

TRENCH EXCAVATION OF EARTH @ 100%

Stone Fill @ Outlet  
 $\left(\frac{0.9+1.0}{2} \times 4.5\right) \times 4.2 \text{ m (w)} = 18.0 \text{ cm}^3$

Stone Fill @ Inlet  
 $\left(\frac{0.5+0.3}{2} \times 4\right) \times 3 \text{ m (w)} = 4.8 \text{ cm}^3$

Headwall @ Outlet  
 $1.05 \text{ m (b)} \times 1.6 \text{ m (w)} \times 2.95 \text{ m (L)} = 5.0 \text{ cm}^3$

Inlet Headwall  
 $0.9 \text{ m (b)} \times 1.6 \text{ m (w)} \times 2.95 \text{ m (L)} = 4.2 \text{ cm}^3$

PIPE 102"  
 $\left[\frac{0.4+0.2}{2} \times 3.4\right] \times (0.1 \times 3) + \left[\frac{0.2+0.1}{2} \times 0.9\right] + \left[\frac{0.7+0.8}{2} \times 0.9\right] + \left[\frac{0.8+1.5}{2} \times 0.3\right] + (1.5 \times 0.4) + \left[\frac{1.5+1.1}{2} \times 0.4\right] + \left[\frac{1.0+0.1}{2} \times 0.6\right] + \left[\frac{0.1+0.2}{2} \times 1.8\right] \times 1.88 \text{ m} = 36.45 \text{ cm}^3$

TRENCH EARTH @ 150%  
 $\left(\frac{0.0+0.1}{2} \times 0.3\right) + \left[\frac{0.1+0.9}{2} \times 3.4\right] + \left[\frac{0.2+0.5}{2} \times 5.8\right] + \left[\frac{0.5+0}{2} \times 0.9\right] \times 1.88 \text{ m} \times 1.5 = 20.1 \text{ cm}^3$   
 88.55 cm<sup>3</sup> WRF 05-01-06

GRANULAR BACKFILL STRUCTURES-

CULVERT-  
 $0.88 \text{ m (H)} \times (1.88 \text{ m}) \text{ W} \times 1.9 \text{ m (L)} = 31.4 \text{ m}^3$

EARTH BORROW  
 $\left(\frac{0.5+1.5}{2}\right) \text{ L} \times (1.22) \text{ H} \times (1.88) \text{ W} \times 22.9 \times 1.15 \text{ factor} = 26.3 \text{ cm}^3$

Stone Fill Type II  
 INLET  
 $4.5 \text{ m (L)} \times 0.3 \text{ m (b)} \times 3 \text{ m (w)} = 4.1 \text{ cm}^3$

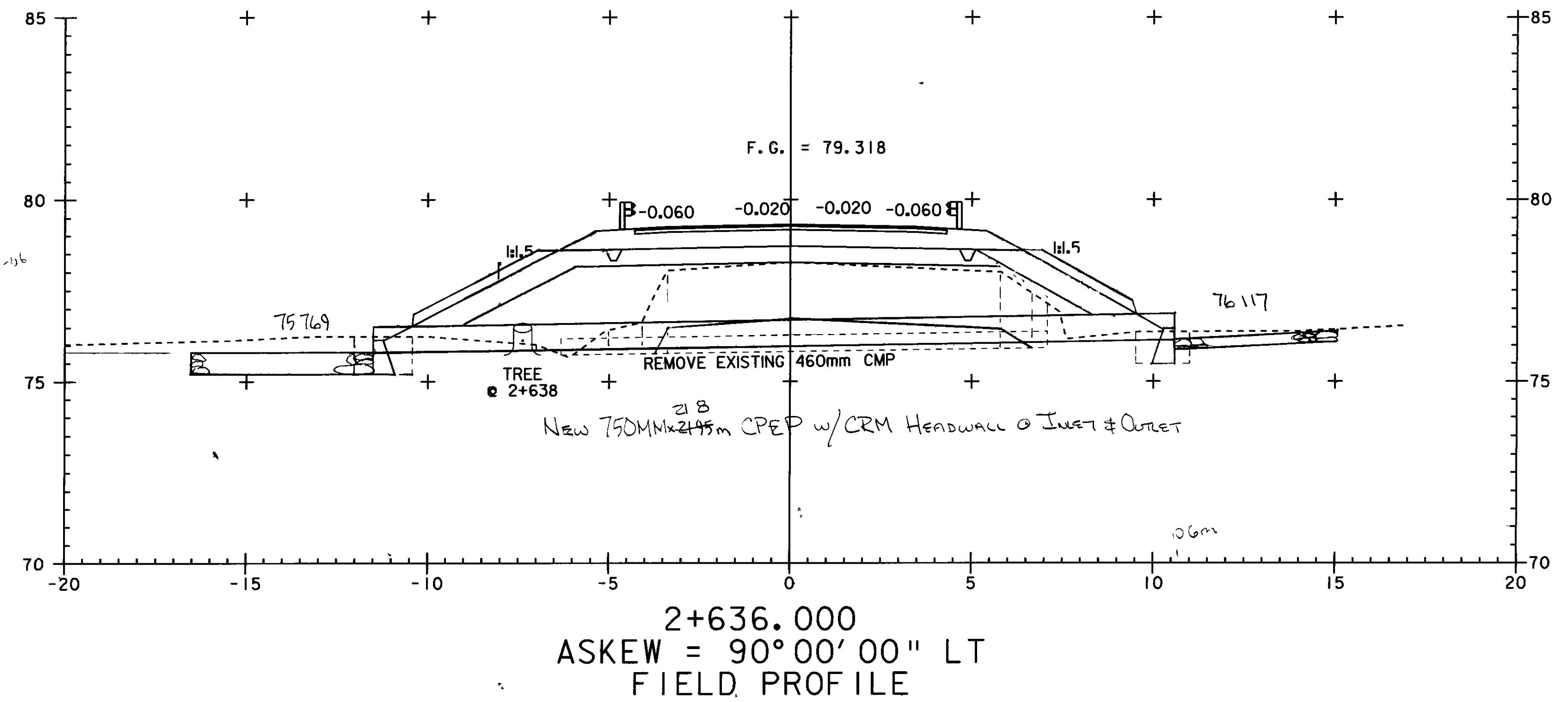
OUTLET  
 $5.0 \text{ m (L)} \times 0.5 \text{ m (b)} \times 4.2 \text{ m (w)} = 10.5 \text{ cm}^3$   
 14.6 cm<sup>3</sup> WRF 05-01-06

GEOTEXTILE UNDER Stone Fill

INLET  
 $5.1 \text{ m} \times 3.6 \text{ m} = 18.4 \text{ sm}^2$

OUTLET  
 $5.4 \text{ m} \times 5.6 \text{ m} = 30.2 \text{ sm}^2$   
 48.6 sm<sup>2</sup>

To Bk 2, Pg 74



WHERE STONE FILL IS SHOWN SURROUNDING A CULVERT, 150mm SAND BORROW WILL BE UTILIZED AS A CUSHION BETWEEN THE PIPE AND THE STONE FILL

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