

Engineer Report

**Waterfront Market
201 William Street
Key West, Florida 33040**

September 30, 2010



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Key West, Florida 33040**

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Section 1: Scope of Work

The purpose of this Engineer Report is to provide a professional evaluation of the building structure at the Waterfront Market Building, Key West, Florida.

Section 2: Existing Conditions

The Waterfront Market Building is located at 201 William Street adjacent to the Key West Bight on the island of Key West, Florida. (See Attachment A, Local Map and Attachment B, Site Map)

The Waterfront Market Building is comprised of four contiguous building structures; Building Structure A, Building Structure B, Building Structure C and Building Structure D. (See Attachment C)

Building Structure A was originally constructed approximately 1970. The frame and foundation were constructed of reinforced concrete members with masonry block infill walls. The building structure is one story except the west end. The west end foundation is lower than the remainder of the building structure. The west end is two stories. The first floor of the entire building structure is constructed with a reinforced concrete slab at grade level. The second floor of the west end of the building structure is constructed of wood framing members and is supported by steel columns and beams. The roof structure is common over the entire building structure, is constructed of precast concrete T sections and is covered with a single-ply membrane.



Photo 01- Building Structure A
Two Story (West End)



Photo 02 - Building Structure A
One Story

Building Structure B was originally constructed approximately 1992. The building frame and foundation were constructed of reinforced concrete members with masonry infill walls. The first floor is constructed with a reinforced concrete slab at grade level. There is a second floor terrace constructed at the north end of the building and second and third floor terraces constructed at the south end of the building. The terraces are constructed of steel framing members and supported by steel columns and beams. The roof structure over Building Structure B is constructed of precast concrete T sections and is covered with a single-ply membrane.

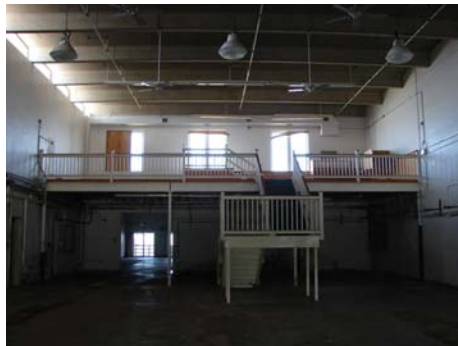


Photo 03
Building Structure B
Second Floor Terrace



Photo 04
Building Structure B
Second and Third Floor Terraces

Building Structure C was originally constructed approximately 1992. The building frame and foundation were constructed of reinforced concrete members with masonry infill walls. The first floor is constructed with a reinforced concrete slab at grade level. The second floor and the roof structure are constructed of precast concrete T sections. The roof structure is covered with a single-ply membrane.



Photo 05 - Building Structure C
First Floor

Building Structure D was originally constructed approximately 1992. The building frame and foundation were constructed of reinforced concrete members with masonry infill walls. The first floor is constructed with a reinforced concrete slab at grade level. The roof structure over Building Structure D is constructed of precast concrete T sections and is covered with a single-ply membrane.



Photo 06 - Building Structure D
First Floor

Section 3: History

The Waterfront Market Building is owned by the City of Key West and leased to several entities. Building Structure A is used primarily for retail use. The second floor of the west end of the building is used by the City of Key West for professional office space. Building Structure B is currently vacant and was last used for retail use as the Waterfront Market. Building Structure C and Building Structure D are currently vacant and were used as cooler space, storage and office space in support of the Waterfront Market that was located in Building Structure B.

The City of Key West is considering renovating the Waterfront Market Building and evaluating options for future use. The City of Key West retained the services of Sea Tech, Inc. via Perez Engineering & Development, Inc. to provide a structural evaluation of the Waterfront Market Building to assist the staff of the City of Key West in making a decision on future renovation options.

Section 4: Findings & Discussion

The initial building observations were conducted on 31 August 2010. The attendees included Mr. Paul R. Semmes, PE, and John Paul Castro representing SeaTech, Inc., and Mr. Doug Bradshaw and Ms. Marilyn Wilbarger representing the City of Key West. The interior spaces of the buildings were observed as well as the exterior wall surfaces and limited areas of the roofs.

Additional field observations were conducted on 30 September 2010 by Mr. John Paul Castro representing Sea Tech, Inc. The interior spaces of the buildings were observed as well as the roof areas

There was no invasive work requested or performed during the observation. The observations were limited to the components of the building that were readily visible from the exterior grade level, roof and interior floor levels.

BUILDING STRUCTURE A

Building Structure A was observed and photographed by Mr. Semmes and Mr. Castro. The photographs are included in Section 6, Photographs.

