



KAW VALLEY ENGINEERING, INC.

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Address: 14700 West 114th Terrace
Lenexa, KS 66215

September 9, 2022

C21D1241

Mr. Kyle Gorrell
Lee's Summit School District
302 SE Transport Road
Lee's Summit, Missouri 64081

**RE: STORM WATER MANGEMENT
LEE'S SUMMIT NORTH HIGH SCHOOL ROBOTICS PROJECT
LEE'S SUMMIT, MISSOURI**

Dear Mr. Gorrell:

Kaw Valley Engineering, Inc. has completed a review of the stormwater management implications associated with the construction of the Robotics/GIC Building at the Lee's Summit North (LSNHS) Campus in Lee's Summit, Missouri.

The City of Lee's Summit, Missouri has adopted a storm water management design criterion titled Section 5600 (Storm Drainage Systems and Facilities) which was used for stormwater planning and design. APWA 5600 lists exceptions to general requirements and applicability associated with Development in section 5601.3. The intent of these exception is to not require implementation of extensive storm water management systems on low impact and small-scale development projects.

The total site area is approximately 89.71 acres. Based on aerial photography, the existing impervious area is about 29.40 acres or 32.8% impervious. The proposed LSNHS Robotics Building will impact approximately 38,450 SF of the property on the southeast corner of the building. A net increase of approximately 12,972 SF (0.30 acres) or 0.30% in impervious is expected at project completion. This project exceeds the thresholds listed in section 5601.3 of the APWA manual as described above; however, a waiver to these requirements is justifiable for the following reasons:

- 5,800 SF of these improvements are linear sidewalk and driveways that sheet flow to adjacent lawn areas. In most instances, the width of the concrete is 6' limiting the space for runoff from these surfaces to concentrate thereby mimicking the existing condition and continuing to allow for the opportunity to realize benefits from infiltration.
- Based on the site's land use as a school, APWA Section 5600 recommends using a Rational "C" coefficient of 0.75 for schools, which is based on an average impervious coverage of 75%. As noted previously, the impervious coverage before and after the proposed improvements is far below this threshold.

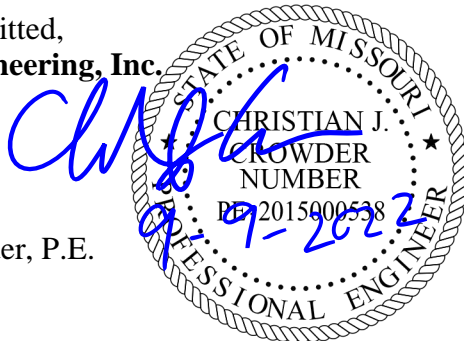
- Added runoff from the proposed improvements that may be captured by the campus storm sewer system is conveyed to the natural channel north of the stadium complex. The expected maximum increase in runoff from this area of campus is 0.3 cfs for the Water Quality Volume (WQv) event, 1.1 cfs for a 10-year event and 2.0 cfs for a 100-year event calculated utilizing the rational method, which are conservative as they do not account for the reductions in volume due to infiltration as noted above. Based on the Small Storm Hydrology Method (Claytor and Schueler 1996), reduction factors can be applied to volumetric runoff from disconnected impervious surfaces that have a pervious flow path at least twice the length of an impervious flow path. As total rainfall increases, the reduction factor will decrease, but the typical reduction factor low-density improvements is approximately 0.23 for the WQv event (1.37”).

Based on these points, KVE will submit a Design and Construction Manual Construction Modification Request to the City of Lee’s Summit, in accordance with sections 1002.A and 1002.B of the City’s Design and Construction Manual, to permit construction of the proposed improvements without addressing the increase in impervious surface. The Design and Construction Manual Modification Request, Overall Lee’s Summit North Drainage Plan, Project Site Plan, Grading Plan and Demolition Plan are attached for reference.

If you have any questions or require additional information, please do not hesitate to contact me at (913) 894-5150.

Respectfully submitted,
Kaw Valley Engineering, Inc.

Christian J. Crowder, P.E.
Project Manager



Attachments:

Design and Construction Manual Construction Modification Request
Overall Lee’s Summit North Drainage Plan
Site Plan
Demolition Plan
Grading Plan

\\VMLX-FILE\Projects\C21_1241\DSN\Storm\20220909 LSNHS Robotics Stormwater Compliance Letter (R0).docx



LEE'S SUMMIT MISSOURI

DESIGN AND CONSTRUCTION MANUAL CONSTRUCTION MODIFICATION REQUEST

PROJECT NAME: Lee's Summit North High School Robotics Project

PREMISE ADDRESS: 901 NE Douglas St., Lee's Summit, MO 64063

PERMIT NUMBER: _____

OWNER'S NAME: Kyle Gorrell – Lee's Summit School District

TO: Lee's Summit City Engineer

In accordance with Sections 1002.A and 1002.B of the City of Lee's Summit's Design and Construction Manual (DCM), I wish to apply for a modification to one or more specification(s). The following articulates my request for your review and action. (NOTE: Cite specific code sections and engineering justification and drawings.)

