LEE'S SUMMIT
MISSOURI

DEVELOPMENT SERVICES

Commercial Final Development Plan
Applicant's Letter

Date: Wednesday, February 23, 2022

To:

Property Owner: ROBINSON E L JR & LETHA M - TRUSTEES	Email:
Applicant: Dan Finn	Email: dfinn@phelpsengineering.com
City Staff: Scott Ready	Email: Scott.Ready@cityofls.net

From: Shannon McGuire, Planner

Re:

Application Number:	PL2022038
Application Type:	Commercial Final Development Plan
Application Name:	Market Street Center, Lot 1 - Final Development Plan
Location:	3501 SW MARKET ST, LEES SUMMIT, MO 64082

Electronic Plans for Resubmittal

All Planning application and development engineering plan resubmittals shall include an electronic copy of the documents as well as the required number of paper copies.

Electronic copies shall be provided in the following formats:

- Plats – All plats shall be provided in mulit-page Portable Document Format (PDF).
- Engineered Civil Plans – All engineered civil plans shall be provided in multipage Portable Document Format (PDF).
- Architectural and other plan drawings – Architectural and other plan drawings, such as site electrical and landscaping, shall be provided in multi-page Portable Document Format (PDF).
- Studies – Studies, such as stormwater and traffic, shall be provided in Portable Document Format (PDF).

Please contact Staff with any questions or concerns.

Excise Tax

On April 1, 1998, an excise tax on new development for road construction went into effect. This tax is levied based on the type of development and trips generated. If you require additional information about this development cost, as well as other permit costs and related fees, please contact the Development Services Department at (816) 969-1200.

Review Status:
Required Corrections:

Fire Review	Jim Eden (816) 969-1303	Assistant Chief Jim.Eden@cityofls.net	Corrections

1. All issues pertaining to life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to the safety to fire fighters and emergency responders during emergency operations, shall be in accordance with the 2018 International Fire Code.

Additional fire protection requirements may apply depending on use and design of the spaces. Verified at building permit plan review.
Response: Acknowledged.

2. IFC 503.1.1 - Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility. Exception: The fire code official is authorized to increase the dimension of 150 feet (45 720 mm) where: 1. The building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3. 2. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

Action required- The 150 foot distance is slightly over. Do not make any changes to the building location that would increase it more.
Response: Acknowledged.

3. IFC 507.5.1 - Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 300 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire code official.

Action required- Provide a hydrant plan.
Response: See added Sheet C3.2. There is an existing public fire hydrant located north of the building directly off the 291 off ramp. This fire hydrant does provide 300 ft of coverage around the building. Due to the difficulty of access from the off-ramp, an additional public fire hydrant is being provided directly southwest of the proposed building. This hydrant will provide additional access for fire protection from both the proposed parking lot fire apparatus roads and the future Lot 2 fire apparatus roads.

4. IFC 503.2.3 - Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities.
Response: Acknowledged and designed as such.

Action required- Confirm the "asphalt pavement" will carry the weight of a 75,000-pound fire apparatus.
Response: Acknowledged. Asphalt pavement will carry the 75,000 pound fire apparatus.

Planning Review	Shannon McGuire (816) 969-1237	Planner Shannon.McGuire@cityofls.net	Corrections

1. Please provide completed ownership affidavit and application forms with signatures.
Response: See included.

2. Please provide the location, height, intensity and type of outside lighting fixtures for buildings and parking lots.
Response: See added photometric plan.

3. Please provide photometric diagram indicating the foot candle levels throughout the site and at the property lines.
Response: See added photometric plan.

4. Please provide the manufacturer's specification sheets for proposed exterior lighting to include both parking lot pole mounted and wall mounted fixtures. The specification sheets shall indicate the exact fixture to be used.
Response: See lighting specifications.

5. Will there be any ground mounted mechanical equipment? If so, please show the location, size, and type of material to be used in all screening of ground mounted mechanical equipment.
Response: The only ground mounted equipment will be an Evergy sectionalizer and Evergy transformer. Both have been shown on the civil plans and screened accordingly on the landscape plan. The size and specification will be provided by Evergy.

6. Please provide the manufacturer's specification sheets for proposed mechanical equipment to be used.
Response: The only ground mounted equipment will be an Evergy sectionalizer and transformer. Both of which has been shown on the plans and screened accordingly. The size and specification will be provided by Evergy.

7. Please show the location, size and materials to be used in all screening of rooftop mechanical equipment.
Response: Parapet walls will exceed the height of the RTU's; refer to revised rendering for building materials

8. On the elevations, please show a dashed line indicating the roof line and rooftop mechanical equipment.
Response: A dashed line is reflected for reference on the elevations. The specified roof top units are 3'-5.25" tall on top of 14" curbs requiring a minimum parapet wall height of 4'-7 ½" above the roof deck. The parapet walls are designed 4'-8" on the high side, and the RTU's will be placed near the midline of the building. Roof slopes ¼" per foot, meaning the effective parapet height at the units is actually 5'-2" +/-, ensuring the roof top mechanical equipment will be fully screened from view.

