

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
PROPOSAL OF CLIFFORD-JACOBS FORGING CO.) **R2014- 022**
FOR AN AMENDMENT TO THE SITE-SPECIFIC)
RULE AT 35 ILL. CODE 901.119)

**RESPONSE BY CLIFFORD-JACOBS FORGING COMPANY TO
THE BOARD HEARING OFFICER'S POST-FIRST NOTICE PERIOD ORDER**

NOW COMES Clifford-Jacobs Forging Co. ("Clifford-Jacobs") by its attorneys, Webber & Thies, P.C., and as its response to the Hearing Officer's Order of July 13, 2015, states as follows:

In his Order, the Hearing Officer directed Clifford-Jacobs to respond to the residents' comments embodied in PC 5 and to the Board's questions set forth in Attachment A to the Order. Inasmuch as the allegations of PC 5 are essentially mirrored in Attachment A, Clifford-Jacobs will address them both by way of the issues enumerated by Attachment A. The paragraph and subparagraph numbers below correspond to the numbering of paragraphs in Attachment A:

1. On page 3 of PC 5, the authors, Mark and Linda Kates, allege that Clifford-Jacobs does not operate a second shift, and that it has in fact laid off an additional seven employees.

The allegation is true. However, the purpose of this proceeding is to enhance, not impair, Clifford-Jacobs' ability to meet the needs of its rapidly evolving industry.

The Hearing Officer then makes two specific requests:

- a. To supply the "[c]urrent number of employees working with the forging equipment in building 4, including those trained to run the hammers, and discuss the extent to which this does or tends to vary annually."

Clifford-Jacobs has repeatedly provided the Board with its then-current employee head count. In doing so, it has noted that its employee head count varies from time to time; as recently as June 26, Clifford-Jacobs provided the Board a then-current employee count [See Response by Clifford-Jacobs Forging Company to the Board's First Notice Opinion and Order, at pages 1-2].

In any event, with respect to the Hearing Officer's question as to "the extent to which [the employee count] does or tends to vary annually", Clifford-Jacobs has noted throughout these proceedings, beginning with its first filing, that the number of employees and the number of teams that currently work on any one shift is a function of demand, not some annual cycle. As the Board acknowledged on Page 3 of its First Notice Opinion and Order, the Clifford-Jacobs facility "is a made-to-order or "job" shop, as opposed to a captive or catalog forge, meaning it only makes a product when a customer has submitted an order. Tr. at 20-21; Exh. 2 at 2-3."

Since the question as to Clifford-Jacobs' overall staffing levels has thus been asked and answered several times, Clifford-Jacobs is confused as to what, if anything, different the Hearing Officer is seeking. The "number of employees working on the forging equipment in Building 4" is but part of the labor force that serves the forging operations. Besides the five workers typically employed in directly manning a hammer during production [See Hearing Exhibits 4 and 5], the forklift operators moving steel billets into the production area for processing and moving finished products out of the production area, the workers cutting the steel bars into the right length, the furnace tenders and the machinists are all serving the forging equipment, although they might not be in Building 4 at any given time [see, e.g., Tr. at pages 50-55]. If this response is not

satisfactory to the Board, Clifford-Jacobs requests clarification as to the information sought.

b. To supply the “number of hammer-trained employees that currently work on each shift.”

Once again, Clifford-Jacobs is confused as to what, precisely, the Hearing Officer is asking for, if other than what has already been provided. As previously noted throughout this proceeding, there is only one shift in operation at the present time, and a typical crew serving a single hammer is five. All Clifford-Jacobs employees working directly on the hammers are trained to run the hammers they are servicing, although each person’s role in running a given hammer varies, depending on the specific tasks to which he is assigned. But if by “hammer-trained employees” the Hearing Officer means to refer solely to the person who specifically controls when a hammer strikes a die, that number was nine [9] as of August 6, 2015. If this is not responsive to the Hearing Officer’s request, Clifford-Jacobs requests clarification.

2. Paragraph 2 of Attachment A to the Hearing Officer’s Order notes the acknowledgment by several witnesses that Wilber Heights has several potentially significant noise sources within it, but highlights the allegation in PC 5 at page 3 that “no noise within the area is more pronounced than the sonic boom [sic] generated by Clifford-Jacobs.” It then asks Clifford-Jacobs to “discuss the comparative differences in noise (A-weighted decibel) levels and attenuation in Wilber Heights from each of these sources as well as that produced by Clifford-Jacobs.”

It should be noted that there is no evidence whatsoever of a “sonic boom” created by Clifford-Jacobs activities in the area; there are no aircraft or devices employed by Clifford-Jacobs that travel faster than the speed of sound, and thus there is no “sonic boom.” As Dr. Schomer noted in his Report (Exhibit D of the Proposal), the sounds

emitted by Clifford-Jacobs for the last 90 years are the “boom-shish” sounds of forging, the latter emitted by the steam vents and the former emitted by the impact of the forge hammer on the receiving object [Schomer Report at pages 3-4]. As also noted by virtually every witness at the hearing, in its first 90 years of operation, nobody has lodged a complaint against Clifford-Jacobs for its “boom” noise until now [Tr. at pages 11, 25, 69, 79]. Clifford-Jacobs suspects that the authors of PC 5 were confusing the “boom” sound with the ground vibration, which will be further discussed below.

With respect to the Hearing Officer’s request that Clifford-Jacobs “discuss the comparative differences” in sounds and attenuation relative to the numerous sources within Wilber Heights, Clifford-Jacobs notes that noise levels and attenuation are a function of the sound spectrum involved, the sound’s energy and duration, ambient air temperature and wind direction, the presence or absence of attenuating structures and surfaces, and the distance between the source and the receptor. While Clifford-Jacobs’ facility is stationery, and located at the far eastern edge of the Wilber Heights neighborhood, the other noise sources in Wilber Heights are either mobile or scattered throughout Wilber Heights at various locations.

It may be presumed that depending on where a given noise source is located and/or the direction it is taking, there may be virtually no attenuation, inasmuch as the distance between the source and the residence next door may be a matter of a few feet and inches, and/or there may be no intervening structures or features as would attenuate sounds. For instance, a Google Earth aerial photo of the home and environs of the authors of PC 5, Mark and Linda Kates, located at 2307 North 5th Street (Attached hereto

as ATTACHMENT A¹) shows virtually no separation and few if any attenuating structures or trees, *etc.*, between their home and several adjacent noise sources to the east (*i.e.*, the large trucks apparently parked or idling on 5th Street directly across from their home, as pictured in Attachment A), and the adjacent commercial/industrial properties to the south, southwest, west, and northwest. Further east, in a direct line of sight from the Kates residence, is the railroad switching yard (see Figure B on page 9 of the Schomer Report). Sounds emanating from the railroad switching yard will be discussed in more detail later.

As for the specific A-weighted noise emissions from the other noise sources in the Wilber Heights vicinity, Clifford-Jacobs did not do what the regulations do not require, and thus has no specific data as to the noise emissions from each of those sources. Dr. Schomer advises that the technical challenge of attempting to study ambient noises from every other noise source in the neighborhood would be extremely expensive and time-consuming, inasmuch as it would be necessary in each instance to select one or more appropriate reference points, marshal sound-measuring equipment to serve each of those points, and then mobilize those resources to their proper locations when conditions were ideal for measurement (*i.e.*, when data-corrupting influences posed by weather, wind, and unrelated noise sources were minimized).

The closest Clifford-Jacobs came to such a measurement was in the course of a failed experiment by Dr. Schomer. As noted in Dr. Schomer's report (Page 3), an attempt to gauge the potential attenuative effect of moving Clifford-Jacobs' steam vents

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from the west side of its facility roof to the east side of its roof was unsuccessful, inasmuch as ambient noises from other sources in the area – primarily the railroad yard – made such measurements “difficult and uncertain.” This was also recounted by Dr. Schomer during the hearing [Tr. at pages 90-91].

A more fundamental challenge posed in attempting to respond to the Hearing Officer’s questions relating to the “boom” sounds is the current state of the science for measuring noise emissions as embodied in the current Board regulations, and indeed, in all recognized noise standards, world-wide. This is how Dr. Schomer puts it:

The hearing officer and IPCB staff have asked numerous times about different hammers operating at the same time. The original IPCB rules, first put out in about 1972, were sensitive to simultaneous occurrences of more than one noise source. In about 1980, Tilton Foundry in Danville petitioned the IPCB to go to a one-hour Leq as their metric rather than the instantaneous metric that was in place. The Board concurred with the Tilton position and the property line noise regulations were changed from instantaneous to one-hour Leq. Through literally hundreds of attitudinal surveys worldwide, Leq has been found to offer a better prediction of community response than does the instantaneous level, and I [had declined] to support the [original] Board rules during their adoption because of the use of the instantaneous level rather than Leq. Leq is used by the federal government for assessment of virtually all forms of noise, is recommended by national and international standards for noise assessment, and is used throughout the EU for noise assessment, as well as by almost every other country in the world.

