



# DEFINABLE FEATURES OF WORK (DFOW)



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# Features of Work

- **To define features of work, each ...**

- **Results in a physical product**

Example: Ceramic Tile, Fencing & Gates, Masonry, Rough-In Electrical, etc.....

- **Can be identified by a unique trade or set of coordinated trades**

- **Requires a distinctive set of quality control activities**

COE describes a DFOW as a task that is separate and distinct from other tasks & has control requirements & work crews unique to that task.





# Features of Work

## Definable Features of Work

are required to be listed in the contractors' Quality Control Plan.





# Features of Work

## How to decide a DFOW?

- ❑ Define your features narrowly enough to ensure adequate Quality Control
- ❑ But not so narrowly that you cause yourself a lot of unnecessary work
  - As your are performing a series of planning, inspections & record keeping procedures for each of which



# Features of Work

- **Begin developing your DFOW by looking at your technical specifications.**
- **Minimum one DFOW for each specification section.**
- **More than one for more complex specification sections.**
  - **Primarily Mechanical/Electrical Sections**



# Features of Work



## Step One

### DIVISION 03 - CONCRETE

- ✓✓ 03 30 00 CAST-IN-PLACE CONCRETE
- ✓✓ 03 40 00.00 10 PLANT-PRECAST CONCRETE PRODUCTS FOR BELOW GRADE CONSTRUCTION

### DIVISION 04 - MASONRY

- ✓ 04 20 00 MASONRY

### DIVISION 05 - METALS

- ✓✓ 05 12 00 STRUCTURAL STEEL
- ✓✓ 05 21 19 OPEN WEB STEEL JOIST FRAMING
- ✓✓ 05 30 00 STEEL DECKS
- ✓✓ 05 40 00 COLD-FORMED METAL FRAMING
- ✓✓ 05 50 13 MISCELLANEOUS METAL FABRICATIONS
- ✓✓ 05 51 33 METAL LADDERS
- ✓✓ 05 52 00 METAL RAILINGS

# Features of Work



## Step Second

Next, add to or replace general category task with tasks that meet the following criteria:

- I.** It requires quality controls such as inspections
- II.** It has operations, work crews, or disciplines unique to that task
- III.** It is a critical path activity on the schedule
- IV.** It is monitored by QC Specialist or specialty inspection personnel



# Features of Work



## Step Second

Example, in place of the general category Cast-In-Place concrete, you would add following to your DFOW list:

- I. Concrete form work & placing reinforcement
- II. Placing concrete, finishing & curing



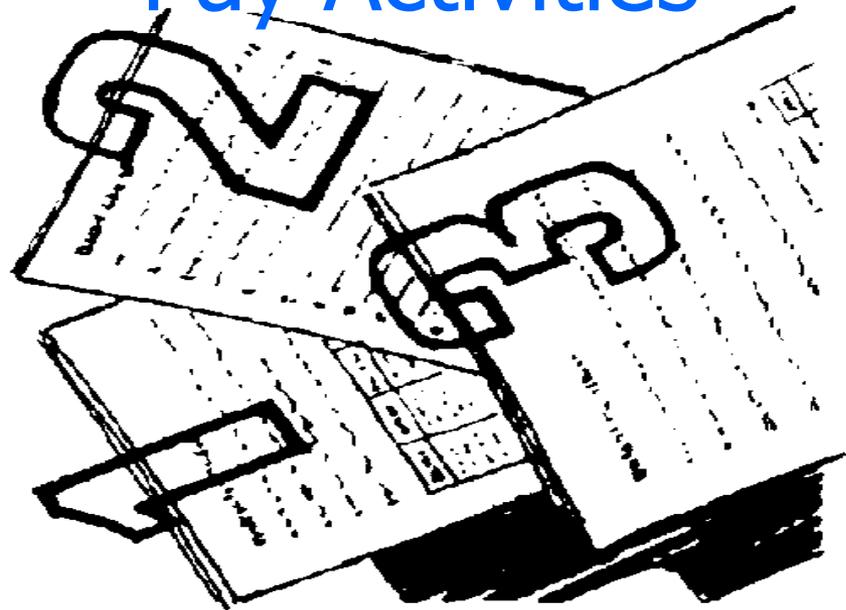
# Features of Work



- **Features of Work** are linked to:
- Schedule
- 3-phase inspection check
- Pay Activities



And then a **MIRACLE** occurs!  
And the project finishes on time and within budget.



