OH SMART AIRPORT

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A. Introduction

The **OH SMART AIRPORT** is invented with State-of-the-Art and Smart design which is in strongest structure circle shape and circle building that has greatest area compare to other shapes, to help Air Traffic Control (ATC) view and control the entire airport better with no or less airplanes traffic while landing or takeoff. The Smart Airport in circle shape provides closest pickup and drop-off ramps with no or less traffic lights or stop signs with shortest walking distance for the travelers. The visitors and travelers can able to explore and view entire airport, and the travelers do not have to go through the security screening gates again after check-in and get into the lounge for boarding. The Smart Airport in circle shape is also invented with airplane rescuer running around in circle to catch airplanes stuck landing wheels and invented with the Airport Emergency paths with high custom security protection for both travelers and visitors for entire airport.

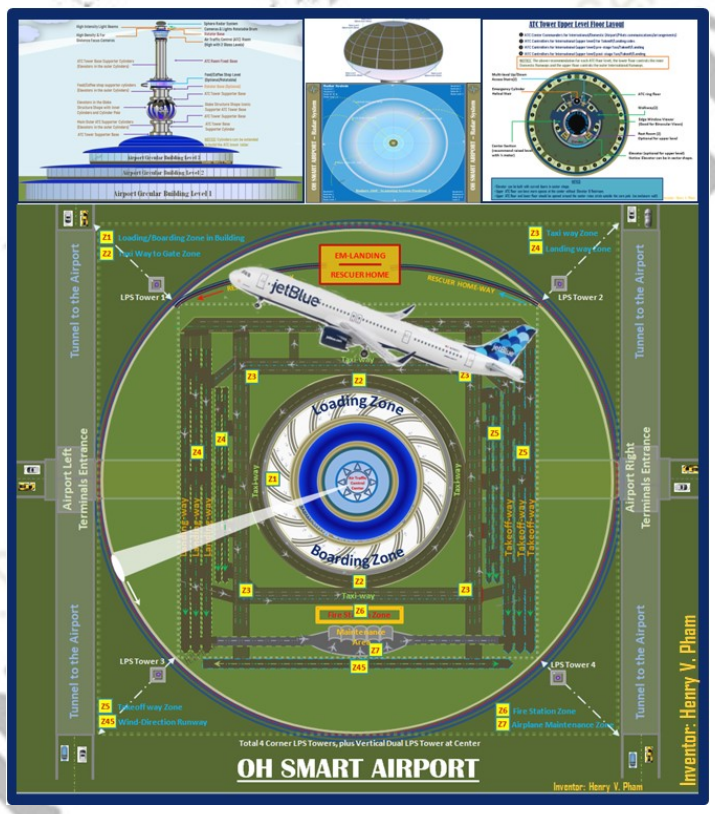

Figure-A1: OH SMART AIRPORT OVERVIEW

The Smart Airport is invented with landing and takeoff runways on both sides; each side provides both International and Domestic runways with two floors of Air Traffic Control which is intended to control International airplanes for the outer runways by the upper ATC floor and control Domestic airplanes for the inner runways by the lower ATC floor. The Smart Airport is invented with the new Multi-radar Layer Spherical shape system and the LPS -- Local positioning System for the airport and airport equipments plus recommended LPS devices for airplanes, which provides better detecting, tracking

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positions and calculating directions and angles of incoming airplanes better and more accurate which can be both passive and active modes to scan entire sky at once instead of rotating around to scan like the current radar system. The Smart Airport in circle shape which is not only provided better for Air Traffic Control but also provide travelers shortest walking distance from and to the airplanes for boarding or un-boarding through the gateways just within the circle radius distance of the Smart Airport building. With the circle shape, the OH Smart Airport is also perfectly designed to rescue airplanes stuck landing wheels with the Airplane Rescuer running in circle railroad until reaching the airplane landing speed to rescue the airplane safer. The Smart Airport in circle shape provides the best to handle Airport Emergency when both visitors and travelers have to be evacuated out of the building; the travelers who are already check-in will have emergency exit right at the boarding gates, and the visitors will have emergency exit paths to the ground level and exit only to two areas which are no need for security checking or screening again.

The **OH SMART AIRPORT** is the promise for future of the airport for air transportation with better viewing, exploring, and for quicker check-in faster checkout in shortest distance with the best rescuing airplane stuck landing wheels. The Smart Airport is also invented to protect illegal access with Airport Emergency Security Doors and better custom security check.

B. Airport Overview

The OH SMART AIRPORT is invented in circle shape with default radius for a regular airport size of the Airport Building r=375m and the default radius of the railroad airport R=3.75km. The Smart Airport would be equipped with the LPS Local Positioning system with recommendation of 4 LPS poles along the diagonal lines within the inner and the outer squares of the railroad circle, and at least 2 LPS device separate vertically in the ATC tower for a complete LPS Local positioning system for Smart Airport. The Smart Airport has 16 Boarding Gateways based on the default radii for a regular airport size of the airport circle and the airport building circle, each Boarding Gateway can able to handle 3 gates, 5 gates or more and the number of gates per Boarding Gateway can be increased by expanding the length of the Boarding Gateway; and the airport is divided the top half for International and the bottom half for Domestic airlines; the regular airport can handle up to 72 airplanes boarding at a time for both International and Domestic airlines. Note that these numbers are based on the building radius of r=375m which can be adjusted as needed, and the Boarding Gateway can be expanded for more boarding gates. The Airport Entrances from both left and right are the tunnels through the airport to the inner airport buildings with parking on the 2nd and the 3rd (top floor) levels. The streets around the airport are recommended with at least 250 meters away from the airport circle or the streets have to be in tunnels for safety purposes.

The below **Figure-B1: OH SMART AIRPORT – Top View** shows Zone-1 (Z1) is the Loading/Boarding zone within the Boarding Gateways; Zone-2 (Z2) is Taxiway ring zone to gates in a ring to provide the airplanes easily get into the gates on the left to avoid traffic for other airplanes; Zone-3 (Z3) is Taxiway zone which provides the airplanes to prepare getting to the gates after landing or prepare to takeoff before get to the runways; Zone-4 (Z4) is the Landing zone for both International and Domestic airplanes; Zone-5 (Z5) is the Takeoff zone for both International and Domestic airplanes; Zone-6 (Z6) is the Firefighter Station zone;

Zone-7 (Z7) at the bottom of the drawing in safest area is the hangar Airplane Maintenance Area; and Zone-45 (Z45) is the Wind-Direction runway which is used when the wind direction is crossing the normal runways which prevents from landing on the normal landing direction.

The below **Figure-B1: OH SMART AIRPORT – Top View** shows the Smart Airport Rescuer home which is on the top of the drawing with a railroad in outward direction at 10:30 o'clock and inward back home direction position at 1:30 o'clock which will be shown more details in later sections.

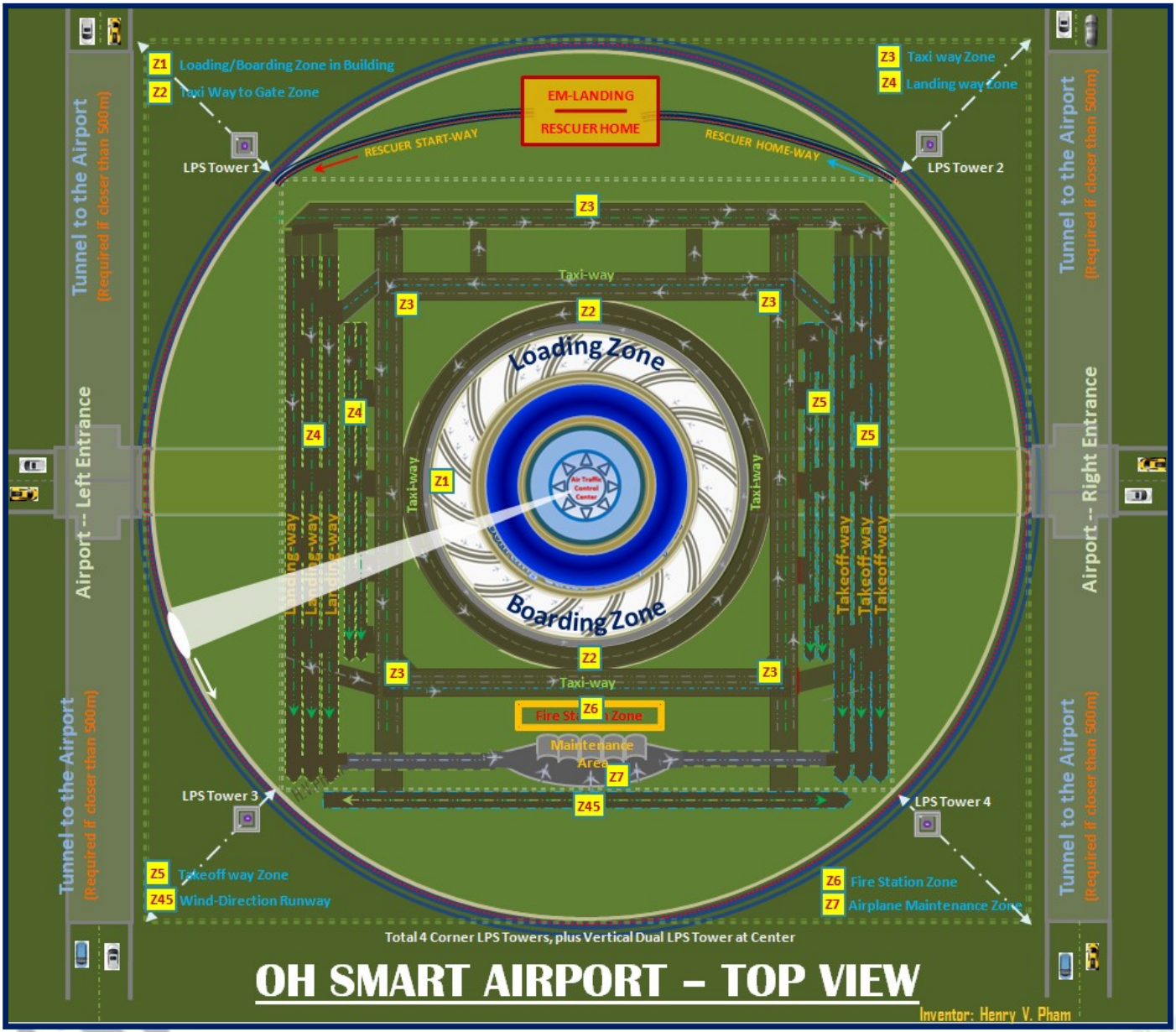

Figure-B1: OH SMART AIRPORT – Top View

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C. Airport Foundation Layout

The location of the airport is expected to be well known about the wind directions, the land in good geographical location. The Smart Airport foundation layout can be started with determine the dimensions of the airport circle building radius r with 3 levels, one for departure check-in, and 2 upper levels for parking and for visitors and travelers exploring; then number of gates per Boarding Gateway and number of the Boarding Gateways can be calculated by the radius of the circle building. Below is the **Figure-C1: OH SMART AIRPORT – Foundation Layout** shows airport building with radius r, with Boarding Gateways labeled as G, and the runways within the magic square ABCD of the outer circle radius R; and the magic square ABCD with line L equals to R√2.

The Airport Ring taxiway around the airport building outside of the Boarding Gateways circle is used for the airplanes get into the gates and to avoid traffic for other airplanes.

The Airport Square taxiway outside of the ring taxiway is used for airplanes to prepare to get to the gates for boarding or away from the gates and ready to takeoff.

The Airport Hangar Maintenance area next to the Firefighter can be built in semi-underground for safety purposes and for clearance. Note that this is the safest location for maintenance area but could be close to the Wind Direction runway. However, each runway is recommended to separate by at least 250 meters away from each other and also away from other properties.

The Airport Runways are shown in this drawing with recommendation of 5 runways for takeoff and 5 runways for landing on each side; and each side has 3 runways for International or big airplanes with 4 engines and 2 runways for smaller airplanes for domestic airplanes.

The Airport Entrances from both left and right are the tunnels through the airport to the inner airport buildings with parking on the 2nd and the 3rd (top floor) levels. The streets around the airport are recommended with at least 250 meters away from the airport circle or the streets have to be in tunnels for safety purposes.

The Airport Rescuer location should be on top as shown in **Figure-C1** with the circle railroad at the outer circle circumference; the railroad would be built in double rail up to 6 meters which will be shown in later section. The railroad circle can be decorated with LED for visibility at night along the rail which will be used for rescuing at night for airplane following the track better and to show the uniqueness of the OH Smart Airport.

Figure-C2: OH SMART AIRPORT – Runways Layout shows recommendation dimensions for each runway based on the standard airport. Takeoff runways class A (TWA1 and TWA2) for small airplanes are recommended with the width of 150 meters, and Takeoff runways class B (TWB1, TWB2 and TWB3) for big airplanes are recommended with the width of 250 meters; same dimensions are recommended for landing runways for both class A and B. The length of the runways for TWBn and LWBn are recommended with 5km long; TWA2 and LWA2 length are recommended with 3.5km; and TWA1 and LWA1 length are recommended with 2.5km.

The runways labels are recommended to use the new format of the Quadletter Compass as shown in Figure-C3 for better direction labeling and navigating especially for airplanes and pilots.

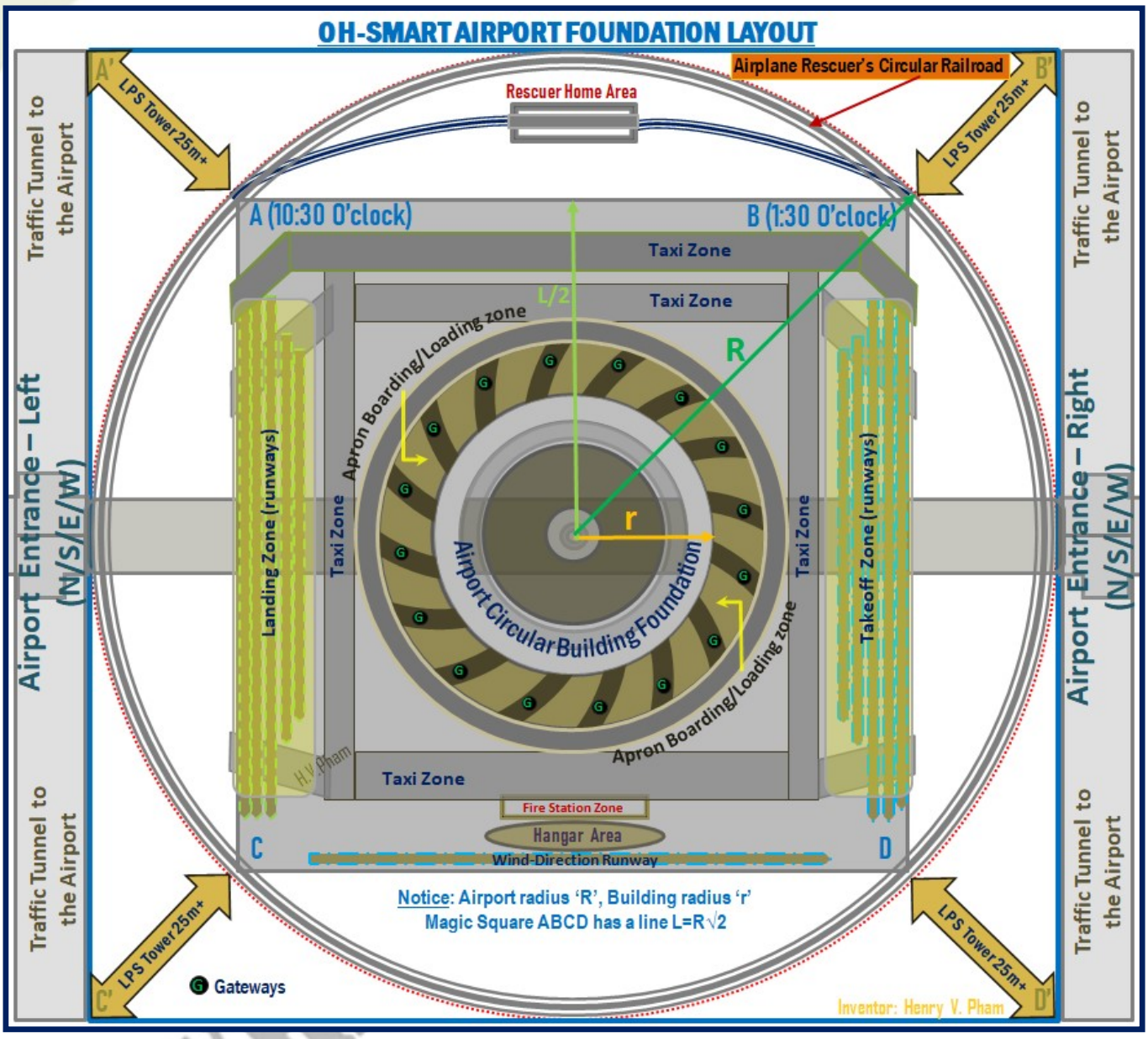

Figure-C1: OH SMART AIRPORT – Foundation Layout

The **Figure-C2: OH SMART AIRPORT – Runways Layout** shows BLDC (Building Circle) with defined radius r is at the center which holding the ATC tower at the middle with strong circle structure that will be shown in later sections; GWC (Gateway Circle) ring apron with defined dimension is the gateways to gates for boarding for departure or un-boarding for arrival; TWC (Taxiway Circle) and TW1, TW2, TW3 and TW4 are the Taxiways for airplane preparation after landing and before takeoff. However, these drawings are based on the regular side of an international airport; and the radius of the building, the number of the gateways and number of gates per gateways can be adjusted based on the crowd traffic demand of the airport.

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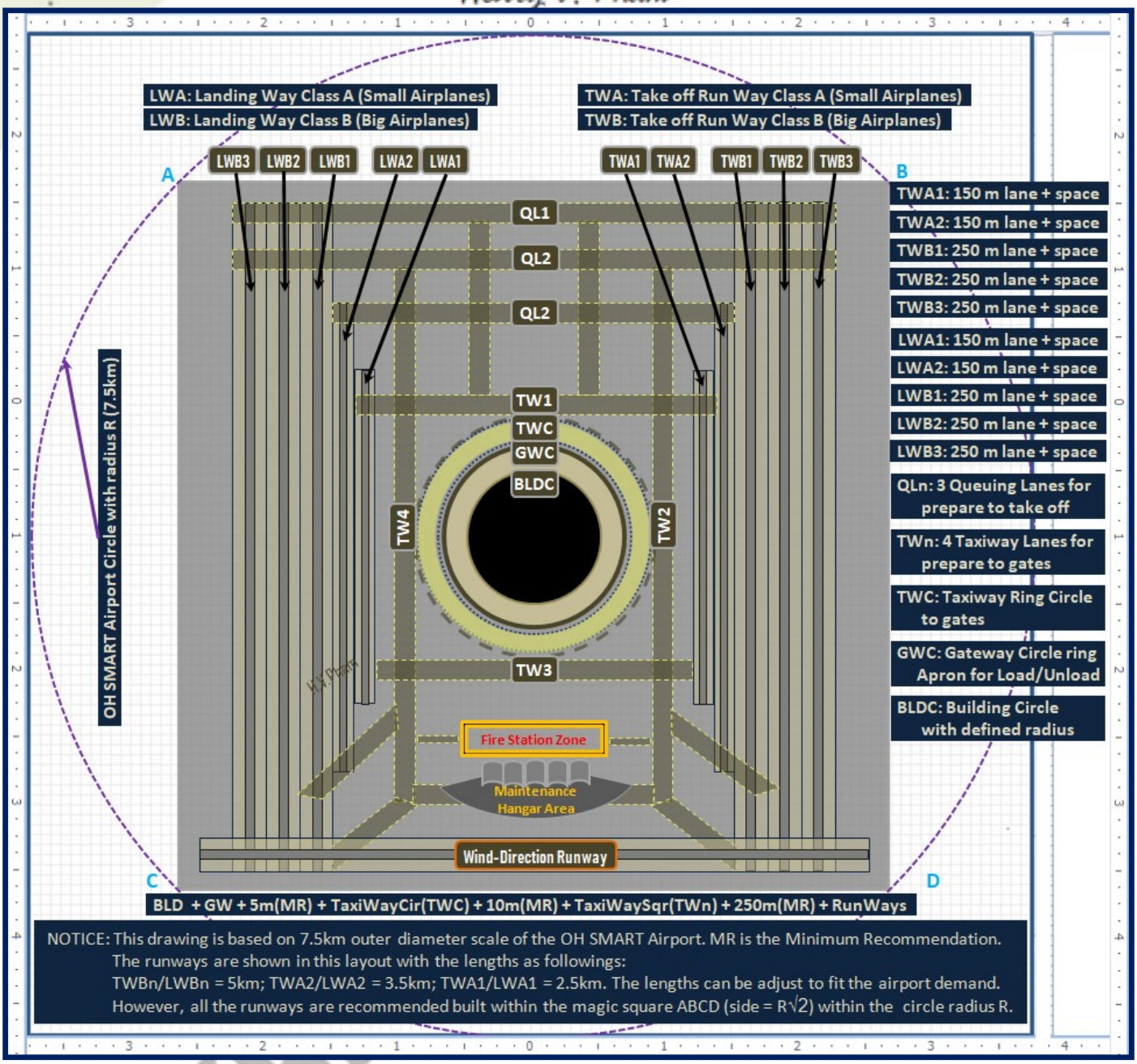

Figure-C2: OH SMART AIRPORT – Runways Layout

The Figure-C3: OH SMART AIRPORT – Quadletter Compass Sample View shows 3 different use cases. The first 2 figures in rectangle shape are showing the map navigation view with the main direction north 'N' with '+15' means the direction is on the right of north 'N' with plus 15˚; and direction changing to 'N' with '-10' means the direction is on the left of north 'N' with negative 10˚. The second 2 figures in half circle shape are showing the aircraft dial meter view with 90˚ form with the 1st main direction north 'N' with '+25' means the direction is on the right of north 'N' with plus 25˚; and direction changing quickly in 135˚ to the right and the 2nd main direction shows as south 'S' with negative 20˚. The third figure shows the runway labels as 'N+15' and the other side shows 'S+15' in opposite direction in 180˚; this is better label to

indicate the runways direction from both sides in case the airport ATC needs to switch direction of landing and takeoff due to the wind direction changing in revert.

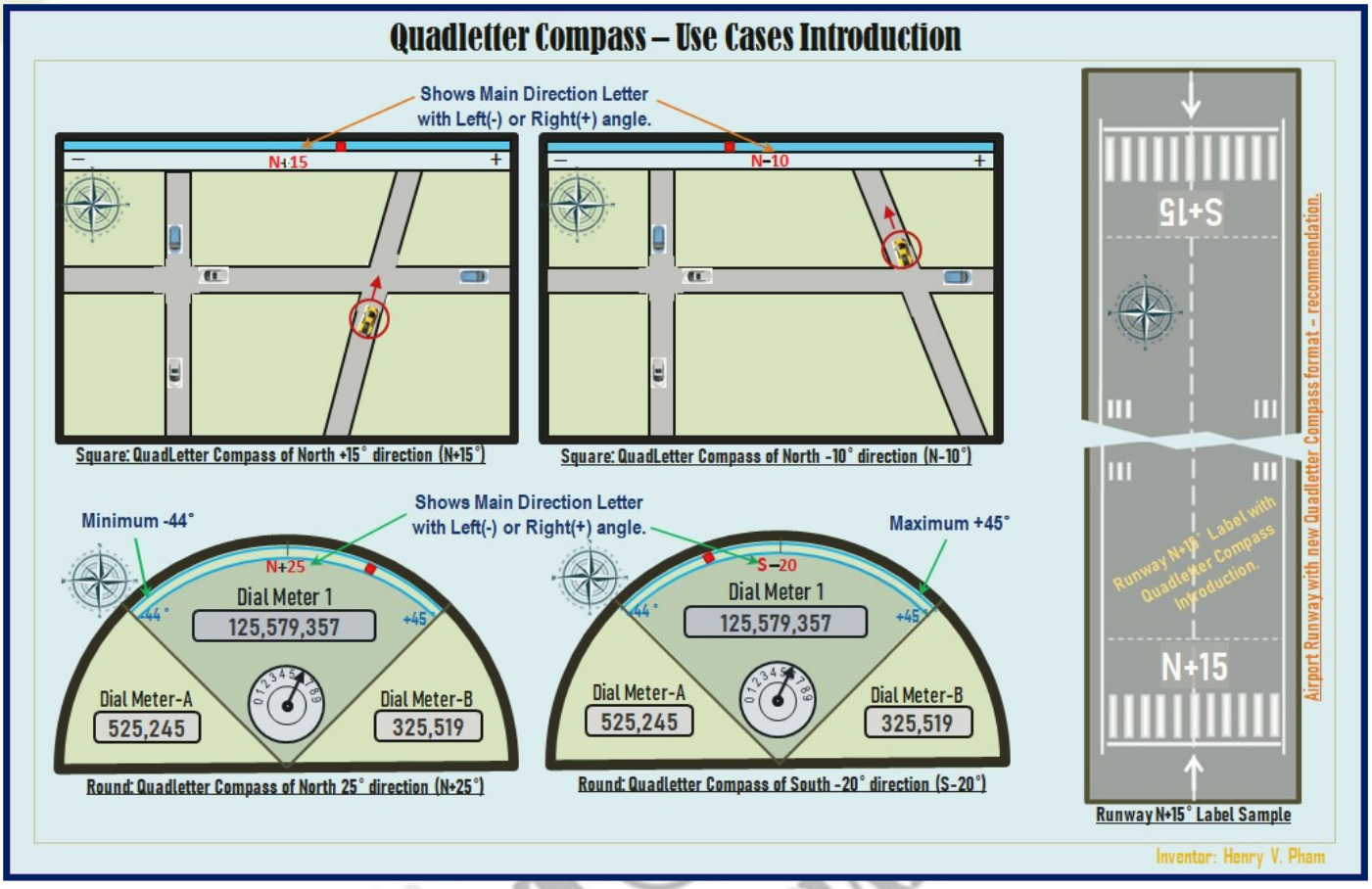

Figure-C3: OH SMART AIRPORT – Quadletter Compass Sample View

D. Airport Foundation Building Levels

OH SMART Airport circle building is recommended to build with 3 levels above the ground level; the first level for Departure with quick drop-off ramp plus 15 minutes parking for faster check-in; the second and third levels for parking and exploring around the airport for both visitors and travelers. The Air Traffic Control (ATC) tower at the center and recommended with the high 75 meters or higher but not recommended too tall since all the runways are closer compare to the current airports, and the runways are within the radius of the airport.

The below Figure-D1: OH SMART AIRPORT – 3D Overview shows the airport building with 3 levels on top of the ground level which is used for airplane apron for loading and unloading. The curved roof for strong structure would support the ATC tower around the tower top base; the bottom base should be underground of the strong foundation building center. The ATC tower would have the Globe Symbol, an optional and rotatable Coffee Sight Viewer, ATC control room, high power Camera and Light drum and the

Spherical Radar system on top. The railroad in circle around the airport building is used for the Airplane Rescuer to run around catching airplane stuck landing wheels when reaching the speed of the airplanes. The Rescuer home is located at the starting angles of takeoff and landing for safety purposes. The high power Cameras and Lights drum is located above the ATC room and rotates around tracking and monitoring the Airport Rescuer and help the pilot for rescue airplane easier.

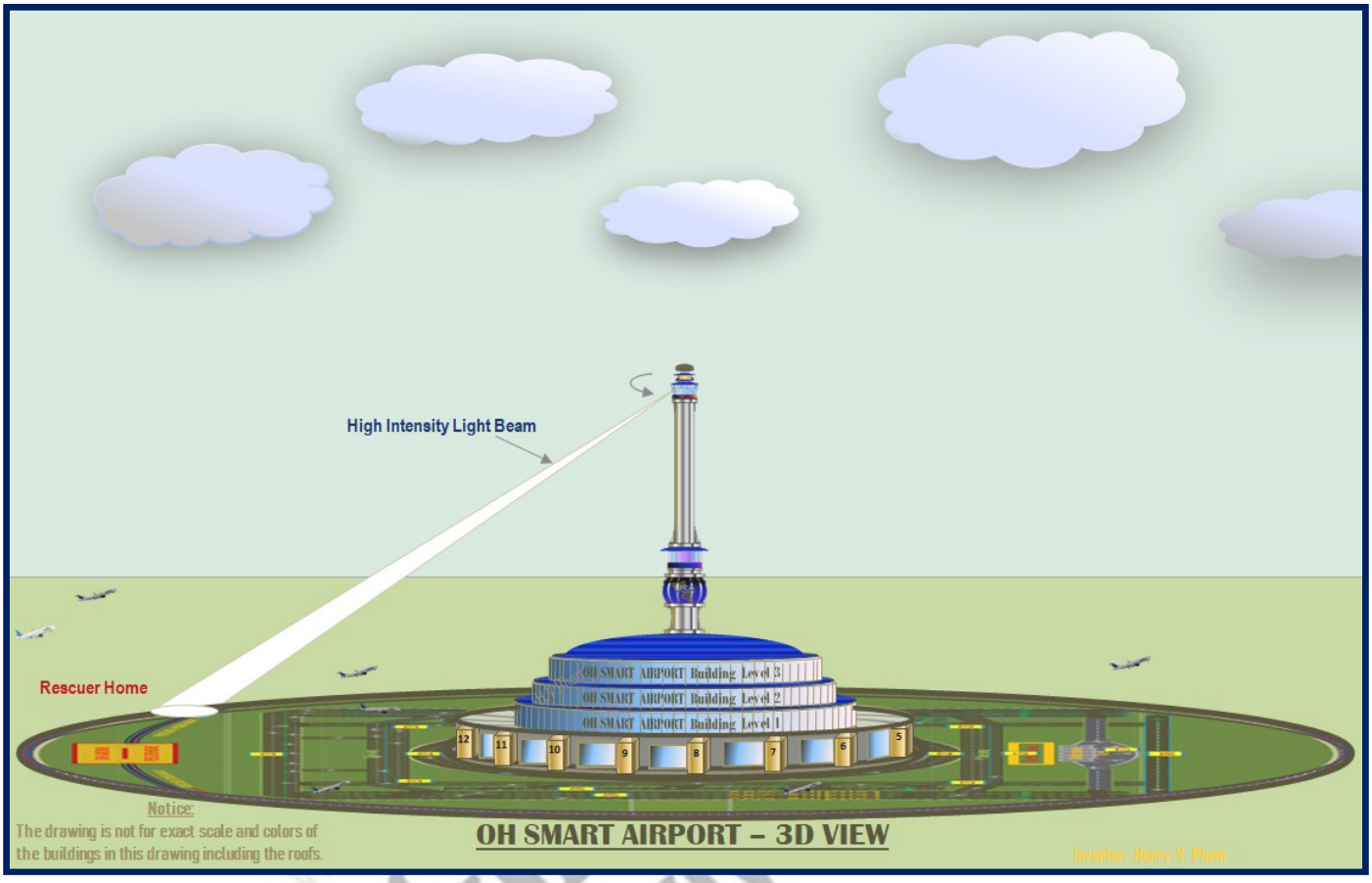

Figure-D1: OH SMART AIRPORT –3D Overview

Figure-D2: OH SMART AIRPORT – Building Levels View shows closer look of the 3 main building levels with the ATC tower top base above the curved roof would hold the Globe symbol which is built around a strong cylinder structure to provide a great looking symbol of OH Smart Airport with recommended country letter code; the figure shows '**USA**' country 3 letters code in this case. On top of the Globe symbol, there is an optional and rotatable Coffee & Beverage Sight Viewer which is built to allow the visitors or travelers to view the airport in 360˚ in 36 minutes or 10˚ per minute while seating on a table. However, the 2 visitor elevators with additional access are controllable by the Coffee Sight Viewer team who can trigger a button to disable the upward direction to the Coffee Sight Viewer when the room is full or out of service; note that these elevators are required to provide this feature. The ATC room with 2 levels is on top and not rotatable; the ATC room will be described more in detail in later sections. The high power Cameras and Lights drum is right above the ATC room which is rotatable to view and monitor the Airplane Rescuer.

The Spherical Radar system would be built with multiple dish layers around the half sphere with both passive and active modes to scan entire sky at once instead of rotating around like current radar system. The radar system will be described more in details in later sections. The tower cylinder can be built with stacking of ring molded cylinder sections or with connection ring cylinder sections which will be shown in detail in Airport Foundation Levels in later sections.

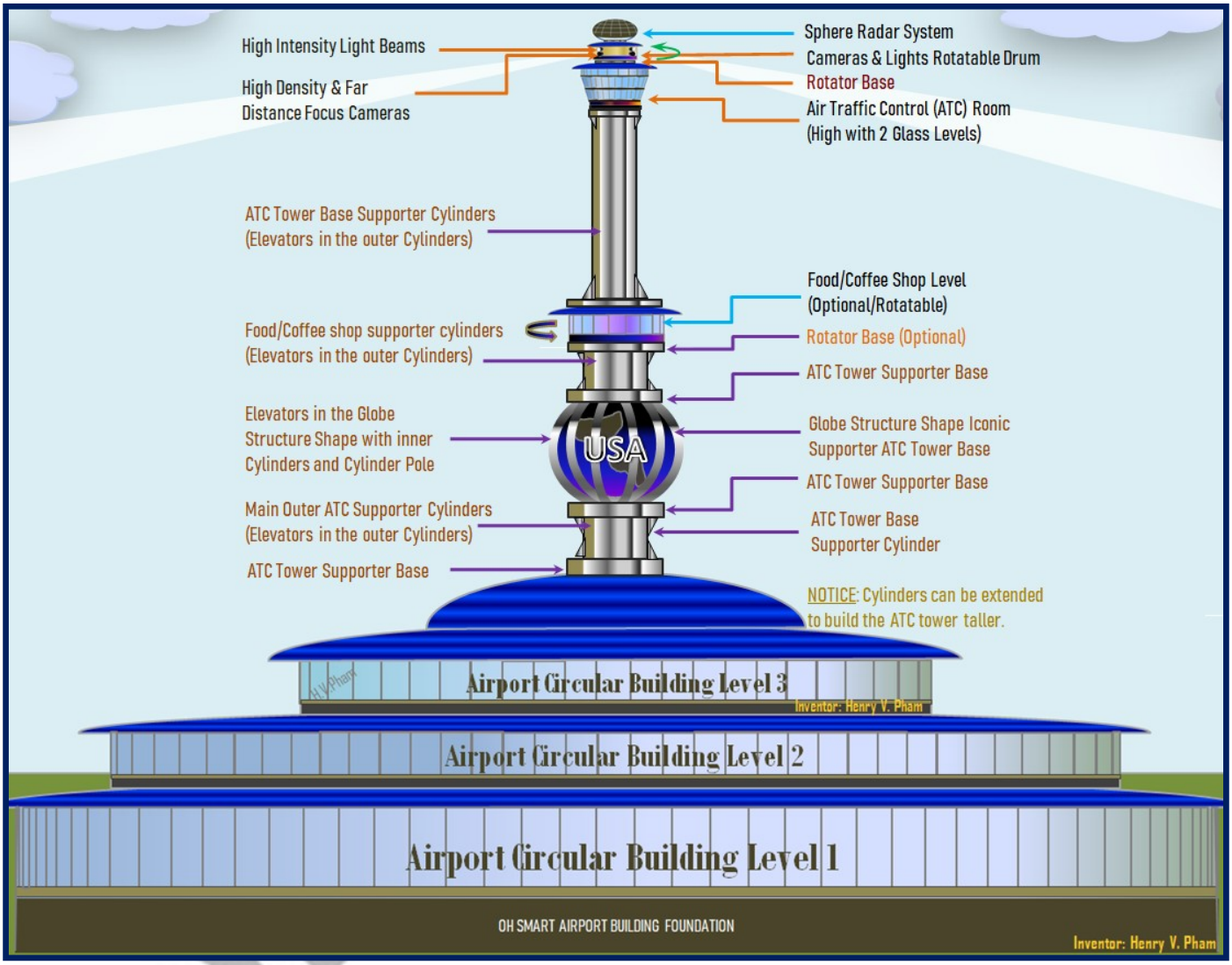

Figure-D2: OH SMART AIRPORT –Building Levels View

OH Smart Airport building foundation has 2 underground levels; count from the ground level, Ground Level 1 is the underground level which is the Arrival Checkout and Ground Transportation level, and the Ground Level 2 is underground level which is under the Ground Level 1 and is used for Airport Access to all levels. The Ground Level is used for Airplane apron loading and uploading, and the 3 Building Levels; Building Level 1 for Departure Check-in and the other 2 upper Buildings Levels are used for parking spaces with explore views for both travelers and visitors.

The Ground Level 2 is the access level and is shown more detail in Airport Underground Level 2 section. The Arrival Checkout Transportation Ground Level 1 is shown in **Figure-D3: OH SMART AIRPORT – Building Foundation Levels View** below with the followings sections. The 'Staffs Side Ring Parking Structure' which can be built outside apron zone foundation and provide with the walkway or walkway with escalators for faster access into the airport, and this parking is only for airport staffs which shows more details in later section. The 'Airplane Taxi/Floor Foundation is right under the Ring Taxiway and the Airplane Apron areas for foundation structure strengthness protection. The driveways 'DRWY-A' and 'DRWY-B' are used for taxi drop off and pickup for Airport Ground Transportation which is shown underground and inside the upper building structure in this figure; note that the airplane tower tugs is recommended to store outside of the building. The 'Arrival, Luggage Checkout Ground Transportation (G1)' section is the underground building structure for arrival and security checkout.

The 'Boarding Terminal/Gates' is the Boarding Gateways buildings for boarding gates with 2 floors; the upper floor is used for Departure Boarding gates for passengers check-in and boarding from the Building Level 1, and the lower floor is used for Arrival Checkout Gates for passengers get into the checkout paths inside the Ground Level building to get down to the lower 'Arrival, Luggage Checkout Ground Transportation (G1)' level for luggage and security checkout and ground transportation services.

The 'Airplane Load/Unload Luggage Ground Level' is right on the Ground Level which is used for Airport Ground Services for luggage and airport maintenance and services. This level is shown more detail in 'Airport Apron and Ground Service' section.

The 'Departure Check-in – Building Level 1' is named as Building Level 1 which is used for travelers check-in with airlines ticket counters and Security Screening Gates. This level provides drop off and pickup ramps with temporary parking spaces for visitors. The parking spaces are limited in this level; there are 2 upper Building Levels which provide more parking spaces with elevators which can be accessed directly from Building Level 3 to Building Level 2 and to Departure Building Level 1 or vice versa. The airport luggage carts are also provided within the carts areas of these 3 Building Levels which are shown more detail in later section.

The Airport Tower is built with stacking ring sections cylinders which would have a Globe Symbol at the bottom which is used for decoration with country letters code and for extending the larger base of the ATC tower to protect the tower better. The 'Food/Coffee Shop Level' is optional and used for Coffee Sight Viewers which is optional and rotatable around to allow the visitors to view entire airport with recommended 36 minutes per revolution as mentioned earlier. The **Figure-D4: OH SMART AIRPORT – Building Tower Levels View** below shows a closer look of the ATC tower. The very top section is the Spherical Radar system which is recommended to build with both active and passive modes; and right below is the high powered Cameras & Lights Rotatable drum which is used to follow and monitor the airplane rescuer while catching the airplane stuck landing wheels. The ATC control room would come with 2 floors with the standard viewing angle of 105˚ degrees wider on top. These levels will be shown in details later for their specific section.

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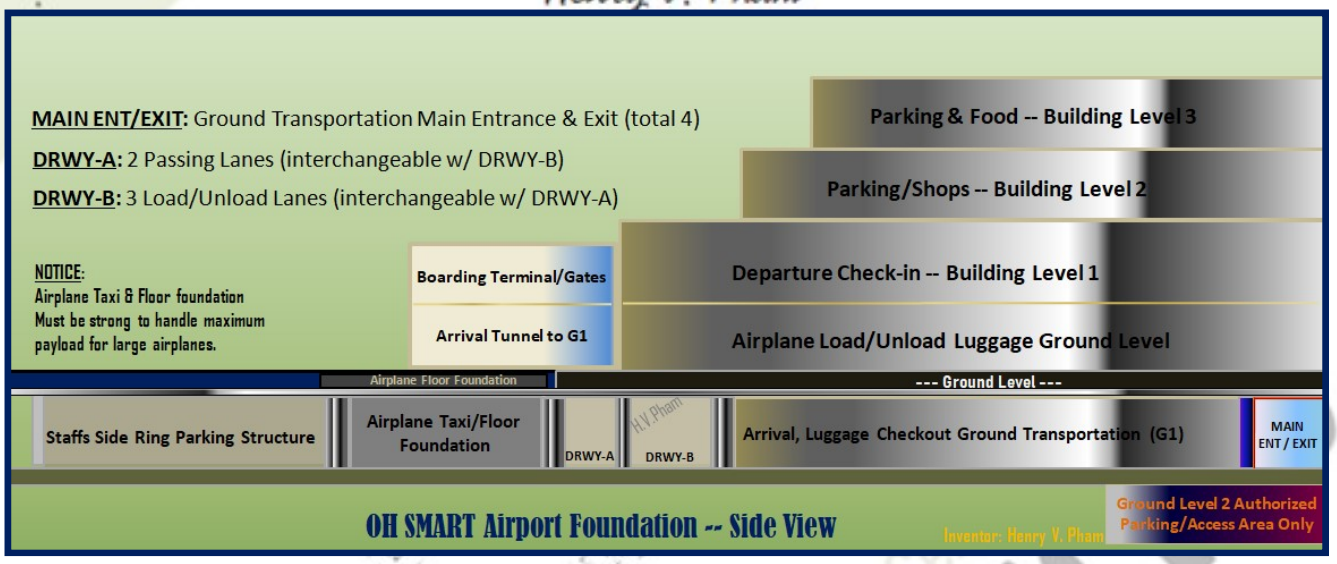

Figure-D3: OH SMART AIRPORT – Building Foundation Levels View

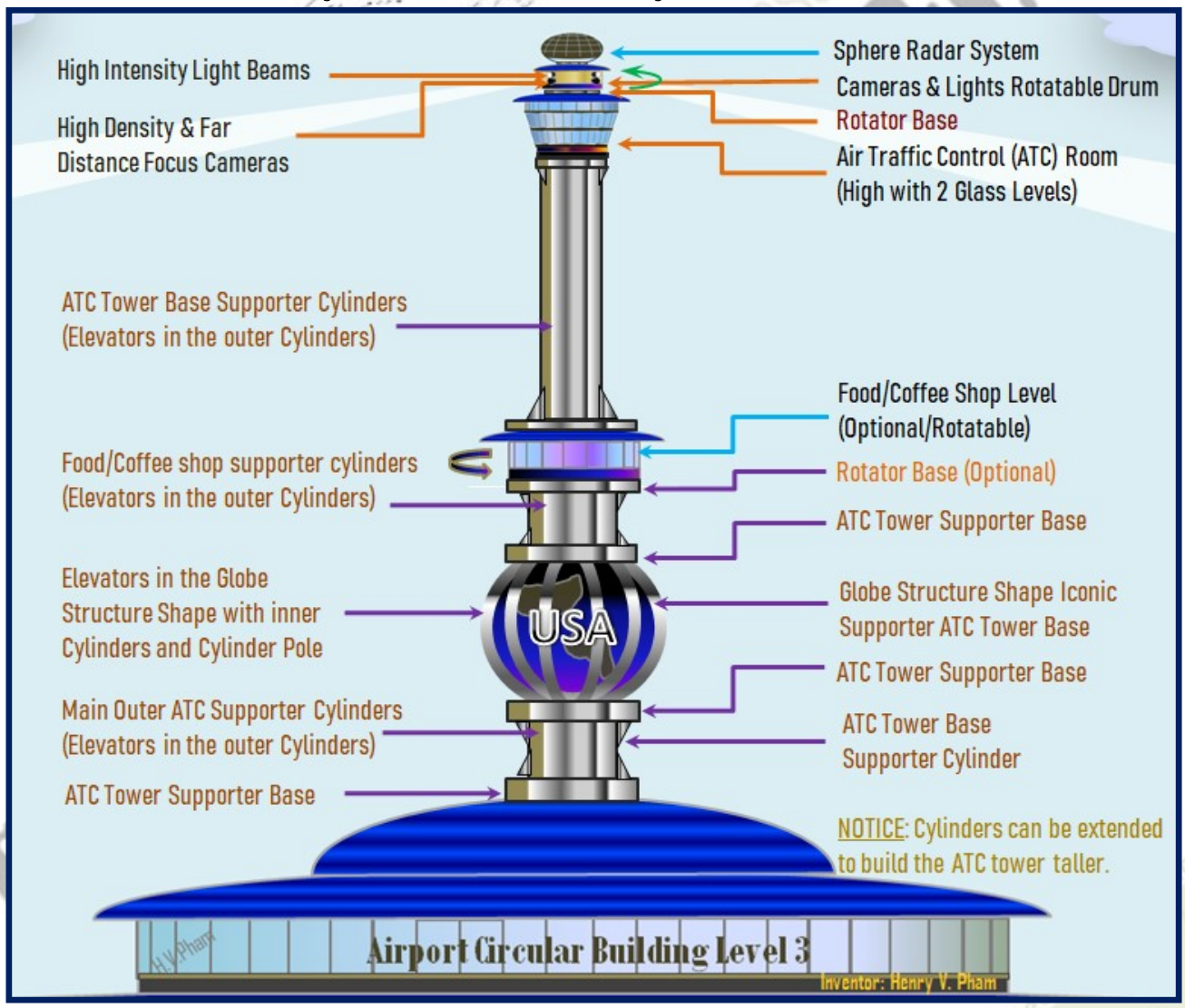

Figure-D4: OH SMART AIRPORT – Building Tower Levels View

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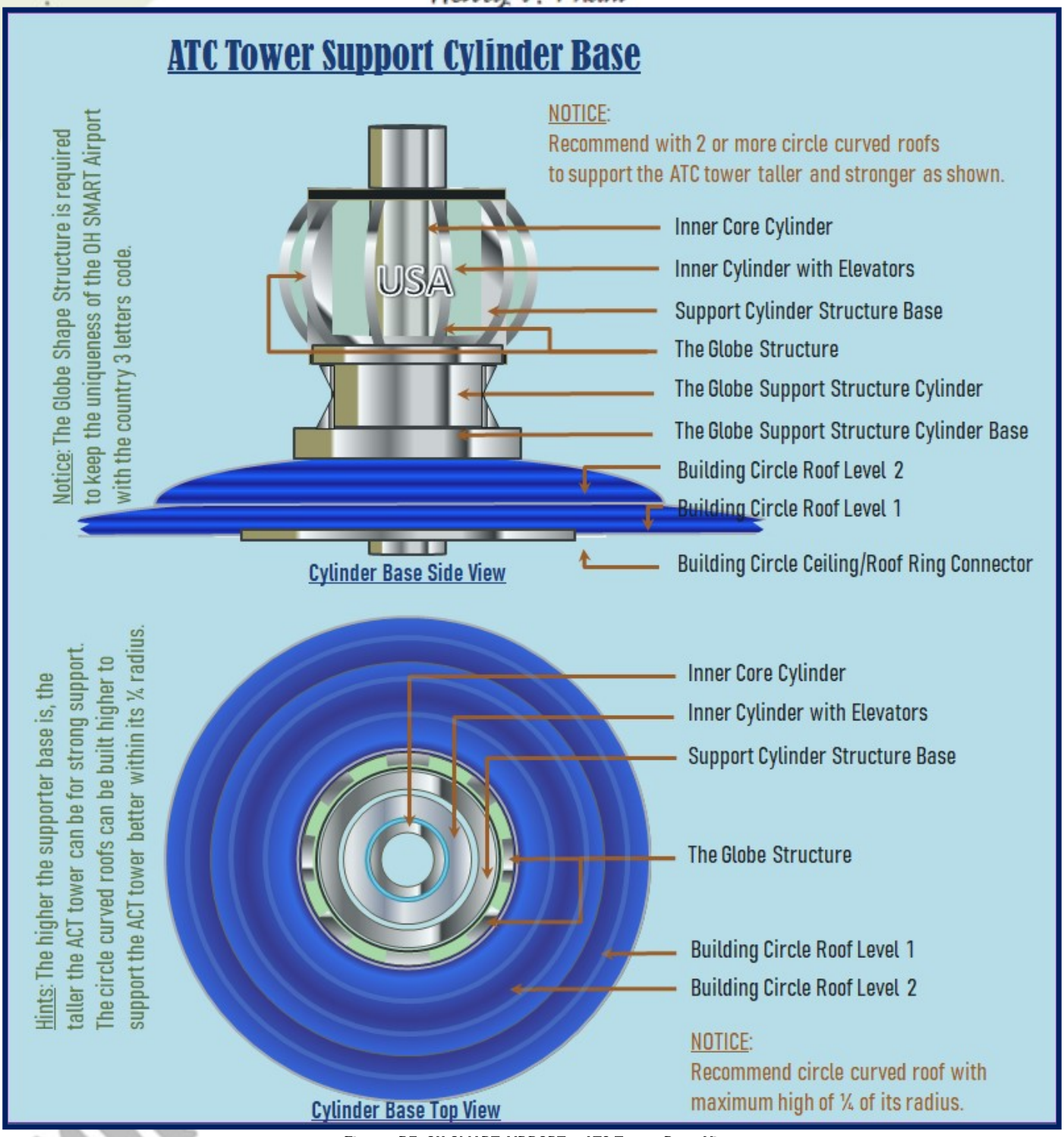

Figure-D5: OH SMART AIRPORT – ATC Tower Base View

The ATC tower supporter cylinder base can be built with ring connectors sections to form a ring for stacking up of a cylinder. The ATC tower base would be extended from the curved roof of the Airport Buildings; and the curved roof can be multiple layers to raise the base taller for more supports; however, the overall curved roof is recommended to be less than ¼ radius of the top sector of the roof circle. The

Globe Symbol is recommended to build around the extended base cylinder right on top of the curved roof as shown; the cylinder inside the Globe Symbol is used as the base for the upper level; note that this is the extended base cylinder, and the inner cylinders which contain the elevators and emergency stairs around the core cylinder are used for the ATC tower to the ATC room and the radar system level.

The cylinder connectors which are used to stack up to build the airport cylinder tower are shown in **Figure-D6: OH SMART AIRPORT – Core Cylinder Tower Structure Sample View** below with 4 ring sections connectors of cylinder tower; however, depends on the radius dimension of the cylinder, the tower builder can decide number of ring connectors to mold for better building construction; choose one ring connector to mold for a complete ring circle for small cylinder is also a good choice. If it is possible to mold right at the construction sites, it is recommended to have a mobile metal molding manufactures right at the big building construction sites to reduce numbers of carrying material transportations and safety during transportation concerns.

