AEC CIVIL CONSTRUCTION PLAN CHECKLIST **(Sheet Set-up, not all inclusive)**

U-M Project #:_____ U-M Project Name: _____

Consultant/DM: _____Checked by: _____Date:_____

Submitted Date: _____ Date on Submitted Plans: _____ # of Plan Sheets: _____

Submittal Phase: **City Preliminary Review/Schematic Design** **City Engineering/License Review/Design Development** **Construction Documents**

AEC Project Schedule:

- SD Review start_____Finalize SD:_____ City Preliminary Review start:_____
- DD Review start_____Finalize DD:_____ City Civil/License Review start:_____
- CD Review start:_____ Finalize CD:_____ Finalize City Plan Review:_____

Note: Consultant to include checklist with quality control reviewer sign-off/initials for each plan submittal. Project applicable requirements to be included in submittals beginning at Schematic Design (City Preliminary Plans) or Design Development (City Civil/License Plans). Construction Document phase is the refinement phase of plans and specs.

Pre-Design

PRE-DESIGN DELIVERABLES, PRIOR TO COMMENCING WITH SCHEMATIC DESIGN

YES	NO	NA	
◯	◯	◯	1. Designer and U-M Design Manager (DM) have reviewed U-M Design Guideline Pre-Design Deliverables and applicable items have been incorporated.

Civil Sheet set up – typical for sheet order and content

All Sheets

SCHEMATIC DESIGN REQUIREMENTS (ALL SHEETS)

YES	NO	NA	
◯	◯	◯	1. North arrow (up or to the left), Engineer scale, plans at 20 or 40 scale (City of Ann Arbor requirement), discuss with U-M DM if requesting any variation to scale of plans.
◯	◯	◯	2. Sheet size 24" x 36" – if overall set is E-size, inset 24 x 36 civil sheets into E-size (avoid duplicate effort).
◯	◯	◯	3. Date of plan release (all sheets dated).
◯	◯	◯	4. U-M project name and U-M project number matches AEC project approval form and is on all sheets.
◯	◯	◯	5. Verify page break locations and overall scale with U-M at time of set up and prior to proceeding in design.
◯	◯	◯	6. Avoid use of keynotes for scope (not preferred by City of Ann Arbor) – use clear hatching, legends and callouts.
◯	◯	◯	7. Text size (12 font minimum) and text orientation Bottom and Right reading.
◯	◯	◯	8. Drawings clear and readable, proposed work clearly distinguished from existing conditions. Line weight of proposed work bolder than existing.
◯	◯	◯	9. Symbols matching legend.
◯	◯	◯	10. Miss Dig note.
◯	◯	◯	11. Label all utilities by type and size on the actual utility line (avoid label callouts).
◯	◯	◯	12. Maintain existing emergency egress and vehicle access requirements.
◯	◯	◯	13. Bold/clearly identified and labeled: ROW, property line, encumbrances (such as easements with page/liber number, etc.). Proposed Easements, ROW occupancy agreements require U-M DM to obtain Campus Planner approval in advance of showing on plans.
◯	◯	◯	14. Clearly dimension ROW width, note actual width or indicate if variable width on the dimension.
◯	◯	◯	15. Show building outlines and include building addresses on adjacent parcels/buildings.

◯	◯	◯	16. Regulatory submittal packages – review level of detail of plan sheet with DM for areas outside regulatory Jurisdiction (example, building interiors are not to be shown for site regulated items.).
◯	◯	◯	17. Confirm printed PDF plans meet scale – all sheets.
◯	◯	◯	18. Include all items identified on the U-M AEC Design Deliverables.
◯	◯	◯	19. For City of Ann Arbor utilities/ ROW, see City's Construction Plan Preparation – Construction Plan Checklist.
◯	◯	◯	20. City of Ann Arbor Preliminary plan submittal package: U-M/City prelim transmittal, U-M provided check to pay fees, preliminary plan checklist, U-M Fire Marshal summary, and project specific City correspondence regarding City direction accompanies City of Ann Arbor preliminary plans for submittal (electronic/paper copy).

DESIGN DEVELOPMENT REQUIREMENTS (ALL SHEETS)

YES	NO	NA	
◯	◯	◯	21. Include a table with unit price pay items & quantity on each sheet – unit price projects; use U-M AEC Civil & Infrastructure standard pay items for unit price bids.
◯	◯	◯	22. City of Ann Arbor Civil Construction Review submittals: U-M/City transmittal, Civil Plan Application, U-M provided check to pay fee, AAGRS Coordinate worksheet, separate worksheet with DIPRA restrained joint calculations, EGLE permit application (word format) and project specific City correspondence regarding City direction accompanies City of Ann Arbor Civil plans for submittal (electronic and paper copy).
◯	◯	◯	23. City of Ann Arbor ROW Occupancy review submittals: U-M/City transmittal, License Agreement Application, U-M provided check for fee, project specific City correspondence regarding City direction accompanies City of Ann Arbor ROW Occupancy plan(s) for submittal (electronic and paper copy).

