July 15, 2022

City of Missoula
Department of Public Works & Mobility
Infrastructure & Mobility Division
Attn: Ida Sajor
435 Ryman Street
Missoula, MT 59802

sent via email:
SajorI@ci.missoula.mt.us

RE: City Project # TBD (not assigned yet)
West End Homes Subdivision - Water, Sewer, & Storm
Stage 2 Checklist Submittal - ***Amended***

Dear Ida:

The West End Homes Subdivision, as proposed by owner/developer Evergreen Housing Solutions LLC, is a major subdivision which currently proposes approximately ***260 lots*** to be utilized for residential purposes and is currently proposed to occur in ***nine (9)*** different phases. Lots will be utilized for single-family and multi-family homes. The property is located adjacent to the west of the intersection of Flynn Lane and England Boulevard. The property is zoned as a Crossroads Center Neighborhood Unit within the Sxwtpqyen (Mullan) Neighborhoods Master Plan.

The proposed lots will be connected to the existing City of Missoula public water and sewer systems. Water and sewer main extensions have been proposed to serve this development; additionally, road and storm improvements have been proposed as a part of the subdivision. The following descriptions pertain to the proposed infrastructure as a part of this project.

Water

The development is proposed to include new 12-inch and 8-inch Class 350 D.I.P. water mains. The 12-inch water main is planned north/south in Dougherty Drive and will connect to the proposed 12-inch water main that will be stubbed out of future England Boulevard, which is part of the Mullan BUILD project, designed by others. The remaining portions of the development are proposed to be served by new 8-inch water mains, with connections to the proposed 12-inch water main in Dougherty Drive and the existing 8-inch PVC water main in Camden Street on the east side of the existing Flynn Lane. ***Based on City comments, the new water mains that were planned to be dead-ended at Bellflower Way (formerly Road 'A'), Mariposa Drive (formerly Road 'B'), and Burnet Drive (formerly Road 'C'), have now been tied into other planned water mains so they are no longer dead-ends. The Bellflower Way water main now ties into the new planned water main at Camden Street along Flynn Lane. The Mariposa Drive and Burnet Drive water mains now tie into each other along Flynn Lane. There are now two (2) planned dead-end water mains, north in Dougherty Drive and west in Camden Street.*** The dead-ends will allow for future extensions if needed for separate or future developments. Refer to the included preliminary Utility Construction Plans for locations and sizes of proposed water mains.

Sanitary Sewer

The development is proposed to include new 8-inch SDR35 PVC gravity sanitary sewer mains that will network together and connect at two (2) different locations to the existing 30-inch sewer main running north/south in future Dougherty Drive. All proposed sewer mains will flow west to the existing 30-inch

sewer and will end on the east end of the proposed development with dead-end manholes just short (west side) of existing Flynn Lane.

The sanitary sewer is the constraining design element for the wet utilities (water and sewer) due to the depth of the existing 30-inch sewer main on the west end of Dougherty Drive. Due to the shallower nature of this existing trunk sewer main and requirement for the crown of lateral mains (i.e. this proposed development's sewer mains) to match crowns of trunk mains (existing 30-inch main), all proposed sewer mains are designed with minimum slopes (0.40% for 8-inch main). Even when running the proposed sewer mains at minimum slopes, there may instances where the proposed bury is less than 5 feet which typically requires blueboard insulation. A minimum bury of 4 feet will be maintained in all instances and blueboard insulation may be required if less than 5 feet is not maintained. Due to the preliminary nature of the project and plans, grading and any shown finished grade is considered preliminary and is subject to change. Blueboard insulation where bury is less than 5 feet (but greater than 4 feet) is not currently shown on the preliminary plans since grading is still considered preliminary. Refer to the included preliminary Utility Construction Plans for locations and sizes of proposed sanitary sewer mains.

