### Design Deliverables

**February 2020**

As part of the deliverables for formal UM review at each of the major phases of design listed below, the Design Professional shall submit this Design Deliverables document to the University’s Design Coordinator. On the “Design Deliverables” document, the Design Professional shall indicate the status of each required item (a check mark is interpreted to mean that an item has been included in the deliverables). On or attached to the “Design Deliverables” document, the Design Professional shall identify all items NOT included in the review package.

**Note:** Design Deliverables for the Design Development phase are to include all items listed in the Design Development column of the “Design Deliverables” table AND, as specifically stated to the contrary in the table, all items listed in the Schematic Design column of the table (which are to be further developed during Design Development).

**Note:** Design Deliverables for the Construction Document phase are to include all items listed in the Construction Document column of the “Design Deliverables” table AND, as specifically stated to the contrary in the table, all items listed in the Schematic Design column and all items listed in the Design Development column of the table (which are to have been further developed during the Construction Document phase).

#### Item Schematic Phase Design Development Phase Construction Document Phase

<table>
<thead>
<tr>
<th>General Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Scope of work narrative.</td>
</tr>
<tr>
<td>2 Comparison of capacities (see “Building Interior” for area comparisions) to program.</td>
</tr>
<tr>
<td>3 Tentative construction plans.</td>
</tr>
<tr>
<td>4 Building code review (describe means of compliance for major code issues and building systems).</td>
</tr>
<tr>
<td>5 List of anticipated building code variance request.</td>
</tr>
<tr>
<td>6 Life Safety (agree) plans with identification of security and access control points.</td>
</tr>
<tr>
<td>7 For project over $5 million construction cost, U-M list of outstanding Facility Condition Assessment improvement recommendations with notation as to which will be addressed by the project.</td>
</tr>
<tr>
<td>9 Demonstration of compliance with DG 3.2 “Energy and Water Conservation”. See DG 3.2 for deliverables requirements.</td>
</tr>
<tr>
<td>10 List of sustainability features incorporated into project design as described in DG 3.1 “Sustainable Design and LEED Requirements”.</td>
</tr>
<tr>
<td>11 Compare capacities of spaces to program.</td>
</tr>
</tbody>
</table>

#### Specifications

<table>
<thead>
<tr>
<th>System &amp; material narrative description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Outline or preliminary specifications indicating project specific features of major equipment as well as component materials, e.g., “welded schedule 40 steel pipe”, “quarter sawn oak”, etc. w. same section numbering as final specification.</td>
</tr>
<tr>
<td>2 List of items which are sole-sourced or dual-sourced and justification for not specifying three acceptable products.</td>
</tr>
<tr>
<td>3 For door hardware sets that require electricity, indicate the proposed sequence of operations for the hardware.</td>
</tr>
</tbody>
</table>

#### Site, Circulation & Utilities

<table>
<thead>
<tr>
<th>General Description</th>
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<tbody>
<tr>
<td>1 Site survey (DD Level)</td>
</tr>
<tr>
<td>2 Existing Conditions/Survey on plan sheet</td>
</tr>
<tr>
<td>3 Soil borings - locations and logs on plan sheet, as appropriate</td>
</tr>
<tr>
<td>4 Traffic study with electronic modeling files to ensure proposed improvements do not negatively impact existing pedestrian, vehicular, train and parking systems. Identify if Traffic Control Order will be required to implement permanent changes to roadways.</td>
</tr>
<tr>
<td>5 Finalized Maintenance of Multi-Modal Traffic during construction, including Traffic Control per Michigan MUTCD</td>
</tr>
<tr>
<td>6 Construction logistics/phasing with vehicle/pedestrian closures and detours, signs, and barricades (refer to Michigan MUTCD) including staging locations, fencing and gates, site access, etc.</td>
</tr>
<tr>
<td>7 Storm Water Management (DD Level)</td>
</tr>
</tbody>
</table>

### Note

- If multiple bid packages, clear indication of scope of each release.
- For projects over $10 million construction cost, visual display that depicts sustainability initiatives and achievement as described in DG 3.1 “Sustainable Design Requirements”.
- Demonstration of compliance with DG 3.2 “Energy and Water Conservation”. See DG 3.2 for deliverables requirements.
- List of items which are sole-sourced or dual-sourced and justification for not specifying three acceptable products.
- For door hardware sets that require electricity, indicate the proposed sequence of operations for the hardware.
Preliminary Maintenance of Multi-Modal Traffic, including
Traffic Control per Michigan MUTCD