Title Sheet

SCHEMATIC DESIGN REQUIREMENTS (TITLE SHEET)

YES	NO	NA	
◯	◯	◯	1. U-M Project name and number, vicinity map, index of sheets with submittal date, parcel ID number, project description, applicable codes & standards (Include current MDOT and MMUTCD in standards for site work).
◯	◯	◯	2. City submittal title sheet(s) when applicable & required for more than one sheet submitted, City requires Ann Arbor vicinity map and site location call-out, index of sheets submitted and date of plans, parcel ID, U-M project number, project description, applicable codes, dated. Title examples, "Preliminary Plan Review" or "Civil Engineering Review", or "Electrical Duct – ROW Occupancy Review".
◯	◯	◯	3. Include AEC standard note: PROPERTY OF THE UNIVERSITY OF MICHIGAN- SUBJECT TO RESTRICTIONS THESE PLANS ARE THE CONFIDENTIAL PROPERTY OF THE UNIVERSITY OF MICHIGAN. THESE PLANS HAVE BEEN PROVIDED TO YOU FOR THE LIMITED PURPOSE OF BIDDING &/OR PROVIDING CONSTRUCTION WORK AT THE UNIVERSITY OF MICHIGAN. YOU ACKNOWLEDGE THAT THESE PLANS ARE THE CONFIDENTIAL PROPERTY OF THE UNIVERSITY OF MICHIGAN. YOU WILL KEEP THE PLANS CONFIDENTIAL AND WILL NOT DISCUSS WITH OR PROVIDE THESE PLANS TO ANY THIRD PARTY, OTHER THAN THOSE EMPLOYEES, SUBCONTRACTORS OR CONSULTANTS WHO ARE ESSENTIAL TO COMPLETING YOUR BID &/OR WORK. UNLESS YOUR COMPANY IS SELECTED TO PERFORM A PART OF THE WORK, YOU WILL DESTROY ALL COPIES OF THE PLANS WITHIN 90 DAYS OF THE BID DUE DATE.
◯	◯	◯	4. ROW impacts: include standard City of Ann Arbor note on City submittal cover sheets: "The construction of any public utility and work within the City of Ann Arbor right-of-way covered by these plans shall conform to the current City of Ann Arbor Public Services Standard Specifications and subsequent updates."
◯	◯	◯	5. Add note when work or staging within or adjacent to a road or pavement: "The contractor shall take all necessary precautions to protect the existing public pavement. Damage to the pavement during the course of construction may necessitate milling and resurfacing of the damaged areas at the cost of the contractor."
◯	◯	◯	6. Add note when work or staging is within or adjacent to roads, including City ROW: "Pavement markings disturbed due to pavement cuts or construction related activities shall be replaced as directed by engineering. Replacement during construction of the project may be considered temporary, with final pavement marking restoration to occur at the end of the project."
◯	◯	◯	7. Include standard note on cover sheet: "Per Chapter 49, section 4:58 of City Code: All sidewalks within the City shall be kept and maintained in good repair by the owner of the land, adjacent to and abutting upon the same; and if any owner shall neglect to keep and maintain the sidewalk or any walks and ramps leading to a crosswalk along the front, rear, side of the land in good repair and safe for the use of the public, the said owner shall be liable to the City for any damages recovered against the City sustained by any person by reason of said sidewalk being unsafe and out of repair. Contractor will replace any contractor damaged sidewalk (full flag) as a result of contractor operations, including sidewalk damaged on U-M Property outside of City ROW."

Existing Conditions Plan (Boundary, Topo, Site Analysis) Sheets

SCHEMATIC DESIGN REQUIREMENTS

YES	NO	NA	
◯	◯	◯	1. Meets U-M minimum "Boundary Topo Survey" requirements. (Sealed survey)
◯	◯	◯	2. Site survey all on one sheet. If survey is a large area, also include additional survey sheets with page break at 20 or 40 scale, north arrow up or to the left.
◯	◯	◯	3. A minimum of two benchmark locations & elevations shall be indicated on the plans as well as listing the benchmarks used in establishing the vertical datum. Vertical Datum: referenced to NAVD 88 datum.
◯	◯	◯	4. Confirm all U-M GIS utilities are included in the survey, including U-M IT lines.
◯	◯	◯	5. Confirm that building water services are labeled as Fire, Domestic, or Fire/Domestic, example *4" w Fire service*
◯	◯	◯	6. Confirm that existing utilities are labeled on the line with lower case labels. Example 12" *w* for water and 15" *r* for storm. This is a City of Ann Arbor requirement.
◯	◯	◯	7. Confirm that gas lines are shown on the survey.
◯	◯	◯	8. Confirm all design ticket Miss Dig identified utilities are included in te survey http://www.missdig.org/excavators/design-ticket-excavators.html.
◯	◯	◯	9. Confirm adjacent non-U-M property addresses on survey.

