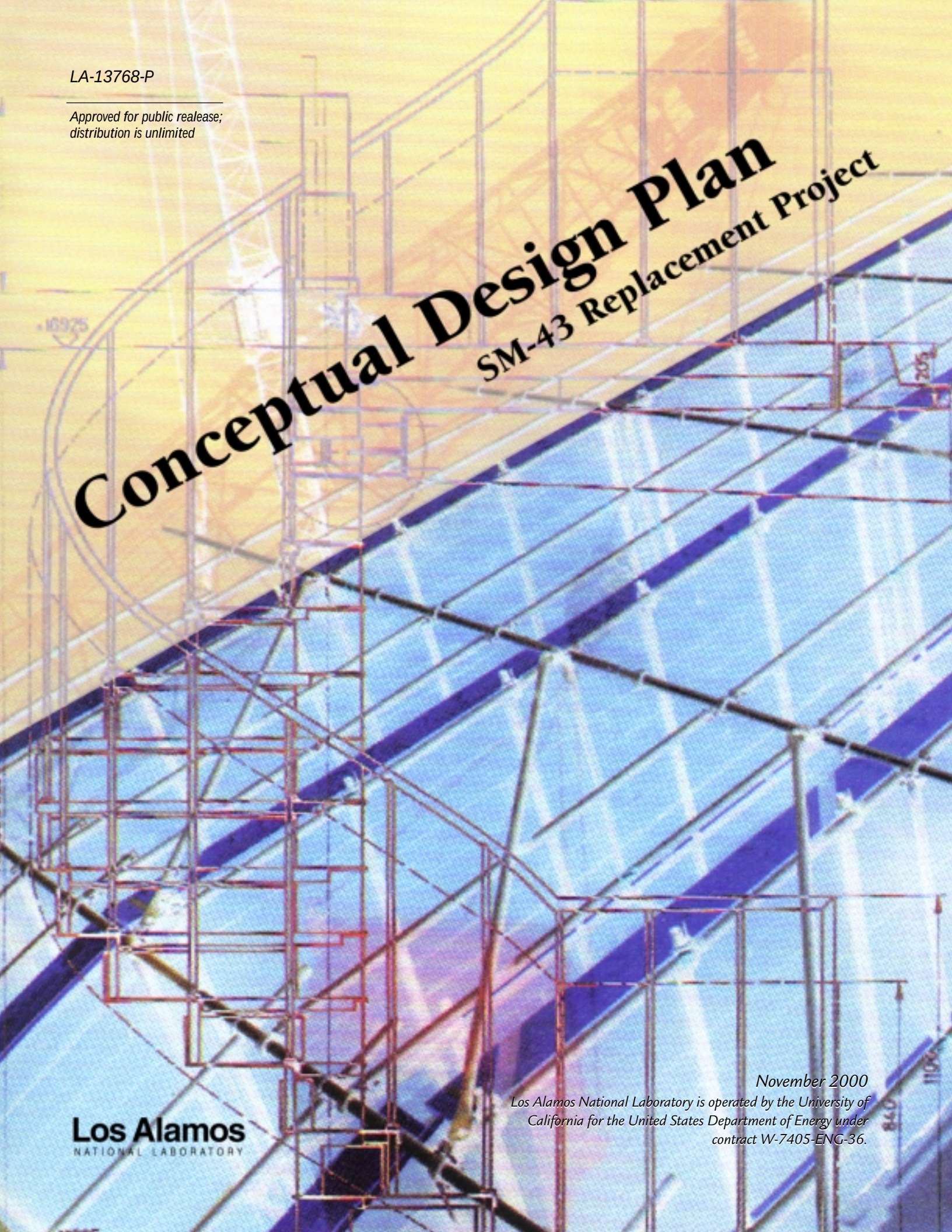


LA-13768-P

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Conceptual Design Plan

SM-43 Replacement Project

Los Alamos
NATIONAL LABORATORY

November 2000
Los Alamos National Laboratory is operated by the University of
California for the United States Department of Energy under
contract W-7405-ENG-36.

ABSTRACT

The Los Alamos National Laboratory Conceptual Design Plan for the SM-43 Replacement Project outlines plans for replacing the SM-43 Administration Building. Topics include the reasons that replacement is considered a necessity; the roles of the various project sponsors; and descriptions of the proposed site and facilities. Also covered in this proposal is preliminary information on the project schedule, cost estimates, acquisition strategy, risk assessment, NEPA strategy, safety strategy, and safeguards and security. Spreadsheets provide further detail on space requirements, project schedules, and cost estimates.

*edited by Carolyn Robinson, Group IM-1
designed by Kelly Parker, Group IM-1*

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Los Alamos

National Laboratory

Associate Laboratory Director for
Nuclear Weapons
PO Box 1663 MS A100
Los Alamos, NM 87545

Date: November 8, 2000

Dr. David H. Crandall
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Dear Dr. Crandall,

With this letter and the attached Conceptual Design Plan, the Laboratory is requesting Critical Decision-0 for the SM-43 Replacement Project. The SM-43 Replacement Project has been identified in the Tri-Lab/NV infrastructure plan as an FY2003 new start. The Conceptual Design Plan has been prepared in accordance with the requirements of the new DOE Order 413.3 Program and Project Management for the Acquisition of Capital Assets.

The project proposes to replace the SM-43 Administration Building which no longer meets the safety and operational requirements of the programs that operate within this facility. The DOE and the Laboratory have been planning the replacement of this 1955 structure since 1995. Serious life safety deficiencies, primarily seismic performance, warrant expeditious execution of this project. \$88 million in funding has been identified for design and construction in FY03 through FY05 in Tri-Lab/NV Plan. The project has been included in the Laboratory's institutional planning processes and carries the full support of Laboratory management team.

Completion of this Conceptual Design Plan represents the first step in the project development process. The plan outlines the mission need, justification and the Laboratory's readiness to proceed with the conceptual design phase of the project. Funding for the development of the conceptual design documentation has been included in the FY2001 and 2002 budget requests. The project schedule is dependent on receipt on Critical Decision-0 by December 1, 2000.

If you have questions or need additional information please contact Jim Holt at 505-667-3900.

Sincerely,



Stephen M. Younger
Associate Laboratory Director for Nuclear Weapons

Conceptual Design Plan

FOR

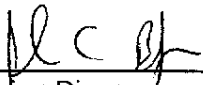
SM-43 Replacement Project

AT THE
LOS ALAMOS NATIONAL LABORATORY
Technical Area 03

Prepared by

University of California
Los Alamos National Laboratory
SCC Project Office
Los Alamos, New Mexico 87545

Submitted By:



Project Director

Approved By:



Facilities and Waste Operations Division



Nuclear Weapons – IFC Program Office

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PREFACE

The Department of Energy process for line item construction project programming, planning, development, design, construction, and start up is defined in DOE Order 413.3 Program and Project Management for Acquisition of Capital Assets. The Order defines control points in the project development life cycle to ensure projects are ready to proceed to the next phase of development and to verify the project's mission need against current Department priorities. Critical Decision 0 (CD-0) is the first hold point in this process. CD-0 approves the project's mission need and justification. CD-0 also authorizes the development of a conceptual design and related budget support information. To enable the Department's evaluation and approval of CD-0, projects are required to submit an information package describing the project and its readiness to proceed. The Conceptual Design Plan is the document prepared by Los Alamos National Laboratory to support a request for CD-0.

This Conceptual Design Plan (CDP) for the SM-43 Replacement Project was prepared by the SCC Project Office on behalf of the Nuclear Weapons – Infrastructure, Facilities and Construction Program Office (NW-IFC) and the Facilities and Waste Operations Division Office (FWO). The CDP was prepared to directly respond to the information requirements defined in Appendix 2 of the DP-10 Construction Project Management Plan dated June 1, 1999. To facilitate Department review, the document has been formatted to identify the specific DP-10 requirement, by topic, followed by a presentation of the related project information.

A. MISSION NEED

“The future depends on you as much now as in the earliest days here on the hill.”

John A. Gordon, NNSA



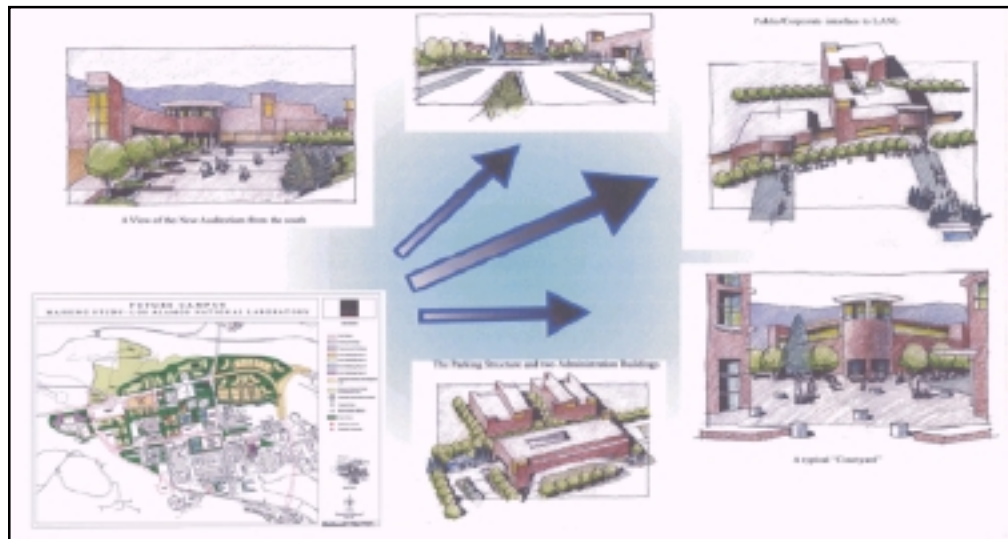
“A brief description of the proposed mission need – provide a summary statement of the program associated with the proposed project, the linkage with Department of Energy strategic and program plans, and the program conditions and drivers that require capital expenditure.”

Mission Need – Replacement of the SM-43 Administration Building

The Department of Energy (DOE) has tasked Los Alamos National Laboratory (LANL) with a core mission of enhancing global security by ensuring safety and confidence in the US nuclear weapons stockpile, developing technical solutions to reduce the threat of weapons of mass destruction, and improving the environmental and nuclear materials legacy of the cold war. To carry out this enduring role in the Nation’s nuclear weapons program requires LANL to develop/maintain a modern, safe, and reliable infrastructure. In support of this mission need, Los Alamos National Laboratory has proposed the SM-43 Replacement Project as a Defense Programs (DP) FY2003 line item.

The project will replace the 45-year-old SM-43 Administration Building that is no longer suitable as the Laboratory’s primary facility for general management and theoretical/computational research. The project will provide office and research space to house theoretical and applied physics, computational sciences, and the Laboratory’s Senior and Program Management functions in support of the DOE’s Stockpile Stewardship Program (SSP). The SM-43 Replacement Project will continue the development of the theoretical-computational core that was started in FY99 with the Strategic Computing Complex (SCC) and the Nonproliferation and International Security Center (NISC) projects.

The SM-43 Replacement Project is currently planned to be located in TA-3 near the new SCC and NISC facilities. The project, as currently envisioned, includes site preparation work and will construct one or more multi-level office buildings and a 400-car parking garage. The office building(s) will house a staff of approximately 700. Once the new facilities are occupied, the existing SM-43 facility will be decommissioned and demolished under a separate program utilizing operating funds. The total estimated cost (TEC) is currently \$88M. The design/construction is planned to start in FY03 with project completion in FY05.



SM-43 Replacement Project

SM-43 Administration Building – Current Operations

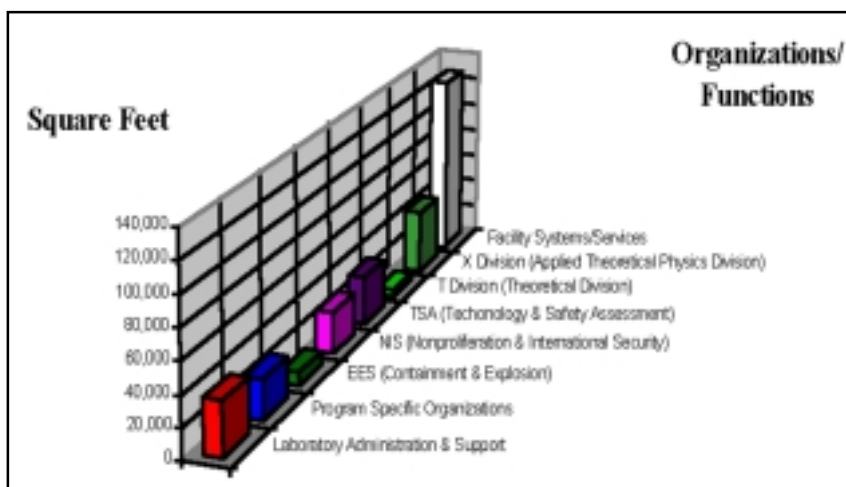
The SM-43 Administration Building was constructed in 1955 as a combination office/laboratory building. Today the facility is primarily used for office/computing functions.

Approximately 65% of the building's occupied space is dedicated to programmatic (line) work, 20% of the space is associated with the general management of the Laboratory, and

approximately 15% of the space is devoted to program management. The 313,500 square foot building currently houses approximately 1,013 people in 1,000 offices.

SM-43 serves seven organizations that perform Laboratory management functions; these organizations include Senior Management, Laboratory Counsel, Business Operations, Government Relations, and Public Affairs. The program management offices for the Nuclear Weapons Directorate are located in this building and include Experimental Programs, Materials and Manufacturing, Simulation and Computing, Stockpile Systems, Infrastructure Facilities, and Construction. Technical operations conducted in SM-43 include containment programs, geo-analysis, nonproliferation and international security, technology and safety assessments, and theoretical and applied physics. In addition, SM-43 contains Laboratory support functions for information & records management, printing

Organizational Space Usage¹



services, security operations/lock shop, internal security, and classification security. It also houses general meeting rooms.

This diverse field of programmatic, management, and support functions is essential to the Laboratory's overall operations and nuclear weapons work.

Mission Justification

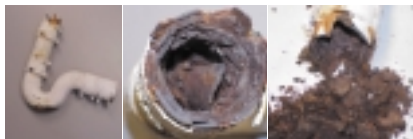
The highest priority of the Stockpile Stewardship Program (SSP) is to ensure the operational readiness of the US nuclear weapons stockpile. The SM-43 Replacement Project will support this objective by providing modern productive facilities for the theoretical, applied physics, and computational science functions as well as for Laboratory/Program management, which will be important in ensuring stockpile readiness.

The primary reason the project is needed is that the existing SM-43 Administration Building can no longer reliably meet the functional & safety requirements of the operations housed in SM-43. The most problematic aspects are described below.

