LATERAL EARTH PRESSURES AND RESISTANCE PARAMETERS FOR RETAINING WALL DESIGN

PROJECT INFORMATION	
Project Name	
Project No.	
Project Location	
Analyzed By	
Reviewed By	

INPUT PARAMETERS		
Retained Soil Properties:		
- Wall Backfill Soil Unit Weight, γ_r	120.00	pcf
- Wall Backfill Soil Friction Angle, ϕ_r	30.00	degrees
- Wall Friction Angle, δ_r	0.00	degrees
Foundation Soil Properties:		
- Foundation Soil Unit Weight, γ_f	120.00	pcf
- Foundation Soil Friction Angle, ϕ_f	30.00	degrees
Seismic Parameter:		
- Free-Field Peak Ground Acceleration (PGA)	0.742	g

LATERAL EARTH PRESSURES		
Flexible (Cantilever) Wall:		
- Active Soil Pressure Coefficient (Level Backfill)	0.33	
- Active Soil Pressure Coefficient (2H:1V Backfill)	0.54	
- Static Drained Active Soil Pressure (Level Backfill)	40	pcf (equivalent fluid pressure)
- Static Undrained Active Soil Pressure (Level Backfill)	82	pcf (equivalent fluid pressure)
- Static Drained Active Soil Pressure (2H:1V Backfill)	64	pcf (equivalent fluid pressure)
- Static Undrained Active Soil Pressure (2H:1V Backfill)	93	pcf (equivalent fluid pressure)
- Seismic Soil Pressure Coefficient (Level Backfill)	0.28	**(Seed and Whitman 1970)**
- Seismic Soil Pressure Coefficient (2H:1V Backfill)	0.45	
- Seismic Soil Pressure Increment (Level Backfill)	33	pcf (inverted triangular pressure)
- Seismic Soil Pressure Increment (2H:1V Backfill)	54	pcf (inverted triangular pressure)
Restrained (Rigid) Wall:		
- At-Rest Soil Pressure Coefficient (Level Backfill)	0.50	
- At-Rest Pressure Coefficient (2H:1V Backfill)	0.72	
- Static Drained At-Rest Soil Pressure (Level Backfill)	60	pcf (equivalent fluid pressure)
- Static Undrained At-Rest Soil Pressure (Level Backfill)	91	pcf (equivalent fluid pressure)
- Static Drained At-Rest Soil Pressure (2H:1V Backfill)	87	pcf (equivalent fluid pressure)
- Static Undrained At-Rest Soil Pressure (2H:1V Backfill)	104	pcf (equivalent fluid pressure)
- Seismic Soil Pressure Coefficient (Level Backfill)	0.50	**(LA County Manual)**
- Seismic Soil Pressure Coefficient (2H:1V Backfill)	N/A	
- Seismic Soil Pressure Increment (Level Backfill)	61	pcf (equivalent fluid pressure)
- Seismic Soil Pressure Increment (2H:1V Backfill)	N/A	

WALL FOOTING RESISTANCE		
Passive Lateral Earth Pressure Coefficient, K_p	3.00	**(Rankine Passive Earth Pressure Theory)**
Ultimate Passive Soil Pressure	360	pcf (equivalent fluid pressure)
Ultimate Coefficient of Friction	0.36	

REFERENCES:

1. Coduto, D., 1994. "Earth Retaining Structure Analysis and Design," Foundation Analysis and Design, Prentice Hall, pp. 666-698.
2. Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division, Administrative Manual S004.0 on Seismic Earth Pressures on Retaining Walls, Rev. 1/3/2024.
3. Seed, H.B. and Whitman, R.V., 1970. "Design of Earth Retaining Structures for Dynamic Loads," ASCE Specialty Conference - Lateral Stresses in the Ground and Design of Earth Retaining Structures," pp. 103-147.
4. Yong, P.M.F, 1985. "Dynamic Earth Pressures Against a Rigid Retaining Wall," Central Laboratories Rpt 5-515, Ministry of Works and Development, Lower Hutt, New Zealand.