Soil Borings Sheet(s)

SCHEMATIC DESIGN REQUIREMENTS

YES	NO	NA	
◯	◯	◯	1. Location and logs on plan sheet(s), if feasible and practical.

Site Logistics/Traffic/Project Phasing Plan Sheets

SCHEMATIC DESIGN REQUIREMENTS (SITE LOGISTICS/TRAFFIC/PHASING)

YES	NO	NA	
◯	◯	◯	1. Site boundaries/impact area identified –Campus Planning to be contacted early for anticipated non-U-M impacts.
◯	◯	◯	2. Tree Protection – shown on the plans.
◯	◯	◯	3. Building egress impacts and maintaining accessible routes.
◯	◯	◯	4. Pedestrian and vehicle traffic routing during construction (detour anticipated, can be refined as design refines).
◯	◯	◯	5. Lighting on adjacent walks/drives during construction –verify if adequate or add temporary/supplemental…
◯	◯	◯	6. Preliminary Maintenance of Traffic plan –Anticipated Detour signage (pedestrian & vehicular), traffic barricades per Part 6 MMUTCD & U-M AEC wayfinding (for each preliminary phase).
◯	◯	◯	7. Construction fencing with anticipated site access gates and hydrant access.
◯	◯	◯	8. Preliminary construction phasing.
◯	◯	◯	9. Preliminary crane locations identified, show air space swing (note that cranes or swing in ROW will require Campus Planning approval).
◯	◯	◯	10. Temporary shoring/tie backs –note if removed or abandoned in place & clearly note whether or not in ROW.
◯	◯	◯	11. Verify with U-M DM– U-M DM to consult DPSS regarding temporary or permanent traffic control orders for traffic signage/striping.
◯	◯	◯	12. Include note when work or staging is within or adjacent to roads: "The contractor shall take all necessary precautions to protect the existing public road pavement. Damage to the public road pavement during the course of construction may necessitate milling and resurfacing of the damaged areas at the cost of the contractor." (This duplicate note is also on the cover sheet of City of Ann Arbor plan submittals.)
◯	◯	◯	13. Include note when work or staging is within or adjacent to roads: "Pavement markings disturbed due to pavement cuts or construction related activities shall be replaced as directed by the City if within the City ROW or by U-M AEC if on University property. Replacement during construction of the project may be considered temporary, with final pavement marking restoration to occur at the end of the project." (This duplicate note is also on the cover sheet of City of Ann Arbor plan submittals.)

YES	NO	NA	
◯	◯	◯	14. Include standard note: "Per Chapter 49, section 4:58 of City Code: All sidewalks within the City shall be kept and maintained in good repair by the owner of the land, adjacent to and abutting upon the same; and if any owner shall neglect to keep and maintain the sidewalk or any walks and ramps leading to a crosswalk along the front, rear, side of the land in good repair and safe for the use of the public, the said owner shall be liable to the City for any damages recovered against the City sustained by any person by reason of said sidewalk being unsafe and out of repair. Contractor shall replace any contractor damaged sidewalk (full flag) as a result of contractor operations – replacement of contractor damaged sidewalk applies to City ROW as well as to general U-M sidewalk." (This duplicate note is also on the cover sheet of City of Ann Arbor plan submittals.)

DESIGN DEVELOPMENT REQUIREMENTS (SITE LOGISTICS/TRAFFIC/PHASING)

YES	NO	NA	
◯	◯	◯	15. Refinements to Maintenance of Traffic plan shall be provided depicting how pedestrians and vehicle traffic will be impacted during different phases of construction and signage per MMUTCD.

SESC Plan Sheet(s)

SCHEMATIC DESIGN REQUIREMENTS (SESC)

YES	NO	NA	
◯	◯	◯	1. Meets U-M EHS Soil Erosion & Sedimentation Control "Design & Review Requirements".
◯	◯	◯	2. Standard SESC/EHS notes and details.

DESIGN DEVELOPMENT REQUIREMENTS (SESC)

YES	NO	NA	
◯	◯	◯	3. Verify storm water controls during construction manage storm events while in construction.

CONSTRUCTION DOCUMENT REQUIREMENTS (SESC)

YES	NO	NA	
◯	◯	◯	4. SESC project notification form to accompany CD submittal.

