ENGINEERING
2615 Main Avenue, Suite 209
Durango, CO 81301

September 14, 2023
Town of Bayfield
Attn: Nicol Killian, Community Development Director
1199 Bayfield Parkway
Bayfield, CO 81122

Subject: Pine River Commons Final Submittal Comment Response Letter

Below in blue are PST Engineering's responses to SGM's Engineering Review Comments provided in a letter dated April 5, 2023.

Geotech Report:

1. Provide a final report for the project and Phase 1 addressing retaining wall design criteria, pavement sections, and concrete sidewalk (ADA curb ramp) sections.
   Trautner Geotechnical has been hired to complete a final geotechnical report for this project but has been unable to perform testing due to field irrigation. Testing will be completed following irrigation season. Reasonable assumptions were made for the mentioned criteria with notes for the contractor to verify with the Trautner report before construction. Report is expected before the end of 2023.

2. The current (2021) report notes that it does not address significant earthwork.
   Please see response to comment 1.

Master Drainage Report:

1. The drainage report overall is well prepared technically. Please consider adding more information on assumptions, why methodologies were selected, and how the project integrates into the Town's 2014 Master Drainage Plan.
   Additional sections discussing "Assumptions and Methodologies" and "Integration into Town of Bayfield 2014 Master Drainage Plan" were added to the revised Master Drainage Report.

2. Please provide an analysis of the water quality control volume for the detention basin. Drain time needs to be between 36 and 40 hours. Mile High Flood District (MHFD), the old UDFCD, has an excellent spreadsheet for this analysis.
   Providing water quality control volume treatment is not a requirement in the current Town of Bayfield Code. Although the volume is not provided, efforts were made to maximize flow over vegetation to the maximum extent possible.

The pond is already larger than what would typically be required because of the sizeable off-site flows entering the project area without Schroder Ditch to intercept flow from the east any longer. Fully treating the WQCV would require enlarging the pond further by raising the flow control invert– reducing amenity areas.

Master Engineering Set:

1. Provide justification for using "local" street classification for the entire project. Specific language wasn't found in the Traffic Summary. Note: Residential units shall front on local streets to the maximum extent possible (Infrastructure Design Standards 2.2.1).
   Per 2.2.1 "Local streets provide frontage for access to lots and carries traffic that has origin or destination at lots adjacent to the streets." The local street classification was used as the roads are the "last" public roads to provide direct access to only a few residential and commercial lots. The proposed residences on Lot 2 & 3 have their own private drives to access individual units due to the multi-family nature of the development.

   The next level of road classification is a "collector street" which Section 2.2.1 states shall be designed for serving 200 or more residential units, significantly more than the proposed development.

   Per the traffic study, over 50% of the projected trips are generated by the gas station at Lot 4. Special consideration of the road section was given in this area to restrict parking along the Lot 4 frontage – mostly to allow fuel truck traffic navigation through this area.

2. Provide street names.
   Based on discussions with the Town, the following road names shall be used.
   Road E-W: West Kremer Drive
   Road N-S: Zeno Drive
   Lot 2 Private Street: Senica Way

   The names were left the same as the preliminary submittal, as they have called this by the development team and contractor for a significant amount of time while discussing the project, but a note was added to the site plan with their anticipated names. Zeno Drive and Senica Way are not used in La Plata County, per GIS.

3. Use a 1-foot contour interval for design.
   PST kept 2-ft contours for overall plan views for clarity and 1-ft for zoomed in sheets.

4. Sheets 8 and 9 of 46, provide a 20-foot landing at 2% or less onto Bayfield Parkway.
   Per Town Code, 5% slope within 50-ft of an intersection is required, which has been provided.

   A sight distance analysis was performed at each BFP and has been included as supplemental to the submittal.

5. Sheet 10 of 46, minimum cover on sewer not met. Provide solution.
   Following preliminary design submittal, the existing manhole was dipped to verify invert elevations. The existing invert out was found to be higher than originally estimated.

