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TECHNOLOGY CONSULTANTS IN TELECOMMUNICATIONS,
AUDIOVISUAL & ACOUSTICS

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SMW Proposal Y-27

MAYOR'S OFFICE OF EMERGENCY MANAGEMENT

New York, New York

Telecommunications, Audiovisual and Acoustic Consulting Services

Prepared for:

**Mr. Joseph J. Aliotta
Swanke Hayden Connell Architects
295 Lafayette Street
New York, NY 10012**

October 21, 1997

NEW YORK • WASHINGTON DC • FLORIDA • CHICAGO • HONG KONG • KUALA LUMPUR

INTRODUCTION

Shen Milsom & Wilke, Inc. (SM&W) is pleased to present this proposal for telecommunications, audiovisual and acoustic consulting services to Swanke Hayden Connell Architects (SHCA) for the Mayor's Office of Emergency Management (OEM) Operations Center in New York City. We believe SM&W can make unique and important contributions to the project team because of our experience in working on projects of a similar nature and scope.

In reviewing this submittal, we would point out the following elements:

- Few consulting firms can match SM&W's breadth of experience which includes a wide variety of command, control and computer centers with requirements similar to those that will be found in the OEM. Please refer to our attached credentials for a detailed listing of similar project experience.
- SM&W's unusually high percentage of repeat and referral business is due not only to the excellence achieved in the final product but also to our track record of bringing projects in on time and within budget.
- SM&W neither sells equipment nor bases fees on the amount of equipment specified. Our main objective is that after a thorough needs analysis programming effort, each client will have the base building and special purpose room provisions to accommodate future requirements.
- SM&W is prepared to take a leadership role in issues that affect telecommunications, audiovisual and acoustic planning and design as well as to work closely with team members who will lead other areas. We work proactively, taking the initiative whenever appropriate, rather than waiting to be directed by the client or the architect. Our effectiveness, an outgrowth of our many years of combined unique experience, readily translates to our ability to help the project team seize opportunities that might otherwise be missed and to avoid potentially costly pitfalls.

PROJECT UNDERSTANDING

The Mayor's OEM has an important function in the management of a crisis. The ability of city government managers and agencies to gather key people and to collate, assess and react to all available information in a timely manner is critical to successful crisis management. Today there is a tremendous amount of information available from a variety of sources. Realtime computer, voice, and video information exists across a variety of agencies, plus numerous stored databases of maps, data and images can all be accessed instantly for use by crisis managers. How to access and use this ever-increasing stream of information most effectively is an important consideration. Operations centers have moved from paper maps, grease pencils and the sneaker network, to projected high resolution screens displaying realtime information such as data, weather map displays and live camera feeds. Access to information is a fundamental need in a crisis.

Our experience includes a variety of command and control center projects, including government, military, telecommunications and corporate network centers. Through that experience we have learned many valuable lessons which we are able to pass along to our clients. There are several key issues we want to address with the Mayor's Office of Emergency Management design team:

- Type and Density of Information to be Displayed
- Number of User Groups at the Consoles and Sources of Information
- The Information Hierarchy - Who Needs to Read What Information, and for How Long (user groups frequently require certain screens remain dedicated to particular information and a single scalable image does not always meet everyone's needs.)
- Physical Space of the Command Center - how it is allocated for current use, future growth, crisis management and secondary functions such as training and presentations.

Command centers can serve multiple functions and with careful initial planning can provide the flexibility to meet fast-changing needs. Issues such as lighting, connectivity, primary and secondary displays, signal routing of on-line information, both data and video, can make the command center a more useful space over its lifetime.

This proposal describes our scope of services to be provided and the related fees. While all phases of the design process are important, none is more important than the programming phase of a design project. The establishment of real goals and design parameters and the careful documentation of those goals is critical to the process. The program effort establishes a solid foundation and a clear direction from which the design process can proceed.

