Adjacent Property Owner Study #1 - Aspen Court Apartment's Response Letter

Aspen Court Apartments

August 19, 2022

To: City of Plano Planning and Zoning
Donna Falletta -Senior Planner
From: Aspen Court Apartments
Don Elster
Re: PLANO ZONING CASE #2022-003
Response to Medical City of Plano's Zoning Exhibits and Explanations

Dear Donna,

Per your request, please see the attached Response from Aspen Court Apartments which is located at 1600 Amelia Court - adjacent to Medical City of Plano. Please feel free to contact me anytime at 818-457-9459 or donelster1@gmail.com and/or Aspen Courts general representives Jim Merrill - jcmmai@aol.com and Barry Knight - bknight3521@gmail.com Thank you for your cooperation.

Sincerely,

Don Elster
Managing Member Aspenbluff, LLC (a TX LLC) *dba* Aspen Court Apartments
www.aspencourt.com

Plano Zoning Case 2022-003

Aspen Court Apartment's Response to Medical City Plano's Zoning Exhibits and Explanations

C Tower expansion (adding 4 floors to existing 4-stories) - The Solar/Shadow Study submitted by MCP measures 5 days in the year, covering every season, "and identified limited impact of shadows on the apartment complex". Shadow Study submitted on behalf of Aspen Court was "based on one day of the year in February, with shortest duration of sunlight" These two statements are false and misleading.

MCP issued a false statement regarding February 14th (Aspen Court Shadow Study date) as having the shortest duration of sunlight (sunrise at 7:11 AM and sunset at 6:11PM) Actually, the shortest day of the year occurs on December 21st (sunrise at 7:25 AM and sunset at 5:24PM) per MCP's own Solar/Shadow Study prepared by Perkins and Will. Aspen Court Apartment's color 3-D Shadow Study demonstrates shadows cast on ¾ of the property during late afternoons-evenings. However, due to the height of the proposed 8 story tower, with only an 85' setback to the Aspen Court property line will cause the entire west horizon to be visually blocked to Aspen Court's residents.

Moreover, it serves no purpose for the MCP Solar/Shadow Study to include shadows cast at 9:00 AM, 12:00PM and 3:00PM in the afternoon when it is obvious shadows across Aspen Court don't exist. Using a 5:00PM Shadow Study as the latest time period year round by Perkins and Will is misleading as sunsets are as follows per the MCP Study: March 21st -7:39PM, June 21st -8:38PM and September 21st - 7:24PM. It would be more meaningful for their study to include Shadow Studies at 6:00PM to 7:00PM for the previous cited time periods during evening hours when most residents are home.

Why Burn and Trauma beds cannot be relocated and expanded in another proposed tower. "It is imperative for Burn and Trauma patients to be located as close as possible to the Emergency Department (ED) and Operating Rooms (OR). Burn patients have an extremely high infection risk, and Trauma patients require immediate intervention for lifesaving care." "Every minute matters"

With a 60 plus acre campus, the proposed expansions can be redesigned to locate helistops and/or burn and trauma beds in an area which does not negatively impact the residential communities bordering along the hospital's east boundary line, thus creating a "win-win" situation for all parties involved. With regard to time taken between transporting patients to the Emergency Department (ED) and Operating Rooms (OR) MCP architects have a virtual clean sheet to work from including designing a building with an east-west floor plan versus a north/south configuration to enhance helicopter safety during landings and departures due to prevailing southerly winds. As an example, Aspen Court's architect has provided an example of an alternative tower location with helistops that would provide timely access to ED and OR facilities. Other nearby site locations could employ the use of skywalks or subterranean corridors to timely transport in bound helicopter patients into ED and OR areas.

Helipad Relocation (From ground level to C Tower roof) INCREASED NOISE "to be indiscernible"

With the helicopters on top of the proposed 8 story tower that only has an 85' setback to the Aspen Court boundary line, the low frequency vibration and noise in the 90dB-95dB plus range occurring randomly 24/7/365 will create a junior Dallas Love Field impact causing an unbearable situation for Aspen Court residents. Currently, ground helipads are located on the opposite (west) side of the existing 4 story building adjacent to Aspen Court which serves as a partial sound barrier to helicopter noise as well as a deterrent to flyovers. To claim that the rooftop helistops will be less noisy is a false

premise. This rooftop location, will lead to increased noise in direct flyovers of Aspen Court, Parkbluff Condominiums and other adjoining residential areas during departures and landings. It is also noted that the equipment used by MCP during their Noise Analysis Report was a Bell 206 Jet Ranger which is not representative of the larger types of twin fanjet helicopters also used by EMS operators in the DFW area such as the Sikorsky S-76, Eurocopter 145, and MMB-117. Larger helicopters generate up to 105 dB of noise. When passing over Aspen Court the noise will reverberate off of the walls of C-tower and Aspen Court's residential walls, windows and doors amplifying the time and duration the sound and vibration is experienced by residents. A sound level of 105 dB is almost double the night time limit of 55.dB and is 40db above the daytime limit as stated in City of Plano Noise Ordinance 2021-12-06.

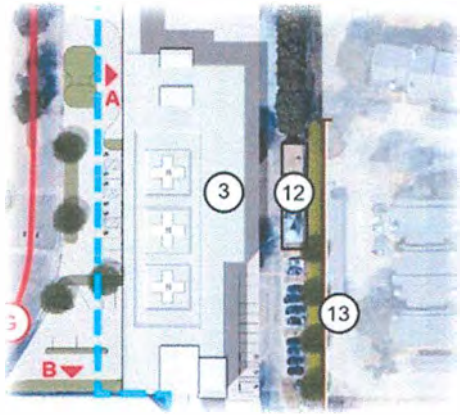
Greater Safety Risk- "Moving the helipads to the roof of Tower C is the safest option."

MCP does NOT acknowledge that moving the helipads to the west end of the Women's Building (Building 8 on Applicant's Site Plan) would significantly reduce the likelihood of helicopter traffic above the residential areas because the prevailing winds are from the north and south, and the Elevator / Stairwell Towers would be on the east and west ends of the building, thus allowing the pilots to approach/depart directly from the north and south at a lower level without diverting around the Elevator / Stairwell Towers. Less overflights equates to less chance that a helicopter might crash in the residential areas. The lower levels of the flight paths and greater distance from the residential areas would allow less of the noise disturbance to be audible to the residential areas.

Speaking about safety risks, MCP has an existing chemical tank farm located between C Tower and Aspen Court Apartments. As depicted in the photo below, the location chosen by MCP for the three helistops lies in the immediate "fall range" onto the tank farm should a helicopter accident occur during landing, departure or hovering on the east side of the tower. Most concerning to Aspen Court Consultants and neighborhood residents is that the tank farm contains a 33' high liquid oxygen tank, a 15' tall liquid oxygen tank a ±10' tall liquid nitrogen tank and a 22' tall vaporizing unit. In the event of a helicopter accident the chemical reaction of oxygen and aviation jet fuel would be catastrophic to Aspen Court and Parkbluff residents and to MCP employees, patients, caregivers and guests in C Tower.

PHOTO LEGEND

12- Existing Tank Farm
3 - C Tower with 3 Helistops
13- Aspen Court Apartments



Plano Zoning Case 2022-003

Photo of Chemical Tank Farm located between C Tower and Aspen Court Apartments. Helistops are to be located directly above tank farm and to the left on top of C Tower. A 33' tall oxygen tank is in foreground.

Below is a view of a nitrogen tank on the left; and the second oxygen tank to the right

Plano Zoning Case 2022-003

Addressing Concerns of Neighbors

Aspen Court's consultants have clearly expressed their concerns and opposition to Medical City and Plano P & Z to this PD/Zone change as it dramatically alters the apartment complex's residential environment. Resident's in Parkbluff Condominiums and homeowners immediately East of Aspen Court have expressed their concerns regarding helicopter noise as well.

Request by Staff to Assess Relocation of Oxygen Tank Farm Area on East Side of C Tower

Aspen Court's consultants have determined that the aforementioned oxygen tanks pose an explosive safety risk in the event of a helicopter accident and recommend the tank farm be located away from proposed helicopter landing sites. MCP's refusal to relocate the tank farm exposes the residential community to safety risks.

Request by Staff to assess alternate options to C Tower's 8-story tower expansion

Aspen Courts architect has an option for the helistop relocations that do not negatively compromise and adversely change the residential environment.

Property Value of Aspen Court – MCP states that that Aspen Court's website states that it is "within walking distance to MCP" and this indicates the property owner understands that the hospital "is a selling point for renters rather than a deterrent".

MCP has been a good neighbor as has Aspen Court by agreeing to support MCP'S construction of a 4-story tower, when it became clear the hospital could not gain zoning approval by Plano P&Z, nor Plano City Council for an 8-story tower with heliports atop the roof in 2018. Aspen Court and the residents of the surrounding residential neighborhoods were adamantly opposed to the story 8-story with roof top helistops in 2018, just as they are today. Aspen Court's owner considered the 4-story approval to be a "win, win" for all parties as the hospital was awarded increased developmental rights to a 4-story building when previously only 2-stories were permitted. In exchange, the 4-story building, as currently configured, serves to buffer helicopter noise during landings and departures on ground mounted helipads located on the west of the 4-story building about 300 feet away from Aspen Court's boundary line. Secondly, the building serves as a deterrent to flyovers which previously occurred nearly daily and now much less frequently.

Aspen Court's owner was not aware that the existing 4-story building's foundation and building structure was designed to accommodate an expansion up to 8-stories and that 4 years later, MCP would be back for second try with a new PD proposal to achieve which they could not in the recent past. With regard to stating Aspen Court's proximity to MCP 'is a selling point for renters" quickly becomes a false premise should MCP's application for 8-stories with helicopter pads atop the roof become a reality. There are many options for Aspen Court residents to lease apartments throughout Plano and adjoining suburbs that are not impacted by noise 24/7/365 from helicopter landings and departures flying overhead (up to 3 helicopters at a time) to helistops less than 200' away, causing residents to wake up in the middle of the night, or interrupting phone calls, watching a TV show or interrupting a family conversation, nor experience their residences being subject to shadows over an hour or more earlier than residents at other complexes due to a blocked western horizon by an 8 story building that has a setback from the boundary line that is equivalent to a 2 story medical building. Yes, tenants do vote with their feet, and yes rental rates and occupancy would be adversely impacted.

Plano Zoning Case 2022-003

Summary and Conclusions

The owner of Aspen strenuously opposes the approval of zoning which will enable MCP to construct an additional 4 floors onto the existing 4-story C Tower and place 3 helistops atop the roof for several reasons:

1. **Noise from EMS helicopters 24/7/365 days** a year will be at unbearable sound levels that will interrupt sleep during the night and periodically interrupt resident's conversations, watching TV, listening to music, etc. It will be especially annoying to those residents who have home offices. Obviously, with the need for 3 helistops, and a growing demand, MCP is planning on an increasing number of EMS helicopter flights day and night.

2. **Shadows cast across Aspen Court by the 8-story C Tower** will cause early night fall for Aspen Court residential units year round due to shadows cast across Aspen's buildings, particularly after 5:00PM. The setback for C Tower is more akin to a 2-story building versus an 8-story structure. The result will be the loss of view toward the western horizon for all residents.

3. **Danger from a massive explosion, should a helicopter crash and fall onto the chemical tank farm that lies next to the east side of C Tower.** MCP's chemical tank farm is located between C Tower and Aspen Court Apartments adjacent to the 3 proposed helistops and lies in the "fall range" in the event of that a helicopter accident occur during landing, departure or hovering on the east side of the tower. Should a helicopter crash onto the tank farm, the result would be catastrophic. The reaction between oxygen and jet fuel igniting simultaneously would cause a massive explosion injuring or causing casualties to Aspen Court and Parkbluff residents occupying 141 units plus many MCP employees, patients, caregivers and guests in C Tower. MCP recognizes the danger, however, states relocation of tanks is not feasible because:
   - "Installing a new tank and switching over from the existing to new tank creates unnecessary patient safety risk for those patients in-house"
   - "There was not an alternative location identified that would allow a relocation of this vital resource"
   - "This was not requested by residents or mentioned as a concern in any stakeholder meetings" *…likely because none of the nearby residents were aware about at that time"*

   Simply put, MCP is implying it is not feasible move the chemical tank farm to an alternate area because the hospital does not wish to pay the cost to cure the problem it is has created next to C Tower and Aspen Court Apartments.

4. **MCP obtained the rights to develop the existing 4-story C Tower (maximum) due to the support of Aspen Court's owner in 2018** in the face of rejection by Plano City Council to approve an 8-story building with 3 helistops on the roof, deemed to be a "win, win" situation by all parties. Now MCP wishes to rehash the same proposal with full knowledge of the economic and quality of life damage it will cause Aspen Court Apartments, Parkbluff Condominiums residents and owners of other single family residences in the immediate neighborhood.

In conclusion, MCP knows there are alternate solutions to the situation by locating helistops elsewhere on their campus and methods to shorten travel times to get patients quickly to the ER department, **but chooses to pursue the least costly methods regardless of the diminishment of quality of life issues, economic damages to its neighbors and potential loss of life should a tank farm explosion occur**

Adjacent Property Owner Study #2 - Architectural Report

THOMAS ARCHITECTS

INTERIORS • ARCHITECTURE • PLANNING

August 31, 2022

PROPOSED ZONING CHANGE - PLANNED DEVELOPMENT - ZC2022-003
MEDICAL CITY OF PLANO PROPOSED 8 STORY TOWER
&
ASPEN COURT/PARKBLUFF RESIDENTIAL ISSUES

1. **Proposed 8 Story Monumental Building is out of place** adjacent to residential properties.
   - **Not an urban environment but suburban**. Keep Plano suburban, not Downtown Dallas.
   - **Blocks the sun and horizon** views including sunsets from residential properties.
   - **Heavy Shadows** are cast over the residential properties during pivotal times of the day in all 4 seasons limiting the outdoor quality of life around the swimming pool and other activity zones.
   - **Squashes the human spirit** to walk out the door to your home and see an 8-story building hovering over your life. Coming and going.

2. The better suburban communities around the country have **ordinances that guard against this kind of development,** because they know it's a detriment to the neighbors. Why would we want to open this door to bad policy where other neighbors suffer in Plano because it was allowed here?

3. **Helicopters landing adjacent to residential neighborhoods is unacceptable in most every suburban community.**
   - **Noise** interrupts the "home" experience and interaction and conversation between neighbors.
   - **Safety** of the residential community is put in jeopardy due to landings and flight paths adjacent to and over their homes.

4. **Hazardous or explosive materials should not be stored adjacent to residential properties.** Including below and above ground oxygen, gas, etc. tanks or containers. Currently, there are both.

5. **Better options for being good neighbors** on both sides of the property lines:
   - **Taller buildings should be moved inward** on the MCP property. Create a buffer where there are no buildings over 80 ft. adjacent to residential property.
   - **Helipads should be moved inward** on the MCP property and not be allowed adjacent to residential property. Create a buffer and distance.
   - **No flight paths over the adjacent residential properties.**

- **Move hazardous or explosive materials** deeper into the property and take appropriate containment design improvements to limit their potentially destructive effects.

6. **Alternate Designs** –
   - **An 8-story building next to residential is not the only option** for the best chance of saving lives for trauma and burn patients.
   - **MCP has more than 50 contiguous acres to utilize** the best design available without devaluing the residential properties next to it.
   - **The cost, both monetarily and in quality of life, related to expansion and renovation should be squarely on the MCP campus and not their neighbors.**

Possible Medical Center Goals:

Life Safety of the patients –

- **Transport emergency patients from the Helicopters to the Emergency (ED) and Operating Rooms (OR) as quickly as possible** avoiding hazardous and infectious conditions along the way.
- **Allow for more beds and support services** related to burn and trauma patients and tie them into the existing where possible.

Proposed Alternate Design Option:

1. **Leave the existing 4 story Bed Tower (65 ft. parapet height) in place as a buffer** between the taller, larger and louder operations and functions of the medical campus.
2. **Extend the east end of the proposed 6 story Women's Building (96 ft. parapet height) to the east** over the Ambulance Driveway & Entry allowing it to continue normal operations into the building.
3. **Allow a 30-35 ft. open air space between** the existing main building to the south and the existing 4 story bed tower to the east to allow natural light into the existing bed unit floors.
4. **Locate the 3 Helipads to the west end of the Women's Building Roof** allowing for a contiguous roof top circulation flow east over the alternate design proposed burn and trauma bed tower.
5. **Connect the proposed alternate design roof with a sky-bridge to a new elevator and stair** extending downward to the first floor of the 4 story existing Bed Tower. This elevator is adjacent to the existing elevators and opens up on the first floor to the corridor that flows directly to the ED and OR.

6. **The Sky-Bridge and Elevator can be used specifically for the Helipads and ED/OR**, or the Sky-Bridge can be extended to connect to all 3 of the the bed tower floors in the existing 4 story tower.
7. We used the same calculation numbers as the previous **Travel Time Study** for varied distances of travel horizontally and vertically (elevator). The time it takes for an emergency transport patient to be moved from the further east rooftop Helipad is **36 seconds longer** than from the proposed 8 story bed tower.
8. The time it takes for an alternate design bed tower trauma or burn patient to move from the furthest room is **65 seconds shorter** than from the furthest room in the proposed 8 story tower.

Medical City Plano has an abundance of property with options for more. The burden to add, subtract, move, or alter improvements to their facilities per the existing codes and ordinances is their responsibility and should not place an unwanted burden on adjacent neighbors to absorb their issues and accept a devaluation of their property or a reduction in the quality of life of its residents.