   As such, a 4-ft wide berm was designed along the sanitary main crossing of the pond to provide adequate cover. This berm was set 2-ft lower than the top of pond elevation. An 18-in culvert was designed along the trickle channel flowline to provide conveyance from the north side of pond to the south side. The sanitary pipe was designed to provide 1-ft clear between the sanitary main and this new culvert.

6. Sheet 11 of 46, pipe alignment has a break near the midpoint. Correct alignment.
   All sanitary pipes are straight both horizontally and vertically.

7. Sheet 15 of 46, correct deficient minimum pipe cover. Provide a detail for tap connection to Town's water main.
   4-ft of cover is maintained at all locations

   PST Engineering reached out to the Bayfield Public Works Director, Jeremy Schulz, to discuss the tap connection. There is no detail, but he requested the plan note to coordinate with him prior to the tie in.

8. Sheet 18 of 46, label the size of all storm drain pipes in the plan view. Provide calculations that support single inlets.
   Size labels have been added to all storm drain pipes. Calculations to support single inlets with a 50% clogging factor are shown in Appendices K1 and K2 of the Master Drainage Study. If the inlets were completely clogged, flows would overtop the sidewalks and flow into Ditches A & B before any impacts to adjacent development.

9. Sheet 19 of 46, consider encasing the irrigation pipe at the water main crossing although vertical separation distance appears to exceed the minimum 18 inches. At water mains crossing a nonpotable pipe, one full length of water pipe must be located so both joints will be as far from the non-potable pipe as possible. Consider extending 60" irrigation pipe to the box culvert to address the sidewalk ending at an open canal.
   Flowable fill encasement of the water main for 10-ft either side of irrigation pipe was added to the final plans.

   The 60-in piped irrigation ties directly into the box culvert and there will be no open canal on this south end.

10. Sheets 21, 22, and 23 of 46, Section A-A, 2.5 to 1 side slopes are hard to maintain. Provide 3:1 side slopes as shown in Section B-B. This ditch will have sustained flow from the Lot 4 pond; what erosion protection will be provided?
    The preliminary geotechnical report recommended that slopes may be up to 2.5:1 slope and this was confirmed with conversations with Trautner who will prepare the final report. Conceptual

site plans have been developed for each lot and 2.5:1 slopes were only used in areas to make the concepts work and are maintained in the final plans.

Rip-rap erosion protection was added at the “corners” and the “drop” between Lots 4 & 5, but largely ditch was kept as grass lined.

11. Sheet 23 of 46, how does runoff on the southwest side of the Lot 4 Pond get to the flowline of Road E-W gutter?
    Lot 4 (potential future gas station lot) was graded to generally flow west and will not be final graded until later phases of the project. The site generally flows west to the Lot 5 property line. The future site will likely contain storm drain and curb and gutter, and a temporary berm may be installed during future rough grading construction to ensure drainage into Ditch A.

12. Sheet 25 of 46, check the grades of ADA ramp on the southwest side of the intersection.
    Grading was modified, but all detailed grading for the Master Plan submittal was noted as preliminary and will not be constructed during Phase 1. Plans should be finalized for future phases based on tying into constructed improvements in Phase 1.

13. Sheet 27 of 46, the sidewalk ends right at the top of an open canal. This is a safety concern. Lower plan view, grading incomplete at the end of sidewalks.
    Per comment #9, there is no open canal at this southern edge. Like Comment #12, detailed grading for walks and ramps was completed for Phase 1 improvements only.

14. Sheet 28 of 47, see comment in Master Drainage Report on pond sizing and WQCV. Consider using trickle channels for very low flows and riprap transitions from swales into pond bottom.
    WQCV was addressed in comment response #2 for Master Drainage Report. Trickle channels were considered but were decided against and the owner is aware of the maintenance implications.

15. Sheet 29 of 46, provide street name placards at intersections.
    Street name placards were included on the stop sign call outs. Street names will be per Comment #2.

16. Sheet 30 of 46, provide an analysis of NB left turn lane storage and design profile for the widening section.
    The left turn lane storage for both Clover Drive and the entrance road to Pine River Commons was addressed in Section IX.B. of the Traffic Study. The study shows a maximum queue length in the year 2043 of 84-ft for WB traffic at Clover Drive and 40-ft for EB traffic into Pine River Commons, both less than the provided lengths.