Site and Utility Demolition Plan Sheets

SCHEMATIC DESIGN REQUIREMENTS

YES	NO	NA	
◯	◯	◯	1. Overall site and utility demolition plan on one sheet (if multiple sheets for 20 or 40 scale, also include an overall 50-100 scale plan).
◯	◯	◯	2. Trees - Removal and transplant and stump removal clearly noted (tree survey to be completed prior to noting removals, see tree preservation policy).
◯	◯	◯	3. Pavement, structures & utilities to be removed/relocated clearly noted/hatched on the utility. Show hatching in legend.
◯	◯	◯	4. Protect utility systems remaining (including irrigation); utility disconnections to occur at the main.
◯	◯	◯	5. Include City standard note if water main work: "Use of line stops is required where existing water mains cannot be sufficiently isolated to complete the work. The cost of any line stop installation is not the responsibility of the City of Ann Arbor." Coordinate with DM regarding line stop responsibility - if by contractor or other.
◯	◯	◯	6. For fire hydrant and valve removals, add note: "Removed fire hydrants and ductile iron valves are to be returned to City of Ann Arbor Public Works."
◯	◯	◯	7. Include contaminated soil disposal notes (if applicable).
			8. Provide Capital Cost Recovery chart for demo (when applicable) – Include table on overall demo sheet

Capital Cost Recovery: Demolished/Removed City metered services

	Meter* (Size/Type)	Meter Number	Service Lead (Size)
1.Domestic water service			
2. Fire water service			
3. Domestic/Fire Service			
a. Fire service lead Size after meter/split	NA		
b. Domestic water Size after meter/split	NA		
4. Irrigation only			
5. Cooling Tower			

Proposed Site Layout Plan Sheets

SCHEMATIC DESIGN REQUIREMENTS (PROPOSED SITE LAYOUT PLAN)

YES	NO	NA	
◯	◯	◯	1. Overall site layout plan with all surface features (if multiple sheets, include an overall plan at a larger scale).
◯	◯	◯	2. Plan view of all site surface features, including material type – (this includes all traffic signs, signals and street lights, as well as pedestrian lights, utility surface features (MH, CB, FH, GV, etc.)).
◯	◯	◯	3. Dimensions, including ROW width, overall pavement/parking lot lanes, sidewalks, roads, parking, approach at curbcut, approach at ROW and approach radii.
◯	◯	◯	4. Parking space dimensions and quantity summary provided.
◯	◯	◯	5. City parking meters – include a chart with impacts noted, provide meter #'s.
◯	◯	◯	6. Service vehicle parking.
◯	◯	◯	7. Barrier free spaces and van accessible spaces meet requirements/needs – Confirm U-M DM has coordinated with U-M Logistic Transportation & Parking (LTP).
◯	◯	◯	8. Identify by hatching, dimension and label accessible routes from accessible parking to accessible building entrances and to any parking pay stations; accessible routes from accessible building entrances to public sidewalk ROW/drop off & bus stops.
◯	◯	◯	9. Pavement markings, crosswalks, traffic signs, emergency vehicle signs, and signals (Confirm that U-M DM has coordinated proposed design with U-M DPSS for traffic control order (TCO) considerations.)
◯	◯	◯	10. Bike, moped, motorized personal transportation parking considerations.
◯	◯	◯	11. Bus stops.
◯	◯	◯	12. Frost-Free Concrete Stoops at all outward swinging doors, and as applicable.
◯	◯	◯	13. Dumpster locations identified and heavy-duty pavement to support Refuge trucks.
◯	◯	◯	14. Stairs/ramps, hand rails & rail extensions (keep out of ROW - extensions into the ROW & walking thru paths require U-M DM to obtain Campus Planner approval prior to including on proposed plan).
◯	◯	◯	15. Fence/gates/turnstiles – meet occupancy exit requirements.
◯	◯	◯	16. Seatwalls, retaining walls, permanent shoring/tiebacks.

DESIGN DEVELOPMENT REQUIREMENTS (PROPOSED SITE LAYOUT PLAN)

YES	NO	NA	
◯	◯	◯	17. Station City of Ann Arbor ROW sidewalk (exclusion for random sidewalk flag replacement).
◯	◯	◯	18. Station road centerline separate from utilities, begin at 0+00 at road spring point.
◯	◯	◯	19. Concrete control joints (hand-tooled) & expansion joints for pavement/walks and concrete subbase (coordinate with existing jointing plan & site features) Complex plans might require separate pavement jointing sheet(s).

Proposed Grading Plan sheets

SCHEMATIC DESIGN REQUIREMENTS (PROPOSED GRADING PLAN)

YES	NO	NA	
◯	◯	◯	1. Overall Grading plan on one sheet (if multiple sheets at 20 or 40 scale, also include an overall plan on one sheet).
◯	◯	◯	2. Ground floor elevation of buildings confirmed with architectural drawings.
◯	◯	◯	3. Verify that the datum used is the same for all bldg. floors when matching elevations of existing buildings & using historical drawings for reference elevations.
◯	◯	◯	4. Drainage directed away from buildings and toward an outlet (grade to avoid use of trench drains).
◯	◯	◯	5. Proposed 1' contours and their connection to existing contours.
◯	◯	◯	6. Storm overflow route identified/shown. Off-site storm drainage flow impact identified/shown.
◯	◯	◯	7. Verify grading limits are outside preserved natural features.
◯	◯	◯	8. Station road centerline separate from utilities, begin at 0+00 at road spring point.