Based upon the documents provided to us, the RFP Draft dated 07/24/97, OEM Program Summary dated 07/21/97 and the Space Design Programming dated 08/18/97, the project will consist of the following spaces:

1. Standard office area of approximately 9,000 ft²
2. The Emergency Command Center - approximately 14,000 ft² on a raised floor. This area includes:
 - a. The Mayor's Suite
 - b. The Operating Room with 90 workstations and one or two media walls containing large TV screens.
 - c. The Watch command, with 10 work stations.
 - d. The Press Room
 - e. The Radio Room
 - f. The Computer Room
3. Mechanical, back-up equipment and other equipment, approximately 12,000 ft² to be installed on another floor, including:
 - a. Water Tank
 - b. Fuel Tanks
 - c. Diesel Generators
 - d. UPS Room
 - e. Satellite Dishes
 - f. Antennas

The project schedule is as follows:

1. Program confirmation, site survey, final schematics and outline specifications (scope of work) must be completed within twenty days of award.
2. Design development must be completed twenty days from the approval of the previous phase.
3. Construction Documents must be completed within fifty days from the approval of the final schematics phase.

TELECOMMUNICATIONS CONSULTING SERVICES

Our scope of services for telecommunications is as follows:

A. Project Set-up

The first part of the communication service planning project is the development of a project team, plan and list responsibilities. The tasks listed below are those necessary to organize the project work and develop a coordinated work plan that is synchronized with the space design and construction design.

1. *Develop Project Plan & Form Project Team*

- 1.1 Identify project team
- 1.2 Review construction project plans with SHCA and OEM
- 1.3 Identify communication requirements for the Emergency Management Center
- 1.4 Identify sources of information within the OEM for current configurations and service providers
- 1.5 Obtain list of work in progress and tasks completed by SHCA, OEM service providers, carriers, etc.
- 1.6 Determine which other governmental and private agencies are to be involved with the construction design process, service provisions or acceptance of any communication systems within the scope of this OEM project
- 1.7 Develop high level project objectives and estimated deliverable dates
- 1.8 Create Phase I project plan that will carry the system design through final design review
- 1.9 Merge Phase I project tasks into construction project plan
- 1.10 Submit merged plans for construction management committee approval
- 1.11 Adjust Phase I project plan in accordance with construction management recommendations
- 1.12 Create final set of project plans that cover the system installation, testing, certification, and acceptance

B. Communication System Appraisal

The existing communication services must be inventoried and evaluated prior to any new design implementation. This service is an information gathering step that identifies the current communication services and determines the portability of these network components. SM&W will issue a detailed questionnaire and spend appropriate time with OEM's technical and network support staff in order to compile an accurate picture of the existing communication systems and new requirements. The OEM will be requested to provide a "Letter of Agency" for inquiry purposes only, for all its common carriers. Among the items to be identified are:

1. *Develop Communication System Profile*

- 1.1 Current common carrier services - types, request circuit identification, quantities (voice data, fax, video, radio, etc.)
- 1.2 Communication service contractual obligations and termination liabilities to be provided by agencies for review.
- 1.3 Integration of the communication system with other sites which are not relocating.
- 1.4 Voice systems (PBX or carrier-based); service types and quantities
- 1.5 Radio systems (dispatch, emergency operations, radio TIE, etc.) Including roof deck and radio riser requirements
- 1.6 LAN and WAN communication installed base and projected requirements
- 1.7 Current cabling system design and future requirements
- 1.8 Intra- and inter-building communication services and future needs
- 1.9 Discuss disaster recovery plans and facility requirements
- 1.10 Special communication requirements (microwave, cellular, infrared, satellite, etc.)
- 1.11 Discuss network security design and future needs.
- 1.12 Review and make recommendations for legacy systems which must be relocated to the Emergency Management Center (i.e., teletype devices, "current loop" technology dispatch devices, analog data components, ring-downs (automatic and manual), etc.)

C. Structured Cabling System Design

It is essential that a structured cabling system design be developed for the Emergency Management Center. This cabling system will include all necessary cable types to support the various radio, CATV, CCTV and other systems. Additionally, this portion of the project will examine the applicability of using fiber optic cabling to the work area to provide a consolidated delivery medium for all high bandwidth applications such as "live from the scene" audio and video feeds to other critical support sites.