Sincerely,
Mark A. Thomas, AIA
THOMAS ARCHITECTS

Attachments:
Support Documents – 46 slides

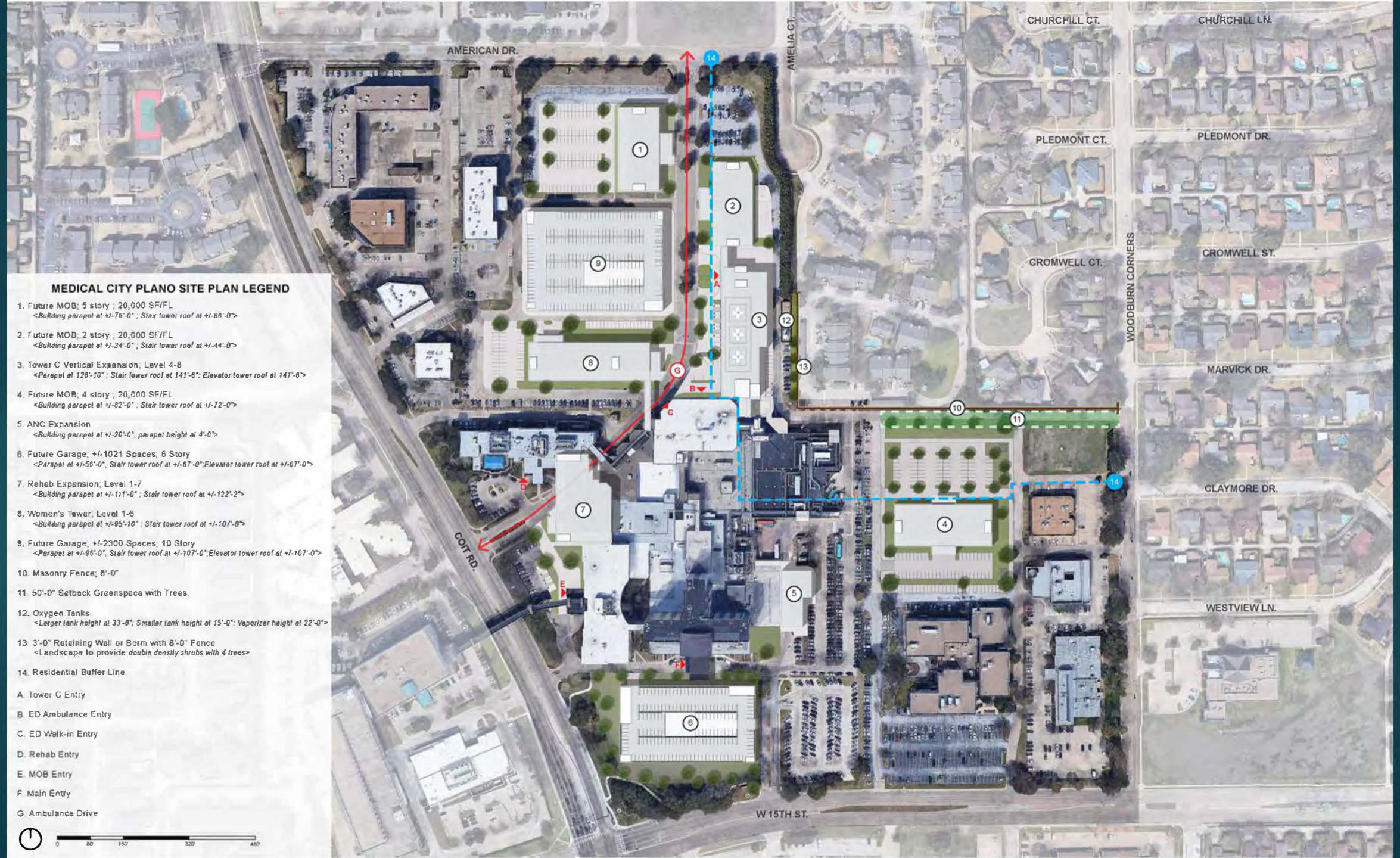
PROPOSED 8 STORY MEDICAL CITY PLANO BED TOWER STUDY

CITY OF PLANO PUBLIC HEARING

FOR ASPEN COURT APARTMENTS

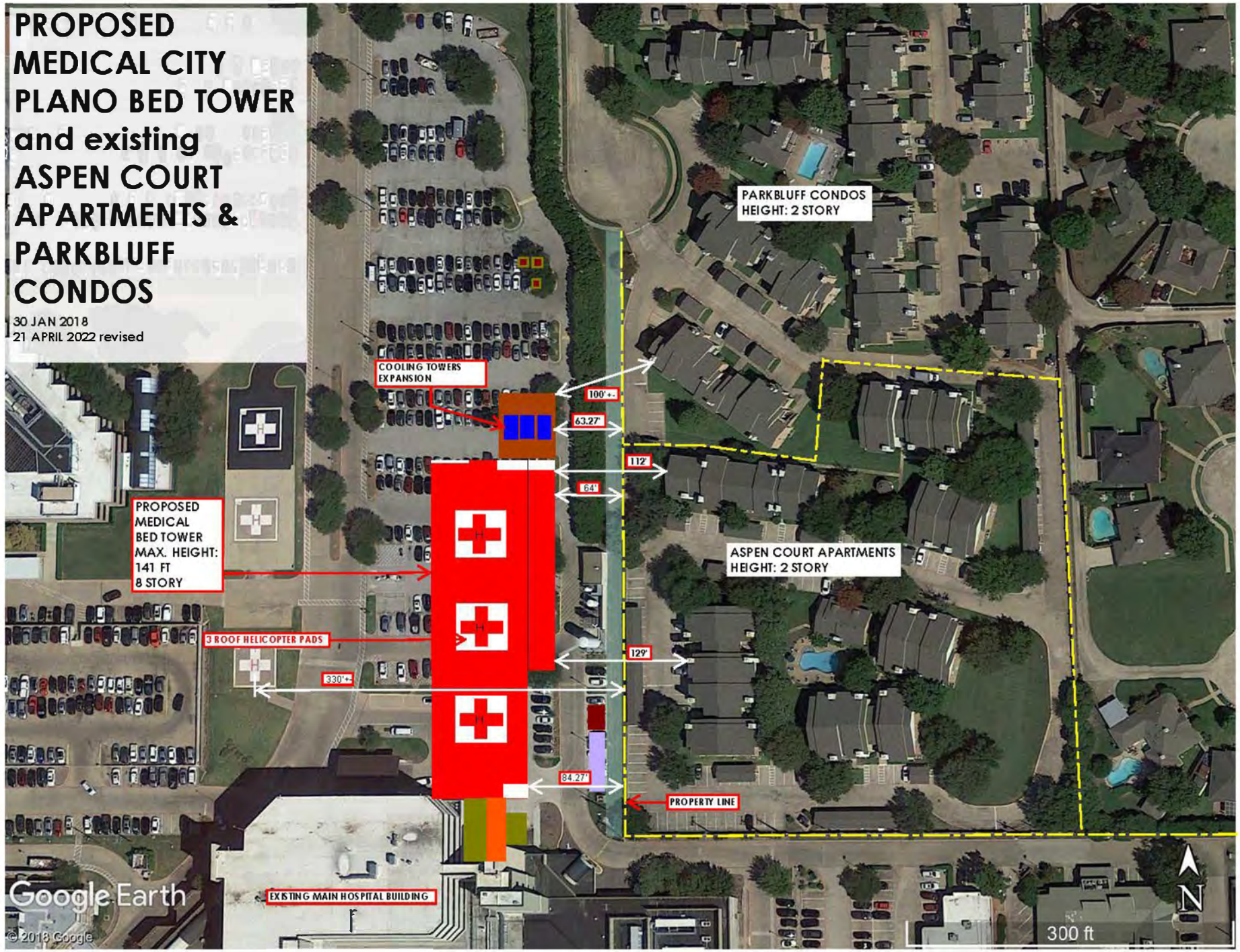
PROPOSED ZONING CHANGE - PLANNED DEVELOPMENT - ZC2022-003

MARK A. THOMAS, AIA ▼▲ THOMAS ARCHITECTS – 972.422-7499


AMERICAN DR.
AMELIA CT.
CHURCHILL CT.
CHURCHILL LN.
PLEDMONT CT.
PLEDMONT DR.
CROMWELL CT.
CROMWELL ST.
WOODBURN CORNERS
MARVICK DR.
CLAYMORE DR.
WESTVIEW LN.
COIT RD.
W 15TH ST.
MEDICAL CITY PLANO SITE PLAN LEGEND
1. Future MOB; 5 story ; 20,000 SF/FL
<Building parapet at +/-76'-0" ; Stair tower roof at +/-86'-0">
2. Future MOB; 2 story ; 20,000 SF/FL
<Building parapet at +/-34'-0" ; Stair tower roof at +/-44'-0">
3. Tower C Vertical Expansion; Level 4-8
<Parapet at 126'-10" ; Stair tower roof at 141'-6"; Elevator tower roof at 141'-6">
4. Future MOB; 4 story ; 20,000 SF/FL
<Building parapet at +/-82'-0" ; Stair tower roof at +/-72'-0">
5. ANC Expansion
<Building parapet at +/-20'-0", parapet height at 4'-0">
6. Future Garage; +/-1021 Spaces; 6 Story
<Parapet at +/-56'-0", Stair tower roof at +/-67'-0",Elevator tower roof at +/-67'-0">
7. Rehab Expansion; Level 1-7
<Building parapet at +/-111'-0" ; Stair tower roof at +/-122'-2">
8. Women's Tower; Level 1-6
<Building parapet at +/-95'-10" ; Stair tower roof at +/-107'-0">
9. Future Garage; +/-2300 Spaces; 10 Story
<Parapet at +/-96'-0", Stair tower roof at +/-107'-0",Elevator tower roof at +/-107'-0">
10. Masonry Fence; 8'-0"
11. 50'-0" Setback Greenspace with Trees.
12. Oxygen Tanks
<Larger tank height at 33'-0"; Smaller tank height at 15'-0"; Vaporizer height at 22'-0">
13. 3'-0" Retaining Wall or Berm with 8'-0" Fence
<Landscape to provide double density shrubs with 4 trees>
14. Residential Buffer Line
A. Tower C Entry
B. ED Ambulance Entry
C. ED Walk-in Entry
D. Rehab Entry
E. MOB Entry
F. Main Entry
G. Ambulance Drive
0
80
160
320
480

PROPOSED MEDICAL CITY PLANO BED TOWER and existing ASPEN COURT APARTMENTS & PARKBLUFF CONDOS

30 JAN 2018
21 APRIL 2022 revised



EXISTING MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

4 STORY MEDICAL TOWER
80 FT.

SHADE & SHADOWS:
DATE: **MARCH 21st**
TIME: **5:00 PM**
SUNRISE: 7:29 AM
SUNSET: 7:39 PM

PROPOSED MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
DATE: **MARCH 21st**
TIME: **5:00 PM**
SUNRISE: 7:29 AM
SUNSET: 7:39 PM

EXISTING MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

4 STORY MEDICAL TOWER
80 FT.

SHADE & SHADOWS:
DATE: **JUNE 21st**
TIME: **6:00 PM**
SUNRISE: 6:18 AM
SUNSET: 8:38 PM

PROPOSED MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
DATE: **JUNE 21st**
TIME: **6:00 PM**
SUNRISE: 6:18 AM
SUNSET: 8:38 PM

EXISTING MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

4 STORY MEDICAL TOWER
80 FT.

SHADE & SHADOWS:
DATE: **SEPTEMBER 21st**
TIME: **5:00 PM**
SUNRISE: 7:14 AM
SUNSET: 7:24 PM

PROPOSED MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
DATE: **SEPTEMBER 21st**
TIME: **5:00 PM**
SUNRISE: 7:14 AM
SUNSET: 7:24 PM

EXISTING MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

4 STORY MEDICAL TOWER
80 FT.

SHADE & SHADOWS:
DATE: **DECEMBER 21st**
TIME: **4:00 PM**
SUNRISE: 7:25 AM
SUNSET: 5:24 PM

PROPOSED MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
DATE: **DECEMBER 21st**
TIME: **4:00 PM**
SUNRISE: 7:25 AM
SUNSET: 5:24 PM

EXISTING MEDICAL CITY OF PLANO BED TOWER
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ASPEN COURT APARTMENTS

4 STORY MEDICAL TOWER
80 FT.

SHADE & SHADOWS:
DATE: **FEBRUARY 14**
TIME: **4:30 PM**
SUNRISE: 7:11 AM
SUNSET: 6:11 PM

THOMAS ARCHITECTS
972.422-7499

4 STORY

PROPOSED MEDICAL CITY OF PLANO BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
DATE: **FEBRUARY 14**
TIME: **4:30 PM**
SUNRISE: 7:11 AM
SUNSET: 6:11 PM

THOMAS ARCHITECTS
972.422-7499

8 STORY

EXISTING MEDICAL CITY OF PLANO
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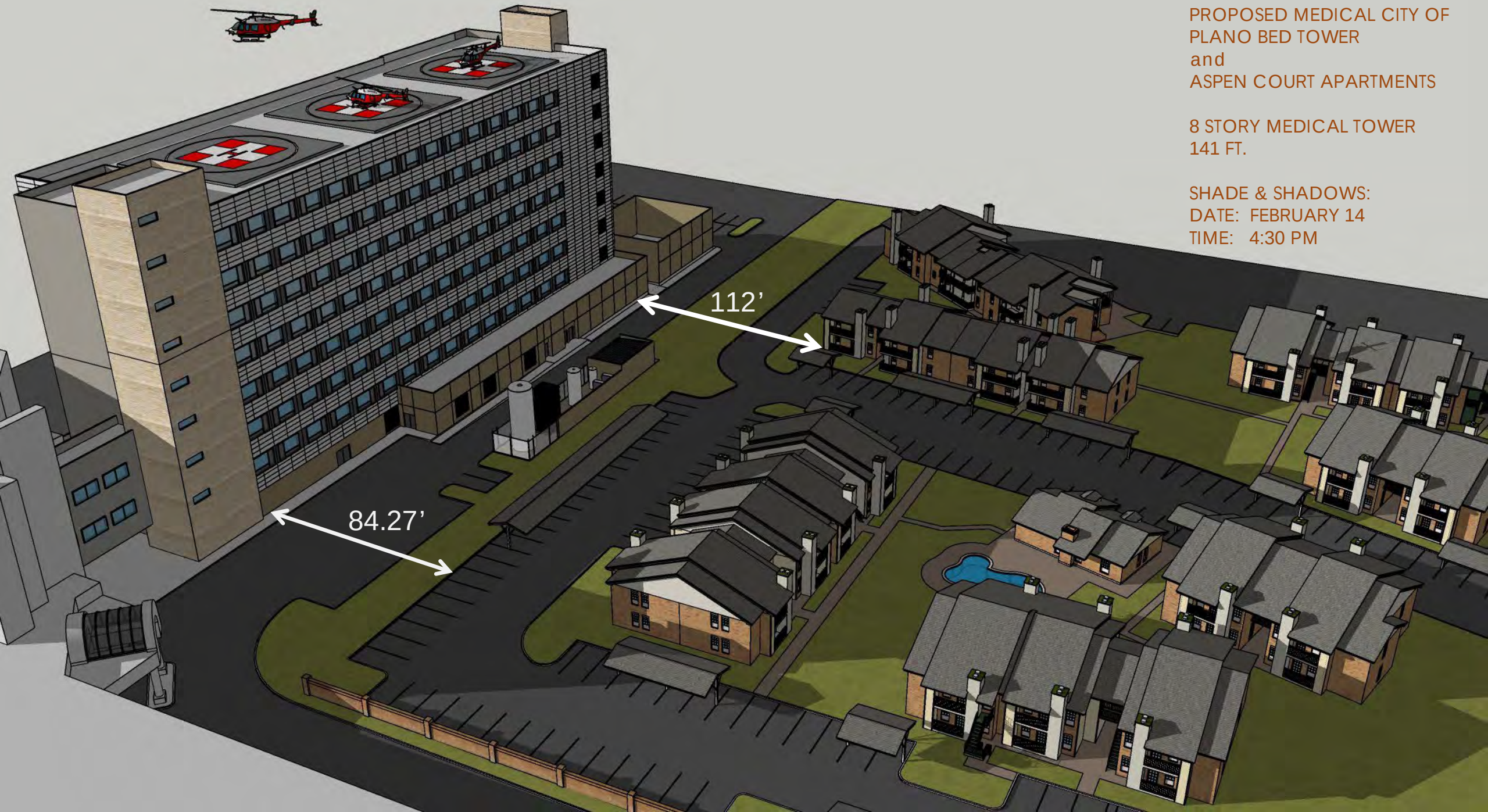
80 FT.

SHADE & SHADOWS:
DATE: FEBRUARY 14
TIME: 4:30 PM



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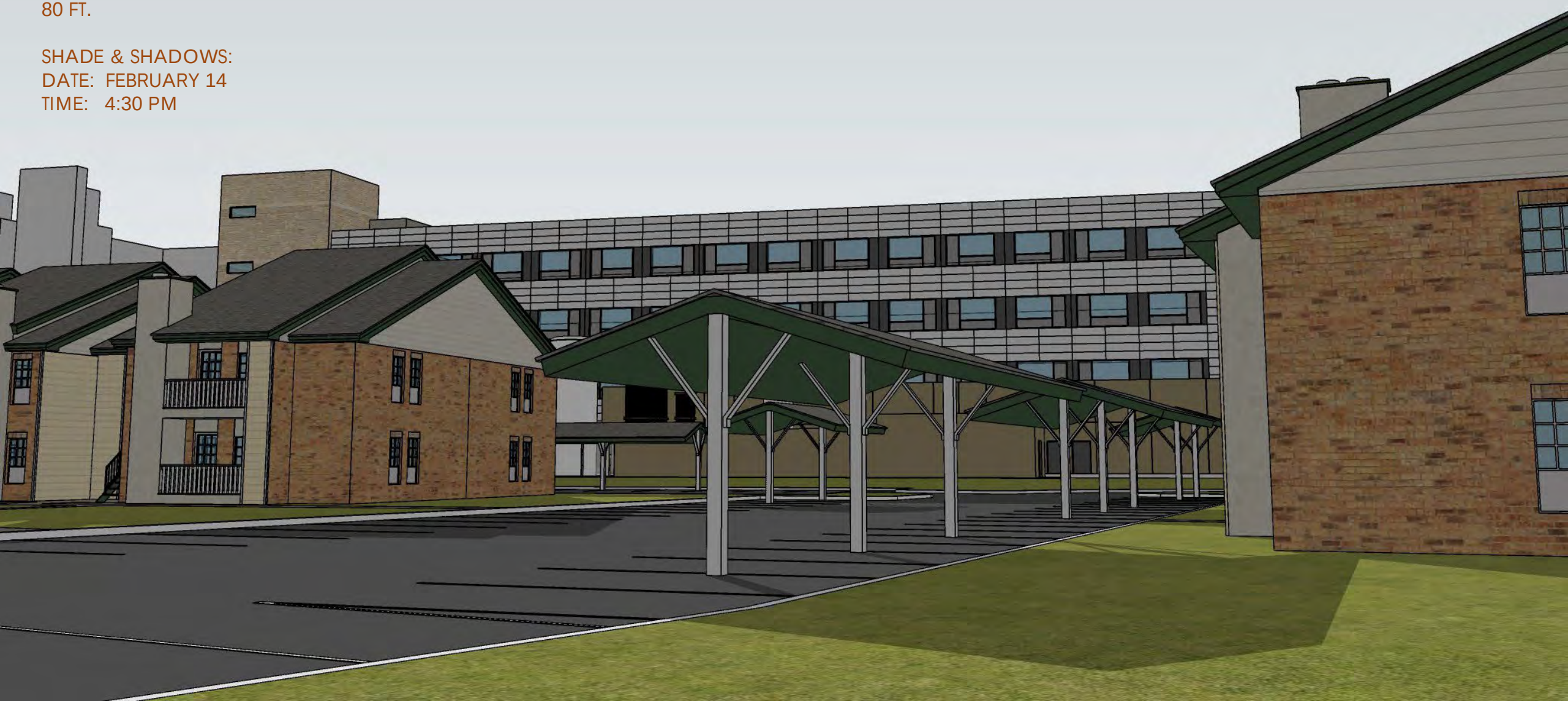

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DATE: FEBRUARY 14
TIME: 4:30 PM

