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MEMORANDUM

To: Matthew S. Steer, Senior Planner
City of Coppell, Texas
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From: J. Eric Cox
HMMH Senior Consultant

Date: August 23, 2016

Subject: Review of Proposed Zoning Ordinance for City of Coppell

Reference: HMMH Project Number 308340.000

The City of Coppell, TX retained HMMH to review a proposed city zoning ordinance related to aircraft noise attenuation requirements for residential building structures. Coppell lies to the north-northwest of Dallas/Fort Worth International Airport (DFW). Portions of Coppell lie within or directly adjacent to the 65 decibel (dB) Day-Night Average Sound Level (DNL) contour. This memorandum summarizes HMMH's review of the draft ordinance and specifically addresses the:

- Appropriateness of ordinance
- Proposed noise reduction zone
- Proposed noise reduction standard
- Feasibility of ordinance requirements to achieve noise reduction standard
- Recommended revisions to ordinance requirements

Appropriateness of Ordinance

The ordinance identifies a zone of applicability based on the 65 dB DNL contour, noise reduction standards for a residential structure as a whole and for various individual building elements, and construction materials and methods to achieve these goals. The proposed ordinance is appropriate for the City to help ensure that compatible noise exposure is experienced by new residents within the noise attenuation zone identified in the ordinance and follows appropriately from the facts presented in the supplemental planning department staff report.

Proposed Noise Reduction Zone

In Appendix A of 14 CFR Part 150, the Federal Aviation Administration (FAA) provides guidelines for the compatibility of land uses with various annual DNL contour values. These guidelines identify all land uses, including residential, as compatible for DNL values below 65 dB. The noise attenuation zone identified in the proposed ordinance uses a fixed local landmark, Freeport Parkway, which roughly follows the 65 dB DNL contour, with a 2,000 foot buffer to the east. This includes all portions of Coppell which are within or directly adjacent to the 65 dB DNL contour. Overall, the proposed noise attenuation zone is logical and appropriate for newly constructed residential structures within and adjacent to the 65 dB DNL aircraft noise exposure contours of the DFW airport.

Proposed Noise Reduction Standard

The proposed ordinance identifies an outdoor-to-indoor noise level reduction (NLR) requirement of 25 dB for residential structures exposed to exterior aircraft noise approaching 65 dB DNL, which would result in an interior noise exposure of 40 dB DNL. While this is slightly more stringent than the FAA requires for residential structures exposed to aircraft noise exposure of 65 dB DNL, the City's proposed noise reduction target for newly constructed residential structures provides an additional 5 dB margin of safety which is typical and appropriate to help ensure adequate protection from aircraft noise exposure.

Feasibility of Ordinance Requirements to achieve Noise Reduction Standard

The proposed ordinance includes the following design requirements for residential structures:

- Sealing, gasketing, caulking , and weather-stripping to limit air infiltrations
- Sound Transmission Class (STC) ratings and/or construction characteristics for exterior walls, windows, doors, skylights, roofs, ceilings, and ventilation systems

The acoustical design requirements outlined in the ordinance are generally appropriate to achieve the proposed noise reduction standard, with the exception of the minor revisions recommended below.


Recommended Revisions to Ordinance Requirements

HMMH recommends the following revisions to the draft ordinance building design requirements:

- Increase minimum exterior door rating to STC 27
- Include additional minimum Outdoor-Indoor Transmission Class (OITC) requirements as follows:
 - Roof/ceiling – OITC 35
 - Exterior walls – OITC 30
 - Exterior windows – OITC 25
 - Exterior doors – OITC 25
 - Exterior skylights – OITC 25
- Specifically forbid the use of through-wall fans and air conditioning units

Also, note that STC and OITC ratings address different frequency ranges of the sound spectrum. Therefore, minimum STC and OITC requirements both need to be met to ensure that the proposed 25 dB outdoor-to-indoor noise reduction standard is achieved.

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