# DFOW for 3-Phase Inspection



## DEFINABLE FEATURES OF WORK

ACTIVITY	PHASE					
	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
	<ul style="list-style-type: none"> <li>Identify and demarcate survey areas.</li> <li>Review the AHAs for this activity.</li> <li>Verify that survey requirements have been reviewed with appropriate personnel.</li> <li>Ensure that base drawings are provided to geophysical contractor.</li> </ul>					
Concrete coring and cutting	<ul style="list-style-type: none"> <li>Verify that schedule and access notifications have occurred with the ROICC.</li> <li>Review applicable sections of Work Plan and SAP.</li> <li>Verify that USA has been contacted 48 hours prior to sampling, if needed for 3-foot depth.</li> <li>Verify that geophysical survey has been conducted.</li> <li>Review existing site utility drawings and marked utilities (by geophysical contractor).</li> <li>Review the AHAs for this activity.</li> <li>Verify that locations are marked and surveyed.</li> <li>Verify that concrete coring and cutting equipment is available and inspected prior to use.</li> <li>Verify that photos have been taken to document pre-investigation conditions.</li> </ul>		<ul style="list-style-type: none"> <li>Verify that concrete coring and cutting is being conducted in accordance with the Work Plan.</li> <li>Verify that chunks of soil and rocks are being visually examined and field screened.</li> <li>Verify that site activities are being photographed.</li> <li>Inspect surface completion activity.</li> </ul>		<ul style="list-style-type: none"> <li>Inspect and verify that work was performed per the Work Plan.</li> <li>Verify proper management of waste.</li> <li>Inspect field documentation.</li> <li>Inspect and verify that work was performed per the Work Plan.</li> <li>Verify proper management of waste.</li> <li>Inspect field documentation.</li> <li>Verify that boreholes are backfilled and surface is completed to pre-existing conditions.</li> </ul>	

# Adding Features to QCS



Quality Control System - Home Office - Portland [ Site ID G4MHQT33 ]

File Options Help

Home Contractor Library Government Library

Overview Reports Exit

### Contractor Library - Feature Types

[QCS Site Description](#)  
[Contractor Staff](#)  
**[Feature Types](#)**  
[3 Phase Inspections](#)  
[Hazard Analysis](#)

Add Edit Delete Find

Feature of Work
Builders Hardware
Carpentry - Finish
Carpentry - Framing
Carpentry - Rough
Concrete - Cast-In-Place
Concrete - Sidewalks
Drywall
Electrical, Aerial
Electrical, Interior - Finish
Electrical, Interior - Rough
Electrical, Underground
Mechanical - HVAC
Metal Decking
Metal Studs
Plaster
Plumbing - Undergroun
Plumbing, Interior - Finish
Plumbing, Interior - Rough
Structural Steel

#### Add Feature of Work

Feature of Work:

Close

Two red arrows originate from the 'Add' button in the 'Contractor Library - Feature Types' window. One arrow points to the 'Add' button itself, and the other points to the 'Add Feature of Work' dialog box, illustrating the process of adding a new feature.

# Features of Work



**Resident Management System**

File Help

Home Summary Office Local Library District Library System Library Overview Reports Exit

**District Library - Middle East District - Feature Types**

[District Policy](#)  
[Prime Contractors](#)  
[Standard Text](#)  
[QA/QC Reports](#)  
[Feature Types](#)  
[3 Phase Inspections](#)  
[Specification Sections](#)  
[Submittal Types](#)  
[Milestone Events](#)  
[Trades / Labor / Work](#)  
[Construction S Curves](#)

