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Technical Report 1

ASHRAE Standard 62.1 Ventilation & Standard 92.1 Energy Design Evaluations

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»Building Name: Sinai Hospital South Tower Vertical Expansion

»Building Location: 2401 W. Belvedere Ave. | Baltimore, MD



Anly Lor
Mechanical Option
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Executive Summary

The Sinai Hospital South Tower Vertical Expansion was evaluated for its compliance with ASHRAE Standard 62.1, sections 5 and 6, and ASHRAE Standard 90.1. These evaluations determined whether or not the building met certain requirements with regards to its HVAC system and components, including meeting the minimum outside air intake flow depending on space function, design occupancy, and floor area.

As a result of these evaluations, it was determined that the Sinai Hospital South Tower Vertical Expansion complied with all the requirements of section 5 of ASHRAE Standard 62.1. In section 6, it was determined that the air handling unit serving floors four, five, and six provided an adequate amount of outside air to the spaces and occupants in the building. However, the discrepancy between the values derived from the ventilation rate procedure analysis and the values obtained from schedules in the design documents was quite large. A conclusion attributed the variation to a lack of ventilation rates for hospitals and medical facilities in table 6-1 of ASHRAE Standard 62.1. Oversized mechanical equipment was also considered as a factor in regards to the inconsistency of minimum outdoor air required.

Overall, the building largely complies with both ASHRAE Standard 60.1 and 90.1.

Overview

The Sinai Hospital South Tower Vertical Expansion will add three stories onto the existing three-story tower, retaining the shape of the existing footprint. In addition, a six-story link enclosing a four-story atrium lobby will connect the existing North Tower to this brand new vertical expansion. A helipad and elevator tower round out the new construction. Each floor has its own unique function. The fourth floor houses the intensive care unit. The fifth floor will be the future home of traumatic brain injury care and sterile processing. Lastly, the intermediate care unit is on the sixth floor.

Two new custom air handling units serve the expansion. A chilled water plant in the penthouse consisting of a 2,000 ton centrifugal chiller, cooling tower, and chilled and condenser water distribution pumps is required to provide additional infrastructure. Existing heating hot water, steam, domestic water, and medical gas mains are extended to the new air handling units. The supply and return air systems for the new medical/surgical patient room floors are medium pressure, variable air volume. Ductwork is distributed from two mechanical shafts that extend down through each floor of the expansion from the penthouse. Infectious isolation rooms have a dedicated isolation exhaust system.

Section 5: Systems & Equipment

5.1 Natural Ventilation

Not applicable.

5.2 Ventilation Air Distribution

Each patient room is provided with an individual, digitally controlled variable air volume supply air terminal unit. Up to ten of these units are contained in individual zones, each which have supply and return airflow monitoring.

All air distribution systems including supply, return, outdoor air, and exhaust ductwork is tested and balanced.

5.3 Exhaust Duct Location

Airborne infectious isolation rooms on the fourth, fifth, and sixth floors are negatively pressurized and have a dedicated isolation exhaust system. Standard patient rooms have a neutral pressure relationship.

5.4 Ventilation System Controls

Custom indoor air handling units are digitally controlled with pneumatic actuation, each having outside air sections with minimum and maximum dampers and actuators. An automatic temperature control system is provided and is an extension of the existing Johnson Metasys direct digital control system in the lower three levels. Supply, return, and exhaust air terminal units are all digitally controlled.

5.5 Airstream Surfaces

Ductwork is constructed of prime, first quality galvanized steel and is resistant to mold growth and erosion.

5.6 Outdoor Air Intakes

The air handling unit's outdoor air intake (located in the penthouse, not susceptible to rain or snow entrainment) is at a sufficient distance from contaminated exhaust, vents, and the cooling tower.

5.7 Local Capture of Contaminants

All exhaust air is discharged directly to the outdoors.

5.8 Combustion Air

Not Applicable.

5.9 Particulate Matter Removal

The air handling units have pre-filter, intermediate filter, and final filter sections installed. A 30% efficient, 2" pre-filter is followed by a 65% efficient, 12" cartridge intermediate filter. A 95% efficient 12" cartridge final filter mounted in 24" x 24" HEPA holding frames finish the capture of contaminants. This also provides the capability of installing HEPA filters in the future.

