



# **THE PENNSYLVANIA STATE UNIVERSITY: INTRAMURAL BUILDING PHASE III**

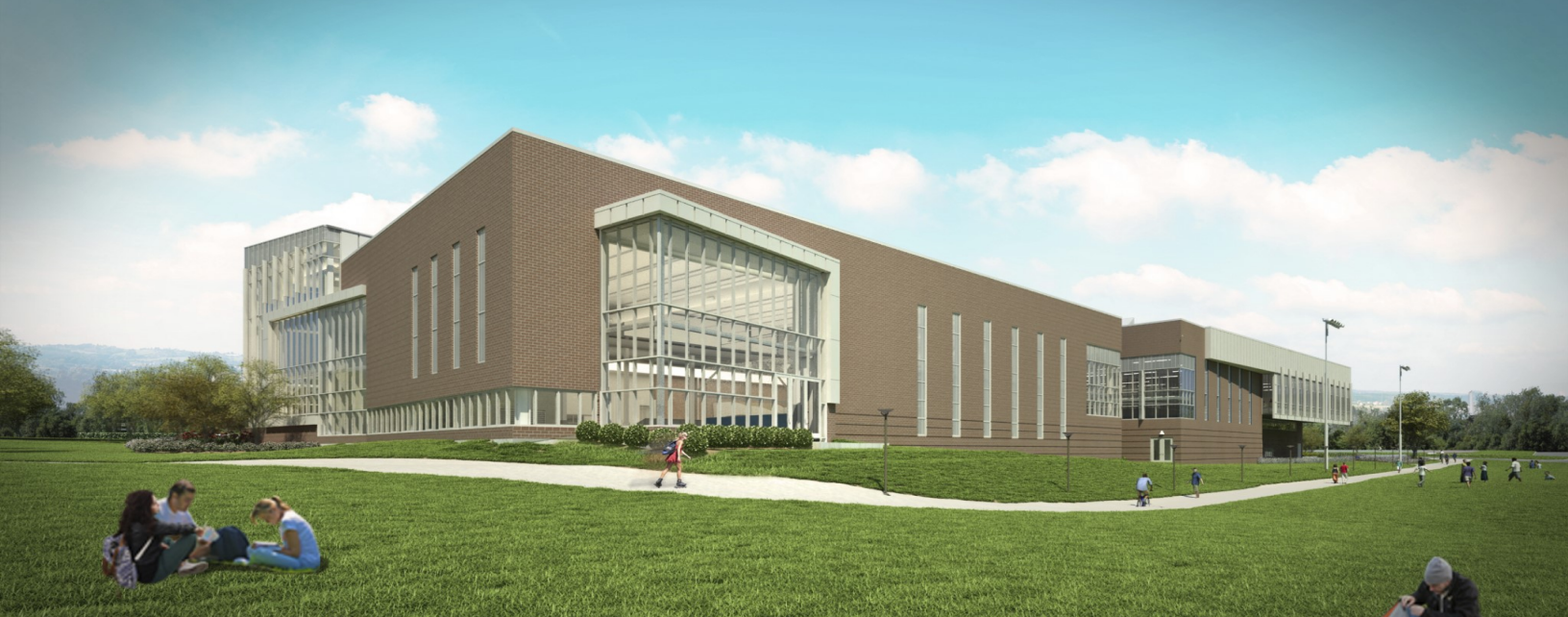
## **FINAL THESIS REPORT**

Name: Issac Colson

Option: Construction

Advisor: Dr. Robert Leicht

Date: April 3, 2017



# The Pennsylvania State University: Intramural Building Addition

## Building Statistics

**Size:** 61, 297 Square Feet (New Construction)

**Height:** 2 Stories (1 below grade) w/ Mezzanine

**Occupancy Type:** Athletic Facility / Mixed Use

**Construction Cost:** \$17 Million

**Contract Type:** CM at Risk

**Construction Dates:** May 2016—August 2017

## Render Credits: Mortenson Construction

## Structural System

- Non-Self-Supporting Steel Frame
- All concrete is cast in place including footings and slabs
- Steel composite decking used
- Curtin walls also featured on exterior

## Project Team

**Owner:** The Pennsylvania State University

**General Contractor:** Mortenson Construction

**Architect:** Moody Nolan

## Mechanical System

- Hybrid ventilation system (utilized 100 percent outside air during optimal temperatures and humidity levels)
- Two newly renovated mechanical rooms to serve building
- 7 additional air handling units installed, as well as 36 VAV units

## Architecture

- Addition onto existing building with renovation on existing basement
- New indoor turf field and rock climbing wall with various smaller rooms and lounges
- Features brick veneer and curtain wall/storefront façade to match existing building.

## Electrical System

- All lights in addition will be LED
- New 75 KVA transformer to be installed
- All lights to utilize daylight sensor to adjust for natural lighting
- Shares newly renovated mechanical rooms



**Issac Colson | Construction Option**

<<http://irc5012.wixsite.com/icolsonthesisproject>>



## Table of Contents

Building Abstract .....	1
Table of Contents .....	2
Executive Summary .....	5
Acknowledgments .....	6
Project Description .....	7
Client Information .....	8
Project Delivery Method .....	8
Project Team Staffing Plan .....	9
Project Cost Evaluation.....	10
Site Logistics .....	10
Project Schedule Summary .....	12
Building Systems .....	12
Cast In Place Concrete .....	12
Masonry .....	12
Support of Excavation .....	12
Curtain Wall.....	12
Structural.....	13
Mechanical.....	13
Lighting.....	13
Electrical.....	14
Transportation .....	14
Fire Protection.....	14
Telecommunications .....	14
Analysis #1: Alternate Roofing System Analysis .....	15
Opportunity Identification .....	15
Background Research.....	15
Potential Solution / Opportunity .....	16
Method .....	16
Execution .....	17
Ranking of Features.....	17
Cost Analysis .....	18
Schedule Analysis.....	19
Conclusion .....	20

<b>Structural Breadth.....</b>	<b>21</b>
<b>Opportunity Identification .....</b>	<b>21</b>
<b>Background Research.....</b>	<b>21</b>
<b>Execution .....</b>	<b>22</b>
<b>Conclusion .....</b>	<b>23</b>
<b>Analysis #2: Modular Exterior Wall Analysis.....</b>	<b>24</b>
<b>Opportunity Identification .....</b>	<b>24</b>
<b>Background Research.....</b>	<b>24</b>
<b>Potential Solution / Opportunity .....</b>	<b>24</b>
<b>Method .....</b>	<b>25</b>
<b>Execution .....</b>	<b>25</b>
<b>Cost Analysis .....</b>	<b>25</b>
<b>Schedule Analysis.....</b>	<b>26</b>
<b>Conclusion .....</b>	<b>27</b>
<b>Analysis #3: Mechanical System Analysis .....</b>	<b>28</b>
<b>Opportunity Identification .....</b>	<b>28</b>
<b>Background Research.....</b>	<b>28</b>
<b>Potential Solution / Opportunity .....</b>	<b>28</b>
<b>Method .....</b>	<b>29</b>
<b>Execution .....</b>	<b>29</b>
<b>Cost Analysis .....</b>	<b>29</b>
<b>Schedule Analysis.....</b>	<b>31</b>
<b>Conclusion .....</b>	<b>31</b>
<b>Mechanical Breadth.....</b>	<b>32</b>
<b>Opportunity Identification .....</b>	<b>32</b>
<b>Background Research.....</b>	<b>32</b>
<b>Potential Solution / Opportunity .....</b>	<b>32</b>
<b>Execution .....</b>	<b>33</b>
<b>Conclusion .....</b>	<b>38</b>
<b>Analysis #4: Subcontractors and the Integrated Project Delivery Method Analysis .....</b>	<b>39</b>
<b>Opportunity Identification .....</b>	<b>39</b>
<b>Background Research.....</b>	<b>39</b>
<b>Potential Solution / Opportunity .....</b>	<b>39</b>
<b>Execution .....</b>	<b>39</b>

Survey .....	40
Research.....	46
Conclusion .....	49
Final Conclusions and Recommendations .....	50
Appendix A: Roofing Area Takeoffs.....	51
Appendix B: Roofing Systems Production and Pricing Information .....	53
Appendix C: Roofing System Schedules .....	55
Appendix D: Modular Panel Takeoff.....	60
Appendix E: Flatbed Dimension Guide .....	62
Appendix F: Wall System Pricing and Production Information .....	66
Appendix G: Stick Built and Modular Wall Schedules .....	70
Appendix H: Roof Mechanical Plans .....	73
Appendix I: Mechanical Load and Power Takeoffs .....	76
Appendix J: Mechanical System Production and Pricing Information .....	78
Appendix K: Future Power Cost Models.....	80
Appendix L: Weather Zone Data for 2016 .....	82
Appendix M: Weather Data Graphs and Figures.....	131
Appendix N: 30 Year Life Cycle Analysis .....	134
Appendix O: Mechanical System Schedules.....	136
Appendix P: Subcontractor Survey Response.....	139

## EXECUTIVE SUMMARY

This final report culminates the 5<sup>th</sup> year of the architectural engineering program at Penn State. Each student will choose a building and complete an in depth analysis of the overall project. Construction students will focus on three specific potential areas for improvement, or that provide a possible opportunity for the project. The three construction analysis will also contain two breadth studies, and a topic of research will be the final analysis.

This report focuses on the third phase of the Intramural Building on the University Park Campus. The project is set to be complete in August of 2017. The addition is the third and final addition for the Intramural Building. The location as well as other information regarding the project will be discussed later in the report. The four analysis that are included in this report are listed below.

The first analysis will look at roofing options for the addition. The original roof of the project is a modified bitumen roof. In this analysis, three other types of roofing are compared, with a TPO being chosen as the preferred roofing system. TPO presents cost and schedule benefits for the project. A structural breadth then analyzed possible reroofing options for the space. TPO presented the most flexibility when choosing reroofing options due to its light weight. The original system was also analyzed for possible reroofing options.

The second analysis of this report will determine the most effective wall type for the project. Analysis 2 covers the pros and cons of a modularized wall panel compared to the classic stick built method of exterior framing. The proposed modular wall panels did not include brick façade, but had all other components of the stick built walls. The modularized system saved the project a small amount of money, but was able to drastically accelerate the schedule, seeing as the exterior wall was on the critical path of the project. Shipping costs were found and added to the modular wall systems, narrowing the gap between the systems. Careful consideration needed to be taken to allow for lead time of the modular panels to be constructed and ready to be delivered.

The third analysis covers the opportunity to substitute an economizer system in place of the current hybrid ventilation system. The economizer system was able to significantly cut the construction cost compared to the hybrid ventilation system, as well as decrease the construction duration. Although the economize system used significantly more power during operation, the life cycle analysis concluded that it was still more profitable than the current system.

The fourth topic covered in this report looks at how subcontractors feel about the Integrated Project Delivery Method. A survey was used to gauge their opinions, and then were compared to outside research about the method. There were some conflicting views, and subcontractors seemed to be more enthusiastic about being a part of an IPD project, but still being reluctant about budget and schedule concerns. The complete analysis is further discusses in Analysis 4.

**ACKNOWLEDGMENTS****ACADEMIC**

Dr. Moses Ling

Dr. Robert Leicht

Professor Paul Bowers

And all of the Penn state AE Faculty and Staff

**PROFESSIONAL**

John Bechtel, Assistant Director of Design and Construction (OPP)

Nick Umosella, Project Manager (Bozzuto Construction Company)

Richard Chazal, Senior Project Manager (Mortenson Construction)

Joe Slapinski, Owner (TMR Roofing)

Mike Maher, Owner (TMR Roofing)

Jason Mayer, Senior Project Engineer (Clayco)

**SPECIAL THANKS TO:**

Family

Friends

PACE Industry Members

Fellow AEs

## PROJECT DESCRIPTION

The Intramural Building at Penn State has been a staple of the university for years. The original building is located on the corner of University Drive and Curtin Road. From the IM Building many of Penn State's most well-known structures can be seen. These include Pegula Ice Arena, the Bryce Jordan Center, and Beaver Stadium. To ensure that the IM building is keeping up with the ever-growing athletic community and student body, three phases of additions were planned. This report will focus on the third addition of the building. The third addition to the IM Building at Penn State began construction in August of 2016 and is set to be completed by the start of the fall 2017 semester. The building addition will add approximately 62,000-square feet to the existing Intramural Building which will include an indoor turf field and a rock climbing wall. The addition will continue to add prestige to the IM building, making it the top gym at Penn State. The building will consist of a brick veneer façade, along with curtain wall and storefront systems. The addition will also include upgrades to the current electrical system and mechanical system. The mechanical system is unique and is referred to as a hybrid ventilation system. The addition will allow for 100 percent outside air to be brought in through movable windows. This will only occur at a specified temperature and humidity level. The roofing system is a modified bitumen, and will match the existing roofing systems of the building. Mortenson is the general contractor of the project, and has been the GC for all three phases of the IM building. Mortenson is also credited with being the GC for the Pegula Ice Arena. Some renderings of the inside are included below. These renderings were done by the Mortenson team.



Figure A.1: Indoor Rendering 1



Figure A.2: Indoor Rendering 2

## CLIENT INFORMATION

Ultimately the project belongs to the university, however there are many parties involved with the building. In theory the student body is the owner of the project. The funds for the project come from the University's student funds. The quality of the project was crucial to the success of the project. As stated before, Penn State wants to create and maintain the best facilities for the student body. Safety was a major concern for the project as students are constantly visiting the gym and cars are constantly driving on University Drive. This means the team had to take safety very seriously.

## PROJECT DELIVERY METHOD

Ultimately Penn State is the owner of the project, however the Office of the Physical Plant manages all construction project completed by Penn State. The architect, Moody Nolan, and the general contractor, Mortenson, each have a contract with Penn State separately. Moody Nolan has contracts with other design professionals, separately. The project is a CM at risk delivery. Mortenson, then chooses the subcontractors they want to bring onto the project. Some of these contractors include Somerset Steel for steel erection, Westmoreland Electric for electrical work, RH Marcon as the roofing subcontractor, Sweetland Engineering as the civil engineer, Nittany Building Specialties to complete all curtain wall systems, and Myco as the mechanical contractor. Mortenson and most of the team have completed the other phases of the project, thus increasing the fluidity of the project. The Organizational plan, along with contract types, can be seen in Figure A.1. Please note that the figure does not include all subcontractors involved on the project.

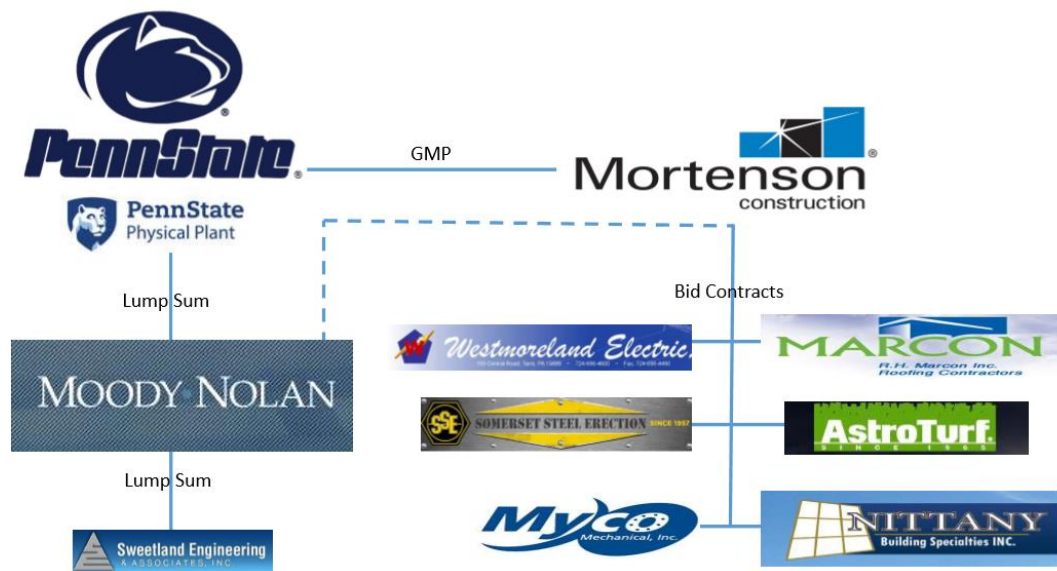


Figure A.3: Project Team Delivery Method

## PROJECT TEAM STAFFING PLAN

The staffing plan for the project has members from the corporate office involved, as well as members on site at the Intramural Building. The Director of Operations is in charge of the project from Mortenson, the general contractor, and is working from the corporate office. Under the director, is the Project Executive and the Field Operations Manager. They remain at the corporate office in Minneapolis and regularly check in on the project to make sure all is going well. They also are very vocal with Penn State to ensure the project is running smoothly. Everyone else involved on the project remains at the site and will be there every day. This includes a senior project manager, a superintendent, an assistant project manager, two field engineers and a safety engineer. This set up is fairly normal for a construction project of this size. The organizational chart can be found in the appendix portion of this report.

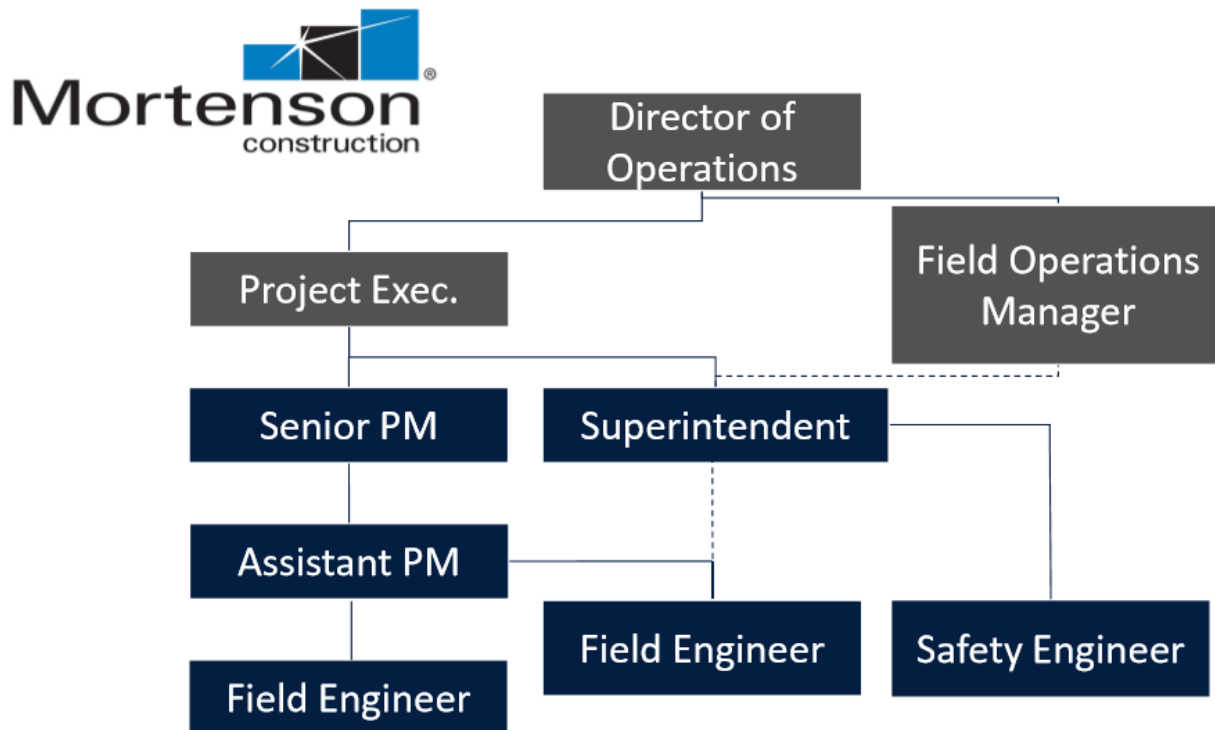


Figure A.5: Mortenson Project Team Staffing

## PROJECT COST EVALUATION

The current estimate from the official estimating team is approximately just over 17 million dollars. A square foot estimate was then completed to determine the similarities and differences in the prices. The square foot price was based from a typical gymnasium. The price for the square foot estimate was very low. This is due to many reasons. Some of the main reasons include that Phase III is a mixed use building with high tech equipment, is two stories compared to the one story gymnasium, and that the project features a state of the art design for the whole building. Breakdowns of the mechanical systems, electrical systems, and structural systems were also completed. These values are shown below. For the square foot estimate percentages were given as a part of the entire project cost. After the total cost was found, these secondary values could also be found. All information can be found in the table below. These values reflect the pricing and guides given through RS means

Initial Building Cost Analysis					
	Total Project Cost	Building Construction Cost	Mechanical	Electrical	Structural
Actual Cost	\$ 17,115,238.00	\$ 15,368,113.00	\$ 3,000,655.00	\$ 2,004,726.00	\$ 4,293,897.00
Per Square Foot	\$ 279.22	\$ 250.72	\$ 48.95	\$ 32.71	\$ 70.05
Estimated Cost	\$ 9,540,165.00	N/A	\$ 877,695.18	\$ 1,068,498.48	\$ 1,078,038.65
Per Square Foot	\$ 155.64	N/A	\$ 14.32	\$ 17.43	\$ 17.33

Figure A.6: Initial Building Cost Analysis

## SITE LOGISTICS

One of the biggest challenges for any project are the site logistics. The site of the project sits on a lot with the existing Intramural Building. The building is in very close proximity with the Bryce Jordan Center, the Shields Building, Beaver Stadium and the Pegula Ice Arena. This meant that student traffic and pedestrians were very important to take into account during construction. Another challenge dealt with working on a relatively small site and working around the existing building. To better allow for staging and laydown areas, Mortenson, the general contractor on the site, has their main operating office in the existing basement of the IM Building. The area used for construction consists of the area running between the existing building and University Drive. The gate for construction is also located off UD, and allows for easy deliveries to the site. The site also featured a temporary staging area, during the demolition phase of the project. This is located in the North West corner of the site, and since has been landscaped back to prior conditions. Another key feature of the site is the requirement of keeping lane open through the site, and through the staging area in order to provide emergency services to the building. The site logistics plan can be seen in Figure A.7.

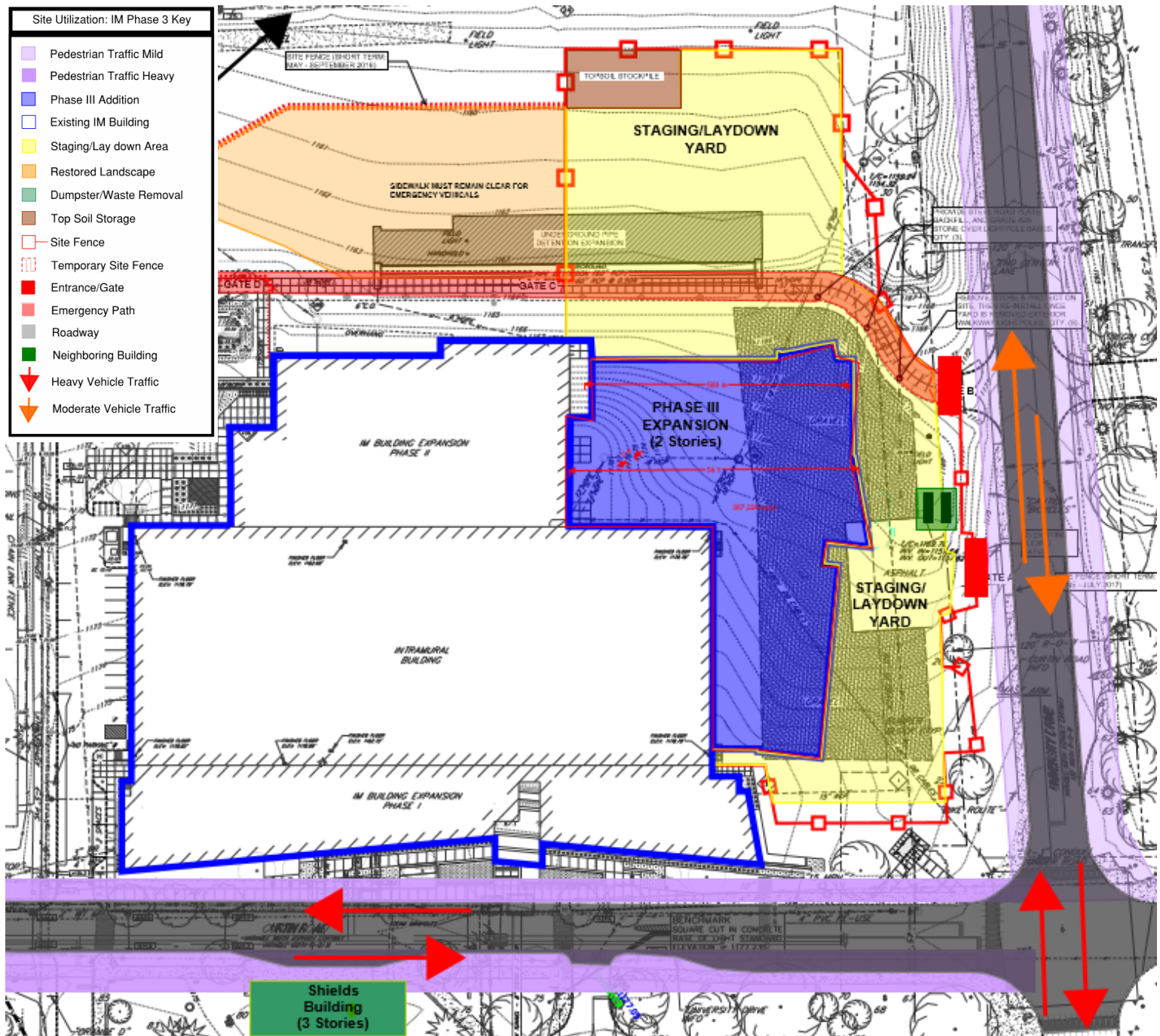


Figure A.7: Site Logistics Plan

## SCHEDULE SUMMARY

The project consisted of two major phases. The first being the demolition of parts of the existing building, and two being the major construction sequence for the addition. The demolition to the existing project started in the beginning of October of 2015 and the owner, Penn State was able to move back into the space in the middle of August 2016. The new construction of Phase III is scheduled to be complete during the beginning of September of 2017, allowing the building to be utilized for almost all of the fall 2017 semester. This is the driving force for the semester as the turf field and rock climbing walls will be utilized as soon as possible by the University. Other major events will drive the schedule including the pouring of the slabs, steel erection, installing the advanced equipment for the facility including televisions, monitors and scoreboards, and testing of these same systems.

## BUILDING SYSTEMS

### CAST IN PLACE CONCRETE

Cast in place concrete was used for several key parts of the building. All footings, and slabs were cast in place. No precast concrete will be used on this phase of the project. Footing, piers and pile caps will use 3000 psi concrete. All interior slabs will use 3500 psi, while all exterior slabs will use 4500 psi concrete.

### MASONRY

Masonry will be included both as an interior finish and as an exterior finish. Brick veneer will be used as the building is supported by steel members. The masonry on the project will serve no structural purpose.

### SUPPORT OF EXCAVATION

The existing building is already supported, and the additional excavation for the site will not require any additional support. Dewatering systems were constructed to ensure the site to stay dry during construction. The location of the site, and no surrounding building allowed for sloped earthwork. The plans do call for special filtration when pumping water from any ditch or depression, and the contractor must follow the guidelines about removing the water in a safe manner.

### CURTAIN WALL

Curtain walls will be located on the side of the addition facing University Drive. These windows will allow for the space to all be partially day lighted. The glass ranged from 1/4" to 7/16". There are three major types of glass used on the curtain wall. These include clear GT-2T glass, annealed laminated glass and regular laminated glass. The curtain wall is a store front system, meaning there will be no structural load on the wall.

## STRUCTURAL

The structural systems begins with cast in place spread footings. In total there are 10 different sizes of footings. The sizes of the square footings range from 3'-0" x 3'-0" to 8'-0" x 8'-0". Also included are rectangular footings at 6'-0" x 3'-0". Each of the footings are between 1'-0" thick to 2'-2" thick. Reinforcement for these footings begin at 4 #5 bars each way for the smallest footing (3x3) and go up to 7 #7 bars each way on the largest footings (9x9). Steel columns, beams, joist and girders will make up the structural system of the building. 3 inch steel deck will serve as the decking for poured slabs and the roofing system. Various shapes and sizes of steel members were used. They range from wide flange shapes to hollow structural section to k series joists. The most common size for wide flange beams are the W26x16. They are used to frame the outside of the building and are the main beams connected to columns. The most common size columns are the hollow structural sections at 12x12x1/2. Field connections are to be bolted, while shop connections were to be welded or bolted depending on strength and distribution requirements. The steel columns were designed to withstand a 675 foot-pound moment. This is achieved by the shear studs that are present on all major loaded beams.

## MECHANICAL

The primary mechanical system used for this phase of the project is called a hybrid ventilation system. This system utilizes the use of automatic windows and fans to bring in outside air when certain moisture and temperature levels are met. This system cuts down on the energy to heat and cool the space during times of preferable weather. To provide the necessary cooling and heating for non-ideal times the addition will seek to add 7 new air handling units ranging in size from 2100 pounds (224x51x38) to 8600 pounds (293x12676). The largest unit, which will supply the turf field will supply approximately 23400 CFM. Also included in the addition will be 12 new exhaust fans, 6 unit heaters, and 36 VAV terminals spread as necessary throughout the building. As mentioned previously a split air conditioning unit will be installed, having an outdoor and an indoor unit. A finned tube radiation system is part of the existing building, and will be added upon by the addition. The bulk of the equipment that will be added to the addition will be found in the basement mechanical rooms. There are two major mechanical rooms in the building, as well as several roof top units. Both mechanical rooms are located in the existing building.

## LIGHTING

The lighting system of the addition seeks to mimic that lighting of the existing building. The lighting system consists of a sensor system that automatically dims lights when the spaces are day lit to a certain level. These sensors help to reduce unnecessary energy costs. The space also consists of several types of lights all of which are LED. These include pendant mounted cylinders, recessed indirect fixtures, display case lights, surface mounted high abuse fixtures, surface mounted track lights, recessed linear fixtures, suspended linear fixtures, circular surface mounted fixtures, strip fixtures and 3" circular surface mounted fixtures.

## **ELECTRICAL**

The electrical room is located in the newly renovated mechanical room residing in the existing building. A new 75KVA transformer will serve the addition adding to the other 75 KVA transformer already on the site. The addition will also add 6 new panel boards ranging from 400 amps to 100 amps. These panel boards include three 400 amp panels, a 225 amp panel, a 150 amp panel board, and a 100 amp panel board. The 400 amps panels will serve various loads including most of the lighting and the receptacles in the space. These panels also will provide spare loads for the addition of future equipment in the space. The 150 amp panel will be added and the receptacles in the existing building will be rewired to be supplied by this panel board. The primary load for the 225 amp panel board will be for the lighting above the track and new field. Finally the 100 amp board will only be used to power new mechanical units for the space.

## **TRANSPORTATION**

No elevators will be present in the addition of the building. The existing IM building has elevators which will allow for occupants to access the lower level. The space does contain ramps which allow for access to the turf field and any other part of the main level of the building.

## **FIRE SUPPRESSION**

The building utilizes two types of sensors to indicate a possible fire. Both smoke and heat detectors will be implemented into the space. The dual sensor system will allow for the sprinkler system to only go off if a fire is very probable, to prevent an accidental let off of the system. The sprinkler system also features both recessed upright sprinkler heads, and recessed wall mounted heads. The water main used for the fire protection system comes from the basement of the building. The system is automatic sprinkler system with a standpipe design.

## **TELECOMMUNICATIONS**

The addition will tap into telecommunications already present in the building. They include voice, data, and cable. The addition will house several large monitors and TV's which will have internet access as well as cable TV access. Phone lines will also be included in the space to be able to contact other parts of the building and the rest of the campus, if necessary.

**ANALYSIS 1: ALTERNATE ROOFING SYSTEM ANALYSIS****OPPORTUNITY IDENTIFICATION**

The building enclosure is one of the most important parts of the building. The enclosure must protect the interior of the building from rain, snow, sleet, hail, wind, and even debris. The part of the enclosure that provides the bulk of this protection is the roof. There are many different types of roofing systems, and each type has its pros and cons. The roof that is currently being used is modified bitumen. This roofing system consists of a layer of insulation, a roof board a base layer of roofing material, and finally a cap sheet. The cap and base sheet are attached to the other layers by heat. The design of this roofing system was chosen as it is the type of roofing used for the existing building, as well as the roofing type used on Phase 2 and Phase 1 of the project. Bitumen, or torch on roofing, is a type of roof that comes in pieces of 3 feet by about 20 feet, or 60 square feet. Each roll is “welded” to the base board by heating the material until it fuses with the board. This type of roofing often blisters and requires the installation to heat the rolls to the right temperature and apply the right pressure. Although the roofing type is effective, and used on many building around the country, a different roofing system could be used to save money upfront, as well as take major time off of the installation. The enclosure of a building is often on the critical path, and any acceleration will accelerate the entire project. There are also roofing systems that provide a longer life span than modified bitumen. Three options are reviewed in this report and talked about in the following sections. They include TPO roofing, EDPM and Built-Up Roofing.

**BACKGROUND RESEARCH**

Modified Bitumen roofing is the current system on IM Phase 3. Modified bitumen, as mentioned earlier is a roofing system that requires a skilled roofer to heat rolls of the material until they are bonded to the layers below. This type of work is very dependent, not only on weather conditions, but also on humidity levels and the skill level of the installer. Hot days can affect the application of the material, and an unexperienced installer may not correctly bond the material. These issued are found throughout the application, and are often required to be repaired after the first inspection. Blister also occur sometime after the installation, which are caused due to trapped air. Careful installation and time must be spent to ensure correct procedure, but during tight schedules, roofers may not adhere to this careful installation. Some benefits to the system include that it expands and retracts well, is durable and is fairly easy to repair. The average lifespan of a modified bitumen roof is 10-15 years.

Thermoplastic Polyolefin (TPO) is a rubber like material that is increasing in popularity in the construction field. The material comes in white and grey, and is very quickly installed. The system only requires the installation to be put down with screws and fasteners and the material is then welded to the plates. TPO also is distributed in larger sheets than that of its closest competitor, EDPM, and weighs less. This means there are less seams than an EDPM roof and installation occurs faster. Seams are usually a major problem on any type of roof, and a system that has less seams is often a favorable choice for owners. An issue of TPO is that it vulnerable to high heating loads, even with the lighter color. The material is best used in milder climates, which makes it appealing in cooler climates such as the northeast. Another key advantage of TPO is that is one of the cheapest options currently for owners. This makes TPO one of the

fastest growing roofing systems for new construction, replacements, and reroofing/recovering options. The life span of a TPO roof is generally 15-20 years.

Ethylene propylene diene monomer (EDPM), is a black rubber roofing material. The life span is usually 25-30 years. EDPM is one of the most widely used roofing materials on flat and low slope roofs. EDPM has many options of installation. The material can be ballasted, which requires the material to be held down with extensive weight (rocks/gravel), or adhered. EDPM is popular due to its relatively low price, and adaptability. EDPM is able to be folded and maneuvered into almost any space and is very flexible and durable. The black coloring of the material may cause problems when solar heat is absorbed, but there are many high quality coating materials that will prevent these issues. EDPM roofs are also very fire resistant and have the most longevity of any of the roofing types compared in this report.

The final type of roofing that will be compared is built-up roofing (BUR). BUR is a “hot” roof, which means the main components of the roof are adhered together using liquid asphalt or coal tar pitch. The roofing is made up of layers of felt paper, insulation and roof board. The final layer is a layer of gravel adhered to the lower layers. This type of roofing is very durable, but very heavy. BUR roofing was once popular, as it was very strong and gave a good life span at the time. Due to safety from coal tar pitch and the weight of the system, it has fell from popularity but still used. The average lifespan of a coal tar pitch roof can last from 30-40 years if careful consideration is taken.

### POTENTIAL SOLUTION / OPPORTUNITY

The goal of this analysis is to provide Penn State with the most cost effective and schedule friendly roofing system, without sacrificing the quality of the system. MBR is the current system and provides a fairly inexpensive system with decent longevity, but possible schedule issues. TPO roofing is a fast, inexpensive, and long lasting choice for IM Phase 3. BUR roofing is the most durable and long lasting, however it poses environmental and safety issues to the workers and students. EDPM is quickly installed, light, and provides the most flexibility in design, but issues could occur with longevity. TPO seems to provide the most efficient roof for the price. To accurately assess this hypothesis a cost breakdown for each roof will be determined. A detailed schedule will be developed to show schedule changes. Finally a look at other categories will be developed using information from roofing subcontractors. With all the evidence compiled, a solution can be reached.

### METHOD

In order to complete the full analysis, several deliverables will need to be completed. These deliverables will not only summarize the information, but provide crucial data in terms of choosing the most beneficial system. The deliverables that are included are:

- Research into the pros and cons of each roofing system
- A detailed take-off of what material is used in each type of roof
- A cost analysis of each roofing system,

- A production information break down to show changes in installation durations
- A schedule for each type of roof
- A structural breadth looking at roofing weights, as well as future options for the building

## EXECUTION

### RANKING OF FEATURES

Contractors are the most reliable source when looking at comparing different roofing systems. To rank each of the four systems, background research, as well as talking to several foreman, concluded the following ranking system. 1, is the highest ranking, meaning it performs the best of the four roofing types. Each system that scored a 1 is highlighted in green, and each system that scored the lowest in each category is highlighted in red.

The roofing system that scored the lowest was TPO, followed by BUR, and EDPM. TPO scored the highest rating in color options, installation time and weight. It also did not score last in any category, making it the optimal solution based on the rating system alone. To further the analysis, a detailed look at the cost is located below. It breaks down each material used in each of the four systems, and takes into account the labor and equipment costs needed for each system. The following section analyzes the production of each system showing the schedule benefits of each system compared to the original MBR roof.

Roof Rating System				
	Roof Type			
Category	EPDM	TPO	BUR	MBR
Color (heat absorption)	4	1	3	2
Seam/Flashing Difficulty	2	3	1	4
Seam/Flashing Durability	3	4	1	2
Installation Time	2	1	4	3
Debris Rating	4	3	1	2
Life Span	2	3	1	4
Weight	2	1	4	3
Cost	1	2	4	3
Totals	20	18	19	23

Figure 1.1: Roofing System Comparisons

### COST ANALYSIS

The first step to finding the cost of each roofing type was to look at the materials that make up each system. The quantities of each system were determined using the overall area of the roof. The roof is broken up into 5 separate roofs, each at different elevations. A detailed breakdown of the square footage for each of the 5 roofs, can be found in Appendix A. The total square footage of the roof came to be 35,436 square feet. This total was then used to find the quantities needed for each system.

The first system that was looked at was the original system, the modified bitumen roof. This roofing system is made up of roof board, polyisocyanurate insulation, bonding adhesive, bitumen base sheet, and bitumen cover sheet. The detailed breakdown of each of the components can be found in Appendix B. The cost per square foot of modified bitumen, came to \$9.53. With the total square footage of the roof, the total contract cost came to \$337,568.70.

The second system that was analyzed was the EDPM system. The EDPM consists of 3" polyisocyanurate insulation, deck screws, fastening plates, bonding adhesive and finally the EDPM membrane. Once again, the cost information for each component can be found in Appendix B. The total cost per square foot of the EDPM system came to \$5.92. This made the total overall price \$209,707.91.

The next system was TPO. TPO is a up and coming system that consists of roof board, 3" polyisocyanurate insulation, deck screws, fastening plates, adhesive and the TPO membrane. The Overall cost of the membrane came to 233,497.16, which made the cost per square foot \$6.59. The detailed breakdown of the materials is in Appendix B.

The final system that was analyzed was the hot asphalt system, or Built-Up roofing system (BUR). This system is made up of a base layer, polyisocyanurate insulation, roof board, layers of coal tar pitch and felt paper, and finally a coating of roofing gravel. This is the most expensive of the options and the total was \$369,136.81. The price per square foot came to \$10.42. Figure 1.1 shows each type and the total prices and price per square foot.

PSU IM Phase III Roof System Estimate				
Roof Type	Size	Unit	Price/Unit	Total
Modified Bitumen	35436	Square Feet	\$9.53	\$337,568.70
EDPM	35436	Square Feet	\$5.92	\$209,707.91
TPO	35436	Square Feet	\$6.59	\$233,497.16
Built-Up Roofing	35436	Square Feet	\$10.42	\$369,136.81

*Figure 1.2: Roofing System Estimate Comparisons*

After completing the cost information for each system, the overall prices were compared to the original system's price. This breakdown can be seen in Figure 1.2. EDPM had a 37% price decrease from the modified bitumen. This is a difference of \$96,685.03. TPO was able to save 33% from the cost of bitumen, which was a savings of \$85,770.61. The only roofing system that was not able to save money from the cost of the bitumen, was the BUR system. The BUR

system had an increase of 16% and required a \$40,903.73 increase in price from the original system.

Based on the overall cost breakdown, only EDPM and TPO roofing could be an option utilized to save money. The goal of the analysis was to save the owner money, thus EDPM and TPO could both present an opportunity to save money on the project.

PSU IM Phase III Roof Cost Comparison			
Roof Type	Cost	Difference	Percentage
Modified Bitumen	\$ 263,098.17	0	0%
EDPM	\$ 166,413.14	\$96,685.03	-37%
TPO	\$ 177,327.56	\$85,770.61	-33%
Built-Up Roofing	\$ 304,001.90	-\$40,903.73	16%

Figure 1.3: Roofing System Difference and Percentage Breakdown

### SCHEDULE ANALYSIS

After the cost of each system was determined, a detailed breakdown at each system's installation time was calculated. Figure 1.4 displays the simplified information. TPO presented the largest change in schedule, reducing the overall duration by 21 days which. This method was able to almost cut the total installation time in half. EDPM also produced an accelerated schedule by 3 days, which yielded a change of 7% of the overall duration. The activities and schedules of each system are included in Appendix C. BUR was the only roofing system that exceeded the durations of the MBR roof, and added 19%, or 8 days to the original schedule.

Based on the schedule comparison, once again TPO and EDPM both could possibly present the project team with an accelerated schedule compared to the original system. Both options add float to the overall project, which could be important for other activities that could become delayed. Both options also present durable and strong roofing options at discounted rates.

PSU IM Phase III Roof Schedule Comparison			
Roof Type	Duration	Difference	Percentage
Modified Bitumen	43	0	0%
EDPM	40	3	-7%
TPO	22	21	-49%
Built-Up Roofing	51	-8	19%

Figure 1.4: Roofing System Schedule Comparison

## CONCLUSION

The analysis of the roofing system looked at 4 unique roofing types. The types included modified bitumen, EDPM, TPO and Built-Up. The analysis focused on cost, schedule and an overall ranking of specific categories. The type of roof that produced the best cost and schedule improvements over the original system, was the TPO roof. EDPM also produced a savings in cost and schedule. However, EDPM was ranked lower by subcontractors and did not save as much money or time when compared to TPO. BUR produced no schedule or cost benefits to the project. BUR is a roofing system that has for the most part been discontinued due to the rise of other options and this analysis proved this recent trend.

The results of this analysis also concluded that TPO is the best option for IM Phase 3. TPO was the highest rated roofing system in terms of (lack of) heat absorption, installation time, and cost. The only category TPO scored last in is the flashing and seam durability. Although this could become a problem, with an experienced TPO installer, bad seams and bad flashing would not be as much of an issue. EDPM also presents a valid option, but TPO outperforms it in just about every category. TPO is one of the fastest growing roofing types due to its advantages over the other roofing systems. In a tight budgeted project, TPO presents a very valid option for value engineering, and could possibly allow the owner to put the money into other areas without giving up the peace of mind of a protective roof. TPO proved to be a valid option, and should be consider for all future projects.

## STRUCTURAL BREADTH

### OPPORTUNITY IDENTIFICATION

Constant wind, rain, sleet, snow, sun, and temperature changes can wreak havoc on a roofing system. The large change in temperatures in central Pennsylvania, along with the wet conditions, can really put a lot of stress on a roof. Due to these issues, along with damage from debris, roofs can experience problems throughout their life cycles. The roof used on IM Phase 3 was a modified bitumen roofing. This roofing system generally has a life cycle between 12 and 20 years, meaning both EDPM and TPO roofing would last longer on average. Because of the low rating of the modified bitumen in the longevity category, many times an owner will decide to replace the roof after repeated leaks and problems. A reroofing solution often will save the owner money upfront, as they will not need to “tear off” their current roof. By adding a secondary roof the owner not only get the satisfaction of a new roofing system, but will be able to keep the building running normally, while construction is going on. A reroofing strategy is often used by owners with smaller budgets, or by owners not wanting to risk damage to the interior of their building

### BACKGROUND RESEARCH

The biggest issue of a roof replacement is the tear off of the old roof. Replacing an old roof is a messy operation, and can potentially harm the building if not careful. Holes can be made in the decking, and materials that are not supposed to come off of the building may become damaged. To an owner with an expensive building with high traffic, they want to avoid these issues as much as possible. This sometimes leads to minor repairs frequently. These repairs are not full proof and often cause backups in other places, improper draining, mold problems, and many others. Another option that can be discussed is reroofing. When reroofing is proposed many factors must be considered. The first is of course, the weight on the structure. The owner must ensure the structure that is present will not only be able to support the load of the new roof, but must also be able to handle any equipment needed for the new roof, and still be able to support snow, rain, and wind loads. This requires the owner to be very knowledgeable of his building, and to consult with the roofing subcontractor to determine the new weight on the structure.

### POTENTIAL SOLUTION / OPPORTUNITY

To determine what options are available for IM Phase 3, a structural analysis was performed. The goal of the analysis is to provide reroofing options for both the proposed roofing system (TPO) and the existing system (MBR). To determine the values each roofing type will be analyzed to find the dead load for each system. Once the weight of each system determined, it will be added to each of the two options described above to determine what options are available for both the TPO reroof and the MBR reroof options.

## EXECUTION

Figure 1.5 shows the materials that each roofing system is comprised of. The figure includes the total width of the roof, the layers of each material, and the weight of each material in pounds per square foot. This information was found through specs of each of the various materials as well as help from roofing subcontractors.

BUR was the heaviest of the four roofing systems and had a weight of 8.725 pounds per square foot and a total estimated height of 4.45 inches. MBR was the next heaviest roofing system at 6.98 pound per square foot, and a width of 6.78 inches. Next was TPO at 5.824 psf, and finally EDPM was the lightest at 4.382 psf.

Roofing System Weight and Width Totals				
Built Up Roofing (Coalt Tar Pitch)				
Layer	LBs/SF	Width	Layers	Total Width
Base Layer	0.100	0.0675	1	0.0675
Felt Paper (double coverage #30)	0.250	0.0675	2	0.135
Coal Tar Pitch	2.000	0.5	3	1.5
Fiber Board	1.500	0.5	1	0.5
Insulation (Polyiso 1.5)	0.375	1.5	1	1.5
Gravel	4.500	0.75	1	0.75
Total	8.725			4.4525
EPDM Roofing				
Layer	LBs/SF	Width	Layers	Total Width
Insulation (Polyiso 3")	3.700	3	2	3
Fastners (3" galv)	0.148	0.017	1	0.017
Adhesive	0.010	0.01	1	0.01
EPDM	0.400	0.1	1	0.1
Screws (4.5 inch)	0.124	0	1	0
Total	4.382			3.127
Modified Bitumen (Torch On)				
Layer	LBs/SF	Width	Layers	Total Width
Cap Sheet	0.900	0.14	1	0.14
Base Sheet	0.850	0.13	1	0.13
Roof Board	1.520	0.5	1	0.5
Insulation	3.700	3	2	6
Adhesive	0.010	0.01	1	0.01
Total	6.980			6.78
TPO Roofing				
Layer	LBs/SF	Width	Layers	Total Width
TPO Material	0.322	0.06	1	0.06
Insulation	3.7	3	2	6
Roof Board	1.52	0.5	1	0.5
Screws	0.124	0	1	0
Fastners	0.148	0.017	1	0.017
Adhesive	0.01	0.01	1	0.01
Total	5.824			6.587

Figure 1.5: Roofing System Weight and Thickness

Figure 1.6 presents both options for the IM Phase 3 roof, as well as four reroofing options. MBR is the original system is had a weight of 6.98 pounds per square foot. Each of the systems, except EDPM, added to this system exceeded the design load of the structure, which was 12 pounds per square foot. This leaves the owner only one reroofing option, which is EDPM. TPO was the proposed system for IM Phase 3, and the analysis was also done on each of the four systems as a reroofing option. Using TPO allowed for EDPM and another layer of TPO to be potentially utilized for reroofing

Reroof Dead Load Analysis						
Original Roofing System						
System	System Weight (PSF)	Secondary System	Secondary Weight (PSF)	Total (PSF)	Desgin Dead Load (PSF)	Exceed?
Modified Bitumen	6.980	Modified Bitumen	6.980	13.960	12	YES
		TPO	5.824	12.804		YES
		EDPM	4.382	11.362		NO
		BUR	8.725	15.705		YES
Prescribed Roofing System						
System	System Weight (PSF)	Secondary System	Secondary Weight (PSF)	Total (PSF)	Desgin Dead Load (PSF)	Exceed?
TPO	5.824	Modified Bitumen	6.980	12.804	12	YES
		TPO	5.824	11.648		NO
		EDPM	4.382	10.206		NO
		BUR	8.725	14.549		YES

Figure 1.6: Roof Structural Analysis

## CONCLUSION

After completing the analysis an EDPM reroofing option on the original roofing system is acceptable. The combined weight of 13.362 pounds per square foot does not exceed the design load of the structural system.

If TPO roofing was utilized on IM Phase 3, both a TPO reroof and an EDPM reroof option would be acceptable to be utilized. The combined weight of a TPO reroof is 11.648 pounds per square foot, and the combined weight of the EDPM reroof is 10.206 pounds per square foot.

Any of the options described above would yield an acceptable solution to a proposed reroofing situation. Each of the options is lower than allowable roof dead load, and are solutions to preserving the IM Building, and giving the building a long life span without needed to replace the roof and endanger any equipment housed in the building.

**ANALYSIS 2: MODULAR EXTERIOR WALL ANALYSIS****OPPORTUNITY IDENTIFICATION**

The façade and enclosure is important on any construction project. Once the building has been enclosed, work can begin on long duration activities like mechanical and electrical work. The exterior walls and façade fell on the critical path for IM Phase 3. An opportunity exists to accelerate the schedule to allow interior work to begin sooner. The total duration of the exterior façade is 84 days. There is opportunity to decrease this number by introducing modularized walls that could be substituted for the stick built construction that occurred on the site. The use of modular panels that have all the components of the wall premade and ready to be installed can really benefit the project schedule.

**BACKGROUND RESEARCH**

Brick can sometimes come in panels, and although are much faster to install, they take away from aesthetics of the project, as well as pose other issues. Penn State would not approve the use of a brick veneer panel to be manufactured off site due to the aesthetics of the new pieces. Although modularization would not be able to be used on the brick, by implementing ways to prefabricate the wall framing system, modularization may be able to be used. Steel stud framing is generally one of the quickest methods of wall framing, and the one way to accelerate this already fast construction, is to prefabricate panels. There are different levels of prefabrication for the steel system each with its own benefits. Sizes, as well as what all is included could all be analyzed to allow for the greatest benefit to the schedule. For this analysis, panels without the face brick will be looked at. The walls that will be prefabricated will include gypsum, the stud, and all other materials called for on the project. A complete breakdown of the wall's materials is located in Appendix F. There are several manufactures of walls of this type. The one that will be analyzed is a manufacturer located in Cleveland, Ohio. The pieces will be sized according to flatbed truck designs and requirements. A breakdown of the performance of each type of bed and sizing is located in Appendix E.

**POTENTIAL SOLUTION / OPPORTUNITY**

A potential opportunity for the system is to use modularized wall panels that include each part of the wall except the brick. The modular sections will be able to be quickly installed, speeding up the duration of the exterior façade, by allowing masonry work to begin much sooner than the original schedule had planned for. The goal of keeping the brick from being modularized is to maintain the aesthetics that Penn State cherishes. Panelized brick often looks unprofessional and a panelized brick façade would stand out from the rest of the IM Building, making it not a choice that Penn State would chose as an owner, even to save money and to accelerate the schedule.

## METHOD

In order to complete the full analysis, several deliverables will need to be completed. These deliverables will not only summarize the information, but provide crucial data in terms of choosing the most beneficial system. The deliverables that are included are:

- Research into the pros and cons of each wall system
- A detailed take-off of what materials can and cannot be modularized
- A cost analysis of each wall type
- A production information break down to show changes in installation durations
- A schedule for each of the wall options

## EXECUTION

### COST ANALYSIS

To develop a cost analysis a detailed breakdown of each material was needed. A square foot take off was conducted and the results can be located in Appendix G. From the results of this information, a detailed list of materials quantities could be concluded. These final results are located in Appendix F. One of the most important differences in each of the cost models is the quantity totals and the labor and material pricing. In the field waste is far more prevalent than in a prefabricated shop setting. This data is often included in an estimate. For the wall constructed in the field, a 10% increase in material quantities was applied. This is the approximate waste factor that will result from construction in the field. A reduced material and labor cost is also used for the modularized panels. These panels will be constructed in a shop. IM Phase 3, and any work done at Penn State, provides all workers with prevailing wage. This means that any subcontractor who is not in the union, will be paid a competitive union wage, on the project. Workers in shop settings, on average, will not be making the same amount of money and will typically have a lower overall wage. The material cost is also lower due to the shop bulk ordering materials. They will have large quantities of the materials they will need, thus driving down the total cost of each material. This information is all compiled into Appendix F.

Figure 2.1 is a simplified cost comparison of each of the systems. The total cost of the stick build exterior walls, was \$888,923.79. The stick built option contained no additional shipping costs, as the materials would be included in the subcontractor's contract, and would not pose an additional cost to the owner. Modular contained shipping costs, which would be an added cost on top of the material itself. To determine how many pieces were needed to complete the project, a breakdown of each piece is included in Appendix D. The sizing of each piece was determined by finding the maximum size of different bed and trailers. The breakdown is located in Appendix C. In total 75 pieces were needed to be constructed. Having the weight of each piece, and knowing the height restrictions meant that up to 10 pieces could be shipped on each truck. This meant, in total 8 trips would need to be made from the factory. The total cost of shipping these materials came to \$4250.00. This value was calculated using the distance from Cleveland, Ohio to State College, and using a flat rate of 2 dollars per mile traveled. By adding the costs of shipping, labor, and materials the modular wall panels would cost a total of \$847,514.14. This gave a 4.7% savings from the original design, and saved a total of \$41,409.65.

Wall Cost Comparison				
Simplified Cost Model				
Name	Cost	Shipping Cost	Total	Difference
Stick Built Exterior	\$888,923.79	\$0.00	\$888,923.79	NA
Modular Wall Panels	\$843,264.14	\$4,250.00	\$847,514.14	4.7%

Figure 2.1: Wall System Simplified Cost Model

### SCHEDULE ANALYSIS

A breakdown of the total durations is included in Figure 2.2. Using the production information found in Appendix F. The current schedule for exterior walls had a duration of 84 days. This included studs, brick laying, gypsum, insulation and all other materials contained in the walls. The proposed modular construction yielded a total duration of only 53 days. This cut the total duration of the system by 31 days, or 37% of the total duration. The estimated installation time for each wall type are also included in Appendix F. Large pieces are any pieces that extend past 4 feet by 8 feet. Medium sized pieces were classified up to 16 feet by 8 feet, and finally large pieces were anything larger than 16 feet by 8 feet. In total the project is made up of 18 small pieces, 23 medium pieces, and 34 large pieces. The durations are defined by appendix F and were found by talking to a previous installer of similar panels. What is important to remember is that although the modularized walls save 31 days, they must be ordered ahead of time to ensure they are ready. Lead time is very important to a project looking to use modular construction and this would have to be a concern for a project with a fast turnaround.

Wall Duration Compariosn		
Simplified Schedule Model		
Name	Days	Difference
Stick Built Exterior	84	NA
Modular Wall Panles	53	37%
<b>Total Saved</b>	<b>31</b>	

Figure 2.2: Wall Duration Simplified Schedule Model

## CONCLUSION

In conclusion, modularized exterior wall panels present a budget and schedule benefit. The modular panels not only present cost and schedule benefits, but also unforeseen benefits. The biggest is safety. By decreasing the amount of trades on site, and decreasing the amount of time they are all working in close proximity, can prevent any safety issues. Safety is the biggest concern for an owner like Penn State. They would quickly accept any option that improves the safety of the workers or students. Phase 3 also greatly benefits from the use of modular panels, as a large lead time would have been available. Penn State along with Mortenson and Moody Nolan, had knowledge of all of the phases of the IM building far enough in advance, where modular panels could have been utilized. The project could really have benefitted from the use of the panels. Modularized exterior wall panels are a valid and favorable option for Penn State and the IM building. 31 days and almost \$50,000 would have been the outcome if they were utilized.

**ANALYSIS 3: MECHANICAL SYSTEM ANALYSIS****OPPORTUNITY IDENTIFICATION**

LEED is a grading system used to determine how green a building, or project is. Although many buildings utilize the LEED ratings, it is beginning to be discontinued. This is also the case on the Penn state Campus. OPP and the school have begun to value a LEED rating less, and use other forms of rating systems. Phase 3 is a LEED Silver project and utilizes a hybrid ventilation system. The system uses 100 percent outside air when the temperature and humidity meet certain levels. State College weather is moderate, although it does not meet the requirements of the system very often. These makes the system unusable for a majority of the time. A look at changing these controls is discussed in the mechanical breadth. An opportunity exists to exchange the current system, and to use a rooftop economizer. An economizer utilizes 100 percent outside air when temperature and humidity levels are met, much like the current system. The difference between the systems is that the economizer uses fans and the existing ductwork to transport in the fresh air. The further differences will be analyzed in the following sections of this report.

**BACKGROUND RESEARCH:**

The background of this opportunity comes from the project manager and the design of the mechanical system. The addition was designed to be LEED Silver. This was because the existing building is also designed to be LEED Silver. Many owners are straying away from LEED as it costs the project more money, and doesn't always produce a more efficient building. Owners are beginning to move to alternative scoring systems for renewable buildings. Penn State is beginning to implement this strategy, as well. The addition comes before Penn State began to stray from typical LEED standards. The mechanical system of the space is one of the areas most affected by LEED on the project. The system of opening all of the windows presents issues with the elements, as well as potential issues with controls, wiring, and mechanical issues. The system is also expensive and requires extensive amounts of labor that could be avoided by utilizing the economizer. An economizer is designed to work well in climates such as State College. The energy savings of an economizer can grow to almost 20-30% in certain climates. Although this is a key selling point of the system, many times they are installed incorrectly. This defeats the purpose of the system and can cause the system to not perform. A well installed product, and careful maintenance is a common commodity at Penn State. An economizer installed on the IM Phase 3 would be installed correctly and closely monitored to cause the system to perform up to its designed standards. The system would provide "free cooling", which is only using air and not the AHU. It would also help to lessen the load of the AHU in general.

**POTENTIAL SOLUTION / OPPORTUNITY**

An opportunity exists to replace the existing hybrid ventilation system. The economizer presents the best substitution for the system. The economizer functions in the same way as the current system, in that at ideal temperature and humidity levels, will utilized 100 percent outside air. The economizer eliminates the expensive hybrid ventilation system and will save the existing air handling unit energy by using the outside air. State College is in an area where an economizer could really benefit the project. Having the windows open during the hybrid

ventilation system could have many problems with wind and debris, and the economizer would eliminate these issues.

## METHOD

In order to complete the full analysis, several deliverables will need to be completed. These deliverables will not only summarize the information, but provide crucial data in terms of choosing the most beneficial system. The deliverables that are included are:

- Research into pros and cons of each system
- A detailed take-off of what materials for both systems
- A cost analysis of all materials
- A production information break down to show changes in installation durations
- A schedule for each of the options
- An energy usage analysis for each system
- A 30 year life cycle cost analysis
- A mechanical breadth analyzing the change in acceptable temperatures and humidity

## EXECUTION

### COST ANALYSIS

To develop the cost analysis, the best solution was to create a life cycle cost analysis. First, the materials that make up both systems needed to be quantified. From the quantities of each system, an initial cost could be developed. A detailed breakdown of this information can be found in Appendix J. Figure 3.1 gives the summarized information. The total cost of the current system, the hybrid ventilation system, was \$1,005,889.05. This price reflects the cost of the operable windows, the wiring and controls needed for the system, the mechanical motors and conduit needed for the system. This price also reflects the pricing needed for the labor on the site during construction. The economizer system had an initial cost of \$90,114.31. This price includes 4 rooftop economizer units and the ductwork needed to connect the systems to AHU 18. This initial cost difference is staggering, and by using the economizer system, the owner could save \$915,774.74. This would persuade most owners to not even consider the hybrid ventilation system, but further analysis of the power consumption will provide varying information.

To find the power consumption of each system, a look at each electric part was analyzed and found through product specifications. A detailed look at each hour's temperature and humidity is found in Appendix L. Each system was assumed to be in a perfect scenario and running during the hours defined by Zone 1. The equipment that ran during hybrid ventilation were only the ceiling fans, and the motors for the windows briefly. The economizers were the only running piece of equipment for the alternate system. A detailed breakdown of each of these systems can be found in Appendix J.

Finally a cost model was determined to estimate the price of a Kilowatt Hour (KWH), each year for the next 30 years. This analysis is found in Appendix K. The amount of energy usage per year was then added to the initial cost of each system to perform the life cycle cost analysis. Figure 3.1 is a simplified model of this life cycle analysis, while Appendix N is the complete

breakdown. After the first year the difference for the system is 91%, with a difference of \$915,774.74. The Hybrid Ventilation system does not ever become the more efficient system over the defined 30 year period. Year 20 the Hybrid Ventilation system's cost is still \$847,212.90, which is 84 % of the Hybrid ventilation Systems Cost. At the end of the 30<sup>th</sup> year, the hybrid ventilation system would be almost 800,000 dollars more costly. Figure 3.2 is a graphical representation of the systems life cycle cost analysis. The graph displays that the economizer will always be more efficient price wise. This is due to steep initial cost of the system.

Being a Penn State project, the IM Phase 3 will have a long life span, and be utilized for more than 30 years, and thus the economizer system should be considered to be the better option based on initial price and energy usage over time.

