NPS Form 10-900 OMB No. 1024-0018 (Expires 5/31/2012)

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NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Schwartz, Robert E. and Barbara (Vitkuske), House

other names/site number N/A

2. Location

street & number 3201 W. Sugnet Road ☐ not for publication

city or town Midland ☐ vicinity

state Michigan code MI county Midland code 111 zip code 48640

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this _X_ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property _X_ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ national _X_ statewide __local

Brian D Conway 8/9/13
Signature of certifying official/Title Date

MI SHPO
State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official Date

Title State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:

✓ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

Signature of the Keeper 9/26/13
Date of Action

Schwartz, Robert E. and Barbara (Vitkuske), House
Name of Property

Midland County, MI
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply.)

- [X] private
- [ ] public - Local
- [ ] public - State
- [ ] public - Federal

Category of Property
(Check only **one** box.)

- [X] building(s)
- [ ] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1	0	buildings
0	0	sites
0	0	structures
0	0	objects
1	0	**Total**

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions.)

DOMESTIC/Single dwelling

Current Functions
(Enter categories from instructions.)

DOMESTIC/Single dwelling

7. Description

Architectural Classification
(Enter categories from instructions.)

MODERN MOVEMENT

Materials
(Enter categories from instructions.)

foundation: Concrete
walls: Concrete Stucco; Glass Curtain Wall
roof: Concrete Stucco
other: Concrete Block

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Summary Paragraph

The Robert E. and Barbara (Vitkuske) Schwartz House is a three-story, thin-shell, hemispherical dome structure with a circular plan. Constructed between 1964 and 1967, it is a unique example of Modern residential architecture designed by Midland architect Robert E. Schwartz for himself and his family. The dome structure is comprised of layers of 2" x 4" X 10' extruded polystyrene (Styrofoam) boards stacked and bonded together using a method of construction developed by the Midland-based Dow Chemical Company called "Spiral Generation." The polystyrene dome is covered with an approximately 3" thick coating of spray-applied concrete over a gridwork of reinforcing steel. Three large arched openings are cut out of the dome and infilled with aluminum-framed glazed curtain walls. The openings are oriented to the north, southeast and southwest to provide views of the surrounding property and capture natural light. A tall, stacked-course, concrete block wall emerges from the north façade and then turns west to shield views of the carport from the street. A linear storage shed with double doors was added along the inside face of the wall in 1979. A two-vehicle, open carport, with concrete block walls and a small furnace room extension, projects from the west side of the dome structure. The carport was added in 1992. At the top of the dome is a large skylight that provides ventilation to the interior and indirect natural light to the third floor. The entire dome, carport and tall block walls are painted white.

The interior of the house contains approximately 4,300 sf of space on three levels. The hexagonal-shaped second and third floors do not intersect the dome but instead float within the larger volume of the structure. The open plan and large glazed curtain walls facing three directions provide natural light and allow expansive views of the surrounding landscape. The house is furnished with many original mid-century modern pieces used by the family.

The house is located on a .82-acre wooded lot on the west side of Midland in close proximity to the Midland Medical Center. The house is set back from W. Sugnet Road in a clearing and surrounded by an open lawn. The Sturgeon Creek cuts through the northeast corner of the property.

Narrative Description

Setting

The Schwartz House is located on West Sugnet Road, a two-lane, tree-lined, east-west thoroughfare connecting Eastman Avenue with W. Main Street in northwest Midland. To the east of the residence, on the opposite side of W. Sugnet Road, is the MidMichigan Medical Center which originated as the Midland Hospital. The original facility opened in 1944 and was designed by Taliesin-trained architect Alden B. Dow.

With the exception of the medical center, which has evolved over the past sixty-eight years into a large modern hospital complex, development in the area has remained sparse giving the neighborhood a somewhat rural character. The lack of development in the vicinity of the Schwartz property is likely due to the fact that much of the land bordering Sturgeon Creek is owned by the Dow Foundation and included in a 100-year floodplain. At the time the Schwartz House was constructed, W. Sugnet Road did not extend past the property to Cook Road (now W. Main Street). However, planning for the extension was under way and Schwartz oriented his house to the north to face the new road. Construction of the extension was not completed until 1968. For the first three years, the Schwartz property was accessed by a long dirt drive that extended east off of Cook Road through an adjacent property entering the Schwartz lot at its southwest corner.

The Schwartz House is set back approximately 150' from W. Sugnet Road on a 0.82-acre wooded lot. The lot, which is roughly square in plan, has been truncated at its northeast corner where the approximately ten foot wide Sturgeon Creek cuts through the edge of the property. The topography of the site slopes gently from northwest to southeast. The house is located along the western edge of the parcel in the center of what was originally a natural clearing that contained a small orchard of apple trees. The siting of the residence within the clearing gives the house a feeling of privacy and seclusion. The house is accessed by a concrete drive that extends south from W. Sugnet Road. A portion of the drive extends in

front of the house and widens to create a small automobile court while the remainder of the drive continues around the west side of the house to the carport. A concrete sidewalk and approximately 7' tall, concrete block wall constructed in a stacked bond intersects the main elevation and then angles to the west in front of the house. The wall screens views of the carport from the front of the house and incorporates a linear storage shed at its western terminus. Two voids in the concrete drive serve as planters, each containing decorative ground cover and a small tree. The voids were originally located to accommodate two apple trees that existed on the property. The existing concrete block carport and small furnace room attached to the west side of the house were constructed in 1992. A small triangular-shaped garden is located between the storage shed and the carport. Narrow concrete pads are located in front of each of the glazed curtain walls and a gravel-filled drainage strip extends around the base of the structure. There are no other buildings on the property.