Leq is really a measure of the total sound energies in an hour; the sum of each single event sound energy. When converted to a decibel, a single event sound energy is the sound exposure level (SEL). Leq is formed by converting all of the single event SELs to their corresponding sound energies, calculating the sum of those that occur in an hour, dividing by 3600 (the number of seconds in an hour), and then converting back to a decibel. [*Email from Dr. Schomer, 8/6/15*]

In less technical language, the questions posed by the Hearing Officer and staff before, during and after hearing, and again in the Hearing Officer’s Order of July 13, 2015, with respect to the “boom” sounds appear to presume an “instantaneous metric”

(i.e., individual impulsive sounds), rather than a one-hour Leq. They further appear concerned with ground vibrations which, to the extent they involve sounds at all, generally fall outside the audible range of human hearing embodied in the (A-weighted decibel) level standard embodied in the Board's regulations since the early 1980's.

Clifford-Jacobs should not be understood as denying that its facility is a significant noise source; it is. However, some of the questions posed in the Hearing Officer's Order appear to be unrelated to the criteria embodied in the Board's regulations.

3. The Hearing Officer cites to PC 5 at 3 alleging that Clifford-Jacobs has not justified its current site-specific operational level overnight in lieu of complying with its default limit under 35 Ill. Adm. Code 901.105[c], and asks how would future Clifford-Jacobs operations be affected if nighttime limits of either 53.5 dB or 58.5dB (A-weighted Leq) were applied.

The immediate effect of using the 53.5 dB standard or the 58.5 dB standard has already been explained to the Board by Dr. Schomer in a number of ways. First, as noted by the Board on page 25 of its First Notice Opinion, "Dr. Schomer predicted that under the proposal, 24 houses used as residences will be at or in excess of the 53.5 dB (A-weighted Leq) nighttime level, [and] 12 will be at or in excess of the 58.5 dB(A-weighted Leq) daytime limit". See also Dr. Schomer's report at page 13, which presents that information visually.

The Hearing Officer's request was also previously addressed in Clifford-Jacobs' responses to questions raised by the Board and staff at hearing. Specifically, Clifford-Jacobs tasked Dr. Schomer to further quantify the effects on Clifford-Jacobs if the Board were to depart from precedent and impose nighttime limits expressed in terms of dB (A-weighted Leq). His efforts were reported in Clifford-Jacobs' *Post-Hearing Comments*, at

pages 5-7 and in eight "Control Site Calculator" models developed by Dr. Schomer and provided as Attachment F of those Comments.

Nevertheless, Clifford-Jacobs again turned to Dr. Schomer to address the question anew and his response is as follows:

Decibels compress a scale. If a single event of 120 dB produces an energy of one watt hour, then a single event of 110 dB produces an energy of 0.1 watt hours and a single event of 100 dB produces an energy of 0.01 watt hours. The decibels are compressing the scale. Let us assume that the 25,000 lb hammer, when shaping a typical piece, produces one unit of sound energy. Table A gives the sound energy of all of the other hammers in comparison to the one unit of sound energy produced by the 25,000 lb hammer. Clearly, the noise produced by Clifford Jacobs generally will be dominated by whichever is the loudest hammer in use during a given hour, unless there is a very strange situation such as one piece is made during the hour using the 25,000 lb hammer and 200 pieces are made during the same hour using the x lb hammer.

Table A: Relative Sound Energy per Piece as a Function of Hammer Size

25,000 lbs	1
20,000 lbs	0.631
12,000 lbs	0.224
8,000 lbs	0.087
6,000 lbs	0.058
4,000 lbs	0.022
3,000 lbs	0.014
2,500 lbs	0.008
2,000 lbs	0.005
1,500 lbs	0.004

In conclusion, the metric selected by the IPCB is Leq. Leq compresses the scale so that it is very sensitive to the loudest sources, and it is somewhat troublesome to see the hearing officer and staff questioning the use of the metric prescribed by the Board. *[Email from Dr. Schomer, 8/6/15]*

To further demonstrate this principle, Dr. Schomer also produced graphic representations of two "what-if" scenarios. These are attached to this Response as **ATTACHMENT B**. The gist of these demonstrations is that imposing a numerical standard basically places a cap on the use of the bigger hammers during those hours of the day when the numerical standards apply; the effects of any such cap on the smaller

hammers is negligible. Exactly what that cap looks like varies with the precise combination of hammers used and the number of pieces that can be produced in that time period on each one.

However many different times or ways presented, the consequence of either limit is to restrict, to a greater or lesser degree, Clifford-Jacobs' ability to attain the flexibility it needs to meet the demands imposed by the marketplace. Lacking such flexibility, its survival is in doubt [Tr. 27-28, 30-32]. Another consequence is to create two troubling precedents. First, it would in effect "move the goalposts" for a forging facility located for almost 90 years in an industrial setting zoned at all times for industrial and commercial uses, because of the presence of subsequent non-compliant uses encroaching within that zone. Second, it would selectively apply different rules to the detriment of just one of the teams in the game: not one of Clifford-Jacobs' forging competitors has to date been subjected to a similar numerical dB (A-weighted Leq) limit, day or night (see 35 Ill. Adm. Code 901.110, 901.111, 901.112, 901.114, 901.115, 901.116, 901.117, 901.118, 901.120, and 901.121).

The issue of nonconforming uses is directly relevant here for one more reason: as the Board noted on page 25 of its First Notice Opinion, "The default nighttime noise limit on existing forgers for Class A receiving land is 53.5 dB (A-weighted Leq), while the limit for Class B receivers is at all times the same-namely, 64.5 dB-and there is no specified limit for Class C land. 35 Ill. Adm. Code 901.105[c]." In other words, were the residences of Wilber Heights not situated in its industrial/commercial area, Clifford-Jacobs would be subject either to a nighttime limit of 64.5 dB or to no limit at all.

It is noteworthy that the extensive railroad switch yard that abuts Clifford-Jacobs

and Wilber Heights already operates 24 hours a day, seven days a week (see the Schomer Report, at pages 6 and B3). According to common noise reference sources, the noise from a typical diesel locomotive train traveling 45 mph as measured from a distance of 100 feet is 83 dB (A-weighted one hour Leq), without adjusting for the collisions typical of switching operations.²

At Clifford-Jacobs' request, Dr. Schomer employed the US Department of Transportation's 1995 *Transit Noise and Vibration Impact Assessment*³ to calculate the sound impacts of the aforesaid railroad switch yard upon the Kates residence, which lies approximately 450 feet west of the switch yard. According to his calculations, that impact is approximately 63.3 dB (A-weighted one hour Leq).⁴ [Email from Dr. Schomer, 8/6/15]

4. The Hearing Officer notes that "[t]he Kates letter also asserts that Clifford-Jacobs' need for the relief it seeks is "not in any sense immediate" and not adequately supported." The Hearing Officer then asks "[o]f the three largest hammers (25,00 lbs, 20,000 lbs, and 12,000 lbs), what is the greatest number of these that have been in operation in the past decade at the same time, on the first shift, and on the second shift?"

²Source: Purdue University

[<https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm>]

³*Transit Noise and Vibration Impact Assessment*, US Department of Transportation, Federal Transit Administration, DOT_T_95-16, April 1995, NTIS PB 9617 2135.

⁴ Below are Dr. Schomer's calculations:

Marshalling Yard

Hourly Leq	at 50 ft	118
distance	450 ft	
20*log(50/450)		-19.08
10*log(3600)		-35.6
TOTAL RESULT		63.3

Clifford-Jacobs finds it difficult to respond to the unsubstantiated assertion by Mr. & Mrs. Kates. It is impossible to imagine what “evidence” would satisfy a showing of “immediate need” if other than the hearing testimony provided by Clifford-Jacobs’ General Manager, Jason Ray, who described specific situations where the limits placed upon Clifford-Jacobs came at the cost of business, which went elsewhere, some of it permanently [Tr. Pages 27-28, 30, 39]. Where business is lost before it is begun, it is impossible for Clifford-Jacobs to “prove” or quantify its immediate need for relief, particularly in the context of a made-to-order forging operation, where loss of one business order can metastasize into loss of much more (*e.g.*, see the testimony of Mr. Ray at Tr. 27 [line 20] to 28 [line 3]). See also Clifford-Jacobs’ Post-Hearing Comments, at Page 7 (bottom paragraph).

With respect to the Hearing Officer’s question, Clifford-Jacobs previously noted at hearing that as many as 6 hammers were in operation on the first shift and as many as 3 hammers were in operation on the second shift (Tr. 47). This information was noted by the Hearing Officer in his Attachment A at par. 4. Clifford-Jacobs can confirm that, in most cases, all three of its largest hammers were usually in operation during some or all of those shifts. At present, and for the last several years, the products produced by the larger hammers are the products most in demand.

