OBJECTIVES

- Define the phrase “Trained”
- Union Sanitary District Overview
- What Was The Need
- Training System
  - Training Modules
  - Assessments
  - Train The Trainer (SME to Trainer/Learning Facilitator)
  - Results and Management Lessons Learned
- USD and the term “Trained”
BEFORE WE BEGIN
Complete the following statement:

“WHEN I SAY AN EMPLOYEE HAS BEEN TRAINED I MEAN:
WHO ARE WE?

- Special District to provide Waste Water Treatment
- Founded 1918
- Service area
- About 325,000 people
- About 800 miles of pipe
- Average dry flow 27.5 MGD
- About 130 employees
What Was The Need For A System

- No Sustainable Training System or Program Exists
Resources Applied

- Full Time Technical Training Coordinator
- Full Time Plant Operator Trainer
- Full time intern for over three years
- Support from over twelve operating group SMEs
- The Lab (right outside the door)
THE TRAINING SYSTEM

Training Modules

Training System
WHAT IS A TRAINING MODULE?

- A collection of documents that together, provide a system the District can use to train, qualify/certify, and assess employees in the proper performance of their job

- Job Competency Requirement (JCR)
  - Competency Assessment (CA)
- Standard Answer (SA)
- Standard Operating Procedures (SOP)
  - Do not cover in this presentation
Job Competency Requirement

- The *minimum* knowledge and skills that an individual *must demonstrate* to be considered competent

- Three sections
  - 300 Section: Tasks (listed in a sequence of accomplishment)
  - 200 Section: Systems (mostly Knowledge / some Skills)
  - 100 Section: Fundamentals (Knowledge)
Do You *Really* Know? - OR -

What Good Looks Like (prn. Wiggle)

- Given a task:
  - Who determines when an employee successfully demonstrates the task?
  - What do you base success upon? What was your standard?

- At SFPUC, WGLL is determined by __________.
STANDARD ANSWERS (SA)

- USD uses Standard Answers to define WGLL

- Steps in Development of Standard Answers:
  - Developed by the Subject Matter Expert (SME)
  - Reviewed by the SME and Coach
  - Approved by the topic area Manager

- SA become the measurement of competency
COMPONENTS OF A SKILL
STANDARD ANSWER FOR PAVING

300 Task: Conduct Final Roll Over the Patch

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. What means of communications are used?
E. What safety precautions must be observed?
F. Satisfactorily perform this task.
COMPONENTS OF A SYSTEM
STANDARD ANSWER FOR PAVING

200 System: Utility Compactor (Roller)

- What models/types are available?
- Where is it located?
- How does it operate?
- What maintenance is done to ensure proper operation?
- What is its capacity?
- What are the probable indications if this component fails?
- Normal operating parameter status (ON/OFF/Flow/Amp/Level etc.)
# PAVING JCR TASKS

## 300 TOPIC (OPERATOR TASKS)

### TASKS

For the tasks listed below:

- A. What are the steps of this procedure?
- B. What are the reasons for each step?
- C. What control/cooordination is required?
- D. What means of communications are used?
- E. What safety precautions must be observed?
- F. Satisfactorily perform this task.

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<tr>
<th>TASKS</th>
<th>YES / NO</th>
<th>REASON</th>
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<tbody>
<tr>
<td>300.8 CONDUCT FIRST AND SECOND LIFT OF AC (A B C E)</td>
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<td>REASON</td>
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<td>(Qualifier/Date)</td>
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<tr>
<td>300.9 CONDUCT FINAL LIFT OF AC (A B)</td>
<td>YES / NO</td>
<td>REASON</td>
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<tr>
<td>(Qualifier/Date)</td>
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<tr>
<td>300.10 RAKE THE FINAL LIFT (A B)</td>
<td>YES / NO</td>
<td>REASON</td>
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<tr>
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</table>
## 200.6 Tamping Rammer


b. Mikasa MTX-80. #316, #317, #302.

c. The Mikasa MTX-80/MTX-90 tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include compacting for roads and embankments as well as backfilling excavations. The impact force of the MTX-80/MTX-90 levels and uniformly compacts voids between soil particles to increase dry density. Circular motion is converted to perpendicular motion, which creates impact force. The MTX-80/MTX-90 tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential. The Mikasa MTX-80/MTX-90 is equipped with an air cooled, four-cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

The Mikasa MTX-80/MTX-90 uses an oil bath lubrication system. Always check the hydraulic oil level through the oil level sight glass at the rear of the tamper foot.

