Dewatering Quantities-Maipalaoa Bridge

Dewatering for Central Piers

*Assume 20gpm infiltration into caisson from caisson-channel lining perimeter

Quantity of water already in caisson:

Assume:
1) 8' x 15' rectangluar caisson
2) Demo one pier at a time
3) Dewatering for entire 8 hr work day
4) 2 days per pier demo 1 day cut, 1 day cure of lining cap
5) High point of water 100 yr storm 2.2 +msl
6) Channel invert at piers at -3.75msl

Volume of existing water to be removed from each caisson:

V=Area of Base*Height
V= 8'x15'*(2.2'+3.75')

V= 714 cuft

Volume of existing water to be removed from all caissons:

V=Volume Water*Number of Piers
V= 714cuft*21piers

V= 14994 cuft

Total quantity of infiltrating water:

V=Infiltration rate*Working Day Hours*Days to demo all piers

V= 20gpm*0.13368056cuft/gal*8 hr*60min/hr*42 days

V= 53900 cuft

Total Caisson Dewatering:	Daily Caisson Dewatering:
25% Safety Factor	25% Safety Factor
V=14994 cuft +53900 cuft	V=714cuft+(20gpm*0.13368056 cuft/gal*8hr*60min/hr)
V= 68894 cuft	V= 1997.333 cuft
VSF= 86117.5 cuft	VSF= 2496.667 cuft