PROPOSED MEDICAL CITY OF
PLANO BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
DATE: FEBRUARY 14
TIME: 4:30 PM

EXISTING MEDICAL CITY OF PLANO
BED TOWER
and
ASPEN COURT APARTMENTS

4 STORY MEDICAL TOWER
80 FT.

SHADE & SHADOWS:
DATE: FEBRUARY 14
TIME: 4:30 PM

PROPOSED MEDICAL CITY OF
PLANO BED TOWER
and
ASPEN COURT APARTMENTS

8 STORY MEDICAL TOWER
141 FT.

SHADE & SHADOWS:
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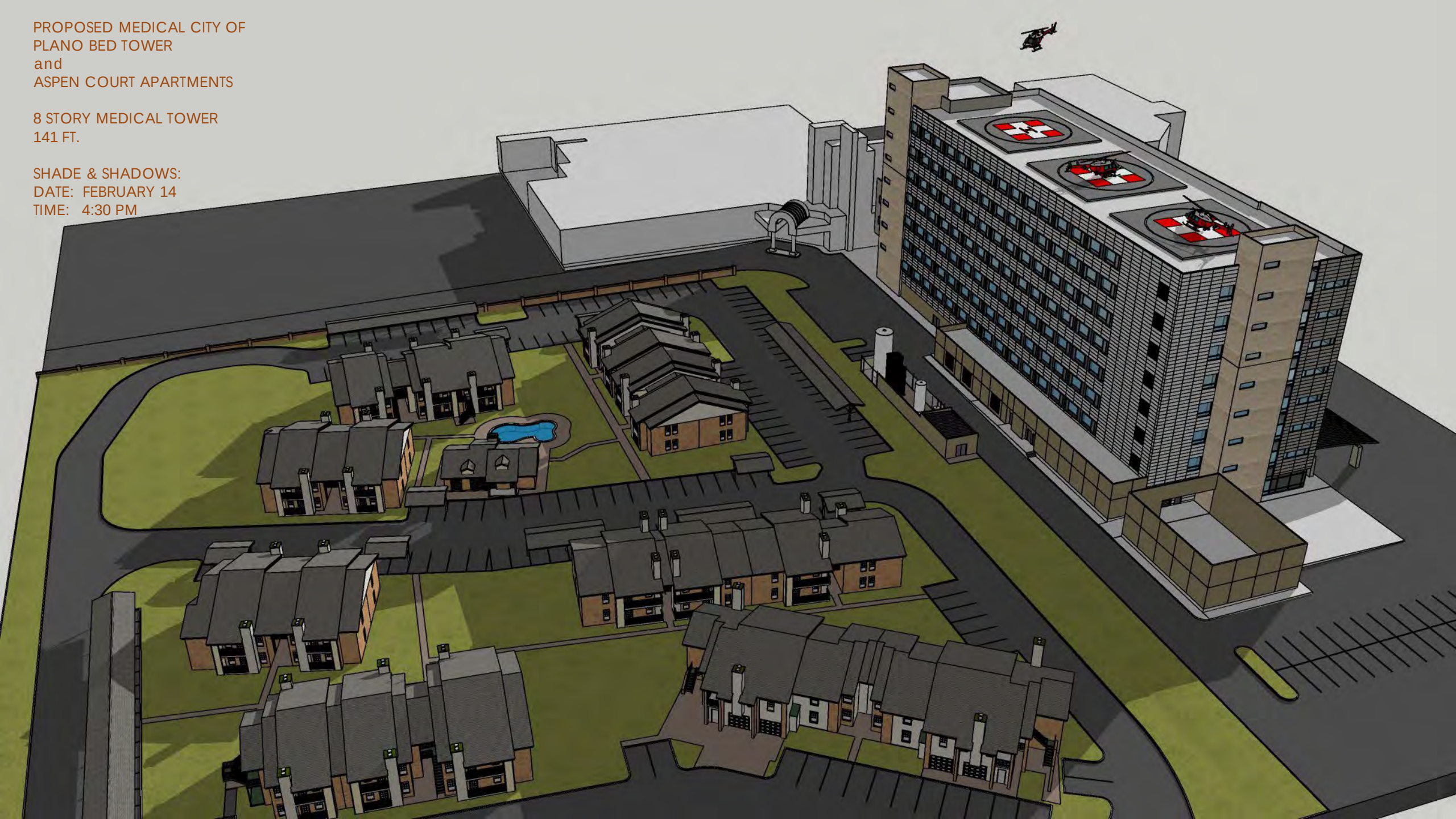


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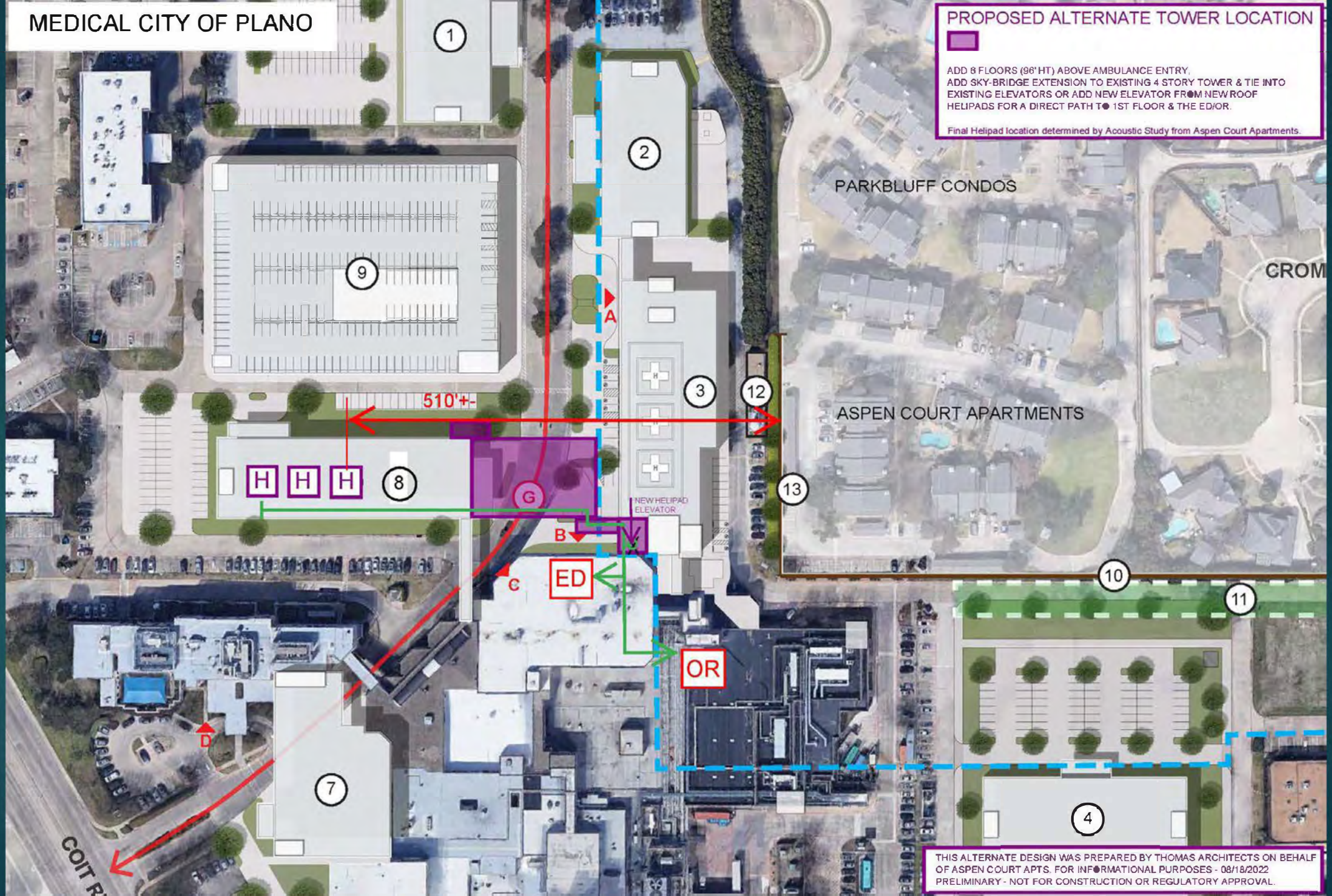

MEDICAL CITY OF PLANO
PROPOSED ALTERNATE TOWER LOCATION
ADD 8 FLOORS (96'HT) ABOVE AMBULANCE ENTRY.
ADD SKY-BRIDGE EXTENSION TO EXISTING 4 STORY TOWER & TIE INTO EXISTING ELEVATORS OR ADD NEW ELEVATOR FROM NEW ROOF HELIPADS FOR A DIRECT PATH TO 1ST FLOOR & THE ED/OR.
Final Helipad location determined by Acoustic Study from Aspen Court Apartments.
PARKBLUFF CONDOS
ASPEN COURT APARTMENTS
510'+-
NEW HELIPAD ELEVATOR
ED
OR
A
B
C
D
G
H
1
2
3
4
7
8
9
10
11
12
13
COIT R
THIS ALTERNATE DESIGN WAS PREPARED BY THOMAS ARCHITECTS ON BEHALF OF ASPEN COURT APTS. FOR INFORMATIONAL PURPOSES - 08/18/2022
PRELIMINARY - NOT FOR CONSTRUCTION OR REGULATORY APPROVAL.

Adjacent Property Owner Study #3 - Helicopter Report

Evaluation of the Proposed Rooftop Heliport At Medical City of Plano

Case # ZC2022-003

Prepared by:
Marc Liebman
709 Hayden Lane
Savannah, TX 76227

Table of Contents

Executive Summary

Medical City of Plano is proposing to build an eight-story parking structure on top of which it will build a heliport with three landing pads. The structure of the proposed building will be 84.4 feet from the property line of Aspen Court Apartments and 112 feet from the wall of the closest apartment.

The installation of the heliport will create unacceptable noise levels for the residents when helicopters are approaching from the north, south and east and taking off in the same directions. During the approach to landing, the helicopters will be producing the most amount of noise as they pass from 50 knots down to about 10 when the cross the proposed building's threshold.

On the ground level, the noise levels will be in the 80 – 90 dB range for the last quarter mile of the approach as the helicopters either pass over or near Aspen Court Apartments, Park Bluff Condominiums, and the homes in Amelia Court. These noise levels exceed the City of Plano noise ordinance 2021-12-6 Section 14-87 daytime limits of 65 dB by 15 – 25 dB and the nighttime limits by 25 – 35 dB.

In addition to the noise, during the last 60 – 90 seconds of the flight, helicopters approaching the proposed heliport from the east present an unacceptable risk to the safety of the residents of Aspen Court Apartments, Park Bluff and Amelia Court. At this time they will be transitioning from forward flight to a hover. The height of the new heliport forces the helicopter to fly in a portion of the helicopter performance envelop called "Hovering Out of Ground Effect" or HOGE.

To continue in controlled flight while hovering out of ground effect the helicopter's engines will be close to, if not at maximum power. If the helicopter has a mechanical problem that affects controllability or a loss of power, or there is a significant change in wind direction or velocity, or an increase in turbulence, the pilot's only option is to reduce power and try to fly out of the situation.

Unfortunately, given the proposed design, the pilot is facing a building that is blocking the helicopter's path and has residences – apartments and homes below. This why helicopter manufacturers recommend that pilots

avoid this portion of the flight envelop due to the increased risk of a crash which is appropriately known as Dead Man's Curve.

Another risk factor of the heliport design is how high summer temperatures, i.e. above 90^0 Fahrenheit - common in Plano between late May and the end of September - degrade helicopter performance and increase risk. When the temperature reaches 90^0 Fahrenheit, the helicopter has lost 9.8% of its available power. At 100^0 Fahrenheit, available power is 11.2% and if it reaches 110^0, the helicopter has 14% less than it would have if the temperature was below 60^0 Fahrenheit.

None of these noise or risk factors which affect the safety of helicopter operations and increase the chances of an accident were mentioned in the FEC Heliports report.

Therefore, for noise and for safety considerations, it its strongly recommended that the City of Plano not approve the construction of the proposed heliport as currently proposed.

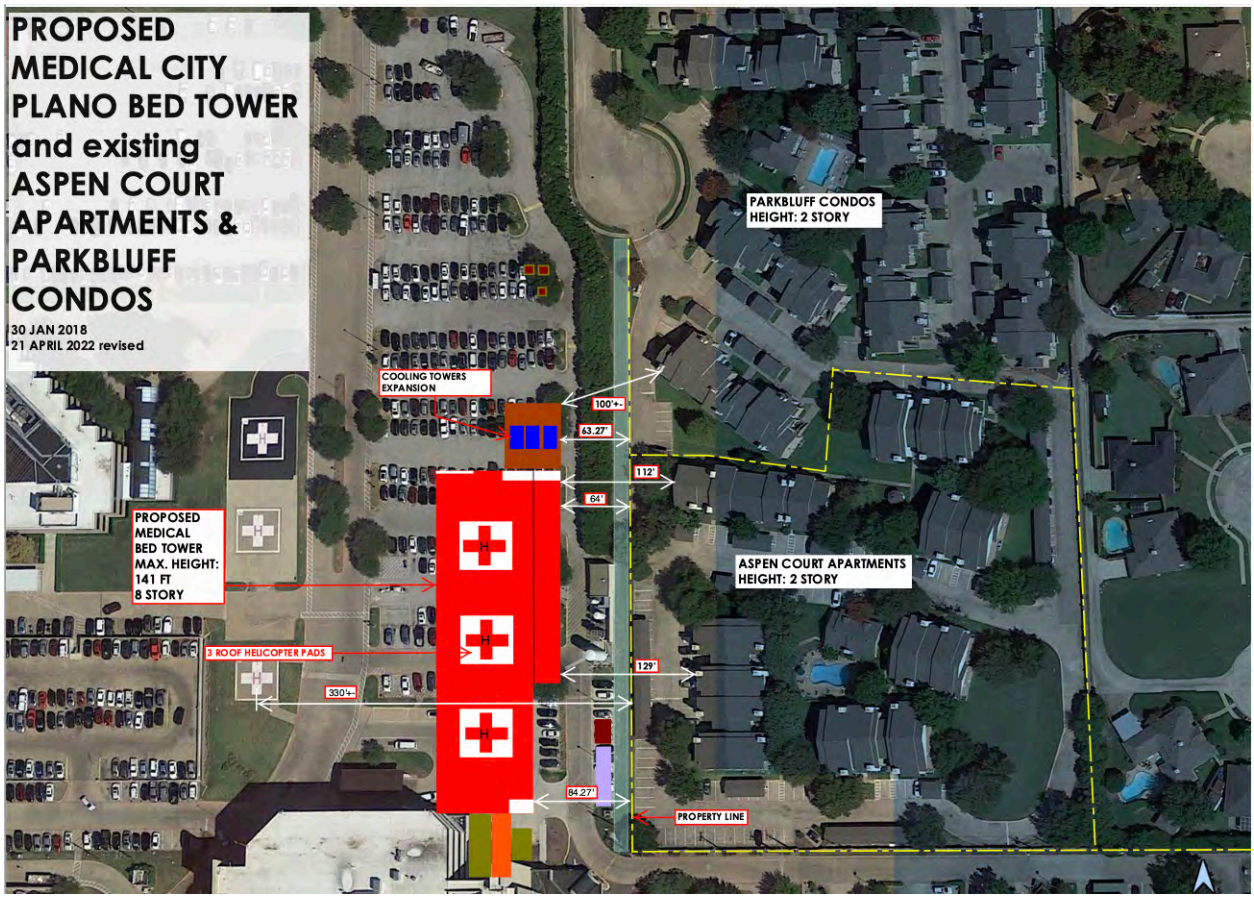
1.0 Location of the Heliport

Medical City of Plano is proposing to build a heliport on the top of an eight-story building by adding four floors to an existing structure. This building will have a heliport on its roof with three landing pads. The building on which the heliports will be located is oriented on a north/south axis. Based on the information provided by Medical City of Plano, the heliport will be at least 125' feet above the ground and will replace the current ground level heliport to the west of the hospital.

As of July 31st, 2022, helicopters can approach the current heliports from the north, crossing over the Life Care Center of Plano on the south side of Park Boulevard, then an open field before flying over a parking lot to land.

In the photograph *(Figure 1)* below which has the proposed building and rooftop heliports, one can see the proximity of the new heliport to homes and apartments and the actual distances to them. The property line is 84.4 feet from the existing building and the apartments are 1oo feet from the cooling tower expansion and 112 feet from the existing building that Medical City wishes to extend upwards. The heliports in the diagram are easily identifiable by the white cross.

Figure 1
Proposed Building and Distances from Homes



2.0 Primer on Helicopter Operations

The purpose of this section is to provide the reader with insight on helicopter operations to and from elevated heliports such as proposed by Medical City of Plano. Once these are understood, the City of Plano can make a much more informed decision on whether or not it should approve the proposed design.

While it may be stating the obvious, helicopters do not fly like airplanes. The very nature of their design and the aerodynamics of a helicopter rotor enable helicopters to hover over the ground or fly very slowly which is something a fixed wing aircraft cannot do.

There are several key factors and helicopter operating limitations common to all helicopters that must be accounted for when designing a heliport. Understanding these limitations to provide insight into how and why the noise footprint is created and the operational risks associated with rooftop heliports.

2.1 Power required

As the helicopter slows, it requires more power from its engines to keep the rotor rpm at the desired speed. The heavier the helicopter is at this time of the flight the more power is required to turn the rotor blades and keep them at the desired constant speed.

The more power required means the turbine engines spool up and generate more noise. In other words, The more power required to keep the helicopter airborne at slow speeds, the more noise it generates.

2.2 Hovering in and out of ground effect

There are two conditions in which a helicopter hovers. One is when it is at low altitude, usually within one half the diameter of its rotor blades. Unless there is significant wind, the rotor wash (or wind) forced downward by the rotors creates a cushion of air known as the “ground cushion.” The closer the helicopter is to the ground, the more the ground cushion reduces the power required.

The second condition is hovering out of ground effect or HOGE. This when the helicopter is high enough so there is no ground cushion. What is keeping the helicopter in the air is the power generated by its engine or engines to turn the rotor at the optimum rpm.

Once the helicopter slows below 50 knots and is more than one rotor diameter above the ground, it is in the hovering out of ground effect portion of the flight envelop and much more power is required to stay in the air. Later in this document, two charts known as the height velocity chart are included to help the reader visualize how this affects the approach to a landing on a rooftop heliport and how long the helicopter will be in this portion of its flight envelope.

2.3 Translational lift

One of the unique aspects of a helicopter is a phenomenon called translational lift. What happens is that at 16 knots, the individual rotors begin acting as if they were a solid lifting disc. By 24 knots, whatever benefit the helicopter will gain through translational lift has been achieved.

The result is that the helicopter needs 10 – 15 percent less power to fly. So, in a take-off, the pilot wants to accelerate past 16 knots as soon as possible. In an approach to landing, the pilot wants to minimize the helicopter spends below 24 knots to minimize the amount of increased power required to fly the helicopter safely to the landing pad.

2.4 Density altitude

As helicopters climb, the engines and rotors become less efficient. This is most noticeable when flying at high altitudes in mountains. The elevation of Plano varies from about 600 to 700 feet above sea level so when the temperature is below 60^0 Fahrenheit, helicopter operations are not affected by altitude.

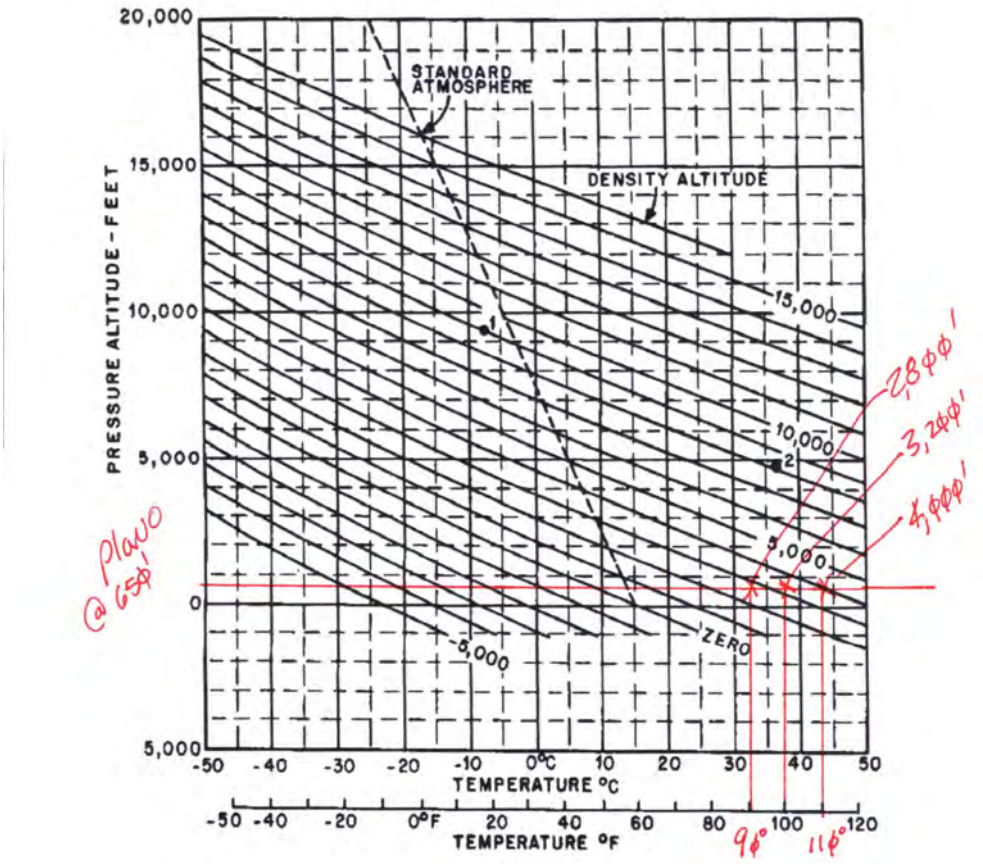
From late May until the end of September, it is not uncommon for the temperature to rise above 90^0 Fahrenheit. This requires one to consider the effect of density altitude in helicopter operations. Density altitude is calculated by correcting the pressure altitude for high temperatures.