See attached Storm Water Management Memo

SUBMITTED BY:

NAME: Christian Crowder () OWNER (x) OWNER'S AGENT

ADDRESS: 14700 West 114th Terrace

Tel.# (913)-894-5150

CITY, STATE, ZIP: Lenexa, KS 66215

Email: crowder@kveng.com SIGNATURE: 

FORWARDING MANAGER: _____ RECOMMENDATION: () APPROVAL () DENIAL

SIGNATURE: _____ DATE: _____

GEORGE BINGER III, P.E. – CITY ENGINEER: () APPROVED () DENIED

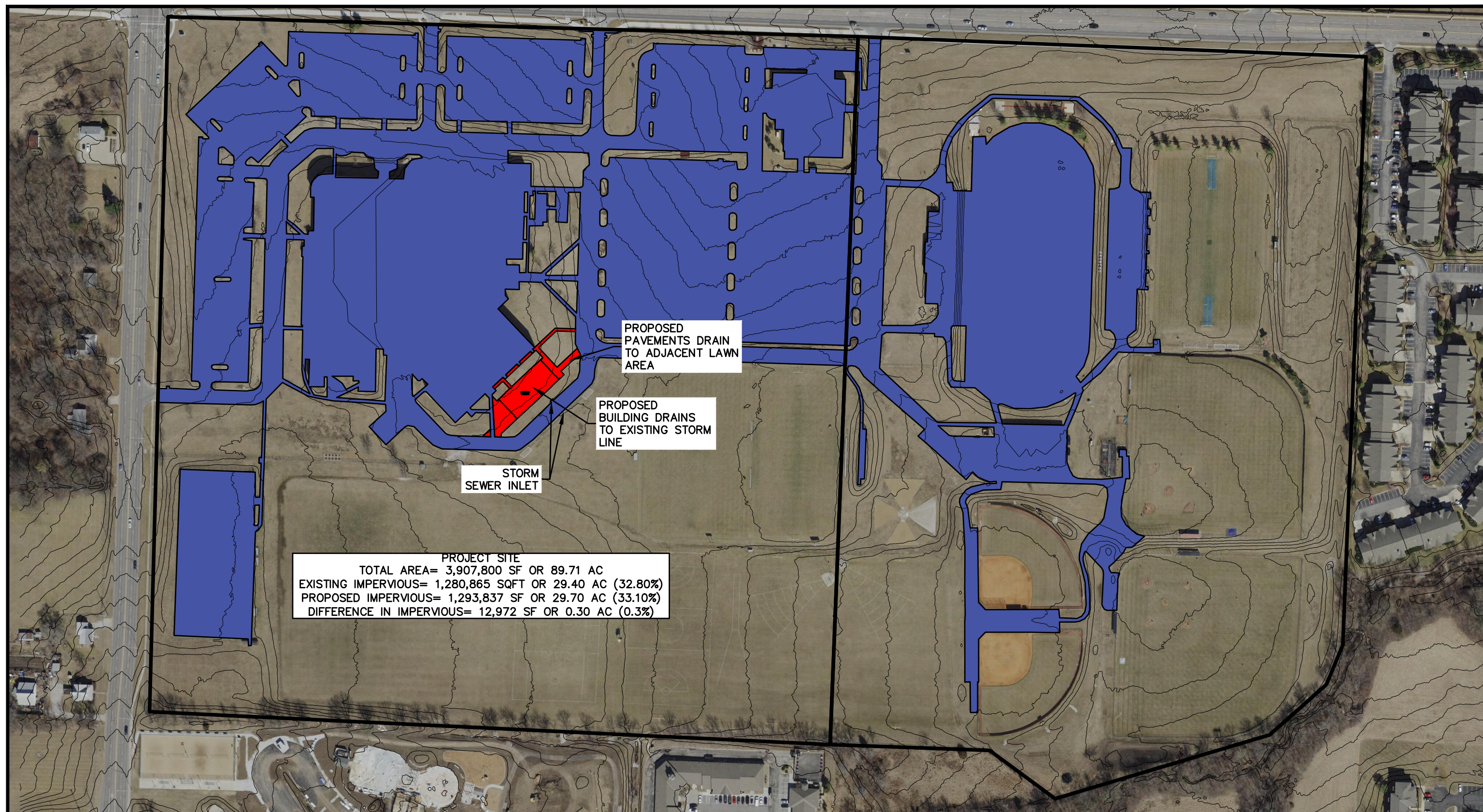
SIGNATURE: _____ DATE: _____

COMMENTS _____

A COPY MUST BE ATTACHED TO THE APPROVED PLANS

Development Services

220 SE Green Street | Lee's Summit, MO 64063 | P: 816.969.1200 | F: 816.969.1221 | cityofLS.net



LEGEND:

- EXISTING IMPERVIOUS AREA
- ADDITIONAL IMPERVIOUS AREA FROM PROPOSED IMPROVEMENTS

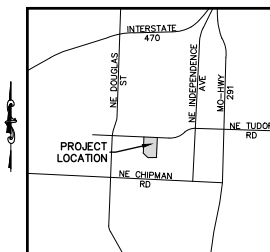
EXISTING IMPERVIOUS AREA IS ESTIMATED FROM AERIAL TOPOGRAPHY

OVERALL LSN DRAINAGE PLAN

8/24/2022

1241PBASEIMPERV

LEE'S SUMMIT NORTH HIGH SCHOOL - ROBOTICS BUILDING
SITE PLAN
901 NE DOUGLAS ST, LEE'S SUMMIT, MO 64086
SECTION 31 - TOWNSHIP 48 N - RANGE 31 W



multistudio
the evolution of gould evans

Lee's Summit Robotics,
GIC & Phys Educaiton

LSN: 901 NE Douglas St., Lee's Summit MO
64086
LSW: 2600 SW Ward Rd, Lee's Summit MO
64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

owner: Lee's Summit R-7 School
301 NE Tudor Road
Lee's Summit, MO 64086
architect: multistudio
4200 Pennsylvania
Kansas City, MO 64111
816.931.6655
multistudio

civil engineer: Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318
kveng.com
structural engineer: Bob D. Campbell &
4338 Bellevue
Kansas City, MO 64111
816.531.4144
www.bdc-engrs.com

MEPFI/Code: Henderson Engineers
8345 Lenexa Drive, Suite
300
Lenexa, KS 66214
816.742.5000
www.hendersonengineers.com

PREPARED FOR:
LEE'S SUMMIT R-7 SCHOOL DISTRICT
502 SE TRANSPLANT DRIVE,
LEE'S SUMMIT, MO 64081
PHONE: (816) 986-2420
CONTACT: KYLE GORRELL
EMAIL: kyle.gorrell@lsr7.net

PREPARED BY:
KAW VALLEY ENGINEERING, INC.
14700 W 114TH TERR.
LENEXA, KANSAS 66215
PHONE: (913) 894-5150
CONTACT: CHRIS CROWDER
EMAIL: crowder@kveng.com

NOTE:
1. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
2. THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.

CONSTRUCTION NOTES:
1. COORDINATE START-UP AND ALL CONSTRUCTION ACTIVITIES WITH THE LEE'S SUMMIT SCHOOL DISTRICT.
2. CONSTRUCTION METHODS AND MATERIALS NOT SPECIFIED IN THESE PLANS ARE TO MEET OR EXCEED THE CURRENT EDITION OF THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT, MISSOURI AND MODIFIED AS NOTED ON THESE PLANS.
3. ALL CONSTRUCTION WORK AND UTILITY WORK OUTSIDE OF PROPERTY BOUNDARIES SHALL BE PERFORMED IN COOPERATION WITH AND IN ACCORDANCE WITH REGULATIONS OF THE AUTHORITIES CONCERNED.
4. PUBLIC CONVENIENCE AND SAFETY: THE CONTRACTOR SHALL CONDUCT THE WORK IN A MANNER THAT WILL INSURE, AS FAR AS PRACTICABLE, THE LEAST OBSTRUCTION TO TRAFFIC, AND SHALL PROVIDE FOR THE CONVENIENCE AND SAFETY OF THE GENERAL PUBLIC AND RESIDENTS ALONG AND ADJACENT TO PUBLIC ROADWAYS. CONTRACTOR IS RESPONSIBLE TO OBTAIN RIGHT-OF-WAY PERMIT FOR CONSTRUCTION OF DRIVE APPROACHES AND SIDEWALKS ALONG SE MILLER STREET AND SE MAIN STREET. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AS REQUIRED BY THE CITY OF LEE'S SUMMIT PUBLIC WORKS DEPARTMENT. REFERENCE MUTCD STANDARD DRAWINGS.
5. ALL DIMENSIONS SHOWN ARE TO THE BACK OF CURB UNLESS OTHERWISE NOTED.
6. ALL SIDEWALK JOINTS WITHIN PROJECT AREA SHALL BE RECAULKED WITH JOINT SEALANT. REFER TO TYPE 1 AND TYPE 2 JOINTS ON SHEET C190.

