



McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

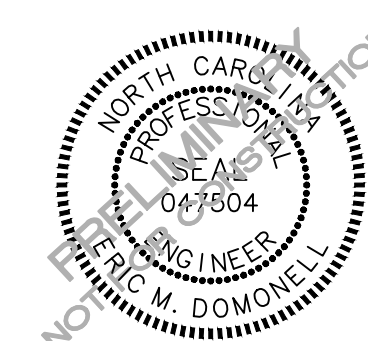
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

NAME: TOWN OF ROLESVILLE
ADDRESS: 502 SOUTHTOWN CIRCLE
ADDRESS: ROLESVILLE NC 27571
PHONE: 919.554.6582

**FRAZIER FARM PARK
CONSTRUCTION DRAWINGS
PHASE 1A
11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA**



REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO. 202011039
FILENAME 202011039-PH1-G1
CHECKED BY EMD
DRAWN BY SME
SCALE 1"=30'
DATE 03.22.2023

SHEET

**GRADING & DRAINAGE
PLAN: AREA 'D'**

C3.04

GRADING LEGEND

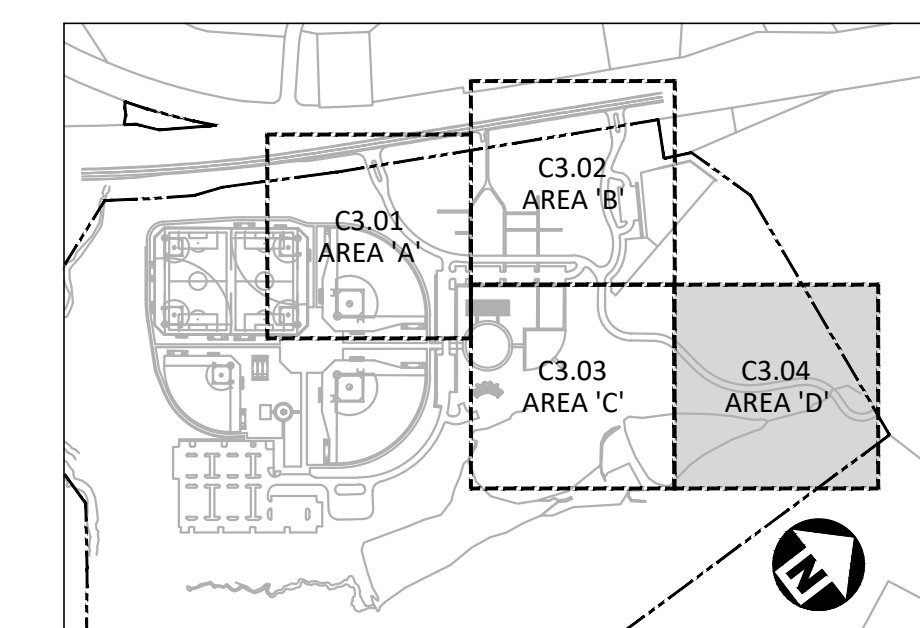
	FLARED END SECTION
	ENDWALL SECTION
	CATCH BASIN
	DROP INLET
	JUNCTION BOX
	DRAINAGE FLOW ARROW
	TOP & BOTTOM CURB ELEVATIONS
	SPOT ELEVATION
	STORM DRAINAGE
	TREE PROTECTION FENCE
	LIMITS OF DISTURBANCE
	WOODED AREA
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EASEMENT LINE
	ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)

GRADING NOTES

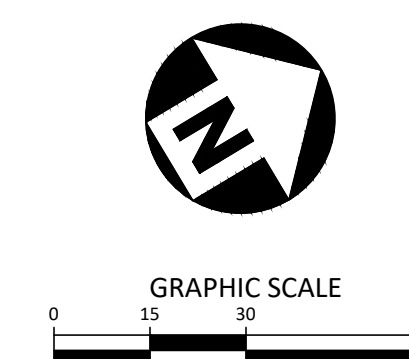
- ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. FOR NECESSARY PLAN OR GRADE CHANGES, NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH. EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRES THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER, PROVIDED BY CONTRACTOR RESPONSIBLE FOR EXCAVATION.
- CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
- A PRE-CONSTRUCTION CONFERENCE WILL BE HELD PRIOR TO ANY LAND DISTURBING ACTIVITY. AS DEEMED NECESSARY, THE OWNER, ENGINEER, CONTRACTOR, AND REPRESENTATIVES FROM NCDEQ WILL BE INVITED TO ATTEND THE MEETING. FOR NCDEQ REPRESENTATIVES, CONTACT DIVISION OF LAND QUALITY AT (910) 433-3300 PRIOR TO START OF CONSTRUCTION.
- CONSTRUCTION, MAINTENANCE AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. TIMING OF REMOVAL SHALL BE COORDINATED WITH THE EROSION CONTROL INSPECTOR.
- EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- SOIL UNDER BUILDINGS, PAVED AREAS AND WITHIN SLOPES LESS THAN 4:1 (H:V) SHALL BE APPROVED, PLACED AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