System Reliability – Most of the major systems are in need of significant investment in order to assure continuation of operations. Building condition evaluations indicate that most building systems are inadequate and no longer meet standards for office and light laboratory use.² These systems include electrical, mechanical, plumbing, and the building envelope. Not only are

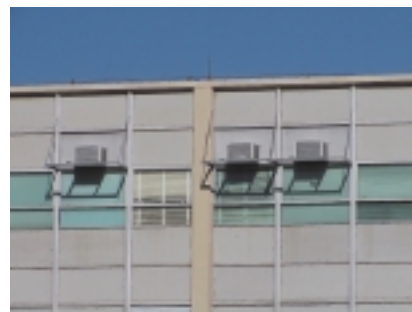
many of the systems required to meet demands unforeseen in the early 1950s, but system components are also failing due to age. With these component failures, it is becoming difficult to provide replacement parts.

The building envelope (window walls) has failed and suffers from air and moisture infiltration. The roof is at failure stage. The building envelope and interior contain a large amount of asbestos. The basic plumbing systems are crumbling from within and can no longer be reliably maintained.



The Heating, Ventilation, and Air Conditioning (HVAC) system does not meet current commercial standards for offices. Much of the building does not have air conditioning, while other areas of the building are cooled with multiple systems. In addition, over 100 noisy, inefficient through-wall (window) systems have been installed. It is estimated that this 1955 building requires an additional \$500K/year in energy costs over that required for a modern building of similar size.

The 1997 failure of the 300-ton chiller provides an example of how these facility deficiencies impact the programmatic operations within the building. Maintenance officials identified the need for upgrading the chiller equip-



ment and related cooling system. Upgrade funding was not available and the work was not completed. Later that same year the chiller and cooling system failed. Building temperatures rose above 100 degrees in some areas. Although the chiller was replaced, the computer operations of TSA, CIC-9, X, NIS, and EES Divisions were suspended until cooling could be restored. All floors of A, B, and C wings were impacted with several employees being sent home. The attendant loss of program activity was estimated at \$355,000 for this single event.

The electrical distribution system is not reliable, contains many code violations, and does not have surge protection capabilities. System failures have resulted in work interruptions and lost computers. The lighting systems are antiquated and do not meet current standards for illumination or energy usage.

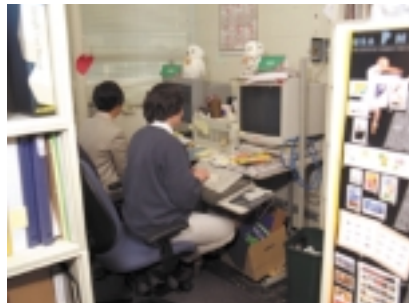


The Human Factor –

An equally important consideration pertains to the building's most fundamental ergonomic deficiencies or, simply, the "human factor." Los Alamos is staffed with employees dedicated to DOE missions who are living with the poor work environment and accepting the limitations of very little private space and the failing heating and cooling systems. However, more and more of these employees are nearing retirement, and the current working conditions are having a negative impact on the Laboratory's ability to recruit new staff. These are the realities of working in the existing building. *The substandard work environment is impacting not only today's productivity but also tomorrow's.*³

"While the cold war has ended, the mission of LANL and the other national laboratories remains essential to the national security of the United States. Some of the finest scientists in the world have gathered there, and the Nation depends on their unique work in preserving our nuclear deterrent. It is therefore essential to preserve the ability of the Laboratory to conduct the leading-edge science that has helped keep America strong and free for the past half-century...Congress should consider significant appropriations to upgrade our facilities dedicated to preserving a safe and secure nuclear deterrent."

Senator Howard Baker



Increasing Cost of Operations –

SM-43 cannot be operated indefinitely without significant investments for system replacements and upgrading. Although several upgrade projects (e.g., fire protection and minor electrical safety upgrades) have been performed in SM-43, no signifi-



cant "behind the wall" investments have been made. The routine maintenance costs have increased because of increasing age and system degradation. It has been estimated that a new facility could reduce the operation and maintenance costs by as much as 30%^{4,5} or by several million dollars per year.

Occupant Safety –

SM-43 has the highest level of occupancy of any building in Los Alamos National Laboratory. Codes and standards have evolved such that the building cannot economically be brought into compliance with today's requirements. Whereas certain aspects of the codes are subject to code waivers, the fact remains that a significant Laboratory population occupies a facility that does not conform to current codes and standards. The primary safety issues include (1) the ability to withstand a design basis earthquake and (2) conformance with the National Electric and Life Safety Codes.

More specifically, the SM-43 building structure does not meet current DOE or Uniform Building Code seismic requirements. The concrete frame, block infill design is no longer allowed by code. A DOE-sponsored structural evaluation,⁶ with peer review,

indicates the seismic capacity is about 25% of that required by current code. Should a design basis earthquake occur,⁷ it is anticipated that the SM-43 building would experience extensive structural and non-structural damage and/or collapse. This description is consistent with that associated with a “very poor” seismic performance rating in the University of California (UC) seismic safety policy. According to UC policy, such buildings or structures should be given the highest priority for expenditures to improve the seismic resistance. To further support this assessment, recent work in response to Executive Order 12941 indicates SM-43 has the highest seismic risk at the Laboratory.

Furthermore, the building design is not consistent with current National Fire Protection Association life safety codes; for example, the corridors are used for return air plenums, and the building lacks sufficient separation walls. The building also has multiple deficiencies regarding compliance with Americans with Disabilities Act requirements.

Functional Obsolescence – SM-43 was built in 1955 before our increased dependence on office electronics. The existing facility is simply not configured to handle today’s demands for increased power and high-speed communication systems. The existing facility is a poor work environment for the DOE’s cyber-based weapons program. The effectiveness of current staff and the ability to recruit and retain qualified employees are being impacted adversely.

One of the significant changes that has occurred since SM-43 was originally constructed is the expectation of physical security. This change has a major impact on the physical makeup of the facility. As computers have greatly increased the amount of classified information present in an office, the need for greater compartmentalization, levels of physical control, and alarms has changed. These changes have impacts on ventilation, fire suppression, electrical, ceiling, floor, and wall infrastructures. Modifications to existing facilities, especially one as old as SM-43, are inefficient and often fall short of meeting the final goals of security. Designing these characteristics into the facility at the beginning, with an element of flexibility for future requirements, greatly enhances LANL’s ability to maintain control over the extremely sensitive information that is maintained in the facility.

“Good information security requires limited access to information, compartmentalized into small subject areas, parceled out on a need-to-know basis.”

Senator Howard Baker

The existing structure will be over 50 years old by the time a replacement can be completed. SM-43 is the primary reception area for visiting dignitaries and Laboratory stakeholders including the President, members of Congress, the Department of Energy, Department of Defense, and industrial and academic leaders. It is important for the structure to provide an environment consistent with the “world

class” science conducted at Los Alamos. The new facilities will present an image of science in the new century rather than 1955.

“The security issue cannot be isolated from the general deterioration of the buildings and working conditions in the nuclear weapons program, which leads to crowding, makeshift security arrangements (e.g., the NEST vault was shared with another LANL program) and, ultimately, low morale. Low morale breeds errors, including security errors.”

Senator Howard Baker

The DOE has assigned a continuing role for the Laboratory in carrying out its national security mission. To enable LANL to continue this enduring responsibility requires modern productive facilities and a revitalized infrastructure.

“Los Alamos has played a special part in U.S. history from the Manhattan project to the present day. Without you, there would not be now, nor will there be in the future, a safe, reliable, and secure U.S. stockpile. The future depends on you as much now as in the earliest days here on the hill.”

John A. Gordon, NNSA

To support the Stockpile Stewardship Program objectives in a timely manner, the SM-43 Replacement Project must proceed as planned in FY03. It is important for the Laboratory and DOE to move expeditiously to correct the life safety concerns

related to the poor seismic capability of the existing building. The project has been identified in the Laboratory's infrastructure reinvestment plans (Tri-Lab/NV) for the past several years. The scheduled start in FY03 is based on the urgency of this infrastructure need at LANL.

In addition, the start of the project has been timed to coincide with the completion of the current construction efforts on the SCC and the NISC projects. This FY03 start will allow a smooth transition in project resources and will leverage the experience that has been gained from these projects.

Funding of the SM-43 Replacement Project, as planned, supports the DOE in meeting its objectives within the Stockpile Stewardship Program of upgrading the nuclear weapons infrastructure. Any delay in the funding will force the Laboratory to expend increasing amounts of operational funding for both planned and unplanned maintenance until such time as SM-43 is demolished. Additional interim facility upgrades may also be needed to mitigate life safety and operational deficiencies in the SM-43 facility. Thus, replacing this facility addresses ongoing risk with no other viable solution.

"We have buildings and infrastructure that are seriously outdated."

Senator Pete Domenici

----- **Conclusion**

The benefits of the SM-43 Replacement Project will go beyond the advantages of energy and cost savings and eliminating substandard space. Creating new replacement space at Los Alamos with functionality and flexibility will allow the staff of theoretical, applied physics, and computational science, senior Laboratory management, and program management to work in an effective interactive environment and allow for future changes in priorities and workflow. The enhanced safety and security of personnel, while perhaps less quantifiable, is no less an imperative. The human factor is as important to employees as salary and benefits. The SM-43 Replacement Project will enhance the Department of Energy and Los Alamos National Laboratory's role as a world-class scientific institution.

B. PROGRAM SPONSORS



“The proposed Department of Energy Program Sponsor and Management and Operating Contractor program sponsor—identify the Department of Energy program office that will provide budget support for the project during execution and later in operation.”

Program Objective

The program objective for the SM-43 Replacement Project is to replace the aging SM-43 facility as part of the ongoing DOE effort to address the failing infrastructure of the Laboratory. The project objectives include the following:

- Replacement of SM-43 which eliminates the existing issues associated with occupant safety, system reliability, and cost of operations⁸
- A modern work environment that will enhance the Laboratory’s ability to recruit and retain the scientists who are implementing the DOE’s Stockpile Stewardship Program
- A facility that supports the integration of programmatic, scientific, research, and operational activities

- A facility that operates with greater efficiency by providing space where the Director, Deputy Directors, and Associate Directors can interact in closer proximity

- A new modern facility that is visible to the community as the Director’s Office and that enhances the complex interactions with the Laboratory’s external stakeholders

Program Sponsorship

The proposed DOE Program Sponsor for the SM-43 Replacement Project is Defense Program’s Office of Research, Development and Simulation (DP-10). DP-10 is the “landlord” for LANL and sponsors a major portion of programmatic activity that will be housed in the new facilities. This assignment recognizes DP-10’s role in both the project’s initial construction and the facility’s future operations.

The Los Alamos National Laboratory Program Sponsor is the Program Office of the Nuclear Weapons Infrastructure, Facilities and Construction Program (NW-IFC). The NW-IFC Program Office is part of the Nuclear Weapons Directorate at Los Alamos. The NW-IFC Program is responsible for LANL’s infrastructure, the TA-03 Core Area, and the SM-43 Replacement Project.

The following diagram depicts the proposed chain of sponsorship for the project.



DOE Mandate for Infrastructure Improvement

This section outlines the downward flow of DOE responsibilities to the Laboratory and relates the DOE objective of infrastructure improvement to the SM-43 Replacement Project.

Department of Energy (DOE)



The United States national security policy requires strong domestic capabilities in science, security, and energy. The Department of Energy mission includes programs in national security, science & technology, energy security, and environmental quality.⁹

National Nuclear Security Administration (NNSA)

The mission of the National Nuclear Security Administration (NNSA) is to carry out the national nuclear security responsibilities of the DOE, including maintenance of a safe, secure, and reliable stockpile of nuclear weapons and associated materials capabilities and technologies; promotion of international nuclear safety and nonproliferation; and administration and management of the naval nuclear propulsion program.

Defense Programs (DP)

Mission

The DOE Office of Defense Programs (DP) is charged with maintaining the safety, security, and reliability of the US nuclear weapons stockpile. Defense Programs is assigned “landlord” responsibilities,¹⁰ as outlined in DOE Order 430.1A, for Los Alamos National Laboratory. Landlord responsibilities include infrastructure development and maintenance for multi-program sites. The Office of Defense



Programs “...assures the integration of all aspects of operations at facilities under the Deputy Administrator for Defense Programs from the standpoint of production, safety, and efficiency, encompassing operational safety, conduct of operations, maintenance, environmental protection activities, safeguards and security, quality assurance, training, and support to ensure compliance with existing policies and orders; Federal, State and local laws; and regulations.”¹¹

Stockpile Stewardship Program¹²

In the absence of nuclear testing, Defense Programs implements this responsibility through the Stockpile Stewardship Program (SSP). The SSP was established by the DOE to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons.¹³ The highest priority of the SSP is to ensure the operational readiness of the US nuclear weapons stockpile. The SSP program is organized into three focus areas: 1) Directed Stockpile



Research, Development and Simulation (DP-10)

The Research, Development and Simulation Program (DP-10) has implemented landlord and infrastructure activities through the Tri-Lab/NV plan. This plan provides level programmatic support

Work (DSW), designed to ensure that stockpiled weapons meet military requirements; 2) Campaigns, designed to provide the science and engineering capabilities needed to meet the ongoing and evolving DSW requirements; and 3) Infrastructure (Readiness in Technical Base and Facilities (RTBF)) that is required for stockpile work and computational research activities.

The primary goal of the RTBF is to ensure that the infrastructure is in place and available to conduct the scientific, engineering, and manufacturing activities of the Stockpile Stewardship Program. It also encompasses those activities needed to ensure that the infrastructure—utilities, facilities, and equipment—are operationally safe, secure, and environmentally compliant within defined levels of readiness. To meet this infrastructure requirement, Defense Programs has included the SM-43 Replacement Project in the *RTBF Implementation Plan – FY2000*.¹⁴

for the conventional facilities at the three weapons laboratories (LANL, LLBL, and SNL) and the Nevada Test Site (NV). The Tri-Lab/NV Plan is a coordinated ten-year plan to provide continuous updating of the physical infrastructure by planning, constructing, and eventually operating the conventional facilities that are necessary to sustain a constant infusion of new technology and to attract high caliber research staff to the four institutions. DP-10 has included the SM-43 Replacement Project in the Tri-Lab/NV plan for Fiscal Years 2003 through 2005.¹⁵

Los Alamos National Laboratory (LANL)

Mission

Los Alamos National Laboratory is a DOE multi-program, scientific laboratory with a core mission to enhance global security by ensuring safety and

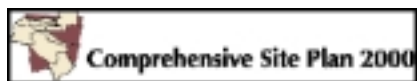


confidence in the US nuclear weapons stockpile, developing technical solutions to reduce the threat of weapons of mass destruction, and improving the environmental and nuclear materials legacy of the cold war. In addition, the Laboratory applies its scientific and engineering capabilities to assist the Nation in addressing energy, environment, infrastructure, and biological security problems.¹⁶ Since 1943, the DOE has assigned elements of each core DOE mission function to Los Alamos National Laboratory. The DOE maintains several basic capabilities at LANL including applications of science and technology to the nuclear weapons program. This work is expected to continue and may, in fact, be expanded as described in the Record of Decisions for the *Programmatic Environmental Impact Statement for Stockpile Stewardship and Management*¹⁷ and the *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory in the State of New Mexico*.¹⁸

LANL Strategic Plans

The Laboratory plans for infrastructure re-investment through a series of formal planning efforts. This planning is documented in the LANL Institutional Plan, the Comprehensive Site Plan (CSP), and the TA-03 Master Plan. The SM-43 Replacement Project has been identified in these institutional plans as the high priority infrastructure requirement for FY03.