Clifford-Jacobs notes that the question inquiring as to “operation ... at the same time” is inherently fraught with ambiguity within the context of an eight-hour shift. Clearly, hammer blows from various hammers are not orchestrated with each other, so as to strike in unison or for the same period of time. When Clifford-Jacobs’ records state that as many as 6 hammers “were in operation on the same shift”, it does not necessarily

follow that all 6 hammers were operating simultaneously throughout that entire shift; the differences in size and capacity among the hammers, differences in the size of the jobs being performed on each hammer and the resulting necessity for maintenance and changing dies, of necessity means that each hammer operates independently of the other hammers.

This question has a practical dimension addressed in Mr. Ray's testimony at hearing [Tr. at 23, 32-33], in Dr. Schomer's report [page 5], in Dr. Schomer's testimony at hearing [Tr. 41, 110-112] and in Clifford-Jacobs' Post-Hearing Comments [at pages 2-3, 5-7]. Dr. Schomer noted that the greater pressures exerted by these larger hammers translates into longer down times for maintenance, such that the likelihood of all three hammers routinely running simultaneously for an extended period of time is remote:

“... in reality, the probability of all three large hammers operating at 100% simultaneously for any period of time is vanishingly small. Based on historical patterns of usage, the more realistic ‘worst case’ scenario would arise when one of the three largest hammers is operating at 100% of capacity while the other two largest hammers are operating at approximately 50% of capacity.” [Schomer Report, page 5; see also Tr. 110]

Again, the point of this rulemaking is not to continue operations as they have been conducted for the last thirty to ninety years, but to allow Clifford-Jacobs to expand its hours to meet the changing demands of an evolving marketplace. At hearing, witnesses specifically noted the difficulties faced by American industries to site and maintain the viability of heavy industrial facilities [*e.g.*, see Tr. 8-9]. Clifford-Jacobs witnesses described its place in a demanding marketplace which has produced a shrinking number of domestic suppliers [Tr. 21-22], and situations where the limits placed upon Clifford-Jacobs came at the cost of business, which went elsewhere, and

took other business with it [Tr. 27-28]. Under these conditions, the need for flexibility, to be able to respond “when the market shows itself” as Mr. Ray put it [Tr. 24], is existential.

5. The Hearing officer cites PC 5 for the proposition that “[n]o other noise generates a pulse that shakes the foundation of the house” and the comments by Mrs. Pheris [PC 3] that “[t]he hammers are equal to a small earthquake.” The Hearing Officer then poses a series of questions:

“a. Has Clifford-Jacobs examined the issue of the effects of ground vibrations on nearby residences and other structures?”

Consistent with the Board’s regulations, Clifford-Jacobs’ examination has been confined to its sound emissions, rather than ground vibrations; it has made no formal study of the ground vibrations on nearby residences or, for that matter, on the much nearer structures built and occupied by Clifford-Jacobs itself.

Nevertheless, Clifford-Jacobs requested that Dr. Schomer address this non-sound issue. He responded as follows:

The hearing officer and the Board staff asked about building vibration: has it been measured? Does it stem from sound or vibration through the ground? How does it decay with distance? Etc. Again, as with Leq, there seems to be a little bit of misunderstanding as to what the Board rules say. The Board rules for impulsive sound and for forges are written in terms of the 1-hour, A-weighted, Leq. This metric does not correlate with sound-induced building vibration and rattles. A-weighting filters out the low frequencies that can be responsible for rattle (and the very high frequencies) in a similar fashion to human hearing at low to moderate sound levels. If the Board wants to know the possibility of having sound-induced vibration or rattles, then they need to conduct rule-making and add additional metrics that have not been there for the first forty-plus years. Also, it is not clear that the Board has the legislative authority to regulate building vibration excited by sound, and it certainly doesn’t appear to have the authority to regulate building vibration excited through the ground.

In the analysis conducted for this rule change request, the IPCB rules for making such a request have been followed fully, completely, and meticulously. The rules simply do not call for any measurements or predictions other than the 1-hour, A-

weighted Leq, and so nothing else was measured. Other measurements could have been made simultaneously with the A-weighted measurements for this study, and would have been made if they had been required, but they were not. Thus, it is not possible to answer questions that necessitate measurements not documented, suggested, or required by Board rules because such measurements are simply not done. [Email from Dr. Schomer, 8/6/15]

While Clifford-Jacobs makes no comment at this juncture regarding Dr. Schomer's opinions as to the limits of the Board's authority, it suggests that his comments appear to confirm the layman's understanding. That is, when a hammer strikes a die, it causes both a "boom" sound, and a ground vibration, and they are, for practical purposes, separate and distinct phenomena.

- "b. Please discuss whether the ground vibrations generated when all 10 currently operational hammers are in operation could "shake the foundation" of a nearby house, and, if so, whether the "pulse" becomes attenuated with increasing distance from Clifford-Jacobs' facility. Also, please address the same questions with all 14 hammers in simultaneous use."

Again, Clifford-Jacobs has made no formal study of ground vibrations as opposed to noise levels, *per se*. However, Dr. Schomer has confirmed that ground vibrations or "pulses" do indeed attenuate with distance rather than go on forever. As for whether the vibrations would be noticeably different in the extremely rare circumstance where all 14 hammers were operating at once, Clifford-Jacobs has no additional information. However, as with Dr. Schomer's conclusions regarding the relative sound emissions of different-sized hammers [see above], Clifford-Jacobs surmises that the three largest hammers account for the most noticeable vibrations, and that the addition of four smaller hammers would have little if any perceptible effect on ground vibrations as would shake houses in the Wilber Heights neighborhood.

- “c. Please comment on whether the ground vibrations mentioned in the Kates letter are caused by the sound emanating from the impact of hammers on the material being forged, or by the transfer of mechanical energy from the impact of the hammers to the ground. In addition, discuss whether there are strategies to mitigate any adverse effects that result from ground vibrations related to the operation of the hammers.”

As noted above, at least for purposes of the Board’s current noise regulations, the phenomenon of sound emissions is distinct from the ground vibrations triggered by the transfer of mechanical energy. The Hearing Officer’s question essentially asks whether these forging hammers can either be made to require less forceful blows or be built upon some base or device which isolates the force of the hammer blows from the ground beneath it. Clifford-Jacobs knows of no such strategies. As Mr. Martz testified at hearing [Tr. 67-68, 105], industry efforts to date have failed to identify a reliable, gentler, quieter way to produce forgings by hammer, or to produce some critical parts without hammers. Clifford-Jacobs presumes that this is true as well for efforts to prevent ground vibrations caused by existing hammer forges.

- “d. Please comment on whether and how the applicable ANSI standards under 35 Ill. Adm. Code 900.103 address the measurement of sound in the frequency range that would be observed as sound that “shakes the foundation” of nearby homes. [Citations to the Hearing Officer’s “Note” are omitted].”

As Dr. Schomer has noted above, the A-weighted one-hour Leq standards, including the ANSI standards referenced by 35 Ill. Adm. Code 900.103, are professionally accepted and in use around the world. As he also noted above, those standards were chosen in specific repudiation of an “impulsive/instantaneous” standard. Hence, the ANSI standards incorporated by reference in 35 Ill. Adm. Code 900.103 simply do not apply to the issue of ground vibrations.

6. The Hearing Officer requested that Clifford-Jacobs provide a copy of the amended Champaign County Zoning Ordinance, and specify the date of the last amendment.

Clifford-Jacobs is happy to supply the relevant portions of the Champaign County Zoning Ordinances. These consist of Zoning Ordinance Sections 8 and 9, which were amended during the course of Clifford-Jacobs preparations of its proposal. These changes were enacted by Ordinance No. 884, Case 675-AT-10, adopted April 21, 2011. To be clear, the amendments apply to ALL nonconforming uses within the County, not just to the Wilber Heights residences. A copy of the Sections so amended is attached hereto as **ATTACHMENT C**. To assist the Board in understanding the ordinance, Clifford-Jacobs has highlighted those portions applicable to nonconforming residential uses or structures in yellow. The text as provided in Attachment C is current as of the date of this submission.

Clifford-Jacobs suggests that the recent amendments to the ordinance were made to prevent undue hardships for residents whose homes were damaged by fire or deterioration in order to enable them to maintain their homes and, to a very limited extent, to expand their building floor area, provided that the premises remained occupied and used as residences. That is a reasonable and humane approach to the challenges posed by nonconforming uses. Nevertheless, it is worth noting what the aforesaid amendments did NOT do:

- they did not change the residences in Wilber Heights or anywhere else into conforming uses; and
- they did not alter the stated policy of the County, as articulated in the

second paragraph of Section 8, which states: “It is the intent of this ordinance to permit these non-conformities to continue until they are removed, except as otherwise herein provided, but not to encourage their survival. Such non-conformities are declared by this ordinance to be incompatible with the permitted STRUCTURES and USES of land and STRUCTURES in the DISTRICTS involved.”

