

2008 – 2013
Program Narrative
DENVER MUSEUM OF NATURE & SCIENCE

Background

The Denver Museum of Nature & Science inspires curiosity and excites minds of all ages through scientific discovery and the presentation and preservation of the world's unique treasures. As an educational asset for the citizens of Denver and visitors to the Rocky Mountain West, the Museum preserves, interprets, and exhibits natural history and human cultural collections held in the public trust, as well as conducts educational and research programs in appropriate areas of science. It must place high importance on the physical components that support visitor and collections safety. The Museum strives for reliable operation of a facility that serves 1.5 million visitors, staff and volunteers 364 days of each year providing dynamic products and programs to remain relevant to changing audience needs. Capital projects allow the Museum to maintain a safe, environmentally controlled facility for visitors, collections and staff. Adequate gallery conditions allow attraction of major traveling exhibitions to Denver increasing visitation to the City and the Museum.

The Museum has launched a new strategic plan which was finalized and approved in 2005 that considers exciting new permanent exhibits and improved collections storage areas. As part of the preparation for implementing and prioritizing strategic planning phases, a master plan has been developed. The master plan includes recommendations for infrastructure upgrades in the areas to be renovated and consolidation of collections storage in an area that mitigates the present crowded and inefficient storage of the all Museum collections. The master plan has identified deferred maintenance and prioritized these projects. Projects for future years will be synchronized with the strategic plan timelines developed in the master plan and gated by the availability of resources. The costs for future years will be adjusted as planning becomes more refined.

The Museum is responsible for demonstrating stewardship both for its collections and for the natural systems that form the core of its educational mission. As part of this stewardship, the Museum has committed to eliminating energy use from non-renewable sources. By 2010, one hundred percent of the Museum's electricity will be generated from renewable sources and by 2020 90-95% of the entire Museum's energy consumption will be from renewable sources. The Museum will accomplish this by reducing our consumption through conservation and energy efficiency and by replacing hydrocarbon-sourced energy with solar, wind, fuel cell or other alternative forms of energy. Capital projects will be prioritized to reflect this additional goal of energy efficiency and will be constructed following the guidance of the US Green Building Association's Leadership in Energy and Environmental Design program (LEED®).

Major Initiatives

Ensure the Denver Museum of Nature and Science remains an educational asset providing an environment that preserves, interprets, and presents its natural history and human cultural collections and inspires critical thinking and scientific discovery.

Description: The Museum's request for 2008 City & County CIP funding is for continuation of a project begun in 2007 using the CIP allocation for roof repair. The SE wing was chosen for replacement after a consultant study indicated that the 20 year old roof had deteriorated beyond repair. The total cost of this project is \$250,000 with \$100,000 to come from the 2007 allocation and the remainder from 2008 funding. This roof is immediately over the gallery used for traveling exhibitions and failure of the roof would result in negative impact on the Museums ability to attract exhibitions such as Body Worlds 2, Ben Franklin and Titanic, the Artifact Exhibition.

Repair of the NW wing roof remains a high priority as leaks in this area threaten the education and rare books collections.

Increase energy efficiency of the Denver Museum of Nature and Science. The goal is to replace 100% of DMNS electrical consumption with renewable source by 2010 and 90-95% of our total energy use with renewable-sourced alternatives by 2020.

Description: Replacement of the SE wing roof section allows implementation of the Museum's initiative for energy efficiency. A 100 kW photovoltaic panel array will be installed on this and the adjacent SW wing roof as part of the Museum's plan to increase use of renewable energy. This array will supply 136,000 kWhrs/year or 1-2% of our electrical use.

Repair of the entry doors to the Museum and caulking of exterior pre-cast panels will prevent air leakage and result in savings by lowering the need to condition interior air. Addition of a flat-plate heat exchanger to the cooling tower for the chiller plant condenser water will result in energy savings.

Priority Projects:

- Replace SE wing roof (continuation of 2007 work)
- Bring elevators up to current building code
- Install public address system
- Replace exterior doors, caulk exterior, replace skylights and store front glass to seal exterior skin
- Repair or replace other failing roofs: NE wing, NW wing, Boiler Building
- Replace atrium lighting

Priority One-Time Projects

- Provide sprinkler coverage in non-sprinklered portions of the Museum
- Convert Gamewell to Simplex fire detection system in order to upgrade fire protection
- Renovate temporary exhibits gallery
- Abate hazardous materials
- Upgrade boiler system to prevent freezing conditions
- Upgrade electrical (W side). Circuits in this portion of the facility are not grounded.
- Replace pneumatic with digital controls and re-build air handling units

Recommended Bond Projects from the Infrastructure Priorities Task Force
(costs in thousands)

Deferred Maintenance \$19,261

Description: Critical code and life safety improvements, building skin repairs/replacements, building systems upgrades, interior renovations, and asbestos abatement.

Science Education Center and Collections Storage Facility \$30,000

Description: Construction of a storage facility under the existing parking lots at the DMNS site. Also, using existing space, construct classrooms, labs, teacher education center, relocation of library, and second traveling exhibit hall. DMNS will match the city contribution with \$23,030,000.