Figure 2 is the standard aviation chart used to estimate density altitude. This phenomenon affects fixed and rotary wing aircraft. On an airliner, it extends the amount of runway needed to take off. As the density altitude rises, helicopters lose power and lift.

On the horizontal red line is the average elevation for Plano which is about 650 feet. The vertical lines represent the temperatures and where they intersect the adjusted pressure lines gives on the pressure altitude adjusted for temperature, i.e., the density altitude.

On a 90^0 Fahrenheit day, the density altitude in Plano is 2,800 feet. At 100^0 Fahrenheit, it rises to 3,200 feet and at 110^0 it is 4,000 feet. In other words, the helicopter performs as if it was at density altitude, not at the pressure altitude indicated on the helicopter's altimeter.

Figure 2
Density Altitude Chart



This is very significant because for each thousand feet of density altitude, the helicopter loses 3.5% of its available power from its engines and about the same amount of lift. Therefore, on a 90^0 Fahrenheit day, the helicopter has lost 9.8% (3.5% X 2,800) of its power and lift. At 100^0 Fahrenheit, the reduction rises to 11.2% (3.5% X 3,200) and at 110^0, the helicopter has lost 14% (3.5% X 4,000) of its lift and power.

The reduction in power and lift available caused by density altitude reduces the safety margins helicopters have in any part of their flight envelop. The loss of lift and power may mean the difference in being able to hover in ground effect during the last and most critical phase of the flight, i.e. the transition from forward flight to landing on the rooftop heliport.

There are some helicopters that will not be able to hover out of ground effect when the temperatures rise above 90^0 Fahrenheit. In those helicopters, an approach to a heliport on the top of an eight-story building is extremely risky.

2.5 The Height Velocity Diagram

Helicopter manufacturers provide from their flight tests as part of their flight manuals what are called Height Velocity diagrams. These diagrams, required as part of the FAA's certification process, depict the portion of the helicopter performance envelope that pilots should avoid because of the significantly increased risk of an accident, even if there is not a mechanical problem with the helicopter.

This portion of the flight envelope received its Dead Man's Curve moniker from the high number of fatal crashes that occurred when pilots ventured into this flight regime. Flying in the Dead Man's Curve portion of the performance envelop does not mean that the helicopter will crash but it does mean the risk of an accident is much higher.

Figures 3 and *4* are the Height Velocity Diagrams taken from the flight manuals of the Bell 412B and the Sikorsky S-76, two helicopters flown by many EMS operators. Each helicopter certified in the U.S. has a similar chart. The red line shows the portion of the flight from 250 feet above the ground to touchdown on the proposed heliport. Note in the Bell 412B chart, there is the word "avoid."

Figure 3
Bell 412B Height Velocity Diagram

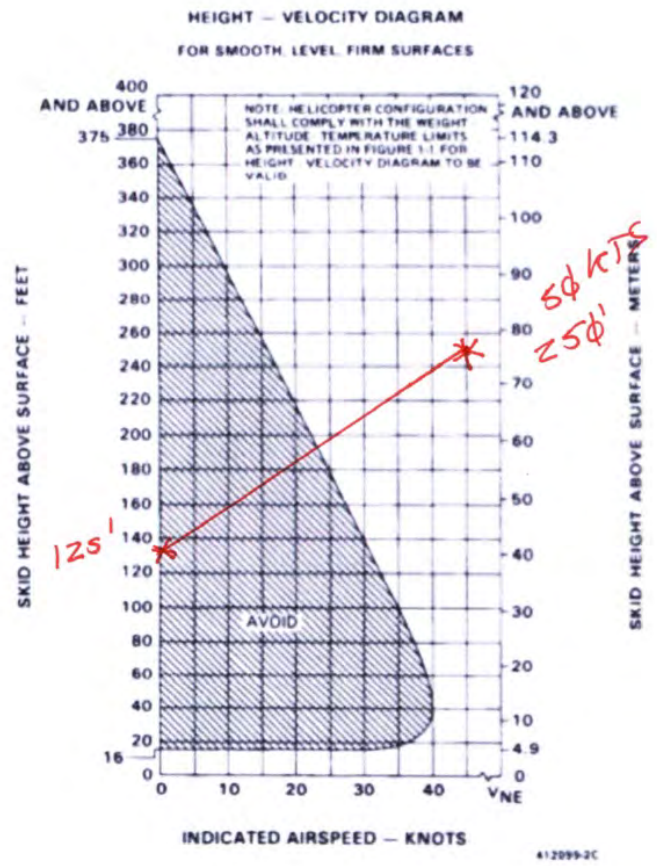


Figure 1-4. Height-velocity diagram (OEI)

Figure 4
Sikorsky S-76 Height Velocity Diagram

LIMITING HEIGHTS AND CORRESPONDING SPEEDS FOR SAFE LANDING AFTER AN ENGINE SUDDENLY BECOMES INOPERATIVE

THESE CURVES ARE APPLICABLE TO ALTITUDES AND TEMPERATURES AT THE CORRESPONDING MAXIMUM ALLOWABLE TAKEOFF GROSS WEIGHT AS DETERMINED FOR CAREGORY A OR B. THE HIGH POINT IS BASED ON MAXIMUM OGE HOVER WEIGHT.

INFORMATION ON TEST CONDITIONS:
1. HARD SURFACE RUNWAY
2. WINDS 5KTS OR LESS
3. STRAIGHT TAKEOFF AND CLIMBOUT PATH
4. GEAR DOWN AT ENTRY

NOTE:
AVOID FLIGHT WITHIN SHADED AREA EXCEPT AFTER INITIATING FLARE FOR A NORMAL LANDING.

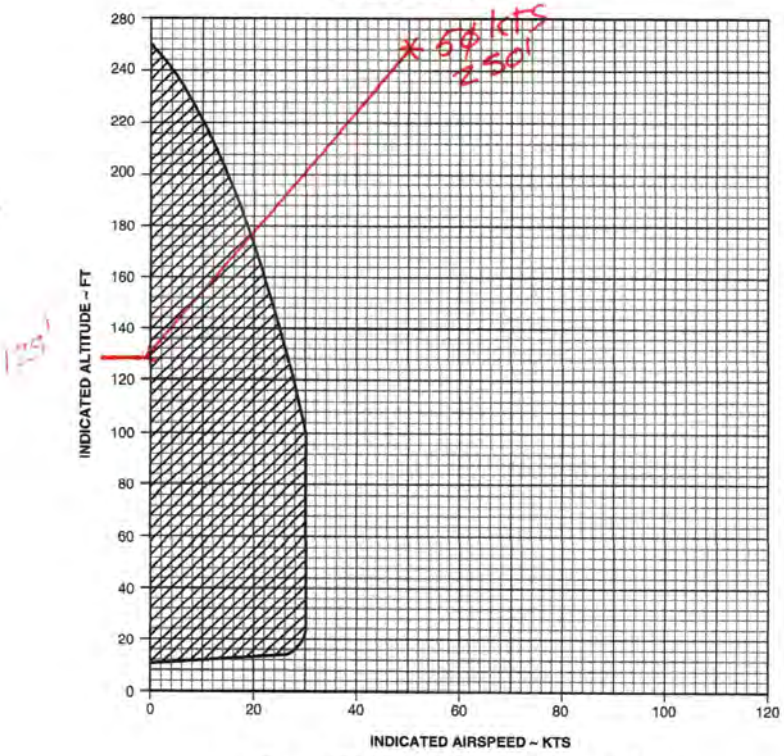


Figure 17B-32. S-76B Height/Velocity Chart

2.6 FEC Heliports Report

FEC Heliports provided a short, four-page commentary on the viability of the proposed rooftop heliport. A page and a half is devoted to platitudes such as no obstructions, less noise and greater security. It also answered other questions on downwash, air traffic above the heliport, never fly above another helicopter, etc.

The content of the report does not address the risk factors of flying in and out of the proposed heliport such as the 14 foot-tall, combined elevator shaft and stair tower at the north end of the structure and the other one at the southeast corner. The combined elevator shaft and stair tower at the north precludes a direct approach from that direction and requires the pilot to deviate around it during the final critical seconds of the approach. This occurs at a time when the helicopter is hovering out of ground effect and well into the portion of the flight envelope known as Dead Man's Curve.

An approach from the south or southeast will require deviation around the tower on the southeast corner, again, while the pilot is hovering out of ground effect. Nor does HEC Heliports mention that if the pilot deviates to the east, he will be flying directly over homes and apartments.

The FEC report says rooftop heliports are "significantly more quiet than ground-based designs." That's true only if the helicopter is parked on the pad either after landing or just before taking off.

Nor does the FEC Heliports document address the effect of temperature on helicopter operations. It does not discuss the effect of density altitude on helicopter performance as discussed in Section 2.4. Suffice it to say, not noting the effect high ambient temperatures that occur from May to the end of September in North Texas is a significant oversight. According to the National Weather Service, the DFW Area averages 20 days above 100^0 and another 106 over 90^0 every year. Combined, one third of the year DFW Area has temperatures above 90.

These high temperatures reduce the safety margins available to the pilots of EMS helicopters. The data shows that to land on a rooftop heliport is *more dangerous* and requires *more power* than touching a heliport on the ground. See Sections 2.1 through 2.5 of this report as to why.

The conclusion reached after reading it was that the FEC Heliports report *did not* address the fundamental design issues of Medical Center of Plano's proposed heliport.

2.7 Use of the term "emergency"

Currently the City of Plano allows EMS operators to land at Medical City's heliport with the understanding that they are landing for "emergencies" only. This confuses the definition of word "emergency" in Emergency Medical Services versus how the word is used in aviation. Pilots declare an "emergency" when they have a problem in an aircraft or a helicopter which affects the safe operation of the flight and forces them to land immediately or as soon as practical.

In EMS operations, the helicopter transports a patient with life threatening conditions to a hospital. The "emergency" refers to the need to bring the patient to a hospital as quickly as possible. It has nothing to do with the material condition of the helicopter which affect the safety of the flight.

The following is the text in taken from the Federal Aviation Administration's document H-8083-3C Appendix A defines an emergency:

> *An emergency can be either a distress or urgency condition as defined in the pilot/controller glossary. Distress is defined as a condition of being threatened by serious and/or imminent danger and requiring immediate assistance. Urgency is defined as a condition of being concerned about safety and requiring timely but not immediate assistance; a potential distress condition.*
>
> *Pilots do not hesitate to declare an emergency when faced with distress conditions, such as fire, mechanical failure, or structural damage. However, some are reluctant to report an urgency condition when encountering situations that may not be immediately perilous but are potentially catastrophic. An aircraft is in an urgency condition the moment that the pilot becomes doubtful about position, fuel endurance, weather, or any other condition that could adversely affect flight safety. The time for a pilot to request assistance is when an urgent situation may, or has just occurred, not after it has developed into a distress situation.*

> *The pilot in command (PIC) is responsible for crew, passengers, and operation of the aircraft at all times. Title 14 of the Code of Federal Regulations (14 CFR) part 91, § 91.3 allows deviations from regulations during emergencies that allow the PIC to make the best decision to ensure safety of all personnel during these contingencies. Also, by declaring an emergency during flight, that aircraft becomes a priority to land safely. Pilots who become apprehensive for their safety for any reason should request assistance immediately. Assistance is available in the form of radio, radar, direction finding (DF) stations, and other aircraft.*

Three points need to be made about helicopter in-flight emergencies. First, when a pilot declares and emergency and safely lands the helicopter whether it is in a field, parking lot, heliport or airport, there is usually an inspection and/or corrective action taken to ensure the helicopter is airworthy. In other words, the helicopter pilot ***doesn't*** declare an emergency, land, discharge its passengers and depart.

Second, unless the pilot of the EMS helicopter declares an actual in-flight emergency, the City of Plano should discontinue using this word to justify its actions. It is both in accurate does not reflect the actual operations at the Medical City heliport.

Third, the frequency of the EMS arrivals and departures are estimated at 30 per month by the management of Aspen Court Apartments. This suggests that helicopter take-offs and landings are commonplace, even routine at the Medical City of Plano heliport and are *not* emergencies.

3.0 City of Plano Ordnance on Heliports

The City of Plano Ordnance 84-2-20 governs the design and operation of heliports within the city limits. Section VIII requires that the designer and operator of a heliport shall construct them in compliance with the Federal Aviation Requirements.

Section XII of the ordnance states “All helicopters shall maintain approach and departure paths affording the least public nuisance and shall be as specified in the Department of Transportation Federal Aviation Administration Circular, and when feasible, away from residential or heavily populated areas.”

The Medical Center of Plano is located adjacent to an apartment complex (Aspen Court Apartments) to the east, a development of homes, (Amelia Court) and condominiums (Park Bluff) to the northeast and across Coit Road to the west from Fairway and Fairview Apartments. The hospital has buildings housing doctor’s offices and other business nearby.

The current FAA circular on heliport design and operations is Advisory Circular AC150/5390-3D in 2021. Drawings and information from this document were used during the evaluation of the proposed Medical Center of Plano heliport.

In the FAA circular, the agency recommends that the approach path to the helipad is free and clear of obstacles on 10^0 on either side of the approach centerline out to 2,000 feet from the touchdown point. The towers at either end of the roof are well within the approach pat. The FAA also recommends a safe zone of 100 feet on either side of the centerline of the approach path to the heliport. Again, the heliport does not meet this recommendation.

Figure 5 was taken from the FAA Advisory Circular AC 150/5390-2D and shows the clearance recommended by the agency. For a heliport 125 feet in the air, the proposed heliport meets the clearances if approaching from the east or west. However, due to the width and height of the combined elevator shaft and stairwell towers, the heliport as proposed *does not* meet the FAA’s requirements.

As noted in Section 5.1, the FAA recommends no obstacles on either side of the centerline. These combined stair wells and elevator shafts are within what the FAA denotes as the safety zone and do not allow a straight in approach. The FAA acronym FATO is short for “final approach to a hover.”

Figure 5
FAA Recommended Glide Paths

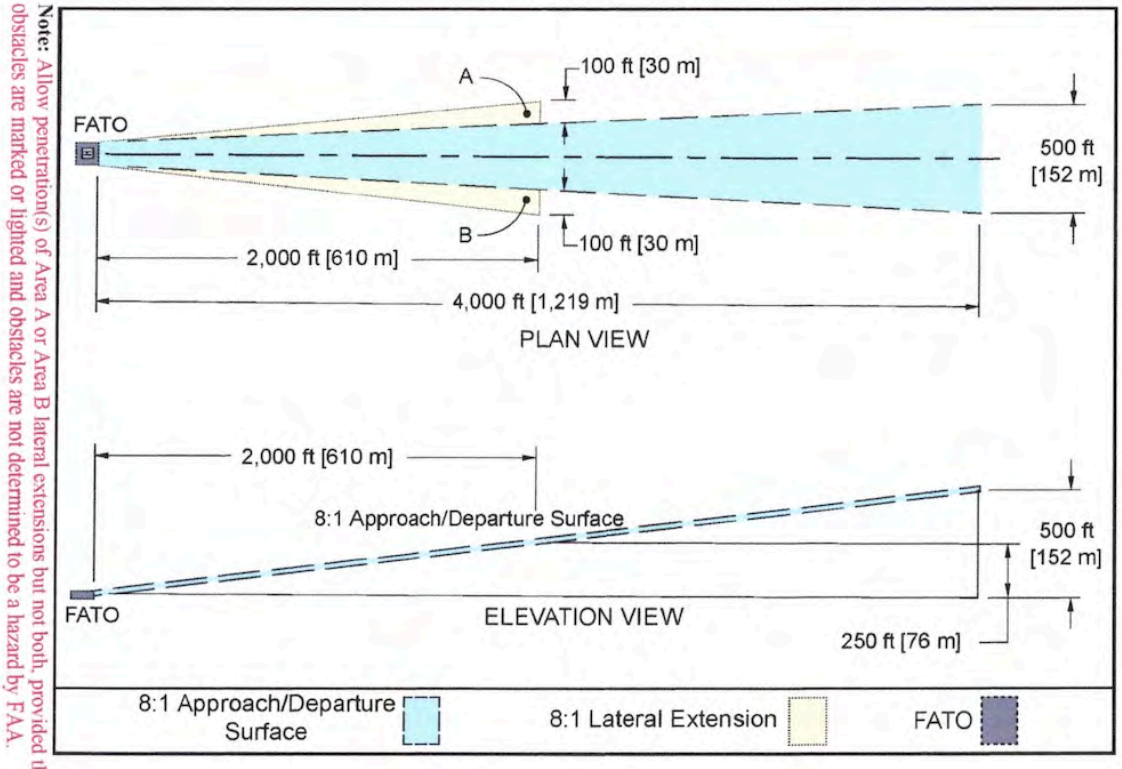


Figure 2-15. VFR Heliport Lateral Extension of the 8:1 Approach / Departure Surface

Note: Allow penetration(s) of Area A or Area B lateral extensions but not both, provided that obstacles are marked or lighted and obstacles are not determined to be a hazard by FAA.

4.0 Noise

Helicopters make noise, lots of it. The sounds come primarily from three sources – the turbine engines, the rotor blades, and the tail rotor. To achieve maximum performance, the tips of the rotor blades are close to but not supersonic. A helicopter flying above 70 knots will make less noise than one is in a hover.

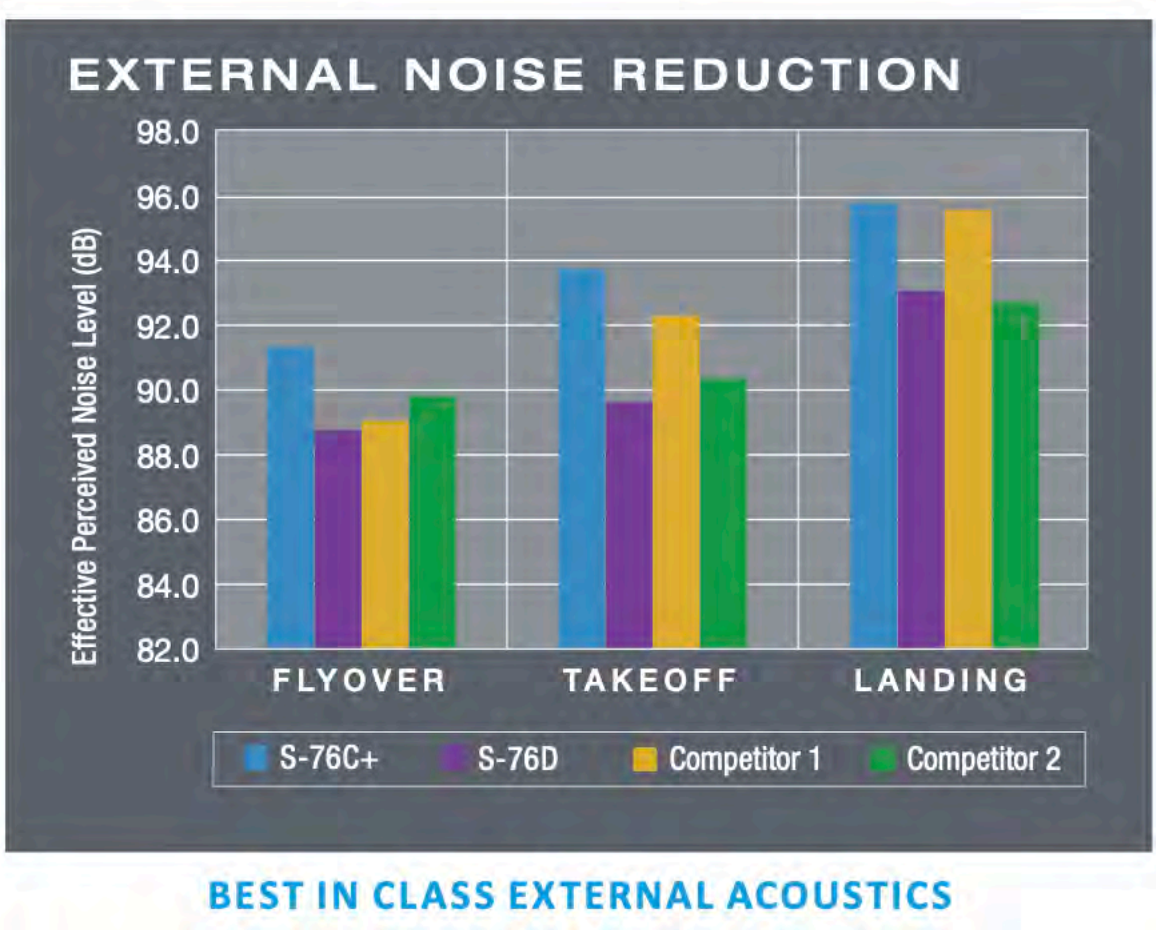
When approaching a rooftop heliport, most pilots slow the helicopter to a 5 – 10 knot “creep” before it passes over the edge of the building. This facilitates the entry into a hover and landing.