Storm Drainage

As this project is located within the Sxwtpqyen Master Plan Area, the Preliminary Grading and Drainage Engineering Design Report accompanying this Stage 2 submittal follows the rules laid out in the Form Based Code (FBC), which call for light imprint stormwater infrastructure. As laid out in the FBC, the goal for this area is to mitigate and treat stormwater runoff as close to the source as possible. Following meetings with the City of Missoula Public Works Department, it has been decided that the entirety of the stormwater from the 10-year storm and smaller will be infiltrated using drywell sumps within the roadway curb lines and in the alleys. Bio-retention areas at roadway intersections and detention swales within the park area of the development are proposed. Neither the detention swales nor bio-retention areas have been designed yet, so no credit for the storage has been applied to the preliminary runoff quantity calculations. Due to this, we expect to propose less drywell sumps with future iterations of the drainage design as these areas will provide some infiltration and storage. Refer to the included preliminary Grading and Drainage Engineering Design Report for further discussion of drainage design, proposed infrastructure, calculations, and exhibits.

Surface (Roads)

The property is located adjacent to Flynn Lane. Half road improvements are proposed along Flynn Lane for the property's entire road frontage. The continuation of England Boulevard moving west from Flynn Lane has been proposed within the subdivision as part of the Mullan BUILD project and is being designed and constructed separately by DJ&A and the City of Missoula. Coordination is required with the BUILD project, and West End Homes designs do not include infrastructure in future England Boulevard. Four separate entrances to the subdivision are proposed off of Flynn Lane. Two additional entrances to the subdivision will stem from the proposed extension of future England Boulevard.

The subdivision will have six (6) streets that serve resident access throughout the subdivision and provide access to the six entrances described above. There are six proposed alleys within the subdivision to further serve as access to individual properties for their residents. The proposed streets, alleys, and rear lane designs are based on requirements listed in the Sxwtpqyen (Mullan) Neighborhoods Development Form-Based Code. Section designs are based on the geotechnical engineering report for this project.

This project has not been assigned a City Project # at this time, and as part of this submittal we are requesting an official City Project # that we can use for the future correspondence and submittals.

Due to the City's new review policies, we are submitting the following electronically as a bookmarked PDF:

- Stage 2 Checklist
- Preliminary Plat
- Preliminary Utility (Sewer & Water) Construction Plans
- Preliminary Surface (Road, Grading, and Drainage) Construction Plans
- Fire Hydrant Layout Exhibit
- Preliminary Grading & Drainage Design Report
- Geotechnical Investigation Report prepared by Tetra Tech dated October 26, 2021
- Draft Traffic Impact Study prepared by HDR dated December 17, 2021

If you have any questions or require additional information, please feel free to contact us by phone (406-721-0142) or via email at Jason.S.Rice@imegcorp.com and Andrew.J.Mill@imegcorp.com.

Sincerely,

IMEG Corp.

Jason Rice, P.E.

IMEG Corp.

Andrew Mill, P.E.

Enclosures: As Noted Above

C. File & Scan (w/ enclosures)

\\files\Active\Projects\2021\21000864.00\Design\Civil\1_ENG DESIGN\Stage 2 - Revised 2022-02-04\ltr.2022-07-15.CityMsla.Stage 2 West End Homes Revised.docx

STAGE 2 – CONCEPTUAL DESIGN REVIEW

Chapter 3 Link

When to submit Stage 2 Conceptual Design review:

- In addition to submitting the formal Sufficient Subdivision Packet, submit the Stage 2 checklist to City Engineering;
- The subdivision is outside City limits and annexation may occur;
- Complex projects for water and sewer main extensions, stormwater, or other surface infrastructure;
- The City is being requested to provide modeling of the proposed utility infrastructure;
- No separate Stage 2 process required but a Stage 2 review will be completed when a Zoning Compliance Permit (ZCP) for a Townhome Exemption Development (TED) has been submitted to Development Services.