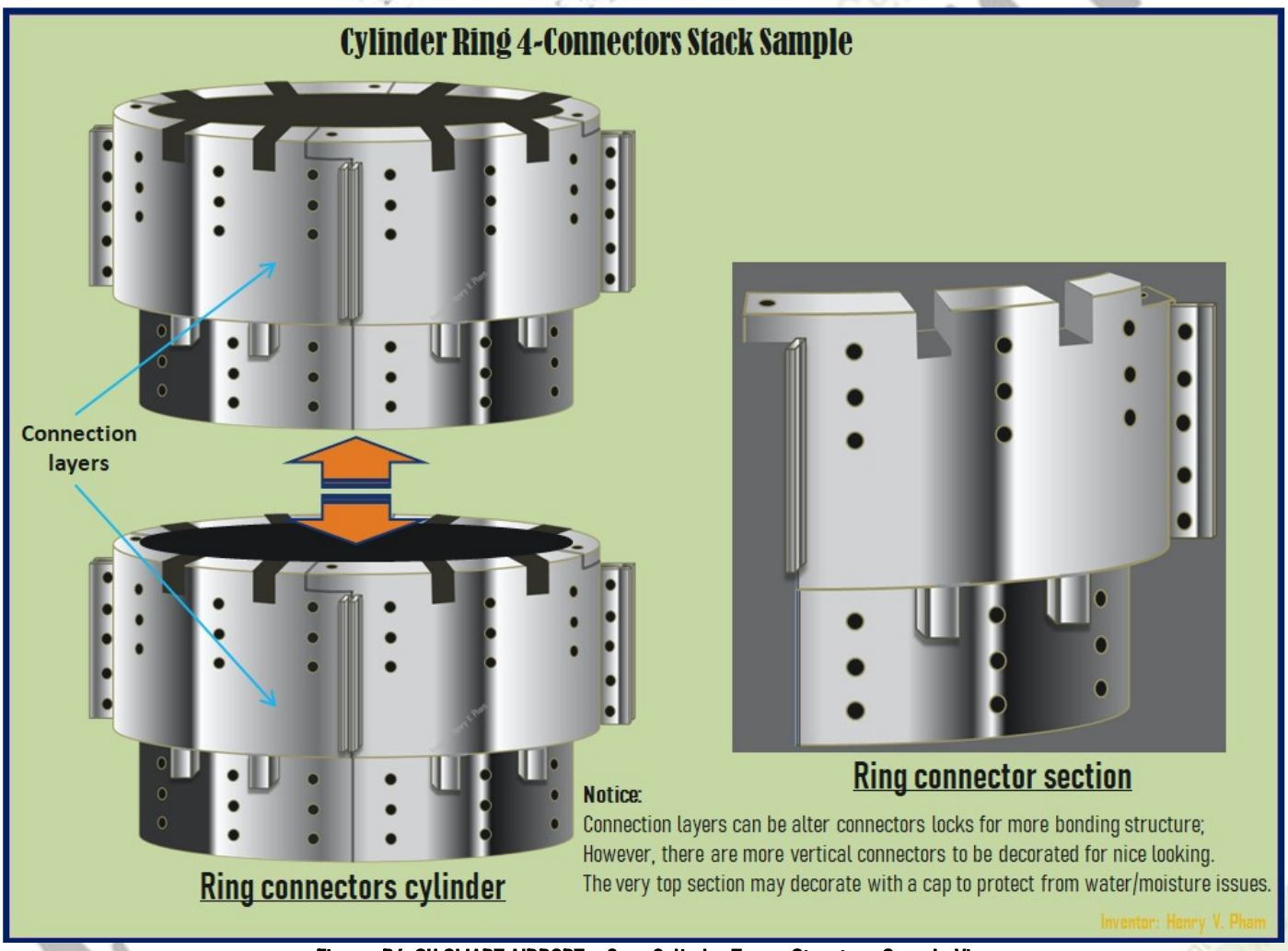

Figure-D6: OH SMART AIRPORT – Core Cylinder Tower Structure Sample View

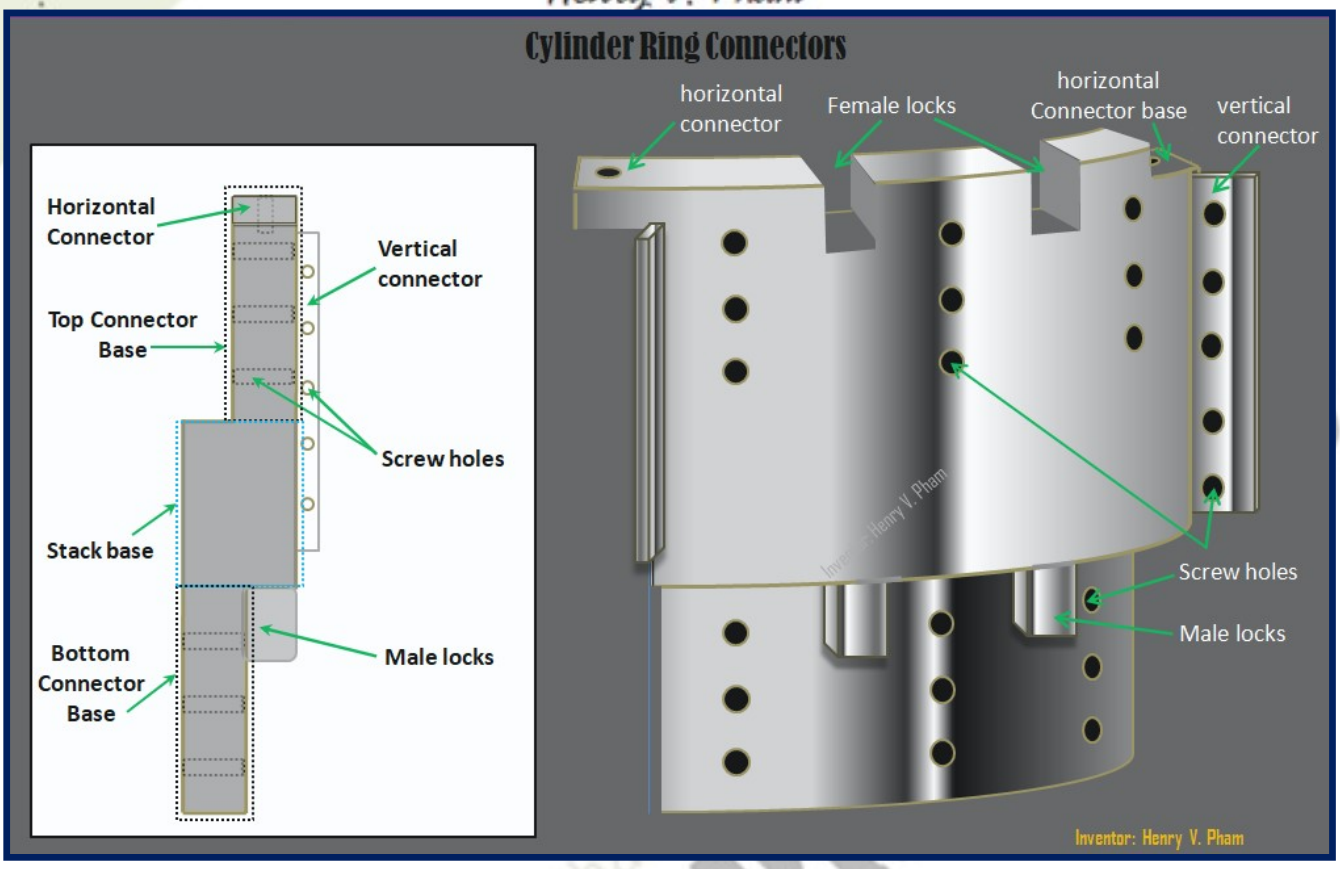

Figure-D7: OH SMART AIRPORT – Cylinder Connector Section View

The cylinder ring connector shows in the above **Figure-D7: OH SMART AIRPORT – Cylinder Connector Section View,** comes with horizontal connector on the left and horizontal connector base on the right which is used to lock the ring connector when connecting one to another. The ring connector also provides vertical locks; this ring connector provides 2 male locks at the middle section which are used to lock with the female locks on the top section of the ring connector to hold the cylinder ring stronger and help during installation better. The vertical locked connectors are shown on both sides are used to tied one ring connector to another. Figure-D7 above on the left side shows the crosscut section of the ring with 3 parts bases, Top Connector Base, Stack Base and Bottom Connector Base. The Top Connector Base is used to connect the Bottom Connector Base of another one on top; and the Stack Base is the cylinder ring high; the top and bottom connector bases are recommended with at least 1 feet (30 cm) high with at least 6" (15 cm) high of the locks; and the high of the cylinder ring is recommended to be 3 meters or less for safety and strengthness purposes. The thickness of the Top Connector Base and the Bottom Connector Base are recommended with at least 6" (15 cm) thick, and the Stack Base thickness should double the thickness of the top or bottom connector base. The cylinder ring connector should provide enough screw holes as shown in Figure-D7 with at least 2" (5 cm) diameter screws; and the entire cylinder should be decorated to cover the screw holes for better look and feel. Airport foundation and cylinder tower are recommend to build with Titanium which has 4500 kg/m^3 lighter weight and better in strength.

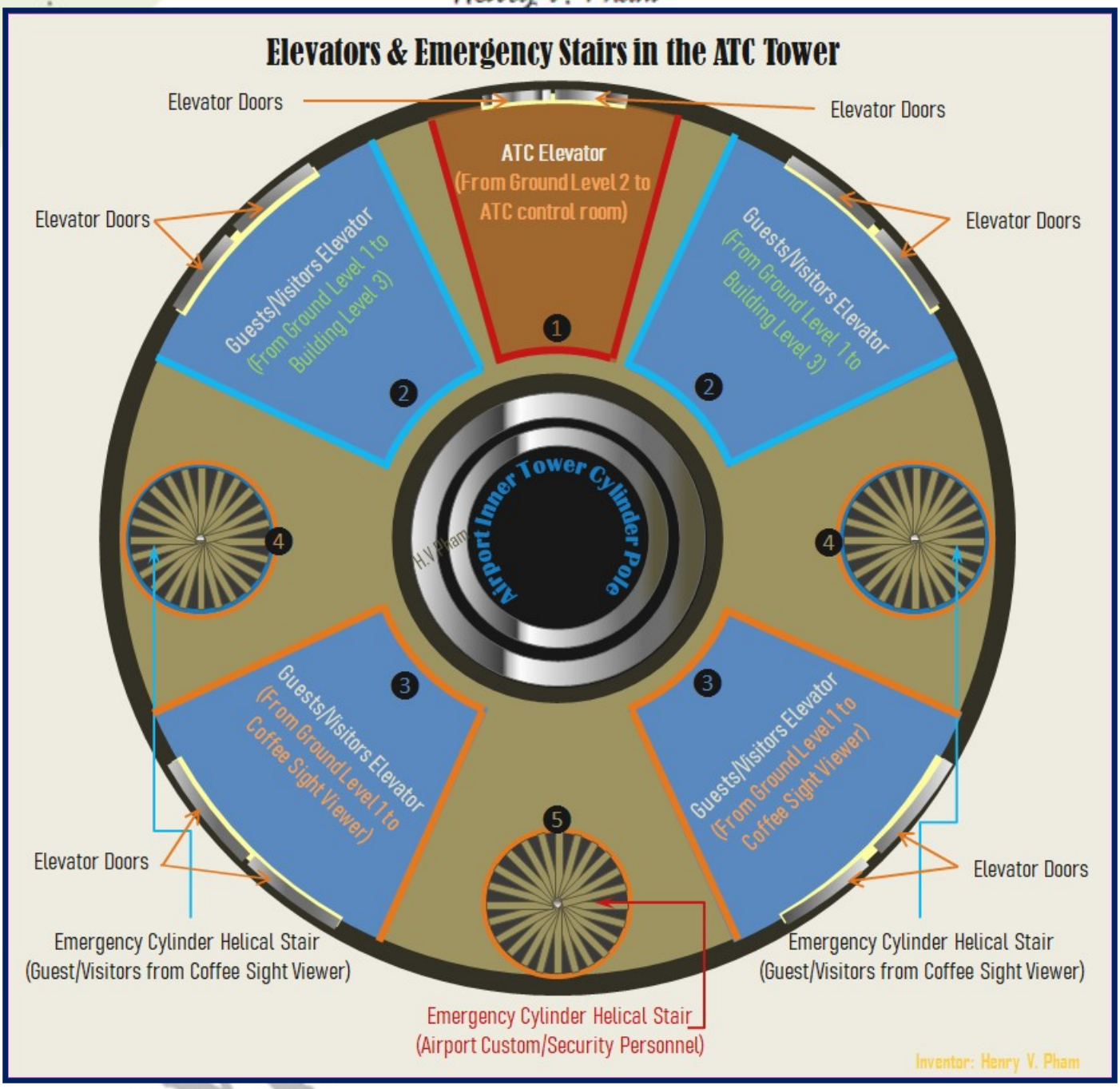

Figure-D8: OH SMART AIRPORT – Elevators & Emergency Stairs in ATC Tower Cylinders View

The center pole of OH Smart Airport would have 5 Elevators and 3 Emergency Stairs; there is one ATC Elevator labeled as (1) only used by ATC personnel, 2 visitors Elevators labeled as (2) for access from Ground Level 1 through Building Levels 1, 2 and 3 and vice versa, 2 visitors Elevators labeled as (3) for access from Ground Level 1 through Coffee Sight Viewer and vice versa with 2 Emergency Stairs labeled as (4) for visitors to access in emergency case from the Coffee Sight Viewer to Building Level 3.

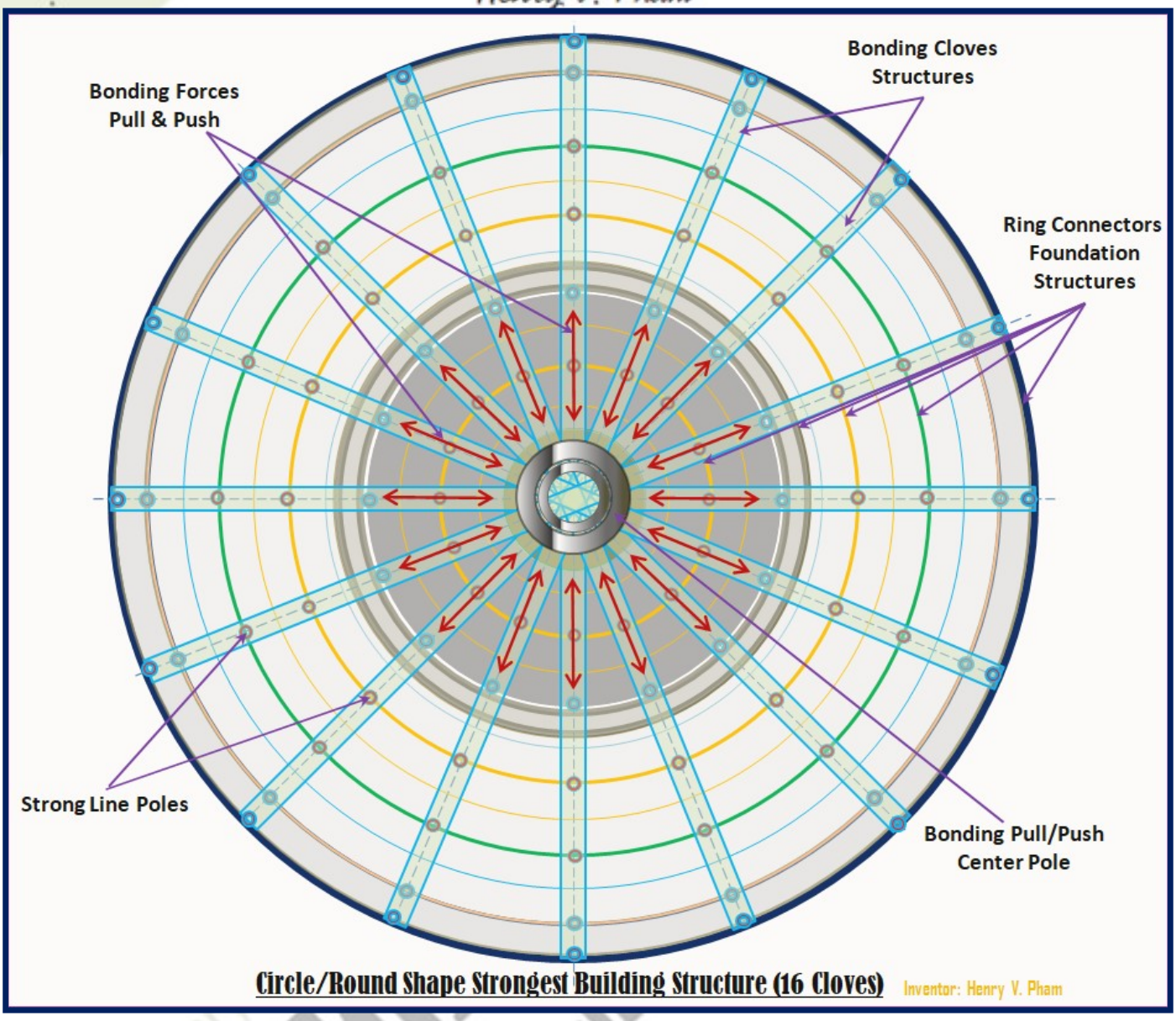

Figure-D9: OH SMART AIRPORT –Round Shape 16 Gloves Building Structures

OH Smart Airport is built with round shape building structures; the structure showing in this document and the above drawing in **Figure-D9: OH SMART AIRPORT –Round Shape 16 Gloves Building Structures** with 16 cloves. The circle round shape is the strongest building structure with a center pole as a ATC tower and the bonding cloves structures connect to the center around the building which provide the best bonding forces that pull and push from other directions to protect the structure better than any other structure for any external forces. The foundation can be connected with ring connector base around in circle and the bonding cloves structures connected with the center and also connected to the ring connector base. The recommended poles are along the cloves structures lines for better bonding structures. This structure works the same for both foundation and curved roofs of the circle buildings. The Building Levels 1, 2 and 3 should have the poles around the center ATC tower around the elevators zone to protect the upper Cylinder Ring Base right below the Globe Symbol structure of the ATC tower.

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E. Airport Radar System

The Smart Airport Radar system is recommended with 5 levels; the top level would be a single round dish; and the other levels contain of multiple dishes around the circle of the sphere in rectangle or trapezoid shape which will handle to monitor and tracking within the view angle of its own dish. The **Figure-E1: OH SMART AIRPORT – Radar System View** shows over view of the Spherical Radar system with 5 levels.

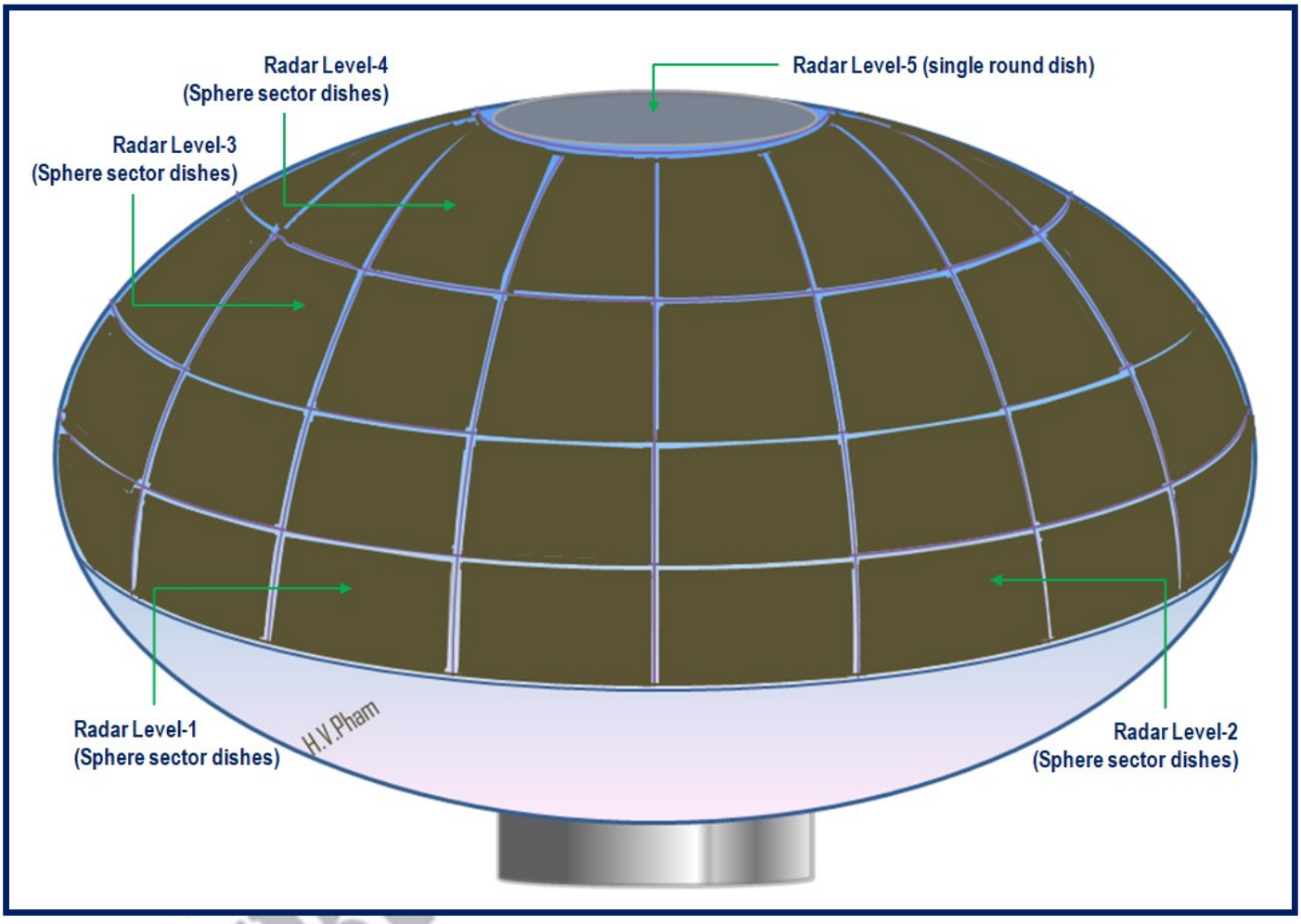

Figure-E1: OH SMART AIRPORT –Radar System View

The below **Figure-E2: OH SMART AIRPORT – Radar Level 1 Cutout Section** shows the radar dish layer with protection; the radar dish layers can be connected together physically around the inner center cylinder pole which is recommended with at least 1.5 meters diameter with built-in ladder that would allow a person to get in and get up to the radar dish layers for repair or maintenance.

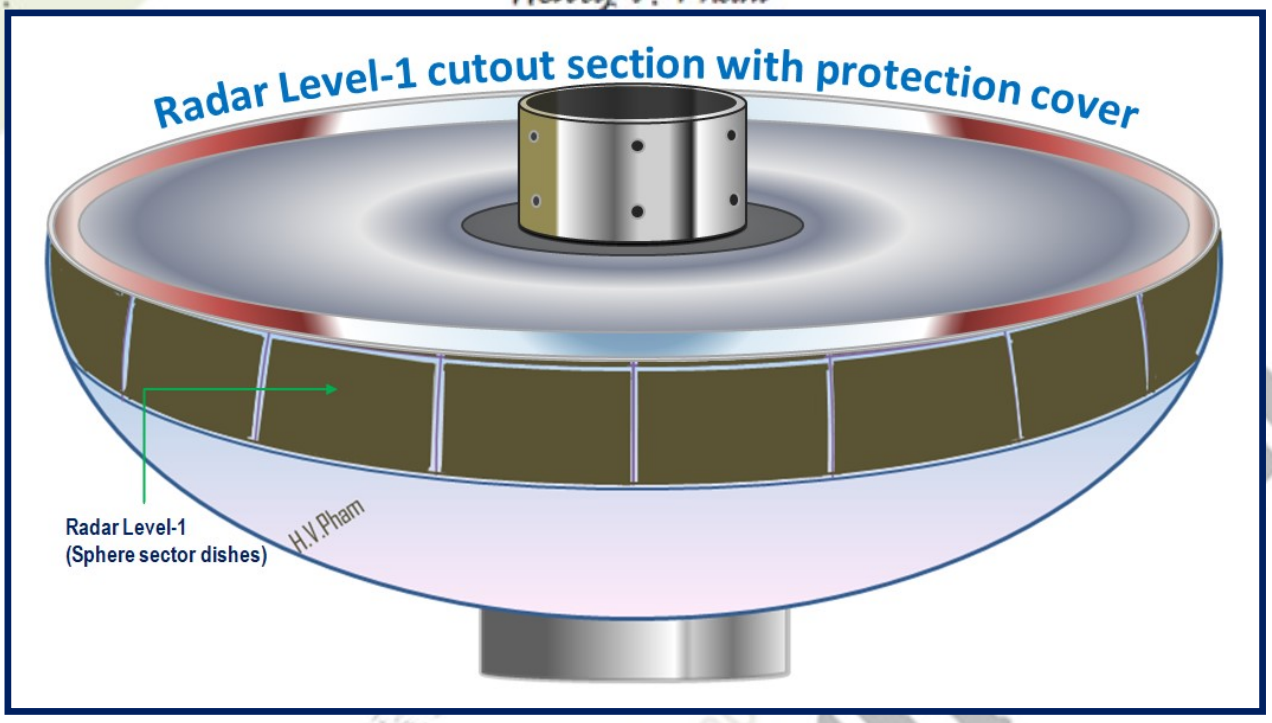

Figure-E2: OH SMART AIRPORT –Radar Level 1 cutout section

The spherical radar dish layer can be divided into number of dishes; the more number of dishes, the smaller angle to monitor, and the smaller angle to monitor the more accurate of the system is; this can be determined by the airport radar planners. Note that the radar system can support both active and passive modes; active mode Doppler radar detects closer targets better than passive mode, and passive mode detects farther targets better than active mode. The below **Figure-E3: OH SMART AIRPORT – Radar Level 1 sample layout** shows with 16 radar dishes with 22.5˚ ψ angle each; and they are wire connected together with other layers to a powerful computer for analyzing scanning data images of each dish from each layer to find direction, angle and altitude of an airplane better and more accurately compare to current radar system. Each radar dish overlaps with α degree angle; this overlap area can be used to calculate position horizontally from a degree relatively to the neighbor radars; and can be used the overlap area to calculate position vertically for altitude in degree relatively to the upper or lower neighbor radar layer. When an airplane is detected on the radar system, the system should be able to identify the main dish that detects the target airplane; the system then should able to signal the software image analyzer identifier to scan and identify with other 4 images from the neighbor dishes images for direction, altitude and angle of the target airplane relatively for accuracy.

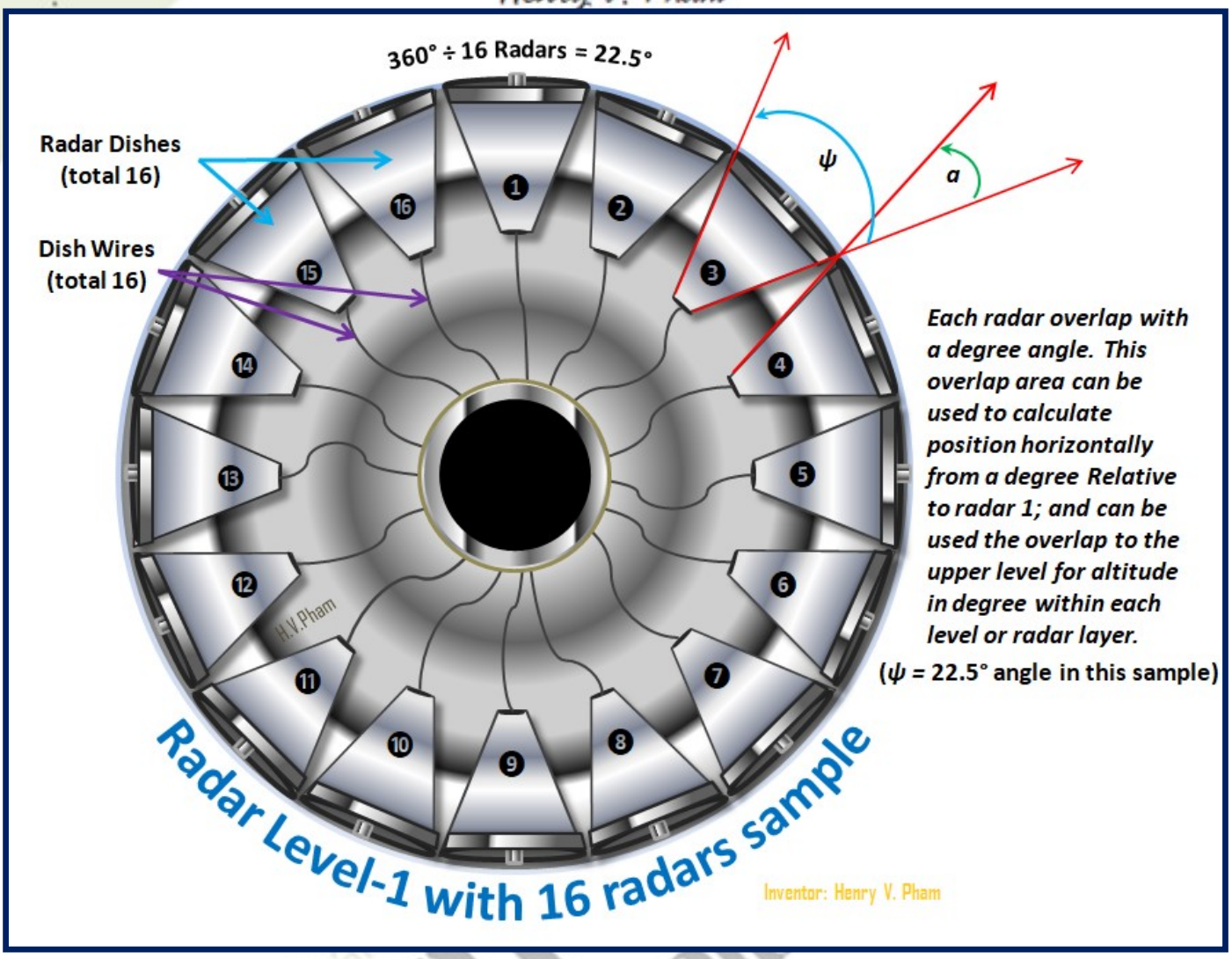

Figure-E3: OH SMART AIRPORT – Radar Level 1 Sample Layout

Figure-E4: OH SMART AIRPORT – Radar Scan Angle Sample Layout shows target airplane is detected and triggered on main radar dish 15 and the neighbor radar dish 16; and another target airplane is detected and triggered on main radar dish 3 and the neighbor radar dish 4. With the dish layer orientation shown in the figures above, the airport radar development team can use a well known dimension airplane to simulate the distance compare to the dimension of the simulated airplane to have different data points for different radius zones (Razones) to tune the radar detecting in distance better. The horizontal and vertical angles of each radar dish and each radar dish layer can also be simulated to have the data points showing on the screen dimension for each radar dish for different radius zones (Razones). The Razones separation is recommended to be 3km difference in length which means that each radius zone has the same separation of 3km or in short name, 3km Razones; note that the Razones can be from 3km for closer zones and 5km for farther zones for better detection and alert system. This process of simulation for data points should be done once and the radar system can be used for other airports or for other radar systems with the same dish dimensions and the same radar dish layout.

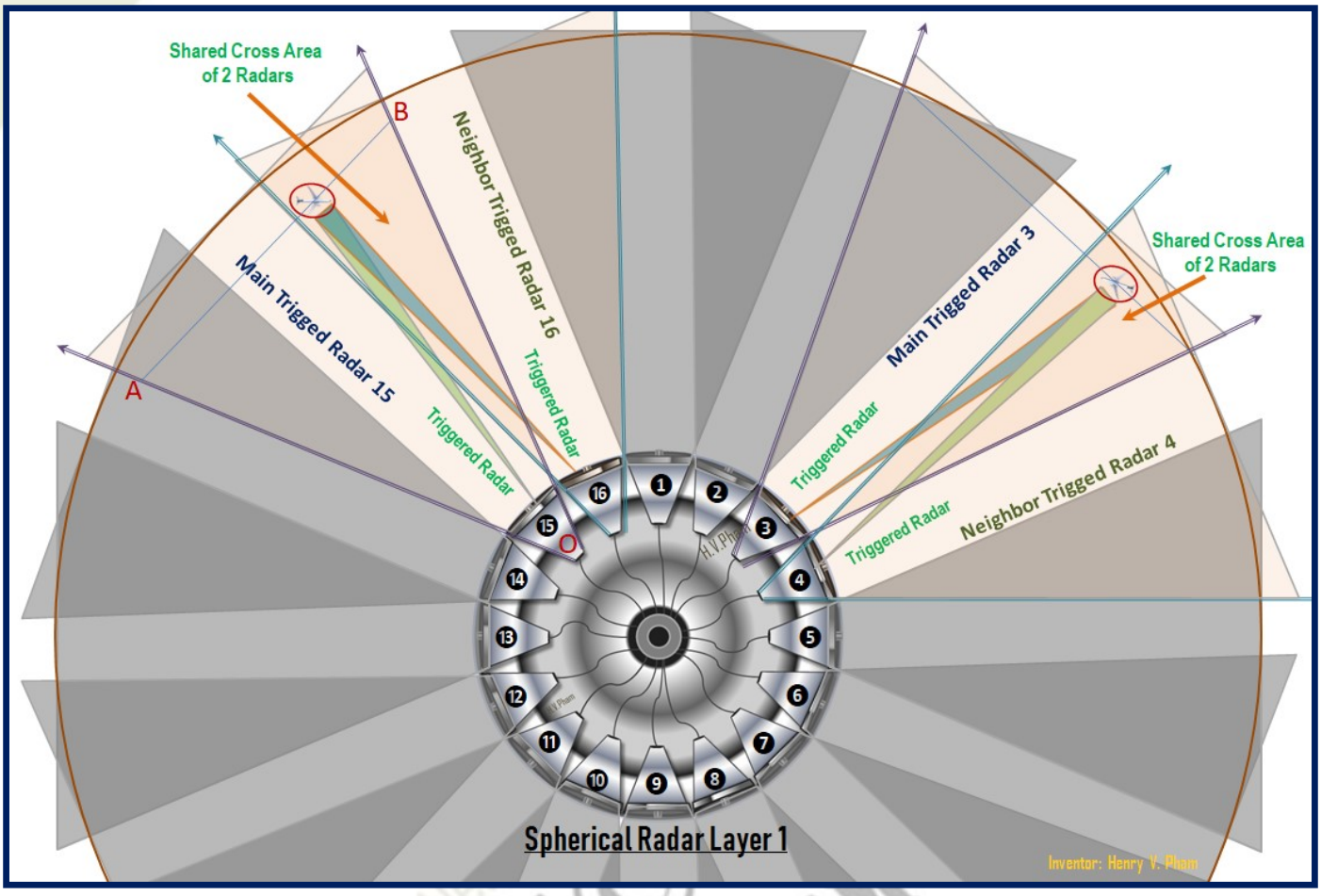

Figure-E4: OH SMART AIRPORT – Radar Scan Angle Sample Layout

The below **Figure-E5: OH SMART AIRPORT – Dish Image Scan Position Calculation sample** shows a sample virtual screen lines in triangle **ABO** which also shown in the above Figure-E4 for the main triggered radar dish 15. With the radar layer orientation above, the target airplane detected on dish 15 with a distance $\boldsymbol{d}$ and $\boldsymbol{x}$ showing in Figure-E5, we can calculate the angle $\boldsymbol{\alpha}$ with the followings equations which are derived from the Laws of Cosines in triangle; note that a and b are the same in this case.

$$\boldsymbol{x^2 = d^2 + b^2 - 2db\,Cos(\alpha)}$$
$$\boldsymbol{x^2 + 2db\,Cos(\alpha) - (d^2 + b^2) = 0}$$
$$\boldsymbol{d^2 - 2db\,Cos(\alpha) + (d^2 - x^2) = 0}$$

We can solve the above quadratic equations for distance $\boldsymbol{d}$ and $\boldsymbol{x}$ then we can use these values to calculate the angle $\boldsymbol{\alpha}$ which is off from the line **B**; we can calculate other radar dishes with similar methods showing here to show position, altitude and direction of the target airplane on the radar screen.

$$\boldsymbol{(c - x)^2 = a^2 + d^2 - 2da\,Cos(\varphi - \alpha)}$$
$$\boldsymbol{2da\,Cos(\varphi - \alpha) = a^2 + d^2 - (c - x)^2}$$
$$\boldsymbol{Cos(\varphi - \alpha) = \frac{(a^2 + d^2 - (c - x)^2)}{2da}}$$

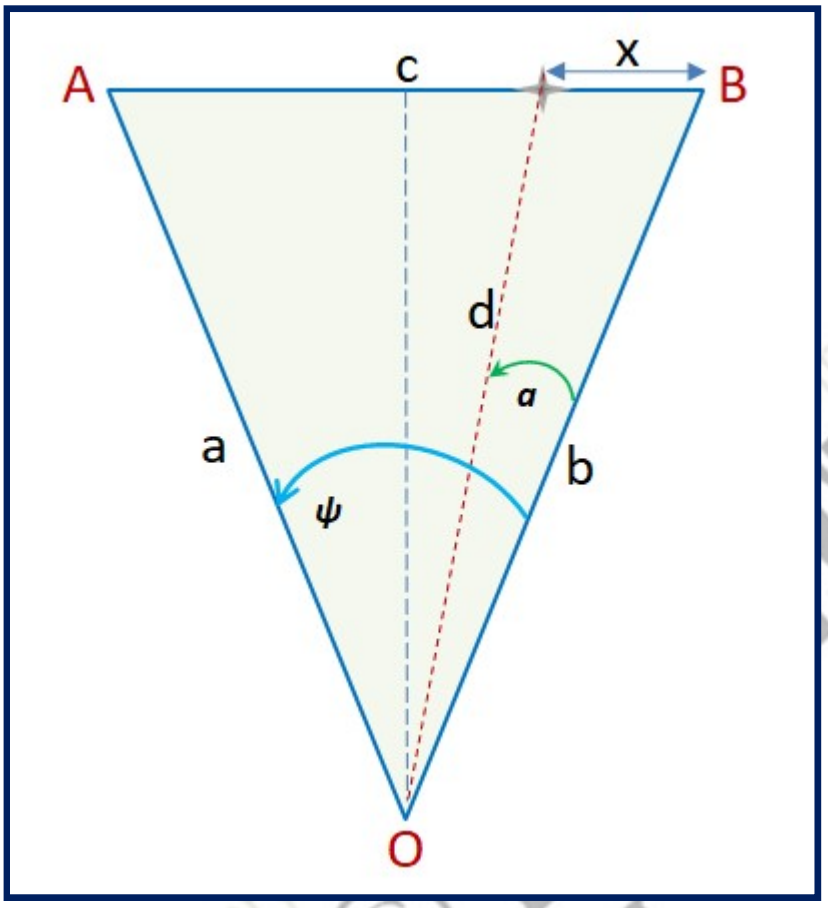

Figure-E5: OH SMART AIRPORT – Dish Image Scan Position Calculation Sample

The spherical multi-radar dish system can set to 1 second scanning frequency, and this would be enough time for the computer to analyze the images of entire radar dishes and draw the paths of the airplanes on the radar screen every one second. However, the radar manufacture can provide options to set higher frequency as needed. The below figures Figure-E6, Figure-E7 and Figure-E8 show the 3 samples scanning positions with the paths of the airplanes plus the positions information in a sample format of <Direction>:[A:<altitude-km>; D:<distance-km>];(x-axis km; y-axis km) with the statistic on each quadrant to save space on the radar screens; however, the format can be simplified if needed. Where the 'Direction' is suggested to use the new format of Quadletter Compass as mentioned in **Figure-C3: OH SMART AIRPORT – Quadletter Compass Sample View**; the Altitude A following the distance D in km format; and the distance to the x-axis and y-axis which is on the East and North direction respectively which is used to refer to the positions and distances in the coordinates to calculate easier; however, these data can be omitted while the directions, distance and altitude are important.

The below **Figure-E6: OH SMART AIRPORT – Radar Scanning Position 1 Sample View** shows radar images scanned for sample 1; the Quadrant-1 shows 2 airplanes, radar number 15 and 14 on radar levels 1 and **1** for 2 airplanes respectively; the Quadrant-2 shows 1 airplane, radar number 3 on radar level 2; the Quadrant-3 shows 1 airplane, radar number 12 on radar level 1; the Quarant-4 shows zero airplane, zero

radar number on zero radar level as no airplanes detected. For instance, the **2nd closest** airplane at position **E+35:[A:5.10km; D:13.35km]:(-11.25km; +7.90km)** shows the airplane is on the main direction **East** with 35˚ angle to the right with 5.1km altitude, 13.35km distance to the airport at the coordinates of -11.25km on West and +7.90km on North**.** The quadrant layout with 4 corners statistic information shows useful info on radar screen in less space for the ATC team; note that the 2 vertical strips are the sample labels on the outer screen frame which can be used for physical compass orientation and decoration.

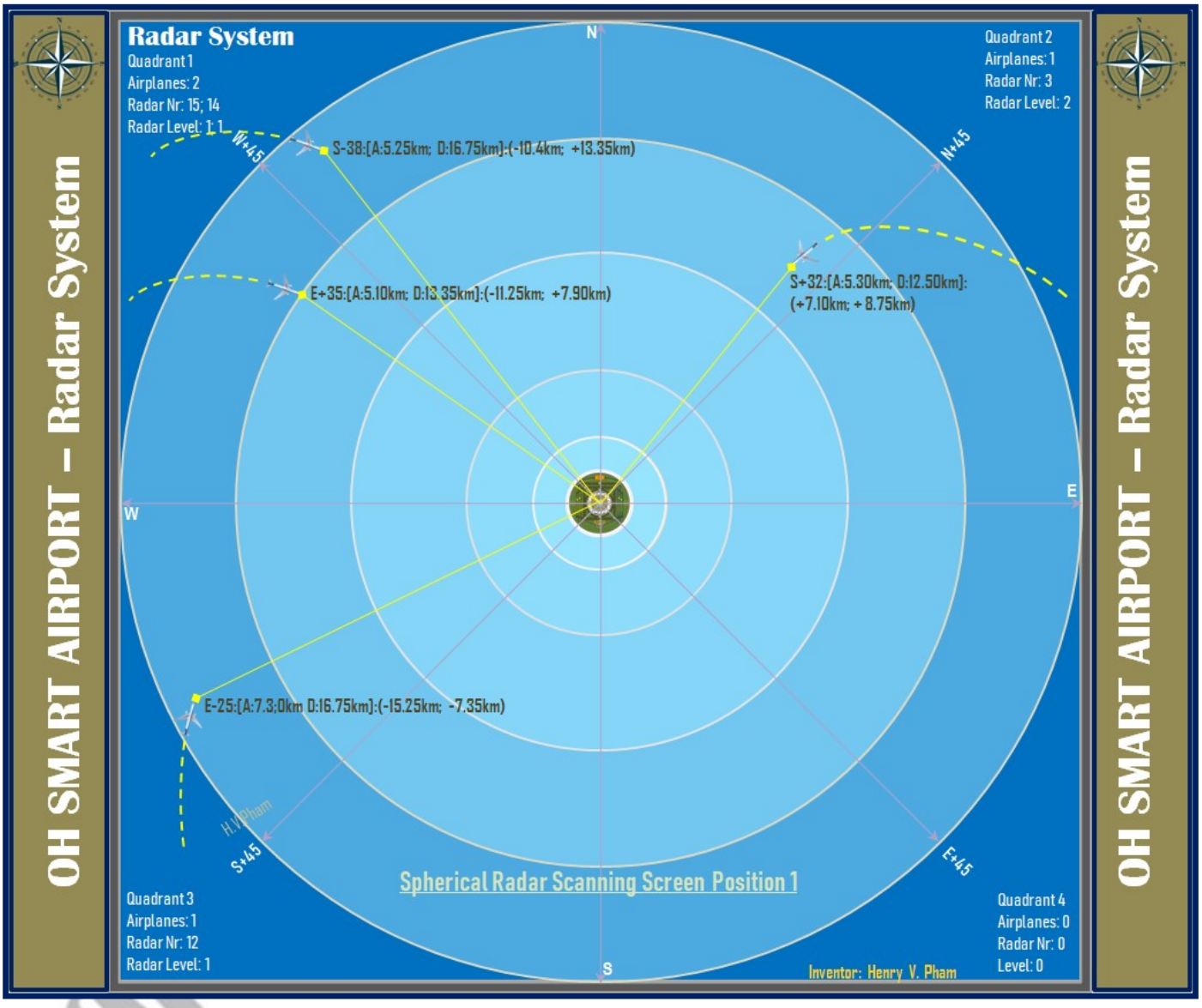

Figure-E6: OH SMART AIRPORT – Radar Scanning Position 1 Sample View

The below Figure-E7: OH SMART AIRPORT – Radar Scanning Position 2 Sample View shows radar images scanned for sample 2; the Quadrant-1 shows 2 airplanes, radar number 15 and 14 on radar levels 1 and **2** for 2 airplanes respectively; the Quadrant-2 shows 1 airplane, radar number 3 on radar level 2; the Quadrant-3 shows 1 airplane, radar number 12 on radar level 1; the Quarant-4 shows zero airplane, zero

radar number on zero radar level as no airplanes detected. The **2nd closest** airplane from the 1st scan now at position **E+35:[A:5.10km; D:12.55km]:(-10.75km; +7.50km)** shows the airplane is on the main direction **East** with 35˚ angle to the right with 5.1km altitude, 12.55km distance to the airport at the coordinates of -10.75km on West and +7.50km on North**.** The quadrant layout with 4 corners statistic information shows useful info on radar screen in less space for the ATC team; note that the 2 vertical strips are the sample labels on the outer screen frame which can be used for physical compass orientation and decoration.

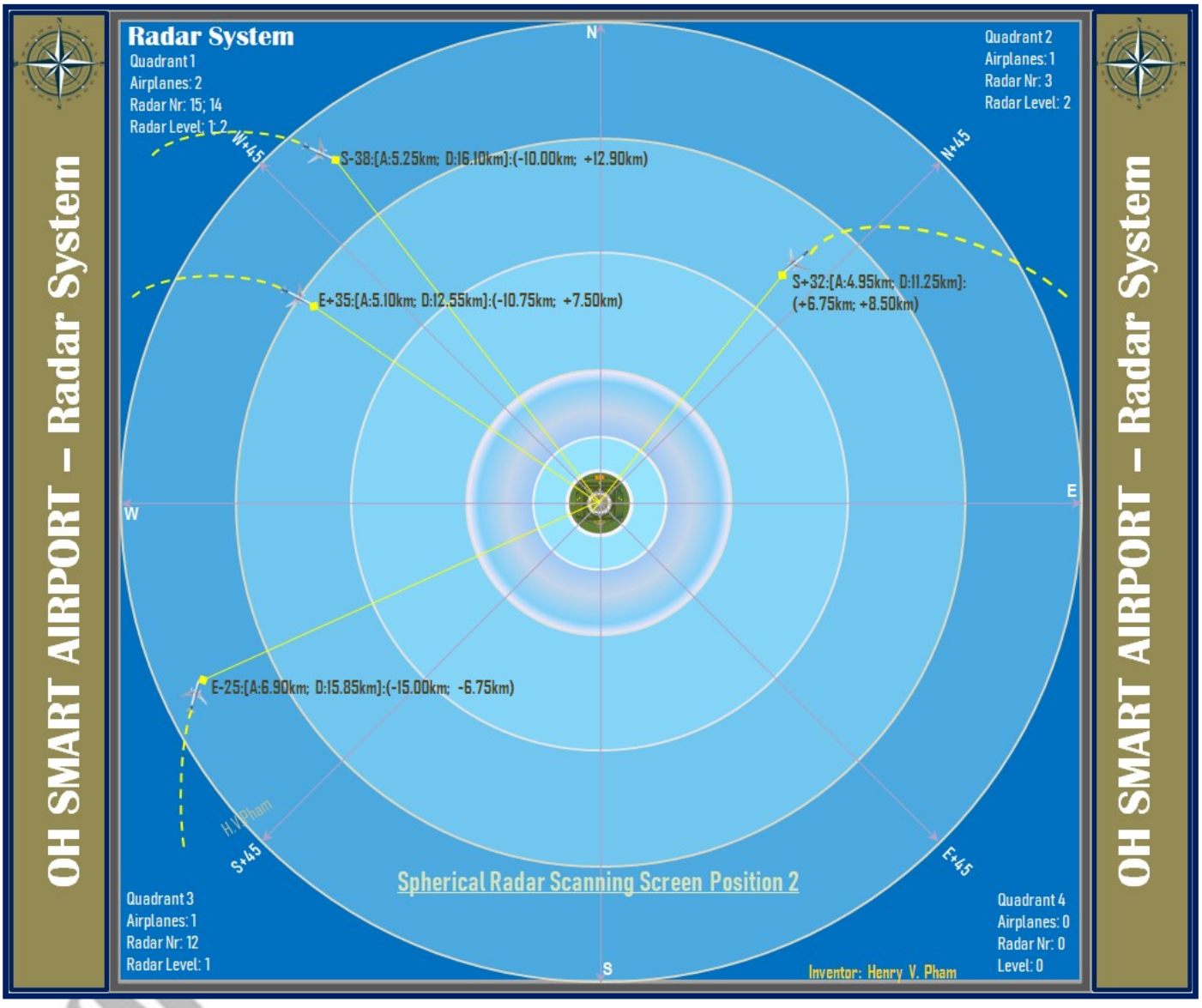

Figure-E7: OH SMART AIRPORT – Radar Scanning Position 2 Sample View

The below Figure-E8: OH SMART AIRPORT – Radar Scanning Position 3 Sample View shows radar images scanned for sample 3; the Quadrant-1 shows 2 airplanes, radar number 15 and 14 on radar levels 1 and **2** respectively; the Quadrant-2 shows 1 airplane, radar number 3 on radar level 2; the Quadrant-3 shows 1 airplane, radar number 12 on radar level 1; the Quarant-4 shows zero airplane, zero radar number on zero

radar level as no airplanes detected. The closest airplane from the 1st scan now at position **E+35:[A:5.10km; D:11.75km]:(-9.55km; +6.75km)** shows the airplane is on the main direction **East** with 35˚ angle to the right with 5.1km altitude, 11.75km distance to the airport at the coordinates of -9.55km on West and +6.75km on North**.** The quadrant layout with 4 corners statistic information shows useful info on radar screen in less space for the ATC team; note that the 2 vertical strips are the sample labels on the outer screen frame which can be used for physical compass orientation and decoration.

