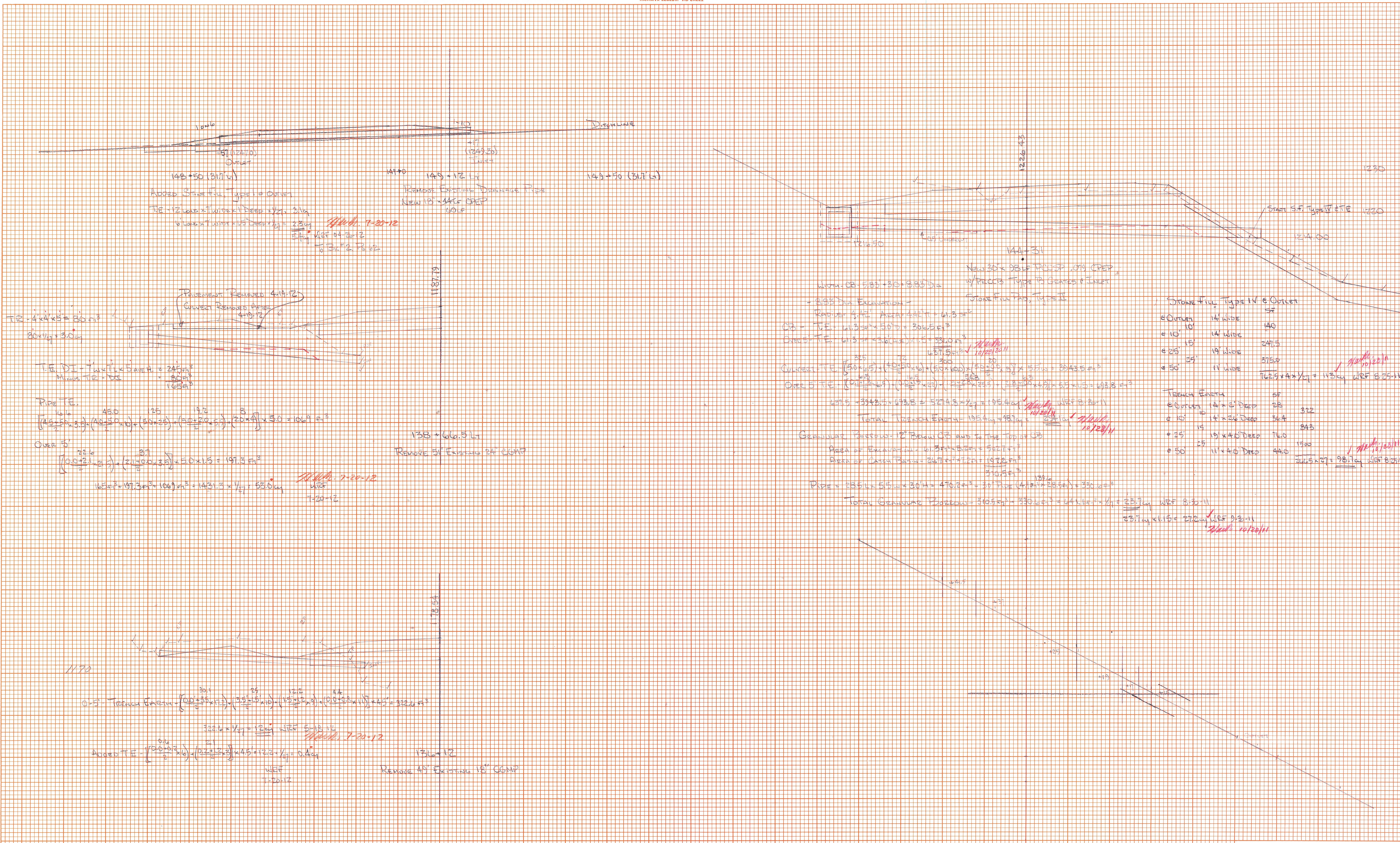


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TR - $4 \times 4 \times 5 = 80 \text{ m}^3$
 $80 \times 1/2 = 40 \text{ m}^3$

