Buildings and Infrastructure

As part of the capital budget process, each agency must submit a list of all buildings and infrastructure. This inventory list is then applied to industry formulas that calculate how much should be spent to maintain the state's building and infrastructure assets. The remainder of this section provides information on the building repair formula and the infrastructure repair formula.

These formulas should be used as a guide by state agencies in their budget requests and will be used by the Office of Management and Budget as it formulates the executive recommendation.

In January, the current inventory of buildings and infrastructure is sent to each agency along with instructions on updating the inventory lists.

Note: The formulas outlined below are based on annual needs and must be doubled to meet North Dakota's biennial budget period.

Extraordinary Repairs - Buildings
Formulas are generally used to calculate the cost of adequately maintaining buildings. The formula selected for use in North Dakota is generally applicable, simple to apply, easy to understand, self-adjusting, and reliable.

The formula is based on the following premises:

1. The formula reflects current building valuation.
2. The formula recognizes that as a general policy, fewer resources should be directed to building renewal than the cost of building replacement.
3. The formula recognizes that older buildings require proportionally more repair funds than do newer buildings.
4. The formula is applied to an entire facility system in an actuarial manner, generating a pool of funds to be used on extraordinary repairs.

Building Formula
The annual extraordinary repairs formula for buildings is as follows (Building Replacement Value = BRV):

Buildings 5 years old or older at mid-year of biennium
(BRV) x 2% = Formula Amount

Buildings less than 5 years old = 0

Building Replacement Value
The North Dakota Century Code requires that state buildings built after 1939 are insured at replacement value. Agencies should utilize the building's insured value as the building value factor (BRV). All state-owned buildings are insured through the Fire and Tornado Fund.

Any difference between the insured value and the building value used in the formula must be documented by the agency and approved in writing by the Office of Management and Budget prior to final submission of the capital budget inventory.

Building Age Factor
The building age is determined by subtracting the year a building was built or extensively renovated from 2018, the mid-year in the 2017-19 biennium. If a building was built or renovated in 1986, the building age factor is 32 (2018 minus 1986).

Extraordinary Repairs - Infrastructure
Infrastructure is defined as a structure outside of and apart from a building, but necessary to the functioning of the building. Examples of infrastructure include water and sewer lines, electrical lines, parking lots, sidewalks and roads.

Recognizing that formulas based on building value would not provide adequate funding for infrastructure needs, the following formula is used in calculating costs of extraordinary repairs to infrastructure.

Infrastructure Formula
The annual extraordinary repairs formula for infrastructure is as follows:

P x R = *Formula Amount.*
P = Infrastructure renewal percentage.
R = Infrastructure replacement value (per unit value times the number of units).

Infrastructure Renewal Percentage
The infrastructure renewal percentage is the straight-line depreciation over the normal life of the item. For example, the infrastructure renewal percentage for an item with a 20-year normal life is five percent.

Infrastructure Replacement Value
Infrastructure will be valued at replacement cost. Expertise from the Facility Management Division of OMB was used to determine unit replacement costs and parameters applicable to the valuation of the following types of infrastructure:

Code	Description	Rate	Unit	Life
Parking Lot				
1001	Parking Lot: 3" Asphalt Concrete	2.44	sq ft	20
1002	Parking Lot: 4" Asphalt Concrete	3.89	sq ft	25
1003	Parking Lot: 5" Asphalt Concrete	4.67	sq ft	25
1004	Parking Lot: 6" Asphalt Concrete	5.75	sq ft	30
1005	Parking Lot: 8" Asphalt Concrete	5.94	sq ft	35
1006	Parking Lot: 10" Asphalt Concrete	6.76	sq ft	35
1008	Parking Lot: 2” Asphalt Concrete	2.15	sq ft	20
1009	Parking Lot: 4" Reinforced Concrete	4.88	sq ft	35
1010	Parking Lot: 6" Concrete	6.24	sq ft	30
1011	Parking Lot: 7" Concrete	6.64	sq ft	30
1012	Parking Lot: 8" Concrete	7.03	sq ft	35
1013	Parking Lot: 5” Concrete	5.25	sq ft	35
1015	Parking Lot: 6" Reinforced Concrete	3.17	sq ft	35
1020	Parking Lot: Curb and Gutter	21.28	lf	30
1030	Parking Lot: Catch Basins - Casting Only	1,153.60	ea	30
1031	Parking Lot: Catch Basins - With Manhole	8,545.60	ea	30
1040	Parking Lot: Gravel 6"	0.71	sq ft	20
1041	Parking Lot: Gravel 8"	1.06	sq ft	20
1042	Parking Lot: Gravel 12"	1.42	sq ft	20

