Substantial Damage Inspection Procedure

FEMA Region III

5 Ps, Prior, Planning, Promotes, Perfect, Procedures!

1. Plan how to accomplish the goals of performing substantial damage inspections, what resources do you have at your disposal?
2. Coordinate with the entire community.
3. What teams will go where, route development.
4. Who will enter data or calculate damages.
5. Transportation, drivable or walkable inspections?
6. Quality Control!

Ground Rules! Required! No-Compromise!

1. Inform Law Enforcement you and your teams will be in the area.
2. Never enter a property with posted, no trespassing, beware of dog, or purple paint.
3. Upon arriving at a property, always knock on the door, no exceptions.
4. Be polite, listen, survivors may need a comforting ear, never one up them, be understanding.
5. Take photos at an angle and if possible get the address in the photo, never have the survivor in the photo.
6. You are assisting the community to obtain damage data, the community will make the substantial damage determination.
7. The community (AHJ) condemns properties, FEMA does not have that authority.

Substantial Damage Worksheet

SDE Residential Worksheet

Inspector Name: _____

Inspection # _____ Photo # _____ Date _____

PROPERTY LOCATION

Latitude: _____ Longitude: _____

Street Address: _____

City, State, Zip: _____

County: _____

STRUCTURE ATTRIBUTES

Residence Type: ◯ Single Family Residence ◯ Town or Row House ◯ Manufactured House

Foundation: ◯ Continuous Wall w/Slab ◯ Basement ◯ Crawl space ◯ Piles ◯ Slab-on-Grade ◯ Piers & Posts

Superstructure: ◯ Stud Framed ◯ Common Brick ◯ ICF ◯ Masonry

Roof Covering: ◯ Shingles – Asphalt, Wood ◯ Clay Tile ◯ Standing Seam (Metal) ◯ Slate

Exterior Finish: ◯ Siding or Stucco ◯ Brick Veneer ◯ EIFS ◯ None – common brick, structural

HVAC System: ◯ Heating and/or Cooling ◯ None

Story: ◯ One Story ◯ Two or more Stories

Quality: ◯ Low ◯ Budget ◯ Average ◯ Good ◯ Excellent

Year of Construction: _____

Date Damage Occurred: ___/___/_____

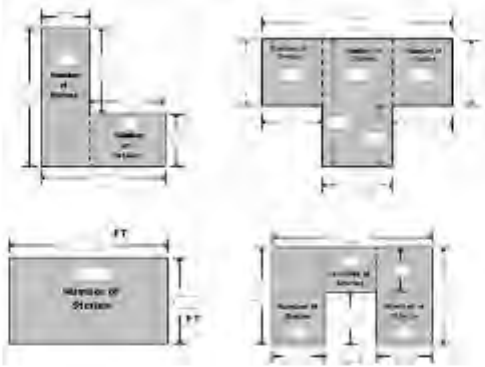
Cause of Damage: ◯ Fire ◯ Flood ◯ Flood and Wind ◯ Seismic ◯ Wind ◯ Other

Duration of Flood: _____ ◯ Hours ◯ Days

Depth of Flood Above Ground: _____

Depth of Flood Above 1st Floor: _____

DIAGRAM w/ MEASUREMENTS and NUMBER OF STORIES:



ELEMENT PERCENTAGES

Foundation	____%	Cabinets & Countertops	____%
Superstructure	____%	Floor Finish	____%
Roof Covering	____%	Plumbing	____%
Exterior Finish	____%	Electrical	____%
Interior Finish	____%	Appliances	____%
Doors and Windows	____%	HVAC	____%

MISC NOTES:

NAHB National Association of Home Builders

2017 Cost Study

- Breakdown

Foundation	12.7%
Superstructure	21.8%
Roof Covering	3.8%
Exterior Finish	7.9%
Interior Finish	17.8%
Doors and Windows	4.5%
Cabinets and Countertops	5.8%
Floor Finish	5%
Plumbing	7%
Electrical	6.7%
Appliances	1.75%
HVAC	5.5%

http://www.nahbclassic.org/generic.aspx?genericContentID=260013/

Residence Type

Foundation

Superstructure

Exterior Finish, Story, & Roof Covering

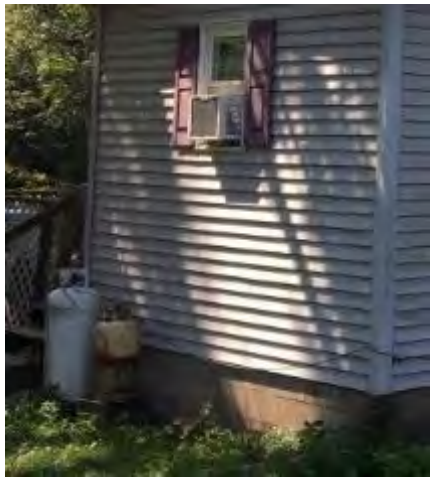
HVAC

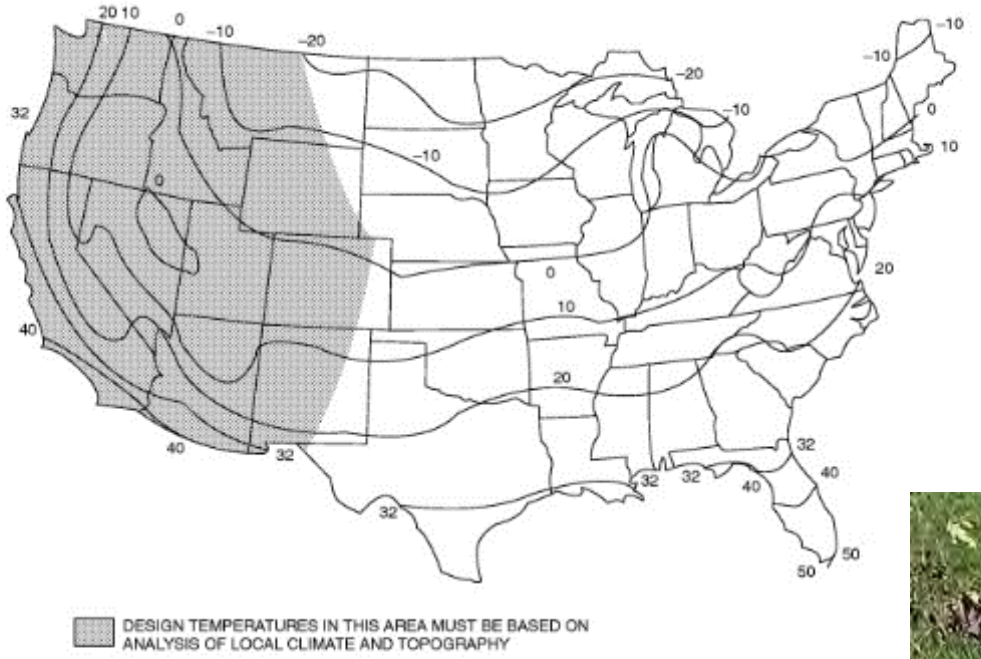
2018 International Residential Code for One- and Two-Family Dwellings
(First Printing: Aug 2017)

CHAPTER 3 BUILDING PLANNING

R303.10 Required heating.

Where the winter design temperature in Table R301.2(1) is below 60°F (16°C), every *dwelling unit* shall be provided with heating facilities capable of maintaining a room temperature of not less than 68°F (20°C) at a point 3 feet (914 mm) above the floor and 2 feet (610 mm) from exterior walls in habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance with this section.