5.10 Dehumidification Systems

Nurse stations, work rooms, ancillary spaces, patient rooms, airborne infectious isolation rooms, offices, and conference and waiting rooms are all provided with conditioned air with a relative humidity between 30% and 60%.

5.11 Drain Pans

Drain pans are provided under coil and fan sections. They are constructed of welded galvanized steel with a bitumastic coating and are insulated with 1", 3PCF fiberglass insulation at the bottom.

5.12 Finned-Tube Coils & Heat Exchangers

Coils have adequate intervening access space.

5.13 Humidifiers & Water-Sprayed Systems

Humidifiers in the air handling units are of the direct discharge type. Steam is provided from existing steam lines and boilers to be injected into the air for humidification. Each humidifier consists of multiple, vertical steam discharge pipes to provide optimum steam to air contact while minimizing pressure drop.

5.14 Access for Inspection, Cleaning, & Maintenance

All rectangular ductwork including outside air, return air, and exhaust air provided on the project conform to SMACNA standards (Sheet Metal and Air Conditioning Contractors National Association, Inc.), which includes providing insulated access doors at a minimum size of 12" x 12" to allow convenient and unobstructed access, cleaning, and routine maintenance of air distribution components.

5.15 Building Envelope & Interior Surfaces

An exterior insulation and finish system provides thermal and moisture protection for the building envelope. The installation includes a complete drainage board system, which includes a rolled on waterproof layer on back-up substrate. The substrate consists of a flashing membrane applied over glass mat faced gypsum. Self-adhering sheet waterproofing or hot fluid-applied rubberized asphalt waterproofing is used to treat joints, cracks, deck drains, corners, and penetrations.

An adhered membrane roofing system, vapor retarder, and roof insulation prohibit the passage of water and resist specified uplift pressures, thermally induced movement, and exposure to weather.

Domestic water, chilled water, heating hot water, steam supply, steam condensate, and condenser water piping are insulated. Air conditioning condensate, and supply, outside air, and return ductwork are insulated. Linear supply air diffusers, generator exhaust, air separators, and chilled water pumps are also insulated.

5.16 Buildings with Attached Parking Garages

Not applicable.

5.17 Air Classification & Recirculation

Isolation exhaust may be classified as class 4 with potentially dangerous particles. All other exhaust may be classified as class 3. Air in patient rooms, offices, common areas, and utilities is recirculated and can be classified as class 1.

5.18 Requirements for Buildings Containing ETS Areas and Non-ETS Areas

Not Applicable.

Section 6: Ventilation Rate Procedure Analysis

The Sinai Hospital South Tower Vertical Expansion includes two new custom fabricated air handling units to provide additional capacity for the expansion. One air handling unit serves floors four, five, and six in the South Tower, and the other serves the six-story hospital link and four-story atrium lobby. The latter will not be analyzed since those spaces are not considered to be occupied. The existing rooftop air handling units installed under the previous vertical expansion were relocated to the roof of the sixth floor; they also are not included in the analysis since they belong to a previous project.

Only the fourth floor (intensive care) and sixth floor (intermediate care) have been fit out. The fifth floor shell space has not yet been configured architecturally or mechanically; it will not be analyzed.

Step One:

Determine R_p , P_z , R_a , and A_z (determined from table 6-1).

Step Two:

Determine V_{bz} .

$$V_{bz} = R_p * P_z + R_a * A_z$$

Step Three:

Determine E_z (determined from table 6-2).

Ceiling supply of cool air » $E_z = 1.0$

Therefore, $V_{oz} = V_{bz}$.

Step Four:

Determine Z_p .

$$Z_p = V_{oz} / V_{pz} \text{ (determined from airflow balance spreadsheet)}$$

*Diversity will not be incorporated into the analysis, as this allows for the worst case scenario (i.e. maximum outdoor air intake flow) to be determined. However, the following equations would have been utilized:

$$D = P_s / \sum_{\text{all zones}} P_z$$

$$V_{ou} = D * \sum_{\text{all zones}} (R_p * P_z) + \sum_{\text{all zones}} (R_a * A_z)$$

Therefore, $V_{ou} = V_{oz}$.