Report any equipment damage or malfunction to the shop. Write a work order and/or tag-out if directed by the shop.

d. CS workers check:

- Engine oil
- Check fuel level
- Hydraulic oil level
PROCEDURES

1. PAVING

1.1 Pre-Job Required Actions

**WARNING**
Gasoline is extremely flammable and its vapors can cause an explosion if ignited. DO NOT start the engine near spilled fuel or combustible material.

Use extreme caution when filling the spare gas can. Ensure the can is filled while on the ground, away from any other objects that can cause a spark. Keep spare fuel well ventilated.

NEVER fuel the rammer while it is in the bed of a truck. Place it on a solid footing before refueling.

NEVER fuel the rammer while the engine is running or hot. Do not overfill the tank.

Always allow the engine to cool before performing maintenance. Components are very hot after use.

**NOTE**
Repeat steps 6, 7 and 8 until asphalt is set to proper grade. Then proceed to step 9.

- **Step 6:** Fill trench with asphalt
  - 3 - 4" 1st and 2nd lifts
  - Lesser amounts for final lift based on remaining depth
- **Step 7:** Compact the lift
  - Moisten the roller drums prior to rolling
- **Step 8:** Allow to cool
  - To city temperature requirements or about 240 - 250 degrees
  - Check with thermometer

**CAUTION**
Do not use too much water to moisten the rollers. If too much water is used, it will cause the patch to check or crack.

- **Step 9:** Roll asphalt with utility compactor
  - Do edges first and work towards middle
  - Do not allow the utility compactor to stop on the fresh AC

**Step 1:** Verify no parking signage is in place
- If required
  - Planner/Scheduler is responsible for ensuring this is done
**Step 2:** Verify asphalt has been ordered
- Planner/Scheduler is responsible for ensuring this is done
**Step 3:** Verify saw cut or grinding has been done or scheduled
- If required
**Step 4:** Verify inspector has been notified
- Planner/Scheduler is responsible for ensuring this is done
**Step 5:** Task Complete

1.2 PAVING

**Step 1:** Conduct equipment pre-trip inspections
**Step 2:** Setup traffic control
**Step 3:** Remove plate(s) or cutback
**Step 4:** Verify trench is at proper height and compaction
THE TRAINING SYSTEM

Training Modules

Assessments

Training System
We base our assessment on the competencies the employee are trained in
  - Standard Answers are the basis of the assessment

Expanding into critical thinking / scenario driven training
  (If, Then, Else process)
ASSESSMENT

- Assess whether the employee has the knowledge and skill to complete the task in accordance with the Standard Answer

- **T** - Information was not successfully transferred from Trainer to Employee. (Classroom, On-The-Job (OJT), Computer Based, etc.)

- **M** - Was the equipment and/or tools inoperative or defective thus affecting the employees ability to accomplish the task. Was the equipment not to specification? Too old? A new piece of equipment? Was the documentation inadequate or wrong?

- **E** - Did the training environment affect the employee accomplishment of the task. Environmental factors include: Time constraints and Temperature/Weather.

- **KSA** - Did the employee not have the requisite KSA to accomplish the task.
ASSESSMENT

Assess whether the employee has the knowledge and skill to complete the task in accordance with the Standard Answer (T, M, E or, KSA)

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<th>YES</th>
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<td>___________ Joe Somebody ___________</td>
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<table>
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<th>300.3 MARKING USA (A B C E)</th>
<th>YES</th>
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<th>REASON</th>
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<td>Remarks: <em>Did not make marks large enough. Most marks were under 6” and difficult to see. Reviewed proper process and will re-assess next month.</em></td>
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USING ASSESSMENT DATA

Provide Data To:
- Team Balanced Score Card
- Operational Excellence Scorecard
- Succession Planning
- Long Term Staffing

Provide Input To:
- Employee Development Plan
- Employee Performance Appraisal

Gauge Effectiveness Of:
- Instruction
- Instructors
- Knowledge Retention
- Tools/Equipment
THE TRAINING SYSTEM

- Training Modules
- Assessments
- Training System
- Train the Trainer
ARE YOU MONET?

