcing steel, all as directed by the Engineer. Fill all bored holes with epoxy grout after barrier is removed. (See below for grout composition).

**NEW BRIDGE DECK.**  
1/4" bolt to be placed in an epoxy coated open coil anchor insert (cast in slab) whose minimum working load tension strength is 16,000# and shear strength is 13,000# with a minimum length of 7 1/2". Coil to be lapped for a 1/4" N.C. threaded bolt. No insert shall be longer than slab depth, minus 1". Provide Type 'A' plain washer. SAE N (narrow) for each 1/4" bolt at connection plate. Fill all inserts with epoxy grout after barrier is removed. (See below for grout composition).

**GROUT COMPOSITION**

Any areas of bridge decks, to remain in place, damaged as a result of anchoring temporary concrete barriers (anchor holes, etc.) shall be repaired to the satisfaction of the Engineer using an epoxy grout. Epoxy grout shall consist of sand and epoxy, mixed by volume according to manufacturer's recommendations. The epoxy grout shall be capable of developing a minimum compressive strength of 6,500 p.s.i. in 72 hours when tested in accordance with MSMT S01 Sand for epoxy grout shall conform to the Specifications Subsection 903.11.



|              |         |          |         |    |
|--------------|---------|----------|---------|----|
| APPROVAL     | DATE    | BY       | DATE    | BY |
| SHA          | 8-22-83 | F.H.W.A. | 12-4-84 |    |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA APPROVAL | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
TEMPORARY PRECAST SINGLE  
FACE "JERSEY TYPE" CONCRETE BARRIER

STANDARD NO. M(5.09)-83-143 SHEET 1 OF 4

|              |         |          |         |    |
|--------------|---------|----------|---------|----|
| APPROVAL     | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA APPROVAL | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
TEMPORARY PRECAST SINGLE  
FACE "JERSEY TYPE" CONCRETE BARRIER

STANDARD NO. M(5.09)-83-143 SHEET 2 OF 4

|              |         |          |         |    |
|--------------|---------|----------|---------|----|
| APPROVAL     | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA APPROVAL | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 |          |         |    |

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
TEMPORARY PRECAST SINGLE  
FACE "JERSEY TYPE" CONCRETE BARRIER

STANDARD NO. M(5.09)-83-143 SHEET 3 OF 4

|              |         |          |         |    |
|--------------|---------|----------|---------|----|
| APPROVAL     | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA          | 12-4-84 | F.H.W.A. | 12-4-84 |    |
| SHA APPROVAL | DATE    | BY       | DATE    | BY |
| SHA          | 12-4-84 |          |         |    |

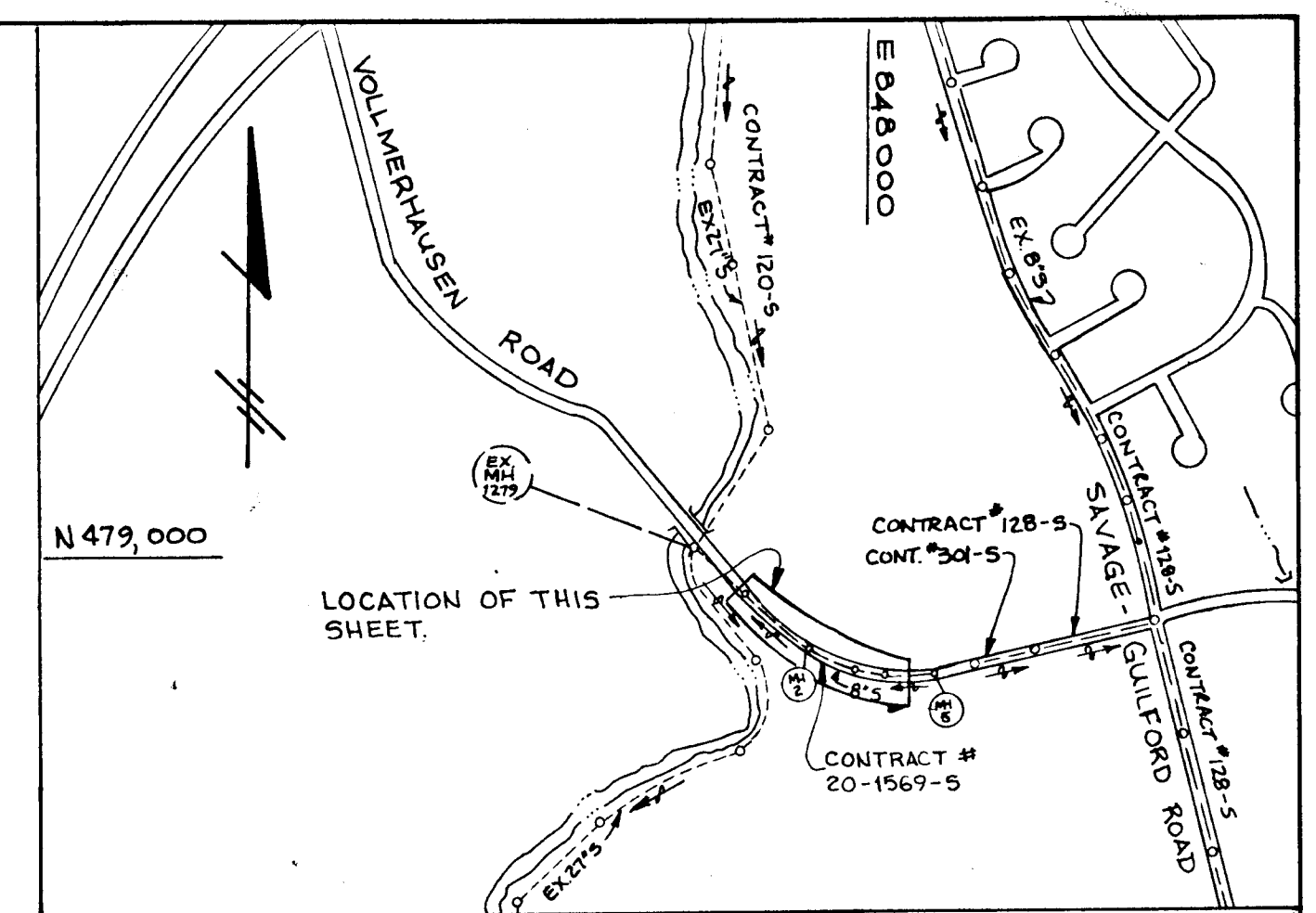
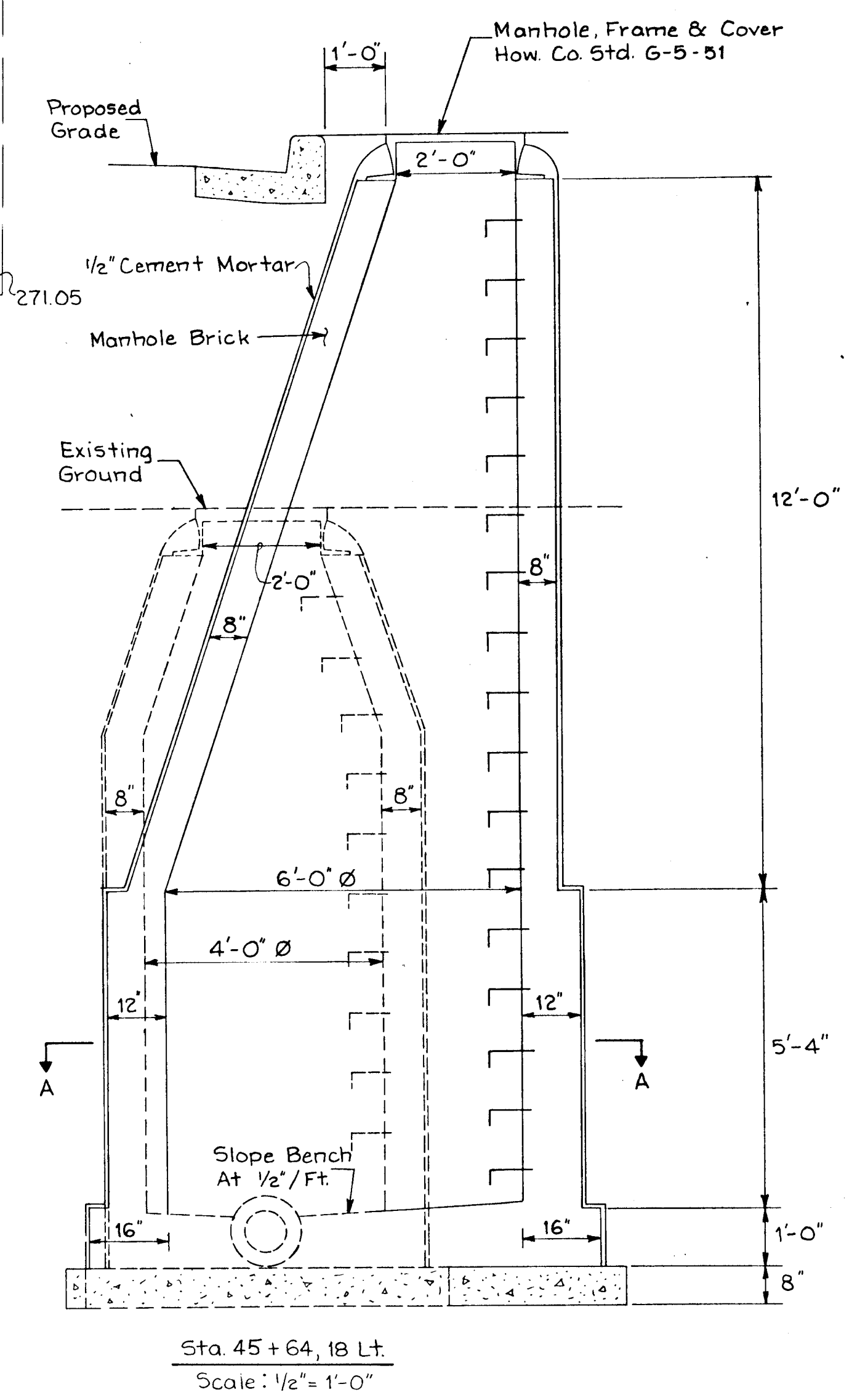
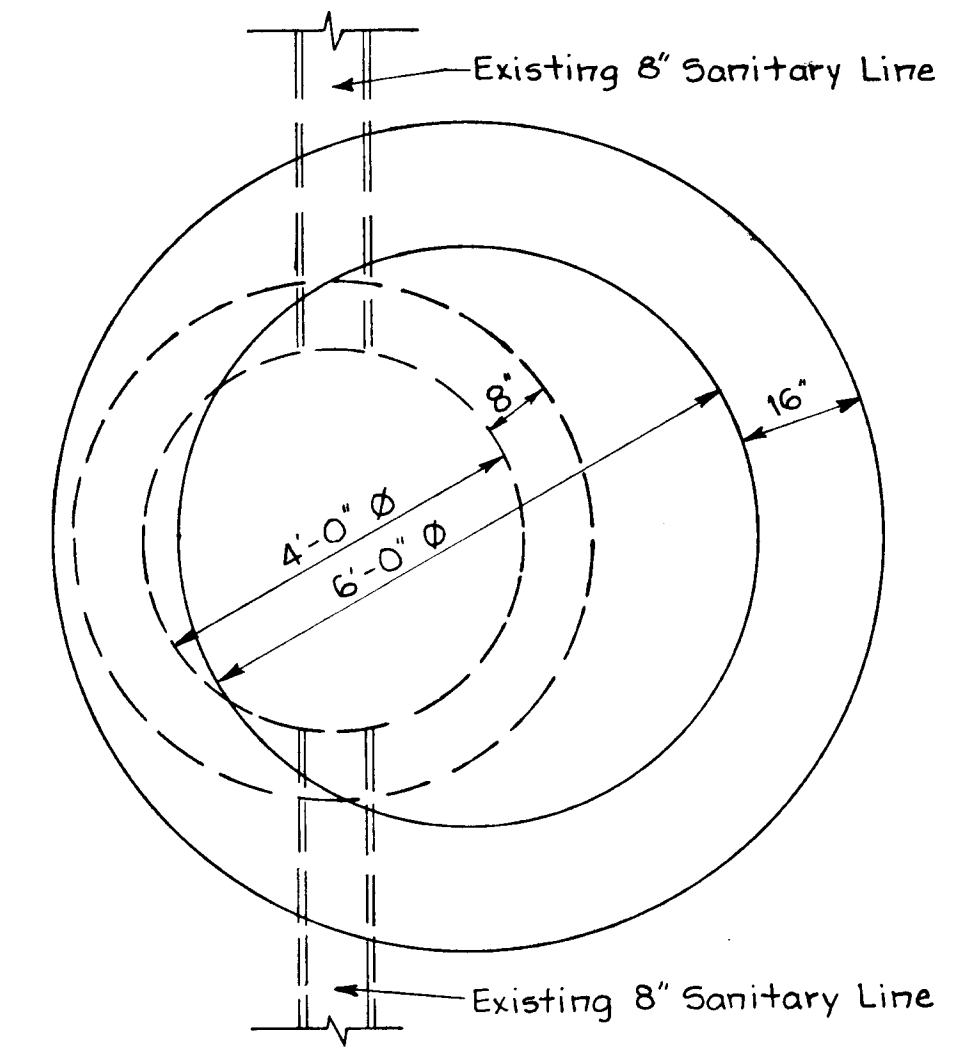
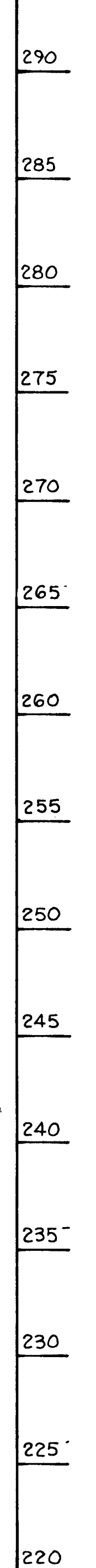
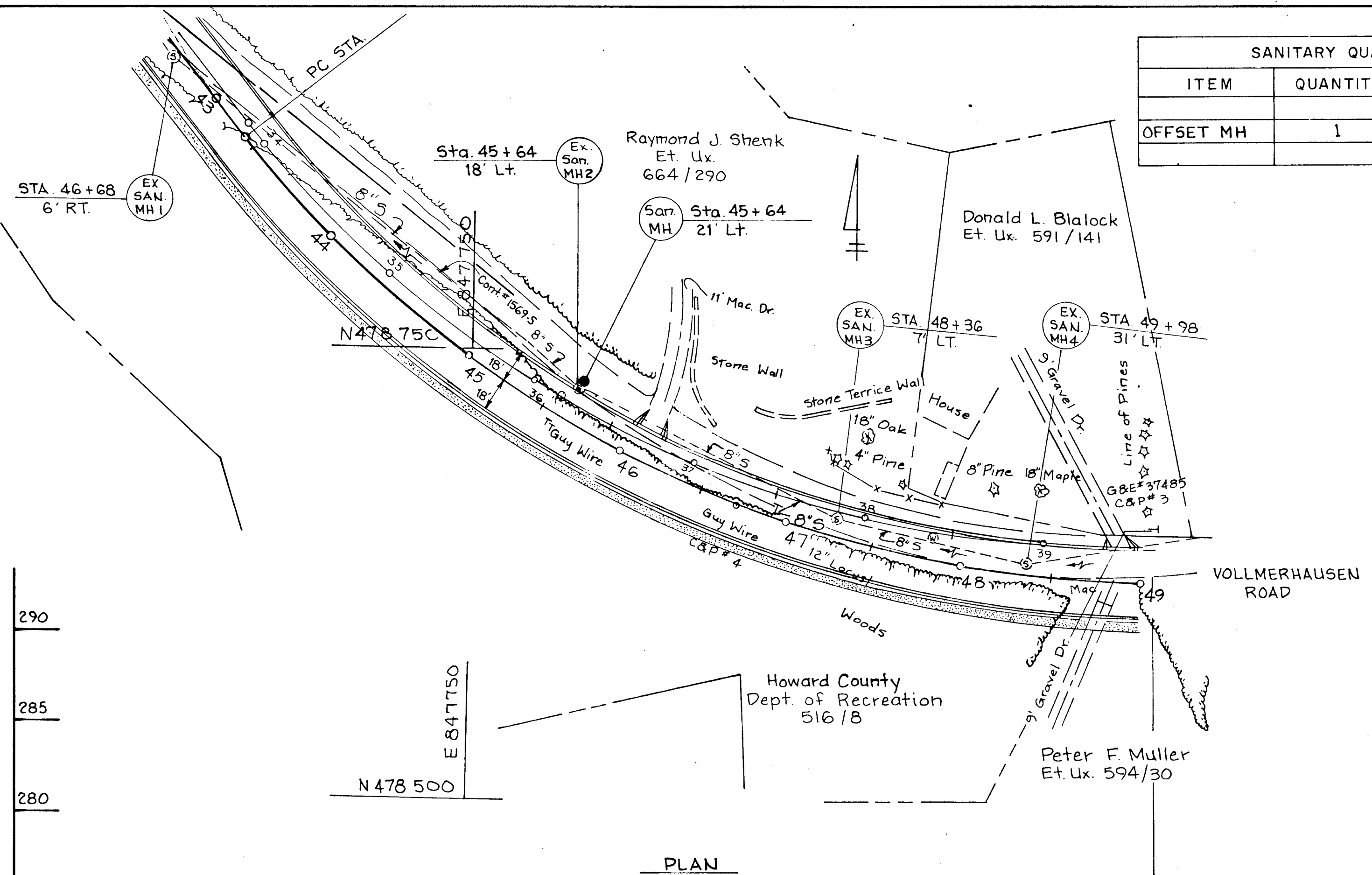
STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
DIVISION OF BRIDGE DEVELOPMENT  
TEMPORARY PRECAST SINGLE  
FACE "JERSEY TYPE" CONCRETE BARRIER