Summary of Compliance

Following the ventilation rate procedure, the required outdoor air intake flow for floors four and six is summed up in the table below:

	Outdoor Air Intake Flow (V_{ot})	Max Z_p
Fourth Floor:	3,320 cfm	0.92
Sixth Floor:	2,763 cfm	0.95
Fifth Floor:	3,000 cfm (assumption)	
Total:	9,083 cfm	
Design Documents:	26,250 cfm	

Because the air handling unit specified in the mechanical schedule also serves floor five, an assumption of required outdoor air intake flow for the fifth floor must be made. Since the fifth floor will have a similar floor area and function as the fourth and sixth floors, a reasonable estimate can be made.

Consequently, the total outdoor air intake flow required for the Sinai Hospital South Tower Vertical Expansion is 9,083 cfm. However, the design documents specify that the minimum outdoor air required for the expansion is over 26,000 cfm. There are several possible reasons for this discrepancy.

Due to the nature of hospitals and medical facilities, the amount of outdoor air intake flow may be significantly higher than what was specified in the ventilation rate procedure calculations. Patient rooms were considered to be offices (since hospitals/medical facilities were not specified in table 6-1 in ASHRAE Standard 62.1) with an outdoor air rate of 5 cfm per person and 0.06 cfm per square foot. In reality, required outdoor air changes per hour for the project were determined from the Guidelines for Construction and Equipment of Hospital and Medical Facilities.

Another possible reason for the discrepancy may very well be that the air handling unit is oversized to compensate for extreme conditions. This occurs frequently in the industry when equipment is selected for the mechanical systems. Not having an exact figure for the required outdoor air intake flow on the fifth floor could have also distorted the values.

Max Z_p values for the fourth and sixth floors are above nine-tenths. This indicates that there are a number of spaces where the airflow from the air handler is almost 100% outdoor air. The staff lounge on the fourth floor gave a Z_p of 0.92 and a small lobby area on the sixth floor gave a Z_p of 0.95. However, for the entire building, outdoor air is only a fraction of primary airflow.

	Nominal (ΣV_{oz})	Required (V_{ot})	% Nominal
Fourth Floor	2,688 cfm	3,320 cfm	80.96
Sixth Floor	2,481 cfm	2,763 cfm	89.79

ASHRAE Standard 90.1 Evaluation

Building Envelope

Baltimore, MD is in climate zone 4A.

	Assembly Maximum	Design	Compliance?
Roof, Insulation Above Deck	U-0.048	U=0.1	No
Walls Above Grade, Mass	U-0.123	U=0.1	Yes
Floors, Mass	U-0.107	U=0.1	Yes
Opaque Doors, Swinging	U-0.70	U=0.1	No
Vertical Glazing, Metal Framing	U-0.60	U=0.1	No
	SHGC-0.25	SHGC-0.67	No

Safe design values were utilized in the Sinai Hospital South Tower Vertical Expansion in order to be conservative when selecting mechanical system components. Only the u-values for walls above grade and floors complied with the assembly maximum for zone 4A in ASHRAE Standard 90.1.

HVAC Systems

The building complies with section 6 of ASHRAE standard 90.1. Minimum equipment efficiencies are verified and labeled, design loads for sizing systems and equipment were determined, and each zone is individually thermostatically controlled. Duct construction conforms to SMACNA standards. Ductwork is insulated and required to undergo leakage tests. Grilles, registers, and diffusers are adjusted to within 10% of design quantities.

Service Water Heating

Not applicable.

Power, Lighting, & Electric Motor Efficiency

The building complies with section 8 and 9 of ASHRAE standard 90.1.

Appendix A – Definition of Variables

<u>Variable</u>	<u>Definition</u>	<u>Units</u>
R_p	Outdoor Airflow Rate Required Per Person	cfm/person
P_z	Zone Population	# of people
R_a	Outdoor Airflow Rate Per Unit Area	cfm/ft ²
A_z	Zone Floor Area	ft ²
V_{bz}	Breathing Zone Outdoor Airflow	cfm
E_z	Zone Air Distribution Effectiveness	-
V_{oz}	Zone Outdoor Airflow	cfm
V_{pz}	Minimum Expected Primary Airflow	cfm
Z_p	Zone Primary Outdoor Air Fraction	-
P_s	System Population	# of people
D	Occupant Diversity	-
V_{ou}	Uncorrected Outdoor Air Intake	cfm
E_v	System Ventilation Efficiency	-
V_{ot}	Outdoor Air Intake Flow	cfm

