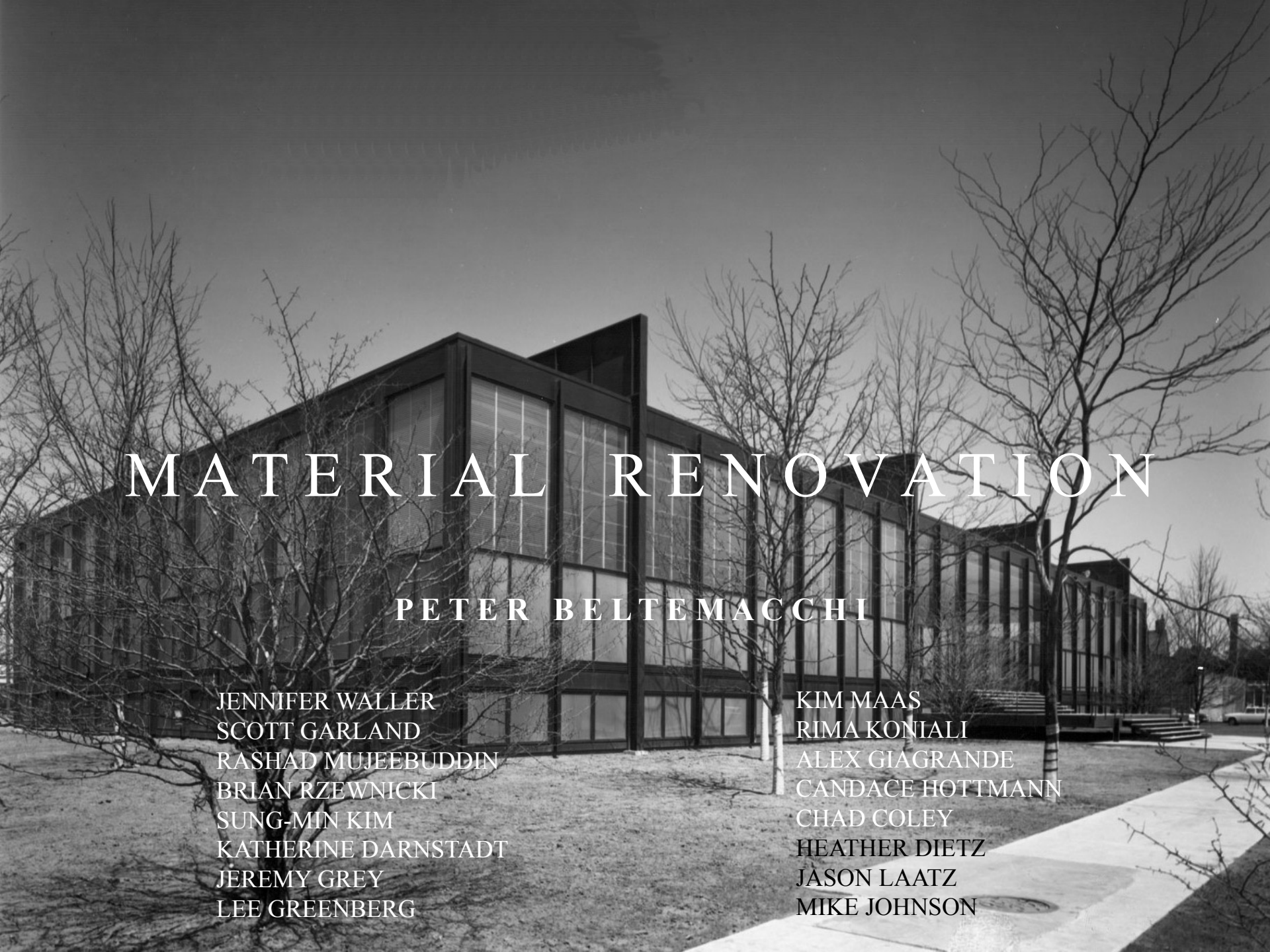

MATERIAL RENOVATION

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G O A L

To create a realistic proposal for renovating and restoring Crown Hall to Mies Van der Rohe's original vision while still keeping the building functional for today. By following guidelines for its new landmark status and last semester's research on the high priority problems of the building we created a plan of restoration that is hopefully comprehensive enough to put into effect as soon as possible.

BUILDING ENVELOPE

- Steel Structure
  - Devise a plan to restore the exterior structural steel of Crown Hall
  - Major problem with the exterior steel was that it was not maintained properly.
  - it should have been cleaned, repainted, and had any exterior rust removed off of it.
  - rust on the steel is caused by moisture mostly do to weather conditions
  - This rust causes the steel to expand and contract, which in turn causes steel members to bow, which causes windows to crack.

