

Typed Resource Definitions

Public Works Resources



FEMA 508-7

May 2005



- Background** The National Mutual Aid and Resource Management Initiative supports the National Incident Management System (NIMS) by establishing a comprehensive, integrated national mutual aid and resource management system that provides the basis to type, order, and track all (Federal, State, and local) response assets.
- Resource Typing** For ease of ordering and tracking, response assets need to be categorized via resource typing. Resource typing is the categorization and description of resources that are commonly exchanged in disasters via mutual aid, by capacity and/or capability. Through resource typing, disciplines examine resources and identify the capabilities of a resource's components (i.e., personnel, equipment, training). During a disaster, an emergency manager knows what capability a resource needs to have to respond efficiently and effectively. Resource typing definitions will help define resource capabilities for ease of ordering and mobilization during a disaster. As a result of the resource typing process, a resource's capability is readily defined and an emergency manager is able to effectively and efficiently request and receive resources through mutual aid during times of disaster.
- Web Site** For more information, you can also refer to the National Mutual Aid and Resource Management Web site located at:
http://www.fema.gov/nims/mutual_aid.shtm.
- Supersedure** This document replaces the Public Works resource definition section in *Resource Definitions*, dated September 2004
- Changes** Document is reformatted. Content is unchanged.

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RESOURCE: Air Conditioner/Heater						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Equipment		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Ton	90 Ton Air conditioner/heater 90 Ton Air Cooled Direct Expansion portable A/C unit w/ heat	60 Ton Air conditioner/heater 60 Ton Air Cooled Direct Expansion portable A/C unit w/ heat	25 Ton Air conditioner/heater 25 Ton Air Cooled Direct Expansion portable A/C unit w/ heat	10 Ton Air conditioner / heater Caterpillar/York 10 Ton Air Cooled Direct Expansion portable A/C unit w/ heat	
Equipment	Cubic feet per minute (cfm) of air delivered	26,000 cfm	17,000 cfm	9,400 cfm	4,000 cfm	
Equipment	Weight	19,900 lbs	16,500 lbs	4,140 lbs	1,500 lbs	
Equipment	Transport	Can be trailer mounted (flat bed semi) dimensions: 20' Long x 8' Wide x 9'.5" Tall	Can be trailer mounted (flat bed semi) dimensions: 20' Long x 8' Wide x 8'.5" Tall.	Can be trailer mounted (flat bed tow behind) dimensions: 12' Long x 7'.6" Wide x 5' Tall	Can be trailer mounted (flat bed tow behind) dimensions: 11' Long x 6'.5" Wide x 5' Tall	
Equipment	Power requirements, Cooling only	260 Amps at 460 volts, 3 phase, 60 hz	160 Amps at 460 volts, 3 phase, 60 hz	60 Amps at 460 volts, 3 phase, 60 hz	24 Amps at 460 volts, 3 phase, 60 hz	
Equipment	Power requirements, Heat only	(250 kW) 368 Amps at 460 volts, 3 phase, 60 hz	(125 kW) 200 Amps at 460 volts, 3 phase, 60 hz	(72 kW) 100 Amps at 460 volts, 3 phase, 60 hz	(54 kW) 71 Amps at 460 volts, 3 phase, 60 hz	
Equipment	Flex duct connections	(8) 20" air supply (4)/ return (4)	(8) 20" air supply (4)/ return (4)	(4-6) 20" air supply (2)/ return (2-4)	(3) 20" air supply (1)/ return (2)	
Equipment	Potential application examples	Airports, Universities, Malls, Moisture removal from wet buildings & materials (weather / temperature permitting)	Airports, Retail stores, Schools, Moisture removal from wet buildings & materials (weather / temperature permitting)	Tents, Small retail stores, Libraries, Moisture removal from wet buildings & materials (weather / temperature permitting)	Tents, Computer rooms, Small office (2,000 sq. ft.), Moisture removal from wet buildings & materials (weather / temperature permitting)	

RESOURCE: Air Conditioner/Heater						
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Set up and connect	Setup time varies depending on duct installation, fabricating, wiring, etc...2+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source.	Setup time varies depending on duct installation, fabricating, wiring, etc...2+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source.	Setup time varies depending on duct installation, fabricating, wiring, etc...2+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source.	Setup time varies depending on duct installation, fabricating, wiring, etc...2+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source.	
Equipment	Example					
COMMENTS:						

RESOURCE: Air Curtain Burners (Fire Box-Above Ground, Refractory Walled)							
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Equipment			
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	TYPE V	TYPE VI
COMPONENT	METRIC						
Equipment	Tons/Hr	Weight: 50,000 lbs Avg. Thru-put: 6-10 tons/hr	Weight: 46,000 lbs Avg. Thru-put: 5-8 tons/hr	Weight: 33,500 lbs Avg. Thru-put: 3-6 tons/hr	Weight: 30,000 lbs Avg. Thru-put: 2-5 tons/hr	Weight: 26,000 lbs Avg. Thru-put: 1-4 tons/hr	Weight: 21,300 lbs Avg. Thru-put: ½-2 tons/hr
Equipment	Dimensions	Overall L×W×H: 37'4"×11'10"×9'7" Firebox: 27'2"×8'5"×8'1"	Overall L×W×H: 31'4"×11'10"×9'7" Firebox: 21'2"×8'5"×8'1"	Overall L×W×H: 30'2"×8'6"×8'6" Firebox: 19'8"×6'2"×7'1"	Overall L×W×H: 27'×8'6"×8'6" Firebox: 16'5"×6'2"×7'1"	Overall L×W×H: 27'×7'5"×7'8" Firebox: 16'×5'×6'	Overall L×W×H: 21'6"×7'5"×7'8" Firebox: 11'×5'×6'
Equipment	Engine	Perkins 1004.42	Perkins 1004.42	Perkins 404C	Perkins 404C	Perkins 404C	Perkins 404C
Equipment	Fuel	Diesel, ≈ 3 gal/hr	Diesel, ≈ 3 gal/hr	Diesel, ≈ 2.5 gal/hr	Diesel, ≈ 2.5 gal/hr	Diesel, ≈ 2.5 gal/hr	Diesel, ≈ 2.5 gal/hr
Equipment	Transport	Unit is shipped completely assembled; transportable by drop-deck trailer	Unit is shipped completely assembled; transportable by drop-deck trailer	Unit is shipped completely assembled transportable by flatbed or tilt bed tag trailer	Unit is shipped completely assembled transportable by flatbed or tilt bed tag trailer	Unit is shipped completely assembled transportable by flatbed or tilt bed tag trailer	Unit is shipped completely assembled transportable by flatbed or tilt bed tag trailer
Equipment	Application	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Small Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Small Animal Carcass Disposal (needs wood waste to support carcass combustion)
Equipment		On GSA Schedule	On GSA Schedule	On GSA Schedule	On GSA Schedule	On GSA Schedule	On GSA Schedule
Equipment	Example	S-327	S-321	S-220	S-217	S-116	S-111
Equipment	Example	 <p>S-300 Series (Type I & II)</p>		 <p>S-200 Series (Type II & III)</p>		 <p>S-100 Series (Type IV & V)</p>	
COMMENTS:							

RESOURCE: Air Curtain Burners (Trench Burner, In-Ground)						
CATEGORY: Public Works and Engineering (ESF #3)				KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Overall dimensions LxWxH	28'x8'1"x6'10"	28'x8'1"x6'10"	018'9"x8'2"x8'7"		
Equipment	Pit or Trench dimensions	40'x10'x12"	20'x10'x10"	35'x12'x12"		
Equipment	Weight	6,900 lbs Tongue: 1,400 lbs	4,900 lbs Tongue: 890 lbs	7,000 lbs Tongue: 1,200 lbs		
Equipment	Avg. Throughput	5-8 tons/h	1-4 tons/hr	4-7 tons/hr		
Equipment	Engine	Kubota V3300E	Perkins 404C	Perkins 1004.42		
Equipment	Fuel	Diesel, ≈ 3 gal/hr	Diesel, ≈ 2.5 gal/hr	Diesel, ≈ 3 gal/h		
Equipment	Trailer	Unit is dual-axle trailer-mounted; 2 5/8" ball hitch or pintle hitch; electric brakes	Unit is dual-axle trailer-mounted; 2 5/8" ball hitch or pintle hitch; electric brakes	Unit is dual-axle trailer-mounted; 2 5/8" ball hitch or pintle hitch; electric brakes		
Equipment	Application	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)	Wood Waste Reduction & Animal Carcass Disposal (needs wood waste to support carcass combustion)		
Equipment		On GSA Schedule	On GSA Schedule			
Equipment	Example	T-400	T-200	T-350		
Equipment	Example	 T-400 & T-200 (Type I & II)		 T-350 (Type III)		
COMMENTS:						