Appendix B – Fourth Floor Space Characteristics

<i>FOURTH FLOOR (INTENSIVE CARE UNIT)</i>										
SPACE	FUNCTION	R_p	P_z	R_a	A_z	V_{oz}	V_{pz}	Z_p	E_v	V_{ot}
PATIENT CORRIDOR	CORRIDOR	0	0	0.06	4400	264	1320	0.20	0.9	294
WAITING ROOM	MEETING	5	37	0.06	930	241	280	0.86	0.6	402
STAFF LOCKERS	STORAGE	0	0	0.12	271	33	85	0.39	0.7	48
ELEVATOR LOBBY	LOBBY	5	5	0.06	378	48	115	0.42	0.9	54
ICU PATIENT ROOM 1	OFFICE	5	3	0.06	419	41	380	0.11	1	41
ICU PATIENT ROOM 2	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 3	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 4	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 5	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 6	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 7	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 8	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 9	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 10	OFFICE	5	3	0.06	400	39	360	0.11	1	39
ICU PATIENT ROOM 11	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 12	OFFICE	5	3	0.06	379	38	345	0.11	1	38
ICU PATIENT ROOM 13	OFFICE	5	3	0.06	339	36	310	0.12	1	36
ICU PATIENT ROOM 14	OFFICE	5	3	0.06	411	40	370	0.11	1	40
ICU PATIENT ROOM 15	OFFICE	5	3	0.06	366	37	330	0.11	1	37
ICU PATIENT ROOM 16	OFFICE	5	3	0.06	363	37	330	0.11	1	37
ICU PATIENT ROOM 17	OFFICE	5	3	0.06	366	37	330	0.11	1	37
ICU PATIENT ROOM 18	OFFICE	5	3	0.06	434	42	395	0.11	1	42
ICU PATIENT ROOM 19	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 20	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 21	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 22	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 23	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 24	OFFICE	5	3	0.06	399	39	360	0.11	1	39
ICU PATIENT ROOM 25	OFFICE	5	3	0.06	399	39	360	0.11	1	39
SOILED UTILITY	LAUNDRY	5	1	0.12	100	17	150	0.11	1	17
ELECTRICAL CLOSET 1	ELECTRICAL	0	0	0.06	50	3	15	0.20	0.9	4
ELECTRICAL CLOSET 2	ELECTRICAL	0	0	0.06	128	8	40	0.20	0.9	9
HOUSEKEEPING	STORAGE	0	0	0.12	50	6	75	0.08	1	6
CR READER	STORAGE	0	0	0.12	80	10	50	0.20	0.9	12
STORAGE 1	STORAGE	0	0	0.12	365	44	110	0.40	0.7	63
STORAGE 2	STORAGE	0	0	0.12	45	6	15	0.40	0.7	9
STAFF TOILET 1	-	0	0	0	66	0	100	0.00	1	0
STAFF TOILET 2	-	0	0	0	42	0	65	0.00	1	0
STAFF TOILET 3	-	0	0	0	62	0	95	0.00	1	0
ON CALL TOILET	-	0	0	0	61	0	95	0.00	1	0
PUBLIC TOILET	-	0	0	0	59	0	90	0.00	1	0