Mechanical System Cost Summary					
Life Cycle Cost					
System	Initial Construction Cost	Cost Year 1	Cost Year 10	Cost Year 20	Cost Year 30
Hybrid Ventilation System	\$1,005,889.05	\$1,005,971.29	\$1,006,828.97	\$1,007,767.33	\$1,008,754.48
Economizer System	\$90,114.31	\$93,198.36	\$125,363.58	\$160,554.44	\$197,574.69
<b>Total Difference</b>	<b>\$915,774.74</b>	<b>\$912,772.93</b>	<b>\$881,465.39</b>	<b>\$847,212.90</b>	<b>\$811,179.78</b>
<b>Percentage</b>	<b>91%</b>	<b>91%</b>	<b>88%</b>	<b>84%</b>	<b>80%</b>

Figure 3.1: Mechanical System Lifetime Cost Summary

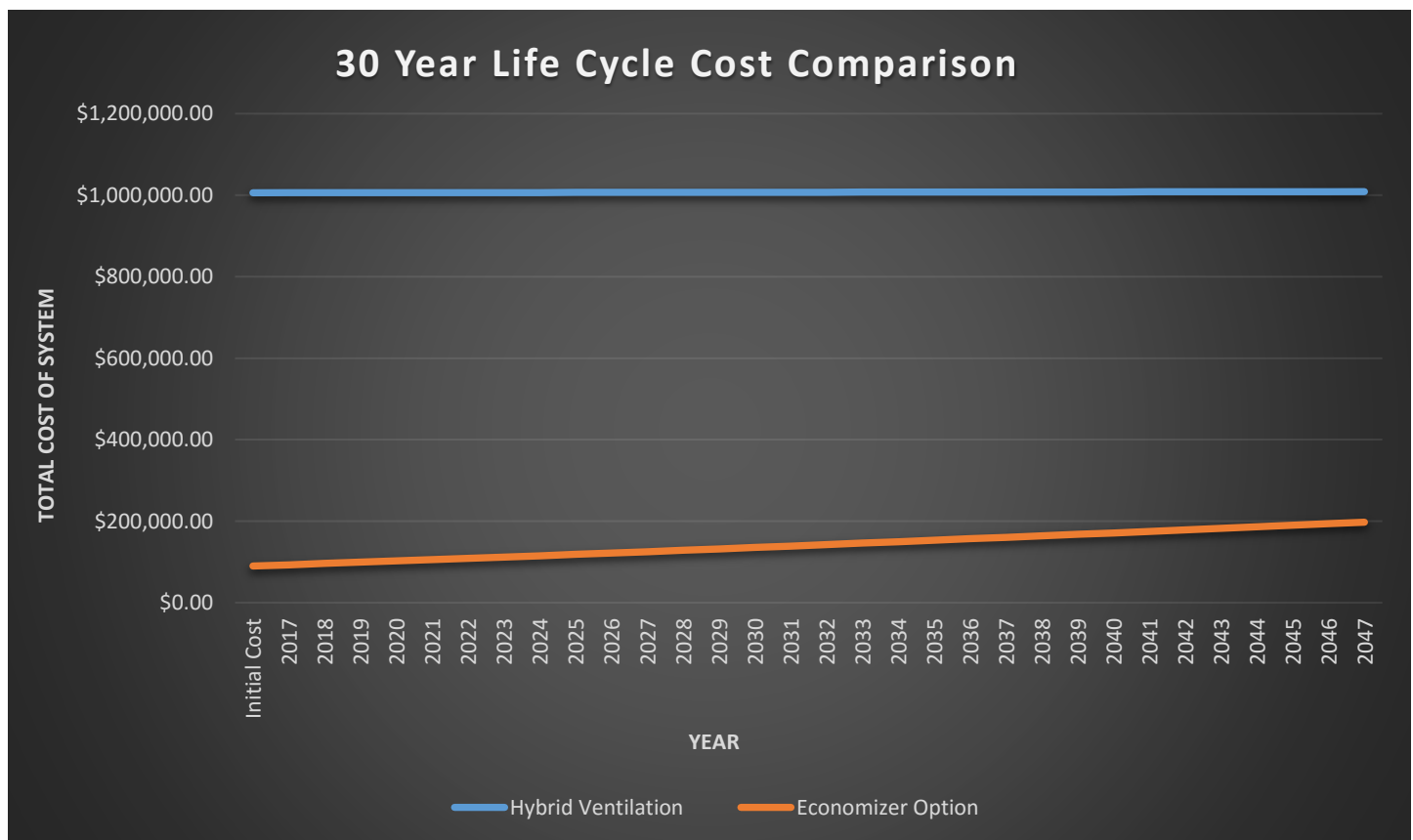


Figure 3.2: Mechanical System Lifetime Cost Cycle

### SCHEDULE ANALYSIS

The schedule was developed using the production and man hours found in Appendix J. The schedules for each system are included in Appendix O. The summary of the schedules and the production information is found in figure 3.3. The start date of the original system was schedule to begin on November 28, 2016. The total duration of the installation of the hybrid ventilation system was 21 days, meaning the system would be completed by December 26, 2016. The proposed economizer system would begin on the same date, but the total duration would only be 11 days. This is a difference of 10 days, or 48 % of the original duration.

Based upon the results of the schedule analysis, the economizer system would be the most effective option. The economizer option cuts the construction in time in half, saving the project that much time.

Mechanical System Schedule Summary					
System Durations					
System	Start Date	End Date	Duration	Difference	Percentage
Hybrid Ventilation System	28-Nov-16	26-Dec-16	21	N/A	N/A
Economizer System	28-Nov-16	12-Dec-16	11	10	48%

Figure 3.3: Mechanical System Construction Durations Summary

### CONCLUSION

Based upon the completed analysis of the economizer system, and the hybrid ventilation system, the economizer system would be the better overall option for the space. The 4 economizers on the roof of the space would serve the large recreational space of the addition, and would only be in operation 7% of the year. Due this information the system would be the best option, as well as saving over 800,000 dollars and 48% of the schedule compared to the original system. The argument could be made, that the economizer system is less efficient than the hybrid ventilation system. This is due to the larger energy consumption during usage, however at no time in its life cycle, does the system surpass the price of the hybrid ventilation system.

## MECHANICAL BREADTH

### OPPORTUNITY IDENTIFICATION

One of the key features of IM Phase 3 was the hybrid ventilation system. The system utilized a special feature that opens all the windows mechanically when the outside temperature falls between 65-75 degrees Fahrenheit, and falls below 65% relative humidity. The main area that is served by this system, is the most active part of the building. Both the climbing and bouldering wall, as well as the turf field are serviced the most by this system. Due to weather of State College, and the uses of the space, a change in the acceptable ranges could be beneficial to the occupants as well as utilize the system more. A lowered minimum temperature and an increased humidity threshold will allow the systems to run more frequently. This means less energy will be used by the systems to cool the space, and the occupants will experience more favorable conditions for physical activities in the space.

### BACKGROUND RESEARCH

Thermal comfort is a highly debated topic. Each person experiences temperature differently and is comfortable at different temperatures and at different humidity levels. The mechanical breadth set out to determine the range of values deemed acceptable for the space. The space being analyzed for the economizer system contains the rock climbing, bouldering, and turf field. This is an area of increased physical activity and occupants. A 65 degree temperature in a crowded gym is not the ideal situation for most occupants. Human comfort is defined as the conditions where a person does not feel too hot or too cold. A 75 degree temperature also is not ideal in the areas described above. Another key factor is the age of the occupants. Age is a direct factor of one's thermal comfort. The use of the space will be a majority of students, aging 19-23. They have a wider range of thermal comfort and also will be more comfortable in lower temperatures. Many of these ideas were set in place through AE 310, which is a mechanical engineering introductory course offered at Penn State. Humidity also plays a major role in thermal comfort. The current system accepts air at 65% relative humidity. State College does not meet the requirements of the system often. Not only are the residents of state College more adapted to this weather, but also more accepting of building temperatures above this range. The residents of state college are also more accepting of lower temperatures in colder months. 55 degrees on a December day after a week of 32 degrees Fahrenheit feels much warmer to residents then 55 degrees after a week of 90 degree weather in August. A lower temperature will also help to manage humidity levels. Sweat and active occupants in the space will cause the humidity to rise in the building. By lowering temperature levels, occupants will be less likely to perspire, thus helping to manage relative humidity in the space. This will allow for a greater humidity threshold.

### POTENTIAL SOLUTION / OPPORTUNITY

A potential solution is to modify the levels that the system accepts. After conducting the research and talking to professors in the mechanical option at Penn State, an increased level could be utilized. The hybrid ventilation system serves a very active area where increased humidity and lowered temperatures may be acceptable. By reconfiguring the system's tolerances

the system could be utilized more than the current acceptable levels. As for the economizer, they are able to be used much in the same way as the system. Analysis 3 proposed that IM Phase 3 had the opportunity to avoid the hybrid ventilation system, and use an economizer that fed the main air handling unit for the space. The economizer would also greatly benefit from cooler temperatures, as it is easier for the system to bring in outdoor air and convert it for use in the space. The operating curve of the system is not linear and works more efficiently in colder temperatures.

## EXECUTION

First, a breakdown of the weather for the previous year was performed. A log of every hour of 2016 was determined which displayed relative humidity and temperature. Appendix L shows the compiled information. Next, a look at the frequency the system would operate was created. Zone 1 is the original zone and is defined as temperatures between 65 and 75 degrees Fahrenheit and below 65% relative Humidity in Appendix M. These two graphs display the temperatures and humidity levels as a line graph. The highlighted areas are the zones in which the system would be in effect. Zone 2 is defined as 60-75 degrees Fahrenheit, and below 75% relative humidity. Zone 3 is defined as 55-75 degrees Fahrenheit, and below 75% relative humidity. Each of the zones is shown on the psychometric chart in figure 3.4, below. A psychometric chart is a chart used to measure temperature data. The chart features a dry bulb, wet bulb, relative humidity and several other aspects of a temperature. By plotting 2 known points of a temperature, more information can be discovered using the charts. The dark blue area is zone 1, the light blue is zone 3, and the green area is zone 2. By looking at the figure below, it can be seen by dropping the temperature and increasing the humidity levels can greatly increase the area of possible values the system could use.

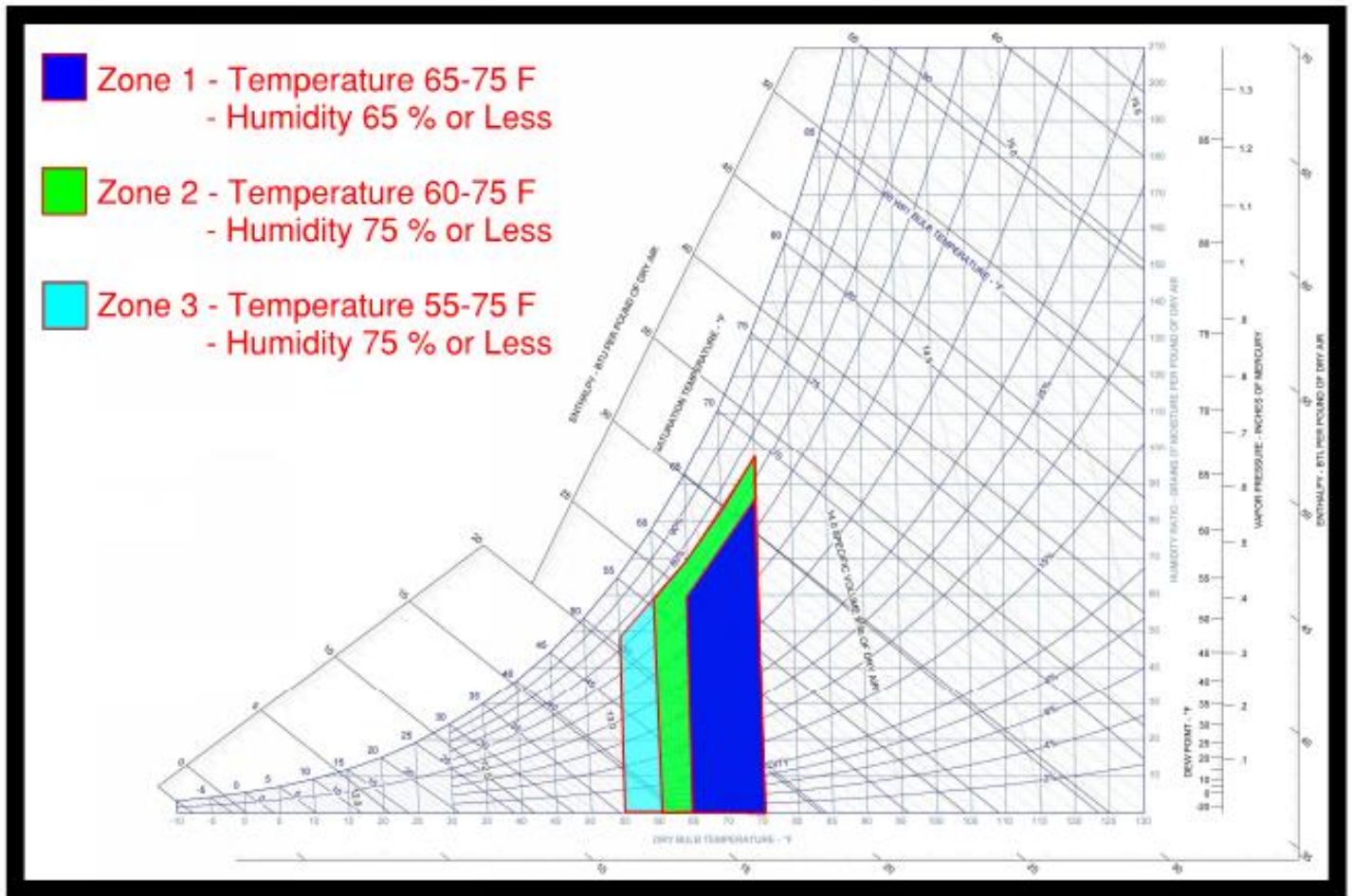


Figure 3.4: Thermal Zone Definitions

The next step was to determine when each of these zones would be active in State College. To determine this information the information in Appendix L was used. Using the logged temperature and relative humidity of each hour, each zone's running time could be found. Figure 3.5 displays the summarized information from this analysis. Zone 1 was able to be in use only 7% of 2016. This is a very low percentage, and due to restrictions of the system only running during daily operational hours, this number would drastically increase, making the system almost useless. To better fit the weather patterns of State College, zone 2 drops the temperature by 5 degrees on the cooler side, and increases the relative humidity to 75%. These values drastically change the amount of time the system can be operational, doubling the previous zone's hours. Zone 2 was able to be in effect of 1259 hours, or 14% of the time. The drop in temperature would benefit the space, seeing as it serves the athletic areas of the building, and a doubled time of operation could yield significant power savings for the building. The third zone was an extreme option. This option allows the system to accept temperatures down to 55 degrees Fahrenheit and up to 75 degrees Fahrenheit. The system also accepts relative humidity levels below 75%. This extreme zone raised the overall hours of activity to 1631, which is 19% of the year. The biggest increases in the hours of usage came in the months near June. During these months temperatures are, on average, milder and are more likely to be in the range of the two proposed zones. Colder months do not benefit as much compared to milder months. Zone

2 seems to be the best solution to utilizing the system. Zone 3 presents temperatures that may be too cold for most students. Zone 3 also does not have as much of an effect on the total, as it only poses a 5% increase in the same temperature change as Zone 2.

The next step would be to look at the energy uses of each system in each system. Using the power information found in analysis 3, the changes in operable hours can be adjusted to show the new power costs of each system. Figure 3.7 shows the zone breakdowns and KWH per zone. Figure 3.8 shows the new energy usage for the hybrid ventilation option. Figure 3.9 shows the energy usage for the economizer option.

Zone Temperature Comparisons for Ventilation System									
Month	Highest Temp.	Lowest Temp.	Total Hours	Zone 1		Zone 2		Zone 3	
				Hours Active	Percent	Hours Active	Percent Increase	Hours active	Percent Increase
January	59	17	744	0	0%	0	0%	5	1%
February	64	17	696	0	0%	10	1%	24	3%
March	77	32	744	31	4%	53	7%	136	18%
April	78	19	720	88	12%	151	21%	209	29%
May	86	35	744	60	8%	148	20%	210	28%
June	86	42	720	162	23%	268	37%	309	43%
July	95	53	744	80	11%	160	22%	163	22%
August	91	51	744	46	6%	112	15%	112	15%
September	87	42	720	122	17%	198	28%	215	30%
October	80	28	744	52	7%	124	17%	162	22%
November	71	24	720	8	1%	35	5%	86	12%
December	51	4	744	0	0%	0	0%	0	0%
<b>Total</b>			8784	649	7%	1259	14%	1631	19%

Figure 3.5: Zone Temperature Comparisons

Power Usage by Items		
Hybrid Ventilation System		
Zone	Hours in Use /Year	KWH
Zone 1	649.00	623.00
Zone 2	1259.00	1208.56
Zone 3	1631.00	1565.66
Economizer		
Item	Quantity	KWH
Zone 1	649.00	23364.00
Zone 2	1259.00	45324.00
Zone 3	1631.00	58716.00

Figure 3.6: Thermal Zone Definitions

Future Cost Model for Electric Use per Zone							
Hybrid Ventilation System							
Year	Cost / KWH (Cents)	Zone 1 Hours	Cost	Zone 2 Hours	Cost	Zone 3 Hours	Cost
2017	13.20	623	\$ 82.24	1209	\$ 159.59	1631	\$215.29
2018	13.30	623	\$ 82.86	1209	\$ 160.80	1631	\$216.92
2019	13.35	623	\$ 83.17	1209	\$ 161.40	1631	\$217.74
2020	13.20	623	\$ 82.24	1209	\$ 159.59	1631	\$215.29
2021	13.40	623	\$ 83.48	1209	\$ 162.01	1631	\$218.55
2022	13.60	623	\$ 84.73	1209	\$ 164.42	1631	\$221.82
2023	13.90	623	\$ 86.60	1209	\$ 168.05	1631	\$226.71
2024	14.20	623	\$ 88.47	1209	\$ 171.68	1631	\$231.60
2025	14.18	623	\$ 88.34	1209	\$ 171.44	1631	\$231.28
2026	14.24	623	\$ 88.72	1209	\$ 172.16	1631	\$232.25
2027	14.30	623	\$ 89.09	1209	\$ 172.89	1631	\$233.23
2028	14.50	623	\$ 90.34	1209	\$ 175.31	1631	\$236.50
2029	14.74	623	\$ 91.83	1209	\$ 178.21	1631	\$240.41
2030	14.85	623	\$ 92.52	1209	\$ 179.54	1631	\$242.20
2031	14.96	623	\$ 93.20	1209	\$ 180.87	1631	\$244.00
2032	15.02	623	\$ 93.57	1209	\$ 181.59	1631	\$244.98
2033	15.30	623	\$ 95.32	1209	\$ 184.98	1631	\$249.54
2034	15.28	623	\$ 95.19	1209	\$ 184.74	1631	\$249.22
2035	15.34	623	\$ 95.57	1209	\$ 185.46	1631	\$250.20
2036	15.32	623	\$ 95.44	1209	\$ 185.22	1631	\$249.87
2037	15.31	623	\$ 95.38	1209	\$ 185.10	1631	\$249.71
2038	15.39	623	\$ 95.88	1209	\$ 186.07	1631	\$251.01
2039	15.45	623	\$ 96.25	1209	\$ 186.79	1631	\$251.99
2040	15.54	623	\$ 96.81	1209	\$ 187.88	1631	\$253.46
2041	15.62	623	\$ 97.31	1209	\$ 188.85	1631	\$254.76
2042	15.70	623	\$ 97.81	1209	\$ 189.81	1631	\$256.07
2043	15.80	623	\$ 98.43	1209	\$ 191.02	1631	\$257.70
2044	16.00	623	\$ 99.68	1209	\$ 193.44	1631	\$260.96
2045	16.30	623	\$ 101.55	1209	\$ 197.07	1631	\$265.85
2046	16.25	623	\$ 101.24	1209	\$ 196.46	1631	\$265.04
2047	16.40	623	\$ 102.17	1209	\$ 198.28	1631	\$267.48
		<b>Total</b>	<b>\$ 2,865.43</b>		<b>\$ 5,560.67</b>		<b>\$7,501.62</b>

Figure 3.7: Hybrid Ventilation Zone Cost Comparison

Future Cost Model for Electric Use per Zone							
Economizer System							
Year	Cost / KWH (Cents)	Zone 1 Hours	Cost	Zone 2 Hours	Cost	Zone 3 Hours	Cost
2017	13.20	23364	\$ 3,084.05	45324	\$ 5,982.77	58716	\$7,750.51
2018	13.30	23364	\$ 3,107.41	45324	\$ 6,028.09	58716	\$7,809.23
2019	13.35	23364	\$ 3,119.09	45324	\$ 6,050.75	58716	\$7,838.59
2020	13.20	23364	\$ 3,084.05	45324	\$ 5,982.77	58716	\$7,750.51
2021	13.40	23364	\$ 3,130.78	45324	\$ 6,073.42	58716	\$7,867.94
2022	13.60	23364	\$ 3,177.50	45324	\$ 6,164.06	58716	\$7,985.38
2023	13.90	23364	\$ 3,247.60	45324	\$ 6,300.04	58716	\$8,161.52
2024	14.20	23364	\$ 3,317.69	45324	\$ 6,436.01	58716	\$8,337.67
2025	14.18	23364	\$ 3,313.02	45324	\$ 6,426.94	58716	\$8,325.93
2026	14.24	23364	\$ 3,327.03	45324	\$ 6,454.14	58716	\$8,361.16
2027	14.30	23364	\$ 3,341.05	45324	\$ 6,481.33	58716	\$8,396.39
2028	14.50	23364	\$ 3,387.78	45324	\$ 6,571.98	58716	\$8,513.82
2029	14.74	23364	\$ 3,443.85	45324	\$ 6,680.76	58716	\$8,654.74
2030	14.85	23364	\$ 3,469.55	45324	\$ 6,730.61	58716	\$8,719.33
2031	14.96	23364	\$ 3,495.25	45324	\$ 6,780.47	58716	\$8,783.91
2032	15.02	23364	\$ 3,509.27	45324	\$ 6,807.66	58716	\$8,819.14
2033	15.30	23364	\$ 3,574.69	45324	\$ 6,934.57	58716	\$8,983.55
2034	15.28	23364	\$ 3,570.02	45324	\$ 6,925.51	58716	\$8,971.80
2035	15.34	23364	\$ 3,584.04	45324	\$ 6,952.70	58716	\$9,007.03
2036	15.32	23364	\$ 3,579.36	45324	\$ 6,943.64	58716	\$8,995.29
2037	15.31	23364	\$ 3,577.03	45324	\$ 6,939.10	58716	\$8,989.42
2038	15.39	23364	\$ 3,595.72	45324	\$ 6,975.36	58716	\$9,036.39
2039	15.45	23364	\$ 3,609.74	45324	\$ 7,002.56	58716	\$9,071.62
2040	15.54	23364	\$ 3,630.77	45324	\$ 7,043.35	58716	\$9,124.47
2041	15.62	23364	\$ 3,649.46	45324	\$ 7,079.61	58716	\$9,171.44
2042	15.70	23364	\$ 3,668.15	45324	\$ 7,115.87	58716	\$9,218.41
2043	15.80	23364	\$ 3,691.51	45324	\$ 7,161.19	58716	\$9,277.13
2044	16.00	23364	\$ 3,738.24	45324	\$ 7,251.84	58716	\$9,394.56
2045	16.30	23364	\$ 3,808.33	45324	\$ 7,387.81	58716	\$9,570.71
2046	16.25	23364	\$ 3,796.65	45324	\$ 7,365.15	58716	\$9,541.35
2047	16.40	23364	\$ 3,831.70	45324	\$ 7,433.14	58716	\$9,629.42
		<b>Total</b>	<b>\$ 107,460.38</b>		<b>\$ 208,463.21</b>		<b>\$270,058.37</b>

Figure 3.8: Economizer Zone Cost Comparison

## CONCLUSION

Based on the above analysis, the hybrid ventilation system should be used on Zone 2. Zone 2 allows the system to double its usage throughout the year. This will ensure that students will be able to experience fresh air in the space while doing cardiovascular activity. The lowered temperature at 60 degrees Fahrenheit is warm enough to allow most of the occupants to feel comfortable. It also allows for less occupants to sweat due to the activities in the space which in turn allows for a higher relative humidity to be in effect for the space. The increased use of the system prevents costly air handling units to be in use, saving the building energy and money. The increase in energy costs would only be a little over \$5000 over a 30 year period, which is very insignificant when looking at the overall building. The pros would outweigh the cons in this situation and the hybrid ventilation system should utilize Zone 2.

The prescribed system for the space, the economizer should be utilized on Zone 3. Zone 3 is the most extreme of the zones but allows for the economizer to be in use for almost one fourth of the year. By bringing in the cooler air (lower range at 55 degrees Fahrenheit) less energy will be needed to be used by the air handling unit, saving the building money in the long run. Cool air also is easier to lower the temperature in the space from return air. Free cooling will also occur where the air from outside will be able to be used the entire period without needed the air handling unit at all. This could cause major savings for the space while still also giving the occupants a more pleasurable experience in the space. The change in price and energy usage is significant, rising over \$170,000 over the 30 year period. Although this number seems steep, the savings from not using the other systems would outweigh these energy costs. The units would also adequately supply the amount of cooling the space would need. This can be seen in figure 3.9. The total cooling of AHU 18 is 898,600, or 898,600,000 BTUs/hour. To satisfy this cooling need at peak performance 4 Trane DX Units would need to be installed on the roof top. Each system can provide 240,000,000 BTUs/hour.

Cooling Load Calculations	
Economizer Information	
Name	Cooling Total MBH
AHU-18	898600
Economizer (Trane DX Units)	240000
<b>Total Needed</b>	<b>4</b>

Figure 3.9: Cooling Load Calculation

## **ANALYSIS 4: SUBCONTRACTORS AND THE INTEGRATED PROJECT DELIVERY METHOD ANALYSIS**

### **OPPORTUNITY**

Integrated project delivery projects are a type of project which allows project teams to be involved very early in the design of the project. It allows subcontractors and contractors to help architects and designers work out details. The ideal of using IPD projects came about from discussing modularization on a large scale at the PACE Roundtable. An opportunity exists to help educate subcontractors on the benefits to being involved in IPD projects and helping increase the overall use of them in the construction field. The overall process is new to many senior level project managers in the subcontractor field. By gauging their opinions on the topics and ideas behind IPD projects, construction managers can begin to engage with them more on the topics of IPD and help to educate them on how successful a project can be while using IPD.

### **BACKGROUND RESEARCH**

From industry experience, as well as having spoken to several industry members about IPD projects, there seems to be a lot of negative stigma about IPD coming from the subcontractors. A lot of subcontractors are not willing to, or are unable to participate in IPD projects for several reasons. One of the main reasons is profit sharing. They are not able to apply their own fees and may think they will not make as much money on the project. IPD projects also require a lot of early involvement in projects. Subcontractors are often tied up on projects and are not willing to put in time into an IPD and would prefer to bid on the projects, as they get paid for their involvement. A lot of the subcontractors also are not up to date on current technology and the sharing of all files could be too overwhelming for some subcontractors. Research was also done through several publications. The results of this research can be found in the later sections of this report.

### **POTENTIAL SOLUTION / OPPORTUNITY**

A potential solution to this problem is to educate the construction workers on IPD projects, and to understand their grievances with IPDs. By identifying what they like most about certain project delivery methods, then we can begin to apply these principles to the IPD method. This analysis will focus on the subcontractors. Subcontractors are usually the most hesitant to buying into IPD projects and can be deterred by the binding nature of IPDs. By understanding why parties are not in favor of IPD projects, they can begin to learn the potential benefits of IPD project and begin to utilize them more in the field. We can also learn about what they think are the best parts of using the IPD method and further analyze how to continue to better the delivery method.

### **EXECUTION**

To determine the necessary research for this analysis, a survey was present to several subcontractors working on Penn State Project. The respondents were fairly diverse and gave a lot of good feedback. The complete answers and questionnaires are found in Appendix... The summarized results and analysis are below.

## SURVEY RESULTS

The survey asked several questions to gauge how subcontractors felt about IPD projects, and whether or not they would want to be involved. The first set of questions set out to look at each respondent's construction experience, and their job position. There was a wide range of experience and titles. There were project managers, a VP of estimating, owners, and company presidents. The average experience of the 8 respondents was 16 year in construction. Although this value is affected by the wide range of respondents. In total 50 percent of the respondents had 26 or more years of experience. 12.5 percent had 15 to 20 years of experience, and the remaining respondents were young, and only had 0 to 5 years of experience in construction. A breakdown of this information is found in Figure 4.1.

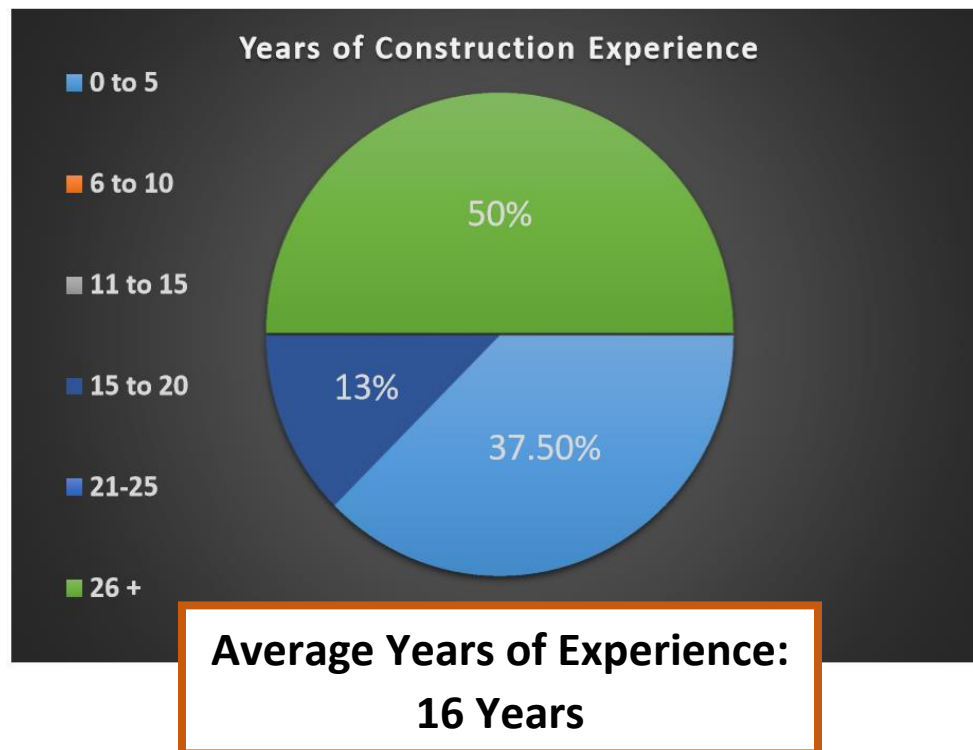


Figure 4.1: Respondents Years of Construction Experience

The next questions inquired about the amount of IPD projects that the respondents had been involved with, and how familiar they were with the method. Figure 4.2 displays this information. For the most part, every respondent had worked on at least one IPD project, meaning they had some idea of the goals and benefits of the delivery method. Space was provided for each person to describe how familiar they think they are with the project delivery method. The familiarity was very wide spread. Several of the respondents had a fairly good idea of the IPD was and felt like they were comfortable. Some, although new to IPDs, still understood the basic concepts and seem to be excited to continue to educate themselves on the delivery method. This information is important as the next section asked each person to rank several categories where IPD projects can benefit the job as a whole. These categories include budget, schedule, and safety, reduction of problems during construction, coordination and overall quality of the project.

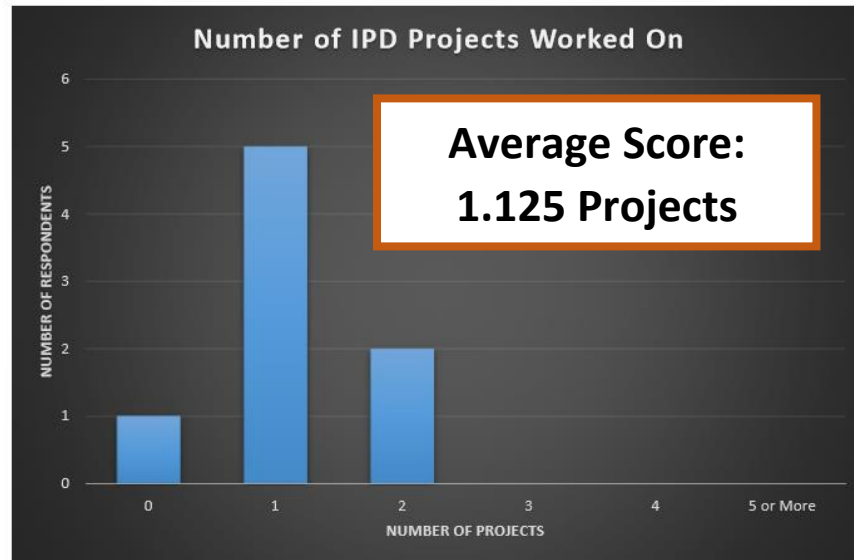


Figure 4.2: Number of IPD Projects Worked On

The first category each member was asked to rank was how effective IPD projects are on managing the budget and saving money. The scores ranged from 2 to 5, meaning there was definitely a discrepancy on how well IPDs help save money. The average of the responses came to a score of 4, which puts the ranking just above fairly successful. The respondents, on average felt that IPDs are a good way to save money. The results can be seen in figure 4.3.

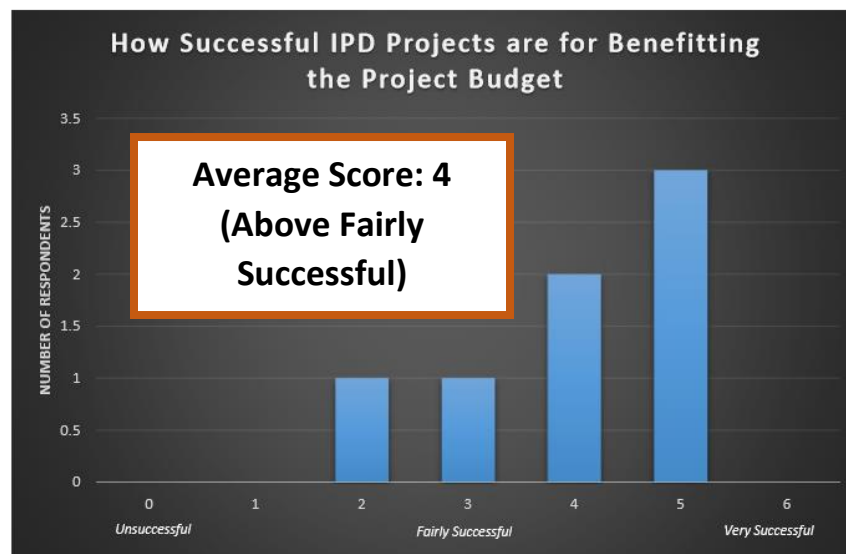


Figure 4.3: How Successful IPD is at Project Budget

The second category each member was asked to rank was how effective IPD projects are on keeping the schedule on time, and having an efficient schedule. The scores ranged from 3 to 6, also meaning there was a discrepancy on how well IPDs help the budget. The average of the responses came to a score of 4, which puts the ranking just above fairly successful. The respondents, on average felt that IPDs are a good way to manage the schedule and to keep the project, and parties involved on time. The results can be seen in figure 4.4.

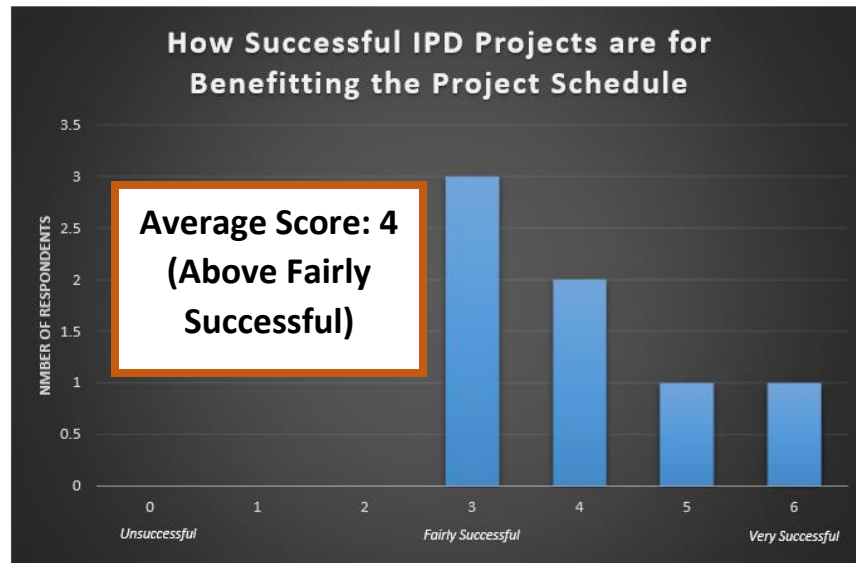


Figure 4.4: How Successful IPD Projects are for the Project Schedule

The third category each member was asked to rank, was how effective IPD projects are on promoting and maintain safety on the job site. The scores ranged from 3 to 6 once again, but only 25 % of the respondents ranked project safety below 5. The average of the responses came to a score of 5, which puts the ranking just under very successful. The respondents, on average seemed to believe IPD projects are very safe for their workers. The results are located below in Figure 4.5.

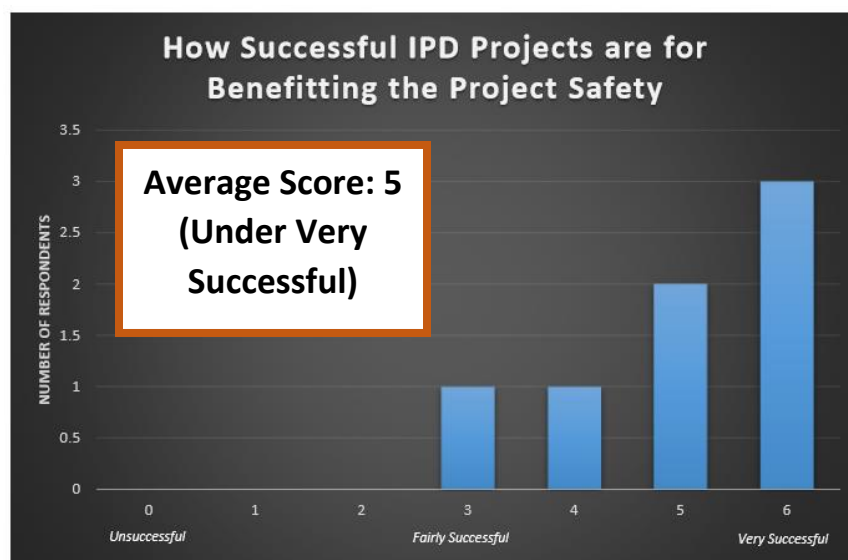


Figure 4.5: How Successful IPD Projects are for the Project Safety

The fourth category each member was asked to rank, was how effective IPD projects are at reducing issues during construction. The scores ranged from 4 to 6. Both 4 and 5 received the majority of the votes. This seems to indicate that the majority felt that IPD felt similarly about how well IPDs performed. The average of the responses felt very similarly about the level of success for construction issues. The average came to a score of 4.71, which puts the ranking just under very successful. The results are located below in Figure 4.6, below.

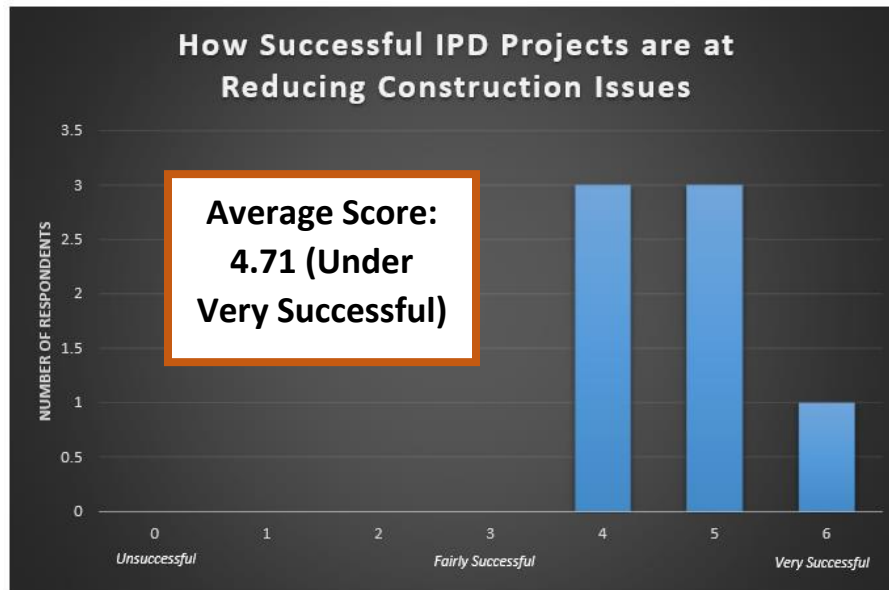


Figure 4.6: How Successful IPD Projects are at Reducing Construction Issues

The fifth category each member was asked to rank, was how effective IPD projects are at improving the coordination on the site. The scores ranged from 4 to 6. Scores of 5 and 6 received the majority of the votes. This seems to indicate that the majority felt that IPDs were pretty good at increasing coordination on the site. The average came to a score of 5.14, which puts the ranking just under very successful. The results are located below in Figure 4.7, below.

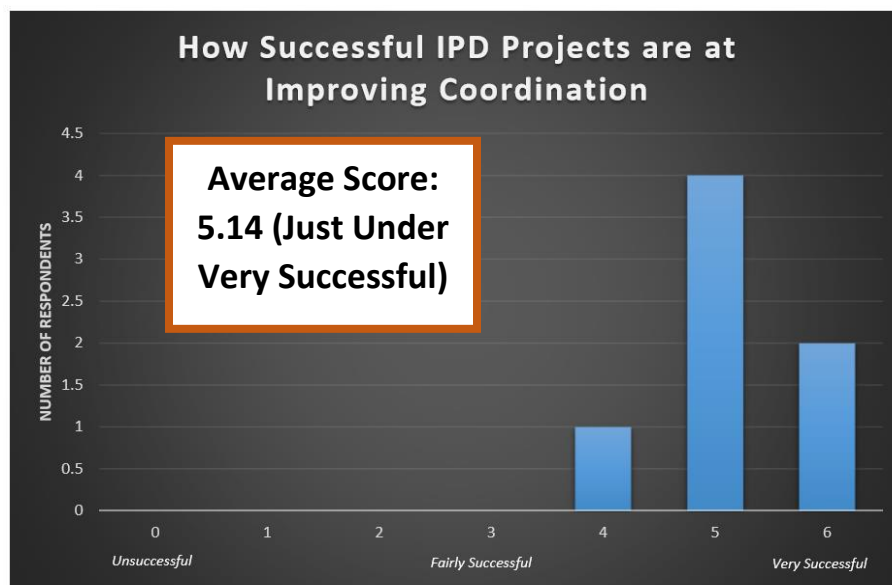


Figure 4.7: How Successful IPD Projects are for Improving Coordination

The final category each member was asked to rank, was how effective IPD projects are at improving the quality of the project. The scores ranged from 4 to 6, although most of the scores were very highly ranked. This seems to indicate that the majority felt that IPDs were very good at improving the quality of a project. The average scores came to a score of 5.14, which puts the ranking just under very successful. The results are located below in Figure 4.8, below.

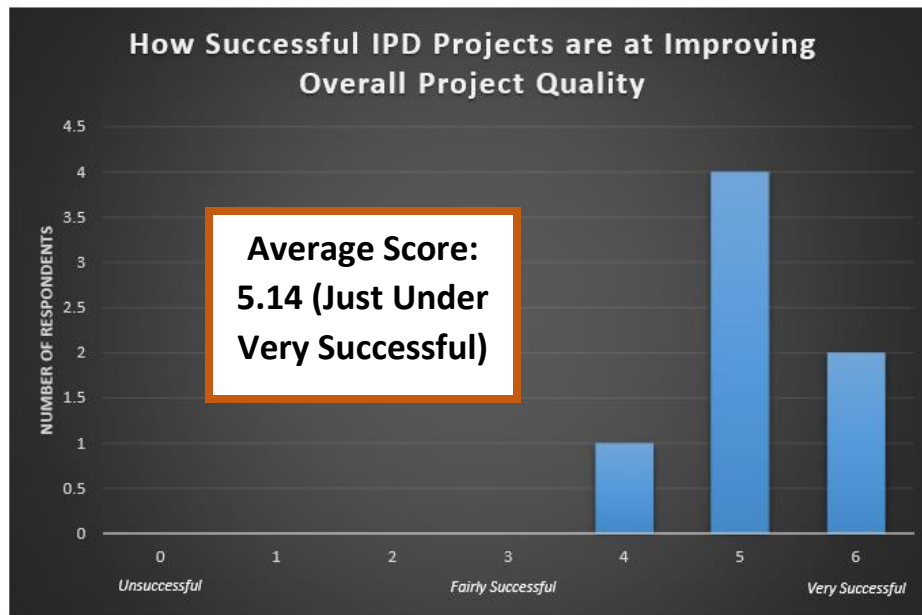


Figure 4.8: How Successful IPD Projects are at Improving Project Quality

Figure 4.9 is below. It is a graphical representation of each category and the average score of each category. Coordination and quality were the most successful categories of the survey, and budget and schedule were the least successful categories.



Figure 4.9: Summary of Average Scores for each IPD Category

To further analyze why the participants ranked each category why they did, they were asked to explain why they described a category as very successful. One respondent talked about the communication involved with IPD. Communication helped to facilitate coordination as well as reduce problems, but is a two edged sword. Too much communication can cut out important details and waste other's times. During meetings, for any delivery method, it is important to discuss details and main points and not waste other parties' time if not necessary. Another common ideal was that with the IPD Project, came increase quality on the project. This is due to each party having something to lose. It also helps in that the project team is typically friendly with one another causing for smoother problem solving and less headaches on the job. Interestingly, safety was another category very highly talked about. Several of the participants emphasized that because all the parties were working together, that safety was a major category that benefited from the team work. Finally, schedule, although not highly rated, was talked about as being "seamless". Overall the consensus was that IPD's create less headaches and create a smoother project overall.

After describing their opinions on IPD project, the participants were asked to mention the last IPD they had worked on, if they had the opportunity to be involved. The question asked for the type of project, the approximate size of the project, the cost of the project and the total percentage of work done. They were also asked to elaborate on how their company was selected.

The types of projects included institutional, Penn State Buildings (HUB), PSU resident halls, and PSU dormitories. The prices of these projects ranged from 300,000 dollars to 144 million dollars. The sizes of these buildings ranged from 14,400 square feet to 195,000 square feet. Some selection tools that were used include interviews, work sessions to determine working skills, references, prequalification, competitive bidding, team work skills and availability of skilled laborers and tradesmen. From this information, it can be concluded that IPD projects are not only able to be used on any sized building as well as any type of building. There are many options to create a team, but the most common comes from experience and teamwork. Owners are very intent on selecting a team that works very well together to create the best project.

The next question was another ranking question. It asked each company how likely it would be to pursue an IPD project in the future, and then asked the respondent to elaborate on why they chose their answer. Figure 4.10 displays this information. The average score was 4.375 out of a possible 5, with 50 percent of the participants choosing "very likely" to pursue another IPD Project. This score indicates there is a want from subcontractors to pursue this type of project. There seems to be a lot of positive influence from the subcontractor sides, especially the parties that had previously worked on an IPD Project. Some of the reasoning behind wanting to pursue the project include following Penn State and their innovations and uses of IPD, the increased issues worked out before construction, empowerment of the field team, more control over the project, and the teamwork associated with the project. Teamwork was the key driving factor, for this question. The subcontractors seemed to be very devote about teamwork and how well it can work on IPD Projects. This information can be very useful as teamwork is one of the most important tools for construction, and too many times team work is an illusion rather than an actual working unit. One of the participants was avid in saying in regards to IPD projects that "It is the way construction should be done."

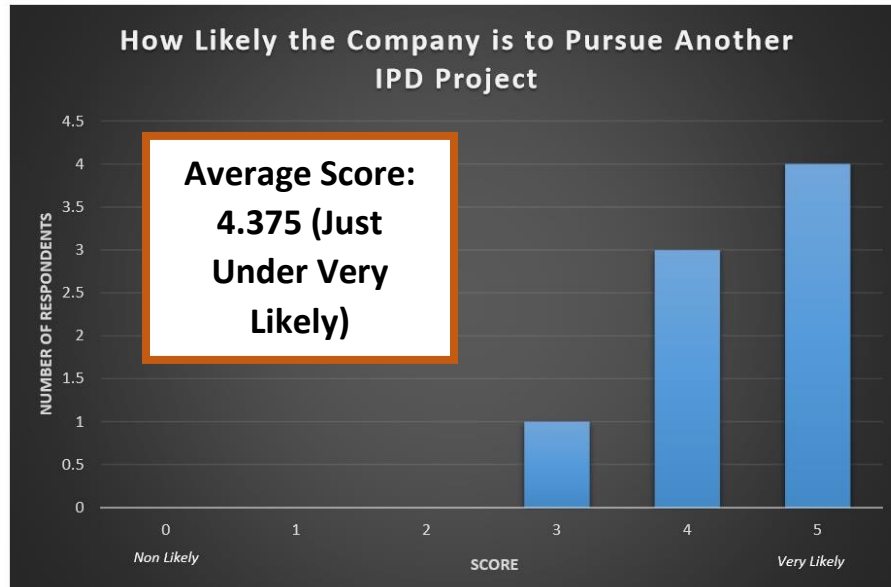


Figure 4.10: How Likely Each Party Would be to Pursue another IPD

The final two questions asked about how the subcontractor would prefer to be reimbursed on a project and what they believed was the most innovative part of IPD projects. Most of the participants chose to have a cost plus a fee method. This method could also potentially include a bonus if the project went smoothly. This method reduces risk for not only the owner, but the contractors on site, promising the cost of the work. This method also helps to encourage efficiency on the job. If each member is pushing on a project to meet a deadline with a shared profit, they are more willing to work together to get it done.

As for the most innovative part of IPD projects, there were several ideas. One of the ideas that came up is that the field guys will be making highly involved. IPDs allow for subcontractors to come in very early and help with design. This means that they will be able to help eliminate problems before construction begins. They have the on the job experience an architect may not have, and will be able to work together to solve problems. Another important aspect is that each party carries equal risk and each party has access to all the information. Requests for information and change orders will be cut down very significantly by utilizing the IPD delivery method. All parties will have access to all information, allowing for easier and more efficient problem solving. This also helps each trade do what they do best, and work in the field. They will need to spend less time interpreting drawings and excel spreadsheets passed down by the architect, if they have their information before construction even begins. There will be less hang-ups and an overall more efficient and safe project.

## RESEARCH

Much of the research in this section, comes from the “Integrated Project Delivery: A Guide”. This is a paper written in 2007 by the American Institute of Architects. The paper helps to define what an IPD project is, and gives generalized information on how the delivery method functions and how it is a benefit to the construction field. The results of the survey are analyzed and compared to this report below.

To further analyze the benefits of IPD projects and how to continue to help subcontractors become involved further research was done into IPD projects. One of the largest topics that should be considered is teamwork. Research into IPD projects yields that teamwork is one of the biggest parts of a successful project and that all parties should be willing to work together. From the general contractor side, the picture is too often painted of a subcontractor only being out to earn money, and gain a profit for themselves. There is a stigma that they do not necessary care about the project as a whole and are just completing their work to a basic level. These ideal not only come from the general contractor side, but from media. We too often see the “boss” on a job yelling at the men to hurry up, or to do a better job. This “selfish” nature is a common misconception. According to the results of the survey, many of the subcontractors look forward and are interested in working with a team of others. They enjoy the comradery and the overall pleasantness of working with people who they get along with. The teamwork then is what helps the project excel. In quality and in budget. Less problems occur, as communication is at the forefront of the project. The sample size of the survey is small, and only talked to subcontractors who have worked with Penn State. Penn State is an outstanding organization and does construction the right way. Further research into smaller companies and their interactions may yield very different results. Smaller subcontractors may be out to make money, due to greedy owners, or harsh general contractors. These smaller firms also may not have the tools to smoothly run an IPD project or interact with an architect and may prove just the opposite of the results of this survey. Construction managers need to continue to build great relationships with the subcontractors. These relationships are what create great projects.

Compensation and financial gains are also crucial parts of any project. Due to human nature, and building what was talked about in the previous paragraph, individuals are worried about their own financial success. A drywall subcontractor is not necessarily concerned with how well a roofing subcontractor is doing finically on the project. This creates problems on a traditional project. The gains of an individual do not always mean the team benefits. IPD project change this outcome, in that the individual success does lead to team success. Each party is working toward a common reward, and each individual’s greediness and self-success, will incoherently lead to the success of the overall project. IPD projects turn a negative human nature into a positive outcome. The results of the survey rank the budget of an IPD project as one of the lowest scores. Although the score is still decent, it is lower than several other categories. This means that although the participants are confident in IPD projects for overall quality and coordination, there still exists some reluctance for the budget of the project. It is the job of the general contractor and owner to develop a fair and just cost model to help subcontractors understand the true amount of success that can be gained using an IPD approach.

Building information modeling is becoming a bigger part of construction. BIM is one tool that many smaller subcontractors do not have. Traditional projects usually have each subcontractor make a “model” of what they need to do and there is no centralized model. IPD projects and the amount of information sharing could really begin to push BIM into the hands of many more subcontractors. The lowest score from the results of the survey come from the ability of IPD projects to manage budget and schedule. A detailed, and highly efficient model create more accurate estimates and schedules. IPD projects allow for all members to have access to a model, thus creating a very detailed model that has input from grizzled veterans. The more widely accessible BIM tools will continue to grow in the construction field, and thus hopefully push IPD projects to be a more widely used project delivery method. More subcontractors that have access

to

BIM mean more subcontractors will be a part of an IPD team. This increased teamwork and coordination should help to change opinions on cost and schedule concerns regarding the delivery method.

Early involvement was a topic talked about a lot in the surveys. Subcontractors are the most important part of the construction project, as they are the ones who actually build the buildings. The season workers are some of the most knowledgeable people in regards to the work they do. They have been doing the work for years, and know secrets, shortcuts, and methods that work, and they also know what doesn't work. In a traditional project delivery method, they are given the drawings by the architect or general contractor and expected to complete the work. They have little to no input on the design, or on any of the components. To make changes or to suggest changes they must go through several long steps and different chains of communication. IPD projects prevent these issues from occurring. Subs are able to have input on the design very early on. This means that they can help designers design what works best for the situation, and this eliminates problems in the field during construction. The participants of the survey also stated this was one the best parts about IPD projects. They want to be involved as early as possible to help prevent change orders and headaches when they are building the project. Even typical project delivery methods should consider bringing in subs as early as possible to help get their input for a job. This can be difficult many times, as subs are not chose until projects are nearly complete. Owners and designers may begin to bring in sub-contractors for joint ventures or creating a partnership with a sub, to allow for them to come in early, and help design the project. This could present a positive change in the construction industry and help increase the fluidity of projects that are not delivered through the IPD model.

Quality of the project was one of the highest ranked categories. The subcontractors felt the quality of an IPD project was very high. This comes from several reasons. The first, again, being BIM. BIM allows for a very detailed model, and from this model finishes and detail work can be worked out accurately on the model. This helps drive quality for the project. With the increase in IPD projects, the quality of the construction industry is going to increase. By increasing the overall quality, the measurement of quality is also going to increase significantly. Quality is very important to an owner, and they will take notice of the quality of an IPD project. This will spark the requests to perform more IPD projects. This trickledown effect will then lead to the wider use of the delivery method.

## CONCLUSION

Technology and drafting tools will continue to become commonplace with subcontractors of all types and sizes. When these tools are given to the subs, they will begin to seek out ways to use this technology, and that is when IPD projects will begin to come even more commonplace than they already are. IPD projects will become the normal way of construction a project in the near future. With more information than ever about the delivery method available, and as more and more subcontractors experience the delivery method for themselves, they will begin to understand the benefits they can receive from them. IPD projects are exciting and in the near future will be a part of many of the most influential projects on the Penn State campus, as well as the country and the world. Subcontractors are a vital part of this growth, and as they continue to become more attune to IPD projects, then the construction industry as a whole will continue to grow and prosper. The subcontractors need to continue to learn about IPD projects, and understand the tools that are available to make construction as painless as possible.

**FINAL CONCLUSIONS AND RECOMMENDATIONS****ANALYSIS #1: ALTERNATE ROOFING SYSTEM ANALYSIS**

The original roofing system was a modified bitumen roofing. Three separate systems were analyzed; EDPM, TPO, and BUR. TPO and EDPM both saved the project money and took time off of the schedule. TPO saved \$85,770.61 and 21 days from the schedule. EPMD saved \$96,685.03 and 3 days from the schedule. Based upon reviews from subcontractors and external research, TPO would present the best option for IM Phase 3. TPO is durable, long lasting and easily repaired. It is a very popular roofing option, and growing in use. It also provides Penn State with multiple roofing options for the future. It is recommended that TPO be utilized for the project.

**ANALYSIS #2: MODULAR EXTERIOR WALL ANALYSIS**

The original stick built system of the exterior walls lasted 84 days and cost approximately \$888,823.79. An alternate method was proposed that would create modularized wall panels. These panels included all parts of the existing walls, but would be manufactured off site. Once installed, face brick would be added to the system. This secondary option included a schedule reduction of 31 days and a decreased cost of \$847,514.14. Research was done into the systems and possible manufactures of the wall panels. Shipping was also considered in designing each wall and determining the price. After the completion of the analysis it is recommended that IM Phase 3 utilize the modular wall panels. The project has been in development for a long enough period to create the lead time needed for the panels. They save money, and time for the project, while not sacrificing the aesthetic appearance of hand laid brick façade.

**ANALYSIS #3: MECHANICAL SYSTEM ANALYSIS**

This analysis set out to compare the current mechanical system that services the rock climbing, bouldering wall, and turf field in the addition. The current system is a hybrid ventilation system that opens during certain temperature and humidity levels. An economizer system was proposed for the same space. The economizer system saved 10 days of construction, and \$811,179.78 over a 30 energy usage analysis. The economizer system uses more power than the hybrid ventilation system during usage, however it is recommended that the economizer system would be a more efficient system for the space given the weather of State College. A mechanical breadth analyzed a change at each systems temperature and humidity ranges. The new zones helped to provide a better range of values, to increase the usage of each system.

**ANALYSIS #4: RESEARCH TOPIC – IPD METHOD AND SUBCONTRACTORS**

This analysis looked at how subcontractors felt about the integrated project delivery method. The analysis gave a survey to several contractors working at Penn State. The results of the survey showed that the subcontracts enjoyed working with a team of good companies, and felt safety and quality were two great parts about IPD projects, but were hesitant about budget and schedule. With an increased knowledge base, and owner's becoming more involved with creating IPD projects, subcontractors will begin to develop the knowledge needed to successfully collaborate on IPD projects. Early involvement on other delivery methods may help to increase quality and subcontractors will become more accustomed to projects similar to IPD such as design-build.