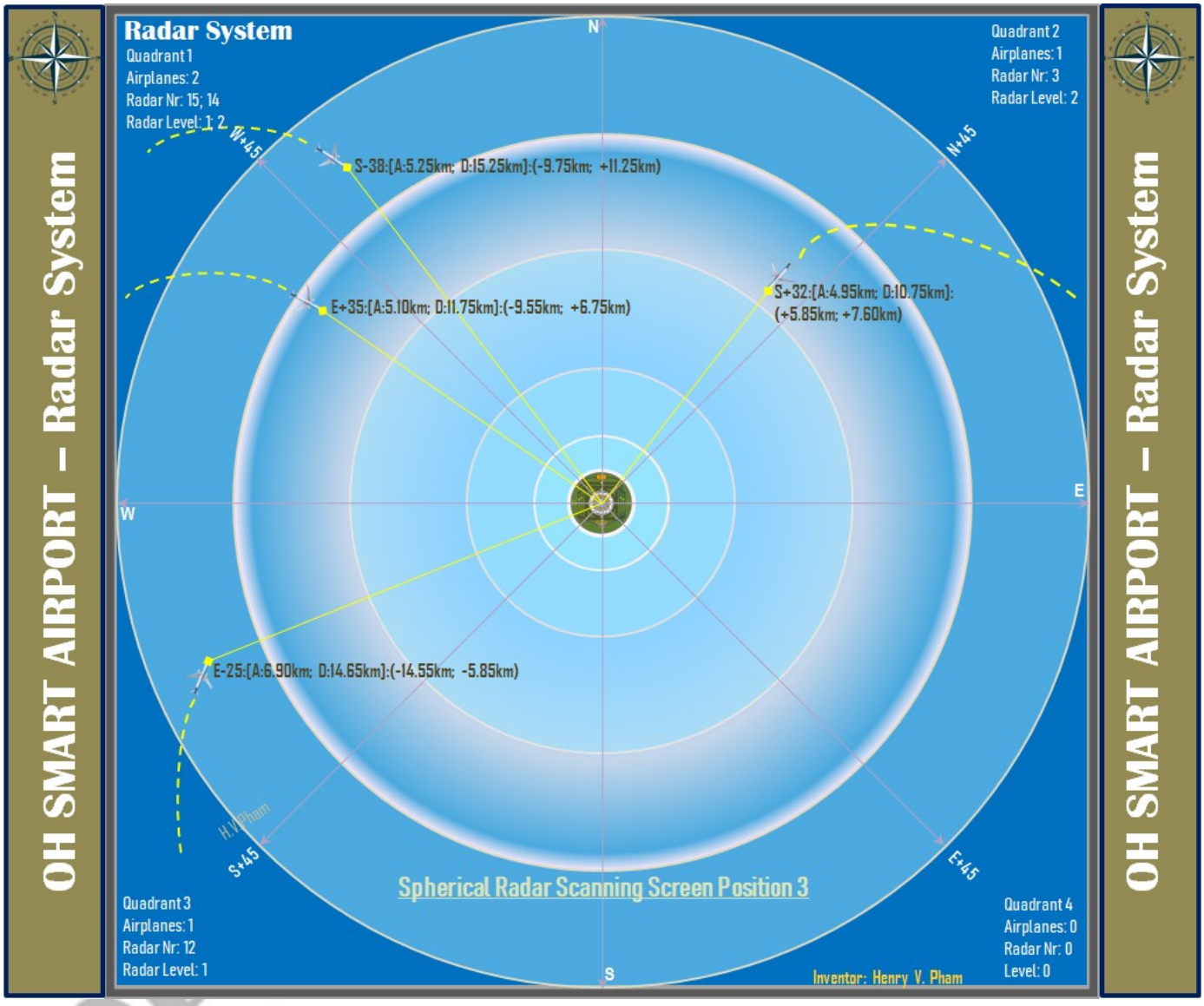

Figure-E8: OH SMART AIRPORT – Radar Scanning Position 3 Sample View

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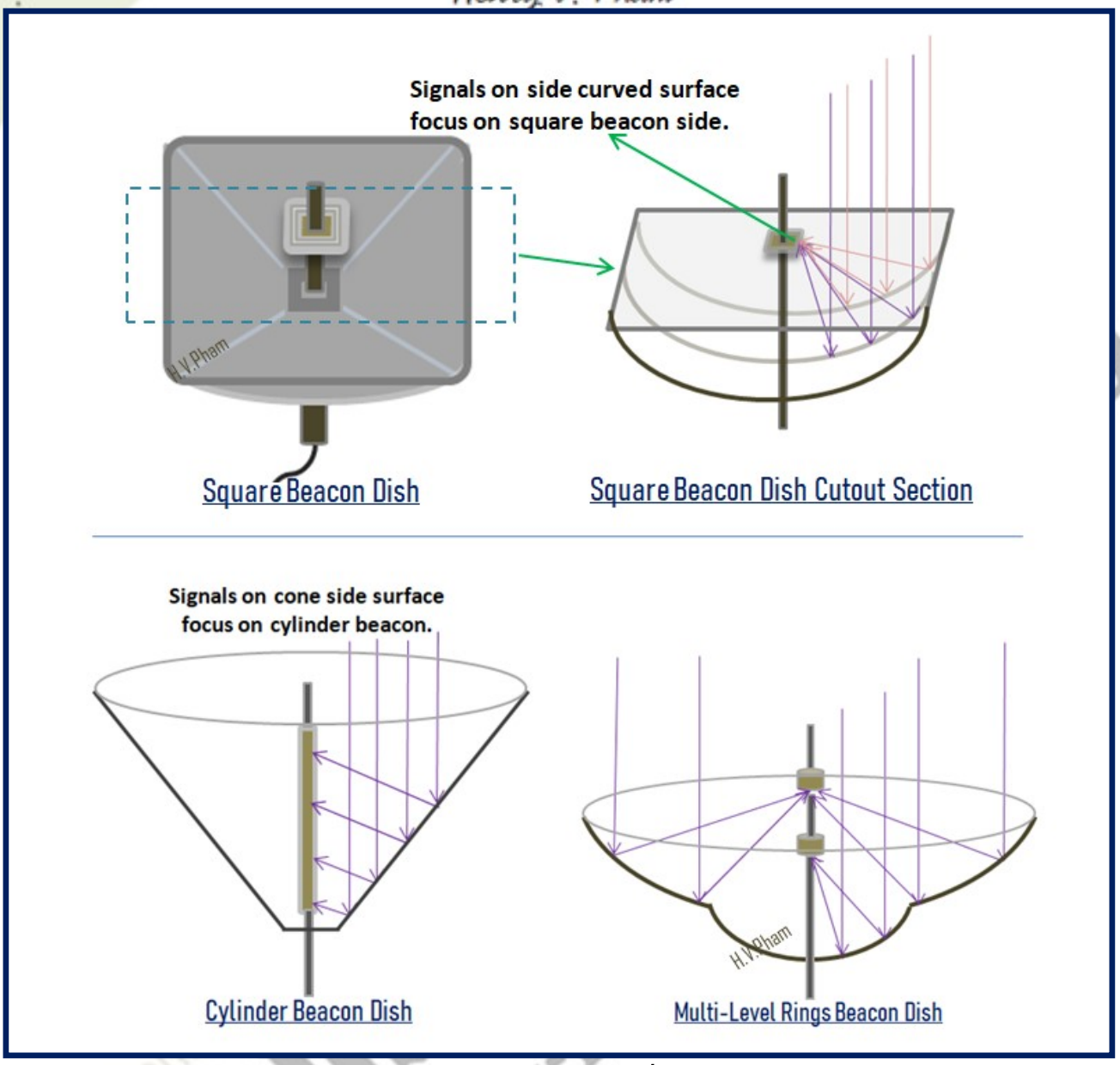

Figure-E9: OH SMART AIRPORT –Radar/SAT Dishes Samples

The Spherical Radar System mentioned above needs to have radar dishes in other shapes than the common round shapes. The above **Figure-E9** shows of new shapes for Radar or Satellite dishes; the Square Beacon Dish may have the beacon in square so the signal reflecting right on the beacon as shown on drawing 'Square Beacon Dish Cutout Section' next to the Square Beacon Dish; the beacon shape should be the same shape as the dish shape so the dish in trapezoid would have the beacon in trapezoid shape as long as the dish curvature makes the signals reflect all to the beacon. Other shapes would have more intensity focus for far distance as shown in the above figure, the 'Cylinder Beacon Dish' and the 'Multi-Level Rings Beacon Dish'; the Cylinder Beacon Dish like cone shape which is easy to build and the shape can be adjusted by rolling in the cone blades when the cone shape is built with many cone blades to form

up a cone that can be adjusted the dimension dynamically; the Multi-Level Rings Beacon Dish similar to the common round dish but have more than one level of focus which provide more beacons in multiple levels. However, radar or satellite dishes may come with many different shapes but the beacons are recommended to install along the inner pole so the dishes can be combine both active beacon and passive i-beacon on the same inner pole for better image scanning and signal receiving.

F. Airport Tower Control (ATC) room

The Air Traffic Control (ATC) room layout is important for OH Smart Airport since the airport is in circle shape. The ATC room is divided into 2 floors levels; both floors layout are identical and are recommended to assign the upper floor for International Airlines to control airplanes takeoff and landing since the runways for bigger airplanes are built at the outer zones, and the inner zones with shorter runways are assigned for smaller airplanes which are recommended for Domestic Airlines to control airplanes takeoff and landing.

The below **Figure-F1: OH SMART AIRPORT – ATC Tower Lower Floor Layout View** shows the lower ATC floor layout with a ATC Elevator and 2 restrooms on both sides of the Elevator, an Emergency Cylinder Helical Stair with 2 stairs to access to and from upper ATC floor, and the layout positions for the computers and screen monitors for Air Traffic Control. The ATC room is recommended with raised middle level, and about ½ meter high to provide the ATC personnel from the inner level to have a better view of the airport without blocking by other persons on the outer layer.

The ATC Elevator provides access from and to the Ground Level 2 and for ATC personnel access only. The Emergency Cylinder Helical Stair is only used for emergency case and recommended to build with access to Building Level 3 for safety purposes; this EM stair is designed to build in a compact space which will be shown more details in Emergency Cylinder Helical Stair section.

The ATC floor layout for air traffic control is recommended as shown in numbering labels. The ATC center labeled as (1) is recommended for the ATC chief officer with small team to control and handle engaging communication with the pilots before entering the airport region and to communicate with other airports if needed. The ATC labeled as (2) is recommended mainly for the team to control airplanes takeoff and landing depending on which side is assigned for takeoff and landing respectively. The ATC labeled as (3) is recommended mainly for the team to control airplanes preparing to takeoff or landing depends on left or right side for their duty. The ATC labeled as (4) is recommended mainly for the team to control airplanes right after takeoff or landing. However, the ATC officers can arrange differently within this physical layout provided for their own purposes or for the demand of the airport regions. This layout recommendation is also applied to the upper floor for International Airlines.

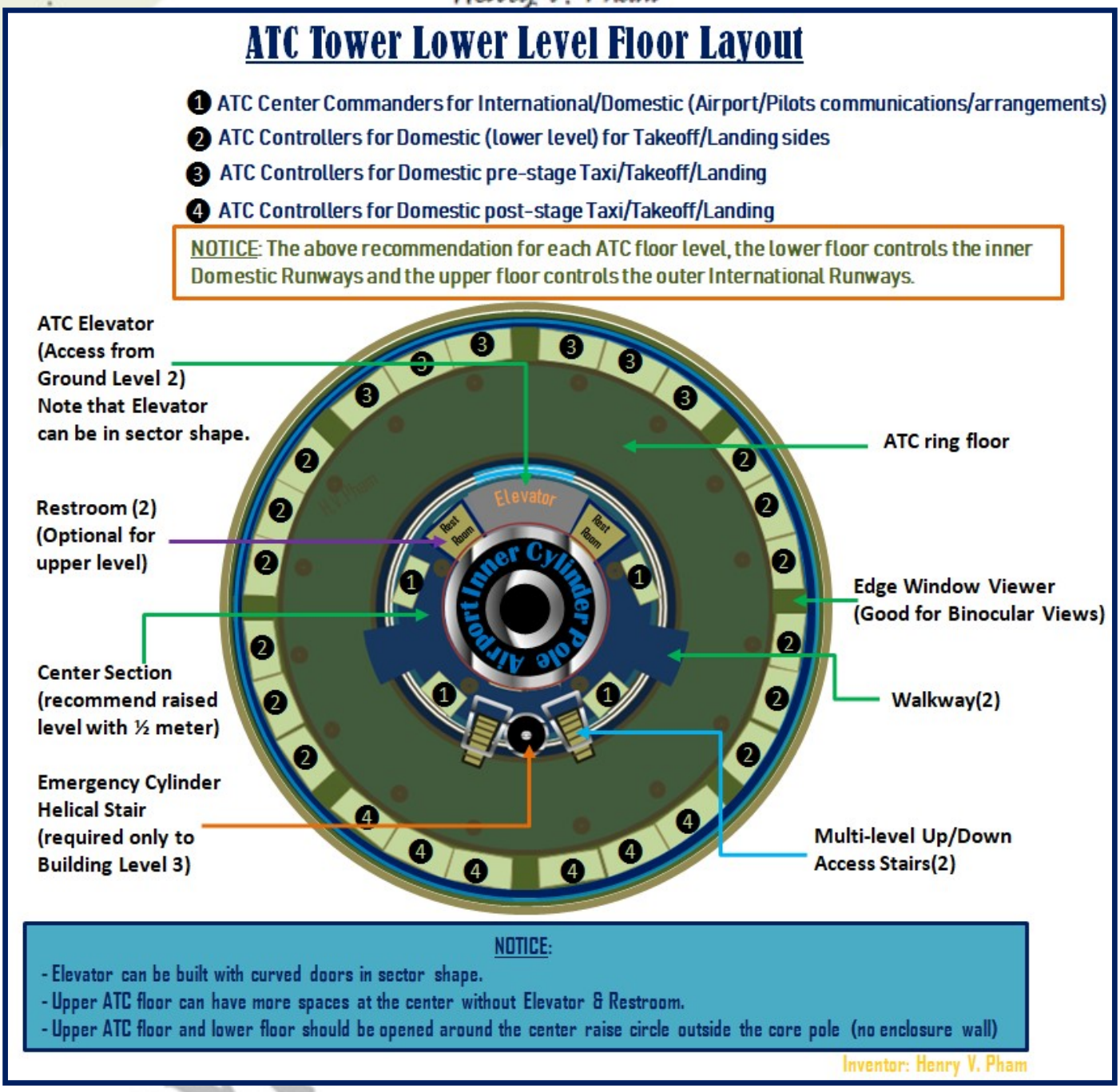

Figure-F1: OH SMART AIRPORT – ATC Tower Lower Floor Layout View

The below Figure-F2: OH SMART AIRPORT – ATC Tower Upper Floor Layout View shows the upper ATC floor layout with a ATC Elevator and 2 restrooms on both sides of the Elevator, an Emergency Cylinder Helical Stair with 2 stairs to access to and from upper ATC floor, and the layout positions for the computers and screen monitors for Air Traffic Control. If the Emergency Cylinder Helical Stair is built in the upper level, this stair of these 2 floors is connected and occupied the space. However, the ATC Elevator, Emergency Stair and Restrooms are optional in this upper floor which can be shared with the lower floor for more

spaces and clearance or can be arranged within the provided layout spaces for better fit with the ATC demands.

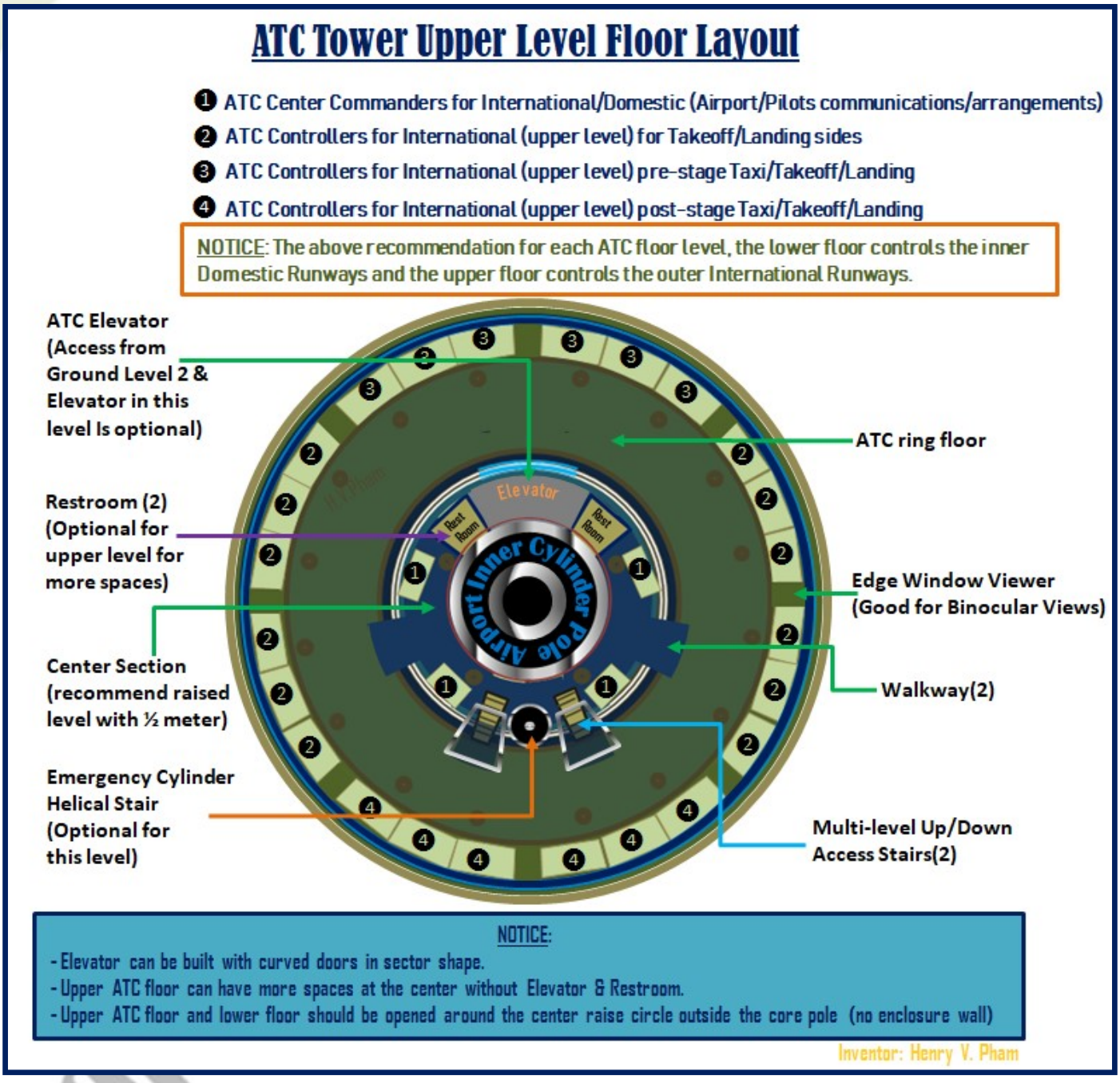

Figure-F2: OH SMART AIRPORT – ATC Tower Upper Floor Layout View

The below Figure-F3: OH SMART AIRPORT – ATC Tower 3D Overview shows the 3D semitransparent view ATC tower with 2 floors and with a recommended top glass vertical layer to view the airplanes in higher altitudes from the upper floor. The ATC tower high is recommended about 75 meters or higher for perfect view and monitor entire airport, the Runways include the Boarding Gateways but no recommended to

race for the high to lose the strengthness levels of the tower. However, the OH Smart Airport with circle buildings base holds the tower at the center strong and hold the base of the tower for at least 25 meters from bottom of the underground levels.

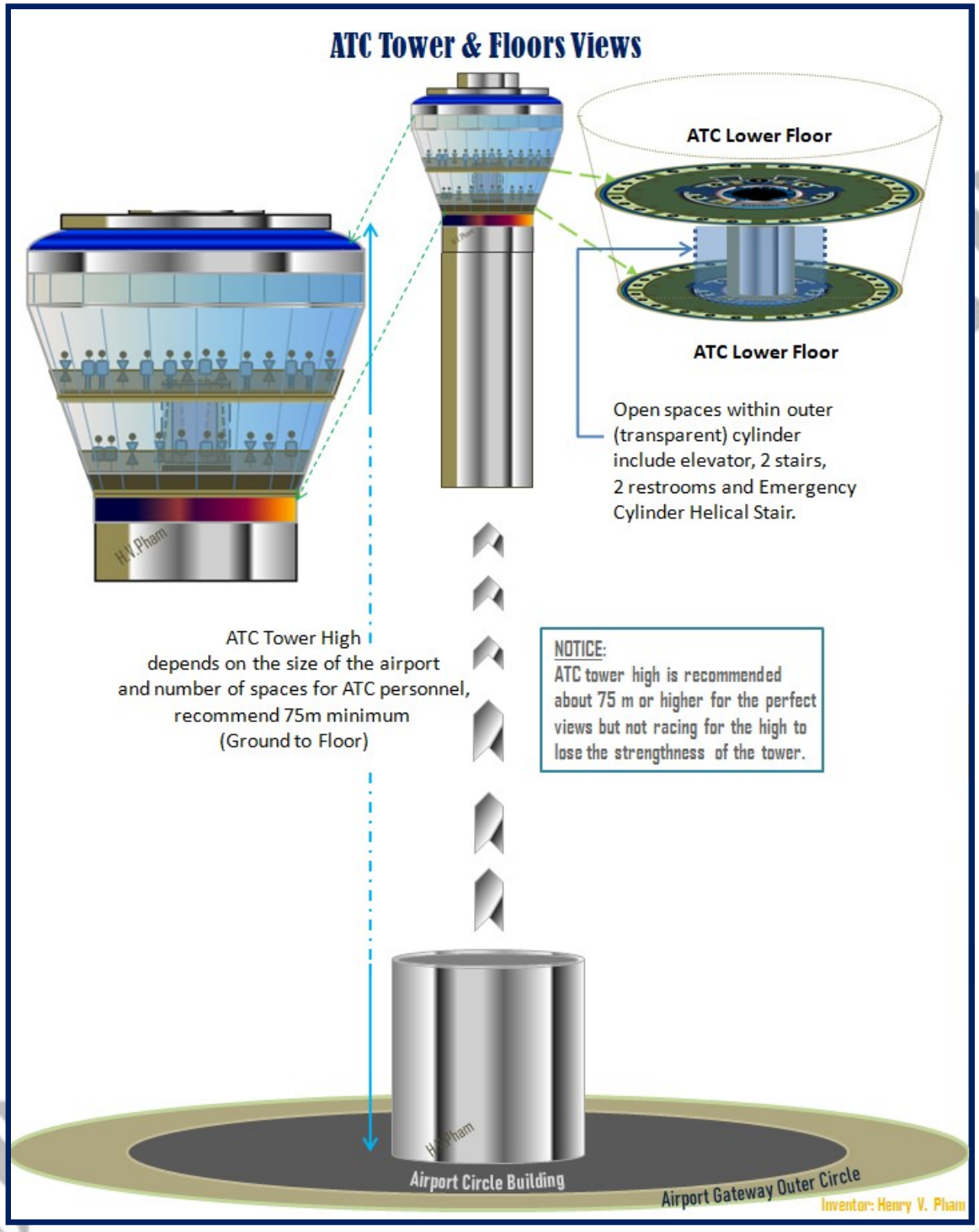

Figure-F3: OH SMART AIRPORT – ATC Tower 3D Overview

OH SMART AIRPORT

G. Airport Rotatable Cameras & Lights Systems

OH Smart Airport is invented with Airplane Rescuer which would run on a circle railroad around the airport to catch the airplanes stuck landing wheels. This rescue operation requires the high power lights and cameras to focus and tracking the airplane rescuer while rescuing the airplane stuck landing wheels. The below **Figure-G1: OH SMART AIRPORT –Lights & Cameras View** shows the lights and cameras drum which can able to spin around in 5 minutes per revolution based on the landing speed of common airplane of 241km (~150 miles) per hour around the circle railroad with the diameter of 7.5km which the Airplane Rescuer running. The drum should have rain, snow or water protection for both cameras and the lights; the rain or snow protection panels should be enough to cover the rain or snow to protect the cameras and the lights and should be strong enough to handle the winds; both cameras and the lights should be installed inside the drum as possible to avoid making bigger rain protection panels. The high density and far focus cameras should be installed at the bottom part of the drum, and the high power lights should be installed on top and can be either right above the cameras or at lagging angles behind each camera for better video quality and visibility. The rotatable high power cameras and lights are recommended with 4 cameras and 4 high power lights in the rotatable drum; the high power lights are expected to be able to beam up to 3.5 km in distance.

The rotatable cameras and lights drum requires a special electrical power connection which can provide electrical power while the drum is spinning; the **Figure-G2: OH SMART AIRPORT – Rotatable Lights & Cameras Electrical Power Drum View** below shows the electrical wiring with 3 power lines pivots, which keep contact with the inner core pole that ready to support with electrical power lines layers and allow the pivots touching while the drum rotating, to provide a continuing electrical power to the drum. The drawing in this invention only shows one direction to follow the Airplane Rescuer; however, the drum can be built with another set of pivots in revert to provide electrical power while rotating in both directions.

The high power cameras and lights can be connected to a cameras and lights hostspot to allow ATC to monitor and control them easier without having to build connection line pivots for both high power cameras and lights. There are only 4 cameras and 4 lights to host, so the wireless connection via hostspot is so close and good to control the devices since the ATC control room is right below the cameras and lights drum. **Figure-G3: OH SMART AIRPORT – Lights & Cameras Drum 3D View** shows high power cameras and lights drum in 3D view in their positions with the pivots power lines connections. The drum is required to spin above a rotator base with 4 gear motors running in a circle rail track as shown in **Figure-G4: OH SMART AIRPORT – Recommended Rotator Base Frame View** and **Figure-G5: OH SMART AIRPORT –Rotational Base View.** The rotator base is recommended with 4 motors on the base for better stabilization and reliability in 4 derivative vector forces with the same direction with difference in phase of 90˚ degrees angle.

The rotation mechanism is recommended to use rail tracks with rail wheels for better maintenance, reliability and stability compare to the bearing balls rotation mechanism. For heavy duty mechanism, the rail track can be built with a precut track section with a length at least equals the length of the track wheel; to remove a track wheel out of the system by lower the precut track section to make the track

wheel separated from the precut track section; moving the drum one track wheel to another to the location of the precut track section to remove the other track wheel while the other track wheels stay on track to keep the entire mechanism and the system strong.

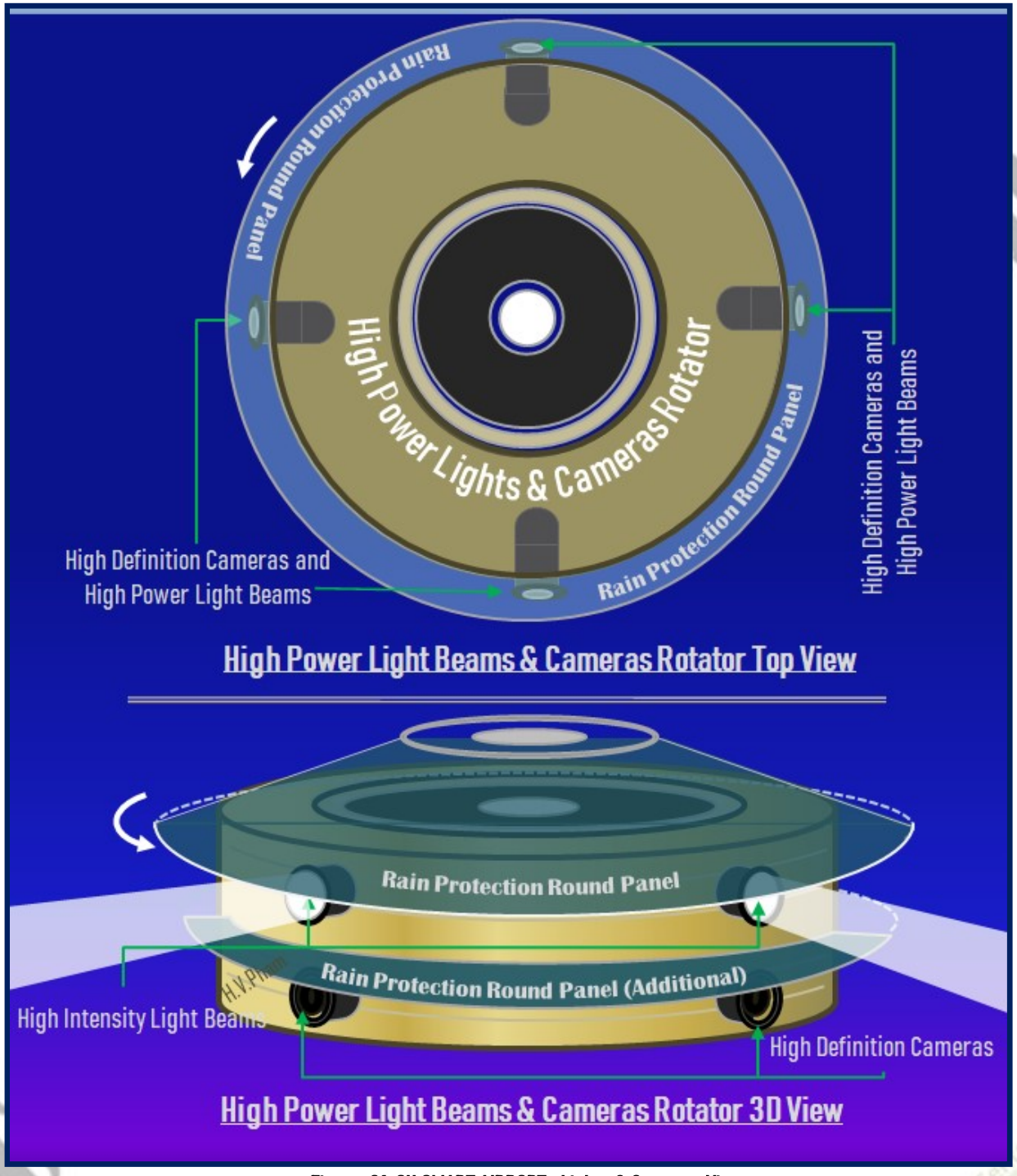

Figure-G1: OH SMART AIRPORT –Lights & Cameras View

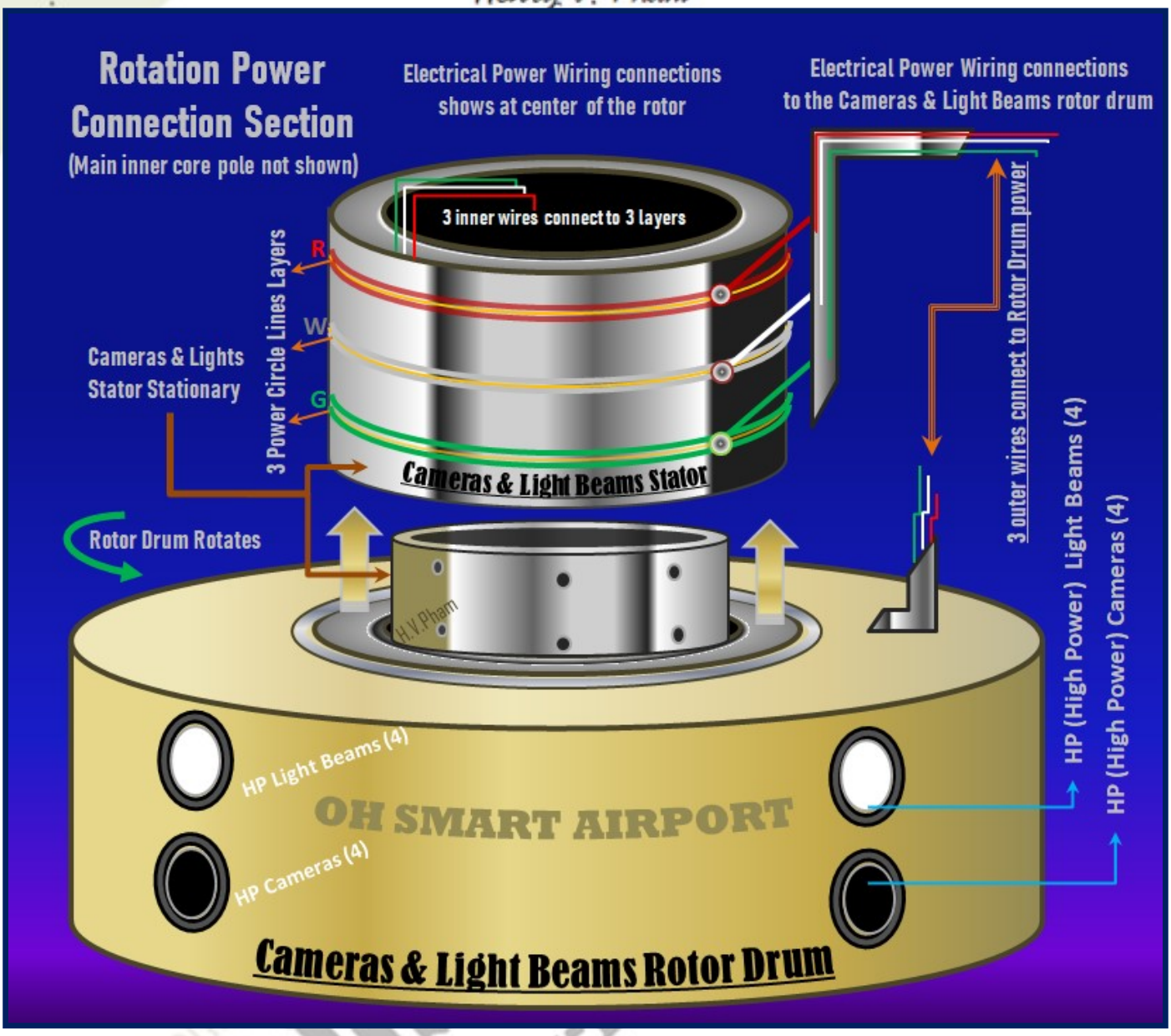

Figure-G2: OH SMART AIRPORT – Rotatable Lights & Cameras Electrical Power Drum View

The rotator base and the rotor base drum spinning on a rail track with rail wheels show in this section which can also be applied to the heavy duty system like the Coffee Sight Viewer, which provides travelers and visitor able to view entire airport while enjoying coffee on a table with recommended 36 minutes per revolution. However, the high power cameras and lights drum is recommended to build with light weight as possible since the drum rotates around to follow the Airplane Rescuer with about 5 minutes per revolution and right above the ATC control room in a smaller cylinder and can be used by ATC as part of the airport security cameras system. The other option for indoor security camera systems can be built with the '**Auto Tracking Target Network Security Cameras System**' which is one of my next inventions.

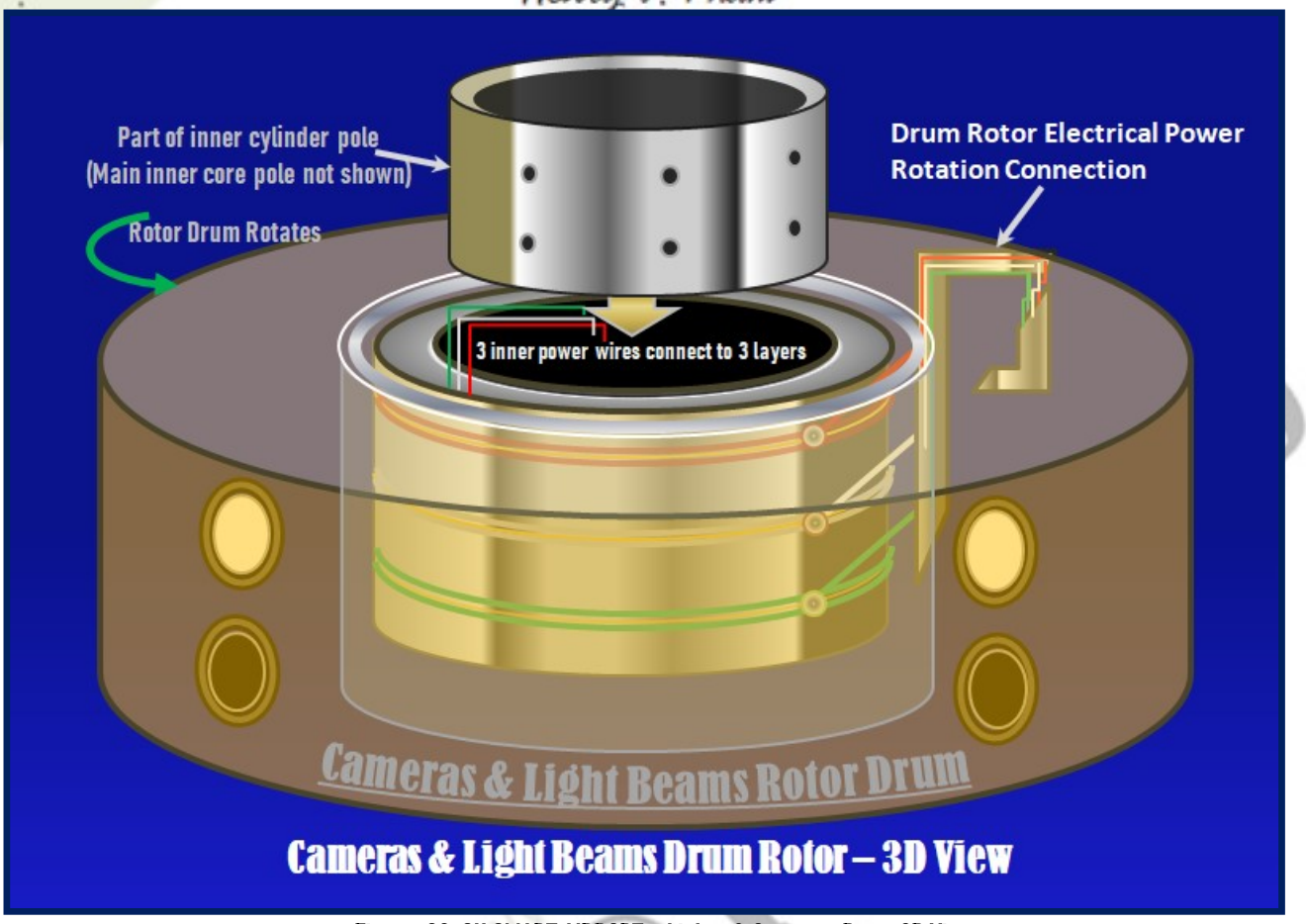

Figure-G3: OH SMART AIRPORT – Lights & Cameras Drum 3D View

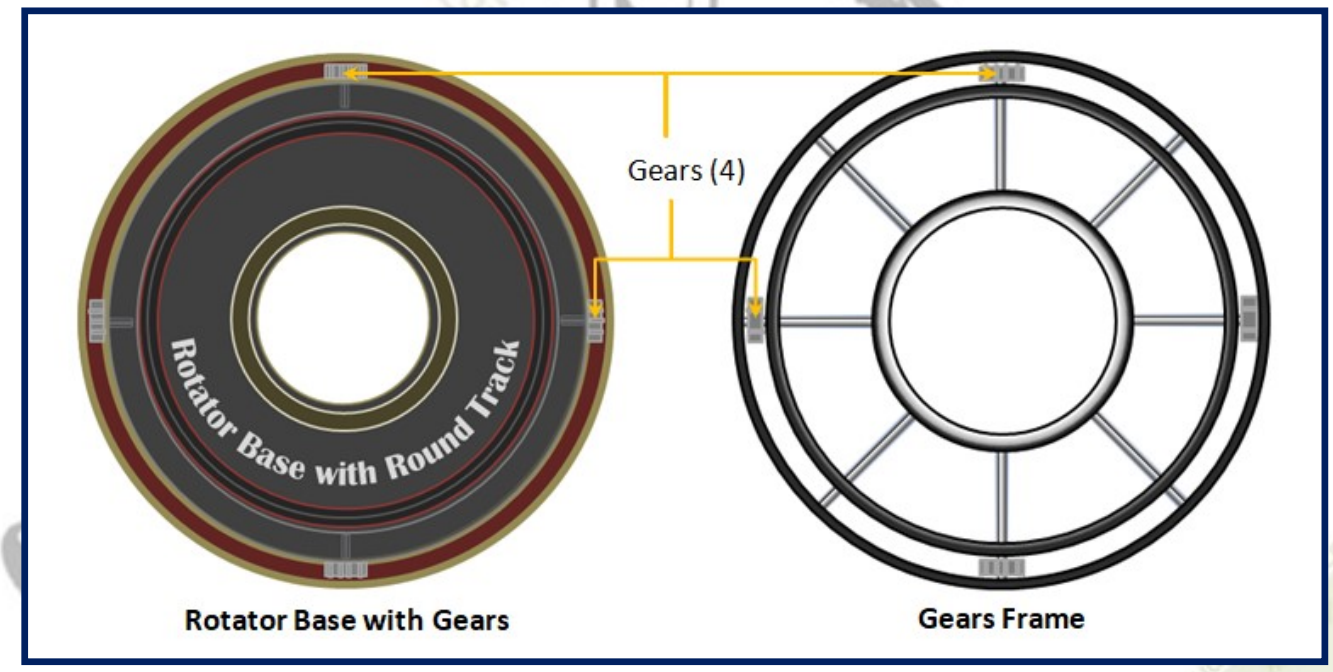

Figure-G4: OH SMART AIRPORT – Recommended Rotator Base Frame View

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The high powered cameras and lights drum is expected to build within 1 meter in length of the deoradii (delta radii) on the rotator base; the cameras should be pre-zoom or auto-zoom-able to view of a far distance up 3.5 km. With the same design of this Rotation Base for heavy duty, the Track Wheels and the Motor Gears should be bigger and strong enough to support heavy floor for the Coffee Sight Viewer; this Ring Gear and Track Rotation system can be built with double Wheel Tracks, and each track is recommended to be located at 25% from the outer edge or 25% from the inner edge of the floor for better weight support of the rotor base and the rotator base respectively. The Ring Gear of the rotor base and the Motor Gear of the rotator base are recommended to be at the outer edge of the floor for better rotating force power to spin the rotor base.

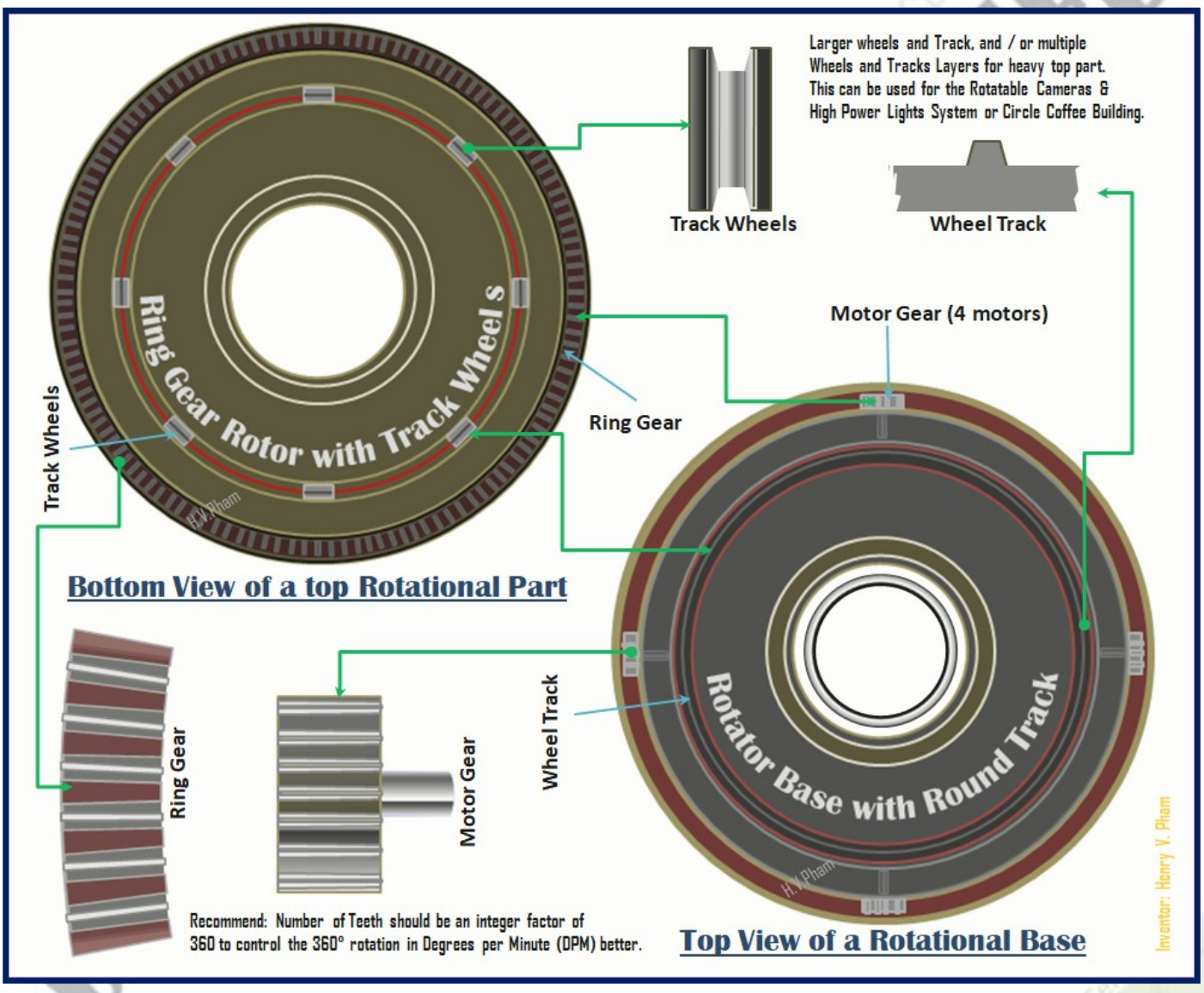

Figure-G5: OH SMART AIRPORT –Rotational Base View

OH SMART AIRPORT

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H. Airport Underground Level 2

The Airport Underground Level 2 is the lowest level which provides the entrances to access into the airport buildings for departure check-in with the ring circle ramps for drop-off and pickup, and parking on the top 2 building levels. OH Smart Airport is invented for fast check-in and quick checkout for the travelers and visitors access into the airport with no or less traffic lights and no or less stop signs. **Figure-H1: OH SMART AIRPORT – Ground Level 2 View** below shows the Underground Level 2 for airport underground access through Airport Left and Right Entrances. The airport entrances, ATC access elevator and Airport Custom access paths are labeled with legends as described in the table below.

Legend	Legend Description
ACSP	Airport Custom/Security Access Paths -- The airport custom/security and ATC personnel are shared the same parking as shown in orange area within the purple sector lines; and the light blue paths within the purple lines which lead to both sides left stairs and right stairs to allow the custom has access to the upper level, the ground level 1 which is used for departure and luggage/security checkout and the ground transportation services for travelers.
ADCST	Airport Domestic Custom/Security Stair(2) -- The custom and security paths lead to the secured access security stairs; and these 2 stairs are reserved for the Domestic Custom to access to upper level to work on the departure and luggage/security checkout.
ADCKZ	Airport Domestic Checkout Section Zone (dash-purple) --The airport is recommended to divide into 2 sections, the top part is used for the International airlines and the bottom part is for the Domestic airlines. The Domestic airlines section at the bottom is divided with the dash purple line.
AICST	Airport International Custom/Security Stair(2) -- The custom and security paths lead to the secured access security stairs; and these 2 stairs are reserved for the International Custom to access to upper level to work on the departure and luggage/security checkout.
AICKZ	Airport International Checkout Section Zone (dash-red) -- The airport is recommended to divide into 2 sections, the top part is used for the International airlines and the bottom part is for the Domestic airlines. The International airlines section on the top is divided with the dash red line.
APKR	Airport Parking Access Ring --The airport entrances from both Left and Right would go to the Access Ring, and this access ring would lead to the Airport Custom/ATC parking, Visitors Entrances Enters/Exits and Airport Ground Service Enter/Exit.
ASEVA	Airport Custom/Security Elevator Access -- ATC security personnel elevator is straight from this level to the ATC tower room; this access path provides the airport personnel access to the secured elevator from the secured parking as shown in orange area.
APK5	Airport Custom/Personnel Gate Parking Access-- The airport custom and ATC personnel parking is

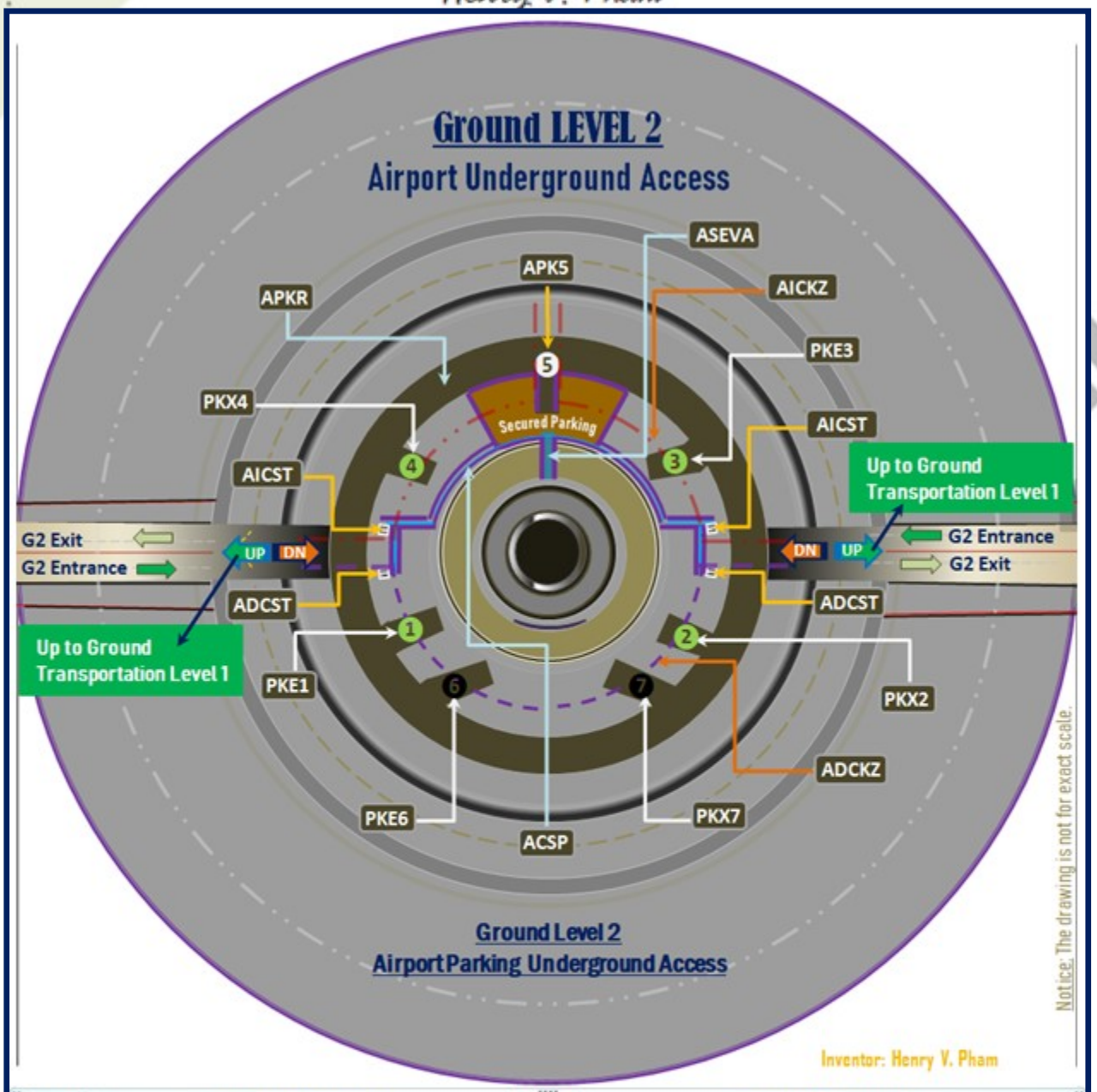
	recommended with a secured gate which is used to protect and secure the parking and access paths for the airport security personnel.
PKE1	Visitors to Airport Upper Parking (Left Entrance) -- Visitors parking entrance from the Left at this level would lead to the upper level through a parking entrance ramp; this entrance ramp could be built as double driveways to provide enough access room for the visitors.
PKE3	Visitors to Airport Upper Parking (Right Entrance) -- Visitors parking entrance from the Right at this level would lead to the upper level through a parking entrance ramp; this entrance ramp could be built as double driveways to provide enough access room for the visitors.
PKE6	Airport Ground Service to Airport Upper Level (Left Entrance) -- Airport Ground service parking entrance from the Left at this level would lead to the upper level through a parking entrance ramp; this entrance can be accessed from the Right airport entrance through the ring access.
PKX2	Visitors Airport Exit (Right Side) -- Visitors parking exit to the Right side of airport at this level would lead to the right tunnel and to the streets; this exit ramp could be built as double driveways to provide enough access room for the visitors.
PKX4	Visitors Airport Exit (Left Side) -- Visitors parking exit to the Left side of airport at this level would lead to the left tunnel and to the streets; this exit ramp could be built as double driveways to provide enough access room for the visitors.
PKX7	Airport Ground Service Exit Airport from Upper Level (Right Side) – Airport Ground service exit to the Right side of airport at this level would lead to the Right tunnel and to the streets.

The Ground Level 2 is the lower level of OH Smart Airport, and this would be the base of ATC tower at the center which is recommended to build with the ring cylinders. This level is only needed to have the secured parking for the airport custom and ATC personnel with the secured access paths, and the ring ramp with airport access entrances for both visitors and airport ground services. This is the deepest level but does not require much of spaces to dig up the ground; however, this is the critical level which provides access to all the airport entrances, not including the Ground Transportation level which is used for fast drop-off and quick pickup with bus and taxi services.

The Left and Right access entrances to this level from the streets are leaded from the same entrance paths which provide the path to the Ground Transportation level; however, the entrances to this level would go lower one level which requires airport elevation leveling and water protection. The Ground Transportation level is right above this level which provides transportation services around the airport circle building of the arrival, luggage and security checkout area. The airport foundation at this level is important for the upper levels and for entire airport building structures.

OH SMART AIRPORT

Henry V. Pham



Legend	Legend Description	Legend	Legend Description
ACSP	Airport Custom/Security Access Path	APK5	Airport Custom/Personnel Gate Parking Access
ADCST	Airport Domestic Custom/Security Stair(2)	PKE1	Visitors to Airport Upper Parking (Left Entrance)
ADCKZ	Airport Domestic Checkout Section Zone (dash-purple)	PKE3	Visitors to Airport Upper Parking (Right Entrance)
AICST	Airport International Custom/Security Stair(2)	PKE6	Airport Ground Service to Airport Upper Level (Left Entrance)
AICKZ	Airport International Checkout Section Zone (dash-red)	PKX2	Visitors Airport Exit (Right Side)
APKR	Airport Parking Access Ring	PKX4	Visitors Airport Exit (Left Side)
ASEVA	Airport Custom/Security Elevator Access	PKX7	Airport Ground Service Exit Airport from Upper Level (Right Side)

Figure-H1: OH SMART AIRPORT – Underground Level 2 View

OH SMART AIRPORT

I. Airport Underground Level 1 -- Transportation Level

The Airport Underground Level 1 is used for Ground Transportation level and Arrival level with 4 entrances in 90˚ degrees angles difference, and the transportation on the dark-yellow ring ramp for faster drop-off and pickup with no or less traffic lights and no or less stop signs; this is one of the great advantages of the OH Smart Airport with building in circle. **Figure-I1: OH SMART AIRPORT – Ground Level 1 Arrival Checkout View** and **Figure-I2: OH SMART AIRPORT – Ground Level 1 View** below shows an overview of the transportation layout and the arrival luggage and security checkout level. The airport is divided into 2 main sections, one for International Airlines shown on top; and one for Domestic Airlines shown at bottom section. The visitors or ground service transportation vehicles come in from both Left and Right entrances of the airport through the 'G1 Entrance' around the ring ramp for drop-off and pickup; and exit to the streets through the 'G1 Exit' as shown in Figure-I2. The ring ramp provides the visitors and ground transportation services have more chances to go around for drop-off and pickup at any points around the building with the same distance to the center of the building. The table below describes the legends that marked on the drawing.

