Project Overview

- **Project Type:** Jaw Crusher Installation
- **Location:** Carson City, Nevada (Carson River floodplain)
- **Elevation:** ~1,150 m
- **Ore Type:** Gold ore
- **System Capacity:** 1,000 tph
- **Moisture Content:** 3%
- **Availability Target:** 90%
- **Top Feed Size:** 10″
- **Product Size Target:** ~1″–6″

Site Conditions

- **Climate:** Arid
- **Annual Rainfall:** ~127 mm
- **Soil Type:** Carson Series (floodplain smectitic clay)
- **Soil Bearing Capacity:** ~200 kPa
- **Water Table Depth:** ~0.5–1.5 m

Crusher Details

- **Type:** Jaw Crusher
- **Model:** PE1200×1500
- **Capacity Range:** 400–1,000 tph
- **Reduction Ratio:** ~6:1
- **Motor Size:** ~800 hp (600 kW)

Foundation Design

- **Static Load:** ~600 kN
- **Dynamic Load (x2 factor):** ~1,200 kN
- **Footprint:** 4 m × 3 m (12 m²)

- **Embedment Depth:** 1 m
- **Concrete Volume:** ~18 m^3 (includes lean concrete)
- **Estimated Cost (Foundation):** $5,160 (concrete) + $3,000 (rebar & labor)

Power & Electrical Infrastructure

- **Total Power Required:** ~720 kW (including 20% spare)
- **Feeder Voltage:** 1.2 kV
- **Transformer:** 1,000 kVA, oil-cooled, 20% redundancy
- **Switchgear:** MCCs, Motor Starters, VFD (optional)
- **Estimated Electrical Cost:** $130,000

Utilities

- **Dust Control:** 4 nozzles, 20 gpm @ 70 psi
- **Air Supply:** 150 cfm @ 100 psi
- **Pump Power:** ~5 kW
- **Utility Piping/Install Estimate:** $15,000

Installation & Civil Infrastructure

- **Transport & Rigging:** $50,000
- **Site Prep (Grading, Drainage):** $30,000
- **Buildings, Walkways, Fencing:** $100,000
- **Contingency (15%):** $280,000

Total Installed Cost (TIC): $1,800,000

- Crusher: $1,200,000
- Foundation: $5,160
- Electrical: $130,000
- Utilities: $50,000

- Civil Works: $130,000
- Contingency: $280,000

Assumptions & Risks

- U.S. labor & standards
- Import duties included
- At-grade construction, minimal dewatering
- Stable exchange rate; 3% inflation
- TIC sensitive to: soil variability, permitting, equipment delays

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Conclusion & Recommendations

- Feasible under local geotechnical conditions
- Compact, cost-effective foundation
- Throughput efficiency: ~$2,250/ton annual
- Recommend: Full geotech survey, vendor quotes, early procurement