

GENERAL (Site Plan Review) 09/12/2023

- Vertical Datum reference to North American Vertical Datum of 1988 (NAVD88)
- Horizontal orientation to reference the North American Datum of 1983 (NAD83)
- Plan date and North arrow
- Name and address of applicant, owners and designers
- Name and address of design engineer
- Stamp of P.E. and R.L.S. with original signatures
- Label Benchmark(s) accordingly
- Locus Plan & Legend
- Property lines shown with metes and bounds and abutting property owners related to (NAD83)
- Assessor's Map and Lot Number, Lot area and Zoning District
- Wetlands delineation, streams, ponds, and water supply protection districts within 200 ft.
- Existing and proposed contours at two foot (2') contour intervals minimum related to (NAVD88)
- Existing and proposed utilities, showing size and type of water, sewer, drainage, gas and electric mains and services.
- Rim and inverts of existing and proposed sewer and drain structures
- Size and dimension of existing and proposed structures/buildings
- Location of existing driveways and driveway openings within 100 ft. of proposed development.
- Name and location of any abutting public or private ways
- Zoning Block showing the appropriate data
- Dimensioned parking and designated traffic circulation plan
- Retaining walls greater than 4 ft. high need to be designed by a Licensed Mass Structural Engineer. A note is to be added to the drawings that the stamped structural design and calculations need to be submitted to the Engineering Division and approved prior to the start of construction
- The following notes are included in the General Notes:
 - All construction shall comply with the Town of Mansfield Department of Public Works Construction Specifications & Standard Details, latest revision.
 - The applicant/contractor is responsible for filing an "Application for Inspectional Services" with the Town of Mansfield DPW Engineering Division and request inspections, as specified by the Department of Public Works. Work covered/backfilled before inspection will not be accepted due to the applicant/contractor's failure to notify the Department of Public Works for inspection.
 - Engineering inspection and testing fees are to be calculated and paid prior to start of any site work.
 - All walkways and ramps shall comply with 521 CMR Architectural Access Board (AAB) and ADA Regulations.
 - Final stamped As-Built Plan, in both hard copy and digital format, shall be submitted to the Town of Mansfield DPW/Engineering Division and approved prior to occupancy as per section 5.3.11 of the zoning bylaw.
- If the project results in a land disturbance of one (1) acre or more a NPDES NOI and a SWPPP is submitted concurrently to the Town.
- An erosion and sedimentation control plan must be provided on the submitted plans.

Sewers:

- The maximum slope for 8" PVC main is 0.055 with a minimum slope of 0.004
- The drop across SMH's is to be a minimum of 0.1' with a maximum of 0.5'
- The sewer main must be sized according having a minimum diameter of 8".
- Minimum cover is 3' to the top, unless approved by the Engineering Division; deeper is recommended to avoid interferences with other utilities
- Details of manholes, chimneys, drop manholes with outside drop, service laterals, water crossings, trench section, and clay dams are to be provided
- Maximum manhole separation is 300'
- Drop MH's, 8' maximum drop, 2' minimum, but 6' drops are preferred
- The minimum diameter of a MH with an inside drop is 5'
- A MH 20' deep is to have an intermediate platform, a caged ladder, and minimum of 5' diameter
- Can basement elevation be served by gravity? Is slope adequate or is a grinder pump needed
- Water supply piping: 10' horizontal distance to sewer. At crossings, the water is to be 18" over sewer
- Watertight manhole covers in easements, within Zone 2 of well, or within 100' of BVW (per DEP)
- Clay dams to be provided every 300' and/or between each MH on main sewer lines
When within 100' of wetlands, clay dams to be provided every 150' and/or between each MH. Dams are to be shown on profile, and detail provided
- Angles between inlet and outlet pipes at MH's to be $\geq 90^\circ$

Force Mains:

- Minimum diameter 3", unless otherwise justified by applicant
- Air relief at high point
- Drain valve manholes at low points
- Velocity 3-6 fps
- Thrust block details to be provided
- Termination at separate manhole and gravity feed into sewer line

Paving/Site Improvements:

- Has access roadway been paved within the last 5 years? (If so, Approval by the Select Board is required.)
- Guardrail: Applicant's engineer to justify guardrail need per AASHTO requirements, including limits.
- Monuments for cross-country easements are to be shown
- Temporary construction entrance detail is to be provided
- A 50 ft. minimum from driveway edge to curb line of intersecting street
- Minimize cuts and fills, and avoid retaining walls at abutting properties
- Maximum driveway width at R.O.W. line of 24 ft. (residential) or 40 ft. (other districts), unless otherwise authorized by the Planning Board

- Pavement width to be shown
- If separate entrance and exit: 60 ft. total maximum width, unless otherwise authorized by the Planning Board
- Provide lines of sight and show sight distance in both directions at driveway intersections
- Are improvements to adjacent streets and sidewalks required?
- Access, utility or stormwater easements must be a minimum of 20' wide
- Parking spaces 9'x 18.5'
- If subcompact spaces, only 30% allowed by right, 8'x 17'
- Substantial bumper of concrete, steel, timber, or concrete curb or berm at edge of surfaced areas
- Loading spaces 14'x 60' with 14' vertical clearance (none required under 5,000 SF)

Drainage:

- Minimum cover is to be 3' to the top, except 2 ½' is allowed at CB's. If the cover is not met, proper material must be used to meet H20 loading.
- Site drainage pipes to be designed for 25-year storm event
- Cross culverts to be designed for the 100-year storm event
- Detailed grading, drainage and erosion control plans. Hydrology design and calculations for the 100-year storm for areas within 100 ft. of a wetland, 200 ft. of a stream, or in an Industrial District
- Lot to be graded to protect streets and other abutting property
- Drainage ditches and swales are to be analyzed for capacity, and be and within easements
- Maximum distance between DMH's is 300', and CB's is 360'
- CB's to connect to MH's, not CB's
- CB's to have a minimum 4' sump
- Drainpipe is not to be at the same elevation as sewer or water
- Outlets to have adequate size and area of rip-rap having filter fabric beneath
- Existing spot shots to be provided at outlets to verify the proposed grading
- Angles between inlet and outlet pipes at MH is to be $\geq 90^\circ$
- A MH diameter is to be analyzed to ensure it's structurally sound with pipes greater than 3 entering and existing
- Pipe crowns: inlet equal or higher than outlet
- Details: DMH's, CB's, headwalls, rip-rap areas, trench sections, drop inlets, wetlands crossing
- Check first flush sizing of drainage structures

Detention Basins/Infiltration:

- Retention basins shall only be allowed in the water supply protection areas
- Site drainage network to be capable of discharging, 100 year event flow to basin, under surcharged conditions
- Provide note on plan for the 100-year storm elevation in basin(s)
- Program for future stormwater system operation and maintenance to be provided
- Test pit/soil evaluation to determine the Estimated Seasonal High Groundwater Table (ESHGWT) and permeability testing shall be provided for each infiltration basin. One soil evaluation for every 5,000 s.f., of infiltration basin area is recommended with a minimum of three (*see MassDEP SWH Volume 2, Chapter 2, pg.88*). Each TP/soil evaluation shall performed by a Massachusetts licensed soil evaluator and witnessed by a representative of the Town of Mansfield DPW/Engineering Division (24-hour notice must be provided for scheduling). (a F.O.S. of 2.0 on field permeability rate is used for design or Rawl's Rate whichever is more conservative)
- Calculations for minimum size Rip rap must be provided
- Access for maintenance
- Inspection port at center of infiltrator rows, w/ metal, water gate type, covers
- Note provided to keep all sediment out of proposed infiltration area, and not used until CB's and drainage system is installed and functional
- Infiltration structures, leaching pits, etc., are to have filter fabric (4oz) over top and down sides of stone

