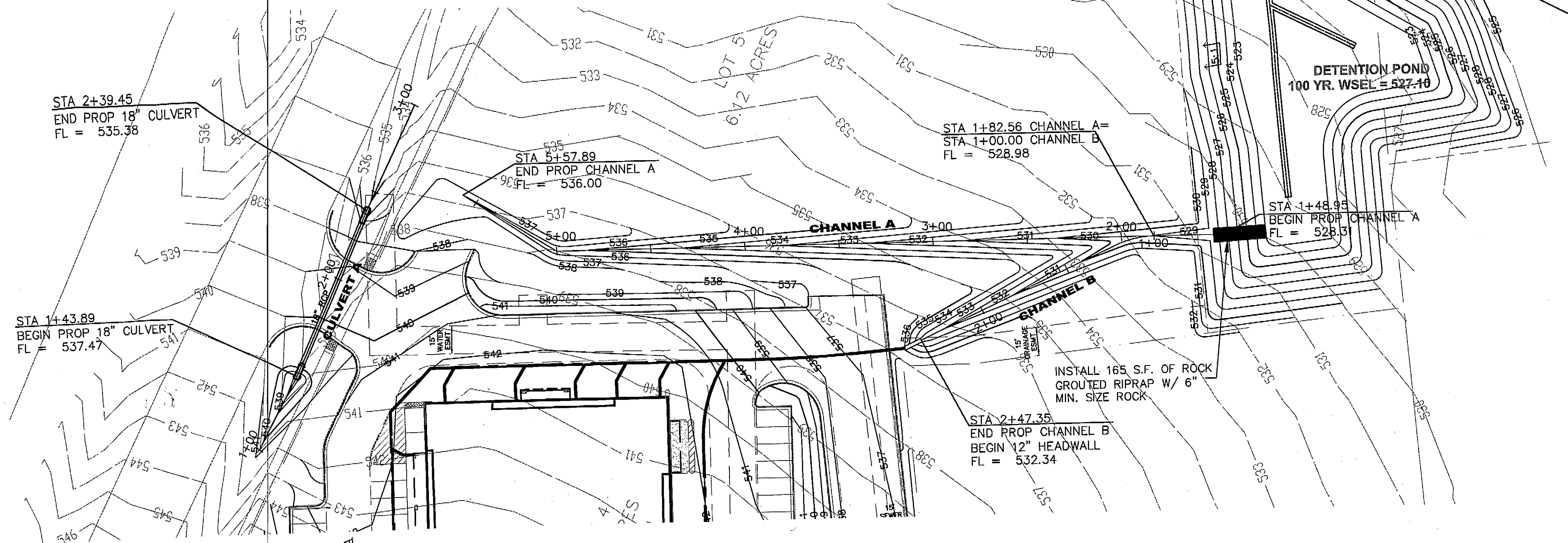
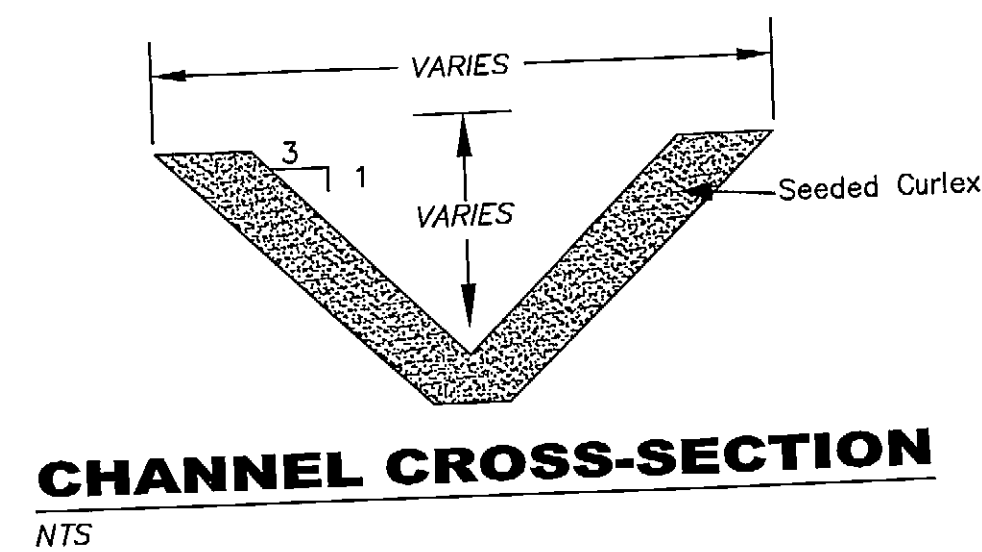