Until the entire rotor disk is over the building, the helicopter is hovering out of ground effect and since it is below 24 knots, has lost the benefits of translational lift. For this portion of the flight, the pilot must increase power in order stop the rate of descent and compensate for the added power needed from the loss of translational lift. At this point in the flight, the helicopter will either be at or near maximum power and making the most noise.

4.1 Noise measurements

According to a Sikorsky brochure on the EMS (Emergency Medical Services) version of the S-76D dated February 2016, the S-76 generates about 95 dB of noise during an approach. (*Figure 6*) Sikorsky does not provide any additional noise data such as what the power setting, weight of the helicopter, or where the measurements were taken, the atmospherics at the time or the distance the microphone was from the helicopter. All these factors affect the noise one hears and is recorded.

Figure 6
Noise Data from Sikorsky S-76D Helicopter



Noise dissipates with distance. In other words, the closer to the noise source, the louder it will be. However, noise can be amplified by walls or the side of a building.

Another study by the International Coordinating Council for the Aerospace Industries Association measured the noise of an approaching S-76D at 98.6 dB. A Bell Aerospace/Augusta Aerospace study comparing the noise of an S-76C+ to another Sikorsky helicopter show that the noise level of an approach S-76 to be 97.0 dB as the helicopter slows below 50 knots.

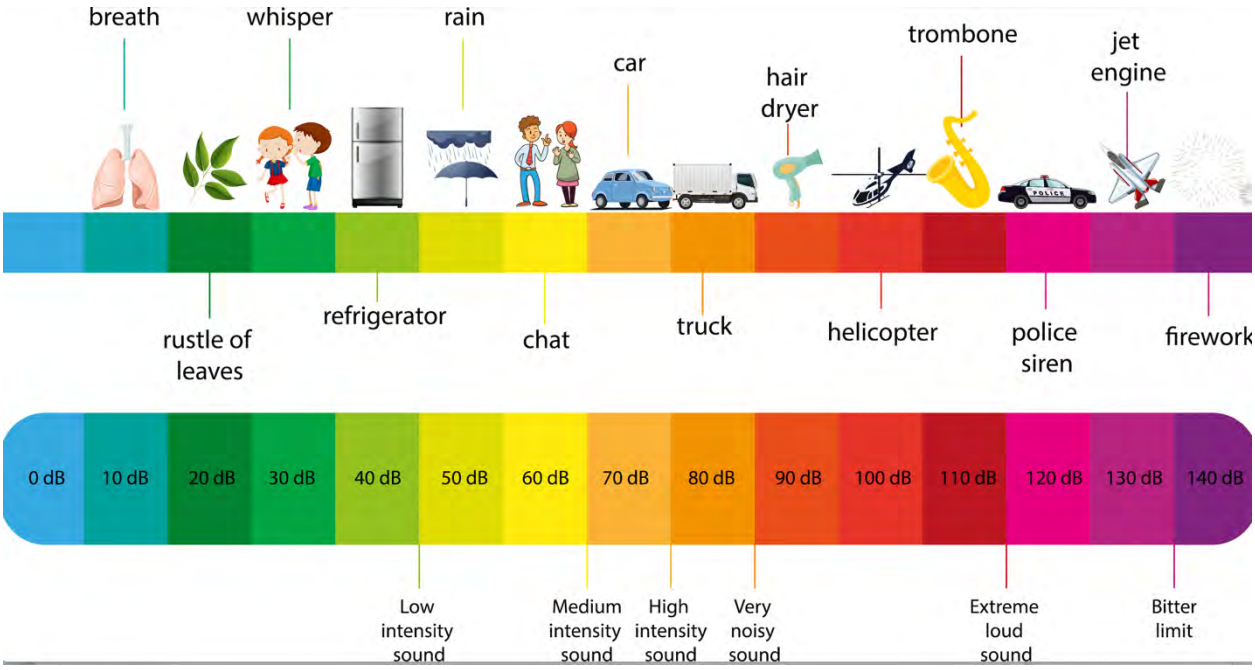
The reality is that in real world operations which is what those living around Medical City will experience, the noise levels will be louder than the test data. How much louder, is unknown, but anyone who has worked

around a helicopter knows that unless one is wearing hearing protection, the noise level is painful once one is within 50 – 75 feet of the helicopter.

An analogous example are the EPA mileage ratings for cars. They are calculated based on a standardized and carefully regulated test. The reality is that few if any drivers every achieve the EPA mileage. To a buyer of a car, it is a data point in the evaluation of a vehicle he or she intends to buy.

Figure 7 depicts noise levels of everyday sounds helps understand the relative noise levels. Note this chart shows the helicopter to be 100dB!

Figure 7
Relative Noise Levels



4.2 City of Plano Noise Ordnance

The City of Plano Ordnance 2021-12-6 states in Table 1 Section 14-87 that daytime noise for residential areas should be 65 dB or 10 dB above the background noise level whichever is lower. At night which the city defines 10:01 p.m. to 6:59 a.m., the noise level requirements drop to 55dB. In the ordnance, there are no exclusions for helicopter operations. The table in the ordnance is *Figure 8*.

Figure 8
Noise Level Table from City of Plano Ordnance 2021-12-8

Table 1: Maximum Specific Noise Levels		
Noise Receiving District	**Timeframe Day 7:00 AM to 10:PM**	**Timeframe Night 10:01 PM to 6:59 AM**
Residential	65 dB or 10 dB above the background noise level whichever is lower	55 dB or 5 dB above the background noise level whichever is lower
Commercial/Mixed Use	70 dB or 10 dB above the background noise level whichever is lower	60 dB or 5 dB above the background noise level whichever is lower
Industrial	75 dB or 10 dB above the background noise level whichever is lower	65 dB or 5 dB above the background noise level whichever is lower
• If the background noise level exceeds the maximum permitted noise level indicate above, the background noise level shall be the maximum noise level • 5 dB shall be subtracted from the maximum Noise Level when the Noise Level includes impulsive noise. • The most restrictive maximum Noise Level shall apply at the property where the noise is audible • Noise may be measured where the noise is audible or where the alleged nuisance is received. Measurement location may be adjusted where line-of-site or elevation may pose a challenge in determining whether a nuisance exists.		

4.3 Helicopter noise footprint over Aspen Court Apartments

Figure 9 shows the flight paths from the north, east and southeast as well as the noise sources.

Figure 9

Noise Sources and Flight Paths

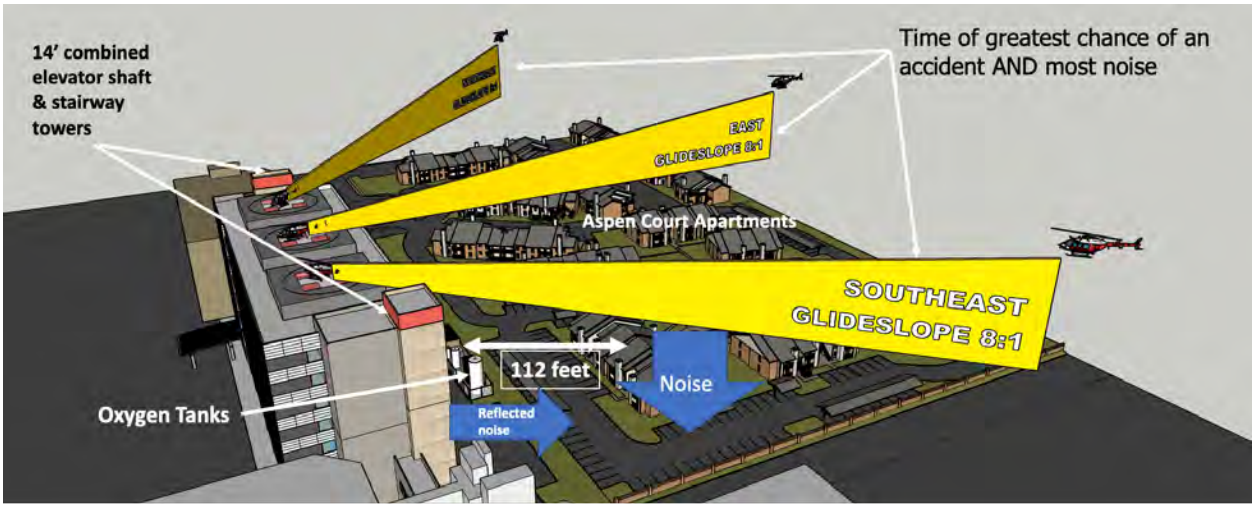
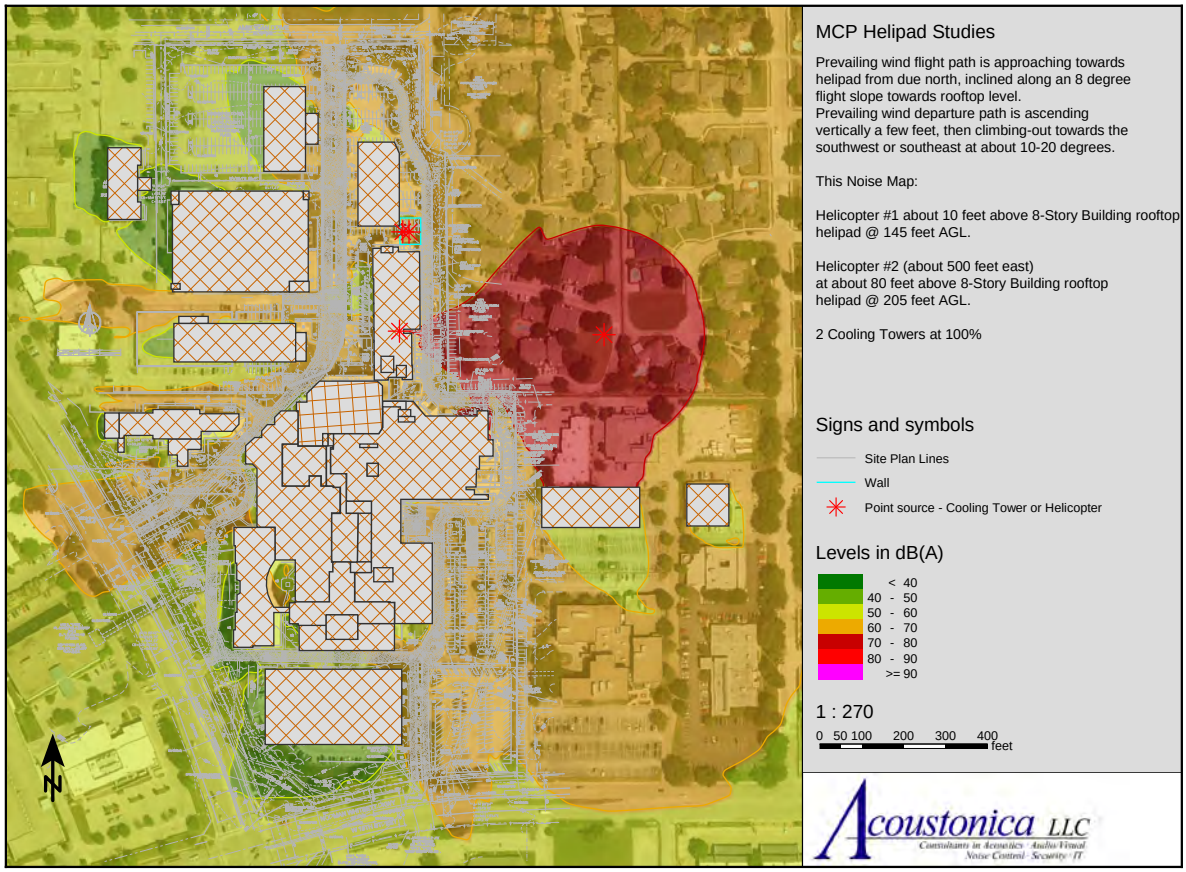


Figure 10 shows the noise footprint and noise levels of a helicopter approaching the heliport from the east and descending from 205 feet above the ground. When it does this, residents of Aspen Court Apartments, Park Bluff and Amelia Court will be subjected to noise levels of between 80 and 90 dB. This is *15 -25 dB above* and significantly higher than the City of Plano ordinance limits of 65 dB during the day. If the flight nighttime is at night, it is *25 – 35 dB higher* than allowed by the City of Plano's ordnance.

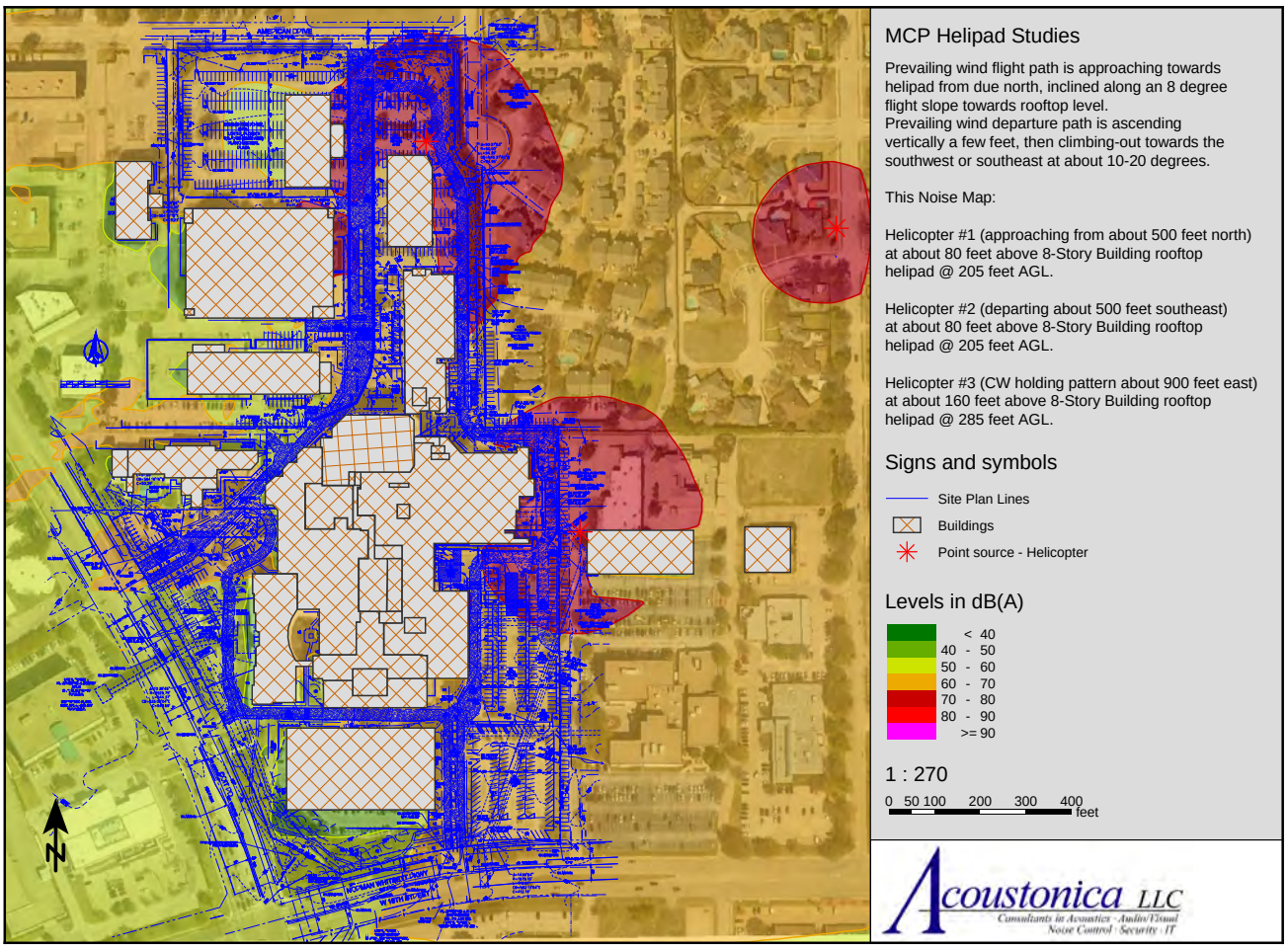
Figure 10
Noise Footprints Approaching from the East



A helicopter approaching from the north or taking off to the south or east has a similar footprint that one approaching from the east. In addition, due to the proposed combined elevator shaft and stairway tower on the building, the helicopter descending from the north will have to deviate either to the east or west to fly around the combined elevator shaft and stairwell.

Figure 11 shows the noise footprint and the potential flight paths Again, the residents on the east side of the heliport will be subject to noise levels that far exceed the City of Plano ordnance. The circle to the east (right on the chart) shows the noise footprint if the helicopter is orbiting at 285 feet above the ground.

Figure 11
Noise Footprint of a Helicopter Approaching from the North and Departing to the East or Southeast



These charts and the noise data supports conclusion is that any approach from the north, south or east will subject the residents of Aspen Court Apartments, Park Bluff Condominiums, and the homes in Amelia Court to unacceptably loud noise from approaching and departing helicopters.

5.0 Heliport Location Factors that Affect Safety

This section deals with two significant flight safety issues that increase the chance of an accident at or near the proposed heliport.

5.1 Obstacles on the heliport

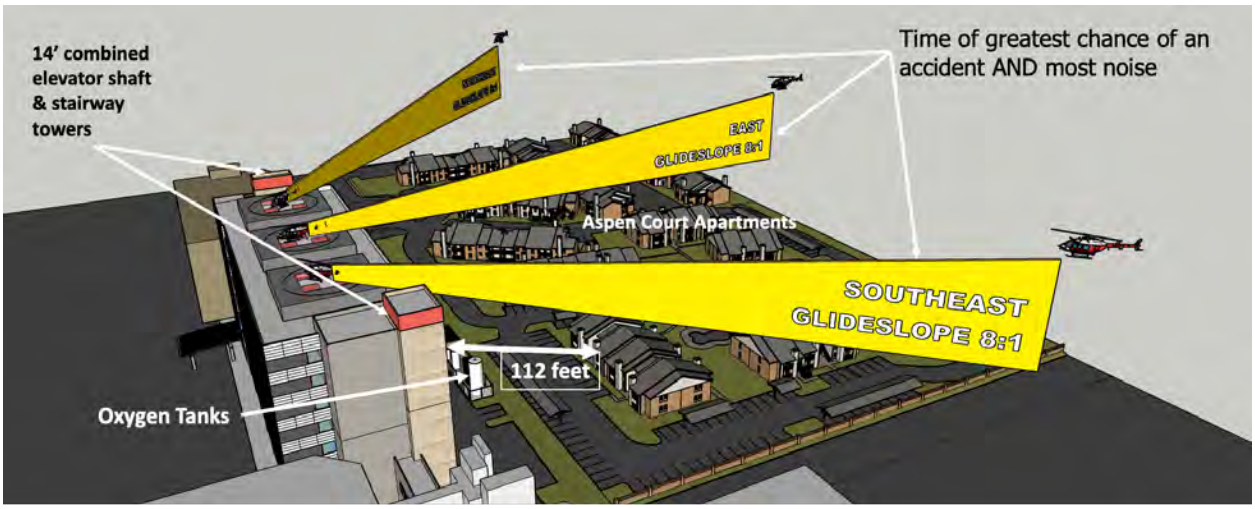
The proposed heliport design has a feature that does not meet FAA requirements outlined in its Advisory Circular FAA AC 150/5230-2D. The FAA recommends that the center line of the approach to the helipad be clear of obstacles plus or minus 10^0 on either side of the centerline.

