PLAN REVIEW CHECKLIST
TO COMPLY WITH
FEMA REQUIREMENTS & SEA LEVEL RISE (SLR)

Public Works
701 Laurel St., Menlo Park, CA 94025
tel 650-330-6620

Notice to the applicant

A. All New Construction or Substantial Improvements (SI) within the flood zone are subject to Menlo Park's Flood Damage Prevention Ordinance. This ordinance is based on FEMA Technical Bulletins and the latest editions of state and national building codes. Refer to Chapter 12.42 of Menlo Park's Municipal Code for additional information: http://www.codepublishing.com/CA/MenloPark/
B. A project is considered a Substantial Improvement if the value of the proposed scope of work is 50% or more than the value of the existing structure based on a set unit price per square foot. Refer to the City's webpage for additional information: https://menlopark.gov/floodplain
C. All new Construction within the M-2, M-3-X, R-MU, LS, and O zoning districts will be subject to Sea Level Rise (SLR) requirements in addition to the Flood Ordinance. For additional information, refer to Sea Level Rise Section below and Chapter 16.43 to Chapter 16.45 of Menlo Park's Municipal Code: https://www.codepublishing.com/CA/MenloPark/
D. Refer to Figure 1 and the FEMA Compliance Examples below for project applicability and compliance measures. The applicant is highly encouraged to review these documents to ensure conformance with all applicable FEMA and SLR requirements.

General requirements

A. The City requires all New Construction and Substantial Improvements in the flood zone to meet the Design Flood Elevation (DFE), hereby defined as the Base Flood Elevation (BFE) plus 12" minimum freeboard. Please note that this elevation is stipulated in ASCE 24 (Flood Resistant Design and Construction), as incorporated in the California Building Standards Code, and is more stringent than criteria outlined in FEMA Technical Bulletins 3 and 6.
B. The City requires an Elevation Certificate to be submitted for all Substantial Improvements in the flood zone. An existing elevation certificate is not mandatory for new construction but site elevations should be shown clearly on the topographic survey. A post-construction Elevation Certificate will be required prior to final inspection for all applicable projects in the flood zone.
C. The Elevation Certificate and topographic survey shall be based on the NAVD'88 (North American Vertical Datum of 1988). This is the datum used in the City's digital Flood Insurance Rate Maps (FIRMs) and represents the sea level elevation from which all other elevations or altitudes are measured. Prior to October 16, 2012, the FIRMs were based on the National Geodetic Vertical Datum of 1929 (NGVD'29). Plans and elevations certificates based on this old datum will not be accepted.
D. The on-site drainage plan shall show how flood waters will be directed around the structure. Show that the 1% annual flood will have no adverse impact on neighboring properties.
E. The title sheet of the plans shall show the Flood Zone designation, Base Flood Elevation (BFE), and Design Flood Elevation (DFE).
F. The title sheet of the plans shall contain the following flood notes:
    i. "The project is built in compliance with the City's Flood Damage Prevention Ordinance, Chapter 12, Section 42."
    ii. "All materials below DFE shall be resistant to flood damage." (i.e., concrete, Redwood or pressure treated Douglas Fir)."
    iii. "The bottom elevation of all appliances and utilities (meters, air conditioning units, etc.) shall be at or above DFE".
    iv. "Storm runoff resulting from the project's grading and drainage activities shall not encroach onto any neighboring lot. Runoff must be contained on-site."
    v. "No basements or any habitable enclosure below the DFE are allowed for projects in the flood zone."
    vi. "Flood vents shall be installed for all non-habitable enclosures below the DFE (i.e. crawlspace, garage, etc.) at a rate of 1 square inch of net opening to 1 square foot of enclosure. Refer to the engineering plans herein for vent locations and calculations."
    vii. The title sheet must include the following statement of compliance to the Engineering Department: "I certify that I am the engineer (or architect) of record and the plans dated _____, submitted on _____ comply with the City's Flood Damage Prevention Ordinance (Chapter 12, Section 42)." Include Stamp and Signature.

G. The following details and information shall be shown on the exterior elevation view and section view plan sheets, where applicable:
   i. Finished Floor Elevation (FFE), BFE, and DFE
   ii. Location of all required flood vents for non-habitable enclosures.
   iii. Bottom of PG&E gas meter, electric meter, HVAC equipment, or other appliances serving the building, if any. No utility components (e.g. gas and electric meters, HVAC equipment, electrical conduits, etc.) are permitted below the DFE. Water and sewer pipes, sealed to prevent flood water intrusion, are allowed.
   iv. Highest and lowest adjacent exterior grade within 2 feet of the structure.
   v. Bottom of crawlspace, if applicable. The bottom of the crawlspace shall be no more than 2' below the lowest adjacent exterior grade or 4' below the lowest floor joist.