This portion of the project will also examine cable pathways from service entrances to a demarcation point in the OEM space. Underground and riser conduits must be surveyed, demarcation point space allocation and equipment spaces must be appraised and sized according to communication requirements.

1. *Prepare Communication Cabling System Technical Specifications Document*

- 1.1 Draw upon current standards to develop a sound and supportable design (ANSI/TIA/EIA/IEEE)
- 1.2 Survey available facilities (conduits, closets, etc.)
- 1.3 Outline material requirements and prepare non-vendor specific components list
- 1.4 Determine work station cabling termination equipment
- 1.5 Specify Telecommunication Closet cabling equipment requirements
- 1.6 Accumulate "per station" run counts for all cable types
- 1.7 Identify suitable manufacturers of components and equipment to coalesce and validate the design
- 1.8 Review specifications with building electrical design engineers
- 1.9 Establish numbering scheme specific to cabling system (TC numbers, riser designations, cable run numbering method, rack and patch panel numbering schemes, etc.)
- 1.10 Prepare technical specifications, system diagrams, component requirements and detailed methods and procedures for system construction
- 1.11 Prepare conceptual budget for the communication cabling system

2. *Prepare Detailed Cabling System Design Data*

- 2.1 Identify all cabling system applications by vendor, carrier or service provider
- 2.2 Review preliminary seating plans, stacking plan or initial furniture layouts
- 2.3 Allocate cable runs to specific Telecommunication Closets (TC)

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- 2.4 Determine TC size and environmental requirements
- 2.5 Determine riser size, quantity , origin & Destination
- 2.6 Develop cable trough and conduit system with electrical contractor
- 2.7 Draw preliminary scale drawings of all TC's and submit for construction management approval

3. *Prepare Communication Cabling System Technical Bid Package*

- 3.1 Consolidate all design criteria into single, unified bid package
- 3.2 Incorporate construction requirements (trade coordination issues)
- 3.3 Prepare environmental data (electrical, HVAC, grounding and bonding) for all TC's and equipment rooms
- 3.4 Coordinate the cabling system bid package with other bids to be disturbed (i.e., electrical and security systems)
- 3.5 Review conceptual budget and adjust to accommodate changes resulting from bid specifications final review.

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D. Common Carrier Coordination

The construction of the OEM dispatch center communication facilities must be coordinated and synchronized with all common carriers. The services listed here will insure that the carrier facilities are identified and properly inventoried early in the project. A new services installation plan can begin once all services have been properly noted.

1. Communication Service Provider Planning

- 1.1 Determine identity of all current carriers along with OEM forecast for future carriers.
- 1.2 Contact carriers and outside plant engineers regarding primary and diverse entrance construction.
- 1.3 Locate Service Entrances and identify manholes, underground conduit, house riser or other facilities to be constructed or reused.
- 1.4 Determine environmental data for Main Telecommunication Closet (i.e., electrical, HVAC, security, etc.)
- 1.5 Obtain outside plant underground conduit searches and determine capacity requirements.
- 1.6 Coordinate activities of various carriers with construction management.

E. Voice Communication System Planning

Voice communication system design and planning is a key element of the entire communication system design. A system design and functional overview must be created and reviewed by OEM management. This list of services applies specifically to voice processing and encompasses standard voice telephony whether PBX or carrier-based along with any PSAP-style service planning including tandem review and a diversity study.

An Automated Call Distribution (ACD), Uniform Call Distribution (UCD) or Call Processing (CP) system(s) requirements study should be conducted and a plan to integrate the new facilities will be developed after this analysis is completed. These applications will only be identified through a thorough voice system review process.

1. Voice Services System Coordination

- 1.1 Identify all current voice systems and components.
- 1.2 Identify special voice-grade services (i.e., IMB for modem, fax; ISDN/BRI, etc.)
- 1.3 Assist with the coordination of carrier facility relocation plans; provide demarcation information and TC riser and station run layouts for voice services provider.
- 1.4 Determine standard voice service requirements (PBX or carrier-based system).
- 1.5 Obtain voice traffic summary data from the OEM or its designated representative.
- 1.6 Prepare recommendation for voice system design and services in conjunction with specified carrier (i.e., Bell Atlantic).
- 1.7 Work with OEM staff to coordinate cable identification and voice riser and station cross connect schedules.
- 1.8 Develop voice system migration strategy jointly with appropriate carrier(s).
- 1.9 Identify new services and features available to OEM for use in the new facility.