STORM DRAINAGE NOTES:

- ALL STORM DRAINAGE PIPES SHOWN SHALL BE CORRUGATED HDPE UNLESS NOTED OTHERWISE. CONTRACTOR TO COORDINATE WITH THE GEOTECH TO VERIFY TYPE OF BEDDING REQUIRED BASED ON SOIL CONDITIONS.
- ALL STORM DRAINAGE CONSTRUCTION SHALL BE IN ACCORDANCE WITH TOWN OF ROLESVILLE STANDARDS.
- ALL CONCRETE SHALL MEET A MINIMUM 3000 PSI COMPRESSIVE STRENGTH.
- ALL PIPE JOINTS SHALL BE MADE WITH PREFORMED JOINT SEALER, WHICH CONFORMS TO AASHTO SPECIFICATION M-198 FOR TYPE B. FLEXIBLE PLASTIC GASKETS UNLESS OTHERWISE NOTED.
- ALL BACKFILL SHALL BE NON-PLASTIC IN NATURE, FREE FROM ROOTS, VEGETATION MATTER, WASTE CONSTRUCTION MATERIAL OR OTHER OBJECTIONABLE MATERIAL. SAID MATERIAL SHALL BE CAPABLE OF BEING COMPACTED BY MECHANICAL MEANS AND SHALL HAVE NO TENDENCY TO FLOW OR BEHAVE IN A PLASTIC MANNER UNDER THE TAMPING BLOWS OR PROOF ROLLING.
- MATERIALS DEEMED BY THE OWNER'S REPRESENTATIVE AS UNSUITABLE FOR BACKFILL PURPOSES SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL.
- BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE THOROUGHLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST. THE TOP EIGHT (8) INCHES SHALL BE COMPACTED TO 100 PERCENT STANDARD PROCTOR.
- UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL PIPE AND STRUCTURES FOR CRACKS OR BREAKS, PRIOR TO INSTALLATION. ANY DAMAGED ITEMS SHALL NOT BE INSTALLED.