## APPENDIX A: ROOFING AREA TAKEOFFS

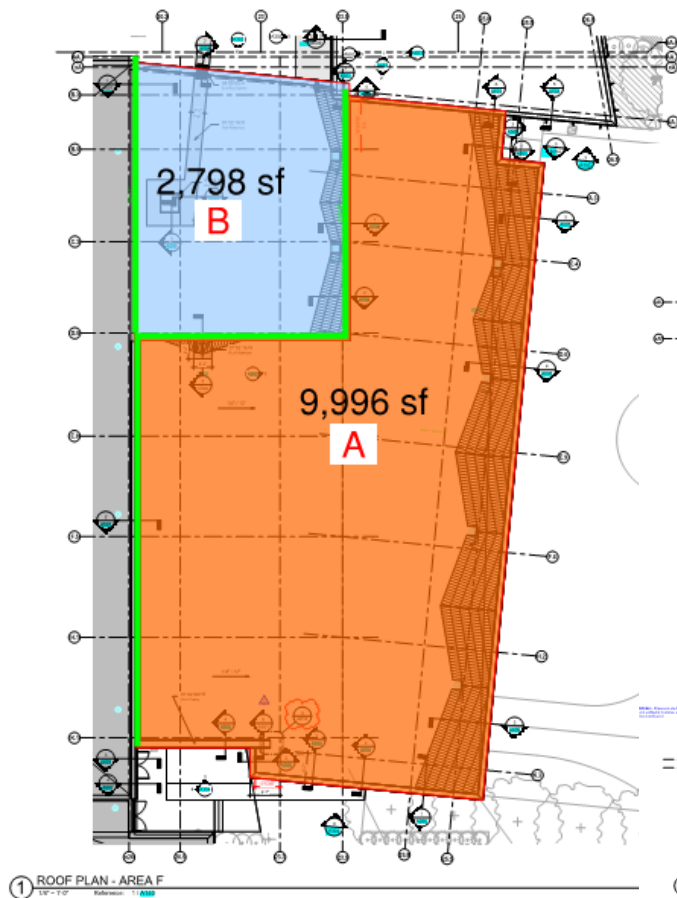


Figure 1.5: Area F Square Foot Take Off

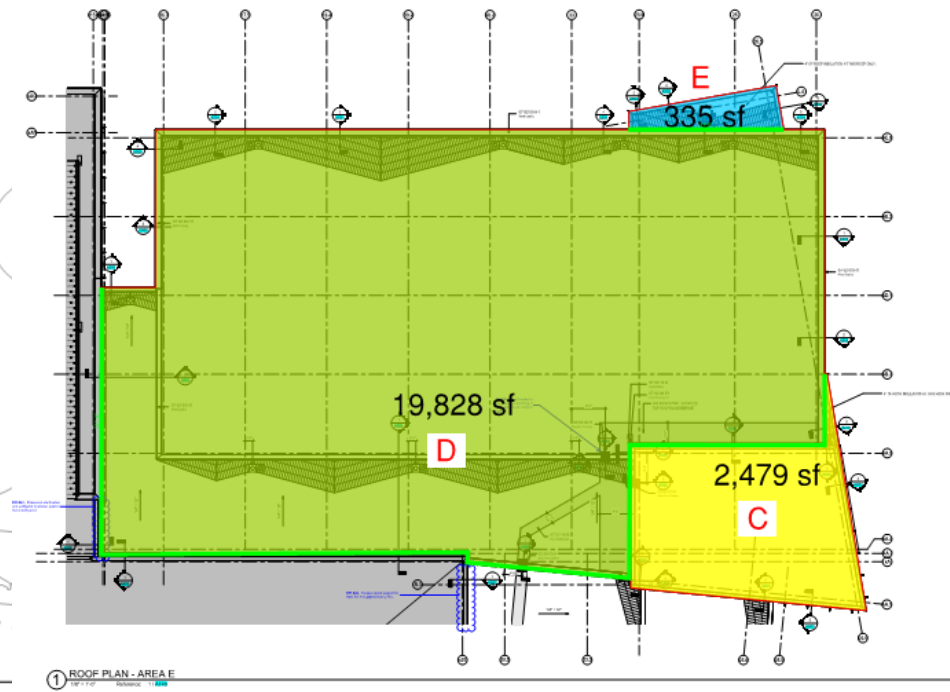


Figure 1.6: Area E Square Foot Take Off

Roofing Area Takeoff			
Name	Location	Square Feet	Linear Feet of Flashing
A	Area F	9996	191
B	Area F	2798	61
C	Area E	2479	0
D	Area E	19828	322
E	Area E	335	42
Total		35436	616

Figure 1.7: Roofing Square Foot Summary

## APPENDIX B: ROOFING SYSTEMS PRODUCTION AND PRICING INFORMATION

Roofing Systems Production and Pricing Information											
Built Up roofing											
Name	Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	Total / Unit w. (OandP)	Total Price
Felt Paper (double coverage #30)	354.36	SQ	Rofc	58.00	0.14	\$25.00	\$52.00	\$0.00	\$77.00	\$84.70	\$30,014.29
Asphalt	354.36	SQ	G1	10.00	2.55	\$225.00	\$103.00	\$24.00	\$352.00	\$387.20	\$137,208.19
Vapor Barrier	354.36	SQ	G1	15.00	2.55	\$56.00	\$103.00	\$24.00	\$183.00	\$201.30	\$71,332.67
Insulation	354.36	SQ	Rofc	15.00	1.88	\$90.00	\$52.00	\$0.00	\$142.00	\$156.20	\$55,351.03
Gravel	354.36	SQ	G1	22.00	2.55	\$66.00	\$103.00	\$24.00	\$193.00	\$212.30	\$75,230.63
Total Price											\$369,136.81
EPDM Roofing											
Name	Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	Total / Unit w. (OandP)	Total Price
Insulation	354.36	SQ	Rofc	15	1.88	\$90.00	\$52.00	\$0.00	\$142.00	\$156.20	\$55,351.03
Plates	15	EA	Rofc	10	0.80	\$85.00	\$5.95	\$0.00	\$90.95	\$100.05	\$1,500.68
Roof Board	354.36	SQ	Rofc	15	1.88	\$100.00	\$5.95	\$0.00	\$105.95	\$116.55	\$41,298.89
Adhesive	50	EA	Rofc	750	0.01	\$80.00	\$5.95	\$0.00	\$85.95	\$94.55	\$4,727.25
EDPM	354.36	SQ	G5	26	1.54	\$157.00	\$103.00	\$7.05	\$267.05	\$293.76	\$104,095.02
Screws	15	EA	Rofc	4	2.00	\$125.00	\$5.95	\$4.10	\$135.05	\$148.56	\$2,228.33
Seam Tape (3"x100')	3	EA	G5	1	8.00	\$43.50	\$103.00	\$7.05	\$153.55	\$168.91	\$506.72
Total Price											\$209,707.91
TPO Roofing											
Name	Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	Total / Unit w. (OandP)	Total Price
TPO Material	354.36	SQ	G5	26	1.54	\$184.00	\$103.00	\$7.05	\$294.05	\$323.46	\$114,619.51
Insulation	354.36	SQ	Rofc	15	1.88	\$90.00	\$52.00	\$0.00	\$142.00	\$156.20	\$55,351.03
Roof Board	354.36	SQ	Rofc	15	1.88	\$100.00	\$52.00	\$0.00	\$152.00	\$167.20	\$59,248.99
Screws	15	EA	Rofc	4	2.00	\$15.00	\$5.95	\$4.10	\$25.05	\$27.56	\$413.33
Plates	15	EA	Rofc	10	0.80	\$85.00	\$5.95	\$0.00	\$90.95	\$100.05	\$1,500.68
Adhesive	25	EA	Rofc	750	0.01	\$80.00	\$5.95	\$0.00	\$85.95	\$94.55	\$2,363.63
Total Price											\$233,497.16
Modified Bitumen Roof											
Name	Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	Total / Unit w. (OandP)	Total Price
Cap Sheet	35436	SF	G5	2100	0.02	\$1.20	\$0.75	\$1.25	\$3.20	\$3.52	\$124,734.72
Base Sheet	35436	SF	G5	2100	0.02	\$0.92	\$0.75	\$1.25	\$2.92	\$3.21	\$113,820.43
Roof Board	354.36	SQ	Rofc	15	1.88	\$100.00	\$5.95	\$0.00	\$105.95	\$116.55	\$41,298.89
Insulation	354.36	SQ	Rofc	15	1.88	\$90.00	\$52.00	\$0.00	\$142.00	\$156.20	\$55,351.03
Adhesive	25	EA	Rofc	750	0.01	\$80.00	\$5.95	\$0.00	\$85.95	\$94.55	\$2,363.63
Total Price											\$337,568.70

Figure 1.8: Roofing System Production and Pricing Information

## APPENDIX C: ROOFING SYSTEM SCHEDULES

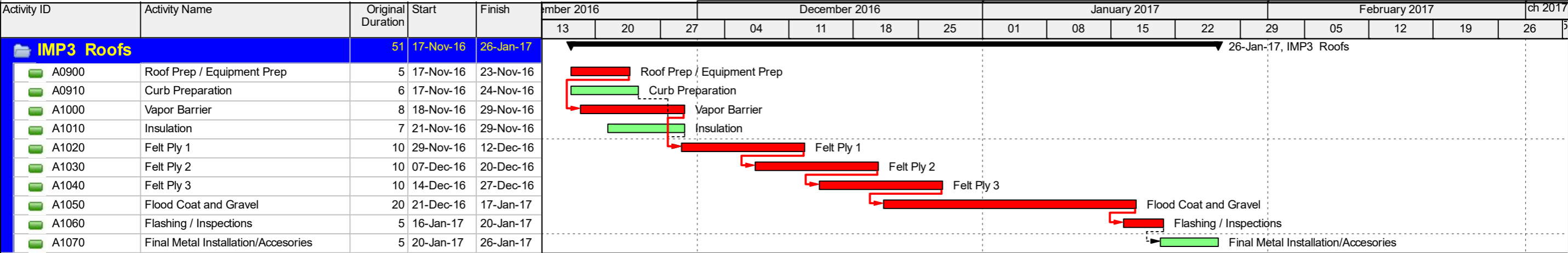


Figure 1.9: Built-Up Roofing Schedule

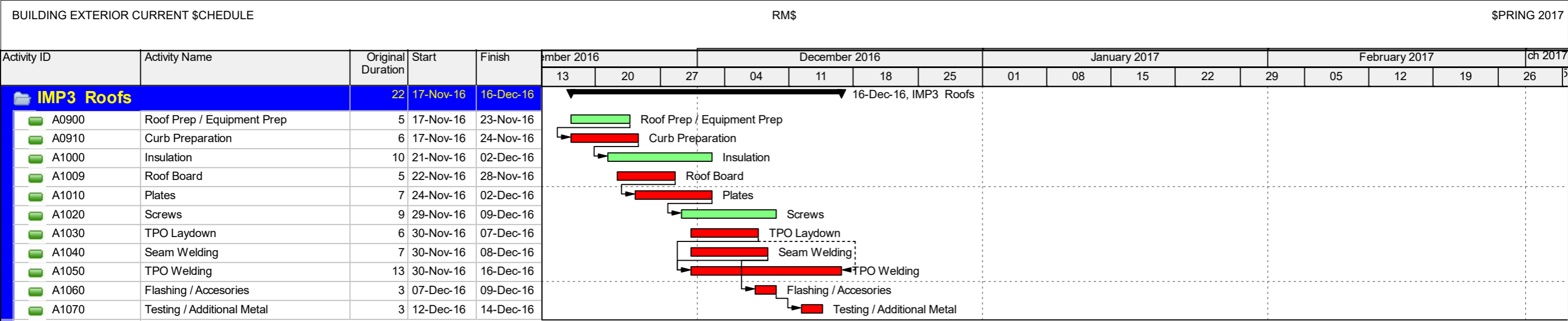


Figure 1.10: TPO Roofing Schedule

Page 1 of 1

TASK filter: All Activities

© Oracle Corporation

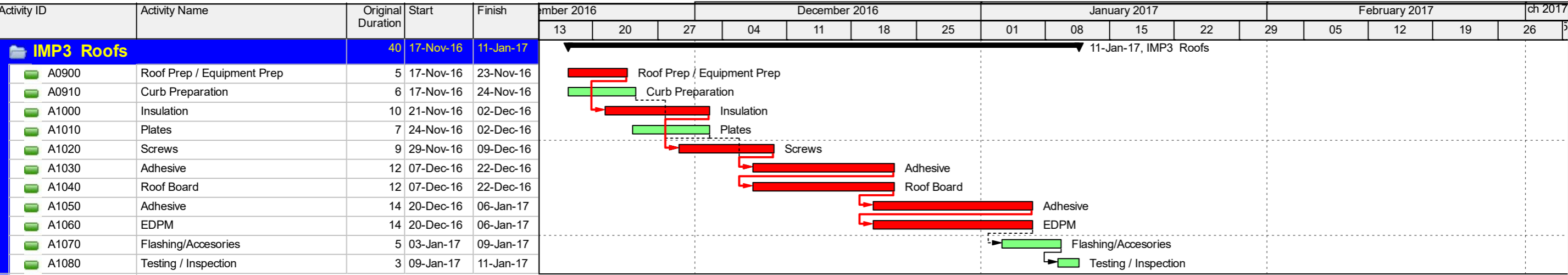


Figure 1.11: EDPM Roofing Schedule

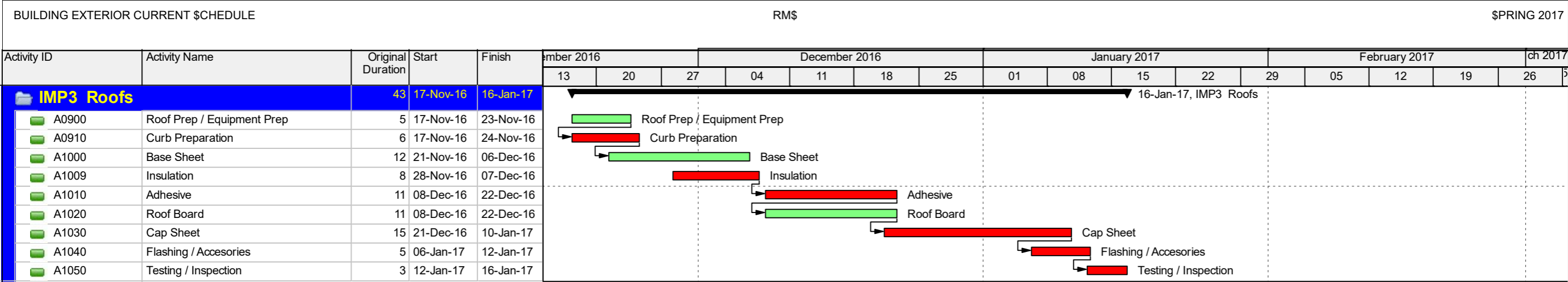


Figure 1.12: Modified Bitumen Roofing Schedule

## APPENDIX D: MODULAR PANEL TAKEOFF

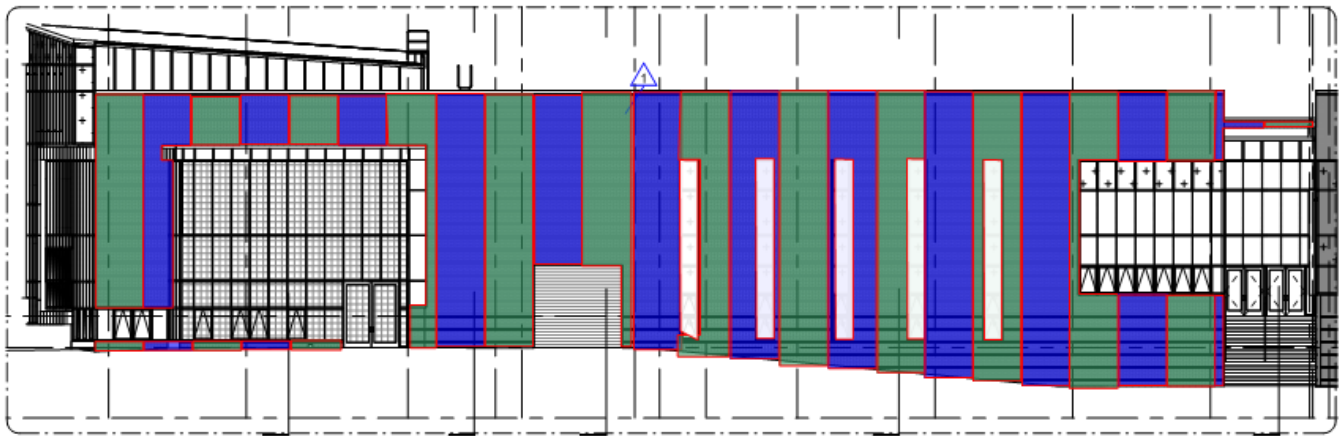


Figure 2.3: North Elevation Modular Wall Takeoff

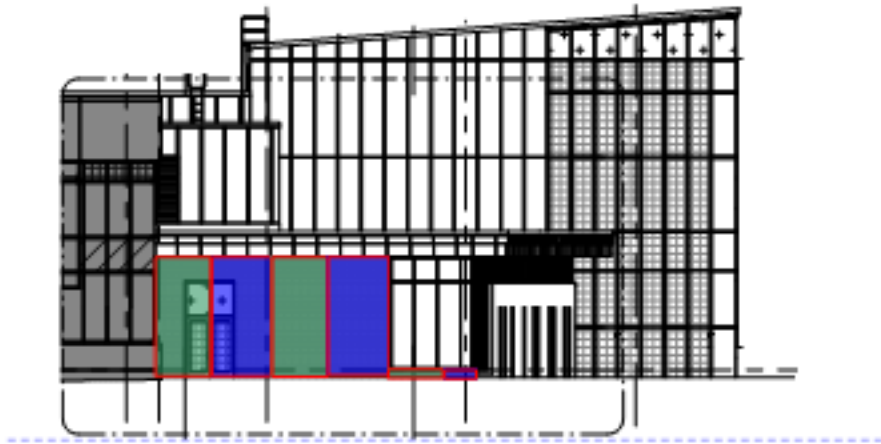


Figure 2.4: South Elevation Modular Wall Takeoff

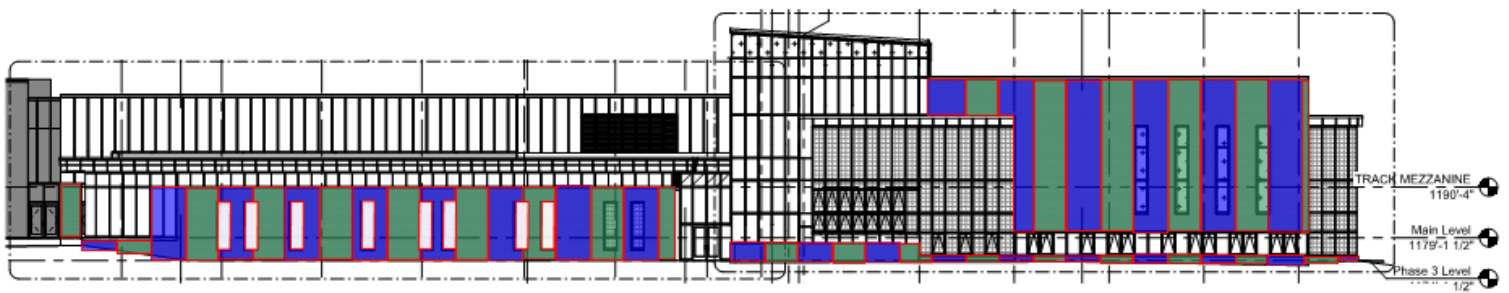
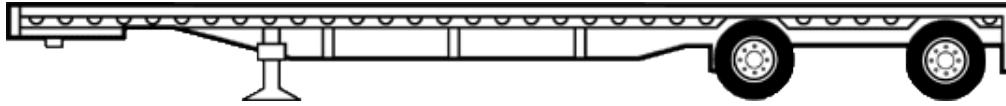


Figure 2.5: East Elevation Modular Wall Takeoff

## APPENDIX E: FLATBED DIMENSION GUIDE

## FLAT BED DIMENSIONS GUIDE

Flatbed



This trailer accommodates freight with the maximum legal weight and dimensions shown below.

**Max. Freight Weight**

48,000 lbs.

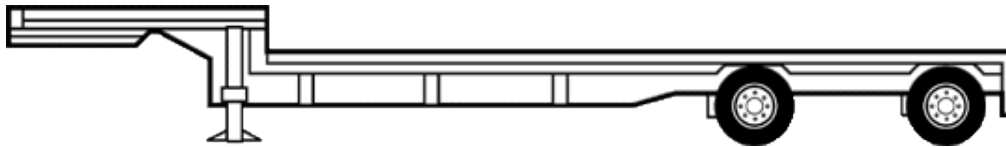
**Maximum Freight Dimensions**

Length 48 feet

Width 8.5 feet (102")

Height 8.5 feet (102")

Single-Drop Deck (aka Stepdeck)



This trailer accommodates freight with the maximum legal weight and dimensions shown below.

**Max. Freight Weight**

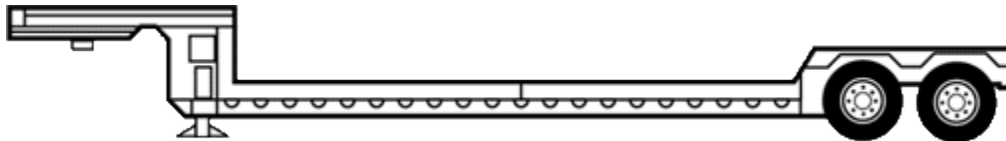
48,000 lbs.

**Maximum Freight Dimensions**

<b>Main Deck Max. Dims.</b>		<b>Front Deck Max. Dims.</b>	
-----------------------------	--	------------------------------	--

Length	37 feet	Length	11 feet
Width	8.5 feet (102")	Width	8.5 feet (102")
Height	10 feet (120")	Height	8.5 feet (102")

Double-Drop Deck



This trailer accommodates freight with the maximum legal weight and dimensions shown below.

**Max. Freight Weight**

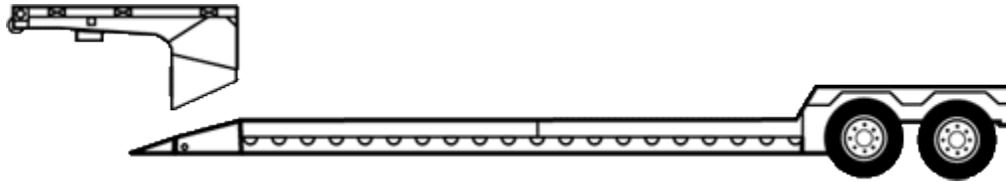
45,000 lbs.

**Maximum Freight Dimensions**

<b>Main Deck Max. Dims.</b>		<b>Front Deck Max. Dims.</b>		<b>Rear Deck Max. Dims.</b>	
Length	29 feet	Length	10 feet	Length	9 feet
Width	8.5 feet (102")	Width	8.5 feet (102")	Width	8.5 feet (102")
Height	11.5 feet (138")	Height	8.5 feet (102")	Height	10 feet (120")

## FLAT BED DIMENSIONS GUIDE

Double-Drop w/Detachable Deck (aka Lowboy, RGN)



This trailer accommodates freight with the maximum legal weight and dimensions shown below.

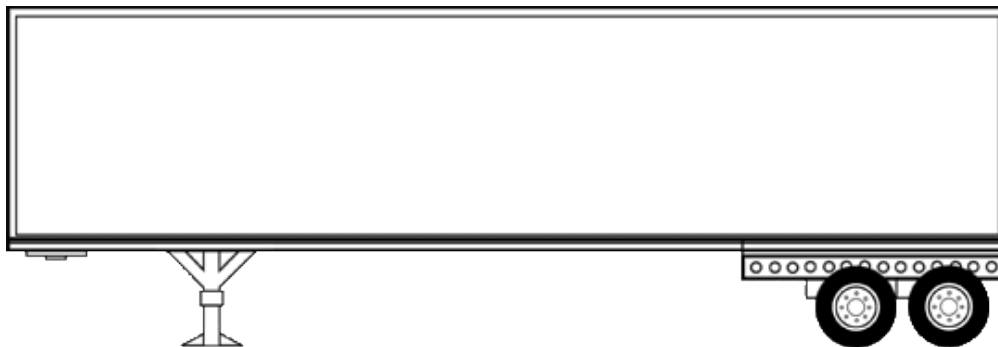
**Max. Freight Weight**

44,000 lbs.

**Maximum Freight Dimensions**

Main Deck Max. Dims.		Front Deck Max. Dims.		Rear Deck Max. Dims.	
Length	29 feet	Length	10 feet	Length	9 feet
Width	8.5 feet (102")	Width	8.5 feet (102")	Width	8.5 feet (102")
Height	12 feet (144")	Height	8.5 feet (102")	Height	10 feet (120")

Enclosed Box Trailer (aka Dry Van)



This trailer accommodates freight with the maximum legal weight and dimensions shown below.

**Max. Freight Weight**

45,000 lbs.

**Maximum Freight Dimensions**

Length 52.5 feet

Width 8 feet 5 inches (100")

Height 9 feet 2 inches (110")

Stretch Flatbed



This trailer accommodates freight with the maximum legal weight and dimensions shown below.

**Max. Freight Weight**

45,000 lbs.

## FLAT BED DIMENSIONS GUIDE

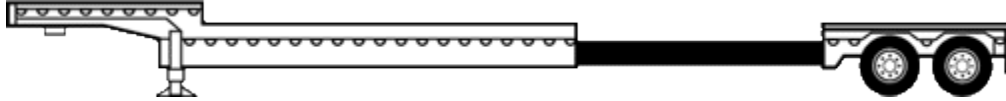
### **Maximum Freight Dimensions**

Length 45-80 feet

Width 8 feet (96")

Height 8.5 feet (102")

Stretch Single-Drop Deck



**This trailer accommodates freight with the maximum legal weight and dimensions shown below.**

### **Max. Freight Weight**

43,000 lbs.

### **Maximum Freight Dimensions**

**Main Deck Max. Dims.    Front Deck Max. Dims.**

Length      38-63 feet      Length      10 feet

Width        8 feet (96")      Width        8 feet (96")

Height       10 feet (120")      Height       8.5 feet (102")

Stretch Double-Drop Deck - 2 or 3 axle (depending on weight)



**This trailer accommodates freight with the maximum legal weight and dimensions shown below.**

### **Max. Freight Weight**

40,000 lbs.

### **Maximum Freight Dimensions**

**Main Deck Max. Dims.    Front Deck Max. Dims.    Rear Deck Max. Dims.**

Length      29-50 feet      Length      10 feet      Length      9 feet

Width        8.5 feet (102")      Width        8.5 feet (102")      Width        8.5 feet (102")

Height       11.5 feet (138")      Height       8.5 feet (102")      Height       10 feet (120")

# APPENDIX F: WALL SYSTEM PRICING AND PRODUCTION INFORMATION

Wall System Production and Pricing Information												
Stick Built Wall System												
Name	Quantity	Waste Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	Total / Unit w. (OandP)	Total Price
Brick (Norman)	10300.00	11330.00	SF	5.00	2500.00	0.016	\$12.00	\$37.00	\$0.00	\$49.00	\$53.90	\$610,687.00
2.5" Rigid Insulation	10300.00	11330.00	SF	1.00	800.00	0.010	\$2.75	\$0.40	\$0.00	\$3.15	\$3.47	\$39,258.45
Fluid-Applied Air/Water Barrier	10300.00	11330.00	SF	2.00	7000.00	0.002	\$0.74	\$0.09	\$0.00	\$0.83	\$0.91	\$10,344.29
5/8" Gypsum Exterior Sheathing	10300.00	11330.00	SF	2.00	1200.00	0.013	\$1.05	\$0.43	\$0.00	\$1.48	\$1.63	\$18,445.24
Tracks	1276.00	1403.60	LF	3.00	100.00	0.004	\$4.28	\$39.00	\$1.12	\$44.40	\$48.84	\$68,551.82
Masonry Anchor	2.00	2.20	C	1.00	10.50	0.762	\$114.00	\$37.00	\$1.12	\$152.12	\$167.33	\$368.13
1.5" Sprayed-On Foam Insulation	10300.00	11330.00	SF	1.00	3700.00	0.004	\$0.78	\$0.09	\$0.00	\$0.87	\$0.96	\$10,842.81
8" Metal stud	1276.00	1403.60	LF	3.00	375.00	0.015	\$27.00	\$39.00	\$1.12	\$67.12	\$73.83	\$103,630.60
5/8" Gypsum Board	10300.00	11330.00	SF	1.00	800.00	0.013	\$1.12	\$0.43	\$0.00	\$1.55	\$1.71	\$19,317.65
Sealant	10300.00	11330.00	SF	1.00	6000.00	0.002	\$0.51	\$0.09	\$0.00	\$0.60	\$0.66	\$7,477.80
											Total	\$888,923.79
Modularized Wall System												
Name	Quantity	Waste Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	Total / Unit w. (OandP)	Total Price
Brick (Norman)	10300.00	11330.00	SF	5.00	2500.00	0.016	\$11.88	\$35.89	\$0.00	\$47.77	\$52.55	\$595,357.51
2.5" Rigid Insulation	10300.00	10300.00	SF	1.00	800.00	0.010	\$2.72	\$0.39	\$0.00	\$3.11	\$3.42	\$35,241.97
Fluid-Applied Air/Water Barrier	10300.00	10300.00	SF	2.00	7000.00	0.002	\$0.73	\$0.09	\$0.00	\$0.82	\$0.90	\$9,289.47
5/8" Gypsum Exterior Sheathing	10300.00	10300.00	SF	2.00	1200.00	0.010	\$1.04	\$0.42	\$0.00	\$1.46	\$1.60	\$16,503.28
Tracks	1276.00	1276.00	LF	3.00	100.00	0.004	\$4.24	\$37.83	\$1.12	\$43.19	\$47.51	\$60,617.55
Masonry Anchor	2.00	2.00	C	1.00	10.50	0.760	\$112.86	\$35.89	\$1.12	\$149.87	\$164.86	\$329.71
1.5" Sprayed-On Foam Insulation	10300.00	10300.00	SF	1.00	3700.00	0.004	\$0.77	\$0.09	\$0.00	\$0.86	\$0.95	\$9,738.14
8" Metal stud	1276.00	1276.00	LF	3.00	375.00	0.015	\$26.73	\$37.83	\$1.12	\$65.68	\$72.25	\$92,188.45
5/8" Gypsum Board	10300.00	10300.00	SF	1.00	800.00	0.010	\$1.11	\$0.42	\$0.00	\$1.53	\$1.68	\$17,288.45
Sealant	10300.00	10300.00	SF	1.00	6000.00	0.002	\$0.50	\$0.09	\$0.00	\$0.59	\$0.65	\$6,709.63
											Total	\$843,264.14

Figure 2.6: Wall System Production and Pricing Information

Wall System Duration Information	
Original Project Durations	
Name	Working Days
Brick	44
Exterior Framing/Sheathing	30
Enclosure Miscellaneous Metals	10
	84
Modularized Wall System	
Name	Working days
Brick	44
Modular Wall Panel (Medium)	3
Modular Wall Panel (Small)	4
Modular Wall Panel (Large)	2
	53

Figure 2.7: Wall System Duration Information

## APPENDIX G: WALL QUANTITY AND SIZING INFORMATION

Current Wall System Surface Area Takeoff					
Total Brick and Glass Quantities					
Side of Building	Total Area	Total Area of Glass	Total Area of Brick	Linear Length of Wall	Maximum Height of Wall
East	1910.00	320.00	1590.00	132.00	16.00
	172.00	0.00	172.00	42.00	4.00
	238.00	0.00	238.00	97.00	4.00
	2357.00	128.00	2229.00	84.00	33.00
North	5751.00	160.00	5591.00	178.00	46.00
South	480.00	0.00	480.00	41.00	16.00
<b>Total</b>	<b>10908.00</b>	<b>608.00</b>	<b>10300.00</b>	<b>616.00</b>	

Figure 2.9: Wall System Surface Area Take Off

Current Wall System Surface Area Takeoff						
Steel Stud and Modular Pieces Calculation						
Location	Linear Length	Maximum Height	Number of Studs Needed	LF of Studs	Modular Size	Pieces
East Elevation	132.00	16.00	99.00	132.00	16'-0"x8'-0"	17.00
	42.00	4.00	32.00	42.00	4'-0"x8'-0"	6.00
	97.00	4.00	73.00	97.00	4'-0"x8'-0"	12.00
	84.00	33.00	189.00	252.00	33'-0"x8'-0"	11.00
North Elevation	178.00	46.00	534.00	712.00	46'-0"x8'-0"	23.00
South Elevation	41.00	16.00	31.00	41.00	16'-0"x8'-0"	6.00
		<b>Total</b>	<b>957.00</b>	<b>1276.00</b>	<b>Total</b>	<b>75.00</b>

Figure 2.10: Wall System Steel Stud and Modular Pieces Calculation

# APPENDIX G: STICK BUILT AND MODULAR WALL SCHEDULES

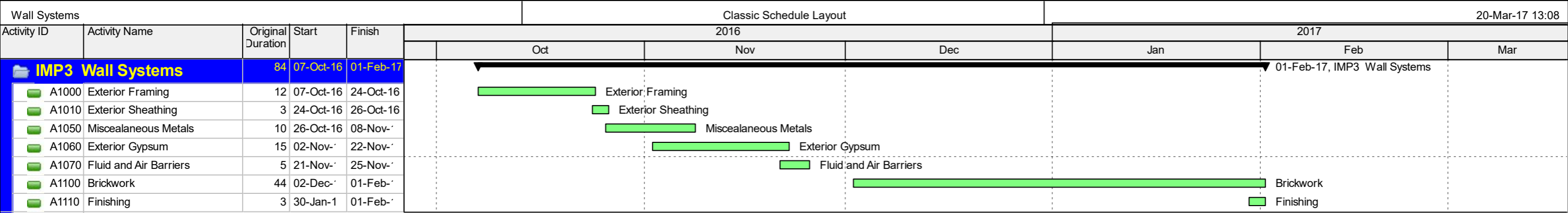


Figure 2.11: Stick Built Exterior Wall Schedule

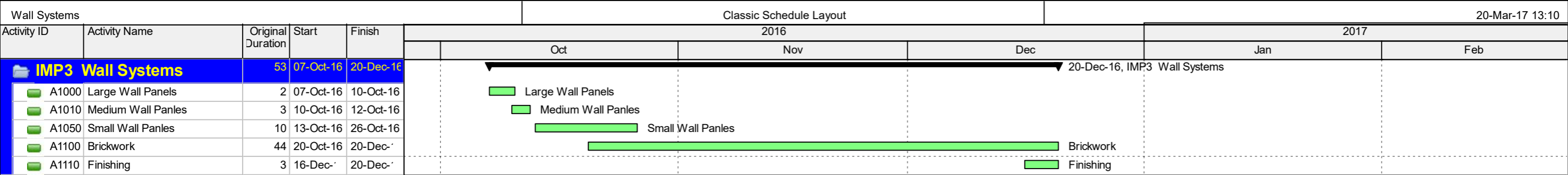


Figure 2.12: Modular Exterior Wall Schedule

## APPENDIX H: ROOF MECHANICAL PLANS

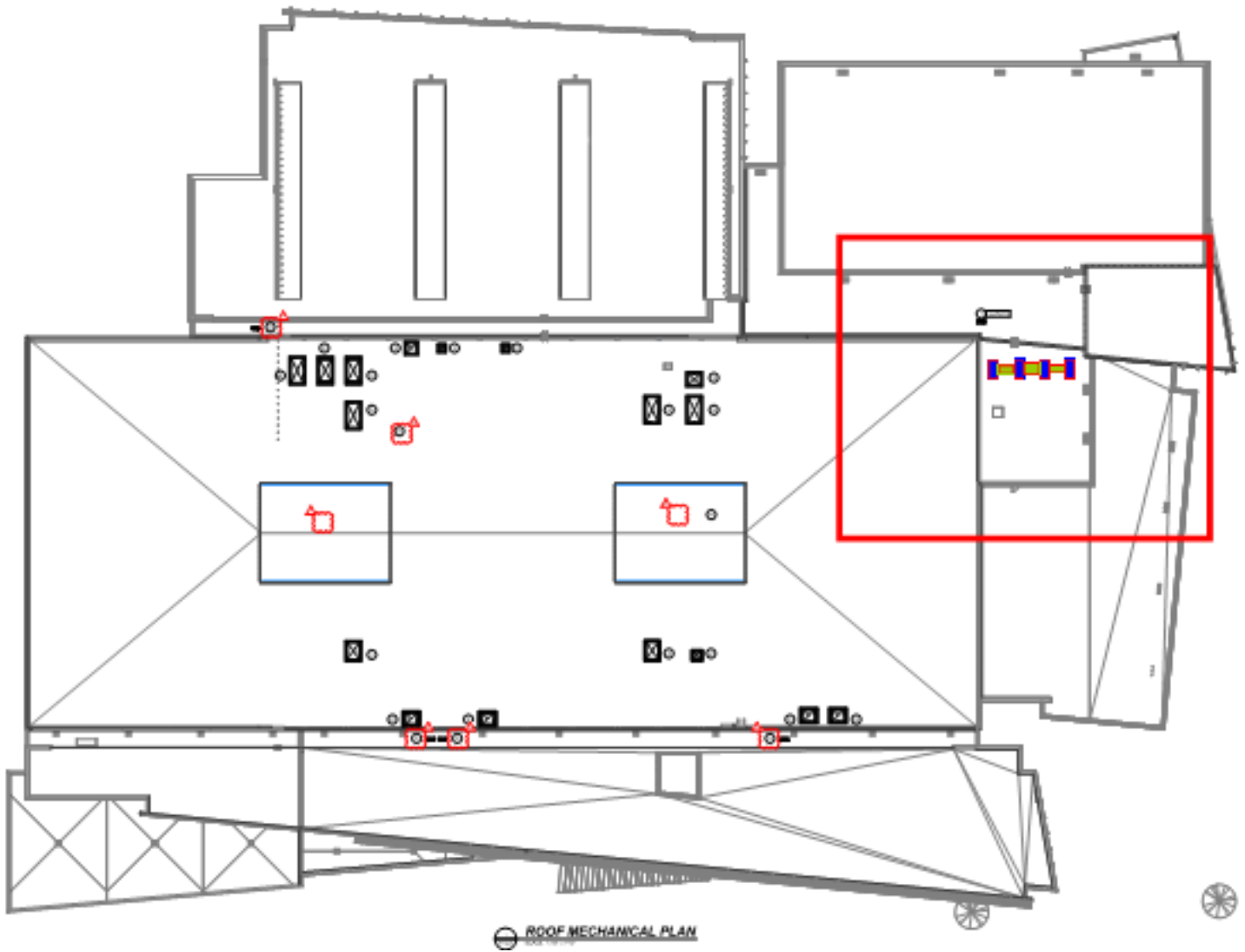


Figure 3.10: New Rooftop Mechanical Plans

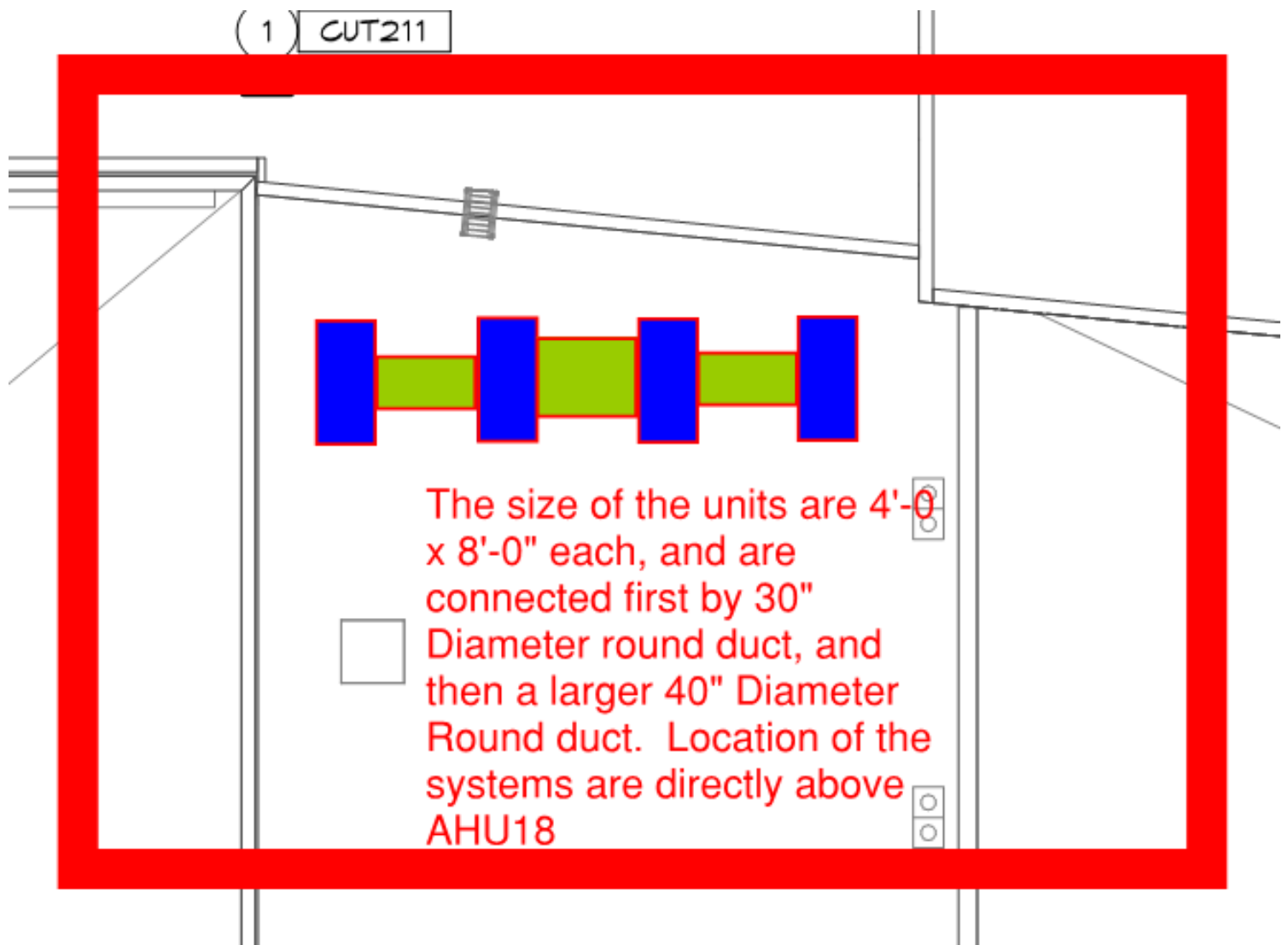


Figure 3.11: Blown up New Rooftop Mechanical Plan

## **APPENDIX I: MECHANICAL LOAD AND POWER TAKEOFFS**

Cooling Load Calculations	
Economizer Information	
Name	Cooling Total MBH
AHU-18	898600
Economizer (Trane DX Units)	240000
<b>Total Needed</b>	<b>4</b>

Figure 3.12: Cooling Load Calculations

Power Usage by Items							
Hybrid Ventilation System							
Item	Quantity	Unit	Power (KW)	Total Power (KW)	Duration Explained	Hours / Year	KWH
Space Mounted Ceiling Fans	3.00	EA	0.31	0.93	Used for Entire duration	649	603.57
Operational Window	19.00	EA	0.17	3.23	Only Used for Start and End	6	19.38
						<b>Total</b>	<b>622.95</b>
Economizer							
Item	Quantity	Unit	Power (KW)	Total Power (KW)	Duration Explained	Hours / Year	KWH
Economizer	4.00	EA	9.00	36.00	Used Entire Duration	649	23364
						<b>Total</b>	<b>23364</b>

Figure 3.12: Power Usage by Mechanical Item

## APPENDIX J: MECHANICAL SYSTEM PRODUCTION AND PRICING INFORMATION

### Mechanical System Production and Pricing Information

#### Hybrid Ventilation System

Name	Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	/ Unit w. (O	Total Price
Operable Windows	19.00	EA	3.00	4.00	4.000	\$850.00	\$217.00	\$0.00	\$1,067.00	\$1,300.00	\$24,700.00
2 #12 Wire	8218.00	LF	3.00	11.00	0.727	\$8.50	\$41.00	\$2.50	\$52.00	\$57.20	\$470,069.60
1 #12 Ground	4109.00	LF	3.00	11.00	0.727	\$8.50	\$41.00	\$2.50	\$52.00	\$57.20	\$235,034.80
Vertical Wire 2 #12	2400.00	LF	3.00	11.00	0.727	\$8.50	\$41.00	\$2.50	\$52.00	\$57.20	\$137,280.00
Vertical Wire 1 #12	1200.00	LF	3.00	11.00	0.727	\$8.50	\$41.00	\$2.50	\$52.00	\$57.20	\$68,640.00
3/4" EMT Conduit	5709.00	LF	2.00	90.00	0.089	\$2.54	\$5.05	\$0.00	\$7.59	\$10.35	\$59,088.15
Push Button w/LED Indicator	2.00	EA	1.00	8.00	1.00	\$137.00	\$56.50	\$0.00	\$193.50	\$235.00	\$470.00
Push Button w/LED Indicator	1.00	EA	1.00	8.00	1.00	\$137.00	\$56.50	\$0.00	\$193.50	\$193.50	\$193.50
Relay	6.00	EA	1.00	15.00	0.53	\$7.75	\$30.00	\$0.00	\$37.75	\$226.50	\$1,359.00
Current Relay	6.00	EA	1.00	15.00	0.53	\$7.75	\$30.00	\$0.00	\$37.75	\$226.50	\$1,359.00
Mechanical Motors	19.00	EA	2.00	3.50	2.286	\$197.00	\$126.00	\$0.00	\$323.00	\$405.00	\$7,695.00
										<b>Total</b>	<b>\$1,005,889.05</b>

#### Economizer System

Name	Quantity	Unit	Crew	Daily Output	Labor Hours	Material	Labor	Equipment	Total / Unit	/ Unit w. (O	Total Price
Economizer	4.00	EA	4.00	4.00	0.250	\$13,750.00	\$5,200.00	\$0.00	\$18,950.00	\$20,845.00	\$83,380.00
30" Round Duct	30.00	LF	3.00	45.00	0.533	\$13.65	\$28.50	\$2.25	\$42.15	\$58.50	\$1,755.00
36" Round Duct	30.00	LF	3.00	40.00	0.600	\$16.40	\$32.00	\$2.25	\$48.40	\$67.00	\$2,010.00
Duct Insulation	154.25	SF	1.00	84.00	0.190	\$4.54	\$9.15	\$2.25	\$13.69	\$19.25	\$2,969.31
										<b>Total</b>	<b>\$90,114.31</b>

Figure 3.13: Mechanical System Production and Pricing Information

## APPENDIX K: FUTURE POWER COST MODELS

Future Cost Model for Electric Use				Future Cost Model for Electric Use			
Hybrid Ventilation System				Econonmizer			
Year	Cost / KHW (Cents)	Hours / Year	Cost / Year	Year	Cost / KHW (Cents)	Hours / Year	Cost / Year
2017	13.20	623	\$82.24	2017	13.20	23364	\$3,084.05
2018	13.30	623	\$82.86	2018	13.30	23364	\$3,107.41
2019	13.35	623	\$83.17	2019	13.35	23364	\$3,119.09
2020	13.20	623	\$82.24	2020	13.20	23364	\$3,084.05
2021	13.40	623	\$83.48	2021	13.40	23364	\$3,130.78
2022	13.60	623	\$84.73	2022	13.60	23364	\$3,177.50
2023	13.90	623	\$86.60	2023	13.90	23364	\$3,247.60
2024	14.20	623	\$88.47	2024	14.20	23364	\$3,317.69
2025	14.18	623	\$88.34	2025	14.18	23364	\$3,313.02
2026	14.24	623	\$88.72	2026	14.24	23364	\$3,327.03
2027	14.30	623	\$89.09	2027	14.30	23364	\$3,341.05
2028	14.50	623	\$90.34	2028	14.50	23364	\$3,387.78
2029	14.74	623	\$91.83	2029	14.74	23364	\$3,443.85
2030	14.85	623	\$92.52	2030	14.85	23364	\$3,469.55
2031	14.96	623	\$93.20	2031	14.96	23364	\$3,495.25
2032	15.02	623	\$93.57	2032	15.02	23364	\$3,509.27
2033	15.30	623	\$95.32	2033	15.30	23364	\$3,574.69
2034	15.28	623	\$95.19	2034	15.28	23364	\$3,570.02
2035	15.34	623	\$95.57	2035	15.34	23364	\$3,584.04
2036	15.32	623	\$95.44	2036	15.32	23364	\$3,579.36
2037	15.31	623	\$95.38	2037	15.31	23364	\$3,577.03
2038	15.39	623	\$95.88	2038	15.39	23364	\$3,595.72
2039	15.45	623	\$96.25	2039	15.45	23364	\$3,609.74
2040	15.54	623	\$96.81	2040	15.54	23364	\$3,630.77
2041	15.62	623	\$97.31	2041	15.62	23364	\$3,649.46
2042	15.70	623	\$97.81	2042	15.70	23364	\$3,668.15
2043	15.80	623	\$98.43	2043	15.80	23364	\$3,691.51
2044	16.00	623	\$99.68	2044	16.00	23364	\$3,738.24
2045	16.30	623	\$101.55	2045	16.30	23364	\$3,808.33
2046	16.25	623	\$101.24	2046	16.25	23364	\$3,796.65
2047	16.40	623	\$102.17	2047	16.40	23364	\$3,831.70
		<b>Total</b>	<b>\$2,865.43</b>			<b>Total</b>	<b>\$107,460.38</b>

Figure 3.14: Predicted Energy Costs and System Energy Costs

## APPENDIX L: WEATHER ZONE DATA FOR 2016

January Weather Data and Zone Requirements													
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
January 1	12	32	85	NO	NO	NO	January 17	12	32	68	NO	NO	NO
	1	32	85	NO	NO	NO		1	31	70	NO	NO	NO
	2	32	80	NO	NO	NO		2	31	71	NO	NO	NO
	3	31	75	NO	NO	NO		3	31	69	NO	NO	NO
	4	31	75	NO	NO	NO		4	31	71	NO	NO	NO
	5	31	79	NO	NO	NO		5	31	70	NO	NO	NO
	6	30	80	NO	NO	NO		6	30	70	NO	NO	NO
	7	30	75	NO	NO	NO		7	30	69	NO	NO	NO
	8	30	75	NO	NO	NO		8	30	69	NO	NO	NO
	9	30	75	NO	NO	NO		9	30	69	NO	NO	NO
	10	30	75	NO	NO	NO		10	30	69	NO	NO	NO
	11	30	80	NO	NO	NO		11	30	69	NO	NO	NO
January 2	12	30	80	NO	NO	NO	January 18, 2016	12	30	75	NO	NO	NO
	1	32	69	NO	NO	NO		1	30	80	NO	NO	NO
	2	32	69	NO	NO	NO		2	28	93	NO	NO	NO
	3	32	60	NO	NO	NO		3	30	86	NO	NO	NO
	4	32	60	NO	NO	NO		4	30	80	NO	NO	NO
	5	30	60	NO	NO	NO		5	30	69	NO	NO	NO
	6	30	64	NO	NO	NO		6	28	74	NO	NO	NO
	7	30	69	NO	NO	NO		7	28	80	NO	NO	NO
	8	30	64	NO	NO	NO		8	27	93	NO	NO	NO
	9	30	64	NO	NO	NO		9	27	74	NO	NO	NO
	10	30	65	NO	NO	NO		10	25	72	NO	NO	NO
	11	30	64	NO	NO	NO		11	22	65	NO	NO	NO
January 3, 2016	12	30	64	NO	NO	NO	January 19, 2016	12	20	60	NO	NO	NO
	1	30	64	NO	NO	NO		1	16	62	NO	NO	NO
	2	28	65	NO	NO	NO		2	14	63	NO	NO	NO
	3	28	67	NO	NO	NO		3	11	63	NO	NO	NO
	4	27	66	NO	NO	NO		4	9	64	NO	NO	NO
	5	27	67	NO	NO	NO		5	8	67	NO	NO	NO
	6	27	69	NO	NO	NO		6	7	67	NO	NO	NO
	7	27	69	NO	NO	NO		7	7	67	NO	NO	NO
	8	27	74	NO	NO	NO		8	7	72	NO	NO	NO
	9	28	69	NO	NO	NO		9	9	67	NO	NO	NO
	10	30	69	NO	NO	NO		10	10	65	NO	NO	NO
	11	30	64	NO	NO	NO		11	12	62	NO	NO	NO
January 4, 2016	12	32	64	NO	NO	NO	January 20, 2016	12	14	62	NO	NO	NO
	1	32	64	NO	NO	NO		1	14	57	NO	NO	NO
	2	30	69	NO	NO	NO		2	14	57	NO	NO	NO
	3	30	69	NO	NO	NO		3	14	57	NO	NO	NO
	4	30	69	NO	NO	NO		4	12	57	NO	NO	NO
	5	30	69	NO	NO	NO		5	12	53	NO	NO	NO
	6	30	69	NO	NO	NO		6	10	57	NO	NO	NO
	7	28	74	NO	NO	NO		7	10	57	NO	NO	NO
	8	27	80	NO	NO	NO		8	10	57	NO	NO	NO
	9	27	80	NO	NO	NO		9	9	67	NO	NO	NO
	10	26	79	NO	NO	NO		10	9	65	NO	NO	NO
	11	26	79	NO	NO	NO		11	9	66	NO	NO	NO
January 5, 2016	12	32	71	NO	NO	NO	January 21, 2016	12	9	68	NO	NO	NO
	1	31	72	NO	NO	NO		1	9	67	NO	NO	NO
	2	32	69	NO	NO	NO		2	8	69	NO	NO	NO
	3	33	66	NO	NO	NO		3	9	67	NO	NO	NO
	4	33	65	NO	NO	NO		4	8	70	NO	NO	NO
	5	33	65	NO	NO	NO		5	8	68	NO	NO	NO
	6	32	64	NO	NO	NO		6	7	72	NO	NO	NO
	7	32	64	NO	NO	NO		7	7	67	NO	NO	NO
	8	32	69	NO	NO	NO		8	9	67	NO	NO	NO
	9	32	69	NO	NO	NO		9	9	73	NO	NO	NO
	10	32	69	NO	NO	NO		10	12	67	NO	NO	NO
	11	32	69	NO	NO	NO		11	14	62	NO	NO	NO
January 6, 2016	12	32	69	NO	NO	NO	January 22, 2016	12	16	58	NO	NO	NO
	1	32	69	NO	NO	NO		1	18	53	NO	NO	NO
	2	32	75	NO	NO	NO		2	19	54	NO	NO	NO
	3	32	75	NO	NO	NO		3	18	63	NO	NO	NO
	4	32	65	NO	NO	NO		4	18	58	NO	NO	NO
	5	32	65	NO	NO	NO		5	18	58	NO	NO	NO
	6	32	64	NO	NO	NO		6	16	62	NO	NO	NO
	7	32	64	NO	NO	NO		7	16	68	NO	NO	NO
	8	32	69	NO	NO	NO		8	18	63	NO	NO	NO
	9	32	69	NO	NO	NO		9	18	63	NO	NO	NO
	10	31	69	NO	NO	NO		10	17	66	NO	NO	NO
	11	30	69	NO	NO	NO		11	18	67	NO	NO	NO
January 7, 2016	12	30	69	NO	NO	NO	January 23, 2016	12	18	65	NO	NO	NO
	1	30	75	NO	NO	NO		1	17	68	NO	NO	NO
	2	28	64	NO	NO	NO		2	17	69	NO	NO	NO
	3	27	63	NO	NO	NO		3	18	69	NO	NO	NO
	4	26	71	NO	NO	NO		4	18	68	NO	NO	NO
	5	25	61	NO	NO	NO		5	18	69	NO	NO	NO
	6	25	64	NO	NO	NO		6	16	73	NO	NO	NO
	7	23	59	NO	NO	NO		7	14	79	NO	NO	NO
	8	21	58	NO	NO	NO		8	16	73	NO	NO	NO
	9	21	63	NO	NO	NO		9	18	68	NO	NO	NO
	10	23	54	NO	NO	NO		10	18	66	NO	NO	NO
	11	23	50	NO	NO	NO		11	19	63	NO	NO	NO
January 8, 2016	12	25	36	NO	NO	NO	January 24, 2016	12	21	59	NO	NO	NO
	1	23	36	NO	NO	NO		1	23	59	NO	NO	NO
	2	23	39	NO	NO	NO		2	23	59	NO	NO	NO
	3	23	39	NO	NO	NO		3	25	54	NO	NO	NO
	4	21	42	NO	NO	NO		4	25	59	NO	NO	NO
	5	19	42	NO	NO	NO		5	25	59	NO	NO	NO
	6	16	47	NO	NO	NO		6	25	63	NO	NO	NO
	7	14	55	NO	NO	NO		7	23	68	NO	NO	NO
	8	12	58	NO	NO	NO		8	23	68	NO	NO	NO
	9	10	61	NO	NO	NO		9	23	73	NO	NO	NO
	10	8	62	NO	NO	NO		10	22	89	NO	NO	NO
	11	9	61	NO	NO	NO		11	20	92	NO	NO	NO

January 5, 2016	12	8	64	NO	NO	NO	January 21, 2016	12	21	91	NO	NO	NO
	1	7	65	NO	NO	NO		1	21	85	NO	NO	NO
	2	7	68	NO	NO	NO		2	21	81	NO	NO	NO
	3	8	69	NO	NO	NO		3	21	79	NO	NO	NO
	4	7	72	NO	NO	NO		4	20	76	NO	NO	NO
	5	7	72	NO	NO	NO		5	20	75	NO	NO	NO
	6	7	72	NO	NO	NO		6	19	80	NO	NO	NO
	7	7	72	NO	NO	NO		7	19	80	NO	NO	NO
	8	7	72	NO	NO	NO		8	19	74	NO	NO	NO
	9	9	67	NO	NO	NO		9	21	74	NO	NO	NO
	10	12.2	67	NO	NO	NO		10	23	74	NO	NO	NO
	11	16	58	NO	NO	NO		11	23	74	NO	NO	NO
January 6, 2016	12	18	53	NO	NO	NO		12	25	69	NO	NO	NO
	1	21	50	NO	NO	NO	January 22, 2016	1	25	64	NO	NO	NO
	2	25	46	NO	NO	NO		2	25	69	NO	NO	NO
	3	27	45	NO	NO	NO		3	25	69	NO	NO	NO
	4	27	43	NO	NO	NO		4	25	69	NO	NO	NO
	5	25	46	NO	NO	NO		5	25	64	NO	NO	NO
	6	25	50	NO	NO	NO		6	25	64	NO	NO	NO
	7	23	52	NO	NO	NO		7	23	68	NO	NO	NO
	8	21.2	53	NO	NO	NO		8	23	68	NO	NO	NO
	9	19	58	NO	NO	NO		9	21	74	NO	NO	NO
	10	19	60	NO	NO	NO		10	21	73	NO	NO	NO
	11	18	61	NO	NO	NO		11	20	73	NO	NO	NO
January 7, 2016	12	16	67	NO	NO	NO	January 23, 2016	12	19	75	NO	NO	NO
	1	14	70	NO	NO	NO		1	19	74	NO	NO	NO
	2	13	71	NO	NO	NO		2	16	83	NO	NO	NO
	3	13	75	NO	NO	NO		3	20	75	NO	NO	NO
	4	11	82	NO	NO	NO		4	17	81	NO	NO	NO
	5	10	85	NO	NO	NO		5	16	86	NO	NO	NO
	6	10	79	NO	NO	NO		6	17	86	NO	NO	NO
	7	9	85	NO	NO	NO		7	16	86	NO	NO	NO
	8	9	85	NO	NO	NO		8	16	86	NO	NO	NO
	9	12	85	NO	NO	NO		9	18	79	NO	NO	NO
	10	18	73	NO	NO	NO		10	19	74	NO	NO	NO
	11	23	68	NO	NO	NO		11	19	74	NO	NO	NO
January 8, 2016	12	30	44	NO	NO	NO	January 24, 2016	12	19	63	NO	NO	NO
	1	32	32	NO	NO	NO		1	21	54	NO	NO	NO
	2	36	26	NO	NO	NO		2	21	54	NO	NO	NO
	3	37	28	NO	NO	NO		3	21	54	NO	NO	NO
	4	37	35	NO	NO	NO		4	21	54	NO	NO	NO
	5	32	34	NO	NO	NO		5	21	54	NO	NO	NO
	6	30	34	NO	NO	NO		6	21	54	NO	NO	NO
	7	30	40	NO	NO	NO		7	21	54	NO	NO	NO
	8	30	34	NO	NO	NO		8	19	68	NO	NO	NO
	9	27	43	NO	NO	NO		9	19	80	NO	NO	NO
	10	23	52	NO	NO	NO		10	18	89	NO	NO	NO
	11	24	51	NO	NO	NO		11	18	88	NO	NO	NO
January 5, 2016	12	23	47	NO	NO	NO	January 21, 2016	12	18	89	NO	NO	NO
	1	21	61	NO	NO	NO		1	18	89	NO	NO	NO
	2	19	69	NO	NO	NO		2	17	90	NO	NO	NO
	3	17	74	NO	NO	NO		3	17	89	NO	NO	NO
	4	16	74	NO	NO	NO		4	17	88	NO	NO	NO
	5	18	74	NO	NO	NO		5	18	85	NO	NO	NO
	6	18	73	NO	NO	NO		6	18	86	NO	NO	NO
	7	16	79	NO	NO	NO		7	19	74	NO	NO	NO
	8	14	86	NO	NO	NO		8	19	68	NO	NO	NO
	9	16	86	NO	NO	NO		9	21	58	NO	NO	NO
	10	21	80	NO	NO	NO		10	19	74	NO	NO	NO
	11	27	69	NO	NO	NO		11	21	68	NO	NO	NO
January 6, 2016	12	30	55	NO	NO	NO	January 22, 2016	12	23	54	NO	NO	NO
	1	36	44	NO	NO	NO		1	25	46	NO	NO	NO
	2	37	36	NO	NO	NO		2	27	43	NO	NO	NO
	3	39	33	NO	NO	NO		3	27	40	NO	NO	NO
	4	39	31	NO	NO	NO		4	28	37	NO	NO	NO
	5	37	36	NO	NO	NO		5	28	40	NO	NO	NO
	6	34	41	NO	NO	NO		6	27	47	NO	NO	NO
	7	34	44	NO	NO	NO		7	27	47	NO	NO	NO
	8	28	51	NO	NO	NO		8	25	50	NO	NO	NO
	9	28	51	NO	NO	NO		9	23	54	NO	NO	NO
	10	25	61	NO	NO	NO		10	21	58	NO	NO	NO
	11	24	64	NO	NO	NO		11	19	62	NO	NO	NO
January 7, 2016	12	24	65	NO	NO	NO	January 23, 2016	12	17	67	NO	NO	NO
	1	23	65	NO	NO	NO		1	15	71	NO	NO	NO
	2	22	71	NO	NO	NO		2	14	76	NO	NO	NO
	3	19	78	NO	NO	NO		3	12	76	NO	NO	NO
	4	20	73	NO	NO	NO		4	13	76	NO	NO	NO
	5	18	81	NO	NO	NO		5	11	78	NO	NO	NO
	6	19	80	NO	NO	NO		6	10	79	NO	NO	NO
	7	18	79	NO	NO	NO		7	9	79	NO	NO	NO
	8	18	79	NO	NO	NO		8	12	85	NO	NO	NO
	9	21	80	NO	NO	NO		9	14	79	NO	NO	NO
	10	23	80	NO	NO	NO		10	19	68	NO	NO	NO
	11	25	80	NO	NO	NO		11	23	63	NO	NO	NO
January 8, 2016	12	28	69	NO	NO	NO	January 24, 2016	12	27	59	NO	NO	NO
	1	30	75	NO	NO	NO		1	27	59	NO	NO	NO
	2	32	87	NO	NO	NO		2	28	55	NO	NO	NO
	3	32	80	NO	NO	NO		3	28	55	NO	NO	NO
	4	32	80	NO	NO	NO		4	28	55	NO	NO	NO
	5	32	80	NO	NO	NO		5	27	59	NO	NO	NO
	6	32	93	NO	NO	NO		6	27	59	NO	NO	NO
	7	32	93	NO	NO	NO		7	25	64	NO	NO	NO
	8	32	93	NO	NO	NO		8	25	64	NO	NO	NO
	9	32	100	NO	NO	NO		9	23	68	NO	NO	NO
	10	33	98	NO	NO	NO		10	23	66	NO	NO	NO
	11	33	99	NO	NO	NO		11	22	69	NO	NO	NO

January 9, 2016	12	35	98	NO	NO	NO	January 25, 2016	12	21	70	NO	NO	NO
	1	35	98	NO	NO	NO		1	22	71	NO	NO	NO
	2	34	99	NO	NO	NO		2	23	70	NO	NO	NO
	3	35	98	NO	NO	NO		3	24	69	NO	NO	NO
	4	35	98	NO	NO	NO		4	22	78	NO	NO	NO
	5	36	99	NO	NO	NO		5	22	84	NO	NO	NO
	6	36	100	NO	NO	NO		6	23	80	NO	NO	NO
	7	37	100	NO	NO	NO		7	23	74	NO	NO	NO
	8	37	93	NO	NO	NO		8	21	74	NO	NO	NO
	9	37	100	NO	NO	NO		9	21	80	NO	NO	NO
	10	39	99	NO	NO	NO		10	25	74	NO	NO	NO
	11	39	96	NO	NO	NO		11	28	64	NO	NO	NO
January 10, 2016	12	41	93	NO	NO	NO	January 26, 2016	12	34	48	NO	NO	NO
	1	41	93	NO	NO	NO		1	36	44	NO	NO	NO
	2	41	93	NO	NO	NO		2	37	38	NO	NO	NO
	3	41	93	NO	NO	NO		3	39	39	NO	NO	NO
	4	41	93	NO	NO	NO		4	39	36	NO	NO	NO
	5	39	100	NO	NO	NO		5	36	41	NO	NO	NO
	6	39	93	NO	NO	NO		6	36	41	NO	NO	NO
	7	41	93	NO	NO	NO		7	32	48	NO	NO	NO
	8	43	87	NO	NO	NO		8	32	48	NO	NO	NO
	9	43	93	NO	NO	NO		9	32	48	NO	NO	NO
	10	43	94	NO	NO	NO		10	32	47	NO	NO	NO
	11	43	95	NO	NO	NO		11	31	47	NO	NO	NO
January 11, 2016	12	44	93	NO	NO	NO	January 27, 2016	12	29	54	NO	NO	NO
	1	44	94	NO	NO	NO		1	30	51	NO	NO	NO
	2	45	95	NO	NO	NO		2	31	53	NO	NO	NO
	3	43	96	NO	NO	NO		3	30	58	NO	NO	NO
	4	45	92	NO	NO	NO		4	30	58	NO	NO	NO
	5	44	95	NO	NO	NO		5	31	68	NO	NO	NO
	6	43	100	NO	NO	NO		6	32	75	NO	NO	NO
	7	45	93	NO	NO	NO		7	32	69	NO	NO	NO
	8	45	93	NO	NO	NO		8	32	75	NO	NO	NO
	9	45	94	NO	NO	NO		9	32	74	NO	NO	NO
	10	45	93	NO	NO	NO		10	34	70	NO	NO	NO
	11	46	93	NO	NO	NO		11	36	70	NO	NO	NO
January 12, 2016	12	48	87	NO	NO	NO	January 28, 2016	12	37	70	NO	NO	NO
	1	50	76	NO	NO	NO		1	43	61	NO	NO	NO
	2	48	76	NO	NO	NO		2	45	61	NO	NO	NO
	3	45	87	NO	NO	NO		3	48	66	NO	NO	NO
	4	39	75	NO	NO	NO		4	48	62	NO	NO	NO
	5	34	81	NO	NO	NO		5	46	66	NO	NO	NO
	6	32	75	NO	NO	NO		6	46	66	NO	NO	NO
	7	32	69	NO	NO	NO		7	43	70	NO	NO	NO
	8	30	69	NO	NO	NO		8	41	70	NO	NO	NO
	9	30	64	NO	NO	NO		9	39	70	NO	NO	NO
	10	28	65	NO	NO	NO		10	37	74	NO	NO	NO
	11	28	62	NO	NO	NO		11	36	73	NO	NO	NO
January 9, 2016	12	25	59	NO	NO	NO	January 25, 2016	12	34	74	NO	NO	NO
	1	24	60	NO	NO	NO		1	33	74	NO	NO	NO
	2	23	61	NO	NO	NO		2	32	74	NO	NO	NO
	3	22	57	NO	NO	NO		3	32	76	NO	NO	NO
	4	20	56	NO	NO	NO		4	32	76	NO	NO	NO
	5	20	56	NO	NO	NO		5	32	74	NO	NO	NO
	6	18	6	NO	NO	NO		6	32	75	NO	NO	NO
	7	18	58	NO	NO	NO		7	32	64	NO	NO	NO
	8	18	68	NO	NO	NO		8	32	64	NO	NO	NO
	9	18	63	NO	NO	NO		9	32	64	NO	NO	NO
	10	19	54	NO	NO	NO		10	32	64	NO	NO	NO
	11	21	58	NO	NO	NO		11	32	64	NO	NO	NO
January 10, 2016	12	21	54	NO	NO	NO	January 26, 2016	12	32	60	NO	NO	NO
	1	21	46	NO	NO	NO		1	32	60	NO	NO	NO
	2	23	46	NO	NO	NO		2	32	60	NO	NO	NO
	3	23	43	NO	NO	NO		3	32	60	NO	NO	NO
	4	23	43	NO	NO	NO		4	32	60	NO	NO	NO
	5	21	46	NO	NO	NO		5	32	60	NO	NO	NO
	6	19	49	NO	NO	NO		6	34	56	NO	NO	NO
	7	18	53	NO	NO	NO		7	34	56	NO	NO	NO
	8	16	62	NO	NO	NO		8	28	69	NO	NO	NO
	9	16	62	NO	NO	NO		9	27	69	NO	NO	NO
	10	16	69	NO	NO	NO		10	27	64	NO	NO	NO
	11	17	69	NO	NO	NO		11	26	66	NO	NO	NO
January 11, 2016	12	17	69	NO	NO	NO	January 27, 2016	12	24	72	NO	NO	NO
	1	18	70	NO	NO	NO		1	22	77	NO	NO	NO
	2	18	71	NO	NO	NO		2	22	77	NO	NO	NO
	3	19	70	NO	NO	NO		3	19	82	NO	NO	NO
	4	19	69	NO	NO	NO		4	20	81	NO	NO	NO
	5	19	75	NO	NO	NO		5	19	83	NO	NO	NO
	6	21	81	NO	NO	NO		6	18	79	NO	NO	NO
	7	23	63	NO	NO	NO		7	18	86	NO	NO	NO
	8	23	68	NO	NO	NO		8	19	86	NO	NO	NO
	9	25	69	NO	NO	NO		9	23	74	NO	NO	NO
	10	25	74	NO	NO	NO		10	28	69	NO	NO	NO
	11	25	86	NO	NO	NO		11	30	64	NO	NO	NO
January 12, 2016	12	25	86	NO	NO	NO	January 28, 2016	12	30	64	NO	NO	NO
	1	27	86	NO	NO	NO		1	32	60	NO	NO	NO
	2	30	80	NO	NO	NO		2	34	56	NO	NO	NO
	3	30	86	NO	NO	NO		3	34	56	NO	NO	NO
	4	30	80	NO	NO	NO		4	34	56	NO	NO	NO
	5	27	69	NO	NO	NO		5	34	56	NO	NO	NO
	6	25	80	NO	NO	NO		6	32	55	NO	NO	NO
	7	21	58	NO	NO	NO		7	32	55	NO	NO	NO
	8	19	58	NO	NO	NO		8	32	60	NO	NO	NO
	9	18	58	NO	NO	NO		9	30	64	NO	NO	NO
	10	16	65	NO	NO	NO		10	32	64	NO	NO	NO
	11	16	66	NO	NO	NO		11	32	61	NO	NO	NO

