Manhattan Community Board 4

(All Fields Must Be Completed)

Liquor License Stipulations Application

CORPORATION NAME	DOING BUSINESS AS (DBA)	
Mekka Nightclub, LLC	Mekka Nightclub, LLC	
STREET ADDRESS	**CROSS STREETS**	**ZIP CODE**
618 West 46th Street New York, New York	11th & West Side Hwy	10036

OWNER *(Attach a list of all the people that will be associated/listed with the license)*	**NAME:**	Glenn J Raymond	**ATTORNEY/ REPRESENTAIVE**	**NAME:**	Terrance R Flynn Jr. Esq.
	PHONE:	212-203-3046		**PHONE:**	718-945-1000
	EMAIL:	Glenn@MekkaNightclub.com		**EMAIL:**	TRFlynnJr@gmail.com
MANAGER	**NAME:**	TBA	**LANDLORD**	**NAME:**	Robert Gans
	PHONE:			**PHONE:**	212-246-9090
	EMAIL:			**EMAIL:**	

APPLICATION TYPE *(Check One)*

☑ New	Has applicant owned or managed a similar business?	**YES**	**NO**
	What is/was the name and address of establishment?		
	What were the dates applicant was involved with this former premise?		
○ Transfer	What is the prior license # and expiration date?		
	Is applicant making any alterations or operational changes?	**YES**	**NO**
	If alterations or operational changes are being made, please describe/list all changes.		
○ Alteration	What is the current license # and expiration date?		
	Please list/describe the nature of all the changes and attach the plans:		

METHOD OF OPERATION

TYPE OF ALCOHOL	☑ Liquor/Wine/Beer	○ Beer	○ Wine & Beer			
ESTABLISHMENT TYPE	○ Restaurant	☑ Cabaret	☑ Night Club	○ Hotel	○ Bar/Tavern	○ Catering Establishment
	○ Adult Entertainment	○ Wine Bar	☑ Dance Club	○ Sports Bar	○ Club (Fratemal Organization – Members Only)	

Has applicant/owner filed with the SLA? If yes, when? If no, when do you plan to file?	**YES**	**NO**	TBD
Is the 500 Foot Rule applicable? If yes, please attach a diagram of the On-Premise liquor license establishments within a 500 ft. radius of your establishment and the Public Interest Statement.	**YES**	**NO**	Diagram Attached
Is the 200 Foot Rule applicable? If yes, please attach a diagram of the schools and houses of worship that trigger the rule.	**YES**	**NO**	
Has applicant/owner(s) read MCB4 Policy Regarding Concentration and Location of Alcoholic-Serving Establishments?	**YES**	**NO**	

OPERATIONAL DETAILS (*Closing time will be when establishment is vacated of all patrons)

		MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
HOURS* (Indoor Only)	Operation	10:00 AM - 4:00 AM	10 - Mid	10 - Mid	10 - Mid	10 - 4:00 AM	10 - 4:00 AM	10:00 - Mid
	Kitchen							
	Music							

See Attached Additional Information Page

If you plan to have music, what type(s)? (Circle all that apply)	BACKGROUND	LIVE MUSIC	DJ	JUKE BOX	KARAOKE

OCCUPANCY

	Capacity (Certificate of Occupancy)	Maximum # of Persons You Anticipate Occupying Premises (Including Employees)	Number of Tables	Number of Seats	Number of Service Only Bars	Number of Stand-Up Bars	Number of Seats at Stand-Up Bar	
INSIDE	2,665	2,665	67	234	2	4	0	
OUTSIDE (Other than sidewalk café)	N/A	N/A						
SIDEWALK CAFÉ	N/A	N/A						

How many floors are there? What is the capacity for each floor?	3 Floors, Mezzanine & Cellar: Main Room 1200 Mezzanine 100, Cellar 340, 2nd Flr 625, 3rd Flr 400		
How frequently will the owner(s) be at the establishment?	Everyday		
Will you be applying or intending to apply for a cabaret license with DCA? If yes, will there be dancing?	YES	NO	
Will applicant have bottle or table service for beverage alcohol?	YES	NO	
Will you be hosting private; promotional or corporate events?	YES	NO	
Will outside promoters be used on a regular basis? If yes please describe.	YES	NO	
Will you have a security plan? If, yes please attach.	YES	NO	Being Created
Will security plan be implemented?	YES	NO	
Will State certified security personnel be used?	YES	NO	
Will New York Nightlife Association and NYPD Best Practices be followed?	YES	NO	
Will applicant be using delivery bicycles? If yes, how many?	YES	NO	No Bikes
Will delivery bicycles be clearly marked with the name of the restaurant and will staff wear attire clearly noting name as described by NYC Law?	YES	NO	
Where will delivery bicycles be stored during the day when not in use?	N/A		

MEKKA NYC

MONDAYS 2nd Floor 10 am – 6 pm Max Occupancy 625
2nd Floor will be an Art Gallery showcasing local artists; Free Admission to the Public
Basement, Main floor, Mezzanine, 3rd Floor – Closed to the Public

TUESDAYS 2nd Floor 10 am – 6 pm Max Occupancy 625
2nd Floor will be an Art Gallery showcasing local artists; Free Admission to the Public
Basement, Main floor, Mezzanine, 3rd Floor – Closed to the Public

WEDNESDAYS 2nd Floor 10 am – 6 pm Max Occupancy 625
2nd Floor will be an Art Gallery showcasing local artists; Free Admission to the Public
Basement, Main floor, Mezzanine, 3rd Floor – Closed to the Public

THURSDAYS 2nd Floor 10 am – 6 pm Max Occupancy 625
2nd Floor will be an Art Gallery showcasing local artists; Free Admission to the Public
Basement, Main floor, Mezzanine, 3rd Floor – Closed to the Public

FRIDAYS 2nd Floor 10 am – 6 pm Max Occupancy 625
2nd Floor will be an Art Gallery showcasing local artists; Free Admission to the Public
Basement, Main floor, Mezzanine, 3rd Floor – Closed to the Public

FRIDAY NIGHTS 8 pm to 1 am

Basement Occupancy 300:	8 pm – 1 am
Main floor Occupancy 1,200:	8 pm – 1 am
Mezzanine Occupancy 100:	8 pm – 1am
2nd Floor Occupancy 625:	8 pm -1 am
3rd Floor Occupancy 400:	Closed

Friday Nights will showcase live music artist performances on the main floor.
The 2nd Floor will be a lounge area
Basement; Coat check
3rd Floor; Closed

SATURDAYS 2nd Floor 10 am – 6 pm Max Occupancy 625
2nd Floor will be an Art Gallery showcasing local artists; Free Admission to the Public
Basement, Main floor, Mezzanine, 3rd Floor – Closed to the Public

SATURDAY NIGHTS 10 pm to 4 am

Basement Occupancy 300:	10 pm to 4 am
Main floor Occupancy 1,200:	10 pm to 4 am
Mezzanine Occupancy 100:	10 pm to 4 am
2nd Floor Occupancy 625:	10 pm to 4 am
3rd Floor Occupancy 400:	10 pm to 4 am

Main floor will highlight local and international dance music DJ's
Basement will showcase local and up and coming DJ's
2nd Floor is for people who do not wish to dance but want to enjoy the music
3rd Floor lounge area for people to relax, also balcony to smoke so music of main floor is not going into the streets

MEKKA HOLDINGS, LLC
618 West 46th Street New York, New York 10036
Phone: **1-212-203-3046** ~ Email: **GlennJRaymond@icloud.com**

LOCATION & ZONING			
Is this a Special District? If yes, is it Clinton, West Chelsea or Hudson Yards?	YES	NO	Clinton
Does the building have a Certificate of Occupancy ("C of O") or a letter of no objection?	YES	NO	
Is a Public Assembly permit required?	YES	NO	
Are your plans filed with DOB?	YES	NO	In Process

Community Notification/Relations		
NOTIFICATION: List all block associations; tenant associations, co-op boards or condo boards of residential buildings; and community groups that applicant has notified regarding its application. For each please list both the organization and individual you contacted	# 1	Clinton and HK Block Associations - in list provided by *Nelly Gonzalez, Assistant District Manager CB4*
	# 2	
	# 3	
	# 4	
	# 5	

Please provide dates when applicant met with the groups listed above.	Tuesday July 25th, 2017		
Who was your contact person at each group you met with?	See Attached List		
When did applicant post the notice that was provided?	July 19th, 2017		
Where did applicant post the notice that was provided?	At Front Entrance of 618 West 46th Street NYC		
Will applicant provide owner cell phone number to neighbors and respond to complaints that arise? Please provide number in space provided.	YES	NO	212-203-3046
Will applicant inform the Community Board office of its job openings and/or provide a hyperlink to applicants jobs webpage?	YES	NO	Hiring within Community

BUILDING DESIGN				
State the name and type of business previously located in the space.	Pacha Nightclub - Caberet/Nightclub			
Has a liquor-licensed establishment previously occupied this space at any time? If yes, please provide the name of the business.	YES	NO	Pacha NYC	
Do you plan any changes to the existing façade? If yes, please describe.	YES	NO		
Will applicant have a vestibule within the establishment?	YES	NO		
Will applicant use a storm enclosure?	YES	NO		
Will applicant not place any items or obstructions on the sidewalk, for example, sandwich boards, sidewalk signs, freestanding menus and plants, as per the law?	YES	NO		
Will applicant comply with the NYC noise code?	YES	NO		
Will the establishment have any of the following: (circle all that apply)	FRENCH DOORS	GARAGE DOORS	WINDOWS THAT CAN BE OPENED	
Will applicant close all windows, French doors, garage doors when any music or amplified sound (including televisions) is played inside the establishment?	YES	NO	N/A	
Will applicant close all windows, French doors, garage doors by 11 PM Friday and Saturday and 10 PM on all other days even if no music or amplified sound is played inside the establishment?	YES	NO	N/A	
Has applicant obtained an acoustical report from a certified sound engineer to assess potential noise disturbance to the neighboring residents and buildings?	YES	NO		
Will applicant follow the recommendations of a certified sound engineer to mitigate potential noise disturbance to the neighboring residents and buildings, including placing speakers on the floor of the establishment?	YES	NO		
Will the kitchen exhaust system extend to the roof?	YES	NO	N/A	
Will the establishment have an illuminated sign?	YES	NO	N/A	
Will the establishment have a canopy extending over the sidewalk?	YES	NO		
Where will the air conditioner be located? What type is it?	Unit Located in the Rear of Building			
When was the air conditioner installed?	2006			

OUTDOOR ITEMS – SIDEWALK CAFÉ			
Has the applicant/owner(s) read MCB4 Sidewalk Café Policy?	**YES**	NO	
Will applicant be applying for a sidewalk café now or in the future?	YES	**NO**	
Is applicant in this application seeking to include a sidewalk café in its liquor license?	YES	**NO**	
If yes, has applicant submitted an application and plans to NYC Dept. of Consumer Affairs? Please attach application and plans.	YES	NO	N/A
Will applicant close and vacate the sidewalk café by 11 PM on Friday & Saturday and 10 PM on all other days?	YES	NO	N/A
Will applicant be serving alcohol in the sidewalk café? If so, will you have waiter service?	YES	NO	N/A
Will the café have a 3 ft. wide serving aisle running the entire length of the sidewalk cafe?	YES	NO	N/A
Will applicant mark the perimeter of the café on the sidewalk?	YES	NO	N/A
Will the service and consumption of alcohol in the sidewalk café only be via seated food service?	YES	NO	N/A
Will the sidewalk café not provide standing space for drinking or smoking?	YES	NO	N/A
Will applicant use any portable natural gas heaters? If so, do you have the requisite approvals from DOB & the Fire Department?	YES	**NO**	
Will applicant have a fighting plan that will allow safe usage of the outdoor space without disrupting neighbors?	**YES**	NO	
Will all furniture, plants and barricades be stored inside between the evening closing hours and the morning opening hours?	**YES**	NO	
Will all furniture be stored inside between December 21st and March 21st, and any other day when it rains or snows?	**YES**	NO	
Will applicant use umbrellas?	YES	**NO**	
If construction or construction protection has reduced the sidewalk width, will applicant always maintain an 8 foot clear path of sidewalk between the perimeter of the café and the closes obstruction including construction barricades?	**YES**	NO	

ADDITIONAL STIPULATIONS: (Office Use Only)

- Art Gallery Hours of operation 10 a.m. – 12 a.m. Sunday-Thursday, 10 a.m. – 1 a.m. Friday, 10 a.m. – 4 a.m. Saturday

- Applicant may remain open until 4 a.m. on the following 8 days each year:
  a) Sunday of Memorial Day weekend
  b) July 3rd
  c) Sunday of Labor Day weekend
  d) NYC Gay Pride Sunday
  e) Halloween
  f) Wednesday before Thanksgiving Day
  g) Christmas Eve
  h) New Year's Eve

- On any nights when applicant is open to 4 a.m., applicant will provide 8 security personnel at W 45th Street exit directing patrons to west side highway

-Other than specified Art Gallery Hours, any events on Sunday through Thursday will be limited to corporate events and private parties, with no member of the general public admited. On all such nights, premise will be closed and vacated no later than midnight

- Applicant will follow all recommendations of attached traffic and parking study and City safe partner security plan

Applicant will implement and adhere to all recommendations of acoustilog reported dated as ameded 8/28/17

- Applicant agress to never use outside promoters

- Applicant will not distribute advertisement fliers around the exterior of the establishment

- To ensure that neighbors are not negatively impacted by sound emanating from the sidewalk in front of the establishment due to the gatherings of people , the applicant's security personnel will monitor the area and encourage patrons to either enter the establishment or leave the area

- There will be no french doors or windows that open to the street front

- Kitchen exhaust will exit through ventilation above the highest floor of surrounding buildings and be constructed in a manner to not disturb neighboring residents or offices. Additonally, it will be complaint with NY DOB code

- Applicant will never install a storm vestibule enclosure as they have the double door "soundtrap" vestibule

- The applicant will proavtively clean the sidewalk and area immediately outside of the establisment and club-related trash on neighboring properties

- The applicant will make a concerted effort to hire employees from the community

To the extent any additional stipulation on pages 7 and 8 of this application conflicts with any response on pages 1 – 6 of this application, the stipulations on pages 7 and 8 control.

Manhattan Community Board 4 (MCB4) recommends:	◯ Denial unless all stipulations agreed to by applicant/owner are part of the method of operation ◯ Denial ◯ Approval

CB4 REPRESENTATIVES

Nelly Gonzalez *CB4 Assistant District Manager*	**Frank Holozubiec** *CB4 BLP Committee Co-Chair*	**Burt Lazarin** *CB4 BLP Committee Co-Chair*

APPLICANT AGREEMENT WITH THE COMMUNITY

Applicant agrees to these stipulations as the basis for the community support of this application and acknowledges that all of these stipulations are essential prerequisites to the MCB4 recommendation regarding this application. Applicant agrees to have these stipulations incorporated in the method of operation of its liquor license. The stipulations in this application constitute the entire agreement between MCB4 and applicant and may only be altered in writing signed by MCB4 and applicant. These stipulations supersede any oral statements or representations in connection with this application.

SIGN HERE →	GLENN J RAYMOND **PRINT NAME OF APPLICANT**	**SIGNATURE OF APPLICANT**	9/12/17 **DATE**

MEKKA NIGHTCLUB, LLC

MENU

MAINS

HAMBURGER
CHEESEBURGER
HOT DOG
WAFFLE CAKES

SIDES

BAGELS
ROLLS

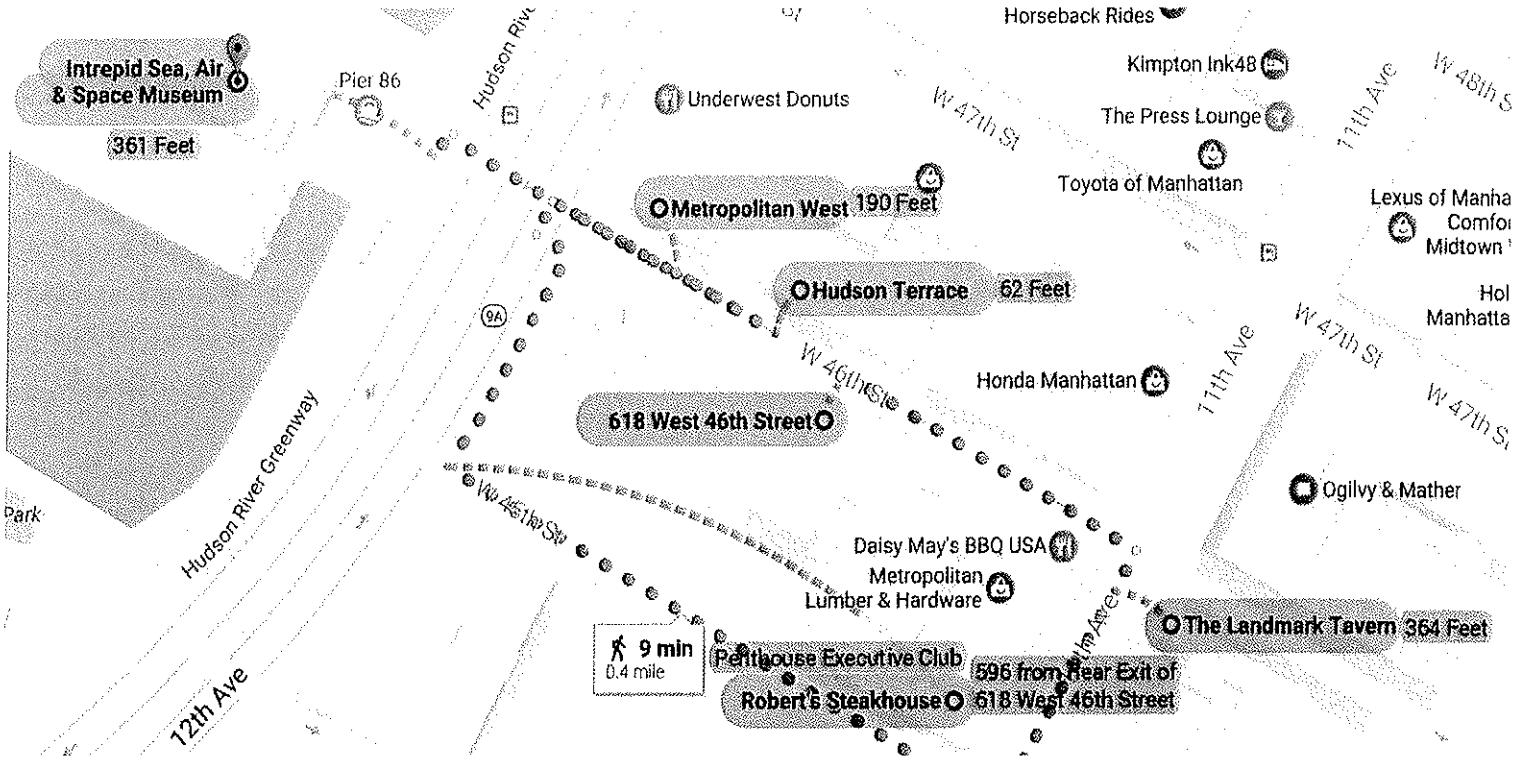
DRINKS (NON-ALCOHOLIC)

SMOOTHIES

MEKKA NIGHTCLUB, LLC
618 West 46th Street New York, New York 10036
Phone: **1-212-203-3046** ~ Email: **Glenn@MekkaNightclub.com**

MEKKA NIGHTCLUB, LLC

500 Foot Rule Diagram for 618 West 46th Street New York, New York 10036



Hudson Terrace: 621 West 46th Street - Approx. 62 ft

Metropolitan West: 639 West 46th Street - Approx. 190 ft

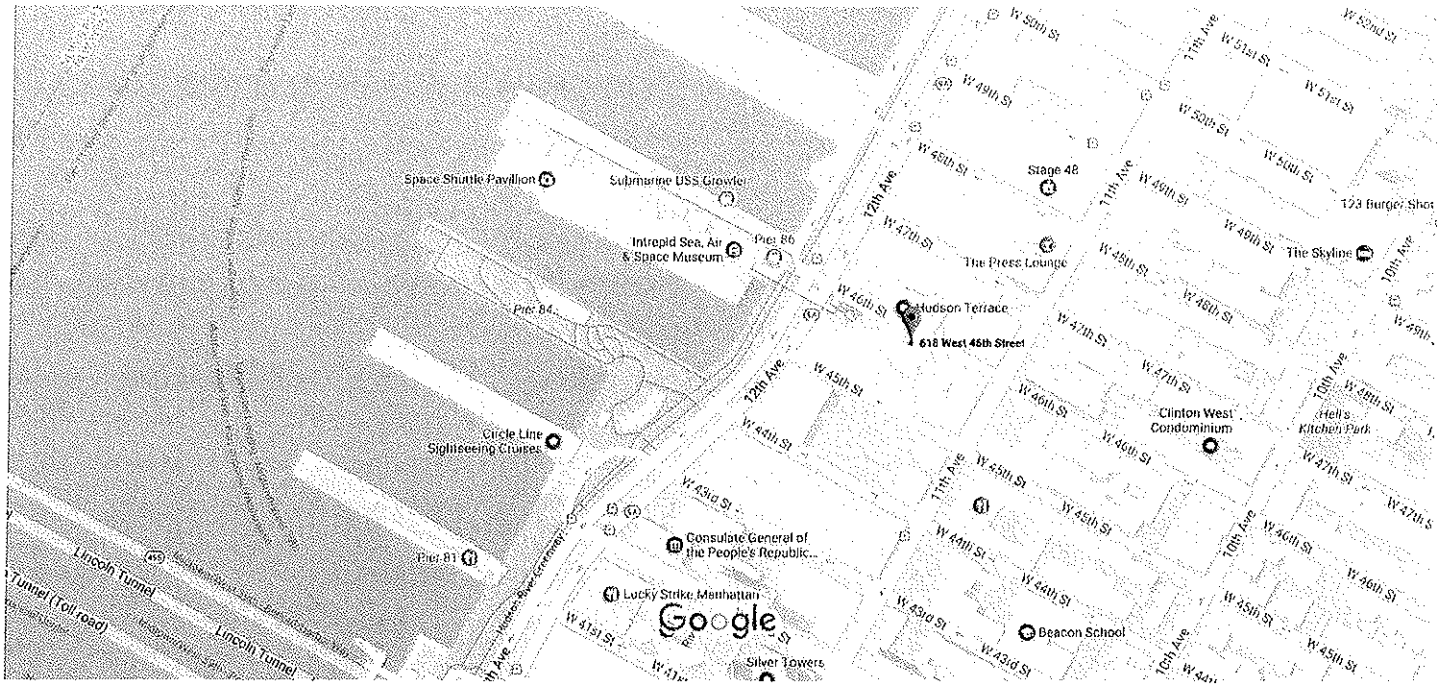
Intrepid Sea, Air & Space Museum: Pier 86, West 46th Street - Approx. 361 ft

Landmark Tavern: 626 11th Avenue - Approx. 364 ft

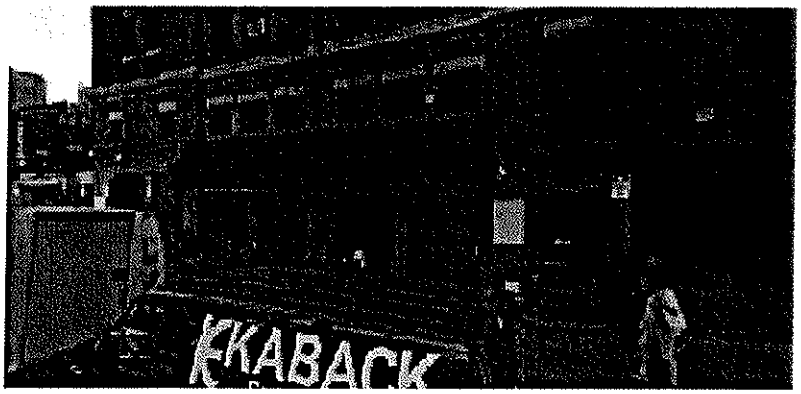
Roberts Steakhouse: 603 West 45th Street - Approx. 496 ft from Rear Exit of Building *(Over 500 ft from Main Entrance)*

Penthouse Executive Club: 603 West 45th Street - Approx. 496 ft from Rear Exit of Building *(Over 500 ft from Main Entrance)*