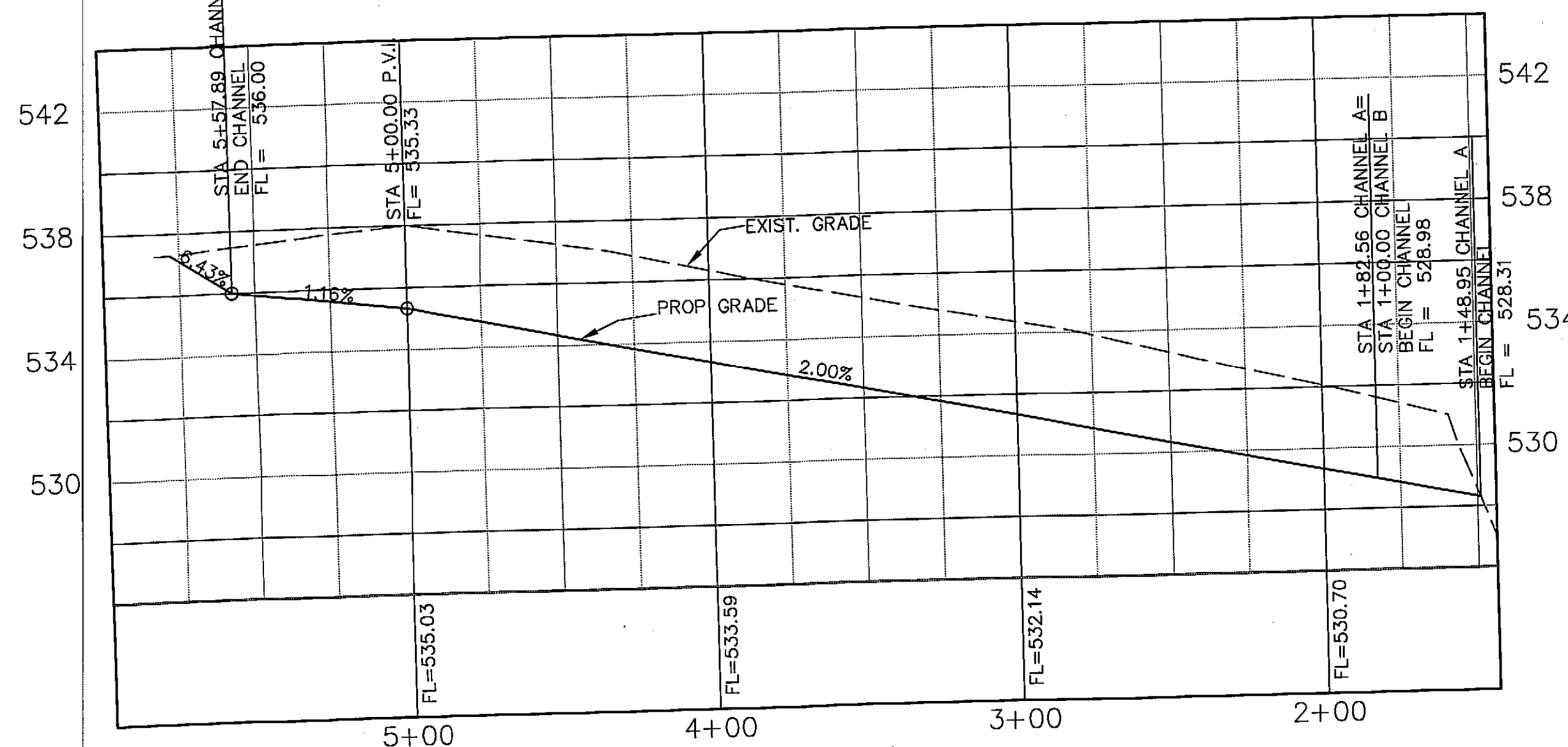




