# BOARD OF ADJUSTMENT <br> PORTSMOUTH, NEW HAMPSHIRE 

## Remote Meeting Via Zoom Conference Call

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Per NH RSA 91-A:2, III (b) the Chair has declared the COVID-19 outbreak an emergency and has waived the requirement that a quorum be physically present at the meeting pursuant to the Governor's Executive Order 2020-04, Section 8, as extended by Executive Order 2020-20, and Emergency Order \#12, Section 3. Members will be participating remotely and will identify their location and any person present with them at that location. All votes will be by roll call.

7:00 P.M.
NOVEMBER 17, 2020

## AGENDA

## I. APPROVAL OF MINUTES

A) Approval of the minutes of the meeting of October 20 and 27, 2020.

## II. PUBLIC HEARINGS - NEW BUSINESS

A) REQUEST TO POSTPONE. Petition of $\mathbf{1 5 0}$ Greenleaf Avenue Realty Trust,

Owner, for property located at $\mathbf{1 5 0}$ Greenleaf Avenue for Appeal of an Administrative Decision that the following are required: 1) A Variance from Section 10-208 Table 4 Uses in Business Districts (2009 Ordinance, Section 10.592 .20 in current Ordinance) that requires a 200 foot setback from any adjoining Residential or Mixed Residential district for motor vehicle sales. 2) A Variance from Section 10-1201, Off-Street Parking (2009 Ordinance, Section 10.1113.30 in current Ordinance) that requires a 100 foot setback for business parking areas from any adjoining Residential or Mixed Residential district. 3) A Wetland Conditional Use Permit for development within the Inland Wetlands Protection District. Said property is shown on Assessor Map 243 Lot 67 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District. REQUEST TO POSTPONE
B) Petition of SAI Builders, LLC, Owner, for property located at 27 Elwyn Avenue wherein relief is needed from the Zoning Ordinance to install two AC units which requires the following: 1) A Variance from Section 10.521 to allow a 5.5 foot right side
yard where 10 feet is required. Said property is shown on Assessor Map 113 Lot 28-1 and lies within the General Residence A (GRA) District.
C) Petition of Bromley Portsmouth, LLC, Owner, for property located at $\mathbf{1 4 6 5}$ Woodbury Avenue wherein relief is need from the Zoning Ordinance to construct a standalone automated teller machine (ATM) which requires the following. 1) A Variance from Section 10.1530 to allow an automated teller machine (ATM) as defined in this section to be a principal freestanding structure and not located on the outside of a building, or in an access-controlled entrance to a building, or within a principal use in a building. Said property is shown on Assessor Map 216 Lot 3 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District.
D) Petition of Michael Petrin, Owner, for property located at $\mathbf{2 3 9}$ Northwest Street wherein relief is needed from the Zoning Ordinance to demolish a rear addition and construct a new two-story rear addition which requires the following: 1) Variances from Section 10.521 to allow: a) 1.5 foot rear yard where 20 feet is required; b) $48 \%$ building coverage where $25 \%$ is the maximum allowed; and c) $28 \%$ open space where $30 \%$ is the minimum required. 2) A Variance from Section 10.321 to allow a nonconforming structure or building to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 122 Lot 3 and lies within the General Residence A (GRA) District.
E) Petition of Jessica Kaiser and John Andrew McMahon, Owners, for property located at $\mathbf{3 0}$ Spring Street wherein relief is needed from the Zoning Ordinance to construct covered front porch and add dormers to existing dwelling which requires the following: 1) Variances from Section 10.521 to allow a) $28.5 \%$ building coverage where $25 \%$ is the maximum allowed; b) a 0 foot front yard where 15 feet is required; and c) a 0 foot side yard where 10 feet is required. 2) A Variance from Section 10.321 to allow a nonconforming structure or building to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 130 Lot 13 and lies within the General Residence A (GRA) District.
F) Petition of Thomas Murphy, Owner, for property located at 95 Dodge Street wherein relief is needed from the Zoning Ordinance to demolish existing home and construct a new home with an attached accessory dwelling unit which requires the following: 1) A Variance from Section 10.1114.30 to allow two driveways where only one per lot is permitted. Said property is shown on Assessor Map 258 Lot 39 and lies within the Single Residence B (SRB) District.
G) Petition of Summit 501 Islington, LLC, Owner, for property located at 501 Islington Street wherein relief is needed from the Zoning Ordinance for a 900 square foot expansion of an existing medical office in an existing building which requires the following: 1) A Special Exception from Section 10.440 Use \#6.20 to allow a medical office where the use is allowed by special exception. Said property is shown on Assessor Map 157 Lot 6 and lies within the Character District 4-L2 (CD4-L2) District.
H) Petition of Gregory \& Amanda Morneault, Owners, for property located at $\mathbf{1 3 7}$ Northwest Street wherein relief is needed from the Zoning Ordinance to subdivide one lot into two lots and construct a new two family dwelling which requires the following: 1) Variances from Section 10.521 to allow: a) a lot depth of 44.7 feet for Lot 1 and 23.4 feet for Lot 2 where 70 feet is required for each; b) a lot area per dwelling unit of 5,317 square feet for proposed Lot 2 where 7,500 square feet per dwelling is required; c) a 2.5 foot front yard for proposed Lot 2 where 15 feet is required; and d) a 4 foot rear yard for proposed Lot 2 where 20 feet is required. Said property is shown on Assessor Map 122 Lot 2 and lies within the General Residence A (GRA) District.
I) Petition of $\mathbf{1 1 1}$ Maplewood Avenue, LLC, Owner, for property located at $\mathbf{1 4 5}$

Maplewood Avenue wherein relief is needed from the Zoning Ordinance for signage for new building which requires the following: 1) A Variance from Section 10.1251.20 to allow a 57 square foot freestanding sign where 20 square feet is the maximum allowed. 2) A Variance from Section 10.1242 to allow wall signs above the ground floor on all sides of the building. 3) A Variance from Section 10.1242 to allow wall signs above the ground floor on a side of a building not facing a street. 3) A Variance from Section 10.1144.63 to allow illuminated signs above 25 feet from grade. Said property is shown on Assessor Map 124 Lot 8-1 and lies within the Character District 5 (CD5) District.

## III. OTHER BUSINESS

## IV. ADJOURNMENT

# BOARD OF ADJUSTMENT MEETING 

PORTSMOUTH, NEW HAMPSHIRE

## Remote Meeting via Zoom Conference Call

# 7:00 P.M. 

OCTOBER 20, 2020

## MINUTES

MEMBERS PRESENT: Chairman David Rheaume, Vice-Chairman Jeremiah Johnson, Jim Lee, Peter McDonell, Arthur Parrott, Alternate Phyllis Eldridge, Alternate Chase Hagaman

MEMBERS ABSENT: Christopher Mulligan, John Formella

ALSO PRESENT: Peter Stith, Planning Department

Two Board members were absent, so both alternates Ms. Eldridge and Mr. Hagaman took voting seats.

## I. APPROVAL OF MINUTES

A) Approval of the minutes of the meeting of September 15, 2020.

The minutes were approved as presented by unanimous vote, 7-0.

## II. PUBLIC HEARINGS - NEW BUSINESS

Note: Due to technical issues with Petition A, it was moved, seconded, and passed unanimously (7-0) to pull Petition B, 322 Lincoln Avenue, out of order. They then addressed Petition B (pg 3).
A) Petition of Kelly Dobben-Annis, Owner, for property located at 160 Rockland Street wherein relief was needed from the Zoning Ordinance to construct a 12' x 14' deck which requires the following: 1) A Variance from Section 10.521 to allow $30.5 \%$ building coverage where $25 \%$ is the maximum allowed. Said property is shown on Assessor Map 129 Lot 01-01 and lies within the General Residence A (GRA) District.

## SPEAKING TO THE PETITION

The applicant Kelly Dobben-Annis was present. She said the condominium had four units; the top units had decks and the lower ones had yards. She said the owner of the other lower condo had requested a private patio but that she preferred to have a deck to give her more privacy. She said the condominium association had agreed with the request.

In response to the Board's questions, Ms. Dobben-Annis said the upper decks were larger than the 12 'x14' deck she wanted. She said she was looking for relief from the building coverage requirement and was pretty sure that no other condominium owners needed additional zoning relief, with the exception that two hazardous walkways would be removed and that the front walkway would be updated. She said the deck would come off the kitchen and would be eight feet from the existing grade. She said she had considered having a patio instead with steps going down to it but thought having a deck over the patio would fit in better.

Mr. McDonell asked if there would be a fence or a partition above the surface of the deck. The applicant said that it would be more within the landscaping. She said she wanted her own dedicated area for privacy because she had a lot of kitchen windows that people could see into.

Chairman Rheaume opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present to speak, and Chairman Rheaume closed the public hearing.

## DECISION OF THE BOARD

Mr. McDonell moved to grant the variance for the petition as presented, and Mr. Parrott seconded.

Mr. McDonell said granting the variance would not be contrary to the public interest and would observe the spirit of the ordinance, seeing that there would be no alteration to the neighborhood or threat to the public's health, safety, or welfare. He said it would be a relatively minimal improvement and that there was a similar deck across the way. He said substantial justice would be done because the deck would be located in as central a location to the lot as possible. He was it was a slight increase in building coverage, but there was no setback relief needed and it would not impede on anyone's light or air. He said surrounding property values would not be impacted. He said the proposed deck was a bit higher than he expected but made sense because the applicant could go from the kitchen to the deck. He said the hardship was that the property in its current state couldn't have anything done without additional building coverage relief. He said the relief required wasn't a lot, so there was no real and fair relationship between the purpose of the building coverage requirement of the ordinance and its application. He said the proposed use was a reasonable one and should be approved.

Mr. Parrott concurred and had nothing to add.
Chairman Rheaume said he thought the deck would be eight feet overall instead of eight feet to the floor. He said it made sense to want a deck, especially off the kitchen, to bring food and so on, and that going down steps to a patio would be inconvenient for that purpose, so it was reasonable for the applicant to want a deck versus a patio. He noted that it would not encroach too close to a neighbor and had the endorsement of the condominium association.

The motion passed by unanimous vote, 7-0.
B) Petition of the Amanda Telford Revocable Trust, Owner, for property located at $\mathbf{3 2 2}$ Lincoln Avenue wherein relief was needed from the Zoning Ordinance to demolish an existing structure and construct a new structure which requires the following: 1) Variances from Section 10.521 to allow a) $35.5 \%$ building coverage where $25 \%$ is the maximum allowed; b) a $3^{\prime} 6$ " right side yard where $10^{\prime}$ is required; and c) a $13^{\prime}$ rear yard where $20^{\prime}$ is required. 2) A Variance from Section 10.321 to allow a nonconforming structure or building to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 130 Lot 26 and lies within the General Residence A (GRA) District.

## SPEAKING TO THE PETITION

Attorney Derek Durbin on behalf of the owner was present and reviewed the petition. He said the carriage house was in derelict condition and that the applicant wanted to demolish it and reconstruct it in a slightly different location. He said the building would be used mainly for storage and that the second floor would be used as a home office. He reviewed the criteria and said they would be met. He said there were three letters of support from the abutters.

Mr. Hagaman asked if the same footings would be used, noting that the building could be flipped so that it would be more than 3-1/2 feet from the line or it could be on the other side of the property. Attorney Durbin said the goal was to bring it in line with the existing structure and that they were dealing with a very narrow building envelope. He said the applicant didn't have a lot of backyard space and was trying to preserve what little open space she had. He noted that either way would require some form of relief. Vice-Chair Johnson asked if the most immediate building adjacent to the neighbor's property was also a garage or shed and whether it was unoccupied. Attorney Durbin said the building was used as a storage space and was owned by the adjacent condominium association. Chairman Rheaume said the BOA previously granted variances for a deck back in 1996, but now the applicant was stating that the existing amount on the lot was 35 percent and was adding a half-percent. He asked where the six percent discrepancy came from. Attorney Durbin said he didn't know and thought someone probably made a mistake in the prior application or were working off the tax map at that time. Mr. Stith said he had no further information for that discrepancy.

Chairman Rheaume opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present, and Chairman Rheaume closed the public hearing.

## DECISION OF THE BOARD

Vice-Chair Johnson moved to grant the variances for the petition as presented, and Mr. Hagaman seconded.

Vice-Chair Johnson said it was a reasonable request and relatively close to in-kind. He said granting the variances would observe the spirit of the ordinance and the public interest, noting that the structure had been in that location for a long time and the setback was quite small. He said no negative comments from the neighbors had been heard. He said the structure was 3-1/2 feet from the neighbor's property, which wasn't ideal but was enough for building maintenance, and the other buildings were unoccupied. He said the proposed building had no windows on that side as well. He said granting the variances would do substantial justice because he saw no case in which the neighbors would be affected. He said there were places to fit a smaller shed within the setback, but it would render the yard useless. He said siting it as proposed and tucking it in the back corner while still leaving a reasonable amount of space from the rear setback provided a reasonable use of the backyard. He said granting the variances would not diminish the value of surrounding properties, noting that the deteriorated building had run its course and that replacing it with a structure of high-level craftsmanship would increase the level of property values in the neighborhood. He said the property had unique conditions, including that it was one of the more narrow properties in the neighborhood, and that the driveway set up the backyard to be the most usable space. He said the size and shape of the property were the two biggest items that created the unnecessary hardship. He said the use was a reasonable one and would replace the existing use with a better quality and look, and that most people wouldn't even know there was a new building there. He said for those reasons, he thought the variances should be granted.

Mr. Hagaman concurred. He said that, even though there was a very slight increase in building coverage, it was actually an improvement, so it was a tradeoff.

Chairman Rheaume said he would support it with a bit of a heavy heart. He said the existing structure was very unique and that it was unfortunate that demolition by neglect could occur. He said the proposed structure was similar but wouldn't be the exact same thing, even though it would be more useful for the applicant and would make better use of the space. He said the setback distance was a bit tight, but the height of the proposed structure would allow maintenance. He said the location was better in some ways because it casted shade on another garage instead of a neighbor's yard.

The motion was approved by unanimous vote, 7-0.
(Note: The Board then went back to address Petition A).
Chairman Rheaume recused himself from the following petition, and Vice-Chair Johnson was Acting-Chair.

## C) Petition of Andrea Ardito \& Brad Lebo, Owners, for property located at $\mathbf{1 2 1}$

Northwest Street wherein relief was needed from the Zoning Ordinance to construct an attached screened porch which requires the following: 1) A Variance from Section 10.521 to allow a $13.5^{\prime}$ rear yard where 20 ' is required. 2) A Variance from Section 10.321 to allow a nonconforming building or structure to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 122 Lot 1 and lies within the General Residence A (GRA) District.

## SPEAKING TO THE PETITION

The applicant Brad Lebo was present to review the petition. He said the screened porch would enhance their yard and allow them to more fully enjoy the weather. He said the porch would not affect the neighbors. He referred to his written criteria assessment.

There were no questions from the Board, and Acting-Chair Johnson opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present to speak, and Acting-Chair Johnson closed the public hearing.

## DECISION OF THE BOARD

Mr. Parrott moved to grant the variances for the petition as presented, and. Ms. Eldridge seconded.

Mr. Parrott said the proposal was very clear and that the structure seemed to be well designed and appropriate for the house. He said it would improve the house for the property owner as well as future owners and would have no effect on any neighbor. He said granting the variances would not be contrary to the public interest and would observe the spirit of the ordinance because there would be no change in the essential character of the neighborhood and the public's health, safety, and welfare would not be threatened. He said substantial justice would be done, noting that the applicant presented a logical reason for why he wanted to do the screened porch and where he wanted to place it. He said the neighbor had a fenced area against a busy roadway, so it was an unusual location. He said granting the variances would not diminish the value of surrounding properties and would be a slight upgrade and improvement. He said literal enforcement of the ordinance would result in an unnecessary hardship due to the special conditions of the property consisting of the odd-shaped lot and its location right up against the highway setbacks. He said the petition should be approved for all those reasons.

Ms. Eldridge concurred and had nothing to add. The motion passed by unanimous vote, 6-0.

Chairman Rheaume resumed his seat, and Vice-Chair Johnson recused himself from the petition.
D) Petition of PNF Trust of 2013 and $\mathbf{2 8 2}$ Middle Street, LLC, Owners, for properties located at 266, 270 \& 278 State Street \& 84 Pleasant Street, wherein relief was needed from the Zoning Ordinance to merge four lots into one as part of a redevelopment project including a four-story addition onto the existing building at 84 Pleasant Street which requires the following: Variances from Section 10.5A41.10C to allow a) an entrance spacing greater than $50^{\prime}$ where $50^{\prime}$ is the maximum allowed; b) $100 \%$ building coverage where $90 \%$ is the maximum allowed; c) $0 \%$ open space where $10 \%$ is the minimum required; d) a 4 -story, 45 ' tall building where 2-3 stories or a short 4th and 45 ' is the maximum allowed; e) less than $70 \%$ shopfront façade glazing where $70 \%$ is the minimum required and less than $20 \%$ other façade types where $20 \%$ is the minimum required; and f) to allow more than $20 \%$ of the ground floor use to be residential where
$20 \%$ is the maximum allowed. Said properties are shown on Assessor Map 107 Lots 77, 78, 79 \& 80 and lie within the Character District 4 (CD4) District.

## SPEAKING TO THE PETITION

Attorney John Bosen representing the applicant was present to review the petition. Project architect Michael Keene, contractor Amos Blanchard, and project engineer John Chagnon were also present. Attorney Bosen noted that they were before the Board in November 2017 about an appeal from the Historic District Commission (HDC) that denied their demolition permit, and that they had stipulations for keeping the State and Church Street facades of the existing building. He said they returned before the Board in 2019 and got variances for 266-270-278 State Street, but since then his client had acquired the 84 Pleasant Street property and wanted to integrate it into the other building. He said they had to retain the façade of the Times building, which would cause of loss of usable square footage, and the glazing required that the existing floor heights remain the same, which made the remaining usable floor space difficult to integrate into the new building without significant cost. He said the applicant needed a building large enough to approximate the square footage and the number of residential units lost in the fire. He said the first floor opening on Church Street was altered for mechanical vents and the access door, and they wanted to set the top floor back and avoid the mansard roof. He said they needed variances for underground parking but weren't sure whether or not they would even have underground parking. He said they would return for a variance if they did; otherwise, they would need a Conditional Use Permit (CPU) from the Planning Board for offstreet parking spaces. He reviewed the criteria and said they would be met.

Mr. Keane stated that the three State Street properties had approval from the HDC and that the Times building and the addition of the building next to it was finalized. He said the changes from the HDC work sessions were that the Church Street elevation's first-floor fenestration would be changed and a fourth story would be added on the Pleasant Street façade. He said the only thing left to work out with the HDC was how the buildings would come together. He explained in detail why they were closer to 50 percent glazing on the storefronts instead of 70 percent. He said 23 percent of the first floor was dedicated to resident use.

Mr. McDonell said the vents on the Church Street façade looked like mechanicals, and he asked what one would see and hear walking down the street. Mr. Keane said they would see painted metal louvers. He said they needed ventilation for the parking garage, even though it would be automated. He said there may be minor airflow running constantly and that only a carbon monoxide detector would cause a lot of air volume. He said an emergency generator would be in the building itself and not on the roof. Mr. Hagaman verified that the reason for the 100 percent coverage variance request instead of the previously-approved 93 percent was because the buildings were being connected and the space between them was eliminated. Mr. Keane agreed and noted that the 93 percent was for the State Street properties only, so the percentage would go down. Mr. Hagaman asked if all the spaces were interactive. Mr. Keane said the commercial spaces would be separated by the alleyway but would have a common hallway. He said the former Louis' restaurant building would be separated but that the upper floors would be integrated. Mr. Hagaman asked if the space where the mansard was going to be would be
utilized. Mr. Keane said the mansard would have allowed more usable interior space, so they were sacrificing some of it by doing the setback.

Chairman Rheaume said the 84 Pleasant Street portion of the application seemed similar to what was presented back in 2017. He asked what the difference would be in the building appearance. Mr. Keane said the Church Street elevation's second and third stories were exactly what was presented before and that the first story, the building footprint, and the entry and egress were the same. He said they were now showing louvers and an overhead garage door, but the materials were the same. Chairman Rheaume said he thought that 70 percent glazing would look modern and that the residential space on the first floor seemed to be a driving factor. He asked what the portion of the space for the parking would be used for if not for parking. Mr. Keane said half of it would go back to commercial use and the rest might be for mechanical uses. Chairman Rheaume said parking seemed to be the only feasible thing to do in that space. He asked why the applicant didn't include the variance for a commercial space now and indicate that he would return if he decided on a garage. He said if the Board approved it that night, it would be authorization for the applicant to do something else in the space that the Board might not be comfortable with. Mr. Keane said he hadn't considered that approach and that they would entertain a condition that the variance granting would be used for a car park.

Attorney Bosen said the only space they would be sacrificing if they didn't do the garage would be the portion of the commercial space shown, which would make the commercial use larger and the remaining use for mechanicals. He said it was a small square footage of the overall development and that they didn't see it as being a big sacrifice moving forward. He said the applicant chose to do the parking, which was why it was on the application, but that the Technical Advisory Committee (TAC) was concerned about the timing of the cars coming out onto Church Street, so technical issues had to be worked out. Chairman Rheaume said the applicant would have to come back before the Board if they did the robotic parking garage anyway because the ordinance didn't think of parking in those terms. Attorney Bosen said they could ignore the parking issue that evening because there had been no parking before the fire incident and they weren't sure if they would have parking at all.

Chairman Rheaume opened the public hearing.

## SPEAKING IN FAVOR OF THE PETITION

Barbara Jenny said she and her husband owned 92-94 Pleasant Street and wanted the project to move forward. She said their building was contiguous to 84-88 Pleasant Street. She asked what kind of precedent would be set by separating a lot from an existing building and combining it with a larger lot and what it would mean to the HDC's oversight of that building. She said she was trying to restore her portion of the building and didn't know who would own that larger lot in the future or whether a skyscraper could be built.

Chairman Rheaume said the HDC applied to the whole District, including that block, and the Planning Board approved the ability to combine all the lots. He said the same area zoning would remain and there were limitations to relief granted. Ms. Jenny asked what would happen in the
basement if there was no robotic garage. Chairman Rheaume said it wasn't germane to the Board but could be an issue that would go before the Planning Board.

## SPEAKING IN OPPOSITION TO THE PETITION OR SPEAKING TO, FOR, OR AGAINST THE PETITION

No one else was present to speak, and Chairman Rheaume closed the public hearing.

## DISCUSSION OF THE BOARD

Mr. Lee said he would be in support of the project because it was well thought out and he felt that the corner had been vacant far too long. Mr. McDonell said that he previously had concerns about the penthouse structure on that corner not being in keeping with the neighborhood's character, but it was approved. He said what was now requested was reasonable. He said the height of the 84 Pleasant Street building, the relief requested, and the way the top floor was configured was much more reasonable in the context of that structure than he thought it was in the context of the structure on the opposite corner. He said the entrance space request was driven by the nature of the Times building, and the building coverage and open space were driven by the fact that the structure was a massing imposing one but in an imposing place and was a reasonable request. Relating to the storefront glazing, he said the property as a whole wouldn't look right if it complied with the 70 percent shopfront glazing. He said it went with the other requirement of less than 20 percent of other façade types and was a reasonable request. He asked for more opinions on the ground floor residential variance request.

Chairman Rheaume said he thought the overall lot usage was greater than what was allowed, but not by much, and was the same relief granted in 2017. He said the glazing was probably based on character-based zoning and looked right but may be a little bit low. He said the distance between the entryways was the desire to keep the historic Times building's façade. He said the roof setback for the new building on the Church Street façade wouldn't be visible from Church Street. He said the ordinance was driving lots of mansard roofs and that the HDC might have been suffering from 'mansard roof fatigue'. He said he didn't see where the 20 percent minimum for the ground floor use was needed but thought the first floor should be business use, which would reduce the amount of relief requested. He said it may be beneficial to either not approve that portion or stipulate that if car use was not needed, it would be a business use. Mr. Hagaman said the application met a lot of the variance criteria but asked if there had been any thought to whether there should be separation between the buildings to combat potential fire or catastrophe. Chairman Rheaume said the current fire safety standards were way above what was present in the previous structure and that even if the buildings were separated, there would be several requirements for fire and safety for both building sections. Ms. Eldridge said she would be in favor of including the 23 percent residential request. Mr. Parrott said he liked the new design even better than the previous one. He said the reduction in glazing was outstanding. He noted that the Board indirectly dealt with design with respect to glazing percentages because it was an important architectural feature. He agreed with Ms. Eldridge about including the 23 percent residential request, and he agreed with Chairman Rheaume about the maximum distance spacing between the entries. He said no one would have a problem with 57 feet versus 50 feet because the actual dimensions on the ground weren't very big. He said he supported the project as
presented and thought it would be a substantial improvement to the neighborhood and the City. Chairman Rheaume said the Board had been thrust into the role of looking at building design, due to the character-based zoning and additional zoning requirements.

## DECISION OF THE BOARD

Mr. McDonell moved to grant the variances for the petition, with the following stipulation:

- That Item F regarding the amount of residential space on the first floor shall be approved only if there is a car lift/elevator installed in the building.


## Mr. Hagaman seconded.

Mr. McDonell said he agreed with the comments from other Board members and that he would incorporate his earlier comments. He said granting the variances would not be contrary to the public interest and would observe the spirit of the ordinance because the requested relief would not constitute an alteration in the essential character of the neighborhood or conflict with the purposes of the ordinance. He said the difference in the Board's approving the top floor relief compared to the previous time was that before, there was concern about the sightlines down the main corner, but now there were sightlines from very few places. He said he thought the penthouse structure on the Church Street façade was more visually appealing when it wasn't above the mansard roof as it was on the main corner of the parcel, so he saw no conflict with the neighborhood's character or any threat to the public's health, safety, and welfare. He said he had no concern with allowing the buildings to be placed closely together because the existing fire codes were different. He said substantial justice would be done because it was a clear benefit to the applicant to allow him to redevelop the property, which had been vacant for quite some time, and it was a reasonable use of the property. He noted that no one had articulated any harm to the general public. He said granting the variances would not diminish the value of surrounding properties. He said the abutter was excited about having her property values increased, and the relied requested was a reasonable way to increase property values. He said literal enforcement of the ordinance would result in unnecessary hardship due to the special conditions of the property, including the entry spacing requirement, the historic use of the existing Times building, the coverage and open space requirements, and the nature of the existing improvements. He said the proposed improvements were reasonable. He noted that the Board did approve that relief in the past. He said other special conditions were the shopfront glazing and other façade requirements, and that part of it was what was there today and part of it was that strict compliance with the ordinance would bring the buildings out of character with the neighborhood. He said there were perhaps some lots in the zone where it made sense to meet that shopfront glazing requirement, but they weren't the same kind of buildings as the applicant's. He said the height of the property had no relationship between the purposes of the ordinance allowing that increased height. He said the applicant articulated a valid reason for needing the increased allowance for ground floor residential and thought it was reasonable with the stipulation imposed. He said the proposed use was a reasonable one and sort of a replication of a historic and existing use. He said, for all those reasons, the Board should approve granting the variances.

Mr. Hagaman concurred. He noted that the project was largely approved by the Board, and now that it was being brought together, there were very specific variance requests to combine the properties. He said the height variance was not a true height variance request but was more of a configuration request, given that the mansard version of the roof could be allowed by right and the offset fourth story was less dominating. He said the stipulation made a lot of sense, given the reasoning and motivation for the ground floor use variance request, and that tying those two thing together with regard to the parking configuration was a reasonable stipulation to add on.

Ms. Eldridge said she would support the motion but didn't understand Mr. McDonell's tradeoff between the garage and the extra three percent. Chairman Rheaume explained that the request was driven by all the blue areas seen in the illustration. He said they were only over by three percent and a lot of the blue area was driven by the car lift area. He said the Board would like to see commercial retail be the dominating factor so that some of that blue space could be put back to residential uses. He said the stipulation would take care of the car elevator. Mr. Parrott said the stipulation was unnecessary and tied the applicant's hands. He said he didn't think the Board needed to do it but said he would support the motion. Chairman Rheaume said he thought it was a good application and would support the motion. He said the building was a 100 -year investment in Portsmouth and was much more than being better than 'a hole in the ground'. He said he was confident that it would be the right building to get into that space.

The motion was approved by unanimous vote, 7-0.
The Board discussed whether they should hear all the petitions that evening, seeing that the hour was late and there were five remaining petitions, some of which were substantial.

Vice-Chair Johnson moved to hear Petitions 7 through 11 at the October 27 meeting. Mr. Lee seconded. The motion passed by unanimous vote, 7-0.

Ms. Eldridge recused herself from the petition.
E) Petition of the Elisabeth Blaisdell Revocable Trust, Owner, for property located at 77 New Castle Avenue, wherein relief was needed from the Zoning Ordinance to install a minisplit unit which requires the following: 1) A Variance from Section 10.515 .14 to allow a 2' side yard setback where $10^{\prime}$ is required. Said property is shown on Assessor Map 101 Lot 50 and lies within the General Residence B (GRB) District.

## SPEAKING TO THE PETITION

The applicant Elisabeth Blaisdell was present and said the structure was presently a garden shed and that they wanted to insulate it and heat a portion for a home office. She said they proposed a mini-spit system with an exterior condenser and that the condenser would be hidden from view by a fence and shrubs. She reviewed the criteria and said they would be met.

Mr. Hagaman asked if there was already insulation in the structure or if a larger project was proposed. Ms. Blaisdell said it would be just office space and that the finished part would be
insulated. She said a garden shed portion would remain and the back corner would be a small bathroom. Chairman Rheaume said it was a tight area for a condenser and asked if the HVAC representative had been contacted and was okay with the air flow in that area. Ms. Blaisdell said the fan was small and set on brackets that pushed it away from the house. She said the HVAC representatives were comfortable with it and had actually recommended the location.
Chairman Rheaume asked how much room there was for access to the opposite side of the condenser for maintenance and whether a ladder could be brought in. Ms. Blaisdell said it had almost three feet of access that could be reached from the back side of the barn and that the condenser would be placed in the widest spot.

Chairman Rheaume opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present to speak to the petition, and Chairman Rheaume closed the public hearing.

## DECISION OF THE BOARD

Mr. Parrott moved to grant the variance for the petition as presented, and Mr. Lee seconded.
Mr. Parrott said it was a simple request and that there weren't obvious places to place the condenser because the lot was small. He said the proposed location was a good choice for all the reasons stated. He said that type of unit was in many neighborhoods and that he had not heard any complaints. He said the location between a building and a fence made sense, and he noted that the neighbor had a similar unit. He said granting the variance would not be contrary to the public interest or to the spirit of the ordinance because there would be no change in the essential character of the neighborhood or any threat to the public's health, safety, or welfare and that no one would even notice the unit. He said substantial justice would be done because the project would be an upgrade to the property and would be a nice working space for the applicants. He said granting the variance would not diminish the values of surrounding properties because it was a tight neighborhood and the neighbors had the same type of unit, and the applicant's property value would be upgraded as well as the neighbors' properties. He said the hardship was the small size of the property and the configuration of the barn tucked into the corner, which made it unlikely to find any other place that would be as suitable. He said the applicant made the right choice in choosing the location for the condenser and that the petition should be approved.

Mr. Lee concurred and had nothing to add. The motion passed by unanimous vote, 6-0.
Ms. Eldridge resumed her voting seat.
F) Petition of Gregory \& Elizabeth LaCamera, Owners, for property located at 200

McDonough Street, wherein relief was needed from the Zoning Ordinance to demolish the existing structure and construct a new single family dwelling which requires the following: 1) Variance from Section 10.521 to allow: a) a lot area and lot area per dwelling unit of 2,588 square feet where 3,500 is required for each; b) $39.5 \%$ building coverage where $35 \%$ is the
maximum allowed. 2) A Variance from Section 10.321 to allow a nonconforming structure or building to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 144 Lot 29 and lies within the General Residence C (GRC) District.

## SPEAKING TO THE PETITION

The applicant Greg LaCamera was present. He said the structure was in poor condition and had been vacant for quite some time and that he reviewed neighboring properties and tried to come up with a structure to fit the neighborhood's character. He said the neighbors were in support. He reviewed the criteria and said they would be met.

Chairman Rheaume said previous applicants in 2016 wanted to do similar things, and one thing that came before the Board was the idea that there would be obstructive visibility on the corner. He said the applicant's diagram showed that even the current building didn't have that concern. He asked what had changed and whether the recent sidewalk configuration was an impact. Mr. LaCamera said he didn't know. Mr. Stith said the existing house was built per the variances granted in 2016 and that possibly what was granted by the Board was never built. Chairman Rheaume agreed that it was never acted upon and said he found it hard to believe that it would have been requested to put the house further on city property. He thought the sidewalk configuration was shallower at the time and created the problem area. Mr. LaCamera said the edge of the street was substantially back from the house, like every other house on the street, but thought that was the reason they were doing bigger setbacks. Chairman Rheaume said he wanted to make sure that the issue wouldn't be a problem later on and that any concern with public safety was taken care of by the sidewalk configuration. He noted that the Board received a letter in support of the project.

Chairman Rheaume opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present to speak, and Chairman Rheaume closed the public hearing.

## DECISION OF THE BOARD

## Mr. McDonell moved to grant the variances for the petition as presented, and Mr. Lee seconded.

Mr. McDonell said the request was for the reconstruction of the home and had two points: one lot area and lot area per dwelling unit, and building coverage. He said the lot area and lot area per dwelling unit were driven by the lot. He said the building coverage wasn't far over the maximum of 35 percent and was in keeping with the rest of the neighborhood. He said he was always concerned when a home was torn down and reconstructed because it was usually much bigger, but in the applicant's case, he thought what was proposed was reasonable and would be in keeping with the rest of the homes in the area. He said it was decreased in current building coverage by combining the house with the garage. He said granting the variances would not be
contrary to the public interest and would observe the spirit of the ordinance because there would be no alteration in the essential character of the neighborhood or threat to the public's health, safety, or welfare. He said substantial justice would be done because the applicant had a clear benefit in that he would be able to build a new home in place of what wasn't really a workable living situation. He pointed out that no harm to the general public or neighbors was articulated. He said granting the variances would not diminish the values of surround properties, noting that he hadn't heard anything to suggest it and that having a nice new home in place of an odd out-ofshape home would increase the values of surrounding properties. He said the special conditions of the property were the size of the lot that clearly drove the lot area per dwelling unit and lot area size requests, and the building coverage request as well. He said there was no relationship between the purposes of the ordinance provisions and their application to the property. He said the proposed use was a reasonable one and that it would stay a single-family home. He said for all those reasons, the Board should grant the variances.

Mr. Lee concurred and said a nice new home on that corner would be a huge asset to the neighborhood.

Chairman Rheaume said he would support it, noting that it was a good project and that the amount of relief requested was a very modest amount. He said it was a small lot and basically unbuildable. He said the Board recognized that even though the modest lot sizes for the GRC were pretty small, many of the neighborhoods had even smaller lots. He said the total lot coverage was less than was existed and the request for $39.5 \%$ building coverage was just shy of meeting in the middle. He said the applicant could take advantage of the tight setback against the property line, which was allowed to give a similar appearance and setback to the other homes in the area, and was in keeping with the character of the immediate adjacent properties.

The motion passed by unanimous vote, 7-0.

It was moved, seconded, and passed unanimously to suspend the 10:00 meeting ending rule.
G) Petition of the Woodbury Avenue Cooperative, Inc., Owner, for property located at 1338 Woodbury Avenue, wherein relief is needed from the Zoning Ordinance to demolish the existing structures and replace them with 6 new mobile home units which requires the following: 1) A Variance from Section 10.521 to allow a lot area per dwelling unit of 3,480 square feet where 7,500 square feet per dwelling is required. 2) A Variance from Section 10.334 to allow a lawful nonconforming use to be extended, enlarged or changed except in conformity with the Ordinance. Said property is shown on Assessor Map 237 Lot 70 and lies within the Mixed Residential Business (MRB) District.

The applicant was not present.

## DECISION OF THE BOARD

Vice-Chair Johnson moved to postpone the petition to the October 27, 2020 meeting. Mr. Lee seconded.

Vice-Chair Johnson said it was unfortunate that the applicant couldn't be present but that there would be time to fit his petition into the next meeting. Mr. Lee concurred.

The motion passed by unanimous vote, 7-0.
Chairman Rheaume stated that the remainder of the petitions would be heard at the October 27, 2020 meeting.
H) Petition of Bacman Enterprises, Inc., Owner, for property located at 140 Edmond Avenue, wherein relief was needed from the Zoning Ordinance to redesign previously approved parking which requires the following 1) Variance from Section 10.1113 .20 to allow off-street parking spaces to be located in the required front yard or between a principal building and the street. 2) Variance from Section 10.1114.32(a) to allow vehicles to enter and leave a parking area by backing out into or from a public street or way. 3) Variance from Section 10.1114.32(b) to allow vehicles to enter and leave each parking space without requiring the moving of any other vehicle. Said property is shown on Assessor Map 220 Lot 81 and lies within the Single Residence B (SRB) District.

It was moved, seconded, and passed unanimously (7-0) to postpone the petition to the October 27, 2020 meeting.
I) Petition of Karen \& Rick Rosania, Owners, for property located at 32 Boss Avenue, wherein relief was needed from the Zoning Ordinance to add a second story to an existing dwelling and enclose rear deck which requires the following: 1) A Variance from Section 10.521 to allow a $14^{\prime}$ front yard where $30^{\prime}$ is required. 2) A Variance from Section 10.321 to allow a nonconforming building or structure to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 153 Lot 5 and lies within the Single Residence B (SRB) District.

It was moved, seconded, and passed unanimously (7-0) to postpone the petition to the October 27, 2020 meeting.
J) Petition of Lori Sarsfield, Owner, for property located at $\mathbf{5 6}$ Clinton Street, wherein relief was needed from the Zoning Ordinance for the addition of attached one car garage which requires the following: 1) A Variance from Section 10.521 to allow a 5' right side yard where $10^{\prime}$ is required. 2) A Variance from Section 10.321 to allow a nonconforming building or structure to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 158 Lot 6 and lies within the General Residence A (GRA) District.

It was moved, seconded, and passed unanimously (7-0) to postpone the petition to the October 27, 2020 meeting.
K) Petition of Matthew \& Sarah Currid, Owners, for property located at $\mathbf{5 4 2}$ State Street, wherein relief was needed from the Zoning Ordinance to convert a single-family dwelling into a
two-family with new $10^{\prime}$ x 18 ' two-story deck which requires the following: 1) A Variance from Section 10.521 to allow a lot area per dwelling unit of 2,175 square feet where 7,500 square feet per dwelling is required. Said property is shown on Assessor Map 127 Lot 18 and lies within the Mixed Residential Office (MRO) District.

It was moved, seconded, and passed unanimously (7-0) to postpone the petition to the October 27, 2020 meeting.

## III. OTHER BUSINESS

There was no other business.

## IV. ADJOURNMENT

The meeting was adjourned at 10:16 p.m.
Respectfully submitted,
Joann Breault
BOA Recording Secretary

# BOARD OF ADJUSTMENT MEETING MINUTES PORTSMOUTH, NEW HAMPSHIRE 

Remote Meeting via Zoom Conference Call
7:00 P.M.
OCTOBER 27, 2020

## MINUTES

MEMBERS PRESENT: Chairman David Rheaume, Vice-Chairman Jeremiah Johnson, Jim Lee, Christopher Mulligan, Arthur Parrott, Alternate Phyllis Eldridge, Alternate Chase Hagaman

MEMBERS EXCUSED: John Formella and Peter McDonell

ALSO PRESENT:
Peter Stith, Planning Department

Chairman Rheaume stated that both alternates Ms. Eldridge and Mr. Hagaman would vote on all petitions.

## I. PUBLIC HEARINGS - NEW BUSINESS

A) Petition of the Woodbury Avenue Cooperative, Inc., Owner, for property located at 1338 Woodbury Avenue, wherein relief was needed from the Zoning Ordinance to demolish the existing structures and replace them with 6 new mobile home units which requires the following: 1) A Variance from Section 10.521 to allow a lot area per dwelling unit of 3,480 square feet where 7,500 square feet per dwelling is required. 2) A Variance from Section 10.334 to allow a lawful nonconforming use to be extended, enlarged or changed except in conformity with the Ordinance. Said property is shown on Assessor Map 237 Lot 70 and lies within the Mixed Residential Business (MRB) District.

## SPEAKING TO THE PETITION

Project engineer Jon Warzocha was present to review the petition. He said they were before the Board in 2017 and had received two of the requested variances except for the setback one, but they hadn't been able to get funding to move ahead with the project. He referred to his written criteria assessment and said they would be met.

Mr. Mulligan said the relief granted in 2017 was for a lot area per dwelling of 3,149 square feet, which was less than the proposed 3,480 square feet. He asked whether there were more units proposed in 2017. Mr. Warzocha said there was originally an additional unit that the Board didn't approve, so it was brought down to its current density. Mr. Parrott asked who was responsible for maintaining the property, noting that there was a tipped-over oil tank, personal
belongings, and stuff strewn around that made the property look unkempt. Mr. Warzocha said the residents were all property shareowners who were responsible for their own areas, but there was a board of directors who addressed individual unit concerns. He said they were also working with a group known as ROK-NH that helped resident-owned communities do improvements and secure funding. He said they would address the housekeeping issues. Mr. Parrott said the answer was the same one the Board got the previous time, and that if everyone was responsible, then no one was responsible. He said the neighbors had concerns. He asked if the individual and collective responsibilities would be enforced if the variances were granted. Mr. Warzocha said that granting the variance would be the first step in enforcing the rules. Vice-Chair Johnson asked whether ROK-NH would provide enforcement follow-up or stipulations. Mr. Warzocha said he would discuss it with them and that they'd also have to go before the Planning Board.

Chairman Rheaume opened the public hearing.

## SPEAKING IN FAVOR OF THE PETITION

Tom Heany of 30 Wholey Way said he was an abutter and asked if any screening would be done along Woodbury Avenue and whether the dumpster would be moved. Mr. Warzocha said the screening issue would be discussed during the site plan process and that Mr. Heany could discuss his concerns with the cooperative group. He said the dumpster's location could be changed. Mr. Heany said he would support any changes that made the property look better.

Robyn Aldo of 30 Wholey Way said the property was in a deplorable state and hoped the mobile homes would obey current setbacks and that screening would be used, and that due diligence would be done to make the mobile park look more attractive.

Tara Reardon said she was the ROC-NH Director and that they were waiting for a funding commitment to improve the property. She said the abandoned homes and other structures would be removed, that a second egress would be added, and that homes would be repositioned for fire and safety concerns. She said all the work would be done by the end of the following year. She said the residents were long-term ones and were excited to have the property improved.

## SPEAKING IN OPPOSITION TO THE PETITION

Chairman Rheaume noted that the Board received a letter in opposition.

Kristen Wade of 1380 Woodbury Avenue said her concern was that six more homes would be added to the mobile park, making the total residences 16 , including the three residences at her home. She wondered if the City was setting a precedent for other mobile parks relating to square footage. She was also concerned about the unkempt conditions of the park and how it would look when the structures that shielded the park were demolished.

Patricia Katkin of 1380 Woodbury Avenue said she had lived in her home for 45 years and that the mobile park had never been cleaned up. She said up to six cars parked in the street in front of
the store area or in front of her house, preventing her from going into her driveway at times. She asked how it would improve if more people were placed in that area.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one else was present to speak, and Chairman Rheaume closed the public hearing.

## DISCUSSION OF THE BOARD

Mr. Warzocha clarified that they would not increase the density and that the property would have the same number of units, with mobile homes replacing the demolished structures.

Ms. Eldridge said if the Board denied the variances, there wouldn't be money to upgrade the property. She asked if the parking rule was being followed. Mr. Stith said the applicant had to comply with the parking rule, otherwise he would get a Conditional Use Permit (CUP). He said the applicant was still working on the site plan, but typically units over $71 / 2$ square feet needed 1.3 parking spaces per dwelling. Ms. Eldridge said there was no reason to believe that the applicant would not be in compliance. Vice-Chair Johnson agreed, noting that it was hard to improve the mobile park without getting an incentive or increasing its value to get the investment. He said community-owned cooperatives were a challenge, and the fact that the density would be equal and would remain less than the previously-approved one meant that the dimensional requirements providing for light, air, and security were less. He said it was a good project and that a renovated and nicely kept mobile home park would be less of an eyesore than the existing decrepit store and other buildings. Mr. Lee suggested stipulating that some vegetation could provide screening. Chairman Rheaume said the requested relief wasn't excessive and that the applicant was just reconfiguring the intensity, but some of the mobile homes would be more visible to the public, which the Planning Board would address. He noted that the area had changed due to all the businesses surrounding it and that the mobile park would provide more affordable housing in the City.

## DECISION OF THE BOARD

Vice-Chair Johnson moved to grant the variances for the petition as presented, and Mr. Lee seconded.

Vice-Chair Johnson referred to his previous comments and said it was important to foster that type of co-op living arrangement. He said it would take a more global investment to bring some of the lagging needs and aesthetics up to par, but that the 3-5 new units would be quite different looking than what was currently there. He said granting the variances would not be contrary to the public interest or the spirit of the ordinance because the density tied into the setback and allowed room for people to live and have light, air, circulation, and safety while having their own individual space. He said it didn't appear that the current intensity of the use was overbearing to the property and that the new units would be smaller than the current wooden structures. He said substantial justice would be done, noting that he understood the neighbors' concerns but thought the scale tipped toward the applicant and the benefits that would be gotten
versus any negative benefits to the public. He said granting the variances would not diminish the values of surrounding properties. He said the wooden buildings were derelict and affected current property values and that a marked visual improvement of the property, added with mobile home sales, would keep the property values at least neutral if not improved. He said the special conditions of the property were its haphazard layout and current use of the property carved out around multiple buildings. He said it would be better if the property were a perfect square and uniform grid, but the location of the buildings slated for demolition and the haphazard layout were the biggest special conditions. He said the residential use would continue and was currently surrounded by a mix of residential and commercial uses.

Mr. Lee concurred with Vice-Chair Johnson, adding that two professionals testified that they had secured the funding and had guidance.

The motion passed by unanimous vote, 7-0.
B) Petition of Bacman Enterprises, Inc., Owner, for property located at $\mathbf{1 4 0}$ Edmond Avenue, wherein relief was needed from the Zoning Ordinance to redesign previously approved parking which requires the following 1) Variance from Section 10.1113 .20 to allow off-street parking spaces to be located in the required front yard or between a principal building and the street. 2) Variance from Section 10.1114.32(a) to allow vehicles to enter and leave a parking area by backing out into or from a public street or way. 3) Variance from Section 10.1114.32(b) to allow vehicles to enter and leave each parking space without requiring the moving of any other vehicle. Said property is shown on Assessor Map 220 Lot 81 and lies within the Single Residence B (SRB) District.

## SPEAKING TO THE PETITION

Attorney Derek Durbin was present on behalf of the applicant, with project engineer Alex Ross, and reviewed the petition. He said the Board previously granted nine parking spaces instead of 12 , which were sufficient, but after several parking plan revisions resulting from other land board meetings, the City now wanted the property to have the required twelve spaces consisting of 10 for commercial uses and two for residential. He reviewed the criteria and said they would be met.

Mr. Mulligan said it seemed that the previously-approved variance for parking between the principal building and the street was being traded for stacked parking with the same number of parking spaces. Attorney Durbin agreed and said it was one additional variance for the stacked parking over what they were previously approved for. Chairman Rheaume asked if the Technical Advisory Committee (TAC) would recommend that spaces 10, 11, and 12 be identified as employee parking. Attorney Durbin agreed. Chairman Rheaume asked if the gravel area in front of the property would have changes made to it to prevent people from parking there. Mr. Ross said they discussed posting a no-parking sign when they were before TAC, but there was no signage at all along Edmond Avenue to prohibit parking. He said stacked parking was opted for because TAC wanted to keep the driveway as narrow as possible for plowing.

Chairman Rheaume opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present to speak, and Chairman Rheaume closed the public hearing.

## DECISION OF THE BOARD

Mr. Mulligan moved to grant the variances for the application as presented and advertised, and Mr. Parrott seconded.