Exterior

The Schwartz House is a thin-shell hemispherical dome structure with a round plan. Its form stems directly from its unique method of construction known as "Spiral Generation," a building technique developed and patented by the Dow Chemical Company of Midland. The house's exterior shell is constructed of 2" x 4" x 10' long flexible polystyrene foam (Styrofoam) boards, stacked and heat-welded together using a Dow-patented spiral generation machine. The dome structure, which is 56' in diameter and 28' tall at its tallest point, rests on a reinforced concrete footing set approximately three feet below grade. The sill or first ring of rigid insulating boards rest on a steel angle which is mechanically fastened to the concrete footing. The spiral generation machine used to create the dome consisted of a steel boom anchored at the center point of the circular plan. At the end of the boom was a heat-welding device that bent, laid and sealed together the polystyrene boards. The arm of the machine rotated around the pivot point like the "hands of a clock" laying down layer upon layer of the Styrofoam boards in a rising spiral. The machine was operated by a two to three-person crew and the process of erecting Schwartz's dome took only fourteen hours to complete. The thin-shell polystyrene structure was then covered with a gridwork of reinforcing steel and an approximately 3" layer of concrete was spray-applied to the interior and exterior surfaces using the Gunite method. After this, three large, 15' tall arched openings were cut out of the otherwise windowless shell and each was infilled with a glazed curtain wall system. The large window walls contain entry doors, awning windows for ventilation, and fixed glazed panels set in an aluminum frame. Concrete slab porch areas are located outside the southeast and southwest-facing window walls. The edge of the porch slab is curved to complete the 56'-diameter circular plan. Given that the spiral generation machine could not complete a fully enclosed dome, a 5'-diameter skylight was created at the top of the structure to provide ventilation and allow natural light into the interior. Originally a simple plexiglass bubble skylight that could be manually shifted from the opening was installed over the void until a larger, more sophisticated indirect skylight was added by Schwartz in approximately 1977. The surface of the dome was finished by applying a white elastomeric coating developed by Dow Corning. The white color of the dome prompted locals and the media to often make references to the house's igloo-like appearance. Today the white finish contrasts sharply with the lush green and natural tones of the surrounding property emphasizing the building's dramatic modern form.

North Elevation

The house is oriented so that the semi-circular glazed curtain wall openings in the shell face north, southeast and southwest to take advantage of natural day lighting and allow expansive views of the surrounding property. A slightly projecting ledge frames each opening providing structural support and also serving as a means to divert snow and rainwater run-off away from the glazed curtain walls. The primary entrance to the residence is a single flush wood door located in the north-facing arched opening. The layout of the aluminum muntins recall Piet Mondrian's grid by dividing the wall into a series of seemingly random large and small rectangular panes. A single, four-pane, awning window is located east of the entry door. A 7'-4" tall interior partition (that separates the foyer from the laundry room and kitchen areas) passes through the glass curtain wall and emerges outside as a concrete block wall, laid in stacked bond. It runs perpendicular to the glass wall until it hits the outer edge of the curved concrete sidewalk, and then turns to the west. Behind this wall, shielded from public view, is the exterior entrance to the laundry room. The block wall runs for approximately forty-one feet to the west screening the carport and service entrance from public view. The wall originally terminated with a small leg that turned back towards the house. In 1979 a storage shed was incorporated along the inside face of the wall and two brightly colored, double green doors were added in the end wall.

Southeast Elevation

The arched opening on the southeast elevation contains three evenly spaced awning windows separated by large square panels of fixed glazing. The southeast-facing window wall provides views of the creek from the living room and second-floor bedrooms.

Southwest Elevation

The southwest-facing elevation is similar to the others but contains two flush wood entry doors. One door is located near the center of the elevation and one under the carport. Similar to the north elevation, a concrete block wall originally extended west from the center of the glazed curtain wall to define the southern limits of the open parking area. A large portion of this wall was removed when the covered carport was constructed in 1992. Also incorporated into the carport was a new concrete block furnace room placed outside of the shell adjacent to the original furnace room which then became dedicated to storage.

Interior

The interior of the house contains approximately 4,300 sf on three floors including four bedrooms on the second floor, three bathrooms and the 940 sf third floor that was primarily used as a recreation room. The home's open plan is organized around a central circular staircase with few dividing walls. The interior spaces of the first floor are loosely defined by a combination of plaster partitions, a semi-transparent screen wall, and built-in storage and furnishings. The hexagonal plan of the second floor is held back from the exterior walls creating a diminishing two-story volume along the perimeter of the first floor. The arrangement has been described as a "tiered wedding cake under a dome." The front entrance opens into the main living space. A tall, two-sided, free-standing cabinet set at an angle provides coat storage and serves as a screen for a small office/study to one side. The desk is set behind a low mirrored wall that separates the study from the main living area. On the opposite side of the entry is a small single-fixture bathroom. Views through to the southeast curtain wall draw the visitor into the space, past a doorway to the kitchen and open spiral stair, to the sunken living room beyond. The spiral stair located at the center of the plan provides a dramatic burst of color with its purple-carpet-clad, pie-shaped treads and central chrome post. Instead of a traditional railing, the perimeter of the circular stair is supported within a cage of widely spaced vertical aluminum bars that pass through the edge of each tread. The vertical bars rise up through the first and second floors forming the railing at the third-floor level. The first floor is lighted by several flush round recessed can light fixtures mounted in the gypsum acoustic tile ceiling. The lights in the living room are 1 ½" diameter solid Lucite tubes hanging down from the recessed can fixtures.

The sunken living room is oriented to the southeast and the views of the surrounding landscape. The interior edge of the living room is defined by a large semi-transparent screen of acrylic panels set in a walnut and aluminum frame and mounted on chrome columns. The screen extends east-west and then turns south at a central hinge point. It is divided into a series of vertical and horizontally oriented rectangles with intermittent brightly-colored panels, once again recalling Mondrian's grid paintings. Below the screen is a built-in sofa with a small table mounted at the hinge point between the two sections. Stairs at each end of the screen provide access to the living room. A second built-in cabinet that contains a wet bar screens the study from the living room. The floor of the living room is covered with light-colored carpet. A strip of hexagonal tiles has been installed in front of the window walls. The floor of the study is covered with similar white or light-colored hexagonal tiles.