At this stage, submitted information and plans would provide City Reviewers project understanding, context, and intended outcomes, and how it meets current City strategic goals and plans. Major design features, constraints, alignments, profiles, external connections, pipe sizing, lane configurations, typical section, and design alternatives are included. This is the first formal project review of the plans showing alignment and grade along with proposed infrastructure features. The design elements constitute the majority of the project footprint, including the mainline surfacing, horizontal and vertical alignments, and grading. Although Detail Sheets are not included in this stage, preliminary details for items that have significant impacts or control points as a result of design alignments may be included. Existing features and survey information are provided, with major drainages and labeled road approaches. Proposed culverts or approaches typically are not shown unless they serve as horizontal or vertical control points or have significant impacts associated with the proposed alignments. The submitted Conceptual Design Review should be approximately 30% design level for City Review.

For more complex or detailed projects (subdivisions, TEDs, condominium developments, etc.), all infrastructure (surface, water, sewer, stormwater) must be submitted at same time, **in one submittal** (rather than staggered) to ensure a holistic, comprehensive review.

ACCEPTANCE or DENIAL of STAGE 2

Acceptance of Stage 2 and approval to proceed to Stage 3 will be provided via email to Developer's Representative, Developer and Planning Division staff.

Incomplete submittals will suspend the review process, will be returned for resubmittal, and will be placed at the back of the queue. If a resubmittal is required, an email will be provided to the Developer's Representative.

Proceed to Stage 3, Preliminary Construction Plan Review

CONCEPTUAL DESIGN REVIEW CHECKLIST
STAGE 2

This checklist is a guide to meet *Missoula City Public Works Standards and Specifications Manual,* specific regulations (Titles 12 and 17 (Articles 3, 5, and 9)) and other minimum requirements that will enable City Staff to adequately review and approve submitted documents required for this stage. (This checklist is not all inclusive; other information may also be required.)

Project Name: _____

City Project # (**MUST** be provided): _____

Developer's Representative Name/Contact Info: _____

Developer/Owner Name/Email/Contact Info: _____

Date Submitted: _____

Plans Submitted ("x" as applicable): _____Surface_____Sewer_____Water_____Storm ____

Other (specify) _____

STAGE NUMBER	STAGE PROCESS
1	Project/Development Initiation
2	Conceptual Design Review
3	Preliminary Construction Plan Review
4	Release for Construction (RFC) Plan Review
5	Inspection and Testing
6	Final Inspection and Acceptance
7	Warranty Inspection Checklist

BASE INFORMATION

REQUIRED INFORMATION FOR ENGINEERING REVIEW – Plat Documentation

_____Subdivision Sufficiency Packet
_____Completed and signed Stage 2 Checklist (this document)
_____Preliminary Plat
_____Transportation plan, as required (traffic study, street layout)
_____Reports (geotech, stormwater, etc.)
_____Review by Montana Department of Transportation (MDT), when accessing state-controlled public right-of-way
_____Special Improvement District (SID) waiver(s) required (specific type, documentation on plat, etc.)
_____Datum information
_____Townhome Exemption Development (TED) minor/major
_____Types of Boulevard Trees
_____Other

Comments

_____

DEVELOPMENT / SUBDIVISION TYPE

_____Rural: County, 2 or fewer dwelling units per acre
_____Urban: City, more than 2 dwelling units per acre
_____Major: more than 5 lots
_____Minor: 5 or fewer lots
_____PNC/PUD/Cluster Development
_____Other

Comments

_____

COVENANTS

_____Homeowners Association (maintenance responsibilities)
_____Townhome Declaration
_____Roundabout landscaping maintenance
_____Traffic-calming landscaping maintenance
_____Street lighting maintenance
_____Infrastructure maintenance
_____Common area, private park, or open space maintenance
_____Private road or short court maintenance
_____Sidewalk or trail on a public access easement maintenance

DIGITAL/ELECTRONIC GIS FILE REQUIREMENTS

File Formats

- Bookmarked pdf and
- Autodesk® AutoCAD™ *.DWG format or
- ESRI® ArcMap™- GIS Shapefile or
- Geodatabase or compatible format file

File Naming Convention

File names should contain the prefix associated with the utility type followed by the suffix containing the city file number: **Utility Prefix + Project Number = Filename**
Example for Lot, Parcel Layout, Easements, and Streets: *surface2020-036*

Deliverables

All digital files shall be compressed together in .zip or .rar format using the above naming convention.

