

**SAMPSON VETERANS MEMORIAL CEMETERY
SENECA FALLS, NEW YORK**

**OPERATING ANALYSIS
OCTOBER, 2008**

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I. INTRODUCTION

A new cemetery to serve the veterans of Central New York is proposed in Seneca Falls, New York. The purposes of this report are to develop projections for use of the cemetery by veterans and their families to assist in the program for Master Planning the site. This will also enable us to establish revenue estimates for the ongoing operation of the facilities.

We will also establish an operating expense budget and project that budget out twenty years. We describe the facilities typically included in a national or state veterans cemetery and prepare a capital budget.

The report also looks at operational options and discusses possible sources of funding for both capital development and ongoing operations.

II. VETERANS POPULATION

The Veterans Administration utilizes a model in evaluating a new veterans cemetery. The model assumes veterans will utilize the facility at some level within a 75-mile radius of the site. The Seneca Falls site is centrally located to draw veterans and their dependents from a twenty-county area.

A map of the twenty-county area is followed by a chart of the veterans' population by county for the period 2001 to 2030. Although the population declines year over year, the area includes 193,509 resident veterans in 2008. The largest populations are in Monroe, Onondaga and Broome Counties.

At the Federal level, the Veterans Administration has carefully identified veteran populations and has modeled the trends among the population segment. The following charts present the Veterans Administration's population projected for 2010 through 2030 for the intended cemetery service area in New York State.

COUNTY	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Broome	20,048	19,349	18,649	18,054	17,550	17,085	16,531	15,986	15,454	14,867
Cayuga	8,319	8,060	7,828	7,651	7,554	7,399	7,205	7,013	6,828	6,596
Chemung	10,260	9,948	9,674	9,421	9,188	8,929	8,643	8,357	8,085	7,743
Cortland	4,364	4,238	4,112	3,989	3,876	3,794	3,694	3,602	3,492	3,368
Fulton	5,987	5,818	5,668	5,546	5,497	5,409	5,286	5,160	5,022	4,838
Genessee	5,966	5,871	5,748	5,623	5,519	5,430	5,323	5,210	5,090	4,926
Livingston	5,848	5,720	5,637	5,556	5,502	5,463	5,392	5,326	5,260	5,138
Madison	6,383	6,230	6,113	6,006	5,915	5,837	5,719	5,588	5,466	5,310
Monroe	60,691	59,206	57,783	56,441	55,145	53,890	52,309	50,074	49,359	47,737
Onondaga	40,248	38,941	37,808	36,718	35,564	34,368	33,043	31,743	30,472	29,162
Ontario	10,110	9,845	9,615	9,411	9,228	8,980	8,685	8,403	8,129	7,828
Orleans	4,018	3,906	3,817	3,747	3,693	3,657	3,596	3,521	3,453	3,326
Oswego	12,423	12,143	11,927	11,720	11,491	11,296	11,050	10,808	10,551	10,199
Schuyler	2,212	2,159	2,112	2,078	2,057	2,034	2,002	1,969	1,934	1,876
Seneca	3,553	3,448	3,356	3,264	3,187	3,105	3,004	2,903	2,786	2,660
Steuben	11,213	10,855	10,506	10,218	9,979	9,700	9,342	8,988	8,681	8,316
Tompkins	6,057	5,936	5,897	5,855	5,735	5,592	5,445	5,297	5,175	5,029
Wayne	8,748	8,501	8,320	8,145	8,021	7,929	7,776	7,631	7,479	7,271
Wyoming	4,200	4,090	4,000	3,911	3,852	3,795	3,706	3,625	3,544	3,436
Yates	2,613	2,561	2,519	2,485	2,451	2,405	2,350	2,305	2,251	2,154
TOTALS	233261	226825	221089	215839	211004	206097	200101	193509	188511	181780

COUNTY	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Broome	14,230	13,643	13,075	12,548	12,044	11,585	11,159	10,731	10,319	9,922
Cayuga	6,327	6,068	5,835	5,611	5,401	5,204	5,018	4,845	4,681	4,528
Chemung	7,341	6,967	6,626	6,300	5,997	5,710	5,450	5,205	4,971	4,753
Cortland	3,221	3,078	2,946	2,819	2,700	2,587	2,484	2,387	2,298	2,217
Fulton	4,608	4,397	4,204	4,030	3,870	3,720	3,590	3,474	3,354	3,235
Genessee	4,737	4,539	4,354	4,180	4,010	3,849	3,692	3,542	3,403	3,274
Livingston	4,943	4,748	4,569	4,407	4,263	4,117	3,979	3,845	3,710	3,595
Madison	5,146	4,965	4,784	4,604	4,423	4,250	4,081	3,926	3,775	3,617
Monroe	46,031	44,374	42,700	41,096	39,550	38,017	36,583	35,164	33,829	32,556
Onondaga	27,872	26,644	25,446	24,342	23,283	22,270	21,344	20,449	19,626	18,863
Ontario	7,528	7,221	6,933	6,646	6,383	6,127	5,881	5,647	5,426	5,222
Orleans	3,166	3,029	2,901	2,796	2,681	2,584	2,498	2,411	2,329	2,239
Oswego	9,767	9,370	8,996	8,662	8,343	8,063	7,796	7,537	7,277	7,029
Schuyler	1,803	1,738	1,675	1,614	1,557	1,502	1,449	1,398	1,351	1,303
Seneca	2,554	2,442	2,346	2,253	2,171	2,097	2,019	1,947	1,866	1,788
Steuben	7,908	7,515	7,150	6,813	6,494	6,188	5,902	5,638	5,392	5,165
Tompkins	4,892	4,760	4,621	4,491	4,357	4,214	4,081	3,940	3,805	3,674
Wayne	6,990	6,716	6,465	6,218	5,977	5,740	5,501	5,288	5,084	4,890
Wyoming	3,305	3,173	3,045	2,921	2,804	2,692	2,582	2,482	2,387	2,302
Yates	2,057	1,969	1,890	1,821	1,760	1,703	1,641	1,586	1,529	1,472
TOTALS	174426	167356	166561	154172	147068	142219	137730	131442	126412	121644

COUNTY	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Broome	9,541	9,198	8,874	8,556	8,252	7,967	7,716	7,472	7,243	7,039
Cayuga	4,368	4,221	4,073	3,933	3,811	3,696	3,583	3,479	3,381	3,282
Chemung	4,556	4,378	4,213	4,045	3,888	3,737	3,598	3,466	3,338	3,226
Cortland	2,146	2,078	2,013	1,945	1,880	1,818	1,759	1,707	1,651	1,601
Fulton	3,122	3,019	2,923	2,828	2,740	2,658	2,578	2,502	2,427	2,356
Genessee	3,150	3,022	2,906	2,797	2,691	2,584	2,472	2,371	2,281	2,199
Livingston	3,455	3,331	3,217	3,112	3,015	2,907	2,804	2,712	2,628	2,550
Madison	3,482	3,353	3,232	3,119	3,011	2,918	2,820	2,729	2,637	2,546
Monroe	31,375	30,260	29,184	28,131	27,129	26,183	25,286	24,401	23,585	22,849
Onondaga	18,170	17,527	16,879	16,267	15,672	15,101	14,570	14,041	12,565	13,127
Ontario	5,047	4,877	4,708	4,540	4,380	4,215	4,051	3,895	3,751	3,618
Orleans	2,153	2,077	2,002	1,935	1,866	1,803	1,744	1,688	1,638	1,585
Oswego	6,796	6,577	6,366	6,160	5,953	5,761	5,589	5,426	5,270	5,122
Schuyler	1,251	1,204	1,159	1,123	1,087	1,055	1,025	996	968	942
Seneca	1,722	1,655	1,599	1,543	1,497	1,462	1,424	1,386	1,341	1,296
Steuben	4,951	4,746	4,552	4,372	4,203	4,037	3,877	3,732	3,598	3,479
Tompkins	3,547	3,429	3,313	3,205	3,107	3,022	2,940	2,857	2,777	2,696
Wayne	4,712	4,552	4,403	4,250	4,112	3,988	3,863	3,743	3,621	3,506
Wyoming	2,219	2,141	2,067	1,994	1,927	1,862	1,799	1,743	1,690	1,641
Yates	1,405	1,346	1,294	1,246	1,206	1,169	1,131	1,098	1,065	1,034
TOTALS	117168	112991	108977	105101	101427	97943	94629	91144	87455	85694

Source: VetPop2007 County: County-Level Veteran Population by VISN, 2000 - 2030

III. CEMETERY UTILIZATION PROJECTION

In planning for new cemeteries and based upon experience in both national and state veterans cemeteries, the Veterans Administration utilizes a formula for utilization estimates. The formula projects mortality among veterans in the 75-mile radius. Then, we assume 15% of those veterans will utilize the veterans' cemetery. We further estimate that for every two (2) veterans buried in the cemetery, one (1) dependent will utilize the cemetery as well.

