

## **Project Water Mitigation Plan**

Updated: 06/07/2021

The Water Mitigation Plan has three major phases: Below Grade Construction, Pre-completion of the Building Enclosure Assembly and water mitigation during completion of interior build out of the project.

### **Excavation and Below Grade Construction Water Control**

During the first phase of the Water Mitigation Plan, the intent is to minimize water damage from weather events during early below grade construction of the building. The main goal is to minimize water damage to concrete and systems and any installed equipment sensitive to moisture prior to the Building Enclosure being completed. This is achieved as follows:

1. Systems and protocols are established to control, redirect and remove water.
  - a. Excavation area side walls and below grade water intrusion
  - b. Weather events.
2. The elements of this section may be included in the Site Operations or TESC plans .

### **Pre-completion of the Building Enclosure Assembly**

During this phase of the Water Mitigation Plan the intent is to minimize water damage from weather events during early framing and rough in of the building. The main goal is to minimize water damage to priority drywall walls and installed equipment sensitive to moisture prior to the Building Enclosure being completed. This is achieved as follows:

3. Limitation of installation of drywall, insulation and other water sensitive materials until Building Enclosure is complete.
  - a. Only priority drywall walls will be installed if required to maintain project schedule.
  - b. Priority walls that will be installed prior to completion of Building Enclosure Assembly will only be installed with moisture and mold resistant materials that exceed mold resistance when tested in accordance with ASTM D3273 level 10.
  - c. 6" concrete curbs have been installed at all shaft openings. The wall framing bottom track will attach directly to the concrete curb. A thin strip of waterstop is also applied to the concrete floor prior to the curb placement when the curb is not poured monolithic with the deck.
  - d. All drywall shall be held up off of the slabs +/- 1/2" to prevent wicking of water.
  - e. At exterior openings requiring a threshold, a temporary curb or threshold will be installed to keep water from intruding at that location. A sheet metal pan may be needed under the threshold to prevent water intrusion from under or from the sides of the threshold.
4. Any standing water within the building footprint shall be promptly removed with squeegees, power squeegees or plate pumps as required.
5. At the edge of slab condition at the exterior closure system, water resistant/waterproof smoke sealant will be utilized to keep water from lower floors.
6. Slab edge fire safing insulation will not be installed unless safing joint will be applied at same time. This will ensure the insulation does not get wet prior to safing installation.

7. Early installation of roof drainage system
  - a. A combination of temporary standpipes (preferably installed exterior to the building) plus the building roof drainage system will be utilized to collect and dispose water during construction.
  - b. In non-roof areas and as required, sacrificial drains shall be installed and temporary PVC piping to direct water to a temporary drain standpipe. The temporary floor drains may also be tied into the actual building drain lines using temporary “y” fittings until the floors have been dried in.
  - c. At all roof levels, the plumbing subcontractor shall prioritize installation of roof drainage assembly. Roof drains to be screened and routinely cleaned to prevent debris from causing over-flow.
8. Temporary enclosure of shafts
  - a. Temporary wood framed and plastic sheathed enclosures are to be constructed over elevator, mechanical and stairwell shafts to limit exposure.
  - b. At locations where this is not feasible, temporary curbs shall be constructed around openings to prevent water from running down shaft walls.
9. Temporary enclosure at Stair 6
  - a. A full scaffold system will be installed around Stair 6 and wrapped with watertight wrap (boat wrap) prior to installation of intumescent painting.
10. No drywall hard lids will be installed until building is considered water tight
11. In the event of a weather event, Project Superintendent will have the walls visually inspected during and after a weather event identifying any areas which may potentially have come in contact with water.
  - a. If it has been determined moisture has come in contact with water sensitive materials, the Project Superintendent will have the material tested with a moisture meter
  - b. If any areas are identified that cannot be returned to a dry condition within 72-hours, the Project Superintendent shall have the material removed and replaced and document such.
  - c. If any areas are questionable, Project Superintendent to err on the side of caution and remove and replace materials.
  - d. All areas are to be documented (photographed and marked up plans identifying location of plans) pre condition and at time of completion of remediation.
    - i. Store all written reports on catalog cards within Daily report.
  - e. Project Superintendent to email to building project team if any water damage is found within the building.
  - f. In an emergency or if extensive water damage is recognized, the Project Superintendent shall notify the Risk Manager and Project Manager. The Project Manager shall then evaluate the condition/issue and determine whether or not to put the Builders Risk carrier on notice of a potential claim.
12. Floor penetrations:
  - a. All sleeves installed in the slab shall extend 2” above the top of slab. If not possible, cement dams or temporary curbs shall be cast around all floor penetrations.
  - b. Plugs shall be installed in sleeves for piping where possible.
  - c. After a pipe or conduit has been installed within a penetration, all Subcontractors shall use a W-rated (water resistive) fire-stopping material.
  - d. All penetrations at roof level will include a sleeve with a cap.