H. The following notes shall be added to the cover sheet of the plan set, where applicable:
   i. For slab construction:
   "PRIOR TO APPROVAL OF FOUNDATION INSPECTION, A LICENSED SURVEYOR SHALL VERIFYFOUNDATION ELEVATIONS BY SUBMITTING A SIGNED, STAMPED STATEMENT."
   ii. For crawlspace construction:
   "PRIOR TO APPROVAL OF UNDER FLOOR FRAMING INSPECTION, A LICENSED SURVEYOR SHALLVERIFY FOUNDATION ELEVATIONS BY SUBMITTING A SIGNED, STAMPED STATEMENT."
   iii. For both types of construction:
   "A FINISHED CONSTRUCTION ELEVATION CERTIFICATE WILL BE REQUIRED AT PROJECTCOMPLETION"

Additional requirements (wet floodproofing)

The following design measures shall supplement the General Requirements outlined in the section above:

A. Wet Floodproofing is REQUIRED for:
   i. Residential projects; defined as:
      - Single Family Homes, duplexes, or townhouses
      - Any other residential structure up to 2 units
   ii. Non-Residential New Construction; defined as:
      - Any new housing development in excess of 2 units (apartments, etc.)
      - Any new commercial structure
   iii. Non-habitable enclosures used solely for storage or parking, (such as a crawlspace or garage)
   iv. Non-Residential Tenant Improvements may elect to Wet OR Dry Floodproof the structure to demonstrate compliance. Refer to the Additional requirements (dry floodproofing) section of this document for additional information.

B. Wet Floodproofing is REQUIRED for:
   i. The FFE of the structure is at or above DFE
   ii. Flood vents or openings are installed so that flood water can flow freely into and out of any non-habitable enclosure below the DFE (i.e. garage or crawlspace)
      - Flood vents or openings shall have a total net area of not less than one square inch for every square foot of enclosed space.
      - At least one flood vent shall be located on each exterior side of the enclosure to allow the automatic entry and exit of floodwater.
      - Provide the area of the outside foundation dimensions for the enclosed area in addition to the size, number and location of flood vents.
      - The bottom of all flood vents shall be no more than 12" above the lowest adjacent grade. The top of all flood vents shall be below the BFE, where feasible.
   iii. All parts of the building below the DFE are built with flood resistant materials
   iv. All critical components including surface meters and utility structures are installed at or above DFE
   v. The design complies with the City's Flood Damage Prevention Ordinance (Chapter 12.42), current FEMA technical bulletins, and the latest version of the state and national building codes.

Additional requirements (dry floodproofing)

The following design measures shall supplement the General Requirements outlined in the section above where Dry Floodproofing is applicable.

A. Dry Floodproofing is ONLY applicable for: :
   i. Non-Residential Tenant Improvements; defined as:
      - Any existing development, in excess of 2 units, undergoing tenant improvements (apartments, etc.)Any other residential structure up to 2 units
      - Any existing commercial structure undergoing tenant improvements
   ii. Any new OR existing commercial garage structure (per FEMA Technical Bulletin 6)

B. Dry Floodproofing is NOT ALLOWED for:
   - Residential projects (Refer to Additional Requirements (Wet Floodproofing) section)
   - Non-Residential New Construction (Refer to Additional Requirements (Wet Floodproofing) section)
   - High Hazard Areas (Zone V) or Coastal A Zones as defined by FEMA

C. Dry Floodproofing is defined as any combination of measures that results in a structure, including the attendant utilities and equipment, being watertight with all elements substantially impermeable and able to withstand flood loads. Dry Floodproofing requires that the structure's critical components meet the DFE.

D. Dry Floodproofing includes, but is not limited to, one of the following measures:
   i. Installing a waterproof epoxy to or above DFE around the building perimeter to form a watertight seal.
   ii. Berm the adjacent grade around the building to or above DFE to prevent intrusion of flood water into the building.
   iii. Utilizing any combination of manual or automatic flood barriers around the building to prevent the intrusion of flood water at entrances to or above DFE (including commercial garage doors). Under no circumstance shall manual gates be placed in the path of emergency entry or exit doorways.