Cremation is becoming a more common step in the funeral and memorial process. The following chart reflects the rates of cremation in New York State.

**STATE OF NEW YORK
CURRENT / PROJECTED CREMATION RATE**

YEAR	ACTUAL CREMATIONS	PERCENTAGE OF DEATHS
Current		
1995	27,629	16.43%
1996	26,400	16.21%
1997	29,035	18.02%
1998	29,455	19.23%
1999	31,383	19.71%
2000	31,998	20.33%
2001	32,414	19.99%
2002	33,118	21.14%
2003	35,073	22.50%
2004	35,571	23.46%
2005	36,841	23.90%
2006		
Projected		
2010		31.32%
Source: Cremation Association of North America (CANA)		

The following charts reflect the projected mortality rates for veterans in the twenty- (20) county area for the period 2011 to 2030.

COUNTY	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Broome	537	524	510	496	482	468	454	440	425	409
Cayuga	187	182	177	172	168	162	157	153	148	143
Chemung	217	207	198	189	180	172	164	157	149	142
Cortland	81	78	76	73	71	68	65	63	60	58
Fulton	157	153	149	145	142	137	133	129	125	121
Genessee	157	153	147	142	137	131	126	120	115	110
Livingston	134	130	126	122	118	115	112	108	104	101
Madison	153	151	148	146	142	138	134	130	126	122
Monroe	1,767	1,731	1,692	1,647	1,599	1,550	1,499	1,452	1,401	1,350
Onondaga	979	945	911	877	842	806	770	737	705	675
Ontario	240	235	228	222	215	208	200	193	186	179
Orleans	90	86	83	81	80	77	74	71	68	65
Oswego	263	255	248	240	234	227	219	211	204	196
Schuyler	55	53	52	50	49	47	45	43	41	40
Seneca	69	67	64	62	60	58	55	52	50	48
Steuben	230	221	212	203	195	187	178	170	163	155
Tompkins	176	174	172	169	165	161	156	151	145	140
Wayne	202	197	192	188	183	178	173	166	160	155
Wyoming	81	79	76	73	70	68	66	63	61	59
Yates	51	49	47	45	44	42	41	39	38	37
TOTALS	5,826	5,670	5,508	5,342	5,446	5,000	4,821	4,648	4,474	4,305

COUNTY	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Broome	394	378	365	352	340	328	317	309	301	293
Cayuga	139	135	131	126	123	120	116	113	110	108
Chemung	135	129	123	118	112	107	102	98	93	89
Cortland	56	54	52	50	48	46	45	43	42	40
Fulton	116	112	108	105	101	98	95	93	91	88
Genessee	106	102	97	94	90	87	83	79	75	72
Livingston	97	94	90	87	84	82	78	75	71	69
Madison	117	113	109	105	102	98	96	93	90	87
Monroe	1,300	1,253	1,211	1,169	1,127	1,086	1,048	1,013	978	945
Onondaga	647	621	597	572	549	527	505	485	464	446
Ontario	173	167	161	155	149	143	137	131	125	119
Orleans	62	60	57	55	53	51	49	47	45	44
Oswego	188	182	175	169	163	156	150	145	139	134
Schuyler	38	36	34	33	31	30	29	28	27	26
Seneca	46	44	42	41	39	37	36	35	34	32
Steuben	148	141	134	128	122	117	111	106	101	97
Tompkins	135	131	126	122	118	114	111	108	105	103
Wayne	149	143	139	135	130	126	123	119	115	110
Wyoming	56	54	52	50	48	46	44	43	41	39
Yates	35	33	31	50	29	28	27	26	24	23
TOTALS	4,137	3,982	3,834	3,716	3,558	3,427	3,302	3,189	3,071	2,964

Source: VetPop2007 County: County-Level Veteran Population by VISN, 2000 - 2030

Like the population of veterans as a whole, the number of death declines over this period. In 2011 with 5,826 deaths, we would expect 15%, or 874 veterans to be interred in the cemetery. Additionally, 437 dependents would utilize the facility. This results in an annual burial rate of 22.5%. This rate will likely decline from this peak and average 647 veteran interments per year over the 20-year period.

Therefore, the cemetery will need to develop approximately 10 acres with 600 burials per acre (a USVA standard) to achieve a ten year capacity. The cemetery should develop casket ground burial areas and both ground burial and columbarium spaces for those selecting cremation.

IV. OPTIONAL OPERATING MODELS

When a veteran is interred in the State Veterans Cemetery, the Federal government does provide a reimbursement fee of \$300. Further, the Federal government will provide a memorial shipped to the cemetery at no cost to the county or the veteran. The burial area will include pre-installed concrete outer enclosures. Utilizing the USDVA operating cost matrix, an annual projected operating budget is described below. Staffing reflects optimum levels to meet projected needs and existing practices. The budget is then projected out for a twenty- (20) year period.

CONCEPTUAL OPERATING BUDGET

Personnel Expenses		
Director (1)	\$ 65,000	
Administration (2)	\$ 59,720	
Equipment Operators (1)	\$ 31,320	
Grounds Employees (4)	\$100,224	
Ground Supervisor (1)	<u>\$ 45,936</u>	
Total (with Benefits)		\$302,200
Utilities	\$ 40,000	
Supplies & Materials	\$ 56,500	
Uniforms	\$ 3,500	
Maintenance Repairs	\$ 15,000	
Equipment Replacement	\$ 20,000	
Contract Services	<u>\$ 25,000</u>	
Total		<u>\$160,000</u>
TOTAL EXPENSES – YEAR ONE		\$462,200

Conceptual Operating Budget – Pro Forma

	Growth Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Personnel Expenses (with Benefits)											
Director (1)	3%	\$ 65,000	\$ 66,950	\$ 68,959	\$ 71,028	\$ 73,159	\$ 75,354	\$ 77,615	\$ 79,943	\$ 82,341	\$ 84,811
Administrator (2)	3%	59,720	61,512	63,357	65,258	67,216	69,232	71,309	73,448	75,651	77,921
Equipment Operator (1)	3%	31,320	32,260	33,228	34,225	35,252	36,310	37,399	38,521	39,677	40,867
Grounds Employees (4)	3%	100,224	103,231	106,328	109,518	112,804	116,188	119,674	123,264	126,962	130,771
Grounds Supervisor (1)	3%	45,936	47,314	48,733	50,195	51,701	53,252	54,850	56,496	58,191	59,937
Total Personnel Expenses		<u>302,200</u>	<u>311,267</u>	<u>320,605</u>	<u>330,224</u>	<u>340,132</u>	<u>350,336</u>	<u>360,847</u>	<u>371,672</u>	<u>382,822</u>	<u>394,307</u>
Utilities	3%	40,000	41,200	42,436	43,709	45,020	46,371	47,762	49,195	50,671	52,191
Supplies & Materials	3%	56,500	58,195	59,941	61,739	63,591	65,499	67,464	69,488	71,573	73,720
Uniforms	3%	3,500	3,605	3,713	3,824	3,939	4,057	4,179	4,304	4,433	4,566
Maintenance and Repairs	3%	15,000	15,450	15,914	16,391	16,883	17,389	17,911	18,448	19,001	19,571
Equipment Replacement	3%	20,000	20,600	21,218	21,855	22,511	23,186	23,882	24,598	25,336	26,096
Contract Services	3%	25,000	25,750	26,523	27,319	28,139	28,983	29,852	30,748	31,670	32,620
Total Other Expenses		<u>160,000</u>	<u>164,800</u>	<u>169,745</u>	<u>174,837</u>	<u>180,083</u>	<u>185,485</u>	<u>191,050</u>	<u>196,781</u>	<u>202,684</u>	<u>208,764</u>
Total Expenses		<u><u>462,200</u></u>	<u><u>476,067</u></u>	<u><u>490,350</u></u>	<u><u>505,061</u></u>	<u><u>520,215</u></u>	<u><u>535,821</u></u>	<u><u>551,897</u></u>	<u><u>568,453</u></u>	<u><u>585,506</u></u>	<u><u>603,071</u></u>

