ATTACHMENT 16

OPEN BURNING/OPEN DETONATION OPERATIONS

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1.0 OB/OD DESIGN AND OPERATION

1.1. Applicability as a Miscellaneous Unit [Utah Admin. Code R315-8-16 and R315-8-6.8]

TEAD conducts thermal treatment of conventional energetic material items at the OB/OD Area. The principal work activities at TEAD are the shipping, receiving, maintenance and demilitarization of conventional munitions, and the testing and development of ammunition peculiar equipment and related demilitarization testing. The location of the OB/OD Area is shown in Figure 1 and a detailed map showing the OB/OD operations area is shown in Figure 2. Treatment by OB/OD falls under the miscellaneous units provisions in Utah Admin. Code R315-8-16.

OB/OD is used for treatment of energetic materials because this is the only safe and effective treatment process currently available for most energetic material items. The selection of OB/OD is based on energetic material item-specific information developed by the U.S. Army based on energetic material type and content, explosion potential, and historical experience. The U.S. Army is continuing to study and evaluate alternative treatment processes that may be used in the future, rather than OB/OD, to treat appropriate energetic materials. TEAD is installing equipment to reutilize propellant as an explosive for the mining industry and to caustically treat Cartridge Activated Devices. TEAD reports progress in developing alternative technologies as part of the annual waste minimization certification.

Because the OB and OD treatment processes are a noncontinuous (i.e., batch) process, the facility is not subject to steady-state or "normal" operating conditions. Wastes are treated by the Demil Team according to Standard Operating Procedures (SOPs). The SOPs detail the handling of the explosives from storage to unloading, the tools to be used, setting the charge, and, ultimately, burning or detonation.

There are major advantages for using OB and OD disposal practices. These include the following:

- Safety. Safety is the most important consideration. Strict observance of proven OB and OD procedures has resulted in an excellent safety record being earned by the personnel who have helped to treat the many millions of pounds of waste military energetic materials safely over the last four decades at numerous Department of Defense (DOD) installations.

- Versatility. These types of operations are extremely versatile; large or small quantities of the myriad types of materials can be treated easily and safely.

- Reliability. Because of their inherent simplicity, OB and OD are extremely reliable processes not subject to equipment downtime.

- Treatment Efficiency. Both OB/OD are very efficient treatments as demonstrated by testing. This is discussed in further detail in Attachment 21, OB/OD Treatment Effectiveness, Alternative Technologies and Waste Minimization.

Figure 1

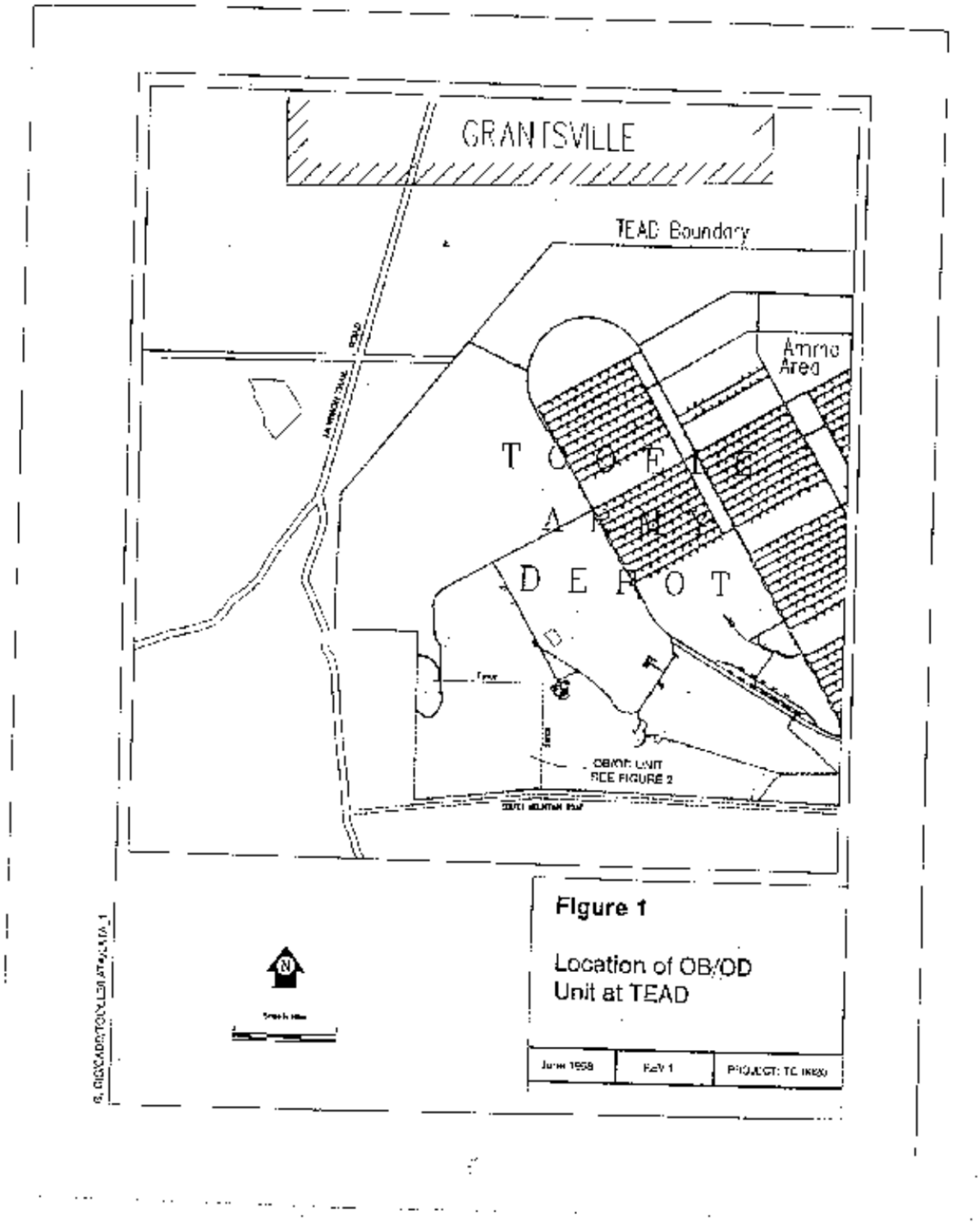
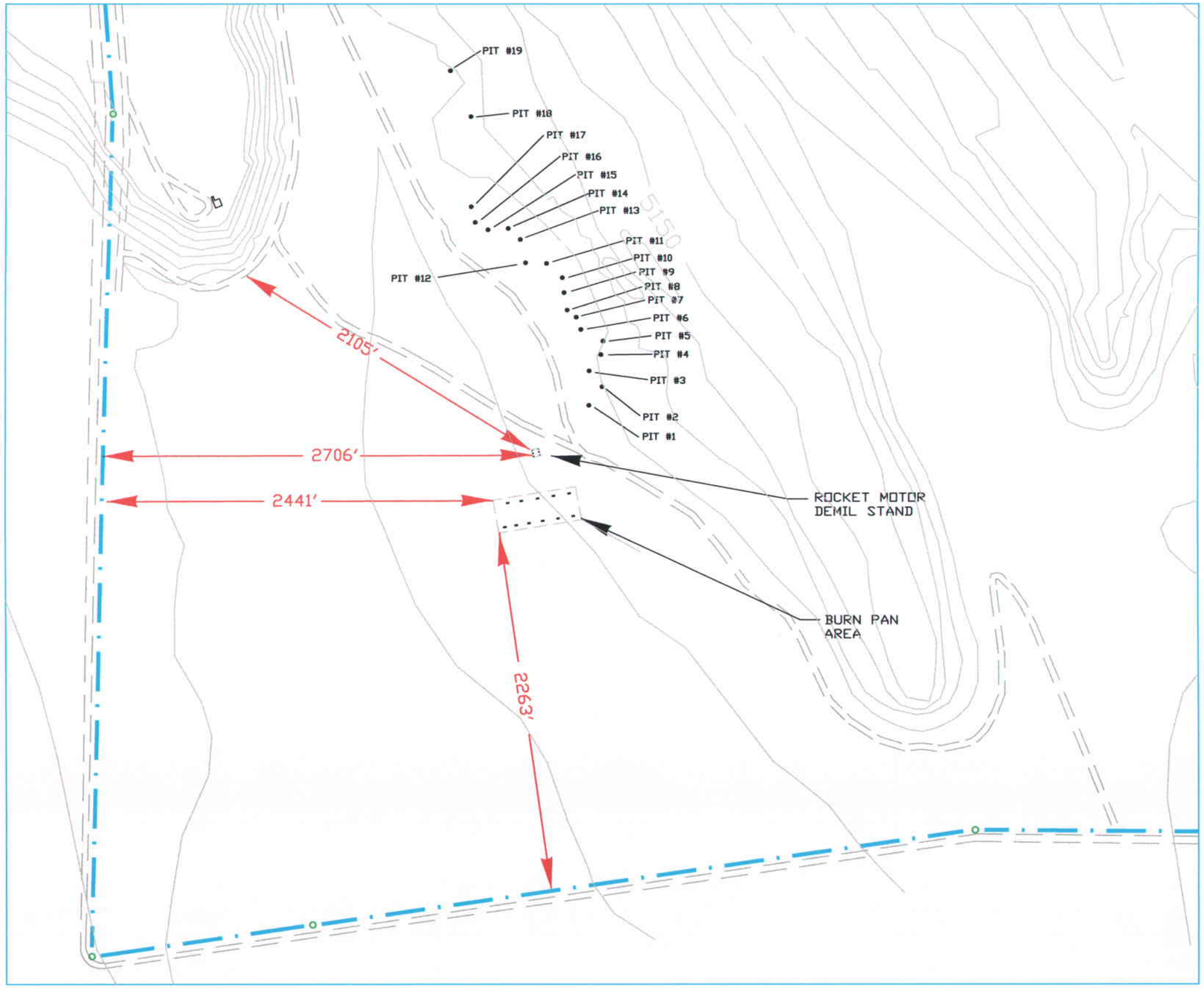


Figure 1

Figure 2**.**

See Attached Figure

Figure 2



400 0 400 800

SCALE IN FEET

PUBLIC WORKS
TOOELE ARMY DEPOT TOOELE, UTAH

TOOELE ARMY DEPOT
TOOELE , UTAH

Operation Area of OB/OD

DRAWN BY: BOB THURSTON | FEBRUARY 2008 | Figure 2

FILE NAME: thurstor\My Documents\Drawings\GaryHoy\ObodOperationArea

1.2. Hazardous Waste Storage and Variance

TEAD does not treat nonreactive waste at the OB/OD Units other than incidental packaging. Thus a variance to treat solid waste is not needed.

Currently TEAD only accepts waste from Tooele Army Depot South Area (TEAD-S) for treatment at the OB/OD Units. Munitions are treated the same day that they are received at the OB/OD Units. In the case of weather delays, munitions are treated as soon as possible (generally within 24 hours). Should treatment be delayed, the munitions will be stored in place, in accordance with the OB/OD/SF Standard Operating Procedures, until conditions permit treatment to commence. Weekly inspections for the munitions stored in the OB/OD units will be conducted as outlined in Attachment 4, Inspection Plan.

1.3. OPEN BURN (OB)

1.3.a Appropriateness of Treatment Technology [Utah Admin. Code R315-3-23(b)]

The reasons that OB is an appropriate treatment technology for unserviceable munitions is discussed in Section 1.1 above.

1.3.b Description of OB Unit [Utah Admin. Code R315-3-6.8(a)]

OB occurs at the OB unit. The OB unit is about 200 feet directly south of the OD unit. Figures in Appendix A show the burn pans at the OB Unit. Treatment at the OB unit is accomplished by the use of 14 burn pans. Items typically treated are bulk propellants. No donor charges are used in OB.

The 14 burn pans are designed and constructed similarly. The dimensions of each of the 14 pans are approximately 16 ft x4 ft x 11 inches deep. A schematic of a typical burn pan is provided in Appendix A. Appendix A also has the detailed drawings of the burn pans used at TEAD. The burn pans are approximately 60 feet apart. Each pan is elevated approximately 1 foot. The position of the legs of the structure allows for easy inspection of the bottom of the pan and the surface of the ground beneath it. The pans are constructed of steel, and covers are placed over them when they are not in use, or when propellant is being stored in place.

Prior to conducting OB, certain meteorological conditions must be met. Figure 3 lists the meteorological parameters for TEAD. The Demil Team Leader, or his/her designated representative, must ensure that all firing has ceased when aircraft approach the area. Designated observers have effective communications with the Range Supervisor any time an aircraft approaches the area. OB will not be initiated until 10:00 a.m. and not after 5:00 p.m.. Meteorological data are obtained from the:

- Salt Lake City National Weather Services (http://nimbo.wrh.noaa.gov/slc); or
- AccuWeather (http://accuweather.com).

Figure 3. Meteorological Parameters for TEAD

Parameters	TEAD Requirement
Wind speed	3-20 mph/gusts to 30 mph
Cloud cover (see note)	<80%
Ceiling	>2,000 ft.
Precipitation	<75% chance
Thunderstorm/electrical storm	<50% chance
Clearing index	>500
Visibility	1 mile

Source: AMC Regulation 755-8.
Note: Cloud cover and ceiling limits are in conjunction with each other. Operations shall not be carried out when the cloud cover is greater than 80% and the cloud ceiling is less than 2,000 ft.

An on-site met tower provides site-specific data. A determination is made prior to burning whether to cease operations or to continue based on the meteorological data. This information is recorded on a form. The demil operations are determined "GO" or "NO GO" by weather forecasts as described above. When forecasts indicate a "GO" condition, demil operations proceed. However, if the weather conditions deteriorate as observed by the Demil Team Leader or his/her designated representative for the operation, he/she contacts the Demil Planner. A determination is made whether to continue the operation with the propellant already in the pan or to store the propellant in the pan and then burn it as soon as conditions of the permit are met. Under no circumstances is propellant placed in the pan after weather conditions have deteriorated.

The Demil Planner annotates on the Demilitarization Approval Form that each organization has been notified. The Demil Planner takes this Demilitarization Approval Form to the Directorate of Ammunition Operations or his/her designated representative for approval/disapproval The Demil Planner phones the Demil Team Leader to inform whether the mission has been approved /disapproved. The Demil Team Leader phones the Demil Planner to describe when charges have been set and when they are ready to burn.

The preliminary steps prior to the actual OB activities are similar to those for the OD practice. Dry grass, leaves, and other extraneous combustible material in amounts sufficient to spread fires are removed within a radius of 61 m (200 feet) from the pans. Meteorological data are checked, and trays are arranged so that the propellants burn in the opposite direction from which the wind is blowing. Telephone or two-way radio communications are established and remain in operation during the entire OB operation.

The propellant to be burned is loaded into the pans. The propellant is poured into the pans with extreme care taken to prevent the occurrence of spills. The propellant is placed in the pan to a thickness no greater than 7.5 cm (3 in.). The area is then cleared of all personnel except for those needed to install the igniting charge into the pans. When the area is determined to be clear, the igniting charges are laid in the pans and activated.

The burn operation is observed from a safe position, and fire-fighting equipment is made available to combat grass, brush, or equipment fires. Qualified personnel check pans and ensure that all propellant has been burned. At the end of each day's operation, all extraneous operations materials are removed from the OB unit. Ash and residue are gathered, containerized in an authorized container, labeled as hazardous waste, and stored at the SAA at the OB/OD Area.

The Demil Team operates the OB unit in accordance with Standard Operating Procedure (SOP) No. TE-0000-H-012. This SOP provides additional information on current procedures.

