Missoula County Public Works

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Memorandum

To: Distribution

From: Shane Stack, P.E.
Missoula County Public Works Director

Date: October 30, 2020

Subject: Mullan BUILD Grant Project
Scope of Work Document - draft
Internal Project Number 7065
Work Type 110 - New Construction

The Scope of Work Report for this project has been released on _____.

I recommend approval:

Approved _____ Date _____

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Scope of Work

The Mullan BUILD project is funded by a 2019 DOT BUILD Grant. The Grant awarded $13.0 Million of a requested $23.2 Million. The scope of work for this document includes the top 5 prioritized elements out of 10 total project elements. These scope elements are:

- Mary Jane – South (extension of collector street from Melrose PL to Mullan Rd)
- Mary Jane – North (extension of collector street from Camden St to W. Broadway)
- Flynn Lane Trail (creation of a new trail parallel to Flynn Ln from Chelsea Dr – north)
- England Boulevard (extension of collector street from Flynn Ln to intersection with George Elmer)
- George Elmer Drive – South (extension and retrofit of collector from England Rd to Mullan Rd)

The project priorities were selected by a local steering committee and guided by the ability of the elements to add value to: safety, traffic congestion, access to land for economic development, transportation choice, and environmental considerations. A complete overview of the scope selection project is further documented in a memo released March 11th 2020 titled "Prioritization of Projects Eligible for Funding Through Mullan BUILD Grant."

Purpose and Need

The purpose of the proposed Mullan BUILD project is to help provide necessary public infrastructure in one of the last remaining large developable areas on the west side of the current Urbanized Area. This infrastructure will provide needed transportation upgrades to better meet the current needs of the area and also better meet the needs of the area as future growth occurs. The primary goals of the project are to improve access to land for economic development and transportation choice. This project will allow for public funding to construct necessary public infrastructure to maximize the ability for the area to develop in a way that meets these primary goals while also helping to provide affordable housing.

Public Summary

MISSOULA, Montana - (July 30, 2020) – Undeniable growth in the Mullan neighborhood area, west of Reserve Street, prompted the need for well-planned development. Missoula County and the City of Missoula are responding to these needs through the Mullan BUILD project. The first milestone has been hit; 30 percent engineering and design of the entire project area. With the completion of the 30 percent design, the project team can now focus on completing final design of the top five project elements that have been prioritized to move to construction in 2021.

Mary Jane Boulevard South, Mary Jane Boulevard North, Flynn Lane Trail, George Elmer Drive South, and England Boulevard were ranked as the highest priorities and are planned to start construction next spring utilizing $13 million in federal BUILD Grant funds. Local funding sources will also be dedicated to the project.

The top five priority elements, when constructed, will all provide logical termini and independent utility by completing critical circulation connections that will result in immediate benefits to the traveling public.

- Mary Jane Boulevard South will connect to the existing Pleasant View Neighborhood at Melrose Pl and run south to its connection at Mullan Rd.
- Mary Jane Boulevard North will connect to the existing Pleasant View neighborhood at Camden St and run north to its connection at West Broadway.
- Flynn Lane Trail will connect to the existing trail system at Hellgate Elementary School (Chelsea Dr) and parallel Flynn Ln to the west, running north to Camden St.
- George Elmer Drive South will include an intersection upgrade at its connection to Mullan Rd and also curb, gutter, and sidewalk running from Mullan Rd, north to the existing 44-Ranch neighborhood at the Flynn Lowney Ditch. The road will then also be constructed running north from Pius Way to the future connection of England Blvd.
- England Blvd will run from its future connection to George Elmer east to its connection of the existing England Blvd at Flynn Lane.

Many neighborhood infrastructure improvements are essential but limited funding has required a unique approach to fulfilling those needs. Missoula County's original 2019 grant request asked for $23.2 million to create a network of complete streets. When $13 million was awarded, the team needed to rank which projects would be constructed first, and what remaining projects would be delivered once additional funding was secured. Now with the full 30 percent design, the project team has a more accurate picture as to which projects are ready for construction and can start making the most impact once underway.

Earlier this spring, the ten project elements, outlined as part of the original BUILD Grant application, were ranked by an evaluation committee comprised of government officials and industry experts. The scoring criterion ranked safety, traffic congestion relief, access to land for economic development, options for all modes and travel, and additional project delivery time associated with potential environmental and permitting needs.

Once the evaluation committee made their initial recommendations, the project engineering lead, DJ&A, continued designing the entire project and sought the input of a steering committee to ensure the five project elements would achieve the greatest benefit for the great number of users. It was at this time that Tipperary Way Trail moved down in the prioritization list and Flynn Lane Trail took its place. Flynn Lane Trail has more land currently available, making it a more simplified process to construct in 2021.

Although the first project elements have been scored, it does not mean that the remaining areas will go unaddressed. Despite a current $10 million funding discrepancy, infrastructure needs do not disappear because the project calls for more funding. The Mullan BUILD project utilizes its funding wisely and will continue to pursue the remaining funding that is crucial to the completion of the project. The City and County have again applied for federal BUILD Grant dollars during the 2020 cycle to complete this project.

The next steps include working through the detailed final design process, securing necessary rights of way, working with utilities that may be in conflict with the work, preparing a final plan package for construction, and finalizing the federal grant agreement that provides authorization to use the BUILD Grant funding.