    The turn lane plans shown in the Master Plan were shown to “paint the picture” showing full build out in the future, incorporating with Clover Drive. A sawcut alignment, profile, and typical section was provided for curb, gutter and sidewalk improvements in the Phase 1 plans.

17. Sheets 31, 39, and 40, missing ROW lines on multiple sections.
    The sections without ROW lines shown are sections that don't have ROW lines (west of roadway, Bayfield Parkway intersections, Town Road intersections.)

18. Sheet 41 of 46, why are ROW lines asymmetric to the roadway?
    This was a drafting issue that has been corrected.

19. Sheet 40 of 46, the proposed grade linework is gapped and doesn't tie to existing.
    This was corrected in the revised plan.

Lighting Plan:

1. Provide Fixture Type and Broadcast Footprint
2. Is this plan dark sky compliant?
   Regarding Comments 1 & 2, LPEA will be providing the street lights and is planning on small sized Type 3 LEDs. The same type of lights were used in Phase 7 of the Clover Meadows subdivision and the light at the NE corner of Clover Drive and Currant Drive is an example of what will be used on this project.

3. The Western pole location isn't proximate to the intersection like the eastern two intersections. Why?
   The pole location was revised in the final plan.

Master Landscape Plan:

1. No comment, see planning comments.

Traffic Impact Report:

PST Engineering is currently finalizing the Traffic Study based on recent input from SEH. Traffic Study is expected to be completed the week ending September 22, 2023.

1. Provide the SH 160 and East Bayfield Parkway Traffic Impact Study (TIS) updated by SEH. The revised TIS should address previous comments that will define lanes required at the Bayfield Parkway and Kremer Dr. / Access #2 intersection and the approach to SH 160.
   PST provided a revised Traffic Study for this project to the Town in May without SEH input. PST was very recently provided with input from SEH regarding their modelling of our proposed configuration and it proved adequate. PST is currently finalizing the Traffic Study to incorporate SEH's comments, and a final study is forthcoming.

2. The proposed EB Access #2 project volumes will require a left turn lane or two-lane approach to Bayfield Parkway. The proposed Lot 4 (Commercial 2.01 acres +/-) eastern access should be restricted to right-in-right out or located far enough west to avoid vehicles queuing on the EB approach to Bayfield Parkway.
   This is a local street approaching a stopped condition. CDOT turn lane warrants do not necessarily apply. SEH modelled the single lane in the full build out in the 2043 full build out and found the level of service and queuing to be appropriate. This will be discussed further in the forthcoming final study.

3. Internal roadway accesses should be aligned across the roadway to create 4-way intersections or be offset by a distance equal to the facility's stopping sight distance measured from the centerline to the centerline of the approaches (Infrastructure Design Standard 2.2.4.D.).
   The future access shown to Lot 7 was shown as being directly across the Lot 2 drive. Future Lot 3 private drive accesses as well as commercial driveway accesses to Lots 4-6 will be evaluated at the time of their development with consideration of this comment and Town of Bayfield Infrastructure Design Standards.

4. Project trip distribution should consider and include trips To/From:
   a. Kremer Drive (Existing residential To/From proposed Commercial)
   b. Clover Lane (Existing residential To/From proposed Commercial and proposed Residential to/from existing School)

   Trip distribution data was revised for the final study.

5. Discuss the number of Simtraffic simulations to generate the 95th percentile queue lengths (Recommend 5-10 runs).
   Discussion was added and 5 runs were performed in the analysis.

Environmental Impact Report:

1. Note that the Phase I ESA is expired. The most recent site reconnaissance was September 2021, with the report also dated September 2021. Per the ASTM standard, Phase I reports are only valid for 365 days at the maximum. That said, the Town of Bayfield is not requiring another ESA. If further site reconnaissance is performed for this development, please provide it to the Town.
   Comment noted – the developer is not planning to perform any further site reconnaissance.