1.3.c. Leak Detection Provisions [Utah Admin. Code R315-3-6.8(a)(1) and (2)(e)]

This section addresses the concern that ash/residue or wastes may be released from the burn pan if it develops a leak, a break, or a crack. The potential for such a release is minimized through pre-burn and post-burn inspections of burn pan integrity. The burn pan is situated above ground on two I-beams to allow visual inspection for leaks. The use of I-beams facilitates the conduct of routine integrity inspections of the burn pans.

Any pan showing any evidence of deterioration is not used; and damaged pans are repaired prior to being returned to use. Additionally, the structural integrity of steel pans has been shown to be reliable in previous U.S. Army tests at the Tooele Army Depot.

There is no need to construct secondary containment in the OB unit to be fully protective of the environment. Any ejecta is collected during the post-burn inspection and is reburned the same day. The pan design has been tested and shown to be structurally reliable. In addition, any damage to the pan would be detected during pre-burn and post-burn inspection and repaired before the pan is used again.

1.3.d. Precipitation Cover [Utah Admin. Code R315-3-6.8(a)(1) and (2)]

Each burn pan is equipped with a precipitation cover. The covers are tight fitting and remain on the burn pans during non-operational or storage periods to prevent accumulation of precipitation and wind dispersion of any ash and residue.

1.3.e Control of Releases of Ash and Residue During OB [Utah Admin. Code R315-3-6.8(a)(1) and (2)]

This section addresses the concern that the propellant, waste, or ashes will be ejected from the burn pan onto the ground during burning operations, potentially resulting in environmental contamination via the soil, surface water, and groundwater pathways. This potential for contamination is minimized during OB by several measures. First, the burn pan is of

sufficient height to minimize the ejection of most waste. Second, post-burn inspection of the area surrounding the pan would reveal the presence of ejected materials, which are subsequently collected. A determination is made as to whether there is any remaining contamination by having experienced personnel carefully inspect the pans and the surrounding area after a burn.

It is considered unsafe to approach the burn pan for ash removal and inspection until a sufficient time has passed to allow all materials in the pan to cool. The pan is inspected after a burn to make sure that all the propellants have burned and the pan is then covered. Any visible ejecta from the pan are collected and placed back in the pan. Although every effort is made to pick up visible ejecta, it is possible that some very small particles may escape detection. After OB, pans are inspected, and any ash is collected and temporarily stored in appropriate containers at the SAA at the OB/OD Area. When the container is full, a composite sample is collected and analyzed. Full containers are removed within 3 days and taken to a 90-day or permitted storage unit.

1.3.f. Methods to Control Deterioration of Fabricated Devices [Utah Admin. Code R315-3-6.8(a)(1) (2)]

As stated in Utah Admin. Code R315-8-7, *The owner or operator must remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard.* The most serious deterioration or malfunction during OB would be loss of burn pan integrity such as a burn pan leak. However, routine pan integrity inspections are conducted prior to and after each OB treatment event. In the event of an accidental release of waste propellants before or during a burn event, the released waste materials will be collected and re-treated in a different burn pan. Specific response procedures are established and are contained in Attachment 7, Contingency Plan. Procedures to prevent hazards are discussed in Attachment 6, Preparedness and Prevention Plan.

1.3.g. Prevention of Accumulated Precipitation in Burn Pans [Utah Admin. Code R315-3-6.8(a)(1) and (2)]

Accumulation of precipitation within the burn pan could provide a means of release of ash or waste to the environment and could also prevent complete thermal treatment of the waste. Precipitation accumulation in the burn pan during non-operational periods is prevented through the use of a precipitation cover. Covers are tight fitting, are secured in place over the pans, and remain on the pans during non-operational periods. Precipitation accumulation in the pan during OB events and cool downs is minimized by conducting OB events only at times when precipitation is not expected. OB treatment operations are not conducted during low overcast sky (i.e., cloud cover of 80% or more and cloud ceiling of less than 2,000 feet) and during precipitation or forecasted high probability of precipitation (greater than 75%). For obvious reasons, the covers cannot be used during OB operations. Following a waiting period (based on safety considerations) after the burn, the pan is inspected and its cover replaced.

If water has accumulated in the pans, it is drained out into an appropriate container prior to a burn. The drained water is sampled by Environmental Management Division personnel and placed into hazardous waste storage until the analysis can be reviewed to determine the correct disposition of the water.

1.3.h. Handling of Precipitation Accumulated in Fabricated Devices [Utah Admin Code R315-3-6.8(a)(1) and (2)]

Although it is highly unlikely, TEAD recognizes that precipitation may contact the ash while the ash is in the burn pan prior to being removed. In such cases, the precipitation is removed with the ash and is considered part of the waste.

1.3.i. Controls to Prevent Wind Dispersion of Ash and Other Residue

Certain administrative controls are used to protect human health and the environment. These include controls to prevent wind dispersion of ash and other residue, such as operating only during moderate wind speeds (i.e., greater than 3 mph to less than 20 mph) to reduce the potential of fugitive particulate emissions. The propellants are generally in the form of pellets, and other energetic materials are contained in casings. Thus, wind dispersion of these energetic wastes is not a problem. The high walls of the burn pan minimize the potential for fugitive wind erosion of these materials.

The cover of the burn pan is replaced after completion of the burn (after a wait time for safety reasons). In addition, the high sides of the burn pan reduce the potential for wind erosion during pre- and post-burn conditions when the cover is off. EPA has reported the efficiency of barriers with a 50% porosity to control wind-blown dust to range from 0% to about 90% based on limited tests (USEPA, 1988c *Control of Open Fugitive Dust Sources*, Sept. 1988, EPA-450/3-88-008, PB89-103691, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, NC). The zone of protection provided by test wind barriers was approximately 10 times the barriers' height. Solid barriers that have 0% porosity (such as the sides of the burn pans at TEAD) are expected to provide even greater control efficiency.

1.3.j. Inspection, Monitoring, and Maintenance [Utah Admin. Code R315-3-6.8(a)(1) and (2)]

The OB unit is inspected before and after use. Prior to use, the OB unit is inspected to ensure that:

- The burn pans do not have cracks, holes, or other leak sources, and
- The immediate area is free of excess vegetation or other potentially combustible material.

After OB activities are completed, the burn pans are inspected for partial burns. If unburned material is discovered, it is subsequently re-burned, provided the pan is safe. Otherwise, re-

burning operations are delayed overnight. See Attachment 4, Inspection Plan, for inspection procedures that are used.

1.3.k. Standing Operating Procedures [Utah Admin. Code R315-3-6.8(a)(2)]

All OB activities at TEAD are conducted by the Demil Team. As discussed above, all Demil personnel are required to comply with SOP No. TE-0000-H-012. The SOP prescribes the responsibilities, policies, and procedures for the operation of the OB unit. This SOP will be amended, as necessary, to reference and be consistent with all conditions of RCRA.. The SOP retains the environmental performance standards specified in this permit.

The Demil office maintains the official file for all treatment activities in the OB unit. As stated in Attachment 2, Waste Analysis Plan, ash residue analysis results will be maintained by the Environmental Management Division.

1.4 OPEN DETONATION (OD) [Utah Admin. Code R315-3-6.8(a)(8) and R315-3-23

1.4.a. Appropriateness of Treatment Technology [Utah Admin. Code R315-3-23(b)]

The reasons that OD is an appropriate treatment technology for unserviceable munitions is discussed in Section 1.1 above.

1.4.b. Description and Operation of OD Unit [Utah Admin. Code R315-3-6.8(a)]

The OD pits are in the southwestern corner of the TEAD. The entire OB/OD Area is approximately 780 acres. OD is conducted in 19 pits. These pits are numbered 1 through 19. The figures in Appendix C show the location of the pits in relation to the static fire silos and burn pans. The area is a broad dissected alluvial fan emanating from the Stansbury Mountains. OD is conducted in subsurface pits that are covered with native soil. The depth of the pits is determined by the quantity of munitions treated. There are no engineered features at this OD unit to detect or prevent releases. Due to the nature of OD, engineered features could be destroyed by detonation.

Prior to conducting OD, certain meteorological conditions must be met. Acceptable meteorological conditions for conducting OD are indicated in Figure 3 and in the SOP. OD is not initiated until at least 10:00 a.m. and is concluded at or before 5:00 p.m., with wind speeds greater than 3 miles per hour (mph) and less than 20 mph with gusts less than 30 mph, and not during or immediately prior to the approach of any electrical storms, snowstorms, or other precipitation events. Meteorological data may be obtained from the Salt Lake City National Weather Service, and the Internet.

The Demil Team Leader or his/her designated representative ensures that all firing has ceased when aircraft approach the area. Designated observers have effective communications with the Range Supervisor any time an aircraft approaches the area. OD will not be initiated until 10:00 a.m. and not after 5:00 p.m. Meteorological data are obtained from:

- Salt Lake City National Weather Services (http://nimbo.wrh.noaa.gov/slc); or AccuWeather (http://accuweather.com).

An on-site met tower provides site-specific data. A determination is made prior to detonation whether to cease operations or to continue based on meteorological data. This information is recorded on a form. The demil operations are determined "GO" or "NO GO" by weather forecasts as described above. When forecasts indicate a "GO" condition, demil operations proceed. However, if the weather conditions deteriorate, as observed by the Demil Team Leader, or his/her designated representative, he/she contacts the Demil Planner. A determination is made whether to continue the operation with the ammunition already in the pit or to store the ammunition in the pit and detonate it as soon as permit conditions allow. Under no circumstances is ammunition placed in the pit after weather conditions have deteriorated.

The Demil Planner will annotate on the Demilitarization Approval Form that each organization has been notified. The Demil Planner takes the Demilitarization Approval Form to the Directorate of Ammunition Operations or his/her designated representative for approval/disapproval. The Demil Planner phones the Demil Team Leader to inform whether the mission has been approved/disapproved. The Demil Team Leader phones the Demil Planner to tell when charges have been set and when the team is ready to detonate.

The design elements that are used to provide protection of human health and the environment include: using appropriate burial depth depending on treatment quantity; burying the munitions to appropriate depths; locating the OD unit far from public roads and inhabited housing; limiting the treatment amounts to 750 lbs NEW per pit, per event (including donor) ; only treating appropriate reactive materials; re-treating any unexploded ordnance (UXO); operating only during appropriate weather conditions; and restricting access to the unit by the use of warning signs, gates, and a surveillance team. A treatment event is defined as a day of open detonation operations with limits of 750 pounds per pit and ten pits per day assuming 7,500 pounds per hour worst case scenario as modeled in the HHRA.

TEAD is limited to the pit explosive limits specified in Condition VI.B.4. and Table 1 for the 3.5-in. rocket fragment munitions. Any additional munitions are considered on a case-by-case basis for explosive limits. If it is determined that the munitions are of greater explosive quantity or different type, additional tests will be conducted to determine debris/fragment throw range. A 20% factor is added to the maximum throw range as a safety factor.

Earth cover for the TEAD detonations is also specified in SOP No. TE-0000-G-010. Requirements are as follows:

- 0-50 lbs. NEW (including donor) requires no earth cover
- 51-750 lbs. NEW (including donor) requires 15 feet of earth cover.

TEAD OD SOP No. TE-0000-G-010 also specifies the distances that are required from above-ground (unburied) detonations to unprotected personnel. This is specified in Table 2. If the OD materials are buried, Table 3 is used. In lieu of the formula specified in Table 3, column A of Table 3 may be used for above-ground detonations. If the materials to be detonated are buried, the reduced distance provided by columns B through I of Table 3 can be used.

Prior to conducting OD operations, as in OB operations, dry grass, leaves, and other combustible materials are cleared within a 61 m (200 ft) radius from the pits.

Table 1. TEAD explosive limits for the 3.5-in. rocket fragment munitions

Pit no.	Distance boundary	Non frag	Less than 5”	Untested 5” or greater	Tested 5” or greater
1	2912 Feet	750 lbs	750 lbs	0 lbs	750 lbs
2	2992 Feet	750 lbs	750 lbs	0 lbs	750 lbs
3	3091 Feet	750 lbs	750 lbs	0 lbs	750 lbs
4	3194 Feet	750 lbs	750 lbs	0 lbs	750 lbs
5	3168 Feet	750 lbs	750 lbs	0 lbs	750 lbs
6	3141 Feet	750 lbs	750 lbs	0 lbs	750 lbs
7	3115 Feet	750 lbs	750 lbs	0 lbs	750 lbs
8	3058 Feet	750 lbs	750 lbs	0 lbs	750 lbs
9	3000 Feet	750 lbs	750 lbs	0 lbs	750 lbs
10	2945 Feet	750 lbs	750 lbs	0 lbs	750 lbs
11	2879 Feet	750 lbs	750 lbs	0 lbs	750 lbs
12	2814 Feet	750 lbs	750 lbs	0 lbs	750 lbs
13	2745 Feet	750 lbs	750 lbs	0 lbs	750 lbs
14	2676 Feet	750 lbs	750 lbs	0 lbs	750 lbs
15	2608 Feet	750 lbs	750 lbs	0 lbs	750 lbs
16	2521 Feet	750 lbs	750 lbs	0 lbs	750 lbs
17	2348 Feet	750 lbs	0 lbs	0 lbs	0 lbs
18	2213 Feet	750 lbs	0 lbs	0 lbs	0 lbs
19	2362 Feet	750 lbs	0 lbs	0 lbs	0 lbs

The placement of the initiating charges and the amount of initiating charge are determined by the amount and nature of material being treated and are specified in Army manuals. Munitions are detonated by either non-electrical or electrical methods. The only residues generated as a result of OD operations are metallic materials such as shell fragments (shrapnel) and occasionally pieces of energetic materials or UXO that were not completely treated during OD. The OD unit is inspected for these materials following OD. After each day of detonation operations, a search of the surrounding area is made for unexploded munitions. Unexploded residue or items or material such as lumps of explosives or unfuzed ammunition may be picked up and stored in a pit for the next detonation. Recovery and detonation of fuzed ammunition or suspected live munition items are treated in accordance with SOP No. TE-0000-G-010. All items or material (fuzed, unfuzed, and live munitions) found must be detonated within two working days of the time they are recovered or stored in the pit(s) until conditions of the permit are met to allow detonations.

Analysis of the OD treatment residue is not conducted at TEAD. TEAD periodically recovers scrap metal, casing, fragment, and related items from the OD grounds as resources allow, and based on the Demil Team Leader’s judgment regarding safe operation of the range. The recovered material is disposed of through the Defense Logistics Agency (DLA) Disposition Services. The Demil team will inspect and document the recovered material to ensure it is explosive free. The Ammunition Surveillance Inspector will verify the documentation. Management of ash and residues is discussed further in Attachment 2, Waste Analysis Plan.

The munitions are on pallets that are transported to the OD pit via forklift or roller conveyor. The palletized munitions are positioned in such a manner to ensure complete detonation. The palletized munitions requiring unpacking are removed to the unpack operation near or within the demolition pit using a forklift. A minimum of 10 feet of separation is maintained between unpack operations and materials stacked in the OD pit. Information about the specific item being treated is used to determine appropriate treatment. For example, bombs and mortar projectiles are as much as 80% (by weight) explosives and have relatively thin walls, as compared with artillery shells, which are 10 to 15% explosives and have relatively heavy walls. The Demil Team personnel maintain an extensive collection of Army Technical Manuals to provide guidance on appropriate OD procedures for specific items (e.g., Technical Manual - Ammunition and Explosives Standards, TM 9-1300-206, Headquarters, Department of the Army, August 1973).