LANL Institutional Plan – The LANL Institutional Plan is an integrated, single-document summary of the Laboratory’s internal plans and their connection to the DOE Strategic Plan (1997). A part of the LANL institutional vision outlines the need to “...advance the ongoing revitalization and maintenance so the Laboratory’s work can be safely and efficiently performed.”¹⁹



Comprehensive Site Plan – The Comprehensive Site Plan (CSP) is a strategic, long-range land use and facilities master plan that is used by the University of California (UC) and DOE to track the development and management of facilities and to demonstrate proper stewardship of the site.²⁰ This plan documents existing capabilities and identifies the strategic investments in facilities and infrastructure, which will enable the work of today and prepare the Laboratory for the work of tomorrow. The plan meets the requirements of DOE Order 430.1A, *Life Cycle Asset Management*, and satisfies the DOE’s need for the integration of programmatic activity and the necessary physical infrastructure. The document is the corporate plan that develops and maintains the Laboratory’s prioritized project list. The Laboratory has identified the need for major facility re-investment in the TA-03 “Core Area” in the CSP. Revitalizing the TA-03 campus is considered fundamental to LANL’s ability to recruit and retain the high caliber scientists and staff

needed to meet the objectives of the DOE Stockpile Stewardship Program. The CSP establishes the TA-3 Core Area and the SM-43 Replacement Project as a priority for facility re-investment at Los Alamos National Laboratory.

TA-03 Master Plan – The TA-3 Master Plan²¹ is a supporting document to the CSP that presents a long-term facility development vision for the Laboratory’s central core. The plan was developed with input from most of the area stakeholders and received endorsement from the LANL Stockpile Stewardship Program. The TA-3 Master Plan identifies a program to replace obsolete infrastructure and facilities over time. The TA-3 Master Plan objectives have been incorporated in the Tri-Lab/NV

and RTBF elements of the Stockpile Stewardship Program. The plan identifies the replacement of building SM-43 as the top priority following the completion of the SCC and NISC projects at Los Alamos.

Program Requirements

The SM-43 Replacement Project will provide new space to house the Laboratory’s technical research programs, program management, senior management, and key laboratory support functions currently housed in the SM-43 facility. The following table identifies the specific organizations, functions, and staff size to be housed in the new facilities.



**Current and Planned Occupants
of SM-43 Replacement Project**

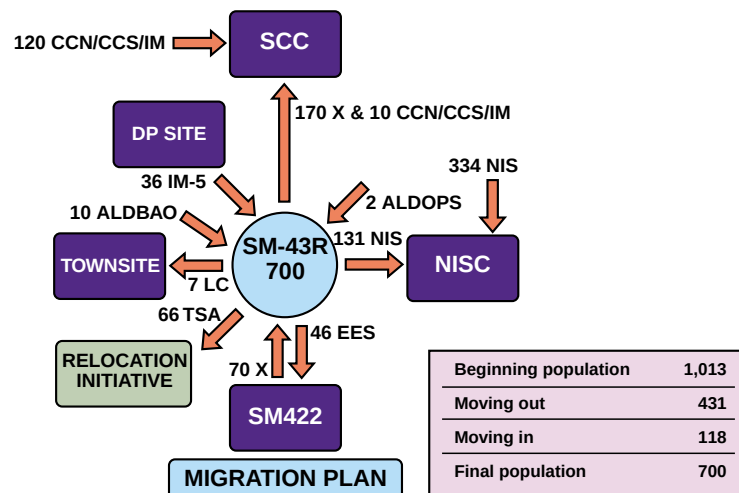
Organization	Function	Current	Planned
<u>Laboratory Management</u>		<u>190</u>	<u>195</u>
DIR	Director's Office	12	12
ALDNW	Assoc. Lab. Director - Nuclear Weapons	27	27
ALDSSR	Assoc. Lab. Dir. - Strategic & Supporting Research	6	6
ALDTR	Assoc. Lab. Director - Threat Reduction	10	10
DLDBAO	Deputy Lab. Director - Administration & Outreach	4	14
DLDOPS	Deputy Lab. Director - Laboratory Operations	7	9
DLDSTP	Deputy Lab. Director - Science & Technology Programs	3	3
GR	Government Relations	14	14
LC, LC-BPL, LC-LEL	Legal Counsel, Business & Patent Law,	13	6
BUS-DO, 2,3, & 8	Business Ops. Div., Defense, Planning and Budgeting, Support	34	34
HR-5 & 7	Human Relations, Staffing & Distributed Services	32	32
ISEC	Internal Security	14	14
ISM	Integrated Safety Management	1	1
PA	Public Affairs	1	1
S-7	Classification	12	12
<u>Laboratory Support</u>		<u>94</u>	<u>120</u>
IM-1	Communication Arts & Services	10	10
CCN-2	Desktop Group	30	26
CCN-5	Network Engineering	3	2
CCN-7	Computing	2	0
IM-4	Imaging Services	12	12
IM-5	Information & Records Management	23	59
CCN-12	Software Engineering Group	6	4
IM-7	Advanced Database & Information Technology Group	1	0
FWO-DF	Facilities & Waste Ops. - Diversified Facilities, Bldg. Mgt.	2	2
JCNNM	Lock Shop	5	5
<u>Program Management</u>		<u>55</u>	<u>55</u>
NW-EP	Nuclear Weapons - Experimental Programs	7	7
NW-IFC	Nuc. Weapons - Institutional Facilities and Construction	9	9
NW-MM	Nuclear Weapons - Materials and Manufacturing	12	12
MW-SC	Nuclear Weapons - Simulation and Computing	8	8
NW-SS	Nuclear Weapons - Stockpile Systems	19	19
<u>Divisions - DP</u>		<u>628</u>	<u>330</u>
NIS-3,6,8,9,DO,IT	Nonproliferation & International Security Division	131	0
T-3,4,11,16,DO	Theoretical Division	27	27
TSA-1,3,4,5,7,11,DO, DOD	Technology & Safety Assessment Division	191	125
X-1,2,3,4,5,7,8,9,10, 11,CI,CM,DO	Applied Physics Division	279	178
<u>Divisions - Other</u>		<u>46</u>	<u>0</u>
EES-1,3,5,8,15,DO	Earth & Environmental Sciences Division	46	0
Total		1,013	700

The figures shown in the “current” column of the previous table refer to the existing occupants of the SM-43 Administration Building. The figures shown in the “planned” column are based on the existing occupants subject to the following changes:

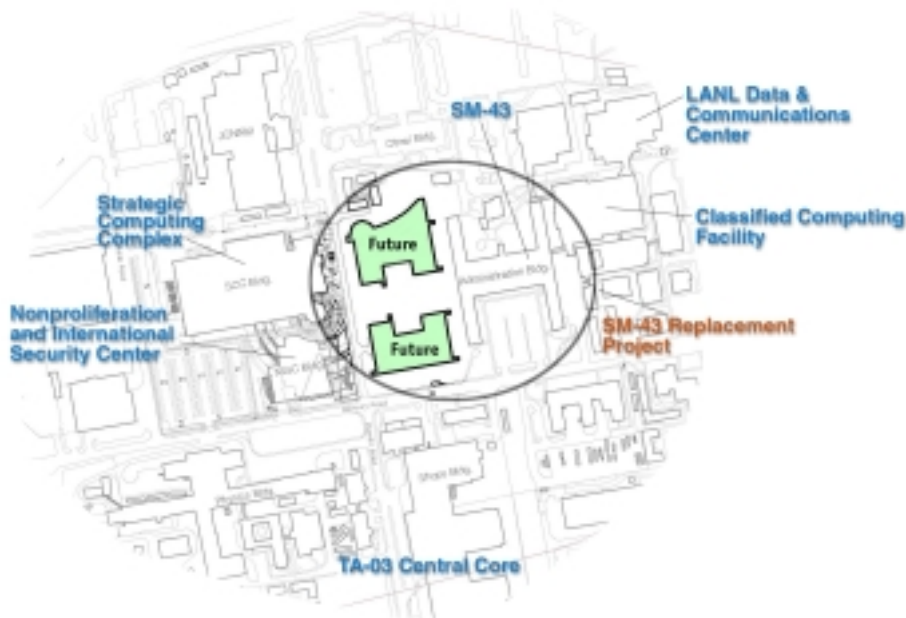
- 170 Applied Physics (X) Division and 10 Computing, Communication, and Networking (CCN)/Computer and Computational Sciences (CCS)/Information Management (IM) Division staff members will move into the Strategic Computing Complex. Additionally, 120 CCN/CCS/IM staff members from other facilities will also move to the SCC.
- 131 Nonproliferation and International Security (NIS) Division staff will move to the Nonproliferation and International Security Center.
- 70 X Division staff members from SM-422 will move to the SM-43 Replacement. This will allow all of X-Division to co-locate within the new facilities.
- 46 Earth and Environmental Sciences (EES) Division staff members will move to SM-422.
- 2 additional staff for the Deputy Laboratory Director for Laboratory Operations (ALDOPS) and 10 additional staff for the Deputy Laboratory Director for Administration and Outreach (ALDBAO) will move to the SM-43 Replacement to provide consolidation of these organizations.

- 7 Laboratory Counsel (LC) staff will move to another facility.
- 36 IM-5 staff will be consolidated in the new project.
- 66 Technology and Safety Assessment (TSA) Division staff will be relocated to another site as part of a relocation initiative.

The program requirements will be re-evaluated, with more formal and more detailed programming studies, during the development of the CDR. This is one of the most critical activities in the scope definition process. The Architect-Engineer for the conceptual design will facilitate programming workshops to ensure the required functional activities are identified and incorporated into the project requirements. These final program requirements will be documented in a Program Requirements Document (PRD) and will become part of the project’s technical baseline.



C. PRELIMINARY FUNCTIONAL REQUIREMENTS



“Preliminary technical functional requirements—describe the physical requirements to provide the programmatic capability described above. This is based on a preliminary architectural/engineering program/study that includes end user input and preliminary site criteria identification.”

Site Description

The new building(s) will be located in the core of the TA-03 area optimizing the relationship with the existing business functions and the central area for theoretical and computational research. The site allows the new facilities to be located within an existing security control area, although some minor reconfiguration of the perimeter will be required. This location requires demolition of several existing structures and reconfiguration of the utility systems. This demolition work is part of the ongoing decommissioning and demolition program at Los Alamos and is identified in this plan as a related project. The site will be cleared and fenced to provide access control similar to the SCC and NISC projects. Minor modifications to the existing roadways and pavements

will be required, in addition to a parking garage. This plan allows the new building(s) to be constructed without disrupting ongoing operations in SM-43. Upon completion, the occupants of SM-43 will move to the new building(s), and the demolition of SM-43 can proceed.

Facility Description

The goal of the project is to design the office building(s) with flexible modular floor plans that will allow the facility to respond to future organizational changes. The design will optimize the technical requirements for security and safety while providing a productive work environment. The office building's structure is envisioned as a conventional concrete substructure with a steel superstructure designed to meet current building and seismic standards. Quality materials, appropriate for a corporate gateway facility, will be used for selected portions of the future management building's exterior and interior finishes. The programatic building will incorporate finish materials consistent with the other office/laboratory facilities located within the TA-03 area. The office building (s) will be furnished and outfitted with appropriate office equipment and furniture. The mechanical and electrical systems will be designed to meet current building standards emphasizing energy efficiency and sustainable design.

The parking garage will be designed to optimize construction cost through adaptation to the selected site. The building is planned as “cast-in-place” concrete construction. The exterior will be designed to blend with the surrounding structures. The garage will be located on the perimeter of TA-03 to provide easy access from West Jemez Road.

----- **Functional Requirements**

The SM-43 Replacement Project is planned to house 700 occupants. The space requirements have been estimated to total 275,000 square feet in support of the functions listed below. This list is not final and will be modified as required during the conceptual phase of the project. The specific staff numbers listed in the Program Sponsors section have been generalized in order to simplify the pre-conceptual design. Which organizations will be housed in the new building(s) is not finalized at this time. The basic concept of management and technical organizations and their group structure will remain the same and will be finalized during conceptual, preliminary, and final design.

The following functional spaces are required to meet programmatic requirements of the SM-43 Replacement Project. The proposed space requirements are based on an analysis of the current SM-43 building and discussion with many of the probable occupants of the new facility. The SCC Project’s Func-

tional and Operational Requirements (F&ORs) were used to develop the detailed space requirements.²² Appendix 1 includes more detailed tabulations of individual space requirements.