2008-2013
Six Year Capital Improvement Plan
DENVER MUSEUM OF NATURE AND SCIENCE

Project Number	Project Name	Scope	2008	2009	2010	2011	2012	2013	Unfunded Projects	Total	Proj Type	CIP Priority	Council Dist	Nghbd
ZF100	ADA Modifications	Construct ramps in SE & NE atria to make areas accessible.							\$92,000	\$92,000	1	9	8	CP
ZF100	Add Sprinklers	Install sprinklers in 150,000 sq ft of building presently without sprinklers.							\$1,347,800	\$1,347,800	2	1	8	CP
ZF100	Asbestos, PCB, lead paint abatement	Abatement in sections of the building exclusive of NW wing							\$1,339,750	\$1,339,750	1a	2	8	CP
ZF100	Bring elevators up to code requirements	Bring three passenger elevators in the NE, SE and E wings up to code through modification of controllers.	\$115,000		\$115,000					\$345,000	1	1	8	CP
ZF100	Caulk Exterior Pre-Cast Panels	Remove and replace caulk in order to seal air leaks between panels.				\$71,300				\$71,300	6	7	8	CP
ZF100	Coiling Tower 1 Heat Exchanger	Increase efficiency of cooling system by adding flat plate heat exchanger to CT-1.							\$172,500	\$172,500	6	7	8	CP
ZF100	Convert Gamewell to Simplex	Replace heads and enclose wiring in conduit.							\$2,093,000	\$2,093,000	2	7	8	CP
ZF100	Install facility-wide public address system	Install facility wide public address system to provide clear communications with visitors and staff throughout the building.							\$661,250	\$661,250	3	9	8	CP
ZF100	Protect Diorama Glass	Cover 120 plate glass panes on 90 dioramas with protective film.	\$69,000							\$69,000	3	2	8	CP
ZF100	Refurbish restrooms	Replace fixtures with low-flow models and install automatic faucets (114 toilets, 109 sinks in 42 restrooms).							\$345,000	\$345,000	2,6	9	8	CP
ZF100	Renovate level 3 temporary exhibits hall	The existing hall is inadequate to continue to attract major traveling exhibitions. Project involves replacing HVAC with units having the ability to control humidity and temperature; installing vapor barriers; replacing ductwork, ceiling, wall, flooring and lighting systems; and upgrading electrical service to provide for increasing electronic demands from exhibits.							\$7,649,000	\$7,649,000	3	9	8	CP
ZF100	Repair and rebuild E Penthouse air handling units	Air handling units are 20+ years old. Re-working motors to allow installation of more energy efficient equipment							\$1,127,000	\$1,127,000	2,6	7	8	CP
ZF100	Repair or Replace NW Wing Roof	TPM roof membrane is separating at seams and needs to be repaired or replaced					\$230,000			\$230,000	1	7	8	CP
ZF100	Replace Boiler Building Roof	Replace 20 year old roof on the boiler building.						\$115,000		\$115,000	1	7	8	CP
ZF100	Replace carpet	Systematic replacement of carpet in public circulation areas.							\$373,750	\$373,750	2	9	8	CP
ZF100	Replace elevator in Prehistoric Journey exhibit	Original equipment is not sized for current use resulting in numerous entrapments and calls for service.							\$65,900	\$65,900	2	9	8	CP
ZF100	Replace Exterior Doors	N. entrance doors leak and need to be replaced.	\$39,675						\$39,675	\$39,675	2	7	8	CP
ZF100	Replace HVAC & Abatement (NW wing)	Replace 40 year old, obsolete HVAC and abate ACM.							\$13,658,004	\$13,658,004	1, 1a	7	8	CP
ZF100	Replace lighting Center, North, South, SE & NE atria	Lighting fixtures have become obsolete making repairs difficult. Lighting fixtures need to be replaced and provides an opportunity to install more energy efficient lights.							\$207,000	\$207,000	2,6	7	8	CP
ZF100	Replace NE & SE atria storefronts with low E glass	Storefronts leak and admit solar radiation requiring increased conditioning of air (heating & cooling). Installation of low emissive glass to lower energy consumption							\$184,000	\$184,000	2,6	7	8	CP
ZF100	Replace NE Wing Roof	Replace BUR because felts are exposed and there are consistent leaks.							\$287,500	\$287,500	1	7	8	CP
ZF100	Replace Pneumatic Controls	Replace pneumatic controls with digital.							\$1,263,275	\$1,263,275	2	7	8	CP

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ZF100	Replace SE wing Roof	Project began in 2007 to replace the 20 year old roof and also support installation of solar photovoltaic array to allow greater proportion of renewable energy for facility.	\$150,000							\$150,000	1	5	8	CP
ZF100	Replace sewer line to Colorado Blvd	Replace sewer line that is 70 years old line and beyond repair.							\$163,300	\$163,300	2	7	8	CP
ZF100	Replace skylights with low E glass	Skylights allow excessive solar gain requiring increased cooling. Replace skylights with low emissive glass resulting in lower energy consumption							\$324,300	\$324,300	2,6	7	8	CP
ZF100	Upgrade Boiler System	Install new 300hp boiler and combustion air coil in order to provide freeze protection.							\$333,500	\$333,500	3	7	8	CP
ZF100	Upgrade Electrical (West side)	Replace electrical infrastructure with grounded circuits.							\$661,250	\$661,250	2	7	8	CP
ZF100	Upgrade Emergency Electrical System	Loads for non-life safety emergency power need to be returned to the emergency generator now that its capacity has been increased. Additional equipment will be placed on the emergency generator and ATS will be brought up to code.							\$198,950	\$198,950	3	7	8	CP

**Projects beyond 2008 carry a 15% contingency

Total	\$150,000	\$223,675	\$115,000	\$186,300	\$230,000	\$115,000	\$32,548,028	\$33,568,003
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