Table 2. Distances from above-ground detonations to unprotected personnel

Material to detonate	Blast distance	Fragment/debris
Non-frag explosive material	D = 328 W**1/3	1,250 feet
Bombs and projectile with a diameter less than 5 inches	D = 328W**1/3	2,500 feet
Bombs and projectiles with a diameter of 5 inches or more	D = 328W**1/3	4,000 feet
All other ammunition	D = 328W**1/3	2,500 feet

Table 3. Required blast overpressure protection distances to nonessential personnel*

NEW in lbs.	Distance in feet for various burial depth								
	0 FT COL A	1 FT COL B	2 FT COL C	3 FT COL D	4 FT COL E	5 FT COL F	7 FT COL G	10 FT COL H	15 FT COL I
1	328	79	16	16	16	16	16	16	16
5	561	261	104	41	28	28	28	28	28
10	707	398	191	92	44	35	35	35	35
20	890	464	326	182	102	57	45	45	45
30	1019	566	368	260	157	94	51	51	51
40	1122	650	439	329	208	131	62	56	56
50	1208	721	501	349	255	166	71	60	60
100	1522	984	737	553	414	326	165	76	76
150	1743	1171	911	708	550	428	256	105	87

*Required Blast Overpressure protection distances to nonessential personnel from ranges used for detonating ammunition for the purposes of demilitarization, demonstration, or explosives ordnance disposal,

1.4.c. Monitoring, and Maintenance Plan [Utah Admin. Code R315-3-6.8(a)(2)]

The OD area is inspected before and after use. Prior to any detonation operations, the OD pits are inspected to ensure that they are:

- Free of water
- Free of ordnance fragments, UXO, blasting caps, detonation cords, or other OD operational debris
- Free of glass, wood fragments, metal scraps, and debris, trash, obstacles, or tripping hazards
- Free of plant matter or other potentially combustible material.

As stated earlier, OD is a very efficient method of treatment; very little shrapnel remains in the OD unit. After each day of detonation operations, a search of the surrounding area is made for unexploded munitions. Items or material such as lumps of explosives or unfuzed ammunition may be picked up and prepared for the next detonation. Recovery and detonation of fuzed ammunition or suspected live munition items are treated in accordance with SOP No. TE-0000-G-010. All items or material (fuzed, unfuzed, and live munitions) found must be detonated within two working days of the day they are found, or be stored within the pits(s) until permit conditions allow them to be detonated.

1.4.d. Run on and Runoff Management [Utah Admin. Code R315-3-6.8(a)(2)]

The process of OD disrupts several feet of soil. The modeling results from the Multimedia Environmental Pollutant Assessment System (MEPAS, Exposure Pathway Module Description, D.L. Strenge and M.A. Smith, October 2006, Pacific Northwest National Laboratory) indicate that, with several conservative and worst-case assumptions, the concentrations estimated for groundwater leaching, overland runoff, surface water recharge, and atmospheric deposition are of lesser magnitude than the health-based levels for constituents of concern.

Precipitation should not contact the waste during OD because OD is not conducted during or prior to rain. Should conditions create delays, once the pits have been loaded, munitions will be stored and remain in place until detonations are permitted. After OD the only remaining material, shrapnel, is visually inspected to make certain it does not contain any UXO. If UXO is found, the material is retreated.

1.4.e. Standard Operating Procedures (SOPs) [Utah Admin. Code R315-3-6.8(a)(2)]

OD operations are conducted in accordance with TEAD SOP (SOP No. TE-0000-G-010). This SOP is periodically reviewed and updated. The SOP will be revised, as necessary, to be commensurate with conditions of this permit.

1.5. Static Firing

Static firing of rockets and missiles is similar to open burning as only the propellant is burned and the metal from the rocket or missile is recycled. The static firing unit is located mid-way between the demolition pits and the open burn pans. Appendix B shows the static firing silos at the OB/OD Area. Treatment is accomplished by the use of six silos. Items typically treated are solid propellant rockets and missiles. No donor charges are used in static firing.

The silos are located, in two rows 40 feet apart and 20 feet between each silo, on a rebar-reinforced concrete pad 52 feet by 10 feet deep. Covers are placed over the silos when they are not in use or when items are being stored in place. Prior to conducting static firing, the same meteorological conditions as for open burning must be met (Figure 3 of Section 1.3.b.).

Operating procedures prior to the actual static firing activity are similar to those used in open burning. Dry grass, leaves and other extraneous combustible material in amounts sufficient to spread fires are removed within a radius of 61 meters (200 feet) from the silos. Meteorological conditions are checked and the silos inspected before each event. Carousels designed for each rocket are prepared and lowered into the silos. Rocket motors are lowered into the carousels and secured in place. The area is then cleared of all personnel except for those needed to install the firing wire to the rocket or missile igniter. When the area is determined to be clear, the rocket motors are electrically ignited from a safe position.

Fire fighting equipment is available to combat grass, brush or equipment fires. Qualified personnel check the silos to ensure that all of the propellant has been burned.

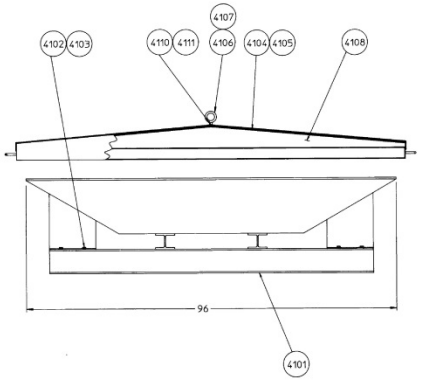
Demil personnel operate the Static Fire Area in accordance with SOP No. TE-0000-J-168. This SOP provides additional information on current operating procedures.

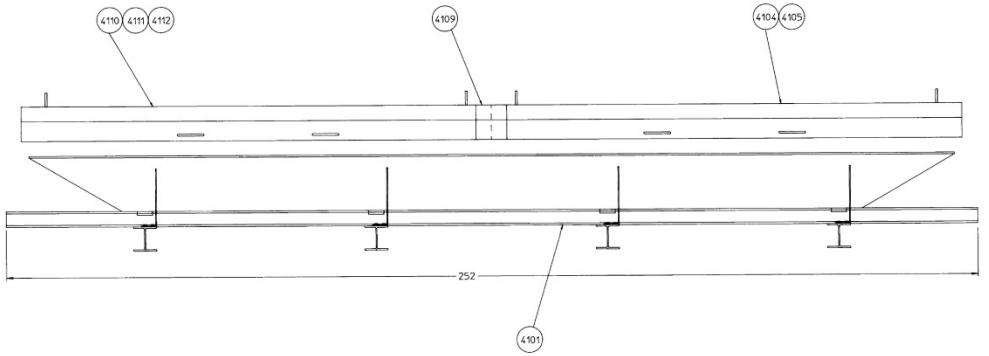
APPENDIX A
DETAILED BURN PAN DRAWINGS

PARTS LIST

FIND NO.	QTY	UNIT	NOMENCLATURE	MANUFACTURER CODE	PART NUMBER
4101-01 THRU 4101-08	1		TRAY, BURNING		SK884101
4102	32		CAPSCREW, HEX HD 1/2-13UNC-2A X 3/4 LG		
4103	32		WASHER, 1/2 I D		

PARTS LIST CONTINUED ON SHEET 5 OF 8





SCANNED DWG

NEXT ASSEMBLY

USED ON

TOLERANCES EXCEPT AS NOTED
DECIMAL
TWO PLACES ±
THREE PLACES ±
FRACTIONAL ±
ANGULAR ±

DRAFTER BD
TRACER BV
DFTG CHECK
TS & D DIV.
PROJECT ENGR.
RT & M DIV.
PROJECT COORD

REV.	DATE	BY	DESCRIPTION	ZONE	CHKD	APRVD

REVISIONS

SUBMITTED
TOOELE ARMY DEPOT-NORTH-AED

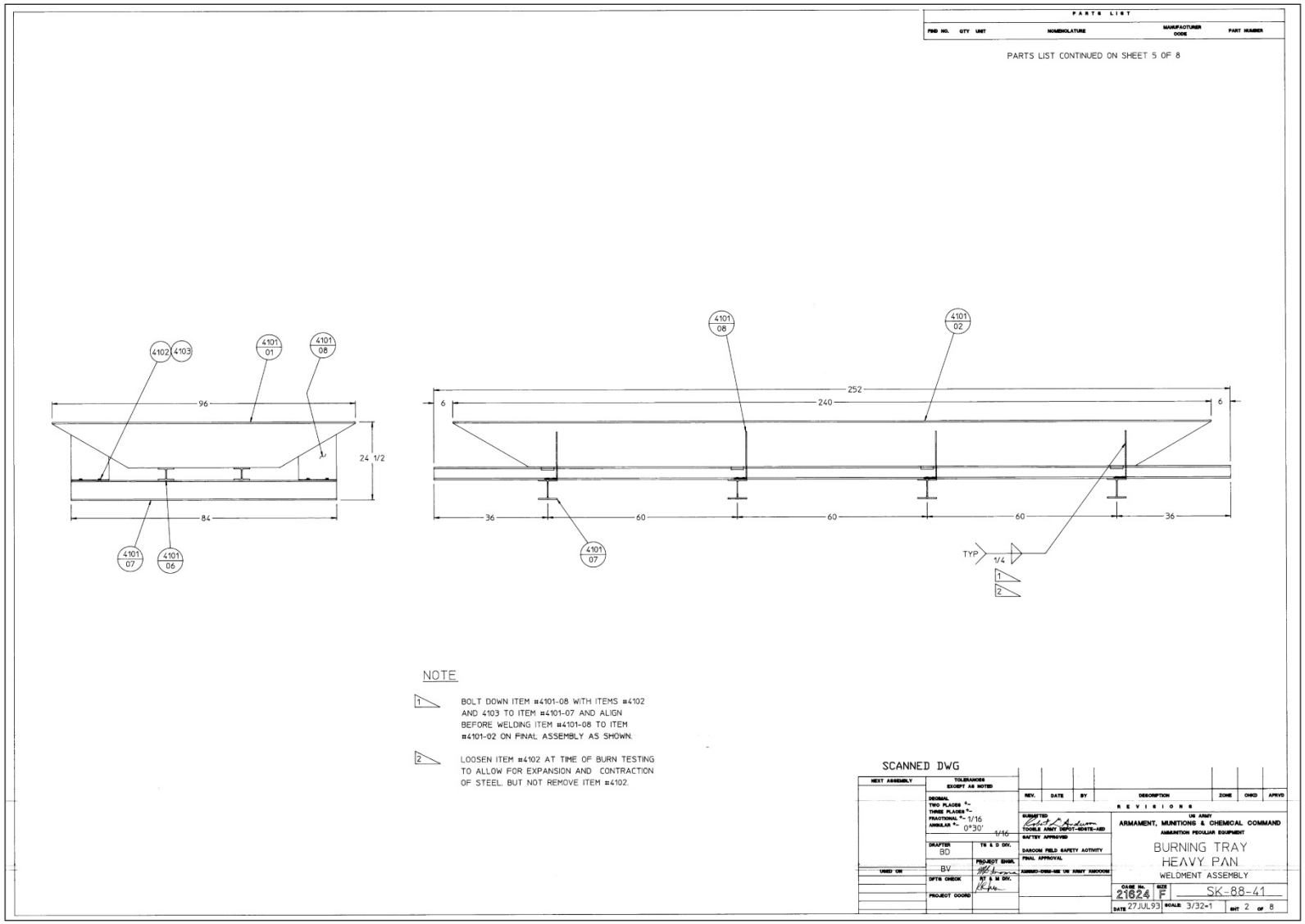
SAFETY APPROVED
DARCOM FIELD SAFETY ACTIVITY