Office Spaces

Laboratory Director
Associate Laboratory Directors
Deputy Laboratory Directors
Program / Division Directors & Managers
Chief of Staff, Group Leaders, and Deputy Group Leaders
Simulation Laboratories
Staff Members
Executive Support Staff
Administrative Staff

Records Management Space (classified)

Records Storage Vault - with high-density compact shelving
Reading Room - adjacent to records storage vault
Information Processing Vault - with six staff stations and work tables
Production Scanning Vault
- Compact shelving
- Scanning production equipment
- Work tables
- 15 staff work stations

Other Spaces

Copy Rooms
File Servers
Mail Alcoves
Building Reception

Locker Rooms
Visiting Staff
Equipment Receiving
Reception Storage
Main & Satellite Telecomm Rooms
Main & Satellite Mechanical Rooms
Main & Satellite Electrical Rooms
Large & Small Conference Rooms
Break Rooms
Janitor’s Closets & Storage
Large & Small Restrooms
Maintenance Shop
Fire Protection Areas
Elevator Lobbies & Equipment Rooms
Stairs
Main Lobby /Vestibule
Security Control Points
Vaults
Video Conference Rooms
Lock Shop / Storage
Research Library
Hallways

These functional spaces will be located in the following suites or group office areas:

Lab Director Suite: (1 each)

1 Director’s Office
2 Executive Secretary spaces (@ 2 persons)
2 Executive Support Staff
1 sitting area

1 DLD office
4 Staff Member offices
1 large conference room
2 small restrooms
1 copy room
1 mail alcove
1 file server room
1 telecom closet

DLD/ALD Suite: (6 each)

1 DLD/ALD office
5 Prog Dir/Prog Mgr offices
7 Staff Member offices
1 Executive Secretary space (@ 2 persons)
3 Executive Support Staff areas
1 sitting area
1/2 small conference room
1/6 large conference room
1/6 restroom (2)
1/3 break room
1 copy room
1 mail alcove
1 file server room
1 telecom closet

**Division Director Suite:
(4 each)**

1 Prog Dir/Prog Mgr office
1 Executive Secretary space (@ 2 persons)
5 Staff Member offices
2 Executive Support Staff
1 sitting area
1/2 small conference room
1/4 large conference room
1/4 restroom (2)

1/4 break room
1 copy room
1 mail alcove
1 file server room
1 telecom closet

**Group Office Area:
(18 each)**

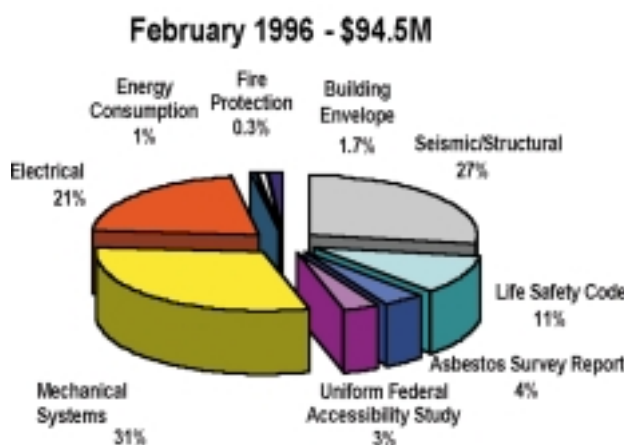
1 Group Leader
1 Deputy Group Leader
1 Executive Secretary space (@ 2 persons)
10 simulation labs
10 Staff Member offices
6 administration
1 copy room
1 file server room
1 telecom closet
1 mail alcove
1/2 restroom (2)
1/2 break room
1/4 small conference room
1/6 large conference room

Parking Garage:

400 full-size spaces

D. ALTERNATIVES

Cost of Correcting SM-43 Deficiencies²



"Identification of high-level alternatives to be explored/analyzed in the Conceptual Design Report—briefly describe the alternatives to be considered during the conceptual design phase of the project."

Project Alternatives

Project alternatives include no action, use of other existing space, SM-43 renovation, and alternate financing methods.

No Action – The no action alternative is typically an alternative considered during environmental evaluations. This alternative is not considered acceptable given the life and seismic safety concerns that have been identified. Implementing some form of corrective action is incumbent on the Laboratory and DOE. Replacing SM-43 is considered the most economical and expeditious approach to correcting the safety and operational deficiencies of SM-43.

Use of Other Existing Space –

The Laboratory Space Management Office has determined that no suitable space at the Laboratory or within the townsite could house a staff of 700 with the related security and computing requirements. Further, space located outside of the TA-3 area would negatively impact productivity and effectiveness due to longer travel times for customer and support organizations.

SM-43 Renovation – The SM-43 Administration Building was not designed or constructed in a fashion that is conducive to large-scale system upgrades. To shut down even the smallest sections would require shutting down the utilities serving much larger portions of the building. Moreover, the serious deficiencies in the seismic design and other building systems would be extremely costly and difficult to correct (see pie chart), and even after such an investment, the building would not gain more than an additional 20 years of life.

Finally, even if we wished to refurbish the building, there is no sufficient secure area within TA-3, at another Laboratory site, or within the townsite to house the current operations during the renovations. Given these circumstances, remodeling this facility is an option that was considered and then rejected as both not feasible and not economical.

Alternate Financing Methods –

At the heart of the TA-3 Revitalization Project was the assumption that third party financing would be used to finance the large set of construction projects identified in the TA-3 Master Plan. This alternative was researched for some time in order to fully understand the legal implications and the required approval process.²³ It was concluded that the process would not meet the urgent needs of replacing SM-43. As a result, the traditional line item approach to financing the SM-43 Replacement Project was selected as the preferred method of financing. The line item funding process meets the timing needs of this project, is a process that the Laboratory is familiar with, does not mortgage future funding, and does not include a cost-of-money component which would raise the ultimate cost to the taxpayer for this facility.

The project alternatives and preliminary analysis described above will be studied in more detail during the development of the Conceptual Design Report and during the NEPA evaluation process.

Scope Alternatives

During the development of this Conceptual Design Plan several space alternatives related to the project's scope were identified. These alternatives will be further evaluated as the conceptual design develops and the project cost estimates become more definitive.

Public Auditorium – The SM-43 Administration Building contains a 600-seat auditorium that has been used for large events, both open to the public and for classified discussions. The TA-03 Master Plan identifies a large public auditorium that would be constructed near the new SM-43 Replacement Project. The funding allotment for this project does not include the new auditorium. The SCC project will construct a new 200-seat classified auditorium; however, the need for a new classified 600-seat auditorium has not been satisfied.

Space Programming – Current space programming plans call for housing most of the existing SM-43 occupants, subject to adjustments for the SCC/NISC projects. During the formal programming studies to be conducted during the Conceptual Design Report phase, alternatives for housing the following operations will be evaluated:

TSA Division: Currently, TSA Division is located at multiple locations. Consolidating all of TSA in one location is the preferred action. Alternatives to the current plan to house only a portion of TSA in the new facility will be studied.

Earth and Environmental Science Division: EES Division may not need to be located in the new facilities. Options will be considered during the CDR programming effort.

Lock Shop: The Lock Shop has a strong tie to the operations of X & NIS Divisions and is currently co-located within the existing SM-43 building. Alternative locations will be evaluated that would better use the new space.

Other ALDBAO Functions:

Over time, the space limitations in the current SM-43 building have forced several key organizations to move to the townsite and other areas of the Laboratory. Detailed programming during the CDR phase will establish adjacency requirements for several smaller groups currently not identified in the program requirements.

Design Alternatives

During the development of this Conceptual Design Plan several alternatives related to the design features surfaced. These alternatives will be further developed and evaluated as the conceptual design and the project cost estimates become more definitive.

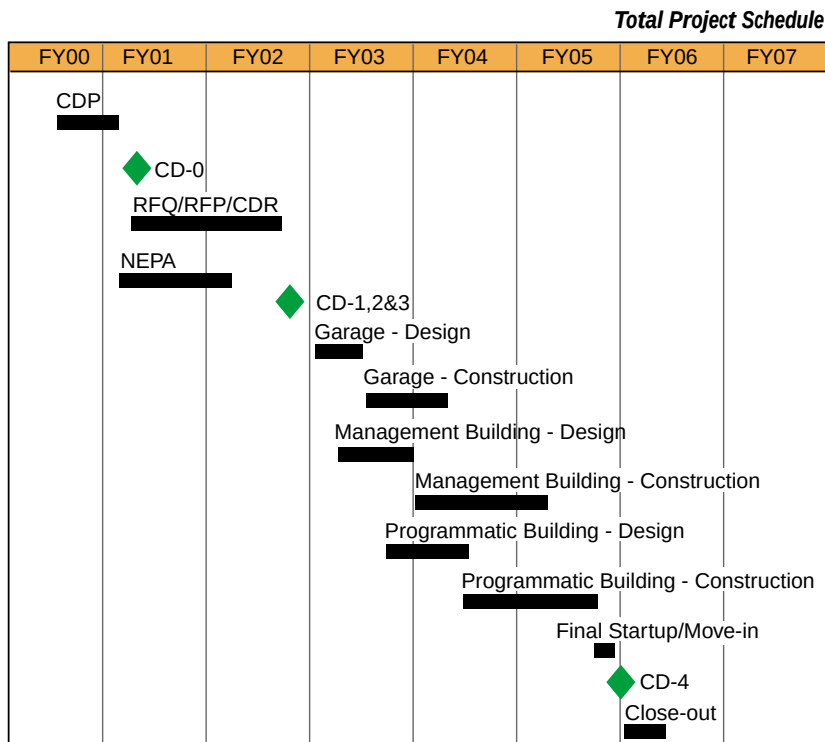
Site Selection – The project is currently planned in the core of TA-03 as shown in the TA-03 Master Plan. The initial utility review identified a number of existing systems that must be re-

configured to accommodate the new buildings. In addition, more detailed seismic evaluations are being performed to map existing faults that may affect portions of the site. For these reasons, additional TA-03 locations will be more closely analyzed with a siting charette during the CDR preparation.

Building Design – The project is currently envisioned as a set of three separate structures: one for management and support office functions, one for programmatic activity, and one for parking. The CDR will evaluate the following:

- The potential to combine structures/functions
- The optimal number of floors, above and below grade
- The appropriate quality and appearance levels
- Sustainable design features

E. PRELIMINARY SCHEDULE

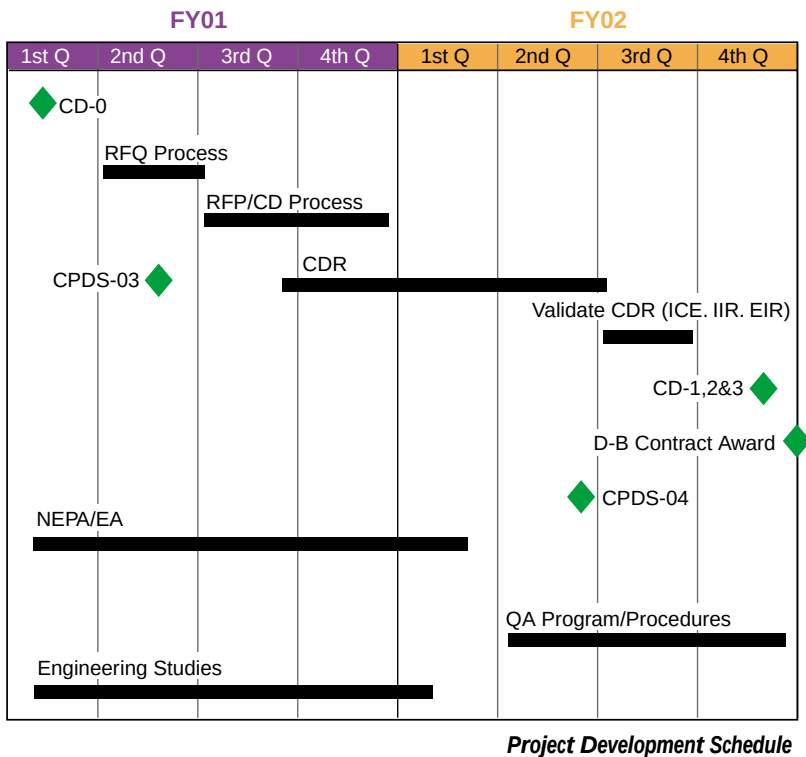


“A preliminary schedule – provide a high-level list of project activities, from preconceptual phase through start of operations, presented graphically and showing Critical Decision milestones and including schedule contingency.”

Project Schedule for SM-43 Replacement

The conceptual design and the Design-Build (D-B) procurement will begin the first quarter of FY01 and will be completed by the fourth quarter of FY02. The baseline validation and approval of Critical Decisions 1, 2 and 3 will occur in late FY02. Capital funded activities will begin in FY03. The detailed design and construction of the parking garage will begin in FY03. Construction of the office building(s) will begin in FY04. Construction completion and move-in will occur in FY05. Project closeout will take place in the first part of FY06. The table above provides a graphic presentation of the project schedule and critical decision milestones.

The conceptual design will begin upon receipt of Critical Decision 0 (CD-0). CD-0 is expected in the first quarter of FY01. As discussed in the Acquisition Strategy section, the D-B Request for Qualifications (RFQ), the D-B Request for Proposal (RFP), conceptual design, and final Conceptual Design Report (CDR) will be accomplished as a coordinated effort. The CDR will be based on the selected D-B contractor's proposal. This should provide a reduced level of cost and schedule risk for the remainder of the project. The FY03 Construction Project Data Sheet (CPDS) will be developed from the Conceptual Design Plan and CD-0 package. The CDR will be finalized and validated by June 2002. The NEPA process and the development of the Environmental Assessment (EA) will begin after the siting studies have started and an initial site selection is made. The NEPA process is scheduled to complete prior to initiating the D-B contract. The project quality assurance program, implementation plans, and project procedures will be developed in the second half of FY02 in anticipation of the FY03 start. Additional schedule details for the conceptual design phase are included in Appendix 2 of this report.



F. PRELIMINARY COST ESTIMATE

TOTAL PROJECT COST ESTIMATE*	
A. Total Estimated Cost (TEC)	
Design Phase	\$ 6,500,000
Construction Phase	\$ 72,500,000
Contingency	\$ 9,000,000
TEC	\$ 88,000,000
B. Other Project Costs (OPC)	
Development, CDR & Procurement	\$ 3,300,000
ESH & Permits During Construction	\$ 400,000
Startup/Close Out	\$ 800,000
Contingency	\$ 500,000
OPC	\$ 5,000,000
C. Total Project Cost	\$ 93,000,000

* Figures have been rounded.

“A rough order of magnitude estimate for Total Project Cost – include a high-level, preconceptual estimate including Conceptual Design Report and other project costs to be funded by the sponsoring program, using the standard Work Breakdown Structure, with appropriate contingency.”

Total Project Cost Estimate

The total estimated cost shown above has been included to provide a general understanding of the approximate magnitude of the project. At this stage of development, the estimated cost is not precise and has been rounded accordingly. Life cycle cost for the proposed alternatives will be evaluated during the CDR development.

The preliminary total estimated cost (TEC) is \$88 million. The total project cost (TPC) has been estimated at \$93 million. The project costs were calculated in today's pricing and escalated to the midpoint of construction.

The cost estimate includes the base estimate and a contingency allowance derived from DOE guidance and in consideration of the risks identified in this plan. A more formal risk-based contingency analysis using statistical methods will be performed during the CDR process. Additional cost estimate details are included in Appendix 3.

Project Development Cost Estimates for FY01 and FY02*		
Category	FY2001	FY2002
Project Management	\$ 275,000	\$ 275,000
Conceptual Design	\$ 750,000	\$ 510,000
NEPA	\$ 120,000	\$ 80,000
ESH & Safety Documentation	\$ 35,000	\$ 60,000
Quality Assurance	\$ 15,000	\$ 35,000
Value Engineering	\$ 0	\$ 35,000
Engineering/Trade Studies	\$ 265,000	\$ 40,000
LANL Project Engineering	\$ 395,000	\$ 410,000
subtotal	\$ 1,855,000	\$ 1,445,000
Contingency @ 8% FY01 10% FY02	\$ 145,000	\$ 155,000
Total	\$ 2,000,000	\$ 1,600,000

* Figures have been rounded.

