

EGS - Emergency Group Site General Installation Guidelines

General

Emergency Group Sites (EG Sites, or EGSs) are groups of Travel Trailers (TT's) intended to provide short term emergency housing until longer-term housing solutions are available. The EG Sites are anticipated to be occupied for a period of up to 90 days, but may extend beyond that period if the emergency conditions persist. EG Sites are to be restored back to their original condition, or as otherwise indicated in the lease agreement between the Owner and FEMA. All salvageable material is to be recovered and returned to FEMA.

The officials in the local community are the most familiar with the available sites that may be usable for EGS development. The Contractor can adapt the general installation guidelines found in this document to fit almost any type of site that may be recommended by the local officials. Speed of construction is usually of prime consideration when selecting EG Sites and hence, sites such as parking lots or other available clear, flat locations are generally preferred.

All work is to be performed in accordance with all applicable Federal, State and local codes, including NFPA 501A, NFPA 70, ANSI C2, etc. or as approved through the local permitting/approval process. All codes, standards and regulations referenced herein are to be the latest edition.

Installation Guidelines

- Potable Water
 - A connection should be made to the most convenient supply available. This can be achieved with a connection to a fire hydrant, or other stub-up provided by the local officials from a potable water main. However, if no suitable water connection is available, potable water service can be provided from a tanker truck with stainless steel tanks specifically intended for potable water use.
 - Potable water pipe should be ASTM D-1785 Schedule 40 polyvinyl chloride (PVC) pipe installed from the connection down the utility corridor. (Pipe size will normally be 1 ½ inch. Larger pipe sizes may be used, but should not exceed 3".) PVC pipe should bear the seal of the NSF. All jointing should be in accordance with the manufacturer's recommendation and the applicable codes and standards. All fittings should be PVC conforming to AWWA C907, "Standard for PVC Pressure Fittings for Water". Potable water supply is normally run above ground for an EG Site, with provisions to hook up each TT individually.
 - A shut-off valve and a hose bibb with anti-siphon valve is to be located adjacent to each respective unit connecting point. This must be in a convenient location to facilitate shut off of water to the respective unit and to make a hose connection.
 - If the site conditions require road crossings, or the situation at the site does not lend itself to an all above ground route, the supply line may be field routed underground. In this case, the potable water service line must be placed in a trench separate from the sewer line trench and with vertical and horizontal separation in compliance with the applicable codes or as agreed by the responsible local officials. (Typically, the Mississippi standards for subdivision development require 10 ft separation horizontally and the sewer line must be a minimum of 18 inches below the potable water line whenever they intersect, but these restrictions may be reduced by the responsible local

officials considering the emergency nature of these sites.) Detection tape shall be placed on top of all underground PVC pipe.

- It should be noted and discussed with the responsible local officials that in the past EG Site installations with aboveground water and sewer lines, the contractors were not required to meet separation criteria because leaks could easily be detected and repaired, reducing the concern for cross-contamination.
- Underground pipe shall be buried as directed by the local authorities. In the absence of other guidance, at least 24" of cover should be provided. Appropriate taps on the service main shall be made and the necessary piping and riser connections installed to provide a riser for each TT.
- The service line shall be checked for leaks and any leaks must be repaired immediately. The leak check shall be done prior to backfilling any trench. A back-flow preventer valve shall be properly installed.
- Where local water pressure is in excess of the manufacturer's recommended maximum pressure, an approved pressure reducing device shall be installed to safeguard the system.
- The inside of bells and the outside of spigots, when used, shall be cleaned before installation. The inside of the pipe shall be kept free from dirt or other foreign matter and thoroughly cleaned before installation.
- Before placing any section of pipe in service, it shall be thoroughly flushed out to remove any dirt or other foreign matter. The lines shall be disinfected to meet the requirements of the Mississippi State Department of Health's (MSDoH) "Recommended Minimum Design Criteria for Mississippi Public Water Systems". Disinfecting shall be done in accordance with AWWA C651, latest edition, "Standard for Disinfecting Water Mains". The local officials will specify the sampling/reporting procedures applicable to each individual installation. In the absence of specific local guidance, approval to use the water should be granted by MSDoH.
- All chlorinated water used for disinfecting the potable water system shall be disposed of in compliance with the requirements of MSDoH.
- TT hookups are to individual hose bibbs, either attached directly to the aboveground distribution main or stubbed up from the underground piping.
- If required, lines should be freeze protected with heat tape and insulation.