YES	NO	NA	
◯	◯	◯	9. Reference contaminated soil disposal notes (notes should be on the plan sheet for demo, if applicable).

DESIGN DEVELOPMENT REQUIREMENTS (PROPOSED GRADING PLAN)

YES	NO	NA	
◯	◯	◯	10. Spot elevations: High-points & low-points identified, road crown, curves, grade breaks, proposed meets existing.
◯	◯	◯	11. Spot elevations for utility rims, valves, gate well boxes, wells, hydrant finished grade.
◯	◯	◯	12. Include slope percentages within paved areas and max slopes in grass/ planting areas (max 1: 4 slope in mowed).
◯	◯	◯	13. Detailed sidewalk grading plans, 10 scale (may require separate sheet(s), Sidewalks/ramps/drive approaches City example): a. Station sidewalk fronting the public streets (City requirement). b. Width of sidewalk dimensioned – confirm snow removal/maintenance needs met. c. Width of ROW from back of curb dimensioned. d. Spot elevations, front and back of walk at 25' max intervals, changes in width or direction, points of curvature, points of tangency, and curve midpoints. e. Longitudinal and transverse sidewalk slopes shall be labeled at slope changes, direction of flow. f. Horizontal curves shall have radius labeled (City requirement). g. Walk meets ADA, target 1.5% max cross slope and 4.5% max longitudinal slope (or match road). h. Curb ramps – verify grades meet ADA turning spaces, landings, and gutter pans; target 7% max ramp design to allow for construction tolerance. i. Verify grades do not flood at curb ramps. j. Verify no structure lids/obstructions in a 4' clear accessible walking path. k. Extend work to transition to existing walk for cross slopes > 2%; discuss scope add with U-M DM. l. Include sidewalk control and expansion joints.
◯	◯	◯	14. Include Note on all grading sheets: "Sidewalks constructed in the public right-of-way, adjacent to University roadways, and/or public and accessible paths shall meet all requirements and guidelines as set forth in the ADA Standards for Accessible Design. Contractor is responsible for constructing sidewalks and ramps per current accessible guidelines and will be responsible for the removal and reinstallation at no cost to U-M. Contractor to provide U-M project manager with written documentation of all locations where it is not feasible to meet accessible requirements prior to installation."

Proposed Site Utilities Plan(s)

SCHEMATIC DESIGN REQUIREMENTS (PROPOSED SITE UTILITIES PLAN)

YES	NO	NA	
◯	◯	◯	1. Overall Utilities plan (if multiple sheets at 20 or 40 scale, include additional overall plan on one sheet (100 scale)
◯	◯	◯	2. Show all above ground and below grade utilities, including electrical, IT conduit and gas. Show and label all abandoned lines. Do not show demolished utilities that are shown to be removed from the site on the demo sheet.
◯	◯	◯	3. Reference contaminated soil disposal notes on earlier plan sheet, if applicable.
◯	◯	◯	4. Existing utilities are to be labeled with lower case letters - Label proposed utility lines with upper case letter, e.g. existing storm sewer as 12" r, existing water as 12" w, label the proposed on the utility line as 12" R or 12" W.
◯	◯	◯	5. Label to identify ownership of U-M utilities in ROW as "U-M high voltage", storm as U-M 15" R, etc. Label the City's Utilities on U-M land as City 15"R. Label shall be on the utility line.
◯	◯	◯	6. Label and number proposed MH's, CB's, HH's, etc. – such as S-1, Elec HH-22. Include existing U-M GIS water main valve numbers for ease of identification in phasing plan.
◯	◯	◯	7. Station utilities in plan view: start at 0+00 for each utility & each run, all leads to start at 0+00 at the main; avoid use of decimals/round to whole number. Run lengths shall agree with utility stationing.
◯	◯	◯	8. Verify scale and that stations on the printed plans match the stationing labels and match the profile stations.
◯	◯	◯	9. Verify all partially demolished or impacted utilities are reconnected.
◯	◯	◯	10. Verify proposed utilities are outside of natural features to be preserved.
◯	◯	◯	11. Sanitary Sewer Flow Mitigation Calculations; include on plan sheet calculated in peak GPM, labeled "Sanitary Sewer Mitigation". Verify that U-M DM has reviewed the calculations with sanitarymitigation@umich.edu.

