

SIXTH FLOOR EXPANSION  
JOHN SEVIER STATE OFFICE BUILDING  
Nashville, Davidson County, Tennessee  
Task Authorization #04-034-N  
SBC No. 529/000-08-2012-04

August 31, 2015

For

STATE OF TENNESSEE  
DEPARTMENT OF GENERAL SERVICES  
Nashville, Tennessee

By

HFR Design, Inc.  
Brentwood, TN  
HFR Project No. 2012500.34

**Purpose:** The purpose of this study is to examine the viability of converting the 6th floor from an L-shape to a rectangle space for better use and function.

**Cost:** \$1,382,606 or \$258.14/square foot. See detailed architectural estimate, as well as mechanical, electrical, and plumbing estimates attached to this report.

**Summary:** The Sixth Floor can be developed or converted into more usable space, but not without the addition of handicapped accessible, men's and women's rest rooms, conference area, and break room. Mechanically, due to the control issue of the two pipe system along with the disturbance of connecting new piping all the way to the basement we recommend using an air cooled VRF system with remote roof mounted condenser. Electrically, the floor will need new power and lighting, new fire alarms, access control, and other systems. New plumbing systems will include new fixtures, new supply and waste lines, and storm lines for the new roof area. See detailed mechanical, electrical, and plumbing evaluations and recommendations attached to this report.

**Methodology:**

- Site visits
- Photography to document existing conditions.
- Existing drawings from the 1930s.
- Schematic design drawing, floor plan.

**Evaluation, Architectural and Structural:**

1. John Sevier Building's Sixth Floor has approximately 8,376 total gross square feet including roof. Taking out the roof area leaves approximately 4,596 SF existing, gross out to out.
2. The State has expressed interest in the development of 760 square feet immediately outside at the southeast corner of the roof. This area is bound conveniently by the original screen wall that hid the original roof top cooling towers no longer in place. After adding this square footage, the new area will be 5,356 SF.
3. Occupancy load in the conference room could be as high as 94 persons (figured at 7 square feet per person with compact seating) or 51 with tables and chairs (15 square feet per person). In either scenario, the occupancy is over 50 and thus the space will require two exits. Please refer to the attached floor plan.
4. Our design concept for the new exterior walls would be plaster or gypsum board over metal studs, sheathing, insulation, and brick to match existing where necessary to infill. Windows will be provided in locations that simulate the positions, sizes, materials, and configuration of the existing windows, with the exception that they will be thermally broken and have insulated glass for energy efficiency.
5. Structurally, we envision the new roof structure's being steel beams (in lieu of joists) due to the small size of the expansion.
6. As for the existing roof slab (in the area proposed for expansion), this area is 4" below the finished floor of the 6th floor. We propose a light weight concrete topping slab to be placed atop the existing roof slab to create a level floor. Additional reinforcements will be required beneath the existing roof slab to accommodate the additional dead and live loads.
7. The conference room interior walls would be the current exterior walls of the John Sevier, brick with three original windows. Ceiling would be a lay in ceiling and metal grid. We will need the acoustical properties of a lay in ceiling with the hard brick and plaster walls.
8. The consideration of an elevator serving the Fifth and Sixth Floors has been researched. Please refer to the HFR Design Report entitled "Sixth Floor Elevator Extension Study" dated August 22, 2015.
9. A new elevator is proposed in a different recommendation. Associated with the new elevator, electrical components located in the elevator machine room are required to be relocated to meet current codes. There is an existing closet adjacent to the elevator machine room we believe could serve as a new location for these components.
10. During earlier discussions of the Sixth Floor we learned the State wishes to eliminate the chimney located on the west end of the corridor. Currently the corridor is offset to avoid the chimney. Removing the chimney would permit us to straighten the corridor and create a more efficient use of the space. Our floor plan shows a recommendation in this regard and includes a drinking fountain in this location.

11. Regarding plumbing fixtures, the existing toilet facility is not ADA compliant. Also, there are not separate men's and women's facilities. Our floor plan indicates a way that new toilets could be envisioned.
12. Codes will require a janitor's sink, one per floor. There is an existing unused shower that can be purposed for this need.
13. In order to enhance the viability of the Sixth Floor for office and conference use, a usable break room would be desirable. To that end, we have shown a T3 style break room. A counter can be provided for a coffee machine, a microwave, and a sink. There is room for vending machines and recycle bins.

