

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM		DATE: November 14, 2023
TO: Land Development Services Department of Building & Safety		FROM: Tyler Key Flood Control Engineering Associate Department of Public Works
SUBJECT:	Drainage Study for:	COPIES TO:
Kyle Canyon Gateway West		KBHome
Cross Streets:	Alpine Ridge Way & Rockey Ave	Westwood
File Number:	F:\Depot\DSMemos\DS05713A.doc	NDOT
Parcel Number:	126-01-601-(001-006)	
Zoning Action:	23-0239-ZON1, 23-0239-MOD1, 23-0239-VAC1, 23-0239-SDR1, 23-0239-TMP1	
FEMA Flood Zone	YES NO X	
Proposed Storm Drain	YES X NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	10/26/2023	11/9/2023	See Comments Below	\$400	5494441: \$400
TOTAL FEES (LDDRS):				\$400	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
X	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

This complex project requires a drainage study meeting prior to resubmittal of the drainage study. Additional drainage study comments may be provided with future submittals.

The following are comments pertaining to the subject site specific drainage study and grading plans:

1. The drainage improvements within the Kyle Canyon Gateway Planned Development appears to be in flux and the timing of the required drainage improvements necessary to protect the current homes under construction needs to be addressed. The proposed improvements modify the KCG East storm drain system located within McKinister Road that was previously approved (L21-02436). A drainage study update to the KCG East project is required to address the system changes. Is the development intent to construct the KCG East facilities and then remove them with this development ? If not, then interim storm drain facilities need to be constructed to provide adequate protection to the KCG East development.
2. The proposed on-site detention basin is an interim drainage facility to be maintained by the developer. The ultimate drainage facilities shall extend the on-site storm drain from the discharge point into the detention basin to the storm drain outfall connection in Rocky Avenue. Upsize the detention basin outlet pipe to have the capacity to convey the entire 100-year onsite flows from KCG West. Flood Control understands that these interim improvements will remain until the

ultimate MPU drainage facilities are available. The required maintenance bond for the interim detention basin shall include line items for the removal of the detention basin and the extension of the drainage facilities. The maintenance bond shall not be considered for release until the ultimate facilities are in place. A drainage study update shall be required prior to release of the maintenance bond.

3. City of Las Vegas does not normally allow local detention basins that are not regional facilities. This site shows a local detention basin and is required to mitigate flow above the existing condition as downstream facilities do not have capacity for increased flows.
4. The project requires NDOT concurrence prior to drainage study approval. The project proposes to increase flows within *Nevada Department of Transportation* (NDOT) right-of-way.
5. The ultimate condition will require a drainage study update to facilitate the required modifications to the interim storm drain system to meet the intent of the MPU.
6. Sites with a grade difference of 2 feet above or below existing grades are required to have approval from the *City of Las Vegas Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide *City Planning* approval with the next submittal.
7. When a finished floor is beneath an adjacent street the wall between the source of flow must be solid grouted three courses. Revise the note for all sections showing solid grouting for flood control to indicate "8-inch minimum solid grouted CMU block three courses above finish grade with all joints mortared," where three courses is 18-inches or twice the depth above the calculated water surface elevation.
8. Private streets must be public drainage easements. Provide a note on the grading plans "Note: All private streets are P.U.E., Public Sewer Easements, and Public Drainage Easements to be privately maintained by HOA."
9. Per DS5414, the master conceptual study, the developed flows are to use soil type "B" for the CN calculations. CN for B-type soils shall use a developed CN value of 92. Review and revise the HEC-1 analysis accordingly.
10. The CN values shown in the curve number computation chart need to match the values shown in Table 602 & 602A for lots less than 6,000 square feet.
11. **Exhibit G** The developed condition flow rates for NW51-CE has been subdivided into subbasins A-E. The proposed prorated flows need to be adjusted to reflect the higher density developments that are being proposed for these areas. Review and revise the HEC-1 analysis accordingly.
12. Review the CN value used for the U2-SITE in all HEC-1 calculations as the CN value appears low for lots less than 6,000 square feet.
13. **Exhibit E:** The basin areas for OFF1 (1.07) does not match value used on the HEC-1 (1.036). Verify basin area.
14. **Exhibit I, Developed Condition 100-year Street Flow Summary:** Based on the location shown, section R should account for flow from basins A, B and C. Revise flow for Section R accordingly.
15. **Exhibit I:** Label limits of each of the storm drains systems.
16. **Exhibit I:** Subbasin Prorated Flow Rate Summary, account for all areas in prorated subbasins. It is unclear where the "remaining" area in the table is and if it is accounted for.
17. **Exhibit I:** Section 2 is a half section overtopping the crown with a depth of 0.49'. The center of street is 0.48'.