9. Wall-mounted mechanical equipment. Wall-mounted mechanical equipment, except air conditioning equipment (e.g., window AC units), that protrudes more than six inches from the outer building wall shall be screened from view by structural features that are compatible with the architecture and color of the subject building. Wall-mounted mechanical equipment that protrudes six inches or less from the outer building wall shall be designed to blend with the color and architectural design of the subject building.
Response: Acknowledged. The only wall mounted equipment will be the electrical service gear on the east face of the building near the south end. Current intent is to create a recess in the wall to ensure no equipment protrudes more than 6". If filed conditions ultimately prohibit this, it is understood that we will need to construct a screen wall and are agreeable to doing so, with finishes matching the building.

10. Elevations of all sides of proposed buildings shall include notation indicating building materials to be used on the exteriors and roofs.
Response: See revised elevations

11. Real wood is not an allowed material. Please propose a different material that meets the UDO requirements. Materials such as Nichiha or Trex are acceptable.
Response: Acknowledged. The faux wood material at the main entries is a Nichiha product, see revised elevations.

12. Parking stalls shall be 9' wide x 19' deep. 9' wide x 17' deep parking spaces shall be permitted when the parking space abuts a 6' wide sidewalk or when abutting a curbed open green/landscaped space. Please increase the depth of the sidewalks that are adjacent to the parking stalls.
Response: Depth of the sidewalk has been increased to 6 feet where behind a parking space.

13. All parking lots with 11 or more stalls must provide parking lot lighting. Please provide details on how you will be meeting this requirement.
Response: See added photometric plan.

14. CG-1 concrete curbing required around all parking areas and access drives in office, commercial and industrial districts. Please update the plans to reflect this requirement.
Response: Updated plan to specify CG-1 concrete curb and gutter on Sheet C1.1 and referenced the detail on Sheet C8.2.

15. All proposed signs must comply with the sign requirements as outlined in the sign section of the ordinance.
Response: Acknowledged. Tenants will submit application for separate sign permit.

16. Please provide details on how you are meeting the mandatory minimum Sustainability development requirements of M-150 Corridor Development Overlay District (UDO Sec. 5.510).
Response: The building design includes low maintenance energy-efficient materials including exterior insulation and finish systems (EIFS), low-e glass, and a white TPO roofing membrane for solar reflectance. Exterior building and parking lot lighting is specified to be LED lighting.

Drip irrigation system will be provided for all landscaping beds. See the dedicated design irrigation system notes (note 6) on Sheet LS-2.

The development provides for shared parking; the parking is shared by the tenants of the building and the development covenants to be recorded with the plat provide for cross access and cross parking between Lot 1 and Lot 2.

Engineering Review	Gene Williams, P.E. (816) 969-1223	Senior Staff Engineer Gene.Williams@cityofls.net	Corrections

1. Private force main is called out as a 2 inch HDPE on Sheet 3, but later on same note calls out 1.25 inch. Please reconcile.
Response: The force main will be 1.25 inches. The public sewer plans and FDP plans have both been updated accordingly.

2. Sheet C3: Sheet Private force main cannot tie direct to a public manhole, but shall be connected a minimum of 4.0 feet from the upstream manhole, as measured from the outside of the manhole to the outside of the wye (i.e., not the middle of the wye, but the closest point on the wye). Please revise as appropriate.
Response: Revised accordingly. Extended MH further onto property, as necessary, to ensure space for proposed force main connection to the proposed 8" public sewer via a wye connection. The connection will be 10 feet downstream of the manhole center which will provide more than 4 feet between the outside wall of the manhole and closes point on the wye.

3. The "Final Stormwater Management Plan" dated Feb. 4, 2022 included a routing diagram within the appendix which only included "1S" hydrograph into the basin. Off-site contributors to drainage were missing, and shall be included in the routing diagram and subsequent routing calculations. No further review of the routing for the detention basin was performed due to this omission. Please correct, and ensure all off-site contributors to flow are properly shown and included in the routing calculations.
Response: See updated stormwater report which includes the off-site drainage areas. This includes the off-site contribution from Walmart, Firestone, and the commercial development on the west side of Market Street. The detention basins for Walmart and Firestone were incorporated into the model to ensure an accurate hydraulic analysis. The detention basin was modified, as necessary, to incorporate the off-site stormwater contributions.

4. Storm drainage layout does not agree or make sense compared to our GIS. For instance, a 48 inch storm line is shown on the topo entering the site from Market St., (later shown to be a proposed 42 inch HDPE line which contradicts the 48 inch callout) near the north side and middle of the project, and proceeding southeast through the site. Our GIS records are not showing this to be the case. Where was this information gathered? Was this based on a field survey?
Response: The discharge from the Walmart detention basin connects to the public storm sewer system and discharges into the existing ditch at the northern edge of the site via an existing 48" RCP storm sewer. This was verified via the survey and an additional field visit. As part of this project, the existing 48" storm sewer will be extended through the property. This information has been incorporated into the detention model and stormwater report. The proposed pipe has been updated to match the existing storm sewer pipe.