E. All doorways critical to emergency ingress and egress must be elevated to or above the DFE to prevent the intrusion of floodwater into the building.

F. All Dry Floodproofing measures must be clearly shown on the site plan and labeled.

G. A floodproofing certificate must be completed by a licensed professional. A copy of the document may be found on FEMA's website (linked below). Note that this is not an as-built document and must be submitted concurrently with the building permit application:
https://www.fema.gov/sites/default/files/2020-05/FF-086034_Nonres_Floodproofing_RE_11Feb2020.pdf

H. The following documents shall be submitted to the City for review and approval for all Dry Floodproofed buildings.
   i. A Flood Emergency Operation Plan to be furnished by a design professional with written instructions for the items below in the event of an emergency:
      - An established chain of command and responsibility
      - A procedure for notification when flood arises
      - A list of specific duties assigned to responsible personnel
      - An evacuation plan for all personnel
      - A plan showing all possible ingress and egress routes
      - Periodic training and exercise program to be administered yearly

   ii. An Inspection and Maintenance Plan to ensure that all components will operate properly under flood conditions including the following:
      - Mechanical equipment
      - Flood gates and shields
      - Wall and wall penetrations
      - Levees and berms

I. All Dry Floodproofing measures not covered in this section shall abide by FEMA Technical Bulletin 3, which can be found below:
https://www.fema.gov/emergency-managers/risk-management/building-science/national-flood-insurance-technical-bulletins

Sea level rise

The following requirements apply to all New Construction in the City's M-2, M-3-X, R-MU, LS, and O Areas. The Flood Construction methods outlined in the General requirements, Additional requirements (wet floodproofing), and Additional requirements (dry floodproofing) sections (as applicable) shall also apply in addition to the freeboard requirements detailed below:

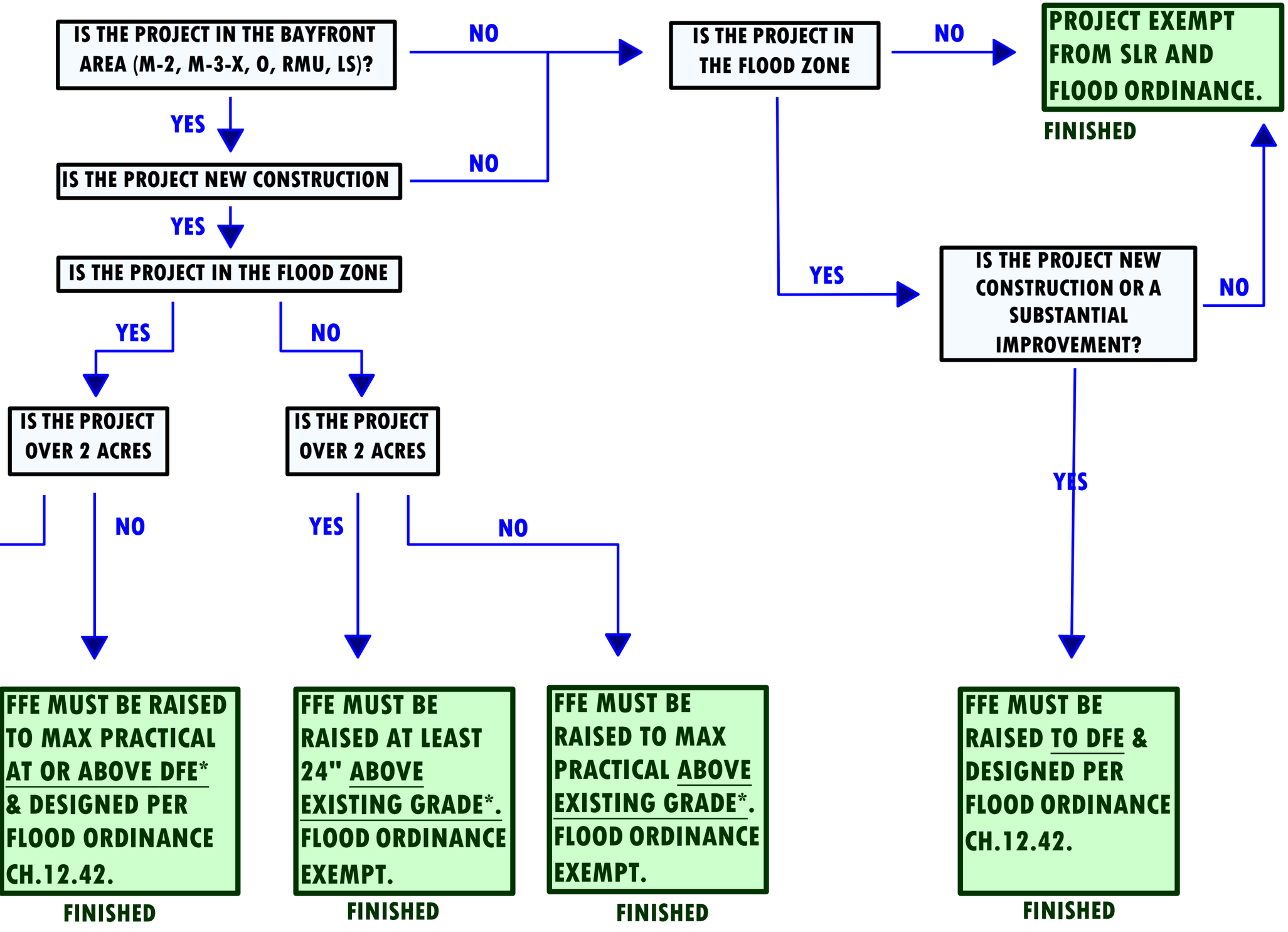
A. Refer to the following zoning map, linked below, for the M-2, M-3-X, R-MU, LS, and O area boundary: https://menlopark.gov/files/sharedassets/public/v/1/community-development/documents/approved-m-2-zoning-map.pdf