Add Edit Delete Find

Feature of Work
PACKAGED SEWAGE TREATMENT PLNT
PAINTING, SEALERS AND STAINS
PAVING, RIGID
PLUMBING, INTERIOR - ROUGH
PLUMBING, INTERIOR - TRIM
POL/WASTE OIL TANK
PRECAST ARCHITECTURAL CONCRETE
RADIO & PUBLIC ADDRESS SYSTEM
ROLLUP/COILING, SHTRS/DRS/GRLS
ROOFING, BUILT-UP
ROOFING, INSULATION
ROOFING, METAL
SALVAGE
SEISMIC PROT FOR MECH & ELECT
SHEETMETAL WORK, ARCHITECTURAL
SIGNAGE, EXTERIOR
SIGNAGE, INTERIOR
SOIL REMEDIATION
SOIL TREATMENT

Roofing may be one Specification Section but necessary to have 3 separate features of work

# Adding Features to QCS



The screenshot displays the RMS Contract Menu software interface. The main window is titled "QA/QC - Features of Work" and contains a table with columns for "Feature of Work" and "Number of days after Preparatory that Initial should be scheduled". A red arrow points to the "Add" button in the top toolbar, with a callout box that says "Select Add".

An "Edit Feature of Work" dialog box is open, showing the "Feature of Work" field with the text "ELECTRICAL, INTERIOR - FINISH" and a "Number of days after Preparatory that Initial should be scheduled" field with the value "2". A red arrow points to the dropdown arrow next to the "Feature of Work" field, with a callout box that says "Select Lookup or Manually insert".

A "Lookup" dialog box is also open, showing a list of feature categories. The "Feature of Work" field is selected, and the list includes:

- ELECTRICAL, INTERIOR - LT FIXT
- ELECTRICAL, INTERIOR - ROUGH
- ELECTRICAL, LIGHTNING PROTECTN
- ELECTRICAL, PRIMRY SWGR & DIST
- ELECTRICAL, UNDERGROUND
- ELEVATOR SYSTEM
- ENERGY MONITORING CNTRL SYSTEM
- ENVIRONMENTAL PROTECTION
- EVAPORATIVE COOLING SYSTEM
- EXTERIOR CEMENT BOARD SYSTEM
- FENCING & GATES

The "Lookup" dialog box also has a "Search Characters" field at the top and "OK" and "Cancel" buttons at the bottom.

# FEATURES OF WORK



RMS Contract Menu - [N0001748] W917PM-07-D-0015 0009 CNP FOB in Herat, AF

File Help

Home Administration Finances QA/QC Submittals Schedules Closeout Import/Export Overview Reports

**QA/QC - Features of Work** *(Read Only)*

[QA/QC Daily Reports](#)  
[QA/QC Summary](#)  
**Features of Work**  
[3 Phase Inspections](#)  
[Hazard Analysis](#)  
[QC Requirements](#)  
[Equipment Checks](#)  
[Exposure Hours](#)  
  
[Required Verifications](#)  
[QA Tests](#)

View Find

Feature of Work	Number of days after Preparatory that Initial should be scheduled
ACOUSTICAL CEILINGS	2
CONCRETE FORMWORK	5
CONCRETE REINFORCEMENT	5
CONCRETE, CAST IN PLACE	5
EARTHWORK (EXCAV & BKFL, BLDGS)	2
EARTHWORK EXC & BKFL, (TRENCH)	2
ELECTRIC UTILITIES	2
ELECTRICAL (PRIMARY)	2
ELECTRICAL CONDUCTORS & GRNDG	2
ELECTRICAL PWR SYS & CAPACITOR	2
ELECTRICAL PWR TRANS & DISTR	2
ELECTRICAL RACEWAYS	2
ELECTRICAL X-FORMERS, BUS DUCT	2
ELECTRICAL, (LOW VOLTAGE)	2
ELECTRICAL, BOXES & WIRING DEV	2
ELECTRICAL, INTERIOR LIGHTING	2
ELECTRICAL, PERIMETER LIGHTING	2
ELECTRICAL, STRT PNLBD & SWTCH	2

Features should be loaded by the KTR before beginning work and should correspond with the feature schedule in the KTR's construction schedule

# Activity Hazard Analysis



- **What is a hazard?**

A hazard is the potential for harm.

A hazard is a condition or activity that, if left uncontrolled, can result in an injury or illness.