The reinforced concrete foundation was observed from the finished floor level and the from the exterior grade adjacent to exposed areas of the foundation perimeter wall. There were no signs of significant structural damage such as large cracking, settlement, spalling, etc.

The reinforced concrete columns and beams were observed from the interior finished floor level and from the exterior grade level and roof areas adjacent to exposed exterior surfaces. There were signs of spalling damage in the structural columns and beams and in the concrete infill walls at the ends of the precast concrete T-sections. The spalling damage appeared to be worse at the building connection between Building Structure A and Building Structures C and D.

There was limited access to the second floor framing members at the west end of the building structure. The second floor framing members were observed from an opening in the ceiling of a storage room on the first floor. There were no signs of damage noted to the second floor framing members that were accessible. The exposed wood floor framing members were not rotted, deteriorated or otherwise defective and the exposed structural steel framing members were not rusted, deformed or otherwise damaged.

The precast concrete roof T-sections were observed from the finished floor level below and from the roof level adjacent to exposed surfaces. There were no signs of significant damage such as cracking, settlement, spalling, etc. There was evidence of ponding water at the west end of the building structure and along the building connection between Building Structure A and Building Structures B and C.



Photo 07 - Building Structure A
Roof Coverings (West End)



Photo 08 - Building Structure A
Roof Coverings (Building Connection)

BUILDING STRUCTURE B

Building Structure B was observed and photographed by Mr. Semmes and Mr. Castro. The photographs are included in Section 6, Photographs.

The reinforced concrete foundation was observed from the interior finished floor level and from the exterior grade adjacent to exposed areas of the foundation perimeter wall. There were no signs of significant damage such as large cracking, settlement, spalling, etc.



Photos 09 and 10 - Building Structure B
Damaged T-section

The reinforced concrete columns and beams were observed from the interior finished floor level and from the exterior grade level and roof areas adjacent to exposed exterior surfaces. There were signs of spalling damage in the structural columns and beams and in the concrete infill walls at the ends of the precast concrete T-sections. The spalling damage appeared to be worse at the building connection between Building Structure A and Building Structures C and D.



Photo 11- Building Structure B
Damaged Column

The second and third floor terraces were observed from the interior finished floor levels below. There were no signs of damage to the terrace framing. The steel floor framing and structural framing members were not rusted, deformed, deteriorated or otherwise damaged.

The precast concrete roof T-sections were observed from the finished floor level below and from the roof level adjacent to exposed surfaces. There was damage noted at the end of a precast concrete roof T-section where the T-sections overhang the structural walls. The damage was isolated to the end of the T-section. The damage did not appear to be significant to the structural integrity of the roof T-section.

BUILDING STRUCTURE C

Building Structure C was observed and photographed by Mr. Semmes and Mr. Castro. The photographs are included in Section 6, Photographs.

The reinforced concrete foundation was observed from the interior finished floor level and from the exterior grade adjacent to exposed areas of the foundation perimeter wall. There were no signs of significant damage such as large cracking, settlement, spalling, etc.

The reinforced concrete columns and beams were observed from the interior finished floor level and from the exterior grade and roof areas adjacent to exposed exterior surfaces. There were signs of spalling damage in the structural columns and beams and in the concrete infill walls at the ends of the precast concrete T-sections. The spalling damage appeared to be worse at the building connection between Building Structure A and Building Structures C and D.

The precast concrete second floor and roof T-sections were observed from the interior finished floor levels below and from the roof areas adjacent to exposed surfaces. There were no signs of significant damage such as cracking, settlement, spalling, etc.

BUILDING STRUCTURE D

Building Structure D was observed and photographed by Mr. Semmes and Mr. Castro. The photographs are included in Section 6, Photographs.

The reinforced concrete foundation was observed from the interior finished floor level and from the exterior grade adjacent to exposed areas of the foundation perimeter wall. There were no signs of significant damage such as large cracking, settlement, spalling, etc.

The reinforced concrete columns and beams were observed from the interior finished floor level and from the exterior grade and roof areas adjacent to exposed exterior surfaces. There were signs of spalling damage in the structural columns and beams and in the concrete infill walls at the ends of the precast concrete T-sections.

The precast concrete roof T-sections were observed from the interior finished floor level below and from the roof areas adjacent to exposed surfaces. There were no signs of significant damage such as cracking, settlement, spalling, etc. There was evidence of ponding water at the west end of the building structure.



Photos 12 and 13 - Building Structure D
Roof Ponding Water

Section 5: Conclusions & Recommendations

There was no visible evidence of significant structural damage to the building foundations and roof structures. The structural damage noted was located in the structural columns and beams of the exterior walls of the building structures. The damage noted fell within the categories of: 1) Concrete Spalling Damage and 2) Possible Structural Overload Damage.