DETAILS - SEE SHEET C190-B FOR THE FOLLOWING DETAILS

- 001 STANDARD CONCRETE CURB & GUTTER
002 ZERO HEIGHT CURB
005 INTEGRAL CURB AND SIDEWALK
040 ASPHALT PAVEMENT
042 CONCRETE PAVEMENT
055 CONCRETE SIDEWALK
060 SIDEWALK RAMP
- NOTES:
6 DISTURBED AREAS TO BE LANDSCAPED OR SODDED AS NOTED ON L SERIES SHEETS.
7 CONCRETE STOMP (REFER TO STRUCTURAL SHEETS)
10 CONCRETE MOW STRIP
13 BOLLARD (REFER TO ARCHITECTURAL SHEETS)
60 STORM SEWER STRUCTURE (SEE SHEET C600-B)
70 SANITARY SEWER STRUCTURE (SEE SHEET C700-B)
80 WATER STRUCTURE (SEE SHEET C800-B)
82 FIRE HYDRANT (SEE SHEET C800-B)

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HEREON ARE FROM FIELD SURVEY INFORMATION OF ONE-CALL LOCATED UTILITIES, FIELD SURVEY INFORMATION OF ABOVE GROUND OBSERVABLE EVIDENCE, AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY. MISSOURI ONE CALL TICKET #220613016

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC. NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION - NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.



LSN SITE AND
DIMENSION PLAN

C100-B

COORDINATE TABLE		
NORTHING	EASTING	DESCRIPTION
1000	1005662.70	2823983.21 BC
1001	1005662.61	2823986.21 BC
1002	1005579.51	2824004.19 BC
1003	1005609.94	2824002.68 SW
1004	1005615.93	2824002.38 SW
1005	1005645.31	2824000.93 SW
1006	1005650.79	2824006.76 SW
1007	1005639.60	2824017.29 EC
1008	1005598.27	2824058.01 EC
1009	1005568.83	2824026.70 BC
1010	1005661.33	2824026.49 BC
1011	1005661.25	2824029.49 BC
1012	1005614.27	2823968.91 SW
1013	1005607.85	2823960.55 SW
1014	1005616.23	2823952.78 SW
1015	1005623.18	2823960.17 SW
1016	1005654.85	2823991.96 SW
1017	1005681.85	2824030.30 SW
1018	1005666.23	2824045.00 SW
1019	1005670.34	2824049.37 SW
1020	1005686.06	2824034.58 SW
1021	1005749.03	2824101.57 SW
1022	1005733.01	2824116.64 SW
1023	1005730.95	2824114.44 EC
1024	1005738.48	2824122.46 SW
1025	1005754.51	2824107.39 SW
1026	1005754.71	2824098.84 SW
1027	1005796.33	2824143.10 SW
1028	1005790.26	2824145.40 SW
1029	1005794.97	2824187.01 SW
1030	1005788.98	2824186.81 SW
1031	1005712.23	2824147.14 EC
1032	1005753.01	2824190.88 EC
1033	1005703.49	2824155.37 EC
1034	1005688.69	2824154.18 EC
1035	1005696.23	2824162.19 EC
1036	1005725.23	2824178.77 EC
1037	1005738.31	2824197.27 BC
1038	1005734.52	2824199.06 BC
1039	1005727.71	2824197.10 BC
1040	1005763.31	2824186.01 EC
1041	1005770.61	2824186.24 SW
1042	1005770.43	2824192.30 BC
1043	1005764.43	2824192.10 BC
1044	1005643.22	2824022.84 B1
1045	1005602.66	2824060.98 B3
1046	1005726.56	2824111.48 H1
1047	1005686.00	2824149.61 H3

HORIZONTAL AND VERTICAL DATUM:

THE COORDINATES SHOWN HEREON ARE GROUND COORDINATES BASED ON THE MISSOURI STATE PLANE WEST ZONE (NAD 1983) (NAVD 1988) CAF: 0.9999998
1 METER = 3.28083333 U.S. SURVEY FEET
GROUND COORDINATES X COMBINED ADJUSTMENT FACTOR (CAF) = GRID COORDINATES
SCALED AROUND 0.0