◯	◯	◯	12. Verify for plan view location: utility depths meet standards (WM 5.5' typical cover, sanitary/storm min 42" cover, HV/IT approx. 24-36" cover) Discuss with U-M DM for consideration and coordination early if depth is proposed to vary from typical. (Profiles are not required at Schematic).
◯	◯	◯	13. Verify for plan view location: 18" vertical clearance on WM for sanitary/storm and 12" vertical clearance for others. Discuss with U-M DM for consideration and coordination early if clearances are not met. (Profile not required at Schematic).
◯	◯	◯	14. Verify 10' horizontal clearance between water main and sanitary/storm and 5' horizontal clearance outside the influence of excavation on all other utilities. Discuss with U-M DM for consideration and coordination early if clearances are not met.
◯	◯	◯	15. Verify for plan view location: For City of Ann Arbor ROW crossings – discuss early with U-M DM if utility crossing elevation of 3' below lowest City utility is not practical or feasible. (Profile not required at Schematic)
◯	◯	◯	16. Show and label building utility services (on water services, label domestic and fire water) examples: 6"w FIRE Service, 4"w DOMESTIC service, 6" san. service, storm roof drain connection, building foundation drain connections, etc.).
◯	◯	◯	17. Indicate with a note on the plans if a facility is being proposed to be fed for fire or domestic water by an existing U-M facility. Show the metered facility connection location to the water main and supporting detail to verify the metered connection satisfies backflow prevention requirements.
◯	◯	◯	18. All hydrant leads shall be 8-inch and reduce to 6-inch three feet prior to the hydrant assembly. The reducer shall be labeled and stationed in the plan and profile view.
◯	◯	◯	19. Hydrant/FDC requirements – show FDC & dimension to hydrant.
◯	◯	◯	20. Hydrant on the same side of the road as the FDC it services – U-M DM has had a discussion with the U-M fire marshal if waived.
◯	◯	◯	21. Clearly show surface restoration features (necessary for hydrant placement).
◯	◯	◯	22. When City utilities or water main are impacted, include standard City note on all utility sheets: "The construction of any public utility, water main and work within the City of Ann Arbor right-of-way covered by these plans shall conform to or exceed the requirements of the current City of Ann Arbor Public Services Standard Specifications and subsequent updates."
◯	◯	◯	23. Include standard note for U-M water main projects: "Installation, maintenance and access to water mains located within University of Michigan property and connected to the City's public water supply system per the terms of the executed Agreement Between the City of Ann Arbor and the Regents of the University of Michigan For Maintenance of Water Mains dated 6/22/2022."
◯	◯	◯	24. Include City standard note if water main work: "Use of line stops is required where existing water mains cannot be sufficiently isolated to complete the work. The cost of any line stop installation is not the responsibility of the City of Ann Arbor." *Coordinate with DM regarding line stop responsibility - if by contractor or other.*
◯	◯	◯	25. For water main projects, include a copy and provide QA per Construction Plan Checklist - General and water mains with plan submittal to U-M.

DESIGN DEVELOPMENT REQUIREMENTS (PROPOSED SITE UTILITIES PLAN)

YES	NO	NA	
◯	◯	◯	26. Proposed storm and sanitary casting schedule. Include the structure numbers, casting make and model, rim elevation, manhole invert(s) and structure depth.
◯	◯	◯	27. A sanitary lead schedule should appear on this sheet which includes the lead number, mainline station of the lead, invert of the lead at the main, riser height and invert at the top of the riser (if applicable), total length of lead from the mainline to 5' off the building face and the invert of the lead at the building face.
◯	◯	◯	28. The finished grade elevation shall be shown for all proposed fire hydrants. Proposed rim elevations shall be shown for all gate valve boxes and wells.
◯	◯	◯	29. Indicate with a note on the plans if booster pumps will be used for building water service leads
			30. Provide Capital Cost Recovery Table (when applicable) on overall utility sheet:

Capital Cost Recovery: Proposed Metered Water Service Connections

	Meter (Size/Type)	Service Lead (Size)
Domestic Water *		
Sanitary		
Fire Service**		
Irrigation		
Cooling Tower Water		

***Design peak domestic flow for meter sizing _____gallons per minute (GPM)**

****** **Fire service lead design flow ____**

◯	◯	◯	31. Plans signed and sealed by professional engineer
◯	◯	◯	32. For water main projects, include a copy of the filled out Construction Plan Checklist - General and water mains as an attachment to this checklist with plan submittal to U-M.