Conceptual Operating Budget – Pro Forma

	Growth Rate	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Personnel Expenses (with Benefits)											
Director (1)	3%	\$ 87,355	\$ 89,976	\$ 92,675	\$ 95,455	\$ 98,319	\$101,269	\$104,307	\$107,436	\$110,659	\$113,979
Administrator (2)	3%	80,259	82,667	85,147	90,332	93,042	95,833	98,708	101,669	101,669	104,719
Equipment Operator (1)	3%	42,093	43,356	44,657	45,997	47,377	48,798	50,262	51,770	53,323	54,923
Grounds Employees (4)	3%	134,694	138,735	142,897	147,184	151,600	156,148	160,832	165,657	170,627	175,746
Grounds Supervisor (1)	3%	61,735	63,587	65,495	67,460	69,484	71,569	73,716	75,927	78,205	80,551
Total Personnel Expenses		406,136	418,321	430,871	443,797	457,112	470,826	484,950	499,498	514,483	529,918
Utilities	3%	53,757	55,370	57,031	58,742	60,504	62,319	64,189	66,115	68,098	70,141
Supplies & Materials	3%	75,932	78,210	80,556	82,973	85,462	88,026	90,667	93,387	96,189	99,075
Uniforms	3%	4,703	4,844	4,989	5,139	5,293	5,452	5,616	5,784	5,958	6,137
Maintenance and Repairs	3%	20,158	20,763	21,386	22,028	22,689	23,370	24,071	24,793	25,537	26,303
Equipment Replacement	3%	26,879	27,685	28,516	29,371	30,252	31,160	32,095	33,058	34,050	35,072
Contract Services	3%	33,599	34,607	35,645	36,714	37,815	38,949	40,117	41,321	42,561	43,838
Total Other Expenses		215,028	221,479	228,123	234,967	242,015	249,276	256,755	264,458	272,393	280,566
Total Expenses		621,164	639,800	658,994	678,764	699,127	720,102	741,705	763,956	786,876	810,484

V. REVENUE OPTIONS AND PROJECTIONS

Fees

No fees will be charged to the veteran for the grave, interment fee or memorial for either casket burial or interment of cremains. Dependents will be charged a fixed fee of \$900 for the interment fee and memorial installation for full casket burials, and \$500 for the interment of cremains. No charge will be made for the grave space. Burial services may also be outsourced initially in Phase I.

Projected Income

A conservative analysis suggests the new Cemetery will provide 600 burials per year of which 400 will be veterans and 200 will be dependents. The veteran will pay no fees, however, the VA will remit \$300 to the Cemetery for each such burial.

VI. DEVELOPMENT PROGRAM AND CAPITAL BUDGET

The Veterans Administration has standards for State Veterans Cemeteries. If the County were to follow those standards, the development program would include the following facilities leading to the capital cost reflected in page 39.

These functions include:

1. Entry Features
2. Roads and Parking
3. Avenue of Flags
4. Assembly Area (Flag Location)
5. Burial Areas and Burial Sections
6. Committal Service Shelter
7. Columbarium and In-Ground Cremated Remains Burials
8. Memorial Walk
9. Administration Building
10. Chapel
10. Public Information Center (PIC)
11. Public Restrooms
12. Maintenance Building
13. Service Yard
14. Irrigation System
15. Utility Distribution System
16. Carillon Tower

ENTRY FEATURES

Function

The Entry Feature welcomes the visitor to a State Veterans Cemetery and established the character of the cemetery grounds within. This entry area impacts the visitor and creates a sense of arrival at the State Veterans Cemetery.

The Entry Feature is symbolic of a gateway to a “veterans shrine” and provides a link to historical and traditional cemetery “entrance gates” which may be unique in form. This Entry Feature gives the arriving or departing visitor a feeling of transition into or out of the cemetery. The Entry Feature should be designed to impart respect and serenity and should be designed to reflect permanence and durability with a minimum of maintenance.

The entry also features landscape plantings to provide seasonal color and groupings of compatible trees and low maintenance plantings. A flag element may also be included.

Signage is an essential element of the Entry Feature. Such signage should be compatible with the overall architecture of the facility.

Components

Cemetery identification is a component of the entrance area. The Entry Feature should include the following elements in its design:

- The State Veterans Affairs Seal, or insignia, at least two feet in diameter
- The words “(NAME) Cemetery” in lettering clearly visible from the public street (approach road).

Most entrances feature a double width road, divided for traffic control at the “entry gate”. This separates entering and existing visitors. Landscape should be used to accentuate the entrance. A directory sign should be included in a pull-off, a short distance from the gate.

Design Requirements

Architecturally, the Entry Feature should be related to the other project structures within the cemetery by using similar materials and design patterns and textures. Low-scale landscape plantings enhance and draw attention to the entrance area and gate. Landscaping should use seasonal plantings to vary colors in this area.

A chain or two swinging or sliding gates are an integral part of the entry design and are useful to control access to the cemetery. Provide a divided double width entrance for traffic control at the “entry gate”. The structure should be properly set back to ensure safe entry from busy roads. Provide vertical curbing to keep cars from driving over the turf or plantings.

A State Veteran Cemetery name sign should be placed horizontally at the center of the Entry Feature wall and gate. The sign should be visible from the approach road and illuminated between dusk and dawn. This name sign will be designed and included in the project construction documents.

Cost

The cost to build an Ornamental Fence is approximately \$150 per linear foot for definition of the Entry Feature area, not for enclosure of the entire site.

The Entry Feature costs approximately \$75,000 and may include walls, signage, up-lighting and landscaping.

ROADS & PARKING

Function

Cemetery roads provide access to various locations within the cemetery. Roads are provided for visitors to access committal service shelters, burial and public areas. Additionally, cemetery roads provide for service and maintenance traffic. The road layout should be simple and provide easy access to all burial sections, with an appearance complementary to the landforms and topography. Safety is a paramount concern because drivers may often be elderly, infirm or distracted by concerns associated with the loss of a loved one. Asphalt is preferred.

Parking in the cemetery is accommodated in several ways to meet the various needs of staff and visitors, as identified in the design criteria for the specific building. **An administrative parking lot for staff with 30-45 spaces, including spaces for disabled staff should be provided.** Typically, cemetery visitors will parallel park along cemetery roads or in parallel pull-offs to visit interment areas or cemetery features such as the Assembly Area (Flag Location), Memorial Walk or Public Information Center. Traditional parking lots are not provided for cemetery visitors. Large numbers of visitors for ceremonies such as Memorial Day need to be accommodated by off-site parking and shuttle service.

Components

Entrance Road

The entrance “boulevard” is a divided road, at least at its intersection with the approach road (public road) and preferably for its full length. Each side supports one-way traffic with a passing lane. Entrance roads, if used as the Funeral Cortege Assembly Area, must be long enough and wide enough to accommodate waiting funerals without blocking access to the cemetery.

Primary Road

For the primary cemetery road, a main loop is desirable, allowing one to drive through the cemetery without turning around. Other configurations are possible depending on the specifics of the site. The primary road provides access to all other cemetery roads.