Mr. Mulligan said it was the same project that was approved the year before, so all the justifications were carried forward, but what had changed was that the applicant got feedback from the Planning Department and the Planning Staff through the TAC process and stacked parking was added. Given that the request was driven by technical concerns raised in the site review process, he said it was appropriate for the Board to adopt the earlier approvals and approve the new request for stacked parking. He said granting the variances would not be contrary to the public interest or to the spirit of the ordinance because the essential character of the neighborhood would not be altered and the public's health, safety, and welfare would not be threatened. He said the purpose of TAC was to look out for the public's health, safety and welfare, and they were doing so by pushing the applicant toward a stacked parking configuration. He said granting the variances would do substantial justice because the applicant would use the deeper part of the stacked parking as employee parking, which TAC would make a condition of approval for site review. He said the loss to the applicant if the Board denied stacked parking would far outweigh any gain to the public. He said the values of surrounding properties would not be diminished because the property had been in its current condition and use for quite some time, and re-engineering the parking would not have a significant impact on surrounding properties. He said literal enforcement of the ordinance would result in unnecessary hardship due to the property's special conditions of the development potential adjacent to the building and across the street. He said the wetlands would not be developed and the road wasn't traveled a lot, so stacked parking and backing in and out of the driveway into a traveled way wouldn't be an inoperable condition, even though it might be suboptimal in some respects. He said there was no fair and substantial relationship between the purpose of the parking ordinances and their application to the property. He said the use was reasonable and was previously approved by the Board, so al the criteria were met.

Mr. Parrott concurred with Mr. Mulligan, adding that it was a sensible modification of the previous approvals and that he was glad to see that TAC was looking into details to come up with the best solution.

The motion passed by unanimous vote, 7-0.
C) Petition of Karen \& Rick Rosania, Owners, for property located at 32 Boss Avenue, wherein relief was needed from the Zoning Ordinance to add a second story to an existing dwelling and enclose rear deck which requires the following: 1) A Variance from Section 10.521 to allow a $14^{\prime}$ front yard where $30^{\prime}$ is required. 2) A Variance from Section 10.321 to allow a nonconforming building or structure to be extended, reconstructed or enlarged without
conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 153 Lot 5 and lies within the Single Residence B (SRB) District.

## SPEAKING TO THE PETITION

Project contractor Corey Boudle was present on behalf of the applicant and reviewed the petition. He said the applicant wanted to add square footage to the home and give it a facelift. He said the wetlands at the rear of the property made it impossible to move the house further away from the property line. He reviewed the criteria and said they would be met.

Mr. Hagaman asked whether the portico could be done without worsening the primary front yard setback. Mr. Boudle said his client wanted a Craftsman-style home and that the portico addition would add to the home's aesthetics as well as protect the entry from adverse weather. Mr. Hagaman asked if there were any alternative designs for the entrance without coming out into the front yard, and Mr. Boudle said they had not explored other design options.

Chairman Rheaume opened the public hearing.

## SPEAKING IN FAVOR OF THE PETITION

No one was present to speak.

## SPEAKING IN OPPOSITION TO THE PETITION

Juliet and Harry McKinnon of 34 Boss Avenue said they were concerned about the project's timeline, due to their unobstructed view of the applicant's home. They thought the proposed structure would be more nonconforming than the existing one, would overwhelm the lot and not be in character with the neighborhood, and would negatively impact their home. They said the hardship seemed self-imposed because the existing home was in excellent condition.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one else was present to speak, and Chairman Rheaume closed the public hearing.

## DISCUSSION OF THE BOARD

Mr. Lee said all the surrounding homes were two-story ones, so he thought converting the home to a two-story one would make it more in conformance with the neighborhood. Mr. Parrott agreed and said the construction was substantial but the actual requested variance was small by comparison, being only four feet and not even a full height addition. He said the front portico would make the house look better and was more appropriate as a front entryway. Chairman Rheaume said the requirement was for a $30-\mathrm{ft}$ front setback, so the addition of the second story was within the front setback. Mr. Stith agreed and said the applicant would have to go before the Board for the vertical expansion even if he didn't propose a portico. Mr. Parrott said his comment was related more to the existing structure, where it went up within a few feet of the
existing front wall. He said the vertical expansion was within the 30 feet, but the whole front of the house was already within 30 feet anyway.

## DECISION OF THE BOARD

Mr. Lee moved to grant the variances for the petition as presented, and Mr. Parrott seconded.

Mr. Lee said the requested relief was slight, only four feet to accommodate a porch, but it was already there, so it met all the criteria. He said granting the variances would not be contrary to the public interest and would observe the spirit of the ordinance because it would not threaten the public's health, safety, or welfare. He said substantial justice would be done because the benefit to the applicant would not be outweighed by any harm to the public. He said granting the variances would not diminish surrounding properties because the addition would not have a negative effect impact on them. He said the hardship was that the applicant already had an encroachment that had to be maintained in order to build the addition. He said aesthetically the front porch would require another four feet, which wasn't a huge deal. Based on those reasons, he said the variances should be granted.

Mr. Parrott concurred and referred to his previous comments. He said the location of the requested four feet was directly across from the opening to Sunset Road, so it was pointed at a street and not someone's property, which meant that the four feet was even less impactful.

Chairman Rheaume said he thought there was a potential impact from the second-story addition and that the Board often considered those types of situations but were usually dealing with a side or rear setback. He said the concerns were always light and air impact on surrounding properties, but in the applicant's case, it was front setback, so he wasn't as concerned about it. He said the property was centrally located across from another street entryway, so there wasn't a lot of potential for surrounding property diminishment, and no side variances were requested. He noted that the side wetlands drove the location of where the structure could be and also drove the initial placement of the structure, so it was unrealistic to have the applicant relocate the house back to the $30-\mathrm{ft}$ requirement if they wanted to expand onto it. He said it was a reasonable request.

## The motion passed by unanimous vote, 7-0.

Vice-Chair Johnson recused himself from the following petition.
D) Petition of Lori Sarsfield, Owner, for property located at $\mathbf{5 6}$ Clinton Street, wherein relief was needed from the Zoning Ordinance for the addition of attached one car garage which requires the following: 1) A Variance from Section 10.521 to allow a 5' right side yard where $10^{\prime}$ is required. 2) A Variance from Section 10.321 to allow a nonconforming building or structure to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 158 Lot 6 and lies within the General R Residence A (GRA) District.

## SPEAKING TO THE PETITION

Owner Lori Sarsfield was present and reviewed the petition. She noted that there was currently a patio and deck seven feet from the property line, so the garage addition would add another two feet, requiring the 5 - ft right side yard allowance. She said the hardship was the substantial dropoff of the grading on the side yard. She reviewed the criteria and said the abutter was in support.

Chairman Rheaume said the diagram showed the decks 7-1/2 feet away from the property line, but the applicant was proposing five feet, which was still a 1-1/2-ft greater encroachment. Ms. Sarsfield said it was a mistake, noting that the existing deck was 7.7 feet from the property line and went back further than what they proposed for the garage.

Chairman Rheaume verified that the Board was in receipt of a letter from the abutter who was in support of the project. He opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

No one was present to speak, and Chairman Rheaume closed the public hearing.

## DECISION OF THE BOARD

Mr. Parrott moved to grant the variances for the petition as presented, and Mr. Hagaman seconded.

Mr. Parrott said it was a simple and straightforward addition to the house and made a lot of sense because it would make the home more functional and useful to the owner and improve the appearance. He said granting the variances would not be contrary to the public interest and would observe the spirit of the ordinance because it would pose no change to the essential character of the neighborhood nor threaten the public's health, safety, or welfare. He said garages were very common in that neighborhood. He said it would do substantial justice because it would be a large benefit to the applicant to have a garage added, and the location was the logical place due to the property's topography. He said granting the variances would not diminish the values of surrounding properties and would have a positive effect, if any. He said literal enforcement of the ordinance would result in unnecessary hardship because the general purposes of the ordinance were to allow people enjoyment of their home as much as possible, and there was no connection between the application of the ordinance, with respect to side yard setbacks, and the property. He said the proposed use was more than reasonable, that the garage would fit in with the neighborhood, it was only a very small variance request, and the neighbors were in favor. He said the petition passed all the tests and should be approved.

Mr. Hagaman concurred. He referred to the property's topography and the hardship criteria and said the house was aligned close to the property line, so putting the garage anywhere else on the property would be difficult to accomplish in a reasonable manner.

The motion passed by unanimous vote, 6-0.

Vice-Chair Johnson resumed his voting seat, and Mr. Mulligan recused himself from the following petition and left the meeting.
E) Petition of Matthew \& Sarah Currid, Owners, for property located at $\mathbf{5 4 2}$ State Street, wherein relief was needed from the Zoning Ordinance to convert a single-family dwelling into a two-family with new 10 x 18' two-story deck which requires the following: 1) A Variance from Section 10.521 to allow a lot area per dwelling unit of 2,175 square feet where 7,500 square feet per dwelling is required. Said property is shown on Assessor Map 127 Lot 18 and lies within the Mixed Residential Office (MRO) District.

## SPEAKING TO THE PETITION

The applicants Matt and Sarah Currid were present. Mr. Currid said they wanted to convert the single-family to two units and wanted a two-story deck as a second point of egress. He said it would be on the right side of the house to maintain all the setbacks and not impact the Historic District abutment. He reviewed the criteria and said they would be met.

Mr. Hagaman said some of the neighbors had multi-unit properties, and he asked how many units were in those buildings. Mr. Currid said the home to the left was owned by a resident but used as a rental unit for one family, the building across the street was a multi-unit apartment, and the home to the east was a mixed-use building.

Chairman Rheaume verified that three parking spaces were required for the two units and that those spaces would remain. He said if the applicant was simply creating an egress from the second floor that would meet the fire code, he wouldn't have to go before the Board, but his request for the additional deck drove the need for the variance request. He asked the applicant to explain why the deck was necessary. Mr. Currid said that doing a built-in staircase to the second floor would cause significant renovation and loss of square footage within the structural unit. He said the primary entry opened into the first floor with a staircase to the second floor, so there was no separation between entry points that they could renovate into a second entry. He said an outer staircase would allow a second-story point of egress without negatively impacting the home's appearance, and there was no other way to build a second point of egress to code without extending the home in some way. Chairman Rheaume said the applicant could build an exterior staircase without the deck space, which would be allowed. Mr. Stith said the Inspection Department would determine the minimum required to provide a second egress to the upper unit. Chairman Rheaume said the ordinance would allow an outer stairway, whether it was enclosed or not. Vice-Chair Johnson said code would require a 5'x6' deck and the stairway down and it would have to be covered. It was further discussed.

Chairman Rheaume opened the public hearing.

## SPEAKING TO, FOR, OR AGAINST THE PETITION

Chairman Rheaume noted that the Board received correspondence from the public pertaining to exterior upgrades and whether the building would consist of two rental apartments or have one
that was owner-occupied. Mr. Currid said it would be two rental units in the short term and an owner-occupied unit in the long term.

No one was present to speak, and Chairman Rheaume closed the public hearing.

## DISCUSSION OF THE BOARD

Mr. Hagaman asked if the applicant could convert the building by right if he had an external staircase on the second floor. Chairman Rheaume agreed but said it would have to be approved by the Inspection Department and might have to look like a small landing for safety purposes or be covered. Mr. Stith said the building of the deck triggered the need for the variance because it exceeded the minimum requirement. Ms. Eldridge asked if the applicant wanted the deck to make the units more marketable or aesthetic, or whether it was due to the need for a second egress. She asked what the hardship was, now that the Board knew that the deck wasn't necessary for an egress. The applicant spoke up and said there would be two rental units in a community that was largely rentals, so the initial goal was to better market the property by having an outdoor seating area for both stories.

Mr. Parrott said the dimensions for the deck were different in the drawing and that the first floor also showed a different dimension. Again, the applicant said he considered a few different build concepts and ended up with a maximum build space of $10^{\prime} \times 18^{\prime}$. Mr. Hagaman said the size of the deck was irrelevant because it met all the criteria. He said the issue was the lot area per dwelling unit because the stairs were inside the building. Chairman Rheaume said the ordinance stated that if the applicant did nothing to the exterior other than providing a safe egress, then he was allowed to make it into two dwelling units. He said the property could be subdivided if it wasn't made bigger, and it could be made safe for someone to egress from an upper floor. He said the applicant's request to have a useful deck and a saleable deck was more than that, so the lot area per dwelling was actually better now. He said the issue was whether the variance request now met the five criteria adequately due to the saleability of the deck. It was further discussed. Chairman Rheaume said he struggled with the hardship and what distinguished the property from others by splitting the building into two units and whether there was something unique about the property. He said it could set a precedent for others to come before the Board to say that they just wanted additional deck space. Ms. Eldridge said if the applicant just wanted a deck that wasn't too close to an abutter, the Board would consider it. Mr. Stith said the applicant by right could build the deck if the building was already a two-family. Vice-Chair Johnson asked whether a variance was really necessary. Mr. Stith said what was proposed did not comply with the ordinance section of converting the existing home. Mr. Lee said the applicant wanted to convert the building to a two-story home, so he needed another egress from the second floor, and that he could build a staircase and also build a deck without requiring a variance. Mr. Lee said he saw no problem with granting the variance for the deck or the staircase, noting that the Board had granted multiple variances in the past for outdoor decks just up the applicant's street.

Mr. Hagaman moved to grant the variance for the petition as presented, and Mr. Lee seconded.

Mr. Hagaman said granting the variance would not be contrary to the public interest or the spirit of the ordinance and would not alter the essential character of the neighborhood. He said it would be a multi-family dwelling in a multi-use rental area, and allowing the applicant to convert the building to a two-family dwelling with the addition of a deck was in the spirit of the ordinance. He said substantial justice would be done because there would be no loss to the public outweighed by any gain to the applicant for being able to convert the property and add the decks as presented. He said granting the variance would not diminish the values of surrounding properties, noting that he had heard no evidence that converting the property to a two-family one and adding two decks would do so, and he thought it would raise the values. He said the hardship was that the oddly-shaped property was undersized, and adding a second unit would require a variance for lot area per dwelling, whereas converting it to a two-family dwelling would be permissible by right if the egress was just a flight of stairs. He said there was no fair and substantial relationship between the general public purpose of the ordinance's provisions and the specific application of that provision to the property. He said the proposed use was a reasonable one, especially since it was considered almost by right within the ordinance already.

Mr. Lee concurred with Mr. Hagaman and had nothing to add.
Chairman Rheaume said he would support the motion. He said he had doubts at first because the purist in him still thought the Board needed to hold the line, but he knew it would be unjust to say that there were two different things the applicant could do to his property within his rights but that he couldn't combine those two things.

The motion passed by unanimous vote, 6-0.

## II. OTHER BUSINESS

There was no other business.

## III. ADJOURNMENT

The meeting was adjourned at 9:54 p.m.
Respectfully submitted,
Joann Breault
BOA Recording Secretary

TO: Zoning Board of Adjustment
FROM: Peter Stith, AICP, Planning Department
DATE: $\quad$ November 12, 2020
RE:
Zoning Board of Adjustment November 17, 2020 Meeting

## NEW BUSINESS

1. 150 Greenleaf Avenue - Appeal REQUEST TO POSTPONE
2. 27 Elwyn Avenue
3. 1465 Woodbury Avenue
4. 239 Northwest Street
5. 30 Spring Street
6. 95 Dodge Street
7. 501 Islington Street
8. 137 Northwest Street
9. 145 Maplewood Avenue

## NEW BUSINESS

1. 

Petition of $\mathbf{1 5 0}$ Greenleaf Avenue Realty Trust, Owner, for property located at $1 \mathbf{5 0}$ Greenleaf Avenue for Appeal of an Administrative Decision that the following are required: 1) A Variance from Section 10-208 Table 4 - Uses in Business Districts (2009 Ordinance, Section 10.592.20 in current Ordinance) that requires a 200 foot setback from any adjoining Residential or Mixed Residential district for motor vehicle sales. 2) A Variance from Section 10-1201, Off-Street Parking (2009 Ordinance, Section 10.1113.30 in current Ordinance) that requires a 100 foot setback for business parking areas from any adjoining Residential or Mixed Residential district. 3) A Wetland Conditional Use Permit for development within the Inland Wetlands Protection District. Said property is shown on Assessor Map 243 Lot 67 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District.

## Neighborhood Context


2.

Petition of SAI Builders, LLC, Owner, for property located at 27 Elwyn Avenue wherein relief is needed from the Zoning Ordinance to install two AC units which requires the following: 1) A Variance from Section 10.521 to allow a 5.5 foot right side yard where 10 feet is required. Said property is shown on Assessor Map 113 Lot 28-1 and lies within the General Residence A (GRA) District.

Existing \& Proposed Conditions

|  | Existing | Proposed | $\begin{aligned} & \text { Permitted / } \\ & \text { Required } \\ & \hline \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Land Use: | Vacant lot | Single-family dwelling | Primarily residential uses |  |
| Lot area (sq. ft.): | 4,996 | 4,996 | 7,500 | min. |
| Lot Area per Dwelling Unit (sq. ft.): | 4,996 | 4,996 | 7,500 | min. |
| Street Frontage (ft.): | 50 | 50 | 100 | min. |
| Lot depth (ft.): | 99 | 99 | 70 | min. |
| Front Yard (ft.): | 15 | 15 | 15 | min. |
| Right Yard (ft.): | 10.5 | 5.5 | 10 | min. |
| Left Yard (ft.): | 11.5 | 11.5 | 10 | min. |
| Rear Yard (ft.): | $>20$ | $>20$ | 20 | min. |
| Height (ft.): | <35 | <35 | 35 | max. |
| Building Coverage (\%): | 24 | 24 | 25 | max. |
| Open Space Coverage (\%): | 64 | 64 | 30 | min. |
| Parking | 2 | 2 | 1.3 |  |
| Estimated Age of Structure: | 2020 | Variance request shown in red. |  |  |

## Other Permits/Approvals Required

None.

## Neighborhood Context



## Previous Board of Adjustment Actions

September 24, 2019 - The Board granted the following variances for a new single family home:

- Section 10.521 to allow a lot area and lot area per dwelling unit of 4,996 square feet where 7,500 square feet is required for each.
- Section 10.521 to allow 50' of street frontage where 100 ' is the minimum required.


## Planning Department Comments

The lot contains a recently constructed single family home. As shown in the history, this property was before the Board in 2019 for relief. The applicant is proposing to add two AC units on the right side that do not comply with the required 10 foot side yard requirement.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.
2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area.

## AND

(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.
3.

Petition of Bromley Portsmouth, LLC, Owner, for property located at 1465 Woodbury Avenue wherein relief is need from the Zoning Ordinance to construct a standalone automated teller machine (ATM) which requires the following. 1) A Variance from Section 10.1530 to allow an automated teller machine (ATM) as defined in this section to be a principal freestanding structure and not located on the outside of a building, or in an access-controlled entrance to a building, or within a principal use in a building. Said property is shown on Assessor Map 216 Lot 3 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District.

Existing \& Proposed Conditions

|  | $\underline{\text { Existing }}$ | $\underline{\text { Proposed }}$ | $\underline{\text { Permitted / Required }}$ |
| :--- | :--- | :--- | :--- |
| Land Use: | Commercial <br> retail | Standalone ATM <br> Machine | Primarily mixed uses |
|  |  | Variance request shown in red. |  |

## Other Permits/Approvals Required

Planning Board/TAC - Site Review

## Neighborhood Context




## Previous Board of Adjustment Actions

August 21, 2018 - The Board granted a variance from Section 10.1251.20 to allow 252 square feet of wall signage where 200 square feet is the maximum allowed.

## Planning Department Comments

The applicant is proposing to construct a free standing walk-up ATM on the subject lot. The definition in the Ordinance is below:

## Automated teller machine (ATM)

An unattended electronic device that is activated by customers to conduct financial transactions. An ATM may be located on the outside of a building, or in an access-controlled entrance to a building, or within a principal use in a building, and may serve pedestrians or patrons in motor vehicles. An ATM servicing patrons in motor vehicles must meet the standards for drive-through establishments provided in this Ordinance. An ATM is permitted only as an accessory use to a related principal use, and is not permitted as a principal use or in a freestanding structure not attached to a principal use.

As defined, the use is only allowed as an accessory use to a principal use. The proposal is for the freestanding ATM to be a principal use and not "located on the outside of a building, or in an access-controlled entrance to a building or within a principal use in a building" as per the definition above. The applicant has had one work session with TAC and will provide revised drawings that rotate the parking 90 degrees from the originally submitted plans.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.

Planning Department Comments 2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area.

## AND

(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.
4.

Petition of Michael Petrin, Owner, for property located at 239 Northwest Street wherein relief is needed from the Zoning Ordinance to demolish a rear addition and construct a new two-story rear addition which requires the following: 1) Variances from Section 10.521 to allow: a) 1.5 foot rear yard where 20 feet is required; b) $48 \%$ building coverage where $25 \%$ is the maximum allowed; and c) $28 \%$ open space where $30 \%$ is the minimum required. 2) A Variance from Section 10.321 to allow a nonconforming structure or building to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 122 Lot 3 and lies within the General Residence A (GRA) District.

## Existing \& Proposed Conditions

|  | Existing | Proposed | $\begin{aligned} & \text { Permitted / } \\ & \text { Required } \\ & \hline \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Land Use: | Single family | Construct rear addition | Primarily residential uses |  |
| Lot area (sq. ft.): | 3,722 | 3,722 | 7,500 | min. |
| Lot Area per Dwelling Unit (sq. ft.): | 3,722 | 3,722 | 7,500 | min. |
| Street Frontage (ft.): | 85 | 85 | 100 | min. |
| Lot depth (ft.): | 63 | 63 | 70 | min. |
| Front Yard (ft.): | 0 | 0 | 15 | min. |
| Right Yard (ft.): | 29 | 29 | 10 | min. |
| Left Yard (ft.): | 8.5' | 8.5' | 10 | min. |
| Rear Yard (ft.): | 0 | 1.5' | 20 | min. |
| Height (ft.): | <35 | <35 | 35 | max. |
| Building Coverage (\%): | 44 | 48 | 25 | max. |
| Open Space Coverage (\%): | $\sim 40$ | 28 | 30 | min. |
| Parking | 2 | 2 1.3 |  |  |
| Estimated Age of Structure: | 1830 | Variance request shown in red. |  |  |

## Other Permits/Approvals Required

Conservation Commission/Planning Board - Wetland CUP
Historic District Commission


## Previous Board of Adjustment Actions

No BOA history found.

## Planning Department Comments

The applicant is proposing to demolish a rear addition and construct a two-story rear addition on the existing dwelling. The existing dwelling occupies most of the lot and appears to extend over the rear lot line. As the applicant's representative indicates in the narrative, a portion of the rear lot was taken in 1939 for the Route 1 Bypass. The
entire lot is within the 100 foot wetland buffer, requiring a Wetland conditional use permit. In addition, the property is located within the Historic District, requiring HDC approval for this project.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.

Planning Department Comments 2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area. AND
(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.
5.

Petition of Jessica Kaiser and John Andrew McMahon, Owners, for property located at 30 Spring Street wherein relief is needed from the Zoning Ordinance to construct covered front porch and add dormers to existing dwelling which requires the following: 1) Variances from Section 10.521 to allow a) $28.5 \%$ building coverage where $25 \%$ is the maximum allowed; b) a 0 foot front yard where 15 feet is required; and c) a 0 foot side yard where 10 feet is required. 2) A Variance from Section 10.321 to allow a nonconforming structure or building to be extended, reconstructed or enlarged without conforming to the requirements of the Ordinance. Said property is shown on Assessor Map 130 Lot 13 and lies within the General Residence A (GRA) District.

Existing \& Proposed Conditions

|  | Existing | Proposed | $\begin{aligned} & \text { Permitted / } \\ & \hline \text { Required } \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Land Use: | Single family | Add dormers and new covered porch | Primarily residential uses |  |
| Lot area (sq. ft.): | 4,953 | 4,953 | 7,500 | min. |
| Lot Area per Dwelling Unit (sq. ft.): | 4,953 | 4,953 | 7,500 | min. |
| Street Frontage (ft.): | 50 | 50 | 100 | min. |
| Lot depth (ft.): | 100 | 100 | 70 | min. |
| Front Yard (ft.): | 4.1** | 0 (5" per application) | 15 | min. |
| Right Yard (ft.): | 0.4 ' | $\begin{aligned} & \hline 0 \text { (3" per } \\ & \text { application) } \end{aligned}$ | 10 | min. |
| Left Yard (ft.): | 7'4"* | 7'4' | 10 | min. |
| Rear Yard (ft.): | 40+ | 40+ | 20 | min. |
| Height (ft.): | <35 | <35 | 35 | max. |
| Building Coverage (\%): | 27 (30.4*) | 28.5 (requested) <br> 29 (actual) | 25 | max. |
| Open Space Coverage (\%): |  |  | 30 | min. |
| Parking | 2 | 2 | 1.3 |  |
| Estimated Age of Structure: | 1900 | Variance request shown in red. <br> * Variances granted in 2003 |  |  |

## Other Permits/Approvals Required

None.

## Neighborhood Context



## Previous Board of Adjustment Actions

December 16, 2003 - The Board granted variances from Article III, Section 10-302(A) and Article IV, Section 10-40(A)(2)(c) to allow the following:

A 2' x 8' bay window to the front with a 4'1" front yard setback where 15 ' is the minimum required. An 18 ' x 22 ' $1 \frac{1}{2}$ story garage with second floor living space having a 7'4" left side yard where $10^{\prime}$ is the minimum required. A $6^{\prime} \times 12^{\prime}$ deck creating $30.4 \%$ building coverage where $25 \%$ is the maximum allowed.

## Planning Department Comments

The applicant is proposing to add dormers on the existing dwelling and a covered front porch. The application requests a 3 inch right yard and a 5" front yard. The legal notice indicated a 0 foot side and front to account for any discrepancies. The deck that was approved in 2003 was not constructed, reducing the current coverage to $27 \%$. The addition of the porch actually increases the coverage to almost $29 \%$ and the legal notice indicated 28.5\%.

## If granted approval, staff would recommend the Board consider a stipulation that allows for $29 \%$ building coverage.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.
2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area.

## AND

(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.
6.

Petition of Thomas Murphy, Owner, for property located at 95 Dodge Street wherein relief is needed from the Zoning Ordinance to demolish existing home and construct a new home with an attached accessory dwelling unit which requires the following: 1) A Variance from Section 10.1114 .30 to allow two driveways where only one per lot is permitted. Said property is shown on Assessor Map 258 Lot 39 and lies within the Single Residence B (SRB) District.

## Existing \& Proposed Conditions

|  | Existing | Proposed | $\frac{2}{\frac{\text { Permitted / }}{\text { Required }}}$ |  |
| :--- | :--- | :--- | :--- | :--- |
| Land Use: | Single family | Demo existing; <br> construct new <br> SFD with AADU | Primarily <br> Family |  |
| Lot area (sq. ft.): | 15,138 | 15,138 | 15,000 | min. |
| Lot Area per Dwelling | 15,138 | 15,138 | 15,000 | min. |
| Unit (sq. ft.): | 241 | 241 | 100 | min. |
| Street Frontage (ft.): | 120 | 120 | 100 | min. |
| Lot depth (ft.): | $19^{*}$ | 30 | min. |  |
| Primary Front Yard (ft.): | 19 | 19 | 10 | min. |
| Left Yard (ft.): | 22 | 11 | 30 | min. |
| Rear Yard (ft.): | 53 | 31 | 35 | max. |
| Height (ft.): | $<35$ | $<35$ | max. |  |
| Building Coverage (\%): | 9 | 19 | min. |  |
| Open Space Coverage | 84.5 | 52 | 40 |  |
| (\%): | $4+$ | 4+ Second <br> driveway | 3 |  |
| Parking | 1935 | Variance request shown in red. <br> * Per 10.516.10 Front Yard Alignment |  |  |
| Estimated Age of |  |  |  |  |
| Structure: |  |  |  |  |

## Other Permits/Approvals Required

Planning Board - CUP for Attached Accessory Dwelling Unit

## Neighborhood Context



Previous Board of Adjustment Actions
No BOA history found.

## Planning Department Comments

The applicant is proposing to demolish the existing structure and construct a new single family dwelling with an attached accessory dwelling unit. The lot is conforming and the new house will comply with the dimensional requirements in the SRB district. However, the applicant is proposing two driveways, where one is permitted per lot, thus the need for a variance. The applicant is seeking a conditional use permit from the Planning Board for the accessory dwelling unit.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.
2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area.

AND
(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.
7.

Petition of Summit 501 Islington, LLC, Owner, for property located at 501 Islington Street wherein relief is needed from the Zoning Ordinance for a 900 square foot expansion of an existing medical office in an existing building which requires the following: 1) A Special Exception from Section 10.440 Use \#6.20 to allow a medical office where the use is allowed by special exception. Said property is shown on Assessor Map 157 Lot 6 and lies within the Character District 4-L2 (CD4-L2) District.

Existing \& Proposed Conditions

|  | Existing | Proposed | Permitted/Required |
| :--- | :--- | :--- | :--- |
| Land Use: | Medical <br> office | Medical office | Primarily Mixed Uses |
| Parking | 84 | 84 | $67 \quad$ min. |

Other Permits/Approvals Required None.

## Neighborhood Context




## Previous Board of Adjustment Actions

April 22, 2014 - The Board granted a variance from Section 10.1253.10 to allow a front yard setback of $10^{\prime}$ where $20^{\prime}$ is the minimum required.

## Planning Department Comments

The proposal is to expand the existing medical office use into an adjacent 900 square foot office in the existing building. When the current use was established in 2014, it was permitted by right. Since then, the zoning changed to CD4-L1 and a medical office requires a special exception. A lawful nonconforming use many not be extended unless it will conform to the requirements of the Ordinance, thus the need for a Special Exception to extend the use into the adjacent space. The 900 square foot space formerly was a professional office. The change to a medical office will increase the parking requirement by 1 space. The applicant has indicated there are 84 spaces onsite and the parking requirement with the proposed expansion would be 67 spaces.

## Review Criteria

The application must meet all of the standards for a special exception (see Section 10.232 of the Zoning Ordinance).

1. Standards as provided by this Ordinance for the particular use permitted by special exception;
2. No hazard to the public or adjacent property on account of potential fire, explosion or release of toxic materials;
3. No detriment to property values in the vicinity or change in the essential characteristics of any area including residential neighborhoods or business and industrial districts on account of the location or scale of buildings and other structures, parking areas, accessways, odor, smoke, gas, dust, or other pollutant, noise, glare, heat, vibration, or unsightly outdoor storage of equipment, vehicles or other materials;
4. No creation of a traffic safety hazard or a substantial increase in the level of traffic congestion in the vicinity;
5. No excessive demand on municipal services, inc/uding, but not limited to, water, sewer, waste disposal, police and fire protection and schools; and
6. No significant increase of stormwater runoff onto adjacent property or streets
7. 

Petition of Gregory \& Amanda Morneault, Owners, for property located at 137
Northwest Street wherein relief is needed from the Zoning Ordinance to subdivide one lot into two lots and construct a new two family dwelling which requires the following: 1) Variances from Section 10.521 to allow: a) a lot depth of 44.7 feet for Lot 1 and 23.4 feet for Lot 2 where 70 feet is required for each; b) a lot area per dwelling unit of 5,317 square feet for proposed Lot 2 where 7,500 square feet per dwelling is required; c) a 2.5 foot front yard for proposed Lot 2 where 15 feet is required; and d) a 4 foot rear yard for proposed Lot 2 where 20 feet is required. Said property is shown on Assessor Map 122 Lot 2 and lies within the General Residence A (GRA) District.

## Existing \& Proposed Conditions

|  | Existing | Proposed |  | $\begin{aligned} & \hline \text { Permitted / } \\ & \hline \text { Required } \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use: | Single family | Two Io family | w/ two new lot | Primarily residential uses |  |
| Lot area (sq. ft.): | 18,134 | $\begin{aligned} & \text { Lot } 1 \\ & 7,500 \end{aligned}$ | $\begin{aligned} & \hline \text { Lot 2 } \\ & 10,634 \end{aligned}$ | 7,500 | min. |
| Lot Area per Dwelling Unit (sq. ft.): | 18,134 | 7,500 | 5,317 | 7,500 | min. |
| Street Frontage (ft.): | 536 | 179 | 357 | 100 | min. |
| Lot depth (ft.): | 51.1 | 44.7 | 23.4 | 70 | min. |
| Front Yard (ft.): | 13.8 | 13.8 | 2.5 ' | 15 | min. |
| Right Yard (ft.): | >200 | $>10$ | 109 | 10 | min. |
| Left Yard (ft.): | 26 | 26 | 130 | 10 | min. |
| Rear Yard (ft.): | 1.8 | 1.8 | 4 | 20 | min. |
| Height (ft.): | <35 | <35 | <35 | 35 | max. |
| Building Coverage (\%): | <25 | 14 | 21 | 25 | max. |
| Open Space Coverage (\%): | >30 | 83 | 70 | 30 | min. |
| Parking | 2 | 2 4 1.3 (lot 1)/ 3 (lot 2) |  | $1.3 \text { (lot 1)/ } 3 \text { (lot 2) }$ |  |
| Estimated Age of Structure: | 1850 | Variance request shown in red. |  |  |  |

## Other Permits/Approvals Required

Planning Board/TAC - Subdivision/Site Review
HDC


## Previous Board of Adjustment Actions

No BOA history found.

## Planning Department Comments

The applicant is proposing to subdivide the subject lot into two lots, with the existing dwelling remaining on Lot 1 and a proposed two family dwelling on Lot 2 . The existing lot depth is nonconforming, thus the need for a variance for each lot for lot depth. In addition, the new two family needs relief from the front and rear yard requirements. This will require HDC approval as well as site plan review through Planning Board and TAC.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.
2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area.

## AND

(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.
9.

Petition of 111 Maplewood Avenue, LLC, Owner, for property located at 145
Maplewood Avenue wherein relief is needed from the Zoning Ordinance for signage for new building which requires the following: 1) A Variance from Section 10.1251.20 to allow a 57 square foot freestanding sign where 20 square feet is the maximum allowed. 2) A Variance from Section 10.1242 to allow wall signs above the ground floor on all sides of the building. 3) A Variance from Section 10.1242 to allow wall signs above the ground floor on a side of a building not facing a street. 3) A Variance from Section 10.1144.63 to allow illuminated signs above 25 feet from grade. Said property is shown on Assessor Map 124 Lot 8-1 and lies within the Character District 5 (CD5) District.
Existing \& Proposed Conditions

|  | Existing | Proposed | Permitted / Required |  |
| :---: | :---: | :---: | :---: | :---: |
| Land Use: | New commercial building | Signage for new building | Primarily mixed use |  |
| Free standing sign (sq. ft.): | NA | 57 | 20 | max. |
| Wall Sign Location: | NA | 5 signs and 31 decorative lights above ground floor | One wall sign permitted above ground floor |  |
| Illuminated Sign height (ft.): | NA | >25 | 20 | max. |
|  |  |  | Variance requests shown in red. |  |

## Other Permits/Approvals Required HDC

## Neighborhood Context



## Previous Board of Adjustment Actions

No BOA history found.

## Planning Department Comments

The new building at this site is currently under construction and the applicant is seeking approval for signage for the building and for future tenants. Per Section 10.1242, a building may have one wall sign above the ground floor that faces a street. The Ordinance considers decorative lighting, including accent lighting, as signage and the applicant is proposing 31 decorative lights in addition to the 5 wall signs above the ground floor and on all sides of the building, including one side that does not face a street. Per Section 10.1144.60, luminaires can be mounted up to 20 feet above grade if they comply with the lumen standards referenced in the section. Section 10.1144.63 states the following:
10.1144.63 Luminaires used primarily for sign illumination may be mounted at any height to a maximum of 25 feet, regardless of lumen rating.

The applicant states the luminaires will comply with the lumen requirements and questions the need for relief from the section above, however the section clearly states that the maximum height for luminaires is 25 feet, regardless of the lumen rating.

## Review Criteria

This application must meet all five of the statutory tests for a variance (see Section 10.233 of the Zoning Ordinance):

1. Granting the variance would not be contrary to the public interest.
2. Granting the variance would observe the spirit of the Ordinance.
3. Granting the variance would do substantial justice.
4. Granting the variance would not diminish the values of surrounding properties.
5. The "unnecessary hardship" test:
(a)The property has special conditions that distinguish it from other properties in the area.

## AND

(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR
Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.

## VIEWPOINT \& HAND DELIVERY

October 9, 2020
City of Portsmouth
Zoning Board of Adjustment
Attn: David Rheaume, Chairman
1 Junkins Avenue
Portsmouth, NH 03801

## RE: SAI Builders, LLC

27 Elwyn Avenue, Tax Map 113, Lot 28-1
Dear Chairman Rheaume:
Enclosed please find twelve copies of a zoning application for consideration by the Zoning Board of Adjustment. The application includes the following documents:

- Letter of Authorization
- Application Narrative
- Tax Map
- Recorded plan by A C Hoyt CE
- Recorded plan by Ambit Engineering, Inc
- Variance Application Plan by Ambit Engineering, Inc
- Floor Plans
- Elevations
- Photos of the Subject Property

Thank you for your cooperation and please do not hesitate to contact me if you have any questions or require additional information.

Sincerely,


Patrick Nysten
SAI Group
12 Industrial Way
Salem, NH 03079
pnysten@saigrp.com
Mobile 603479.5579

## LETTER OF AUTHORIZATION

City of Portsmouth
Zoning Board of Adjustment
1 Junking Avenue
Portsmouth, NH 03801

## RE: 27 Elwyn Avenue, Portsmouth Tax Map 113, Lot 28-1

Dear Sir/Madam:
SAI Builders, LLC, the owner of the above referenced property, authorizes Patrick Nysten to represent SAI Builders, LLC in connection with any zoning, planning, building or other municipal permit applications filed with the City of Portsmouth for said property.

Very truly yours,


Anton J Miller
Duly Authorized
$10 / 09 / 2020$ Date

# City of Portsmouth Zoning Board of Adjustment Application Narrative 

SAI Builders, LLC<br>Tax Map 113, Lot 28-1<br>27 Elwyn Avenue<br>Portsmouth, NH 03801

## Introductory Statement

The Applicant, SAI Builders, LLC, is the owner of a property identified as 27 Elwyn Avenue and Tax Map 113, Lot 28-1 (the "Subject Property"). The Subject Property is situated in Portsmouth's General Residence A (GRA) Zoning District.

The Subject Property is shown as Lot 47 on a recorded plan referenced as Plan Of A Lot Of Land owned by Alfred L Elwyn, Portsmouth NH, Compiled from a survey made 1899 by A C Hoyt CE, Scale 100 ft . to an inch, W H Whitney, 15 Court Sq, Boston, Mass, Aug 1899, a copy of which is attached herewith. The Subject Property is also shown as Lot 113/28-1 on a recorded plan referenced as Standard Boundary Survey, Tax Map 113 - Lots 28- \& 28-1, Owner Arlene F Beatty Trust, 21 Elwyn Avenue, City of Portsmouth, County Of Rockingham, State Of New Hampshire, prepared by Ambit Engineering, Inc., signed by Paul A Dobberstein, LLS on August 22, 2019, a copy of which is attached herewith. The Subject Property contains approximately 4,996 SF according to the Ambit Engineering plan.

On September 24, 2019, the City of Portsmouth's Zoning Board of Adjustment granted variances for the construction of a new single-family residence at the Subject Property. The house is currently under construction, in compliance with the zoning setback regulations for the GRA District.

## Proposed Improvements

The Applicant desires to install a pad, two air conditioning condensers, and associated appurtenances (the "AC Equipment") in the southerly side yard as shown on Variance Application Plan by Ambit Engineering, Inc., September 2020, a copy of which is attached herewith.

Locations considered for the AC equipment include the rear of the house (rear yard), both sides of the house (side yards), and the front of the house (front yard). The rear of the house is encumbered by steps, a bulkhead, and a patio. Installing the AC Equipment in the front yard is not customary and would be detrimental to the existing streetscape. The northerly side yard is encumbered by a driveway and is subject to vehicular and pedestrian ingress/egress, and snow removal activities. Based on the afore-
mentioned conditions, the Applicant believes that the southerly side yard is the most viable location for the installation and operation of the AC Equipment.

Due to the lot configuration, setback relief is required for the installation and operation of the proposed AC Equipment in the southerly side yard.

## Variance Relief

The Applicant seeks the following variance relief from Section 10.521 the Zoning Ordinance:

1. To allow $5.7^{\prime}+/-$ side yard setback from the $A C$ Equipment where $10^{\prime}$ is the minimum required by the Ordinance.

## Variance Criteria

## Granting the variance will not be contrary to the public interest and will observe the spirit of the Ordinance.

There are many houses and accessory structures in the neighborhood and throughout Portsmouth that do not comply with current zoning setback regulations. The existing house is under construction and complies with the setback regulations for the GRA District. Having central air conditioning will improve the comfort, functionality, and value of the house. The proposed AC Equipment will occupy a relatively small area of approximately 28 square feet, and the appearance of the house and the proposed improvements will remain consistent with the character of the neighborhood. It's reasonable for the Board to conclude that granting the variance will not be contrary to the public interest and will observe the spirit of the Ordinance.

## Substantial justice will be done by granting the variance relief.

The requested setback relief is reasonable. The AC Equipment will be consistent with the evolving needs and expectations of many homebuyers. If the application was denied, the comfort of the house would be diminished, and it would place the Applicant at an economic disadvantage. There would be no gain to the public by denying the requested zoning relief. It's reasonable for the Board to conclude that substantial justice will be done by granting the variance relief.

## The values of surrounding properties will not be diminished by granting the variance relief.

The AC Equipment will be inconspicuously located away from the streetscape and will not alter the essential character of the neighborhood. Central air conditioning will raise the value of the existing house which may help maintain or increase the values of other properties in the neighborhood. It's

$$
12 \text { Industrial Way - Salem, NH } 03079 \text { - Tel (603) 421-0470 }
$$

reasonable for the Board to conclude that the values of surrounding properties will not be diminished by granting the variance relief.

## Literal enforcement of the provisions of the Ordinance would result in an unnecessary hardship.

The Subject Property is similar in size and building coverage to many other properties in the area. The new house on the Subject Property was built on an old lot created prior to modern day construction methods and innovations including central air conditioning. Despite the challenging configuration of this old lot, the existing house complies with the zoning setback regulations for the GRA District. However, the relatively small area hosting the proposed AC Equipment will require zoning setback relief from the Ordinance. Due to the conditions, there is no fair and substantial relationship between the general purposes of the Ordinance provisions and their application to the Subject Property. It's reasonable for the Board to conclude that literal enforcement of the provisions of the Ordinance would result in an unnecessary hardship.

## The proposed use is reasonable.

The subject lot was created prior to modern day zoning and construction methods and innovations including central air conditioning. The proposed AC Equipment is a use that is consistent with many of the properties in the neighborhood and throughout Portsmouth. Accordingly, it's reasonable for the Board to conclude that the proposed use is reasonable.

## Conclusion

The Applicant has demonstrated that it meets the five criteria for granting the zoning relief requested. Consequently, the Applicant respectfully requests that the Board approve the variance application.

Respectfully Submitted,

## SAI BUILDERS, LLC



Patrick Nysten


12 Industrial Way
Salem, NH 03079
pnysten@saigrp.com
Mobile 603479.5579




$D-41673$



## SITE ENGINEER

AMBIT ENGINEERING, INC.
200 GRIFFIN RD NH 03801
Voice (603) 430-9282
Fax (603) 436-2315
PERMIT SET - 10/04/19






|  |  |  |  |  |  |  |  | $\begin{aligned} & 0 \\ & \frac{0}{0} \\ & 0 \\ & \frac{0}{0} \\ & \frac{0}{Ш 1} \\ & \hline \end{aligned}$ |  |  | - |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |



[^0]

Front of House



Rear of House



 ASX13

EnERGY-EFFICIENT
Split System Air Conditioner
Up TO 14 SEER / 12 EER


## Contents

Nomenclature ....................................... 2
Product Specifications .......................... 3
Expanded Cooling Data ........................ 4
Dimensions ......................................... 22
Wiring Diagrams ................................. 23
Accessories ......................................... 25

## Standard Features

- Energy-efficient scroll compressor
- High-density foam compressor sound blanket
- Copeland ${ }^{\circledR}$ ComfortAlert ${ }^{\text {M }}$ diagnostics
- Factory-installed filter drier
- Copper tube / enhanced aluminum fin coil
- Sweat connection service valves with easy access to gauge ports
- Contactor with lug connection
- Ground lug connection
- AHRI Certified; ETL Listed


## Cabinet Features

- Heavy-gauge, galvanized-steel cabinet with sound control top design
- Attractive Architectural Gray powder-paint finish with 500-hour salt-spray approval
- Wire fan discharge grille
- Steel louver coil guard
- Compact footprint
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories

* Complete warranty details available from your local dealer or at www.amana-hac.com. To receive the 2-Year Unit Replacement Limited Warranty and 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.


|  | $\begin{aligned} & \text { ASX13 } \\ & \text { 0181D } \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 0241C } \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & 0301 \mathrm{C} \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 0361D } \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 0421C } \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 0481C } \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & 0601 \mathrm{C} \end{aligned}$ | $\begin{gathered} \text { ASX13 } \\ \text { 0611A* } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CAPACIties <br> Nominal Cooling (BTU/h) <br> SEER / EER <br> Decibels | $\begin{gathered} 17,800 \\ 13 / 11 \\ 75 \end{gathered}$ | $\begin{gathered} 23,000 \\ 13 / 11 \\ 75 \end{gathered}$ | $\begin{gathered} 28,400 \\ 13 / 11 \\ 73 \end{gathered}$ | $\begin{gathered} 33,600 \\ 13 / 11 \\ 74 \end{gathered}$ | $\begin{gathered} 40,000 \\ 13 / 11 \\ 75 \end{gathered}$ | $\begin{gathered} 46,000 \\ 13 / 11 \\ 76 \end{gathered}$ | $\begin{gathered} 57,000 \\ 13 / 11 \\ 77 \end{gathered}$ | $\begin{gathered} 56,500 \\ 13 / 11 \\ 77 \end{gathered}$ |
| COMPRESSOR <br> RLA <br> LRA | 9.0 48 | $\begin{aligned} & 13.5 \\ & 58.3 \end{aligned}$ | $\begin{gathered} 12.8 \\ 64 \end{gathered}$ | $\begin{gathered} 14.1 \\ 77 \end{gathered}$ | $\begin{aligned} & 17.9 \\ & 112 \end{aligned}$ | $\begin{gathered} 19.9 \\ 109 \end{gathered}$ | $\begin{gathered} 25.0 \\ 134 \end{gathered}$ | $\begin{gathered} 26.4 \\ 134 \end{gathered}$ |
| Condenser Fan Motor <br> Horsepower <br> FLA | $\begin{aligned} & 1 / 8 \\ & 0.7 \end{aligned}$ | $\begin{aligned} & 1 / 8 \\ & 0.7 \end{aligned}$ | $\begin{aligned} & 1 / 8 \\ & 0.7 \end{aligned}$ | $\begin{aligned} & 1 / 4 \\ & 1.4 \end{aligned}$ | $\begin{aligned} & 1 / 4 \\ & 1.3 \end{aligned}$ | $\begin{aligned} & 1 / 4 \\ & 1.3 \end{aligned}$ | $\begin{aligned} & 1 / 4 \\ & 1.3 \end{aligned}$ | $\begin{aligned} & 1 / 4 \\ & 1.3 \end{aligned}$ |
| Refrigeration System <br> Refrigerant Line Size <br> Liquid Line Size ("O.D.) <br> Suction Line Size ("O.D.) <br> Refrigerant Connection Size <br> Liquid Valve Size ("O.D.) <br> Suction Valve Size ("O.D.) ${ }^{34}$ <br> Valve Type <br> Refrigerant Charge <br> Shipped with Orifice Size | $3 / 8^{\prime \prime}$ $3 / 411$ $3 / \mathbf{n}^{\prime \prime}$ $3 / 4 "$ Sweat 69 0.051 | $\begin{gathered} 3 / 3^{\prime \prime} \\ 3 / 4 " \\ \\ 3 / 8^{\prime \prime} \\ 3 / 4 " 1 \\ \text { Sweat } \\ 60 \\ 0.057 \end{gathered}$ | $\begin{gathered} 3 / 8 \\ 3 / 4 " \\ \\ 3 / 8{ }^{\prime \prime} \\ 3 / 4 " \\ \text { Sweat } \\ 60 \\ 0.061 \end{gathered}$ | $\begin{gathered} 3 / 8 " \\ 1 / 8^{\prime \prime} \\ \\ 3 / 8^{\prime \prime} \\ 3 / 4^{\prime \prime} 4 \\ \text { Sweat } \\ 62 \\ 0.070 \end{gathered}$ | $\begin{gathered} 3 / 8 " \\ 11 / 8^{\prime \prime} \\ \\ 3 / 88^{\prime \prime} \\ 1 / 8^{\prime 5} \\ \text { Sweat } \\ 80 \\ 0.076 \end{gathered}$ | $\begin{gathered} 3 / 8^{\prime \prime} \\ 11 / 8^{\prime \prime} \\ \\ 3 / 8^{\prime \prime} \\ 7 / 8^{\prime 5} \\ \text { Sweat } \\ 91 \\ 0.080 \end{gathered}$ | $\begin{gathered} 3 / 8^{\prime \prime} \\ 11 / 8^{\prime \prime} \\ \\ 3 / 8^{\prime \prime} \\ 7 / 8^{\prime 5} \\ \text { Sweat } \\ 94 \\ 0.086 \end{gathered}$ | $3 / 8 "$ $7 / 8^{\prime \prime}$ $3 / 8{ }^{\prime \prime}$ $3 / 4$ Sweat 111 0.086 |
| Electrical Data <br> Voltage / Phase ( 60 Hz ) <br> Minimum Circuit Ampacity ${ }^{1}$ <br> Max. Overcurrent Protection ${ }^{2}$ <br> Min / Max Volts <br> Electrical Conduit Size | $\begin{gathered} 208 / 230-1 \\ 12 \\ 20 \\ 197 / 253 \\ 1 / 2{ }^{\prime \prime} \text { or } 3 / 4{ }^{\prime \prime} \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 17.6 \\ 30 \\ 197 / 253 \\ 1 / 2 \text { " or } 3 / 4 \text { " } \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 16.7 \\ 25 \\ 197 / 253 \\ 1 / 2{ }^{2} \text { or } 3 / 4 " \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 19.0 \\ 30 \\ 197 / 253 \\ 1 / 2 \text { or } 3 / 4 " \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 23.7 \\ 40 \\ 197 / 253 \\ 1 / 2{ }^{2} \text { or } 3 / 411 \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 26.2 \\ 45 \\ 197 / 253 \\ 1 / 2{ }^{2} \text { or } 3 / 410 \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 32.6 \\ 50 \\ 197 / 253 \\ 1 / 2 \text { " or } 3 / 4^{\prime \prime} \end{gathered}$ | $\begin{gathered} 208 / 230-1 \\ 34.3 \\ 60 \\ 197 / 253 \\ 1 / 2{ }^{\prime \prime} \text { or } 3 / 4 \text { " } \end{gathered}$ |
| Equipment Weight (lbs) <br> Ship Weight (lbs) | $\begin{aligned} & 102 \\ & 117 \end{aligned}$ | 115 128 | $\begin{aligned} & 115 \\ & 132 \end{aligned}$ | $\begin{aligned} & 118 \\ & 135 \end{aligned}$ | $\begin{aligned} & 171 \\ & 189 \end{aligned}$ | $\begin{aligned} & 175 \\ & 193 \end{aligned}$ | $\begin{aligned} & 184 \\ & 202 \end{aligned}$ | $\begin{aligned} & 211 \\ & 233 \end{aligned}$ |

${ }^{1}$ Line sizes denoted for $25^{\prime}$ line sets, tested and rated in accordance with AHRI Standard 210/240. For other line-set lengths or sizes, refer to the installation \& Operating instructions and/or the long line-set guidelines.
${ }^{2}$ Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes
${ }^{3}$ Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.
4 Installer will need to supply $3 / 4$ " to $7 / 8^{\prime \prime}$ adapters for suction line connections.
5 Installer will need to supply $7 / 8^{\prime \prime}$ to $11 / 8^{\prime \prime}$ adapters for suction line connections.