Funding Profile			
Fiscal Year	OPC	TEC	Total
2001	\$ 2,000 K		\$ 2,000 K
2002	\$ 1,600 K		\$ 1,600 K
2003	\$ 120 K	\$ 16,000 K	\$ 16,120 K
2004	\$ 640 K	\$ 37,000 K	\$ 37,640 K
2005	\$ 640 K	\$ 35,000 K	\$ 35,640 K
Total	\$ 5,000 K	\$ 88,000 K	\$ 93,000 K

Project Development Cost Estimate

The costs provided in the table on the left include project development, conceptual design, and contractor procurement for Fiscal Years 2001 and 2002. These development costs are based on a analysis of the development activities and costs that occurred on the SCC/NISC projects. The estimate will be used for the performance baseline during this period.

The cost estimate for the CDR is 1,260,000 dollars. A contingency has been included to cover risks for unknown in-scope requirements. Additional estimate details for this phase of the project are included in Appendix 3.

Funding Profile

The funding requirements defined at left are based on the allocations that have been allotted in the Tri-Lab/NV Plan. The project may actually be able to accomplish work at a faster pace if additional funding becomes available.

G. COST ESTIMATE BASIS/METHODOLOGY



“Cost estimate basis/methodology – briefly describe the basis for the estimate, the contingency rationale, assumptions for equipment, and other principal components of the total project cost (e.g., historical figures adjusted for specifics of the project, contingency level based on perceived technical risk, equipment based on today’s costs escalated for inflation, etc.).”

Estimate Basis

The cost estimate has been developed using parametric estimating techniques. The estimate parameters and data were obtained from other active projects at LANL and discussions with industry contractors. Projects that were analyzed include the SCC, NISC, two Design-Build GPP projects, and the Research Park. The cost estimate has been compiled in a format based on the most recent DOE guidance. The cost estimating assumptions and cost basis are discussed in the following paragraphs.

Engineering, Design & Inspection (ED&I) costs have been included in the estimate. The design costs for the D-B engineer have been developed based on a percentage of the design builder’s construction costs. In addition, costs for inspection and other design and

engineering support activities furnished by the Laboratory have been estimated based on anticipated activities and the duration of each activity. Hourly labor wage rates used in the development of the estimate are those currently in effect for the SCC.

Project and construction management (PM/CM) costs have been included in the cost estimate. The costs are based on resource loading a schedule over the duration for required PM/CM activities. The resource requirements and level of effort have been estimated based on typical activities relative to the proposed project. Hourly labor wage rates used in the development of the estimate are those currently in effect for the SCC.

Building construction costs were developed on a square foot basis and are included in the estimate at \$157 per square foot for the building construction only. Standard construction activities are anticipated during the construction phase of the project. Minimal costs for site security during construction have been included in the planning estimate.

Costs for utilities, security, and communications were estimated parametrically using the SCC project’s costs as a basis. The SCC unit costs were adjusted for anticipated project differences and cost differences applied to the proposed project.

The proposed costs for utilities, security, and communication could change significantly pending final site(s) selection. The costs were also developed based on discussions with the LANL utility systems engineers who have responsibility for operations and maintenance.

Equipment and furniture costs are based on industry pricing data. The estimate is based on the furniture being supplied by the D-B contractor. Based on experience with the SCC and NISC projects, this method is more cost effective than using the Laboratory's on-site furniture contractor. The furniture allowance is small and is designed to provide the basic pieces. Special or custom requirements will be provided by the occupying organization.

Escalation costs were developed using current DOE guidance and rates. The midpoint date of each major activity was determined, and escalation costs, based on current indices, were estimated.

LANL procurement, Group and Division, and G&A taxes are included in the planning estimate for the buildings. The taxes included in the construction estimate are those in effect on the SCC project. The G&A rate has been included at 12%, the procurement tax at 0.25%, and Group and Division taxes are included in the respective hourly

wage rates. The discounted procurement tax rate is based on the assumption that procurement staff will charge time directly to the project .

Contingency costs were calculated using the rates applied against the burdened project costs. The contingency rate and cost are lower than what might be expected at this stage of the design development. The rates have been established with consideration for the high quality cost information that was available from the other LANL projects. They were based on the assumption that the project budget is fixed and that the scope definition will be used, if necessary, during the CDR development to manage/control project costs. In essence, the project scope represents the largest percentage of available contingency, and this fact will be managed during the CDR development to stay within the available funding while maximizing value to the government.

Other project costs (OPC) requirements to be completed during the proposed project have been estimated using activity-based costing methods along with level-of-effort resources. The DOE Cost Estimating Guide

(DOE G 430.1-1) was used as a guide in determining OPC activities and requirements. In addition, SCC OPC activities were noted and incorporated into the activity basis, if applicable. Procurement, Group and Division, G&A taxes, escalation, and contingency costs have been included in the estimate. Of significant impact is the LANL G&A rate of 40% on numerous costs associated with OPCs.

H. PRELIMINARY ACQUISITION STRATEGY



“A preliminary acquisition strategy – discuss the anticipated contracting strategy for the major components of the project, such as design, construction, or special equipment.”

Introduction

The basic strategy to complete this project in the most cost-effective manner, in line with current commercial practices, consists of four overriding procurement goals. These goals are the following:

- Utilize the latest commercial procurement practices for the Design-Build (D-B) of the new SM-43 replacement facilities
- To the greatest extent possible, use physical barriers or significant milestones that represent completed products to separate the scopes of work that are assigned to separate contractors
- Assign as much “inside the construction fence” scope of work as reasonably possible to one contractor

- Ensure that the procurement process and documents support the underlying needs of the project

Consistent with these procurement goals, the SM-43 Replacement Project has planned two primary procurements to support the project. The first primary procurement is with a D-B firm. The D-B scope of work includes all materials, personnel, management, and processes to complete the design and construction of the SM-43 replacement. This contract is a firm fixed-price contract. This procurement process will begin early in the CDR development in order to incorporate the winning firm’s conceptual design into the CDR that is published and forwarded to the DOE for approval. This approach will naturally support an emphasis on early and complete definition of the project’s scope and provide a significantly improved confidence level in the cost estimate at the completion of the CDR.

The second procurement is with a construction management oversight services firm. This firm will support the SM-43 Replacement Project Team in meeting its contractual requirements to the DOE. This contract will be a cost-plus-fixed-fee reimbursable contract in order to retain the

necessary flexibility to respond immediately to unpredicted circumstances.

The project will also use three existing UC subcontractor vehicles to complete this project. The existing Johnson Controls Northern New Mexico (JCNNM) maintenance support services contract will be used to complete any early utilities work for the site. This alternative was chosen after evaluating the scope and complexities of this work and deciding that the JCNNM contract provided the least risk to the project schedule and objectives. The existing Basic Ordering Agreement (BOA) in the Architect-Engineering (A-E) contracts will be utilized to support LANL in its preparation of the Conceptual Design Report, request for proposal, and other similar documents/services and will be referred to as the D-B Support Services Contract. Evaluation of alternatives led to the firm conclusion that using this vehicle provided the greatest service and least risk to the project. Finally, an existing contract that provides access to project controls expertise familiar with the LANL financial system is being utilized to acquire such services.

----- Acquisition Plan Objectives

The Laboratory's standard procurement practice is to generate acquisition plans for all procurements greater than \$500K as part of the pre-solicitation process. Its purpose is to obtain quality service in a timely, effective manner at a reasonable price. It involves analyzing

requirements and employing technical, business, operational, and other acquisition considerations to develop a plan that establishes realistic milestones to achieve program goals. Acquisition planning is designed to accomplish the following objectives:

- Identify acquisition requirements (risks, quality, environment, safety and health concerns, functional and operational requirements, etc.)
- Address funding issues
- Address source selection decisions such as sole source versus competition
- Incorporate socioeconomic considerations

When it appears likely that the acquisition will take place, a detailed acquisition plan must be prepared jointly by the requester and the contract specialist. Decisions made during preparation of an acquisition plan will assist the requester in preparing the purchase request, statement of work and/or specifications, source list or sole-source justification, evaluation criteria milestone schedule for the acquisition, environment, safety and health concerns, security concerns, and other elements of the purchase request package. The detailed plan must follow a prescribed format as identified in the Laboratory Procurement Standards Practices Manual.

The SM-43 Replacement Project calls for three acquisition plans:

1. Design-Build Services
2. Construction Management Oversight Services
3. Design-Build Support Services (utilizing an existing BOA contract)

Descriptions of the three acquisition plans follow. Each plan includes a description of services, cost and time estimates, the acquisition procedure itself, special approvals (if applicable), and a statement of risk.

----- Acquisition Plan for Design-Build Contract

The Design/Build contractor and its subcontractors are responsible for the design and construction of the SM-43 replacement. This task must be completed in accordance with the terms and conditions of the D-B contract documents.

Time and cost estimates are as follows:

- The estimated cost for this D-B requirement is in excess of \$40,000,000.
- The estimated acquisition lead time to release the RFQ is two months.
- The estimated performance period is three years.

The acquisition procedure is a best-value, fixed price/best design source selection procedure using a two-phased process—request for qualifications (RFQ) followed by a request for proposal (RFP). Using this type of selection procedure, which considers technical excellence at a fixed cost, optimizes the value of the product received and the selection of a competent, experienced firm that will perform successfully. To ensure that the critical schedule is met, the D-B product delivery system allows for an overlap of design and construction activities; it also streamlines the procurement process by combining design and construction into one procurement. Full and open competition will be employed by advertising the requirements over the Internet and through the Commerce Business Daily. The RFQ will be released early in FY01, and the candidate list will be narrowed down to approximately three firms. The RFP will require the three firms to prepare conceptual designs that conform to the following requirements:

- Functional and operations requirements
- LANL design standards
- Fixed maximum price
- Annual funding profile
- LANL performance specifications
- Geotechnical Report,
- Preliminary Storm Water Pollution Prevention Plan

LANL will work independently with these firms during the RFP phase to assure that the designs are meeting the needs of LANL. The winning proposal will become the basis of the Conceptual

Design Report. Stipends will be paid to the unsuccessful firms that were not selected, assuming their products met the minimum requirements. The firm fixed-price cost proposal will be required to remain valid for approximately 14 months, because the final contract cannot commit capital funds until FY03.

DOE-AL approval will be required. In addition, DOE-HQ approval may be required since this acquisition is greater than \$25M.

A firm fixed-price contract with damages and incentives will be used for this contract, because the scope will be very well defined in the RFP and will represent little risk to the bidding firms. It is also anticipated that this contract will be multi-year funded, consistent with DOE's approach for line-item projects.

Acquisition Plan for Construction Management Oversight Services

Construction Management Oversight (CMO) services are intended to assist the Laboratory in the management of designing and building the SM-43 replacement facilities. This assistance may include the following services:

- Develop procedures that will govern the CMO function during the construction phase of the project

- Support the monitoring of cost and schedule
- Review D-B contractor schedules to check that contract activities are logical, durations are realistic, specifications are met, and the critical path is well managed and reflects programmatic priorities
- Measure as-planned performance against actual performance throughout the project
- Review and recommend approval of D-B contractor progress payments
- Provide progress reports that identify D-B problems and possible solutions
- Verify that D-B required reviews, certifications, inspections, and tests are being performed
- Conduct regular on-site inspections
- Document all inspections and reviews
- Dispute avoidance management
- Prepare dispute resolution documentation as required

Cost and time estimates are as follows:

- The estimated cost for Construction Management Oversight services is in excess of \$1,000,000.
- The estimated procurement lead time to release the RFQ is four months.
- The estimated performance period is three years.

A best value source selection procedure will be utilized. This process, which considers both technical excellence as well as cost, optimizes the selection of a competent, experienced firm that will perform successfully. In addition, providing full and open competition should give this project access to the best and most current talent available. Because the tasking involves activities that are typically commercial and because familiarity with LANL processes is not critical to performing this task, it is appropriate to look closely at what the commercial sector can provide LANL.

A cost-plus-fixed-fee contract type will be used because of the uncertainty in the staffing requirements, which may fluctuate widely depending on the problems or issues that are encountered during the project's life.

----- **Acquisition Plan for Design-Build Support Services**

The design/build support services of an Architect-Engineering firm generate the technical documents, starting with development and leading up to and including the request for proposal. These documents include the following:

- Conceptual Design Report, engineering studies, cost estimates, and functional and operational requirements
- Design criteria
- Systems descriptions, the performance specifications, site verification data, preliminary

fire hazards analysis, scheduling, value engineering study, RFI reviews, and design reviews

- Design review during the D-B procurement and proposal evaluation
- Engineering services during design and construction
- Any other related technical documents

Cost and time estimates are as follows:

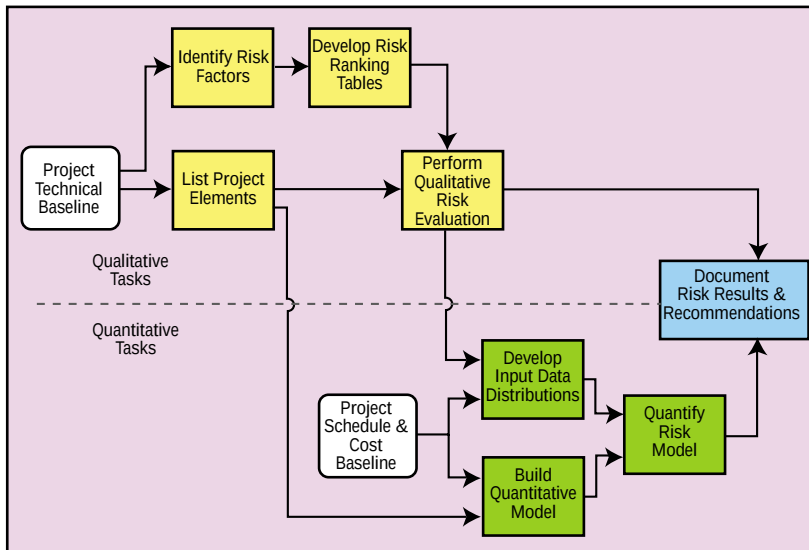
- The estimated cost of this requirement is in excess of \$500,000.
- The estimated lead time for this procurement is one month.
- The performance period for this requirement is approximately four years.

The existing Master Subcontract for architect/engineering services will be utilized. Competition between the three firms currently under contract with LANL must be consistent with the requirements of the contracts. The selected firm must work side-by-side with the LANL project team to prepare the necessary documentation during the early stages of the project. The firm must have an intimate knowledge of LANL's standards, methods, costs, and expectations in order to effectively and efficiently develop the required programming documents for this project.

These products become the primary communication tools between LANL and the selected D-B contractor, so they must be able to translate LANL's requirements into common commercial terms that can be readily and accurately interpreted by the bidding firms. The Basic Ordering Agreements in the A-E contracts have been established for this particular purpose and should be utilized as a result.