Code	Description	Rate	Unit	Life
Storm Sewer				
1100	Storm Sewer: 4" Poly Vinyl Chloride	96.00	ft	60
1101	Storm Sewer: 6" Poly Vinyl Chloride	106.47	ft	60
1103	Storm Sewer: 8" Poly Vinyl Chloride	124.02	ft	60
1104	Storm Sewer: 10" Poly Vinyl Chloride	130.00	ft	60
1105	Storm Sewer: 12" Poly Vinyl Chloride	136.00	ft	60
1106	Storm Sewer: 15" Poly Vinyl Chloride	142.00	ft	60
1107	Storm Sewer: 21" Poly Vinyl Chloride	160.00	ft	60
1108	Storm Sewer: 24" Poly Vinyl Chloride	164.00	ft	60
1109	Storm Sewer: 30" Poly Vinyl Chloride	174.00	ft	60
1110	Storm Sewer: 12" Reinforced Concrete Pipe	138.06	ft	60
1111	Storm Sewer: 18" Reinforced Concrete Pipe	179.01	ft	60
1112	Storm Sewer: 24" Reinforced Concrete Pipe	293.67	ft	60
1113	Storm Sewer: 36" Reinforced Concrete Pipe	237.51	ft	60
1114	Storm Sewer: 48" Reinforced Concrete Pipe	322.92	ft	60
1115	Storm Sewer: 60" Reinforced Concrete Pipe	379.08	ft	60
1116	Storm Sewer: 15" Reinforced Concrete Pipe	156.78	ft	60
1117	Storm Sewer: 21" Reinforced Concrete Pipe	219.96	ft	60
1119	Storm Sewer: 30" Reinforced Concrete Pipe (uncased bore)	417.69	ft	60
1120	Storm Sewer: (metal culvert)	16.27	ft	60
1125	Storm Sewer: 6" Area Drain	11.96	ft	60
1130	Storm Sewer: 27" Poly Vinyl Chloride	170.00	ft	60
1133	Storm Sewer: 18" Poly Vinyl Chloride	50.03	ft	60
1135	Storm Sewer: Water Quality Structure	158,000.00	ea	60
1140	Storm Sewer: Water Quality Structure 900 Gallon	19,408.00	ea	60
Water Main				
1201	Water Main: 2" Copper	35.60	ft	50
1202	Water Main: 3/4" Poly Vinyl Chloride	85.56	ft	35
1203	Water Main: 1" Poly Vinyl Chloride	85.56	ft	35
1204	Water Main: 1-1/4" - 1-1/2" Poly Vinyl Chloride	85.56	ft	35
1205	Water Main: 2" Poly Vinyl Chloride	85.56	ft	35
1206	Water Main: 3" Poly Vinyl Chloride	78.12	ft	35
1210	Water Main: 4" Poly Vinyl Chloride	78.12	ft	35
1211	Water Main: 6" Poly Vinyl Chloride	101.87	ft	35
1212	Water Main: 8" Poly Vinyl Chloride	104.82	ft	35
1213	Water Main: 10" Poly Vinyl Chloride	106.64	ft	35
1214	Water Main: 12" Poly Vinyl Chloride	119.04	ft	35
1215	Water Main: 16" Poly Vinyl Chloride	148.80	ft	35
1220	Water Main: Underground Chilled - 6"	135.16	lf	35
1221	Water Main: Underground Chilled - 8"	148.80	lf	35
1229	Water Main: 3/4" HDPE	4.74	lf	35
1230	Water Main: 1" HDPE	6.58	ft	35
1231	Water Main: 2" HDPE	10.33	ft	35
1232	Water Main: 3" HDPE	12.11	ft	35
1234	Water Main: 6" HDPE	13.02	ft	35
1240	Water Main: 14" HDPE	31.00	ft	35
Sanitary Sewer				
1289	Sanitary Sewer 2" Poly Vinyl Chloride	130.00	lf	40
1290	Sanitary Sewer: 4" Poly Vinyl Chloride	153.27	ft	40
1300	Sanitary Sewer: 5" Poly Vinyl Chloride	153.27	ft	40
1301	Sanitary Sewer: 6" Poly Vinyl Chloride	153.27	ft	40
1302	Sanitary Sewer: 8" Poly Vinyl Chloride	170.82	ft	40
1303	Sanitary Sewer: 10" Poly Vinyl Chloride	191.45	ft	40
1304	Sanitary Sewer: 12" Poly Vinyl Chloride	198.90	ft	40
1305	Sanitary Sewer: 14" Poly Vinyl Chloride	228.15	ft	40
1306	Sanitary Sewer: 16" Poly Vinyl Chloride	251.55	ft	40
1307	Sanitary Sewer: 18" Poly Vinyl Chloride	266.76	ft	40
1308	Sanitary Sewer: 15" Poly Vinyl Chloride	237.51	ft	40
1311	Sanitary Sewer: 10" HDPE	263.25	ft	40
1330	Towner Sewer Improvement	13,138.00	ea	40
1331	Velva Sewer Improvement	13,138.00	ea	40
1332	Underwood Sewer Improvement	52,046.00	ea	40