A contractor is anticipated to be announced later this summer and will join the project team in planning the details of the project during the final design phase. This process, known as Construction Manager/General Contractor (CM/GC), also provides more certainty of the final construction costs of the project than a traditional “low-bid” procurement method.

Aside from City Council and Commissioner hearings, residents and businesses can share their feedback with the Mullan BUILD team by contacting public involvement lead, Katie Klietz, either through the project webpage (www.mullanbuild.com) or via email at Katie@BigSkyPublicRelations.com. Residents will be asked for preferences regarding the look and feel of future infrastructure, including roadway styles, intersections, and landscaping.

Occurring concurrently with the Mullan BUILD design project, Missoula County is conducting the Mullan Area Master Plan, a public planning and design process for the study area that is intended to identify future land use planning and regulations, transportation elements, and plans for amenities through community and stakeholder engagement. The final Mullan Area Master Plan, expected to be complete towards the end of 2020, will provide an illustrative plan meant to help guide future development in the area. The study area has been identified in several local planning documents for future growth and city annexation in accordance with City/County growth policies and adopted land use plans. Completion of the Mullan Area Master Plan, in addition to complete streets design to improve the safety and functionality of the proposed roadways for all users, and robust public and stakeholder participation, will mitigate effects of future development as growth occurs in the project area.

Project Location and Limits

The project is located in Missoula County, Montana, generally west of the Missoula city limits, and approximately five miles from downtown Missoula. The project area is bordered by W Broadway Street to the north, Reserve Street to the east, Mullan Road to the south, and The Missoula International Airport and Grant Creek to the west. Other key roadways in the project area include Flynn Lane and England Boulevard. The land use begins to transition from existing agricultural and residential land on the western edge to commercial use approaching Reserve Street.

Description	Functional Classification	Route Name	MDT Corridor ID	Approx. Sta. Range	Accumulated Miles
Mary Jane – South	Local Collector	Mary Jane	C230352N	10+00 to 30+00	0.38
Mary Jane - North	Local Collector	Mary Jane	C230352N	60+00 to 80+00	0.39

England Blvd	Local Collector	England	C008853E	30+00 to 66+24	0.70
George Elmer Dr	Local Collector	George Elmer	C083546N	10+00 to 55+00	0.62
Mullan Rd	Minor Arterial	Mullan Rd	C000263N	N/A	2 Intersections
West Broadway	Principal Arterial	Broadway	C032758E	N/A	1 Intersections

Physical Characteristics

The proposed work for Mary Jane, England, and the section of George Elmer between Pius Way and England Blvd is all new construction. The land on which the roads are being constructed is primarily farmland with an average of 9-inches of topsoil. A full geotechnical investigation and report was produced to determine an appropriate typical section. Overall, the topography in the area is very flat and on the fringe of the Urban area. The developed area in and around the project location is predominantly residential but will include some commercial construction once it is fully developed.

The project does also include updates to existing sections of Mary Jane Blvd and George Elmer. Both of these existing sections of road run through established residential neighborhoods. The existing section of Mary Jane Blvd runs through the Pleasant View neighborhood which was constructed in 2000. The existing section of George Elmer Blvd runs through a farm field location and the existing 44-Ranch neighborhood. This neighborhood was initially built around 2005 and continues to be expanded.

Traffic Data

An extensive traffic and safety analysis was completed during the preliminary phase of this project. This work has been captured in the following four technical memos:

- TM1 – Existing Conditions;
- TM2 – Performance Measures;
- TM3 – Intersection Roadway Options – Year 2045; and
- TM4 – 2050 Conditions and Recommendations.

The traffic and safety analyses were conducted primarily to inform the project how to meet the safety and congestion goals through proper design specifically by determining intersection controls, lane configurations, and multi-modal design. The Mullan Area Master Planning effort was done in parallel with the traffic analysis and provided the critical travel demand model output necessary to forecast traffic growth in the area. Ultimately, the traffic design was done for future year 2050 conditions from this model.

A summary of the current and future year AADT's are shown below, the technical memos should be referenced for additional detail.

- Mary Jane – South | Current = N/A | Future 2050 = 6,840
- Mary Jane – North | Current = N/A | Future 2050 = 5,910
- England Blvd | Current = N/A | Future 2050 = 10,441
- George Elmer – South | Current = 2,563 | Future 2050 = 6,358
- Mullan Rd East of Mary Jane | Current = 13,319 | Future 2050 = 24,045
- Mullan Rd East of George Elmer – South | Current = 13,589 | Future 2050 = 14,179
- Broadway East of Mary Jane | Current = 15,945 | Future 2050 = 27,780

Crash Analysis

MDT provided crash data for the most recent five-year period (2014 – 2018) for project area intersections. The crash data included type, severity, weather condition, and other factors. No crashes were reported at the intersections of Flynn Lane and Camden Street; Flynn Lane and Chelsea Drive; Mary Jane Boulevard and Melrose Place; Mary Jane Boulevard and Camden Street; and Flynn Lane and England Boulevard.