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F. Wide Area Network Planning

This work list addresses the construction of the various carrier facilities required by the OEM to provide interconnection to the other locations for LAN-based services.

1. Wide Area Network Design

- 1.1 Identify current WAN topology requirements including carrier information and applications.
- 1.2 Determine carrier requirements for move-in and OEM's future service projections.
- 1.3 Locate carrier equipment on SE and TC drawings.
- 1.4 Develop carrier service migration plans (i.e., additions, relocation, drops).
- 1.5 Coordinate carrier circuit "live" dates with the move-in schedule and prepare testing schedule jointly with the OEM and its service providers.
- 1.6 Develop capacity estimations to be used in sizing the carrier facilities brought into the new management center.
- 1.7 Coordinate carrier orders of various service bureaus to be used by OEM at the Emergency Management Center.

G. Develop and Maintain Communication Cabling System Construction Drawings

The entire communication cabling system must be documented in a way that is compatible with architectural and engineering submittals for construction design purposes. The activities listed here are those that will integrate the communication cabling system and supporting elements into the construction documents. SM&W will use background drawings and communication outlet locations prepared by the architects and engineers to develop a separate set of drawings labeled "Communication Cabling" created in AutoCAD R13c4a or R14 format. These drawings coupled with the system's technical specification documents will present a complete package to the cabling system bidders and installers.

1. *Develop Communication Cabling System Design Drawings (50% CD level)*

- 1.1 Assemble all communication outlet locations by floor and prepare spreadsheets for each floor listing an outlet profile (e.g., outlet number, type, room number, special features, etc.)
- 1.2 Assign communication outlet numbers to each designated location on the drawings.
- 1.3 Compile communication outlet specific data (e.g., type of outlet, special mounting requirements, cable distribution method, etc.)
- 1.4 Prepare 50% CD drawings communication outlet layer for review and comment.

2. *Develop Communication Cabling System Design Drawings (100% CD level)*

- 2.1 Update all drawings to reflect comments and modification to 50% CD documents.
- 2.2 Update communication outlet spreadsheets to reflect comments and modifications to 50% CD documents.
- 2.3 Review 100% CD drawings with all project team members responsible for any component of the communication system and consolidate final comments on these drawings.

3. *Develop Communication Cabling System Design Drawings (Bid Issue)*

- 3.1 Prepare final set of drawings to be issued with the communication cabling system technical bid package incorporating final comments and changes to 100% CD issue.
- 3.2 Review these final drawings with the project team and obtain final sign-off on these drawings.

H. Communication Cabling System Bid Process Monitoring

The following describes the steps SM&W will take to monitor the bid process should the communication cabling system be submitted to a formal bid after the cabling system design and technical specifications have been completed. This portion of the work effort will observe the entire communication cabling system bid process to insure that the system is presented correctly to the bidders, that all bidder technical questions are addressed, that bid responses are evaluated properly and that the technical portion of the award process proceeds smoothly.

It is the responsibility of the OEM (or its designated representative) to distribute the bid document to the vendors or contractors of its choice. SM&W will not solicit the bid responses nor will it act as the bid coordinator. SM&W will provide only a technical appraisal of all bid responses; tracking bid responses, procedural methods, legal issues, financial matters and all other non-technical issues must be addressed by the OEM or its designated representative(s).

1. Monitor Communication Cabling System Bid Process

- 1.1 Compile complete communication cabling system technical bid package.
- 1.2 Address all bidder technical questions, attend all bidder conferences and assist in the technical evaluation of bid responses.
- 1.3 Attend site(s) walk-through with bidders.
- 1.4 Revise bid technical specifications to incorporate any clarifications or OEM additions.
- 1.5 Monitor bid award process to track project progress and deliverable dates.