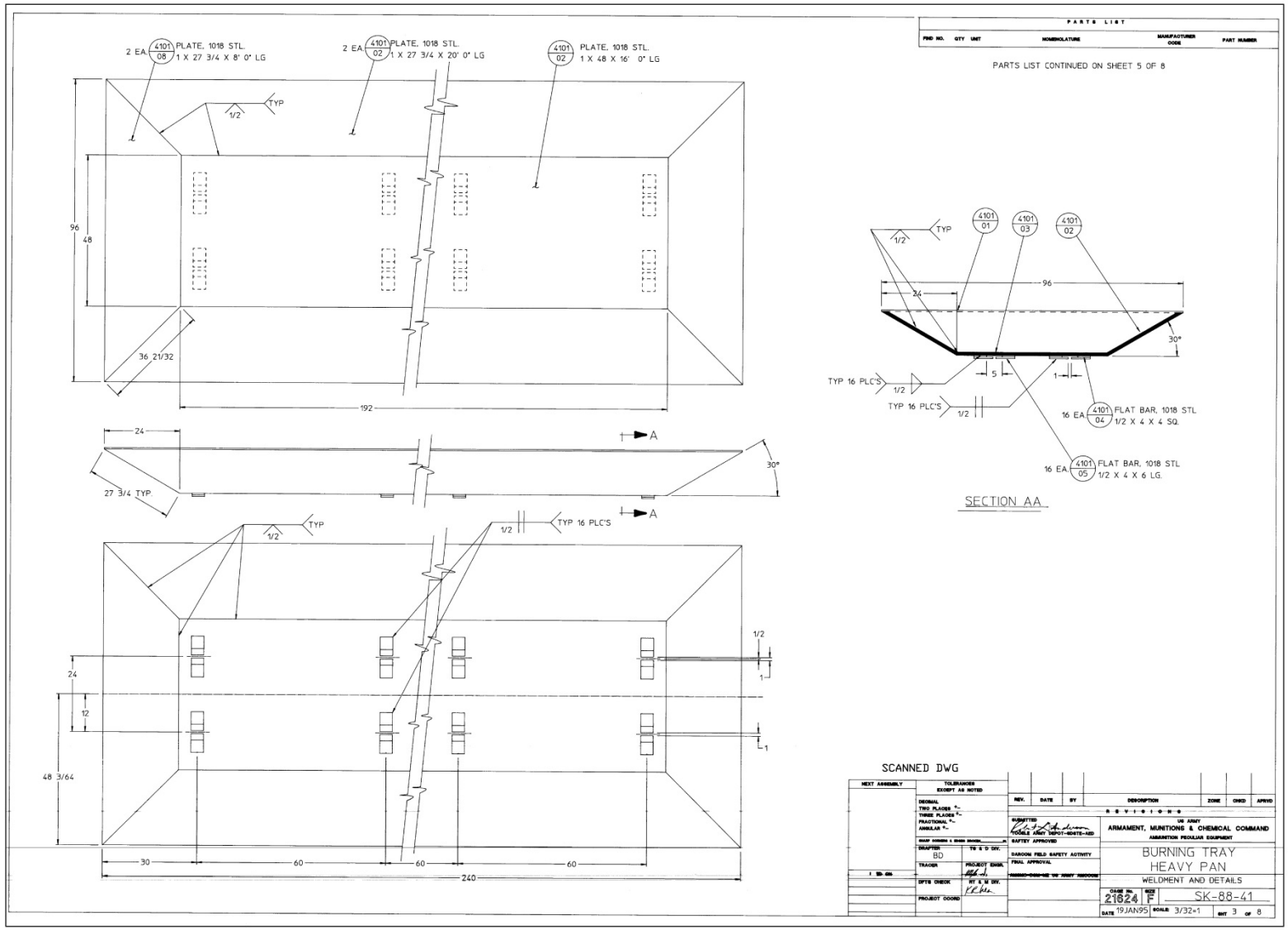
AMMO-DSS-ME US ARMY AMCOM

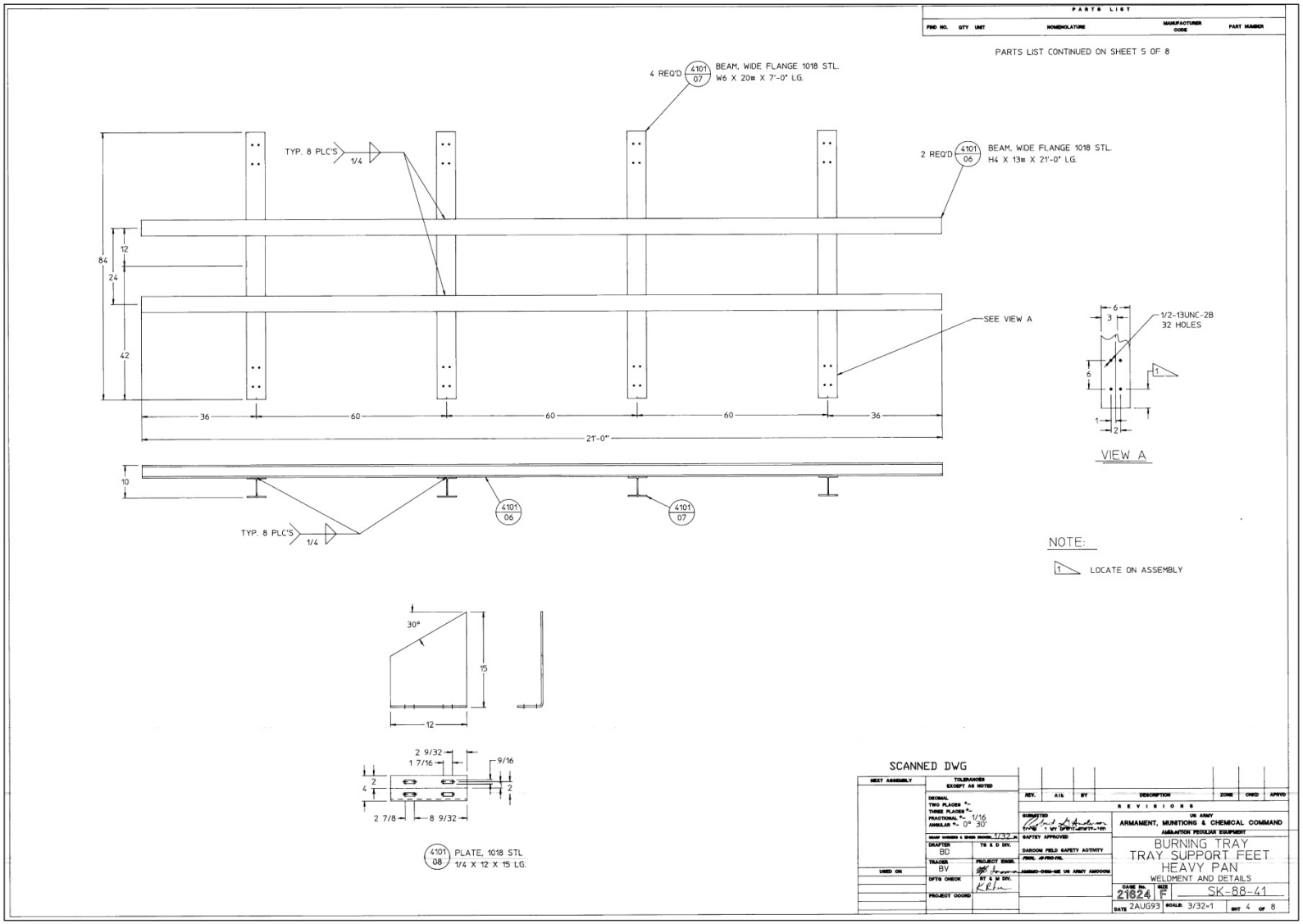
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT

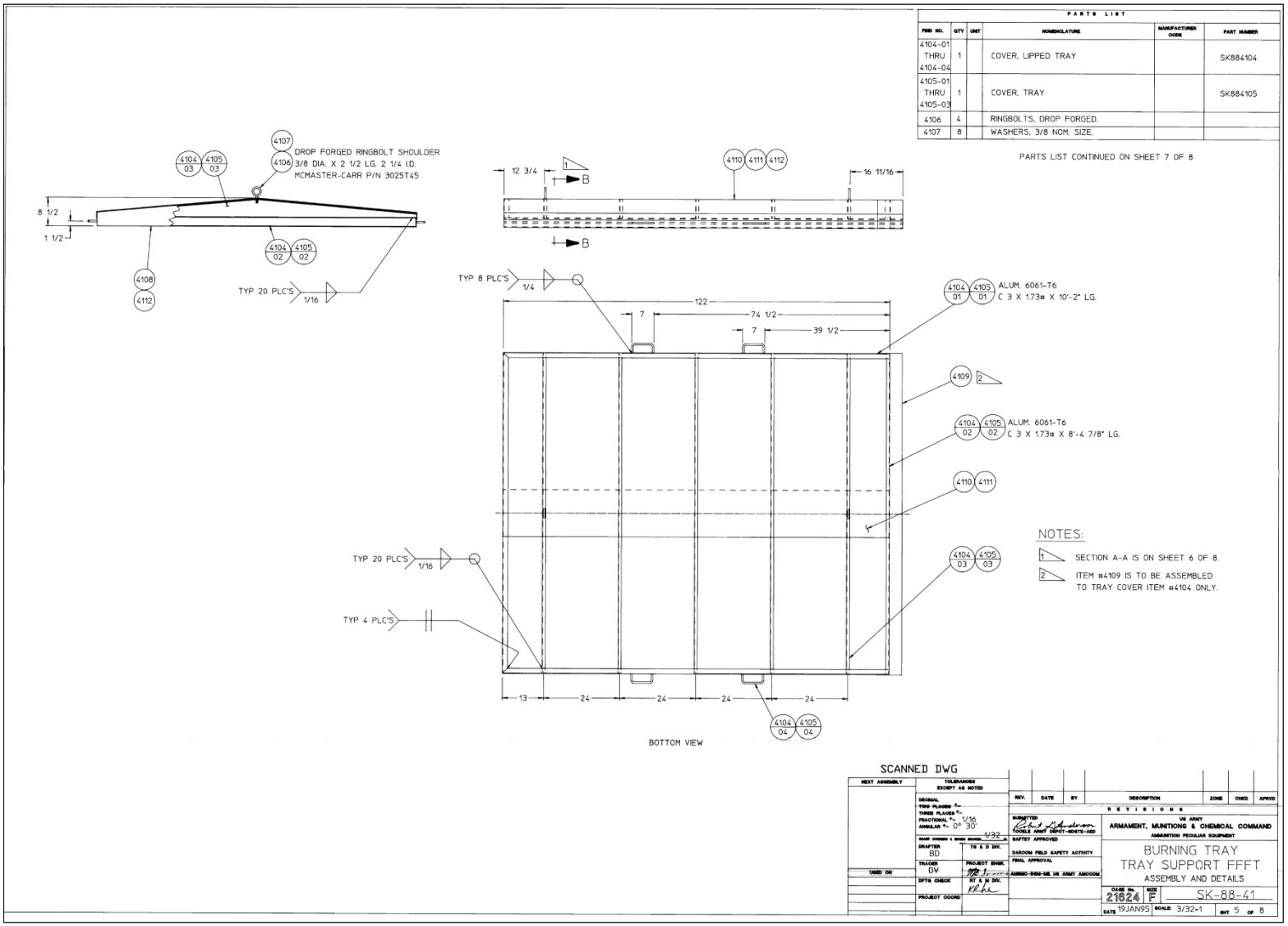
BURNING TRAY
HEAVY PAN
ASSEMBLY

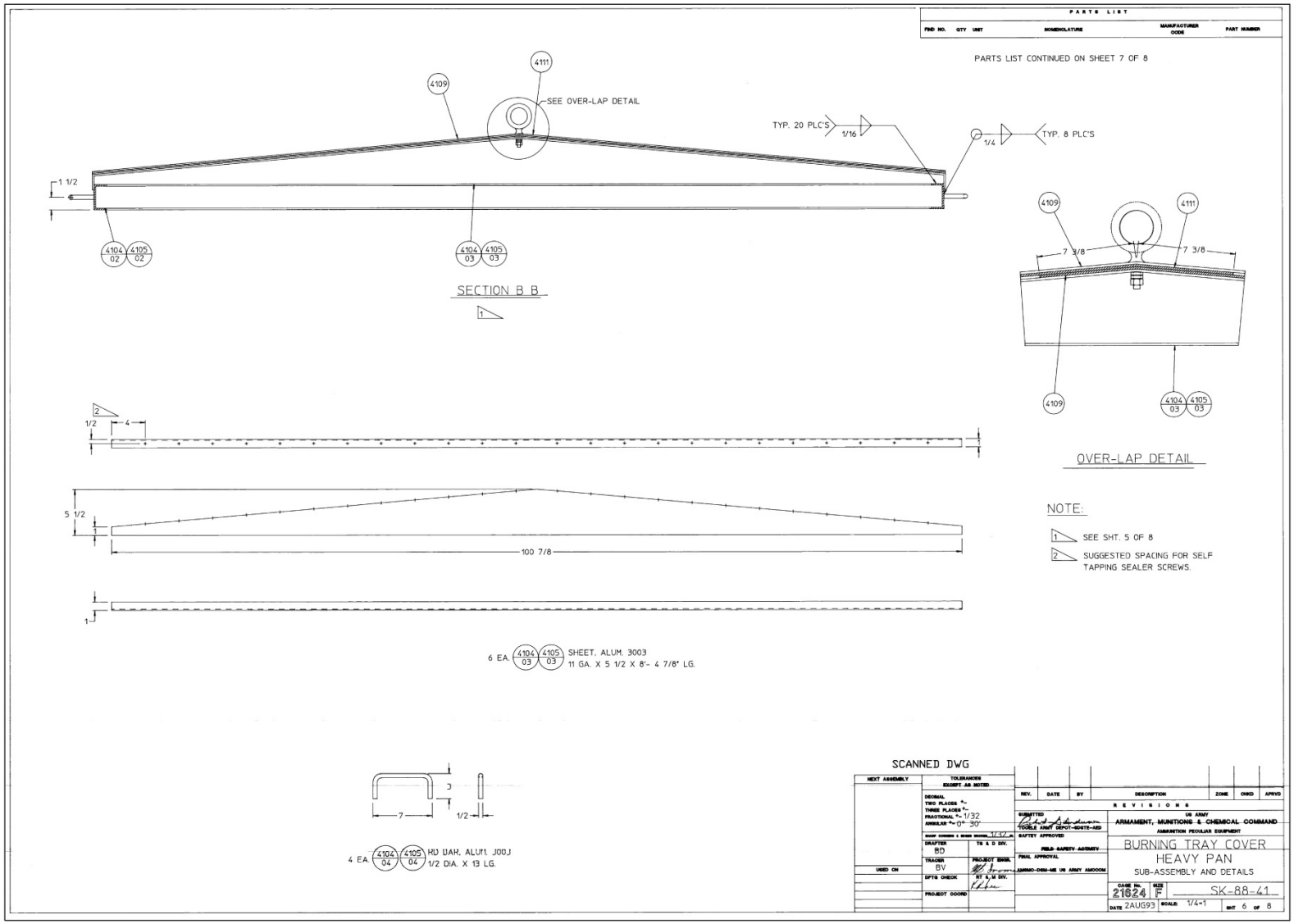
CAGE No. 21624 F
SK-88-4-1
DATE 19JAN95
SCALE 3/32-1
SHT 1 OF 8

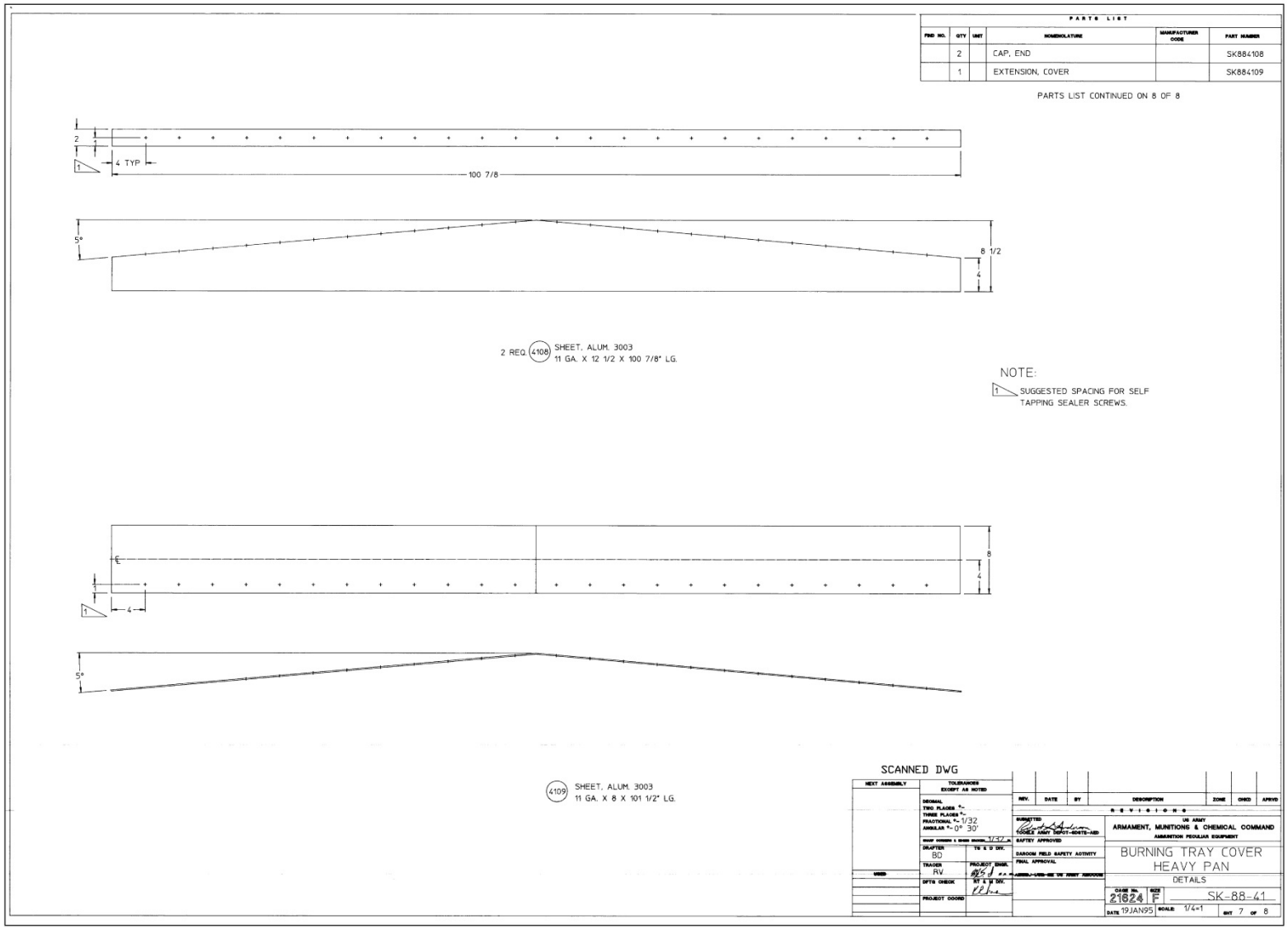

PARTS LIST
FIND NO. QTY UNIT NOMENCLATURE MANUFACTURER CODE PART NUMBER
PARTS LIST CONTINUED ON SHEET 5 OF 8
4102
4103
4101 01
4101 08
96
24 1/2
84
4101 07
4101 06
4101 08
4101 02
252
6
240
6
36
60
60
60
36
4101 07
TYP
1/4
1
2
NOTE
1 BOLT DOWN ITEM #4101-08 WITH ITEMS #4102 AND 4103 TO ITEM #4101-07 AND ALIGN BEFORE WELDING ITEM #4101-08 TO ITEM #4101-02 ON FINAL ASSEMBLY AS SHOWN.
2 LOOSEN ITEM #4102 AT TIME OF BURN TESTING TO ALLOW FOR EXPANSION AND CONTRACTION OF STEEL. BUT NOT REMOVE ITEM #4102.
SCANNED DWG
NEXT ASSEMBLY
USED ON
TOLERANCES EXCEPT AS NOTED
DECIMAL TWO PLACES ±_ THREE PLACES ±_
FRACTIONAL ±_ 1/16
ANGULAR ±_ 0°30'
1/16
DRAFTER BD
BV
DPTH CHECK
PROJECT COORD
TS & D DIV.
PROJECT ENGR.
RT & M DIV.
REV. DATE BY DESCRIPTION ZONE CHKD APRVD
REVISIONS
SUBMITTED
TOOELE ARMY DEPOT-SDSTE-MD
BATTERY APPROVED
DARCOM FIELD SAFETY ACTIVITY
FINAL APPROVAL
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT
BURNING TRAY
HEAVY PAN
WELDMENT ASSEMBLY
CAGE NO. 21624
SIZE F
SK-88-41
DATE 27JUL93
SCALE 3/32=1
SHT 2 OF 8