- A Subject Matter Expert once said about module development:

......this is an art. You cannot just do this. You cannot be assigned to do it out of the blue. It is no different from painting. If you never learned to paint, the outcome probably won’t look good.
What Makes An Subject Matter Expert, An Expert Trainer?

- What is the process at your site when someone is assigned to train a co-worker?
- The Train The Trainer course
  - Four Modules
    1. Adult Learning Theory
    2. Training Module Development
    3. Training Strategies and Techniques
    4. Competency Assessment

Know what an assessment is and why we use them
Develop an assessment from a Training Module
Assess an employees performance
Develop Standard Operating Procedures (SOP)
## Course of Instruction

### Course Syllabus and Instructor Guide

**Paving**

<table>
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<tr>
<th>Session Number</th>
<th>TIME</th>
<th>TM LINE NUMBER</th>
<th>TOPIC</th>
<th>ASSESSMENT TYPE AND SESSION #</th>
<th>Related Instructor Activity</th>
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<td>300.1</td>
<td>No parking signage, Order asphalt, Obtain asphalt, Call inspector, Equip Vehicle pre-checks, Setup traffic control, Oil the trench, 1st and 2nd AC lifts, Final lift, Rake final lift, Asphalt roller, 2nd Compaction, Final roll over, Oil the edges, Install a cold patch, Pave around the manhole, Stow equipment</td>
<td>Oral exam during practicals for 300.1 thru 300.6.</td>
<td>Slides 8 - 35</td>
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<td>8:45AM – 9:30AM</td>
<td></td>
<td>After break, employees will meet out in the training center.</td>
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<td>3.</td>
<td>9:00AM – 10:00AM</td>
<td>300.16</td>
<td>Practical</td>
<td>Employee(s) complete task. Two cone sections in training center.</td>
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<td></td>
<td>Training Center</td>
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<td></td>
<td></td>
<td>Pave Around a Manhole</td>
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<td>4.</td>
<td>10:00AM – 11:00AM</td>
<td>300.7</td>
<td>Practical</td>
<td>In pre-cut areas in the training center.</td>
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<td></td>
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<td>300.8</td>
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<td></td>
<td></td>
<td>Oil the trench and conduct 1st AC lift</td>
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Management of the System

- Microsoft Share Point
- Development, Review, and Approval

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<td>Andy Morrison</td>
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THE TRAINING SYSTEM

Training Modules

Assessments

Benefits and Management Lessons Learned

Train the Trainer

Training System
Results

- Over thirty modules developed to date
  - Tractor Loader Backhoe (Collections)
  - SCADA (Plant Operator)
  - Pump Station Mechanic (Maintenance)
- Extensive process review
- Retain Expert Knowledge
- Instruction and assessments completed in seven modules
- Employee feedback 4.8 on a 5.0 scale
- Researching uses in:
  - Professional development plans
  - Beginning discussion with executive team and union
Results

- Construction and use of a dedicated training center

- TV and Vactor
- Confined Space
- Excavation
- Training Trailer
- Manholes
- Backhoe and Skid Steer Loader
- Paving
- Spot Repair
- Skid Steer Loader
Results

• Workforce Development Tied To Strategic Plan
• Use of Balanced Scorecard
  • Progress (Modules Developed, Employees Assessed)
  • Performance (Safety, ROI (Cost Vs Benefit))
  • Beginning to use Kirkpatrick Level 3 evaluations
    • Employee use of K&S and Coach Observation of Performance
• Awarded Training Magazine Top 125 Global Training Organizations for 2011
Management Lessons Learned

- It’s going to take you longer than you want
- Resources taken away from work
- Details, details = Frustration
- It’s not an event, it’s a process
Management Lessons Learned

• Leadership drives the bus
  • Or it dies

• Not everyone can
  • Develop a module

• Train fellow employees

• Assess fellow employees
When we say an employee has been trained:

Trained occurs when instruction is given either:
- on the job (OJT)
- in the classroom
- or both
accomplished in concert with/or followed by successful demonstration of the acquired knowledge or skill
THANK YOU

James Mcpherson
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Union Sanitary District
Union City, CA

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james_mcpherson@unionsanitary.com