Legend	Legend Description
ACSTA	Airport Custom Security Stair access to Ground Level 2 – The secured stair for airport custom security officers which is accessible only from Ground Level 2 as mentioned in the Ground Level 2 section.
ASEC	Airport Security Offices – The airport security offices are recommended to build right at the main entrances for higher security purposes; there are 4 airport security offices for the 4 main entrances.
ASPK	Airport Staffs Parking on Outer Ring Building – The airport staffs parking is recommended to build in this level outside of the circle building which provides the airport staffs having separate parking spaces with the visitors.
ASPKDN	Airport Service Parking Down (enclosed ramp access) – The enclosed ramp access for airport service parking down ramp; this ramp has to be enclosed since this level is used for arrival and custom security checkout.
ASPKUP	Airport Service Parking Up (enclosed ramp access) -- The enclosed ramp access for airport service parking access up ramp; this ramp has to be enclosed since this level is used for arrival and custom security checkout.
ATCB	Arrival Travelers Luggage Conveyor Belts – The airport traveler luggage conveyor belts which is used for luggage transferring from the upper airport ground service level.
ATCK	Arrival Travelers Luggage Checkout Gates – The airport traveler luggage checkout gates.
ATLCKA	Arrival Travelers Luggage Checkout Area (with walls) – The airport travelers luggage checkout area, this area is recommended with enclosed walls for security and environment noise protection purposes.
ATSCKA	Arrival Traveler Security Checkout Area (with walls) – The airport travelers security checkout area with custom check; this area is recommended with enclosed half wall with top half glass for security purposes.

ATCKG	Arrival Traveler Security Checkout Gate – The exit security gates for travelers after they went though custom check.
ATEC	Arrival Travelers Escalators (from upper floor) – The escalators from upper floor which are used by arrival travelers from the upper level un-boarding.
ATEV	Arrival Travelers Elevators (from upper floor) -- The elevators from upper floor which are used by arrival travelers from the upper level un-boarding.
ATLC	Arrival Travelers Luggage Carousels – The carousels use for luggage which transfer from upper Ground Service level.
ATLCart	Arrival Travelers Luggage Carts – The luggage carts pools for arrival travelers, which is designed as one-way downstream only for security purposes from upper levels and manage by the airport luggage carts team with the Smart Cart Gear Belt Exchanger which will be shown in later section.
ATRRM	Arrival Travelers Restrooms – Restrooms inside the luggage areas for arrival travelers only.
CEVAA	Center Elevators Access Area – The center area with elevators for the visitors and travelers access from this level Ground Level 1 to Building Level 1, 2 and 3 and vice versa.
DCKZ	Domestic Gates Luggage Checkout Zone Line (orange) -- The orange zone line separates the bottom section which is used for the Domestic Airlines.
DTLCart	Departure Travelers Luggage Carts – The departure travelers luggage carts pools which is designed as one way down stream only from upper levels and manage by the airport luggage carts team with the Smart Cart Gear Belt Exchanger which will be shown in later section.
EMVST	Emergency Visitors Stairs (to Emergency path on Ground Level) – These stairs are used for emergency only to go up to the Ground Level and lead to the Emergency path; these emergency stairs from this level should be built to share with the same Emergency stairs from Building Levels 1, 2, and 3. However, the stairs should have the exit door at the Ground Level for the path from Arrival Level; and one separate exit door for at the same Ground Level for the path from upper levels, so both ways have to exit at the Ground Level.
ICKZ	International Gates Luggage Checkout Zone Line (red) -- The orange zone line separates the bottom section which is used for the International Airlines.
L&F	Lost & Found Services – Lost & Found services offices are recommended to build at this level.
VEV	Visitors Elevators – The elevators which are designed for visitors to go through from this level Ground Level 1 to Building Level 1, 2 and 3 and vice versa.
VPKDN	Visitors Parking Exit to G2 with Enclosure (total 2 – Restrooms*) – The enclosed ramp for exit down direction from visitor parking level 2 and 3; and recommended to build restrooms around this ramp to save spaces.
VPKUP	Visitors Parking Entrance From G2 with Enclosure (total 2 – Restrooms*) -- The enclosed ramp for up direction entrances from visitor parking level 2 and 3; and recommended to build restrooms around this ramp to save spaces.
VRRM	Visitors Restrooms – Restrooms outside the custom/security areas for visitors only.
VWA	Visitors Waiting/Greeting Area – This is the recommended area for visitors waiting and greeting area.

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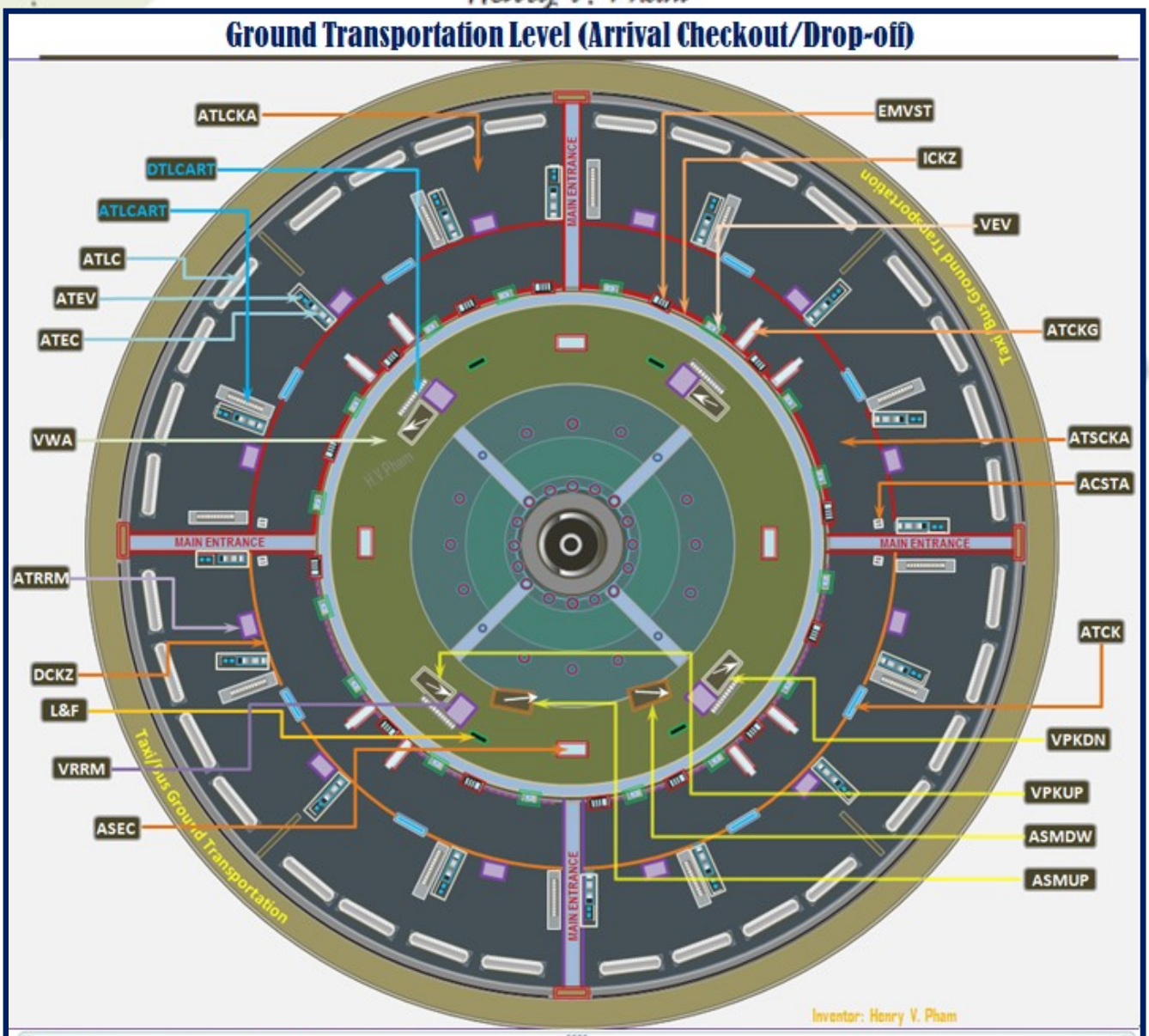
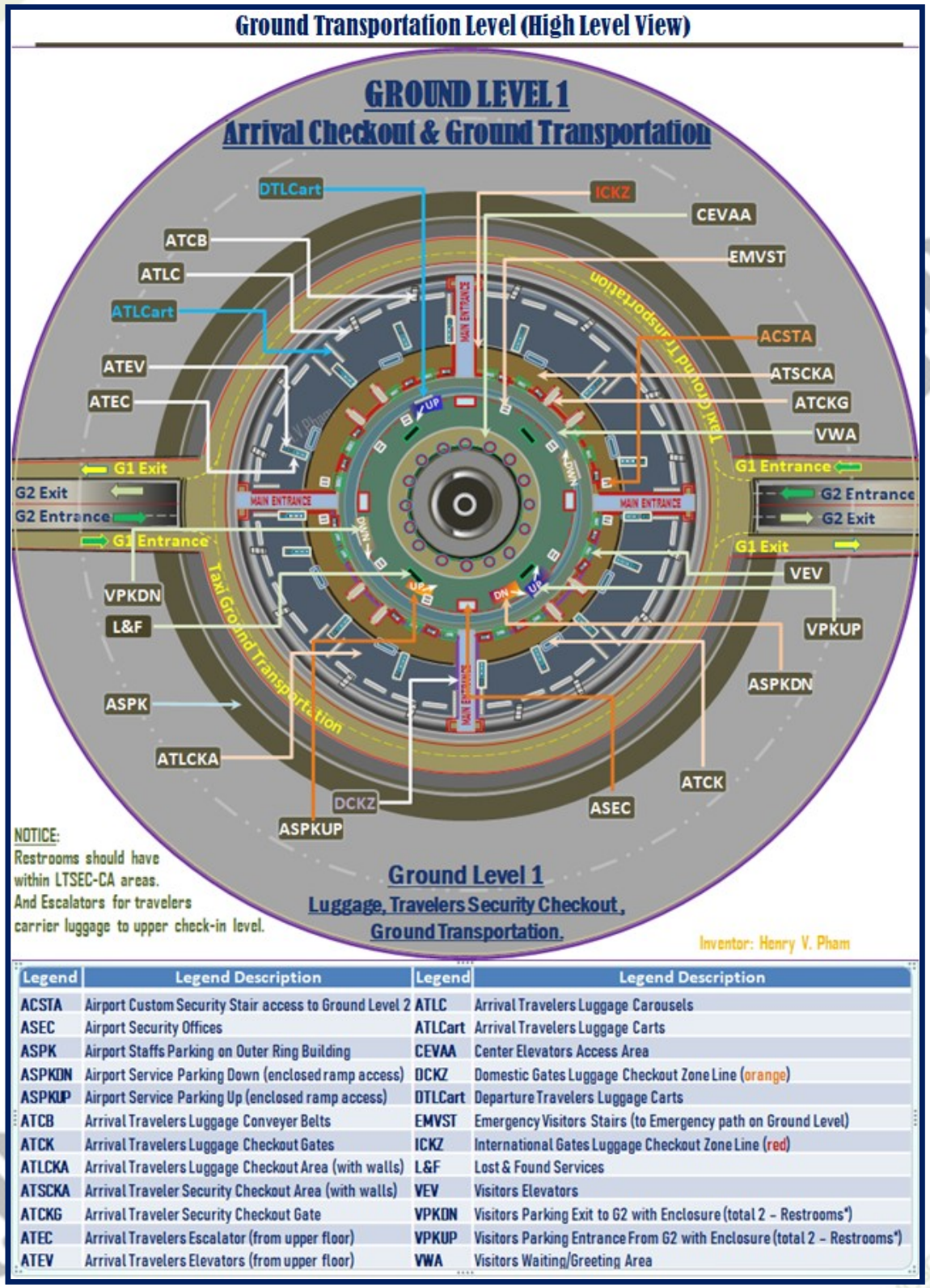


Legend	Legend Description	Legend	Legend Description
ACSTA	Airport Custom Security Stair access from Ground Level 2	ATLC	Arrival Travelers Luggage Carousels (total 32)
ASEC	Airport Security Office (total 4)	DCKZ	Domestic Gates Luggage Checkout Zone Line
ASPKDN	Airport Service Parking enclosed down access	DTLCART	
ASPKUP	Airport Service Parking enclosed up access	EMVST	Emergency Visitors Stairs (up to EM path on Ground Level; total 14)
ATLCART	Arrival Travelers Carts	ICKZ	International Gates Luggage Checkout Zone Line
ATRRM	Arrival Travelers Restrooms	L&F	Lost & Found Services (total 4)
ATCK	Arrival Luggage Travelers Checkout Gates (8)	VEV	Visitors Elevators (total 16; not include center elevators)
ATLCKA	Arrival Travelers Luggage Checkout Area (total 4 - w/ wall)	VPKDN	Visitors Parking Exit to G2 with Enclosure (total 2)
ATSCKA	Arrival Traveler Security Checkout Area (total 8 – w/ wall)	VPKUP	Visitors Parking Entrance From G2 with Enclosure (total 2)
ATCKG	Arrival Traveler Security Checkout Gate (total 8)	VRRM	Visitors Restrooms
ATEC	Arrival Travelers Escalator from up stair (total 16)	VWA	Visitors Waiting/Greeting Area
ATEV	Arrival Travelers Elevators from up stair (total 16)		

Figure-11: OH SMART AIRPORT – Ground Level 1 Arrival Checkout View



Legend	Legend Description	Legend	Legend Description
ACSTA	Airport Custom Security Stair access to Ground Level 2	ATLC	Arrival Travelers Luggage Carousels
ASEC	Airport Security Offices	ATLCart	Arrival Travelers Luggage Carts
ASPK	Airport Staffs Parking on Outer Ring Building	CEVAA	Center Elevators Access Area
ASPKDN	Airport Service Parking Down (enclosed ramp access)	DCKZ	Domestic Gates Luggage Checkout Zone Line (orange)
ASPKUP	Airport Service Parking Up (enclosed ramp access)	DTLCart	Departure Travelers Luggage Carts
ATCB	Arrival Travelers Luggage Conveyer Belts	EMVST	Emergency Visitors Stairs (to Emergency path on Ground Level)
ATCK	Arrival Travelers Luggage Checkout Gates	ICKZ	International Gates Luggage Checkout Zone Line (red)
ATLCKA	Arrival Travelers Luggage Checkout Area (with walls)	L&F	Lost & Found Services
ATSCKA	Arrival Traveler Security Checkout Area (with walls)	VEV	Visitors Elevators
ATCKG	Arrival Traveler Security Checkout Gate	VPKDN	Visitors Parking Exit to G2 with Enclosure (total 2 – Restrooms*)
ATEC	Arrival Travelers Escalator (from upper floor)	VPKUP	Visitors Parking Entrance From G2 with Enclosure (total 2 – Restrooms*)
ATEV	Arrival Travelers Elevators (from upper floor)	VWA	Visitors Waiting/Greeting Area

Figure-I2: OH SMART AIRPORT – Ground Level 1 View

OH SMART AIRPORT

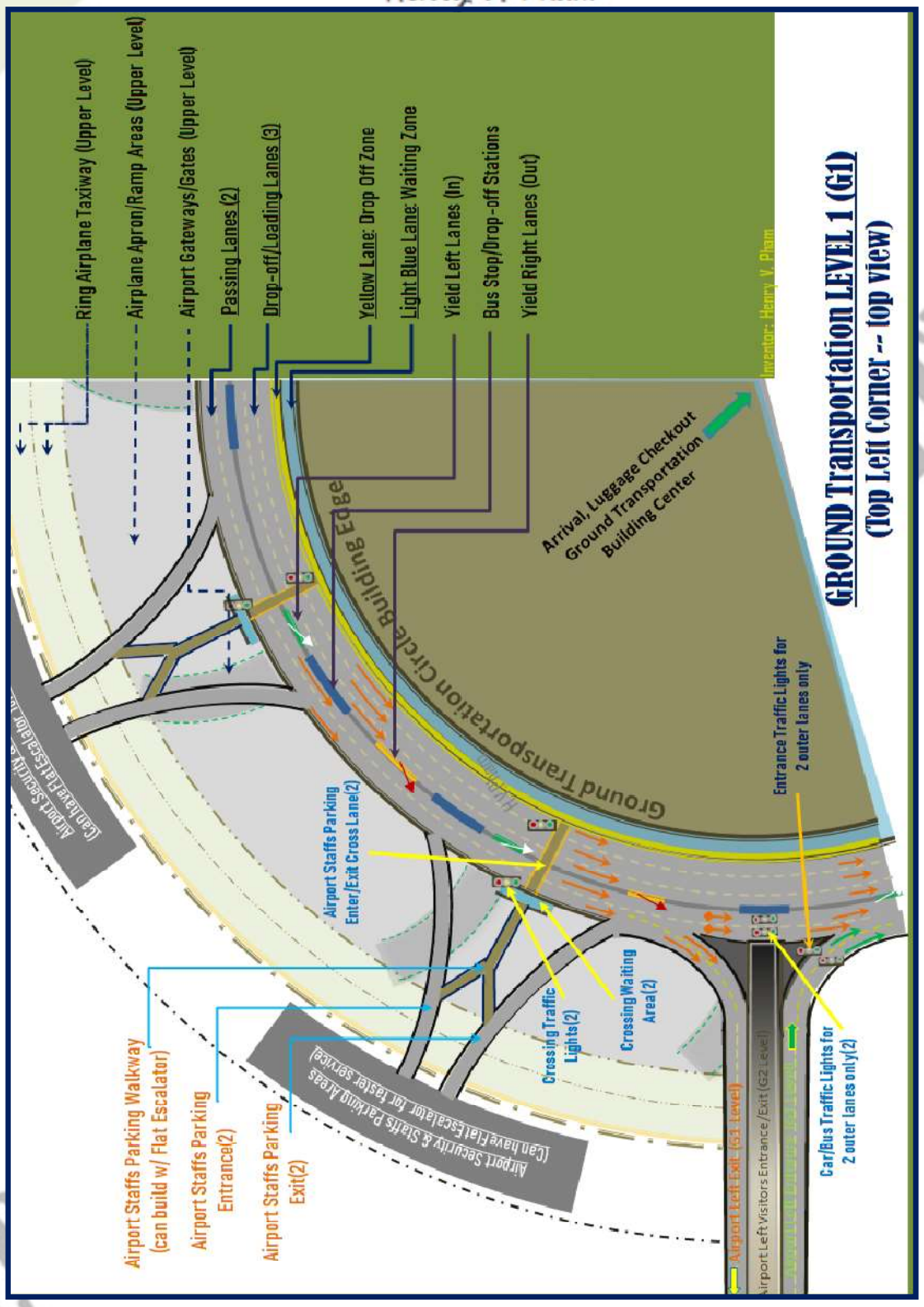


Figure-I3: OH SMART AIRPORT – Ground Level 1 Transportation Driveway View

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The Ground Transportation with driveways on the ring ramp is recommended to with at least 2 passing lanes and 3 drop-off, pickup and loading lanes. The ring ramp should also have bus stops and taxi drop-off stations as shown detail in **Figure-I3: OH SMART AIRPORT – Ground Level 1 Transportation Driveway View** above as a quarter view corner of the airport building right at the airport entrance. Airport Staffs and Airport Service parking areas are on the outer side of the ring ramp and recommended to build away from the apron and airplane taxiway ring on the upper level.

J. Airport Apron and Ground Service Level

The airport apron and Ground Service level is the base of the airplanes ground service, boarding and loading with airplane maintenance service which is critical for airport airplane service access. **Figure-J1: OH SMART AIRPORT –Ground Level layout View** below shows the airport divides by 2 sections; top half section for International Airlines and bottom half section for Domestic Airlines for security purposes and for airport traffic control better. The travelers from International section cannot able to access into the Domestic section after they already checked in for departure or after they arrived for checkout; even in emergency case, the International check-in travelers cannot able to access into the Domestic section or vice versa. This level only allows Ground Service and Airplane Service accesses; the visitors cannot access into this level, and there are enclosed parking ramps which lead to the Building Level 1, 2 and 3 for parking. The inner section of this level is reserved for the base of airport electrical power, airport air conditioners, and plumping systems for the airport buildings. However, the airport electrical power which could be used as quantum electrical power that can be installed at the lower level with safety protection which is suggested with silicon or rubber layer to protect from radiation; this can be decided by the airport electrical power experts. At this level, the apron for airplanes parking is along the Boarding Gateways which are provided with the short boarding tubes from the upper level of the Boarding Gateways building for travelers boarding and un-boarding which will be shown later in this section. Based on the dimension of this drawing, there are 16 Boarding Gateways and each gateway handles 3 boarding gates for International Airlines and extra 3 small airplane spaces for the Domestic Airlines; however, the airport planer can chose to have 5 or more gates per Boarding Gateway by increasing the Boarding Gateway length. The great advantage of OH Smart Airport with circle building is provided the travelers with faster drop-off, shortest distance of walking for boarding of departure and checkout of arrival and quick pickup; so increasing 2 or more gates for bigger airport for higher demand of certain countries would not be an issue. Note that all airplanes have passengers boarding gates on the left side, and luggage containers loading doors on the right side expectedly as shown on the drawing as the airplanes park on the right side of the Boarding Gateways. Each Boarding Gateway has its own Airport Ground Service luggage room which is used for loading or unloading travelers' luggage to and from the conveyor belts for departure and arrival respectively. The table below describes the legends with detail descriptions.

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Legend	Legend Description
ALCB	Arrival/Departure Luggage Conveyor Belts – Conveyor belts use for loading luggage for arrival travelers from the airplanes to the lower level, the Ground Transportation level; this conveyer belts also can be used for loading luggage of the departure travelers from upper level, the Building Level1 to the airplanes.
ADGWS	Airport Domestic Gateways; half of airport section (total 8) – The bottom half of the airport is recommended for Domestic Airlines with total of 8 Boarding Gateways; each gateway can handle both big and small airplanes, which based on the dimensions shown in invention.
AESCK	Arrival Escalators Checkout Path to G1 Luggage/Security level (total 16) – Escalators for arrival which lead to the checkout path at lower level, the Ground Transportation level. Note that this must be enclosed for security purposes.
AEVCK	Arrival Elevators Checkout Path to G1 Luggage/Security level (total 16) -- Elevators for arrival which lead to the checkout path at lower level, the Ground Transportation level. Note that this must be enclosed for security purposes.
AGWS	Airport Gateways to Gates for Boarding Aprons (total 16) – The Boarding Gateways buildings with 3 boarding gates as shown in current drawing with total of 16 Boarding Gateways. The Boarding Gateway names is suggested to label as 'G1' to 'G16' in this case, and the Gates is suggested to label as 'A', 'B', 'C' in this case with 3 gates, and the complete label showing on airline tickets for gates would be 'G1A' , 'G1B', 'G1C', 'G16A', 'G16B', 'G16C', etc…; however, this is the circle airport building, the travelers would hardly get lost.
AIGWS	Airport International Gateways; half of airport section (total 8) -- The top half of the airport is recommended for International Airlines with total of 8 Boarding Gateways; each gateway can handle 3 big airplanes, which based on the dimensions shown in invention.
ASMUP	Airport Service/Maintenance Up ramp – The driveway up ramp which is used for the Airport Maintenance access and this should be open ramp to drive up from lower Ground Level 2 from the streets levels as one way access.
ASMDW	Airport Service/Maintenance Down ramp -- The driveway down ramp which is used for the Airport Maintenance access and this should be open ramp to drive down to the lower Ground Level 2 to the streets levels as one way access.
ATCKP	Arrival Travelers to Security checkout path to G1 (White Arrows) – Arrival travelers after un-boarding from the airplane and get to the lower floor of the Boarding Gateways to get to this checkout path which leads to the Ground Level 1 for luggage, security checkout and Ground Transportation services.
ATTESP	Arrival Transfer Travelers Escalators up to Lounge via TT-TSA (total 16) – The escalators at this path must be enclosed for security purposes, which is used for transferring and allow the Airlines Staffs guide the transferring travelers to the upper level, the Departure level through the security gates for security screening if required by the airport TSA.
EMEXT	Emergency Exit Paths (Orange Arrows Path) -- The emergency exit paths show in orange for both top section shown as the International Airlines and the bottom section shown as the Domestic Airlines. There are 2 main paths that lead to both left and right sides of the airport building, and these paths are used for visitors and not-yet check-in travelers.
EMST	Emergency Exit Stairs (red) – The emergency exit stairs are used for the visitors to get to emergency

	path from the Ground Level and from upper Building Levels 1, 2 and 3.
GSLRM	Ground Service Luggage Room w/ Conveyor Belts (total 16) – The service luggage room with conveyor belts is used for airport ground service within the Boarding Gateways.
RMPBA	Apron/Ramp Load/Unload for Big Airplanes – Airport apron for big airplanes which is shown in International section.
RMPSA	Apron/Ramp Load/Unload for Small Airplanes -- Airport apron for small airplanes which is shown in Domestic section, this can be used for private jets instead of having long distance traveling to the bigger airports for travelers who lives more than couple hours from the International Airports.
VPKUP	Visitors Parking Enclosed Up Ramp (total 2) – The enclosed up ramp parking driveway to the upper levels, the Building Levels 1, 2 and 3 for visitors parking.
VPKDW	Visitors Parking Enclosed Down Ramp (total 2) -- The enclosed down ramp parking driveway from the upper levels, the Building Levels 1, 2 and 3 for visitors parking to Ground Level 2 and to the streets level.

The International Airlines section is shown on the top of the drawing; and the Domestic Airlines section is shown at the bottom of the drawing. The airplanes go around on the taxi ring ramp to get into the gates which have been assigned as shown on the airport apron for each Boarding Gateways. Note that all airplanes have passengers boarding gates on the left side, and luggage containers loading doors on the right side expectedly as shown on the drawing as the airplanes park on the right side of the Gateways. **Figure-J2: OH SMART AIRPORT – International Gateways Boarding View** shows the International Boarding view with big airplanes, and the boarding tubes which are expandable from the top floor of the Boarding Gateways. **Figure-J3: OH SMART AIRPORT – Domestic Gateways Boarding View** shows the Domestic Boarding view with big airplanes and small airplanes, and the boarding tubes which are expandable from the top floor of the Boarding Gateways.

OH Smart Airport is invented and shown in this document with even Boarding Gateways layout of 16 total gateways with equal size. The Boarding Gateways layout can be chosen to layout with different sizes; larger size for International Airlines section, and smaller size for the Domestic Airlines section. However, depends on the airport of each country or region demand, the airport planers can choose to have more or less Gateways and each Gateway can allocate with 3, 5 or more gates to handle more airplanes that can be boarding at the same time. The Gateways separation dimension and the number of the Gateways can be calculated based on the radius of the airport circle building; in this document with the default given building diameter of 750 meters or the circumference is about 2,356 meters with given the common 4 engines airplane wingspan of 60 or the largest 70 meters, and each Gateway width is at least 6 m; then the number of Gateways equals $\frac{2356m}{(70*2+6)m} = 16.1$ gateways. Note that the wingspan is 60 meters and the space for the inner gateway is needed to be double to support airplane taxi in and out of the gates. However, the layout in this invention document is chosen to use 16 Gateways for easy drawing; but the airport planer team can choose which is best fit for the airport with their demand to support the airlines and the travelers better for air transportation. Note that circle has greatest area compare to other shapes; OH Smart Airport with circle building is the best airport for future transportation.

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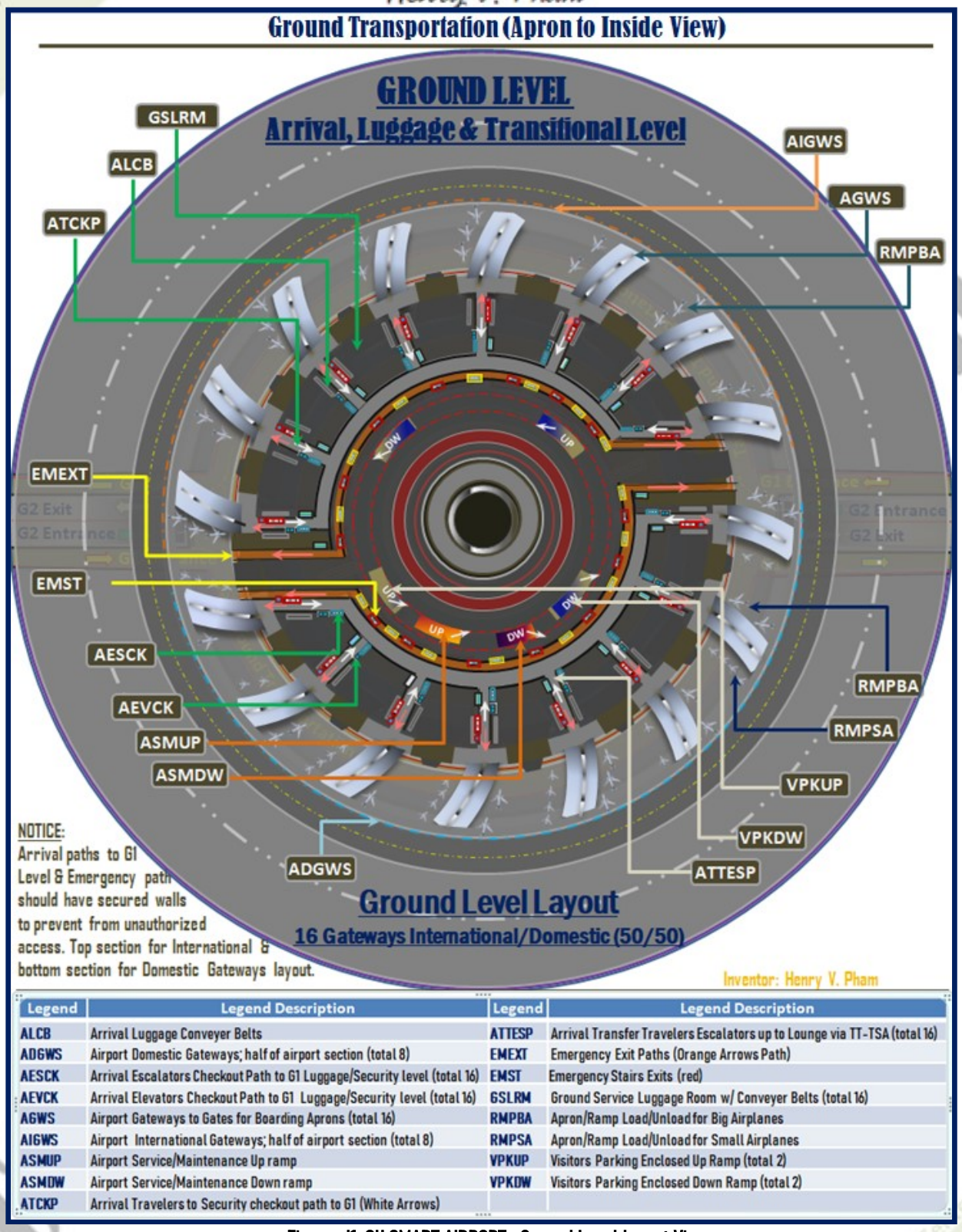

Legend	Legend Description	Legend	Legend Description
ALCB	Arrival Luggage Conveyer Belts	ATTESP	Arrival Transfer Travelers Escalators up to Lounge via TT-TSA (total 16)
ADGWS	Airport Domestic Gateways; half of airport section (total 8)	EMEXT	Emergency Exit Paths (Orange Arrows Path)
AESCK	Arrival Escalators Checkout Path to G1 Luggage/Security level (total 16)	EMST	Emergency Stairs Exits (red)
AEVCK	Arrival Elevators Checkout Path to G1 Luggage/Security level (total 16)	GSLRM	Ground Service Luggage Room w/ Conveyer Belts (total 16)
AGWS	Airport Gateways to Gates for Boarding Aprons (total 16)	RMPBA	Apron/Ramp Load/Unload for Big Airplanes
AIGWS	Airport International Gateways; half of airport section (total 8)	RMPSA	Apron/Ramp Load/Unload for Small Airplanes
ASMUP	Airport Service/Maintenance Up ramp	VPKUP	Visitors Parking Enclosed Up Ramp (total 2)
ASMDW	Airport Service/Maintenance Down ramp	VPKDW	Visitors Parking Enclosed Down Ramp (total 2)
ATCKP	Arrival Travelers to Security checkout path to G1 (White Arrows)		

Figure-J1: OH SMART AIRPORT –Ground Level layout View

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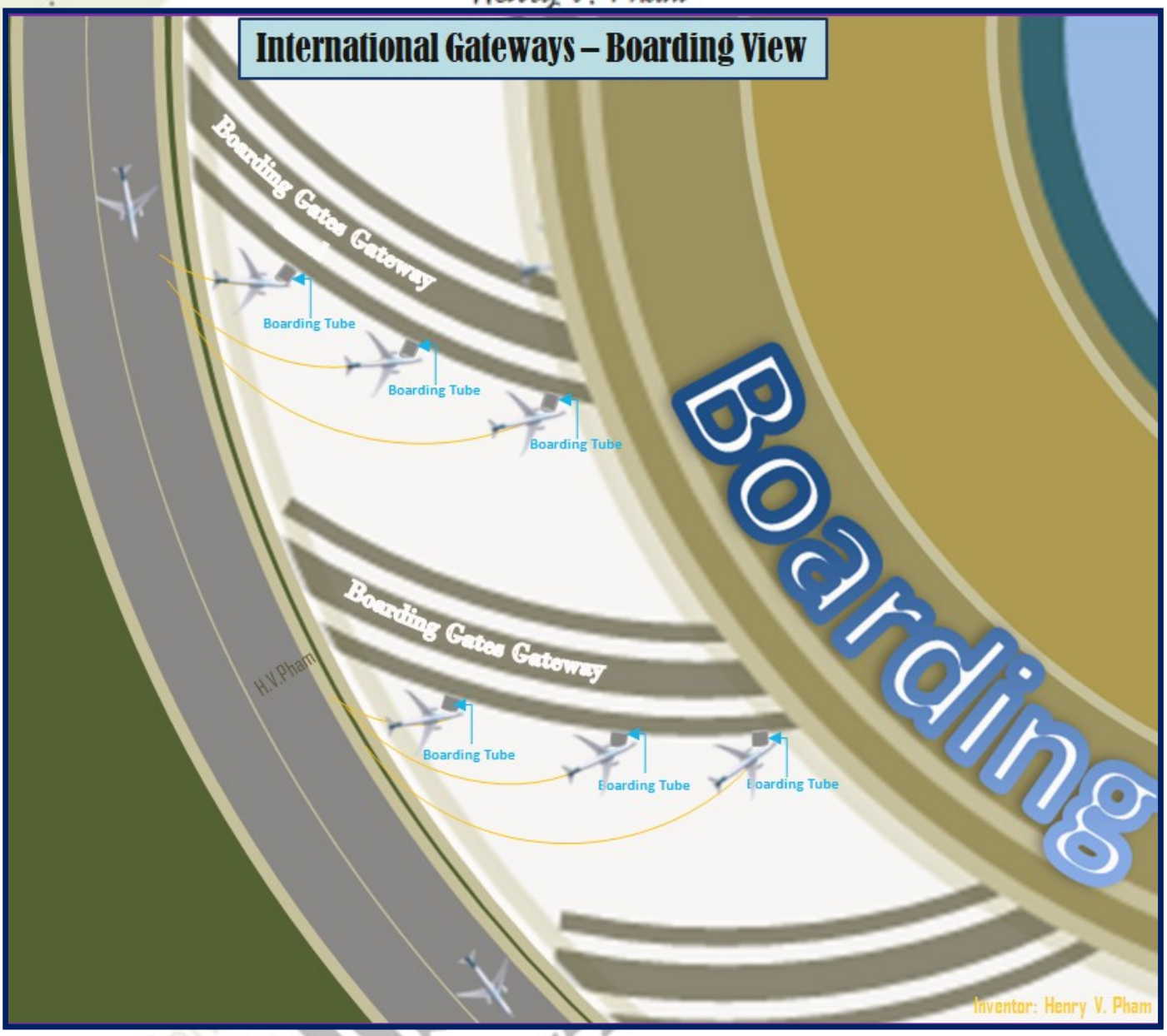


Figure-J2: OH SMART AIRPORT – International Gateways Boarding View

The International Boarding Gateways are shown in the figure above with 3 gates per gateway which provides enough space for airport ground service on the side for luggage loading and unloading of the inner section with at least double size of the wingspan of the common big airplanes. The Gateways are layout in a curved line structure, which provides longer length and better apron spaces for the airplane that can save space for the airplanes parking and boarding in an angle with the tip of the wing and the airplane nose are close to the edge of the Gateway Building. To support more gates for more boarding airplanes at a time, the Gateways Buildings can easily be extended longer when planning to build the airport for more space of the apron. Note that the Gateways building is in curvature shape to save apron space; save up to 8 meters in length and 6 meters in width for Boeing 747 airplane.

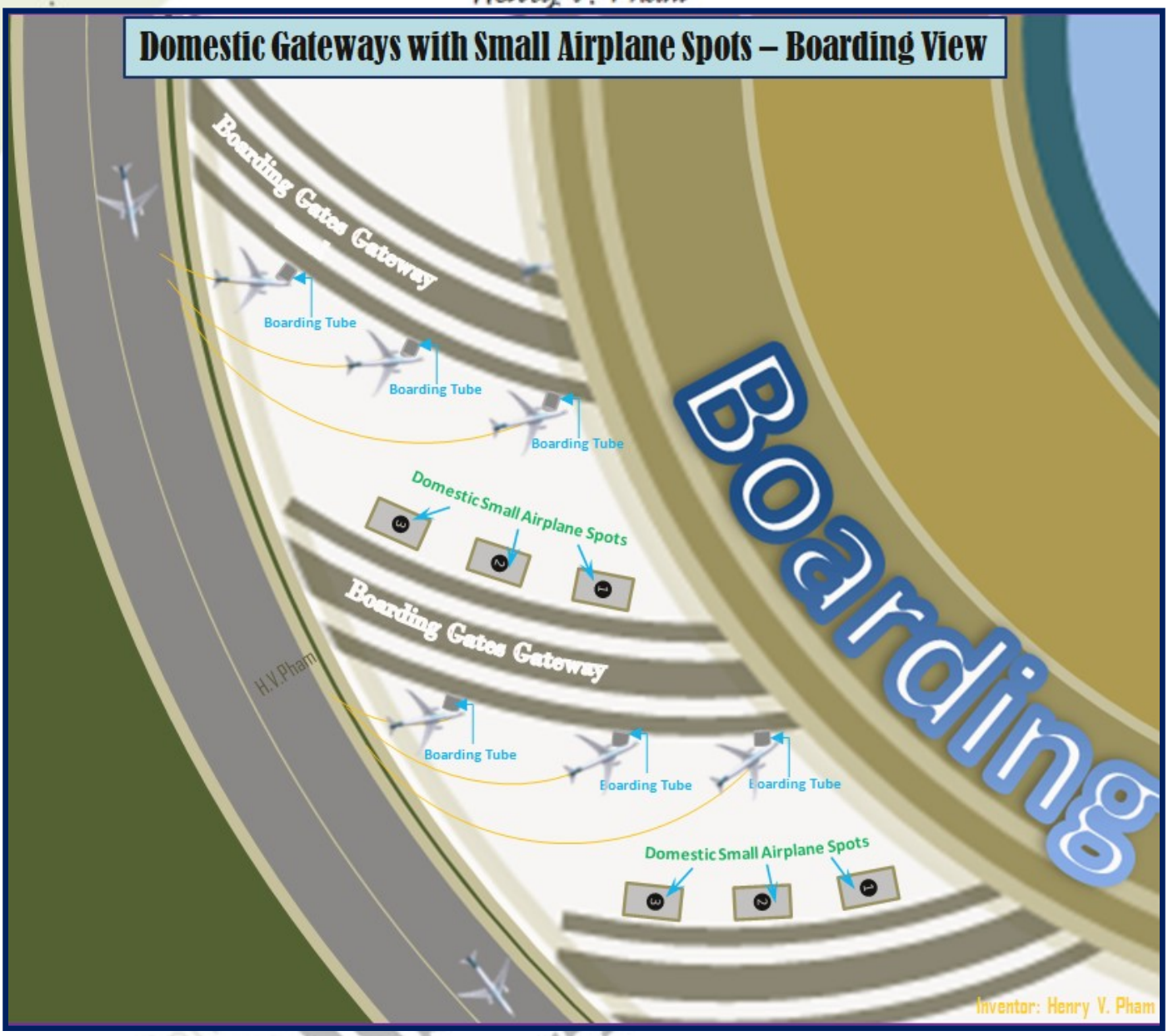


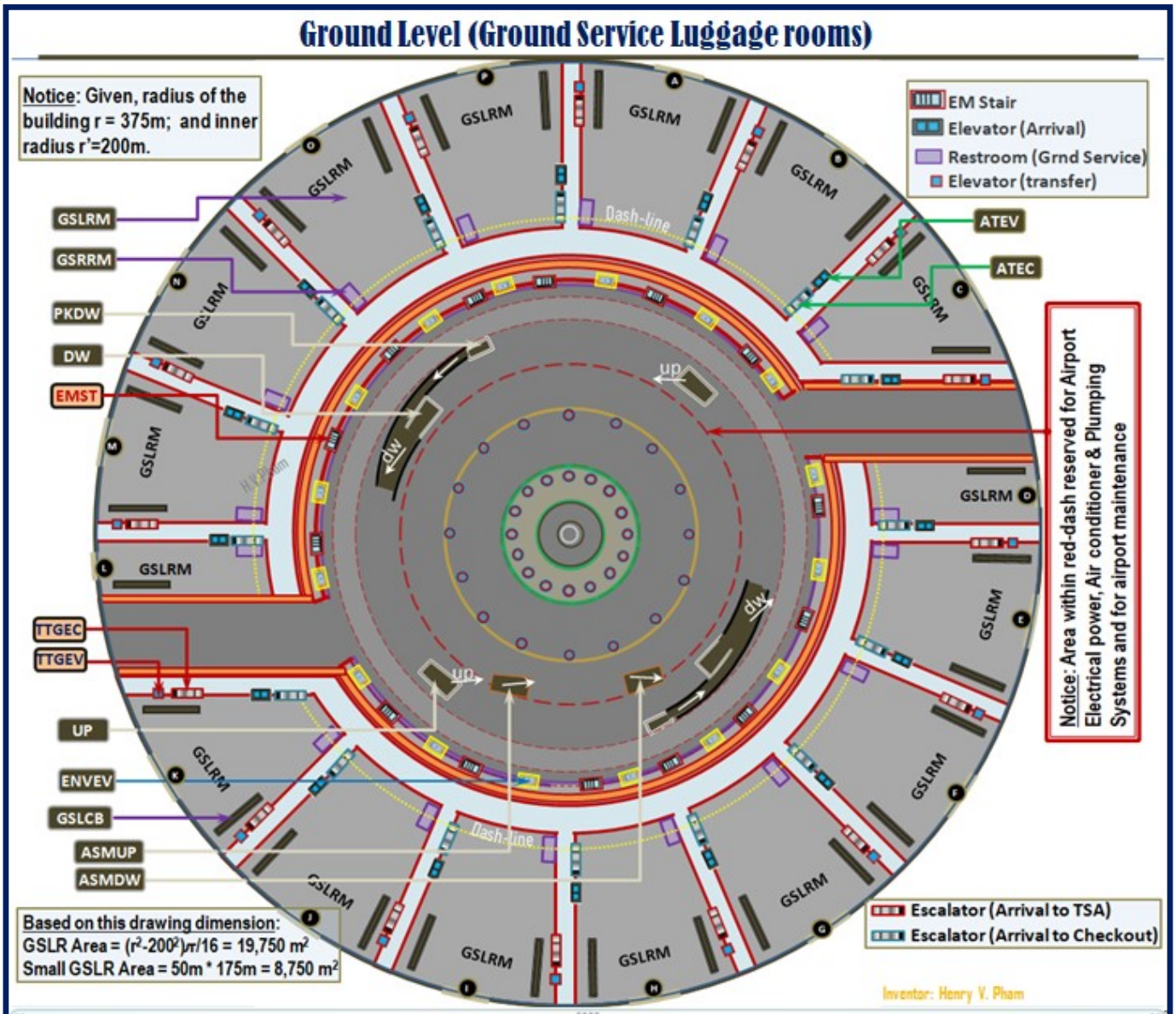
Figure-J3: OH SMART AIRPORT – Domestic Gateways Boarding View

The Airport Ground service luggage rooms, at the Ground Level for arrival, are designed one for each Boarding Gateway as shown in **Figure-J4: OH SMART AIRPORT –Ground Service layout View**. Each luggage room is approximately around 19,750 m^2 based on the given regular airport dimension in this document with the circle building radius of 375 meters, and the inner radius of 200 meters which is used for airport parking up and down enclosed ramps and the emergency paths. The smallest Airport Ground service room which is right at the emergency cleared areas for visitors is calculated with approximately around 8,750 m^2; these luggage rooms areas should be large enough to handle luggage for travelers for both departure and arrival. The table below describes the legends that show on the Figure-J4 below.

Legend	Legend Description
ASMDW	Airport Service/Maintenance Down Ramp – The airport service and maintenance down ramp and should be open at this level.
ASMUP	Airport Service/Maintenance Up Ramp -- The airport service and maintenance up ramp and should be open at this level.
ATEC	Arrival Travelers Escalators (to checkout) – The escalators which are designed for arrival to get to the lower level, the luggage and security checkout, and the Ground Transportation services level.
ATEV	Arrival Travelers Elevators (to checkout) -- The elevators which are designed for arrival to get to the lower level, the luggage and security checkout, and the Ground Transportation services level.
DW	Airport Parking Exit Down Ramp (exit parking) – The airport enclosed ramp which is used for airport parking exit from the upper levels, Building Levels 1, 2 and 3.
EMST	Emergency Stair (from upper/lower levels) – The emergency stairs which are used for visitors to exit from lower level, the Ground Level 1 and for visitors to exit from upper levels, Building Levels 1, 2 and 3.
ENVEV	Enclosed Visitors Pass-thru Elevators – The enclosed-pass-thru elevators which are used for visitors' access from Ground Level 1 to Building Levels 1, 2 and 3. Note that at this level the elevators must be a pass-thru and not allow for visitors' access.
GSLCB	Ground Service Luggage Conveyor Belt – The Ground Service luggage conveyor belts to handle luggage from upper level, the departure level and the luggage for arrival to the Ground Level 1.
GSLRM	Ground Service Luggage Room – The luggage service rooms with total of 16 with 2 small on the sides and 14 larger rooms on the normal Boarding Gateways.
GSRRM	Ground Service Restroom – The restrooms which are layout for Ground Service.
PKDW	Parking Down Ramp (within parking only) – The enclosed down ramp, which is connected from the upper Building Level 1 with labeled 'DWO' as Drop-off Driveway open ramp, is merged into 'DW' down ramp exit only.
TTGEC	Travelers Transfer Gate to TSA Check Escalators – The escalators for travelers transferring gates to TSA screening check to upper Building Level for departure.
TTGEV	Travelers Transfer Gate to TSA Check Elevators -- The elevators for travelers transferring gates to TSA screening check to upper Building Level for departure.
UP	Airport Parking Up Ramp (entrance parking) -- The airport enclosed ramp which is used for airport parking entrances from the street level, the Ground Level 2 to the upper levels, Building Levels 1, 2 and 3.

OH Smart Airport is invented with emergency paths and exits for both travelers and visitors, and the Ground Service areas are divided with 2 small Ground Service rooms and 14 large Ground Service rooms. So, there are 2 different Ground Services areas with different corners, the small one on the sides of the circle building would come with Emergency Security Doors next to the Ground Service Luggage entrance room, and an Airport Maintenance entrance which should be secured and controlled by the airport security. **Figure-J5: OH SMART AIRPORT –Ground Level Gate Tube & Service Vehicles View** shows the normal Ground Service areas, and **Figure-J6: OH SMART AIRPORT –Ground Service with Emergency Door View** shows the

small Ground Service areas with airplanes service vehicles like airplane tower tugs and luggage carrier tugs for Airport Ground Service within the desired apron for luggage loading and unloading with passengers boarding tubes which are attached on the top floor of the Boarding Gateways for passenger boarding and un-boarding.