Code	Description	Rate	Unit	Life
Electrical				
1401	Electrical: Conduit	110.50	ft	25
1402	Electrical: Direct Buried	92.51	ft	20
1405	Electrical: Overhead	16.09	ft	25
1410	High Voltage Copper Wire 1/0 (19XFS AL 15KV 0.220" EPR)	94.12	ln ft	30
Steamline				
1501	Steamline; Direct Burial: 2"	239.68	ft	25
1502	Steamline; Direct Burial: 3"	256.68	ft	25
1503	Steamline; Direct Burial: 4"	292.00	ft	25
1504	Steamline; Direct Burial: 6"	394.02	ft	25
1505	Steamline; Direct Burial: 8"	463.34	ft	25
1506	Steamline; Direct Burial: 10"	531.36	ft	25
1510	Steamline: Direct Burial: 5"	307.00	ft	25
1520	Steamline; Direct Burial 1-1/2"	227.90	ft	25
1522	Steamline; Direct Burial 2-1/2"	327.60	ft	25
1524	Steamline: Direct Burial 12"	601.20	ft	25
1526	Steamline: Direct Burial 14"	668.70	ft	25
1528	Steamline: Direct Burial 16"	612.00	ft	25
1529	Steamline: Direct Burial 18"	777.60	ft	25
Condensate				
1600	Condensate, Direct Burial: 1"	197.60	ft	10
1601	Condensate, Direct Burial: 2" and 2-1/2"	208.00	ft	10
1602	Condensate, Direct Burial: 3"	227.50	ft	10
1603	Condensate, Direct Burial: 6" (includes vault)	373.10	ft	10
1604	Condensate, Direct Burial: 4"	265.20	ft	10
1611	Condensate, Direct Burial: 8"	439.40	ft	10
Utility Tunnels				
1701	Utility Tunnels, W/O Steamlines: 4' X 4'	333.75	ft	60
1702	Utility Tunnels, W/O Steamlines: 4' X 6'	416.25	ft	60
1703	Utility Tunnels, W/O Steamlines: 5' X 7'	541.25	ft	60
1801	Utility Tunnels, with Steam & Condensate Lines: 4' X 4'	712.50	ft	40
1802	Utility Tunnels, with Steam & Condensate Lines: 4' X 6'	793.75	ft	40
1803	Utility Tunnels, with Steam & Condensate Lines: 5' X 7'	920.00	ft	40
1805	Utility Tunnels, with Steam & Condensate Lines: 7' X 7'	1,226.25	fr	40
1806	Utility Tunnels, with Steam & Condensate Lines: 8' X 7'	1,260.00	ft	40
Gas Main				
1901	Gas Mains: 2" HP Poly Vinyl Chloride	42.38	ft	35
1902	Gas Mains: 3" HP Poly Vinyl Chloride	45.60	ft	35
1910	Gas Mains: 4" Steel	52.80	ft	35
Telecom				
2001	Telcom: Main Conduit Ductbank - Fiber Optic - 96&144 Strand	41.45	ft	25
2002	Telcom: Main Conduit Ductbank - Copper, 1800 pair	83.44	ft	25
2003	Telcom: Conduit Ductbank, 12 strand MM fiber, 12 strand SM fiber, 200 pro cop	36.93	ft	25
2004	Telcom: Conduit System	59.59	ft	25
2005	Telcom: 12 Strand SM Fiber	23.85	ft	25
2006	Telcom: 2" Conduit - 12 Strand SM Fiber	13.39	ft	25
2007	Telcom: 4" Conduit - 12 Strand SM Fiber	13.64	lf	25
2008	Telcom: 4" Conduit - 24 Strand SM Fiber	19.76	lf	25
2009	Telcom: 4" Conduit w/3 3 cell fabric	27.00	lf	25
2010	Telcom: Conduit Ductbank: Trunk Line - Copper, 600 pair & fiber	98.43	ft	25
2011	Telcom: Conduit Ductbank: Trunk Line - Copper, 300 pair & fiber	92.66	ft	25
2012	Telcom: 25 Pair Copper Cable	11.25	lf	25
2013	Telcom: 50 Pair Copper Cable	19.08	lf	25
2014	Telcom: 200 Pair Copper Cable	34.06	lf	25
2015	Telcom: 2" Conduit w/1 3 cell fabric	22.00	lf	25
2020	Telcom: Conduit Ductbank: Trunk Line - Copper, 12-100 pair	28.28	ft	25
2030	Telcom: Aerial Cable Plant - Copper	6.81	ft	25
2040	Telcom: Broadband Coax Cable - .825 Coax (Back bone)	8.30	ft	25
2041	Telcom: Broadband Coax Cable - .625 Coax (Back bone to bldg)	6.49	ft	25
2045	Fibercable - Singlemode	5.73	ft	25
2050	System 7	13.63	ft	25