- e. All penetrations at level 1 will include a sleeve with a cap to stop any water migrating to existing garage below.

13. Mechanical ductwork

- a. Mechanical contract is required to always maintain seal ductwork, protect open ends of all ductwork.
- b. Mechanical contractor shall not wrap any ductwork with insulation until a floor is considered temporarily dried in.

14. General Maintenance

- a. No material is to be stored directly on the ground. All material to be stored off the ground on dunnage or carts and away from moisture sources.
- b. All moisture sensitive material is to be covered with temporary protective wrap or tarps, all imported GWB loads will be covered in transport.
- c. Where necessary, temporary heat shall be used to keep the area dry and moisture free.

15. Topping out of Building Structure

- a. Each Building Team shall develop a written temporary roof plan prior to topping out of concrete roof deck.
- b. Written plan shall identify where temporary roofing systems will be installed.
- c. A temporary roof parapet shall be constructed around the roof slab edge perimeter and at all large openings of the building core as required to ensure no water intrusion into building shafts.
- d. Temporary structures shall be constructed over all shaft conditions as required to prevent water intrusion.
- e. Temporary roof membrane shall be installed at the building perimeter parapet wall, concrete closure pour location and mechanical yard curbs
- f. Temporary dams and ramps shall be constructed at the roof material hoist location and stairwells to prevent water from running into these openings.
- g. All roof drain systems shall be completed.
- h. All vertical penetrations / sleeves shall be sealed, Superintendent to utilize Roof Coordination / Sleeve document to verify all penetrations are sealed.
- i. No Curtain wall insulation shall be installed until Curtain wall and parapet wall is completely watertight
  - i. Do not VE out glazed in backpans without taking into account cost to replace damaged or wet insulation.

16. Each Building Team to develop a building specific water mitigation plan for unique conditions

17. Building Team shall witness all roof inspections and be present for all Manufacturer roof inspections. Building team will monitor roofing installation to ensure all “night seal” procedures have been performed on roofing membrane each day at end of shift to prevent water intrusion and saturation of built-up insulation.

## **Water mitigation during completion of interior build out**

During this phase of the project, the major concern is for water damage resulting from unexpected water leaks. The intent of this section is to address quality control measures during installation of mechanical systems within the building and education on how to control water if a water leak occurs.

## Quality Control

1. Project Superintendent Team shall require all wet system pressure testing documentation prior to any system being concealed.
  - a. Tested to be verified:
    - i. Fire Sprinkler and Standpipe System pressure test
    - ii. Plumbing System pressure test
    - iii. Heating/Cooling Piping System pressure test
2. Included as part of the In-wall sign off sheet, Superintendent shall verify all plumbing clean out caps have been installed
3. Prior to installation of water plumbing fixtures, Project Superintendent shall ensure pipes are capped at end cap conditions. No open pipes.
4. Team to verify all test balls have been removed.
5. Team to verify all Test Tees are installed at capped.
6. Plumbing subcontractor shall provide a permanent pressure gauge at all water lines.
  - a. A sign to be posted at gauge with required minimum pressure.
  - b. Project Superintendent Team to visual inspection gauge on daily bases.
7. Project team shall designate a dedicated area for wash out of materials.
  - a. This designated location shall be visually inspected and cleaned on a weekly basis.
  - b. This drain shall be inspected with a pipe camera at completion of the project.
  - c. No tile wash out will be provided within the building. Tile wash out shall be in a separate contained system and disposed of properly.
8. At completion of Roof Drain system, the system shall be verified by camera.
  - a. All wet systems will be turn on and off at the end of each shift.
    - i. Project Superintendent will designate a dedicated person to turn off the system.
    - ii. The (designated person – Preferably the Plumbing/Pipefitter Subcontractor Rep) to visually verify the wet systems have been turned off.
9. Fire Sprinkler system
  - a. The fire sprinkler system will be turned on and off at the end of each shift unless monitored for flow.
    - i. Lead Project superintendent will designate a dedicated person to turn off the system.
    - ii. The (Designated person – Preferably Fire Sprinkler Subcontractor Rep) to visually verify the wet system to turn off.
  - b. When the fire sprinkler system is energized in its permanent state a temporary electronic monitor system will be installed. The system will have audible alarms and remote cellular monitoring.