The open dining room is located adjacent to the living room and is provided views of the outdoors through the southwest-facing window wall. A single, flush wood door in the curtain wall provides access to the exterior from this space. A large built-in cabinet added in the 1990s is located on the interior partition wall separating the dining room from the kitchen. Next to this is a single wood door that leads to the adjacent kitchen space. The kitchen is a simple space separated from the main living and dining area. It contains a free-standing peninsula with a sink that faces the window wall, upper and lower cabinets on the interior partition wall and a central island with a stove. The peninsula contains an impressive array of original features including three integral sinks, a water fountain, garbage disposal, deck-mounted light fixture and a built-in motor to power various kitchen appliances. The dark wood cabinets and thin laminate counter tops are simple in form and contain no embellishments or traditional detailing. The frameless cabinet doors are primarily white with a few bright blue panels to add a punch of color to the space. The lower cabinets have simple recessed aluminum pulls while the upper cabinet doors have circular pulls. A wood frame hood suspended from the ceiling above the cook top contains a light to illuminate the work area below. This hood, which originally contained the oven, was reconfigured in 1986 when the oven was moved into the lower cabinets. A table and four chairs within the kitchen provide a second less formal dining area.

Just off of the kitchen is a mechanical closet and small laundry and storage room. The laundry room contains a washer and dryer, sink and bank of wood cabinets with laminate doors and counter tops. A single doorway leads from the laundry room out to the garden area between the concrete screen wall and the carport.

The circular stair rises in the center of the second floor into a common central hallway off of which the four bedrooms and a bath are located. The plan of the second floor is hexagonal in shape and the dividing walls between the individual bedrooms and bath radiate from this central hallway. As mentioned above, the second floor does not intersect the exterior walls but instead floats within the larger hemispherical volume. This creates a unique feature of the second-floor bedrooms in that there are no separating walls at the outside edge of the rooms. Instead the bedrooms are open to the floor below like balconies and have only the radiating common walls to provide visual separation. A low continuous desk created around the perimeter of the second floor is common to each of the spaces. A semi-transparent screen encloses the outside edge of the bathroom to provide additional privacy. The master bedroom is larger than the others and contains a wall of closets along its outer edge as well as a small on-suite bathroom.

The third floor is an open, carpeted space that contains no partition walls. Although the third-floor plate does not intersect the exterior walls, the curve of the dome and a low wood curb prevent occupants from getting close to the edge and eliminates any chance of falling through the small intervening space. The circular skylight in the center of the dome provides natural daylight to the third floor and ventilation for the entire house, drawing air up through the interior volume from the first-floor awning windows. The lighting at this level is supplemented with a series of three ceiling-mounted spot lights.

Alterations

Alterations to the house are discussed in the narratives above but are primarily limited to the incorporation of the storage shed along the inside face of the screen wall in 1977, modification of the skylight during this same period, and the construction of the carport and furnace room in 1992. All of these modifications were designed by Robert E. Schwartz and built under his direction.

The few changes made to the interior include the addition of hexagonal floor tiles at the base of the window walls and within the study and modification of the hood over the stove. Within the last year some cosmetic upgrades to restore original finishes were made to prepare the house for sale. These changes were designed and overseen by Robert Schwartz Jr., who is a practicing architect in New York City.

Outbuildings

There are no outbuildings on the property.

Integrity

The Schwartz House has not experienced any significant changes to its original form, plan or materials and thus retains its uniquely modern character and innovative features. The very minor changes and additions that were made over time were executed by the original owner and architect and do not diminish the overall understanding of the architecture.

The house's setting within a clearing in the woods adjacent to Sturgeon Creek has not been altered by modern development and still evokes a sense of seclusion and privacy as it would have originally.

Schwartz, Robert E. and Barbara (Vitkuske), House
Name of Property

Midland County, MI
County and State

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [ ] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [x] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- [ ] A Owned by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [x] G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions.)

Architecture
Engineering

Period of Significance
1964-1967

Significant Dates
1964
1967

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation
N/A

Architect/Builder
Robert E. Schwartz

Period of Significance (justification)

The period of significance of the Schwartz House begins in 1964 when Schwartz entered into an agreement with the Dow Chemical Company and ends in 1967 when construction of the house was completed.

Criteria Considerations (explanation, if necessary)

The Robert E. and Barbara Schwartz House meets Criteria Consideration G for its exceptional significance at the state level as the only known example in Michigan of a mid-twentieth-century Modern residence constructed in the dome form using the Spiral Generation technique.

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance and applicable criteria.)

The Schwartz House is eligible for the National Register of Historic Places under Criterion C at the state level for its association with the Modern architecture movement in Michigan and as a demonstration of the use of the Spiral Generation method of construction developed by the Dow Chemical Company. The house was designed by Midland architect Robert E. Schwartz for himself and his family, and was constructed between the years 1964 and 1967. The Schwartz House possesses significance in the category of Architecture as a rare example in Michigan of the use of the dome form for mid-century residential design. The house also exhibits the fundamental characteristics of the Modern Movement including its simple geometric form, lack of applied ornamentation, use of large expanses of glass to bring nature and sunlight into the structure, and its open, free-flowing floor plan. Further, the house possesses significance in the area of Engineering for its innovative structural system and use of alternative building materials and methods. The Schwartz House is an early residential prototype built as a collaborative effort between Schwartz and the Dow Chemical Company to provide a home for the architect and demonstrate Dow's proprietary spiral-generation system of construction.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Area of Significance: Criterion C

Robert E. Schwartz, a native of Midland, attended Midland High School and early on expressed an interest in design, specifically aeronautical engineering. He ultimately made the decision to study architecture and in 1950 at the age of 22 enrolled in the University of Michigan's College of Architecture and Design.

At the time Schwartz entered Michigan, the College of Architecture and Design was swelling in numbers due to the influx of returning veterans starting or resuming their education after World War II. The program itself was also grappling with its identity; where most programs across the country had by this time moved away from the Beaux Arts system and adopted the Bauhaus approach to architectural education, Michigan maintained a more pluralistic and versatile pedagogy. A few years prior to Schwartz's enrollment Dean Wells Bennett had initiated a critical review of the program that resulted in the hiring of a number of new faculty. These included several alumni along with three modernist architects from the east coast, Theodore C. Larson, Walter Sanders and William Muschenheim, who came to Ann Arbor between 1948 and 1950. Larson became best known for spearheading a formal emphasis on architectural research establishing the Architectural Research Laboratory (ARL), one of the first of its kind in the country. This program of research resulted in several collaborations between the university and the building industry.