B. The following measures shall apply to all M-2, M-3-X, R-MU, LS, and O New Construction in the flood zone:
   i. The FFE of all New Construction encompassing over 2 acres shall be 24" above BFE to mitigate sea level rise (SLR).
   ii. The FFE of all New Construction of 2 acres or less shall be designed to the maximum practical freeboard above BFE to mitigate sea level rise. The applicant should note that the FFE shall, under no circumstance, be less than 12" above BFE.

C. The following measures shall apply to all M-2, M-3-X, R-MU, LS, and O New Construction out of the flood zone:
   i. The FFE of any project encompassing over 2 acres, and located out of the flood zone, will be 24" above Existing Grade to mitigate sea level rise.
   ii. The FFE of any project of 2 acres or less, and located out of the flood zone, must be designed to the maximum practical freeboard above Existing Grade to mitigate sea level rise. The applicant should note that the FFE shall, under no circumstance, be less than 6" above Existing Grade.

D. Non-habitable commercial buildings constructed below the DFE, such as garages, are exempt from the SLR requirement provided that the structure complies with one of the two options below:
   i. The structure abides by the wet-flood proofing measures per the Additional requirements (wet floodproofing) section.
   ii. The structure abides by the dry-flood proofing measures per the Additional requirements (dry floodproofing) section.

APPLICABILITY FLOWCHART FOR FEMA AND SEA LEVEL RISE (SLR)



NOTES:

1. THE COMPLIANCE MEASURES SHOWN ON THIS EXAMPLE SHALL APPLY FOR ALL NEW CONSTRUCTION OR SUBSTANTIAL IMPROVEMENTS IN THE FLOOD ZONE WITH CRAWLSPACES. ALL INFORMATION SHOWN ON THIS EXAMPLE IS FOR REFERENCE ONLY. ALL STRUCTURAL ELEMENTS AND FINISHED GRADES ARE SCHEMATIC IN NATURE AND SHALL BE DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF THE PROJECT ENGINEER.

2. THE FINISHED FLOOR ELEVATION (FFE) MUST BE DESIGNED TO OR ABOVE THE DESIGN FLOOD ELEVATION (DFE), HEREBY DEFINED AS THE PROJECT'S BASE FLOOD ELEVATION (BFE) PLUS AN ADDITIONAL 12" MIN FREEBOARD (DFE = BFE + 12" MIN).