RESOURCE:		All Terrain Cranes				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment; Personnel; Vehicle	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Tons	210-175 Crane type with boom reach of 170 feet. With jib reaches to approx. 280 feet. Self-propelled/driven over the road. Operator furnished. Setup time minimal. Jib and counter-weight are transported by two tractor-trailers	50-120 Crane type with boom reach of 150 feet. With jib reaches to approx. 250 feet. Self-propelled/driven over the road. Operator furnished. Setup time minimal. Jib and counter-weight are transported by two tractor-trailers	110-90 Crane type with boom reach of 192 feet. With jib add approx. 30 feet. Self-propelled/driven over the road. Operator furnished. Setup time minimal. Jib and counter-weight are transported by two tractor-trailers	22.5 Crane type with boom reach of 90 feet. With jib add approx. 30 feet. Self-propelled/driven over the road. Operator furnished. Setup time minimal	
COMMENTS:	Check with your local/State transportation and law enforcement organizations to determine mobilization requirements.					
						

Resource:		Backhoe Loader				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Gross Power	kw/hp	82/110	66/88	66/88	58/77	
Operating Weight (max)	lbs	19,630	15,772	15,772	15,257	
Dig Depth Standard Stick	ft/in	14'5"	14'5"	14'5"	14'5"	
Extended Stick	ft/in	18'1"	18'1"	18'1"	18'1"	
Loading Height	ft/in	11'10"	11'10"	11'10"	11'10"	
Loading Reach	ft/in	5'8"	5'8"	5'8"	5'8"	
Bucket Capacity	yd ³	1.25	1.25	1.25	1.25	
Dump Height (max angle)	ft/in	8'4"	8'4"	8'1"	8'4"	
Dump Reach (max angle)	ft/in	2'9"	2'9"	2'10"	2'9"	
Lift Capacity (full height)	lbs	6,385	6,385	(w/QC) 6,970	5,292	
Bucket Breakout Force	lbs	10,131	10,131	10,564	8,524	
Fuel Capacity	gal	34	34	34	34	
Vehicle	Example					
				420D IT with Quick Coupler		




Resource:		Backhoe Loader				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
		446B – Cat 3114T Diesel	420D – Cat 3054T Diesel	– Cat 3054T Diesel	416D – Cat 3054B Diesel	
COMMENTS	<p>Caterpillar is used as an example only.</p> <p>420 IT tools include the following:</p> <p>Backhoe Work Tools: Buckets – Standard, Heavy Duty, Heavy Duty Rock, High Capacity, Coral, Ditch Cleaning; Hydraulic Hammer; Vibratory Plate Compactor; Ripper.</p> <p>Loader Work Tools: Buckets – General Purpose, Multipurpose, Side Dump, Light Material, Penetration; Loader Forks; Material Handling Arm; Angle Blade; Broom; Rake; Asphalt Cutter; Bale Spear</p>					


Resource:		Chillers & Air Handlers (500 Ton to 50 Ton)				
CATEGORY:	Chillers & Air Handlers (500 Ton to 50 Ton)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER (TYPE V)
COMPONENT	METRIC					
Equipment	Ton	<p>500/450 Ton Chiller Caterpillar/York 450/500 Ton Air Cooled Chiller; Built-in pump delivering 330-1600 gpm (gallons per minute); Will operate in series or parallel operation w/multiple units;</p> <p>8" flanged water fittings on exterior; Weight: 50,000 lbs; Trailer mounted (semitractor) dimensions: 40' Long x 8'.5" Wide x 13'.5" Tall; Power requirements: 800-980 Amps at 460 volts, 3 phase, 60 hz; Temporary quick connect chilled water hose available with unit for tie in to chilled water system; Potential application examples: Single or multiple units for Computer centers, High-rise buildings, Heavy manufacturing, Airports, Universities.</p> <p>Setup time varies depending on hose installation, water filling, fabricating, etc...4+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source</p>	<p>300 Ton Chiller Caterpillar/York 300 Ton Air Cooled Chiller; Built-in pump(s) delivering 250-800 gpm;</p> <p>6" flanged water fittings on exterior; Weight: 33,000 lbs; Trailer mounted (semitractor) dimensions: 30' Long x 8' Wide x 13'.5" Tall; Power requirements: 600-700 Amps at 460 volts, 3 phase, 60 hz; Temporary quick connect chilled water hose available with unit for tie in to chilled water system; Potential application examples: Single or multiple units for Office buildings, Multi-story buildings, Schools, Temporary structures, Retail stores.</p> <p>Setup time varies depending on hose installation, water filling, fabricating, etc...3+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source</p>	<p>150 Ton Chiller Caterpillar/York 150 Ton Air Cooled Chiller; Built-in pumps delivering 250-700 gpm;</p> <p>6" flanged water fittings on exterior; Weight: 31,000 lbs; Trailer mounted (semitractor) dimensions: 20/30' Long x 8' Wide x 12'.5" Tall; Power requirements: 329-400 Amps at 460 volts, 3 phase, 60 hz; Temporary quick connect chilled water hose available with unit for tie in to chilled water system; Potential application examples: Single or multiple units for Medium office buildings, Libraries, Hotels/motels, Condominiums, Retail stores.</p> <p>Setup time varies depending on hose installation, water filling, fabricating, etc...2+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source</p>	<p>50 Ton Chiller Caterpillar/York 50 Ton Air Cooled Chiller; Built-in pump delivering 75-200 gpm;</p> <p>4" quick connect water fittings on exterior; Weight: 5,500 lbs.; Skid mounted w/ forklift pockets (8,000 lb. lift recommended) dimensions: 12' Long x 7'.5" Wide x 8'.5" Tall; Power requirements: 125 Amps at 460 volts, 3 phase, 60 hz; Temporary quick connect chilled water hose available with unit for tie in to chilled water system. Potential application examples: Single or multiple units for Small office buildings, Tent/shelter cooling, Small-medium retail stores.</p> <p>Setup time varies depending on hose installation, water filling, fabricating, etc...2+ hours; 4/0 Cam-Lock type quick connect cable used for power termination to source</p>	<p>Custom Rental Air Handling Units: 50, 75, & 100 Tons</p> <p>For delivering cold air with use of any chiller, 5,000-30,000 cfm depending on unit;</p> <p>20" diameter flex duct inlets/outlets for air distribution supply/return; 4/0 Cam-Lock type quick connect cable used for power termination to source; Call for power requirements and sizing; Potential application examples: Single or multiple units for buildings w/out HVAC systems, Tent/shelter cooling, etc</p> <p>Setup time varies on application 1-2 hours each</p>

Resource:		Chillers & Air Handlers (500 Ton to 50 Ton)				
CATEGORY:	Chillers & Air Handlers (500 Ton to 50 Ton)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER (TYPE V)
COMPONENT	METRIC					
Equipment	Example	 500/450 Ton	 300 Ton	 150 Ton	 50 Ton	 Custom Rental Air Handling Unit
COMMENTS	Caterpillar equipment used for typing. Equipment not available at all locations, but CAT dealer network can acquire equipment from one another and ship. Need fresh water source for filling chilled water system. Temporary chilled water hose & 4/0 power cable available for chillers. Set up & monitoring available. Low Temp Chillers and Cooling Towers available. Air handlers require use of chillers or chilled water supply to operate.					