5. ADA ramps are incorrect. Wings are not allowed on ADA accessible ramps, but rather, grading no more than 3 to 1 provided to transition from grade to the ADA-accessible ramp. Slope callout and elevations are incorrect on the west side, where it shows a slope reversal, and the slope callout on the east side is too high at 8.0%. The City requires a design slope of max. 7.5%. Finally, the ADA-accessible route with a minimum 5 foot width across the driveway entrance was missing with dimensions, elevation callouts, and cross-slope callouts. Please correct.
Response: See revised Sheet C2.1. Removed the wings from the public ADA ramps. Revised running slope of ramps to 7.5% max. Added the ADA-accessible route across the entrance with dimensions, spot elevation and note.

6. The swale at the south end of the project was shown on the topo with a 36 inch pipe discharging into the swale and detention basin. The hydrograph for this incoming stormwater was not included in the "Final Stormwater Management Plan" dated Feb. 4, 2022. Please re-evaluate and provide a revised plan as appropriate, as no further review was conducted on this report due to this omission. This will affect the storage requirements of the basin due to increased volume required to manage this "pass-through" flow.
Response: See updated stormwater report which includes the off-site drainage areas. This includes the off-site contribution from Walmart, Firestone, and the commercial development on the west side of Market Street. The detention basins for Walmart and Firestone were incorporated into the model to ensure an accurate hydraulic analysis. The detention basin was modified, as necessary, to incorporate the off-site stormwater contributions.

7. Private sanitary sewer easement shall be dedicated for the private force main. It shall be of sufficient width to allow for future maintenance up to an including the wye connection at the main. Please show on the plans, and ensure this is carried through to the plat.
Response: Private sanitary sewer easement added to the plat, sewer plans, and FDP plans.

8. "Final Stormwater Management Plan" dated Feb. 4, 2022 was not signed and sealed. All reports shall be signed and sealed by a registered professional engineeer licensed in the State of Missouri.
Response: See updated stormwater report which has been signed and sealed.

9. "Final Stomwater Management Plan" dated Feb. 4, 2022 contains a table of contents that does not match the items contained in the report. For example, an Executive Summary is shown in the table of contents as the first item, but no Executive Summary was included as the first item. In fact, no Executive Summary is contained within the report. Please reconcile, and ensure all sections, pages, and appendices match what is shown in the table of contents.
Response: See updated stormwater report which includes and updated table of contents which matches the report.

10. "Final Stomwater Management Plan" dated Feb. 4, 2022 was missing the inflow hydrograph from the Walmart property (i.e., the incoming flow from the 48 inch pipe). Please see other comments concerning the questionable nature of the location of this line. Re-evaluate the stormwater conditions, and revise the report as necessary. No further review of this report was conducted due to this issue.
Response: See updated stormwater report which includes the off-site drainage areas. This includes the off-site contribution from Walmart, Firestone, and the commercial development on the west side of Market Street. The detention basins for Walmart and Firestone were incorporated into the model to ensure an accurate hydraulic analysis. The detention basin was modified, as necessary, to incorporate the off-site stormwater contributions.

11. Calculations for the 100% clogged condition/zero available storage were not shown, nor were they shown on the plans. Please ensure all KCAPWA design standards for detention basins are followed in regard to this emergency spillway, including freeboard of 1.0 feet from the lowest point on the top of the dam, to the 100 year WSE for the clogged condtion/zero available storage.
Response: See updated stormwater report and detention basin detail sheet C6 which include the 100% clogged condition analysis. The emergency spillway analysis was included per APWA requirements.

12. Water meter is shown in the middle of a swale. This is not allowed. Please show the water meters within an area not impacted by stormwater runoff, and please show their locations in an area that is accessible to Water Utilities staff.
Response: Grading updated and meter location revised to ensure that the meters are not located within a swale or sloped area.

13. Grading is being changed along the south property line during construction of the detention basin. The grading will create an adverse impact to adjacent property owner due to the fact that the swale will now be converted into a detention basin with grade and stormwater now directed towards the south. Revision is required to eliminate the alteration of the drainage patterns that are creating the adverse impact. Recommend not disturbing this area, and revising the footprint location of the detention basin to allow this swale to remain "as-is", and allowing this drainage to "pass through" undetained. As previously commented, the drainage from this swale was not properly accounted for in the "Final Stormwater Managment Plan" dated Feb. 4, 2022, and if properly accounted will require the basin to be expanded considerably from its current storage volume. Please re-evaluate and provide a re-design.
Response: Grading updated to ensure no additional runoff onto the southern property. A small swale has been added to carry stormwater easterly along the southern property line ensuring it does not adversely impact the southern neighbor.

14. Sheet C6: This sheet was missing the following items: 1) location of emergency spillway (not overlflow weir as shown on your plan view), 2) profile view of outlet structure in relation to proposed grade, 3) top of the dam elevation callout, 4) elevation of the emergency spillway, preferably in section view format showing the 100 year WSE (nominal) in relation to the emergency spillway elevation, 4) freeboard between the nominal 100 year WSE and the emergency spillway (0.5 feet is minimum required), 5) freeboard between the 100 year clogged condition/zero available storage and the top of dam (assuming the top is flat, otherwise the low point on the dam), 6) cross-section of dam, showing a minimum 3 foot flat area at top of dam, 7) design storage for the 2, 10, and 100 year events, (only the 90 percent mean annual event storage was provided), 8) graphic representation of the 100 year WSE for the clogged/zero available storage condition (an outline within the basin is sufficient, along with notes showing the extent), 9) dimensions from these WSEs to the nearest property line or building, 10) design allowable release rates for the 2, 10, and 100 year events.
Response: See updated Sheet C6 which includes the required information.