Coordinate System

- Un-projected files or files with incorrectly applied projections will be rejected.
- Note: The City only requires that digital data be submitted in state plane grid. It is unnecessary to submit at ground.

Accuracy Requirements

- Submission must be accurate horizontally to **1/10th of a foot**. These items include all utilities and property corners within the project area or effected in the project.
- All submissions must be referenced to the National Spatial Reference System (NSRS) and comply with Montana Code Annotated, Title 70, Chapter 22, Part 2. For local control points tied to the NSRS, contact the Missoula County Surveyors Office.
- If derived from GNSS measurements, the submission must use and note the geoid model used. Valid models for our areas include:
    - GEOID18
    - GEOID12A
    - GEOID12B

SURFACE INFRASTRUCTURE

TOPOGRAPHY / GEOTECHNICAL – Hillside / Site Grading

_____Floodplain
_____Wetland/riparian zone(s)
_____Rock/outcrop issues
_____Adjacent property topography (grade match)
_____Slope delineation (<5%, 5.01-10%, 10.01-20%, 20.01-25%, >25.01 %)
_____Grading plan (existing/proposed, pre-graded lots, cuts/fills, access issues)
_____Cut and fills (ROW work must be located within ROW) or easements
_____Disturbed slopes designed at 2:1 (50%) or less
_____Ground water issues
_____Slope stability/hazards (unstable slopes, etc.)
_____Retaining walls
_____Weed control/topsoil/re-vegetation plan
_____Existing surface drainage
_____Other

Comments

_____

RIGHTS-OF-WAY – Base Criteria

_____Access to public and/or state right-of-way
_____Controlled access
_____Conformance to Regulations
_____Widths (as per City Standards Manual)
_____Lengths (as per Standards Manual diameter of cul-de-sac, etc.)
_____Alleys (existence, radiuses, access points, drainage, garbage access)
_____Other

Comments

_____

BLOCKS

_____Conformance to City Subdivision Regulations, Article 3
_____Length maximum uninterrupted block(s)
_____Configuration: appropriate access to all lots. See also Driveways, Access/Approaches
_____Common area(s): access, maintenance agreements, etc.
_____Other

Comments

_____

LOTS

_____Configuration: buildable area, slope, pre-grading
_____Access: slope, distance from intersections, no access designation
_____Sight obstruction & visibility triangles: NO structures permitted in visibility triangle
_____Other

Comments

_____

EASEMENTS

No permanent structures are allowed within easements
_____Existing easement(s)
_____Proposed easement(s)
- _____Public/Private utility easement(s) (location, width – includes: overhead and/or buried sanitary sewer, stormwater, water, electric, natural/ propane/high-pressure gas, petroleum, telephone, cable, and other utilities)
  - ➔ Main(s) 20 feet minimum easement width
  - ➔ Service(s) 15 feet minimum easement width
- _____Public/Private common service easement (for stub-outs)
- _____Public/Private drainage easement(s) (collection, retention, and detention ponds)
- _____Public/Private foundation drainage easement(s) (width, location)
- _____Public/Private access easement(s) (width, location)
- _____Public/Private NO access easement(s) (width, location)
- _____Public/Private non-motorized access easement(s) (width, location [trails])
- _____Construction easement(s) (width, location)
- _____Maintenance easement(s) (width, location)
- _____Irrigation/ditch easement(s) (width, location)
- _____Conservation easement(s) (width, location)
- _____Off-site adjacent properties easement(s) (width, location)
- _____Other_____
- _____Other_____
- _____Other_____

_____Other

Comments

_____

STREETS & ALLEYS – Paving (including Private Roads, Short Courts, and Cul-de-sacs)

_____Public street/roadway – (refer to City Standards Manual)
_____Private street/roadway/drive – (refer to City Standards Manual)
_____Public/Private street/roadway names
_____Cul-de-sac (length, turn-around) – 600 feet maximum