The winning firm will have an organizational conflict of interest (OCI) related to the primary D-B contract. Methods to mitigate this OCI will be investigated prior to releasing the RFP. It is anticipated that a cost-plus-fixed-fee task order mechanism will be utilized because of the nature and uncertainty of the majority of the work.

I. PRELIMINARY RISK ASSESSMENT



"A preliminary risk assessment – provide a brief statement identifying probable areas of cost, schedule, or technical risk on the proposed project."

Introduction

This assessment has been prepared based on an informal review by the assigned program and project staff. A more formal risk assessment will be prepared during the conceptual design phase. Risk elements will be identified, the impacts will be assessed, and a qualitative risk management plan will be developed to guide project scope development and risk reduction activities.

In summary, the programmatic risk associated with the project is considered low. The program requirement for the project is to deliver quality office and computer laboratory space. Technology maturity is not a concern for this project. The Laboratory has several similar projects underway at this time and has a great deal of positive experience with this type of construction. In spite of

this general assessment, there are several areas of risk that warrant continuing attention.

Technical Risk

Primary technical risks relate to siting and to security requirements.

Siting – The project site has not been finalized at this point in the project's development. Additional site evaluations will be done during the CDR process to make the final selection. Each site will bring unique requirements that the facilities will need to address. Some examples are seismic fault locations, geo-technical conditions, impact to potential release sites, and interfaces with security, roadway, and utility systems.

Security Requirements – The new facilities will be located within a limited access area and will handle various forms of classified information. This activity requires a variety of security features to protect this information. It is not uncommon for the design basis threat scenarios to change over time. The potential for changes to the baseline security requirements must be included in the development of the Conceptual Design Report and related contingencies.

Cost Risk

There are costs risks associated with funding and cash flow.

Funding Availability – All projects are susceptible to cost and schedule problems associated with interruptions in cash flow. The D-B acquisition strategy and the attendant rapid completion schedule make this project more sensitive to funding perturbations than a typical design-bid-build approach. A serious commitment by the DOE/LANL program offices must be secured to ensure that the required funding is available to support the D-B contract .

Schedule Risk

There are schedule risks associated with National Environmental Policy Act (NEPA) evaluation activities, the congested work site, and the TA-03 Decommissioning and Demolition (D/D) Program.

NEPA – Most large projects at Los Alamos are faced with significant NEPA evaluation activities regardless of the level of documentation required. The nature of the NEPA process has produced a variety of experiences in completing the NEPA actions. Because NEPA evaluation activities must be completed prior to the start of the definitive design, it can present a significant schedule risk. Up front planning and commitment to project milestones can reduce this risk.

Congested Work Site – The proposed construction site is in a heavily developed part of the Laboratory. To accomplish this work will require a great deal of interface management with the existing facility operations. Schedule impacts associated with these interfaces can be expected. This risk can also be controlled with early/continuing project planning and use of appropriate schedule contingencies.

TA-03 D/D Program – The proposed site for the project contains a number of existing utilities and structures that are being removed by the Laboratory's D/D program. The start of the SM-43 Replacement Project is dependent on the D/D program completing the removal of these existing facilities. In addition, one of the existing facilities cannot be removed until the NISC project has been completed in FY03. These dependencies create a real but manageable schedule risk. Planning and inter-project coordination can reduce the risk of delays to the project.

ESH Risk

The ESH risks for an office building are relatively minor when compared with a complex process or nuclear facility. There are, however, several areas of ESH risk that warrant continuing attention by project management. The project will apply the

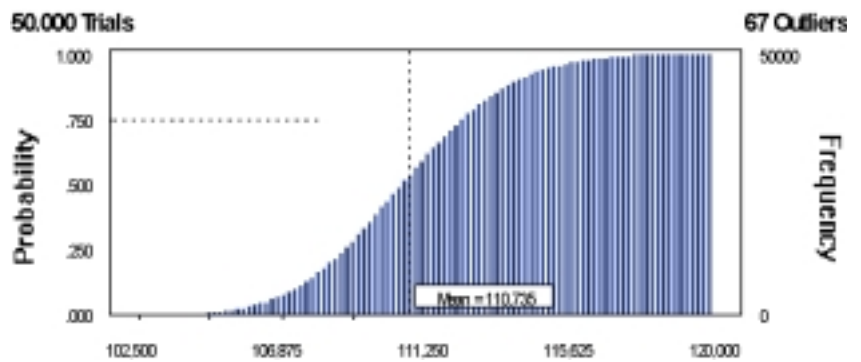
Laboratory's successful ISM program to the project ESH activities.

Environment – The project is currently sited in an existing developed area within TA-03. As such, no significant environmental impacts are expected. The NEPA process will ensure a careful examination of the potential impacts and any appropriate mitigation measures. During construction activities, attention will be required for unusual air releases from construction equipment. The project must also define specific plans for storm water and dust control during construction.

Safety – Construction work is an inherently dangerous activity that requires relentless attention to safety. The project will establish a safety policy and will apply safety requirements on all organizations performing work on the project. Safety records of contractors will be used as a major selection criterion. The project will also establish a monitoring and oversight program in addition to those of contractor organizations. The interface between construction activities and

ongoing Laboratory activities presents an additional risk. The construction site will be isolated with temporary construction fencing and gates. The contractor will be assigned responsibility for access control and site safety. The project will also plan and budget funds to enable quick response to any unplanned interface problems.

Health – The health of project and Laboratory workers is of utmost importance. Care will be taken to reduce impacts to the public from dust and other typical construction nuisances.



Example Risk Probability Curve

J. PRELIMINARY NEPA STRATEGY



“Preliminary environmental National Environmental Policy Act strategy – present the anticipated level of National Environmental Policy Act documentation for the project and the preliminary plan for completing it in support of the proposed project schedule. Identify any environmental issues that might impact the project.”

Documentation Level

The Laboratory and DOE-LAAO National Environmental Policy Act (NEPA) staff have reviewed the project plans to develop a preliminary determination of the required level of NEPA documentation. The official review will be performed during the conceptual design phase, and a formal determination (NEPA Evaluation Review Form) will be issued by the DOE-LAAO. Based on a review of the project scope and its relationship to ongoing LANL operations that were covered under the Site-Wide Environmental Impact Statement, an Environmental Assessment (EA) will be required. The project will replace existing administrative workspace in the same general area (disturbed) of the Laboratory. As such, the environmental impacts are expected to be

minor; however, to ensure that all impacts are adequately addressed by the project, an EA will be prepared.

Implementation Plan

The DOE-LAAO NEPA staff will lead the implementation of NEPA compliance for this project. DOE will either use in-house NEPA staff or retain a NEPA support contractor, independent of the Laboratory, to develop the required documentation. In the case of a support contractor, the Laboratory will provide baseline environmental data and information support to the DOE and the NEPA contractor.

An EA will be prepared and released for public review. Public input will be incorporated during the NEPA process. The DOE will perform a review of the final EA. Upon completion of the EA, either a “Finding of No Significant Impact” will be issued or a determination to prepare an Environmental Impact Statement (EIS) will be made.

The EA development will begin during the conceptual phase and will develop in parallel with the design and the alternative analysis. The DOE determination must be completed before the D-B contract can be issued.

Environmental Issues

The Laboratory procedure for identifying the relevant environmental concerns related to a project is called the ESH-ID process.²⁴ The ESH-ID process is based on a review of the project plans and their relationship to existing environmental laws and regulations. The result of this process is an ESH checklist that identifies the actions the project must undertake to ensure regulatory compliance. To address project changes, this process is repeated at each major stage of development in the project life cycle. The initial ESH-ID has been submitted for review based on this Conceptual Design Plan and no unusual requirements have been identified.

The project will prepare a waste minimization and pollution prevention plan during the conceptual design phase to address waste issues during both the construction and operation of the new facility.



K. PRELIMINARY SAFETY STRATEGY



“Preliminary safety strategy – discuss the anticipated level of safety documentation for the project, and the preliminary plan for completing it in support of the proposed project schedule. Identify safety issues that might impact the project.”

This preliminary safety strategy outlines the ES&H activities that will be required for this project. The SM-43 Replacement Project will be completed consistent with the requirements of LANL’s Laboratory Implementation Requirements (LIRs).

The anticipated level of safety documentation is based on the initial assumption that the SM-43 Replacement Project will be designated as a low hazard facility, PC-1, at a management level 3 (ML-3). The following safety-related documents would be prepared during the following stages of this project:

Preconceptual Stage:

- ESH-ID
- Preliminary Hazard Classification
- Preliminary Natural Phenomena Hazards (NPH) Performance Category (PC)

- Management Level Determination
- Hazard Identification
- Hazard screening by FM/ESH

Conceptual Stage:

- Draft Hazards Analysis
- Preliminary Hazards Analysis (PHA)
- Readiness Assessment Method
- NEPA Requirements
- Environmental Permits (i.e., Storm Water Pollution Prevention Plan)
- Other Permits

Design-Build Stage:

- Contractor Safety Plan
- Activity Hazards Analysis
- ESH-ID (update)
- Fire Hazards Analysis
- NPH Performance Category Determination Documentation
- NPH Seismic Detailing
- Site Hazards Analysis and Controls
- DOE Notification Report (at completion)

Start-up and Turnover Stages:

- Final Hazards Analysis
- Final ESH-ID
- Readiness Assessment Plan of Action
- Readiness Assessment Final Report

L. SAFEGUARDS AND SECURITY



“Safeguards and Security – These should be addressed in this section to the degree that they are technical objectives and functional requirements that affect the design basis.”

Technical Objectives

The SM-43 Replacement Project will house both classified and non-classified operations. The building(s) will be located within a limited access security area requiring access clearance to the L and Q levels. The building(s) will house classified documents, classified communications, and classified computing. Classified, UCNI and sensitive types of information will be present in the facility. Special nuclear materials will not be located in the building. The building design must balance the requirements for the Director’s public interactions with the facility security requirements.

The building location(s) will require reconfiguration of the current limited access area boundary to include the new facilities.

Functional Requirements

The safeguards and security requirements will be developed during the conceptual design and documented in the final Functional & Operational Requirements document. The requirements will be derived from the conceptual design and DOE Orders DOE O 5632.1C-1, DOE O 470.1, DOE M 200.1-1A, DOE M 471.2-1B, DOE M 471.2-2, and DOE O 6430.1A.

The project will include the following operational requirements:

- Expansion of the Limited Area
- Vaults
- Vault-type rooms (VTR)
- Secure conference rooms
- Security containers
- Intrusion detection assessment systems
- Security fencing
- Access control
- Entry/exit inspection
- Barriers & locks
- Classified computer systems
- Duress system
- Electronic surveillance
- Acoustical isolation
- Occupant accountability
- TSRD Ductbank System

Security Design Basis

The major portion of the building will be designed and built as a Limited Area with the exception of the area where unclassified operations and discussion will be held. A Controlled Access Area (CAA) will be located inside the Limited Area. This classified area may be a vault type room (VTR) complex. A Security Police Officer (SPO) from the Protective Force will perform access control for this complex. An SPO may be stationed at a post outside the VTR complex twenty-four hours per day, seven days a week.

This requires a booth-type enclosure outside the main entrance to the VTR complex. The complex shall be accessed through a double door airlock to acoustically isolate the SPO and others in the unclassified area from the VTR complex. Badge readers, administrative key/lock control, and internal facility procedures also will be instituted. Detailed design criteria for fencing, doors, locks, walls, windows, telecommunications, Red/Black Systems, grounding, encryption, HVAC, Protected Transmission Systems, and intrusion detection will be defined in the Conceptual Design Report.



During construction the project site will be located outside of the current security perimeter and will generally not require security guards or escorts. Construction activities that occur within 20 feet of the existing fencing will require the use of security guards. These requirements will be re-evaluated after completion of the conceptual design. A security plan will be prepared for the construction activities and another prepared for the building operations.

M. RELATIONSHIP & INTEGRATION WITH OTHER PROGRAMS/PROJECTS



“Relationships or integration with other programs or projects – identify other Department of Energy sites, programs, and/or facilities that have a programmatic and/or functional relationship to the proposed project. Confirm that the project is in the Tri-Lab/NV Plan or other Department of Energy planning document.”

DOE Program/Project Integration

As a Los Alamos infrastructure project, the SM-43 Replacement Project is not directly related to other DOE sites, programs, or facilities. However, Los Alamos is a multi-program site, and all DOE programs conducting operations at Los Alamos will benefit from this improvement in capability.

As discussed in the Program Sponsors section of this report, the project is included in the Tri-Lab/NV Plan. The Tri-Lab/NV plan has identified funding for the project in fiscal years 2003 through 2005.

Relationship to Other Projects

The SM-43 Replacement Project is planned for the core of TA-3 and therefore has an adjacency relationship to several other programs and projects located at LANL. It has been identified in the TA-03 Master Plan and the Comprehensive Site Plan. These plans identify TA-03 as the Laboratory’s central core dedicated to complex modeling and large-scale simulations. These plans outline a collection of planned projects and long-term goals for the Laboratory.

The SM-43 Replacement Project will provide space for applied physics, theoretical physics, and computational sciences. As such, the project will have a functional adjacency to activities conducted in the new SCC and NISC facilities.

The ongoing decommissioning and demolition in the TA-03 area is considered a related project. This ongoing work will remove several structures and reconfigure the related utility systems in the vicinity of the proposed location for this project. Detailed siting analysis may determine that use of some of these cleared sites is optimum for building construction by this project. The Laboratory's Senior Executive Team (SET) has committed to funding the decommissioning and demolition of SM-43 through Operating Expense funds. Structures slated for demolition are listed in the following table.

Structures Slated for Demolition	
Building #	Building Type
03-1569	Trailer
03-1597	Trailer
03-2055	Trailer
03-2091	Trailer
03-400	Transportable
03-401	Transportable
03-402	Transportable
03-403	Transportable
03-581	Transportainer
03-582	Transportainer
03-583	Transportainer
03-584	Transportainer
03-585	Transportainer
SM-43	Office Building (planned FY06)
SM-105	Sherwood Building (planned FY01)
SM-452	Office Building
SM-100	Office Building (planned FY02)
SM-287	Syllac Lab/Office Building (planned FY03)

N. REFERENCES

¹*Long Term Space Requirements for TA3-43 Occupants*, November 30, 1996 (prepared by Merrick & Company, Los Alamos, NM).

²“The Administration Building,” *SM-43 Building Assessment*, February 1996.

³*Building Modern Facilities to Meet Tomorrow's Missions*, Los Alamos National Laboratory, March 2, 1999.

⁴*LANL Space Costs*, PM-1 Planning Data, August 2000.

⁵*Business Case Study*, Los Alamos National Laboratory, Technical Area-3 Revitalization, KPMG, January 1999.