Profiles

DESIGN DEVELOPMENT REQUIREMENTS

YES	NO	NA	
◯	◯	◯	1. City of Ann Arbor profile requirements – use City template (City scale, profile, stationing, labels, etc), see Construction Plan Preparation, AutoCAD templates and construction plan checklist for City template and profile requirements. Attach City Construction Plan water checklist for project with impacted/proposed site water piping 4" and greater in size.
◯	◯	◯	2. Include plan view over and parallel to profiles. North arrow up or left. Label ROW& existing easements/encumbrances in plan and profile view. Plan view to include dimensions of ROW and easements.
◯	◯	◯	3. No more than two proposed utilities shall be shown on the same profile sheet. Preferably the sanitary sewer and water main on one sheet, and the storm sewer and C/G on another.
◯	◯	◯	4. Verify plan view stationing matches profile stationing, and that printed plans scale appropriately.
◯	◯	◯	5. Existing and proposed grade lines provided. Profile grade to match plan view.
◯	◯	◯	6. All utility crossings must be shown on the profile. A minimum vertical clearance of 18" for sewers and 12" for all other utilities. Water main bell shall not be located at point of crossing.
◯	◯	◯	7. Plan and profile view: The finished grade elevation shall be shown for all proposed fire hydrants. Proposed rim elevations shall be shown for all gate valve boxes and wells.
◯	◯	◯	8. Profile all new road grades; include cut sections.
◯	◯	◯	9. Profile and station all seat walls, retaining walls/foundations. Spot elevations on top/bottom of foundation, Top/bottom of walls, proposed grade, etc. Show wall expansion and control joints and slip dowels.
◯	◯	◯	10. Profile all fence installations greater than 50' in length, include foundations and proposed grade.
◯	◯	◯	11. Profile all underground U-M utilities on U-M Property greater than 50' in length and as necessary.
◯	◯	◯	12. Profile all City proposed utilities, **all** water mains & services (see exception), and **all** proposed utilities in the ROW (exception: water services 2" or less do not require profiles) Follow City of AA profile requirements.
◯	◯	◯	13. Utility profiles signed and sealed by professional engineer.
◯	◯	◯	14. Add note on all water main plan/profile sheets for U-M water main: "Installation, maintenance and access to water mains located within University of Michigan property and connected to the City's public water supply system are per the terms of the executed Agreement Between the City of Ann Arbor and the Regents of the University of Michigan for Maintenance of Water Mains dated 6/22/2022."

Storm Water Management – post construction

SCHEMATIC DESIGN REQUIREMENTS (STORMWATER MANAGEMENT)

YES	NO	NA	
◯	◯	◯	1. All projects are to refer to the EHS Guideline – EP3-001 Storm Water Management -- Post-Construction Requirements, including U-M EHS deliverable and certification after construction when greater than an acre of earth disturbance.
◯	◯	◯	2. Storm water management post construction preliminary basis of design and preliminary matrix of potential options with cost/benefits – early planning deliverable independent of plan set. Follow Design guidelines for storm water management procedure & plan examples with narrative template.
◯	◯	◯	3. Storm Water Management - Summary sheet: Existing & Proposed site imperviousness hatching with legend, overall drainage patterns with where storm water leaves the site and storm water narrative.
◯	◯	◯	4. Storm Water Management - Plan sheet: Overall storm water plan with details for drainage systems; distinguish elective storm water management measures from permit requirements.
◯	◯	◯	5. Storm Water Management – Calculation sheet.

DESIGN DEVELOPMENT REQUIREMENTS (STORMWATER MANAGEMENT)

YES	NO	NA	
◯	◯	◯	6. Final storm water management plan sheets reflect final site design and satisfies all permit requirements (submittal package to EHS required).

Site Lighting Plan

SCHEMATIC DESIGN REQUIREMENTS (SITE LIGHTING PLAN)

YES	NO	NA	
◯	◯	◯	1. Photometric / light simulations showing calculated results in compliance with Design Guideline 265600.
◯	◯	◯	2. Site lighting plans & details, showing dimensioned lighting equipment locations & types.
◯	◯	◯	3. Table of lighting fixtures.

DESIGN DEVELOPMENT REQUIREMENTS (SITE LIGHTING PLAN)

YES	NO	NA	
◯	◯	◯	4. Conduit & hand hole locations– also to be shown on overall utility sheet and surface features on plan view.
◯	◯	◯	5. Lighting panel feed location & capacity verification (including building penetration locations and details).

Landscape Plan

SCHEMATIC DESIGN REQUIREMENTS (LANDSCAPE PLAN)

YES	NO	NA	
◯	◯	◯	1. Verify with U-M DM they have reviewed plant materials with Grounds/Campus Planning.
◯	◯	◯	2. Verify landscape plan/ trees coordinated with site utilities plan.
◯	◯	◯	3. Confirm plant materials/trees in ROW and meet City species standards. Verify that U-M DM has obtained Campus Planner approval of selection.
◯	◯	◯	4. Lawn/restoration and special planting areas defined (outline site disturbance allowable, if applicable).

DESIGN DEVELOPMENT REQUIREMENTS (LANDSCAPE PLAN)

YES	NO	NA	
◯	◯	◯	5. Irrigation plan (not in ROW): irrigation system, building penetrations, water and electrical source designed and noted – confirm no conflicts with Utility and site plans.
◯	◯	◯	6. Topsoil specification/minimum requirements noted; specify infiltrating soils if infiltration is required.
◯	◯	◯	7. U-M preferred site furniture.
◯	◯	◯	8. Public art, plaques, memorial trees, etc.