Concrete Spalling Damage is common throughout the Florida Keys. The high highly corrosive coastal environment combined with humidity and frequent wetting and drying periods allow moisture intrusion to carry chlorides into concrete members. This introduction of chlorides creates an electrolytic current within the concrete which decomposes the reinforcement steel. The steel expands and thus cracks the concrete. The situation is exacerbated when inferior construction materials and techniques are employed

The quantity of concrete spalling damage in this building is significant due to the size of the building. The building is large and so the quantity of structural mass is also large. Even though the ratio of damage to total structural mass is likely within an acceptable threshold to justify repairs, the total quantity of repairs would likely be significant. It is recommended that a cost-benefit analysis be performed with consideration given to the proposed use of the building to determine whether or not the current configuration is suitable for future use and whether or not concrete spalling repairs should be made.

The possibility of Structural Overload is present in the columns and beams that support the roof T-sections redundantly between adjacent building structures. (Attachment F) There is cracking that is indicative of shear stress that occurs when a structural member is overloaded. The might only be concrete spalling damage

but could not be determined by visual inspection only. The roof T-sections in the areas shown should be temporarily supported until the damaged structural members are repaired or replaced. The condition could possibly be dangerous to life and/or safety.

The interior terrace and floor structures in Building Structure A and Building Structure B were sound but might need modifications depending on proposed new uses.

The roof over Building Structure A holds water. The water has likely caused damage to the structure at the building connection between Building Structure A and Building Structures B and C. The damage to the structure should be repaired and the roof should be repaired to provide proper drainage.

The work described herein should be designed by a qualified design professional and installed by a qualified contractor.

Paul R. Semmes, PE



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SHEET: ATT. "A"
DATE: 10-14-10
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WATERFRONT MARKET

