Menasha Corporation

Secondary Fiber Building

General Description:
- **Location:** Otsego, Michigan
- **Profile:** Paper Manufacturing Plant
- **Project:** Construction of new building over existing building

Services Provided:
- Evaluation
- Design Development
- Construction Documents
- Bidding Assistance
- Field Quality Assurance

Challenge:
- Owner didn't want to have to shut down operations and move to a new building - causing loss of revenue
- Needed a deck that would withstand high relative humidity because of the paper manufacturing process
- High relative humidity posed a potential hazard to the new roof assembly

Solution:
- New structure was designed over and around existing structure, allowing production to continue without disruption
- Designed a stainless steel deck with proper slope to prevent degradation from humidity and moisture
- Designed two layers of vapor retardant and high R-value insulation to prevent damage to roof assembly

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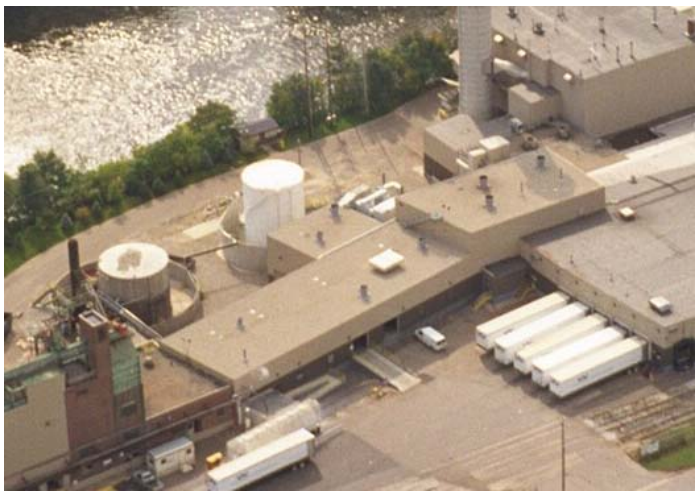
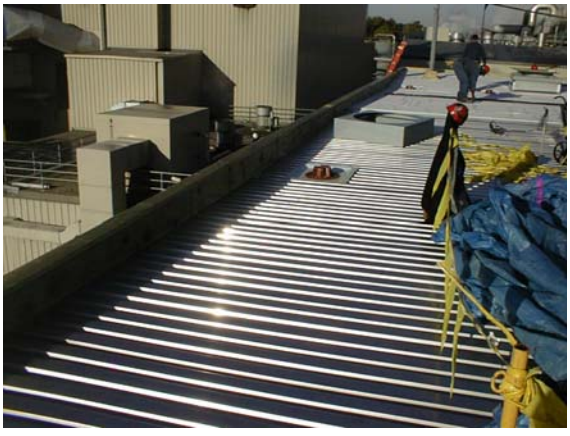
Facing a possible shutdown of a portion of their plant, Menasha Corporation was in need of an innovative solution to replace their Secondary Fiber Builidng. With the walls deflecting from the building, the extreme degradation and loss of structural integrity had created an at-risk situation for structural failure. Moving operations to a new facility would cause significant loss of revenue due to temporary loss of manufacturing capacity. After selecting a Construction Manager, Menasha consulted StructureTec for assistance in designing the solution – a new facility constructed over and around the existing facility. StructureTec had been working with Menasha for over ten years on remedial projects and was asked to provide a total design of the roof deck and roof system and a cursory review of the wall and building envelope design. By constructing a new building around the existing structure, Menasha was able to maintain production while replacing their current building. The plan included constructing three of the walls and the roof and deck then demolishing the orignial building inside the new structure and removing the refuse before completing construction on the new facility. The major challenge the new facility faced was the high relative humidity of the manufacturing process on the inside of the facility which had contributed to the structural problems in the original builidng. Stainless steel was chosen for the roof deck and incorporated into the wall design to combat the problem. The roof assembly also faced a challenge from this humidity. Potential moisture ingress from the humidity and the associated dew point considerations made the design of the roof system assembly critical for its longevity and durability. Gypsum deck board and two plies of vapor retardant combined with flexible neoprene flashings were designed over the stainless steel deck to avert the moisture



Overview of the completed new building.



Stainless steel deck installed to withstand high relative humidity of manufacturing process below.

StructureTec® *Project Profile*

Roofing - Corporate

New structure was constructed over and around existing building.

New roof assembly included built-up membrane with modified cap sheet, flood coat, and roofing aggregate.

from entering the roof assembly. Two layers of insulation were designed to ensure a high R-value. Tapered insulation in the form of crickets and saddles was also incorporated to enhance drainage conditions and impede ponding water from developing and causing stress to the roof system. The design of the new roofing consisted of an asphalt built-up roof membrane overlaid with a smooth surface, modified bitumen cap sheet. The design also included an asphalt flood-coat over the system with roofing aggregate imbedded in the flood-coat for a protective FM approved finish. This design ensured that the high foot traffic necessary to accomodate the rooftop equipment would not damage the roof. The final design was a roofing assembly which was highly protected from humidity below and foot traffic above. The Construction Document package was then assembled. StructureTec assisted in the bidding process, ensuring that the specialized contractor selected was capable of performing the highly technical aspects of the job. Extensive Field Quality Assurance was employed to make certain that the high standards necessary were employed during the workmanship phase. The finished product included a roof deck and assembly which would safeguard the manufacturing process below. In conclusion, Menasha Corporation was able to maintain operations while constructing a durable, long-lasting new facility to house their production process. The specialized design of the roof system, deck, and structure will ensure that Menasha has a building which will yield the highest return on investment. ■

FEATURES	BENEFITS
Designed built-up with modified cap sheet	Durable for high traffic areas and longevity
Installed new structural support and decking	Provides additional structural support for extensive rooftop equipement
Designed new fascia system	Prevents splits and fractures along edge detail
Provided field of the roof metal flashing details	Long-term details requiring minimum maintenance over the service life
Provided Field Quality Assurance	Ensures high quality end product
Designed high R-value insulation system with vapor retarder	Allows for high relative humidity conditions inside the facility
Designed insulation saddles and crickets	Prevents standing water by aiding water dispersion

StructureTec® Project Profile