1. Communication Cabling System Construction Monitoring

SM&W can monitor the cabling system installation process to insure that the components installed match the bid submittals, that the methods and procedures for installation are according to the bid specification, and the proper testing of any certified cabling system is being conducted.

SM&W can also arrange for an independent testing firm to visit each site and randomly test copper and fiber optic cable runs per bid and standards' specifications. Charges for an independent testing firm's service are NOT included here but can be obtained after the cabling system has been designed and approved.

1. Monitor Communication Cabling System Construction

- 1.1 Verify that cabling components delivered to site for installation are the appropriate manufacturer, make, model, color and any other attribute as described in the cabling system technical bid specification.
- 1.2 Verify that placement of any cabling system mounting equipment, racks, cable trays, cable ladders, patch panels, connecting blocks and any other component are in accordance with the cabling system technical specification and the final construction issue drawings.
- 1.3 Review installation at regular intervals with the cabling system contractor and prepare punch list of items that must be corrected or examined again.
- 1.4 Report on system construction progress to the project management team.
- 1.5 Periodically attend cable testing and certification.
- 1.6 Coordinate the random sample testing of copper and fiber optic cable runs by an independent firm should the OEM elect this option.
- 1.7 Verify that all construction punch list items are corrected or closed.

J. Radio Systems

Radio communication is essential to the operation of the OEM center. SM&W can provide the OEM with project management assistance during the implementation of the radio systems at the Emergency Management Center.

The OEM has already begun its procurement of many system components including radio devices. SM&W will work with OEM staff members, SHC architects, design engineers and the various vendors to integrate the radio system design with the other support systems at the Emergency Management Center. All radio systems design, installation and testing is by others. Radio systems designers to provide all diagrams, drawings and equipment layouts.

1. Radio System Design Coordination

- 1.1 Review the radio system design with OEM staff members as it impacts infrastructure pathway space planning.
- 1.2 Review construction requirements to support radio signal distribution to designated areas.
- 1.3 Create technical bid specifications for the cabling systems necessary to support the radio communication system.
- 1.4 Assist in the space/cabling layout of the radio equipment room in coordination with the OEM and various construction project teams.
- 1.5 Review design and construction plans for radio system cabling plant.

AUDIOVISUAL CONSULTING SERVICES

The scope of our audiovisual work described in this proposal covers the completion of the following task:

Programming

(Interviews, Analysis, Budget Estimates & Report)

1. Conduct interview/s with OEM personnel to determine the nature and extent of the audiovisual display systems and peripheral systems required for the OEM. These interviews are intended to be a dialogue to exchange information and to discuss technologies for which provisions should be made.

Obtaining information from OEM personnel is critical to the display systems design process. Key user groups to be interviewed should be identified by SHCA. We recommend that in addition to OEM operations personnel and other user groups, that the information technologies sector be represented, so that we can discuss future plans that may impact the infrastructure design of the OEM. We anticipate one day of interview discussions in a casual roundtable format.

Issues to be discussed during the programming phase of work include, but are not limited to:

- Connectivity to Allow for Signal Distribution to and from the OEM
- Provision for Wireless, Microwave and Satellite Up/Downlinks
- Primary/Secondary Viewing
- Video Conference and Other Technologies
- Crisis Management Space
- Information Display Requirements
- System Redundancy Requirements

2. Prepare an *Audiovisual Needs Assessment Report*. The report will include:

List of OEM spaces, a summary of each space in the program, and how the room will be used.

Systems capabilities descriptions, a delineation of systems capabilities that should be considered for the OEM. The information, in outline format, will be presented in terms of screen/s, projection, audio, control and video display capabilities.

Preliminary planning budget estimates, that reflect the cost of equipment and installation by a systems contractor.

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3. Meet with OEM group to review the report, present our findings and answer any questions the client may have.