Thus, it remains the law that as soon as a structure is abandoned for 180 days (see, *e.g.*, Section 8.2.3) or is put to a conforming use (see, *e.g.*, Section 8.4.4), as several structures in Wilber Heights have been, it cannot be returned to residential use.

7. In paragraph 7 of Attachment A of the Hearing Officer’s Order, Clifford-Jacobs is once again asked to “[p]lease clarify the decibel level that would exist at the control point and at the closest residence if only the three largest hammers were in operation at one time, and whether that level would be sufficient to generate a ‘wave that shakes the foundation of the homes closest to the facility.’ PC 5 at 1. In addition, please provide the decibel levels at the control point and at the closest residence for each of the largest hammers separately, if that information is available.”

The first question again blurs the line between mechanical vibrations and sound [decibel levels]. However, with respect to the decibel levels emanating from each of the largest three hammers, such information is already in the Board’s possession, in the form of Dr. Schomer’s comments above, in Attachment B of this Response, in Clifford-Jacobs’ *Post-Hearing Comments* of November 2, 2014, and in Dr. Schomer’s “Control Site Calculator” models which were provided as Attachment F of those Comments. This information enables the Board to gauge the relative impacts and contributions of virtually any combination of hammers which would be permissible under a site-specific rule limiting night-time operations in terms of decibels rather than hours of operation. All of

the calculators were linked to the control point, which was nearer to the hammers than any of the residences.

8. Paragraph 8 of Attachment A of the Hearing Officer's Order again cites the Kates letter [PC 5] and its somewhat misleading reference to a "sonic boom" allegedly generated by the Clifford-Jacobs facility. It then poses two distinct questions:

"a. Because Clifford-Jacobs' attempt to install silencers dates back to the early 1980s, please update the record with more current information on the state of the art on using mufflers and silencers to control sound emissions from impact forging hammers."

Clifford-Jacobs believes that it has already supplied such information to the Board. The Board's 1st Notice Opinion and Order acknowledged [page 6] the testimony and prefiled testimony of Mr. George Martz, Facilities Manager of Clifford-Jacobs. Mr. Martz not only testified that Clifford-Jacobs' prior efforts in the mid to late 1980's to install silencers on its hammers had ended in failure due to reliability concerns, but that he had attended numerous forging industry association conferences since then and had never heard anyone claim to have successfully used any such sound mitigation devices on the kind of impact producing equipment Clifford-Jacobs has [Tr. 105]. Dr. Schomer also testified [Tr. 104] that he also was unaware of any such sound mitigation technologies which could withstand the routine shocks emanating from a drop forge hammer, and dismissed as economically unreasonable and technically infeasible the suggestion of any sound barrier systems [Tr. 106-110].

Presumably in recognition of such evidence, the Board's 1st Notice Opinion & Order⁵ required that Clifford-Jacobs keep abreast of any new sound abatement

⁵ As paragraphs (d) and (e) of Section 901.119

technologies and measures, and report to the Board thereon every ten years as a condition of the revised site-specific standard.

Clifford-Jacobs believes that thus requiring it to investigate new technologies as a condition of maintaining a more relaxed site-specific standard over a period of years is not unreasonable. The Board's 1st Notice Opinion & Order implicitly recognized that the task is not simple and cannot reasonably be performed in a few weeks. The unique demands of the forging process, as noted by Mr. Martz, have frustrated the industry in this respect for decades, and requires close examination of any claims. At a minimum, Clifford-Jacobs submits that any such claimant should be required to demonstrate:

1. Whether it has actual experience constructing silencers for steam vents serving a 12,000 lb or larger drop hammer [since the larger hammers account for the bulk of the sound emissions, as noted above];
2. If not, what could it supply that it believes would serve the purpose within Clifford-Jacobs' physical plant and drop forging environment?
3. What would its product cost to install and maintain?
4. Would it guarantee that its product will achieve a specific level of acoustical sound reduction?
5. Would it warrant a specific measure of practical durability [*i.e.*, expressed in terms of years] in Clifford-Jacobs' drop forging environment?

Nevertheless, Dr. Schomer was charged by Clifford-Jacobs with attempting to respond to the Hearing Officer's request. Following his investigation, he has again confirmed what was reported to the Board in the course of the Hearing and elsewhere, namely, that the state of the art for using mufflers and silencers to control sound emissions from impact forging hammers has not advanced beyond the points described by Mr. Martz and Dr. Schomer previously. He has further noted that the issue is not only technical feasibility and economic reasonableness but efficacy. Specifically, he noted the

extremely limited benefit, if any, that would be conferred even from herculean silencing measures. His investigation and conclusions are summarized in his Affidavit, which is attached hereto and incorporated herein as **ATTACHMENT D**.

Clifford-Jacobs reminds the Board that, as Mr. Jason Ray, Clifford-Jacobs' General Manager, testified at hearing [Tr. at 21-22], Clifford-Jacobs is one of only about five forging operations left in the entire United States capable of producing the range of products Clifford-Jacobs produces. It is thus hardly surprising that there are no manufacturers of silencers with experience meeting the unique and demanding needs of this niche industry.

If the Board were to mandate, as it proposed in its First Notice Opinion & Order, that Clifford-Jacobs routinely keep abreast of (and periodically report on) advances in sound control technologies, Clifford-Jacobs could do so in a thorough and studied manner. This is essential, inasmuch as one can imagine any number of manufacturers willing to claim miracle cures for noise problems. Based on the observations by Mr. Martz and Dr. Schomer over the past three-plus decades, including Dr. Schomer's recent efforts recounted in his affidavit [Attachment D hereof], there is ample reason to be skeptical of any such claims. Allowing the time to thus exhaustively vet any candidates in order to "separate the wheat from the chaff" is absolutely necessary.

"b. Please comment on whether installation of silencers on steam-driven hammers would reduce the "boom" sound from the hammers mentioned in the Kates letter."

This was answered by Dr. Schomer in the negative, both as described above and in the course of his hearing testimony (see Tr. at pages 103-104). Steam line silencers

are designed to attenuate the higher-pitched, higher-energy sounds emitted from the steam vents atop the building's roof. They have no effect upon either the mechanical vibrations or the impact sounds of the hammers striking the dies. Put in layman's terms, the silencers in question address the "shish" component, not the "boom" component, of forging noises.

SPECIFIC RESPONSE TO PC 5

Clifford-Jacobs will next address a claim made by Mr. & Mrs. Kates in PC 5 but which is not reflected in the Hearing Officer's order. Specifically, they claimed that "[W]e did not receive physical notice from Clifford-Jacobs as you required of them. Instead we received this notice from family members who live several blocks within the interior of the Wilber Heights community."

The claim is patently false, for at least three reasons. First, the Board's regulations prescribe the manner of public notice and the record is clear that Clifford-Jacobs complied with those requirements to the letter.

Second, the Board never required that Clifford-Jacobs provide "physical notice" to Mr. & Mrs. Kates or anyone else. Rather, the Board decided to require that Clifford-Jacobs provide *the Board* with the names and addresses of owners of residential-style buildings within the affected area, so that the Board could provide its 1st Notice Opinion and Order to them. Clifford-Jacobs attempted to do so by supplying the Board with the names and addresses of the owners of 40 properties as identified by street address from the records of the Champaign County Assessor. That notice obviously made its way to

Mr. & Mrs. Kates even though, for reasons unknown to Clifford-Jacobs, their identity and PIN # do not appear when their common address is entered into the County Assessor's online database⁶.

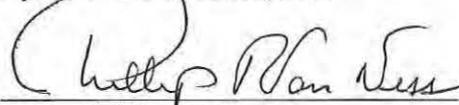
Finally, following the Board's decision to provide its 1st Notice Opinion and Order to individual property owners, Clifford-Jacobs reached out to its neighbors with its own letter [see **ATTACHMENT E** hereof]. It received one response, from Mrs. Helen Pheris, which was also provided to the Board and referenced by the Hearing Officer on Page 3 of Attachment A to his Order of July 13, 2015 [as PC 3].

Clifford-Jacobs remains available to assist the Board and public commenters with any questions that may arise.

Respectfully Submitted,

CLIFFORD-JACOBS FORGING CO.

By: Webber & Thies, P.C.



BY: Phillip R. Van Ness

Phillip R. Van Ness
John E. Thies
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⁶The Champaign County Assessor's database does not allow a search by the owner's name, but rather allows a search only by common address or by Permanent Identification Number [PIN]. Since Clifford-Jacobs did not know the individual PIN numbers of all parcels in Wilber Heights, it was able only to search by common address. Unfortunately, entering the Kates' common address produces no relevant response.