**Existing Features:**

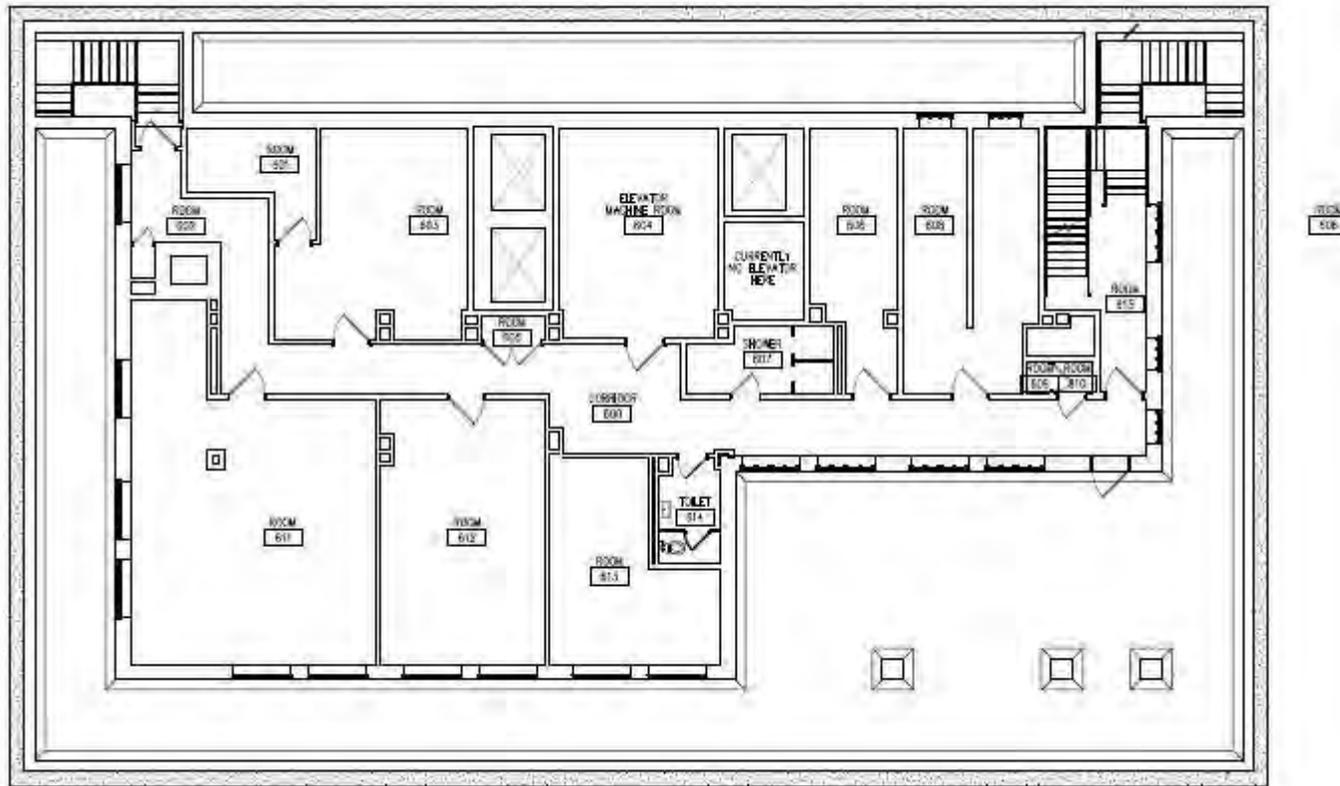
1. Rehabilitation of the remaining features of the John Sevier Sixth Floor should begin with the building envelope: the roof, walls, windows, insulation systems, and the rest. Some of these systems could wait or be considered part of the larger exterior renovation project. Some could proceed or be part of an early release project.
2. The roof, for example, could be demolished, the insulation upgraded, and a new single ply membrane installed.
3. Existing windows are in poor condition; we can take this opportunity to replace them with more energy efficient windows, or refurbish existing windows and install new interior storm windows.
4. The walls and roof enclosure around the new conference room could proceed in fairly quick order while the remainder of the renovation project is in progress.
5. The existing floor has all exposed ceilings. This exposes wiring and especially sprinkler piping to view. To bring the floor up to anticipated finish levels for office type occupancy, we propose to add plaster veneer ceilings in office and corridor areas.
6. Existing mechanical, plumbing, and electrical systems require repairs and upgrades.
7. The existing skylights should be restored in the two offices on the southwest corner of the floor. They measure approximately 7' x 15' in plan and would reproduce the historical, pyramid shape

Mechanical, Plumbing, and Electrical Narrative: Refer to attached reports.