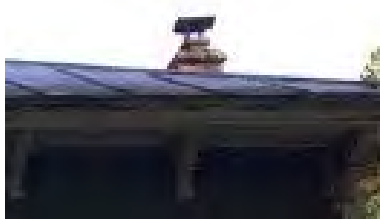


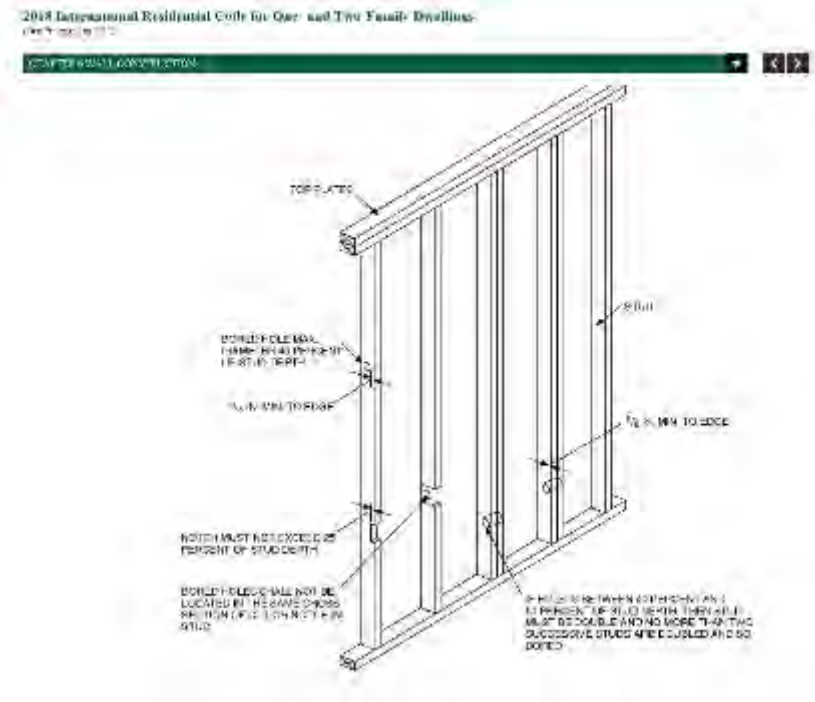
FIGURE R301.2(1)
ISOLINES OF THE 97½-PERCENT WINTER (DECEMBER, JANUARY AND FEBRUARY) DESIGN TEMPERATURES (°F)