_____Short court (length, number of units served) – 200 feet maximum
_____Overflow parking (length, width, number of spaces)
_____Street/roadway/driveway layout/design cross-section – private/public and short courts
_____Grades (preliminary grading plan, profiles, include vertical curve data, intersection grading is ADA compliant)
_____Cuts and fills: include topsoil and re-vegetation
_____Maintenance agreements for private street/roadway/drive, short courts,
_____Bridges/culverts
_____Temporary turn-around, required at phase break(s)
_____Other

Comments

_____

TRAFFIC MANAGEMENT (must fully conform to MUTCD, FHWA, and MDT)

Must satisfy all requirements for location, design criteria, minimum radii, landscaping and irrigation, signing and striping, pedestrian facilities, and maintenance agreements

_____Round-a-bout(s): location, design, functional; ADA compliance
_____Traffic circle(s): location, design, functional; ADA compliance
_____Bulb-out(s): location, design, functional; ADA compliance
_____Mid-block pedestrian crossing(s): location, design, functional; ADA compliance
_____Chicane(s): location, design, functional compliance
_____Medians/island(s): location, design, functional compliance
_____Raised crosswalk(s): location, design, functional; ADA compliance
_____Speed table(s): location, design, functional; ADA compliance
_____Other

Comments

_____

CURBING

_____Location
_____Curb type: “A”, “B”, “K” – cove, “L”, standard drawings
_____Access points and curb cut(s): location, width, type—commercial/residential
_____Controlled access: right-in/right-out, “pork-chop” islands, etc.
_____ADA compliance: location, width, ramps/grades, landings, cross-slope, etc.
_____Mail stop pullout, bus pullout, over-flow parking, etc.
_____Other

Comments

_____

DRIVEWAYS – Access and Approaches

Refer to City Standards Manual

_____Location (multiple/shared, public/private street/road/drive/alley, etc.)
_____Distance from intersection; minimum distance from intersection or crosswalk
_____Width of approach(es), curb cut, must be constructed perpendicular (90° degrees) to the adjacent street
_____Grades; eight (8%) percent maximum
_____Other

Comments

_____

PEDESTRIAN ACCESS – Non-Motorized Facilities; Sidewalks, Trails, Bicycles

_____Sidewalk design
- _____Location: both/one side(s) of street, other/additional location(s)
- _____Width, cross-section, material, etc. – standard drawings
- _____Sidewalk and boulevard width pre-approved construction plans
- _____Construction cross-section specifications and design (concrete sidewalk thickness, base thickness, jointing, mix design, testing, type and location of pedestrian facilities/sidewalks)
- _____Backfilling boulevard and adjacent to sidewalk

_____ADA compliance: location, width, ramps/grades, landings, cross-slope, detectible warning/truncated domes, etc.
_____Trail (width, location)
_____Connections: between on-site pedestrian facilities, parks, common area(s), with adjacent property(ies) / subdivision(s), etc.
_____Street-crossing (mid-block, bulb-out, etc.)
_____Bike lanes (width, location)
_____Bridges, non-motorized access: pedestrians, bicycles, trails, etc.
_____Other

Comments

_____

PARKING – Overflow

_____Location: distance from intersections, access, type; parallel, head in/back in, angled: 90°, 60°, 45°
_____Dimensions: length, width
_____Grading and drainage
_____Parking Signage
_____Pedestrian access: connection to sidewalks, trails, etc.
_____ADA compliance: width, ramps, grades, landings, cross-slope, etc.
_____Other

Comments

_____

BUS STOPS (May require Mountain Line Approval)

_____Location: distance from intersections, signing, configuration, standard drawings
_____Pedestrian access: connection to sidewalk, trails, etc.
_____ADA compliance: width, ramps, grades, landings, cross-slope, etc.
_____Other

Comments

_____

CLUSTER MAILBOX FACILITIES (U.S.P.S. Postmaster approval required)