T.E. DI - $T \times W \times H = 245 \text{ m}^3$
 Minus TR - 40

Pipe T.E.
 $(16 \times 45.0) + (25 \times 50.0) + (12 \times 50.0) + (3 \times 50.0) = 1060 \text{ m}^3$

Over 5'
 $(0.5 \times 2.5 \times 2.5) + (2.5 \times 0.5 \times 2.5) \times 5.0 \times 1.5 = 197.3 \text{ m}^3$

$165 \text{ m}^3 + 197.3 \text{ m}^3 + 1060 \text{ m}^3 = 1422.3 \text{ m}^3$
 $1422.3 \times 1/2 = 711.15 \text{ m}^3$

0.5' Trench Earth - $(0.5 \times 30 \times 17.3) + (3.5 \times 5 \times 10) + (12 \times 2 \times 9) + (10 \times 5 \times 11) \times 4.3 = 322.6 \text{ m}^3$

ADDED T.E. - $(100 \times 0.5 \times 0.5) + (2.5 \times 0.5 \times 2.5) \times 4.5 + 12.2 \times 1/2 = 0.4 \text{ m}^3$

REMOVE 48' EXISTING 18" CGMP

New 30" 30' PEDESTAL 18" CGMP
 4/8" PROCS TYPE IV GRATES & Joints
 Stone Fill Type IV

Width - $CB = 5.83 + 30 + 5.83 \text{ Dia}$
 + 2.93 Dia Excavation
 Radius 1.46 Area 6.71 m^2
 CR - T.E. $(1.3 \times 5 \times 5.0) = 30.65 \text{ m}^3$
 Over 5' T.E. $(0.5 \times 2.5 \times 2.5) + (2.5 \times 0.5 \times 2.5) \times 5.0 \times 1.5 = 197.3 \text{ m}^3$

Curved T.E. $(50 \times 0.5) + (10 \times 0.5 \times 10) + (50 \times 0.5) + (2.5 \times 0.5 \times 2.5) \times 5.0 \times 1.5 = 394.3 \text{ m}^3$
 Over 5' T.E. $(0.5 \times 2.5 \times 2.5) + (2.5 \times 0.5 \times 2.5) \times 5.0 \times 1.5 = 197.3 \text{ m}^3$

$471.5 + 394.3 = 865.8 = 574.3 \times 1/2 = 287.15 \text{ m}^3$

TOTAL TRENCH EARTH = $193.4 \text{ m}^3 + 98.7 \text{ m}^3 = 292.1 \text{ m}^3$

GRAVELL FILL - 12" BELOW CR AND TO THE TOP OF CR
 Area of Excavation - $16.3 \text{ m} \times 6.2 \text{ m} = 101.6 \text{ m}^2$
 Area of Catch Basin - $26.7 \text{ m} \times 7.2 \text{ m} = 192.2 \text{ m}^2$

Pipe - $25.5 \text{ m} \times 5.5 \text{ m} \times 30 \text{ m} = 425.25 \text{ m}^3 + 30 \text{ m} \times (4 \text{ m} \times 28.5 \text{ m}) = 330 \text{ m}^3$

TOTAL GRAVELL FILL - $340.9 \text{ m}^3 + 330 \text{ m}^3 + 24 \text{ m} \times 16 \text{ m} \times 1/2 + 23.7 \text{ m} = 674.6 \text{ m}^3$

Stone Fill Type IV @ Outlet	5'
@ Outlet 14' wide	140
@ 10' 14' wide	241.5
@ 25' 19' wide	275.0
@ 50' 11' wide	162.9
TRENCH EARTH	
@ Outlet 14' x 3' Deep	28
@ 10' 14' x 3' Deep	36.4
@ 25' 19' x 4' Deep	84.3
@ 50' 11' x 4' Deep	150
TOTAL = 98.7 m ³	