RESOURCE:		Concrete Cutter/Multi-Processor for Hydraulic Excavator				
CATEGORY:	Public Works and Engineering			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Jaw Opening	Inches	50.4	38.4	32	26	
Jaw Depth	Inches	43.3	35	31	26	
Force at Tooth Tip	Short Ton	168	140	107	79	
Force Primary Blade Center	Short Ton	494	460	337	247	
Weight of Jaw	Pounds	4,850	7,935	5,730	3,970	
Weight With housing	Pounds	12,785	20.5	18	16	
Cutter Length	Inches	23.6	110.2	95	87	
Length	Inches	137.8	208	157	112	
Force At Cutting Tip	Short Ton	247	2,865	2,205	1,430	
Max Op Pres Hyd. Cylinder	Pressure Per Square Inch	5,075	5,075	5,075	5,075	
Maximum Oil flow Cylinder	Gallons Per Minute	106	79	53	40	
Maximum Oil flow Cylinder	Cycle - Seconds	7.5	6.5	6	5	
Maximum Operating Pressure Rotator	Pressure Per Square Inch	2,030	2,030	2,030	2,030	
Maximum Oil Flow Rotator	Gallons per minute	22	11	11	11	

RESOURCE:		Concrete Cutter/Multi-Processor for Hydraulic Excavator				
CATEGORY:	Public Works and Engineering			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
For Use on Models		375, 375 L Hydraulic Excavators	345B L Series II Hydraulic Excavators	322C L, 325C L Hydraulic Excavators	321 B LCR, 322C L Hydraulic Excavators	
COMMENTS:	Multiprocessors do the work of many types of demolition tools by use of interchangeable jaw sets. Changing jaws allows a single unit to crush, pulverize, and perform a variety of specialized cutting tasks, such as cutting steel rebar and tanks. Check with Cat dealer/owner to match Multiprocessor model attachment to Hydraulic Excavator.					
						

RESOURCE: Crawler Cranes							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Equipment	Tons	200 (Manitowoc 777) with a boom reach of 300 feet	100 (Manitowoc 222) with a boom reach of 300 feet	80 (Manitowoc 111) with a boom reach of 300 feet			
Equipment	Mobilize & demobilize	Requires nine (9) tractor-trailers to mobilize & demobilize.	Requires four (4) tractor-trailers to mobilize & demobilize.	Requires four (4) tractor-trailers to mobilize & demobilize.			
Equipment	Setup time	Six (6) hours.	Four (4) hours.	Two (2) hours.			
Personnel		Operator with one (1) oiler/rigger.	Operator with one (1) oiler/rigger.	Operator with one (1) oiler/rigger.			
COMMENTS:	Check with your local/State transportation and law enforcement organization to determine mobilization requirements. 						



RESOURCE: Debris Management Monitoring Team						
CATEGORY: Public Works and Engineering (ESF #3)			KIND: Team; Personnel			
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Services	Annual Contracts; Per Unit; Hourly; Lump Sum	<p>General Manager (GM)</p> <p>GM responsibility would include overall coordination with all levels of government and other ESFs; Knowledge of the Federal Response Plan and Federal response and recovery procedures related to debris management; Site monitoring of health and safety requirement in meeting local, State, or Federal standards during any and all parts of the recovery process whether from manmade or natural occurrences; Appropriate standards for the debris processing and disposal to successfully complete the recovery process of an event; Ability to manage and oversee owner's current debris removal operations plan; Highest trained in debris monitoring management and recovery operations; Highest experience level in meeting Federal record keeping requirements and processing procedures; Highest knowledge in managing multiple service levels of manmade and or natural</p>	<p>Project Manager (PM)</p> <p>PM responsibility would include overall management of all taskings under the project to include removal, reduction and disposal/salvage operations. Monitors changes in the scope of original assignment, cost estimates, coordinating the procurement process, scheduling, tracking of funds, and reporting all elements of work progress; Knowledge of the Federal Response Plan and Federal response and recovery procedures related to debris management; Monitors and assures that health and safety procedures and requirements meet local, State, or Federal standards during any and all parts of the recovery process whether from manmade or natural occurrences; Monitors the compliance of debris processing and disposal to successfully complete the recovery process of an event; Ability to manage and oversee owner's current debris removal operations plan; Highest trained in debris</p>			



RESOURCE: Debris Management Monitoring Team						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Team; Personnel		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
		disasters; Financial capabilities to manage progressive monitoring processes; Required and necessary liability coverage for all aspects of operation; Highest ability to manage work programs and personnel safely, with the highest regard to safety and applicable regulations protecting employees of the company and community; Highest capabilities to recruit support staffing within acceptable timeframe	project management and recovery operations; Highest experience level in meeting Federal record keeping requirements and processing procedures; Highest ability to manage work programs and personnel safely, with the highest regard to safety and applicable regulations protecting employees of the company and community			
Equipment		Ability to supply, support, and maintain an inventory of varying equipment specialties in assisting the handling of all aspects of monitoring for health and safety of personnel involved with recovery operations	Ability to support and maintain an inventory of varying equipment specialties in assisting the handling of all aspects of monitoring the health and safety of personnel involved with recovery operations			
Personnel		The highest trained and experienced in the field of debris management procedures; Very good communication skills and the ability to effectively brief high level officials; Highest capability to train and manage assisting resources; Highest ability to comply with all local, State, Federal authority, and OSHA regulations to which services	Trained and experienced in the field of debris management procedures; Very good communication skills; Highest capability to manage assisting resources; General understanding of equipment leasing contracts, various type of equipment, and unit price contracts. Highest ability to comply with all local, State, Federal authority, and OSHA			



RESOURCE: Debris Management Monitoring Team						
CATEGORY: Public Works and Engineering (ESF #3)			KIND: Team; Personnel			
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
		are being applied; No use restriction as it relates to assignment; Fully mobilized and fully equipped; Permanently assigned to completion of task on rotation, 30/3	regulations to which services are being applied; No use restriction as it relates to assignment; Fully mobilized and fully equipped; Have an engineering background with a background in site development and proven skills in the field of construction; Permanently assigned to completion of task on rotation, 30/3			
COMMENTS:						



RESOURCE: Debris Management Site Reduction Team						
CATEGORY: Public Works and Engineering (ESF #3)			KIND: Team			
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
	Storage Area Capabilities	Ability to establish lined temporary storage areas for ash, household hazardous waste, fuels, and other materials that can contaminate soils, runoff, or ground water				
	Control Capabilities	Ability to establish traffic control, dust control, erosion control, fire protection, on-site roadway maintenance, and safety measures				
	Debris Reduction	Ability to burn debris through air curtain incineration; Use of tub grinders to reduce disaster debris waste, and other source reduction applications to be site/disaster-specific				
	Sorting and Stockpiling	Ability to sort and stack debris at the site				
	Disposal	Ability to dispose nonburnable debris and ash residue				
	Clearance	Ability to clear site of all debris				
	Equipment	Ability to supply, support, and maintain an inventory of varying equipment specialties to facilitate and coordinate the removal, collection, and disposal of debris				



RESOURCE: Debris Management Site Reduction Team							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Personnel	Training and experience	<p>Trained and experienced in the field of debris management procedures; Understanding of equipment leasing contracts, various types of equipment, and unit price contracts; Ability to comply with Federal, State, and local authority, and OSHA regulations to which services are being applied; Ability to be fully mobilized and equipped; Engineering background with a background in site development and proven skills in construction; Knowledge of soil and water sampling and other environmental impacts; Knowledge and ability to ensure environmental justice protocols are upheld; Knowledge and expertise to perform varying debris reduction separation techniques, including, at minimum, 4 categories: woody vegetative debris, construction or building rubble, hazardous materials, and recyclable materials (e.g., aluminum, cast iron, steel, or household white goods or appliances); Appropriate education and training in managing inspection stations located at such debris reduction sites, recycling locations, or temporary debris</p>					



RESOURCE: Debris Management Site Reduction Team							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
		staging reduction sites					
COMMENTS:		Debris Management Site Reduction Teams should possess the experience and financial capabilities to support equipment, disaster debris waste reduction capabilities, and personnel, and to maintain operations for an indefinite period of time. As only one type, the makeup of the Debris Management Site Reduction Team will be dependent on the site and impact specifics of the disaster.					