Schwartz's educational experience would not only be influenced by his participation in the research program but he also benefited from the regular series of prominent guest lecturers that were brought to Ann Arbor during the early 1950s. Among the innovative thinkers that lectured at Michigan was R. Buckminster Fuller who was best known as the inventor of the Geodesic Dome and designer of the Dymaxion House. "Bucky," as he was known to many, came to Ann Arbor a number of times visiting the university while working on his geodesic dome for the Ford Motor Company in Dearborn. The design of the 93' diameter geodesic dome for Ford and the media exposure it received during the company's 50th Anniversary celebrations would elevate Fuller to international prominence.

Fuller not only lectured at Michigan but also collaborated with faculty and students on a number of special projects. In his senior year, Schwartz participated in a special project led by Fuller to design and construct a dome shelter using cardboard. The project took on a greater meaning for the students as it was not simply a theoretical exercise but had a practical application. The dome shelter was to be used by young boys participating in programs at Camp Tamarack, a camping and recreational facility managed by the Jewish Community Center of Detroit. Fuller, with the assistance of

faculty members George Brigham and Walter Sanders, led the students in their effort to design and construct the cardboard shelter. As part of Fuller's rigorous approach to project organization he assigned the students specific areas of responsibility. Schwartz was named the project's Graphics Director. The design of the shelter had several requirements including that it be light-weight, easily erected and disassembled, low-cost (a budget of approximately eighty dollars was established by the client) and able to accommodate six boys. The project took place over an approximately one-week period in 1954 and culminated in the construction of a prototype shelter on the grounds of the Alpha Chi Rho fraternity. It was Schwartz's participation in this special project and his interaction with Fuller that is said to have influenced his decision to incorporate the dome form into the design of his own home some ten years later.

After graduation Schwartz returned to Midland and apprenticed in the offices of Bob Goodall and Glen Beach for a few years before establishing his own practice. Both Beach and Goodall had previously worked for Alden B. Dow before leaving in the early 1950s to establish their own practices. Schwartz became particularly fond of Goodall who was known for his remarkable drawing abilities. Prior to working for Dow, Goodall was employed as a draftsman for Frank Lloyd Wright. Goodall left Taliesin in 1933 to join Dow in Midland, eventually rising to the position of Office Manager, Chief Draftsman and specification writer. Goodall also assisted Dow in developing his Unit Block building system and is named on the patent. During his time with Goodall and Beach, Schwartz worked primarily on residential projects in and around Midland, including the design of a home for his father-in-law Frank J. Vitkuske in 1955. By 1958 Schwartz had received his architectural license and took on several commissions on his own including the design of a residence for the Bergstein family. The design of both the Vitkuske and Bergstein houses demonstrate Schwartz's affinity for modernist design principles and his admiration of the work of Frank Lloyd Wright, Eliel and Eero Saarinen and Ludwig Mies van der Rohe.

By the early 1960s Schwartz was married, had three children and had made the decision to partner with Charles Blacklock to form the firm Blacklock & Schwartz Architects. The new firm received two significant commissions for buildings that would become longstanding landmarks in Midland. The first was for the United Church of Christ in 1961. For this building, located in a quiet residential neighborhood, Schwartz completed a dramatically modern design incorporating a sweeping thin-shell hyperbolic paraboloid roof structure. Although striking in its appearance and embraced by most, the non-traditional approach to church design proved to be divisive among members of the congregation and as a result led to a few members leaving the church. In 1967 the building was featured on the cover of the *Journal of the American Concrete Institute*. The second project was a commission to design the Circle Community Drug Store which was owned by the Bergstein family for whom Schwartz had designed a home several years earlier. Blacklock & Schwartz would go on to design a series of commercial, institutional and government buildings over the next decade before eventually dissolving their partnership in 1974.

During this same period Ted Larson's Architectural Research Laboratory was sponsored by the Agency for International Development to explore the use of cellular plastics for low-cost housing in Third World countries. One of the projects associated with this program involved the erection of a prototype plastic dome utilizing the Dow Chemical Company's new "Spiral Generation" process (ORA Project 05687). As part of Dow's ongoing research to develop materials that could be used in the construction industry, they had come up with a process for generating thin-shelled dome structures using "foamed resin." This foamed resin or extruded polystyrene foam was better known as Styrofoam, a material Dow had patented in 1944. The system used a specially designed machine mounted to a boom that would bend, place and heat weld the preformed 2" x 4" x 10' Styrofoam boards together in a continuously rising spiral. The machine was mounted in the center of the structure and applied the material in a rotating manner. The system was well-suited as a means to produce low-cost shelters as it produced a structure with a high strength-to-weight ratio, required relatively simple equipment and could be erected in a relatively short period of time. The research project culminated in the construction of a 45' diameter prototype dome that was to be used as a temporary clubhouse for a golf course just outside of Ann Arbor. The case study dome was erected on June 24, 1963 by three workmen from the Dow Chemical Company. After the initial set-up of the equipment, the dome took only twelve hours to complete. By 1965 Dow's Spiral Generation method of construction had been used on a number of building projects including a theater and convention facility in Traverse City, waste-water equipment shelters in Midland, a planetarium at the University of Toledo and a clinic in Lafayette, Indiana.

Recalling the prototype dome shelters he helped to develop with Fuller during his senior year at Michigan, and likely being aware of the recent innovations in the use of plastics to construct thin-shell structures, Schwartz began to implement his long time desire to construct a home for himself in the form of a dome. In early 1964 Schwartz was contacted by the Dow Company, who had become aware of his design and offered to furnish the materials and equipment necessary to erect the dome in exchange for access to the property to inspect, measure and photograph the dome structure and to tour the home

with parties interested in learning more about this emerging technology. Dow was also interested in obtaining cost information from Schwartz about the additional expense incurred to fit out the house for occupancy. Schwartz entered into an agreement with Dow in March 1964 and purchased the lot on Sturgeon Creek a few months later. Although construction of the dome was rapid, taking a mere fourteen hours to complete, application of the reinforcing steel and concrete coating took several additional weeks. The process of finishing out the interior took even longer as Schwartz did much of the work himself with the help of his father. By 1966 the house was substantially complete and the family was able to move in; however, finishing of the interior continued into 1967. Robert Schwartz lived in the house on W. Sugnet Road until his death in October 2010. Throughout his career Schwartz maintained an interest in the creation of thin-shelled structures and specifically the Spiral Generation technique. After seeing the devastation left by the 2010 earthquake in Haiti, Schwartz wrote the Dow Chemical Company expressing his interest in seeing the company renew its exploration of the Spiral Generation method of constructing thin-shelled dome structures as a quick and efficient means of enclosing space for human occupation.