- Traffic study for significant temporary traffic impacts or multiple construction impacts to the road network
- Preliminary construction logistics/shaking with vehicle/pedestrian closures and detours; traffic signs, and barricades per MUTCD; staging locations; fencing and gates; site access; etc.
- Preliminary Maintenance of Traffic coordination; explaining impacts, with summarized narrative to provide to local governing agency

Community Engagement graphics

Connexion Plan for site features, including hardscape, softscape, utilities, trees, Capital cost recovery credits

Proposed Preliminary Site Plans sheets (overall and 20 or 40 scale with page breaks)

- Proposed building outline, overhangs, below grade extensions, and building entrances (future buildings accommodated)
- Dimensions on site features, such as drive approaches, roads, walks
- Site entrance; roads/access drives; drop off/pick up; loading docks, trash receptacles/recycling dumpsters; etc.
- Multi-modal transportation, such as pedestrian walls, crosswalks, access routes, bus stop/shelter; bike; etc.
- Parking (Visitor/staff, service, business, accessible, capped/bike/electric scooter, special events, etc.)
- Retaining walls, seat walls, ramps, stairs, handrails and extensions
- Pedestrian, road, and parking lighting locations: light level modeling
- Permanent signs & pavement marking, including building ID signs, traffic signs, pavement markings
- Emergency phones
- Site snow storage

Preliminary Grading Plan & strategic site cross sections

- Preliminary site utility plan (overall and at 20 or 40 scale with page breaks)
- Show and label roof/foundation drain storm sewer connections; roof overflow outlets
- Summary Green Roof Mitigation Calculations
- Proposed Capital Cost Recovery Table

Utility Plan(s)

- Utility plan view over profile with stationing starting at 0+00 for each utility over 50 feet & per City requirements
- Proposed Capital Cost Recovery Tables

Site Utilities

Utilities

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Construction Plan for site features, including hardscape, softscape, utilities, trees, Capital cost recovery credits

Proposed Site Details and notes

Site Details and notes

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Environmental review for Radon contaminated soils

- Preliminary Monitoring Plan & strategic site cross sections
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Landscaping

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Utility Plan(s)
Building Interior

1. Typical floor plans (min. 1:100 scale) & legends
2. Floor plans for room numbering & public use (see DG 2.4)
3. Demolition Plans
4. Fire use identification & area in square ft.
5. Mechanical, electrical & other service roofs & rooms
6. Circulating paths
7. Area tabulations compared to program requirements
8. Pavement flexibility for expansion & alterations
9. Preliminary layout of major spaces w/ fixed equipment
10. Perform pre-construction thermal imaging to detect areas of excess air leakage if project is renovation over $30M construction cost.
11. Important interior elevations
12. Demolition plans at roof levels
13. Details of fixed equipment
14. Preliminary finish schedule
15. Preliminary door schedule
16. Informational signage

Elevators

1. Elevator locations
2. Equipment room locations
3. Determine type of elevator
4. Identify backup power source, if required
5. Note if any of th elevators will be an accessible means of egress
6. Preliminary floor plans of mechanical rooms w/ all equipment description
7. Door & hardware schedules
8. Elevator car & equipment support details
9. Water riser diagram, including assumed fixture counts per floor connection
10. Preliminary flow diagrams for each fire protection system, and other materials as required to describe the fundamental design concept for all fire protection systems
11. Design calculations
12. General controls drawings, including structural support requirements
13. General controls drawings, including structural support requirements
14. Preliminary finish schedule

HVAC

1. Identify all systems
2. One-line diagrams for each air, hydronic, steam, condensate and plumbing systems, and other materials as required to describe the fundamental design concept for all mechanical systems
3. Indication of the amount of redundancy for all major pieces of mechanical equipment, e.g. "two pumps 100% capacity each"
4. Major equipment locations
5. Air intake & discharge locations
6. Cross HVAC zoning, and typical individual space zoning (e.g. VAV boxes per office =?)
7. Mechanical legend
8. Special occupancy zones
9. Preliminary floor plans of mechanical rooms w/ all components and required service access areas drawn to actual scale
10. Preliminary calculations
11. Draft construction schedule (on the drawings), indicating materials and pressure class for each duct system
12. Detailed controls drawings, including clear differentiation of trade responsibility for control, fire, and control power wiring
13. Draft construction schedule (on the drawings), indicating materials and pressure class for each duct system
14. Design calculations