- Electrical Connection

- Close coordination with the responsible local electric utility company is required to bring electric power to the site.
- Under normal circumstances, the responsible local electric utility will bring the electric service into the EG Site. The typical scope of the responsible local utility normally ends at the metering device(s) to be used. This could be individual meters for each trailer, a meter for each cluster of trailers (6 to 8 trailers per cluster), or a single primary meter for the entire site. Each site will need to be individually reviewed for metering setup. It is anticipated that many EG Sites will have a single primary meter.
- All equipment and cable past the primary meter(s) shall be designed, supplied and installed by Bechtel. A local Electrical Consultant will normally be assigned to detail any design features required. NEC standards will apply.
- A weatherproof combination circuit breaker/disconnect and power outlet for connection of the TT electrical plug shall be installed for each TT. The disconnect box shall be NEMA 3R rated and installed near the TT location so that the TT power supply cable, furnished with the TT and less than 50 ft long, may be run to the box. The bottom of the weatherproof disconnect box shall be a minimum of 10" above ground level. All conduits on meter poles and disconnect pedestals shall be watertight.

- See Attachment 1 for two typical one-line diagrams. One diagram is for a 208/120 Volt 3-phase situation and the other is for 240/120 v single phase. If the utility will provide either, then the 208/120 v 3-phase supply is preferred. A 400 amp panel designed to receive either 208/120 v 3-phase or 240/120 v single phase is typical for use in distributing electric power to the pedestals via 100 amp breakers. In the configuration depicted, each pedestal will provide for up to 4 TTs with 30 amp outlets. (It assumes that the TTs only require 30 amps and that cooking is provided for through propane gas.) In the case shown, each pedestal also has four 20 amp utility outlets for operating tools and for hooking up Macerator pumps if used for the effluent discharge from the TTs. Other configurations are possible. If appropriate, pedestals should be treated 4" X 4" post or equivalent. In all cases, each pedestal must be properly grounded.
- See Attachment 2 for Mississippi Power Company's (MPC) typical technical details.
- Cables may be laid on the ground inside the utility corridor fence. Such cables must be of a type approved for lying above or on the ground and should be resistant to ultraviolet, water and some abuse. TPC or mining type cables are preferred. If the cables are to be laid underground, use cables approved for direct burial.
- Generators may be used if utility service is unavailable, but issues including reliability, interference, variation, noise and lead time need to be addressed. Generators might be provided as 5kW gensets for each TT, or one per cluster, or one for an entire EG site.
- Sanitary Sewer
 - Connection to an existing sanitary sewer system is preferred, but may extend the time to install and set up the EG Site. Polyethylene holding tanks, also known as bladders, may be used if a sanitary sewer is unavailable or if it will expedite occupying the EG Site until the connection to the existing sanitary sewer system can be made. Bladders require frequent pumping, and the schedule for pumping should be determined by the number of TTs discharging into each bladder, and the bladder capacity. Maintenance plan for potential sewage spill during pumping or capacity overflow should also be considered if bladders are used.
 - A 3 inch PVC connection is made to each TT. See detail shown on Attachment 3. A connection to the bladder or main is then made with a 3" schedule 40 PVC sewer pipe with a minimum slope of ¼" per foot. If 3" PVC is unavailable, 4" PVC may be substituted downstream of appropriate adapters. All pipes and fittings for the sanitary sewer should be PVC conforming to ASTM D3034. A wye fitting and cleanout should normally be installed at all changes in alignment.
 - The piping from each TT should normally be connected to a 6 inch schedule 40 PVC main that is run down the utility corridor. The 6" main shall be sloped at a minimum of 0.6% (greater slope is recommended if permissible by the existing topography). (The height of the trailer connection and the slope of the main determine where the 6" main comes in contact with the ground. Intermittent support by masonry block, timber, saddle or stake with strap may be required to provide elevation and to prevent the sewer pipe from sagging. This limits the length of the sanitary sewer above ground to ~250 feet.) If the system is a gravity system and the surface must be penetrated due to the configuration, then the local authorities should understand the implications. The site will be restored to its original condition when the EG Site is removed unless otherwise directed. A cleanout should be provided at the high end of the main and at all changes in alignment.
 - There are several other options at the point where the main hits the ground. One is to put a holding tank under ground at the end of the run and pump it daily. Another is to use a smaller holding tank and a lift station. The lift station pump would then pump through a hose to the nearest manhole to connect to the local sanitary sewer. Another