Secondary Road(s)

Secondary roads may be subordinate loops or connector roads. They provide access primarily to burial sections.

Service Road(s)

The following two types make up the network of service only roads within the cemetery roadway system:

- Service entrance – The road provides access from the public road (approach road) directly to the cemetery administration/maintenance complex. Traffic consists of maintenance vehicles and delivery trucks.
- Service drives to buildings – The drives that provide access to wells, pump houses, etc. **These driveways have no curbs and will be paved surfaces.** Traffic consists of cemetery maintenance vehicles.

Committal Service Shelter Drive

Separate drives may be provided for access and parking for each committal service shelter. A small loop drive, adjacent to the shelter, wide enough for parking three vehicles abreast, works well. The entire drive should accommodate an average of 30 vehicles. The layout of roads and shelters should allow for a cortege to proceed to the designated shelter without passing another funeral cortege on the road. Whenever possible, Committal Service Shelter drives should be accessed without driving by active burial operations.

Design Requirements

The hierarchy of roads in the cemetery includes the entrance road as a divided two-lane road leading into the system of primary and secondary roads and service drives. The design of all the roads should accommodate anticipated traffic volume at a design speed of 15 mph (24 km/h). The road system should allow for funeral corteges to proceed in a forward direction from entry to departure. The road system should be simple and provide good access to all burial sections. Winding roads and sweeping curves enhance the beauty of the cemetery. Roadside landscaping that complements the appearance of the cemetery should be provided.

The preferred road design includes curbing. In expansions of existing cemeteries, the road design will follow the master plan. Roads designed without curbing will have edge reinforcement. Where curbing is used, it must be mountable (rolled, sloped, flush or battered-face) for traffic control, equipment access and drainage control. Design storm drainage curb and gutter inlets to match the profile of the curb and/or curb and gutter. No part of the inlet shall be behind the curb. Use vertical curbing on roads within the cemetery only if necessary for traffic control. Maximum road grade is 10 percent.

The entrance road, primary and second roads are generally wide enough for two-way traffic to pass a parked vehicle. The roads should be placed in a manner to allow for burial sections to be placed on both sides of the road. Preferred

minimum road widths and radii are outlined in the table that follows in this section.

Quality in construction and materials is critical to the cemetery roadway system. Determine quality requirements by contacting the state highway engineer and a geo-technical consultant. All cemetery roads should support occasional use by heavy equipment and large trucks loaded with wet dirt, gravel and headstones.

Road dimensions for road types and minimum widths and radii for a cemetery roadway system are presented in the following table.

Table 10.0 ROAD DIMENSIONS FOR ROAD TYPES AND MINIMUM WIDTHS AND RADII FOR A CEMETERY ROADWAY SYSTEM

ROAD TYPE	MINIMUM WIDTH & MINIMUM RADIUS
Entrance Road	18' Face-to-Face of Curb 24' Edge-to-Edge with No Curb 50' Minimum Radius
Primary Road	25' Face-to-Face of Curb 24' Edge-to-Edge with No Curb 30' Minimum Radius
Secondary Roads	20' Face-to-Face of Curb 24' Edge-to-Edge with No Curb 30' Minimum Radius
Service Roads – Entrance	24' Face-to-Face of Curb 24' Edge-to-Edge with No Curb 50' Minimum Radius
Service Roads – To Buildings	10' Edge-to-Edge with No Curb 30' Minimum Radius
Committal Service Shelter Drives	27' Face-to-Face of Curb 30' Edge-to-Edge with No Curb Narrow to 12' at Throat 30' Minimum Radius

Source:

Cost

The cost to build roads ranges from \$60 per linear foot to \$100 per linear foot. This figure assumes a 24-foot-wide asphalt road with curbs on both sides.

AVENUE OF FLAGS

Function

The Avenue of Flags flanks both sides of the curb line—usually along the main entrance road— with flags mounted at grade in support sleeves. The Avenue of Flags or “Avenue of Remembrance” is a patriotic feature at a State Veterans Cemetery and reinforces patriotism, national pride and represents a visible, bold and proud display of flags. At some locations, the flags are donated by the families of the interred veterans for display along the Avenue of Flags. In most cases, the Avenue of Flags is only flown on days of special ceremonial significance such as Memorial Day.

The Avenue of Flags establishes a strong sense of entry, creating an interesting and dramatic space. It adds an important feature after the gate and entry feature and strengthens patriotic expression, adding color and interest along the entry road into the loop of the cemetery grounds. Flagpoles and flags are usually donated to the cemetery. Other than the installation of the flag sleeves, federal funding is not provided for this feature.

The Avenue of Flags consists of approximately 40 flags lining both sides of the cemetery entry road. The funeral corteges proceed in a forward direction from entry to departure. The Avenue of Flags adds to the color, drama and patriotic impact of the cemetery.

Design Requirements

Flags are placed in sleeves inside the cemetery entry gate and along the entrances and exit roads. The sleeves are mounded at grade level in a permanent anchor. The flags are nylon (preferably) for wind and weather resistance and may be small in size, rather than large. The height of the poles **should be 20 feet in height** and spaced at approximately 15 – 20 feet minimum distance apart, or 30 feet maximum distance apart, depending on the trees and plantings at each cemetery location.

The large interment flags are often used for the Avenue of Flags, however, these heavy-duty cotton flags are not recommended for routine use if the Avenue of Flags is intended as an everyday feature. Interment flags are not suitable for everyday use due to their large size, staining and weathering fabric properties and weight.

Cost

Each project varies in cost with the project layout, type of flags used, flag spacing, land conditions, climate and size of the project donation by organization. Sleeves cost approximately **\$350 each, including installation.**

ASSEMBLY AREA / CEREMONIAL PLAZA / MAIN FLAGS

Function

The Assembly Area with the U. S. flag as its key focus is an outdoor open plaza space developed for people to gather on patriotic holidays and other special events. The assembly area itself, which is the area designed to accommodate the audience, should be turf and not paved. The area designed to accommodate speakers and other dignitaries may be paved. The Assembly Area terrain and landscaping materials define the space. The shape is defined with turf, paving or a texture to create a space comfortable for public gatherings. The Assembly Area is located in the master plan to take advantage of views on site and off site.

Definition of the immediate surroundings will establish a distinct open space for assemblies and ceremonies and be an attractive year-round feature. The space for assembly can serve multiple uses and should not consume land area that is needed for interments. The Assembly Area design does not include permanent seating.

Components

The U. S. flag is the key focal point for the Assembly Area. The flag may be designed tangent to the Assembly Area and positioned in a key visible spot. The Assembly Area may accommodate approximately **1000-1500 persons**. This can also include an **overflow area** to the sides of the Assembly Area.

The Assembly Area may also incorporate an architectural or a landscape feature that functions as a platform or a backdrop for speakers. The area must accommodate enough portable seating for 20 dignitaries. Note that an area adjacent to the speakers' platform may permit portable seating for a 40-piece band.

The U. S. flag is the single most important feature (Figure 8.0) within the cemetery boundaries. The flag is the focus of great symbolism for veterans and their survivors. **In addition, the ceremonial plaza incorporates 5 branches of service flags used for special events such as Memorial Day and Veterans Day.** The State of New York and POW/MIA flags should also be visible from surrounding areas. The flagpoles and its surrounding area should have its own individual identity, and be both complementary and harmonious with the natural surroundings. Use quality, durable, and low-maintenance building materials such as stone, brick or concrete. Avoid locating the flagpole in conjunction with an

operational function, such as the Administration Building, where the flag becomes an adornment of the building.