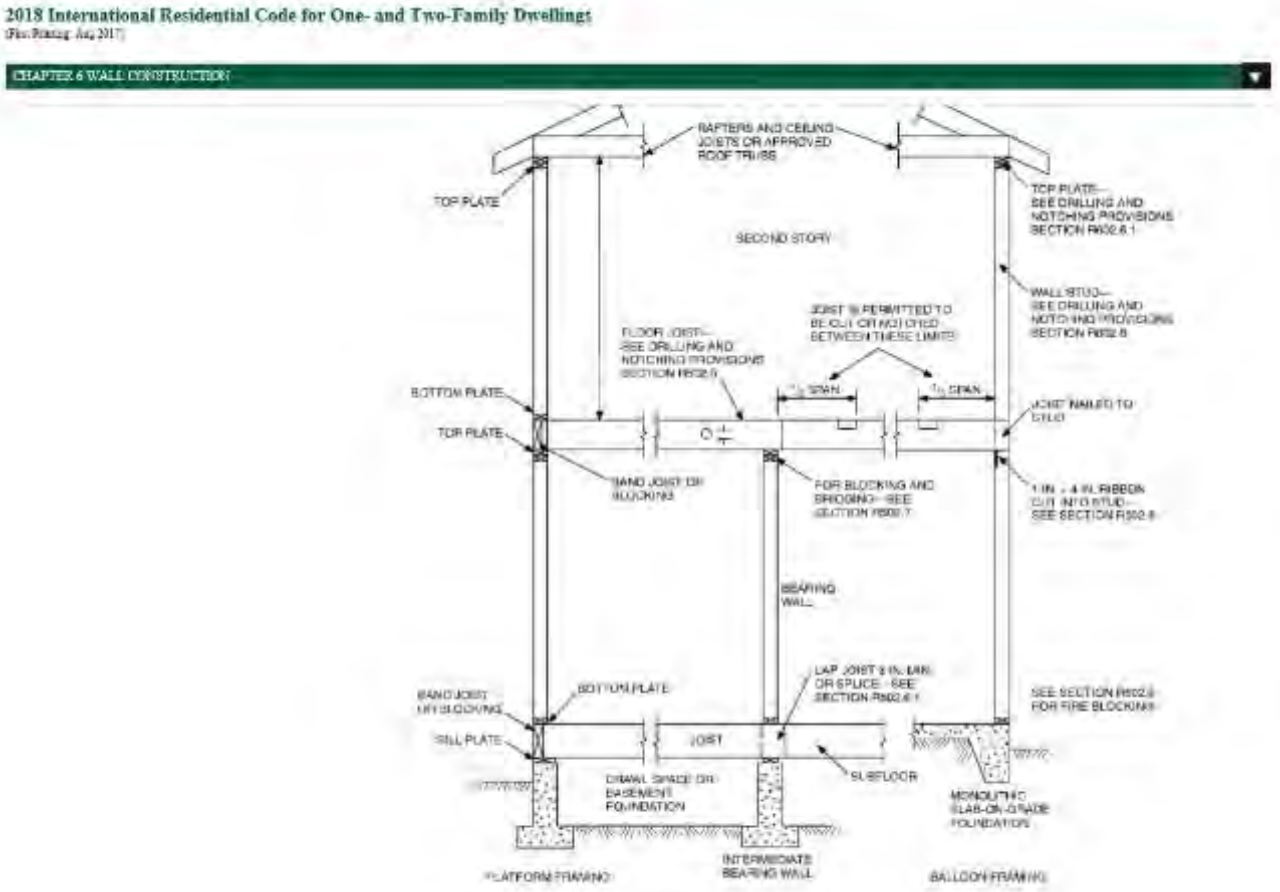
Quality

Quality prior to the event occurring!

Determining the Height of Flooding

Housing Components





Footers and Foundation

- Check for damage around the house:
  - Was footers or foundation undermined and allowed to settle?
  - Are there cracks, if so are the cracks new or existing prior to the event?
  - Are there portions missing?

Superstructure

- Walls and Roof Support
  - Did they become inundated?
  - Are they twisted, bowed, or broken?
  - Are portions missing?

Exterior Finish

- Does it need cleaned?
- Damaged?
- Missing?

Interior Finish

- Damage to Drywall or other wall coverings?

Doors and Windows

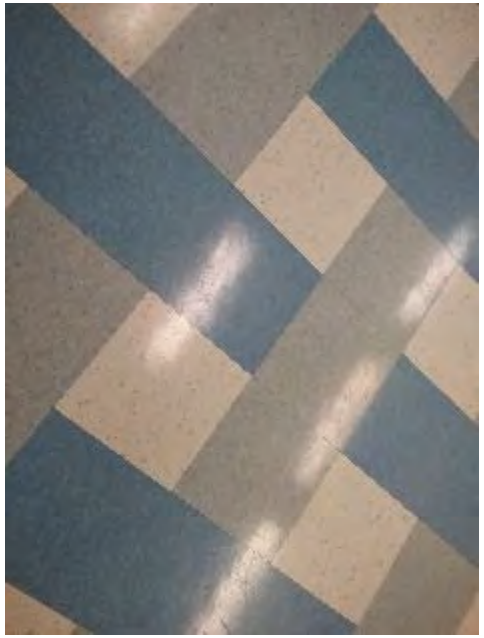
- Inundation may cause warping of frames and doors.
- Windows or doors broken or missing.