Code	Description	Rate	Unit	Life
2055	Deltanet	19.29	ft	25
2060	Telecom: 1-1/4" Conduit - 48 Strand SM Fiber	13.00	ft	25
2080	Emergency Code Blue Phones	2,500.00	ea	20
Sidewalk				
2070	Sidewalk: 3" Asphalt	4.03	sq ft	20
2100	Sidewalk: 4" Reinforced Concrete - 6' wide	14.17	sq ft	20
2101	Sidewalk: 4" Reinforced Concrete	3.74	sq ft	25
2102	Sidewalk: 5" Reinforced Concrete	3.76	sq ft	30
2103	Sidewalk: 6" Reinforced Concrete	6.66	sq ft	30
2110	Sidewalk: Patio Brick	7.09	sq ft	25
2111	Sidewalk: Patio Brick with 3" Concrete Base	14.30	sq ft	30
2113	Sidewalk: Stone Walkway	7.80	sq ft	40
2117	Sidewalk: 8” Reinforced Concrete	7.53	sq ft	30
2125	Boardwalk	26.22	ft	5
2130	Trail: 4' Wide	5.84	lf	25
2132	Trail: 6’ Wide	5.25	lf	25
2140	Trail: 10' Wide	7.25	lf	25
2141	Trail: 10' Wide - Asphalt	34.01	lf	30
Lighting				
2201	Lighting: 30' Pole	5,831.10	pole	35
2202	Lighting: 75' Pole	11,451.00	pole	35
2203	Lighting: 100' Pole	37,180.00	pole	20
2204	Lighting: Walkway 15'	2,530.00	ea	35
2206	Lighting: 20' Pole	3,597.00	ea	35
2208	Lighting: 25’ Pole	46.75	ea	35
2210	Lighting: 12' Pole	1,650.00	ea	35
2211	Lighting: On Building	959.20	ea	35
2213	Lighting: Hi-Mast 40'	23,441.00	ea	35
Signage				
2250	Sign: Electronic	22,100.00	ea	20
2251	Sign: Non-illuminated	24,725.00	ea	50
Razor Wire				
2301	Razor Wire: 32"	14.25	ft	15
2305	Perimeter Fence Security System	433,930.00	ea	20
Streets & Roads				
2350	Streets & Roads: 16' Wide (no curbs) & 6" Gravel Base - Auto 6" A.C.	150.00	ft	20
2355	Streets & Roads: 20' Wide (no curbs) & 6" Gravel Base - Auto 6" A.C.	168.75	ft	20
2357	Streets & Roads: 22' Wide (no curbs) & 6" Gravel Base - Auto 6" A.C.	1,780.00	ft	20
2360	Streets & Roads: 26' Wide (no curbs) & 6" Gravel Base - Auto 6" A.C.	198.13	ft	20
2365	Streets & Roads: 16' Wide (curb one-side) & 6" Gravel Base - Auto 6" A.C.	158.33	ft	20
2370	Streets & Roads: 24' Wide (w/ curbs) & 6" Gravel Base - Auto 6" A.C.	190.00	ft	20
2401	Streets & Roads: 26' Wide (w/ 4 Curbs) & 6" Gravel Base - Auto 8" Concrete	230.00	ft	25
2402	Streets & Roads: 26' Wide (w/ 4 Curbs) & 6" Gravel Base - Truck 12" Concrete	363.75	ft	25
2408	Streets & Roads: 30' wide (no curbs)+6" Gravel Base - Auto 8" Concrete	212.50	ft	25
2410	Streets & Roads: 30' Wide (w/ 2 Curbs) & 6" Gravel Base - Auto 8" Concrete	250.00	ft	25
2411	Streets & Roads: 30' Wide (w/ 2 Curbs) & 6" Gravel Base - Truck 12" Concrete	401.25	ft	25
2420	Streets & Roads: 40' Wide (w/ 4 Curbs) & 6" Gravel Base - Auto 8" Concrete	338.75	ft	25
2421	Streets & Roads: 40' Wide (w/ 4 Curbs) & 6" Gravel Base - Truck 12" Concrete	543.75	ft	25
2430	Streets & Roads: 40' Wide (w/ 2 Curbs) & 6" Gravel Base - Auto 8" Concrete	326.25	ft	25
2431	Streets & Roads: 40' Wide (w/ 2 Curbs) & 6" Gravel Base - Truck 12" Concrete	530.00	ft	25
2432	Streets & Roads: 58' Wide (w/2 Curbs) & 6" Gravel Base-Auto 8" Concrete	317.50	ft	25
2440	Streets & Roads: 2 Lane Gravel	44.90	ft	25
2441	Streets & Roads: 1 Lane Gravel	22.45	ft	25
2450	Railroad Tracks	43.75	ft	50
Fencing				
2501	Fencing: Barbwire, 3 Strand	5.45	ft	10
2505	Fencing: 3' Chain Link	9.54	ft	20
2506	Fencing: 4' Chain Link	10.50	ft	20
2508	Fencing: 9' Chain Link	25.00	ft	20
2510	Fencing: 6' Chain Link	13.75	ft	20
2511	Fencing: 8' Chain Link	32.50	ft	20