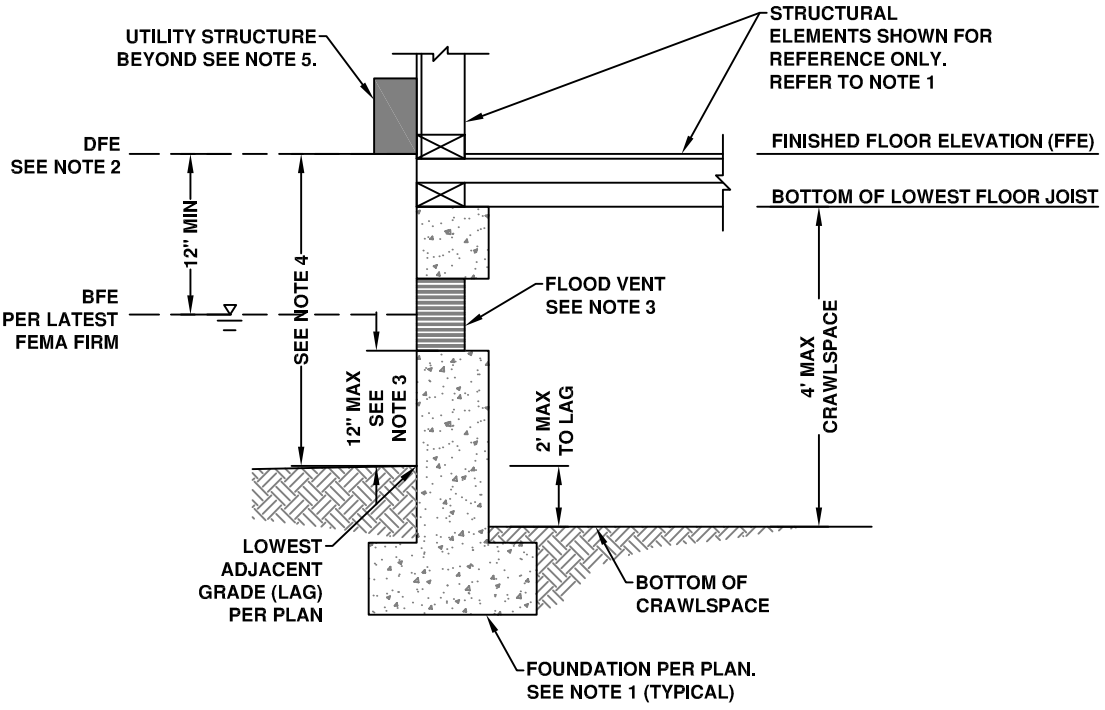
3. AREA OF FLOOD VENTS SHALL BE A MINIMUM OF 1 SQUARE INCH TO EVERY SQUARE FOOT OF NON-HABITABLE ENCLOSED SPACE BELOW THE DFE (CRAWLSPACE, ETC). AT LEAST ONE FLOOD VENT SHALL BE LOCATED ON EACH EXTERIOR SIDE OF THE ENCLOSURE TO ALLOW INGRESS AND EGRESS OF FLOOD WATER. BOTTOM OF FLOOD VENTS SHALL BE 12" MAX ABOVE THE LOWEST ADJACENT GRADE (LAG).

4. ALL MATERIALS CONSTRUCTED BELOW THE DFE SHALL BE RESISTANT TO FLOOD DAMAGE (I.E. CONCRETE, PRESSURE TREATED WOOD, ETC).

5. THE BOTTOM OF ALL ATTENDANT UTILITY STRUCTURES AND APPLIANCES SERVICING THE STRUCTURE (I.E. METERS, TRANSFORMERS, ETC) MUST BE AT OR ABOVE DFE.

6. THE APPLICANT IS ENCOURAGED TO CONTACT THE CITY'S ENGINEERING DEPARTMENT AT 650-330-6740 PRIOR TO THE FIRST CITY SUBMITTAL TO ENSURE FLOOD PLAIN COMPLIANCE MEASURES ARE IN ACCORDANCE WITH CITY STANDARDS.

7. REFER TO FEMA TECHNICAL BULLETIN 1 AND THE CITY'S FLOOD DAMAGE PREVENTION ORDINANCE (CH. 12.42) FOR ADDITIONAL INFORMATION REGARDING FLOOD PLAIN COMPLIANCE.



NOT TO SCALE

CITY OF MENLO PARK

FEMA COMPLIANCE EXAMPLE

TYPICAL RESIDENTIAL FOUNDATION WITH CRAWLSPACE

DATE: 3/27/2017

NOTES:

1. THE COMPLIANCE MEASURES SHOWN ON THIS EXAMPLE SHALL ONLY APPLY FOR NEW OR SUBSTANTIALLY IMPROVED, NON-HABITABLE STRUCTURES IN THE FLOOD ZONE. ALL INFORMATION SHOWN ON THIS EXAMPLE IS FOR REFERENCE ONLY. STRUCTURAL ELEMENTS AND FINISHED GRADES ARE SCHEMATIC IN NATURE AND SHALL BE DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF THE PROJECT ENGINEER.