BUILDING ENVELOPE

- Steel Structure
  - If the problem is not dealt with, the overall structural soundness of the building could be affected negatively
  - In these pictures, you can see the rust on the steel and how it is reducing the section modulus of the members.
  - You can also see the member above the door frame and how it is bowed.

BUILDING ENVELOPE

- Glass
  - The window frame contains a 5/16” piece of glass.
  - To insulate the building a double paned glass was considered, but could not be installed because it is a landmark building.
  - A landmark building cannot change any profile of the building. Eg. shape of window frame.
  - A lot of windows have cracked because of problems with the outside steel rusting and expanding.

BUILDING ENVELOPE

- South Porches
  - Terrace is an exposed steel structure with a concrete slab on a corrugated metal deck covered by travertine pavers.
  - The steel deck was rusted in 1997 and shows a significant amount of additional rust currently.
  - The extent of corrosion indicates that the waterproof membrane has been compromised in several areas.
  - The concrete slab and metal deck are unsalvageable. The steel and concrete will have to be replaced.

BUILDING ENVELOPE

- South Porches
  - Drains on the south enterance were found to be either clogged or only partially opened. Since the situation has worsened, more pieces of decaying concrete, steel, stone and Calcite deposits are blocking the drainage system. Some of the drains are even no longer attached.
  - Due to the extreme decay of the concrete and metal structure, our representative from Scecnak Assoc. has suggested that a new system be designed
  - Some of the railings around the deck have had their welds broken and need to be cleaned, painted and re-welded to the structure.
  - Immediate action should be taken to preserve this landmark before it promotes further damage.

BUILDING ENVELOPE

- North Porches

BUILDING ENVELOPE

- Penthouse
  - This houses a majority of the mechanical equipment for the building. However, as a structure it is built in the exact same manner as the rest of Crown, which means that structurally it is suffering from the same problems.
  - Both the primary steel beams of the roof as well as the smaller window mullions are severely rusted.
  - They also have vines that have embedded themselves into the steel furthering the damage every year.
  - The solutions for this are the same as those for the exterior steel of Crown Hall.

BUILDING ENVELOPE

- Mechanical
  - There are two main components to the mechanical system. The heating and cooling system which is known as the Delta system.
  - We could potentially have Siemens system installed in Crown for a fee of at least $46,000.
  - Instead it seems to make more sense to focus on elements such as thermal insulated glass before revamping the system.
  - Crown has more temperature issues because of its steel and glass design not because of the mechanical equipment.
  - Second main component is ventilation. This consists of three floor mounted horizontal discharge air handlers and sidewall propeller exhaust fans, all of which are located up in the Penthouse.

BUILDING ENVELOPE

- Mechanical

BUILDING ENVELOPE

- North entry doors
  - They consist of a stainless steel frame with a glass light and balanced door hardware.
  - The doors have wracked (twisted) over the last 50 years.
  - They are not correctly fitting into their frames.
  - The hardware has also worn down over time.
  - The frames, doors, and hardware can all be recreated exactly as they were originally made, as the Northcamp Company has the original shop drawings.
  - A total of four pairs of doors would be needed.

BUILDING ENVELOPE

- Lower exterior mechanical room doors
  - Under the north porch is a mechanical room accessed by steel doors at the bottom of the east and west entry stairways.
  - On the east side of the building is a double set of doors and on the west side is a single door.
  - Both sides have louvered vents at the bottom.
  - All three of these doors have severe rust problems and should be replaced in order to provide security and weather protection for the mechanical equipment inside.

BUILDING INTERIOR

- Louvered vents
  - Under each window around the exterior of the building on the upper level is a louvered vent.
  - There is a plywood panel that hinges open and locks with latches.
  - The hardware on many of these vents is rusted and/or non-functional due to broken latches or hinges.
  - The hardware on all of the vents should be replaced, and the vents and covers should be cleaned and repainted.
  - There is also a problem with ivy growing inside the building through the vents, and the ivy should be removed.

BUILDING INTERIOR

- Lockers
  - Made of seven-ply exterior-grade plywood
  - Generally in good condition
  - Surfaces to be stripped and fill
  - Alkyd enamel to be applied
  - Repair/replace lock sets

BUILDING INTERIOR

- Wood Panels
  - Made of seven-ply Spruce Plywood
  - Surfaced with 1/4" White Oak veneer
  - Veneer too thin to be sanded and refinishe
  - Two options for restoration: apply new veneer or replace panels entirely
  - Decision will be based on price


THE END