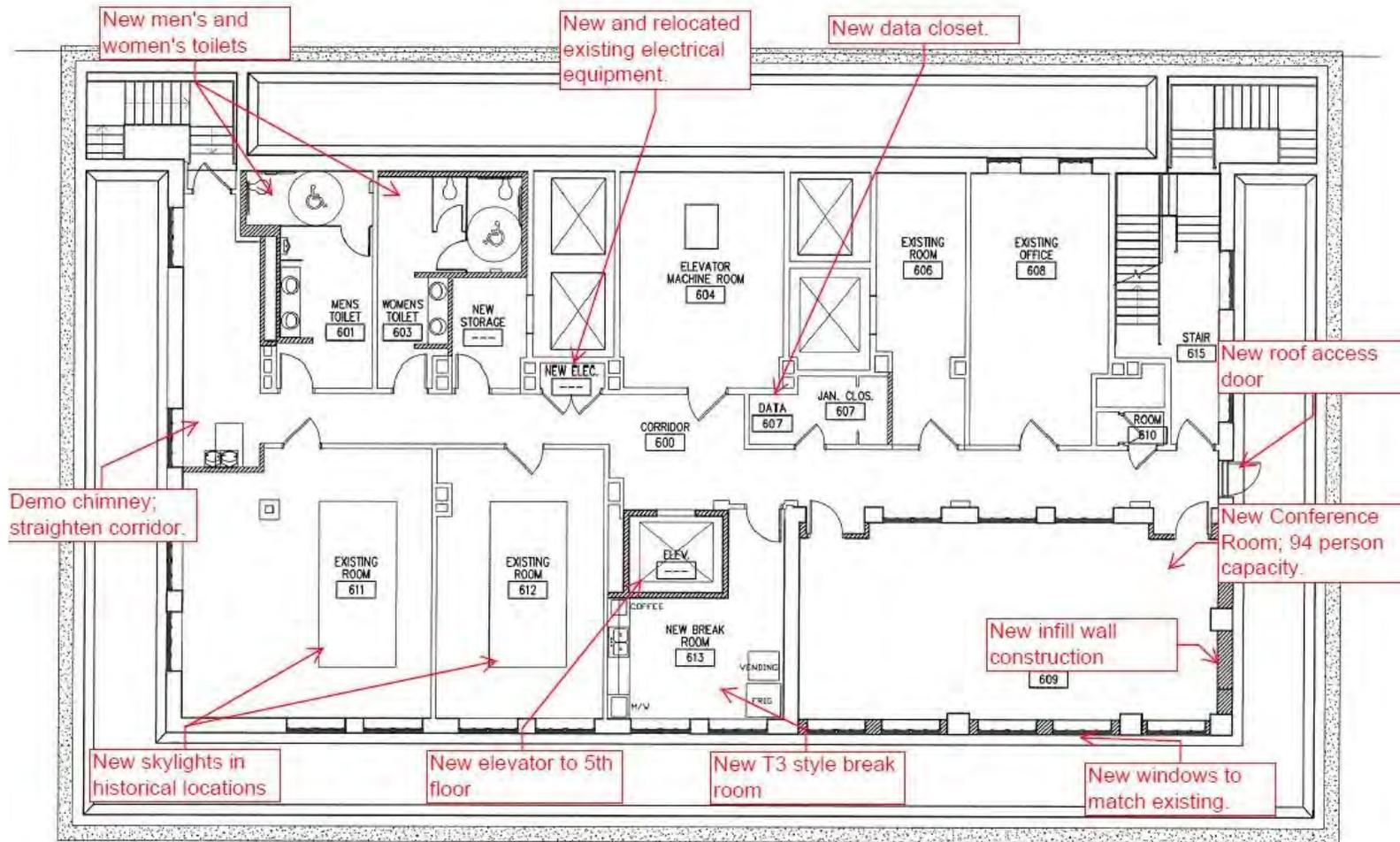
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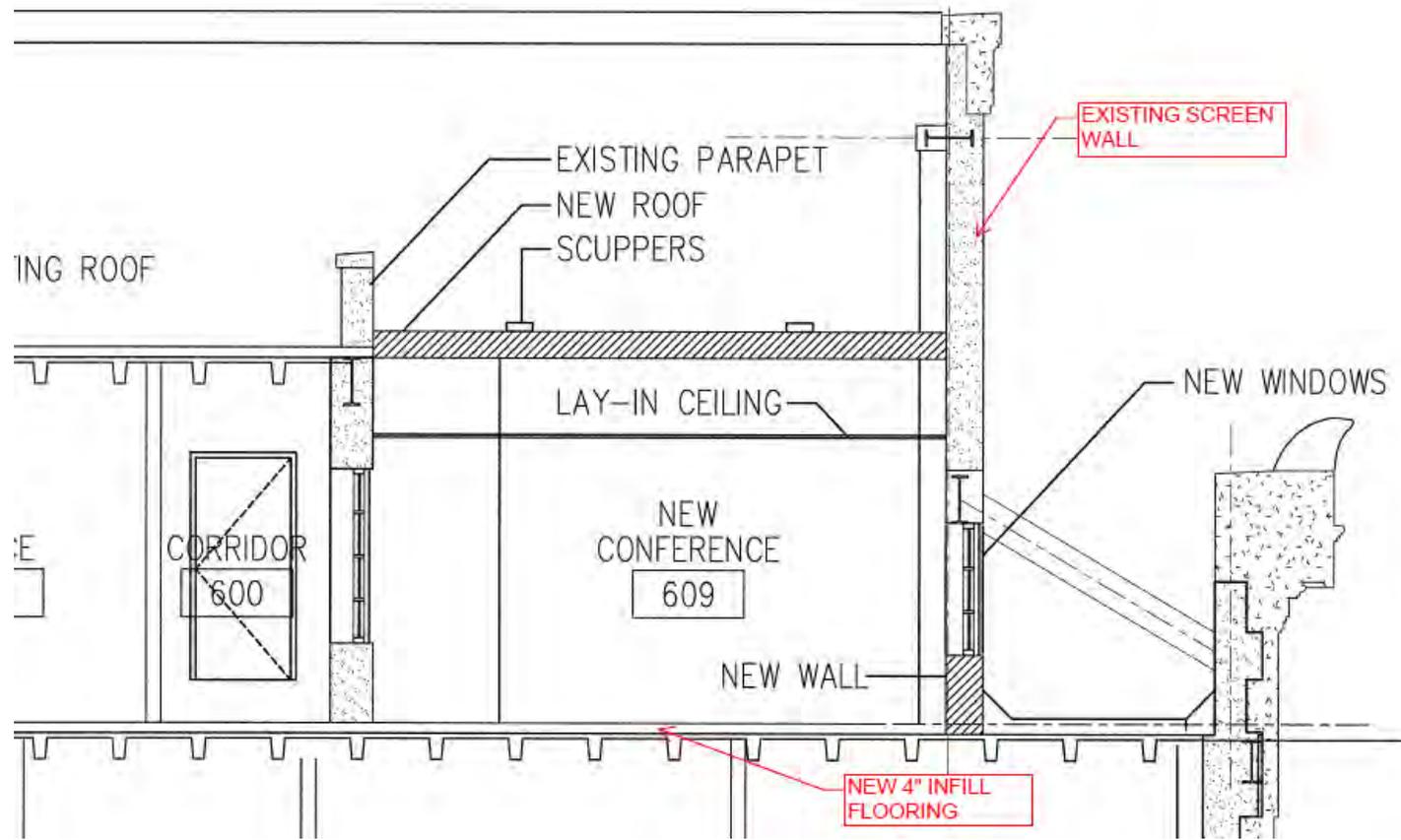
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Existing Sixth Floor Plan



Proposed Sixth Floor Plan



Study section through New Conference Room, 6<sup>th</sup> Floor John Sevier.



Photo 1: Exterior area of roof in which Conference Room could be located. New exterior wall of Conference Room would be under existing screen wall.



Photo 2: Another view of exterior roof area. Observe one limitation; existing screen wall has low height. Windows located under screen wall would have head height of 6'-8", not 7'-0" or 7'-4" as other windows.



Photo 3: Area between existing screen wall and parapet wall of John Sevier. New infill wall and windows would be under screen wall in right of this shot.



Photo 4: Roof between existing Sixth Floor exterior wall and parapet wall.



Photo 5: Existing skylights that have been roofed over; proposal is to install new skylights in the old openings.



Photo 6: Another view of old skylight locations where HFR recommends installing new skylights.



Photo 7: Exterior of existing Elevator Machine room; note existing through the wall air conditioner indicative of cooling issues in the Machine Room.



Photo 8: View of proposed expansion area from roof over Sixth Floor.



Photo 9: Interior view of stairwell.



Photo 10: View of exterior windows.



Photo 11: Existing shower area to be converted into Janitor's closet.



Photo 12: Finishes showing evidence of moisture intrusion; a new roof will contribute toward remedying this condition.



Photo 13: Typical interior office on Sixth Floor.



Photo 14: Existing corridor.



Photo 15: Existing corridor. Notice high existing ceiling and exposed sprinkler piping.



Photo 16: Existing Elevator Machine Room from which existing electrical panels need to be relocated. Note low headroom.



Photo 17: Existing electrical outlets need to be demolished and replaced with recessed outlets



Photo 18: Existing toilet will be demolished. New accessible men's and women's toilet will be provided in another location. See HFR sketch plan included in this report.



Photo 19: Existing high ceilings can stay in utility areas. Demo old lights. Replace with new energy efficient models.