Google Maps 618 W 46th St

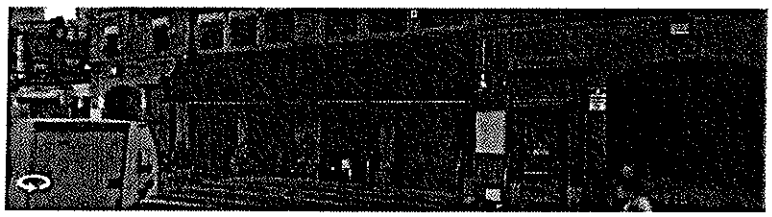


Map data ©2017 Google United States 200 ft



618 W 46th St

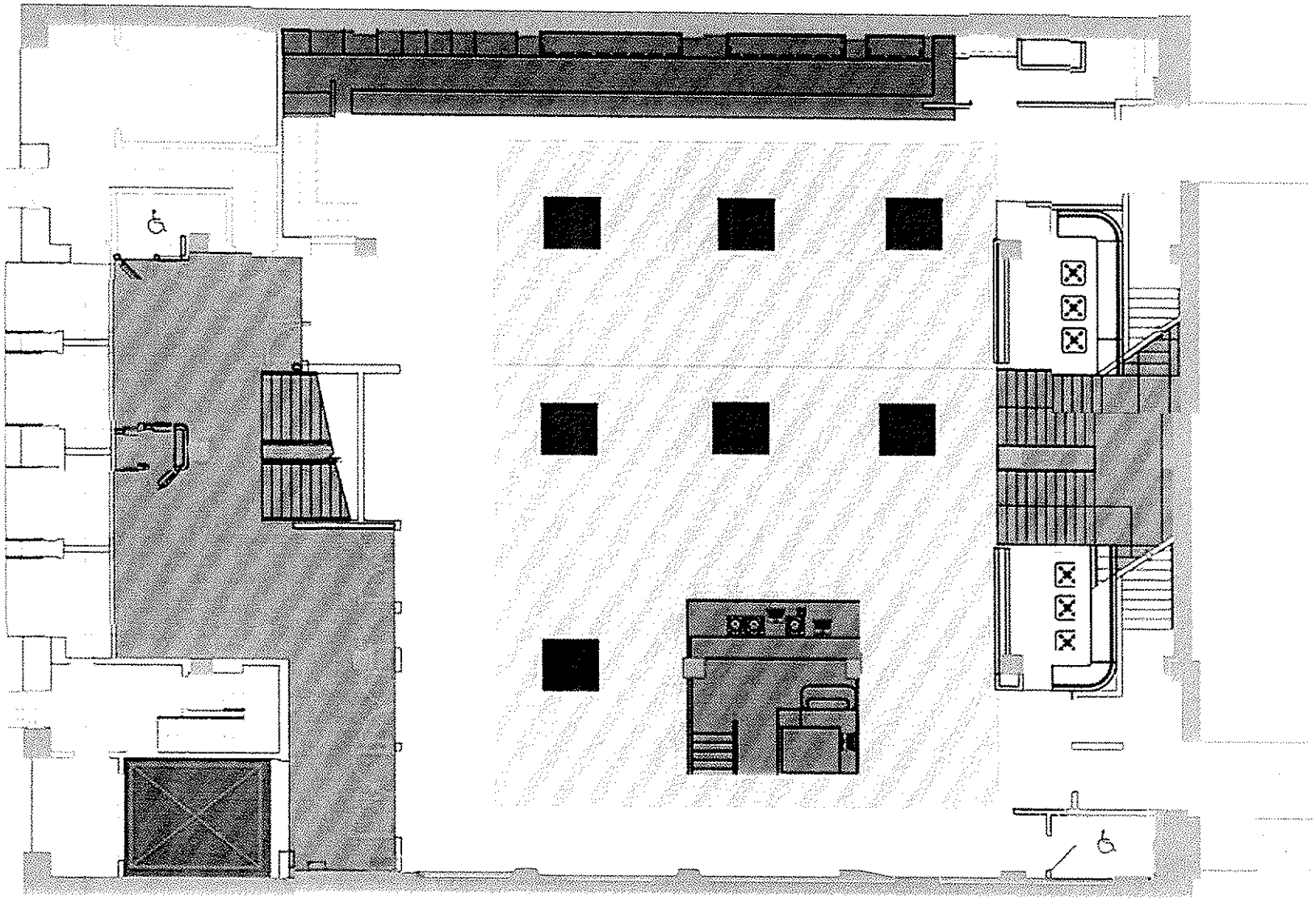
New York, NY 10036



FLOORPLAN

MAIN FLOOR

MEKKA NIGHTCLUB

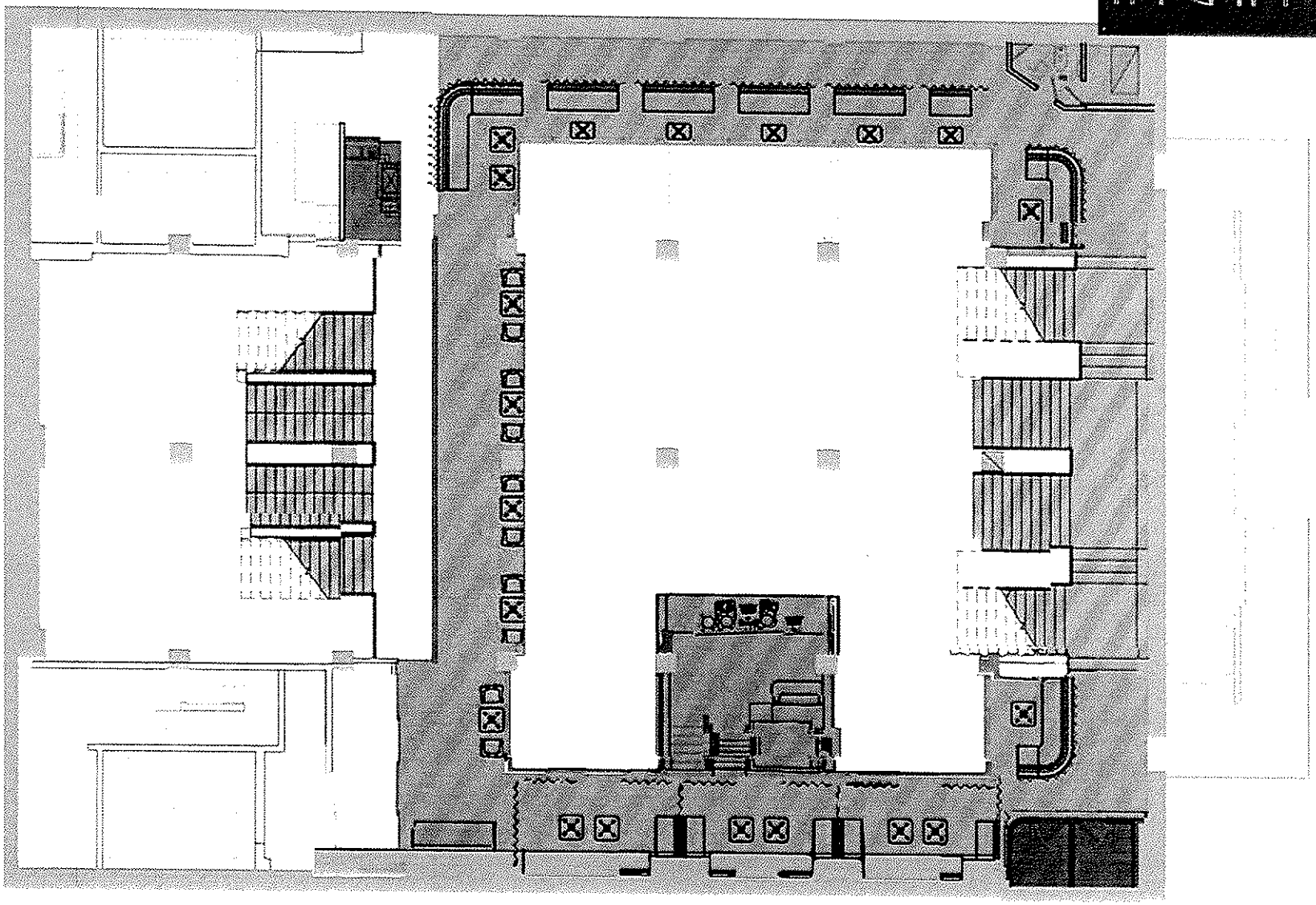


MEKKA NIGHTCLUB, LLC. 618 WEST 46TH STREET NEW YORK, NEW YORK 10036 (212) 203-3046 WWW.MEKKANIGHTCLUB.COM

FLOOR PLAN

MEZZANINE

MEKKA NIGHTCLUB



Mezzanine Stairs DJ Booth Bathrooms VJ Booth Service Bar

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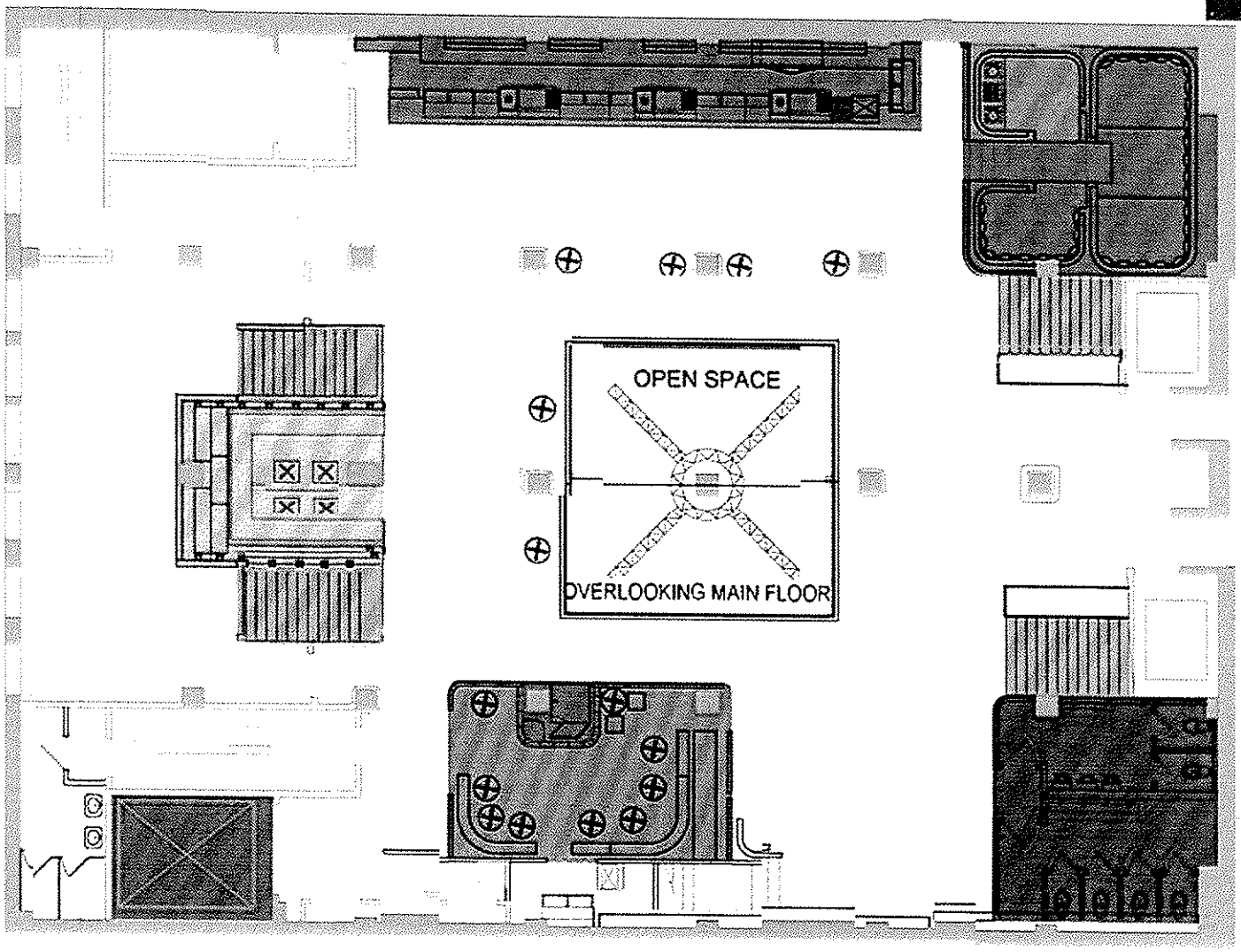
FLOOR PLAN

SECOND FLOOR



Bar Lounge Stairs Green Room DJ Booth Lounge Private Elevator Bathrooms

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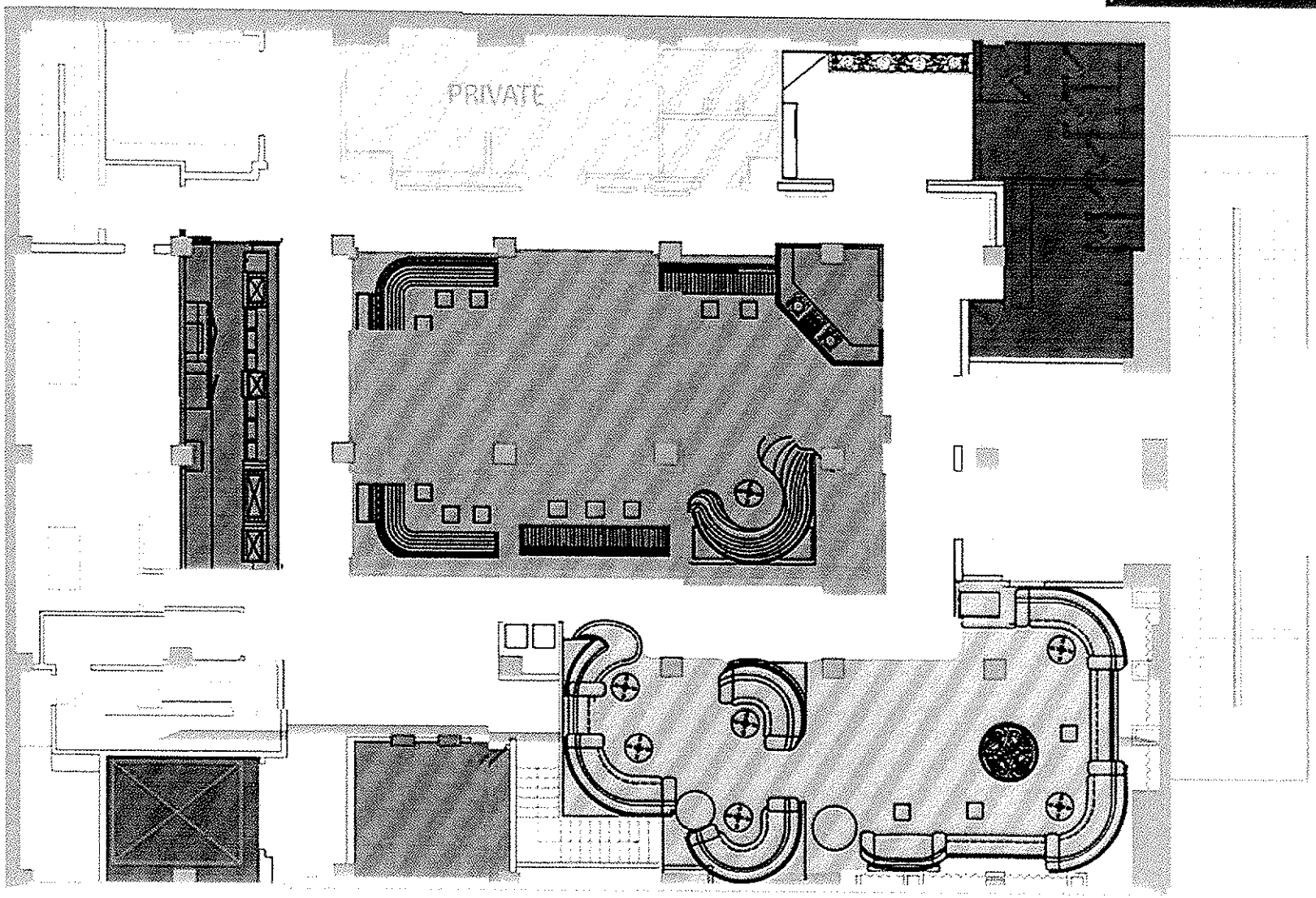
FLOOR PLAN

THIRD FLOOR

MEKKA NIGHTCLUB



Dance Floor Private Elevator Gift Shop Lounge DJ Booth Coat Check Bathrooms

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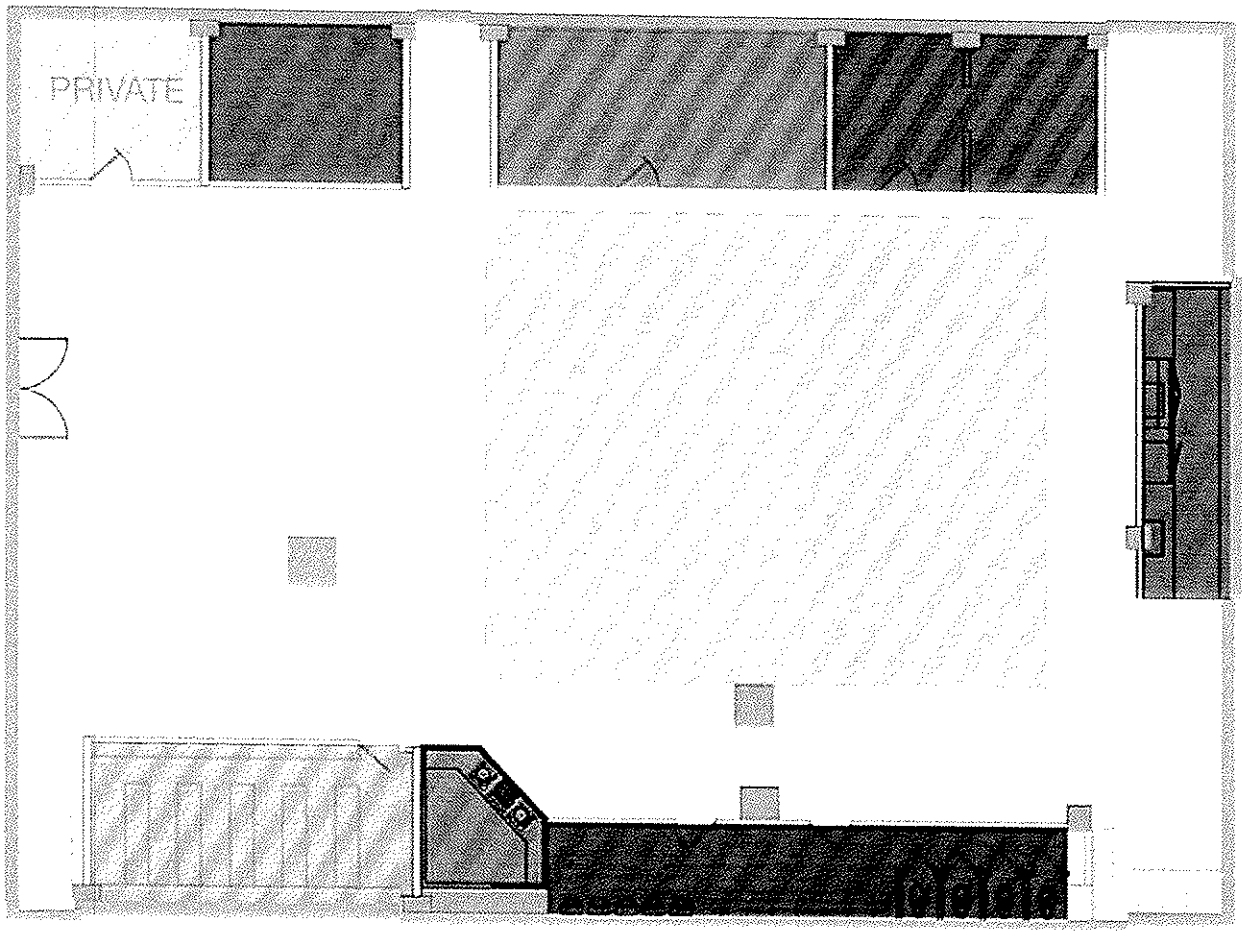
FLOOR PLAN

CELLAR



Dance Floor | Juice Bar | Lounge | Dressing Room | DJ Booth | Merchandise | Coat Check | Bathrooms

MEKKA NIGHTCLUB, LLC. 618 WEST 46TH STREET NEW YORK, NEW YORK 10036 (212) 203-3046 WWW.MEKKANIGHTCLUB.COM

ACOUSTILOG INC.
19 Mercer Street, NY, NY 10013 (212) 925-1365 Fax: (212) 966-4216 www.acoustilog.com

April 12, 2017 to Anthony Piacquadio
Amended August 28, 2017

Mr. Glenn Raymond
Mekka Holdings LLC DBA Mekka NYC
618 West 46th Street
New York, NY 10038

Re: Lounge Soundproofing, 618 West 46th Street

Dear Mr. Raymond,

This is a report originally commissioned by Mr. Anthony Piacquadio. I understand you are planning on operating the same type of establishment as that report was designed for. Therefore, this report will be applicable for you as well.

I conducted acoustic tests on April 4, 2017 at the above premises to determine the existing soundproofing of the lounge space and to make appropriate recommendations to protect neighbors from noise. There are currently no complaints nor are there any apartments in nearby buildings.

SUMMARY

Sound leakage from the club will meet Noise Code requirements at the nearest residences. Recommendations are provided.

DBA VS ONE-THIRD OCTAVE BAND MUSIC LEVELS

One way that the sound levels were measured was using the A-weighting decibel scale. The dB (A) decibel scale (see Noise Code Section §24-231 a1) is the most common type of sound measurement, which represents an overall measurement of all frequencies, but with a strong tendency to ignore the low-frequency "bass" sounds. The A-weighted decibels require only a simple sound level meter to measure them. DBA is what the City DEP inspectors usually use, and they normally consider anything above 42 dBA to be unreasonable. However, they typically use a 3 dBA safety margin and do not issue violations unless the sound level is greater than 45 dBA.

The C-weighted decibels or dBC (see Noise Code Section §24-231 a3) are also an overall measurement of all frequencies, but this measurement includes the important low-frequency "bass" sounds. However, dBC readings pick up so many frequencies at the same time that they usually do not distinguish between normal background noise and music beats.

One-third octave band sound level (see Noise Code Section §24-231 a2) readings were also taken, using a complex spectrum analyzer. These are measured in decibels, or dB. The loudest sounds produced by the music are in the low frequencies below 200 Hertz. This is commonly called bass, which sounds like thumping or vibration, and is the sound most likely to cause neighbor complaints. Bass and drums usually cause sounds in these frequency ranges.

THE NOISE CODE - MUSIC

§24-231 Commercial music.

(a) No person shall make or cause or permit to be made or caused any music originating from or in connection with the operation of any commercial establishment or enterprise when the level of sound attributable to such music, as measured inside any receiving property dwelling unit:

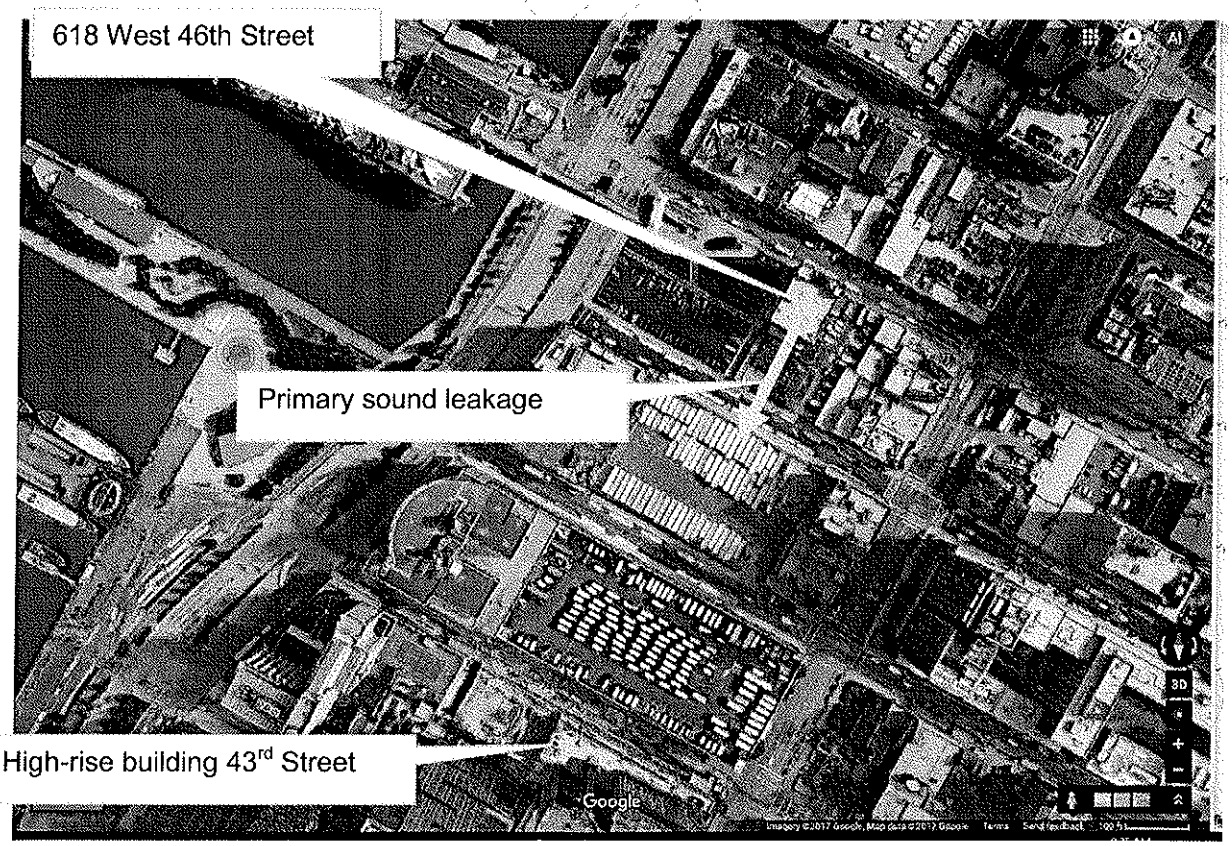
(1) is in excess of 42 dB(A) as measured with a sound level meter; or

(2) is in excess of 45 dB in any one-third octave band having a center frequency between 63 hertz and 500 hertz (ANSI bands numbers 18 through 27, Inclusive), in accordance with American National Standards Institute standard S1.6-1984; or

(3) causes a 6 dBC or more increase in the total sound level above the ambient sound level as measured in decibels in the "C" weighting network provided that the ambient sound level is in excess of 62 dBC.

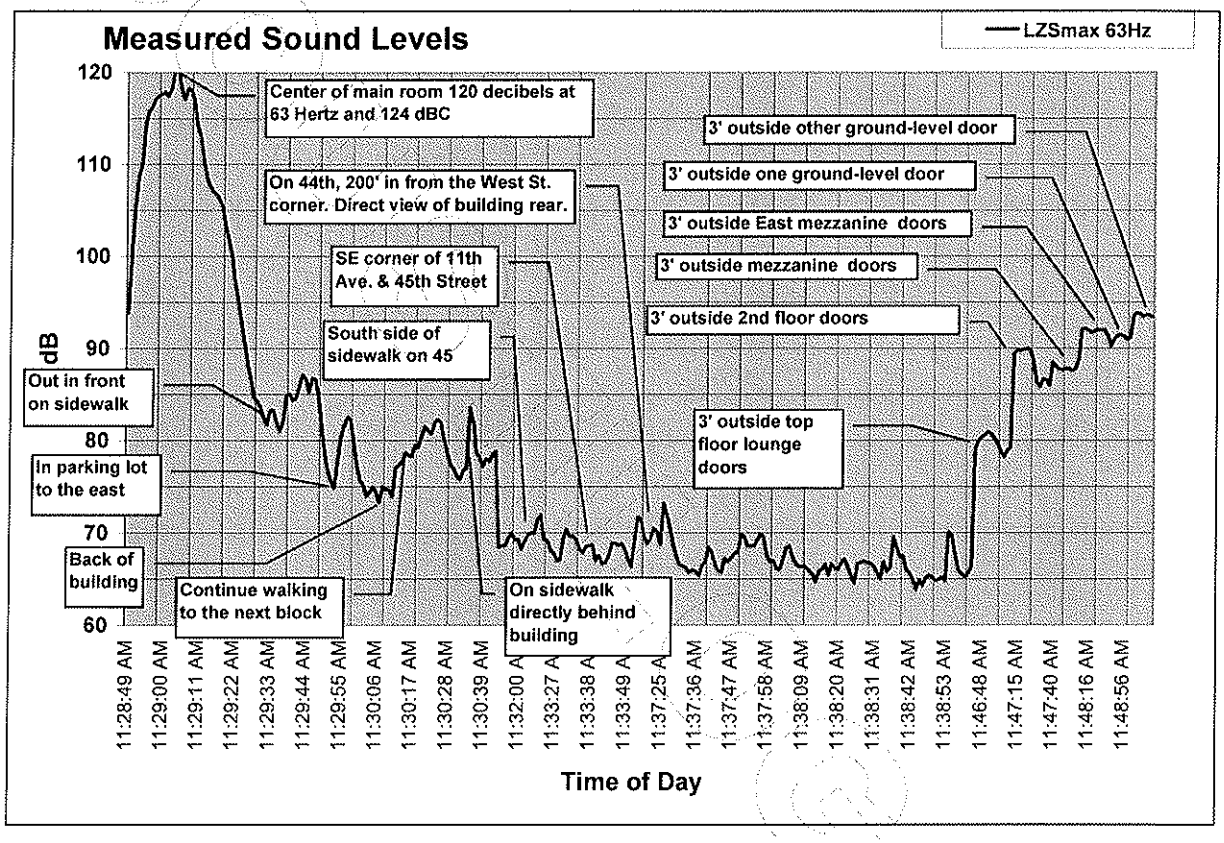
TESTING

A large test sound system was set to a level of 124 dBC as measured in the center of the main room. The sound level was then measured at various locations around the building and surrounding blocks. See the picture from Google Maps below.