Code	Description	Rate	Unit	Life
2512	Fencing: 16' Chain Link	130.00	ft	20
2513	Fencing: 24' Chain Link	197.50	ft	20
2514	Fencing: 12' Chain Link	76.25	ft	20
2515	Fencing: 20' Chain Link	150.00	ft	20
2516	Fencing: 10' Chain Link	15.00	ft	20
2517	Fencing: 14' Chain Link	35.43	ft	20
2518	Fencing: 10' Chain Link Electrified Security	48.38	ft	30
2519	Fencing: 30' Chain Link	190.00	ft	20
2520	Fencing: 6' Wood	25.21	ft	20
2521	Fencing: 8' Wood	36.38	ft	20
2522	Fencing: 4' Split Rail	15.00	ft	20
2530	Ornamental Rail: 3'-6"	132.50	ft	50
2535	Fencing: 6' Steel	79.38	ft	30
2541	Fencing: 6' PVC	22.25	ft	20
2550	Barrier Posts	41.25	ea	20
2545	Fencing: 4’ Composite Material	22.00	ft	40
2546	Fencing: 5’ Composite Material	25.00	ft	40
4547	Fencing: 6’ Composite Material	28.00	ft	40
Poles				
2590	Flag Pole - 18'	341.25	ea	20
2600	Flag Pole - 30'	613.75	ea	20
Misc.				
2601	Tennis Courts	5.89	sq ft	15
2602	Retaining Wall: 16' High	612.50	ln ft	25
2603	Running Tracks	4.05	sq ft	15
2604	Retaining Wall	163.75	ft	30
2605	Bleachers, 100 Person Capacity	6,503.75	ea	30
2606	100' Communication Tower	47,500.00	ea	25
2610	General Electric 1.6MW Wind Turbine	3,262,824.00	ea	30
2650	Walk Tunnels	613.75	ft	60
2655	Johnstone Skywalk	2,250.00	ft	60
2660	CAS Skywalks	4,051.25	ft	60
Water Wells				
2700	Irrigation Wells	10,146.40	ea	25
2703	Water Wells	10,503.90	ea	25
Irrigation				
2704	Underground Sprinkler Systems	3.30	sq yd	15
2706	Water Wells - 25'	14.39	ft	25
2707	Irrigation Lines (PVC 1")	1.10	ft	25
2708	Irrigation Lines (PVC 4")	3.00	ln ft	25
2709	Irrigation Lines (PVC 2")	124.00	ln ft	25
Septic Systems				
2710	Septic Systems	2,249.50	ea	25
2715	Septic Tank (1,000 gal)	839.30	gal	25
2716	Septic Tank: (2,500 gal)	3,836.80	gal	25
Sewer				
2720	Sewer Lift Station - Small	5,995.00	ea	50
2721	Sewer Lift Station - Medium	23,980.00	ea	50
2722	Sewer Lift Station - Large	35,970.00	ea	50
Lagoon				
2730	Lagoon - 2 Cell	215,600.00	ea	50
2731	Lagoon - 3 Cell	269,500.00	ea	50
2750	Landscape (block structure and block edging)	4,087.50	ea	50
2755	Landscape Pond/Pump	23.50	sqfs	50
Hydrants				
2800	Hydrants - Fire	4,087.50	ea	40
2803	Hydrants - Metal (10"x39")	272.50	ea	40
Ball				
2810	Basketball Goals	613.75	ea	10
2815	Softball Backstop	2,300.00	ea	30