JA-142 (PID: 095142)
NORTHING: 302106.953 (METERS) (GRID)
EASTING: 856960.056 (METERS) (GRID)
ELEVATION: 318.0 (METERS)

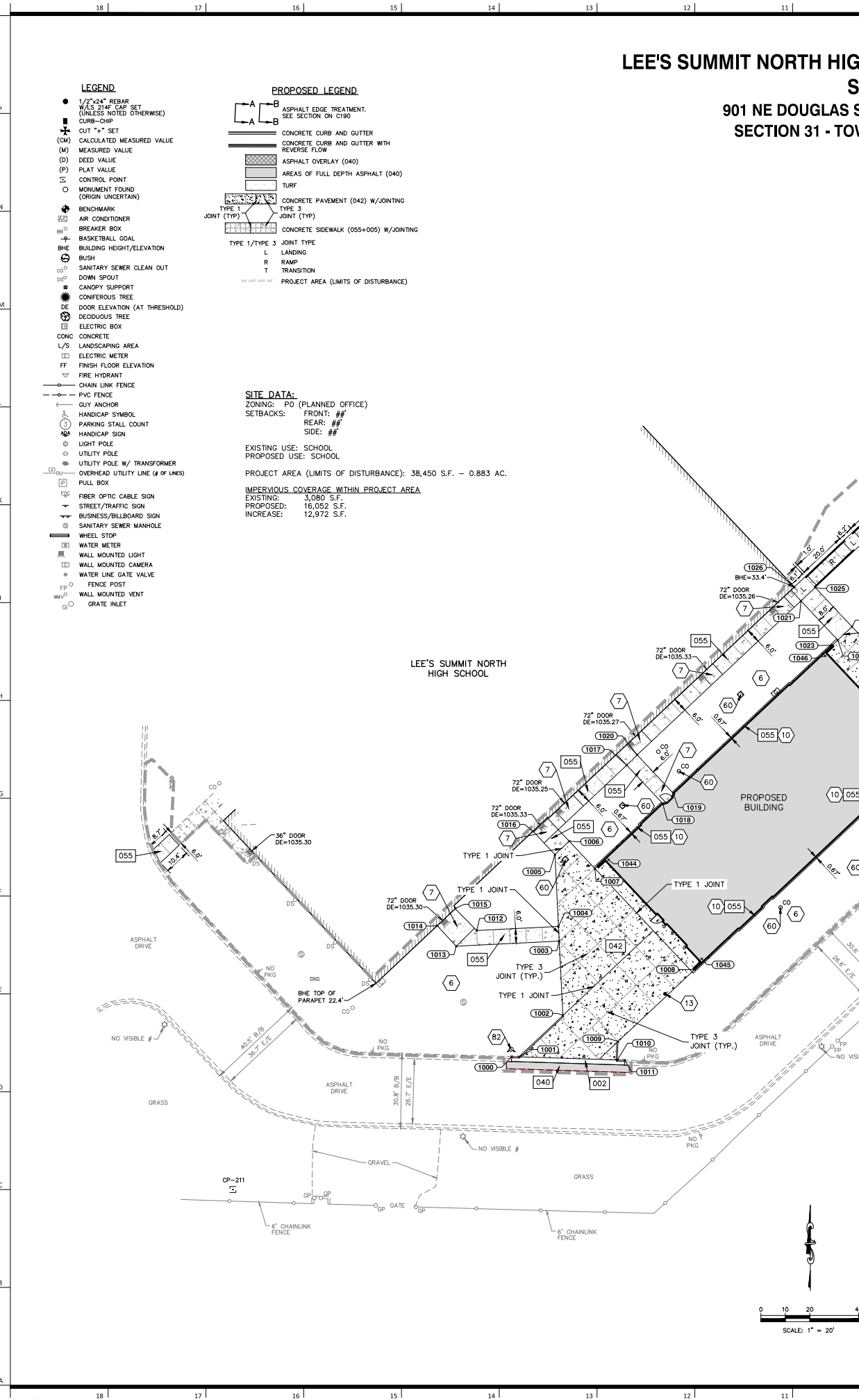
PROJECT CONTROL:

CP-#001
1/2" REBAR FOUND "CAPPED CONTROL POINT"
NORTHING: 1005747.89
EASTING: 2824897.78
ELEV = 1029.48
CP-#002
1/2" REBAR FOUND "CAPPED CONTROL POINT"
NORTHING: 1006282.63
EASTING: 2824855.59
ELEV = 1016.25
CP-#004
SET 1/2" REBAR WITH CONTROL POINT CAP
NORTHING: 1005472.64
EASTING: 2825043.87
ELEV = 1022.57

SITE BENCHMARKS:

BM-1
CHISELED SQUARE ON EAST SIDE OF CONCRETE LIGHT POLE BASE AT SOUTHWEST CORNER OF PARKING LOT WEST OF STADIUM. (POLE # E-24)
ELEVATION = 1027.98
BM-4
CHISELED SQUARE ON NORTH SIDE OF CONCRETE LIGHT POLE BASE AT SOUTHWEST CORNER OF MAINTENANCE BUILDING AT SOUTH END OF TRACK. (POLE # E-26)
ELEVATION = 1023.18

SCALE: 1" = 20'



Lee's Summit Robotics,
Gic & Phys Educaiton

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64086
LSW: 2600 SW Ward Rd, Lee's Summit MO
64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

owner:
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301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Multistudio
4200 Pennsylvania
Kansas City, MO 64111
816.931.6655
multistudio

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318
kveeng.com

structural engineer:
Bob D. Campbell &
4338 Bellevue
Kansas City, MO 64111
816.531.4144
www.bdc-engrs.com

MEPFI/Code:
Hendersen Engineers
8345 Lenexa Drive, Suite
300
Lenexa, KS 66214
816.742.5000
www.hendersenengineers.com

1. PROJECT AREA IS APPROXIMATE LIMITS OF CONSTRUCTION.
2. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE DRAWINGS PRIOR TO BEGINNING EARTHWORK OPERATIONS.
3. THE CONTRACTOR SHALL MAINTAIN ALL SILT CONTROL MEASURES DURING CONSTRUCTION.
4. ALL SILT SHALL REMAIN WITHIN THE CONSTRUCTION LIMITS. SURROUNDING PARKING LOTS AND PLAYGROUNDS SHALL BE KEPT CLEAR OF ALL MUD AND DEBRIS.
5. A SEDIMENTATION BARRIER IS TO BE INSTALLED AS SHOWN.
6. ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE SEDIMENTATION BARRIERS MAINTAINED AS NEEDED TO PREVENT SEDIMENTATION BYPASS OF THE BARRIER.
7. SLOPES ARE TO BE LEFT IN A ROUGH CONDITION DURING GRADING.
8. CURB INLET SEDIMENTATION BARRIERS ARE TO BE INSTALLED AROUND INLETS WHERE SEDIMENTATION IS A CONCERN. INLET BARRIERS SHALL BE FILTER BAGS.
9. SEDIMENT IS TO BE REMOVED FROM STORM WATER DRAINAGE SYSTEMS.
10. CONTRACTOR IS RESPONSIBLE FOR INSTALLING ANY ADDITIONAL EROSION CONTROL AS HE/SHE DEEMS NECESSARY.

11. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, EQUIPMENT AND LABOR AS NECESSARY TO INSTALL AND MAINTAIN ADEQUATE EROSION AND SILTATION CONTROLS REQUIRED TO PREVENT SOIL EROSION FROM LEAVING THE PROJECT SITE. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THAT METHODS UTILIZED ARE ADEQUATE AND COMPLY WITH REQUIREMENTS OF THE SPECIFICATIONS AND GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE WORK.
12. TEMPORARY SEDIMENT FENCE/STRAW WATTLES TO REMAIN UNTIL ADEQUATE VEGETATION IS ESTABLISHED.
13. MUD AND DEBRIS SHALL BE CLEANED UP AT THE CONCLUSION OF EACH WORKING DAY, OR AFTER EACH RAINFALL IF SILT IS PRESENT.

14. INSPECTION, MAINTENANCE AND REPAIR OF EROSION CONTROL DEVICES SHALL BE ON GOING THROUGHOUT THE LIFE OF BUILDING CONSTRUCTION TO KEEP THE DEVICES IN OPERABLE CONDITION AT ALL TIMES. ADDITIONAL MEASURES SHALL BE INSTALLED AS REQUIRED BY ACTUAL FIELD CONDITIONS AND/OR GOVERNING INSPECTION AGENCIES.
15. INSTALL CONSTRUCTION ENTRANCE AS NOTED.

16. AT COMPLETION OF SITE GRADING AND OTHER RELATED CONSTRUCTION ACTIVITIES, ALL DISTURBED AREAS WITHIN THE PROJECT SITE SHALL BE SEEDED, SODED, OR LANDSCAPED AS SHOWN ON THE SITE. IF GRADING ACTIVITIES CEASE ON AN AREA OF THE SITE DISTURBED SLOPES SHALL BE TEMPORARILY SEEDED IN ACCORDANCE WITH PLANS.