Very little sound emanated from the front of the building so most measurements were made to the south. The loudest frequency regulated the Noise Code was 63 Hertz.

The sound levels are shown in chart below. Note that the dBA levels (not shown) are completely caused by extraneous noise and are not from the lounge. The music in the lounge would not cause levels exceeding 42 dBA in any of the apartments. This is because the sound leakage is entirely bass, which dBA readings largely ignore.



INSPECTION AND ANALYSIS

I did not have access to the large residential towers facing the back of the building. However, calculations show that the leakage will reach the building and produce approximately 55 decibels at 63 Hertz measured 3 feet inside a north-facing open window. This is 10 decibel higher than the Noise Code 45-decibel limit.

The south-facing emergency exit doors were a main leakage point for the sound, even when closed. Sound is exiting through the doors on 3 different floors.

The doors are presently modified to increase their mass with additional wood layers on the inside and outside.

The only set of doors where the sound leakage is acceptable is the on the top floor next to the private lounge. There was no separate sound system in this area during the test. Assuming that sound levels remain below 105 decibels in the private lounge, this floor's doors will continue to have sufficient soundproofing.

The air conditioner duct penetrations are another main leakage point. The ducts are lined with internal insulation but this still allows sound to exit from the lounge and penetrate the thin metal of the ducts.

Therefore, the leakage should be reduced by 10 decibels using sound system modifications, physical soundproofing or a combination of both methods.

Details are provided in the Recommendations section below.

RECOMMENDATIONS

DOOR LEAKAGE

1. Do not prop the front door open at any time.
2. Make sure the automatic door closer is functioning properly.
3. The best way to reduce the door leakage is to add a second set of doors with at least a 3 foot space to the existing doors.
4. Where it is not possible to add a second set of doors, replace the doors with sound rated doors.

DUCT LEAKAGE

5. The air conditioner duct penetrations are another main leakage point. The ducts are lined with internal insulation but this still allows sound to exit from the lounge and penetrate the thin metal of the ducts.
6. The ducts should be lagged with ½" concrete board on all exposed surfaces.
7. The grills above and next to the doors will have to be checked after the doors are soundproofed. However, they are not presently the main leakage path.
8. The air conditioners themselves should not be treated at this time as the sound level decreases at it travels through the ducts on the way to the air conditioner units. By the time it gets to the air conditioners it is less intense. However, after treating the ducts, the sound leakage through the entire HVAC system should be tested to see if a barrier on the south side of the units should be erected.
9. Duct silencers were considered; these reduce airflow and are not recommended.

SOUND SYSTEM

10. The sound system processor will use a limiter. Set the system below, based on not modifying the doors and ducts as described above.
    a. Set the volume on the amplifiers to maximum to prevent employees from turning the amps up louder.
    b. Set the sound level in the center of the main room to an initial maximum level of 114 dBC Slow. The sound installer can do this with a simple Radio Shack sound level meter. Set the meter to read "C", and "Slow". This will be a good starting point from which to operate the sound system.
    c. Set the initial maximum level to 105 dBC for the mezzanine speakers.
    d. To ensure accuracy of the meter, you can bring it to my office to be calibrated.

e. The dbx unit could be set more accurately in conjunction with tests made of noise levels in the neighboring apartments.

If I can be of further assistance, please call.

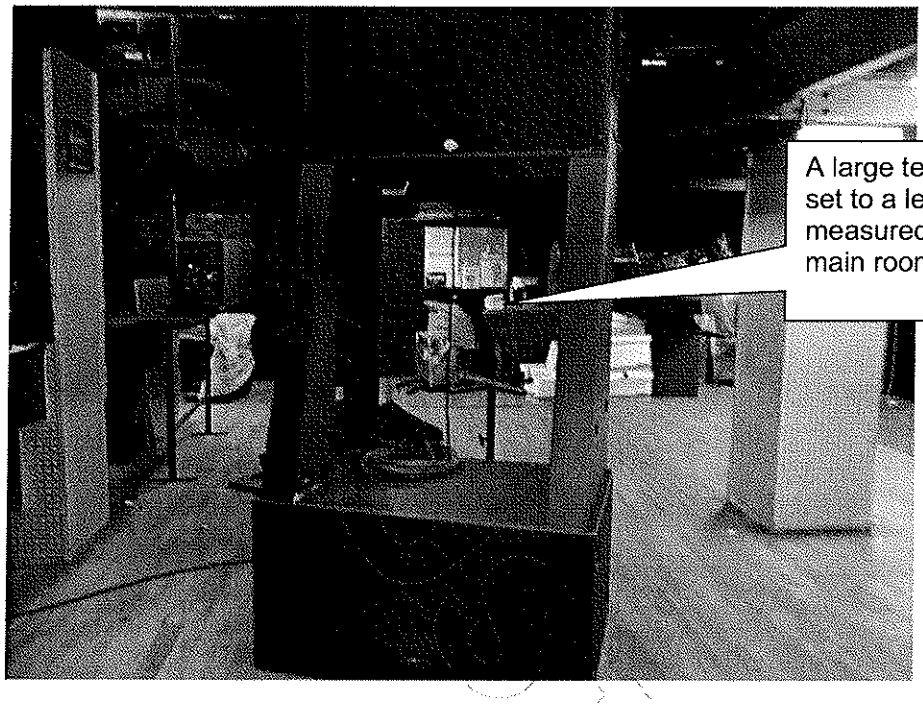
It is strongly recommended that all complicated construction projects get regular inspection visits at critical times, to make sure the system performs properly. This is an optional service which I can provide. All Acoustilog, Inc.-designed information supplied is for the original client and may not be copied in any way for different projects by any architect, consultant, engineer or other party.

Yours Truly,

Alan Fierstein

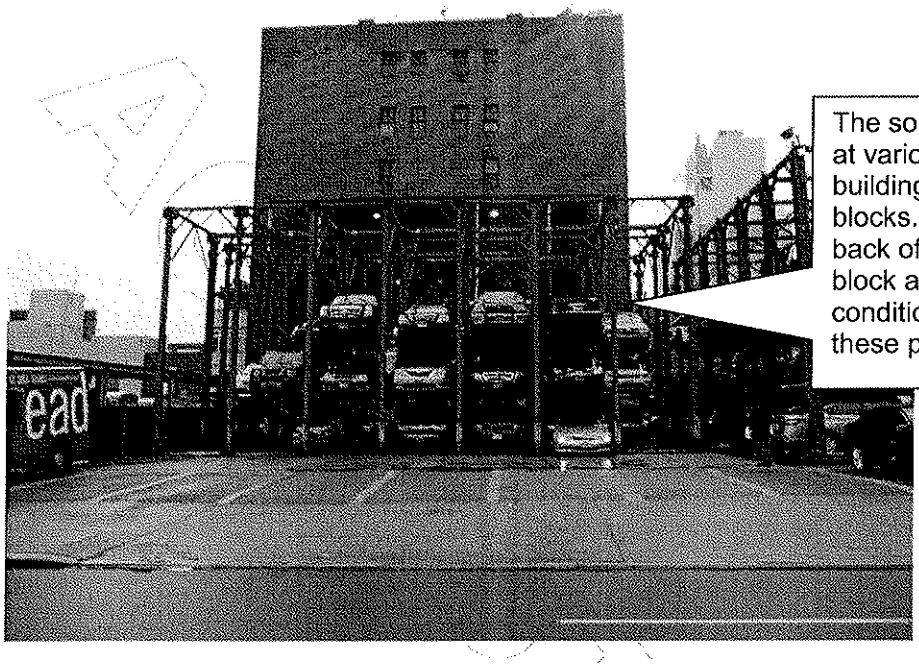
President
acoustilog1@verizon.net

All readings re: .0002 microbar. Readings taken with Bruel & Kjaer 2260/2270 Analyzer, Bruel & Kjaer 4135, 4145, 4165, 4189 or 4190 Microphone, Acoustilog 232A Reverberation Timer. Calibrated to Bruel & Kjaer 4220 Sound Source or Quest CA-15A.

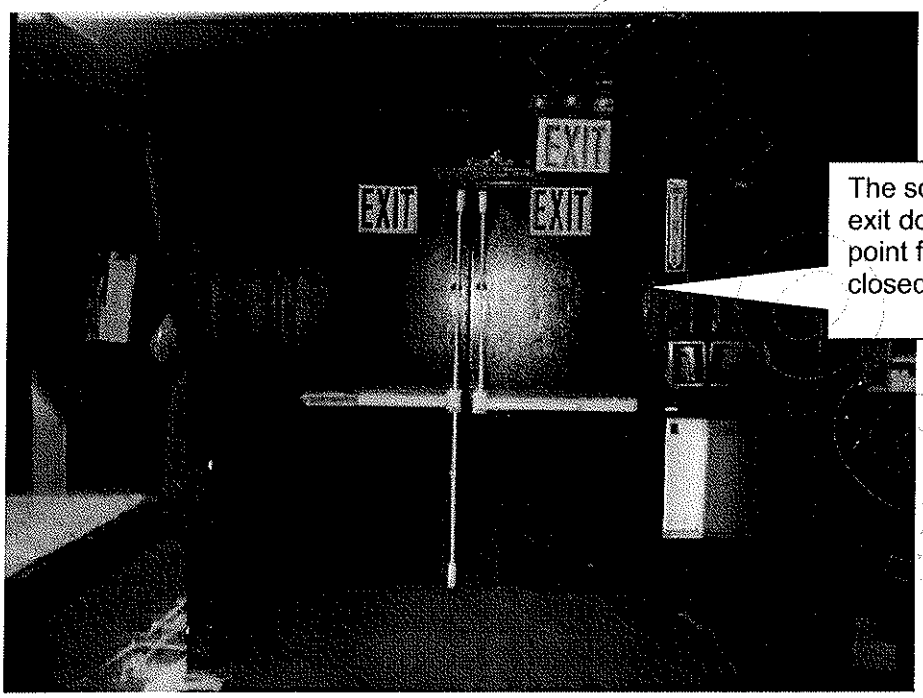


A large test sound system was set to a level of 124 dBC as measured in the center of the main room.

I did not have access to the large residential towers facing the back of the building.

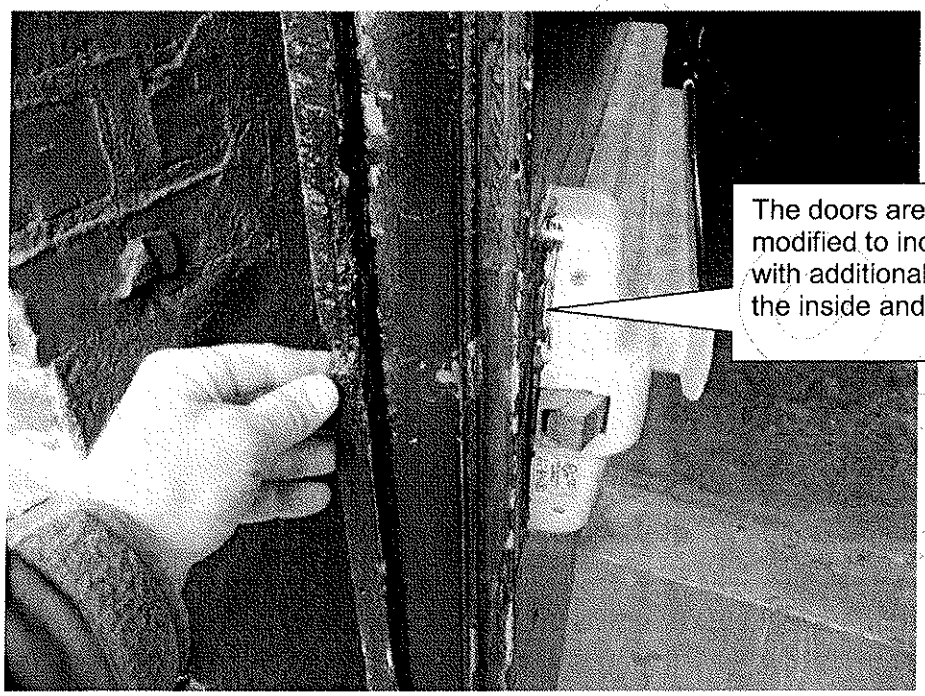


The sound level was measured at various locations around the building and surrounding blocks. This is a view of the back of the building from a block away. The doors and air conditioners are hidden behind these parked cars.

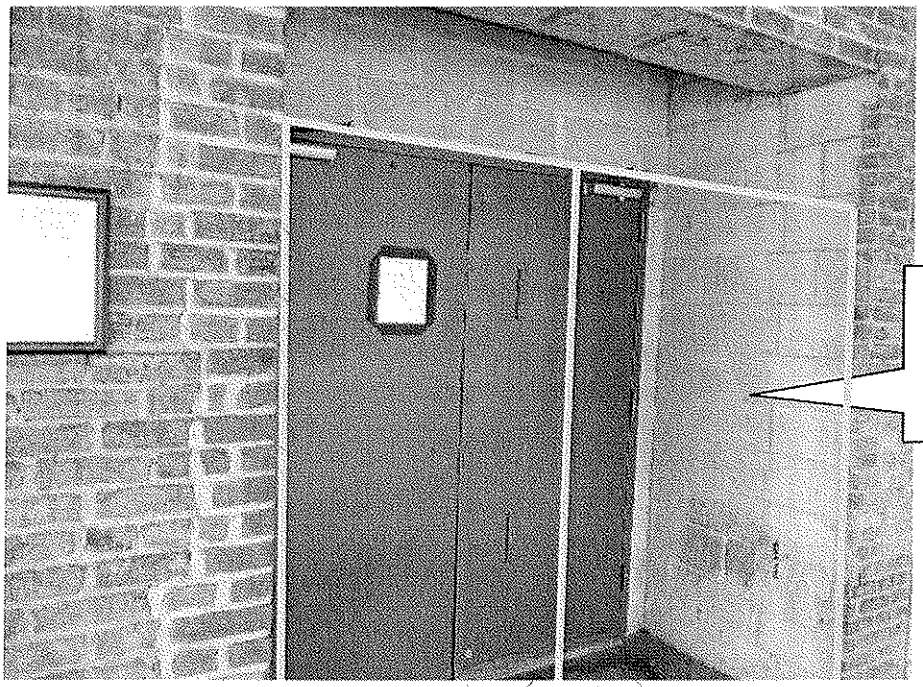


The south-facing emergency exit doors were a main leakage point for the sound, even when closed.

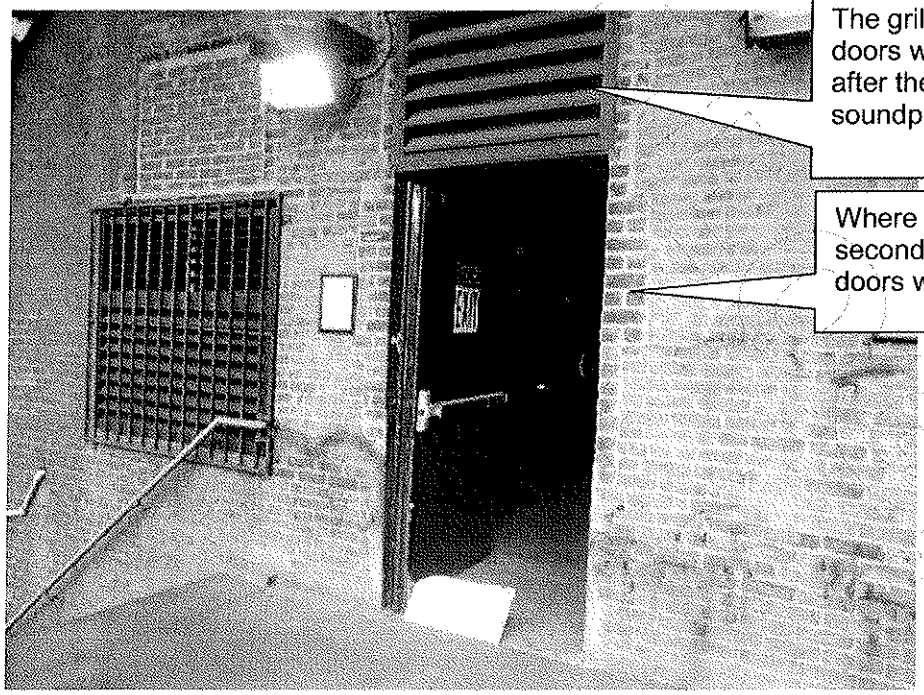
Sound is exiting through the doors on 3 different floors.



The doors are presently modified to increase their mass with additional wood layers on the inside and outside.

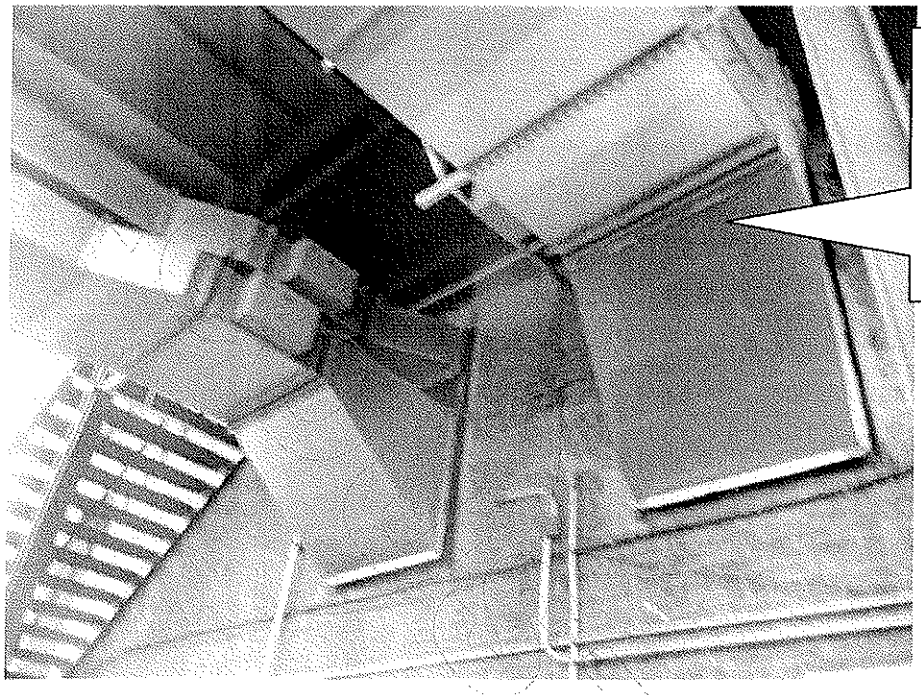


The best way to reduce the door leakage is to add a second set of doors with at least a 3 foot space to the existing doors.



The grills above and next to the doors will have to be checked after the doors are soundproofed.

Where it is not possible to add a second set of doors, replace the doors with sound rated doors.



The air conditioner duct penetrations are another main leakage point. The ducts are lined with internal insulation but this still allows sound to exit from the lounge and penetrate the thin metal of the ducts.

ACOUSTIC PERFORMANCE SELECTION DATA - IAC NOISE-LOCK DOORS

TYPE	THK (in. (mm)	STC	1/3 OCTAVE BAND CENTER FREQUENCY, HZ																			Test Report (year)	Wt. lb/ft² (kg/m)	Seals
			63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000			
			SOUND TRANSMISSION LOSS, DB																					
SWINGING DOOR	1-3/4 (45)	43	23	12	18	23	31	38	43	42	41	41	42	43	42	43	44	43	45	49	51	815-29-95 (1995)	8 (39)	a
	1-3/4 (45)	47	20	17	25	26	34	37	42	45	45	47	47	47	47	48	48	48	48	50	51	890-8c-9B (1998)	11 (54)	a
	2-1/2 (64)	49	-	-	-	28	34	40	39	42	44	46	47	51	50	50	51	53	55	55	55	618-2-87 (1987)	7 (34)	b
	2-1/2 (64)	51	24	20	23	28	37	44	47	49	48	50	53	52	53	52	51	51	54	58	59	815-19C (1994)	9 (44)	b
	2-1/2 (64)	53	22	24	27	31	42	47	47	48	50	53	54	54	54	53	51	51	53	57	58	815-17 (1994)	11 (54)	b
	3-1/2 (89)	54	21	58	28	40	48	52	51	52	52	54	55	55	54	51	51	51	54	59	63	815-23h (1994)	16 (78)	b
	3-1/2 (89)	55	21	28	29	40	48	50	51	53	53	54	55	56	56	55	53	52	53	58	61	815-20L (1994)	16 (78)	b
	3-1/2 (89)	51	22	28	28	41	51	54	53	55	55	60	62	60	60	61	61	62	64	66	69	815-23G (1994)	16 (78)	c
	5 (127)	64	24	32	33	44	51	53	58	58	59	62	63	63	65	66	65	66	67	70	70	815-24P (1994)	18 (88)	d
PAIRS	2-1/2 (64)	51	20	26	21	31	38	43	47	46	48	49	49	50	50	52	53	54	56	57	63	1027-5A-02 (2002)	9 (44)	b
	3-1/2 (89)	56	24	26	28	34	43	45	47	50	53	54	53	56	57	58	57	57	54	55	60	1027-7GG-032 (2004)	16 (78)	b
		NIC	NOISE REDUCTION, DB																					
SLIDING	4 (102)	45	-	-	-	29	29	31	36	38	42	44	43	43	44	50	54	59	61	61	66	1194-PB (1994)	18 (88)	e
	6 (152)	54	-	-	-	45	45	45	45	49	49	49	52	52	52	60	60	65	65	65	63	72-0365-S (1984)	24 (118)	f
	8 (203)	42	-	-	-	47	46	51	55	57	59	56	59	64	63	63	>65	>65	>65	>65	>65	72-0732 (1990)	50 (245)	g

IAC Acoustic Seal System - a) single magnetic; b) double magnetic; c) magnetic tri-seal; d) magnetic compression tri-seal; e) manual labyrinth wiper; f) automatic pneumatic; g) automatic labyrinth compression.

ACOUSTIC PERFORMANCE SELECTION DATA - IAC NOISE-LOCK WINDOWS

TYPE	STC	1/3 OCTAVE BAND CENTER FREQUENCY, HZ															Test Report (year)	Wt. lb/ft² (kg/m)	Min. Frame Depth in. (mm)	Glazing Type
		125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000				
		SOUND TRANSMISSION LOSS, DB																			
SINGLE GLAZED	35	24	25	27	29	28	29	31	32	35	36	36	39	36	37	38	40	543-82-2 (1982)	5 (25)	4 (102)	a
	39	28	30	34	29	34	36	36	36	38	38	37	40	41	46	48	50	549-1-83 (1983)	8 (39)	4 (102)	b
	41	30	29	32	35	35	37	38	38	38	37	41	44	48	50	53	56	—	9 (44)	4 (102)	c
	47	28	26	34	33	36	46	49	51	53	56	60	63	58	57	61	65	543-82-1 (1982)	10 (49)	4 (102)	d
DOUBLE GLAZED	53	30	36	37	39	45	50	52	55	57	59	61	62	61	59	59	66	AC-609-2-87 (1987)	12 (59)	8 (203)	e
	57	40	41	46	47	47	50	53	57	56	60	63	66	67	75	79	81	VW-587-2-86 (1986)	18 (88)	10 (254)	f
	58	40	39	46	43	50	54	55	58	60	64	66	64	63	62	63	64	AC-654-89 (1989)	27 (132)	18 (457)	g
	59	42	45	50	48	49	53	57	58	58	59	63	67	72	79	81	82	VW-586-2-85 (1985)	20 (98)	10 (254)	h

Glazing Type and Thickness a) 1/4 in. (6mm) laminated safety glass; b) 1/2 in. (13mm) laminated safety glass; c) 3/4 in. (19mm) laminated safety glass; d) 1/4 in. x 1/4 in. (6 x 6mm) tempered safety glass; e) 1/4 in. x 1/4 in. (6 x 6mm) laminated safety glass; f) 1/2 in. x 1/4 in. (13 x 16mm) laminated safety glass; g) 1-3/16 in. x 1/4 in. (30 x 6mm) bullet resistant glass-laminated safety glass; h) 1/2 in. x 3/8 in. (13 x 109mm) laminated safety glass.

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Submittal Sheet

Durock® Cement Board

Backerboard for ceramic tile and exterior finish systems

- Lightest cement board in the industry
- Environmentally sustainable product—lower weight reduces embodied energy and embodied emissions
- Water-durable, mold-resistant substrate for high-moisture areas
- Suitable for use in interior or exterior applications
- Will not rot, warp, delaminate or disintegrate
- Easy to cut and fasten
- Non-combustible

Description

DUROCK cement board offers architects, builders and tile contractors a strong, water-durable tile base for tub and shower areas. Also an ideal underlayment for tile on floors and countertops in new construction and remodeling. Board is readily applied over wood or steel framing spaced 16" o.c. with corrosion-resistant wood or steel screws or hot-dipped galvanized roofing nails. After joints are treated, ceramic wall or floor tile is applied using latex fortified mortar or Type I organic adhesive.

DUROCK cement board is preferred by many applicators as a base for directly applied finishes, tile, stone and thin-brick used in building exteriors.