# Activity Hazard Analysis



- **What is a Activity Hazard Analysis?**

An activity hazard analysis is a technique that focuses on tasks as a way to identify hazards before they occur.

It focuses on the relationship between the worker, the task, the tools, and the work environment.

Once you identify the hazards you will take steps to eliminate or reduce them.



# Activity Hazard Analysis



- **Before beginning each work activity involving a type of work presenting hazards the Contractor performing that work activity shall prepare an Activity Hazard Analysis.**



## **SAFETY NORMS**

We believe continued business success will be built on foundations of safety planning and the prevention of injury.



# Activity Hazard Analysis



- **AHA** is really keyed around the activities required to accomplish a certain **Feature of Work**.



# Activity Hazard Analysis



## How do I identify workplace hazards?

- A job hazard analysis is an exercise in detective work. Your goal is to discover the following:
- What can go wrong?
- What are the consequences?
- How could it arise?
- What are other contributing factors?
- How likely is it that the hazard will occur?



*Tools and Techniques for*

### Conducting a Job Hazard Analysis (JHA)



# Activity Hazard Analysis



RMS Contract Menu - [N0001741] W917PM-07-D-0021 0003 CNP Border Crossing Pnt Herat

File Help

Home Administration Finances QA/QC Submittals Schedules Closeout Import/Export Overview Reports

**QA/QC - Hazard Analysis** *(Read Only)*

[QA/QC Daily Reports](#)  
[QA/QC Summary](#)  
[Features of Work](#)  
[3 Phase Inspections](#)  
[Hazard Analysis](#)  
[QC Requirements](#)  
[Equipment Checks](#)  
[Exposure Hours](#)  
[Required Verifications](#)  
[QA Tests](#)

View

Feature of Work	Number of Principal Steps	Number of Hazards	Status
Aboveground Fuel Oil Storage			Not Received
Acoustical Ceiling			Not Received
Aggregate and Graded-Crushed			Not Received
Air Supply, Distribution, Vent			Not Received
Automatic Transfer Switch-ATS			Not Received
Building Foundation			Not Received
Building Insulation			Not Received
Building Lighting			Not Received
Building Telecom, Cabling Sys			Not Received
CMU & Brick Masonry			Not Received
Cast-In-Place Concrete			Not Received
Ceramic Tile			Not Received
Cold-Formed Metal Framing			Not Received
<b>Concrete Finishing</b>			<b>Not Received</b>
Diesel GeneratorSet Stationary			Not Received
Elec. Dist. Sys.BLDG, UG			Not Received
Electrical Space heating Equip			Not Received
Excavating,Backfilling & Comp.			Not Received

All Features of Work must have an Activity Hazard Analysis

# Activity Hazard Analysis



- **An AHA is made up of the following elements in QCS:**

Principal Steps – Includes Hazards and Controls

- Equipment – Equipment required for performing the work
- Inspections – List of required Ktr Inspections for the work
- Training – List of required training that might be anticipated



# Activity Hazard Analysis



ACTIVITY HAZARD ANALYSIS		
Contract No.	Project:	Location:
Date:	Activity:	Estimated Start Date:
PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principal step for potential hazards.</i>	<i>Develop specific controls to eliminate or reduce each hazard to an acceptable level of risk.</i>
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements, include hazard communication.</i>

# Activity Hazard Analysis



## ACTIVITY HAZARD ANALYSIS

Contract No:		Project:		Location:	
Date:		Activity:		Estimated Start Date:	
PHASE NO.	ACTIVITY/P.STEPS	POTENTIAL HAZARDS	PRECAUTIONARY ACTION & CONTROL TO BE TAKEN		
	Concrete work	a. Injury and damages by collapse of stacked material.	<p>1. Height and supports of piling and stacking materials shall be strictly controlled (14.B.01)</p> <p>2. Lumbers will not to stacked more than 16 ft (4.8 m) high. It will be stacked level so as to be stable and self-supporting (14.M.07.b &amp; d)</p> <p>3. Bag of cement will not be stacked more than 10 ft high (14.B.08.b)</p>		
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS		TRAINING REQUIREMENTS	
Concrete Pump Truck Remicon Truck		Equipment Safety Inspection		Traffic Regulation in army installation	