Google earth

Imagery Date: 4/19/2014 40°08'32.64" N 88°13'52.92" W elev. 738 ft. eye alt. 1396 ft.

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1995

ATTACHMENT B

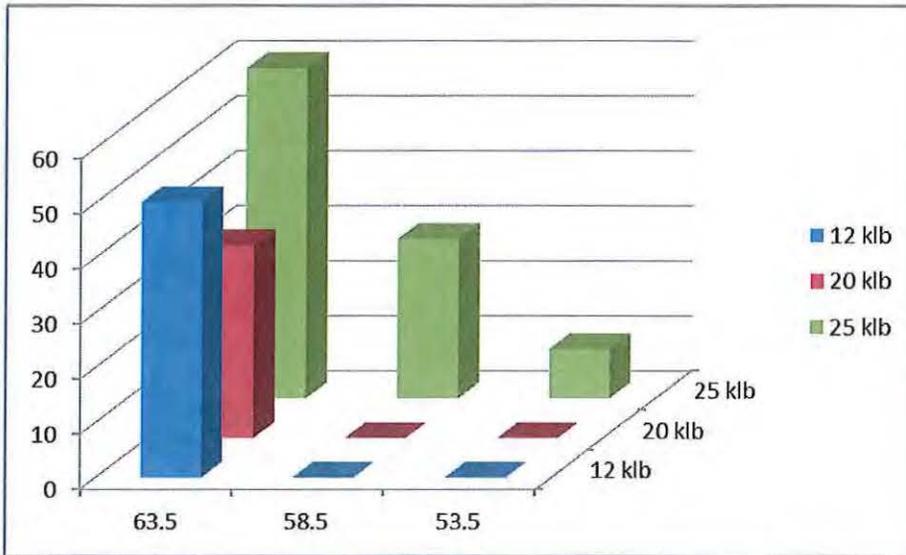


Figure A shows the number of pieces that can be produced in one hour, meeting 63.5 dB at the most affected property, assuming downwind propagation. The numbers are 60 of the 25,000 lb hammer, 35 of the 20,000 lb hammer, and 50 of the 12,000 lb hammer. If this limit were to change to 58.5 dB at the most affected property, the production numbers contract to 29 of the 25,000 lb hammer and nothing else. If the limit were to change to 53.5 dB, then the production numbers contract further to 9 of the 25,000 lb hammer, and nothing else.

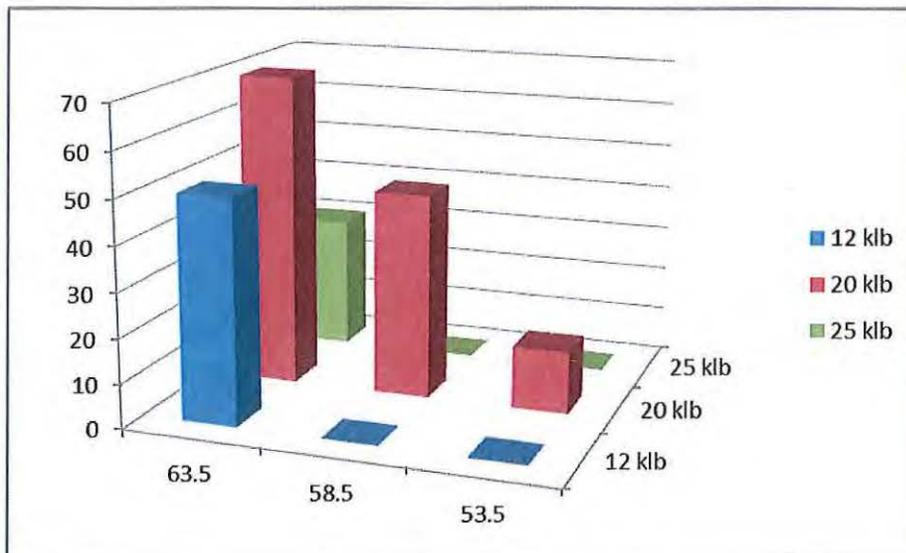


Figure B is similar to Figure A, but it shows a slightly different example. For this example, the 20,000 lb hammer begins at 100%, with the 25,000 and 12,000 lb hammers at 50%. As above, lowering to 58.5 dB or 53.5 dB reduces the 20,000 lb hammer production to 46 and 14 units respectively, and again, the two 50% hammers go to zero units.

SECTION 8 NON-CONFORMITIES

Within the DISTRICTS established by this ordinance or by amendments that may later be adopted, there exist LOTS, PREMISES, STRUCTURES, ACCESSORY STRUCTURES, USES, and ACCESSORY USES of land which were lawful before this ordinance was effective or amended, but which would be prohibited, regulated, or restricted under the provisions of this ordinance or future amendments.

It is the intent of this ordinance to permit these non-conformities to continue until they are removed, except as otherwise herein provided, but not to encourage their survival. Such non-conformities are declared by this ordinance to be incompatible with the permitted STRUCTURES and USES of land and STRUCTURES in the DISTRICTS involved. It is further the intent of this ordinance that such NONCONFORMING USES of land, PREMISES, or STRUCTURES or ACCESSORY STRUCTURES shall not be enlarged upon, expanded, or extended except as provided for herein, nor to be used as grounds for adding other STRUCTURES or USES prohibited elsewhere in the same DISTRICT.

A NONCONFORMING USE of land, PREMISES, STRUCTURES or ACCESSORY STRUCTURES shall not be enlarged, expanded, or extended after October 10, 1973, or after the effective date of an ordinance amendment rendering such USE NONCONFORMING except as otherwise provided. Attachment to a STRUCTURE, PREMISES, or land, or any additional SIGNS intended to be seen off the PREMISES, or land, shall be prohibited. The addition of other USES which are prohibited in the DISTRICT involved shall not be permitted.

A NONCONFORMING USE or a NONCONFORMING STRUCTURE which is nonconforming only because of failure to provide required off-street PARKING SPACES or LOADING BERTHS shall have all the rights of a conforming USE or STRUCTURE provided that no further reduction of off-street PARKING or LOADING BERTHS takes place.

8.1 NONCONFORMING LOTS of Record

8.1.1 In any zoning DISTRICT where SINGLE FAMILY DWELLINGS are permitted as a principal USE, a SINGLE FAMILY DWELLING and customary ACCESSORY BUILDINGS may be erected on any single LOT of record which was platted and recorded prior to October 10, 1973, provided that:

- A. such LOT must have been in separate OWNERSHIP and not in continuous FRONTAGE with other LOTS in the same OWNERSHIP as of October 10, 1973, and;
- B. such LOT must contain sufficient AREA and width to provide a lawful water supply and means of wastewater disposal;
- C. YARD dimensions and other requirements not involving AREA or WIDTH, or both of such LOTS shall conform to the requirements for the DISTRICT in which said LOT is located; and

SECTION 8.1 NONCONFORMING LOTS OF RECORD – CONTINUED

- D. for purposes of LOT AREA calculations, any LOT AREA devoted to permanent ponds and/or lakes shall be excluded from calculations of total LOT AREA.

These provisions shall apply even though such NONCONFORMING LOTS fail to meet the current dimensional, geometric, LOT ACCESS or other requirements in their respective DISTRICTS.

- 8.1.2** Once two or more contiguous LOTS or combination of LOTS and portions of LOTS which individually do not meet any dimensional, geometric, LOT ACCESS or other standards are brought into common ownership the LOTS involved shall be considered to be a single LOT for the purpose of this ordinance. No portion of said LOT shall be used separately or conveyed to another owner which does not meet all of the dimensional, geometric, LOT ACCESS and other standards established by this ordinance unless a VARIANCE is granted by the BOARD in accordance with Section 9.1.9.