Photo 20: Add ceiling to office space. Drop sprinkler heads. Provide new lighting. Reuse or replace existing fan coil units.

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**Mechanical Systems Narrative**

**GENERAL**

This narrative encompasses the scope of work for the renovation and additions to the 6<sup>th</sup> floor of the John Sevier Building.

Our understanding is the existing building system is 2-pipe fan coils units (only heating or only cooling depending on building mode) with a central AHU feeding the interior core area.

The current 2-pipe system does not have enough capacity to add the additional square footage and accommodate the additional space conditioning load for the new skylights at this level. To obtain the additional capacity new piping mains would be routed all the way to the basement mechanical space. Even if the additional capacity of the 2-pipe system was available there is also the issue of space temperature control. The 2-pipe is not flexible enough to provide adequate temperature control at all space conditions. Due to the control issue of the two pipe system along with the disturbance of connecting new piping all the way to the basement we recommend using an air cooled VRF system with remote roof mounted condenser.

**DEMOLITION**

Due to the age of the existing systems and amount of renovation occurring on we have assumed a complete HVAC replacement for this floor. The owner at their option may choose to keep existing HVAC for rooms 606 and 608 since they are not effected at the work as well as some exiting components in the corridors. However, for this option it is assumed all the HVAC is being replaced with the exception of the HVAC for existing Elevator Machine Room or stairs. All existing ductwork and piping not being reused shall be removed and capped at floor below.

**VARIABLE REFRIGERANT FLOW (VRF) SYSTEMS**

Each zone shall be provided with individual fan coil unit(s) for individual space temperature control. The approximate size and quantity of fan coil units is as follows:

- (4) 1 ton floor mounted fan coil units mounted below the window in the existing chw fan coil unit locations for room 611
- (2) 1.5 ton floor mounted fan coil units mounted below the window in the existing chw fan coil unit locations for room 612
- (1) 2 ton ceiling cassette unit for the new break room (remove existing wall mounted fan coil unit and patch floor and wall
- (2) 2 ton ceiling cassette units for new Conference room 609
- Provide new 6 ton / 900 cfm 100% outside air VRF unit for providing code required ventilation to the 6<sup>th</sup> floor as well as provide make up air for the new toilet exhaust
- New 1 ton floor mounted fan coil unit (in place of existing floor mounted unit) for existing office 608
- New 0.5 ton ceiling mounted fan coil for existing room 606.

- New 1.5 ton wall mounted fan coil for data room
- New 2 ton wall mounted fan coil for a new elevator mechanical room for the new elevator

Total connected fan coil units = 22 tons

VRF system as manufactured by Daikin LG or Mitsubishi. Fan coil units will be combined into one common VRF condensing unit. The VRF system will have a condensing unit located on an accessible roof area. The following is an estimate of unit quantity and sizes:

- 22 ton air cooled condensing unit for the entire 6<sup>th</sup> floor area.

Route brazed ACR copper tubing (3 sets of lines) from outdoor condensing unit to indoor branch controller (one branch controller and thermostat for each space). Each refrigerant line shall be insulated with 1" thick Armaflex. Route condensate from each unit to nearest condensate drain, floor drain, or janitor sink.

### **MISCELLANEOUS**

Provide exhaust fan, louver, ductwork, and grilles to exhaust new toilets. From the 100% outside air VRF unit route insulated sheet metal ductwork from outside air unit to a supply grille in each room and corridor for fresh air ventilation and exhaust make up.

Provide electric duct heater in outside air unit ductwork for supplemental heating and provide electric ceiling heaters in each toilet.

### **CONTROLS**

Provide DDC controls for all new HVAC systems. Controls shall meet State Standards.

### **COST ESTIMATE**

A cost estimate of the mechanical system was determined using a combination of Vendor pricing and data from the Mechanical Means. Our estimated cost for the mechanical for the scope of work described is \$209,000.

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**Electrical Systems Narrative**

This narrative is intended to encompass the electrical scope of work for the renovation and expansion of the sixth floor of the John Sevier State Office Building. Refer to Architectural narrative for exact square footage.

Provide all labor, materials, tools and services for a complete installation of equipment and systems specified herein. Principal features of work included are:

- Power Wiring and Secondary Distribution
- Interior Lighting Fixtures and Lighting Control Equipment
- Convenience Outlets
- Telephone and Data Outlets Rough-in
- Electrical Control and Interlock Wiring as required by Mechanical Drawings, Specifications, or Manufacturer's Schematics
- Heating, Ventilating and Air-Conditioning Equipment Power
- Plumbing Equipment Power
- CATV Distribution Rough-in
- Fire Alarm and Smoke Detection Systems
- Access Control System Rough-in
- Closed-Circuit Television Rough-in
- Wireless Internet Rough-in
- Electrical Connections to Owner-Furnished Equipment

Comply with applicable local, state, and federal codes.

Comply with applicable requirements of recognized industry associations which promulgate standards for the various trades.

Employ only qualified journeymen for this work. Employ a competent qualified mechanic to supervise the work.

Perform work specified in Division 26 in accordance with standards listed below including amendments or revisions:

- NFPA-20 Centrifugal Fire Pumps. Latest Edition.
- NFPA-70 National Electrical Code. Latest Edition.
- NFPA-72A Local Protective Signaling Systems.
- NFPA-72 National Fire Alarm Code. Latest Edition.
- NFPA-90A Installation of Air Conditioning and Ventilating Systems. Latest Edition.
- NFPA-90B Warm Air Heating and Air Conditioning Systems. Latest Edition.
- NFPA-91 Installation of Blower and Exhaust Systems. Latest Edition.
- ANSI Handicapped Code A117.1. Latest Edition.

All materials and equipment used in carrying out these specifications to be American made unless approved otherwise by the Engineer and to be new and have U.L. listing, or listing by other recognized testing laboratory when such listings are available. Construction materials shall meet Factory Mutual guidelines.

Properly identify all starters, contactors, relays, safety switches, and panels with permanently attached black phenolic plates with 1/4 white engraved lettering on the face of each attached, with two sheet metal screws.