2. The report does not include an investigation of the house, garages, or outbuildings on site. The buildings weren't even inspected from the outside, but merely viewed from the adjacent Bayfield Parkway. Given that the house and outbuildings are not included in the proposed development, this is okay. However, if the house and outbuildings are incorporated to the proposed development in the future, then additional site reconnaissance will be required. The main house was built in approximately 1900 and is therefore likely to contain lead-based paint and possibly asbestos.
   Noted for future development considerations.

3. The interview (Section 6.3) mentions that a septic system is likely present on the site, as well as an unregistered domestic water well. No further information is given. The likely presence of an old septic tank warrants further consideration. Provide assurances that the septic system is closed and abandoned. If still active, locate the entire septic system and leach field to ensure the septic system does not extend beyond the Lot 1 property boundary onto the proposed Pine River Commons development.
   The house is serviced by Town water and sewer. We are not aware of a septic system on or off of the house lot. If an abandoned system is discovered during construction, it will be dealt with in accordance with state laws.

Phase 1 Drainage Report:

1. See comments in the master drainage report review.

Please see responses to the Master Drainage Report. It is the intent of the development that future development of Lots 3-7 will refer to the Master Drainage Report which was completed with the 2014 SMA Report in mind.

2. Please use the MHFD spreadsheet for the rational method analysis.
   PST used the MHFD spreadsheet to confirm the "c" values as an internal check but the coefficients "a" "b" and "c" used for the MHFD spreadsheet are not readily available for the project area (they are Denver area specific) and there is no ability to override the intensity values as determined by NOAA or Town of Bayfield Code. As such, the spreadsheet used in the preliminary study was used with some added explanation.

3. Please show the watercourses (Tc) used for each basin in the exhibit.
   Watercourses were added to the exhibit for each sub-basin, but it should be noted the minimum Tc = 10-minutes was used for each basin per Town Code.

4. Add discussion on the selection of "c" values.
   Table 6-4 from MHFD Criteria Manual was added to Appendix C to help clarify how the "c" values were determined.

Phase 1 Engineering Plan Set:

1. Cover sheet, provide Engineer of Record, Town Engineer, and Public Works director signature lines.
   Signature lines have been added to the plans.

2. Provide acceptance letter of proposed fire access and hydrant locations from the Upper Pine River Fire Protection District.
   PST Engineering reached out to Greg French who reviewed the plans and found fire access, hydrant locations, and turnaround all to be acceptable. Email correspondence from Mr. French has been included in the submittal package.

3. Sheet 3 of 20, provide a turning analysis of temporary hammerhead turnaround for a fire truck. Provide gravel hammerhead design section. Revise note #2 to reflect "design by a licensed engineer". No ADA-compliant parking spaces are provided. The reference to Master Engineering Plan Set for the Bayfield Parkway crosswalk is not correct as the Master Plan set does not address this crosswalk. Provide turning analysis to justify an 18.5-foot curb radius at the Bayfield Parkway intersection. Since there will be commercial lots to the north, access should accommodate tractor-trailer-sized vehicles (minimum radius 30-feet). The master plan shows the sidewalk continuing to Bayfield Parkway. Why isn't it extended to Bayfield Parkway in the Phase 1 plans?

   Bulleted list of responses:
   - Dimensions of hammerhead meet Apparatus Road requirements of IFC Appendix D Figure D103.1

- The wall is 4-ft tall which is the maximum allowed by the Town without a structural engineer requirement. A detail was added to Sheet 25.

- ADA spaces and ramp/access aisles for the parking spaces are not required for residential areas – as discussed with the Town.

- The crosswalk is detailed on the new sheet 18 of the plan set.

- Radius was revised to be 30-ft at the curb flowline.

- Sidewalk was added to the plans along Bayfield Parkway from the western edge of Lot 1 to Road N-S.

4. Sheet 4 of 46, unlabeled sanitary sewer main extending into Lot 7. Provide temporary blow-off at water main dead end. What does the unlabeled water stub to the north in Road E-W represent? Need detail for water main tap in Bayfield Parkway.

   Bulleted list of responses:

   - This is the 6-in sanitary service to Lot 7. Label was added.

   - Temporary blow off detail from Denver Water was added to Sheet 22.