## Water Damage Control

The lists of items below consist of preplanning for a water event within the building and how to respond in the event a water leak occurs.

1. Each project team will create a water valve location map. At each stairwell a laminated water control map will be posted identifying the location of each valve. The project team will have the plumber and sprinkler supervisors facilitate a tour of all the system valves and shut-offs in the field with Contractor personnel.
2. At each valve, a temporary sign will be hung from the valve and a streamer will be hung down from the ceiling or wall clearly identifying the location as necessary.
3. Each building will be provided with a water crash cart at floors designated by the Project Superintendent but no less than one cart per 3-levels of building. The crash cart will be in a designated location and clearly marked.

The following items will be included in the crash cart:

- a. Broom
- b. Mop and Mop Bucket
- c. Two (2) squeegees
- d. 12 packages of 4' socks (3" x 48") – absorbent material
- e. 4 packages of 21" x 17" pillows - absorbent material
- f. Shop wet vac
- g. 25' flat hose
- h. Pipe patch kit
- i. Rags
- j. Small sump pump and hose
- k. Trash Bags
- l. Plastic rolls and duct tape
- m. Pipe crimping tool
- n. Sprinkler shut off tool – Quick stop Commercial Fire Sprinkler Tool
- o. Air Fans to dry walls
4. Special Systems shut down procedures will be located in each crash cart. (As necessary):
  - a. Provide written step by step instruction how to turn off domestic water system.
  - b. Provide written step by step instruction how to turn off fire pump and fire sprinkler system.
  - c. Provide written step by step instruction how to turn off heating and cooling piping systems.
5. Phone numbers for critical (Contractor) and Subcontractor personnel. Phone numbers will be posted at each stairwell.
6. In the event of a water leak, Project Superintendent will visually verify area during and after a water leak identifying any areas which may potentially have come in contact with water.
  - a. If it has been determined moisture has come in contact with water sensitive materials, the Project Superintendent will have the material tested with a moisture meter
  - b. If any areas are identified that cannot be returned to a dry condition within 72-hours, the Project Superintendent shall have the material removed and replaced and document such.
  - c. If any areas are questionable, Project Superintendent to err on the side of caution and remove and replace materials.
  - d. All areas are to be documented (photographed and marked up plans identifying location of plans) precondition and at time of completion of remediation.
    - i. Store all written reports on catalog cards within Daily report.

- e. Project Superintendent to email to building project team if any water damage is found within the building.
- f. In an emergency or if extensive water damage is recognized, the Project Superintendent shall notify the Risk Manager and Project Manager. The Project Manager shall then evaluate the condition/issue and determine whether or not to put the Builders Risk carrier on notice of a potential claim.

### **Exhibit A – Emergency Contact Information (Phone Tree)**

Russell Paananen – Superintendent	Cell: 206.730.0671
Matt Trueblood – Asst. Superintendent	Cell: 206.496.7902
Brad Coville – Asst. Superintendent	Cell: 206.348.6146
Hu Hsu – Safety Manager	Cell: 206.735.8788
Dave Howard – Safety	Cell: 206.348.7956

### **Exhibit B – Building Water Valve Map**

### **Exhibit C – Special System shut down procedures**

### **Exhibit E – Miscellaneous Information**

- 1. Example of Temporary Roof Plan
- 2. In Wall sign off sheet
- 3. Remote Alarm System Information/Data