

VNA-SB-029 | Oracle Data, AI & Industry Accelerators | Construction Field ERP, HeavyJob/HeavyBid Refactoring, Multi-Service Dispatch & B2B Portals | Redwood Stone

Construction Timekeeping, HeavyJob/HeavyBid Migration & Multi-Service Field ERP (Landscaping, Trucking, Concrete Washouts & Grading) on Oracle 23ai & APEX

Specialty and multi-service contractors are trapped between two bad options: expensive heavy-civil software (HCSS HeavyJob and HeavyBid) with steep per-user fees, or rigid 'Green Industry' landscaping ERPs (SingleOps, Aspire, LMN, Greenius) that handle mowing crews well but break completely when your business also runs dump-truck hauling, concrete washout bin delivery and environmental manifests, mass grading/earthwork, and shop fabrication. Using Oracle Database 23ai, Oracle APEX 24.2, and AI, we migrate and refactor your estimating, crew timekeeping, tablet shop kiosks, equipment check-in/check-out, and multi-trade dispatch into a unified internal solution that meets 100% of your operational needs with zero per-user licensing.

Search Queries & Scope Covered: HCSS HeavyJob and HeavyBid alternative migration with AI | multi-service contractor ERP landscaping trucking concrete washouts grading | replace rigid green landscaping ERP SingleOps Aspire LMN custom workflow | construction crew timesheet mobile app and shop tablet timecard kiosk | construction equipment tracking barcode check-in anti-hoarding job billing | external B2B subcontractor supplier portal Oracle APEX zero per-seat cost

SOURCE LEGACY STACK (STACK X)		MODERNIZED TARGET ARCHITECTURE (STACK Y)	
HCSS HeavyJob / HeavyBid, Rigid Green/Landscaping ERPs (SingleOps / Aspire / LMN), Paper Timesheets & Equipment Spreadsheets		Oracle Database 23ai + APEX 24.2 PWA: Crew Timecards, Shop Kiosks, AI Bid Refactoring, Trucking/Washout/Grading Dispatch & Anti-Hoarding Fleet Tracker	
BUSINESS PROCESS FIT	PER-USER / FOREMAN FEE	EQUIPMENT HOARDING	ROLLOUT SPEED
100% Tailored (All Trades)	\$0 / Unlimited Users	Eliminated via Daily Charge	5 - 8 Weeks to Production

1. Problem Space & Architectural Bottlenecks

- Single-Trade 'Green' Landscaping ERPs Break on Multi-Service Operations: Off-the-shelf landscaping ERPs (Greenius, SingleOps, Aspire, LMN) assume every job is a crew mowing or planting. When a contractor also operates dump trucks (per-ton/per-load haul tickets), environmental concrete washout containers (drop-off, pump-out, swap, and manifest tracking), and mass grading/excavation (cut/fill production units), office staff are forced into 4 disconnected systems and double data entry.
- HeavyJob & HeavyBid Licensing & Rigidity: HCSS HeavyJob and HeavyBid charge high per-seat/module fees and lock historical bid assemblies, production rates, and daily foreman diaries inside rigid structures that are difficult to customize or combine with AI takeoff and corporate ERP workflows.
- Timekeeping Friction & Payroll Bottlenecks: Field foremen struggle with clunky apps while shop mechanics and fabrication workers lack fast tablet clock-in/clock-out kiosks, forcing payroll clerks to manually reconcile hours across Jobs, Cost Codes, prevailing-wage classifications, and overtime rules.
- Jobsite Equipment Hoarding & Blind Utilization: Foremen routinely 'hoard' excavators, skid steers, trenchers, and specialty tools on their jobsites 'just in case,' hiding idle assets from other crews while equipment managers lack

barcode check-in/check-out, maintenance tie-in, and usage-based depreciation.