NURSE MANAGER	OFFICE	5	4	0.06	110	27	35	0.77	0.6	45
DIRECTORS OFFICE 1	OFFICE	5	3	0.06	148	24	45	0.53	0.6	40
DIRECTORS OFFICE 2	OFFICE	5	3	0.06	147	24	45	0.53	0.6	40
SOCIAL WORKER	OFFICE	5	3	0.06	75	20	25	0.80	0.6	34
MID LEVEL PROVIDERS	OFFICE	5	2	0.06	150	19	45	0.42	0.7	28
CLINICAL LEADERS	OFFICE	5	1	0.06	253	21	80	0.26	0.8	27
RECEPTION	OFFICE	5	1	0.06	119	13	40	0.33	0.8	17
FAMILY CONSULTANT	OFFICE	5	3	0.06	108	22	35	0.63	0.6	37
SECURITY	OFFICE	5	1	0.06	104	12	35	0.34	0.8	15
NURSES STATION 1	OFFICE	5	4	0.06	198	32	60	0.53	0.6	54
NURSES STATION 2	OFFICE	5	4	0.06	202	33	65	0.51	0.6	55
NURSES STATION 3	OFFICE	5	4	0.06	202	33	65	0.51	0.6	55
NURSES STATION 4	OFFICE	5	4	0.06	150	29	45	0.64	0.6	49
ISOLATION PATIENT ROOM 1	OFFICE	5	3	0.06	398	39	720	0.05	1	39
ISOLATION PATIENT ROOM 2	OFFICE	5	3	0.06	369	38	665	0.06	1	38
ISOLATION PATIENT ROOM 3	OFFICE	5	3	0.06	454	43	820	0.05	1	43
ISOLATION PATIENT ROOM 4	OFFICE	5	3	0.06	454	43	820	0.05	1	43
MEDICATION 1	OFFICE	5	3	0.06	88	21	55	0.38	0.7	30
MEDICATION 2	OFFICE	5	3	0.06	81	20	50	0.40	0.7	29
MEDS ROOM	STORAGE	0	0	0.12	77	10	50	0.20	0.9	12
STAFF CONFERENCE ROOM	CONFERENCE	5	10	0.06	292	68	90	0.76	0.6	114
DOC. CONF/ VIEWING	CONFERENCE	5	9	0.06	222	59	70	0.84	0.6	99
CLEAN UTILITY 1	LAUNDRY	5	5	0.12	87	36	55	0.65	0.9	40
CLEAN UTILITY 2	LAUNDRY	5	5	0.12	168	46	105	0.44	0.9	52
CLEAN UTILITY 3	LAUNDRY	5	5	0.12	128	41	80	0.51	0.9	46
STAFF LOUNGE	MEETING	5	13	0.06	290	83	90	0.92	0.6	139
ANTE ROOM 1	OFFICE	5	1	0.06	65	9	100	0.09	1	9
ANTE ROOM 2	OFFICE	5	1	0.06	65	9	100	0.09	1	9
WORK ALCOVE	OFFICE	5	1	0.06	520	37	315	0.12	1	37
NOURISHMENT 1	STORAGE	0	0	0.12	131	16	80	0.20	0.9	18
NOURISHMENT 2	STORAGE	0	0	0.12	74	9	45	0.20	0.9	10
ON CALL ROOM 1	OFFICE	5	2	0.06	62	14	60	0.23	0.9	16
ON CALL ROOM 2	OFFICE	5	2	0.06	63	14	60	0.23	0.9	16
ON CALL ROOM 3	OFFICE	5	2	0.06	68	15	65	0.23	0.9	17
ON CALL ROOM 4	OFFICE	5	2	0.06	65	14	60	0.23	0.9	16
EQUIPMENT STORAGE	STORAGE	0	0	0.12	363	44	110	0.40	0.7	63
						2,688				3,320