After completion of the programming effort and with OEM staff have approved the *Audiovisual Program Report*, SM&W will begin the following tasks:

Design Development/Base Building Design
(*Facilities Planning, Electrical and Mechanical Design Input*)

1. Prepare preliminary sketch studies as necessary to confirm deployment of space proposed, determining space requirements for all audio, audiovisual and television equipment, sight lines, projection lines, ceiling height requirements, projection room depths, etc.
2. Develop final facility plan and elevation drawings showing all systems equipment to be installed. These drawings will provide input for architectural design, including: projection screen details, computer flooring, special glazing for projection and observation ports, wall treatments, built-in cabinetry and other special base building requirements. These drawings will determine the design of the electrical system drawings to follow.
3. Develop reflected ceiling and base electrical mark-up drawings showing required empty conduit and raceways, junction boxes and power outlets for the systems equipment.

Systems Design
(*Engineering and Bid Specification*)

1. Provide functional block drawings for all audio, video and control systems showing the interconnections between all components.
2. Provide equipment rack drawings detailing all allocated equipment modules.
3. Provide detail drawings of all consoles, control desks, projection tables, custom control panels, connection panels and plates and mounting devices.
4. Provide schematic drawings of custom circuitry, where required.
5. Provide updated facility plan drawings showing the location of all specified systems equipment.

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6. Provide complete specifications for all systems. These specifications will include:

General Specifications, warranties, system performance requirements, installation practices, Owner training, system check-out, etc.

Detailed Specifications, outlining functional requirements for each system in each area.

Equipment Lists detailing each piece of equipment by manufacturer and model number.

Together with the drawings, these specifications will provide complete bid documents for competitive bidding by a systems contractor.

7. Provide a list of recommended systems contractors competent to perform the systems implementation.
8. Provide a detailed review and analysis of the bid returns from systems contractors in order to facilitate the owner evaluation of the returns.

Systems Implementation

(Review Contractor's Submissions, Monitor Workmanship and Supervise Final Acceptance Tests)

1. Coordinate with the systems contractor and owner representatives to establish scheduling, operating and reporting procedures for the implementation phase.
2. Review the systems contractor's shop drawings for conformance with the specifications and contract documents. Approve or disapprove these drawings.
3. Approve or disapprove systems contractor's requests for deviations from the specifications.
4. Supervise on-site acceptance testing of all equipment and systems operation after the systems contractor has completed the installation but before commissioning.
5. Recommend that the systems be accepted as installed before final payment is made to the contractor.

ACOUSTIC CONSULTING SERVICES

Shen Milsom & Wilke will provide architectural and structural review as well as providing interior acoustics design requirements, all based on good practices and in accordance with applicable industry standards.

Areas of concentration will include room acoustics, acoustic isolation of sensitive spaces such as the Emergency Command Center and the Mayor's Suite. Focus will also be given to the diesel generators, which require noise and vibration isolation to minimize impact on the work environment.

Based on the above understanding, our acoustic consulting services include the completion of the following base building and base scope interior tasks:

Schematic Design

1. Study space adjacencies and identify potential intrusive noise transmission between adjoining spaces due to the nature of the various functions. Submit comments and recommendations of adjacency changes and/or noise transmission control treatments.
2. For existing buildings to be renovated, conduct walk-through of the buildings. Observe existing M&E equipment which may be maintained.
3. Review base building mechanical and electrical design concepts and provide input in terms of equipment noise and vibration generating properties, identify and discuss potential problems, and offer suggestions of alternate design approach where applicable.
4. Submit recommendations of floor slab and any other structural input as appropriate to handle major mechanical and electrical equipment spaces for control of vibration transmission.
5. Submit acoustical design guidelines with regard to HVAC systems to achieve acceptable NC (Noise Criterion) ratings for all Phases of the project.

Design Development

1. Submit complete recommendations of base building core and shell constructions for each category of spaces in order to achieve adequate sound attenuation from adjacent activities. Submit construction details and specifications as necessary for base building documents.