STANDARD NO. M(5.09)-83-143 SHEET 4 OF 4

1609

|   |   |  |             |         |           |       |  |   |
|---|---|--|-------------|---------|-----------|-------|--|---|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>DIRECTOR OF PUBLIC WORKS<br>DATE: 11/19/91<br>CHIEF, BRIDGES AND STORM DRAINAGE DIVISION | BUCHART-HORN INC.<br>CONSULTING ENGINEERS<br>THE QUADRANGLE<br>244 WEST BLOCK<br>VILLAGE OF CROSS KEYS<br>BALTIMORE, MARYLAND 21210 |  | DES: SHA    |         |           |       | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND | SCALE<br>AS<br>SHOWN<br><br>SHEET<br>22 OF 42 |
|   |   |  | DRN: SHA    |         |           |       |  |   |
|   |   |  | CHK: KS     |         |           |       |  |   |
|   |   |  | DATE: 12/90 | BY: NO. | REVISION: | DATE: | 600 SCALE MAP NO. _____ BLOCK NO. _____  |   |

| SANITARY QUANTITIES |          |      |
|---------------------|----------|------|
| ITEM                | QUANTITY | UNIT |
| OFFSET MH           | 1        | EA.  |



VICINITY MAP  
SCALE: 1" = 600'

1606

CONTRACT NO. 1569-S

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Ramon J. ...* 1-10-91  
DIRECTOR OF PUBLIC WORKS DATE

*R. ...* 1-14-91  
CHIEF, UTILITY DESIGN DIVISION DATE

*R. ...* 1-10-91  
CHIEF, BUREAU OF ENGINEERING DATE

*R. ...* 1-14-91  
CHIEF, BUREAU OF UTILITIES DATE

BUCHART-HORN INC.  
CONSULTING ENGINEERS  
BALTIMORE, MARYLAND 21210



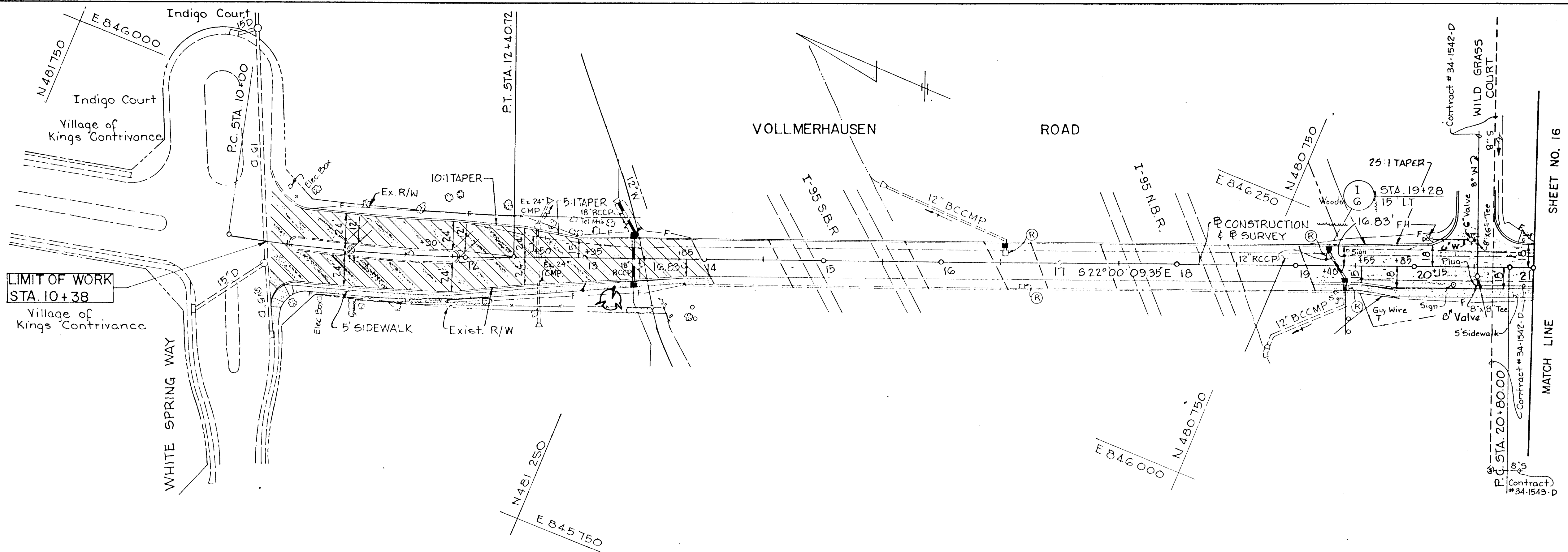
|             |    |     |          |
|-------------|----|-----|----------|
| DES: J.D.M. |    |     |          |
| DRN: A.G.S. |    |     |          |
| CHK: J.D.M. |    |     |          |
| DATE: 12/90 | BY | NO. | REVISION |

SANITARY SEWER DETAILS  
OFFSET MANHOLE

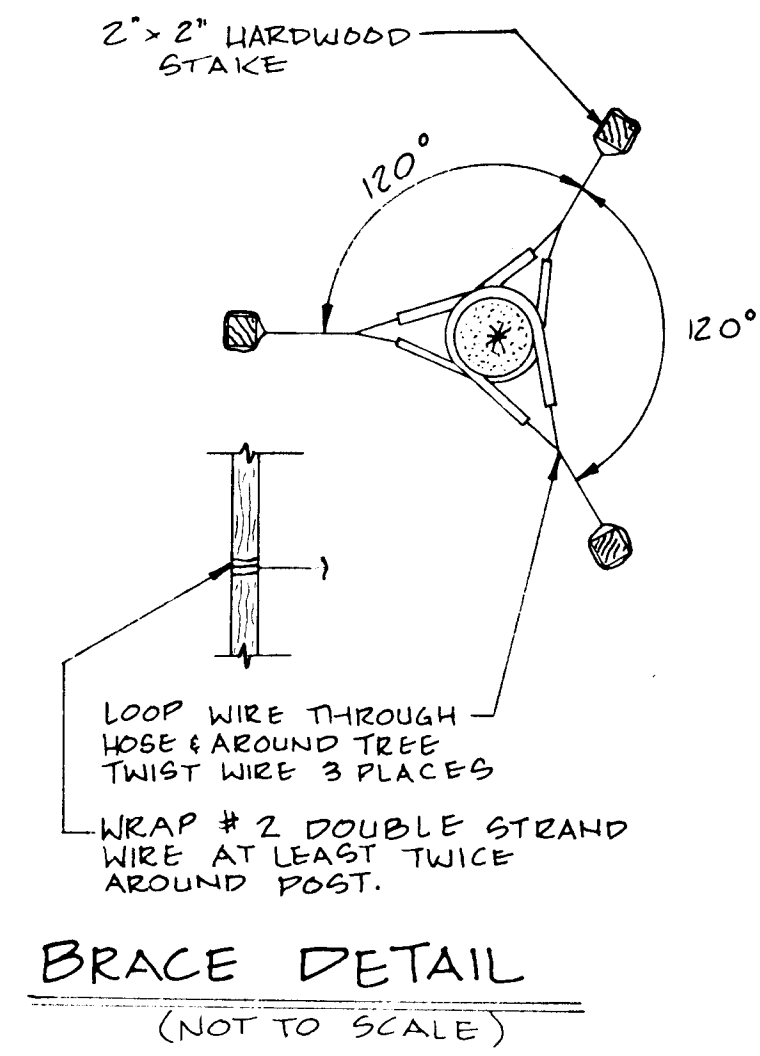
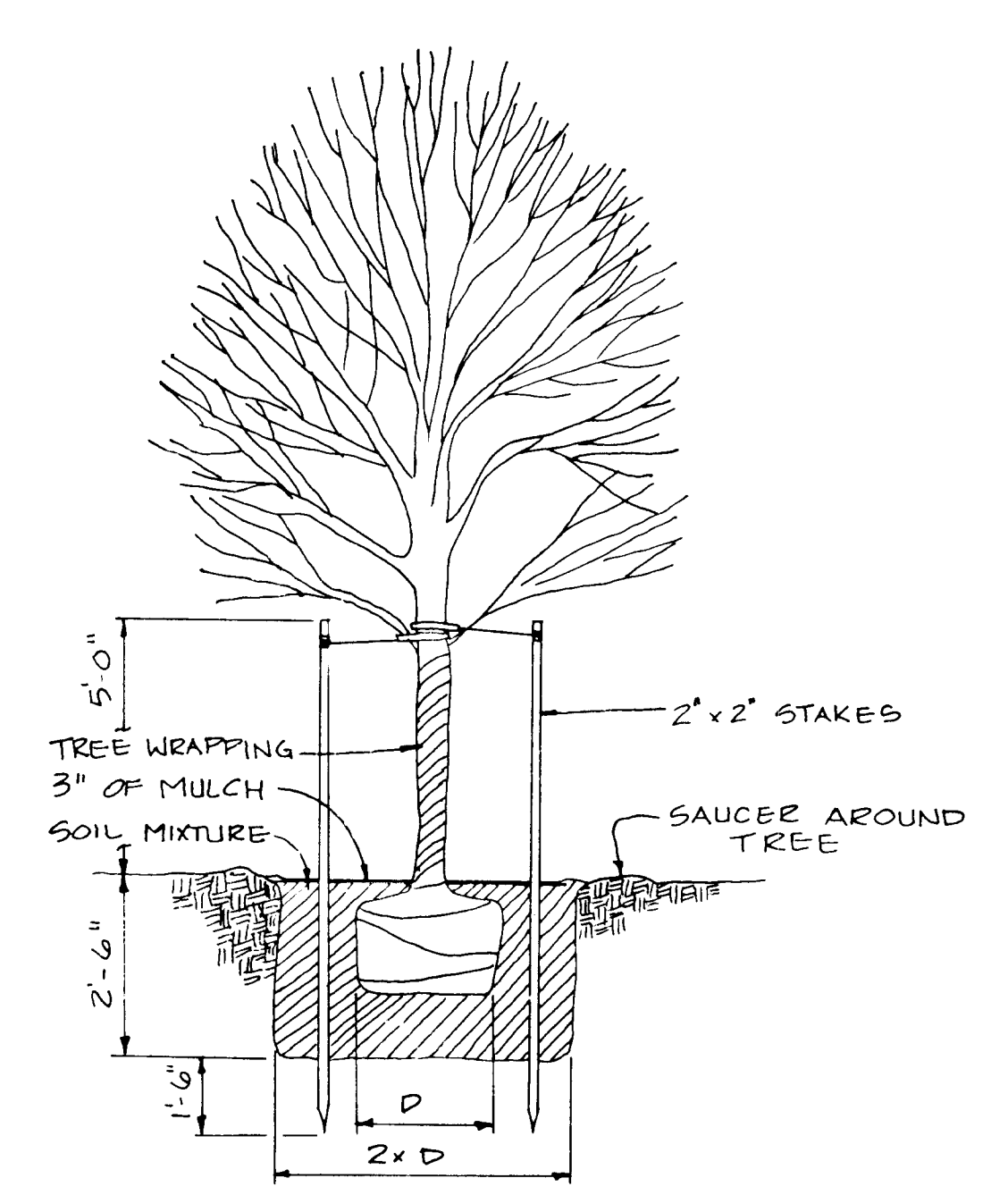
600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
CAPITAL PROJECT J-4046  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 40 OF 40