RESOURCE: Debris Management Team						
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Services	Annual Contracts; Per Unit; Hourly; Lump Sum	<p>Long & Short Term</p> <p>Management of national and international situations and events for manmade and natural occurrences that would produce debris requiring the resources to successfully complete the recovery process of debris management</p> <p>Maintains a current and active debris removal operations plan</p> <p>Highest training in debris management and recovery operations</p> <p>Highest experience level in meeting Federal record keeping requirements and processing procedures</p> <p>Highest knowledge in managing multiple service levels of manmade and/or natural disasters</p> <p>Financial capabilities to manage progressive recovery processes</p> <p>Has required and necessary liability coverage for all aspects of operation</p> <p>Highest ability to manage work programs and its personnel safely and with the</p>	<p>Same as Type I except:</p> <p>Mobilization timeframe: 24 hours—25% 48 hours—50% 72 hours—75% 96 hours—100%</p> <p>Debris removal will commence following the first 24-36 hours</p>	<p>Same as Type II except:</p> <p>Management of multiple community resources through its management teams</p> <p>Mobilization timeframe: 36 hours—25% 48 hours—50% 72 hours—75% 96 hours—100%</p>		



RESOURCE: Debris Management Team							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
		<p>highest regard to safety and applicable regulations protecting employees of the company and community</p> <p>Highest capabilities to recruit support staffing within acceptable timeframe</p> <p>Mobilization timeframe: 24 hours—25% 48 hours—75% 72 hours—100%</p> <p>Debris removal will commence following the first 24 hours</p>					
Equipment		Ability to supply, support, and maintain an inventory of varying equipment specialties in handling all aspects of disaster recovery	Same as Type I	Utilization of all available community support equipment Ability to supply, support, and maintain additional inventory of varying equipment specialties in handling all aspects of disaster recovery			
Personnel	Training and Experience	<p>The highest trained and experienced in the field of debris management and recovery</p> <p>Sufficient quantity of personnel to support all required services</p> <p>Highest capability to train assisting resources</p> <p>Highest ability to comply with OSHA regulations to which services are being applied</p>	Same as Type I	Same as Type II except: Interacting available community management resources at all levels and managing their performance			



RESOURCE: Debris Management Team							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
		No use restriction as it relates to assignment Fully mobilized and fully equipped Permanently assigned to completion of task					
COMMENTS:							



RESOURCE: Disaster Assessment Team						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Team		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Team Personnel		Institutional Services Manager	Assessment Director	Assessment Team Leader		
Team	Description	<p>Responsible for seeing that the building is safe, damage to the building is evaluated, and measures are formulated and implemented to remedy or correct problems</p> <p>Upon notification of a problem, establishes that no threat exists to personnel safety, secures the affected area and/or building, and alerts Assessment Director</p> <p>Establishes priorities for facility repairs, and follows the progress of repairs once begun</p>	<p>Organizes and manages the process by which damage is evaluated</p> <p>Responsible for notifying and instructing Assessment Team Leaders, and enlisting the assistance of in-house or outside experts/resource people as required</p> <p>Evaluates findings and recommendations, and contacts the Recovery Director with recovery recommendations</p>	<p>Selects and assembles the team members and directs their operations</p> <p>Instructs the team on what to do and how to do it, including methods of inspection and sampling, assessing damaged material, and documenting the process</p> <p>Monitors the damage investigation, reporting recommendations to the Assessment Director</p>		
Personnel	Training or Requirements	<p>Must be multidisciplinary and familiar with health personnel, engineering specialists, logisticians, environmental experts, and communications specialists</p> <p>Must also be able to record observations and decisions made by the team, photograph and record disaster site damage, and investigate where damage exists</p> <p>Able to analyze the significance of affected infrastructure, estimate the</p>	Same as Type I	Same as Type II		



RESOURCE: Disaster Assessment Team							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
		extent of damages, and establish initial priorities for recovery					
Team	Crew Availability	Incident Specific and Site Specific	Same as Type I	Same as Type II			
COMMENTS:	There is only one type of Disaster Assessment Team because it is a specialty and based on level of devastation; however, the team possesses different personnel types/roles. The team members should be equipped with their own laptops, cell phones, and vehicles, and should be able to stay based on severity of incident (i.e., "Site-Specific" and "Incident-Specific"). Team size, expertise, and functional requirements will be determined at the disaster location.						



RESOURCE: Disaster Recovery Team							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:		Team
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Personnel		Recovery Director	Recovery Secretary	Conservator	Recovery Team Leader		
Personnel	Description	<p>Organizes and manages the recovery process</p> <p>Sets priorities based on information received from the Assessment Director, and assigns recovery teams, reports on progress, actions taken, problems encountered, and future risks</p> <p>In many cases, the Assessment Director and Recovery Director may be the same person</p>	<p>Keeps a record of all purchases and orders placed, assists in coordinating requests for materials, information, and provides other assistance</p> <p>This position will require immediate access to a telephone</p>	<p>Works with the Recovery Director to advise on recovery priorities concerning collections and materials, and recommends appropriate techniques and procedures</p> <p>Assists in choosing and locating supplies, equipment, and services necessary for recovery</p> <p>In many cases, the Conservator and Recovery Director may be the same person</p>	<p>Appoints team members, instructs the team on what they will be doing and how they will do it</p> <p>Monitors the recovery process, and updates the Recovery Director</p>		
Personnel	Training or Requirements	<p>Must be multidisciplinary and familiar with health personnel, engineering specialists, logisticians, environmental experts, and communications specialists</p> <p>Must also be able to record observations and decisions made by the team, photograph and record disaster site damage, and investigate where damage exists</p> <p>Able to analyze the significance of affected infrastructure, estimate the extent of damages, and establish initial priorities for recovery</p>	Same as Type I	Same as Type I	Same as Type I		




RESOURCE: Disaster Recovery Team						
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Team	Crew Availability	Incident Specific and Site Specific	Same as Type I	Same as Type I	Same as Type I	
COMMENTS:		<p>There is only one type of Disaster Recovery Team because it is a specialty and based on level of devastation; however, the team possesses different personnel types/roles. The team members should be equipped with their own laptops, cell phones, and vehicles, and should be able to stay based on severity of incident (i.e., "Site-Specific" and "Incident-Specific").</p> <p>Team size, expertise, and functional requirements will be determined at the disaster location.</p>				



RESOURCE: Dump Trailer (one type/example only)							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Example		DYNAHAULER/DT Dump Trailer					
Length	ft	24-40					
Side Height	ft	54-72					
Overall Height Variable (max)	ft/in	13'6"					
Gate Height	ft	54-72					
Tire to End of Floor	in	4					
King Pin to Front of Trailer	in	18+					
Center of Hinge Pin to End of Floor	in	6					
Side Panels	in	3/16					
Side Panels PSI (min yield)	lbs	175,000					
Bulkhead	in	3/16					
Bulkhead PSI (min yield)	lbs	175,000					
Dog Box	in	3/16					
Dog Box PSI (min yield)	lbs	175,000					
Floor	in	5/16					



RESOURCE: Dump Trailer (one type/example only)							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Floor PSI (min yield)	lbs	175,000					
Top Rail	in x in	4 x 4					
Vertical Side Posts	in	on 24 centers					
Rear Posts	in x in	4 x 4					
Understructure I-Beam Crossmembers	lbs/ft on in	7.7 on 12 centers					
Understructure Longitudinals	in x in x in	6 x 6 x 3/8					
Tailgate	in	1/4					
Tailgate PSI (min yield)	lbs	175,000					
Dana' D22	lbs/in round	25,000/5					
Brakes (with ABS 4S2M)	in x in	16 x 7					
Frame Depth	in	16					
Frame Wide Flange Beam	lbs/ft	31					
Suspension	lbs	60,000					
Landing Gear	in	7/8					
King Pin Plate	in	3/8					
Wheels		24.5 x 8.25					
Tires		11R24.5, 14 ply					


RESOURCE: Dump Trailer (one type/example only)						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Equipment		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
COMMENTS:		There will be one type of dump trailer. It will have generally the same configuration but will be capable of hauling more or fewer materials because of varying length and depth. DYNHAULER/DT dump trailer is used only as an example.				
						