- option is use a packaged sewage treatment plant. In this case, processed water can be discharged to the surface system after receiving local approval; and sludge would be periodically disposed of at an authorized landfill.
- It should be noted that most of the sites under consideration in the lower six counties of Mississippi have sanitary sewer connections somewhere nearby, and use of bladders until a reasonable connection mechanism can be devised and agreed to by the local officials will normally be the most expeditious way to move into an EG Site.
 - If required, lines should be freeze protected with heat tape and insulation.
- Lighting
 - Area lighting is important for safety and security at all EG Sites. When utility power/lighting is not available, portable generating/lighting units should be set up around EG Sites. Care should be taken to avoid placing these units too close to trailers because they are engine driven and might disturb residents.
 - The local electric utility will normally install streetlights on poles around and in an EG Site. Most often poles installed for dropping power to the panels are sufficient for the internal lighting of the site.
 - Lighting should not be over specified to prevent light pollution. Spacing between light poles should be kept within 150 ft to 300 ft apart to ensure adequate lighting.
 - Storm Water
 - Basic consideration is to not disturb existing storm water runoff pattern
 - If site grading or other disturbance activity is required for unpaved sites, silt fences, hay bales or pre-fabricated storm water products shall be used at the appropriate locations to prevent sediment runoff from the sites.

Layout Considerations

The layout will have to consider existing entrance/egress, location of existing water, sewer and electrical connections, storm water drainage, etc. The optimum layout will result in a simple installation for the utility corridor and for the TTs themselves. Because of the temporary nature of the EG Sites, the typical site layout does not consider open spaces or a place for children to play. However, if space is easily available, play areas are recommended. Basic services such as laundry facilities, site management, and maintenance facilities should be provided. Additional general planning considerations include:

- At least two entrance/egress locations should be provided
- Access lanes for fire fighting and emergency service vehicles should be provided
- The main access/egress roads should normally be ~30 ft wide
- Internal circulation roads should normally be ~20 ft wide
- One parking space should be provided directly next to each TT. Additional parking spaces located within 300 feet of the TTs should also be provided. The overall parking ratio per TT should be a minimum of 1.5 spaces per TT. Parking spaces should be clearly marked
- TTs should normally be installed back to back with a minimum separation of 12 feet for the utility corridor
- The utility corridor will normally run at the back of TTs, as outlined above
- Centerline spacing between trailers facing same direction should normally be ~24'
- The set-back from trailer to the internal circulation street should normally be ~15'
- The space between the back edge of a TT in one row and the back edge of the nearest TT in the row behind should normally be ~12 ft

- US Postal Service approved pedestal mounted rear loading mail boxes should be provided. Each pedestal can support numerous mailboxes. One mailbox should be provided for each TT.
- A trash receptacle (dumpster) should normally be placed at a convenient location away from the TTs, one for each ~20 TTs. Refuse removal should normally be provided twice per week.

Other Considerations

- The construction period is measured in days
- Local government involvement is needed to expedite site location, assessment and acquisition (lease or MOU) and for processing/waiving permitting, and zoning issues.
- Phased occupancy should be considered
- Long lead items could include transformers, distribution panels, electric and water meters, lift stations and any packaged plants.
- Trench excavation will normally be made with a "Ditch Witch".