LOCAL MAP



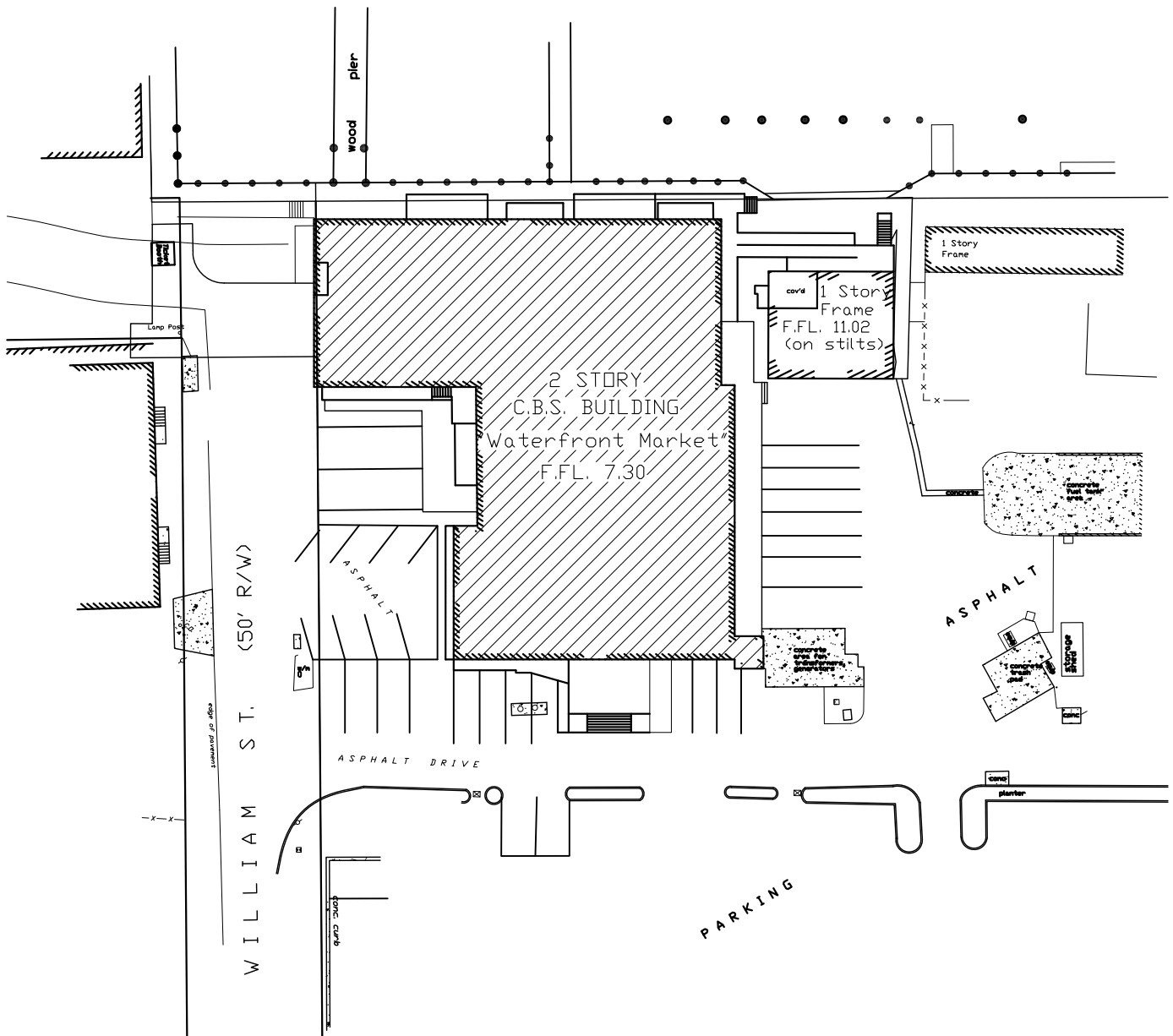


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WATERFRONT MARKET

SITE MAP



SCALE: 1"=60'