Code	Description	Rate	Unit	Life
Shelters				
2820	Picnic Shelter - Small	4,087.50	ea	25
2825	Nursery Shade Shelter	50,953.75	ea	30
2826	Stone Shelter	27,250.00	ea	60
Tanks				
2849	Tanks: Above Ground (5,200 gal)	27,370.00	ea	30
2850	Tanks: Above Ground (300 gal)	1,128.15	ea	30
2851	Tanks: Above Ground (10,000 gal)	41,630.00	ea	30
2852	Tanks: Above Ground (500 gal)	4,826.55	ea	30
2853	Tanks: Above Ground (21,000 gal)	68,425.00	ea	30
2854	Tanks: Above Ground (1,000 gal)	7,647.50	ea	30
2855	Tanks: Underground (2,500 gal)	3,635.15	ea	30
2856	Tanks: Propane (1,000 gal)	2,005.60	ea	30
2857	Tanks: Underground (10,000 gal)	12,535.00	ea	30
2858	Tanks: (6,350 gal)	9,464.50	ea	30
2859	Tanks: (19,100 gal)	25,070.00	ea	30
2860	Tanks: Propane (500 gal)	1,880.25	ea	30
2861	Tanks: Propane (250 gal)	940.70	ea	30
2862	Tanks: Propane (80 gal)	301.30	ea	30
Boating				
2900	Riprap Marina/Boat Ramp	30,084.00	ea	50
2901	Breakwater	12,535.00	ea	50
2903	Dike System - Walhalla	1,869,580.00	ea	50
2905	Boat Ramp: 6” Reinforced Concrete	12.44	sq ft	50
2910	Boat Ramp: Cement	2,760.00	ea	25
2920	Docks: Steel	53.31	sq ft	30
2922	Docks: Floating	31.44	sq ft	20
2924	Docks: Marina	51.31	sq ft	50
Radar				
2950	Radar Pedestals	30,130.00	ea	25
2955	Radar Domes: 12" Fiberglass	12,535.00	ea	25
Bridges				
3000	Bridges: Wooden Foot	3,133.75	ea	25
3001	Bridges: Walking	3,133.75	ea	25
3005	Bridges: wood/metal	25,070.00	ea	25
3015	Bridges: Vehicle	526,700.00	ea	25
Manholes				
3200	Manholes	1,514.40	ea	60
Utility Vault				
3220	Utility Vault: 10' X 12' X 7'	8,190.00	ea	50
Transformers				
3900	Transformers - 3 KVA	1,158.00	ea	30
4000	Transformers - 10 KVA	2,460.00	ea	30
4001	Transformers - 15 KVA	2,910.00	ea	30
4003	Transformers - 25 KVA	3,750.00	ea	30
4004	Transformers - 45 KVA	5,206.80	ea	30
4006	Transformers - 50 KVA	5,610.00	ea	30
4007	Transformers - 75 KVA	6,930.00	ea	30
4008	Transformers - 112 KVA	6,330.00	ea	30
4009	Transformers - 150 KVA	7,710.00	ea	30
4011	Transformers - 225 KVA	10,350.00	ea	30
4012	Transformers - 300 KVA	12,840.00	ea	30
4020	Transformers - 500 KVA	19,560.00	ea	30
4022	Transformers - 750 KVA	32,400.00	ea	30
4025	Transformers - 1000 KVA	48,594.00	ea	30
4030	Transformers - 2500 KVA	154,461.60	ea	30
4100	Transformers, Wet - 3.5 KVA	1,596.00	ea	30
4105	Transformers, Wet - 75 KVA	7,800.00	ea	30
4110	Transformers, Wet - 150 KVA	15,960.00	ea	30
4120	Transformers, Wet - 300 KVA	20,280.00	ea	30