SCALE: 1" = 40'



Channel A Calculator

Given Input Data:

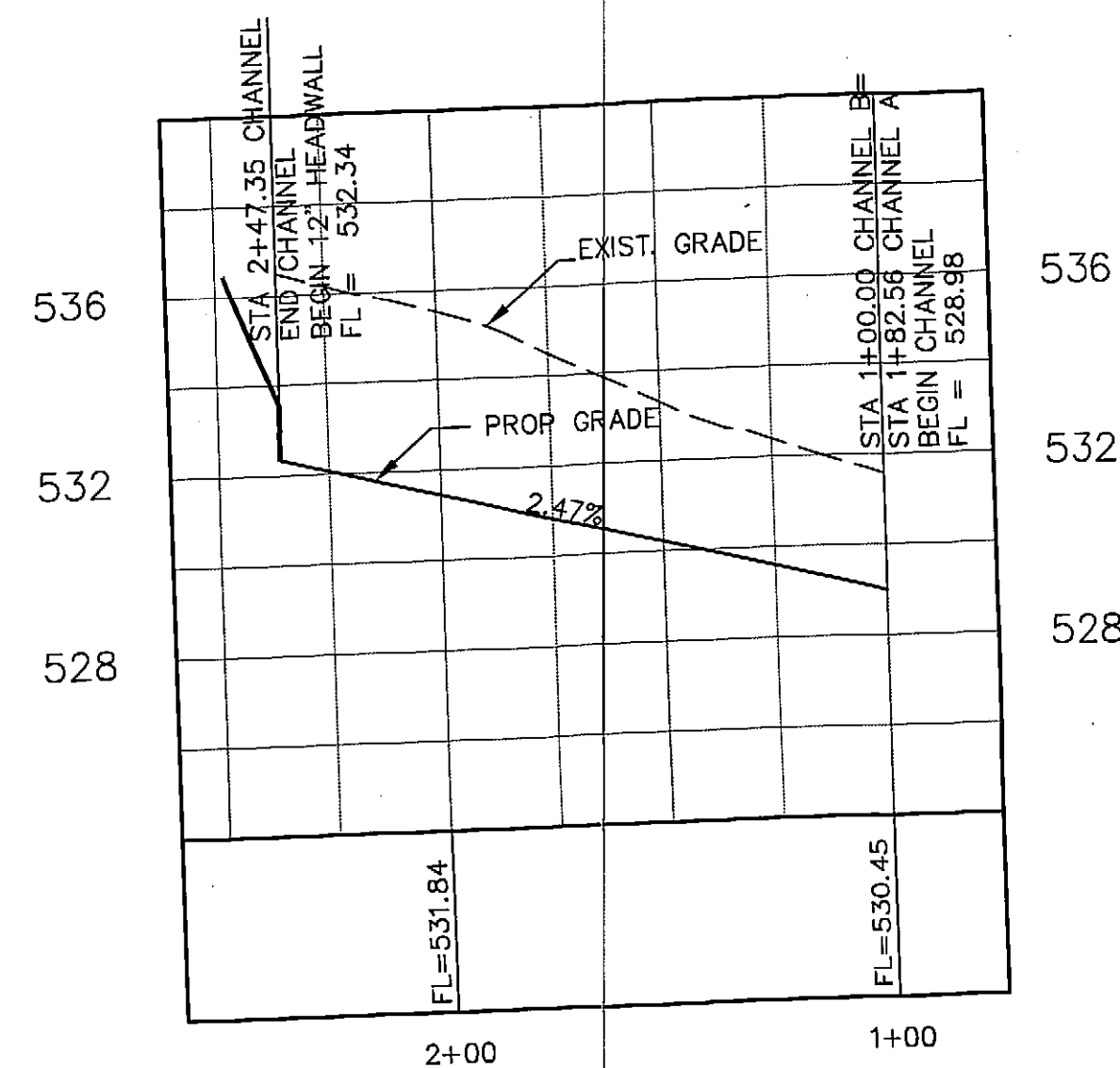
|              |                                |
|--------------|--------------------------------|
| Shape        | Trapezoidal                    |
| Solving for  | Depth of Flow                  |
| Flowrate     | 23.2800 cfs (Area's 2,3,4,5,8) |
| Slope        | 0.0200 ft/ft                   |
| Manning's n  | 0.0300                         |
| Height       | 2.5000 ft                      |
| Bottom width | 0.0000 ft                      |
| Left slope   | 0.3330 ft/ft (V/H)             |
| Right slope  | 0.3330 ft/ft (V/H)             |

Computed Results:

|                  |                         |
|------------------|-------------------------|
| Depth            | 1.2516 ft               |
| Velocity         | 4.9486 fps              |
| Full Flowrate    | 147.3097 cfs            |
| Flow area        | 4.7043 ft <sup>2</sup>  |
| Flow perimeter   | 7.9231 ft               |
| Hydraulic radius | 0.5938 ft               |
| Top width        | 7.5172 ft               |
| Area             | 18.7686 ft <sup>2</sup> |
| Perimeter        | 15.8256 ft              |
| Percent full     | 50.0647 %               |