| PLANT LIST |        |                               |                                    |               |
|------------|--------|-------------------------------|------------------------------------|---------------|
| QTY        | SYMBOL | NAME                          | SIZE                               | REMARKS       |
| 12         |        | ACER RUBRUM<br>RED MAPLE      | 2 1/2" - 3" CAL.<br>13' - 15' HGT. | B+B FULL HEAD |
| 14         |        | QUERCUS PALLISTRIS<br>PIN OAK | 2 1/2" - 3" CAL.                   | B+B FULL HEAD |
|            |        |                               |                                    |               |

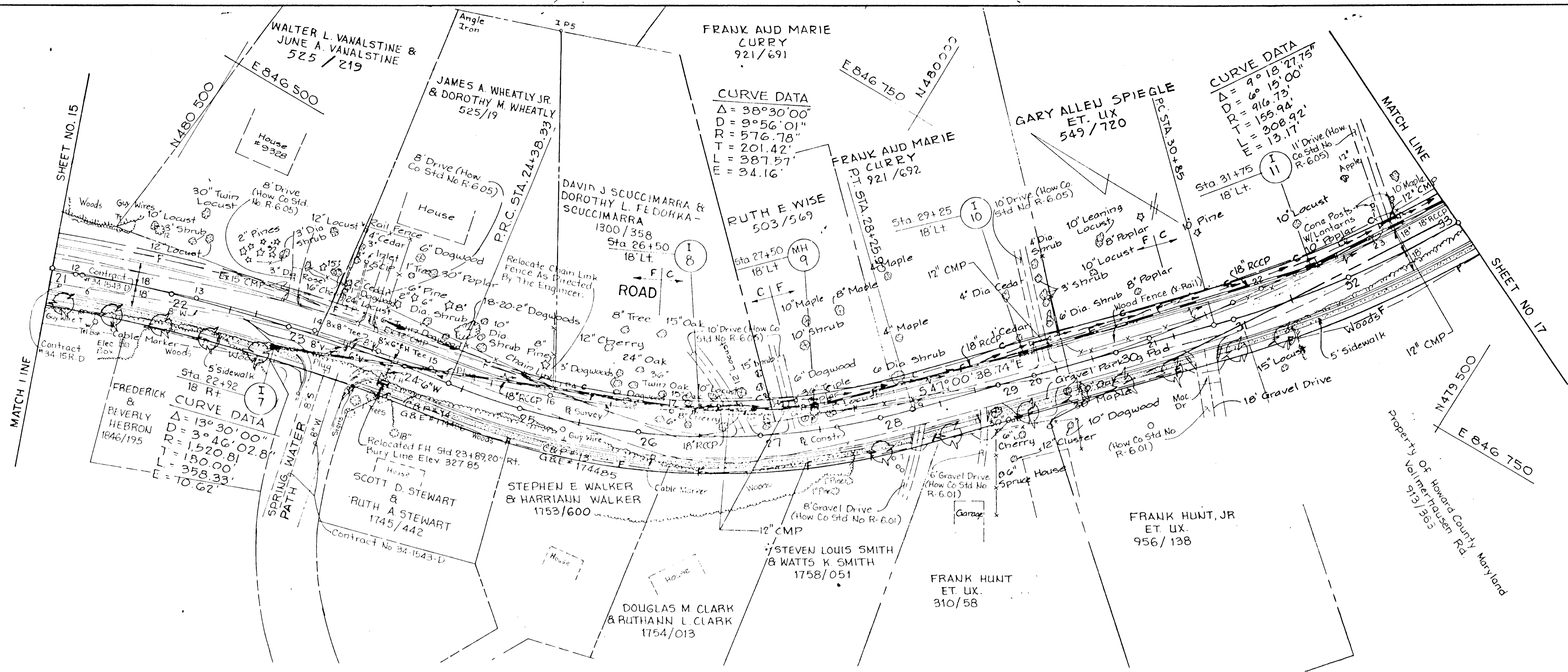


- LANDSCAPING NOTES:**
- NOTE: SHEET NOS L1 THROUGH L4 ARE INTENDED TO CONVEY INFORMATION PERTINENT TO PLACEMENT OF STREET TREES AND LANDSCAPING DETAILS ONLY. SEE OTHER ROAD CONSTRUCTION PLANS FOR ALL OTHER INFORMATION RELATED TO CONSTRUCTION OF VOLLMERHAUSEN RD.
1. CONTRACTOR SHALL FIELD VERIFY EXISTING UNDERGROUND UTILITIES BEFORE DIGGING.
  2. TREES SHALL BE PLANTED 7' BEHIND THE FACE OF CURB. HOWEVER ACTUAL LOCATIONS OF TREES MAY VARY TO ACCOMMODATE FIELD CONDITIONS.
  3. SEE SPECIFICATIONS FOR GENERAL PLANTING REQUIREMENTS.

1606

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| <p>DEPARTMENT OF PUBLIC WORKS<br/>HOWARD COUNTY, MARYLAND</p> <p><i>James M. ...</i><br/>DIRECTOR OF PUBLIC WORKS</p> <p><i>Elizabeth Anderson-Lewis</i> 1/10/91<br/>CHIEF, ROADS, BRIDGES AND STORM DRAINAGE DIVISION</p> | <p>BUCHART-HORN INC.<br/>CONSULTING ENGINEERS<br/>BALTIMORE, MARYLAND 21210</p> <p><i>Elizabeth Anderson-Lewis</i></p> | <p>DES: GMI<br/>DRN: GMI<br/>CHK: JSN<br/>DATE: 12/19/91</p> | <p>LANDSCAPING PLAN<br/>STA. 10+00 TO STA. 21+00</p> | <p>VOLLMERHAUSEN RD IMPROVEMENTS<br/>WHITE SPRING WAY TO SAVAGE-GUILFORD ROAD<br/>CAPITAL PROJECT J-4046<br/>ELECTION DISTRICT NO. 6<br/>HOWARD COUNTY, MARYLAND</p> | <p>SCALE<br/>HORIZ 1"=50'<br/>VERT 1"=5'</p> <p>SHEET<br/>L1 OF L4</p> |
|--|--|--|--|--|--|

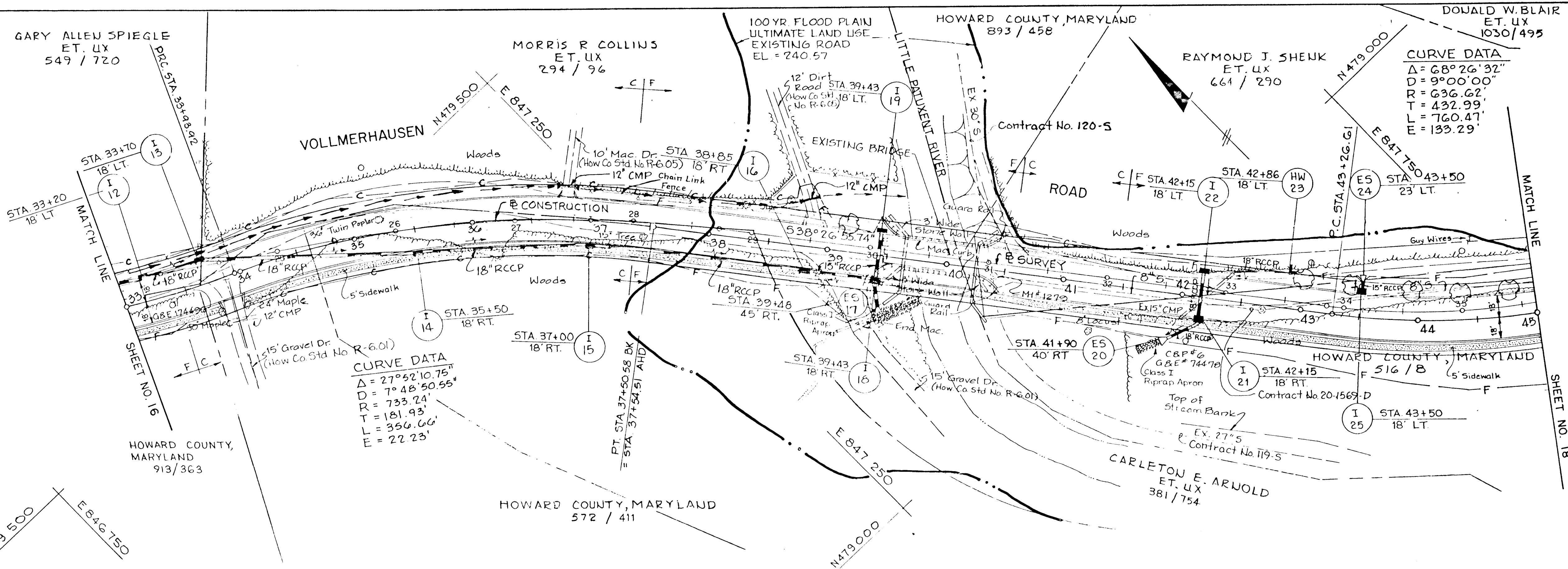
C194AZ41



NOTE: SEE SHEET L1 FOR LANDSCAPING GENERAL NOTES AND LANDSCAPING DETAILS.

1606

|   |  |  |  |   |  |  |  |
|---|--|--|--|---|--|--|--|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br><i>Susan B. Vinn</i><br>DIRECTOR OF PUBLIC WORKS<br>DATE: 11/09/91<br><i>Elizabeth Anderson</i><br>CHIEF, BUREAU OF HIGHWAYS<br>DATE: 11/09/91 |  | BUCHART-HORN INC<br>CONSULTING ENGINEERS<br>BALTIMORE, MARYLAND 21210<br><i>Elizabeth Anderson</i> |  | DES: SMI<br>DRN: SMI<br>CHK: JBN<br>DATE: 12/90 | LANDSCAPING PLAN<br>STA. 21 + 00 TO STA. 33 + 00<br>600' SCALE MAP NO. _____ BLOCK NO. _____ | VOLLMERHAUSEN RD. IMPROVEMENTS<br>WHITE SPRING WAY TO SAVAGE GUILFORD ROAD<br>CAPITAL PROJECT J-4046<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND | SCALE<br>HORIZ: 1"=50'<br>VERT: 1"=5'<br>SHEET<br>L2 OF L4 |
|---|--|--|--|---|--|--|--|



**CURVE DATA**  
 $\Delta = 27^{\circ}52'10.75''$   
 $D = 7^{\circ}48'50.55''$   
 $R = 733.24'$   
 $T = 181.93'$   
 $L = 356.66'$   
 $E = 22.23'$

**CURVE DATA**  
 $\Delta = 68^{\circ}26'32''$   
 $D = 9^{\circ}00'00''$   
 $R = 636.62'$   
 $T = 432.99'$   
 $L = 760.47'$   
 $E = 133.29'$

NOTE: SEE SHEET U FOR LANDSCAPING GENERAL NOTES AND LANDSCAPING DETAILS.