Design Requirements

The U. S. flagpole in the Assembly Area (aluminum or stainless steel) with internal halyard shall be tall enough to be visible from major adjacent roadways, if practical. Provide ample and unobtrusive flag lighting. Use aboveground fixtures only. Do not use in-ground fixtures. If flown 24 hours a day, the flag must be illuminated after dark. The flag should remain visible to the maximum extent possible even when lowered to half-staff. **The flags are lowered to half – staff only by the Governor’s or President’s proclamation.** The flagpole shall meet FAA regulations for height and flight safety requirements. Cemetery personnel must be able to access the flagpole to raise and lower the flag for services. The State flag is typically in front of the Administration Building. A shorter flagpole (15 to 30 feet) in another location may display the POW/MIA flag. This is frequently located along the Memorial Walk.

Provide adequate electrical service to meet ceremonial and maintenance needs in the Assembly Area. Electrical junction J-boxes should be out of sight and blend into their surroundings. Provide access to water to clean the assembly area paving. Parking for special events and programs is accommodated on roadways and sometimes on the turf in undeveloped interment areas. As landforms vary, so will site layouts.

Cost

The cost to build an Assembly Area is approximately \$75,000 including flagpoles, walls, speaker platform, turfed audience seating area per project including the site work.

BURIAL AREAS AND BURIAL SECTIONS

Function

Burial Areas are those portions of the cemetery acreage developed for interment of full casket or cremated remains. Burial Areas should be subdivided into Burial Sections of various sizes and shapes. **Casketed burial areas should be subdivided into sections containing a maximum of 500-600 sites and no more than 50 sites side by side in any given row.** Burial Sections are visually separate areas, broken by woods or landscaped areas. Burial Sections for full casket gravesites are approximately one acre in size. The Burial Sections for cremated remains shall have no more than 999 burial sites (approximately .6 acre).

Components

Burial Areas should generally conform to the existing terrain, with grades ranging from a minimum of two percent (2%) to a maximum of fifteen percent (15%) to achieve positive drainage and pedestrian access. In selecting a site, one should consider whether extensive earthmoving and grading would be necessary to develop the site as a cemetery. Extensive grading should be avoided as it is expensive and could adversely impact adjoining land or destroy natural site features, making the cemetery appear to be out of character with the surrounding landscape. Final grading must achieve one, predominant uniform slope within each section. Rising and falling slopes must be eliminated.

Permanent gravesite control markers should be based on a grid layout. Depending on the terrain, the size of sections may vary. Plant materials should be utilized to create shade and add texture to the area.

Avoid soils where ground water conditions require subsurface drainage systems. An adequate storm drainage system is required to prevent collection of water in Burial Areas.

Irrigation of Burial Sections is strongly recommended to support healthy turf.

At key points, parallel parking for two to three cars is provided for cemetery visitors. Water and vase receptacles are also provided at these locations. The transition from roadside parking to the burial areas should be easily negotiated by all visitors. Burial areas should not be dramatically lower or higher in elevation than the roads.

Design Requirements

In-ground interment areas for casketed or cremated remains shall generally conform to existing terrain. Final grades shall range from two percent (2%), the minimum to achieve positive drainage, to a maximum of fifteen percent (15%). Final grading shall achieve one predominant, uniform slope. Edges of burial sections shall be a minimum of ten (10) feet from edges of roads, drives and tree lines and a minimum of twenty (20) feet from property boundaries or fence lines.

The maximum distance from the edge of a road to the farthest gravesite within a burial section shall be no further than 275 feet over relatively level land. In sloped areas, the distance from the farthest gravesite should be measurably shorter.

The topography is the primary factor in determining the direction graves face within a Burial Section. Where the topography is not significant, road layout and accessibility will determine the direction graves face. A single Burial Section should have one predominant slope. Each Burial Section in the cemetery is

identified, with the limits of the Burial Section clearly indicated by section markers.

Gravesite sizes when conditions warrant are:

- The **5 foot x 10 foot gravesite** will be used where double-depth interments in a 7-foot excavation are possible.
- The **6 foot x 10 foot gravesite** will be used for single depth, side-by-side interments where excavation below 5 feet is impractical due to soil conditions.
- The **4 foot x 8 foot gravesite** may be used in those sections of state cemeteries which use flat markers.
- The **3 foot x 10 foot gravesite** may be used in those sections that use lawn crypts. Lawn crypts are double depth type pre-placed concrete containers with removable concrete lids. They are installed at the time of land development. Crypts are installed by excavating the burial area. In most climates, adequate drainage is installed and the area is filled, leveled, and then compacted. The pre-cast crypts are placed adjacent to and abutting one another. **Markers are not placed on top of the crypt but placed on virgin ground.**

An In-Ground Cremated Remains Burial Site is usually square and half the size of a full casket site (e.g. 5 feet x 5 feet). Size depends upon the type of marker and the grid layout chosen. The cremated remains sections should be consistent with any adjacent gravesite section.

Cremated remains sites when conditions warrant are:

- **Cremated Remains Sections** should be two (2) feet deep. Size again depends on the full casket size used at the location. Markers should be consistent with others used at the site. When selecting marker type (upright or flat), site size must be a consideration due to spacing, maintenance and aesthetics.
- **Garden Niche or Terrace** – A burial site for the interment of cremated remains in a distinct space using a system of paths, walls and/or terraces that creates a tranquil garden setting, is 3 feet x 3 feet x 2 feet deep, and is marked with 12 inch x 18 inch flat marker of granite or bronze, or a wall-mounted bronze plaque, 5 ½ x 8 ½ inches.
- **Scattering Garden** – A designated garden-type area where cremated remains are scattered in the landscape. A site used for the scattering of cremated remains is not individually marked, but the deceased is

acknowledged on a communal bronze plaque in the garden area or by an individual bronze plaque mounted on a wall designated for that purpose. An individual whose ashes are scattered in the state cemetery may not have a memorial marker placed in the memorial section of the cemetery.

Cost

The cost for standard, double-depth crypts is \$350 per unit, delivered to the site.

Crypt installation is \$350 per unit.

COMMITTAL SERVICE SHELTER

Function

The function of a Committal Service Shelter is to provide a location for interment services away from the actual gravesite. In a Veterans cemetery, where specific gravesites are not reserved for individuals, the burial area is usually not a suitable location for the committal service. A military honors team or a volunteer honor guard team performs at the service. If a bugler is not available, "Taps" may be played after the ceremony by a "ceremonial bugle", or from built-in speakers connected to the sound system or Carillon Tower.

The Committal Service Shelter is a quiet, dignified, open, covered pavilion set in the terrain with trees and vegetation. It is intended to provide temporary shelter from the wind, rain and sun for an interment service in a solemn manner.

The Committal Service Shelter is located in an area visually isolated from the administrative, maintenance and burial operations. Most often, the Committal Service Shelter is located in an area that is sheltered from noise and casual visitors.

The shelter is considered to be a facility that serves the family and friends of the deceased at any given time and is not intended to be a focal point or strong visual element of the total cemetery experience. Each shelter should have a related Cortege Assembly Area and a Parking Pull-off Area for hearse or vehicle to unload the casket.

Committal Service Shelters are not staffed. Cemetery personnel, however, normally coordinate each service at the shelter with the funeral director, clergy and the honor guard team.

Components

The Committal Service Shelter is a roofed, open-air pavilion structure with four to six columns blending the feeling of shelter with the outdoors. The pavilion provides a covered area with seating for the immediate family of approximately 10 to 20 people and an uncovered paved area to provide space for approximately 50 additional people. **In addition, permanent benches and extra chairs need to be made available.** The paved area (approximately 900 minimum covered square feet with 1,200 to 1,800 maximum square feet total including both the covered and uncovered areas) will permit the additional standing room overflow for 50 persons to gather for the ceremony.

Additionally, a paved area must be provided for an Honor Guard of approximately three to seven members to stand adjacent to the shelter. The U. S. flag should be visible from the shelter.

An enclosed Storage Closet (approximately 125 square feet or less) will store one rolling bier, 20 stacking chairs, wall-mounted shelf for sound system, a duplex outlet, broom and a shovel.

Public restrooms are not recommended at this location, as they may tend to increase visitor traffic during a committal service.