Key findings from the crash data analysis include:

- Rear-end crashes were the most common crash type at the intersections.
- The most common crash severity type was Property Damage Only (PDO).
- The intersection of Flynn Lane/W Broadway Street had the only reported fatality at a project area intersection.
- Ten angle crashes were reported at the intersection of Flynn Lane/W Broadway Street.

- There were five reported fatalities on all project roadway segments.
- The highest pedestrian (3) and bicyclist (5) crashes occurred at the N Reserve Street and Mullan Road intersection.
- N Reserve St, Mullan Road, and England Boulevard experienced the highest number of crashes.
- Mullan Road experienced six wild animal related crashes.
- Bicyclist and pedestrian crashes were prevalent on N Reserve Street (18 bicyclist, 3 pedestrian); Mullan Road (6 bicyclist; 2 pedestrian); England Boulevard (3 bicyclist, 1 pedestrian); and Flynn Lane (1 bicyclist).

Major Design Features

a. **Design Speed.** Due to the residential zoning in the area, lower design speeds for the road elements were used to encourage reduced speeds and traffic calming. For the trails, a design speed was chosen considering that the entire site is relatively flat and the proposed trails generally follow existing grade that very rarely exceeds 2%. The design speeds for the urban collector streets and trails are as follows:
   - Mary Jane Boulevard – 30 MPH
   - England Boulevard – 30MPH
   - George Elmer Drive – 30 MPH
   - Flynn Lane Trail – 18 MPH

   The design speeds for routes on MDT's system are as follows:
   - West Broadway Street – 55 MPH
   - Mullan Road – 45 MPH

   The posted speed limits within the Mullan BUILD project will be set in accordance with the responsible agencies policy. This will include input from the Mullan Area Master Plan, The Mullan BUILD project's recommendations, and any applicable speed studies. Currently, West Broadway Street and Mullan Road are posted at 55-mph and 45-mph, respectively. The City of Missoula will request these studies to be conducted after the project is implemented as it will have an impact on observed speeds. It is anticipated the City of Missoula's posted speeds will not exceed 30-mph on any of the collector streets and posted speeds as low as 25-mph in certain areas, such as Mary Jane Boulevard, may be implemented to increase safety.

b. **Horizontal Alignment.** The design standard for a horizontal curve radius ranges from 2830' for a normal crowned road to a 250' minimum with a superelevation rate of emax equal to 4%. A design exception will need to be made for horizontal curve radii under the crowned road minimum without super elevation. Horizontal alignments for each corridor were designed using a 1200-foot minimum horizontal curve radius where possible, due to a 2830' curve not fitting within dedicated right-of-way and making for impractical horizontal alignments where right-of-way has yet to be dedicated. Beyond the horizontal alignment design standards, additional considerations included the following: dedicated/undedicated right-of-way, designing horizontal alignments to stay out of the airport runway protection zone, and practical tie-in locations to existing and known proposed roadways. The major horizontal features, including those which will not meet the applicable design criteria, for each project element are as follows:
   i. **Mary Jane Boulevard South** is approximately 1960 feet in length and begins at Mullan Road and terminates at an existing stub-out near Melrose Place to the North. This roadway is not located within a dedicated right-of-way easement and runs north-south. Approximately 1455 feet north of Mullan Road along the centerline alignment, the roadway was designed to implement WGM's preliminary design for a proposed development. This preliminary design contains two horizontal curves with a radius of 650' and 273'. Preceding the proposed development by WGM, key horizontal design features include one future intersection and two horizontal curves with radii of 600' and 1500'. Three of these curves pose horizontal design constraints as they are below the minimum horizontal curve radius for a crowned road.
   ii. **Mary Jane Boulevard North** is approximately 2050 feet in length and begins at its current termination at Camden Street and terminates at West Broadway Street to the North. This roadway is all within an 80-foot dedicated right of way easement and runs north-south. Approximately 1060 feet north of the Camden Street intersection along the centerline alignment, the roadway was designed to properly tie-into Territorial Landworks preliminary design for the Summit Beverage development. This preliminary

design contains one 250-foot curve. Proceeding the preliminary design by Territorial Landworks, key horizontal design features include two horizontal curves with a radius of 499' and 498'. All of these curves pose horizontal design constraints as they are below the minimum horizontal curve radius for a crowned road.

iii. **Flynn Lane Trail** is approximately 3340 feet long and begins on the west side of Flynn Lane, North of Camden Street. This trail then terminates at the existing shared use path near Hellgate Elementary School. The trail is all within right-of-way yet to be dedicated. This trail contains no horizontal curves or design constraints/concerns.

iv. **George Elmer Drive South** contains two segments. The first segment is approximately 1900 feet long following the existing George Elmer Drive alignment. The corridor begins at the intersection with Mullan Road and terminates just south of Bell Tower Road. This portion of the project will consist of improvements to the existing George Elmer Drive that runs South to North with no curves for its entirety. The key horizontal features of this segment include two future intersections, one where the proposed Herons Landing Drive intersects running east-west and the other where Tipperary way trail is proposed to intersect George Elmer Drive. The second segment of George Elmer Drive South is approximately 1400 feet long and begins at its current termination at Pius Way, and terminates at the intersection of the proposed England Boulevard roadway. This segment of road is all within dedicated right-of-way easement and runs South to North and contains no horizontal curves or design constraints/concerns.