1606

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*James M. Anderson*  
 DIRECTOR OF PUBLIC WORKS

*Dr. William W. Anderson*  
 CHIEF, BUREAU OF ENGINEERING

DATE: 11/10/91

BUCHART-HORN INC.  
 CONSULTING ENGINEERS  
 BALTIMORE, MARYLAND 21210

|             |    |     |          |      |
|-------------|----|-----|----------|------|
| DES: GMI    |    |     |          |      |
| DRN: GMI    |    |     |          |      |
| CHK: JBN    |    |     |          |      |
| DATE: 12/90 | BY | NO. | REVISION | DATE |

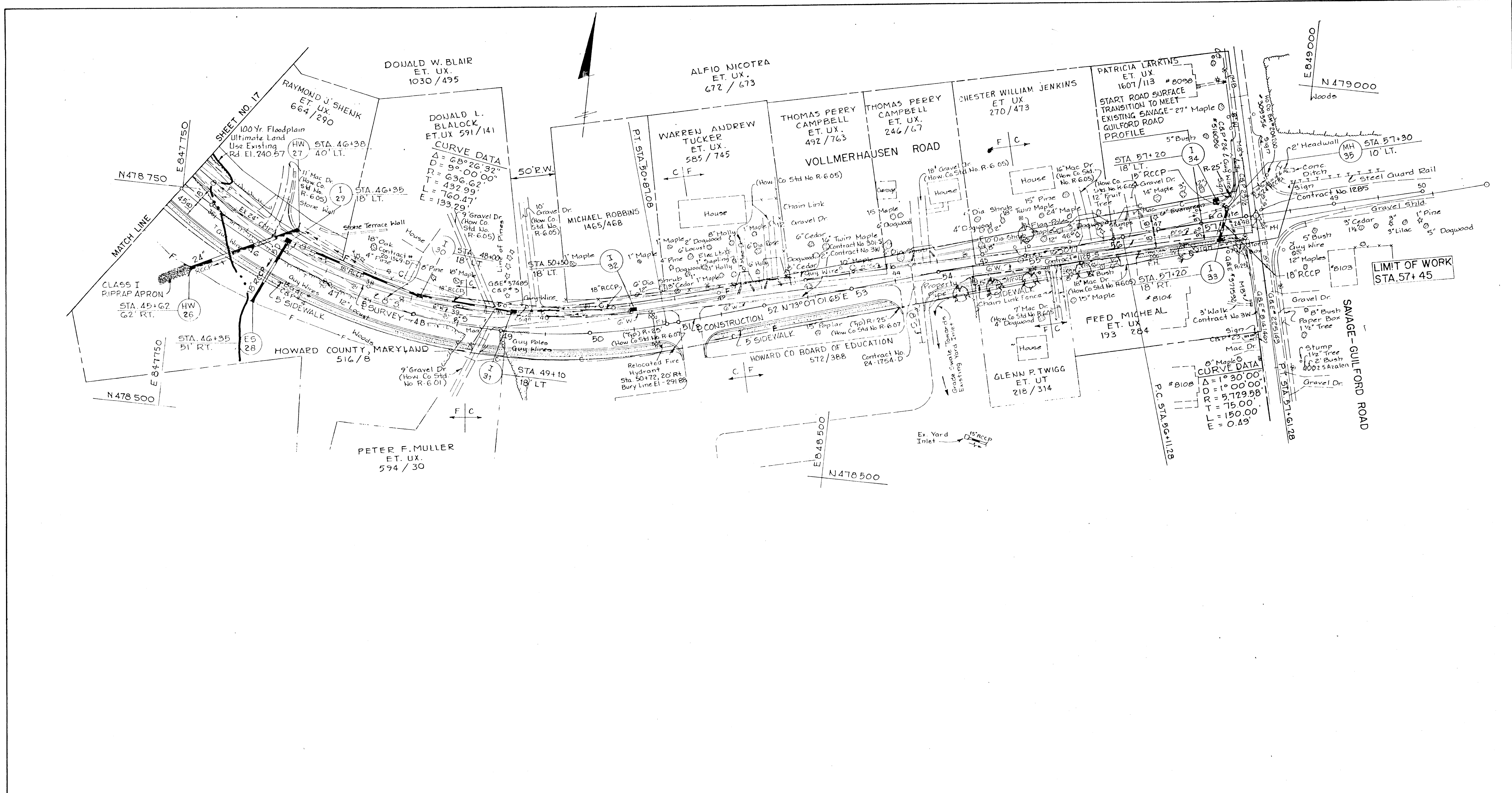
LANDSCAPING PLAN  
 STA 33+00 TO STA. 45+00

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

VOLLMERHAUSEN RD. IMPROVEMENTS  
 WHITE SPRING WAY TO SAVAGE GUILFORD ROAD  
 CAPITAL PROJECT U-4046  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE  
 HORIZ. 1"=50'  
 VERT. 1"=5'

SHEET  
 L3 OF L4

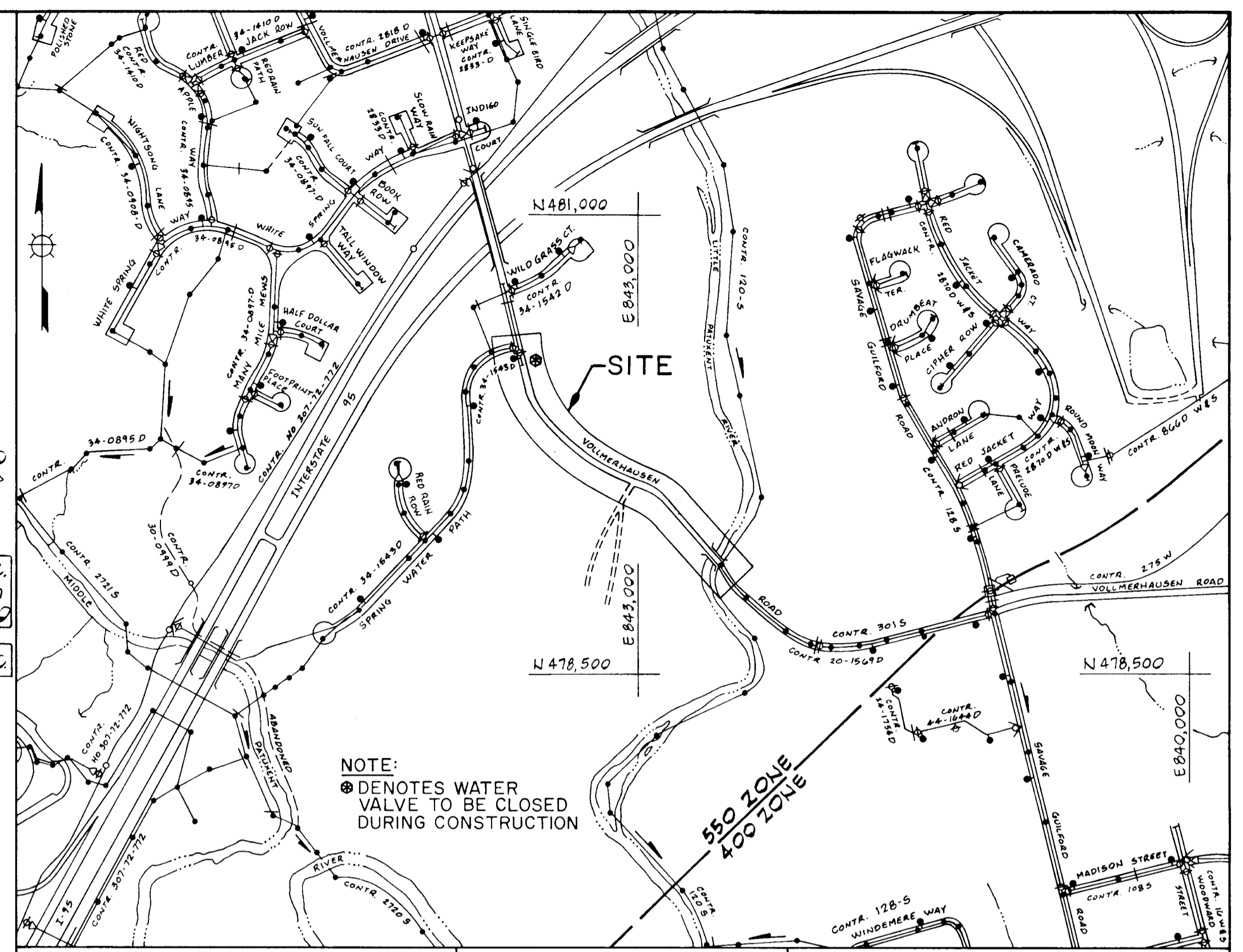
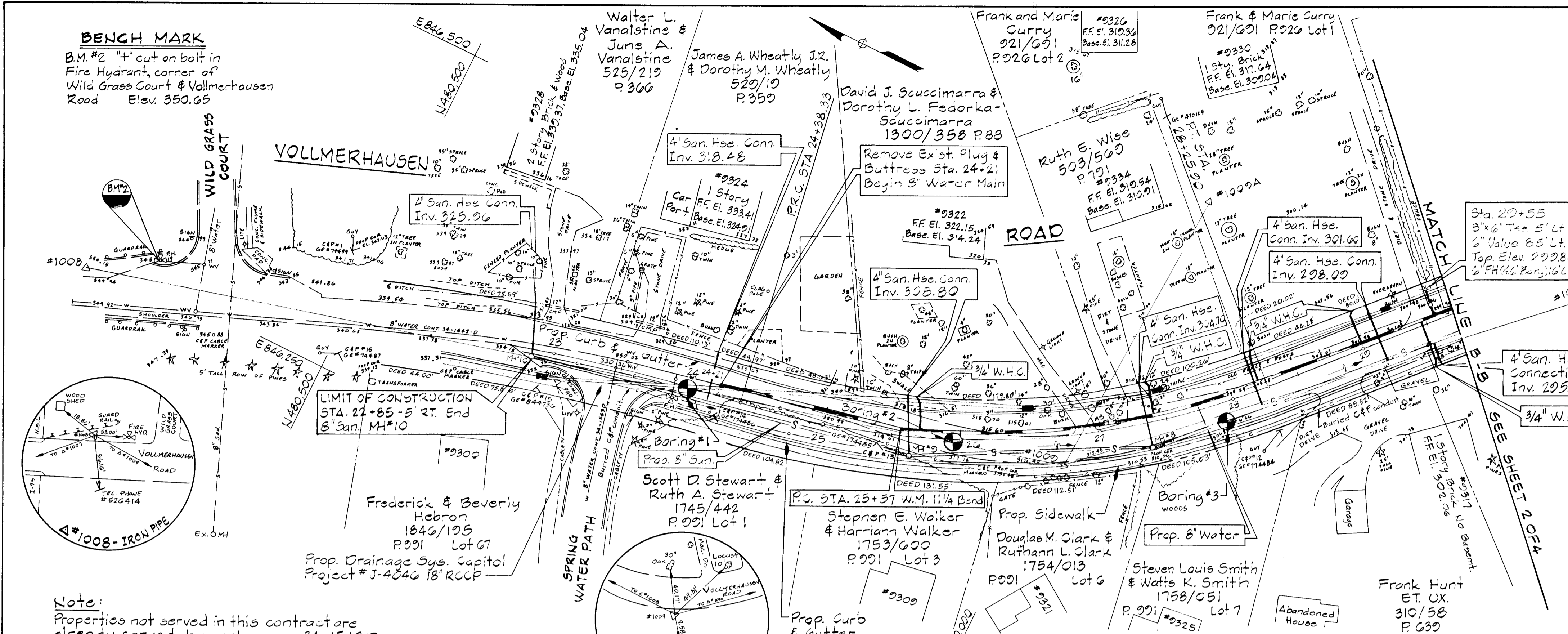


NOTE: SEE SHEET U FOR LANDSCAPING GENERAL NOTES AND LANDSCAPING DETAILS.