Product Data

Sizes and Packaging

Size (thickness x width x length)[1]	Units (pcs)[2]
1/2" x 32" x 5'	50
1/2" x 36" x 5'	50
1/2" x 32" x 8'	30
1/2" x 48" x 8'	30
5/8" x 36" x 5'	30
5/8" x 48" x 8'	24
5/16" x 48" x 4'	40
5/16" x 36" x 5'	50

1. Other lengths available. Contact your USG Representative. 2. Shipped in packaging units as shown.

Standards

DUROCK cement board exceeds ANSI standards for cementitious backer units (CBU). See ANSI A118.9 for test methods and specifications for CBU and ANSI A108.11 for interior installation of CBU. Exceeds industry standards as an exterior substrate for exterior finishes. Exceeds ASTM C1325 standards for non-asbestos fiber-mat reinforced cementitious backer units.

Availability

DUROCK cement board is distributed throughout the United States. Contact a United States Gypsum Company sales office or sales person for additional information.

Composition and Materials

DUROCK cement board is formed in a continuous process of aggregated portland cement slurry with polymer-coated, glass-fiber mesh completely encompassing edges, back and front surfaces. The edges are formed smooth. The ends are square cut.

Delivery and Storage of Materials

All materials should be delivered and stored in their original unopened package and stored in an enclosed shelter providing protection from damage and exposure to the elements. Even though the stability and durability of DUROCK cement board is unaffected by the elements, moisture and temperature variations may have an effect on the bonding effectiveness of basecoats and adhesives. Store all DUROCK cement board panels flat.

Environmental Conditions

In cold weather and during DUROCK cement panel and tile installation, temperatures within the building shall be maintained within the range of 40 to 100 °F. Adequate ventilation shall be provided to carry off excess moisture.

Interior Applications

Wood framing shall approximate the moisture content it will reach in service by allowing the enclosed building to stand as long as possible prior to the application of the cement board. Do not install board when the board is wet.

Exterior Applications

Finishes, leveling/skim coats and basecoats shall not be applied to DUROCK cement panel that is wet or frozen or that contains frost. After application, and for at least 24 hours, finishes, leveling/skim coats and basecoats shall be effectively protected from rain and excessive moisture. In cold weather and during finish applications, DUROCK cement panel, skim or basecoat, mortar, finish material and air temperature must be at least 40 °F, and must remain at this temperature or higher for at least 24 hours after application. Hot and dry weather may affect working time of leveling/skim or basecoat and finish materials. Under rapid drying conditions, dampening or light fogging of board, leveling/skim or basecoat surface may be required to improve workability.

USG

Panel Micro-Cracking

DUROCK cement board is formulated to develop fine micro-cracking (also called as multiple-cracking) in the panel. The micro-cracking process helps to evenly relieve the stored strain energy in the product due to handling and installation, external loads, and/or panel restrained movement. The presence of micro-cracks in the panel should not be considered a product defect.

Installation

A. Install cement board with ends and edges closely abutted, but not forced together. Stagger end joints in successive courses.

B. For flooring applications over a wood-based substrate, laminate DUROCK to subfloor using Type 1 organic adhesive or latex-modified thin-set mortar suitable for bonding cement board. Fasten to subfloor with 1-1/4" DUROCK™ tile backer screws for wood framing (or equivalent) or 1-1/2" hot-dipped galvanized roofing nails spaced 8" o.c. in both directions with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges. Drive nails and screws so that bottoms of heads are flush with panel surface to ensure firm panel contact with sub floor. Do not overdrive fasteners. Prefill joints with tile-setting mortar or adhesive and then immediately embed DUROCK™ tile backer tape and level joints.

C. For wall application, fasten DUROCK panels to framing with specified fasteners. Drive fasteners into field of panels first, working toward ends and edges. Hold panels in firm contact with framing while driving fasteners. Space fasteners maximum 8" o.c. for walls, 6" o.c. for ceilings, with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges. Drive nails and screws so that bottoms of heads are flush with panel surface to ensure firm panel contact with framing. Do not overdrive fasteners. Approved fasteners include: DUROCK tile backer screws for steel framing (or equivalent), 1-1/4" and 1-5/8" for 14- to 20-gauge steel framing; DUROCK tile backer screws for wood framing (or equivalent), 1-1/4", 1-5/8", and 2-1/4" for wood framing. Nails (1-1/2" hot-dipped galvanized roofing nails). Prefill joints with tile-setting mortar or adhesive and then immediately embed DUROCK™ tile backer tape and level joints.

D. Cement board should be cut to size with a knife and straight edge. A power saw should be used only if it is equipped with a dust-collection device. Installer should wear NIOSH/MSHA-approved dust mask.

Refer to current United States Gypsum Company literature piece SA932 for complete installation information, including good design practices. For technical assistance, call USG Technical Service at 800 USG.4YOU (874.4968).

Limitations

1. Designed for positive or negative uniform loads up to 60 psf. For complete information on the use of DUROCK panels in exterior systems, consult uniform load table on page 3 for applicable positive or negative uniform loads on wall systems.
2. Wall applications: Maximum stud spacing: 16" o.c. (24" o.c. for cavity shaft wall assembly). Framing shall be designed (based on stud properties alone) not to exceed L/360 deflection for tile and thin brick, L/240 for direct-applied exterior finish systems. Maximum fastener spacing: 8" o.c. for wood and steel framing; 6" o.c. for ceiling applications.
3. Floor applications: Maximum joist spacing 24" o.c. The subfloor system should be designed with a minimum deflection limit of L/360 for the span. Some finish materials may require a more rigid sub-assembly (such as large format tile and natural stone products). In these cases, follow the manufacturer's minimum requirements. The subfloor should be APA Span-Rated Plywood or OSB with an Exposure 1 classification or better with tongue and groove or back blocked at the unsupported edges.
4. Maximum dead load for ceiling system is 7.5 psf.
5. Steel framing must be 20-gauge equivalent or heavier.
6. Do not use drywall screws or drywall nails. Do not use drywall joint tape.
7. Do not use 5/16" DUROCK cement board for wall or ceiling applications.
8. Do not use DUROCK cement board with vinyl flooring.
9. Durock cement board is not designed for use as a structural panel.

Technical Data

Property	Unit of Measure	ASTM Test Method	1/2" Cement Board Typical Value	5/16" Underlayment Typical Value
Flexural strength	psi	C947	> 750	> 1000
Indentation strength	psi	D2394	> 1250	> 1250
Shear bond strength	psi	ANSI A118.4	> 50	> 50
Water absorption	% by wt. 24 hrs.	C473	15	15
Nail-pull resistance	lb. (0.4" head diameter, wet or dry)	C473	> 90	—
Weight	psf	C473	2.4	2.0
Freeze/thaw resistance	procedure B, number of cycles with no deterioration	C666	100	100
Mold resistance	—	G21	No growth	No growth
Non-combustibility	Pass/Fail	E136	Pass	Pass
Surface burning characteristics	flame/smoke	E84	0/0	0/0
Thermal	"R"/k value	C518	0.39/1.27	—
Standard method for evaluating ceramic floor tile installation systems	Passes cycles 1-6	C627	Light Commercial	Light Commercial
Minimum bending radius	ft. (requires special framing—details available upon request)	—	6	—

Uniform Load — 1/2" Durock Cement Board

Stud Spacing	Fastener Spacing	Design Wind Load (l/240)	Design Wind Load (l/360)
12" o.c.	8" o.c.	45 psf	45 psf
	6" o.c.	60 psf	60 psf
16" o.c.	8" o.c.	33 psf	30 psf
	6" o.c.	45 psf	30 psf
24" o.c. (for shaft wall assemblies only)	8" o.c.	13 psf	9 psf
	6" o.c.	13 psf	9 psf

Submittal Approvals:

Job Name	
Contractor	Date

Product Information
See usg.com for the most up-to-date product information.

Warning
Portland cement is strongly alkaline. Direct contact can be corrosive and cause severe damage or chemical burns to the eyes and wet or moist skin. Avoid contact with eyes and skin. Wear eye protection, alkali-resistant protective gloves, long-sleeved shirts and pants to prevent direct contact. If eye contact occurs, immediately flush thoroughly with water for 30 minutes and seek medical advice. Inhalation of dust may be corrosive or cause chemical burns or irritation to nose, throat and respiratory tract. Avoid breathing dust. Use in a well-ventilated area or provide sufficient local ventilation. If dusty, wear a NIOSH/MSHA-approved dust respirator. Wash thoroughly with soap and water after use. Do not ingest. If ingested, call physician. If cutting board with a power tool, use a wet or vacuum saw to reduce the amount of dust generated. Panels are heavy and can fall over, causing serious injury or death. Avoid creating a tripping hazard and do not exceed floor limit loads. Long-term breathing of respirable crystalline silica dust can cause permanent lung damage and/or cancer. Product safety information: (800) 507-8699 or usg.com. **KEEP OUT OF REACH OF CHILDREN.**

Trademarks
The following trademarks are owned by United States Gypsum Company or its related companies: USG, Durock and USG in stylized letters.

Note
Products described here may not be available in all geographic markets. Consult your U.S. Gypsum Company sales office or representative for information.

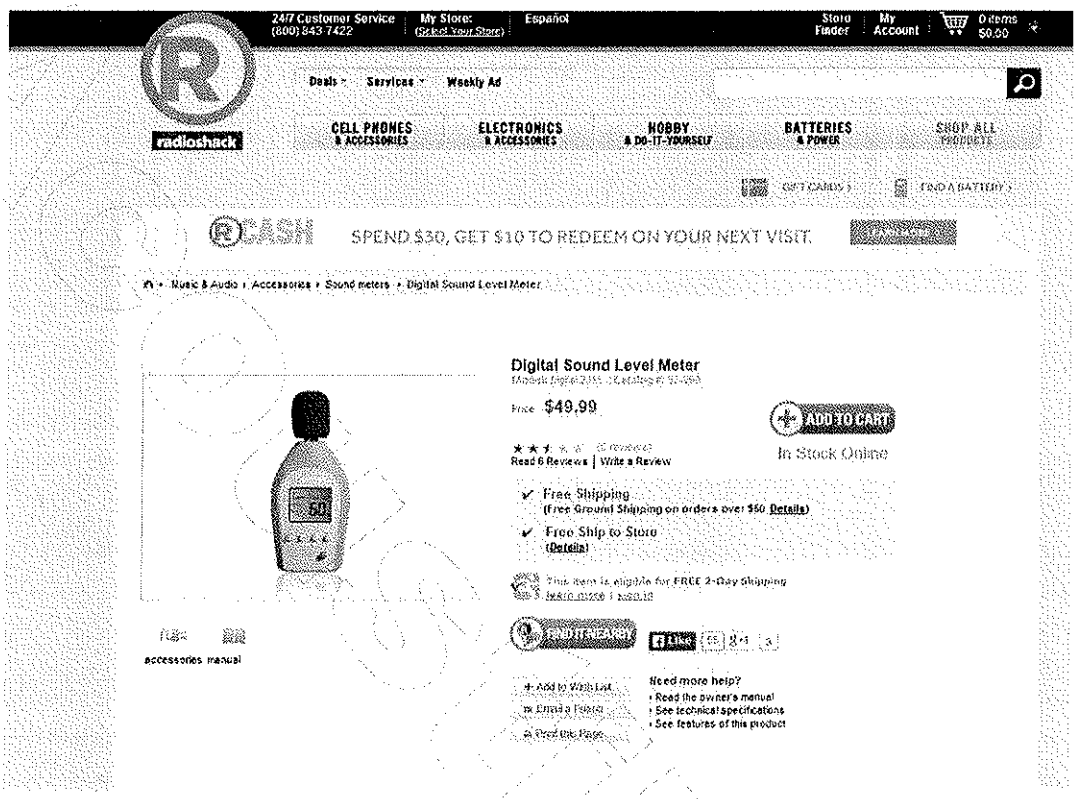
Notice
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

Safety First!
Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read MSDS and literature before specification and installation.

Manufactured by
United States Gypsum Company
550 West Adams Street
Chicago, IL 60661

800 USG.4YOU (874.4968)
usg.com

CB399/rev. 11-10



Product Summary

Fine-tune your audio.

Fine-tune your PA or stereo systems audio response to match the acoustic environment with this Digital Sound Level Meter. It comes with a carrying case for travel and features an easy-to-read display.

- Carrying case protects the meter when traveling
- Easy-to-read display, sound range 30-130db, digit LCD display
- You can fine-tune your PA or stereo systems audio response to match the acoustic environment

Pricing and availability: Please note that all prices are subject to change without prior notice. Prices advertised on this site are for online orders only. Prices on some items may differ from those advertised in RadioShack stores. All merchandise may not be available at all stores, and all stores may not participate in all sales promotions. We recommend you contact the store to confirm product availability and price.

Shipping

Usually ships in 1 - 2 business days

In store: Check availability
By phone: 1-800-843-7422

Manufacturer Warranty

- Parts: 12 month
- Labor: 12 month

CITY SAFE
PARTNERS

September 8, 2017

Mekka Holdings LLC /DBA Mekka NYC
618 West 46th st
New York NY 10036

Dear Glenn Raymond,

City Safe Partners - Security is pleased to submit this proposal for security services to support your goals for providing a safe environment. City Safe Partners is a fully licensed, insured and bonded security company with extensive experience of over 95 years in law enforcement.

Our firm has an impeccable reputation for delivering superior service to our clients. We take proactive measures to protect our clients by liaising with local agencies to ensure your interest are protected.

Our services include armed and unarmed protective services, fire safety, risk management, surveillance and consulting. We customize our services to fit your needs and work with you to find the perfect integration of solutions and best practices for the job. It is our experience, strong relationships, performance based processes and integrated solutions that sets us above the competition.

Thank you for considering City Safe Partners for your security needs. We look forward to working with you and will reach out to you next week to follow up on our submission.

If you have questions on this proposal, feel free to contact us at your convenience by email at chanshue@citysafepartners.com or by phone at 347-448-5494.

Sincerely,

Soyini Chan Shue
Managing Partners
CitySafe Partners-Security
chanshue@citysafepartners.com
office: 347-448-5494

Prepared by City Safe Partners-Security

CITY SAFE
PARTNERS

Project Objective: To provide security services with licensed Security Guards and Safety Directors

The risks associated with criminal acts perpetrated on commercial establishments by patrons and/or employees are substantial and include direct costs/loss, litigations costs and a company's most valuable asset...***its reputation***. Often events that attract a large number of participants have proven to provide additional challenges not only on site but off premise as well.

City Safe Partners Security takes these challenges into consideration and pairs it with our in-depth knowledge of the risks and problems to create a comprehensive plan of action to reduce and/or eliminate those risks.

The **CSP** security team is trained in safety, crowd control, and counterterrorism. A select group of team members are trained in Fire Safety and are certified Fire Safety Directors and Emergency Action Plan Directors.

Our guards receive training that is current and reflective to the needs our our clients. They are friendly, vigilant, trained in community relations, deterrence and in emergency response.

CITY SAFE
PARTNERS

The Security Plan

Our main focus is deterrence. **CSP** can provide you with a risk assessment for each threat and vulnerability gap that may exist and the security plan to address them. Countermeasures address the physical, personnel security, liability issues and departmental dependencies. It will also include an emergency plan and disaster response for threats.

We work cooperatively with local law enforcement agencies, retail and commercial and community associations to develop the CSP security policies. These detailed policies and procedures focus on deterrence, de-escalation, access control, theft, and countermeasures while maintaining a friendly environment for your clients.

We will provide one (1) security officer for every seventy five (75) patrons, and (1) supervisor for every five guards. We will staff at least one Fireguard for every five hundred (500) patrons.

Our guard will be strategically placed throughout the venue to monitor the crowd. Security staff posted at the front entrance will be equipped with identification scanners and magnetometers to prevent the entry of minors and any illegal weapons.

Security Officers will be placed at each exit, entrance, and stair well and strategically around the perimeter of the establishment to ensure an orderly entry and exit of patrons. Our security management will devise a venue exit plan with the local police to minimize any community impact.

Prepared by City Safe Partners-Security

CITY SAFE
PARTNERS

Security Officers will work with all staff and give special attention to bar staff to ensure patrons are not intoxicated to the extent that their behavior becomes unsafe; Patrons who engage inappropriate behavior or arrested will be ejected; their information will be stored in a database and will be banned from future entry.

Security Supervisor will assist with monitoring the crowd by viewing cameras and will make adjustment to security post as necessary.

Security Officers will be familiar with all areas of the venue and will assist emergency personnel as necessary. A sitemap will be provided to security officers highlighting the emergency evacuation plan in the event of an incident requiring an evacuation.

THE SECURITY TEAM

The **CSP** security personnel are professional and attired based on our client's preference in suits or uniform that would make them easily identifiable. The security personnel is often the first contact with patrons and sets the tone for future interactions Our team members are tactful and are excellent communicators. Their job is to deter and de-escalate. They do so through their visible presence, alertness and interactions with patrons and staff, observation and assessment of all that goes on within their sight and hearing and if necessary their verbal and/or physical intervention.

The **CSP** team members are carefully screened and possess maturity, sound judgement and the ability to interact without appearing threatening or intimidating. Our security team are trained and their individual training is documented which includes but are not limited to:

- Community Relations
- Crowd Control
- No Parking Details

Prepared by City Safe Partners-Security

CITY SAFE
PARTNERS

- Dignitary or VIP Protection
- Weapon detection
- Information sharing guidelines
- Incident Reporting

With input from your Management team, specific policies and guidelines will be developed that outline the action(s) security personnel will or will not take and define what authority management gives them in the absence of a manager. **CSP** incorporates those policies and guidelines into the training for the site. The **CSP** personnel duties will be limited "security/safety" type duties so that they do not become distracted or find themselves elsewhere when a security/safety problem arises.

COST

Position		**Cost**
Security Officers Un-Armed		$38.00 per hour
Security Officer Armed		$50.00 per hour

** The number of guards required for events will be determined by the number of patrons and exits.

Magnetometers and Scanners and equipment will be purchased by client.

*Pricing does not include NY tax at 8.85%. Holiday will be billed at time and one half the respectively hourly rate for all hour worked. Holidays include: New Year's Day, MLK Jr. Day, Presidents Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day.

Prepared by City Safe Partners-Security

CITY SAFE
PARTNERS

3.0 City Safe Partners-Security MANAGEMENT TEAM

Philip Banks III

Mr. Philip Banks is one of the highest profile security and law enforcement leadership roles in America. His extensive executive level security and law enforcement experience spans a twenty-eight year career culminating in the his role as the highest ranking uniformed position in the New York City Police Department – Chief of Department, reporting to the Police Commissioner. In this position, Banks oversaw and managed the day to day logistical and operational command of approximately 35,000 uniformed officers and 20,000 civilian professionals. A pragmatic and collaborative senior leader; Banks is recognized for listening, gathering critical intelligence, developing and studying options, allocating resources, and taking decisive actions that ensure the security and protection of millions of people, the most sophisticated infrastructure in the world, and physical assets of unfathomable value. Currently, he is working closely with
industry, civic, community and religious leaders as well as the public at large.

Soyini Chan-Shue

Ms. Soyini Chan-Shue has over 22 years of law enforcement and security experience. She retired from the New York City Police Department with the rank of Sergeant Special Assignment, where she worked closely with the top brass. During her tenure with the NYPD's prestigious Organized Crime Control Bureau (OCCB), she gained extensive experience in security and investigations management, personnel and resource management, including dignitary, personal and property protection. She was also the NYPD representative for major organizations, and local agencies, including the Mayor's Action Plan (MAP) to address the needs of city residents with local agencies. Her law enforcement expertise has been utilized to supervise building sweeps for high profile dignitaries, and to oversee safety site surveys for major events of national organizations such as the National Football League, National Basketball League, United General Assembly, and for the National Advancement of Colored People (NAACP) and National Organization of Black Law Enforcement Executives (NOBLE) conferences. She is also a certified trainer in law enforcement topics and has extensive experience in counterterrorism.

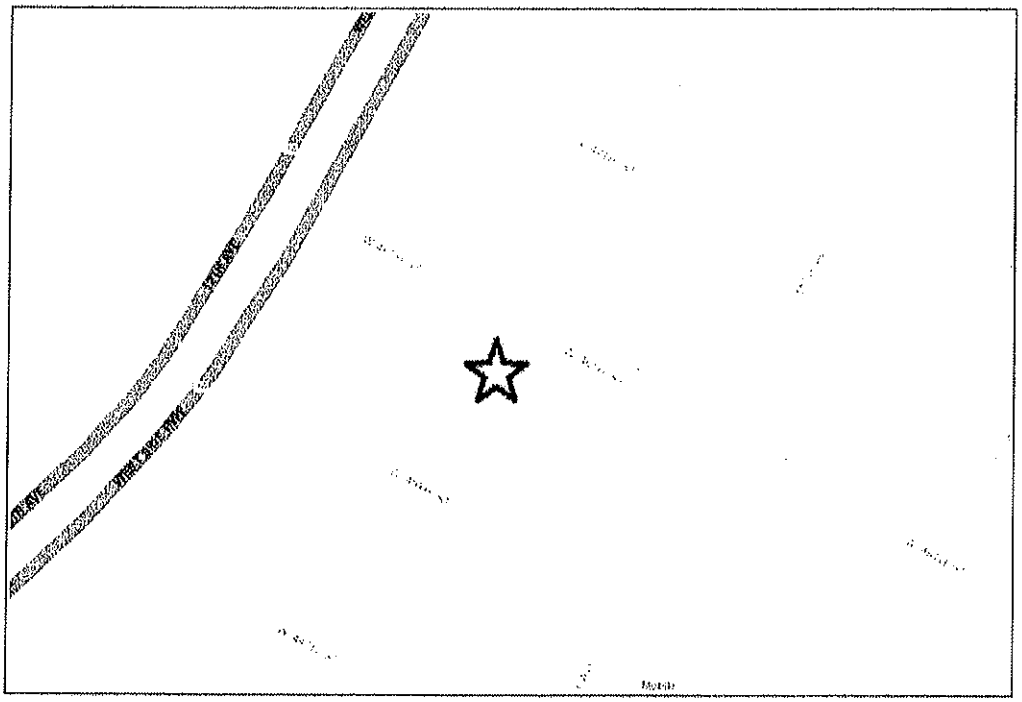
CITY SAFE
PARTNERS

Dwayne Montgomery

Dwayne Montgomery brings over thirty years of law enforcement experience with NYPD to City Safe Partners. During his tenure with the New York City Police Department his assignments included Instructor at the Police Academy, Commanding Officer of the Management Information Systems Division's Network Development and Standards Section, and Commanding Officer of the 28th Precinct. As Commanding Officer of the 28th Precinct, he supervised over 200 people and assumed primary responsibility for the safety and quality of life of the residence who reside within the precinct. Under his leadership the 28th precinct experienced record levels of overall crime reduction. As a member of the Training Bureau, he was responsible for reviewing, evaluating and assessing the Police Department's practices. His recommendations led to the revamping of the Police Department's Captain Promotional Training Course, Firearms Training Course and the Unarmed Tactical Training. He retired from NYPD as an Inspector. He brings to City Safe, the same dedication, personal commitment, leadership and passion that he displayed as a member of the NYPD.

REFERENCES WILL BE PROVIDED UPON REQUEST

TRAFFIC AND PARKING STUDY



618 WEST 46TH STREET
NEW YORK, NEW YORK

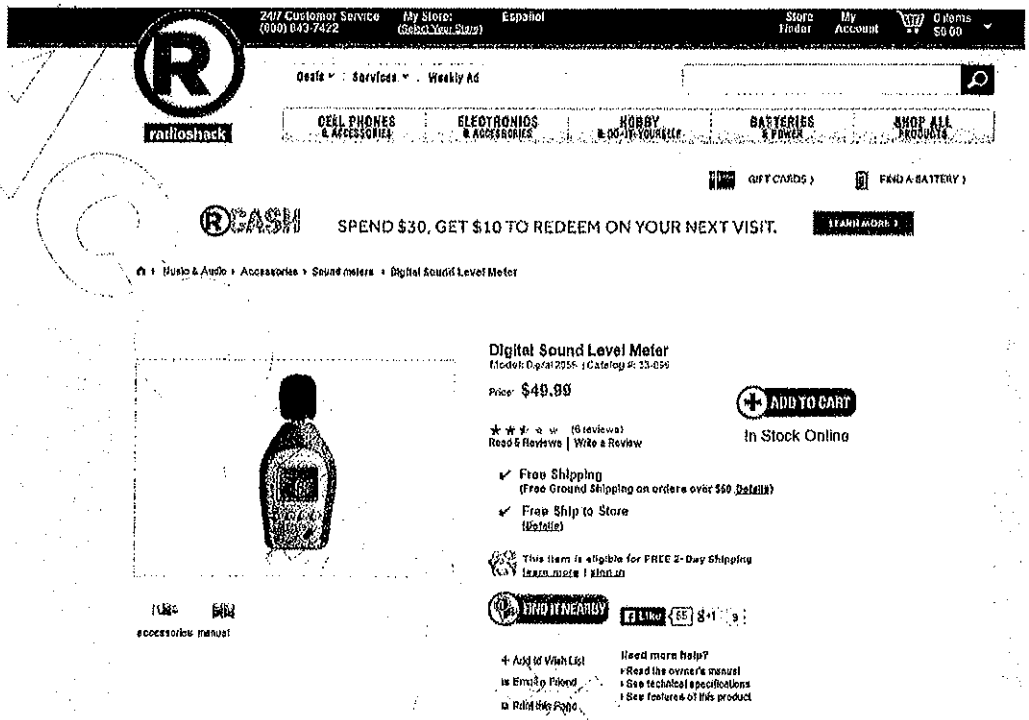
Prepared for:

FREQUENCY HOLDING, LLC
618 West 46th Street
New York, NY

Prepared by:

PlanningWorksNYC
244 Fifth Avenue, 14th Floor
New York, NY 10037

April 20, 2017



Product Summary

Fine-tune your audio.

Fine-tune your PA or stereo systems audio response to match the acoustic environment with this Digital Sound Level Meter. It comes with a carrying case for travel and features an easy-to-read display.

- Carrying case protects the meter when traveling
- Easy-to-read display, sound range 30-130db, digit LCD display
- You can fine-tune your PA or stereo systems audio response to match the acoustic environment

Pricing and availability: Please note that all prices are subject to change without prior notice. Prices advertised on this site are for online orders only. Prices on some items may differ from those advertised in RadioShack stores. All merchandise may not be available at all stores, and all stores may not participate in all sales promotions. We recommend you contact the store to confirm product availability and price.

Shipping

Usually ships in 1 - 2 business days

In store: Check availability
By phone: 1-800-843-7422

Manufacturer Warranty

- Parts: 12 month
- Labor: 12 month

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List of Exhibits

Appendices

Introduction and Project Description

The applicant, Frequency Holdings, LLC seeks a license from the NYS Liquor Authority (SLA) that would facilitate the operation of a proposed nightclub/event space venue at 618 West 46th Street in the Clinton neighborhood in Manhattan Community Board 4, New York. The new venue would hold a capacity of 2,600. Proposed operating hours are generally Thursday through Sunday from 6:00 PM to 6:00 AM. Project completion is scheduled for Q3/Q4, 2017.