v. **England Boulevard** is approximately 3050 feet in length and begins at the proposed intersection with George Elmer Drive and terminates at Flynn Lane to the East. This roadway is all within an 80-foot dedicated right-of-way easement and runs east-west. The key horizontal features within this corridor are two horizontal curves with radii of 300' and 750'. Both of these curves pose horizontal design constraints as they are below the minimum horizontal curve radius for a crowned road.

c. **Vertical Alignment.** The design criteria for vertical alignments include stopping sight distance, maximum grade, cross slope, and vertical clearance. See below for a summary of the vertical alignment design standards for roads using a 30-mph design speed:

- Stopping Sight Distance – 200 feet
- K-Value (Crest) - 19
- K-Value (Sag) - 37
- Maximum Grade – 9%
- Cross Slope – 2% to 5%
- Vertical Clearance 14 feet

All roadway designs meet minimum K-values, are below the maximum grade of 9%, and were designed with a 3% crowned slope. Vertical clearance is not of concern on this project as there are no proposed or existing overhead/underpass components in this project. Beyond the vertical alignment design standards, additional considerations include drainage, keeping embankment slopes low, and providing safe and practical vertical approaches to existing and proposed roadway tie-in locations. To help achieve ideal drainage, a minimum vertical grade of 0.5% was used to avoid ponding in the roadways. Keeping embankment slopes low was achieved by matching existing ground as much as possible while also maintaining positive drainage slopes. To provide safe and practical vertical approaches, gradual grades into tie in locations were implemented where possible. The major vertical features, including those which will not meet the applicable design criteria, for each project element are as follows:

i. **Mary Jane Boulevard South** begins matching existing ground at Mullan Road and continues north approximately 1455 along the centerline alignment where a proposed development designed by WGM Engineering begins. The minimum grade along this segment is 0.60% and the maximum is 0.64%. Key elements along this segment are three low points that were placed to help balance embankment quantities along this segment. There are no vertical alignment constraints or concerns in this section of the corridor. Key design elements where WGM's proposed design begin are four vertical curves (two crest, two sag) with radii ranging from 30' to 119'. The K-values for these curves range from 19 to 37. All of these curves meet the minimum design standard K-values so there are no vertical alignment constraints or concerns in this segment.

ii. **Mary Jane Boulevard North** begins matching existing ground at its current termination at Camden Street and continues north approximately 1060 feet along the centerline alignment and matches existing ground at its intersection with Flynn Lane where the proposed development by Territorial Landworks begins. The minimum grade along this section is 0.60% and the maximum is 0.63%. The key design element along this segment is a low point that was placed to help balance embankment quantities. There are no vertical curves or vertical alignment constraints/concerns along this section of the corridor. After its intersection at Flynn, Mary Jane Boulevard continues north to match existing ground at West Broadway and implements into the proposed development done by Territorial Landworks. The key design element along this segment is one low point. There are no vertical curves or vertical alignment constraints/concerns along this section of the corridor.

iii. **Flynn Lane Trail** begins on the west side of Flynn Lane, North of Camden Street. From here it parallels Flynn Lane and matches finished ground at the intersection with England Boulevard. The trail continues along Flynn Lane before it terminates matching existing ground at the shared use path near Hellgate Elementary School. There are no vertical curves or vertical alignment constraints/concerns in this corridor.

iv. **George Elmer Drive South** is divided into two segments. The first segment involves improving the existing George Elmer Drive from Mullan Road to where it currently terminates just south of the proposed Bell Tower Road. The existing minimum grade along this alignment is 0.53% and the maximum is 1.74%. The key vertical elements on this segment include three vertical curves (two sag, one crest) and three low points. The vertical curve lengths are all 200' with K-values ranging from 86 to 234 all of which are above the minimum K-values listed above. There are no vertical alignment constraints or concerns in this corridor. The second segment of George Elmer Drive South ties-in to existing ground at the current termination at Pius Way, and terminates matching finished ground at the intersection with the proposed section of England Boulevard. The minimum grade along this segment is 0.60% and the maximum is 0.85%. Key vertical elements within this corridor consist of two distinct low points. These were placed to provide positive drainage for the conveyance of the stormwater west towards Grant Creek. There are no vertical curves or constraints/concerns in this corridor.

v. **England Boulevard** matches proposed finished ground at the intersection with George Elmer Drive and terminates matching existing ground at Flynn Lane to the east. The minimum grade along this alignment is 0.50% and the maximum is 0.62%. Key vertical elements within this corridor are a vertical curve (crest), a distinct high point, and two local low points. The vertical curve is 200' and has a K-value of 181 which is well above the minimum K-value listed above. The curve is located at a high point which allows stormwater runoff west of the high point to be conveyed toward Grant Creek and the East side of the high point to be drained via sumps. The localized low points were placed to keep the road fill down and help balance embankment quantities along this segment of the alignment. There are no vertical alignment constraints or concerns in this corridor.

d. **Typical Sections.** The typical roadway sections used in the design were developed in concept with the Mullan Area Master Plan and provided by Dover-Kohl. See table below for a summary of the typical road sections used.