1606

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| <p>DEPARTMENT OF PUBLIC WORKS<br/>HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i><br/>DIRECTOR OF PUBLIC WORKS</p> <p><i>[Signature]</i><br/>CHIEF, BUREAU OF ENGINEERING</p> <p>DATE: 11/10/91</p> | <p>BUCHART-HORN INC.<br/>CONSULTING ENGINEERS<br/>BALTIMORE, MARYLAND 21210</p> <p><i>[Signature]</i></p> | <p>DES: BMI<br/>DRN: BMI<br/>CHK: JSW<br/>DATE: 12/90</p> | <p>LANDSCAPING PLAN<br/>STA. 45+00 TO STA. 57+61.28</p> | <p>VOLLMERHAUSEN RD. IMPROVEMENTS<br/>WHITE SPRING WAY TO SAVAGE GUILFORD ROAD<br/>CAPITAL PROJECT J-4046<br/>ELECTION DISTRICT NO. 6<br/>HOWARD COUNTY, MARYLAND</p> | <p>SCALE<br/>HORIZ: 1"=50'<br/>VERT: 1"=5'</p> <p>SHEET<br/>LA OF LA<br/>44</p> |
|---|---|---|---|---|---|

9



Note:  
Properties not served in this contract are already served by contract no 34-1542D or 34-1543D.

Note:  
All house connections are to be open cut.

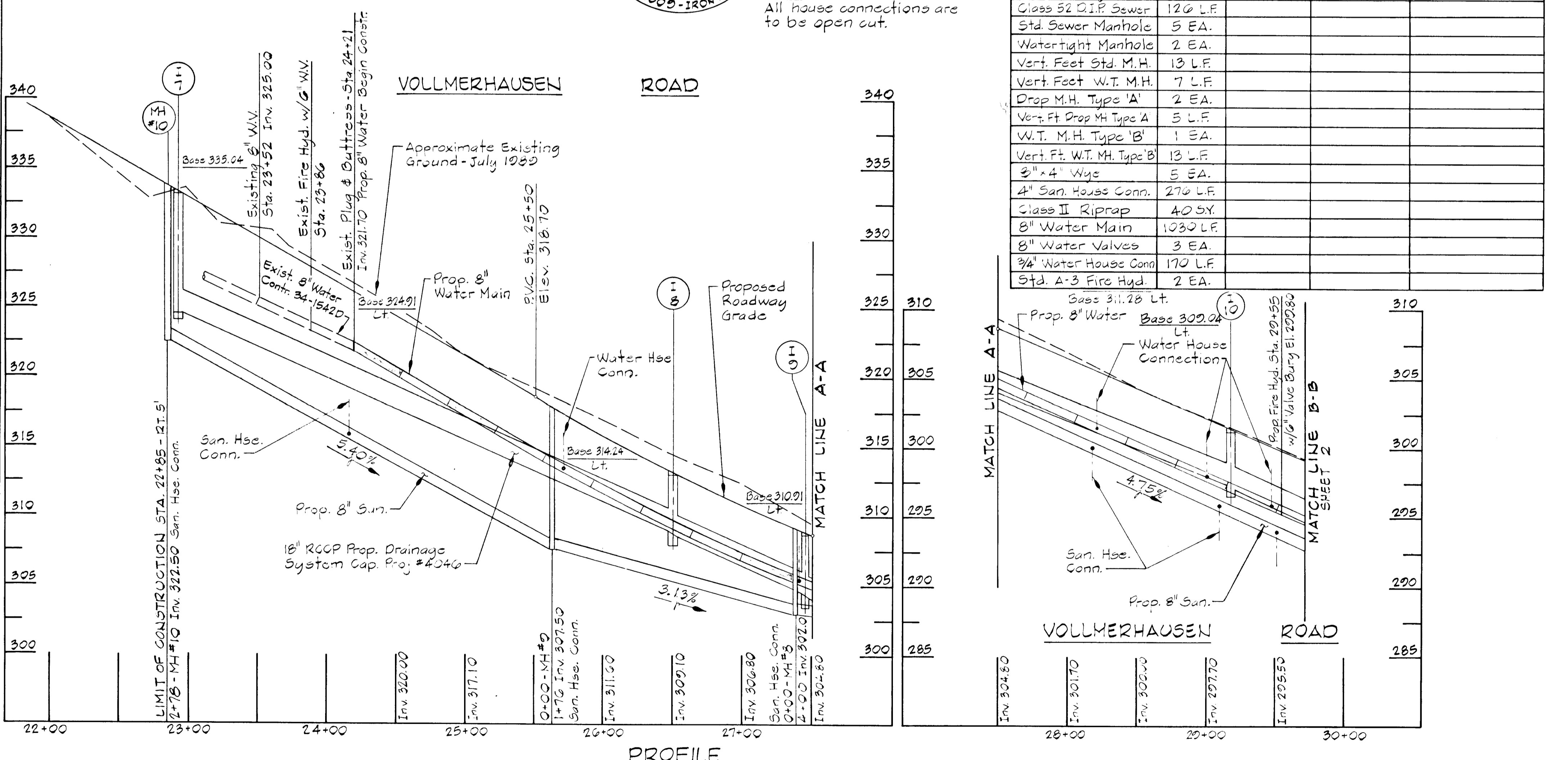
| QUANTITIES                 |           |          |          |          |
|----------------------------|-----------|----------|----------|----------|
| ITEM                       | ESTIM.    | AS BUILT | MATERIAL | SUPPLIER |
| 8" Sanitary Sewer          | 1037 L.F. |          |          |          |
| Class 52 D.I.P. Sewer      | 120 L.F.  |          |          |          |
| Std. Sewer Manhole         | 5 EA.     |          |          |          |
| Watertight Manhole         | 2 EA.     |          |          |          |
| Vert. Feet Std. M.H.       | 13 L.F.   |          |          |          |
| Vert. Feet W.T. M.H.       | 7 L.F.    |          |          |          |
| Drop M.H. Type 'A'         | 2 EA.     |          |          |          |
| Vert. Ft Drop M.H. Type A  | 5 L.F.    |          |          |          |
| W.T. M.H. Type 'B'         | 1 EA.     |          |          |          |
| Vert. Ft. W.T. M.H. Type B | 13 L.F.   |          |          |          |
| 8" x 4" Wye                | 5 EA.     |          |          |          |
| 4" San. House Conn.        | 270 L.F.  |          |          |          |
| Class II Riprap            | 40 SQ.    |          |          |          |
| 8" Water Main              | 1030 L.F. |          |          |          |
| 8" Water Valves            | 3 EA.     |          |          |          |
| 3/4" Water House Conn.     | 170 L.F.  |          |          |          |
| Std. A-3 Fire Hyd.         | 2 EA.     |          |          |          |

TYPE OF BUILDING: RESIDENTIAL  
 NUMBER OF PARCELS: 8  
 SEWER HOUSE CONNECTIONS: 8  
 WATER HOUSE CONNECTIONS: 6  
 DRAINAGE AREA: LITTLE PATUXENT

VICINITY MAP  
 SCALE: 1"=600'

SEWER AND WATER CODES FOR COUNTY USE ONLY  
 WATER NO. CO1  
 SEWER NO. 6100000

- GENERAL NOTES:
- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS, SERVICES AND MAINTAIN UNINTERRUPTED SUPPLY. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
  - ALL HORIZONTAL CONTROLS BASED ON MARYLAND STATE COORDINATES.
  - ALL VERTICAL CONTROLS BASED ON U.S.G.S. DATUM.
  - ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
  - CLEAR ALL UTILITIES BY A MINIMUM OF 6".
  - FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
  - WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL [ ] AT THE LOCATION OF THE TEST PIT. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TESTS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
  - THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) WORK DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:  
 BALTO. GAS & ELECTRIC CO.- CONTRACTOR SERVICE 850-4620  
 BALTO. GAS & ELECTRIC CO.- UNDERGROUND DAMAGE CONTROL 859-9004  
 BALTO. GAS & ELECTRIC CO.- TROUBLE SHOOTING 298-9001  
 MISS UTILITY- 1-559-0100  
 BUREAU OF UTILITIES, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS- 992-2366
  - TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
  - CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
  - ALL SEWER MAINS SHALL BE V.C.P.X. OR P.V.C. UNLESS OTHERWISE NOTED. ALL WATER MAINS SHALL BE CLASS 52 D.I.P. WITH A MINIMUM COVER OF 3.5' UNLESS OTHERWISE NOTED.
  - THE CONTRACTOR SHALL PROVIDE A JOINT IN ALL SEWER MAINS WITHIN 2'-0" OF EXTERIOR M.H. WALL.
  - ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
  - INVERTS OF THE SEWER HOUSE CONN. AT THE PROPERTY LINE ARE INDICATED BY THE SYMBOL: [315.73]
  - WATER VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
  - FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE STRAPPED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS. SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 FROM THE STANDARD SPECS.
  - THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM. CALL HOWARD COUNTY BUREAU OF UTILITIES AT 992-2366. COORDINATE TIE-IN TO THE EXISTING 8" WATER AT LEAST FIVE WORKING DAYS PRIOR TO SCHEDULING. ALL WATER HOUSE CONNECTIONS SHALL BE FOR INSIDE METER SETTING, UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS.
  - THE CONTRACTOR SHALL IMPLEMENT THE EROSION AND SEDIMENT CONTROL MEASURES ON SHEET 2.
  - MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL G5.52. WHERE WATERTIGHT MANHOLE FRAME AND COVER IS USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.



PROFILE  
 Scale: 1" = 50' Horiz. & 1" = 5' Vert.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature]  
 Chief, Bureau of Engineering: [Signature]  
 Chief, Bureau of Utilities: [Signature]

DATE: 1-16-91

WALLACE, MONTGOMERY & ASSOCIATES  
 1544 YORK ROAD  
 LUTHERVILLE, MARYLAND 21093  
 (301) 494-9093

John Challace

DATE: 1-9-91

DES: J.C.W.  
 DRN: S.W.S.  
 CHK: J.C.W.  
 DATE: 7/1/90

PLAN AND PROFILE OF  
 WATER AND SEWER EXTENSION

BY: NO. REVISION DATE

C194A245

VOLLMERHAUSEN ROAD WATER AND SEWER EXTENSION  
 CAPITAL PROJECT W-8156  
 CONTRACT NO. 24-3010  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 1 OF 4  
 45

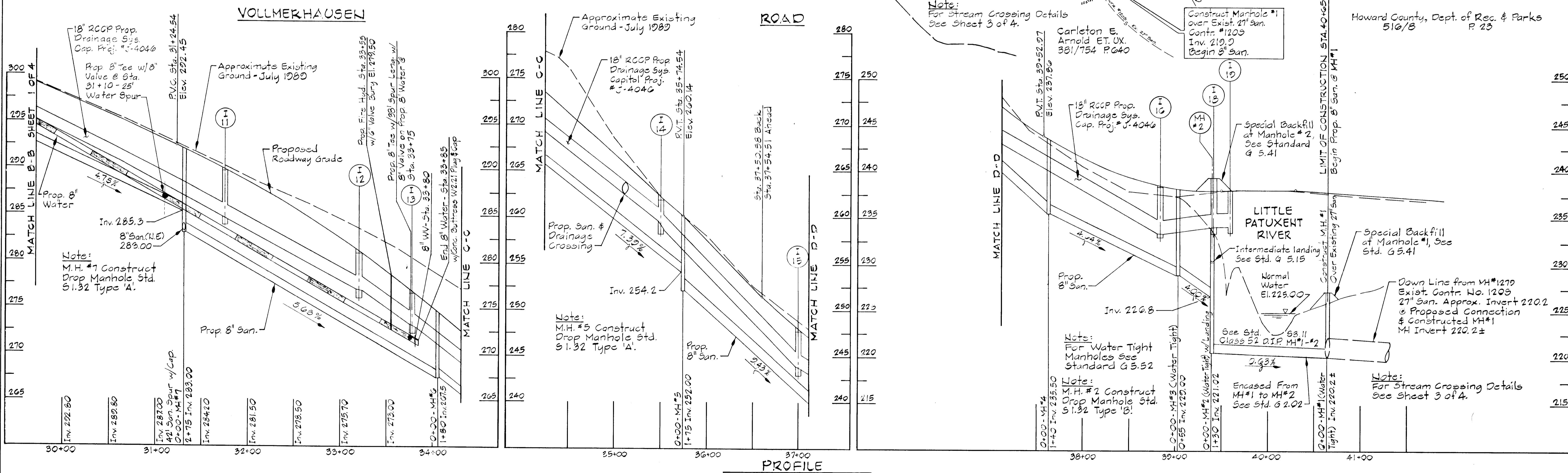
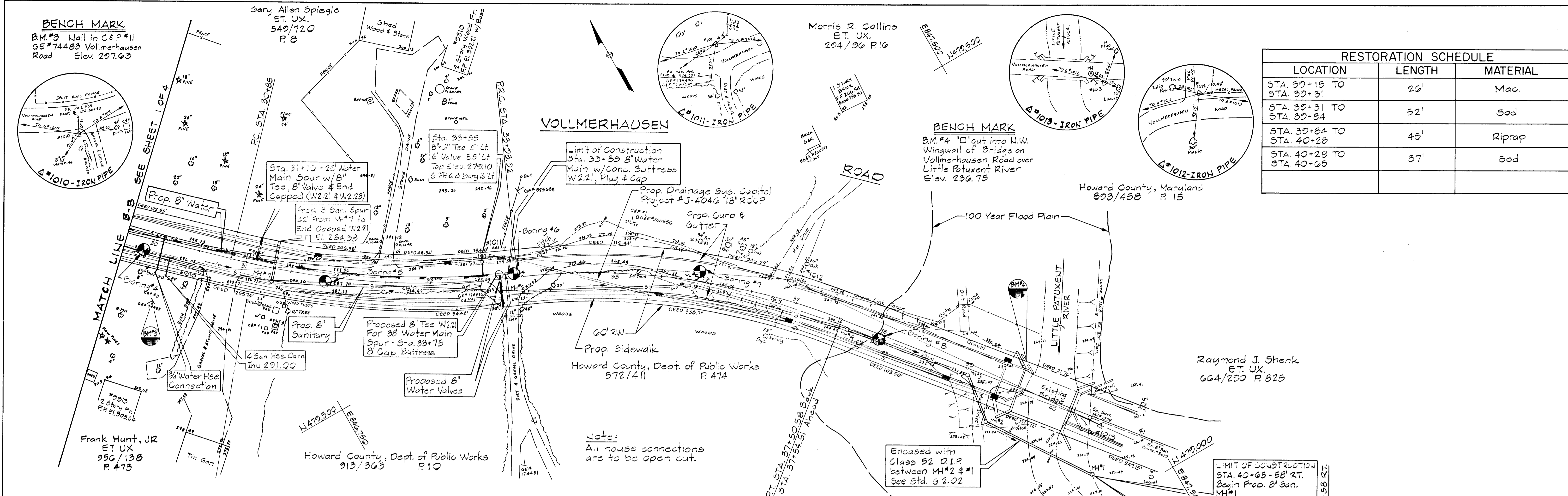
**BENCH MARK**  
 B.M.#3 Nail in C&P#11  
 GE#74483 Vollmerhausen  
 Road Elev. 297.63

