



**SITE PLAN REVIEW CHECKLIST**

**PROJECT NAME:** \_\_\_\_\_ **ADDRESS:** \_\_\_\_\_  
**DESIGN ENGINEER:** \_\_\_\_\_ **DATE:** \_\_\_\_\_  
**COMPANY:** \_\_\_\_\_ **PHONE:** \_\_\_\_\_

<b>I. General Review Items, Including General Plan (if applicable)</b>	<b><u>YES</u></b>	<b><u>NO</u></b>	<b><u>N/A</u></b>
1) Engineering plans match the approved site plan or preliminary plat.	_____	_____	_____
2) Original seal and signature by a PE on Plans (cover sheet only if indexed).	_____	_____	_____
3) Title block information filled in (i.e., project name, location, owner, etc.).	_____	_____	_____
4) Location sketch.	_____	_____	_____
5) North arrow and graphic scale. North shall be up or to the left.	_____	_____	_____
6) Provide location map	_____	_____	_____
7) Legal description of all properties involved in project provided.	_____	_____	_____
8) Two Bench Marks with labeled datum.	_____	_____	_____
9) Street names and R.O.W. widths (existing or proposed).	_____	_____	_____
10) All existing and proposed municipal and private utilities (including on-site services), maintaining adequate separation between all utilities.	_____	_____	_____
11) Existing easements shown.	_____	_____	_____
12) Location of proposed buildings on property.	_____	_____	_____
13) Location and elevations of ditches, culverts, natural waterways, and county drains.	_____	_____	_____
14) Lot numbers, Parcel number and dimensions or tract acreage shown.	_____	_____	_____
15) Adjacent flood plain area shown.	_____	_____	_____
16) Provide plans on 24" x 36" sheets of paper; *.pdf shall also be provided	_____	_____	_____
17) Provide location dimensions for all proposed utilities.	_____	_____	_____
18) Provide Topographic Survey showing adjacent buildings and structures (min. 50' offsite) including: 50' grid or closer if needed, adjoining parcel and lot numbers, utilities, and easements	_____	_____	_____
19) Identify approvals and/or permits required:			
a) Soil Erosion and Sedimentation Control	_____	_____	_____
b) EGLE Water Permit	_____	_____	_____
c) EGLE Sanitary Sewer Permit	_____	_____	_____
d) Macomb County Public Works	_____	_____	_____
e) Macomb County Department of Roads	_____	_____	_____
f) MDOT	_____	_____	_____
g) Red Run Drain	_____	_____	_____
h) Other	_____	_____	_____

- |  |       |       |       |
|--|-------|-------|-------|
| 20) Location and elevation of 100 year Floodplain if applicable                  | _____ | _____ | _____ |
| a) Certification that FIRM panel # has been checked.                             | _____ | _____ | _____ |
| 21) Lot dimensions and information as to how boundary was located on the ground. | _____ | _____ | _____ |
| a) Identify set irons, found irons, etc.   | _____ | _____ | _____ |