15. A portion of the site near the periphery in the vicinity of the building footprint does not appear to meet the allowable release rates and 40 hour extended detention for the 90 percent mean annual event. This is the area proposed for "free-release" without detention. A waiver to the Design and Construction Manual will be required for this area, and shall be submitted on forms provided by the City. The form shall be completed along with the citations within the Design and Construction Manual, along with a summary, and exhibt. The summary shall include the following: 1) brief summary of the "peripheral drainage" issue in relation to the building footprints being re-graded in the vicinity of the area proposed for "free-release", 2) magnitude of the existing condition flow rate at a point of interest related to this drainage area, along with the developed condition peak discharge for the various events in relation to the existing condition, and the percentage decrease in peak flow rate from this drainage area, 3) rationale behind the waiver, and 4) an exhibit showing the drainage area to be "free-released". The summary attachment and exhibit shall be signed and sealed by a registered professional engineeer licensed in the State of Missouri.
Response: Acknowledged. Waiver to be pursued. Please provide the required City forms when available. It should be noted that 100% of the proposed pavement is being routed to the basin. The free release area is around the periphery of the site and is 100% open space.

16. Drainage area is greater than 2 acres for the area of sheet flow to be directed to the detention basin. An engineered system is required for stormwater drainage areas greater than 2 acres in size. Please evaluate and revise as appropriate.
Response: Per APWA, generally, a drainage system is engineered and constructed when the drainage area exceeds 2 acres. The proposed Lot 2 pad site will be left as a stabilized green space at approximately 2-3% slope from north to the south and sheet flow into the detention basin. The contours avoid a concentrated flow area of more than 2 acres prior to entering the detention basin. The green space north of the basin is approximately 2.2 acres. We feel this area does not warrant an engineered system and the developer is aware that they will be responsible for establishment and stabilization of this area as shown on the plans.

17. Grading plan shows several areas greater than 3 to 1 slope which is not allowed without a geotechnical report stating this is acceptable. Please show grading no greater than 3 to 1 slope, or provide a geotechnical report showing this is acceptable. The geotechnical report (if desired) shall be based on actual field samples being obtained rather than assumptions.
Response: Grading updated to ensure no areas are graded steeper than 3:1. A note has been added to the grading plan ensuring a 3:1 slope is not exceeded.

18. Note M on Sheet C1.1 is referencing the incorrect drawing. Generic details are not sufficient for design of ADA-accessible ramps. Site specific design is required. The question, however, is later on in the plans on Sheet C2.1, a site-specific design is provided. Please correct the error in the reference on Sheet C1.1 by directing the reader to he correct sheet number.
Response: Revised note to point to the site specific design information on Sheet C2.1.

19. Turf reinforcement mat is warranted for the large area to north of the detention basin. Please provide a design for the inclusion of turf reinforement mat in this area, along with design calculations showing the type of TRM is appropriate for the conditions.
Response: TRM is not being pursued for the large green space north of the detention basin. The developer is aware that they will be responsible for establishment and stabilization of this area as shown on the plans.

20. If private fire hydrants are being installed to serve the site as per Fire Dept. comments, a backflow vault is required for the private fire hydrant. The backflow vault shall follow the City of Lee's Summit standard detail, along with sufficient notes showing how the vault will drain at the sump. The vault shall be located within 6 feet of the main, outside of any easement, and shall include a gate valve just prior to the backfilow vault. The connection point at the main shall be via a cut-in tee. Please correct.
Response: See added Sheet C3.2 which includes the proposed hydrant plan. The plan proposes a new public fire hydrant at the southern extent of Lot 1. The distance from the existing water main was minimized to ensure stagnation does not occur. We understand that inclusion of a public fire hydrant in lieu of a private fire hydrant is contingent upon approval from the fire department (regarding adequate access) and engineering (regarding distance from the main).

21. Sheet C4 does not make sense. Please see previous comments related to the stormwater entering from Market St. This is a questionable design, and should be re-evaluated based on existing conditions, which do not appear to be correct.
Response: The discharge from the Walmart detention basin connects to the public storm sewer system and discharges into the existing ditch at the northern edge of the site via an existing 48" RCP storm sewer. This was verified via the survey and an additional field visit. As part of this project, the existing 48" storm sewer will be extended through the property. This information has been incorporated into the detention model and stormwater report. The proposed pipe has been updated to match the existing storm sewer pipe. See the updated stormwater report and Sheet C5.1 which shows the existing off-site system in more detail.