Gary Allen Spigale  
 ET. UX.  
 549/720  
 P. 8

Morris R. Collins  
 ET. UX.  
 294/96 P.16

**BENCH MARK**  
 B.M.#4 "O" out into N.W.  
 Wingwall of Bridge on  
 Vollmerhausen Road over  
 Little Patuxent River  
 Elev. 296.75

| RESTORATION SCHEDULE     |        |          |
|--------------------------|--------|----------|
| LOCATION                 | LENGTH | MATERIAL |
| STA. 39+15 TO STA. 39+31 | 26'    | Mac.     |
| STA. 39+31 TO STA. 39+84 | 52'    | Sod      |
| STA. 39+84 TO STA. 40+28 | 45'    | Riprap   |
| STA. 40+28 TO STA. 40+65 | 37'    | Sod      |



DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

Director of Public Works: *Robert Benjamin* DATE: 1-16-91  
 Chief, Bureau of Engineering: *John Wallace* DATE: 1-16-91  
 Chief, Bureau of Utilities: *John Wallace* DATE: 1-9-91  
 Chief, Utility Design Division: *John Wallace* DATE: 1-9-91

WALLACE, MONTGOMERY & ASSOCIATES  
 1544 YORK ROAD  
 LUTHERVILLE, MARYLAND 21093  
 (301) 494-9093

*John Wallace*

DES: J.C.W.  
 DRN: S.W.S.  
 CHK: J.C.W.  
 DATE: 7/1/90

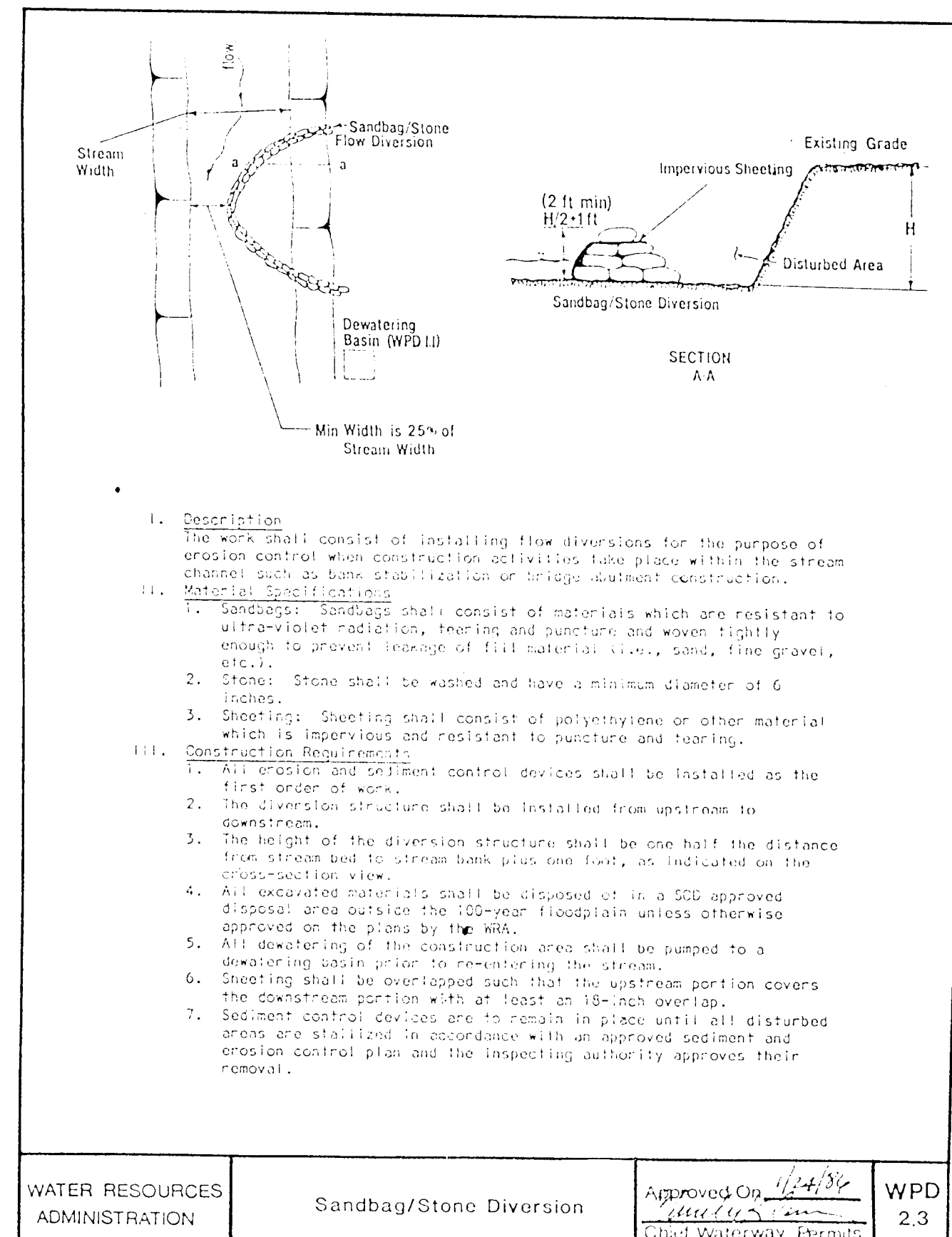
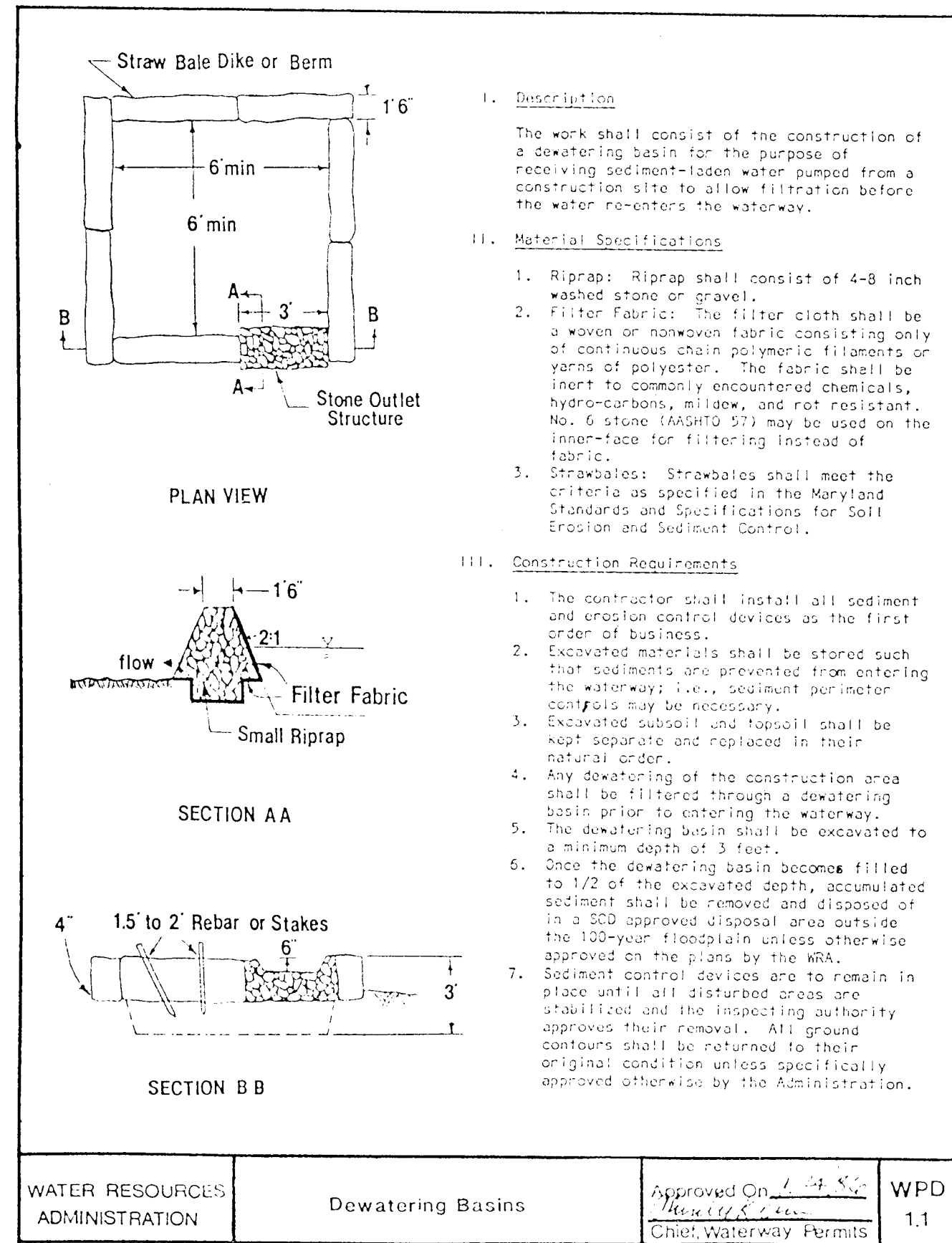
PLAN AND PROFILE OF  
 WATER AND SEWER EXTENSION

60' SCALE MAP NO. 47 BLOCK NO.

VOLLMERHAUSEN ROAD WATER AND SEWER EXTENSION  
 CAPITAL PROJECT W-8156  
 CONTRACT NO. 24-3010  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 2 OF 4  
 46