   - This water stub is the vent for the air/vac assembly, which will need to be installed in phase 1. Label was added and a detail provided in the master plan set.

   - See response to Master Plans Comment #7 regarding main tap.

5. Sheet 5 of 46, provide a 1-foot contour-based design (2-foot is planning level). Show road profile to the north edge of gravel hammerhead.
   1-ft contour interval was shown on plan.

6. Sheet 7 of 20, show the finished grade of the hammerhead area.
   The hammerhead area was shown in the profile. This area was designed to be the top of base course of future Road E-W.

7. Sheet 8 of 46, why are sanitary sewer services (11) above water main? Sewer main is shown at 5 feet below grade. Water main (or non-potable pipes) will need to be encased if a minimum vertical distance of 18 inches between the outside of the water main and the outside of the non-potable pipes cannot be provided. This must be the case where the water main is either above or below the sewer with preference to the water main being located above the non-potable pipe.
   The proposed sanitary main was revised so that the services would be installed a minimum of 18-in below the water main.

8. Sheet 11 of 46, Master Plan set does not provide additional information on diversion gate or detailing. Provide in this Phase 1 plan set.
   A note was added to install a slide gate valve. This configuration was recently used in a vault for the piped Schroder Ditch downstream in the Clover Meadows subdivision.

9. Sheet 12 of 46, typical section reference extends into units; sheet 16 only provides street elements, correct sheet 16. Provide flush curbing along the unprotected edge of the pavement at the transition to gravel hammerhead.
   The revised typical section extends to the face of units.

   The developer would like to forego flush curb since this is a planned temporary condition with future tie in to Road E-W. Pavement will be sawcut cleanly for future construction.

10. Sheet 13 of 46, provide profiles for proposed 18-in and 18-in elliptical storm pipes. Provide road plan and profile for the paved emergency access. Provide flush curbing around the unprotected edge of the parking area and tying into Lot 2 Road.

    Bulleted list of responses:

    - Space is very limited on this sheet for a culvert profile and PST thinks there is enough information provided to construct. The expected cover at the emergency access is almost 2.5-ft based on the invert, slope and length as well as the edge of pavement provided.

    - The elliptical storm pipe was removed from the plan with the introduction of curb and gutter on Bayfield Parkway.

    - Several points were provided for the paved emergency access which provide enough information to construct.

    - To keep costs down (as an affordable housing project) the developer would like to forego flush curbing around the parking area and understands the implications. Parking bumpers were called out to provide a wheel stop so that cars do not go past the edge of pavement.

11. Sheet 14 of 20, the ADA ramp appears to work only in the north-south direction, while most of the foot traffic will come from the west. Revise layout. Provide flush curbing along the unprotected edge of the pavement.

    Bulleted list of responses:

    - The ADA ramps were revised. No ramps were provided to cross Road N-S as there are no amenities directly across Road N-S in the piped irrigation easement. Pedestrians can travel north/south to nearby Bayfield Parkway or future Road E-W to cross Road N-S (both approximately 100-ft away).

    - As discussed in Comment #9, the developer does not think that flush curbing is appropriate for a temporary condition. An additional 3-ft wide strip of “sacrificial” asphalt will be installed as an interim condition.

    - Based on email from Nicol, ramps and sidewalks on the east side of Road N-S will be deferred to future phases of development.

12. Sheet 15 of 46, extend the sidewalk to Bayfield Parkway as shown on the master plan. Correct radius at the intersection with Bayfield Parkway as noted in a previous comment.

    This sheet was revised and Sheets 16 & 17 added to provide additional detail on BFP sidewalk construction.

13. Sheet 16 of 46, show public and private utilities in cross sections. Add typical section for Road N-S. Add gravel hammerhead section or detail. Provide geotech report that designs pavement sections.

    Bulleted list of responses:

    - Utilities were added to the Lot 2 Road Typical Section
    - The typical section for Road N-S is provided in the master plan set. A note was added to the typical sections sheet.
    - A note about the gravel hammerhead was provided on Sheet 12. The intent for the hammerhead is that it will be constructed of the future Road E-W base course.
    - Per geotechnical comment #1 - Trautner Geotechnical has been hired to complete a final geotechnical report for this project but was unable to perform testing due to field irrigation. Testing will be completed at the end of irrigation season. Reasonable assumptions were made for the section and a note added for the contractor to verify with the Trautner report before construction.