- 8.1.3** In any zoning DISTRICT where TWO-FAMILY DWELLING STRUCTURES or MULTI-FAMILY DWELLING STRUCTURES are permitted by right, or where more than one MAIN or PRINCIPAL STRUCTURE or BUILDING is permitted as a SPECIAL USE or authorized under Section 4.2.1D, any NONCONFORMING LOT of record which was not improved with such DWELLINGS, STRUCTURES or BUILDINGS on or before October 10, 1973, shall not be eligible for the location of a TWO-FAMILY DWELLING STRUCTURE or MULT-FAMILY DWELLING STRUCTURE, or more than one MAIN or PRINCIPAL STRUCTURE or BUILDING for reasons of protecting the public health, unless said LOT contains a minimum AREA as follows:

- A. A LOT without a PUBLIC WATER SUPPLY SYSTEM and without a connected PUBLIC SANITARY SEWER SYSTEM shall not be less than 20,000 square feet in AREA for the first DWELLING UNIT, or the first MAIN or PRINCIPAL STRUCTURE or BUILDING thereon, and 7,000 square feet for each additional DWELLING UNIT, or MAIN or PRINCIPAL STRUCTURE or BUILDING placed thereon.
- B. A LOT served by a private well and a PUBLIC SANITARY SEWER SYSTEM shall not be less than 10,000 square feet in AREA for the first DWELLING UNIT, or the first MAIN or PRINCIPAL STRUCTURE or BUILDING placed thereon, and 7,000 square feet for each additional DWELLING UNIT, or MAIN or PRINCIPAL STRUCTURE or BUILDING placed thereon.
- C. A LOT served by a PUBLIC WATER SUPPLY SYSTEM and without a connected PUBLIC SANITARY SEWER SYSTEM shall not be less than 10,000 square feet in AREA for the first DWELLING UNIT, or the first MAIN or PRINCIPAL STRUCTURE or BUILDING placed thereon, and 7,000 square feet for each additional DWELLING UNIT, or MAIN or PRINCIPAL STRUCTURE or BUILDING placed thereon.

8.1.4 YARD Regulations and Standards for Single NONCONFORMING LOTS of Record

- A. FRONT YARD: The FRONT YARD regulations and standards of the DISTRICT in which such LOT is located shall apply.
- B. REAR YARD: The REAR YARD regulations and standards of the DISTRICT in which such LOT is located shall apply.
- C. SIDE YARD
 - 1. On such LOT with a width of 50 feet or more, two SIDE YARDS shall be provided as required by the regulations and standards of the DISTRICT in which such LOT is located.
 - 2. On such LOT less than 50 feet but not less than 27 feet in width, two SIDE YARDS shall be provided, each equaling 10% of the LOT width.
 - 3. On such LOT less than 27 feet but not less than 20 feet in width, the STRUCTURE located on such LOT shall have a width of not more than 90% of such LOT width. Only one SIDE YARD need be provided, equaling in width the difference between the LOT width and the maximum permitted width of the STRUCTURE. No other SIDE YARD need be provided. The wall of any BUILDING facing the side of the LOT on which no SIDE YARD is required shall be without openings and shall not be constructed as a common wall.

8.2 NONCONFORMING USES of Land

Where, on the effective date of adoption or amendment of this ordinance, a lawful USE of land exists that is no longer permissible under the regulations and standards of this ordinance as adopted, or amended, such USE may be continued so long as it remains otherwise lawful subject to the following provisions:

8.2.1 Expansion of NONCONFORMING USE

- A. No such NONCONFORMING USE of land shall be enlarged, increased, or extended to occupy a greater area of land than was occupied on the effective date of adoption or amendment of this ordinance except as provided below.
- B. A SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land may be expanded as follows:

SECTION 8.2.1 EXPANSION OF NONCONFORMING USE - CONTINUED

1. A SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land and was 1,200 square feet or less in building floor area (not including basement) on October 10, 1973, may expand up to a total building floor of 1,500 square feet provided that a VARIANCE is required if there is more than one PRINCIPAL USE on the LOT and the LOT AREA is less than required in Section 4.3.4. The expansion may occur all at one time as part of a total reconstruction or replacement as authorized by Section 8.6.
2. A SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land and exceeded 1,200 square feet in building floor area (not including basement) on October 10, 1973, may be expanded by a total of 200 square feet or 25% of building floor area, whichever is greater, compared to the building floor area that existed on October 10, 1973, provided that a VARIANCE is required if there is more than one PRINCIPAL USE on the LOT and the LOT AREA is less than required in Section 4.3.4. The expansion may occur all at one time as part of a total reconstruction or replacement as authorized by Section 8.6.
3. Expansion of existing or construction of any new ACCESSORY BUILDING or STRUCTURE shall conform to the regulations and standards for the DISTRICT in which it is located.

C. NONCONFORMING nonresidential USES which are permitted as of right in the R-1, Single Family Residence DISTRICT and are not otherwise permitted by SPECIAL USE Permit may be expanded by a total of no more than 25% of building floor area compared to the building floor area that existed on October 10, 1973, and HEIGHT, lot coverage, and off-street parking and loading area only if a VARIANCE is granted by the BOARD in accordance with Section 9.1.9.

8.2.2 No such NONCONFORMING USE of land shall be moved in whole or in part to any other portion of the LOT or tract of land occupied on the effective date of adoption or amendment of this ordinance except that a SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land (including any ACCESSORY BUILDING or ACCESSORY STRUCTURE) may be moved on the LOT provided that a VARIANCE is granted by the BOARD in accordance with Section 9.1.9. Expansion as authorized in 8.2.1B. shall not be considered moving of the NONCONFORMING USE.

8.2.3 If any such NONCONFORMING USE of land ceases for any reason for a period of more than 180 consecutive days except for seasonal vacations lasting more than 274 consecutive days and that occur no more often than once in any 365 consecutive days or except when actively marketed for sale or rent by either the posting of a sign on the front LOT LINE of the property or when marketed by other affirmative means, any subsequent USE of such land shall conform to the regulations and standards set by this ordinance for the DISTRICT in which such land is located.

8.3 NONCONFORMING STRUCTURES

Where, on the effective date of adoption or amendment of this ordinance, a lawful STRUCTURE exists that could not be built under the regulations and standards of this ordinance as adopted or amended, by reason of restrictions on LOT AREA, LOT COVERAGE, HEIGHT, YARDS, spacing between BUILDINGS, or other characteristics of the STRUCTURE or its location on the LOT, such STRUCTURE may be continued so long as it remains otherwise lawful subject to the following provisions:

8.3.1 No such STRUCTURE may be enlarged or ALTERED in a way which increases its nonconformity unless a VARIANCE is granted by the BOARD in accordance with Section 9.1.9.

8.3.2 Should such STRUCTURE be destroyed by any means to an extent of more than 50% of its replacement cost at the time of destruction, it shall not be reconstructed unless a VARIANCE is granted by the BOARD in accordance with Section 9.1.9.

8.3.3 Should any STRUCTURE be moved for any reason for any distance whatever, it shall thereafter conform to the regulations and standards for the DISTRICT in which it is located after it is moved unless a VARIANCE is granted by the BOARD in accordance with Section 9.1.9.

8.4 NONCONFORMING USES of STRUCTURES

Where, on the effective date of adoption, or amendment, of this ordinance, a lawful USE or a STRUCTURE, or of a PREMISES, exists that is no longer permissible under the regulations and standards of this ordinance as adopted, or amended, such USE may be continued so long as it remains otherwise lawful subject to the following provisions:

8.4.1 No existing STRUCTURE devoted to a USE not permitted by this ordinance in the DISTRICT in which it is located shall be enlarged, extended, constructed, reconstructed, moved, or ALTERED except in changing the USE of such STRUCTURE to a USE permitted in the DISTRICT in which it is located except as follows:

A. A SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land (including any ACCESSORY BUILDING or ACCESSORY STRUCTURE) may be constructed, reconstructed, or ALTERED without changing the USE to a permitted USE and may also be enlarged or moved without changing the USE as otherwise herein provided.

B. As otherwise herein provided for structures used for other than a SINGLE FAMILY DWELLING.

SECTION 8.4 NONCONFORMING USES of STRUCTURES – CONTINUED

- 8.4.2** Any NONCONFORMING USE may be extended throughout any parts of the BUILDING or STRUCTURE which were manifestly arranged or designed for such USE at the effective date of adoption, or amendment, of this ordinance, but no such USE shall be extended to occupy land outside of such STRUCTURE except as otherwise herein provided.
- 8.4.3** If no structural ALTERATIONS are made, any NONCONFORMING USE of a STRUCTURE or of any PREMISES, may be changed to another NONCONFORMING USE provided that the BOARD, either by general rule or by making findings in the specified case, shall find that the proposed USE is equally appropriate to the DISTRICT as the existing NONCONFORMING USE. Such change in NONCONFORMING USE shall be considered a major VARIANCE and shall not be permitted except as provided in Section 9.1.9.
- 8.4.4** Any STRUCTURE, or any PREMISES, in or on which a NONCONFORMING USE is superseded by a permitted USE, shall thereafter conform to the regulations and standards of the DISTRICT in which such STRUCTURE or PREMISES is located, and the NONCONFORMING USE shall not be resumed.
- 8.4.5** When a NONCONFORMING USE of a BUILDING or STRUCTURE or of a PREMISES is discontinued or abandoned for 180 consecutive days or for 540 days during any 1,095 day period except for seasonal vacations lasting less than 274 consecutive days and that occur no more often than once in any 365 consecutive days or except that when actively marketed for sale or rent by either the posting of a sign on the front LOT LINE of the property or when marketed by other affirmative means, the STRUCTURE or the PREMISES shall thereafter not be used except in compliance with the regulations and standards of the DISTRICT in which it is located.
- 8.4.6** Where NONCONFORMING USE status applies to a PREMISES, removal or destruction of the STRUCTURE shall eliminate the NONCONFORMING USE status of the land, except as it may qualify as a NONCONFORMING LOT of record except as otherwise herein provided.