As shown in Exhibit 1, the subject property is on the south side of West 46th Street approximately midblock between 11th and 12th Avenues (aka the West Side Highway). The project site is currently vacant but was occupied by *Club Pacha* nightclub through January 2017.

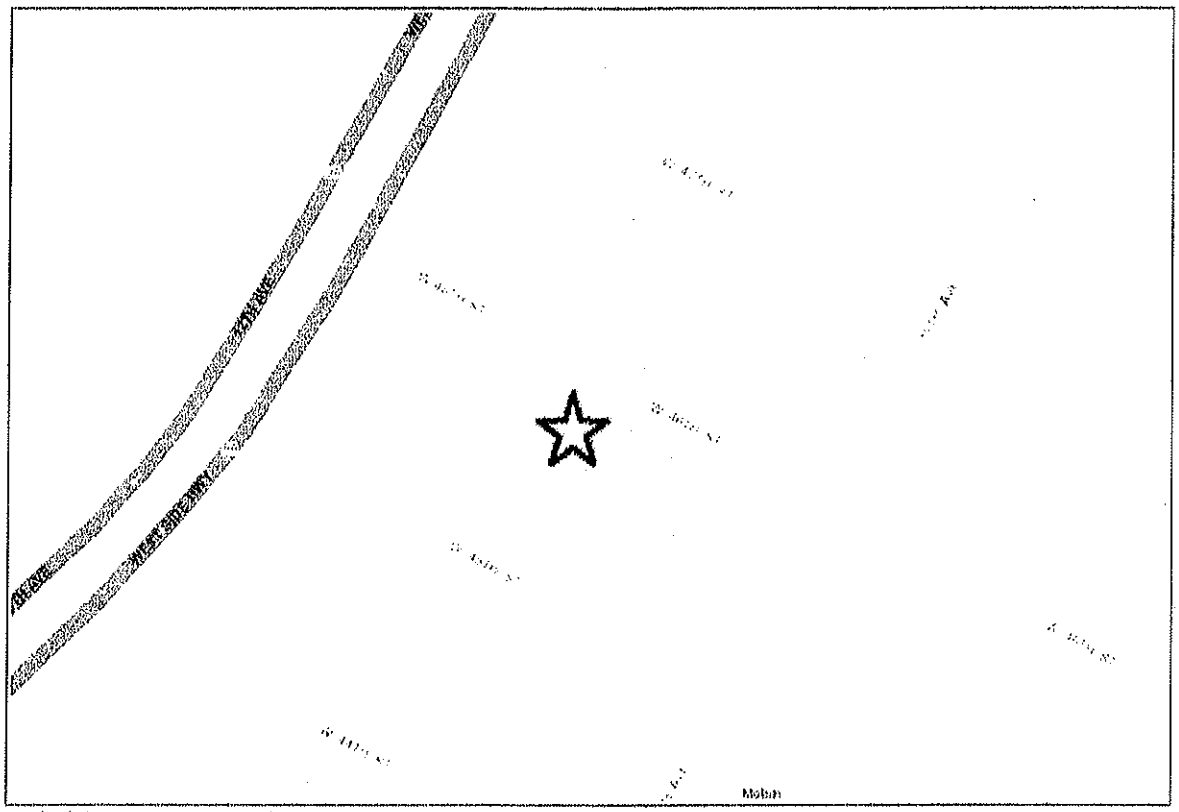


Exhibit 1: Project Site Location

A shown in Exhibits 1 and 2, the area roadways are laid out in a regular grid pattern. The West Side Highway/12th Avenue and 11th Avenue are two-way streets running northbound and southbound. West 45th and West 47th Streets run one-way westbound and West 46th Street runs one-way eastbound.

Exhibit 2: Aerial Photograph (source NYCDCP / ZOLA Map)

The West Side Highway is a regional thoroughfare and an important through-route, connecting the Brooklyn-Battery Tunnel[1] at the southern tip of Manhattan to the George Washington Bridge and other points to the north including the Bronx, and Westchester County. The Lincoln and Holland Tunnels also connect to the West Side Highway, providing easy and direct access to the project site from points in New Jersey. In addition to serving regional through traffic, the West Side Highway also provides access to the neighborhoods along Manhattan's west side (including the project site).

Each of the intersections in the vicinity of the project site are controlled by traffic signals. The area is posted with a combination of parking regulations that include no standing/no standing 7:00 AM to 7:00 PM except trucks loading and unloading regulations. Parking is generally permitted on the area streets after 7:00 PM.

There are a number of parking facilities in the area including a +/- 30 car parking garage is located immediately east of the project site at 614 West 46th Street, and a larger, quadruple stacked parking facility at 610 West 45th Street at 11th Avenue.

1 Since 2010, officially known as the Hugh L. Carey Tunnel.

A number of subway lines are an approximate 15- to 20-minute walk from the proposed venue.

As noted above, the proposed nightclub would be replacing a popular nightclub that had been operating at the premises through January 2017 (*Club Pacha*) – a substantial traffic and pedestrian generating use. Based on the traffic surveys and trip generation analyses presented below, the traffic, parking, and pedestrian levels associated with the proposed night club are expected to be comparable to those associated with the former *Club Pacha*. In order to provide a conservative assessment of future conditions, the analyses that follow do not account for the traffic associated with former use that had, until recently, been present on the area roadways.

This traffic study has been prepared to evaluate the potential for the discretionary SLA license that would allow the operation of the new venue, to negatively affect existing traffic and parking conditions. Preparation of this report included a review of previous planning studies, surveys of the existing transportation network, a trip generation and traffic assignment analysis, and traffic and parking capacity analyses to determine the potential for significant project related impacts.

Summary of Findings

As discussed below, the project site is well located with respect to the transportation network and has a number of important and unique advantages compared to other potential sites.

- The project site is located in an M2-4 zoning district, and is flanked by designated NYCDOT truck routes on both 11th Avenue and 12th Avenue/West Side Highway. **As demonstrated below, vehicular travel to and from the venue would occur along the designated truck routes on 11th and 12th Avenues and the venue would not draw traffic through any primarily residential neighborhoods.**

- While parking is in short supply during daytime hours, overnight parking demands are relatively low. **There is an abundance of available parking in the parking garage on West 46th Street, other nearby parking lots, and on the area streets, to serve projected demands during the late evening and overnight periods when the new venue would be most active.**

- **West 46th Street is among the few streets that provide access from both the northbound and southbound lanes of West Street/12th Avenue, a major truck route.** Vehicles would have access to the new venue directly from both the northbound and the southbound lanes of 12th Avenue without having to travel through any local or residential streets.

- **West 46th Street is wide enough for through traffic on West 46th Street to bypass any taxis/for-hire vehicles that may be momentarily stopped to drop off or pick up passengers at the venue.**

- The local street network primarily serves commercial and industrial uses and traffic volumes are lower during the late evening and overnight periods, compared to the peak AM and PM travel periods. **The proposed venue would tap into excess traffic and parking capacity when the network is underutilized.** The analyses presented below affirm that there is adequate capacity at the adjacent intersections to process existing and projected future traffic volumes.

- There are subway station stops for a number of subway lines that are an approximate 15- to 20-minute walk from the proposed venue, and a major NYC Transit bus route on West 46th Street. **A percentage of the patrons to the new venue would use transit to access the site, and those that do travel by car would most often be carpooling and/or using an on-demand service such as Uber or Lyft.**

- The analyses presented below indicate that during peak event periods, the new venue would add at most +/- 300 total vehicle trips during any peak hour period (94 private autos and 207 on-demand and/or taxi vehicles), and create a corresponding parking demand for +/- 94 private autos. **This level of trip generation equates to only five (5) new vehicles every minute added to the streets and intersections in the immediate vicinity of the new location.**

Based on the information presented above, and a thorough analysis of projected future conditions, this report concludes that the traffic that may be generated by the opening of the new venue would not adversely affect traffic conditions on the existing roadway network.

The applicant has committed to proactive measures to minimize any potential disruptions to traffic flow in the neighborhood. These measures include at a minimum (1) providing safety and security personnel that would ensure that drop

offs and pick ups are handled efficiently, (2) establishing a relationship with a nearby parking operator so that parking demands can be accommodated off-street and the few private autos that may be accessing the site would not need to circulate through the neighborhood to find parking, and (3) providing a set of traffic, transit, and parking information pages and links on or accessible from the venue's own web and online mobile presence in order to minimize the amount of time patrons spend on the local roadways and area sidewalks.

The proposed nightclub venue represents an efficient utilization of the site from a transportation and land use planning perspective, and would tap into excess roadway and parking capacity that is available in the vicinity of the site. The report concludes that the proposed entertainment venue is well suited for the project site given its location and the other nearby uses, and its operation would not result in any significant transportation related impacts.

Existing Setting

As discussed above, the project site is a mid-block property, on the south side of West 46th Street between 11th and 12th Avenues. The premises are currently vacant but were formerly occupied by *Club Pacha,* a popular dance club that vacated the premises in January, 2017.

A land use and zoning map is shown in Exhibit 3. As indicated, the project site is located in an M2-4 zoning district. M2 districts occupy the middle ground between light (M1) and heavy (M3) manufacturing/industrial areas. Required performance standards in all M2 districts are lower than in M1 districts. Except when M2 uses border on a residence district, higher levels of noise and vibration are allowed, smoke is permitted and industrial activities need not be entirely enclosed. M2-4 districts, which are mapped in Manhattan, are exempt from parking requirements. Land uses in the vicinity of the project site are generally limited to industrial and commercial uses, along with parking facilities.

Analysis Methodology

This traffic study has been prepared in order evaluate the potential for the discretionary SLA license, in combination with the operation of the entertainment venue, to result in significant vehicular traffic, and parking impacts. Accordingly, the following development scenarios were evaluated and compared:

- Existing Conditions
- Future Conditions without the facility ("No Action Scenario")
- Future Conditions with the facility ("With Action Scenario")

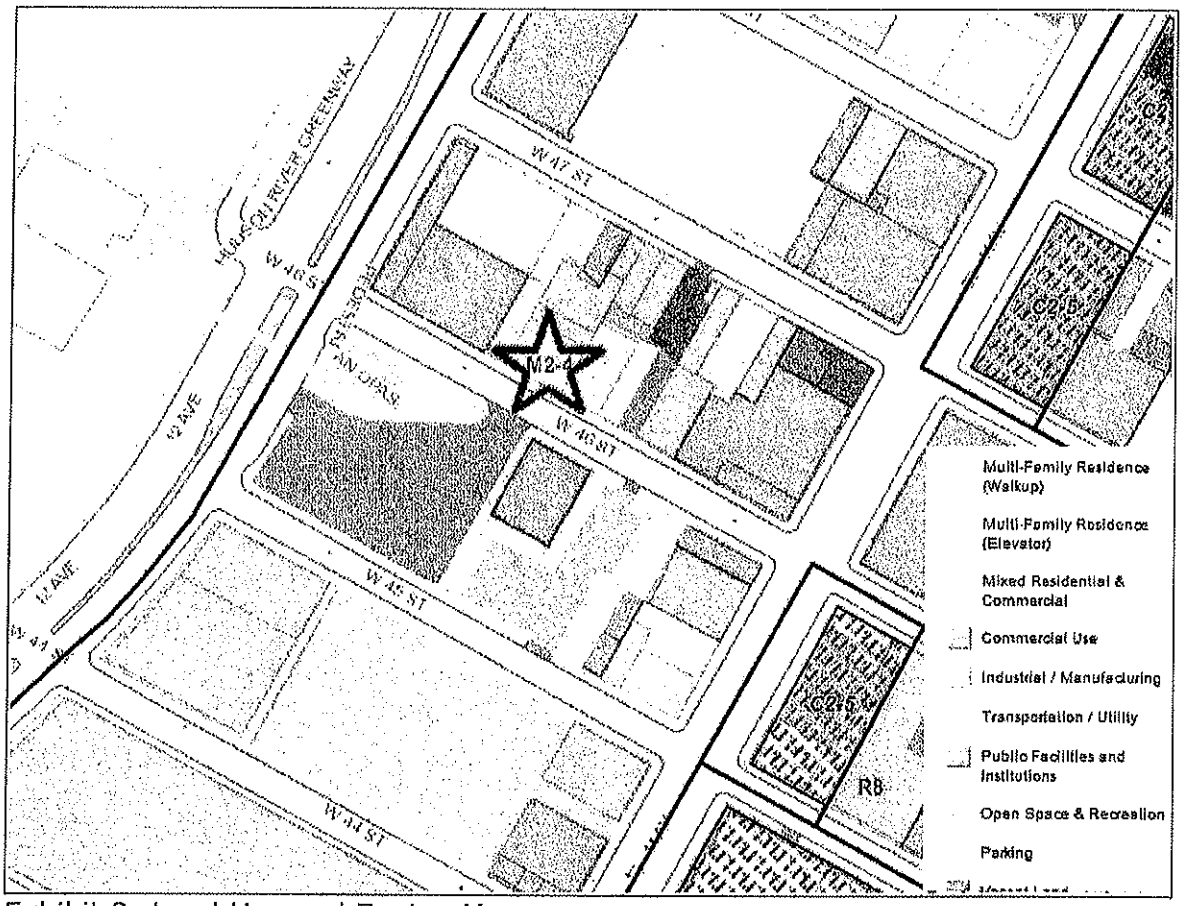


Exhibit 3: Land Use and Zoning Map

As noted above, the proposed venue would be replacing a popular night club (*Club Pacha*) that vacated the premises in January, 2017 – a substantial traffic and pedestrian generating use. The traffic, parking, and pedestrian levels associated with the proposed venue are expected to be comparable to those associated with the operation of *Club Pacha*. In order to provide a conservative analysis methodology, the assessment that follows does not account for the traffic associated with the former use.

This traffic study has been prepared to evaluate the potential for the discretionary SLA license that would allow the operation of the new venue, to negatively affect existing traffic and parking conditions. Preparation of this report included a review of previous planning studies, surveys of the existing transportation network, a trip generation and traffic assignment analysis, and traffic and parking capacity analyses to determine the potential for significant project related impacts.

Existing Conditions

Roadway Network and Local Circulation Patterns

The project site is located between two major two-way truck routes (12th Avenue/West Side Highway and 11th Avenue), and a one-way street pair (West 46th Street eastbound and West 47st Street westbound). As discussed below, this is an efficient configuration and minimizes the potential for the proposed project to draw traffic through residential areas and the local street network. Exhibit 4 shows the designated NYCDOT truck routes.

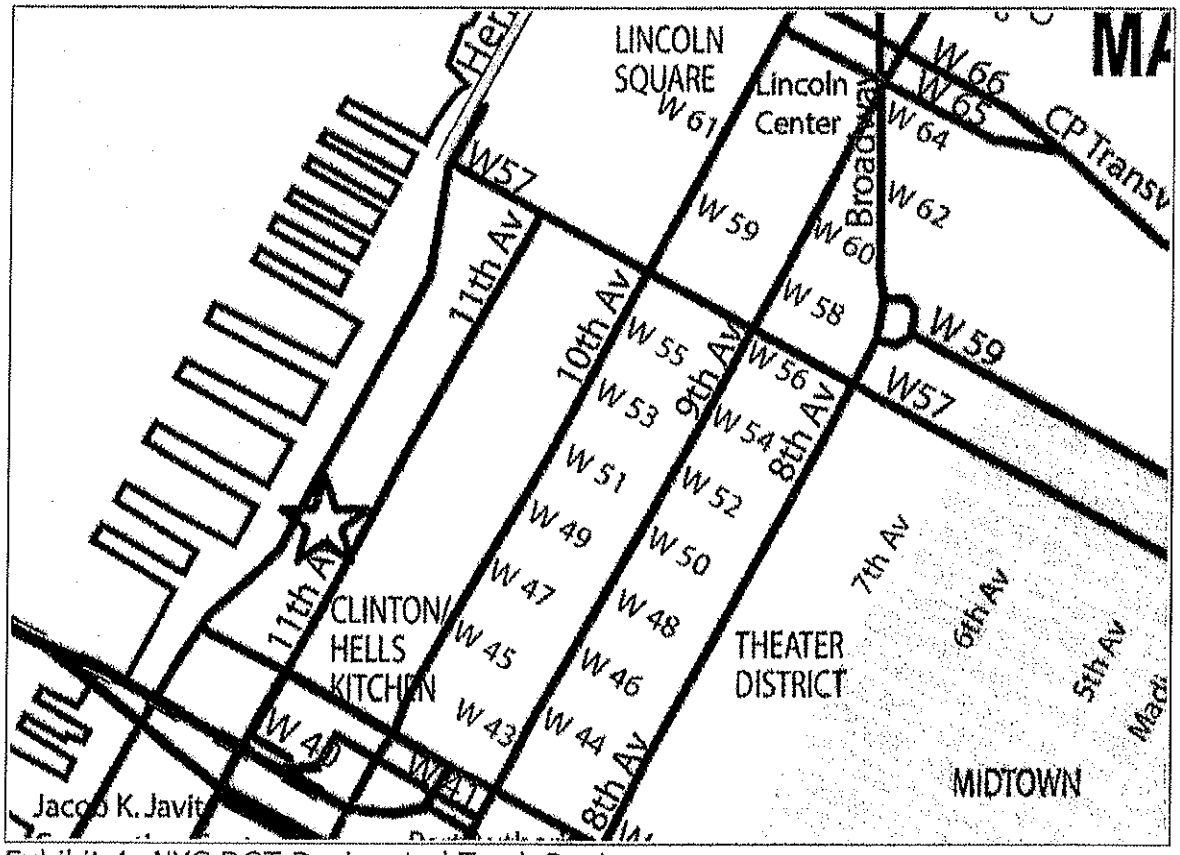


Exhibit 4: NYC DOT Designated Truck Routes

Twelfth Avenue carries four lanes for moving traffic in each direction, in addition to left turn lanes at certain locations. Parking is generally prohibited along 12th Avenue. There is a dedicated left turn lane, along with a protected left-turn signal, on southbound 12th Avenue at West 46th Street.

West 46th Street is a +/- 35 foot wide (curb-to-curb) street striped with two travel

lanes. There is ample room for taxis and other for-hire vehicles to momentarily stop to drop off or pick up passengers, leaving room for through traffic to pass without causing a traffic spillback.

Parking Characteristics

The area is posted with a combination of parking regulations that include a taxi bus stops, and no standing/no standing 7:00 AM to 7:00 PM except trucks loading and unloading regulations. Parking is generally permitted on the area streets after 7:00 PM. Based on the Western Rail/Hudson Yards FEIS, off-street parking demand is projected to increase to 134 percent of supply during the weekday midday in 2017, but it is estimated that over 1,100 overnight spaces would be available. The proposed project would be active from 6PM to 6AM, when there would be an abundance of parking available.

No Build Conditions

No Build Traffic Volumes

Future No Build traffic conditions are projected as a basis against which the Future Build condition is evaluated. No Build traffic volumes are calculated by applying a background growth to the existing traffic volumes, and adding any traffic associated with other programmed developments, to yield 2017 No Build conditions.

Traffic generated by the proposed facility will be concentrated at the intersections immediately adjacent to the project site. Accordingly, the following intersections were included in the traffic study:

- 11th Avenue/West 46th Street
- 12th Avenue/West 46th Street

Traffic volumes at the study intersections were taken from the Final Environmental Impact Study (FEIS) prepared for the Western Rail Yards project. The interim year 2017 traffic volumes from the Western Rail Yards FEIS included both existing baseline traffic volumes, and projections for other programed developments in the area. The traffic volume tabulations are shown in Exhibit 5.

		2017 No-Build Traffic	PATTERN In	PATTERN Out	IN Trips	Out Trips	Total Project Increment	2017 Build Traffic
12th Avenue/ West 46th Street	EBL	18			0	0	0	18
	EBT	26			0	0	0	26
	EBR	26			0	0	0	26
	NBT	2950			0	0	0	2950
	NBR	139	70%		211	0	211	350
	SBL	57	30%		90	0	90	147
	SBT	2817			0	0	0	2817
	ARRIVE	0	100%		301	0	301	301
	DEPART	0		100%	0	301	301	301
11th Avenue/ West 46th Street	EBL	91		40%	0	120	120	211
	EBT	67		20%	0	60	60	127
	EBR	65		40%	0	120	120	185
	NBT	86			0	0	0	86
	NBR	13			0	0	0	13
	SBL	88			0	0	0	88
	SBT	1499			0	0	0	1499

Exhibit 5: 2017 No-Build and Build Projected Traffic Volumes[2]

No Build Levels of Service

Consistent with current New York City environmental review policy, the HCS 2000 software was used to calculate signalized intersection levels of service. The level of service criteria for signalized intersections is based on control delay. These criteria are presented below:

Level of Service Criteria for Signalized Intersections Control Delay per Vehicle 1Level of Service	(seconds/vehicle)
A	0-10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	> 80

2 The Western Rail Yards Interim Year 2017 PM No Build Volumes (i.e., volumes before the full build-out of the Hudson Yards project, scheduled to be complete in 2019) were adjusted to reflect late evening peak hour traffic volumes based on Automatic Traffic Recorder (ATR) traffic volume comparisons.

The critical analysis period is the Friday/Saturday late evening peak hour period; this is the period when both the background traffic from the other nearby venues, and the project traffic, will simultaneously peak.

The results of the No Build levels of service analyses are summarized in Exhibit 6. As indicated, operating conditions in the 2017 No-Build condition (i.e., conditions without the operational traffic associated with the new venue factored in) vary greatly, from level of service (LOS) A, through LOS E. The most congested movement is the southbound left turn from 12th Avenue, onto West 46th Street, operating at LOS E. The LOS worksheets are provided in Appendix 1.

Build Traffic Conditions

Proposed Project Trip Generation

Information from other venues in New York City has been used, and adjustments have been made to represent typical "worst case" conditions at the proposed new venue at 618 West 46th Street.

In order to determine the modal split associated with a peak event (i.e., the percentage arriving by private auto, taxi/for hire vehicles, subway, bus and walk trips), information was taken from a modal split and vehicle occupancy survey conducted at an existing venue at 239 Third Avenue in Manhattan. The trip generation/modal split analysis is shown below in Exhibit 6. As indicated, during a peak event with half the full capacity of 2,600 arriving and departing (a total of 2,600 person trips) in the same peak hour, there would be approximately 94 inbound and outbound private auto trips (carrying 301 people each way), 207 two-way for hire vehicle/taxi trips (carrying 603 people each way), and 396 person trips inbound and outbound would be via subway or bus and walk.

The new facility trips were assigned to the roadway network based on existing traffic patterns, and the likely travel routes to the site. The only way into West 46th Street is via 12th Avenue/West Side Highway, putting additional strains on the northbound right-turn, and in particular, the southbound left-turn movements. In order to provide a conservative analysis, all of the private and for-hire vehicles were assigned to the project site at 618 West 46th Street, and then through the downstream intersections. After dropping off passengers at the project site, private autos were assigned to available parking in the immediate vicinity of the site and the for-hire vehicles were assigned out of the study area. The traffic assignment patterns and trip distribution is presented in Exhibit 5.

	Vehicles	People	Occupancy	Percent
Auto	5	16	3.20	
Taxi	6	14	2.33	
Uber	2	4	2.00	
Subway	6	14	2.33	
Car Service	3	14	4.67	
Walk	2	7		
	24	69		
Auto	5	16	3.20	23.2%
Hired	11	32	2.91	46.4%
Subway	6	14	2.33	20.3%
Walk	2	7	3.50	10.1%
Total	24	69		100.0%
Max Capacity @50%		1300		
Adjustment Factor		18.84		
Max Adjustment Trips				
Auto	**94**	**301**		
Hired	**207**	**603**		
Subway	N/A	**264**		
Walk	N/A	**132**		
	301	**1300**		

Exhibit 6: Trip Generation Survey and Projections

Build Traffic Volumes

The Build volumes were calculated as the sum of the No Build volumes and the project traffic, and are displayed in Exhibit 5.

Build Levels of Service

The Build (i.e., conditions with the operational traffic associated with the new venue added) levels of service were calculated based on the projected build volumes in the analysis year 2017. The No Build and Build levels of service are displayed in Exhibit 7. The LOS worksheets are provided in Appendix 1.

		2017 No Build		2017 Build	
		Delay (SEC)	LOS	Delay (SEC)	LOS
12th Avenue/	EB LTR	57.5	E	57.5	E
West 46th Street	NB TR	25.8	C	34.4	C
	SB L	42.8	E	67.4	E
	SB T	8.9	A	8.9	A
11th Avenue/	EB LTR	32.1	D	39.7	D
West 46th Street	NB TR	9.6	A	9.6	A
	SB L	10.5	B	10.5	B
	SB T	26.3	C	26.3	C

Exhibit 7: Level of Service Summary

As shown in Exhibit 7, in the Build condition, each of the analyzed approaches would continue to operate at the same levels of service as the No-Build conditions. The worst-case analyzed conditions for the proposed venue would result in a the largest increase in delay on the southbound left turn movement at 12th Avenue/West 46th Street. However, there would not be a change in the operating level of service which would still be below capacity, at LOS E.

Conclusions

The project site is well located, flanked by truck routes on both 11th and 12th Avenues, and would not draw traffic through any primarily residential areas. Based on the information presented above, each of the critical intersection movements would continue to operate at the same levels of service in the Build condition, as in the No-Build condition. During the late evening and early morning weekend hours when the proposed venue would operate at its peak capacity, there are projected to be over 1,100 available parking off-street parking spaces in the vicinity, and additional parking spaces available on-street. Even in a fully sold out event, there would be less than 200 private autos that would need to park. Therefore, there is adequate roadway and parking capacity to accommodate the projected demands.