Code	Description	Rate	Unit	Life
4130	Transformers, Wet - 750 KVA	33,840.00	ea	30
4150	Transformers, Wet - 1500 KVA	49,080.00	ea	30
4200	5KV Switch Gear w/Transfer Switch	1,505,939.00	ea	30
Security				
5000	Minot District Door Access System	19,208.45	ea	30
5001	Apple Creek RA West-Security	10,777.80	ea	30
5002	Apple Creek RA East-Security	11,272.30	ea	30
5003	Beach Visitor Center-Security	18,446.00	ea	30
5004	Oriska Rest Area Security	11,235.00	ea	30
5005	Jamestown Rest Area East Security	7,850.00	ea	30
5006	Jamestown Rest Area West Security	7,850.00	ea	30
Water Supply Systems				
5040	NAWS SCADA Submaster Equipment and Instrumentation	20,190.00	ea	20
5042	NAWS Microwave Backhaul System Equipment and Instrumentation	12,341.00	ea	20
5044	NAWS Microwave Backhaul System Towers	54,000.00	ea	25
Geothermal Wells				
6050	Geothermal Well: 400' to 425'	17,265.00	ea	30
Emergency Generators				
7010	Emergency Generator under 100KW	60,000.00	ea	30
7012	Emergency Generator 100-120KW	95,000.00	ea	30
7014	Emergency Generator 250-300KW	110,000.00	ea	30
7020	Emergency Generator 350-400KW	150,000.00	ea	30
7030	Emergency Generator 600KW	210,000.00	ea	30
7050	Emergency Generator 1400-1500KW	650,000.00	ea	30

The infrastructure cost list represents an effort to accurately assign replacement costs to infrastructure items throughout the state. These costs were arrived at using recent bid tabulations, information from several city engineers, estimates from consulting engineers, and costs from various state agencies. This list is not all-inclusive, but includes the majority of items that will be found on state properties.

The cost list is meant to assign a replacement value to infrastructure, and will be used for formula budgeting purposes. Actual costs of a replacement project will differ for each case; these numbers are for formula budgeting purposes only. The costs do not take into account variations in building code requirements. The following paragraphs describe each category, and provide information on how the numbers should be applied.

Parking Lots: Parking lot value is calculated on a per square foot basis, applying the appropriate unit cost for the material used. Catch basins and curb and gutter are separated out, since many lots have islands or other structures that need to be accounted for. The unit costs include site preparation on virgin soil, and do not take into account the removal or relocation of utilities, lights, or existing concrete and asphalt.

Storm Sewer: Storm sewer is calculated by the lineal foot. Catch basins and access holes are included in the per foot cost. Standard sizes are used on this list, as opposed to listing every possible size. For replacement cost purposes, if the size currently used doesn't appear on the list, use the next larger standard size. This was done to keep the list short, and assumes that a replacement would also increase capacity. Excavation is based on virgin soil, and does not include repairs to streets or relocating utilities.