Legend	Legend Description	Legend	Legend Description
ASMDW	Airport Service/Maintenance Down Ramp	GSLCB	Ground Service Luggage Conveyor Belt
ASMUP	Airport Service/Maintenance Up Ramp	GSLRM	Ground Service Luggage Room
ATEC	Arrival Travelers Escalators (to checkout)	GSRRM	Ground Service Restroom
ATEV	Arrival Travelers Elevators (to checkout)	PKDW	Parking Down Ramp (within parking only)
DW	Airport Parking Exit Down Ramp (exit parking)	TTGEC	Travelers Transfer Gate to TSA Check Escalators
EMST	Emergency Stair (from upper/lower levels)	TTGEV	Travelers Transfer Gate to TSA Check Elevators
ENVEV	Enclosed Visitors Pass-thru Elevators	UP	Airport Parking Up Ramp (entrance parking)

Figure-J4: OH SMART AIRPORT –Ground Service layout View

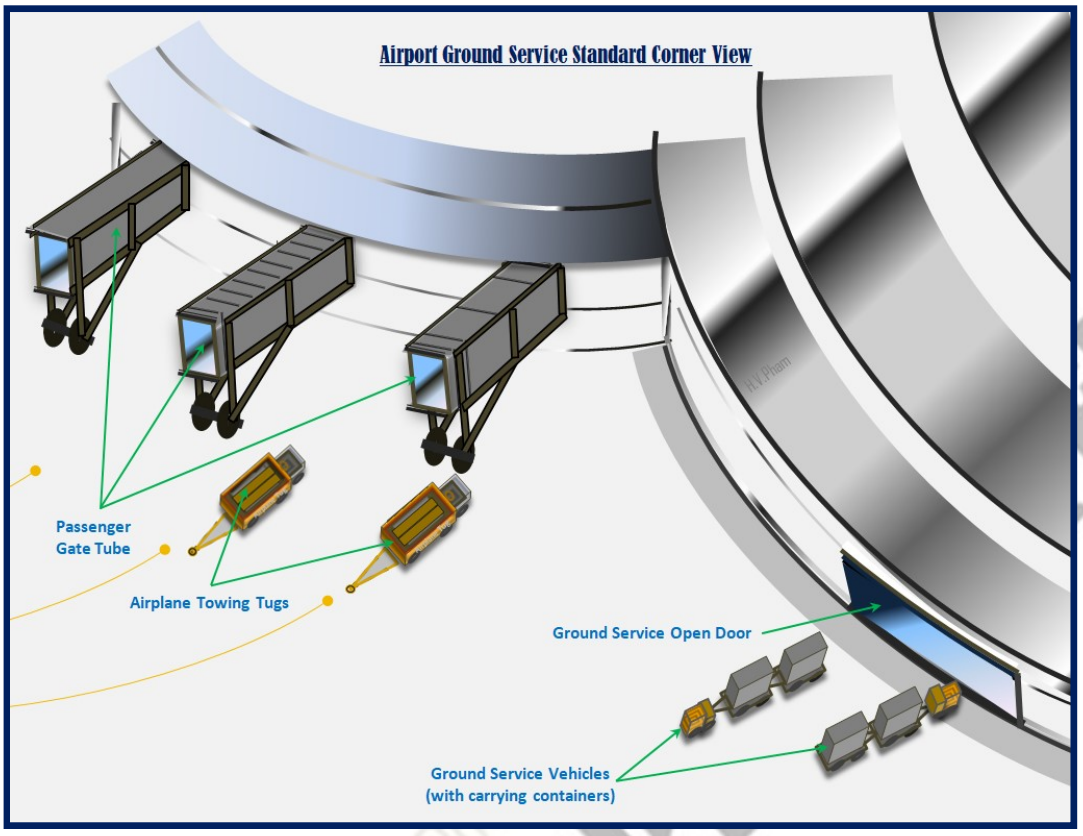


Figure-J5: OH SMART AIRPORT –Ground Level Gate Tube & Service Vehicles View

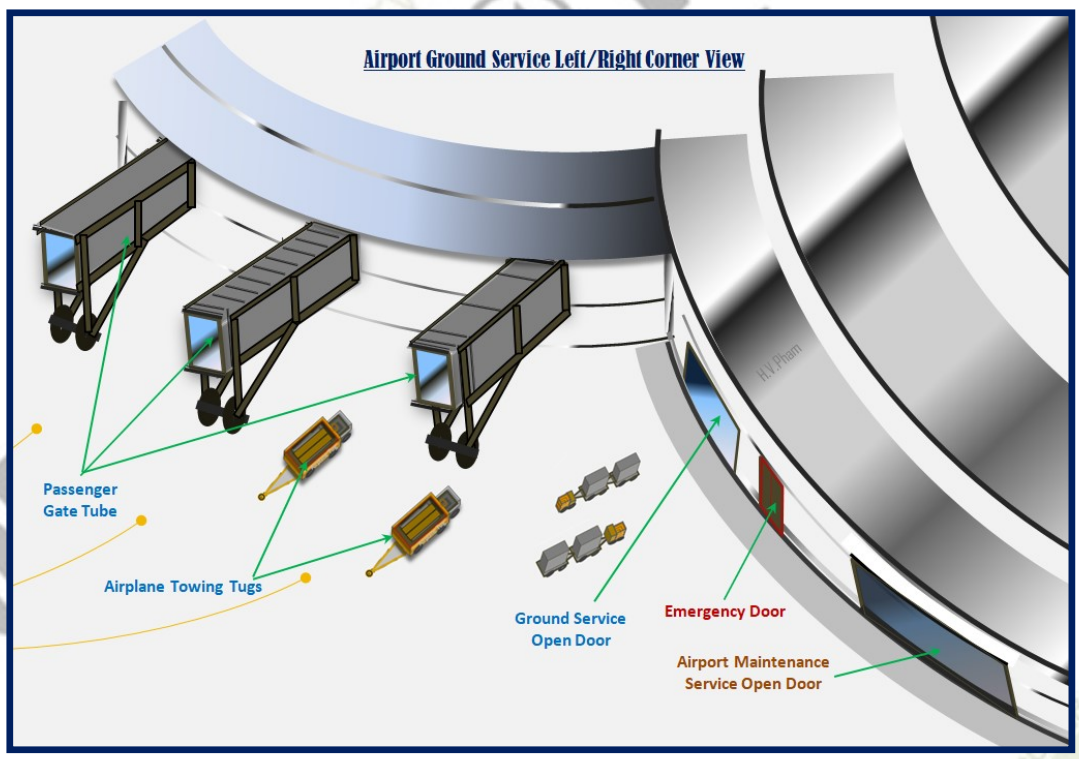


Figure-J6: OH SMART AIRPORT –Ground Service with Emergency Door View

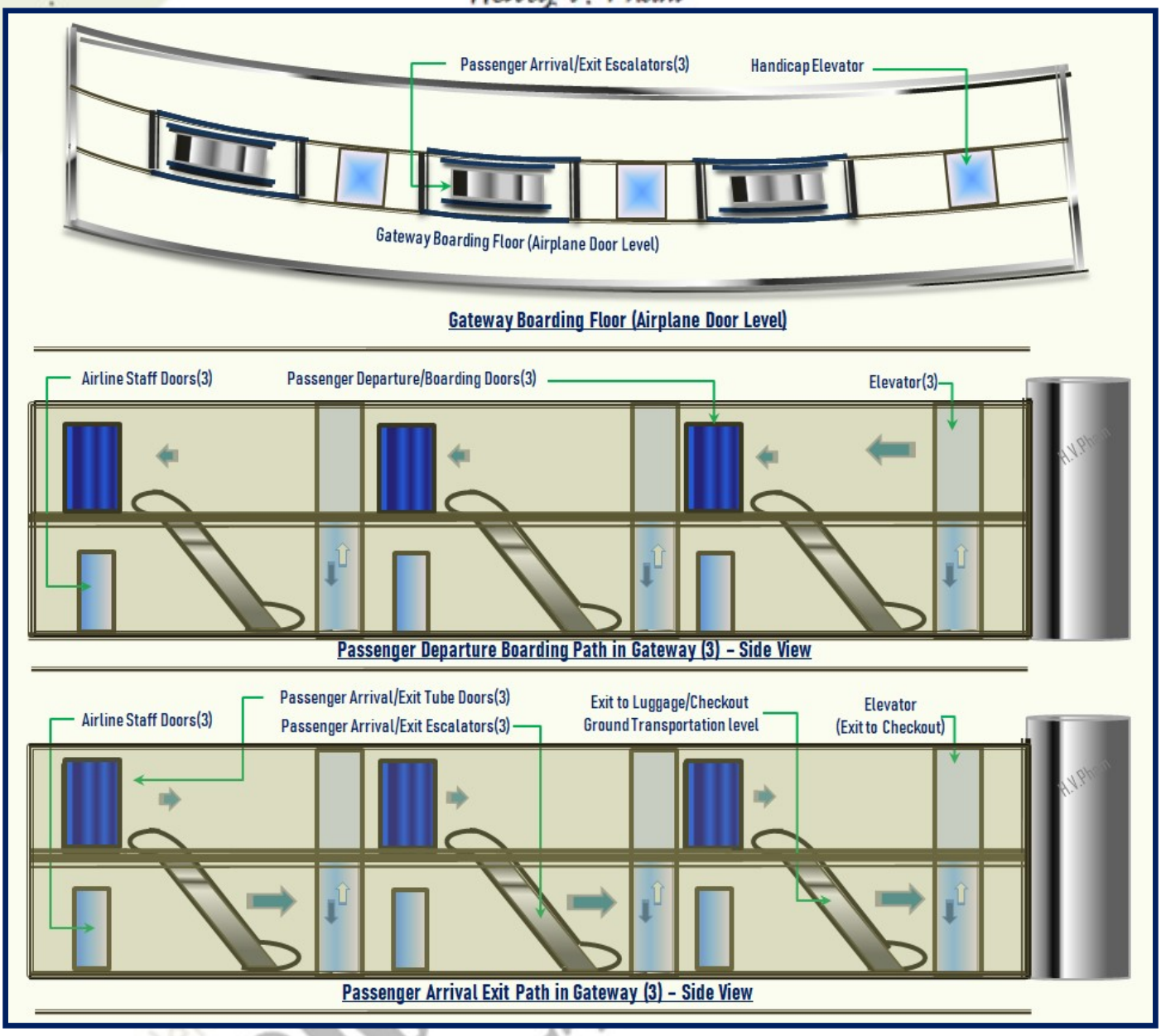


Figure-J7: OH SMART AIRPORT – Gateway Building View

Figure-J7: OH SMART AIRPORT – Gateway Building View shows the Boarding Gateway with 2 floors, the top floor with 3 boarding tube doors, 3 escalators and 3 elevators which are used one set for each boarding gate as shown in this document with regular airport dimension of this drawing with 3 airplanes per Boarding Gateway. The top drawing of Figure-J7 shows the top floor layout with 3 sets of escalators and elevators. The second drawing of Figure-J7 shows the travelers path with arrows on the top floor boarding from the departure from Building Level 1; and the bottom drawing of Figure-J7 shows the arrival passengers' path with arrows un-boarding from the airplanes, and get to the lower floor by escalators or elevators to lead to the luggage and security checkout at lower level, the Ground Level 1 for check out and for Ground Transportation services.

OH SMART AIRPORT

K. Airport Departure/Check-in Building Level 1

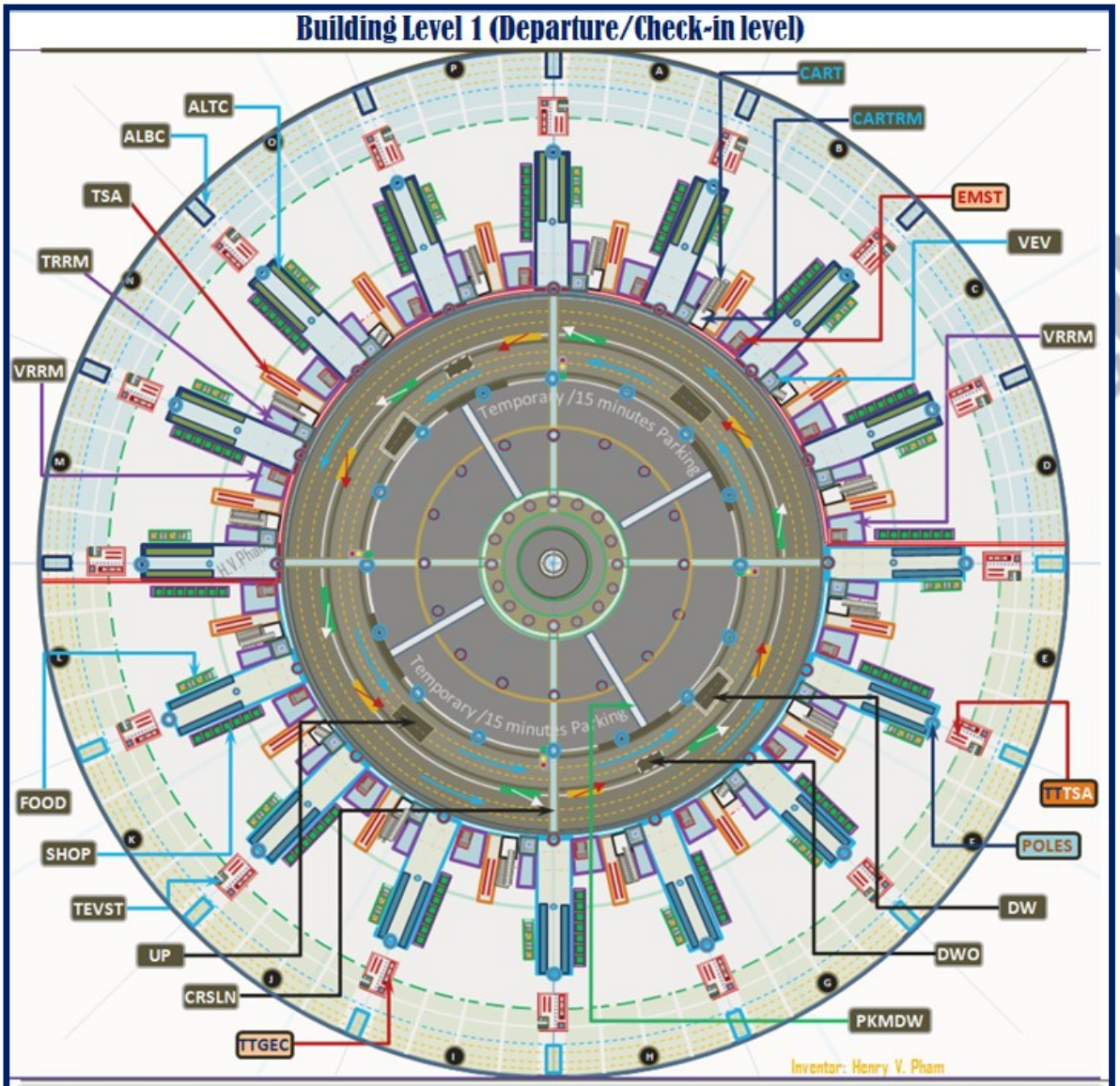
OH Smart Airport is invented with State-of-the-Art with airport circle building which provides shortest walking distance, fast drop-off and quick pickup for arrival and departure with no or less traffic lights and stop signs. Departure Building Level 1 is the busiest floor which is layout with the inner circle area, with radius within 150 meters around the ATC tower with elevators, which is used for temporary or 15 minutes parking; the inner 3 driveways for passing lanes with at recommended total of 10 meters width; the 3 outer driveways for drop-off or pickup lanes with at recommended total of 10 meters width, plus at least 3 meters ring spaces for waiting area for drop-off and pickup. The Airline Ticket Counters, TSA airport security screening areas, and the lounge area for departure with the width or the deoradii (delta radii of the 2 circles) of the annulus sector about 175 meters based on the default dimension shown in this invention. **Figure-K1: OH SMART AIRPORT –Building Level 1 Departure Layout View** below shows detail layout of this Departure Building Level 1 with the legends describe in the table below.

Legend	Legend Description
ALBC	Airline Boarding Counters – The boarding counters which are used for boarding passengers and the airlines can share the area and Boarding Gateways for boarding.
ALTC	Airline Ticket Counters – The airline ticket counters are enclosed inside section and allow the travelers to check-in their luggage; one airline counter can be shared with 2 airlines for checking in simultaneously. The airline ticket counter can be built up to 100 meters and 25 meters width.
CART	Cart Lane for Luggage Carrier Carts – The luggage cart lanes which are used to queue up the carts for travelers to or from upper Building Parking Level 2 and 3, and carts for the arrival travelers on the luggage checkout area on the Ground Level 1.
CARTRM	Cart Exchanger/Storage room – The cart exchanger storage rooms which are used to store and exchange carts, and this cart exchanger will be shown more details in Smart Cart Gear Belt System section.
CRSLN	Crossing Lane for Pedestrians – The pedestrian crossing lanes which are layout to allow the visitors walk across from the temporary parking and from the 4 ATC tower elevators. However, the Smart Airport is provided with one set of elevators for each Gateways with total of 16 elevators that the visitors can access straightly from Building Parking Levels 2 and 3 to Departure Building level 1 and to or from Arrival Ground Level 1; this would be more than enough elevators for the travelers and visitors.
DW	Airport Parking Down Ramp (enclosed upper parking exit) – The airport parking down ramp for upper parking exits; the down ramp is recommended to be enclosed at this level and could be built with at least double lanes.
DWO	Drop off Driveway Down to Exit (Open) – The drop-off driveway down ramp exit for this level, and this driveway ramp is recommended to be merged with the 'DW' down ramp exit from the upper parking levels at the lower level at the convenient ramp conjunction for airport exits.
EMST	Emergency Stairs – The emergency stairs are used to the visitors to get to the secured areas on both sides of the circle building at the Ground Level; these emergency stairs are also accessible from the upper Building Parking Levels 2 and 3.

FOOD	Food and Beverage – The food areas are layout next to the Airline Ticket Counters, and these areas are inside the check-in areas which are used only for check-in travelers. This can be optional depends on the airport security rules. However, the airport can be built with more food, beverage and gift shops on upper levels for both check-in travelers' views and visitors' views.
POLES	Airport building poles locations (suggested) – The airport building is designed in circle which is the strongest shape. The drawing shows suggested layout for building poles which are used for building poles foundation structures.
PKMDW	Visitor Parking Main Driveways – The visitor parking main driveways at this level are only used for temporary parking.
SHOP	Gift Shops -- The gift shop areas are layout next to the Airline Ticket Counters, and these areas are inside the check-in areas which are used only for check-in travelers. This can be optional depends on the airport security rules. However, the airport can be built with more food, beverage and gift shops on upper levels for both check-in travelers' views and visitors' views.
TEVST	Checked-in Travelers Elevators & Stairs -- The elevators and stairs which can be used by the check-in travelers to access to upper levels to explore around the airport through the glass-enclosed alternate viewing areas within the 2 floors, Building Level 2 and 3; this will be shown more detail in later sections.
TRRM	Traveler Restrooms (inside check-in room) – The restrooms are layout inside the check-in areas for check-in travelers.
TSA	TSA Check Points Entrances – The TSA screening check point entrances are layout next to each Airline Ticket Counter for security check-in screening. The dimension of the TSA screening area can be up to 50 meters long and 15 meters width.
TTGEC	Travelers Transfer Gate to TSA Check Escalators – The travelers transfer gate in the enclosed room for TSA security screening for transferring travelers access from lower level, the Ground Level.
TTTSA	Travelers Transfer to TSA Check Point – The TSA screening gate in the enclosed room for TSA security screening for transferring travelers.
UP	Airport Parking Up Ramp (entrance parking) – The airport up ramp and open at this level, which is provided for visitors able to drop-off and able to drive to upper Building Parking Levels 2 and 3.
VEV	Visitor Elevators – The visitor elevators are recommended to build one set of elevators for each Boarding Gateway as shown in the figures below.
VRRM	Visitor Restrooms (outside check-in room) – The visitor restrooms are layout with access from outside waiting ring for visitors access only.

A section of Departure Lounge, Airline Ticket Counter, and TSA security screening areas are shown closer with more details in **Figure-K2: OH SMART AIRPORT –Building Level 1 Detail Section View** below. The airline ticket counter would have 2 conveyor belts which are used for luggage moving straight from ticket counter to the lower Airport Ground Service rooms which are associated with the Boarding Gateways that assigned to the airlines of the Airline Ticket Counters. The luggage carts rooms are commended to build one cart exchanger room per Boarding Gateway with one cart lane to the upper Parking Levels and one cart lane to the arrival luggage area; and recommended with at least 4 cart lanes to the Ground

Transportation Level 1 for the departure travelers who use bus or taxi Transportation Ground Service drop-off at the Ground Transportation Level 1.



Legend	Legend Description	Legend	Legend Description
ALBC	Airline Boarding Counters	PKMDW	Visitor Parking Main Driveways
ALTC	Airline Ticket Counters	SHOP	Gift Shops
CART	Cart Lane for Luggage Carrier Carts	TEVST	Checked-in Travelers Elevators & Stairs
CARTRM	Cart Exchanger/Storage room	TRRM	Traveler Restrooms (inside check-in room)
CRSLN	Crossing Lane for Pedestrians	TSA	TSA Check Points Entrances
DW	Airport Parking Down Ramp (exit parking)	TTGEC	Travelers Transfer Gate to TSA Check Escalators
DWO	Drop off Driveway Down to Exit (Open)	TTTSA	Travelers Transfer to TSA Check Point
EMST	Emergency Stairs	UP	Airport Parking Up Ramp (entrance parking)
FOOD	Food and Beverage	VEV	Visitor Elevators
POLES	Airport building poles locations (suggested)	VRRM	Visitor Restrooms (outside check-in room)

Figure-K1: OH SMART AIRPORT –Building Level 1 Departure Layout View

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OH SMART AIRPORT

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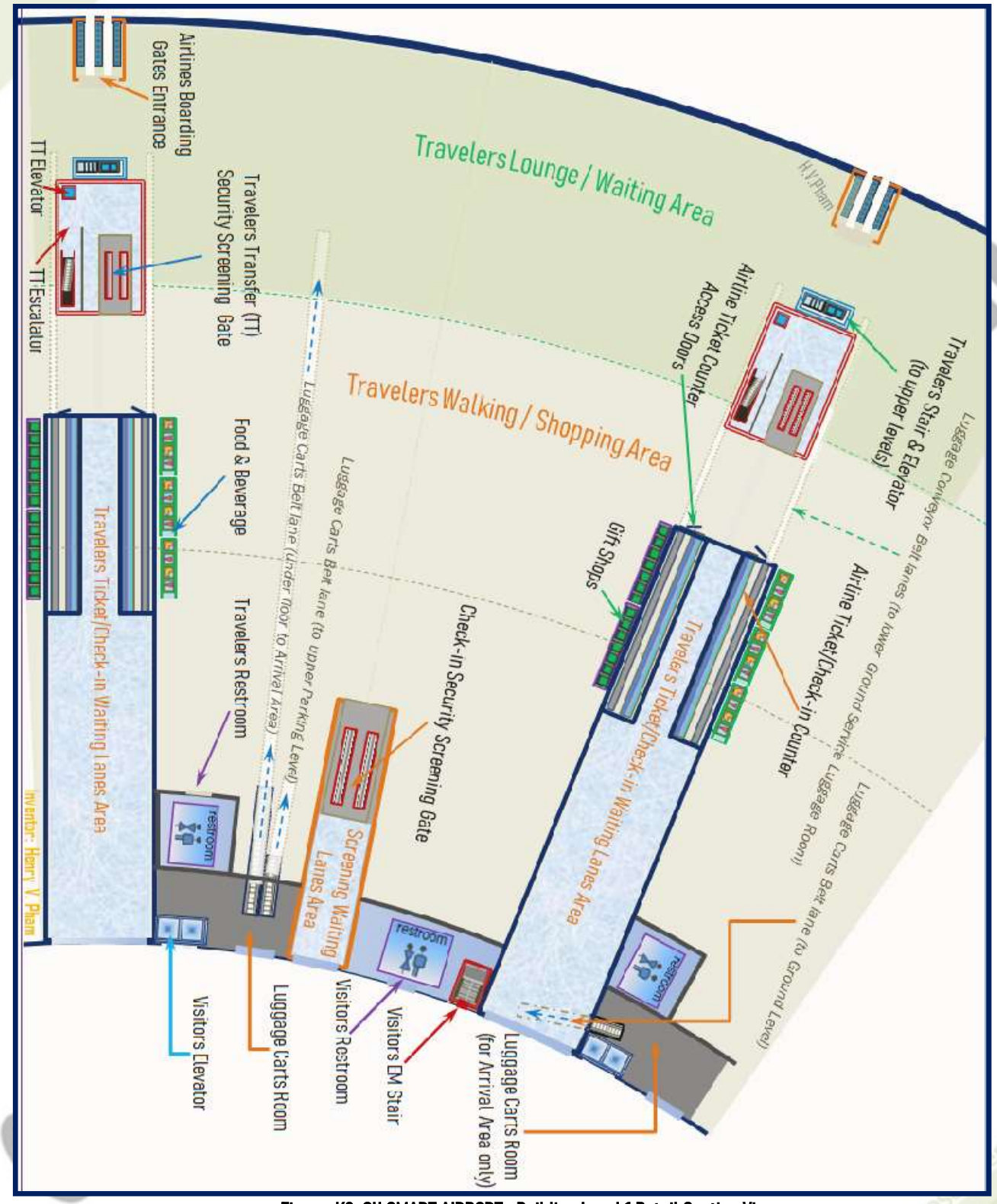

Figure-K2: OH SMART AIRPORT –Building Level 1 Detail Section View

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The enclosed Airport Transferring Security Screening areas are layout within the Airline Boarding Gateway Entrances, which have 'TT Elevator' and 'TT Escalator' for Transferring Travelers access from lower level, the Ground Level when they arrived and went through the transfer paths as shown in Figure-K2 above. The lounge areas are recommended to divide into 4 or more sections as shown in yellow area in **Figure-K3: OH SMART AIRPORT –Building Level 1 Detail Departure Lounge Area View**. Each area sector could have up to 50 meters deoradii (delta radii of 2 circles) with the inner arc length about 30 meters and the outer arc length about 35 meters which could provide up to 2,229 seats based on the Airport Standard Seat Dimensions L=20.67" (52.5cm); W=18.11" (46cm); H=19.69"(50cm); Let's take the basic calculations with row to row (52.5 cm + 75 cm = 127.5 cm) for sector size of 50 m and the arcs length of 35m and 30 m; let's take average 30m for row length (3000 cm / 52.5 cm = 57 seats for row); total rows = 5000 cm / 127.5 cm = 39 rows; total seats 57 seats * 39 rows = 2229 seats; these would be more than enough for travelers seats and waiting for boarding. However, with advantages of OH Smart Airport with building in circle, the airport can provide the check-in travelers able to explore around entire airport through upper levels with alternating views within the 2 upper levels. These will be shown more details in later sections.

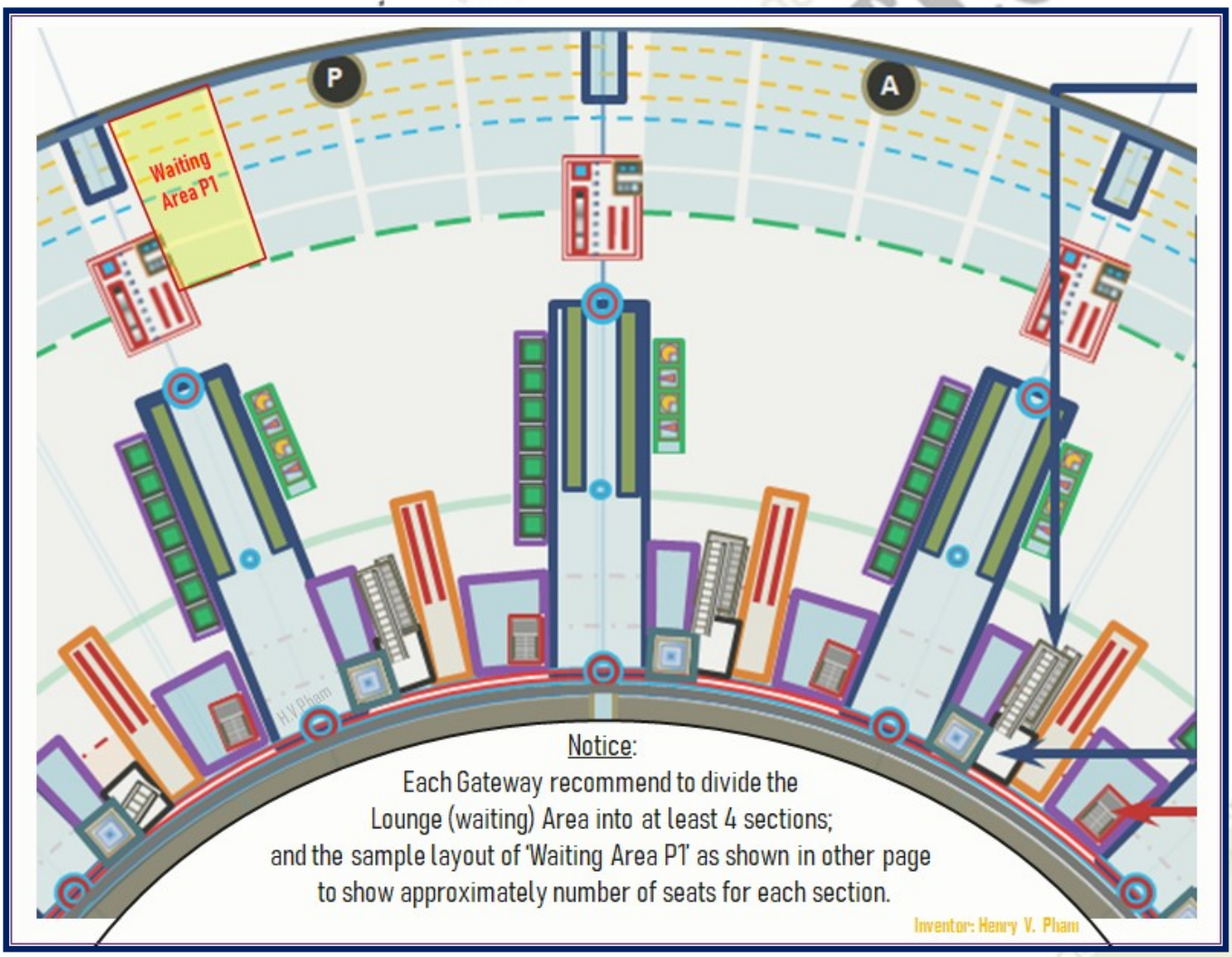


Figure-K3: OH SMART AIRPORT –Building Level 1 Detail Departure Lounge Area View

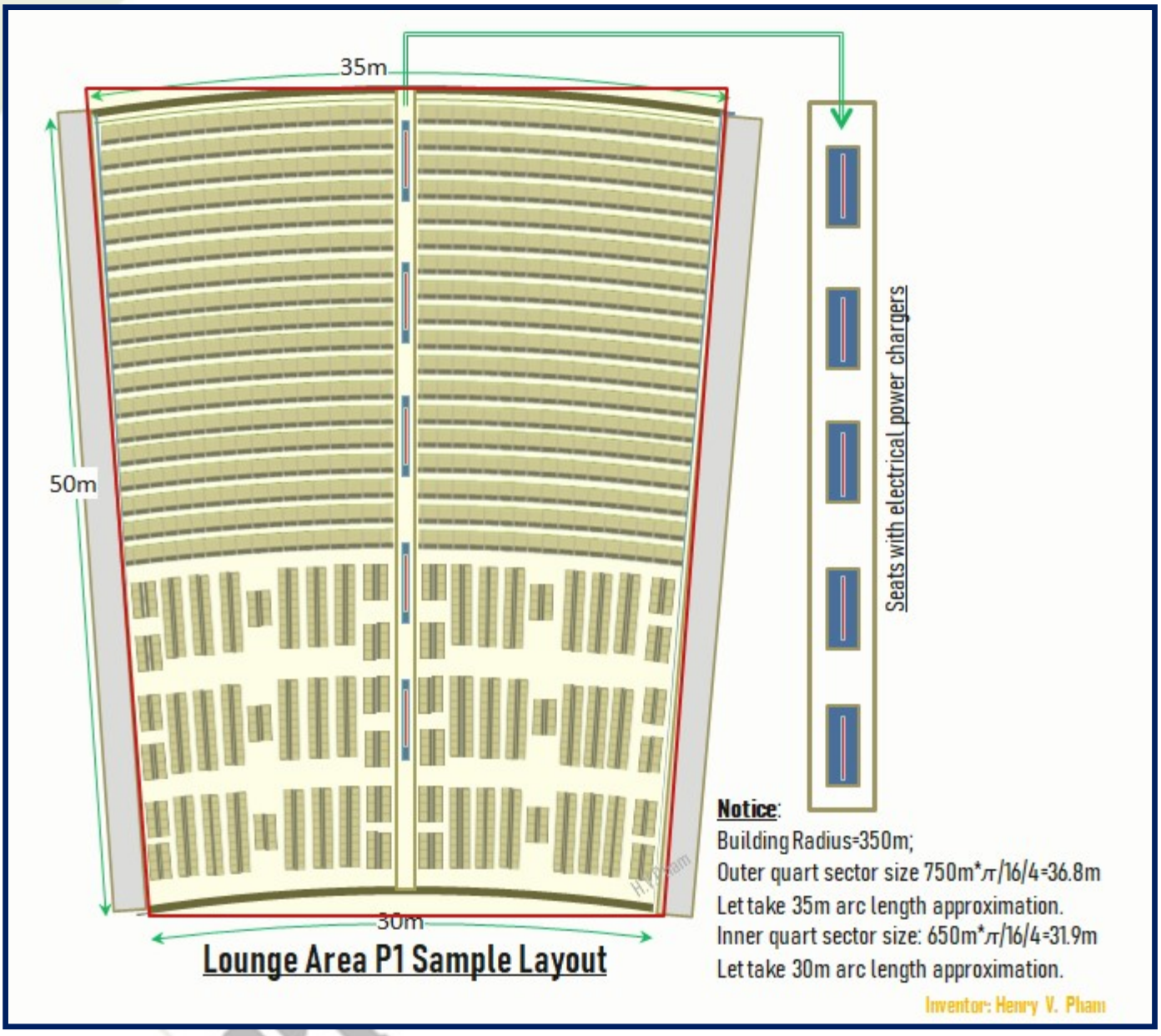


Figure-K4: OH SMART AIRPORT –Building Level 1 Detail Departure Lounge Area Seats Sample Layout

The lounge waiting area 'P1' in yellow section is shown more detail layout in **Figure-K4: OH SMART AIRPORT –Building Level 1 Detail Departure Lounge Area Seats Sample Layout.** The airport planers can arrange the seats rows and provide enough electrical power chargers or outlets and the airplane flights schedules boards around the lounge waiting areas and along the check-in traveler exploring paths on other upper levels. However, to attract the travelers, the airport can be built with more food, beverage and gift shops on upper levels for both check-in travelers' views and visitors' views.

OH SMART AIRPORT

L. Airport Parking/Viewing Building Level 2

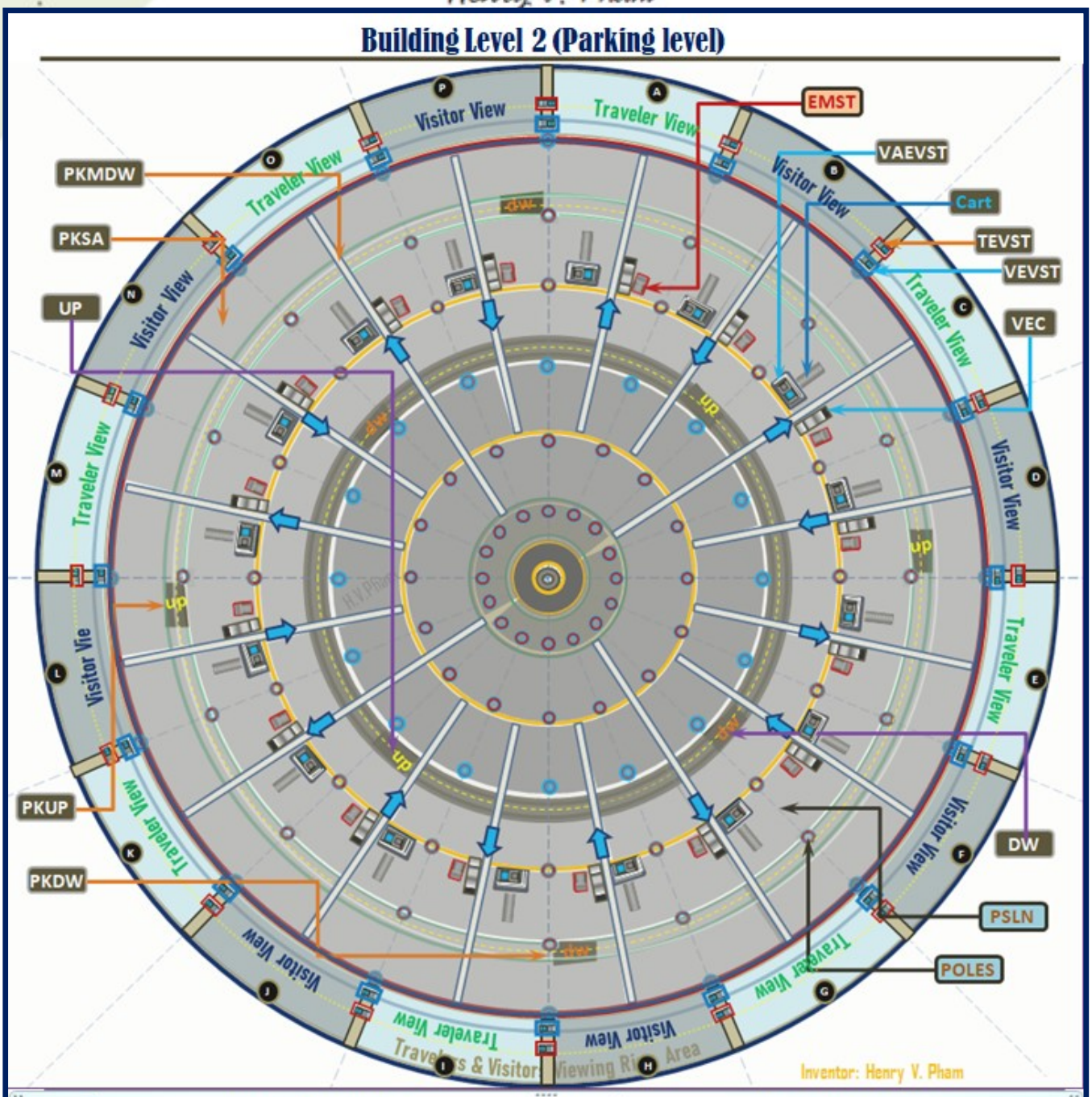
The Airport Building Level 2 is the airport parking and viewing level which provides parking spaces at level 2 and alternate views for visitors exploring entire airport around the parking, and for the check-in travelers exploring entire airport within the airport building. This level of building is recommended to build smaller than the lower level to keep the building structure stronger with better look and feel. In this invention with regular airport dimension, the Building Level 2 is recommended with the radius of 25 meters smaller than the lower level which is set default as 350 meters compare to the default radius of the entire building as 375 meters; and the viewing ring areas for both upper levels with recommended deoradii (delta radii of the 2 circles) of 35 meters which is 25 meters carrying from the lower level and recommended with 10 meters space extend from the base 25 meters. The lower level, the departure Building Level 1 with check-in traveler elevators and stairs access starts at 50 meters away from the outer circle; so the elevators and stairs access can be built straight from departure Building Level 1 to Building Level 3.

Figure-L1: OH SMART AIRPORT –Building Level 2 Layout shows the parking areas in circle with the radius of 315 meters (350m – 35m = 315m) based on the dimension mentioned above; however, these dimensions can be adjusted to make the circle parking areas larger or smaller depends on the demand of the city, country or region. The circle parking area is recommended to divide into sector with alternate direction of driveways for car motion momentum distribution evenly. The parking area of one parking level is over 311,000 m^2 which is larger than the size of a regular airport parking area space. The parking space layout is recommended in 45˚ degrees space layout which is the best layout for car parking in and out easier with one direction driveway. The parking space layout will be described more detail in Parking Space Layout section.

The travelers cart storage open access in the parking levels is recommended to build spread out evenly around the airport building as shown in Figure-L1 below to provide enough carts for the travelers. The cart storages in the parking levels are linked to the departure Building Level 1 where the Smart Cart Gear Belt Exchanger system should be installed and controlled at the cart storage rooms for stocking and restocking carts which are shown more detail in later sections. The parking levels are recommended to build with enough emergency stairs and elevators to allow visitors and travelers access to departure Building Level 1 and to the arrival Ground Level; note that the escalators in these parking levels are recommended for parking upper and lower parking access only for safety purposes. The table below describes the legends that labeled on the Figure-L1.

Legend	Legend Description
Cart	Cart Lines –for Luggage Carrier Carts – The cart paths which are linked from departure Building Level 1 where the cart exchanger system allow to stocking and restocking carts.
DW	Airport Parking Down Ramp (exit parking) – The airport parking exit open ramps provide the exit path straight down to the Underground Level 2 to the street levels which will be merged with 'DWO' Drop-off driveway only from the departure Building Level 1; the 'DW' is recommended with at least

	2 ramps as shown on the drawing.
EMST	Emergency Stairs – The emergency stairs which provide visitors with escape out of the airport building in emergency case.
PKDW	Parking Down Ramp (within parking only) – The parking down ramp within parking upper and lower levels; the ramp can be built with double lanes.
PKMDW	Visitor Parking Main Driveways – The parking driveways which provide the visitors access to the parking spaces inward and outward directions from the center; and there are recommended with 4 driveways that accessible to the center of the circle parking at the ATC tower that has extra 4 visitor elevators.
PKSA	Visitor Parking Sector Areas – The visitor parking sector areas are recommended to divide in sector for ring parking in 45˚ degrees parking space layout.
PKUP	Parking Up Ramp (within parking only) -- The parking up ramp within parking upper and lower levels; the ramp can be built with double lanes.
POLES	Airport building poles locations (suggested) -- The recommended airport circle building poles locations for bonding structure of the great circle shape.
PSLN	Airport building poles structure lines (suggested) -- The recommended airport circle building poles structure lines which can be based on to do the layout of the parking structure and parking spaces layout for strengthness foundation.
TEVST	Checked-in Travelers Elevators & Stairs – The Traveler Elevators and Stairs are layout to build for traveler accesses from the departure Building Level 1.
UP	Airport Parking Up Ramp (entrance parking) -- The airport parking up ramps provide the parking up ramps from the departure Building Level 1 and to the parking Building Level 3; the ramp can be built with double lanes.
VAEVST	Visitor Airport Elevators & Stairs – The Visitors Elevators and Stairs provide access from this parking Building Level 2 to parking Building Level 3 and down to departure Building Level 1 and to arrival Underground Building Level.
VEC	Visitor Parking Escalators – The escalators are only used in parking levels to allow visitors access faster within the parking levels.
VEVST	Visitor View Elevators & Stairs -- The Visitor Elevators and Stairs are layout to build for visitor accesses to explore around the airport through the ring viewer to and from the parking Building Level 2 and 3.



Legend	Legend Description	Legend	Legend Description
Cart	Cart Lines -- Luggage Carrier Carts	POLES	Airport building poles locations (suggested)
DW	Airport Parking Down Ramp (exit parking)	PSLN	Airport building poles structure lines (suggested)
EMST	Emergency Stairs	TEVST	Checked-in Travelers Elevators & Stairs
PKDW	Parking Down Ramp (within parking only)	UP	Airport Parking Up Ramp (entrance parking)
PKMDW	Visitor Parking Main Driveways	VEC	Visitor Parking Escalators
PKSA	Visitor Parking Sector Areas	VAEVST	Visitor Airport Elevators & Stairs
PKUP	Parking Up Ramp (within parking only)	VEVST	Visitor View Elevators & Stairs

Figure-L1: OH SMART AIRPORT –Building Level 2 Layout

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OH SMART AIRPORT

M. Airport Parking/Viewing Building Level 3

The Airport Building Level 3 is the airport parking and viewing level which provide parking spaces at level 3 and alternate views for visitors exploring entire airport around the parking, and for the check-in travelers exploring entire airport within the airport building. This level of building is recommended to build smaller than the lower level to keep the building structure stronger with better look and feel. In this invention with regular airport dimension, the Building Level 3 is recommended with the radius of 25 meters smaller than the lower level which is set default as 325 meters compare to the default radius of the entire building as 375 meters; and the explore viewing ring area for this Building Parking level with recommended deoradii (delta radii of the 2 circles) of 10 meters space extending from the base 50 meters; this means that the deoradii is 10 meters for view ring. The lower level, the departure Building Level 1 with check-in traveler elevators and stairs access starts at 50 meters away from the outer circle, and each upper level is recommended with 25 meters smaller radius; so the elevators and stairs access can be built straight from departure Building Level 1 to Building Level 3. However, the dimension of the view ring can be adjusted by the airport planer team before building the airport to fit the airport demand of airport explore viewing space verse the airport parking spaces depends on the city, country and region.

Figure-M1: OH SMART AIRPORT –Building Level 3 Layout shows the parking area in circle with the radius of 315 meters (325m – 10m = 315m) based on the dimension mentioned above. The circle parking area is recommended to divide into sector with alternate direction of driveways for car motion momentum distribution evenly. The parking area of one parking level is over 311,000 m^2 which is about the size of a regular airport parking area space; note that the parking layout showing in here is purposely set both Building Level 2 and Building Level 3 having the same size of parking structure spaces. The parking space layout is recommended in 45˚ degrees space layout which is the best layout for car parking in and out easier with one direction driveway. The parking space layout will be described more detail in Parking Space Layout section.

The travelers cart storage open access in the parking levels is recommended to build spread out evenly around the airport building as shown in Figure-M1 below to provide enough carts for the travelers. The cart storages in the parking levels are linked locations together for more convenient and to the departure Building Level 1 where the Smart Cart Gear Belt system exchanger should be installed and controlled at the cart storage rooms for stocking and restocking carts which are shown more detail in later sections. The parking levels are recommended to build with enough emergency stairs and elevators to allow visitors and travelers access to departure Building Level 1 and to the arrival Ground Level; note that the escalators in these parking levels are recommended for parking upper and lower parking access only for safety purposes. The table below describes the legends that labeled on the Figure-M1.

Legend	Legend Description
Cart	Cart Lines –for Luggage Carrier Carts – The cart paths which are linked from departure Building Level 1 and Building Parking Level 2 where the cart exchanger system allow to stocking and restocking carts.

DW	Airport Parking Down Ramp (exit parking) – The airport parking exit open ramps provide the exit path down to Building Parking Level 2 then to the Underground Level 2 to the street levels which will be merged with 'DWO' Drop-off driveway only from the departure Building Level 1; the 'DW' is recommended with at least 2 ramps as shown on the drawing.
EMST	Emergency Stairs – The emergency stairs which provide visitors with escape out of the airport building in emergency case.
PKDW	Parking Down Ramp (within parking only) – The parking down ramp within this parking level and lower levels; the ramp can be built with double lanes.
PKMDW	Visitor Parking Main Driveways – The parking driveways which provide the visitors access to the parking spaces inward and outward directions from the center; and there are recommended with 4 driveways that accessible to the center of the circle parking at the ATC tower that has extra 4 visitor elevators.
PKSA	Visitor Parking Sector Areas – The visitor parking sector areas are recommended to divide in sector for ring parking in 45˚ degrees parking space layout.
PKUP	Parking Up Ramp (within parking only) -- The parking up ramp within this parking level and lower levels; the ramp can be built with double lanes.
POLES	Airport building poles locations (suggested) -- The recommended airport circle building poles locations for bonding structure of the great circle shape.
PSLN	Airport building poles structure lines (suggested) -- The recommended airport circle building poles structure lines which can be based on to do the layout of the parking structure and parking spaces layout for strengthness foundation.
TEVST	Checked-in Travelers Elevators & Stairs – The Traveler Elevators and Stairs are provided for traveler accesses from the departure Building Level 1.
UP	Airport Parking Up Ramp (entrance parking) -- The airport parking up ramps provide the parking up ramps from the Building Parking Level 2; the ramp can be built with double lanes.
VAEVST	Visitor Airport Elevators & Stairs – The Visitors Elevators and Stairs provide access from this Building Parking Level 3 to Building Parking Level 2 and down to departure Building Level 1 and to arrival Underground Building Level.
VEC	Visitor Parking Escalators – The escalators are only used in parking levels to allow visitors access faster within the parking levels.
VEVST	Visitor View Elevators & Stairs -- The Visitor Elevators and Stairs are provided for visitor accesses to explore around the airport through the ring viewer to and from the Building Parking Level 2 and 3.

OH SMART AIRPORT

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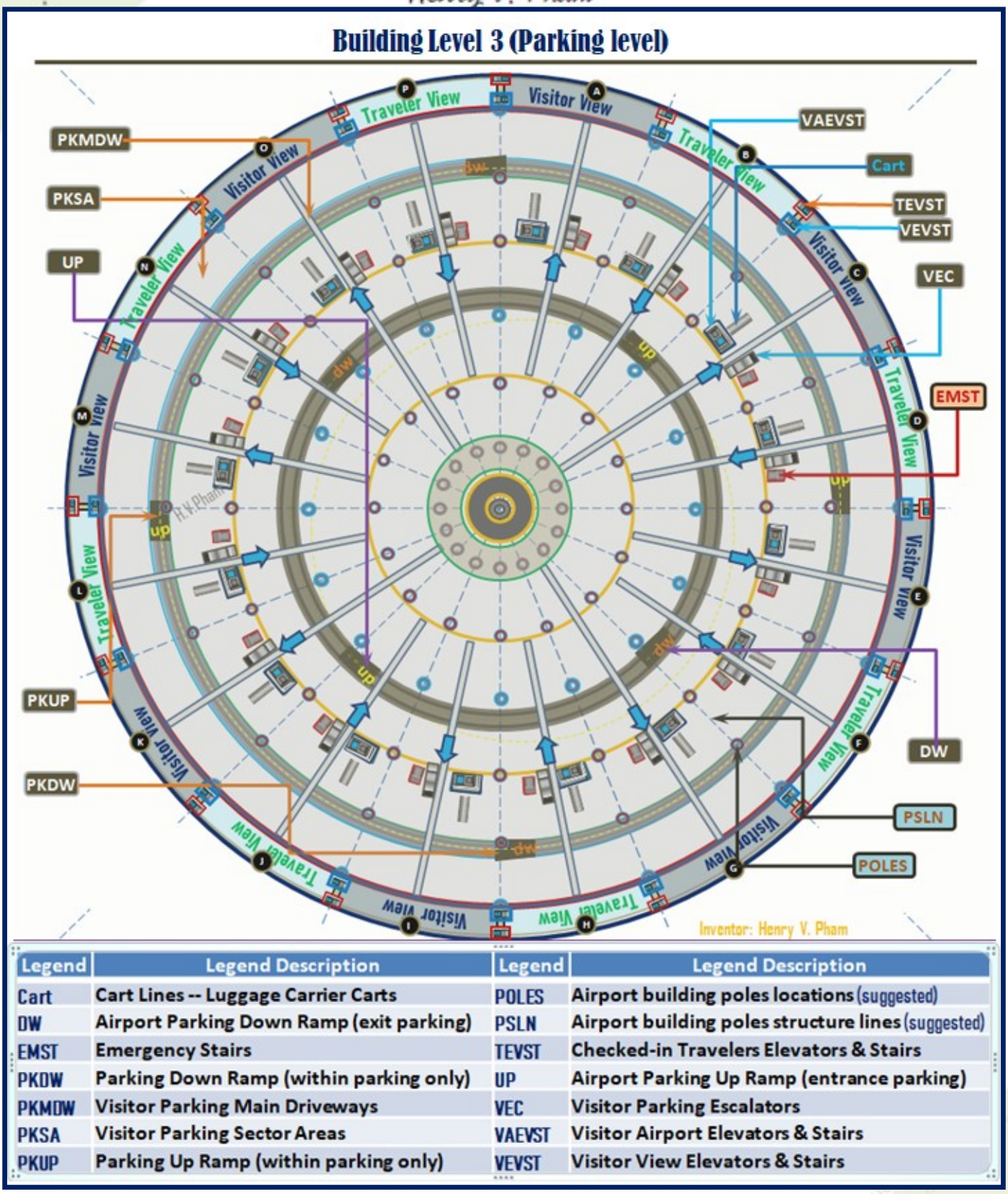

Legend	Legend Description	Legend	Legend Description
Cart	Cart Lines -- Luggage Carrier Carts	POLES	Airport building poles locations (suggested)
DW	Airport Parking Down Ramp (exit parking)	PSLN	Airport building poles structure lines (suggested)
EMST	Emergency Stairs	TEVST	Checked-in Travelers Elevators & Stairs
PKDW	Parking Down Ramp (within parking only)	UP	Airport Parking Up Ramp (entrance parking)
PKMDW	Visitor Parking Main Driveways	VEC	Visitor Parking Escalators
PKSA	Visitor Parking Sector Areas	VAEVST	Visitor Airport Elevators & Stairs
PKUP	Parking Up Ramp (within parking only)	VEVST	Visitor View Elevators & Stairs

Figure-M1: OH SMART AIRPORT –Building Level 3 Layout

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OH SMART AIRPORT

N. Airport Visitors & Travelers Explore Views

OH Smart Airport is invented in circle shape which provides the best airport for transportation ever. Besides providing the shortest walking distances for travelers for departure, boarding and arrival and luggage checkout; and the visitors can drop-off faster and pickup quicker within the transportation ring, OH Smart Airport provides both check-in travelers and visitors the paths to explore around the airport and the check-in travelers do not have to rescreening for TSA security screening check. **Figure-N1: OH SMART AIRPORT –Building Level 1 Travelers Elevators/Stairs** shows the deoradii (Bldg radius 1 – Bldg radius 3) which is the different radius between Building Level 1 and Building Level 3; and this is the width of the lounge waiting area in the departure building level which is recommended with 50 meters as shown in earlier section based on the default dimensions of this invention document. The traveler explorer path Elevators and Stairs in the enclosed Transferring TSA Screening Gates are provided with one open side, the right side as shown in Figure-N1. Building Levels 2 and 3 are recommended to be smaller from each other and smaller than the main building circle Building Level 1 with 25 meters in radius.