14. Sheet 20 of 46, access gate detail provided, but not called out on the plans. Town will provide revised detail C-02 showing 5-ft wide sidewalks (Infrastructure Design Standards 2.2.8).

    The gate was shown near the driveway entrance to Bayfield Parkway on Sheet 3 and has been made clearer.

    We understand there is a Bayfield detail that shows 5-ft wide sidewalk, but the private road section shows 4-ft sidewalk widths to help with costs for affordable housing. This was verbally found to be acceptable in conversation with Nicol Kilian. All public sidewalks will be 5-ft wide.

Plat Comments:

Plat comments were provided to Moreno Surveying and the final plat addressing comments is forthcoming. Moreno has been coordinating directly with the Town.

Additionally, please see below in green to PST Engineering's responses to the "Conditions of Approval of Preliminary Plan."

A. The Final Plan submittal shall include all requirements in Land Use Code Sec. 3-6.
   Requirements of this section will be met in the final submittal.

B. The Final Plan submittal shall include construction cost estimates and a Subdivision Improvement Agreement (SIA) per LUC Sec. 3-6.
PST Engineering has provided a construction cost estimate to the owner and an SIA should be forthcoming.

C. The Final Plan submittal shall include a Planned Unit Development Guide agreement per LUC Sec. 4-6-B(4).
This will be provided by the developer.

D. The Final Plat shall include all required easements including LPEA and Schroder Ditch Company easements.
The final plat with all required easements is being prepared by Moreno Surveying and is forthcoming.

E. The applicants shall submit an agreement signed by applicants and the Schroder Ditch Company (the ditch easement holder) for the rerouting and design of the irrigation systems and related ditch easements through the Property prior to final plat approval and prior to development of the Property
Agreement is on-going between the parties and the developer will provide.

F. Per LUC Sec. 6-5, if surface water rights exist for this property, the owner must dedicate to the town water rights sufficient to offset the expected amount of water to be used for both domestic and irrigation purposes after development of the parcel. If no water rights exist, the owner must provide cash in lieu of water to the town. This shall occur before Final Plan approval and shall be included in the SIA.
The developer is currently working to identify and dedicate all water rights necessary for the development.

G. The Clover Drive/Bayfield Parkway Intersection fee shall be included in the Final SIA for each Phase of the development.
This will be included by the developer.

H. A sidewalk should be located on the project side of Bayfield Parkway.
Per coordination with the Town, Phase 1 will provide sidewalk along Bayfield Parkway from the western edge of Lot 1 to the west side of Road N-S (Zeno Drive). Sidewalk on the east side of Zeno Drive is not required until future lot development.

I. A small playground area, similar to what the Fox Farm Village Deed-Restricted PUD has provided for its residents, should be included in the development rather than the applicant paying the park land dedication in-lieu fee.
A small playground area has been shown in the final master landscaping plans. The developer will select the specific equipment.

J. If it is determined that a septic system is present on the site, this should be removed per San Juan Basin Public Health's standards.
There is no knowledge of an existing system, but it will be removed if encountered complying with all required standards.

K. Prior to the issuance of any excavation or building permits, the applicants need to acquire any necessary stormwater construction permits from the Colorado Department of Health and Environment, if necessary, or from the Town of Bayfield.
Comment noted and all necessary permits will be secured.

L. Road N-S shall be dedicated to the Town, but not accepted until there is a connection to the remaining phases. The Town will not manage snow or other maintenance requests until the street connections are accepted.
The developer is aware of and accepts this condition.

M. The crosswalk that comes off the emergency access road/pedestrian trail shall be shifted further west so that it crosses Bayfield Parkway in line with the east side of Clover Drive.
Revisions have been made and a crosswalk has been provided in the appropriate location.

Sincerely,

Steve Pavlick, PE

Holden Rennaker, PE