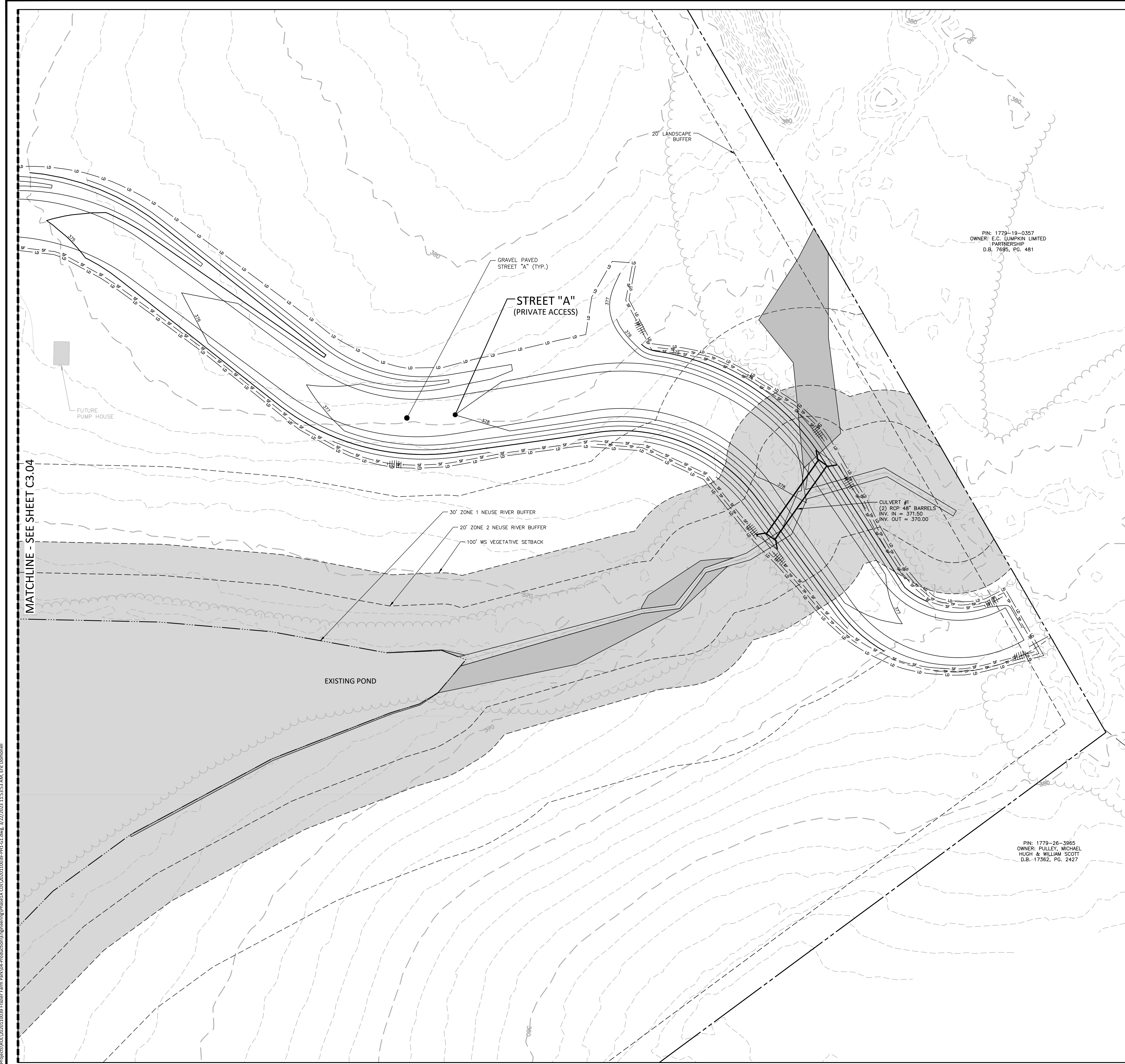


INDEX MAP
N.T.S.



ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF ROLESVILLE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



PIN: 1779-19-0357
OWNER: E.C. LUMPKIN LIMITED PARTNERSHIP
D.B. 7695, PG. 481

PIN: 1779-26-3965
OWNER: PULLEY, MICHAEL HUGH & WILLIAM SCOTT
D.B. 17262, PG. 2427

STREET "A"
(PRIVATE ACCESS)

GRAVEL PAVED STREET "A" (TYP.)

EXISTING POND

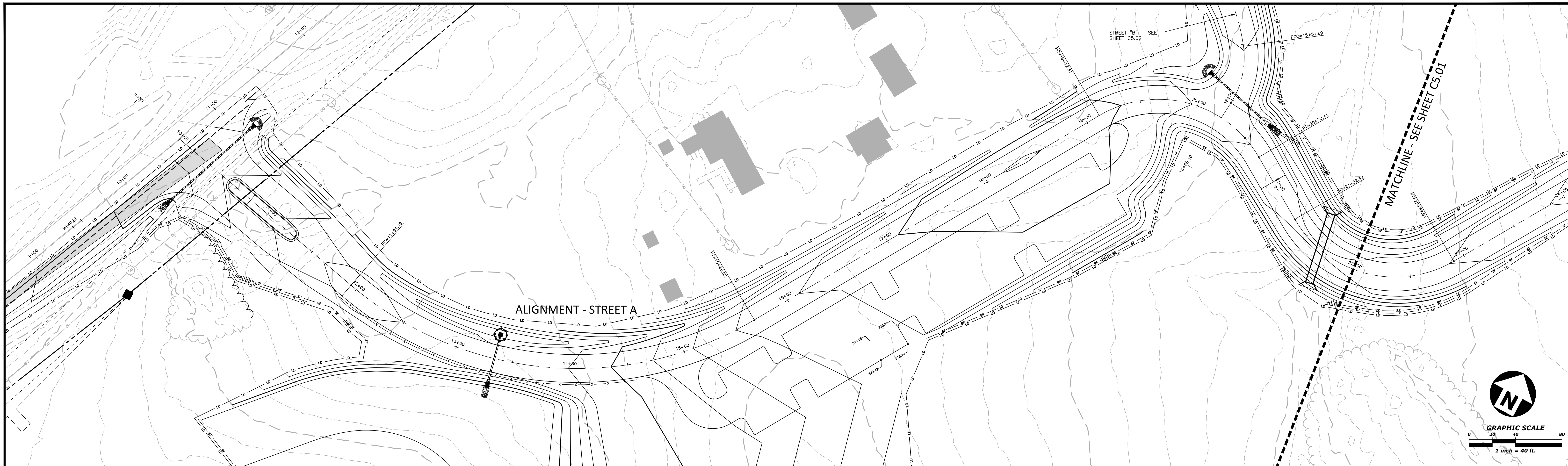
30' ZONE 1 NEUSE RIVER BUFFER
20' ZONE 2 NEUSE RIVER BUFFER
100' WS VEGETATIVE SETBACK