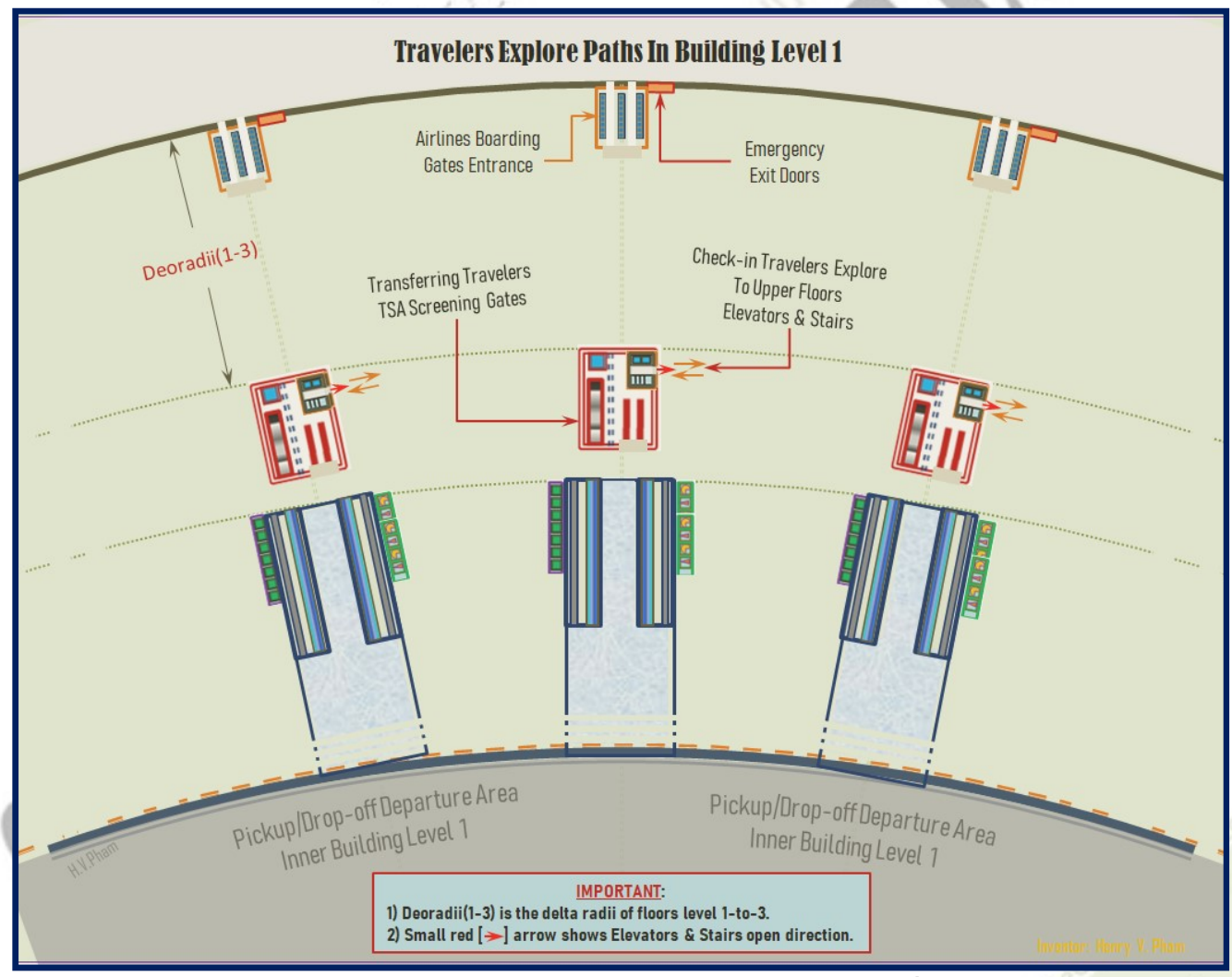


Figure-N1: OH SMART AIRPORT –Building Level 1 Travelers Elevators/Stairs

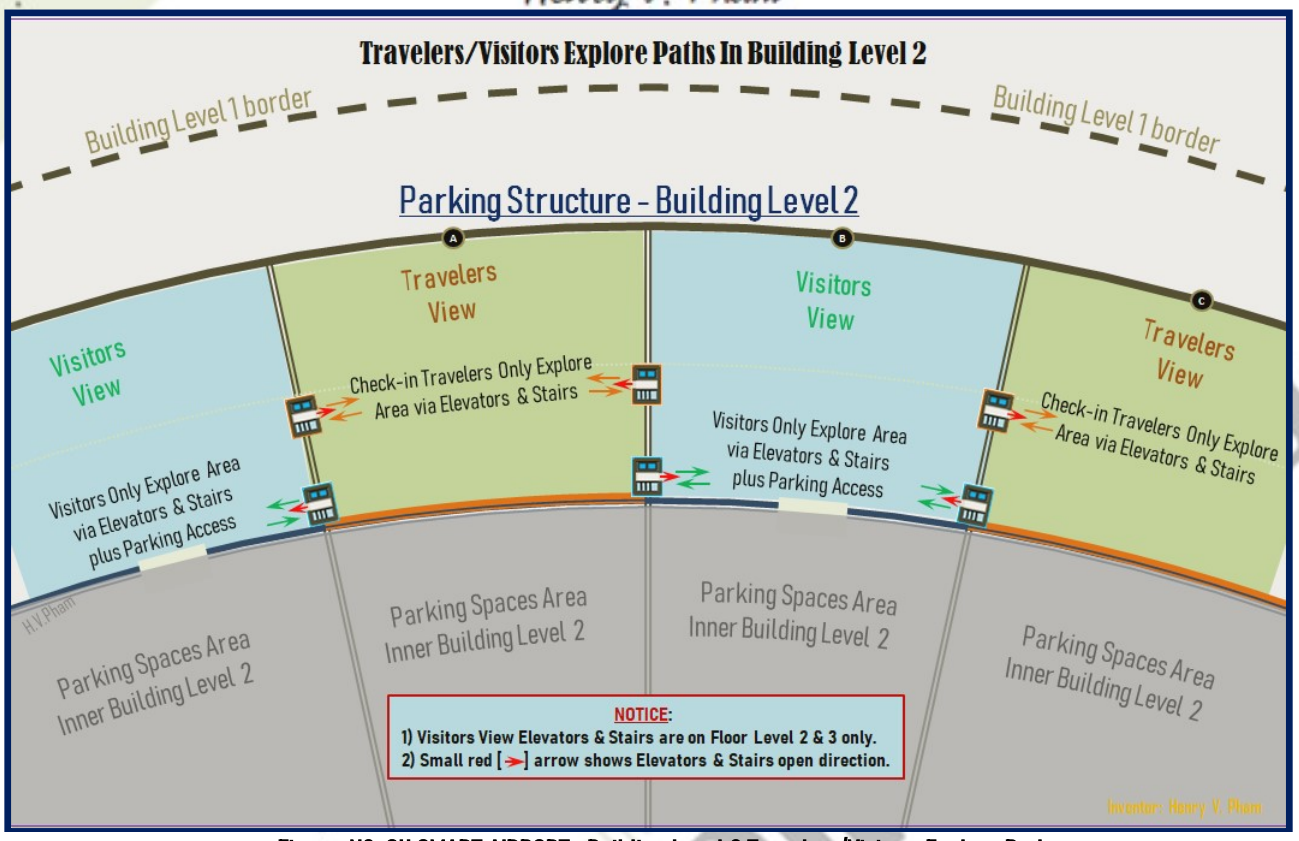


Figure-N2: OH SMART AIRPORT –Building Level 2 Travelers/Visitors Explore Paths

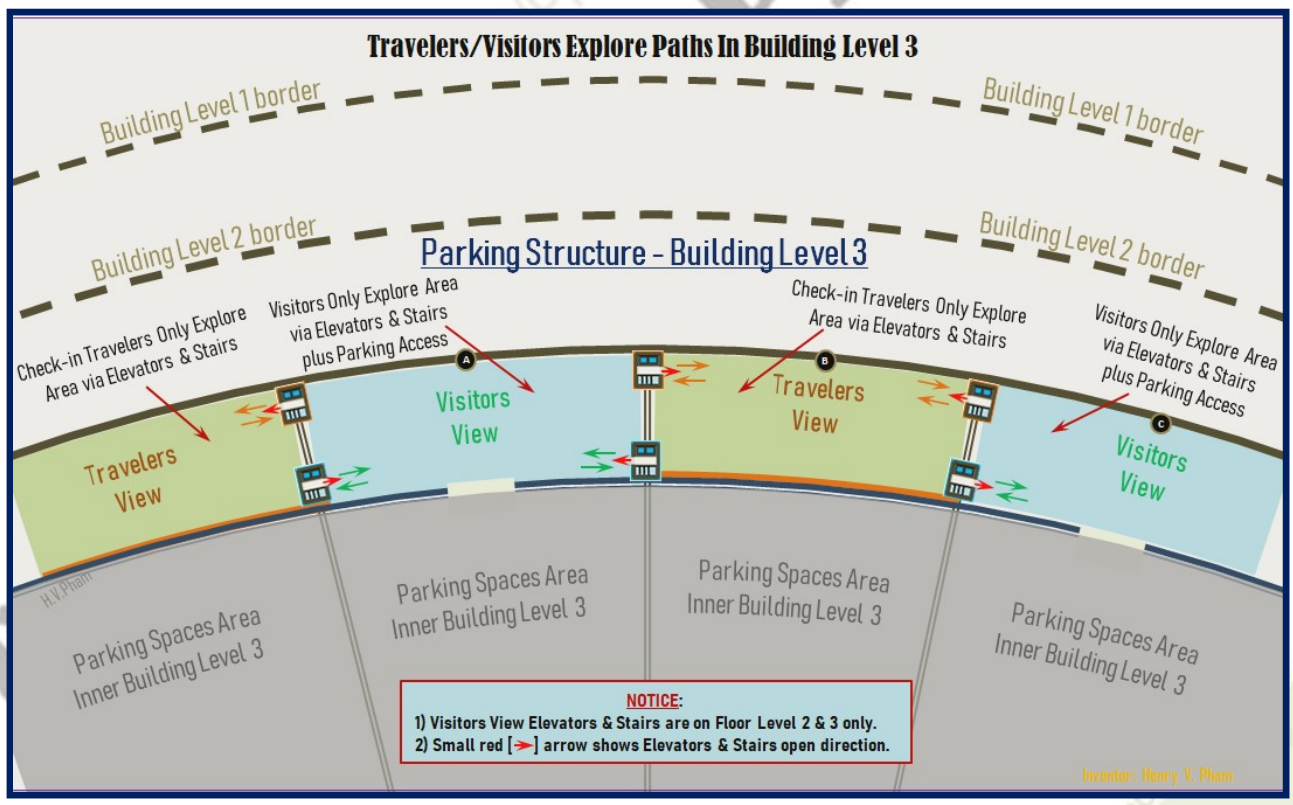


Figure-N3: OH SMART AIRPORT –Building Level 3 Travelers/Visitors Explore Paths

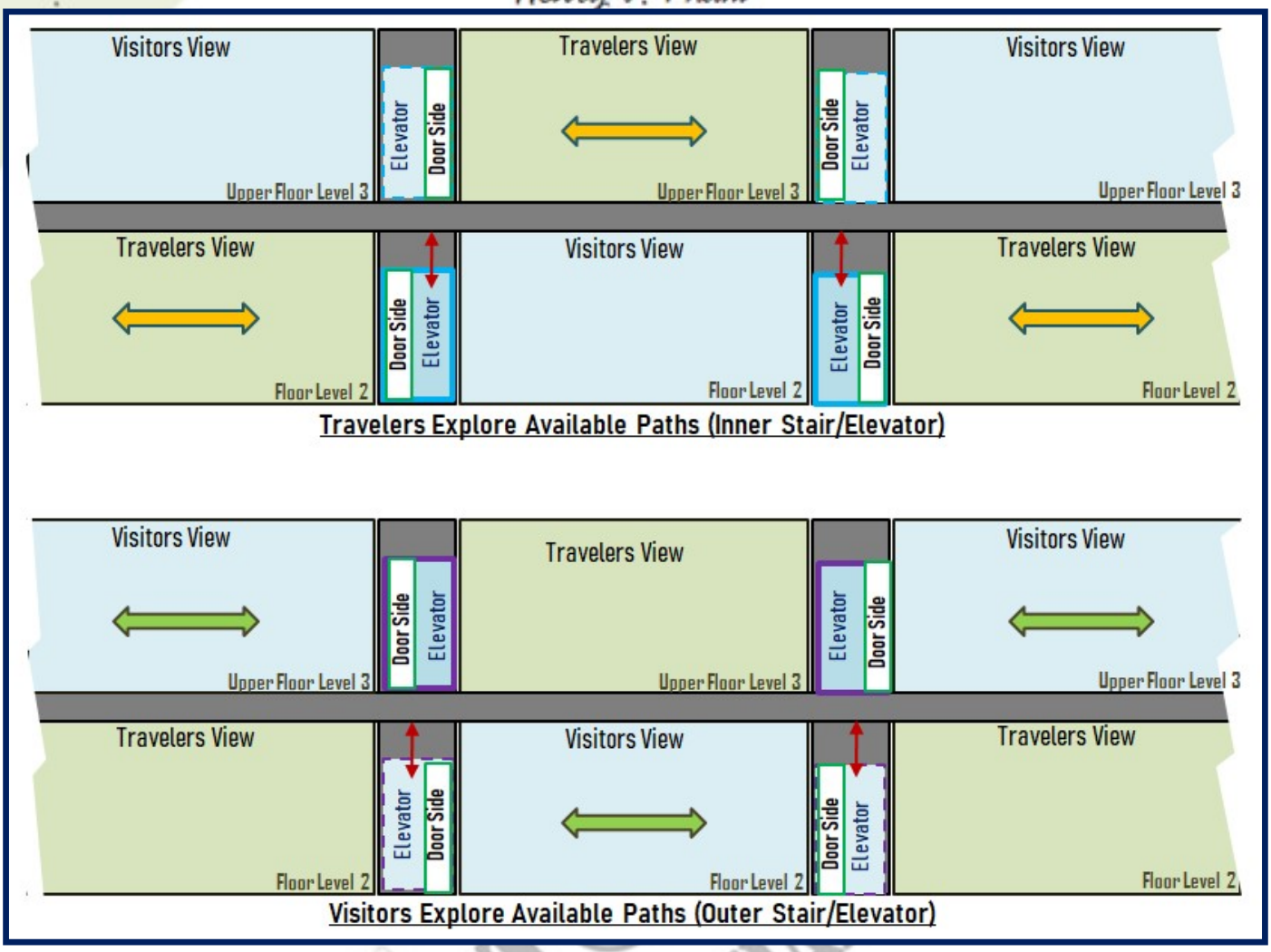


Figure-N4: OH SMART AIRPORT –Building Level 2/3 Travelers/Visitors Explore Paths

The check-in travelers want to explore around the airport after TSA security screening and check-in, they can take the elevators or stairs in the Transferring Travelers TSA section to upper floor which can take straight to Building Level 2 or Building Level 3 depends on the view section where the Elevators open side to. **Figure-N2: OH SMART AIRPORT – Building Level 2 Travelers/Visitors Explore Paths** shows the travelers views on the Building Level 2 with the inner Elevators and Stairs where the arrows showing the direction to the explore viewing room. The travelers sector view labeled 'A' has 2 (inner room) travelers elevator and stair sets that have the arrows showing the open directions to the same view room; and the other 2 (outer room) visitors elevator and stair sets that have the arrows showing the open directions to the other view rooms which are reverted directions for visitors and they can access to the parking anytime. At these views, the travelers and the visitors can see each other but not able to touch which is expected with glass walls or semi-glass walls around the explorer viewing rooms. **Figure-N3: OH SMART AIRPORT – Building Level 3 Travelers/Visitors Explore Paths** shows similar to the Building Level 2 exploring views but in reverted directions or alternately swapped sides of viewing rooms. The traveler sector view labeled 'A' now shows as visitor sector view in Building Level 3. The key here is the Elevator and Stair set having the open side

alternately for both (inner room) travelers Elevator and Stair sets and (outer room) visitors Elevator and Stair sets; and the Elevator and Stair sets are built on the wall that alternately floor to floor. **Figure-N4: OH SMART AIRPORT –Building Level 2/3 Travelers/Visitors Explore Paths** shows the available paths for both travelers and visitors with 2 floors view. Note that the Elevator and Stair sets for travelers are built inner of the explore view ring to provide the travelers explore from the departure Building Level 1 more closer and closer to the edge of the building; and the Elevator and Stair sets for visitors are built outer of the explore view ring.

0. Airport Parking Layout

Airport parking is important that needs to provide enough spaces for the visitors, airline staffs, and airport security personnel. The airport custom and security parking is recommended to build at the Ground Level 2 as shown in the Underground Level 2 section which provides high secured and protection for the airport personnel to get to their workspace safely. The airline staff parking is recommended to build on the Ground Transportation Level as shown in the Underground Transportation Level 1 section.

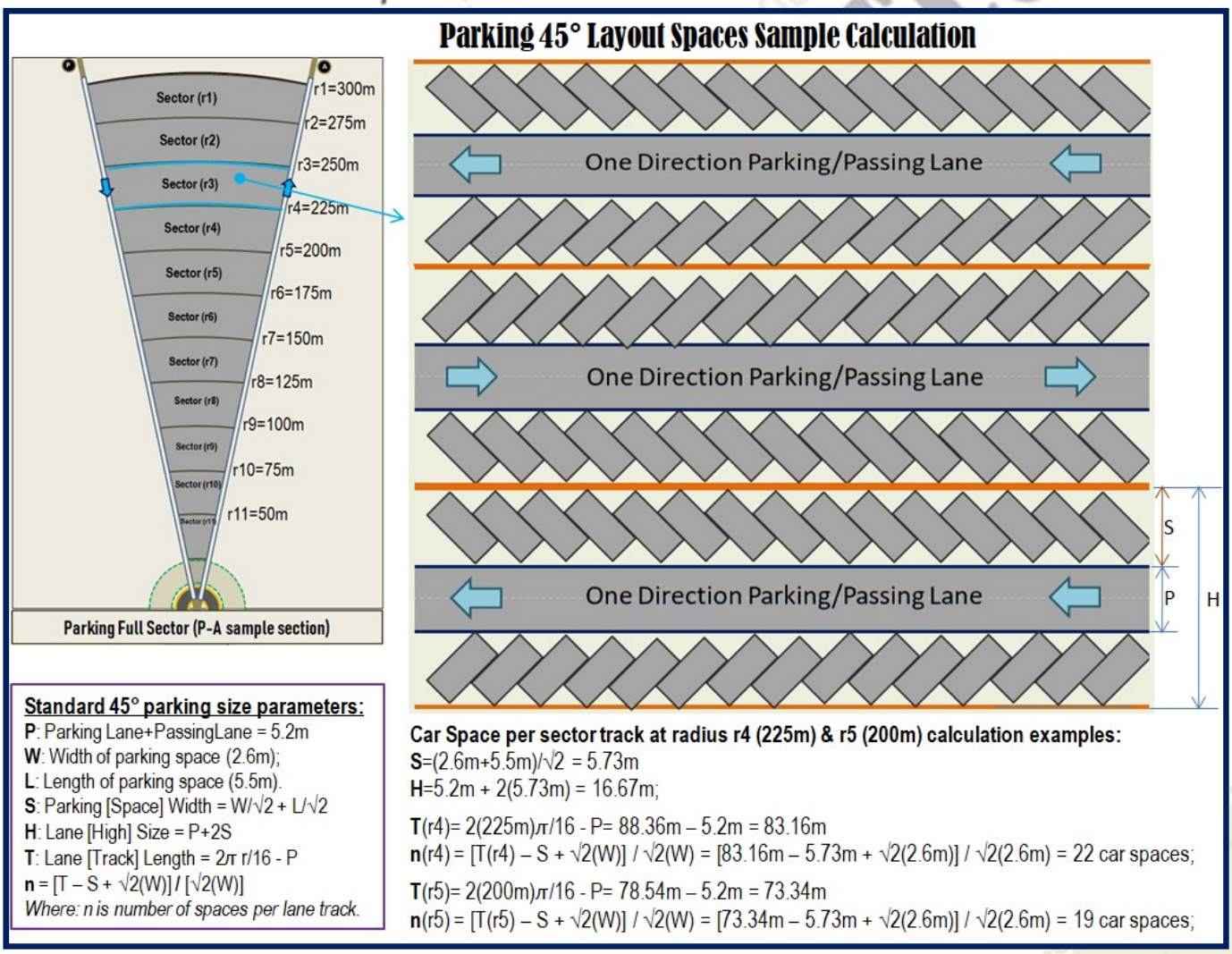
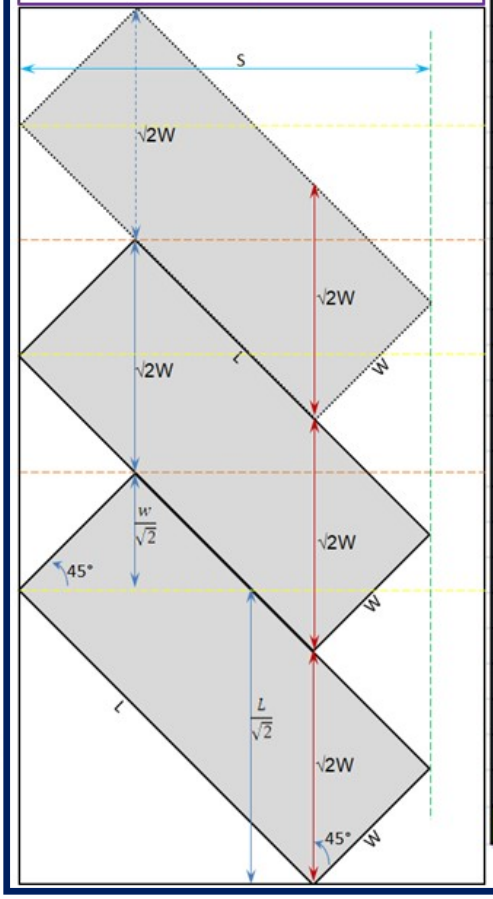


Figure-01: OH SMART AIRPORT – Parking Spaces 45° Recommended Layout

Figure-01: OH SMART AIRPORT – Parking Spaces 45° Recommended Layout shows the parking space in 45˚ degrees layout with alternate parking access driveways with the parking spaces sample calculations. Based on the standard parking space dimension of the width of the parking space 2.6m, length of parking space 5.5m and the parking access driveway 5.2m for the 45˚ degrees layout; the sample calculations show number of car spaces at radius r5 with 200m is approximately 19 car spaces. The total approximate car spaces per parking sector are 503 spaces; with total 16 sectors the total spaces per floor are over 8,000 spaces with eliminated the driveways and other gaps. **Figure-02: OH SMART AIRPORT – Parking Spaces 45° Recommended Layout Sample Calculations** shows the table data grid for parking sectors based on the radius from 300 to 51 meters.

Parking Spaces 45° Layout Sample Calculation by Radius

Standard 45° parking size parameters:
P: Parking Lane+PassingLane = 5.2m
W: Width of parking space (2.6m);
L: Length of parking space (5.5m).
S: Parking [Space] Width = $W/\sqrt{2} + L/\sqrt{2}$
H: Lane [High] Size = P+2S
T: Lane [Track] Length = $2\pi r/16 - P$
n = $[T - S + \sqrt{2}(W)] / \sqrt{2}(W)$
Where: n is number of spaces per lane track.



Radius (m)	Sector Lane (Track) in meter	Car Spaces Per Sector Lane (Track)
300.00	112.61	30
289.07	108.32	29
283.00	105.93	28
272.07	101.64	27
266.00	99.26	26
255.07	94.97	25
249.00	92.58	25
238.07	88.29	23
232.00	85.91	23
221.07	81.61	22
215.00	79.23	21
204.07	74.94	20
198.00	72.55	19
187.07	68.26	18
181.00	65.88	17
170.07	61.59	16
164.00	59.20	16
153.07	54.91	14
147.00	52.53	14
136.07	48.23	13
130.00	45.85	12
119.07	41.56	11
113.00	39.18	10
102.07	34.88	9
96.00	32.50	8
85.07	28.21	7
79.00	25.82	6
68.07	21.53	5
62.00	19.15	5
51.07	14.86	3
Total approximately car spaces per sector for radius (300m-50 m):		503

Notice: The data in table above used approximately H=P+2S=17m

Figure-02: OH SMART AIRPORT – Parking Spaces 45° Recommended Layout Sample Calculations

OH SMART AIRPORT

Henry V. Pham

P. Airport Emergency Paths Layout

Airport is the crowd area and needed high security to protect the airport as well as protecting the people within the airport. For whatever reason in any emergency cases that the airport needs to evacuate and clear the building, OH Smart Airport is invented with circle building to provide the best evacuate the crowd to the safe areas outside of the circle building in shortest walking distance compare to other existing airports. Evacuate the airport personnel from the ATC tower control room and the people on the Coffee Sight Viewer above the Building Levels are also important with the EM Cylinder Helical stairs.

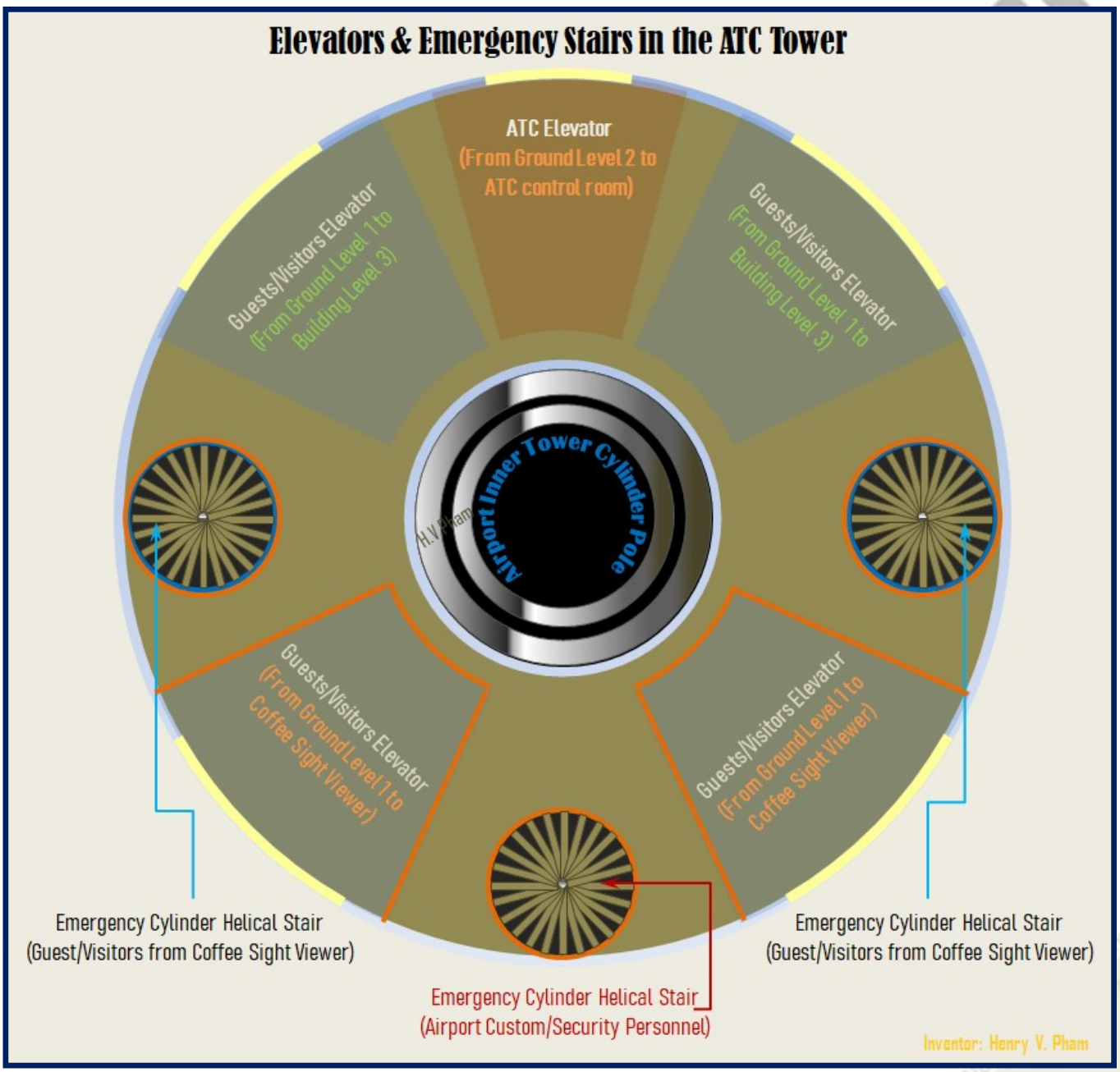


Figure-P1: OH SMART AIRPORT –Elevators & Emergency Stairs in ATC Tower Cylinder Pole

Figure-P1: OH SMART AIRPORT –Elevators & Emergency Stairs in ATC Tower Cylinder Pole shows the layout of the cylinder ATC tower which contains 4 elevators for visitors; where 2 elevators are only allowed to access to and from Ground Transportation Level to Building Level 1, 2 and 3; and the other 2 visitors elevators are allowed with additional access to the Coffee Sight Viewer. However, the 2 visitor elevators with additional access are controllable by the Coffee Sight Viewer team who can trigger a button to disable the upward direction to the Coffee Sight Viewer when the room is full or out of service; note that these elevators are required to provide this feature for the Coffee Sight Viewer to control.

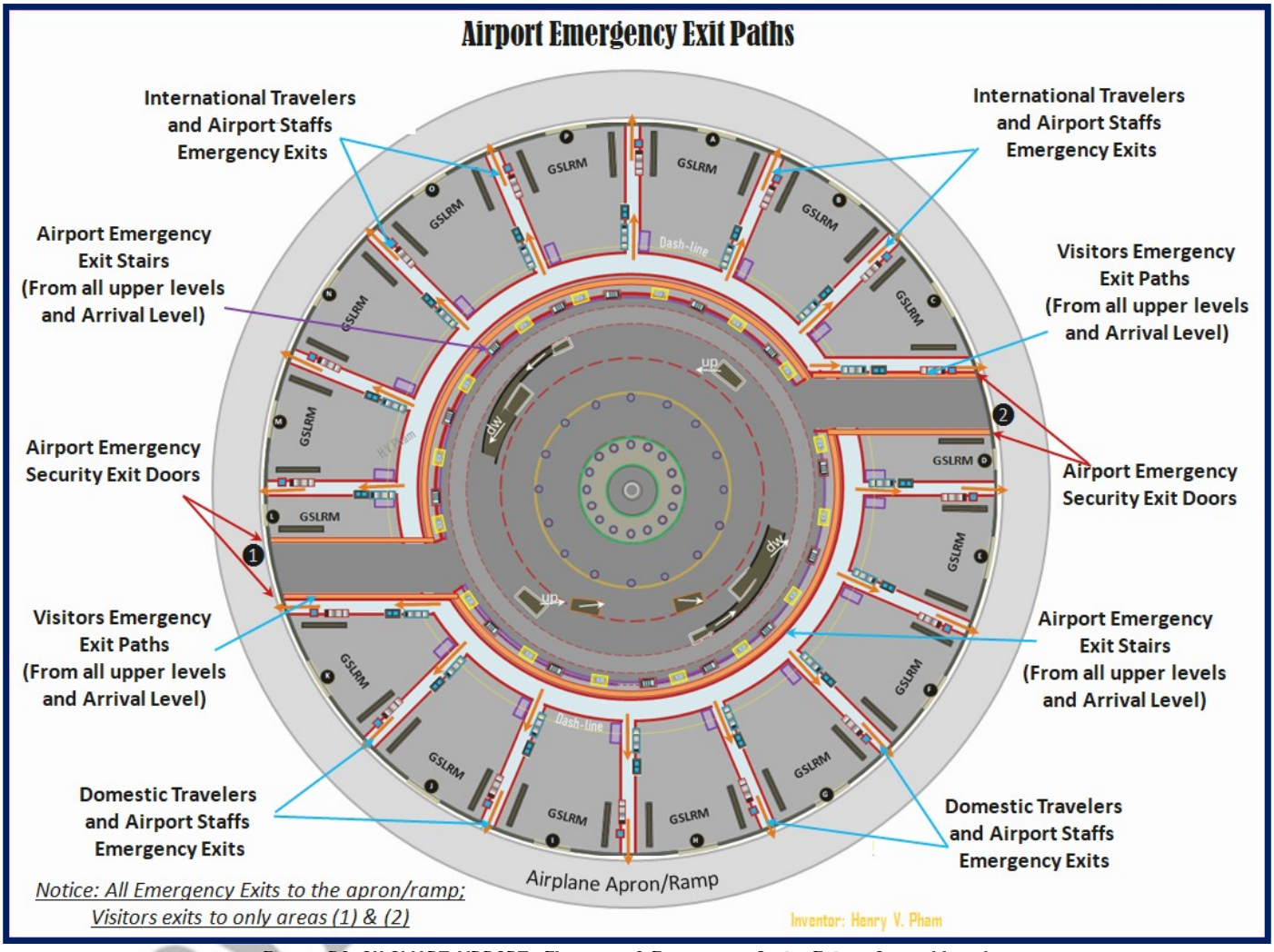


Figure-P2: OH SMART AIRPORT –Elevators & Emergency Stairs Exit to Ground Level

The airport emergency exit paths are important and need to provide the airport with high secured to control and protect for entire airport and the liability for the people. OH Smart Airport provides the emergency paths for visitors to exit into the secured areas labeled (1) and (2) on both sides of the circle building, note that these paths are secured with Airport Emergency Secured Doors; and the check-in travelers can take emergency exit doors right at the boarding Gateways; the airport staffs and arrival travelers within the security areas can exit by the arrival Gateways paths. The airport security team only

needs to secure the areas for the visitors, and the visitors can go back through the emergency paths again from the secured areas labeled (1) and (2) after the emergency alert is cleared; and the travelers can go back to their gates to their lounge areas or luggage checkout areas. Note that the emergency paths are enclosed with walls; when the visitors go back to their areas through the emergency paths, at least one security personnel must be the last person to be a pair inside and outside of the security door on each path to close the security doors and check for any visitors hanging around for security purposes.

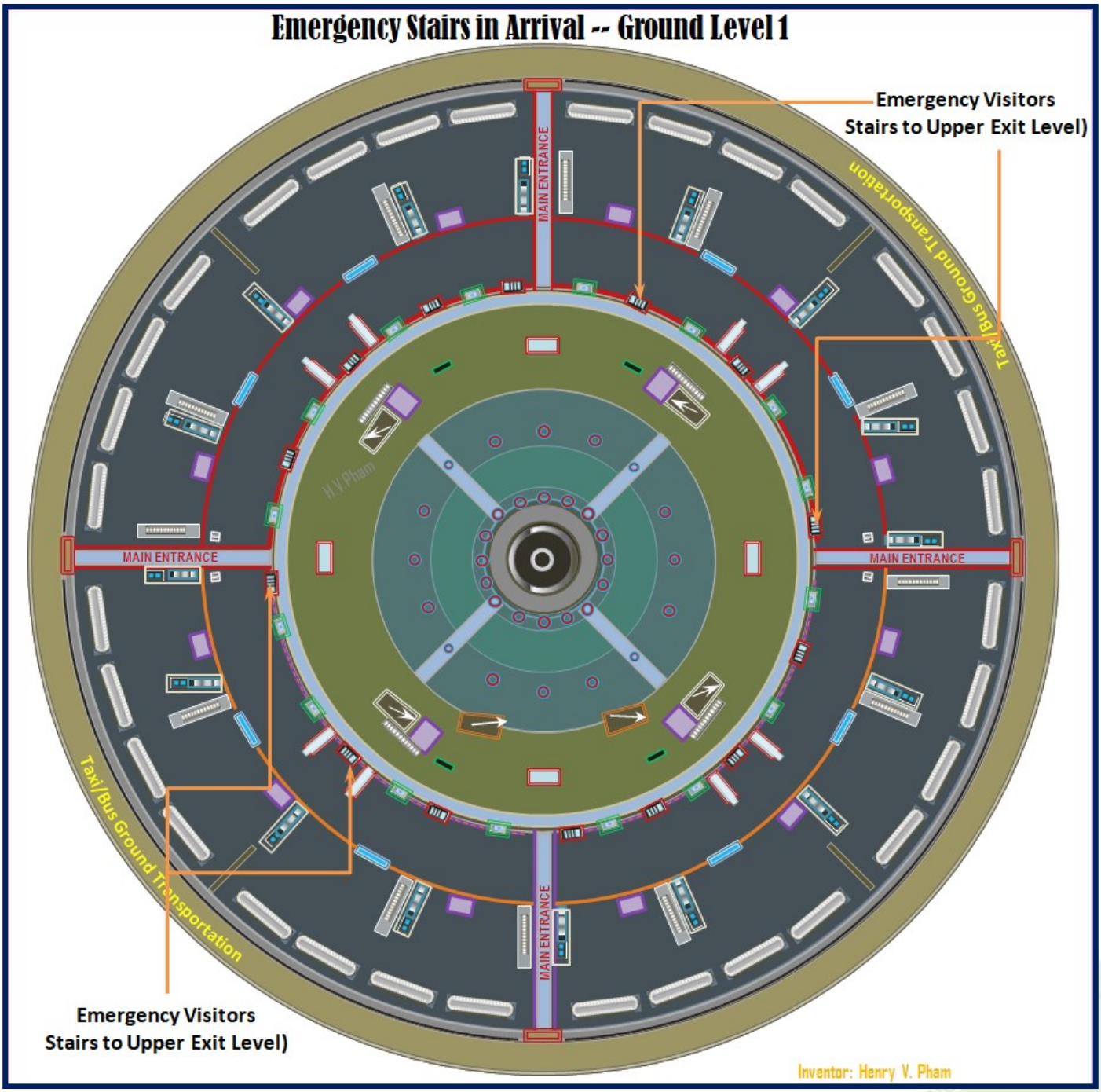


Figure-P3: OH SMART AIRPORT –Emergency Stairs Exit up to Ground Level

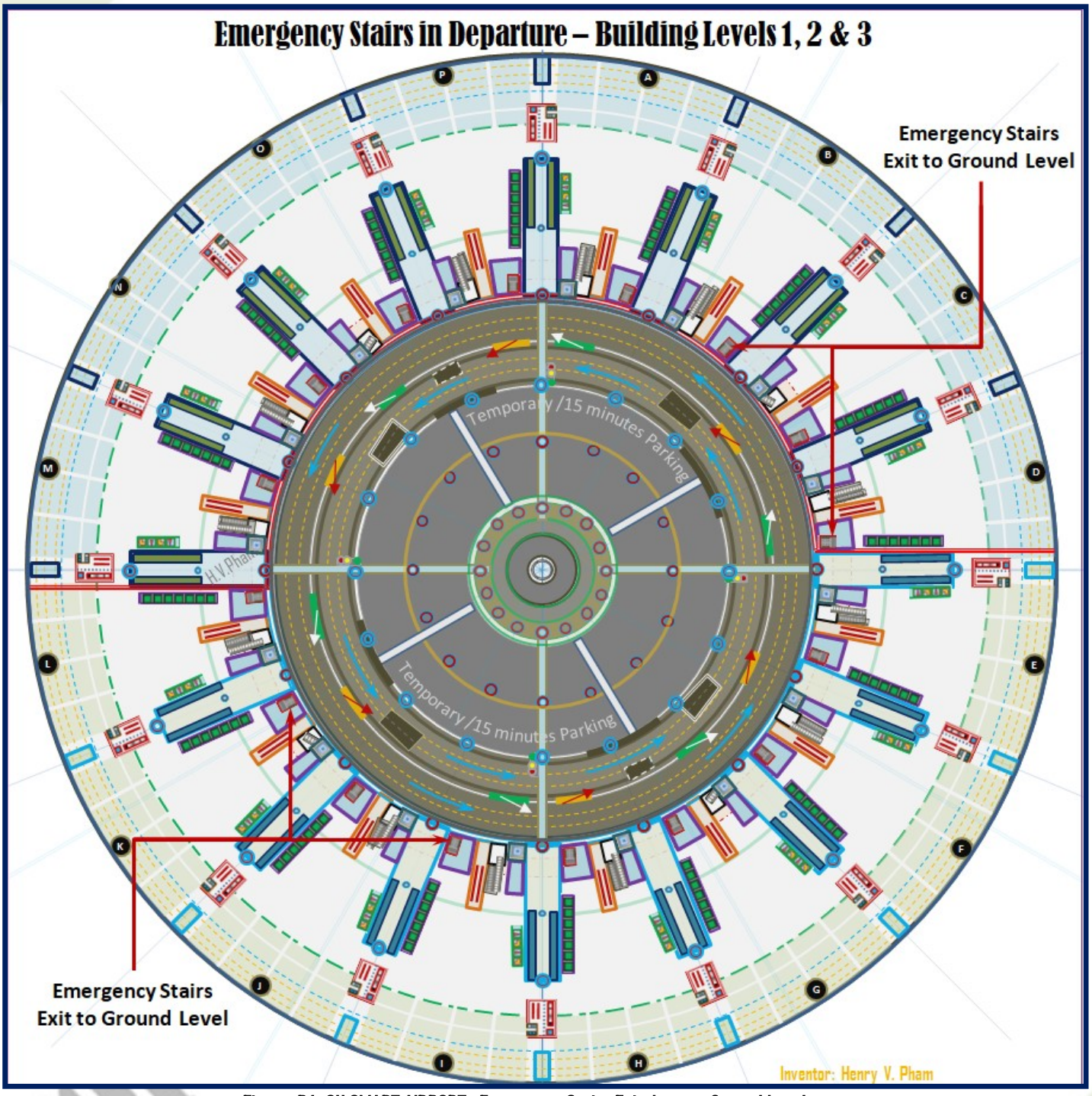


Figure-P4: OH SMART AIRPORT –Emergency Stairs Exit down to Ground Level

When emergency is triggered, the airport police or security personnel needs to use keys to unlock the Emergency Security Doors on both areas labeled (1) and (2) of the airport circle building; then airport security team works with airline staffs to unlock and open the Emergency Doors at the airline Gateways to handle their travelers within their gates; after the airport security personnel unlock the Emergency

Security Doors on both sides of the airport building, the security team inside the building should work with the airport security team outside of the areas labeled (1) and (2) to open the Emergency Security Doors. Note that the Airport Emergency Security Doors are special designed to secure the airport and prevent from unauthorized access; the doors need at least one person on each side and making agreement to open and close at the same time. The airport security team should be equipped with communication devices or walkie-talkie devices to communicate at least on the emergency cases. **Figure-P2: OH SMART AIRPORT –Elevators & Emergency Stairs Exit to Ground Level** shows the emergency paths in orange and orange arrows and the 2 secured areas labeled (1) and (2) emergency paths are always locked with Airport Emergency Security Doors; and there are 4 Airport Emergency Security Doors for both sides of the circle building.

Figure-P3: OH SMART AIRPORT –Emergency Stairs Exit up to Ground Level shows Emergency Stairs from the Ground Transportation Level 1, where the visitors in the waiting area which is used for greeting the arrival travelers. The Emergency Stairs at this level are designed for the visitors to use as an emergency exit through the emergency paths which lead to both sides areas of the circle building. The emergency stairs, from the Building Levels 1, 2 and 3 are shown in one view in **Figure-P4: OH SMART AIRPORT –Emergency Stairs Exit down to Ground Level,** are connected to the same path that lead to the visitors airport emergency path.

Q. Emergency Cylinder Helical Stair & Security Door

OH Smart Airport is invented with circle building to provide the best for Air Traffic Control plus the emergency escape stair for the ATC personnel for critical emergency that may happen. The Emergency Cylinder Helical Stair is invented with secured and compact to fit into small space as possible, in this case it is required to fit into the elevators space along the ATC tower cylinders as shown in **Figure-P1: OH SMART AIRPORT –Elevators & Emergency Stairs in ATC Tower Cylinder Pole.** The Emergency Cylinder Helical Stair, which is shown in **Figure-Q1: OH SMART AIRPORT –Emergency Cylinder Helical Stair** is the stair with the steps around a small pole which can hold by hand inside a cylinder. The cylinder is used to protect from falling out, and the small pole at center is designed as a holder while running down for safety purposes. The floors should have doors with locks to protect and secure the doors from unauthorized access from the lower levels and open by security officer for emergency purposes only. However, the Emergency Cylinder Helical Stair can be built to open on the floor with half open-able cover instead of having a door to save spaces, but this is not recommended for the visitor level at the Coffee Sight Viewer for safety and liability purposes. The emergency stair has no rail and no rail handle requirements since it is inside the cylinder.

The airport emergency exit paths are important and need to provide the airport with high secured to control and protect for entire airport and the liability of the people as mentioned above; the design of Emergency Security Door which required both sides with persons and agreement to open and close at the same time is shown in **Figure-Q2: OH SMART AIRPORT –Emergency Security Door.**

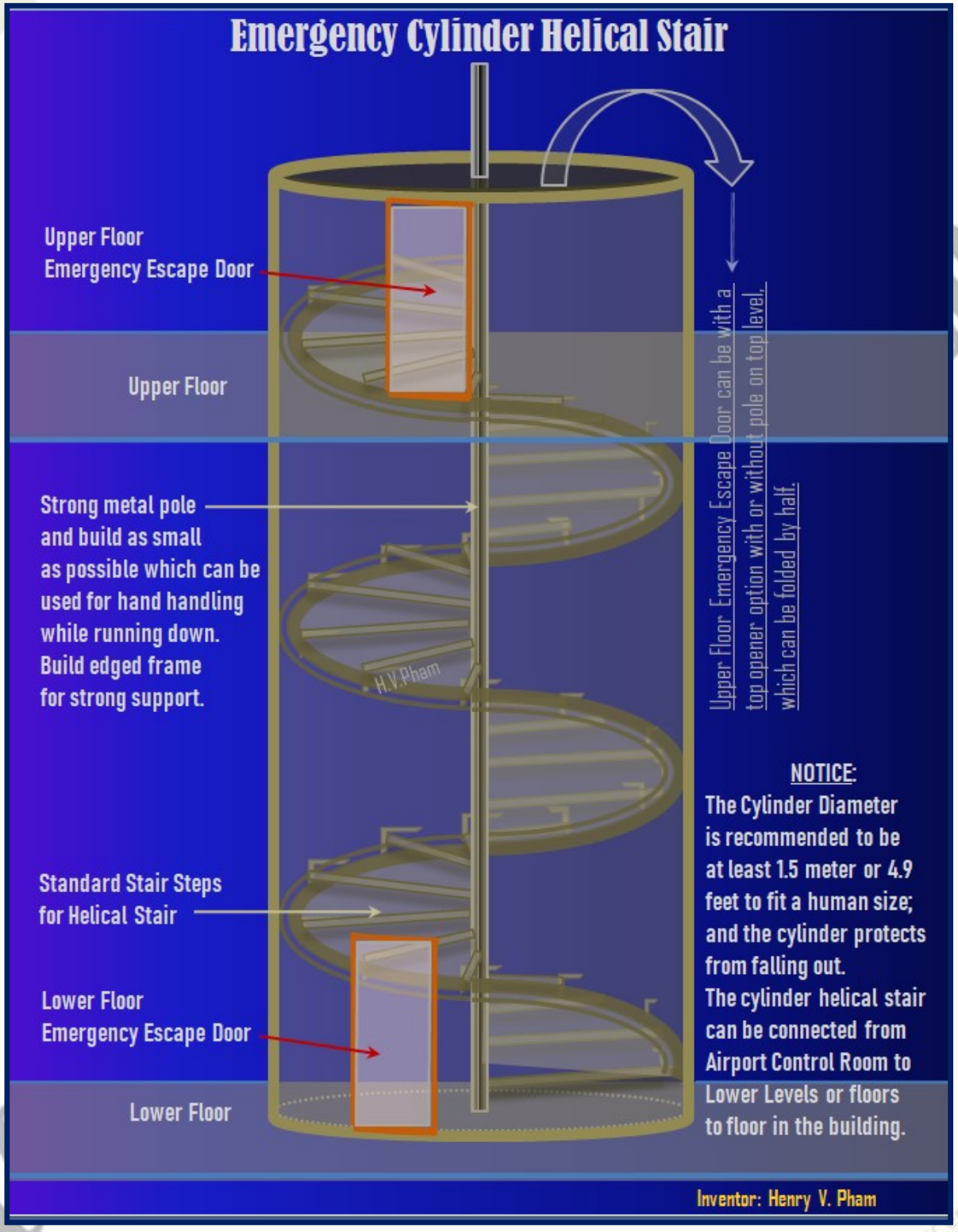


Figure-Q1: OH SMART AIRPORT -Emergency Cylinder Helical Stair

For the airport, the door needs a security key lock with deadbolt which is used by the airport police or airport security officer for emergency purposes only. The door requires both outside and inside doors must have a handle with deadbolt for both sides to hold and open or close at the same time. The doors must be built with strong material and secured keys set with high protection and handle by top airport security personnel. Note that the Emergency Security Doors must be built with deadbolts but not latches.

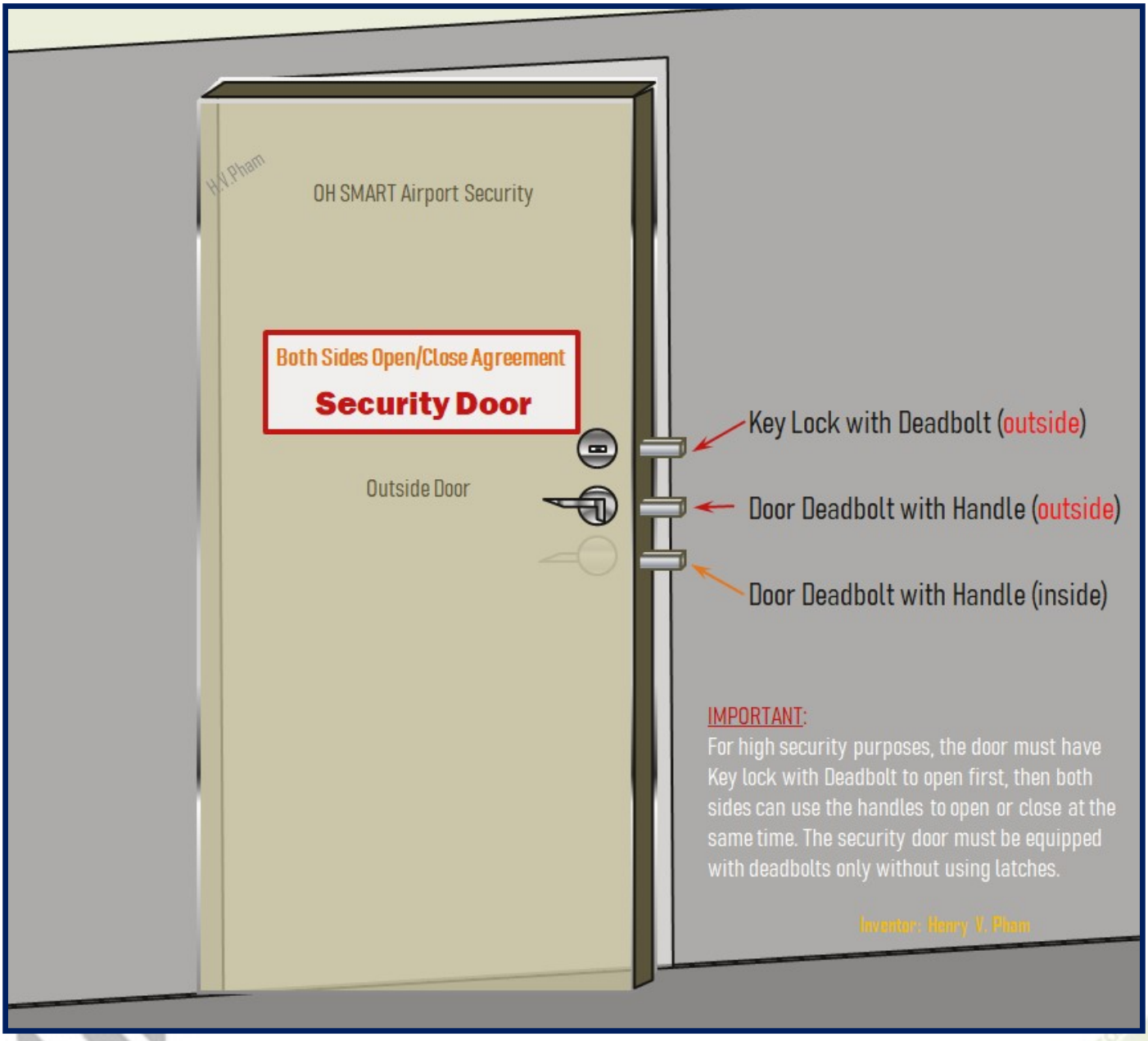


Figure-Q2: OH SMART AIRPORT –Emergency Security Door

OH SMART AIRPORT

R. Smart Cart Gear Belt Exchanger System

Airport traveler Cart Exchanger is also important which is needed to spread out as evenly as possible and safety is also high concerned within the crowd. There is no safe and secured Cart Exchanger system has been found, so the Smart Cart Gear Belt Exchange system is invented along with OH Smart Airport to provide the airport with secured and safe cart exchanger system for entire airport. The Smart Cart Gear Belt Exchanger system requires the luggage carts must have the Cart-to-Cart hook which is used to connect and secure carts together into a carts batch for stocking and restocking one batch at a time for safety purposes. The travelers or users just need to remove the hook for the outer cart to take out a cart for use; this protects the carts from moving down or out uncontrollable and provides safety for the travelers or users. The carts must be built with the Gearbart, along the vertical cart frame, which is used to push on the gear belt for the cart exchanger to pull upward or downward. **Figure-R1: OH SMART AIRPORT – Smart Gear Belt Cart View** shows the carts with Cart-to-Cart hook and the Gearbart.