**II. Sanitary Sewer**

**YES    NO    N/A**

- |  |                          |                                      |  |
|--|--------------------------|--------------------------------------|--|
| 1) Acceptable Pipes:   | • 8” – 15” Truss         | • 12” – 24” Sanatite HP              |  |
|  | • 4” – 15” SDR 26        | • 12” – 24” RCP w/ Xypex             |  |
|  | • > 24” Special          | • <b><i>SDR35 not acceptable</i></b> |  |
| 2) Proposed Sewer Location:  |                          |                                      |  |
| a) Show dimensional ties.  |                          |                                      |  |
| b) Label pipe length, type, and slope on plan review.  |                          |                                      |  |
| 3) Manhole (assign number to each):  |                          |                                      |  |
| a) Locations: at end of line and at all changes of grade, direction or pipe size.  |                          |                                      |  |
| b) Size: minimum of 4’ diameter.   |                          |                                      |  |
| c) Maximum spacing: 500’   |                          |                                      |  |
| d) Provide drop connections when inverts are over 18” apart (5’ diam. MH)  |                          |                                      |  |
| 4) Minimum 8" diameter shown for public sanitary sewer.  |                          |                                      |  |
| 5) Depth: minimum of 9' from T/C to top of pipe unless limited by receiving sewer.   |                          |                                      |  |
| 6) Slope: sufficient to provide at least 2 fps velocity such as:   |                          |                                      |  |
| • 8" @ 0.40% (0.68 cfs)  | • 15" @ 0.15% (2.60 cfs) |                                      |  |
| • 10" @ 0.30% (1.10 cfs)   | • 18" @ 0.12% (3.65 cfs) |                                      |  |
| • 12" @ 0.22% (1.57 cfs)   | • 21" @ 0.10% (5.00 cfs) |                                      |  |
| 7) Profiles  |                          |                                      |  |
| a) Match sewer tops, 0.8 diameter points, or use interior drop connection; except drop invert additional 0.10 at 45° turn. |                          |                                      |  |
| b) All crossing underground utilities shown (existing or proposed).  |                          |                                      |  |
| c) Show: size, slope, and type of pipe; sewer inverts and rim elevations.  |                          |                                      |  |
| d) Show sump-manhole and temporary bulkhead for sewer test.  |                          |                                      |  |
| e) Show building service connections.  |                          |                                      |  |
| f) Label the stationing and terminus elevation for all proposed leads.   |                          |                                      |  |
| g) Show compacted sand backfill where required.  |                          |                                      |  |
| 8) Building service connections show:  |                          |                                      |  |
| a) Location and sizes shown.   |                          |                                      |  |
| b) All connections (except industrial): min. 6" PVC SDR 23.5 lead.   |                          |                                      |  |
| c) Areas Zoned Industrial: min 8” Truss Pipe lead with sampling point and cleanout.  |                          |                                      |  |
| d) One lead shown for each unit to be served by public sewer.  |                          |                                      |  |
| 9) State Construction Permit Submittal:  |                          |                                      |  |
| a) Quantities and description of improvements of public sanitary sewer.  |                          |                                      |  |
| b) Basis of design provided with current and future service populations and flows shown separately.                        |                          |                                      |  |
| c) Service district map provided with current and future service areas labeled.  |                          |                                      |  |

d) Peak flow calculated with the following formula:

$$Peak\ Flow = [(18 + \sqrt{TP}) / (4 + \sqrt{TP})] \times Avg.\ Flow \quad where\ TP = (pop.) / 1000$$

e) EGLE Part 41 Permit application completed.

10) Easement (pvt property) Approx: trench width + 2x depth over pipe; 12' min.

11) Provide Warren Engineering's standard detail sheet with construction notes.

12) Special backfill (compact to 95%) shown & labeled on plan and profile views where sanitary sewer is under the influence of pavement.

13) Provide recordable easement document to City of Warren for private property

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**III. Water Main**

**YES   NO   N/A**

1) Acceptable Water main materials

a) CL 54 Ductile Iron, poly wrapped, 3" – 24"

b) C900, 4"-12"; C905, 12"-24"; C909, 6"-16"; DR18 PVC with tracer wire

c) >24" pipe, special review

_____	_____	_____
_____	_____	_____
_____	_____	_____

2) Water main Location:

a) Show dimensional ties

b) Label pipe length, type and sand backfill areas on plan view

_____	_____	_____
_____	_____	_____

3) Hydrants:

a) Spacing: maximum of 500' residential, 300' everywhere else.

b) Type: Mueller or East Jordan.

c) Location: min. 5' away from driveways, 30' away from buildings.

d) Show finished grade for all hydrants.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4) Gate Valves and Wells:

a) Spacing: 1250' maximum, not more than 30 units disconnected when closing sections, not more than 4 gate valves to close off section.

b) Location: about 5' from R.O.W. intersection and outside of pavement.

c) Gate well size: minimum 5' diameter.

d) Show finish grade for gate well rims.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5) For dead-ends, provide hydrant and gate valve.

_____	_____	_____
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6) For cul-de-sacs:

a) Water main must be located around cul-de-sac and adjacent to or in front of lots to be served.

b) A bore for water service leads cannot be more than 28 feet.

_____	_____	_____
_____	_____	_____

7) Provide 45 degree bends or less for water main (no 90 degree bends).

_____	_____	_____
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8) One water service lead shown for each unit on site.

_____	_____	_____
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9) For river and county drain crossings, show detailed section with elevations below river and drain bottom.

_____	_____	_____
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10) Updated City water main standard detail sheet attached to plans.

_____	_____	_____
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11) 12' minimum easement shown for all public water mains.

_____	_____	_____
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12) Quantities and description of improvements of public water main with Warren name, section number, and existing main roads near the project.