2. THE FINISHED FLOOR ELEVATION (FFE) MUST BE DESIGNED TO OR ABOVE THE DESIGN FLOOD ELEVATION (DFE), HEREBY DEFINED AS THE PROJECT'S BASE FLOOD ELEVATION (BFE) PLUS AN ADDITIONAL 12" MIN FREEBOARD (DFE = BFE + 12" MIN).

3. AREA OF FLOOD VENTS SHALL BE A MINIMUM OF 1 SQUARE INCH TO EVERY SQUARE FOOT OF NON-HABITABLE ENCLOSED SPACE BELOW THE DFE. AT LEAST ONE FLOOD VENT SHALL BE LOCATED ON EACH EXTERIOR SIDE OF THE ENCLOSURE TO ALLOW INGRESS AND EGRESS OF FLOOD WATER. BOTTOM OF FLOOD VENT SHALL BE 12" MAX ABOVE THE LOWEST ADJACENT GRADE (LAG).

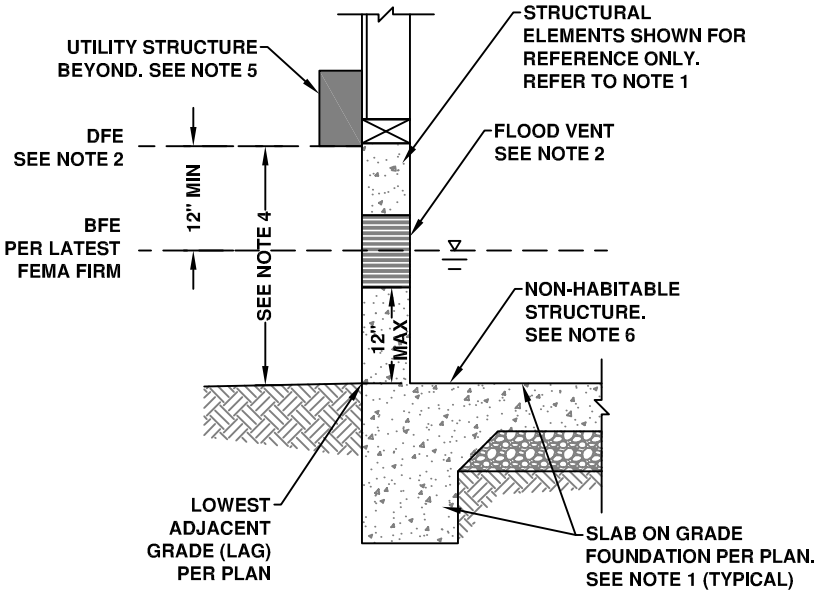
4. ALL MATERIALS CONSTRUCTED BELOW THE DFE SHALL BE RESISTANT TO FLOOD DAMAGE (I.E. CONCRETE, PRESSURE TREATED WOOD, ETC).

5. THE BOTTOM OF ALL ATTENDANT UTILITY STRUCTURES AND APPLIANCES SERVICING THE STRUCTURE (I.E. METERS, TRANSFORMERS, ETC) MUST BE AT OR ABOVE DFE.

6. NON-HABITABLE STRUCTURES ARE DEFINED AS ENCLOSURES USED FOR PARKING OR STORAGE ONLY (IE ATTACHED OR DETACHED GARAGE, SHED ETC).

7. THE APPLICANT IS ENCOURAGED TO CONTACT THE CITY'S ENGINEERING DEPARTMENT AT 650-330-6740 PRIOR TO THE FIRST CITY SUBMITTAL TO ENSURE FLOOD PLAIN COMPLIANCE MEASURES ARE IN ACCORDANCE WITH CITY STANDARDS.

8. REFER TO FEMA TECHNICAL BULLETIN 1 AND THE CITY'S FLOOD DAMAGE PREVENTION ORDINANCE (CH. 12.42) FOR ADDITIONAL INFORMATOIN REGARDING FLOOD PLAIN COMPLIANCE.



NOT TO SCALE

CITY OF MENLO PARK

FEMA COMPLIANCE EXAMPLE

TYPICAL RESIDENTIAL GARAGE OR STORAGE UNIT

DATE: 3/27/2017

NOTES:

1. THE COMPLIANCE MEASURES SHOWN ON THIS EXAMPLE SHALL APPLY FOR ALL NEW CONSTRUCTION OR SUBSTANTIALLY IMPROVED, HABITABLE STRUCTURES IN THE FLOOD ZONE WITH SLAB-ON-GRADE FOUNDATIONS UTILIZING WET FLOODPROOFING. ALL INFORMATION SHOWN ON THIS EXAMPLE IS FOR REFERENCE ONLY. ALL STRUCTURAL ELEMENTS AND FINISHED GRADES ARE SCHEMATIC IN NATURE AND SHALL BE DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF THE PROJECT ENGINEER.