In addition to a number of commercial, governmental and institutional projects, Robert Schwartz is credited with designing between twenty and thirty single-family residences in Midland during his career as well as several others in association with Glen Beach during the 1950s and Charles Blacklock during the 1960s and 1970s. Some of the houses designed solely by Schwartz in Midland include:

- Frank J. Vitkuske House (1955), 410 Lingle Lane
- Sturart J. Bergstein House (1958), 1200 North Parkway
- Roger Burdick House (1959), 400 Graham St.
- Robert E. Naegele House (1959), 412 Graham St.
- Lester E. Camp House (1960), 3411 Valley Dr.
- James E. VanderKelen House (1962), 3302 Valley Dr.
- Schwartz House (1964)
- John F. Vitkuske House II (1965), 1800 McGregor St.
- Leon L. Martuch House (1967), 3600 Valley Dr.
- Dr. Harold W. Peterson House (1970), 5816 Evergreen St.
- Robert E. Naegele House II (1981), 3606 White Pine Way
- Dr. Robert M. Nowak House (1991), 3603 White Pine Way
- Dr. Thomas E. Evans House (1994), 2415 North Trail
- James R. Jenkins House (1995), 3105 Valley Dr.

Developmental history/additional historic context information (if appropriate)

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

Bartlett, Nancy. *More than a Handsome Box: Education in Architecture at the University of Michigan, 1876-1986.* The University of Michigan College of Architecture and Urban Planning, 1995.

Commercial, Governmental and Religious Buildings Designed by Robert E. Schwartz, Copy obtained from Robert E. Schwartz Jr. Copy (showing addresses) in working file.

"Dome-shaped home of Midland-made materials under construction, Architect Robert Schwartz making contribution to 'City of Modern Homes'" *Midland Daily News*, 30 December 1965.

Garrett, Fred E., "Future Home Already Standing in Michigan," *The Saginaw News*, July 7, 1968.

Gehner, Martin D., Professor of Architectural Engineering, Yale University to Robert E. Schwartz, 12 December 1989. Copy obtained from Robert E. Schwartz Jr.

Harsha, Paul, The Dow Chemical Company to Robert E. Schwartz, 10 September 1969. Copy obtained from Robert E. Schwartz Jr.

"Igloo is a Home Spun, Architect Uses New Dow Process." *The Detroit News.* January, 9, 1965.

Miller, William D., The Dow Chemical Company to Robert E. Schwartz, 24 March 1964. Copy obtained from Robert E. Schwartz Jr.

"Mr. Schwartz Builds a Dome House," *Petroleum Today,* Fall 1968.

Partial List of Midland Houses Designed by Robert E. Schwartz, Copy obtained from Robert E. Schwartz Jr.

Partial List of Midland Houses Designed by Robert E. Schwartz During Partnership with Charles Blacklock, Copy obtained from Robert E. Schwartz Jr.

Partial List of Midland Houses Designed by Robert E. Schwartz While Associated with Glen M. Beach, Copy obtained from Robert E. Schwartz Jr.

Schwartz, Robert Jr. Personal communication with Rob Yallop, 31 January 2012.

Schwartz, Robert E. to Andrew Liveris, The Dow Chemical Company, 28 January 2010. Copy obtained from Robert E. Schwartz Jr.

Smith-Miner Funeral Home, Robert E. Schwartz Obituary, http://smithminer.com/obituary.php?id=306 (accessed September 29, 2011).

"Spiral Generated Dome for the University of Michigan, June 1963, A Case Study Under ORA Project 05687, Sponsored by the Agency for International Development". Photocopy provided by Robert E. Schwartz Jr.

The Dow Chemical Company. *Spiral Generation.* The Dow Chemical Company Plastics Department, Midland, Michigan, 1965.

"The Structural Use of Foam Plastics." *Arts & Architecture*, August 1966.

Ziegler, E. E., "Spiral Generation – A New Concept for Enclosing Space." Photocopy of manuscript provided by Robert E. Schwartz Jr.

Previous documentation on file (NPS):

____preliminary determination of individual listing (36 CFR 67 has been requested)
____previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____recorded by Historic American Buildings Survey #_____
____recorded by Historic American Engineering Record #_____
____recorded by Historic American Landscape Survey #_____

Primary location of additional data:

____State Historic Preservation Office
____Other State agency
____Federal agency
____Local government
____University
____Other
Name of repository: _____

Historic Resources Survey Number (if assigned): _____

Schwartz, Robert E. and Barbara (Vitkuske), House
Name of Property

Midland County, MI
County and State

10. Geographical Data

Acreage of Property 0.82 A
(Do not include previously listed resource acreage.)

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing		Zone	Easting	Northing
1	16	720570	4834660	3			
2				4			

Verbal Boundary Description (Describe the boundaries of the property.)

Property ID# 14-08-70-006

BEG 33 FT N & 300 FT E OF W 1/4 COR SEC 8, E 200 FT, N 89.65 FT, N 33DEG. 21MIN. W 124.2 FT, W 132 FT, S 197.3 FT TO BEG.

Boundary Justification (Explain why the boundaries were selected.)

The boundaries include the .82 acre parcel purchased by Robert E. Schwartz in 1964. The house and full extent of the landscape features that contribute to the setting are included within this boundary.

11. Form Prepared By

name/title Rob Yallop
organization Lord, Aeck & Sargent Architecture date June 2011
street & number 213 South Ashley Street telephone 734-827-3930
city or town Ann Arbor state MI zip code 48104
e-mail ryallop@lasarchitect.com

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.