APPENDIX 1
LEVEL OF SERVICE CALCULATIONS

HCS2000: Signalized Intersections Release 4.1f

Analyst: DMB
Agency: PLW
Date: 4/20/2017
Period: PM NB
Project ID: 618 E 46 ST
E/W St: E 46 ST

Inter.: 11TH AVE/E 46TH ST
Area Type: CBD or Similar
Jurisd: NYCDOT
Year : 2017

N/S St: 11TH AVE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	0	0	0	2	0	1	2	0
LGConfig		LTR						TR		L	T	
Volume	91	67	65					86	13	88	1499	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left				
Thru	P				Thru	P			
Right	P				Right	P			
Peds					Peds				
WB Left					SB Left	P			
Thru					Thru	P			
Right					Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	37.0					73.0			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	896	2906	0.28	0.31	32.1	C	32.1	C
Westbound								
Northbound								
TR	1851	3042	0.06	0.61	9.6	A	9.6	A
Southbound								
L	676	1112	0.14	0.61	10.5	B		
T	1886	3101	0.88	0.61	26.3	C	25.5	C

Intersection Delay = 25.4 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1f

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	DMB
Agency/Co.:	PLW
Date Performed:	4/20/2017
Analysis Time Period:	PM NB
Intersection:	11TH AVE/E 46TH ST
Area Type:	CBD or Similar
Jurisdiction:	NYCDOT
Analysis Year:	2017

Project ID: 618 E 46 ST
E/W St: E 46 ST N/S St: 11TH AVE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	91	67	65					86	13	88	1499	
% Heavy Veh	5	5	5					5	5	5	5	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
PK 15 Vol	25	19	18					24	4	24	416	
Hi Ln Vol												
% Grade		0						0			0	
Ideal Sat		1900						1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	2	0	0	0	0	0	2	0	1	2	0
LGConfig		LTR						TR		L	T	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			
Adj Flow		247						110		98	1666	
%InSharedLn												
Prop LTs		0.409						0.000		1.000	0.000	
Prop RTs	0.291						0.127			0.000		
Peds Bikes	0			0			0					
Buses		0						0		0	0	
%InProtPhase												

Duration 0.25 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0		0.0	0.0	
Arriv. Type		3						3		3	3	
Unit Ext.		3.0						3.0		3.0	3.0	
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0		2.0	2.0	
Ext of g		2.0						2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	P				NB Left			
	Thru	P				Thru	P		
	Right	P				Right	P		
	Peds					Peds			
WB	Left					SB Left	P		
	Thru					Thru	P		
	Right					Right			
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		37.0				73.0			
Yellow		3.0				3.0			
All Red		2.0				2.0			

Cycle Length: 120.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	91	67	65					86	13	88	1499	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
Adj flow	101	74	72					96	14	98	1666	
No. Lanes	0	2	0	0	0	0	0	2	0	1	2	0
Lane group		LTR						TR		L	T	
Adj flow		247						110		98	1666	
Prop LTs		0.409						0.000		1.000	0.000	
Prop RTs	0.291						0.127			0.000		

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LTR						TR			L	T	
So	1900						1900			1900	1900	
Lanes	2	0	0	0	0	0	2	0		1	2	0
fW	1.000						1.000			1.000	1.000	
fHV	0.952						0.952			0.952	0.952	
fG	1.000						1.000			1.000	1.000	
fP	1.000						1.000			1.000	1.000	
fBB	1.000						1.000			1.000	1.000	
fA	0.900						0.900			0.900	0.900	
fLU	0.952						0.952			1.000	0.952	
fRT	0.956						0.981				1.000	
fLT	0.980						1.000			0.683	1.000	
Sec.												
fLpb	1.000						1.000			1.000	1.000	
fRpb	1.000						1.000				1.000	
S	2906						3042			1112	3101	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	247	2906	# 0.08	0.31	896	0.28
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru							
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	TR	110	3042	0.04	0.61	1851	0.06
Right							
Southbound							
Prot							
Perm							
Left	L	98	1112	0.09	0.61	676	0.14
Prot							
Perm							
Thru	T	1666	3101	# 0.54	0.61	1886	0.88
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.62
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.68

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LTR	0.28	0.31	31.4	1.000	896	0.50	0.8	0.0	32.1	C	32.1	C
Westbound												
Northbound												
TR	0.06	0.61	9.5	1.000	1851	0.50	0.1	0.0	9.6	A	9.6	A
Southbound												
L	0.14	0.61	10.1	1.000	676	0.50	0.5	0.0	10.5	B		
T	0.88	0.61	19.9	1.000	1886	0.50	6.4	0.0	26.3	C	25.5	C

Intersection delay = 25.4 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				M
Cycle length, C 120.0 sec				
Total actual green time for LT lane group, G (s)				73.0
Effective permitted green time for LT lane group, g(s)				73.0
Opposing effective green time, go (s)				73.0
Number of lanes in LT lane group, N				1
Number of lanes in opposing approach, No				2
Adjusted LT flow rate, VLT (veh/h)				98
Proportion of LT in LT lane group, PLT				1.000
Proportion of LT in opposing flow, PLTo				0.00
Adjusted opposing flow rate, Vo (veh/h)				110
Lost time for LT lane group, tL				5.00
Computation				
LT volume per cycle, LTC=VLTC/3600				3.27
Opposing lane util. factor, fLUo		0.952	0.952	0.952
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				1.93
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				0.39
gq, (see Exhibit C16-4,5,6,7,8)				0.00
gu=g-gq if gq>=gf, or = g-gf if gq<gf				73.00
n=Max(gq-gf)/2,0)				0.00
PTHo=1-PLTo				1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				1.00
EL1 (refer to Exhibit C16-3)				1.46
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				0.05
gdiff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				0.68
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				0.683

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 120.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No			
Adjusted LT flow rate, VLT (veh/h)			
Proportion of LT in LT lane group, PLT	0.409	0.000	0.000
Proportion of LT in opposing flow, PLTo			
Adjusted opposing flow rate, Vo (veh/h)			
Lost time for LT lane group, tL			
Computation			
LT volume per cycle, LTC=VLTC/3600			
Opposing lane util. factor, fLUo	0.952	0.952	0.952
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)			
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g			
Opposing platoon ratio, Rpo (refer Exhibit 16-11)			
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]			
gq, (see Exhibit C16-4,5,6,7,8)			
gu=g-gq if gq>=gf, or = g-gf if gq<gf			
n=Max(gq-gf)/2,0)			
PTHo=1-PLTo			
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]			
EL1 (refer to Exhibit C16-3)			
EL2=Max((1-Ptho**n)/Plto, 1.0)			
fmin=2(1+PL)/g or fmin=2(1+Pl)/g			
gdiff=max(gq-gf,0)			
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)			
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)			
or flt=[fm+0.91(N-1)]/N**			
Left-turn adjustment, fLT			

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C 120.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
	0.0						0.0	
LTR	0.0	0.00	41.5	31.4	0.00	0.0	0.0	32.1
	0.0						0.0	
Westbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Northbound								
	0.0						0.0	
TR	0.0	0.00	23.5	9.5	0.00	0.0	0.0	9.6
	0.0						0.0	
Southbound								
L	0.0	0.00	23.5	10.1	0.00	0.0	0.0	10.5
T	0.0	0.00	23.5	19.9	0.00	0.0	0.0	26.3
	0.0						0.0	

Intersection Delay 25.4 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

	Eastbound	Westbound	Northbound	Southbound
LaneGroup	LTR		TR	L T
Init Queue	0.0		0.0	0.0 0.0
Flow Rate	129		57	98 874
So	1900		1900	1900 1900
No.Lanes	0 2 0	0 0 0	0 2 0	1 2 0
SL	1526		1597	1112 1628
LnCapacity	470		972	676 990
Flow Ratio	0.08		0.04	0.09 0.54
v/c Ratio	0.27		0.06	0.14 0.88
Grn Ratio	0.31		0.61	0.61 0.61
I Factor	1.000		1.000	1.000
AT or PVG	3		3	3 3
Pltn Ratio	1.00		1.00	1.00 1.00
PF2	1.00		1.00	1.00 1.00
Q1	3.2		0.8	1.4 24.6
kB	0.8		1.4	1.1 1.4
Q2	0.3		0.1	0.2 7.0
Q Average	3.6		0.9	1.6 31.7
Q Spacing	25.0		25.0	25.0 25.0
Q Storage	0		0	0 0
Q S Ratio				
70th Percentile Output:				
fB%	1.2		1.3	1.3 1.2
BOQ	4.4		1.1	2.0 38.0
QSRatio				
85th Percentile Output:				
fB%	1.5		1.7	1.6 1.4
BOQ	5.5		1.4	2.6 44.4
QSRatio				
90th Percentile Output:				
fB%	1.7		1.9	1.9 1.5
BOQ	6.2		1.6	3.0 47.6
QSRatio				
95th Percentile Output:				
fB%	2.1		2.4	2.3 1.6
BOQ	7.4		2.1	3.7 50.8
QSRatio				
98th Percentile Output:				
fB%	2.4		3.0	2.8 1.7
BOQ	8.7		2.5	4.4 54.0
QSRatio				

ERROR MESSAGES

No errors to report.

HCS2000: Signalized Intersections Release 4.1f

Analyst: DMB
Agency: PLW
Date: 4/20/2017
Period: PM BD
Project ID: 618 E 46 ST
E/W St: E 46 ST

Inter.: 11TH AVE/E 46TH ST
Area Type: CBD or Similar
Jurisd: NYCDOT
Year : 2017

N/S St: 11TH AVE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	0	0	0	2	0	1	2	0
LGConfig		LTR						TR		L	T	
Volume	211	127	185					86	13	88	1499	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left				
Thru	P				Thru	P			
Right	P				Right	P			
Peds					Peds				
WB Left					SB Left	P			
Thru					Thru	P			
Right					Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	37.0					73.0			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	887	2878	0.66	0.31	39.7	D	39.7	D
Westbound								
Northbound								
TR	1851	3042	0.06	0.61	9.6	A	9.6	A
Southbound								
L	676	1112	0.14	0.61	10.5	B		
T	1886	3101	0.88	0.61	26.3	C	25.5	C

Intersection Delay = 28.1 (sec/veh) Intersection LOS = C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	DMB
Agency/Co.:	PLW
Date Performed:	4/20/2017
Analysis Time Period:	PM BD
Intersection:	11TH AVE/E 46TH ST
Area Type:	CBD or Similar
Jurisdiction:	NYCDOT
Analysis Year:	2017

Project ID: 618 E 46 ST
E/W St: E 46 ST N/S St: 11TH AVE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	211	127	185					86	13	88	1499	
% Heavy Veh	5	5	5					5	5	5	5	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
PK 15 Vol	59	35	51					24	4	24	416	
Hi Ln Vol												
% Grade		0						0			0	
Ideal Sat		1900						1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	2	0	0	0	0	0	2	0	1	2	0
LGConfig		LTR						TR		L	T	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			
Adj Flow		581						110		98	1666	
%InSharedLn												
Prop LTs		0.403						0.000		1.000	0.000	
Prop RTs	0.355						0.127			0.000		
Peds Bikes	0			0			0					
Buses		0						0		0	0	
%InProtPhase												

Duration 0.25 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0		0.0	0.0	
Arriv. Type		3						3		3	3	
Unit Ext.		3.0						3.0		3.0	3.0	
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0		2.0	2.0	
Ext of g		2.0						2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left			
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left					SB Left	P		
Thru					Thru	P		
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	37.0				73.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 120.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	211	127	185					86	13	88	1499	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
Adj flow	234	141	206					96	14	98	1666	
No. Lanes	0	2	0	0	0	0	0	2	0	1	2	0
Lane group		LTR						TR		L	T	
Adj flow		581						110		98	1666	
Prop LTs		0.403						0.000		1.000	0.000	
Prop RTs	0.355						0.127			0.000		

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LTR						TR			L	T	
So	1900						1900			1900	1900	
Lanes	2	0	0	0	0	0	2	0		1	2	0
fW	1.000						1.000			1.000	1.000	
fHV	0.952						0.952			0.952	0.952	
fG	1.000						1.000			1.000	1.000	
fP	1.000						1.000			1.000	1.000	
fBB	1.000						1.000			1.000	1.000	
fA	0.900						0.900			0.900	0.900	
fLU	0.952						0.952			1.000	0.952	
fRT	0.947						0.981				1.000	
fLT	0.980						1.000			0.683	1.000	
Sec.												
fLpb	1.000						1.000			1.000	1.000	
fRpb	1.000						1.000				1.000	
S	2878						3042			1112	3101	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	581	2878	# 0.20	0.31	887	0.66
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru							
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	TR	110	3042	0.04	0.61	1851	0.06
Right							
Southbound							
Prot							
Perm							
Left	L	98	1112	0.09	0.61	676	0.14
Prot							
Perm							
Thru	T	1666	3101	# 0.54	0.61	1886	0.88
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.74
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.81

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor Del k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LTR	0.66	0.31	36.0	1.000	887	0.50	3.8	0.0	39.7	D	39.7	D
Westbound												
Northbound												
TR	0.06	0.61	9.5	1.000	1851	0.50	0.1	0.0	9.6	A	9.6	A
Southbound												
L	0.14	0.61	10.1	1.000	676	0.50	0.5	0.0	10.5	B		
T	0.88	0.61	19.9	1.000	1886	0.50	6.4	0.0	26.3	C	25.5	C

Intersection delay = 28.1 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				M
Cycle length, C 120.0 sec				
Total actual green time for LT lane group, G (s)				73.0
Effective permitted green time for LT lane group, g(s)				73.0
Opposing effective green time, go (s)				73.0
Number of lanes in LT lane group, N				1
Number of lanes in opposing approach, No				2
Adjusted LT flow rate, VLT (veh/h)				98
Proportion of LT in LT lane group, PLT				1.000
Proportion of LT in opposing flow, PLTo				0.00
Adjusted opposing flow rate, Vo (veh/h)				110
Lost time for LT lane group, tL				5.00
Computation				
LT volume per cycle, LTC=VLTC/3600				3.27
Opposing lane util. factor, fLUo		0.952	0.952	0.952
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				1.93
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				0.39
gq, (see Exhibit C16-4,5,6,7,8)				0.00
gu=g-gq if gq>=gf, or = g-gf if gq<gf				73.00
n=Max(gq-gf)/2,0)				0.00
PTHo=1-PLTo				1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				1.00
EL1 (refer to Exhibit C16-3)				1.46
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				0.05
gdiff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				0.68
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				0.683

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 120.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No			
Adjusted LT flow rate, VLT (veh/h)			
Proportion of LT in LT lane group, PLT	0.403	0.000	0.000
Proportion of LT in opposing flow, PLTo			
Adjusted opposing flow rate, Vo (veh/h)			
Lost time for LT lane group, tL			
Computation			
LT volume per cycle, LTC=VLTC/3600			
Opposing lane util. factor, fLUo	0.952	0.952	0.952
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)			
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g			
Opposing platoon ratio, Rpo (refer Exhibit 16-11)			
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]			
gq, (see Exhibit C16-4,5,6,7,8)			
gu=g-gq if gq>=gf, or = g-gf if gq<gf			
n=Max(gq-gf)/2,0)			
PTHo=1-PLTo			
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]			
EL1 (refer to Exhibit C16-3)			
EL2=Max((1-Ptho**n)/Plto, 1.0)			
fmin=2(1+PL)/g or fmin=2(1+Pl)/g			
gdiff=max(gq-gf,0)			
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)			
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)			
or flt=[fm+0.91(N-1)]/N**			
Left-turn adjustment, fLT			

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	120.0 sec			
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
	0.0						0.0	
LTR	0.0	0.00	41.5	36.0	0.00	0.0	0.0	39.7
	0.0						0.0	
Westbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Northbound								
	0.0						0.0	
TR	0.0	0.00	23.5	9.5	0.00	0.0	0.0	9.6
	0.0						0.0	
Southbound								
L	0.0	0.00	23.5	10.1	0.00	0.0	0.0	10.5
T	0.0	0.00	23.5	19.9	0.00	0.0	0.0	26.3
	0.0						0.0	

Intersection Delay 28.1 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

	Eastbound	Westbound	Northbound	Southbound
LaneGroup	LTR		TR	L T
Init Queue	0.0		0.0	0.0 0.0
Flow Rate	305		57	98 874
So	1900		1900	1900 1900
No.Lanes	0 2 0	0 0 0	0 2 0	1 2 0
SL	1511		1597	1112 1628
LnCapacity	465		972	676 990
Flow Ratio	0.20		0.04	0.09 0.54
v/c Ratio	0.66		0.06	0.14 0.88
Grn Ratio	0.31		0.61	0.61 0.61
I Factor	1.000		1.000	1.000
AT or PVG	3		3	3 3
Pltn Ratio	1.00		1.00	1.00 1.00
PF2	1.00		1.00	1.00 1.00
Q1	8.8		0.8	1.4 24.6
kB	0.8		1.4	1.1 1.4
Q2	1.5		0.1	0.2 7.0
Q Average	10.3		0.9	1.6 31.7
Q Spacing	25.0		25.0	25.0 25.0
Q Storage	0		0	0 0
Q S Ratio				
70th Percentile Output:				
fB%	1.2		1.3	1.3 1.2
BOQ	12.5		1.1	2.0 38.0
QSRatio				
85th Percentile Output:				
fB%	1.4		1.7	1.6 1.4
BOQ	14.8		1.4	2.6 44.4
QSRatio				
90th Percentile Output:				
fB%	1.6		1.9	1.9 1.5
BOQ	16.1		1.6	3.0 47.6
QSRatio				
95th Percentile Output:				
fB%	1.7		2.4	2.3 1.6
BOQ	17.7		2.1	3.7 50.8
QSRatio				
98th Percentile Output:				
fB%	1.9		3.0	2.8 1.7
BOQ	19.4		2.5	4.4 54.0
QSRatio				

ERROR MESSAGES

No errors to report.

HCS2000: Signalized Intersections Release 4.1f

Analyst: DMB
Agency: PLW
Date: 4/20/2017
Period: PM NB
Project ID: 618 E 46 ST
E/W St: E 46 ST

Inter.: 12TH AVE/E 46TH ST
Area Type: CBD or Similar
Jurisd: NYCDOT
Year : 2017

N/S St: 12TH AVE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	0	0	0	4	0	1	4	0
LGConfig		LTR						TR		L	T	
Volume	18	26	26					2950	139	57	2817	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left				
Thru	P				Thru	P			
Right	P				Right	P			
Peds					Peds				
WB Left					SB Left	P	P		
Thru					Thru	P	P		
Right					Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	23.0					93.0	13.0		
Yellow	3.0					3.0	3.0		
All Red	2.0					2.0	2.0		

Cycle Length: 144.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	244	1527	0.32	0.16	57.0	E	57.0	E
Westbound								
Northbound								
TR	3794	5875	0.90	0.65	25.8	C	25.8	C
Southbound								
L	243	1547	0.26	0.77	42.8	D		
T	4559	5915	0.69	0.77	8.9	A	9.6	A

Intersection Delay = 18.4 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	DMB
Agency/Co.:	PLW
Date Performed:	4/20/2017
Analysis Time Period:	PM NB
Intersection:	12TH AVE/E 46TH ST
Area Type:	CBD or Similar
Jurisdiction:	NYCDOT
Analysis Year:	2017
Project ID: 618 E 46 ST	
E/W St: E 46 ST	N/S St: 12TH AVE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	18	26	26					2950	139	57	2817	
% Heavy Veh	5	5	5					5	5	5	5	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
PK 15 Vol	5	7	7					819	39	16	783	
Hi Ln Vol												
% Grade		0						0			0	
Ideal Sat		1900						1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	1	0	0	0	0	0	4	0	1	4	0
LGConfig		LTR						TR		L	T	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			
Adj Flow		78						3432		63	3130	
%InSharedLn												
Prop LTs		0.256						0.000		1.000	0.000	
Prop RTs	0.372						0.045			0.000		
Peds Bikes	0			0			0					
Buses		0						0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0		0.0	0.0	
Arriv. Type		3						3		3	3	
Unit Ext.		3.0						3.0		3.0	3.0	
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0		2.0	2.0	
Ext of g		2.0						2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	P				NB Left			
	Thru	P				Thru	P		
	Right	P				Right	P		
	Peds					Peds			
WB	Left					SB Left	P	P	
	Thru					Thru	P	P	
	Right					Right			
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		23.0				93.0	13.0		
Yellow		3.0				3.0	3.0		
All Red		2.0				2.0	2.0		

Cycle Length: 144.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	18	26	26					2950	139	57	2817	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
Adj flow	20	29	29					3278	154	63	3130	
No. Lanes	0	1	0	0	0	0	0	4	0	1	4	0
Lane group		LTR						TR		L	T	
Adj flow		78						3432		63	3130	
Prop LTs		0.256						0.000		1.000	0.000	
Prop RTs	0.372						0.045			0.000		

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound	Westbound	Northbound	Southbound
LG	LTR		TR	L T
So	1900		1900	1900 1900
Lanes 0	1 0 0	0 0 0	4 0	1 4 0
fW	1.000		1.000	1.000 1.000
fHV	0.952		0.952	0.952 0.952
fG	1.000		1.000	1.000 1.000
fP	1.000		1.000	1.000 1.000
fBB	1.000		1.000	1.000 1.000
fA	0.900		0.900	0.900 0.900
fLU	1.000		0.908	1.000 0.908
fRT	0.950		0.993	1.000
fLT	0.987		1.000	0.950 1.000
Sec.				0.043
fLpb	1.000		1.000	1.000 1.000
fRpb	1.000		1.000	1.000
S	1527		5875	1547 5915
Sec.				70

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	78	1527	# 0.05	0.16	244	0.32
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru							
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	TR	3432	5875	0.58	0.65	3794	0.90
Right							
Southbound							
Prot		13	1547	# 0.01	0.125	193	0.07
Perm		50	70	# 0.71	0.646	50	1.00
Left	L	63			0.77	243	0.26
Prot							
Perm							
Thru	T	3130	5915	0.53	0.77	4559	0.69
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.77
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.83

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LTR	0.32	0.16	53.6	1.000	244	0.50	3.4	0.0	57.0	E	57.0	E
Westbound												
Northbound												
TR	0.90	0.65	21.7	1.000	3794	0.50	4.1	0.0	25.8	C	25.8	C
Southbound												
L	0.26	0.77	40.3	1.000	243	0.50	2.6	0.0	42.8	D		
T	0.69	0.77	8.0	1.000	4559	0.50	0.9	0.0	8.9	A	9.6	A

Intersection delay = 18.4 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				M
Cycle length, C 144.0 sec				
Total actual green time for LT lane group, G (s)				111.0
Effective permitted green time for LT lane group, g(s)				93.0
Opposing effective green time, go (s)				93.0
Number of lanes in LT lane group, N				1
Number of lanes in opposing approach, No				4
Adjusted LT flow rate, VLT (veh/h)				63
Proportion of LT in LT lane group, PLT				1.000
Proportion of LT in opposing flow, PLTo				0.00
Adjusted opposing flow rate, Vo (veh/h)				3432
Lost time for LT lane group, tL				5.00
Computation				
LT volume per cycle, LTC=VLTC/3600				2.52
Opposing lane util. factor, fLUo		1.000	0.908	0.908
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				37.80
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				0.35
gq, (see Exhibit C16-4,5,6,7,8)				51.36
gu=g-gq if gq>=gf, or = g-gf if gq<gf				41.64
n=Max(gq-gf)/2,0)				25.68
PTHo=1-PLTo				1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				1.00
EL1 (refer to Exhibit C16-3)				52.54
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+P1)/g				0.04
gdiff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				0.04
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				0.043

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 144.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No				
Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT	0.256		0.000	0.000
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo		1.000	0.908	0.908
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				
gq, (see Exhibit C16-4,5,6,7,8)				
gu=g-gq if gq>=gf, or = g-gf if gq<gf				
n=Max(gq-gf)/2,0)				
PTHo=1-PLTo				
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				
EL1 (refer to Exhibit C16-3)				
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbi.cg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C 144.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v				63
v/c ratio from Capacity Worksheet, X				0.26
Protected phase effective green interval, g (s)				18.0
Opposing queue effective green interval, gq				51.36
Unopposed green interval, gu				41.64
Red time r=(C-g-gq-gu)				33.0
Arrival rate, qa=v/(3600(max[X,1.0]))				0.02
Protected ph. departure rate, Sp=s/3600				0.430
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				0.04
XPerm				1.22
XProt				
Case				5
Queue at beginning of green arrow, Qa				0.40
Queue at beginning of unsaturated green, Qu				1.48
Residual queue, Qr				0.00
Uniform Delay, d1				40.3

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
	0.0						0.0	
LTR	0.0	0.00	60.5	53.6	0.00	0.0	0.0	57.0
	0.0						0.0	
Westbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Northbound								
	0.0						0.0	
TR	0.0	0.00	25.5	21.7	0.00	0.0	0.0	25.8
	0.0						0.0	
Southbound								
L	0.0	0.00		40.3	0.00	0.0	0.0	42.8
T	0.0	0.00	16.5	8.0	0.00	0.0	0.0	8.9
	0.0						0.0	

Intersection Delay 18.4 sec/veh Intersection LOS B

BACK OF QUEUE WORKSHEET

	Eastbound	Westbound	Northbound	Southbound
LaneGroup	LTR		TR	L T
Init Queue	0.0		0.0	0.0 0.0
Flow Rate	78		944	63 861
So	1900		1900	1900 1900
No.Lanes	0 1 0	0 0 0	0 4 0	1 4 0
SL	1527		1617	310 1628
LnCapacity	244		1044	243 1255
Flow Ratio	0.05		0.58	0.20 0.53
v/c Ratio	0.32		0.90	0.26 0.69
Grn Ratio	0.16		0.65	0.77 0.77
I Factor	1.000		1.000	1.000
AT or PVG	3		3	3 3
Pltn Ratio	1.00		1.00	1.00 1.00
PF2	1.00		1.00	1.00 1.00
Q1	2.8		32.1	0.6 16.8
kB	0.6		1.6	0.6 1.9
Q2	0.3		9.0	0.2 3.8
Q Average	3.0		41.1	0.8 20.5
Q Spacing	25.0		25.0	25.0 25.0
Q Storage	0		0	0 0
Q S Ratio				
70th Percentile Output:				
fB%	1.3		1.2	1.3 1.2
BOQ	3.8		49.4	1.0 24.7
QSRatio				
85th Percentile Output:				
fB%	1.6		1.4	1.7 1.4
BOQ	4.7		57.6	1.3 28.8
QSRatio				
90th Percentile Output:				
fB%	1.8		1.5	1.9 1.5
BOQ	5.4		61.7	1.5 31.0
QSRatio				
95th Percentile Output:				
fB%	2.1		1.6	2.5 1.6
BOQ	6.5		65.8	2.0 33.2
QSRatio				
98th Percentile Output:				
fB%	2.5		1.7	3.0 1.7
BOQ	7.6		69.9	2.4 35.4
QSRatio				

ERROR MESSAGES

No errors to report.