8.5 Nonconforming SIGNS

- 8.5.1** SIGNS which were CONSTRUCTED in compliance with previous regulations, but which do not conform to the provision of this ordinance as of the date of its enactment, or thereafter shall be regarded as nonconforming SIGNS. All roof SIGNS shall be considered nonconforming SIGNS and subject to the provisions herein.
- 8.5.2** A nonconforming SIGN may not be:
- A. Changed to another nonconforming SIGN;
 - B. Structurally ALTERED so as to prolong the life of the SIGN;
 - C. Expanded;

SECTION 8.5 NONCONFORMING SIGNS – CONTINUED

- D. Re-established after discontinuance for 90 days; or STRUCTURE removed after discontinuance for 180 consecutive days;
- E. Re-established after damage or destruction if the estimated expense of reconstruction exceeds 50% of appraised replacement costs.

8.5.3 Repair or replacement of a nonconforming SIGN with a SIGN of greater dimension than permitted by the ordinance and/or a SIGN in a location not permitted if a VARIANCE is granted by the BOARD in accordance with Section 9.1.9, and if the VARIANCE would not increase the nonconformity of the legal existing nonconforming SIGN.

8.6 Repairs or Maintenance

On any STRUCTURE devoted in whole or in part to any NONCONFORMING USE, or which itself is NONCONFORMING, work may be done in a period of 365 consecutive days on ordinary repairs or on repair or replacement of non-bearing walls, fixtures, wiring, or plumbing, to an extent not to exceed 10% of the then current replacement value of the STRUCTURE, provided that the volume of such BUILDING or the size of such STRUCTURE as it existed at the effective date of the adoption, or amendment, of this ordinance shall not be increased except as follows:

- A. As otherwise herein provided; and
- B. There is no limit on the value of repair or replacement for a SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land (including any ACCESSORY BUILDING or ACCESSORY STRUCTURE) including repair or replacement of bearing walls or other structural features.
- C. On any STRUCTURE that is NONCONFORMING a VARIANCE may be granted by the BOARD to authorize a higher value of repair or replacement including repair or replacement of bearing walls or other structural features.

Nothing in this ORDINANCE shall be deemed to prevent the strengthening or restoring to a safe condition of any STRUCTURE or part thereof declared to be unsafe by any official charged with protecting the public safety, upon order of such official.

*Champaign County, Illinois
Zoning Ordinance*

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SECTION 9 ADMINISTRATION, ENFORCEMENT, AMENDMENT AND FEES

9.1 Administration and Enforcement

The administration and enforcement of this ordinance shall be vested in an office and a body of the government of the COUNTY as follows: A. Zoning Administrator; B. Zoning BOARD of Appeals (BOARD); C. Champaign County Board (GOVERNING BODY); D. Hearing Officer.

9.1.1 Zoning Administrator

- A. Appointment: This ordinance shall be administered and enforced by the Zoning Administrator appointed by the Chairman of the GOVERNING BODY and confirmed by the members of the GOVERNING BODY. The Zoning Administrator may be provided with the assistance of such persons as the GOVERNING BODY may direct.
- B. Duties: The Zoning Administrator shall have the authority and duty to administer and enforce this ordinance and shall:
 - 1. issue all zoning use permits where authorized by this ordinance and keep permanent records thereof;
 - 2. issue all Zoning Compliance Certificates and keep permanent records thereof;
 - 3. conduct such inspections of STRUCTURES, USES, and ACCESSORY USES as are necessary to determine compliance with this ordinance;
 - 4. maintain permanent records pertaining to VARIANCES, SPECIAL CONDITIONS, and SPECIAL USES, granted, modified, or denied by the BOARD;
 - 5. maintain permanent records of all amendments to this ordinance;
 - 6. make, or cause to be made, changes to the Official Zoning Map in the manner specified herein;
 - 7. when directed by the BOARD or PLAN COMMISSION, prepare factual reports pertaining to any VARIANCE, SPECIAL CONDITION or SPECIAL USE or to any amendment to this ordinance;
 - 8. when directed by the BOARD or GOVERNING BODY, attend meetings of the BOARD or GOVERNING BODY or public hearing in connection with any VARIANCE, SPECIAL CONDITION or SPECIAL USE or with any amendment to this ordinance.

SECTION 9.1.1 ZONING ADMINISTRATOR - CONTINUED

9. in the event that any regulations and standards of this ordinance are being violated, notify immediately in writing upon his knowledge of such violation the perpetrator of such violation indicating the nature of the violation and the action necessary to correct it. The Zoning Administrator shall order the discontinuance of illegal use of any STRUCTURE or of any additional change, or ALTERATION thereto, discontinuance of any illegal work being done, or shall take other action authorized by this ordinance to ensure compliance with or to prevent violation of its regulations and standards. When necessary, the Zoning Administrator may inform the State's Attorney of the COUNTY, who shall in turn institute an appropriate action of proceeding in equity or law to restrain, correct or abate the violation. The notice provided in this Section shall not be a prerequisite to any civil or criminal judicial proceeding.
10. the Zoning Administrator shall prepare a report of permits issued, which he shall present to the appropriate committee of the GOVERNING BODY at each regular meeting of the committee.
11. authorize upon application ADMINISTRATIVE VARIANCES in accordance with Section 9.1.10.

9.1.2 Zoning Use Permit

A. Scope of the Zoning Use Permit

A Zoning Use Permit shall be obtained by the OWNER, or OWNER and contract buyer, when the PROPERTY is being sold under contract, agents of either, or the architect, engineer or builder employed in connection with the proposed work, from the Zoning Administrator before starting:

1. to establish, occupy, or change the USE of a STRUCTURE, ACCESSORY STRUCTURE, or land either by itself or in addition to another USE;
2. to CONSTRUCT or erect a new STRUCTURE or ACCESSORY STRUCTURE or part thereof;
3. to extend, or move any STRUCTURE or ACCESSORY STRUCTURE or part thereof;
4. to change one NONCONFORMING USE to another such USE or to a SPECIAL USE;
5. to extend, expand, change or re-establish any NONCONFORMING USE.

SECTION 9.1.2 ZONING USE PERMIT – CONTINUED

B. Application for Zoning Use Permit

1. Applications for Zoning Use Permits shall be filed in written form with the Zoning Administrator on such forms as the Zoning Administrator shall prescribe, and shall:
 - a. state the location, including township, street number, lot, block, and/or tract comprising the legal description of the PROPERTY;
 - b. state the name and address of the OWNER, the applicant, and the contractor, if known;
 - c. state the estimated cost;
 - d. describe the USES to be established or expanded;
 - e. be accompanied by a plan in duplicate, or duplicate prints thereof, drawn approximately to scale, showing the:
 - (1) actual dimensions of the LOT to be built upon;
 - (2) size, shape, and locations of the USE to be established on the STRUCTURE or ACCESSORY STRUCTURE to be CONSTRUCTED;
 - (3) size, shape, and location of all existing STRUCTURES, ACCESSORY STRUCTURES, and USES on the LOT;
 - (4) minimum floor elevations and the highest known flood level, where applicable;
 - (5) ACCESS;
 - (6) off-street PARKING SPACES and LOADING BERTHS;
 - (7) water supply and sewage disposal facilities, including a true and current copy of any permit required by the COUNTY or Environmental Protection Agency approving such facilities;
 - (8) other information as may be necessary to provide for the proper administration and enforcement of this ordinance.

SECTION 9.1.2 ZONING USE PERMIT – CONTINUED

- f. include any ACCESSORY STRUCTURE or USE established or CONSTRUCTED at the same time the MAIN or PRINCIPAL STRUCTURE, or main or principal USE is established or CONSTRUCTED;
- g. each Zoning Use Permit for a MAIN or PRINCIPAL STRUCTURE, or main or a principal USE shall also cover any ACCESSORY STRUCTURE or ACCESSORY USE established or CONSTRUCTED at the same time on the same LOT or tract of land.

C. Issuance of Zoning Use Permit

- 1. The Zoning Administrator shall retain the original copy of the Zoning Use Permit and shall mark such Permit whether approved or disapproved and for any Zoning Use Permit authorizing construction on a SINGLE FAMILY DWELLING that is a NONCONFORMING USE of land in a zoning DISTRICT in which a SINGLE FAMILY DWELLING is not an authorized PRINCIPAL USE, the Zoning Use Permit shall include a notice that the zoning DISTRICT does not authorize a SINGLE FAMILY DWELLING as a PRINCIPAL USE and shall indicate in general the types of PRINCIPAL USE authorized as either business uses or industrial uses.
- 2. One copy shall be returned to the applicant, duly signed and marked, as in (1) above.
- 3. The applicant's copy shall be posted in plain sight on the PREMISES for which it is issued until the Zoning Compliance Certificate shall have been issued by the Zoning Administrator.
- 4. No Zoning Use Permit shall be issued until application has been made for a Zoning Compliance Certificate.