As designed, the structure will have a combined elevator shaft and stairway opening at the north end and another one in the southeast corner. When approaching from the north with a south, southeast, or southwest wind, for the helicopter to land on any of the pads, it will have fly around the towers. If it is approaching from the south, there is a tower in the southeast corner of the pads that provide an obstruction.

Figure 12 is an architectural rendering of the elevator towers and shows the proximity of the proposed building to Aspen Court Apartments and the flight paths of helicopters approaching from the northeast, east and southeast. In the architectural rendering, the two 14-foot tall, combined elevator shaft and stairway are clearly visible and the reader can see the hazard they present to approaching helicopters.

The prevailing winds in the DFW Metroplex are from the north, northwest, south and southeast. Helicopters can approach a heliport in crosswind, or even downwind and then, when in a hover over the heliport turn into the wind and land. What is the best and safest method is to approach the heliport into the wind. This enables the helicopter to minimize the power required during the last few seconds of the flight and take maximum advantage of translational lift and then the ground cushion.

Figure 12
Heliport Obstacles and Aspen Court Apartments



Heliports mounted on top of a building present a challenge that requires the helicopter spend about a minute (or more) in the area known as Dead Man's Curve. The chances of an accident increase the longer the helicopter is in this flight regime and if there is an inflight emergency caused by a:

- Problem with the engine or engines that reduces available power;
- Failure in the flight control system that affects the pilot's ability to fly the helicopter;
- Change of wind direction; or
- An increase in the turbulence increase caused by the wind flowing around either the building on which the heliport is located or the flue effect of wind passing through nearby buildings.

While not in the flight path of an approaching helicopter, there are oxygen tanks on the road directly below the heliport. Besides being an eyesore to the residents of Aspen Court, they also pose a safety risk. A leak or an accident with a vehicle could cause a major fire. These tanks should be moved.

5.2 Stages in a helicopter approach to an elevated heliport

Stage one is forward flight. As the helicopter descends the pilot is slowing the helicopter from its cruising speed to 50 knots. Normally, by the time the helicopter is at 50 knots, it is within a quarter mile of the heliport

and about 200 – 250 feet above the elevation of the heliport. Since the proposed heliport is 125 feet above the ground, the helicopter at the end of this phase will be 325 – 375 feet above the ground.

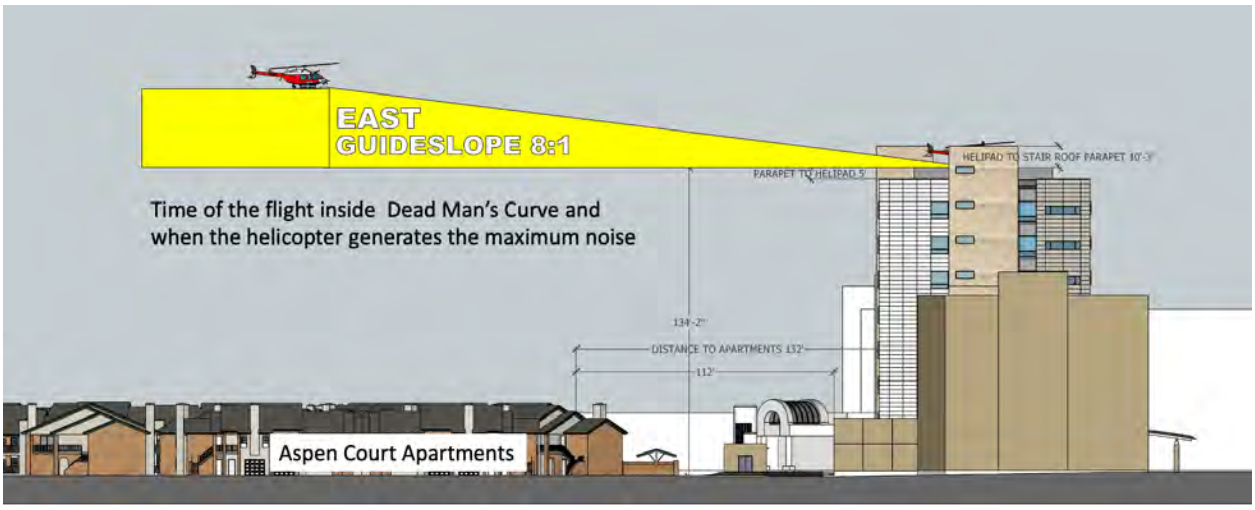
The second stage is slowing from 50 knots to less 10 knots as it descends to a safe altitude to cross over the top of the building. In this part of the flight, the helicopter is hovering out of ground effect even though it is not stationary of the ground. This is also the part of the flight where the pilot is using the most power and where the most noise is generated.

In this portion of the flight which lasts about 30 to 40 seconds, maybe longer, if there is a problem, the pilot has only one choice, reduce power and try to turn away from the building. Given that the pilot is well within the Dead Man's Curve portion of the flight envelop, this is the most dangerous portion of the flight and when the chance of an accident is very high. See sections 2.5 and 5.2.

The third phase is passing from over the ground 125 feet below to the heliport and slowing to zero airspeed above the heliport and landing. Here the pilot makes two transitions. One occurs as it passes over the edge of the building and its flight regime changes from hovering out of ground effect to flying over the ground cushion as the pilot flies the helicopter to the center of the landing pad and land.

Figure 13 shows the flight path of a helicopter approaching the proposed helipads from the east. Note that for the third phase of the flight, it will be flying low over Aspen Court Apartments as it transitions from forward flight to a hover. This is the portion of the mission when it will be hovering out of ground effect and at high power settings so it will be making the most noise.

Figure 13
Flight Path Approaching from the East



5.3 Approach options for the proposed heliport

The direction the helicopter approaches the proposed heliport is important. To operate safely, it should be dictated by the wind direction and velocity.

A landing approach from due north is the safest because the last quarter mile is over an open field and a parking lot. This assumes there are no obstacles on the roof that will cause the helicopter to deviate to the east (left) or right (west).

Flying in from the south, the helicopter will fly over existing office buildings with the same potential for an accident.

Coming in from the west, the helicopter will cross over the Fairway and Fairview Apartments to the west of Coit Road before passing over the existing buildings of Medical City Plano.

If Medical City Plano builds additional buildings around the proposed structure which will have the heliport, it may create turbulence and flue effects that will vary with wind velocity and direction. These may make landings on the proposed structure more dangerous.

Given the proposed design, none of the directions offer acceptable options either from a flight safety or noise perspective. The hospital's best

option is to leave the heliport where it is and continue to provide a clear path in from the north.

6.0 Recommendations

The recommendation to the City of Plano is not to approve the placement of the heliport on top of the eight-story structure adjacent to Aspen Court Apartments, Park Bluff Condominiums and Amelia court for two reasons – noise and safety.

6.1 Noise issues

Placing the proposed heliport on top of an eight-story structure 84 feet from the property line and 112 feet from the apartment buildings will subject the residents of Aspen Court, Park Bluff, and Amelia Court to 105 dB of sound that is also being reflected by the proposed buildings which also increases the length and intensity of what they hear.

105 dB of sound is an unacceptable level 15 dB to 25 dB higher than the City of Plano's daytime limit of 65 dB and 25 dB – 35 dB higher than its nighttime maximum noise level of 55 dB which are set forth in the City of Plano Ordinance 2021-12-6 Section 14-87. Noise at 105 dB is in *clear violation* of City of Plano ordinance.

Approaches from the east will place the helicopter directly on top of the apartment and condo complexes and the homes during the portion of the flight when the most noise is generated. Helicopters coming from the north and south will also create a noise footprint that will be objectionable to the residents living in the above-mentioned neighbor hoods.

Only if the helicopter approaches from the west will the noise not affect Aspen, Park Bluff and Amelia Court. However, when the helicopter takes off into the wind to either the north or east, the noise levels will increase to unacceptable levels for those residents.

6.2 Safety issues

For the residents of the afore-mentioned areas, building the heliport on top of the eight-story structure presents an unacceptable risk to their safety. Any helicopter approaching the heliport will be flying within the part of the flight envelop called Dead Man's Curve. An approach from the east will have the helicopter fly over a residential area while it is hovering out of ground effect as it transitions from forward flight to a "creep." If, during this part of the flight, the helicopter has a mechanical problem or there is a wind shift or added turbulence, a crash is almost inevitable.

Hot days are common in Plano from late May until the end of September. On average on a normal year, according to the *Dallas News,* there are 20 days above 100 and 106 above 90^0. In these conditions, the effect of density altitude reduces available power margins and lift from the rotor blades by 3.5% for each thousand feet. At 90^0 Fahrenheit, the density altitude for Plano is right around 2,800 feet which reduces power and lift by 9.8% and at 100^0 Fahrenheit, the helicopter flying around Plano performs as if it is at 3,200 feet and has lost 11.2% of its lift and power. At 110, at 110^0, the helicopter has lost 14% of its lift and power.

While these percentages don't seem like a lot, they are and with many helicopters, density altitude significantly reduces the safety margin available to pilots of EMS helicopters. In fact, some helicopters will not be able to hover when the density altitudes rise above 4,000 feet.

6.3 Recommendation

Therefore, due to noise generated for those who live close by the proposed structure and safety considerations, the author strongly recommends that the City of Plano *NOT* approve the current design.

7.0 References

What follows is a partial list of the publicly available sources used in this report.

1. *Helicopter Noise Reduction Study Status Report*, dated 21 April 2015 conducted by ICCAIA with the support of Snecma, Airbus Helicopters, Sikorsky Aircraft, Bell Helicopter, AgustaWestland, Turbomeca, Marenco Swisshelicopter and Research Centers: NASA, DLR, ONERA, JAXA
2. Augusta/Bell Noise Study on the S-76 and S-92
3. Sikorsky S-76D EMS brochure
4. FAA AC 150/5230-2D
5. Flight Safety S-76 Pilot Training Manual
6. City of Plano Ordinance No. 84-2-20 dated February 27th, 1984
7. City of Plano Ordinance No. 2021-12-6 dated December 13th, 2021
8. AVWeb info on density altitude - https://www.avweb.com/flight-safety/flight-planning/density-altitude-and-you/
9. Info on the number of days above 90^0 and 100^0, www.dallasnews.com
10. Info on prevailing winds in DFW area - https://weatherspark.com/y/145920/Average-Weather-at-Dallas-Fort-Worth-International-Airport-Texas-United-States-Year-Round

10.0 Aviation Qualifications of Marc Liebman

Marc Liebman has extensive helicopter flying experience. He has flown combat search and rescue missions. He has flown the helicopter that plucked families off rooftops; lifted injured hikers from the ledges of mountain cliffs; hoisted sailors from their sinking boats and many more life-saving missions. He has also landed and taken off from the pitching and rolling decks of destroyers and frigates where the clearance between the tips of his helicopter's rotor blades and the superstructure of a ship was less than three feet.

He is a retired Navy Captain and Naval aviator with approximately 3,000 hours of pilot in command flying helicopters and another 3,000 hours in fixed wing aircraft. Mr. Liebman flew combat search and rescue missions and other helicopter missions during the Vietnam War and Desert Shield and Storm.

Mr. Liebman holds an FAA Commercial Pilot License with ratings in airplane single and multi-engine land, rotorcraft, and helicopter. His license also includes an instrument rating in airplanes and helicopters and has a type rating in the Sikorsky S-61 helicopter.

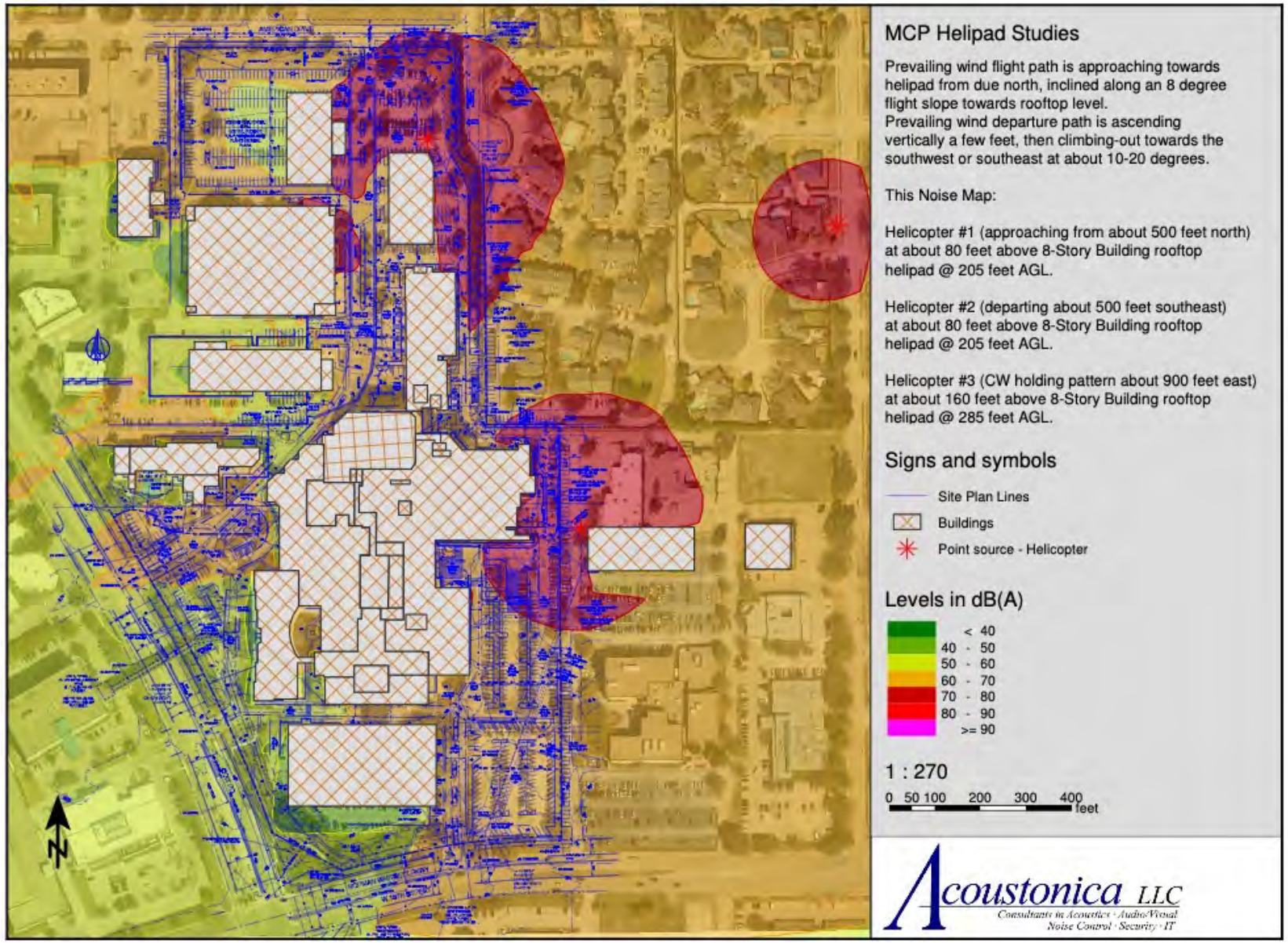
Marc is an award-winning author of 11 novels, nine of which are about helicopter pilots and an aviation historian. He is a former resident of Plano currently resident of Savannah, Texas in Denton County.

Marc Liebman has extensive experience flying helicopters

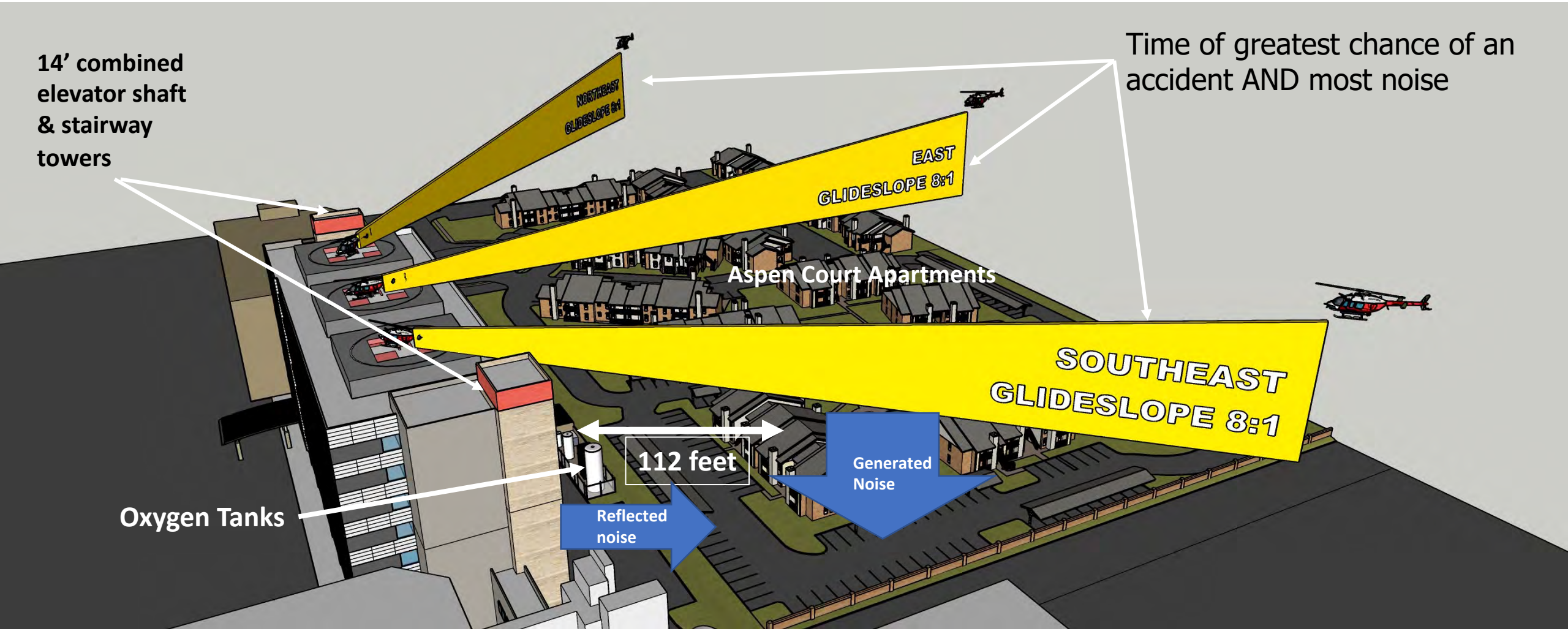
- 3,000+ hours flying helicopters
- 3,000+ flying fixed wing aircraft from general aviation airplanes to corporate jets
- Navy flight experience includes logistics missions to rooftop heliports, offshore platforms as well as combat search and rescue, search and rescue, rescues from roof tops, cliff ledges, mountains, overturned and sinking boats, pitching and rolling decks of small ships
- FAA Commercial Pilot License. Rated in airplane single and multi-engine land, rotorcraft, and helicopter with instrument rating for airplanes and helicopters. Type rated in the Sikorsky S-61 helicopter.
- Retired Navy Captain and Naval Aviator, aviation historian and award-winning author

Helicopters approaching from the north or east into the prevailing winds will generate noise levels well above the limits set in the City of Plano

- High power settings during final minute of the approach generates the most noise
- Noise levels of 80 – 90 dB are well above City of Plano daytime limits of 65 dB and nighttime limit of 55 dB



Any helicopter approaching the heliport will flying inside Dead Man's Curve for at least the last minute of its flight which increases the risk of an accident



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August 6, 2022

Ms. Donna Falletta, Senior Planner
City of Plano - Planning and Zoning Department
520 K Avenue, 2nd Floor, Suite 250
Plano, Texas 75074

Project: Aspen Court Apartments Helicopter Noise

Subject: Helipad Relocation Study – Zoning Exhibits and Explanations
Page 1 'Increased Noise

Ms. Falletta,

I am responding on behalf of Don Elster, owner of the Aspen Court Apartments. I have read the response from Medical City Plano regarding their Planning & Zoning Submission #4 "Increased Noise of the helicopter flights", and my comments are as follow:

Original comment by Medical City Plano:

"A **Helicopter Noise Analysis** [references BAi Report of December 6, 2021] was conducted to model the noise generated with the helipads relocated. It was found that the sound level only increased from 94 dB to 95 dB, which would not be, or barely be, perceptible (a change of 3 dB is just noticeable, 6 dB is clearly noticeable). It also concluded that the duration of the noise itself would be less, because the helicopter would not need to hover all the way to the ground, instead landing at ~120 feet. The simulation did not include shielding that would be gained from the rooftop of Tower C, which would further improve sound."