## Notes

- Always check the S\&R plate for electrical data on the unit being installed.
- Unit is charged with refrigerant for $15^{\prime}$ of $3 /{ }^{\prime \prime}$ liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- This product may not be installed in the Southeast (including Hawaii) or Southwest Regions as of Jan. 1, 2015.

|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | Airflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 |  | MBh | 15.8 | 16.4 | 17.9 | - | 15.4 | 16.0 | 17.5 | - | 15.1 | 15.6 | 17.1 | - | 14.7 | 15.2 | 16.7 | - | 14.0 | 14.5 | 15.9 | - | 12.9 | 13.4 | 14.7 | - |
|  |  | S/T | 0.67 | 0.56 | 0.39 | - | 0.69 | 0.58 | 0.40 | - | 0.71 | 0.59 | 0.41 | - | 0.73 | 0.61 | 0.42 | - | 0.76 | 0.63 | 0.44 | - | 0.77 | 0.64 | 0.44 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 525 | kW | 1.27 | 1.30 | 1.34 | - | 1.36 | 1.39 | 1.43 | - | 1.44 | 1.47 | 1.51 | - | 1.51 | 1.54 | 1.59 | - | 1.57 | 1.60 | 1.65 | - | 1.62 | 1.65 | 1.71 | - |
|  |  | Amps | 4.6 | 4.7 | 4.8 | - | 4.9 | 5.0 | 5.2 | - | 5.3 | 5.5 | 5.6 | - | 5.7 | 5.8 | 6.0 | - | 6.0 | 6.2 | 6.4 | - | 6.4 | 6.6 | 6.8 | - |
|  |  | HIPR | 203 | 218 | 230 | - | 228 | 245 | 259 | - | 259 | 279 | 294 | - | 295 | 317 | 335 | - | 332 | 357 | 377 | - | 366 | 394 | 416 | - |
|  |  | LO PR | 103 | 109 | 119 | - | 109 | 116 | 126 | - | 113 | 120 | 131 | - | 119 | 126 | 138 | - | 124 | 132 | 144 | - | 129 | 137 | 149 | - |
|  |  | MBh | 17.1 | 17.7 | 19.4 | - | 16.7 | 17.3 | 19.0 | - | 16.3 | 16.9 | 18.5 | - | 15.9 | 16.5 | 18.1 | - | 15.1 | 15.7 | 17.2 | - | 14.0 | 14.5 | 15.9 | - |
|  |  | S/T | 0.69 | 0.58 | 0.40 | - | 0.72 | 0.60 | 0.41 | - | 0.74 | 0.61 | 0.43 | - | 0.76 | 0.63 | 0.44 | - | 0.79 | 0.66 | 0.46 | - | 0.79 | 0.66 | 0.46 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 600 | kW | 1.30 | 1.33 | 1.37 | - | 1.39 | 1.42 | 1.46 | - | 1.48 | 1.51 | 1.55 | - | 1.55 | 1.58 | 1.63 | - | 1.61 | 1.64 | 1.69 | - | 1.66 | 1.70 | 1.75 | - |
|  |  | Amps | 4.7 | 4.8 | 5.0 | - | 5.1 | 5.2 | 5.3 | - | 5.5 | 5.6 | 5.8 | - | 5.9 | 6.0 | 6.2 | - | 6.2 | 6.4 | 6.6 | - | 6.6 | 6.7 | 7.0 | - |
|  |  | HIPR | 209 | 225 | 238 | - | 235 | 252 | 267 | - | 267 | 287 | 303 | - | 304 | 327 | 345 | - | 342 | 368 | 389 | - | 378 | 407 | 429 | - |
|  |  | LO PR | 106 | 113 | 123 | - | 112 | 119 | 130 | - | 116 | 124 | 135 | - | 122 | 130 | 142 | - | 128 | 136 | 149 | - | 133 | 141 | 154 | - |
|  |  |  |  | 18.3 | 20.0 | - |  |  | 19.6 | - |  | 17.4 | 19.1 | - | 16.4 | 17.0 | 18.6 | - | 15.6 |  | 17.7 | - | 14.4 | 15.0 | 16.4 |  |
|  |  | S/T | 0.73 | 0.61 | 0.42 | - | 0.75 | 0.63 | 0.43 | - | 0.77 | 0.64 | 0.45 | - | 0.80 | 0.66 | 0.46 | - | 0.83 | 0.69 | 0.48 | - | 0.83 | 0.70 | 0.48 | - |
|  |  | $\Delta T$ | 17 | 15 | 11 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 16 | 14 | 11 | - |
|  | 675 | kW | 1.31 | 1.34 | 1.38 | - | 1.40 | 1.43 | 1.48 | - | 1.49 | 1.52 | 1.56 | - | 1.56 | 1.59 | 1.64 | - | 1.62 | 1.65 | 1.71 | - | 1.67 | 1.71 | 1.76 | - |
|  |  | Amps | 4.7 | 4.8 | 5.0 | - | 5.1 | 5.2 | 5.4 | - | 5.5 | 5.7 | 5.8 | - | 5.9 | 6.0 | 6.2 | - | 6.3 | 6.4 | 6.6 | - | 6.6 | 6.8 | 7.0 | - |
|  |  | HIPR | 211 | 227 | 240 | - | 237 | 255 | 269 | - | 270 | 290 | 306 | - | 307 | 330 | 349 | - | 345 | 372 | 392 | - | 382 | 411 | 434 | - |
|  |  | LO PR | 107 |  |  |  | 113 |  |  | - |  |  |  | - | 123 |  | 143 | - | 129 | 138 | 150 | - | 134 | 142 | 155 | - |


| 75 | 525 | MBh | 16.1 | 16.5 | 17.9 | 19.2 | 15.7 | 16.2 | 17.5 | 18.8 | 15.3 | 15.8 | 17.1 | 18.3 | 15.0 | 15.4 | 16.7 | 17.9 | 14.2 | 14.6 | 15.8 | 17.0 | 13.2 | 13.5 | 14.7 | 15.7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.76 | 0.68 | 0.51 | 0.33 | 0.79 | 0.70 | 0.53 | 0.34 | 0.81 | 0.72 | 0.55 | 0.35 | 0.83 | 0.74 | 0.56 | 0.36 | 0.86 | 0.77 | 0.58 | 0.38 | 0.87 | 0.78 | 0.59 | 0.38 |
|  |  | $\Delta T$ | 21 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 20 | 18 | 15 | 10 |
|  |  | kW | 1.28 | 1.31 | 1.35 | 1.39 | 1.37 | 1.40 | 1.44 | 1.49 | 1.45 | 1.48 | 1.53 | 1.57 | 1.52 | 1.55 | 1.60 | 1.65 | 1.58 | 1.62 | 1.67 | 1.72 | 1.63 | 1.67 | 1.72 | 1.77 |
|  |  | Amps | 4.6 | 4.7 | 4.9 | 5.0 | 5.0 | 5.1 | 5.2 | 5.4 | 5.4 | 5.5 | 5.7 | 5.9 | 5.7 | 5.9 | 6.1 | 6.3 | 6.1 | 6.3 | 6.5 | 6.7 | 6.5 | 6.6 | 6.8 | 7.1 |
|  |  | HI PR | 205 | 220 | 233 | 243 | 230 | 247 | 261 | 272 | 261 | 281 | 297 | 310 | 298 | 320 | 338 | 353 | 335 | 361 | 381 | 397 | 370 | 398 | 421 | 439 |
|  |  | LO PR | 104 | 111 | 121 | 128 | 110 | 117 | 127 | 136 | 114 | 121 | 132 | 141 | 120 | 127 | 139 | 148 | 126 | 134 | 146 | 155 | 130 | 138 | 151 | 161 |
|  |  | MBh | 17.4 | 17.9 | 19.4 | 20.8 | 17.0 | 17.5 | 19.0 | 20.3 | 16.6 | 17.1 | 18.5 | 19.9 | 16.2 | 16.7 | 18.1 | 19.4 | 15.4 | 15.8 | 17.2 | 18.4 | 14.3 | 14.7 | 15.9 | 17.1 |
|  |  | S/T | 0.79 | 0.70 | 0.53 | 0.34 | 0.81 | 0.73 | 0.55 | 0.35 | 0.84 | 0.75 | 0.57 | 0.36 | 0.86 | 0.77 | 0.58 | 0.38 | 0.90 | 0.80 | 0.61 | 0.39 | 0.90 | 0.81 | 0.61 | 0.39 |
|  |  | $\Delta T$ | 21 | 19 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 19 | 16 | 11 | 20 | 18 | 15 | 10 |
|  | 600 | kW | 1.31 | 1.34 | 1.38 | 1.42 | 1.40 | 1.43 | 1.48 | 1.52 | 1.49 | 1.52 | 1.56 | 1.61 | 1.56 | 1.59 | 1.64 | 1.69 | 1.62 | 1.65 | 1.71 | 1.76 | 1.67 | 1.71 | 1.76 | 1.82 |
|  |  | Amps | 4.7 | 4.8 | 5.0 | 5.2 | 5.1 | 5.2 | 5.4 | 5.6 | 5.5 | 5.7 | 5.8 | 6.1 | 5.9 | 6.0 | 6.2 | 6.5 | 6.3 | 6.4 | 6.6 | 6.9 | 6.6 | 6.8 | 7.0 | 7.3 |
|  |  | HI PR | 211 | 227 | 240 | 250 | 237 | 255 | 269 | 281 | 270 | 290 | 306 | 319 | 307 | 330 | 349 | 364 | 345 | 372 | 392 | 409 | 382 | 411 | 434 | 452 |
|  |  | LO PR | 107 | 114 | 124 | 132 | 113 | 120 | 131 | 140 | 118 | 125 | 137 | 145 | 124 | 131 | 143 | 153 | 129 | 138 | 150 | 160 | 134 | 142 | 156 | 166 |
|  |  | MBh | 17.9 | 18.5 | 20.0 | 21.5 | 17.5 | 18.0 | 19.5 | 21.0 | 17.1 | 17.6 | 19.1 | 20.5 | 16.7 | 17.2 | 18.6 | 20.0 | 15.9 | 16.3 | 17.7 | 19.0 | 14.7 | 15.1 | 16.4 | 17.6 |
|  |  | S/T | 0.82 | 0.74 | 0.56 | 0.36 | 0.85 | 0.76 | 0.58 | 0.37 | 0.88 | 0.78 | 0.59 | 0.38 | 0.90 | 0.81 | 0.61 | 0.39 | 0.94 | 0.84 | 0.64 | 0.41 | 0.95 | 0.85 | 0.64 | 0.41 |
|  |  | $\Delta T$ | 20 | 19 | 15 | 10 | 20 | 19 | 15 | 11 | 20 | 19 | 15 | 11 | 21 | 19 | 16 | 11 | 20 | 19 | 15 | 11 | 19 | 17 | 14 | 10 |
|  | 675 | kW | 1.32 | 1.35 | 1.39 | 1.43 | 1.42 | 1.44 | 1.49 | 1.53 | 1.50 | 1.53 | 1.57 | 1.62 | 1.57 | 1.60 | 1.65 | 1.70 | 1.63 | 1.67 | 1.72 | 1.77 | 1.69 | 1.72 | 1.78 | 1.83 |
|  |  | Amps | 4.8 | 4.9 | 5.0 | 5.2 | 5.1 | 5.3 | 5.4 | 5.6 | 5.6 | 5.7 | 5.9 | 6.1 | 6.0 | 6.1 | 6.3 | 6.5 | 6.3 | 6.5 | 6.7 | 6.9 | 6.7 | 6.9 | 7.1 | 7.4 |
|  |  | HI PR | 213 | 230 | 242 | 253 | 239 | 258 | 272 | 284 | 272 | 293 | 309 | 323 | 310 | 334 | 352 | 368 | 349 | 375 | 396 | 413 | 385 | 415 | 438 | 457 |
|  |  | LO PR | 108 | 115 | 126 | 134 | 114 | 122 | 133 | 141 | 119 | 126 | 138 | 147 | 125 | 133 | 145 | 154 | 131 | 139 | 152 | 162 | 135 | 144 | 157 | 167 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AlRflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 | 525 | MBh | 16.4 | 16.7 | 17.9 | 19.1 | 16.0 | 16.3 | 17.4 | 18.6 | 15.6 | 15.9 | 17.0 | 18.2 | 15.2 | 15.6 | 16.6 | 17.8 | 14.5 | 14.8 | 15.8 | 16.9 | 13.4 | 13.7 | 14.6 | 15.6 |
|  |  | S/T | 0.83 | 0.78 | 0.63 | 0.47 | 0.86 | 0.81 | 0.66 | 0.49 | 0.88 | 0.83 | 0.67 | 0.50 | 0.91 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 0.95 | 0.90 | 0.73 | 0.54 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 21 | 19 | 15 |
|  |  | kW | 1.29 | 1.32 | 1.36 | 1.40 | 1.38 | 1.41 | 1.45 | 1.50 | 1.46 | 1.49 | 1.54 | 1.59 | 1.53 | 1.57 | 1.61 | 1.66 | 1.59 | 1.63 | 1.68 | 1.73 | 1.65 | 1.68 | 1.73 | 1.79 |
|  |  | Amps | 4.6 | 4.8 | 4.9 | 5.1 | 5.0 | 5.1 | 5.3 | 5.5 | 5.4 | 5.6 | 5.7 | 6.0 | 5.8 | 5.9 | 6.1 | 6.4 | 6.2 | 6.3 | 6.5 | 6.8 | 6.5 | 6.7 | 6.9 | 7.2 |
|  |  | HIPR | 207 | 223 | 235 | 245 | 232 | 250 | 264 | 275 | 264 | 284 | 300 | 313 | 301 | 324 | 342 | 357 | 338 | 364 | 385 | 401 | 374 | 402 | 425 | 443 |
|  |  | LO PR | 105 | 112 | 122 | 130 | 111 | 118 | 129 | 137 | 115 | 123 | 134 | 143 | 121 | 129 | 141 | 150 | 127 | 135 | 147 | 157 | 131 | 140 | 152 | 162 |
|  | 600 | MBh | 17.7 | 18.1 | 19.4 | 20.7 | 17.3 | 17.7 | 18.9 | 20.2 | 16.9 | 17.3 | 18.5 | 19.7 | 16.5 | 16.8 | 18.0 | 19.2 | 15.7 | 16.0 | 17.1 | 18.3 | 14.5 | 14.8 | 15.8 | 16.9 |
|  |  | S/T | 0.86 | 0.81 | 0.66 | 0.49 | 0.89 | 0.84 | 0.68 | 0.51 | 0.92 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 0.98 | 0.92 | 0.75 | 0.56 | 0.99 | 0.93 | 0.76 | 0.56 |
|  |  | $\Delta T$ | 23 | 22 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 21 | 18 | 15 |
|  |  | kW | 1.32 | 1.35 | 1.39 | 1.43 | 1.42 | 1.44 | 1.49 | 1.53 | 1.50 | 1.53 | 1.58 | 1.62 | 1.57 | 1.60 | 1.65 | 1.71 | 1.63 | 1.67 | 1.72 | 1.77 | 1.69 | 1.72 | 1.78 | 1.83 |
|  |  | Amps | 4.8 | 4.9 | 5.0 | 5.2 | 5.1 | 5.3 | 5.4 | 5.6 | 5.6 | 5.7 | 5.9 | 6.1 | 6.0 | 6.1 | 6.3 | 6.5 | 6.3 | 6.5 | 6.7 | 6.9 | 6.7 | 6.9 | 7.1 | 7.4 |
|  |  | HIPR | 213 | 230 | 242 | 253 | 239 | 258 | 272 | 284 | 272 | 293 | 309 | 323 | 310 | 334 | 352 | 368 | 349 | 375 | 396 | 413 | 385 | 415 | 438 | 457 |
|  |  | LO PR | 108 | 115 | 126 | 134 | 114 | 122 | 133 | 141 | 119 | 126 | 138 | 147 | 125 | 133 | 145 | 154 | 131 | 139 | 152 | 162 | 135 | 144 | 157 | 167 |
|  | 675 | MBh | 18.3 | 18.7 | 19.9 | 21.3 | 17.8 | 18.2 | 19.5 | 20.8 | 17.4 | 17.8 | 19.0 | 20.3 | 17.0 | 17.4 | 18.5 | 19.8 | 16.1 | 16.5 | 17.6 | 18.8 | 14.9 | 15.3 | 16.3 | 17.4 |
|  |  | S/T | 0.90 | 0.85 | 0.69 | 0.52 | 0.94 | 0.88 | 0.72 | 0.53 | 0.96 | 0.90 | 0.73 | 0.55 | 1.00 | 0.93 | 0.76 | 0.57 | 1.00 | 0.97 | 0.79 | 0.59 | 1.00 | 1.00 | 0.79 | 0.59 |
|  |  | $\Delta T$ | 22 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 22 | 22 | 19 | 15 | 20 | 21 | 18 | 14 |
|  |  | kW | 1.33 | 1.36 | 1.40 | 1.44 | 1.43 | 1.45 | 1.50 | 1.54 | 1.51 | 1.54 | 1.59 | 1.64 | 1.58 | 1.62 | 1.67 | 1.72 | 1.65 | 1.68 | 1.73 | 1.79 | 1.70 | 1.74 | 1.79 | 1.85 |
|  |  | Amps | 4.8 | 4.9 | 5.1 | 5.3 | 5.2 | 5.3 | 5.5 | 5.7 | 5.6 | 5.8 | 6.0 | 6.2 | 6.0 | 6.2 | 6.4 | 6.6 | 6.4 | 6.5 | 6.8 | 7.0 | 6.8 | 6.9 | 7.2 | 7.4 |
|  |  | HI PR | 215 | 232 | 245 | 255 | 242 | 260 | 275 | 287 | 275 | 296 | 313 | 326 | 313 | 337 | 356 | 371 | 352 | 379 | 400 | 418 | 389 | 419 | 442 | 461 |
|  |  | LO PR | 109 | 116 | 127 | 135 | 115 | 123 | 134 | 143 | 120 | 128 | 139 | 148 | 126 | 134 | 146 | 156 | 132 | 140 | 153 | 163 | 137 | 145 | 159 | 169 |



|  |  |  | OUtDOor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering indoor Wet Bulb temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | Airflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 | 700 | MBh | 21.1 | 21.8 | 23.9 | - | 20.6 | 21.3 | 23.4 | - | 20.1 | 20.8 | 22.8 | - | 19.6 | 20.3 | 22.3 | - | 18.6 | 19.3 | 21.1 | - | 17.3 | 17.9 | 19.6 | - |
|  |  | S/T | 0.67 | 0.56 | 0.39 | - | 0.70 | 0.58 | 0.40 | - | 0.72 | 0.60 | 0.41 | - | 0.74 | 0.62 | 0.43 | - | 0.77 | 0.64 | 0.44 | - | 0.77 | 0.65 | 0.45 | - |
|  |  | $\Delta T$ | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 13 | - | 19 | 16 | 12 | - | 18 | 15 | 12 | - |
|  |  | kW | 1.68 | 1.70 | 1.74 | - | 1.77 | 1.79 | 1.83 | - | 1.84 | 1.87 | 1.92 | - | 1.91 | 1.94 | 1.99 | - | 1.97 | 2.01 | 2.05 | - | 2.02 | 2.06 | 2.11 | - |
|  |  | Amps | 5.7 | 5.8 | 6.0 | - | 6.1 | 6.3 | 6.5 | - | 6.7 | 6.8 | 7.1 | - | 7.1 | 7.3 | 7.5 | - | 7.6 | 7.8 | 8.0 | - | 8.0 | 8.2 | 8.5 | - |
|  |  | HIPR | 209 | 225 | 237 | - | 234 | 252 | 266 | - | 267 | 287 | 303 | - | 304 | 327 | 345 | - | 342 | 368 | 388 | - | 377 | 406 | 429 | - |
|  |  | LO PR | 100 | 107 | 116 | - | 106 | 113 | 123 | - | 110 | 117 | 128 | - | 116 | 123 | 134 | - | 121 | 129 | 141 | - | 125 | 133 | 146 | - |
|  | 800 | MBh | 22.8 | 23.7 | 25.9 | - | 22.3 | 23.1 | 25.3 | - | 21.8 | 22.6 | 24.7 | - | 21.2 | 22.0 | 24.1 | - | 20.2 | 20.9 | 22.9 | - | 18.7 | 19.4 | 21.2 | - |
|  |  | S/T | 0.70 | 0.58 | 0.40 | - | 0.72 | 0.61 | 0.42 | - | 0.74 | 0.62 | 0.43 | - | 0.77 | 0.64 | 0.44 | - | 0.80 | 0.66 | 0.46 | - | 0.80 | 0.67 | 0.46 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  |  | kW | 1.71 | 1.73 | 1.77 | - | 1.80 | 1.82 | 1.87 | - | 1.88 | 1.91 | 1.95 | - | 1.95 | 1.98 | 2.03 | - | 2.01 | 2.04 | 2.09 | - | 2.06 | 2.10 | 2.15 | - |
|  |  | Amps | 5.8 | 6.0 | 6.2 | - | 6.3 | 6.5 | 6.7 | - | 6.9 | 7.0 | 7.3 | - | 7.3 | 7.5 | 7.8 | - | 7.8 | 8.0 | 8.3 | - | 8.3 | 8.5 | 8.7 | - |
|  |  | HIPR | 215 | 232 | 245 | - | 242 | 260 | 275 | - | 275 | 296 | 312 | - | 313 | 337 | 356 | - | 352 | 379 | 400 | - | 389 | 419 | 442 | - |
|  |  | LO PR | 103 | 110 | 120 | - | 109 | 116 | 127 | - | 114 | 121 | 132 | - | 119 | 127 | 138 | - | 125 | 133 | 145 | - | 129 | 137 | 150 | - |
|  | 900 | MBh | 23.5 | 24.4 | 26.7 | - | 23.0 | 23.8 | 26.1 | - | 22.4 | 23.2 | 25.5 | - | 21.9 | 22.7 | 24.8 | - | 20.8 | 21.5 | 23.6 | - | 19.3 | 20.0 | 21.9 | - |
|  |  | S/T | 0.73 | 0.61 | 0.42 | - | 0.76 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.80 | 0.67 | 0.47 | - | 0.83 | 0.70 | 0.48 | - | 0.84 | 0.70 | 0.49 | - |
|  |  | $\Delta T$ | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 16 | 12 | - | 18 | 15 | 12 | - | 17 | 14 | 11 | - |
|  |  | kW | 1.71 | 1.74 | 1.78 | - | 1.81 | 1.84 | 1.88 | - | 1.89 | 1.92 | 1.97 | - | 1.96 | 1.99 | 2.04 | - | 2.02 | 2.06 | 2.11 | - | 2.08 | 2.11 | 2.16 | - |
|  |  | Amps | 5.9 | 6.0 | 6.2 | - | 6.4 | 6.5 | 6.7 | - | 6.9 | 7.1 | 7.3 | - | 7.4 | 7.6 | 7.8 | - | 7.9 | 8.1 | 8.3 | - | 8.3 | 8.5 | 8.8 | - |
|  |  | HIPR | 217 | 234 | 247 | - | 244 | 263 | 277 | - | 278 | 299 | 315 | - | 316 | 340 | 359 | - | 356 | 383 | 404 | - | 393 | 423 | 446 | - |
|  |  | LO PR | 104 | 111 | 121 | - | 110 | 117 | 128 | - | 115 | 122 | 133 | - | 120 | 128 | 140 | - | 126 | 134 | 147 | - | 131 | 139 | 152 |  |


| 75 | 700 | MBh | 21.4 | 22.1 | 23.9 | 25.6 | 20.9 | 21.6 | 23.3 | 25.0 | 20.4 | 21.0 | 22.8 | 24.4 | 19.9 | 20.5 | 22.2 | 23.8 | 18.9 | 19.5 | 21.1 | 22.7 | 17.5 | 18.1 | 19.6 | 21.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\mathrm{S} / \mathrm{T}$ | 0.77 | 0.69 | 0.52 | 0.33 | 0.79 | 0.71 | 0.54 | 0.35 | 0.81 | 0.73 | 0.55 | 0.35 | 0.84 | 0.75 | 0.57 | 0.37 | 0.87 | 0.78 | 0.59 | 0.38 | 0.88 | 0.79 | 0.60 | 0.38 |
|  |  | $\Delta T$ | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 17 | 11 | 22 | 20 | 16 | 11 | 20 | 19 | 15 | 11 |
|  |  | kW | 1.69 | 1.71 | 1.75 | 1.79 | 1.78 | 1.80 | 1.84 | 1.89 | 1.86 | 1.88 | 1.93 | 1.98 | 1.93 | 1.96 | 2.00 | 2.05 | 1.99 | 2.02 | 2.07 | 2.12 | 2.04 | 2.07 | 2.12 | 2.18 |
|  |  | Amps | 5.7 | 5.9 | 6.1 | 6.3 | 6.2 | 6.3 | 6.6 | 6.8 | 6.7 | 6.9 | 7.1 | 7.4 | 7.2 | 7.4 | 7.6 | 7.9 | 7.7 | 7.8 | 8.1 | 8.4 | 8.1 | 8.3 | 8.6 | 8.9 |
|  |  | HI PR | 211 | 227 | 240 | 250 | 237 | 255 | 269 | 281 | 269 | 290 | 306 | 319 | 307 | 330 | 348 | 363 | 345 | 371 | 392 | 409 | 381 | 410 | 433 | 452 |
|  |  | LO PR | 101 | 108 | 118 | 125 | 107 | 114 | 124 | 132 | 111 | 118 | 129 | 138 | 117 | 124 | 136 | 145 | 122 | 130 | 142 | 151 | 127 | 135 | 147 | 157 |
|  |  | MBh | 23.2 | 23.9 | 25.9 | 27.8 | 22.7 | 23.4 | 25.3 | 27.1 | 22.1 | 22.8 | 24.7 | 26.5 | 21.6 | 22.2 | 24.1 | 25.8 | 20.5 | 21.1 | 22.9 | 24.5 | 19.0 | 19.6 | 21.2 | 22.7 |
|  |  | S/T | 0.79 | 0.71 | 0.54 | 0.35 | 0.82 | 0.74 | 0.56 | 0.36 | 0.84 | 0.76 | 0.57 | 0.37 | 0.87 | 0.78 | 0.59 | 0.38 | 0.90 | 0.81 | 0.61 | 0.39 | 0.91 | 0.82 | 0.62 | 0.40 |
|  |  | $\Delta T$ | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 20 | 18 | 15 | 10 |
|  | 800 | kW | 1.71 | 1.74 | 1.78 | 1.82 | 1.81 | 1.84 | 1.88 | 1.92 | 1.89 | 1.92 | 1.97 | 2.01 | 1.96 | 1.99 | 2.04 | 2.09 | 2.02 | 2.06 | 2.11 | 2.16 | 2.08 | 2.11 | 2.17 | 2.22 |
|  |  | Amps | 5.9 | 6.0 | 6.2 | 6.5 | 6.4 | 6.5 | 6.7 | 7.0 | 6.9 | 7.1 | 7.3 | 7.6 | 7.4 | 7.6 | 7.8 | 8.1 | 7.9 | 8.1 | 8.3 | 8.6 | 8.3 | 8.5 | 8.8 | 9.2 |
|  |  | HI PR | 218 | 234 | 247 | 258 | 244 | 263 | 277 | 289 | 278 | 299 | 315 | 329 | 316 | 340 | 359 | 375 | 356 | 383 | 404 | 422 | 393 | 423 | 447 | 466 |
|  |  | LO PR | 104 | 111 | 121 | 129 | 110 | 117 | 128 | 136 | 115 | 122 | 133 | 142 | 120 | 128 | 140 | 149 | 126 | 134 | 147 | 156 | 131 | 139 | 152 | 161 |
|  |  | MBh | 23.9 | 24.6 | 26.7 | 28.6 | 23.4 | 24.1 | 26.0 | 27.9 | 22.8 | 23.5 | 25.4 | 27.3 | 22.2 | 22.9 | 24.8 | 26.6 | 21.1 | 21.8 | 23.6 | 25.3 | 19.6 | 20.2 | 21.8 | 23.4 |
|  |  | S/T | 0.83 | 0.75 | 0.56 | 0.36 | 0.86 | 0.77 | 0.58 | 0.38 | 0.89 | 0.79 | 0.60 | 0.39 | 0.91 | 0.82 | 0.62 | 0.40 | 0.95 | 0.85 | 0.64 | 0.41 | 0.96 | 0.86 | 0.65 | 0.42 |
|  |  | $\Delta T$ | 20 | 19 | 15 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 20 | 19 | 15 | 11 | 19 | 18 | 14 | 10 |
|  | 900 | kW | 1.72 | 1.75 | 1.79 | 1.83 | 1.82 | 1.85 | 1.89 | 1.93 | 1.90 | 1.93 | 1.98 | 2.03 | 1.97 | 2.01 | 2.06 | 2.11 | 2.04 | 2.07 | 2.12 | 2.18 | 2.09 | 2.13 | 2.18 | 2.24 |
|  |  | Amps | 5.9 | 6.1 | 6.3 | 6.5 | 6.4 | 6.6 | 6.8 | 7.1 | 7.0 | 7.2 | 7.4 | 7.7 | 7.5 | 7.6 | 7.9 | 8.2 | 7.9 | 8.1 | 8.4 | 8.7 | 8.4 | 8.6 | 8.9 | 9.3 |
|  |  | HI PR | 220 | 236 | 250 | 260 | 247 | 265 | 280 | 292 | 280 | 302 | 319 | 332 | 319 | 344 | 363 | 378 | 359 | 387 | 408 | 426 | 397 | 427 | 451 | 470 |
|  |  | LO PR | 105 | 112 | 122 | 130 | 111 | 119 | 129 | 138 | 116 | 123 | 135 | 143 | 122 | 129 | 141 | 150 | 127 | 136 | 148 | 158 | 132 | 140 | 153 | 163 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering indoor Wet Bulb temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AIRflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 | 700 | MBh | 21.8 | 22.3 | 23.8 | 25.5 | 21.3 | 21.8 | 23.3 | 24.9 | 20.8 | 21.3 | 22.7 | 24.3 | 20.3 | 20.7 | 22.2 | 23.7 | 19.3 | 19.7 | 21.0 | 22.5 | 17.9 | 18.2 | 19.5 | 20.8 |
|  |  | S/T | 0.84 | 0.79 | 0.64 | 0.48 | 0.87 | 0.82 | 0.67 | 0.50 | 0.89 | 0.84 | 0.68 | 0.51 | 0.92 | 0.86 | 0.70 | 0.53 | 0.96 | 0.90 | 0.73 | 0.55 | 0.97 | 0.91 | 0.74 | 0.55 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 25 | 24 | 20 | 16 | 24 | 23 | 20 | 16 | 23 | 22 | 19 | 15 |
|  |  | kW | 1.70 | 1.72 | 1.76 | 1.80 | 1.79 | 1.81 | 1.86 | 1.90 | 1.87 | 1.90 | 1.94 | 1.99 | 1.94 | 1.97 | 2.02 | 2.07 | 2.00 | 2.03 | 2.08 | 2.13 | 2.05 | 2.08 | 2.14 | 2.19 |
|  |  | Amps | 5.8 | 5.9 | 6.1 | 6.3 | 6.3 | 6.4 | 6.6 | 6.9 | 6.8 | 7.0 | 7.2 | 7.5 | 7.3 | 7.4 | 7.7 | 8.0 | 7.7 | 7.9 | 8.2 | 8.5 | 8.2 | 8.4 | 8.7 | 9.0 |
|  |  | HI PR | 213 | 229 | 242 | 253 | 239 | 257 | 272 | 283 | 272 | 293 | 309 | 322 | 310 | 333 | 352 | 367 | 348 | 375 | 396 | 413 | 385 | 414 | 438 | 456 |
|  |  | LO PR | 102 | 109 | 119 | 127 | 108 | 115 | 126 | 134 | 112 | 120 | 130 | 139 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 153 | 128 | 136 | 149 | 158 |
|  | 800 | MBh | 23.6 | 24.1 | 25.8 | 27.6 | 23.1 | 23.6 | 25.2 | 26.9 | 22.5 | 23.0 | 24.6 | 26.3 | 22.0 | 22.5 | 24.0 | 25.7 | 20.9 | 21.3 | 22.8 | 24.4 | 19.3 | 19.8 | 21.1 | 22.6 |
|  |  | S/T | 0.87 | 0.82 | 0.67 | 0.50 | 0.90 | 0.85 | 0.69 | 0.52 | 0.93 | 0.87 | 0.71 | 0.53 | 0.96 | 0.90 | 0.73 | 0.55 | 0.99 | 0.93 | 0.76 | 0.57 | 1.00 | 0.94 | 0.76 | 0.57 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 21 | 19 | 15 |
|  |  | kW | 1.72 | 1.75 | 1.79 | 1.83 | 1.82 | 1.85 | 1.89 | 1.93 | 1.90 | 1.93 | 1.98 | 2.03 | 1.97 | 2.01 | 2.06 | 2.11 | 2.04 | 2.07 | 2.12 | 2.18 | 2.09 | 2.13 | 2.18 | 2.24 |
|  |  | Amps | 5.9 | 6.1 | 6.3 | 6.5 | 6.4 | 6.6 | 6.8 | 7.1 | 7.0 | 7.2 | 7.4 | 7.7 | 7.5 | 7.6 | 7.9 | 8.2 | 7.9 | 8.1 | 8.4 | 8.7 | 8.4 | 8.6 | 8.9 | 9.3 |
|  |  | HIPR | 220 | 236 | 250 | 260 | 247 | 265 | 280 | 292 | 280 | 302 | 319 | 332 | 319 | 344 | 363 | 379 | 359 | 387 | 408 | 426 | 397 | 427 | 451 | 470 |
|  |  | LO PR | 105 | 112 | 123 | 130 | 111 | 119 | 129 | 138 | 116 | 123 | 135 | 143 | 122 | 129 | 141 | 150 | 127 | 136 | 148 | 158 | 132 | 140 | 153 | 163 |
|  | 900 | MBh | 24.3 | 24.9 | 26.6 | 28.4 | 23.8 | 24.3 | 26.0 | 27.7 | 23.2 | 23.7 | 25.3 | 27.1 | 22.6 | 23.1 | 24.7 | 26.4 | 21.5 | 22.0 | 23.5 | 25.1 | 19.9 | 20.4 | 21.8 | 23.3 |
|  |  | S/T | 0.91 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 1.00 | 0.91 | 0.74 | 0.55 | 1.00 | 0.94 | 0.77 | 0.57 | 1.00 | 1.00 | 0.79 | 0.59 | 1.00 | 1.00 | 0.80 | 0.60 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 24 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 22 | 22 | 19 | 15 | 20 | 21 | 18 | 14 |
|  |  | kW | 1.73 | 1.76 | 1.80 | 1.84 | 1.83 | 1.86 | 1.90 | 1.95 | 1.91 | 1.94 | 1.99 | 2.04 | 1.99 | 2.02 | 2.07 | 2.12 | 2.05 | 2.08 | 2.14 | 2.19 | 2.10 | 2.14 | 2.19 | 2.25 |
|  |  | Amps | 6.0 | 6.1 | 6.3 | 6.6 | 6.5 | 6.6 | 6.9 | 7.1 | 7.0 | 7.2 | 7.5 | 7.7 | 7.5 | 7.7 | 8.0 | 8.3 | 8.0 | 8.2 | 8.5 | 8.8 | 8.5 | 8.7 | 9.0 | 9.3 |
|  |  | HIPR | 222 | 239 | 252 | 263 | 249 | 268 | 283 | 295 | 283 | 305 | 322 | 336 | 323 | 347 | 367 | 382 | 363 | 390 | 412 | 430 | 401 | 431 | 456 | 475 |
|  |  | LOPR | 107 | 113 | 124 | 132 | 113 | 120 | 131 | 139 | 117 | 124 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 150 | 159 | 133 | 142 | 155 | 165 |


| 85 | 700 | MBh | 22.2 | 22.6 | 23.7 | 25.3 | 21.7 | 22.1 | 23.1 | 24.7 | 21.2 | 21.6 | 22.6 | 24.1 | 20.6 | 21.0 | 22.0 | 23.5 | 19.6 | 20.0 | 20.9 | 22.3 | 18.2 | 18.5 | 19.4 | 20.7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.88 | 0.85 | 0.77 | 0.62 | 0.91 | 0.88 | 0.80 | 0.65 | 0.94 | 0.90 | 0.82 | 0.66 | 0.97 | 0.93 | 0.84 | 0.68 | 1.00 | 0.97 | 0.87 | 0.71 | 1.00 | 0.98 | 0.88 | 0.71 |
|  |  | $\Delta T$ | 26 | 25 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 25 | 24 | 21 | 24 | 24 | 22 | 19 |
|  |  | kW | 1.70 | 1.73 | 1.77 | 1.81 | 1.80 | 1.82 | 1.87 | 1.91 | 1.88 | 1.91 | 1.95 | 2.00 | 1.95 | 1.98 | 2.03 | 2.08 | 2.01 | 2.04 | 2.09 | 2.15 | 2.06 | 2.10 | 2.15 | 2.21 |
|  |  | Amps | 5.8 | 6.0 | 6.2 | 6.4 | 6.3 | 6.5 | 6.7 | 6.9 | 6.9 | 7.0 | 7.3 | 7.5 | 7.3 | 7.5 | 7.8 | 8.0 | 7.8 | 8.0 | 8.3 | 8.6 | 8.3 | 8.5 | 8.7 | 9.1 |
|  |  | HIPR | 215 | 232 | 245 | 255 | 242 | 260 | 274 | 286 | 275 | 296 | 312 | 326 | 313 | 337 | 356 | 371 | 352 | 379 | 400 | 417 | 389 | 419 | 442 | 461 |
|  |  | LO PR | 103 | 110 | 120 | 128 | 109 | 116 | 127 | 135 | 113 | 121 | 132 | 140 | 119 | 127 | 138 | 147 | 125 | 133 | 145 | 155 | 129 | 137 | 150 | 160 |
|  | 800 | MBh | 24.0 | 24.5 | 25.7 | 27.4 | 23.5 | 23.9 | 25.1 | 26.8 | 22.9 | 23.4 | 24.5 | 26.1 | 22.4 | 22.8 | 23.9 | 25.5 | 21.2 | 21.7 | 22.7 | 24.2 | 19.7 | 20.1 | 21.0 | 22.4 |
|  |  | S/T | 0.91 | 0.88 | 0.80 | 0.65 | 0.95 | 0.91 | 0.82 | 0.67 | 0.97 | 0.94 | 0.85 | 0.69 | 1.00 | 0.97 | 0.87 | 0.71 | 1.00 | 1.00 | 0.91 | 0.74 | 1.00 | 1.00 | 0.91 | 0.74 |
|  |  | $\Delta T$ | 25 | 25 | 23 | 20 | 26 | 25 | 24 | 21 | 26 | 25 | 24 | 21 | 26 | 25 | 24 | 21 | 24 | 25 | 24 | 20 | 23 | 23 | 22 | 19 |
|  |  | kW | 1.73 | 1.76 | 1.80 | 1.84 | 1.83 | 1.86 | 1.90 | 1.95 | 1.91 | 1.94 | 1.99 | 2.04 | 1.99 | 2.02 | 2.07 | 2.12 | 2.05 | 2.08 | 2.14 | 2.19 | 2.10 | 2.14 | 2.19 | 2.25 |
|  |  | Amps | 6.0 | 6.1 | 6.3 | 6.6 | 6.5 | 6.6 | 6.9 | 7.1 | 7.0 | 7.2 | 7.5 | 7.7 | 7.5 | 7.7 | 8.0 | 8.3 | 8.0 | 8.2 | 8.5 | 8.8 | 8.5 | 8.7 | 9.0 | 9.3 |
|  |  | HIPR | 222 | 239 | 252 | 263 | 249 | 268 | 283 | 295 | 283 | 305 | 322 | 336 | 323 | 347 | 367 | 382 | 363 | 390 | 412 | 430 | 401 | 431 | 456 | 475 |
|  |  | LO PR | 107 | 113 | 124 | 132 | 113 | 120 | 131 | 139 | 117 | 124 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 150 | 159 | 133 | 142 | 155 | 165 |
|  | 900 | MBh | 24.8 | 25.2 | 26.4 | 28.2 | 24.2 | 24.7 | 25.8 | 27.6 | 23.6 | 24.1 | 25.2 | 26.9 | 23.0 | 23.5 | 24.6 | 26.2 | 21.9 | 22.3 | 23.4 | 24.9 | 20.3 | 20.7 | 21.6 | 23.1 |
|  |  | S/T | 0.96 | 0.92 | 0.83 | 0.68 | 0.99 | 0.96 | 0.86 | 0.70 | 1.00 | 0.98 | 0.89 | 0.72 | 1.00 | 1.00 | 0.92 | 0.74 | 1.00 | 1.00 | 0.95 | 0.77 | 1.00 | 1.00 | 0.96 | 0.78 |
|  |  | $\Delta T$ | 24 | 24 | 23 | 20 | 25 | 24 | 23 | 20 | 24 | 24 | 23 | 20 | 24 | 24 | 23 | 20 | 22 | 23 | 23 | 20 | 21 | 21 | 21 | 18 |
|  |  | kW | 1.74 | 1.77 | 1.81 | 1.85 | 1.84 | 1.87 | 1.91 | 1.96 | 1.92 | 1.96 | 2.00 | 2.05 | 2.00 | 2.03 | 2.08 | 2.14 | 2.06 | 2.10 | 2.15 | 2.21 | 2.12 | 2.15 | 2.21 | 2.27 |
|  |  | Amps | 6.1 | 6.2 | 6.4 | 6.6 | 6.5 | 6.7 | 6.9 | 7.2 | 7.1 | 7.3 | 7.5 | 7.8 | 7.6 | 7.8 | 8.0 | 8.4 | 8.1 | 8.3 | 8.6 | 8.9 | 8.6 | 8.8 | 9.1 | 9.4 |
|  |  | HIPR | 224 | 241 | 255 | 266 | 251 | 271 | 286 | 298 | 286 | 308 | 325 | 339 | 326 | 351 | 370 | 386 | 366 | 394 | 416 | 434 | 405 | 436 | 460 | 480 |
|  |  | LOPR | 108 | 114 | 125 | 133 | 114 | 121 | 132 | 141 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 154 | 130 | 138 | 151 | 161 | 135 | 143 | 156 | 166 |


|  |  |  | OUtDOor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering indoor Wet bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | Airflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 | 1181 | MBh | 24.9 | 25.8 | 28.3 | - | 24.4 | 25.2 | 27.7 | - | 23.8 | 24.6 | 27.0 | - | 23.2 | 24.0 | 26.3 | - | 22.0 | 22.8 | 25.0 | - | 20.4 | 21.2 | 23.2 | - |
|  |  | S/T | 0.69 | 0.58 | 0.40 | - | 0.72 | 0.60 | 0.42 | - | 0.74 | 0.61 | 0.43 | - | 0.76 | 0.63 | 0.44 | - | 0.79 | 0.66 | 0.46 | - | 0.80 | 0.66 | 0.46 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  |  | kW | 1.94 | 1.98 | 2.03 | - | 2.08 | 2.12 | 2.18 | - | 2.20 | 2.25 | 2.32 | - | 2.31 | 2.36 | 2.43 | - | 2.40 | 2.45 | 2.53 | - | 2.48 | 2.54 | 2.62 | - |
|  |  | Amps | 6.8 | 7.0 | 7.2 | - | 7.4 | 7.6 | 7.8 | - | 8.0 | 8.2 | 8.5 | - | 8.6 | 8.8 | 9.1 | - | 9.1 | 9.3 | 9.7 | - | 9.7 | 9.9 | 10.2 | - |
|  |  | HIPR | 228 | 245 | 259 | - | 256 | 275 | 291 | - | 291 | 313 | 331 | - | 332 | 357 | 377 | - | 373 | 401 | 424 | - | 412 | 443 | 468 | - |
|  |  | LO PR | 102 | 109 | 119 | - | 108 | 115 | 125 | - | 112 | 119 | 130 | - | 118 | 125 | 137 | - | 124 | 131 | 143 | - | 128 | 136 | 148 | - |
|  | 1050 | MBh | 27.0 | 28.0 | 30.7 | - | 26.4 | 27.4 | 30.0 | - | 25.8 | 26.7 | 29.3 | - | 25.1 | 26.1 | 28.5 | - | 23.9 | 24.7 | 27.1 | - | 22.1 | 22.9 | 25.1 | - |
|  |  | S/T | 0.72 | 0.60 | 0.42 | - | 0.74 | 0.62 | 0.43 | - | 0.76 | 0.64 | 0.44 | - | 0.79 | 0.66 | 0.46 | - | 0.82 | 0.68 | 0.47 | - | 0.82 | 0.69 | 0.48 | - |
|  |  | $\Delta T$ | 18 | 15 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  |  | kW | 1.98 | 2.02 | 2.08 | - | 2.13 | 2.17 | 2.24 | - | 2.25 | 2.30 | 2.37 | - | 2.37 | 2.42 | 2.49 | - | 2.46 | 2.51 | 2.59 | - | 2.54 | 2.60 | 2.68 | - |
|  |  | Amps | 7.0 | 7.2 | 7.4 | - | 7.6 | 7.8 | 8.0 | - | 8.2 | 8.4 | 8.7 | - | 8.8 | 9.0 | 9.3 | - | 9.4 | 9.6 | 9.9 | - | 9.9 | 10.2 | 10.5 | - |
|  |  | HI PR | 235 | 253 | 267 | - | 264 | 284 | 300 | - | 300 | 323 | 341 | - | 342 | 368 | 388 | - | 384 | 414 | 437 | - | 425 | 457 | 483 | - |
|  |  | LO PR | 105 | 112 | 122 | - | 111 | 118 | 129 | - | 116 | 123 | 134 | - | 122 | 129 | 141 | - | 127 | 135 | 148 | - | 132 | 140 | 153 | - |
|  | 919 | MBh | 27.8 | 28.8 | 31.6 | - |  | 28.2 | 30.9 | - |  | 27.5 | 30.1 | - |  |  |  | - | 24.6 | 25.5 | 27.9 | - | 22.8 | 23.6 | 25.9 |  |
|  |  | S/T | 0.75 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.80 | 0.67 | 0.46 | - | 0.83 | 0.69 | 0.48 | - | 0.86 | 0.72 | 0.50 | - | 0.86 | 0.72 | 0.50 | - |
|  |  | $\Delta \mathrm{T}$ | 17 | 15 | 11 | - | 17 | 15 | 11 | - | 17 | 15 | 11 | - | 17 | 15 | 11 | - | 17 | 15 | 11 | - | 16 | 14 | 11 | - |
|  |  | kW | 2.00 | 2.04 | 2.10 | - | 2.14 | 2.19 | 2.25 | - | 2.27 | 2.32 | 2.39 | - | 2.39 | 2.44 | 2.51 | - | 2.48 | 2.53 | 2.62 | - | 2.56 | 2.62 | 2.70 | - |
|  |  | Amps | 7.1 | 7.2 | 7.5 | - | 7.7 | 7.8 | 8.1 | - | 8.3 | 8.5 | 8.8 | - | 8.9 | 9.1 | 9.4 | - | 9.5 | 9.7 | 10.0 | - | 10.0 | 10.3 | 10.6 | - |
|  |  | HIPR | 237 | 256 | 270 | - | 266 | 287 | 303 | - | 303 | 326 | 344 | - | 345 | 371 | 392 | - | 388 | 418 | 441 | - | 429 | 462 | 488 | - |
|  |  | LO PR | 106 | 113 | 124 | - | 112 | 120 | 131 | - | 117 | 124 | 136 | - | 123 | 131 | 143 | . | 129 | 137 | 149 | - | 133 | 142 | 155 | . |


| 75 | 1181 | MBh | 25.4 | 26.1 | 28.3 | 30.3 | 24.8 | 25.5 | 27.6 | 29.6 | 24.2 | 24.9 | 26.9 | 28.9 | 23.6 | 24.3 | 26.3 | 28.2 | 22.4 | 23.1 | 25.0 | 26.8 | 20.8 | 21.4 | 23.1 | 24.8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.79 | 0.70 | 0.53 | 0.34 | 0.82 | 0.73 | 0.55 | 0.36 | 0.84 | 0.75 | 0.57 | 0.36 | 0.86 | 0.77 | 0.58 | 0.38 | 0.90 | 0.80 | 0.61 | 0.39 | 0.90 | 0.81 | 0.61 | 0.39 |
|  |  | $\Delta T$ | 21 | 19 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 19 | 16 | 11 | 20 | 18 | 15 | 10 |
|  |  | kW | 1.95 | 1.99 | 2.05 | 2.11 | 2.09 | 2.14 | 2.20 | 2.27 | 2.22 | 2.26 | 2.33 | 2.41 | 2.33 | 2.38 | 2.45 | 2.53 | 2.42 | 2.47 | 2.55 | 2.63 | 2.50 | 2.56 | 2.64 | 2.72 |
|  |  | Amps | 6.9 | 7.1 | 7.3 | 7.6 | 7.4 | 7.6 | 7.9 | 8.2 | 8.1 | 8.3 | 8.6 | 8.9 | 8.6 | 8.9 | 9.2 | 9.5 | 9.2 | 9.4 | 9.7 | 10.1 | 9.7 | 10.0 | 10.3 | 10.7 |
|  |  | HI PR | 230 | 248 | 262 | 273 | 259 | 278 | 294 | 306 | 294 | 316 | 334 | 349 | 335 | 360 | 381 | 397 | 377 | 405 | 428 | 447 | 416 | 448 | 473 | 493 |
|  |  | LO PR | 103 | 110 | 120 | 128 | 109 | 116 | 127 | 135 | 113 | 121 | 132 | 140 | 119 | 127 | 138 | 147 | 125 | 133 | 145 | 154 | 129 | 137 | 150 | 160 |
|  |  | MBh | 27.5 | 28.3 | 30.6 | 32.9 | 26.8 | 27.6 | 29.9 | 32.1 | 26.2 | 27.0 | 29.2 | 31.3 | 25.6 | 26.3 | 28.5 | 30.6 | 24.3 | 25.0 | 27.1 | 29.0 | 22.5 | 23.2 | 25.1 | 26.9 |
|  |  | S/T | 0.82 | 0.73 | 0.55 | 0.36 | 0.85 | 0.76 | 0.57 | 0.37 | 0.87 | 0.78 | 0.59 | 0.38 | 0.90 | 0.80 | 0.61 | 0.39 | 0.93 | 0.83 | 0.63 | 0.40 | 0.94 | 0.84 | 0.63 | 0.41 |
|  |  | $\Delta T$ | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 19 | 18 | 15 | 10 |
|  | 1050 | kW | 2.00 | 2.04 | 2.10 | 2.16 | 2.14 | 2.19 | 2.25 | 2.32 | 2.27 | 2.32 | 2.39 | 2.47 | 2.39 | 2.44 | 2.51 | 2.59 | 2.48 | 2.53 | 2.62 | 2.70 | 2.57 | 2.62 | 2.70 | 2.79 |
|  |  | Amps | 7.1 | 7.2 | 7.5 | 7.8 | 7.7 | 7.8 | 8.1 | 8.4 | 8.3 | 8.5 | 8.8 | 9.1 | 8.9 | 9.1 | 9.4 | 9.8 | 9.5 | 9.7 | 10.0 | 10.4 | 10.0 | 10.3 | 10.6 | 11.0 |
|  |  | HI PR | 238 | 256 | 270 | 282 | 267 | 287 | 303 | 316 | 303 | 326 | 344 | 359 | 345 | 372 | 392 | 409 | 388 | 418 | 441 | 460 | 429 | 462 | 488 | 509 |
|  |  | LO PR | 106 | 113 | 124 | 132 | 112 | 120 | 131 | 139 | 117 | 124 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 149 | 159 | 133 | 142 | 155 | 165 |
|  |  | MBh | 28.3 | 29.1 | 31.5 | 33.9 | 27.6 | 28.5 | 30.8 | 33.1 | 27.0 | 27.8 | 30.1 | 32.3 | 26.3 | 27.1 | 29.3 | 31.5 | 25.0 | 25.8 | 27.9 | 29.9 | 23.2 | 23.9 | 25.8 | 27.7 |
|  |  | S/T | 0.86 | 0.77 | 0.58 | 0.37 | 0.89 | 0.79 | 0.60 | 0.39 | 0.91 | 0.81 | 0.62 | 0.40 | 0.94 | 0.84 | 0.64 | 0.41 | 0.97 | 0.87 | 0.66 | 0.42 | 0.98 | 0.88 | 0.67 | 0.43 |
|  |  | $\Delta T$ | 20 | 18 | 15 | 10 | 20 | 18 | 15 | 10 | 20 | 18 | 15 | 10 | 20 | 19 | 15 | 11 | 20 | 18 | 15 | 10 | 19 | 17 | 14 | 10 |
|  | 919 | kW | 2.01 | 2.05 | 2.11 | 2.18 | 2.16 | 2.20 | 2.27 | 2.34 | 2.29 | 2.34 | 2.41 | 2.49 | 2.40 | 2.46 | 2.53 | 2.61 | 2.50 | 2.56 | 2.64 | 2.72 | 2.59 | 2.64 | 2.73 | 2.82 |
|  |  | Amps | 7.1 | 7.3 | 7.6 | 7.8 | 7.7 | 7.9 | 8.2 | 8.5 | 8.4 | 8.6 | 8.9 | 9.2 | 9.0 | 9.2 | 9.5 | 9.9 | 9.6 | 9.8 | 10.1 | 10.5 | 10.1 | 10.4 | 10.7 | 11.1 |
|  |  | HI PR | 240 | 258 | 273 | 284 | 269 | 290 | 306 | 319 | 306 | 329 | 348 | 363 | 349 | 375 | 396 | 413 | 392 | 422 | 446 | 465 | 433 | 466 | 493 | 514 |
|  |  | LO PR | 107 | 114 | 125 | 133 | 114 | 121 | 132 | 140 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 153 | 130 | 138 | 151 | 161 | 134 | 143 | 156 | 166 |

[^1]|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | Alrfiow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 |  | MBh | 25.8 | 26.4 | 28.2 | 30.1 | 25.2 | 25.8 | 27.5 | 29.4 | 24.6 | 25.1 | 26.9 | 28.7 | 24.0 | 24.5 | 26.2 | 28.0 | 22.8 | 23.3 | 24.9 | 26.6 | 21.1 | 21.6 | 23.1 | 24.7 |
|  |  | S/T | 0.86 | 0.81 | 0.66 | 0.49 | 0.90 | 0.84 | 0.68 | 0.51 | 0.92 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 0.98 | 0.92 | 0.75 | 0.56 | 0.99 | 0.93 | 0.76 | 0.57 |
|  |  | $\Delta T$ | 23 | 22 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 21 | 18 | 15 |
|  | 1181 | kW | 1.97 | 2.01 | 2.07 | 2.13 | 2.11 | 2.15 | 2.22 | 2.29 | 2.24 | 2.28 | 2.35 | 2.43 | 2.35 | 2.40 | 2.47 | 2.55 | 2.44 | 2.49 | 2.57 | 2.66 | 2.52 | 2.58 | 2.66 | 2.75 |
|  |  | Amps | 7.0 | 7.1 | 7.3 | 7.6 | 7.5 | 7.7 | 7.9 | 8.2 | 8.2 | 8.4 | 8.6 | 9.0 | 8.7 | 8.9 | 9.2 | 9.6 | 9.3 | 9.5 | 9.8 | 10.2 | 9.8 | 10.1 | 10.4 | 10.8 |
|  |  | HI PR | 233 | 250 | 264 | 276 | 261 | 281 | 297 | 310 | 297 | 320 | 338 | 352 | 338 | 364 | 384 | 401 | 381 | 410 | 432 | 451 | 420 | 452 | 478 | 498 |
|  |  | LO PR | 104 | 111 | 121 | 129 | 110 | 117 | 128 | 136 | 114 | 122 | 133 | 142 | 120 | 128 | 140 | 149 | 126 | 134 | 146 | 156 | 130 | 139 | 151 | 161 |
|  |  | MBh | 28.0 | 28.6 | 30.5 | 32.6 | 27.3 | 27.9 | 29.8 | 31.9 | 26.7 | 27.2 | 29.1 | 31.1 | 26.0 | 26.6 | 28.4 | 30.4 | 24.7 | 25.3 | 27.0 | 28.8 | 22.9 | 23.4 | 25.0 | 26.7 |
|  |  | S/T | 0.90 | 0.84 | 0.68 | 0.51 | 0.93 | 0.87 | 0.71 | 0.53 | 0.95 | 0.89 | 0.73 | 0.54 | 0.98 | 0.92 | 0.75 | 0.56 | 1.00 | 0.96 | 0.78 | 0.58 | 1.00 | 0.96 | 0.78 | 0.59 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 16 | 23 | 22 | 19 | 16 | 23 | 23 | 20 | 16 | 23 | 22 | 19 | 15 | 21 | 21 | 18 | 14 |
|  | 1050 | kW | 2.01 | 2.05 | 2.12 | 2.18 | 2.16 | 2.20 | 2.27 | 2.34 | 2.29 | 2.34 | 2.41 | 2.49 | 2.40 | 2.46 | 2.53 | 2.61 | 2.50 | 2.56 | 2.64 | 2.72 | 2.59 | 2.64 | 2.73 | 2.82 |
|  |  | Amps | 7.1 | 7.3 | 7.6 | 7.8 | 7.7 | 7.9 | 8.2 | 8.5 | 8.4 | 8.6 | 8.9 | 9.2 | 9.0 | 9.2 | 9.5 | 9.9 | 9.6 | 9.8 | 10.1 | 10.5 | 10.1 | 10.4 | 10.7 | 11.1 |
|  |  | HIPR | 240 | 258 | 273 | 284 | 269 | 290 | 306 | 319 | 306 | 330 | 348 | 363 | 349 | 375 | 396 | 413 | 392 | 422 | 446 | 465 | 433 | 466 | 493 | 514 |
|  |  | LO PR | 107 | 114 | 125 | 133 | 114 | 121 | 132 | 140 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 153 | 130 | 138 | 151 | 161 | 134 | 143 | 156 | 166 |
|  |  | MBh | 28.8 | 29.4 | 31.4 | 33.6 | 28.1 | 28.7 | 30.7 | 32.8 | 27.5 | 28.1 | 30.0 | 32.1 | 26.8 | 27.4 | 29.3 | 31.3 | 25.5 | 26.0 | 27.8 | 29.7 | 23.6 | 24.1 | 25.7 | 27.5 |
|  |  | S/T | 0.94 | 0.88 | 0.72 | 0.54 | 1.00 | 0.91 | 0.74 | 0.56 | 1.00 | 0.94 | 0.76 | 0.57 | 1.00 | 0.97 | 0.79 | 0.59 | 1.00 | 1.00 | 0.82 | 0.61 | 1.00 | 1.00 | 0.82 | 0.62 |
|  |  | $\Delta T$ | 22 | 21 | 18 | 15 | 23 | 21 | 19 | 15 | 22 | 21 | 19 | 15 | 22 | 22 | 19 | 15 | 21 | 21 | 19 | 15 | 19 | 20 | 17 | 14 |
|  | 919 | kW | 2.03 | 2.07 | 2.13 | 2.20 | 2.18 | 2.22 | 2.29 | 2.36 | 2.31 | 2.36 | 2.43 | 2.51 | 2.42 | 2.48 | 2.55 | 2.64 | 2.52 | 2.58 | 2.66 | 2.74 | 2.61 | 2.66 | 2.75 | 2.84 |
|  |  | Amps | 7.2 | 7.4 | 7.6 | 7.9 | 7.8 | 8.0 | 8.2 | 8.6 | 8.5 | 8.7 | 9.0 | 9.3 | 9.1 | 9.3 | 9.6 | 10.0 | 9.6 | 9.9 | 10.2 | 10.6 | 10.2 | 10.5 | 10.8 | 11.2 |
|  |  | HI PR | 242 | 261 | 275 | 287 | 272 | 293 | 309 | 322 | 309 | 333 | 351 | 367 | 352 | 379 | 400 | 417 | 396 | 426 | 450 | 470 | 438 | 471 | 498 | 519 |
|  |  | LO PR | 109 | 116 | 126 | 134 | 115 | 122 | 133 | 142 | 119 | 127 | 138 | 147 | 125 | 133 | 145 | 155 | 131 | 140 | 152 | 162 | 136 | 144 | 158 | 168 |


| 85 | 1181 | MBh | 26.3 | 26.8 | 28.0 | 29.9 | 25.7 | 26.1 | 27.4 | 29.2 | 25.0 | 25.5 | 26.7 | 28.5 | 24.4 | 24.9 | 26.1 | 27.8 | 23.2 | 23.7 | 24.8 | 26.4 | 21.5 | 21.9 | 23.0 | 24.5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.91 | 0.87 | 0.79 | 0.64 | 0.94 | 0.91 | 0.82 | 0.66 | 0.96 | 0.93 | 0.84 | 0.68 | 0.99 | 0.96 | 0.86 | 0.70 | 1.00 | 0.99 | 0.90 | 0.73 | 1.00 | 1.00 | 0.91 | 0.73 |
|  |  | $\Delta T$ | 25 | 25 | 23 | 20 | 25 | 25 | 24 | 20 | 25 | 25 | 24 | 20 | 25 | 25 | 24 | 21 | 24 | 25 | 23 | 20 | 23 | 23 | 22 | 19 |
|  |  | kW | 1.98 | 2.02 | 2.08 | 2.15 | 2.13 | 2.17 | 2.24 | 2.31 | 2.25 | 2.30 | 2.37 | 2.45 | 2.37 | 2.42 | 2.49 | 2.57 | 2.46 | 2.51 | 2.59 | 2.68 | 2.54 | 2.60 | 2.68 | 2.77 |
|  |  | Amps | 7.0 | 7.2 | 7.4 | 7.7 | 7.6 | 7.8 | 8.0 | 8.3 | 8.2 | 8.4 | 8.7 | 9.0 | 8.8 | 9.0 | 9.3 | 9.7 | 9.4 | 9.6 | 9.9 | 10.3 | 9.9 | 10.2 | 10.5 | 10.9 |
|  |  | HI PR | 235 | 253 | 267 | 279 | 264 | 284 | 300 | 313 | 300 | 323 | 341 | 356 | 342 | 368 | 388 | 405 | 384 | 414 | 437 | 456 | 425 | 457 | 483 | 503 |
|  |  | LO PR | 105 | 112 | 122 | 130 | 111 | 118 | 129 | 138 | 116 | 123 | 134 | 143 | 121 | 129 | 141 | 150 | 127 | 135 | 148 | 157 | 132 | 140 | 153 | 163 |
|  |  | MBh | 28.5 | 29.0 | 30.4 | 32.4 | 27.8 | 28.3 | 29.7 | 31.7 | 27.1 | 27.7 | 29.0 | 30.9 | 26.5 | 27.0 | 28.3 | 30.1 | 25.1 | 25.6 | 26.8 | 28.6 | 23.3 | 23.7 | 24.9 | 26.5 |
|  |  | S/T | 0.94 | 0.91 | 0.82 | 0.66 | 0.97 | 0.94 | 0.85 | 0.69 | 1.00 | 0.96 | 0.87 | 0.71 | 1.00 | 0.99 | 0.90 | 0.73 | 1.00 | 1.00 | 0.93 | 0.76 | 1.00 | 1.00 | 0.94 | 0.76 |
|  |  | $\Delta T$ | 25 | 24 | 23 | 20 | 25 | 24 | 23 | 20 | 25 | 24 | 23 | 20 | 24 | 25 | 23 | 20 | 23 | 24 | 23 | 20 | 21 | 22 | 21 | 19 |
|  | 1050 | kW | 2.03 | 2.07 | 2.13 | 2.20 | 2.18 | 2.22 | 2.29 | 2.36 | 2.31 | 2.36 | 2.43 | 2.51 | 2.42 | 2.48 | 2.55 | 2.64 | 2.52 | 2.58 | 2.66 | 2.74 | 2.61 | 2.66 | 2.75 | 2.84 |
|  |  | Amps | 7.2 | 7.4 | 7.6 | 7.9 | 7.8 | 8.0 | 8.2 | 8.6 | 8.5 | 8.7 | 9.0 | 9.3 | 9.1 | 9.3 | 9.6 | 10.0 | 9.6 | 9.9 | 10.2 | 10.6 | 10.2 | 10.5 | 10.8 | 11.2 |
|  |  | HI PR | 242 | 261 | 275 | 287 | 272 | 293 | 309 | 322 | 309 | 333 | 351 | 367 | 352 | 379 | 400 | 417 | 396 | 426 | 450 | 470 | 438 | 471 | 498 | 519 |
|  |  | LO PR | 109 | 116 | 126 | 134 | 115 | 122 | 133 | 142 | 119 | 127 | 138 | 147 | 125 | 133 | 145 | 155 | 131 | 140 | 152 | 162 | 136 | 144 | 158 | 168 |
|  |  | MBh | 29.3 | 29.9 | 31.3 | 33.4 | 28.6 | 29.2 | 30.6 | 32.6 | 27.9 | 28.5 | 29.8 | 31.8 | 27.3 | 27.8 | 29.1 | 31.1 | 25.9 | 26.4 | 27.7 | 29.5 | 24.0 | 24.5 | 25.6 | 27.3 |
|  |  | S/T | 0.98 | 0.95 | 0.86 | 0.70 | 1.00 | 0.98 | 0.89 | 0.72 | 1.00 | 1.00 | 0.91 | 0.74 | 1.00 | 1.00 | 0.94 | 0.76 | 1.00 | 1.00 | 0.98 | 0.79 | 1.00 | 1.00 | 0.98 | 0.80 |
|  |  | $\Delta T$ | 24 | 23 | 22 | 19 | 23 | 23 | 22 | 19 | 23 | 23 | 22 | 19 | 22 | 23 | 22 | 19 | 21 | 22 | 22 | 19 | 20 | 20 | 21 | 18 |
|  | 919 | kW | 2.04 | 2.08 | 2.15 | 2.21 | 2.19 | 2.24 | 2.31 | 2.38 | 2.33 | 2.37 | 2.45 | 2.53 | 2.44 | 2.49 | 2.57 | 2.66 | 2.54 | 2.60 | 2.68 | 2.77 | 2.63 | 2.69 | 2.77 | 2.86 |
|  |  | Amps | 7.3 | 7.4 | 7.7 | 8.0 | 7.9 | 8.1 | 8.3 | 8.6 | 8.5 | 8.8 | 9.0 | 9.4 | 9.1 | 9.4 | 9.7 | 10.0 | 9.7 | 10.0 | 10.3 | 10.7 | 10.3 | 10.6 | 10.9 | 11.3 |
|  |  | HIPR | 245 | 263 | 278 | 290 | 275 | 296 | 312 | 326 | 312 | 336 | 355 | 370 | 356 | 383 | 404 | 422 | 400 | 431 | 455 | 474 | 442 | 476 | 503 | 524 |
|  |  | LO PR | 110 | 117 | 127 | 136 | 116 | 123 | 135 | 143 | 120 | 128 | 140 | 149 | 126 | 135 | 147 | 156 | 133 | 141 | 154 | 164 | 137 | 146 | 159 | 170 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AIRflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 | 1050 | MBh | 31.1 | 32.2 | 35.3 | - | 30.4 | 31.5 | 34.5 | - | 29.6 | 30.7 | 33.7 | - | 28.9 | 30.0 | 32.8 | - | 27.5 | 28.5 | 31.2 | - | 25.4 | 26.4 | 28.9 | - |
|  |  | S/T | 0.70 | 0.58 | 0.40 | - | 0.72 | 0.60 | 0.42 | - | 0.74 | 0.62 | 0.43 | - | 0.76 | 0.64 | 0.44 | - | 0.79 | 0.66 | 0.46 | - | 0.80 | 0.67 | 0.46 | - |
|  |  | $\Delta T$ | 19 | 16 | 12 | - | 19 | 17 | 13 | - | 19 | 17 | 13 | - | 19 | 17 | 13 | - | 19 | 16 | 13 | - | 18 | 15 | 12 | - |
|  |  | kW | 2.40 | 2.44 | 2.52 | - | 2.57 | 2.63 | 2.71 | - | 2.73 | 2.78 | 2.87 | - | 2.86 | 2.92 | 3.02 | - | 2.98 | 3.04 | 3.14 | - | 3.08 | 3.15 | 3.25 | - |
|  |  | Amps | 8.7 | 8.9 | 9.2 | - | 9.4 | 9.7 | 10.0 | - | 10.3 | 10.5 | 10.9 | - | 11.0 | 11.3 | 11.6 | - | 11.7 | 12.0 | 12.4 | - | 12.4 | 12.7 | 13.1 | - |
|  |  | HIPR | 214 | 231 | 244 | - | 241 | 259 | 273 | - | 274 | 294 | 311 | - | 312 | 335 | 354 | - | 351 | 377 | 398 | - | 387 | 417 | 440 | - |
|  |  | LO PR | 99 | 106 | 115 | - | 105 | 112 | 122 | - | 109 | 116 | 127 | - | 115 | 122 | 133 | - | 120 | 128 | 139 | - | 124 | 132 | 144 | - |
|  | 1200 | MBh | 33.7 | 34.9 | 38.2 | - | 32.9 | 34.1 | 37.4 | - | 32.1 | 33.3 | 36.5 | - | 31.3 | 32.5 | 35.6 | - | 29.8 | 30.8 | 33.8 | - | 27.6 | 28.6 | 31.3 | - |
|  |  | S/T | 0.72 | 0.60 | 0.42 | - | 0.75 | 0.62 | 0.43 | - | 0.77 | 0.64 | 0.44 | - | 0.79 | 0.66 | 0.46 | - | 0.82 | 0.69 | 0.48 | - | 0.83 | 0.69 | 0.48 | - |
|  |  | $\Delta T$ | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 17 | 15 | 11 | - |
|  |  | kW | 2.45 | 2.50 | 2.58 | - | 2.63 | 2.69 | 2.77 | - | 2.79 | 2.85 | 2.94 | - | 2.93 | 3.00 | 3.09 | - | 3.05 | 3.12 | 3.22 | - | 3.16 | 3.23 | 3.33 | - |
|  |  | Amps | 9.0 | 9.2 | 9.5 | - | 9.7 | 10.0 | 10.3 | - | 10.6 | 10.8 | 11.2 | - | 11.3 | 11.6 | 12.0 | - | 12.0 | 12.3 | 12.8 | - | 12.8 | 13.1 | 13.5 | - |
|  |  | HIPR | 221 | 238 | 251 | - | 248 | 267 | 282 | - | 282 | 304 | 321 | - | 321 | 346 | 365 | - | 361 | 389 | 411 | - | 399 | 430 | 454 | - |
|  |  | LO PR | 102 | 109 | 119 | - | 108 | 115 | 126 | - | 112 | 120 | 131 | - | 118 | 126 | 137 | - | 124 | 132 | 144 | - | 128 | 136 | 149 | - |
|  | 1350 | MBh | 34.7 | 36.0 | 39.4 | - | 33.9 | 35.1 | 38.5 | - | 33.1 | 34.3 | 37.6 | - | 32.3 | 33.4 | 36.6 | - | 30.7 | 31.8 | 34.8 | - | 28.4 | 29.4 | 32.2 | - |
|  |  | S/T | 0.76 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.80 | 0.67 | 0.47 | - | 0.83 | 0.69 | 0.48 | - | 0.86 | 0.72 | 0.50 | - | 0.87 | 0.73 | 0.50 | - |
|  |  | $\Delta T$ | 18 | 15 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  |  | kW | 2.47 | 2.52 | 2.60 | - | 2.65 | 2.71 | 2.79 | - | 2.82 | 2.88 | 2.97 | - | 2.96 | 3.02 | 3.12 | - | 3.08 | 3.15 | 3.25 | - | 3.18 | 3.25 | 3.36 | - |
|  |  | Amps | 9.1 | 9.3 | 9.6 | - | 9.8 | 10.0 | 10.4 | - | 10.7 | 10.9 | 11.3 | - | 11.4 | 11.7 | 12.1 | - | 12.1 | 12.5 | 12.9 | - | 12.9 | 13.2 | 13.7 | - |
|  |  | HIPR | 223 | 240 | 254 | - | 250 | 270 | 285 | - | 285 | 307 | 324 | - | 324 | 349 | 369 | - | 365 | 393 | 415 | - | 403 | 434 | 458 | - |
|  |  | LO PR | 103 | 110 | 120 | - | 109 | 116 | 127 | - | 114 | 121 | 132 | - | 119 | 127 | 139 | - | 125 | 133 | 145 | - | 129 | 138 | 150 | - |


| 75 | 1050 | MBh | 31.6 | 32.5 | 35.2 | 37.8 | 30.9 | 31.8 | 34.4 | 36.9 | 30.1 | 31.0 | 33.6 | 36.1 | 29.4 | 30.3 | 32.8 | 35.2 | 27.9 | 28.8 | 31.1 | 33.4 | 25.9 | 26.6 | 28.8 | 31.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.79 | 0.71 | 0.54 | 0.34 | 0.82 | 0.73 | 0.55 | 0.36 | 0.84 | 0.75 | 0.57 | 0.37 | 0.87 | 0.78 | 0.59 | 0.38 | 0.90 | 0.81 | 0.61 | 0.39 | 0.91 | 0.81 | 0.61 | 0.40 |
|  |  | $\Delta T$ | 22 | 20 | 17 | 11 | 22 | 20 | 17 | 12 | 22 | 20 | 17 | 12 | 22 | 21 | 17 | 12 | 22 | 20 | 17 | 11 | 21 | 19 | 16 | 11 |
|  |  | kW | 2.41 | 2.46 | 2.54 | 2.62 | 2.59 | 2.65 | 2.73 | 2.81 | 2.75 | 2.81 | 2.89 | 2.99 | 2.89 | 2.95 | 3.04 | 3.14 | 3.00 | 3.07 | 3.17 | 3.27 | 3.11 | 3.17 | 3.28 | 3.38 |
|  |  | Amps | 8.8 | 9.0 | 9.3 | 9.7 | 9.5 | 9.8 | 10.1 | 10.5 | 10.4 | 10.6 | 11.0 | 11.4 | 11.1 | 11.4 | 11.7 | 12.2 | 11.8 | 12.1 | 12.5 | 13.0 | 12.5 | 12.8 | 13.3 | 13.8 |
|  |  | HI PR | 217 | 233 | 246 | 257 | 243 | 262 | 276 | 288 | 276 | 297 | 314 | 328 | 315 | 339 | 358 | 373 | 354 | 381 | 402 | 420 | 391 | 421 | 445 | 464 |
|  |  | LO PR | 100 | 107 | 117 | 124 | 106 | 113 | 123 | 131 | 110 | 117 | 128 | 136 | 116 | 123 | 134 | 143 | 121 | 129 | 141 | 150 | 125 | 133 | 146 | 155 |
|  |  | MBh | 34.2 | 35.3 | 38.2 | 41.0 | 33.5 | 34.4 | 37.3 | 40.0 | 32.7 | 33.6 | 36.4 | 39.1 | 31.9 | 32.8 | 35.5 | 38.1 | 30.3 | 31.2 | 33.7 | 36.2 | 28.0 | 28.9 | 31.2 | 33.5 |
|  |  | S/T | 0.82 | 0.73 | 0.56 | 0.36 | 0.85 | 0.76 | 0.58 | 0.37 | 0.87 | 0.78 | 0.59 | 0.38 | 0.90 | 0.80 | 0.61 | 0.39 | 0.93 | 0.83 | 0.63 | 0.41 | 0.94 | 0.84 | 0.64 | $0.41$ |
|  |  | $\Delta T$ | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 17 | 11 | 22 | 20 | 16 | 11 | 20 | 19 | 15 | 11 |
|  | 1200 | kW | 2.47 | 2.52 | 2.60 | 2.68 | 2.65 | 2.71 | 2.79 | 2.88 | 2.82 | 2.88 | 2.97 | 3.06 | 2.96 | 3.02 | 3.12 | 3.22 | 3.08 | 3.15 | 3.25 | 3.35 | 3.18 | 3.25 | 3.36 | 3.47 |
|  |  | Amps | 9.1 | 9.3 | 9.6 | 10.0 | 9.8 | 10.0 | 10.4 | 10.8 | 10.7 | 10.9 | 11.3 | 11.7 | 11.4 | 11.7 | 12.1 | 12.5 | 12.2 | 12.5 | 12.9 | 13.4 | 12.9 | 13.2 | 13.7 | 14.2 |
|  |  | HI PR | 223 | 240 | 254 | 265 | 251 | 270 | 285 | 297 | 285 | 307 | 324 | 338 | 325 | 349 | 369 | 385 | 365 | 393 | 415 | 433 | 403 | 434 | 458 | 478 |
|  |  | LO PR | 103 | 110 | 120 | 128 | 109 | 116 | 127 | 135 | 114 | 121 | 132 | 141 | 119 | 127 | 139 | 148 | 125 | 133 | 145 | 155 | 129 | 138 | 150 | 160 |
|  |  | MBh | 35.3 | 36.3 | 39.3 | 42.2 | 34.5 | 35.5 | 38.4 | 41.2 | 33.6 | 34.6 | 37.5 | 40.2 | 32.8 | 33.8 | 36.6 | 39.3 | 31.2 | 32.1 | 34.7 | 37.3 | 28.9 | 29.7 | 32.2 | 34.5 |
|  |  | S/T | 0.86 | 0.77 | 0.58 | 0.37 | 0.89 | 0.80 | 0.60 | 0.39 | 0.91 | 0.82 | 0.62 | 0.40 | 0.94 | 0.84 | 0.64 | 0.41 | 0.98 | 0.88 | 0.66 | 0.43 | 0.99 | 0.88 | 0.67 | 0.43 |
|  |  | $\Delta T$ | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 19 | 18 | 15 | 10 |
|  | 1350 | kW | 2.49 | 2.54 | 2.62 | 2.70 | 2.68 | 2.73 | 2.82 | 2.91 | 2.84 | 2.90 | 2.99 | 3.09 | 2.98 | 3.05 | 3.14 | 3.25 | 3.10 | 3.17 | 3.27 | 3.38 | 3.21 | 3.28 | 3.39 | 3.50 |
|  |  | Amps | 9.1 | 9.4 | 9.7 | 10.0 | 9.9 | 10.1 | 10.5 | 10.9 | 10.8 | 11.0 | 11.4 | 11.8 | 11.5 | 11.8 | 12.2 | 12.7 | 12.3 | 12.6 | 13.0 | 13.5 | 13.0 | 13.3 | 13.8 | 14.3 |
|  |  | HI PR | 226 | 243 | 256 | 267 | 253 | 272 | 288 | 300 | 288 | 310 | 327 | 341 | 328 | 353 | 372 | 388 | 369 | 397 | 419 | 437 | 407 | 438 | 463 | 483 |
|  |  | LO PR | 104 | 111 | 121 | 129 | 110 | 117 | 128 | 137 | 115 | 122 | 133 | 142 | 121 | 128 | 140 | 149 | 126 | 134 | 147 | 156 | 131 | 139 | 152 | 162 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AIRFLOW |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 | 1050 | MBh | 32.2 | 32.9 | 35.1 | 37.5 | 31.4 | 32.1 | 34.3 | 36.7 | 30.7 | 31.3 | 33.5 | 35.8 | 29.9 | 30.6 | 32.7 | 34.9 | 28.4 | 29.1 | 31.0 | 33.2 | 26.3 | 26.9 | 28.8 | 30.7 |
|  |  | S/T | 0.87 | 0.81 | 0.66 | 0.49 | 0.90 | 0.84 | 0.69 | 0.51 | 0.92 | 0.86 | 0.70 | 0.53 | 0.95 | 0.89 | 0.73 | 0.54 | 0.99 | 0.93 | 0.75 | 0.56 | 1.00 | 0.93 | 0.76 | 0.57 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 25 | 24 | 21 | 16 | 25 | 24 | 21 | 16 | 25 | 24 | 21 | 17 | 25 | 24 | 20 | 16 | 23 | 22 | 19 | 15 |
|  |  | kW | 2.43 | 2.48 | 2.56 | 2.64 | 2.61 | 2.67 | 2.75 | 2.84 | 2.77 | 2.83 | 2.92 | 3.01 | 2.91 | 2.97 | 3.07 | 3.17 | 3.03 | 3.09 | 3.19 | 3.30 | 3.13 | 3.20 | 3.30 | 3.41 |
|  |  | Amps | 8.9 | 9.1 | 9.4 | 9.8 | 9.6 | 9.9 | 10.2 | 10.6 | 10.5 | 10.7 | 11.1 | 11.5 | 11.2 | 11.5 | 11.9 | 12.3 | 11.9 | 12.2 | 12.6 | 13.1 | 12.6 | 13.0 | 13.4 | 13.9 |
|  |  | Hi PR | 219 | 235 | 249 | 259 | 245 | 264 | 279 | 291 | 279 | 300 | 317 | 331 | 318 | 342 | 361 | 377 | 358 | 385 | 406 | 424 | 395 | 425 | 449 | 468 |
|  |  | Lo PR | 101 | 108 | 118 | 125 | 107 | 114 | 124 | 132 | 111 | 118 | 129 | 138 | 117 | 124 | 136 | 145 | 123 | 130 | 142 | 152 | 127 | 135 | 147 | 157 |
|  | 1200 | MBh | 34.9 | 35.6 | 38.1 | 40.7 | 34.0 | 34.8 | 37.2 | 39.7 | 33.2 | 34.0 | 36.3 | 38.8 | 32.4 | 33.1 | 35.4 | 37.8 | 30.8 | 31.5 | 33.6 | 36.0 | 28.5 | 29.2 | 31.2 | 33.3 |
|  |  | S/T | 0.90 | 0.84 | 0.69 | 0.51 | 0.93 | 0.87 | 0.71 | 0.53 | 0.96 | 0.90 | 0.73 | 0.55 | 0.99 | 0.93 | 0.75 | 0.56 | 1.00 | 0.96 | 0.78 | 0.58 | 1.00 | 0.97 | 0.79 | 0.59 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 25 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 22 | 19 | 15 |
|  |  | kW | 2.49 | 2.54 | 2.62 | 2.70 | 2.68 | 2.73 | 2.82 | 2.91 | 2.84 | 2.90 | 2.99 | 3.09 | 2.98 | 3.05 | 3.14 | 3.25 | 3.11 | 3.17 | 3.27 | 3.38 | 3.21 | 3.28 | 3.39 | 3.50 |
|  |  | Amps | 9.1 | 9.4 | 9.7 | 10.0 | 9.9 | 10.1 | 10.5 | 10.9 | 10.8 | 11.0 | 11.4 | 11.8 | 11.5 | 11.8 | 12.2 | 12.7 | 12.3 | 12.6 | 13.0 | 13.5 | 13.0 | 13.3 | 13.8 | 14.3 |
|  |  | Hi PR | 226 | 243 | 256 | 267 | 253 | 272 | 288 | 300 | 288 | 310 | 327 | 341 | 328 | 353 | 373 | 389 | 369 | 397 | 419 | 437 | 407 | 438 | 463 | 483 |
|  |  | Lo PR | 105 | 111 | 121 | 129 | 110 | 117 | 128 | 137 | 115 | 122 | 133 | 142 | 121 | 128 | 140 | 149 | 126 | 134 | 147 | 156 | 131 | 139 | 152 | 162 |
|  | 1350 | MBh | 35.9 | 36.7 | 39.2 | 41.9 | 35.1 | 35.8 | 38.3 | 40.9 | 34.2 | 35.0 | 37.4 | 40.0 | 33.4 | 34.1 | 36.5 | 39.0 | 31.7 | 32.4 | 34.6 | 37.0 | 29.4 | 30.0 | 32.1 | 34.3 |
|  |  | S/T | 0.94 | 0.88 | 0.72 | 0.54 | 1.00 | 0.92 | 0.75 | 0.56 | 1.00 | 0.94 | 0.76 | 0.57 | 1.00 | 0.97 | 0.79 | 0.59 | 1.00 | 1.00 | 0.82 | 0.61 | 1.00 | 1.00 | 0.83 | 0.62 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 15 | 24 | 22 | 19 | 16 | 23 | 22 | 19 | 16 | 23 | 23 | 20 | 16 | 22 | 22 | 19 | 15 | 20 | 20 | 18 | 14 |
|  |  | kW | 2.51 | 2.56 | 2.64 | 2.72 | 2.70 | 2.75 | 2.84 | 2.93 | 2.86 | 2.92 | 3.01 | 3.11 | 3.01 | 3.07 | 3.17 | 3.27 | 3.13 | 3.20 | 3.30 | 3.41 | 3.24 | 3.31 | 3.42 | 3.53 |
|  |  | Amps | 9.2 | 9.5 | 9.8 | 10.1 | 10.0 | 10.2 | 10.6 | 11.0 | 10.9 | 11.1 | 11.5 | 11.9 | 11.6 | 11.9 | 12.3 | 12.8 | 12.4 | 12.7 | 13.1 | 13.6 | 13.1 | 13.5 | 13.9 | 14.5 |
|  |  | Hi PR | 228 | 245 | 259 | 270 | 256 | 275 | 290 | 303 | 291 | 313 | 330 | 345 | 331 | 356 | 376 | 392 | 372 | 401 | 423 | 441 | 412 | 443 | 468 | 488 |
|  |  | Lo PR | 106 | 112 | 123 | 131 | 112 | 119 | 130 | 138 | 116 | 123 | 135 | 143 | 122 | 130 | 141 | 151 | 128 | 136 | 148 | 158 | 132 | 140 | 153 | 163 |


|  |  | MBh | 32.7 | 33.4 | 34.9 | 37.3 | 32.0 | 32.6 | 34.1 | 36.4 | 31.2 | 31.8 | 33.3 | 35.6 | 30.5 | 31.0 | 32.5 | 34.7 | 28.9 | 29.5 | 30.9 | 33.0 | 26.8 | 27.3 | 28.6 | 30.5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.91 | 0.88 | 0.79 | 0.64 | 0.94 | 0.91 | 0.82 | 0.67 | 0.97 | 0.93 | 0.84 | 0.68 | 1.00 | 0.96 | 0.87 | 0.70 | 1.00 | 1.00 | 0.90 | 0.73 | 1.00 | 1.00 | 0.91 | 0.74 |
|  |  | $\Delta T$ | 26 | 26 | 24 | 21 | 26 | 26 | 25 | 21 | 26 | 26 | 25 | 21 | 27 | 26 | 25 | 21 | 25 | 26 | 24 | 21 | 23 | 24 | 23 | 20 |
|  | 1050 | kW | 2.45 | 2.50 | 2.58 | 2.66 | 2.63 | 2.69 | 2.77 | 2.86 | 2.79 | 2.85 | 2.94 | 3.04 | 2.93 | 3.00 | 3.09 | 3.19 | 3.05 | 3.12 | 3.22 | 3.33 | 3.16 | 3.23 | 3.33 | 3.44 |
|  |  | Amps | 9.0 | 9.2 | 9.5 | 9.9 | 9.7 | 10.0 | 10.3 | 10.7 | 10.6 | 10.8 | 11.2 | 11.6 | 11.3 | 11.6 | 12.0 | 12.4 | 12.0 | 12.3 | 12.8 | 13.2 | 12.8 | 13.1 | 13.5 | 14.0 |
|  |  | Hi PR | 221 | 238 | 251 | 262 | 248 | 267 | 282 | 294 | 282 | 303 | 320 | 334 | 321 | 346 | 365 | 381 | 361 | 389 | 411 | 428 | 399 | 430 | 454 | 473 |
|  |  | Lo PR | 102 | 109 | 119 | 127 | 108 | 115 | 126 | 134 | 112 | 120 | 131 | 139 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 153 | 128 | 136 | 149 | 158 |
|  |  | MBh | 35.5 | 36.2 | 37.9 | 40.4 | 34.6 | 35.3 | 37.0 | 39.5 | 33.8 | 34.5 | 36.1 | 38.5 | 33.0 | 33.6 | 35.2 | 37.6 | 31.3 | 31.9 | 33.5 | 35.7 | 29.0 | 29.6 | 31.0 | 33.1 |
|  |  | S/T | 0.94 | 0.91 | 0.82 | 0.67 | 0.98 | 0.94 | 0.85 | 0.69 | 1.00 | 0.97 | 0.87 | 0.71 | 1.00 | 1.00 | 0.90 | 0.73 | 1.00 | 1.00 | 0.93 | 0.76 | 1.00 | 1.00 | 0.94 | 0.76 |
|  |  | $\Delta T$ | 26 | 25 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 26 | 24 | 21 | 25 | 26 | 24 | 21 | 24 | 24 | 24 | 21 | 22 | 23 | 22 | 19 |
| 85 | 1200 | kW | 2.51 | 2.56 | 2.64 | 2.72 | 2.70 | 2.75 | 2.84 | 2.93 | 2.86 | 2.92 | 3.01 | 3.11 | 3.01 | 3.07 | 3.17 | 3.27 | 3.13 | 3.20 | 3.30 | 3.41 | 3.24 | 3.31 | 3.42 | 3.53 |
|  |  | Amps | 9.2 | 9.5 | 9.8 | 10.1 | 10.0 | 10.2 | 10.6 | 11.0 | 10.9 | 11.1 | 11.5 | 11.9 | 11.6 | 11.9 | 12.3 | 12.8 | 12.4 | 12.7 | 13.1 | 13.6 | 13.1 | 13.5 | 13.9 | 14.5 |
|  |  | Hi PR | 228 | 245 | 259 | 270 | 256 | 275 | 290 | 303 | 291 | 313 | 330 | 345 | 331 | 356 | 376 | 392 | 372 | 401 | 423 | 441 | 412 | 443 | 468 | 488 |
|  |  | Lo PR | 106 | 112 | 123 | 131 | 112 | 119 | 130 | 138 | 116 | 123 | 135 | 143 | 122 | 130 | 141 | 151 | 128 | 136 | 148 | 158 | 132 | 140 | 153 | 163 |
|  |  | MBh | 36.5 | 37.2 | 39.0 | 41.6 | 35.7 | 36.4 | 38.1 | 40.6 | 34.8 | 35.5 | 37.2 | 39.7 | 34.0 | 34.6 | 36.3 | 38.7 | 32.3 | 32.9 | 34.5 | 36.8 | 29.9 | 30.5 | 31.9 | 34.1 |
|  |  | S/T | 0.99 | 0.95 | 0.86 | 0.70 | 1.00 | 0.99 | 0.89 | 0.72 | 1.00 | 1.00 | 0.91 | 0.74 | 1.00 | 1.00 | 0.94 | 0.77 | 1.00 | 1.00 | 0.98 | 0.80 | 1.00 | 1.00 | 0.99 | 0.80 |
|  |  | $\Delta T$ | 25 | 24 | 23 | 20 | 24 | 24 | 23 | 20 | 24 | 24 | 23 | 20 | 23 | 24 | 23 | 20 | 22 | 22 | 23 | 20 | 20 | 21 | 21 | 19 |
|  | 1350 | kW | 2.53 | 2.58 | 2.66 | 2.74 | 2.72 | 2.77 | 2.86 | 2.95 | 2.88 | 2.95 | 3.04 | 3.14 | 3.03 | 3.10 | 3.20 | 3.30 | 3.16 | 3.22 | 3.33 | 3.44 | 3.26 | 3.33 | 3.44 | 3.56 |
|  |  | Amps | 9.3 | 9.5 | 9.9 | 10.2 | 10.1 | 10.3 | 10.7 | 11.1 | 11.0 | 11.2 | 11.6 | 12.1 | 11.7 | 12.0 | 12.4 | 12.9 | 12.5 | 12.8 | 13.2 | 13.8 | 13.3 | 13.6 | 14.0 | 14.6 |
|  |  | Hi PR | 230 | 248 | 261 | 273 | 258 | 278 | 293 | 306 | 294 | 316 | 334 | 348 | 334 | 360 | 380 | 396 | 376 | 405 | 427 | 446 | 416 | 447 | 472 | 493 |
|  |  | Lo PR | 107 | 113 | 124 | 132 | 113 | 120 | 131 | 139 | 117 | 125 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 150 | 159 | 133 | 142 | 155 | 165 |
| Indoor Dry Bulb Temperature Shaded area reflects AHRI conditions Amps = outdoor unit amps |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  | OUtdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AIRFLOW |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 |  | MBh | 32.9 | 34.1 | 37.4 | - | 32.2 | 33.3 | 36.5 | - | 31.4 | 32.5 | 35.7 | - | 30.6 | 31.7 | 34.8 | - | 29.1 | 30.2 | 33.0 | - | 27.0 | 27.9 | 30.6 | - |
|  |  | S/T | 0.77 | 0.65 | 0.45 | - | 0.80 | 0.67 | 0.46 | - | 0.82 | 0.69 | 0.48 | - | 0.85 | 0.71 | 0.49 | - | 0.88 | 0.74 | 0.51 | - | 0.89 | 0.74 | 0.51 | - |
|  |  | $\Delta T$ | 17 | 15 | 11 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 17 | 15 | 11 | - | 16 | 14 | 11 | - |
|  | 1350 | kW | 2.44 | 2.49 | 2.55 | - | 2.61 | 2.65 | 2.73 | - | 2.75 | 2.80 | 2.88 | - | 2.88 | 2.94 | 3.02 | - | 2.99 | 3.05 | 3.14 | - | 3.08 | 3.14 | 3.24 | - |
|  |  | Amps | 9.7 | 9.9 | 10.0 | - | 10.1 | 10.3 | 10.5 | - | 10.6 | 10.8 | 11.0 | - | 11.0 | 11.2 | 11.4 | - | 11.4 | 11.6 | 11.8 | - | 11.8 | 12.0 | 12.2 | - |
|  |  | HIPR | 183 | 197 | 208 | - | 205 | 221 | 234 | - | 234 | 252 | 266 | - | 266 | 286 | 302 | - | 299 | 322 | 340 | - | 331 | 356 | 376 | - |
|  |  | LO PR | 95 | 101 | 110 | - | 100 | 107 | 117 | - | 104 | 111 | 121 | - | 110 | 117 | 127 | - | 115 | 122 | 134 | - | 119 | 126 | 138 | - |
|  |  | MBh | 32.0 | 33.1 | 36.3 | - | 31.2 | 32.4 | 35.5 | - | 30.5 | 31.6 | 34.6 | - | 29.7 | 30.8 | 33.8 | - | 28.2 | 29.3 | 32.1 | - | 26.2 | 27.1 | 29.7 | - |
|  |  | S/T | 0.74 | 0.62 | 0.43 | - | 0.76 | 0.64 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.81 | 0.68 | 0.47 | - | 0.84 | 0.70 | 0.49 | - | 0.85 | 0.71 | 0.49 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 1200 | kW | 2.42 | 2.47 | 2.54 | - | 2.59 | 2.64 | 2.71 | - | 2.73 | 2.78 | 2.86 | - | 2.86 | 2.91 | 3.00 | - | 2.96 | 3.02 | 3.11 | - | 3.06 | 3.12 | 3.21 | - |
|  |  | Amps | 9.7 | 9.8 | 10.0 | - | 10.1 | 10.2 | 10.4 | - | 10.6 | 10.7 | 10.9 | - | 11.0 | 11.1 | 11.3 | - | 11.4 | 11.5 | 11.8 | - | 11.8 | 11.9 | 12.2 | - |
|  |  | HIPR | 181 | 195 | 206 | - | 203 | 219 | 231 | - | 231 | 249 | 263 | - | 264 | 284 | 299 | - | 296 | 319 | 337 | - | 328 | 353 | 372 | - |
|  |  | LO PR | 94 | 100 | 109 | - | 99 | 106 | 116 | - | 103 | 110 | 120 | - | 109 | 116 | 126 | - | 114 | 121 | 132 | - | 118 | 125 | 137 | - |
|  |  | MBh | 29.5 | 30.6 | 33.5 | - | 28.8 | 29.9 | 32.7 | - | 28.1 | 29.2 | 31.9 | - | 27.4 | 28.4 | 31.2 | - | 26.1 | 27.0 | 29.6 | - | 24.2 | 25.0 | 27.4 | - |
|  |  | S/T | 0.71 | 0.59 | 0.41 | - | 0.74 | 0.62 | 0.43 | - | 0.76 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.81 | 0.68 | 0.47 | - | 0.82 | 0.68 | 0.47 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 1050 | kW | 2.37 | 2.42 | 2.48 | - | 2.53 | 2.58 | 2.65 | - | 2.67 | 2.72 | 2.80 | - | 2.79 | 2.85 | 2.93 | - | 2.90 | 2.96 | 3.04 | - | 2.99 | 3.05 | 3.14 | - |
|  |  | Amps | 9.6 | 9.7 | 9.8 | - | 10.0 | 10.1 | 10.3 | - | 10.4 | 10.5 | 10.7 | - | 10.8 | 10.9 | 11.1 | - | 11.2 | 11.3 | 11.6 | - | 11.6 | 11.7 | 12.0 | - |
|  |  | HIPR | 176 | 189 | 200 | - | 197 | 212 | 224 | - | 224 | 242 | 255 | - | 256 | 275 | 291 | - | 288 | 309 | 327 | - | 318 | 342 | 361 | - |
|  |  | LO PR | 91 | 97 | 106 | - | 96 | 103 | 112 | - | 100 | 107 | 116 | - | 105 | 112 | 122 | - | 110 | 117 | 128 | - | 114 | 121 | 133 | - |



[^2]|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65아 |  |  |  | 75아 |  |  |  | 85F. |  |  |  | 95ํ. |  |  |  | 105아 |  |  |  | 115-F |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AlRflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 | 1350 | MBh | 34.1 | 34.8 | 37.2 | 39.8 | 33.3 | 34.0 | 36.3 | 38.8 | 32.5 | 33.2 | 35.5 | 37.9 | 31.7 | 32.4 | 34.6 | 37.0 | 30.1 | 30.8 | 32.9 | 35.1 | 27.9 | 28.5 | 30.5 | 32.6 |
|  |  | S/T | 0.96 | 0.90 | 0.74 | 0.6 | 1.00 | 0.94 | 0.76 | 0.57 | 1.00 | 0.96 | 0.78 | 0.6 | 1.00 | 1.00 | 0.81 | 0.60 | 1.00 | 1.00 | 0.84 | 0.6 | 1.00 | 1.00 | 0.84 | 0.63 |
|  |  | $\Delta T$ | 22 | 21 | 19 | 15 | 23 | 22 | 19 | 15 | 22 | 22 | 19 | 15 | 22 | 22 | 19 | 15 | 21 | 21 | 19 | 15 | 19 | 19 | 18 | 14 |
|  |  | kW | 2.48 | 2.52 | 2.59 | 2.7 | 2.64 | 2.69 | 2.77 | 2.85 | 2.79 | 2.85 | 2.93 | 3.0 | 2.92 | 2.98 | 3.07 | 3.16 | 3.03 | 3.09 | 3.19 | 3.3 | 3.13 | 3.19 | 3.29 | 3.39 |
|  |  | /anos | 9.8 | 10.0 | 10.1 | 10.3 | 10.2 | 10.4 | 10.6 | 10.8 | 10.7 | 10.9 | 11.1 | 11.3 | 11.1 | 11.3 | 11.5 | 11.8 | 11.5 | 11.7 | 12.0 | 12.2 | 12.0 | 12.1 | 12.4 | 12.7 |
|  |  | Hi PR | 187 | 201 | 212 | 221.5 | 210 | 226 | 238 | 249 | 238 | 257 | 271 | 282.7 | 272 | 292 | 309 | 322 | 306 | 329 | 347 | 362.2 | 338 | 363 | 384 | 400 |
|  |  | Lo PR | 97 | 103 | 113 | 120.0 | 103 | 109 | 119 | 127 | 107 | 113 | 124 | 131.8 | 112 | 119 | 130 | 138 | 117 | 125 | 136 | 145.1 | 121 | 129 | 141 | 150 |
|  | 1200 | MBh | 33.1 | 33.8 | 36.1 | 38.6 | 32.3 | 33.0 | 35.3 | 37.7 | 31.5 | 32.2 | 34.4 | 36.8 | 30.8 | 31.4 | 33.6 | 35.9 | 29.2 | 29.9 | 31.9 | 34.1 | 27.1 | 27.7 | 29.6 | 31.6 |
|  |  | S/T | 0.92 | 0.86 | 0.70 | 0.5 | 0.95 | 0.89 | 0.73 | 0.54 | 0.98 | 0.92 | 0.75 | 0.6 | 1.00 | 0.95 | 0.77 | 0.58 | 1.00 | 0.98 | 0.80 | 0.6 | 1.00 | 0.99 | 0.81 | 0.60 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 22 | 20 | 16 | 21 | 21 | 18 | 15 |
|  |  | kW | 2.46 | 2.50 | 2.57 | 2.6 | 2.62 | 2.67 | 2.75 | 2.83 | 2.77 | 2.82 | 2.91 | 3.0 | 2.90 | 2.96 | 3.05 | 3.14 | 3.01 | 3.07 | 3.16 | 3.3 | 3.10 | 3.17 | 3.26 | 3.36 |
|  |  | /anos | 9.8 | 9.9 | 10.1 | 10.3 | 10.2 | 10.3 | 10.5 | 10.7 | 10.7 | 10.8 | 11.0 | 11.3 | 11.1 | 11.2 | 11.5 | 11.7 | 11.5 | 11.7 | 11.9 | 12.2 | 11.9 | 12.1 | 12.3 | 12.6 |
|  |  | Hi PR | 185 | 199 | 210 | 219.3 | 208 | 223 | 236 | 246 | 236 | 254 | 268 | 279.9 | 269 | 289 | 306 | 319 | 303 | 326 | 344 | 358.6 | 334 | 360 | 380 | 396 |
|  |  | Lo PR | 96 | 102 | 112 | 118.8 | 102 | 108 | 118 | 126 | 105 | 112 | 123 | 130.5 | 111 | 118 | 129 | 137 | 116 | 124 | 135 | 143.6 | 120 | 128 | 140 | 149 |
|  | 1050 | MBh | 30.5 | 31.2 | 33.3 | 35.6 | 29.8 | 30.5 | 32.6 | 34.8 | 29.1 | 29.8 | 31.8 | 34.0 | 28.4 | 29.0 | 31.0 | 33.2 | 27.0 | 27.6 | 29.5 | 31.5 | 25.0 | 25.5 | 27.3 | 29.2 |
|  |  | S/T | 0.89 | 0.83 | 0.68 | 0.5 | 0.92 | 0.86 | 0.70 | 0.52 | 0.94 | 0.88 | 0.72 | 0.5 | 0.97 | 0.91 | 0.74 | 0.55 | 1.01 | 0.95 | 0.77 | 0.6 | 1.02 | 0.95 | 0.78 | 0.58 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 21 | 19 | 15 |
|  |  | kW | 2.41 | 2.45 | 2.52 | 2.6 | 2.57 | 2.62 | 2.69 | 2.77 | 2.71 | 2.76 | 2.84 | 2.9 | 2.84 | 2.89 | 2.98 | 3.07 | 2.94 | 3.00 | 3.09 | 3.2 | 3.03 | 3.10 | 3.19 | 3.29 |
|  |  | /anos | 9.7 | 9.8 | 9.9 | 10.1 | 10.0 | 10.2 | 10.4 | 10.6 | 10.5 | 10.6 | 10.8 | 11.1 | 10.9 | 11.1 | 11.3 | 11.5 | 11.3 | 11.5 | 11.7 | 11.9 | 11.7 | 11.9 | 12.1 | 12.4 |
|  |  | Hi PR | 179 | 193 | 204 | 212.7 | 201 | 217 | 229 | 239 | 229 | 246 | 260 | 271.5 | 261 | 281 | 296 | 309 | 293 | 316 | 333 | 347.8 | 324 | 349 | 368 | 384 |
|  |  | Lo PR | 93 | 99 | 108 | 115.3 | 98 | 105 | 114 | 122 | 102 | 109 | 119 | 126.6 | 107 | 114 | 125 | 133 | 113 | 120 | 131 | 139.3 | 117 | 124 | 135 | 144 |


| 85 | 1350 | MBh | 34.7 | 35.3 | 37.0 | 39.5 | 33.9 | 34.5 | 36.2 | 38.6 | 33.1 | 33.7 | 35.3 | 37.7 | 32.3 | 32.9 | 34.4 | 36.7 | 30.6 | 31.2 | 32.7 | 34.9 | 28.4 | 28.9 | 30.3 | 32.3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 1.00 | 0.98 | 0.88 | 0.71 | 1.00 | 1.00 | 0.91 | 0.74 | 1.00 | 1.00 | 0.94 | 0.76 | 1.00 | 1.00 | 0.97 | 0.78 | 1.00 | 1.00 | 1.00 | 0.81 | 1.00 | 1.00 | 1.00 | 0.82 |
|  |  | $\Delta T$ | 24 | 23 | 22 | 19 | 23 | 24 | 22 | 19 | 23 | 23 | 22 | 19 | 22 | 22 | 23 | 20 | 21 | 21 | 22 | 19 | 19 | 20 | 21 | 18 |
|  |  | kW | 2.49 | 2.54 | 2.61 | 2.68 | 2.66 | 2.71 | 2.79 | 2.87 | 2.81 | 2.87 | 2.95 | 3.04 | 2.94 | 3.00 | 3.09 | 3.19 | 3.06 | 3.12 | 3.21 | 3.31 | 3.15 | 3.22 | 3.31 | 3.42 |
|  |  | /anos | 9.9 | 10.0 | 10.2 | 10.4 | 10.3 | 10.4 | 10.6 | 10.8 | 10.8 | 10.9 | 11.1 | 11.4 | 11.2 | 11.4 | 11.6 | 11.8 | 11.6 | 11.8 | 12.0 | 12.3 | 12.0 | 12.2 | 12.5 | 12.7 |
|  |  | Hi PR | 189 | 203 | 214 | 224 | 212 | 228 | 241 | 251 | 241 | 259 | 274 | 285 | 274 | 295 | 312 | 325 | 309 | 332 | 351 | 366 | 341 | 367 | 387 | 404 |
|  |  | Lo PR | 98 | 104 | 114 | 121 | 104 | 110 | 120 | 128 | 108 | 114 | 125 | 133 | 113 | 120 | 131 | 140 | 118 | 126 | 138 | 147 | 123 | 130 | 142 | 152 |
|  |  | MBh | 33.7 | 34.3 | 35.9 | 38.3 | 32.9 | 33.5 | 35.1 | 37.5 | 32.1 | 32.7 | 34.3 | 36.6 | 31.3 | 31.9 | 33.4 | 35.7 | 29.7 | 30.3 | 31.8 | 33.9 | 27.6 | 28.1 | 29.4 | 31.4 |
|  |  | S/T | 0.96 | 0.93 | 0.84 | 0.68 | 1.00 | 0.96 | 0.87 | 0.71 | 1.00 | 0.99 | 0.89 | 0.72 | 1.00 | 1.00 | 0.92 | 0.75 | 1.00 | 1.00 | 0.96 | 0.78 | 1.00 | 1.00 | 0.96 | 0.78 |
|  |  | $\Delta T$ | 25 | 24 | 23 | 20 | 25 | 25 | 23 | 20 | 25 | 25 | 23 | 20 | 24 | 24 | 24 | 20 | 23 | 23 | 23 | 20 | 21 | 22 | 22 | 19 |
|  | 1200 | kW | 2.48 | 2.52 | 2.59 | 2.67 | 2.64 | 2.69 | 2.77 | 2.85 | 2.79 | 2.85 | 2.93 | 3.02 | 2.92 | 2.98 | 3.07 | 3.16 | 3.03 | 3.09 | 3.19 | 3.28 | 3.13 | 3.19 | 3.29 | 3.39 |
|  |  | /anos | 9.8 | 10.0 | 10.1 | 10.3 | 10.2 | 10.4 | 10.6 | 10.8 | 10.7 | 10.9 | 11.1 | 11.3 | 11.1 | 11.3 | 11.5 | 11.8 | 11.5 | 11.7 | 12.0 | 12.2 | 12.0 | 12.1 | 12.4 | 12.7 |
|  |  | Hi PR | 187 | 201 | 212 | 221 | 210 | 226 | 238 | 249 | 238 | 257 | 271 | 283 | 272 | 292 | 309 | 322 | 306 | 329 | 347 | 362 | 338 | 363 | 384 | 400 |
|  |  | Lo PR | 97 | 103 | 113 | 120 | 103 | 109 | 119 | 127 | 107 | 113 | 124 | 132 | 112 | 119 | 130 | 138 | 117 | 125 | 136 | 145 | 121 | 129 | 141 | 150 |
|  |  | MBh | 31.1 | 31.7 | 33.2 | 35.4 | 30.3 | 30.9 | 32.4 | 34.6 | 29.6 | 30.2 | 31.6 | 33.7 | 28.9 | 29.5 | 30.9 | 32.9 | 27.5 | 28.0 | 29.3 | 31.3 | 25.4 | 25.9 | 27.2 | 29.0 |
|  |  | $S / T$ | $0.93$ | 0.90 | 0.81 | 0.66 | $0.96$ | 0.93 | 0.84 | 0.68 | 0.99 | 0.95 | 0.86 | 0.70 | 1.00 | 0.98 | 0.89 | 0.72 | 1.00 | 1.00 | 0.92 | 0.75 | 1.00 | 1.00 | 0.93 | 0.75 |
|  |  | $\Delta T$ | 25 | 25 | 24 | 20 | 26 | 25 | 24 | 21 | 26 | 25 | 24 | 21 | 25 | 25 | 24 | 21 | 24 | 25 | 24 | 20 | 22 | 23 | 22 | 19 |
|  | 1050 | kW | 2.42 | 2.47 | 2.54 | 2.61 | 2.59 | 2.64 | 2.71 | 2.79 | 2.73 | 2.78 | 2.86 | 2.95 | 2.86 | 2.91 | 3.00 | 3.09 | 2.96 | 3.02 | 3.11 | 3.21 | 3.06 | 3.12 | 3.21 | 3.31 |
|  |  | /anos | 9.7 | 9.8 | 10.0 | 10.2 | 10.1 | 10.2 | 10.4 | 10.6 | 10.6 | 10.7 | 10.9 | 11.1 | 11.0 | 11.1 | 11.3 | 11.6 | 11.4 | 11.5 | 11.7 | 12.0 | 11.8 | 11.9 | 12.2 | 12.5 |
|  |  | Hi PR | 181 | 195 | 206 | 215 | 203 | 219 | 231 | 241 | 231 | 249 | 263 | 274 | 263 | 284 | 299 | 312 | 296 | 319 | 337 | 351 | 327 | 352 | 372 | 388 |
|  |  | Lo PR | 94 | 100 | 109 | 116 | 99 | 106 | 115 | 123 | 103 | 110 | 120 | 128 | 109 | 115 | 126 | 134 | 114 | 121 | 132 | 141 | 118 | 125 | 137 | 146 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AIRflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 |  | MBh | 36.0 | 37.3 | 40.9 | - | 35.2 | 36.4 | 39.9 | - | 34.3 | 35.6 | 39.0 | - | 33.5 | 34.7 | 38.0 | - | 31.8 | 33.0 | 36.1 | - | 29.5 | 30.5 | 33.5 | - |
|  |  | S/T | 0.69 | 0.57 | 0.40 | - | 0.71 | 0.59 | 0.41 | - | 0.73 | 0.61 | 0.42 | - | 0.75 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.79 | 0.66 | 0.46 | - |
|  |  | $\Delta T$ | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 1225 | kW | 2.78 | 2.84 | 2.92 | - | 2.98 | 3.04 | 3.13 | - | 3.15 | 3.21 | 3.31 | - | 3.30 | 3.37 | 3.47 | - | 3.43 | 3.50 | 3.61 | - | 3.54 | 3.61 | 3.73 | - |
|  |  | Amps | 10.7 | 10.9 | 11.2 | - | 11.5 | 11.8 | 12.1 | - | 12.5 | 12.7 | 13.2 | - | 13.3 | 13.6 | 14.0 | - | 14.1 | 14.5 | 14.9 | - | 14.9 | 15.3 | 15.8 | - |
|  |  | HiPR | 209 | 225 | 238 | - | 235 | 253 | 267 | - | 267 | 288 | 304 | - | 304 | 328 | 346 | - | 343 | 369 | 389 | - | 378 | 407 | 430 | - |
|  |  | Lo PR | 101 | 107 | 117 | - | 106 | 113 | 124 | - | 111 | 118 | 129 | - | 116 | 124 | 135 | - | 122 | 130 | 141 | - | 126 | 134 | 146 | - |
|  |  | MBh | 39.0 | 40.4 | 44.3 | - | 38.1 | 39.5 | 43.3 | - | 37.2 | 38.5 | 42.2 | - | 36.3 | 37.6 | 41.2 | - | 34.5 | 35.7 | 39.1 | - | 31.9 | 33.1 | 36.3 | - |
|  |  | $\mathrm{S} / \mathrm{T}$ | 0.71 | 0.59 | 0.41 | - | 0.74 | 0.62 | 0.43 | - | 0.76 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.81 | 0.68 | 0.47 | - | 0.82 | 0.68 | 0.47 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 1400 | kW | 2.84 | 2.90 | 2.98 | - | 3.05 | 3.11 | 3.20 | - | 3.22 | 3.29 | 3.39 | - | 3.38 | 3.45 | 3.55 | - | 3.51 | 3.58 | 3.70 | - | 3.63 | 3.70 | 3.82 | - |
|  |  | Amps | 10.9 | 11.2 | 11.6 | - | 11.8 | 12.1 | 12.5 | - | 12.8 | 13.1 | 13.5 | - | 13.7 | 14.0 | 14.4 | - | 14.5 | 14.9 | 15.3 | - | 15.4 | 15.7 | 16.2 | - |
|  |  | Hi PR | 216 | 232 | 245 | - | 242 | 261 | 275 | - | 276 | 297 | 313 | - | 314 | 338 | 357 | - | 353 | 380 | 401 | - | 390 | 420 | 443 | - |
|  |  | Lo PR | 104 | 111 | 121 | - | 110 | 117 | 127 | - | 114 | 121 | 132 | - | 120 | 127 | 139 | - | 126 | 134 | 146 | - | 130 | 138 | 151 | - |
|  |  | MBh | 40.2 | 41.6 | 45.6 | - | 39.2 | 40.7 | 44.6 | - | 38.3 | 39.7 | 43.5 | - | 37.4 | 38.7 | 42.4 | - | 35.5 | 36.8 | 40.3 | - | 32.9 | 34.1 | 37.3 |  |
|  |  | S/T | 0.75 | 0.62 | 0.43 | - | 0.77 | 0.65 | 0.45 | - | 0.79 | 0.66 | 0.46 | - | 0.82 | 0.68 | 0.47 | - | 0.85 | 0.71 | 0.49 | - | 0.86 | 0.72 | 0.50 | - |
|  |  | $\Delta T$ | 18 | 15 | 11 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 18 | 15 | 12 | - | 16 | 14 | 11 | - |
|  | 1575 | kW | 2.87 | 2.92 | 3.01 | - | 3.07 | 3.13 | 3.22 | - | 3.25 | 3.31 | 3.41 | - | 3.41 | 3.48 | 3.58 | - | 3.54 | 3.61 | 3.73 | - | 3.66 | 3.73 | 3.85 | - |
|  |  | Amps | 11.0 | 11.3 | 11.7 | - | 11.9 | 12.2 | 12.6 | - | 12.9 | 13.2 | 13.6 | - | 13.8 | 14.1 | 14.6 | - | 14.6 | 15.0 | 15.5 | - | 15.5 | 15.9 | 16.4 | - |
|  |  | Hi PR | 218 | 235 | 248 | - | 245 | 263 | 278 | - | 278 | 300 | 316 | - | 317 | 341 | 360 | - | 357 | 384 | 405 | - | 394 | 424 | 448 | - |
|  |  | Lo PR | 105 | 112 | 122 | - | 111 | 118 | 129 | - | 115 | 123 | 134 | - | 121 | 129 | 141 | - | 127 | 135 | 147 | - | 131 | 140 | 152 | - |


| 75 | 1225 | MBh | 36.6 | 37.7 | 40.8 | 43.8 | 35.8 | 36.8 | 39.9 | 42.8 | 34.9 | 35.9 | 38.9 | 41.8 | 34.1 | 35.1 | 38.0 | 40.7 | 32.4 | 33.3 | 36.1 | 38.7 | 30.0 | 30.9 | 33.4 | 35.8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.78 | 0.70 | 0.53 | 0.34 | 0.81 | 0.72 | 0.55 | 0.35 | 0.83 | 0.74 | 0.56 | 0.36 | 0.86 | 0.77 | 0.58 | 0.37 | 0.89 | 0.79 | 0.60 | 0.39 | 0.90 | 0.80 | 0.61 | 0.39 |
|  |  | $\Delta T$ | 21 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 17 | 11 | 22 | 20 | 16 | 11 | 20 | 19 | 15 | 10 |
|  |  | kW | 2.80 | 2.86 | 2.94 | 3.03 | 3.00 | 3.06 | 3.15 | 3.24 | 3.17 | 3.24 | 3.33 | 3.44 | 3.33 | 3.39 | 3.50 | 3.61 | 3.46 | 3.53 | 3.64 | 3.75 | 3.57 | 3.64 | 3.76 | 3.88 |
|  |  | Amps | 10.8 | 11.0 | 11.3 | 11.8 | 11.6 | 11.9 | 12.2 | 12.7 | 12.6 | 12.9 | 13.3 | 13.8 | 13.4 | 13.7 | 14.2 | 14.7 | 14.2 | 14.6 | 15.1 | 15.6 | 15.1 | 15.4 | 15.9 | 16.5 |
|  |  | Hi PR | 212 | 228 | 240 | 251 | 237 | 256 | 270 | 281 | 270 | 291 | 307 | 320 | 308 | 331 | 350 | 365 | 346 | 372 | 393 | 410 | 382 | 411 | 434 | 453 |
|  |  | Lo PR | 102 | 108 | 118 | 126 | 108 | 114 | 125 | 133 | 112 | 119 | 130 | 138 | 117 | 125 | 136 | 145 | 123 | 131 | 143 | 152 | 127 | 135 | 148 | 157 |
|  |  | MBh | 39.7 | 40.8 | 44.2 | 47.4 | 38.7 | 39.9 | 43.2 | 46.3 | 37.8 | 38.9 | 42.2 | 45.2 | 36.9 | 38.0 | 41.1 | 44.1 | 35.1 | 36.1 | 39.1 | 41.9 | 32.5 | 33.4 | 36.2 | 38.8 |
|  |  | S/T | 0.81 | 0.72 | 0.55 | 0.35 | 0.84 | 0.75 | 0.57 | 0.37 | 0.86 | 0.77 | 0.58 | 0.37 | 0.89 | 0.79 | 0.60 | 0.39 | 0.92 | 0.82 | 0.62 | 0.40 | 0.93 | 0.83 | 0.63 | 0.40 |
|  |  | $\Delta T$ | 21 | 19 | 16 | 11 | 21 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 20 | 18 | 15 | 10 |
|  | 1400 | kW | 2.87 | 2.92 | 3.01 | 3.10 | 3.07 | 3.13 | 3.22 | 3.32 | 3.25 | 3.31 | 3.41 | 3.52 | 3.41 | 3.48 | 3.58 | 3.70 | 3.54 | 3.61 | 3.73 | 3.84 | 3.66 | 3.73 | 3.85 | 3.97 |
|  |  | Amps | 11.0 | 11.3 | 11.7 | 12.1 | 11.9 | 12.2 | 12.6 | 13.0 | 12.9 | 13.2 | 13.6 | 14.1 | 13.8 | 14.1 | 14.6 | 15.1 | 14.6 | 15.0 | 15.5 | 16.1 | 15.5 | 15.9 | 16.4 | 17.0 |
|  |  | Hi PR | 218 | 235 | 248 | 259 | 245 | 263 | 278 | 290 | 278 | 300 | 316 | 330 | 317 | 341 | 360 | 376 | 357 | 384 | 405 | 423 | 394 | 424 | 448 | 467 |
|  |  | Lo PR | 105 | 112 | 122 | 130 | 111 | 118 | 129 | 137 | 115 | 123 | 134 | 143 | 121 | 129 | 141 | 150 | 127 | 135 | 147 | 157 | 131 | 140 | 152 | 162 |
|  |  | MBh | 40.9 | 42.1 | 45.5 | 48.9 | 39.9 | 41.1 | 44.5 | 47.7 | 39.0 | 40.1 | 43.4 | 46.6 | 38.0 | 39.1 | 42.4 | 45.5 | 36.1 | 37.2 | 40.2 | 43.2 | 33.4 | 34.4 | 37.3 | 40.0 |
|  |  | S/T | 0.85 | 0.76 | 0.57 | 0.37 | 0.88 | 0.79 | 0.60 | 0.38 | 0.90 | 0.81 | 0.61 | 0.39 | 0.93 | 0.83 | 0.63 | 0.41 | 0.97 | 0.86 | 0.65 | 0.42 | 0.97 | 0.87 | 0.66 | 0.42 |
|  |  | $\Delta T$ | 20 | 19 | 15 | 11 | 20 | 19 | 15 | 11 | 21 | 19 | 15 | 11 | 21 | 19 | 16 | 11 | 20 | 19 | 15 | 11 | 19 | 18 | 14 | 10 |
|  | 1575 | kW | 2.89 | 2.94 | 3.03 | 3.12 | 3.09 | 3.15 | 3.25 | 3.35 | 3.27 | 3.34 | 3.44 | 3.55 | 3.43 | 3.50 | 3.61 | 3.72 | 3.57 | 3.64 | 3.76 | 3.87 | 3.68 | 3.76 | 3.88 | 4.00 |
|  |  | Amps | 11.1 | 11.4 | 11.8 | 12.2 | 12.0 | 12.3 | 12.7 | 13.2 | 13.0 | 13.3 | 13.8 | 14.3 | 13.9 | 14.2 | 14.7 | 15.2 | 14.8 | 15.1 | 15.6 | 16.2 | 15.6 | 16.0 | 16.5 | 17.2 |
|  |  | Hi PR | 220 | 237 | 250 | 261 | 247 | 266 | 281 | 293 | 281 | 303 | 320 | 333 | 320 | 345 | 364 | 380 | 360 | 388 | 409 | 427 | 398 | 428 | 452 | 472 |
|  |  | Lo PR | 106 | 113 | 123 | 131 | 112 | 119 | 130 | 139 | 116 | 124 | 135 | 144 | 122 | 130 | 142 | 151 | 128 | 136 | 149 | 158 | 133 | 141 | 154 | 164 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AlRfLOW |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 |  | MBh | 37.3 | 38.1 | 40.7 | 43.5 | 36.4 | 37.2 | 39.7 | 42.5 | 35.5 | 36.3 | 38.8 | 41.5 | 34.7 | 35.4 | 37.8 | 40.5 | 32.9 | 33.6 | 36.0 | 38.4 | 30.5 | 31.2 | 33.3 | 35.6 |
|  |  | S/T | 0.86 | 0.80 | 0.65 | 0.49 | 0.89 | 0.83 | 0.68 | 0.51 | 0.91 | 0.85 | 0.69 | 0.52 | 0.94 | 0.88 | 0.72 | 0.54 | 0.97 | 0.91 | 0.74 | 0.56 | 0.98 | 0.92 | 0.75 | 0.56 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 22 | 22 | 19 | 15 |
|  | 1225 | kW | 2.82 | 2.88 | 2.96 | 3.05 | 3.02 | 3.08 | 3.17 | 3.27 | 3.20 | 3.26 | 3.36 | 3.46 | 3.35 | 3.42 | 3.53 | 3.64 | 3.48 | 3.56 | 3.67 | 3.78 | 3.60 | 3.67 | 3.79 | 3.91 |
|  |  | Amps | 10.8 | 11.1 | 11.4 | 11.9 | 11.7 | 12.0 | 12.4 | 12.8 | 12.7 | 13.0 | 13.4 | 13.9 | 13.5 | 13.8 | 14.3 | 14.8 | 14.4 | 14.7 | 15.2 | 15.8 | 15.2 | 15.6 | 16.1 | 16.7 |
|  |  | Hi PR | 214 | 230 | 243 | 253 | 240 | 258 | 273 | 284 | 273 | 294 | 310 | 323 | 311 | 334 | 353 | 368 | 350 | 376 | 397 | 414 | 386 | 416 | 439 | 458 |
|  |  | Lo PR | 103 | 109 | 119 | 127 | 109 | 116 | 126 | 134 | 113 | 120 | 131 | 140 | 119 | 126 | 138 | 147 | 124 | 132 | 144 | 154 | 129 | 137 | 149 | 159 |
|  |  | MBh | 40.4 | 41.3 | 44.1 | 47.1 | 39.4 | 40.3 | 43.1 | 46.0 | 38.5 | 39.3 | 42.0 | 44.9 | 37.6 | 38.4 | 41.0 | 43.8 | 35.7 | 36.5 | 39.0 | 41.6 | 33.0 | 33.8 | 36.1 | 38.6 |
|  |  | S/T | 0.89 | 0.83 | 0.68 | 0.51 | 0.92 | 0.86 | 0.70 | 0.52 | 0.94 | 0.88 | 0.72 | 0.54 | 0.97 | 0.91 | 0.74 | 0.56 | 1.00 | 0.95 | 0.77 | 0.58 | 1.00 | 0.96 | 0.78 | 0.58 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 23 | 23 | 20 | 16 | 22 | 21 | 18 | 15 |
|  | 1400 | kW | 2.89 | 2.94 | 3.03 | 3.12 | 3.09 | 3.15 | 3.25 | 3.35 | 3.27 | 3.34 | 3.44 | 3.55 | 3.43 | 3.50 | 3.61 | 3.72 | 3.57 | 3.64 | 3.76 | 3.88 | 3.68 | 3.76 | 3.88 | 4.01 |
|  |  | Amps | 11.1 | 11.4 | 11.8 | 12.2 | 12.0 | 12.3 | 12.7 | 13.2 | 13.0 | 13.3 | 13.8 | 14.3 | 13.9 | 14.2 | 14.7 | 15.2 | 14.8 | 15.1 | 15.6 | 16.2 | 15.6 | 16.0 | 16.5 | 17.2 |
|  |  | Hi PR | 220 | 237 | 250 | 261 | 247 | 266 | 281 | 293 | 281 | 303 | 320 | 333 | 320 | 345 | 364 | 380 | 360 | 388 | 410 | 427 | 398 | 428 | 452 | 472 |
|  |  | Lo PR | 106 | 113 | 123 | 131 | 112 | 119 | 130 | 139 | 116 | 124 | 135 | 144 | 122 | 130 | 142 | 151 | 128 | 136 | 149 | 158 | 133 | 141 | 154 | 164 |
|  |  | MBh | 41.6 | 42.5 | 45.4 | 48.5 | 40.6 | 41.5 | 44.3 | 47.4 | 39.6 | 40.5 | 43.3 | 46.3 | 38.7 | 39.5 | 42.2 | 45.1 | 36.7 | 37.6 | 40.1 | 42.9 | 34.0 | 34.8 | 37.2 | 39.7 |
|  |  | S/T | 0.93 | 0.87 | 0.71 | 0.53 | 0.96 | 0.90 | 0.74 | 0.55 | 1.00 | 0.93 | 0.75 | 0.56 | 1.00 | 0.96 | 0.78 | 0.58 | 1.00 | 1.00 | 0.81 | 0.60 | 1.00 | 1.00 | 0.82 | 0.61 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 21 | 22 | 19 | 15 | 20 | 20 | 18 | 14 |
|  | 1575 | kW | 2.91 | 2.96 | 3.05 | 3.14 | 3.11 | 3.18 | 3.27 | 3.37 | 3.30 | 3.36 | 3.47 | 3.58 | 3.46 | 3.53 | 3.64 | 3.75 | 3.60 | 3.67 | 3.79 | 3.91 | 3.71 | 3.79 | 3.91 | 4.04 |
|  |  | Amps | 11.2 | 11.5 | 11.9 | 12.3 | 12.1 | 12.4 | 12.8 | 13.3 | 13.1 | 13.5 | 13.9 | 14.4 | 14.0 | 14.4 | 14.8 | 15.4 | 14.9 | 15.3 | 15.8 | 16.4 | 15.8 | 16.2 | 16.7 | 17.3 |
|  |  | Hi PR | 223 | 240 | 253 | 264 | 250 | 269 | 284 | 296 | 284 | 306 | 323 | 337 | 324 | 348 | 368 | 383 | 364 | 392 | 414 | 431 | 402 | 433 | 457 | 477 |
|  |  | Lo PR | 107 | 114 | 124 | 132 | 113 | 120 | 131 | 140 | 118 | 125 | 137 | 145 | 123 | 131 | 143 | 153 | 129 | 138 | 150 | 160 | 134 | 142 | 155 | 166 |


| 85 | 1225 | MBh | 37.9 | 38.6 | 40.5 | 43.2 | 37.0 | 37.7 | 39.5 | 42.2 | 36.2 | 36.9 | 38.6 | 41.2 | 35.3 | 36.0 | 37.7 | 40.2 | 33.5 | 34.2 | 35.8 | 38.2 | 31.0 | 31.6 | 33.1 | 35.4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.90 | 0.87 | 0.78 | 0.63 | 0.93 | 0.90 | 0.81 | 0.66 | 0.95 | 0.92 | 0.83 | 0.67 | 0.98 | 0.95 | 0.86 | 0.70 | 1.00 | 0.99 | 0.89 | 0.72 | 1.00 | 0.99 | 0.90 | 0.73 |
|  |  | $\Delta T$ | 26 | 25 | 24 | 21 | 26 | 25 | 24 | 21 | 26 | 25 | 24 | 21 | 26 | 26 | 24 | 21 | 25 | 25 | 24 | 21 | 23 | 24 | 22 | 19 |
|  |  | kW | 2.84 | 2.90 | 2.98 | 3.07 | 3.04 | 3.11 | 3.20 | 3.29 | 3.22 | 3.29 | 3.39 | 3.49 | 3.38 | 3.45 | 3.55 | 3.66 | 3.51 | 3.58 | 3.70 | 3.81 | 3.63 | 3.70 | 3.82 | 3.94 |
|  |  | Amps | 10.9 | 11.2 | 11.6 | 12.0 | 11.8 | 12.1 | 12.5 | 12.9 | 12.8 | 13.1 | 13.5 | 14.0 | 13.6 | 14.0 | 14.4 | 15.0 | 14.5 | 14.9 | 15.3 | 15.9 | 15.4 | 15.7 | 16.2 | 16.8 |
|  |  | Hi PR | 216 | 232 | 245 | 256 | 242 | 261 | 275 | 287 | 276 | 297 | 313 | 327 | 314 | 338 | 357 | 372 | 353 | 380 | 401 | 418 | 390 | 420 | 443 | 462 |
|  |  | Lo PR | 104 | 110 | 121 | 128 | 110 | 117 | 127 | 136 | 114 | 121 | 132 | 141 | 120 | 127 | 139 | 148 | 126 | 134 | 146 | 155 | 130 | 138 | 151 | 161 |
|  | 1400 | MBh | 41.1 | 41.9 | 43.9 | 46.8 | 40.1 | 40.9 | 42.8 | 45.7 | 39.2 | 39.9 | 41.8 | 44.6 | 38.2 | 39.0 | 40.8 | 43.5 | 36.3 | 37.0 | 38.8 | 41.3 | 33.6 | 34.3 | 35.9 | 38.3 |
|  |  | S/T | 0.93 | 0.90 | 0.81 | 0.66 | 0.96 | 0.93 | 0.84 | 0.68 | 0.99 | 0.95 | 0.86 | 0.70 | 1.00 | 0.98 | 0.89 | 0.72 | 1.00 | 1.00 | 0.92 | 0.75 | 1.00 | 1.00 | 0.93 | 0.75 |
|  |  | $\Delta T$ | 25 | 25 | 23 | 20 | 25 | 25 | 24 | 20 | 25 | 25 | 24 | 20 | 25 | 25 | 24 | 21 | 24 | 24 | 23 | 20 | 22 | 23 | 22 | 19 |
|  |  | kW | 2.91 | 2.96 | 3.05 | 3.14 | 3.11 | 3.18 | 3.27 | 3.37 | 3.30 | 3.36 | 3.47 | 3.58 | 3.46 | 3.53 | 3.64 | 3.75 | 3.60 | 3.67 | 3.79 | 3.91 | 3.71 | 3.79 | 3.91 | 4.04 |
|  |  | Amps | 11.2 | 11.5 | 11.9 | 12.3 | 12.1 | 12.4 | 12.8 | 13.3 | 13.1 | 13.5 | 13.9 | 14.4 | 14.0 | 14.4 | 14.8 | 15.4 | 14.9 | 15.3 | 15.8 | 16.4 | 15.8 | 16.2 | 16.7 | 17.3 |
|  |  | Hi PR | 223 | 240 | 253 | 264 | 250 | 269 | 284 | 296 | 284 | 306 | 323 | 337 | 324 | 348 | 368 | 383 | 364 | 392 | 414 | 431 | 402 | 433 | 457 | 477 |
|  |  | Lo PR | 107 | 114 | 124 | 132 | 113 | 120 | 131 | 140 | 118 | 125 | 137 | 145 | 123 | 131 | 143 | 153 | 129 | 138 | 150 | 160 | 134 | 142 | 155 | 166 |
|  | 1575 | MBh | 42.3 | 43.1 | 45.2 | 48.2 | 41.3 | 42.1 | 44.1 | 47.1 | 40.3 | 41.1 | 43.1 | 45.9 | 39.4 | 40.1 | 42.0 | 44.8 | 37.4 | 38.1 | 39.9 | 42.6 | 34.6 | 35.3 | 37.0 | 39.4 |
|  |  | S/T | 0.98 | 0.94 | 0.85 | 0.69 | 1.00 | 0.98 | 0.88 | 0.71 | 1.00 | 1.00 | 0.90 | 0.73 | 1.00 | 1.00 | 0.93 | 0.76 | 1.00 | 1.00 | 0.97 | 0.78 | 1.00 | 1.00 | 0.98 | 0.79 |
|  |  | $\Delta T$ | 24 | 24 | 22 | 19 | 24 | 24 | 23 | 20 | 24 | 24 | 23 | 20 | 23 | 23 | 23 | 20 | 22 | 22 | 23 | 20 | 20 | 21 | 21 | 18 |
|  |  | kW | 2.93 | 2.99 | 3.07 | 3.17 | 3.14 | 3.20 | 3.30 | 3.40 | 3.32 | 3.39 | 3.49 | 3.60 | 3.49 | 3.56 | 3.67 | 3.78 | 3.62 | 3.70 | 3.82 | 3.94 | 3.74 | 3.82 | 3.94 | 4.07 |
|  |  | Amps | 11.3 | 11.6 | 12.0 | 12.4 | 12.2 | 12.5 | 12.9 | 13.4 | 13.3 | 13.6 | 14.0 | 14.5 | 14.2 | 14.5 | 15.0 | 15.5 | 15.0 | 15.4 | 15.9 | 16.5 | 15.9 | 16.3 | 16.9 | 17.5 |
|  |  | Hi PR | 225 | 242 | 255 | 266 | 252 | 271 | 287 | 299 | 287 | 309 | 326 | 340 | 327 | 352 | 371 | 387 | 368 | 396 | 418 | 436 | 406 | 437 | 462 | 481 |
|  |  | Lo PR | 108 | 115 | 126 | 134 | 114 | 122 | 133 | 141 | 119 | 126 | 138 | 147 | 125 | 133 | 145 | 154 | 131 | 139 | 152 | 162 | 135 | 144 | 157 | 167 |
| Shaded area reflects AHRI conditions |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AlRfLOW |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 |  | MBh | 40.4 | 41.9 | 45.9 | - | 39.5 | 40.9 | 44.8 | - | 38.5 | 39.9 | 43.7 | - | 37.6 | 38.9 | 42.7 | - | 35.7 | 37.0 | 40.5 | - | 33.1 | 34.3 | 37.5 | - |
|  |  | S/T | 0.71 | 0.59 | 0.41 | - | 0.73 | 0.61 | 0.42 | - | 0.75 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.81 | 0.67 | 0.47 | - | 0.81 | 0.68 | 0.47 | - |
|  |  | $\Delta T$ | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 13 | - | 19 | 17 | 13 | - | 19 | 16 | 12 | - | 18 | 15 | 12 | - |
|  | 1400 | kW | 3.17 | 3.23 | 3.32 | - | 3.39 | 3.46 | 3.56 | - | 3.59 | 3.66 | 3.77 | - | 3.77 | 3.84 | 3.96 | - | 3.91 | 4.00 | 4.12 | - | 4.04 | 4.13 | 4.26 | - |
|  |  | Amps | 11.6 | 11.9 | 12.3 | - | 12.6 | 12.9 | 13.3 | - | 13.7 | 14.0 | 14.5 | - | 14.6 | 15.0 | 15.5 | - | 15.5 | 15.9 | 16.5 | - | 16.5 | 16.9 | 17.4 | - |
|  |  | Hi PR | 215 | 231 | 244 | - | 241 | 259 | 274 | - | 274 | 295 | 311 | - | 312 | 336 | 354 | - | 351 | 377 | 399 | - | 388 | 417 | 440 | - |
|  |  | Lo PR | 104 | 111 | 121 | - | 110 | 117 | 128 | - | 115 | 122 | 133 | - | 120 | 128 | 140 | - | 126 | 134 | 146 | - | 130 | 139 | 151 | - |
|  |  | MBh | 43.8 | 45.4 | 49.7 | - | 42.7 | 44.3 | 48.5 |  | 41.7 | 43.2 | 47.4 | - | 40.7 | 42.2 | 46.2 | - | 38.7 | 40.1 | 43.9 | - | 35.8 | 37.1 | 40.7 | - |
|  |  | S/T | $0.73$ | 0.61 | $0.43$ | - | 0.76 | 0.64 | $0.44$ | - | $0.78$ | 0.65 | 0.45 | - | $0.81$ | 0.67 | 0.47 | - | 0.84 | $0.70$ | 0.48 | - | 0.84 | 0.70 | 0.49 | - |
|  |  | $\Delta T$ | 18 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 19 | 16 | 12 | - | 17 | 15 | 11 | - |
|  | 1600 | kW | 3.24 | 3.30 | 3.40 | - | 3.47 | 3.54 | 3.65 | - | 3.67 | 3.75 | 3.87 | - | 3.86 | 3.94 | 4.06 | - | 4.01 | 4.09 | 4.22 | - | 4.14 | 4.23 | 4.36 | - |
|  |  | Amps | $12.0$ | $12.3$ | 12.7 | - | 12.9 | 13.2 | 13.7 | - | 14.1 | 14.4 | 14.9 | - | 15.0 | 15.4 | 15.9 | - | 16.0 | 16.4 | 16.9 | - | 16.9 | 17.4 | 17.9 | - |
|  |  | Hi PR | 221 | 238 | 251 | - | 248 | 267 | 282 | - | 282 | 304 | 321 | - | 321 | 346 | 365 | - | 362 | 389 | 411 | - | 400 | 430 | 454 | - |
|  |  | Lo PR | 108 | 114 | 125 | - | 114 | 121 | 132 | - | 118 | 126 | 137 | - | 124 | 132 | 144 | - | 130 | 138 | 151 | - | 134 | 143 | 156 | - |
|  |  | MBh | 45.1 | 46.7 | 51.2 | - | 44.0 | 45.6 | 50.0 | - | 43.0 | 44.5 | 48.8 | - | 41.9 | 43.5 | 47.6 | - | 39.8 | 41.3 | 45.2 | - | 36.9 | 38.2 | 41.9 | - |
|  |  | S/T | $0.77$ | $0.64$ | 0.45 | - | 0.80 | 0.67 | 0.46 | - | 0.82 | 0.68 | 0.47 | - | 0.85 | 0.71 | 0.49 | - | 0.88 | 0.73 | 0.51 | - | 0.88 | 0.74 | 0.51 | - |
|  |  | $\Delta \mathrm{T}$ | 18 | 15 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 15 | 12 | - | 17 | 14 | 11 | - |
|  | 1800 | kW | 3.26 | 3.33 | 3.42 | - | 3.50 | 3.57 | 3.67 | - | 3.70 | 3.78 | 3.90 | - | 3.89 | 3.97 | 4.09 | - | 4.04 | 4.13 | 4.26 | - | 4.18 | 4.26 | 4.40 | - |
|  |  | Amps | 12.1 | 12.4 | 12.8 | - | 13.0 | 13.4 | 13.8 | - | 14.2 | 14.5 | 15.0 | - | 15.2 | 15.5 | 16.0 | - | 16.1 | 16.5 | 17.1 | - | 17.1 | 17.5 | 18.1 | - |
|  |  | Hi PR | 223 | 240 | 254 | - | 251 | 270 | 285 | - | 285 | 307 | 324 | - | 325 | 349 | 369 | - | 365 | 393 | 415 | - | 404 | 434 | 459 | - |
|  |  | Lo PR | 109 | 116 | 126 | - | 115 | 122 | 133 | - | 119 | 127 | 139 | - | 125 | 133 | 146 | - | 131 | 140 | 152 | - | 136 | 144 | 158 | - |


| 75 | 1400 | MBh | 41.1 | 42.3 | 45.8 | 49.1 | 40.1 | 41.3 | 44.7 | 48.0 | 39.2 | 40.3 | 43.7 | 46.8 | 38.2 | 39.3 | 42.6 | 45.7 | 36.3 | 37.4 | 40.5 | 43.4 | 33.6 | 34.6 | 37.5 | 40.2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.81 | 0.72 | 0.55 | 0.35 | 0.83 | 0.75 | 0.56 | 0.36 | 0.86 | 0.77 | 0.58 | 0.37 | 0.88 | 0.79 | 0.60 | 0.38 | 0.92 | 0.82 | 0.62 | 0.40 | 0.92 | 0.83 | 0.63 | 0.40 |
|  |  | $\Delta T$ | 22 | 20 | 16 | 11 | 22 | 20 | 17 | 11 | 22 | 20 | 17 | 11 | 22 | 20 | 17 | 12 | 22 | 20 | 16 | 11 | 20 | 19 | 15 | 11 |
|  |  | kW | 3.19 | 3.25 | 3.35 | 3.45 | 3.42 | 3.49 | 3.59 | 3.70 | 3.62 | 3.69 | 3.80 | 3.92 | 3.79 | 3.87 | 3.99 | 4.12 | 3.95 | 4.03 | 4.15 | 4.29 | 4.08 | 4.16 | 4.29 | 4.43 |
|  |  | Amps | 11.7 | 12.0 | 12.4 | 12.9 | 12.7 | 13.0 | 13.4 | 13.9 | 13.8 | 14.1 | 14.6 | 15.1 | 14.7 | 15.1 | 15.6 | 16.2 | 15.7 | 16.1 | 16.6 | 17.2 | 16.6 | 17.0 | 17.6 | 18.3 |
|  |  | Hi PR | 217 | 233 | 246 | 257 | 243 | 262 | 276 | 288 | 277 | 298 | 314 | 328 | 315 | 339 | 358 | 373 | 354 | 381 | 403 | 420 | 391 | 421 | 445 | 464 |
|  |  | Lo PR | 105 | 112 | 122 | 130 | 111 | 118 | 129 | 138 | 116 | 123 | 134 | 143 | 122 | 129 | 141 | 150 | 127 | 136 | 148 | 158 | 132 | 140 | 153 | 163 |
|  |  | MBh | 44.5 | 45.8 | 49.6 | 53.2 | 43.5 | 44.8 | 48.4 | 52.0 | 42.4 | 43.7 | 47.3 | 50.8 | 41.4 | 42.6 | 46.1 | 49.5 | 39.3 | 40.5 | 43.8 | 47.0 | 36.4 | 37.5 | 40.6 | 43.6 |
|  |  | S/T | 0.84 | 0.75 | 0.57 | 0.36 | 0.87 | 0.77 | 0.59 | 0.38 | 0.89 | 0.79 | 0.60 | 0.39 | 0.92 | 0.82 | 0.62 | 0.40 | 0.95 | 0.85 | 0.64 | 0.41 | 0.96 | 0.86 | 0.65 | 0.42 |
|  |  | $\Delta T$ | 21 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 21 | 20 | 16 | 11 | 20 | 18 | 15 | 10 |
|  | 1600 | kW | 3.26 | 3.33 | 3.42 | 3.53 | 3.50 | 3.57 | 3.68 | 3.79 | 3.70 | 3.78 | 3.90 | 4.02 | 3.89 | 3.97 | 4.09 | 4.22 | 4.04 | 4.13 | 4.26 | 4.39 | 4.18 | 4.26 | 4.40 | 4.54 |
|  |  | Amps | 12.1 | 12.4 | 12.8 | 13.2 | 13.1 | 13.4 | 13.8 | 14.3 | 14.2 | 14.5 | 15.0 | 15.6 | 15.2 | 15.5 | 16.1 | 16.7 | 16.1 | 16.5 | 17.1 | 17.7 | 17.1 | 17.5 | 18.1 | 18.8 |
|  |  | Hi PR | 223 | 240 | 254 | 265 | 251 | 270 | 285 | 297 | 285 | 307 | 324 | 338 | 325 | 349 | 369 | 385 | 365 | 393 | 415 | 433 | 404 | 434 | 459 | 478 |
|  |  | Lo PR | 109 | 116 | 126 | 134 | 115 | 122 | 133 | 142 | 119 | 127 | 139 | 148 | 125 | 133 | 146 | 155 | 131 | 140 | 153 | 162 | 136 | 145 | 158 | 168 |
|  |  | MBh | 45.8 | 47.2 | 51.1 | 54.8 | 44.8 | 46.1 | 49.9 | 53.6 | 43.7 | 45.0 | 48.7 | 52.3 | 42.6 | 43.9 | 47.5 | 51.0 | 40.5 | 41.7 | 45.1 | 48.5 | 37.5 | 38.6 | 41.8 | 44.9 |
|  |  | S/T | 0.88 | 0.78 | 0.59 | 0.38 | 0.91 | 0.81 | 0.61 | 0.40 | 0.93 | 0.83 | 0.63 | 0.41 | 0.96 | 0.86 | 0.65 | 0.42 | 1.00 | 0.89 | 0.67 | 0.43 | 1.00 | 0.90 | 0.68 | 0.44 |
|  |  | $\Delta T$ | 21 | 19 | 15 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 19 | 18 | 15 | 10 |
|  | 1800 | kW | 3.29 | 3.35 | 3.45 | 3.55 | 3.52 | 3.59 | 3.70 | 3.82 | 3.73 | 3.81 | 3.93 | 4.05 | 3.92 | 4.00 | 4.12 | 4.26 | 4.07 | 4.16 | 4.29 | 4.43 | 4.21 | 4.30 | 4.44 | 4.58 |
|  |  | Amps | 12.2 | 12.5 | 12.9 | 13.4 | 13.2 | 13.5 | 13.9 | 14.5 | 14.3 | 14.7 | 15.1 | 15.7 | 15.3 | 15.7 | 16.2 | 16.8 | 16.3 | 16.7 | 17.2 | 17.9 | 17.3 | 17.7 | 18.3 | 19.0 |
|  |  | Hi PR | 226 | 243 | 256 | 267 | 253 | 272 | 288 | 300 | 288 | 310 | 327 | 341 | 328 | 353 | 373 | 389 | 369 | 397 | 419 | 437 | 408 | 439 | 463 | 483 |
|  |  | Lo PR | 110 | 117 | 127 | 136 | 116 | 123 | 135 | 143 | 120 | 128 | 140 | 149 | 127 | 135 | 147 | 157 | 133 | 141 | 154 | 164 | 137 | 146 | 159 | 170 |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | Alrflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 |  | MBh | 41.8 | 42.7 | 45.6 | 48.8 | 40.8 | 41.7 | 44.6 | 47.7 | 39.9 | 40.7 | 43.5 | 46.5 | 38.9 | 39.7 | 42.5 | 45.4 | 36.9 | 37.8 | 40.3 | 43.1 | 34.2 | 35.0 | 37.4 | 39.9 |
|  |  | S/T | 0.88 | 0.83 | 0.67 | 0.50 | 0.92 | 0.86 | 0.70 | 0.52 | 0.94 | 0.88 | 0.72 | 0.54 | 0.97 | 0.91 | 0.74 | 0.55 | 1.01 | 0.94 | 0.77 | 0.57 | 1.01 | 0.95 | 0.77 | 0.58 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 25 | 24 | 20 | 16 | 25 | 24 | 20 | 16 | 25 | 24 | 21 | 16 | 24 | 23 | 20 | 16 | 23 | 22 | 19 | 15 |
|  | 1400 | kW | 3.21 | 3.28 | 3.37 | 3.47 | 3.44 | 3.51 | 3.62 | 3.73 | 3.65 | 3.72 | 3.83 | 3.95 | 3.82 | 3.90 | 4.03 | 4.15 | 3.98 | 4.06 | 4.19 | 4.32 | 4.11 | 4.20 | 4.33 | 4.47 |
|  |  | Amps | 11.9 | 12.1 | 12.5 | 13.0 | 12.8 | 13.1 | 13.6 | 14.1 | 13.9 | 14.3 | 14.7 | 15.3 | 14.9 | 15.2 | 15.8 | 16.3 | 15.8 | 16.2 | 16.8 | 17.4 | 16.8 | 17.2 | 17.8 | 18.5 |
|  |  | Hi PR | 219 | 236 | 249 | 259 | 246 | 264 | 279 | 291 | 279 | 301 | 317 | 331 | 318 | 342 | 362 | 377 | 358 | 385 | 407 | 424 | 395 | 426 | 449 | 469 |
|  |  | Lo PR | 106 | 113 | 124 | 132 | 112 | 120 | 131 | 139 | 117 | 124 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 149 | 159 | 133 | 142 | 155 | 165 |
|  |  | MBh | 45.3 | 46.3 | 49.5 | 52.9 | 44.2 | 45.2 | 48.3 | 51.6 | 43.2 | 44.1 | 47.2 | 50.4 | 42.1 | 43.1 | 46.0 | 49.2 | 40.0 | 40.9 | 43.7 | 46.7 | 37.1 | 37.9 | 40.5 | 43.3 |
|  |  | $\mathrm{S} / \mathrm{T}$ | 0.92 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 0.97 | 0.91 | 0.74 | 0.56 | 1.00 | 0.94 | 0.77 | 0.57 | 1.00 | 0.98 | 0.80 | 0.60 | 1.00 | 0.99 | 0.80 | 0.60 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 23 | 23 | 20 | 16 | 21 | 21 | 19 | 15 |
|  | 1600 | kW | 3.29 | 3.35 | 3.45 | 3.56 | 3.52 | 3.59 | 3.70 | 3.82 | 3.73 | 3.81 | 3.93 | 4.05 | 3.92 | 4.00 | 4.12 | 4.26 | 4.07 | 4.16 | 4.29 | 4.43 | 4.21 | 4.30 | 4.44 | 4.58 |
|  |  | Amps | 12.2 | 12.5 | 12.9 | 13.4 | 13.2 | 13.5 | 13.9 | 14.5 | 14.3 | 14.7 | 15.2 | 15.7 | 15.3 | 15.7 | 16.2 | 16.8 | 16.3 | 16.7 | 17.3 | 17.9 | 17.3 | 17.7 | 18.3 | 19.0 |
|  |  | Hi PR | 226 | 243 | 256 | 267 | 253 | 272 | 288 | 300 | 288 | 310 | 327 | 341 | 328 | 353 | 373 | 389 | 369 | 397 | 419 | 437 | 408 | 439 | 463 | 483 |
|  |  | Lo PR | 110 | 117 | 127 | 136 | 116 | 123 | 135 | 143 | 120 | 128 | 140 | 149 | 127 | 135 | 147 | 157 | 133 | 141 | 154 | 164 | 137 | 146 | 159 | 170 |
|  |  | MBh | 46.7 | 47.7 | 50.9 | 54.4 | 45.6 | 46.6 | 49.7 | 53.2 | 44.5 | 45.5 | 48.6 | 51.9 | 43.4 | 44.3 | 47.4 | 50.6 | 41.2 | 42.1 | 45.0 | 48.1 | 38.2 | 39.0 | 41.7 | 44.6 |
|  |  | S/T | 0.96 | 0.90 | 0.73 | 0.55 | 1.00 | 0.93 | 0.76 | 0.57 | 1.00 | 0.96 | 0.78 | 0.58 | 1.00 | 1.00 | 0.80 | 0.60 | 1.00 | 1.00 | 0.83 | 0.62 | 1.00 | 1.00 | 0.84 | 0.63 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 15 | 22 | 23 | 19 | 16 | 21 | 22 | 19 | 15 | 20 | 20 | 18 | 14 |
|  | 1800 | kW | 3.31 | 3.38 | 3.48 | 3.58 | 3.55 | 3.62 | 3.73 | 3.85 | 3.76 | 3.84 | 3.96 | 4.08 | 3.95 | 4.03 | 4.16 | 4.29 | 4.11 | 4.19 | 4.33 | 4.47 | 4.24 | 4.33 | 4.47 | 4.62 |
|  |  | Amps | 12.3 | 12.6 | 13.0 | 13.5 | 13.3 | 13.6 | 14.1 | 14.6 | 14.4 | 14.8 | 15.3 | 15.9 | 15.4 | 15.8 | 16.4 | 17.0 | 16.4 | 16.8 | 17.4 | 18.1 | 17.4 | 17.9 | 18.5 | 19.2 |
|  |  | Hi PR | 228 | 245 | 259 | 270 | 256 | 275 | 291 | 303 | 291 | 313 | 331 | 345 | 331 | 356 | 376 | 393 | 373 | 401 | 423 | 442 | 412 | 443 | 468 | 488 |
|  |  | Lo PR | 111 | 118 | 129 | 137 | 117 | 125 | 136 | 145 | 122 | 129 | 141 | 151 | 128 | 136 | 148 | 158 | 134 | 143 | 156 | 166 | 139 | 147 | 161 | 171 |


| 85 | 1400 | MBh | 42.5 | 43.4 | 45.4 | 48.5 | 41.5 | 42.4 | 44.4 | 47.3 | 40.6 | 41.3 | 43.3 | 46.2 | 39.6 | 40.3 | 42.2 | 45.1 | 37.6 | 38.3 | 40.1 | 42.8 | 34.8 | 35.5 | 37.2 | 39.7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.93 | 0.89 | 0.81 | 0.65 | 0.96 | 0.93 | 0.84 | 0.68 | 0.98 | 0.95 | 0.86 | 0.70 | 1.00 | 0.98 | 0.88 | 0.72 | 1.00 | 1.00 | 0.92 | 0.74 | 1.00 | 1.00 | 0.93 | 0.75 |
|  |  | $\Delta T$ | 26 | 25 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 26 | 25 | 21 | 25 | 25 | 24 | 21 | 23 | 23 | 23 | 20 |
|  |  | kW | 3.24 | 3.30 | 3.40 | 3.50 | 3.47 | 3.54 | 3.65 | 3.76 | 3.67 | 3.75 | 3.86 | 3.99 | 3.85 | 3.94 | 4.06 | 4.19 | 4.01 | 4.09 | 4.22 | 4.36 | 4.14 | 4.23 | 4.36 | 4.50 |
|  |  | Amps | 12.0 | 12.2 | 12.6 | 13.1 | 12.9 | 13.2 | 13.7 | 14.2 | 14.0 | 14.4 | 14.9 | 15.4 | 15.0 | 15.4 | 15.9 | 16.5 | 16.0 | 16.4 | 16.9 | 17.6 | 16.9 | 17.4 | 17.9 | 18.6 |
|  |  | Hi PR | 221 | 238 | 251 | 262 | 248 | 267 | 282 | 294 | 282 | 304 | 321 | 334 | 321 | 346 | 365 | 381 | 361 | 389 | 411 | 428 | 399 | 430 | 454 | 473 |
|  |  | Lo PR | 108 | 114 | 125 | 133 | 114 | 121 | 132 | 140 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 153 | 130 | 138 | 151 | 161 | 134 | 143 | 156 | 166 |
|  |  | MBh | 46.1 | 47.0 | 49.2 | 52.5 | 45.0 | 45.9 | 48.1 | 51.3 | 43.9 | 44.8 | 46.9 | 50.1 | 42.9 | 43.7 | 45.8 | 48.8 | 40.7 | 41.5 | 43.5 | 46.4 | 37.7 | 38.5 | 40.3 | 43.0 |
|  |  | S/T | 0.96 | 0.93 | 0.84 | 0.68 | 1.00 | 0.96 | 0.87 | 0.70 | 1.00 | 0.98 | 0.89 | 0.72 | 1.00 | 1.00 | 0.92 | 0.74 | 1.00 | 1.00 | 0.95 | 0.77 | 1.00 | 1.00 | 0.96 | 0.78 |
|  |  | $\Delta T$ | 25 | 25 | 24 | 20 | 26 | 25 | 24 | 21 | 25 | 25 | 24 | 21 | 25 | 25 | 24 | 21 | 23 | 24 | 24 | 21 | 22 | 22 | 22 | 19 |
|  | 1600 | kW | 3.31 | 3.38 | 3.48 | 3.58 | 3.55 | 3.62 | 3.73 | 3.85 | 3.76 | 3.84 | 3.96 | 4.08 | 3.95 | 4.03 | 4.16 | 4.29 | 4.11 | 4.19 | 4.33 | 4.47 | 4.24 | 4.33 | 4.47 | 4.62 |
|  |  | Amps | 12.3 | 12.6 | 13.0 | 13.5 | 13.3 | 13.6 | 14.1 | 14.6 | 14.4 | 14.8 | 15.3 | 15.9 | 15.4 | 15.8 | 16.4 | 17.0 | 16.4 | 16.8 | 17.4 | 18.1 | 17.4 | 17.9 | 18.5 | 19.2 |
|  |  | Hi PR | 228 | 245 | 259 | 270 | 256 | 275 | 291 | 303 | 291 | 313 | 331 | 345 | 331 | 356 | 376 | 393 | 373 | 401 | 423 | 442 | 412 | 443 | 468 | 488 |
|  |  | Lo PR | 111 | 118 | 129 | 137 | 117 | 125 | 136 | 145 | 122 | 129 | 141 | 151 | 128 | 136 | 148 | 158 | 134 | 143 | 156 | 166 | 139 | 147 | 161 | 171 |
|  |  | MBh | 47.5 | 48.4 | 50.7 | 54.1 | 46.4 | 47.3 | 49.5 | 52.8 | 45.3 | 46.1 | 48.3 | 51.6 | 44.2 | 45.0 | 47.1 | 50.3 | 42.0 | 42.8 | 44.8 | 47.8 | 38.9 | 39.6 | 41.5 | 44.3 |
|  |  | S/T | 1.00 | 0.97 | 0.88 | 0.71 | 1.00 | 1.00 | 0.91 | 0.74 | 1.00 | 1.00 | 0.93 | 0.76 | 1.00 | 1.00 | 0.96 | 0.78 | 1.00 | 1.00 | 1.00 | 0.81 | 1.00 | 1.00 | 1.00 | 0.82 |
|  |  | $\Delta T$ | 24 | 24 | 23 | 20 | 24 | 24 | 23 | 20 | 23 | 24 | 23 | 20 | 23 | 23 | 23 | 20 | 21 | 22 | 23 | 20 | 20 | 20 | 21 | 18 |
|  | 1800 | kW | 3.34 | 3.40 | 3.50 | 3.61 | 3.58 | 3.65 | 3.76 | 3.88 | 3.79 | 3.87 | 3.99 | 4.11 | 3.98 | 4.06 | 4.19 | 4.32 | 4.14 | 4.23 | 4.36 | 4.50 | 4.28 | 4.37 | 4.51 | 4.65 |
|  |  | Amps | 12.4 | 12.7 | 13.1 | 13.6 | 13.4 | 13.7 | 14.2 | 14.7 | 14.6 | 14.9 | 15.4 | 16.0 | 15.6 | 16.0 | 16.5 | 17.1 | 16.6 | 17.0 | 17.6 | 18.2 | 17.6 | 18.0 | 18.6 | 19.3 |
|  |  | Hi PR | 230 | 248 | 262 | 273 | 258 | 278 | 294 | 306 | 294 | 316 | 334 | 348 | 335 | 360 | 380 | 397 | 376 | 405 | 428 | 446 | 416 | 448 | 473 | 493 |
|  |  | Lo PR | 112 | 119 | 130 | 138 | 118 | 126 | 137 | 146 | 123 | 131 | 143 | 152 | 129 | 137 | 150 | 160 | 135 | 144 | 157 | 167 | 140 | 149 | 163 | 173 |



| 75 | 1500 | MBh | 50.9 | 52.4 | 56.7 | 60.9 | 49.7 | 51.2 | 55.4 | 59.5 | 48.5 | 50.0 | 54.1 | 58.1 | 47.3 | 48.8 | 52.8 | 56.6 | 45.0 | 46.3 | 50.1 | 53.8 | 41.7 | 42.9 | 46.4 | 49.8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.76 | 0.68 | 0.51 | 0.33 | 0.79 | 0.70 | 0.53 | 0.34 | 0.81 | 0.72 | 0.55 | 0.35 | 0.83 | 0.75 | 0.56 | 0.36 | 0.87 | 0.77 | 0.59 | 0.38 | 0.87 | 0.78 | 0.59 | 0.38 |
|  |  | $\Delta T$ | 24 | 22 | 18 | 12 | 24 | 22 | 18 | 13 | 24 | 22 | 18 | 13 | 24 | 22 | 18 | 13 | 24 | 22 | 18 | 12 | 22 | 21 | 17 | 12 |
|  |  | kW | 3.90 | 3.98 | 4.10 | 4.23 | 4.19 | 4.28 | 4.41 | 4.55 | 4.45 | 4.54 | 4.68 | 4.84 | 4.67 | 4.77 | 4.93 | 5.09 | 4.86 | 4.97 | 5.13 | 5.30 | 5.03 | 5.14 | 5.31 | 5.48 |
|  |  | Amps | 14.6 | 14.9 | 15.4 | 16.0 | 15.8 | 16.1 | 16.7 | 17.3 | 17.1 | 17.6 | 18.1 | 18.8 | 18.3 | 18.8 | 19.4 | 20.2 | 19.5 | 20.0 | 20.7 | 21.5 | 20.7 | 21.2 | 21.9 | 22.8 |
|  |  | HIPR | 231 | 249 | 263 | 274 | 259 | 279 | 295 | 307 | 295 | 317 | 335 | 350 | 336 | 362 | 382 | 398 | 378 | 407 | 430 | 448 | 418 | 449 | 475 | 495 |
|  |  | LO PR | 103 | 109 | 119 | 127 | 108 | 115 | 126 | 134 | 113 | 120 | 131 | 139 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 153 | 128 | 136 | 149 | 159 |
|  |  | MBh | 55.1 | 56.8 | 61.5 | 66.0 | 53.9 | 55.5 | 60.0 | 64.4 | 52.6 | 54.1 | 58.6 | 62.9 | 51.3 | 52.8 | 57.2 | 61.4 | 48.7 | 50.2 | 54.3 | 58.3 | 45.1 | 46.5 | 50.3 | 54.0 |
|  |  | S/T | 0.79 | 0.71 | 0.53 | 0.34 | 0.82 | 0.73 | 0.55 | 0.36 | 0.84 | 0.75 | 0.57 | 0.36 | 0.86 | 0.77 | 0.59 | 0.38 | 0.90 | 0.80 | 0.61 | 0.39 | 0.91 | 0.81 | 0.61 | 0.39 |
|  |  | $\Delta T$ | 23 | 21 | 17 | 12 | 23 | 21 | 17 | 12 | 23 | 21 | 17 | 12 | 23 | 21 | 18 | 12 | 23 | 21 | 17 | 12 | 21 | 20 | 16 | 11 |
|  | 1750 | kW | 3.99 | 4.07 | 4.20 | 4.33 | 4.29 | 4.38 | 4.52 | 4.66 | 4.56 | 4.65 | 4.80 | 4.96 | 4.79 | 4.89 | 5.05 | 5.22 | 4.99 | 5.10 | 5.26 | 5.44 | 5.16 | 5.27 | 5.44 | 5.63 |
|  |  | Amps | 15.0 | 15.3 | 15.8 | 16.4 | 16.2 | 16.6 | 17.2 | 17.8 | 17.6 | 18.1 | 18.7 | 19.4 | 18.9 | 19.3 | 20.0 | 20.8 | 20.1 | 20.6 | 21.3 | 22.1 | 21.3 | 21.8 | 22.6 | 23.5 |
|  |  | HIPR | 238 | 256 | 271 | 282 | 267 | 288 | 304 | 317 | 304 | 327 | 346 | 360 | 346 | 373 | 394 | 411 | 390 | 419 | 443 | 462 | 431 | 463 | 489 | 510 |
|  |  | LO PR | 106 | 112 | 123 | 131 | 112 | 119 | 130 | 138 | 116 | 123 | 135 | 144 | 122 | 130 | 142 | 151 | 128 | 136 | 148 | 158 | 132 | 141 | 153 | 163 |
|  |  | MBh | 56.8 | 58.5 | 63.3 | 67.9 | 55.5 | 57.1 | 61.8 | 66.4 | 54.2 | 55.8 | 60.4 | 64.8 | 52.8 | 54.4 | 58.9 | 63.2 | 50.2 | 51.7 | 55.9 | 60.0 | 46.5 | 47.9 | 51.8 | 55.6 |
|  |  | S/T | 0.83 | 0.74 | 0.56 | 0.36 | 0.86 | 0.77 | 0.58 | 0.37 | 0.88 | 0.79 | 0.59 | 0.38 | 0.91 | 0.81 | 0.61 | 0.39 | 0.94 | 0.84 | 0.64 | 0.41 | 0.95 | 0.85 | 0.64 | 0.41 |
|  |  | $\Delta T$ | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 16 | 11 | 22 | 20 | 17 | 11 | 22 | 20 | 16 | 11 | 20 | 19 | 15 | 11 |
|  | 2000 | kW | 4.02 | 4.11 | 4.23 | 4.37 | 4.33 | 4.42 | 4.56 | 4.70 | 4.59 | 4.69 | 4.84 | 5.00 | 4.83 | 4.93 | 5.09 | 5.26 | 5.03 | 5.14 | 5.31 | 5.48 | 5.20 | 5.32 | 5.49 | 5.67 |
|  |  | Amps | 15.1 | 15.5 | 16.0 | 16.6 | 16.4 | 16.8 | 17.3 | 18.0 | 17.8 | 18.2 | 18.8 | 19.6 | 19.0 | 19.5 | 20.2 | 20.9 | 20.3 | 20.8 | 21.5 | 22.3 | 21.5 | 22.0 | 22.8 | 23.7 |
|  |  | HIPR | 241 | 259 | 274 | 285 | 270 | 291 | 307 | 320 | 307 | 331 | 349 | 364 | 350 | 376 | 398 | 415 | 394 | 424 | 447 | 466 | 435 | 468 | 494 | 515 |
|  |  | LO PR | 107 | 114 | 124 | 132 | 113 | 120 | 131 | 139 | 117 | 125 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 150 | 160 | 133 | 142 | 155 | 165 |

[^3]|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AlRfLOW |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 | 1500 | MBh | 51.8 | 52.9 | 56.6 | 60.5 | 50.6 | 51.7 | 55.2 | 59.1 | 49.4 | 50.5 | 53.9 | 57.6 | 48.2 | 49.2 | 52.6 | 56.2 | 45.8 | 46.8 | 50.0 | 53.4 | 42.4 | 43.3 | 46.3 | 49.5 |
|  |  | S/T | 0.83 | 0.78 | 0.64 | 0.48 | 0.86 | 0.81 | 0.66 | 0.49 | 0.89 | 0.83 | 0.68 | 0.51 | 0.91 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 0.96 | 0.90 | 0.73 | 0.55 |
|  |  | $\Delta T$ | 26 | 25 | 22 | 18 | 27 | 26 | 22 | 18 | 27 | 26 | 22 | 18 | 27 | 26 | 23 | 18 | 27 | 26 | 22 | 18 | 25 | 24 | 21 | 17 |
|  |  | kW | 3.93 | 4.01 | 4.13 | 4.26 | 4.22 | 4.31 | 4.45 | 4.59 | 4.48 | 4.58 | 4.72 | 4.88 | 4.71 | 4.81 | 4.97 | 5.13 | 4.90 | 5.01 | 5.17 | 5.34 | 5.07 | 5.18 | 5.35 | 5.53 |
|  |  | Amps | 14.7 | 15.1 | 15.6 | 16.1 | 15.9 | 16.3 | 16.8 | 17.5 | 17.3 | 17.7 | 18.3 | 19.0 | 18.5 | 19.0 | 19.6 | 20.4 | 19.7 | 20.2 | 20.9 | 21.7 | 20.9 | 21.4 | 22.2 | 23.0 |
|  |  | HIPR | 234 | 251 | 265 | 277 | 262 | 282 | 298 | 311 | 298 | 321 | 339 | 353 | 339 | 365 | 386 | 402 | 382 | 411 | 434 | 453 | 422 | 454 | 479 | 500 |
|  |  | LO PR | 104 | 110 | 120 | 128 | 109 | 116 | 127 | 135 | 114 | 121 | 132 | 141 | 119 | 127 | 139 | 148 | 125 | 133 | 145 | 155 | 129 | 138 | 150 | 160 |
|  | 1750 | MBh | 56.1 | 57.4 | 61.3 | 65.5 | 54.8 | 56.0 | 59.9 | 64.0 | 53.5 | 54.7 | 58.4 | 62.5 | 52.2 | 53.4 | 57.0 | 60.9 | 49.6 | 50.7 | 54.2 | 57.9 | 45.9 | 46.9 | 50.2 | 53.6 |
|  |  | S/T | 0.86 | 0.81 | 0.66 | 0.49 | 0.90 | 0.84 | 0.68 | 0.51 | 0.92 | 0.86 | 0.70 | 0.52 | 0.95 | 0.89 | 0.72 | 0.54 | 0.98 | 0.92 | 0.75 | 0.56 | 0.99 | 0.93 | 0.76 | 0.57 |
|  |  | $\Delta T$ | 25 | 24 | 21 | 17 | 26 | 25 | 22 | 17 | 26 | 25 | 22 | 17 | 26 | 25 | 22 | 17 | 26 | 25 | 21 | 17 | 24 | 23 | 20 | 16 |
|  |  | kW | 4.02 | 4.11 | 4.23 | 4.37 | 4.33 | 4.42 | 4.56 | 4.70 | 4.59 | 4.69 | 4.84 | 5.00 | 4.83 | 4.93 | 5.09 | 5.26 | 5.03 | 5.14 | 5.31 | 5.48 | 5.20 | 5.32 | 5.49 | 5.67 |
|  |  | Amps | 15.1 | 15.5 | 16.0 | 16.6 | 16.4 | 16.8 | 17.3 | 18.0 | 17.8 | 18.2 | 18.8 | 19.6 | 19.0 | 19.5 | 20.2 | 20.9 | 20.3 | 20.8 | 21.5 | 22.3 | 21.5 | 22.0 | 22.8 | 23.7 |
|  |  | HIPR | 241 | 259 | 274 | 285 | 270 | 291 | 307 | 320 | 307 | 331 | 349 | 364 | 350 | 377 | 398 | 415 | 394 | 424 | 447 | 467 | 435 | 468 | 494 | 515 |
|  |  | LO PR | 107 | 114 | 124 | 132 | 113 | 120 | 131 | 140 | 117 | 125 | 136 | 145 | 123 | 131 | 143 | 152 | 129 | 137 | 150 | 160 | 133 | 142 | 155 | 165 |
|  | 2000 | MBh | 57.8 | 59.1 | 63.1 | 67.5 | 56.5 | 57.7 | 61.6 | 65.9 | 55.1 | 56.3 | 60.2 | 64.3 | 53.8 | 55.0 | 58.7 | 62.8 | 51.1 | 52.2 | 55.8 | 59.6 | 47.3 | 48.4 | 51.7 | 55.2 |
|  |  | S/T | 0.91 | 0.85 | 0.69 | 0.52 | 0.94 | 0.88 | 0.72 | 0.54 | 0.96 | 0.90 | 0.74 | 0.55 | 1.00 | 0.93 | 0.76 | 0.57 | 1.00 | 0.97 | 0.79 | 0.59 | 1.00 | 1.00 | 0.79 | 0.59 |
|  |  | $\Delta T$ | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 24 | 23 | 20 | 16 | 25 | 24 | 20 | 16 | 23 | 23 | 20 | 16 | 22 | 22 | 19 | 15 |
|  |  | kW | 4.05 | 4.14 | 4.27 | 4.40 | 4.36 | 4.45 | 4.59 | 4.74 | 4.63 | 4.73 | 4.88 | 5.04 | 4.87 | 4.97 | 5.13 | 5.30 | 5.07 | 5.18 | 5.35 | 5.53 | 5.24 | 5.36 | 5.54 | 5.72 |
|  |  | Amps | 15.2 | 15.6 | 16.1 | 16.7 | 16.5 | 16.9 | 17.5 | 18.1 | 18.0 | 18.4 | 19.0 | 19.8 | 19.2 | 19.7 | 20.4 | 21.1 | 20.5 | 21.0 | 21.7 | 22.5 | 21.7 | 22.3 | 23.0 | 23.9 |
|  |  | HIPR | 243 | 262 | 276 | 288 | 273 | 294 | 310 | 323 | 310 | 334 | 353 | 368 | 353 | 380 | 402 | 419 | 398 | 428 | 452 | 471 | 439 | 473 | 499 | 521 |
|  |  | LO PR | 108 | 115 | 125 | 133 | 114 | 121 | 132 | 141 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 154 | 130 | 139 | 151 | 161 | 135 | 143 | 157 | 167 |


|  |  | MBh | 52.7 | 53.7 | 56.3 | 60.0 | 51.5 | 52.5 | 55.0 | 58.6 | 50.3 | 51.2 | 53.7 | 57.2 | 49.0 | 50.0 | 52.3 | 55.8 | 46.6 | 47.5 | 49.7 | 53.1 | 43.1 | 44.0 | 46.1 | 49.1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.87 | 0.84 | 0.76 | 0.62 | 0.91 | 0.87 | 0.79 | 0.64 | 0.93 | 0.90 | 0.81 | 0.66 | 0.96 | 0.93 | 0.83 | 0.68 | 1.00 | 0.96 | 0.87 | 0.70 | 1.00 | 0.97 | 0.87 | 0.71 |
|  |  | $\Delta T$ | 28 | 28 | 26 | 23 | 29 | 28 | 27 | 23 | 29 | 28 | 27 | 23 | 29 | 28 | 27 | 23 | 28 | 28 | 26 | 23 | 26 | 26 | 25 | 21 |
|  | 1500 | kW | 3.96 | 4.04 | 4.17 | 4.30 | 4.26 | 4.35 | 4.48 | 4.62 | 4.52 | 4.61 | 4.76 | 4.92 | 4.75 | 4.85 | 5.01 | 5.17 | 4.94 | 5.05 | 5.22 | 5.39 | 5.11 | 5.23 | 5.40 | 5.58 |
|  |  | Amps | 14.8 | 15.2 | 15.7 | 16.3 | 16.0 | 16.4 | 17.0 | 17.6 | 17.5 | 17.9 | 18.5 | 19.2 | 18.7 | 19.1 | 19.8 | 20.5 | 19.9 | 20.4 | 21.1 | 21.9 | 21.1 | 21.6 | 22.4 | 23.2 |
|  |  | HIPR | 236 | 254 | 268 | 280 | 265 | 285 | 301 | 314 | 301 | 324 | 342 | 357 | 343 | 369 | 390 | 406 | 386 | 415 | 438 | 457 | 426 | 459 | 484 | 505 |
|  |  | LO PR | 105 | 111 | 121 | 129 | 110 | 118 | 128 | 137 | 115 | 122 | 133 | 142 | 121 | 128 | 140 | 149 | 126 | 134 | 147 | 156 | 131 | 139 | 152 | 162 |
|  |  | MBh | 57.1 | 58.2 | 61.0 | 65.0 | 55.8 | 56.9 | 59.6 | 63.5 | 54.5 | 55.5 | 58.1 | 62.0 | 53.1 | 54.2 | 56.7 | 60.5 | 50.5 | 51.4 | 53.9 | 57.5 | 46.7 | 47.7 | 49.9 | 53.2 |
|  |  | S/T | 0.91 | 0.87 | 0.79 | 0.64 | 0.94 | 0.91 | 0.82 | 0.66 | 0.96 | 0.93 | 0.84 | 0.68 | 0.99 | 0.96 | 0.87 | 0.70 | 1.00 | 1.00 | 0.90 | 0.73 | 1.00 | 1.00 | 0.91 | 0.74 |
|  |  | $\Delta T$ | 27 | 27 | 25 | 22 | 28 | 27 | 26 | 22 | 28 | 27 | 26 | 22 | 28 | 27 | 26 | 22 | 27 | 27 | 25 | 22 | 25 | 25 | 24 | 21 |
| 85 | 1750 | kW | 4.05 | 4.14 | 4.27 | 4.40 | 4.36 | 4.45 | 4.59 | 4.74 | 4.63 | 4.73 | 4.88 | 5.04 | 4.87 | 4.97 | 5.13 | 5.30 | 5.07 | 5.18 | 5.35 | 5.53 | 5.24 | 5.36 | 5.54 | 5.72 |
|  |  | Amps | 15.2 | 15.6 | 16.1 | 16.7 | 16.5 | 16.9 | 17.5 | 18.1 | 18.0 | 18.4 | 19.0 | 19.8 | 19.2 | 19.7 | 20.4 | 21.1 | 20.5 | 21.0 | 21.7 | 22.5 | 21.7 | 22.3 | 23.0 | 23.9 |
|  |  | HI PR | 243 | 262 | 276 | 288 | 273 | 294 | 310 | 323 | 310 | 334 | 353 | 368 | 353 | 380 | 402 | 419 | 398 | 428 | 452 | 471 | 439 | 473 | 499 | 521 |
|  |  | LO PR | 108 | 115 | 125 | 133 | 114 | 121 | 132 | 141 | 118 | 126 | 137 | 146 | 124 | 132 | 144 | 154 | 130 | 139 | 151 | 161 | 135 | 143 | 157 | 167 |
|  |  | MBh | 58.8 | 60.0 | 62.8 | 67.0 | 57.5 | 58.6 | 61.3 | 65.4 | 56.1 | 57.2 | 59.9 | 63.9 | 54.7 | 55.8 | 58.4 | 62.3 | 52.0 | 53.0 | 55.5 | 59.2 | 48.2 | 49.1 | 51.4 | 54.8 |
|  |  | S/T | 0.95 | 0.92 | 0.83 | 0.67 | 0.99 | 0.95 | 0.86 | 0.70 | 1.00 | 0.97 | 0.88 | 0.71 | 1.00 | 1.00 | 0.91 | 0.74 | 1.00 | 1.00 | 0.94 | 0.76 | 1.00 | 1.00 | 0.95 | 0.77 |
|  |  | $\Delta T$ | 26 | 25 | 24 | 21 | 26 | 26 | 24 | 21 | 26 | 26 | 24 | 21 | 25 | 26 | 24 | 21 | 24 | 24 | 24 | 21 | 22 | 23 | 22 | 19 |
|  | 2000 | kW | 4.09 | 4.17 | 4.30 | 4.44 | 4.39 | 4.49 | 4.63 | 4.78 | 4.67 | 4.77 | 4.92 | 5.08 | 4.91 | 5.01 | 5.18 | 5.35 | 5.11 | 5.22 | 5.39 | 5.57 | 5.29 | 5.40 | 5.58 | 5.77 |
|  |  | Amps | 15.4 | 15.8 | 16.3 | 16.9 | 16.7 | 17.1 | 17.6 | 18.3 | 18.1 | 18.6 | 19.2 | 19.9 | 19.4 | 19.9 | 20.6 | 21.3 | 20.7 | 21.2 | 21.9 | 22.7 | 21.9 | 22.5 | 23.2 | 24.1 |
|  |  | HIPR | 246 | 264 | 279 | 291 | 276 | 297 | 313 | 327 | 313 | 337 | 356 | 371 | 357 | 384 | 406 | 423 | 402 | 432 | 456 | 476 | 444 | 477 | 504 | 526 |
|  |  | LO PR | 109 | 116 | 126 | 135 | 115 | 122 | 134 | 142 | 120 | 127 | 139 | 148 | 126 | 134 | 146 | 155 | 132 | 140 | 153 | 163 | 136 | 145 | 158 | 168 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  | OUtdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet bulb temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | Alrflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 70 | 1500 | MBh | 53.8 | 55.7 | 61.0 | - | 52.5 | 54.4 | 59.6 | - | 51.3 | 53.1 | 58.2 | - | 50.0 | 51.8 | 56.8 | - | 47.5 | 49.2 | 53.9 | - | 44.0 | 45.6 | 50.0 | - |
|  |  | S/T | 0.66 | 0.55 | 0.38 | - | 0.68 | 0.57 | 0.39 | - | 0.70 | 0.58 | 0.40 | - | 0.72 | 0.60 | 0.42 | - | 0.75 | 0.62 | 0.43 | - | 0.75 | 0.63 | 0.44 | - |
|  |  | $\Delta T$ | 22 | 19 | 14 | - | 22 | 19 | 14 | - | 22 | 19 | 14 | - | 22 | 19 | 14 | - | 22 | 19 | 14 | - | 20 | 18 | 13 | - |
|  |  | kW | 3.97 | 4.05 | 4.18 | - | 4.27 | 4.37 | 4.51 | - | 4.54 | 4.64 | 4.80 | - | 4.78 | 4.89 | 5.05 | - | 4.99 | 5.10 | 5.27 | - | 5.16 | 5.28 | 5.45 | - |
|  |  | Amps | 15.4 | 15.8 | 16.3 | - | 16.7 | 17.1 | 17.6 | - | 18.1 | 18.6 | 19.2 | - | 19.4 | 19.9 | 20.6 | - | 20.7 | 21.2 | 21.9 | - | 22.0 | 22.5 | 23.3 | - |
|  |  | HIPR | 228 | 245 | 259 | - | 256 | 275 | 291 | - | 291 | 313 | 331 | - | 331 | 357 | 377 | - | 373 | 401 | 424 | - | 412 | 443 | 468 | - |
|  |  | LO PR | 98 | 104 | 114 | - | 103 | 110 | 120 | - | 107 | 114 | 125 | - | 113 | 120 | 131 | - | 118 | 126 | 137 | - | 122 | 130 | 142 | - |
|  | 1750 | MBh | 55.4 | 57.4 | 62.9 | - | 54.1 | 56.1 | 61.4 | - | 52.8 | 54.7 | 59.9 | - | 51.5 | 53.4 | 58.5 | - | 48.9 | 50.7 | 55.6 | - | 45.3 | 47.0 | 51.5 | - |
|  |  | S/T | 0.69 | 0.57 | 0.40 | - | 0.71 | 0.60 | 0.41 | - | 0.73 | 0.61 | 0.42 | - | 0.75 | 0.63 | 0.44 | - | 0.78 | 0.65 | 0.45 | - | 0.79 | 0.66 | 0.46 | - |
|  |  | $\Delta T$ | 20 | 17 | 13 | - | 20 | 18 | 13 | - | 20 | 18 | 13 | - | 20 | 18 | 13 | - | 20 | 17 | 13 | - | 19 | 16 | 12 | - |
|  |  | kW | 4.00 | 4.09 | 4.21 | - | 4.31 | 4.40 | 4.54 | - | 4.58 | 4.68 | 4.84 | - | 4.82 | 4.93 | 5.09 | - | 5.03 | 5.14 | 5.31 | - | 5.20 | 5.32 | 5.50 | - |
|  |  | Amps | 15.5 | 15.9 | 16.4 | - | 16.8 | 17.2 | 17.8 | - | 18.3 | 18.8 | 19.4 | - | 19.6 | 20.1 | 20.8 | - | 20.9 | 21.4 | 22.2 | - | 22.2 | 22.7 | 23.5 | - |
|  |  | HIPR | 230 | 248 | 262 | - | 258 | 278 | 294 | - | 294 | 316 | 334 | - | 335 | 360 | 380 | - | 377 | 405 | 428 | - | 416 | 448 | 473 | - |
|  |  | LO PR | 99 | 105 | 115 | - | 104 | 111 | 121 | - | 108 | 115 | 126 | - | 114 | 121 | 132 | - | 119 | 127 | 139 | - | 124 | 131 | 143 | - |
|  | 2000 | MBh | 55.6 | 57.7 | 63.2 | - | 54.3 | 56.3 | 61.7 | - | 53.0 | 55.0 | 60.2 | - | 51.8 | 53.6 | 58.8 | - | 49.2 | 51.0 | 55.8 | - | 45.5 | 47.2 | 51.7 | - |
|  |  | S/T | 0.70 | 0.58 | 0.40 | - | 0.72 | 0.60 | 0.42 | - | 0.74 | 0.62 | 0.43 | - | 0.77 | 0.64 | 0.44 | - | 0.79 | 0.66 | 0.46 | - | 0.80 | 0.67 | 0.46 | - |
|  |  | $\Delta T$ | 18 | 15 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 18 | 16 | 12 | - | 17 | 15 | 11 | - |
|  |  | kW | 4.03 | 4.12 | 4.25 | - | 4.34 | 4.44 | 4.58 | - | 4.62 | 4.72 | 4.88 | - | 4.86 | 4.97 | 5.13 | - | 5.07 | 5.18 | 5.36 | - | 5.25 | 5.37 | 5.55 | - |
|  |  | Amps | 15.7 | 16.0 | 16.6 | - | 17.0 | 17.4 | 18.0 | - | 18.5 | 18.9 | 19.6 | - | 19.8 | 20.3 | 21.0 | - | 21.1 | 21.6 | 22.4 | - | 22.4 | 22.9 | 23.7 | - |
|  |  | HIPR | 233 | 250 | 264 | - | 261 | 281 | 297 | - | 297 | 319 | 337 | - | 338 | 364 | 384 | - | 380 | 409 | 432 | - | 420 | 452 | 477 | - |
|  |  | LO PR | 100 | 106 | 116 | - | 105 | 112 | 122 | - | 110 | 117 | 127 | - | 115 | 122 | 134 | - | 121 | 128 | 140 | - | 125 | 133 | 145 | - |


|  |  | MBh | 54.7 | 56.3 | 60.9 | 65.4 | 53.4 | 55.0 | 59.5 | 63.9 | 52.1 | 53.7 | 58.1 | 62.3 | 50.9 | 52.4 | 56.7 | 60.8 | 48.3 | 49.7 | 53.8 | 57.8 | 44.7 | 46.1 | 49.9 | 53.5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.75 | 0.67 | 0.50 | 0.32 | 0.77 | 0.69 | 0.52 | 0.34 | 0.79 | 0.71 | 0.54 | 0.35 | 0.82 | 0.73 | 0.55 | 0.36 | 0.85 | 0.76 | 0.57 | 0.37 | 0.86 | 0.77 | 0.58 | 0.37 |
|  |  | $\Delta T$ | 25 | 23 | 19 | 13 | 25 | 23 | 19 | 13 | 25 | 23 | 19 | 13 | 26 | 23 | 19 | 13 | 25 | 23 | 19 | 13 | 23 | 22 | 18 | 12 |
|  | 1500 | kW | 4.00 | 4.09 | 4.22 | 4.35 | 4.31 | 4.40 | 4.55 | 4.69 | 4.58 | 4.68 | 4.84 | 5.00 | 4.82 | 4.93 | 5.09 | 5.26 | 5.03 | 5.14 | 5.31 | 5.49 | 5.20 | 5.32 | 5.50 | 5.69 |
|  |  | Amps | 15.5 | 15.9 | 16.4 | 17.1 | 16.8 | 17.2 | 17.8 | 18.5 | 18.3 | 18.8 | 19.4 | 20.2 | 19.6 | 20.1 | 20.8 | 21.6 | 20.9 | 21.4 | 22.2 | 23.0 | 22.2 | 22.7 | 23.5 | 24.4 |
|  |  | HI PR | 230 | 248 | 262 | 273 | 258 | 278 | 294 | 306 | 294 | 316 | 334 | 348 | 335 | 360 | 380 | 397 | 377 | 405 | 428 | 446 | 416 | 448 | 473 | 493 |
|  |  | LO PR | 99 | 105 | 115 | 122 | 104 | 111 | 121 | 129 | 108 | 115 | 126 | 134 | 114 | 121 | 132 | 141 | 119 | 127 | 139 | 148 | 124 | 131 | 143 | 153 |
|  |  | MBh | 56.3 | 58.0 | 62.7 | 67.3 | 55.0 | 56.6 | 61.3 | 65.8 | 53.7 | 55.3 | 59.8 | 64.2 | 52.4 | 53.9 | 58.4 | 62.6 | 49.8 | 51.2 | 55.5 | 59.5 | 46.1 | 47.5 | 51.4 | 55.1 |
|  |  | S/T | 0.78 | 0.70 | 0.53 | 0.34 | 0.81 | 0.72 | 0.55 | 0.35 | 0.83 | 0.74 | 0.56 | 0.36 | 0.86 | 0.77 | 0.58 | 0.37 | 0.89 | 0.80 | 0.60 | 0.39 | 0.90 | 0.80 | 0.61 | 0.39 |
|  |  | $\Delta T$ | 23 | 21 | 17 | 12 | 23 | 22 | 18 | 12 | 23 | 22 | 18 | 12 | 24 | 22 | 18 | 12 | 23 | 21 | 18 | 12 | 22 | 20 | 16 | 11 |
| 75 | 1750 | kW | 4.03 | 4.12 | 4.25 | 4.39 | 4.34 | 4.44 | 4.58 | 4.73 | 4.62 | 4.72 | 4.88 | 5.04 | 4.86 | 4.97 | 5.14 | 5.31 | 5.07 | 5.18 | 5.36 | 5.54 | 5.25 | 5.37 | 5.55 | 5.74 |
|  |  | Amps | 15.7 | 16.1 | 16.6 | 17.2 | 17.0 | 17.4 | 18.0 | 18.7 | 18.5 | 18.9 | 19.6 | 20.3 | 19.8 | 20.3 | 21.0 | 21.8 | 21.1 | 21.6 | 22.4 | 23.2 | 22.4 | 22.9 | 23.7 | 24.7 |
|  |  | HI PR | 233 | 250 | 264 | 276 | 261 | 281 | 297 | 309 | 297 | 320 | 337 | 352 | 338 | 364 | 384 | 401 | 380 | 409 | 432 | 451 | 420 | 452 | 478 | 498 |
|  |  | LO PR | 100 | 106 | 116 | 123 | 105 | 112 | 122 | 130 | 110 | 117 | 127 | 136 | 115 | 122 | 134 | 142 | 121 | 128 | 140 | 149 | 125 | 133 | 145 | 154 |
|  |  | MBh | 56.6 | 58.3 | 63.1 | 67.7 | 55.3 | 56.9 | 61.6 | 66.1 | 53.9 | 55.5 | 60.1 | 64.5 | 52.6 | 54.2 | 58.7 | 63.0 | 50.0 | 51.5 | 55.7 | 59.8 | 46.3 | 47.7 | 51.6 | 55.4 |
|  |  | S/T | 0.79 | 0.71 | 0.54 | 0.35 | 0.82 | 0.73 | 0.56 | 0.36 | 0.84 | 0.75 | 0.57 | 0.37 | 0.87 | 0.78 | 0.59 | 0.38 | 0.90 | 0.81 | 0.61 | 0.39 | 0.91 | 0.81 | 0.62 | 0.40 |
|  |  | $\Delta T$ | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 21 | 19 | 16 | 11 | 19 | 18 | 15 | 10 |
|  | 2000 | kW | 4.06 | 4.15 | 4.28 | 4.42 | 4.38 | 4.48 | 4.62 | 4.77 | 4.66 | 4.76 | 4.92 | 5.08 | 4.90 | 5.01 | 5.18 | 5.35 | 5.11 | 5.23 | 5.40 | 5.59 | 5.29 | 5.41 | 5.59 | 5.78 |
|  |  | Amps | 15.8 | 16.2 | 16.7 | 17.4 | 17.1 | 17.6 | 18.1 | 18.8 | 18.7 | 19.1 | 19.8 | 20.5 | 20.0 | 20.5 | 21.2 | 22.0 | 21.3 | 21.8 | 22.6 | 23.5 | 22.6 | 23.2 | 24.0 | 24.9 |
|  |  | HI PR | 235 | 253 | 267 | 278 | 264 | 284 | 300 | 312 | 300 | 323 | 341 | 355 | 341 | 367 | 388 | 405 | 384 | 413 | 437 | 455 | 424 | 457 | 482 | 503 |
|  |  | LO PR | 101 | 107 | 117 | 125 | 106 | 113 | 124 | 132 | 111 | 118 | 129 | 137 | 116 | 124 | 135 | 144 | 122 | 130 | 141 | 151 | 126 | 134 | 146 | 156 |
| $\begin{array}{ll}\text { IDB: Entering Indoor Dry Bulb Temperature } \\ \text { High and low pressures are measured at the liquid and suction service valves. } & \text { Shaded area reflects ACCA (TVA) conditions }\end{array}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  | Outdoor Ambient Temperature |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 65 |  |  |  | 75 |  |  |  | 85 |  |  |  | 95 |  |  |  | 105 |  |  |  | 115 |  |  |  |
|  |  |  | Entering Indoor Wet Bulb Temper |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| IDB | AIRflow |  | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 | 59 | 63 | 67 | 71 |
| 80 | 1500 | MBh | 55.6 | 56.9 | 60.7 | 64.9 | 54.3 | 55.5 | 59.3 | 63.4 | 53.0 | 54.2 | 57.9 | 61.9 | 51.8 | 52.9 | 56.5 | 60.4 | 49.2 | 50.2 | 53.7 | 57.4 | 45.5 | 46.5 | 49.7 | 53.2 |
|  |  | S/T | 0.82 | 0.77 | 0.62 | 0.47 | 0.85 | 0.80 | 0.65 | 0.48 | 0.87 | 0.82 | 0.66 | 0.50 | 0.90 | 0.84 | 0.69 | 0.51 | 0.93 | 0.87 | 0.71 | 0.53 | 0.94 | 0.88 | 0.72 | 0.54 |
|  |  | $\Delta T$ | 28 | 27 | 23 | 19 | 28 | 27 | 24 | 19 | 28 | 27 | 24 | 19 | 28 | 27 | 24 | 19 | 28 | 27 | 23 | 19 | 26 | 25 | 22 | 17 |
|  |  | kW | 4.03 | 4.12 | 4.25 | 4.39 | 4.35 | 4.44 | 4.58 | 4.73 | 4.62 | 4.72 | 4.88 | 5.04 | 4.86 | 4.97 | 5.14 | 5.31 | 5.07 | 5.18 | 5.36 | 5.54 | 5.25 | 5.37 | 5.55 | 5.74 |
|  |  | Amps | 15.7 | 16.1 | 16.6 | 17.2 | 17.0 | 17.4 | 18.0 | 18.7 | 18.5 | 18.9 | 19.6 | 20.3 | 19.8 | 20.3 | 21.0 | 21.8 | 21.1 | 21.6 | 22.4 | 23.2 | 22.4 | 22.9 | 23.7 | 24.7 |
|  |  | HIPR | 233 | 250 | 264 | 276 | 261 | 281 | 297 | 309 | 297 | 320 | 337 | 352 | 338 | 364 | 384 | 401 | 380 | 409 | 432 | 451 | 420 | 452 | 478 | 498 |
|  |  | LO PR | 100 | 106 | 116 | 123 | 105 | 112 | 122 | 130 | 110 | 117 | 127 | 136 | 115 | 122 | 134 | 142 | 121 | 128 | 140 | 149 | 125 | 133 | 145 | 154 |
|  | 1750 | MBh | 57.3 | 58.6 | 62.6 | 66.9 | 56.0 | 57.2 | 61.1 | 65.3 | 54.6 | 55.8 | 59.6 | 63.8 | 53.3 | 54.5 | 58.2 | 62.2 | 50.6 | 51.7 | 55.3 | 59.1 | 46.9 | 47.9 | 51.2 | 54.7 |
|  |  | S/T | 0.86 | 0.80 | 0.65 | 0.49 | 0.89 | 0.83 | 0.68 | 0.51 | 0.91 | 0.85 | 0.70 | 0.52 | 0.94 | 0.88 | 0.72 | 0.54 | 1.00 | 0.92 | 0.75 | 0.56 | 1.00 | 0.92 | 0.75 | 0.56 |
|  |  | $\Delta T$ | 26 | 25 | 22 | 17 | 26 | 25 | 22 | 17 | 26 | 25 | 22 | 17 | 26 | 25 | 22 | 18 | 27 | 25 | 22 | 17 | 25 | 23 | 20 | 16 |
|  |  | kW | 4.07 | 4.15 | 4.28 | 4.42 | 4.38 | 4.48 | 4.62 | 4.77 | 4.66 | 4.76 | 4.92 | 5.08 | 4.90 | 5.01 | 5.18 | 5.35 | 5.11 | 5.23 | 5.40 | 5.59 | 5.29 | 5.41 | 5.59 | 5.79 |
|  |  | Amps | 15.8 | 16.2 | 16.7 | 17.4 | 17.1 | 17.6 | 18.2 | 18.9 | 18.7 | 19.1 | 19.8 | 20.5 | 20.0 | 20.5 | 21.2 | 22.0 | 21.3 | 21.8 | 22.6 | 23.5 | 22.6 | 23.2 | 24.0 | 24.9 |
|  |  | HIPR | 235 | 253 | 267 | 279 | 264 | 284 | 300 | 313 | 300 | 323 | 341 | 355 | 342 | 368 | 388 | 405 | 384 | 414 | 437 | 455 | 425 | 457 | 482 | 503 |
|  |  | LO PR | 101 | 107 | 117 | 125 | 107 | 113 | 124 | 132 | 111 | 118 | 129 | 137 | 116 | 124 | 135 | 144 | 122 | 130 | 142 | 151 | 126 | 134 | 146 | 156 |
|  | 2000 | MBh | 57.6 | 58.8 | 62.9 | 67.2 | 56.2 | 57.5 | 61.4 | 65.6 | 54.9 | 56.1 | 59.9 | 64.1 | 53.6 | 54.7 | 58.5 | 62.5 | 50.9 | 52.0 | 55.6 | 59.4 | 47.1 | 48.2 | 51.5 | 55.0 |
|  |  | S/T | 0.87 | 0.82 | 0.66 | 0.50 | 0.90 | 0.85 | 0.69 | 0.51 | 0.92 | 0.87 | 0.71 | 0.53 | 0.95 | 0.89 | 0.73 | 0.54 | 1.00 | 0.93 | 0.76 | 0.56 | 1.00 | 0.94 | 0.76 | 0.57 |
|  |  | $\Delta T$ | 23 | 22 | 19 | 15 | 23 | 22 | 19 | 16 | 23 | 22 | 19 | 16 | 23 | 23 | 20 | 16 | 23 | 22 | 19 | 15 | 22 | 21 | 18 | 14 |
|  |  | kW | 4.10 | 4.19 | 4.32 | 4.46 | 4.42 | 4.51 | 4.66 | 4.81 | 4.70 | 4.80 | 4.96 | 5.12 | 4.94 | 5.06 | 5.22 | 5.40 | 5.16 | 5.27 | 5.45 | 5.63 | 5.34 | 5.46 | 5.64 | 5.84 |
|  |  | Amps | 16.0 | 16.4 | 16.9 | 17.6 | 17.3 | 17.7 | 18.3 | 19.0 | 18.8 | 19.3 | 20.0 | 20.7 | 20.2 | 20.7 | 21.4 | 22.2 | 21.5 | 22.0 | 22.8 | 23.7 | 22.8 | 23.4 | 24.2 | 25.1 |
|  |  | HIPR | 237 | 255 | 270 | 281 | 266 | 287 | 303 | 316 | 303 | 326 | 344 | 359 | 345 | 371 | 392 | 409 | 388 | 418 | 441 | 460 | 429 | 461 | 487 | 508 |
|  |  | LO PR | 102 | 108 | 118 | 126 | 108 | 114 | 125 | 133 | 112 | 119 | 130 | 138 | 117 | 125 | 136 | 145 | 123 | 131 | 143 | 152 | 127 | 135 | 148 | 157 |


| 85 | 1500 | MBh | 56.6 | 57.7 | 60.4 | 64.5 | 55.3 | 56.4 | 59.0 | 63.0 | 54.0 | 55.0 | 57.6 | 61.5 | 52.7 | 53.7 | 56.2 | 60.0 | 50.0 | 51.0 | 53.4 | 57.0 | 46.3 | 47.2 | 49.5 | 52.8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S/T | 0.86 | 0.83 | 0.75 | 0.61 | 0.89 | 0.86 | 0.77 | 0.63 | 0.91 | 0.88 | 0.79 | 0.64 | 0.94 | 0.91 | 0.82 | 0.66 | 0.98 | 0.94 | 0.85 | 0.69 | 0.98 | 0.95 | 0.86 | 0.70 |
|  |  | $\Delta T$ | 30 | 29 | 28 | 24 | 30 | 30 | 28 | 24 | 30 | 30 | 28 | 24 | 30 | 30 | 28 | 24 | 30 | 29 | 28 | 24 | 28 | 28 | 26 | 23 |
|  |  | kW | 4.07 | 4.15 | 4.28 | 4.42 | 4.38 | 4.48 | 4.62 | 4.77 | 4.66 | 4.76 | 4.92 | 5.08 | 4.90 | 5.01 | 5.18 | 5.35 | 5.11 | 5.23 | 5.40 | 5.59 | 5.29 | 5.41 | 5.59 | 5.79 |
|  |  | Amps | 15.8 | 16.2 | 16.7 | 17.4 | 17.1 | 17.6 | 18.2 | 18.9 | 18.7 | 19.1 | 19.8 | 20.5 | 20.0 | 20.5 | 21.2 | 22.0 | 21.3 | 21.8 | 22.6 | 23.5 | 22.6 | 23.2 | 24.0 | 24.9 |
|  |  | HI PR | 235 | 253 | 267 | 279 | 264 | 284 | 300 | 313 | 300 | 323 | 341 | 355 | 342 | 368 | 388 | 405 | 384 | 414 | 437 | 455 | 425 | 457 | 482 | 503 |
|  |  | LO PR | 101 | 107 | 117 | 125 | 107 | 113 | 124 | 132 | 111 | 118 | 129 | 137 | 116 | 124 | 135 | 144 | 122 | 130 | 142 | 151 | 126 | 134 | 146 | 156 |
|  |  | MBh | 58.3 | 59.4 | 62.2 | 66.4 | 56.9 | 58.1 | 60.8 | 64.9 | 55.6 | 56.7 | 59.4 | 63.3 | 54.2 | 55.3 | 57.9 | 61.8 | 51.5 | 52.5 | 55.0 | 58.7 | 47.7 | 48.7 | 51.0 | 54.4 |
|  |  | S/T | 0.90 | 0.87 | 0.78 | 0.64 | 0.93 | 0.90 | 0.81 | 0.66 | 0.96 | 0.92 | 0.83 | 0.68 | 0.99 | 0.95 | 0.86 | 0.70 | 1.00 | 0.99 | 0.89 | 0.72 | 1.00 | 1.00 | 0.90 | 0.73 |
|  |  | $\Delta T$ | 28 | 27 | 26 | 22 | 28 | 27 | 26 | 22 | 28 | 27 | 26 | 22 | 28 | 28 | 26 | 23 | 27 | 27 | 26 | 22 | 25 | 25 | 24 | 21 |
|  | 1750 | kW | 4.10 | 4.19 | 4.32 | 4.46 | 4.42 | 4.51 | 4.66 | 4.81 | 4.70 | 4.80 | 4.96 | 5.12 | 4.95 | 5.06 | 5.22 | 5.40 | 5.16 | 5.27 | 5.45 | 5.63 | 5.34 | 5.46 | 5.64 | 5.84 |
|  | 1750 | Amps | 16.0 | 16.4 | 16.9 | 17.6 | 17.3 | 17.7 | 18.3 | 19.0 | 18.8 | 19.3 | 20.0 | 20.7 | 20.2 | 20.7 | 21.4 | 22.2 | 21.5 | 22.0 | 22.8 | 23.7 | 22.8 | 23.4 | 24.2 | 25.1 |
|  |  | HI PR | 237 | 255 | 270 | 281 | 266 | 287 | 303 | 316 | 303 | 326 | 344 | 359 | 345 | 371 | 392 | 409 | 388 | 418 | 441 | 460 | 429 | 461 | 487 | 508 |
|  |  | LO PR | 102 | 108 | 118 | 126 | 108 | 114 | 125 | 133 | 112 | 119 | 130 | 138 | 117 | 125 | 136 | 145 | 123 | 131 | 143 | 152 | 127 | 135 | 148 | 157 |
|  |  | MBh | 58.6 | 59.7 | 62.5 | 66.7 | 57.2 | 58.3 | 61.1 | 65.2 | 55.9 | 56.9 | 59.6 | 63.6 | 54.5 | 55.6 | 58.2 | 62.1 | 51.8 | 52.8 | 55.3 | 59.0 | 48.0 | 48.9 | 51.2 | 54.6 |
|  |  | S/T | 0.91 | 0.88 | 0.79 | 0.64 | 0.94 | 0.91 | 0.82 | 0.67 | 0.97 | 0.93 | 0.84 | 0.68 | 1.00 | 0.96 | 0.87 | 0.71 | 1.00 | 1.00 | 0.90 | 0.73 | 1.00 | 1.00 | 0.91 | 0.74 |
|  |  | $\Delta T$ | 25 | 24 | 23 | 20 | 25 | 24 | 23 | 20 | 25 | 24 | 23 | 20 | 25 | 25 | 23 | 20 | 24 | 24 | 23 | 20 | 22 | 22 | 21 | 19 |
|  | 2000 | kW | 4.13 | 4.22 | 4.35 | 4.50 | 4.45 | 4.55 | 4.70 | 4.85 | 4.74 | 4.84 | 5.00 | 5.17 | 4.99 | 5.10 | 5.27 | 5.45 | 5.20 | 5.32 | 5.49 | 5.68 | 5.38 | 5.50 | 5.69 | 5.89 |
|  |  | Amps | 16.1 | 16.5 | 17.1 | 17.7 | 17.5 | 17.9 | 18.5 | 19.2 | 19.0 | 19.5 | 20.1 | 20.9 | 20.4 | 20.9 | 21.6 | 22.4 | 21.7 | 22.2 | 23.0 | 23.9 | 23.0 | 23.6 | 24.4 | 25.4 |
|  |  | HI PR | 240 | 258 | 272 | 284 | 269 | 289 | 306 | 319 | 306 | 329 | 348 | 363 | 348 | 375 | 396 | 413 | 392 | 422 | 445 | 465 | 433 | 466 | 492 | 513 |
|  |  | LO PR | 103 | 109 | 119 | 127 | 109 | 116 | 126 | 134 | 113 | 120 | 131 | 140 | 119 | 126 | 138 | 147 | 124 | 132 | 144 | 154 | 129 | 137 | 149 | 159 |
|  | g In | r Dry | Te | ture |  |  |  |  |  |  | haded | a ref | AH | nditio |  |  |  |  |  |  |  | Am | = out | or ur | ps | p.+f |




[^4]

[^5]| Model | DESCRIPTION | $\begin{gathered} \text { ASX13 } \\ \text { 018* } \end{gathered}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 024* } \end{aligned}$ | $\begin{gathered} \text { ASX13 } \\ \text { 030* } \end{gathered}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 036* } \end{aligned}$ | $\begin{gathered} \text { ASX13 } \\ \text { 042* } \end{gathered}$ | $\begin{aligned} & \text { ASX13 } \\ & 048^{*} \end{aligned}$ | $\begin{aligned} & \text { ASX13 } \\ & \text { 060* } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ABK-20 | Anchor Bracket Kit ${ }^{\text {® }}$ | X | X | X | X | X | X | X |
| ASC-01 | Anti-Short Cycle Kit | $x$ | X | X | X | X | X | x |
| CSR-U-1 | Hard-start Kit | $x$ | $x$ | $x$ | $x$ | X | X | x |
| FSK01A ${ }^{1}$ | Freeze Protection Kit | X | X | X | X | X | X | X |
| LAKT01A | Low-Ambient Kit | X | X | $x$ | X | X | X | X |
| LSK01A | Liquid Line Solenoid Kit | X | X | X | X | X | X | X |
| OT18-60A | Outdoor Thermostat | X | X | X | X | X | X | X |
| TX2N4A ${ }^{2}$ | TXV Kit | X | X |  |  |  |  |  |
| TX3N4 ${ }^{2}$ | TXV Kit |  |  | X | X |  |  |  |
| TX5N4 ${ }^{2}$ | TXV Kit |  |  |  |  | X | X | X |

- Contains 20 brackets; four brackets needed to anchor unit to pad

1 Installed on indoor coil
2 Field-installed, non-bleed, expansion valve kit - Condensing units and heat pumps with reciprocating or rotary compressors require the use of start-assist components when used in conjunction with an indoor coil using a non-bleed thermal expansion valve refrigerant metering device or liquid line solenoid kit. The TXV should always be sized based on the tonnage of the outdoor unit.

WILLIAM STARCK ARCHITECTS, INC.

October 27, 2020

City of Portsmouth Zoning Board of Adjustment
1 Junking Avenue
Portsmouth NH, 03801

## Re: Citizens Bank <br> Zoning Variance Request Criteria

## Dear Zoning Board Members:

This letter is to supplement the Land Use Application submitted by State Permits, Inc. on behalf of Citizens Bank to seek a Land Use relief from the City of Portsmouth's Zoning Ordinance and is intended to address $\S 10.233 .20$ by providing an explanation that the Variance request meets the required criteria for authorization of a Variance by the Board.
§10.233.21 The variance will not be contrary to the public interest;
The character of the Gateway Corridor District shall remain intact.
§10.233.22 The spirit of the Ordinance will be observed;
The proposal, as represented, will benefit the surrounding businesses and establishments at the shopping mall/.
§10.233.23 Substantial justice will be done;
The proposed free-standing automated teller machine (ATM) is considered an accessory use to a principal use and not attached to a principal structure, so by enforcing the ordinance would result in a loss of potential revenue to the local businesses and establishments and the general public.
§10.233.24 The values of surrounding properties will not be diminished;
The proposed free-standing automated teller machine (ATM) will enhance the surrounding business properties and promote commerce.

## §10.233.25 Literal enforcement of the provisions of the Ordinance would result in an

 unnecessary hardship;Without the authorized Variance, Citizens Bank and Bromley Portsmouth, LLC would not be able to keep the agreement between both parties resulting in a hardship of professional fees paid and a termination of contract between Citizens Bank and Bromley Portsmouth, LLC.

Citizens Bank is proposing to construct a free-standing walk-up automated teller machine (ATM) structure located at 1465 Woodbury Avenue and owned by Bromley Portsmouth, LLC through a lease agreement. The property land use description is identified as a shopping mall, approximately 19.26 acres and designated by zoning as (G1) Gateway Corridor District. The existing parking lot located at 1465 Woodbury Avenue provides six-

WILLIAM STARCK ARCHITECTS, INC.
hundred-sixty-four (664) existing parking spaces, of which thirty (30) spaces are designated for handicap accessible parking.

The proposed free-standing structure design shall consist of a single use automated teller machine (ATM) housed within a prefabricated structure erected on a reinforced concrete slab. A handicap accessible concrete sidewalk shall be provided so that the general public can access the walk-up automated teller machine (ATM). In addition to the existing parking spaces, two (2) new additional parking spaces will be provided solely for parking at the free-standing walk-up automated teller machine (ATM). The designated parking spaces will consist of one handicap van accessible parking space and one regular vehicle space. The perimeter of the parking lot shall be constructed of a six inch wide precast concrete curb defining the boundary of the parking lot. Improvements to the existing open lawn area at the proposed freestanding automated teller machine (ATM) site shall include plantings and new loam and seed.

Citizens Bank and Bromley Portsmouth, LLC are requesting a land use zoning variance from the City of Portsmouth zoning ordinance $\S 10.571$. The City of Portsmouth zoning ordinance defines an ATM as "an unattended electronic device that is activated by customers to conduct financial transactions. An ATM may be located on the outside of a building, or in an accesscontrolled entrance to a building, or within a principal use in a building and may serve pedestrians or patrons in motor vehicles. An ATM servicing patrons in motor vehicles, must meet the standards for drive-thru establishments provided in this Ordinance. An ATM is permitted only as an accessory use to a related principal use and is not permitted as a principal use or in a freestanding structure not attached to a principal use.

Zoning ordinance §10.571.states that no accessory building, structure or use, shall be located in any required front yard, or closer to a street than the principal building. There is no principal building or structure as it relates to a financial institution at the current property.

Citizens Bank and Bromley Portsmouth, LLC are seeking an authorization of a variance from the Board of Adjustments and Rules to consider this request based on that there is no financial institution principal building or structure on the property that the proposed automated teller machine (ATM) can be an accessory use too. By constructing the proposed free-standing walk-up automated teller machine (ATM) at the shopping mall at 1465 Woodbury Avenue will not only benefit the surrounding businesses, but can also attract new consumers to the shopping mall and visitors to the area.

Sincerely,
WILLIAM STARCK ARCHITECTS, INC.


Michael Pereira
Project Manager
MP/ml
Doc.ZoningOrdinanceLet.

October 27, 2020
City of Portsmouth Zoning Board of Adjustment
1 Junking Avenue
Portsmouth NH, 03801

## RE: Citizens Bank Walk-Up ATM <br> 1465 Woodbury Avenue <br> Portsmouth, NH 03801 <br> Relief of Land Use Criteria

Dear Board Members,
Citizens Bank is proposing to construct a free-standing walk-up automated teller machine (ATM) at 1465 Woodbury Avenue in Portsmouth, NH through a land-lease agreement with Bromley Portsmouth, LLC. The existing property is designated by zoning as a Gateway Corridor District and categorized as a shopping mall. The current shopping mall is approximately 19.25 acres. The proposed location for construction the freestanding walk-up automated teller machine (ATM) structure is located on a small portion of lawn area, parallel to Woodbury Avenue and is adjacent to the existing Wendy's restaurant. The proposed location currently does not have any accessory use component or structure constructed in the proposed vicinity.

The proposed free-standing walk-up automated teller machine (ATM) structure will be constructed on a reinforced concrete pad, measuring $8^{\prime}-3^{\prime \prime}$ in width by $8^{\prime}-9^{\prime \prime}$ in length and will have a handicap accessible sidewalk that permits accesses to the automated teller machine (ATM). The prefabricated ATM structure will be erected on the reinforced concrete slab and will house the automated teller machine (ATM). The prefabricated structure measures 6 '-5" in width by $7^{\prime}-7$ " in depth and has a height of $10^{\prime}-31 / 4^{\prime \prime}$ at the roof canopy. The canopy overhang at the teller side shall have an overhang dimension of $4^{\prime}-0$ ". The freestanding automated teller machine (ATM) structure shall be protected by eight (8) concrete filled galvanized steel bollards.

The existing shopping mall parking lot located at 1465 Woodbury Avenue currently provides six-hundred thirty-five (635) existing parking spaces, of which thirty (30) spaces are designated for handicap accessible parking. The proposed free-standing walk-up automated teller machine (ATM) will provide two (2) additional parking spaces consisting of one handicap van accessible parking space with striped access space and one regular vehicle space. The proposed additional parking spaces complies with zoning ordinance, §10.1112.321 Parking Requirements for Nonresidential Uses. Use No.5.10-5.30 identifies one (1) parking space per 350 sf GFA for professional, business and financial services. The proposed free-standing automated teller machine is approximately 72 sf and requires one (1) parking space to satisfy the requirements; two parking spaces are proposed. The proposed parking lot measures $25^{\prime}-6$ "
width and $20^{\prime}-0^{\prime \prime}$ in depth. The perimeter of the parking lot shall be constructed of a six inch wide precast concrete curb defining the boundary of the parking lot.

Plantings are also being proposed to be planted adjacent to the free-standing walk-up automated teller machine (ATM) structure. Plantings will not only enhance the existing landscape but will also conceal the electrical meter and panel support panel. Any lawn areas disturbed outside the work area shall be repaired in-like kind.

The proposed project is to construct a free-standing walk-up automated teller machine (ATM) so the total number of dwelling units, new hotel rooms, restaurant gross floor area and loading spaces are not applicable. The Valuation of New Construction is estimated at $\$ 60,000.00$ dollars.

The Project Representatives are as follows:
Michael Pereira, Project Manager - William Starck Architects, Inc.
120 Cove Street
Fall River, MA 02720
P: 508-679-5733
E: mpereira@starckarchitects.com

Dylan Lincoln, Project Manager - Citizens Bank
P: 401-339-0721
E: dylan.c.lincoln@citizensbank.com

Tom Godfrey, Manager - Granite Development, LLC
P: 781-258-1199
E: Tomg10@comcast.net

Sincerely,
WILLIAM STARCK ARCHITECTS, INC.


Michael Pereira
Project Manager
MP/ml
Doc.LandUseReliefLet.

October 27, 2020

City of Portsmouth Zoning Board of Adjustment 1 Junking Avenue
Portsmouth NH, 03801

## Re: Citizens Bank Walk-Up ATM 1465 Woodbury Avenue Portsmouth, NH 03801 Zoning Variance Request Criteria

## Existing Condition Site Photos:



Photo 1: View facing south at existing to remain drive aisle.


Photo 2: View facing west at existing main entrance to the shopping mall.


Photo 3: Partial view facing northwest at existing Wendy's restaurant obstructed by existing-to-remain trees.


Photo 4: View facing north at existing shopping mall parking lot, adjacent to existing drive aisle at proposed building site.

## WSA

WILLIAM STARCK ARCHITECTS. INC.


Photo 5: View facing southwest at main shopping mall entrance.


Photo 6: View facing west at proposed building site.

Page 6 of 8


Photo 7: Conceptual perspective view of the free-standing ATM facing south at the proposed building site.


Photo 8: Conceptual perspective view of the free-standing ATM facing north at the shopping mall entrance.









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WILLIAM STARCK




敞Citizens Bank



A2.5





# RE: APPLICATION OF MICHAEL PETRIN 

## 239 NORTHWEST STREET

Applicant's Narrative

## I. The Property:

Michael Petrin is a co-owner of the property located at 239 Northwest Street. The property consists of a single family residence, constructed circa 1830, which is located on a lot containing $3,722 \mathrm{sq}$. ft . The lot is non-conforming in size. The existing structure is non-conforming as to front, rear and left side yards, lot coverage, and open space.

The lot itself abuts the US Route 1 Bypass and was the subject of takings by the Maine- NH Interstate Bridge Authority for the Sarah Mildred Long Bridge in 1939, when 6,400 square feet of the lot were taken, leaving only 3,722 square feet of lot area.. The single family residence is located within 50 feet of the bridge on ramp and -0 - feet from the Route 1 Bypass right-of-way.

The existing structure is approximately one foot from Northwest Street which dead ends at the adjacent property to the east.

The entire structure is located within 100' of the North Mill Pond. The applicant also is the coowner of a waterfront vacant lot across Northwest Street which is approximately 2615 sq. ft. in size and is the location of a dock upon the Mill Pond.

## II. The Proposal:

The applicant proposes to demolish a shed addition to the rear of the home and to construct a two-story addition to the rear of the home. The net increase in the square footage of the footprint would be 99 square feet. In addition, an existing deck of 30 square feet would be removed, and a new deck of approximately the same size constructed.

## III. Variances Required:

Because the structure and lot are non-conforming, variances from Article 3, Sections 10.311 and 10.321 to alter a non-conforming structure upon a non-conforming lot, variances from Article 5, Sec. 10.521 for a 1.9 foot rear yard setback, lot coverage of $48 \%$ and open space of $28 \%$ are also required.

## IV. ARGUMENT

The Applicant believes that the 5 criteria necessary for the Board to grant the requested Variances are met by the within application.
A. First and foremost granting the Variances requested, will not substantially alter the characteristics of the neighborhood, nor will public health, safety or welfare be threatened. In essence the proposal is to demolish the nonconforming shed at the rear of the home and to replace it with a 2 story addition adjacent to where the shed was. There will be a 99 Square foot increase in the lot coverage.

Applying the tests set forth in the Malachy Glen Case, granting the Variances would not be contrary to the public interest, nor would the spirit and intent of the ordinance be violated.
B. Granting the requested Variances will not result in any diminution in value of surrounding properties. The Applicant has spoken to abutters who are supportive of the proposal to renovate the existing structure. As can be seen from the submitted photos and renderings the proposed addition would be in keeping with the characteristics of the existing structure and will require approval by the HDC. A work session has been held with the HDC and feedback from the Commission was positive.
C. Granting the requested Variances would result in substantial justice being done as the hardship upon the owner, were the Variances to be denied, would not be outweighed by some benefit to the general public in denying the Variances. When Board members apply the balancing test, it should be clear that substantial justice will be done by granting the Variances. The general public would in no way be benefited by a denial, while the applicant would suffer a hardship.
D. Finally, ii is abundantly clear that there is a hardship inherent in the land which requires that variances be granted. The property was reduced in size by two thirds in 1939 when 6400 square feet of land were taken by eminent domain. The home was constructed in 1830 before any zoning existed. Due to the takings, and the application of the zoning ordinance to the existing lot and structure, both lot size and coverage became nonconforming. Setbacks, front, and rear and open space became nonconforming when the zoning ordinance went into effect. Secondly there is no fair and substantial relationship between the purpose of the ordinance as it relates to the particular property. There is adequate light and air and access for emergency vehicles in and around the structure. The fact that there is an unbuildable 2600 square foot, waterfront lot owned by the applicant across Northwest Street certainly mitigates the open space requirements and lot coverage requirements, as does the fact that Northwest Street dead ends at the applicants property line, with a turn around abutting the property. Lastly the Use is a permitted use in the district.

## v. CONCLUSION

In conclusion, the applicant believes the criteria necessary for the Board to grant the requested Variances have been met, and thus, the Variances should be granted.



## 239 NORTHWEST ST

| Location 239 NORTHWEST ST | Mblu | $0122 / 0003 / 0000 / /$ |  |
| ---: | :--- | ---: | :--- |
| Acct\# | 33612 | Owner | PETRIN MICHAEL GEORGE <br> $(12.3 \% ~ I N T)$ |
| PBN |  | Assessment | $\$ 403,300$ |

## Current Value

| Appraisal |  |  |  |
| :---: | :---: | :---: | :---: |
| Valuation Year | Improvements | Land | Total |
| 2019 | \$146,000 | \$257,300 | \$403,300 |
| Assessment |  |  |  |
| Valuation Year | Improvements | Land | Total |
| 2019 | \$146,000 | \$257,300 | \$403,300 |


| Owner of Record |  |  |  |
| :--- | :--- | :--- | :--- |
| Owner | PETRIN MICHAEL GEORGE $(12.3 \%$ INT $)$ | Sale Price | $\$ 400,000$ |
| Co-Owner | LAVERRIERE KATIE MARIE | Certificate |  |
| Address | 268 DENNETT ST | Book \& Page | $6138 / 647$ |
|  | PORTSMOUTH, NH 03801 | Sale Date | $07 / 13 / 2020$ |
|  |  | Instrument | $\mathbf{8 1}$ |

## Ownership History

| Ownership History |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Owner | Sale Price | Certificate | Book \& Page | Instrument | Sale Date |
| PETRIN MICHAEL GEORGE ( $12.3 \%$ INT) | \$400,000 |  | 6138/647 | 81 | 07/13/2020 |
| KENNETT WILLIAM C | \$0 |  | 2304/1890 |  | 02/21/1978 |
| KENNETT WILLIAM C | \$0 |  | 2304/1890 |  | 02/21/1978 |

## Building Information

## Building 1 : Section 1

| Living Area: | 1,545 |
| :---: | :---: |
| Replacement Cost: | \$275,153 |
| Building Percent Good: | 53 |
| Replacement Cost |  |
| Less Depreciation: | \$145,800 |
| Building Attributes |  |
| Field | Description |
| Style | Conventional |
| Model | Residential |
| Grade: | C+ |
| Stories: | 1.75 |
| Occupancy | 1 |
| Exterior Wall 1 | Clapboard |
| Exterior Wall 2 |  |
| Roof Structure: | Gable/Hip |
| Roof Cover | Asph/F Gls/Cmp |
| Interior Wall 1 | Plastered |
| Interior Wall 2 |  |
| Interior FIr 1 | Carpet |
| Interior Flr 2 | Hardwood |
| Heat Fuel | Gas |
| Heat Type: | Warm Air |
| AC Type: | None |
| Total Bedrooms: | 3 Bedrooms |
| Total Bthrms: | 1 |
| Total Half Baths: | 0 |
| Total Xtra Fixtrs: | 1 |
| Total Rooms: | 7 |
| Bath Style: | Avg Quality |
| Kitchen Style: | Avg Quality |
| Kitchen $\mathbf{G r}$ |  |
| WB Fireplaces | 0 |
| Extra Openings | 0 |
| Metal Fireplaces | 0 |
| Extra Openings | 0 |
| Bsmt Garage |  |


(http://images.vgsi.com/photos2/PortsmouthNHPhotos/ $/ 00101179 / 38 . j p g$ )
Building Layout

(http://images.vgsi.com/photos2/PortsmouthNHPhotos//Sketches/33612_3

| Building Sub-Areas (sq ft) |  |  | Legend |  |
| :--- | :--- | ---: | ---: | :---: |
| Code | Description | Gross <br> Area | Living <br> Area |  |
| BAS | First Floor | 1,005 | 1,005 |  |
| TQS | Three Quarter Story | 720 | 540 |  |
| FSP | Porch, Screened | 204 | 0 |  |
| UBM | Basement, Unfinished | 1,005 | 0 |  |
| UST | Utility, Storage, Unfinished | 156 | 0 |  |
| WDK | Deck, Wood | 50 | 0 |  |
|  |  | 3,140 | 1,545 |  |

## Extra Features

## Land

| Land Use |  |
| :--- | :--- |
|  |  |
| Use Code | 1012 |
| Description | SFR WATERINFL |
| Zone | GRA |
| Neighborhood | 131 |
| Alt Land Appr | No |


| Land Line Valuation |  |
| :--- | ---: |
|  |  |
| Size (Acres) | 0.11 |
| Frontage |  |
| Depth |  |
| Assessed Value | $\$ 257,300$ |
| Appraised Value | $\$ 257,300$ |

Category

Outbuildings

| Outbulldings |  |  |  |  |  | Legend |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Code | Description | Sub Code | Sub Description | Size | Value | Bldg \# |
| SHD1 | SHED FRAME |  |  | 220 S.F. | \$200 | 1 |

## Valuation History

| Appraisal |  |  |  |
| :---: | :---: | :---: | :---: |
| Valuation Year | Improvements | Land | Total |
| 2018 | \$129,700 | \$233,900 | \$363,600 |
| 2017 | \$129,700 | \$233,900 | \$363,600 |
| 2016 | \$118,100 | \$160,100 | \$278,200 |


| Assessment |  |  |  |
| :---: | :---: | :---: | :---: |
| Valuation Year | Improvements | Land | Total |
| 2018 | \$129,700 | \$233,900 | \$363,600 |
| 2017 | \$129,700 | \$233,900 | \$363,600 |
| 2016 | \$118,100 | \$160,100 | \$278,200 |

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# APPLICATION OF JESSICA KAISER and JOHN McMAHON 30 SPRING STREET, PORTSMOUTH <br> Map 130, Lot 13 

## APPLICANT'S NARRATIVE

## I. THE PROPERTY:

The applicants, Jessica Kaiser and John McMahon, own the single family residence located at 30 Spring Street, where they live with their three young children. They propose to add dormers and a covered porch to the dwelling.

As a result of the pandemic, the applicants are working from home and need the additional space the dormers will provide for a home office. The covered porch is desirable as home deliveries are ever increasing, and a safe, sheltered space for such deliveries is needed. In addition, the porch will provide a sheltered environment from which the applicants may keep an eye on their children when they play with their friends on Spring Street.

According to city tax records, the home was constructed in 1900. The existing attached garage was added 2004. The property is in the GRA zone and is nonconforming as to frontage, lot area, building coverage and front and side yard setbacks.

The dwelling's existing right side yard setback at its closest point is .4 feet. The front yard setback is 6.1 feet, however, what appears for all intents and purposes as the majority of the applicants' front lawn is in fact outside the boundary of their property. This is consistent all along this portion of Spring Street. The applicant has not calculated the applicable average front yard within 200 feet of the property to take advantage of the front yard exception for existing alignments contemplated by Section10.516.10, but it is assumed that this would create a minimum setback far less than 15 feet. We have submitted both the static and MapGeo tax maps for the board's consideration to obtain an understanding of the existing front yards on Spring Street. The current building coverage is $26.8 \%$, where $25 \%$ is the maximum permitted.

The applicants propose to add a dormer addition on either side of the roofline within the existing footprint, which will fall within the 10 foot right side yard setback and the 15 foot front yard setback. In addition, the applicants propose to replace the existing stairs and landing leading to the front door with a covered porch which wraps around the right side of the house. The proposed porch would also fall within the 15 foot front yard setback and the 10 foot right side yard setback.

The proposed dormers will be approximately 7.4 feet from the front property line and approximately 4.4 feet from the right side property line, entirely within the existing footprint.

The proposed covered porch will be $5 "$ from the front property line and 3 " from the side property line. The steps down from the existing front door landing actually extend over the property line now and will do so with the proposed porch. It should be noted that the steps from the porch of the neighbor to the right and the house to the left also extend past the property line, a condition that occurs in at least two other instances on Spring Street. The proposed porch would add 80 square feet of building coverage.

The applicants therefore need relief from Section 10.521 to permit a front yard setback of 5 " where 15 feet is required, a side yard setback of 3 " where 10 is required, and building coverage of $28.4 \%$ where $25 \%$ is the maximum permitted.

## II. CRITERIA:

The applicant believes the within Application meets the criteria necessary for the Board to grant the requested variances.

Granting the requested variance will not be contrary to the spirit and intent of the ordinance nor will it be contrary to the public interest. The "public interest" and "spirit and intent" requirements are considered together pursuant to Malachy Glen Associates v. Chichester, 152 NH 102 (2007). The test for whether or not granting a variance would be contrary to the public interest or contrary to the spirit and intent of the ordinance is whether or not the variance being granted would substantially alter the characteristics of the neighborhood or threaten the health, safety and welfare of the public.

The essentially residential characteristics of the neighborhood would not be altered by this project. The existing structure and lot are already non-compliant with front and side yard setback and building coverage requirements, as are most if not all of the properties on this section of Spring Street.

Were the variances to be granted, there would be no change in the essential characteristics of the neighborhood, nor would any public health, safety or welfare be threatened.

Substantial justice would be done by granting the variance. Whether or not substantial justice will be done by granting a variance requires the Board to conduct a balancing test. If the hardship upon the owner/applicant outweighs any benefit to the general public in denying the variance, then substantial justice would be done by granting the variance. It is substantially just to allow a property owner the reasonable use of his or her property.

In this case, there is no benefit to the public in denying the variances that is not outweighed by the hardship upon the owner. The proposed dormers are within the existing non-conforming footprint and do not increase the non-conforming setbacks at all.

The home immediately adjacent to the right side dormer has few windows facing it, and will not suffer the loss of any privacy, light, air or access as a result.

The proposed porch will encroach into the front yard setback, however it is consistent with the look and feel of the neighborhood and is tastefully integrated to match the existing front bay window. The side yard encroachment is consistent with the existing footprint of the main dwelling structure. Accordingly, the loss to the applicants clearly outweighs any gain to the public if the applicants were required to conform to the ordinance.

The values of surrounding properties will not be diminished by granting the variance. The proposal will improve the streetscape along Spring Street and will increase the value of the applicants' property. The values of surrounding properties will not be negatively affected in any way.

There are special conditions associated with the property which prevent the proper enjoyment of the property under the strict terms of the zoning ordinance and thus constitute unnecessary hardship. The property is non-conforming as to frontage, lot area, lot area per dwelling, building coverage and setbacks. The dwelling is oriented well to the front of the property, although the paved portion of the Spring Street right of way is actually several feet further away from the dwelling.

The use is a reasonable use. The proposal is a residential use in a residential zone.

There is no fair and substantial relationship between the purpose of the ordinance as it is applied to this particular property. The purpose of the setback requirements is to provide sufficient access, light, air and privacy, and physical separation between properties. None of these purposes are frustrated by this proposal. The dormers will be entirely within the existing footprint and will not negatively affect the neighboring property on the right side of the lot. The porch will increase the front yard nonconformity, although the paved portion of the Spring Street right of way is actually several feet further away from the dwelling, so it will not conflict at all with the travelled way. The porch does not encroach into the side yard setback significantly more than the existing dwelling. The amount of additional building coverage proposed, 80 square feet, is minimal and not out of character for this neighborhood.

Accordingly, the relief requested here would not in any way frustrate the purpose of the ordinance and there is no fair and substantial relationship between the purpose of the setback requirements and their application to this property.

## III. Conclusion.

For the foregoing reasons, the applicant respectfully requests the Board grant the variances as requested and advertised.

Respectfully submitted,

Dated: 10/27/2020
By: John K. Bosen
John K. Bosen, Esquire




10 Ox Point Drive
Kittery, ME 03904 207.752.1371 studiob-E@Comcast.ne


10 Ox Point Drive
Kittery, ME 03904 207.752.1371
studiob-E@Comcast.ne



$100 \times$ Point Drive Kittery, ME 03904

## Kaiser

Residence
30 Spring Street
Portsmouth, NH

10 Ox Point Drive Kittery, ME 03904 207.752.1371 studiob-E@Comcast.net


30 spring ST Front Gables





The right side of the porch would end just past the existing arborvitae, and would not exceed the width of the back half of the house. .


All neighbors, including my neighbor on the right side, are agreeable to a porch and dormer. The neighbor on my right underwent an extensive expansion / renovation in 2008 which required a variance on both sides of their house.


Here is a porch located 3 houses down from my house, on the corner of Spring St. and Lincoln St, that was approved for development in 2017. This porch is located closer to the road than the one we are proposing.

# Bosen ${ }^{\circ} \bigcirc$ Associates, p.l.l.c. 

John K. Bosen ATTORNEYS AT LAWW Admitted in NH \& MA

Christopher P. Mulligan Admitted in NH \& ME

Molly C. Ferrara Admitted in NH \& ME

Bernard W. Pelech Admitted in NH \& ME

Zoning Board of Adjustment 1 Junkins Ave. Portsmouth, NH 03801
November 5, 2020

David Rheaume, Chair

## VIA HAND DELIVERY

Ader

## RE: 30 Spring Street, Portsmouth, New Hampshire Tax Map 130, Lot 13 <br> Jessica Kaiser and John McMahon

Dear Mr. Rheaume:
As a supplement to our variance application relative to the above property, enclosed please find twelve (12) copies of a revised elevation plan showing the proposed porch from the front and right side, as well as a statement in support of the project signed by the affected abutters.

These documents were submitted through Viewpoint On November 5, 2020.
Thank you for your attention.

Very Truly Yours,

$\mathrm{JKB} / \mathrm{sdm}$
Enclosures
cc: Jessica Kaiser and John McMahon


Support of an addition of a front/side porch for $\mathbf{3 0}$ Spring Street in Portsmouth
As a resident of Spring Street, I approve of the addition of a small side / front porch and dormers to Jess and Andy's home located at 30 Spring Street.


Name $\qquad$ Clavistopher Wicilese Street $\qquad$ $\frac{46 \operatorname{sen} \pi n}{\sqrt{7}}$ Date $112 / 20$
 Name Enmity Grady Street $4 b$ Sawing _D P- nit Sosconey Street \# $\square$ Le Spring Date $11 / 2 / 20$ $\rightarrow \longrightarrow$ mene ry Name
 Street\# $\qquad$ 295 perse Date $11 \leq 1 \geq 0$
Date $1 / 2 / 20$ Name Jenifer hansheryst Street $\qquad$ Date $\qquad$
Signed: $\qquad$ Name $\qquad$ Street $\qquad$ Date $\qquad$

## VIA VIEWPOINT

October 27, 2020
City of Portsmouth
Zoning Board of Adjustment
Attn: David Rheaume, Chairman
1 Junkins Avenue
Portsmouth, NH 03801

## RE: Variance Application of Thomas J. Murphy 95 Dodge Avenue, Portsmouth (Tax Map 258, Lot 39)

Dear Chairman Rheaume,
Our Office represents Thomas J. Murphy, owner of property located at 95 Dodge Avenue in Portsmouth. Attached herewith, please find the following materials for submission to the Zoning Board of Adjustment for consideration at its next regularly scheduled meeting:

1) Landowner Letter of Authorization;
2) Narrative to Variance Application;
3) Site Plan;
4) Architectural Plans (Floor Plans and Elevations);
5) Design Memorandum;
6) Tax Map; and
7) Photographs of the Property.

We have also delivered twelve (12) copies of the submission materials to the Planning Department. Should you have any questions or concerns regarding the enclosed application materials, do not hesitate to contact me at your convenience.


Derek R. Durbin, Esq.

## LETTER OF AUTHORIZATION

Thomas J. Murphy, owner of property located at 95 Dodge Avenue, identified on Portsmouth Tax as Map 258, as Lot 39 (the "Property"), hereby authorizes Durbin Law Offices PLLC, of 144 Washington Street, Portsmouth, New Hampshire 03801, to act as its agent and representative in connection with the filing of any building, zoning, planning or other municipal permit applications with the City of Portsmouth for said Property. This Letter of Authorization shall be valid until expressly revoked in writing.


# CITY OF PORTSMOUTH ZONING BOARD OF ADJUSTMENT APPLICATION NARRATIVE 

Thomas J. Murphy<br>95 Dodge Avenue<br>Portsmouth, NH 03801<br>Tax Map 258, Lot 39<br>(Owner/Applicant)

## INTRODUCTORY STATEMENT

Thomas J. Murphy is the owner of the property located at 95 Dodge Avenue, identified on Portsmouth Tax Map 258 as Lot 39 (the "Property" or the "Applicant's Property"). The Property is zoned Single Residence B ("SRB"). It is a 1,538 square foot lot that contains the Applicant's home, which is a single-family residence. As depicted on the Tax Map, the Property is bounded on two sides by Dodge Avenue, so in essence it is a corner lot, which makes it a unique property in the context of the larger neighborhood. There is only one other lot, the abutting Property to the immediate south, that shares this condition.

The Applicant is proposing to demolish the existing home and construct a new one in its place. In conjunction with the proposed home, the Applicant intends to construct an attached accessory dwelling unit ("ADU"). The existing home is antiquated, and it is cost prohibitive for the Applicant to try to renovate and improve it in conjunction with constructing an attached ADU and meeting current building and life safety requirements. The Applicant has phased the proposed construction such that he may remain living at the Property throughout the build-out. The proposed home and attached ADU is designed as an energy efficient "net zero" structure.

There is a relatively short driveway in front of the Applicant's existing residence. Due to natural and other existing conditions associated with the Property, the Applicant desires to construct a separate driveway to the proposed ADU on the other side of the Property that is abutted by Dodge Avenue. Because Section 3.3.2(3) of the City's Site Plan Regulations prohibit more than one driveway on a lot and this standard is incorporated by reference into the Zoning Ordinance, variance relief is necessary in order to construct a separate driveway to the proposed garage and ADU. The proposed home and ADU will comply in all other respects with the Zoning Ordinance.

## SUMMARY OF ZONING RELIEF

The Applicant seeks the following variance from the Zoning Ordinance:

1. A variance from Section 10.1114 .30 to allow two (2) driveways on a lot where only one (1) driveway is permitted.

## VARIANCE CRITERIA

## Granting the variances will not be contrary to the public interest and will observe the spirit of the Ordinance.

In the case of Chester Rod \& Gun Club, Inc. v. Town of Chester, the Court observed that the requirements that a variance not be "contrary to the public interest" or "injure the public rights of others" are coextensive and are related to the requirement that the variance be consistent with the spirit of the ordinance. 152 N.H. 577 (2005). The Court noted that since the provisions of all ordinances represent a declaration of public interest, any variance will, in some measure, be contrary to the ordinance, but to be contrary to the public interest or injurious to public rights of others, "the variance must 'unduly, and in a marked degree' conflict with the ordinance such that it violates the ordinance's 'basic zoning objectives." "Id. "There are two methods of ascertaining whether granting a variance would violate an ordinance's basic zoning objectives: (1) examining whether granting the variance would alter the essential character of the neighborhood or, in the alternative; and (2) examining whether granting the variance would threaten the public health, safety, or welfare." Harborside Assoc v. Parade Residence Hotel, 162 N.H. 508, 514 (2011).

It appears that Section 3.2.2(3) of the Site Plan Regulations was primarily intended to limit the number of driveways accessing individual lots for safety, aesthetic, and environmental reasons (i.e. to limit impervious surface coverage). With respect to the Applicant's Property, there are existing site conditions which limit where and how a driveway may be constructed or expanded. The only way to avoid the variance relief being requested would be to significantly widen the existing driveway to the north and/or extend the existing driveway from east to west on the Property so that it can provide sufficient access to the garage below the proposed ADU . Aside from the fact that this would effectively eliminate much of the Property's open space, usable yard area and area for a septic system, it would involve having to relocate an existing fire hydrant and utility pole. In addition, any widening of the existing driveway would be towards a "blind corner" of Dodge Avenue, thus creating site line concerns for vehicles approaching and exiting the Property. The grade of the Property, which slopes down rather substantially from the east to the west, would also create the need for costly site work and increased impervious surface coverage resulting in a sea of pavement across the Property. In essence, most of the usable yard area would become a parking lot.

By creating a separate driveway to access the Garage and ADU rather than expanding the existing driveway, the Applicant will be able to maintain the single-family residential appearance and character of the Property. It will also keep the frontage of the Property more pedestrianfriendly. For these reasons it is fair to conclude that denying the variance is far more likely to threaten the public health, safety and welfare and alter the essential character of the neighborhood than approving it. The proposed plan for the Property is consistent with the spirit of the ordinance.

## Substantial justice will be done by granting the variance relief.

Any loss to the individual that is not outweighed by a gain to the general public is an injustice. New Hampshire Office of State Planning, The Board of Adjustment in New Hampshire, A Handbook for Local Officials (1997); Malachy Glen Assocs., Inc. v. Town of Chichester, 155 N.H. 102 (2007).

The costs to the Applicant and overall effect (public safety, environmental impact, etc.) that denying the variance would have outweighs any possible gain to the public. Arguably, the effect of denying the variance to the public represents a loss versus a gain. Accordingly, the equitable balancing test tips overwhelmingly in favor of granting the variance.

## The values of surrounding properties will not be diminished by granting the variance relief.

The value of surrounding properties will only be enhanced by the demolition of the existing home and the construction of a new single-family residence with attached garage and ADU. Having a second driveway access to the attached garage/ADU as opposed to a large continuous driveway will only benefit the value of the Property. Similar redevelopment on residential properties in Portsmouth has only increased the values of the properties that surround them.

## Literal enforcement of the provisions of the Ordinance would result in an unnecessary hardship.

The Property has special conditions that distinguish it from surrounding properties. It is bounded on two sides by Dodge Avenue. Thus, it has the same characteristics that a corner lot has, although rather than having primary and second frontage on two different streets, it has one continuous street frontage that wraps around two sides of the Property. As a result, more stringent setback standards apply to the Applicant's Property than would apply to a lot that is not bounded on two sides by a street. This limits the available building envelope on the Property, despite there being sufficient lot area to build a new single-family home and attached ADU by right. Rather than having two $10^{\prime}$ side yard setbacks, the Property has only one 10 ' side yard setback and two $19^{\prime}$ front yard setbacks. The more restrictive setbacks, coupled with the east-to-west sloping topography of the lot, limit the siting and orientation of structures and associated appurtenances on the Property. These conditions dictate the location and configuration of the proposed home, usable yard/open space, stormwater management, septic and utility service. To build a new home on the Property and attached ADU that complies with the setback requirements, the Applicant must either create a separate driveway entrance or expand upon and extend the existing driveway. However, as a result the Property's special conditions, expansion of the existing driveway is impractical and creates a greater impact upon the Property than creating a second driveway. If the Applicant were to enlarge the existing driveway on the Property, it would result in a significant increase in impervious surface coverage, less safe access, reduced open space and usable yard area, a less attractive appearance, and the re-siting of an existing utility pole and fire hydrant. It would also affect the proposed stormwater management plan for the Property and would further limit where the septic system could be located.

3|Page Durbin Law Offices PLLC

In addition, the Property has $241^{\prime}$ of continuous street frontage on Dodge Avenue. While the Property is not subdividable due to the Ordinance's lot area requirements, it has more than sufficient frontage to support two lots which makes the Property suitable for two access points.

Owing to the special conditions of the Property described above, having driveways on separate sides of Dodge Avenue is more consistent with the spirit of the Ordinance than expanding the existing driveway and parking area. Therefore, there is no fair and substantial relationship between the general purposes of the Ordinance provisions and their application to the Property.

Finally, the proposed use of the Property is also reasonable. The use of the Property will remain single-family residential, which is permitted by right in the SRB Zoning District, and will comply with the dimensional requirements of the Ordinance. The two driveways are a safer more practical alternative for the Property than an enlarged single driveway.

## CONCLUSION

In conclusion, the Applicant has demonstrated that his application meets the five (5) criteria for granting the variance and respectfully requests that the Board approve his application.

Respectfully Submitted,
Dated: October 28, 2020
Thomas J. Murphy
By and Through His Attorneys, Durbin Law Offices PLLC


By: Derek R. Durbin, Esq. 144 Washington Street Portsmouth, NH 03801 (603)-287-4764
derek@durbinlawoffices.com









| Date: | 280 CT2020 |
| :--- | :--- |
| To: |  |
| Subject: | 95 Dodge Ave |
| CC to: |  |

95 Dodge Ave is a unique lot with an existing 1-1/2 story bungalow and garage. Improvements to the property would increase the property value and benefit the neighborhood's overall aesthetic appeal. The owner is looking to build a new 1-1/2 story bungalow with a walkout basement level and an attached accessory dwelling unit in place of the existing structures. The construction would be phased to allow the owner to remain living on site throughout the project. The phasing plan would follow as listed:

1. Demo existing garage
2. Building new accessory dwelling unit
3. Demo existing house
4. Build new primary dwelling unit

The proposed bungalow and complementary accessory dwelling unit is in keeping with the size of other homes in the area. The accessory dwelling unit is designed in a scale and style that compliments the main house. The interior program of spaces is designed to be efficient and functional for the owner.

The materials used are a mixture of panel siding, board and batten, stone and natural shingle. All the exterior materials used pay homage to a traditional new England home with a contemporary twist. The siding materials on the main home break up the vertical floors and add visual interest. The accessory dwelling unit is finished with a board and batten siding in the same color as the main house panel siding.

Thank You,
Brandon Holben, AIA, LEED AP
Principal Architect
WINTER HOLBEN




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Utility Pde (North)

Zoning Board of Adjustment
City of Portsmouth, New Hampshire

Dear Members of the Board:

My company, Summit 501 Islington, LLC, is the owner of the three-story office building at 501 Islington Street. Our existing tenant, Dr. Nicole Schertell of Vibrant Naturopathic Heathcare has signed a lease to expand her existing practice into the adjacent, approx. 900sf office space. Dr. Schertell has been operating in approx.. 3,000sf in the building since 2014 and has been a great addition to the neighborhood and the community. We welcome her expansion to continue to serve the community.

When Dr. Schertell opened her business in 2014, medical office was a permitted use for our property. Apparently, the zoning changed for our property in 2014 and medical office is now a non-conforming use which requires a special exception, so I am hereby submitting this application for a Special Exception to permit the expansion of Dr. Schertell's healthcare business.

Our request for a minor building permit to fit up the new space is currently paused according to Peter Stith of the planning department for the following reason:

A medical office is only allowed by Special Exception in the CD4-L2 zoning district. Section 10.333 states:
"A nonconforming use located in a portion of a building or structure shall not be extended throughout other parts of the building or structure."

According to town ordinance 10.232, the Board shall grant requests for Special Exceptions which are in harmony with the general purpose and intent of the Ordinance and meet the standards of Subsection 10.232.20.

I am unclear on the cause for changing the zoning of our property which now requires a special exception for medical office, but I can see no reason that medical office shouldn't be encouraged in the mixed use area where 501 Islington is an integral part of the community. The goosf expansion of Dr. Schertell's business is very minor (total building is approx. 26200sf) and we expect no material change in traffic, no change in footprint, or any other change that would be detrimental to the community.

With respect to the specific standards of Subsection 10.232.20, below is the text of the ordinance, with comments concerning this application in bold italics:
10.232.20 Special exceptions shall meet all of the following standards:
10.232.21 Standards as provided by this Ordinance for the particular use permitted by special exception;

We are unaware of any standards for medical office that would be deny the approval for a special exception. Dr. Schertell's existing business has been operating since 2014 in the adjacent 3000sf space and will be increasing her space by 900 sf, which will have no material impact on the property or the community.
10.232.22 No hazard to the public or adjacent property on account of potential fire, explosion or release of toxic materials;

Summit 501 Islington, LLC
There is no reasonable expectation for hazard to the public. On the contrary, the expansion of Dr. Schertell's medical practice will add space for one additional naturopatic doctor to serve the community out of an existing space that is currently vacant
10.232.23 No detriment to property values in the vicinity or change in the essential characteristics of any area including residential neighborhoods or business and industrial districts on account of the location or scale of buildings and other structures, parking areas, accessways, odor, smoke, gas, dust, or other pollutant, noise, glare, heat, vibration, or unsightly outdoor storage of equipment, vehicles or other materials;

There will be no change to the exterior of the building at all and we expect no negative impact on any adjacent property.
10.232.24 No creation of a traffic safety hazard or a substantial increase in the level of traffic congestion in the vicinity;

We expect no material change in traffic by changing the use of the proposed space. Formerly the space was a financial services office. We expect the amount of traffic and use in the medical office to be similar to previous uses in this space.
10.232.25 No excessive demand on municipal services, including, but not limited to, water, sewer, waste disposal, police and fire protection and schools; and

We expect no change in any municipal services by this minor expansion of a medical office
10.232.26 No significant increase of stormwater runoff onto adjacent property or streets.

There will be no change to the exterior of the building at all and we expect no negative impact on stormwater or runoff to any property or street.

We hope that you will agree that all the criteria for granting this special exception request has been satisfied. Please approve our request for this Special Exception application.

Thank you for your volunteer service!

For Summit 501 Islington, LLC
Todd Baker, Manager

501 Islington Existing Conditions Photographs


Street View Exterior


Street View Exterior


Street View Exterior


Street View List of Businesses

501 Islington Existing Conditions Photographs


Existing Medical Office Interior Entry


Existing Medical Office Exam room

501 Islington Existing Conditions Photographs


Proposed Vacant Space Entry


Proposed Vacant Space to be Medical Office

Proposed Vacant Space to be Medical Office

# Hoefle, Phoenix, Gormley \& Roberts, pllc 

—ATTORNEYS AT LAW<br>127 Parrott Avenue, P.O. Box 4480 | Portsmouth, NH, 03802-4480<br>Telephone: 603.436.0666 | Facsimile: 603.431.0879 | www.hpgrlaw.com

October 28, 2020

## HAND DELIVERED

Peter Stith, Planner
City of Portsmouth
1 Junkins Ave.
Portsmouth, NH 03801
Re: Gregory \& Amanda Morneault, Owner
Darrell Moreau, Applicant
137 Northwest Street
Portsmouth, New Hampshire, 03801
Tax Map 122, Lot 2, Gen. Residence A (GRA) District
Dear Peter:
Attached please find our Memorandum with exhibits in support of an Application for Variances in order to subdivide one lot into and to add a duplex on the subdivided lot. We have uploaded on the application and documents. We will also deliver the original and eleven (11) copies as required.

We look forward to presenting this the Zoning Board of Adjustment at its November 17, 2020 meeting.

Let me know if you have any questions or comments.


RTP/msw
Encl.
cc: Client
Ambit Engineering, Inc.
Artform Architecture, Inc

GREGORY D. ROBBINS
MONICA F. KIESER
SAMUEL HARKINSON

## MEMORANDUM

TO: Portsmouth Zoning Board of Adjustment ("ZBA")<br>FROM: R. Timothy Phoenix, Esquire<br>RE: Variances<br>Gregory and Amanda Morneault, Owners<br>Darrell Moreau, Applicant<br>Property Location: 137 Northwest Street, Portsmouth, NH 03801<br>Tax Map 122, Lot 2, GRA and Historic Districts

Dear Chair Rheaume and Zoning Board Members:
On behalf of Gregory and Amanda Morneault, owners and Darrell Moreau, applicant ("Moreau" or "Applicant"), we are pleased to submit this memorandum and the attached exhibits in support of variances to subdivide a single lot into two lots, and add a duplex on the newly created lot.

## I. Exhibits

1. $10 / 22 / 20$ Plan Set- by Ambit Engineering, Inc.

- Subdivision Plan
- Variance Plan

2. Elevations and Floor Plan Set- by Artform Architecture, Inc.

- Front and Rear Elevations
- First Floor Plan
- $2^{\text {nd }}$ floor Plan
- Foundation Plan
- Front and Right Elevations
- Rear and Left Elevations

3. Site Photographs.
4. Tax Map 122 (subject), 123, 141 (area).

## II. Property/Project

137 Northwest St. is $18,134 \mathrm{ft}$. lot sandwiched between Northwest Street and the Route 1 Bypass. With frontage of approximately 536 feet, and a depth ranging from less than 20 feet to approximately 70 feet, the lot is very long and narrow. The existing home is located at the far west (left) end of the lot, leaving a significant area presently undeveloped except for a City of Portsmouth sewer pump station and access area located at the far easterly (right) end of the lot.

The project intent is to subdivide the single lot into two lots. Lot 1 will hold the existing home. Lot 2 will hold a proposed duplex. The Lot 2 rear lot line is about 30 feet and down a steep hill from the Bypass. The proposed lot configuration and building represent a reasonable development for this property. The existing home other nearby homes on smaller lots close to lot lines supports this effort to permit. It is widely known there are is demand for few relatively reasonably priced homes in in Portsmouth. This project will allow Moreau to offer new construction for two families in downtown Portsmouth at comparatively reasonable prices.

As proposed, each lot will meet the 7500 ft . minimum lot size requirement, frontage and side setback requirements. Relief is required for both lots because the depth of lot 1 will be slightly reduced, and lot 2 does not meet the front/rear yard and depth requirements or the 7500 s.f. lot size per dwelling unit requirement.

## IIII. Relief Required

## Lot 1

PZO§10.521-Table of Dimensional Standards ${ }^{1}$
Lot Depth- 44.7 feet where 51.1 feet exists and 70 feet is required.

## Lot 2

PZO \& 10.521 Table of Dimensional Standards
Lot area per dwelling unit-5317 s.f. (10634/2) where 7500 s.f. is required.
Front yard-2.9 feet where 15 feet is required.
Rear Yard-4.0 feet where 20 feet is required.
Lot Depth- $23.4^{2}$ feet where 70 feet is required.

## V. Variance Requirements

## 1. The variances will not be contrary to the public interest.

2. The spirit of the ordinance is observed.

These two requirements are considered together pursuant Malachy Glen Associates, Inc. v. Town of Chichester, 155 N.H. 102 (2007) and its progeny. The test is whether granting a

[^6]variance "would unduly and to a marked degree conflict with the ordinance such that violates the ordinance's basic zoning objectives." Id." Mere conflict with the ordinance is not enough. Id. The analysis begins with the purposes of the GRA District and the general purposes of the ordinance.

The purpose of the GRA District is "to provide for areas of single-family, two-family and multifamily dwellings with appropriate accessory uses, at moderate to high densities (ranging from approximately 5 to 12 dwelling units per acre ), together with appropriate accessory uses and limited services. " PZO§10.440 Residential District Purposes. This purpose is met by both lots. Lot 1 with one dwelling on 7500 ft . equals 5.8 units per acre. Lot 2 at 5317 ft . per unit translates to 8.19 units per acre.

The general purposes of the ordinance pursuant to PZO 10.121 is "to promote the health, safety and the general welfare of Portsmouth and its region in accordance with the city's Master Plan... by regulating:

1. The use of land, buildings and structures for business, industrial, residential and other purposes-It is widely known that home prices in Portsmouth are quite high. Relatively modestly priced homes are difficult to find, leaving many young people and or moderate income earners to live in other communities. Adding two duplex units on a lot sandwiched between Northwest Street and the bypass will tend to command a more modest price, thus is appropriate.
2. The intensity of land use, including lot sizes, building coverage, building height and bulk, yards and open space-The lot 1 home presently exists. Accordingly, the depth and front and rear setbacks cannot be changed. Frontage, side setbacks, and area are compliant. Nothing can be built on proposed Lot 2 absent front, rear setback and depth variances. The location and characteristics of the lot leave it suitable for a duplex. With large side yards, 5317 s.f. per dwelling unit is reasonable.
3. The design of facilities for vehicular access, circulation, parking and loading-Lot 1 will not change. Lot 2 provides two garaged parking spaces for each unit.
4. The impact on properties of outdoor lighting, noise, vibration, stormwater runoff and floading-Lot 1 will not change. The lot 2 duplex will have no negative effect on lighting, noise, vibration or flooding. Stormwater will be vetted in the subdivision process before the Planning Board.
5. The preservation and enhancement of the visual environment- Lot 1 will not change. Lot 2 will hold a tastefully designed and sized duplex.
6. The preservation of historic districts and buildings and structures of historic or architectural interest-Lot 1 will not change. Lot 2 will be subject to Historic District Commission review.
7. The protection of natural resources, including groundwater, surface water, weapons, wildlife habitat and air quality-Lot 1 will not change. Lot 2 is presently vacant and
somewhat overgrown. There will be no negative effect upon groundwater or wildlife habitat or air quality. Surface water will be the vetted by the Planning Board.

In considering the public interest and spirit of the ordinance tests for determination of whether granting variances violates basic zoning objectives, the Malachy Glen court further held:

One way to ascertain whether granting the variance would violate basic zoning objectives is to examine whether it would alter the essential character of the locality... . Another approach to [determine] whether granting the variance violates basic zoning objectives is to examine whether granting the variance would threaten the public health, safety or welfare. (emphasis added)

Lot 1 and the house upon it already exist in the locality. The depth is only slightly reduced over existing conditions. The home is on a compliant sized lot so will neither alter the essential character of the locality nor threaten the public health, safety or welfare. The duplex on Lot 2 will be built to code, and will benefit from vetting by the Planning Board. The area includes compliant and numerous non-compliant sized lots many with structures very close to lot lines (Exhibit 4) It follows that granting the subdivision and variances will neither alter the essential character nor threaten the public health, safety or welfare.

## 3. Granting the variance will not diminish surrounding property values.

Northwest Street itself has relatively few houses. Those existing are an eclectic mix of various sized lots/houses with various distances from the road. Some have water access, some do not. The larger area includes homes along Maplewood Avenue many of which are on small lots. The width of Lot 2 provides significant separation from neighbors. There is but one home directly across the street. It too is close to Northwest Street. The nature and location of Northwest Street, this lot, and the tastefully designed duplex, which will receive HDC review, will not diminish surrounding property values.

## 4. Denial of the variance result in unnecessary hardship.

a. Special conditions exist which distinguish the property/project from others in the area.

The lot is over 500 feet in length but only 19-70 feet deep, sandwiched between Northwest Street and the Bypass. The length and shallow nature of the lot create special conditions. These conditions support permitting two attached units of relatively affordable housing in downtown Portsmouth.
b. No fair and substantial relationship exists between the general purposes of the ordinance and its specific application in this instance.

Density limits are intended to provide space, air and light, protect against overbulking structures, maintain off street parking and eliminate congestion. Here, Lot 1 and the home upon it meet the density requirement. Because the home is placed to the far left of the lot, a very wide expanse of the lot continues for several hundred feet. Though narrow, it can accommodate the requested duplex. This area of Northwest Street has only a few homes. While the proposed density for Lot 2 at 5317 ft . per unit is a short of the 7500 ft . required in GRA, it does meet the general purposes of the GRA area by providing approximately 8 units per acre, within the 5-12 guidelines set forth under the general purposes. It is also consistent with the larger area of Northwest Street and Maplewood Avenue where there are numerous homes on very small lots, very close to the lot line. Since this proposal will provide relatively affordable housing in downtown Portsmouth, there is no fair and substantial relationship between the density requirement and its application in this instance.

Setbacks are intended to provide adequate space between homes, sightlines, and area for stormwater treatment. The Lot 1 setbacks for front and rear are very close to lot lines and will not change. The Lot 2 setbacks are similar and exist due to the narrowness of the lot. Given the location abutting the bypass, the substantial width of the lot, there is ample separation of neighbors, space between homes, sightlines and area for stormwater management, which will be vetted by the Planning Board via the subdivision process. Accordingly, there is no justifiable reason to apply the strict requirements of the ordinance.
c. The proposed use is reasonable.

Duplexes are permitted in the GRA zone. The proposed duplex density is consistent with the area. The front and rear setbacks are very close to the setbacks for the existing home.

Numerous other homes in the general area are on small lots and close to lot lines. As such, this residential use in a residential zone is reasonable.

## 5. Substantial justice will be done by granting the variance.

If "there is no benefit to the public that would outweigh the hardship to the applicant, this factor is satisfied." Harborside Associates, LP v. Parade Residents Hotel, LLC 162 NH

508(2011). That is, "any loss to the[applicant] not outweighed by again to the general public is an injustice." Malachy Glen, supra at 109.

The extreme width of the subject lot with the existing home far to the left, leaves a large expanse of land lying fallow. Given its location immediately abutting the bypass, a duplex, which will permit the owners to sell the lot, and the applicant to build the homes, will provide two families with relatively affordable housing in downtown Portsmouth. Since the immediate area of Northwest Street has relatively few homes, while the overall area from Northwest Street to Maplewood Avenue is very dense, allowing the subdivision and variances to build the duplex will cause no harm whatsoever to the general public. Denial, however, will prevent the owners from selling a portion of the lot, and will prevent the applicant from providing, and potential residents from owning brand-new construction at reasonable cost in downtown Portsmouth. Clearly, there is no benefit to the public from denial that outweighs the hardship to the applicant and the loss to the applicant far outweighs any gain to the general public.

## V. Conclusion

For all the foregoing reasons, the property owners and applicant respectfully request that the zoning would grant all requested relief.

Respectfully submitted
Darrell Moreau


RTP/msw
Encl.




Dear Builders and Home Buyers,
In addition to our Terms and Conditions (the "Terms"), please be aware of the following:
This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings'). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on
www.ArtformHomePlans.com to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors,
Artform Home Plans ("Artform") requires that our Drawings be built substantially as designed. Artform will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to
 updated by Artform prior to attaching any Drawing to any builder agreement. Artform shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.
Facade Changes: to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Artform.

- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

Floor plan layout and/or Structural Changes:

- Structural changes always require the express written consent of Arfform or posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).


Living Area this Floor (Per Unit): 519 sq ft
8 ft Ceilings



IMPORTANT:

- Unless an area is specifically designed as "no posts" additional posts may be required.
will be framed below the florwise, basement beams
- Basement spaces accommodate utilities, mechanical equipment and the horizontal movement of plumbing pipes, electrical wires and heating ducts. Both as part of any Construction Drawings produced based on this changes to accommodate these items must be expected.
- Basement window locations are dependent on site conditions and utility locations. Clarify number and



## Front Elevation

Scale: $1 / 8^{\prime \prime}=1^{\prime}-0$ "


Right Elevation
Scale: $1 / 8^{\prime \prime}=1^{\prime}-0$ "


## 137 Northwest St



Imagery ©2020 Maine GeoLibrary, Maxar Technologies, U.S. Geological Survey, Map data ©2020
50 ft

## Google Maps 137 Northwest St



Imagery ©2020 Maine GeoLibrary, U.S. Geological Survey, Map data ©2020 20 ft $\qquad$

## Google Maps 137 Northwest St



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## Google Maps 136 Northwest St



Image capture: Sep 2011
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## Google Maps 172 Northwest St



Image capture: Sep 2011
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## Google Maps 260 Northwest St



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## HAND DELIVERED

October 28, 2020
David Rheaume, Chair
Zoning Board of Adjustment
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801
L.IZABETH M. MACDONALD

JOHN J. RATIGAN
DENISE A. POULOS ROBERT M. DEROSIER CHRISTOPHER L. BOLDT SHARON CUDDY SOMERS DOUGLAS M. MANSFIELD KATHERINF.B. MILLER CHRISTOPHER T. HILSON HEIDI J. BARRETT-KITCHEN IUSTIN L. PASAY ERIC A. MAHER BRENDAN A. O'DONNELL ELAINA L. HOEPPNER

## RETIRED

MICHAEL J. DONAHUE
CHARLES E TUCKER
ROBERT D. CIANDELLA
NICHOLAS R. AESCHLIMAN

RE: 145 Maplewood Avenue (a/k/a portion of 111 Maplewood Avenue Tax Map 124, Lot 8)

Dear Chair Rheaume and Board Members:
Enclosed please find supporting materials to accompany the information submitted via the City's on-line permitting system for variance relief regarding the proposed signage scheme at the above referenced property.

We respectfully request that this matter be placed on the Board's November 17, 2020 agenda. In the meantime, if you have any questions or require additional information do not hesitate to contact me.

Very truly yours, DONAHUE, TUCKER \& CIANDELLA, PLLC


Justin L. Pasay
JLP/sac
Enclosures

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cc: }111\mathrm{ Maplewood Avenue, LLC
    Christopher Lizotte, ProCon, Inc.
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## VARIANCE APPLICATION FOR 111 MAPLEWOOD AVENUE, LLC (the "Applicant")

The Applicant requests variances from Sections 10.1251.20, 10.1242 (two variances requested) and 10.1144 .63 , as detailed below, to accomplish its signage proposal for the property located at 145 Maplewood Avenue (shown as a portion of 111 Maplewood Avenue on the City assessing cards), further identified as City Assessor Map 124, Lot 8 (the "Property"), as depicted in Enclosures 1 and 2, which include detailed signage plans and renderings.

## A. Introduction

The Property is situated in the City's North End within Character District 5 ("CD5"), the Downtown Overlay District, the North End Incentive Overlay District, the Historic District, and Sign District 3. The Property consists of .98 acres of lot area and, uniquely, it is both a through and corner lot under the City's Zoning Ordinance, as it has frontage along Maplewood Avenue, Raynes Avenue and Vaughn Street. The eastern side of the building is the only side with no frontage, yet it provides primary access to the 4 -story office building currently under construction on the Property (the "Building") via a driveway off Vaughn Street and a Pedestrian Alley. The Property is bound to the southeast by the office building at 111 Maplewood Avenue, to the northeast by the AC Hotel by Marriot, 3S Artspace and Barrio Restaurant, to the northwest by the Vanguard Key Club and office building at 31 Raynes Avenue, and to the southwest by various commercial and residential uses.

In May of 2019, the Property received Site Plan Approval from the City's Planning Board to construct the Building and related paving, lighting, utilities, landscaping, drainage and associated site improvements. That same month the Building received a Certificate of Approval from the City's Historic District Commission (the "HDC"). In September of 2019, the Property received amended Site Plan Approval from the City of Portsmouth to permit minor changes to the parking layout and building footprint. In May of 2020, the HDC provided administrative approval for changes to the previously approved design of the Building to include the lighting discussed in this application. See Enclosure 3. We note that the HDC has not reviewed the rest of the Applicant's signage proposal for the Property so the Applicant would anticipate, as a condition of approval, the requirement to obtain additional review and approval of the proposed signage from the HDC pursuant to Section 10.1221 .30 of the Zoning Ordinance.

The Building will be predominately office use but there will be some commercial/retail use as well, and several tenants are anticipated throughout the Building. In light of the anticipated occupation of the Building, the Applicant has produced the enclosed Signage Plans and reviewed the same with City Staff. See Enclosure 2. Complementing Enclosure 2 is Enclosure 3, which comprises additional renderings of the proposed sign locations and Building lighting.

As depicted in these Enclosures, the Applicant's signage proposal reflects the size and scale of the building, its location in the North End, its orientation towards downtown and its anticipated occupation. Moreover, effort was taken to ensure a proposal that is well within the parameters for permitted aggregate signage square footage per building side and permitted mean
lumens per net acre. However, upon review by the City, it was determined that the following variances are needed to accommodate the Applicant's signage plan.

1) Variance from $\S 10.1251 .20$ to permit a freestanding sign with 56.97 s.f. of sign area where 20 s.f. is the maximum in Sign District 3: $\S 10.1251 .20$ of the Zoning Ordinance provides a maximum sign area for individual freestanding signs in Sign District 3 of 20 s.f. The Applicant proposes to construct a freestanding sign depicting " 145 ", the Property's address along Maplewood Avenue, on the eastern side of the building facing the office building at 111 Maplewood Avenue and downtown (the "Freestanding Sign"). The Freestanding Sign, labeled "FS-1" in Enclosures 2 and 3, will be viewable by foot and vehicular traffic along Maplewood Avenue and is proposed to be 56.97 s.f. A similar sign complying with the 20 s.f. maximum sign area requirement in $\S 10.1251 .20$ is depicted in Enclosure 2 for comparison purposes.
2) Variance from $\S 10.1242$ to permit wall signs above the ground floor on all Building sides: $\S 10.1242$ of the Zoning Ordinance states that "[e]ach side of a building facing a street may have one parapet sign . . . or one wall sign above the ground floor." §10.1252.80 of the Zoning Ordinance states that "decorative lighting on a building or structure, including neon and other accent lighting, and any illuminated building panel, shall be considered a wall sign for the purposes of [the Zoning Ordinance], and shall be counted as part of the aggregate sign area allowed." "Ground floor or story" is defined by the Zoning Ordinance as "[a]ny floor or story of a building in which the floor is less than six feet above or below the finished grade at any street entrance of the building." Zoning Ordinance, §10.1530.

As depicted in Enclosure 2, the Applicant proposes 31 decorative lights (labeled "W1" and "WP2") above the ground floor across the four Building sides. The Applicant also proposes five (5) wall mounted signs above the ground floor across the four Building sides to include R-1, E-5, E-6, V-1, and M-1.
3) Variance from $\$ 10.1242$ to permit wall signs above the ground floor on a side of a building not facing a street (east elevation): §10.1242 of the Zoning Ordinance states that " $[\mathrm{e}]$ ach side of a building facing a street may have one parapet sign . . . or one wall sign above the ground floor." The Applicant proposes nine (9) decorative lights above the ground floor and two (2) wall signs, depicted as Signs E-5 and E-6, on the eastern elevation of the Building facing 111 Maplewood Avenue and downtown. See Enclosure 2.
4) Variance from $\S 10.1144 .63$ to permit illuminated signs above $25^{\prime}$ from grade: In discussions with the City it was maintained that if "wall signs are illuminated above $25^{\prime}$ from grade, [the Applicant] will need a variance from Section 10.1144.61." Section 10.1144 .61 states that the maximum mounting height of a luminaire is $20^{\prime}$ above grade, except that flood or spot luminaires rated at 900 lumens or less, and other luminaires rated at 1800 lumens or less, may be used without restriction to mounting height. Section 10.1144.63, however, states that "[luminaires] used
primarily for sign illumination may be mounted at any height to a maximum of 25 feet, regardless of lumen rating."

The Applicant anticipates that all of its wall mounted signs will be illuminated including the five signs above 25' from grade depicted in Enclosures 2 and 3 (Signs R-1, E-5, E-6, M-1 and V-1). That said, the luminaires illuminating all wall mounted signs will comply with the lumen requirements of $\S 10.1144 .61$, thus begging the question of whether variance relief from $\S 10.1144 .63$ is required in the first instance.

Because the Applicant's signage proposal would not be inconsistent with the essential character of the surrounding area, will not compromise the public health in any way, will provide substantial justice, will not compromise the property values of surrounding properties, and because there is no rational connection between the intent of the City's Sign Ordinance and its application to the Property under the unique circumstances of this case, as outlined below, we respectfully request that these variances be granted.

## B. Variance Criteria

Pursuant to Article 2, Section 10.233 of the Zoning Ordinance, and RSA 674:33, to obtain a variance in New Hampshire, an applicant must show that: (1) the variance will not be contrary to the public interest; (2) the spirit of the ordinance is observed; (3) substantial justice is done; (4) the values of surrounding properties are not diminished; and (5) literal enforcement of the provisions of the ordinance would result in an unnecessary hardship, where said term means that, owing to special conditions of the property that distinguish it from other properties in the area: no fair and substantial relationship exists between the general public purposes of the ordinance provision and the specific application of that provision to the property; and the Proposed use is a reasonable one; or if, and only if, owing to special conditions of the property that distinguish it from other properties in the area, the property cannot be reasonably used in strict conformance with the ordinance, and a variance is therefore necessary to enable a reasonable use of it. See RSA 674:33, I (b).

While four (4) individual variances are sought, we address the statutory criteria together as they are a part of a comprehensive signage proposal for the Property.

## 1. The variances will not be contrary to the public interest.

The New Hampshire Supreme Court has indicated that the requirement that a variance not be "contrary to the public interest" is coextensive and related to the requirement that a variance be consistent with the spirit of the ordinance. See Chester Rod \& Gun Club v. Town of Chester, 152 N.H. 577, 580 (2005); Malachy Glen Associates, Inc. v. Town of Chichester, 155 N.H. 102, 105-06 (2007); and Farrar v. City of Keene, 158 N.H. 684, 691 (2009). A variance is contrary to the public interest only if it "unduly, and in a marked degree conflicts with the ordinance such that it violates the ordinance's basic zoning objectives." Chester Rod \& Gun Club, 152 N.H. at 581 ; Farrar, 158 N.H. at 691. See also Harborside Associates, L.P. v. Parade Residence Hotel, LLC, 162 N.H. 508, 514 (2011) ("[m]ere conflict with the terms of the ordinance is insufficient.") Moreover, these cases instruct boards of adjustment to make the
determination as to whether a variance application "unduly" conflicts with the zoning objectives of the ordinance "to a marked degree" by analyzing whether granting the variance would "alter the essential character of the neighborhood" or "threaten the public health, safety or welfare" and to make that determination by examining, where possible, the language of the Zoning Ordinance.

The purpose of the City's Sign Ordinance is to "maintain and enhance the character of the City's commercial districts and residential neighborhoods and to protect the public from hazardous and distracting displays." Zoning Ordinance, $\S 10.1211$. This express purpose of the Sign Ordinance is substantially similar to the standard of review, outlined above, that the Board of Adjustment must use in determining whether the requested variance will be contrary to the public interest and whether the spirit of the Ordinance is observed, which is whether the proposed signage will alter the essential character of the neighborhood or threaten the public health, safety or welfare. The Applicant's signage proposal for the Property will do neither.

First, as depicted in Enclosure 2, the size of the Freestanding Sign complements the scale of the Building and will be located between the Building and the office building to the east at 111 Maplewood Avenue. As proposed, this sign will not constitute a hazardous or distracting display and it will be consistent with the ongoing development in the North End. Certainly, the Freestanding Sign will not alter the essential character of the neighborhood or threaten the public health, safety or welfare. On the contrary, the sign will preserve the same, be consistent with the neighborhood, and be more suited for the Building than a 20 s.f. version of the same, thus fulfilling its purpose of orienting vehicular and pedestrian traffic to the Building and its access from Vaughn Street. See Enclosure 2.

Similarly, the requested variances from $\S 10.1242$ of the Zoning Ordinance, relating to the number of wall signs above the ground floor on all sides of the Building, will not constitute a hazardous or distracting display, and will not alter the essential character of the neighborhood or compromise public health or safety. Important to note here is that all of the Building sides with the exception of the eastern elevation facing 111 Maplewood Avenue, only have one true wall mounted sign above the ground floor identified as R-1 (Raynes Avenue elevation), V-1 (Vaugh Street elevation), and M-1 (Maplewood Avenue elevation), which is consistent with the Zoning Ordinance. The eastern elevation, facing 111 Maplewood Avenue and downtown, has two (2) true wall-mounted signs identified as E-5 and E-6. The rest of the "signs" are decorative lighting, as depicted in Enclosures 2 and 3, which lighting has been reviewed and approved by the HDC. Regardless, the Building side with the most signs is the eastern elevation which provides one of the primary entrances and faces the Building's parking lot and downtown. Moreover, the size of the proposed signage on each of the Building sides is conservative, and well within the aggregate total square footage permitted by the Zoning Ordinance. See Enclosure 2. Similarly, despite their designation as "signs", the decorative lighting is well within the permitted lumens allowed for the Property. Id. More specifically, incorporating the square footage of the actual wall mounted signs proposed and the decorative lighting, 98.65 s.f. of signage remains available for the Vaughn Street elevation, 314.9 s.f. of signage remains available for Raynes Avenue elevation, and 7.3 s.f. remains available for Maplewood Avenue elevation. ${ }^{1}$

[^7]Finally, the five (5) illuminated wall mounted signs (R-1, E-5, E-6, M-1 and V-1) above $25^{\prime}$ from grade will not constitute hazardous or distracting displays, and will not alter the essential character of the neighborhood or compromise public health or safety. As noted above, all of the illuminated wall mounted signs will comply with the lumen requirements of $\S 10.1144 .61$ of the Zoning Ordinance and thus appear similar to other luminaires that would be permitted by right at the underlying heights. Additionally, two (2) of the five (5) signs will face the downtown and the illumination and appearance of all of these signs will be consistent with and complement the decorative lighting that was reviewed and approved by the HDC. Finally, despite the aggregate square footage of the wall mounted signs and decorative lighting, there is still a surplus of available sign square footage for each of the Building sides.

The Applicant's sign proposal promotes the public health by incorporating a thoughtful design the promotes vehicular and pedestrian traffic whilst preserving meaningful signage for anticipated tenants.

As the Applicant's signage proposal will uphold the City's Sign Ordinance by maintaining the character of the City's commercial districts and residential neighborhoods and not creating hazardous and distracting displays, and as the proposal will not alter the essential character of the neighborhood or threaten the public health or safety, the Applicant respectfully submits that it would be reasonable and appropriate for the Board of Adjustment to conclude that granting the variances will not be contrary to the public interest.

## 2. The spirit of the Ordinance is observed.

As referenced in Section 1, above, the requested variances observe the spirit of the Sign Ordinance and New Hampshire jurisprudence regarding the "public interest" prong of the variance criteria because the Applicant's signage proposal will not compromise the character of the City's commercial or residential neighborhoods and will not alter the essential character of the neighborhood or threaten the public health, safety, or welfare. As the New Hampshire Supreme Court has indicated in both Chester Rod \& Gun Club and in Malachy Glen, the requirement that the variance not be "contrary to the public interest" is coextensive and is related to the requirement that the variance be consistent with the spirit of the ordinance. See Chester Rod \& Gun Club, 152 N.H. at 580 . A variance is contrary to the spirit of the ordinance only if it "unduly, and in a marked degree conflicts with the ordinance such that it violates the ordinance's basic zoning objectives." Chester Rod \& Gun Club, 152 N.H. at 581; Farrar, 158 N.H. at 691. As discussed above, the requested variances are consistent with the spirit of the Sign Ordinance because of the reasons stated in Section 1. As a result, for the reasons stated above, the Applicant respectfully asserts that it would be reasonable and appropriate for the Board of Adjustment to conclude that the requested variances will observe the spirit of the Zoning Ordinance.

## 3. Substantial justice is done.

As noted in Malachy Glen, supra, "'perhaps the only guiding rule [on this factor] is that any loss to the individual that is not outweighed by a gain to the general public is an injustice.'" Malachy Glen, supra, citing 15 P. Loughlin, New Hampshire Practice, Land Use Planning and

Zoning § 24.11, at 308 (2000) (quoting New Hampshire Office of State Planning, The Board of Adjustment in New Hampshire, A Handbook for Local Officials (1997)). In short, there must be some gain to the general public from denying the variance that outweighs the loss to the Applicant from its denial.

In this case, the public does not stand to gain anything from denying the variances requested. Despite the scale of the Building, the Applicant's signage proposal is below the maximum parameters for total aggregate sign square footage permitted per building side and permitted lumens under the Zoning Ordinance. See Enclosure 2. In other words, more signage and more light is permitted by right under the Zoning Ordinance. Rather than maxing these parameters out, however, the Applicant is pursuing signage that will complement and beautify the Building and the area. Further, the lighting scheme has been reviewed and approved by the HDC and the signage proposal is tastefully designed to orient people to the Building and its future tenants, which will benefit the public. The signage will complement the Building and not be contrary to the essential character of the City's North End.

On the other hand, the Applicant's proposed signage will be of great benefit to the Applicant, which endeavors to complete conservative and complementary signage to further beautify the Building and accommodate the tenants it anticipates will eventually occupy the same.

As there is no gain to the general public from denying the variance that outweighs the loss to the Applicant from its denial, granting the requested variance will accomplish substantial justice.

## 4. The proposal will not diminish surrounding property values.

Given the nature of the neighborhood, the size and scale of the Building on the Property, and the fact that the Applicant could achieve more lumens and sign square footage along the Raynes Avenue, Vaughn Street and Maplewood Avenue Building sides by right, none of the surrounding properties will suffer any diminution in value as a result of granting these variances. Certainly, the Applicant is aware of no evidence to the contrary. Accordingly, the Applicant respectfully requests that the Board of Adjustment find that the requested variance will not diminish surrounding property values.

## 5. Literal enforcement of the provisions of the ordinance would result in an unnecessary hardship.

As set forth in the provisions of RSA 674:33, I, there are two options by which the Board of Adjustment can find that an unnecessary hardship exists:
(A) For purposes of this subparagraph, "unnecessary hardship" means that, owing to special conditions of the property that distinguish it from other properties in the area:
(i) No fair and substantial relationship exists between the general public purposes of the ordinance provision and the specific application of that provision to the property; and
(ii) The Proposed use is a reasonable one.
or,
(B) If the criteria in subparagraph (A) are not established, an unnecessary hardship will be deemed to exist if, and only if, owing to special conditions of the property that distinguish it from other properties in the area, the property cannot be reasonably used in strict conformance with the ordinance, and a variance is therefore necessary to enable a reasonable use of it.

The "special conditions" of the Property for purposes of this variance criterion include the size and scale of the Building vis-à-vis the size of the Property, the Property's nature as both a through and corner lot, the complicated and undulating nature of the Building's facades, and the fact that the Building's eastern elevation provides one of the primary accesses to the Building and faces the Building's parking lot and downtown.

In Harborside Assocs. v. Parade Residence Hotel, the New Hampshire Supreme Court upheld the Portsmouth Board of Adjustment's finding that the physical improvements on a property, in that case the size of a building when compared to other buildings in the area within the context of sign variance request, could be considered "special circumstances." Affirming the analysis of the Board of Adjustment, the Supreme Court stated:

The [Respondent] is not attempting to meet the 'special conditions' test by showing that its signs would be unique in their settings, but that its property - the hotel and conference center - has unique characteristics that make the signs themselves a reasonable use of the property.

Harborside, 162 N.H. at 518 (emphasis added). Cf Farrar, 158, N.H. 689 (where variance sought to convert large, historical single use residence to mixed use of two residence and office space, size of residence was relevant to determining whether property was unique in its environment).

Here, like the size of the building in Harborside, and the size of the residence in Farrar, the Property's physical characteristics and improvements make the proposed signage reasonable under the circumstances. To start, with more than 20,000 s.f. of building footprint, the Building occupies a significant portion of the Property and is in very close proximity to Raynes Avenue, Vaughn Street, and Maplewood Avenue. As a through and corner lot, vehicular and foot traffic will be able to navigate around the entirety of the Building but will gain primary access to the same via the driveway and Pedestrian Alley off Vaughn Street. Further, the complicated design of the Building and its undulating and varying facades, though beautiful, require a thoughtful approach to signage to accommodate future tenants.

Due to these special conditions of the Property, there is no fair and substantial relationship between the public purposes of the underlying ordinances and their specific application to the Property. On the contrary, despite its lack of conformity, the Applicant's proposed signage scheme is consistent with the public purposes of the relevant Zoning Ordinances because to effectively activate the streetscape, promote public health and traffic safety, promote the purpose of the City's Sign Ordinance, and provide meaningful signage for
the Building's anticipated tenants, a thoughtful and deliberate approach must be advanced. In that context, rather than proposing bigger, brighter or more obvious signage, the Applicant is proposing more thoughtful and complementary signage and is proposing less sign square footage than would be permitted by right under the Ordinance.

Specifically, the Freestanding Sign is large enough to be discernible from Maplewood Avenue considering the size of the Building, but not too big, and will alert vehicular and pedestrian traffic to the address of the Building, which will in turn orient people down Vaughn Street or Raynes Avenue to gain access. Similarly, of the "signs" proposed above the ground floor on any of the Building sides, only one Building side, the eastern elevation, actually has more than one wall mounted sign above the ground floor. The rest of the "signs" are decorative lighting which has been reviewed and approved by the HDC. Where this is more than one wall mounted sign above the ground floor, on the eastern elevation of the Building, their placement is logical in light of the Building's parking lot on that side and that Building side's service as a primary access point, and they face downtown where they have the smallest impact to surrounding property. All of the signage, illuminated wall mounted signs or decorative lighting alike, will emit lumens that are consistent with the Zoning Ordinance. Moreover, the aggregate sign square footage proposed is less than that which could be obtained by right under the Ordinance. Accordingly, the Applicant's signage proposal is consistent with the Ordinance's purposes because it will maintain the character of the City's commercial districts and residential neighborhoods and protect the public from hazardous and distracting displays, and will encourage public safety while providing meaningful signage.

Put another way, strictly enforcing the underlying Zoning Ordinances will not advance the public purposes of the Sign Ordinance, but granting the requested variances will.

The Applicant respectfully reminds the Board of Adjustment that the mere fact that the Applicant is seeking a variance from the express provisions of the Zoning Ordinance is not a valid reason for denying the variance. See Malachy Glen Associates, Inc. v. Town of Chichester, 155 N.H. 102, 107 (2007); see also Harborside Associates, 162 N.H. at 2011 ("mere conflict with the terms of the ordinance is insufficient").

Finally, because the Applicant's proposed signage will be conservatively and tastefully sited on the Building, and will be within the size and lumen parameters established by the Zoning Ordinance, it is reasonable under the circumstances. See Vigeant v. Town of Hudson, 151 N.H. 747, 752 - 53 (2005); and Malachy Glen, 155 N.H. at 107; see also Harborside at 518519 (applicant did not need to show signs were "necessary" rather only had to show signs were a "reasonable use").

Accordingly, the Applicant respectfully asserts that its application complies with the standard for Option A of the unnecessary hardship criterion and the Board of Adjustment should so find.

## C. Conclusion

The Applicant respectfully submits that all five criteria for the variance as requested have been met such that its Variance Application should be granted.


0zozisi 60





$\mathrm{M}-2=15.6 \mathrm{SF}$



(7) $\frac{\text { ENLARGED SIGNAGE ELEVATION }}{1=1 \cdot \sigma}$
$\mathrm{M}-1=36 \mathrm{SF}$

(4) ENLARGED SIGNAGE ELEVATION - E-6


SIGNAGE ELEVATIONS

PPROCON
PROCON

PORTSMOUTH, NH

PRROCON
PROCON

SIGN V-1
$\triangle$ PROCON

## 145 MAPLEWOOD AVENUE |


NORTHEAST STREET VIEW 1
PROCON

NORTHEAST STREET VIEW 2



# CITY OF PORTSMOUTH 

Planning Department
1 Junkins Avenue Portsmouth, New Hampshire 03801

## HISTORIC DISTRICT COMMISSION

May 27, 2020

RJF Maplewood, LLC
30 Temple Street , Suite 400
Nashua, NH 03060

## RE: 111 Maplewood Avenue (LUHD-143)

Dear Owner:
The Historic District Commission, at its regularly scheduled meeting of Wednesday May 20, 2020, considered your request for administrative approval for changes to a previously approved design. Miscellaneous changes were proposed including:(the penthouse screen, railing location, curtain-wall fin system, terracotta arches, doors, windows, mechanical termination louvers and lighting). As a result of said consideration, the Commission voted to grant the Administrative Approval as presented.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,


Nicholas J. Cracknell, AICP, Principal Planner
for Vincent Lombardi, Chairman of the Historic District Commission
cc:
Eric Nelson, RW Norfolk Holdings, LLC







[^0]:    

[^1]:    High and low pressures are measured at the liquid and suction service valves,

[^2]:    Amps = outdoor unit amps (comp. + fan)
    Design Subcooling $9 \pm 3^{\circ} \mathrm{F} @$ the liquid service valve, ARI 95 test conditions

[^3]:    High and low pressures are measured at the liquid and suction service valves,

[^4]:    | 1. WARNING | $\begin{array}{l}\text { High Voltage: Disconnect all power before servicing or installing this unit. Multiple power } \\ \text { sources may be present. Failure to do so may cause property damage, personal injury, or death. }\end{array}$ |
    | :--- | :--- |$\leqslant$| lat |
    | :--- |

    
    

[^5]:    

[^6]:    ${ }^{1}$ We question whether Lot 1 variances are required since the noncompliant lot depth is a prior nonconforming condition; however, we request the variances in an abundance of caution at the recommendation of the Planning staff.
    ${ }^{2}$ Approximately 34 feet at proposed duplex location.

[^7]:    ${ }^{1}$ We note that the calculation for the Building's Maplewood Avenue elevation incorporates all of the signage for the Building's eastern elevation and there is still a surplus.