RESOURCE: Dump Truck-Off Road						
CATEGORY: Public Works and Engineering (ESF #3)			KIND: Equipment			
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Example		(Caterpillar Off-Highway) 769D Caterpillar 3408E engine	(Caterpillar Quarry) 771D Caterpillar 3408E engine			
Gross Power	kw/hp	386/518	386/518			
Flywheel Power	kw/hp	363/487	363/487			
Net Power	kw/hp	363/486	363/487			
Maximum Torque	N/m/1,618 lb ft	2,194	2m186			
Gross Machine Weight	kg/lbs	71,400/157,000	75,700/166,500			
Operating (Empty) Weight	kg/lbs	11,100/24,471.28				
Chassis Weight	kg/lbs		23,000/50,600			
Body Weight	kg/lbs		10,350/23,000			
SAE Capacity	m3/yd3	17/22.24 to 24.2/31.7	27.5/36			
Payload Capacity	tonnes/tons	36.4/40 to 36.58/40	41/45			
Transmission (Forward 1 to 6)	kph/mph	12.6/7.8 to 77.7/48.3	12.6/7.8 to 57.3/35.6			
Transmission (Reverse)	kph/mph	16.6/10.3	16.6/10.3			
Fuel Tank	L/gal	530/140	530/140			
Cooling System	L/gal	113.5/30	113.5/30			



RESOURCE: Dump Truck-Off Road						
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Crankcase	L/gal	45/12	45/12			
Differentials and Final Drives	L/gal	83/22	83/22			
Steering Tank	L/gal	34/9	34/9			
Steering System with Tank	L/gal	56/15	56/15			
Brake Hoist with Tank	L/gal	277/73	277/73			
Torque Converter and Transmission with Sump	L/gal	72/19	72/19			
Inside Body Length	mm/in	5,275/207.68	5,275/207.68			
Overall Length	mm/in	8,039/316.5	8,039/316.5			
Wheelcase	mm/in	3,713/146.18	3,713/146.18			
Ground Clearance	mm/in	627/24.68	627/24.68			
Loading Height (Empty)	mm/in	3,143/123.74	3,143/123.74			
Operating Width	mm/in	5,069/199.57	5,069/199.57			
Centerline Front Tire Width	mm/in	3,102/122.13	3,102/122.13			
Front Canopy Height	mm/in	3,952/155.59	3,952/155.59			

RESOURCE: Dump Truck-Off Road						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Equipment		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Tires		Standard: 18.00-R33 (E4)	Standard: 18.00-R33 (E4)			
COMMENTS:	Caterpillar was used only for example purposes.					
						

RESOURCE: Dump Truck-On Road						
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment		Triple Axle	Tandem Axle	Single Axle		
Equipment		DOT Class 8; GVW rating 80,000 Capacities 16-20 yards of aggregate material and demolition debris Diesel powered with choice of Manual or Automatic Transmission; Air Brakes Limited off-road service; Medium to long haul; Wide turning radius CDL license required	DOT Class 8; GVW rating 60,000 Capacities 10-14 yards of aggregate material and demolition debris Diesel powered with choice of Manual or Automatic Transmission; Air Brakes Limited off-road service; Medium to long haul; Wide turning radius CDL license required	DOT Class 7; GVW rating 32,000 Capacities 5-8 yards of aggregate material and demolition debris Diesel or gas powered with choice of Manual or Automatic Transmission; Air or Hydraulic Brakes Limited off-road service; Short to medium haul; Short turning radius CDL license required		
COMMENTS:						



RESOURCE: Electrical Power Restoration Team (Example)							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Team	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Personnel	Team Composition	5 overhead (2 person) crews with material handlers 1 overhead (2 person) crew 2 designers 1 team leader 1 safety specialist Fleet services support					
Equipment		Digger derrick/pole trailer Auxiliary bucket (material handler or 36' bucket)					
COMMENTS:	Electrical Power Restoration Teams coordinate and support resources of energy producers to quickly restore electrical power to afflicted areas. Members should possess the experience and financial capabilities to support equipment and personnel, and to maintain operations for an indefinite period of time. Teams are "Site-Specific" and dependent on personnel and equipment deployment. The above type is only one example of said resource.						




RESOURCE: Engineering Services							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Services	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Personnel	Damage Assessment Capability	Ability to determine the safety of buildings for occupancy purposes per the Applied Technology Council ATC-20 criteria; Ability to evaluate buildings using the ATC-20 Rapid Evaluation Safety Assessment Form; Ability to evaluate buildings using the ATC-20 Detailed Evaluation Safety Assessment Form; Ability to support the need for an owner-provided Engineering Evaluation; Ability to evaluate safety of transportation structures per Federal Highway Administration Damage Assessment procedures and forms; Ability to evaluate damage for Stafford Act cost recovery purposes					
Personnel	Support	Ability to support USAR teams, debris management, HazMat evaluation, traffic management, utility restoration, and water and wastewater quality evaluations					












RESOURCE: Engineering Services						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Services		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Personnel	Training	Knowledge of the ATC-20 criteria, Stafford Act cost recovery procedures, and Federal Highway Damage Assessment procedures; Extensive backgrounds in chemical, civil, electrical, and mechanical engineering, as appropriate	Training			
COMMENTS:		Engineering services encompass small firms to large national firms, and private to government-managed offices. Personnel must be certified and capable of handling assigned tasks, proven successes, and licensed, must have worked with public sector, and must be familiar with the Stafford Act, the Federal Highway Administration, and other Federal, State, Territorial, Tribal, and local agencies (and familiar with their requirements) for recording purposes. Engineering Services is one type based on the need to create the necessary engineering services based on "Incident-Specifics." The makeup of the engineering services will be based on the discipline specialization of the disaster.				



RESOURCE: Flat Bed Trailer Truck (one type/example only)							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:		Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Equipment		Example Only					
Trailer Length	ft	18					
Bed	in	96					
Slope	ft	2					
Axles	lbs	6,000					
GVWR		12,000					
Ramp with Adjustable Height Pintle	in	60					
Ground Clearance	in	56					
Weight	tons	6 to 25					
Transport	tons	25 to 100					
Air Operated Breaks	in x in	16.5 x 7					
Wide Spread	in	122					
Marker Lights Per Side		5					
Stop, Tail, and Turn Lights Per Side/Rear		3					

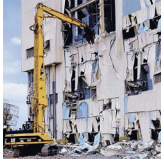




RESOURCE: Flat Bed Trailer Truck (one type/example only)						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Equipment		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
COMMENTS:		There is one type because of the generality of the flat bed trailer; however, the capacity and hauling function of the trailer will vary with differing length and configurations. The above is only an example.				
						


RESOURCE:		Generators				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER (TYPE V)
COMPONENT	METRIC					
Equipment	KW	2000 kW Generator; Sound attenuated; Trailer mounted (semi tractor); Up to 3015 Amps@ 480 Volts, 3 Phase, 60 Hz; Dry weight 89,000 lbs	1500 kW Generator, Sound attenuated; Trailer mounted (semi tractor); Up to 2260 Amps@ 480 Volts, 3 Phase, 60 Hz; Dry weight 59,000 lbs	600 kW Generator; Sound attenuated; Trailer mounted (semi tractor); Up to 2080 Amps@ 208 Volts, 3 Phase, 60 Hz / up to 902 Amps@ 480 Volts 3 Phase, 60 Hz; Dry weight 37,000 lbs	400 kW Generator; Sound attenuated; Trailer mounted (pull behind); Multi-voltage distribution panel; Up to 1390 Amps @ 208 Volts, 3 Phase, 60 Hz/up to 602 Amps@ 480 Volts 3 Phase, 60 Hz; Dry weight 16,800 lbs	125 kW Generator; Sound attenuated; Trailer mounted (pull behind); Multi-voltage distribution panel; Up to 433 Amps@ 208 Volts, 3 Phase, 60 Hz / up to 188 Amps @ 480 Volts 3 Phase, 60 Hz; Dry weight 10,610 lbs
Equipment	Fuel tank capacity	1250 Gallons	1250 Gallons	660 Gallons	470 Gallons	223 Gallons
Equipment	Dimensions	40' Long x 8' Wide x 13'.5" Tall	40' Long x 8' Wide x 13'.5" Tall	40' Long x 8' Wide x 13'.5" Tall	23' Long x 8'.5" Wide x 11' Tall	18'.5" Long x 6'.5" Wide x 9' Tall
Equipment	Potential application example	Single or multiple units for: Power plants, heavy industrial facility, high-rise buildings	Single or multiple units for: Universities, hospitals, medium to large manufacturing facility	Retail stores, HVAC system power, multi-story/buildings, light manufacturing, apartment buildings	Large office building, public schools, libraries, and communication equipment.	Small office building, emergency mobile trailers & operations, restaurants.
Equipment	Setup time	Cables from generator to main power feed estimated at 5+ hours	Cables from generator to main power feed estimated at 5+ hours	Cables from generator to main power feed estimated at 3+ hours	Cables from generator to main power feed estimated at 2+ hours	Cables from generator to main power feed estimated at 1 hour
Equipment	Example	 XQ2000	 XQ1500	 XQ600	 XQ400 <small>Arrangement shown with optional trailer with pivot hitch.</small>	 XQ125 <small>Arrangement shown with optional trailer with pivot hitch.</small>
COMMENTS:	2500-gallon external fuel tanks available. Fuel consumption is estimated at 7% of the kW usage. Example: Fuel consumption on a 100 kW Generator operating at full load is approximately 7 gallons per hour). Technicians are available for hookup and monitoring of equipment. 4/0 Quick connect (Cam-Lock) cable is available for tie-in to power feed, rated at 400 Amps each cable. Fuel supply, and/or fuel vendors available. Power distribution equipment available. Transformers & Load Banks are available.					