DRAINAGE AREA MAPS

- Provide one set of drainage area maps to accompany each drainage analysis on a minimum sheet size of 24x36, with a suitable scale, such as 1"=40', 1"=50', or 1"=100'. If the drainage area(s) is/are very large, the on-site map scale must be no smaller than 1"=100'. Separate drainage area maps are submitted for existing (pre-development) and proposed (post-development) conditions. Separate drainage area map is submitted for post development closed pipe calculations.
- Property lines of the subject site and the proposed project limits are shown on all submitted drainage area maps;
- Drainage area boundaries or limits need to be complete. Drainage areas shall include upgradient areas which extend beyond the subject property, provide adequate drainage area mapping of off-site areas so as to depict the entirety of each drainage area.
- The existing and proposed condition drainage area maps compare the same overall area.
- Common analysis point(s) is/are used for comparison of pre and post-development runoff discharge. Post drainage areas which do not drain to a stormwater facility are accounted for.
- Two foot (2') contour intervals for the on-site topography provided for both the pre and post development condition. *Do not illustrate proposed condition topography on the existing condition drainage area map. Topo for upgradient, off-site areas may utilize a ten foot (10') contour interval (e.g., USGS topography);*

- Limits of wetland areas on-site depicted, approximate limits of off-site wetlands in the project vicinity (*e.g., USGS quadrangle map information may be used for off-site areas*)
- The drainage area maps indicate the various cover types in each drainage area, which are used to calculate the weighted curve number for each drainage area. *Map and label the cover types (example: woods, brush, grass, impervious, etc.) along with hydrologic soil groups (A, B, C, or D) within each subarea.*
- Each existing and proposed condition subarea(s) are numbered and the labeling is consistent with the submitted analysis.
- Tc flow path of each drainage area is shown and labeled on the pre and post development watershed maps.
- All existing stormwater conveyance features (swales, pipes, catch basins, drainage inlets, ditches, culverts, etc.) and stormwater management facilities are shown. Labeling of the existing stormwater facilities are consistent with the submitted analysis.
- All proposed stormwater conveyance feature (swales, pipes, catch basins, drainage inlets, ditches, culverts, etc.) and stormwater management facilities and/or practices used for detention and/or water quality management purposes are shown. Labeling of proposed stormwater management facilities and/or BMPs are consistent with the submitted analysis.
- All proposed buildings and roof leaders are shown and indicate the respective drainage area.

DRAINAGE ANALYSIS DATA

- Project/ Drainage Narrative
- Pre and post-development drainage diagram (Node Diagram)
- The subareas of existing and proposed conditions compare the same overall area
- The MassDEP Stormwater Checklist completed and stamped by a Massachusetts Registered Professional Engineer that certifies the Stormwater Report contains all required submittals.
- Drainage areas, reaches, ponds (including detention basins and/or infiltration facilities), (such as diversion structures), and design/analysis points shown on diagram.
- All features on the drainage diagram are labeled and are consistent with the submitted analysis. Labeling also is consistent with the information depicted on the submitted drainage area maps.
- Storm events analysis and the rainfall depths use NOAA Atlas 14-Precipitation-Frequency Atlas of the United States Volume 10 Version 3.0 or even the Extreme Precipitation in New York & New England ("Cornell"). (<http://precip.eas.cornell.edu/>)**
- Ground cover types, hydrologic soil group information, and hydrologic condition are provided that are used in the determination of weighted curve numbers.
- Inputs for the Tc analysis; Tc minimum shall be set to 6 minutes
- MassDEP Standard 2: Stormwater management systems are designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.
- MassDEP Standard 3: Required Recharge Volume Calculations are provided.
 - Drawdown calculations are provided which confirms that the infiltration facility is able to completely drain within 72 hours.
- MassDEP Standard 4: Stormwater management systems are designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).
 - Structural stormwater best management practices (BMP's) are sized to capture the required water quality volume and calculations are provided in accordance with the Massachusetts Stormwater Handbook;
 - MassDEP TSS Removal Worksheet provided for each BMP treatment train.