  A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Continuation Sheets**
- **Additional items:** (Check with the SHPO or FPO for any additional items.)

Photographs:

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map.

Name of Property: Robert E. and Barbara Schwartz House

City or Vicinity: Midland

County: Midland State: MI

Photographer: Rob Yallop, Lord Aeck & Sargent Architecture

Date Photographed: June 21, 2011 and January 31, 2012

1 of 14: Schwartz House from W. Sugnet Road looking south.
MI_MidlandCounty_SchwartzHouse_0001.tif

2 of 14: North elevation looking south.
MI_MidlandCounty_SchwartzHouse_0002.tif

3 of 14: Storage shed and carport looking southeast.
MI_MidlandCounty_SchwartzHouse_0003.tif

4 of 14: West elevation with carport looking northeast.
MI_MidlandCounty_SchwartzHouse_0004.tif

5 of 14: South elevation looking northwest.
MI_MidlandCounty_SchwartzHouse_0005.tif

6 of 14: Southeast elevation looking northwest.
MI_MidlandCounty_SchwartzHouse_0006.tif

7 of 14: Central stair looking south from entry.
MI_MidlandCounty_SchwartzHouse_0007.tif

8 of 14: Study east of entry.
MI_MidlandCounty_SchwartzHouse_0008.tif

9 of 14: Sunken living room.
MI_MidlandCounty_SchwartzHouse_0009.tif

10 of 14: Dining area and living room screen.
MI_MidlandCounty_SchwartzHouse_0010.tif

11 of 14: View of kitchen looking southeast.
MI_MidlandCounty_SchwartzHouse_0011.tif

12 of 14: View of master bedroom looking east.
MI_MidlandCounty_SchwartzHouse_0012.tif

13 of 14: View of second floor bedroom.
MI_MidlandCounty_SchwartzHouse_0013.tif

14 of 14: View of third floor with central stair railing.
MI_MidlandCounty_SchwartzHouse_0014.tif

Property Owner:

(Complete this item at the request of the SHPO or FPO.)

name The Barbara J. Schwartz Trust

street & number 3201 W. Sugnet Road telephone

city or town Midland state MI 48640-2637

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).
Estimated Burden Statement: Public reporting burden for this form is estimated to average 18 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management. U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

AVERILL QUADRANGLE
MICHIGAN—MIDLAND CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE/4 SANFORD 15' QUADRANGLE

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1972. Field checked 1973

Projection and 10,000-foot grid ticks: Michigan coordinate system, south zone (Lambert conformal conic)
1000-metre Universal Transverse Mercator grid ticks, zone 16, shown in blue. 1927 North American datum

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U. S. Route — State Route

QUADRANGLE LOCATION

AVERILL, MICH.
NE/4 SANFORD 15' QUADRANGLE
N4337.5—W8415/7.5
1973
AMS 4171 III NE—SERIES V862

USGS
Historical File
Topographic Division

Robert E. and Barara (Vitkuske) Schwartz House
Midland Co., MI
16 720570
4834660

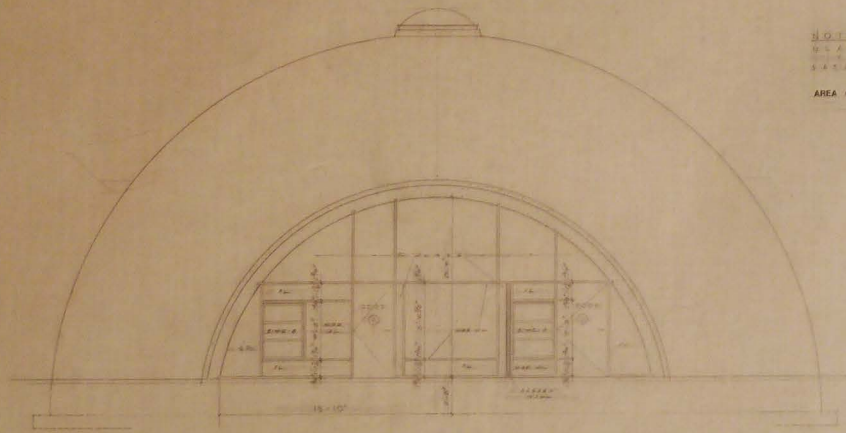
APR 11 1977

U.S. MAIL

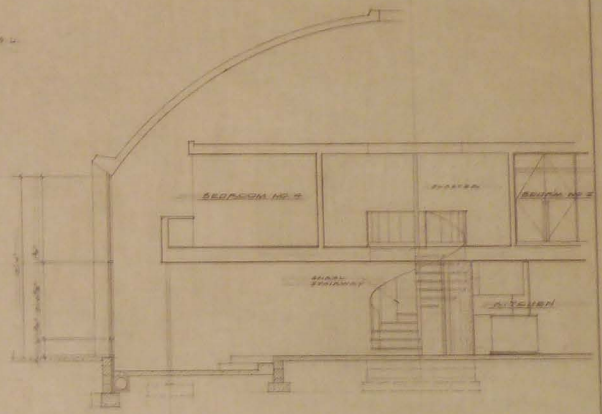
ROBERT A. M. STERN HOUSES

NOTE:
GLASS MARKED PL. 1/4" POL. PL.
" " OBS. 1/4" SAND BLASTED PL.
BATH ARE GLAZED BY MANUFACTURER

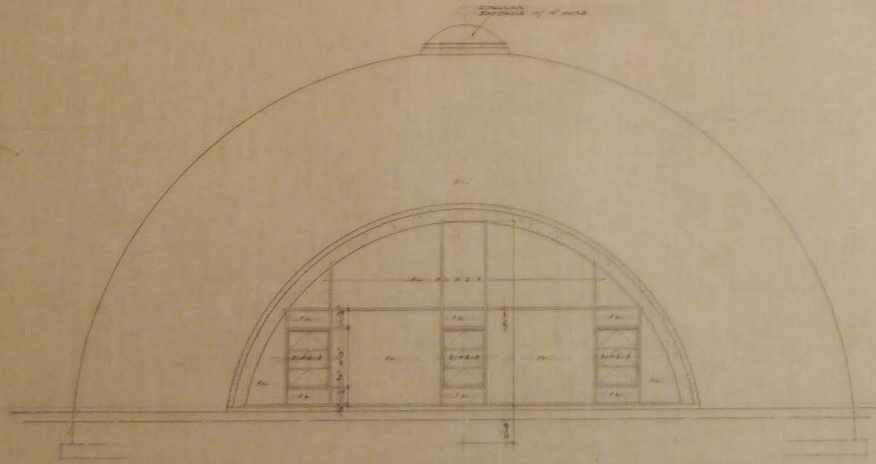
AREA OF HEMISPHERE = 3510 sq. ft.