Design Requirements

A Committal Service Shelter looks best when the design is simplified and long lasting for the future (50 to 100 years). The shelter design should stand the test of time and reflect today's contemporary forms. The architectural style of the structure is preferred to be an open pavilion, with sturdy, simple shapes and easy-to-maintain structural elements and materials. This will provide many years of future use for this structure.

The structure should be approximately 900 square feet (covered area—25 feet x 36 feet) supported by the Storage Closet and two (minimum) to six (maximum) columns at a 10-foot minimum clear height.

It is recommended that standing seam metal (gabled or hipped) with gutters, leaders, downspouts, splash blocks or underground pipe connection to ensure positive drainage from the structure. The color palette is coordinated throughout the master plan.

The shelter should contain a **10-foot x 20-foot** Storage Closet for chairs and bier storage at one end of the structure.

The structure will bear on a concrete slab approximately 1,200 to 1,800 square feet with control joints to prevent cracking. A textured concrete finish can be added to the concrete slab to define the gathering area.

Building materials are required to be durable and relatively maintenance-free, such as brick, stucco, building stone or cut masonry block and are selected for life-cycle performance characteristics at a given project location.

Based on burial activity, the program will fund one Committal Shelter for one to five burials and two for six to ten burials per day.

In designing the Committal Service Shelter, the following architectural elements should be avoided:

- Excessive use of vernacular, detailed items, extra trim and unnecessary ornaments, striping, expensive limestone, sandstone, copper roofing material, synthetic slate, or clay roof tiles. This adds extra, undesirable cost.
- The use of vinyl siding, lead or leaded copper siding or roof tiles is inappropriate.
- Open trusses, open column tops, or perching areas are not permitted due to the maintenance and cleaning required and unpredictable distractions occurring during the burial ceremonies. Avoid architecture that invites birds and insects to nest.

Cost

The cost to build a Committal Service Shelter ranges from \$200 to \$250 per square foot, excluding the site work. The building cost index for the local area will need to be referred to in order to adjust and determine cost of this component.

COLUMBARIUM AND IN-GROUND CREMATED REMAINS BURIALS

Function

The function of a Columbarium is to provide an above-grade structure designed for the interment of the cremated remains of a veteran and a dependent. Each niche is designed to accept an individual VA standard niche cover.

Components

A Columbarium is a pre-cast concrete structure with footings. The structure is faced with brick, block, stone, granite or pre-cast veneer, similar in material to other structures in the cemetery. Niche covers are supplied by the National Cemetery Administration, Memorial Programs Service (MPS). Inscription contracts are also arranged upon request through MPS.

Design Requirements

Columbarium designs are recommended to be a maximum of **four** units high **and incorporate USDVA national standard niche components**. The length, configuration of layout and size is determined during design based on desired number of units and other factors such as topography and traffic patterns. Size will also vary based on burial rates. Columbaria supply between 25% and 50% of the total cemetery burials. Columbaria may not be needed in regions with low cremation rates or at facilities with ample space for in-ground cremation burials. For visual balance, niches should be horizontally aligned between Columbarium units within a courtyard. Columbarium walls should not be closer than 12 feet apart. This ensures visitor circulation, privacy and landscape improvements.

The Columbarium supporting slab projects several inches above grade. A 12-inch perimeter gravel strip at the slab edge provides drainage along the Columbarium perimeter. Family and visitors may place flowers in cemetery-supplied vases in the drainage strip.

The Columbarium cap must be sloped to direct rainwater and provide a waterproof cover over the structure.

Security is also an important factor in design. Columbarium courtyards should not be isolated. They should be visible from other parts of the cemetery.

Components

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The function of a Memorial Walk is to provide a path for visitor access to a Memorial Section where veterans' organizations and other groups may place memorial plaques mounted on stones or monuments to commemorate certain groups, units, campaigns or other military events on walls designated for that purpose. A donations area for these donated memorial monuments may be located here and may be the location of the secondary flagpole for display of the POW/MIA flag.

The donated memorials are typically 18 inches deep x 24 inches wide x 24 inches high with granite bases or natural boulders. They are placed in small cleared areas adjacent to a path. The Memorial Walk or donations area must appear complete as a feature in its own right, even without any donated memorials. As with all cemetery features, the Memorial Walk/Donations Area must be relatively flat or with a gentle slope and accessible to disabled persons without using sidewalks and ramps for wheelchairs.

Components

A Memorial Section for headstones memorializing those whose remains are unavailable for burial may be located in areas of a cemetery not suitable for casketed interments because of soils, terrain or landscape features. The size and layout of the Memorial Section will depend on the site layout, size of the individual memorial site and the demand at a particular cemetery for memorial sites.

A memorial site is **3 feet x 5 feet** marked with a flat or upright marker of granite or bronze, except that bronze memorial plaques may be mounted on walls designated for that purpose, in lieu of placement of a marker in a memorial

section. The walls may be portions of other features such as retaining walls, terraces, etc., which are appropriate for memorial purposes.

Design Requirements

A Memorial Walk **for organizational/group memorials** shall have appropriate locations designated along the path for donated memorials, plaques and benches.

The Memorial Walk consists of an asphalt path leading to a Memorial Section or donations area. Minimize the visual impact of the paved surfaces if designed as a woodland path. The site turf is maintained, cut and trimmed along the Memorial Walk. Landscape features may be grouped nearby depending on the project.

Cost

The walk costs approximately \$40 per linear foot.

ADMINISTRATION BUILDING, PUBLIC CENTER AND PUBLIC RESTROOMS

Function

The function of the Administration Building is to house the offices, workspaces and administrative support area for cemetery staff. The staff provides direct and indirect services to veterans, their families and other cemetery visitors. Services include verification of eligibility, scheduling burials, ordering headstones and markers, recording burial locations, budgeting, and human resources activities.

The cemetery director, administrative staff, reception center for visitors and records are housed in this building. Public restrooms with doors to the outside should be accessible and visible from the parking area or pull-off along the loop road and included at this building, if not provided at the Public Information Center (PIC).

The Administration Building is centrally located on the principal entrance road, far enough from the main gate to allow for the formation of lengthy funeral processions to enter the cemetery without causing interference with external vehicular traffic. Site the building optimally and relate it to all other structures at the cemetery in the use of similar design and building materials. This relationship provides an appearance of continuity and permanence. The building is not intended to function as a “monument” or architectural statement.

The Federal State Grant will not fund chapels. There will be a need for the state to fund a chapel.

Components

The Administration Building contains the administrative offices, records and support spaces for the administrative work of the cemetery. The building has a waiting room with a receptionist (if workload requires) for families and visitors, offices for the director and assistant director (if workload requires), operations and records room (secured), multipurpose conference room, a staff unisex restroom, kitchenette and break room, and storage and janitor closets. The Administration Building serves as a contact point and private meeting place for the family of the deceased and funeral directors. The building also includes cemetery burial records.

Depending on size, the staff may be from one to five or more persons. A small cemetery may have one administrative member and the director on site. A medium sized cemetery may have three persons. A larger, busy cemetery may have five or more persons on the staff. To support your design, NCA provides veteran population data to help determine staffing levels.

An Honor Guard room space for the military honors team may be collocated with or adjacent to the Administration Building. This space will require a separate entry door, a windowed space with a table, kitchenette with refrigerator, counter and microwave oven, a unisex toilet room and lockers for approximately 8 to 12 persons, depending on the number of volunteers required.

Design Requirements

The Administration Building shall be constructed with durable building materials and low maintenance finishes and fixtures. Materials used should be consistent with materials used for the Committal Service Shelter, such as masonry construction. Typically, roofs should be designed with gables or hips and simple roof plans. Roofs should avoid dormers and skylights. Positive drainage away from the building must be achieved.

The Administration Building may be separate, collocated or adjacent to the Maintenance Building. Utilities serving this building such as pad-mounted condensers should be properly located and screened from public view.

Visitors enter the building through the front door and are greeted in the reception and waiting room area adjacent to the general offices. The director's office, conference and multipurpose rooms are open to the general public. A unisex staff restroom should also be located close to the reception area that serves the administrative staff and also serves (infrequently) the public.