2. Technical Solution & Reference Architecture

- 2.1 HeavyJob & HeavyBid Migration to an AI-Native Estimating & Job Cost Platform: We extract your historical HeavyBid / Excel bid tabs, crew assemblies, equipment rates, and HeavyJob cost-code actuals into Oracle Database 23ai. Estimators use Oracle 23ai AI Vector Search and Document AI to parse PDF plans/specs, compare historical production rates against actual job performance, and generate 100% custom proposals.
- 2.2 Multi-Service Dispatch Engine (Landscaping + Trucking + Concrete Washouts + Grading): One unified data model handles every service line cleanly: (a) Landscaping route/crew schedules, (b) Trucking dispatch with digital haul tickets, scale weights, and DOT driver logs, (c) Concrete Washout serialized bin tracking (GPS drop-off, fill status, pump-out/swap routing, and environmental disposal manifests), and (d) Grading & Earthwork daily cut/fill quantities and percent-complete billing.
- 2.3 Mobile Crew Timesheets, Daily Logs & Shop Timecard Tablet Kiosks: Field foremen enter crew time against Job IDs and Cost Codes alongside weather, production quantities, safety sign-offs, and jobsite photos from any phone/tablet PWA. Shop and yard employees clock in and out on mounted tablet kiosks with badge/PIN scan, feeding a multi-tier approval workflow and one-click CSV/API payroll export.
- 2.4 Anti-Hoarding Equipment Check-In/Check-Out, Barcode & GPS Fleet Management: Every heavy asset, truck, washout bin, and tool is tracked via mobile barcode/QR check-in/check-out, UNSPSC coding, and GPS telematics. Automated daily internal job rental charges bill the active job until the asset is checked back into the yard, immediately stopping foremen from hoarding idle equipment and tying actual runtime hours directly to preventive maintenance and depreciation.
- 2.5 Zero-Per-Seat B2B Subcontractor, Customer & Supplier Portals: Because Oracle APEX 24.2 carries \$0 per-user licensing, every foreman, driver, shop worker, general-contractor customer, and external subcontractor accesses real-time job status, washout manifests, COI/W-9 uploads, and billing backups without adding a single dollar of per-seat SaaS fees.

3. Artifact-by-Artifact Conversion & Modernization Matrix

Legacy Artifact / Baseline Workload	Modernized Oracle / Cloud Target	Engineering Method & Outcome
HCSS HeavyJob Field Diaries, Timecards & Cost-Code Tracking	Oracle APEX 24.2 Mobile Foreman PWA + Shop Timecard Kiosks	100% custom cost-code timekeeping, photo/note diaries, multi-tier approval & payroll CSV/API export
HCSS HeavyBid Assemblies, Historical Bid Tabs & Takeoffs	Oracle 23ai AI-Assisted Estimating Workbench + Vector Bid History	Migrate assemblies & production rates; use AI to match new bid items against historical actuals
Rigid 'Green' Landscaping ERP (Fails on Trucking, Washouts & Grading)	Unified Multi-Service Dispatch (Landscaping, Trucking, Washouts, Grading)	Purpose-built dispatch workflows for haul tickets, serialized concrete washout bins, and earthwork
Concrete Washout Bin Spreadsheets & Paper Environmental Manifests	Serialized Container Lifecycle Tracker (Drop-Off / Swap / Pump-Out / Manifest)	GPS bin pin-drop, yard inventory, route optimization, and automated recurring rental + service billing
Foreman Equipment Hoarding & Paper Yard Sign-Out Sheets	Mobile Barcode Check-In/Out + Automated Daily Internal Job Rental Charge	Charge active job daily until checked back in; link hours to maintenance & usage depreciation

Legacy Artifact / Baseline Workload	Modernized Oracle / Cloud Target	Engineering Method & Outcome
Per-User SaaS Portal Fees for Subcontractors & GC Customers	Zero-Per-Seat Oracle APEX B2B Customer & Subcontractor Portal (VPD)	Unlimited external logins for haul tickets, washout manifests, lien waivers, and AIA progress billing

4. Oracle APEX & Ancillary Engineering Toolchain

- Oracle APEX 24.2 Progressive Web App (Mobile Crew Timecards, Tablet Shop Kiosks, Barcode Scanner & Spatial Map)
- Oracle Database 23ai (AI Vector Search for Historical Bid Matching, OCI Document Understanding for Tickets/Plans)
- Viscosity AMP (Role-Based Security for Foremen, Estimators, Dispatchers, Mechanics, and External GCs)
- APEX Office Print (AOP) for AIA Billing Backups, Bid Proposals, Certified Payroll & Concrete Washout Manifests
- Automated REST / CSV Connectors for QuickBooks, Vista by Viewpoint, Spectrum, Sage 300 CRE, and Oracle Fusion

Anonymized Production Proof: Engineered for national deep-foundation/bridge contractors, multi-service site-work contractors (combining commercial landscaping, dump-truck hauling, concrete washout services, and mass grading), and electrical/specialty trades, our Oracle APEX + 23ai field operations suites eliminate six-figure annual per-seat software bills, stop jobsite equipment hoarding, and cut weekly payroll and billing close times by 75%.