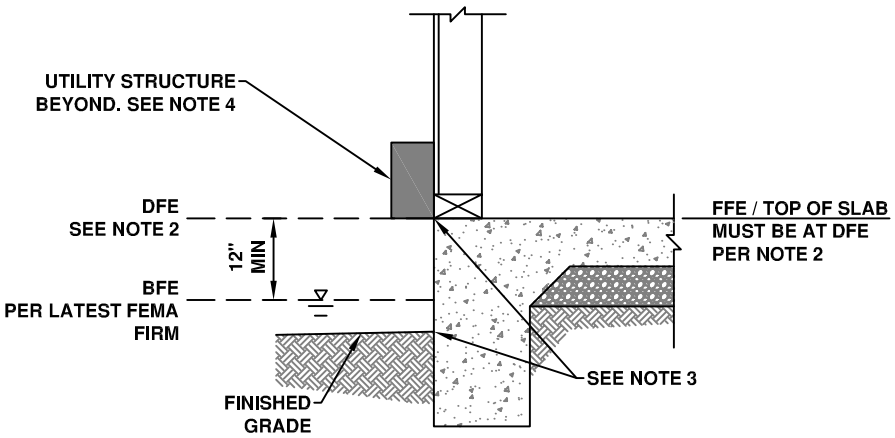
2. THE FINISHED FLOOR ELEVATION (FFE) MUST BE DESIGNED TO OR ABOVE THE DESIGN FLOOD ELEVATION (DFE), HEREBY DEFINED AS THE PROJECT'S BASE FLOOD ELEVATION (BFE) PLUS AN ADDITIONAL 12" MIN FREEBOARD (DFE = BFE + 12" MIN).

3. ALL MATERIALS CONSTRUCTED BELOW THE DFE SHALL BE RESISTANT TO FLOOD DAMAGE (I.E. CONCRETE, PRESSURE TREATED WOOD, ETC).

4. THE BOTTOM OF ALL ATTENDANT UTILITY STRUCTURES AND APPLIANCES SERVICING THE STRUCTURE (I.E. METERS, TRANSFORMERS, ETC) MUST BE AT OR ABOVE DFE.

5. THE APPLICANT IS ENCOURAGED TO CONTACT THE CITY'S ENGINEERING DEPARTMENT AT 650-330-6740 PRIOR TO THE FIRST CITY SUBMITTAL TO ENSURE FLOOD PLAIN COMPLIANCE MEASURES ARE IN ACCORDANCE WITH CITY STANDARDS.

6. REFER TO THE CITY'S FLOOD DAMAGE PREVENTION ORDINANCE (CH. 12.42) FOR ADDITIONAL INFORMATION REGARDING FLOOD PLAIN COMPLIANCE.



NOT TO SCALE

CITY OF MENLO PARK

FEMA COMPLIANCE EXAMPLE

TYPICAL RESIDENTIAL / COMMERCIAL SLAB ON GRADE FOUNDATION

DATE: 3/27/2017

NOTES:

1. THIS EXAMPLE APPLIES TO ONLY SUBSTANTIALLY IMPROVED, COMMERCIAL STRUCTURES IN THE FLOOD ZONE UTILIZING DRY FLOODPROOFING AT THE PERIMETER WALLS & ENTRANCES. ALL INFORMATION SHOWN ON THIS EXAMPLE IS FOR REFERENCE ONLY. ALL STRUCTURAL ELEMENTS AND FINISHED GRADES ARE SCHEMATIC IN NATURE AND SHALL BE DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF THE PROJECT ENGINEER.