Behind the waiting room and the director's office space is the operations and records room. This is the hub of the office, containing shared office equipment and secured files. The staff and volunteers enter the Administration Building

from the adjacent employee parking lot. A lunchroom with a kitchenette is a separate room isolated from public view and can serve as a connector to a rear or side door to the employee parking lot.

Cost

The approximate cost to build an Administration Building is \$250 per square foot (gross). **The cost to build a chapel is \$250 per square foot or approximately \$612,500.**

PUBLIC INFORMATION CENTER

Function

The main function of a Public Information Center (PIC) is to provide funeral cortege and visitor orientation to the cemetery, including grave locator information. The PIC acts as an information portal for all cemetery activity at state cemeteries. The PIC is collocated with the Administration Building. If warranted, a separate PIC building is typically located near the entrance to the cemetery burial areas. It contains a cemetery map showing the burial areas, a kiosk grave locator and other public information about the cemetery. Additionally, the building also contains Public Restrooms which are convenient and accessible.

The PIC contains a small visitor information office occupied by a cemetery staff member (one person) to provide information, answer questions and assist customers. The building will feature a display of historical items and a desk or counter with a computer. Therefore, the visitor information function typically is part of the administration function.

Components

The PIC is a roofed, one-story structure with visitor information displayed on a cemetery site plan map or information office (optional for larger cemeteries). The PIC components include the kiosk grave locator, air conditioned and heated restrooms, a drinking fountain, a layout map of the cemetery, a bulletin notice board and an optional telephone (optional these days due to the cellular phone). Building materials are similar to the Administration Building. Functions of the information desks may be combined with the Administration Building reception area.

To access the PIC, visitors park in an area adjacent to the main entrance to the PIC. The PIC parking area is separate from the Cortege Assembly Area. The two parking areas, however, may be combined at a smaller location.

Design Requirements

The PIC is a one-story building with a commercial, non-institutional character. The appearance of the PIC building is of a solid, enduring structure, similar in nature to materials used for the administration building and other structures. The PIC should be constructed using durable materials and finished requiring little or no maintenance.

Since most PIC buildings have restrooms, separate restroom facilities are not required at the cemetery Administration Building.

After passing through the main gates of the cemetery, the PIC provides an orientation point to the visitors in the corteges. The PIC should be located adjacent to the Cortege Assembly Area. The building's location overlooks the Assembly Area, Flag Location, Columbarium and many of the Burial Sections. The PIC should be accessible from the interment areas providing visitors with easy access to Public Restrooms.

The PIC provides handicap accessible restroom facilities for men and women. It should also include a drinking fountain and a janitor closet with mop sink adjacent to the restrooms. The PIC must be heated and cooled in Wisconsin. A small mechanical room may be located adjacent to the janitor closet.

The Kiosk Grave Locator associated with the PIC should be positioned under a projecting or recessed cover that provides protection from glare, thus making the kiosk screen easily readable. The kiosk displays gravesite locations for the cemetery visitor's use.

The Kiosk Grave Locator is an interactive computer screen that gives veteran burial information and grave locations for veterans and dependents buried in the cemetery. The kiosk provides the visitor with a printout page showing the gravesite location of the deceased veteran and dependents.

Cost

The cost for a separate PIC with restrooms is approximately \$300 per square foot. The Kiosk cost is between \$25,000 and \$30,000.

PUBLIC RESTROOMS

Function

Public Restrooms are located to serve the public prior to their involvement with cemetery activities and convenient to the visitors and funeral attendees. The restrooms must be easily accessible from the visitors and cortege parking lots.

Depending on the size of the cemetery, the Public Restrooms are normally located at either the Public Information Center or the Administration Building

Components

The design and building materials should be similar to the Administration Building. If not part of the Public Information Center or Administration Building, the restroom building would be a freestanding building with separate facilities for men and women.

Design Requirements

Public Restrooms include separate facilities for men and women (approximately 150 square feet each for men and women), an adjacent janitor closet with mop sink and shelves for paper storage and a small mechanical/electrical room for heating and cooling.

Note the size, fixtures and location for the restrooms vary with the cemetery project and with the number of visitors and daily burial rate. A typical restroom layout should contain a minimum of two fixtures but no more than three.

Cost

The cost of a freestanding restroom building is approximately \$250 per square foot. If the restrooms are located in the Public Information Center, the total cost with restrooms is \$300 per square foot. If the Public Information Center is constructed adjacent to the Administration Building, the cost is approximately \$150 per square foot.

MAINTENANCE BUILDING AND COLD STORAGE BUILDING

Function

The Maintenance Building houses all the facilities serving the interment operations and grounds maintenance. In the building, cemetery employees perform workshop repairs, park cemetery equipment, maintain vehicles and equipment and store spare parts and tools. The Maintenance Building complex also contains a service yard. Additionally, the building also houses employees' facilities such as lockers, showers, a lunch and multi-purpose room and a foreman's office if needed.

Components

The components of a Maintenance Building include;

- Workshop (with Parts and Tools Storage)

- Maintenance Bays for Vehicles and Equipment
- Storage bays for top soil, sand and crushed rock
- Vehicle Wash Bay and Wash Equipment Room
- Equipment (Compressor, Lifts, Tire Changer, Etc.)
- Storage Space / Mezzanine
- Foreman's Office
- Lunchroom with Kitchen Unit and Vending Area
- Janitor Closet
- Locker Room (with Toilet and Shower Facilities)
- Boot Vestibule with Storage
- Mechanical Room
- **Storage bays for top soil, sand and crushed rock**

Design Requirements

Locate the maintenance areas so that they are not readily visible to the public. Site the complex optimally for functional operations. In some instances, the Maintenance Building is located with the Administration Building and the Public Information Center (PIC). It should not, however, be visible from the interment areas. In this configuration, the Maintenance Building is normally located behind the Administration part of the complex. Also, utilize terrain and landscape in the design to lessen the visual impact of this facility on the cemetery.

The Maintenance Building is required to be constructed of durable materials and a garage interior requiring little or no maintenance. This building is a support facility for the cemetery facility's vehicle and equipment services.

Materials recommended include metal, prefabricated or pre-engineered metal building, cut block/stone (granite face), brick (oversize), or a combination of masonry and metal depending on the project location and budget. Knee walls should be utilized to minimize damage to interior and exterior walls when moving equipment. The design must be similar in form, elevations and overall building massing (including roof, form and detail) to the Administration Building and Public Information Center. If the state considers contracting out maintenance operations, the Maintenance Building may be substantially reduced in size.

Provide employee pedestrian access from the employee parking lot to the Service Yard.

Cost

The cost to build a Maintenance Building is approximately \$125 per square foot, unheated, and \$150 per square foot, heated.

SERVICE YARD

Function

The function of a Service Yard is to accommodate vehicles and equipment moving in and out of the maintenance facility and storage buildings. In addition, it may provide for storage of supplies, grave liners and headstones that are kept outdoors. Aboveground fuel tanks and pumps are also located in the service yard for refueling cemetery vehicles and equipment. The size of the yard must accommodate tractor-trailer trucks for unloading items such as equipment and headstones. In the Service Yard, cemetery vehicles and equipment are loaded, unloaded, washed, fueled and parked.

Components

The Service Yard use is based on outdoor service, maintenance and delivery functions. The size of the yard varies with the project and cemetery size. Vehicles and daily vehicular movement and activity are the ongoing functions in a Service Yard including (1) entering, backing up and departing for 16- and 18-wheeler trucks delivering headstones and (2) daily yard use by employees driving pickup trucks, backhoes, tractors and lawn mowers.

Design Requirements

The Maintenance Yard is required to have a separate secured vehicular access from the public road.

A typical Service Yard is approximately 150 square feet (depending on the size of the cemetery project) with an asphalt-paved surface, concrete aprons at the overhead doors and bollards protecting the door openings at the Maintenance and Service garage buildings.

Both the buildings and the Service Yard are required to be physically secured. The entire complex is required to have fire detection and security systems.