Response:

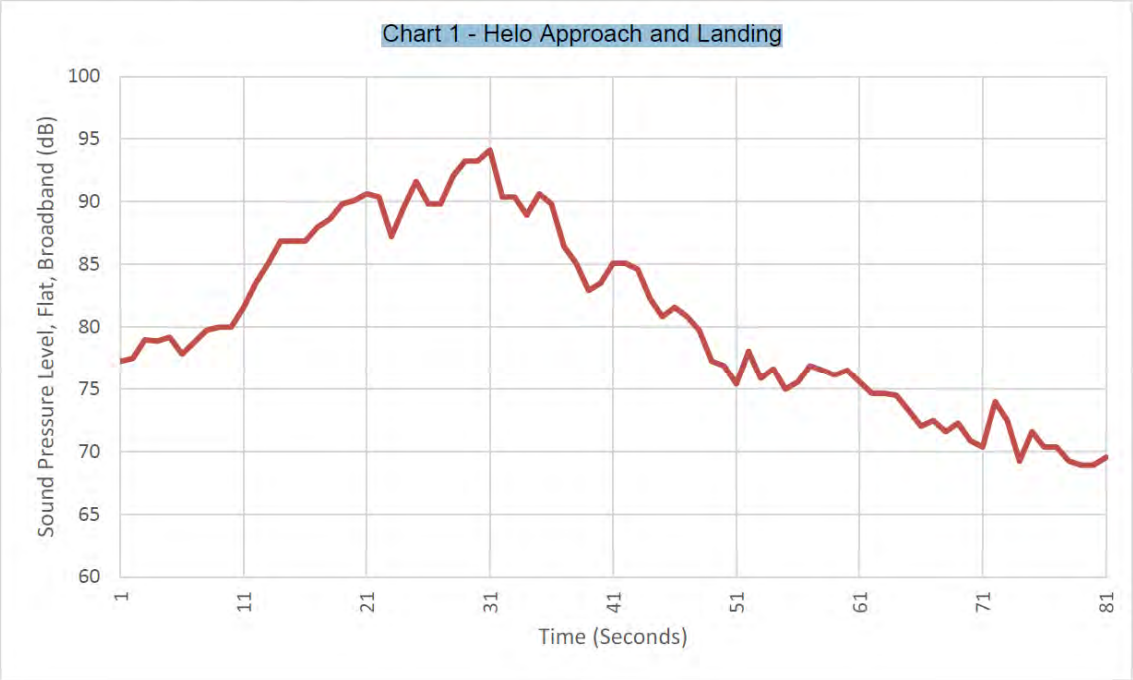
1. "It was found that the sound level only increased from 94 dB to 95 dB" This is not the conclusion of the report. The report only compared the sound levels of an approaching helicopter BEFORE it was masked by the existing four (4) story building. The bulk of the flight approach where the helicopter comes into ground effect and hovers before descending to the existing helipad is currently not substantially audible in the apartments because there is a four (4) story building between the helicopter and the apartment buildings. It should be noted that the subsequent departure of a helicopter from the current helipad location is routed towards the southwest to avoid the main existing hospital building, so the Aspen Court Apartments are again shielded by the buildings between the helicopters and the apartments.

   It is also important to note that the expected sound levels of "94 dB to 95 dB" are REALLY LOUD. This is equivalent of someone shouting in your ear from just twelve inches away for several minutes at a time. The ambient sound level in the urban residential neighborhood are in the range of 50-60dB. This is 35-45 dB ABOVE the ambient noise level in the community. This can happen at any time – day or night – 365 day of the year.

2. "It also concluded that the duration of the noise itself would be less, because the helicopter would not need to hover all the way to the ground, instead landing at ~120 feet." The conclusion that the duration of the noise would be less is nonsensical. The flight approach, hover, landing, and power-down times will be the same *or longer* (as will be the power-up, initial hover, and departure times). The flight operations times in the BAi report appear to be cherry-picked as well. We have observed several helicopter approach / departure events at the MCP facility that lasted substantially longer that the data presented in the report.

2. (continued) The BAi report showed a sound level graph of a helicopter approach and landing (Ref: Chart 1 - Helo Approach and Landing, Page 3 of the BAi Report). It shows an approach to last about 81 seconds. This is not realistic at all.

The following chart represents the broadband, unweighted, sound pressure level during the entire approach, landing, and rotor slowdown once on the ground.



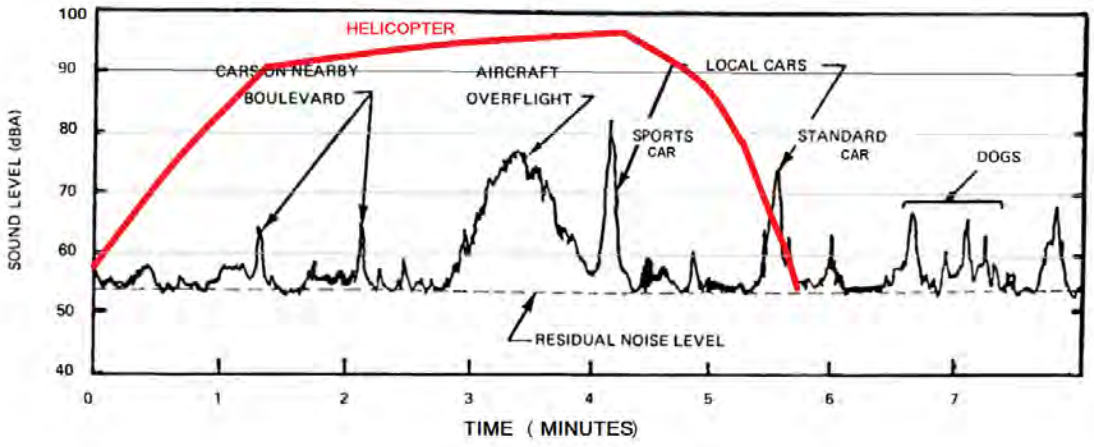
The maximum sound pressure level of 94 dB at 31 seconds occurs when the helicopter is on the approach path exactly perpendicular from the measurement location on the property line. The following chart shows the 1/3 Octave Band Frequency Sound Pressure Levels at the 94 dB maximum.

(Excerpted from the BAi report)

The decreasing sound level after the 31 second mark is disingenuous as the helicopter was going behind the existing 4 story Tower C and there was no line-of-sight sound exposure to the Aspen Court Apartments.

The following noise exposure graph is more representative of the sound levels and durations which the residents of Aspen Court Apartments will experience. Note that the red line occurs twice for each event – once upon approach,

and again upon departure. The warm-up period just prior to departure may extend from a few minutes to possibly ten minutes depending upon weather conditions and other preflight operations the pilot deems necessary.



The reason that the flight operations may be longer upon the 8 story building is due to several differences in operating conditions:

a. The existing flight path is in a narrow wind protected 'canyon' between buildings that only has a single viable approach and departure route that, coincidentally, does not go over the Aspen Court Apartments.

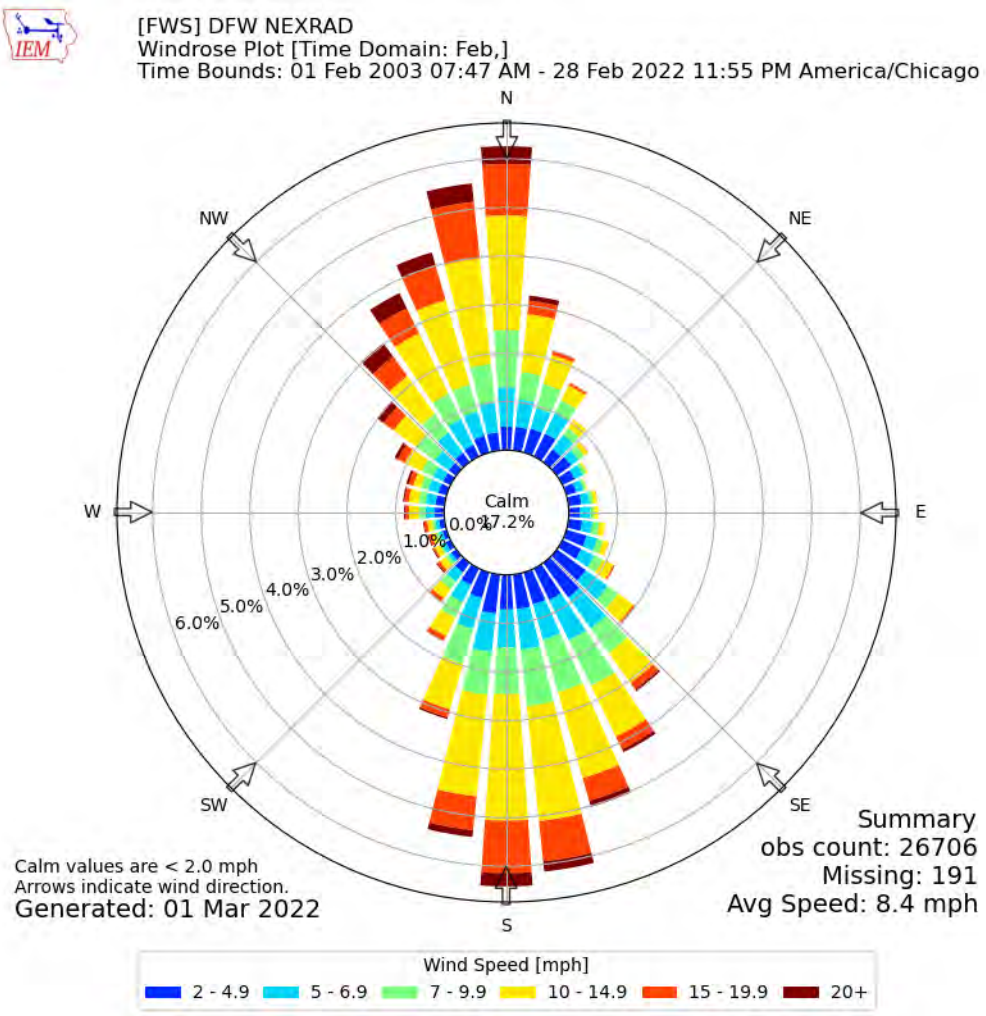
b. The proposed rooftop helipad locations have two approach and departure zones (one being an arc from the northwest to the southwest; and the other being and arc from the northeast to the southeast -- above Aspen Court Apartments). See attached Illustrative site plan with green shading. Due to the typically higher wind conditions in the unprotected airspace above the buildings, it may be necessary for the pilots to take addition maneuvering time to negotiate avoiding the elevator towers at each end of Tower C (Building #3), the 10 Story Parking Garage (Building #9), and, potentially, the elevator towers at the Rehab Expansion (Building #7).

Approaching helicopter pilots will have to align to the appropriate available helipad while correcting for wind speed and direction. It is imperative that the helicopter pilots have both of the elevator towers in their view before they descend below the vertical minimums dictated by the height of the elevator towers. Note that the prevailing wind directions in item c) (below) are perpendicular to the available approach and departure directions, so the helicopter pilots could be essentially 'flying sideways' to negotiate landings under adverse wind conditions.

Of particular concern is pilots having to clear the elevator towers safely, because if they elect to go **over** them they will have to fly much higher to clear the building structure before transitioning into a vertical flight path to/from the helipads, which in turn, will expose the Aspen Court Apartment residents to longer periods of high-power operation of the helicopters *without the benefit of the helipad parapet wall to shield any of the noise*.

c. Of significant concern is the flightpaths of the helicopters due to prevailing winds. As discussed in item a) (above), currently, the helicopters are constrained in their flight path options. Once unconstrained by the higher helipad locations, they are free to travel in directions optimal for flight safety, which is <u>into the wind</u> whenever possible. For wind conditions that are common in the area (from the north and south), this would place the pilots frequently approaching/departing from the northwest and southeast (over Aspen Court Apartments).

   Note that there are elevator towers directly in the flightpath both north and southeast of the helipads, so pilots will have to rise high enough to avoid them and/or divert around them. Either option exposes the Aspen Court Apartments to longer periods of helicopter noise.



Average wind data excerpted from: https://mesonet.agron.iastate.edu/sites/windrose.phtml?station=FWS&network=TX_ASOS

d. "The simulation did not include [acoustic] shielding that would be gained from the rooftop of Tower C, which would further improve sound." The sound shielding of the proposed helipad parapet is only *partially effective for the first few vertical feet of flight*, as the rotors and engines are positioned near the TOP of the helicopters, which is well above the elevation of the helipad parapet. As soon as the helicopters lift off -- they go **UP** before they rotate for the heading into the wind -- and then transition towards an inclined, yet still close-to-horizontal, flight path

until they gain lateral airspeed. The helicopters are operating under maximum power conditions during this phase of flight which generate maximum downward sound levels as the main rotor blades try to lift the dead weight of the aircraft and passengers. In the vicinity of the helipads the helicopters are *not* flying like an airplane with the 'rotating disc' acting like a wing – instead, they are just beating the air into submission as they gain altitude.

Similarly, the same is true for a helicopter in an approach path – the full power of the engines and rotor blade activity is exposed to the people below.

e. **Not** mentioned in the BAi report, *but quite obvious*, is that whenever helicopters are operating to the east of Tower C (Building #3), the sound from the helicopter(s) will not only come directly from the helicopter(s), but there also will be a substantial sound reflection from the face of each of the buildings that surround Aspen Court Apartments. This includes, but is not limited to:

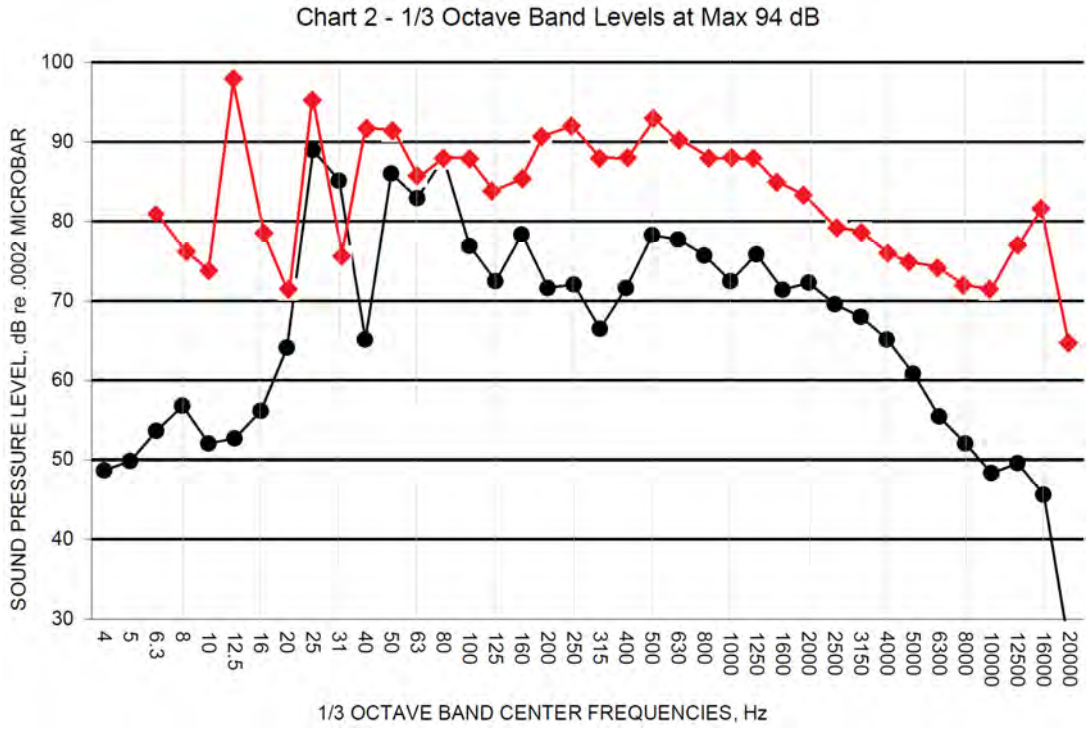
   i. Building #2 – Future MOB - 2 stories tall
   ii. Building #3 – Tower C – 8 stories tall
   iii. Building #4 – Medical Surgical Tower – 4 stories tall
   iv. Building #5 – Future MOB - 4 stories tall
   v. Building #9 – Future Parking Garage - 10 stories tall

   Each of these buildings have *additional* stair and elevator towers, too, which further increases the sound reflective surface areas facing the residents.

   The sound reflections from each building will arrive at a slightly different times, loudness, and timber due to their constructions and locations, which will create a cacophony of helicopter noise during each overflight. This further increases the residential disturbance as each reflection will sound like a different nearby helicopter. One helicopter will sound like five or six helicopters. Reference the attached **Sound Reflections** Illustrative

site plan and the perspective view looking at the sound reflecting building faces.

f. **Not** clearly discussed in the BAi report is the sound spectrum produced by a helicopter. (Ref: Chart 2 – Sound Spectrum, Page 4 of the BAi Report). It shows the broad spectrum without placing it in any context. Below is the BAi chart with field data we measured overlayed in red:



Although our field data differs slightly from what BAi measured, the most important things to note, are:

i. There are three main sources of sound emanating from a helicopter:
   - The Main Rotor blades that generate lift,
   - The Tail Rotor blades that provide directional control, and
   - The Power Plant -- typically Turbine Engines – one or two depending upon the helicopter design.

ii. The lowest frequencies where there is significant sound energy is from 4 Hz to 20 Hz. These are frequencies that are generally not audible to people, but instead, are **felt** by people. One can 'feel'

a helicopter from a very long distance away because the long sound waves bend around buildings and pass right through structures. These low frequency 'pulses' resonate one's body in a way that the entire nervous system is affected.

Closing windows and doors has little effect on how this energy enters a building, particularly a residential construction building that doesn't have thick concrete walls and ceilings.

The difference in sound levels measured is likely due to the location of the microphone relative to the helicopter

iii. The middle frequencies from 20 Hz to 200 Hz are the 'Thup-Thup-Thup' associated with the passing of the main rotor blades. This is generally the loudest part of the helicopter noise.

iv. The upper frequencies 200 Hz to 2,000 Hz is produced by all three parts of the helicopter and vary with the relative speeds of rotation of the components.

v. The very high frequencies 2,000 Hz to 20,000 Hz are generally the 'whine' of the turbine engines. This sound can be quite shrill as the turbine blades spin very fast.

In the high-powered approach and departure phases of flight, the downward sound emissions are concentrated and are very loud. Refer to the sound level simulation plot attached to see how a single helicopter intrudes upon the people below the overflight.