Cabinets and Countertops

- What are they made of (can they be cleaned)?
- What was the height of the flood? May only impact a portion of the cabinets.

Floor Finish

- Typically flooring will have to be replaced if inundated with flood water for any duration. Environmental conditions may also factor in.

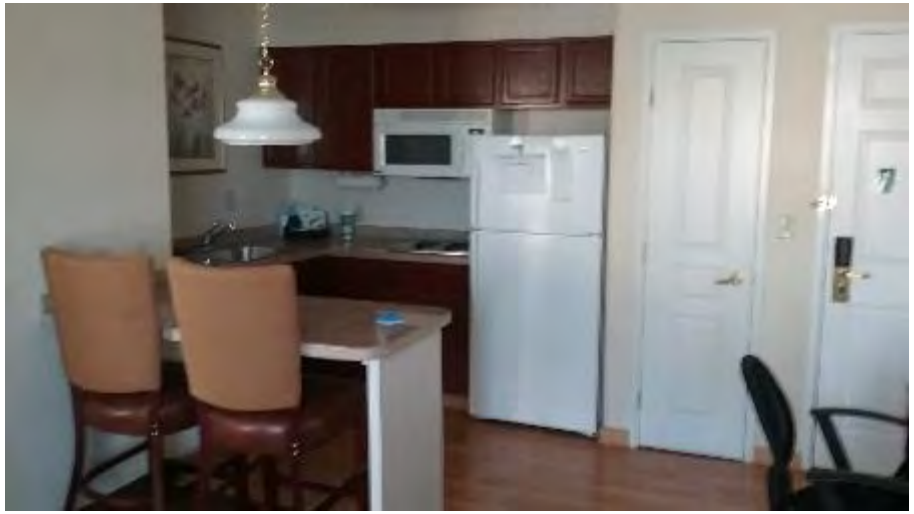


Plumbing and Electrical

- Electrical and Plumbing components inundated by water should at minimum be inspected before re-use or re-energized.
  - Electric refer to UL pamphlet: After the Storm, Floodwater Safety
  - Plumbing, test according to applicable code and type of plumbing. (example Section P2503 of the 2018 IRC)
  - Did foundation torque or twist, could impact electric and plumbing (settling or superstructure flexing may have broken pipes, chafed wires, or stripped wires from fixtures?
  - Plumbing and electrical components allow the possibility of infiltration of contaminants, can plumbing be cleaned and disinfected, was electrical components impacted by sediment, silt, or other factors.

Appliances

- Built in appliances (fridge, stove, washing machine, dryer, furnace, built in microwave, dishwasher, water heater, water pump, etc.)



HVAC

- Treat HVAC as any other plumbing or electrical components and inspect prior to re-energizing. For damage purposes if they were inundated, mark as needing to be replaced and let the AHJ have the conversation with the property owner.

Test House

Answer

SDE Residential Worksheet

Inspector Name

Inspection # Photo # Date

PROPERTY LOCATION

Latitude _____ Longitude: _____

Street Address
City, State, Zip _____
County

STRUCTURE ATTRIBUTES

Residence Type: ■ Single Family Residence ○ Town or Row House ○ Manufactured House

Foundation: ○ Continuous Wall w/Slab ■ Basement ○ Crawlspace ○ Piles ○ Slab-on-Grade ○ Piers & Posts

Superstructure: ■ Stud-Framed ○ Common Brick ○ ICF ○ Masonry

Roof Covering: ■ Shingles – Asphalt, Wood ○ Clay Tile ○ Standing Seam (Metal) ○ Slate

Exterior Finish: ■ Siding or Stucco ○ Brick Veneer ○ FIPS ○ None – common brick, structural