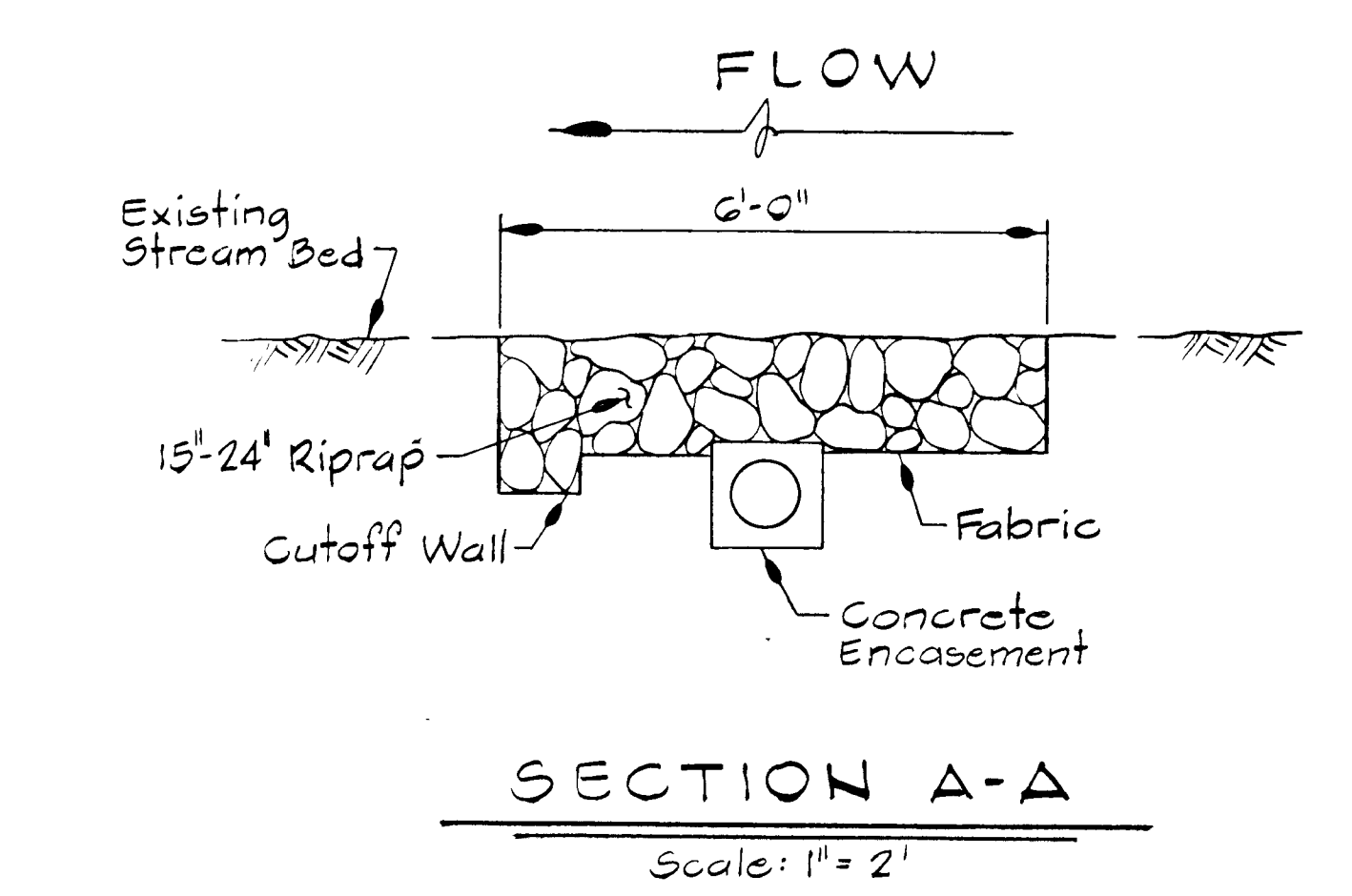
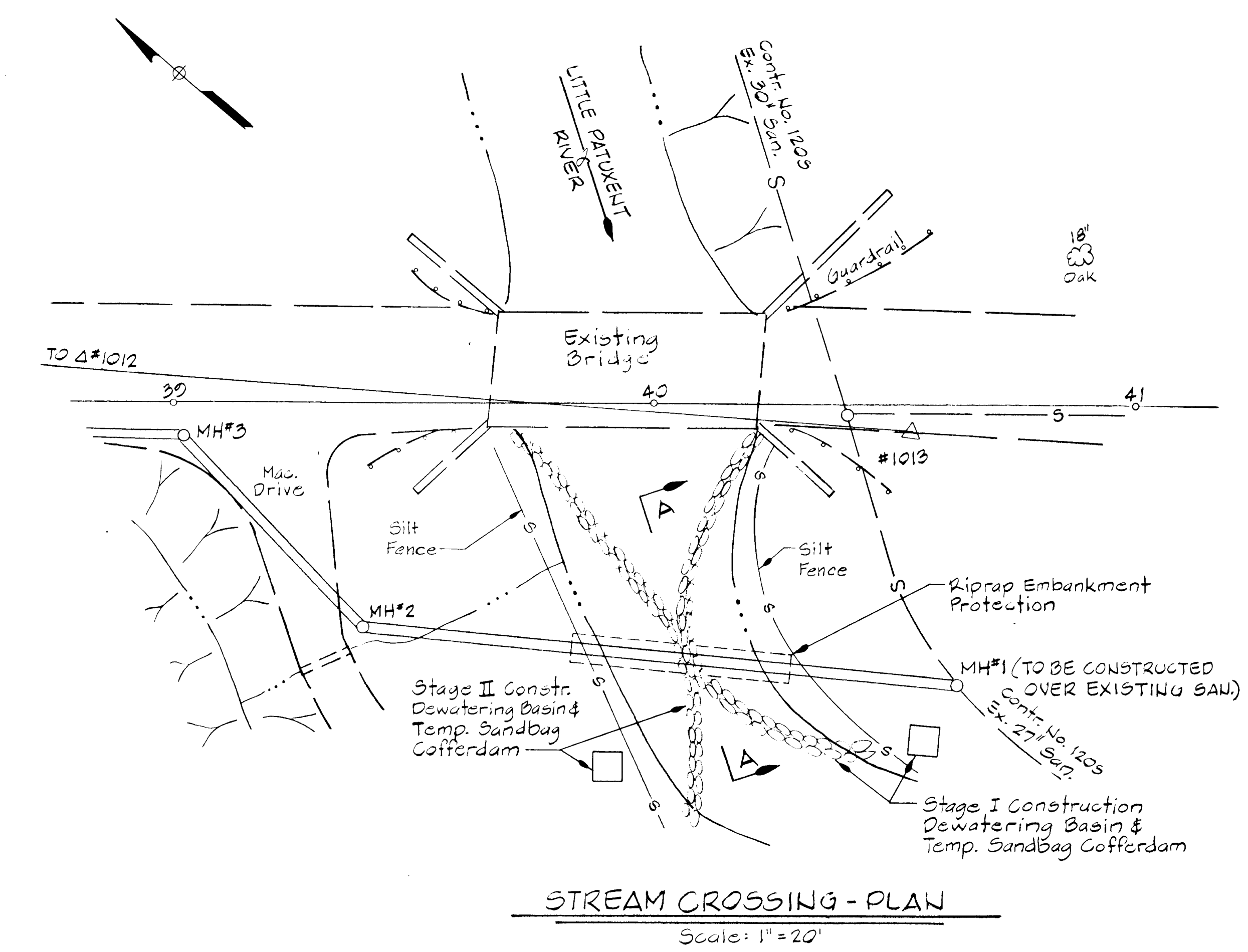
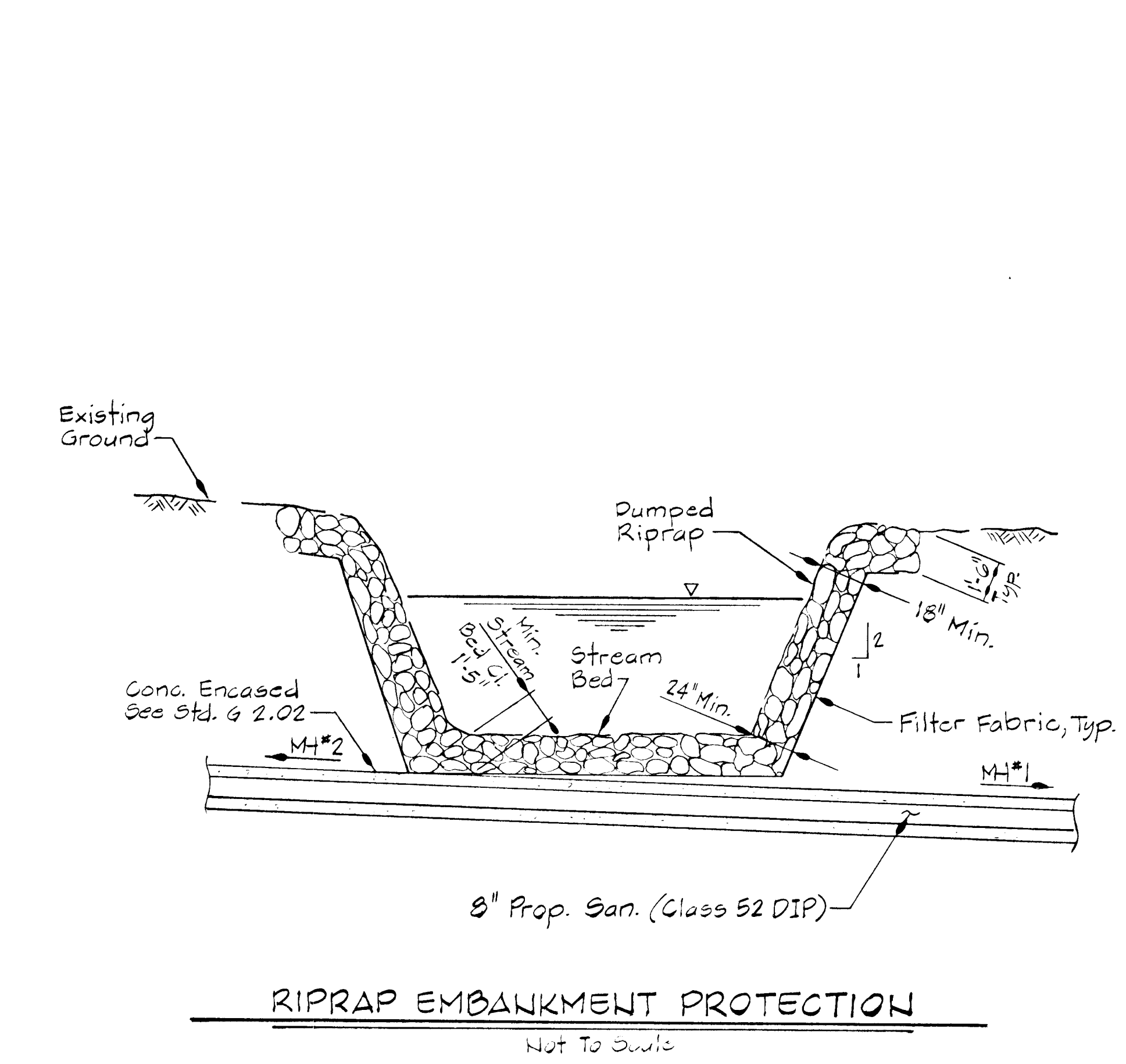




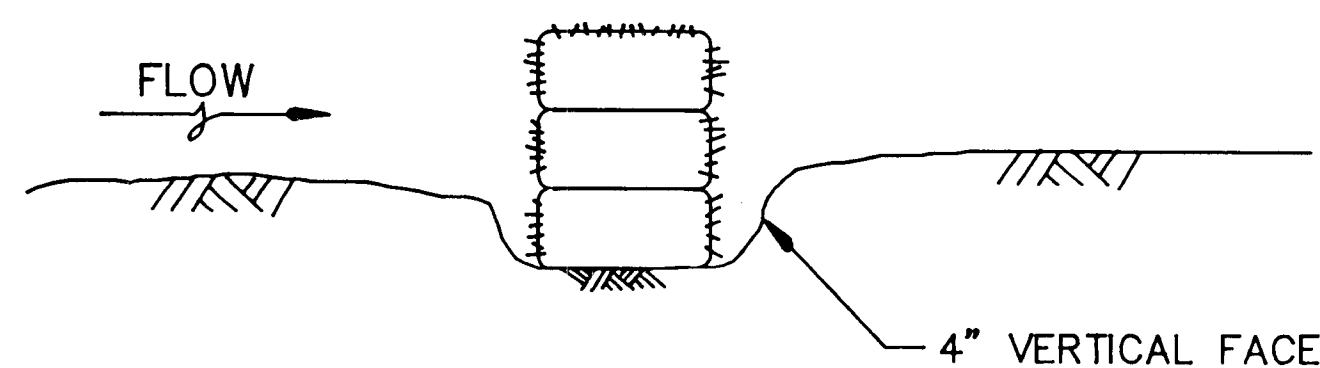
- ### STREAM CROSSING SEQUENCE OF CONSTRUCTION:
1. Install Sediment Control Device (Silt Fence) as shown on the Plans.
  2. Build a Dewatering Basin for Stage I as in WPD 1.1.
  3. Construct a temporary sandbag Cofferdam upstream to divert water around the Stage I working area.
  4. Construct a temporary sandbag Cofferdam downstream to prevent backwashing into the Stage I construction area.
  5. Dewater the work area for Stage I.
  6. Install Sediment Control Devices for proposed excavated material storage piles.
  7. Excavate ditch, install sewer pipe and concrete encasement for Stage I.
  8. Place riprap to restore stream bed to the original elevation for Stage I.
  9. Stabilize the stream bank with riprap for Stage I.
  10. Remove downstream Cofferdam, remove the upstream Cofferdam for Stage I.
  11. Restore the Stage I Dewatering Basin to the original grade.
  12. Repeat steps 2 through 12 for Stage II construction.
  13. Clean up the entire construction site.
  14. Remove all Sediment Control Devices.
  15. Seed and mulch all disturbed areas.