Appendix C – Sixth Floor Space Characteristics

SIXTH FLOOR (INTERMEDIATE CARE UNIT)										
SPACE	FUNCTION	R _p	P _z	R _a	A _z	V _{oz}	V _{pz}	Z _p	E _v	V _{ot}
PATIENT RM	OFFICE	5	3	0.06	336	36	305	0.12	1	36
ISOLATION RM	OFFICE	5	3	0.06	331	35	565	0.06	1	35
ISOLATION RM	OFFICE	5	3	0.06	373	38	635	0.06	1	38
ISOLATION RM	OFFICE	5	3	0.06	50	18	50	0.36	0.7	26
ISOLATION RM	OFFICE	5	3	0.06	50	18	0	-	-	-
ISOLATION RM	OFFICE	5	3	0.06	347	36	590	0.06	1	36
ISOLATION RM	OFFICE	5	3	0.06	343	36	585	0.06	1	36
ANTE RM	OFFICE	5	1	0.06	69	10	100	0.10	1	10
FAMILY WAITING	MEETING	5	7	0.06	138	44	125	0.35	0.8	55
STORAGE	STORAGE	0	0	0.12	170	21	50	0.42	0.7	30
REPERTORY THERAPY	OFFICE	5	6	0.06	360	52	220	0.24	0.9	58
REPERTORY STORAGE	STORAGE	0	0	0.12	395	48	120	0.40	0.7	69
PATIENT SUPPORT	OFFICE	5	1	0.06	115	12	70	0.17	0.9	14
JANITOR	STORAGE	0	0	0.12	51	7	0	-	-	-
TRASH RM	LAUNDRY	5	1	0.12	80	15	0	-	-	-
CHARTING	OFFICE	5	1	0.06	46	8	30	0.27	0.8	10
SOIL UTILITY	LAUNDRY	5	1	0.12	147	23	225	0.10	1	23
CLEAN UTILITY	LAUNDRY	5	1	0.12	120	20	75	0.27	0.8	25
CONSULT	OFFICE	5	4	0.06	133	28	80	0.35	0.8	35
ANTE RM	OFFICE	5	1	0.06	139	14	200	0.07	1	14
NURSE'S STATION	OFFICE	5	6	0.06	641	69	385	0.18	0.9	77
MEDICATION	STORAGE	0	0	0.12	120	15	75	0.20	0.9	17
EQUIPMENT	ELECTRICAL	0	0	0.06	242	15	75	0.20	0.9	17
CLEAN UTILITY	LAUNDRY	5	5	0.12	120	40	75	0.53	0.6	67
NURSES STATION	OFFICE	5	6	0.06	534	63	325	0.19	0.9	70
NOURISHMENT	STORAGE	0	0	0.12	81	10	75	0.13	1	10
STAFF TLT	-	0	0	0	78	0	0	-	-	-
LOCKER	STORAGE	0	0	0.12	207	25	125	0.20	0.9	28
STAFF LOUNGE	MEETING	5	14	0.06	318	90	290	0.31	0.8	113
CLEAN UTILITY	LAUNDRY	5	1	0.12	147	23	90	0.26	0.8	29
JANITOR	STORAGE	0	0	0.12	63	8	0	-	-	-
ELECTRICAL RM	ELECTRICAL	0	0	0.06	156	10	50	0.20	0.9	12
NOURISHMENT	STORAGE	0	0	0.12	81	10	75	0.13	1	10
NURSE MANAGER	OFFICE	5	3	0.06	145	24	90	0.27	0.8	30
SW CASE MANAGEMENT	OFFICE	5	2	0.06	148	19	45	0.42	0.7	28
CONFERENCE	CONFERENCE	5	12	0.06	240	75	145	0.52	0.6	125
MANAGERIAL ASSISTANT	OFFICE	5	3	0.06	88	21	55	0.38	0.7	30
CLINICAL LEADERS	OFFICE	5	4	0.06	310	39	190	0.21	0.9	44
CLINICAL COACH	OFFICE	5	2	0.06	86	16	55	0.29	0.8	20
OFFICE	OFFICE	5	3	0.06	123	23	75	0.31	0.8	29
SOILED HOLDING	LAUNDRY	5	0	0.12	70	9	100	0.09	1	9

WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM	OFFICE	5	3	0.06	320	35	290	0.12	1	35
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
WEST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM	OFFICE	5	3	0.06	290	33	265	0.12	1	33
SOUTH PATIENT RM	OFFICE	5	3	0.06	290	33	265	0.12	1	33
SOUTH PATIENT RM	OFFICE	5	3	0.06	290	33	265	0.12	1	33
SOUTH PATIENT RM	OFFICE	5	3	0.06	290	33	265	0.12	1	33
SOUTH PATIENT RM	OFFICE	5	3	0.06	290	33	265	0.12	1	33
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33

EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM	OFFICE	5	3	0.06	300	33	270	0.12	1	33
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
EAST PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
SOUTH PATIENT RM TLT	-	0	0	0	35	0	50	0.00	1	0
ELEVATOR LOBBY	LOBBY	5	5	0.06	80	30	50	0.60	0.6	50
ELEVATOR LOBBY	LOBBY	5	5	0.06	80	30	50	0.60	0.6	50
CORRIDOR 1	CORRIDOR	0	0	0.06	2275	137	685	0.20	0.9	153
CORRIDOR 2	CORRIDOR	0	0	0.06	1533	92	460	0.20	0.9	103
CORRIDOR 3	CORRIDOR	0	0	0.06	303	19	95	0.20	0.9	22
CORRIDOR 4	CORRIDOR	0	0	0.06	220	14	70	0.20	0.9	16
CORRIDOR 5	CORRIDOR	0	0	0.06	355	22	110	0.20	0.9	25
CORRIDOR 5	CORRIDOR	0	0	0.06	200	12	60	0.20	0.9	14
VENDING	LOBBY	5	3	0.06	64	19	20	0.95	0.6	32
						2,481				2,763