Electrical service for the 6<sup>th</sup> floor shall be from a new 400A, 120/208V, 3 phase, 4 wire panel located in the closet in the hallway fed from the main switchgear in the basement. The new panel shall feed the new elevator serving this floor as well as all other loads.

Provide two (2) 4" conduits back to facility IT closet for IT service to the sixth floor.

Division 26 to furnish and install starters, line- and low-voltage control wiring including conduit, conductors, and terminations for same. Starters used inside to have NEMA-1 enclosures, starters used in damp locations or exposed to weather to have NEMA-3R enclosures.

Conductors and cables utilized for interior building installation shall be copper. Temperature rating of conductors shall be 90 degrees C. Insulation shall be THHN, THHW, or XHHW, 600 volt rated, 90 degrees C.

The entire system of raceways and equipment shall be grounded in accordance with Article 250 of the NEC. Separate green grounding conductors shall be installed in all feeder and branch circuits in accordance with Table 250-95 of the NEC.

Lighting for the facility shall match the T3 upgrades done on previous State projects.

Lighting controls for the facility shall be in compliance with IECC and shall consist primarily of line-voltage occupancy sensors and switches.

The existing fire alarm system shall be modified to add devices as required, to be wired, connected and left in first class operating condition. Include sufficient control panels, manual stations, automatic fire detectors, smoke detectors, alarm indicating appliances, wiring, terminations, electrical boxes, conduit and all other necessary material for a complete operating system. Provide duct smoke detectors in supply and return ducts of all air-handling units. The system alarm operation subsequent to the alarm activation of any manual station, automatic detection device or sprinkler flow shall be as follows:

- All audible alarm indicating appliances shall notify occupants with the chime signal.
- All visual alarm indicating appliances shall flash continuously until the system is reset.
- Release all doors held open by door control devices.
- Recall all elevators.
- Activate mechanical control schemes in accordance with NFPA 90.
- Notify monitoring station.

Convenience outlets shall be provided throughout the facility as specified herein. Convenience outlets shall be specification grade with a #12 ground wire from the device

grounding terminal back to the grounding bus in the panelboard and bonded to the outlet box. Convenience outlets shall be provided with stainless steel device plates. Convenience outlets provided for outdoor use shall be mounted vertically and be the GFI type and equipped with Taymac covers. Convenience outlets provided in rest rooms shall be GFI type. Convenience outlets provide for PC power shall be the isolated ground type. Convenience outlets on individual circuits shall be rated at 20 ampere. Convenience outlets in corridors, prefunction areas, etc., are to be rated at 20 amperes. Provide convenience outlets in offices at one outlet per wall with an additional quadraplex for PC power.

Provide rough-in and interface for wireless communications systems.

Provide all required rough-in for backboxes, conduit, power connections, sleeves, etc., to serve audio/visual and voice/data systems.

Provide all required rough-in for back boxes, conduit, power connections, sleeves, etc., to serve the Access Control and CCTV systems.

Minimum conduit size shall be 1/2". Flexible metal conduit shall be used only for whips to lighting fixtures and equipment. All empty conduits shall have a 65-pound test polymer (or equivalent) pull string tied off at both ends.

#### ELECTRICAL SPECIFICATIONS

##### A. Raceways and Conduit Systems:

1. Electrical Metallic Tubing (EMT) may be used for all feeders and branch circuits not subject to physical damage or located underground, in wet locations, or encased in concrete slabs or ductbanks. Rigid Galvanized Steel (RGS) conduit or Intermediate Metal Conduit (IMC) will be used in such areas. Polyvinyl Chloride (PVC) conduit may be used here, only as indicated below.
2. PVC conduit will be used only underground and will be encased in 4" concrete envelope as detailed on the drawings. Where PVC conduit is used, a transition to RGS or IMC will be made prior to emergence above grade or through slabs. No PVC upturns to above grade or through slabs will be permitted.
3. All-steel conduit couplings, connectors, and fittings will be used on metallic raceways. Couplings for metallic raceways will be double lock nut or set screw type.
4. Flexible metallic conduit will be used for connection to recessed lighting fixtures and most types of equipment, especially that subject to vibration, such as motors and transformers. In damp or wet locations, flexible conduit will be liquid tight type.

B. Conductors: All conductors will be 98 percent conductivity copper with a minimum insulation rating of 600 volts; No. 10 AWG and smaller - solid with Type THHN; No. 8 AWG and larger - stranded with Type THHN or THWN. Cross-linked polyethylene

type insulation will be used on all conductors underground or outside building footprint.

- C. Outlet Boxes: A galvanized steel outlet box will be provided for each fixture, switch, receptacle, or other device; 4" octagonal for ceiling and 4" square for wall, with raised plaster ring or device ring.
- D. Panelboards: Circuit breaker type panelboards, each having an isolated neutral bus and separate ground bus, will be provided, rated 120/208V, 3PH, 4W. Panelboards will either be distribution type or lighting type, surface-mounted or flush-mounted, as indicated on the drawings.
- E. Wiring Devices:
  - 1. Switches rated 15A, 120/277V and duplex receptacles rated 15A or 20A, 125V will be used, ivory color when connected to normal power and red color when connected to emergency power.
  - 2. All wiring devices shall be industrial heavy-duty specification grade, rated a minimum 20A, 125V.
- F. Safety Switches: Safety switches furnished with arc shields and rated for the voltage system in which they are applied will be used. General-duty switches may be used on systems of 240 volts line-to-line or less. Heavy-duty switches will be used on systems above 240 volts line-to-line.

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**Plumbing and Fire Protection Systems Narrative**

**NEW CONSTRUCTION**

Sanitary, Waste, and Vent Systems: The renovated areas will be provided with a complete sanitary waste and vent system utilizing Schedule 40 cast iron pipe and fittings. Floor- or wall-mounted cleanouts will be provided every 50 feet within the building. The new sanitary sewer and vent systems will connect to the existing services within the area.

Domestic Cold Water Systems: The renovated areas will be provided with a domestic cold water system utilizing Type “L” copper pipe and fittings. Domestic cold water will be distributed throughout the new areas to service plumbing fixtures and equipment. Shutoff valves will be provided to isolate fixtures and equipment. Shock absorbers will be provided at all flush valve fixtures.