How M.D.  
James M. Helm / JMH 1/14/91

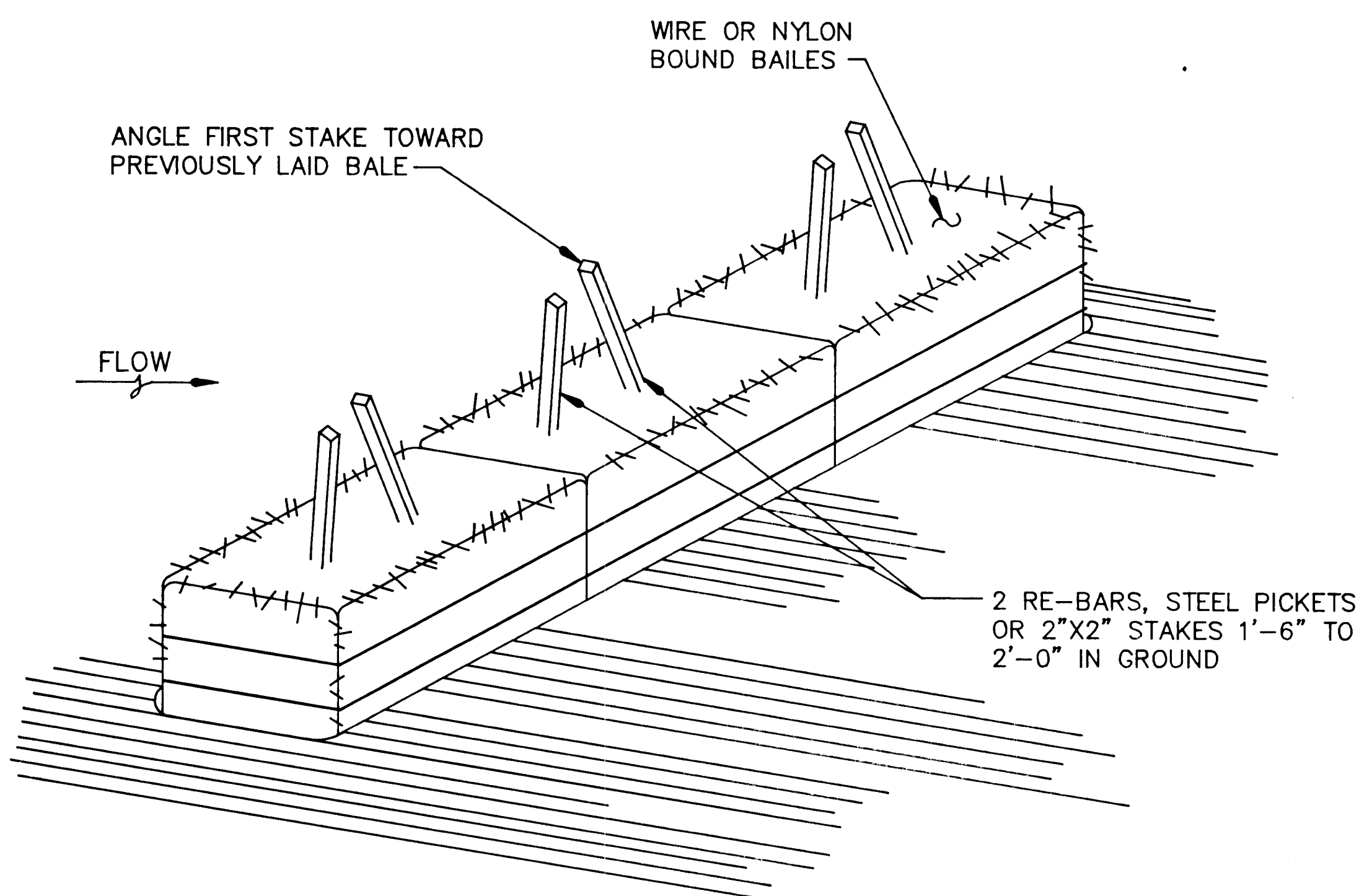
John R. Whitaker 1/11/91



|   |  |   |  |   |  |   |  |  |  |                                      |
|---|--|---|--|---|--|---|--|--|--|--------------------------------------|
| DEPARTMENT OF PUBLIC WORKS<br>HOWARD COUNTY, MARYLAND<br>DIRECTOR OF PUBLIC WORKS: [Signature] DATE: 1-16-91<br>CHIEF, BUREAU OF UTILITIES: [Signature] DATE: 1-16-91 |  | WALLACE, MONTGOMERY & ASSOCIATES<br>1544 YORK ROAD<br>LUTHERVILLE, MARYLAND 21093<br>(301) 494-9093<br>John Wallace |  | DES: J.C.W.<br>DRN: S.W.S.<br>CHK: J.C.W.<br>DATE: 7/1/90 |  | DETAILS OF<br>WATER AND SEWER EXTENSION |  | VOLLMERHAUSEN ROAD WATER AND SEWER EXTENSION<br>CAPITAL PROJECT W-8156<br>CONTRACT NO. 24-3010<br>ELECTION DISTRICT NO. 6<br>HOWARD COUNTY, MARYLAND |  | SCALE AS SHOWN<br>SHEET 3 OF 4<br>47 |
|   |  |   |  | BY: NO. REVISION DATE                                     |  | 600' SCALE MAP NO. 47 BLOCK NO.         |  |  |  |                                      |



EMBEDDING DETAIL



ANCHORING DETAIL

| TRAVERSE DESCRIPTION |             |             |               |          |
|----------------------|-------------|-------------|---------------|----------|
| POINT NO.            | NORTH       | EAST        | BEARING       | DISTANCE |
| 2041003              | 478528.6720 | 844482.9670 |               |          |
|                      |             |             | N29°-26'-30"E | 3112.77' |
| 2142006              | 481239.4500 | 846013.0100 |               |          |
|                      |             |             | S00°-57'-10"E | 107.79'  |
| 1007                 | 481131.6749 | 846014.8024 |               |          |
|                      |             |             | S25°-44'-25"E | 507.14'  |
| 1008                 | 480674.8578 | 846235.0503 |               |          |
|                      |             |             | S15°-11'-50"E | 711.95'  |
| 1009                 | 479987.8056 | 846421.6837 |               |          |
|                      |             |             | S44°-12'-46"E | 388.45'  |
| 1010                 | 479709.3818 | 846692.5594 |               |          |
|                      |             |             | S63°-31'-36"E | 313.70'  |
| 1011                 | 479569.5401 | 846973.3653 |               |          |
|                      |             |             | S55°-20'-14"E | 325.11'  |
| 1012                 | 479384.6351 | 847240.7726 |               |          |
|                      |             |             | S33°-40'-31"E | 370.13'  |
| 1013                 | 479076.6152 | 847446.0041 |               |          |
|                      |             |             | S11°-41'-04"W | 219.08'  |
| 1131                 | 478862.0799 | 847401.6365 |               |          |
|                      |             |             | S23°-14'-13"E | 247.68'  |
| 1132                 | 478634.4960 | 847499.3527 |               |          |

| STAKEOUT TABLE       |               |        |
|----------------------|---------------|--------|
| MANHOLE/POINT        | STATION       | OFFSET |
| Manhole #10          | STA. 27+85    | 8' R   |
| Manhole #9           | STA. 28+05    | 13' R  |
| Manhole #8           | STA. 27+05    | 10' R  |
| Manhole #7           | STA. 31+31    | 14' R  |
| Manhole #6           | STA. 34+00    | 16' R  |
| Manhole #5           | STA. 35+85    | 7' R   |
| Manhole #4           | STA. 37+58    | 8' R   |
| Manhole #3           | STA. 39+00    | 7' R   |
| Manhole #2           | STA. 39+42    | 47' R  |
| Manhole #1           | STA. 40+10    | 50' R  |
| BEGIN WATER MAIN     | STA. 24+21    | 5' L   |
| P.O. WATER MAIN      | STA. 25+51    | 5' L   |
| CURVE RADIUS 574.23' |               |        |
| P.T. WATER MAIN      | STA. 28+25.00 | 5' L   |
| P.O. WATER MAIN      | STA. 30+00    | 5' L   |
| CURVE RADIUS 914.23' |               |        |
| END WATER MAIN       | STA. 30+00    | 5' L   |

SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR WILL COMPLY WITH ALL REQUIREMENTS OF SEDIMENT AND EROSION CONTROL SET FORTH IN THE CONTRACT DRAWINGS, 1983 "MARYLAND STANDARDS SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", AND VOLUME IV-SECTION 219 OF THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV.
2. THE CONTRACTOR SHALL NOT PUMP FROM EXCAVATED AREAS DIRECTLY INTO THE HOWARD COUNTY STORM DRAINAGE SYSTEM OR ANY NATURAL WATER COURSE. WHERE GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE PORTABLE OR EXCAVATED SEDIMENT TRAPS TO PREVENT SILTED TRENCH WATER FROM ENTERING STORM DRAINAGE SYSTEMS OR NATURAL WATERWAYS.
3. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH WHENEVER POSSIBLE, AND CONFINED TO AN AREA WHERE IT WILL NOT OBSTRUCT THE NORMAL FLOW OR DRAINAGE COURSES.
4. ALL SWALES SHALL BE EQUIPPED WITH A SEDIMENT RETENTION DEVICE TO TRAP SEDIMENT AND FILTER WATER LEAVING THE RIGHT-OF-WAY PRIOR TO ENTERING ANY RUNNING STREAM.
5. THE CONTRACTOR SHALL PROVIDE STRAW BALE DIKES NORMAL TO SURFACE WATER FLOW AROUND ALL VEHICLE AND EQUIPMENT STAGING AREAS AS SHOWN IN "DETAIL OF A STRAW BALE DIKE" ENCLOSED IN SPECIFICATIONS.
6. ROAD SIDE DITCHES AND DRAINAGE PIPES SHALL BE RESTORED TO A CONDITION FOLLOWING COMPLETION OF CONSTRUCTION.
7. THE CONTRACTOR SHALL DISPOSE OF SPOILS IN ACCORDANCE WITH GOOD SOIL CONSERVATION PRACTICE AND IN SUCH A MANNER THAT NONE CAN BE CARRIED INTO ANY DRAINAGE FACILITY OR WATER COURSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL SPOIL OR EXCESS EXCAVATED MATERIAL ON A SITE APPROVED BY THE SOIL CONSERVATION DISTRICT. DOCUMENTATION OF APPROVAL AND SITE SHALL BE PROVIDED TO THE ENGINEER PRIOR TO BEGINNING WORK.
8. THE HOWARD COUNTY SOIL CONSERVATION DISTRICT MUST BE NOTIFIED IN WRITING BY THE CONTRACTOR AS TO WHERE EXCESS MATERIAL WILL BE DISPOSED FROM THE PROJECT, COPIES SHALL BE PROVIDED TO THE ENGINEER.
9. CONTINUOUS INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROL DEVICES WILL BE REQUIRED.
10. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL AS REQUIRED BY THE SEDIMENT CONTROL INSPECTOR, AS THE WORK PROGRESSES OR REQUIRES.
11. THE CONTRACTOR SHALL NOTIFY IN WRITING, A HOWARD COUNTY SEDIMENT CONTROL DIVISION REPRESENTATIVE AT LEAST THREE (3) DAYS PRIOR TO STARTING WORK. PLEASE CONTACT: HOWARD COUNTY 992-2436. COPIES SHALL BE PROVIDED TO THE ENGINEER.
12. THE CONTRACTOR SHALL PLACE A STABILIZED CONSTRUCTION ENTRANCE AS SHOWN IN THE HOWARD COUNTY STANDARD DETAILS, G6.11 WHERE SHOWN ON THE PLANS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
13. SEDIMENT REMOVAL - ALL TRAPPED SEDIMENT IS TO BE REMOVED AND DISPOSED OF AT THE AUTHORIZED LANDFILLS PRIOR TO REMOVAL OF SEDIMENT CONTROL STRUCTURES.
14. FOLLOWING INITIAL SOIL DISTURBANCE, OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
  - A. SEVEN (7) CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1.
  - B. FOURTEEN (14) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THRU THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STANDARD SYMBOL - \_\_\_\_\_ S.B.D. \_\_\_\_\_

STRAW BALE DIKE DETAIL

NOT TO SCALE

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| <p>ENGINEER'S CERTIFICATION</p> <p>I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.</p> <p><i>John C. Wallace</i><br/>WALLACE, MONTGOMERY &amp; ASSOCIATES<br/>1544 YORK ROAD<br/>LUTHERVILLE, MARYLAND 21093<br/>(301) 494-9093</p> | <p>REVIEWED FOR HOWARD COUNTY S.C.D. MEETS TECHNICAL REQUIREMENTS.</p> <p><i>James M. Nelson</i><br/>S.C.D. SOIL CONSERVATION SERVICE / DATE</p> <p>THIS DEVELOPMENT PLAN IS APPROVED FOR THE SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY CONSERVATION DISTRICT.</p> <p><i>John A. Robutear</i><br/>APPROVED / DATE<br/>HOWARD COUNTY S.C.D.</p> |
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| <p>DEPARTMENT OF PUBLIC WORKS<br/>HOWARD COUNTY, MARYLAND</p> <p><i>Robert B. ...</i><br/>DIRECTOR OF PUBLIC WORKS<br/>DATE: 1-16-91</p> <p><i>...</i><br/>CHIEF, BUREAU OF ENGINEERING<br/>DATE: 1-26-91</p> <p><i>...</i><br/>CHIEF, UTILITY DESIGN DIVISION<br/>DATE: 1-2-91</p> | <p>WALLACE, MONTGOMERY &amp; ASSOCIATES<br/>1544 YORK ROAD<br/>LUTHERVILLE, MARYLAND 21093<br/>(301) 494-9093</p> | <p>DES: J.C.W.</p> <p>DRN: G.C.N.</p> <p>CHK: J.C.W.</p> <p>DATE: 7/1/90</p> | <p>BY NO. REVISION DATE</p> | <p>DETAILS OF<br/>WATER AND SEWER EXTENSION</p> <p>600' SCALE MAP NO. 47 BLOCK NO. _____</p> | <p>VOLLMERHAUSEN ROAD WATER AND SEWER EXTENSION<br/>CAPITAL PROJECT W-8156<br/>CONTRACT NO. 24-3010<br/>ELECTION DISTRICT NO. 6<br/>HOWARD COUNTY, MARYLAND</p> | <p>SCALE AS SHOWN</p> <p>SHEET 4 OF 4</p> |
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