22. Sheet C3.1 Enlarged Utillity Plan: Water meter tap location note does not match what is shown on the plan view. I am showing 3 locations, not 2 locations. Please revise as appropriate.
Response: There are 3 total taps for this project. This includes 2 taps for domestic water service and 1 tap for irrigation. W1 calls out the 2 taps for the 2 domestic service lines. W4 calls out the 1 tap for the 1 irrigation line.

23. Sheet C3.1 Enlarged Utillity Plan: Note for water meter tap is incorrect. The City shall perform the tap after the contractor has coordinated with the Development Services field inspector. Please correct.
Response: Updated note accordingly.

24. Sheet C3.1 Enlarged Utillity Plan: The note concerning the meter and pit is incorrect. The City shall provide the meter, the pit, and all other materials necessary for its installation for a fee based on the most current fee schedule at time of installation. The labor shall be performed by the contractor. Please correct.
Response: Updated note accordingly.

25. Sheet C3.1 Enlarged Utillity Plan: The note W3 is shown in the upper right hand corner, but no corresponding locations are shown on the plans. Please correct.
Response: Updated Keynote location in the plan view.

26. Sheet C3.1 Enlarged Utillity Plan: Note W3 is not entirely correct. The contractor shall always coordinate with the Development Services inspector, not Water Utlities. Please correct.
Response: Updated note accordingly.

27. Sheet C3.1 Enlarged Utillity Plan: The private force main S4 shown on this sheet is too close to the southwest lot line. Recommend a minimum of 5 feet from the lot line. Please revise.
Response: Updated the force main location to a minimum of 5 feet from the lot line. Added dimension for clarity.

28. The 100 year WSE for the nominal condition is at the property line at the west end of the detention basin. This is not allowed. A minimum 20 foot setback is required between the 100 year WSE for the clogged condition/zero available storage, and any property line or building. In addition, no WSE for the clogged/zero available storage was provided, but it is fairly self-evident it will be over the property line. Please revise as appropriate.
Response: See updated Sheet C6. The existing conditions which include an open channel point discharge at the southwest corner of the site results in the clogged 100-year water surface elevation backing up into the southwest corner of the property. Excluding the southwest corner, the proposed plan has been updated to ensure 100-year water surface elevation (clogged condition) is more than 20 feet away from the southern property line, 20 feet away from the western property line, and 20 feet away from the R/W. The proposed emergency spillway is at an elevation of 1002.45 and the 100-year clogged water surface elevation is at 1003.2. It should be noted that the top of the existing wingwalls at the southwest corner of the property is 1003.6. Where the detention basin berm terminates at the southwest corner, the existing parking lot top of curb elevation is 1004.5. Any backup during the 100-year (clogged condition) will be contained in the area around the existing 36" storm sewer and wingwalls and will not impact the existing parking lot or building to the south.

29. Grading and stormwater modifications are shown within MoDOT right of way, which will require a permit from MoDOT. Please provide the permit prior to formal approval of the Final Development Plan.
Response: Acknowledged.

30. Sheet C5: The outlet pipe is noted as being undersized, which is not allowed by KCAPWA Section 5600. All discharge pipes from detention basins shall be designed to manage the 100 year event without utilizing the emergency spillway. The only time the emergency spillway shall be utilized is when: 1) the actual flow exceeds the 100 year event, or 2) clogging of the primary outlet structure. The note shall be revised as well as the "Final Stormwater Management Plan" dated Feb. 4, 2022.
Response: The stormwater report has been updated accordingly to include the off-site drainage areas. The outlet pipe has been updated and sized to convey the full 100-year storm event from the detention basin without utilizing the emergency spillway.

31. All Sheets related to grading: The stormwater being discharged from the existing Firestone detention basin was not properly engineered in terms of how it will be directed to the detention basin without severe erosion and backcutting toward the Firestone property. This shall likely require it be piped to the basin, not allowed to direct discharge on the ground. Please provide a re-design that eliminates concentrated flow from discharging on slopes in excess of 2%.
Response: See revised plan which will utilize the existing fire stone outlet and swale. The swale will be re-graded on the property to discharge to the new detention basin. This will ensure backcutting toward the firestone property will not occur. The developer is aware that they will be responsible for establishment and stabilization of this area as shown on the plans.

32. Sheet C6: Outgoing elevation of the pipe matches the incoming elevation of the outlet structure. A drop of 0.20 feet is required to minimize siltation. Please revise.
Response: See revised detention basin outlet design. The outlet pipe is 0.20 ft below the 4" WQV pipe entrance.

33. Sheet C6: Stormwater is shown entering the basin from the questionable 48 inch pipe on northeast corner of basin. This shall be located further away from outlet structure to minimize "short-circuiting" of the water quality aspect of the basin. Please revise as appropriate to move the discharge point as far away as possible from the outlet structure.
Response: The water quality volume outlet has been revised to include a perforated riser and a 4" pipe located in the center of the basin to minimize "short-circuiting" of the water quality aspect of the basin. The 4" pipe will connect to the outlet structure and include an endcap with an orifice opening to control the WQV drawdown. See the revised plans and stormwater report.

34. Sheet C6: Rip rap is shown being installed on a 3:1 slope, which is not allowed. All rip rap shall be installed no greater than 2.0%. Please revise.
Response: Updated accordingly.