HVAC System: ■ [illegible] ○ None

Story: ○ One Story ■ Two or more Stories

Quality: ○ Low ○ Budget ■ Average ○ Good ○ Excellent

Year of Construction: _____

Date Damage Occurred: __/__/_____

Cause of Damage: ■ Fire ○ Flood ○ Flood and Wind ○ Seismic ○ Wind ○ Other

Duration of Flood: ○ Hours ○ Days

Depth of Flood Above Ground: 3ft from LAG

Depth of Flood Above 1st Floor: 3ft _____

DIAGRAM w/ MEASUREMENTS and NUMBER OF STORIES:

ELEMENT PERCENTAGES

Foundation	0 %	Cabinets & Countertops	0 %
Superstructure	10 %	Floor Finish	10 %
Roof Covering	0 %	Plumbing	0 %
Exterior Finish	0 %	Electrical	40 %
Interior Finish	10 %	Appliances	0 %
Doors and Windows	5 %	HVAC	100 %

MISC NOTES:

Test House

Answer

SDE Residential Worksheet

Inspector Name

Inspection # Photo # Date

PROPERTY LOCATION

Latitude _____ Longitude: _____

Street Address
City, State, Zip _____
County

STRUCTURE ATTRIBUTES

Residence Type: ■ Single Family Residence ○ Town or Row House ○ Manufactured House

Foundation: ○ Continuous Wall w/Slab ■ Basement ○ Crawlspace ○ Piles ○ Slab-on-Grade ○ Piers & Posts

Superstructure: ■ Stud-Framed ○ Common Brick ○ ICF ○ Masonry

Roof Covering: ■ Shingles – Asphalt, Wood ○ Clay Tile ○ Standing Seam (Metal) ○ Slate

Exterior Finish: ■ Siding or Stucco ○ Brick Veneer ○ FIPS ○ None – common brick, structural

HVAC System: ■ [illegible] ○ None

Story: ○ One Story ■ Two or more Stories

Quality: ○ Low ○ Budget ■ Average ○ Good ○ Excellent

Year of Construction: _____

Date Damage Occurred: __/__/_____

Cause of Damage: ■ Fire ○ Flood ○ Flood and Wind ○ Seismic ○ Wind ○ Other

Duration of Flood: ○ Hours ○ Days

Depth of Flood Above Ground: 12ft floor LAG

Depth of Flood Above 1st Floor: 120

DIAGRAM w/ MEASUREMENTS and NUMBER OF STORIES:

ELEMENT PERCENTAGES

Foundation	0	%	Cabinets & Countertops	50	%
Superstructure	25	%	Floor Finish	75	%
Roof Covering	0	%	Plumbing	75	%
Exterior Finish	25	%	Electrical	75	%
Interior Finish	35	%	Appliances	75	%
Doors and Windows	75	%	HVAC	100	%

MISC NOTES:

Test House

Answer

SDE Residential Worksheet

Inspector Name _____

Inspection # _____ **Photo #** _____ **Date** _____

PROPERTY LOCATION

Latitude: _____ Longitude: _____

Street Address _____
City, State, Zip _____
County _____

STRUCTURE ATTRIBUTES

Residence Type:
- [x] Single Family Residence
- ◯ Town or Row House
- ◯ Manufactured House

Foundation:
- ◯ Continuous Wall w/Slab
- ◯ Basement
- ◯ Crawlspace
- ◯ Piles
- [x] Slab-on-Grade
- ◯ Piers & Posts

Superstructure:
- [x] Stud-Framed
- ◯ Common Brick
- ◯ ICF
- ◯ Masonry

Roof Covering:
- [x] Shingles – Asphalt, Wood
- ◯ Clay Tile
- ◯ Standing Seam (Metal)
- ◯ Slate

Exterior Finish:
- [x] Siding or Stucco
- ◯ Brick Veneer
- ◯ EIFS
- ◯ None – common brick, structural