January 13, 2016	12	16	69	NO	NO	NO	January 29, 2016	12	32	65	NO	NO	NO
	1	16	71	NO	NO	NO		1	32	77	NO	NO	NO
	2	15	70	NO	NO	NO		2	32	78	NO	NO	NO
	3	15	71	NO	NO	NO		3	32	78	NO	NO	NO
	4	15	68	NO	NO	NO		4	31	83	NO	NO	NO
	5	14	68	NO	NO	NO		5	32	91	NO	NO	NO
	6	12	73	NO	NO	NO		6	32	93	NO	NO	NO
	7	12	67	NO	NO	NO		7	34	81	NO	NO	NO
	8	10	73	NO	NO	NO		8	32	80	NO	NO	NO
	9	10	73	NO	NO	NO		9	30	75	NO	NO	NO
	10	14	67	NO	NO	NO		10	30	60	NO	NO	NO
11	16	62	NO	NO	NO	11	30	64	NO	NO	NO		
12	18	62	NO	NO	NO	12	32	60	NO	NO	NO		
1	16	63	NO	NO	NO	1	30	55	NO	NO	NO		
2	16	62	NO	NO	NO	2	30	55	NO	NO	NO		
3	16	62	NO	NO	NO	3	30	55	NO	NO	NO		
4	16	58	NO	NO	NO	4	28	59	NO	NO	NO		
5	14	62	NO	NO	NO	5	27	64	NO	NO	NO		
6	12	67	NO	NO	NO	6	27	64	NO	NO	NO		
7	12	67	NO	NO	NO	7	25	69	NO	NO	NO		
8	14	62	NO	NO	NO	8	25	69	NO	NO	NO		
9	12	67	NO	NO	NO	9	25	64	NO	NO	NO		
10	14	61	NO	NO	NO	10	23	66	NO	NO	NO		
11	15	60	NO	NO	NO	11	22	69	NO	NO	NO		
January 14, 2016	12	16	64	NO	NO	NO	January 30, 2016	12	21	70	NO	NO	NO
	1	15	84	NO	NO	NO		1	20	73	NO	NO	NO
	2	15	87	NO	NO	NO		2	20	76	NO	NO	NO
	3	16	86	NO	NO	NO		3	18	79	NO	NO	NO
	4	16	88	NO	NO	NO		4	17	84	NO	NO	NO
	5	19	86	NO	NO	NO		5	17	82	NO	NO	NO
	6	19	86	NO	NO	NO		6	19	80	NO	NO	NO
	7	21	93	NO	NO	NO		7	21	80	NO	NO	NO
	8	25	86	NO	NO	NO		8	21	80	NO	NO	NO
	9	27	82	NO	NO	NO		9	23	74	NO	NO	NO
	10	28	74	NO	NO	NO		10	25	69	NO	NO	NO
11	30	69	NO	NO	NO	11	30	60	NO	NO	NO		
12	32	69	NO	NO	NO	12	34	52	NO	NO	NO		
1	36	65	NO	NO	NO	1	37	45	NO	NO	NO		
2	39	56	NO	NO	NO	2	39	42	NO	NO	NO		
3	39	61	NO	NO	NO	3	43	34	NO	NO	NO		
4	39	61	NO	NO	NO	4	45	41	NO	NO	NO		
5	39	61	NO	NO	NO	5	43	45	NO	NO	NO		
6	37	65	NO	NO	NO	6	37	45	NO	NO	NO		
7	37	65	NO	NO	NO	7	37	48	NO	NO	NO		
8	37	65	NO	NO	NO	8	37	48	NO	NO	NO		
9	39	61	NO	NO	NO	9	37	54	NO	NO	NO		
10	38	67	NO	NO	NO	10	36	52	NO	NO	NO		
11	34	78	NO	NO	NO	11	35	53	NO	NO	NO		
January 15, 2016	12	31	82	NO	NO	NO	January 31, 2016	12	35	54	NO	NO	NO
	1	29	86	NO	NO	NO		1	35	55	NO	NO	NO
	2	28	90	NO	NO	NO		2	33	54	NO	NO	NO
	3	28	90	NO	NO	NO		3	35	57	NO	NO	NO
	4	28	88	NO	NO	NO		4	32	59	NO	NO	NO
	5	26	92	NO	NO	NO		5	32	62	NO	NO	NO
	6	27	86	NO	NO	NO		6	32	62	NO	NO	NO
	7	25	93	NO	NO	NO		7	32	64	NO	NO	NO
	8	25	93	NO	NO	NO		8	32	69	NO	NO	NO
	9	27	93	NO	NO	NO		9	32	75	NO	NO	NO
	10	30	86	NO	NO	NO		10	36	60	NO	NO	NO
11	32	81	NO	NO	NO	11	37	60	NO	NO	NO		
12	34	70	NO	NO	NO	12	45	53	NO	NO	NO		
1	39	70	NO	NO	NO	1	52	44	NO	NO	NO		
2	39	75	NO	NO	NO	2	59	45	NO	NO	YES		
3	37	75	NO	NO	NO	3	59	54	NO	NO	YES		
4	37	75	NO	NO	NO	4	59	58	NO	NO	YES		
5	36	75	NO	NO	NO	5	57	51	NO	NO	YES		
6	36	75	NO	NO	NO	6	55	54	NO	NO	YES		
7	36	75	NO	NO	NO	7	54	51	NO	NO	NO		
8	36	75	NO	NO	NO	8	52	54	NO	NO	NO		
9	37	70	NO	NO	NO	9	48	58	NO	NO	NO		
10	40	72	NO	NO	NO	10	48	56	NO	NO	NO		
11	37	89	NO	NO	NO	11	44	63	NO	NO	NO		
January 16, 2016	12	37	91	NO	NO	NO							
	1	34	97	NO	NO	NO							
	2	34	99	NO	NO	NO							
	3	34	99	NO	NO	NO							
	4	34	99	NO	NO	NO							
	5	35	99	NO	NO	NO							
	6	36	100	NO	NO	NO							
	7	39	93	NO	NO	NO							
	8	39	87	NO	NO	NO							
	9	39	87	NO	NO	NO							
	10	39	87	NO	NO	NO							
11	37	85	NO	NO	NO								
12	37	81	NO	NO	NO								
1	37	87	NO	NO	NO								
2	36	87	NO	NO	NO								
3	34	87	NO	NO	NO								
4	34	87	NO	NO	NO								
5	34	93	NO	NO	NO								
6	34	87	NO	NO	NO								
7	34	87	NO	NO	NO								
8	32	75	NO	NO	NO								
9	32	80	NO	NO	NO								
10	32	75	NO	NO	NO								
11	32	68	NO	NO	NO								

February Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)		Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
February 1	12	43	69	NO	NO	NO		February 17	12	32	79	NO	NO	NO
	1	43	69	NO	NO	NO			1	32	83	NO	NO	NO
	2	45	68	NO	NO	NO			2	32	80	NO	NO	NO
	3	47	67	NO	NO	NO			3	32	78	NO	NO	NO
	4	49	67	NO	NO	NO			4	32	75	NO	NO	NO
	5	51	69	NO	NO	NO			5	31	72	NO	NO	NO
	6	52	76	NO	NO	NO			6	30	75	NO	NO	NO
	7	52	76	NO	NO	NO			7	30	75	NO	NO	NO
	8	48	82	NO	NO	NO			8	28	75	NO	NO	NO
	9	46	71	NO	NO	NO			9	28	74	NO	NO	NO
	10	46	66	NO	NO	NO			10	28	74	NO	NO	NO
February 2, 2016	11	48	58	NO	NO	NO		February 18, 2016	11	30	75	NO	NO	NO
	12	50	50	NO	NO	NO			12	30	75	NO	NO	NO
	1	48	54	NO	NO	NO			1	32	69	NO	NO	NO
	2	46	57	NO	NO	NO			2	32	69	NO	NO	NO
	3	46	57	NO	NO	NO			3	32	69	NO	NO	NO
	4	46	53	NO	NO	NO			4	32	69	NO	NO	NO
	5	45	53	NO	NO	NO			5	32	69	NO	NO	NO
	6	43	61	NO	NO	NO			6	30	75	NO	NO	NO
	7	43	61	NO	NO	NO			7	30	75	NO	NO	NO
	8	41	61	NO	NO	NO			8	30	80	NO	NO	NO
	9	39	56	NO	NO	NO			9	30	75	NO	NO	NO
February 3, 2016	10	37	62	NO	NO	NO		February 19, 2016	10	28	67	NO	NO	NO
	11	35	66	NO	NO	NO			11	27	62	NO	NO	NO
	12	35	68	NO	NO	NO			12	25	67	NO	NO	NO
	1	32	73	NO	NO	NO			1	23	65	NO	NO	NO
	2	29	78	NO	NO	NO			2	22	62	NO	NO	NO
	3	29	81	NO	NO	NO			3	21	61	NO	NO	NO
	4	28	82	NO	NO	NO			4	20	60	NO	NO	NO
	5	28	83	NO	NO	NO			5	19	62	NO	NO	NO
	6	28	80	NO	NO	NO			6	18	68	NO	NO	NO
	7	27	86	NO	NO	NO			7	18	63	NO	NO	NO
	8	27	86	NO	NO	NO			8	18	68	NO	NO	NO
February 4, 2016	9	30	80	NO	NO	NO		February 20, 2016	9	18	63	NO	NO	NO
	10	34	75	NO	NO	NO			10	19	58	NO	NO	NO
	11	39	65	NO	NO	NO			11	23	50	NO	NO	NO
	12	43	57	NO	NO	NO			12	25	46	NO	NO	NO
	1	45	49	NO	NO	NO			1	27	43	NO	NO	NO
	2	46	34	NO	NO	NO			2	28	43	NO	NO	NO
	3	46	37	NO	NO	NO			3	30	40	NO	NO	NO
	4	43	46	NO	NO	NO			4	30	40	NO	NO	NO
	5	43	46	NO	NO	NO			5	30	40	NO	NO	NO
	6	41	45	NO	NO	NO			6	28	43	NO	NO	NO
	7	41	45	NO	NO	NO			7	27	51	NO	NO	NO
February 5, 2016	8	41	49	NO	NO	NO		February 21, 2016	8	25	54	NO	NO	NO
	9	41	53	NO	NO	NO			9	23	59	NO	NO	NO
	10	42	53	NO	NO	NO			10	22	65	NO	NO	NO
	11	42	53	NO	NO	NO			11	21	67	NO	NO	NO
	12	42	52	NO	NO	NO			12	19	73	NO	NO	NO
	1	42	59	NO	NO	NO			1	18	75	NO	NO	NO
	2	42	61	NO	NO	NO			2	18	75	NO	NO	NO
	3	41	63	NO	NO	NO			3	16	82	NO	NO	NO
	4	39	80	NO	NO	NO			4	16	81	NO	NO	NO
	5	37	86	NO	NO	NO			5	15	86	NO	NO	NO
	6	37	93	NO	NO	NO			6	14	86	NO	NO	NO
February 6, 2016	7	39	93	NO	NO	NO		February 22, 2016	7	18	79	NO	NO	NO
	8	39	93	NO	NO	NO			8	19	74	NO	NO	NO
	9	39	95	NO	NO	NO			9	19	80	NO	NO	NO
	10	41	100	NO	NO	NO			10	21	74	NO	NO	NO
	11	43	93	NO	NO	NO			11	27	47	NO	NO	NO
	12	45	93	NO	NO	NO			12	28	43	NO	NO	NO
	1	45	93	NO	NO	NO			1	30	44	NO	NO	NO
	2	45	93	NO	NO	NO			2	32	44	NO	NO	NO
	3	46	93	NO	NO	NO			3	32	44	NO	NO	NO
	4	46	93	NO	NO	NO			4	34	44	NO	NO	NO
	5	46	93	NO	NO	NO			5	32	51	NO	NO	NO
February 7, 2016	6	48	93	NO	NO	NO		February 23, 2016	6	34	52	NO	NO	NO
	7	46	93	NO	NO	NO			7	34	52	NO	NO	NO
	8	45	100	NO	NO	NO			8	34	52	NO	NO	NO
	9	45	100	NO	NO	NO			9	36	48	NO	NO	NO
	10	44	99	NO	NO	NO			10	37	49	NO	NO	NO
	11	42	99	NO	NO	NO			11	37	52	NO	NO	NO
	12	42	99	NO	NO	NO			12	37	52	NO	NO	NO
	1	42	92	NO	NO	NO			1	37	55	NO	NO	NO
	2	42	88	NO	NO	NO			2	38	57	NO	NO	NO
	3	41	81	NO	NO	NO			3	38	65	NO	NO	NO
	4	41	76	NO	NO	NO			4	36	67	NO	NO	NO
February 8, 2016	5	40	73	NO	NO	NO		February 24, 2016	5	45	65	NO	NO	NO
	6	39	70	NO	NO	NO			6	48	54	NO	NO	NO
	7	37	70	NO	NO	NO			7	48	50	NO	NO	NO
	8	37	67	NO	NO	NO			8	48	54	NO	NO	NO
	9	37	65	NO	NO	NO			9	50	54	NO	NO	NO
	10	37	65	NO	NO	NO			10	52	52	NO	NO	NO
	11	39	65	NO	NO	NO			11	55	47	NO	NO	YES
	12	39	65	NO	NO	NO			12	59	42	NO	NO	YES
	1	39	61	NO	NO	NO			1	61	36	NO	YES	YES
	2	39	56	NO	NO	NO			2	63	34	NO	YES	YES
	3	39	52	NO	NO	NO			3	63	34	NO	YES	YES
February 9, 2016	4	41	49	NO	NO	NO		February 25, 2016	4	63	32	NO	YES	YES
	5	39	52	NO	NO	NO			5	61	34	NO	YES	YES
	6	39	52	NO	NO	NO			6	57	36	NO	YES	YES
	7	37	52	NO	NO	NO			7	55	38	NO	NO	YES
	8	37	60	NO	NO	NO			8	55	41	NO	NO	YES
	9	36	65	NO	NO	NO			9	55	41	NO	NO	YES
	10	36	66	NO	NO	NO			10	55	42	NO	NO	YES
	11	35	68	NO	NO	NO			11	52	46	NO	NO	YES

February 5, 2016	12	35	69	NO	NO	NO	February 21, 2016	12	50	47	NO	NO	NO
	1	35	72	NO	NO	NO		1	49	48	NO	NO	NO
	2	34	73	NO	NO	NO		2	47	51	NO	NO	NO
	3	34	71	NO	NO	NO		3	45	55	NO	NO	NO
	4	33	70	NO	NO	NO		4	43	59	NO	NO	NO
	5	33	68	NO	NO	NO		5	44	58	NO	NO	NO
	6	32	69	NO	NO	NO		6	45	57	NO	NO	NO
	7	32	69	NO	NO	NO		7	36	75	NO	NO	NO
	8	32	69	NO	NO	NO		8	41	65	NO	NO	NO
	9	32	64	NO	NO	NO		9	39	75	NO	NO	NO
	10	34	56	NO	NO	NO		10	39	70	NO	NO	NO
	11	32	69	NO	NO	NO		11	41	57	NO	NO	NO
February 6, 2016	12	32	69	NO	NO	NO		12	46	58	NO	NO	NO
	1	32	55	NO	NO	NO	February 22, 2016	1	50	50	NO	NO	NO
	2	34	52	NO	NO	NO		2	52	50	NO	NO	NO
	3	36	48	NO	NO	NO		3	54	47	NO	NO	NO
	4	34	48	NO	NO	NO		4	54	47	NO	NO	NO
	5	32	51	NO	NO	NO		5	50	54	NO	NO	NO
	6	30	55	NO	NO	NO		6	46	57	NO	NO	NO
	7	30	55	NO	NO	NO		7	45	57	NO	NO	NO
	8	28	55	NO	NO	NO		8	43	61	NO	NO	NO
	9	28	59	NO	NO	NO		9	41	65	NO	NO	NO
	10	28	61	NO	NO	NO		10	39	68	NO	NO	NO
	11	26	65	NO	NO	NO		11	37	72	NO	NO	NO
February 7, 2016	12	28	60	NO	NO	NO	February 23, 2016	12	34	70	NO	NO	NO
	1	25	67	NO	NO	NO		1	34	74	NO	NO	NO
	2	23	74	NO	NO	NO		2	33	75	NO	NO	NO
	3	24	72	NO	NO	NO		3	32	79	NO	NO	NO
	4	24	71	NO	NO	NO		4	32	80	NO	NO	NO
	5	23	77	NO	NO	NO		5	30	80	NO	NO	NO
	6	21	80	NO	NO	NO		6	28	86	NO	NO	NO
	7	23	80	NO	NO	NO		7	30	80	NO	NO	NO
	8	25	80	NO	NO	NO		8	30	86	NO	NO	NO
	9	25	80	NO	NO	NO		9	32	80	NO	NO	NO
	10	28	74	NO	NO	NO		10	34	72	NO	NO	NO
	11	32	60	NO	NO	NO		11	37	56	NO	NO	NO
February 8, 2016	12	37	48	NO	NO	NO	February 24, 2016	12	39	52	NO	NO	NO
	1	39	45	NO	NO	NO		1	41	42	NO	NO	NO
	2	41	42	NO	NO	NO		2	45	34	NO	NO	NO
	3	43	39	NO	NO	NO		3	45	37	NO	NO	NO
	4	43	36	NO	NO	NO		4	45	37	NO	NO	NO
	5	41	39	NO	NO	NO		5	45	37	NO	NO	NO
	6	36	48	NO	NO	NO		6	41	42	NO	NO	NO
	7	36	48	NO	NO	NO		7	39	42	NO	NO	NO
	8	36	48	NO	NO	NO		8	37	42	NO	NO	NO
	9	34	52	NO	NO	NO		9	35	52	NO	NO	NO
	10	30	61	NO	NO	NO		10	33	57	NO	NO	NO
	11	31	60	NO	NO	NO	February 25, 2016	12	32	63	NO	NO	NO
February 5, 2016	12	28	67	NO	NO	NO		1	31	67	NO	NO	NO
	1	31	59	NO	NO	NO		2	31	68	NO	NO	NO
	2	28	68	NO	NO	NO		3	31	65	NO	NO	NO
	3	29	63	NO	NO	NO		4	30	68	NO	NO	NO
	4	26	71	NO	NO	NO		5	29	72	NO	NO	NO
	5	26	69	NO	NO	NO		6	28	74	NO	NO	NO
	6	25	74	NO	NO	NO		7	30	64	NO	NO	NO
	7	23	80	NO	NO	NO		8	30	75	NO	NO	NO
	8	27	69	NO	NO	NO		9	34	70	NO	NO	NO
	9	32	60	NO	NO	NO		10	36	70	NO	NO	NO
	10	37	48	NO	NO	NO		11	34	75	NO	NO	NO
	11	39	45	NO	NO	NO		12	34	87	NO	NO	NO
February 6, 2016	12	41	45	NO	NO	NO	February 26, 2016	1	34	93	NO	NO	NO
	1	45	43	NO	NO	NO		2	34	93	NO	NO	NO
	2	45	43	NO	NO	NO		3	34	93	NO	NO	NO
	3	46	43	NO	NO	NO		4	34	93	NO	NO	NO
	4	45	43	NO	NO	NO		5	34	93	NO	NO	NO
	5	45	43	NO	NO	NO		6	34	93	NO	NO	NO
	6	41	49	NO	NO	NO		7	34	93	NO	NO	NO
	7	39	52	NO	NO	NO		8	34	93	NO	NO	NO
	8	34	65	NO	NO	NO		9	34	100	NO	NO	NO
	9	34	65	NO	NO	NO		10	35	97	NO	NO	NO
	10	32	69	NO	NO	NO		11	35	97	NO	NO	NO
	11	31	72	NO	NO	NO	February 27, 2016	12	35	95	NO	NO	NO
February 7, 2016	12	30	75	NO	NO	NO		1	35	91	NO	NO	NO
	1	30	75	NO	NO	NO		2	35	92	NO	NO	NO
	2	27	84	NO	NO	NO		3	35	92	NO	NO	NO
	3	26	85	NO	NO	NO		4	35	92	NO	NO	NO
	4	26	86	NO	NO	NO		5	35	94	NO	NO	NO
	5	26	86	NO	NO	NO		6	34	100	NO	NO	NO
	6	25	86	NO	NO	NO		7	34	100	NO	NO	NO
	7	23	93	NO	NO	NO		8	36	93	NO	NO	NO
	8	25	93	NO	NO	NO		9	36	93	NO	NO	NO
	9	28	86	NO	NO	NO		10	37	93	NO	NO	NO
	10	32	85	NO	NO	NO		11	41	93	NO	NO	NO
	11	35	80	NO	NO	NO		12	41	93	NO	NO	NO
February 8, 2016	12	39	45	NO	NO	NO	February 28, 2016	1	45	93	NO	NO	NO
	1	39	49	NO	NO	NO		2	45	93	NO	NO	NO
	2	41	45	NO	NO	NO		3	45	100	NO	NO	NO
	3	39	49	NO	NO	NO		4	46	93	NO	NO	NO
	4	39	49	NO	NO	NO		5	48	100	NO	NO	NO
	5	17	56	NO	NO	NO		6	55	77	NO	NO	YES
	6	17	56	NO	NO	NO		7	50	87	NO	NO	NO
	7	36	70	NO	NO	NO		8	45	93	NO	NO	NO
	8	36	75	NO	NO	NO		9	45	100	NO	NO	NO
	9	34	81	NO	NO	NO		10	45	99	NO	NO	NO
	10	34	84	NO	NO	NO		11	45	99	NO	NO	NO
	11	33	85	NO	NO	NO							





March Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	
3/1/2016	12	42	62	NO	NO	NO	March 17	12	53	41	NO	NO	NO	
	1	42	64	NO	NO	NO		1	53	43	NO	NO	NO	
	2	42	65	NO	NO	NO		2	53	41	NO	NO	NO	
	3	37	73	NO	NO	NO		3	50	40	NO	NO	NO	
	4	36	73	NO	NO	NO		4	49	47	NO	NO	NO	
	5	35	77	NO	NO	NO		5	43	52	NO	NO	NO	
	6	32	80	NO	NO	NO		6	45	54	NO	NO	NO	
	7	32	87	NO	NO	NO		7	43	57	NO	NO	NO	
	8	32	87	NO	NO	NO		8	46	53	NO	NO	NO	
	9	39	70	NO	NO	NO		9	48	54	NO	NO	NO	
	10	42	61	NO	NO	NO		10	50	50	NO	NO	NO	
	11	46	57	NO	NO	NO		11	54	44	NO	NO	NO	
	12	52	47	NO	NO	NO		12	55	38	NO	NO	YES	
	1	54	44	NO	NO	NO		1	55	38	NO	NO	YES	
	2	59	29	NO	NO	YES		2	55	38	NO	NO	YES	
3	59	27	NO	NO	YES	3	55	38	NO	NO	YES			
4	59	27	NO	NO	YES	4	57	29	NO	NO	YES			
5	57.2	31	NO	NO	YES	5	55	31	NO	NO	YES			
6	55	36	NO	NO	YES	6	55	26	NO	NO	YES			
7	55	36	NO	NO	YES	7	54	28	NO	NO	NO			
8	54	51	NO	NO	NO	8	50	35	NO	NO	NO			
9	54	44	NO	NO	NO	9	48	40	NO	NO	NO			
10	53	52	NO	NO	NO	10	46	44	NO	NO	NO			
11	50	58	NO	NO	NO	11	47	42	NO	NO	NO			
March 2, 2016	12	48	83	NO	NO	NO	March 18, 2016	12	45	44	NO	NO	NO	
	1	47	87	NO	NO	NO		1	44	48	NO	NO	NO	
	2	44	81	NO	NO	NO		2	45	50	NO	NO	NO	
	3	38	75	NO	NO	NO		3	43	52	NO	NO	NO	
	4	33	82	NO	NO	NO		4	41	52	NO	NO	NO	
	5	31	68	NO	NO	NO		5	40	52	NO	NO	NO	
	6	27	69	NO	NO	NO		6	39	52	NO	NO	NO	
	7	25	59	NO	NO	NO		7	36	60	NO	NO	NO	
	8	23	64	NO	NO	NO		8	34	65	NO	NO	NO	
	9	25	64	NO	NO	NO		9	41	53	NO	NO	NO	
	10	27	61	NO	NO	NO		10	48	45	NO	NO	NO	
	11	27	55	NO	NO	NO		11	50	40	NO	NO	NO	
	12	28	51	NO	NO	NO		12	52	36	NO	NO	NO	
	1	28	51	NO	NO	NO		1	54	26	NO	NO	NO	
	2	28	59	NO	NO	NO		2	55	24	NO	NO	NO	
3	28	55	NO	NO	NO	3	54	26	NO	NO	NO			
4	28	52	NO	NO	NO	4	54	26	NO	NO	NO			
5	27	50	NO	NO	NO	5	55	26	NO	NO	NO			
6	25	54	NO	NO	NO	6	55	28	NO	NO	NO			
7	25	56	NO	NO	NO	7	52	33	NO	NO	NO			
8	25	55	NO	NO	NO	8	50	35	NO	NO	NO			
9	23	55	NO	NO	NO	9	46	43	NO	NO	NO			
10	23	55	NO	NO	NO	10	44	53	NO	NO	NO			
11	23	57	NO	NO	NO	11	41	54	NO	NO	NO			
March 3, 2016	12	23	62	NO	NO	NO	March 19, 2016	12	40	52	NO	NO	NO	
	1	23	63	NO	NO	NO		1	38	63	NO	NO	NO	
	2	23	61	NO	NO	NO		2	35	70	NO	NO	NO	
	3	21	63	NO	NO	NO		3	34	75	NO	NO	NO	
	4	20	64	NO	NO	NO		4	35	77	NO	NO	NO	
	5	19	67	NO	NO	NO		5	34	80	NO	NO	NO	
	6	18	68	NO	NO	NO		6	34	81	NO	NO	NO	
	7	18	73	NO	NO	NO		7	32	80	NO	NO	NO	
	8	19	63	NO	NO	NO		8	32	75	NO	NO	NO	
	9	21	58	NO	NO	NO		9	32	75	NO	NO	NO	
	10	23	59	NO	NO	NO		10	33	60	NO	NO	NO	
	11	25	54	NO	NO	NO		11	34	60	NO	NO	NO	
	12	27	47	NO	NO	NO		12	37	52	NO	NO	NO	
	1	28	44	NO	NO	NO		1	37	52	NO	NO	NO	
	2	30	47	NO	NO	NO		2	41	45	NO	NO	NO	
3	30	47	NO	NO	NO	3	41	39	NO	NO	NO			
4	32	47	NO	NO	NO	4	41	33	NO	NO	NO			
5	30	51	NO	NO	NO	5	43	27	NO	NO	NO			
6	30	60	NO	NO	NO	6	41	31	NO	NO	NO			
7	30	69	NO	NO	NO	7	39	31	NO	NO	NO			
8	30	71	NO	NO	NO	8	37	36	NO	NO	NO			
9	30	79	NO	NO	NO	9	37	36	NO	NO	NO			
10	29	85	NO	NO	NO	10	37	40	NO	NO	NO			
11	29	84	NO	NO	NO	11	35	42	NO	NO	NO			
March 4, 2016	12	27	88	NO	NO	NO	March 20, 2016	12	33	45	NO	NO	NO	
	1	26	92	NO	NO	NO		1	32	48	NO	NO	NO	
	2	26	92	NO	NO	NO		2	31	50	NO	NO	NO	
	3	26	92	NO	NO	NO		3	31	50	NO	NO	NO	
	4	26	93	NO	NO	NO		4	29	51	NO	NO	NO	
	5	26	93	NO	NO	NO		5	29	50	NO	NO	NO	
	6	25	100	NO	NO	NO		6	28	51	NO	NO	NO	
	7	27	93	NO	NO	NO		7	28	47	NO	NO	NO	
	8	27	93	NO	NO	NO		8	28	47	NO	NO	NO	
	9	27	93	NO	NO	NO		9	28	51	NO	NO	NO	
	10	28	86	NO	NO	NO		10	28	51	NO	NO	NO	
	11	30	86	NO	NO	NO		11	30	41	NO	NO	NO	
	12	30	80	NO	NO	NO		12	32	48	NO	NO	NO	
	1	32	75	NO	NO	NO		1	34	44	NO	NO	NO	
	2	32	70	NO	NO	NO		2	34	48	NO	NO	NO	
3	34	70	NO	NO	NO	3	36	52	NO	NO	NO			
4	34	70	NO	NO	NO	4	36	56	NO	NO	NO			
5	34	65	NO	NO	NO	5	36	56	NO	NO	NO			
6	34	60	NO	NO	NO	6	36	56	NO	NO	NO			
7	32	64	NO	NO	NO	7	36	56	NO	NO	NO			
8	32	64	NO	NO	NO	8	34	60	NO	NO	NO			
9	32	64	NO	NO	NO	9	34	60	NO	NO	NO			
10	32	63	NO	NO	NO	10	34	61	NO	NO	NO			
11	32	62	NO	NO	NO	11	34	64	NO	NO	NO			

March 5, 2016	12	32	56	NO	NO	NO	March 21, 2016	12	32	70	NO	NO	NO
	1	28	75	NO	NO	NO		1	33	71	NO	NO	NO
	2	26	92	NO	NO	NO		2	29	95	NO	NO	NO
	3	26	92	NO	NO	NO		3	27	97	NO	NO	NO
	4	26	93	NO	NO	NO		4	27	96	NO	NO	NO
	5	26	93	NO	NO	NO		5	30	83	NO	NO	NO
	6	25	100	NO	NO	NO		6	30	60	NO	NO	NO
	7	27	93	NO	NO	NO		7	28	69	NO	NO	NO
	8	27	93	NO	NO	NO		8	28	69	NO	NO	NO
	9	27	93	NO	NO	NO		9	30	69	NO	NO	NO
	10	28	93	NO	NO	NO		10	32	64	NO	NO	NO
	11	30	86	NO	NO	NO		11	36	56	NO	NO	NO
March 6, 2016	12	30	86	NO	NO	NO		12	37	45	NO	NO	NO
	1	32	80	NO	NO	NO	March 22, 2016	1	37	45	NO	NO	NO
	2	32	75	NO	NO	NO		2	41	42	NO	NO	NO
	3	34	70	NO	NO	NO		3	39	39	NO	NO	NO
	4	34	70	NO	NO	NO		4	39	45	NO	NO	NO
	5	34	65	NO	NO	NO		5	37	41	NO	NO	NO
	6	34	60	NO	NO	NO		6	37	36	NO	NO	NO
	7	32	64	NO	NO	NO		7	36	38	NO	NO	NO
	8	32	64	NO	NO	NO		8	34	44	NO	NO	NO
	9	32	64	NO	NO	NO		9	34	44	NO	NO	NO
	10	32	63	NO	NO	NO		10	33	45	NO	NO	NO
	11	32	62	NO	NO	NO		11	32	45	NO	NO	NO
March 7, 2016	12	32	56	NO	NO	NO	March 23, 2016	12	31	47	NO	NO	NO
	1	31	77	NO	NO	NO		1	30	49	NO	NO	NO
	2	31	88	NO	NO	NO		2	27	54	NO	NO	NO
	3	31	88	NO	NO	NO		3	27	55	NO	NO	NO
	4	31	87	NO	NO	NO		4	26	58	NO	NO	NO
	5	31	93	NO	NO	NO		5	26	59	NO	NO	NO
	6	30	86	NO	NO	NO		6	28	59	NO	NO	NO
	7	32	80	NO	NO	NO		7	27	64	NO	NO	NO
	8	34	75	NO	NO	NO		8	27	74	NO	NO	NO
	9	36	65	NO	NO	NO		9	32	64	NO	NO	NO
	10	36	65	NO	NO	NO		10	39	52	NO	NO	NO
	11	36	65	NO	NO	NO		11	45	46	NO	NO	NO
March 8, 2016	12	37	60	NO	NO	NO		12	48	43	NO	NO	NO
	1	39	56	NO	NO	NO	March 24, 2016	1	48	43	NO	NO	NO
	2	43	46	NO	NO	NO		2	52	38	NO	NO	NO
	3	45	43	NO	NO	NO		3	57	29	NO	NO	YES
	4	45	39	NO	NO	NO		4	57	29	NO	NO	YES
	5	45	43	NO	NO	NO		5	59	29	NO	NO	YES
	6	42	53	NO	NO	NO		6	57	29	NO	NO	YES
	7	37	60	NO	NO	NO		7	57	29	NO	NO	YES
	8	34	70	NO	NO	NO		8	55	33	NO	NO	YES
	9	32	75	NO	NO	NO		9	54	38	NO	NO	NO
	10	32	75	NO	NO	NO		10	52	42	NO	NO	NO
	11	31	76	NO	NO	NO		11	51	44	NO	NO	NO
March 5, 2016	12	32	75	NO	NO	NO	March 21, 2016	12	48	48	NO	NO	NO
	1	32	78	NO	NO	NO		1	48	47	NO	NO	NO
	2	32	78	NO	NO	NO		2	48	48	NO	NO	NO
	3	31	81	NO	NO	NO		3	47	50	NO	NO	NO
	4	31	82	NO	NO	NO		4	45	44	NO	NO	NO
	5	30	81	NO	NO	NO		5	44	43	NO	NO	NO
	6	30	86	NO	NO	NO		6	50	40	NO	NO	NO
	7	30	86	NO	NO	NO		7	52	35	NO	NO	NO
	8	36	81	NO	NO	NO		8	52	38	NO	NO	NO
	9	39	65	NO	NO	NO		9	59	31	NO	NO	YES
	10	46	53	NO	NO	NO		10	61	29	NO	YES	YES
	11	55	44	NO	NO	YES		11	63	30	NO	YES	YES
March 6, 2016	12	59	36	NO	NO	YES		12	64	30	NO	YES	YES
	1	65	28	YES	YES	YES	March 22, 2016	1	65	32	YES	YES	YES
	2	68	24	YES	YES	YES		2	66	30	YES	YES	YES
	3	66	26	YES	YES	YES		3	68	28	YES	YES	YES
	4	66	28	YES	YES	YES		4	68	28	YES	YES	YES
	5	65	32	YES	YES	YES		5	70	28	YES	YES	YES
	6	63	32	NO	YES	YES		6	68	30	YES	YES	YES
	7	57	38	NO	NO	YES		7	64	34	NO	YES	YES
	8	55	41	NO	NO	YES		8	63	37	NO	YES	YES
	9	54	44	NO	NO	YES		9	61	39	NO	YES	YES
	10	55	44	NO	NO	YES		10	59	42	NO	NO	YES
	11	53	47	NO	NO	NO		11	52	59	NO	NO	NO
March 7, 2016	12	50	51	NO	NO	NO	March 23, 2016	12	48	64	NO	NO	NO
	1	51	51	NO	NO	NO		1	46	68	NO	NO	NO
	2	52	50	NO	NO	NO		2	44	70	NO	NO	NO
	3	52	57	NO	NO	NO		3	43	74	NO	NO	NO
	4	50	65	NO	NO	NO		4	42	77	NO	NO	NO
	5	48	72	NO	NO	NO		5	41	79	NO	NO	NO
	6	45	71	NO	NO	NO		6	41	76	NO	NO	NO
	7	45	71	NO	NO	NO		7	37	87	NO	NO	NO
	8	48	76	NO	NO	NO		8	39	87	NO	NO	NO
	9	55	63	NO	NO	YES		9	43	81	NO	NO	NO
	10	63	34	NO	YES	YES		10	50	65	NO	NO	NO
	11	66	30	YES	YES	YES		11	57	55	NO	NO	YES
March 8, 2016	12	68	30	YES	YES	YES	March 24, 2016	12	55	42	NO	NO	YES
	1	68	33	YES	YES	YES		1	66	40	YES	YES	YES
	2	68	33	YES	YES	YES		2	70	35	YES	YES	YES
	3	70	33	YES	YES	YES		3	73	29	YES	YES	YES
	4	70	38	YES	YES	YES		4	72	27	YES	YES	YES
	5	68	43	YES	YES	YES		5	72	29	YES	YES	YES
	6	65	49	YES	YES	YES		6	70	28	YES	YES	YES
	7	63	52	NO	YES	YES		7	70	31	YES	YES	YES
	8	61	52	NO	YES	YES		8	68	35	YES	YES	YES
	9	57	63	NO	NO	YES		9	68	37	YES	YES	YES
	10	57	61	NO	NO	YES		10	68	42	YES	YES	YES
	11	50	75	NO	NO	NO		11	68	42	YES	YES	YES

March 9, 2016	12	53	71	NO	NO	NO	March 25, 2016	12	68	42	YES	YES	YES
	1	50	75	NO	NO	NO		1	62	67	NO	YES	YES
	2	51	77	NO	NO	NO		2	61	69	NO	NO	YES
	3	48	80	NO	NO	NO		3	58	81	NO	NO	YES
	4	46	84	NO	NO	NO		4	57	87	NO	NO	YES
	5	45	85	NO	NO	NO		5	56	89	NO	NO	YES
	6	43	93	NO	NO	NO		6	55	94	NO	NO	YES
	7	43	87	NO	NO	NO		7	55	94	NO	NO	YES
	8	46	87	NO	NO	NO		8	54	88	NO	NO	NO
	9	57	59	NO	NO	YES		9	52	82	NO	NO	NO
	10	66	43	YES	YES	YES		10	52	67	NO	NO	NO
March 10, 2016	11	72	35	YES	YES	YES	March 26, 2016	11	52	71	NO	NO	NO
	12	73	38	YES	YES	YES		12	50	71	NO	NO	NO
	1	73	36	YES	YES	YES		1	50	66	NO	NO	NO
	2	75	34	YES	YES	YES		2	50	62	NO	NO	NO
	3	77	29	NO	NO	NO		3	45	71	NO	NO	NO
	4	75	34	YES	YES	YES		4	48	58	NO	NO	NO
	5	73	36	YES	YES	YES		5	48	54	NO	NO	NO
	6	70	40	YES	YES	YES		6	46	57	NO	NO	NO
	7	66	43	YES	YES	YES		7	43	57	NO	NO	NO
	8	65	42	YES	YES	YES		8	39	65	NO	NO	NO
	9	65	45	YES	YES	YES		9	37	65	NO	NO	NO
March 11, 2016	10	65	44	YES	YES	YES	March 27, 2016	10	37	67	NO	NO	NO
	11	64	46	NO	YES	YES		11	35	68	NO	NO	NO
	12	59	54	NO	NO	YES		12	34	71	NO	NO	NO
	1	59	53	NO	NO	YES		1	32	74	NO	NO	NO
	2	61	50	NO	YES	YES		2	32	73	NO	NO	NO
	3	61	54	NO	YES	YES		3	32	75	NO	NO	NO
	4	61	53	NO	YES	YES		4	31	76	NO	NO	NO
	5	62	53	NO	YES	YES		5	30	76	NO	NO	NO
	6	57	63	NO	NO	YES		6	28	80	NO	NO	NO
	7	57	59	NO	NO	YES		7	27	86	NO	NO	NO
	8	57	63	NO	NO	YES		8	28	80	NO	NO	NO
March 12, 2016	9	61	55	NO	YES	YES	March 28, 2016	9	32	75	NO	NO	NO
	10	63	52	NO	YES	YES		10	34	70	NO	NO	NO
	11	64	52	NO	YES	YES		11	37	65	NO	NO	NO
	12	64	68	NO	YES	YES		12	39	65	NO	NO	NO
	1	64	68	NO	YES	YES		1	45	53	NO	NO	NO
	2	64	64	NO	YES	YES		2	48	50	NO	NO	NO
	3	64	64	NO	YES	YES		3	52	44	NO	NO	NO
	4	63	77	NO	YES	YES		4	54	41	NO	NO	NO
	5	59	88	NO	NO	YES		5	55	38	NO	NO	YES
	6	59	88	NO	NO	YES		6	55	33	NO	NO	YES
	7	59	88	NO	NO	YES		7	54	35	NO	NO	NO

March 13, 2016	12	50	76	NO	NO	NO
	1	49	75	NO	NO	NO
	2	51	79	NO	NO	NO
	3	50	74	NO	NO	NO
	4	48	76	NO	NO	NO
	5	48	79	NO	NO	NO
	6	47	83	NO	NO	NO
	7	48	76	NO	NO	NO
	8	46	81	NO	NO	NO
	9	46	71	NO	NO	NO
	10	48	82	NO	NO	NO
	11	46	81	NO	NO	NO
March 14, 2016	12	46	87	NO	NO	NO
	1	46	87	NO	NO	NO
	2	45	89	NO	NO	NO
	3	44	93	NO	NO	NO
	4	44	87	NO	NO	NO
	5	43	87	NO	NO	NO
	6	43	87	NO	NO	NO
	7	43	93	NO	NO	NO
	8	41	93	NO	NO	NO
	9	41	87	NO	NO	NO
	10	43	87	NO	NO	NO
	11	43	93	NO	NO	NO
March 15, 2016	12	43	87	NO	NO	NO
	1	43	93	NO	NO	NO
	2	43	93	NO	NO	NO
	3	43	93	NO	NO	NO
	4	45	87	NO	NO	NO
	5	45	87	NO	NO	NO
	6	45	87	NO	NO	NO
	7	45	87	NO	NO	NO
	8	45	93	NO	NO	NO
	9	43	93	NO	NO	NO
	10	43	92	NO	NO	NO
	11	43	93	NO	NO	NO
March 16, 2016	12	42	94	NO	NO	NO
	1	42	97	NO	NO	NO
	2	42	94	NO	NO	NO
	3	42	94	NO	NO	NO
	4	42	93	NO	NO	NO
	5	42	93	NO	NO	NO
	6	41	93	NO	NO	NO
	7	41	93	NO	NO	NO
	8	41	100	NO	NO	NO
	9	43	93	NO	NO	NO
	10	43	87	NO	NO	NO
	11	45	87	NO	NO	NO
March 29, 2016	12	46	87	NO	NO	NO
	1	46	87	NO	NO	NO
	2	46	93	NO	NO	NO
	3	48	87	NO	NO	NO
	4	48	87	NO	NO	NO
	5	48	82	NO	NO	NO
	6	46	87	NO	NO	NO
	7	46	87	NO	NO	NO
	8	45	93	NO	NO	NO
	9	46	87	NO	NO	NO
	10	46	89	NO	NO	NO
	11	47	90	NO	NO	NO
March 30, 2016	12	35	34	NO	NO	NO
	1	35	35	NO	NO	NO
	2	30	44	NO	NO	NO
	3	31	48	NO	NO	NO
	4	28	56	NO	NO	NO
	5	27.5	56	NO	NO	NO
	6	25	64	NO	NO	NO
	7	27	59	NO	NO	NO
	8	27	64	NO	NO	NO
	9	32	55	NO	NO	NO
	10	39	39	NO	NO	NO
	11	45	29	NO	NO	NO
March 31, 2016	12	48	30	NO	NO	NO
	1	52	36	NO	NO	NO
	2	55	36	NO	NO	YES
	3	57	25	NO	NO	YES
	4	57	27	NO	NO	YES
	5	57	29	NO	NO	YES
	6	57	31	NO	NO	YES
	7	55	33	NO	NO	YES
	8	55	33	NO	NO	YES
	9	55	36	NO	NO	YES
	10	55	37	NO	NO	YES
	11	55	39	NO	NO	YES
March 13, 2016	12	41	68	NO	NO	NO
	1	41	66	NO	NO	NO
	2	40	67	NO	NO	NO
	3	40	68	NO	NO	NO
	4	39	67	NO	NO	NO
	5	39	68	NO	NO	NO
	6	37	68	NO	NO	NO
	7	37	65	NO	NO	NO
	8	37	65	NO	NO	NO
	9	39	56	NO	NO	NO
	10	41	53	NO	NO	NO
	11	43	42	NO	NO	NO
March 29, 2016	12	45	39	NO	NO	NO
	1	46	32	NO	NO	NO
	2	50	30	NO	NO	NO
	3	50	24	NO	NO	NO
	4	50	20	NO	NO	NO
	5	50	22	NO	NO	NO
	6	50	25	NO	NO	NO
	7	48	27	NO	NO	NO
	8	45	27	NO	NO	NO
	9	43	27	NO	NO	NO
	10	40	28	NO	NO	NO
	11	39	31	NO	NO	NO
March 30, 2016	12	35	34	NO	NO	NO
	1	35	35	NO	NO	NO
	2	30	44	NO	NO	NO
	3	31	48	NO	NO	NO
	4	28	56	NO	NO	NO
	5	27.5	56	NO	NO	NO
	6	25	64	NO	NO	NO
	7	27	59	NO	NO	NO
	8	27	64	NO	NO	NO
	9	32	55	NO	NO	NO
	10	39	39	NO	NO	NO
	11	45	29	NO	NO	NO
March 31, 2016	12	48	30	NO	NO	NO
	1	52	36	NO	NO	NO
	2	55	36	NO	NO	YES
	3	57	25	NO	NO	YES
	4	57	27	NO	NO	YES
	5	57	29	NO	NO	YES
	6	57	31	NO	NO	YES
	7	55	33	NO	NO	YES
	8	55	33	NO	NO	YES
	9	55	36	NO	NO	YES
	10	55	37	NO	NO	YES
	11	55	39	NO	NO	YES
March 16, 2016	12	50	90	NO	NO	NO
	1	48	98	NO	NO	NO
	2	46	99	NO	NO	NO
	3	46	99	NO	NO	NO
	4	42	100	NO	NO	NO
	5	40	99	NO	NO	NO
	6	41	100	NO	NO	NO
	7	43	100	NO	NO	NO
	8	43	100	NO	NO	NO
	9	45	100	NO	NO	NO
	10	46	100	NO	NO	NO
	11	48	94	NO	NO	NO
March 16, 2016	12	52	88	NO	NO	NO
	1	55	88	NO	NO	YES
	2	55	82	NO	NO	YES
	3	57	77	NO	NO	YES
	4	63	68	NO	YES	YES
	5	63	68	NO	YES	YES
	6	63	72	NO	YES	YES
	7	63	72	NO	YES	YES
	8	61	31	NO	YES	YES
	9	59	31	NO	NO	YES
	10	56	39	NO	NO	YES
	11	55	41	NO	NO	YES

April Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)		Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
April 1	12	64	67	NO	YES	YES	April 17	12	55	42	NO	NO	YES	
	1	63	67	NO	YES	YES		1	53	45	NO	NO	NO	NO
	2	63	68	NO	YES	YES		2	49	53	NO	NO	NO	NO
	3	62	69	NO	YES	YES		3	46	58	NO	NO	NO	NO
	4	62	70	NO	YES	YES		4	48	55	NO	NO	NO	NO
	5	61	71	NO	YES	YES		5	43	66	NO	NO	NO	NO
	6	61	72	NO	YES	YES		6	45	61	NO	NO	NO	NO
	7	59	82	NO	NO	NO		7	43	66	NO	NO	NO	NO
	8	59	94	NO	NO	NO		8	46	66	NO	NO	NO	NO
	9	57	94	NO	NO	NO		9	52	58	NO	NO	NO	NO
	10	59	82	NO	NO	NO		10	57	44	NO	NO	YES	YES
April 2, 2016	11	63	82	NO	NO	NO	April 18, 2016	11	64	37	NO	YES	YES	YES
	12	63	78	NO	NO	NO		12	68	33	YES	YES	YES	YES
	1	66	65	YES	YES	YES		1	70	28	YES	YES	YES	YES
	2	66	64	YES	YES	YES		2	72	27	YES	YES	YES	YES
	3	68	56	YES	YES	YES		3	73	27	YES	YES	YES	YES
	4	66	52	YES	YES	YES		4	75	24	YES	YES	YES	YES
	5	65	45	YES	YES	YES		5	75	24	YES	YES	YES	YES
	6	64	40	NO	YES	YES		6	75	25	YES	YES	YES	YES
	7	61	42	NO	YES	YES		7	75	24	YES	YES	YES	YES
	8	57	44	NO	NO	YES		8	73	25	YES	YES	YES	YES
	9	57	41	NO	NO	YES	April 19, 2016	9	70	28	YES	YES	YES	YES
April 3, 2016	10	50	67	NO	NO	NO		10	66	35	YES	YES	YES	YES
	11	46	68	NO	NO	NO		11	64	38	NO	YES	YES	YES
	12	44	72	NO	NO	NO		12	63	36	NO	YES	YES	YES
	1	42	74	NO	NO	NO		1	60	43	NO	YES	YES	YES
	2	43	73	NO	NO	NO		2	59	42	NO	NO	YES	YES
	3	44	72	NO	NO	NO		3	57	45	NO	NO	YES	YES
	4	43	71	NO	NO	NO		4	55	45	NO	NO	YES	YES
	5	43	74	NO	NO	NO		5	48	59	NO	NO	NO	NO
	6	43	76	NO	NO	NO		6	52	54	NO	NO	NO	NO
	7	43	76	NO	NO	NO		7	46	66	NO	NO	NO	NO
	8	45	71	NO	NO	NO	April 20, 2016	8	50	66	NO	NO	NO	NO
April 4, 2016	9	45	71	NO	NO	NO		9	55	58	NO	NO	YES	YES
	10	46	62	NO	NO	NO		10	61	42	NO	YES	YES	YES
	11	48	54	NO	NO	NO		11	66	30	YES	YES	YES	YES
	12	48	43	NO	NO	NO		12	68	28	YES	YES	YES	YES
	1	54	33	NO	NO	NO		1	72	25	YES	YES	YES	YES
	2	54	28	NO	NO	NO		2	75	24	YES	YES	YES	YES
	3	54	28	NO	NO	NO		3	77	19	NO	NO	NO	NO
	4	52	33	NO	NO	NO		4	79	18	NO	NO	NO	NO
	5	52	33	NO	NO	NO		5	79	16	NO	NO	NO	NO
	6	50	30	NO	NO	NO		6	79	16	NO	NO	NO	NO
	7	48	40	NO	NO	NO		7	77	18	NO	NO	NO	NO
April 5, 2016	8	46	57	NO	NO	NO	April 21, 2016	8	75	18	YES	YES	YES	YES
	9	39	87	NO	NO	NO		9	73	20	YES	YES	YES	YES
	10	36	94	NO	NO	NO		10	69	24	YES	YES	YES	YES
	11	35	77	NO	NO	NO		11	68	26	YES	YES	YES	YES
	12	34	77	NO	NO	NO		12	67	28	YES	YES	YES	YES
	1	32	68	NO	NO	NO		1	66	31	YES	YES	YES	YES
	2	33	72	NO	NO	NO		2	62	36	NO	YES	YES	YES
	3	31	66	NO	NO	NO		3	59	41	NO	NO	YES	YES
	4	29	65	NO	NO	NO		4	57	44	NO	NO	YES	YES
	5	27	62	NO	NO	NO		5	55	47	NO	NO	YES	YES
	6	25	53	NO	NO	NO		6	55	47	NO	NO	YES	YES
April 6, 2016	7	23	50	NO	NO	NO	April 22, 2016	7	59	39	NO	NO	YES	YES
	8	23	59	NO	NO	NO		8	63	37	NO	YES	YES	YES
	9	25	54	NO	NO	NO		9	61	48	NO	YES	YES	YES
	10	27	51	NO	NO	NO		10	64	45	NO	YES	YES	YES
	11	28	41	NO	NO	NO		11	66	44	YES	YES	YES	YES
	12	30	38	NO	NO	NO		12	68	40	YES	YES	YES	YES
	1	32	38	NO	NO	NO		1	68	33	YES	YES	YES	YES
	2	34	44	NO	NO	NO		2	70	28	YES	YES	YES	YES
	3	34	48	NO	NO	NO		3	68	30	YES	YES	YES	YES
	4	37	52	NO	NO	NO		4	70	21	YES	YES	YES	YES
	5	37	55	NO	NO	NO	April 23, 2016	5	68	23	YES	YES	YES	YES
April 7, 2016	6	36	66	NO	NO	NO		6	68	18	YES	YES	YES	YES
	7	36	58	NO	NO	NO		7	64	21	NO	YES	YES	YES
	8	34	61	NO	NO	NO		8	61	25	NO	YES	YES	YES
	9	34	62	NO	NO	NO		9	57	29	NO	NO	NO	NO
	10	32	58	NO	NO	NO		10	52	37	NO	NO	NO	NO
	11	32	61	NO	NO	NO		11	52	32	NO	NO	NO	NO
	12	32	58	NO	NO	NO		12	49	35	NO	NO	NO	NO
	1	33	60	NO	NO	NO		1	48	37	NO	NO	NO	NO
	2	33	61	NO	NO	NO		2	46	23	NO	NO	NO	NO
	3	34	60	NO	NO	NO		3	47	22	NO	NO	NO	NO
	4	35	76	NO	NO	NO	April 24, 2016	4	46	41	NO	NO	NO	NO
April 8, 2016	5	34	76	NO	NO	NO		5	42	42	NO	NO	NO	NO
	6	32	93	NO	NO	NO		6	39	39	NO	NO	NO	NO
	7	36	81	NO	NO	NO		7	41	41	NO	NO	NO	NO
	8	36	81	NO	NO	NO		8	43	43	NO	NO	NO	NO
	9	39	75	NO	NO	NO		9	48	46	NO	NO	NO	NO
	10	43	76	NO	NO	NO		10	52	38	NO	NO	NO	NO
	11	48	76	NO	NO	NO		11	54	33	NO	NO	NO	NO
	12	50	82	NO	NO	NO		12	57	29	NO	NO	YES	YES
	1	48	93	NO	NO	NO		1	61	27	NO	YES	YES	YES
	2	48	87	NO	NO	NO		2	64	22	NO	YES	YES	YES
	3	46	93	NO	NO	NO		3	66	19	YES	YES	YES	YES
April 9, 2016	4	45	87	NO	NO	NO	April 25, 2016	4	66	18	YES	YES	YES	YES
	5	39	87	NO	NO	NO		5	66	17	YES	YES	YES	YES
	6	36	81	NO	NO	NO		6	68	19	YES	YES	YES	YES
	7	34	75	NO	NO	NO		7	68	19	YES	YES	YES	YES
	8	32	69	NO	NO	NO		8	68	14	YES	YES	YES	YES
	9	30	69	NO	NO	NO		9	64	15	NO	YES	YES	YES
	10	29	68	NO	NO	NO		10	63	18	NO	YES	YES	YES
	11	28	65	NO	NO	NO		11	60	26	NO	YES	YES	YES

April 5, 2016	12	26	64	NO	NO	NO	April 21, 2016	12	57	22	NO	NO	YES
	1	25	64	NO	NO	NO		1	37	28	NO	NO	YES
	2	23	63	NO	NO	NO		2	55	31	NO	NO	YES
	3	23	62	NO	NO	NO		3	52	34	NO	NO	NO
	4	22	60	NO	NO	NO		4	53	31	NO	NO	NO
	5	22	63	NO	NO	NO		5	49	38	NO	NO	NO
	6	21	68	NO	NO	NO		6	52	35	NO	NO	NO
	7	21	68	NO	NO	NO		7	48	43	NO	NO	NO
	8	23	64	NO	NO	NO		8	52	54	NO	NO	NO
	9	25	52	NO	NO	NO		9	55	44	NO	NO	YES
	10	27	45	NO	NO	NO		10	59	39	NO	NO	YES
	11	22	38	NO	NO	NO		11	61	39	NO	YES	YES
4/6/2016	12	32	30	NO	NO	NO	April 22, 2016	12	63	37	NO	YES	YES
	1	34	31	NO	NO	NO		1	68	35	YES	YES	YES
	2	37	26	NO	NO	NO		2	72	33	YES	YES	YES
	3	39	24	NO	NO	NO		3	70	33	YES	YES	YES
	4	39	24	NO	NO	NO		4	70	35	YES	YES	YES
	5	41	247	NO	NO	NO		5	70	35	YES	YES	YES
	6	41	28	NO	NO	NO		6	70	35	YES	YES	YES
	7	39	65	NO	NO	NO		7	68	37	YES	YES	YES
	8	37	65	NO	NO	NO		8	66	40	YES	YES	YES
	9	36	65	NO	NO	NO		9	64	42	NO	YES	YES
	10	32	36	NO	NO	NO		10	63	51	NO	YES	YES
	11	32	43	NO	NO	NO		11	62	54	NO	YES	YES
4/6/2016	12	28	45	NO	NO	NO	April 23, 2016	12	62	58	NO	YES	YES
	1	29	46	NO	NO	NO		1	61	61	NO	YES	YES
	2	26	58	NO	NO	NO		2	61	63	NO	YES	YES
	3	25	56	NO	NO	NO		3	60	65	NO	YES	YES
	4	23	62	NO	NO	NO		4	57	73	NO	NO	YES
	5	23	60	NO	NO	NO		5	56	75	NO	NO	YES
	6	23	61	NO	NO	NO		6	55	72	NO	NO	YES
	7	23	62	NO	NO	NO		7	55	72	NO	NO	YES
	8	27	58	NO	NO	NO		8	55	77	NO	NO	NO
	9	28	55	NO	NO	NO		9	55	82	NO	NO	NO
	10	32	48	NO	NO	NO		10	59	72	NO	NO	YES
	11	36	38	NO	NO	NO		11	63	64	NO	YES	YES
4/7/2016	12	37	38	NO	NO	NO	April 24, 2016	12	64	60	NO	YES	YES
	1	41	36	NO	NO	NO		1	66	52	YES	YES	YES
	2	46	32	NO	NO	NO		2	68	56	YES	YES	YES
	3	48	30	NO	NO	NO		3	68	49	YES	YES	YES
	4	48	32	NO	NO	NO		4	70	53	YES	YES	YES
	5	48	30	NO	NO	NO		5	70	52	YES	YES	YES
	6	50	34	NO	NO	NO		6	68	68	NO	YES	YES
	7	48	34	NO	NO	NO		7	64	72	NO	YES	YES
	8	48	34	NO	NO	NO		8	61	82	NO	NO	NO
	9	48	34	NO	NO	NO		9	59	82	NO	NO	NO
	10	49	35	NO	NO	NO		10	60	84	NO	NO	NO
	11	48	36	NO	NO	NO		11	59	87	NO	NO	NO
April 8, 2016	12	48	36	NO	NO	NO	April 24, 2016	12	60	82	NO	NO	NO
	1	48	42	NO	NO	NO		1	60	83	NO	NO	NO
	2	46	41	NO	NO	NO		2	59	87	NO	NO	NO
	3	47	40	NO	NO	NO		3	58	84	NO	NO	NO
	4	48	42	NO	NO	NO		4	57	89	NO	NO	NO
	5	48	48	NO	NO	NO		5	57	78	NO	NO	NO
	6	48	46	NO	NO	NO		6	55	77	NO	NO	NO
	7	48	54	NO	NO	NO		7	54	77	NO	NO	NO
	8	45	81	NO	NO	NO		8	54	77	NO	NO	NO
	9	45	93	NO	NO	NO		9	54	72	NO	NO	NO
	10	45	87	NO	NO	NO		10	54	72	NO	NO	NO
	11	45	76	NO	NO	NO		11	57	67	NO	NO	YES
April 8, 2016	12	48	62	NO	NO	NO	April 24, 2016	12	57	59	NO	NO	YES
	1	52	58	NO	NO	NO		1	61	55	NO	YES	YES
	2	52	54	NO	NO	NO		2	63	45	NO	YES	YES
	3	54	62	NO	NO	NO		3	61	42	NO	YES	YES
	4	52	71	NO	NO	NO		4	61	40	NO	YES	YES
	5	48	87	NO	NO	NO		5	61	39	NO	YES	YES
	6	45	93	NO	NO	NO		6	59	29	NO	NO	YES
	7	41	81	NO	NO	NO		7	55	31	NO	NO	YES
	8	43	81	NO	NO	NO		8	52	33	NO	NO	NO
	9	41	83	NO	NO	NO		9	47	38	NO	NO	NO
	10	39	84	NO	NO	NO		10	47	46	NO	NO	NO
	11	38	79	NO	NO	NO		11	47	43	NO	NO	NO
April 8, 2016	12	37	80	NO	NO	NO	April 24, 2016	12	45	41	NO	NO	NO
	1	37	85	NO	NO	NO		1	44	40	NO	NO	NO
	2	35	84	NO	NO	NO		2	42	42	NO	NO	NO
	3	34	86	NO	NO	NO		3	41	43	NO	NO	NO
	4	33	89	NO	NO	NO		4	41	45	NO	NO	NO
	5	32	89	NO	NO	NO		5	39	51	NO	NO	NO
	6	32	87	NO	NO	NO		6	36	56	NO	NO	NO
	7	30	86	NO	NO	NO		7	36	60	NO	NO	NO
	8	30	84	NO	NO	NO		8	39	65	NO	NO	NO
	9	32	80	NO	NO	NO		9	45	43	NO	NO	NO
	10	32	75	NO	NO	NO		10	48	37	NO	NO	NO
	11	32	75	NO	NO	NO		11	52	33	NO	NO	NO
April 8, 2016	12	36	65	NO	NO	NO	April 24, 2016	12	55	29	NO	NO	YES
	1	39	60	NO	NO	NO		1	59	27	NO	NO	YES
	2	41	56	NO	NO	NO		2	63	26	NO	YES	YES
	3	41	49	NO	NO	NO		3	63	24	NO	YES	YES
	4	43	46	NO	NO	NO		4	66	23	YES	YES	YES
	5	41	49	NO	NO	NO		5	68	24	YES	YES	YES
	6	41	49	NO	NO	NO		6	68	24	YES	YES	YES
	7	41	49	NO	NO	NO		7	66	24	YES	YES	YES
	8	41	49	NO	NO	NO		8	63	30	NO	YES	YES
	9	37	56	NO	NO	NO		9	61	29	NO	YES	YES
	10	37	60	NO	NO	NO		10	60	32	NO	YES	YES
	11	36	64	NO	NO	NO		11	55	38	NO	NO	YES