Domestic Hot Water System: Hot water for the renovated areas will be supplied from the existing services within the area. Shutoff valves will be provided to isolate plumbing fixtures. All domestic hot water piping to be insulated.

Storm Water System: The new roof area will be drained by scuppers onto the existing roof below.

Plumbing Fixtures: Provide new plumbing fixtures for the new building equal to the following:

- P-1      Water Closet - Public, Wall Mounted, Barrier-Free, 1.28 Gallon:  
            Zurn Z5615-BWL  
            Zurn Z5955SS-EL-seat  
            Zurn ZEMS6000AV-HET-IS with P6000-HW6 power converter  
            Zurn wall carrier  
            Install 17” from rim to finished floor
  
- P-2      Water Closet - Public, Wall Mounted, 1.28 Gallon:  
            Zurn Z5615-BWL  
            Zurn Z5955SS-EL seat  
            Zurn ZEMS6000AV-HET-IS with P6000-HW6 power converter  
            Zurn wall carrier
  
- P-3      Lavatory, Oval, Barrier-Free, Undermount, Public:  
            Zurn Z5220  
            Zurn Z6915-CWB-F-SH-TMV1 with P6000-HW6 power converter  
            Zurn Z8746 offset grid drain  
            Zurn ZH8822-LR supplies  
            Zurn Z8700 p-trap  
            Zurn Z8946-3 trap wrap kit

- P-4 Floor Drain, Regular:  
Zurn ZN-415-P-Y B strainer, nickel bronze top, trap primer, sediment bucket
- P-5 Urinal, Barrier-Free, 1/8 GPF:  
Zurn Z5798  
Zurn ZER6003AV-ULF-CPM with P6000-HW6 power converter  
Install 17" from rim to finished floor
- P-6 Electric Water Cooler (Split Level):  
Haws Model HWUACP8LSS with stainless steel finish  
Zurn ZH8822 stop  
Zurn Z8700 p-trap  
Install with lower bubbler 36" above finished floor  
Provide ADA cane guard
- P-7 Double Compartment Sink, Kitchen Faucet:  
Elkay LRAD-3319 - 6" deep  
Symmons S-23-2 faucet and hose spray  
Wilkins Model 38-ZW3870-XL-T mixing valve  
Zurn Z8748 basket drains  
Zurn ZH8822-XL-LR supplies  
Zurn Z8752 continuous waste, 17 ga.  
Zurn Z8702 p-trap

#### PLUMBING SPECIFICATIONS

Copper Pipes: Type "L" hard drawn seamless, ASTM B-88: Domestic hot and cold water piping: up to 4" OD.

Type "K" hard drawn seamless for the following services:

- A. Domestic water piping located under concrete slabs.
- B. Type "K" rolled, soft drawn seamless for the following services: Under concrete slabs and underground where length of pipe runs between fittings exceeds maximum hard drawn lengths.

Cast Iron Soil and Vent Pipe: Standard weight, cast iron pipe with drainage fittings:  
Waste, vent, and drain pipe: 2" and larger.

Joints in Cast Iron Pipe:

- A. Neoprene compression type gasketed joints in hubbed cast iron soil pipe below grade.
- B. No-hub pipe and joints may be used above slab on grade.

Pipe Insulation:

- A. Glass Fiber:

- a. Factory-formed, fiberglass jacketed "system" type, fiberglass reinforced, white Kraft paper jacket, aluminum foil vapor barrier, and 4 pounds per cubic foot density.
- b. Temperature Limit: 650 degrees F, minimum "R" of 4.00.
- c. Manville "Micro-Lok 650" with Type AP jacketing.
- d. Insulate as follows:
  - i. Domestic hot water piping: 1" thick
  - ii. Domestic cold water piping: 1/2" thick.

B. PVC Fitting Covers:

- a. Provide factory premolded one-piece PVC insulated fitting covers, precut insulation inserts and installation materials for all pipe fittings, elbows, tees, butterfly valves, and couplings.
- b. Foster Seaglass PVC fitting cover, UNI-FIT inserts and accessories.
- c. All exposed piping shall be painted.

FIRE PROTECTION SYSTEMS

The renovated areas and new addition shall be provided with a complete automatic sprinkler system. All sprinklers shall be installed according to their listing. Existing sprinkler head layout to be adjusted for new partition and ceiling layout. The sprinkler system shall be a wet system, hydraulically calculated using the following criteria:

- A. Office areas and like occupancies well subdivided shall be hydraulically balanced on a light hazard basis to produce .1 GPM density over the most remote 1,500 sq. ft. and head coverage of 225 sq. ft./head maximum using 165 degree F quick response heads.
- B. Supply rooms, incidental storage rooms, and like occupancies shall be hydraulically balanced on an ordinary hazard Group 1 basis to produce .15 GPM density over the most remote 1,500 sq. ft. and head coverage of 130 sq. ft./head maximum using 165 degree F quick response heads.
- C. Equipment rooms, power and telephone switchgear rooms, and like occupancies shall be hydraulically balanced on an ordinary hazard Group 2 basis to produce .2 GPM density over the most remote 1,500 sq. ft. and head coverage 130 sq. ft./head maximum using 165 degree F heads.
- D. Calculations for above densities to include hose streams of 100 GPM for light hazard, 250 GPM for ordinary hazard, and 500 GPM for extra hazard occupancies.
- E. All sprinkler heads in areas with finished ceiling shall be quick response, white, recessed type except as noted below with temperature rating as conditions dictate. Associated sprinkler piping shall be run in furred spaces, chases, etc., to completely conceal all piping.
- F. All sprinkler heads in areas without finished ceilings shall be quick response, brass upright heads with temperature ratings as conditions dictate. Associated sprinkler piping shall be run exposed and painted to match adjoining areas.
- G. The sprinkler contractor shall coordinate the location of piping and heads with light fixtures, diffusers, ductwork, plumbing lines, etc., and make minor adjustments in the sprinkler layout where required or deemed necessary by the architect.

- H. All sprinkler heads shall be located symmetrically in all areas and centered in ceiling tiles.
- I. Fire protection system to conform to all requirements of NFPA 10, 13 and 14, all local, county and state regulations, as well as the insurance underwriter. Sprinklers are to be supplied from horizontal fire mains in the various building fire zones.
- J. All sprinkler piping shall be installed by a registered sprinkler contractor.