PARTS LIST
FIND NO. QTY UNIT NOMENCLATURE MANUFACTURER CODE PART NUMBER
PARTS LIST CONTINUED ON SHEET 5 OF 8
2 EA 4101 08 PLATE, 1018 STL. 1 X 27 3/4 X 8' 0" LG
2 EA 4101 02 PLATE, 1018 STL. 1 X 27 3/4 X 20' 0" LG
4101 02 PLATE, 1018 STL. 1 X 48 X 16' 0" LG
TYP
1/2
96
48
36 21/32
192
24
27 3/4 TYP.
30°
A
TYP 16 PLC'S
4101 01
4101 03
4101 02
5
1
16 EA 4101 04 FLAT BAR, 1018 STL 1/2 X 4 X 4 SQ.
16 EA 4101 05 FLAT BAR, 1018 STL 1/2 X 4 X 6 LG.
SECTION AA
12
48 3/64
30
60
240
SCANNED DWG
NEXT ASSEMBLY
TOLERANCES EXCEPT AS NOTED
REVISIONS
REV. DATE BY DESCRIPTION ZONE CHKD APRVD
SUBMITTED
SAFETY APPROVED
DARCOM FIELD SAFETY ACTIVITY
FINAL APPROVAL
DRAFTER BD
TRACER
DFTS CHECK
PROJECT COORD
PROJECT ENGR.
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT
BURNING TRAY
HEAVY PAN
WELDMENT AND DETAILS
CAGE No. 21624 SIZE F SK-88-41
DATE 19JAN95 SCALE 3/32=1 SHT 3 OF 8


PARTS LIST
FIND NO. QTY UNIT NOMENCLATURE MANUFACTURER CODE PART NUMBER
PARTS LIST CONTINUED ON SHEET 5 OF 8
4 REQ'D 4101 07 BEAM, WIDE FLANGE 1018 STL. W6 X 20# X 7'-0" LG.
2 REQ'D 4101 06 BEAM, WIDE FLANGE 1018 STL. H4 X 13# X 21'-0" LG.
TYP. 8 PLC'S 1/4
SEE VIEW A
1/2-13UNC-2B 32 HOLES
VIEW A
84
12
24
42
10
36
60
60
60
36
21'-0"
NOTE:
1 LOCATE ON ASSEMBLY
30°
15
12
2 9/32
1 7/16
9/16
2 7/8
8 9/32
4101 08 PLATE, 1018 STL 1/4 X 12 X 15 LG.
SCANNED DWG
US ARMY ARMAMENT, MUNITIONS & CHEMICAL COMMAND
BURNING TRAY
TRAY SUPPORT FEET
HEAVY PAN
WELDMENT AND DETAILS
CAGE No. 21624
SIZE F
SK-88-41
DATE 2AUG93
SCALE 3/32=1
SHT 4 OF 8


PARTS LIST
FIND NO. | QTY | UNIT | NOMENCLATURE | MANUFACTURER CODE | PART NUMBER
4104-01 THRU 4104-04 | 1 | | COVER, LIPPED TRAY | | SK884104
4105-01 THRU 4105-03 | 1 | | COVER, TRAY | | SK884105
4106 | 4 | | RINGBOLTS, DROP FORGED. | |
4107 | 8 | | WASHERS, 3/8 NOM. SIZE. | |
PARTS LIST CONTINUED ON SHEET 7 OF 8
DROP FORGED RINGBOLT SHOULDER
3/8 DIA. X 2 1/2 LG. 2 1/4 I.D.
MCMASTER-CARR P/N 3025T45
8 1/2
1 1/2
TYP 20 PLC'S
1/16
12 3/4
16 11/16
TYP 8 PLC'S
1/4
122
7
74 1/2
39 1/2
ALUM. 6061-T6
C 3 X 1.73# X 10'-2" LG.
ALUM. 6061-T6
C 3 X 1.73# X 8'-4 7/8" LG.
TYP 20 PLC'S
1/16
TYP 4 PLC'S
13
24
24
24
24
BOTTOM VIEW
NOTES:
1 SECTION A-A IS ON SHEET 6 OF 8.
2 ITEM #4109 IS TO BE ASSEMBLED TO TRAY COVER ITEM #4104 ONLY.
SCANNED DWG
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT
BURNING TRAY
TRAY SUPPORT FFFT
ASSEMBLY AND DETAILS
SK-88-41
DRAWING NO. 21824
SIZE F
DATE 19JAN95
SCALE 3/32=1
SHT 5 OF 8

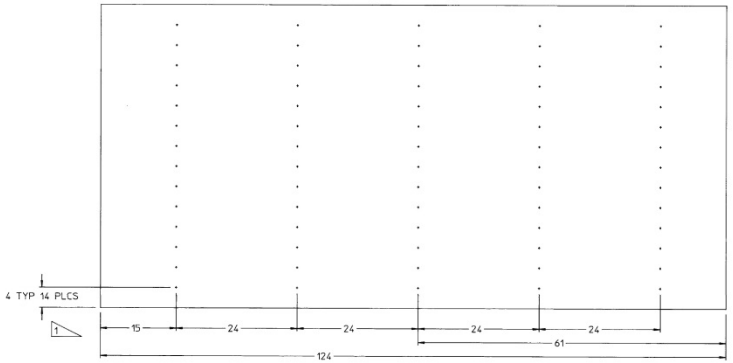

PARTS LIST
FIND NO. QTY UNIT NOMENCLATURE MANUFACTURER CODE PART NUMBER
PARTS LIST CONTINUED ON SHEET 7 OF 8
4111
4109
SEE OVER-LAP DETAIL
TYP. 20 PLC'S
1/16
1/4
TYP. 8 PLC'S
1 1/2
4104 02
4105 02
4104 03
4105 03
SECTION B B
1
4109
4111
7 3/8
7 3/8
4109
4104 03
4105 03
OVER-LAP DETAIL
2
1/2
4
5 1/2
100 7/8
1
NOTE:
1 SEE SHT. 5 OF 8
2 SUGGESTED SPACING FOR SELF TAPPING SEALER SCREWS.
6 EA. 4104 03 4105 03 SHEET, ALUM. 3003
11 GA. X 5 1/2 X 8'- 4 7/8" LG.
3
7
1/2
4 EA. 4104 04 4105 04 HD DAR, ALUM. 3003
1/2 DIA. X 13 LG.
SCANNED DWG
NEXT ASSEMBLY
USED ON
TOLERANCES
EXCEPT AS NOTED
DECIMAL
TWO PLACES ±
THREE PLACES ±
FRACTIONAL ± 1/32
ANGULAR ± 0° 30'
DRAFTER BD
TRACER BV
DFTG CHECK
PROJECT COORD
TS & D DIV.
PROJECT ENGR.
RT & M DIV.
REV. DATE BY DESCRIPTION ZONE CHKD APPVD
REVISIONS
SUBMITTED
TOOELE ARMY DEPOT-SDSTE-ASD
SAFETY APPROVED
FIELD SAFETY AGENCY
FINAL APPROVAL
AMMO-DEM-ME US ARMY AMCOM
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT
BURNING TRAY COVER
HEAVY PAN
SUB-ASSEMBLY AND DETAILS
CAGE No. 21624
SIZE F
SK-88-41
DATE 2AUG93
SCALE 1/4=1
SHT 6 OF 8

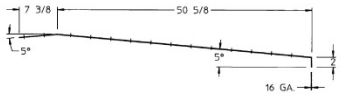

PARTS LIST
FIND NO. | QTY | UNIT | NOMENCLATURE | MANUFACTURER CODE | PART NUMBER
2 | CAP, END | SK884108
1 | EXTENSION, COVER | SK884109
PARTS LIST CONTINUED ON 8 OF 8
2
1
4 TYP
100 7/8
5°
8 1/2
4
2 REQ. (4108) SHEET, ALUM. 3003
11 GA. X 12 1/2 X 100 7/8" LG.
NOTE:
1 SUGGESTED SPACING FOR SELF TAPPING SEALER SCREWS.
8
4
1
4
5°
(4109) SHEET, ALUM. 3003
11 GA. X 8 X 101 1/2" LG.
SCANNED DWG
NEXT ASSEMBLY
TOLERANCES EXCEPT AS NOTED
DECIMAL
TWO PLACES ±
THREE PLACES ±
FRACTIONAL ± 1/32
ANGULAR ± 0° 30'
DRAFTER BD
TRACER RV
DFTG CHECK
PROJECT COORD
PROJECT ENGR
T/S & D DIV.
RT & M DIV.
REVISIONS
REV. | DATE | BY | DESCRIPTION | ZONE | CHKD | APRVD
SUBMITTED
TOOELE ARMY DEPOT-SDSTE-MED
SAFETY APPROVED
DARCOM FIELD SAFETY ACTIVITY
FINAL APPROVAL
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT
BURNING TRAY COVER
HEAVY PAN
DETAILS
CAGE No. 21624
SIZE F
SK-88-41
DATE 19JAN95
SCALE 1/4=1
SHT 7 OF 8

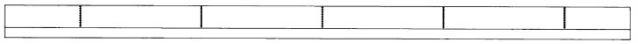
PARTS LIST

FIND NO.	QTY	UNIT	NOMENCLATURE	MANUFACTURER CODE	PART NUMBER
	2		SKIN, RIGHT SIDE COVER		SK884110
	2		SKIN, LEFT SIDE COVER		SK884111
4112	AS REQ'D		SCREW HEX. SELF DRILL RUBBER WASHER 1/4 X 14 X 1 LG. NSN 1123900082Y698.		

NOTE:
1 SUGGESTED SPACING FOR SELF TAPPING SEALER SCREWS.







2 REQ. (4110) ONE THUS
SHEET, ALUM. 3003
16 GA. X 60 X 122 LG.

2 REQ. (4111) ONE OPPOSITE
SHEET, ALUM. 3003
16 GA. X 60 X 122 LG.

SCANNED DWG

NEXT ASSEMBLY

USED ON

TOLERANCES
EXCEPT AS NOTED
DECIMAL
TWO PLACES ±-
THREE PLACES ±-
FRACTIONAL ±- 1/32
ANGULAR ± 0 30'
DRAFTER DD
TRACER BV
DFTS CHECK
PROJECT COORD
T& E D DIV.
PROJECT ENGR.
ST & M DIV.