Critical Information

|                           |                        |
|---------------------------|------------------------|
| Critical depth            | 1.3016 ft              |
| Critical slope            | 0.0162 ft/ft           |
| Critical velocity         | 4.5759 fps             |
| Critical area             | 5.0875 ft <sup>2</sup> |
| Critical perimeter        | 8.2394 ft              |
| Critical hydraulic radius | 0.6175 ft              |
| Critical top width        | 7.8174 ft              |
| Specific energy           | 1.6322 ft              |
| Minimum energy            | 1.9524 ft              |
| Froude number             | 1.1028                 |
| Flow condition            | Supercritical          |



**CHANNEL B PROFILE**

HOR. SCALE: 1"=40'  
VER. SCALE: 1"=4'

Channel B Calculator

HOR. SCALE: 1"=40'  
VER. SCALE: 1"=4'

Given Input Data:

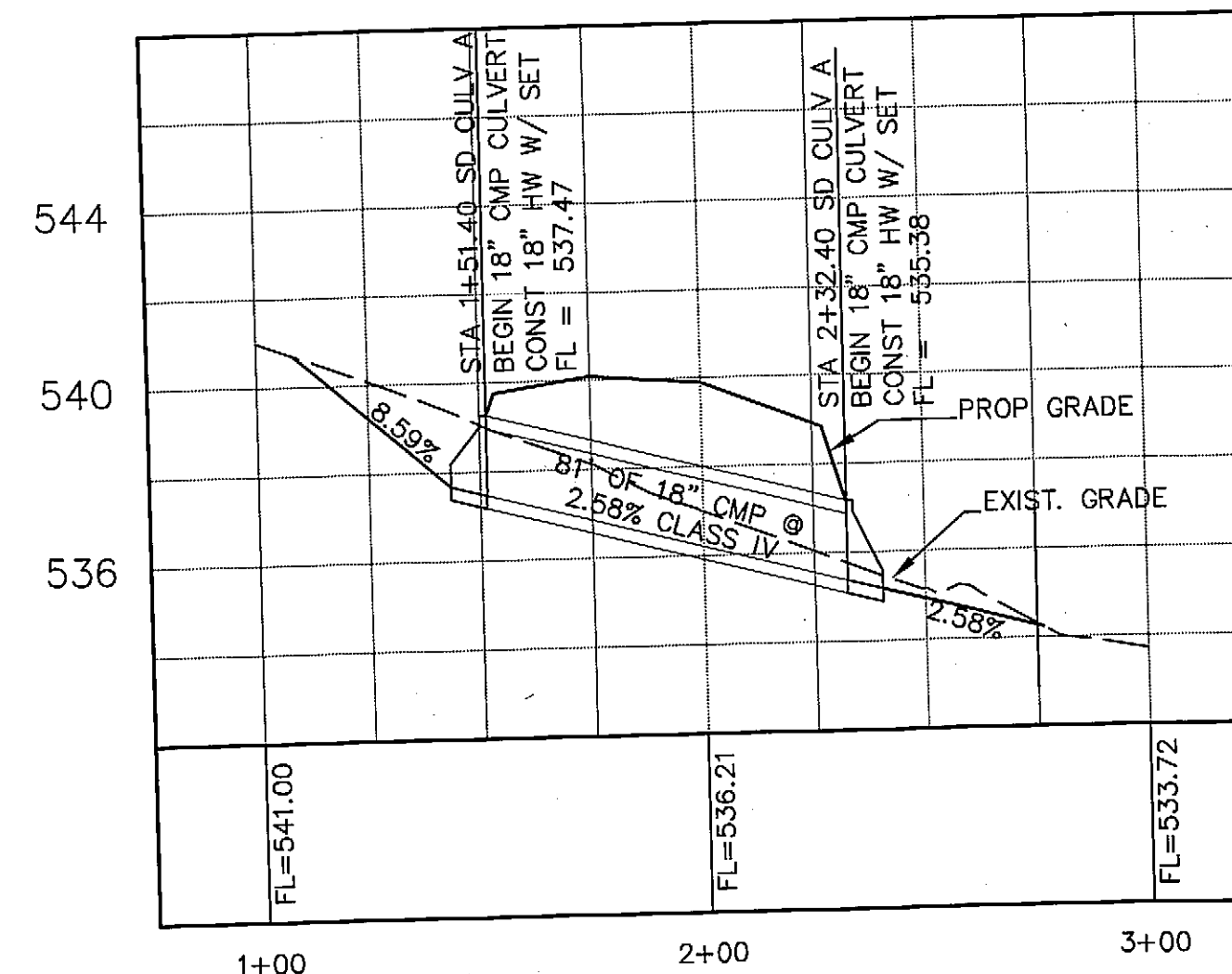
|              |                     |
|--------------|---------------------|
| Shape        | Trapezoidal         |
| Solving for  | Depth of Flow       |
| Flowrate     | 3.4400 cfs (Area 4) |
| Slope        | 0.0247 ft/ft        |
| Manning's n  | 0.0300              |
| Height       | 3.0000 ft           |
| Bottom width | 0.0000 ft           |
| Left slope   | 0.3330 ft/ft (V/H)  |
| Right slope  | 0.3330 ft/ft (V/H)  |