Street Types	Left Sidewalk (ft)	Left Boulevard & Bike Lane (from left to right)	Roadway Description (from left back of curb to right back of curb)	Right Boulevard & Bike Lane (from left to right)	Right Sidewalk (ft)	Total Width (ft)
Main Street Collector	6	7' Boulevard 6' Bike Lane 3' Buffer	8' Parking 10' Lane 10' Lane 8' Parking **Roadway Width = 36'**	3' Buffer 6' Bike Lane 7' Boulevard	6	80

Neighborhood Collector	6	6' Bike Lane 10' Boulevard	8' Parking 10' Lane 10' Lane 8' Parking **Roadway width = 36'**	10' Boulevard 6' Bike Lane	6	80

The corridors and locations where these different typical sections are used are as follows:

i. Mary Jane Boulevard South
   1. Mullan Road intersection to Oleary Street intersection (Station 10+48 to 19+69) - Main Street Collector
   2. Oleary street intersection to current termination of Mary Jane Boulevard South (Station 20+80 to 30+24) - Neighborhood Collector

ii. Mary Jane Boulevard North
   1. Current termination at Camden Street to West Broadway Street intersection (Station 61+03 to 81+08) - Main Street Collector

iii. George Elmer Drive South
   1. Mullan Road intersection to Herons Landing intersection (Station 11+12 to 22+54) - Main Street Collector
   2. Herons Landing intersection to existing upgraded portion of George Elmer Drive South (Station 23+48 to 29+22) - Neighborhood Collector
   3. Current termination at Pius Way to England Boulevard Intersection (Station 41+41 to 54+38) - Main Street Collector

iv. England Boulevard
   1. George Elmer Drive intersection to Flynn Lane intersection (Station 29+92 to 65+84) - Neighborhood Collector

The typical section used for Flynn Lane Trail consists of a 10' travel lane with a 1' shoulder on either side and this is used for the entirety of Flynn Lane Trail.

e. **Surface Design.** A project specific surfacing design was completed by Tetra Tech as part of the preliminary geotechnical investigation. The investigation concluded that beneath a thin topsoil layer, the subsurface profile encountered in the borings was varied and discontinuous across the site. In general, silt, clayey sand, silty sand, and poorly graded gravel with clay and sand were encountered beneath the topsoil extending to depths on the order of 11 feet. Subsurface water was not encountered in any of the borings at the time of the field exploration (April 2020).

   The surfacing design also took into considerations the anticipated traffic loading. The resulting design is as follows all thicknesses in inches (road section - | asphalt | aggregate base | pit run subbase:

   - Mary Jane South - | 4 | 9 | 8
   - Mary Jane North - | 4 | 10 | 8
   - England Blvd - | 4 | 10 | 8
   - George Elmer South - | 4 | 9 | 8
   - Flynn Lane Train - | 3 | 6 | 0

   All new pavement sections will also include a Mirafi 380i Geotextile Fabric placed on native subgrade within the roadway prism.

f. **Grading.** The project will have an overall net excavation balance on the project. A large amount of topsoil striping will be required with an average of 9" of topsoil. A detailed breakdown of the earthwork quantities can be provided as necessary.

g. **Slope Design.** Due to the flat topography and urban nature of this project, slope design is not anticipated to be an issue. In general, the desired 4H:1V slope will be achieved beyond the sidewalk. There are two identified locations with minor constraints that may require small retaining walls. These may include the north side of the intersection of Broadway and Mary Jane and the south side of the intersection of George Elmer and Mullan.

h. **Geotechnical Considerations.** There are no notable geotechnical issues or considerations on this project not already discussed in the surfacing design section.

i. **Hydraulics and Water Utilities.** The project will include new proposed water distribution, wastewater collection, and stormwater utilities, which will serve as the "backbone" for the project-area. All new proposed infrastructure will be located within the roadway right-of-way and will tie into existing utility infrastructure. Proposed wastewater collection infrastructure included in the project comprises new proposed gravity sewer lines which will be constructed along most, but not all, of the planned street improvements and which will tie into existing wastewater infrastructure. The project also provides recommendations for offsite water and wastewater improvements not included within the project scope, but which will be necessary to support the new backbone infrastructure for future development. The proposed stormwater management system for the project will include both traditional storm drain system which will outfall towards Grant Creek, as well as stormwater management controls designed to store and infiltrate stormwater runoff locally. Additional coordination with adjacent subdivision developments will be required as design progresses.

j. **Permanent Erosion and Sediment Control (PESC) Features.** All sediment during construction will be maintained on-site. A detailed PESC plan will be completed during the final design phase of the project. In general, due to the flat topography, the stormwater runoff will infiltrate into the ground. Erosion control BMPs will be installed to minimize runoff and sedimentation to Grant Creek.

k. **Bridges.** There are no bridge structures in this proposed scope.

l. **Safety Enhancements.** Increasing safety is one of the top priorities of this project. By completing Mary Jane Blvd as the local collector, traffic will be reduced off of Flynn. This will enhance safety around Hellgate Elementry School. Pedestrian crossings will also be closely evaluated as well and likely include rectangular rapid flashing beacons (RRFB's) at trail crossings. Increasing safety has also been a significant consideration as part of the intersection control evaluation.