_____	_____	_____
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13) Special backfill (compacted to 95%) shown and labeled on plan and profile views where sanitary sewer is under the influence of pavement.

_____	_____	_____
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|---|-------|-------|-------|
| 14) Provide two independent water services for hospitals, nursing homes or residential property having more than 30 living units. | _____ | _____ | _____ |
| 15) Provide City standard detail sheet with construction notes.   | _____ | _____ | _____ |
| 16) Provide recordable easement document to City of Warren on private property.   | _____ | _____ | _____ |
| 17) Provide completed EGLE Act 399 Water Main application.  | _____ | _____ | _____ |
| 18) Provide profiles for water main > 16".  | _____ | _____ | _____ |
| 19) Design shall be in conformance with 10 States Standards.  | _____ | _____ | _____ |

**IV. Storm Sewer**

**YES   NO   N/A**

- |  |       |       |       |
|--|-------|-------|-------|
| 1) Provide catch basins (with 2' min. sumps) at low points.  | _____ | _____ | _____ |
| 2) All pavement catch basins shall have edge drain (6" diam.) around their perimeter and/or along the back of curb (min. length: 40 LF total).   | _____ | _____ | _____ |
| 3) Provide intercepting catch basins so there is not more than 150' of drainage around curb returns.   | _____ | _____ | _____ |
| 4) Provide plan showing drainage districts and furnish design calculations <ul style="list-style-type: none"> <li>• based on 10-year storm</li> <li>• use the following imperviousness factors for zoning classification: <ul style="list-style-type: none"> <li>• Single family = 0.35   • Multiple family = 0.55</li> <li>• Industrial = 0.80   • Commercial = 0.90</li> </ul> </li> </ul>   | _____ | _____ | _____ |
| 5) Detention <ul style="list-style-type: none"> <li>• If &gt;1.0 Ac., review ordinance, provide treatment.</li> <li>• If &lt;1.0 Ac., provide as possible (2" over site or Oakland 10 yr design).</li> <li>• discharge shall be = or &lt; than pre-development. <ul style="list-style-type: none"> <li>a) Parking lot – 9" max. depth, low point to gutter line.</li> <li>b) Pond 1 on 6 max. slope</li> <li>c) Underground detention</li> <li>d) Calculations shown.</li> </ul> </li> </ul> | _____ | _____ | _____ |
| 6) Provide a maintenance agreement for all storm drainage facilities with the City of Warren (i.e. storm sewers, swales, detention basins, etc.).  | _____ | _____ | _____ |
| 7) Storm sewer size and type: <ul style="list-style-type: none"> <li>a) Minimum 12" for surface drainage, 8" allowed if only serving roof or sump-pump connections.</li> <li>b) Sized for upstream areas.</li> <li>c) Use class of pipe necessary for depth</li> <li>d) Roof leads under pavement: <ul style="list-style-type: none"> <li>• 6" or less – SDR 23.5   • 8" – truss pipe</li> </ul> </li> </ul>   | _____ | _____ | _____ |
| 8) Show sump pump connections to storm sewer (and connection detail)   | _____ | _____ | _____ |
| 9) Profiles: <ul style="list-style-type: none"> <li>a) Provide at least 3' of cover; drop inverts at least 0.1' at sewer size changes Or 90° turns. Show hydraulic gradient when it is above top of pipe; keep H.G. at least one foot below profile's finish grade.</li> <li>b) Show all crossing underground utilities (existing or proposed).</li> </ul>   | _____ | _____ | _____ |

- |   |       |       |       |
|---|-------|-------|-------|
| c) Provide sufficient slope to get at least 2.5 fps velocity<br>12" @ .32%, 15" @ .24%, 18" @ .18%, 21" @ .14%                            | _____ | _____ | _____ |
| d) Show: size, slope, pipe type, sewer inverts, and rim elevations at manholes.   | _____ | _____ | _____ |
| e) Sanitary building-service connections clear storm sewer.   | _____ | _____ | _____ |
| f) Show compacted sand backfill where required  | _____ | _____ | _____ |
| 10) Storm Sewer Location:   |       |       |       |
| a) Show dimensional ties  | _____ | _____ | _____ |
| b) Label pipe length, type and sand backfill areas on plan view   | _____ | _____ | _____ |
| 11) Storm sewer manholes (assign number to each):   |       |       |       |
| a) Location: end of line and at all changes of grade, direction, and/or pipe size.  | _____ | _____ | _____ |
| b) Size: minimum 4' diameter.   | _____ | _____ | _____ |
| c) Spacing: 500' maximum.   | _____ | _____ | _____ |
| 12) No more than three catch basins shall drain into any one structure.   | _____ | _____ | _____ |
| 13) 12' minimum easement shown for all public storm sewers.   | _____ | _____ | _____ |
| 14) City standard detail sheet attached to plans.   | _____ | _____ | _____ |
| 15) Special backfill (compacted to 95%) shown and labeled on plan and profile views where storm sewer is under the influence of pavement. | _____ | _____ | _____ |