HCS2000: Signalized Intersections Release 4.1f

Analyst: DMB
Agency: PLW
Date: 4/20/2017
Period: PM BD
Project ID: 618 E 46 ST
E/W St: E 46 ST

Inter.: 12TH AVE/E 46TH ST
Area Type: CBD or Similar
Jurisd: NYCDOT
Year : 2017

N/S St: 12TH AVE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	0	0	0	4	0	1	4	0
LGConfig		LTR						TR		L	T	
Volume	18	26	26					2950	320	177	2817	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left				
Thru	P					Thru	P			
Right	P					Right	P			
Peds						Peds				
WB Left					SB	Left	P	P		
Thru						Thru	P	P		
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	23.0						93.0	13.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 144.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	244	1527	0.32	0.16	57.0	E	57.0	E
Westbound								
Northbound								
TR	3764	5828	0.97	0.65	32.6	C	32.6	C
Southbound								
L	243	1547	0.81	0.77	80.2	F		
T	4559	5915	0.69	0.77	8.9	A	13.1	B

Intersection Delay = 23.7 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1f

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	DMB
Agency/Co.:	PLW
Date Performed:	4/20/2017
Analysis Time Period:	PM BD
Intersection:	12TH AVE/E 46TH ST
Area Type:	CBD or Similar
Jurisdiction:	NYCDOT
Analysis Year:	2017

Project ID: 618 E 46 ST
E/W St: E 46 ST N/S St: 12TH AVE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	18	26	26					2950	320	177	2817	
% Heavy Veh	5	5	5					5	5	5	5	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
PK 15 Vol	5	7	7					819	89	49	783	
Hi Ln Vol												
% Grade		0						0			0	
Ideal Sat		1900						1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	1	0	0	0	0	0	4	0	1	4	0
LGConfig		LTR						TR		L	T	
Lane Width		12.0						12.0		12.0	12.0	
RTOR Vol			0						0			
Adj Flow		78						3634		197	3130	
%InSharedLn												
Prop LTs		0.256						0.000		1.000	0.000	
Prop RTs		0.372						0.098			0.000	
Peds Bikes	0			0			0					
Buses		0						0		0	0	
%InProtPhase										0.0		

Duration 0.25 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0		0.0	0.0	
Arriv. Type		3						3		3	3	
Unit Ext.		3.0						3.0		3.0	3.0	
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0		2.0	2.0	
Ext of g		2.0						2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination		1	2	3	4		5	6	7	8
EB	Left	P				NB	Left			
	Thru	P					Thru	P		
	Right	P					Right	P		
	Peds						Peds			
WB	Left					SB	Left	P	P	
	Thru						Thru	P	P	
	Right						Right			
	Peds						Peds			
NB	Right					EB	Right			
SB	Right					WB	Right			
Green		23.0						93.0	13.0	
Yellow		3.0						3.0	3.0	
All Red		2.0						2.0	2.0	

Cycle Length: 144.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	18	26	26					2950	320	177	2817	
PHF	0.90	0.90	0.90					0.90	0.90	0.90	0.90	
Adj flow	20	29	29					3278	356	197	3130	
No. Lanes	0	1	0	0	0	0	0	4	0	1	4	0
Lane group		LTR						TR		L	T	
Adj flow		78						3634		197	3130	
Prop LTs		0.256						0.000		1.000	0.000	
Prop RTs		0.372						0.098			0.000	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound	Westbound	Northbound	Southbound
LG	LTR		TR	L T
So	1900		1900	1900 1900
Lanes 0	1 0 0	0 0 0	4 0	1 4 0
fW	1.000		1.000	1.000 1.000
fHV	0.952		0.952	0.952 0.952
fG	1.000		1.000	1.000 1.000
fP	1.000		1.000	1.000 1.000
fBB	1.000		1.000	1.000 1.000
fA	0.900		0.900	0.900 0.900
fLU	1.000		0.908	1.000 0.908
fRT	0.950		0.985	1.000
fLT	0.987		1.000	0.950 1.000
Sec.				0.043
fLpb	1.000		1.000	1.000 1.000
fRpb	1.000		1.000	1.000
S	1527		5828	1547 5915
Sec.				70

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	78	1527	# 0.05	0.16	244	0.32
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru							
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	TR	3634	5828	0.62	0.65	3764	0.97
Right							
Southbound							
Prot		147	1547	# 0.10	0.125	193	0.76
Perm		50	70	# 0.71	0.646	50	1.00
Left	L	197			0.77	243	0.81
Prot							
Perm							
Thru	T	3130	5915	0.53	0.77	4559	0.69
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.86
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.92

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
LTR	0.32	0.16	53.6	1.000	244	0.50	3.4	0.0	57.0	E	57.0	E
Westbound												
Northbound												
TR	0.97	0.65	24.0	1.000	3764	0.50	8.6	0.0	32.6	C	32.6	C
Southbound												
L	0.81	0.77	55.6	1.000	243	0.50	24.6	0.0	80.2	F		
T	0.69	0.77	8.0	1.000	4559	0.50	0.9	0.0	8.9	A	13.1	B

Intersection delay = 23.7 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				M
Cycle length, C 144.0 sec				
Total actual green time for LT lane group, G (s)				111.0
Effective permitted green time for LT lane group, g(s)				93.0
Opposing effective green time, go (s)				93.0
Number of lanes in LT lane group, N				1
Number of lanes in opposing approach, No				4
Adjusted LT flow rate, VLT (veh/h)				197
Proportion of LT in LT lane group, PLT				1.000
Proportion of LT in opposing flow, PLTo				0.00
Adjusted opposing flow rate, Vo (veh/h)				3634
Lost time for LT lane group, tL				5.00
Computation				
LT volume per cycle, LTC=VLTC/3600				7.88
Opposing lane util. factor, fLUo		1.000	0.908	0.908
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				40.02
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				0.35
gq, (see Exhibit C16-4,5,6,7,8)				58.83
gu=g-gq if gq>=gf, or = g-gf if gq<gf				34.17
n=Max(gq-gf)/2,0)				29.41
PTHo=1-PLTo				1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				1.00
EL1 (refer to Exhibit C16-3)				66.27
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				0.04
gdiff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				0.04
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				0.043

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 144.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No				
Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT	0.256	0.000	0.000	
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo	1.000	0.908	0.908	
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				
gq, (see Exhibit C16-4,5,6,7,8)				
gu=g-gq if gq>=gf, or = g-gf if gq<gf				
n=Max(gq-gf)/2,0)				
PTHo=1-PLTo				
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				
EL1 (refer to Exhibit C16-3)				
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

		EBLT	WBLT	NBLT	SBLT
Cycle length, C	144.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v					197
v/c ratio from Capacity Worksheet, X					0.81
Protected phase effective green interval, g (s)					18.0
Opposing queue effective green interval, gq					58.83
Unopposed green interval, gu					34.17
Red time r=(C-g-gq-gu)					33.0
Arrival rate, qa=v/(3600(max[X,1.0]))					0.05
Protected ph. departure rate, Sp=s/3600					0.430
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)					0.05
XPerm					3.81
XProt					
Case					5
Queue at beginning of green arrow, Qa					5.09
Queue at beginning of unsaturated green, Qu					5.03
Residual queue, Qr					0.00
Uniform Delay, d1					55.6

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
	0.0						0.0	
LTR	0.0	0.00	60.5	53.6	0.00	0.0	0.0	57.0
	0.0						0.0	
Westbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Northbound								
	0.0						0.0	
TR	0.0	0.00	25.5	24.0	0.00	0.0	0.0	32.6
	0.0						0.0	
Southbound								
L	0.0	0.00		55.6	0.00	0.0	0.0	80.2
T	0.0	0.00	16.5	8.0	0.00	0.0	0.0	8.9
	0.0						0.0	

Intersection Delay 23.7 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

	Eastbound	Westbound	Northbound	Southbound
LaneGroup	LTR		TR	L T
Init Queue	0.0		0.0	0.0 0.0
Flow Rate	78		1000	197 861
So	1900		1900	1900 1900
No.Lanes	0 1 0	0 0 0	0 4 0	1 4 0
SL	1527		1604	310 1628
LnCapacity	244		1036	243 1255
Flow Ratio	0.05		0.62	0.64 0.53
v/c Ratio	0.32		0.97	0.81 0.69
Grn Ratio	0.16		0.65	0.77 0.77
I Factor	1.000		1.000	1.000
AT or PVG	3		3	3 3
Pltn Ratio	1.00		1.00	1.00 1.00
PF2	1.00		1.00	1.00 1.00
Q1	2.8		37.6	2.0 16.8
kB	0.6		1.6	0.6 1.9
Q2	0.3		12.2	1.9 3.8
Q Average	3.0		49.8	3.9 20.5
Q Spacing	25.0		25.0	25.0 25.0
Q Storage	0		0	0 0
Q S Ratio				
70th Percentile Output:				
fB%	1.3		1.2	1.2 1.2
BOQ	3.8		59.8	4.8 24.7
QSRatio				
85th Percentile Output:				
fB%	1.6		1.4	1.5 1.4
BOQ	4.7		69.7	6.0 28.8
QSRatio				
90th Percentile Output:				
fB%	1.8		1.5	1.7 1.5
BOQ	5.4		74.7	6.7 31.0
QSRatio				
95th Percentile Output:				
fB%	2.1		1.6	2.1 1.6
BOQ	6.5		79.7	8.0 33.2
QSRatio				
98th Percentile Output:				
fB%	2.5		1.7	2.4 1.7
BOQ	7.6		84.7	9.3 35.4
QSRatio				

ERROR MESSAGES

No errors to report.

APPENDIX 2
QUALIFICATIONS

PlanningWorks.NYC is an urban and environmental planning firm that was formed in 1989, and is associated with Metrocommute, the New York metro region= s leading provider of real time transportation information. The firm's staff is composed of urban planners, scientists and technicians with extensive public sector and private sector experience. The firm has successfully completed over 1,000 environmental reviews within New York City, ranging from residential development within areas bounded by sensitive wetlands, to high density commercial projects requiring detailed analyses of transportation, air quality, noise, and urban design.

Our services include conducting analyses, preparing written and technical reports, and presenting our work in public forums including community meetings and hearings of the decision-making agencies. None of our SEQRA, CEQR or similar environmental impact statements have been challenged in court. Key staff members also have public sector experience within the environmental review divisions of City agencies including the Department of City Planning, Department of Environmental Protection, Department of Transportation, and the Mayor= s Office of Environmental Coordination.

Evan Lemonides, Senior Associate - Transportation Planning
Mr. Lemonides founded the planning firm of Evan Lemonides Associates in 1989. Prior to starting his own firm, Mr. Lemonides was a transportation planner in private practice and at the New York City Department of Transportation (DOT). While with Urbitran Associates, Mr. Lemonides developed the traffic network analyses for the Downtown Brooklyn Master Plan Study. In 1994, he co-founded Metrocommute, the region= s leading provider of real-time traffic and transit information. Mr. Lemonides has successfully represented private and public clients before the NYC Board of Standards and Appeals, Department of City Planning, Department of Environmental Protection, Department of Transportation, and the NYS Liquor Authority.

Daniel Broe, Senior Associate, Land Use Planning
Dr. Broe has worked in private planning practice for twelve years, successfully representing clients before the Board of Standards and Appeals, Department of City Planning, and Department of Environmental Protection. Dr. Broe was a transportation planner at the New York City Transit Authority, where he had responsibility for conducting studies of travel demand, preparing level of service forecasts, and designing structural and operational improvements in the transit system.

George Wright, Associate - Hazardous Materials, Air Quality and Noise
George Wright is an OSHA-certified hazardous materials specialist and meteorologist/air quality scientist. As a staff member of the DEP Air Quality unit, DCP Environmental Assessment and Review Division, and Mayor= s Office of Environmental Coordination, and in private practice, Mr. Wright has had primary responsibility for conducting and reviewing air quality and noise analyses pursuant to CEQR and applicable federal and state regulations.

ACOUSTILOG INC.
19 Mercer Street, NY, NY 10013 (212) 925-1365 Fax: (212) 966-4216 www.acoustilog.com

April 12, 2017

Mr. Anthony Piacquadio
618 West 46th Street
New York, NY 10038

Re: Lounge Soundproofing, FREQ, 618 West 46th Street

Dear Mr. Piacquadio,

I conducted acoustic tests on April 4, 2017 at the above premises to determine the existing soundproofing of the lounge space and to make appropriate recommendations to protect neighbors from noise. There are currently no complaints nor are there any apartments in nearby buildings.

SUMMARY

Sound leakage from the club will meet Noise Code requirements at the nearest residences. Recommendations are provided.

DBA VS ONE-THIRD OCTAVE BAND MUSIC LEVELS

One way that the sound levels were measured was using the A-weighting decibel scale. The dB (A) decibel scale (see Noise Code Section §24-231 a1) is the most common type of sound measurement, which represents an overall measurement of all frequencies, but with a strong tendency to ignore the low-frequency "bass" sounds. The A-weighted decibels require only a simple sound level meter to measure them. DBA is what the City DEP inspectors usually use, and they normally consider anything above 42 dBA to be unreasonable. However, they typically use a 3 dBA safety margin and do not issue violations unless the sound level is greater than 45 dBA.

The C-weighted decibels or dBC (see Noise Code Section §24-231 a3) are also an overall measurement of all frequencies, but this measurement includes the important low-frequency "bass" sounds. However, dBC readings pick up so many frequencies at the same time that they usually do not distinguish between normal background noise and music beats.

One-third octave band sound level (see Noise Code Section §24-231 a2) readings were also taken, using a complex spectrum analyzer. These are measured in decibels, or dB. The loudest sounds produced by the music are in the low frequencies below 200 Hertz. This is commonly called bass, which sounds like thumping or vibration, and is the sound most likely to cause neighbor complaints. Bass and drums usually cause sounds in these frequency ranges.

THE NOISE CODE - MUSIC

§24-231 Commercial music.

> *(a) No person shall make or cause or permit to be made or caused any music originating from or in connection with the operation of any commercial establishment or enterprise when the level of sound attributable to such music, as measured inside*

any receiving property dwelling unit:

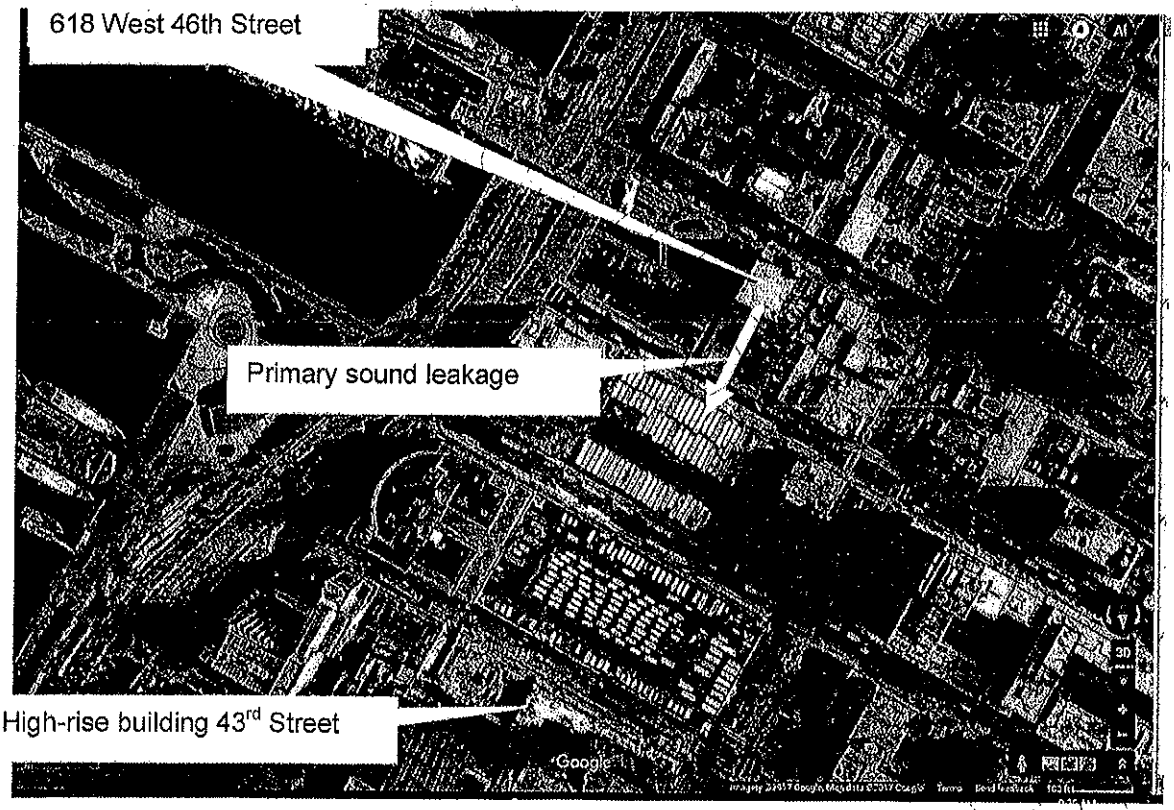
(1) is in excess of 42 dB(A) as measured with a sound level meter; or

(2) is in excess of 45 dB in any one-third octave band having a center frequency between 63 hertz and 500 hertz (ANSI bands numbers 18 through 27, inclusive), in accordance with American National Standards Institute standard S1.6-1984; or

(3) causes a 6 dBC or more increase in the total sound level above the ambient sound level as measured in decibels in the "C" weighting network provided that the ambient sound level is in excess of 62 dBC.

TESTING

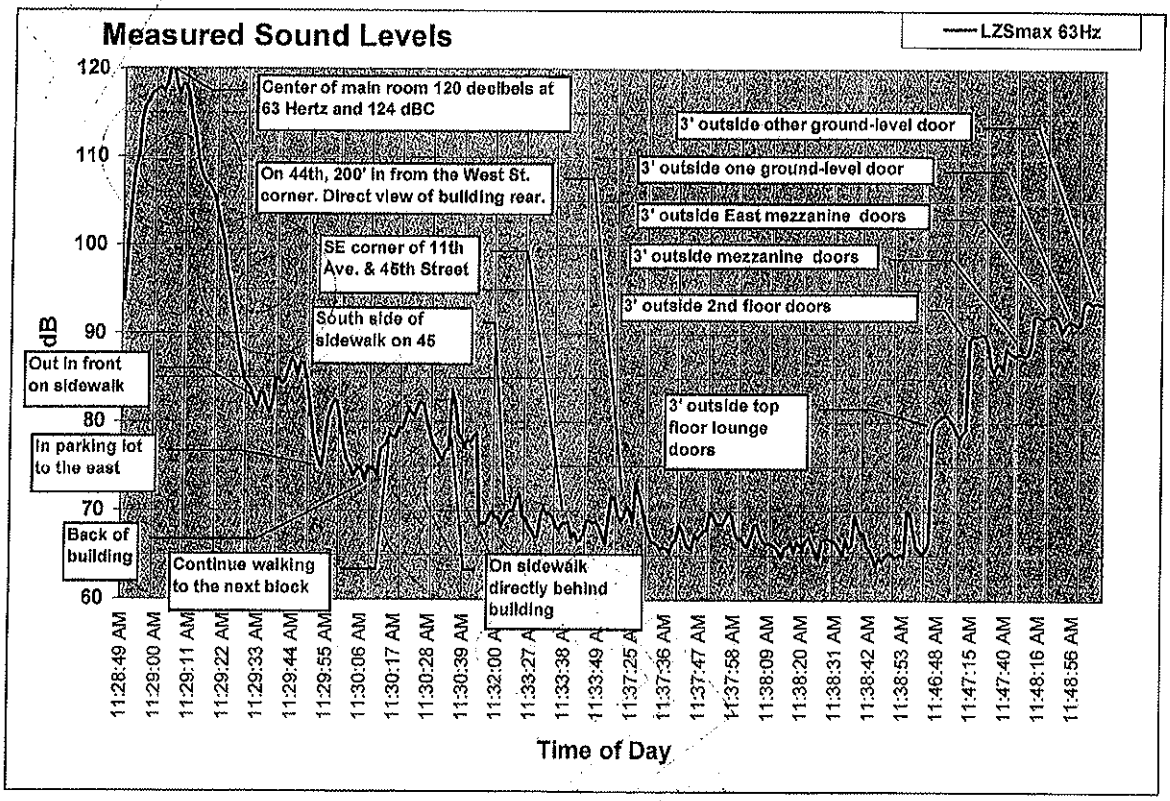
A large test sound system was set to a level of 124 dBC as measured in the center of the main room. The sound level was then measured at various locations around the building and surrounding blocks. See the picture from Google Maps below.



Very little sound emanated from the front of the building so most measurements were made to the south. The loudest frequency regulated the Noise Code was 63 Hertz.

The sound levels are shown in chart below. Note that the dBA levels (not shown) are completely caused by extraneous noise and are not from the lounge. The music in the lounge would not cause

levels exceeding 42 dBA in any of the apartments. This is because the sound leakage is entirely bass, which dBA readings largely ignore.



INSPECTION AND ANALYSIS

I did not have access to the large residential towers facing the back of the building. However, calculations show that the leakage will reach the building and produce approximately 55 decibels at 63 Hertz measured 3 feet inside a north-facing open window. This is 10 decibel higher than the Noise Code 45-decibel limit.

The south-facing emergency exit doors were a main leakage point for the sound, even when closed. Sound is exiting through the doors on 3 different floors.

The doors are presently modified to increase their mass with additional wood layers on the inside and outside.

The only set of doors where the sound leakage is acceptable is the on the top floor next to the private lounge. There was no separate sound system in this area during the test. Assuming that sound levels remain below 105 decibels in the private lounge, this floor's doors will continue to have sufficient soundproofing.

The air conditioner duct penetrations are another main leakage point. The ducts are lined with internal insulation but this still allows sound to exit from the lounge and penetrate the thin metal of the ducts.

Therefore, the leakage should be reduced by 10 decibels using sound system modifications, physical soundproofing or a combination of both methods.

Details are provided in the Recommendations section below.

RECOMMENDATIONS

DOOR LEAKAGE

1. Do not prop the front door open at any time.
2. Make sure the automatic door closer is functioning properly.
3. The best way to reduce the door leakage is to add a second set of doors with at least a 3 foot space to the existing doors.
4. Where it is not possible to add a second set of doors, replace the doors with sound rated doors.

DUCT LEAKAGE

5. The air conditioner duct penetrations are another main leakage point. The ducts are lined with internal insulation but this still allows sound to exit from the lounge and penetrate the thin metal of the ducts.
6. The ducts should be lagged with ½" concrete board on all exposed surfaces.
7. The grills above and next to the doors will have to be checked after the doors are soundproofed. However, they are not presently the main leakage path.
8. The air conditioners themselves should not be treated at this time as the sound level decreases at it travels through the ducts on the way to the air conditioner units. By the time it gets to the air conditioners it is less intense. However, after treating the ducts, the sound leakage through the entire HVAC system should be tested to see if a barrier on the south side of the units should be erected.
9. Duct silencers were considered; these reduce airflow and are not recommended.

SOUND SYSTEM

10. The sound system processor will use a limiter. Set the system below, based on not modifying the doors and ducts as described above.
    a. Set the volume on the amplifiers to maximum to prevent employees from turning the amps up louder.
    b. Set the sound level in the center of the main room to an initial maximum level of 114 dBC Slow. The sound installer can do this with a simple Radio Shack sound level meter. Set the meter to read "C", and "Slow". This will be a good starting point from which to operate the sound system.
    c. Set the initial maximum level to 105 dBC for the mezzanine speakers.
    d. To ensure accuracy of the meter, you can bring it to my office to be calibrated.
    e. The dbx unit could be set more accurately in conjunction with tests made of noise levels in the neighboring apartments.

If I can be of further assistance, please call.

It is strongly recommended that all complicated construction projects get regular inspection visits at critical times, to make sure the system performs properly. This is an optional service which I can provide. All Acoustilog, Inc.-designed information supplied is for the original client and may not be copied in any way for different projects by any architect, consultant, engineer or other party.

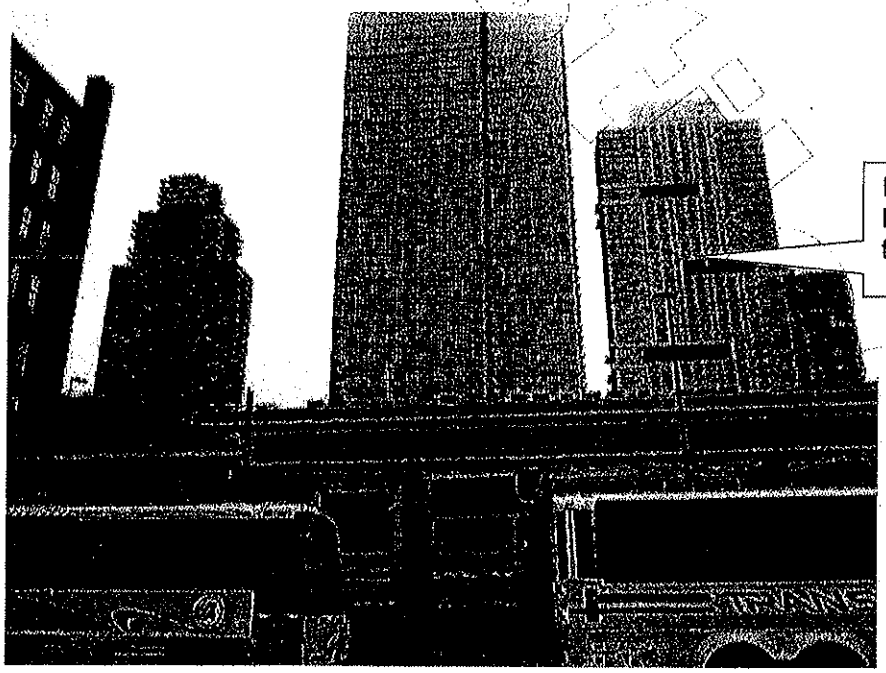
Yours Truly,

Alan Fierstein

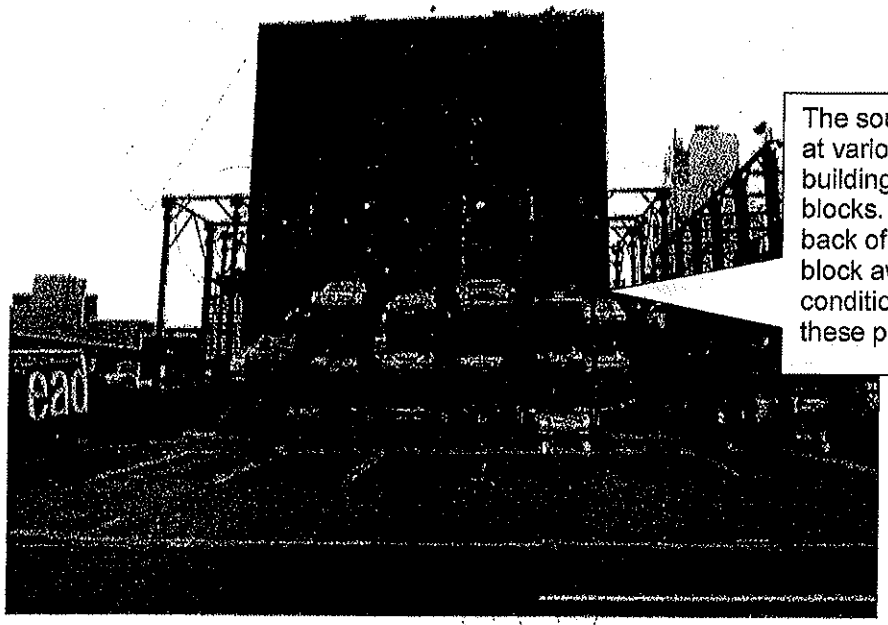
President
acoustilog1@verizon.net

All readings re: .0002 microbar. Readings taken with Bruel & Kjaer 2260/2270 Analyzer, Bruel & Kjaer 4135, 4145, 4165, 4189 or 4190 Microphone, Acoustilog 232A Reverberation Timer. Calibrated to Bruel & Kjaer 4220 Sound Source or Quest CA-15A.