⁶Miller, Constantino, Zhu, Wang, Shteyngart, Xu, and Bandyopadhyay, *A Report on the Seismic Capacity of the General Laboratory Administration Building at Los Alamos National Laboratory*, Upton, New York, January 1995.

⁷*Probabilistic Seismic Hazard Analysis For Surface Fault Displacement at TA-3*, Los Alamos National Laboratory, July 7, 1998.

⁸*SM-1400, TA-3, FY-99 Stockpile Stewardship GPP Feasibility Study*, October 1998.

⁹DOE Homepage, <http://www.doe.gov/glance/mission.htm>.

¹⁰DOE Memorandum from Victor H. Reis to DP-45 (X. Ascanio), “Defense Programs Facilities and Infrastructure Management Policy,” October 1997.

¹¹DOE Defense Programs Mission Statement from the DP homepage, http://www.dp.doe.gov/dp_web/mission_f.htm.

¹²*FY01 Stockpile Stewardship Plan*, Executive Overview, June 12, 2000.

¹³DOE *Stockpile Stewardship Program 30-Day Review*, November 23, 1999.

¹⁴ *LANL Readiness in Technical Base and Facilities (RTBF)*, Implementation Plan – FY2000, FY2000 DP Budget Call.

¹⁵NW-IFC Tri-Lab/NV Budget Spreadsheet, June 2000.

¹⁶*1999 Los Alamos National Laboratory Strategic Plan (1999-2004)*.

¹⁷DOE *Record of Decision: Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory in the State of New Mexico*, Federal Register, Vol. 64, No. 181, September 20, 1999.

¹⁸DOE *Record of Decision Programmatic Environmental Impact Statement for Stockpile Stewardship and Management*, Federal Register, Vol. 61, No. 249, December 26, 1996.

¹⁹LANL *Institutional Plan FY2000-FY2005*, October 1999, LALP-99-151.

²⁰LANL *Comprehensive Site Plan 2000*, February 19, 1997 (revised April 12, 2000).

²¹“Infrastructure and Facilities Revitalization,” *TA-3 Master Plan*, October 1997.

²²*Functional and Operational Requirements for the Strategic Computing Complex*, Volume 3A- Design Requirements, Request for Proposal, May 1999.

²³*Public /Private Partnerships for Los Alamos National Laboratory*, Ernst & Young Construction Group, September 1999.

²⁴NEPA, Cultural Resources and Biological Resources (NCB) Process, LIR 404-30-02-0.

APPENDIX 1

Space Requirement Tabulations and Space Utilization

SM-43 REPLACEMENT PROJECT			
OFFICE SPACES @ 700 Personnel			
Description	Area (sf)	#	Total Area
Director	400	1	400
DLD/ALD	350	6	2100
Prog Dir/Prog Mgr	275	34	9350
C of S, GL, DGL	250	65	16250
Sim Lab	140	180	25200
Staff Member	120	246	29520
Exec Secretary Space (2)*	230	30	6900
Admin Staff	120	108	12960
Records Storage	2000	1	2000
Computer Classroom	1200	0	0
Vault	500	2	1000
Video Conference	600	2	1200
Lock Shop	1400	1	1400
Lock Shop Storage	400	1	400
Research Library	400	2	800
Sitting Area (reception)	130	11	1430
	no.of offices =	670	
TOTAL			110,910

*This office is occupied by two administrative individuals

SM-43 REPLACEMENT PROJECT			
SUPPORT SPACES @ 700 Personnel			
Description	Area (sf)	#	Total Area
Copy Room	150	29	4350
File Server	150	29	4350
Mail Alcove	24	29	696
Locker Room	130	4	520
Equipment Receiving	700	2	1400
Reception Storage	100	30	3000
Main Telecom Room	2000	1	2000
Satellite Comm Room	250	29	7250
Large Conference Rm	1000	6	6000
Small Conference Rm	600	10	6000
Break Room	300	12	3600
Janitor's Closet	50	12	600
Janitor's Storage	100	12	1200
Large Restroom	900	2	1800
Small Restroom	400	16	6400
Main Electrical Room	17000	1	17000
Satellite Electrical Rm	200	4	800
Main Mechanical Rm	34000	1	34000
Satellite Mechanical Rm	650	4	2600
Mechanical Control Area	120	2	240
Maintenance Shop	400	2	800
Fire Protection Area	100	12	1200
Elevator Lobby	100	12	1200
Elevator Equip Room	100	4	400
Stairs	250	18	4500
Main Lobby / Vestibule	2000	2	4000
Hallways	12000	1	12000
TOTAL			127,906

Space Requirements Summary

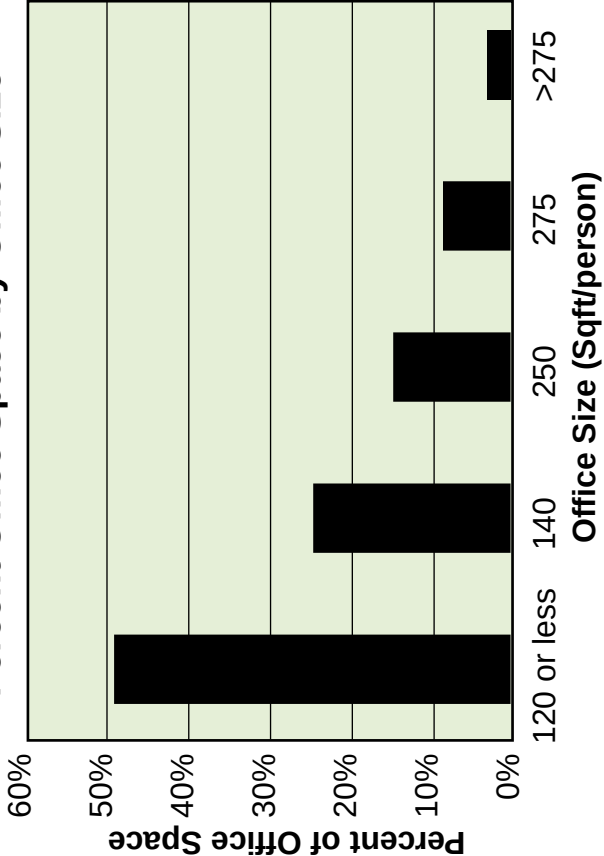
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SM-43 Replacement Space Utilization

Office Space	Sq. Feet	Quantity
Director	400	1
Dep/Assoc Lab Director	350	6
Div/Prog Director/Manager	275	34
Exec Support Staff	250	29
Group/Dep Grp Leader	250	36
Exec Secretary (2)	230	30
Admin/Staff Member	120	354
Sim Lab	140	180
Totals	102,680	700*

*Personnel

Percent Office Space by Office Size



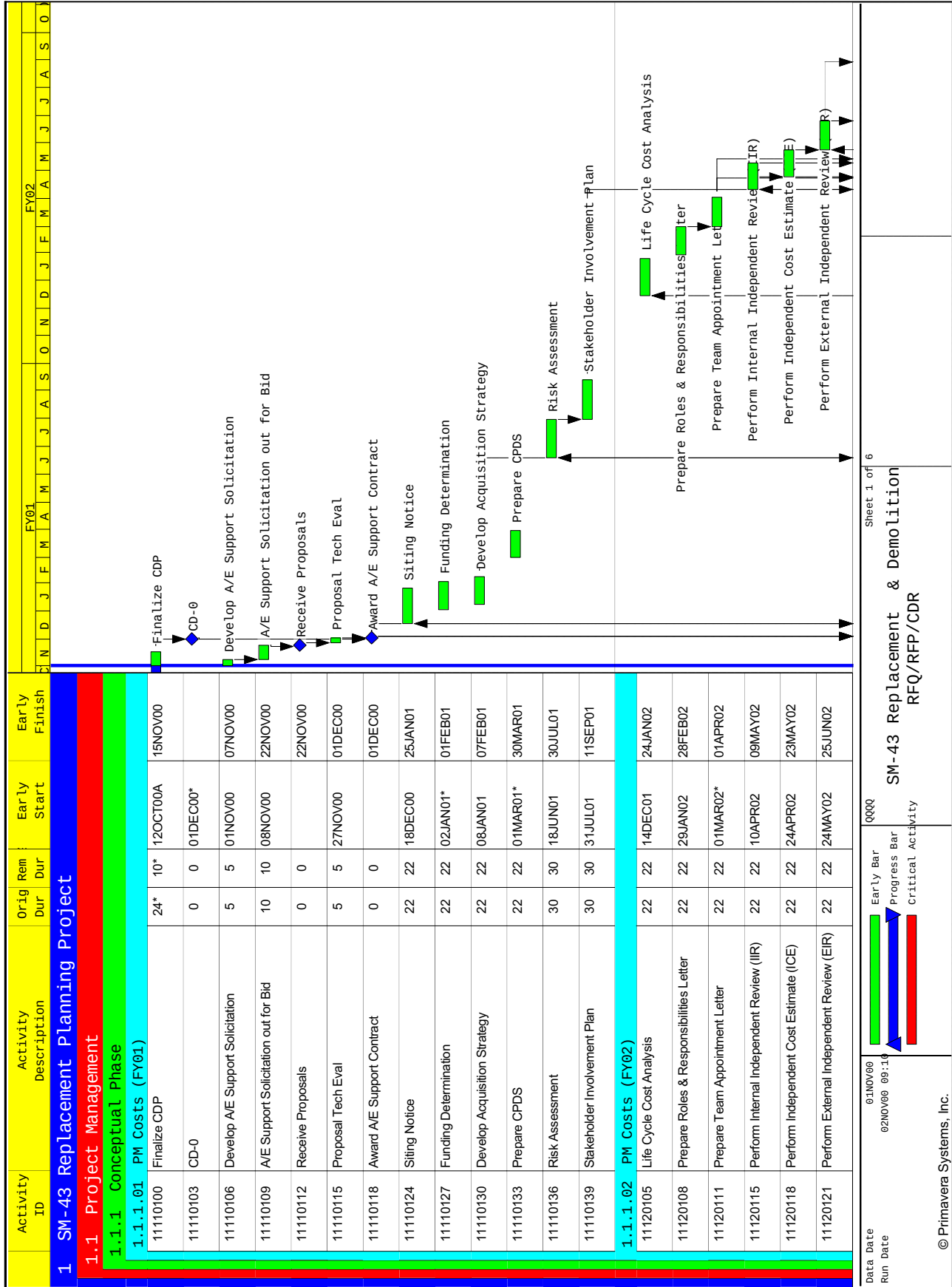
Average Square Feet Per Person Comparisons

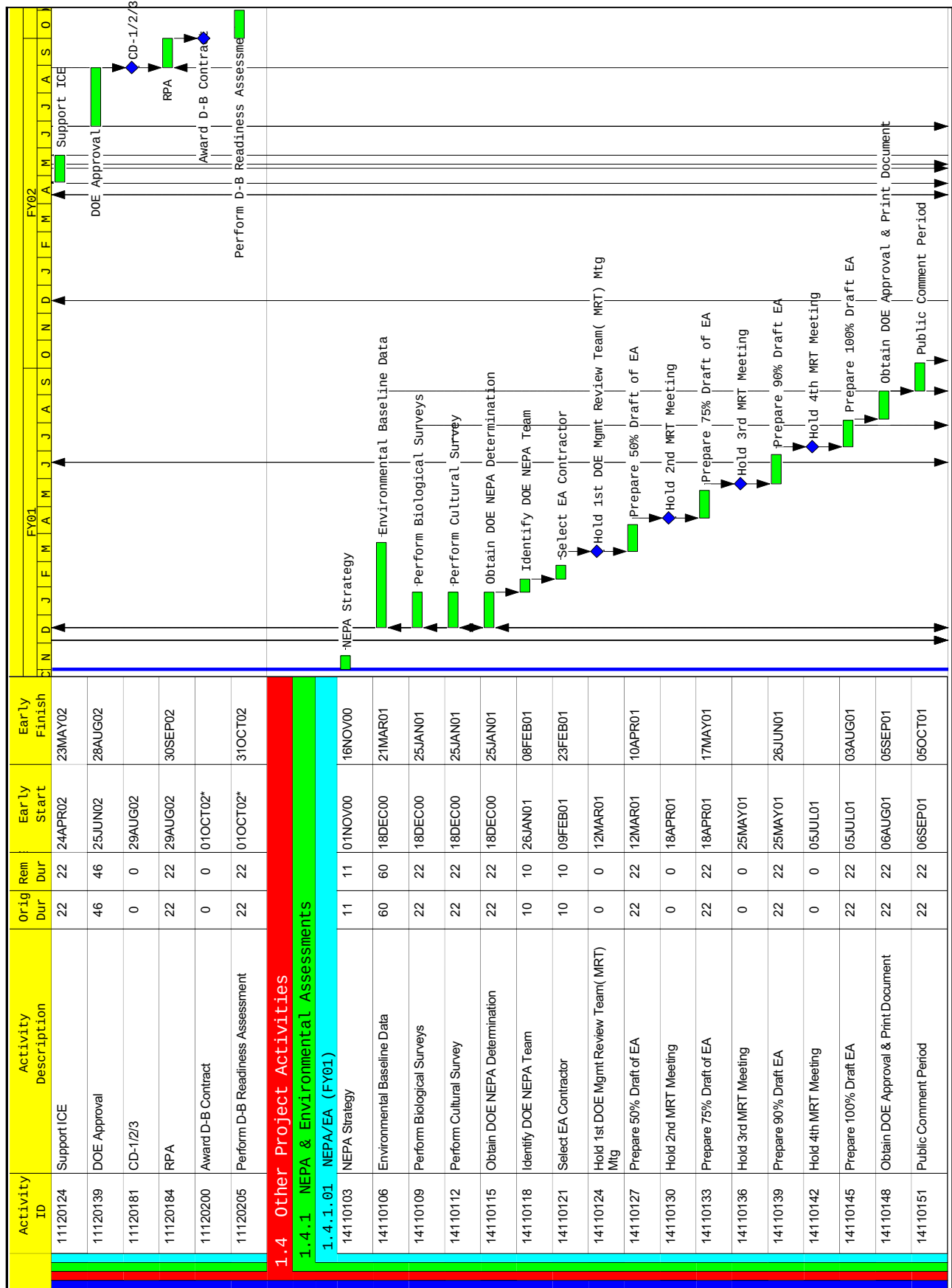
Average Sq. Ft. Per Person	Number of Planned Occupants		Primary Office Space		Ops and Maint		Special Purpose		Storage		Office Support		Total		Office Support Area Allowance		Net to Gross Ratio	
Proposed SM-43 Rplcmt	700	147	141	64	9	33	393	22.3%	45.8%									
NISC	465	117	121	86	3	24	351	20.9%	44.6%									
SCC	306	141	279	528	0	42	990	30.0%	30.5%									
COB	71	124	134	30	3	23	314	18.3%	44.2%									
FITS	120	116	69	0	2	10	198	8.7%	59.4%									
SM-43	1013	149	109	7	16	32	312	21.4%	51.3%									
GSA Goals		<120	<49			<26		<22%	>75%									