m. **Context Sensitive Design.** The project is an investment of public infrastructure that will be a fundamental part of the local area transportation system for years to come. Due to this context, the Mullan Area Master Planning effort was conducted in parallel with the preliminary design phase. The Master Plan was a very public process that informed the BUILD project of typical sections, densities, and other critical elements of design. The project has also worked with a Steering Committee comprised of local professionals to provide input for design context. This included what elements of the project to prioritize and construct, what types of intersection controls (roundabout or signal), and other various aspects of design.

n. **Traffic.** The project will include geometric modification, intersection improvements, new intersection construction, electrical, signing, and pavement markings.

o. **Miscellaneous Features.** The proposed improvements will include new lighting infrastructure. New roadway lighting will be included within the project for all intersection and pedestrian crossings.

p. **Pedestrian/Bicycle/ADA**. The most non-motorized focused component of the project will be the construction of the Flynn Lane Trail. In addition to this path, the project will incorporate detailed non-motorized elements throughout as can be seen by the substantial focus on the pedestrian and bike facilities in the typical sections. The bike and pedestrian facilities will include high visibility green pavement markings at crossing locations. RRFB's will be installed at trail crossing locations in addition to the pavement markings. Where roundabout intersections are selected to be installed, the guidelines presented in NCHRP Report 672 will be followed in creating pedestrian refuge islands and crosswalks. All existing curb ramps on the project not meeting current ADA standards will be retrofitted. All new curb ramps will be designed in compliance with ADA and PROWAG.

Design Exceptions

Design exceptions will be requested as they are required.

Right-of-Way
Public easements for the project have been granted for Mary Jane North, England Boulevard, and George Elmer South. An easement is anticipated to be obtained for the necessary ROW for Mary Jane South. In addition to these permeant easements, temporary construction easements (TCE's) will also need to be acquired in all of the locations. Several approaches on the south side of Mullan Road will be modified with the project as well. Efforts will be made to consolidate approaches where possible to increase the safety and operations of the associated intersections. Small (less than 0.1 acres each) easements or acquisitions of farm field land are likely necessary at two intersection locations. These include George Elmer/England and George Elmer/Mullan.

Utilities/Railroads
There are no railroads within this project scope of work.

A proposed crossing of the Flynn-Lowney Ditch at the location of Mary Jane – South will require an agreement with the ditch company. Also, an existing crossing of the same ditch at George Elmer will need to be extended. This will also require an agreement.

The project has identified several locations where existing private utilities will be in conflict with the proposed construction. The project team has been in contact and will continue to coordinate with these utility companies to ensure relocation occurs. These companies include:

- Northwestern Energy (electric and gas)
- Missoula Electric COOP (electric)
- Century Link (communication)
- AT&T (communication)
- Charter (communication)

Maintenance Items
The project is in contact with the City of Missoula, Missoula County, and MDT's maintenance groups about the design and the new facilities. A combination of these three agencies will take over maintenance responsibility of the facilities after they are constructed. In general, the City will assume responsibilities over the new collectors and MDT will continue to maintain Mullan Rd and West Broadway assets.

Environmental Considerations

- The proposed project is being processed as a categorical exclusion and significant impacts have not been identified. FHWA is the lead federal agency for the project.
- No wetlands were identified within the project limits and wetland impacts are not anticipated. The project may require Section 404 permit related to the irrigation ditch crossings.
- A Biological Assessment has been prepared evaluating the potential impacts of the proposed improvements on federally listed threatened and endangered species. An effect determination of "may affect, not likely to adversely affect" has been rendered for bull trout and bull trout critical habitat. Informal consultation is anticipated between FHWA and the USFWS.
- A cultural resources investigation of the study are identified two historic resources that have preliminarily been recommended eligible for National Register listing: 24MO0550 - Flynn-Lowney Ditch and 24MO1781 - The Dougherty Ranch. The project would have no adverse effect on either resource. Additional coordination is necessary between FHWA and SHPO on the eligibility recommendations and determination of effect.
- A detailed noise analysis was conducted for the project that identified noise impacts along Mary Jane Boulevard. Noise abatement was evaluated and noise barriers were determined not feasible based on engineering, maintenance and safety reasons.

Energy Savings/Eco-Friendly Considerations
The project will install LED lighting and utilize recycled asphalt pavement to the extent practical.

Experimental Features and Proprietary Products
There are no experimental features on this project. The high strength geotextile fabric specified is Mirafi 380i, which is a proprietary product.

Work Zone Safety and Mobility
At this time, Level 3 (or low) construction zone impacts are anticipated for this project. A Traffic Control and Staging Plan will be completed during the final design phase of the project. These issues are discussed in more detail under the Traffic Control and Public Involvement sections.

Other Projects
There are numerous other projects in Missoula and Missoula County of various scopes, locations, and timeframes. As designs and lettings become more certain, other project tie opportunities will be evaluated. The project team will continue to coordinate with other local private developers to understand the timing of their projects and potential impacts. Intersection improvements at Mary Jane – North and Broadway will be completed through MDT's SF199 MaryJane Broadway INTX project. This project was initially included in the BUILD scope, but separated to be delivered through MDT's HSIP program. Traffic analysis and other preliminary engineering work from the BUILD project is being used to further develop and deliver the intersection improvement project.