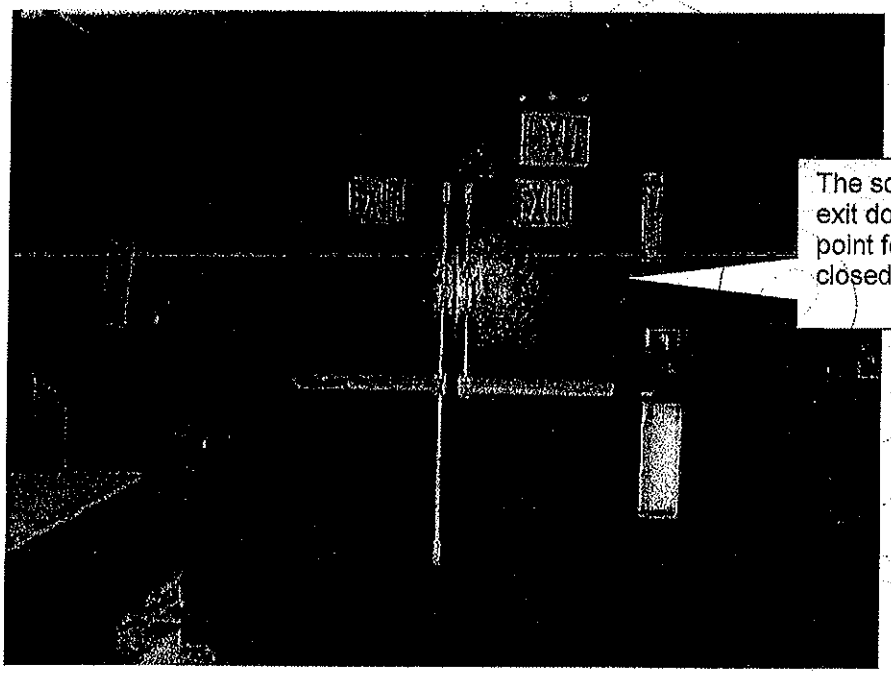
A large test sound system was set to a level of 124 dBC as measured in the center of the main room.



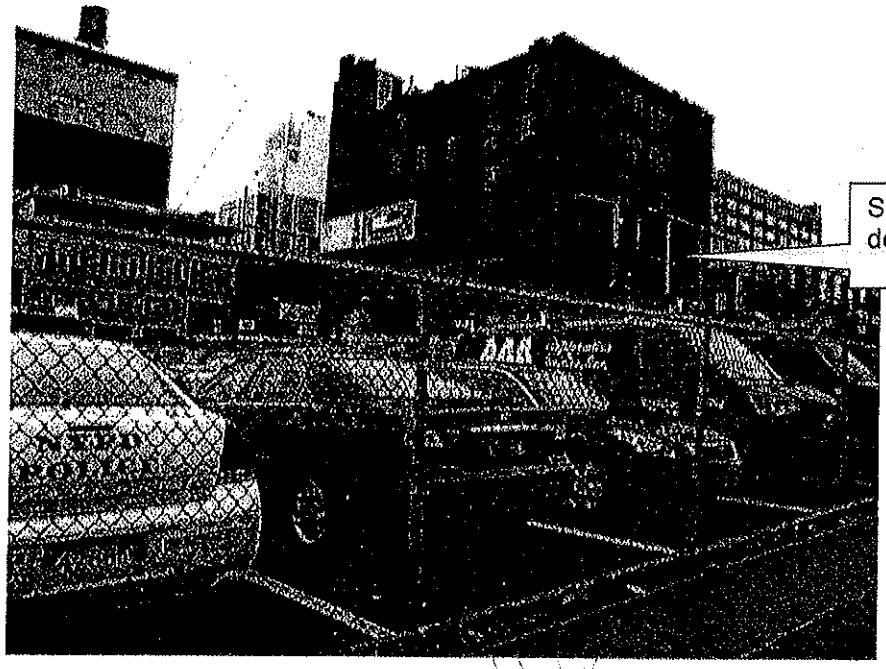
I did not have access to the large residential towers facing the back of the building.



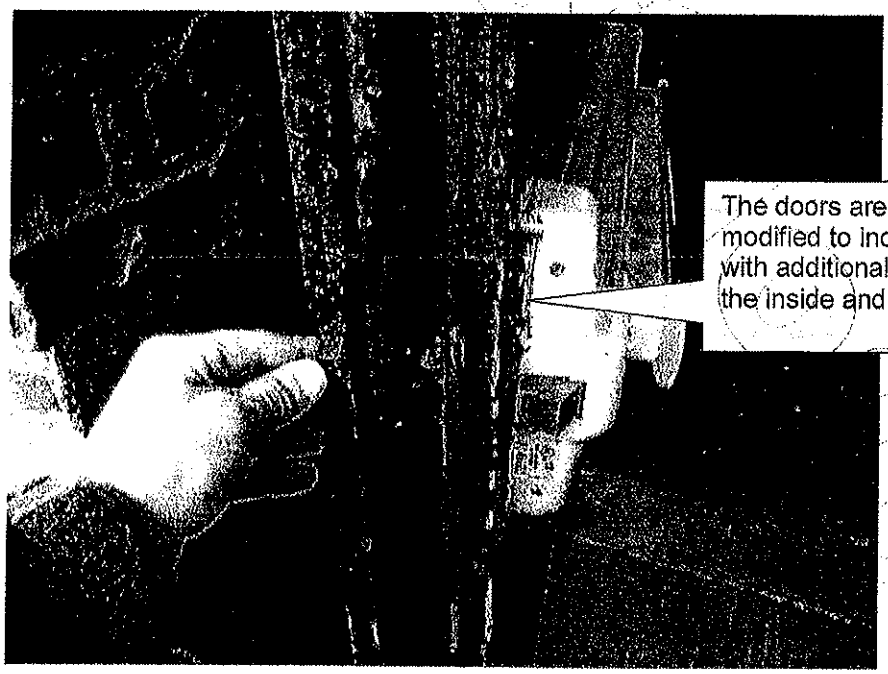
The sound level was measured at various locations around the building and surrounding blocks. This is a view of the back of the building from a block away. The doors and air conditioners are hidden behind these parked cars.



The south-facing emergency exit doors were a main leakage point for the sound, even when closed.

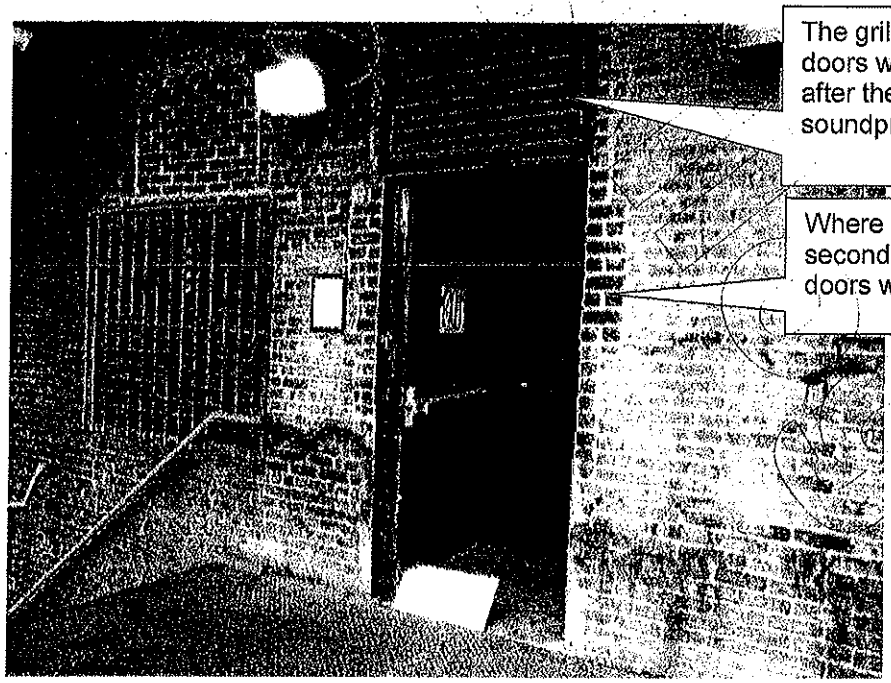


Sound is exiting through the doors on 3 different floors.



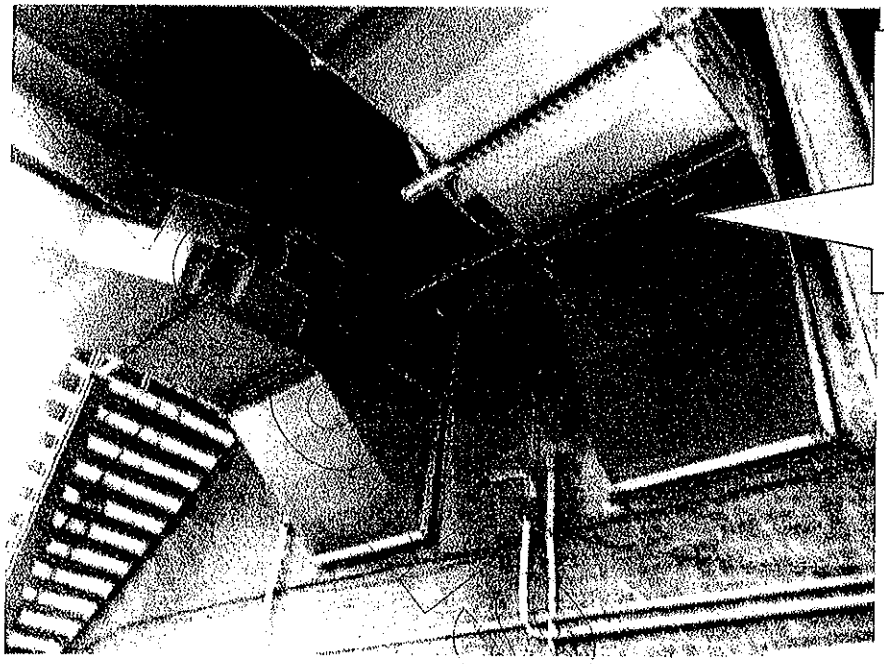
The doors are presently modified to increase their mass with additional wood layers on the inside and outside.

The best way to reduce the door leakage is to add a second set of doors with at least a 3 foot space to the existing doors.



The grills above and next to the doors will have to be checked after the doors are soundproofed.

Where it is not possible to add a second set of doors, replace the doors with sound rated doors.



The air conditioner duct penetrations are another main leakage point. The ducts are lined with internal insulation but this still allows sound to exit from the lounge and penetrate the thin metal of the ducts.

ACOUSTIC PERFORMANCE SELECTION DATA - IAC NOISE-LOCK DOORS

TYPE	THK in. (mm)	STC	1/3 OCTAVE BAND CENTER FREQUENCY, HZ																			Test Report (year)	Wt. lb/ft² (kg/m²)	Seals
			SOUND TRANSMISSION LOSS, DB																					
SWINGING DOOR	1-3/4 (45)	43	23	12	18	23	31	38	43	42	41	41	42	43	42	43	44	43	45	49	51	815-29-96 (1995)	8 (39)	a
	1-3/4 (45)	47	20	17	25	26	34	37	42	45	45	47	47	47	47	48	48	48	48	50	51	890-8c-98 (1998)	11 (54)	a
	2-1/2 (64)	49	-	-	-	28	34	40	39	42	44	46	47	51	50	50	51	53	55	56	55	618-2-87 (1987)	7 (34)	b
	2-1/2 (64)	51	24	20	23	28	37	44	47	49	48	50	53	52	53	52	51	51	54	58	59	816-19C (1994)	9 (44)	b
	2-1/2 (64)	53	22	24	27	31	42	47	47	48	50	53	54	54	54	53	51	51	53	57	58	815-17 (1994)	11 (54)	b
	3-1/2 (89)	54	21	66	28	40	48	52	51	52	52	54	55	55	54	51	51	51	54	59	63	816-23h (1994)	16 (78)	b
	3-1/2 (89)	55	21	28	29	40	48	50	51	53	53	54	55	56	56	55	53	52	53	56	61	816-20L (1994)	16 (78)	b
	3-1/2 (89)	61	22	28	28	41	51	54	53	55	55	60	62	60	60	61	61	62	64	66	69	815-23G (1994)	16 (78)	c
	5 (127)	64	24	32	33	44	51	53	58	58	59	62	63	63	65	66	65	66	67	70	70	815-24P (1994)	18 (88)	d
PAIRS	2-1/2 (64)	51	20	26	21	31	38	43	47	46	48	49	49	50	50	52	53	54	55	57	63	1027-64-02 (2002)	9 (44)	b
	3-1/2 (89)	64	24	26	28	34	43	48	47	50	53	54	53	56	57	58	57	57	54	56	60	1027-700-032 (2004)	16 (78)	b
		NIC	NOISE REDUCTION, DB																					
SLIDING	4 (102)	45	-	-	-	29	29	31	36	38	42	44	43	43	44	50	54	59	61	61	66	1194-P6 (1994)	18 (88)	e
	6 (152)	54	-	-	-	46	46	46	46	49	49	49	52	52	52	50	50	55	55	55	53	72-0366-S (1964)	24 (118)	f
	8 (203)	62	-	-	-	47	46	51	55	57	59	56	59	64	63	>63	>65	>65	>65	>65	>65	72-0732 (1990)	50 (245)	g

IAC Acoustic Seal System - a) single magnetic; b) double magnetic; c) magnetic tri-seal; d) magnetic compression tri-seal; e) manual labyrinth wiper; f) automatic pneumatic; g) automatic labyrinth compression.

ACOUSTIC PERFORMANCE SELECTION DATA - IAC NOISE-LOCK WINDOWS

TYPE	STC	1/3 OCTAVE BAND CENTER FREQUENCY, HZ																Test Report (year)	Wt. lb/ft² (kg/m²)	Min. Frame Depth in. (mm)	Glazing Type
		SOUND TRANSMISSION LOSS, DB																			
SINGLE GLAZED	36	24	25	27	29	28	29	31	32	35	36	36	39	36	37	38	40	543-82-2 (1982)	6 (29)	4 (102)	a
	39	28	30	34	29	34	36	36	36	38	38	37	40	41	46	48	60	549-1-83 (1983)	8 (39)	4 (102)	b
	41	30	29	32	36	35	37	38	38	38	37	41	44	48	60	53	66		9 (44)	4 (102)	c
	47	28	28	34	33	36	46	49	61	53	56	60	63	58	67	61	66	543-82-1 (1982)	10 (49)	4 (102)	d
DOUBLE GLAZED	53	30	36	37	39	45	60	62	66	57	59	61	62	61	69	59	66	AC-607-2-87 (1987)	12 (59)	8 (203)	e
	57	40	41	46	47	47	60	53	67	56	60	63	66	67	76	79	81	VW-607-2-86 (1986)	10 (88)	10 (264)	f
	50	40	39	46	43	50	54	55	68	60	64	66	64	63	62	63	64	AC-664-89 (1989)	27 (132)	18 (467)	g
	59	42	45	50	48	49	63	57	68	58	59	63	67	72	79	81	82	VW-686-2-86 (1986)	20 (98)	10 (264)	h

Glazing Type and Thickness a) 1/4 in. (6mm) laminated safety glass; b) 1/2 in. (13mm) laminated safety glass; c) 3/4 in. (19mm) laminated safety glass; d) 1/4 in. x 1/4 in. (6 x 6mm) tempered safety glass; e) 1/4 in. x 1/4 in. (6 x 6mm) laminated safety glass; f) 1/2 in. x 1/4 in. (13 x 16mm) laminated safety glass; g) 1-3/16 in. x 1/4 in. (30 x 6mm) bullet resistant glass-laminated safety glass; h) 1/2 in. x 3/8 in. (13 x 109mm) laminated safety glass.

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iac
Making the World a Quieter Place™

Submittal Sheet

Durock® Cement Board

Backerboard for ceramic tile and exterior finish systems

- Lightest cement board in the industry
- Environmentally sustainable product—lower weight reduces embodied energy and embodied emissions
- Water-durable, mold-resistant substrate for high-moisture areas
- Suitable for use in interior or exterior applications
- Will not rot, warp, delaminate or disintegrate
- Easy to cut and fasten
- Non-combustible

Description

Durock cement board offers architects, builders and tile contractors a strong, water-durable tile base for tub and shower areas. Also an ideal underlayment for tile on floors and countertops in new construction and remodeling. Board is readily applied over wood or steel framing spaced 16" o.c. with corrosion-resistant wood or steel screws or hot-dipped galvanized roofing nails. After joints are treated, ceramic wall or floor tile is applied using latex fortified mortar or Type I organic adhesive.

Durock cement board is preferred by many applicators as a base for directly applied finishes, tile, stone and thin-brick used in building exteriors.

Product Data

Sizes and Packaging

Size (thickness x width x length)[1]	Units (pcs)[2]
1/2" x 32" x 5'	50
1/2" x 36" x 5'	50
1/2" x 32" x 8'	30
1/2" x 48" x 8'	30
5/8" x 36" x 5'	30
5/8" x 48" x 8'	24
5/16" x 48" x 4'	40
5/16" x 36" x 5'	50

1. Other lengths available. Contact your USG Representative. 2. Shipped in packaging units as shown.

Standards

Durock cement board exceeds ANSI standards for cementitious backer units (CBU). See ANSI A118.9 for test methods and specifications for CBU and ANSI A108.11 for interior installation of CBU. Exceeds industry standards as an exterior substrate for exterior finishes. Exceeds ASTM C1325 standards for non-asbestos fiber-mat reinforced cementitious backer units.

Availability

Durock cement board is distributed throughout the United States. Contact a United States Gypsum Company sales office or sales person for additional information.

Composition and Materials

Durock cement board is formed in a continuous process of aggregated portland cement slurry with polymer-coated, glass-fiber mesh completely encompassing edges, back and front surfaces. The edges are formed smooth. The ends are square cut.

Delivery and Storage of Materials

All materials should be delivered and stored in their original unopened package and stored in an enclosed shelter providing protection from damage and exposure to the elements. Even though the stability and durability of Durock cement board is unaffected by the elements, moisture and temperature variations may have an effect on the bonding effectiveness of basecoats and adhesives. Store all Durock cement board panels flat.

Environmental Conditions

In cold weather and during Durock cement panel and tile installation, temperatures within the building shall be maintained within the range of 40 to 100 °F. Adequate ventilation shall be provided to carry off excess moisture.

Interior Applications

Wood framing shall approximate the moisture content it will reach in service by allowing the enclosed building to stand as long as possible prior to the application of the cement board. Do not install board when the board is wet.

Exterior Applications

Finishes, leveling/skim coats and basecoats shall not be applied to Durock cement panel that is wet or frozen or that contains frost. After application, and for at least 24 hours, finishes, leveling/skim coats and basecoats shall be effectively protected from rain and excessive moisture. In cold weather and during finish applications, Durock cement panel, skim or basecoat, mortar, finish material and air temperature must be at least 40 °F, and must remain at this temperature or higher for at least 24 hours after application. Hot and dry weather may affect working time of leveling/skim or basecoat and finish materials. Under rapid drying conditions, dampening or light fogging of board, leveling/skim or basecoat surface may be required to improve workability.

USG

Panel Micro-Cracking	Durock cement board is formulated to develop fine micro-cracking (also called as multiple-cracking) in the panel. The micro-cracking process helps to evenly relieve the stored strain energy in the product due to handling and installation, external loads, and/or panel restrained movement. The presence of micro-cracks in the panel should not be considered a product defect.
Installation	A. Install cement board with ends and edges closely abutted, but not forced together. Stagger end joints in successive courses. B. For flooring applications over a wood-based substrate, laminate Durock to subfloor using Type 1 organic adhesive or latex-modified thin-set mortar suitable for bonding cement board. Fasten to subfloor with 1-1/4" Durock™ tile backer screws for wood framing (or equivalent) or 1-1/2" hot-dipped galvanized roofing nails spaced 8" o.c. in both directions with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges. Drive nails and screws so that bottoms of heads are flush with panel surface to ensure firm panel contact with sub floor. Do not overdrive fasteners. Prefill joints with tile-setting mortar or adhesive and then immediately embed Durock™ tile backer tape and level joints. C. For wall application, fasten Durock panels to framing with specified fasteners. Drive fasteners into field of panels first, working toward ends and edges. Hold panels in firm contact with framing while driving fasteners. Space fasteners maximum 8" o.c. for walls, 6" o.c. for ceilings, with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges. Drive nails and screws so that bottoms of heads are flush with panel surface to ensure firm panel contact with framing. Do not overdrive fasteners. Approved fasteners include: Durock tile backer screws for steel framing (or equivalent), 1-1/4" and 1-5/8" for 14- to 20-gauge steel framing; Durock tile backer screws for wood framing (or equivalent), 1-1/4", 1-5/8", and 2-1/4" for wood framing. Nails (1-1/2" hot-dipped galvanized roofing nails). Prefill joints with tile-setting mortar or adhesive and then immediately embed Durock™ tile backer tape and level joints. D. Cement board should be cut to size with a knife and straight edge. A power saw should be used only if it is equipped with a dust-collection device. Installer should wear NIOSH/MSHA-approved dust mask. Refer to current United States Gypsum Company literature piece SA932 for complete installation information, including good design practices. For technical assistance, call USG Technical Service at 800 USG.4YOU (874.4968).
Limitations	1. Designed for positive or negative uniform loads up to 60 psf. For complete information on the use of Durock panels in exterior systems, consult uniform load table on page 3 for applicable positive or negative uniform loads on wall systems. 2. Wall applications: Maximum stud spacing: 16" o.c. (24" o.c. for cavity shaft wall assembly). Framing shall be designed (based on stud properties alone) not to exceed L/360 deflection for tile and thin brick, L/240 for direct-applied exterior finish systems. Maximum fastener spacing: 8" o.c. for wood and steel framing; 6" o.c. for ceiling applications. 3. Floor applications: Maximum joist spacing 24" o.c. The subfloor system should be designed with a minimum deflection limit of L/360 for the span. Some finish materials may require a more rigid sub-assembly (such as large format tile and natural stone products). In these cases, follow the manufacturer's minimum requirements. The subfloor should be APA Span-Rated Plywood or OSB with an Exposure 1 classification or better with tongue and groove or back blocked at the unsupported edges. 4. Maximum dead load for ceiling system is 7.5 psf. 5. Steel framing must be 20-gauge equivalent or heavier. 6. Do not use drywall screws or drywall nails. Do not use drywall joint tape. 7. Do not use 5/16" Durock cement board for wall or ceiling applications. 8. Do not use Durock cement board with vinyl flooring. 9. Durock cement board is not designed for use as a structural panel.

Technical Data

Property	Unit of Measure	ASTM Test Method	1/2" Cement Board Typical Value	5/16" Underlayment Typical Value
Flexural strength	psi	C947	> 750	> 1000
Indentation strength	psi	D2394	> 1250	> 1250
Shear bond strength	psi	ANSI A118.4	> 50	> 50
Water absorption	% by wt. 24 hrs.	C473	15	15
Nail-pull resistance	lb. (0.4" head diameter, wet or dry)	C473	> 90	—
Weight	psf	C473	2.4	2.0
Freeze/thaw resistance	procedure B, number of cycles with no deterioration	C666	100	100
Mold resistance	—	G21	No growth	No growth
Non-combustibility	Pass/Fail	E136	Pass	Pass
Surface burning characteristics	flame/smoke	E84	0/0	0/0
Thermal	"R"/k value	C518	0.39/1.27	—
Standard method for evaluating ceramic floor tile installation systems	Passes cycles 1-6	C627	Light Commercial	Light Commercial
Minimum bending radius	ft. (requires special framing—details available upon request)	—	6	—

Uniform Load — 1/2" Durock Cement Board

Stud Spacing	Fastener Spacing	Design Wind Load (l/240)	Design Wind Load (l/360)
12" o.c.	8" o.c.	45 psf	45 psf
	6" o.c.	60 psf	60 psf
16" o.c.	8" o.c.	33 psf	30 psf
	6" o.c.	45 psf	30 psf
24" o.c. (for shaft wall assemblies only)	8" o.c.	13 psf	9 psf
	6" o.c.	13 psf	9 psf

Submittal Approvals:

Job Name	
Contractor	Date

Product Information
See usg.com for the most up-to-date product information.

Warning
Portland cement is strongly alkaline. Direct contact can be corrosive and cause severe damage or chemical burns to the eyes and wet or moist skin. Avoid contact with eyes and skin. Wear eye protection, alkali-resistant protective gloves, long-sleeved shirts and pants to prevent direct contact. If eye contact occurs, immediately flush thoroughly with water for 30 minutes and seek medical advice. Inhalation of dust may be corrosive or cause chemical burns or irritation to nose, throat and respiratory tract. Avoid breathing dust. Use in a well-ventilated area or provide sufficient local ventilation. If dusty, wear a NIOSH/MSHA-approved dust respirator. Wash thoroughly with soap and water after use. Do not ingest. If ingested, call physician. If cutting board with a power tool, use a wet or vacuum saw to reduce the amount of dust generated. Panels are heavy and can fall over, causing serious injury or death. Avoid creating a tripping hazard and do not exceed floor limit loads. Long-term breathing of respirable crystalline silica dust can cause permanent lung damage and/or cancer. Product safety information: (800) 507-8899 or usg.com. **KEEP OUT OF REACH OF CHILDREN.**

Trademarks
The following trademarks are owned by United States Gypsum Company or its related companies: USG, Durock and USG in stylized letters.

Note
Products described here may not be available in all geographic markets. Consult your U.S. Gypsum Company sales office or representative for information.

Notice
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

Safety First!
Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read MSDS and literature before specification and installation.

USG

Manufactured by
United States Gypsum Company
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