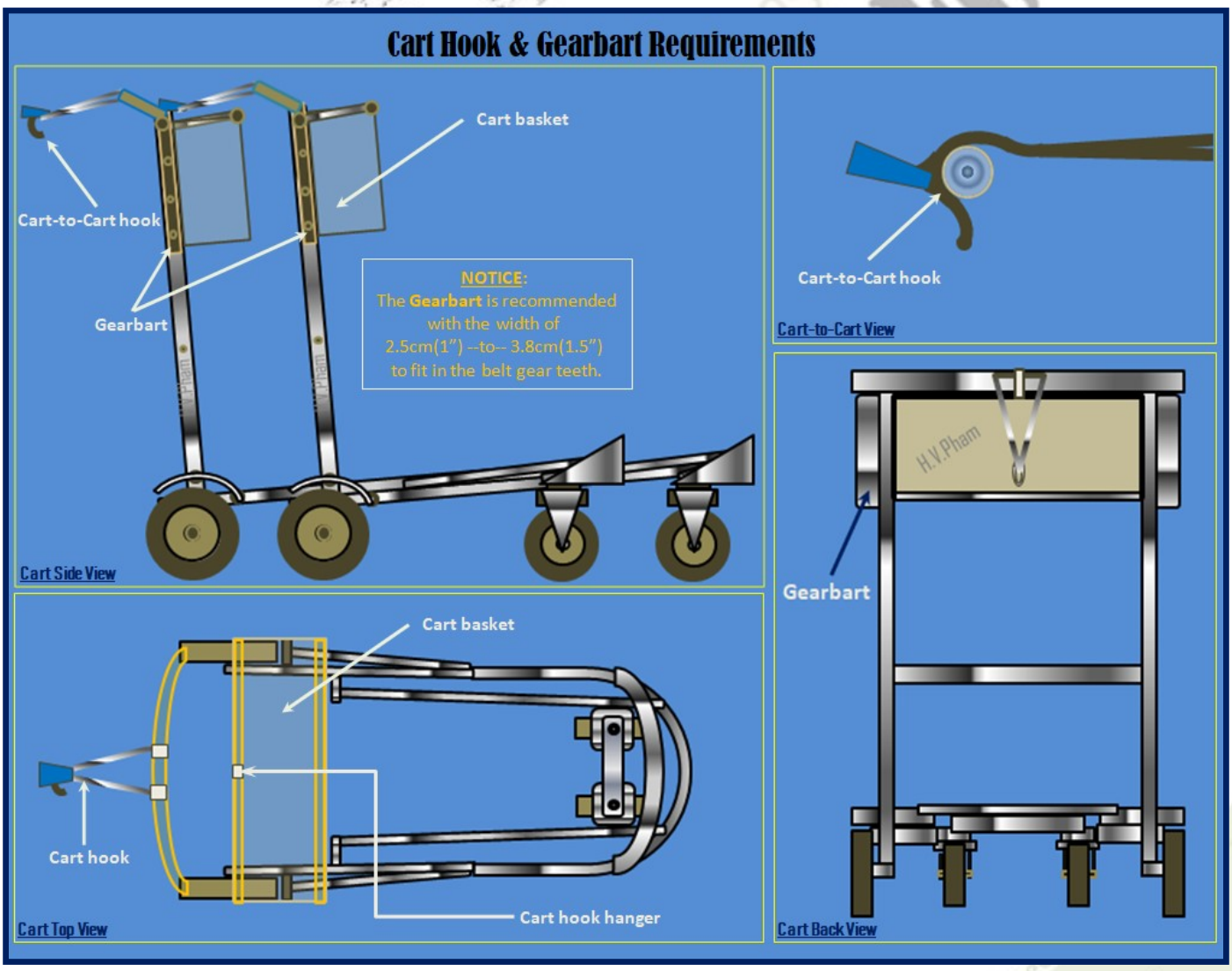


Figure-R1: OH SMART AIRPORT –Smart Gear Belt Cart View

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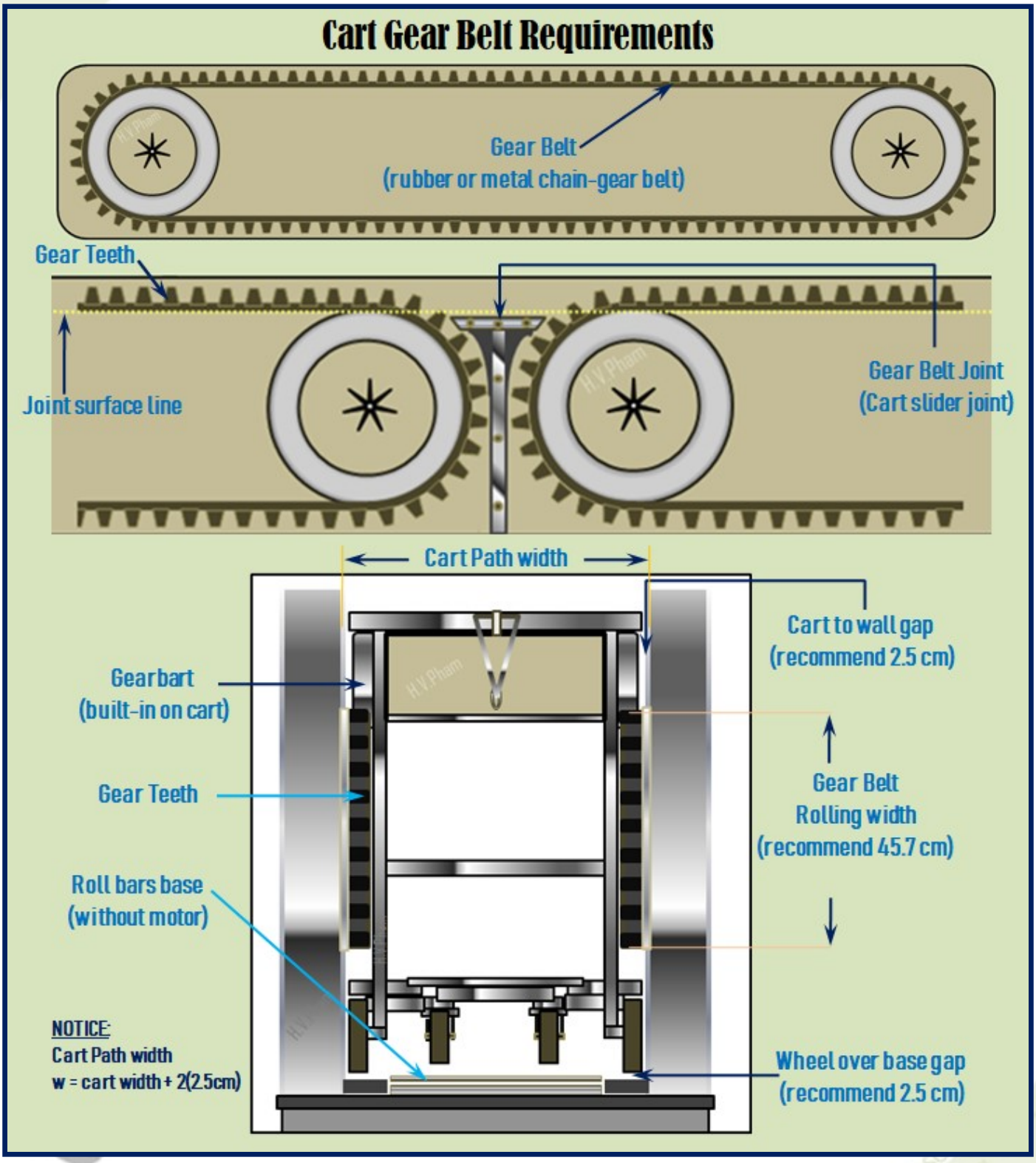

Figure-R2: OH SMART AIRPORT –Smart Gear Belt Cart System View

The Smart Cart Gear Belt Exchanger system requires the system must have gear belt which can be rubber or metal chain with gears, the gears are used to hold the Gearbart of the carts to protect the carts from moving outward or downward when they are not on the flat surface. The cart is recommended with dual wheel standard casters and back wheels with bold threads which is the same direction of the wheel spinning forward to protect the wheels from rolling out; the cart dimension is also recommended with standard size of 41 inches (~105 cm) with the front casters about 6 inches (~15.3 cm) and back wheels around 8 inches (~20.3 cm) diameters; the Gearbart width is recommended with dimension about 2.5 cm to 3.75 cm which is about the size of the cart frame and the height about 5 inches (12.7 cm). The cart gear belts can be extended and jointed with one and another by the Gear Belt Joint or Cart Slider Joint as shown in **Figure-R2: OH SMART AIRPORT –Smart Gear Belt Cart System View.** The Gear Belts are required to install on the cart rolling path so that the cart wheels raise above the cart rolling path base with at least 2.5 cm; note that the cart rolling path base can be smooth flat surface or can be a roller base. The cart path is required to have Cart-to-Wall gap with at least 2.5 cm which can fit the Cart Detection Sensor bar while the cart is moving through the cart path on the Cart Gear Belt; however, the Cart-to-Wall gap can be adjusted or increased if the cart path is not built perfectly straight.

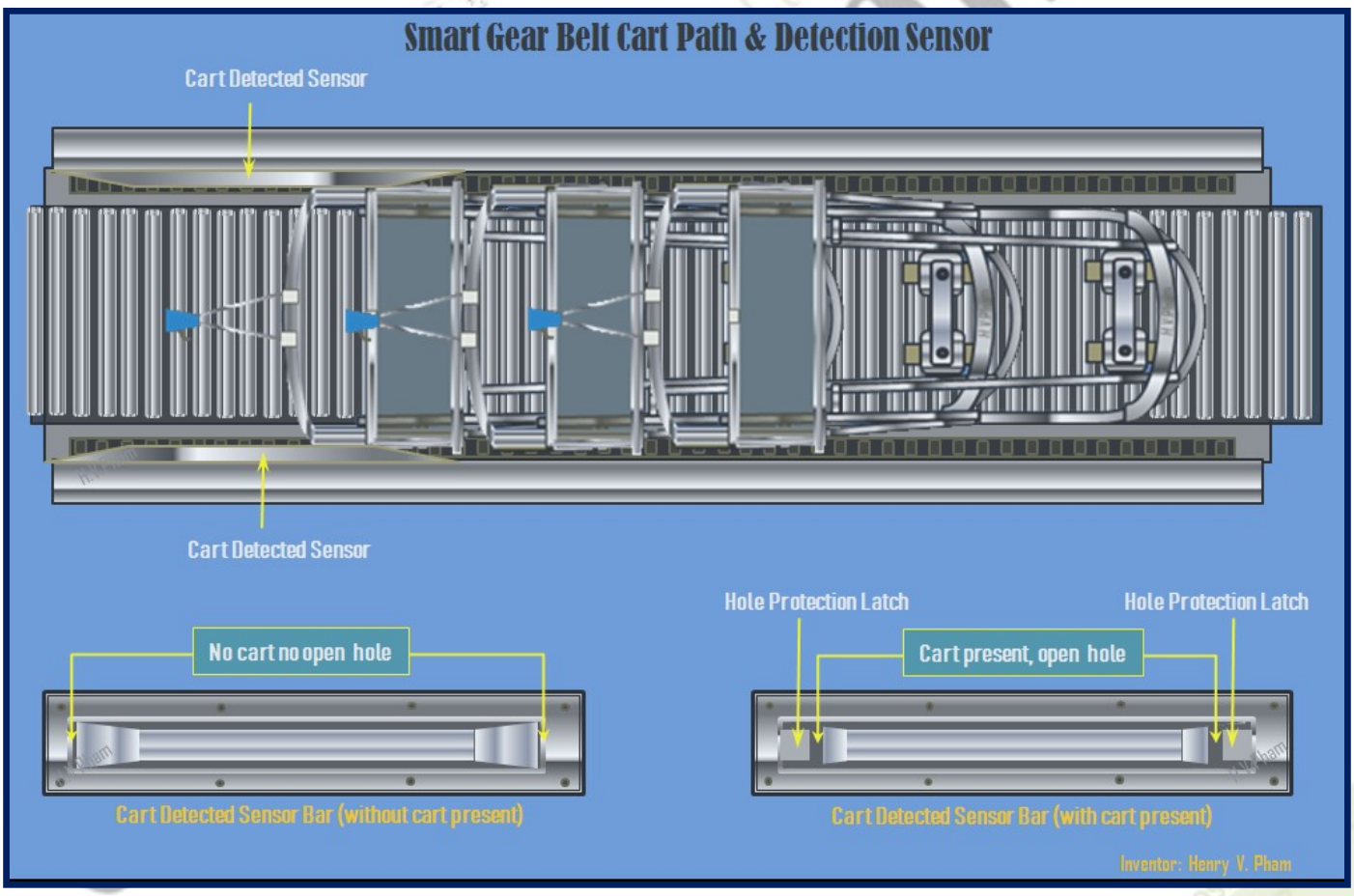

Figure-R3: OH SMART AIRPORT –Smart Gear Belt Cart System Detection Sensor View

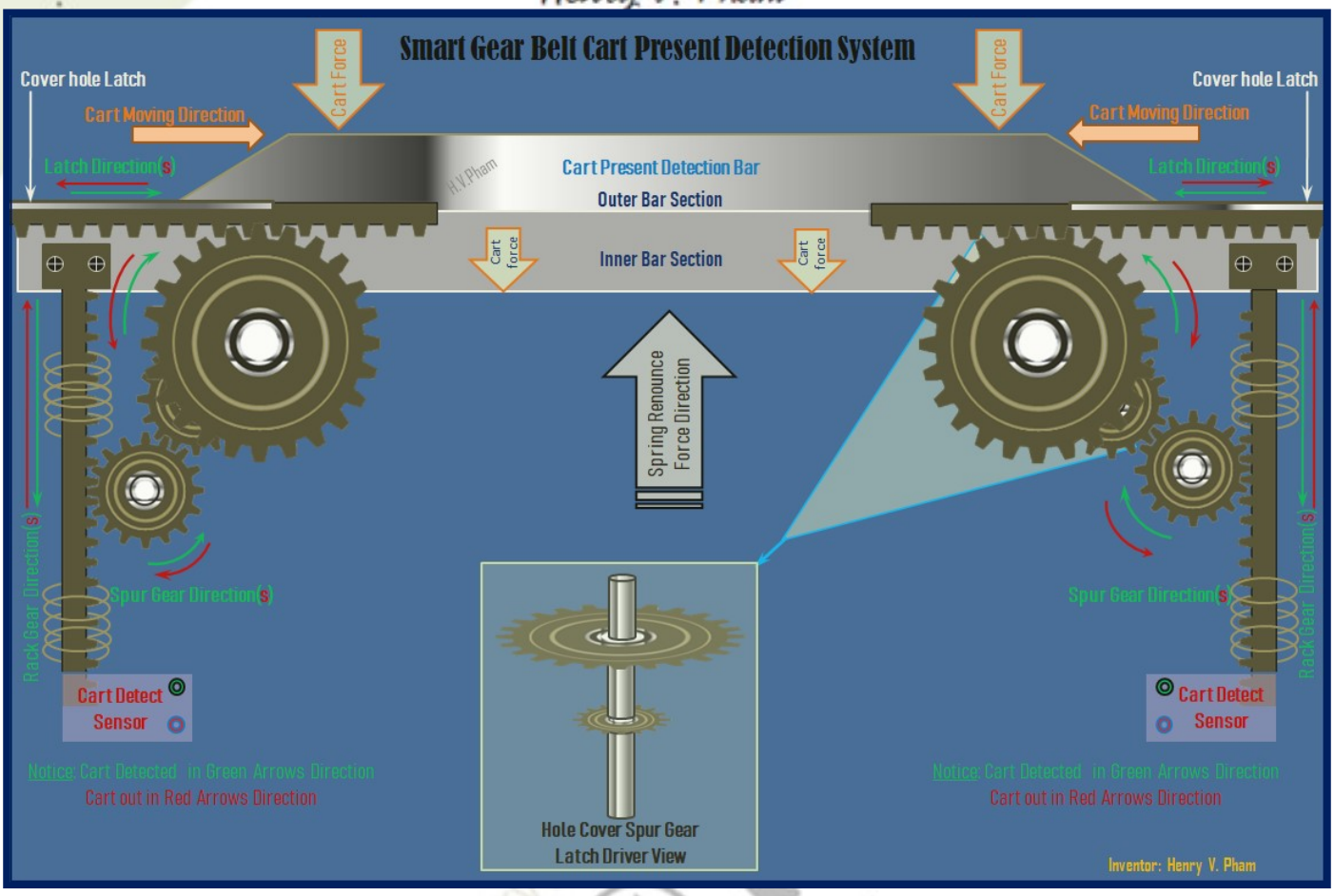

Figure-R4: OH SMART AIRPORT –Smart Gear Belt Cart Detection/Protection Mechanism View

The Smart Cart Gear Belt Exchanger system requires cart detection sensors with at least 2 set of sensors on both sides of the cart path for each cart gear belt section right at the beginning and ending cart gear belt section at the cart gear belt joint. These sensors are used to detect the present of the cart on a cart gear belt section; if the carts are not detected, then the operators can press a button to move the carts batches forward through the empty cart gear belt sections for stocking or restocking. Note that the operators or the carts stocking team do the work to pull the carts stocking up to the carts pool paths at midnight time or at the least crowd time. **Figure-R3: OH SMART AIRPORT –Smart Gear Belt Cart System Detection Sensor View** shows the cart gear belt path with cart detection sensors to detect cart present which is recommended detecting position based on the top part right at the Gearbart of the cart. The cart detection sensor should come with a detection bar, and the bar should look like a trapezoid shape with sliding angles on both sides which allow the carts to pass through easier; these sliding angles leave with a hole on both sides when the cart is on detected, and these holes are recommended to have a holes protection latches which are shown in the design of the cart present detection mechanism in **Figure-R4: OH SMART AIRPORT –Smart Gear Belt Cart Detection/Protection Mechanism View**. The cart detection mechanism is designed with sensors to detect the rack gear bars pushing inward in green arrows directions when cart is present and outward with pushing of the springs when cart is moving out in red arrows directions.

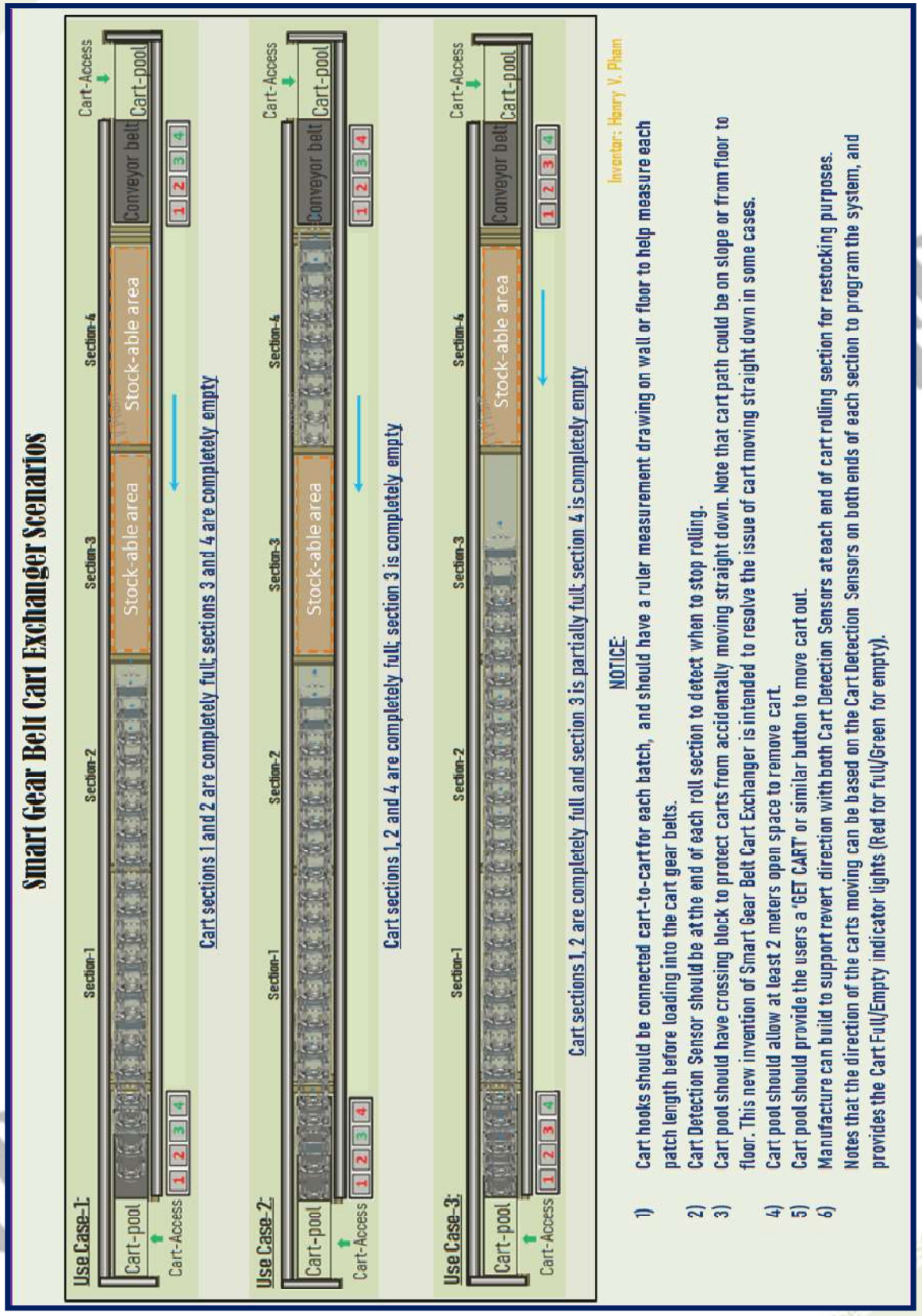

Figure-R5: OH SMART AIRPORT –Smart Gear Belt Cart Exchanger Scenarios View

The cart detection mechanism requires the gear bars which are connected to the inner part of the cart detection bar, and the spur gears which are connected to the holes cover latches. The gear bar spins the spur gear which is connected to the holes cover spur gear driver that comes with double layers gears for force transformation which can be adjusted based on the spring strength to provide enough force to release after covering the holes as shown in Figure-R4.

The Smart Cart Gear Belt Exchanger system requires cart pool on flat surface for access on both ends with controller for both users and operators; the controller should have a separate button on the users or travelers end which allows the users to move the carts out to the pool for access, and a secured separate control panel for the operators to control the carts for stocking or restocking. The cart pool should be long enough to provide spaces for the users to access with an open gate, and the gate should be at least double the length of the cart; and the cart pool should have a crossing lock wall at the end to protect the carts from moving out too far. The cart pool is recommended to have cart access for users or travelers without conveyor belt, and the inner section of the cart pool should be built with a conveyor belt on the flat surface which allows the users to press the button to move the carts out to the cart access gate.

Figure-R5: OH SMART AIRPORT –Smart Gear Belt Cart Exchanger Scenarios View shows the 3 scenarios use cases which the operators may get into while stocking or restocking the carts. Instead moving all carts out of the cart path and restock all at once; this Smart Cart Gear Belt Exchanger system provides the cart detection sensors on both ends of the cart gear belt section, and the system can be programmed to rotate the gear belts for the empty section only plus the gear belts for the stocking sections. Use-case 1 in Figure-R5 shows empty sections 3 and 4 that the operators can stack in the carts in batch press the button to move the carts batch in all the way to fill the empty sections; note that the carts batch is recommended stacked in or hooked in carts with number of carts to have a maximum length equals to the length of the gear belt section. Use-case 2 shows only empty Section 3, and the operators can stack in the carts batch and put on the gear belt to fill the empty as a normal situation. Use-case 3 shows the cart Section 3 with partially full, the system should be able to detect based on the sensors from end-to-end of the carts gear belt sections and not allow the cart Section 3 to spin the gear belt; note that the carts batch is recommended to stack-in with number of carts to within a cart section to reduce gaps and for safety purposes. The Smart Cart Gear Belt Exchanger system should provide controller with the lights indicators to show which cart section is full or empty. Note that the cart path, from the departure Building Level 1 to the arrival Underground Building Level 2, is one-way downstream cart stocking and restocking path for security purposes.

S. Airplane Rescuer System

OH Smart Airport is invented with airplane rescuer to rescue airplane stuck landing wheels which is the common airplanes crashed or get fire while landing. The airplane rescuer system requires the airplane rescuer running in circle railroad around the airport until reaching the same speed of the landing airplane with the recommended radius of at least 3.75km or 7.5 km diameter. The Rescuer home position is recommended to be on top at 12 O'clock with at least 250 meters inside the circle railroad as shown in

OH SMART AIRPORT

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Figure-S1: OH SMART AIRPORT –Rescuer Home Location Calculation Method. The recommended calculations for the rescuer home position and the railroad from and to circle railroad at 10:30 O'clock and 1:30 O'clock which is lying on the magic square ABCD of the circle that was already shown in **Figure-C1: OH SMART AIRPORT – Foundation Layout**.

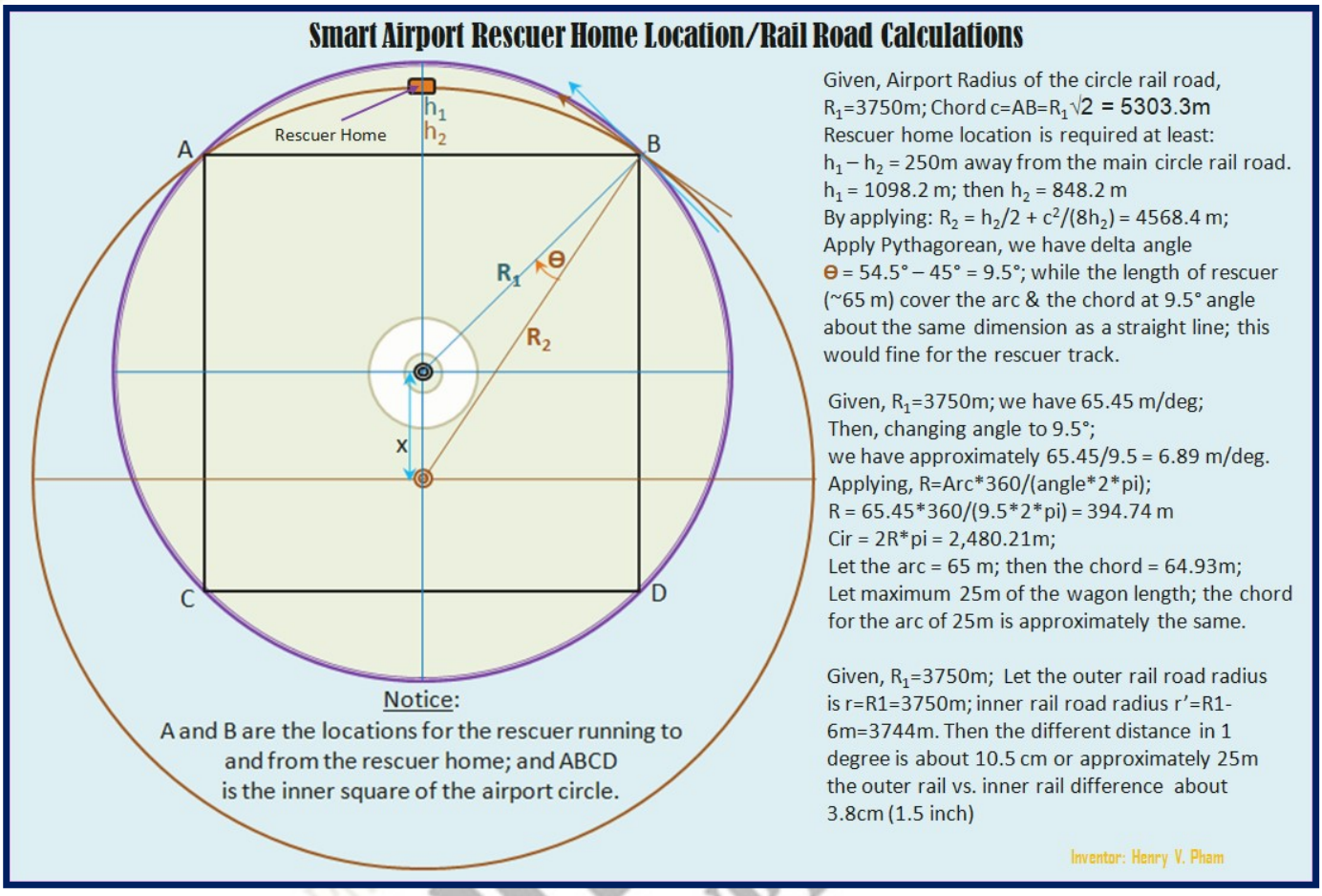

Figure-S1: OH SMART AIRPORT –Rescuer Home Location Calculation Method

The Airplane Rescuer is recommended to build like train with drive head vehicle, sensor pilot positioning vehicle, front catcher connected vehicle, main rescuer vehicle and back catcher connected vehicle. The drive head vehicle is recommended with 10 meters long and used for rescuer team to control speed and the system; and with at least one seat for a person on the back with back-view to communicate with the ATC personnel and the pilot while rescuing. The sensor pilot positioning vehicle is recommended with at least 15 meters long; this vehicle should be equipped with cameras, airplane following with sensors lights indicators pole and airplane nose following pole. The front catcher connected vehicle is recommended with at least 15 meters long; this vehicle should be equipped with at least 2 catcher curved beds. The main rescuer vehicle is commended with at least 25 meters long; this is the main catcher vehicle with the Wings Catcher base which should comes with 2 middle catcher beds, 4 catcher bars with at least 2 powered rubber drive wheels and 2 rubber balanced wheels with electric powered rail wheels on each vehicle as shown in **Figure-S3: OH SMART AIRPORT –Rescuer Home Base Layout**. The back catcher connected vehicle is recommended with at least 20 meters with at least 2 catcher curved beds.

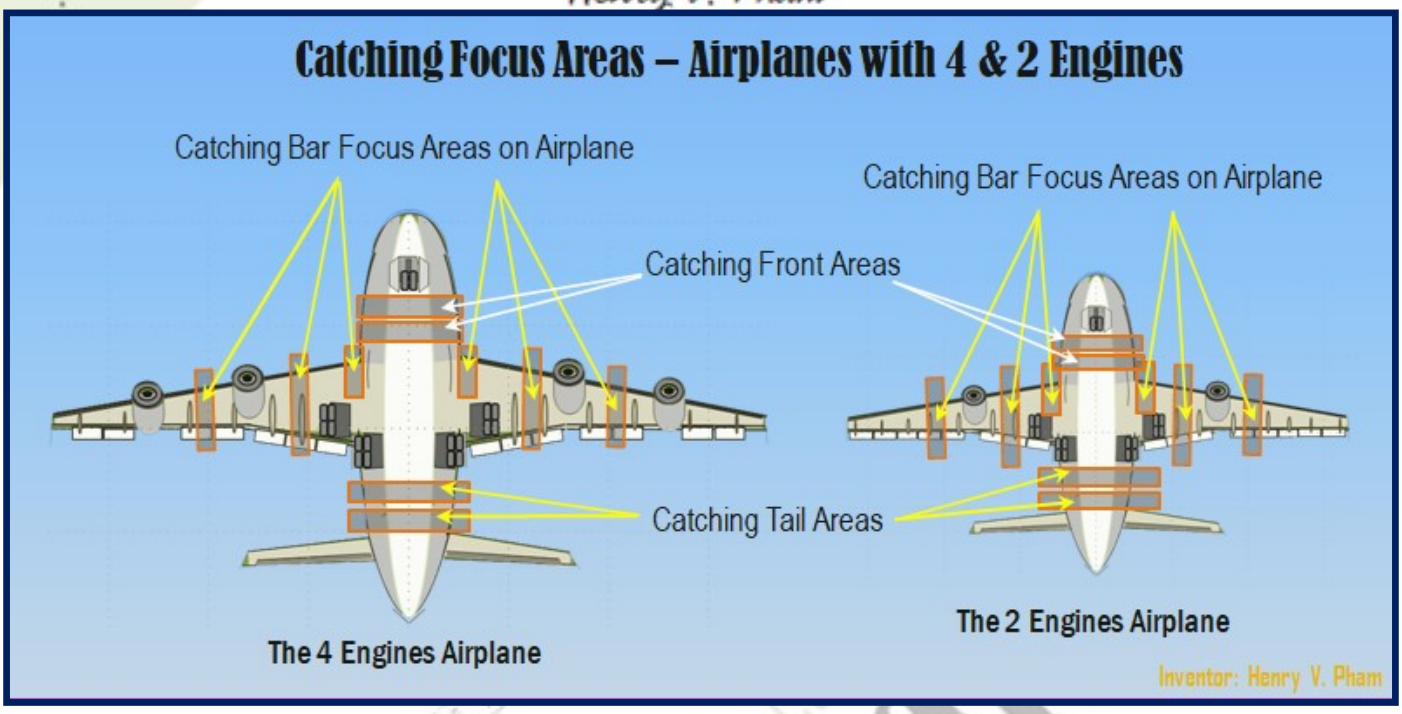

Figure-S2: OH SMART AIRPORT –Catching Focus Airplane Areas

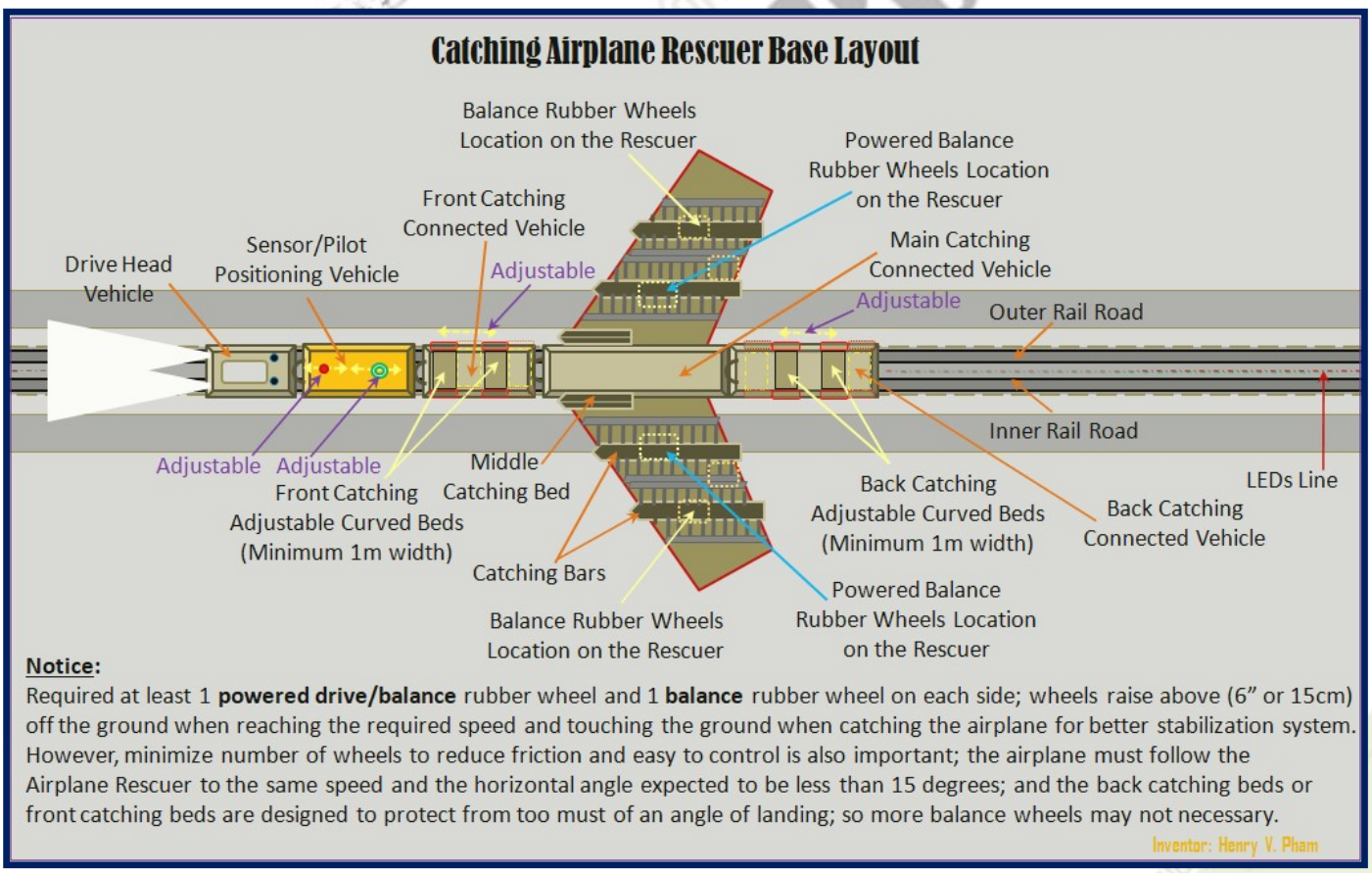

Figure-S3: OH SMART AIRPORT –Rescuer Home Base Layout

For better Airplane Rescuer development and support, this invention is based on the common Boeing 747 airplane size with 4 engines, which is similar to some Airbus airplanes, to build the rescuer with adjustable airplane following indicators, Catcher Beds and Catcher Bars to support most of the airplanes without having to remove or replace the equipments or components of the Airplane Rescuer. The common areas of the 2 engines and 4 engines airplanes are needed to focus for catcher with beds and bars are shown in **Figure-S2: OH SMART AIRPORT –Catching Focus Airplane Areas.** Note that the middle catcher bars (beds) right at the airplane body should be shorter than other catcher bars; the airplane back wheels are closer to the airplane body that needs spaces to eliminate dangerous touching on wheels.

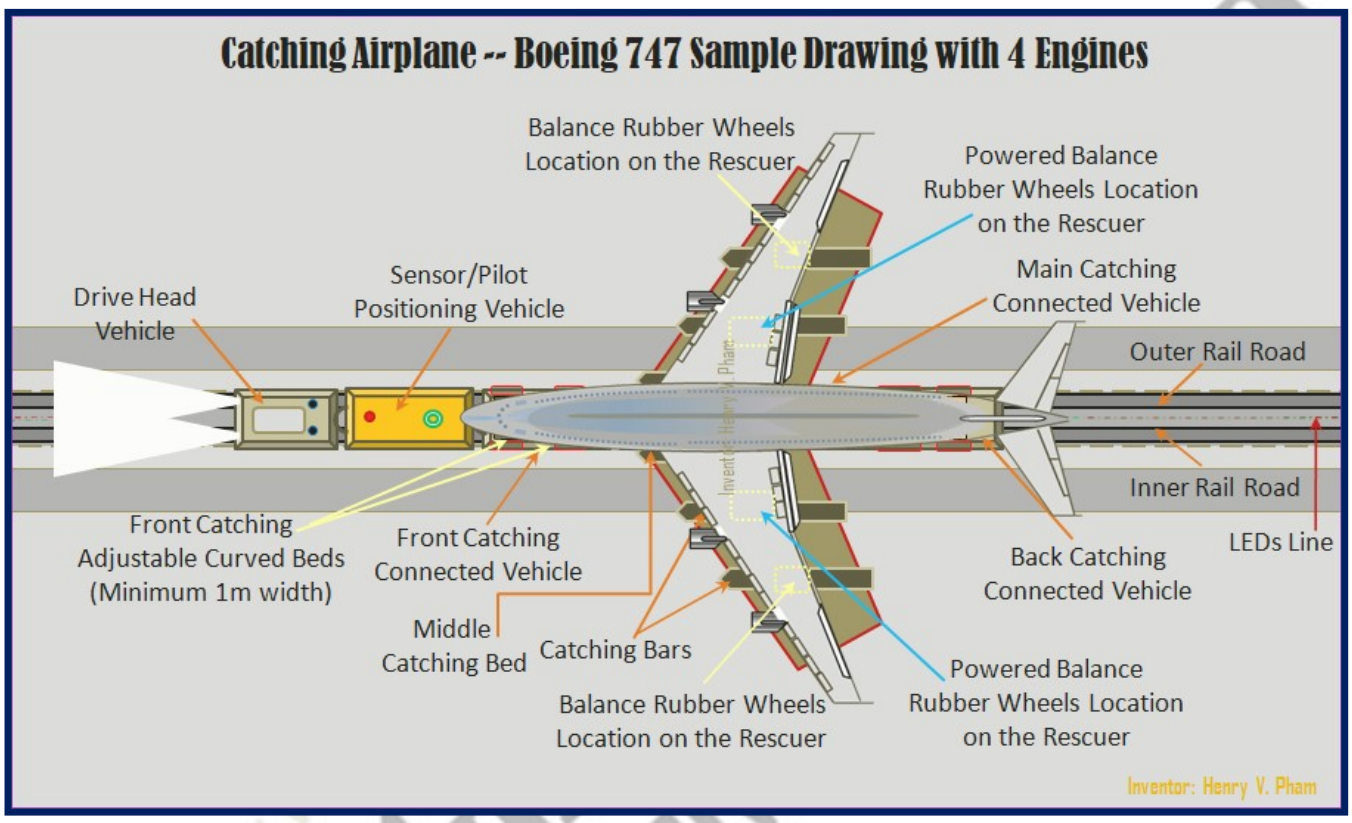

Figure-S4: OH SMART AIRPORT –Rescuer Catching 747 Airplane 4 Engines Sample Drawing

Before the rescuing, the ATC officers and the pilot should already been communicated and planed with the rescuer team to setup and prepare the Airplane Rescuer. The airport should be in a warning mode; the high powered cameras and lights drum should be operated to follow the Airplane Rescuer right after the rescuer starts running out at 10:30 O'clock. The Airplane Rescuer should be prepared the catcher bars on both wings sides, catcher beds on both front and back, and the airplane nose following and indicators poles to the correct positions of the airplane as designed. The Airplane Rescuer needs to run on the circle railroad to reach the speed of the airplane stuck landing wheels with all power drive wheels on the vehicles with the powered rubber wheels while the other outer rubber balanced wheels are raised 6" (15 cm) above the ground. When the Airplane Rescuer maintains the required speed for landing, all the rubber wheels are recommended to raise 6" (15 cm) above the ground to keep the entire Airplane Rescuer include the airplane nose following and indicators poles in stabilization state; the pilot can able to

follow the Airplane Rescuer better and more accurate with all the sensors and indicators are stable. The airplane following indicators should have multiple levels which indicate following mode, then touching mode; the airplane nose following pole should be adjust for the desired rescuing airplane size, the pilot can follow the nose following pole for better landing. After the pilot and the rescuer team are well communicated and controlled with signals to land, then the pilot can start landing on the Airplane Rescuer by lower the airplane to the correct catching positions which have been correctly following as designed with the same speed and keep the airplane horizontal as possible. The Airplane Rescuer should lower the rubber wheels when the airplane is touching the rescuer to keep the airplane and the entire Airplane Rescuer balance. After the airplane is landing completely on the rescuer, the rescuer can start slow down and ready to get back to the rescuer home at 1:30 O'clock; note that the railroad connectors at 10:30 O'clock and 1:30 O'clock are controllable to make the Airplane Rescuer run out and get back to the rescuer home. When the airplane is safely rescued, the passengers are needed to un-boarding and their luggage are needed to unloading right at rescuer home; however, if the rescuer home hangar could not able to un-boarding and unloading inside the rescuer home, then recommend to un-boarding and unloading right before entering the hangar. Note that the rescuer home can be more than one for convenience and able to rescue other airplanes while the rescuer home is not ready for repair or for other services. **Figure-S4: OH SMART AIRPORT –Rescuer Catching 747 Airplane 4 Engines Sample Drawing** shows the sample of the Airplane Rescuer rescuing a 747 airplane with 4 engines; and **Figure-S5: OH SMART AIRPORT – Rescuer Catching 737 Airplane 2 Engines Sample Drawing** shows the sample of the Airplane Rescuer rescuing a 737 airplane with 2 engines.

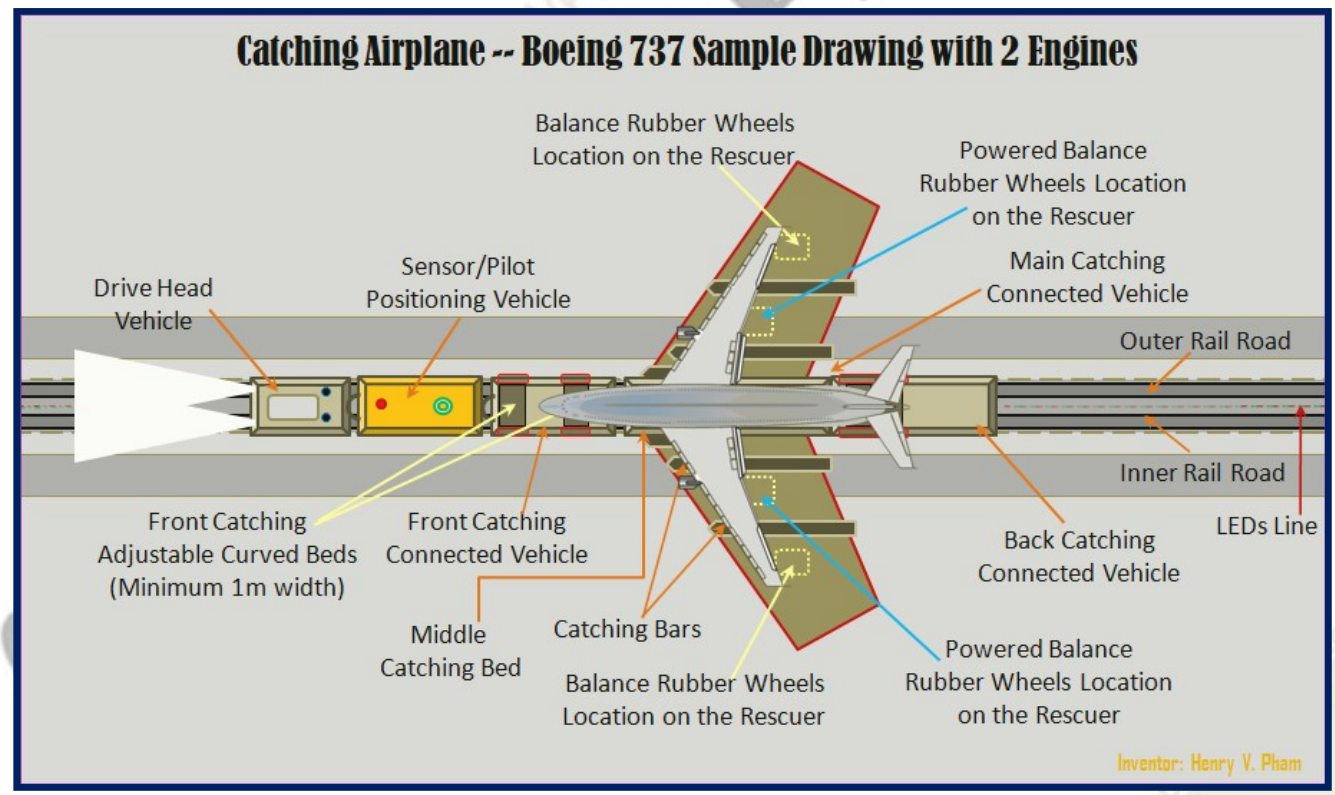

Figure-S5: OH SMART AIRPORT – Rescuer Catching 737 Airplane 2 Engines Sample Drawing

The Airplane Rescuer home is recommended to build in a hangar, one of the strongest shapes in large scale which can cover and handle repairing big airplanes. **Figure-S6: OH SMART AIRPORT –Rescuer Hangar Home – Top View** shows a sample top view of the rescuer home in hangar shape which can provide heavy duty lift up and unload system.

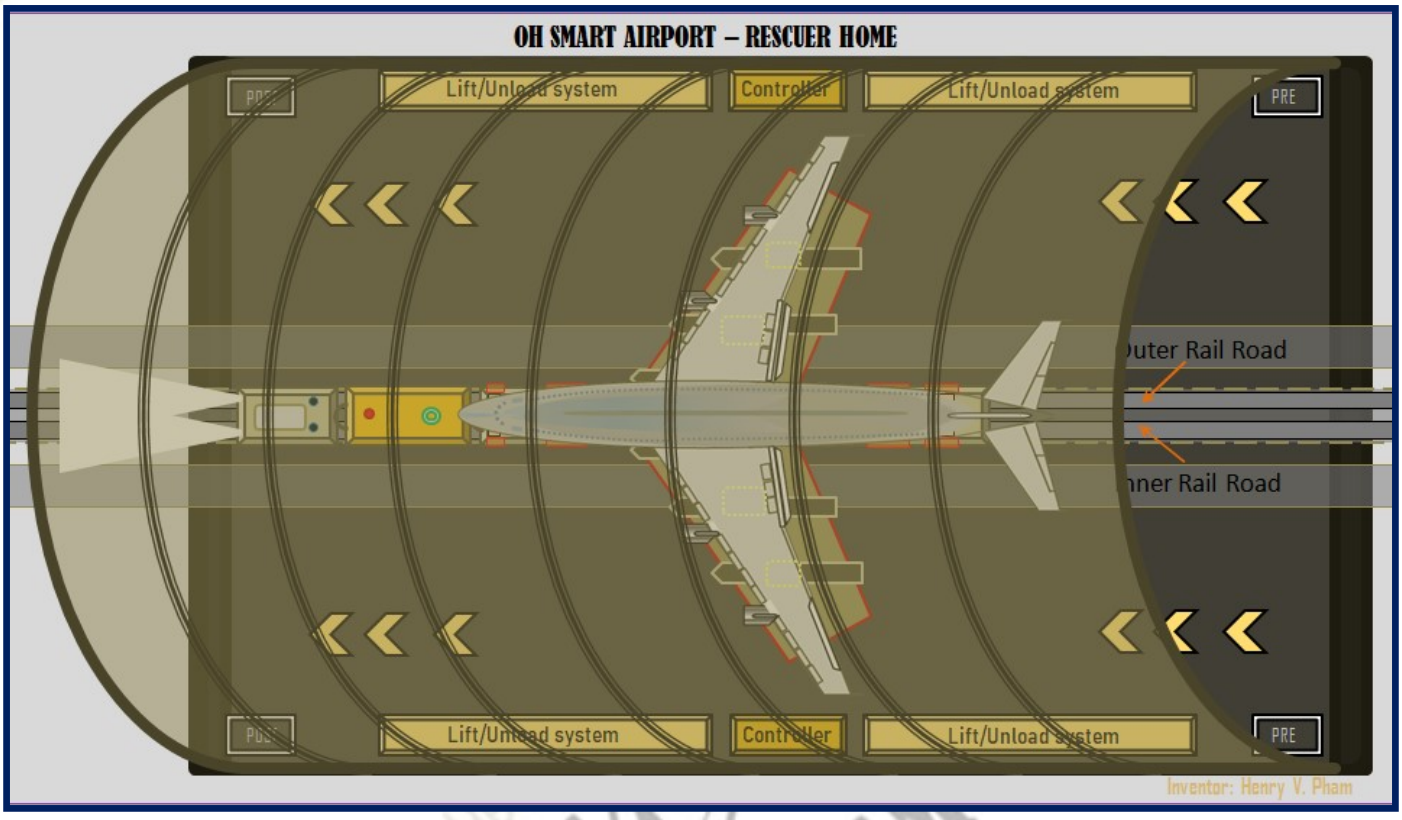

Figure-S6: OH SMART AIRPORT –Rescuer Hangar Home – Top View

The Airplane Rescuer is recommended to build big enough to handle common 747 airplane size which has the wingspan up to 70 meters, the length more than 70 meters and the body width about 6 meters; which requires the front catcher connected vehicle, main rescuer vehicle and back catcher connected vehicle long enough to hold the common big airplane. The circle railroad is required to be double railroads with total of 4 tracks, and each railroad separates about 2 meters which requires the rescuer vehicles with the width of approximately 6 meters, and the rescuer vehicles should have dual Electric Powered Rail Wheelset bogie on both sides. **Figure-S7: OH SMART AIRPORT – Rescuer Catching 747 Airplane 4 Engines -- Side View** shows rescuer vehicles with the airplane following poles and Airplane Catcher Adjustable Beds; the catcher beds should be at least 1 meter width, 30 cm thick with rubber layer on top and curved to fit most common airplanes for front and back catcher vehicles. The Airplane Catcher Adjustable Beds on the main vehicle should be shorter but long enough to at least half of the airplane wing length along the airplane body, and the curved shape should fit the bottom of the common airplanes at the front of the wings. The Wings Catcher base should have the shape similar angles with the common airplane wings and wider; the base should not too high and must be strong to hold the airplane on both wings with Catcher Bars which are raised and adjustable by the Gear Scissor Lifting System.