REV.	DATE	BY	DESCRIPTION	ZONE	CHKD	APRVD

REVISIONS

SUBMITTED
TOOELE ARMY DEPOT--SDSTE--AED

SAFETY APPROVED

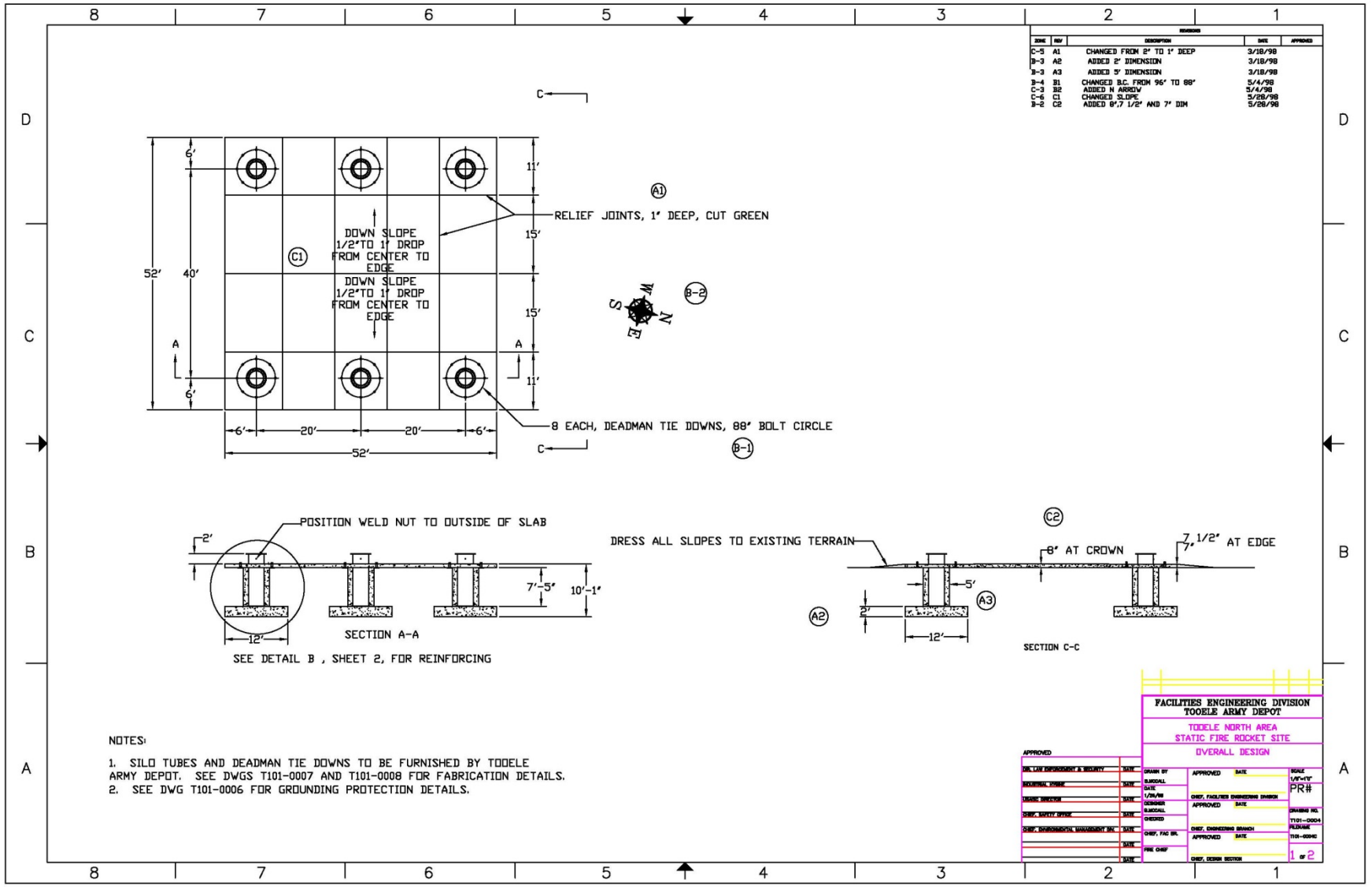
DARCOM SAFETY /ITSMEY
FINAL APPROVAL
AMSMC-DEM-ME US ARMY AMCOM

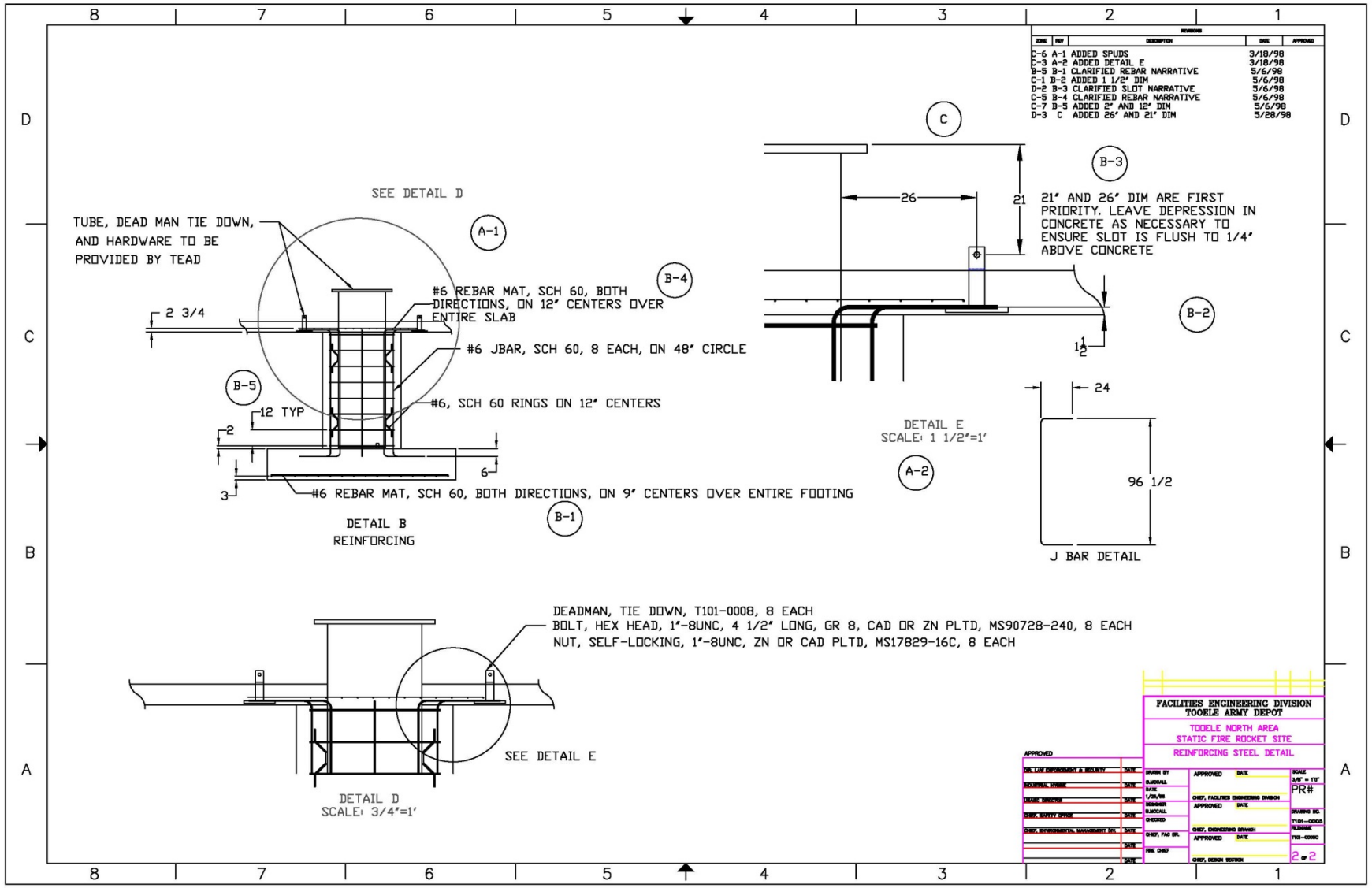
US ARMY
ARMAMENT, MUNITIONS & CHEMICAL COMMAND
AMMUNITION PECULIAR EQUIPMENT

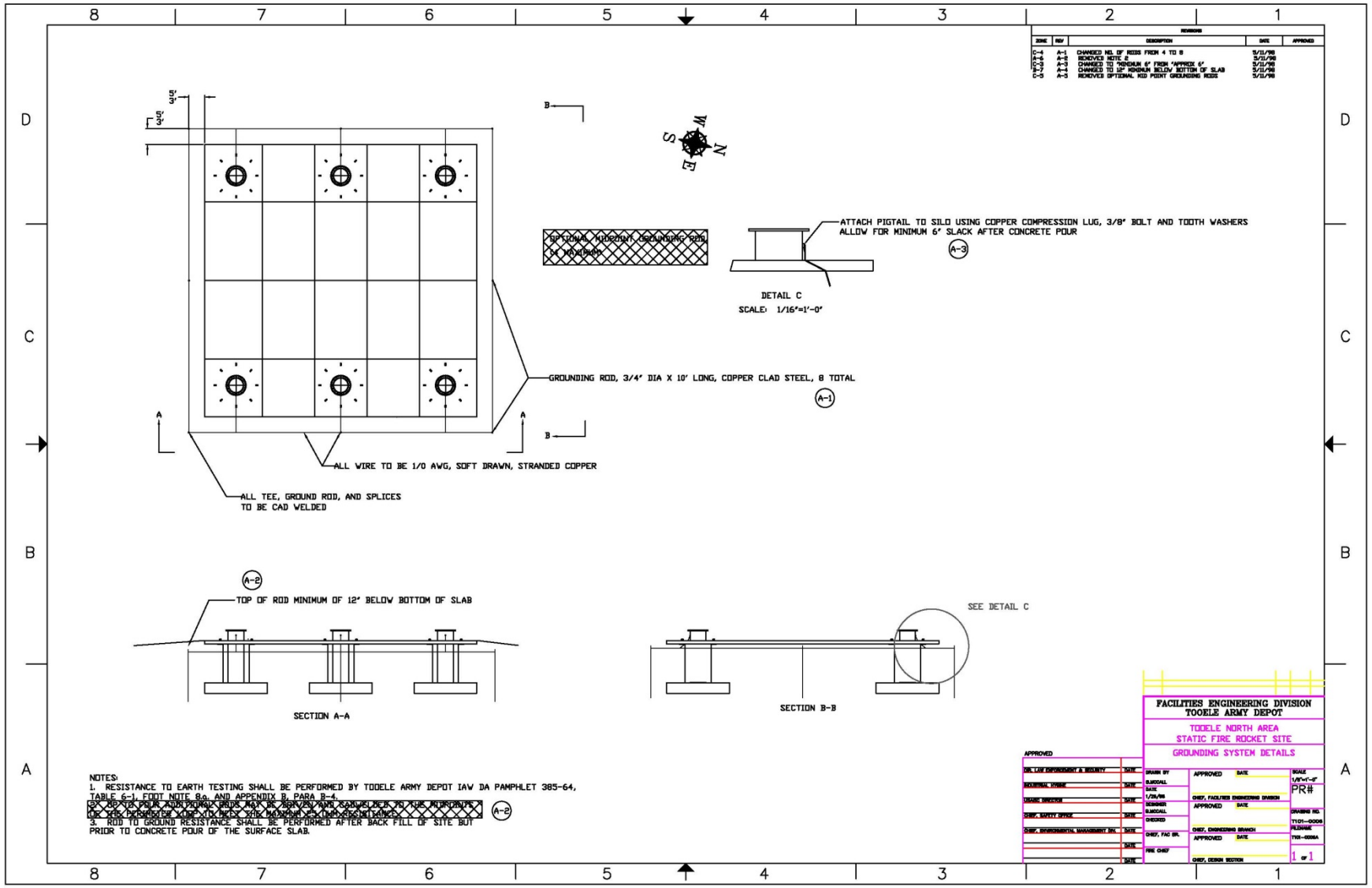
BURNING TRAY COVER
HEAVY PAN
DETAILS

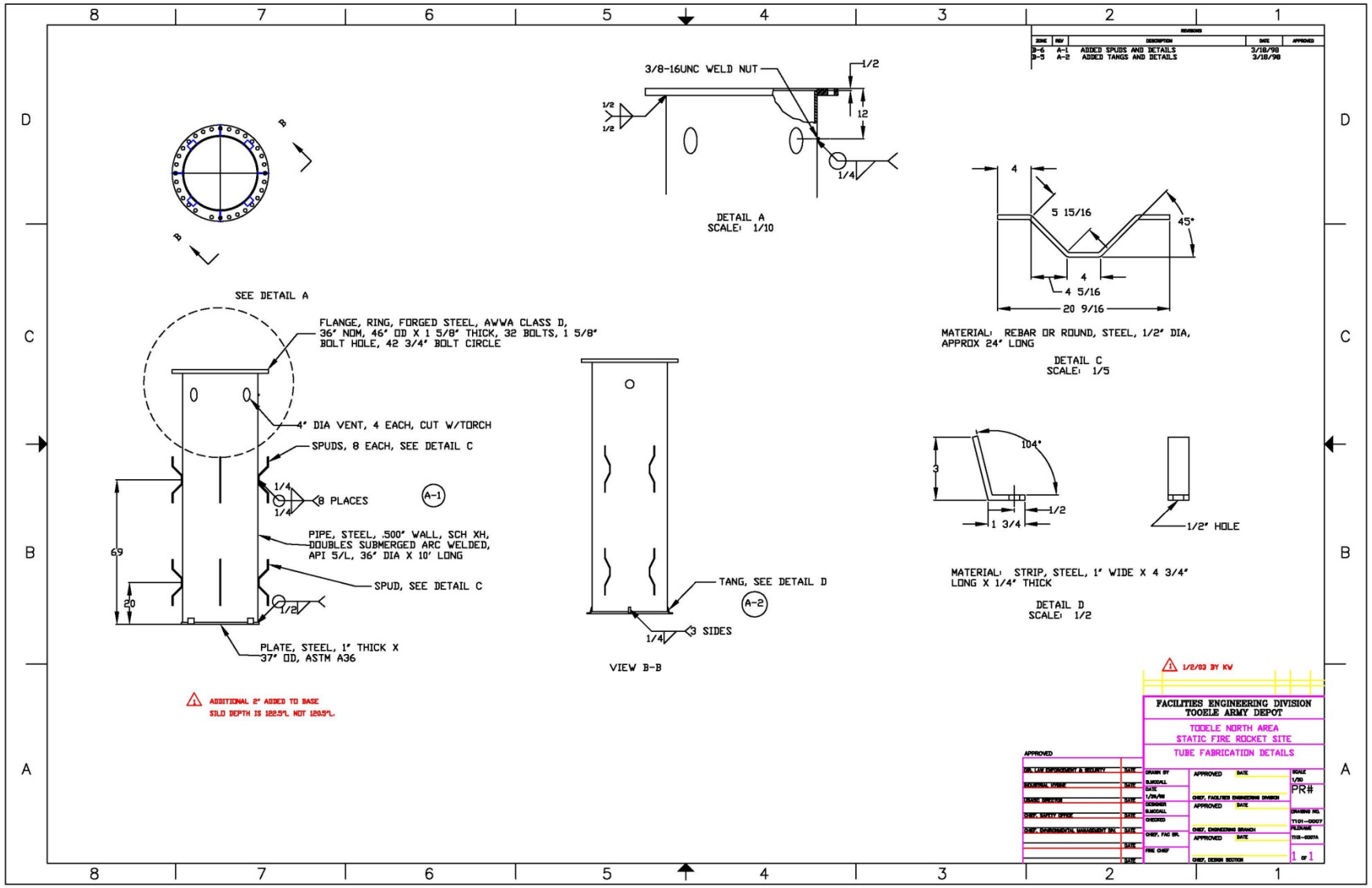
CAGE No. 21624 | SIZE F | SK-88-41
DATE 19JAN95 | SCALE 1/8=1 | SHT 8 OF 8