Traffic Control
Traffic will be maintained through the construction of the project with appropriate signing, flagging, pilot cars, etc., in accordance with the Manual on Uniform Traffic Control Devices. The work zones will require lane closures at intersection tie-in locations of existing roadways during construction operations. The most significant traffic impacts are anticipated to occur along Mullan Road. A minimum of one lane in each direction will be maintained throughout the day. Nighttime operations may restrict traffic to alternating one-way traffic, but will need to be approved by the City of Missoula due to a noise ordinance. This project will utilize a Construction Manager / General Contractor (CM/GC) delivery method. As part of this project the contractor will be utilized to devise a traffic control strategy that minimizes impacts to the public during construction.

Intelligent Transportation Systems (ITS) Features
There are no ITS features on this project.

Public Involvement
Throughout the preliminary engineering phase of the project, the public involvement consultant, Big Sky Public Relations, has focused on developing clear project materials to distill a complex project to the general project. This work will continue to build on PI efforts and headway made since beginning project outreach. Because this project is moving on an accelerated timeline, key stakeholder engagement during the design development process will continue to be important. With COVID-19 restrictions, some outreach strategies must be nimble to best safely reach targeted audiences. PI activities have included developing a robust project webpage; media relations (leading to several positive traditional media placements); engaging with residents and stakeholders remotely; staffing community partner meetings; and the latest focus has been on the steering committee and engaging with the public online and in neighborhood locations. Direct advertising will also be executed to reach residents online later in the project timeline and as the project moves closer to construction.

Construction Cost Estimate

The construction cost estimate is for informational purposes and utilizes estimate information from the 30% cost estimate. This estimate includes cost estimates for the all scope elements. The actual budget figures for the purpose of the BUILD Grant will be presented in the Budget Narrative and Grant Funding Agreement documents.

Mullan Build

MULLAN BUILD PROJECT SUMMARY

BASE SCHEDULE - 30% Preliminary

Prepared By: DJ&A ENGINEERS PLANNERS SURVEYORS

Job No.	7065	
Computed	BHB	Date 7/24/2020
Checked	DP	Date 7/24/2020

PROJECT ELEMENT	ELEMENT DESCRIPTION	TOTAL
1	*MARY JANE BOULEVARD SOUTH*	$3,250,804
2	*MARY JANE BOULEVARD NORTH*	$3,519,632
3	*FLYNN LANE TRAIL*	$561,713
4-1 & 4-2	*GEORGE ELMER DRIVE SOUTH*	$3,562,428
5	*ENGLAND BOULEVARD*	$3,075,059
6	*MULLAN TRAIL*	$498,848
7	*GEORGE ELMER DRIVE NORTH*	$5,380,156
8	*TIPPERARY WAY TRAIL*	$630,665
9	*MILWAUKEE TRAIL*	$141,413
10	*GRANT CREEK TRAIL*	$212,772
10	*GRANT CREEK STREAM RESTORATION AND FLOOD CONTROL*	$1,386,802
1	*MARY JANE BOULEVARD SOUTH - WATER*	$386,444
2	*MARY JANE BOULEVARD NORTH - WATER*	$0
4-1 & 4-2	*GEORGE ELMER DRIVE SOUTH - WATER*	$696,200
5	*ENGLAND BOULEVARD - WATER*	$707,688
7	*GEORGE ELMER DRIVE NORTH - WATER*	$1,058,394
1	*MARY JANE BOULEVARD SOUTH - SANITARY SEWER*	$0
2	*MARY JANE BOULEVARD NORTH - SANITARY SEWER*	$179,250
4-1 & 4-2	*GEORGE ELMER DRIVE SOUTH - SANITARY SEWER*	$501,281
5	*ENGLAND BOULEVARD - SANITARY SEWER*	$679,031
7	*GEORGE ELMER DRIVE NORTH - SANITARY SEWER*	$105,194
1	*MARY JANE BOULEVARD SOUTH - STORM WATER*	$641,150
2	*MARY JANE BOULEVARD NORTH - STORM WATER*	$493,225
4-1 & 4-2	*GEORGE ELMER DRIVE SOUTH - STORM WATER*	$410,750
5	*ENGLAND BOULEVARD - STORM WATER*	$1,208,535
7	*GEORGE ELMER DRIVE NORTH - STORM WATER*	$1,469,708

Note: Total costs shown include a 20% contingency. Detailed cost estimates for each scope element can be found below.

WATER SUBTOTAL	$2,848,726
SANITARY SEWER SUBTOTAL	$1,464,756
STORM WATER SUBTOTAL	$4,223,368
ROAD/TRAIL SUBTOTAL	$22,220,292
8% CONSTRUCTION ADMINISTRATION AND ENGINEERING	$2,460,571
TOTAL ESTIMATED COST	**$33,217,713**

The total construction cost estimate for the top 5 prioritized elements totals $20,008,692. This includes 8% Construction Engineering (CE), 20% Contingency, and 5% inflation costs. It should be noted that this total does not include the estimated $1,346,623 for the Mary Jane – West Broadway intersection updates which are anticipated to be funded by HSIP funding and likely let and constructed at a later date. This total exceeds the available local ($5,000,000) and 2019 BUILD funding ($13,000,000) of approximately

$18,000,000. As the project progresses through the final design phase, the cost estimate will be further refined. If necessary, scope items such as sidewalk, landscaping, etc., may be removed from England Blvd and deferred to be constructed at a later date due to available funding.