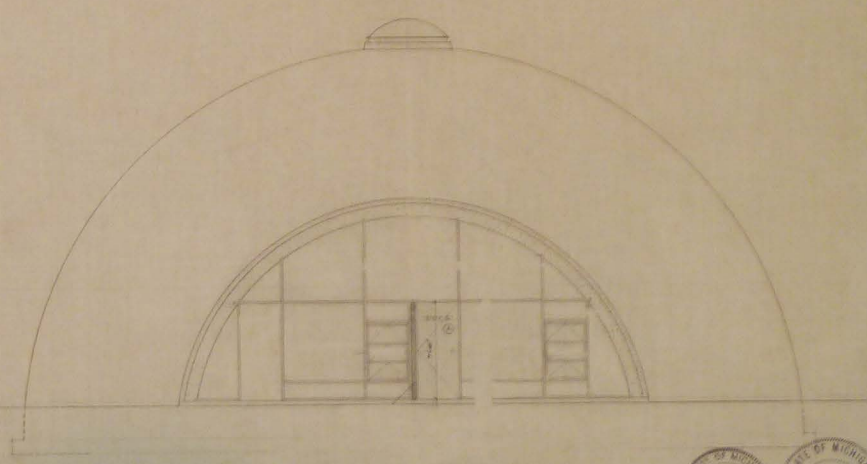
NORTH ELEVATION



· SECTION A-A ·



SOUTHEAST ELEVATION



SOUTHWEST ELEVATION

THE ROBERT E SCHWARTZ HOU

NOV 1, 1964

5

1992 ALTERATIONS AND ADDITIONS TO

THE ROBERT E. SCHWARTZ HOUSE

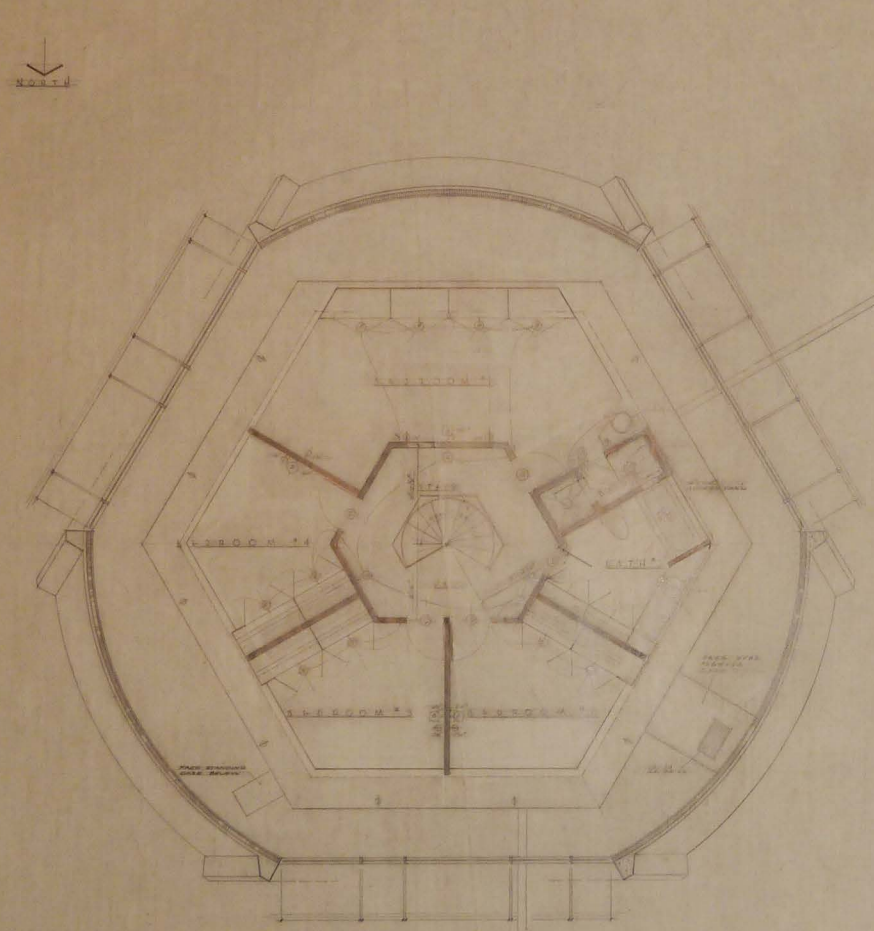
MIDLAND, MICHIGAN

FIRST FLOOR PLAN

1992 HOME IMPROVEMENTS			HOME IMPROVEMENTS			
IMPROVEMENT	VENDOR	COST	IMPROVEMENT	VENDOR	COST	DATE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

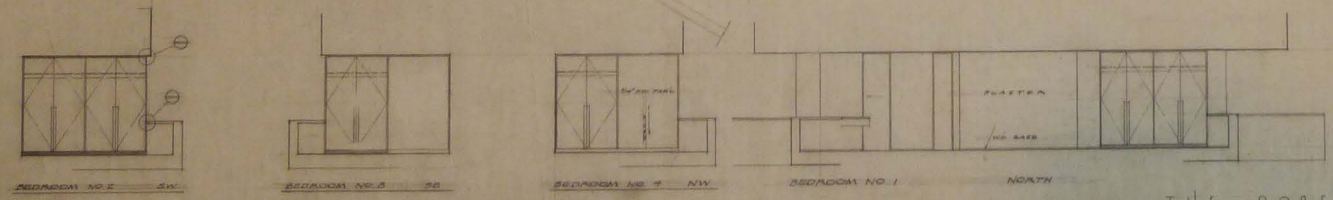
STATE OF MICHIGAN
ROBERT E. SCHWARTZ
ARCHITECT
No. 10662
REGISTERED ARCHITECT

A3



SECOND FLOOR PLAN

1/4" = 1'-0"