2. Establish acoustical design criteria for the project in the following categories:
 - Maximum permissible background noise levels due to operation of base building HVAC systems in terms of NC (Noise Criterion) levels for OEM spaces.
 - Partition sound attenuating properties in terms of STC ratings for mechanical/electrical equipment rooms and OEM spaces.
 - Sound attenuating properties of equipment room doors in terms of STC ratings based on realistic field installed achievable performance.
 - Optimum reverberation time for special audiovisual spaces.
3. Submit recommendations for adequate control of airborne and structure-borne noise/vibration transmission.
4. Establish all partition types as appropriate in accordance with sound attenuating properties as established for the project. Submit a set of partition detail sketches for each recommended type, including the joint details and conditions along top and bottom runner channels for best field performance of recommended constructions.
5. Based on the central air handling systems, review duct penetration locations for both supply and return air and duct routing configurations on the typical floor. Based on the air distribution requirements, determine the best air handling equipment location, orientation, and shaft adjacencies within the core.
6. Following the establishment of the above, review ductwork velocities, fan sound power ratings, duct lengths within fan rooms, and submit recommendations of ductwork acoustical treatments for the achievement of NC environment established for the project.
7. Study architectural shapes and volumes of Command Center Room. Determine amount of acoustical treatment requirements. Submit recommendations of interior finishes suitable in achieving desired room acoustics for optimum functioning of audio systems as well as for clarity of speech communications.
8. Submit details of room finishes, material specification and mounting details. Work with designs for alternate solutions as necessary to achieve acoustical goals while complying with designers' aesthetic intent.

Construction Documents

1. Review all construction document progress sets on a continual basis and submit plan review reports to ensure thorough incorporation of all acoustical input.
2. Review ductwork fitting designs, to minimize the potential of regenerated noise due to air turbulence.
3. Review the selection of fan powered box terminals and/or VAV boxes. Submit recommendations of CFM breakdowns vs. inlet duct sizes to boxes. Submit acoustical performance criteria and approved manufacturers and model types.
4. Submit specifications of acoustical performance, acoustical treatments, and vibration isolation mounting system.
5. Prepare schedules for sound traps, acoustical lining, and minimum static deflections for each resiliently mounted system.

Construction Administration

1. Review and approve shop drawing, materials, and equipment submissions for conformance with design intent and compliance with the Construction Documents.
2. Conduct a final inspection and test to confirm approval of all acoustical conditions in the building.
3. Coordinate all construction observation and testing services with related disciplines.

FEE COMPENSATION

For services described above, our fee compensation shall be:

Telecommunications Consulting Services	\$76,500
Audiovisual Consulting Services	\$32,000
Acoustic Consulting Services	\$11,500

We estimate our reimbursable expenses for this project will not exceed \$4,500.

TERMS OF AGREEMENT

Invoicing: Fees shall be invoiced monthly for work performed during the previous month on a basis of the Project's percentage of completion.

Architectural Drawings: Fees contained in this proposal are based on the assumption that SM&W will be provided architectural drawings for the project in an AutoCadd14 format so that we may add our infrastructure and design details to these drawings.

Additional Services: If additional services, including but not limited to request for changes in previously approved work, are requested beyond the basic services, we shall receive additional compensation at the following hourly rate schedule:

Principals	\$ 170
Sr. Associates	\$ 145
Associates	\$ 125
Staff Consultants	\$ 115
CADD Designer	\$ 100

Note: The above rates for additional services are subject to change due to cost of living increases and employee merit increases during the course of the project.

Reimbursables: We shall be reimbursed monthly, at cost, for Project-related direct expenses including, but not limited to, printing, express mail delivery. Use of vehicles will be charged at the rate of \$.35/mile.

Contract Termination: Should the Project be suspended for more than three (3) months or abandoned or should you elect to terminate our services prior to our completion of the work, we shall be compensated for all services performed and reimbursables expended up to the date of receipt of written notice.

If the Project is resumed after being suspended for more than six (6) months, our compensation shall be equitably adjusted.

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Credit: In any publication relating to the Project, you will use your best efforts to have our firm identified as the acoustical, audiovisual and/or telecommunications consultant for the Project.

Extent of Agreement: This agreement will constitute the entire agreement of the parties concerning the Project and supersedes all prior negotiations. This agreement may be modified only in writing, if agreed to by both parties.

If you find this proposal agreeable, kindly signify your acceptance in the space provided below and return a copy to us for our files.

Shen Milsom & Wilke, Inc.


 Jeff N. Wilde
 Senior Associate

APPROVED BY:

Signature

Name

Title

Date