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GRAND TOTAL	\$1,382,606	AREA, NEW	5,356	SF	COST/SF	\$	258.14
		AREA, EXISTING	4,596	SF			
		AREA, ROOF	8,376	SF			

DESCRIPTION	QTY	UNIT	UNIT COST		COST	
			MAT.	LABOR	MAT.	TOTAL
ABATEMENT						
Hazardous materials abatement	4,596	SF	\$3.00	\$7.00	\$13,788	\$45,960
DEMOLITION						
Corridor; assume 8" terra cotta; plaster on both sides	550	SF	\$1.00	\$38.68	\$550	\$21,821
Walls at new Rest Rooms	500	SF	\$1.00	\$38.68	\$500	\$19,838
Existing toilet room	70	SF	\$1.00	\$38.68	\$70	\$2,777
Existing Showers	26	SF	\$1.00	\$38.68	\$26	\$1,032
Existing Windows	14	EA	\$1.00	\$120.00	\$14	\$1,694
Existing Windows and wall below to floor	2	EA	\$1.00	\$240.00	\$2	\$482
Existing Roof for conference room	775	SF	\$1.00	\$15.00	\$775	\$12,400
Chimney	320	CF	\$1.00	\$53.50	\$320	\$17,440
Demo existing skylight covering construction	3	EA	\$1.00	\$600.00	\$3	\$1,803
BUILDING ENVELOPE NEW / UPGRADES						

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Roof: EPDM over insulation over existing roof deck	7,601	SF	\$5.00	\$7.00	\$38,005	\$91,212
Repair Roof where chimney and skylight are removed; assume metal deck and steel beams	150	SF	\$8.00	\$3.00	\$1,200	\$1,650
New Energy Efficient Steel Windows; assume double hung, 3'-4" x 5'-6"; in groups of 2 windows each	19	EA	\$2,750.00	\$680.00	\$52,250	\$65,170
Hollow metal door, frame, hardware	1	EA	\$1,145.00	\$310.00	\$1,145	\$1,455
 CONFERENCE ROOM ADDITION - NEW						
New Exterior Wall: Gypsum board, metal studs, insulation, sheathing, brick	455	SF	\$7.05	\$17.40	\$3,208	\$11,125
Floor: 4" lightweight concrete and structure	775	SF	\$10.00	\$35.00	\$7,750	\$34,875
Roof: EPDM over insulation over metal deck over steel beams.	775	SF	\$15.00	\$42.00	\$11,625	\$44,175
Gypsum Board ceilings	1,900	SF	\$1.00	\$4.50	\$1,900	\$10,450
Acoustical ceiling	660	SF	\$2.50	\$3.50	\$1,650	\$3,960
Flooring	660	SF	\$2.56	\$1.00	\$1,687	\$2,347
 OTHER NEW CONSTRUCTION						
New Interior Wall Construction	850	SF	\$1.00	\$2.50	\$850	\$2,975
Wall at Janitor Closet	600	SF	\$1.00	\$2.50	\$600	\$2,100
Furr out and walls at New Rest Rooms	700	SF	\$1.00	\$2.50	\$700	\$2,450
Walls at Drinking Fountain	500	SF	\$1.00	\$2.50	\$500	\$1,750
Interior build out at new Rest Rooms	420	SF	\$5.00	\$10.00	\$2,100	\$6,300
Interior build out at Janitor Closet	52	SF	\$5.00	\$10.00	\$260	\$780
Interior build out at Break Room	214	SF	\$5.00	\$10.00	\$1,070	\$3,210
Build out at Data and Telecommunication Room	20	SF	\$5.00	\$10.00	\$100	\$300
Interior 6-panel wood doors, metal frames, hardware	6	EA	\$810.00	\$430.00	\$4,860	\$7,440
Rework existing doors, frames, hardware	11	EA	\$810.00	\$430.00	\$8,910	\$13,640
Furr downs for sprinkler, piping, wiring, and other utility runs	750	LF	\$6.00	\$15.00	\$4,500	\$15,750

SIXTH FLOOR DEVELOPMENT STUDY  
JOHN SEVIER STATE OFFICE BUILDING  
Nashville, Tennessee  
SBC #529/070-01-2013  
August 31, 2015

Plaster repair	1	LS	\$5,000.00	\$15,000.00	\$5,000	\$20,000
Woodwork repair	1	LS	\$8,000.00	\$20,000.00	\$8,000	\$28,000
Audio Visual allowance for conference room	1	LS	\$5,000.00	\$5,000.00	\$5,000	\$10,000
Window treatment	19	EA	\$800.00	\$250.00	\$15,200	\$19,950
Skylights	2	EA	\$12,000.00	\$12,000.00	\$24,000	\$48,000
MECHANICAL*	1	LS	\$69,080.22	\$140,253.78	\$69,080	\$209,334
PLUMBING*	1	LS	\$4,488.00	\$9,112.00	\$4,488	\$13,600
ELECTRICAL*	1	LS	\$41,250.00	\$83,750.00	\$41,250	\$125,000

SUBTOTAL MAT. \$332,936

\*Note: See detailed mechanical, plumbing,  
and electrical estimates on following  
pages.