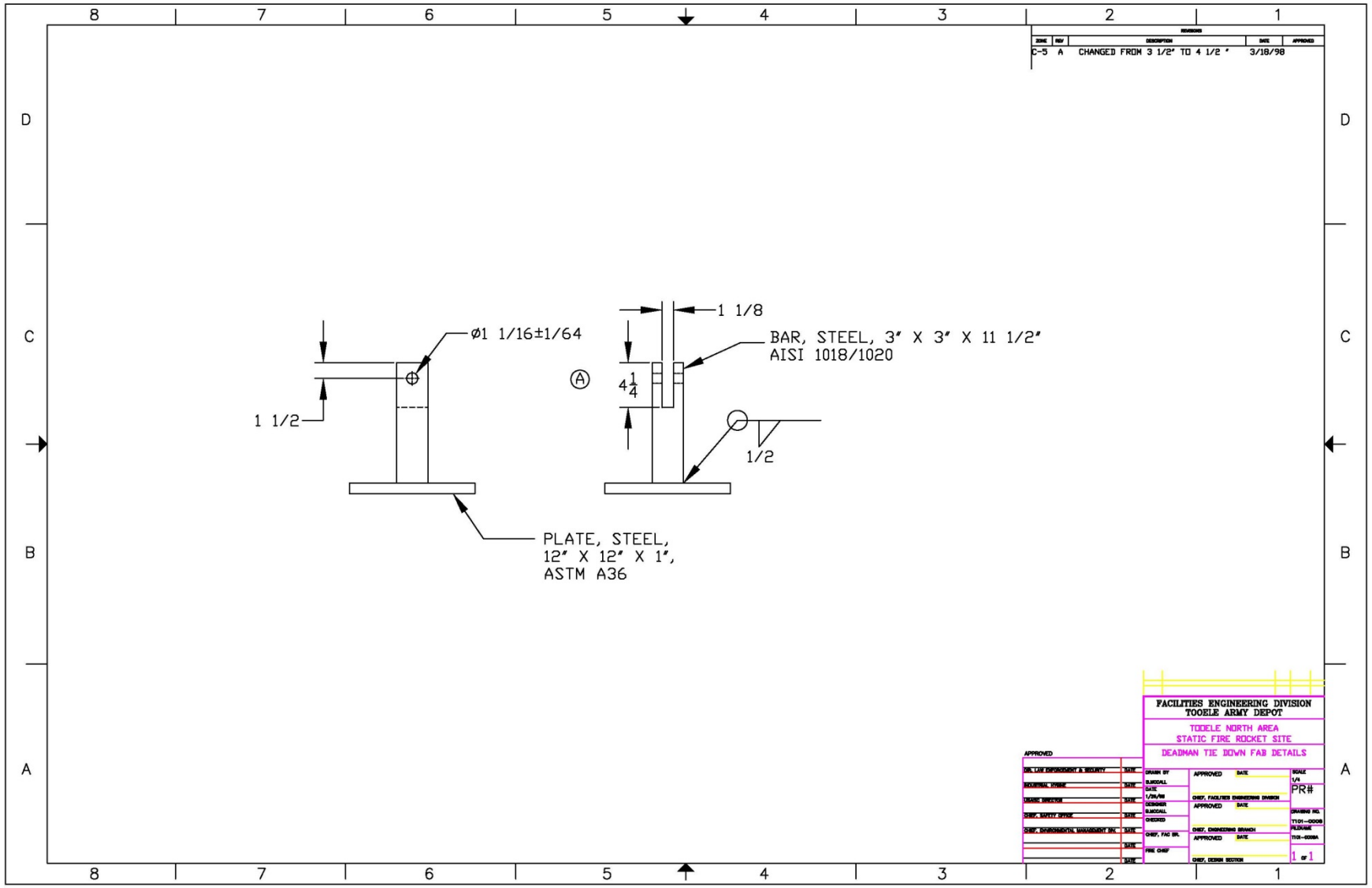
APPENDIX B
STATIC FIRE SILOS DRAWINGS

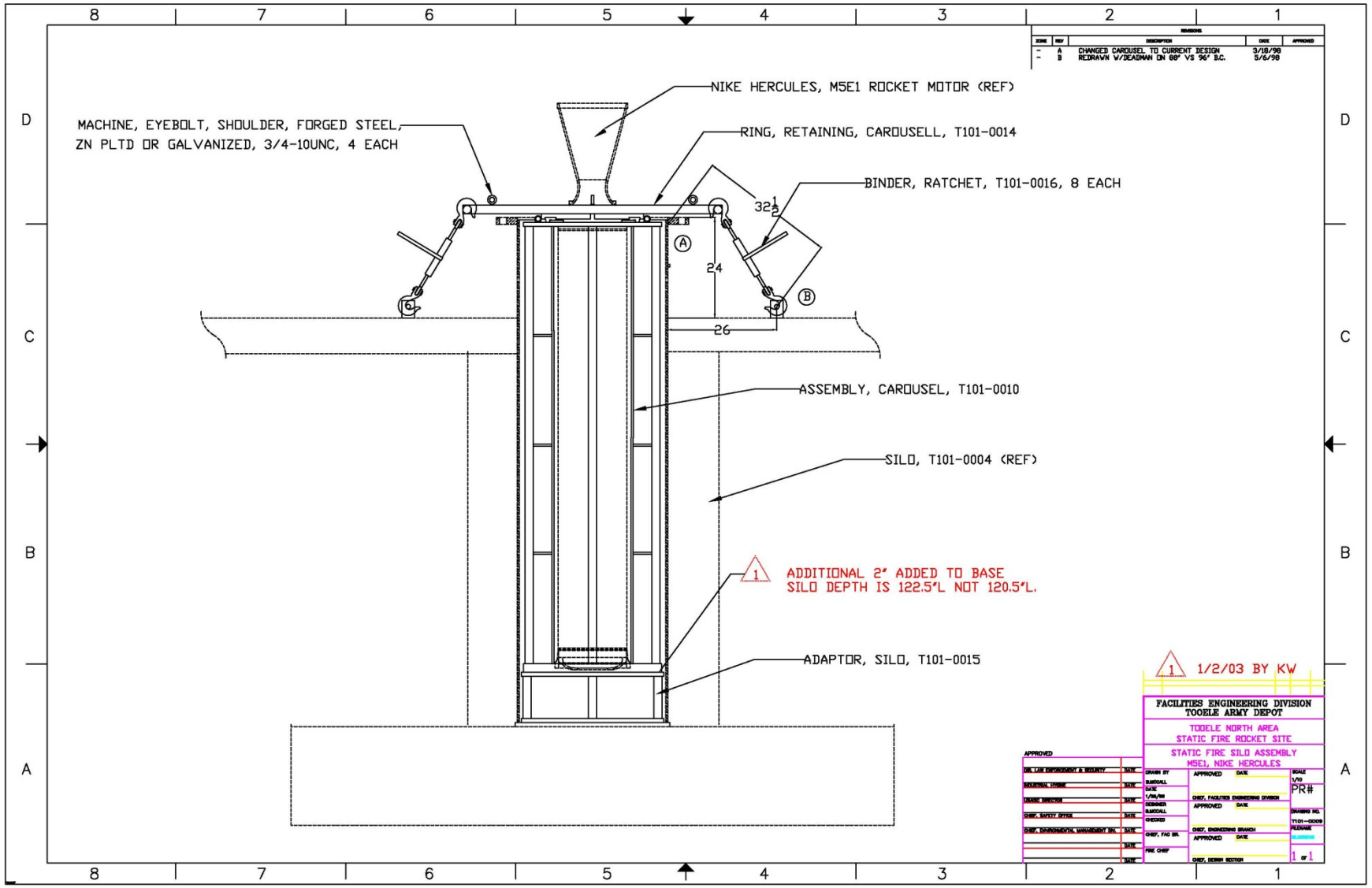

REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
C-5 A1 CHANGED FROM 2' TO 1' DEEP 3/18/98
B-3 A2 ADDED 2' DIMENSION 3/18/98
B-3 A3 ADDED 5' DIMENSION 3/18/98
B-4 B1 CHANGED B.C. FROM 96' TO 88' 5/4/98
C-3 B2 ADDED N ARROW 5/4/98
C-6 C1 CHANGED SLOPE 5/28/98
B-2 C2 ADDED 8',7 1/2' AND 7' DIM 5/28/98
DOWN SLOPE 1/2"TO 1' DROP FROM CENTER TO EDGE
DOWN SLOPE 1/2"TO 1' DROP FROM CENTER TO EDGE
RELIEF JOINTS, 1' DEEP, CUT GREEN
8 EACH, DEADMAN TIE DOWNS, 88' BOLT CIRCLE
POSITION WELD NUT TO OUTSIDE OF SLAB
SECTION A-A
SEE DETAIL B , SHEET 2, FOR REINFORCING
DRESS ALL SLOPES TO EXISTING TERRAIN
8" AT CROWN
7 1/2" AT EDGE
SECTION C-C
NOTES:
1. SILO TUBES AND DEADMAN TIE DOWNS TO BE FURNISHED BY TOOELE ARMY DEPOT. SEE DWGS T101-0007 AND T101-0008 FOR FABRICATION DETAILS.
2. SEE DWG T101-0006 FOR GROUNDING PROTECTION DETAILS.
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
STATIC FIRE ROCKET SITE
OVERALL DESIGN
PR#
T101-0004
1 OF 2


REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
C-6 A-1 ADDED SPUDS 3/18/98
C-3 A-2 ADDED DETAIL E 3/18/98
B-5 B-1 CLARIFIED REBAR NARRATIVE 5/6/98
C-1 B-2 ADDED 1 1/2" DIM 5/6/98
D-2 B-3 CLARIFIED SLOT NARRATIVE 5/6/98
C-5 B-4 CLARIFIED REBAR NARRATIVE 5/6/98
C-7 B-5 ADDED 2" AND 12" DIM 5/6/98
D-3 C ADDED 26" AND 21" DIM 5/28/98
SEE DETAIL D
TUBE, DEAD MAN TIE DOWN, AND HARDWARE TO BE PROVIDED BY TEAD
A-1
B-4
#6 REBAR MAT, SCH 60, BOTH DIRECTIONS, ON 12" CENTERS OVER ENTIRE SLAB
2 3/4
#6 JBAR, SCH 60, 8 EACH, ON 48" CIRCLE
B-5
12 TYP
#6, SCH 60 RINGS ON 12" CENTERS
2
6
3
#6 REBAR MAT, SCH 60, BOTH DIRECTIONS, ON 9" CENTERS OVER ENTIRE FOOTING
B-1
DETAIL B
REINFORCING
C
B-3
26
21
21" AND 26" DIM ARE FIRST PRIORITY. LEAVE DEPRESSION IN CONCRETE AS NECESSARY TO ENSURE SLOT IS FLUSH TO 1/4" ABOVE CONCRETE
B-2
1 1/2
DETAIL E
SCALE: 1 1/2"=1'
A-2
24
96 1/2
J BAR DETAIL
DEADMAN, TIE DOWN, T101-0008, 8 EACH
BOLT, HEX HEAD, 1"-8UNC, 4 1/2" LONG, GR 8, CAD OR ZN PLTD, MS90728-240, 8 EACH
NUT, SELF-LOCKING, 1"-8UNC, ZN OR CAD PLTD, MS17829-16C, 8 EACH
SEE DETAIL E
DETAIL D
SCALE: 3/4"=1'
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
STATIC FIRE ROCKET SITE
REINFORCING STEEL DETAIL
APPROVED
OBL LAW ENFORCEMENT & SECURITY
INDUSTRIAL HYGIENE
LOGISTIC DIVISION
CHIEF, SAFETY OFFICE
CHIEF, ENVIRONMENTAL MANAGEMENT DIV.
DRAWN BY
B.MCCALL
DESIGNED
B.MCCALL
CHECKED
CHIEF, FAC ENG.
FIRE CHIEF
APPROVED
CHIEF, FACILITIES ENGINEERING DIVISION
APPROVED
CHIEF, ENGINEERING BRANCH
APPROVED
CHIEF, DESIGN SECTION
SCALE
3/8" = 1'0"
PR#
DRAWING NO.
T101-0008
T101-0008
2 OF 2

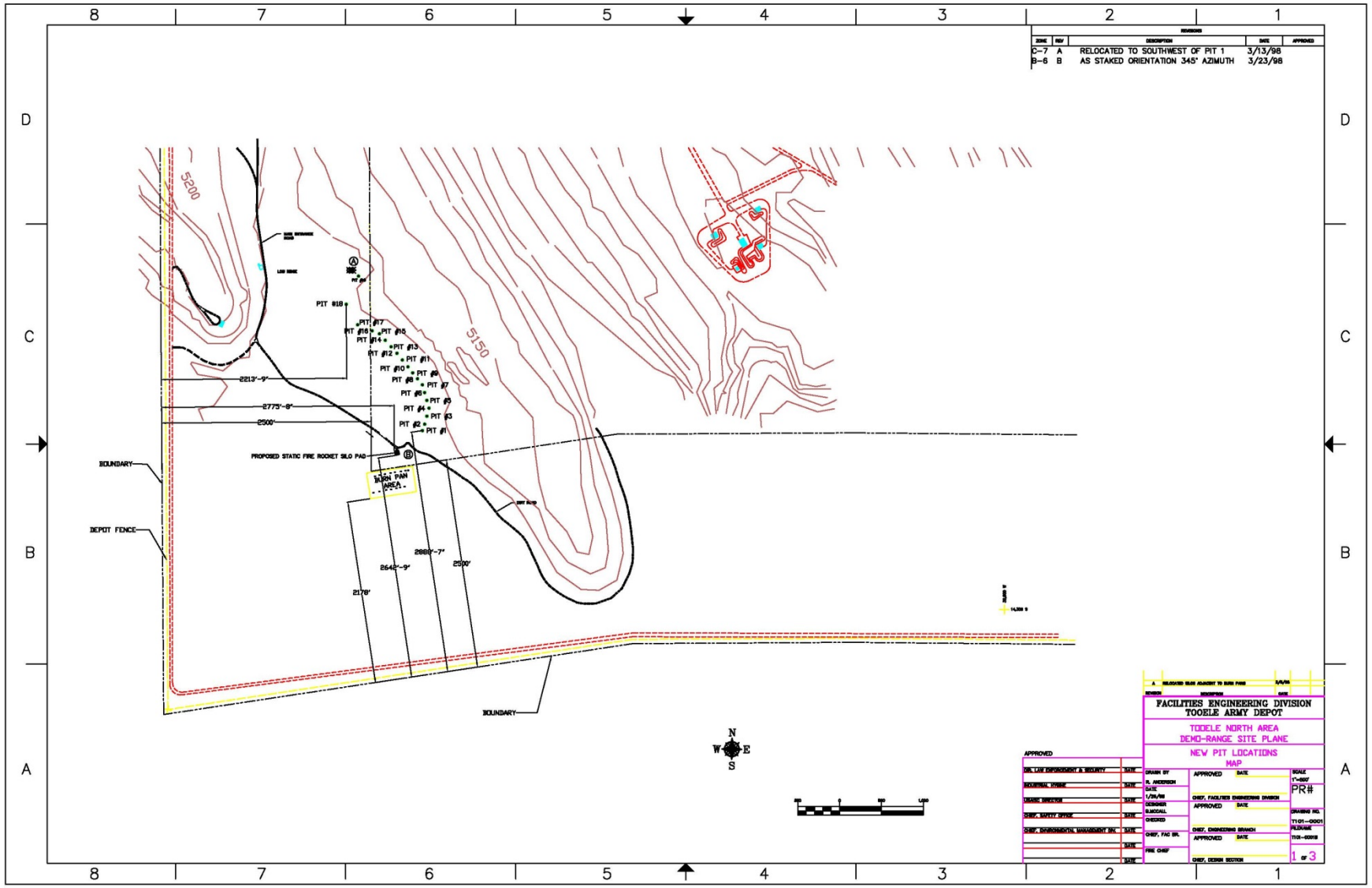

8
7
6
5
4
3
2
1
D
C
B
A
REVISIONS
ZONE | REV | DESCRIPTION | DATE | APPROVED
C-1 A-1 CHANGED NO. OF RODS FROM 4 TO 8 5/11/98
C-2 A-2 REMOVED NOTE 2 5/11/98
C-3 A-3 CHANGED TO MINIMUM 6" FROM "APPROX 6" 5/11/98
C-4 A-4 CHANGED TO 12" MINIMUM BELOW BOTTOM OF SLAB 5/11/98
C-5 A-5 REMOVED OPTIONAL ROD POINT GROUNDING RODS 5/11/98
3'-0"
3'-0"
B
B
OPTIONAL KICKOUT GROUNDING ROD, 10' MINIMUM
ATTACH PIGTAIL TO SILO USING COPPER COMPRESSION LUG, 3/8" BOLT AND TOOTH WASHERS ALLOW FOR MINIMUM 6" SLACK AFTER CONCRETE POUR
A-3
DETAIL C
SCALE: 1/16"=1'-0"
GROUNDING ROD, 3/4" DIA X 10' LONG, COPPER CLAD STEEL, 8 TOTAL
A-1
ALL WIRE TO BE 1/0 AWG, SOFT DRAWN, STRANDED COPPER
ALL TEE, GROUND ROD, AND SPLICES TO BE CAD WELDED
A-2
TOP OF ROD MINIMUM OF 12" BELOW BOTTOM OF SLAB
SECTION A-A
SEE DETAIL C
SECTION B-B
NOTES:
1. RESISTANCE TO EARTH TESTING SHALL BE PERFORMED BY TOOELE ARMY DEPOT IAW DA PAMPHLET 385-64, TABLE 6-1, FOOT NOTE 8a, AND APPENDIX B, PARA B-4.
2. SIX (6) TO FOUR ADDITIONAL RODS MAY BE REQUIRED AND SHALL BE PER THE REQUIRED TO MEET THE PERMISSIBLE VALUE AS NOTED IN THE MANUAL AS UNDISCRIMINATE.
A-2
3. ROD TO GROUND RESISTANCE SHALL BE PERFORMED AFTER BACK FILL OF SITE BUT PRIOR TO CONCRETE POUR OF THE SURFACE SLAB.
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
STATIC FIRE ROCKET SITE
GROUNDING SYSTEM DETAILS
APPROVED
OBL LAW ENFORCEMENT & SECURITY
RECREATIONAL SYMBOLS
LOGISTIC DIRECTOR
CHIEF, SAFETY OFFICE
CHIEF, ENVIRONMENTAL MANAGEMENT DIV.
DRAWN BY
B.MCCALL
CHECKED
CHIEF, FAC BR.
FIRE CHIEF
APPROVED
CHIEF, FACILITIES ENGINEERING DIVISION
CHIEF, ENGINEERING BRANCH
CHIEF, DESIGN SECTION
SCALE
1/8"=1'-0"
PR#
DRAWING NO.
1 OF 1