- Note the build-up of sound in front of the buildings is dues to sound reflecting from the building faces.

- Also note the light green areas on the sides of the buildings opposite the helicopter – this demonstrates how the building shields the area from the helicopter noise.

Make no mistake, helicopters produce a lot of acoustic energy, and the sound can be very disruptive to sleep, communications, concentration, and the general enjoyment of life. The nature of the sounds is such that it is impractical to re-construct residential housing sufficiently robust enough to keep the sound from entering the residences, and even if you could, this would only provide relief to those that kept their windows and doors closed and sealed 365 days of the year. Relief from the unwanted noise when outdoors would not be provided via construction changes.

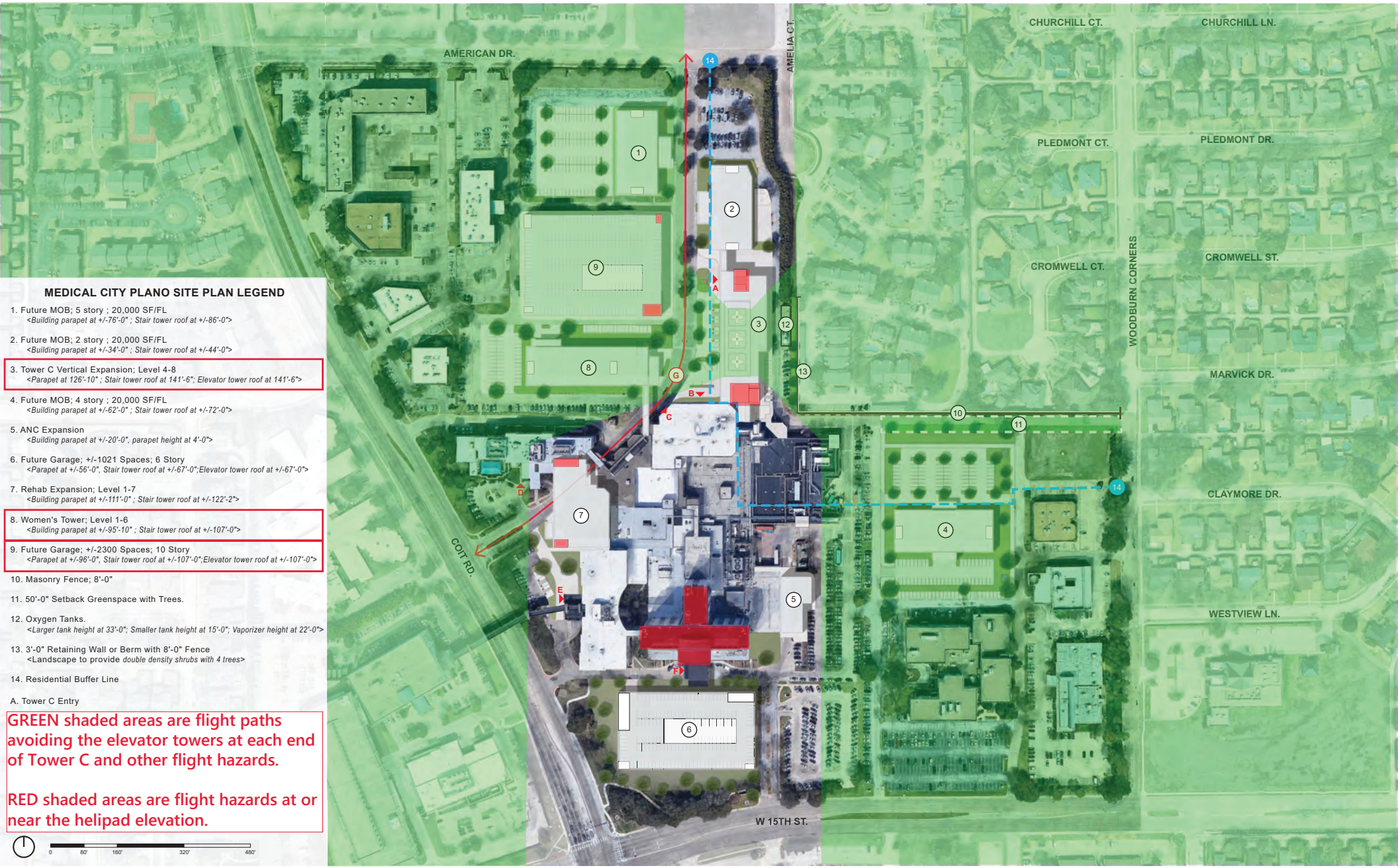
Summary:

The BAi report has been presented by Medical City Plano with incorrect and misleading conclusions about the noise intrusion that is likely to be caused by the placement of the helipads on top of the 8 story expansion of Tower C.

Relocating the helipads and helicopter operations to another site further away from the residential properties and where interstitial buildings can further shield the residences from the direct onslaught of the noise is necessary to maintain the quality of life for the residents.

Respectfully,

Erich Friend
Senior Consultant
Acoustonica
Direct line: 817-235-7817



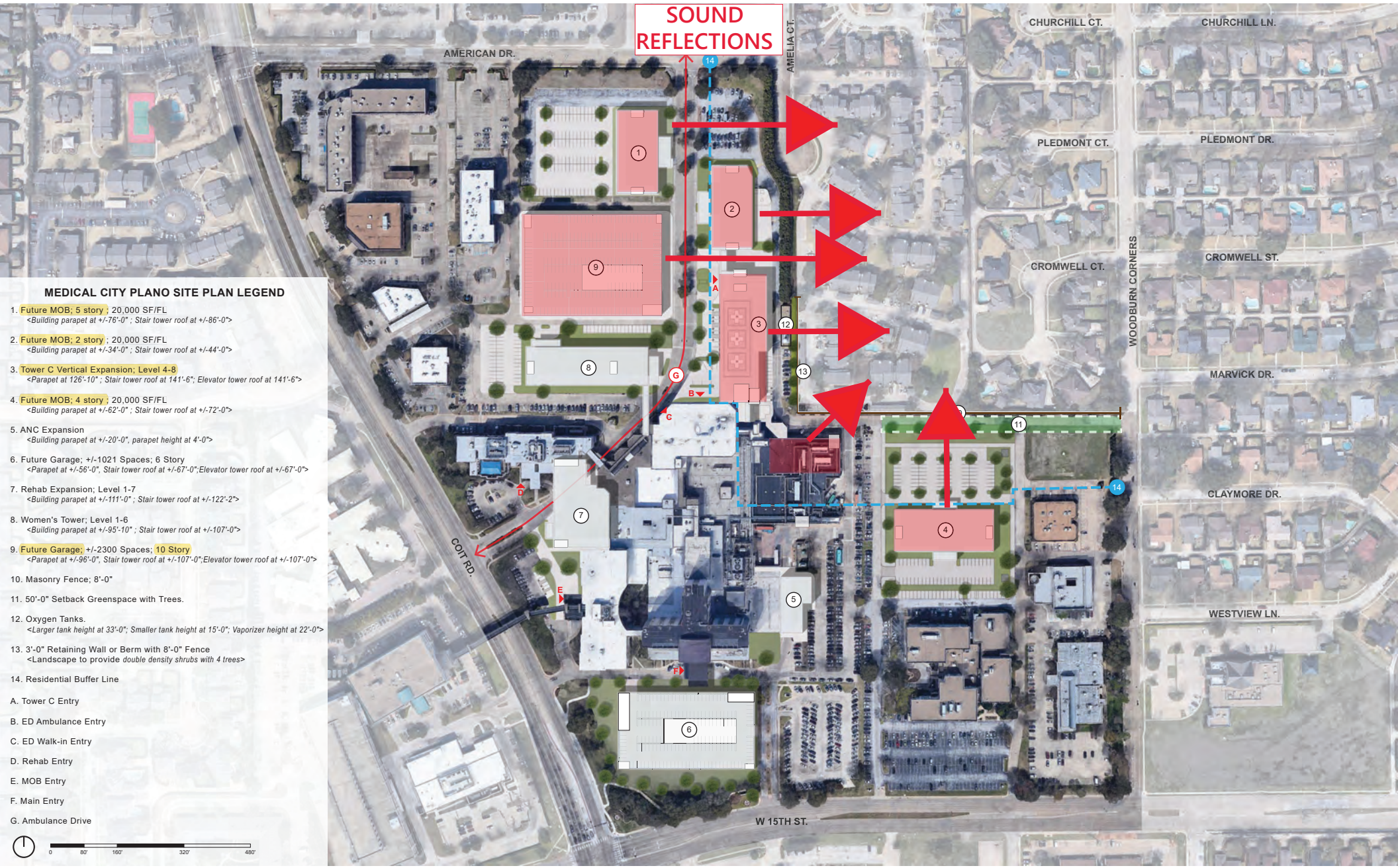
MEDICAL CITY PLANO SITE PLAN LEGEND

1. Future MOB; 5 story ; 20,000 SF/FL
   <Building parapet at +/-76'-0" ; Stair tower roof at +/-86'-0">
2. Future MOB; 2 story ; 20,000 SF/FL
   <Building parapet at +/-34'-0" ; Stair tower roof at +/-44'-0">
3. Tower C Vertical Expansion; Level 4-8
   <Parapet at 126'-10" ; Stair tower roof at 141'-6"; Elevator tower roof at 141'-6">
4. Future MOB; 4 story ; 20,000 SF/FL
   <Building parapet at +/-62'-0" ; Stair tower roof at +/-72'-0">
5. ANC Expansion
   <Building parapet at +/-20'-0", parapet height at 4'-0">
6. Future Garage; +/-1021 Spaces; 6 Story
   <Parapet at +/-56'-0", Stair tower roof at +/-67'-0";Elevator tower roof at +/-67'-0">
7. Rehab Expansion; Level 1-7
   <Building parapet at +/-111'-0" ; Stair tower roof at +/-122'-2">
8. Women's Tower; Level 1-6
   <Building parapet at +/-95'-10" ; Stair tower roof at +/-107'-0">
9. Future Garage; +/-2300 Spaces; 10 Story
   <Parapet at +/-96'-0", Stair tower roof at +/-107'-0";Elevator tower roof at +/-107'-0">
10. Masonry Fence; 8'-0"
11. 50'-0" Setback Greenspace with Trees.
12. Oxygen Tanks.
    <Larger tank height at 33'-0"; Smaller tank height at 15'-0"; Vaporizer height at 22'-0">
13. 3'-0" Retaining Wall or Berm with 8'-0" Fence
    <Landscape to provide *double density shrubs with 4 trees*>
14. Residential Buffer Line

A. Tower C Entry

GREEN shaded areas are flight paths avoiding the elevator towers at each end of Tower C and other flight hazards.

RED shaded areas are flight hazards at or near the helipad elevation.


SOUND REFLECTIONS
AMERICAN DR.
AMELIA CT.
CHURCHILL CT.
CHURCHILL LN.
PLEDMONT CT.
PLEDMONT DR.
CROMWELL CT.
CROMWELL ST.
WOODBURN CORNERS
MARVICK DR.
CLAYMORE DR.
WESTVIEW LN.
COIT RD.
W 15TH ST.
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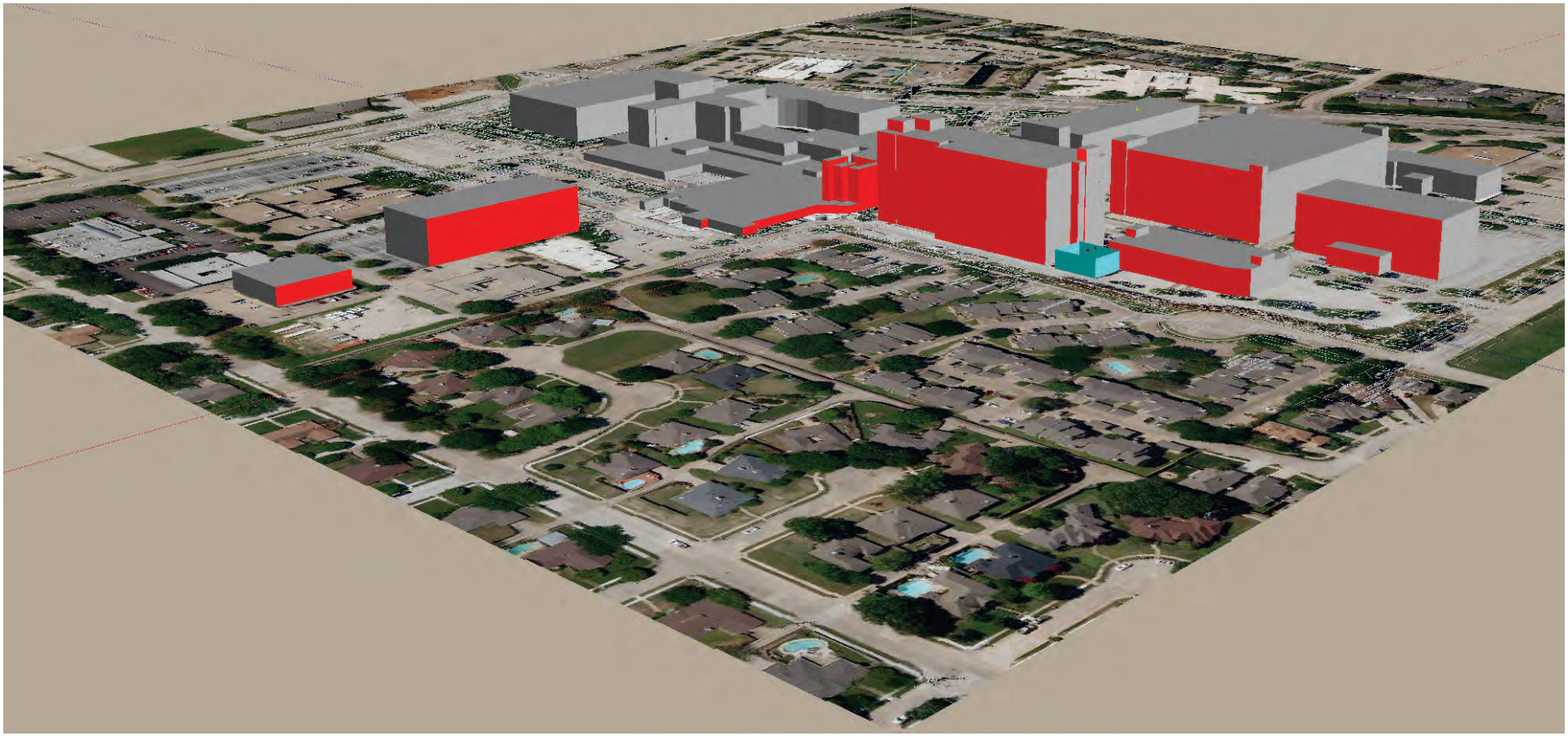
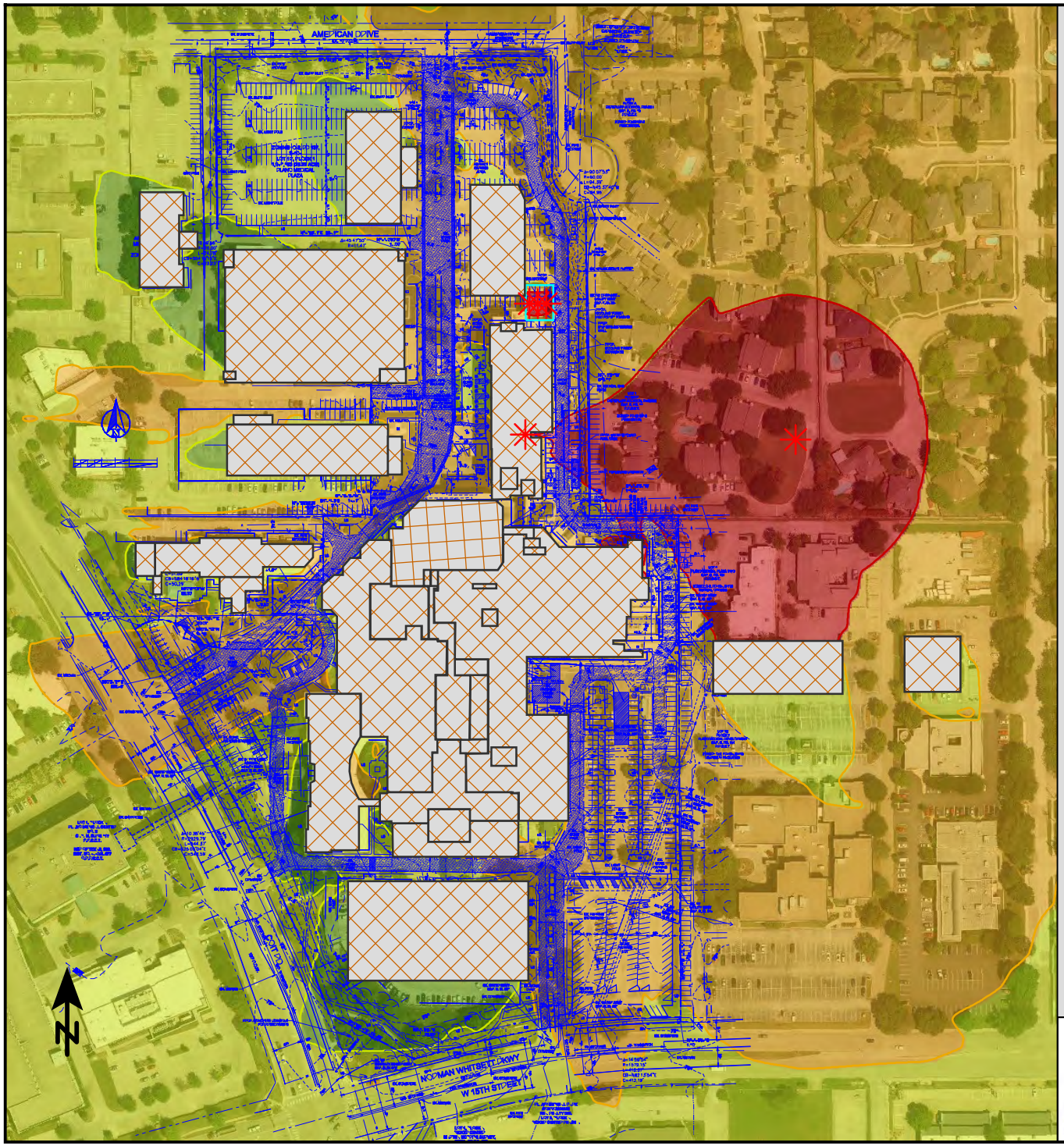
<Landscape to provide double density shrubs with 4 trees>
14. Residential Buffer Line
A. Tower C Entry
B. ED Ambulance Entry
C. ED Walk-in Entry
D. Rehab Entry
E. MOB Entry
F. Main Entry
G. Ambulance Drive
0
80'
160'
320'
480'



Aspen Apartments
View from Northeast towards Southwest
RED shows building faces that will reflect helicopter sounds back towards the residential areas.



MCP Helipad Studies

Prevailing wind flight path is approaching towards helipad from due north, inclined along an 8 degree flight slope towards rooftop level.
Prevailing wind departure path is ascending vertically a few feet, then climbing-out towards the southwest or southeast at about 10-20 degrees.

This Noise Map:

Helicopter #1 about 10 feet above 8-Story Building rooftop helipad @ 145 feet AGL.

Helicopter #2 (about 500 feet east) at about 80 feet above 8-Story Building rooftop helipad @ 205 feet AGL.

3 Cooling Towers at 100%

Signs and symbols

- Site Plan Lines
- Wall
- Buildings
- Point source - Cooling Tower or Helicopter

Levels in dB(A)

	< 40
	40 - 50
	50 - 60
	60 - 70
	70 - 80
	80 - 90
	>= 90

1 : 270

0 50 100 200 300 400 feet

Acoustonica LLC
Consultants in Acoustics · Audio/Visual
Noise Control · Security · IT