RESOURCE: Hydraulic Excavator (Large Mass Excavation 13 cy to 3 cy buckets)						
CATEGORY: Public Works and Engineering (ESF #3)			KIND: Equipment			
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Personnel	Cubic Yard	Net HP (800); Operating Weight-Std. (399000 lb); Bucket Capacity-HDR (13.7 yd ³); Max. Digging Depth (27.6 ft); Max. Reach at Ground Level (48.9 ft); Max. Dump Height (29.8 ft); Max. Drawbar Pull (196000); Fuel Tank (987 gal); Overall Width (21.7 ft); Height To Top Of Cab (21.4 ft); Track Length-Std. (23.8 ft) Mining Machine	Net HP (513); Operating Weight-Std. (183940 lb); Operating Weight-Long (L) Undercarriage (189770 lb); Bucket Capacities-HDR (2.5 yd ³) - General Purpose GP (5.5 yd ³); Max. Drawbar Pull (132810); Fuel Tank (328 gal); Max. Digging Depth (38.7 ft); Max. Reach at Ground Level (56.11 ft); Max. Dump Height (37.11 ft); Minimum Loading Height (11.1 ft); Overall Width (12.7 ft); Height To Top Of Cab (12 ft); Track Length-Std. (19.2 ft)	In respective order of size; Net HP (428-404); Operating Weight-Std. (173100 lb-149000 lb); Operating Weight-Long (L) Undercarriage (179800 lb-150200 lb); Bucket Capacities-HDR (2.5 yd ³ -1.6 yd ³) - General Purpose GP (5 yd ³); Max. Drawbar Pull (126300 -103820); Fuel Tank (261gal-211 gal); Max. Digging Depth (37.7ft-31 ft); Max. Reach at Ground Level (52ft-46 ft); Max. Dump Height (33.11ft-30 ft); Overall Width (13.6ft--11.6ft); Height To Top Of Cab (12.2ft-11.11ft); Track Length-Std. (20.10 ft-19.3ft)		
Equipment	Example	 5130B ME	 385B-L	 375-L	 365B-L Series II	
COMMENTS:		To better match bucket needs to material conditions, contact dealer and or owner. The reference to "L" means Long Undercarriage. Mobilization may require more than one truck-trailer.				



RESOURCE: Hydraulic Excavator (Medium Mass Excavation 4 cy to 1.75 cy buckets)							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Equipment	Model	345B L Series II	330C -- 325C L See Note 1	322C L -- 320C L See Note 1 See Note 2	321B L -- 320C L Utility Models See Note 1 See Note 2		
Equipment	Net HP	321	247 -- 188	168 -- 138	168-138		
Equipment	Operating Weight-Long Undercarriage	111180 lb for UHD -- 97940lb	77400 lb -- 63100 lb	53600 lb -- 46300 lb	50927 lb-50700 lb		
Equipment	Bucket Capacity (yd ³)	HDR (3) GP (4)	HDR (2.12 -- 1.75) GP (3 -- 2.5)	HDR (2.12 -- 1) GP (3 -- 1.75)	Bucket capacities and other handling performances will be similar to 320 C L		
Equipment	Max. Drawbar Pull (lb)	74380	66094 -- 54853	50132 -- 44040)	44063 -- 4040		
Equipment	Fuel Tank (gal)	190	163 -- 132	132 -- 106	66 -		
Equipment	Reach and dimensions	Max. Digging Depth (23.7 ft) Max. Reach at Ground Level (37.2 ft) Max. Loading Height (22.6 ft) Overall Width (11.5 ft) Height To Top Of Cab (15.1 ft) Track Length-Std. (17.7 ft)	Max. Digging Depth (24.3 ft - 23.3 ft) Max. Reach at Ground Level (35.10 ft -- 34.6 ft) Max. Loading Height (23.7 ft- 23.4 ft) Minimum Loading Height (8.11 ft-8 ft) Overall Width (11.3 ft-11.1 ft) Height To Top Of Cab (11 ft - 10.11 ft) Track Length -- Std. (16.6 ft - 15.3 ft)	Max. Digging Depth (22 ft -- 22 ft) Max. Reach at Ground Level (32.10 ft -- 32.4 ft) Max. Loading Height (22.1ft - 21.4 ft) Overall Width (11.6ft -- 9.6 ft) Height To Top Of Cab (10.9 - 9.11ft) Track Length-Std. (15.3 ft -- 13.4ft)			






RESOURCE: Hydraulic Excavator (Medium Mass Excavation 4 cy to 1.75 cy buckets)						
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Example	 345B L Series II UHD  345B L Series II	 330C -- 325C L	 322C -- 320C L	 321B -- 320C L Utility	
Comments:		To better match bucket needs to material conditions, contact dealer and or owner. The reference to "L" means Long Undercarriage. Mobilization may require more than one truck w/trailer. Boom type will change reach, digging depth, and handling performances. Note 1: In respective order of size Note 2: 320C L has two versions for difference applications. Utility model has smaller radius.				

RESOURCE: Hydraulic Truck Cranes						
CATEGORY:	Public Works and Engineering (ESF #3)				KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Tons	75-70	65-60	40-35		
Equipment	Size	Crane type with boom reach of 190-170 feet; With jib add approx. 30 feet Self-propelled/driven over the road; Counter weight transported by tractor-trailer No other special transport permit required	Crane type with boom reach of 160-150 feet; With jib add approx. 30 feet Self-propelled/driven over the road No special transport permit required	Crane type with boom reach of 140 feet; With jib add approx. 30 feet Self-propelled/driven over the road No special transport permit required		
Equipment	Setup time	Minimal	Minimal and ready for use	Minimal and ready for use		
Personnel	Operator	Furnished	Furnished	Furnished		
COMMENTS:	Check with your local/State transportation and law enforcement organizations to determine mobilization requirements.					
						

RESOURCE: Lattice Truck Cranes							
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment; Personnel; Vehicle	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER	
COMPONENT	METRIC						
Personnel	Tons	220 Manitowoc Reach of 430 feet; Requires 7 tractor-trailers to mobilize & demobilize; Setup time 6 hours					
Equipment		Operator with one (1) oiler/rigger					
COMMENTS:	Check with your local/State transportation and law enforcement organizations to determine mobilization requirements.						
							






RESOURCE: Track Dozer						
CATEGORY: Public Works and Engineering (ESF #3)				KIND: Equipment		
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Example	D10R – Cat 3412E Turbo Charged Diesel	D6N – Cat 3126B Diesel	D3G – Cat 3046 Diesel		D10R WHA (Waste Handling) – Cat 3412E Turbo Charged Diesel
Gross Power	RPM	1,900	2,100	2,400		1,900
Gross Power	kw/hp	457/613	127/170	57/77		457/613
Operating Weight	lbs	144,191	34,209	16,193		144,986
Blade Capacity	yd ³	24.2	5.6	1.88		63.9
Digging Depth	in	26.5	20.5	21.8		26.5
Height	ft/in	6'11"	4'1"	3'8"		10'5"
Ground Clearance	ft/in	4'11"	3'2.7"			4'10"
Total Tilt	ft/in	3'3"	2'2.2"	1'2.5"		3'6.3"
Width Over End Bits	ft/in	15'11"	10'6"	8'9"		17'3"
Blade Lift Height	in			27.1		
Digging Depth	in			21.8		
Multishanks Arrangements		1-3	3			1 to 3
Ground Clearance Under Tip	in	35	19.9	16.2		35"
Machine Ground Clearance	in			14.7		
Max Penetration	in		14.2			3'1"

RESOURCE:		Track Dozer				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Max Reach at Ground Line	in		29.1	29.1"		
Width	ft/in	9'7"	7'2.7"	8'9"		9'7"
Winch-Drum Capacity	ft	226	371	371		226
Fuel Capacity	gal	293	79	43.6		293
Max Line Pull Bare Drum	lbs			40,000		
Full Drum	lbs			25,000		
Equipment	Example	 D10R	 D6N	 D3G		 D10R WH
COMMENTS:	Caterpillar is used as an example only. The major difference for D10R WHA (Waste Handling) – Cat 3412E Turbo Charged Diesel is that it contains a larger blade and protection guards to prevent landfill type debris from tangling its drives.					
	 General Example					