5. Deep-Dive FinOps Research Notes

Migrating from HCSS HeavyJob & HeavyBid to an Internal AI-Powered Construction Platform: How civil, foundation, and specialty contractors refactor HeavyBid assemblies and HeavyJob field timekeeping into a zero-per-seat Oracle 23ai and APEX 24.2 platform that fits 100% of their workflow.

1. *Why Contractors Outgrow Off-the-Shelf HeavyJob and HeavyBid* - Commercial estimating and field management packages like HCSS HeavyBid and HeavyJob were designed decades ago around rigid desktop paradigms and per-user licensing tiers. As a contractor grows across multiple divisions, adding every foreman, lead hand, truck driver, shop mechanic, and project engineer becomes cost-prohibitive. More importantly, off-the-shelf software forces your estimators and superintendents to adapt to the vendor's data model. Historical bid production rates sit disconnected from live daily field actuals, and integrating custom payroll rules, per-diem logic, or specialized equipment rates requires clumsy CSV exports.
2. *Refactoring HeavyBid Assemblies with Oracle 23ai Vector Search & Document AI* - We extract 100% of your historical HeavyBid estimates, crew/equipment assemblies, cost code libraries, and vendor quotes into Oracle Database 23ai. Using OCI Document Understanding and Oracle 23ai AI Vector Search, estimators can upload new RFP bid schedules and PDF specifications to automatically match line items against historical jobs of similar soil, crew size, and haul distance. Instead of guessing production rates, the AI surfaces the exact historical P50 and P80 labor/equipment cost per unit from your completed jobs, while APEX Office Print (AOP) generates polished client proposals and bid tabs in one click.
3. *Replacing HeavyJob with Mobile Foreman Timecards & Shop Tablet Kiosks* - On the field side, we replace HeavyJob with a fast, touch-friendly Oracle APEX 24.2 Progressive Web App (PWA) alongside mounted Shop Timecard Tablet Kiosks. Foremen log crew hours against Job IDs and Cost Codes in under 3 minutes, attach geotagged jobsite photos, and record daily production quantities and weather delays. Shop and yard personnel clock in and out on wall-mounted

iPads/tablets with instant job-allocation prompts. Multi-tier approvals route automatically from Foreman to Superintendent to Payroll, exporting clean, validated batches directly to your accounting system.

Why 'Green' Landscaping ERPs Fail Multi-Service Contractors (Trucking, Concrete Washouts & Grading): When a contractor runs commercial landscaping plus dump-truck hauling, concrete washout containers, and mass grading, single-trade 'Green' ERPs break down. Here is how we unify all service lines in one database.

1. The Single-Trade Trap of 'Green Industry' Landscaping ERPs - Many site-work and exterior services contractors start out using a 'Green Industry' landscaping ERP (such as SingleOps, Aspire, LMN, or Greenius). Those platforms work fine when your only business process is sending a 4-person mowing or planting crew to a property on a recurring schedule. However, fast-growing contractors rarely stay in a single lane. When that same company expands into dump-truck aggregate hauling, roll-off concrete washout bin rentals and pump-outs, hydroseeding, SWPPP erosion control, and mass grading/excavation, the landscaping ERP becomes a massive operational bottleneck. It has no concept of serialized container inventory sitting on a builder's lot, no per-ton or per-load trucking dispatch ticket, and no cut/fill earthwork progress tracking.