_____Location
_____Mail stop pullout
_____Pedestrian Access: connection to sidewalk, trails, etc.
_____ADA compliance: width, ramps/grades, landings, cross-slope, etc.
_____Documented Post Office concurrence with location/design, letter of approval
_____Other

Comments

_____

STREETLIGHTS

_____Location, minimum: intersections, pedestrian crossings, mid-block pedestrian crossings, etc. (refer to City Standards Manual for minimum standards and when required)
_____Maintenance agreement; covenants
_____Compliance with Missoula Outdoor Lighting Ordinance – MMC 8.64
_____Other

Comments

_____

SURFACE DRAINAGE

_____Natural drainage: existing both on-site and adjacent off-site
_____Storm drainage: calculations, location on-site/off-site, collection/retention/detention, and source areas (See also "STORMWATER" section below in "UTILITY INFRASTRUCTURE" review)
_____Surface drainage – existing/proposed; calculations, cross-sections, overflow, crossings: culvert/bridge sizing, vegetation, etc.
_____Surface drainage – individual lots
  _____Swales: between lots and through development/subdivision
  _____Covenants
  _____Building permit conditions/requirements
  _____Other
_____Foundation drains (separate collection system for foundation drains on hillside development)
_____Maintenance: public/private, homeowner's association, agreement(s)
_____Structures: inlets, sumps, manholes; location, design, capacity, etc.
_____Other

Comments

_____

UTILITY INFRASTRUCTURE

SANITARY SEWER

_____Type (Gravity, S.T.E.P., Force, Dry lay)
_____County review for additional county rules and regulations
_____Conformance to City, County, and State specifications and requirements; thrust restraint on mains over 20% grade, ownership, etc.
_____Structures: location, access,
_____Manholes: location, access, type
_____Gravity mains: location, sizing, profile, separation, specifications, calculations, etc.
_____Lift stations: location, sizing, access both to site and internal, security, specifications, etc.
_____Force mains: location, sizing, profile, ports, valves, etc.
_____S.T.E.P. systems and appurtenances designed and engineered for commercial use
_____S.T.E.P. mains: location, sizing, profiles, ports, valves, etc.
_____S.T.E.P. Tanks and appurtenances: residential, commercial, and community
_____Floodplain requirements
_____Shallow groundwater requirements
_____Stub-outs: location, property marked
_____Specifications: pipe type(s), sizing, bedding, gradations, marking, and compaction

_____Number and location (by lot) of stub-outs for auditing and permitting purposes
_____Other

Comments

_____

STORMWATER

_____Type (Gravity, S.T.E.P., Force, Dry lay)
_____Conformance with current City, EPA, and state (MT DEQ) rules, regulations, and practices
_____Mains: location, sizing, profile, separation, specifications, calculations, etc.
_____Appurtenances: manholes, inlets, grates, outfalls, diffusers, beehives, etc.
_____Access: appurtenances, collection/retention/detention systems, etc.
_____Shallow groundwater requirements
_____Other

Comments

_____

WATER (includes City Fire Department review)

_____Conformance with current state (MT DEQ) rules, regulations, and practices
_____Mains: size, location, valves, separation, etc.
_____Stub-outs: location, property marked
_____Fire protection: mains to structures—commercial, industrial, and residential
_____Hydrants: location within 500 feet, clear zone, charged, verified, and approved by Fire Department
_____Other

Comments

_____

PRIVATE UTILITIES

_____Two copies of the Master Utility Plan: comprehensive—all sources, below, at, and above grade
_____Gas – Mains: location, placement of related appurtenances (valves, etc.)
_____Electric – Mains and Primaries: location, placement of related appurtenances (switches, transformers, etc.), traffic control lights, rail control lights, streetlights, etc.
_____Communications: telephone, television, etc.
_____Mains and primaries: placement of related appurtenances (pedestals, junction boxes, etc.)
_____Other

Comments

_____

APPLICANTS CERTIFICATION:

I have reviewed all information, and this submittal is true and accurate. To the best of my knowledge, all requirements of the Stage 2 Checklist have been satisfied.

_____

Developer Representative's Signature Date