April 9, 2016	12	33	71	NO	NO	NO	April 25, 2016	12	55	39	NO	NO	YES
	1	33	74	NO	NO	NO		1	51	48	NO	NO	NO
	2	32	77	NO	NO	NO		2	49	51	NO	NO	NO
	3	32	79	NO	NO	NO		3	46	55	NO	NO	NO
	4	33	72	NO	NO	NO		4	45	55	NO	NO	NO
	5	32	95	NO	NO	NO		5	45	57	NO	NO	NO
	6	30	100	NO	NO	NO		6	45	57	NO	NO	NO
	7	32	93	NO	NO	NO		7	41	65	NO	NO	NO
	8	30	100	NO	NO	NO		8	46	57	NO	NO	NO
	9	30	100	NO	NO	NO		9	50	50	NO	NO	NO
	10	32	95	NO	NO	NO		10	54	47	NO	NO	NO
	11	34	87	NO	NO	NO		11	59	42	NO	NO	NO
April 10, 2016	12	34	81	NO	NO	NO	April 26, 2016	12	64	34	NO	YES	YES
	1	32	93	NO	NO	NO		1	68	33	YES	YES	YES
	2	32	87	NO	NO	NO		2	70	31	YES	YES	YES
	3	32	81	NO	NO	NO		3	73	25	YES	YES	YES
	4	34	70	NO	NO	NO		4	75	27	YES	YES	YES
	5	34	65	NO	NO	NO		5	77	19	NO	NO	NO
	6	32	69	NO	NO	NO		6	77	22	NO	NO	NO
	7	32	55	NO	NO	NO		7	73	29	YES	YES	YES
	8	30	48	NO	NO	NO		8	72	33	YES	YES	YES
	9	29	47	NO	NO	NO		9	70	35	YES	YES	YES
	10	29	52	NO	NO	NO		10	68	38	YES	YES	YES
	11	28	57	NO	NO	NO		11	68	41	YES	YES	YES
April 11, 2016	12	28	63	NO	NO	NO	April 27, 2016	12	60	79	NO	NO	NO
	1	28	67	NO	NO	NO		1	59	75	NO	NO	NO
	2	28	58	NO	NO	NO		2	57	77	NO	NO	NO
	3	26	66	NO	NO	NO		3	55	81	NO	NO	NO
	4	25	66	NO	NO	NO		4	54	83	NO	NO	NO
	5	22	74	NO	NO	NO		5	53	86	NO	NO	NO
	6	19	80	NO	NO	NO		6	54	88	NO	NO	NO
	7	21	74	NO	NO	NO		7	54	88	NO	NO	NO
	8	23	74	NO	NO	NO		8	61	77	NO	NO	NO
	9	27	64	NO	NO	NO		9	63	72	NO	YES	YES
	10	28	59	NO	NO	NO		10	68	64	YES	YES	YES
	11	30	55	NO	NO	NO		11	72	57	YES	YES	YES
April 12, 2016	12	34	48	NO	NO	NO	April 28, 2016	12	72	50	YES	YES	YES
	1	34	48	NO	NO	NO		1	73	50	YES	YES	YES
	2	36	41	NO	NO	NO		2	73	47	YES	YES	YES
	3	37	36	NO	NO	NO		3	73	47	YES	YES	YES
	4	39	36	NO	NO	NO		4	73	53	YES	YES	YES
	5	39	36	NO	NO	NO		5	73	50	YES	YES	YES
	6	41	36	NO	NO	NO		6	75	36	YES	YES	YES
	7	41	33	NO	NO	NO		7	73	41	YES	YES	YES
	8	41	36	NO	NO	NO		8	70	46	YES	YES	YES
	9	41	39	NO	NO	NO		9	61	68	NO	YES	YES
	10	42	38	NO	NO	NO		10	55	75	NO	NO	YES
	11	43	40	NO	NO	NO		11	51	77	NO	NO	NO
April 9, 2016	12	44	38	NO	NO	NO	April 25, 2016	12	50	76	NO	NO	NO
	1	45	36	NO	NO	NO		1	47	73	NO	NO	NO
	2	45	39	NO	NO	NO		2	44	77	NO	NO	NO
	3	44	51	NO	NO	NO		3	42	80	NO	NO	NO
	4	43	60	NO	NO	NO		4	40	83	NO	NO	NO
	5	41	75	NO	NO	NO		5	39	85	NO	NO	NO
	6	41	76	NO	NO	NO		6	39	87	NO	NO	NO
	7	41	81	NO	NO	NO		7	39	76	NO	NO	NO
	8	43	76	NO	NO	NO		8	41	70	NO	NO	NO
	9	45	76	NO	NO	NO		9	43	66	NO	NO	NO
	10	45	72	NO	NO	NO		10	46	62	NO	NO	NO
	11	46	71	NO	NO	NO		11	50	62	NO	NO	NO
April 10, 2016	12	48	71	NO	NO	NO	April 26, 2016	12	52	62	NO	NO	NO
	1	54	71	NO	NO	NO		1	55	63	NO	NO	YES
	2	54	67	NO	NO	NO		2	57	59	NO	NO	YES
	3	52	71	NO	NO	NO		3	61	52	NO	YES	YES
	4	57	59	NO	NO	YES		4	63	48	NO	YES	YES
	5	59	55	NO	NO	YES		5	64	49	NO	YES	YES
	6	57	63	NO	NO	YES		6	63	52	NO	YES	YES
	7	57	67	NO	NO	YES		7	61	55	NO	YES	YES
	8	55	72	NO	NO	YES		8	59	59	NO	NO	YES
	9	54	77	NO	NO	NO		9	55	67	NO	NO	YES
	10	52	80	NO	NO	NO		10	53	71	NO	NO	NO
	11	51	82	NO	NO	NO		11	51	77	NO	NO	NO
April 11, 2016	12	51	89	NO	NO	NO	April 27, 2016	12	51	76	NO	NO	NO
	1	50	43	NO	NO	NO		1	49	78	NO	NO	NO
	2	49	40	NO	NO	NO		2	49	68	NO	NO	NO
	3	51	94	NO	NO	NO		3	47	61	NO	NO	NO
	4	50	93	NO	NO	NO		4	47	56	NO	NO	NO
	5	50	83	NO	NO	NO		5	45	55	NO	NO	NO
	6	50	81	NO	NO	NO		6	45	76	NO	NO	NO
	7	48	76	NO	NO	NO		7	45	71	NO	NO	NO
	8	45	65	NO	NO	NO		8	46	46	NO	NO	NO
	9	41	61	NO	NO	NO		9	46	43	NO	NO	NO
	10	39	53	NO	NO	NO		10	46	43	NO	NO	NO
	11	38	49	NO	NO	NO		11	46	46	NO	NO	NO
April 12, 2016	12	44	46	NO	NO	NO	April 28, 2016	12	45	57	NO	NO	NO
	1	46	43	NO	NO	NO		1	45	53	NO	NO	NO
	2	46	40	NO	NO	NO		2	43	70	NO	NO	NO
	3	48	40	NO	NO	NO		3	41	87	NO	NO	NO
	4	50	37	NO	NO	NO		4	41	93	NO	NO	NO
	5	49	32	NO	NO	NO		5	41	93	NO	NO	NO
	6	45	32	NO	NO	NO		6	41	100	NO	NO	NO
	7	45	34	NO	NO	NO		7	43	93	NO	NO	NO
	8	45	37	NO	NO	NO		8	41	100	NO	NO	NO
	9	41	45	NO	NO	NO		9	43	93	NO	NO	NO
	10	39	48	NO	NO	NO		10	42	98	NO	NO	NO
	11	38	49	NO	NO	NO		11	42	97	NO	NO	NO

April 13, 2016	12	37	52	NO	NO	NO	04/29/2016	12	42	97	NO	NO	NO
	1	35	56	NO	NO	NO		1	42	97	NO	NO	NO
	2	35	60	NO	NO	NO		2	42	97	NO	NO	NO
	3	33	63	NO	NO	NO		3	42	97	NO	NO	NO
	4	31	68	NO	NO	NO		4	42	97	NO	NO	NO
	5	31	67	NO	NO	NO		5	42	99	NO	NO	NO
	6	30	69	NO	NO	NO		6	43	93	NO	NO	NO
	7	28	74	NO	NO	NO		7	43	93	NO	NO	NO
	8	32	75	NO	NO	NO		8	43	100	NO	NO	NO
	9	36	65	NO	NO	NO		9	43	100	NO	NO	NO
	10	37	60	NO	NO	NO		10	45	93	NO	NO	NO
	11	41	49	NO	NO	NO		11	45	93	NO	NO	NO
April 14, 2016	12	43	46	NO	NO	NO	April 30, 2016	12	45	93	NO	NO	NO
	1	46	40	NO	NO	NO		1	45	93	NO	NO	NO
	2	48	32	NO	NO	NO		2	45	93	NO	NO	NO
	3	52	30	NO	NO	NO		3	45	93	NO	NO	NO
	4	52	28	NO	NO	NO		4	46	87	NO	NO	NO
	5	52	28	NO	NO	NO		5	45	93	NO	NO	NO
	6	52	28	NO	NO	NO		6	45	100	NO	NO	NO
	7	52	30	NO	NO	NO		7	45	100	NO	NO	NO
	8	48	34	NO	NO	NO		8	45	98	NO	NO	NO
	9	46	34	NO	NO	NO		9	45	98	NO	NO	NO
	10	45	40	NO	NO	NO		10	45	98	NO	NO	NO
	11	42	47	NO	NO	NO		11	45	99	NO	NO	NO
April 15, 2016	12	41	51	NO	NO	NO	April 30, 2016	12	44	99	NO	NO	NO
	1	39	55	NO	NO	NO		1	44	100	NO	NO	NO
	2	36	62	NO	NO	NO		2	44	99	NO	NO	NO
	3	37	58	NO	NO	NO		3	44	98	NO	NO	NO
	4	37	59	NO	NO	NO		4	44	100	NO	NO	NO
	5	34	65	NO	NO	NO		5	44	99	NO	NO	NO
	6	34	65	NO	NO	NO		6	43	100	NO	NO	NO
	7	32	69	NO	NO	NO		7	43	100	NO	NO	NO
	8	36	70	NO	NO	NO		8	45	100	NO	NO	NO
	9	39	56	NO	NO	NO		9	46	93	NO	NO	NO
	10	45	49	NO	NO	NO		10	48	87	NO	NO	NO
	11	48	43	NO	NO	NO		11	50	76	NO	NO	NO
April 16, 2016	12	54	35	NO	NO	NO	April 30, 2016	12	50	76	NO	NO	NO
	1	55	33	NO	NO	YES		1	52	71	NO	NO	NO
	2	57	33	NO	NO	YES		2	52	76	NO	NO	NO
	3	57	29	NO	NO	YES		3	52	76	NO	NO	NO
	4	59	29	NO	NO	YES		4	52	76	NO	NO	NO
	5	59	27	NO	NO	YES		5	54	72	NO	NO	NO
	6	59	29	NO	NO	YES		6	52	71	NO	NO	NO
	7	59	27	NO	NO	YES		7	52	76	NO	NO	NO
	8	57	29	NO	NO	YES		8	52	76	NO	NO	NO
	9	54	33	NO	NO	NO		9	52	76	NO	NO	NO
	10	53	34	NO	NO	NO		10	50	89	NO	NO	NO
	11	51	35	NO	NO	NO		11	49	92	NO	NO	NO
April 16, 2016	12	47	44	NO	NO	NO	April 30, 2016	12	47	44	NO	NO	NO
	1	45	49	NO	NO	NO		1	45	49	NO	NO	NO
	2	44	50	NO	NO	NO		2	44	50	NO	NO	NO
	3	38	66	NO	NO	NO		3	38	66	NO	NO	NO
	4	40	57	NO	NO	NO		4	40	57	NO	NO	NO
	5	36	73	NO	NO	NO		5	36	73	NO	NO	NO
	6	36	70	NO	NO	NO		6	36	70	NO	NO	NO
	7	36	70	NO	NO	NO		7	36	70	NO	NO	NO
	8	37	75	NO	NO	NO		8	37	75	NO	NO	NO
	9	45	61	NO	NO	NO		9	45	61	NO	NO	NO
	10	50	47	NO	NO	NO		10	50	47	NO	NO	NO
	11	54	41	NO	NO	NO		11	54	41	NO	NO	NO
April 16, 2016	12	59	36	NO	NO	YES	April 30, 2016	12	59	36	NO	NO	YES
	1	59	34	NO	NO	YES		1	59	34	NO	NO	YES
	2	63	30	NO	YES	YES		2	63	30	NO	YES	YES
	3	63	30	NO	YES	YES		3	63	30	NO	YES	YES
	4	63	30	NO	YES	YES		4	63	30	NO	YES	YES
	5	64	30	NO	YES	YES		5	64	30	NO	YES	YES
	6	64	28	NO	YES	YES		6	64	28	NO	YES	YES
	7	63	30	NO	YES	YES		7	63	30	NO	YES	YES
	8	59	34	NO	NO	YES		8	59	34	NO	NO	YES
	9	57	36	NO	NO	YES		9	57	36	NO	NO	YES
	10	55	40	NO	NO	YES		10	55	40	NO	NO	YES
	11	54	42	NO	NO	NO		11	54	42	NO	NO	NO
April 16, 2016	12	51	46	NO	NO	NO	April 30, 2016	12	51	46	NO	NO	NO
	1	50	50	NO	NO	NO		1	50	50	NO	NO	NO
	2	47	55	NO	NO	NO		2	47	55	NO	NO	NO
	3	42	67	NO	NO	NO		3	42	67	NO	NO	NO
	4	43	66	NO	NO	NO		4	43	66	NO	NO	NO
	5	41	70	NO	NO	NO		5	41	70	NO	NO	NO
	6	41	70	NO	NO	NO		6	41	70	NO	NO	NO
	7	39	75	NO	NO	NO		7	39	75	NO	NO	NO
	8	43	76	NO	NO	NO		8	43	76	NO	NO	NO
	9	46	66	NO	NO	NO		9	46	66	NO	NO	NO
	10	54	58	NO	NO	NO		10	54	58	NO	NO	NO
	11	59	45	NO	NO	YES		11	59	45	NO	NO	YES
April 16, 2016	12	63	32	NO	YES	YES	April 30, 2016	12	63	32	NO	YES	YES
	1	66	24	YES	YES	YES		1	66	24	YES	YES	YES
	2	66	24	YES	YES	YES		2	66	24	YES	YES	YES
	3	70	23	YES	YES	YES		3	70	23	YES	YES	YES
	4	70	25	YES	YES	YES		4	70	25	YES	YES	YES
	5	70	25	YES	YES	YES		5	70	25	YES	YES	YES
	6	70	25	YES	YES	YES		6	70	25	YES	YES	YES
	7	70	26	YES	YES	YES		7	70	26	YES	YES	YES
	8	66	30	YES	YES	YES		8	66	30	YES	YES	YES
	9	64	31	YES	YES	YES		9	64	31	YES	YES	YES
	10	62	35	YES	YES	YES		10	62	35	YES	YES	YES
	11	60	37	YES	YES	YES		11	60	37	YES	YES	YES

May Weather Data and Zone Requirements													
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
May 1	12	50	89	NO	NO	NO	May 17	12	49	58	NO	NO	NO
	1	49	92	NO	NO	NO		1	50	54	NO	NO	NO
	2	49	92	NO	NO	NO		2	48	58	NO	NO	NO
	3	48	92	NO	NO	NO		3	48	63	NO	NO	NO
	4	49	93	NO	NO	NO		4	50	57	NO	NO	NO
	5	48	93	NO	NO	NO		5	47	69	NO	NO	NO
	6	48	93	NO	NO	NO		6	48	66	NO	NO	NO
	7	50	87	NO	NO	NO		7	50	62	NO	NO	NO
	8	50	94	NO	NO	NO		8	52	62	NO	NO	NO
	9	50	94	NO	NO	NO		9	52	62	NO	NO	NO
	10	50	94	NO	NO	NO		10	54	58	NO	NO	NO
	11	50	94	NO	NO	NO		11	55	51	NO	NO	YES
	12	50	100	NO	NO	NO		12	59	48	NO	NO	YES
	1	50	100	NO	NO	NO		1	61	48	NO	YES	YES
	2	50	100	NO	NO	NO		2	61	48	NO	YES	YES
	3	50	94	NO	NO	NO		3	60	48	NO	YES	YES
	4	50	94	NO	NO	NO		4	61	45	NO	YES	YES
	5	50	94	NO	NO	NO		5	61	45	NO	YES	YES
	6	50	94	NO	NO	NO		6	61	45	NO	YES	YES
	7	50	94	NO	NO	NO		7	59	45	NO	NO	YES
	8	50	100	NO	NO	NO		8	57	51	NO	NO	YES
	9	50	100	NO	NO	NO		9	56	59	NO	NO	YES
	10	50	97	NO	NO	NO		10	55	67	NO	NO	YES
	11	50	97	NO	NO	NO		11	54	71	NO	NO	NO
May 2, 2016	12	50	97	NO	NO	NO	May 18, 2016	12	53	72	NO	NO	NO
	1	50	97	NO	NO	NO		1	53	75	NO	NO	NO
	2	50	97	NO	NO	NO		2	52	76	NO	NO	NO
	3	50	98	NO	NO	NO		3	51	80	NO	NO	NO
	4	49	97	NO	NO	NO		4	51	80	NO	NO	NO
	5	49	98	NO	NO	NO		5	50	87	NO	NO	NO
	6	50	94	NO	NO	NO		6	48	87	NO	NO	NO
	7	50	100	NO	NO	NO		7	48	93	NO	NO	NO
	8	50	100	NO	NO	NO		8	50	87	NO	NO	NO
	9	54	94	NO	NO	NO		9	60	85	NO	NO	NO
	10	55	94	NO	NO	NO		10	52	76	NO	NO	NO
	11	61	82	NO	NO	NO		11	54	58	NO	NO	NO
	12	64	77	NO	NO	NO		12	55	51	NO	NO	YES
	1	70	60	YES	YES	YES		1	57	48	NO	NO	YES
	2	70	49	YES	YES	YES		2	57	45	NO	NO	YES
	3	72	46	YES	YES	YES		3	59	45	NO	NO	YES
	4	72	46	YES	YES	YES		4	59	48	NO	NO	YES
	5	70	49	YES	YES	YES		5	57	59	NO	NO	YES
	6	68	52	YES	YES	YES		6	57	63	NO	NO	YES
	7	66	52	YES	YES	YES		7	55	58	NO	NO	YES
	8	64	56	NO	YES	YES		8	55	71	NO	NO	YES
	9	63	59	NO	YES	YES		9	52	78	NO	NO	NO
	10	59	76	NO	NO	NO		10	49	83	NO	NO	NO
	11	56	91	NO	NO	NO		11	47	88	NO	NO	NO
May 3, 2016	12	54	95	NO	NO	NO	May 19, 2016	12	46	89	NO	NO	NO
	1	51	97	NO	NO	NO		1	46	93	NO	NO	NO
	2	51	98	NO	NO	NO		2	43	98	NO	NO	NO
	3	49	98	NO	NO	NO		3	43	99	NO	NO	NO
	4	48	98	NO	NO	NO		4	41	98	NO	NO	NO
	5	48	97	NO	NO	NO		5	42	99	NO	NO	NO
	6	48	100	NO	NO	NO		6	39	100	NO	NO	NO
	7	46	100	NO	NO	NO		7	39	100	NO	NO	NO
	8	46	100	NO	NO	NO		8	41	93	NO	NO	NO
	9	46	100	NO	NO	NO		9	43	80	NO	NO	NO
	10	48	93	NO	NO	NO		10	52	75	NO	NO	NO
	11	50	94	NO	NO	NO		11	59	62	NO	NO	YES
	12	52	88	NO	NO	NO		12	61	48	NO	YES	YES
	1	54	82	NO	NO	NO		1	63	39	NO	YES	YES
	2	55	77	NO	NO	NO		2	64	34	NO	YES	YES
	3	57	77	NO	NO	NO		3	64	32	NO	YES	YES
	4	61	72	NO	YES	YES		4	68	33	YES	YES	YES
	5	61	68	NO	YES	YES		5	66	35	YES	YES	YES
	6	59	72	NO	NO	YES		6	65	32	YES	YES	YES
	7	59	72	NO	NO	YES		7	66	35	YES	YES	YES
	8	57	77	NO	NO	NO		8	63	37	YES	YES	YES
	9	55	82	NO	NO	NO		9	59	45	NO	NO	YES
	10	54	86	NO	NO	NO		10	57	47	NO	NO	YES
	11	53	88	NO	NO	NO		11	54	53	NO	NO	NO
May 4, 2016	12	52	88	NO	NO	NO	May 20, 2016	12	52	60	NO	NO	NO
	1	51	90	NO	NO	NO		1	50	64	NO	NO	NO
	2	50	93	NO	NO	NO		2	45	76	NO	NO	NO
	3	52	92	NO	NO	NO		3	46	75	NO	NO	NO
	4	49	96	NO	NO	NO		4	43	84	NO	NO	NO
	5	48	96	NO	NO	NO		5	43	85	NO	NO	NO
	6	48	100	NO	NO	NO		6	43	81	NO	NO	NO
	7	48	100	NO	NO	NO		7	41	93	NO	NO	NO
	8	50	94	NO	NO	NO		8	48	82	NO	NO	NO
	9	52	88	NO	NO	NO		9	52	91	NO	NO	NO
	10	54	88	NO	NO	NO		10	59	59	NO	NO	YES
	11	55	88	NO	NO	NO		11	64	45	NO	YES	YES
	12	57	77	NO	NO	NO		12	68	37	YES	YES	YES
	1	72	72	NO	NO	NO		1	68	40	YES	YES	YES
	2	55	88	NO	NO	YES		2	70	35	YES	YES	YES
	3	55	77	NO	NO	YES		3	70	35	YES	YES	YES
	4	54	82	NO	NO	NO		4	70	35	YES	YES	YES
	5	52	94	NO	NO	NO		5	70	35	YES	YES	YES
	6	50	88	NO	NO	NO		6	68	37	YES	YES	YES
	7	50	94	NO	NO	NO		7	68	37	YES	YES	YES
	8	50	94	NO	NO	NO		8	66	40	YES	YES	YES
	9	50	94	NO	NO	NO		9	64	42	NO	YES	YES
	10	49	90	NO	NO	NO		10	64	44	NO	YES	YES
	11	49	90	NO	NO	NO		11	63	44	NO	YES	YES



May 9, 2016	12	47	51	NO	NO	NO	May 25, 2016	12	59	59	NO	NO	YES
	1	46	52	NO	NO	NO		1	60	57	NO	YES	YES
	2	45	53	NO	NO	NO		2	56	67	NO	NO	YES
	3	47	55	NO	NO	NO		3	53	74	NO	NO	NO
	4	46	51	NO	NO	NO		4	57	64	NO	NO	NO
	5	47	53	NO	NO	NO		5	54	68	NO	NO	NO
	6	45	56	NO	NO	NO		6	54	72	NO	NO	NO
	7	52	61	NO	NO	NO		7	52	88	NO	NO	NO
	8	52	67	NO	NO	NO		8	59	72	NO	NO	NO
	9	55	54	NO	NO	YES		9	66	64	YES	YES	YES
	10	59	48	NO	NO	YES		10	72	53	YES	YES	YES
	11	61	45	NO	YES	YES		11	75	47	YES	YES	YES
May 10, 2016	12	64	40	NO	YES	YES	May 26, 2016	12	79	39	NO	NO	NO
	1	63	37	NO	YES	YES		1	81	34	NO	NO	NO
	2	64	34	NO	YES	YES		2	81	37	NO	NO	NO
	3	64	37	NO	YES	YES		3	82	35	NO	NO	NO
	4	64	34	NO	YES	YES		4	82	32	NO	NO	NO
	5	63	37	NO	YES	YES		5	81	32	NO	NO	NO
	6	61	39	NO	YES	YES		6	81	32	NO	NO	NO
	7	59	42	NO	NO	YES		7	79	36	NO	NO	NO
	8	57	48	NO	NO	YES		8	77	39	NO	NO	NO
	9	51	55	NO	NO	NO		9	73	44	YES	YES	YES
	10	51	68	NO	NO	NO		10	69	52	YES	YES	YES
	11	52	68	NO	NO	NO		11	66	56	YES	YES	YES
May 11, 2016	12	52	72	NO	NO	NO	May 27, 2016	12	65	59	YES	YES	YES
	1	48	81	NO	NO	NO		1	65	58	YES	YES	YES
	2	48	62	NO	NO	NO		2	63	60	NO	YES	YES
	3	46	59	NO	NO	NO		3	61	69	NO	YES	YES
	4	45	60	NO	NO	NO		4	61	69	NO	YES	YES
	5	45	60	NO	NO	NO		5	62	69	NO	YES	YES
	6	45	66	NO	NO	NO		6	61	72	NO	YES	YES
	7	45	71	NO	NO	NO		7	59	88	NO	NO	NO
	8	45	66	NO	NO	NO		8	63	77	NO	NO	NO
	9	45	71	NO	NO	NO		9	68	64	YES	YES	YES
	10	46	83	NO	NO	NO		10	72	60	YES	YES	YES
	11	46	87	NO	NO	NO		11	75	53	YES	YES	YES
May 12, 2016	12	46	79	NO	NO	NO	May 28, 2016	12	79	41	NO	NO	NO
	1	48	76	NO	NO	NO		1	81	45	NO	NO	NO
	2	50	71	NO	NO	NO		2	81	48	NO	NO	NO
	3	50	82	NO	NO	NO		3	77	50	NO	NO	NO
	4	54	72	NO	NO	NO		4	77	59	NO	NO	NO
	5	55	67	NO	NO	YES		5	81	54	NO	NO	NO
	6	55	72	NO	NO	YES		6	77	61	NO	YES	YES
	7	54	72	NO	NO	NO		7	72	73	NO	YES	YES
	8	57	77	NO	NO	NO		8	72	78	NO	NO	NO
	9	52	82	NO	NO	NO		9	70	83	NO	NO	NO
	10	51	83	NO	NO	NO		10	68	85	NO	NO	NO
	11	49	87	NO	NO	NO		11	68	87	NO	NO	NO
May 9, 2016	12	49	89	NO	NO	NO	May 25, 2016	12	67	89	NO	NO	NO
	1	48	90	NO	NO	NO		1	68	85	NO	NO	NO
	2	48	91	NO	NO	NO		2	64	94	NO	NO	NO
	3	49	92	NO	NO	NO		3	65	92	NO	NO	NO
	4	49	92	NO	NO	NO		4	64	96	NO	NO	NO
	5	48	93	NO	NO	NO		5	65	92	NO	NO	NO
	6	48	93	NO	NO	NO		6	64	94	NO	NO	NO
	7	48	93	NO	NO	NO		7	64	94	NO	NO	NO
	8	50	87	NO	NO	NO		8	68	88	NO	NO	NO
	9	52	82	NO	NO	NO		9	73	78	NO	NO	NO
	10	52	77	NO	NO	NO		10	75	73	NO	YES	YES
	11	54	77	NO	NO	NO		11	77	69	NO	NO	NO
May 10, 2016	12	55	77	NO	NO	NO	May 26, 2016	12	81	61	NO	NO	NO
	1	57	77	NO	NO	NO		1	82	58	NO	NO	NO
	2	57	88	NO	NO	NO		2	82	54	NO	NO	NO
	3	55	94	NO	NO	NO		3	82	54	NO	NO	NO
	4	55	88	NO	NO	NO		4	84	51	NO	NO	NO
	5	57	88	NO	NO	NO		5	86	48	NO	NO	NO
	6	57	88	NO	NO	NO		6	81	58	NO	NO	NO
	7	57	94	NO	NO	NO		7	81	58	NO	NO	NO
	8	57	94	NO	NO	NO		8	77	65	NO	NO	NO
	9	55	94	NO	NO	NO		9	73	73	NO	YES	YES
	10	55	98	NO	NO	NO		10	72	75	NO	YES	YES
	11	56	96	NO	NO	NO		11	72	79	NO	NO	NO
May 11, 2016	12	56	97	NO	NO	NO	May 27, 2016	12	70	83	NO	NO	NO
	1	55	96	NO	NO	NO		1	68	90	NO	NO	NO
	2	55	97	NO	NO	NO		2	68	88	NO	NO	NO
	3	55	98	NO	NO	NO		3	67	90	NO	NO	NO
	4	54	98	NO	NO	NO		4	65	94	NO	NO	NO
	5	54	98	NO	NO	NO		5	64	97	NO	NO	NO
	6	54	98	NO	NO	NO		6	63	100	NO	NO	NO
	7	54	100	NO	NO	NO		7	64	94	NO	NO	NO
	8	54	100	NO	NO	NO		8	68	88	NO	NO	NO
	9	54	100	NO	NO	NO		9	72	83	NO	NO	NO
	10	55	94	NO	NO	NO		10	77	69	NO	NO	NO
	11	59	88	NO	NO	NO		11	81	65	NO	NO	NO
May 12, 2016	12	63	82	NO	NO	NO	May 28, 2016	12	82	62	NO	NO	NO
	1	68	68	NO	YES	YES		1	84	48	NO	NO	NO
	2	70	64	YES	YES	YES		2	81	65	NO	NO	NO
	3	72	60	YES	YES	YES		3	81	61	NO	NO	NO
	4	73	61	YES	YES	YES		4	86	55	NO	NO	NO
	5	73	64	YES	YES	YES		5	84	58	NO	NO	NO
	6	72	64	YES	YES	YES		6	84	55	NO	NO	NO
	7	72	64	YES	YES	YES		7	82	58	NO	NO	NO
	8	70	68	NO	YES	YES		8	81	65	NO	NO	NO
	9	66	78	NO	NO	NO		9	79	65	NO	NO	NO
	10	66	81	NO	NO	NO		10	76	76	NO	NO	NO
	11	64	85	NO	NO	NO		11	75	75	NO	YES	YES

May 13, 2016	12	52	95	NO	NO	NO	May 29, 2016	12	75	71	NO	YES	YES
	1	61	96	NO	NO	NO		1	75	70	NO	YES	YES
	2	61	96	NO	NO	NO		2	73	74	NO	YES	YES
	3	61	97	NO	NO	NO		3	71	71	NO	YES	YES
	4	60	97	NO	NO	NO		4	68	87	NO	NO	NO
	5	59	97	NO	NO	NO		5	66	92	NO	NO	NO
	6	59	100	NO	NO	NO		6	66	93	NO	NO	NO
	7	61	94	NO	NO	NO		7	66	94	NO	NO	NO
	8	61	94	NO	NO	NO		8	66	94	NO	NO	NO
	9	61	94	NO	NO	NO		9	73	78	NO	NO	NO
	10	61	82	NO	NO	NO		10	77	65	NO	NO	NO
May 14, 2016	11	63	80	NO	NO	NO	May 30, 2016	11	81	58	NO	NO	NO
	12	63	77	NO	NO	NO		12	82	51	NO	NO	NO
	1	68	60	YES	YES	YES		1	82	51	NO	NO	NO
	2	70	49	YES	YES	YES		2	82	48	NO	NO	NO
	3	70	46	YES	YES	YES		3	82	45	NO	NO	NO
	4	70	46	YES	YES	YES		4	81	42	NO	NO	NO
	5	70	46	YES	YES	YES		5	79	54	NO	NO	NO
	6	70	40	YES	YES	YES		6	77	57	NO	NO	NO
	7	68	43	YES	YES	YES		7	73	65	YES	YES	YES
	8	66	46	YES	YES	YES		8	70	73	NO	YES	YES
	9	63	52	NO	YES	YES		9	70	73	NO	YES	YES
	10	61	59	NO	YES	YES		10	68	74	NO	YES	YES
May 15, 2016	11	60	60	NO	YES	YES	May 31, 2016	11	67	77	NO	NO	NO
	12	58	62	NO	NO	YES		12	65	85	NO	NO	NO
	1	56	70	NO	YES	YES		1	64	85	NO	NO	NO
	2	55	73	NO	NO	YES		2	62	85	NO	NO	NO
	3	52	76	NO	NO	NO		3	64	84	NO	NO	NO
	4	50	80	NO	NO	NO		4	61	90	NO	NO	NO
	5	51	85	NO	NO	NO		5	61	90	NO	NO	NO
	6	48	87	NO	NO	NO		6	61	88	NO	NO	NO
	7	50	82	NO	NO	NO		7	61	94	NO	NO	NO
	8	54	77	NO	NO	NO		8	66	83	NO	NO	NO
	9	59	63	NO	NO	YES		9	70	73	NO	YES	YES
	10	61	59	NO	YES	YES		10	73	65	YES	YES	YES
May 16, 2016	11	61	59	NO	YES	YES		11	75	65	YES	YES	YES
	12	61	77	NO	NO	NO	May 31, 2016	12	79	61	NO	NO	NO
	1	57	88	NO	NO	NO		1	81	54	NO	NO	NO
	2	55	82	NO	NO	NO		2	81	58	NO	NO	NO
	3	57	82	NO	NO	NO		3	81	54	NO	NO	NO
	4	57	82	NO	NO	NO		4	82	54	NO	NO	NO
	5	54	88	NO	NO	NO		5	82	45	NO	NO	NO
	6	55	77	NO	NO	NO		6	82	42	NO	NO	NO
	7	52	71	NO	NO	NO		7	82	39	NO	NO	NO
	8	46	66	NO	NO	NO		8	81	39	NO	NO	NO
	9	46	66	NO	NO	NO		9	77	47	NO	NO	NO
	10	46	67	NO	NO	NO		10	74	62	YES	YES	YES
May 16, 2016	11	46	65	NO	NO	NO		11	74	52	YES	YES	YES
	12	45	71	NO	NO	NO	May 31, 2016	12	68	64	YES	YES	YES
	1	44	71	NO	NO	NO		1	67	75	NO	YES	YES
	2	43	82	NO	NO	NO		2	64	87	NO	NO	NO
	3	42	84	NO	NO	NO		3	62	97	NO	NO	NO
	4	41	85	NO	NO	NO		4	61	94	NO	NO	NO
	5	41	80	NO	NO	NO		5	59	94	NO	NO	NO
	6	39	87	NO	NO	NO		6	57	100	NO	NO	NO
	7	39	87	NO	NO	NO		7	59	94	NO	NO	NO
	8	41	76	NO	NO	NO		8	63	88	NO	NO	NO
	9	37	93	NO	NO	NO		9	66	88	NO	NO	NO
	10	39	87	NO	NO	NO		10	70	78	NO	NO	NO
May 16, 2016	11	39	93	NO	NO	NO		11	77	54	NO	NO	NO
	12	41	81	NO	NO	NO	May 31, 2016	12	79	44	NO	NO	NO
	1	41	87	NO	NO	NO		1	79	37	NO	NO	NO
	2	45	61	NO	NO	NO		2	81	32	NO	NO	NO
	3	45	66	NO	NO	NO		3	82	35	NO	NO	NO
	4	43	81	NO	NO	NO		4	82	37	NO	NO	NO
	5	43	70	NO	NO	NO		5	84	35	NO	NO	NO
	6	45	61	NO	NO	NO		6	81	37	NO	NO	NO
	7	45	49	NO	NO	NO		7	82	35	NO	NO	NO
	8	43	53	NO	NO	NO		8	79	39	NO	NO	NO
	9	41	57	NO	NO	NO		9	75	50	YES	YES	YES
	10	39	58	NO	NO	NO		10	71	56	YES	YES	YES
May 16, 2016	11	39	58	NO	NO	NO		11	70	57	YES	YES	YES
	12	39	60	NO	NO	NO	May 31, 2016						
	1	39	64	NO	NO	NO							
	2	39	66	NO	NO	NO							
	3	38	73	NO	NO	NO							
	4	38	74	NO	NO	NO							
	5	37	77	NO	NO	NO							
	6	36	75	NO	NO	NO							
	7	37	70	NO	NO	NO							
	8	41	65	NO	NO	NO							
	9	45	57	NO	NO	NO							
	10	48	54	NO	NO	NO							
	11	52	44	NO	NO	NO							
	12	55	41	NO	NO	YES							
	1	57	38	NO	YES	YES							
	2	61	36	NO	YES	YES							
	3	61	34	NO	YES	YES							
	4	63	34	NO	YES	YES							
	5	61	34	NO	YES	YES							
	6	61	34	NO	YES	YES							
	7	61	36	NO	YES	YES							
	8	59	39	NO	NO	YES							
	9	55	41	NO	NO	YES							
	10	49	42	NO	NO	NO							
	11	50	54	NO	NO	NO							

June Weather Data and Zone Requirements															
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)		Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	
June 1	12	69	60	YES	YES	YES		June 17	12	63	93	NO	NO	NO	
	1	67	65	YES	YES	YES			1	63	94	NO	NO	NO	
	2	64	65	YES	YES	YES			2	62	97	NO	NO	NO	
	3	62	69	NO	YES	YES			3	62	99	NO	NO	NO	
	4	62	72	NO	YES	YES			4	62	98	NO	NO	NO	
	5	60	75	NO	YES	YES			5	60	99	NO	NO	NO	
	6	60	77	NO	NO	NO			6	61	100	NO	NO	NO	
	7	61	82	NO	NO	NO			7	61	100	NO	NO	NO	
	8	63	77	NO	NO	NO			8	61	100	NO	NO	NO	
	9	66	64	YES	YES	YES			9	64	88	NO	NO	NO	
	10	68	60	YES	YES	YES			10	68	78	NO	NO	NO	
June 2, 2016	11	70	60	YES	YES	YES		June 18, 2016	11	70	68	NO	YES	YES	
	12	75	57	YES	YES	YES			12	73	53	YES	YES	YES	
	1	79	51	NO	NO	NO			1	77	47	NO	NO	NO	
	2	82	42	NO	NO	NO			2	79	42	NO	NO	NO	
	3	84	37	NO	NO	NO			3	81	45	NO	NO	NO	
	4	84	42	NO	NO	NO			4	77	47	NO	NO	NO	
	5	84	45	NO	NO	NO			5	81	39	NO	NO	NO	
	6	82	47	NO	NO	NO			6	81	37	NO	NO	NO	
	7	82	50	NO	NO	NO			7	79	36	NO	NO	NO	
	8	79	53	NO	NO	NO			8	75	38	YES	YES	YES	
	9	77	55	NO	NO	NO			9	72	41	YES	YES	YES	
June 3, 2016	10	76	57	NO	NO	NO		June 19, 2016	10	70	44	YES	YES	YES	
	11	73	59	YES	YES	YES			11	67	52	YES	YES	YES	
	12	74	57	YES	YES	YES			12	62	64	NO	YES	YES	
	1	72	70	NO	YES	YES			1	58	64	NO	NO	YES	
	2	69	75	NO	YES	YES			2	63	66	NO	YES	YES	
	3	69	73	NO	YES	YES			3	59	77	NO	NO	NO	
	4	69	70	NO	YES	YES			4	57	84	NO	NO	NO	
	5	67	73	NO	YES	YES			5	55	90	NO	NO	NO	
	6	66	71	NO	YES	YES			6	54	94	NO	NO	NO	
	7	68	73	NO	YES	YES			7	55	88	NO	NO	NO	
	8	68	73	NO	YES	YES			8	61	77	NO	NO	NO	
June 4, 2016	9	70	78	NO	NO	NO		June 20, 2016	9	64	77	NO	NO	NO	
	10	70	78	NO	NO	NO			10	70	68	NO	YES	YES	
	11	66	80	NO	NO	NO			11	70	64	YES	YES	YES	
	12	66	94	NO	NO	NO			12	77	41	NO	NO	NO	
	1	68	94	NO	NO	NO			1	81	34	NO	NO	NO	
	2	70	88	NO	NO	NO			2	81	32	NO	NO	NO	
	3	70	83	NO	NO	NO			3	82	28	NO	NO	NO	
	4	72	83	NO	NO	NO			4	82	32	NO	NO	NO	
	5	72	83	NO	NO	NO			5	84	30	NO	NO	NO	
	6	72	83	NO	NO	NO			6	81	29	NO	NO	NO	
	7	70	83	NO	NO	NO			7	75	39	YES	YES	YES	
June 5, 2016	8	70	88	NO	NO	NO		June 21, 2016	8	73	47	YES	YES	YES	
	9	70	83	NO	NO	NO			9	69	50	YES	YES	YES	
	10	68	90	NO	NO	NO			10	69	65	YES	YES	YES	
	11	68	93	NO	NO	NO			11	68	65	YES	YES	YES	
	12	68	92	NO	NO	NO			12	68	64	YES	YES	YES	
	1	68	94	NO	NO	NO			1	67	68	NO	YES	YES	
	2	68	94	NO	NO	NO			2	65	73	NO	YES	YES	
	3	67	96	NO	NO	NO			3	65	73	NO	YES	YES	
	4	68	95	NO	NO	NO			4	62	78	NO	NO	NO	
	5	67	98	NO	NO	NO			5	64	82	NO	NO	NO	
	6	66	100	NO	NO	NO			6	61	82	NO	NO	NO	
June 6, 2016	7	66	100	NO	NO	NO		June 22, 2016	7	64	77	NO	NO	NO	
	8	68	94	NO	NO	NO			8	68	73	NO	YES	YES	
	9	68	94	NO	NO	NO			9	72	64	YES	YES	YES	
	10	68	95	NO	NO	NO			10	75	61	YES	YES	YES	
	11	72	94	NO	NO	NO			11	79	54	NO	NO	NO	
	12	73	83	NO	NO	NO			12	81	45	NO	NO	NO	
	1	75	76	NO	NO	NO			1	84	33	NO	NO	NO	
	2	75	69	NO	YES	YES			2	82	39	NO	NO	NO	
	3	79	65	NO	NO	NO			3	84	37	NO	NO	NO	
	4	79	57	NO	NO	NO			4	84	37	NO	NO	NO	
	5	81	42	NO	NO	NO			5	84	40	NO	NO	NO	
June 7, 2016	6	79	48	NO	NO	NO		June 23, 2016	6	84	37	NO	NO	NO	
	7	79	51	NO	NO	NO			7	82	42	NO	NO	NO	
	8	75	69	NO	YES	YES			8	79	51	NO	NO	NO	
	9	73	78	NO	NO	NO			9	75	53	YES	YES	YES	
	10	70	87	NO	NO	NO			10	71	64	YES	YES	YES	
	11	71	85	NO	NO	NO			11	70	68	NO	YES	YES	
	12	68	92	NO	NO	NO			12	70	65	NO	YES	YES	
	1	68	95	NO	NO	NO			1	66	71	NO	YES	YES	
	2	67	96	NO	NO	NO			2	66	73	NO	YES	YES	
	3	66	97	NO	NO	NO			3	63	73	NO	YES	YES	
	4	65	98	NO	NO	NO			4	63	79	NO	NO	NO	
June 8, 2016	5	64	99	NO	NO	NO		June 24, 2016	5	62	85	NO	NO	NO	
	6	68	94	NO	NO	NO			6	61	88	NO	NO	NO	
	7	66	100	NO	NO	NO			7	63	82	NO	NO	NO	
	8	64	100	NO	NO	NO			8	66	78	NO	NO	NO	
	9	66	100	NO	NO	NO			9	72	69	NO	YES	YES	
	10	68	94	NO	NO	NO			10	77	54	NO	NO	NO	
	11	70	88	NO	NO	NO			11	79	51	NO	NO	NO	
	12	73	73	NO	YES	YES			12	81	48	NO	NO	NO	
	1	73	78	NO	NO	NO			1	84	45	NO	NO	NO	
	2	75	73	NO	YES	YES			2	82	45	NO	NO	NO	
	3	75	73	NO	YES	YES			3	86	45	NO	NO	NO	
June 9, 2016	4	75	69	NO	NO	NO		June 25, 2016	4	86	45	NO	NO	NO	
	5	73	78	NO	NO	NO			5	86	51	NO	NO	NO	
	6	73	78	NO	NO	NO			6	84	55	NO	NO	NO	
	7	73	78	NO	NO	NO			7	82	58	NO	NO	NO	
	8	73	83	NO	NO	NO			8	81	61	NO	NO	NO	
	9	72	83	NO	NO	NO			9	77	69	NO	NO	NO	
	10	71	86	NO	NO	NO			10	77	69	NO	NO	NO	
	11	70	89	NO	NO	NO			11	76	74	NO	NO	NO	

June 5, 2016	12	70	92	NO	NO	NO	June 21, 2016	12	75	75	NO	YES	YES
	1	70	92	NO	NO	NO		1	75	76	NO	NO	NO
	2	70	92	NO	NO	NO		2	75	77	NO	NO	NO
	3	70	93	NO	NO	NO		3	76	74	NO	NO	NO
	4	70	91	NO	NO	NO		4	76	74	NO	NO	NO
	5	70	91	NO	NO	NO		5	75	77	NO	NO	NO
	6	70	94	NO	NO	NO		6	66	88	NO	NO	NO
	7	70	88	NO	NO	NO		7	64	88	NO	NO	NO
	8	70	88	NO	NO	NO		8	66	83	NO	NO	NO
	9	70	88	NO	NO	NO		9	68	68	NO	YES	YES
	10	72	90	NO	NO	NO		10	68	64	YES	YES	YES
	11	72	94	NO	NO	NO		11	72	57	YES	YES	YES
June 6, 2016	12	72	94	NO	NO	NO		12	73	44	YES	YES	YES
	1	66	100	NO	NO	NO	June 22, 2016	1	75	44	YES	YES	YES
	2	64	100	NO	NO	NO		2	79	42	NO	NO	NO
	3	64	94	NO	NO	NO		3	79	42	NO	NO	NO
	4	66	94	NO	NO	NO		4	81	42	NO	NO	NO
	5	68	88	NO	NO	NO		5	81	45	NO	NO	NO
	6	70	83	NO	NO	NO		6	79	47	NO	NO	NO
	7	70	83	NO	NO	NO		7	79	47	NO	NO	NO
	8	68	83	NO	NO	NO		8	77	39	NO	NO	NO
	9	64	83	NO	NO	NO		9	73	44	YES	YES	YES
	10	63	89	NO	NO	NO		10	71	48	YES	YES	YES
	11	63	92	NO	NO	NO		11	66	58	YES	YES	YES
	12	64	91	NO	NO	NO	June 23, 2016	12	66	57	YES	YES	YES
June 7, 2016	1	65	86	NO	NO	NO		1	64	68	NO	YES	YES
	2	64	88	NO	NO	NO		2	61	74	NO	YES	YES
	3	62	92	NO	NO	NO		3	60	80	NO	YES	YES
	4	62	92	NO	NO	NO		4	63	69	NO	YES	YES
	5	61	94	NO	NO	NO		5	60	74	NO	YES	YES
	6	59	94	NO	NO	NO		6	63	68	NO	YES	YES
	7	61	94	NO	NO	NO		7	64	64	YES	YES	YES
	8	64	93	NO	NO	NO		8	66	64	YES	YES	YES
	9	68	73	NO	YES	YES		9	70	56	YES	YES	YES
	10	72	64	YES	YES	YES		10	72	53	YES	YES	YES
	11	73	57	YES	YES	YES		11	73	47	YES	YES	YES
	12	75	57	YES	YES	YES	June 24, 2016	12	75	47	YES	YES	YES
June 8, 2016	1	73	57	YES	YES	YES		1	77	41	NO	NO	NO
	2	77	50	NO	NO	NO		2	79	39	NO	NO	NO
	3	77	50	NO	NO	NO		3	79	39	NO	NO	NO
	4	79	51	NO	NO	NO		4	79	42	NO	NO	NO
	5	79	44	NO	NO	NO		5	77	44	NO	NO	NO
	6	75	50	YES	YES	YES		6	79	42	NO	NO	NO
	7	73	65	YES	YES	YES		7	77	44	NO	NO	NO
	8	70	68	NO	YES	YES		8	75	50	YES	YES	YES
	9	68	73	NO	YES	YES		9	72	57	YES	YES	YES
	10	69	74	NO	YES	YES		10	67	65	YES	YES	YES
	11	65	92	NO	NO	NO		11	65	68	NO	YES	YES
June 5, 2016	12	63	95	NO	NO	NO	June 21, 2016	12	63	71	NO	YES	YES
	1	61	96	NO	NO	NO		1	64	70	NO	YES	YES
	2	60	97	NO	NO	NO		2	63	75	NO	YES	YES
	3	60	97	NO	NO	NO		3	63	76	NO	NO	NO
	4	60	97	NO	NO	NO		4	65	73	NO	YES	YES
	5	60	95	NO	NO	NO		5	64	75	NO	YES	YES
	6	59	94	NO	NO	NO		6	63	82	NO	NO	NO
	7	59	100	NO	NO	NO		7	61	94	NO	NO	NO
	8	64	88	NO	NO	NO		8	63	94	NO	NO	NO
	9	66	83	NO	NO	NO		9	64	94	NO	NO	NO
	10	68	73	NO	YES	YES		10	68	88	NO	NO	NO
	11	70	64	YES	YES	YES	June 22, 2016	11	72	78	NO	NO	NO
June 6, 2016	12	73	53	YES	YES	YES		12	75	79	NO	NO	NO
	1	66	50	YES	YES	YES		1	75	78	NO	NO	NO
	2	73	47	YES	YES	YES		2	73	65	NO	NO	NO
	3	70	53	YES	YES	YES		3	72	78	NO	NO	NO
	4	68	52	YES	YES	YES		4	68	94	NO	NO	NO
	5	64	73	NO	YES	YES		5	72	88	NO	NO	NO
	6	68	56	YES	YES	YES		6	72	83	NO	NO	NO
	7	66	52	YES	YES	YES		7	72	88	NO	NO	NO
	8	64	52	NO	YES	YES		8	70	94	NO	NO	NO
	9	61	63	NO	YES	YES		9	68	94	NO	NO	NO
	10	61	60	NO	YES	YES		10	66	98	NO	NO	NO
	11	59	65	NO	NO	YES	June 23, 2016	11	65	98	NO	NO	NO
June 7, 2016	12	57	70	NO	NO	YES		12	65	99	NO	NO	NO
	1	55	79	NO	NO	YES		1	65	98	NO	NO	NO
	2	54	82	NO	NO	YES		2	64	99	NO	NO	NO
	3	55	82	NO	NO	YES		3	64	98	NO	NO	NO
	4	52	89	NO	NO	NO		4	62	97	NO	NO	NO
	5	52	93	NO	NO	NO		5	61	96	NO	NO	NO
	6	52	100	NO	NO	NO		6	61	94	NO	NO	NO
	7	54	94	NO	NO	NO		7	61	88	NO	NO	NO
	8	54	94	NO	NO	NO		8	63	77	NO	NO	NO
	9	52	82	NO	NO	NO		9	63	77	NO	NO	NO
	10	50	82	NO	NO	NO		10	64	73	NO	YES	YES
	11	54	72	NO	NO	NO	June 24, 2016	11	64	68	NO	YES	YES
June 8, 2016	12	54	72	NO	NO	NO		12	66	68	NO	YES	YES
	1	54	72	NO	NO	NO		1	70	64	YES	YES	YES
	2	55	63	NO	NO	YES		2	73	57	YES	YES	YES
	3	55	58	NO	NO	YES		3	73	53	YES	YES	YES
	4	59	51	NO	NO	YES		4	73	61	YES	YES	YES
	5	59	51	NO	NO	YES		5	73	61	YES	YES	YES
	6	57	51	NO	NO	YES		6	75	57	YES	YES	YES
	7	55	54	NO	NO	YES		7	75	57	YES	YES	YES
	8	55	58	NO	NO	YES		8	73	61	YES	YES	YES
	9	54	62	NO	NO	NO		9	72	64	YES	YES	YES
	10	53	61	NO	NO	NO		10	71	66	NO	YES	YES
	11	53	65	NO	NO	NO		11	70	73	NO	YES	YES

June 9, 2016	12	52	62	NO	NO	NO	
	1	51	69	NO	NO	NO	
	2	47	80	NO	NO	NO	
	3	46	84	NO	NO	NO	
	4	46	87	NO	NO	NO	
	5	44	91	NO	NO	NO	
	6	43	93	NO	NO	NO	
	7	46	87	NO	NO	NO	
	8	52	67	NO	NO	NO	
	9	55	54	NO	NO	YES	
	10	57	55	NO	NO	YES	
	11	61	48	NO	YES	YES	
June 10, 2016	12	63	42	NO	YES	YES	
	1	66	35	YES	YES	YES	
	2	68	33	YES	YES	YES	
	3	70	35	YES	YES	YES	
	4	70	33	YES	YES	YES	
	5	70	33	YES	YES	YES	
	6	70	31	YES	YES	YES	
	7	68	30	YES	YES	YES	
	8	66	30	YES	YES	YES	
	9	63	32	NO	YES	YES	
	10	61	35	NO	YES	YES	
	11	59	39	NO	NO	YES	
June 11, 2016	12	57	41	NO	NO	YES	
	1	56	43	NO	NO	YES	
	2	54	51	NO	NO	NO	
	3	54	51	NO	NO	NO	
	4	51	59	NO	NO	NO	
	5	52	59	NO	NO	NO	
	6	48	71	NO	NO	NO	
	7	52	67	NO	NO	NO	
	8	55	54	NO	NO	YES	
	9	59	48	NO	NO	YES	
	10	61	42	NO	YES	YES	
	11	64	34	NO	YES	YES	
June 12, 2016	12	68	37	YES	YES	YES	
	1	70	40	YES	YES	YES	
	2	72	38	YES	YES	YES	
	3	73	36	YES	YES	YES	
	4	75	34	YES	YES	YES	
	5	75	34	YES	YES	YES	
	6	75	34	YES	YES	YES	
	7	75	36	YES	YES	YES	
	8	73	38	YES	YES	YES	
	9	70	49	YES	YES	YES	
	10	65	62	YES	YES	YES	
	11	64	62	NO	YES	YES	
June 9, 2016	12	62	70	NO	NO	YES	
	1	61	70	NO	NO	YES	
	2	59	75	NO	NO	NO	
	3	57	83	NO	NO	NO	
	4	56	80	NO	NO	NO	
	5	56	83	NO	NO	NO	
	6	57	77	NO	NO	NO	
	7	57	82	NO	NO	NO	
	8	64	77	NO	NO	NO	
	9	72	73	NO	NO	NO	
	10	77	65	NO	NO	NO	
	11	81	61	NO	NO	NO	
June 10, 2016	12	84	55	NO	NO	NO	
	1	84	55	NO	NO	NO	
	2	86	55	NO	NO	NO	
	3	86	51	NO	NO	NO	
	4	86	51	NO	NO	NO	
	5	86	51	NO	NO	NO	
	6	86	48	NO	NO	NO	
	7	86	43	NO	NO	NO	
	8	84	45	NO	NO	NO	
	9	81	51	NO	NO	NO	
	10	77	60	NO	NO	NO	
	11	77	64	NO	NO	NO	
June 11, 2016	12	77	61	NO	NO	NO	
	1	76	65	NO	NO	NO	
	2	76	67	NO	NO	NO	
	3	76	67	NO	NO	NO	
	4	76	67	NO	NO	NO	
	5	75	67	NO	YES	YES	
	6	73	73	NO	YES	YES	
	7	73	69	NO	YES	YES	
	8	73	57	YES	YES	YES	
	9	72	31	YES	YES	YES	
	10	73	33	YES	YES	YES	
	11	73	33	YES	YES	YES	
June 12, 2016	12	75	34	YES	YES	YES	
	1	75	31	YES	YES	YES	
	2	75	29	YES	YES	YES	
	3	75	31	YES	YES	YES	
	4	75	31	YES	YES	YES	
	5	73	33	YES	YES	YES	
	6	73	31	YES	YES	YES	
	7	70	38	YES	YES	YES	
	8	68	43	YES	YES	YES	
	9	66	46	YES	YES	YES	
	10	65	48	YES	YES	YES	
	11	62	55	NO	YES	YES	
June 25, 2016	12	69	76	NO	NO	NO	
	1	66	83	NO	NO	NO	
	2	66	84	NO	NO	NO	
	3	63	93	NO	NO	NO	
	4	61	94	NO	NO	NO	
	5	61	95	NO	NO	NO	
	6	59	94	NO	NO	NO	
	7	61	94	NO	NO	NO	
	8	64	88	NO	NO	NO	
	9	68	83	NO	NO	NO	
	10	72	73	NO	YES	YES	
	11	72	73	NO	YES	YES	
June 26, 2016	12	75	65	NO	YES	YES	
	1	77	61	NO	NO	NO	
	2	79	54	NO	NO	NO	
	3	81	54	NO	NO	NO	
	4	79	51	NO	NO	NO	
	5	81	51	NO	NO	NO	
	6	79	54	NO	NO	NO	
	7	77	57	NO	NO	NO	
	8	77	57	NO	NO	NO	
	9	73	65	YES	YES	YES	
	10	71	70	NO	YES	YES	
	11	68	80	NO	NO	NO	
June 27, 2016	12	68	82	NO	NO	NO	
	1	66	85	NO	NO	NO	
	2	66	85	NO	NO	NO	
	3	65	88	NO	NO	NO	
	4	63	92	NO	NO	NO	
	5	62	94	NO	NO	NO	
	6	61	78	NO	NO	NO	
	7	61	100	NO	NO	NO	
	8	61	100	NO	NO	NO	
	9	70	78	NO	NO	NO	
	10	75	65	YES	YES	YES	
	11	77	57	NO	NO	NO	
June 28, 2016	12	79	54	NO	NO	NO	
	1	81	51	NO	NO	NO	
	2	81	51	NO	NO	NO	
	3	82	51	NO	NO	NO	
	4	82	51	NO	NO	NO	
	5	81	51	NO	NO	NO	
	6	81	54	NO	NO	NO	
	7	81	51	NO	NO	NO	
	8	81	57	NO	NO	NO	
	9	75	57	YES	YES	YES	
	10	74	59	YES	YES	YES	
	11	72	64	YES	YES	YES	
June 9, 2016	12	72	63	YES	YES	YES	
	1	70	64	YES	YES	YES	
	2	68	70	NO	YES	YES	
	3	68	69	NO	YES	YES	
	4	66	71	NO	YES	YES	
	5	64	78	NO	NO	NO	
	6	66	73	NO	YES	YES	
	7	66	78	NO	NO	NO	
	8	70	73	NO	YES	YES	
	9	70	73	NO	YES	YES	
	10	73	72	NO	YES	YES	
	11	75	69	NO	YES	YES	
June 10, 2016	12	75	69	NO	YES	YES	
	1	75	73	NO	YES	YES	
	2	81	74	NO	NO	NO	
	3	81	65	NO	NO	NO	
	4	84	70	NO	NO	NO	
	5	84	62	NO	NO	NO	
	6	84	62	NO	NO	NO	
	7	81	70	NO	NO	NO	
	8	79	78	NO	NO	NO	
	9	77	78	NO	NO	NO	
	10	75	87	NO	NO	NO	
	11	73	90	NO	NO	NO	
June 11, 2016	12	72	90	NO	NO	NO	
	1	70	92	NO	NO	NO	
	2	70	93	NO	NO	NO	
	3	68	94	NO	NO	NO	
	4	68	93	NO	NO	NO	
	5	66	98	NO	NO	NO	
	6	64	100	NO	NO	NO	
	7	64	100	NO	NO	NO	
	8	68	94	NO	NO	NO	
	9	72	88	NO	NO	NO	
	10	75	69	NO	YES	YES	
	11	77	69	NO	NO	NO	
June 12, 2016	12	79	65	NO	NO	NO	
	1	82	58	NO	NO	NO	
	2	79	65	NO	NO	NO	
	3	82	73	NO	NO	NO	
	4	82	58	NO	NO	NO	
	5	82	48	NO	NO	NO	
	6	81	42	NO	NO	NO	
	7	77	48	NO	NO	NO	
	8	73	54	YES	YES	YES	
	9	73	57	YES	YES	YES	
	10	72	58	YES	YES	YES	
	11	70	61	YES	YES	YES	

June 13, 2016	12	61	53	NO	YES	YES	June 29, 2016	12	70	59	YES	YES	YES
	1	56	56	NO	NO	YES		1	66	64	YES	YES	YES
	2	59	57	NO	NO	YES		2	64	75	NO	YES	YES
	3	58	60	NO	NO	YES		3	59	77	NO	NO	NO
	4	56	67	NO	NO	YES		4	60	81	NO	NO	NO
	5	56	68	NO	NO	YES		5	59	82	NO	NO	NO
	6	55	67	NO	NO	YES		6	57	82	NO	NO	NO
	7	55	72	NO	NO	YES		7	57	82	NO	NO	NO
	8	55	72	NO	NO	YES		8	59	77	NO	NO	NO
	9	59	62	NO	NO	YES		9	59	82	NO	NO	NO
	10	59	62	NO	NO	YES		10	63	72	NO	YES	YES
June 14, 2016	11	63	55	NO	NO	YES		11	64	73	NO	YES	YES
	12	66	52	YES	YES	YES		12	66	64	YES	YES	YES
	1	68	49	YES	YES	YES		1	66	64	YES	YES	YES
	2	70	46	YES	YES	YES		2	70	56	YES	YES	YES
	3	72	46	YES	YES	YES		3	72	53	YES	YES	YES
	4	72	46	YES	YES	YES		4	70	60	YES	YES	YES
	5	72	50	YES	YES	YES		5	72	53	YES	YES	YES
	6	70	49	YES	YES	YES		6	72	53	YES	YES	YES
	7	68	52	YES	YES	YES		7	72	53	YES	YES	YES
	8	66	56	YES	YES	YES		8	70	53	YES	YES	YES
	9	66	56	YES	YES	YES		9	66	64	YES	YES	YES
June 15, 2016	10	64	54	NO	YES	YES		10	66	64	YES	YES	YES
	11	63	55	NO	YES	YES		11	62	72	NO	YES	YES
	12	62	57	NO	YES	YES	June 30, 2016	12	59	81	NO	NO	NO
	1	60	61	NO	YES	YES		1	57	88	NO	NO	NO
	2	58	66	NO	NO	YES		2	58	84	NO	NO	NO
	3	57	69	NO	NO	YES		3	55	92	NO	NO	NO
	4	55	71	NO	NO	YES		4	55	92	NO	NO	NO
	5	52	73	NO	NO	YES		5	54	95	NO	NO	NO
	6	52	76	NO	NO	YES		6	54	94	NO	NO	NO
	7	54	72	NO	NO	YES		7	55	94	NO	NO	NO
	8	55	72	NO	NO	YES		8	59	88	NO	NO	NO
	9	59	59	NO	NO	YES		9	64	73	NO	YES	YES
	10	61	59	NO	YES	YES		10	68	64	YES	YES	YES
June 16, 2016	11	63	52	NO	YES	YES		11	72	50	YES	YES	YES
	12	66	46	YES	YES	YES		12	73	47	YES	YES	YES
	1	70	43	YES	YES	YES		1	72	46	YES	YES	YES
	2	70	46	YES	YES	YES		2	77	41	NO	NO	NO
	3	73	38	YES	YES	YES		3	77	39	NO	NO	NO
	4	73	41	YES	YES	YES		4	75	41	YES	YES	YES
	5	75	38	YES	YES	YES		5	75	41	YES	YES	YES
	6	75	38	YES	YES	YES		6	75	47	YES	YES	YES
	7	73	44	YES	YES	YES		7	77	41	NO	NO	NO
	8	72	46	YES	YES	YES		8	73	44	YES	YES	YES
	9	66	60	YES	YES	YES		9	72	43	YES	YES	YES
	10	65	62	YES	YES	YES		10	69	55	YES	YES	YES
	11	64	61	NO	YES	YES		11	64	59	NO	YES	YES
June 16, 2016	12	60	70	NO	YES	YES	June 16, 2016	12	60	70	NO	YES	YES
	1	57	77	NO	NO	NO		1	57	77	NO	NO	NO
	2	56	81	NO	NO	NO		2	56	81	NO	NO	NO
	3	55	84	NO	NO	NO		3	55	84	NO	NO	NO
	4	54	89	NO	NO	NO		4	54	89	NO	NO	NO
	5	54	90	NO	NO	NO		5	54	90	NO	NO	NO
	6	52	94	NO	NO	NO		6	52	94	NO	NO	NO
	7	54	94	NO	NO	NO		7	54	94	NO	NO	NO
	8	57	82	NO	NO	NO		8	57	82	NO	NO	NO
	9	61	72	NO	YES	YES		9	61	72	NO	YES	YES
	10	64	73	NO	YES	YES		10	64	73	NO	YES	YES
June 16, 2016	11	68	64	YES	YES	YES		11	68	64	YES	YES	YES
	12	70	60	YES	YES	YES		12	70	60	YES	YES	YES
	1	70	64	YES	YES	YES		1	70	64	YES	YES	YES
	2	72	69	YES	YES	YES		2	72	69	YES	YES	YES
	3	75	61	YES	YES	YES		3	75	61	YES	YES	YES
	4	73	69	YES	YES	YES		4	73	69	YES	YES	YES
	5	75	65	YES	YES	YES		5	75	65	YES	YES	YES
	6	75	65	YES	YES	YES		6	75	65	YES	YES	YES
	7	73	73	NO	YES	YES		7	73	73	NO	YES	YES
	8	73	73	NO	YES	YES		8	73	73	NO	YES	YES
	9	68	73	NO	YES	YES		9	68	73	NO	YES	YES
	10	68	95	NO	NO	NO		10	68	95	NO	NO	NO
	11	68	93	NO	NO	NO		11	68	93	NO	NO	NO
June 16, 2016	12	67	95	NO	NO	NO		12	67	95	NO	NO	NO
	1	68	97	NO	NO	NO		1	68	97	NO	NO	NO
	2	67	96	NO	NO	NO		2	67	96	NO	NO	NO
	3	67	98	NO	NO	NO		3	67	98	NO	NO	NO
	4	67	98	NO	NO	NO		4	67	98	NO	NO	NO
	5	66	97	NO	NO	NO		5	66	97	NO	NO	NO
	6	66	98	NO	NO	NO		6	66	98	NO	NO	NO
	7	65	99	NO	NO	NO		7	65	99	NO	NO	NO
	8	64	99	NO	NO	NO		8	64	99	NO	NO	NO
	9	63	100	NO	NO	NO		9	63	100	NO	NO	NO
	10	63	100	NO	NO	NO		10	63	100	NO	NO	NO
	11	64	94	NO	NO	NO		11	64	94	NO	NO	NO
	12	68	88	NO	NO	NO		12	68	88	NO	NO	NO
	1	66	88	NO	NO	NO		1	66	88	NO	NO	NO
	2	66	78	NO	NO	NO		2	66	78	NO	NO	NO
	3	70	73	NO	YES	YES		3	70	73	NO	YES	YES
	4	72	73	NO	YES	YES		4	72	73	NO	YES	YES
	5	73	83	NO	NO	NO		5	73	83	NO	NO	NO
	6	72	88	NO	NO	NO		6	72	88	NO	NO	NO
	7	66	94	NO	NO	NO		7	66	94	NO	NO	NO
	8	66	94	NO	NO	NO		8	66	94	NO	NO	NO
	9	66	94	NO	NO	NO		9	66	94	NO	NO	NO
	10	65	94	NO	NO	NO		10	65	94	NO	NO	NO
	11	64	94	NO	NO	NO		11	64	94	NO	NO	NO

July Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)		Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
July 1	12	66	58	YES	YES	YES	July 17	12	70	75	NO	YES	YES	
	1	61	69	NO	YES	YES		1	69	80	NO	NO	NO	
	2	61	72	NO	YES	YES		2	70	75	NO	YES	YES	
	3	59	77	NO	NO	NO		3	68	82	NO	NO	NO	
	4	58	81	NO	NO	NO		4	64	88	NO	NO	NO	
	5	58	87	NO	NO	NO		5	64	89	NO	NO	NO	
	6	57	88	NO	NO	NO		6	63	94	NO	NO	NO	
	7	59	82	NO	NO	NO		7	63	94	NO	NO	NO	
	8	51	82	NO	NO	NO		8	68	83	NO	NO	NO	
	9	53	82	NO	NO	NO		9	70	78	NO	NO	NO	
	10	68	78	NO	NO	NO		10	75	65	YES	YES	YES	
July 2, 2016	11	72	73	NO	YES	YES		11	75	61	YES	YES	YES	
	12	77	57	NO	NO	NO		12	79	54	NO	NO	NO	
	1	77	54	NO	NO	NO		1	82	45	NO	NO	NO	
	2	77	54	NO	NO	NO		2	84	37	NO	NO	NO	
	3	81	42	NO	NO	NO		3	86	35	NO	NO	NO	
	4	81	43	NO	NO	NO		4	86	37	NO	NO	NO	
	5	79	47	NO	NO	NO		5	86	37	NO	NO	NO	
	6	79	47	NO	NO	NO		6	86	37	NO	NO	NO	
	7	77	50	NO	NO	NO		7	84	40	NO	NO	NO	
	8	73	61	YES	YES	YES		8	81	45	NO	NO	NO	
	9	70	64	YES	YES	YES		9	75	57	YES	YES	YES	
July 3, 2016	10	69	68	NO	YES	YES	July 18, 2016	10	73	62	YES	YES	YES	
	11	68	69	NO	YES	YES		11	72	61	YES	YES	YES	
	12	66	69	NO	YES	YES		12	71	59	YES	YES	YES	
	1	64	70	NO	YES	YES		1	70	68	NO	YES	YES	
	2	62	71	NO	YES	YES		2	69	72	NO	YES	YES	
	3	60	72	NO	YES	YES		3	69	73	NO	YES	YES	
	4	55	83	NO	NO	NO		4	69	75	NO	YES	YES	
	5	56	82	NO	NO	NO		5	71	75	NO	YES	YES	
	6	57	77	NO	NO	NO		6	70	83	NO	NO	NO	
	7	57	77	NO	NO	NO		7	72	78	NO	NO	NO	
	8	59	72	NO	NO	YES		8	77	69	NO	NO	NO	
July 4, 2016	9	51	68	NO	NO	NO	July 19, 2016	9	79	69	NO	NO	NO	
	10	54	59	NO	NO	NO		10	81	65	NO	NO	NO	
	11	58	49	NO	NO	YES		11	84	55	NO	NO	NO	
	12	70	40	YES	YES	YES		12	84	61	NO	NO	NO	
	1	72	35	YES	YES	YES		1	81	65	NO	NO	NO	
	2	72	38	YES	YES	YES		2	84	55	NO	NO	NO	
	3	72	43	YES	YES	YES		3	86	51	NO	NO	NO	
	4	84	27	NO	NO	NO		4	86	51	NO	NO	NO	
	5	75	38	YES	YES	YES		5	86	55	NO	NO	NO	
	6	73	38	YES	YES	YES		6	85	55	NO	NO	NO	
	7	73	43	YES	YES	YES		7	86	48	NO	NO	NO	
July 5, 2016	8	72	52	YES	YES	YES	July 20, 2016	8	84	55	NO	NO	NO	
	9	68	66	NO	YES	YES		9	81	54	NO	NO	NO	
	10	62	72	NO	YES	YES		10	78	59	NO	NO	NO	
	11	61	70	NO	YES	YES		11	76	63	NO	NO	NO	
	12	62	65	YES	YES	YES		12	74	66	NO	YES	YES	
	1	60	70	NO	YES	YES		1	74	65	YES	YES	YES	
	2	58	74	NO	YES	YES		2	69	77	NO	NO	NO	
	3	58	77	NO	NO	NO		3	67	82	NO	NO	NO	
	4	53	81	NO	NO	NO		4	64	90	NO	NO	NO	
	5	55	83	NO	NO	NO		5	63	91	NO	NO	NO	
	6	54	88	NO	NO	NO		6	64	88	NO	NO	NO	
July 6, 2016	7	57	82	NO	NO	NO	July 21, 2016	7	66	78	NO	NO	NO	
	8	59	77	NO	NO	NO		8	70	60	YES	YES	YES	
	9	63	72	NO	YES	YES		9	72	50	YES	YES	YES	
	10	68	56	YES	YES	YES		10	75	46	YES	YES	YES	
	11	70	56	YES	YES	YES		11	77	41	NO	NO	NO	
	12	72	50	YES	YES	YES		12	79	39	NO	NO	NO	
	1	72	43	YES	YES	YES		1	82	34	NO	NO	NO	
	2	73	41	YES	YES	YES		2	84	32	NO	NO	NO	
	3	75	36	YES	YES	YES		3	82	32	NO	NO	NO	
	4	73	41	YES	YES	YES		4	84	30	NO	NO	NO	
	5	73	44	YES	YES	YES		5	82	35	NO	NO	NO	
July 7, 2016	6	73	44	YES	YES	YES	July 22, 2016	6	81	35	NO	NO	NO	
	7	72	52	YES	YES	YES		7	79	35	NO	NO	NO	
	8	70	60	YES	YES	YES		8	75	37	YES	YES	YES	
	9	68	74	NO	YES	YES		9	73	39	YES	YES	YES	
	10	65	79	NO	NO	NO		10	73	44	YES	YES	YES	
	11	62	83	NO	NO	NO		11	71	47	YES	YES	YES	
	12	62	83	NO	NO	NO		12	68	62	YES	YES	YES	
	1	60	87	NO	NO	NO		1	67	65	YES	YES	YES	
	2	60	85	NO	NO	NO		2	62	72	NO	YES	YES	
	3	58	90	NO	NO	NO		3	62	74	NO	YES	YES	
	4	57	92	NO	NO	NO		4	62	75	NO	YES	YES	
July 8, 2016	5	56	94	NO	NO	NO	July 23, 2016	5	57	90	NO	NO	NO	
	6	54	95	NO	NO	NO		6	55	94	NO	NO	NO	
	7	55	100	NO	NO	NO		7	57	88	NO	NO	NO	
	8	59	100	NO	NO	NO		8	59	88	NO	NO	NO	
	9	61	94	NO	NO	NO		9	66	68	NO	YES	YES	
	10	64	88	NO	NO	NO		10	70	56	YES	YES	YES	
	11	68	77	NO	NO	NO		11	72	50	YES	YES	YES	
	12	72	73	NO	YES	YES		12	75	41	YES	YES	YES	
	1	72	64	YES	YES	YES		1	77	41	NO	NO	NO	
	2	72	69	NO	YES	YES		2	79	39	NO	NO	NO	
	3	72	73	NO	YES	YES		3	81	37	NO	NO	NO	
July 9, 2016	4	70	73	NO	YES	YES	July 24, 2016	4	81	37	NO	NO	NO	
	5	70	78	NO	NO	NO		5	82	35	NO	NO	NO	
	6	70	83	NO	NO	NO		6	81	35	NO	NO	NO	
	7	68	88	NO	NO	NO		7	81	37	NO	NO	NO	
	8	66	94	NO	NO	NO		8	80	37	NO	NO	NO	
	9	66	94	NO	NO	NO		9	75	47	YES	YES	YES	
	10	66	97	NO	NO	NO		10	72	52	YES	YES	YES	
	11	66	98	NO	NO	NO		11	72	49	YES	YES	YES	

July 5, 2016	12	66	98	NO	NO	NO	July 21, 2016	12	65	66	NO	YES	YES
	1	66	97	NO	NO	NO		1	66	61	YES	YES	YES
	2	66	98	NO	NO	NO		2	61	74	NO	YES	YES
	3	66	98	NO	NO	NO		3	59	81	NO	NO	NO
	4	66	98	NO	NO	NO		4	59	83	NO	NO	NO
	5	66	99	NO	NO	NO		5	58	86	NO	NO	NO
	6	66	100	NO	NO	NO		6	57	88	NO	NO	NO
	7	68	94	NO	NO	NO		7	57	88	NO	NO	NO
	8	68	94	NO	NO	NO		8	63	77	NO	NO	NO
	9	70	88	NO	NO	NO		9	68	68	NO	YES	YES
	10	73	83	NO	NO	NO		10	73	57	YES	YES	YES
July 6, 2016	11	73	83	NO	NO	NO	July 22, 2016	11	77	50	NO	NO	NO
	12	75	78	NO	NO	NO		12	82	37	NO	NO	NO
	1	79	69	NO	NO	NO		1	84	35	NO	NO	NO
	2	79	69	NO	NO	NO		2	84	35	NO	NO	NO
	3	82	62	NO	NO	NO		3	88	31	NO	NO	NO
	4	84	55	NO	NO	NO		4	88	29	NO	NO	NO
	5	84	55	NO	NO	NO		5	88	27	NO	NO	NO
	6	84	55	NO	NO	NO		6	88	28	NO	NO	NO
	7	84	55	NO	NO	NO		7	84	30	NO	NO	NO
	8	82	58	NO	NO	NO		8	81	42	NO	NO	NO
	9	79	65	NO	NO	NO		9	79	42	NO	NO	NO
July 7, 2016	10	76	73	NO	NO	NO	July 23, 2016	10	75	52	YES	YES	YES
	11	71	83	NO	NO	NO		11	71	63	YES	YES	YES
	12	70	87	NO	NO	NO		12	72	62	YES	YES	YES
	1	71	94	NO	NO	NO		1	71	66	NO	YES	YES
	2	68	95	NO	NO	NO		2	69	70	NO	YES	YES
	3	67	98	NO	NO	NO		3	70	69	NO	YES	YES
	4	66	98	NO	NO	NO		4	69	71	NO	YES	YES
	5	66	96	NO	NO	NO		5	71	73	NO	YES	YES
	6	66	94	NO	NO	NO		6	70	78	NO	NO	NO
	7	68	94	NO	NO	NO		7	70	78	NO	NO	NO
	8	72	88	NO	NO	NO		8	73	73	NO	YES	YES
July 8, 2016	9	73	88	NO	NO	NO	July 24, 2016	9	77	69	NO	NO	NO
	10	77	78	NO	NO	NO		10	79	65	NO	NO	NO
	11	79	74	NO	NO	NO		11	82	54	NO	NO	NO
	12	82	86	NO	NO	NO		12	79	65	NO	NO	NO
	1	84	92	NO	NO	NO		1	82	58	NO	NO	NO
	2	86	88	NO	NO	NO		2	82	51	NO	NO	NO
	3	88	90	NO	NO	NO		3	88	43	NO	NO	NO
	4	66	94	NO	NO	NO		4	90	40	NO	NO	NO
	5	66	96	NO	NO	NO		5	90	46	NO	NO	NO
	6	66	94	NO	NO	NO		6	90	49	NO	NO	NO
	7	68	94	NO	NO	NO		7	88	52	NO	NO	NO
July 9, 2016	8	72	88	NO	NO	NO	July 25, 2016	8	86	55	NO	NO	NO
	9	73	88	NO	NO	NO		9	82	62	NO	NO	NO
	10	77	78	NO	NO	NO		10	81	67	NO	NO	NO
	11	79	74	NO	NO	NO		11	80	71	NO	NO	NO
	12	82	62	NO	NO	NO		12	79	75	NO	NO	NO
	1	75	63	YES	YES	YES		1	78	76	NO	NO	NO
	2	71	75	NO	YES	YES		2	77	77	NO	NO	NO
	3	71	78	NO	NO	NO		3	76	78	NO	NO	NO
	4	71	81	NO	NO	NO		4	76	79	NO	NO	NO
	5	71	87	NO	NO	NO		5	72	88	NO	NO	NO
	6	68	88	NO	NO	NO		6	72	88	NO	NO	NO
July 10, 2016	7	70	83	NO	NO	NO	July 26, 2016	7	75	83	NO	NO	NO
	8	72	88	NO	NO	NO		8	75	83	NO	NO	NO
	9	75	78	NO	NO	NO		9	77	78	NO	NO	NO
	10	75	78	NO	NO	NO		10	82	70	NO	NO	NO
	11	79	69	NO	NO	NO		11	81	70	NO	NO	NO
	12	82	62	NO	NO	NO		12	86	58	NO	NO	NO
	1	82	62	NO	NO	NO		1	90	43	NO	NO	NO
	2	84	58	NO	NO	NO		2	91	38	NO	NO	NO
	3	86	51	NO	NO	NO		3	93	32	NO	NO	NO
	4	84	58	NO	NO	NO		4	93	28	NO	NO	NO
	5	84	58	NO	NO	NO		5	93	26	NO	NO	NO
July 11, 2016	6	84	62	NO	NO	NO	July 27, 2016	6	91	28	NO	NO	NO
	7	84	66	NO	NO	NO		7	91	29	NO	NO	NO
	8	82	70	NO	NO	NO		8	88	33	NO	NO	NO
	9	81	75	NO	NO	NO		9	84	35	NO	NO	NO
	10	78	74	NO	NO	NO		10	82	37	NO	NO	NO
	11	77	70	NO	NO	NO		11	80	41	NO	NO	NO
	12	75	74	NO	YES	YES		12	77	47	NO	NO	NO
	1	72	78	NO	NO	NO		1	72	57	YES	YES	YES
	2	72	82	NO	NO	NO		2	70	62	YES	YES	YES
	3	69	89	NO	NO	NO		3	69	65	YES	YES	YES
	4	68	93	NO	NO	NO		4	66	72	NO	YES	YES
July 12, 2016	5	70	92	NO	NO	NO	July 28, 2016	5	64	75	NO	YES	YES
	6	68	95	NO	NO	NO		6	63	82	NO	NO	NO
	7	70	93	NO	NO	NO		7	64	77	NO	NO	NO
	8	72	94	NO	NO	NO		8	68	73	NO	YES	YES
	9	73	88	NO	NO	NO		9	73	65	YES	YES	YES
	10	75	73	NO	YES	YES		10	79	57	NO	NO	NO
	11	77	78	NO	NO	NO		11	82	51	NO	NO	NO
	12	75	74	NO	YES	YES		12	84	45	NO	NO	NO
	1	77	89	NO	NO	NO		1	86	40	NO	NO	NO
	2	70	100	NO	NO	NO		2	88	40	NO	NO	NO
	3	72	94	NO	NO	NO		3	93	34	NO	NO	NO
July 13, 2016	4	75	89	NO	NO	NO	July 29, 2016	4	93	34	NO	NO	NO
	5	79	78	NO	NO	NO		5	90	40	NO	NO	NO
	6	79	78	NO	NO	NO		6	88	49	NO	NO	NO
	7	79	78	NO	NO	NO		7	70	100	NO	NO	NO
	8	77	83	NO	NO	NO		8	72	94	NO	NO	NO
	9	73	94	NO	NO	NO		9	72	94	NO	NO	NO
	10	74	93	NO	NO	NO		10	72	97	NO	NO	NO
	11	73	93	NO	NO	NO		11	72	98	NO	NO	NO

July 9, 2016	12	73	93	NO	NO	NO	July 25, 2016	12	71	97	NO	NO	NO
	1	72	93	NO	NO	NO		1	70	97	NO	NO	NO
	2	70	93	NO	NO	NO		2	69	96	NO	NO	NO
	3	70	94	NO	NO	NO		3	70	97	NO	NO	NO
	4	70	95	NO	NO	NO		4	70	98	NO	NO	NO
	5	70	93	NO	NO	NO		5	70	98	NO	NO	NO
	6	72	88	NO	NO	NO		6	68	100	NO	NO	NO
	7	72	88	NO	NO	NO		7	70	100	NO	NO	NO
	8	73	83	NO	NO	NO		8	72	94	NO	NO	NO
	9	75	78	NO	NO	NO		9	75	89	NO	NO	NO
	10	79	65	NO	NO	NO		10	79	83	NO	NO	NO
July 10, 2016	11	71	58	YES	YES	YES	July 26, 2016	11	82	79	NO	NO	NO
	12	72	51	YES	YES	YES		12	86	70	NO	NO	NO
	1	72	48	YES	YES	YES		1	88	66	NO	NO	NO
	2	74	51	YES	YES	YES		2	91	55	NO	NO	NO
	3	72	45	YES	YES	YES		3	93	47	NO	NO	NO
	4	72	48	YES	YES	YES		4	95	83	NO	NO	NO
	5	74	49	YES	YES	YES		5	75	83	NO	NO	NO
	6	79	53	NO	NO	NO		6	75	83	NO	NO	NO
	7	77	58	NO	NO	NO		7	75	83	NO	NO	NO
	8	75	61	YES	YES	YES		8	77	83	NO	NO	NO
	9	73	63	YES	YES	YES		9	75	89	NO	NO	NO
July 11, 2016	10	72	65	YES	YES	YES	July 27, 2016	10	74	87	NO	NO	NO
	11	70	67	NO	YES	YES		11	72	95	NO	NO	NO
	12	67	69	NO	YES	YES		12	70	90	NO	NO	NO
	1	67	73	NO	YES	YES		1	73	93	NO	NO	NO
	2	74	74	NO	YES	YES		2	73	93	NO	NO	NO
	3	65	75	NO	YES	YES		3	73	90	NO	NO	NO
	4	65	77	NO	NO	NO		4	71	93	NO	NO	NO
	5	65	79	NO	NO	NO		5	70	97	NO	NO	NO
	6	66	78	NO	NO	NO		6	70	100	NO	NO	NO
	7	66	78	NO	NO	NO		7	70	94	NO	NO	NO
	8	66	78	NO	NO	NO		8	73	88	NO	NO	NO
July 12, 2016	9	68	73	NO	YES	YES	July 28, 2016	9	75	83	NO	NO	NO
	10	70	68	NO	YES	YES		10	75	78	NO	NO	NO
	11	72	60	YES	YES	YES		11	81	65	NO	NO	NO
	12	75	53	YES	YES	YES		12	82	54	NO	NO	NO
	1	77	47	NO	NO	NO		1	84	48	NO	NO	NO
	2	79	42	NO	NO	NO		2	86	45	NO	NO	NO
	3	81	42	NO	NO	NO		3	88	38	NO	NO	NO
	4	81	39	NO	NO	NO		4	88	38	NO	NO	NO
	5	81	39	NO	NO	NO		5	88	35	NO	NO	NO
	6	81	39	NO	NO	NO		6	88	35	NO	NO	NO
	7	79	42	NO	NO	NO		7	86	37	NO	NO	NO
July 9, 2016	8	77	44	NO	NO	NO	July 25, 2016	8	82	42	NO	NO	NO
	9	71	55	YES	YES	YES		9	81	45	NO	NO	NO
	10	64	57	YES	YES	YES		10	78	48	NO	NO	NO
	11	65	69	NO	YES	YES		11	71	65	YES	YES	YES
	12	67	62	YES	YES	YES		12	76	54	NO	NO	NO
	1	63	67	NO	YES	YES		1	72	64	YES	YES	YES
	2	58	74	NO	NO	YES		2	69	72	NO	YES	YES
	3	61	81	NO	NO	NO		3	68	76	NO	NO	NO
	4	57	88	NO	NO	NO		4	65	83	NO	NO	NO
	5	56	93	NO	NO	NO		5	66	81	NO	NO	NO
	6	55	91	NO	NO	NO		6	64	88	NO	NO	NO
July 10, 2016	7	55	94	NO	NO	NO	July 26, 2016	7	63	94	NO	NO	NO
	8	61	82	NO	NO	NO		8	64	94	NO	NO	NO
	9	64	77	NO	NO	NO		9	72	73	NO	YES	YES
	10	70	64	YES	YES	YES		10	75	65	YES	YES	YES
	11	73	57	YES	YES	YES		11	79	57	NO	NO	NO
	12	77	50	NO	NO	NO		12	81	54	NO	NO	NO
	1	79	47	NO	NO	NO		1	82	51	NO	NO	NO
	2	81	45	NO	NO	NO		2	84	37	NO	NO	NO
	3	82	39	NO	NO	NO		3	86	37	NO	NO	NO
	4	82	35	NO	NO	NO		4	86	37	NO	NO	NO
	5	84	39	NO	NO	NO		5	86	35	NO	NO	NO
July 11, 2016	6	82	37	NO	NO	NO	July 27, 2016	6	86	37	NO	NO	NO
	7	77	39	NO	NO	NO		7	86	38	NO	NO	NO
	8	77	61	NO	NO	NO		8	82	48	NO	NO	NO
	9	71	57	YES	YES	YES		9	81	45	NO	NO	NO
	10	70	73	NO	YES	YES		10	75	62	YES	YES	YES
	11	69	74	NO	YES	YES		11	73	60	YES	YES	YES
	12	69	72	NO	YES	YES	July 28, 2016	12	71	69	NO	YES	YES
	1	68	72	NO	YES	YES		1	69	71	NO	YES	YES
	2	67	75	NO	YES	YES		2	68	72	YES	YES	YES
	3	64	82	NO	NO	NO		3	67	75	NO	YES	YES
	4	64	84	NO	NO	NO		4	65	80	NO	NO	NO
	5	63	86	NO	NO	NO		5	62	90	NO	NO	NO
	6	61	94	NO	NO	NO		6	63	88	NO	NO	NO
	7	61	94	NO	NO	NO		7	63	88	NO	NO	NO
	8	64	88	NO	NO	NO		8	66	83	NO	NO	NO
	9	70	78	NO	NO	NO		9	70	78	NO	NO	NO
	10	73	69	NO	NO	NO		10	73	73	NO	YES	YES
July 12, 2016	11	77	61	NO	NO	NO	July 28, 2016	11	73	65	YES	YES	YES
	12	81	58	NO	NO	NO		12	75	69	NO	YES	YES
	1	82	54	NO	NO	NO		1	77	65	NO	NO	NO
	2	82	54	NO	NO	NO		2	77	69	NO	NO	NO
	3	84	51	NO	NO	NO		3	79	65	NO	NO	NO
	4	84	51	NO	NO	NO		4	75	73	NO	YES	YES
	5	86	51	NO	NO	NO		5	75	73	NO	YES	YES
	6	84	58	NO	NO	NO		6	73	83	NO	NO	NO
	7	82	61	NO	NO	NO		7	72	88	NO	NO	NO
	8	81	65	NO	NO	NO		8	70	94	NO	NO	NO
	9	79	73	NO	NO	NO		9	70	94	NO	NO	NO
July 9, 2016	10	77	74	NO	NO	NO	July 25, 2016	10	69	96	NO	NO	NO
	11	76	79	NO	NO	NO		11	68	98	NO	NO	NO

July 13, 2016	12	76	78	NO	NO	NO	July 29, 2016	12	68	98	NO	NO	NO
	1	75	80	NO	NO	NO		1	68	98	NO	NO	NO
	2	75	81	NO	NO	NO		2	67	99	NO	NO	NO
	3	75	82	NO	NO	NO		3	67	99	NO	NO	NO
	4	72	93	NO	NO	NO		4	66	99	NO	NO	NO
	5	72	94	NO	NO	NO		5	66	99	NO	NO	NO
	6	72	94	NO	NO	NO		6	64	100	NO	NO	NO
	7	70	100	NO	NO	NO		7	64	100	NO	NO	NO
	8	73	88	NO	NO	NO		8	66	94	NO	NO	NO
	9	73	88	NO	NO	NO		9	68	100	NO	NO	NO
	10	75	85	NO	NO	NO		10	72	88	NO	NO	NO
July 14, 2016	11	77	83	NO	NO	NO	July 30, 2016	11	77	74	NO	NO	NO
	12	79	74	NO	NO	NO		12	79	69	NO	NO	NO
	1	77	83	NO	NO	NO		1	82	58	NO	NO	NO
	2	79	83	NO	NO	NO		2	84	55	NO	NO	NO
	3	81	79	NO	NO	NO		3	82	58	NO	NO	NO
	4	84	75	NO	NO	NO		4	84	48	NO	NO	NO
	5	84	66	NO	NO	NO		5	82	43	NO	NO	NO
	6	86	58	NO	NO	NO		6	79	58	NO	NO	NO
	7	84	62	NO	NO	NO		7	77	61	NO	NO	NO
	8	82	66	NO	NO	NO		8	73	69	NO	NO	NO
	9	81	70	NO	NO	NO		9	72	73	NO	YES	YES
July 15, 2016	10	78	76	NO	NO	NO	July 31, 2016	10	72	77	NO	NO	NO
	11	76	83	NO	NO	NO		11	69	83	NO	NO	NO
	12	76	83	NO	NO	NO		12	69	84	NO	NO	NO
	1	74	88	NO	NO	NO		1	68	88	NO	NO	NO
	2	73	90	NO	NO	NO		2	67	94	NO	NO	NO
	3	73	93	NO	NO	NO		3	65	96	NO	NO	NO
	4	72	95	NO	NO	NO		4	66	98	NO	NO	NO
	5	72	95	NO	NO	NO		5	65	99	NO	NO	NO
	6	70	100	NO	NO	NO		6	64	100	NO	NO	NO
	7	72	94	NO	NO	NO		7	64	94	NO	NO	NO
	8	73	94	NO	NO	NO		8	66	88	NO	NO	NO
July 16, 2016	9	77	83	NO	NO	NO		9	68	83	NO	NO	NO
	10	77	74	NO	NO	NO		10	70	88	NO	NO	NO
	11	75	78	NO	NO	NO		11	70	88	NO	NO	NO
	12	81	61	NO	NO	NO		12	70	94	NO	NO	NO
	1	82	58	NO	NO	NO		1	70	94	NO	NO	NO
	2	84	51	NO	NO	NO		2	70	94	NO	NO	NO
	3	88	49	NO	NO	NO		3	72	88	NO	NO	NO
	4	90	40	NO	NO	NO		4	72	94	NO	NO	NO
	5	90	38	NO	NO	NO		5	72	94	NO	NO	NO
	6	90	40	NO	NO	NO		6	72	88	NO	NO	NO
	7	96	48	NO	NO	NO		7	70	88	NO	NO	NO
July 17, 2016	8	82	54	NO	NO	NO	July 22, 2016	8	70	94	NO	NO	NO
	9	79	61	NO	NO	NO		9	70	94	NO	NO	NO
	10	77	68	NO	NO	NO		10	69	97	NO	NO	NO
	11	76	70	NO	NO	NO		11	69	97	NO	NO	NO
	12	75	74	NO	NO	NO		12	68	98	NO	NO	NO
	1	73	80	NO	NO	NO		1	69	98	NO	NO	NO
	2	72	84	NO	NO	NO		2	69	98	NO	NO	NO
	3	72	85	NO	NO	NO		3	69	99	NO	NO	NO
	4	72	84	NO	NO	NO		4	68	99	NO	NO	NO
	5	68	90	NO	NO	NO		5	68	99	NO	NO	NO
	6	68	90	NO	NO	NO		6	68	100	NO	NO	NO
July 18, 2016	7	70	88	NO	NO	NO		7	68	100	NO	NO	NO
	8	73	78	NO	NO	NO		8	70	95	NO	NO	NO
	9	75	73	NO	YES	YES		9	70	100	NO	NO	NO
	10	75	69	NO	YES	YES		10	73	88	NO	NO	NO
	11	77	65	NO	NO	NO		11	75	78	NO	NO	NO
	12	79	61	NO	NO	NO		12	77	74	NO	NO	NO
	1	82	51	NO	NO	NO		1	81	65	NO	NO	NO
	2	84	45	NO	NO	NO		2	82	62	NO	NO	NO
	3	86	40	NO	NO	NO		3	82	62	NO	NO	NO
	4	88	40	NO	NO	NO		4	84	58	NO	NO	NO
	5	86	43	NO	NO	NO		5	86	51	NO	NO	NO
July 19, 2016	6	82	48	NO	NO	NO		6	86	51	NO	NO	NO
	7	77	61	NO	NO	NO		7	82	62	NO	NO	NO
	8	75	69	NO	YES	YES		8	81	65	NO	NO	NO
	9	73	69	NO	YES	YES		9	73	69	NO	YES	YES
	10	74	71	NO	YES	YES		10	70	86	NO	NO	NO
	11	71	79	NO	NO	NO		11	71	86	NO	NO	NO
	12	70	83	NO	NO	NO							
	1	69	85	NO	NO	NO							
	2	69	85	NO	NO	NO							
	3	66	93	NO	NO	NO							
	4	65	91	NO	NO	NO							
	5	64	96	NO	NO	NO							
July 20, 2016	6	64	94	NO	NO	NO							
	7	64	94	NO	NO	NO							
	8	66	94	NO	NO	NO							
	9	70	83	NO	NO	NO							
	10	73	73	NO	NO	NO							
	11	75	73	NO	NO	NO							
	12	79	65	NO	NO	NO							
	1	79	65	NO	NO	NO							
	2	81	54	NO	NO	NO							
	3	81	54	NO	NO	NO							
	4	82	54	NO	NO	NO							
	5	82	54	NO	NO	NO							
July 21, 2016	6	82	54	NO	NO	NO							
	7	82	54	NO	NO	NO							
	8	81	51	NO	NO	NO							
	9	77	61	NO	NO	NO							
	10	76	65	NO	NO	NO							
	11	74	66	NO	YES	YES							

August Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	
August 1	12	67	95	NO	NO	NO	August 17	12	71	96	NO	NO	NO	
	1	68	93	NO	NO	NO		1	71	97	NO	NO	NO	
	2	66	92	NO	NO	NO		2	71	97	NO	NO	NO	
	3	66	93	NO	NO	NO		3	71	95	NO	NO	NO	
	4	65	96	NO	NO	NO		4	71	92	NO	NO	NO	
	5	65	96	NO	NO	NO		5	71	88	NO	NO	NO	
	6	64	99	NO	NO	NO		6	70	88	NO	NO	NO	
	7	64	100	NO	NO	NO		7	70	83	NO	NO	NO	
	8	66	100	NO	NO	NO		8	70	88	NO	NO	NO	
	9	68	100	NO	NO	NO		9	72	78	NO	NO	NO	
	10	72	88	NO	NO	NO		10	73	78	NO	NO	NO	
	11	75	78	NO	NO	NO		11	73	73	NO	YES	YES	
	12	81	70	NO	NO	NO		12	73	73	NO	YES	YES	
	1	82	58	NO	NO	NO		1	73	73	NO	YES	YES	
	2	84	55	NO	NO	NO		2	75	73	NO	YES	YES	
	3	72	51	YES	YES	YES		3	77	69	NO	NO	NO	
	4	79	65	NO	NO	NO		4	75	78	NO	NO	NO	
	5	81	58	NO	NO	NO		5	75	69	NO	YES	YES	
	6	82	58	NO	NO	NO		6	75	69	NO	YES	YES	
	7	73	51	YES	YES	YES		7	73	83	NO	NO	NO	
	8	72	83	NO	NO	NO		8	72	94	NO	NO	NO	
	9	70	88	NO	NO	NO		9	70	88	NO	NO	NO	
10	69	92	NO	NO	NO	10	70	92	NO	NO	NO			
11	68	93	NO	NO	NO	11	69	98	NO	NO	NO			
August 2, 2016	12	66	98	NO	NO	NO	August 18, 2016	12	68	96	NO	NO	NO	
	1	65	100	NO	NO	NO		1	66	97	NO	NO	NO	
	2	64	99	NO	NO	NO		2	67	98	NO	NO	NO	
	3	64	99	NO	NO	NO		3	66	99	NO	NO	NO	
	4	63	100	NO	NO	NO		4	66	99	NO	NO	NO	
	5	63	99	NO	NO	NO		5	66	100	NO	NO	NO	
	6	64	100	NO	NO	NO		6	64	100	NO	NO	NO	
	7	64	100	NO	NO	NO		7	64	100	NO	NO	NO	
	8	66	100	NO	NO	NO		8	64	100	NO	NO	NO	
	9	66	100	NO	NO	NO		9	70	99	NO	NO	NO	
	10	68	94	NO	NO	NO		10	73	83	NO	NO	NO	
	11	69	83	NO	NO	NO		11	77	78	NO	NO	NO	
	12	73	73	NO	YES	YES		12	79	59	NO	NO	NO	
	1	77	65	NO	NO	NO		1	82	58	NO	NO	NO	
	2	81	54	NO	NO	NO		2	82	54	NO	NO	NO	
	3	82	51	NO	NO	NO		3	82	54	NO	NO	NO	
	4	82	45	NO	NO	NO		4	82	58	NO	NO	NO	
	5	82	42	NO	NO	NO		5	82	54	NO	NO	NO	
	6	82	51	NO	NO	NO		6	79	61	NO	NO	NO	
	7	82	65	NO	NO	NO		7	79	65	NO	NO	NO	
	8	79	71	NO	NO	NO		8	77	69	NO	NO	NO	
	9	75	65	YES	YES	YES		9	75	73	NO	YES	YES	
10	72	71	NO	YES	YES	10	74	75	NO	YES	YES			
11	71	74	NO	YES	YES	11	70	86	NO	NO	NO			
August 3, 2016	12	70	83	NO	NO	NO	August 19, 2016	12	70	89	NO	NO	NO	
	1	71	82	NO	NO	NO		1	68	93	NO	NO	NO	
	2	70	82	NO	NO	NO		2	66	96	NO	NO	NO	
	3	70	83	NO	NO	NO		3	68	89	NO	NO	NO	
	4	69	84	NO	NO	NO		4	65	98	NO	NO	NO	
	5	69	87	NO	NO	NO		5	64	98	NO	NO	NO	
	6	68	88	NO	NO	NO		6	63	99	NO	NO	NO	
	7	68	88	NO	NO	NO		7	63	100	NO	NO	NO	
	8	68	88	NO	NO	NO		8	63	100	NO	NO	NO	
	9	70	83	NO	NO	NO		9	64	100	NO	NO	NO	
	10	72	78	NO	NO	NO		10	66	94	NO	NO	NO	
	11	73	73	NO	YES	YES		11	70	88	NO	NO	NO	
	12	75	69	NO	YES	YES		12	75	78	NO	NO	NO	
	1	77	65	NO	NO	NO		1	77	74	NO	NO	NO	
	2	79	57	NO	NO	NO		2	81	58	NO	NO	NO	
	3	81	54	NO	NO	NO		3	81	54	NO	NO	NO	
	4	79	54	NO	NO	NO		4	82	54	NO	NO	NO	
	5	81	51	NO	NO	NO		5	82	51	NO	NO	NO	
	6	81	51	NO	NO	NO		6	82	51	NO	NO	NO	
	7	79	57	NO	NO	NO		7	81	61	NO	NO	NO	
	8	77	57	NO	NO	NO		8	79	54	NO	NO	NO	
	9	73	69	NO	YES	YES		9	73	73	NO	YES	YES	
10	72	71	NO	YES	YES	10	72	75	NO	YES	YES			
11	71	74	NO	YES	YES	11	71	76	NO	NO	NO			
August 4, 2016	12	71	77	NO	NO	NO	August 20, 2016	12	69	81	NO	NO	NO	
	1	70	78	NO	NO	NO		1	69	85	NO	NO	NO	
	2	69	81	NO	NO	NO		2	66	93	NO	NO	NO	
	3	68	84	NO	NO	NO		3	68	87	NO	NO	NO	
	4	69	81	NO	NO	NO		4	66	91	NO	NO	NO	
	5	66	87	NO	NO	NO		5	64	96	NO	NO	NO	
	6	66	90	NO	NO	NO		6	64	94	NO	NO	NO	
	7	64	88	NO	NO	NO		7	63	100	NO	NO	NO	
	8	68	94	NO	NO	NO		8	66	94	NO	NO	NO	
	9	70	83	NO	NO	NO		9	70	88	NO	NO	NO	
	10	73	73	NO	YES	YES		10	73	78	NO	NO	NO	
	11	73	73	NO	YES	YES		11	77	74	NO	NO	NO	
	12	75	69	NO	YES	YES		12	81	70	NO	NO	NO	
	1	77	61	NO	NO	NO		1	82	62	NO	NO	NO	
	2	81	54	NO	NO	NO		2	84	58	NO	NO	NO	
	3	81	54	NO	NO	NO		3	84	58	NO	NO	NO	
	4	81	54	NO	NO	NO		4	82	58	NO	NO	NO	
	5	82	51	NO	NO	NO		5	81	58	NO	NO	NO	
	6	82	48	NO	NO	NO		6	82	62	NO	NO	NO	
	7	81	51	NO	NO	NO		7	81	58	NO	NO	NO	
	8	79	54	NO	NO	NO		8	79	57	NO	NO	NO	
	9	75	61	YES	YES	YES		9	77	65	NO	NO	NO	
10	73	64	YES	YES	YES	10	76	66	NO	NO	NO			
11	71	68	NO	YES	YES	11	75	69	NO	YES	YES			

August 5, 2016	12	69	79	NO	NO	NO	August 21, 2016	12	75	69	NO	YES	YES
	1	68	81	NO	NO	NO		1	76	68	NO	NO	NO
	2	69	78	NO	NO	NO		2	75	68	NO	YES	YES
	3	68	79	NO	NO	NO		3	74	69	NO	YES	YES
	4	65	82	NO	NO	NO		4	74	72	NO	YES	YES
	5	67	84	NO	NO	NO		5	74	75	NO	YES	YES
	6	66	86	NO	NO	NO		6	73	78	NO	NO	NO
	7	66	85	NO	NO	NO		7	73	78	NO	NO	NO
	8	70	89	NO	NO	NO		8	73	83	NO	NO	NO
	9	70	88	NO	NO	NO		9	70	94	NO	NO	NO
	10	72	79	NO	NO	NO		10	72	92	NO	NO	NO
	11	73	77	NO	NO	NO		11	73	88	NO	NO	NO
August 6, 2016	12	77	72	NO	NO	NO		12	70	100	NO	NO	NO
	1	81	70	NO	NO	NO	August 22, 2016	1	72	100	NO	NO	NO
	2	81	64	NO	NO	NO		2	75	83	NO	NO	NO
	3	82	62	NO	NO	NO		3	77	78	NO	NO	NO
	4	84	61	NO	NO	NO		4	75	69	NO	YES	YES
	5	82	58	NO	NO	NO		5	75	69	NO	YES	YES
	6	82	62	NO	NO	NO		6	75	69	NO	YES	YES
	7	81	65	NO	NO	NO		7	73	61	YES	YES	YES
	8	77	66	NO	NO	NO		8	70	68	NO	YES	YES
	9	75	67	NO	YES	YES		9	68	73	NO	YES	YES
	10	74	73	NO	YES	YES		10	68	75	NO	YES	YES
	11	74	87	NO	NO	NO		11	64	93	NO	NO	NO
August 7, 2016	12	71	92	NO	NO	NO	August 23, 2016	12	61	94	NO	NO	NO
	1	70	94	NO	NO	NO		1	65	91	NO	NO	NO
	2	71	94	NO	NO	NO		2	60	80	NO	NO	NO
	3	70	96	NO	NO	NO		3	64	84	NO	NO	NO
	4	69	96	NO	NO	NO		4	62	92	NO	NO	NO
	5	70	98	NO	NO	NO		5	59	94	NO	NO	NO
	6	70	100	NO	NO	NO		6	57	93	NO	NO	NO
	7	70	100	NO	NO	NO		7	59	94	NO	NO	NO
	8	72	94	NO	NO	NO		8	63	88	NO	NO	NO
	9	75	89	NO	NO	NO		9	64	73	NO	YES	YES
	10	79	78	NO	NO	NO		10	68	64	YES	YES	YES
	11	81	74	NO	NO	NO		11	70	60	YES	YES	YES
August 8, 2016	12	82	66	NO	NO	NO	August 24, 2016	12	72	53	YES	YES	YES
	1	86	48	NO	NO	NO		1	72	53	YES	YES	YES
	2	86	43	NO	NO	NO		2	73	53	YES	YES	YES
	3	86	40	NO	NO	NO		3	73	47	YES	YES	YES
	4	86	37	NO	NO	NO		4	73	47	YES	YES	YES
	5	86	37	NO	NO	NO		5	73	44	YES	YES	YES
	6	84	37	NO	NO	NO		6	73	44	YES	YES	YES
	7	82	39	NO	NO	NO		7	73	47	YES	YES	YES
	8	79	42	NO	NO	NO		8	70	53	YES	YES	YES
	9	75	47	YES	YES	YES		9	66	60	YES	YES	YES
	10	74	51	YES	YES	YES		10	64	62	YES	YES	YES
	11	71	57	YES	YES	YES		11	60	74	NO	YES	YES
August 5, 2016	12	70	60	YES	YES	YES	August 21, 2016	12	60	72	NO	YES	YES
	1	68	66	NO	YES	YES		1	57	83	NO	NO	NO
	2	63	79	NO	NO	NO		2	56	86	NO	NO	NO
	3	63	79	NO	NO	NO		3	54	94	NO	NO	NO
	4	60	86	NO	NO	NO		4	54	94	NO	NO	NO
	5	60	87	NO	NO	NO		5	53	94	NO	NO	NO
	6	59	88	NO	NO	NO		6	54	88	NO	NO	NO
	7	59	94	NO	NO	NO		7	52	100	NO	NO	NO
	8	63	88	NO	NO	NO		8	54	94	NO	NO	NO
	9	70	64	YES	YES	YES		9	59	88	NO	NO	NO
	10	73	62	YES	YES	YES		10	64	77	NO	NO	NO
	11	75	61	YES	YES	YES		11	68	68	NO	YES	YES
August 6, 2016	12	79	50	NO	NO	NO	August 22, 2016	12	73	53	YES	YES	YES
	1	81	47	NO	NO	NO		1	73	57	YES	YES	YES
	2	81	45	NO	NO	NO		2	75	53	YES	YES	YES
	3	81	42	NO	NO	NO		3	77	54	NO	NO	NO
	4	81	42	NO	NO	NO		4	77	54	NO	NO	NO
	5	82	42	NO	NO	NO		5	79	51	NO	NO	NO
	6	82	35	NO	NO	NO		6	77	57	NO	NO	NO
	7	79	32	NO	NO	NO		7	75	57	YES	YES	YES
	8	75	39	YES	YES	YES		8	72	64	YES	YES	YES
	9	74	44	YES	YES	YES		9	72	64	YES	YES	YES
	10	74	47	YES	YES	YES		10	69	71	NO	YES	YES
	11	70	56	YES	YES	YES		11	65	82	NO	NO	NO
August 7, 2016	12	70	57	YES	YES	YES	August 23, 2016	12	64	82	NO	NO	NO
	1	68	62	YES	YES	YES		1	63	83	NO	NO	NO
	2	64	72	NO	YES	YES		2	60	84	NO	NO	NO
	3	63	76	NO	NO	NO		3	59	89	NO	NO	NO
	4	62	79	NO	NO	NO		4	59	9694	NO	NO	NO
	5	62	81	NO	NO	NO		5	58	94	NO	NO	NO
	6	61	82	NO	NO	NO		6	57	100	NO	NO	NO
	7	61	82	NO	NO	NO		7	57	94	NO	NO	NO
	8	63	88	NO	NO	NO		8	59	94	NO	NO	NO
	9	66	73	NO	YES	YES		9	63	94	NO	NO	NO
	10	68	67	NO	YES	YES		10	68	83	NO	NO	NO
	11	73	57	YES	YES	YES		11	72	78	NO	NO	NO
August 8, 2016	12	75	53	YES	YES	YES	August 24, 2016	12	77	69	NO	NO	NO
	1	77	47	NO	NO	NO		1	79	65	NO	NO	NO
	2	79	44	NO	NO	NO		2	81	58	NO	NO	NO
	3	81	45	NO	NO	NO		3	81	58	NO	NO	NO
	4	84	37	NO	NO	NO		4	81	61	NO	NO	NO
	5	84	37	NO	NO	NO		5	81	58	NO	NO	NO
	6	82	37	NO	NO	NO		6	81	58	NO	NO	NO
	7	81	45	NO	NO	NO		7	79	61	NO	NO	NO
	8	79	41	NO	NO	NO		8	75	69	NO	YES	YES
	9	75	53	YES	YES	YES		9	75	69	NO	YES	YES
	10	73	59	YES	YES	YES		10	73	76	NO	NO	NO
	11	70	67	NO	YES	YES		11	71	80	NO	NO	NO

August 9, 2016	12	70	67	NO	YES	YES	August 25, 2016	12	71	81	NO	NO	NO
	1	68	72	NO	YES	YES		1	69	82	NO	NO	NO
	2	66	74	NO	YES	YES		2	71	82	NO	NO	NO
	3	64	79	NO	NO	NO		3	69	88	NO	NO	NO
	4	59	93	NO	NO	NO		4	69	89	NO	NO	NO
	5	60	90	NO	NO	NO		5	68	90	NO	NO	NO
	6	57	100	NO	NO	NO		6	68	90	NO	NO	NO
	7	57	100	NO	NO	NO		7	68	88	NO	NO	NO
	8	61	94	NO	NO	NO		8	68	88	NO	NO	NO
	9	66	78	NO	NO	NO		9	70	94	NO	NO	NO
	10	72	73	NO	YES	YES		10	73	83	NO	NO	NO
	11	73	73	NO	YES	YES		11	75	83	NO	NO	NO
August 10, 2016	12	77	61	NO	NO	NO		12	79	78	NO	NO	NO
	1	79	57	NO	NO	NO	August 26, 2016	1	79	78	NO	NO	NO
	2	77	61	NO	NO	NO		2	82	70	NO	NO	NO
	3	77	61	NO	NO	NO		3	82	70	NO	NO	NO
	4	77	54	NO	NO	NO		4	84	66	NO	NO	NO
	5	79	65	NO	NO	NO		5	84	66	NO	NO	NO
	6	77	69	NO	NO	NO		6	84	66	NO	NO	NO
	7	75	73	NO	YES	YES		7	82	66	NO	NO	NO
	8	73	73	NO	YES	YES		8	77	78	NO	NO	NO
	9	73	73	NO	YES	YES		9	77	78	NO	NO	NO
	10	73	78	NO	NO	NO		10	75	83	NO	NO	NO
	11	73	80	NO	NO	NO		11	74	86	NO	NO	NO
August 11, 2016	12	73	80	NO	NO	NO	August 27, 2016	12	76	81	NO	NO	NO
	1	73	83	NO	NO	NO		1	74	86	NO	NO	NO
	2	73	84	NO	NO	NO		2	73	89	NO	NO	NO
	3	73	85	NO	NO	NO		3	73	91	NO	NO	NO
	4	72	86	NO	NO	NO		4	71	97	NO	NO	NO
	5	72	87	NO	NO	NO		5	70	96	NO	NO	NO
	6	72	89	NO	NO	NO		6	70	88	NO	NO	NO
	7	70	88	NO	NO	NO		7	73	88	NO	NO	NO
	8	72	94	NO	NO	NO		8	72	94	NO	NO	NO
	9	72	88	NO	NO	NO		9	75	78	NO	NO	NO
	10	73	88	NO	NO	NO		10	77	78	NO	NO	NO
	11	77	78	NO	NO	NO	August 28, 2016	11	79	70	NO	NO	NO
August 12, 2016	12	81	70	NO	NO	NO		12	81	69	NO	NO	NO
	1	82	66	NO	NO	NO		1	84	65	NO	NO	NO
	2	84	66	NO	NO	NO		2	84	55	NO	NO	NO
	3	86	62	NO	NO	NO		3	86	45	NO	NO	NO
	4	77	89	NO	NO	NO		4	86	45	NO	NO	NO
	5	75	94	NO	NO	NO		5	86	45	NO	NO	NO
	6	77	89	NO	NO	NO		6	86	45	NO	NO	NO
	7	75	94	NO	NO	NO		7	84	51	NO	NO	NO
	8	75	94	NO	NO	NO		8	81	58	NO	NO	NO
	9	73	94	NO	NO	NO		9	77	65	NO	NO	NO
	10	70	99	NO	NO	NO		10	71	79	NO	NO	NO
	11	70	99	NO	NO	NO		11	71	78	NO	NO	NO
August 9, 2016	12	70	99	NO	NO	NO	August 25, 2016	12	70	79	NO	NO	NO
	1	71	99	NO	NO	NO		1	69	83	NO	NO	NO
	2	71	98	NO	NO	NO		2	67	92	NO	NO	NO
	3	71	99	NO	NO	NO		3	66	92	NO	NO	NO
	4	71	98	NO	NO	NO		4	64	92	NO	NO	NO
	5	71	98	NO	NO	NO		5	64	94	NO	NO	NO
	6	70	100	NO	NO	NO		6	63	100	NO	NO	NO
	7	70	100	NO	NO	NO		7	61	100	NO	NO	NO
	8	70	100	NO	NO	NO		8	63	100	NO	NO	NO
	9	74	83	NO	NO	NO		9	68	88	NO	NO	NO
	10	78	74	NO	NO	NO		10	72	83	NO	NO	NO
	11	79	79	NO	NO	NO	August 26, 2016	11	75	73	NO	YES	YES
August 10, 2016	12	82	70	NO	NO	NO		12	75	78	NO	NO	NO
	1	86	66	NO	NO	NO		1	81	61	NO	NO	NO
	2	88	66	NO	NO	NO		2	81	61	NO	NO	NO
	3	86	66	NO	NO	NO		3	82	62	NO	NO	NO
	4	84	70	NO	NO	NO		4	82	62	NO	NO	NO
	5	86	70	NO	NO	NO		5	82	58	NO	NO	NO
	6	79	74	NO	NO	NO		6	82	62	NO	NO	NO
	7	75	78	NO	NO	NO		7	81	70	NO	NO	NO
	8	75	94	NO	NO	NO		8	79	69	NO	NO	NO
	9	75	89	NO	NO	NO		9	77	69	NO	NO	NO
	10	74	96	NO	NO	NO		10	75	76	NO	NO	NO
	11	74	97	NO	NO	NO	August 27, 2016	11	73	81	NO	NO	NO
August 11, 2016	12	74	96	NO	NO	NO		12	72	81	NO	NO	NO
	1	72	96	NO	NO	NO		1	71	84	NO	NO	NO
	2	72	97	NO	NO	NO		2	68	91	NO	NO	NO
	3	71	98	NO	NO	NO		3	71	81	NO	NO	NO
	4	72	97	NO	NO	NO		4	68	81	NO	NO	NO
	5	71	99	NO	NO	NO		5	66	92	NO	NO	NO
	6	72	94	NO	NO	NO		6	67	94	NO	NO	NO
	7	72	94	NO	NO	NO		7	68	88	NO	NO	NO
	8	73	94	NO	NO	NO		8	68	94	NO	NO	NO
	9	77	89	NO	NO	NO		9	73	73	NO	YES	YES
	10	81	84	NO	NO	NO		10	75	66	NO	YES	YES
	11	82	79	NO	NO	NO	August 28, 2016	11	79	62	NO	NO	NO
August 12, 2016	12	86	70	NO	NO	NO		12	81	58	NO	NO	NO
	1	88	62	NO	NO	NO		1	82	53	NO	NO	NO
	2	90	59	NO	NO	NO		2	84	73	NO	NO	NO
	3	90	59	NO	NO	NO		3	86	88	NO	NO	NO
	4	90	59	NO	NO	NO		4	75	88	NO	NO	NO
	5	91	4	NO	NO	NO		5	68	94	NO	NO	NO
	6	88	58	NO	NO	NO		6	68	94	NO	NO	NO
	7	86	62	NO	NO	NO		7	70	88	NO	NO	NO
	8	82	70	NO	NO	NO		8	68	94	NO	NO	NO
	9	81	79	NO	NO	NO		9	66	100	NO	NO	NO
	10	80	80	NO	NO	NO		10	68	100	NO	NO	NO
	11	80	79	NO	NO	NO		11	68	97	NO	NO	NO

August 13, 2016	12	77	84	NO	NO	NO
	1	78	81	NO	NO	NO
	2	75	88	NO	NO	NO
	3	75	90	NO	NO	NO
	4	73	92	NO	NO	NO
	5	73	95	NO	NO	NO
	6	72	94	NO	NO	NO
	7	73	94	NO	NO	NO
	8	75	89	NO	NO	NO
	9	79	83	NO	NO	NO
	10	84	70	NO	NO	NO
	11	88	66	NO	NO	NO
August 14, 2016	12	88	84	NO	NO	NO
	1	88	89	NO	NO	NO
	2	75	94	NO	NO	NO
	3	75	94	NO	NO	NO
	4	77	84	NO	NO	NO
	5	81	79	NO	NO	NO
	6	82	89	NO	NO	NO
	7	82	89	NO	NO	NO
	8	81	94	NO	NO	NO
	9	73	100	NO	NO	NO
	10	74	96	NO	NO	NO
	11	74	98	NO	NO	NO
August 15, 2016	12	72	92	NO	NO	NO
	1	73	91	NO	NO	NO
	2	72	93	NO	NO	NO
	3	72	93	NO	NO	NO
	4	72	93	NO	NO	NO
	5	73	94	NO	NO	NO
	6	73	94	NO	NO	NO
	7	73	94	NO	NO	NO
	8	75	89	NO	NO	NO
	9	75	94	NO	NO	NO
	10	79	83	NO	NO	NO
	11	81	74	NO	NO	NO
August 16, 2016	12	82	74	NO	NO	NO
	1	81	74	NO	NO	NO
	2	81	79	NO	NO	NO
	3	79	83	NO	NO	NO
	4	49	83	NO	NO	NO
	5	73	83	NO	NO	NO
	6	73	83	NO	NO	NO
	7	72	88	NO	NO	NO
	8	72	88	NO	NO	NO
	9	70	94	NO	NO	NO
	10	69	96	NO	NO	NO
	11	71	92	NO	NO	NO
August 13, 2016	12	69	98	NO	NO	NO
	1	68	98	NO	NO	NO
	2	68	98	NO	NO	NO
	3	67	98	NO	NO	NO
	4	66	99	NO	NO	NO
	5	66	99	NO	NO	NO
	6	66	100	NO	NO	NO
	7	68	94	NO	NO	NO
	8	68	100	NO	NO	NO
	9	70	94	NO	NO	NO
	10	72	88	NO	NO	NO
	11	75	78	NO	NO	NO
August 14, 2016	12	79	74	NO	NO	NO
	1	81	70	NO	NO	NO
	2	79	74	NO	NO	NO
	3	81	70	NO	NO	NO
	4	79	74	NO	NO	NO
	5	79	78	NO	NO	NO
	6	79	78	NO	NO	NO
	7	77	83	NO	NO	NO
	8	77	89	NO	NO	NO
	9	73	94	NO	NO	NO
	10	73	94	NO	NO	NO
	11	71	97	NO	NO	NO
August 15, 2016	12	71	98	NO	NO	NO
	1	70	98	NO	NO	NO
	2	71	97	NO	NO	NO
	3	70	98	NO	NO	NO
	4	71	95	NO	NO	NO
	5	69	99	NO	NO	NO
	6	70	100	NO	NO	NO
	7	70	100	NO	NO	NO
	8	72	94	NO	NO	NO
	9	73	94	NO	NO	NO
	10	73	94	NO	NO	NO
	11	77	83	NO	NO	NO
August 16, 2016	12	79	78	NO	NO	NO
	1	84	70	NO	NO	NO
	2	79	78	NO	NO	NO
	3	84	74	NO	NO	NO
	4	82	70	NO	NO	NO
	5	82	70	NO	NO	NO
	6	84	70	NO	NO	NO
	7	82	74	NO	NO	NO
	8	81	79	NO	NO	NO
	9	72	94	NO	NO	NO
	10	71	96	NO	NO	NO
	11	70	94	NO	NO	NO
August 29, 2016	12	68	94	NO	NO	NO
	1	67	95	NO	NO	NO
	2	66	98	NO	NO	NO
	3	66	99	NO	NO	NO
	4	65	99	NO	NO	NO
	5	64	99	NO	NO	NO
	6	64	100	NO	NO	NO
	7	64	100	NO	NO	NO
	8	66	100	NO	NO	NO
	9	68	100	NO	NO	NO
	10	72	94	NO	NO	NO
	11	75	78	NO	NO	NO
August 30, 2016	12	77	74	NO	NO	NO
	1	79	65	NO	NO	NO
	2	81	58	NO	NO	NO
	3	82	48	NO	NO	NO
	4	84	48	NO	NO	NO
	5	84	45	NO	NO	NO
	6	82	48	NO	NO	NO
	7	79	51	NO	NO	NO
	8	77	54	NO	NO	NO
	9	72	69	NO	YES	YES
	10	70	70	NO	YES	YES
	11	70	71	NO	YES	YES
August 31, 2016	12	69	76	NO	NO	NO
	1	64	88	NO	NO	NO
	2	64	94	NO	NO	NO
	3	62	99	NO	NO	NO
	4	60	99	NO	NO	NO
	5	60	99	NO	NO	NO
	6	59	100	NO	NO	NO
	7	57	100	NO	NO	NO
	8	59	100	NO	NO	NO
	9	63	94	NO	NO	NO
	10	68	83	NO	NO	NO
	11	72	78	NO	NO	NO
August 31, 2016	12	75	61	YES	YES	YES
	1	77	61	NO	NO	NO
	2	79	54	NO	NO	NO
	3	79	47	NO	NO	NO
	4	81	48	NO	NO	NO
	5	81	45	NO	NO	NO
	6	81	48	NO	NO	NO
	7	75	61	YES	YES	YES
	8	75	57	YES	YES	YES
	9	70	73	NO	YES	YES
	10	71	69	NO	YES	YES
	11	68	81	NO	NO	NO
August 31, 2016	12	64	85	NO	NO	NO
	1	63	87	NO	NO	NO
	2	64	90	NO	NO	NO
	3	62	91	NO	NO	NO
	4	62	93	NO	NO	NO
	5	60	97	NO	NO	NO
	6	60	100	NO	NO	NO
	7	59	94	NO	NO	NO
	8	61	94	NO	NO	NO
	9	63	88	NO	NO	NO
	10	66	87	NO	NO	NO
	11	70	88	NO	NO	NO
August 31, 2016	12	72	83	NO	NO	NO
	1	75	83	NO	NO	NO
	2	77	73	NO	NO	NO
	3	77	69	NO	NO	NO
	4	75	65	YES	YES	YES
	5	73	69	NO	YES	YES
	6	72	73	NO	YES	YES
	7	70	78	NO	NO	NO
	8	70	88	NO	NO	NO
	9	69	83	NO	NO	NO
	10	69	92	NO	NO	NO
	11	67	97	NO	NO	NO

September Weather Data and Zone Requirements													
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
September 1	12	66	99	NO	NO	NO	September 17	12	66	65	YES	YES	YES
	1	66	97	NO	NO	NO		1	65	66	NO	YES	YES
	2	66	98	NO	NO	NO		2	64	70	NO	YES	YES
	3	66	99	NO	NO	NO		3	63	73	NO	YES	YES
	4	66	99	NO	NO	NO		4	63	73	NO	YES	YES
	5	66	100	NO	NO	NO		5	62	79	NO	NO	NO
	6	66	100	NO	NO	NO		6	61	82	NO	NO	NO
	7	64	100	NO	NO	NO		7	61	88	NO	NO	NO
	8	66	100	NO	NO	NO		8	61	83	NO	NO	NO
	9	66	94	NO	NO	NO		9	64	83	NO	NO	NO
	10	68	83	NO	NO	NO		10	66	83	NO	NO	NO
	11	70	78	NO	NO	NO		11	68	78	NO	NO	NO
	12	73	69	NO	YES	YES		12	72	73	NO	YES	YES
	1	75	65	YES	YES	YES		1	72	73	NO	YES	YES
	2	75	61	YES	YES	YES		2	72	73	NO	YES	YES
	3	75	55	YES	YES	YES		3	73	73	NO	YES	YES
	4	75	47	YES	YES	YES		4	72	78	NO	NO	NO
	5	73	50	YES	YES	YES		5	72	78	NO	NO	NO
	6	73	50	YES	YES	YES		6	73	73	NO	YES	YES
	7	73	50	YES	YES	YES		7	72	78	NO	NO	NO
	8	70	56	YES	YES	YES		8	72	78	NO	NO	NO
	9	68	60	YES	YES	YES		9	70	83	NO	NO	NO
	10	65	65	YES	YES	YES		10	72	78	NO	NO	NO
	11	65	65	YES	YES	YES		11	72	76	NO	NO	NO
9/2/2016	12	62	72	NO	YES	YES	September 18, 2016	12	72	76	NO	NO	NO
	1	63	76	NO	NO	NO		1	71	77	NO	NO	NO
	2	60	76	NO	NO	NO		2	69	82	NO	NO	NO
	3	57	86	NO	NO	NO		3	69	86	NO	NO	NO
	4	57	84	NO	NO	NO		4	67	95	NO	NO	NO
	5	54	86	NO	NO	NO		5	66	98	NO	NO	NO
	6	55	88	NO	NO	NO		6	66	100	NO	NO	NO
	7	55	94	NO	NO	NO		7	66	100	NO	NO	NO
	8	59	82	NO	NO	NO		8	66	100	NO	NO	NO
	9	61	82	NO	NO	NO		9	68	94	NO	NO	NO
	10	63	82	NO	NO	NO		10	72	88	NO	NO	NO
	11	66	73	NO	YES	YES		11	72	88	NO	NO	NO
	12	70	64	YES	YES	YES		12	73	83	NO	NO	NO
	1	70	60	YES	YES	YES		1	73	83	NO	NO	NO
	2	73	53	YES	YES	YES		2	73	83	NO	NO	NO
	3	73	53	YES	YES	YES		3	73	88	NO	NO	NO
	4	73	53	YES	YES	YES		4	73	94	NO	NO	NO
	5	73	57	YES	YES	YES		5	72	95	NO	NO	NO
	6	70	64	YES	YES	YES		6	70	94	NO	NO	NO
	7	70	60	YES	YES	YES		7	70	94	NO	NO	NO
	8	68	64	YES	YES	YES		8	68	100	NO	NO	NO
	9	66	68	YES	YES	YES		9	68	99	NO	NO	NO
	10	64	69	NO	YES	YES		10	68	100	NO	NO	NO
	11	61	71	NO	YES	YES		11	67	100	NO	NO	NO
September 3, 2016	12	59	78	NO	NO	NO	September 19, 2016	12	67	100	NO	NO	NO
	1	58	80	NO	NO	NO		1	67	100	NO	NO	NO
	2	58	82	NO	NO	NO		2	67	100	NO	NO	NO
	3	57	83	NO	NO	NO		3	66	100	NO	NO	NO
	4	55	84	NO	NO	NO		4	66	100	NO	NO	NO
	5	54	90	NO	NO	NO		5	67	100	NO	NO	NO
	6	54	88	NO	NO	NO		6	66	100	NO	NO	NO
	7	54	94	NO	NO	NO		7	66	100	NO	NO	NO
	8	55	88	NO	NO	NO		8	66	100	NO	NO	NO
	9	57	88	NO	NO	NO		9	66	94	NO	NO	NO
	10	61	77	NO	NO	NO		10	68	94	NO	NO	NO
	11	66	68	NO	YES	YES		11	68	83	NO	NO	NO
	12	70	60	YES	YES	YES		12	72	83	NO	NO	NO
	1	72	60	YES	YES	YES		1	72	78	NO	NO	NO
	2	75	50	YES	YES	YES		2	73	73	NO	YES	YES
	3	75	50	YES	YES	YES		3	73	78	NO	NO	NO
	4	75	47	YES	YES	YES		4	75	69	NO	YES	YES
	5	75	47	YES	YES	YES		5	75	69	NO	YES	YES
	6	74	48	YES	YES	YES		6	75	69	NO	YES	YES
	7	73	50	YES	YES	YES		7	73	73	NO	YES	YES
	8	70	56	YES	YES	YES		8	70	83	NO	NO	NO
	9	66	68	YES	YES	YES		9	66	94	NO	NO	NO
	10	63	72	NO	YES	YES		10	66	94	NO	NO	NO
	11	61	79	NO	NO	NO		11	64	96	NO	NO	NO
September 4, 2016	12	59	85	NO	NO	NO	September 20, 2016	12	64	97	NO	NO	NO
	1	57	92	NO	NO	NO		1	63	99	NO	NO	NO
	2	55	96	NO	NO	NO		2	60	99	NO	NO	NO
	3	55	97	NO	NO	NO		3	61	100	NO	NO	NO
	4	55	96	NO	NO	NO		4	59	100	NO	NO	NO
	5	54	99	NO	NO	NO		5	60	100	NO	NO	NO
	6	52	100	NO	NO	NO		6	61	100	NO	NO	NO
	7	52	100	NO	NO	NO		7	61	100	NO	NO	NO
	8	55	95	NO	NO	NO		8	61	100	NO	NO	NO
	9	57	94	NO	NO	NO		9	61	100	NO	NO	NO
	10	63	77	NO	NO	NO		10	63	100	NO	NO	NO
	11	68	68	YES	YES	YES		11	64	100	NO	NO	NO
	12	70	64	YES	YES	YES		12	66	94	NO	NO	NO
	1	73	53	YES	YES	YES		1	73	78	NO	NO	NO
	2	75	53	YES	YES	YES		2	77	57	NO	NO	NO
	3	77	44	YES	YES	YES		3	81	42	NO	NO	NO
	4	77	50	YES	YES	YES		4	81	42	NO	NO	NO
	5	77	50	YES	YES	YES		5	81	42	NO	NO	NO
	6	77	47	YES	YES	YES		6	81	42	NO	NO	NO
	7	75	53	YES	YES	YES		7	75	57	YES	YES	YES
	8	70	57	YES	YES	YES		8	72	73	NO	YES	YES
	9	68	64	YES	YES	YES		9	68	78	NO	NO	NO
	10	68	61	YES	YES	YES		10	66	80	NO	NO	NO
	11	64	72	NO	YES	YES		11	63	89	NO	NO	NO