**V. Paving and Grading**

- |   | <b><u>YES</u></b> | <b><u>NO</u></b> | <b><u>N/A</u></b> |
|---|-------------------|------------------|-------------------|
| 1) Topographic Survey Plan (show existing ground contour lines).  | _____             | _____            | _____             |
| 2) Offsite elevations (100' beyond each property line).   | _____             | _____            | _____             |
| 3) Pavement cross sections shown:   |                   |                  |                   |
| a) Parking areas.   | _____             | _____            | _____             |
| b) Drive lanes (deep strength required).  | _____             | _____            | _____             |
| c) Public and private roads.  | _____             | _____            | _____             |
| 4) Concrete pavement cross-sections:  |                   |                  |                   |
| a) 6" concrete or 4" HMA on 8" aggregate base for parking areas   | _____             | _____            | _____             |
| b) 7" concrete for residential streets on 8" aggregate base   | _____             | _____            | _____             |
| c) 9" for industrial drives on 8" aggregate base  | _____             | _____            | _____             |
| 5) Curb detail shown 18" wide. (Straight faced and asphalt curbs not allowed).                                  | _____             | _____            | _____             |
| 6) Indicate in plan view where the standard curb and gutter and where the reverse curb and gutter will be used. | _____             | _____            | _____             |
| 7) Integral sidewalk and curb detail shown if applicable. (18" footing).  | _____             | _____            | _____             |
| 8) Proposed elevations in boxes.  | _____             | _____            | _____             |
| 9) Pavement grades:   |                   |                  |                   |
| a) Concrete: Minimum 0.5%, Maximum 7%.  | _____             | _____            | _____             |
| b) Asphalt: Minimum 1%, Maximum 7%.   | _____             | _____            | _____             |
| 10) Provide vertical curve, if grade change exceeds 2%.   | _____             | _____            | _____             |
| 11) Provide minimum of 0.30' drop around curb returns.  | _____             | _____            | _____             |
| 12) Provide intersection and cul-de-sac details   |                   |                  |                   |
| • (elevations, dimensions and drainage scheme).   | _____             | _____            | _____             |
| 13) Dead ends: use cul-de-sac or approved turn around: maximum length 600'.                                     | _____             | _____            | _____             |
| 14) Show centerline curve data (for roads only).  | _____             | _____            | _____             |

- |   |       |       |       |
|---|-------|-------|-------|
| 15) Show stationing left to right (for roads only).   | _____ | _____ | _____ |
| 16) Show top-of-curb elevations.  | _____ | _____ | _____ |
| 17) Sidewalks:  |       |       |       |
| a) Along existing public R.O.W.'s.  | _____ | _____ | _____ |
| b) Along both sides of all proposed R.O.W.'s<br>(except along industrial roads or within subdivisions).                 | _____ | _____ | _____ |
| c) Within a site, as necessary.   | _____ | _____ | _____ |
| d) Cross-section shown: 4" min, 8" for drive crossings.   | _____ | _____ | _____ |
| 18) On site (excluding R.O.W.) pavement quantities shown on plan<br>(i.e. LF curb, pavement area, sidewalk area, etc.). | _____ | _____ | _____ |
| 19) Show proposed pavement drainage slopes.   | _____ | _____ | _____ |
| 20) Proposed Sewer Location:  |       |       |       |
| a) Show dimensional ties  | _____ | _____ | _____ |
| b) Label pipe length, type and slope on plan view   | _____ | _____ | _____ |
| 21) Provide adequate access per ADA standards.  |       |       |       |
| • Max. 1:12 (8.33%) ramps   • 2.0 sidewalk cross slope   • 2.0% in parking areas  |       |       |       |
| • See MDOT R-28   | _____ | _____ | _____ |