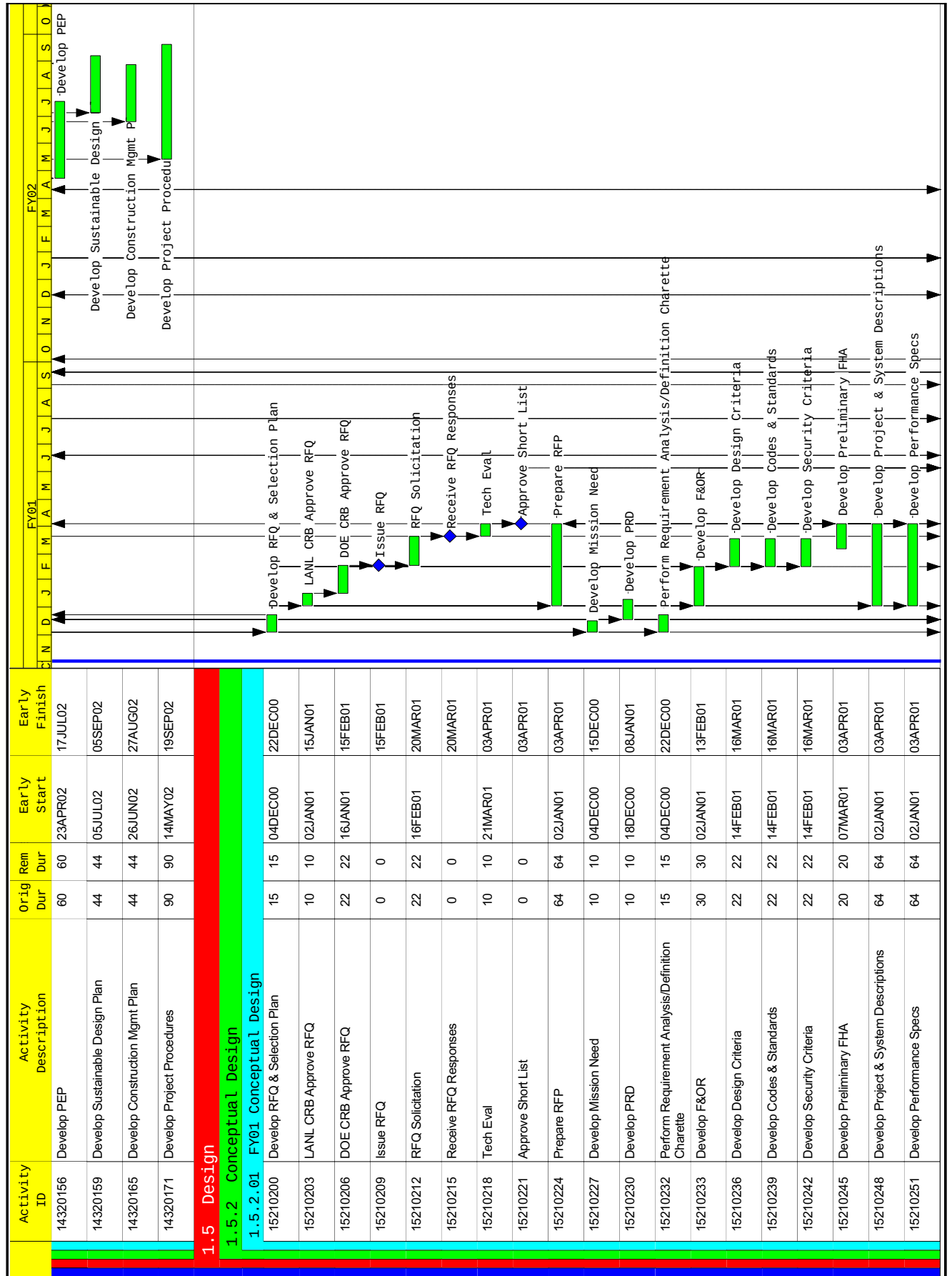
Office Support Area Allowance = Office Support/Primary Office Space
Net to Gross Ratio = Primary Office Space/(Primary Office Space + Ops and Maint + Office Support)

APPENDIX 2

Project Development Schedule Detail







APPENDIX 3

Cost Estimate Detail

TOTAL ESTIMATED COST (TEC) SUMMARY

ESTIMATE EFFECTIVE DATE PROJECT ELEMENT																																					
2-Nov-00 ESTIMATED DIRECT COST				ESCALATION CALCULATION		PROCUREMENT TAX		ESCALATED COST		ESCALATION COST		Rate		SUBTOTAL COST		CONTINGENCY COST		TOTAL ESTIMATED COST (TEC)		Costs for Garage		Costs for File Storage		Costs for Building I		Costs for Building II											
Start Date	Finish Date	Duration (mos.)	Midpoint Date	ESCALATION COST	ESCALATED COST	PROCUREMENT TAX	G&A	SUBTOTAL COST	% CONTINGENCY COST	TOTAL ESTIMATED COST (TEC)	Costs for Garage	Costs for File Storage	Costs for Building I	Costs for Building II																							
A. DESIGN PHASE																																					
1 Design																																					
a. Preliminary & Final Design by Design-Build A/E Building I. (assume 8% of Building & Improvement to Land Costs)																																					
\$1,633,764				1-Jan-03	29-Sep-03	9	May-03	7.2%	\$117,631	\$1,751,396	\$4,378	\$12,525	\$1,768,299	10.0%	\$176,830	\$1,945,129																					
\$1,633,764				1-Jun-03	10-Mar-04	9	Oct-03	8.4%	\$137,236	\$1,771,001	\$4,428	\$531	\$1,775,959	10.0%	\$177,596	\$1,953,555																					
\$200,000				1-Jan-03	30-Mar-03	3	Feb-03	6.4%	\$212,800	\$212,800	\$532	\$12,064	\$225,396	15.0%	\$33,809	\$259,205																					
\$160,000				1-Jun-03	1-Sep-03	3	Jul-03	7.7%	\$12,320	\$172,320	\$431	\$52	\$172,802	15.0%	\$25,920	\$198,723																					
2 Design Management by LANL																																					
\$751,500				1-Oct-02	1-Apr-04	18	Jul-03	7.7%	\$57,866	\$809,366	\$809	\$97,124	\$906,489	10.0%	\$90,649	\$997,138																					
\$300,600				1-Oct-02	1-Apr-04	18	Jul-03	7.7%	\$23,146	\$323,746	\$809	\$12,097	\$336,653	10.0%	\$33,665	\$370,318																					
3 Project Management Costs by LANL																																					
\$1,039,575				1-Oct-02	1-Apr-04	18	Jul-03	7.7%	\$80,047	\$1,119,622		\$134,355	\$1,253,977	10.0%	\$125,398	\$1,379,375																					
DESIGN SUBTOTAL																																					
																\$6,439,576																					
B. CONSTRUCTION PHASE																																					
1 Improvements To Land (SITEWORK). (Included with Building Costs Shown Below)																																					
2 Buildings																																					
a. Fixed Price Construction Contract (Building & Improvements to Land)																																					
1.a				D-B for Office Bldg., 335 personnel, 119,408 sf., 100 offices secure, \$157 per square foot plus furnishings at \$5K/per personnel-BLDG I																																	
				1-Oct-03	1-Feb-05	16	Jun-04	10.6%	\$6,776	\$22,586,794	\$56,467	\$6,776	\$22,650,037	10.0%	\$2,265,004	\$24,915,041																					
1.b				Records Storage in Bldg I or II, (costs includes A/E engineering costs)																																	
				10-May-04	15-Jul-05	14	Dec-04	12.2%	\$2,491,491	\$22,913,547	\$57,284	\$6,874	\$22,977,705	10.0%	\$2,297,770	\$25,275,475																					
2.a				D-B for Office Bldg., 335 personnel, 119,408 sf., 100 offices secure, \$157 per square foot plus furnishings at \$5K/per personnel-BLDG II																																	
				10-May-04	15-Jul-05	14	Dec-04	12.2%	\$2,491,491	\$22,913,547	\$57,284	\$6,874	\$22,977,705	10.0%	\$2,297,770	\$25,275,475																					
b.				In-House Construction Building Activities																																	
1				JCNMM Support (0.5 fte per duration at \$70/hr), survey, field locales, "as-builts"																																	
				1-Dec-02	31-Jul-05	32	Mar-04	9.8%	\$18,988	\$212,748	\$425	\$12,051	\$225,225	15.0%	\$33,784	\$259,009																					
2				Communications by LANL																																	
2a.				Communications by LANL. (includes subcontract) & GFE for Bldg I., 100 offices are secure																																	
				1-Aug-04	1-Feb-05	6	Nov-04	11.8%	\$174,454	\$1,640,454		\$196,854	\$1,837,308	15.0%	\$275,596	\$2,112,905																					
2b.				Communications by LANL. (includes subcontract) & GFE for Bldg II., 100 offices are secure																																	
				1-Jan-05	15-Jul-05	6	Apr-05	13.3%	\$184,978	\$1,660,978		\$199,317	\$1,860,295	15.0%	\$279,044	\$2,139,340																					
3				Security by LANL																																	
3a.				Security by LANL & Security /Inspect during Construction - Bldg. I., 100 offices are secure																																	
				1-Jun-04	1-Feb-05	8	Oct-04	11.6%	\$17,400	\$167,400		\$20,088	\$187,488	15.0%	\$28,123	\$215,611																					
3b.				Security by LANL & Security /Inspect during Construction - Bldg. II., 100 offices are secure																																	
				1-Nov-04	15-Jul-05	8	Mar-05	13.0%	\$26,000	\$226,000		\$27,120	\$253,120	15.0%	\$37,966	\$291,088																					
3 Other Structures																																					
a.				Fixed Price Construction Contract																																	
1				Parking Garage - includes A/E engineering costs, 400 spaces																																	
				1-Dec-02	15-Jan-04	13	Jun-03	7.4%	\$418,026	\$6,067,026	\$15,168	\$1,820	\$6,084,014	15.0%	\$912,602	\$6,996,616																					
4 Demolition																																					
5 Utilities																																					
a. Mechanical Utilities																																					
1				Water, Steam, Storm & Sanitary Sewage, Etc. by JCNMM																																	
				1-Apr-03	1-Aug-03	4	Jun-03	7.4%	\$48,840	\$708,840	\$1,418	\$12,170	\$722,428	15.0%	\$108,364	\$830,792																					
				1-Jan-04	1-May-04	4	Mar-04	9.8%	\$64,680	\$724,680	\$1,449	\$12,174	\$738,303	15.0%	\$110,745	\$849,049																					
b. Electrical Utilities																																					
1				Electrical Utilities by JCNMM																																	
				1-Apr-03	1-Aug-03	4	Jun-03	7.4%	\$18,500	\$268,500	\$537	\$12,064	\$281,101	15.0%	\$42,165	\$323,267																					
				1-Jan-04	1-May-04	4	Mar-04	9.8%	\$24,500	\$274,500	\$549	\$12,066	\$287,115	15.0%	\$43,067	\$330,182																					
2				Fire Alarm Tie-In by JCNMM																																	
				1-Dec-04	1-Feb-05	2	Jan-05	12.4%	\$6,200	\$56,200	\$112	\$12,013	\$68,326	15.0%	\$10,249	\$78,575																					
				15-May-05	15-Jul-05	2	Jun-05	13.8%	\$6,900	\$56,900	\$114	\$12,014	\$69,027	15.0%	\$10,354	\$79,382																					
6 Standard Equipment																																					
a.				Furnishings in D-B costs. (phones & safes will be moved to new offices). - Bldg I. Costs shown for misc equip																																	
				1-Jun-04	1-Feb-05	8	Oct-04	11.6%	\$14,500	\$139,500	\$349	\$42	\$139,891	15.0%	\$20,984	\$160,874																					
b.				Furnishings in D-B costs. (phones & safes will be moved to new offices). - Bldg II. Costs shown for misc equip																																	
				15-Nov-04	15-Jul-05	8	Mar-05	13.0%	\$16,250	\$141,250	\$353	\$42	\$141,646	15.0%	\$21,247	\$162,892																					
7 Inspection & Design & Project Liaison during Construction & Demolition																																					
a. During Construction																																					
1.				D-B Engineering Services for Bldg I. (assume 2.0% of Building Improvement to Land Costs)																																	
				1-Oct-03	1-Feb-05	16	Jun-04	10.6%	\$43,295	\$451,736	\$1,129	\$12,136	\$465,001	10.0%	\$46,500	\$511,501																					
2.				D-B Engineering Services for Bldg I (assume 2.0% of Building & Improvement to Land Costs)																																	
				10-May-04	15-Jul-05	14	Dec-04	12.2%	\$49,630	\$458,271	\$1,146	\$137	\$459,954	10.0%	\$45,955	\$505,510																					
3.				LANL Engineering Services (QA, Safety, etc)																																	
				1-Oct-03	29-Jun-05	21	Aug-04	11.1%	\$19,464	\$194,814	\$23,378	\$23,378	\$128,192	10.0%	\$21,819	\$240,011																					
4.				Inspection Services by Construction Manager																																	
				1-Apr-03	30-Sep-05	30	Jun-04	10.6%	\$113,514	\$1,184,402	\$2,961	\$355	\$1,187,718	10.0%	\$118,772	\$1,306,490																					
8 Construction Management (CM)																																					
a. Construction Management Firm for Construction Activities																																					
1.				Construction Management Firm for Construction Activities																																	
				1-Oct-02	30-Sep-05	36	Mar-04	9.8%	\$212,103	\$2,376,423	\$5,941	\$12,713	\$2,395,077	10.0%	\$239,508	\$2,634,585																					
2.				LANL CM Activities for Construction Activities																																	
				1-Apr-04	30-Sep-05	18	Dec-04	12.2%	\$73,346	\$674,546		\$80,946	\$755,482	10.0%	\$75,549	\$631,041																					
9 Project Management (LANL PM Activities)																																					
1.				Project Management during Construction Activities																																	
				1-Oct-03	30-Sep-05	24	Sep-04	11.4%	\$155,493	\$1,519,466		\$182,336	\$1,701,802	10.0%	\$170,180	\$1,871,962																					
CONSTRUCTION SUBTOTAL																																					
																\$72,599,485																					
																\$85,478,638																					
																\$1,124,235																					
																\$155,980																					
																\$70,865,226																					
																\$6,814,537																					
																\$1,519,466																					
																\$1,871,962																					
TOTAL ESTIMATED COSTS																																					
																\$6,996,616																					
																\$7,927,663																					
																\$36,981,602																					
																\$36,046,442																					

2-Oct-00

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