Details & Specifications Sheets

SCHEMATIC DESIGN REQUIREMENTS (DETAILS & SPECIFICATIONS)

YES	NO	NA	
◯	◯	◯	1. U-M AEC standard civil notes & details .
◯	◯	◯	2. City of Ann Arbor standard details .
◯	◯	◯	3. Include note on each City standard detail: "If detail differs from City's current details, the City's current details supersede – see City of Ann Arbor website for current details: https://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx."

DESIGN DEVELOPMENT REQUIREMENTS (DETAILS & SPECIFICATIONS)

YES	NO	NA	
◯	◯	◯	4. Project specific notes and details.

Fire/Emergency Access Plan -Applies to site only, bldg codes apply to bldg construction (including high rise bldg definition)

SCHEMATIC DESIGN REQUIREMENTS

YES	NO	NA	
◯	◯	◯	1. Building footprints, hydrants, FDC's, access routes, fire lane signage, hose lay, building fire service leads.
◯	◯	◯	2. Include plan view with site restoration features noted, including landscape plan.
◯	◯	◯	3. Show 250' radius around each hydrant (should encompass entire building footprint).
◯	◯	◯	4. FDC within 100' of supporting hydrant per approved route (dimension of distance from FDC to hydrant).
◯	◯	◯	5. Entire exterior of building is within 400 feet hose lay of the support hydrant per approved route. Show & dimension hose lay. Exception: If building is fully suppressed per MBC903, distance increases to 600 feet.
◯	◯	◯	6. New buildings/structures-entire exterior of the building to be within 150' of fire vehicle access. (IFC 503) Show and dimension.
◯	◯	◯	7. Approved turn around for dead-end fire access lane in excess of 150', see IFC appendix D for more info.
◯	◯	◯	8. Fire lane to be minimum of 20' width and overhead clearance of 13'6"; no overhead obstruction if aerial tower access required. Dimension and note elevations of overhead obstructions.
◯	◯	◯	9. At hydrants, the required fire lane access width is a minimum of 26 feet wide for a distance of 20 feet in both directions from the hydrant (IFC D103.1).
◯	◯	◯	10. Per 2015 IFC D105.1, aerial tower access is required where the vertical distance between the highest roof surface (eave, top of parapet wall or intersection of roof to exterior wall) exceeds 30' above grade plane. Fire lane width to be 26' parallel to one complete side. Dimension Width - to be measured starting minimum of 15' to maximum of 30' from the building.
◯	◯	◯	11. Aerial fire access route turning radius and angle of approach/departure shall be per IFC, 2015, 503.2.4and 503.2.8. Based on 2017 measurements, 28' inside radius and 48' outside radius supports the City of Ann Arbor's largest aerial truck.
◯	◯	◯	12. Fire Service Leads: Per 2015 Michigan Building Code (403.3.2), new High Rise buildings over 420' above fire department vehicle access requiring a fire pump are required to be supplied by no fewer than two water mains.
◯	◯	◯	13. Fire lane signage.
◯	◯	◯	14. Fire command center location and fire pump location to be indicated on plans, if applicable to the project.

Backflow Prevention & Metering Arrangement Sheet(s) (Required for each new domestic and fire meter installation – City of Ann Arbor)

DESIGN DEVELOPMENT REQUIREMENTS (CAN BE SUBMITTED AS EARLY AS SD, BACKFLOW PREVENTION & METERING ARRANGEMENT)

YES	NO	NA	
◯	◯	◯	1. Civil plan showing location and size of domestic/fire water service lead from building entry to water main.
◯	◯	◯	2. Building plumbing drawings showing location of backflow prevention.
◯	◯	◯	3. Label make and model of backflow device on plan view and on U-M standard detail. EGLE requires the backflow device to be ASSE International certified, and the City of A2 checks that when a device is proposed. It's http://forms.iapmo.org/asse/listed/.
◯	◯	◯	4. Building plumbing drawings – deduct meters labeled.
◯	◯	◯	5. Building plumbing drawings– show, label, and dimension the metering configuration for site specific application– follow U-M standard metering details for layout.
◯	◯	◯	6. Domestic and Fire suppression one-line riser diagrams showing all back-flow prevention (BFP) devices associated with each system. Label type of each BFP device and include information regarding the hazard being protected against (e.g. chilled water system make-up).
◯	◯	◯	7. Domestic water riser diagram shall show and label any booster pumps and all City domestic water meters.
◯	◯	◯	8. U-M standard domestic or fire meter configuration detail(s), customized for site. Any variation to standards requires discussion with U-M DM and approval.