September 5, 2016	12	62	78	NO	NO	NO		September 21, 2016	12	62	88	NO	NO	NO	
	1	59	86	NO	NO	NO			1	62	90	NO	NO	NO	
	2	59	86	NO	NO	NO			2	60	94	NO	NO	NO	
	3	57	91	NO	NO	NO			3	60	95	NO	NO	NO	
	4	56	94	NO	NO	NO			4	59	99	NO	NO	NO	
	5	55	97	NO	NO	NO			5	58	98	NO	NO	NO	
	6	54	94	NO	NO	NO			6	59	94	NO	NO	NO	
	7	52	100	NO	NO	NO			7	55	100	NO	NO	NO	
	8	55	94	NO	NO	NO			8	55	100	NO	NO	NO	
	9	59	88	NO	NO	NO			9	59	100	NO	NO	NO	
	10	64	77	NO	NO	NO			10	66	73	NO	YES	YES	
	11	68	73	NO	YES	YES			11	70	64	YES	YES	YES	
September 6, 2016	12	73	61	YES	YES	YES		September 22, 2016	12	72	60	YES	YES	YES	
	1	77	54	NO	NO	NO			1	75	53	YES	YES	YES	
	2	81	48	NO	NO	NO			2	77	50	NO	NO	NO	
	3	81	48	NO	NO	NO			3	79	47	NO	NO	NO	
	4	84	40	NO	NO	NO			4	81	45	NO	NO	NO	
	5	82	42	NO	NO	NO			5	81	42	NO	NO	NO	
	6	82	45	NO	NO	NO			6	79	42	NO	NO	NO	
	7	81	46	NO	NO	NO			7	75	47	YES	NO	NO	
	8	72	45	YES	YES	YES			8	72	53	YES	NO	NO	
	9	75	48	YES	YES	YES			9	70	56	YES	NO	NO	
	10	67	53	YES	YES	YES			10	64	76	NO	NO	NO	
	11	68	65	YES	YES	YES			11	62	79	NO	NO	NO	
September 7, 2016	12	64	78	NO	NO	NO		September 23, 2016	12	62	77	NO	NO	NO	
	1	62	73	NO	YES	YES			1	58	89	NO	NO	NO	
	2	69	68	NO	YES	YES			2	56	89	NO	NO	NO	
	3	64	79	NO	NO	NO			3	57	87	NO	NO	NO	
	4	62	86	NO	NO	NO			4	56	89	NO	NO	NO	
	5	60	93	NO	NO	NO			5	54	95	NO	NO	NO	
	6	58	94	NO	NO	NO			6	54	94	NO	NO	NO	
	7	57	94	NO	NO	NO			7	54	94	NO	NO	NO	
	8	61	88	NO	NO	NO			8	52	100	NO	NO	NO	
	9	66	78	NO	NO	NO			9	57	94	NO	NO	NO	
	10	72	69	NO	YES	YES			10	63	82	NO	NO	NO	
	11	73	65	YES	YES	YES			11	68	73	NO	YES	YES	
September 8, 2016	12	81	51	NO	NO	NO		September 24, 2016	12	72	60	YES	YES	YES	
	1	82	51	NO	NO	NO			1	77	50	NO	NO	NO	
	2	84	48	NO	NO	NO			2	79	42	NO	NO	NO	
	3	84	48	NO	NO	NO			3	81	42	NO	NO	NO	
	4	86	45	NO	NO	NO			4	81	18	NO	NO	NO	
	5	86	45	NO	NO	NO			5	81	37	NO	NO	NO	
	6	84	48	NO	NO	NO			6	81	37	NO	NO	NO	
	7	82	51	NO	NO	NO			7	75	47	YES	YES	YES	
	8	81	54	NO	NO	NO			8	70	56	YES	YES	YES	
	9	75	69	NO	YES	YES			9	68	64	YES	YES	YES	
	10	72	77	NO	NO	NO			10	65	66	NO	YES	YES	
	11	71	79	NO	NO	NO			11	61	79	NO	NO	NO	
September 5, 2016	12	69	79	NO	NO	NO		September 21, 2016	12	60	83	NO	NO	NO	
	1	67	84	NO	NO	NO			1	61	84	NO	NO	NO	
	2	68	88	NO	NO	NO			2	59	86	NO	NO	NO	
	3	66	93	NO	NO	NO			3	58	88	NO	NO	NO	
	4	66	93	NO	NO	NO			4	58	87	NO	NO	NO	
	5	66	94	NO	NO	NO			5	58	88	NO	NO	NO	
	6	64	94	NO	NO	NO			6	57	88	NO	NO	NO	
	7	63	100	NO	NO	NO			7	57	88	NO	NO	NO	
	8	66	94	NO	NO	NO			8	61	88	NO	NO	NO	
	9	68	88	NO	NO	NO			9	65	78	NO	NO	NO	
	10	73	83	NO	NO	NO			10	68	73	NO	YES	YES	
	11	79	74	NO	NO	NO			11	72	64	YES	YES	YES	
September 6, 2016	12	82	70	NO	NO	NO		September 22, 2016	12	79	57	NO	NO	NO	
	1	86	58	NO	NO	NO			1	81	51	NO	NO	NO	
	2	86	62	NO	NO	NO			2	82	48	NO	NO	NO	
	3	88	55	NO	NO	NO			3	82	48	NO	NO	NO	
	4	86	66	NO	NO	NO			4	82	45	NO	NO	NO	
	5	75	75	NO	YES	YES			5	84	45	NO	NO	NO	
	6	73	89	NO	NO	NO			6	82	45	NO	NO	NO	
	7	75	94	NO	NO	NO			7	79	54	NO	NO	NO	
	8	72	100	NO	NO	NO			8	75	61	YES	YES	YES	
	9	70	96	NO	NO	NO			9	73	65	YES	YES	YES	
	10	70	97	NO	NO	NO			10	71	73	NO	YES	YES	
	11	70	96	NO	NO	NO			11	69	77	NO	NO	NO	
September 7, 2016	12	71	97	NO	NO	NO		September 23, 2016	12	69	81	NO	NO	NO	
	1	71	96	NO	NO	NO			1	66	80	NO	NO	NO	
	2	70	98	NO	NO	NO			2	65	80	NO	NO	NO	
	3	73	92	NO	NO	NO			3	62	82	NO	NO	NO	
	4	72	96	NO	NO	NO			4	60	84	NO	NO	NO	
	5	70	98	NO	NO	NO			5	59	78	NO	NO	NO	
	6	70	94	NO	NO	NO			6	59	72	NO	NO	YES	
	7	70	100	NO	NO	NO			7	57	72	NO	NO	YES	
	8	70	100	NO	NO	NO			8	57	67	NO	NO	YES	
	9	75	89	NO	NO	NO			9	57	67	NO	NO	YES	
	10	81	74	NO	NO	NO			10	59	63	YES	NO	YES	
	11	82	74	NO	NO	NO			11	59	63	YES	NO	YES	
September 8, 2016	12	82	74	NO	NO	NO		September 24, 2016	12	63	55	YES	YES	YES	
	1	84	66	NO	NO	NO			1	66	49	YES	YES	YES	
	2	86	62	NO	NO	NO			2	68	43	YES	YES	YES	
	3	84	62	NO	NO	NO			3	70	43	YES	YES	YES	
	4	88	55	NO	NO	NO			4	70	40	YES	YES	YES	
	5	84	62	NO	NO	NO			5	70	40	YES	YES	YES	
	6	82	66	NO	NO	NO			6	70	40	YES	YES	YES	
	7	81	70	NO	NO	NO			7	66	46	YES	YES	YES	
	8	77	78	NO	NO	NO			8	61	63	YES	YES	YES	
	9	77	83	NO	NO	NO			9	57	67	NO	NO	YES	
	10	73	93	NO	NO	NO			10	57	64	NO	NO	YES	
	11	72	97	NO	NO	NO			11	55	68	NO	NO	YES	

September 9, 2016	12	72	97	NO	NO	NO	
	1	72	98	NO	NO	NO	
	2	71	98	NO	NO	NO	
	3	71	97	NO	NO	NO	
	4	71	93	NO	NO	NO	
	5	70	97	NO	NO	NO	
	6	70	94	NO	NO	NO	
	7	70	94	NO	NO	NO	
	8	70	100	NO	NO	NO	
	9	72	94	NO	NO	NO	
	10	73	94	NO	NO	NO	
September 10, 2016	11	75	89	NO	NO	NO	
	12	77	83	NO	NO	NO	
	1	77	83	NO	NO	NO	
	2	77	83	NO	NO	NO	
	3	81	74	NO	NO	NO	
	4	79	74	NO	NO	NO	
	5	79	78	NO	NO	NO	
	6	79	74	NO	NO	NO	
	7	77	78	NO	NO	NO	
	8	75	89	NO	NO	NO	
	9	75	83	NO	NO	NO	
September 11, 2016	10	75	81	NO	NO	NO	
	11	73	91	NO	NO	NO	
	12	72	94	NO	NO	NO	
	1	71	95	NO	NO	NO	
	2	71	94	NO	NO	NO	
	3	70	99	NO	NO	NO	
	4	70	98	NO	NO	NO	
	5	70	99	NO	NO	NO	
	6	70	100	NO	NO	NO	
	7	70	100	NO	NO	NO	
	8	70	100	NO	NO	NO	
September 12, 2016	9	75	89	NO	NO	NO	
	10	77	83	NO	NO	NO	
	11	79	78	NO	NO	NO	
	12	82	70	NO	NO	NO	
	1	84	66	NO	NO	NO	
	2	84	62	NO	NO	NO	
	3	86	55	NO	NO	NO	
	4	88	52	NO	NO	NO	
	5	88	49	NO	NO	NO	
	6	84	57	NO	NO	NO	
	7	82	66	NO	NO	NO	
September 25, 2016	8	82	62	NO	NO	NO	
	9	81	65	NO	NO	NO	
	10	78	73	NO	NO	NO	
	11	81	67	NO	NO	NO	
	12	77	76	NO	NO	NO	
	1	76	68	NO	NO	NO	
	2	74	70	NO	YES	YES	
	3	73	75	NO	YES	YES	
	4	72	74	NO	YES	YES	
	5	65	80	NO	NO	NO	
	6	64	83	NO	NO	NO	
September 26, 2016	7	63	88	NO	NO	NO	
	8	64	77	NO	NO	NO	
	9	66	73	NO	YES	YES	
	10	68	68	NO	YES	YES	
	11	70	60	YES	YES	YES	
	12	72	60	YES	YES	YES	
	1	70	60	YES	YES	YES	
	2	72	53	YES	YES	YES	
	3	75	44	YES	YES	YES	
	4	75	41	YES	YES	YES	
	5	72	43	YES	YES	YES	
September 27, 2016	6	72	43	YES	YES	YES	
	7	70	46	YES	YES	YES	
	8	68	52	YES	YES	YES	
	9	66	56	YES	YES	YES	
	10	61	70	NO	YES	YES	
	11	58	77	NO	NO	NO	
	12	58	73	NO	NO	YES	
	1	57	85	NO	NO	NO	
	2	53	84	NO	NO	NO	
	3	54	87	NO	NO	NO	
	4	53	94	NO	NO	NO	
September 28, 2016	5	51	94	NO	NO	NO	
	6	50	62	NO	NO	NO	
	7	50	94	NO	NO	NO	
	8	50	100	NO	NO	NO	
	9	55	88	NO	NO	NO	
	10	59	64	NO	NO	YES	
	11	66	53	YES	YES	YES	
	12	70	50	YES	YES	YES	
	1	72	47	YES	YES	YES	
	2	73	44	YES	YES	YES	
	3	73	41	YES	YES	YES	
September 9, 2016	4	77	39	NO	NO	NO	
	5	77	41	NO	NO	NO	
	6	75	47	YES	YES	YES	
	7	73	56	YES	YES	YES	
	8	68	68	NO	YES	YES	
	9	64	65	NO	YES	YES	
	10	65	69	NO	YES	YES	
	11	63	72	NO	YES	YES	
	12	54	71	NO	NO	NO	
	1	51	82	NO	NO	NO	
	2	50	85	NO	NO	NO	
September 25, 2016	3	49	84	NO	NO	NO	
	4	48	87	NO	NO	NO	
	5	47	88	NO	NO	NO	
	6	43	100	NO	NO	NO	
	7	43	93	NO	NO	NO	
	8	43	100	NO	NO	NO	
	9	48	87	NO	NO	NO	
	10	54	77	NO	NO	NO	
	11	59	59	NO	YES	YES	
	12	61	52	NO	YES	YES	
	1	63	55	NO	YES	YES	
September 26, 2016	2	64	49	NO	YES	YES	
	3	66	46	YES	YES	YES	
	4	68	33	YES	YES	YES	
	5	68	35	YES	YES	YES	
	6	64	42	NO	YES	YES	
	7	63	42	NO	YES	YES	
	8	61	42	NO	YES	YES	
	9	57	55	NO	NO	YES	
	10	56	60	NO	NO	YES	
	11	57	56	NO	NO	YES	
	12	54	64	NO	NO	NO	
September 27, 2016	1	51	75	NO	NO	NO	
	2	48	83	NO	NO	NO	
	3	46	90	NO	NO	NO	
	4	47	85	NO	NO	NO	
	5	45	95	NO	NO	NO	
	6	48	87	NO	NO	NO	
	7	48	93	NO	NO	NO	
	8	50	87	NO	NO	NO	
	9	52	58	NO	NO	NO	
	10	55	77	NO	YES	YES	
	11	61	72	NO	YES	YES	
September 28, 2016	12	63	73	NO	YES	YES	
	1	64	73	NO	YES	YES	
	2	66	77	NO	NO	NO	
	3	64	77	NO	NO	NO	
	4	64	82	NO	NO	NO	
	5	63	94	NO	NO	NO	
	6	61	94	NO	NO	NO	
	7	61	94	NO	NO	NO	
	8	61	94	NO	NO	NO	
	9	61	94	NO	NO	NO	
	10	61	97	NO	NO	NO	
September 9, 2016	11	61	98	NO	NO	NO	
	12	61	97	NO	NO	NO	
	1	58	95	NO	NO	NO	
	2	59	94	NO	NO	NO	
	3	57	94	NO	NO	NO	
	4	55	93	NO	NO	NO	
	5	52	97	NO	NO	NO	
	6	50	100	NO	NO	NO	
	7	50	94	NO	NO	NO	
	8	52	94	NO	NO	NO	
	9	55	88	NO	NO	NO	
September 25, 2016	10	59	77	NO	NO	NO	
	11	63	68	NO	YES	YES	
	12	66	52	YES	YES	YES	
	1	68	46	YES	YES	YES	
	2	70	40	YES	YES	YES	
	3	70	35	YES	YES	YES	
	4	70	35	YES	YES	YES	
	5	70	35	YES	YES	YES	
	6	70	35	YES	YES	YES	
	7	66	40	YES	YES	YES	
	8	59	59	NO	NO	YES	
September 26, 2016	9	59	55	NO	NO	NO	
	10	54	73	NO	NO	NO	
	11	52	76	NO	NO	NO	
	12	51	80	NO	NO	NO	
	1	48	86	NO	NO	NO	
	2	48	90	NO	NO	NO	
	3	46	95	NO	NO	NO	
	4	44	97	NO	NO	NO	
	5	45	97	NO	NO	NO	
	6	45	100	NO	NO	NO	
	7	45	100	NO	NO	NO	
September 27, 2016	8	45	100	NO	NO	NO	
	9	50	94	NO	NO	NO	
	10	57	77	NO	NO	NO	
	11	63	72	NO	YES	YES	
	12	66	56	YES	YES	YES	
	1	68	46	YES	YES	YES	
	2	70	43	YES	YES	YES	
	3	70	49	YES	YES	YES	
	4	68	60	YES	YES	YES	
	5	66	64	YES	YES	YES	
	6	66	73	NO	YES	YES	
September 28, 2016	7	64	73	NO	YES	YES	
	8	61	88	NO	NO	NO	
	9	61	94	NO	NO	NO	
	10	62	88	NO	NO	NO	
	11	61	91	NO	NO	NO	

September 13, 2016	12	61	73	NO	YES	YES	September 29, 2016	12	60	93	NO	NO	NO
	1	62	71	NO	YES	YES		1	59	93	NO	NO	NO
	2	60	72	NO	YES	YES		2	58	93	NO	NO	NO
	3	58	82	NO	NO	NO		3	57	94	NO	NO	NO
	4	55	96	NO	NO	NO		4	57	94	NO	NO	NO
	5	58	81	NO	NO	NO		5	56	95	NO	NO	NO
	6	55	88	NO	NO	NO		6	55	94	NO	NO	NO
	7	54	94	NO	NO	NO		7	55	94	NO	NO	NO
	8	55	94	NO	NO	NO		8	54	100	NO	NO	NO
	9	61	82	NO	NO	NO		9	54	100	NO	NO	NO
	10	66	82	NO	NO	NO		10	55	88	NO	NO	NO
	11	72	78	NO	NO	NO		11	55	100	NO	NO	NO
September 14, 2016	12	75	69	NO	YES	YES	September 30, 2016	12	57	94	NO	NO	NO
	1	77	65	NO	NO	NO		1	57	94	NO	NO	NO
	2	81	61	NO	NO	NO		2	57	94	NO	NO	NO
	3	82	58	NO	NO	NO		3	57	94	NO	NO	NO
	4	84	51	NO	NO	NO		4	57	94	NO	NO	NO
	5	81	48	NO	NO	NO		5	57	94	NO	NO	NO
	6	81	54	NO	NO	NO		6	57	94	NO	NO	NO
	7	81	54	NO	NO	NO		7	57	94	NO	NO	NO
	8	75	57	YES	YES	YES		8	57	94	NO	NO	NO
	9	82	64	NO	NO	NO		9	55	94	NO	NO	NO
	10	70	67	NO	YES	YES		10	55	92	NO	NO	NO
	11	66	79	NO	NO	NO		11	55	94	NO	NO	NO
September 15, 2016	12	67	74	YES	YES	YES	September 30, 2016	12	55	95	NO	NO	NO
	1	62	80	NO	NO	NO		1	55	94	NO	NO	NO
	2	62	87	NO	NO	NO		2	55	95	NO	NO	NO
	3	60	89	NO	NO	NO		3	54	97	NO	NO	NO
	4	59	88	NO	NO	NO		4	54	97	NO	NO	NO
	5	59	84	NO	NO	NO		5	54	97	NO	NO	NO
	6	57	94	NO	NO	NO		6	54	100	NO	NO	NO
	7	59	88	NO	NO	NO		7	52	100	NO	NO	NO
	8	63	88	NO	NO	NO		8	52	100	NO	NO	NO
	9	68	78	NO	NO	NO		9	52	99	NO	NO	NO
	10	72	69	YES	YES	YES		10	52	100	NO	NO	NO
	11	75	57	YES	YES	YES		11	52	100	NO	NO	NO
September 16, 2016	12	79	57	NO	NO	NO	September 30, 2016	12	54	100	NO	NO	NO
	1	81	54	NO	NO	NO		1	55	94	NO	NO	NO
	2	82	51	NO	NO	NO		2	55	94	NO	NO	NO
	3	81	54	NO	NO	NO		3	55	94	NO	NO	NO
	4	82	51	NO	NO	NO		4	55	88	NO	NO	NO
	5	77	65	NO	NO	NO		5	55	94	NO	NO	NO
	6	72	83	NO	NO	NO		6	55	94	NO	NO	NO
	7	70	78	NO	NO	NO		7	55	94	NO	NO	NO
	8	68	78	NO	NO	NO		8	54	100	NO	NO	NO
	9	68	73	NO	YES	YES		9	54	100	NO	NO	NO
	10	65	78	NO	NO	NO		10	54	97	NO	NO	NO
	11	63	82	NO	NO	NO		11	55	97	NO	NO	NO

October Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	
October 1	12	55	97	NO	NO	NO	October 17	12	62	84	NO	NO	NO	
	1	55	97	NO	NO	NO		1	61	86	NO	NO	NO	
	2	54	98	NO	NO	NO		2	60	87	NO	NO	NO	
	3	54	98	NO	NO	NO		3	60	88	NO	NO	NO	
	4	54	99	NO	NO	NO		4	59	90	NO	NO	NO	
	5	54	99	NO	NO	NO		5	59	89	NO	NO	NO	
	6	54	100	NO	NO	NO		6	59	88	NO	NO	NO	
	7	54	100	NO	NO	NO		7	59	88	NO	NO	NO	
	8	54	100	NO	NO	NO		8	61	94	NO	NO	NO	
	9	54	100	NO	NO	NO		9	59	100	NO	NO	NO	
	10	55	94	NO	NO	NO		10	59	100	NO	NO	NO	
	11	55	100	NO	NO	NO		11	63	94	NO	NO	NO	
	12	55	100	NO	NO	NO		12	68	83	NO	NO	NO	
	1	55	94	NO	NO	NO		1	72	78	NO	NO	NO	
	2	57	94	NO	NO	NO		2	73	73	NO	YES	YES	
	3	57	94	NO	NO	NO		3	73	69	NO	YES	YES	
	4	59	94	NO	NO	NO		4	77	61	NO	NO	NO	
	5	59	94	NO	NO	NO		5	75	65	YES	YES	YES	
	6	57	100	NO	NO	NO		6	72	73	NO	YES	YES	
	7	57	100	NO	NO	NO		7	68	78	NO	NO	NO	
	8	57	94	NO	NO	NO		8	68	78	NO	NO	NO	
	9	57	97	NO	NO	NO		9	64	88	NO	NO	NO	
	10	57	97	NO	NO	NO		10	63	92	NO	NO	NO	
	11	57	99	NO	NO	NO		11	63	89	NO	NO	NO	
October 2, 2016	12	57	97	NO	NO	NO	October 18, 2016	12	62	87	NO	NO	NO	
	1	57	97	NO	NO	NO		1	61	85	NO	NO	NO	
	2	57	97	NO	NO	NO		2	59	84	NO	NO	NO	
	3	57	98	NO	NO	NO		3	59	87	NO	NO	NO	
	4	57	98	NO	NO	NO		4	60	93	NO	NO	NO	
	5	57	98	NO	NO	NO		5	59	97	NO	NO	NO	
	6	57	100	NO	NO	NO		6	57	88	NO	NO	NO	
	7	57	100	NO	NO	NO		7	57	94	NO	NO	NO	
	8	57	100	NO	NO	NO		8	59	88	NO	NO	NO	
	9	57	100	NO	NO	NO		9	63	88	NO	NO	NO	
	10	59	94	NO	NO	NO		10	68	73	NO	YES	YES	
	11	61	94	NO	NO	NO		11	72	64	YES	YES	YES	
	12	63	88	NO	NO	NO		12	75	57	YES	YES	YES	
	1	64	88	NO	NO	NO		1	77	57	NO	NO	NO	
	2	64	83	NO	NO	NO		2	79	51	NO	NO	NO	
	3	64	83	NO	NO	NO		3	79	51	NO	NO	NO	
	4	61	94	NO	NO	NO		4	81	48	NO	NO	NO	
	5	57	88	NO	NO	NO		5	79	51	NO	NO	NO	
	6	57	88	NO	NO	NO		6	77	54	NO	NO	NO	
	7	58	88	NO	NO	NO		7	73	61	YES	YES	YES	
	8	57	94	NO	NO	NO		8	73	61	YES	YES	YES	
	9	55	94	NO	NO	NO		9	72	64	YES	YES	YES	
	10	58	94	NO	NO	NO		10	69	68	NO	YES	YES	
	11	57	95	NO	NO	NO		11	71	67	NO	YES	YES	
October 3, 2016	12	56	97	NO	NO	NO	October 19, 2016	12	73	63	YES	YES	YES	
	1	56	95	NO	NO	NO		1	73	80	NO	NO	NO	
	2	55	98	NO	NO	NO		2	68	85	NO	NO	NO	
	3	58	92	NO	NO	NO		3	65	94	NO	NO	NO	
	4	56	92	NO	NO	NO		4	65	97	NO	NO	NO	
	5	52	97	NO	NO	NO		5	65	99	NO	NO	NO	
	6	52	94	NO	NO	NO		6	64	100	NO	NO	NO	
	7	54	94	NO	NO	NO		7	64	100	NO	NO	NO	
	8	54	94	NO	NO	NO		8	63	100	NO	NO	NO	
	9	55	94	NO	NO	NO		9	64	100	NO	NO	NO	
	10	59	82	NO	NO	NO		10	70	83	NO	NO	NO	
	11	61	82	NO	NO	NO		11	72	78	NO	NO	NO	
	12	63	77	NO	NO	NO		12	72	73	NO	YES	YES	
	1	64	73	NO	YES	NO		1	73	65	YES	YES	YES	
	2	64	68	NO	YES	NO		2	75	50	YES	YES	YES	
	3	66	68	NO	YES	NO		3	75	50	YES	YES	YES	
	4	63	64	NO	YES	NO		4	75	50	YES	YES	YES	
	5	61	77	NO	NO	NO		5	75	41	YES	YES	YES	
	6	59	82	NO	NO	NO		6	72	46	YES	YES	YES	
	7	57	94	NO	NO	NO		7	68	52	YES	YES	YES	
	8	55	100	NO	NO	NO		8	66	56	YES	YES	YES	
	9	56	97	NO	NO	NO		9	63	63	YES	YES	YES	
	10	55	98	NO	NO	NO		10	60	72	NO	YES	YES	
	11	55	99	NO	NO	NO		11	59	75	NO	NO	YES	
October 4, 2016	12	52	99	NO	NO	NO	October 20, 2016	12	60	73	NO	NO	YES	
	1	53	100	NO	NO	NO		1	58	78	NO	NO	NO	
	2	53	100	NO	NO	NO		2	57	77	NO	NO	NO	
	3	55	100	NO	NO	NO		3	57	79	NO	NO	NO	
	4	54	100	NO	NO	NO		4	57	79	NO	NO	NO	
	5	55	100	NO	NO	NO		5	57	78	NO	NO	NO	
	6	55	100	NO	NO	NO		6	57	77	NO	NO	NO	
	7	55	100	NO	NO	NO		7	57	77	NO	NO	NO	
	8	55	100	NO	NO	NO		8	57	82	NO	NO	NO	
	9	55	100	NO	NO	NO		9	57	82	NO	NO	NO	
	10	55	100	NO	NO	NO		10	61	72	NO	YES	YES	
	11	57	88	NO	NO	NO		11	64	68	NO	YES	YES	
	12	59	77	NO	NO	NO		12	64	73	NO	YES	YES	
	1	63	77	NO	NO	NO		1	70	68	NO	YES	YES	
	2	63	77	NO	NO	NO		2	72	64	YES	YES	YES	
	3	64	77	NO	NO	NO		3	75	61	YES	YES	YES	
	4	64	68	NO	YES	YES		4	75	61	YES	YES	YES	
	5	64	73	NO	YES	YES		5	75	61	YES	YES	YES	
	6	64	73	NO	YES	YES		6	72	69	NO	YES	YES	
	7	60	82	NO	NO	NO		7	72	73	NO	YES	YES	
	8	61	82	NO	NO	NO		8	72	78	NO	NO	NO	
	9	59	88	NO	NO	NO		9	64	78	NO	NO	NO	
	10	59	83	NO	NO	NO		10	64	94	NO	NO	NO	
	11	59	83	NO	NO	NO		11	64	97	NO	NO	NO	

October 5, 2016	12	57	86	NO	NO	NO
	1	56	86	NO	NO	NO
	2	55	88	NO	NO	NO
	3	54	92	NO	NO	NO
	4	53	94	NO	NO	NO
	5	53	97	NO	NO	NO
	6	50	100	NO	NO	NO
	7	50	100	NO	NO	NO
	8	52	100	NO	NO	NO
	9	54	94	NO	NO	NO
	10	57	88	NO	NO	NO
	11	57	88	NO	NO	NO
October 6, 2016	12	59	82	NO	NO	NO
	1	59	77	NO	NO	NO
	2	61	72	NO	YES	NO
	3	61	72	NO	YES	NO
	4	61	72	NO	YES	NO
	5	61	72	NO	YES	NO
	6	61	72	NO	YES	NO
	7	55	82	NO	NO	NO
	8	54	88	NO	NO	NO
	9	52	94	NO	NO	NO
	10	51	95	NO	NO	NO
	11	49	97	NO	NO	NO
October 7, 2016	12	48	99	NO	NO	NO
	1	48	100	NO	NO	NO
	2	46	100	NO	NO	NO
	3	45	99	NO	NO	NO
	4	44	100	NO	NO	NO
	5	45	100	NO	NO	NO
	6	45	100	NO	NO	NO
	7	45	100	NO	NO	NO
	8	45	100	NO	NO	NO
	9	45	100	NO	NO	NO
	10	46	100	NO	NO	NO
	11	48	100	NO	NO	NO
October 8, 2016	12	52	94	NO	NO	NO
	1	55	94	NO	NO	NO
	2	61	77	NO	NO	NO
	3	66	64	YES	YES	YES
	4	68	60	YES	YES	YES
	5	70	53	YES	YES	YES
	6	68	60	YES	YES	YES
	7	64	64	NO	YES	YES
	8	59	77	NO	NO	NO
	9	57	82	NO	NO	NO
	10	55	91	NO	NO	NO
	11	53	96	NO	NO	NO
October 21, 2016	12	51	97	NO	NO	NO
	1	51	99	NO	NO	NO
	2	50	100	NO	NO	NO
	3	49	99	NO	NO	NO
	4	47	100	NO	NO	NO
	5	47	100	NO	NO	NO
	6	50	100	NO	NO	NO
	7	48	100	NO	NO	NO
	8	50	100	NO	NO	NO
	9	50	100	NO	NO	NO
	10	52	100	NO	NO	NO
	11	54	100	NO	NO	NO
October 22, 2016	12	59	100	NO	NO	NO
	1	64	94	NO	NO	NO
	2	70	68	NO	YES	YES
	3	72	56	YES	YES	YES
	4	69	56	YES	YES	YES
	5	69	56	YES	YES	YES
	6	68	60	YES	YES	YES
	7	66	64	YES	YES	YES
	8	66	64	YES	YES	YES
	9	63	82	NO	NO	NO
	10	62	83	NO	NO	NO
	11	63	85	NO	NO	NO
October 23, 2016	12	62	88	NO	NO	NO
	1	60	91	NO	NO	NO
	2	60	95	NO	NO	NO
	3	60	96	NO	NO	NO
	4	59	94	NO	NO	NO
	5	60	90	NO	NO	NO
	6	61	88	NO	NO	NO
	7	59	94	NO	NO	NO
	8	59	100	NO	NO	NO
	9	61	94	NO	NO	NO
	10	61	94	NO	NO	NO
	11	61	100	NO	NO	NO
October 24, 2016	12	61	100	NO	NO	NO
	1	63	94	NO	NO	NO
	2	63	94	NO	NO	NO
	3	61	100	NO	NO	NO
	4	63	94	NO	NO	NO
	5	63	94	NO	NO	NO
	6	63	88	NO	NO	NO
	7	61	82	NO	NO	NO
	8	59	76	NO	NO	NO
	9	57	77	NO	NO	NO
	10	56	75	NO	NO	YES
	11	53	75	NO	NO	NO
October 21, 2016	12	64	97	NO	NO	NO
	1	63	100	NO	NO	NO
	2	63	100	NO	NO	NO
	3	63	97	NO	NO	NO
	4	63	99	NO	NO	NO
	5	63	100	NO	NO	NO
	6	63	100	NO	NO	NO
	7	63	100	NO	NO	NO
	8	63	100	NO	NO	NO
	9	63	94	NO	NO	NO
	10	64	88	NO	NO	NO
	11	54	88	NO	NO	NO
October 22, 2016	12	54	82	NO	NO	NO
	1	54	88	NO	NO	NO
	2	54	88	NO	NO	NO
	3	54	88	NO	NO	NO
	4	54	88	NO	NO	NO
	5	54	88	NO	NO	NO
	6	54	82	NO	NO	NO
	7	52	82	NO	NO	NO
	8	50	87	NO	NO	NO
	9	50	82	NO	NO	NO
	10	49	80	NO	NO	NO
	11	48	80	NO	NO	NO
October 23, 2016	12	46	78	NO	NO	NO
	1	48	79	NO	NO	NO
	2	47	77	NO	NO	NO
	3	47	77	NO	NO	NO
	4	46	76	NO	NO	NO
	5	46	77	NO	NO	NO
	6	46	76	NO	NO	NO
	7	45	81	NO	NO	NO
	8	45	71	NO	NO	NO
	9	43	70	NO	NO	NO
	10	45	66	NO	NO	NO
	11	43	66	NO	NO	NO
October 24, 2016	12	45	53	NO	NO	NO
	1	45	53	NO	NO	NO
	2	46	53	NO	NO	NO
	3	46	57	NO	NO	NO
	4	46	66	NO	NO	NO
	5	46	76	NO	NO	NO
	6	45	76	NO	NO	NO
	7	43	81	NO	NO	NO
	8	43	81	NO	NO	NO
	9	43	82	NO	NO	NO
	10	43	81	NO	NO	NO
	11	43	80	NO	NO	NO
October 23, 2016	12	43	81	NO	NO	NO
	1	43	73	NO	NO	NO
	2	43	75	NO	NO	NO
	3	43	74	NO	NO	NO
	4	42	79	NO	NO	NO
	5	43	79	NO	NO	NO
	6	43	81	NO	NO	NO
	7	45	76	NO	NO	NO
	8	45	81	NO	NO	NO
	9	48	76	NO	NO	NO
	10	52	71	NO	NO	NO
	11	52	67	NO	NO	NO
October 24, 2016	12	54	62	NO	NO	NO
	1	55	63	NO	NO	YES
	2	57	55	NO	NO	YES
	3	59	51	NO	NO	YES
	4	59	51	NO	NO	YES
	5	59	51	NO	NO	YES
	6	57	55	NO	NO	YES
	7	52	67	NO	NO	NO
	8	52	67	NO	NO	NO
	9	50	71	NO	NO	NO
	10	50	76	NO	NO	NO
	11	50	73	NO	NO	NO
October 24, 2016	12	56	68	NO	NO	YES
	1	61	80	NO	YES	YES
	2	60	61	NO	YES	YES
	3	51	87	NO	NO	NO
	4	49	93	NO	NO	NO
	5	51	81	NO	NO	NO
	6	48	87	NO	NO	NO
	7	50	82	NO	NO	NO
	8	48	82	NO	NO	NO
	9	50	76	NO	NO	NO
	10	52	71	NO	NO	NO
	11	52	71	NO	NO	NO
October 24, 2016	12	54	62	NO	NO	NO
	1	54	58	NO	NO	NO
	2	52	62	NO	NO	NO
	3	52	62	NO	NO	NO
	4	54	51	NO	NO	NO
	5	54	54	NO	NO	NO
	6	52	54	NO	NO	NO
	7	48	58	NO	NO	NO
	8	46	62	NO	NO	NO
	9	46	62	NO	NO	NO
	10	46	65	NO	NO	NO
	11	45	68	NO	NO	NO

October 9, 2016	12	52	75	NO	NO	NO
	1	51	77	NO	NO	NO
	2	51	79	NO	NO	NO
	3	50	77	NO	NO	NO
	4	49	75	NO	NO	NO
	5	48	76	NO	NO	NO
	6	46	76	NO	NO	NO
	7	46	76	NO	NO	NO
	8	46	76	NO	NO	NO
	9	46	76	NO	NO	NO
	10	50	71	NO	NO	NO
	11	52	67	NO	NO	NO
October 10, 2016	12	55	58	NO	NO	YES
	1	55	58	NO	NO	YES
	2	57	55	NO	NO	YES
	3	57	55	NO	NO	YES
	4	57	55	NO	NO	YES
	5	57	55	NO	NO	YES
	6	55	54	NO	YES	YES
	7	54	58	NO	NO	YES
	8	54	67	NO	YES	YES
	9	52	70	NO	YES	YES
	10	50	71	NO	YES	YES
	11	48	70	NO	YES	YES
October 11, 2016	12	46	69	NO	YES	YES
	1	44	71	NO	YES	YES
	2	44	71	NO	YES	YES
	3	44	72	NO	YES	YES
	4	44	74	NO	YES	YES
	5	42	76	NO	NO	NO
	6	41	76	NO	NO	NO
	7	39	87	NO	NO	NO
	8	39	80	NO	NO	NO
	9	43	70	NO	NO	NO
	10	46	66	NO	NO	NO
	11	48	62	NO	NO	NO
October 12, 2016	12	50	54	NO	NO	NO
	1	55	44	NO	NO	YES
	2	57	41	NO	NO	YES
	3	57	41	NO	NO	YES
	4	59	39	NO	NO	YES
	5	59	39	NO	NO	YES
	6	57	41	NO	NO	YES
	7	55	44	NO	NO	YES
	8	50	58	NO	NO	NO
	9	46	71	NO	NO	NO
	10	47	65	NO	NO	NO
	11	43	81	NO	NO	NO
October 25, 2016	12	41	86	NO	NO	NO
	1	42	91	NO	NO	NO
	2	38	95	NO	NO	NO
	3	37	95	NO	NO	NO
	4	36	97	NO	NO	NO
	5	35	98	NO	NO	NO
	6	34	100	NO	NO	NO
	7	34	100	NO	NO	NO
	8	32	99	NO	NO	NO
	9	34	100	NO	NO	NO
	10	41	100	NO	NO	NO
	11	45	93	NO	NO	NO
October 26, 2016	12	52	58	NO	NO	NO
	1	57	49	NO	NO	YES
	2	59	45	NO	NO	YES
	3	61	45	NO	YES	YES
	4	61	39	NO	YES	YES
	5	59	45	NO	NO	YES
	6	57	51	NO	NO	YES
	7	55	54	NO	NO	YES
	8	54	58	NO	NO	NO
	9	52	71	NO	NO	NO
	10	51	71	NO	NO	NO
	11	51	68	NO	NO	NO
October 27, 2016	12	50	72	NO	NO	NO
	1	48	72	NO	NO	NO
	2	47	76	NO	NO	NO
	3	48	72	NO	NO	NO
	4	45	82	NO	NO	NO
	5	45	87	NO	NO	NO
	6	43	83	NO	NO	NO
	7	41	93	NO	NO	NO
	8	41	93	NO	NO	NO
	9	45	93	NO	NO	NO
	10	52	76	NO	NO	NO
	11	55	67	NO	NO	YES
October 28, 2016	12	59	59	NO	NO	YES
	1	63	55	NO	YES	YES
	2	64	52	NO	YES	YES
	3	66	49	NO	YES	YES
	4	68	49	YES	YES	YES
	5	66	49	YES	YES	YES
	6	63	52	NO	YES	YES
	7	61	55	NO	YES	YES
	8	57	63	NO	NO	YES
	9	55	67	NO	NO	YES
	10	53	77	NO	NO	NO
	11	53	80	NO	NO	NO
October 29, 2016	12	45	66	NO	NO	NO
	1	44	66	NO	NO	NO
	2	43	68	NO	NO	NO
	3	41	76	NO	NO	NO
	4	42	75	NO	NO	NO
	5	43	75	NO	NO	NO
	6	43	76	NO	NO	NO
	7	43	76	NO	NO	NO
	8	41	81	NO	NO	NO
	9	45	71	NO	NO	NO
	10	45	76	NO	NO	NO
	11	46	66	NO	NO	NO
October 30, 2016	12	46	53	NO	NO	NO
	1	48	46	NO	NO	NO
	2	48	43	NO	NO	NO
	3	48	40	NO	NO	NO
	4	50	40	NO	NO	NO
	5	48	43	NO	NO	NO
	6	46	46	NO	NO	NO
	7	45	49	NO	NO	NO
	8	45	49	NO	NO	NO
	9	43	57	NO	NO	NO
	10	42	61	NO	NO	NO
	11	39	68	NO	NO	NO
October 31, 2016	12	40	69	NO	NO	NO
	1	38	77	NO	NO	NO
	2	38	89	NO	NO	NO
	3	38	88	NO	NO	NO
	4	33	91	NO	NO	NO
	5	32	87	NO	NO	NO
	6	30	93	NO	NO	NO
	7	32	93	NO	NO	NO
	8	28	100	NO	NO	NO
	9	30	100	NO	NO	NO
	10	36	84	NO	NO	NO
	11	38	61	NO	NO	NO
November 1, 2016	12	41	61	NO	NO	NO
	1	43	57	NO	NO	NO
	2	45	53	NO	NO	NO
	3	45	53	NO	NO	NO
	4	46	57	NO	NO	NO
	5	45	57	NO	NO	NO
	6	45	61	NO	NO	NO
	7	43	57	NO	NO	NO
	8	43	57	NO	NO	NO
	9	43	65	NO	NO	NO
	10	41	58	NO	NO	NO
	11	41	54	NO	NO	NO
November 2, 2016	12	42	54	NO	NO	NO
	1	42	55	NO	NO	NO
	2	42	56	NO	NO	NO
	3	42	58	NO	NO	NO
	4	41	69	NO	NO	NO
	5	40	75	NO	NO	NO
	6	37	76	NO	NO	NO
	7	37	87	NO	NO	NO
	8	37	87	NO	NO	NO
	9	39	87	NO	NO	NO
	10	39	93	NO	NO	NO
	11	41	87	NO	NO	NO
November 3, 2016	12	41	87	NO	NO	NO
	1	43	87	NO	NO	NO
	2	43	93	NO	NO	NO
	3	43	100	NO	NO	NO
	4	43	93	NO	NO	NO
	5	43	93	NO	NO	NO
	6	45	100	NO	NO	NO
	7	46	100	NO	NO	NO
	8	46	93	NO	NO	NO
	9	48	87	NO	NO	NO
	10	48	80	NO	NO	NO
	11	47	82	NO	NO	NO
November 4, 2016	12	47	81	NO	NO	NO
	1	46	82	NO	NO	NO
	2	44	83	NO	NO	NO
	3	44	76	NO	NO	NO
	4	42	78	NO	NO	NO
	5	41	73	NO	NO	NO
	6	41	70	NO	NO	NO
	7	39	75	NO	NO	NO
	8	39	75	NO	NO	NO
	9	39	70	NO	NO	NO
	10	41	65	NO	NO	NO
	11	43	61	NO	NO	NO
November 5, 2016	12	46	53	NO	NO	NO
	1	48	50	NO	NO	NO
	2	52	41	NO	NO	NO
	3	52	41	NO	NO	NO
	4	52	44	NO	NO	NO
	5	52	44	NO	NO	NO
	6	50	50	NO	NO	NO
	7	46	62	NO	NO	NO
	8	43	70	NO	NO	NO
	9	45	66	NO	NO	NO
	10	44	69	NO	NO	NO
	11	41	76	NO	NO	NO

October 13, 2016	12	54	78	NO	NO	NO
	1	52	81	NO	NO	NO
	2	52	85	NO	NO	NO
	3	50	90	NO	NO	NO
	4	51	88	NO	NO	NO
	5	50	89	NO	NO	NO
	6	46	100	NO	NO	NO
	7	50	94	NO	NO	NO
	8	50	94	NO	NO	NO
	9	52	94	NO	NO	NO
	10	52	94	NO	NO	NO
	11	54	94	NO	NO	NO
	12	57	94	NO	NO	YES
	1	61	77	NO	NO	YES
	2	61	68	NO	YES	YES
	3	61	62	NO	YES	YES
	4	59	59	NO	NO	YES
	5	57	59	NO	NO	YES
	6	57	55	NO	NO	YES
	7	54	58	NO	NO	NO
	8	52	62	NO	NO	NO
	9	50	66	NO	NO	NO
	10	50	65	NO	NO	NO
	11	47	77	NO	NO	NO
October 14, 2016	12	45	77	NO	NO	NO
	1	43	82	NO	NO	NO
	2	40	90	NO	NO	NO
	3	39	93	NO	NO	NO
	4	41	93	NO	NO	NO
	5	40	93	NO	NO	NO
	6	36	100	NO	NO	NO
	7	36	100	NO	NO	NO
	8	36	100	NO	NO	NO
	9	39	100	NO	NO	NO
	10	45	81	NO	NO	NO
	11	48	71	NO	NO	NO
	12	52	58	NO	NO	NO
	1	54	54	NO	NO	NO
	2	55	51	NO	YES	YES
	3	55	51	NO	YES	YES
	4	57	48	NO	YES	YES
	5	57	48	NO	YES	YES
	6	55	51	NO	YES	YES
	7	50	66	NO	NO	NO
	8	48	71	NO	NO	NO
	9	45	81	NO	NO	NO
	10	45	83	NO	NO	NO
	11	42	88	NO	NO	NO
October 15, 2016	12	41	90	NO	NO	NO
	1	37	92	NO	NO	NO
	2	38	94	NO	NO	NO
	3	36	95	NO	NO	NO
	4	39	97	NO	NO	NO
	5	33	98	NO	NO	NO
	6	32	100	NO	NO	NO
	7	32	100	NO	NO	NO
	8	32	100	NO	NO	NO
	9	34	100	NO	NO	NO
	10	37	100	NO	NO	NO
	11	37	100	NO	NO	NO
	12	52	71	NO	NO	NO
	1	59	59	NO	NO	YES
	2	61	59	NO	YES	YES
	3	63	59	NO	YES	YES
	4	64	56	NO	YES	YES
	5	64	56	NO	YES	YES
	6	63	59	NO	YES	YES
	7	59	67	NO	NO	YES
	8	57	72	NO	NO	YES
	9	55	72	NO	NO	YES
	10	58	70	NO	NO	YES
	11	55	70	NO	NO	YES
	12	55	70	NO	NO	YES
October 16, 2016	1	53	76	NO	NO	NO
	2	53	79	NO	NO	NO
	3	50	83	NO	NO	NO
	4	52	92	NO	NO	NO
	5	48	89	NO	NO	NO
	6	48	93	NO	NO	NO
	7	46	100	NO	NO	NO
	8	46	100	NO	NO	NO
	9	52	94	NO	NO	NO
	10	57	82	NO	NO	NO
	11	61	77	NO	NO	NO
	12	63	72	NO	YES	YES
	1	68	68	NO	YES	YES
	2	72	60	YES	YES	YES
	3	73	57	YES	YES	YES
	4	72	60	YES	YES	YES
	5	73	57	YES	YES	YES
	6	70	64	YES	YES	YES
	7	66	73	NO	YES	YES
	8	66	73	NO	YES	YES
	9	64	77	NO	NO	NO
	10	65	78	NO	NO	NO
	11	64	76	NO	NO	NO
October 29, 2016	12	39	83	NO	NO	NO
	1	41	80	NO	NO	NO
	2	42	85	NO	NO	NO
	3	40	85	NO	NO	NO
	4	39	87	NO	NO	NO
	5	41	85	NO	NO	NO
	6	39	81	NO	NO	NO
	7	39	87	NO	NO	NO
	8	37	93	NO	NO	NO
	9	41	87	NO	NO	NO
	10	46	73	NO	NO	NO
	11	55	60	NO	NO	YES
	12	63	60	NO	YES	YES
	1	70	60	YES	YES	YES
	2	70	60	YES	YES	YES
	3	70	57	YES	YES	YES
	4	70	57	YES	YES	YES
	5	72	64	YES	YES	YES
	6	72	64	YES	YES	YES
	7	68	64	YES	YES	YES
	8	68	64	YES	YES	YES
	9	68	62	YES	YES	YES
	10	70	63	YES	YES	YES
	11	69	62	YES	YES	YES
October 30, 2016	12	69	62	YES	YES	YES
	1	67	65	YES	YES	YES
	2	67	67	NO	YES	YES
	3	67	66	NO	YES	YES
	4	67	67	NO	YES	YES
	5	66	68	NO	YES	YES
	6	66	68	NO	YES	YES
	7	64	68	NO	YES	YES
	8	64	73	NO	YES	YES
	9	63	70	NO	YES	YES
	10	66	68	NO	YES	YES
	11	66	64	YES	YES	YES
	12	68	60	YES	YES	YES
	1	72	78	NO	NO	NO
	2	66	83	NO	NO	NO
	3	64	88	NO	NO	NO
	4	63	88	NO	NO	NO
	5	63	82	NO	NO	NO
	6	63	77	NO	NO	NO
	7	59	77	NO	NO	NO
	8	55	77	NO	NO	NO
	9	54	77	NO	NO	NO
	10	51	68	NO	NO	NO
	11	50	71	NO	NO	NO
October 31, 2016	12	48	70	NO	NO	NO
	1	47	70	NO	NO	NO
	2	45	70	NO	NO	NO
	3	44	70	NO	NO	NO
	4	43	69	NO	NO	NO
	5	43	68	NO	NO	NO
	6	43	66	NO	NO	NO
	7	41	70	NO	NO	NO
	8	39	75	NO	NO	NO
	9	41	70	NO	NO	NO
	10	43	66	NO	NO	NO
	11	45	57	NO	NO	NO
	12	46	50	NO	NO	NO
	1	46	53	NO	NO	NO
	2	48	50	NO	NO	NO
	3	48	50	NO	NO	NO
	4	50	50	NO	NO	NO
	5	48	54	NO	NO	NO
	6	46	57	NO	NO	NO
	7	45	57	NO	NO	NO
	8	45	61	NO	NO	NO
	9	41	70	NO	NO	NO
	10	39	76	NO	NO	NO
	11	37	78	NO	NO	NO

November Weather Data and Zone Requirements														
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)		Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
November 1	12	38	79	NO	NO	NO		November 17	12	50	52	NO	NO	NO
	1	37	81	NO	NO	NO			1	50	53	NO	NO	NO
	2	37	92	NO	NO	NO			2	49	56	NO	NO	NO
	3	33	94	NO	NO	NO			3	48	58	NO	NO	NO
	4	33	92	NO	NO	NO			4	48	62	NO	NO	NO
	5	34	89	NO	NO	NO			5	48	63	NO	NO	NO
	6	32	93	NO	NO	NO			6	48	66	NO	NO	NO
	7	32	100	NO	NO	NO			7	48	66	NO	NO	NO
	8	32	93	NO	NO	NO			8	48	71	NO	NO	NO
	9	34	93	NO	NO	NO			9	50	71	NO	NO	NO
	10	41	87	NO	NO	NO			10	52	62	NO	NO	NO
	11	46	71	NO	NO	NO			11	52	62	NO	NO	NO
	12	50	66	NO	NO	NO			12	55	54	NO	NO	YES
	1	50	67	NO	NO	NO			1	55	47	NO	NO	YES
	2	54	67	NO	NO	NO			2	54	47	NO	NO	NO
	3	54	67	NO	NO	NO			3	50	47	NO	NO	NO
	4	54	67	NO	NO	NO			4	48	37	NO	NO	NO
	5	54	67	NO	NO	NO			5	46	40	NO	NO	NO
	6	54	67	NO	NO	NO			6	45	43	NO	NO	NO
	7	50	76	NO	NO	NO			7	41	49	NO	NO	NO
	8	50	76	NO	NO	NO			8	39	52	NO	NO	NO
	9	50	82	NO	NO	NO			9	37	52	NO	NO	NO
	10	49	84	NO	NO	NO			10	35	58	NO	NO	NO
	11	50	84	NO	NO	NO			11	34	61	NO	NO	NO
November 2, 2016	12	49	86	NO	NO	NO		November 18, 2016	12	34	60	NO	NO	NO
	1	47	92	NO	NO	NO			1	35	70	NO	NO	NO
	2	48	92	NO	NO	NO			2	37	75	NO	NO	NO
	3	47	93	NO	NO	NO			3	37	88	NO	NO	NO
	4	44	98	NO	NO	NO			4	36	95	NO	NO	NO
	5	44	97	NO	NO	NO			5	33	97	NO	NO	NO
	6	45	93	NO	NO	NO			6	33	100	NO	NO	NO
	7	43	100	NO	NO	NO			7	32	100	NO	NO	NO
	8	46	93	NO	NO	NO			8	32	93	NO	NO	NO
	9	50	87	NO	NO	NO			9	39	87	NO	NO	NO
	10	55	77	NO	NO	NO			10	43	81	NO	NO	NO
	11	61	72	NO	YES	YES			11	52	67	NO	NO	NO
	12	64	68	NO	YES	YES			12	59	55	NO	NO	YES
	1	64	68	NO	YES	YES			1	64	45	NO	YES	YES
	2	72	57	YES	YES	YES			2	68	43	YES	YES	YES
	3	70	60	YES	YES	YES			3	70	40	YES	YES	YES
	4	68	60	YES	YES	YES			4	68	43	YES	YES	YES
	5	66	57	YES	YES	YES			5	63	48	NO	YES	YES
	6	66	60	YES	YES	YES			6	61	52	NO	YES	YES
	7	62	64	NO	YES	YES			7	59	55	NO	NO	YES
	8	61	64	NO	YES	YES			8	59	55	NO	NO	YES
	9	64	64	NO	YES	YES			9	52	71	NO	NO	NO
	10	62	75	NO	YES	YES			10	49	79	NO	NO	NO
	11	61	49	NO	YES	YES			11	45	87	NO	NO	NO
November 3, 2016	12	62	77	NO	NO	NO		November 19, 2016	12	46	85	NO	NO	NO
	1	61	69	NO	YES	YES			1	45	85	NO	NO	NO
	2	53	86	NO	NO	NO			2	41	94	NO	NO	NO
	3	57	84	NO	NO	NO			3	41	96	NO	NO	NO
	4	58	80	NO	NO	NO			4	37	95	NO	NO	NO
	5	58	81	NO	NO	NO			5	40	97	NO	NO	NO
	6	59	77	NO	NO	NO			6	39	98	NO	NO	NO
	7	61	77	NO	NO	NO			7	37	93	NO	NO	NO
	8	64	73	NO	YES	YES			8	37	93	NO	NO	NO
	9	64	73	NO	YES	YES			9	39	76	NO	NO	NO
	10	64	77	NO	NO	NO			10	43	63	NO	NO	NO
	11	64	77	NO	NO	NO			11	42	59	NO	NO	NO
	12	64	83	NO	NO	NO			12	59	66	NO	NO	YES
	1	64	94	NO	NO	NO			1	57	75	NO	NO	YES
	2	64	88	NO	NO	NO			2	48	81	NO	NO	NO
	3	63	88	NO	NO	NO			3	39	81	NO	NO	NO
	4	63	77	NO	NO	NO			4	37	81	NO	NO	NO
	5	63	68	NO	YES	YES			5	36	81	NO	NO	NO
	6	61	63	NO	YES	YES			6	36	75	NO	NO	NO
	7	57	63	NO	NO	YES			7	36	75	NO	NO	NO
	8	57	63	NO	NO	YES			8	36	70	NO	NO	NO
	9	54	72	NO	NO	NO			9	36	70	NO	NO	NO
	10	53	71	NO	NO	NO			10	35	74	NO	NO	NO
	11	54	67	NO	NO	NO			11	34	76	NO	NO	NO
November 4, 2016	12	52	71	NO	NO	NO		November 20, 2016	12	34	74	NO	NO	NO
	1	49	74	NO	NO	NO			1	34	72	NO	NO	NO
	2	50	76	NO	NO	NO			2	33	70	NO	NO	NO
	3	50	75	NO	NO	NO			3	33	67	NO	NO	NO
	4	49	74	NO	NO	NO			4	32	68	NO	NO	NO
	5	47	68	NO	NO	NO			5	32	70	NO	NO	NO
	6	46	66	NO	NO	NO			6	32	69	NO	NO	NO
	7	46	66	NO	NO	NO			7	32	75	NO	NO	NO
	8	45	66	NO	NO	NO			8	32	75	NO	NO	NO
	9	46	62	NO	NO	NO			9	32	75	NO	NO	NO
	10	48	62	NO	NO	NO			10	32	74	NO	NO	NO
	11	50	54	NO	NO	NO			11	34	75	NO	NO	NO
	12	52	54	NO	NO	NO			12	34	75	NO	NO	NO
	1	54	44	NO	NO	NO			1	34	81	NO	NO	NO
	2	55	41	NO	NO	YES			2	32	93	NO	NO	NO
	3	55	38	NO	NO	YES			3	32	87	NO	NO	NO
	4	55	38	NO	NO	YES			4	32	80	NO	NO	NO
	5	55	36	NO	NO	YES			5	32	75	NO	NO	NO
	6	54	38	NO	NO	NO			6	32	75	NO	NO	NO
	7	50	47	NO	NO	NO			7	32	69	NO	NO	NO
	8	48	50	NO	NO	NO			8	32	75	NO	NO	NO
	9	48	50	NO	NO	NO			9	30	80	NO	NO	NO
	10	47	53	NO	NO	NO			10	30	75	NO	NO	NO
	11	44	63	NO	NO	NO			11	30	73	NO	NO	NO

November 5, 2016	12	44	64	NO	NO	NO
	1	40	68	NO	NO	NO
	2	40	72	NO	NO	NO
	3	40	79	NO	NO	NO
	4	42	78	NO	NO	NO
	5	41	82	NO	NO	NO
	6	41	87	NO	NO	NO
	7	41	87	NO	NO	NO
	8	41	87	NO	NO	NO
	9	43	81	NO	NO	NO
	10	48	71	NO	NO	NO
	11	52	67	NO	NO	NO
November 6, 2016	12	54	58	NO	NO	NO
	1	57	51	NO	NO	YES
	2	59	48	NO	NO	YES
	3	61	42	NO	YES	YES
	4	61	45	NO	YES	YES
	5	59	48	NO	NO	YES
	6	57	51	NO	NO	YES
	7	50	62	NO	NO	NO
	8	48	58	NO	NO	NO
	9	53	53	NO	NO	NO
	10	53	54	NO	NO	NO
	11	53	54	NO	NO	NO
November 7, 2016	12	53	54	NO	NO	NO
	1	51	61	NO	NO	NO
	2	50	69	NO	NO	NO
	3	50	73	NO	NO	NO
	4	49	78	NO	NO	NO
	5	49	78	NO	NO	NO
	6	48	82	NO	NO	NO
	7	46	87	NO	NO	NO
	8	48	76	NO	NO	NO
	9	52	62	NO	NO	NO
	10	54	51	NO	NO	NO
	11	55	47	NO	NO	YES
November 8, 2016	12	57	36	NO	NO	YES
	1	61	31	NO	YES	YES
	2	61	29	NO	YES	YES
	3	61	29	NO	YES	YES
	4	59	31	NO	NO	YES
	5	57	31	NO	NO	YES
	6	55	33	NO	NO	YES
	7	52	38	NO	NO	NO
	8	50	40	NO	NO	NO
	9	50	39	NO	NO	NO
	10	48	42	NO	NO	NO
	11	47	44	NO	NO	NO
November 21, 2016	12	47	44	NO	NO	NO
	1	44	56	NO	NO	NO
	2	41	58	NO	NO	NO
	3	39	67	NO	NO	NO
	4	38	69	NO	NO	NO
	5	37	73	NO	NO	NO
	6	34	81	NO	NO	NO
	7	32	87	NO	NO	NO
	8	34	87	NO	NO	NO
	9	41	70	NO	NO	NO
	10	46	53	NO	NO	NO
	11	50	43	NO	NO	NO
November 22, 2016	12	54	35	NO	NO	NO
	1	57	33	NO	NO	YES
	2	59	29	NO	NO	YES
	3	59	31	NO	NO	YES
	4	59	31	NO	NO	YES
	5	57	33	NO	NO	YES
	6	54	38	NO	NO	NO
	7	50	53	NO	NO	NO
	8	46	57	NO	NO	NO
	9	43	56	NO	NO	NO
	10	42	57	NO	NO	NO
	11	41	60	NO	NO	NO
November 23, 2016	12	39	66	NO	NO	NO
	1	38	70	NO	NO	NO
	2	35	76	NO	NO	NO
	3	35	76	NO	NO	NO
	4	33	82	NO	NO	NO
	5	33	93	NO	NO	NO
	6	34	91	NO	NO	NO
	7	30	93	NO	NO	NO
	8	32	87	NO	NO	NO
	9	41	70	NO	NO	NO
	10	46	62	NO	NO	NO
	11	54	51	NO	NO	NO
November 24, 2016	12	61	39	NO	YES	YES
	1	64	40	NO	YES	YES
	2	64	42	NO	YES	YES
	3	63	45	NO	YES	YES
	4	63	45	NO	YES	YES
	5	61	51	NO	YES	YES
	6	59	58	NO	NO	YES
	7	55	58	NO	NO	YES
	8	55	58	NO	NO	YES
	9	55	62	NO	NO	YES
	10	55	61	NO	NO	YES
	11	53	70	NO	NO	NO
November 25, 2016	12	30	73	NO	NO	NO
	1	34	72	NO	NO	NO
	2	33	71	NO	NO	NO
	3	33	70	NO	NO	NO
	4	32	72	NO	NO	NO
	5	30	70	NO	NO	NO
	6	30	69	NO	NO	NO
	7	30	69	NO	NO	NO
	8	30	69	NO	NO	NO
	9	30	69	NO	NO	NO
	10	30	72	NO	NO	NO
	11	30	75	NO	NO	NO
November 26, 2016	12	32	69	NO	NO	NO
	1	32	69	NO	NO	NO
	2	32	64	NO	NO	NO
	3	32	64	NO	NO	NO
	4	32	64	NO	NO	NO
	5	30	69	NO	NO	NO
	6	30	69	NO	NO	NO
	7	30	64	NO	NO	NO
	8	32	55	NO	NO	NO
	9	32	60	NO	NO	NO
	10	32	60	NO	NO	NO
	11	32	60	NO	NO	NO
November 27, 2016	12	32	61	NO	NO	NO
	1	32	62	NO	NO	NO
	2	32	62	NO	NO	NO
	3	33	61	NO	NO	NO
	4	32	63	NO	NO	NO
	5	32	65	NO	NO	NO
	6	32	64	NO	NO	NO
	7	32	64	NO	NO	NO
	8	32	64	NO	NO	NO
	9	34	60	NO	NO	NO
	10	36	52	NO	NO	NO
	11	37	52	NO	NO	NO
November 28, 2016	12	39	45	NO	NO	NO
	1	41	45	NO	NO	NO
	2	41	42	NO	NO	NO
	3	41	42	NO	NO	NO
	4	41	52	NO	NO	NO
	5	37	60	NO	NO	NO
	6	36	65	NO	NO	NO
	7	34	65	NO	NO	NO
	8	32	69	NO	NO	NO
	9	32	69	NO	NO	NO
	10	32	73	NO	NO	NO
	11	32	72	NO	NO	NO
November 29, 2016	12	28	80	NO	NO	NO
	1	29	79	NO	NO	NO
	2	29	80	NO	NO	NO
	3	27	84	NO	NO	NO
	4	26	88	NO	NO	NO
	5	27	83	NO	NO	NO
	6	25	86	NO	NO	NO
	7	25	86	NO	NO	NO
	8	27	86	NO	NO	NO
	9	28	86	NO	NO	NO
	10	34	75	NO	NO	NO
	11	36	70	NO	NO	NO
November 30, 2016	12	37	60	NO	NO	NO
	1	39	56	NO	NO	NO
	2	41	53	NO	NO	NO
	3	39	56	NO	NO	NO
	4	39	56	NO	NO	NO
	5	39	56	NO	NO	NO
	6	39	52	NO	NO	NO
	7	37	65	NO	NO	NO
	8	37	75	NO	NO	NO
	9	36	81	NO	NO	NO
	10	36	82	NO	NO	NO
	11	37	80	NO	NO	NO
November 1, 2017	12	36	81	NO	NO	NO
	1	36	68	NO	NO	NO
	2	36	59	NO	NO	NO
	3	34	79	NO	NO	NO
	4	35	76	NO	NO	NO
	5	36	72	NO	NO	NO
	6	36	81	NO	NO	NO
	7	36	81	NO	NO	NO
	8	36	87	NO	NO	NO
	9	36	93	NO	NO	NO
	10	36	93	NO	NO	NO
	11	37	87	NO	NO	NO
November 2, 2017	12	39	87	NO	NO	NO
	1	39	81	NO	NO	NO
	2	39	81	NO	NO	NO
	3	41	81	NO	NO	NO
	4	39	87	NO	NO	NO
	5	39	93	NO	NO	NO
	6	39	100	NO	NO	NO
	7	39	100	NO	NO	NO
	8	39	100	NO	NO	NO
	9	39	100	NO	NO	NO
	10	40	99	NO	NO	NO
	11	40	97	NO	NO	NO