Plumbing & Piping

1. One-line (iner) diagrams for every plumbing system (e.g. Domestic water, sanitary, storm, gas, RODI, etc.) and main water supply, storm, and sanitary leads
2. Major equipment locations
3. Restroom location(s)
4. Plumbing legend
5. Fixture schedules, to include lab fixtures
6. Equipment schedules (major equipment)
7. Preliminary floor plans of mechanical rooms w/ all components and required service access areas drawn to scale
8. Water heating piping details
9. Fire protection (Mechanical)
10. One-line diagrams for each fire protection system, and other materials as required to describe the fundamental design concept for all fire protection systems
11. Location of fire heads and fire department connections
12. Preliminary piping plans (domestic & process) with indication of required service access areas
13. Fire protection plans (incl. header and riser layout) with indication of any required service access areas
14. Design calculations
### Electrical Power Distribution

<table>
<thead>
<tr>
<th>1</th>
<th>Electrical Demotion</th>
<th><strong>MOSCAD systems</strong>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Cable and wire diagrams with equipment ratings</td>
<td><strong>MOSCAD panel detail</strong>...</td>
</tr>
<tr>
<td>3</td>
<td>Lighting symbols and locations</td>
<td><strong>MOSCAD standard detail</strong>...</td>
</tr>
<tr>
<td>4</td>
<td>Interior equipment locations</td>
<td><strong>MOSCAD panel location plans and installation</strong>...</td>
</tr>
<tr>
<td>5</td>
<td>Substation, generator and ATS descriptions</td>
<td><strong>MOSCAD antenna location plans and installation</strong>...</td>
</tr>
<tr>
<td>6</td>
<td>Substation, generator, and electric room locations</td>
<td><strong>MOSCAD equipment location plans</strong>...</td>
</tr>
<tr>
<td>7</td>
<td>Preliminary substation and generator room plans</td>
<td><strong>MOSCAD panel location plans and installation</strong>...</td>
</tr>
<tr>
<td>8</td>
<td>Electrical load calculations based on watts/f</td>
<td><strong>MCC elevations</strong>...</td>
</tr>
<tr>
<td>9</td>
<td><strong>Electrical load calculations</strong>...</td>
<td><strong>typical electrical outlet locations</strong>...</td>
</tr>
<tr>
<td>10</td>
<td><strong>Electrical equipment location plans</strong>...</td>
<td><strong>Plan for temporary power during construction</strong>...</td>
</tr>
</tbody>
</table>

### Fire Alarm and Emergency Communications

<table>
<thead>
<tr>
<th>1</th>
<th>System descriptions</th>
<th><strong>Riser diagrams</strong>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td><strong>Fire Alarm and Emergency</strong>...</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
</tr>
<tr>
<td>3</td>
<td>MOSCAD panel locations</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
</tr>
<tr>
<td>4</td>
<td>Preliminary FA and EC device and appliance location plans</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
</tr>
<tr>
<td>5</td>
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### Communications (Including voice, data & video systems)

<table>
<thead>
<tr>
<th>1</th>
<th>Manhole, duct bank, and building entry locations</th>
<th><strong>BE and TR locations, sizes, and door swings</strong>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Building Entrance (BE) and local Telephone Room (TR) locations</td>
<td><strong>Operating and role at alarm bureaus</strong>...</td>
</tr>
<tr>
<td>3</td>
<td><strong>Fire Alarm and Emergency</strong>...</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
</tr>
<tr>
<td>4</td>
<td>Preliminary cable tray plans</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
</tr>
<tr>
<td>5</td>
<td>Identify if any assistive listening systems are required.</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
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<td>Note if project scope will include a call phone signal reinforcement system</td>
<td><strong>Fire Alarm and HVAC systems</strong>...</td>
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### Security (Including CCTV and Card Access Control Systems)

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</tr>
<tr>
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<tr>
<td>Renderings or other graphics as necessary to clearly present</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>Preliminary cost estimate. For projects with cost greater than $500,000, use format described in UM Design Guidelines 2.5 “Project Estimates”</th>
<th>Cost Benchmarking. For projects with constr. cost &gt; $5 million or greater ref. DG 2.5 Project Estimates for Project Benchmarking Requirements</th>
</tr>
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<tr>
<th>Notes</th>
<th>All movable furnishings and artwork are considered to be independent of the architectural design.</th>
<th>Submit all deliverable for DD and CD phases are to be presented by a complete response to U-M review comments on the previous phase of design work.</th>
</tr>
</thead>
</table>