RESOURCE:		Tractor Trailer (Example Only)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Example		TE70FG-2 Folding Gooseneck Trailer	TE18AH (D9AH) General Duty Hydraulic Tail Trailer (with Fifth-Wheel Hookup)			
Capacity	lbs	70,000	18,000			
Overall Length	ft/in	40'-53'	34'11"			
Main Deck Length (Double Drop)	ft	17-28	8			
Hydraulic Deck Plate	in		18			
Arch Hitch Length	ft/in		7'9"			
Arch Hitch Height	in		32-40			
Main Deck Length (Single Drop)	ft	20-32				
Upper Deck Length	ft	8				
Rear Deck Length	ft/in	7'-10'				
Slope	degrees	60				
Width	ft/in	8'6"	8'			
Swing Clearance	in	84				
King Pin Setting	in	16				

RESOURCE:		Tractor Trailer (Example Only)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Deck Height (Unloaded Single Drop)	in	39.5				
Deck Height (Loaded)	in		36			
Ground Clearance (Single Drop)	in	19.5				
Platform	in	1.375	1.375			
Axles (2)	lbs	25,000	9,000			
Brakes (Air)	in x in	16.5 x 7	12.25 x 3.375			
Wheels (Disc-Pilot Mounted)		8.25 x 22.5				
Wheels (8-Hole)			6.75 x 16.5			
Tires (Low Profile)		255/70R x 22.5				
Tires (10-Ply)			8.75 x 16.5			
Suspension		Spring-type	18,000 lbs			
Jack (Crank Style with Pin Drop Base)	lbs		12,000			
Equipment	Example	 TE70FG-2	 TE18AH (D9AH)			
COMMENTS	Rail-EZE Trailers are used only as an example.					

RESOURCE:		Tub Grinder				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Output Capability	cy/hr	> 400	300-400	100-300	Up to 100	
Tub Size (opening)	ft/in	14'-15'	12'-13'	8'-11'	Up to 8'4"	
Towing Arrangement (i.e., Tow-Behind and Fifth-Wheel Trailer Hookup)		Fifth-wheel	Fifth-wheel	Fifth-wheel	Pintle hitch	
Horsepower	hp	>1000	630-1000	200-575	Up to 200	
Example		Morbark 1500	Morbark 1300/1200XL	Morbark 1100/1000	Morbark 950	
COMMENTS	Morbark is used as an example only. 					



RESOURCE:		Tug Boat				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Personnel	Vessel Personnel	Tug Boat Captain	Inland River Pilot	Docking Pilot		
Personnel	Description	Term used on the inland waterways to describe a vessel operator who holds a Master license	Term used on the inland waterways that equates to "Mate" in the coastal sector A pilot is the second operator onboard an inland towing vessel The pilot has similar navigation duties and credentials to the Captain/Master, although the Captain/Master has the ultimate authority onboard the vessel	A docking pilot is an individual with specific expertise in maneuvering large, deep sea vessels in confined spaces (e.g., alongside a pier) The docking pilot boards the ship, takes the conn, and brings the vessel into port Most docking pilots are licensed by the Coast Guard (except in Maryland and New Jersey, where they are licensed by the State) and are employed by tug companies		
Personnel	Training or Requirements	Requires a tug boat captain's licensure issued by the U.S. Coast Guard Increasingly, 2-month schools are available for captain licensure	Requires licensure issued by the U.S. Coast Guard	Requires special licensure issued by the U.S. Coast Guard or New Jersey/ Maryland		
Personnel	Crew Availability	Generally live on the boat during working times, as schedule depends on the tug boat companies (e.g., 4 days on, 4 days off)	Required by law and on an on-call basis	Specialty position on an on-call basis		
COMMENTS		Tug boats are typed as one resource as modifications and enhancements are based on boat-to-boat, location, and working task specialty bases. Tug boats and operators are subject to licensure and jurisdiction of the U.S. Coast Guard, and are required by law to make use of river pilots on inland waterways. The docking pilot specialist is becoming more used in current times. Horsepower will be the first determining factor in tug boat requisitioning, as tractor tugs are the preferred equipment type. Equipment is usually				

RESOURCE:		Tug Boat				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
	requisitioned from a U.S. Coast Guard or harbor-master matrix based on the closest and largest available tug boat. The matrix will assign the tug type, size, and how many units may be available to assist in the emergency situation.					
						







RESOURCE:		Water Purification Team (USACE Emergency Water Teams)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Personnel	Team Personnel	ESF Action Officer (AO)	Mission Manager	Mission Specialist	Logistics Manager	Contract Specialist
Personnel	Description	<p>Coordinates the mission requirements on all levels with FEMA, State, local, and other ESF elements to determine scope of mission</p> <p>Is the USACE liaison with FEMA, DFO, and ERRO, and provides tasking to the ERRO/District</p> <p>Works with Mission Manager to ensure actions are accomplished</p>	<p>Serves as the Project Manager for mission execution and is responsible for team coordination and timely procurement and delivery of water to all staging areas and distribution sites</p> <p>Prepares scopes of work, cost estimates, schedule and tracking of water deliveries, and upward reporting</p>	<p>Works with the ERRO and assists the Mission Manager, while serving as the MM backup (same relative duties)</p>	<p>Works at the staging operations area and provides support for the MM</p> <p>Responsible for receiving, inventory management, and distribution of emergency water in coordination with the MM</p> <p>Ensures the quality control and accounting necessary for upward reporting and contractor payments</p> <p>Provides status reports of deliveries and inventories</p>	<p>Works for the Chief of the Contracting Division of the supported District and ERRO, and contract support to the MM</p> <p>Responsible for all contracting for the procurement, transportation, storage, security, testing, and distribution of water during emergency operations</p> <p>Provides copies of all ACI Contract actions and delivery orders</p>
Personnel	Training or Requirements	<p>Must have full knowledge of the Federal Response Plan, FEMA operations, PL 84-99 authorities, and operational dynamics of a DFO</p>	<p>Must be familiar with the procurement process and able to communicate mission requirements to contracting, resource management, emergency management, and other impacted districts</p> <p>Trained and fully knowledgeable of the current ACI Water Contract, and familiar with the ENLink Interactive and the preparation of SITREPS, CEFMS, and the PR&C process (requires an alternate to be designated)</p>	<p>Same as Type II</p>	<p>Must possess special training for receiving and accountability process</p> <p>Must be able to effectively work with emergency managers to solicit support for Logistics PRT (requires an alternate person be designated)</p>	<p>Must be able to act as liaison between Water PRT and the Contracting Division of supported District, while scoping contract requirements for mission execution and procurement</p> <p>Must be fully knowledgeable of the current ACI Water Contract, delivery orders, preparing sealed bids, negotiate actions, simplified acquisition procedures, and must be proficient in the Standard Procurement System, Procurement Desktop Defense, and CEFMS</p>



RESOURCE:		Water Purification Team (USACE Emergency Water Teams)				
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Supplies	Crew Availability	Deployed for 30-day rotations, with a 3- to 5-day transition period between consecutive missions Average missions last 2-3 weeks	Same as Type I	Same as Type I except: Nightshift availability if required	Same as Type I except: multiple deployments required (nightshift availability if required)	Same as Type I
Supplies	Water Sources	ACI Water Contract	Commercial Water Sources	Reverse Osmosis Water Purification Units (ROWPUs)		
Supplies	Description	A service and supply contract which can be used to provide bottled and bulk water: Area of Coverage: Continental U.S. (CONUS) and Outside Continental U.S. (OCONUS) Time Requirement: Within 24 hours Bottle Size: 12 ounce to 1.5 liter Conversion Factor: 1 gallon = 3.79 liters Price: 0.38/liter for CONUS Bulk Water: Scope and cost to be negotiated based on water source and transportation method	Commercial water sources can be located by contacting the International Bottled Water Association	Able to purify 3,000 gallons of potable water an hour Detachments are typically equipped with a 2-million-gallon storage capability to pump this water approximately 20 miles		
Water Distribution	Recommendation	1 gallon/person per day See Note 1				