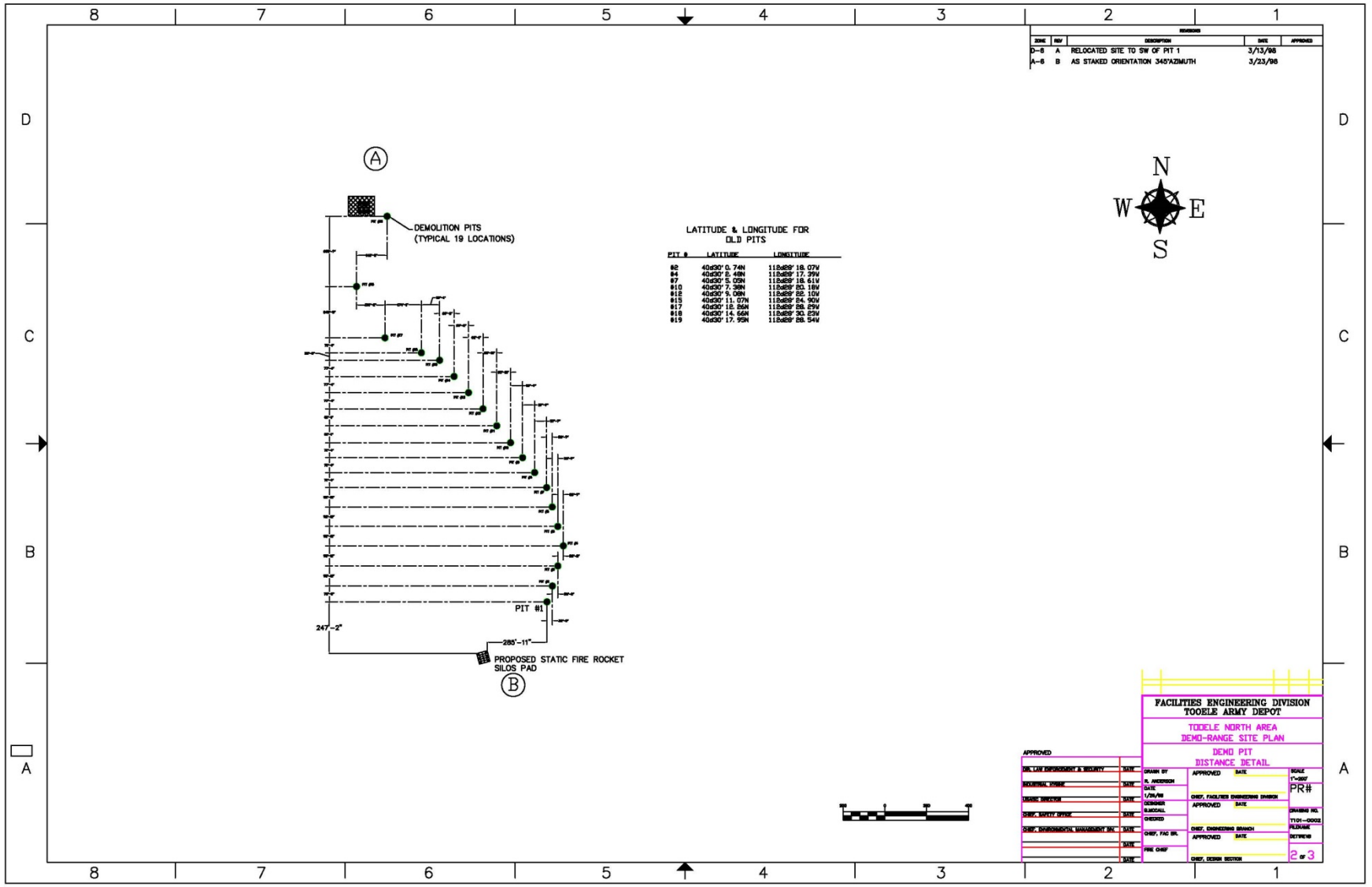

REVISIONS
ZONE | REV | DESCRIPTION | DATE | APPROVED
B-6 A-1 ADDED SPUDS AND DETAILS 3/18/98
B-5 A-2 ADDED TANGS AND DETAILS 3/18/98
3/8-16UNC WELD NUT
1/2
1/2
1/2
12
1/4
DETAIL A
SCALE: 1/10
4
5 15/16
45°
4
4 5/16
20 9/16
MATERIAL: REBAR OR ROUND, STEEL, 1/2" DIA, APPROX 24" LONG
DETAIL C
SCALE: 1/5
SEE DETAIL A
FLANGE, RING, FORGED STEEL, AWWA CLASS D, 36" NOM, 46" OD X 1 5/8" THICK, 32 BOLTS, 1 5/8" BOLT HOLE, 42 3/4" BOLT CIRCLE
4" DIA VENT, 4 EACH, CUT W/TORCH
SPUDS, 8 EACH, SEE DETAIL C
1/4
1/4
8 PLACES
A-1
PIPE, STEEL, .500" WALL, SCH XH, DOUBLES SUBMERGED ARC WELDED, API 5/L, 36" DIA X 10' LONG
69
SPUD, SEE DETAIL C
20
1/2
PLATE, STEEL, 1" THICK X 37" OD, ASTM A36
ADDITIONAL 2" ADDED TO BASE
SILO DEPTH IS 122.5'L NOT 120.5'L.
TANG, SEE DETAIL D
A-2
3 SIDES
1/4
VIEW B-B
104°
3
1/2
1 3/4
1/2" HOLE
MATERIAL: STRIP, STEEL, 1" WIDE X 4 3/4" LONG X 1/4" THICK
DETAIL D
SCALE: 1/2
1/2/03 BY KW
FACILITIES ENGINEERING DIVISION
TOOELE army DEPOT
TOOELE NORTH AREA
STATIC FIRE ROCKET SITE
TUBE FABRICATION DETAILS
APPROVED
DRAWN BY
B.MCCALL
DESIGNED
B.MCCALL
CHECKED
SCALE
1/20
PR#
1 of 1

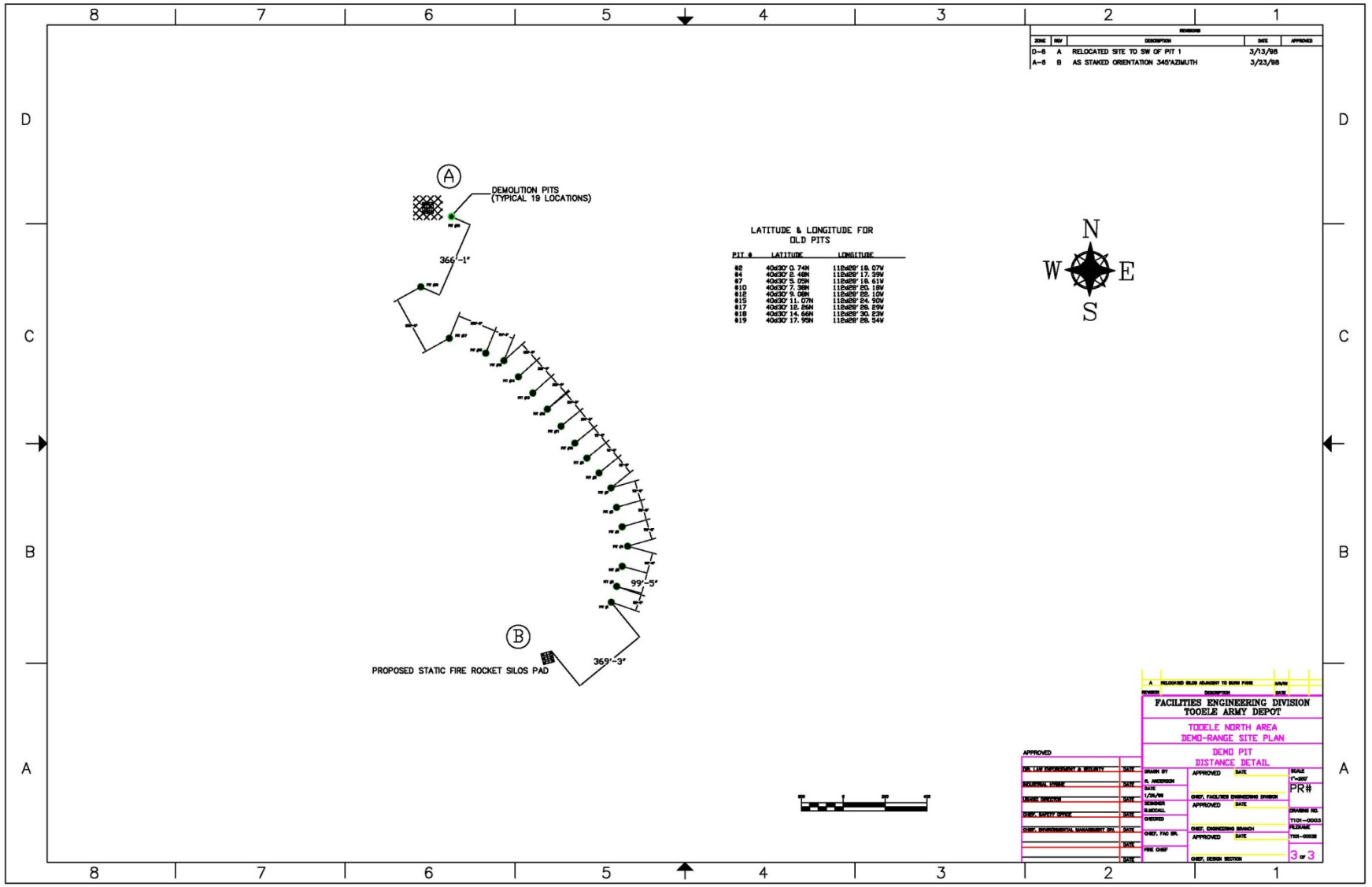

8
7
6
5
4
3
2
1
D
C
B
A
C-5 A CHANGED FROM 3 1/2" TO 4 1/2 " 3/18/98
Ø1 1/16±1/64
1 1/2
1 1/8
BAR, STEEL, 3" X 3" X 11 1/2"
AISI 1018/1020
A
4 1/4
1/2
PLATE, STEEL,
12" X 12" X 1",
ASTM A36
FACILITIES ENGINEERING DIVISION
TOOELE army DEPOT
TOOELE NORTH AREA
STATIC FIRE ROCKET SITE
DEADMAN TIE DOWN FAB DETAILS
APPROVED
DRAWN BY
B.MCCALL
DESIGNED
B.MCCALL
CHECKED
SCALE
1/4
PR#
1 OF 1


NIKE HERCULES, M5E1 ROCKET MOTOR (REF)
MACHINE, EYEBOLT, SHOULDER, FORGED STEEL, ZN PLTD OR GALVANIZED, 3/4-10UNC, 4 EACH
RING, RETAINING, CAROUSELL, T101-0014
BINDER, RATCHET, T101-0016, 8 EACH
32 1/2
24
26
ASSEMBLY, CAROUSEL, T101-0010
SILO, T101-0004 (REF)
1 ADDITIONAL 2" ADDED TO BASE SILO DEPTH IS 122.5"L NOT 120.5"L.
ADAPTOR, SILO, T101-0015
1 1/2/03 BY KW
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
STATIC FIRE ROCKET SITE
STATIC FIRE SILO ASSEMBLY
M5E1, NIKE HERCULES

APPENDIX C
DETONATION PITS DRAWINGS


REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
C-7 A RELOCATED TO SOUTHWEST OF PIT 1 3/13/98
B-6 B AS STAKED ORIENTATION 345° AZIMUTH 3/23/98
5200
5150
PIT #18
PIT #17
PIT #16
PIT #15
PIT #14
PIT #13
PIT #12
PIT #11
PIT #10
PIT #9
PIT #8
PIT #7
PIT #6
PIT #5
PIT #4
PIT #3
PIT #2
PIT #1
2213'-9"
2775'-8"
2500'
PROPOSED STATIC FIRE ROCKET SILO PAD
BURN PAN AREA
BOUNDARY
DEPOT FENCE
2889'-7"
2642'-9"
2500'
2178'
BOUNDARY
N
W
E
S
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
DEMO-RANGE SITE PLANE
NEW PIT LOCATIONS
MAP
APPROVED
DRAWN BY
R. ANDERSON
DESIGNER
B.MCCALL
CHECKED
SCALE
1"=800'
PR#
1 OF 3


8
7
6
5
4
3
2
1
D
C
B
A
REVISIONS
ZONE | REV | DESCRIPTION | DATE | APPROVED
D-6 A RELOCATED SITE TO SW OF PIT 1 3/13/98
A-6 B AS STAKED ORIENTATION 345°AZIMUTH 3/23/98
N
W
E
S
DEMOLITION PITS
(TYPICAL 19 LOCATIONS)
LATITUDE & LONGITUDE FOR
OLD PITS
PIT # LATITUDE LONGITUDE
#2 40d30' 0.74N 112d29' 18.07W
#4 40d30' 2.48N 112d29' 17.39W
#7 40d30' 5.05N 112d29' 16.61W
#10 40d30' 7.38N 112d29' 83.18W
#12 40d30' 9.08N 112d29' 82.10W
#15 40d30' 11.07N 112d29' 84.90W
#17 40d30' 16.86N 112d29' 86.29W
#18 40d30' 14.66N 112d29' 30.23W
#19 40d30' 17.95N 112d29' 85.54W
PIT #1
247'-2"
285'-11"
PROPOSED STATIC FIRE ROCKET
SILOS PAD
A
B
APPROVED
OBL LAW ENFORCEMENT & SECURITY
INDUSTRIAL HYGIENE
LOGISTIC DIRECTION
CHIEF, SAFETY OFFICE
CHIEF, ENVIRONMENTAL MANAGEMENT DIV.
FIRE CHIEF
DRAWN BY
R. ANDERSON
DESIGNER
B.MCCALL
CHECKED
CHIEF, FAC BR.
CHIEF, FACILITIES ENGINEERING DIVISION
CHIEF, ENGINEERING BRANCH
CHIEF, DESIGN SECTION
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
DEMO-RANGE SITE PLAN
DEMO PIT
DISTANCE DETAIL
SCALE
1"=200'
PR#
DRAWING NO.
7101-00002
REVISED
2 OF 3


DEMOLITION PITS
(TYPICAL 19 LOCATIONS)
366'-1"
99'-5"
369'-3"
PROPOSED STATIC FIRE ROCKET SILOS PAD
LATITUDE & LONGITUDE FOR
OLD PITS
PIT # LATITUDE LONGITUDE
#2 40d30' 0.74N 112d28' 19.07W
#4 40d30' 2.49N 112d28' 17.99W
#7 40d30' 5.05N 112d28' 18.61W
#10 40d30' 7.39N 112d28' 20.18W
#12 40d30' 9.08N 112d28' 22.10W
#15 40d30' 11.07N 112d28' 24.90W
#17 40d30' 18.86N 112d28' 28.29W
#18 40d30' 14.66N 112d28' 30.23W
#19 40d30' 17.95N 112d28' 28.54W
N
W
E
S
REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
D-6 A RELOCATED SITE TO SW OF PIT 1 3/13/98
A-6 B AS STAKED ORIENTATION 345°AZIMUTH 3/23/98
FACILITIES ENGINEERING DIVISION
TOOELE ARMY DEPOT
TOOELE NORTH AREA
DEMO-RANGE SITE PLAN
DEMO PIT
DISTANCE DETAIL
APPROVED
DRAWN BY
R. ANDERSON
CHECKED
SCALE
1"=200'
PR#
DRAWING NO.
T101-0003
FILENAME
T101-00030
3 OF 3