35. Due to extensive comments related to the "Final Stormwater Management Plan" dated Feb. 4, 2022, no further review of Sheet C6 was performed at this time. Please ensure all details previously requested above in this comment letter are addressed on the revised detention basin sheet C6, and ensure the elevations shown on the outlet structure match what is shown on the pond setup tables with the stormwater report.
Response: See updated Sheet C6 and added Sheet C6.1 which has been coordinated with the updated stormwater report.

36. Sheet C7: Erosion control plan is very basic, and missing silt fence or other erosion control measures to be installed along the wide expansive area to be re-graded and TRM installed. Suggest at a minimum to include silt fence in accordance with the Design and Construction Manual in this area.
Response: Additional intermittent rows of silt fence added to the Lot 2 pad space.

37. Sheet C7: The detention basin should be utilized as a temporary silt basin. Please provide details including skimmer installation, notation that it be constructed as the first item, and notation for its conversion to a permanent detention basin after the project has been stabilized in terms of vegetation.
Response: The proposed basin will be utilized as a temporary sediment trap which is acceptable for a disturbed drainage areas less than 10 acres. This will not include a skimmer system which is required for sediment basins will more than 10 acres of disturbed area to a single discharge location. The temporary sediment trap detail has been added to Sheet C7.1 and referenced on Sheet C7. The staging chart has been established to ensure that the temporary sediment trap is cut in prior to additional mass grading.

38. Sheet C7: No phasing plan was provided for the various items shown on this sheet. This is required. Please provide a phasing schedule, perhaps in the form of a table.
Response: Added staging chart with phasing plan included.

39. Sheet C7: Turf reinforcement mat appears warranted for this site, in particular and at a minimum in the large expansive area north of the detention basin. Please see previious comments related to its design, and show on the erosion and sediment control plan. Please ensure it is included on the required phasing plan discussed earlier in this comment letter.
Response: TRM is not being pursued for the large green space north of the detention basin. The developer is aware that they will be responsible for establishment and stabilization of this area as shown on the plans.

40. Rip rap calculations were missing on the plans. Please provide all rip rap calculations on the plans. In addition, wherever rip rap is called-out, provide standard drafting references to the Sheet number and detail for the rip rap installation.
Response: Riprap sizing calculation added for structure #30 on Sheet C6. Riprap sizing calculation added for structure #10 to Sheet C4. On callouts, added reference to the sheet number and detail. Also included dimensions, thickness, sizing, and cubic yardage. Filter fabric called out on detail under riprap.

41. Wherever rip rap is called-out on the plans, sufficient information for its design is required. It did not appear this was provided. Dimensions shall be required, along with thickness, the sizing of rip rap, the approximate cubic yardage of rip rap, and notation concerning the placement of geofabric in accordance with City standards. Reference to the detail shown on Sheet C8.3 shall also be noted using standard drafting techniques of referencing sheets shown elsewhere in the plan set. Please correct.
Response: Riprap sizing calculation added for structure #30 on Sheet C6. Riprap sizing calculation added for structure #10 to Sheet C4. On callouts, added reference to the sheet number and detail. Also included dimensions, thickness, sizing, and cubic yardage. Filter fabric called out on detail under riprap.

42. Sheet C1.1: Scored concrete sidewalk shall be a minimum 6 inches thickness to manage heavy traffic, preferably 8 inch with a 6 inch aggregate base on top of either geogrid or chemically-stabilized subgrade. Note I shall be revised to reference the standard detail utilized for its construction, including standard drafting notation of Sheet number and detail number. Please revise the detail shown on Sheet C8.1 within the plans to include the thickness, and please revise the detail shown on Sheet C8.1 to include either geogrid or subgrade stabilization and aggegate base.
Response: Updated detail accordingly to provide minimum thickness. The keynote on Sheet C1.1 was updated to reference the detail name and sheet number.

43. Sheet C1.1: Notes are provided in upper right hand corner without standard drafting technique of referencing the proper plan sheet and detail number shown elsewhere within the plan set. Please correct.
Response: Updated notes to reference the detail names and sheet numbers accordingly.

44. Sheet C1.1: Heavy duty pavement areas were not noted on the plan view. These are areas where trash trucks, semi-trucks, or emergency vehicles such as fire trucks will need to access. This shall be shown on the plans. Denotion of heavy duty pavement versus standard pavement shall be noted, along with a reference to the sheet number and detail number provided elsewhere in the plan using standard drafting notation.
Response: See the revised Sheet C1.1 and pavement sections which meet the Cities minimum requirements. Heavy duty pavement areas have been designated on the plan accordingly for all drive lanes. Keynotes O and P and Q have been added to reference the details on Sheet C8.

45. Sheet C1.1: A monument sign is proposed in an area with undefined dashed lines. What do these dashed lines represent? What is "P/S"? There appear to be conflicts in its placement. No portion of a monument sign can be within an easement, including the footing of the monument sign or any electrical connections to the monument sign.
Response: The lines are as follows as defined in the legend:

- U/E = utility easement, 10 ft
- B/L = building line, 15 ft
- P/S = parking setback, 20 ft

The monument sign is outside of the utility easement and within the building / parking setbacks.