Water Main and Feed Lines: Water lines are calculated on a per lineal foot basis, from the building foundation to the city connection. If the city owns the line from the main to the curb stop/shut-off, it should not be counted. Again, standard sizes were used; use the next larger size

if currently used lines fall between the standard sizes. It is assumed that most replacement would be done with PVC piping. Excavation is based on virgin soil.

Sanitary Sewer: Sanitary sewers are calculated on a per lineal foot basis, with the access holes being included in the cost. Standard sizes were again used, with the assumption being made that replacement would be done with PVC. Excavation is based on virgin soil. Major structures such as lift stations and lagoon pump houses should be considered as buildings, with the pumps and controls being fixed equipment. Septic systems are considered to be building plumbing.

Electrical: This category deals with high voltage transmission lines, transformers and high voltage switch gear considered fixed equipment. Lines are calculated on a per lineal foot basis. Typical conduit installation consists of three 4" PVC conduits containing conductors, with the conduits being encased in concrete underground. Direct buried lines are simply trenched-in conductors. Excavation is based on virgin soil. Overhead lines should be considered at the conduit price, as the price is nearly the same, and most overhead replacements are going underground.

Steam Line, Direct Buried: Direct buried lines are encased in a conduit and are calculated on a per lineal foot basis. The cost is based on virgin soil and does not take into account the removal of the existing line. Standard sizes were used as before, and the cost of access structures is included.

Condensate, Direct Buried: Same considerations as steam line.

Utility Tunnels: Tunnels are calculated on a per lineal foot basis, applying the unit cost for the appropriate size of tunnel. Tunnels may or may not contain steam and condensate lines, or other utilities. For steam tunnels, a standard 6" size was used for both lines, with uni-strut pipe support structure being used. The 6" pipe size represents an average, since there are combinations of sizes too numerous to list for this purpose. The access holes, expansion joints, and coffin boxes are included in the per foot cost.

Gas Mains: Gas mains are calculated on a per lineal foot basis, with unit costs for 2" and 3" high-pressure PVC, and 4" steel as the standard sizes. Excavation is based on virgin soil, and meters are not included in the cost.

Telecom: This category covers the lines outside of buildings, up to the building entrance terminal. The lines are categorized by function, with the first category being the backbone. The trunk lines are broken down based on whether they serve academic or housing buildings. Aerial cable and broadband coax are also separated. Any components inside of the buildings are not counted as infrastructure, and should be included in the building valuation. All costs are calculated on a per lineal foot basis, with access structures included in the cost.

Sidewalk: Sidewalks are calculated on a per square foot basis, depending on the concrete thickness. Patio block is categorized separately. Curb cuts for handicapped access are not included in the costs.

Lighting: This section deals with exterior site lighting, which is on a replacement basis to include the light fixtures. The 30' and 75' poles are standard, street or parking lot lighting. "On Building"

refers to light fixtures on building exterior walls or roofs that are used for site or security lighting. Walkway lights are typically 10'-15' tall, and are installed along sidewalks. The Hi-Mast is an omni-directional light pole used to illuminate parking lots or other large areas. All costs are per pole or fixture.

Razor Wire: Standard concertina type security wire, calculated on a per foot basis.

Streets and Roads: Streets and roads are calculated on a per lineal foot basis, using the factor for the appropriate type of road. Standard types were used; use the type that would be used in replacing existing roadways. Costs include removal of old street, but do not include catch basins or access holes. Curb and gutter are also included, as is the re-connection with existing sidewalks (ramped).

Fencing: Calculate by the lineal foot for each type. Includes the fencing and the posts.

Miscellaneous Items:

Tennis courts: calculate by square footage.
Running tracks: calculate by square footage, includes track markings.
Retaining walls: calculate by the lineal foot.
Bleachers, per 100-person section: for fixed athletic seating outdoor,
Communication Tower: calculate per tower.
Walk tunnels, Johnston Skywalk, and CAS Skywalk: calculate by the foot.

Flag Poles, Water Wells, Septic Systems, Lagoons, Hydrants, Basketball/Softball items, Shelters, Tanks, Boating, Radar items, Bridges, and Manholes: Calculate by each.

Irrigation:

Irrigation wells: calculate by each.
Underground sprinklers: calculate by square yardage of grounds served by the system.
Irrigation lines: calculate by lineal foot.