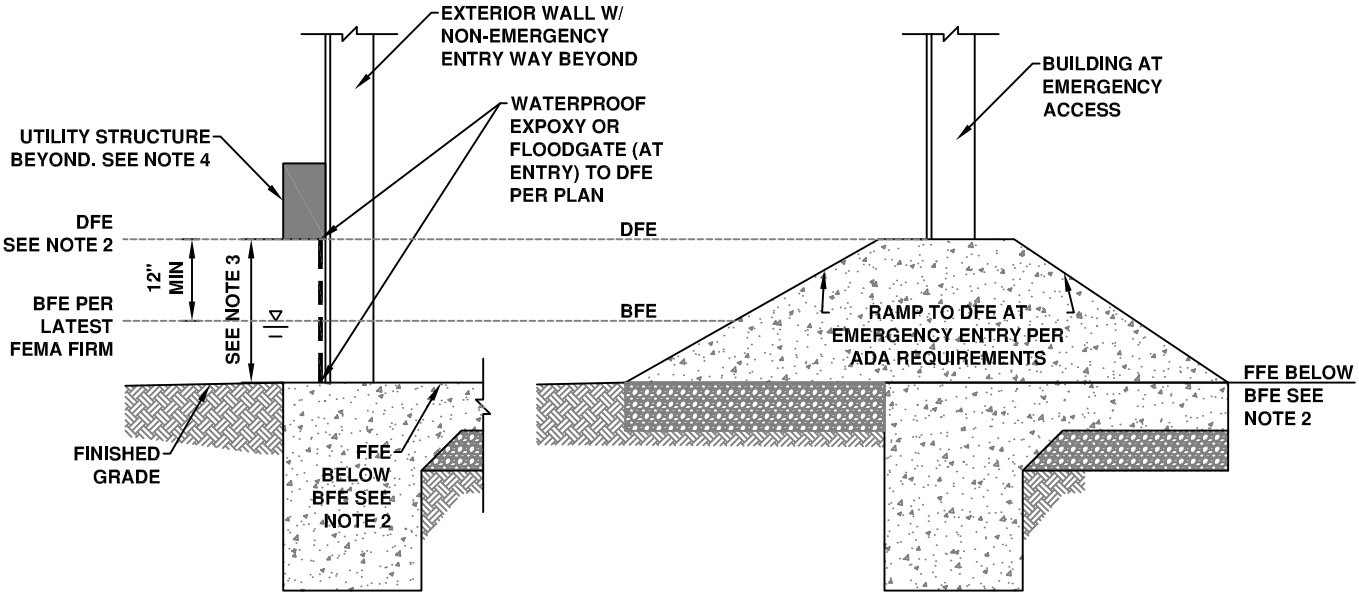
2. THE STRUCTURE'S FINISHED FLOOR (FFE) IS ALLOWED BELOW THE BASE FLOOD ELEVATION (BFE) PROVIDED THAT DRY FLOODPROOFING MEASURES ARE DESIGNED TO MEET THE DESIGN FLOOD ELEVATION (DFE). THE DFE IS HEREBY DEFINED AS THE PROJECT'S BFE PLUS AN ADDITIONAL 12" MIN FREEBOARD (DFE = BFE + 12" MIN).

3. ALL MATERIALS CONSTRUCTED BELOW THE DFE SHALL BE RESISTANT TO FLOOD DAMAGE (I.E. CONCRETE, PRESSURE TREATED WOOD, ETC).

4. THE BOTTOM OF ALL ATTENDANT UTILITY STRUCTURES AND APPLIANCES SERVICING THE STRUCTURE (I.E. METERS, TRANSFORMERS, ETC) MUST BE AT OR ABOVE DFE.

5. THE APPLICANT IS ENCOURAGED TO CONTACT THE CITY'S ENGINEERING DEPARTMENT AT 650-330-6740 PRIOR TO THE FIRST CITY SUBMITTAL TO ENSURE FLOOD PLAIN COMPLIANCE MEASURES ARE IN ACCORDANCE WITH CITY STANDARDS.

6. REFER TO FEMA TECHNICAL BULLETIN 3-93 AND THE CITY'S FLOOD DAMAGE PREVENTION ORDINANCE (CH. 12.42) FOR ADDITIONAL INFORMATION REGARDING FLOOD PLAIN COMPLIANCE.



DRY FLOODPROOFING AT WALL AND NON-EMERGENCY ENTRY

DRY FLOODPROOFING AT EMERGENCY ACCESS

DRY FLOODPROOFING IS ONLY AVAILABLE FOR NON-RESIDENTIAL SUBSTANTIAL IMPROVEMENTS UNDERGOING TENANT IMPROVEMENTS. ALL OTHER PROJECTS MUST BE WET FLOODPROOFED.

NOT TO SCALE

CITY OF MENLO PARK

FEMA COMPLIANCE EXAMPLE

TYPICAL COMMERCIAL DRY FLOODPROOFING

DATE: 3/27/2017