The size and external storage requirements for the Service Yard will be considered on an individual project basis. An outside vehicle wash area for pressure washing with an oil/water separator may be recommended in mild climates for year-round use.

The Service Yard and adjacent buildings should be screened from public view from access highways and roads. The Service Yard is fenced for security purposes with a lockable sliding or swinging gate and a wood, brick, block or chain link steel fence.

NCA uses aboveground fuel storage tanks and dispensing system. A divided tank is required, one tank for unleaded and one for diesel fuel with mounting pad and electrical service for pumps.

Provide floor drains and hose bibs at the wash rack, as appropriate, so that dirt and mud can be washed off vehicles and equipment after use. State Cemetery Grants Service prefers to use self-contained wash water recycling systems.

Pesticide storage cabinets are labeled and placed within Maintenance Storage areas in cemetery maintenance buildings. A prefabricated building is highly recommended for large facilities for this requirement. Pesticide mixing and loading are done here by the Maintenance Staff.

Special requirements:

- Designed to meet current EPA regulations for chemical storage and containment
- Designed to meet local building codes and pesticide storage regulations
- Fireproof construction
- Positive ventilation with explosion proof motor(s)
- Chemical-resistant, coated surfaces; sealed concrete floors
- Explosion and dustproof lighting
- Metal storage shelving
- Secondary containment area to prevent spill leakage
- Mixing and loading area adjacent to storage, under roof with containment area
- Eyewash

Cost

Aboveground fuel tank - \$24,000 for a 1,000-gallon tank delivered to site.

IRRIGATION SYSTEM

Function

Irrigation is required to keep the landscape and turf healthy and appropriate for a veterans' shrine. Although rainfall may be adequate to sustain indigenous plants in a give year, the rainfall may cycle through extended droughts putting the plants under stressful conditions requiring irrigation. In the process of developing an irrigation solution, states should look to local universities for turf cultivars that are drought tolerant.

Components

Evaluate the project site location to determine whether an irrigation system is feasible and should be installed at the cemetery. The report should include a cost analysis of irrigation versus non-irrigation, on-site and off-site water supply sources including quality of available water, annual rainfall and the quantity of water needed to sustain healthy plants.

Irrigation systems consist of main and lateral lines, controls, valves and sensors and sprinkler heads. Wells and pump houses are also required. Some cemeteries have man-made structures such as tanks or ponds for water storage.

Design Requirements

If an irrigation system is recommended, design and specify an efficient irrigation system that is easily operated and maintained by cemetery staff. Irrigation lateral lines in burial sections should run parallel with the length of the gravesites. Xeric or low volume irrigation systems are recommended to minimize water usage. Please note that water supply approval varies state by state, based on conservation rules. This necessitates early water source planning.

In cemeteries using pre-placed crypts, considerations should be given to irrigation installation at the time of crypt placement.

Cost

Irrigation installation costs \$28,000 for ten acres for an automated system.

UTILITY DISTRIBUTION SYSTEM

Function

The function of the Utility Distribution System at a State Cemetery is to route the main distribution systems for utilities. **As part of the design elements consideration should be given towards “green energy” sources (wind, solar, and thermo).**

Components

Utility Distribution Systems include electric, gas, water, sewer and telephone lines. Different parts of the cemetery will require different utilities. The Administration Building, for example, requires all utilities. Committal Shelters require only electricity and water. Burial Sections will require water for flower vases and irrigation. **Security is an issue and should include but not be limited to alarms, locks on cold storage doors and cameras connected to local law enforcement.**

In many cemetery site layouts, the loop road incorporates most utilities. Utilities are brought into the cemetery based on the most direct or best utility access. The grant program does not pay for off-site utility lines. Since utility locations will vary, utility development costs (i. e. bringing utilities to the cemetery project property line) will vary with each project. Local utility companies must be contacted and routing costs estimated to obtain utilities at a given cemetery project.

Design Requirements

Route the main distribution systems for utilities immediately adjacent to roadways within 10 feet of the curb or pavement edge. Route any utility lines through interment areas between interment sections.

Install all utility lines, including electric power and communication lines underground. Exceptions may be made depending upon excessive cost or remoteness of a source from developed areas of the cemetery.

Eliminating power poles and overhead distribution lines will reduce maintenance and repair costs by reducing exposure or vulnerability to damage while reducing clutter in the visual environment.

Cost

The State Cemetery Grand Program does not fund offsite utility development. Utility costs are approximately six percent (6%) of project cost. Cost varies based on anticipated utility requirements.

CARILLON TOWER

Function

The function of a Carillon Tower is to provide bell tower music for the cemetery. Speakers may be included in the Carillon Tower to provide prerecorded music from the Committal Service Shelter location before, during or after interment services.

Components

The Carillon Tower should be constructed of materials that blend in with other cemetery components. A sound system is incorporated into the tower to provide bell tower sounds.

Design Requirements

A Carillon Tower is approximately 45 feet high with a **7' x 8' base**. The Master Plan may provide a location and electrical conduit rough-in connecting the Carillon Tower to built-in speakers at the Committal Service Shelter Storage Closet which will play taps after the Committal Service.

Cost

A Carillon Tower is optional at a state veterans cemetery. Again, this is typically a donated item at a state cemetery.

Taking into account all of the cemetery components recommended by the USDVA, capital budget estimates to meet grant standards for federal cemetery facilities are presented in the following table.

MODEL CAPITAL BUDGET TO MEET GRANT STANDARDS

Item No.	Description	Units	Estimated Quantity	Estimated Unit Price	Amount
1	Entrance Walls, Signage, Lighting, Landscaping Ornamental Fence	LS	1	\$ 80,000	\$ 100,000
		LF	400	\$ 75	\$ 30,000
2	Roads and Parking	LF	5000	\$ 100	\$ 500,000
3	Avenue of Flags (Grant funds flagpole sleeves)	EA	20	\$ 50	\$ 1,000
4	Assembly Area (Added Cost to Committal Shelter)	EA	1	\$ 75,000	\$ 75,000
5	Burial Areas Traditional Burial Pre-placed Lawn Crypts (Delivered/Installed)	AC	10	\$135,000	\$1,350,000
		Units	3,000	\$ 700	\$2,100,000
6	Committal Service Shelter	SF	1000	\$ 350	\$ 350,000
7	Columbarium	EA	1000	\$ 400	\$ 400,000
8	Memorial Walk	LF	600	\$ 40	\$ 24,000
9	Administration Building	SF	2450	\$ 250	\$ 612,500
10	Public Information Center (at Administration Bldg) Kiosk	SF		\$ 300	\$ 0
		Unit	1	\$ 27,000	\$ 27,000
11	Restrooms (At Administration Bldg)	SY	400	\$ 300	\$ 120,000
12	Maintenance Building	SF	2300	\$ 150	\$ 345,000
13	Service Yard 8' Vinyl Clad Chain Link Fencing Fuel Tank and Pumps Equipment Wash Pad & Water Quality Treatment Concrete Pavement Material Storage Bins w/Canopy	LF	6000	\$ 25	\$ 150,000
		EA	1	\$ 24,000	\$ 24,000
		EA	1	\$ 40,000	\$ 40,000
		SF	16,000	\$ 11	\$ 176,000
		EA	2	\$ 16,000	\$ 32,000
14	Irrigation and Landscaping	AC	10	\$ 28,000	\$ 280,000
15	Utility Distribution (Cost included in Item #5)	LS			\$ 250,000
16	Carillon Tower (Grant Funds only support pad constr)	LS	1	\$ 5,000	\$ 5,000
17	Furnishings and Equipment (ESTABLISHMENT GRANTS)	LS	1	\$ 375,000	\$ 375,000
SUBTOTAL:					\$7,346,000.00

PLUS CONTRACT ADMIN/INSPECTION FEES:	\$135,787.50
PLUS 12% DESIGN FEE:	\$881,520.00
CONTINGENCY (5%)	\$367,300.00
TOTAL ESTIMATED GRANT COST:	\$8,731,107.50