D. Expiration of Zoning Use Permit

- 1. If work described on any Zoning Use Permit shall not have begun within 180 days from the issuance thereof, said permit shall expire and be canceled by the Zoning Administrator and written notice thereof shall be given to the applicant.

ATTACHMENT C

92. Ordinance No. 884, Case 675-AT-IO, Adopted April 21, 2011

-Section 3, Definitions

Amend NONCONFORMING LOT, STRUCTURE or USE

-Section 8, NON-CONFORMITIES

Amend 3rd Paragraph

Revise Subsection 8.1.2

Revise Paragraph 8.2. 1B

Revise Paragraph 8.2.1C

Revise Subsection 8.2.2

Revise Subsection 8.2.3

Revise Subsection 8.3.1

Revise Subsection 8.3.3

Revise Subsection 8.4.1

Revise Subsection 8.4.2

Revise Subsection 8.4.5

Amend Subsection 8.4.6

Revise Subsection 8.6

-Section 9, Administration, Enforcement, Amendment and Fees

-Amend Paragraph 9.1 .2C

A-

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
PROPOSAL OF CLIFFORD-JACOBS FORGING CO.) R2014- 022
FOR AN AMENDMENT TO THE SITE-SPECIFIC)
RULE AT 35 ILL. ADM. CODE 901.119)

AFFIDAVIT OF PAUL D. SCHOMER, Ph.D, P.E.

STATE OF ILLINOIS)
) SS
COUNTY OF Champaign)

The undersigned, being first duly sworn upon oath, states as follows:

1. I am the President of Schomer & Associates, Inc., the consultant in Acoustics and Noise Control to Clifford-Jacobs Forging Co., the Petitioner in the above-entitled proceeding. I am a Board Certified Member of the Institute of Noise Control Engineering, and Standards Director Emeritus of the Acoustical Society of America.

2. I have been tasked by the Petitioner to respond to the Order of the Hearing Officer requesting the Petitioner to "please update the record with more current information on the state of the art on using mufflers and silencers to control sound emissions from impact forging hammers."

3. I have surveyed the available literature within the constraints of time imposed and have addressed the issue with prominent manufacturers of my acquaintance. I have determined that a more current state of the art for silencing forge hammers does not exist. No manufacturer of steam vent silencers expressly markets or manufactures such silencers for forging hammers like those at Clifford-Jacobs. I have further determined that there is nobody that we could confirm has experience in quieting a forge hammer and its steam sounds. What we can say at present is that it has not been done.

4. The issue is not only the integrity of the silencer standing up to the vibration but more the questions loom as to how the installation of the silencer would affect the operation of the forge/anvil. It is also not clear if the building can support or house a silencer large and heavy enough to be effective, and it is not clear if the floor could support the superstructure necessary to support it.

ATTACHMENT D

5. Finally, there may be some misunderstanding in some people's mind as to what the benefits of a silencer would be. There are two sounds coming from the building that have been measured. The first is the "shish" sound and the second is the "boom." The "shish" sound is steam passing through the vent pipes coming through the roof of the forge building. The "boom" sound is the sound of the hammer striking the metal. Typically the two are about equal, but are in different octave band levels. **Figure 1**[below] shows an example collected on June 13 at Location 2. It shows the boom sound is centered in the 125 Hz A-weighted octave band level, and the shish sound is centered in the 1000 Hz A-weighted octave band level. Adding the 4 lower-frequency octave bands together, 63 through 250 Hz (light blue), gives an estimate of 69.9 dB for the boom sound alone (dark blue), and adding the 5 higher frequency bands together, 500 Hz through 8000 Hz (pink), gives an estimate of 69.7 dB for the level of shish sound alone (dark red). Because the boom and shish levels are about equal, they combine to an A-weighted level that is 3 dB above the average of these two, just under 73 dB (teal).

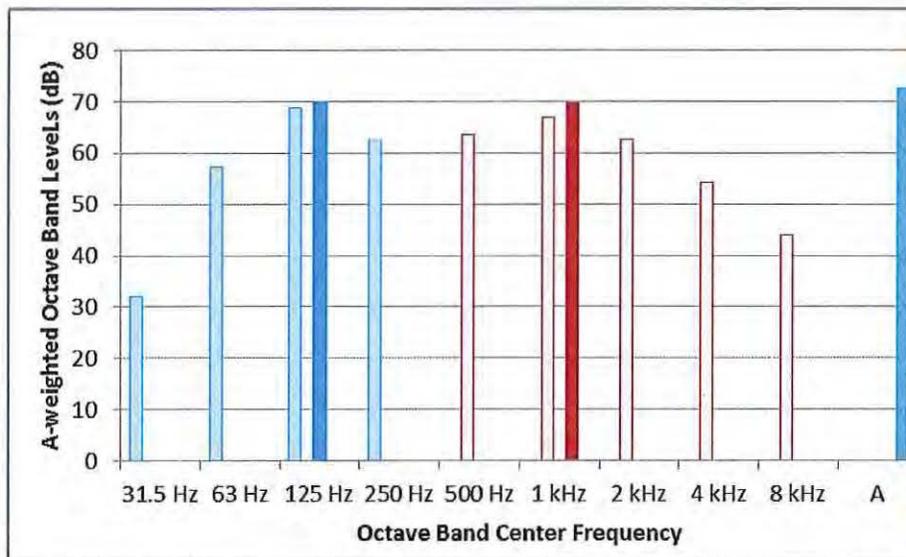


Figure 1. Single, 25,000 lb hammer forging beginning at 21:33:26 on 13 June 2013 at Location 2. The dark blue bar at 125 Hz is the sum of the 31, 63, 125, and 250 Hz bands (light blue) and the dark red bar at 1 kHz is the sum of the bands from 500 through 8000 Hz (pink), and the sum of the shish sound (dark red) and the boom sound (dark blue) yields the shish boom sound (teal).

To make matters even worse, within residences in Wilber Heights the benefit is further reduced so that it is rarely above zero. Specifically, only when the windows in those residences are open more than about 10 inches will the benefits go above 1 dB. This occurs because the attenuation of sound by the building is greater with respect to the higher-pitched sounds [e.g., 1000 Hz] than with respect to the lower-pitched sounds [e.g., 125 Hz]. When the windows are closed the difference in attenuation is approximately 9 dB, which attenuation decreases the wider the windows are left open. Together, this analysis shows that if we eliminate entirely all of the “shish” sounds from the stream of shish—boom sounds using silencers, there is a reduction of only 3dB to the A-weighted level outdoors, and most of the time indoors this benefit drops to less than 1 dB. Thus, a potential significant reduction of the A-weighted level cannot be accomplished just by installing silencers on the steam vents.

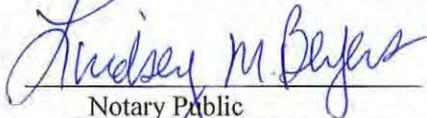
FURTHER AFFIANT SAYETH NAUGHT.

DATED this 11 day of September, 2015

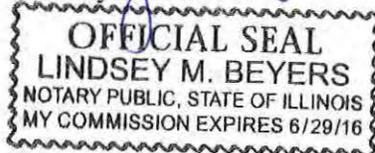


Paul D. Schomer, Ph. D., P.E.

SUBSCRIBED and SWORN to
before me this 11th day of September, 2015



Notary Public





PO Box 830 • 2410 N 5th St • Champaign, IL 61824-0830 • P: 217.352.5172 • F: 217.352.4629 • www.Clifford-Jacobs.com

April 23, 2015

Dear Neighbor:

Some time ago, Clifford- Jacobs (C-J) petitioned the Illinois Pollution Control Board to expand our company's available hours of operation in order to take advantage of changes in the forging industry and perhaps, add to its workforce and payroll. In the last several days, the Board released its Opinion and Order proposing to grant C-J's request. This followed from a public hearing and lengthy application process.

The Board's Opinion and Order has been or will soon be mailed to you as one of C-J's neighbors. Because this document is long and technical, I want to invite you to contact us with any questions you may have after reviewing it.

If you do have questions, please feel free to contact Jeff Baker at [352-5172 \(Ext. 4238\)](tel:352-5172). You can also write Jeff at [2410 North Fifth Street, Champaign, IL 61822](mailto:2410NorthFifthStreet@cliffordjacobs.com).

Sincerely,

Jason M. Ray
General Manager