46. Section view for asphaltic concrete pavement does not follow the Unified Development Ordinance. Please see specific requirements for regular asphaltic concrete, and heavy duty asphaltic concrete. Particular attention shall be given to the subgrade requirements, as the City requires the subgrade design to include either geogrid or chemically-stabilized subgrade on top of 95% proctor compacted suitable subgrade in addition to thickness of the asphaltic concrete and aggregate base.
Response: See the revised plan and pavement sections which meet the Cities minimum requirements. Heavy duty and standard asphalt areas were designated on the plan accordingly.

47. Where are the ADA-accessible routes from the ADA parking spaces to the building? It did not appear they were shown, nor did it appear an ADA-accessible route exists between these spaces and the building. Please correct.
Response: See added Sheet C2.4 which shows the ADA accessible routes. See the enlarged grading plan which details all curb ramps and sidewalks along the accessible routes. Per Sheet C2.2 and C2.3, the curb is laid down in front of both the ADA stall and the ADA access aisle. This provides access directly from the ADA stalls to the ADA sidewalk. Curb ramps transition the sidewalk from full height curb to flush curb.

48. Was Autoturn or other method used to determine whether the entrances will work adequately? It appears emergency vehicles or trash trucks will not be able to navigate these extreme curves. Please evaluate and revise as appropriate.
Response: See added Sheets C1.2 through C1.4 which document a trash truck and fire truck circulating through the site.

49. Profile view on Sheet C4 for the large pipe entering the basin does not match the detention basin plan. The profile view shows the pipe entering flat, but the detention basin plan shows the rip rap installed on an unallowed 3 to 1 slope at the discharge of this large pipe. Although rip rap installed relatively flat is good, it needs to match what is shown elsewhere within the plans, inclduing the grading plan, the enlarged grading plan, and the dedicated detention basin plan sheet. in addition, it does not match the detail provided on Sheet C8.3 which shows a forebay depression. Please also see additional comments related to rip rap design notation on the plans, and ensure the rip rap is thorougly detailed. Also ensure the grading plan matches what is shown on the profile view. Finally, ensure the notes on Sheet C8.3 regarding dimensions shown on the plans, etc. are noted on the plan view on Sheet C4.
Response: The riprap has been revised and is no longer shown on the 3:1 slope. The riprap has been dimensioned and detailed on Sheet C4 to coincide with the detail on Sheet C8.3.

50. Sheet C6: Slope callouts are required on the bottom of the basin are required. It appears the west portion is shown at 2.0%, and the east portion at 0.7%. Is 0.7% sufficient slope for this basin bottom? The Design and Construction Manual requires 2%, but MARC manual allows for lesser slope. The question, however, is whether 0.7% slope is adequate to drain the pond without issue. Please evaluate and revise as appropriate.
Response: See the updated Sheet C6 which includes minimum slope callouts. The basin will slope at a minimum of 1% to the WQV riser.

52. Wil the project include the installation of parking lot lighting? If so, where? They cannot be contained within an easement or within 10 feet of any public water line, storm line, or sanitary sewer line.
Response: See the added photometric plan.

53. Prior to formal approval of the plans, the off-site sanitary sewer improvements shall be in an approvable form, and an Engineer's Estimate of Probable Construction Costs submitted for determination of the Engineering Plan Review and Inspection Fee. This estimate shall include all sitework necessary to construct the project. Please do not include the building, site lighting, trees, shrubs, monument sign, parking lot striping and signage, trash enclosure, railings, or other items not reviewed or inspected by Development Services engineering or inspections.
Response: Acknowledged.

54. A "payment in lieu of" agreement may be required for the missing sidewalk to the northeast of the southern commercial entrance. Please check with the project manager for specific instructions regarding this requirement.
Response: Acknowledged.

55. The "Final Stormwater Management Plan" dated Feb. 3, 2022 did not include a pre-development (i.e., existing) drainage map with points of interest downstream of the project where stormwater converges to concentrated flow, nor was the proposed drainage area diagram shown with these points of interest. Therefore, all calculations of allowable release rate for the various events are suspect. There was an unlabeled diagram in the appendix that may have been an attempt to show the existing conditions, but it did not show the point of interest near the existing

discharge point in the southeast corner of the site. This would appear to be the most important point of interest where the allowable would be calculated, and it is unclear why it was not analyzed. Please re-evaluate, and provide: 1) an existing drainage condition and proposed condition diagram with points of interest that match what is shown in the report and match what is shown on either the existing and proposed condition, 2) points of interest shall be where stormwater has already converged to flow in a concentrated pattern, and 3) clear indications of where stormwater will be "free-released" near the periphery and where a waiver is required.
Response: See updated stormwater report which includes the off-site drainage areas. This includes the off-site contribution from Walmart, Firestone, and the commercial development on the west side of Market Street. The detention basins for Walmart and Firestone were incorporated into the model to ensure an accurate hydraulic analysis. The detention basin was modified, as necessary, to incorporate the off-site stormwater contributions.