17. TOPSOIL IS TO BE PLACED IN AREAS UNSUITABLE FOR VEGETATIVE GROWTH.
18. STRIP TOPSOIL PRIOR TO EXCAVATION, STOCKPILE AND SPREAD ONTO DISKED SUBGRADE (4" MIN) A THICKNESS OF 4 INCHES.

19. THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY FOR RESOLVING COMPLAINTS IN THE EVENT THAT COMPLAINTS OR DAMAGES OCCUR DUE TO DAMAGES OCCURRING ADJACENT TO OR DOWNSTREAM FROM PROPERTY BY SEDIMENT RESULTING FROM EROSION ON THE PROJECT SITE.
20. GOOD HOUSEKEEPING PRACTICES SHALL BE MAINTAINED ON SITE TO KEEP SOLID WASTE FROM ENTRY INTO WATERS.

21. ALL FUELING FACILITIES PRESENT ON SITE SHALL ADHERE TO APPLICABLE FEDERAL AND STATE REQUIREMENTS CONCERNING UNDERGROUND STORAGE, ABOVE GROUND STORAGE AND DISPENSERS, INCLUDING SPILL PREVENTION, CONTROL AND COUNTER MEASURES.
22. EROSION CONTROL IS TO BE PLACED IN PHASING AS CONSTRUCTION PROGRESSES.

23. MINIMAL WASHING OF CONCRETE EQUIPMENT ALLOWED, CHUTE ETC. CONCRETE WASHOUT OF THE DRUM IS NOT ALLOWED. ANY PIT/WASHOUT AREA NEEDS TO BE MAINTAINED IN A NON-DISCHARGING MANNER AND ANY WASTE RESIDUE WILL NEED TO BE CLEANED OUT AND REMOVED AT THE END OF PROJECT.
24. EROSION CONTROL SEDIMENT FENCE OR STRAW WATTLE SHALL BE INSTALLED 1'-0" BEHIND CURB & GUTTER OR SIDEWALK UPON COMPLETION OF BACKFILL OF CURB IN ALL AREAS WHERE SLOPES FROM DISTURBED AREAS DRAIN TOWARDS CURB OR SIDEWALK. UPON COMPLETION OF FINAL GRADING THE TOES OF ALL EMBANKMENTS IN EXCESS OF TWO FEET IN HEIGHT WILL HAVE EROSION CONTROL SEDIMENT FENCE INSTALLED

Issue Date: September 9, 2022

Revisions

NUMBER DESCRIPTION DATE

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Lee's Summit Robotics,
Gic & Phys Educaiton

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structural engineer:
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Henderson Engineers
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300
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NOTES:

- 22 MATCH EXISTING SIDEWALK ELEVATION.
23 MATCH EXISTING PAVEMENT ELEVATION.
24 MATCH EXISTING CURB ELEVATION.

LEGEND (PROPOSED)

- 23.4 BACK OF CURB ELEVATION (ADD 1000),
22.9 FLOWLINE OF CURB ELEVATION (ADD 1000),
22.9 SPOT ELEVATION (ADD 1000),
1000 FINISHED 1' CONTOUR INTERVALS,
TOP OF PAVEMENT
1000 EXISTING GROUND CONTOUR (1' INTERVALS)
SWALE
LP LOW POINT
HP HIGH POINT

NOTE:

1. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
2. THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.

GRADING NOTES:

1. THE CONSTRUCTION AREA SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL AND ORGANIC MATTER FROM ALL AREAS TO BE OCCUPIED BY BUILDING AND PAVING. TOPSOIL FOR REPLACEMENT ON SLOPES MAY BE STOCKPILED ON SITE. EXCESS TOPSOIL MAY BE WASTED IN FILL SLOPES PROVIDED THAT NO TOPSOIL WILL BE WASTED WITHIN 10 FEET OF THE EDGE OF THE BUILDING OR PARKING AREA. BURNING OF TIMBER WILL NOT BE PERMITTED UNLESS APPROVAL IS OBTAINED FROM GOVERNING OFFICIALS. STRIPPING EXISTING TOPSOIL AND ORGANIC MATTER SHALL BE TO A MINIMUM DEPTH OF 6 INCHES. CONSTRUCTION MANAGER SHALL DESIGNATE LOCATION OF STOCKPILE AREAS DURING CONSTRUCTION. ANY UNAUTHORIZED STOCKPILE SHALL BE REMOVE/RELOCATED AT THE CONTRACTORS EXPENSE.
2. AREAS TO RECEIVE FILL SHALL BE SCARIFIED AND THE TOP 12-INCH DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 WITH A MOISTURE CONTENT OF +/-3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT OF LESS THAN 40 AND 0 TO +4% FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40. ANY UNSUITABLE AREAS SHALL BE UNDERCUT AND REPLACED WITH SUITABLE MATERIAL BEFORE ANY FILL MATERIAL CAN BE APPLIED.
3. OFF-SITE SOIL MATERIAL FOR USE UNDER BUILDING AND PAVED AREAS SHALL HAVE A PLASTICITY INDEX OF 25 OR LESS, A LIQUID LIMIT OF 45 OR LESS AND CONTAIN NO ROCK LARGER THAN THREE INCHES. OFF-SITE FILL MATERIAL SHALL BE APPROVED BY THE OWNER'S TESTING AGENCY PRIOR TO BRINGING ON SITE.
4. EARTHWORK UNDER THE BUILDING, PAVING AND LIGHTLY LOADED STRUCTURAL FEATURES SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND PROJECT GEOTECHNICAL REPORT. THE BUILDING PAD SHALL BE EXCAVATED AS REQUIRED TO ALLOW THE PLACEMENT OF LOW VOLUME CHANGE MATERIAL. REFER TO GEOTECHNICAL REPORT FOR PREPARING BUILDING PAD AND LOW VOLUME CHANGE THICKNESS REQUIREMENTS. OTHER FILL MATERIAL SHALL BE MADE IN LIFTS NOT TO EXCEED EIGHT INCHES DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. LVC SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT OF 0 TO +4% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40 AND +/-3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT LESS THAN 40. NO ROCK LARGER THAN THREE INCHES IN ANY DIMENSION NOR ANY SHALE SHALL BE PLACED IN THE TOP 24 INCHES OF EMBANKMENT.
5. AREAS THAT ARE TO BE CUT TO SUBGRADE LEVELS SHALL BE PROOF ROLLED WITH A LOADED DUMP TRUCK OR SIMILAR APPROVED CONSTRUCTION EQUIPMENT TO DETECT UNSUITABLE SOIL CONDITIONS.
6. IN ALL AREAS OF EXCAVATION, IF UNSUITABLE SOIL CONDITIONS ARE ENCOUNTERED, THE OWNER'S ENGINEER SHALL RECOMMEND TO THE OWNER THE METHODS OF UNDERCUTTING AND REPLACEMENT OF PROPERLY COMPACTED, APPROVED FILL MATERIAL. ALL PROOFROLLING AND UNDERCUTTING SHOULD BE PERFORMED DURING A PERIOD OF DRY WEATHER.
7. ALL EXCAVATIONS SHALL BE CONSIDERED AS UNCLASSIFIED. REFER TO PROJECT GEOTECHNICAL REPORT.
8. ALL DISTURBED SLOPES ARE TO BE 3:1 OR FLATTER.
9. ALL SLOPES DISTURBED EXCEEDING 4:1 SHALL BE HYDROSEEDING, SODDED OR PROTECTED BY EROSION CONTROL BLANKETS THAT WILL PREVENT EROSION AND PLACED SUCH THAT THE SURFACE IS FLUSH WITH SURROUNDING GROUND AND SHAPED TO CHANNEL WATER IN DIRECTIONS INDICATED. SEE GENERAL NOTES ON THIS SHEETS.
10. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH AND A MINIMUM OF FOUR INCHES OF TOPSOIL APPLIED, IF ADEQUATE TOPSOIL IS NOT AVAILABLE ON-SITE, THE CONTRACTOR SHALL PROVIDE TOPSOIL, APPROVED BY THE OWNER, AS NEEDED. THE AREA SHALL THEN BE SODDED OR SEED, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. REFER TO THE NOTES ON THIS SHEET FOR TEMPORARY SEEDING SPECIFICATIONS. REFER TO PROJECT SITE PLAN FOR FINAL STABILIZATION TREATMENTS.
11. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS.
12. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
13. IT IS NOT THE DUTY OF THE ENGINEER OR THE OWNER TO REVIEW THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE AT ANY TIME DURING CONSTRUCTION.
14. IF ANY OF THESE NOTES CONFLICT WITH THE PROJECT GEOTECHNICAL REPORT AND ALL ADDENDUMS PREPARED BY CFS ENGINEERS DATED AUGUST 3, 2022 (CFS PROJECT NO. 22-5545), RECOMMENDATIONS IN GEOTECHNICAL REPORT SHALL GOVERN.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

CAUTION - NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SCALE: 1" = 10'



Know what's below.
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KAW VALLEY ENGINEERING, INC. IS AUTHORIZED TO OFFER
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AUTHORITY # 000842. EXPIRES 12/31/23



Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/9/2022
Engineer License No. PE-2015000538

LSN GRADING PLAN

C300-B