18. **Exhibit I:** Add a cross section for each street and corresponding subbasin to verify finished floor elevation requirements. Additionally, verify corner lot finished floor elevations based on both adjacent streets. Add drainage walls where required.
19. **Exhibit I:** Add a cross section C3 for the north end of the rip-rap channel to show the 9.90% slope.
20. **Exhibit I:** Add a cross section at the east end of Arete Ave for the 3.74% slope.
21. The study places inlets at the end of the roads of Water Knot Avenue and Arete Avenue within roll curb. Inlets cannot be placed in roll curb, and the flow depth of roll curb would not contain the proposed street flow to allow capture by the inlets. The street flow depth will also allow flow to enter private driveways. Additional upstream inlets will prevent over-topping the curb instead of impacting the drop inlet. Consider adding two extra inlets towards the end of the road or collect more flow before reaching the inlet at the end of the road or modify the grading to accommodate the velocity head impacts of the street flow.
22. For the sump inlets, extend the L-curb a minimum of 20' upstream of the inlet. For the inlet on Arete Ave., extend the L-curb to the west property line of Lot 14 and construct the L-curb to the same location on the opposite side of the street. For the inlet on Water Knot Ave., extend the L-curb to the east side of the driveway on Lot 29, and to the west side of Lot 27.
23. Provide calculations to show the impact of the velocity head at the inlet locations. Provide finished grade elevations east of the inlets, in the common area, that provide a minimum of 6" of freeboard before the overflow path.
24. The drainage study and the improvement plan names need to match. Improvement plans are labeled differently "Arete Unit 1 (aka Kyle Canyon Gateway West)" "Kyle Canyon Gateway West – Arete Unit 2".
25. **Unit 1: Sheet G-1 and G-4:** The rip-rap channel, on the west side of Alpine Ridge, needs a "Public Drainage Easement to be privately maintained" that extends 5' passed the channel on either side.
26. **Unit 1: Sheet G-1 and G-4:** Extend the cutoff wall, concrete pad, and rip-rap to the grade break on the north and south end of the channel.
27. Provide a 12' minimum access road to the storm drain manholes. The required section is a minimum of 6" of Type 2 with concrete collars at each manhole. The plans currently show a 10' decomposed granite trail.
28. **Unit 1 Sheet G-3:** SDDI OS2 calls out detail 25 on sheet D-3, but the detail for the inlet appears to be detail 26.
29. **Unit 1 Sheet G-3:** Sections 17, 20, 21 say the east wall is existing but the plan view shows it as proposed.
30. **Unit 1 Sheet G-3:** SDDI P1 shows "GTATE" this is not provided on the abbreviation list.
31. **Unit 1 Sheet G-3:** Provide low flow concrete channels connecting the inlets of the detention basin.
32. **Unit 1 Sheet G-4:** Add a second concrete access ramp for access to the south side of the channel.
33. **Unit 1 Sheet D-3:** Section 21 label in text says "textedit"
34. **Unit 1 Sheet D-3:** In Section 25, the wrought iron fencing needs to be designed per standard drawing 425.S1.
35. **Unit 1 Sheet D-4:** Provide specific details for the outlet structure that includes the restrictor plate and the size of the opening.
36. **Unit 1 Sheet G-1, G-4 and D-4:** The curb along Alpine Ridge Way needs to be a 24" L-curb instead of an 18" L-curb.
37. **Sheet PP-16:** Place construction Note 18 in the profile.

38. **Sheet PP-17:** The HGL shown does not meet 1' below grade at SDMH P3. Verify HGL with WSPG analysis.
39. **Sheet PP-18:** SDMH #1, Sheet G2 SDJS #1 add label specifying MH type and size.
40. **Sheet PP-19:** Provide 18" minimum separation between sanitary sewer, storm sewer and water lines. Where crossing have less than 18" of separation, provide mitigation per DCSWCS.
41. **Unit 2 Sheet G-3:** Add a construction note stating that the riprap channel across Arete Ave. and Water Knot Ave. is "to be removed."
42. All drainage easements are to be labeled as "Public Drainage Easements to be privately maintained."
43. The improvement plans show improvements within a Patent Easement (*Alpine Ridge Way*). The engineer must supply the *City of Las Vegas ROW* section with patent easement documents, legal descriptions and coordinate a Declaration of Utilization with the *City of Las Vegas ROW* prior to approval of improvement plans.
44. The grading plan indicates offsite grading. Secure a notarized letter of permission from the property owner allowing the grading. This letter is required prior to final acceptance of the drainage study.
45. The project proposes to build a temporary drainage facility at (Alpine Ridge Way and the detention basin). Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (off-site berms or channels and detention basin) and post a minimum maintenance bond of \$50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facility and an exhibit that adequately shows the location and limits of the drainage facility to *City of Las Vegas Flood Control* for approval. Once the drainage study is conditionally approved, the engineer should contact the City's Land Development Section (229-6371) to begin the agreement process.

In order for the maintenance bond to be released in the future, a drainage update / letter will be required to justify that the offsite berms / channels and detention basin are no longer necessary and can be removed.

46. During the interim phase, all interim facilities are to be maintained by the master developer.
47. Structural plans for the storm drain improvements must be submitted for review. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the *Building Department* for processing. The engineer must provide a copy of *Building Department* approval of the structures to *Flood Control* prior to final acceptance of the drainage study.
48. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.
49. All storm drain manholes must be designed per standard drawing 405.2.
50. Provide conceptual details for junction structures in the next submittal. Full junction structure will need approval from Flood Control prior to the approval from the Building and Safety Division.
51. Provide a detail to show the special manhole connection at SDMH #1.
52. Provide a separate detention basin plan. Include basin characteristics, storage volume, a minimum of 1' freeboard, flow in and flow out, etc. The detention basin table provided on Exhibit I needs to be included in the detention basin plan.
53. Provide full cross sections through the detention basin in both directions. Show the concrete lining in the cross sections.

- 54. Add details to show the headwall structure and low flow channel connections.
- 55. In the WSPG summary, there needs to be a column for storm drain stationing that corresponds to the WSPG.

***** The City of Las Vegas Flood Control is standardizing the file naming of drainage studies and plans during the digitizing process. When saving the project files in the CD or thumb drive, please follow the system below:**

If drainage study only contains one combined file, use the following naming convention in Document Title:

- 1st Submittal DS and Plans (for first and original submittal);
- 2nd Submittal DS and Plans (for second submittal (addendum #1)) etc.

If drainage study contains multiple files, use the following naming convention in Document Title:

- 1st Submittal DS (for the report of the drainage study)
- 1st Submittal Plan 1 (could be the drainage condition maps)
- 1st Submittal Plan 2 (could be the improvement plans) etc.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, final approval of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

END OF REMARKS

T/R/S: T19S/R590E/S1
AREA F-01