POD Form 184-R (Rev) 1 Sep, 98

Edition of Apr. 91 is Obsolete

# Activity Hazard Analysis



PHASE NO.	ACTIVITY/P.STEPS	POTENTIAL HAZARDS	PRECAUTIONARY ACTION & CONTROL TO BE TAKEN
	Concrete work	b. Injuries and damages by unexpected collapse or fall of forms.	<ol style="list-style-type: none"> <li>1. Supporting ground or completed from construction will be of sufficient strength to carry the vertical and lateral loads to be imposed (27.B.03.a)</li> <li>2. Diagonal bracing will be provided so that stiffness and prevention of buckling of individual members can be provided (27.B.05)</li> <li>3. Sills for shoring will be sound, rigid and capable of carrying the maximum intended load (27.B.03.b).</li> <li>4. When steel forms being handled by heavy equipment in lifting or lowering for installation or removal all workers within the range of the equipment operation will be subject to the signal man's orders (27.A.02)</li> <li>5. All the erected shoring members will be inspected immediately before, during and after the concrete placement Any shoring equipment found to be damaged, displaced loosened or weakened will instantly be reinforced or re-shored (27.B.06.b)</li> <li>6. All baseplates, extension devices or adjustment screws will be in firm and secure contact with footing will or form materials (27.B.03.c)</li> <li>7. Stripped forms and shoring will be stockpiled promptly after removal and stripping. Protruding nails, tie wires and other form accessories not needed for the subsequent work will be pulled and cut out and taken out of the working place.</li> </ol>
	Concrete work	<p>c. Injuries and damages by sharp end of re-bars.</p> <p>d. Injuries and damages by mis-step and fall down.</p>	<ol style="list-style-type: none"> <li>1. All the ends of rebars vertically or laterally exposed will clearly be marked or capped to prevent workers from being injured.</li> <li>1. Safe access will be provided to all forming, placing forms and concreting area (21.A.01)</li> <li>2. Stable and safe walkway with guard rails will be installed at high vertical form works for concrete placement (21.A.15.a)</li> </ol>

# Activity Hazard Analysis



PHASE NO.	ACTIVITY/P.STEPS	POTENTIAL HAZARDS	PRECAUTIONARY ACTION & CONTROL TO BE TAKEN
		e. Injuries by power tools and equipment in operation.	<p>3. Access ways and walk ways will be kept cleared of materials, waste or debris that will obstruct passage or cause tripping (21.A.13.a)</p> <p>1. Grounding system will be provided with every power operated tool and equipment and GFCI will be installed where necessary.</p> <p>2. All power circular and cross cut saws will be equipped with guards.</p> <p>3. Power tools will not be left running unattended.</p> <p>4. The electric re-bar cutting machine will be operated only by instructed re-bar worker.</p>
	Concrete work	<p>f. Fire hazard.</p> <p>g. Vehicular mishap by remicon truck and concrete pump car.</p> <p>h. Un-used concrete worker's protective apparel.</p>	<p>1. Scrap lumbers piece meal plywoods and sawdust will be gathered and placed in containers or bags for disposal, stored away from ignition.</p> <p>1. It will be confirmed that all remicon truck drivers and concrete pump car operators bear a valid license.</p> <p>2. All trucks and pump cars must be equipped with back signal system.</p> <p>3. Secure stop and station means will be provided for the concrete pump car.</p> <p>4. A signal man will be working for concrete pump car operator.</p> <p>5. Extreme caution will be taken where concrete pump car is operated in vicinity of energized electrical circuits.</p> <p>6. Traffic rules and signs will strictly be kept by all drivers.</p> <p>1. Concrete workers shall be provided with personal protective devices such as rubber booth, gloves, goggles during placing, finishing concrete.</p>