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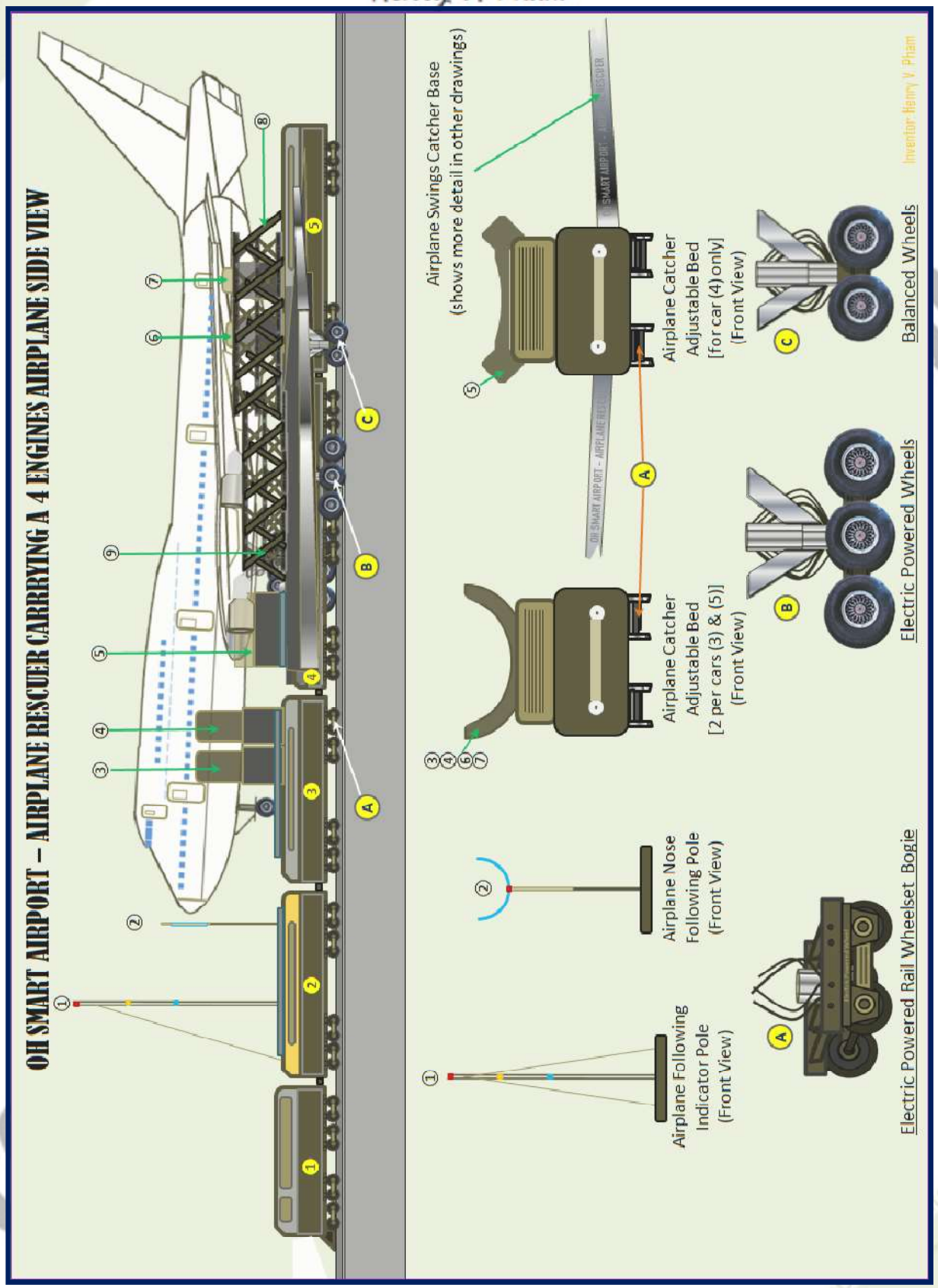

Figure-S7: OH SMART AIRPORT – Rescuer Catching 747 Airplane 4 Engines -- Side View

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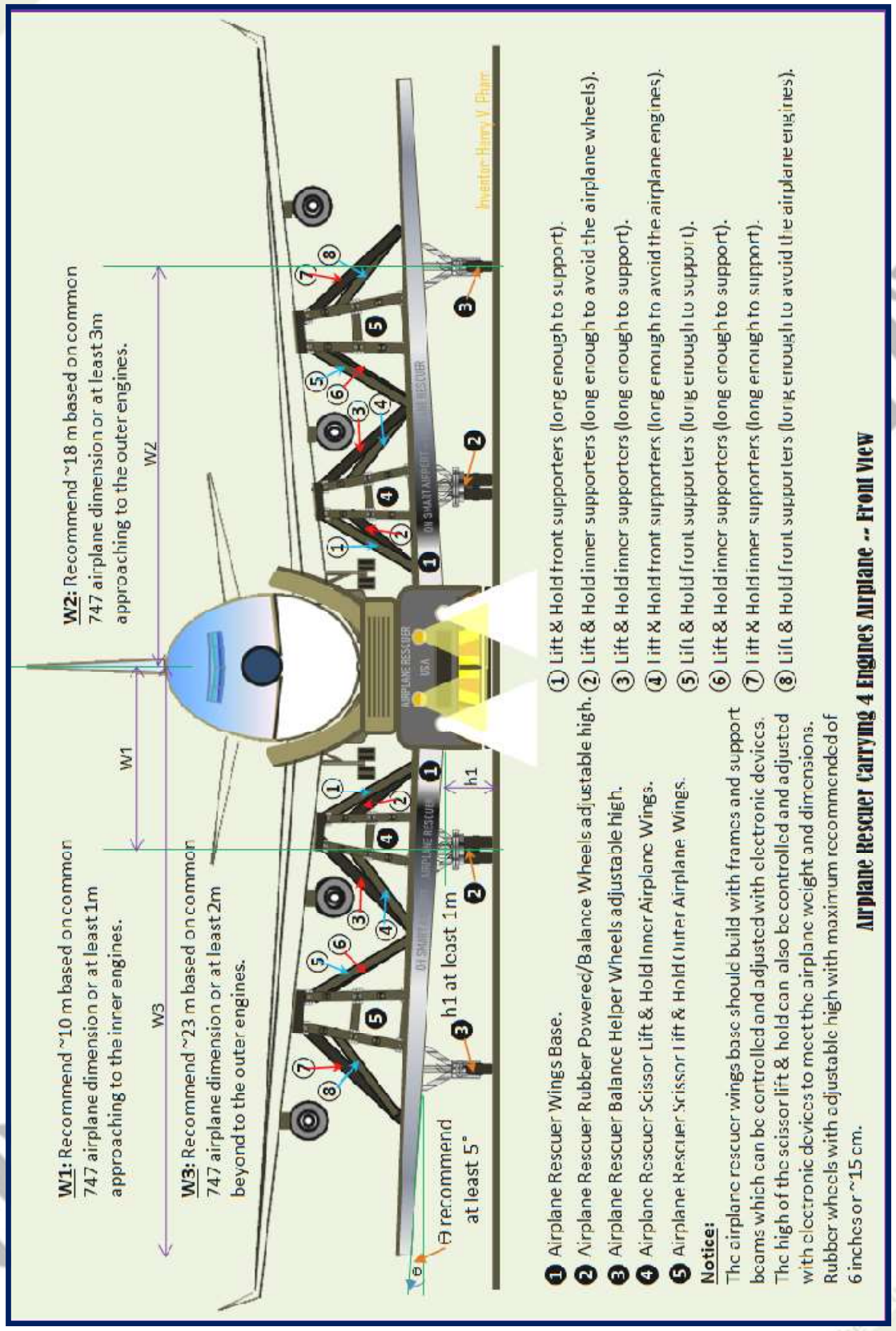

Figure-S8: OH SMART AIRPORT –Rescuer Catching 747 Airplane 4 Engines – Front View

The Airplane Rescuer Catcher base would have 2 Rubber Electric Powered Wheels at the middle of the catcher base, and at least 2 Rubber Balanced Wheels on outer part of the catcher base as shown in Figure-S7. The Catcher Bars or Beds should be built on the Gear Scissor Lifting system or similar lifting system which can be adjusted and raised to the correct position and level for the airplane in rescued; and the bars and beds can be built with additional magnet as possible to touch and catch easier. **Figure-S8: OH SMART AIRPORT –Rescuer Catching 747 Airplane 4 Engines – Front View** shows details of the Rescuer Catcher base with the Gear Scissor Lifting system for the common 4 engines airplanes, Boeing 747 airplane. The base of the Rescuer Catcher should have supporters which can be adjustable to lift the catcher bars and beds to the correct level of the airplane wings; and the Rescuer Catcher base should be built the supporters with enough spaces for the airplane's engines to avoid touching. Note that for the 2 engines airplanes, the Gear Scissor Lifting system should be adjustable so that the catcher bars and beds are right on the good positions of the airplane for catching. **Figure-S9: OH SMART AIRPORT – Electric Gear Scissor Lift – Side View** shows the side view of the single Gear Scissor Lift of the system.

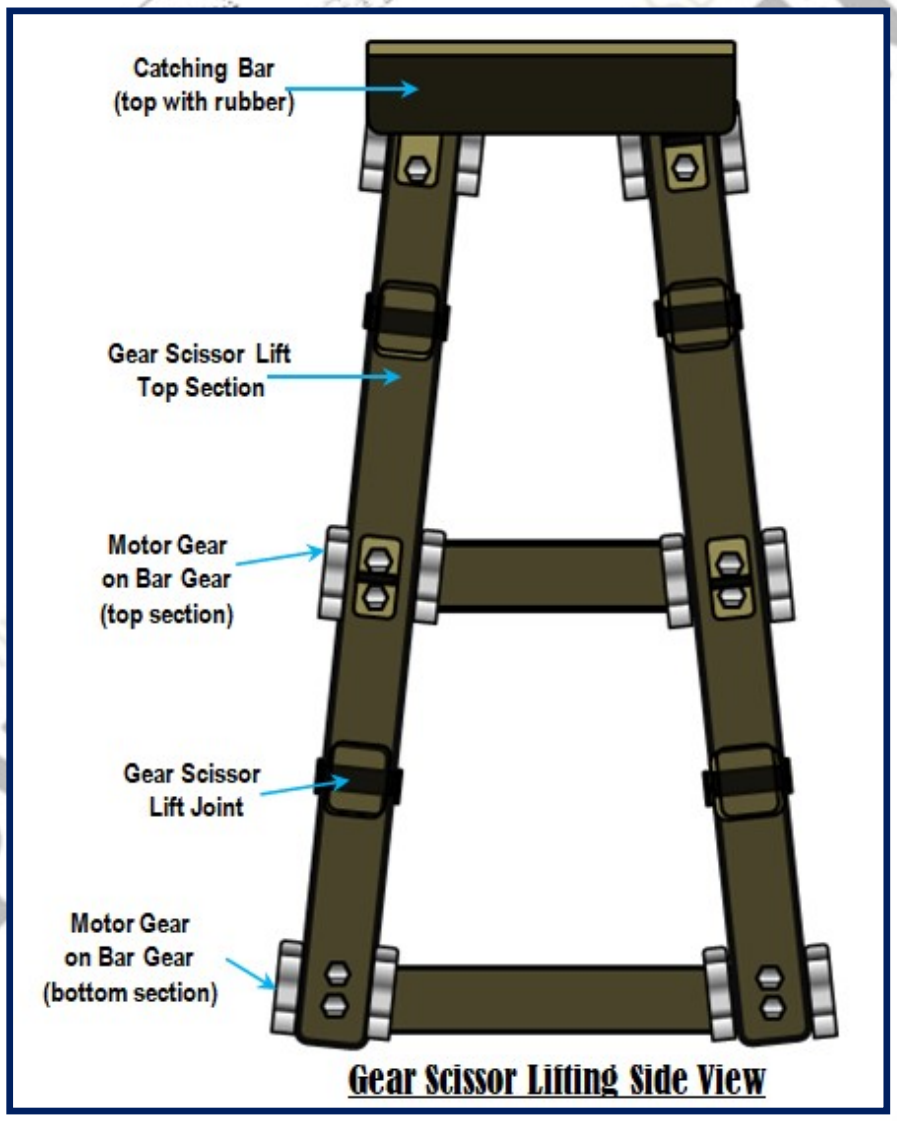

Figure-S9: OH SMART AIRPORT –Electric Gear Scissor Lift – Side View

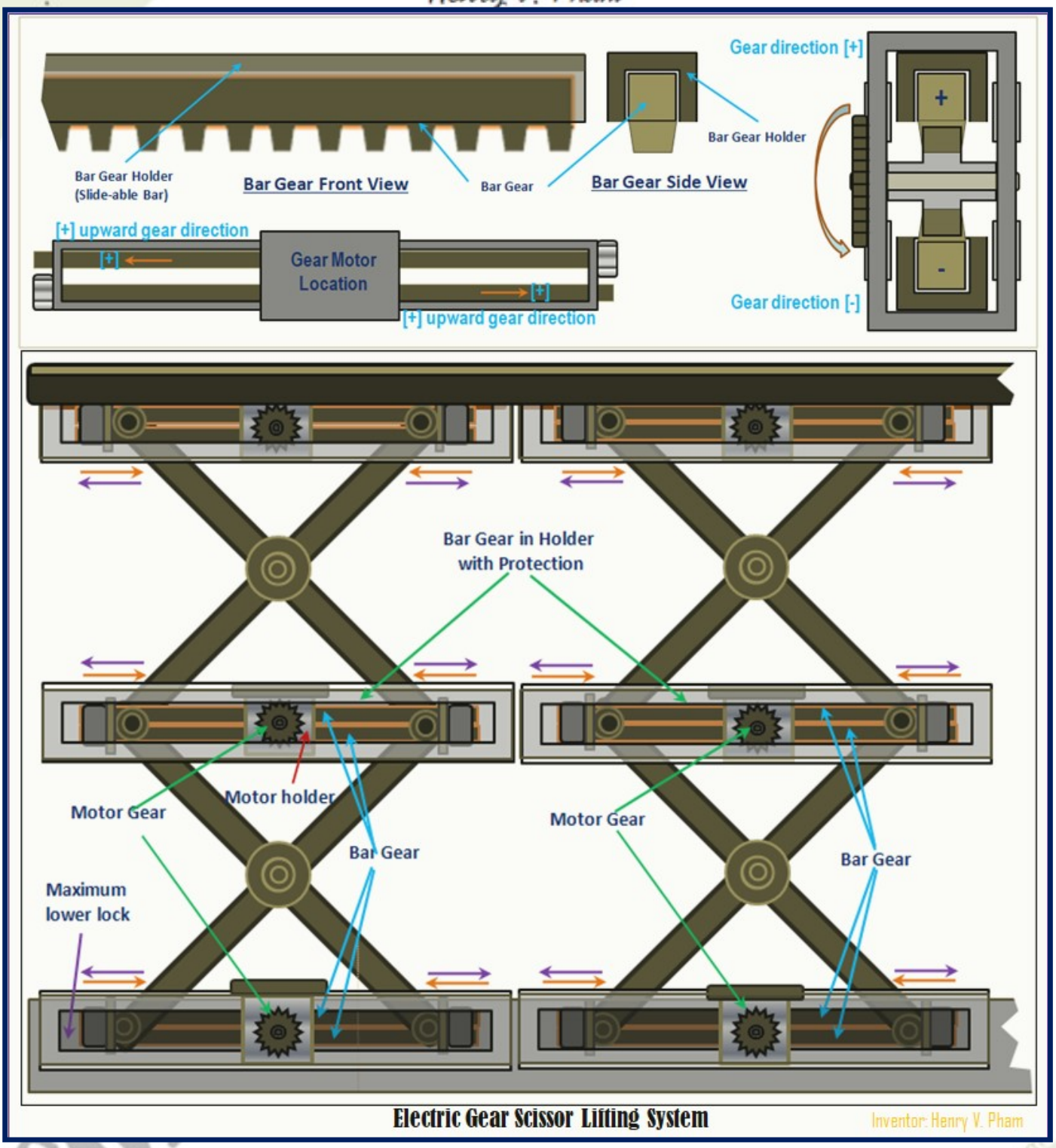

Figure-S10: OH SMART AIRPORT –Electric Gear Scissor Lifting System – Views

Figure-S10: OH SMART AIRPORT – Electric Gear Scissor Lifting System – Views shows the 2 levels Gear Scissor Lifting system; the system comes with 2 gear bars which go in opposite directions of each other when the motor at the middle turns; the motor turns for upward direction as shown in orange arrows and

turns for downward direction as shown in purple arrows. This Electric Gear Scissor Lifting system, which could be the best lifting system for Airplane Rescuer, provides stronger and longer holding compare to other air lifting systems.

The Rescuer Vehicles have to connect to each other via train couplers; however, the existing train couplers could be dangerous for train vehicles pushing or when the train vehicles stopping with hard breaks. The Dual Ring Coupler which is introduced in this invention is intended to prevent the train vehicle pushing in certain degree angles which may cause train vehicles fail to keep on tracks. **Figure-S11: OH SMART AIRPORT –Dual Ring Coupler – Views** shows the ring spread pushing force vectors with the calculations, and the turn-able ring coupler in its circular path base with either bearing rollers or bearing balls (bii) with spring tolerance protection which is either built-in on the back of the vehicle or in a connector connecting to the back of the vehicle. The bearing bii with spring at the bottom which is holding the bearing rollers or bii base in hexagon shape; the hexagon base at the middle which protects joint ball and provides tolerance with about 1 inch (2.5cm) for the ring turning left and right. The Airplane Rescuer or the train vehicles can have a required angle θ to turn which is required the outer part of the ring with length $l = rSin(\frac{\theta}{2})$ where r is the radius of the ring.

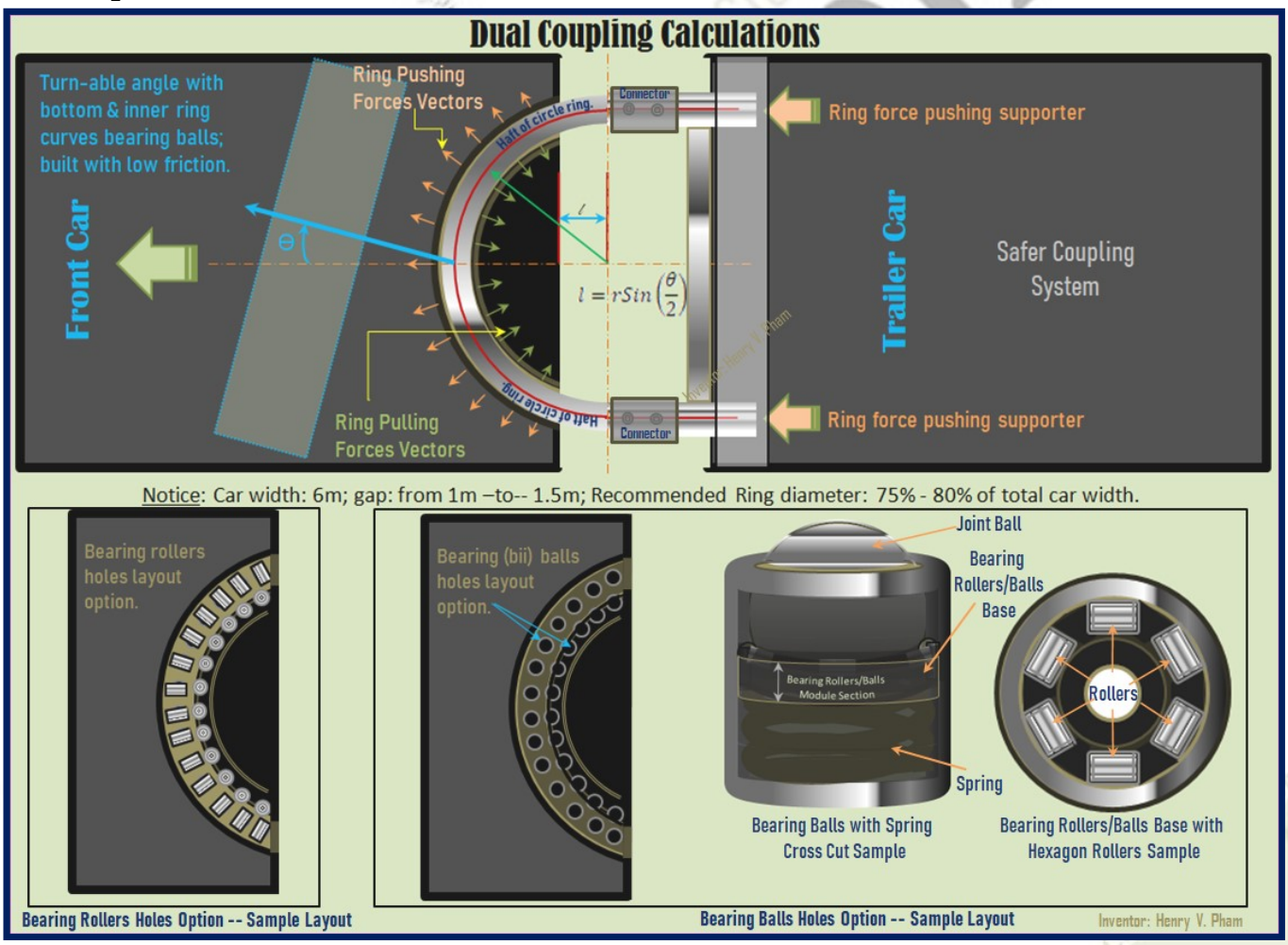

Figure-S11: OH SMART AIRPORT –Dual Ring Coupler – Views

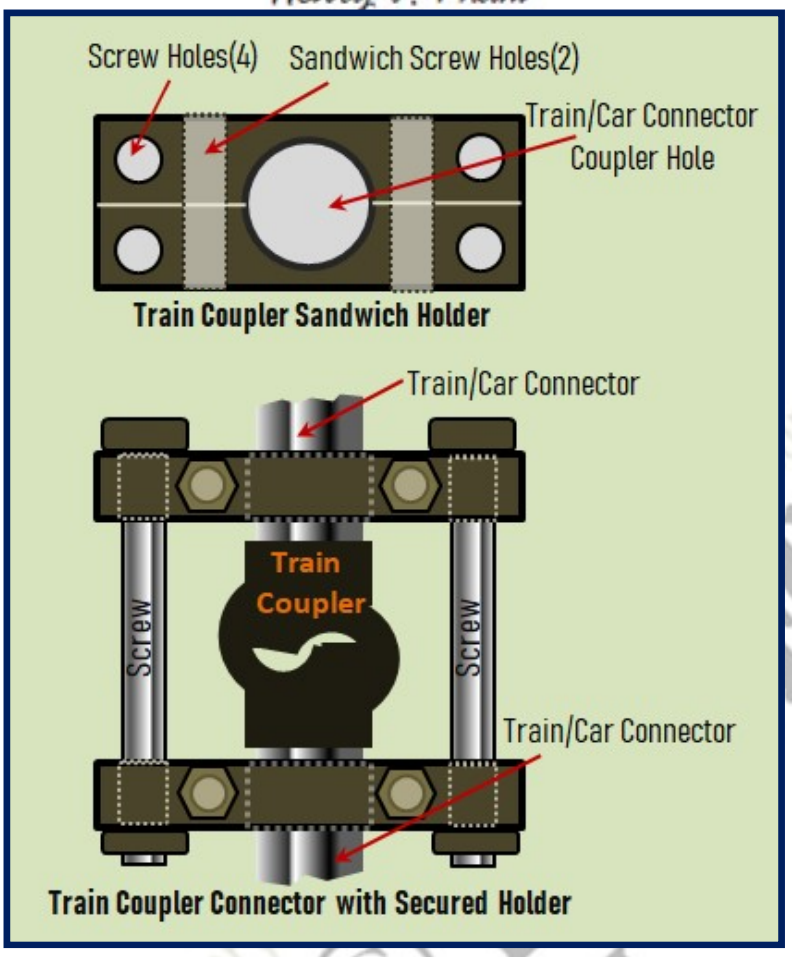

Figure-S12: OH SMART AIRPORT –Train Coupler with Secured Holder – Side View

The Dual Ring Coupler comes with bearing rollers or bearing bii having springs around the bottom and inner sides of the bearing ring is to hold the bearing ring tie with some tolerance to allow the cars can turn and keep the cars from shaking for shocking propagation during the catching. The Dual Ring Coupler connectors can be a handshake with latch lock or with a traditional coupler with lower tolerance within the straight bars of the dual coupler. The trailer car or vehicle can have the train coupler connector on both ends of the ring with secured holder around the sandwich holder as shown in **Figure-S12: OH SMART AIRPORT –Train Coupler with Secured Holder – Side View**. The Airplane Rescuer in this invention is about 85 meters not including the vehicles connectors with a maximum length of the main catcher vehicle of 25 meters, and the rescuer is required to run a railroad circle with recommended diameter of 7.5 km or 23,562 meters in circumference. The main catcher vehicle with 25 meters long is considered a straight line along the circle railroad as shown in Figure-S1 above, which is great for the Airplane Rescuer with the above recommendation dimensions. The Airplane Rescuer is only required to run in one direction, counter-clockwise, so the Dual Ring Coupler is only needed for the front vehicle; however, this Dual Ring Coupler can be applied to the existing trains with both front and trailer cars built with the ring couplers and connect through the train couplers of both ring couplers to provide the existing trains with safer train coupler to prevent trains from out of tracks crashing with pushing or hard breaks as a suggestion.

OH SMART AIRPORT

T. Airplane Traffic Control & Road Layout

The road layout and street traffic are also important for the airport for street traffic control and for security purposes. The streets around the airport are suggested to be away from the airport border at least 250 meters; note that the streets can be built closer but need to be in tunnels. The 2 airport entrances are suggested with at least 4 airport access lanes with 2 **F**orward Streets lanes, 1 **F**orward & **R**ight turn lane, 1 **R**ight turn lane only; the 2 streets that across the airport entrances are suggested with at least 4 airport access lanes with 2 **F**orward Streets lanes, 1 **F**orward & **R**ight turn lane, 1 **R**ight turn lane to airport; and with at least 4 airport access lanes with 2 **F**orward Streets lanes, 1 **F**orward & **L**eft turn lane, 1 **L**eft turn lane to airport and not including the right turn out of airport. The other streets, which are outside of the airport access, can be designed normally with 4-ways access to prevent traffic that may block the streets accesses to the airport. The figure below shows a suggestion of street layout around the airport to prevent traffic and for the best of airport traffic control and for security purposes.

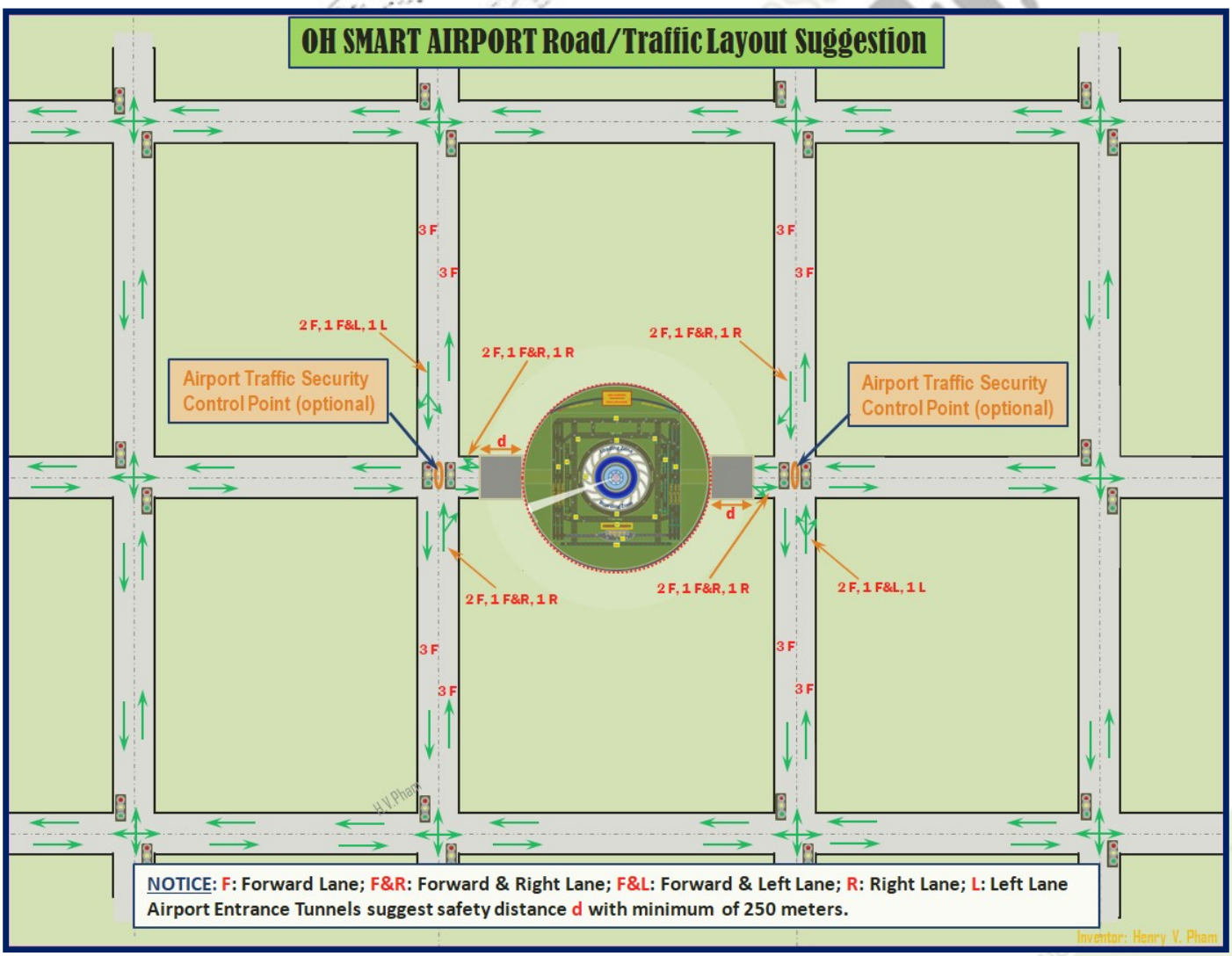

Figure-T1: OH SMART AIRPORT – Recommended Road/Traffic Layout

OH SMART AIRPORT

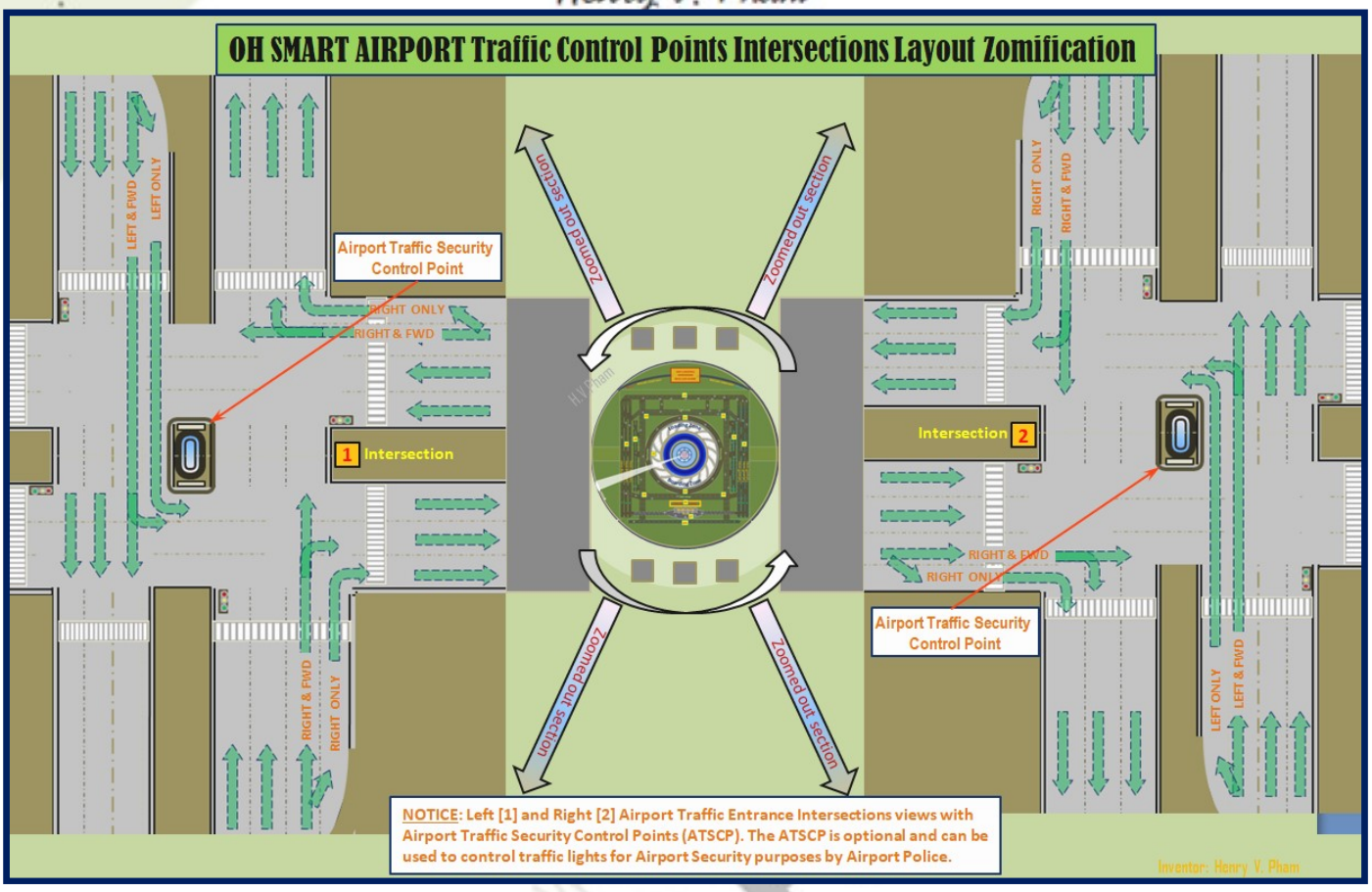

Figure-T2: OH SMART AIRPORT – Recommended Traffic at the main Airport Traffic Entrance Layout

OH Smart Airport is invented with 2 main traffic entrances to access as shown in **Figure-T1: OH SMART AIRPORT – Recommended Road/Traffic Layout;** the 2 traffic entrances intersections are introduced with optional of Airport Traffic Security Control Points which can be used for Airport Police to control the airport traffic and for security alert cases when needed, which security alerts could happened like September 11 alerts for ground zeros. The airport Left and Right Traffic Entrances are recommended only allow Forward, Left Only and Right Only directions to enter into the airport; and only allow Forward and Right Only directions to exit the airport at the 2 main intersections for avoid traffic jams. The other traffic intersections should provide all directions so the visitors can exit the airport left or right after go straight out of the Airport Traffic Security Control Points. The 2 main airport traffic intersections are shown closer view in **Figure-T2: OH SMART AIRPORT – Recommended Traffic at the main Airport Traffic Entrance Layout**. The Airport Traffic Security Control Points (ATSCP) should be raised above the ground at least 1/2 meters. The ATSCP should have enough space for 2 airport policemen, and they can control the traffic lights and open check points on other intersections at the ATSCP intersections to control the traffic for security purposes. The ATSCP should have 2 police motorcycle spaces for the 2 airport policemen as shown in **Figure-T3: OH SMART AIRPORT – Recommended Airport Traffic Security Control Points View**. OH Smart Airport is invented with fast check-in and quick checkout for the travelers and visitors access into the airport with no or less traffic lights and no or less stop signs; so the street traffic is also important.

OH SMART AIRPORT

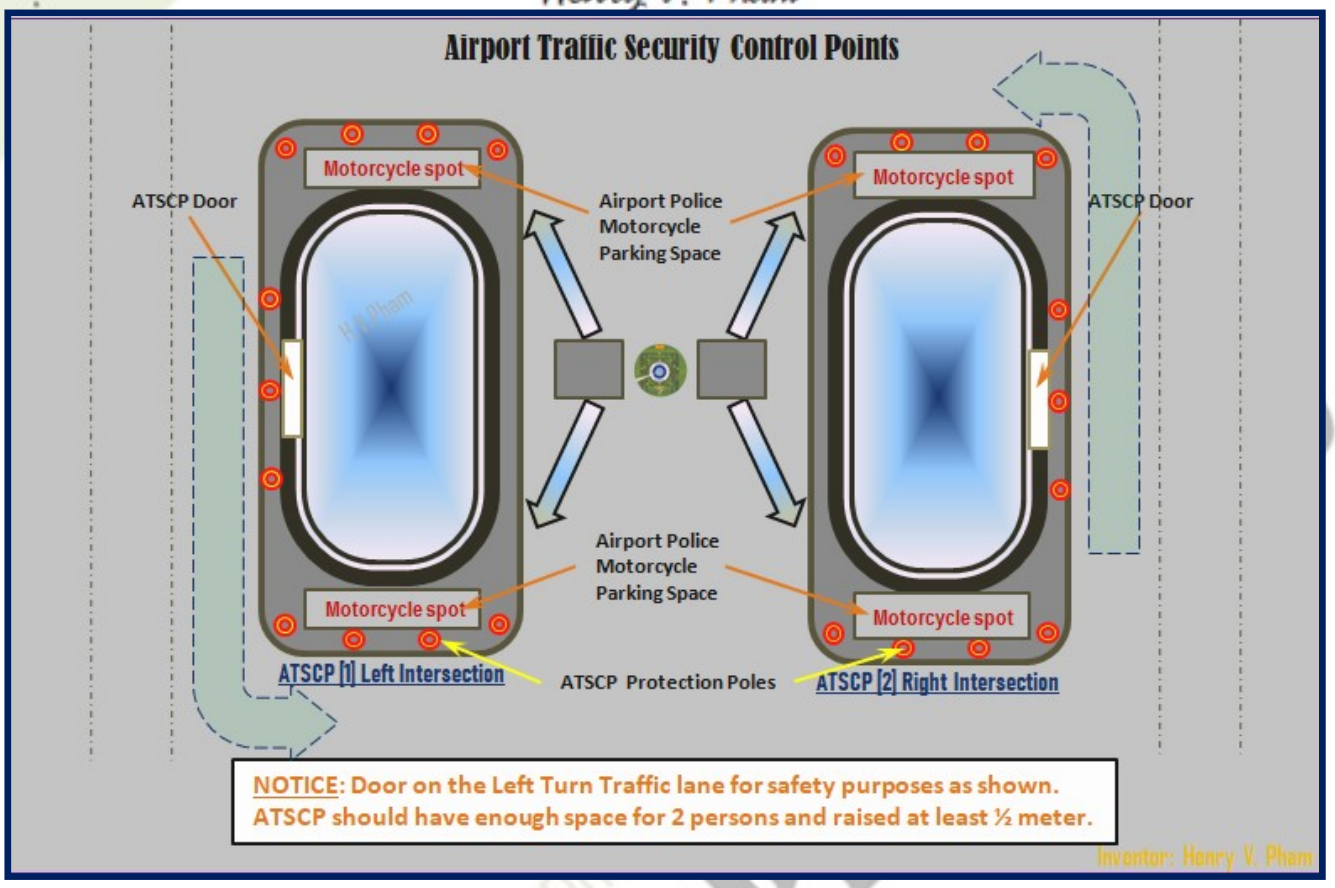

Figure-T3: OH SMART AIRPORT – Optional Airport Traffic Security Control Points View

U. OH SMART AIRPORT Check List

1. Airport location is important; chose the airport with well known common wind directions for all seasons to layout the main runways direction and the wind direction runway is in 90˚ degree angles of the main runways. The runways are suggested to use the new Quadletter Compass to label the directions of the runways for better view and identify by the pilots.
2. The LPS – Local Positioning System is new and recommended to use in Smart Airport with at least 4 LPS poles at the 4 corner lines of the magic square of the railroad circle, plus at least a pair vertical LPS devices on the vertical line of the ATC tower. The LPS devices are recommended to equip in all airplanes for better positioning on the ground plus on the air for safety and security purposes. The LPS system would work great with the Spherical Multi-Dish Layers Radar system with both passive and active modes supported to scan short and long range better which provides great air traffic control for the ATC personnel.
3. OH Smart Airport is invented with 2 underground levels, 1 on ground level, and 3 airport building levels. Ground or Underground Level 2 is the airport access for all visitor parking, airport ground service, and airport custom security ATC personnel access with secured parking; Ground or Underground Level 1, with inner section reserve for the airport electrical power with pumping and air conditioning system, is the airport transportation level which provides cars, buses and taxi drop-off

and pickup; Ground Level is the airport ground service for luggage, apron and the level for arrival travelers to access to the lower Ground Level 2 for security and checkout; Building Level 1 is used for departure and air ticket check-in and provide with quick drop-off and pickup ramps and 15 minutes parking spaces; Building Level 2 and 3 are used for visitors parking and travelers and visitors explore views.

4. Luggage check-in and out are important for the travelers, and this invention also provides Smart Cart Gear Belt Exchanger system. Make sure the cart path to arrival luggage area should one-way stocking and restocking carts, and cart paths from Building Level 1 to both lower Ground Level and upper Parking Levels 2 and 3.
5. Airport lounge waiting spaces and explore paths for travelers are important. Airport planers should define an estimate number of parking spaces and number of travelers to choose the radius of the airport building to fit the demand of the region. OH Smart Airport provides explore paths to upper levels with alternate views for both visitors and travelers; the travelers would have more space to hang around while waiting for boarding; plus the Coffee Spot or Sight Viewer which can only be accessed via visitors elevators of the ATC tower. The airport would have an option for shopping and eating areas; plus some semi-open rooms for privacy or for childcares.
6. The airport should provide Lost & Found services on the Arrival Ground Level 1, airport and travelers information center and car rental services.
7. The airport should provide enough flights schedule boards and power charger station around the lounge waiting areas and along the travelers explore paths.
8. When an emergency alert happens and the airport needs to evacuate people out of the airport, the airport security team should work with ATC personnel and airlines staffs on all gates and clear the areas for travelers and visitors to exit from the upper and lower levels inside the airport building. Airport police or top security would open the Emergency Doors on both sides of the building on the apron ground and the security team work with airlines staffs to secure the visitors and their travelers.
9. OH Smart Airport invention comes with an option of Airplane Rescuer which is required to run in circle railroad to catch airplane stuck landing wheels with the recommended railroad circle with at least 7.5 km diameter. Note that Airplane Rescuer can be optional or can be built at a later phase, but recommended to plan, build and test before the airport is operated. The Airplane Rescuer should be built and tested with at least 3 different airplane types with at least 3 different pilots to better suggestions. The testing procedure should have at least speed following and indicators following tests to make sure the pilots can able to follow the rescuer based on the following nose and indicators poles before trying to rescue land; then testing with different payloads from light to heavy which matches the common 4 engines 747 airplane payload to ensure the Airplane Rescuer can handle stability to well catching. Suggest all airplanes should have 3 cameras; one for watching the front wheel, one for the pilot to view the back wheels when needed, and one for the pilot to view the front of the airplane right at the front wheel which is great for the pilot since the airplane is high and the pilot view is too far horizontally when the airplane is tilting an angle while takeoff or landing.

10. The Wings Catcher Base should be built with Titanium for strong and light weight material; The Catcher Bars or Beds can be built with magnet as possible to touch and catch easier; which could be used for magnet shoes for Space Walking as a suggestion. After reviewing carefully to catch airplane stuck landing wheels for 4 engines airplanes for the common airplanes, the wings show the mass center points of engines are too far from the wings and suggest airplane maker adding a triangle to reduce shaking propagating from one engine to another during the turbulence condition phenomena, plus adding built-in fire extinguishers for self-rescue the engine when needed.

V. Summary

The **OH SMART AIRPORT** is invented with State-of-the-Art in mind with the circle building in strongest structure shape to help Air Traffic Control (ATC) view and control the entire airport better with no or less airplanes traffic while landing or takeoff. The Smart Airport building in circle shape provides closest pickup and drop-off ramps with no or less traffic lights or stop signs with shortest walking distance for the travelers. The visitors and travelers can able to explore and view entire airport, and the travelers do not have to go through the security screening gates again after check-in and get back into the lounge area for boarding. The Smart Airport in circle shape is also invented with Airplane Rescuer running around in circle to catch airplanes stuck landing wheels and invented with the Airport Emergency paths with high custom security protection for both travelers and visitors for entire airport. OH Smart Airport is invented with landing and takeoff runways on both sides; each side provides both International and Domestic runways with two floors Air Traffic Control which is intended to control International airplanes for the outer runways by the upper ATC floor and control Domestic airplanes for the inner runways by the lower ATC floor. The Smart Airport is invented with the new Multi-radar Layer Spherical shape system and the LPS -- Local positioning System for the airport and airport equipments plus recommended LPS devices for airplanes, which provides better detecting, tracking positions and calculating directions and angles of incoming airplanes better and more accurate which can be both passive and active modes to scan entire sky at once instead of rotating around to scan like the current radar system. With the circle shape, the OH Smart Airport is also perfectly designed to rescue airplanes stuck landing wheels with the Airplane Rescuer running in railroad circle until reaching the airplane landing speed to rescue the airplane safer with 3 additional cameras which are recommended for all airplanes. The Smart Airport in circle shape provides the best to handle Airport Emergency when both visitors and travelers have to be out of the building; the travelers who are already check-in will have emergency exit right at the boarding gates, and the visitors will have emergency exit paths to the ground level and exit only to two areas which are no need for security checking or screening again. The **OH SMART AIRPORT**, with conventional naming suggestion as "**OH SMART <name> AIRPORT**"; where '**name**' can be a city or country name plus the 3 country letters on the smart airport symbol Globe, is the promise future airport for air transportation with better viewing, exploring, and for quick check-in fast checkout in shortest walking distance with the best rescuing airplane stuck landing wheels, plus protect illegal access and better custom security check.

OH SMART AIRPORT

W. Biography

About myself, my full name is Henry Viet Pham, original name was 'Viet Hong Pham', changed in 1996 when obtained U.S. citizenship, and I am a father of 3 sons, Alexander Le Pham, Andrew Le Pham, and Harry Quoc Pham and my wife Celine Nguyet Tran. I was born in Vietnam at Dang Nang city in 1972/08/23 and grown up at Binh My, Binh Son, Quang Ngai; and I came to United States in 1991 as a military and political immigrant with my father and family members. My father Nu Pham who served as a Lieutenant in military during Vietnam War in 1975, and my mother is Thong Thi Tran with my sisters are Nguyet Thi Pham, Jessie Nga Pham and Tiffany Tuyen Pham, and my brothers are Duc Hong Pham, Kevin Tri Pham, Danny Phuc Pham, and Andy Quy Pham.

About Education, I came to United States after finished my high school in Vietnam, and I continued my education right after came to U.S. and I got my Bachelor Degree in Electrical and Computer Engineering at Calpoly Pomona, California in 1998. I am interested in Engineering and Science, and I have done many researches and self-study since I graduated in 1998 and continue researching and inventing with total of 12 inventions which have been submitted for patents from June 2021 to August 2024 not include this invention OH SMART AIRPORT, and I still have many other inventions to work on and open the Cloud OS Company for business.

About my works and inventions, I have over 25 years of professional experience in high technology industry since 1998. I have worked for Eden Airport Ground Service Company in Los Angeles Airport in 1995; worked for Caltrans in 1997; worked for Raytheon, a defense company from year 1998 to 2005; worked for Marshal 8e6, an internet security company from year 2006 to 2010; worked for Pace

America, a Satellite Set Top Box in 2010; and worked for Western Digital, a storage technology company, from year 2010 to 2024. I am a sole inventor of a total of 12 inventions which have been submitted from June 2021 to August 2024 as followings.

1. Invention Title: New Way to protect WiFi Network from Hackers – Submission with U.S. Patent PCT No.: 29/788,607; Submitted on: 2021/07/01; and resubmitted on 2024/02/27 to WIPO international office with U.S. Patent PCT No.: PCT/US24/17533 and International Patent: PCT/IB2024/000110;
2. Invention Title: THE G-CODE – First submission with U.S. Patent PCT No.: 29/806,573 => then resubmitted with PCT/US22/70704; and International Patent: PCT/IB2022/000112; Submitted on: 2021/09/03;
3. Invention Title: The Cloud OS - Operating System – Submission with U.S. Patent PCT No.: PCT/US21/71689; and International Patent: PCT/IB2021/000683; Submitted on: 2021/10/02;
4. Invention Title: The LPS - Local Positioning System – Submission with U.S. Patent PCT No.: PCT/US21/72562; and International Patent: PCT/IB2021/000949; Submitted on: 2021/11/23;
5. Invention Title: Greatest Performance Hard Drive (G-Drive) – Submission with U.S. Patent PCT No.: PCT/US21/72563; and International Patent: PCT/IB2021/000961; Submitted on: 2021/11/23;
6. Invention Title: Cell eMap Live Updates System – Submission with U.S. Patent PCT No.: PCT/US22/79368; and International Patent: PCT/IB2022/000685; Submitted on: 2022/11/07;
7. Invention Title: LPS Navigation System – Submission with U.S. Patent PCT No.: PCT/US22/79369; and International Patent: PCT/IB2022/000671; Submitted on: 2022/11/07;
8. Invention Title: Emergency Traffic Lights Routing System – Submission with U.S. Patent PCT No.: PCT/US22/82343; and International Patent: PCT/IB2022/000791; Submitted on: 2022/12/23;
9. Invention Title: G-ROUTING ALGORITHM METHODOLOGY -- Submission with U.S. Patent PCT No.: PCT/US22/82347; and International Patent: PCT/IB2022/000800; Submitted on: 2022/12/23;
10. Invention Title: Parallel Transforming Percentage Theorem -- Submission with U.S. Patent PCT No.: PCT/US23/77057; and International Patent: PCT/IB2023/000611; Submitted on 2023/10/23;
11. Invention Title: Auto Following Motion Security Camera -- Submission with U.S. Patent PCT No.: PCT/US24/13660; and International Patent: PCT/IB2024/000177; Submitted on: 2024/01/31;
12. Invention Title: Wall Security Camera System -- Submission with U.S. Patent PCT No.: PCT/US24/13663; and International Patent: PCT/IB2024/000096; Submitted on: 2024/01/31;

My other inventions included this invention, 'OH SMART AIRPORT' and other related or in-progress inventions as followings, "Cybercopter Flyer" which is intended to replace the current helicopter and for future jet/turbojet/turbofan flyers in UFO circle shape, "Touch Slide & Landing Board for Aircraft

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Carrier" which is intended to replace the traditional rope/cable aircraft catching, "Hybrid Air & Rubber Cells Layer Tire" which is intended to replace current tire to help prevent flat tires, "Emergency Cylinder Helical Stair" which is used in OH SMART AIRPORT and for commercial use for personal and emergency purposes, "Personal One Step Escalator" which is intended to provide personal use like elevator in compact space, "Smart Cart Gear Belt System" which is used in OH SMART AIRPORT and intended to use for commercial for Smart Cart Exchanger, "Transpond License Plate" which is intended to use for tracking license plate within a desired distance, "Auto Tracking Target Network Security Cameras System" which is intended to use in the crowd areas like airport to follow and track the suspect/target for crowd security camera system, "Robot Medical Doctor" which is intended to help family doctors and hospital to check up patients faster with better medical statistic data with built-in Machine Intelligence (MI), and direct business related inventions, "Matrix Base Keyboard" to prevent wire/wireless keystrokes logger and "One Round Chamber" for data storage hard drive (one of my invention 'Greatest Performance Hard Drive') tester.

About my business, The Cloud OS Company (website: www.TheCloudOSCenter.com) business uses mainly Invention #3: The Cloud OS – Operating System, Invention #5: Greatest Performance Hard Drive (G-Drive), and Invention #9: G-ROUTING ALGORITHM METHODOLOGY. The Cloud OS Company business brings the world to the next level of World Computing Infrastructure Modern with the main purposes to secure users' data and secure entire computer networking around the world or the World eWeb with the new technology of Neighbor-to-neighbor checking methodology and Neighbor-to-neighbor routing technology, and applying the new dynamic protocol technology for data transferring with the high secure of the 4K Number Encryption. And there are my other 3 businesses related websites www.TheGCODECreator.com which is used for the G-CODE labels/profiles/products/logos creator application; www.ThePatrolCircle.com which is used to patrol the points of interests for security camera system with Patrol Circle Unmanned Aircraft; and www.TheCybercopterFlyer.com which is used for Cybercopter Flyer, the Cybercopter flyer is intended to replace the current helicopters and for future of aviation transportation in circle shape like UFO flyers which can support both turbofan and turbojet engines with cell fuel and solar energy.

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