HVAC System:
- [x] Heating and/or Cooling
- ◯ None

Story:
- [x] One Story
- ◯ Two or more Stories

Quality:
- ◯ Low
- ◯ Budget
- [x] Average
- ◯ Good
- ◯ Excellent

Year of Construction: _____

Date Damage Occurred: _/_/_____

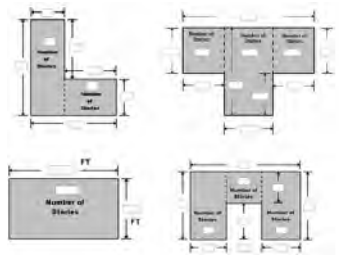
Cause of Damage:
- ◯ Fire
- [x] Flood
- ◯ Flood and Wind
- ◯ Seismic
- ◯ Wind
- ◯ Other

Duration of Flood: _____
- ◯ Hours
- ◯ Days

Depth of Flood Above Ground: .5ft from LAG

Depth of Flood Above 1st Floor: .5ft

DIAGRAM w/ MEASUREMENTS and NUMBER OF STORIES:



ELEMENT PERCENTAGES

Foundation	0 %	**Cabinets & Countertops**	50 %
Superstructure	40 %	**Floor Finish**	100 %
Roof Covering	0 %	**Plumbing**	100 %
Exterior Finish	50 %	**Electrical**	75 %
Interior Finish	50 %	**Appliances**	100 %
Doors and Windows	100 %	**HVAC**	100 %

MISC NOTES:

Test House

Answer

SDE Residential Worksheet

Inspector Name _____

Inspection # _____ **Photo #** _____ **Date** _____

PROPERTY LOCATION

Latitude: _____ Longitude: _____

Street Address _____
City, State, Zip _____
County _____

STRUCTURE ATTRIBUTES

Residence Type:
- ◯ Single Family Residence
- ◯ Town or Row House
- ■ Manufactured House

Foundation:
- ◯ Continuous Wall w/Slab
- ◯ Basement
- ◯ Crawlspace
- ◯ Piles
- ◯ Slab-on-Grade
- ■ Piers & Posts

Superstructure:
- ■ Stud-Framed
- ◯ Common Brick
- ◯ ICF
- ◯ Masonry

Roof Covering:
- ■ Shingles – Asphalt, Wood
- ◯ Clay Tile
- ◯ Standing Seam (Metal)
- ◯ Slate

Exterior Finish:
- ■ Siding or Stucco
- ◯ Brick Veneer
- ◯ EIFS
- ◯ None – common brick, structural

HVAC System:
- ■ Heating and/or Cooling
- ◯ None

Story:
- ■ One Story
- ◯ Two or more Stories

Quality:
- ◯ Low
- ◯ Budget
- ■ Average
- ◯ Good
- ◯ Excellent

Year of Construction: _____

Date Damage Occurred: _/_/_____

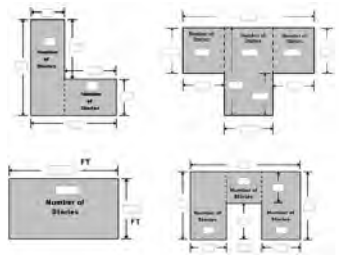
Cause of Damage:
- ◯ Fire
- ■ Flood
- ◯ Flood and Wind
- ◯ Seismic
- ◯ Wind
- ◯ Other

Duration of Flood: _____
- ◯ Hours
- ◯ Days

Depth of Flood Above Ground: .5ft from LAG

Depth of Flood Above 1st Floor: .5ft

DIAGRAM w/ MEASUREMENTS and NUMBER OF STORIES:



ELEMENT PERCENTAGES

Foundation	100 %	**Cabinets & Countertops**	50 %
Superstructure	100 %	**Floor Finish**	100 %
Roof Covering	0 %	**Plumbing**	100 %
Exterior Finish	50 %	**Electrical**	75 %
Interior Finish	50 %	**Appliances**	100 %
Doors and Windows	100 %	**HVAC**	100 %

MISC NOTES: