

3. OVERALL AREA OF TRACT: 48,730 SQ.FT. (1.12 ACRES)
2. DISTURBED AREA: 37,366 SQ.FT. (0.86 ACRES)
3. SITE ADDRESS: 5615 E. ST.CHARLES RD
COLUMBIA, MO
4. ZONING: M-C MIXED USE – CORRIDOR
5. USE:
EXISTING USE–
PROPOSED USE–
VACANT
RESTAURANT, McDONALD'S
6. OWNER: GKT CLARK LANE LLC
211 N STADIUM BLVD STE 201
COLUMBIA, MO 65203
7. SETBACKS PER M-C ZONING ORDINANCE:
FRONT YARD: 25'
SIDE YARD: 0'
REAR YARD: 0'
8. MAXIMUM BUILDING HEIGHT: 45' MAXIMUM
9. ALL NEW UTILITIES SHALL BE LOCATED UNDERGROUND.
10. ALL NECESSARY UTILITIES (PUBLIC AND PRIVATE) WILL BE AVAILABLE, FUNCTIONING, AND USABLE AT THE TIME ANY STAGE OF THE PROJECT OR THE TOTAL PROJECT IS READY FOR OCCUPANCY.
11. FLOOD PLAIN NOTE:
THIS TRACT IS NOT LOCATED WITHIN A FLOOD HAZARD ZONE AS DEFINED IN CITY ORD. 29-2.3(d)(17). PER THE BOONE COUNTY FIRM PLAN #29019C0284E, WITH AN EFFECTIVE DATE OF APRIL 19, 2014.
THIS TRACT IS NOT REGULATED BY THE CITY OF COLUMBIA STREAM BUFFER ORDINANCE AS DETERMINED BY THE USGS MAP FOR THIS AREA, AND ARTICLE X OF CHAPTER 12A OF THE CITY OF COLUMBIA CODE OF ORDINANCES.
12. PARKING CALCULATIONS: TBD
PARKING REQUIRED = 1 SPACE PER 200 SF OF GROSS FLOOR AREA (3,680/200) = 19 TOTAL SPACES
PARKING PROVIDED = 36 REGULAR SPACES & 2 ADA ACCESSIBLE SPACES = 38 TOTAL SPACES
MAXIMUM PARKING ALLOWED (PER SEC 29-4.3(e)(3))=200% OF MINIMUM REQUIRED = 19 * 2 = 38
13. BICYCLE SPACES: (PER SEC 29-4.3(k))
BICYCLE SPACES REQUIRED: FOR 10 – 50 VEHICLE SPACES = 4 BICYCLE SPACES
14. SANITARY SEWAGE FLOW CALCULATION:
3,680 SQ.FT X 0.1 GALLONS/DAY/UNIT = 368 GPD
TOTAL SEWAGE GENERATED BY THIS DEVELOPMENT = 368 GPD
15. PERFORMANCE GUARANTEE SHALL BE ACQUIRED PRIOR TO CONSTRUCTION.
16. ANY SIGNAGE SHALL BE BY SEPARATE PERMIT.
17. STORMWATER DETENTION AND WATER QUALITY IMPROVEMENTS WILL BE EVALUATED BY THE CITY'S ENGINEER DIVISION DURING THEIR REVIEW OF THE FUTURE SITE IMPROVEMENT PLANS.
18. ALL MECHANICAL EQUIPMENT, WHETHER ROOF OR GROUND MOUNTED, WILL BE SCREENED TO THE HEIGHT OF THE EQUIPMENT IN ACCORDANCE WITH THE CITY'S CODE.
19. IN ORDER TO TERMINATE A STATE OPERATING PERMIT THE MISSOURI DEPARTMENT OF NATURAL RESOURCES (MDNR) REQUIRES THAT THE PERMITTEE SUBMIT A COMPLETED FORM H (INCLUDED WITH THE APPROVED PERMIT) TO THE MDNR. A PERMIT IS ELIGIBLE FOR TERMINATION WHEN EITHER PERENNIAL VEGETATION, BUILDINGS, OR STRUCTURES USING PERMANENT MATERIALS COVER ALL AREAS THAT HAVE BEEN DISTURBED. VEGETATIVE COVER SHALL BE AT LEAST 70% OF FULLY ESTABLISHED PLANT DENSITY OVER 100% OF THE DISTURBED AREA. A COPY OF FORM H SHOULD BE SUBMITTED TO THE CITY AT WHICH TIME THE CITY WILL REMOVE THE PROJECT FROM ITS INSPECTION SCHEDULE.
20. LAND DISTURBANCE SITES SHALL BE INSPECTED ON A REGULAR SCHEDULE AND WITHIN A REASONABLE TIME PERIOD (NOT TO EXCEED 48 HOURS) FOLLOWING HEAVY RAINS. REGULARLY SCHEDULED INSPECTIONS SHALL BE AT A MINIMUM OF ONCE PER WEEK. ANY DEFICIENCIES SHALL BE NOTED IN A WEEKLY REPORT OF THE INSPECTION AND CORRECTED WITHIN SEVEN CALENDAR DAYS OF THE REPORT. CONTRACTORS ARE REQUIRED TO SUBMIT TO CITY INSPECTION STAFF COPIES OF THEIR INSPECTION REPORTS REQUIRED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) ON A MONTHLY BASIS IF REQUESTED.
21. THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE CITY'S LATEST EDITION OF THE STREET AND STORM SEWER SPECIFICATIONS AND STANDARDS ON SITE AT ALL TIMES DURING CONSTRUCTION

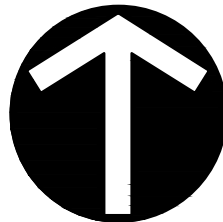
IMPERVIOUS COVER CALCULATIONS			
SITE AREA			
	AREA (SF)	AREA (AC)	
TOTAL SITE AREA	48,730	1.12	
EXISTING SITE IMPERVIOUS COVER			
	AREA (SF)	AREA (AC)	
BUILDING/ROOF	0	0.00	
PVMT/CONC/MISC	0	0.00	
TOTAL IMPERVIOUS AREA	0	0.00	0.0%
PROPOSED SITE IMPERVIOUS COVER			
	AREA (SF)	AREA (AC)	
BUILDING/ROOF	3,680	0.08	7.6%
PVMT/CONC/MISC	31,893	0.73	65.4%
TOTAL IMPERVIOUS AREA	35,573	0.82	73.0%

1. THE SURVEY WAS PREPARED FROM ITEMS FURNISHED TO CIVIL & ENVIRONMENTAL CONSULTANTS, INC. BY CHURCH TITLE INSURANCE COMPANY.
2. BASIS OF BEARING FOR THE SURVEY IS MISSOURI EAST STATE PLANE. SITE WAS SCALED TO GROUND USING A GROUND SCALE FACTOR DERIVED FROM A CENTRAL POINT ON SITE USING TRIMBLE ACCESSORY SOFTWARE ON A TSC2 DATA COLLECTOR. SAID POINT IS AT
LAT 38°57'45.16078"W
LONG 92°15'11.47010"W
HEIGHT 719.095'
GROUND SCALE FACTOR=1.0000953593
3. BENCHMARK INFORMATION: MISSOURI DEPARTMENT OF NATURAL RESOURCES BENCHMARK BO-12, DESCRIBED AS STANDARD MO DNR GRS DISK STAMPED "BO 12 1992"
ELEVATION NAVD 1988 = 832.84
HORIZONTAL NAD 1983 = N: 1,138,428.13, E: 1,713,132.22
4. THE SURVEY WAS PREPARED IN ACCORDANCE WITH THE CURRENT STANDARDS FOR PROPERTY BOUNDARY SURVEYS, 20 CSR 20330-16.010 AND THE RESULTS ARE SHOWN HEREON.
5. PUBLIC UTILITIES WERE LOCATED AND FLAGGED BY THE MISSOURI ONE CALL SYSTEM TICKET NUMBERS 232290545. ALL GROUND MARKINGS WERE VERIFIED IN THE FIELD. THE SYMBOLS AND LINE-WORK OF WHICH REPRESENT WHAT WAS PRESENT AT TIME OF SURVEY.
6. TOTAL LAND AREA OF SURVEYED PROPERTY IS 48,724.21 SQUARE FEET OR 1.118 ACRES ±.
7. THERE ARE NO PARKING STALLS ON THIS PROPERTY.
8. THERE IS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.
9. PROPERTY LIES APPROXIMATELY 300' SOUTH OF THE INTERSECTION OF EAST ST. CHARLES ROAD AND EAST CLARK LANE, THE NEAREST INTERSECTION STREET.
10. SURVEYED PARCELS AND ADJOINING PARCEL ARE CONTIGUOUS AND NO GAPS OR GORES EXIST BETWEEN SAID PARCELS.

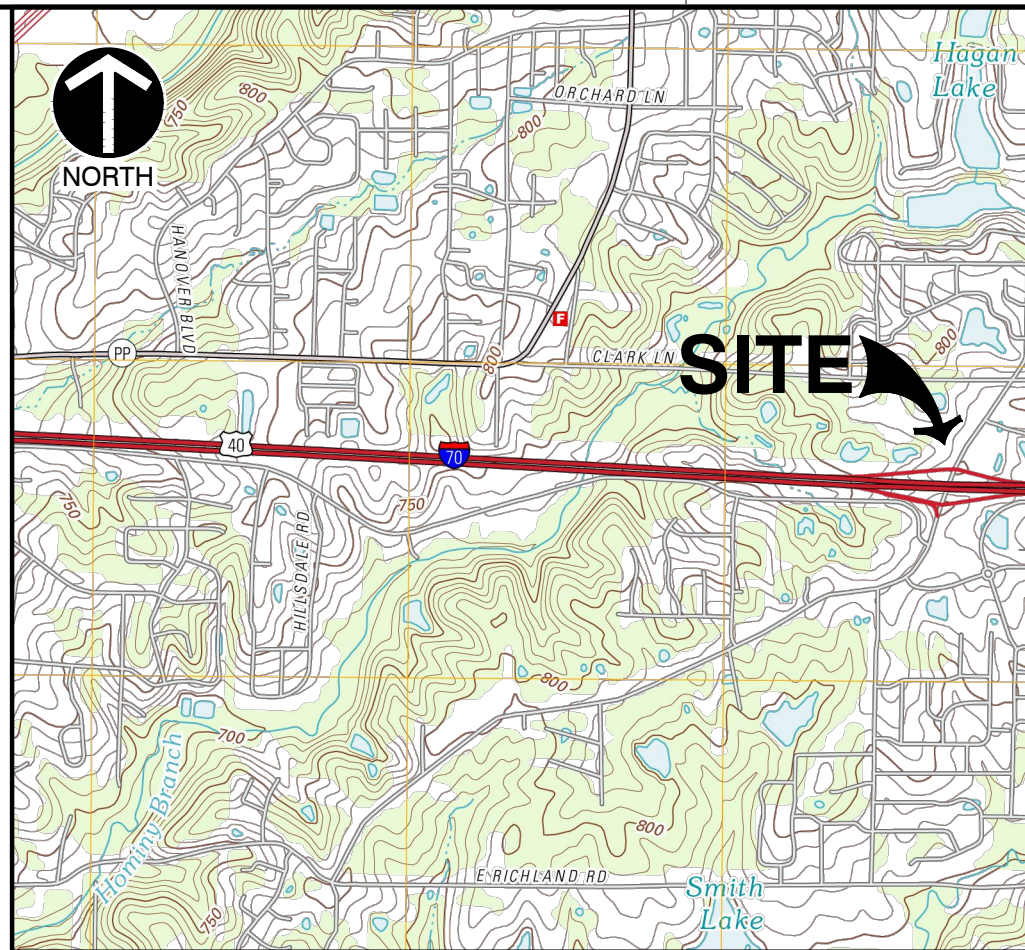
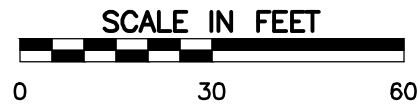


- # SITE PLAN FOR A PROPOSED **McDONALD'S RESTAURANT** NSN41181 (024-1301)

**A TRACT OF LAND BEING LOT 3 OF BATTLE CROSSING PLAT 1, A SUBDIVISION, AND BEING PART OF SECTION 10, TOWNSHIP 48 NORTH, RANGE 12 WEST, AS RECORDED IN PLAT BOOK 54 PAGE 38
BOONE COUNTY, MISSOURI**



NORTH



SITE USGS AND VICINITY MAP
U.S.G.S. 7.5 TOPOGRAPHIC MAP, COLUMBIA QUADRANGLE, MO, DATED 2011
SCALE 1" = 24000'



OVERALL SITE MAP
SCALE 1" = 500'

Sheet Number	Sheet Title	Sheet Description
01	C000	COVER SHEET
02	C001	GENERAL NOTES
03	C100	EXISTING CONDITIONS & DEMOLITION PLAN
04	C200	SITE PLAN
05	C300	GRADING PLAN
06	C500	UTILITY PLAN
07	C501	SEWER PROFILES
08	C700	LANDSCAPE PLAN
09	C701	LANDSCAPE DETAILS
10	C800	CONSTRUCTION DETAILS
11	C801	CONSTRUCTION DETAILS
12	C802	CONSTRUCTION DETAILS
13	C803	SIGN FOUNDATION DETAILS
14	C804	SIGN FOUNDATION DETAILS
15	C900	EROSION & SEDIMENT CONTROL PLAN
16	C901	EROSION & SEDIMENT CONTROL DETAILS & NOTES
17	C902	EROSION & SEDIMENT CONTROL NOTES & DETAILS
18	HD1	DRAINAGE AREA MAPS
19	HD2	WATER QUALITY DETAILS
20	LIGHTING	LIGHTING PHOTOMETRICS
21	IR-1	IRRIGATION PLAN
22	IR-2	IRRIGATION DETAILS
23	IR-3	IRRIGATION SPECS

STORM SEWER DISTRICT
CITY OF COLUMBIA
701 E. BROADWAY
COLUMBIA, MO 65205
CONTACT: RICK KAUFFMEN
PHONE: (573) 874-7575
EMAIL: rick.kauffmen@como.gov

SANITARY SEWER DISTRICT
CITY OF COLUMBIA
701 E. BROADWAY
COLUMBIA, MO 65205
CONTACT: JUSTIN FESSLER
PHONE: (573) 874-6308
EMAIL: justin.fessler@como.gov

WATER DISTRICT
COLUMBIA WATER & LIGHT
P.O. BOX 6015
COLUMBIA, MO 65205
CONTACT: DAVID WHITAKER
PHONE: (573) 874-7443
EMAIL: david.whitaker@como.gov

ELECTRIC SERVICE
BOONE COUNTY ELECTRIC
1413 RANGELINE STREET
COLUMBIA, MO 65201
CONTACT: KIRK PICKETT
PHONE: (573) 441-7322

GAS SERVICE
AMEREN MISSOURI
2001 MAGUIRE BOULEVARD
COLUMBIA, MO 65203
CONTACT: DAVID HAGENHOFF
PHONE: (574) 876-3030
EMAIL: dhagenhoff@ameren.com

TELEPHONE / FIBER
CENTURYLINK
CONTACT: ALEX BRESHEARS
PHONE: (800) 526-3557, OPT. 5
EMAIL: N/A

FIRE PROTECTION
COLUMBIA FIRE DEPARTMENT
201 ORR STREET
COLUMBIA, MO 65201
CONTACT: MICHAEL BAUER
PHONE: (573) 874-7394

PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



COVER SHEET

DRAWING NO.:

C000

SHEET 01 OF 23

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



EEC
Civil & Environmental Consultants, Inc.
CERTIFICATION/LICENSE NO. 2002013942
8000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-556-4566 · 866-250-3679
www.eecinc.com

[illegible]

SURVEY NOTES

1. EXISTING CONDITIONS AS DEPICTED ON THESE PLANS ARE GENERAL AND ACCURATE IN NATURE. THE RESPONSIBILITY OF THE CONTRACTOR TO EXAMINE THE SITE AND BE FAMILIAR WITH EXISTING CONDITIONS PRIOR TO BIDDING ON THIS PROJECT. IF CONDITIONS ENCOUNTERED DURING EXAMINATION ARE SIGNIFICANTLY DIFFERENT THAN THOSE SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
2. THE CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR REMEDIATING ANY APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
3. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER, OWNER, AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES TO PERSONNEL, EQUIPMENT AND/OR EXISTING FACILITIES OCCURRING IN THE COURSE OF THE DEMOLITION AND CONSTRUCTION DESCRIBED IN THE PLANS AND SPECIFICATIONS.
4. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL APPLICABLE PERMITS, AND PAY ALL REQUIRED FEES PRIOR TO BEGINNING WORK.
5. ALL WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE LATEST REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT. IF DEVIATION FROM THE REQUIREMENTS ARE PROPOSED THE ENGINEER SHALL BE CONTACTED IMMEDIATELY.
6. CONTRACTOR SHALL REFER TO OTHER PLANS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.
8. BEFORE INSTALLATION OF STORM OR SANITARY SEWER, OR OTHER UTILITY, THE CONTRACTOR SHALL VERIFY ALL CROSSINGS, BY EXCAVATION WHERE NECESSARY, AND INFORM THE OWNER AND THE ENGINEER OF ANY CONFLICTS. THE ENGINEER WILL BE HELD HARMLESS IN THE EVENT HE IS NOT NOTIFIED OF DESIGN CONFLICTS PRIOR TO CONSTRUCTION.
9. UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

DEMOLITION NOTES

1. ALL EXISTING ABOVE AND BELOW GROUND STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE REMOVED UNLESS NOTED OTHERWISE WITHIN THIS CONSTRUCTION SET AND/OR PROJECT SPECIFICATIONS. THIS INCLUDES FOUNDATION SLABS, WALLS, AND FOOTINGS. CAVITIES LEFT BY STRUCTURE REMOVAL SHALL BE BACKFILLED WITH SATISFACTORY MATERIALS AND COMPACTED TO 98% OF MAXIMUM DENSITY PER ASTM D-698 OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
2. CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD.
3. ALL DEMOLITION WASTE AND CONSTRUCTION DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE IN A STATE APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. REPAIR DAMAGE ACCORDING TO THE APPROPRIATE UTILITY COMPANY STANDARDS AND AT THE CONTRACTOR'S EXPENSE.
4. ALL UTILITY DISCONNECTION, REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY / AGENCY. UTILITY CONTACTS ARE LISTED ON THE SITE UTILITY PLAN.
5. THE BURNING OF CLEARED MATERIAL AND DEBRIS SHALL NOT BE ALLOWED UNLESS CONTRACTOR OBTAINS PRIOR WRITTEN AUTHORIZATION FROM THE LOCAL AUTHORITIES.
6. EROSION AND SEDIMENTATION CONTROL MEASURES AROUND AREAS OF DEMOLITION SHALL BE PROPERLY INSTALLED AND SHALL FUNCTION PROPERLY PRIOR TO INITIALIZATION OF DEMOLITION ACTIVITIES.
7. ASBESTOS OR HAZARDOUS MATERIALS ARE NOT EXPECTED, IF FOUND ON SITE, SUCH MATERIALS SHALL BE REMOVED BY A LICENSED HAZARDOUS MATERIALS CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IF HAZARDOUS MATERIALS ARE ENCOUNTERED.
8. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE, FEDERAL AND OSHA REGULATIONS DURING ALL DEMOLITION ACTIVITIES.
9. CONTRACTOR SHALL PROTECT ALL CORNER PINS, MONUMENTS, PROPERTY CORNERS AND BENCHMARKS DURING DEMOLITION ACTIVITIES. IF DISTURBED, CONTRACTOR SHALL HAVE DISTURBED ITEMS RESET BY A LICENSED SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND FEATURES TO REMAIN. ANY ITEMS TO REMAIN THAT HAVE BEEN DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
11. CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH STATE DEPARTMENT OF TRANSPORTATION REGULATIONS AND AS REQUIRED BY LOCAL AGENCIES WHEN WORKING IN AND/OR ALONG STREETS, ROADS, HIGHWAYS, ETC. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL AND COORDINATE WITH LOCAL AND/OR STATE AGENCIES REGARDING THE NEED, EXTENT AND LIMITATIONS ASSOCIATED WITH INSTALLING AND MAINTAINING TRAFFIC CONTROL MEASURES.
12. PROVIDE NEAT, STRAIGHT, FULL DEPTH, SAW CUTS OF EXISTING PAVEMENT WHERE INDICATED ALONG LIMITS OF PAVEMENT DEMOLITION.
13. ALL UTILITY AND STRUCTURE REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED AND PROPERLY DOCUMENTED BY A CERTIFIED PROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY COMPANY, MUNICIPALITY AND/OR AGENCY. DEMOLITION OF REGULATED ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO: WELLS, ASBESTOS, UNDER GROUND STORAGE TANKS, SEPTIC TANKS AND ELECTRIC TRANSFORMERS. DEMOLITION CONTRACTOR SHALL REFER TO ANY ENVIRONMENTAL STUDIES FOR DEMOLITION RECOMMENDATIONS AND GUIDANCE. AVAILABLE ENVIRONMENTAL STUDIES MAY INCLUDE, BUT ARE NOT LIMITED TO: PHASE I ESA, PHASE II, WETLAND AND STREAM DELINEATION AND ASBESTOS SURVEY. ALL APPLICABLE ENVIRONMENTAL STUDIES SHALL BE MADE AVAILABLE UPON REQUEST.
14. NO TREES SHALL BE REMOVED, NOR VEGETATION DISTURBED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
16. ALL PAVEMENT, BASE COURSES, SIDEWALKS, CURBS, BUILDINGS, FOUNDATIONS, ETC., WITHIN THE AREA TO BE DEMOLISHED SHALL BE REMOVED TO FULL DEPTH. EXISTING BASE COURSE MATERIALS MAY BE WORKED INTO THE NEW PAVEMENT OR BUILDING SUBGRADE PROVIDED THAT THE GRADATION, CONSISTENCY, COMPACTION, SUBGRADE CONDITION, ETC., ARE IN ACCORDANCE WITH THE SPECIFICATIONS AND RECOMMENDATIONS OF THE REPORT OF GEOTECHNICAL INVESTIGATION. BASE COURSE MATERIALS SHALL NOT BE WORKED INTO THE SUBGRADE AREAS TO RECEIVE LANDSCAPING.
17. THE CONTRACTOR SHALL USE SUITABLE METHODS TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION ACTIVITIES.



LAYOUT NOTES

1. THE CONTRACTOR SHALL CHECK EXISTING GRADES, DIMENSIONS, AND INVERTS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES, INCLUDING IRRIGATION LINES. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. RELOCATE EXISTING UTILITIES AS INDICATED, OR AS NECESSARY FOR CONSTRUCTION.
3. PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. INSTALL ALL UTILITIES, INCLUDING IRRIGATION SLEEVING, PRIOR TO INSTALLATION OF PAVED SURFACES.
4. THE CONTRACTOR SHALL PROTECT ALL TREES TO REMAIN.
5. SITE WORK CONCRETE WALKS AND PADS SHALL HAVE A BROOM FINISH TO ALL SURFACES. SITE WORK CONCRETE SHALL BE CLASS 'A' (4,000 PSI @ 28 DAYS) UNLESS OTHERWISE NOTED.
6. ALL DAMAGE TO EXISTING PAVEMENT TO REMAIN WHICH RESULTS FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH LIKE MATERIALS AT THE CONTRACTOR'S EXPENSE.
7. SITE DIMENSIONS SHOWN ARE TO THE BACK OF CURB UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL MAINTAIN ONE SET OF AS-BUILT / RECORD DRAWINGS ON THE JOB SITE DURING CONSTRUCTION FOR DISTRIBUTION TO THE OWNER AND/OR OWNER'S REPRESENTATIVE UPON COMPLETION.
9. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS AND LOCATIONS OF UTILITY SERVICE ENTRY LOCATIONS AND PRECISE BUILDING DIMENSIONS. SHOULD SIGNIFICANT DEVIATION EXIST BETWEEN WHAT IS SHOWN HEREIN THE CONTRACTOR SHALL CONTACT THE ENGINEER.

DRAINAGE NOTES

1. DISTANCES SHOWN ON PIPING ARE HORIZONTAL DISTANCES FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE, UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE INSTALLATION, INSPECTION, TESTING AND FINAL ACCEPTANCE OF ALL NEW STORMWATER MANAGEMENT FACILITIES CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE REGULATING AGENCIES CONCERNING INSTALLATION, INSPECTION AND APPROVAL OF THE STORM DRAINAGE SYSTEM CONSTRUCTION.
3. ALL STORMWATER MANAGEMENT FACILITIES, INCLUDING COLLECTION AND CONVEYANCE STRUCTURES SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES AND REGULATIONS.
4. ANY WORK PERFORMED IN THE LOCAL OR STATE RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL OR STATE REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE NECESSARY PERMITS FOR THE WORK, SCHEDULE NECESSARY INSPECTIONS, AND PROVIDE THE NECESSARY TRAFFIC CONTROL MEASURES AND DEVICES, ETC., FOR WORK PERFORMED IN THE RIGHT OF WAYS.
5. ALL MANHOLE TOPS BUILT WITHOUT ELEVATIONS FURNISHED BY THE ENGINEER WILL BE THE RESPONSIBILITY OF THE SEWER CONTRACTOR.
21. ALL AREAS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF NOT LESS THAN 6 INCHES AND THEN COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS GIVEN BELOW. NATURAL SLOPES STEEPER THAN 1 VERTICAL TO 5 HORIZONTAL TO RECEIVE FILL SHALL HAVE HORIZONTAL BENCHES, CUT INTO THE SLOPES BEFORE THE PLACEMENT OF ANY FILL. THE WIDTH AND HEIGHT TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER. THE FILL SHALL BE LOOSELY PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 8 INCHES IN THICKNESS AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS GIVEN BELOW. THE GEOTECHNICAL ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE ACCEPTABILITY OF SOILS PLACED. ANY UNACCEPTABLE SOILS PLACED SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE.
22. THE SEQUENCE OF OPERATION IN THE FILL AREAS WILL BE FILL, COMPACT, VERIFY ACCEPTABLE SOIL DENSITY, AND REPETITION OF THE SEQUENCE. THE ACCEPTABLE MOISTURE CONTENTS DURING THE FILLING OPERATION ARE THOSE AT WHICH SATISFACTORY DRY DENSITIES CAN BE OBTAINED. THE ACCEPTABLE MOISTURE CONTENTS DURING THE FILLING OPERATION IN THE REMAINING AREAS ARE FROM 2 TO 8 PERCENT ABOVE THE OPTIMUM MOISTURE CONTROL.
23. THE SURFACE OF THE FILL SHALL BE FINISHED SO THAT IT WILL NOT IMPOUND WATER. IF AT THE END OF A DAYS WORK IT WOULD APPEAR THAT THERE MAY BE RAIN PRIOR TO THE NEXT WORKING DAY, THE SURFACE SHALL BE FINISHED SMOOTH. IF THE SURFACE HAS BEEN FINISHED SMOOTH FOR ANY REASON, IT SHALL BE SCARIFIED BEFORE PROCEEDING WITH THE PLACEMENT OF SUCCEEDING LIFTS. FILL SHALL NOT BE PLACED ON FROZEN GROUND, NOR SHALL FILLING OPERATIONS CONTINUE WHEN THE TEMPERATURE IS SUCH AS TO PERMIT THE LAYER UNDER PLACEMENT TO FREEZE.
24. ALL FILLED PLACES, INCLUDING TRENCH BACKFILLS, UNDER BUILDINGS, PROPOSED STORM & SANITARY SEWER LINES, ETC. SHALL BE COMPACTED TO THE CRITERIA AS SPECIFIED BY THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT OR BE EQUAL TO THE REQUIREMENTS OF THE CITY OF COLUMBIA IF SO ESTABLISHED.
25. ANY CONTAMINATED SOIL ENCOUNTERED DURING EXCAVATION SHALL BE HAILED AND PLACED AS DIRECTED BY THE OWNERS ENVIRONMENTAL ENGINEERING REPRESENTATIVE.

GRADING NOTES

1. CONTRACTOR SHALL ADHERE TO THE EROSION CONTROL PLAN PREPARED FOR THIS PROJECT.
2. REFER TO AND FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT PREPARED BY JACOBI GEOTECHNICAL ENGINEERING, INC. DATED SEPTEMBER 2023.
3. EARTHWORK SHALL INCLUDE CLEARING AND GRUBBING, STRIPPING AND STOCKPILING OF TOPSOIL, MATERIAL GRADING, EXCAVATION, FILLING, UNDER CUT AND REPLACEMENT, IF REQUIRED, AND COMPACTION.
4. CONTRACTOR TO REFILL UNDERCUT AREAS WITH SUITABLE MATERIAL AND COMPACT AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
5. PLACE TOPSOIL OVER THE SUBGRADE OF UNPAVED, DISTURBED AREAS TO A DEPTH INDICATED ON THE LANDSCAPE PLANS (6" MINIMUM).
6. PAVEMENT SLOPES ACROSS ACCESSIBLE PARKING STALLS AND ADJOINING ACCESS AISLES SHALL BE MAXIMUM 2% .
7. NO SLOPE SHALL EXCEED 3:1 (HORIZONTAL:VERTICAL) UNLESS NOTED OTHERWISE.
8. ALL AREAS NOT PAVED SHALL BE STABILIZED IN ACCORDANCE WITH THE EROSION CONTROL PLAN, UNLESS NOTED OTHERWISE.
9. ALL EXCESS SOIL MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
10. ALL EVACUATED AREAS BENEATH AND WITHIN TWO FEET OF THE PAVEMENT SHALL BE BACKFILLED WITH GRANULAR MATERIAL AND COMPACTED TO 90% MAXIMUM DENSITY AS DETERMINED BY THE "STANDARD AASHTO T-180 COMPACTION TEST" (ASTM D-1557-70). ALL OTHER AREAS MAY BE BACKFILLED WITH EXCAVATED MATERIAL PLACED IN THE 8" MAXIMUM THICKNESS LIFTS, FREE OF FROZEN PARTICLES, AND COMPACTED TO 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557-70 OR AS OTHERWISE DETERMINED BY THE GEOTECHNICAL ENGINEER.
11. ALL SOILS TEST SHALL BE VERIFIED BY A GEOTECHNICAL ENGINEER CONCURRENT WITH THE GRADING AND BACKFILLING OPERATIONS.
12. A GEOTECHNICAL ENGINEER SHALL BE EMPLOYED BY THE OWNER AND BE ON SITE DURING GRADING OPERATIONS. ALL SOILS TESTS SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER CONCURRENT WITH THE GRADING AND BACK FILLING OPERATIONS.
13. THE GRADING CONTRACTOR SHALL PERFORM A COMPLETE GRADING AND COMPACTION OPERATION AS SHOWN ON THE PLANS, STATED IN THESE NOTES, OR REASONABLY IMPLIED THERE FROM, ALL IN ACCORDANCE WITH THE PLANS AND NOTES AS INTERPRETED BY THE GEOTECHNICAL ENGINEER.
14. ALL AREAS SHALL BE ALLOWED TO DRAIN. ALL LOW POINTS SHALL BE PROVIDED WITH TEMPORARY DITCHES.
15. ANY EXISTING TRASH AND DEBRIS CURRENTLY ON THIS PROPERTY MUST BE REMOVED AND DISPOSED OF OFF-SITE IN AN APPROVED MANNER.
16. SITE PREPARATION INCLUDES THE CLEARANCE OF ALL STUMPS, TREES, BUSHES, SHRUBS, AND WEEDS, THE GRUBBING AND REMOVAL OF ROOTS AND OTHER SURFACE OBSTRUCTIONS FROM THE SITE; AND THE DEMOLITION AND REMOVAL OF ANY MAN-MADE STRUCTURES. THE UNSUITABLE MATERIAL SHALL BE PROPERLY DISPOSED OF OFF-SITE. TOPSOIL AND GRASS IN THE FILL AREAS SHALL BE THOROUGHLY DISSED PRIOR TO THE PLACEMENT OF ANY FILL. THE GEOTECHNICAL ENGINEER SHALL APPROVE THE DISCING OPERATION.
17. TREE CLEARING WILL BE PERFORMED BY THE OWNER IN ADVANCE OF FULL SITE WORK (NOT INCLUDING STUMP GRINDING).
18. COMPACTION EQUIPMENT SHALL CONSIST OF TAMPING ROLLERS, PNEUMATIC-TIRED ROLLERS, VIBRATORY ROLLER, OR HIGH SPEED IMPACT TYPE DRUM ROLLERS ACCEPTABLE TO THE GEOTECHNICAL ENGINEER. THE ROLLER SHALL BE DESIGNED SO AS TO AVOID THE CREATION OF A LAYERED FILL WITHOUT PROPER BLENDING OF SUCCESSIVE FILL LAYERS.
19. THE GEOTECHNICAL ENGINEER SHALL OBSERVE AND TEST THE PLACEMENT OF THE FILL TO VERIFY THAT SPECIFICATIONS ARE MET. A SERIES OF FILL DENSITY TESTS WILL BE DETERMINED ON EACH LIFT OF FILL. INTERIM REPORTS SHOWING FILL QUALITY WILL BE MADE TO THE OWNER AT REGULAR INTERVALS.
20. THE GEOTECHNICAL ENGINEER SHALL NOTIFY THE CONTRACTOR OF REJECTION OF A LIFT OF FILL OR PORTION THEREOF. THE CONTRACTOR SHALL REWORK THE REJECTED PORTION OF FILL AND OBTAIN NOTIFICATION FROM THE GEOTECHNICAL ENGINEER OF ITS ACCEPTANCE PRIOR TO THE PLACEMENT OF ADDITIONAL FILL.
21. ALL AREAS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF NOT LESS THAN 6 INCHES AND THEN COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS GIVEN BELOW. NATURAL SLOPES STEEPER THAN 1 VERTICAL TO 5 HORIZONTAL TO RECEIVE FILL SHALL HAVE HORIZONTAL BENCHES, CUT INTO THE SLOPES BEFORE THE PLACEMENT OF ANY FILL. THE WIDTH AND HEIGHT TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER. THE FILL SHALL BE LOOSELY PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 8 INCHES IN THICKNESS AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS GIVEN BELOW. THE GEOTECHNICAL ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE ACCEPTABILITY OF SOILS PLACED. ANY UNACCEPTABLE SOILS PLACED SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE.
22. THE SEQUENCE OF OPERATION IN THE FILL AREAS WILL BE FILL, COMPACT, VERIFY ACCEPTABLE SOIL DENSITY, AND REPETITION OF THE SEQUENCE. THE ACCEPTABLE MOISTURE CONTENTS DURING THE FILLING OPERATION ARE THOSE AT WHICH SATISFACTORY DRY DENSITIES CAN BE OBTAINED. THE ACCEPTABLE MOISTURE CONTENTS DURING THE FILLING OPERATION IN THE REMAINING AREAS ARE FROM 2 TO 8 PERCENT ABOVE THE OPTIMUM MOISTURE CONTROL.
23. THE SURFACE OF THE FILL SHALL BE FINISHED SO THAT IT WILL NOT IMPOUND WATER. IF AT THE END OF A DAYS WORK IT WOULD APPEAR THAT THERE MAY BE RAIN PRIOR TO THE NEXT WORKING DAY, THE SURFACE SHALL BE FINISHED SMOOTH. IF THE SURFACE HAS BEEN FINISHED SMOOTH FOR ANY REASON, IT SHALL BE SCARIFIED BEFORE PROCEEDING WITH THE PLACEMENT OF SUCCEEDING LIFTS. FILL SHALL NOT BE PLACED ON FROZEN GROUND, NOR SHALL FILLING OPERATIONS CONTINUE WHEN THE TEMPERATURE IS SUCH AS TO PERMIT THE LAYER UNDER PLACEMENT TO FREEZE.
24. ALL FILLED PLACES, INCLUDING TRENCH BACKFILLS, UNDER BUILDINGS, PROPOSED STORM & SANITARY SEWER LINES, ETC. SHALL BE COMPACTED TO THE CRITERIA AS SPECIFIED BY THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT OR BE EQUAL TO THE REQUIREMENTS OF THE CITY OF COLUMBIA IF SO ESTABLISHED.
25. ANY CONTAMINATED SOIL ENCOUNTERED DURING EXCAVATION SHALL BE HAILED AND PLACED AS DIRECTED BY THE OWNERS ENVIRONMENTAL ENGINEERING REPRESENTATIVE.

UTILITY NOTES

1. ALL PROPOSED UTILITY LINES AND EXTENSIONS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CORRESPONDING UTILITY'S SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE UTILITY DISCONNECTIONS WITH THE APPROPRIATE AGENCY.
2. THE CONTRACTOR IS PARTICULARLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES SHOWN HEREON IS BASED ON TOPOGRAPHIC SURVEYS AND RECORD DRAWINGS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. SHOULD UNCHARTED UTILITIES BE ENCOUNTERED DURING EXCAVATION OPERATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AS SOON AS POSSIBLE FOR INSTRUCTIONS. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION AND REQUEST FIELD VERIFICATION OF UTILITY LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO RELOCATE EXISTING UTILITIES CONFLICTING WITH IMPROVEMENTS SHOWN HEREON IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS.
3. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SEQUENCING OF CONSTRUCTION FOR ALL UTILITY LINES SO THAT WATER LINES, GAS LINES, AND UNDERGROUND ELECTRIC DO NOT CONFLICT WITH SANITARY SEWERS OR STORM SEWERS. INSTALL UTILITIES PRIOR TO PAVEMENT CONSTRUCTION.
5. ALL TRENCH SPOILS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFF SITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
6. ADJUST ALL EXISTING UTILITY SURFACE FEATURES INCLUDING BUT NOT LIMITED TO CASTINGS, VALVE BOXES, PEDESTALS, CLEANOUTS, ETCETERA, TO MATCH PROPOSED FINISHED GRADES, UNLESS OTHERWISE INDICATED.
7. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS OF ALL IMPROVEMENTS. INCLUDE AT LEAST TWO DIMENSIONS TO EACH VALVE AND MANHOLE FROM KNOWN SITE FEATURES. DRAWINGS SHALL INCLUDE HORIZONTAL AND VERTICAL INFORMATION ON ALL NEW UTILITIES AS WELL AS EXISTING UTILITIES ENCOUNTERED.
8. CONTRACTOR SHALL COORDINATE WITH EACH UTILITY PROVIDER THE INSTALLATION OF UTILITY CONDUITS FOR TELEPHONE, ELECTRIC, GAS, IRRIGATION, AND ETCETERA. CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR FOR THE TRENCHING AND CONDUIT INSTALLATION. COST FOR INSTALLATION AND MATERIALS SHALL BE INCLUDED IN VARIOUS BID ITEMS.
9. GAS SERVICE SHOWN IS TO BE CONSTRUCTED BY THE BUILDING CONTRACTOR, FROM THE MAIN TO THE BUILDING. ALL VALVES & TEES PER GAS COMPANY SPECIFICATIONS. LOCATIONS AND SIZES WILL BE DETERMINED AT A LATER DATE.
10. ALL DOWNSPOUT COLLECTORS TO BE CONSTRUCTED OF PVC SDR-35 OR SIMILAR, OR AS REQUIRED BY CODE.
11. ALL METER VALVE BOXES SHALL BE PER WATER COMPANY SPECIFICATIONS.
12. THE SITE LIGHTING LAYOUT SHOWN HEREON IS BY OTHERS AND IS FOR COORDINATION PURPOSES ONLY. CIVIL & ENVIRONMENTAL CONSULTANTS, INC. HAS NOT PERFORMED A SITE LIGHTING DESIGN FOR THIS PROJECT AND SUCH SHALL NOT BE INFERRED DUE THE ILLUSTRATION OF FIXTURE DESIGNATIONS AND LOCATIONS SHOWN HEREON. PLEASE REFER TO SEPARATE PLANS BY OTHERS FOR DETAILED FIXTURE AND POLE SPECIFICATIONS, ELECTRICAL LAYOUT AND CONTROL SYSTEM DESIGNS AND ANY OTHER SITE LIGHTING ELEMENTS.
13. ALL TRENCH BACKFILLS UNDER PAVED AREAS SHALL BE GRANULAR BACKFILL AND SHALL BE COMPACTED TO 90% OF THE MAXIMUM DENSITY AS DETERMINED BY THE "STANDARD AASHTO T-180 COMPACTION TEST", (A.S.T.M.-D-1557). ALL OTHER TRENCH BACKFILL MAY BE EARTH MATERIAL (FREE OF LARGE CLODS OR STONES). REFER TO MUNICIPAL AND/OR AGENCY CONSTRUCTION SPECIFICATION MANUAL OR AS OTHERWISE DETERMINED BY THE GEOTECHNICAL ENGINEER.
14. ALL P.V.C. SANITARY SEWER IS TO BE SDR-35 OR EQUAL WITH CLEAN 1/2" TO 1" GRANULAR STONE BEDDING UNIFORMLY GRADED. THIS BEDDING SHALL EXTEND FROM 4" BELOW THE PIPE TO THE SPRINGLINE OF THE PIPE. IMMEDIATE BACKFILL OVER PIPE SHALL CONSIST OF SAME SIZE "CLEAN" OR MINUS STONE FROM SPRINGLINE OF PIPE TO 12" ABOVE THE TOP OF PIPE.
15. ALL WATER LINES SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY. FROM ANY SANITARY SEWER, STORM SEWER, OR MANHOLE, 18" VERTICAL CLEARANCE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE SHALL BE MAINTAINED WHEREVER WATER LINES MUST CROSS SANITARY SEWERS, LATERALS, OR STORM DRAINS. THE WATER LINE SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER LINE IS ABOVE THE TOP OF THE DRAIN OR SEWER. A FULL LENGTH OF WATER PIPE SHALL BE CENTERED OVER THE SEWER LINE TO BE CROSSED SO THAT THE JOINTS WILL BE EQUALLY DISTANT FROM THE SEWER AND AS REMOTE THEREFROM AS POSSIBLE. THIS VERTICAL SEPARATION SHALL BE MAINTAINED FOR THAT PORTION OF THE WATER LINE LOCATED WITHIN 10 FEET HORIZONTALLY, OF ANY SEWER OR DRAIN IT CROSSES.
16. WATER LINES, VALVES, SLEEVES, METERS, AND FITTINGS SHALL MEET ALL SPECIFICATIONS AND INSTALLATION REQUIREMENTS OF WATER COMPANY. CONTRACTOR TO NOTIFY ALL AFFECTED PROPERTY OWNERS. ANY SHUTTING DOWN OF THE PUBLIC WATER SUPPLY SHALL BE COORDINATED WITH THE WATER COMPANY.
17. BRICK WILL NOT BE USED IN THE CONSTRUCTION OF SANITARY SEWER MANHOLES.
18. ALL PIPES SHALL HAVE POSITIVE DRAINAGE THROUGH MANHOLES. NO FLAT BASE STRUCTURES ARE ALLOWED.
19. GAS, WATER AND OTHER UNDERGROUND UTILITIES SHALL NOT CONFLICT WITH THE DEPTH OR HORIZONTAL LOCATION OF EXISTING OR PROPOSED SANITARY OR STORM SEWERS, INCLUDING HOUSE LATERALS.
20. ALL EXISTING SITE IMPROVEMENTS DISTURBED, DAMAGED OR DESTROYED SHALL BE REPAIRED OR REPLACED TO MATCH PRE-CONSTRUCTION CONDITIONS.
21. CONCRETE PIPE FOR STORM SEWERS SHALL BE CLASS III, A.S.T.M. C-76 WITH A MINIMUM DIAMETER OF 12" UNLESS OTHERWISE NOTED.
22. CONCRETE PIPE JOINTS SHALL BE TYPE "A" APPROVED COMPRESSION-TYPE JOINTS AND SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS FOR JOINTS FOR CONCRETE SEWER AND CULVERT PIPE, USING FLEXIBLE, WATER-TIGHT, RUBBER-TYPE GASKETS (A.S.T.M.-C-443). BAND-TYPE GASKETS DEPENDING ENTIRELY ON CEMENT FOR ADHESION AND RESISTANCE TO DISPLACEMENT DURING JOINTING SHALL NOT BE USED.
23. HIGH DENSITY POLYETHYLENE PIPE (HDPE) FOR STORM SEWERS SHALL MEET ASHTO M294 OR ASTM F2306.

WATER SERVICE GENERAL NOTES

1. ALL PROPOSED WATER MAINS AND HYDRANTS TO BE LAID IN DEDICATED UTILITY EASEMENT APPROVED BY CITY OF COLUMBIA WATER.
2. ALL PROPOSED WATER MAINS ARE TO MAINTAIN MINIMUM OF 10 FT HORIZONTAL AND 18 INCH VERTICAL SEPARATION FROM SEWERS.
3. RESTRAINED JOINT GASKETS MAY BE REQUIRED ON HORIZONTAL PIPE TO PIPE APPLICATIONS.
4. LOCATION OF CITY OF COLUMBIA WATER FACILITIES IS BASED ON RECORD INFORMATION AT TIME OF INSTALLATION, AND MAY VARY SEVERAL FEET FROM DIMENSIONS GIVEN.
5. CONTRACTOR IS RESPONSIBLE FOR DETERMINING WHAT BENDS, TEES, REDUCERS, BLOW-OFFS, ETC. ARE NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH CITY OF COLUMBIA STANDARD SPECIFICATIONS FOR INSTALLATION OF WATER FACILITIES, WATER MAIN OR WATER INSTALLATION DETAILS, AND THIS DEVELOPMENT'S WATER MAIN LAYOUT.
6. BE ADVISED, PURCHASING INCORRECT FITTINGS AND/OR AN INSUFFICIENT NUMBER OF FITTINGS MAY CAUSE SIGNIFICANT CONSTRUCTION DELAYS.
7. IF RESTRAINED JOINT DUCTILE IRON PIPE IS REQUIRED, DUCTILE IRON FITTINGS AND VALVES SHALL BE MECHANICAL JOINT UTILIZING MEGA LUGS IN CONJUNCTION WITH PTFE POLYMER COATED BOLTS (EX. XLYAN FLUORKOTE #1) FOR RESTRAINT.
8. JOINT RESTRAINED DUCTILE IRON PIPE WITH CASING MAY BE REQUIRED WHEN INSTALLED WATER MAIN IN CLOSE PROXIMITY OF OTHER STRUCTURES AS FIELD DETERMINED BY CITY OF COLUMBIA WATER REPRESENTATIVE.
9. PVC PIPE MATERIALS MAY BE USED IN LIEU OF SPECIFIED D.I. PIPE MATERIALS ON THE APPROVED PLANS TO BE APPROVED AS REQUIRED AND FIELD DETERMINED BY CITY OF COLUMBIA WATER REPRESENTATIVE.
10. LOCATION OF PROPOSED WATER MAIN MAY CHANGE DUE TO FIELD CONDITIONS DETERMINED BY CITY OF COLUMBIA WATER FIELD REPRESENTATIVE AND APPROVED BY CITY OF COLUMBIA WATER.
11. ALL PVC PIPE SHALL BE BEDDED WITH 3/4" CLEAN GRANULAR BACKFILL FROM 6" BELOW BOTTOM OF PIPE TO ONE (1') FOOT ABOVE TOP OF PIPE.
12. DUCTILE-IRON PIPE SHALL MEET ANSI/AWWA C141/A21.51-09 OR LATEST REVISION THEREOF, THICKNESS CLASS 50 OR PRESSURE CLASS 350, PUSH-ON JOINT, CEMENT-MORTAR LINED, BITUMINOUS COATED, ACCEPTABLE MANUFACTURERS ARE: CLOW, AMERICAN, AND US PIPE. FOR RESTRAINED JOINT PIPE ACCEPTABLE MANUFACTURERS ARE: US PIPE TR-FLEX, CLOW TR FLEX, OR APPROVED EQUAL.
13. PVC PIPE 4"-12" SHALL MEET AWWA SPECIFICATION C900-07 OR LATEST REVISION THEREOF, OUTSIDE DIAMETER EQUIVALENT TO DUCTILE-IRON PIPE, OR (DIMENSION RATIO) SERIES 18, GASKET BELL-END COUPLING, INSTALLATION REQUIREMENTS SHALL BE THE SAME AS FOR DUCTILE IRON PIPE. ACCEPTABLE MANUFACTURERS ARE: PIPE LIFE JET STREAM, VINYLPLEX, NORTHERN PIPE PRODUCTS, PW EAGLE, JM EAGLE, CERTAINTED, DIAMOND, IPEX BLUE BRUTE, AND NORTH AMERICAN PIPE COMPANY.
14. POLYETHYLENE PIPE SHALL MEET AWWA C901 AND ASTM D 2737 OR THE LATEST REVISION THEREOF. THE PIPE SHALL BE COPPER TUBE SIZE, DR9, 2.125 IN OD, 1.653 IN ID, AND BE RATED FOR A MAX WORKING PRESSURE OF AT LEAST 200 PSI. ACCEPTABLE MANUFACTURERS ARE: CENTENNIAL PLASTICS, AND SILVER-LINE PLASTICS, OR AN APPROVED EQUAL.
15. NO WARPING OR BENDING OF PVC PIPE SHALL BE ALLOWED.
16. GRANULAR BACKFILL SHALL BE REQUIRED UNDER ALL PAVEMENT.

ABBREVIATIONS

AC	ACRES
ADA	AMERICANS WITH DISABILITIES ACT
ADAA	AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
AI, A.I.	AREA INLET
ATG	ADJUST TO GRADE
BC	BASE OF CURB AT FLOWLINE
BFP	BACK FLOW PREVENTION
BLDG	BUILDING
CL, C.O.	LEANOUT
CI, C.I.	CURB INLET
COMM	U/G COMMUNICATION LINE
CONC	CONCRETE
CURB, C.Y.	CURB YARD
DI	DUCTILE IRON
DIA	DIAMETER
DR	DRAIN BASIN
DS	DOWNSPOUT
DNR	MISSOURI DEPARTMENT OF NATURAL RESOURCES
ELEV	ELEVATION
EX	EXISTING
E.O.P.	END OF PIPE
FEMA	FEDERAL EMERGENCY MANAGEMENT ADMINISTRATION
FF	FINISHED FLOOR ELEVATION
FL	FLOW LINE
FND	FOUNDATION
G	U/G GAS LINE
GI, G.I.	GRADED INLET
G.I. W/S.I.	GRATE INLET WITH SIDE INTAKE
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
IMP	IMPERVIOUS
INV	INVERT
IRRIG	U/G IRRIGATION LINE
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MODOT	MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
N.T.S.	NOT TO SCALE
OAH	OVERALL HEIGHT
PP	POLY PROPYLENE
PVC	POLY VINYL CHLORIDE
PVMT	PAVEMENT
R	RADIUS
RD	ROAD
SAN; SS	SANITARY SEWER
SO.F.T.	SQUARE FEET
ST; STM	STORM
T/C	U/G PHONE AND/OR DATA LINE
TBR	TO BE REMOVED
TBRAR	TO BE REMOVED & RELOCATED
TC	TOP OF CURB
TD	TRENCH DRAIN
TS	TOP OF SURFACE
TW	TOP OF WALL ELEVATION
TYP	TYPICAL
UG; U/G	UNDERGROUND
UG-E	U/G ELECTRIC LINE
USGS	UNITED STATES GEOLOGICAL SURVEY
UST	U/G PETROLEUM STORAGE TANK
W	WATER
WFRMR	TRANSFORMER

SUBMITTAL RECORD

NO.	DATE	DESCRIPTION
1.	01/16/2024	ISSN FOUNDATIONS AND REGULATION PLANS
2.	02/16/2024	CITY COMMENTS



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McDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI

GENERAL NOTES

DATE:	DECEMBER 22, 2023	DRAWN BY:	PTB
DWG SCALE:	AS NOTED	CHECKED BY:	332-743
PROJECT NO:		APPROVED BY:	DRAFT



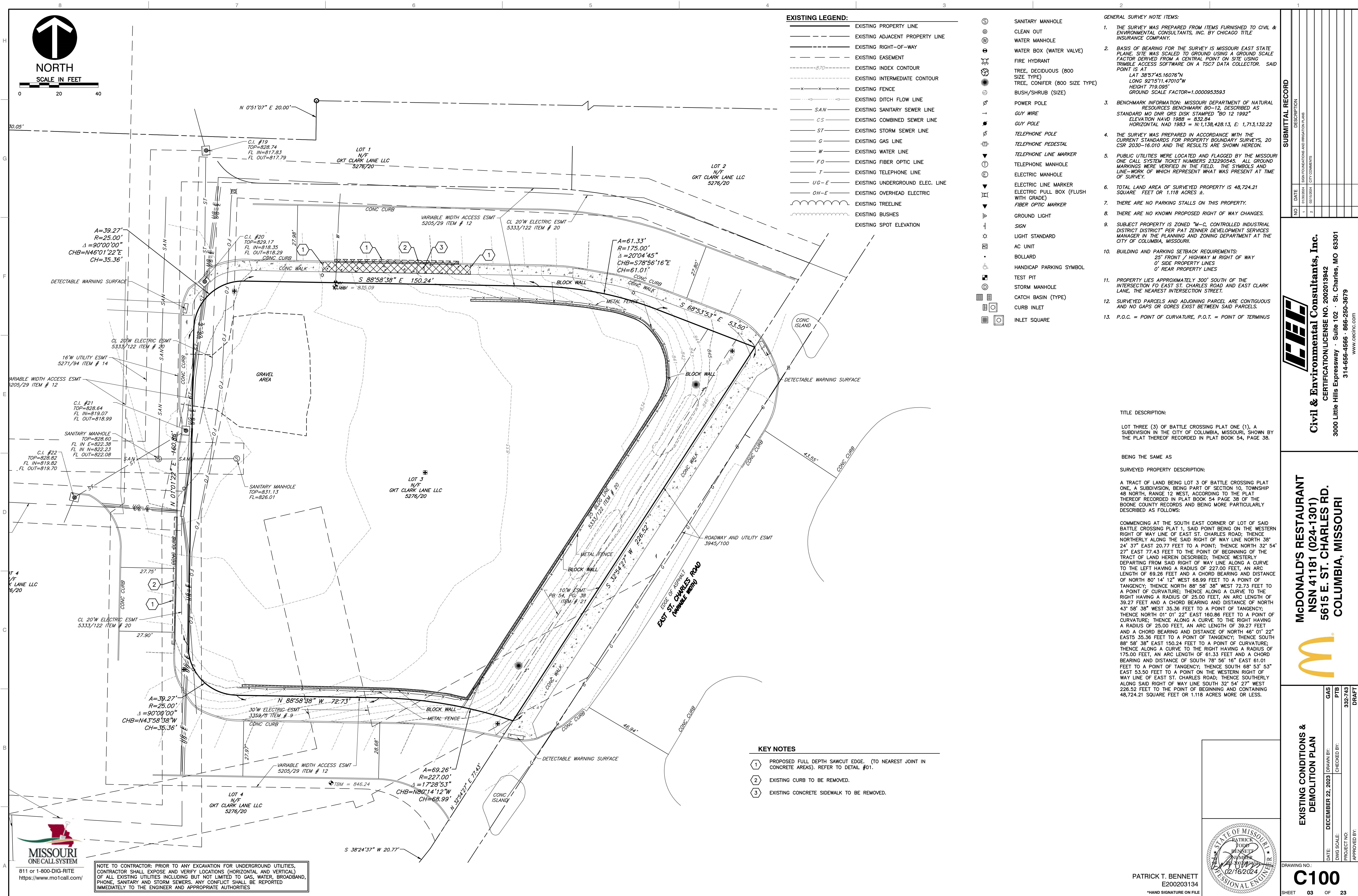
PATRICK T. BENNETT
E200203134


*HAND SIGNATURE ON FILE

DRAWING NO.:
C001

SHEET 02 OF 23

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811 or 1-800-DIG-RITE
<https://www.mo1call.com/>

NOTE TO CONTRACTOR: PRIOR TO ANY EXCAVATION FOR UNDERGROUND UTILITIES, CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES INCLUDING BUT NOT LIMITED TO GAS, WATER, BROADBAND, PHONE, SANITARY AND STORM SEWERS. ANY CONFLICT SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND APPROPRIATE AUTHORITIES

EXISTING LEGEND:

- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- EXISTING EASEMENT
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING FENCE
- EXISTING DITCH FLOW LINE
- EXISTING SANITARY SEWER LINE
- EXISTING COMBINED SEWER LINE
- EXISTING STORM SEWER LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING FIBER OPTIC LINE
- EXISTING TELEPHONE LINE
- EXISTING UNDERGROUND ELEC. LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING TREELINE
- EXISTING BUSHES
- EXISTING SPOT ELEVATION

GENERAL SURVEY NOTE ITEMS:

- THE SURVEY WAS PREPARED FROM ITEMS FURNISHED TO CIVIL & ENVIRONMENTAL CONSULTANTS, INC. BY CHICAGO TITLE INSURANCE COMPANY.
- BASIS OF BEARING FOR THE SURVEY IS MISSOURI EAST STATE PLANE. SITE WAS SCALED TO GROUND USING A GROUND SCALE FACTOR DERIVED FROM A CENTRAL POINT ON SITE USING TRIMBLE ACCESS SOFTWARE ON A TSC7 DATA COLLECTOR. SAID POINT IS AT
LAT 38°57'45.16076"N
LONG 92°15'11.47010"W
HEIGHT 719.095'
GROUND SCALE FACTOR=1.0000953593
- BENCHMARK INFORMATION: MISSOURI DEPARTMENT OF NATURAL RESOURCES BENCHMARK BO-12, DESCRIBED AS STANDARD MO DNR GRS DISK STAMPED "BO 12 1992" ELEVATION NAVD 1988 = 832.84 HORIZONTAL NAD 1983 = N:1,138,428.13, E: 1,713,132.22
- THE SURVEY WAS PREPARED IN ACCORDANCE WITH THE CURRENT STANDARDS FOR PROPERTY BOUNDARY SURVEYS, 20 CSR 2030-16.010 AND THE RESULTS ARE SHOWN HEREON.
- PUBLIC UTILITIES WERE LOCATED AND FLAGGED BY THE MISSOURI ONE CALL SYSTEM TICKET NUMBERS 232290545. ALL GROUND MARKINGS WERE VERIFIED IN THE FIELD. THE SYMBOLS AND LINE-WORK OF WHICH REPRESENT WHAT WAS PRESENT AT TIME OF SURVEY.
- TOTAL LAND AREA OF SURVEYED PROPERTY IS 48,724.21 SQUARE FEET OR 1.118 ACRES ±.
- THERE ARE NO PARKING STALLS ON THIS PROPERTY.
- THERE ARE NO KNOWN PROPOSED RIGHT OF WAY CHANGES.
- SUBJECT PROPERTY IS ZONED "M-C, CONTROLLED INDUSTRIAL DISTRICT DISTRICT" PER PAT ZENNER DEVELOPMENT SERVICES MANAGER IN THE PLANNING AND ZONING DEPARTMENT AT THE CITY OF COLUMBIA, MISSOURI.
- BUILDING AND PARKING SETBACK REQUIREMENTS:
25' FRONT / HIGHWAY M RIGHT OF WAY
0' SIDE PROPERTY LINES
0' REAR PROPERTY LINES
- PROPERTY LIES APPROXIMATELY 300' SOUTH OF THE INTERSECTION OF EAST ST. CHARLES ROAD AND EAST CLARK LANE, THE NEAREST INTERSECTION STREET.
- SURVEYED PARCELS AND ADJOINING PARCEL ARE CONTIGUOUS AND NO GAPS OR GORES EXIST BETWEEN SAID PARCELS.
- P.O.C. = POINT OF CURVATURE, P.O.T. = POINT OF TERMINUS

TITLE DESCRIPTION:

LOT THREE (3) OF BATTLE CROSSING PLAT ONE (1), A SUBDIVISION IN THE CITY OF COLUMBIA, MISSOURI, SHOWN BY THE PLAT THEREOF RECORDED IN PLAT BOOK 54, PAGE 38.

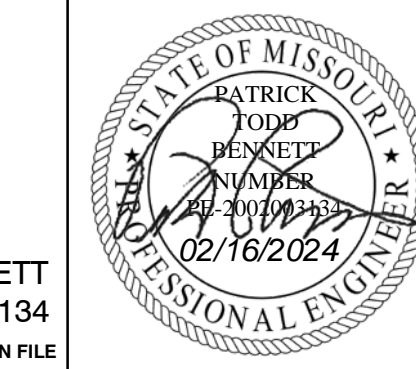
BEING THE SAME AS

SURVEYED PROPERTY DESCRIPTION:

A TRACT OF LAND BEING LOT 3 OF BATTLE CROSSING PLAT ONE, A SUBDIVISION, BEING PART OF SECTION 10, TOWNSHIP 48 NORTH, RANGE 12 WEST, ACCORDING TO THE PLAT THEREOF RECORDED IN PLAT BOOK 54 PAGE 38 OF THE BOONE COUNTY RECORDS AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH EAST CORNER OF LOT OF SAID BATTLE CROSSING PLAT 1, SAID POINT BEING ON THE WESTERN RIGHT OF WAY LINE OF EAST ST. CHARLES ROAD; THENCE NORTHERLY ALONG THE SAID RIGHT OF WAY LINE NORTH 38° 24' 37" EAST 20.77 FEET TO A POINT; THENCE NORTH 32° 54' 27" EAST 77.43 FEET TO THE POINT OF BEGINNING OF THE TRACT OF LAND HEREIN DESCRIBED; THENCE WESTERLY DEPARTING FROM SAID RIGHT OF WAY LINE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 227.00 FEET, AN ARC LENGTH OF 69.26 FEET AND A CHORD BEARING AND DISTANCE OF NORTH 80° 14' 12" WEST 68.99 FEET TO A POINT OF TANGENCY; THENCE NORTH 88° 38' 38" WEST 72.73 FEET TO A POINT OF CURVATURE; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 25.00 FEET, AN ARC LENGTH OF 39.27 FEET AND A CHORD BEARING AND DISTANCE OF NORTH 43° 58' 38" WEST 35.36 FEET TO A POINT OF TANGENCY; THENCE NORTH 01° 01' 22" EAST 160.86 FEET TO A POINT OF CURVATURE; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 25.00 FEET, AN ARC LENGTH OF 39.27 FEET AND A CHORD BEARING AND DISTANCE OF NORTH 46° 01' 22" EAST 35.36 FEET TO A POINT OF TANGENCY; THENCE SOUTH 88° 38' 38" EAST 150.24 FEET TO A POINT OF CURVATURE; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 175.00 FEET, AN ARC LENGTH OF 61.33 FEET AND A CHORD BEARING AND DISTANCE OF SOUTH 78° 56' 16" EAST 61.01 FEET TO A POINT OF TANGENCY; THENCE SOUTH 68° 53' 53" EAST 53.50 FEET TO A POINT ON THE WESTERN RIGHT OF WAY LINE OF EAST ST. CHARLES ROAD; THENCE SOUTHERLY ALONG SAID RIGHT OF WAY LINE SOUTH 32° 54' 27" WEST 226.52 FEET TO THE POINT OF BEGINNING AND CONTAINING 48,724.21 SQUARE FEET OR 1.118 ACRES MORE OR LESS.

- KEY NOTES**
- 1 PROPOSED FULL DEPTH SAWCUT EDGE. (TO NEAREST JOINT IN CONCRETE AREAS). REFER TO DETAIL #01.
 - 2 EXISTING CURB TO BE REMOVED.
 - 3 EXISTING CONCRETE SIDEWALK TO BE REMOVED.



EXISTING CONDITIONS & DEMOLITION PLAN

DRAWING NO. **C100**

SHEET **03** OF **23**

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5615 E. ST. CHARLES RD.
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DATE: DECEMBER 22, 2023 **DRAWN BY:** PATRICK T. BENNETT
DWG SCALE: AS SHOWN **CHECKED BY:** [Signature]
PROJECT NO.: 332-743 **APPROVED BY:** [Signature]

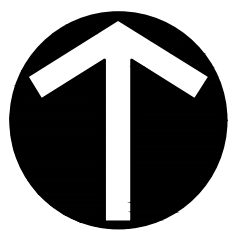
GENERAL SURVEY NOTE ITEMS:

- THE SURVEY WAS PREPARED FROM ITEMS FURNISHED TO CIVIL & ENVIRONMENTAL CONSULTANTS, INC. BY CHICAGO TITLE INSURANCE COMPANY.
- BASIS OF BEARING FOR THE SURVEY IS MISSOURI EAST STATE PLANE. SITE WAS SCALED TO GROUND USING A GROUND SCALE FACTOR DERIVED FROM A CENTRAL POINT ON SITE USING TRIMBLE ACCESS SOFTWARE ON A TSC7 DATA COLLECTOR. SAID POINT IS AT
LAT 38°57'45.16076"N
LONG 92°15'11.47010"W
HEIGHT 719.095'
GROUND SCALE FACTOR=1.0000953593
- BENCHMARK INFORMATION: MISSOURI DEPARTMENT OF NATURAL RESOURCES BENCHMARK BO-12, DESCRIBED AS STANDARD MO DNR GRS DISK STAMPED "BO 12 1992" ELEVATION NAVD 1988 = 832.84 HORIZONTAL NAD 1983 = N:1,138,428.13, E: 1,713,132.22
- THE SURVEY WAS PREPARED IN ACCORDANCE WITH THE CURRENT STANDARDS FOR PROPERTY BOUNDARY SURVEYS, 20 CSR 2030-16.010 AND THE RESULTS ARE SHOWN HEREON.
- PUBLIC UTILITIES WERE LOCATED AND FLAGGED BY THE MISSOURI ONE CALL SYSTEM TICKET NUMBERS 232290545. ALL GROUND MARKINGS WERE VERIFIED IN THE FIELD. THE SYMBOLS AND LINE-WORK OF WHICH REPRESENT WHAT WAS PRESENT AT TIME OF SURVEY.
- TOTAL LAND AREA OF SURVEYED PROPERTY IS 48,724.21 SQUARE FEET OR 1.118 ACRES ±.
- THERE ARE NO PARKING STALLS ON THIS PROPERTY.
- THERE ARE NO KNOWN PROPOSED RIGHT OF WAY CHANGES.
- SUBJECT PROPERTY IS ZONED "M-C, CONTROLLED INDUSTRIAL DISTRICT DISTRICT" PER PAT ZENNER DEVELOPMENT SERVICES MANAGER IN THE PLANNING AND ZONING DEPARTMENT AT THE CITY OF COLUMBIA, MISSOURI.
- BUILDING AND PARKING SETBACK REQUIREMENTS:
25' FRONT / HIGHWAY M RIGHT OF WAY
0' SIDE PROPERTY LINES
0' REAR PROPERTY LINES
- PROPERTY LIES APPROXIMATELY 300' SOUTH OF THE INTERSECTION OF EAST ST. CHARLES ROAD AND EAST CLARK LANE, THE NEAREST INTERSECTION STREET.
- SURVEYED PARCELS AND ADJOINING PARCEL ARE CONTIGUOUS AND NO GAPS OR GORES EXIST BETWEEN SAID PARCELS.
- P.O.C. = POINT OF CURVATURE, P.O.T. = POINT OF TERMINUS

SUBMITTAL RECORD

NO.	DATE	DESCRIPTION
1	01/15/2024	PLAN FOUNDATIONS AND PRELIMINARY PLANS
2	02/15/2024	CITY COMMENTS

A: 1:30--0001-1332-7411 -CADD [DWG] [DWT] [33743-001]-C200.dwg [2020] 15:02:15/2024 - enroute - LP: 2/16/2024 8:20 AM

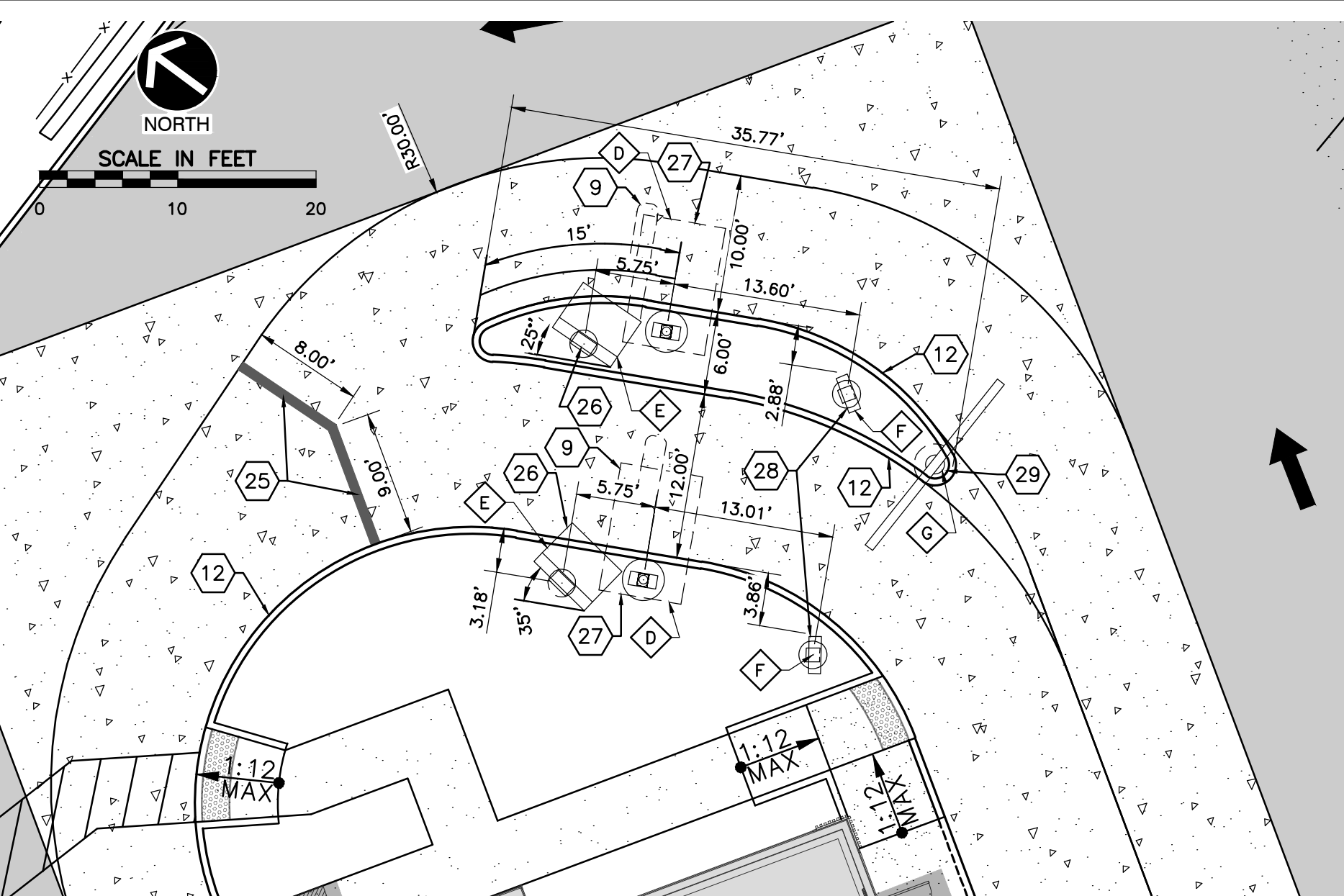
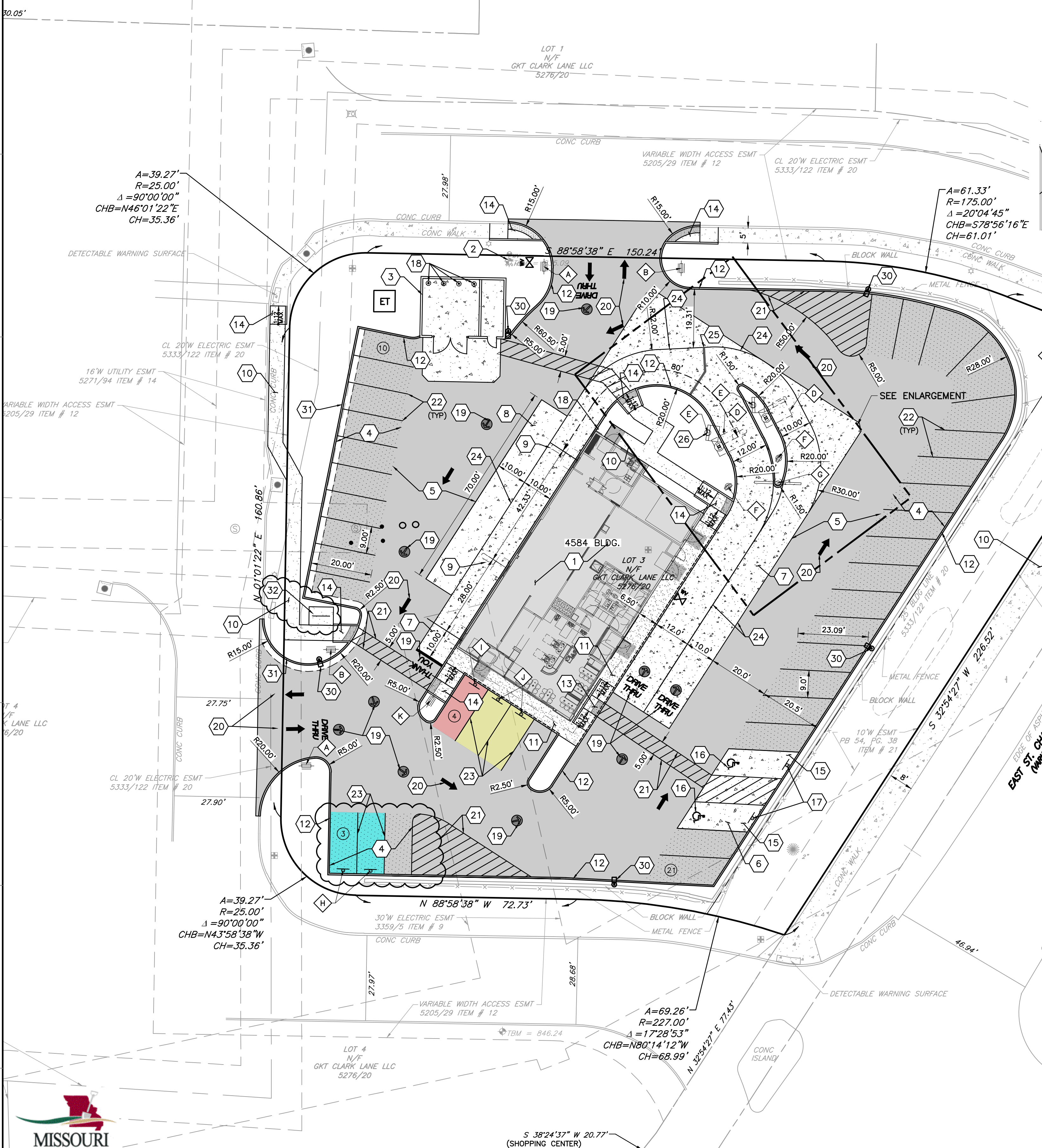


NORTH

SCALE IN FEET

0 20 40

N 0°51'07" E 20.00'



LEGEND

- PROPOSED CURB & GUTTER
- PROPOSED EDGE OF PAVED DRIVE
- PROPOSED ASPHALT (MEDIUM DUTY)
- PROPOSED ASPHALT (LIGHT DUTY)
- PROPOSED CONCRETE
- PROPOSED STRIPING
- PROPOSED SIDEWALK
- PROPOSED BUILDING
- PROPOSED FENCE

KEY NOTES

- PROPOSED BUILDING. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
- EXISTING HYDRANT. PROTECT IN PLACE DURING CONSTRUCTION.
- PROPOSED TRASH ENCLOSURE WITH STORAGE. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
- PROPOSED ASPHALTIC CONCRETE (LIGHT DUTY) PAVEMENT. REFER TO DETAIL #03.
- PROPOSED ASPHALTIC CONCRETE (MEDIUM DUTY) PAVEMENT. REFER TO DETAIL #03.
- PROPOSED CONCRETE (LIGHT DUTY) PAVEMENT. REFER TO DETAIL #02.
- PROPOSED CONCRETE (MEDIUM DUTY) PAVEMENT. REFER TO DETAIL #02.
- PROPOSED 10' X 70' CONCRETE LOADING PAD. REFER TO DETAIL #02.
- PROPOSED DETECTOR LOOP. REFER TO DETAIL #14 AND ELECTRICAL PLANS.
- PROPOSED ADA COMPLIANT CONCRETE WALK. REFER TO DETAIL #12.
- PROPOSED ADA COMPLIANT COMBINATION CURB / SIDEWALK. REFER TO DETAIL #05.
- PROPOSED 6" VERTICAL CONCRETE CURB. REFER TO DETAIL #10.
- PROPOSED ADA ACCESSIBLE DEPRESSED CURB RAMP. REFER TO DETAIL #06.
- PROPOSED ADA ACCESSIBLE CURB RAMP. REFER TO DETAIL #07.
- PROPOSED ADA ACCESSIBLE SPACES. REFER TO DETAIL #13.
- PROPOSED PAINTED ADA ACCESSIBLE PARKING SYMBOL. REFER TO DETAIL #09.
- PROPOSED ADA ACCESSIBLE PARKING SIGN(S). REFER TO DETAIL #11.
- PROPOSED BOLLARD. REFER TO DETAIL #08.
- PROPOSED BRANDED PAVEMENT STRIPING PER MCDONALD'S STANDARDS. REFER TO DETAIL #25.
- PROPOSED PAINTED DIRECTIONAL ARROWS. REFER TO DETAIL #24.
- PROPOSED PAVEMENT STRIPING. REFER TO DETAIL #26.
- PROPOSED PARKING STRIPING (WHITE).
- PROPOSED PARKING STRIPING (YELLOW).
- PROPOSED DRIVE THRU LANE STRIPING (6" WIDE) PER MCDONALD'S STANDARDS.
- PROPOSED MERGE STRIPING (6" WIDE) PER MCDONALD'S STANDARDS.
- PROPOSED MENU BOARD. REFER TO ARCHITECTURAL/SIGN VENDOR/OTHERS' PLANS FOR ADDITIONAL INFORMATION.
- PROPOSED DRIVE-THRU CANOPY WITH DIGITAL ORDER BOARD. REFER TO ARCHITECTURAL/SIGN VENDOR/OTHERS' PLANS FOR ADDITIONAL INFORMATION.
- PROPOSED PRE-ORDER MENU BOARD. REFER TO ARCHITECTURAL/SIGN VENDOR/OTHERS' PLANS FOR ADDITIONAL INFORMATION.
- PROPOSED DOUBLE GATEWAY SIGN. REFER TO ARCHITECTURAL/SIGN VENDOR/OTHERS' PLANS FOR ADDITIONAL INFORMATION.
- PROPOSED LOT LIGHT. REFER TO PHOTOMETRIC PLAN (BY OTHERS).
- PROPOSED 6" CONCRETE CURB AND GUTTER. REFER TO DETAIL #16.
- PROPOSED BIKE RACK FOR 4 BIKES.

SIGN LEGEND

- A DIRECTIONAL SIGN - ("ENTER")
- B DIRECTIONAL SIGN - ("THANK YOU")
- C MCDONALD'S MONUMENT SIGN
- D MCDONALD'S DRIVE-THRU CANOPY
- E DIGITAL MENU BOARD
- F DIGITAL PRE-BROWSE MENU BOARD
- G GATEWAY SIGN (DOUBLE ARM)
- H RESERVED DRIVE-THRU
- I McDELIVERY - COURIER PARKING
- J CURBSIDE PICK UP
- K PULL FORWARD/THANK YOU



811 or 1-800-DIG-RITE
<https://www.mo1call.com/>

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PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



DRAWING NO.:
C200
SHEET 04 OF 23

SITE PLAN

DATE: DECEMBER 22, 2023
DWG SCALE: 1"=40'-0"
PROJECT NO: 332-743
GAS: []
PTB: []
CHECKED BY: []
APPROVED BY: []
DRAFT

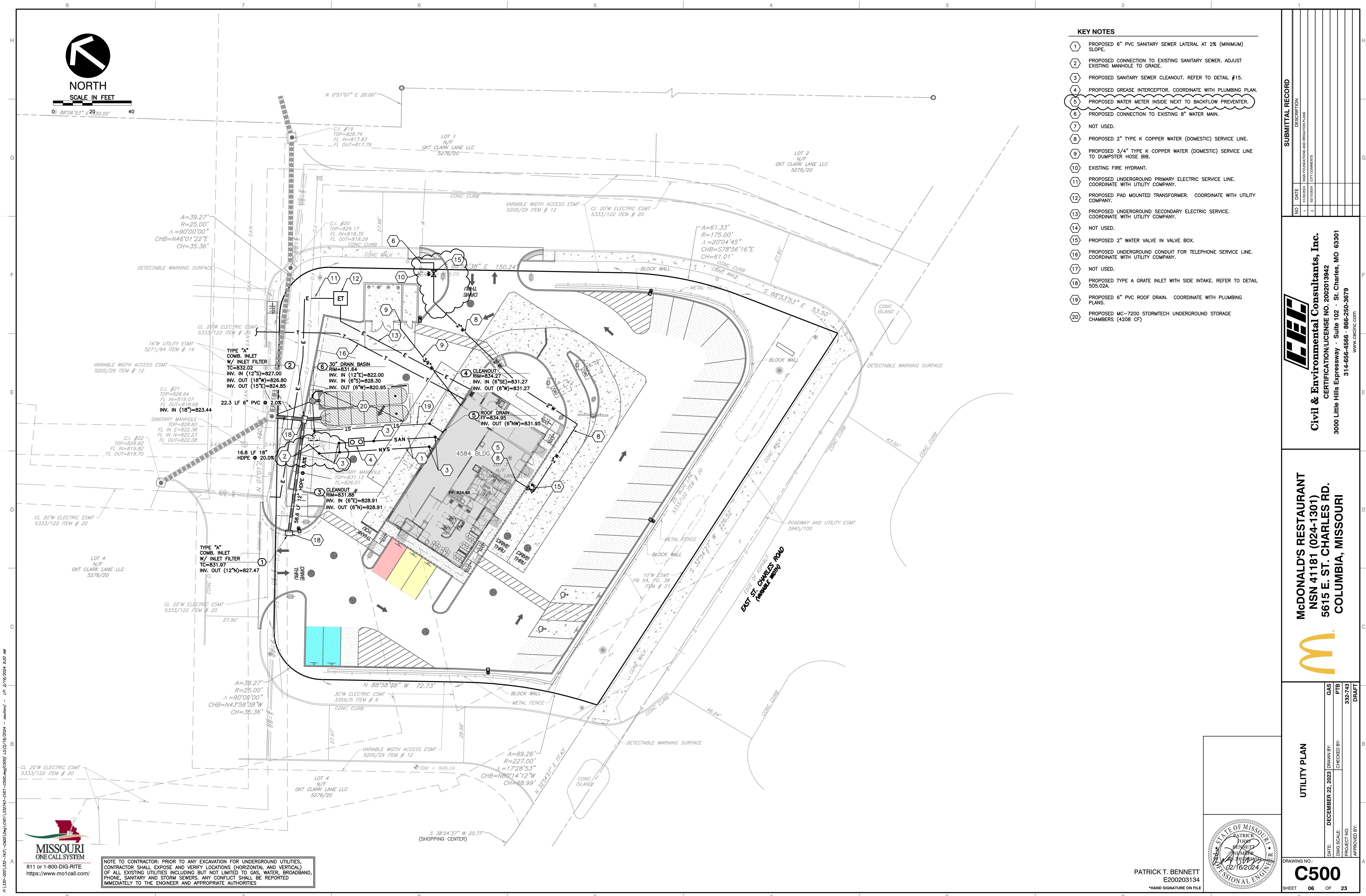
MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



Civil & Environmental Consultants, Inc.
CERTIFICATION/LICENSE NO. 2002013942
3000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679
www.cecinc.com

SUBMITTAL RECORD

NO.	DATE	DESCRIPTION
1	01/15/2024	ISSUE FOR PERMIT
2	01/15/2024	CITY COMMENTS




- KEY NOTES**
- 1 PROPOSED 6" PVC SANITARY SEWER LATERAL AT 2% (MINIMUM) SLOPE.
 - 2 PROPOSED CONNECTION TO EXISTING SANITARY SEWER. ADJUST EXISTING MANHOLE TO GRADE.
 - 3 PROPOSED SANITARY SEWER CLEANOUT. REFER TO DETAIL #15.
 - 4 PROPOSED GREASE INTERCEPTOR. COORDINATE WITH PLUMBING PLAN.
 - 5 PROPOSED WATER METER INSIDE NEXT TO BACKFLOW PREVENTER.
 - 6 PROPOSED CONNECTION TO EXISTING 8" WATER MAIN.
 - 7 NOT USED.
 - 8 PROPOSED 2" TYPE K COPPER WATER (DOMESTIC) SERVICE LINE.
 - 9 PROPOSED 3/4" TYPE K COPPER WATER (DOMESTIC) SERVICE LINE TO DUMPSTER HOSE BIB.
 - 10 EXISTING FIRE HYDRANT.
 - 11 PROPOSED UNDERGROUND PRIMARY ELECTRIC SERVICE LINE. COORDINATE WITH UTILITY COMPANY.
 - 12 PROPOSED PAD MOUNTED TRANSFORMER. COORDINATE WITH UTILITY COMPANY.
 - 13 PROPOSED UNDERGROUND SECONDARY ELECTRIC SERVICE. COORDINATE WITH UTILITY COMPANY.
 - 14 NOT USED.
 - 15 PROPOSED 2" WATER VALVE IN VALVE BOX.
 - 16 PROPOSED UNDERGROUND CONDUIT FOR TELEPHONE SERVICE LINE. COORDINATE WITH UTILITY COMPANY.
 - 17 NOT USED.
 - 18 PROPOSED TYPE A GRATE INLET WITH SIDE INTAKE. REFER TO DETAIL 505.02A.
 - 19 PROPOSED 6" PVC ROOF DRAIN. COORDINATE WITH PLUMBING PLANS.
 - 20 PROPOSED MC-7200 STORMTECH UNDERGROUND STORAGE CHAMBERS (4208 CF)

SUBMITTAL RECORD	
NO.	DESCRIPTION
1	01/15/2024 SAN FOUNDATIONS AND IRIGATION PLANS
2	02/15/2024 CITY COMMENTS



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MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI

UTILITY PLAN	
DATE: DECEMBER 22, 2023	DRAWN BY: PATRICK T. BENNETT
DWG SCALE: 1"=40'	CHECKED BY: PATRICK T. BENNETT
PROJECT NO: 230110001	APPROVED BY: PATRICK T. BENNETT
DRAFT	



PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



MISSOURI
ONE CALL SYSTEM

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<https://www.mo1call.com/>

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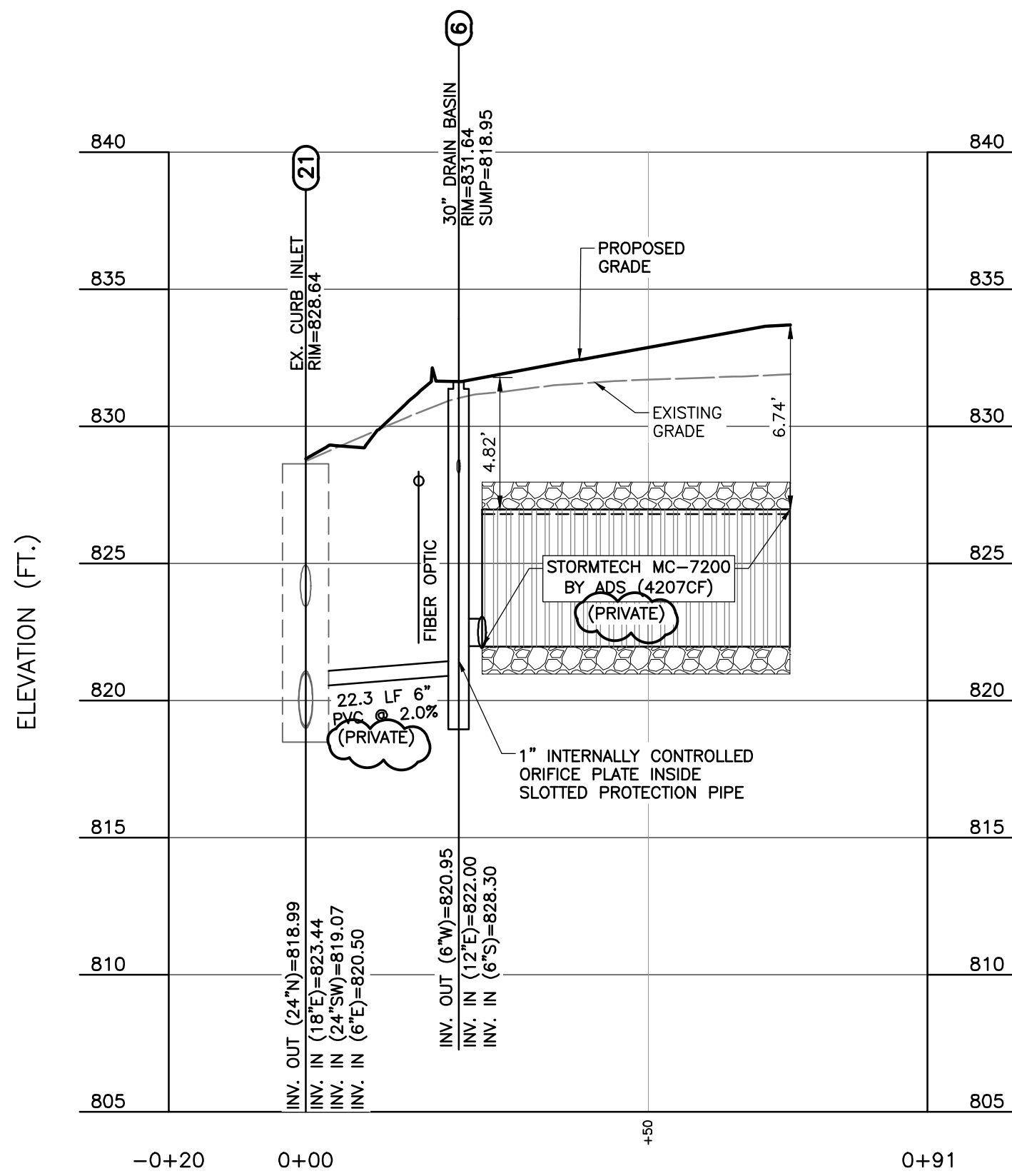
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A: 130-0001-1332-741 - CADD [DWG] (001) 133743-001 - C500.dwg [C501] 15/02/16/2024 - (author) - LP: 2/16/2024 8:21 AM



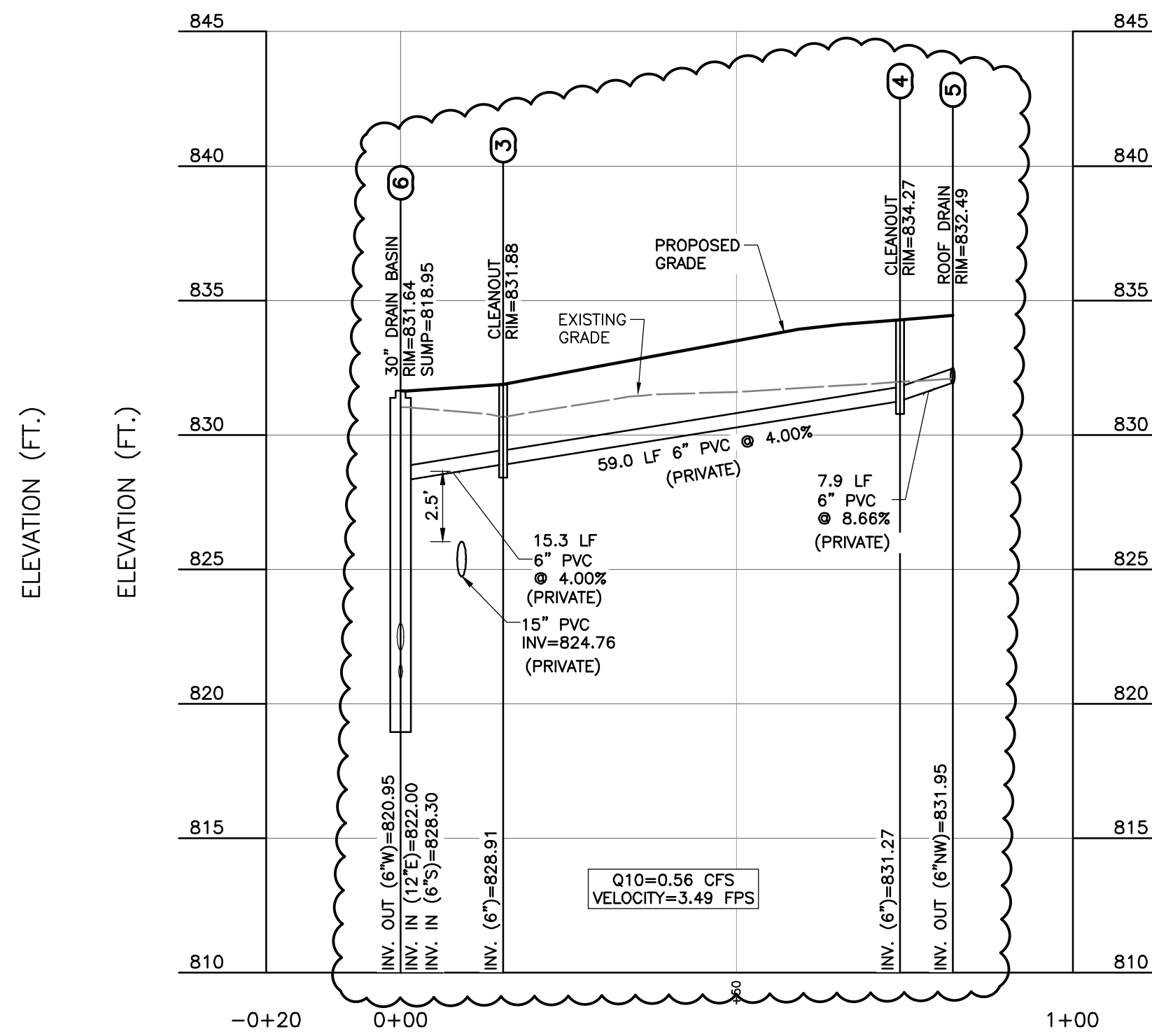
811 or 1-800-DIG-RITE
https://www.mo1call.com/

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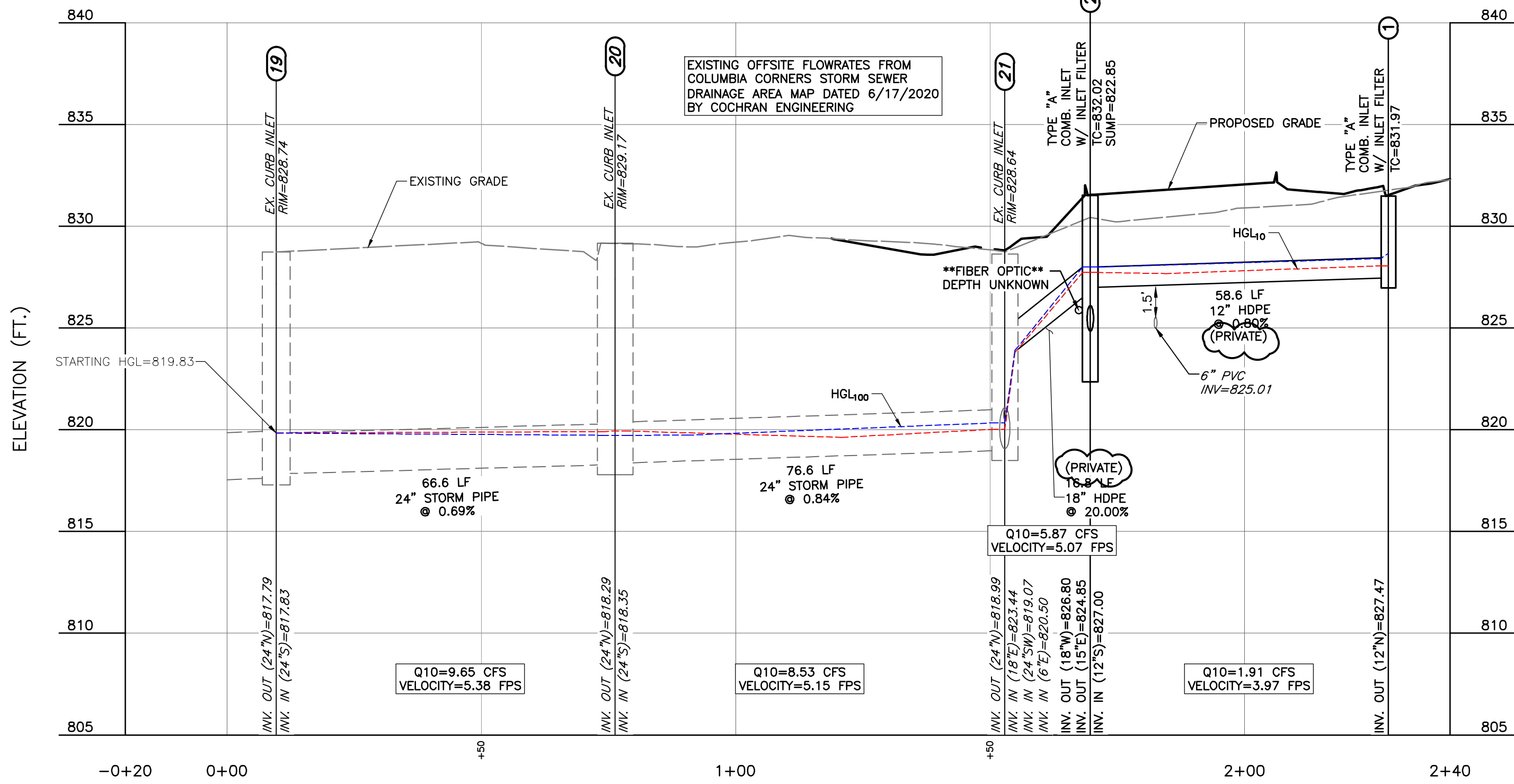
STORMTECH DISCHARGE PROFILE

SCALE H:1"=20'; V:1"=5'



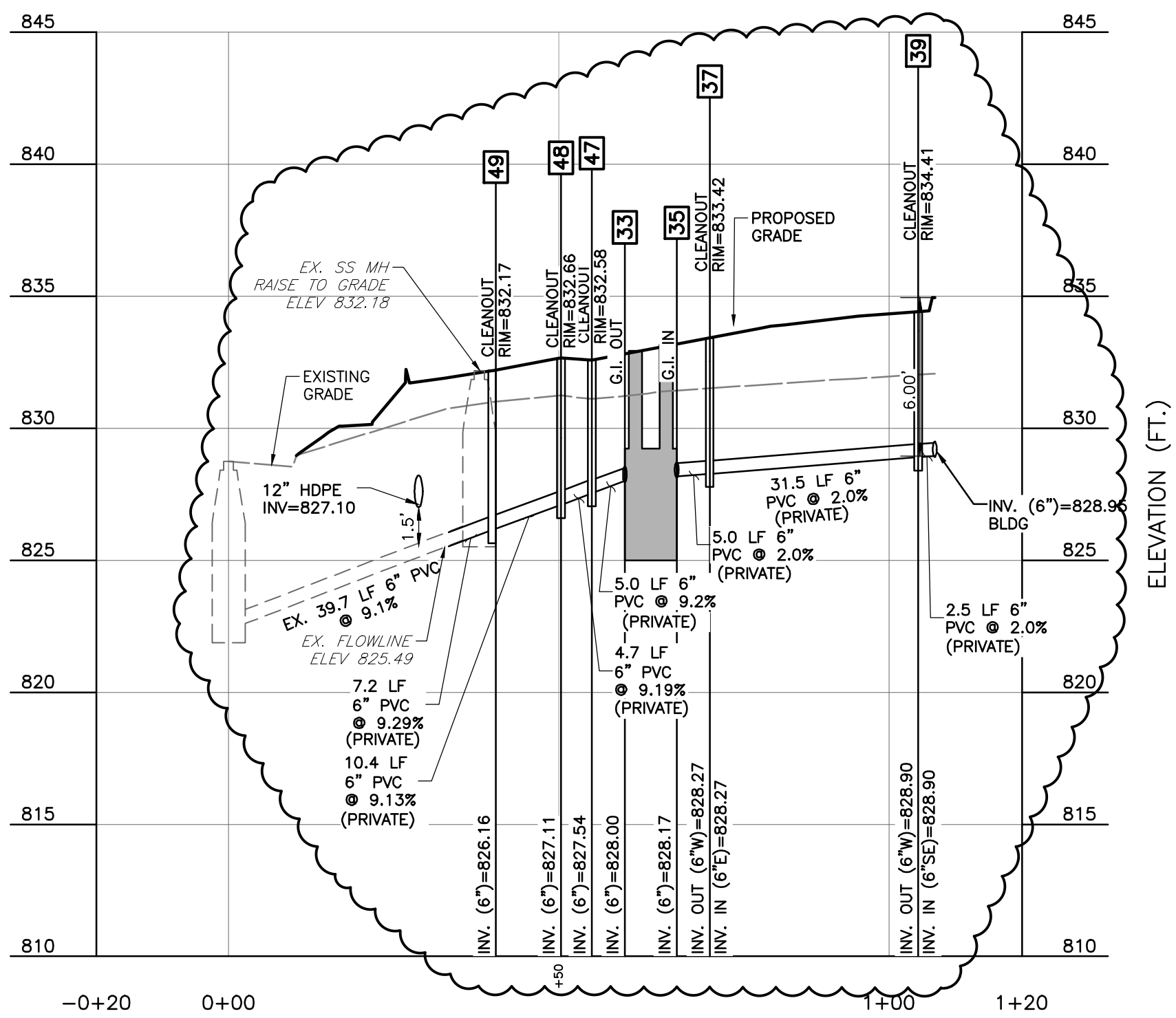
STORM ROOF DRAIN PROFILE

SCALE H:1"=20'; V:1"=5'



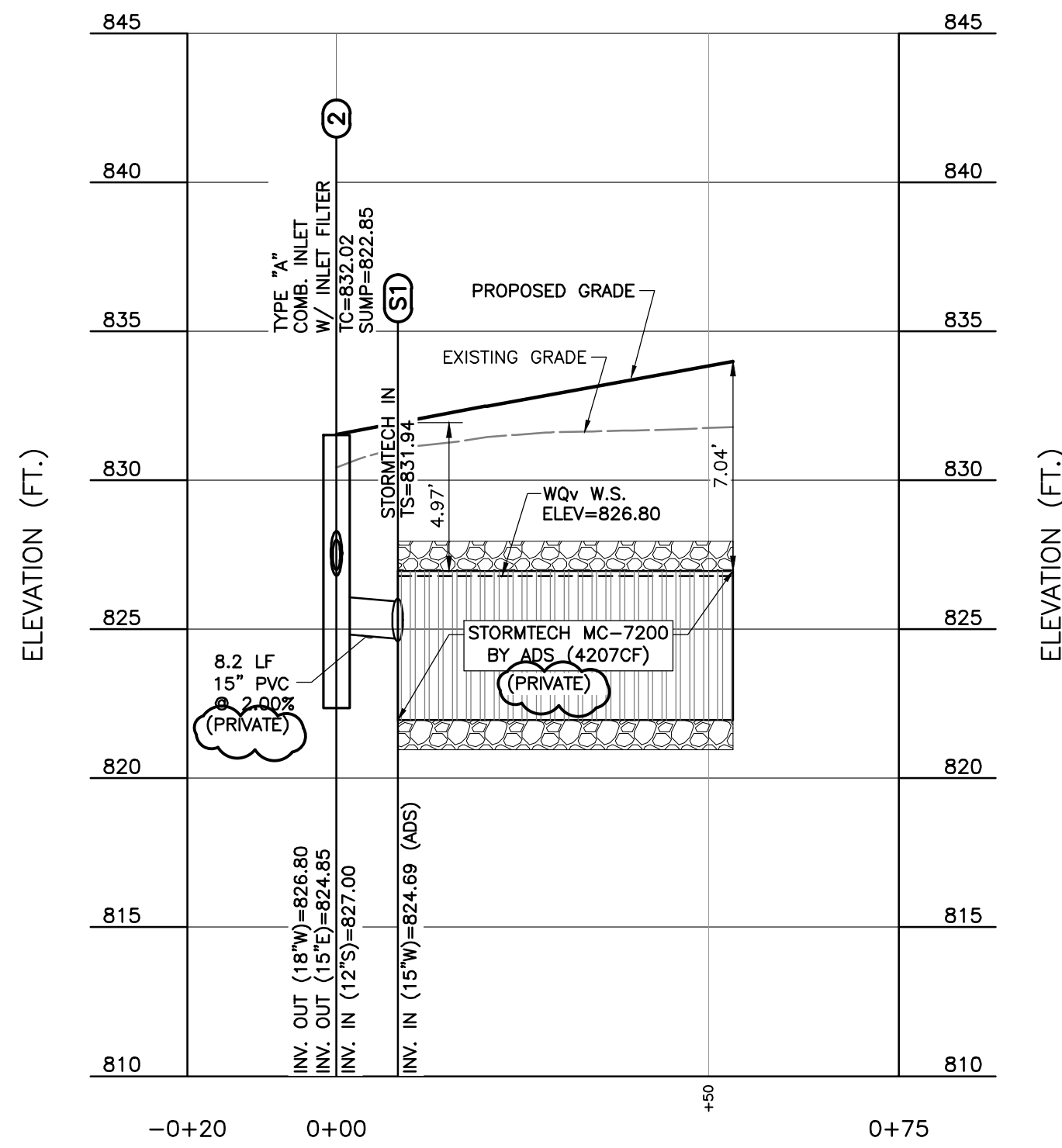
STORM PROFILE

SCALE H:1"=20'; V:1"=5'



SANITARY-GREASE PROFILE

SCALE H:1"=20'; V:1"=5'



STORMTECH ENTRY PROFILE

SCALE H:1"=20'; V:1"=5'

PROPOSED STORM NETWORK - PROPOSED FLOWS												10 YEAR						100 YEAR					
Up Str. No.	Down Str. No.	Defl. Angle (Deg)	Size (in)	Length (ft)	Slope (%)	n-value	Capacity Full (cfs)	InvertDn (ft)	InvertUp (ft)	Junction Type	Sill / Rim Elev (ft)	Known Q (cfs)	FlowRate (cfs)	Vel Up (ft/s)	HGLDn (ft)	HGLUp (ft)	Freeboard (ft)	Known Q (cfs)	FlowRate (cfs)	Vel Up (ft/s)	HGLDn (ft)	HGLUp (ft)	Freeboard (ft)
20	Outfall	90.6	24	66.6	0.69	0.013	19.13	817.83	818.29	INLET	829.17	1.12	9.65	5.38	819.84	819.40	9.77	1.83	16.01	6.58	819.84	819.73	9.44
21	20	6.6	24	76.6	0.84	0.013	21.05	818.35	818.99	INLET	828.64	1.95	8.53	5.15	819.40	820.03	8.61	3.23	14.18	6.23	819.73	820.34	8.30
22	21	51.8	24	65.9	0.96	0.013	22.51	819.07	819.70	INLET	828.82	0.71	0.71	2.53	820.03	819.99	8.83	1.28	1.28	2.96	820.34	820.09	8.73
2	21	-91.6	18	16.8	20.00	0.013	46.97	823.44	826.80	INLET	831.44	3.40	5.87	5.07	823.80	827.73	3.70	5.61	9.67	6.38	823.90	828.00	3.43
1	2	92.1	12	58.6	0.80	0.013	3.19	827.00	827.47	INLET	831.39	1.91	1.91	3.97	827.73	828.06	3.32	3.16	3.16	4.12	828.00	828.41	2.97
3	2	35.9	6	8.7	4.93	0.013	1.25	828.52	828.95	BEND	----	0.00	0.56	3.49	828.76	829.33	----	0.00	0.90	4.76	828.84	829.41	----
4	3	-45.0	6	57.7	4.02	0.012	1.22	828.95	831.27	BEND	----	0.00	0.56	3.49	829.33	831.65	----	0.00	0.90	4.76	829.41	831.73	----
5	4	36.4	6	7.9	8.66	0.013	1.65	831.27	831.95	RD	----	0.56	0.56	3.49	831.65	832.33	----	0.90	0.90	4.76	831.73	832.41	----

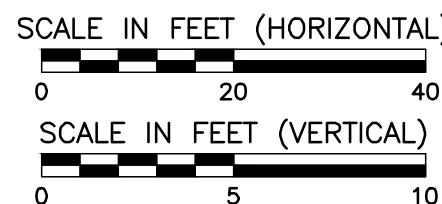
Notes:

Calculations From Hydraulics Storm Sewers Software

Known Q column is the flow rate entering the structure directly. The Flow Rate column is the flow rate at that structure inclusive of upstream flows.

Starting HGL for storm system is the soft of the outfall pipe (2 sections downstream).

Notes: j-line contains hyd. jump



PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



DRAWING NO.:
C501
SHEET 07 OF 23

SEWER PROFILES

DATE: DECEMBER 22, 2023
DWG SCALE: 1"=20'
DRAWN BY: PATRICK T. BENNETT
CHECKED BY: PATRICK T. BENNETT
PROJECT NO: 332743
APPROVED BY: PATRICK T. BENNETT
GAS PTD
332743
DRAFT

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI

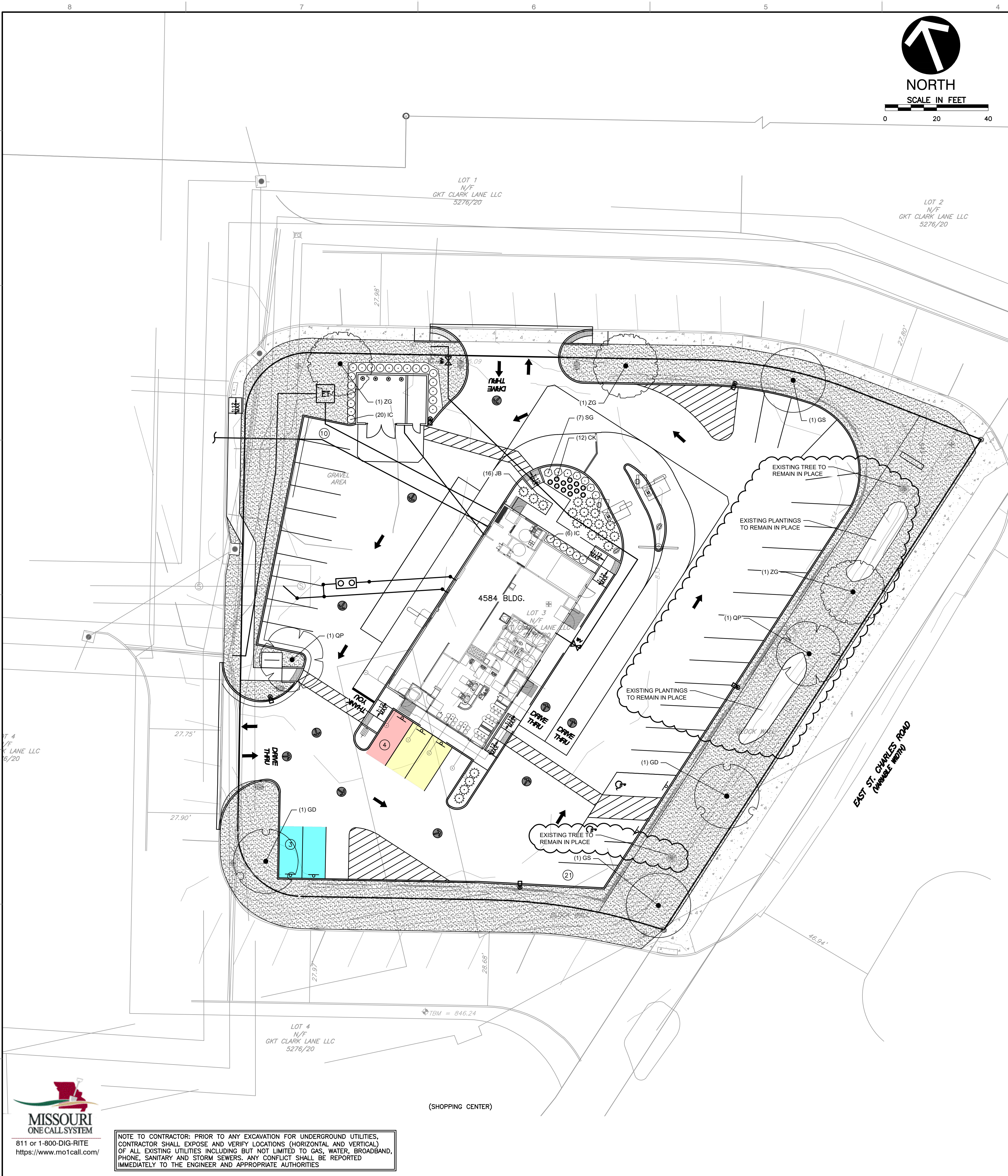


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3000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679
www.ccecinc.com

SUBMITTAL RECORD

NO. DATE DESCRIPTION
1. 01/05/2024 SAN FOUNDATIONS AND IRIGATION PLANS
2. 02/15/2024 CITY COMMENTS

A 130-0001332-741 - 0400 [dwg] (DWG) 1332743-001 - 07003.dwg (2/20) 15/2/15/2024 - 0400 (dwg) - LP: 2/16/2024 10:21 AM



PLANT SCHEDULE					
TREES	CODE	QTY	BOTANICAL / COMMON NAME	CONTAINER	CALIPER
	GS	2	GLEDITSIA TRIACANTHOS 'INERMIS' 'SKYLINE' / SKYLINE HONEY LOCUST STRAIGHT LEADER, MATCH SPECIMEN	B&B	2" CAL.
	GD	2	GYMNOCLADUS DIOICA 'ESPRESSO' / KENTUCKY COFFEETREE STRAIGHT LEADER, MATCH SPECIMEN	B&B	2" CAL.
	QP	2	QUERCUS PALUSTRIS / PIN OAK STRAIGHT LEADER, MATCH SPECIMEN	B&B	2" CAL.
	ZG	3	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE JAPANESE ZELKOVA STRAIGHT LEADER, MATCH SPECIMEN	B&B	2" CAL.
SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	CONTAINER	HEIGHT
	CK	12	CALAMAGROSIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS FULL TO GROUND, MATCH SPECIMEN	NO. 3 CONT.	AS SHOWN
	IC	26	ILEX GLABRA 'CHAMZIN' / NORDIC™ INKBERRY HOLLY FULL TO GROUND, MATCH SPECIMEN	NO. 5 CONT.	AS SHOWN
	JB	20	JUNIPERUS HORIZONTALIS 'BLUE CHIP' / BLUE CHIP CREEPING JUNIPER FULL TO GROUND, MATCH SPECIMEN	NO. 5 CONT.	AS SHOWN
	SG	8	SPIRAEA JAPONICA 'GOLDFLAME' / GOLDFLAME JAPANESE SPIREA FULL TO GROUND, MATCH SPECIMEN	NO. 5 CONT.	AS SHOWN
GROUND COVERS	CODE	QTY	BOTANICAL / COMMON NAME	CONT	SPACING
	TB	15,968 SF	TURF SOD BLUEGRASS / KENTUCKY BLUEGRASS	SOD	

PLANTING REQUIREMENTS				
Street Frontage	Per SF	Total Lot Area Minus Structure	Required Planting	Provided Planting
1 tree per 60 LF of Frontage	60	224	4	4

Note: No more than 30% of species diversity.

MISSOURI
ONE CALL SYSTEM

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PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



LANDSCAPE PLAN

DRAWING NO.: **C700**

SHEET 08 OF 23

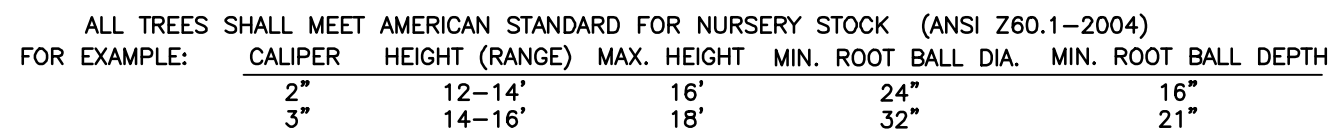
DATE: DECEMBER 22, 2023 | DRAWN BY: PATRICK T. BENNETT
DWG SCALE: 1"=40'-0" | CHECKED BY: JESSICA L. BARNES
PROJECT NO: 332-743
APPROVED BY: [Signature]

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI

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www.ccecinc.com

SUBMITTAL RECORD		DESCRIPTION
NO	DATE	
1	01/15/2024	ISSUE FOUNDATIONS AND PRELIMINARY PLANS
2	02/15/2024	CITY COMMENTS

1. CONTRACTOR RESPONSIBLE FOR ALL PLANTS SHOWN ON PLAN. QUANTITIES ARE FOR CONVENIENCE ONLY.
2. SPACE PLANTS AS SHOWN ON PLAN OR IN PLANT LIST. ADJUST AS NECESSARY TO MEET EXISTING CONDITIONS.
3. STAKE AND GUY TREES AS PER LOCALLY ACCEPTED PRACTICE AND ANSI STANDARDS. CONTRACTOR RESPONSIBLE FOR DAMAGE TO PLANTS BECAUSE OF IMPROPER GUYING.
4. ALL STRAPPING AND TOP 2/3 OF WIRE BASKET MUST BE CUT AWAY AND REMOVED FROM ROOT BALL PRIOR TO BACKFILLING PLANTING PIT. REMOVE TOP 1/3 OF THE BURLAP FROM ROOT BALL.
5. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL SUB-BASE AND CONSTRUCTION DEBRIS, REMOVE COMPACTED SOIL, AND ADD 24" NEW TOPSOIL OR TILL AND AMEND TO TOP 24" OF EXISTING SOIL TO MEET TOPSOIL PLANTING MIX STANDARDS FOR TREES (WITHIN ENTIRE MINIMUM AREA OF 274 SQUARE FEET PER TREE).
6. ALL PLANTS AND PLANTING AREAS ARE TO HAVE A WEED BARRIER FABRIC AND TO BE MULCHED WITH CLEAN SHREDDED BARK TO A MINIMUM DEPTH OF 3" MULCH TREES TO 3'-0" BEYOND TRUNK MINIMUM AND TO BED LINES AS SHOWN. KEEP MULCH OFF THE TRUNKS OF TREES.
7. GUESS MARKING: TREES TO BE REMOVED WHERE THERE ARE NO DISC WHORLS OR TRANSMISSION LINES. IF TREES CONFLICT WITH POWER LINES OR SIGNS, CALL OWNER'S REPRESENTATIVE TO RESOLVE BEFORE PLANTING.
8. ADJUST TREE PLANTING LOCATIONS TO AVOID UNDERGROUND UTILITIES. PLANT 15' FROM ALL UNDERGROUND UTILITIES (GAS, WATER, PHONE, AND ELECTRICAL LINES).
9. ATTENTION LANDSCAPER: NOTIFY OWNER'S REPRESENTATIVE OF ANY SIGN, POWER LINE, OR OTHER CONFLICTS BEFORE PLANTING NEW TREES. LARGE MATING TREES MUST BE A MINIMUM OF 50' FROM THE OVERHEAD DISTRIBUTION OR TRANSMISSION LINES. IF TREES CONFLICT WITH POWER LINES OR SIGNS, CALL URBAN FORESTER TO RESOLVE BEFORE PLANTING.



A cross-sectional diagram of a planting bed. At the top, a dimension line indicates 'SPACING VARIES SEE LANDSCAPE PLAN' between two trees. The trees are shown with root balls. Below the root balls is a layer of '4" LAYER OF APPROVED MULCH'. Under the mulch is a 'TYP. COLLAR MIN. 2" HT.' (typical collar, minimum 2 inches high). Below the collar is a 'FRENCH DRAIN AROUND THE PLANTING BED' (a French drain around the planting bed). The drain is filled with 'WEED BARRIER (4 OZ WEIGHT OR LARGER)' (weed barrier, 4 oz weight or larger). The drain is surrounded by 'PLANT MIX' (plant mix). The drain is '12" MIN.' (12 inches minimum) wide. The drain is '8" MIN.' (8 inches minimum) deep. The drain is 'TAMP SOIL MIX UNDER EACH PLANT BALL TO MINIMIZE SETTLEMENT' (tamp soil mix under each plant ball to minimize settlement). The drain is 'EDGE OF PLANTING BED' (edge of planting bed). The drain is '4" MIN.' (4 inches minimum) deep. The drain is 'TYP. COLLAR MIN. 2" HT.' (typical collar, minimum 2 inches high). The drain is '4" LAYER OF APPROVED MULCH' (4 inch layer of approved mulch). The drain is 'SPACING VARIES SEE LANDSCAPE PLAN' (spacing varies, see landscape plan).

SPACING VARIES
SEE LANDSCAPE PLAN

TYP. COLLAR
MIN. 2" HT.

4" LAYER OF
APPROVED MULCH

4" MIN.

8" MIN.

12" MIN.

FRENCH DRAIN AROUND
THE PLANTING BED

EDGE OF
PLANTING BED

WEED BARRIER
(4 OZ WEIGHT
OR LARGER)

PLANT MIX

TAMP SOIL MIX
UNDER EACH
PLANT BALL TO
MINIMIZE
SETTLEMENT

TYPICAL PLANTING BED DETAIL

TYPICAL PLANTING BED DETAIL



C703 NOT TO SCALE

1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL WEED BARRIER FABRIC TO ALL PLANT BEDS. WEED BARRIER SHALL BE MINIMUM 4 OZ WEIGHT OR LARGER.
3. INSTALL CONTAINERIZED PLANTS AT FINISHED GRADE.
4. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
5. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
6. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.

TYPICAL BED CROWNING

THIS PROJECT SHALL ABIDE BY CHANGES IN THE NPDES PERMIT (NCG01), WHICH WENT INTO EFFECT AUGUST 3, 2011 AND INCLUDE (BUT NOT LIMITED TO) THE FOLLOWING:

TEMPORARY SEEDING SPECIFICATION

SEEDING DATES:
AUG 15 TO DEC 30

MULCH:
APPLY 4000lb/ac STRAW. ANCHOR STRAW BY TACKING
w/ ASPHALT, NETTING, OR A MULCH ANCHORING TOOL.
A DISK w/ BLADES SER NEARLY STRAIGHT CAN BE USED
AS A MULCH ANCHORING TOOL.

CUT/FILL SLOPES SEEDING SPECIFICATIONS – STEEPER THAN 3:1

NURSE PLANTS:
BETWEEN MAY 1 AND AUG 15, ADD 10lb/ac GERMAN MILLET
OR 15 lb/ac SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG 15,
ADD 40 lb/ac RYE (GRAIN). IT MAY BE BENEFICIAL TO PLANT THE
GRASSES IN LATE SUMMER AND OVERSEED THE LESPENDEZAS
IN MARCH.

SOIL AMENDMENTS:
APPLY LIME AND FERTILIZER ACCORDING TO SOIL TEST, OR
APPLY 4000 lb/ac GROUND AGRICULTURAL LIMESTONE AND
1200 lb/ac 10-10-10 FERTILIZER.

MAINTENANCE:
MOW NO MORE THAN ONCE A YEAR, RE-FERTILIZE IN THE
SECOND YEAR UNLESS GROWTH IS FULLY ADEQUATE.
RE-SEED, RE-FERTILIZE, RE-MULCH DAMAGED AREAS IMMEDIATELY.

SEEDING MIXTURE:	
SPECIES	RATE (lb/ac)
TALL FESCUE	250 (6 lb/1000 sq ft)
KENTUCKY BLUEGRASS	50 (1 lb/1000 sq ft)

NURSE PLANTS:
BETWEEN MAY 1 AND AU 15, ADD 10 lb/ac GERMAN MILLET
OR 15 lb/ac SUDANGRASS, PRIOR TO MAY 1 OR AFTER AUG 15,
ADD 40 lb/ac RYE (GRAIN).

SOIL AMENDMENTS:
APPLY LIME AND FERTILIZE ACCORDING TO SOIL TEST, OR APPLY
4000 lb/ac GROUND AGRICULTURAL LIMESTONE AND 1200 lb/ac
10-10-10 FERTILIZER.

MULCH:
USE CHANNEL LINING MATERIAL TO COVER THE BOTTOM OF DITCHES.
THE LINING SHOULD EXTEND ABOVE THE HIGHEST CALCULATED DEPTH
OF FLOW. ON CHANNEL SIDE SLOPES ABOVE THE HEIGHT, AND IN
DRAINAGES NOT REQUIRING TEMPORARY LININGS, APPLY 4000 lb/ac
GRAIN STRAW AND ANCHOR STRAW BY STAPLING NETTING OVER THE TOP.

MULCH AND ANCHORING MATERIALS MUST NOT BE ALLOWED TO WASH DOWN SLOPE WHERE THEY CAN CLOG DRAINAGE DEVICES.

INSPECT AND REPAIR MULCH FREQUENTLY. RE-FERTILIZE IN LATE WINTER ACCORDING TO SOIL TESTS OR APPLY 150 lb/ac 10-10-10 FERTILIZER (3 lb/1000 sq ft). MOW REGULARLY TO A HEIGHT OF 2" TO 4".



NOTE TO CONTRACTOR: PRIOR TO ANY EXCAVATION FOR UNDERGROUND UTILITIES, CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES INCLUDING BUT NOT LIMITED TO GAS, WATER, BROADBAND, PHONE, SANITARY AND STORM SEWERS. ANY CONFLICT SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND APPROPRIATE AUTHORITIES

PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



DRAWING NO.:
C7
SHEET 08

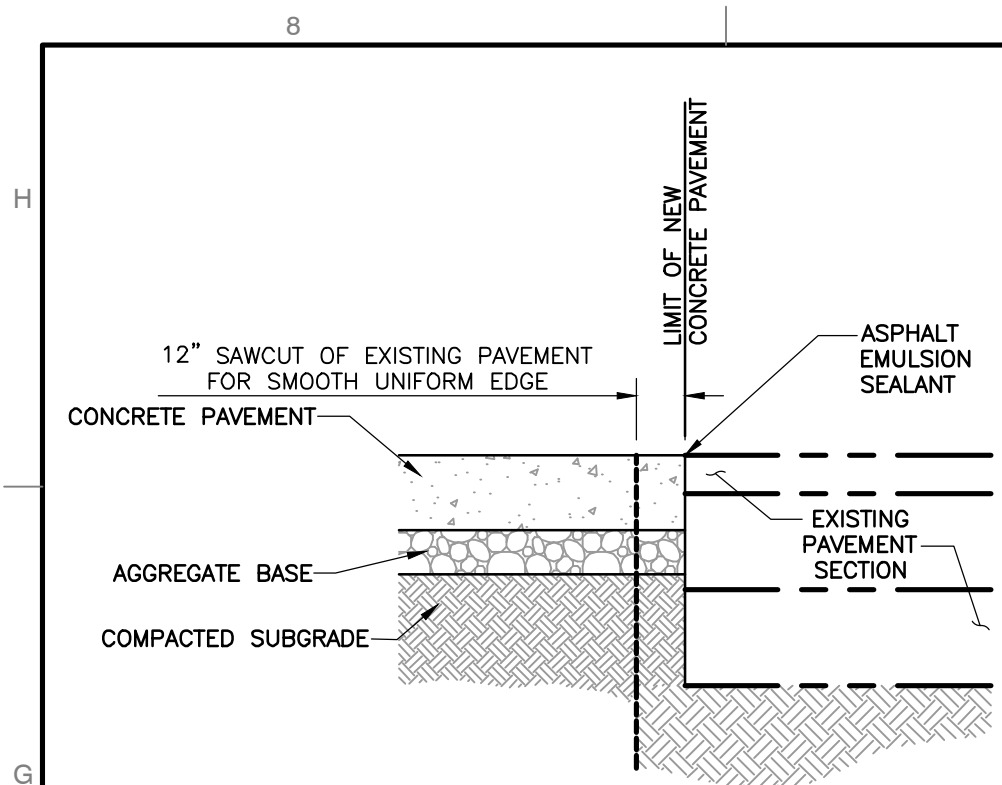
DATE:	DECEMBER 22, 2023	DRAWN BY:	GAS
DWG SCALE:		CHECKED BY:	PTB
PROJECT NO:			
APPROVED BY:	332-743		
	DRAFT		

DRAWING NO.:

C701

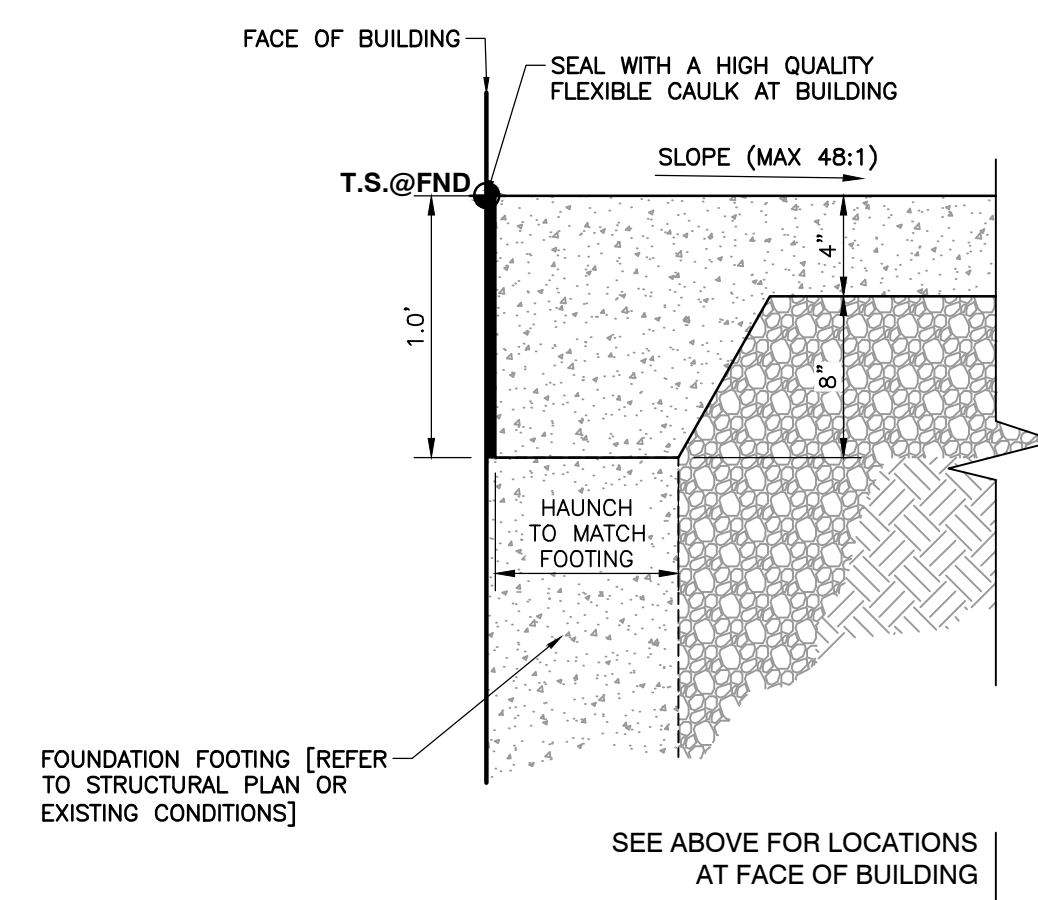
SHEET 09 OF

15:00:00 1332-741 - 0400 [0mg] [001] 1332741-0401 - 0803 [mg] [0800] 15:17:20 2024 - enroute - LP: 2/16/2024 10:21 AM



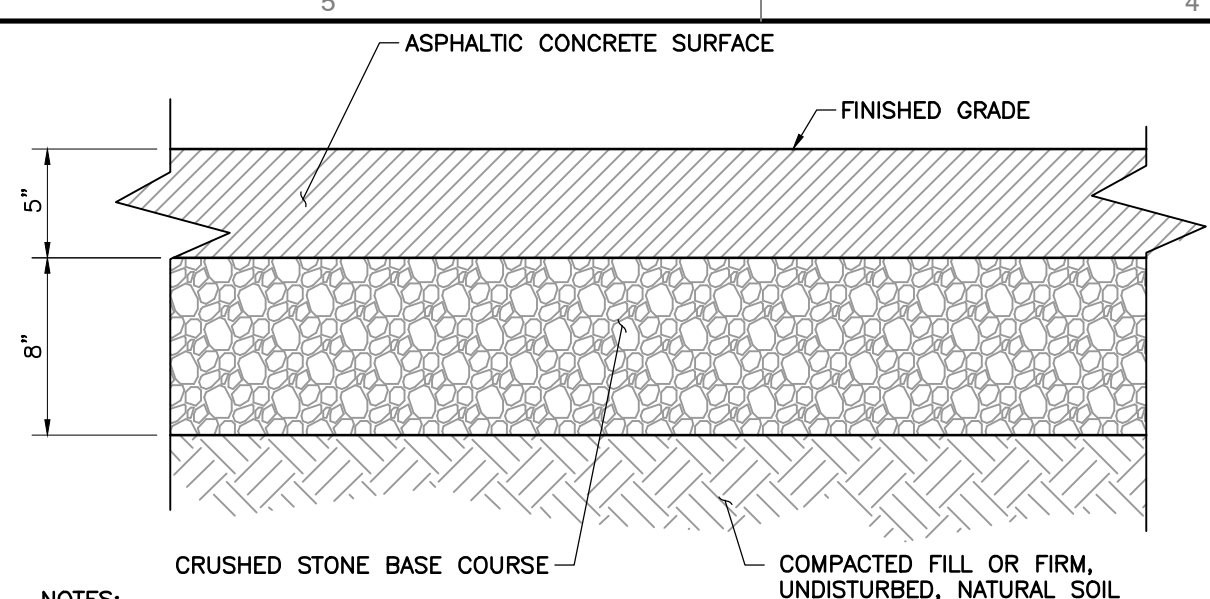
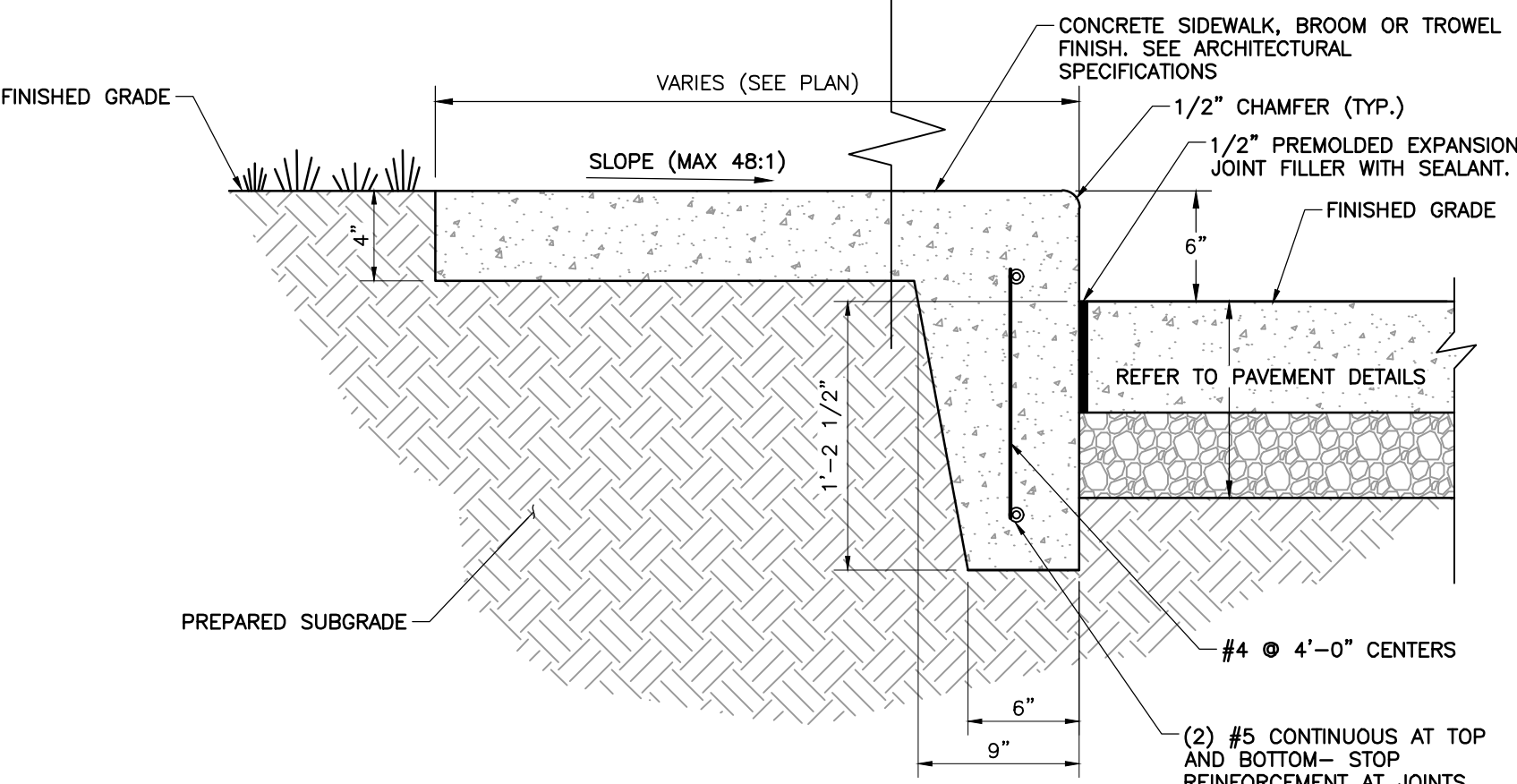
- NOTES:
1. PROVIDE TACK COAT ALONG SAWCUT TO BIND EXISTING ASPHALT PAVEMENT TO NEW PAVEMENT. FOR AREAS WITH PATCHING AND OVERLAY, PROVIDE TACK COAT TO BIND EXISTING ASPHALT PAVEMENT WITH NEW PAVEMENT.

DETAIL #01
PAVEMENT SAWCUT
N.T.S.



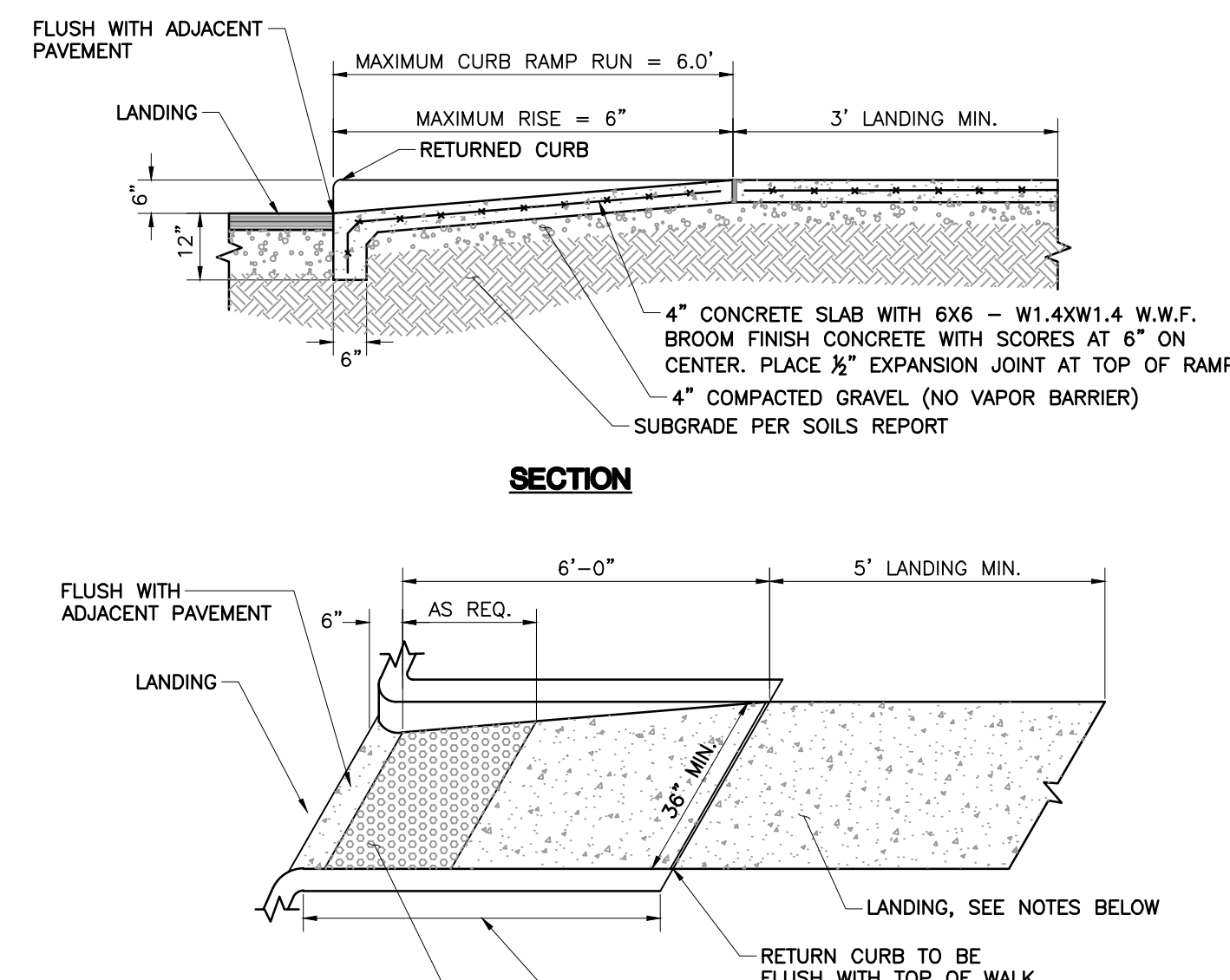
- NOTES:
1. SEE CHART IN ASPHALT PAVEMENT DETAIL FOR THICKNESSES.
 2. EXPANSION AND CONTROL JOINTS SHALL BE PER JOINT DETAILS
 3. CONCRETE SHALL BE CLASS "A" 4,000 PSI UNLESS OTHERWISE NOTED.
 4. PAVEMENT THICKNESSES SHOWN PER GEOTECHNICAL REPORT BY JACOBI GEOTECHNICAL ENGINEERING, INC. DATED SEPTEMBER, 2023. REFER TO THIS DOCUMENT FOR FURTHER SPECIFICATIONS AND/OR RECOMMENDATIONS.

DETAIL #02
CONCRETE PAVEMENT
N.T.S.



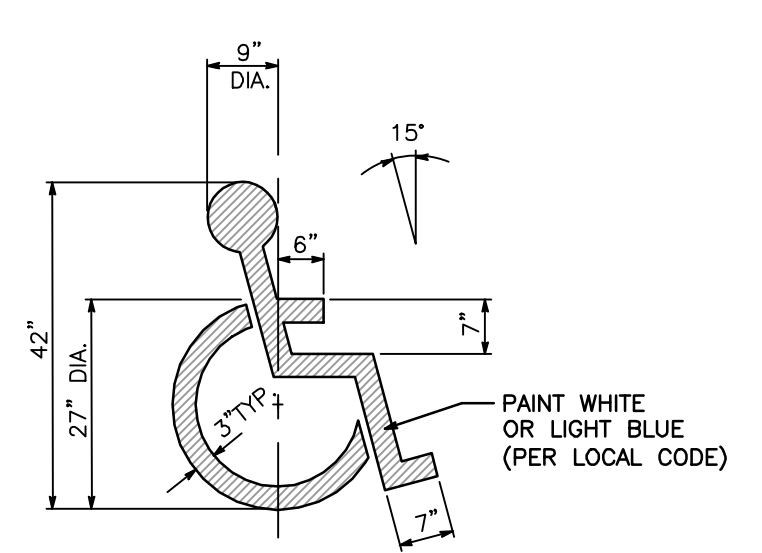
- NOTES:
1. MAXIMUM JOINT SPACING SHALL BE 15' CENTER TO CENTER.

DETAIL #04
CONCRETE JOINTS
N.T.S.



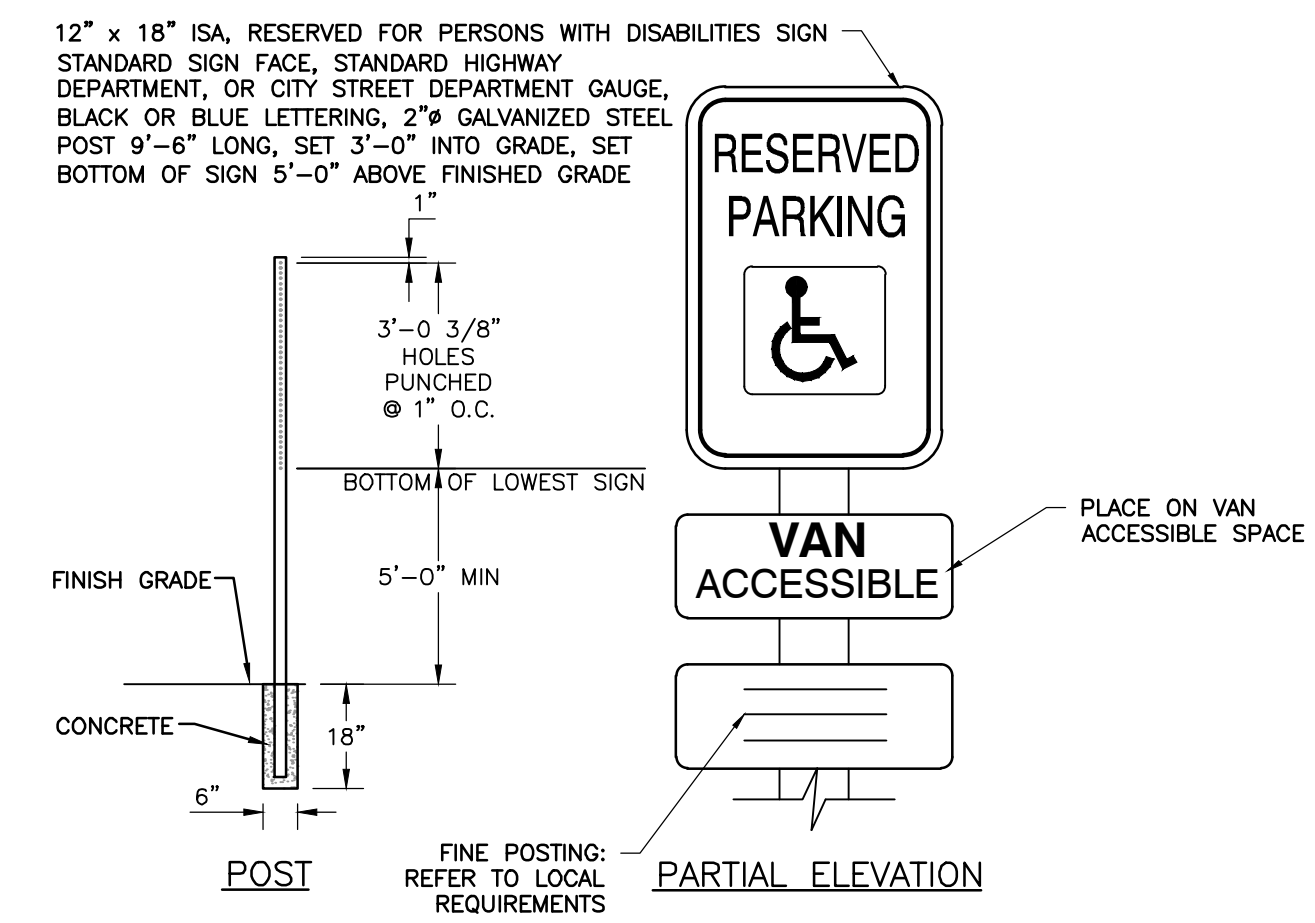
- NOTES:
1. PROVIDE 1/2" PREFORMED EXPANSION JOINT @ 25' ON CENTER.
 2. PROVIDE TOOLED CONTRACTION JOINTS AT 5' ON CENTER.

DETAIL #05
COMBINATION CONCRETE CURB - SIDEWALK
N.T.S.



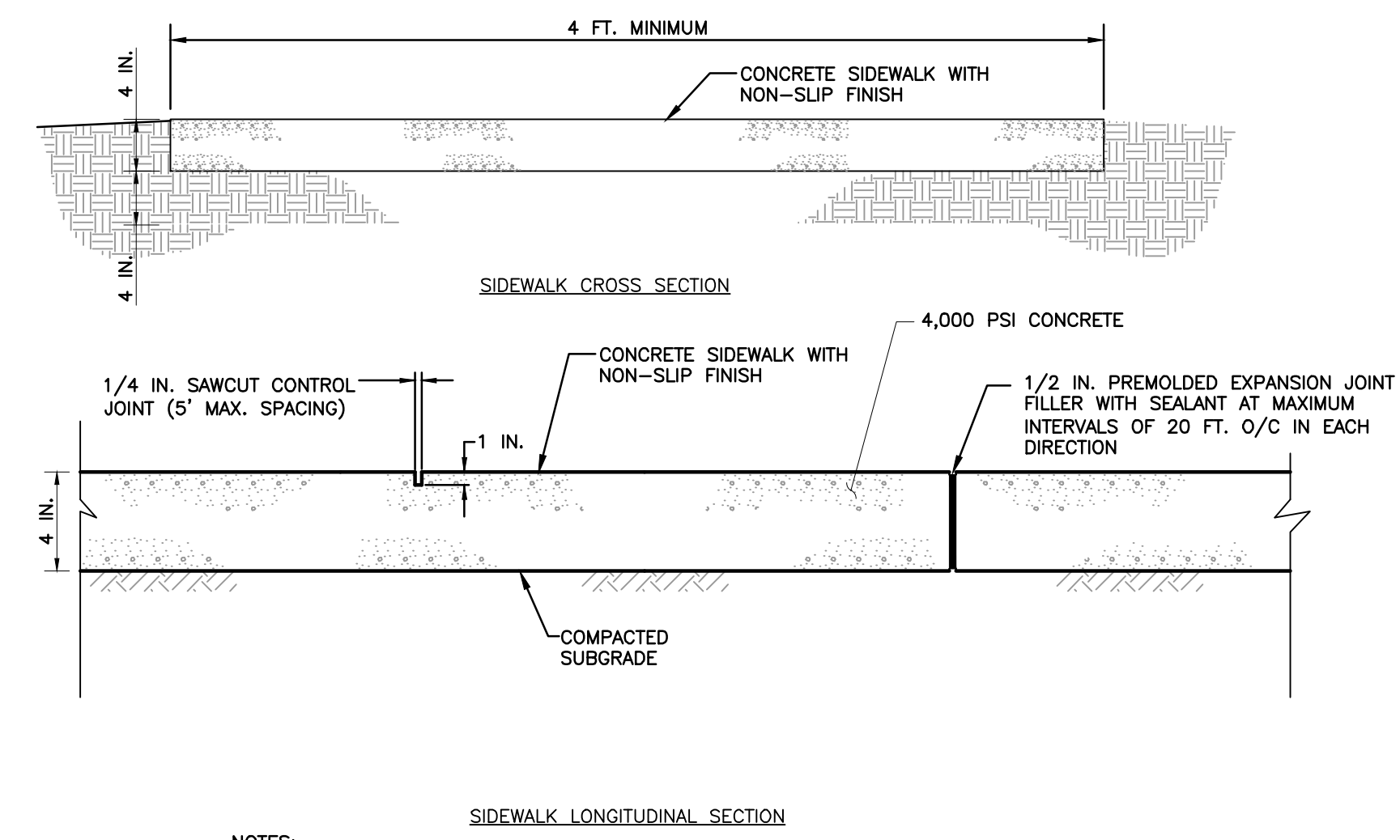
- NOTES:
1. ACCESSIBLE SPACE / LOADING AREA: MAXIMUM 48:1 SLOPE IN ANY DIRECTION.
 2. RAMP & PAVEMENT TRANSITION TO BE COMPLETELY FLUSH, NO LIP.
 2. WHEN RAMP OCCURS ON RADI, MINIMUM CLEAR LANDING WIDTH MUST BE MAINTAINED ON SHORTEST SIDE ALONG CURVE.
 3. CONSTRUCT PER A.D.A. & LOCAL STANDARDS.

DETAIL #06
ADA DEPRESSED CURB ACCESSIBLE RAMP
N.T.S.



- NOTES:
1. LANDINGS SHALL BE LEVEL (LESS THAN 2% SLOPE IN ALL DIRECTIONS) AND PROVIDED AT THE TOP AND BOTTOM OF ALL ACCESSIBLE RAMPS.
 2. LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE WIDEST RAMP RUN LEADING TO THE LANDING.
 3. LANDING CLEAR LENGTH SHALL BE 5' LONG MINIMUM.
 4. LANDINGS THAT REQUIRE A CHANGE IN DIRECTION BETWEEN RAMP RUNS SHALL HAVE A CLEAR LANDING 60" MINIMUM BY 60" MINIMUM.

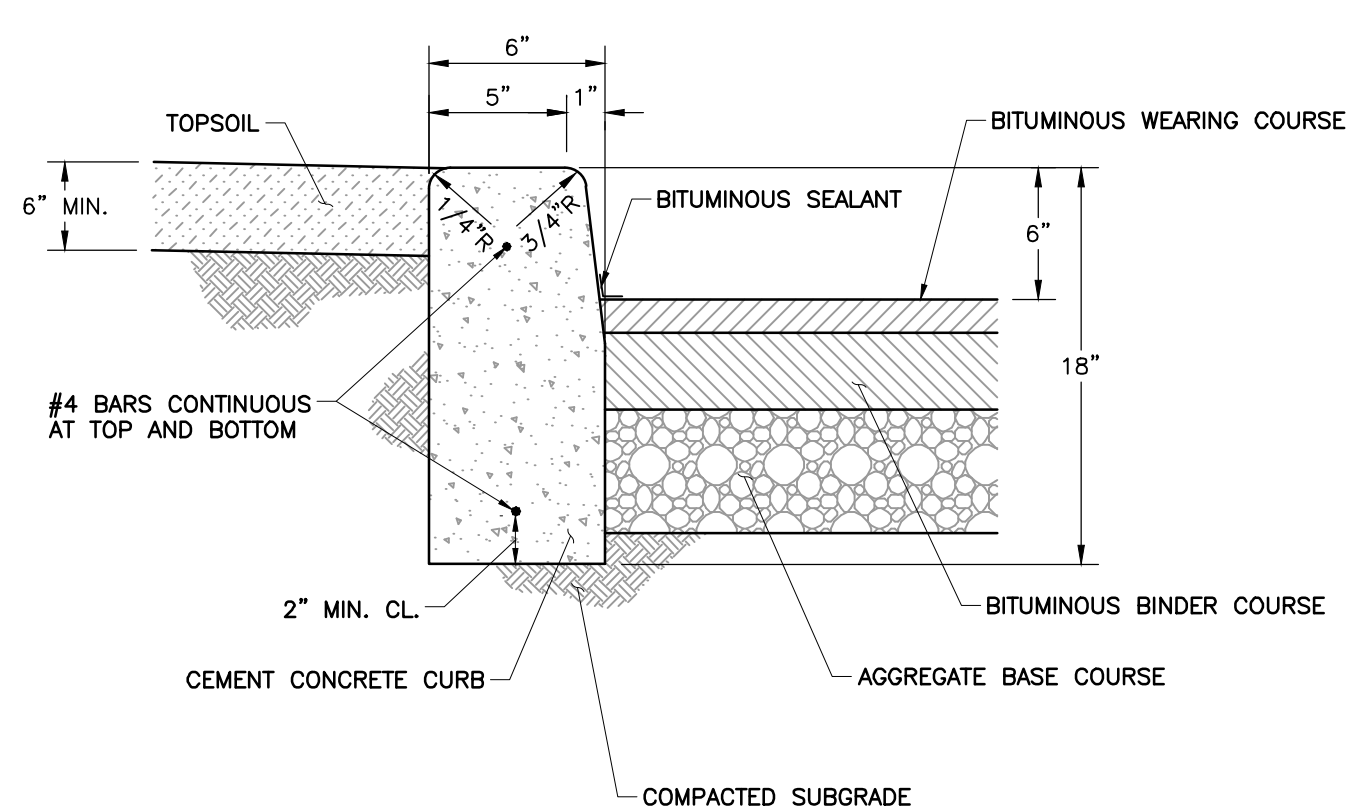
DETAIL #07
ACCESSIBLE CURB RAMP
N.T.S.



DETAIL #08
PIPE BOLLARD
N.T.S.



DETAIL #09
ACCESSIBLE PARKING SYMBOL
N.T.S.



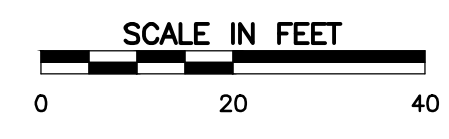
DETAIL #10
VERTICAL CONCRETE CURB
N.T.S.

- NOTE:
1. SIGN MAY BE AFFIXED TO WALL SURFACE
 2. SIGN MUST NOT PROTRUDE MORE THAN 4" (IF WALL MOUNTED) OR 12" IF POST MOUNTED HORIZONTALLY INTO PEDESTRIAN PATH.

DETAIL #11
ACCESSIBLE PARKING SIGN
N.T.S.

- NOTES:
1. PROVIDE AN 8 IN. HAUNCH AND 1/2 IN. EXPANSION JOINT FILLER WITH SEALANT WHERE THE CONCRETE SIDEWALK ABUTS THE BUILDING.

DETAIL #12
CONCRETE SIDEWALK
N.T.S.



SCALE IN FEET
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PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE

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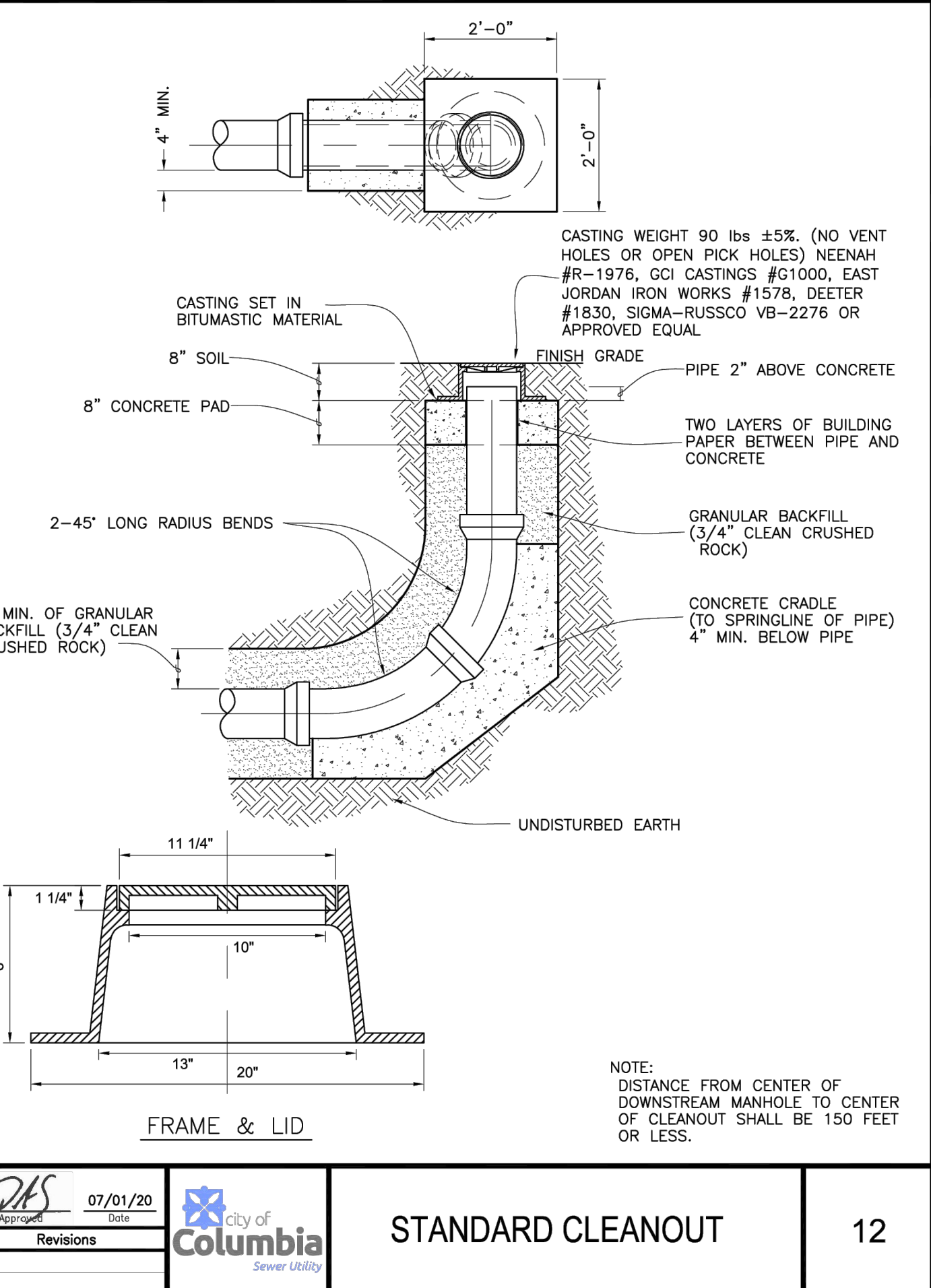
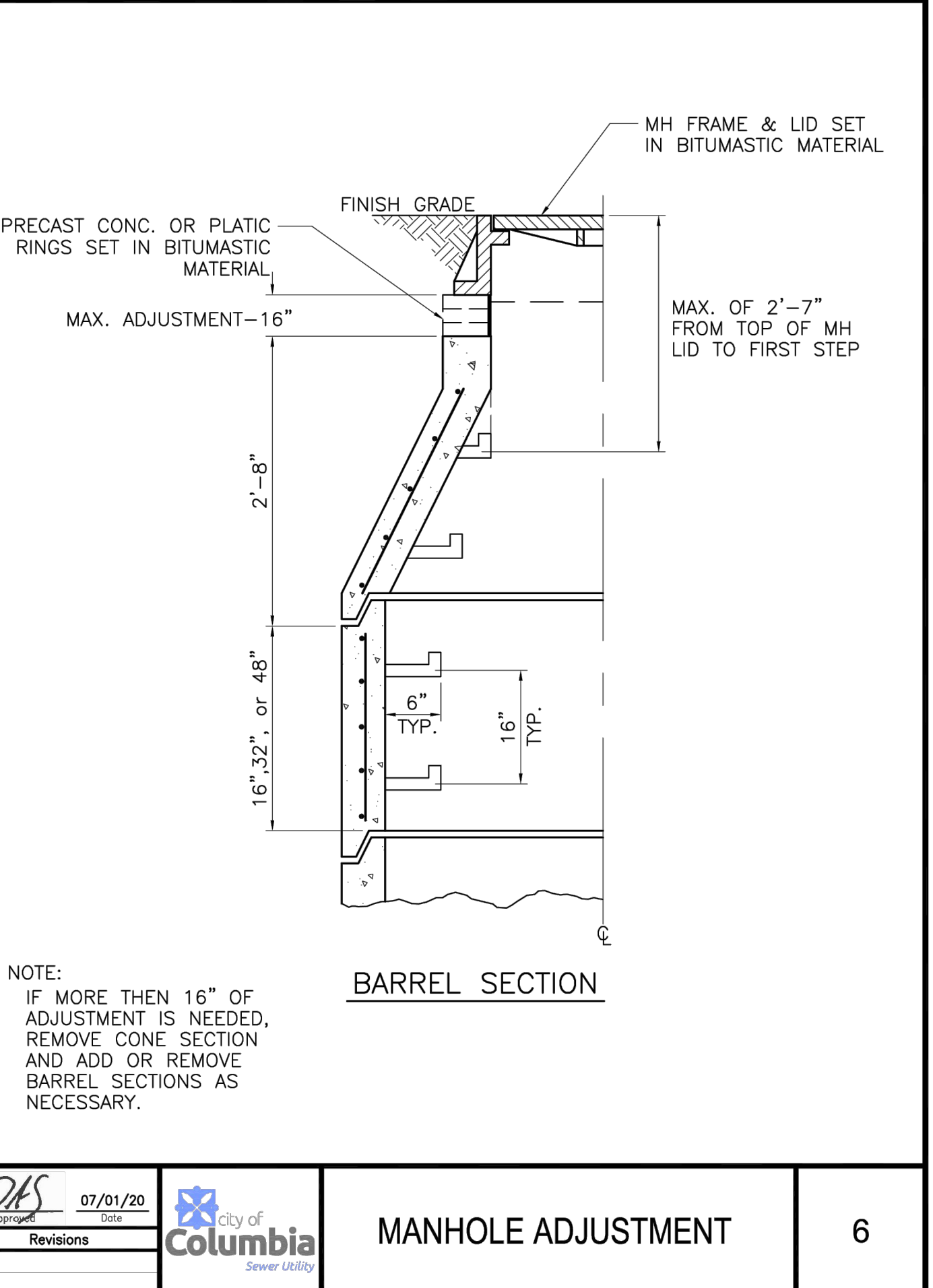
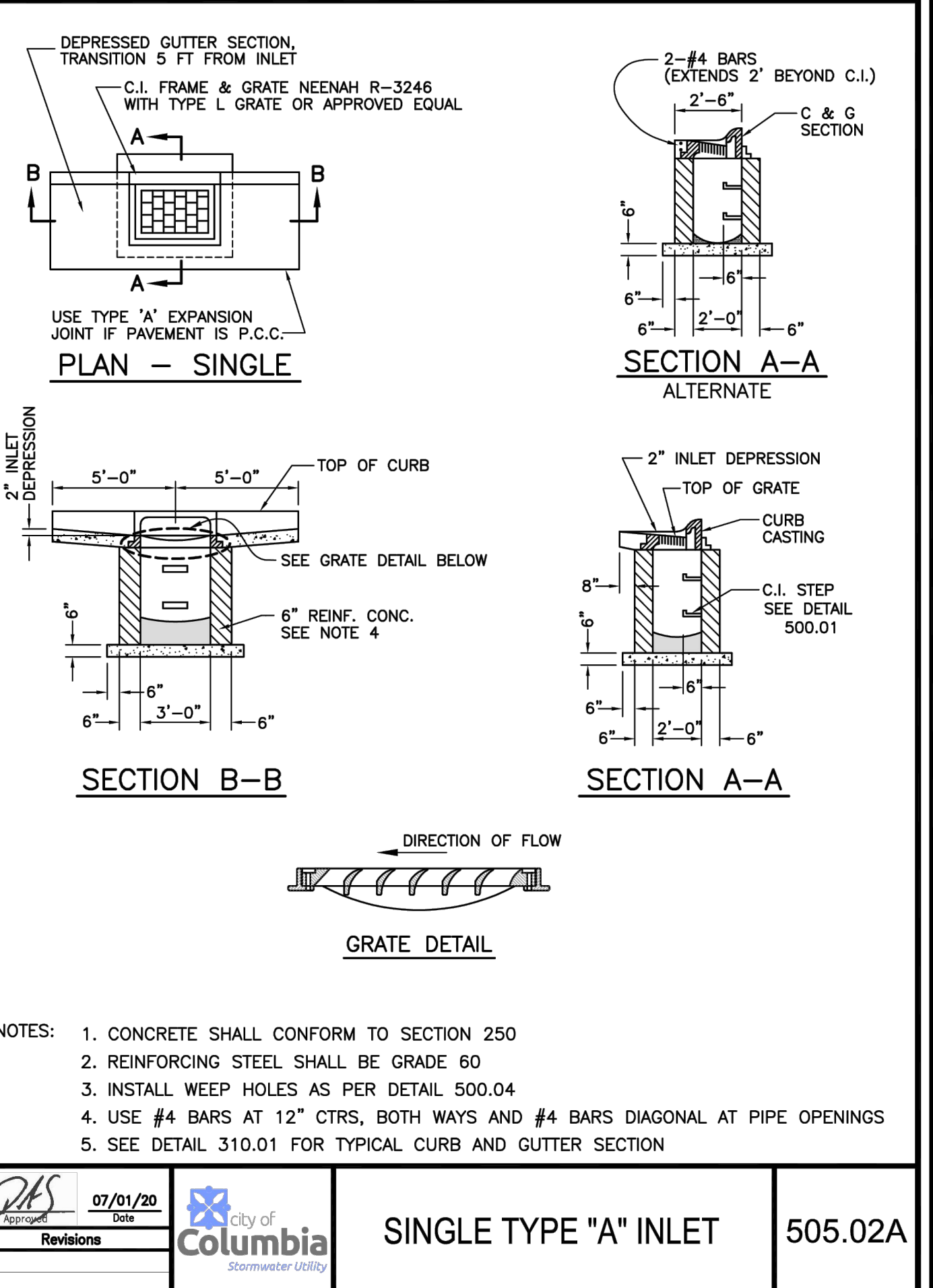
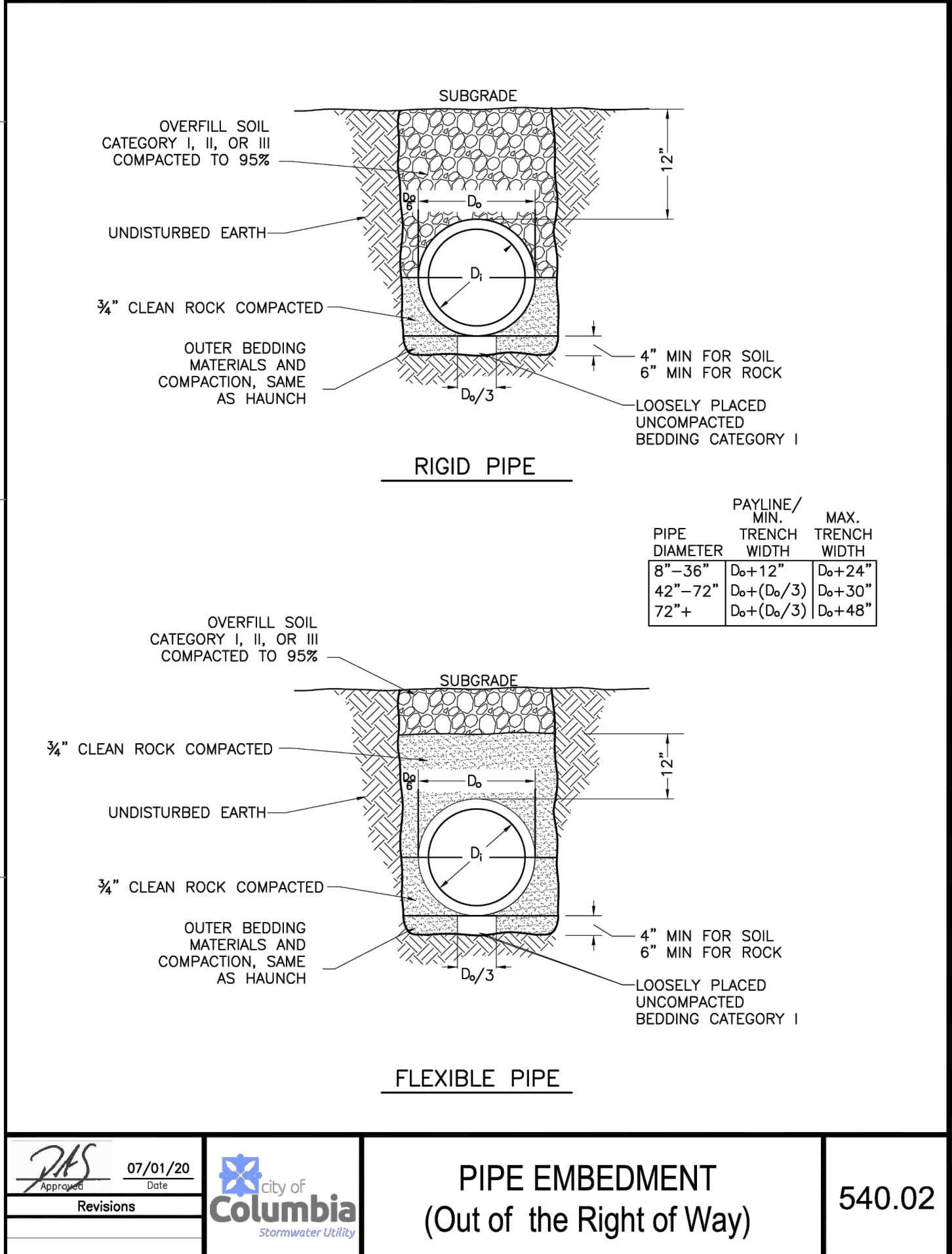
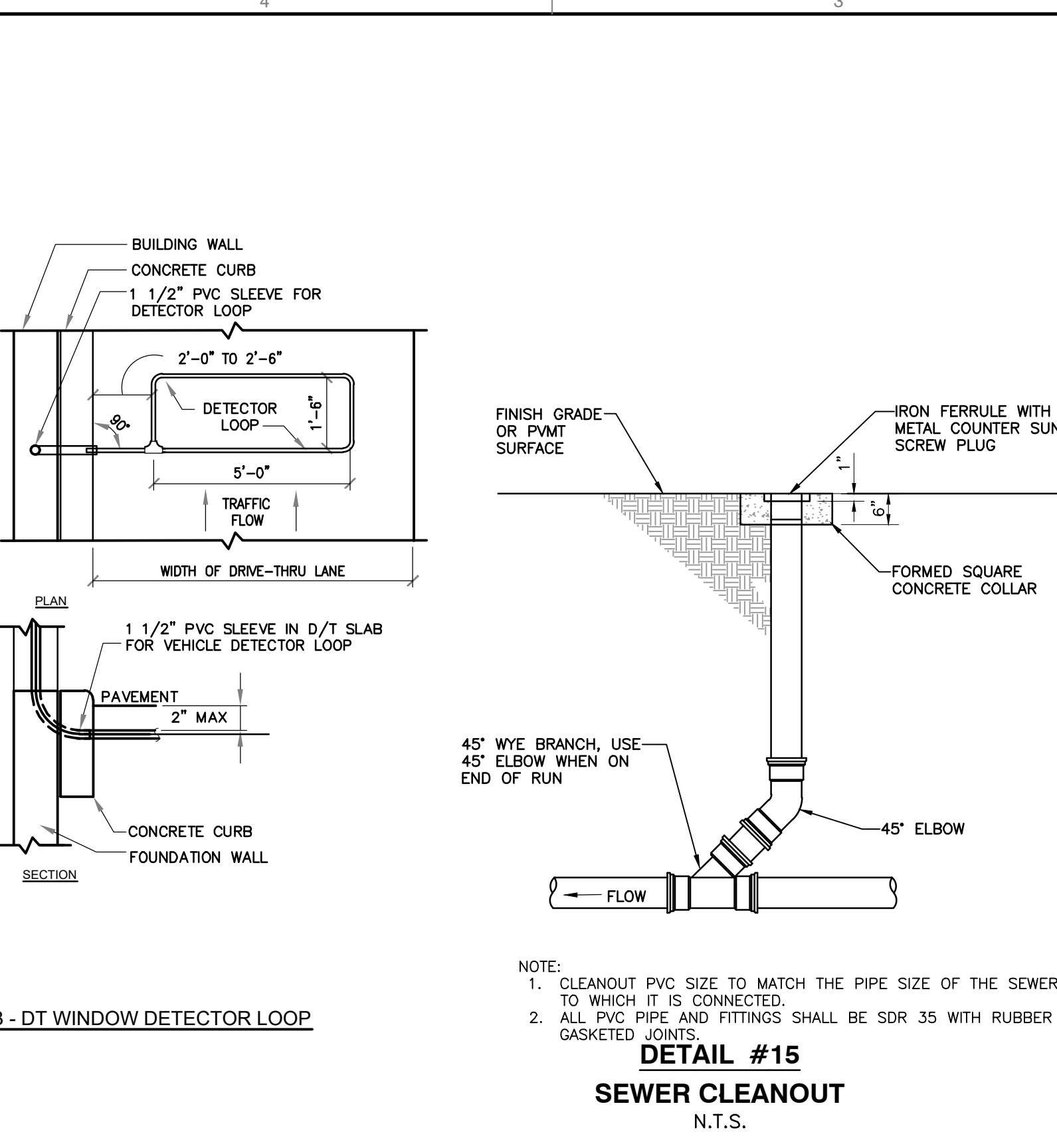
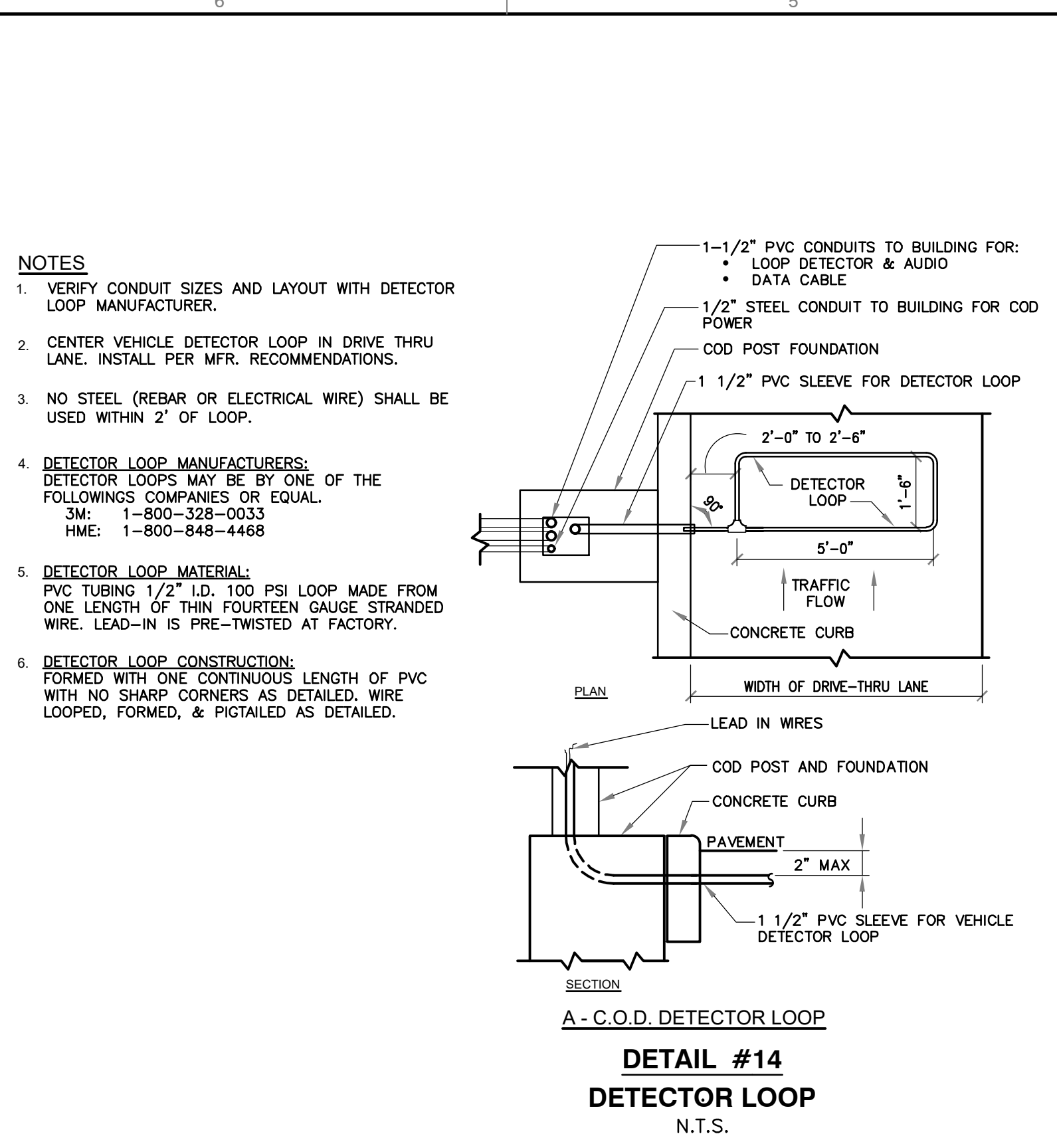
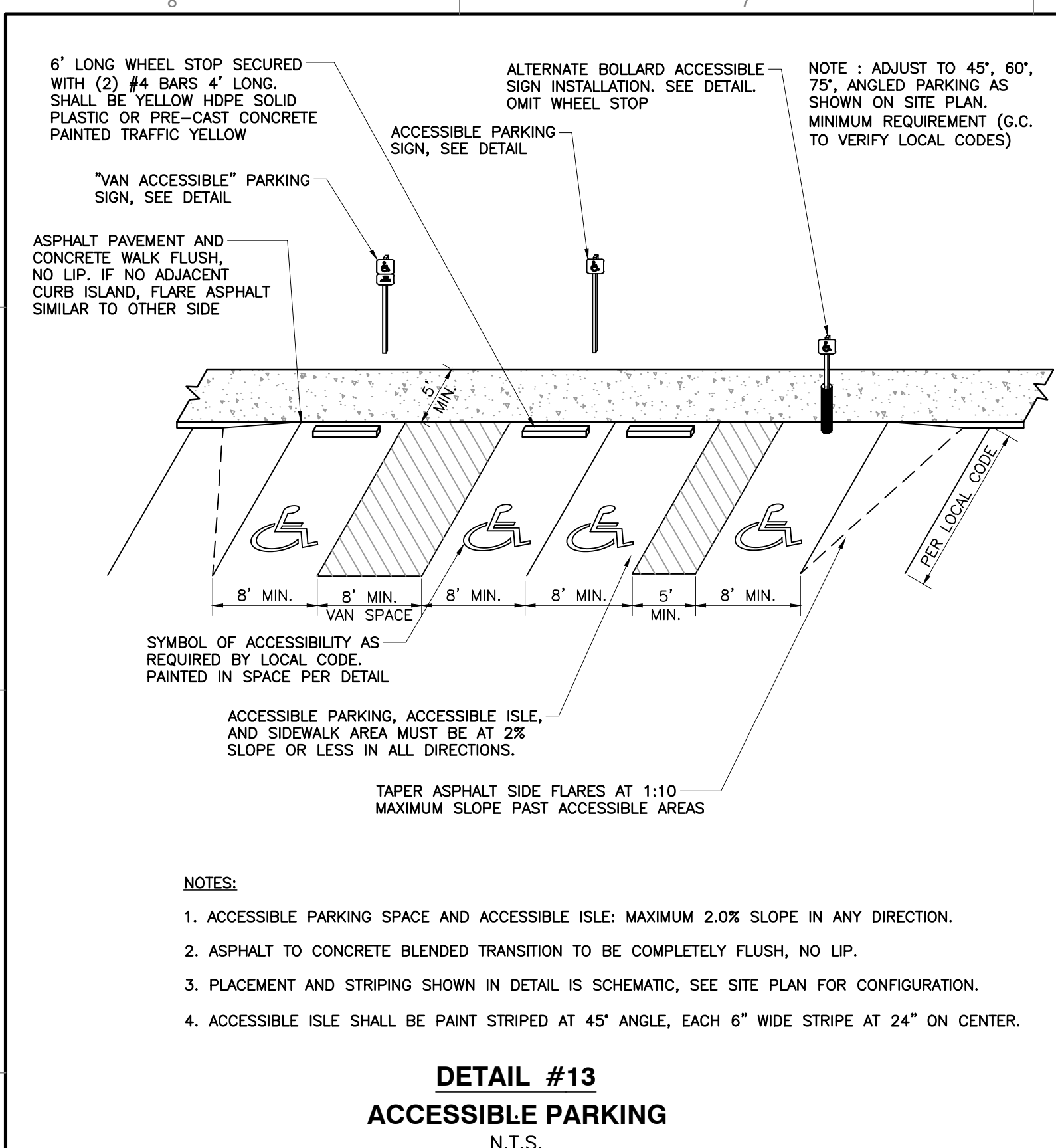
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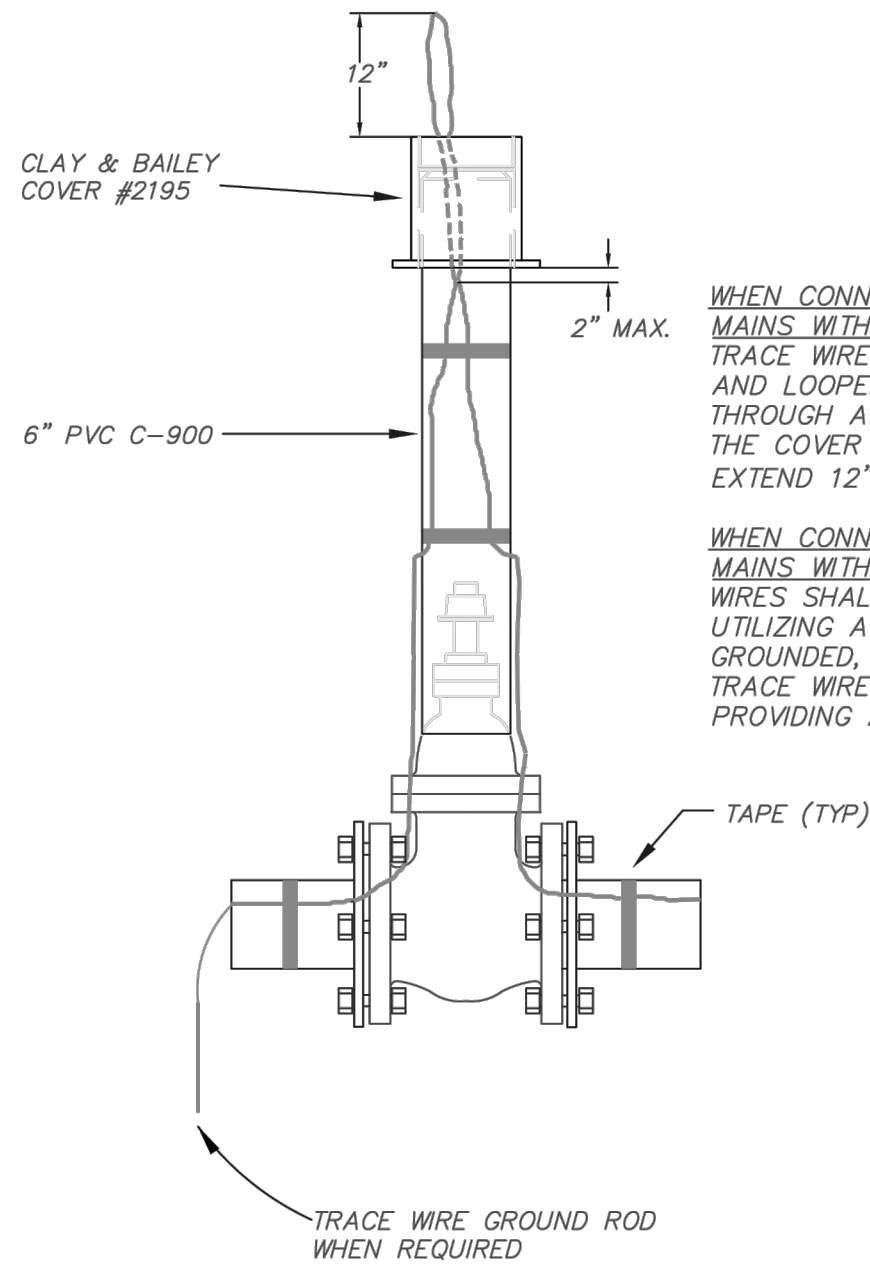


A: 1:30--1:00 1:30--7:41 -CAGD [DWG] [DWG] [1:30:74]-0101 -C800.dwg [3862] 151/120/2024 - encltwn - LP: 2/16/2024 8:23 AM




811 or 1-800-DIG-RITE
https://www.mo1call.com/

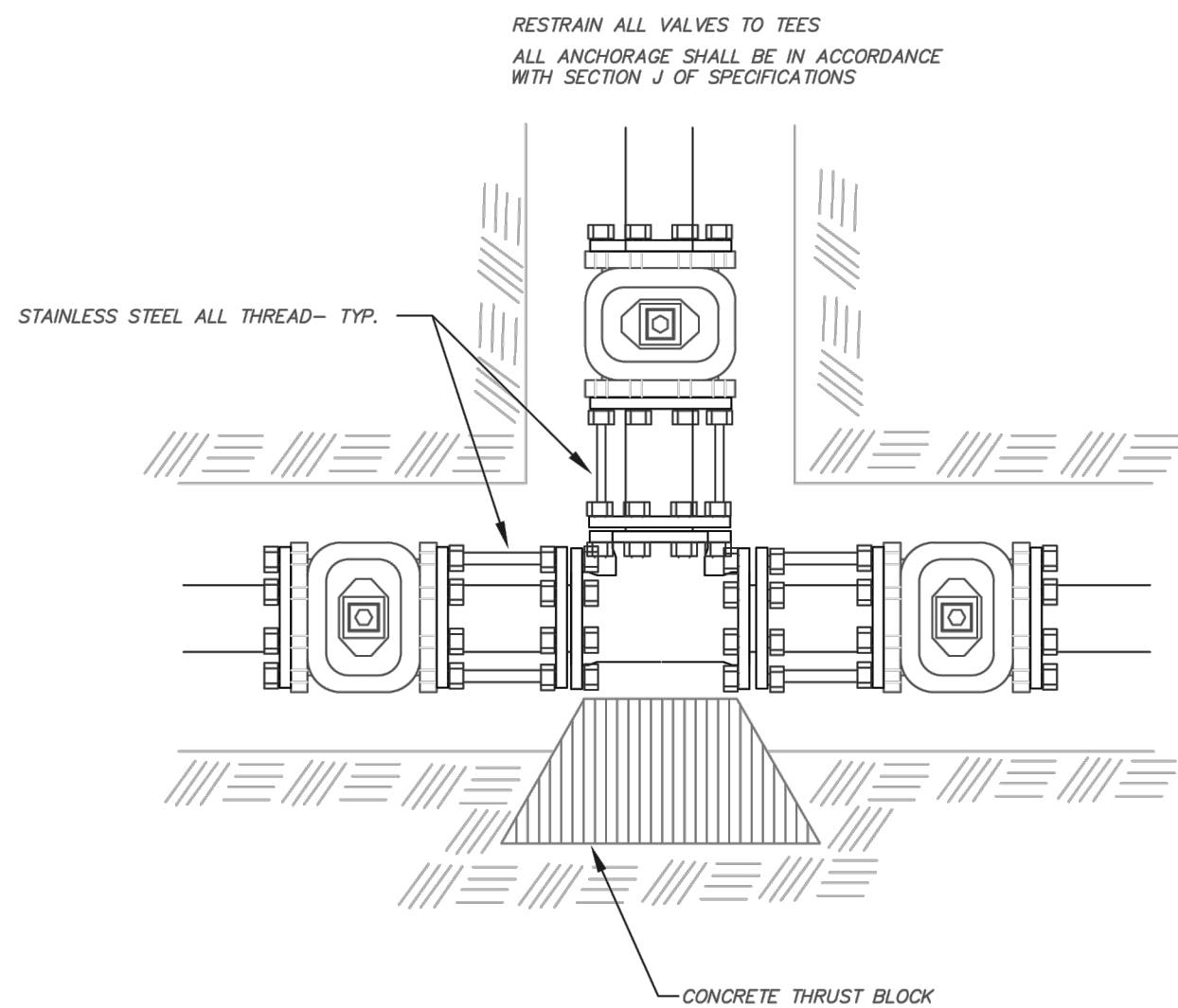
NOTE TO CONTRACTOR: PRIOR TO ANY EXCAVATION FOR UNDERGROUND UTILITIES, CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES INCLUDING BUT NOT LIMITED TO GAS, WATER, BROADBAND, PHONE, SANITARY AND STORM SEWERS. ANY CONFLICT SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND APPROPRIATE AUTHORITIES

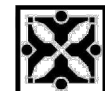


WHEN CONNECTING TO EXISTING MAINS WITHOUT TRACE WIRE
TRACE WIRE SHALL BE GROUNDED AND LOOPED INTO VALVE BOX THROUGH A HOLE JUST BELOW THE COVER WITH ENOUGH WIRE TO EXTEND 12" ABOVE FINAL GRADE

WHEN CONNECTING TO EXISTING MAINS WITH TRACE WIRE
WIRES SHALL BE BONDED UTILIZING A BRANCH CONNECTOR, GROUNDED, AND INSTALLED PER TRACE WIRE SPECIFICATION PROVIDING ACCESS AS REQUIRED

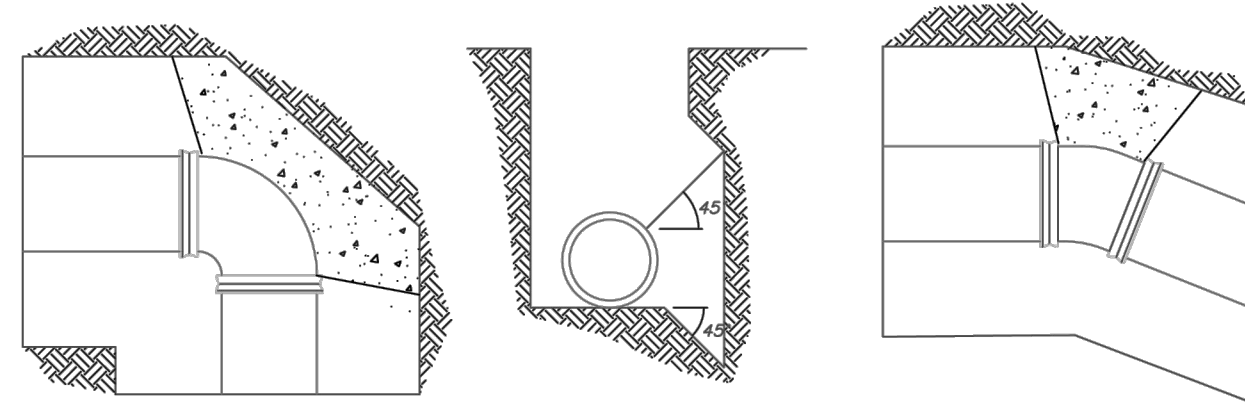
 **City of Columbia, Missouri**
Utilities Department - Water & Light
Locate Wire At Valve
Detail Sheet- Q 03
701 East Broadway - Columbia, Boone, Missouri - Phone: 573-875-2555




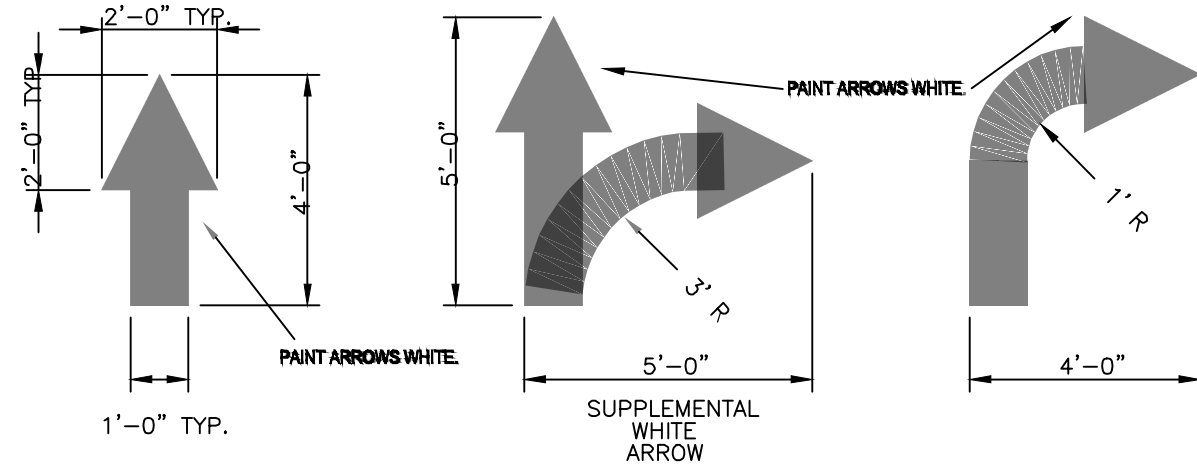
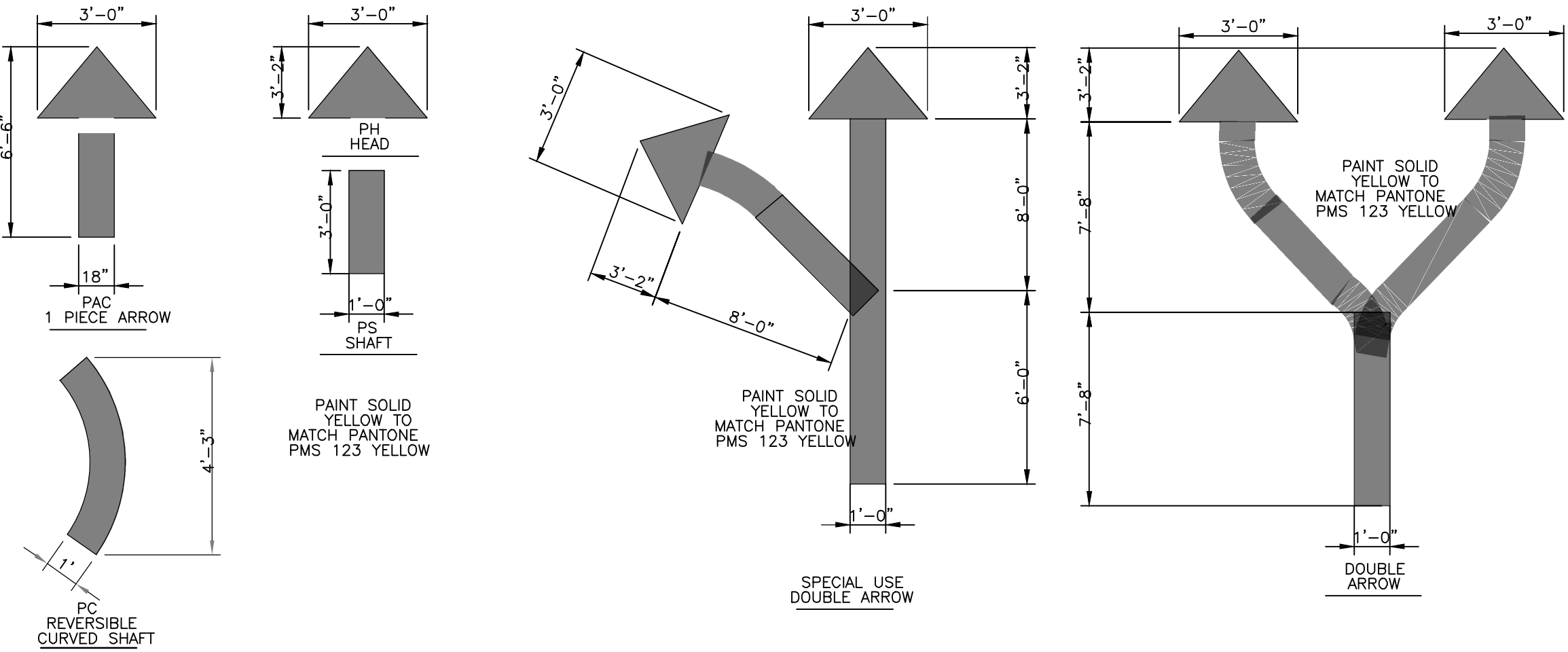
 **City of Columbia, Missouri**
Utilities Department - Water & Light
Valves at Intersections And Branches
Detail Sheet- Q 04
701 East Broadway - Columbia, Boone, Missouri - Phone: 573-875-2555

MINIMUM BEARING AREA ON UNDISTURBED EARTH IN SQUARE FEET

PIPE SIZE	11.25'	22.5'	45'	90'	TEE
6"	1	2	4	7	5
8"	2	3	6	12	8
12"	4	7	14	26	18
16"	6	13	25	46	33
24"	15	31	60	111	78

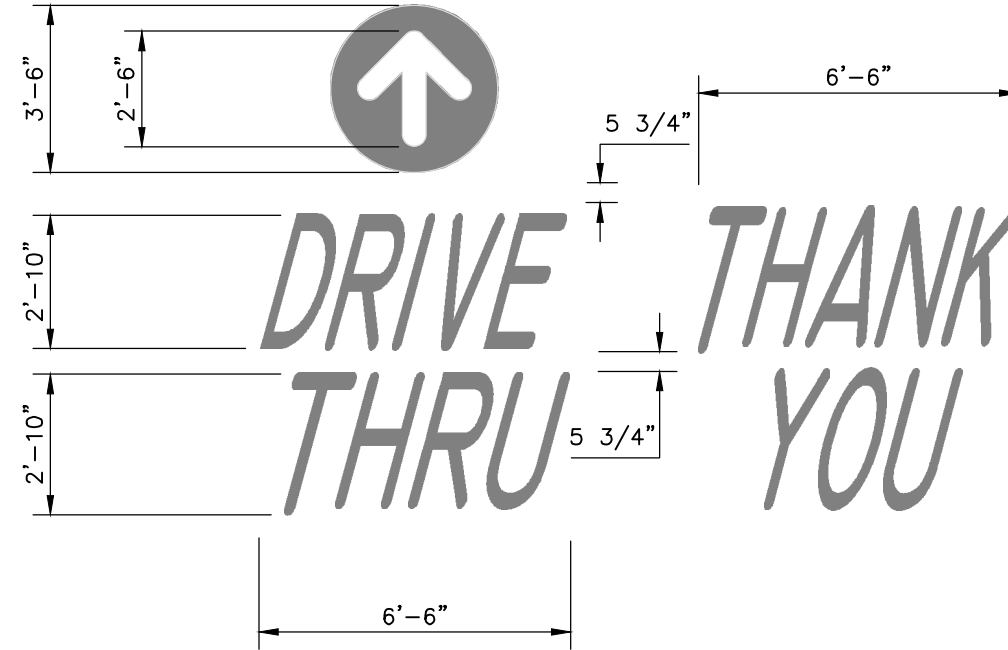


 **City of Columbia, Missouri**
Utilities Department - Water & Light
Thrust Block Detail
Detail Sheet- Q 05
701 East Broadway - Columbia, Boone, Missouri - Phone: 573-875-2555

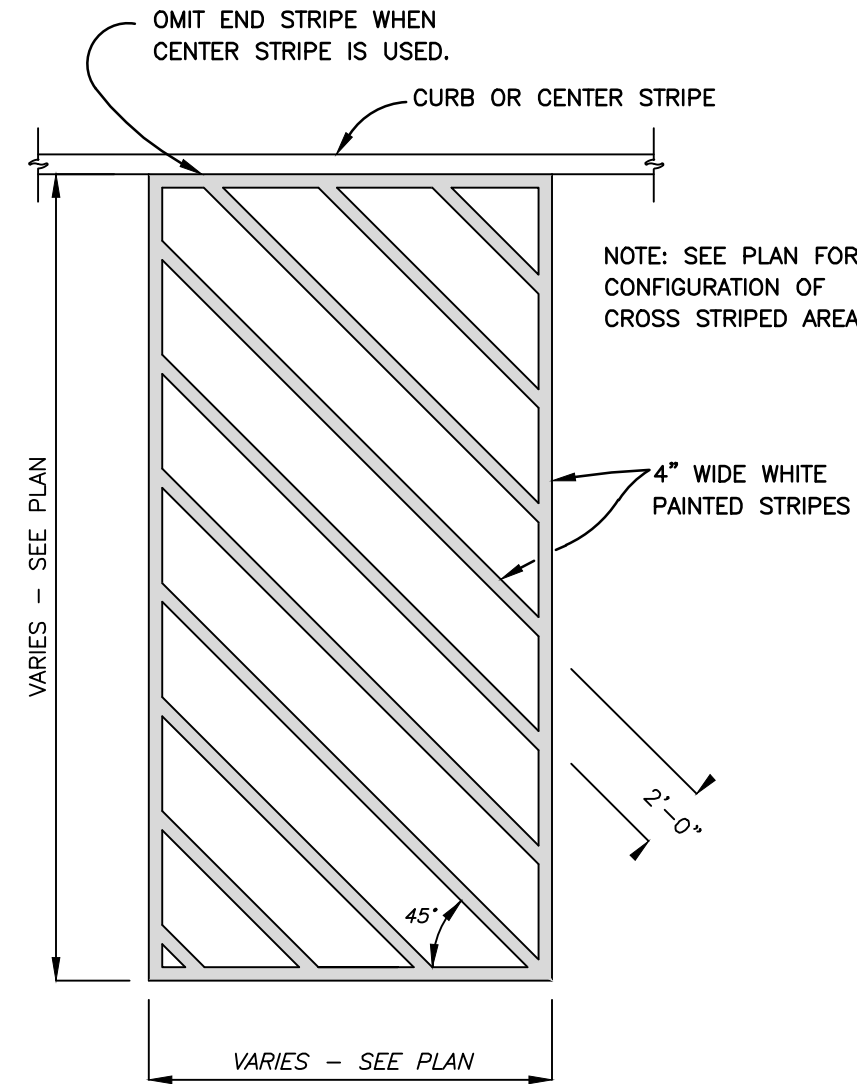


DETAIL #24
DIRECTIONAL ARROWS
N.T.S.

- PAVEMENT BRANDING NOTES:**
1. YELLOW PAINT (PMS123) IS USED FOR ALL DRIVE-THRU MARKINGS.
 2. THE WORDS 'DRIVE-THRU' AND THE CIRCLE ARROW ARE PLACED AT ALL ENTRANCES TO THE LOT APPROX. 25' TO 30' FROM THE CURB OR SIDEWALK.
 3. THE WORDS 'DRIVE-THRU' SHOULD BE CENTERED IN THE DRIVEWAY FOR ONE WAY TRAFFIC (ON THE INGRESS SIDE OF THE DRIVE AISLE IF THERE IS TWO WAY TRAFFIC).
 4. THE CIRCLE DIRECTIONAL ARROW SHOULD BE CENTERED ABOVE THE WORD 'DRIVE' APPROX. 5' IN TO THE PARKING LOT.
 5. IF FIVE OR MORE ARROWS ARE NEEDED TO DIRECT CARS TO THE DRIVE-THRU, PLAN THE CORRECT PLACEMENT OF THE ARROWS TO INCLUDE THE APPLICATION OF THE WORDS 'DRIVE-THRU' WITH AN ARROW CENTERED ABOVE THE WORD 'DRIVE,' ORIENTED TO THE DECISION POINT.
 6. THE ARROW ART KNOCKS OUT SO THAT THE ARROW IS THE COLOR OF THE UNDERLYING PAVEMENT.



DETAIL #25
PAVEMENT-BRANDING
N.T.S.



DETAIL #26
STRIPING DETAIL
N.T.S.

CONSTRUCTION DETAILS
DATE: DECEMBER 22, 2023
DRAWN BY: PATRICK T. BENNETT
PROJECT NO: 332-743
APPROVED BY: [Signature]
GAS
PTB
332-743
DRAFT



SCALE IN FEET
0 20 40

PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE

DRAWING NO: **C802**
SHEET 12 OF 23

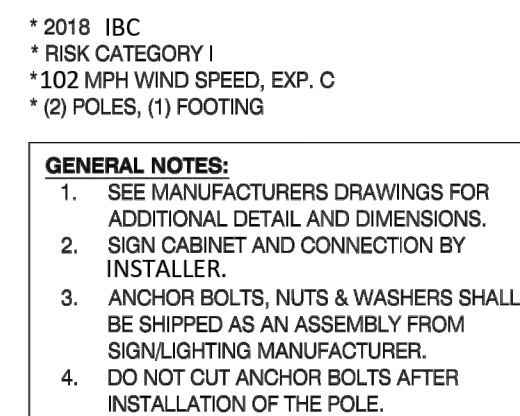
MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



Civil & Environmental Consultants, Inc.
CERTIFICATION/LICENSE NO. 2002013942
3000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679
www.ccecinc.com

SUBMITTAL RECORD

NO	DATE	DESCRIPTION
1	01/15/2024	ISSN FOUNDATIONS AND RETENTION PLANS
2	02/15/2024	CITY COMMENTS



NOTE:
INCLUDE COMPLETION PHOTOS OF MOUNTING / CONNECTION POINTS
INCLUDING FOUNDATION, BASE PLATES, ANCHOR BOLTS, MATCH PLATE,
WALL MOUNTING AND WELDING CONNECTIONS IF APPLICABLE.

INSTALLER TO FURNISH:
1. INSTALLER TO BE SURE SIGNS ARE PROPERLY CONNECTED AND
GROUNDING.

GENERAL CONTRACTOR TO FURNISH:
1. CONCRETE BASE,
2. ALL ELECTRICAL COMPONENTS REQUIRED.
3. PRIMARY WIRES FROM BUILDING (OR SOURCE) TO AND INCLUDING THE
CONNECTION TO THE BREAKER BOX.

CONCRETE SPECIFICATIONS:
CONCRETE SHALL HAVE MIN. COMPRESSIVE
STRENGTH OF 3,000 PSI @ 28 DAYS, REINFORCING STEEL SHALL HAVE
MIN. YIELD STRENGTH OF 60,000 PSI, RECOMMENDED MIN. CURE TIME OF
7 DAYS BEFORE SIGN INSTALLATION.

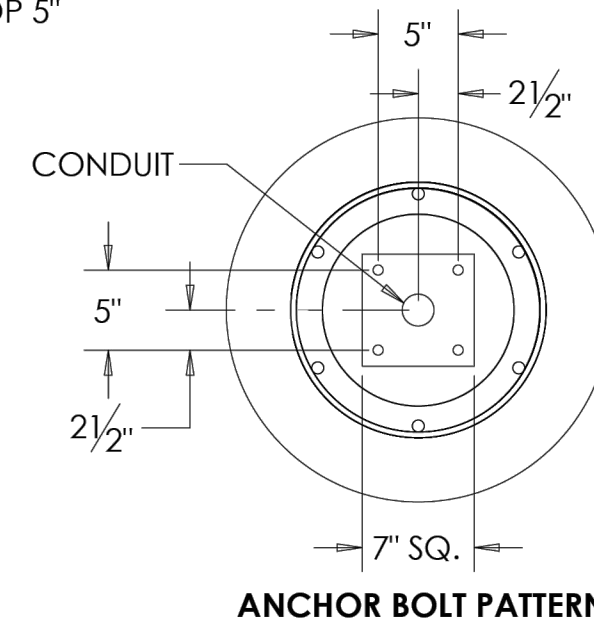
DESIGN NOTES:

1. CONCRETE FOUNDATION DESIGNED USING A NET ALLOWABLE SOIL STRESS BEARING PRESSURE OF 100 PSF/FT OF DEPTH. IF THESE SOIL CONDITIONS DO NOT EXIST AT THE FOUNDATION LOCATION, IT IS THE ERECTOR'S RESPONSIBILITY TO NOTIFY EVERBILT, LLC, PRIOR TO PERFORMING ANY FOUNDATION EXCAVATION OR ANY CONCRETE PLACEMENT.
2. ALL FOUNDATION EXCAVATIONS ARE TO BE FREE OF WATER AND ALL EXCESSIVE MATERIAL PRIOR TO POURING CONCRETE.
3. THE FOUNDATION IS DESIGNED TO WITHSTAND IBC 1018 102 MPH EXPOSURE C WIND LOADS.

THIS SIGN IS INTENDED TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 600 OF THE NATIONAL ELECTRIC CODE OR OTHER APPLICABLE CODES. THIS INCLUDES PROPER GROUNDING AND BONDING OF THE SIGN.

INSTALLATION INSTRUCTIONS:

1. STAKE FOUNDATION AREA AND EXCAVATE.
2. ALLOW CONCRETE CURE TIME AS REQUIRED.
3. PLACE (4) 1/2" LEVELING NUTS AND WASHERS ON THE FOUR ANCHOR BOLTS TO PROVIDE A 1/2" GAP BETWEEN THE FOUNDATION AND BASE PLATE OF THE POLE.
4. POSITION THE POLE ONTO THE ANCHOR BOLTS AND SECURE IN PLACE WITH (4) 1/2" NUTS AND (4) 1/2" WASHERS.
5. LEVEL POLE BY ADJUSTING THE 1/2" NUTS.
6. TIGHTEN THE WIRING CLAMP AND TIGHTEN THE GREEN, WHITE AND BLACK WIRES PURSUING FROM THE SIGN BASE.
7. CLEAN SITE AND PACKAGING MATERIAL.
8. OBTAIN SIGN OF INSTALLATION AND HAVE FIELD SERVICE REPORT SIGNED BY OPERATOR OR MANAGER.



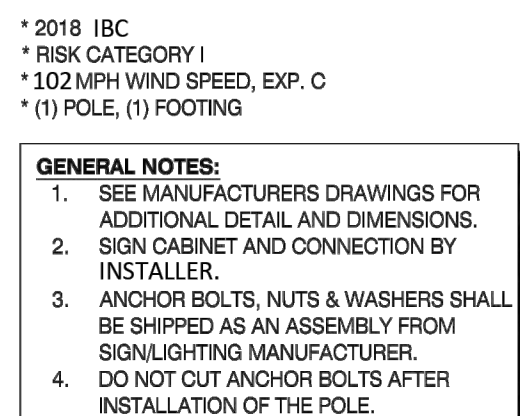
DIRECTION SIGN FOUNDATION DETAIL

N.T.S.

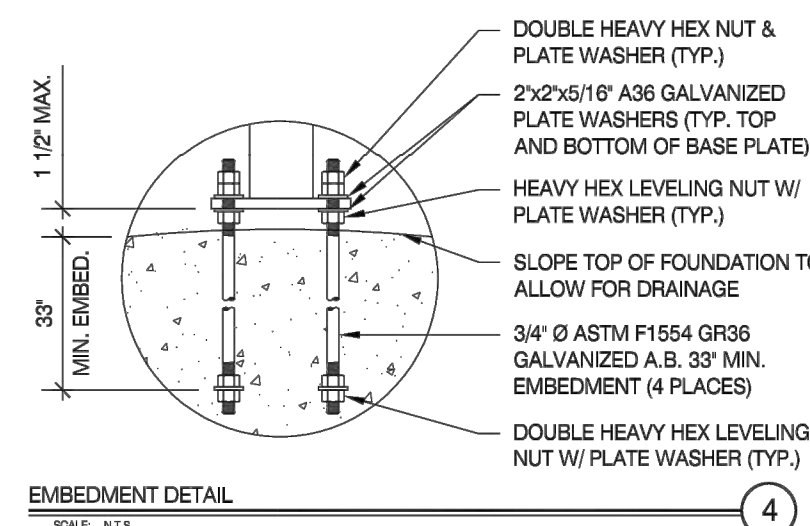
SIGNS A, B, & K

ELECTRICAL DATA:
1.30 AMPS @ 120 VOLTS.
(1) 20 AMP 120 VOLT CIRCUIT REQUIRED.

SIGN AREA:
BOXED: 2.875 SQ. FT.



SIGN AREA:
BOXED: 2.875 SQ. FT.



④

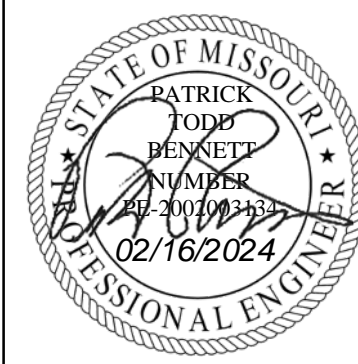
DRIVE-THRU GATEWAY DETAIL

N.T.S.



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PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



SIGN FOUNDATION DETAILS

DRAWING NO. **C**
SHEET

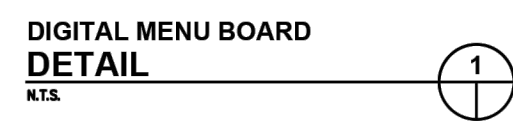
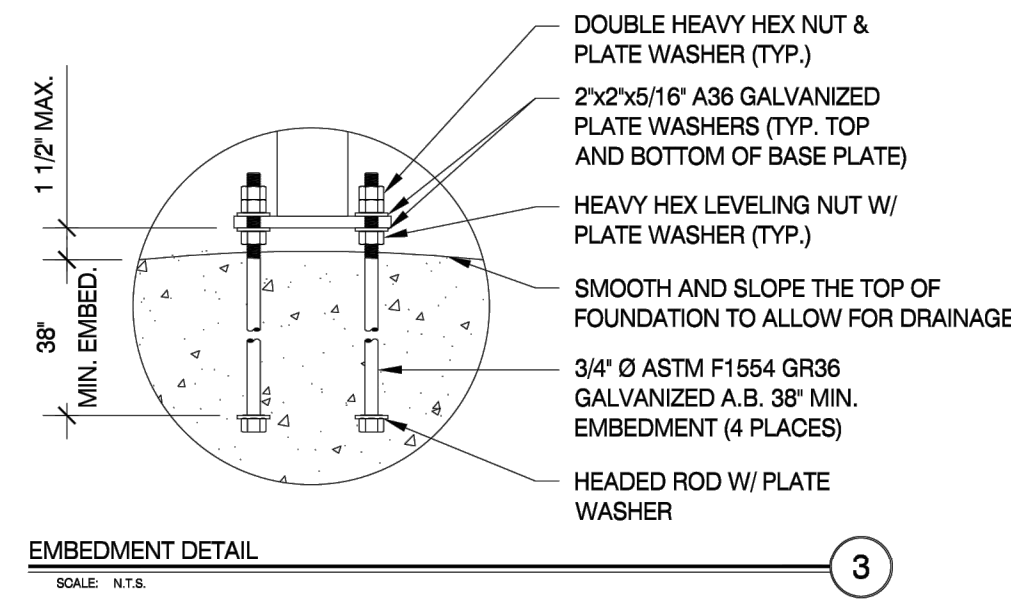
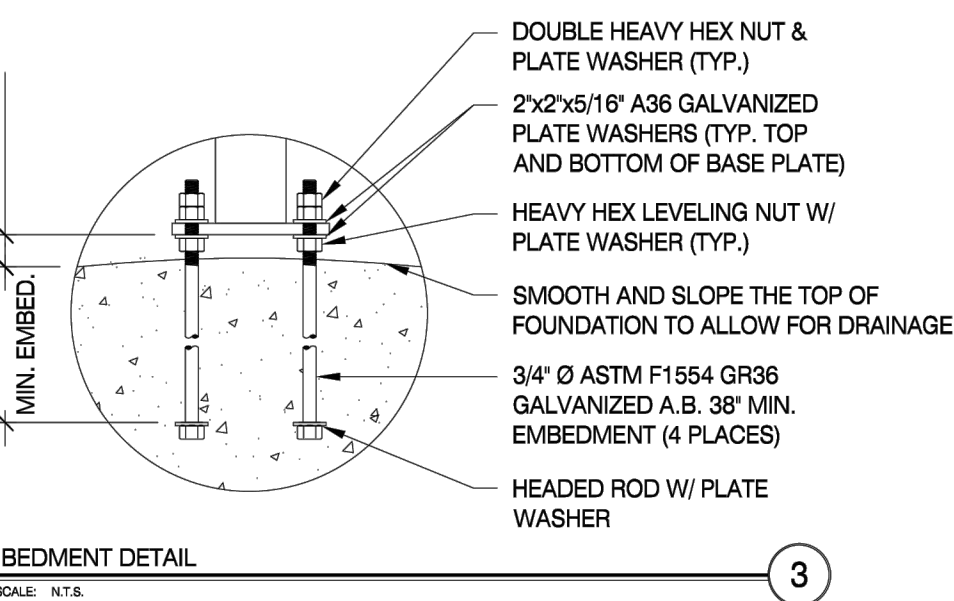
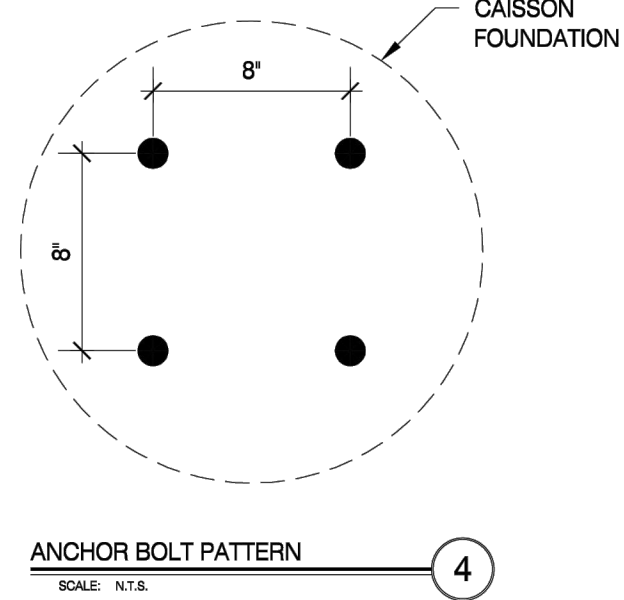
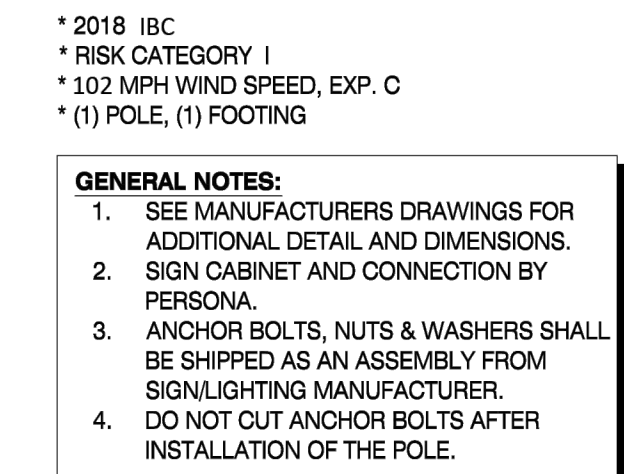
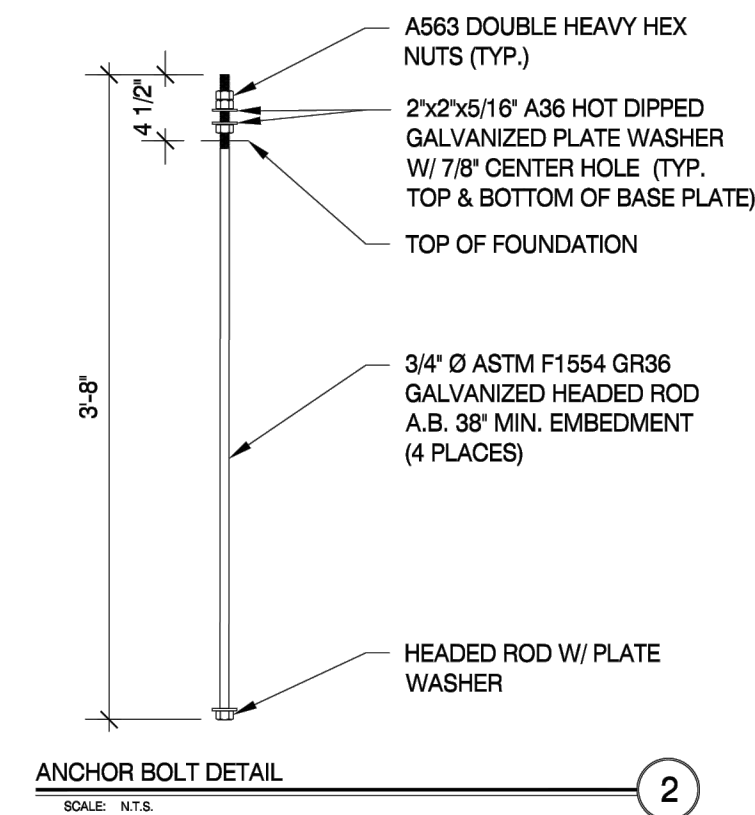
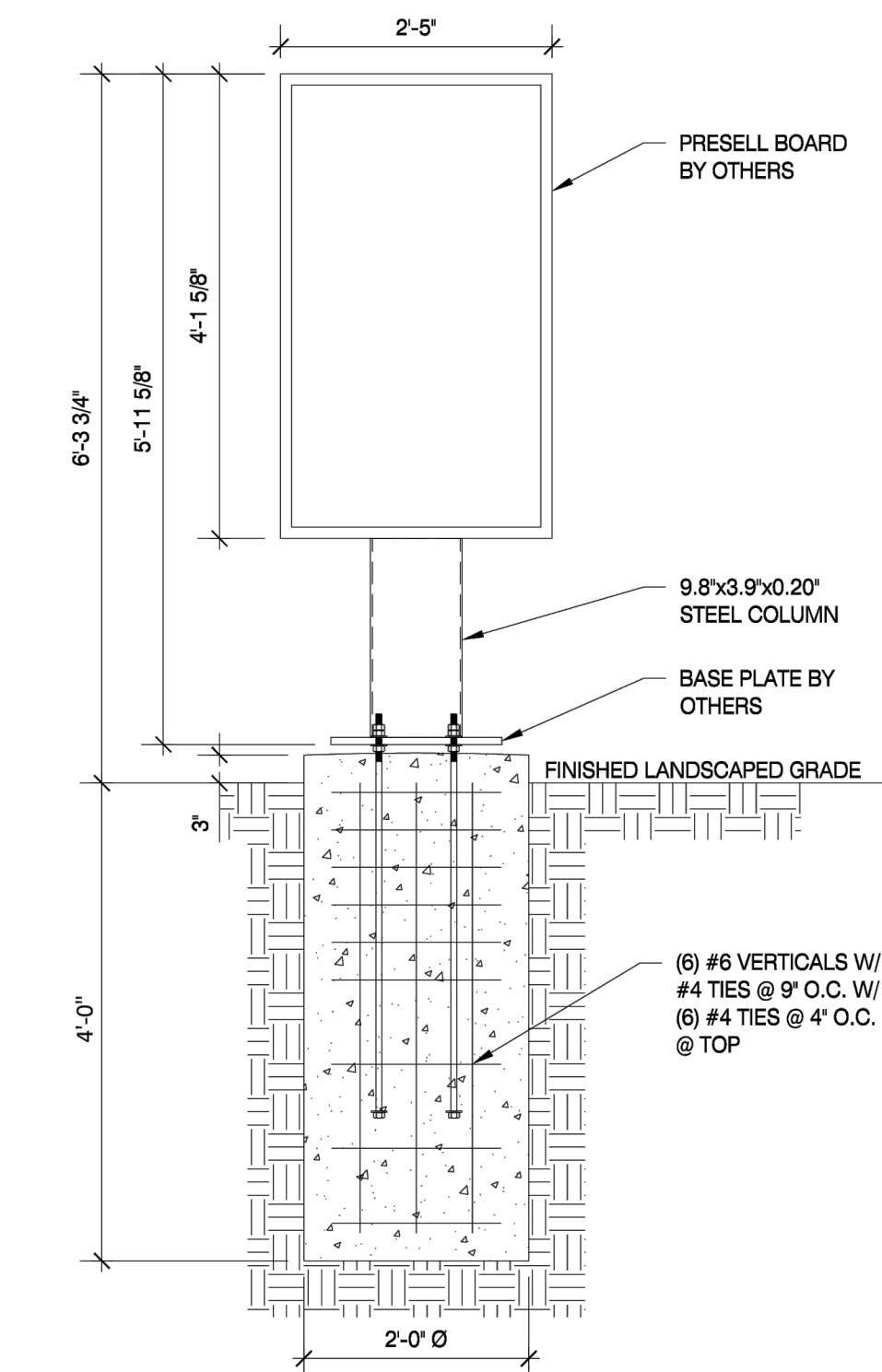
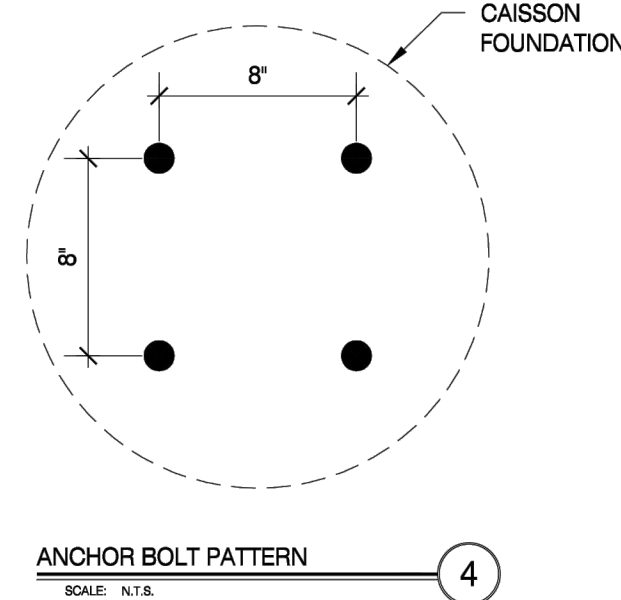
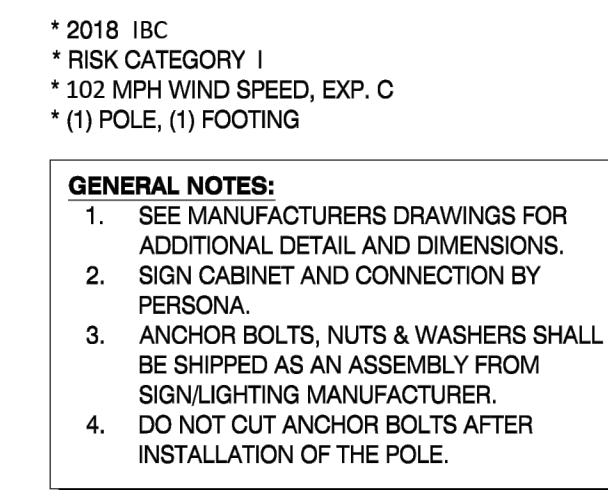
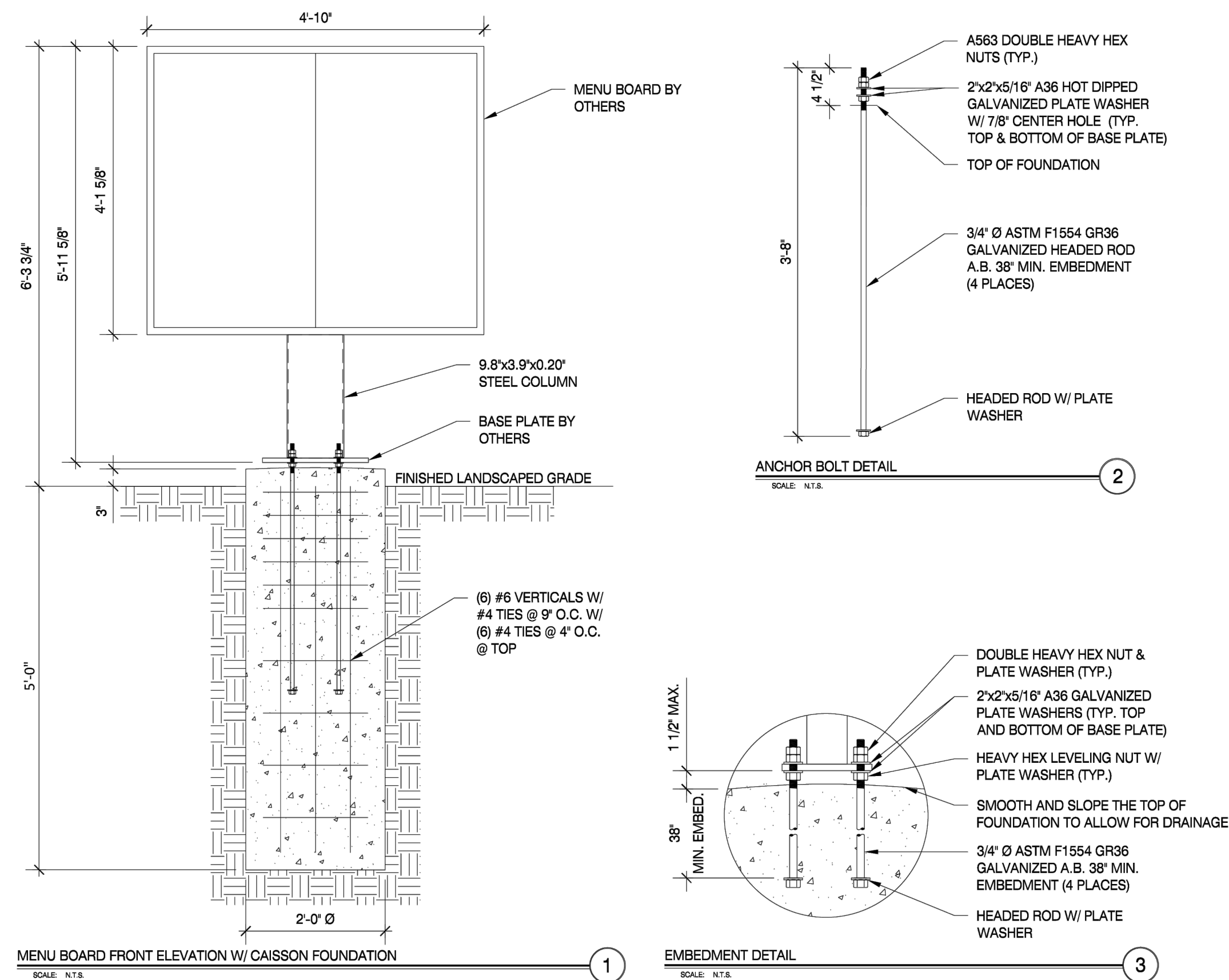
DATE:	DECEMBER 22, 2023	DRAWN BY:	GAS
DWG SCALE:		CHECKED BY:	PTB
PROJECT NO:			332-743
APPROVED BY:			DRAFT

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI

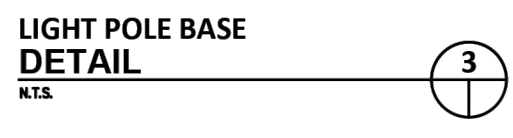
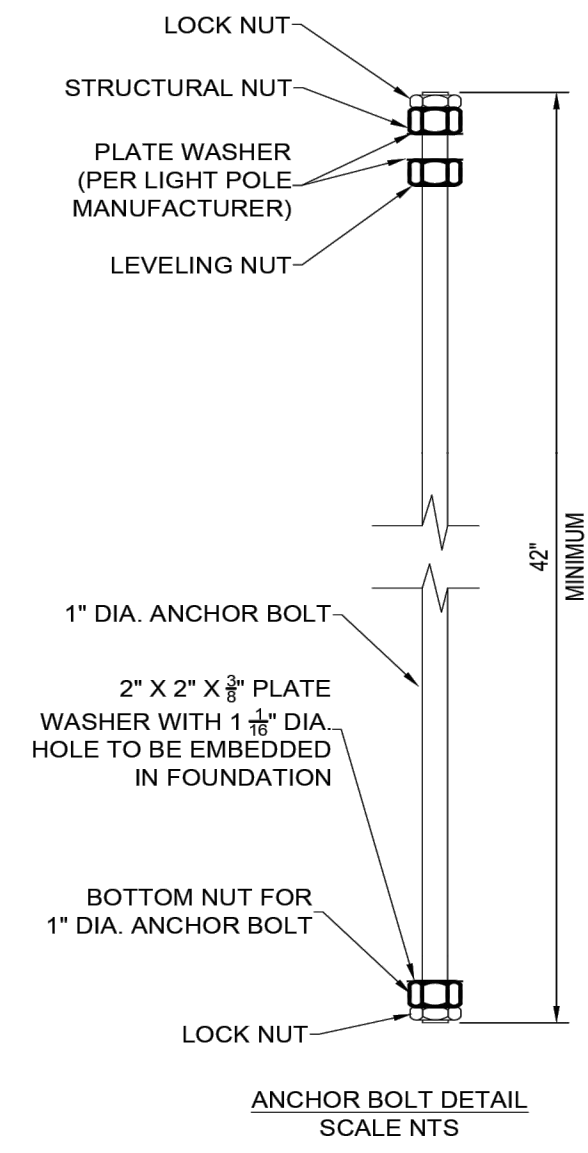
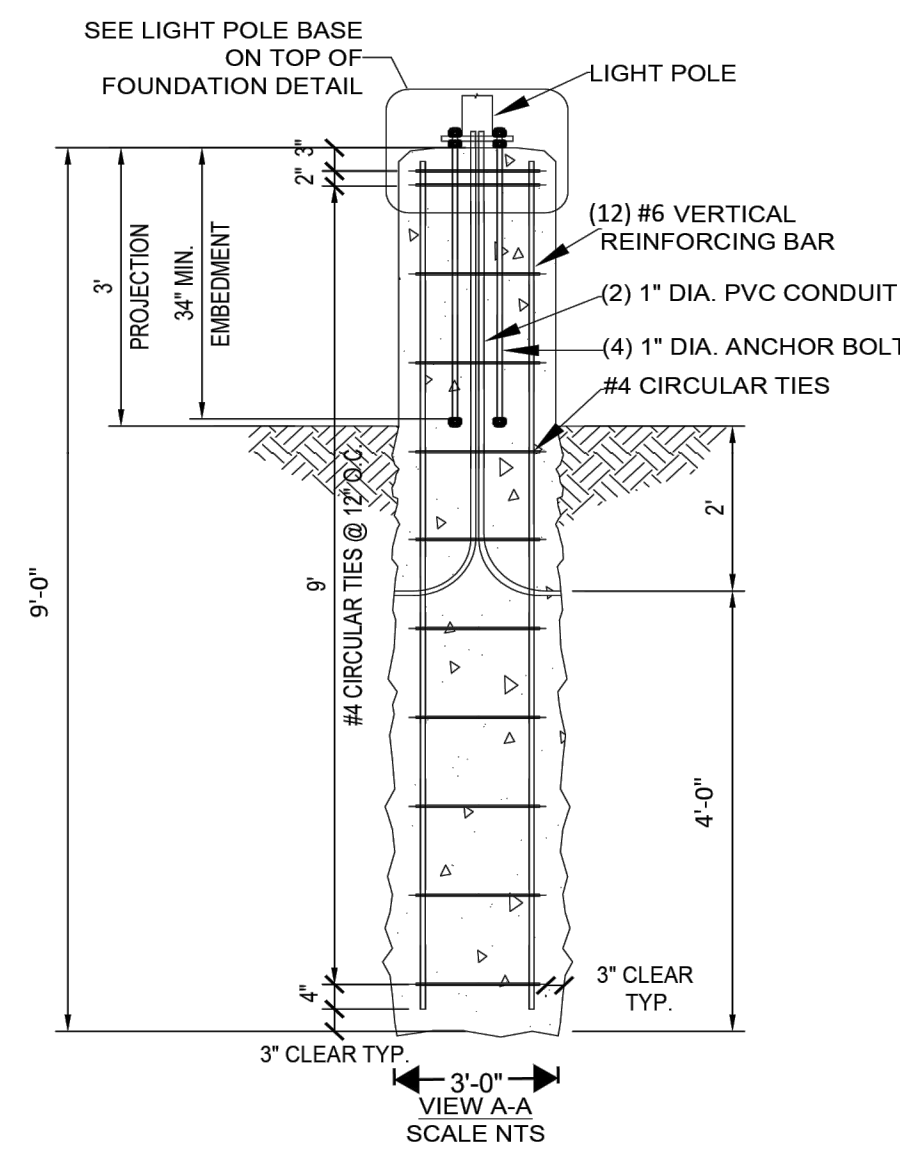
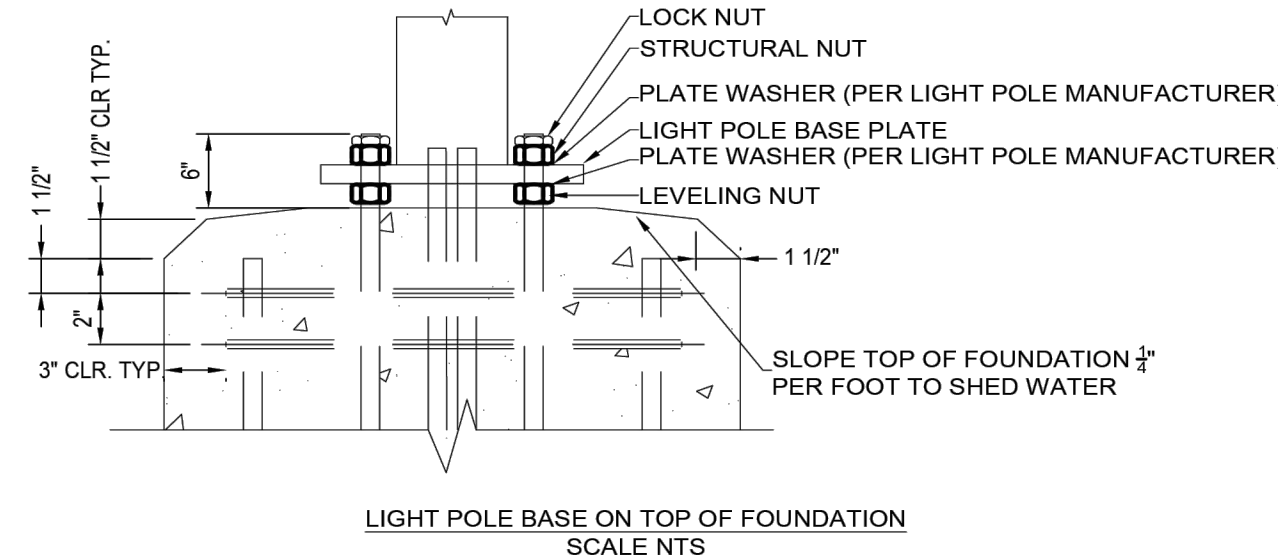
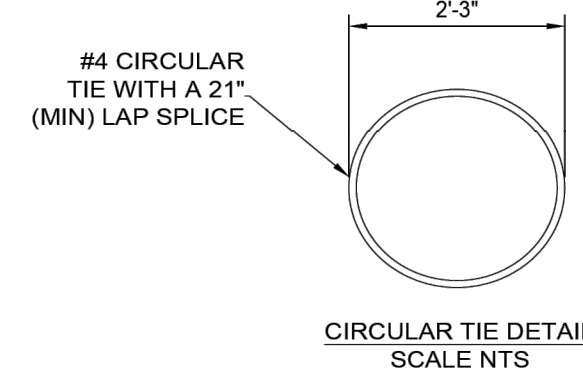
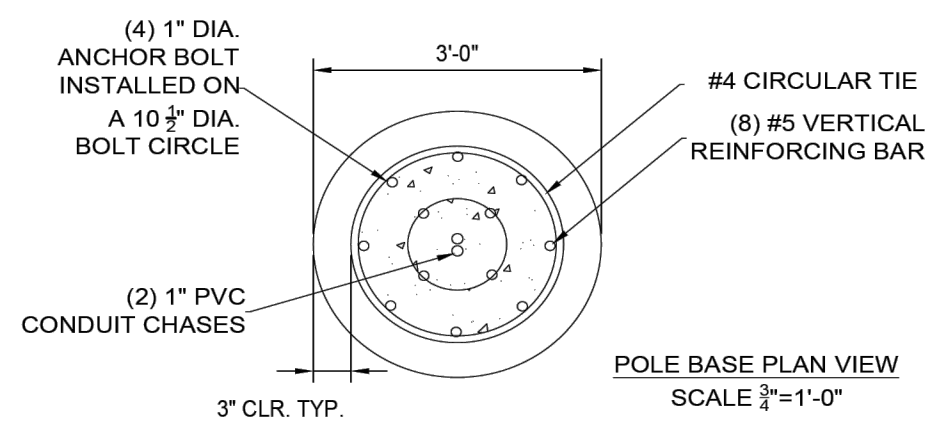
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CERTIFICATION/LICENSE NO. 2002013942
000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679

[illegible]

SUBMITTAL RECORD



DESIGN CRITERIA
AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY
SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, FIFTH EDITION, 2009



LIGHT LOBE BASE
GENERAL NOTES:

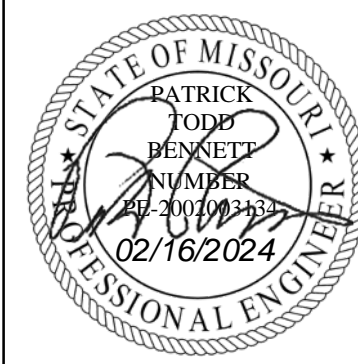
1. CONCRETE COMPRESSIVE STRENGTH (FC) SHALL BE A MINIMUM OF 3000PSI
2. ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 55, HOT DIP GALVANIZED PER ASTM F2329. THEY SHALL BE STRAIGHT AND NOT "T" SHAPED.
3. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
4. NUTS SHALL BE HEAVY HEX ASTM A563 GRADE 40, HOT DIP GALVANIZED PER ASTM A153.
5. PLATE SHALL BE ASTM A572 GRADE 50, HOT DIP GALVANIZED PER ASTM A153
6. LOCK NUT SHALL BE HOT DIP GALVANIZED PER ASTM A153
7. ALL REINFORCING PROVIDED BY GENERAL CONTRACTOR.
8. STANDARD LOT POLE IS FULLY, HOT DIPPED, GALVANIZED STEEL POLE WITH A PLATINUM COLOR POWDER COAT. PAINTED STEEL LOT LIGHTS ARE NOT APPROVED.

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PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE



SIGN FOUNDATION DETAILS

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



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DRAWING NO.:
C804
SHEET 14 OF 25

GRADING/SEDIMENT & EROSION CONTROL NOTES

- SEDIMENT AND EROSION CONTROL SHALL NOT BE LIMITED TO THE MEASURES SHOWN ON THE PLANS. THE CONTRACTOR, WITH THE APPROVAL OF THE CITY OF COLUMBIA SHALL UTILIZE BEST MANAGEMENT PRACTICES TO PREVENT SEDIMENT FROM ENTERING ADJACENT PROPERTIES, ROADWAYS, STORM SEWERS, AND DRAINAGE WAYS.
- EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH CITY/COUNTY CODE AND ENGINEERING STANDARDS.
- THE CONTRACTOR, DEVELOPER AND OWNER SHALL REQUEST THE CITY TO INSPECT AND APPROVE WORK COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN AND IN ACCORDANCE WITH THE CITY CODE. THE CONTRACTOR, DEVELOPER OR OWNER SHALL BE REQUIRED TO OBTAIN WRITTEN APPROVAL BY THE CITY AT THE STAGES OF DEVELOPMENT AS OUTLINED IN CITY CODE.
- ALL SILTATION CONTROL DEVICES SHALL BE INSPECTED BY THE CONTRACTOR BI-WEEKLY, AT A MINIMUM, AND WITHIN 24 HOURS AFTER EACH RAINFALL EVENT. FOR DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED, ALL INSTALLED BMP'S AND OTHER POLLUTION CONTROL MEASURES SHALL BE INSPECTED FOR PROPER INSTALLATION, OPERATION, AND MAINTENANCE. LOCATIONS WHERE STORMWATER LEAVES THE SITE SHALL BE INSPECTED FOR EVIDENCE OF EROSION OR SEDIMENT DEPOSITION. ANY DEFICIENCIES SHALL BE NOTED IN A REPORT OF THE INSPECTION AND CORRECTED WITHIN FOUR CALENDAR DAYS OF THE INSPECTION.
- TEMPORARY SILTATION CONTROL MEASURES (STRUCTURAL) SHALL BE MAINTAINED UNTIL VEGETATIVE COVER IS ESTABLISHED AT A SUFFICIENT DENSITY TO PROVIDE EROSION CONTROL ON THE SITE.
- WHERE NATURAL VEGETATION IS REMOVED DURING GRADING, VEGETATION SHALL BE RE-ESTABLISHED IN SUCH A DENSITY AS TO PREVENT EROSION. PERMANENT TYPE GRASSES SHALL BE ESTABLISHED AS SOON AS POSSIBLE DURING THE NEXT SEEDING PERIOD AFTER GRADING HAS BEEN COMPLETED.
- WHEN GRADING OPERATIONS ARE COMPLETED OR SUSPENDED FOR MORE THAN 14 DAYS PERMANENT GRASS MUST BE ESTABLISHED AT SUFFICIENT DENSITY TO PROVIDE EROSION CONTROL ON THE SITE. BETWEEN PERMANENT GRASS SEEDING PERIODS, TEMPORARY COVER SHALL BE PROVIDED ACCORDING TO COLUMBIA'S RECOMMENDATIONS. ALL FINISHED GRADES (AREAS NOT TO BE DISTURBED BY FUTURE IMPROVEMENT) IN EXCESS OF 20% SLOPES (5:1) SHALL BE MULCHED AND TACKED AT THE RATE OF 100 POUNDS PER 1,000 SQUARE FEET WHEN SEEDED.
- PROVISIONS SHALL BE MADE TO ACCOMMODATE THE INCREASED RUNOFF CAUSED BY CHANGED SOILS AND SURFACE CONDITIONS DURING AND AFTER GRADING. UNVEGETATED OPEN CHANNELS SHALL BE DESIGNED SO THAT GRADIENTS RESULT IN VELOCITIES OF 2 FPS (FEET PER SECOND) OR LESS. OPEN CHANNELS WITH VELOCITIES MORE THAN 2 FPS AND LESS THAN 5 FPS SHALL BE ESTABLISHED IN PERMANENT VEGETATION BY USE OF COMMERCIAL EROSION CONTROL BLANKETS OR LINED WITH ROCK RIP RAP OR CONCRETE OR OTHER SUITABLE MATERIALS AS APPROVED BY THE CITY. DETENTION BASINS, DIVERSIONS, OR OTHER APPROPRIATE STRUCTURES SHALL BE CONSTRUCTED TO PREVENT VELOCITIES ABOVE 5 FPS.
- THE ADJOINING GROUND TO DEVELOPMENT SITES (LOTS) SHALL BE PROVIDED WITH PROTECTION FROM ACCELERATED AND INCREASED SURFACE WATER, SILT FROM EROSION, AND ANY OTHER CONSEQUENCE OF EROSION. RUN-OFF WATER FROM DEVELOPED AREAS (PARKING LOTS, PAVED SITES AND BUILDINGS) ABOVE THE AREA TO BE DEVELOPED SHALL BE DIRECTED TO DIVERSIONS, DETENTION BASINS, CONCRETE CUTTERS AND/OR UNDERGROUND OUTLET SYSTEMS. SUFFICIENTLY ANCHORED STRAW BALES MAY BE TEMPORARILY SUBSTITUTED WITH THE APPROVAL OF THE CITY.
- UPON COMPLETION OF STORM SEWERS, SILTATION CONTROL SHALL BE PROVIDED AROUND ALL OPEN SEWER INLETS AND SHALL REMAIN UNTIL THE DISTURBED DRAINAGE AREAS HAVE BEEN PROPERLY STABILIZED.
- SEDIMENT SHALL BE WASHED FROM ALL VEHICLES AT WASH DOWN STATION PRIOR TO LEAVING THE SITE. NO TRACKING OF MUD ONTO PUBLIC ROADS SHALL BE ALLOWED.
- SILTATION CONTROL MEASURES SHALL BE INSTALLED BEFORE GRADING ACTIVITIES BEGIN AND SHALL BE MAINTAINED UNTIL ALL SITEWORK THAT COULD GENERATE SILT IS COMPLETED.
- ALL FEDERAL, STATE AND LOCAL PERMITS ARE TO BE LOCATED AT THE JOB TRAILER FOR VIEWING AT ALL TIMES.
- THE PROJECT WILL NOT EMPLOY THE USE OF TEMPORARY, ON SITE, CONCRETE OR ASPHALT BATCH PLANTS.
- THIS SITE DOES NOT REQUIRE 404/401 PERMITTING.
- NO DEWATERING METHODS ARE ANTICIPATED OR PROPOSED FOR THIS PROJECT.
- NO CONSTRUCTION WASTE OR POTENTIAL POLLUTION SOURCES ARE PROPOSED TO BE STORED ON SITE DURING CONSTRUCTION OR LAND DISTURBANCES.
- PRIOR TO ANY MAJOR LAND DISTURBANCE ACTIVITY, A LAND DISTURBANCE PERMIT FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES (MO DNR) WILL BE REQUIRED. CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS OF SAID PERMIT.
- THE LOSS OF ANY CONTAINED SEDIMENT OR OTHER POLLUTANT REQUIRES IMMEDIATE ACTION WHICH MUST BE DOCUMENTED AND REPORTED TO THE CITY OF COLUMBIA.
- PROPOSED POST CONSTRUCTION BMPS SHALL BE CONSTRUCTED AFTER SUBSTANTIAL COMPLETION OF LAND DISTURBANCE ACTIVITIES. ALL POST CONSTRUCTION BMPS ARE TO BE PROTECTED FROM RUNOFF, SEDIMENT, AND DAMAGE DURING CONSTRUCTION ACTIVITIES.
- EPA ALLOWABLE NON-STORM WATER DISCHARGES:

WATERLINE FLUSHING
LANDSCAPE IRRIGATION
DIVERTED STREAM FLOWS
RISING GROUND WATERS
UNCONTAMINATED GROUND WATER INFILTRATION
UNCONTAMINATED PUMPED GROUND WATER
FOUNDATION DRAINS
DISCHARGE FROM POTABLE WATER SOURCES
AIR CONDITIONING CONDENSATION
IRRIGATION WATER, SPRINGS
WATER FROM CRAWL SPACE PUMPS
FOOTING DRAINS
LAWN WATERING
INDIVIDUAL RESIDENT CAR WASHING
FLOWS FROM RIPARIAN HABITATS AND WETLANDS
DE-CHLORINATED SWIMMING POOL DISCHARGES
STREET WASH WATER
RESIDENTIAL BUILDING WASH WATERS, WITHOUT DETERGENT
DISCHARGES FROM EMERGENCY FIRE FIGHTING ACTIVITIES

ESTIMATED CONSTRUCTION AND SILTATION CONTROL SEQUENCE AND ESTIMATED SCHEDULE:

CLEARING SITE OF DEBRIS FOR GRADING AND BMP INSTALLATION _____ EARLY JANUARY- MID JANUARY

INITIAL BMP INSTALLATION OF SILT FENCING, CONSTRUCTION ENTRANCE, AND WASH DOWN STATION _____ EARLY JANUARY- MID JANUARY

GRADING THE SITE AND INSTALLING INTERIOR SILT FENCING AND CHECK DAMS _____ MID JANUARY- EARLY FEBRUARY

INSTALLING UTILITY LINES AND INLET PROTECTION _____ EARLY FEBRUARY- EARLY MARCH

BUILDING CONSTRUCTION, CURBS, PAVEMENT, AND SIDEWALKS _____ MID MARCH- EARLY JULY

SOIL STABILIZATION AND TEMPORARY BMP REMOVAL _____ MID JULY- EARLY AUGUST

LEGEND

- LOB** PROPOSED LIMITS OF DISTURBANCE
- 1050** PROPOSED INDEX (MAJOR) CONTOUR
- 1048** PROPOSED INTERMEDIATE (MINOR) CONTOUR
- 5.00%** PROPOSED SLOPE LABEL
- 595.68** PROPOSED SPOT ELEVATION
- TW=598.37** TOP OF WALL ELEVATION
- BW=595.63** BOTTOM OF WALL ELEVATION
- TC=594.00** TOP OF CURB ELEVATION
- BC=593.50** BOTTOM OF CURB ELEVATION
- SF** PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION
- PROPOSED CONSTRUCTION EXIT

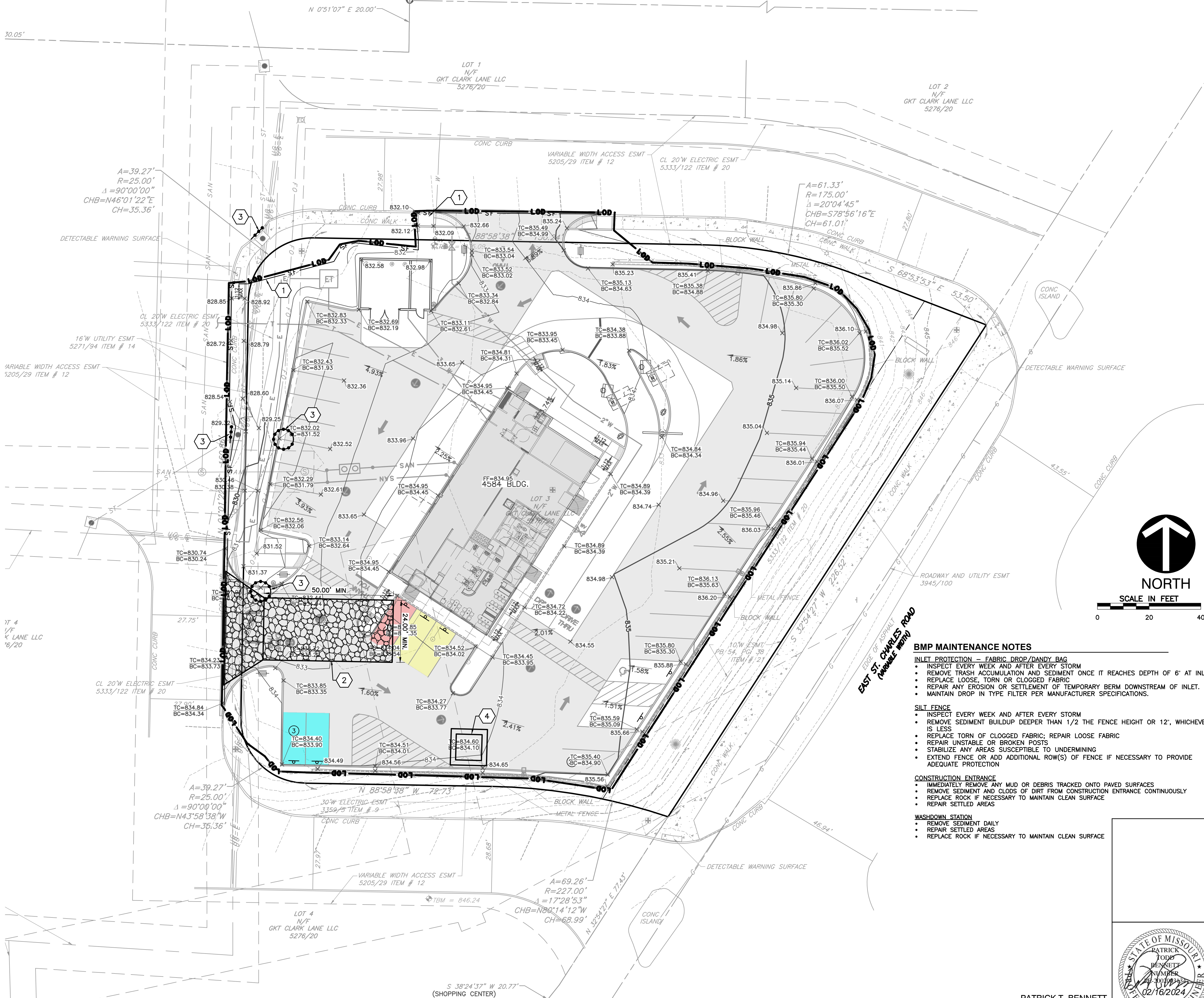


811 or 1-800-DIG-RITE
<https://www.mo1call.com/>

NOTE TO CONTRACTOR: PRIOR TO ANY EXCAVATION FOR UNDERGROUND UTILITIES, CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES INCLUDING BUT NOT LIMITED TO GAS, WATER, BROADBAND, PHONE, SANITARY AND STORM SEWERS. ANY CONFLICT SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND APPROPRIATE AUTHORITIES

THIS PLAN SHALL BE UPDATED AS CONSTRUCTION OCCURS TO INCLUDE ONSITE STORAGE OF POTENTIAL SOURCES OF POLLUTION AND ANY CHANGES OR ADDITIONS TO THE BMPS UTILIZED TO PREVENT POTENTIAL POLLUTANTS FROM DISCHARGE DURING LAND DISTURBANCE ACTIVITIES.

THE SWPPP, AS AMENDED THROUGHOUT CONSTRUCTION, AND THE STATE AND CITY LAND DISTURBANCE PERMITS SHALL BE RETAINED ONSITE BY THE SUPERINTENDENT AT ALL TIMES AND BE AVAILABLE UPON REQUEST. THE SUPERINTENDENT IS RESPONSIBLE FOR THE LOCATION, PROTECTION, AND ACCESSIBILITY OF THESE DOCUMENTS AT ALL TIMES.



KEY NOTES

- PROPOSED SILT FENCE. REFER TO DETAIL SC-2A & B.
- PROPOSED ROCK CONSTRUCTION ENTRANCE. REFER TO DETAIL TC-1.
- PROPOSED INLET PROTECTION - DANDY CURB BAG (OR APPROVED EQUAL). REFER TO DETAIL ON C902.
- PROPOSED CONCRETE WASHOUT PIT. REFER TO DETAIL ON C902.

BMP MAINTENANCE NOTES

- INLET PROTECTION - FABRIC DROP/DANDY BAG**
- INSPECT EVERY WEEK AND AFTER EVERY STORM
 - REMOVE TRASH ACCUMULATION AND SEDIMENT ONCE IT REACHES DEPTH OF 6" AT INLET.
 - REPLACE LOOSE, TORN OR CLOGGED FABRIC
 - REPAIR ANY EROSION OR SETTLEMENT OF TEMPORARY BERM DOWNSTREAM OF INLET.
 - MAINTAIN DROP IN TYPE FILTER PER MANUFACTURER SPECIFICATIONS.

- SILT FENCE**
- INSPECT EVERY WEEK AND AFTER EVERY STORM
 - REMOVE SEDIMENT BUILDUP DEEPER THAN 1/2 THE FENCE HEIGHT OR 12", WHICHEVER IS LESS
 - REPLACE TORN OF CLOGGED FABRIC; REPAIR LOOSE FABRIC
 - REPAIR UNSTABLE OR BROKEN POSTS
 - STABILIZE ANY AREAS SUSCEPTIBLE TO UNDERMINING
 - EXTEND FENCE OR ADD ADDITIONAL ROW(S) OF FENCE IF NECESSARY TO PROVIDE ADEQUATE PROTECTION

- CONSTRUCTION ENTRANCE**
- IMMEDIATELY REMOVE ANY MUD OR DEBRIS TRACKED ONTO PAVED SURFACES
 - REMOVE SEDIMENT AND CLODS OF DIRT FROM CONSTRUCTION ENTRANCE CONTINUOUSLY
 - REPLACE ROCK IF NECESSARY TO MAINTAIN CLEAN SURFACE
 - REPAIR SETTLED AREAS

- WASHDOWN STATION**
- REMOVE SEDIMENT DAILY
 - REPAIR SETTLED AREAS
 - REPLACE ROCK IF NECESSARY TO MAINTAIN CLEAN SURFACE

SUBMITTAL RECORD

NO.	DATE	DESCRIPTION
1	01/15/2024	PLAN FOUNDATIONS AND EROSION PLANS
2	02/15/2024	CITY COMMENTS

Civil & Environmental Consultants, Inc.
CERTIFICATION/LICENSE NO. 2002013942
3000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679
www.cecinc.com

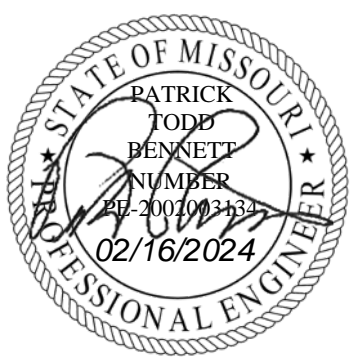
MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



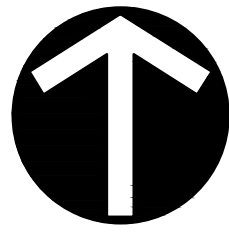
EROSION & SEDIMENT CONTROL PLAN

DATE:	DECEMBER 22, 2023	DRAWN BY:	GAS
DWG SCALE:		CHECKED BY:	PTB
PROJECT NO:			332-743
APPROVED BY:			DRAFT

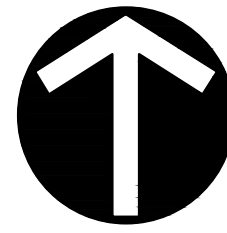
DRAWING NO.: **C900**
SHEET 15 OF 23



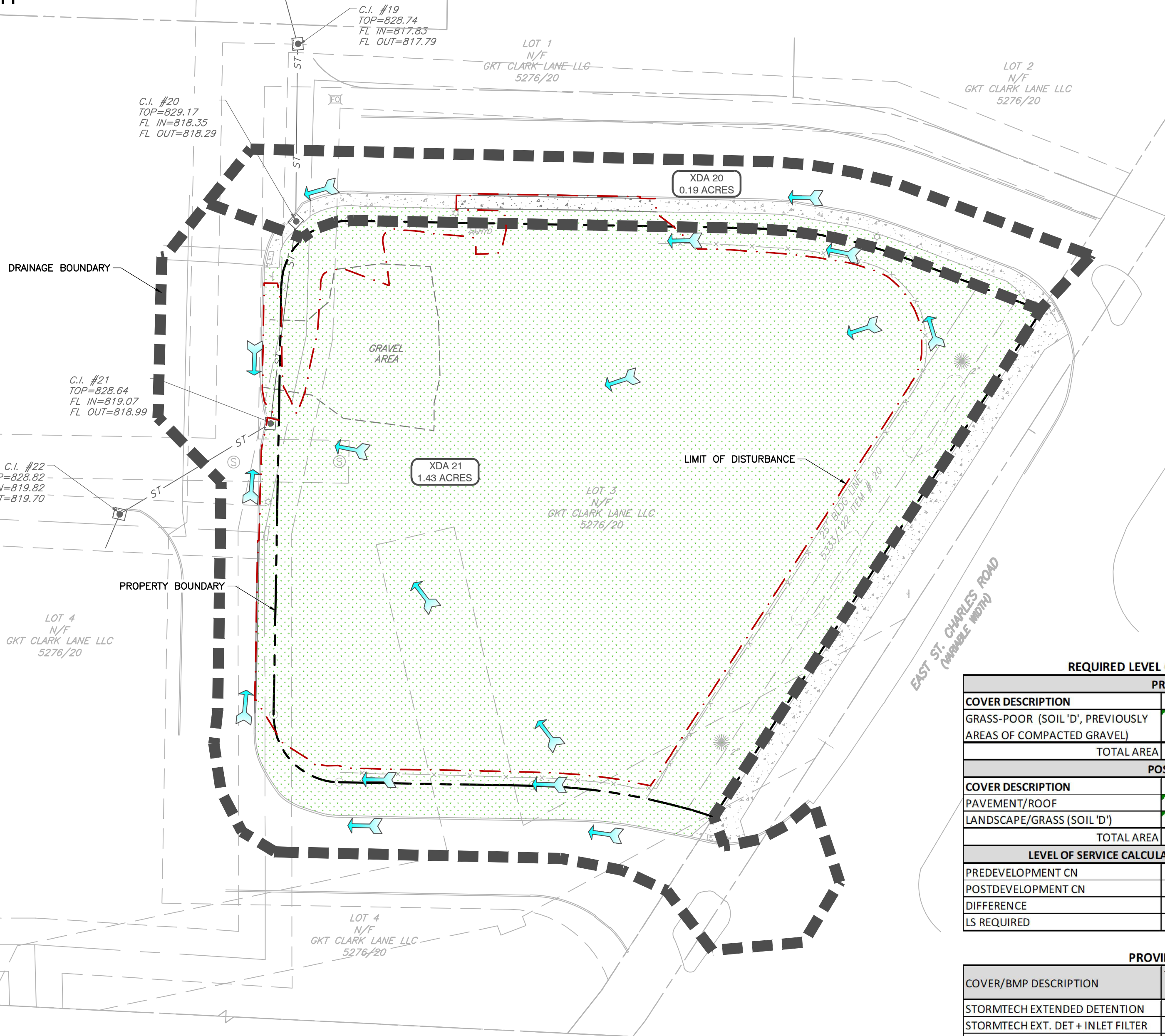
PATRICK T. BENNETT
E200201394
*HAND SIGNATURE ON FILE



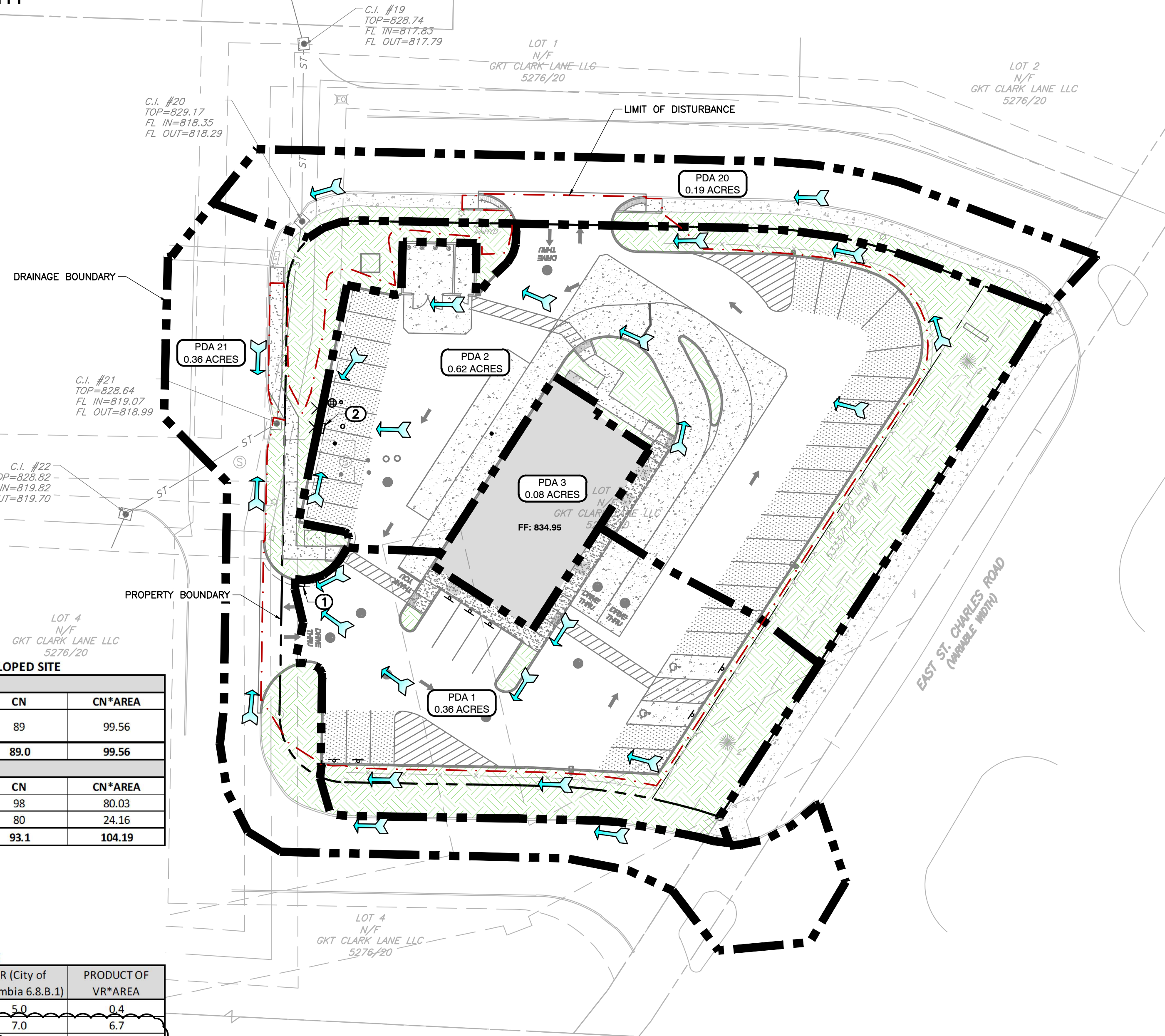
NORTH



NORTH



EXISTING DRAINAGE AREA MAP



PROPOSED DRAINAGE AREA MAP

REQUIRED LEVEL OF SERVICE - UNDEVELOPED SITE			
PREDEVELOPMENT CN			
COVER DESCRIPTION	SITE AREA (AC)	CN	CN*AREA
GRASS-POOR (SOIL 'D', PREVIOUSLY AREAS OF COMPACTED GRAVEL)	1.12	89	99.56
TOTAL AREA	1.12	89.0	99.56
POSTDEVELOPMENT CN			
COVER DESCRIPTION	SITE AREA (AC)	CN	CN*AREA
PAVEMENT/ROOF	0.82	98	80.03
LANDSCAPE/GRASS (SOIL 'D')	0.30	80	24.16
TOTAL AREA	1.12	93.1	104.19
LEVEL OF SERVICE CALCULATION			
PREDEVELOPMENT CN	89.00		
POSTDEVELOPMENT CN	93.14		
DIFFERENCE	4.14		
LS REQUIRED	6		

PROVIDED LEVEL OF SERVICE			
COVER/BMP DESCRIPTION	TREATMENT AREA (AC)	VR (City of Columbia 6.8,8.1)	PRODUCT OF VR*AREA
STORMTECH EXTENDED DETENTION	0.08	5.0	0.4
STORMTECH EXT. DET + INLET FILTER	0.95	7.0	6.7
LANDSCAPE/GRASS (SOIL 'D')	0.08	0.0	0.0
PAVEMENT/ROOF	0.01	0.0	0.0
TOTAL:	1.12	TOTAL:	7.1
		WEIGHTED VR:	6.3

EXISTING DRAINAGE AREAS																	
XDA#	Description	Subareas	Area (SF)	Area (AC)	C	K ₁₀	(C*K) ₁₀	i ₁₀ (10 YR)	Q ₁₀ (cfs)	K ₂₅	(C*K) ₂₅	i ₂₅ (25 YR)	Q ₂₅ (cfs)	K ₁₀₀	(C*K) ₁₀₀	i ₁₀₀ (100 YR)	Q ₁₀₀ (cfs)
20	TO EX. CURB INLET #20	IMPERVIOUS	6,771	0.16	0.90	1.00	0.90	7.3	1.02	1.10	0.99	8.1	1.25	1.25	1.00	10.7	1.66
		PERVIOUS	1,503	0.03	0.30	1.00	0.30	7.3	0.08	1.10	0.33	8.1	0.09	1.25	0.38	10.7	0.14
		TOTALS	8,274	0.19					1.10				1.34				1.80
21	TO EX. CURB INLET #21	IMPERVIOUS	10,422	0.24	0.90	1.00	0.90	7.3	1.57	1.10	0.99	8.1	1.92	1.25	1.00	10.7	2.56
		PERVIOUS	51,975	1.19	0.30	1.00	0.30	7.3	2.61	1.10	0.33	8.1	3.19	1.25	0.38	10.7	4.79
		TOTALS	62,397	1.43					4.18				5.11				7.35
EXISTING DRAINAGE AREA TOTALS			70,671	1.62					5.28				6.45				9.15
TC = 5 MIN (5-15 mins)																	

EXISTING OFFSITE DRAINAGE AREAS															
(FROM COCHRAN ENGINEERING 'COLUMBIA CORNERS' DRAINAGE AREA MAP 6/17/2020)															
XDA#	Description	Area (AC)	C	K ₁₀	(C*K) ₁₀	i ₁₀ (10 YR)	Q ₁₀ (cfs)	K ₂₅	(C*K) ₂₅	i ₂₅ (25 YR)	Q ₂₅ (cfs)	K ₁₀₀	(C*K) ₁₀₀	i ₁₀₀ (100 YR)	Q ₁₀₀ (cfs)
19	TO EX. CURB INLET #19	0.14	0.83	1.00	0.83	7.3	0.85	1.10	0.91	8.1	1.04	1.25	1.00	10.7	1.50
22	TO EX. CURB INLET #22	0.12	0.81	1.00	0.81	7.3	0.71	1.10	0.89	8.1	0.87	1.25	1.00	10.7	1.28

COMPUTING WATER QUALITY PEAK DISCHARGE RATE & STORAGE VOLUME	
(Per City of Columbia Stormwater Management & Water Quality Manual, Section 2.3)	
Curve Number, CN =	96 (Based on WQ rainfall depth)
Note: $CN=1000/[10+5P+10Qa-10((Qa+2)+1.25QaP)]$	
Time of Concentration, T _c =	5 minutes
	0.083 hours
Site Area, A =	1.12 acres
	0.001749 sq. miles
WQ Rainfall Depth, P =	1.3 inches Boone County
Impervious Area Percentage, I =	73.0%
Volumetric Runoff Coefficient, R _v =	0.7070 Note: $R_v=0.05+0.009(I)$
Initial Abstraction, I _a =	0.0799 inches Note: $I_a=(200/CN)-2$
Ratio I _a /P =	0.0615
WQ Post-Development Runoff Depth, Q _a =	0.9191 inches Note: $Q_a=P \times R_v$
Unit Peak Factor, q _u =	1000 (from Exhibit 4-II)
Peak Discharge, Q _p =	1.60 cfs Note: $Q_p=q_u \times A \times Q_a$ (where A is in sq. miles)
Water Quality Storage Volume, WQ _v =	3732 cf Note: $WQ_v=(P/12 \times R_v \times A) \times 43560$ (where A is in Acres)

PROPOSED DRAINAGE AREAS																	
PDA#	Description	Subareas	Area (SF)	Area (AC)	C	K ₁₀	(C*K) ₁₀	i ₁₀ (10 YR)	Q ₁₀ (cfs)	K ₂₅	(C*K) ₂₅	i ₂₅ (25 YR)	Q ₂₅ (cfs)	K ₁₀₀	(C*K) ₁₀₀	i ₁₀₀ (100 YR)	Q ₁₀₀ (cfs)
1	TO PROPOSED INLET #1	IMPERVIOUS	11,070	0.25	0.90	1.00	0.90	7.3	1.67	1.10	0.99	8.1	2.04	1.25	1.00	10.7	2.72
		PERVIOUS	4,815	0.11	0.30	1.00	0.30	7.3	0.24	1.10	0.33	8.1	0.30	1.25	0.38	10.7	0.44
		TOTALS	15,885	0.36					1.91				2.33				3.16
2	TO PROPOSED INLET #2	IMPERVIOUS	20,324	0.47	0.90	1.00	0.90	7.3	3.07	1.10	0.99	8.1	3.74	1.25	1.00	10.7	4.99
		PERVIOUS	6,727	0.15	0.30	1.00	0.30	7.3	0.34	1.10	0.33	8.1	0.41	1.25	0.38	10.7	0.62
		TOTALS	27,051	0.62					3.40				4.15				5.61
3	ROOF TO DOWNSPOUTS	IMPERVIOUS	3,680	0.08	0.90	1.00	0.90	7.3	0.56	1.10	0.99	8.1	0.68	1.25	1.00	10.7	0.90
		PERVIOUS	0	0.00	0.30	1.00	0.30	7.3	0.00	1.10	0.33	8.1	0.00	1.25	0.38	10.7	0.00
		TOTALS	3,680	0.08					0.56				0.68				0.90
20	TO EX. CURB INLET #20	IMPERVIOUS	6,969	0.16	0.90	1.00	0.90	7.3	1.05	1.10	0.99	8.1	1.28	1.25	1.00	10.7	1.71
		PERVIOUS	1,305	0.03	0.30	1.00	0.30	7.3	0.07	1.10	0.33	8.1	0.08	1.25	0.38	10.7	0.12
		TOTALS	8,274	0.19					1.12				1.36				1.83
21	TO CURB INLET #21	IMPERVIOUS	11,538	0.26	0.90	1.00	0.90	7.3	1.74	1.10	0.99	8.1	2.12	1.25	1.00	10.7	2.83
		PERVIOUS	4,243	0.10	0.30	1.00	0.30	7.3	0.21	1.10	0.33	8.1	0.26	1.25	0.38	10.7	0.39
		TOTALS	15,781	0.36					1.95				2.38				3.23
PROPOSED DRAINAGE AREA TOTALS			70,671	1.62					8.94				10.91				14.74
TC = 5MIN (5-15 mins)																	

TC = 5MIN (5-15 mins)



811 or 1-800-DIG-RITE
https://www.mo1call.com/

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PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE

SUBMITTAL RECORD

NO	DATE	DESCRIPTION
1	01/15/2024	RAIN FOUNDATIONS AND PRELIM PLANS
2	02/15/2024	CITY COMMENTS

Civil & Environmental Consultants, Inc.
CERTIFICATION/LICENSE NO. 2002013942
3000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679
www.ccecinc.com

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



DRAINAGE AREA MAPS

DATE:	DECEMBER 22, 2023	DRAWN BY:	GAS
DWG SCALE:	1" = 30'	CHECKED BY:	PTB
PROJECT NO:	332-743	APPROVED BY:	DRAFT

DRAWING NO.: **HD1**
SHEET 18 OF 23

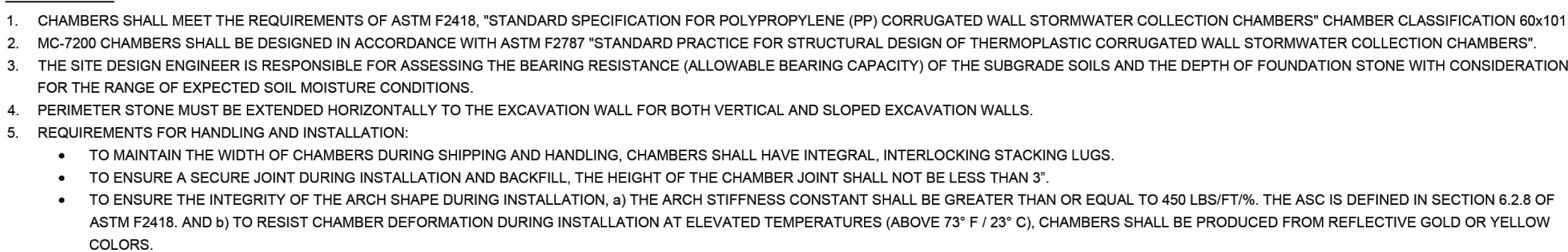
	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2, A-3, 4 OR AASHTO M43 ¹ PROCESSED AGGREGATE 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT AN ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIALS AND 90% RELATIVE DENSITY FOR PROCESSSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

1. THE LISTED DASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR R-14 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (ASHTO M43) STONE".

2. STORMTIECH COMPACTION REQUIREMENTS ARE MET FOR R' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.

3. THE STORMTIECH SURFACE MAY BE COMPROMISED BY COMPACTION. FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTIECH FOR COMPACTION REQUIREMENTS.

4. ONCE LAYER 'C' IS PLACED, ANY SUBGRADE MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL. REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEERS' DISCRETION.



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-720 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

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	StormTech® Chamber System										888-885-2894 WWW.STORMTECH.COM					
	4640 TREUEMAN BLVD HILLIARD, OH 43026 6087-32-7473															
													DATE	DRW	CHK	DESCRIPTION
													DATE:		DRAWN CD	
													PROJECT #:		CHECKED NA	
												MCDONALDS COLUMBIA, MO, USA				

SHEET
5 OF 5

Benefits

- Stainless steel frame provides extended service life
- Easily replaceable filter bags
- Meets stringent removal requirements:
 - All bags rated >80% removal efficiency of street sweep-size particles
 - Optional FXP/PCP bags can be used for hydrocarbon removal when required



PATRICK T. BENNETT
E200203134

*HAND SIGNATURE ON FILE

[illegible]

DATE:	DECEMBER 22, 2023	DRAWN BY:	GAS
DWG SCALE:		CHECKED BY:	PTB
PROJECT NO:			332-743
APPROVED BY:			DRAFT

MCDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



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 3000 Little Hills Expressway · Suite 102 · St. Charles, MO 63301
 314-456-4566 · 866-250-3679

www.cecinc.com

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CEC
& Environmental Consultants, Inc.
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Hills Expressway · Suite 102 · St. Charles, MO 63301
314-656-4566 · 866-250-3679
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DONALD'S RESTAURANT
 N 41181 (024-1301)
 E. ST. CHARLES RD.
 UMBIA, MISSOURI

QUALITY DETAILS	Q23	DRAWN BY:	GAS
		CHECKED BY:	PTB
			332-743
			DRAFT

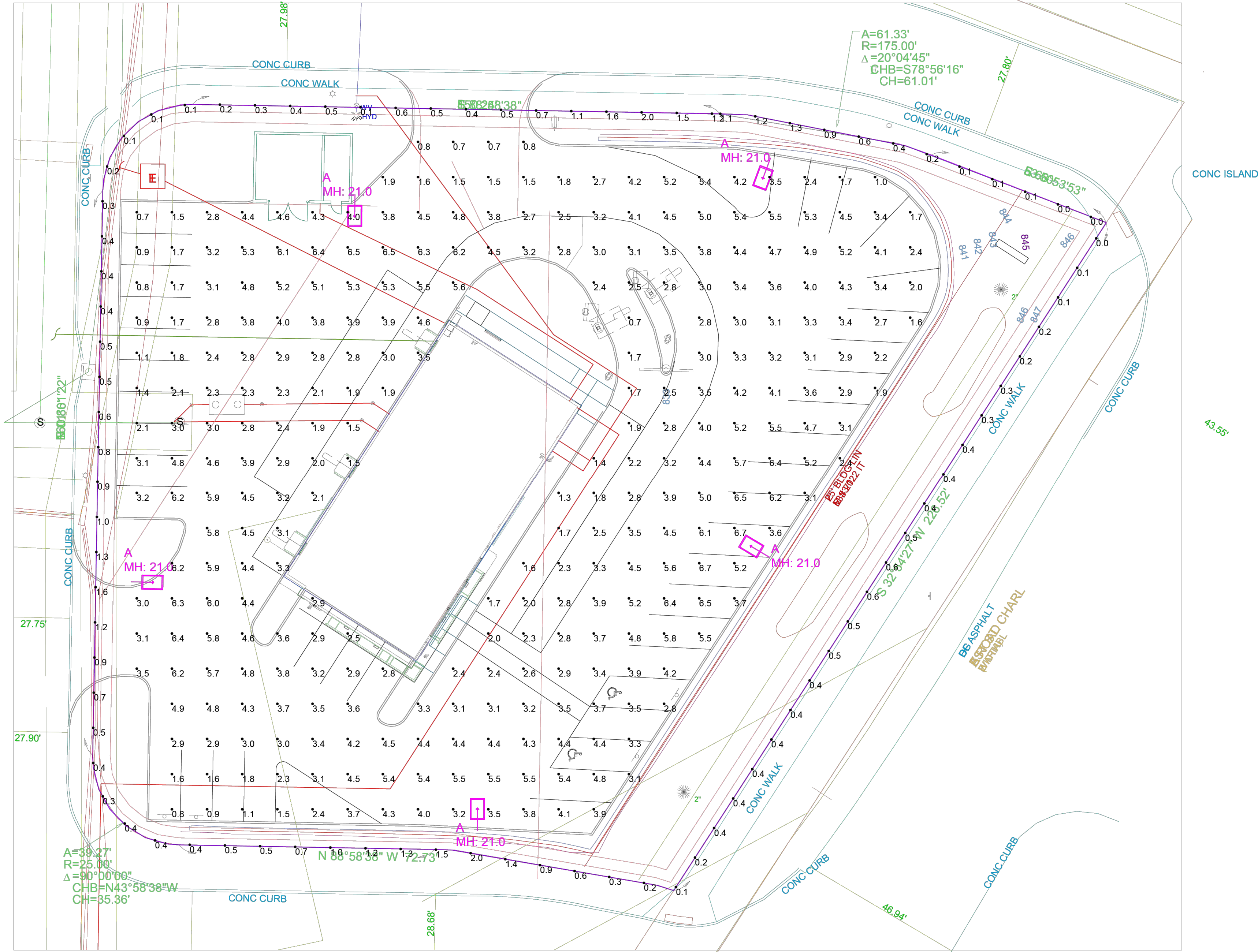
WATER QUALITY	
DATE:	DECEMBER 22, 2019
DWG SCALE:	
PROJECT NO.:	
APPROVED BY:	

811 or 1-800-DIG-RITE
<https://www.mo1call.com/>

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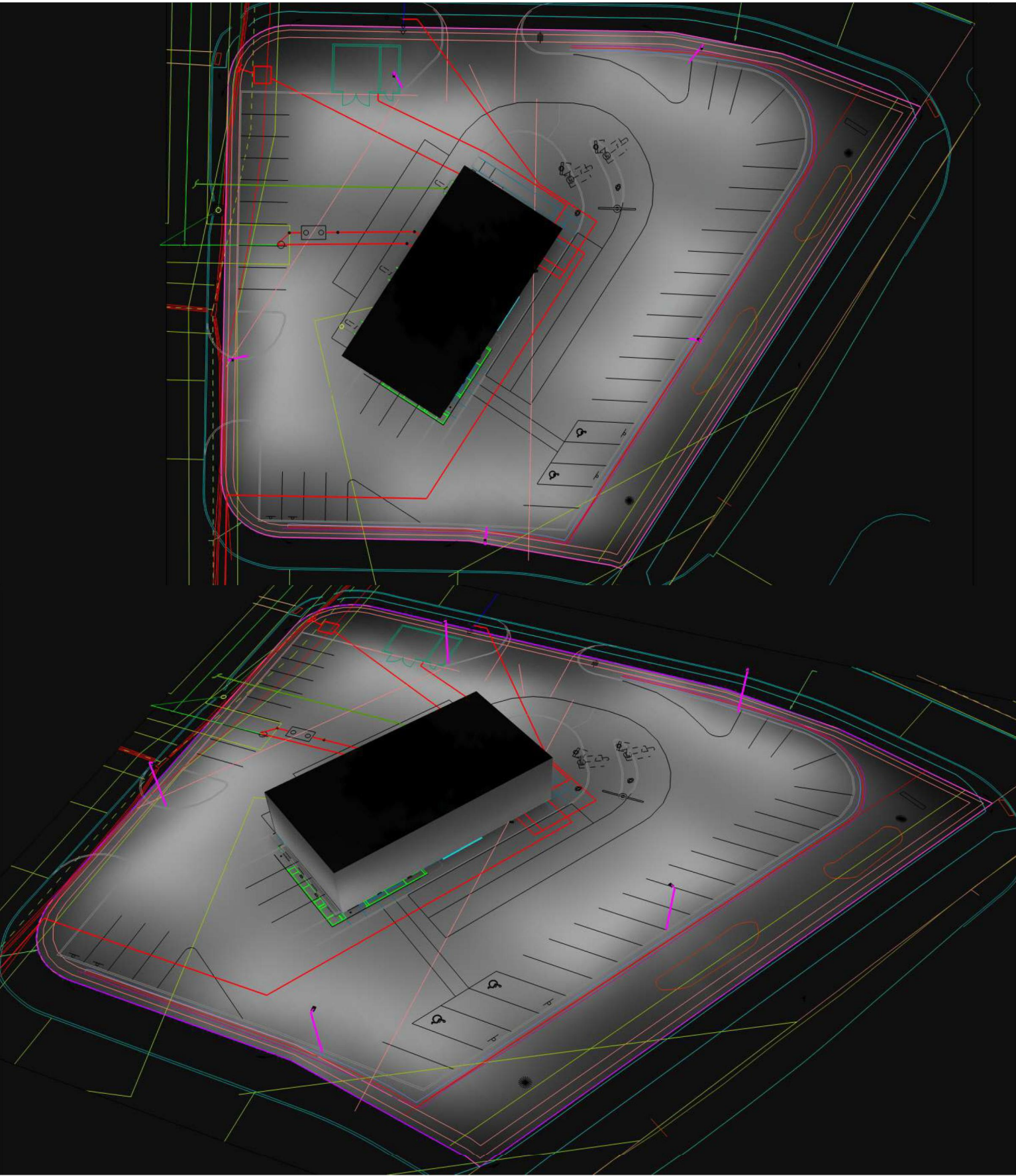
NOTES:

1. THE FOOTCANDLE LEVELS AS SHOWN ARE BASED ON THE FOLLOWING CRITERIA. ANY SUBSTITUTIONS IN SPECIFIED FIXTURES OR CHANGES TO LAYOUT WILL AFFECT LIGHTING LEVELS SHOWN AND WILL NOT BE THE RESPONSIBILITY OF SECURITY LIGHTING.
2. DISTANCE BETWEEN READINGS _____ 10'



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PAVED SURFACE READINGS	Illuminance	Fc	3.53	6.7	0.7	5.04	9.57
PROPERTY LINE READINGS	Illuminance	Fc	0.59	2.0	0.0	N.A.	N.A.

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	LLF	Description	Lum. Watts	EPA	Mtg Height	Pole Type
	5	A	SINGLE	0.900	RAR2-480L-240-5K7-4W	226.9	0.607	21	SES-18-40-1-TA-GL-xx (4")



Pole Fixtures Are Full Cutoff
Tilt=0
Calculation Grids Are At Grade
Pole Light Mounting Height=21ft
(18' Pole + 3' Base)

Regional Drawing
024-1301

1. THIS LIGHTING DESIGN IS BASED ON INFORMATION SUPPLIED BY OTHERS TO SECURITY LIGHTING SYSTEMS. SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AND FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIER RESPONSIBLE FOR THE PROJECT.
2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.
3. CONFORMANCE TO FACILITY CODE AND OTHER LOCAL REQUIREMENTS IS THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
4. THIS LAYOUT MAY NOT MEET TITLE 24 OR LOCAL ENERGY REQUIREMENTS. IF THIS LAYOUT NEEDS TO BE COMPLIANT WITH TITLE 24 OR OTHER ENERGY REQUIREMENTS, PLEASE CONSULT FACTORY WITH SPECIFIC DETAILS REGARDING PROJECT REQUIREMENTS SO THAT REVISIONS MAY BE MADE TO THE DRAWING.

PROJECT WIND LOAD CRITERIA BASED ON:
ASCE 7-10 WIND SPEEDS (3-SBC PEAK GUST MPH)
50 YEAR MEAN RECURRENT INTERVAL
ALLOWED EPA 13.6 @ WIND LOAD 90 MPH



2100 Gulf Road, Suite 460, Rolling Meadows, IL 60009
(800) 544-4568

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES

SCALE 1"=20' 0"

DRAWN BY CLB

POINT-BY-POINT FOOTCANDLE PLOT FOR

MCDONALD'S

5615 E. St. Charles Street
Columbia MO

NATIONAL STORE NUMBER

41181

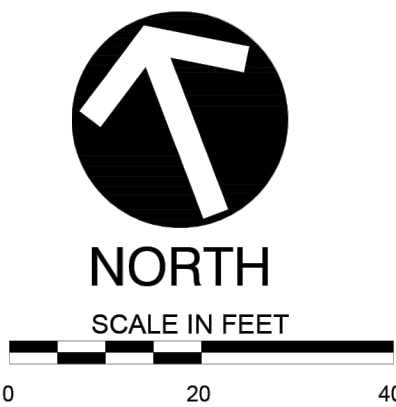
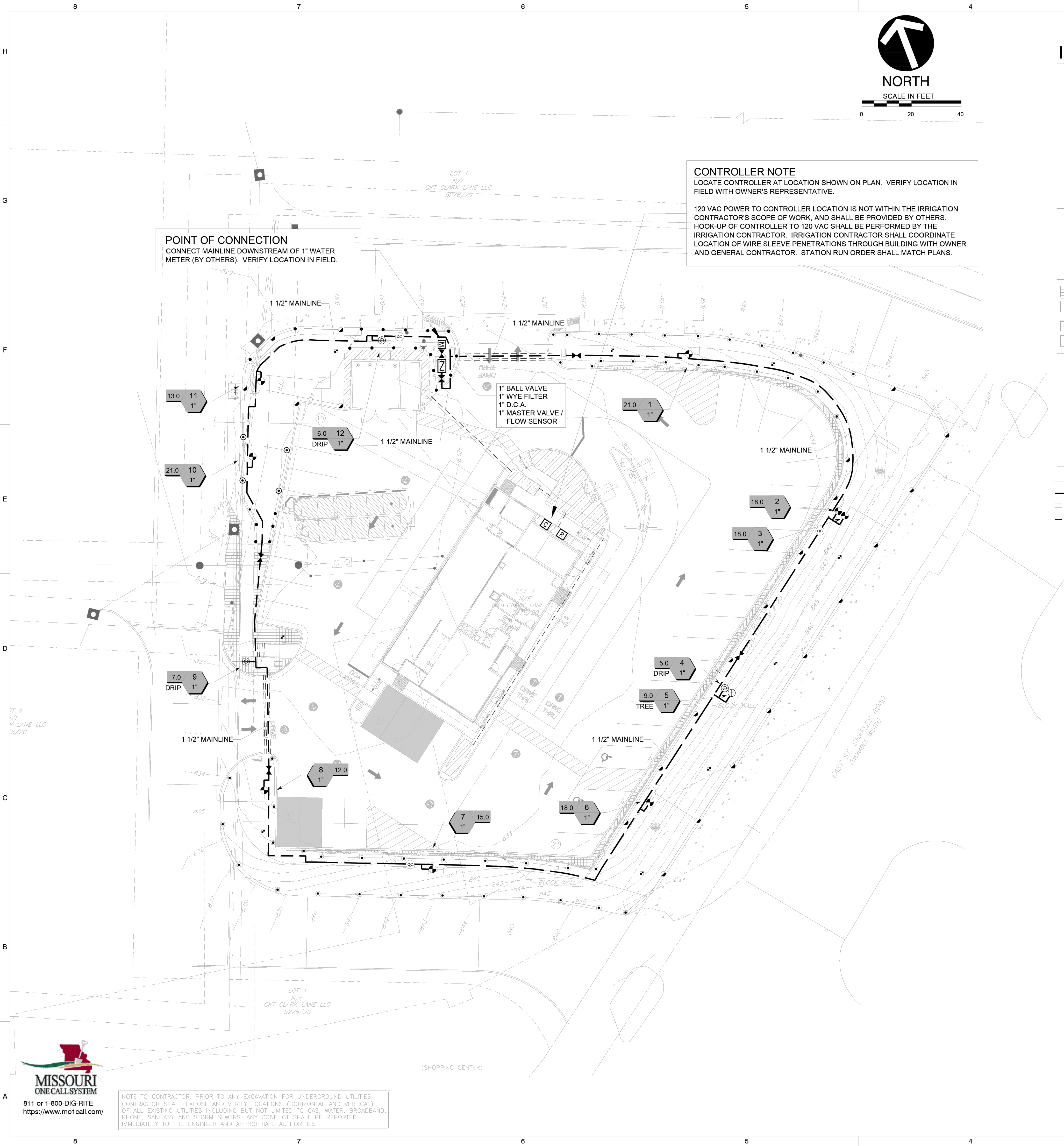
DATE

9/26/2023

DRAWING NUMBER

A231879A.AGI

THIS DRAWING MEETS OR EXCEEDS MCDONALD'S CURRENT ILLUMINATION SPECIFICATIONS OF A 3-4 FOOTCANDLE AVERAGE, UNLESS SUPERCEDED BY OTHER REQUIREMENTS



CONTROLLER NOTE
LOCATE CONTROLLER AT LOCATION SHOWN ON PLAN. VERIFY LOCATION IN FIELD WITH OWNER'S REPRESENTATIVE.

120 VAC POWER TO CONTROLLER LOCATION IS NOT WITHIN THE IRRIGATION CONTRACTOR'S SCOPE OF WORK, AND SHALL BE PROVIDED BY OTHERS. HOOK-UP OF CONTROLLER TO 120 VAC SHALL BE PERFORMED BY THE IRRIGATION CONTRACTOR. IRRIGATION CONTRACTOR SHALL COORDINATE LOCATION OF WIRE SLEEVE PENETRATIONS THROUGH BUILDING WITH OWNER AND GENERAL CONTRACTOR. STATION RUN ORDER SHALL MATCH PLANS.

POINT OF CONNECTION
CONNECT MAINLINE DOWNSTREAM OF 1" WATER METER (BY OTHERS). VERIFY LOCATION IN FIELD.

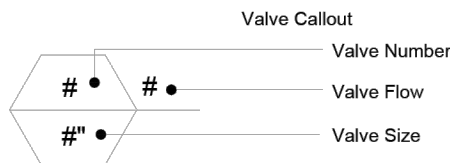
1" BALL VALVE
1" WYE FILTER
1" D.C.A.
1" MASTER VALVE / FLOW SENSOR

IRRIGATION LEGEND

SYMBOL	MANUFACTURER/MODEL
•	RAIN BIRD R-VAN14 1806-SAM-P45, TURF ROTARY, 8'-14' 45"-270" AND 360" HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET.
•	RAIN BIRD R-VAN18 1806-SAM-P45, TURF ROTARY, 13'-18' 45"-270" AND 360" HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET.
⊙	RAIN BIRD R-VAN24 1806-SAM-P45, TURF ROTARY, 17'-24' 45"-270" AND 360" HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET.
✱	RAINBIRD 1806-SAM-PRS SERIES POP UP SPRAY HEADS WITH ADAPTER AND RAINBIRD #1402 SERIES BUBBLER NOZZLES. (TWO PER TREE) SEE INSTALLATION NOTE #N-5 REGARDING TREE BUBBLER LATERAL PIPE
✱	RAINBIRD 5004PCSAMR, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, PART CIRCLE, #1.5 LA NOZZLE UNLESS NOTED OTHERWISE
✱	RAINBIRD 5004PCSAMR, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, PART CIRCLE, #2.5 NOZZLE UNLESS NOTED OTHERWISE
⊕	RAINBIRD XCZ-100-PRB-COM / 150-PRB-COM SERIES AUTOMATIC DRIP VALVE ASSEMBLY WITH 40 PSI PRESSURE REGULATOR XCZ-100-PRB-COM - 1" BALL VALVE WITH 1" PESB VALVE AND 1" PRESSURE REGULATING 40PSI QUICK-CHECK BASKET FILTER. 0.3GPM TO 20GPM.
⊕	RAINBIRD PEB SERIES ELECTRIC REMOTE CONTROL, "TREE BUBBLER ZONE" VALVE SEE INSTALLATION NOTE #N-5 REGARDING TREE BUBBLER LATERAL PIPE
⚡	RAINBIRD PEB SERIES 1", 1-1/2", 2" PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.
	AREA TO RECEIVE DRIPLINE RAINBIRD XFS-CV-06-12 SERIES DRIP TUBE IN SHRUB BED INSTALLED AT 2" DEPTH
	AREA TO RECEIVE DRIPLINE RAINBIRD XFS-CV-06-12 SERIES DRIP TUBE IN NARROW TURF AREAS INSTALLED AT 4" DEPTH
	ZURN / WILKINS 350 SERIES D.C.A. INSTALLED PER CITY CODE, WITH SAME SIZE ZURN / WILKINS 850 SERIES BRONZE BALL VALVE AND ZURN / WILKINS SXL SERIES BRONZE WYE FILTER WITH 20 MESH STAINLESS STEEL SCREEN
	LASCO "V" SERIES SCH. 80 PVC TRUE UNION BALL VALVE, MAINLINE SIZE
	IRRIGATION WATER METER AND TAP (BY OTHERS) SIZE AS NOTED ON THE PLAN
	RAINBIRD 33DLRC QUICK COUPLER, 3/4"
	RAINBIRD ESP12LXMEF2P SERIES AUTOMATIC WALL MOUNT CONTROLLER WITH ONE ESPLXMSM12 STATION MODULE
	RAINBIRD WR2-RFC RAIN / FREEZE SENSOR LOCATE SENSOR AS FIELD DIRECTED BY THE LANDSCAPE ARCHITECT
	1" MASTER VALVE MODEL # 100-FFB-CP WITH RAINBIRD FLOW SENSOR MODEL #FS100B SERIES

- IRRIGATION LATERAL LINE: CLASS 200 PVC
- IRRIGATION MAINLINE: SCHEDULE 40 PVC
- IRRIGATION SLEEVES, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED
- IRRIGATION SLEEVE, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED

VALVE KEY



IRRIGATION DISCLAIMER

THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, AND OTHER EQUIPMENT SHOWN WITHIN PAVED AREAS OR OUT OF PROPERTY BOUNDARIES ARE FOR DESIGN CLARIFICATION ONLY, AND SHALL BE INSTALLED IN PLANTING AREAS WITHIN THE PROPERTY LINES OR LIMITS INDICATED ON PLAN. THE IRRIGATION CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL ABOVE-GRADE IRRIGATION EQUIPMENT WITH THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION, OR IRRIGATION CONTRACTOR MAY BE REQUIRED TO MOVE SUCH ITEMS AT HIS OWN COST.

IRRIGATION CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL FINAL QUANTITIES PER DRAWINGS AND SPECIFICATIONS. ANY QUANTITIES PROVIDED ARE PROVIDED AS A CONVENIENCE TO THE CONTRACTOR ONLY AND SHALL NOT BE CONSIDERED ABSOLUTE.

AUTOMATIC DRAIN VALVES AND AIR RELIEF VALVES

INSTALL AUTOMATIC DRAIN VALVES AT THE LOW POINTS OF EACH LATERAL LINE (MIN. 2 PER VALVE) AS PER DETAIL ON SHEET IR-2. INSTALL AIR RELIEF VALVES ON DRIP SYSTEMS AT THE LOCATIONS SHOWN ON THE PLANS, AS PER DETAILS.

SLEEVING / WIRING NOTES:

IN ADDITION TO PROVIDING SLEEVES FOR ALL PIPING UNDER ROADWAYS AND WALKWAYS, THE IRRIGATION CONTRACTOR SHALL PROVIDE AND INSTALL SCH. 40 PVC SLEEVES FOR ALL CONTROLLER WIRES OCCURRING UNDER ALL ROADWAYS AND WALKWAYS. SLEEVES FOR CONTROLLER WIRES SHALL BE 2" DIA. AND CONTAIN NO MORE THAN 25 WIRES. FOR PLAN CLARITY, ONLY SOME REPRESENTATIVE SLEEVES ARE SHOWN; SOME SLEEVES MAY NOT BE SHOWN.

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IRRIGATION SPECIFICATIONS

- GENERAL
- A. QUALIFICATIONS OF IRRIGATION CONTRACTOR
- ALL WORK SHOWN ON THESE PLANS SHALL BE PERFORMED BY A SINGLE IRRIGATION CONTRACTING FIRM SPECIALIZING IN IRRIGATION SYSTEMS. SEE THE IRRIGATION PLAN FOR SPECIFIC EQUIPMENT AND SYSTEM LAYOUT.
 - THE IRRIGATION CONTRACTOR MUST HAVE ON ITS STAFF A LICENSED IRRIGATION INSTALLER, AS REGULATED BY THE APPROPRIATE LOCAL JURISDICTION. A LICENSED IRRIGATION INSTALLER SHALL BE PRESENT AT THE PROJECT SITE AT ALL TIMES AS WORK IS IN PROGRESS. THE OWNER MAY DEMAND THAT WORK STOP UNTIL THE CONTRACTOR PROVIDES FOR A LICENSED IRRIGATION INSTALLER TO BE PRESENT AT THE PROJECT SITE AND SUPERVISING ALL IRRIGATION WORK.
 - A LIST OF SUCCESSFULLY COMPLETED PROJECTS OF THIS TYPE, SIZE AND NATURE MAY BE REQUESTED BY THE OWNER FOR FURTHER QUALIFICATION MEASURES.
- B. SCOPE OF WORK
- WORK COVERED BY THESE SECTIONS INCLUDES THE FURNISHING AND PAYMENT OF ALL MATERIALS, LABOR, SERVICES, EQUIPMENT, LICENSES, TAXES, FEES, AND ANY OTHER ITEMS THAT ARE NECESSARY FOR THE EXECUTION, INSTALLATION AND COMPLETION OF ALL WORK, SPECIFIED HEREIN AND/OR SHOWN ON THE IRRIGATION PLANS, NOTES, AND DETAILS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION OVER SUCH WORK, INCLUDING ALL INSPECTIONS AND PERMITS REQUIRED BY FEDERAL, STATE AND LOCAL AUTHORITIES IN SUPPLY, TRANSPORTATION AND INSTALLATION OF MATERIALS. IN CASE OF CONFLICT BETWEEN THESE PLANS AND LOCAL AND/OR STATE CODES, CODES SHALL PREVAIL.
 - THE INTENT OF THE IRRIGATION SYSTEM IS TO PROVIDE 100% COVERAGE OF ALL LANDSCAPE AREAS. THE IRRIGATION PLAN IS GENERALLY DIAGRAMMATIC; COORDINATE IRRIGATION INSTALLATION WITH UTILITY INSTALLATIONS. ACTUAL LOCATION OF CONTROLLER, BACKFLOW DEVICE, PIPING, VALVES, SPRAY HEADS, DRIP IRRIGATION, AND RELATED EQUIPMENT MAY NEED TO BE ADJUSTED BASED ON ACTUAL SITE CONDITIONS.
 - FOR CLARITY PURPOSES, SOME IRRIGATION LINES AND EQUIPMENT ARE SHOWN IN HARDSCAPE AREAS WITHOUT ACCESS SLEEVES. THESE LINES SHALL BE INSTALLED IN A COMMON TRENCH OR AT THE BACK OF CURB IN LANDSCAPE AREAS. MINOR FIELD ADJUSTMENTS SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.

- PRODUCTS
- A. ALL MATERIALS SHALL BE NEW AND WITHOUT FLAWS OR DEFECTS OF ANY TYPE AND SHALL BE THE BEST OF THEIR CLASS AND KIND. ALL MATERIALS SHALL HAVE A MINIMUM GUARANTEE OF ONE YEAR AGAINST MATERIAL DEFECTS OR DEFECTIVE WORKMANSHIP. ALL MATERIALS SHALL BE OF THE BRANDS AND TYPES NOTED ON THE DRAWINGS OR AS SPECIFIED HEREIN, OR APPROVED EQUAL. THE CONTRACTOR MUST FIRST OBTAIN APPROVAL FROM THE IRRIGATION DESIGNER FOR AN APPROVED EQUAL BEFORE INSTALLING SUCH MATERIALS IN THE FIELD, OR THE CONTRACTOR MAY BE REQUIRED TO REPLACE SUCH MATERIALS AT HIS OWN COST.
- B. BACKFLOW PREVENTION DEVICES SHALL BE OF THE SIZE AND TYPE INDICATED ON THE DRAWINGS. INSTALL BACKFLOW PREVENTION UNITS IN ACCORDANCE WITH IRRIGATION AND RELATED CONSTRUCTION DETAILS AND ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
- C. PIPING
- PRESSURE SUPPLY LINES, DOWNSTREAM OF THE POINT-OF-CONNECTION:
 - SCHEDULE 40 PVC FOR ALL PIPE 1-1/2" OR LESS
 - CLASS 315 PVC FOR ALL PIPE 2" TO 2-1/2"
 - CLASS 200 PVC, GASKETED, FOR ALL PIPE 3" AND LARGER
 - SLEEVING AND NON-PRESSURE LATERAL LINES (DOWNSTREAM FROM VALVES): CLASS 200 PVC
 - FITTINGS: SCH. 40 PVC, EXCEPT AS NOTED OTHERWISE.
- D. VALVES AND DRIP VALVE ASSEMBLIES: TYPE AND SIZE AS NOTED ON PLANS. EACH VALVE SHALL BEAR A PRE-MANUFACTURED, NUMBERED WATERPROOF TAG BEARING A NUMBER CORRESPONDING TO ITS VALVE SEQUENCE ON THE CONTROLLER. THE OPERATION SEQUENCE SHALL MATCH THAT AS SHOWN ON THE PLANS.
- E. QUICK COUPLERS, BALL VALVES, AND GATE VALVES: TYPE AND SIZE PER PLANS.
- F. VALVE BOXES: TYPE AND SIZE AS NOTED ON DETAILS. ALL VALVE BOXES SHALL BE LOCKING BOLT-DOWN TYPE, FURNISHED WITH LIDS AND BOLTS. BOXES SHALL BE OF A SIZE TO CONTAIN THE ENTIRE VALVE AND/OR VALVE ASSEMBLY. THE VALVE BOX LID SHALL HAVE THE VALVE STATION NUMBER HEAT-BRANDED INTO THE LID WITH 2" HIGH LETTERS.
- G. FIXED SPRAY HEADS AND ROTORS: PLASTIC BODY POP-UP, WITH A REMOVABLE PLASTIC SPRAY NOZZLE. EXACT TYPE, MODEL, AND NOZZLE SHALL BE AS INDICATED ON PLANS.
- H. INTEGRAL EMITTER DRIP TUBING: TUBING MODEL AND FLOW RATE AS NOTED ON PLANS, WITH INTEGRAL EMITTERS WELDED TO THE INSIDE WALL OF THE TUBING AS AN INTEGRAL PART OF THE TUBING ASSEMBLY.
- I. AUTOMATIC CONTROLLER: TYPE AND MODEL PER PLANS. PROVIDE VANDAL-PROOF ENCLOSURE FOR ALL EXTERIOR INSTALLATIONS. PROVIDE LINE-VOLTAGE DISCONNECT SWITCH WITH GROUND FAULT PROTECTION.
- J. 24 VOLT VALVE WIRE SHALL BE A MINIMUM OF #14 GAUGE, U.F. APPROVED FOR DIRECT BURIAL, SINGLE CONDUCTOR IRRIGATION WIRE. EACH CONTROLLER SHALL HAVE A DIFFERENT COLOR STATION AND COMMON WIRE.
- STATION WIRE - ANY COLOR EXCEPT WHITE OR BLUE
 - COMMON WIRE - WHITE
 - EXTRA COMMON WIRES - BLUE
- K. WIRE SPLICES SHALL BE ENCASED IN A WATERPROOF COMPOUND OR GEL. ALL FIELD SPLICES SHALL BE LOCATED IN A 6 INCH ROUND VALVE BOX.
- L. RAIN SENSOR: TYPE AND MODEL PER PLANS.

- METHODS
- A. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, AND OTHER EQUIPMENT SHOWN WITHIN PAVED AREAS OR OUT OF PROPERTY BOUNDARIES ARE FOR DESIGN CLARIFICATION ONLY, AND SHALL BE INSTALLED IN PLANTING AREAS WITHIN THE PROPERTY LINES OR LIMITS INDICATED ON PLAN. THE IRRIGATION CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL ABOVE-GRADE IRRIGATION EQUIPMENT WITH THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION, OR IRRIGATION CONTRACTOR MAY BE REQUIRED TO MOVE SUCH ITEMS AT HIS OWN COST. ENSURE FIELD COORDINATION IS MADE EARLY ON IN THE CONSTRUCTION PHASE SO PLACEMENT LOCATION IS CORRECT.
- B. THE IRRIGATION CONTRACTOR SHALL MEET WITH THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF WORK, AND SHALL OBTAIN ALL ENGINEERING, LANDSCAPE, AND OTHER APPLICABLE PLANS & DOCUMENTS. THE CONTRACTOR SHALL THOROUGHLY REVIEW THE PLANS AND REPORT ANY CONFLICTS OR DISCREPANCIES TO THE LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE IMMEDIATELY.
- C. THE IRRIGATION CONTRACTOR SHALL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN OBSTRUCTIONS, GRADES OR DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE BROUGHT TO THE ATTENTION OF THE IRRIGATION DESIGNER. IN THE EVENT THAT THIS NOTIFICATION IS NOT PERFORMED, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS AND NECESSARY COSTS.
- D. THE IRRIGATION CONTRACTOR SHALL PAY ANY AND ALL FEES AND PERMITS ASSOCIATED WITH THE INSTALLATION OF THE IRRIGATION SYSTEM.
- E. AT LEAST SEVEN DAYS BEFORE BEGINNING WORK, CONFIRM THE STATIC WATER PRESSURE IS AT LEAST 65 PSI. IF STATIC WATER PRESSURE IS OUTSIDE OF THE STATED RANGE, DO NOT PROCEED WITHOUT FIRST NOTIFYING THE IRRIGATION DESIGNER AND OWNER IN WRITING, AND OBTAINING SUBSEQUENT DIRECTION FOR CORRECTIONAL MEASURES. SHOULD THE IRRIGATION CONTRACTOR CHOOSE TO BEGIN THE INSTALLATION WITHOUT SUCH NOTIFICATION, THE IRRIGATION CONTRACTOR WILL ASSUME THE RESPONSIBILITY FOR ALL COSTS INCURRED TO ENSURE THE SYSTEM IS WORKING PROPERLY. NO CHANGE ORDERS WILL BE AUTHORIZED IN SUCH CIRCUMSTANCES.
- F. THE IRRIGATION CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITY LINES (WATER, SEWER, ELECTRICAL, TELEPHONE, GAS, CABLE, TELEVISION, ETC.) PRIOR TO THE START OF ANY WORK. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL GRADE DIFFERENCES, LOCATIONS OF WALLS, STRUCTURES AND UTILITIES.
- G. COORDINATE WITH THE OWNER THE PROPOSED LOCATIONS OF THE AUTOMATIC CONTROLLER AND ANY REQUIRED SLEEVES THROUGH THE BUILDING FOR CONTROL WIRES.
- H. TRENCHING NEAR EXISTING TREES:
- CONTRACTOR SHALL NOT DISTURB ROOTS 1-1/2" AND LARGER IN DIAMETER WITHIN THE CRITICAL ROOT ZONE (CRZ) OF EXISTING TREES, AND SHALL EXERCISE ALL POSSIBLE CARE AND PRECAUTIONS TO AVOID INJURY TO TREE ROOTS, TRUNKS, AND BRANCHES. THE CRZ IS DEFINED AS A CIRCULAR AREA EXTENDING OUTWARD FROM THE TREE TRUNK, WITH A RADIUS EQUAL TO 1" FOR EVERY 1" OF TRUNK DIAMETER AT BREAST-HEIGHT (4' 2" ABOVE THE AVERAGE GRADE AT THE TRUNK).
 - ALL EXCAVATION WITHIN THE CRZ SHALL BE PERFORMED USING HAND TOOLS. NO MACHINE EXCAVATION OR TRENCHING OF ANY KIND SHALL BE ALLOWED WITHIN THE CRZ.
 - ALTER ALIGNMENT OF PIPE TO AVOID TREE ROOTS 1-1/2" AND LARGER IN DIAMETER. WHERE TREE ROOTS 1-1/2" AND LARGER IN DIAMETER ARE ENCOUNTERED IN THE FIELD, TUNNEL UNDER SUCH ROOTS. WRAP EXPOSED ROOTS WITH SEVERAL LAYERS OF BURLAP AND KEEP MOIST. CLOSE ALL TRENCHES WITHIN THE CANOPY DRIP LINES WITHIN 24 HOURS.
 - ALL SEVERED ROOTS SHALL BE HAND PRUNED WITH SHARP TOOLS AND ALLOWED TO AIR-DRY. DO NOT USE ANY SORT OF SEALERS OR WOUND PAINTS.

- I. BACKFILL
- ALL BACKFILL MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE OWNER. BACKFILL MATERIAL SHALL BE FREE FROM RUBBISH, ROCK LARGER THAN 1", LARGE STONES, BRUSH, SOIL, FROZEN MATERIAL OR OTHER UNSUITABLE SUBSTANCES THAT MAY DAMAGE PIPE DURING THE BACKFILLING OPERATIONS. SEPARATE OUT ROCKS LARGER THAN 1 INCH IN ANY DIRECTION FROM EXCAVATED MATERIAL, AND REMOVE FROM AREAS TO RECEIVE LANDSCAPING. COVER FOR BOTH TOP AND SIDES OF PIPE SHALL BE A MINIMUM OF 2 INCHES OF ROCK-FREE SOIL, SAND, OR OTHER APPROVED MATERIAL.
 - IN THE EVENT THAT THE MATERIAL FROM THE EXCAVATION OR TRENCHING IS FOUND TO BE UNSUITABLE FOR USE IN BACKFILL, IT SHALL BE REMOVED FROM THE SITE AND PROPERLY AND LEGALLY DISPOSED OF BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL THEN PURCHASE AND USE FURNISH SUITABLE BACKFILL MATERIAL CONSISTING OF EARTH, LOAM, SANDY CLAY, SAND OR OTHER APPROVED MATERIALS FREE OF DEBRIS.
- J. BACKFLOW PREVENTER INSTALLATION: CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING WATER SOURCES AT LOCATION SHOWN ON PLANS AND AS APPROVED BY THE OWNER, AND SHALL MAKE ANY MINOR CHANGES IN LOCATION AS MAY BE NECESSARY DUE TO ACTUAL SITE CONDITIONS. BACKFLOW PREVENTER HEIGHT SHALL BE AS PER LOCAL CODES AND IRRIGATION DETAILS. INSTALL A BRASS BALL VALVE IMMEDIATELY UPSTREAM OF THE BACKFLOW DEVICE TO SERVE AS AN ISOLATION VALVE. TO EVERY EXTENT POSSIBLE, INSTALL BACKFLOW PREVENTER ION A LOCATION SCREENED FROM PUBLIC VIEW (SUCH AS BEHIND A SHRUB ROW).
- K. PIPING
- PIPE SIZE SHALL CONFORM TO THOSE SHOWN ON THE DRAWINGS. NO SUBSTITUTIONS OF SMALLER PIPE SIZES SHALL BE PERMITTED, BUT SUBSTITUTIONS FOR LARGER SIZES MAY BE APPROVED.
 - MAINLINE PIPE AND WIRES SHALL BE INSTALLED WITH A MINIMUM COVER OF 18 INCHES (24" FOR MAINLINE 3"-5" AND 30" FOR MAINLINE 6" AND GREATER). LATERAL PIPE SHALL BE INSTALLED WITH A MINIMUM COVER OF 12 INCHES.
 - ASSEMBLE ALL THREADED FITTINGS WITH TEFLON TAPE, WHICH SHALL BE APPLIED TO MALE THREADS ONLY.
 - ALL SOLVENT-WELD CONNECTIONS SHALL BE MADE WITH APPROVED SOLVENT-WELD PRIMER AND GLUE.
 - PIPE SHALL BE INSTALLED WITH A MINIMUM OF 4" HORIZONTAL CLEARANCE FROM ANY OTHER PIPE AND 2" VERTICAL CLEARANCE FROM ANY PIPES THAT CROSS OVER OR UNDER.
- L. VALVES
- VALVES SHALL BE INSTALLED PER MANUFACTURER'S DIRECTIONS AND THE IRRIGATION DETAILS.
 - VALVE BOXES SHALL BE INSTALLED FLUSH WITH THE GRADE, WITH CLEAN PEA GRAVEL LOCATED BELOW THE VALVE AS NOTED ON THE DETAILS. LOCATE BOXES WITHIN 12 TO 24" OF SIDEWALKS OR LANDSCAPE EDGES, WITH TOPS OF BOXES 1" ABOVE FINISH GRADE IN TURF, AND 3" ABOVE FINISH GRADE IN SHRUB AREAS TO AVOID BEING COVERED BY MULCH).
 - EACH VALVE BOX COVER SHALL BE HEAT-BRANDED WITH THE CONTROLLER STATION NUMBER.
 - DO NOT INSTALL MORE THAN TWO VALVES IN A JUMBO BOX.
- M. DRIP IRRIGATION EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S DIRECTIONS AND THE IRRIGATION DETAILS.
- SUBSURFACE DRIP LINES SHALL BE BURIED NO MORE THAN 2" BELOW FINISH GRADE.
 - DRIP LINES MOUNTED ON GRADE SHALL BE LOCATED BENEATH LANDSCAPE FABRIC, AND BE SECURED IN PLACE WITH WIRE STAPLES AT A MAXIMUM OF 24"-36" ON CENTER.
- N. SPRAY, ROTOR, AND BUBBLER HEADS
- ALL SPRAY AND ROTOR HEAD LOCATIONS SHALL BE STAKED, FLAGGED AND/OR OTHERWISE CLEARLY MARKED ON THE GROUND PRIOR TO INSTALLATION. SPRINKLER HEAD STAKING SHALL BE INSPECTED AND APPROVED BY THE OWNER'S REPRESENTATIVE BEFORE INSTALLATION.
 - ALL SPRAY HEADS SHALL BE CONNECTED WITH A 12 INCH MINIMUM LENGTH OF 1/2 INCH FLEX PVC. THE FLEX PVC SHALL BE SOLVENT WELDED TO SCHEDULE 40 PVC FITTINGS WITH WELD-ON 45° SOLE VENT AND RP-70 PRIMER. ALL ROTORS SHALL BE CONNECTED TO LATERAL LINES WITH PRE-MANUFACTURED SWING JOINTS.
 - ALL ROTOR, SPRAY AND BUBBLER HEADS SHALL BE SET PERPENDICULAR AND FLUSH TO FINISH GRADE AND WITH A CLEARANCE OF FOUR INCHES (MINIMUM) FROM THE EDGE OF ANY BUILDINGS, WALLS, BOULDERS, AND HARDSCAPE. WITH A CLEARANCE OF TWELVE INCHES (MINIMUM) FROM BUILDINGS, UNLESS OTHERWISE SPECIFIED.
 - ALL ROTOR, SPRAY AND BUBBLER HEADS AND VALVES SHALL BE FLUSHED AND ADJUSTED FOR OPTIMUM COVERAGE WITH MINIMUM OVERSPRAY ON WALKS, STREETS, WALLS, ETC.
 - LATERAL PIPE TO TREE STREAM BUBBLER HEADS IS OMITTED FOR GRAPHIC CLARITY. CONNECT TREE BUBBLER HEADS TO VALVES AS SHOWN WITH CLASS 200 PVC PIPE SIZED TO ALLOW A MAXIMUM FLOW VELOCITY OF 5 FEET PER SECOND.
- O. AUTOMATIC CONTROLLER
- INSTALL THE CONTROLLER AT THE LOCATION INDICATED BY THE OWNER. INSTALL CONTROLLER WITH A BACKUP BATTERY AS RECOMMENDED BY THE MANUFACTURER.
 - THE IRRIGATION CONTRACTOR SHALL COORDINATE 120 V A.C. ELECTRICAL POWER TO CONTROLLER AND DEDICATE ONE (1) 20-AMP BREAKER FOR EACH CONTROLLER. IT SHALL BE THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO MAKE THE FINAL HOOK-UP FROM THE ELECTRICAL SOURCE TO THE CONTROLLER UNIT ONLY.
 - ALL VALVE CONTROL WIRE SHALL BE AVG 14 TYPE UF, 800 VOLT TEST, DIRECT BURIAL. NO SPLICES SHALL BE ALLOWED EXCEPT AT VALVES AND CONTROLLER. WHERE SPLICES MAY BE NECESSARY DUE TO EXCESSIVELY LONG WIRE RUNS, THE CONTRACTOR SHALL MAKE ALL SPLICES IN 6" ROUND VALVE BOXES WITH 3MS "DBY-DIRECT BURIAL SPLICE KIT". THE CONTRACTOR SHALL LABEL ALL WIRES WITH WATERPROOF TAGS AND MARKERS AT ALL SPLICES AND VALVE MANIFOLDS, AND SHALL LEAVE A 24" COIL OF EXCESS WIRE AT EACH CONNECTION.
 - PROVIDE #10 COMMON WIRE, DIRECT BURIAL, TO ALL REMOTE CONTROL VALVES.
 - CONNECT ALL DIRECT BURIAL WIRES TO VALVES USING 3MS "DBY-DIRECT BURIAL SPLICE KIT" (UNLESS OTHERWISE SPECIFIED).
 - PROVIDE THREE ADDITIONAL IRRIGATION CONTROL WIRES ALONG EACH BRANCH OF MAINLINE FOR FUTURE EXPANSION. STUB ADDITIONAL CONTROL WIRES INTO BACK OF IRRIGATION CONTROLLERS.
 - THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL CONTROL WIRE SLEEVES AND PIPE SLEEVES UNDER PAVED AREAS PRIOR TO PAVING - SEE SLEEVING NOTES.
- P. INSTALL THE RAIN SENSITIVE LOCATION OF THE CONTROLLER AT THE LOCATION INDICATED WITH THE OWNER. PROVIDE MINIMUM 5' CLEARANCE FROM OTHER OUTDOOR EQUIPMENT, FREE AND CLEAR OF ANY TREE CANOPY OR OTHER OVERHEAD OBSTRUCTIONS, AND ABOVE THE HEIGHT OF THE SPRINKLER COVERAGE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE RAIN SENSOR IS PLACED IN A LOCATION WHERE IT CAN RECEIVE ADEQUATE RAINFALL WITHOUT OBSTRUCTIONS. IF IT IS PLACED IN AN INADEQUATE LOCATION, THE IRRIGATION CONTRACTOR MAY BE REQUIRED TO RELOCATE IT AT NO ADDITIONAL COST TO THE OWNER.
- Q. ALL IRRIGATION EQUIPMENT NOT OTHERWISE DETAILED OR SPECIFIED SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
- R. QUALITY CONTROL
- PERFORM COVERAGE TESTS AFTER IRRIGATION SYSTEM IS COMPLETED, BUT PRIOR TO ANY PLANTING AND PERFORM TESTING IN THE PRESENCE OF THE IRRIGATION DESIGNER AND THE CONSTRUCTION MANAGER.
 - TEST SYSTEM TO ASSURE THAT ALL LAWN AND PLANTING AREAS ARE WATERED COMPLETELY AND UNIFORMLY.
 - MAKE ALL NECESSARY ADJUSTMENTS TO PROVIDE COMPLETE COVERAGE, INCLUDING THE REALIGNMENT OF HEADS AND REPLACEMENT OF NOZZLES.
- S. CLEAN UP
- DURING IRRIGATION EXCAVATION AND INSTALLATION, KEEP ALL PAVEMENT CLEAN AND ALL WORK AREAS IN A NEAT, ORDERLY CONDITION.
 - DISPOSED LEGALLY OF ALL EXCAVATED MATERIALS OFF THE PROJECT SITE.
- T. INSPECTION AND ACCEPTANCE
- UPON COMPLETION OF THE WORK, THE IRRIGATION CONTRACTOR SHALL PROVIDE THE SITE CLEAN, FREE OF DEBRIS AND TRASH, AND SUITABLE FOR USE AS INTENDED. THE IRRIGATION CONTRACTOR SHALL THEN REQUEST AN INSPECTION BY THE OWNER TO DETERMINE FINAL ACCEPTABILITY.
 - WHEN THE INSPECTED WORK DOES NOT COMPLY WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL REPLACE AND/OR REPAIR THE REJECTED WORK TO THE OWNER'S SATISFACTION WITHIN 24 HOURS.
 - THE MAINTENANCE PERIOD WILL NOT COMMENCE UNTIL THE WORK HAS BEEN RE-INSPECTED BY THE OWNER AND FOUND TO BE ACCEPTABLE. AT THAT TIME, A WRITTEN NOTICE OF FINAL ACCEPTANCE WILL BE ISSUED BY THE OWNER, AND THE MAINTENANCE AND GUARANTEE PERIODS WILL COMMENCE.
 - CONTROLLER CHART: THE IRRIGATION CONTRACTOR SHALL PROVIDE A 11" X 17" COLOR-CODED, LAMINATED COPY OF THE IRRIGATION LAYOUT AND PLACE IT IN THE CONTROLLERS COVER. THE CONTROLLER CHART SHALL CLEARLY DELINEATE THE AREAS COVERED BY EACH VALVE, USING A SEPARATE COLOR FOR EACH ZONE.
 - TURN THE FOLLOWING ITEMS IN TO THE OWNER UPON COMPLETION OF THE INSTALLATION:
 - QUICK COUPLER KEYS (2)
 - CONTROLLER MANUAL (1)
 - CONTROLLER KEYS (2)
 - A MINIMUM OF (2) COPIES OF RECORD DRAWINGS. A RECORD DRAWING IS A RECORD OF ALL CHANGES THAT OCCURRED IN THE FIELD THAT ARE DOCUMENTED THROUGH CHANGE ORDERS, ADDENDA, OR CONTRACTOR/CONSULTANT DRAWING MARKUPS.
- V. REFER TO THE PLANTING SPECIFICATIONS FOR ADDITIONAL CONDITIONS OF FINAL ACCEPTANCE AND START OF THE MAINTENANCE PERIOD.
- W. WARRANTY
- THE IRRIGATION SYSTEM SUPPLIED AND INSTALLED SHALL BE WARRANTED (LABOR AND MATERIALS) TO REMAIN OPERATIONAL FOR A PERIOD OF 12 MONTHS AFTER THE DATE OF FINAL ACCEPTANCE. DURING THIS PERIOD, THE CONTRACTOR SHALL ALSO REPAIR ANY SETTLEMENT OF THE IRRIGATION TRENCHES.
 - BY THE END OF THE WARRANTY PERIOD, ANY IRRIGATION PART THAT IS EITHER NON-OPERATIONAL OR THAT IS OPERATING BELOW STANDARDS AS DETERMINED BY THE OWNER, SHALL BE REMOVED FROM THE SITE AND SHALL BE REPLACED. REPLACEMENTS SHALL BE OF THE SAME KIND AS SPECIFIED IN THE IRRIGATION LEGEND, AND SHALL BE INSTALLED AS ORIGINALLY SPECIFIED.
 - IRRIGATION PARTS DAMAGED OR IMPAIRED DUE TO ACTS OF GOD, VANDALISM, AND/OR THE OWNER'S IMPROPER MAINTENANCE SHALL NOT BE COVERED BY THIS WARRANTY.
- X. SHOULD THE PERMITTING JURISDICTION REQUIRE AN IRRIGATION AUDIT, THE IRRIGATION CONTRACTOR SHALL RETAIN THE SERVICES OF A THIRD-PARTY CERTIFIED LANDSCAPE IRRIGATION AUDITOR, AT NO ADDITIONAL COST TO THE OWNER.

IRRIGATION LEGEND

SYMBOL	MANUFACTURER/MODEL
●	RAIN BIRD R-VAN14 1806-SAM-P45, TURF ROTARY, 8'-14' 45"-270" AND 360" HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET.
●	RAIN BIRD R-VAN18 1806-SAM-P45, TURF ROTARY, 13'-18' 45"-270" AND 360" HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET.
⊙	RAIN BIRD R-VAN24 1806-SAM-P45, TURF ROTARY, 17'-24' 45"-270" AND 360" HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET.
✱	RAINBIRD 1806-SAM-PRS SERIES POP UP SPRAY HEADS WITH ADAPTER AND RAINBIRD #1402 SERIES BUBBLER NOZZLES. (TWO PER TREE) SEE INSTALLATION NOTE #N-5 REGARDING TREE BUBBLER LATERAL PIPE
✱	RAINBIRD 5004PCSAMR, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, PART CIRCLE, #1.5 LA NOZZLE UNLESS NOTED OTHERWISE
✱	RAINBIRD 5004PCSAMR, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, PART CIRCLE, #2.5 NOZZLE UNLESS NOTED OTHERWISE
⊕	RAINBIRD XCZ-100-PRB-COM / 150-PRB-COM SERIES AUTOMATIC DRIP VALVE ASSEMBLY WITH 40 PSI PRESSURE REGULATOR XCZ-100-PRB-COM - 1" BALL VALVE WITH 1" PESB VALVE AND 1" PRESSURE REGULATING 40PSI QUICK-CHECK BASKET FILTER. 0.3GPM TO 20GPM.
⊕	RAINBIRD PEB SERIES ELECTRIC REMOTE CONTROL, "TREE BUBBLER ZONE" VALVE SEE INSTALLATION NOTE #N-5 REGARDING TREE BUBBLER LATERAL PIPE
⚡	RAINBIRD PEB SERIES 1", 1-1/2", 2" PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.
	AREA TO RECEIVE DRIPLINE RAINBIRD XFS-CV-06-12 SERIES DRIP TUBE IN SHRUB BED INSTALLED AT 2" DEPTH
	AREA TO RECEIVE DRIPLINE RAINBIRD XFS-CV-06-12 SERIES DRIP TUBE IN NARROW TURF AREAS INSTALLED AT 4" DEPTH
	ZURN / WILKINS 350 SERIES D.C.A. INSTALLED PER CITY CODE, WITH SAME SIZE ZURN / WILKINS 850 SERIES BRONZE BALL VALVE AND ZURN / WILKINS SXL SERIES BRONZE WYE FILTER WITH 20 MESH STAINLESS STEEL SCREEN
	LASCO "V" SERIES SCH. 80 PVC TRUE UNION BALL VALVE, MAINLINE SIZE
	IRRIGATION WATER METER AND TAP (BY OTHERS) SIZE AS NOTED ON THE PLAN
	RAINBIRD 33DLRC QUICK COUPLER, 3/4"
	RAINBIRD ESP12LXMEF2P SERIES AUTOMATIC WALL MOUNT CONTROLLER WITH ONE ESPLXMSM12 STATION MODULES
	RAINBIRD WR2-RFC RAIN / FREEZE SENSOR LOCATE SENSOR AS FIELD DIRECTED BY THE LANDSCAPE ARCHITECT
	1" MASTER VALVE MODEL # 100-EFB-CP WITH RAINBIRD FLOW SENSOR MODEL #FS100B SERIES

— — — — —	IRRIGATION LATERAL LINE: CLASS 200 PVC
== == == == ==	IRRIGATION MAINLINE: SCHEDULE 40 PVC
— — — — —	IRRIGATION SLEEVES, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED
— — — — —	IRRIGATION SLEEVE, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED

IRRIGATION NOTE:

- L.I.C. SHALL SELECT R-VAN SPRAY NOZZLES FOR "HEAD-TO-HEAD" COVERAGE, ADJUSTED FOR NO OVERSPRAY ONTO WALLS AND WALKS. NO OVERSPRAY INTO STREETS IS PERMITTED.
- ALL PIPE TO BE SIZED SUCH THAT FLOWS WILL NOT EXCEED VELOCITY OF 5 FPS

WATER CONSERVATION

IRRIGATION WATER CONSERVATION SHALL BE ACCOMPLISHED THROUGH THE FOLLOWING EFFORTS:

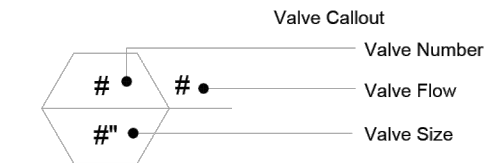
- SEPARATE TURF / SHRUB ZONES FOR SCHEDULING ADJUSTMENT
- NO OVERSPRAY ONTO PAVEMENT PERMITTED
- USE OF RAIN SENSOR SHUT OFF OVER-RIDE DEVICE

LATERAL PIPE SIZE CHART

LATERAL PIPE SHALL BE SIZED TO ALLOW A MAXIMUM FLOW VELOCITY OF FIVE FEET PER SECOND ACCORDING TO THE FOLLOWING CHART:

FLOW IN GPM	LATERAL PIPE SIZE
UP TO 5 GPM	3/4" CLASS 200
6 - 10 GPM	3/4" CLASS 200
11 - 15 GPM	1" CLASS 200
16 - 28 GPM	1 1/4" CLASS 200
29 - 35 GPM	1 1/2" CLASS 200
36 - 54 GPM	2" CLASS 200
55 - 81 GPM	2 1/2" CLASS 200
82 - 120 GPM	3" CLASS 200

VALVE KEY



CRITICAL ANALYSIS

P.O.C. NUMBER: 01
Water Source Information: Irrigation Meter, By Others

FLOW AVAILABLE
Water Meter Size: 1"
Flow Available: 30 gpm

PRESSURE AVAILABLE
Static Pressure at POC (est.): 68.00 psi
Elevation Change: NA
Service Line Size: NA
Length of Service Line: NA
Pressure Available: 65.00 psi

DESIGN ANALYSIS
Maximum Station Flow: 21.0 gpm
Flow Available at POC: 30.0 gpm
Residual Flow Available: 9.0 gpm

Critical Station: 1
Head Pressure Required: 35.0 psi
Loss (Laterals): 3.3 psi
Loss through Valve: 2.9 psi
Pressure Req. at Critical Station: 41.2 psi
Loss for Main Line: 1.78 psi
Loss for Fittings 25%(Main Line): 0.36 psi
Loss for Master Valve: 2.9 psi
Loss for Backflow: 4.0 psi
Loss for Water Meter: 2.8 psi
Critical Station Pressure at POC: 53.04 psi
Pressure Available: 65.00 psi
Residual Pressure Available: 11.96 psi

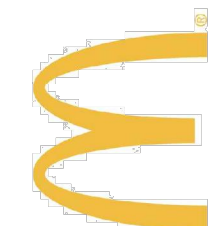


811 or 1-800-DIG-RITE
https://www.mo1call.com/

NOTE TO CONTRACTOR: PRIOR TO ANY EXCAVATION FOR UNDERGROUND UTILITIES, CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES INCLUDING BUT NOT LIMITED TO GAS, WATER, BROADBAND, PHONE, SANITARY AND STORM SEWERS. ANY CONFLICT SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND APPROPRIATE AUTHORITIES.

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McDONALD'S RESTAURANT
NSN 41181 (024-1301)
5615 E. ST. CHARLES RD.
COLUMBIA, MISSOURI



GAS
PTB
332-743
DRAFT

IRRIGATION SPECS

DATE: DECEMBER 22, 2023
DRAWN BY:
CHECKED BY:
PROJECT NO.:
APPROVED BY:

DRAWING NO.:
IR-3
SHEET 23 OF 23

PATRICK T. BENNETT
E200203134
*HAND SIGNATURE ON FILE