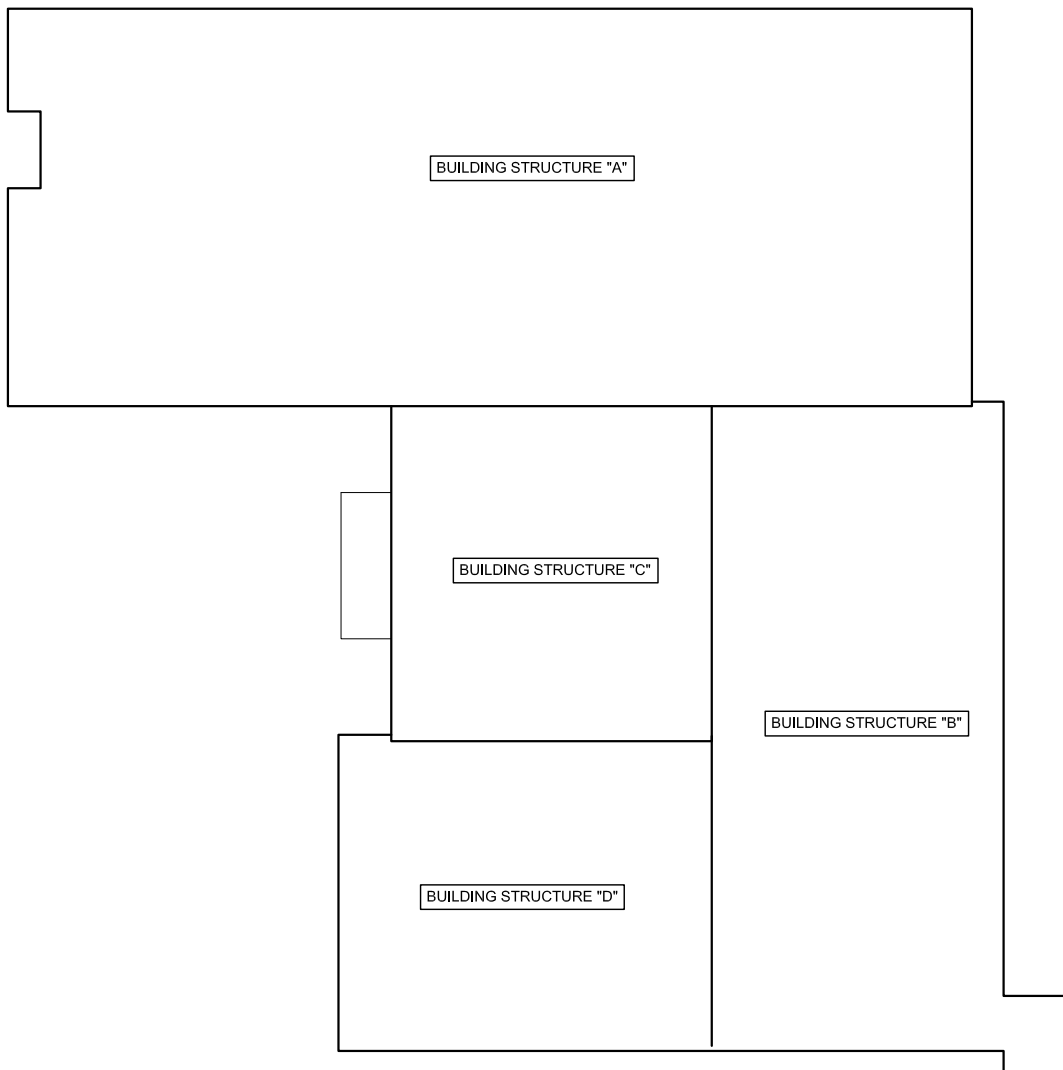


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WATERFRONT MARKET

BUILDING PLAN





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WATERFRONT MARKET

PHOTOGRAPH LEGEND - INTERIOR



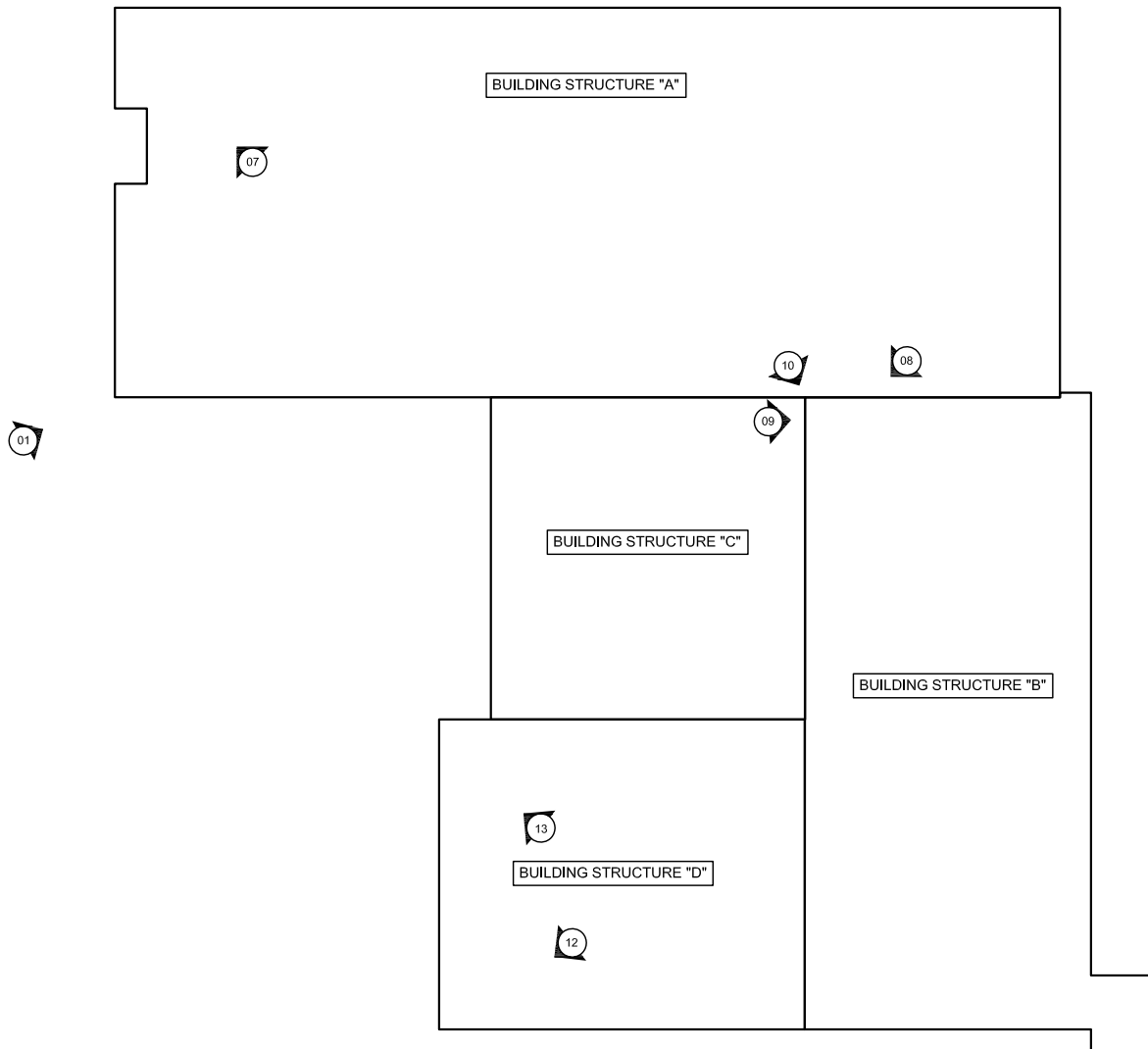


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PHOTOGRAPH LEGEND - EXTERIOR





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STRUCTURAL PLAN