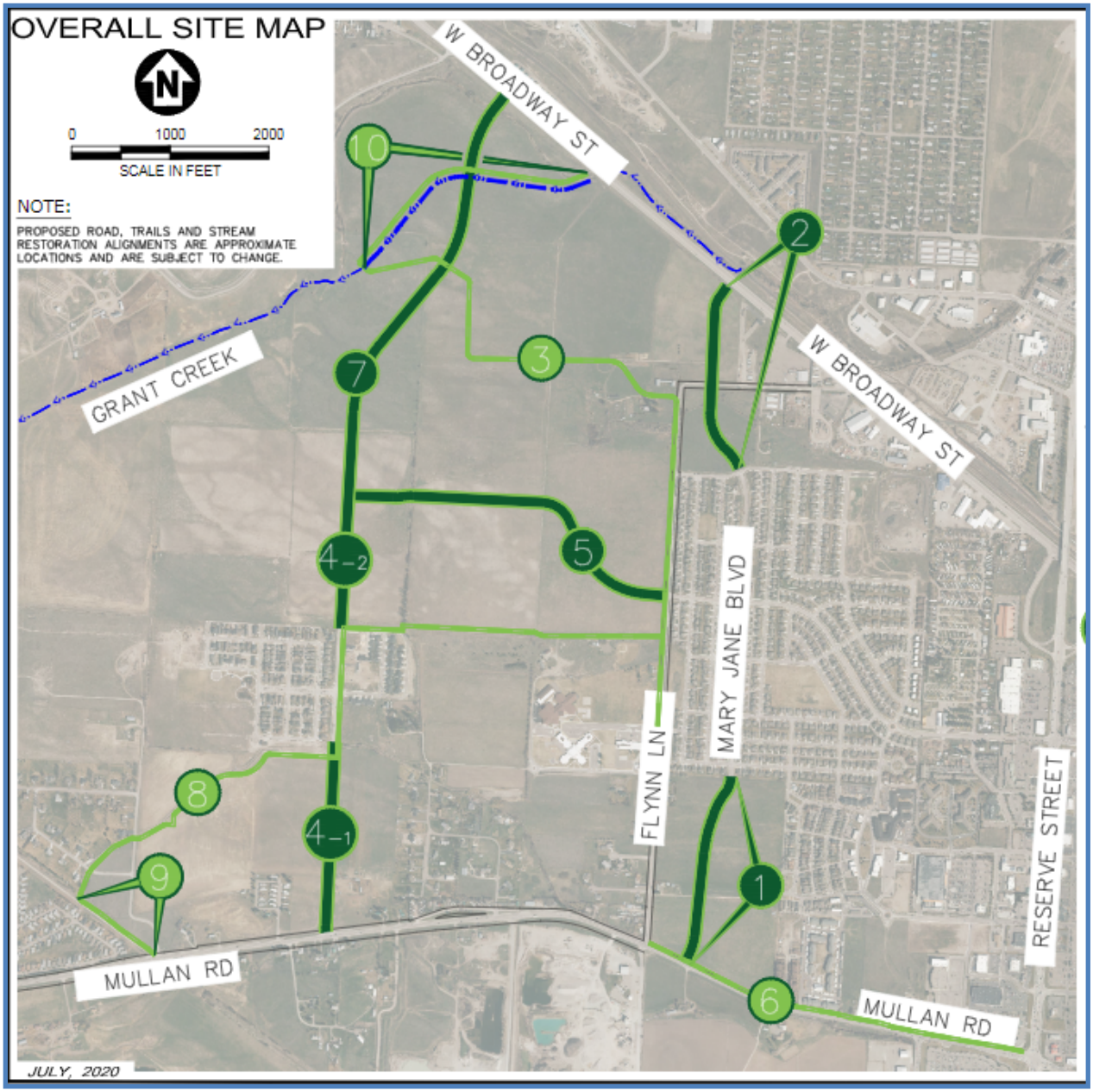
Preliminary Engineering
The preliminary engineering phase is being completed by a consultant team lead by DJ&A. This team is comprised of other partners including HDR, Kittelson, Tetra Tech, and Big Sky PR. In addition, the project will hire a construction manager (CM) to provide input and cost certainty throughout the final design phase.

Project and Risk Management
Project risk will be primarily mitigated by utilizing the CM/GC contracting method. A risk assessment will be performed as part of this process after a CM is selected. This is anticipated to occur in September 2020.

Ready Date
The project is anticipated to complete a PS&E package by the end of January 2021. After the conclusion of this package, the selected CM will propose a Guaranteed Maximum Price (GMP) which will be justified by an independent cost estimator (ICE). Once a GMP is agreed upon, a completed Grant Funding Agreement will be sent to the DOT's Office of the Secretary (OST) for concurrence. Execution of the Grant Funding Agreement is anticipated in April 2021 and subsequent construction would occur shortly thereafter.

Site Map

A project site map is provided below. The site map shows all project elements designed during the preliminary engineering phase and listed numerically by priority. The scope of work identified in this document if for the top 5 scope elements: 1) Mary Jane South, 2) Mary Jane – North, 3) Flynn Lane Trail, 4) England Blvd, and 5) George Elmer – South.



Choose a District.