RESOURCE:		Water Purification Team (USACE Emergency Water Teams)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
COMMENTS	<p>USACE – Emergency Water Team Staffing is designed to provide the minimum number of personnel to effectively manage and support the execution of the water mission in concert with the responding Emergency Response and Recovery Office command and control structure. The team configuration is designed to staff the three operational functions required to execute a major Federal Response Plan mission: Emergency Support Function #3 (Public Works and Engineering) element at the Disaster Field Office, Emergency Response and Recovery Office, and the Staging Operations area(s). The preferred method of providing water to disaster victims is by bottled water because the containers are usually stronger and easier to carry, and reduce opportunity for disease transmission as the water is consumed in a shorter period of time.</p> <p>Note 1: (Note: emergency water is for drinking purposes only, and initial distributions should be based on 1 gallon/ person per day and limited to no more than 2 days supply per visit to ensure all residents have minimum amount for survival)</p>					






RESOURCE:		Water Truck (example only)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Example	Tandem Axle				
Equipment		DOT Class 8; GVW rating 60,000; Capacity 4,000 gallons of potable water; Gas or diesel powered with choice of Manual or Automatic Transmission; Air Brakes; Limited off-road service; Medium to long haul; Wide turning radius; CDL license required				
COMMENTS	 					
	 					











RESOURCE:		Wheel Dozer				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Example	854G – Cat 3508B EUI Diesel All-Wheel-Drive	824G – Cat 3406C Turbo Charged Diesel All-Wheel-Drive			
Gross Power	RPM		2,100			
Gross Power	kw/hp	656/880	254/340			
Weight	lbs	212,230	58,697			
Blade Height	ft/in	6'11"	4'10"			
Width	ft/in	21'8"				
Moldboard Length	ft/in		13'9"			
Maximum Depth of Cut	ft/in	1'4"	1'5"			
Maximum Lift Above Ground	ft/in	3'6"	3'6"			
Maximum Clearance Under Skid Plate	ft/in	5'6"	3'2"			
Total Tilt	ft/in	3'10"	3'11"			
Width Over End Bits	ft/in	20'7"	14'9"			
Fuel Capacity	gal	413	166			


RESOURCE:		Wheel Dozer				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Example	 <p>854G</p>	 <p>824G</p>			
COMMENTS	Caterpillar is used as an example only.					
						

RESOURCE:		Wheel Loaders (Large 41 cy to 8 cy)				
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Model	994D	992G	990 Series II	988G	
Equipment	Bucket Capacity m ³ (yd ³)	Range 15 - 31 (19.5 - 41)	Max. 12.3 (16)	Range 8.4 - 9.2 (11 - 12)	Range 6.3 - 7 (8.2 - 9.2)	
Equipment	Power, weight, payload	Gross Power 1027 kW (1375 hp) Operating Weight 191200 kg (421600 lb) Rated Payload-Standard 34.5 tonnes (38 tons)	Gross Power 656 kw (880 hp) Operating Weight 93779 kg (206783 lb); Dump Clearance 4636 mm (19 ft)	Gross Power 503 kW (675 hp) Operating Weight 77141 kg (170067 lb) Rated Payload-Standard 15 tonnes (16.5 tons)	Gross Power 388 kW (520 hp) Operating Weight 50183 kg (110634 lb) Rated Payload-Standard 11.4 tonnes (12.5 tons)	
Equipment	Reach and dimensions	Reach at Max. Lift/Dump-Std 2263 mm (7.4 ft); Clearance at Max. Lift/Dump-Std 5592 mm (18.4 ft); Bucket pivot at Max. Lift-Std 8157 mm (26.8 ft); Overall Height Bucket Raised-Std 100996 mm (36.1 ft); Overall Length-Std 16809 mm (55.1 ft); Width Over Tires 5499 mm (18 ft)		Static Tipping Load, Full Turn 38243 kg (84311 lb); Reach at Max. Lift/Dump-Std 1799 mm (5.9 ft); Clearance at Max. Lift/Dump-Std 4135 mm (13.7 ft); Overall Length-Std 12839 mm (42.1 ft); Width Over Tires 4071 mm (13.3 ft)	Static Tipping Load, Full Turn 26960 kg (59436 lb); Reach at Max. Lift/Dump-Std 2113 mm (6.9 ft); Clearance at Max. Lift/Dump-Std 3971 mm (13 ft); Overall Length-Std slightly less than 990 Series	
Equipment	Fuel Tank (gal)	1226	413	284	176.5	
Equipment	Example	 994D	 992G	 990 Series	 988G	
COMMENTS:		Caterpillar products used in typing. To better match bucket needs to material conditions, contact dealer and or owner.				

RESOURCE:		Wheel Loaders (Medium 7 cy to 3 cy)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Bucket Capacity	Range 3.8-5.7m ³ (7.5 - 5 yd ³)	Bucket Capacity Range 3.5 - 4.25 m ³ (4.5 - 5.5 yd ³)	Bucket Capacity Range 2.7 - 3.8 m ³ (5 - 3.5 yd ³)	Bucket Capacity Range 2.8 - 2.5 m ³ (3.65 - 2.9 yd ³)	
Equipment	Fuel capacity	Fuel Tank (124-100 gal)	Fuel Tank (100 gal)	Fuel Tank (75 gal)	Fuel Tank (67 gal)	
Equipment	Example	980G, 972G In respective order: Max. Flywheel Power 238 kW-213 kW (319 hp-285 hp) Operating Weight 30207 kg-25490 kg (66576 lb-56180 lb) Static Tipping Load 18032 kg (39743 lb) Breakout Force 210 kN (47277 lb)	966G Series II Max. Flywheel Power 194 kW (260 hp) Operating Weight 22870 kg (50400 lb)	962G Series II, IT62G, 950G Series II In respective order: Max. Flywheel Power 157-146 kW (210-196 hp) Operating Weight 18547-17780 kg (40889-39198 lb) Static Tipping Load 11966-10619 kg (26380-23411 lb) Breakout Force 154-125 kN (34666-28210 lb)	938G, IT38G In respective order: Max. Flywheel Power 128 kW (172 hp) Operating Weight 13062-13030 kg (28731-28714 lb) Static Tipping Load 9241-7621 kg (20373-16800 lb) Breakout Force 109-124 kN (25096-28020lb)	
		 <p style="text-align: center;">980G</p>	 <p style="text-align: center;">966G</p>	 <p style="text-align: center;">962G</p> 	 <p style="text-align: center;">938G</p>	

RESOURCE:		Wheel Loaders (Medium 7 cy to 3 cy)				
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
		 972G		IT62G  950G	 IT38G	
COMMENTS		Caterpillar products used in typing. To better match bucket needs to material conditions, contact dealer and or owner. IT models offer multiple attachments.				

RESOURCE:		Wheel Loaders (Small 7 cy to 2 cy)				
CATEGORY:	Public Works and Engineering (ESF #3)			KIND:	Equipment	
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
Equipment	Cubic Yards	928G, IT28G In respective order; Bucket Capacity Range 2-5.35 m3 (2.5-7 yd3) Max. Flywheel Power 107 kW (144 hp) Operating Weight 11836 kg-12134 kg (26094 lb-26751 lb) Fuel Tank (59 gal)	924G, 924Gz In respective order; Bucket Capacity Range 1.7-5 m3 (2.2-6.5 yd3) Max. Flywheel Power 98 kW (132 hp) Operating Weight 10328 kg-9844 kg (22769 lb-21702 lb) Fuel Tank (59-51 gal)	IT14G, 914G In respective order; Bucket Capacity Range 1.4 m3 (1.8 yd3) Max. Gross Power 73 kW (98 hp) Operating Weight 7906 kg-7243 kg (17393 lb-15935 lb) Fuel Tank (59-51 gal) Breakout Force (17270-14007 lb); Static Tipping Load (10094-11737 lb); Dump Clearance 9.58-8.75 feet		
Equipment	Example	 <p style="text-align: center;">928G</p>	 <p style="text-align: center;">924G</p> 	 <p style="text-align: center;">IT14G</p> 		

RESOURCE:		Wheel Loaders (Small 7 cy to 2 cy)				
CATEGORY:		Public Works and Engineering (ESF #3)			KIND:	Equipment
MINIMUM CAPABILITIES:		TYPE I	TYPE II	TYPE III	TYPE IV	OTHER
COMPONENT	METRIC					
		 IT28G	924Gz	914G		
COMMENTS		Caterpillar products used in typing. To better match bucket needs to material conditions, contact dealer and or owner. IT models offer multiple attachments.				