56. The "Final Stormwater Management Plan" dated Feb. 4, 2022 presented a questionable method to determine the allowable release rate for the various storm events. Typical method is to provide: 1) on-site contributors to peak flows for the various events, 2) off-site contributors to peak flow for the various events, 3) calculation of the allowable for each point of interest (see prevous comment since points of interest provided in the report do not appear to make sense) for the site, allowing credit for "pass through" peak flows, and 4) ensuring the routing calculations for the detention basin meet the allowable release rate. For this particular project, the point of interest near the southeast corner where stormwater is discharged onto MoDOT right of way is the most significant point of interest, and that would appear to be the most logical point of interest to show the allowable release rate. Please call me if further discussion is needed on this topic, since it appears the method used to determine the allowable release rate did not follow any recognized method for determination.
Response: See updated stormwater report which includes the off-site drainage areas. This includes the off-site contribution from Walmart, Firestone, and the commercial development on the west side of Market Street. The detention basins for Walmart and Firestone were incorporated into the model to ensure an accurate hydraulic analysis. The detention basin was modified, as necessary, to incorporate the off-site stormwater contributions.

57. A profile view of the 8 inch storm line behind the building should be shown. It should also include any potential utility conflicts such as domestic water service lines, etc.
Response: A profile is not typically required or provided for roof drain lines. Sheet C3.1 provides finished grade and flowline callouts for the roof drain line which ensure installation at 1% minimum slope. Keynotes X1 and X2 have been provided to document the vertical separation between the roof drain line and force main / private water lines.

58. Sheet C3.1: The storm lines on the north side of Market St. do not match our records. How was this information obtained? Was this based on a field survey?
Response: The existing storm line sizes and flowlines were obtained from the field survey. See Sheet C6.1 which provides more detail of the off-site stormwater system.

59. Profile Views of All Storm Lines: The design storm HGL shall be shown on the profile view. In general, the 10 year event should be below the crown of the pipe, and the 100 year event should be below any inlet throat or top, a minimum distance of 6 inches. If not, a suitable overflow route for the 100 year event shall be required. Please revise and evaluate as necessary.
Response: The 10-year and 100-year HGL lines have been added to the profiles on Sheet C5.

60. All interior storm lines shall be labeled "PRIVATE", including any storm lines connected to public curb inlets. Please revise, and place the label on the profile view at a minimum.
Response: “Private” has been added to the profile labels.

61. Calculations of the HGL within the storm lines did not appear to account for the various storm events and subsequent HGL calculations for the detention basin for the 42 inch storm line entering the basin from the north.

Please re-evaluate and provide calculations of the HGL within the basin in relation to this line.
Response: The 10-year and 100-year HGL lines have been added to the profiles on Sheet C5. This includes a downstream condition of the 10-year and 100-year water surface elevations.

62. What will be the affect on the hydraulics of the existing storm line along the south property line when installing a detention basin? It appears the clogged condition 100 year WSE will create subcritical flow at this location, and if this pipe is flowing under outlet control conditions, will negatively affect public storm system upstream of this point. This shall be evaluated, unless the applicant wishes to use the "bypass" method to leave the southern swale "as is", and bypass this stormwater and thereby eliminate it from the detention routing. Please evaluate and revise as appropriate.
Response: The clogged condition 100-year WSE is 1003.20. The upstream curb inlet at Market Street has a 36" storm line exiting at a flowline of 1001.34 and a top elevation of 1014.13. The existing 36" pipe is running at approximately 0.5% slope. See the 100-year HGL calculation below for this pipe segment. The result is a 100-year HGL at an elevation of 1005.07 if the detention pond is clogged. This is >9 feet below the rim elevation. The detention pond will have no negative effect on the upstream system along Market Street.

EUREKA SPREADSHEET

Structure	to	Structure	Q(cfs)	D(ft)	S(ft/ft)	L(ft)
Market Street		Basin	46.9	3.00	0.0055	309.0

WS @	Basin	1003.20	Top Elev (up stream)	1014.13	Structure	ci
- Inv Down		999.64	Inv Up	1001.34	Condition:	2
Ho		3.56	+HW	3.73	HW =	Hwi4
			WS@	1005.07		

Variables	Outlet Control	Inlet Control
M = 0.65	H1 = 1.66	
Ki = 0.520	Hwo1 = 3.52	Hwi1 = 3.14
Ke = 0.20	H2 = 2.00	
n = 0.013	Hwo2 = 3.86	Hwi2 = 3.48
D = 3.0	H3 = 2.34	
L = 309.0	Hwo3 = 4.20	Hwi3 = 3.82
Q = 46.85		Hwi4 = 3.73
S = 0.0055	**Alternate inlet control equation form**	
Ho = 3.56	f1Hwi5 = 3.82	

Ck = 3.69
check: Hwi4 applies when Ck is < 3.5

Traffic Review	Susan Barry, P.E. (816) 969-1800	City Traffic Engineer Susan.Barry@cityofls.net	Approved with Conditions

1. Please verify that Autoturn was used to check that large vehicles are able to access both entrances into the site.
Response: See added Sheets C1.2 through C1.4 which document a trash truck and fire truck circulating through the site.