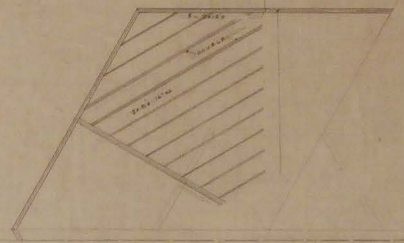


BEDROOM NO. 2 SW

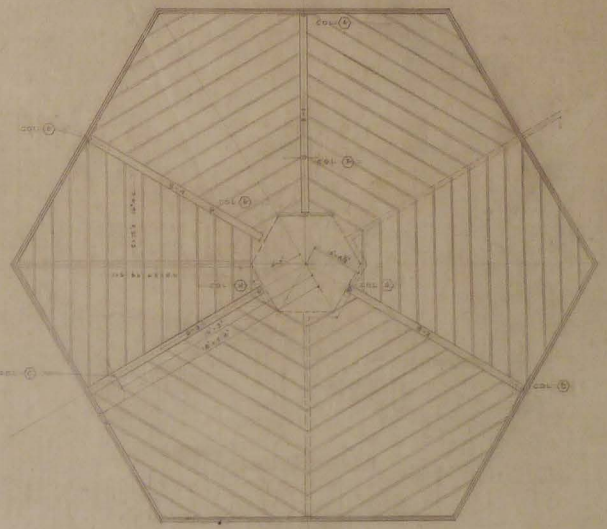
BEDROOM NO. 3 SE

BEDROOM NO. 4 NW

BEDROOM NO. 1 NORTH



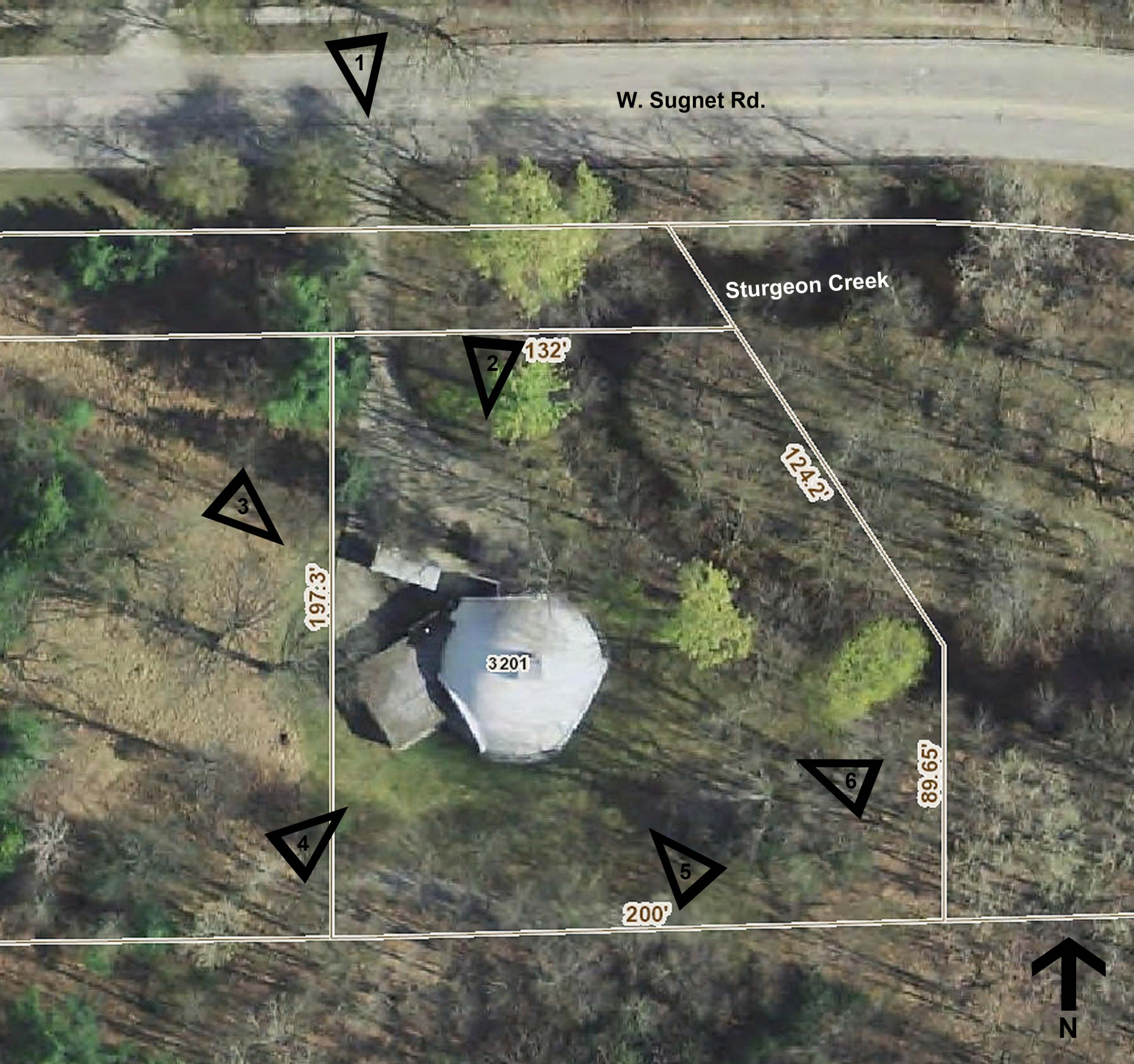
PARTIAL THIRD FLOOR FRAMING PLAN



SECOND FLOOR FRAMING PLAN

STATE OF MICHIGAN
ROBERT E. SCHWARTZ
ARCHITECT
No. 10642
REGISTERED ARCHITECT

THE ROBERT E. SCHWARTZ HOUSE


1
W. Sugnet Rd.
Sturgeon Creek
2
132'
124.2'
3
197.3'
3201
6
89.65'
4
5
200'
N