November 9, 2016	12	52	81	NO	NO	NO	November 25, 2016	12	40	97	NO	NO	NO
	1	51	87	NO	NO	NO		1	40	98	NO	NO	NO
	2	50	92	NO	NO	NO		2	40	99	NO	NO	NO
	3	50	94	NO	NO	NO		3	40	100	NO	NO	NO
	4	49	97	NO	NO	NO		4	39	100	NO	NO	NO
	5	49	97	NO	NO	NO		5	39	99	NO	NO	NO
	6	48	10	NO	NO	NO		6	37	100	NO	NO	NO
	7	48	100	NO	NO	NO		7	39	100	NO	NO	NO
	8	50	94	NO	NO	NO		8	39	100	NO	NO	NO
	9	50	94	NO	NO	NO		9	39	100	NO	NO	NO
	10	50	94	NO	NO	NO		10	41	100	NO	NO	NO
	11	52	88	NO	NO	NO		11	45	87	NO	NO	NO
November 10, 2016	12	54	82	NO	NO	NO		12	45	87	NO	NO	NO
	1	52	76	NO	NO	NO	November 26, 2016	1	45	87	NO	NO	NO
	2	52	76	NO	NO	NO		2	46	76	NO	NO	NO
	3	52	67	NO	NO	NO		3	46	71	NO	NO	NO
	4	48	76	NO	NO	NO		4	45	71	NO	NO	NO
	5	48	76	NO	NO	NO		5	45	66	NO	NO	NO
	6	46	76	NO	NO	NO		6	43	70	NO	NO	NO
	7	45	76	NO	NO	NO		7	43	66	NO	NO	NO
	8	43	70	NO	NO	NO		8	41	70	NO	NO	NO
	9	43	66	NO	NO	NO		9	41	70	NO	NO	NO
	10	42	69	NO	NO	NO		10	41	70	NO	NO	NO
	11	42	67	NO	NO	NO		11	41	71	NO	NO	NO
November 11, 2016	12	41	70	NO	NO	NO	November 27, 2016	12	40	73	NO	NO	NO
	1	41	79	NO	NO	NO		1	39	76	NO	NO	NO
	2	40	79	NO	NO	NO		2	39	80	NO	NO	NO
	3	41	73	NO	NO	NO		3	39	80	NO	NO	NO
	4	40	74	NO	NO	NO		4	38	87	NO	NO	NO
	5	39	77	NO	NO	NO		5	37	87	NO	NO	NO
	6	37	81	NO	NO	NO		6	37	81	NO	NO	NO
	7	37	81	NO	NO	NO		7	37	87	NO	NO	NO
	8	39	81	NO	NO	NO		8	37	81	NO	NO	NO
	9	43	70	NO	NO	NO		9	37	81	NO	NO	NO
	10	46	71	NO	NO	NO		10	37	81	NO	NO	NO
	11	50	66	NO	NO	NO		11	37	81	NO	NO	NO
November 12, 2016	12	52	58	NO	NO	NO	November 28, 2016	12	39	75	NO	NO	NO
	1	55	44	NO	NO	YES		1	39	75	NO	NO	NO
	2	55	41	NO	NO	YES		2	39	75	NO	NO	NO
	3	57	38	NO	NO	YES		3	39	75	NO	NO	NO
	4	55	41	NO	NO	YES		4	39	75	NO	NO	NO
	5	54	44	NO	NO	NO		5	39	75	NO	NO	NO
	6	50	50	NO	NO	NO		6	37	81	NO	NO	NO
	7	48	54	NO	NO	NO		7	37	81	NO	NO	NO
	8	48	54	NO	NO	NO		8	39	75	NO	NO	NO
	9	48	52	NO	NO	NO		9	37	81	NO	NO	NO
	10	49	52	NO	NO	NO		10	37	81	NO	NO	NO
	11	50	49	NO	NO	NO		11	38	79	NO	NO	NO
November 9, 2016	12	50	52	NO	NO	NO	November 25, 2016	12	37	77	NO	NO	NO
	1	50	54	NO	NO	NO		1	35	81	NO	NO	NO
	2	49	56	NO	NO	NO		2	33	85	NO	NO	NO
	3	48	58	NO	NO	NO		3	35	80	NO	NO	NO
	4	48	62	NO	NO	NO		4	36	78	NO	NO	NO
	5	48	63	NO	NO	NO		5	36	77	NO	NO	NO
	6	48	66	NO	NO	NO		6	36	81	NO	NO	NO
	7	48	66	NO	NO	NO		7	36	81	NO	NO	NO
	8	48	71	NO	NO	NO		8	37	75	NO	NO	NO
	9	50	71	NO	NO	NO		9	37	75	NO	NO	NO
	10	52	62	NO	NO	NO		10	37	74	NO	NO	NO
	11	52	62	NO	NO	NO		11	39	72	NO	NO	NO
November 10, 2016	12	55	54	NO	NO	YES	November 26, 2016	12	41	65	NO	NO	NO
	1	55	47	NO	NO	YES		1	41	65	NO	NO	NO
	2	54	47	NO	NO	NO		2	43	61	NO	NO	NO
	3	50	47	NO	NO	NO		3	43	61	NO	NO	NO
	4	48	37	NO	NO	NO		4	43	61	NO	NO	NO
	5	46	40	NO	NO	NO		5	41	65	NO	NO	NO
	6	45	43	NO	NO	NO		6	41	65	NO	NO	NO
	7	41	49	NO	NO	NO		7	39	70	NO	NO	NO
	8	39	52	NO	NO	NO		8	37	75	NO	NO	NO
	9	37	52	NO	NO	NO		9	34	81	NO	NO	NO
	10	35	58	NO	NO	NO		10	33	82	NO	NO	NO
	11	34	61	NO	NO	NO		11	32	82	NO	NO	NO
November 11, 2016	12	33	62	NO	NO	NO	November 27, 2016	12	32	85	NO	NO	NO
	1	32	62	NO	NO	NO		1	30	86	NO	NO	NO
	2	32	61	NO	NO	NO		2	31	87	NO	NO	NO
	3	32	62	NO	NO	NO		3	29	91	NO	NO	NO
	4	30	65	NO	NO	NO		4	28	91	NO	NO	NO
	5	31	65	NO	NO	NO		5	27	94	NO	NO	NO
	6	30	63	NO	NO	NO		6	27	93	NO	NO	NO
	7	30	64	NO	NO	NO		7	27	100	NO	NO	NO
	8	32	64	NO	NO	NO		8	25	93	NO	NO	NO
	9	35	60	NO	NO	NO		9	28	93	NO	NO	NO
	10	38	56	NO	NO	NO		10	30	93	NO	NO	NO
	11	37	52	NO	NO	NO		11	36	87	NO	NO	NO
November 12, 2016	12	43	49	NO	NO	NO	November 28, 2016	12	37	75	NO	NO	NO
	1	45	46	NO	NO	NO		1	43	66	NO	NO	NO
	2	46	43	NO	NO	NO		2	43	61	NO	NO	NO
	3	46	43	NO	NO	NO		3	43	61	NO	NO	NO
	4	46	43	NO	NO	NO		4	43	61	NO	NO	NO
	5	43	46	NO	NO	NO		5	43	57	NO	NO	NO
	6	41	53	NO	NO	NO		6	43	57	NO	NO	NO
	7	39	56	NO	NO	NO		7	43	61	NO	NO	NO
	8	36	65	NO	NO	NO		8	43	61	NO	NO	NO
	9	36	65	NO	NO	NO		9	43	61	NO	NO	NO
	10	40	62	NO	NO	NO		10	44	62	NO	NO	NO
	11	40	62	NO	NO	NO		11	44	62	NO	NO	NO

November 13, 2016	12	40	61	NO	NO	NO	November 29, 2016	12	43	65	NO	NO	NO
	1	39	62	NO	NO	NO		1	44	67	NO	NO	NO
	2	37	67	NO	NO	NO		2	42	73	NO	NO	NO
	3	37	68	NO	NO	NO		3	41	86	NO	NO	NO
	4	36	69	NO	NO	NO		4	39	97	NO	NO	NO
	5	36	68	NO	NO	NO		5	40	96	NO	NO	NO
	6	36	70	NO	NO	NO		6	41	100	NO	NO	NO
	7	34	75	NO	NO	NO		7	43	93	NO	NO	NO
	8	37	65	NO	NO	NO		8	46	93	NO	NO	NO
	9	41	61	NO	NO	NO		9	46	94	NO	NO	NO
	10	45	49	NO	NO	NO		10	48	94	NO	NO	NO
	11	50	40	NO	NO	NO		11	48	88	NO	NO	NO
November 14, 2016	12	54	35	NO	NO	NO		12	50	94	NO	NO	NO
	1	55	31	NO	NO	YES	November 30, 2016	1	50	88	NO	NO	NO
	2	57	27	NO	NO	YES		2	52	88	NO	NO	NO
	3	57	27	NO	NO	YES		3	52	94	NO	NO	NO
	4	55	29	NO	NO	YES		4	52	94	NO	NO	NO
	5	50	30	NO	NO	NO		5	52	94	NO	NO	NO
	6	48	32	NO	NO	NO		6	50	94	NO	NO	NO
	7	45	37	NO	NO	NO		7	50	94	NO	NO	NO
	8	43	39	NO	NO	NO		8	50	94	NO	NO	NO
	9	38	42	NO	NO	NO		9	50	100	NO	NO	NO
	10	38	49	NO	NO	NO		10	48	100	NO	NO	NO
	11	38	51	NO	NO	NO		11	48	100	NO	NO	NO
November 15, 2016	12	38	52	NO	NO	NO	November 30, 2016	12	47	100	NO	NO	NO
	1	41	46	NO	NO	NO		1	47	99	NO	NO	NO
	2	39	47	NO	NO	NO		2	46	100	NO	NO	NO
	3	34	57	NO	NO	NO		3	46	99	NO	NO	NO
	4	36	52	NO	NO	NO		4	46	100	NO	NO	NO
	5	34	55	NO	NO	NO		5	45	100	NO	NO	NO
	6	34	56	NO	NO	NO		6	45	100	NO	NO	NO
	7	32	60	NO	NO	NO		7	45	100	NO	NO	NO
	8	34	60	NO	NO	NO		8	45	100	NO	NO	NO
	9	37	60	NO	NO	NO		9	46	100	NO	NO	NO
	10	46	43	NO	NO	NO		10	50	100	NO	NO	NO
	11	52	33	NO	NO	NO		11	50	100	NO	NO	NO
November 16, 2016	12	55	29	NO	NO	YES	November 16, 2016	12	50	100	NO	NO	NO
	1	57	25	NO	NO	YES		1	50	100	NO	NO	NO
	2	59	25	NO	NO	YES		2	50	100	NO	NO	NO
	3	57	27	NO	NO	YES		3	52	94	NO	NO	NO
	4	55	29	NO	NO	YES		4	52	100	NO	NO	NO
	5	54	26	NO	NO	NO		5	52	94	NO	NO	NO
	6	52	28	NO	NO	NO		6	52	94	NO	NO	NO
	7	46	40	NO	NO	NO		7	50	100	NO	NO	NO
	8	45	46	NO	NO	NO		8	50	100	NO	NO	NO
	9	45	39	NO	NO	NO		9	52	100	NO	NO	NO
	10	37	59	NO	NO	NO		10	53	95	NO	NO	NO
	11	37	36	NO	NO	NO		11	53	96	NO	NO	NO
November 15, 2016	12	40	52	NO	NO	NO	November 16, 2016	12	42	50	NO	NO	NO
	1	39	60	NO	NO	NO		1	43	53	NO	NO	NO
	2	37	69	NO	NO	NO		2	44	54	NO	NO	NO
	3	37	67	NO	NO	NO		3	41	55	NO	NO	NO
	4	37	70	NO	NO	NO		4	40	64	NO	NO	NO
	5	36	70	NO	NO	NO		5	38	65	NO	NO	NO
	6	37	60	NO	NO	NO		6	37	65	NO	NO	NO
	7	36	65	NO	NO	NO		7	39	65	NO	NO	NO
	8	34	81	NO	NO	NO		8	41	70	NO	NO	NO
	9	37	75	NO	NO	NO		9	43	70	NO	NO	NO
	10	43	57	NO	NO	NO		10	50	65	NO	NO	NO
	11	48	50	NO	NO	NO		11	52	62	NO	NO	NO
November 16, 2016	12	52	38	NO	NO	NO	November 16, 2016	12	54	67	NO	NO	NO
	1	55	33	NO	NO	YES		1	52	67	NO	NO	NO
	2	57	29	NO	NO	YES		2	52	68	NO	NO	NO
	3	57	29	NO	NO	YES		3	52	71	NO	NO	NO
	4	55	31	NO	NO	YES		4	50	82	NO	NO	NO
	5	52	28	NO	NO	NO		5	50	76	NO	NO	NO
	6	50	32	NO	NO	NO		6	50	82	NO	NO	NO
	7	48	37	NO	NO	NO		7	50	76	NO	NO	NO
	8	45	43	NO	NO	NO		8	50	76	NO	NO	NO
	9	46	46	NO	NO	NO		9	48	76	NO	NO	NO
	10	40	55	NO	NO	NO		10	47	82	NO	NO	NO
	11	42	50	NO	NO	NO		11	47	79	NO	NO	NO

December Weather Data and Zone Requirements													
Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)	Date	Time (Hour)	Temp.	RH	65-75 (65<)	60-75 (75<)	55-75 (75<)
December 1	12	51	87	NO	NO	NO	December 17	12	20	42	NO	NO	NO
	1	48	79	NO	NO	NO		1	20	42	NO	NO	NO
	2	47	79	NO	NO	NO		2	20	44	NO	NO	NO
	3	44	76	NO	NO	NO		3	20	56	NO	NO	NO
	4	43	66	NO	NO	NO		4	21	48	NO	NO	NO
	5	41	70	NO	NO	NO		5	20	65	NO	NO	NO
	6	39	75	NO	NO	NO		6	19	80	NO	NO	NO
	7	41	76	NO	NO	NO		7	19	86	NO	NO	NO
	8	41	70	NO	NO	NO		8	19	93	NO	NO	NO
	9	41	76	NO	NO	NO		9	21	86	NO	NO	NO
	10	41	70	NO	NO	NO		10	23	93	NO	NO	NO
	11	41	70	NO	NO	NO		11	25	93	NO	NO	NO
	12	41	65	NO	NO	NO		12	28	93	NO	NO	NO
	1	39	65	NO	NO	NO		1	30	93	NO	NO	NO
	2	37	65	NO	NO	NO		2	30	93	NO	NO	NO
	3	37	65	NO	NO	NO		3	30	100	NO	NO	NO
	4	37	70	NO	NO	NO		4	28	100	NO	NO	NO
	5	37	65	NO	NO	NO		5	28	100	NO	NO	NO
	6	37	65	NO	NO	NO		6	28	100	NO	NO	NO
	7	37	76	NO	NO	NO		7	30	100	NO	NO	NO
	8	37	76	NO	NO	NO		8	30	100	NO	NO	NO
December 2, 2016	9	37	70	NO	NO	NO	December 18, 2016	9	30	100	NO	NO	NO
	10	36	70	NO	NO	NO		10	30	97	NO	NO	NO
	11	36	65	NO	NO	NO		11	30	98	NO	NO	NO
	12	36	65	NO	NO	NO		12	31	97	NO	NO	NO
	1	37	72	NO	NO	NO		1	30	98	NO	NO	NO
	2	37	74	NO	NO	NO		2	31	99	NO	NO	NO
	3	37	76	NO	NO	NO		3	33	100	NO	NO	NO
	4	37	76	NO	NO	NO		4	34	100	NO	NO	NO
	5	37	77	NO	NO	NO		5	41	99	NO	NO	NO
	6	36	81	NO	NO	NO		6	43	93	NO	NO	NO
	7	37	75	NO	NO	NO		7	43	100	NO	NO	NO
	8	37	75	NO	NO	NO		8	43	100	NO	NO	NO
	9	37	75	NO	NO	NO		9	46	100	NO	NO	NO
	10	39	70	NO	NO	NO		10	43	100	NO	NO	NO
	11	39	65	NO	NO	NO		11	36	93	NO	NO	NO
	12	41	61	NO	NO	NO		12	34	87	NO	NO	NO
	1	39	65	NO	NO	NO		1	32	75	NO	NO	NO
	2	41	61	NO	NO	NO		2	32	80	NO	NO	NO
	3	39	65	NO	NO	NO		3	32	69	NO	NO	NO
	4	39	65	NO	NO	NO		4	32	69	NO	NO	NO
	5	37	70	NO	NO	NO		5	30	69	NO	NO	NO
December 3, 2016	6	37	75	NO	NO	NO	December 19, 2016	6	28	74	NO	NO	NO
	7	37	81	NO	NO	NO		7	28	64	NO	NO	NO
	8	37	75	NO	NO	NO		8	28	59	NO	NO	NO
	9	36	87	NO	NO	NO		9	27	59	NO	NO	NO
	10	37	79	NO	NO	NO		10	25	59	NO	NO	NO
	11	37	76	NO	NO	NO		11	24	63	NO	NO	NO
	12	37	75	NO	NO	NO		12	24	61	NO	NO	NO
	1	37	77	NO	NO	NO		1	23	64	NO	NO	NO
	2	37	78	NO	NO	NO		2	22	67	NO	NO	NO
	3	37	79	NO	NO	NO		3	21	68	NO	NO	NO
	4	37	76	NO	NO	NO		4	20	72	NO	NO	NO
	5	37	75	NO	NO	NO		5	20	74	NO	NO	NO
	6	37	75	NO	NO	NO		6	19	74	NO	NO	NO
	7	37	81	NO	NO	NO		7	19	74	NO	NO	NO
	8	37	87	NO	NO	NO		8	19	74	NO	NO	NO
	9	37	87	NO	NO	NO		9	21	74	NO	NO	NO
	10	37	81	NO	NO	NO		10	21	68	NO	NO	NO
	11	37	81	NO	NO	NO		11	23	59	NO	NO	NO
	12	37	81	NO	NO	NO		12	23	63	NO	NO	NO
	1	39	75	NO	NO	NO		1	23	59	NO	NO	NO
	2	39	75	NO	NO	NO		2	25	59	NO	NO	NO
	3	39	75	NO	NO	NO		3	25	59	NO	NO	NO
December 4, 2016	4	39	70	NO	NO	NO	December 20, 2016	4	25	59	NO	NO	NO
	5	39	70	NO	NO	NO		5	23	59	NO	NO	NO
	6	39	81	NO	NO	NO		6	23	59	NO	NO	NO
	7	39	80	NO	NO	NO		7	19	68	NO	NO	NO
	8	39	82	NO	NO	NO		8	19	68	NO	NO	NO
	9	37	80	NO	NO	NO		9	18	68	NO	NO	NO
	10	37	81	NO	NO	NO		10	17	73	NO	NO	NO
	11	37	81	NO	NO	NO		11	16	79	NO	NO	NO
	12	37	81	NO	NO	NO		12	14	86	NO	NO	NO
	1	37	83	NO	NO	NO		1	12	86	NO	NO	NO
	2	37	84	NO	NO	NO		2	14	86	NO	NO	NO
	3	36	85	NO	NO	NO		3	12	90	NO	NO	NO
	4	36	85	NO	NO	NO		4	12	88	NO	NO	NO
	5	36	86	NO	NO	NO		5	10	91	NO	NO	NO
	6	36	81	NO	NO	NO		6	9	92	NO	NO	NO
	7	36	81	NO	NO	NO		7	10	92	NO	NO	NO
	8	36	87	NO	NO	NO		8	7	85	NO	NO	NO
	9	36	87	NO	NO	NO		9	10	92	NO	NO	NO
	10	37	75	NO	NO	NO		10	15	85	NO	NO	NO
	11	37	70	NO	NO	NO		11	19	80	NO	NO	NO
	12	37	70	NO	NO	NO		12	25	69	NO	NO	NO
	1	37	70	NO	NO	NO		1	27	69	NO	NO	NO
	2	37	65	NO	NO	NO		2	28	64	NO	NO	NO
	3	37	65	NO	NO	NO		3	28	64	NO	NO	NO
	4	37	65	NO	NO	NO		4	30	60	NO	NO	NO
	5	37	65	NO	NO	NO		5	28	64	NO	NO	NO
	6	36	70	NO	NO	NO		6	27	69	NO	NO	NO
	7	37	65	NO	NO	NO		7	27	69	NO	NO	NO
	8	37	70	NO	NO	NO		8	27	68	NO	NO	NO
	9	37	65	NO	NO	NO		9	25	71	NO	NO	NO
	10	37	70	NO	NO	NO		10	26	70	NO	NO	NO
	11	37	72	NO	NO	NO		11	25	69	NO	NO	NO

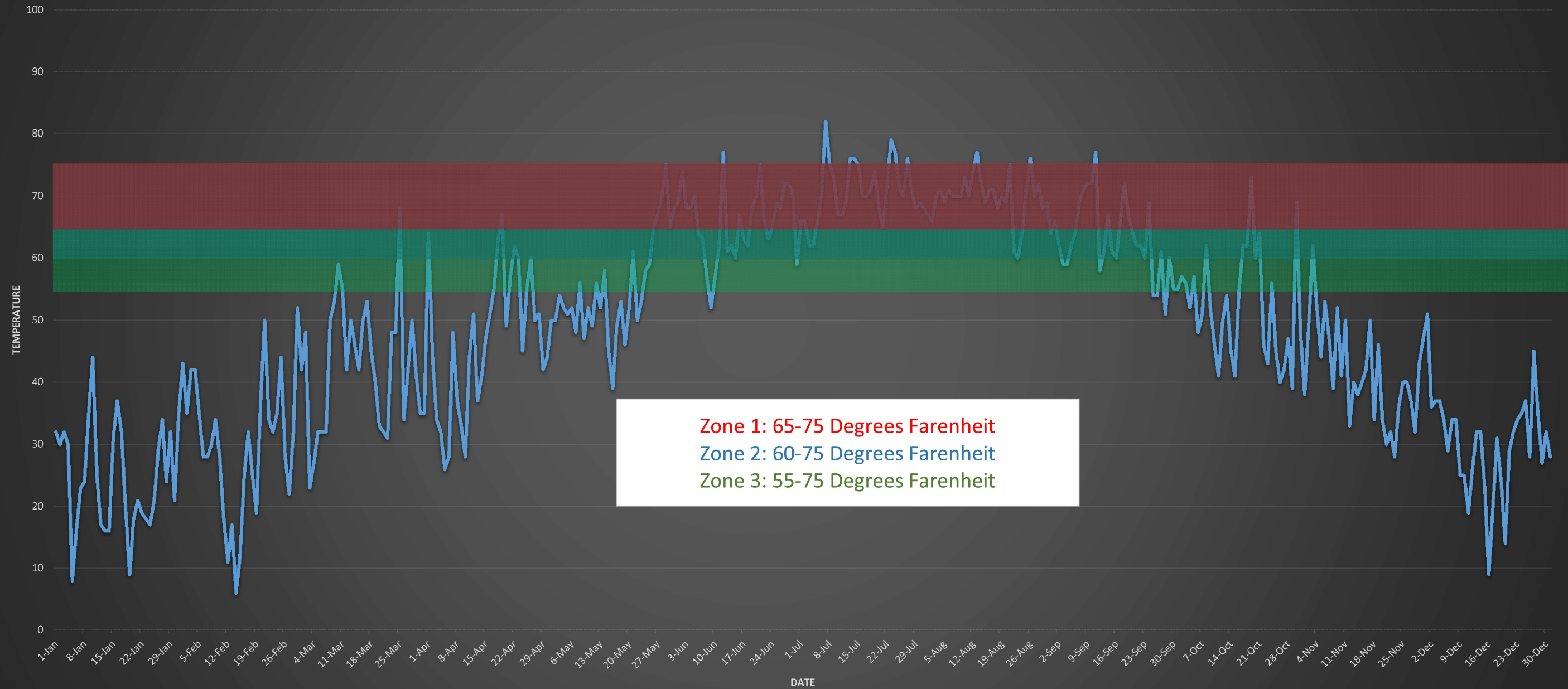
December 5, 2016	12	34	90	NO	NO	NO
	1	33	97	NO	NO	NO
	2	32	99	NO	NO	NO
	3	33	86	NO	NO	NO
	4	33	86	NO	NO	NO
	5	33	87	NO	NO	NO
	6	34	93	NO	NO	NO
	7	34	93	NO	NO	NO
	8	34	93	NO	NO	NO
	9	39	81	NO	NO	NO
	10	39	81	NO	NO	NO
December 6, 2016	11	41	76	NO	NO	NO
	12	39	70	NO	NO	NO
	1	29	65	NO	NO	NO
	2	41	65	NO	NO	NO
	3	41	65	NO	NO	NO
	4	39	65	NO	NO	NO
	5	39	65	NO	NO	NO
	6	37	70	NO	NO	NO
	7	36	75	NO	NO	NO
	8	36	75	NO	NO	NO
	9	36	75	NO	NO	NO
December 7, 2016	10	32	82	NO	NO	NO
	11	35	76	NO	NO	NO
	12	29	90	NO	NO	NO
	1	28	91	NO	NO	NO
	2	29	93	NO	NO	NO
	3	30	95	NO	NO	NO
	4	30	94	NO	NO	NO
	5	26	95	NO	NO	NO
	6	27	100	NO	NO	NO
	7	28	93	NO	NO	NO
	8	30	93	NO	NO	NO
December 8, 2016	9	30	93	NO	NO	NO
	10	34	81	NO	NO	NO
	11	36	75	NO	NO	NO
	12	37	81	NO	NO	NO
	1	36	87	NO	NO	NO
	2	36	87	NO	NO	NO
	3	34	93	NO	NO	NO
	4	34	93	NO	NO	NO
	5	34	87	NO	NO	NO
	6	36	93	NO	NO	NO
	7	34	87	NO	NO	NO
December 21, 2016	8	36	93	NO	NO	NO
	9	34	93	NO	NO	NO
	10	34	99	NO	NO	NO
	11	34	99	NO	NO	NO
	12	34	99	NO	NO	NO
	1	34	99	NO	NO	NO
	2	34	99	NO	NO	NO
	3	35	99	NO	NO	NO
	4	35	99	NO	NO	NO
	5	36	97	NO	NO	NO
	6	36	100	NO	NO	NO
December 22, 2016	7	37	93	NO	NO	NO
	8	37	81	NO	NO	NO
	9	36	87	NO	NO	NO
	10	37	81	NO	NO	NO
	11	39	70	NO	NO	NO
	12	41	65	NO	NO	NO
	1	43	57	NO	NO	NO
	2	41	49	NO	NO	NO
	3	41	53	NO	NO	NO
	4	41	49	NO	NO	NO
	5	39	52	NO	NO	NO
December 23, 2016	6	37	56	NO	NO	NO
	7	36	60	NO	NO	NO
	8	36	60	NO	NO	NO
	9	34	65	NO	NO	NO
	10	35	62	NO	NO	NO
	11	35	62	NO	NO	NO
	12	34	63	NO	NO	NO
	1	34	63	NO	NO	NO
	2	34	63	NO	NO	NO
	3	34	61	NO	NO	NO
	4	33	60	NO	NO	NO
December 24, 2016	5	32	60	NO	NO	NO
	6	30	64	NO	NO	NO
	7	30	64	NO	NO	NO
	8	30	69	NO	NO	NO
	9	30	69	NO	NO	NO
	10	32	62	NO	NO	NO
	11	34	56	NO	NO	NO
	12	36	60	NO	NO	NO
	1	34	56	NO	NO	NO
	2	34	55	NO	NO	NO
	3	32	55	NO	NO	NO
December 25, 2016	4	30	51	NO	NO	NO
	5	28	55	NO	NO	NO
	6	27	55	NO	NO	NO
	7	27	59	NO	NO	NO
	8	27	59	NO	NO	NO
	9	25	64	NO	NO	NO
	10	26	64	NO	NO	NO
	11	25	65	NO	NO	NO
	12	29	60	NO	NO	NO
	1	30	62	NO	NO	NO
	2	29	62	NO	NO	NO
December 26, 2016	3	29	62	NO	NO	NO
	4	28	65	NO	NO	NO
	5	28	66	NO	NO	NO
	6	27	69	NO	NO	NO
	7	28	64	NO	NO	NO
	8	27	69	NO	NO	NO
	9	27	74	NO	NO	NO
	10	30	64	NO	NO	NO
	11	32	64	NO	NO	NO
	12	34	60	NO	NO	NO
	1	36	60	NO	NO	NO
December 27, 2016	2	37	52	NO	NO	NO
	3	37	56	NO	NO	NO
	4	36	60	NO	NO	NO
	5	36	60	NO	NO	NO
	6	36	60	NO	NO	NO
	7	34	65	NO	NO	NO
	8	34	65	NO	NO	NO
	9	32	75	NO	NO	NO
	10	33	64	NO	NO	NO
	11	32	69	NO	NO	NO
	12	32	74	NO	NO	NO
December 28, 2016	1	32	75	NO	NO	NO
	2	32	75	NO	NO	NO
	3	33	69	NO	NO	NO
	4	35	59	NO	NO	NO
	5	35	57	NO	NO	NO
	6	32	60	NO	NO	NO
	7	34	60	NO	NO	NO
	8	34	60	NO	NO	NO
	9	37	60	NO	NO	NO
	10	39	61	NO	NO	NO
	11	39	61	NO	NO	NO
December 29, 2016	12	37	65	NO	NO	NO
	1	36	70	NO	NO	NO
	2	36	65	NO	NO	NO
	3	36	70	NO	NO	NO
	4	36	65	NO	NO	NO
	5	36	70	NO	NO	NO
	6	36	70	NO	NO	NO
	7	36	70	NO	NO	NO
	8	36	70	NO	NO	NO
	9	36	65	NO	NO	NO
	10	35	66	NO	NO	NO
December 30, 2016	11	35	65	NO	NO	NO
	12	34	66	NO	NO	NO
	1	34	67	NO	NO	NO
	2	34	67	NO	NO	NO
	3	33	67	NO	NO	NO
	4	32	69	NO	NO	NO
	5	32	69	NO	NO	NO
	6	30	75	NO	NO	NO
	7	30	75	NO	NO	NO
	8	30	75	NO	NO	NO
	9	30	75	NO	NO	NO
	10	32	75	NO	NO	NO
December 31, 2016	11	34	70	NO	NO	NO
	12	34	70	NO	NO	NO
	1	36	65	NO	NO	NO
	2	36	65	NO	NO	NO
	3	36	65	NO	NO	NO
	4	36	65	NO	NO	NO
	5	34	70	NO	NO	NO
	6	33	72	NO	NO	NO
	7	32	75	NO	NO	NO
	8	32	75	NO	NO	NO
	9	32	75	NO	NO	NO
	10	35	65	NO	NO	NO
January 1, 2017	11	35	64	NO	NO	NO
	12	35	64	NO	NO	NO
	1	37	62	NO	NO	NO
	2	37	60	NO	NO	NO
	3	38	60	NO	NO	NO
	4	36	74	NO	NO	NO
	5	35	83	NO	NO	NO
	6	36	82	NO	NO	NO
	7	36	75	NO	NO	NO
	8	37	75	NO	NO	NO
	9	36	87	NO	NO	NO
	10	36	93	NO	NO	NO
January 2, 2017	11	37	93	NO	NO	NO
	12	37	93	NO	NO	NO
	1	45	81	NO	NO	NO
	2	45	81	NO	NO	NO
	3	45	81	NO	NO	NO
	4	43	81	NO	NO	NO
	5	43	76	NO	NO	NO
	6	41	75	NO	NO	NO
	7	41	76	NO	NO	NO
	8	39	79	NO	NO	NO
	9	39	81	NO	NO	NO
January 3, 2017	10	37	81	NO	NO	NO
	11	37	81	NO	NO	NO

December 9, 2016	12	25	65	NO	NO	NO	December 25, 2016	12	37	82	NO	NO	NO
	1	25	67	NO	NO	NO		1	36	82	NO	NO	NO
	2	25	68	NO	NO	NO		2	36	82	NO	NO	NO
	3	25	69	NO	NO	NO		3	36	81	NO	NO	NO
	4	25	70	NO	NO	NO		4	35	82	NO	NO	NO
	5	25	72	NO	NO	NO		5	35	82	NO	NO	NO
	6	25	74	NO	NO	NO		6	34	82	NO	NO	NO
	7	25	74	NO	NO	NO		7	34	87	NO	NO	NO
	8	25	74	NO	NO	NO		8	34	87	NO	NO	NO
	9	27	72	NO	NO	NO		9	36	81	NO	NO	NO
	10	27	69	NO	NO	NO		10	36	84	NO	NO	NO
December 10, 2016	11	28	64	NO	NO	NO		11	36	84	NO	NO	NO
	12	28	69	NO	NO	NO		12	37	75	NO	NO	NO
	1	28	64	NO	NO	NO		1	37	70	NO	NO	NO
	2	30	69	NO	NO	NO		2	39	65	NO	NO	NO
	3	28	69	NO	NO	NO		3	39	65	NO	NO	NO
	4	28	64	NO	NO	NO		4	39	65	NO	NO	NO
	5	28	69	NO	NO	NO		5	37	70	NO	NO	NO
	6	27	74	NO	NO	NO		6	36	70	NO	NO	NO
	7	27	74	NO	NO	NO		7	34	75	NO	NO	NO
	8	27	80	NO	NO	NO		8	34	75	NO	NO	NO
	9	25	74	NO	NO	NO		9	32	79	NO	NO	NO
December 11, 2016	10	24	76	NO	NO	NO	December 26, 2016	10	31	80	NO	NO	NO
	11	25	76	NO	NO	NO		11	30	83	NO	NO	NO
	12	25	75	NO	NO	NO		12	28	90	NO	NO	NO
	1	24	77	NO	NO	NO		1	32	86	NO	NO	NO
	2	25	79	NO	NO	NO		2	32	85	NO	NO	NO
	3	25	77	NO	NO	NO		3	33	83	NO	NO	NO
	4	24	78	NO	NO	NO		4	32	88	NO	NO	NO
	5	24	80	NO	NO	NO		5	35	80	NO	NO	NO
	6	25	74	NO	NO	NO		6	36	81	NO	NO	NO
	7	23	80	NO	NO	NO		7	37	75	NO	NO	NO
	8	25	69	NO	NO	NO		8	37	75	NO	NO	NO
December 12, 2016	9	25	64	NO	NO	NO		9	36	87	NO	NO	NO
	10	27	59	NO	NO	NO		10	36	87	NO	NO	NO
	11	27	59	NO	NO	NO		11	36	87	NO	NO	NO
	12	28	59	NO	NO	NO		12	36	87	NO	NO	NO
	1	28	69	NO	NO	NO		1	36	93	NO	NO	NO
	2	28	59	NO	NO	NO		2	37	87	NO	NO	NO
	3	27	59	NO	NO	NO		3	37	87	NO	NO	NO
	4	27	64	NO	NO	NO		4	37	87	NO	NO	NO
	5	25	69	NO	NO	NO		5	39	87	NO	NO	NO
	6	23	74	NO	NO	NO		6	37	93	NO	NO	NO
	7	19	80	NO	NO	NO		7	39	87	NO	NO	NO
December 9, 2016	8	19	80	NO	NO	NO	December 27, 2016	8	41	87	NO	NO	NO
	9	19	82	NO	NO	NO		9	41	87	NO	NO	NO
	10	19	81	NO	NO	NO		10	42	88	NO	NO	NO
	11	19	83	NO	NO	NO		11	43	90	NO	NO	NO
	12	19	83	NO	NO	NO		12	45	89	NO	NO	NO
	1	20	81	NO	NO	NO		1	44	92	NO	NO	NO
	2	20	80	NO	NO	NO		2	43	96	NO	NO	NO
	3	21	80	NO	NO	NO		3	44	98	NO	NO	NO
	4	21	80	NO	NO	NO		4	46	99	NO	NO	NO
	5	21	80	NO	NO	NO		5	47	99	NO	NO	NO
	6	21	80	NO	NO	NO		6	52	94	NO	NO	NO
December 10, 2016	7	21	86	NO	NO	NO		7	50	71	NO	NO	NO
	8	21	92	NO	NO	NO		8	46	71	NO	NO	NO
	9	21	86	NO	NO	NO		9	46	62	NO	NO	NO
	10	23	80	NO	NO	NO		10	48	54	NO	NO	NO
	11	25	80	NO	NO	NO		11	48	54	NO	NO	NO
	12	25	80	NO	NO	NO		12	50	50	NO	NO	NO
	1	25	86	NO	NO	NO		1	50	47	NO	NO	NO
	2	25	86	NO	NO	NO		2	50	47	NO	NO	NO
	3	25	74	NO	NO	NO		3	50	43	NO	NO	NO
	4	27	74	NO	NO	NO		4	46	50	NO	NO	NO
	5	27	74	NO	NO	NO		5	43	53	NO	NO	NO
December 11, 2016	6	27	74	NO	NO	NO	December 28, 2016	6	41	57	NO	NO	NO
	7	27	74	NO	NO	NO		7	37	65	NO	NO	NO
	8	27	74	NO	NO	NO		8	36	70	NO	NO	NO
	9	28	64	NO	NO	NO		9	34	75	NO	NO	NO
	10	29	65	NO	NO	NO		10	35	74	NO	NO	NO
	11	27	87	NO	NO	NO		11	35	71	NO	NO	NO
	12	26	94	NO	NO	NO		12	35	70	NO	NO	NO
	1	27	95	NO	NO	NO		1	35	72	NO	NO	NO
	2	29	86	NO	NO	NO		2	34	71	NO	NO	NO
	3	30	91	NO	NO	NO		3	34	72	NO	NO	NO
	4	31	92	NO	NO	NO		4	33	70	NO	NO	NO
December 12, 2016	5	32	94	NO	NO	NO		5	33	71	NO	NO	NO
	6	32	93	NO	NO	NO		6	34	70	NO	NO	NO
	7	32	93	NO	NO	NO		7	32	69	NO	NO	NO
	8	32	100	NO	NO	NO		8	32	69	NO	NO	NO
	9	32	100	NO	NO	NO		9	32	69	NO	NO	NO
	10	36	93	NO	NO	NO		10	32	69	NO	NO	NO
	11	37	87	NO	NO	NO		11	32	69	NO	NO	NO
	12	39	81	NO	NO	NO		12	32	69	NO	NO	NO
	1	39	75	NO	NO	NO		1	32	69	NO	NO	NO
	2	37	75	NO	NO	NO		2	32	65	NO	NO	NO
	3	37	70	NO	NO	NO		3	34	65	NO	NO	NO
December 9, 2016	4	37	65	NO	NO	NO	December 25, 2016	4	34	65	NO	NO	NO
	5	37	65	NO	NO	NO		5	34	65	NO	NO	NO
	6	36	60	NO	NO	NO		6	34	65	NO	NO	NO
	7	34	65	NO	NO	NO		7	28	80	NO	NO	NO
	8	34	65	NO	NO	NO		8	28	80	NO	NO	NO
	9	34	60	NO	NO	NO		9	27	80	NO	NO	NO
	10	33	64	NO	NO	NO		10	26	85	NO	NO	NO
	11	32	63	NO	NO	NO		11	26	86	NO	NO	NO

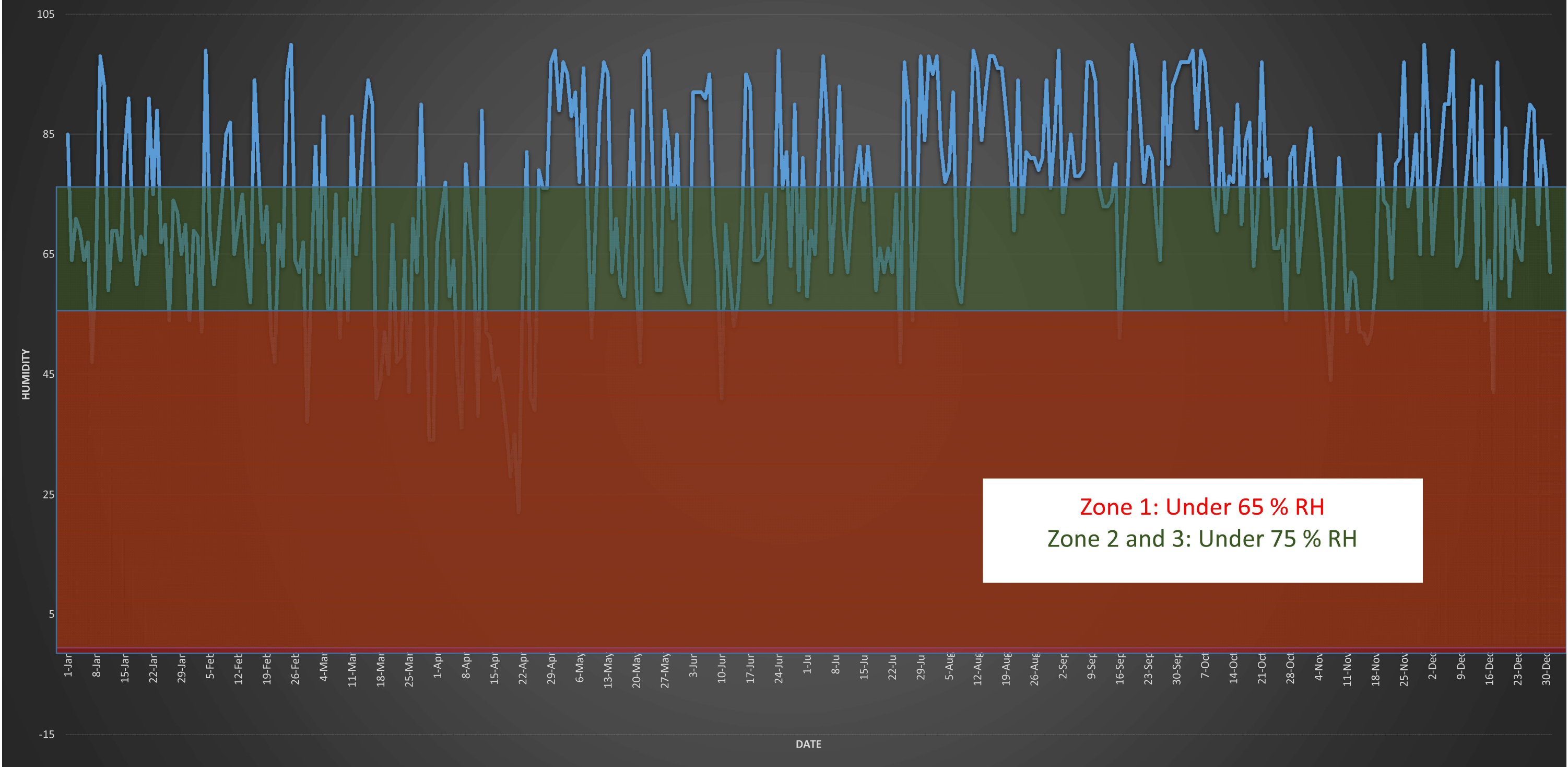
December 13, 2016	12	32	61	NO	NO	NO
	1	32	67	NO	NO	NO
	2	31	65	NO	NO	NO
	3	30	66	NO	NO	NO
	4	29	71	NO	NO	NO
	5	27	73	NO	NO	NO
	6	27	69	NO	NO	NO
	7	25	74	NO	NO	NO
	8	25	80	NO	NO	NO
	9	27	74	NO	NO	NO
	10	28	72	NO	NO	NO
December 14, 2016	11	28	74	NO	NO	NO
	12	30	69	NO	NO	NO
	1	32	69	NO	NO	NO
	2	34	70	NO	NO	NO
	3	34	70	NO	NO	NO
	4	34	93	NO	NO	NO
	5	32	93	NO	NO	NO
	6	32	93	NO	NO	NO
	7	32	93	NO	NO	NO
	8	30	100	NO	NO	NO
	9	32	99	NO	NO	NO
December 15, 2016	10	32	99	NO	NO	NO
	11	32	98	NO	NO	NO
	12	32	93	NO	NO	NO
	1	32	89	NO	NO	NO
	2	31	85	NO	NO	NO
	3	3	84	NO	NO	NO
	4	29	77	NO	NO	NO
	5	29	78	NO	NO	NO
	6	28	74	NO	NO	NO
	7	27	74	NO	NO	NO
	8	27	69	NO	NO	NO
December 16, 2016	9	25	69	NO	NO	NO
	10	25	64	NO	NO	NO
	11	25	64	NO	NO	NO
	12	27	59	NO	NO	NO
	1	27	55	NO	NO	NO
	2	27	55	NO	NO	NO
	3	27	47	NO	NO	NO
	4	25	50	NO	NO	NO
	5	23	54	NO	NO	NO
	6	21	63	NO	NO	NO
	7	19	63	NO	NO	NO
December 13, 2016	8	19	63	NO	NO	NO
	9	21	69	NO	NO	NO
	10	19	63	NO	NO	NO
	11	22	54	NO	NO	NO
	12	23	54	NO	NO	NO
	1	21	60	NO	NO	NO
	2	18	55	NO	NO	NO
	3	16	55	NO	NO	NO
	4	15	60	NO	NO	NO
	5	15	64	NO	NO	NO
	6	14	59	NO	NO	NO
December 29, 2016	7	14	67	NO	NO	NO
	8	12	62	NO	NO	NO
	9	10	57	NO	NO	NO
	10	12	67	NO	NO	NO
	11	14	67	NO	NO	NO
	12	12	53	NO	NO	NO
	1	14	57	NO	NO	NO
	2	14	53	NO	NO	NO
	3	12	57	NO	NO	NO
	4	12	53	NO	NO	NO
	5	12	48	NO	NO	NO
December 30, 2016	6	10	67	NO	NO	NO
	7	10	62	NO	NO	NO
	8	10	52	NO	NO	NO
	9	9	62	NO	NO	NO
	10	9	62	NO	NO	NO
	11	9	63	NO	NO	NO
	12	9	64	NO	NO	NO
	1	21	60	NO	NO	NO
	2	18	55	NO	NO	NO
	3	16	60	NO	NO	NO
	4	15	64	NO	NO	NO
December 31, 2016	5	15	59	NO	NO	NO
	6	14	67	NO	NO	NO
	7	14	67	NO	NO	NO
	8	12	62	NO	NO	NO
	9	10	57	NO	NO	NO
	10	12	67	NO	NO	NO
	11	14	67	NO	NO	NO
	12	12	53	NO	NO	NO
	1	14	57	NO	NO	NO
	2	14	53	NO	NO	NO
	3	12	57	NO	NO	NO
December 29, 2016	4	12	53	NO	NO	NO
	5	12	48	NO	NO	NO
	6	10	67	NO	NO	NO
	7	10	62	NO	NO	NO
	8	10	52	NO	NO	NO
	9	9	62	NO	NO	NO
	10	9	62	NO	NO	NO
	11	9	63	NO	NO	NO
	12	8	61	NO	NO	NO
	1	26	85	NO	NO	NO
	2	27	84	NO	NO	NO
December 29, 2016	3	30	79	NO	NO	NO
	4	33	73	NO	NO	NO
	5	31	92	NO	NO	NO
	6	30	93	NO	NO	NO
	7	32	93	NO	NO	NO
	8	32	100	NO	NO	NO
	9	32	100	NO	NO	NO
	10	34	93	NO	NO	NO
	11	34	93	NO	NO	NO
	12	36	93	NO	NO	NO
	1	39	75	NO	NO	NO
December 30, 2016	2	39	65	NO	NO	NO
	3	37	65	NO	NO	NO
	4	36	65	NO	NO	NO
	5	34	70	NO	NO	NO
	6	34	75	NO	NO	NO
	7	34	70	NO	NO	NO
	8	34	65	NO	NO	NO
	9	34	70	NO	NO	NO
	10	33	73	NO	NO	NO
	11	32	75	NO	NO	NO
	12	32	78	NO	NO	NO
December 31, 2016	1	32	80	NO	NO	NO
	2	30	90	NO	NO	NO
	3	31	87	NO	NO	NO
	4	31	77	NO	NO	NO
	5	31	75	NO	NO	NO
	6	30	80	NO	NO	NO
	7	30	78	NO	NO	NO
	8	28	74	NO	NO	NO
	9	28	80	NO	NO	NO
	10	30	64	NO	NO	NO
	11	30	69	NO	NO	NO
December 31, 2016	12	30	64	NO	NO	NO
	1	32	60	NO	NO	NO
	2	30	69	NO	NO	NO
	3	30	69	NO	NO	NO
	4	27	86	NO	NO	NO
	5	27	80	NO	NO	NO
	6	28	69	NO	NO	NO
	7	27	64	NO	NO	NO
	8	27	64	NO	NO	NO
	9	27	64	NO	NO	NO
	10	28	63	NO	NO	NO
December 31, 2016	11	28	63	NO	NO	NO
	12	28	62	NO	NO	NO
	1	28	67	NO	NO	NO
	2	26	69	NO	NO	NO
	3	25	71	NO	NO	NO
	4	24	74	NO	NO	NO
	5	24	75	NO	NO	NO
	6	25	69	NO	NO	NO
	7	23	74	NO	NO	NO
	8	25	69	NO	NO	NO
	9	28	64	NO	NO	NO
December 31, 2016	10	32	55	NO	NO	NO
	11	32	55	NO	NO	NO
	12	36	48	NO	NO	NO
	1	36	44	NO	NO	NO
	2	36	44	NO	NO	NO
	3	37	49	NO	NO	NO
	4	39	65	NO	NO	NO
	5	37	60	NO	NO	NO
	6	37	70	NO	NO	NO
	7	36	75	NO	NO	NO
	8	37	87	NO	NO	NO
December 31, 2016	9	39	81	NO	NO	NO
	10	38	80	NO	NO	NO
	11	39	82	NO	NO	NO
	12	39	82	NO	NO	NO
	1	39	82	NO	NO	NO
	2	39	82	NO	NO	NO
	3	39	82	NO	NO	NO
	4	39	82	NO	NO	NO
	5	39	82	NO	NO	NO
	6	39	82	NO	NO	NO
	7	39	82	NO	NO	NO
	8	39	82	NO	NO	NO

## APPENDIX M: WEATHER DATA CHARTS

# Temperature Data for 2016



Humidity Data for 2016



## APPENDIX N: 30 YEAR LIFE CYCLE ANALYSIS

30 Year Life Cycle Analysis				
Hybrid Ventilation System vs Economizer				
Cost	Hybrid Ventilation	Economizer Option	Yearly Difference	Percentage
Initial Cost	\$1,005,889.05	\$90,114.31	\$915,774.74	91%
2017	\$1,005,971.29	\$93,198.36	\$912,772.93	91%
2018	\$1,006,054.15	\$96,305.77	\$909,748.37	90%
2019	\$1,006,137.32	\$99,424.87	\$906,712.45	90%
2020	\$1,006,219.55	\$102,508.91	\$903,710.64	90%
2021	\$1,006,303.03	\$105,639.69	\$900,663.34	90%
2022	\$1,006,387.76	\$108,817.19	\$897,570.57	89%
2023	\$1,006,474.36	\$112,064.79	\$894,409.57	89%
2024	\$1,006,562.82	\$115,382.48	\$891,180.35	89%
2025	\$1,006,651.17	\$118,695.49	\$887,955.67	88%
2026	\$1,006,739.88	\$122,022.53	\$884,717.35	88%
2027	\$1,006,828.97	\$125,363.58	\$881,465.39	88%
2028	\$1,006,919.31	\$128,751.36	\$878,167.95	87%
2029	\$1,007,011.14	\$132,195.21	\$874,815.92	87%
2030	\$1,007,103.65	\$135,664.77	\$871,438.88	87%
2031	\$1,007,196.85	\$139,160.02	\$868,036.83	86%
2032	\$1,007,290.43	\$142,669.29	\$864,621.13	86%
2033	\$1,007,385.75	\$146,243.99	\$861,141.76	85%
2034	\$1,007,480.94	\$149,814.01	\$857,666.93	85%
2035	\$1,007,576.51	\$153,398.04	\$854,178.46	85%
2036	\$1,007,671.95	\$156,977.41	\$850,694.54	84%
2037	\$1,007,767.33	\$160,554.44	\$847,212.90	84%
2038	\$1,007,863.21	\$164,150.16	\$843,713.06	84%
2039	\$1,007,959.47	\$167,759.89	\$840,199.57	83%
2040	\$1,008,056.28	\$171,390.66	\$836,665.62	83%
2041	\$1,008,153.59	\$175,040.12	\$833,113.48	83%
2042	\$1,008,251.40	\$178,708.26	\$829,543.14	82%
2043	\$1,008,349.84	\$182,399.78	\$825,950.06	82%
2044	\$1,008,449.52	\$186,138.02	\$822,311.50	82%
2045	\$1,008,551.07	\$189,946.35	\$818,604.72	81%
2046	\$1,008,652.30	\$193,743.00	\$814,909.31	81%
2047	\$1,008,754.48	\$197,574.69	\$811,179.78	80%

Figure 3.15: Life Cycle and Initial Cost Breakdown

## APPENDIX O: MECHANICAL SYSTEM SCHEDULES

Mechanical System Schedules			Classic Schedule Layout			17-Mar-17 13:39		
Activity ID	Activity Name	Original Duration	Start	Finish	Qtr 4, 2016		Qtr 1, 2017	
					Nov	Dec	Jan	
📁 AE482 Mechanical System Schedules		11	28-Nov-16	12-Dec-16	12-Dec-16, AE482 Mechanical System Schedules			
📄 A1000	Set Curbs For Economizers	2	28-Nov-16	29-Nov-16	📄 Set Curbs For Economizers			
📄 A1010	Economizer Installation	2	30-Nov-16	01-Dec-16	📄 Economizer Installation			
📄 A1020	Run Connecting DuctWork	3	01-Dec-16	05-Dec-16	📄 Run Connecting DuctWork			
📄 A1030	Ductwork Insulation	1	05-Dec-16	05-Dec-16	📄 Ductwork Insulation			
📄 A1040	Fan and Electrical work	2	07-Dec-16	08-Dec-16	📄 Fan and Electrical work			
📄 A1050	Connecting to AHU 18	1	09-Dec-16	09-Dec-16	📄 Connecting to AHU 18			
📄 A1060	Testing	1	12-Dec-16	12-Dec-16	📄 Testing			

Actual Level of Effort

Actual Work

Remaining Work

Critical Remaining Work

Milestone

summary

Page 1 of 1

TASK filter: All Activities

© Oracle Corporation



# APPENDIX P: SUBCONTRACTOR SURVEY RESPONSES

Title/Position: Dwayne Rush, Project Manager

Company: Penn State

Years of Experience: 5 at PS; 30 total

**1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)**

	0	1	2	3	4	5+
Number of Projects:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2.) How familiar are you with the integrated project delivery method?**

Somewhat. Learning something new all the time.

**3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?**

	Unsuccessful 0	1	2	3	4	Very Successful 5	6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced Problems during Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**4.) Please explain any categories you rated as very successful, and how you came to this conclusion.**

---



---



---

**5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.**

Project Type: new construction Approximate Size (SF) 195,000 SF

Project Cost: \$144M Percent of Total Project (%): 5% complete

How Your Company was Selected: \_\_\_\_\_

\_\_\_\_\_

**6.) How likely would your company be to pursue an IPD Project in the future?**

	Not Likely 0	1	2	3	4	Very Likely 5
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**7.) Why do you believe this?**

Penn State is very interested in utilizing this delivery method.

\_\_\_\_\_

\_\_\_\_\_

**8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**9.) What do you believe is the most innovative part of IPD Projects?**

Involvement of design-assist partners early in the project.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Title/Position: Project Manager  
 Company: Interior Specialist, Inc.  
 Years of Experience: 3

**1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)**

	0	1	2	3	4	5+
Number of Projects:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2.) How familiar are you with the integrated project delivery method?**

Limited working knowledge, method is new to me, but  
I understand the concepts.

**3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?**

	Unsuccessful	0	1	2	3	4	Very Successful	5	6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced Problems during Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4.) Please explain any categories you rated as very successful, and how you came to this conclusion.**

More Seamless Schedule, less Safety issues, reduced  
Design / Work Delay, systematic coordination with other trades,  
overall less stressed enjoyable work environment for all.

5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.

Project Type: \_\_\_\_\_ Approximate Size (SF) \_\_\_\_\_

Project Cost: \_\_\_\_\_ Percent of Total Project (%): \_\_\_\_\_

How Your Company was Selected: \_\_\_\_\_

6.) How likely would your company be to pursue an IPD Project in the future?

	Not Likely 0	1	2	3	4	Very Likely 5
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

7.) Why do you believe this?

More controlled Project.

8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9.) What do you believe is the most innovative part of IPD Projects?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Title/Position: Vinny Hood, Project Manager  
 Company: HC Hoodco, Inc.  
 Years of Experience: 2

**1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)**

	0	1	2	3	4	5+
Number of Projects:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2.) How familiar are you with the integrated project delivery method?**

I feel comfortable with the ideas and flow of an IPD project however have limited experience with it.

**3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?**

	Unsuccessful 0	1	2	3	4	Very Successful 5	6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced Problems during Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4.) Please explain any categories you rated as very successful, and how you came to this conclusion.**

I think the constant communication required in IPD projects can be successful in reducing problems during construction and helping to facilitate coordination between other trades. However there is a fine line between too much communication and just the right amount. Specifically each meeting organizer needs to be conscious of other's time and only have the pertinent people attend the meeting rather than require seemingly everyone they can think of.

**5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.**

Project Type: New Construction/Education

Approximate Size (SF)

Total Project Cost: ~\$40MM

Percent of Total Project (%) ~1%\_

How Your Company was Selected: Willingness and proven record of working on teams for the betterment of the end user.

**6.) How likely would your company be to pursue an IPD Project in the future?**

	Not Likely 0	1	2	3	4	Very Likely 5
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**7.) Why do you believe this?**

IPD's can be great projects to work on however it takes the right owner and the right construction manager to reap the benefits of this style of project. If either of these two parties are fully committed to the IPD ideals the project could be an absolute disaster to be apart of.

**8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?**

Cost + markup with potentially a bonus to incentive the collective reduction of project cost.

**9.) What do you believe is the most innovative part of IPD Projects?**

I think the most innovative part of an IPD project is focusing on efficiency and letting each trade do what they do best. For doors and hardware it was novel to pass the door schedule back and forth to the architect as an excel spreadsheet rather than PDF allowing both parties to clearly see what was changed in each revision rather than guess.

Title/Position: VP Estimating  
 Company: C.R. Spencer, Inc.  
 Years of Experience: 40

1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)

0 1 2 3 4 5+  
 Number of Projects: ☒ ☐ ☐ ☐ ☐ ☐

2.) How familiar are you with the integrated project delivery method?

Some what familiar with the process. There is currently  
only one project @ PSU so there hasn't been  
much opportunity with this process.

3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?

	Unsuccessful 0	1	2	3	4	5	Very Successful 6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Reduced Problems during Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.) Please explain any categories you rated as very successful, and how you came to this conclusion.

I believe the process is very similar to design  
assist with the addition task/reward of the  
budget and schedule. We have a lot of experience  
with design assist and design build, when  
everyone is working together with equal  
risks and you are allowed to pick your  
team it works much better. You have  
experience with the team player & understand  
everyone's expectations.

5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.

Project Type: PSU Hub & Book Store Approximate Size (SF) 130,000  
 Project Cost: 7.5 M Percent of Total Project (%): 12-14  
 How Your Company was Selected: With initial budgeting & pricing along with an interview process.

6.) How likely would your company be to pursue an IPD Project in the future?

Not Likely						Very Likely
0	1	2	3	4	5	
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

7.) Why do you believe this?

We prefer working with others as a team instead of the old adversarial plan & spec type of projects.

8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?

Monthly payments based on completed work with no retainage. Self performing most of the work this allows us to pay for the labor & materials so we don't have a line of credit for several million dollars.

9.) What do you believe is the most innovative part of IPD Projects?

Knowing everything about the job with the equal risk.

Title/Position: Project Manager  
 Company: S.A. Commune Co. Inc.  
 Years of Experience: 18 Total - 10 Sprinkler Fitter Journeyman 8-PM

**1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)**

	0	1	2	3	4	5+
Number of Projects:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2.) How familiar are you with the integrated project delivery method?**

Collaboration of Architects, Engineers, Tradesmen, Owners and end users in delivering a final product that has best value for cost,

**3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?**

	Unsuccessful						Very Successful
	0	1	2	3	4	5	6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Reduced Problems during Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**4.) Please explain any categories you rated as very successful, and how you came to this conclusion.**

Safety is or should be the #1 concern for all parties involved. We all should be looking out for each other.

5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.

Project Type: PSU South Halls Approximate Size (SF) 5-Dorm Buildings  
 Project Cost: 1,200,000 \*\* Fire Retardant Percent of Total Project (%): 100%  
 How Your Company was Selected: Experience, availability of experienced Tradesman, Safety Program,

6.) How likely would your company be to pursue an IPD Project in the future?

	Not Likely					Very Likely
	0	1	2	3	4	5
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

7.) Why do you believe this?

Successful project with South Halls, looks promising on East Halls.

8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?

Standard Low Bid - open book is a guarantee but we would focus resources on projects where we could make additional profit if we perform better.

9.) What do you believe is the most innovative part of IPD Projects?

Working with the end user.

Title/Position: Owner/President  
 Company: Port Elevator, Inc.  
 Years of Experience: 32

**1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)**

	0	1	2	3	4	5+
Number of Projects:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2.) How familiar are you with the integrated project delivery method?**

somewhat, as a team partner with early stakeholder involvement  
 \_\_\_\_\_  
 \_\_\_\_\_

**3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?**

	Unsuccessful 0	1	2	3	4	Very Successful 5	6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduced Problems during Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**4.) Please explain any categories you rated as very successful, and how you came to this conclusion.**

Safety starts and ends every meeting and is the most important part of project.  
 \_\_\_\_\_  
 \_\_\_\_\_

**5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.**

Project Type: PSU ABE and PSU CEBME Approximate Size (SF) 88,000 sqft and 120,000 sqft

Project Cost: \$42M and \$120M Percent of Total Project (%): about 1.5% each

How Your Company was Selected: Pregualified with PSU, design experience, excellent references and interview process

**6.) How likely would your company be to pursue an IPD Project in the future?**

	Not Likely					Very Likely
	0	1	2	3	4	5
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**7.) Why do you believe this?**

Quality work, issues worked out during design, less/no change orders, fits budget for owners

**8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?**

ACH or check as usual.

**9.) What do you believe is the most innovative part of IPD Projects?**

For elevator, bringing in construction company during design to avoid change orders, conflicts and avoidable cost increases.

Title/Position: Project Manager

Company: Lighthouse Electric

Years of Experience: 3

**1.) How many Integrated Project Delivery projects have you worked on? (IPD projects)**

	0	1	2	3	4	5+
Number of Projects:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2.) How familiar are you with the integrated project delivery method?**

I am currently working on an IPD project and would say that I am pretty familiar with the method.

**3.) Based on your experience, how successful do you believe IPD projects are in each of the following categories?**

	Unsuccessful 0	1	2	3	4	Very Successful 5	6
Budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduced Problems during <u>Construction</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coordination with Other Trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Quality of Project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**4.) Please explain any categories you rated as very successful, and how you came to this conclusion.**

Safety is a large focus on the project I'm currently on without the heap of paper work that traditionally comes with a general contractor. Everyone is encouraged to think safely and the culture is very strong.

Coordination with the other trades is outstanding. The GC leads this effort and ensures everyone is talking. It is in the best interest of the GC for all trades to be efficient, so they make sure this coordination is taking place. The sequencing of the schedule is a large focus to promote efficiency, which does not typically take place.

Quality is a large focus. There is a significant amount of input from the field personal to the designers on the best way to build the project, from a quality and cost standpoint. IPD preaches that the field guys are the experts, not the designers, and it is evident as the field personnel have been empowered to weigh in on the decision making.

**5.) If you have had the chance to work on an IPD Project, please list some information about the project you've done most recently. If you have not worked on an IPD project please describe another similar project.**

Project Type: Institutional Approximate Size (SF) 100,000

Project Cost: \$6,000,000 Percent of Total Project (%): 14%

How Your Company was Selected: Interviewing and work session to determine team working skills. Value was a larger focus than cost knowing that the owner would receive a better product in the end.

**6.) How likely would your company be to pursue an IPD Project in the future?**

	Not Likely					Very Likely
	0	1	2	3	4	5
How likely would you be?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**7.) Why do you believe this?**

It is the way construction should be done. It empowers the field team to make decisions that reduce costs for ourselves and in the end the owner. It is truly a team and not the illusion of a team.

**8.) If you were able to choose your reimbursement method for a project, which would you prefer and why?**

Cost plus with the IPD delivery method. This reduces risk all around for the owner and for the contractors. It also improves collaboration between trades because everyone is encouraged to be efficient.

**9.) What do you believe is the most innovative part of IPD Projects?**

The thought that the field guys should be making or very highly involved with the decision making on how the building should be built.