Computed Results:

|                  |                         |
|------------------|-------------------------|
| Depth            | 0.5873 ft               |
| Velocity         | 3.3209 fps              |
| Full Flowrate    | 266.2042 cfs            |
| Flow area        | 1.0359 ft <sup>2</sup>  |
| Flow perimeter   | 3.7179 ft               |
| Hydraulic radius | 0.2786 ft               |
| Top width        | 3.5274 ft               |
| Area             | 27.0270 ft <sup>2</sup> |
| Perimeter        | 18.9908 ft              |
| Percent full     | 19.5773 %               |

Critical Information

|                           |                        |
|---------------------------|------------------------|
| Critical depth            | 0.6058 ft              |
| Critical slope            | 0.0209 ft/ft           |
| Critical velocity         | 3.1217 fps             |
| Critical area             | 1.1020 ft <sup>2</sup> |
| Critical perimeter        | 3.8347 ft              |
| Critical hydraulic radius | 0.2874 ft              |
| Critical top width        | 3.6382 ft              |
| Specific energy           | 0.7587 ft              |
| Minimum energy            | 0.9087 ft              |
| Froude number             | 1.0804                 |
| Flow condition            | Supercritical          |



HOR. SCALE: 1"=40'  
VER. SCALE: 1"=4'

Culvert Calculator

Entered Data:

|                   |                                                 |
|-------------------|-------------------------------------------------|
| Shape             | Circular                                        |
| Number of Barrels | 1                                               |
| Solving for       | Headwater                                       |
| Chart Number      | 1                                               |
| Scale Number      | 1                                               |
| Chart Description | CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE |
| Scale Description | SQUARE EDGE ENTRANCE WITH HEADWALL              |
| Overturning       | Off                                             |
| Flowrate          | 4.7600 cfs (Area 1)                             |
| Manning's n       | 0.0130                                          |
| Roadway Elevation | 539.7800 ft                                     |
| Inlet Elevation   | 537.4700 ft                                     |
| Outlet Elevation  | 535.3800 ft                                     |
| Diameter          | 1.5000 ft                                       |
| Length            | 81.0000 ft                                      |
| Entrance Loss     | 0.0000                                          |
| Tailwater         | 1.0000 ft                                       |

Computed Results:

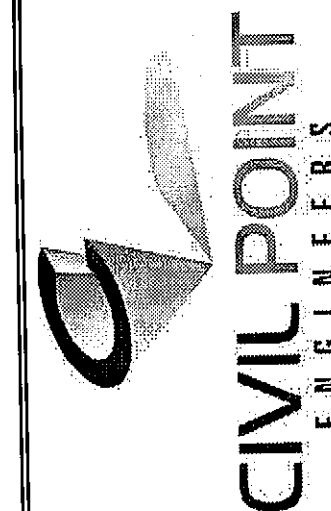
|           |                           |
|-----------|---------------------------|
| Headwater | 538.7014 ft Inlet Control |
| Slope     | 0.0258 ft/ft              |
| Velocity  | 8.2106 fps                |

Messages:

Inlet head > Outlet head.  
Computing Inlet Control headwater.  
Solving Inlet Equation 28.  
Solving Inlet Equation 28.  
Headwater: 538.7014 ft

Benchmark: At the northwest corner of the concrete bridge on HWY 205, in the top of the concrete guardrail base, 17' southwest off the HWY 205 centerline and 3' southeast of the northwest end of the guardrail base. Elev. 524.552

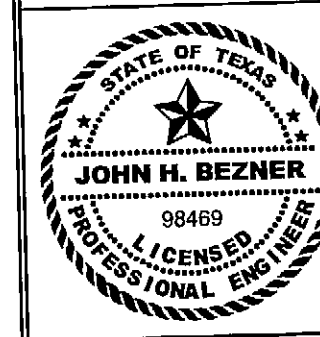
206 N WALNUT STREET  
MUNSTER, TX 76252  
940-202-2743 (Office)  
1-866-682-8129 (Fax)  
Contact@Civiltpt.com



PROJECT NAME:  
**MEADOW CREEK  
BUSINESS PARK**  
ROCKWALL, TEXAS

SHEET TITLE  
**DRAINAGE PROFILES**

SHEET TITLE



DATE 3-11-08  
SCALE 1" = 40'  
SHEET **11**  
OF **18**