2. Engineering First-Class Workflows for Trucking, Concrete Washouts & Grading - Rather than forcing non-landscaping divisions into fake 'mowing work orders' or maintaining four separate software subscriptions, we build a unified Multi-Service Contractor ERP in Oracle APEX 24.2 and Oracle Database 23ai where each division has its exact native workflow: Concrete Washout Services: Track every serialized washout bin and liner by barcode and GPS coordinates. Manage drop-offs, scheduled pump-outs, bin swaps, slurry disposal manifests, and automated monthly rental + service invoicing without losing bins on sprawling subdivisions. Trucking & Hauling Dispatch: Dispatch internal dump trucks and third-party sub-haulers via SMS/mobile PWA, capture scale tickets with OCR, and calculate hourly, per-ton, or per-load billing and driver pay automatically. Mass Grading, Excavation & Landscaping: Track heavy equipment cut/fill yardage, laser/GPS grade milestones, and recurring landscape maintenance crews against a single unified customer and job record.

3. One Unified Customer 360, One Invoice & 100% Ownership - Because grading, concrete washouts, trucking, and landscaping all live in the same ACID-compliant Oracle 23ai database, a homebuilder or general contractor receives consolidated job reporting and clean AIA/progress or service invoices, while leadership sees real-time gross margin by service line, truck, bin, and crew.

Eliminating Jobsite Equipment Hoarding: Barcode Check-In/Out, Internal Rental Billing & Fleet Maintenance:

How automated daily internal job rental rates, mobile barcode check-in/check-out, and usage-based depreciation stop foremen from hoarding idle equipment and tie field hours directly to shop maintenance.

1. The Hidden Cost of Jobsite Equipment Hoarding - Across heavy civil, foundation, and site-work contractors, one of the largest sources of wasted capital is 'equipment hoarding.' A foreman finishes using a mini-excavator, skid steer, trencher, or specialty pump on Tuesday, but parks it behind a storage container so he still has it next week 'just in case.' Meanwhile, another jobsite 15 miles away is forced to rent the exact same machine from an outside rental house for \$4,500/month because the yard manager has no visibility into which assets are actively working versus sitting idle.

2. Barcode Check-In/Check-Out & Automated Internal Job Rental Charges - Our Oracle APEX Asset & Equipment Manager solves equipment hoarding through behavioral economics and simple mobile scanning. Every piece of equipment and specialty tool is tagged with a durable QR/barcode and classified using UNSPSC / internal fleet codes. When an asset is checked out to a Job ID, the system automatically posts a daily internal rental charge against that superintendent's job budget every single day until the asset is physically checked back into the yard or transferred to another job. Foremen immediately return idle gear the moment they finish using it to protect their job bonus and margin.

3. Tying Timesheet Engine Hours to Preventive Maintenance & Depreciation - When foremen submit daily crew timecards and equipment meter readings, engine hours flow directly into the Shop Maintenance module. Preventive maintenance work orders trigger automatically at 250/500/1,000-hour intervals, and finance gets true usage-based

depreciation rather than flat straight-line guesswork.

6. Principal Architect Q&A

Q: Why build an internal construction and multi-service ERP on Oracle APEX + 23ai instead of buying HCSS HeavyJob or a niche landscaping ERP?

A: COTS tools force you to choose between heavy-civil rigidity (HeavyJob/HeavyBid) or single-trade 'Green' landscaping ERPs that cannot handle dump-truck hauling, concrete washout container logistics, or mass grading. With Oracle APEX 24.2 and Oracle Database 23ai, we deliver a system tailored 100% to every service line you operate, in 5 to 8 weeks, with \$0 per-user licensing fees.

Q: How do you migrate our historical estimates and cost history out of HeavyBid and HeavyJob?

A: We extract your historical HeavyBid assemblies, bid tabs, equipment rates, and HeavyJob daily timecard/cost-code history into structured Oracle 23ai tables and AI Vector indexes. Your estimators keep all their institutional history while gaining AI-assisted takeoff and bid matching.

Q: How does your system stop foremen from hoarding equipment on jobsites?

A: We pair mobile barcode check-in/check-out with automated daily internal job rental billing. As long as an excavator, truck, or attachment is checked out to Job #104, Job #104's budget is charged the daily internal rental rate until the foreman checks it back into the yard or transfers it to another active crew.

Q: Can external subcontractors, haulers, and homebuilder customers log into the portal without costing us per-seat fees?

A: Yes. Oracle APEX is licensed by underlying database compute (ECPU/OCPU), not per named user. You can grant portal access to 500 internal crew members and 5,000 external subcontractors, third-party truckers, and GC customers at \$0 per-user license cost, secured by Oracle Virtual Private Database (VPD).