# Activity Hazard Analysis



PHASE NO.	ACTIVITY/P.STEPS	POTENTIAL HAZARDS	PRECAUTIONARY ACTION & CONTROL TO BE TAKEN
	Concrete work	<p>i. Mis-used vibrator with hose.</p> <p>j. Accident by unbalanced, bad footing or damaged scaffolds and ladders</p> <p>k. Accident by falling or collapse of scaffolds.</p>	<p>1. Provide as many additional worker's to help vibrator operator in holding or moving the vibrator through concrete placing area.</p> <p>1. Planking will be erected at both ends to prevent movement.</p> <p>2. Suitable platform will be placed and fastened securely.</p> <p>3. Foot plates for scaffolding will be placed, balanced and securely set with cross bracing adequately fabricated.</p> <p>4. Portable ladders as temporary access will extend at least 3 feet past the landing.</p> <p>5. Broken or damaged ladders will be removed from service immediately and destroyed.</p> <p>1. All scaffolds will be plumb and level.</p> <p>2. An access ladder or equivalent safe means of access will be provided with scaffolds.</p> <p>3. Work platforms will be securely fastened to the scaffold.</p>
	Concrete work	<p>k. Accident by falling or collapse of scaffolds.</p> <p>l. Clean-up</p>	<p>4. Where walkways and work surfaces are slippery, abrasive material will be used to assure safe footing.</p> <p>5. Climbing of braces will be prohibited.</p> <p>1. Trash can as many as needed will be provided at proper locations.</p> <p>2. All work shops and other work areas should be cleaned-up everyday and removed from job site.</p>

# Sample AHA in QCS



## Hazard Analysis - FEATURE: COIR FABRIC PLACEMENT

19 Aug 2006

Sac Bank Lower Sac R. Erosion Sites  
W91238-06-C-0018 NA

American River Project Office

US Army Corps  
of Engineers

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Cut Coir Fabric to Length & Attach Tag Lines	Tripping Hazard	When cutting is completed, place fabric away from foot traffic paths to prevent tripping hazards.
	Use of Sharp Object to Cut Fabric	Proper PPE's. Use gloves while cutting fabric with utility knife. Cut away from body. Ensure fabric steady during cutting activity. Keep fingers clear when cutting.
Fasten Fabric to Inside Bench at Existing Levee	Injury from Picking Up Too Large Rock	To fasten the rock to the inside of the inner bench, place small to medium size rocks. Rocks of medium size are those that will take a minimal effort to pick up. Use back and legs when picking up and placing rocks. If rocks larger than medium need to be used, have a fellow employee help pick up the rock.
Place Rock from Top of Inside Bench into Trench to Fasten Fabric	Injury from Picking Up Too Large Rock	To place the fabric and secure into the trench, toss small to medium size rocks onto the fabric into the trench. Rocks of medium size are those that will take a minimal effort to pick up. Use back and legs when picking up and placing rocks. If rocks larger than medium need to be used, have a fellow employee help pick up the rock.
	Tripping Hazard Working on Uneven Surface	Ensure proper footing prior to picking up and placing rock. When walking, ensure footing is secure every step.
Place Rock on Outer Berm to Fasten Fabric	Injury From Picking Up Too Large Rock	To fasten the rock to the inside of the inner bench, place small to medium size rocks. Rocks of medium size are those that will take a minimal effort to pick up. Use back and legs when picking up and placing rocks. If rocks larger than medium need to be used, have a fellow employee help pick up the rock.
	Tripping Hazard Working on Uneven Surface	Ensure proper footing prior to picking up and placing rock. When walking, ensure footing is secure every step.
	Working in 0" to 1' of Water on Outer Slope	Ensure proper footing as rocks may be slippery. Proper PPE's as always wear life vests when working near water. Inspect outer berm prior to working for holes that may cause tripping hazards/ ankle injuries. Note where concrete blocks have been placed to prevent tripping.
Dull Fastened Fabric Tugnt from	Potential to be Pulled Off Berms	When rocks are being placed into trench to secure fabric, hold lines loosely allow slack of trench to release/fall into



## Hazard Analysis

19 Aug 2006

Sac Bank Lower Sac R. Erosion Sites  
W91238-06-C-0018 NA

American River Project Office

US Army Corps  
of Engineers

Equipment to be used	Inspection Requirements	Training Requirements
Tag lines Utility Knife	Tag lines free of rips Utility Knife Balde New/ Sharp	

# Definable Features of Work



Make a List of 10.



# DISCUSSIONS