SUBTOTAL TOTAL \$922,244

SALES TAX ON MATERIALS 9% \$29,964

SUBTOTAL INCL TAXES \$952,208

GENL CONTR'S OVERHEAD 10% \$95,221

SUBTOTAL \$1,047,429

PROFIT 10% \$104,743

SUBTOTAL \$1,152,172

CONTINGENCY 20% \$230,434

**GRAND TOTAL \$1,382,606**

**JOHN SEVIER 6TH FLOOR  
MECHANICAL COST ESTIMATE**

BY: DAVID PETERS ICT  
8/27/2015

	UNIT	#	MATERIAL		LABOR		MEANS	TOTAL		
			\$/UNIT	TOTAL	\$/UNIT	TOTAL	REFER.			
DUCTWORK	LB		1200.00	0.69	828	4.87	5844	P307	\$ 6,672	
INSULATION	SF		520.00	0.27	140.4	2.39	1242.8	P268	\$ 1,383	
CONDENSATE DRAIN	LF		0.00	55.50	0	28.5	0	P176	\$ -	
TEST AND BALANCE	EA		0.00	0.00	0	793	0	P266	\$ -	
DIFFUSERS	EA		10.00	162.00	1620	32	320	P341	\$ 1,940	
BALANCE DAMPERS	EA		10.00	27.00	270	21.5	215	P323	\$ 485	
TRANSFER DUCT (TO TRANSFER AIR BACK TO MAIN TOILETS)	LB		0.00	0.69	0	4.87	0	P307	\$ -	
SMOKE DAMPER (TO TRANSFER AIR BACK TO MAIN TOILETS)	EA		0.00	178.00	0	28.5	0		\$ -	
UNIT CONTROLS	EA		0.00	0.00	0	805	0	P271	\$ -	MATERIAL AND LABOR INCLUDED TOGETHER
<b>VRF UNITS</b>										
VRF EQUIPMENT COST									\$ 62,400	LUMP SUM PRICE FROM VENDOR
MINI SPLIT UNITS - INSTALL ONLY		7			0	680	4760		\$ 4,760	
CONDENSATE DRAIN	LF	100.00	55.50	5550	28.50	2850		P176	\$ 8,400	
TEST AND BALANCE	EA	7.00	0.00	0	793.00	5551		P266	\$ 5,551	
WALL MOUNTED THERMOSTAT	EA	7.00	150.00	1050	150.00	1050			\$ 2,100	
REFRIGERANT PIPING										
1/2" TUBING	LF	750	5.55	4162.5	5.7	4275		P135	\$ 8,438	
1" TUBING	LF	750	16.3	12225	7.95	5962.5			\$ 18,188	
REFRIGERANT PIPE FITTINGS										
1" FITTINGS	EA	30	15.65	469.5	28	840			\$ 1,310	
REFRIGERANT PIPE INSULATION										
1" THICK 1/2" TUBE	LF	750	2.05	1537.5	4.62	3465		P123	\$ 5,003	
1" THICK 1" TUBE	LF	750	2.89	2167.5	4.73	3547.5			\$ 5,715	
CONDENSING UNITS										
INSTALL ONLY	EA	1		0	1800	1800			\$ 1,800	
VRF CONTROL INTERFACE		1	3500	3500	3500	3500			\$ 7,000	
ELECTRIC HEATERS	EA	2.00	440.00	880	175.00	350		p419	\$ 1,230	
EXHASUT FANS	EA	1	615	615	122	122			\$ 737	
EXHAUST DUCTWORK	LB	500	0.69	345	4.87	2435		P307	\$ 2,780	
ELECTRIC DUCT HEATER	EA	1	1850.00	1850	79.00	79			\$ 1,929	
REPLACE EXISTING FAN COILS IN KIND	EA	8	1050.00	8400	156.00	1248			\$ 9,648	
DEMOLITION									\$ 10,000	
SUB TOTAL									\$ 167,467	
DESIGN CONTINGENCY							10%		\$ 16,746.72	
OVERHEAD							10%		\$ 16,747	
PROFIT							5%		\$ 8,373	
<b>GRAND TOTAL</b>									<b>\$ 209,334</b>	





I. C. THOMASSON ASSOCIATES, INC.  
 PRICING SHEET

FILE NO. 150443  
 SHEET 3 OF 3

JOB NAME John Sevier 6th Floor Study  
 WORK: PLUMBING PIPING

BY R. BOST

CHECKED R. BOST

DATE 8-31-15

MATERIAL	QUANTITY	MATERIAL PRICE	PER	MATERIAL EXTENSION	LABOR UNIT	PER	LABOR EXTENSION
COPPER ( TYPE L )			L.F.	\$0.00		L.F.	\$0.00
1/2"	350	\$3.00	L.F.	\$1,050.00	\$4.00	L.F.	\$1,400.00
3/4"	200	\$3.50	L.F.	\$700.00	\$4.50	L.F.	\$900.00
1"	200	\$4.00	L.F.	\$800.00	\$5.00	L.F.	\$1,000.00
1 1/4"	100	\$4.50	L.F.	\$450.00	\$6.00	L.F.	\$600.00
1 1/2"	100	\$5.50	L.F.	\$550.00	\$6.00	L.F.	\$600.00
2"	200	\$9.00	L.F.	\$1,800.00	\$8.00	L.F.	\$1,600.00
CAST IRON			L.F.	\$0.00		L.F.	\$0.00
2"	300	\$8.00	L.F.	\$2,400.00	\$8.00	L.F.	\$2,400.00
3"	150	\$9.00	L.F.	\$1,350.00	\$9.00	L.F.	\$1,350.00
4"	300	\$10.00	L.F.	\$3,000.00	\$10.00	L.F.	\$3,000.00
			L.F.	\$0.00		L.F.	\$0.00
			L.F.	\$0.00		L.F.	\$0.00
			L.F.	\$0.00		L.F.	\$0.00
			L.F.	\$0.00		L.F.	\$0.00
			L.F.	\$0.00		L.F.	\$0.00
			L.F.	\$0.00		L.F.	\$0.00
TOTALS				\$12,100.00			\$12,850.00

I. C. THOMASSON ASSOCIATES, INC.

PLUMBING RECAP SHEET

FILE NO. 150443  
SHEET 1 OF 3

JOB NAME John Sevier 6th Floor Study  
WORK: PLUMBING

BY R. BOST

CHECKED R. BOST

DATE 8-31-15

	MATERIAL EXTENSION	LABOR EXTENSION
SUB-TOTAL	\$23,100	\$26,450
PLUMBING GRAND TOTAL		\$49,550

I. C. THOMASSON ASSOCIATES, INC.  
FIRE PROTECTION SHEET

JOB NAME **John Sevier 6th Floor Study**  
WORK: FIRE PROTECTION

FILE NO. **150443**  
SHEET 1 OF 1

BY **R. BOST**

CHECKED **R. BOST**

DATE **8-31-15**

	SQUARE FOOTAGE		S.F. COST		TOTAL
FIRE PROTECTION	<b>5356</b>		\$5.00		\$26,780
GRAND TOTAL					\$26,780