20' LANDSCAPE BUFFER

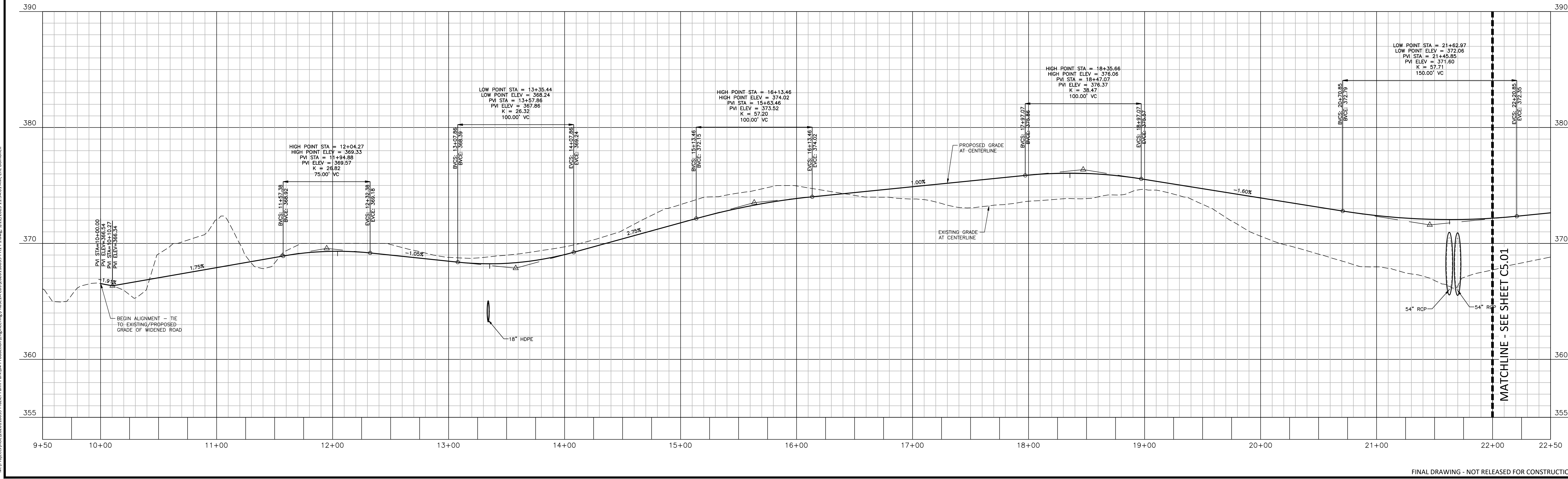
FUTURE PUMP HOUSE

MATCHLINE - SEE SHEET C3.04

M:\Projects\WOL\202011039 Frazier Farm PH1A\04-Production\Engineering\Phase1A_CD\202011039-PH1-G1.dwg, 3/22/2023, 1:53:53 AM, Eric Domonell



ALIGNMENT - STREET A



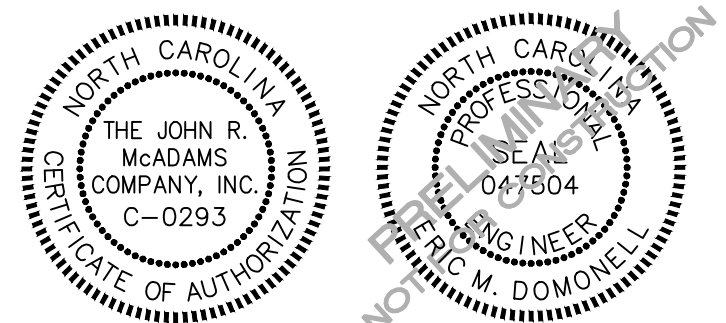
FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION



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 Raleigh, NC 27603
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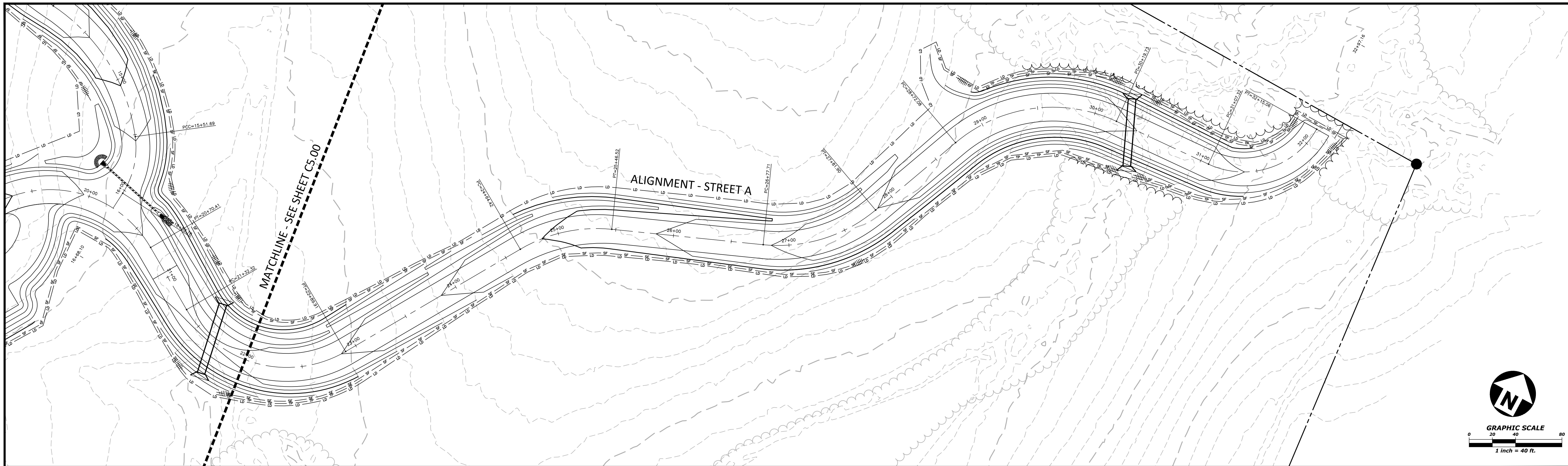


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 11624 LOUISBURG ROAD
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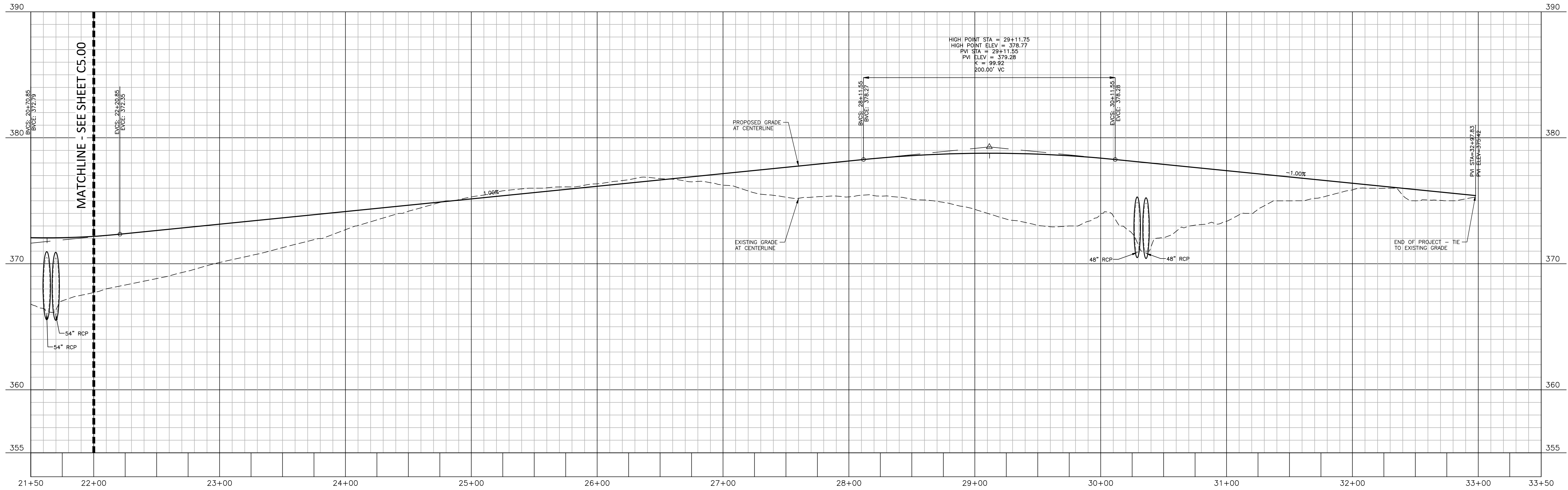
PLAN INFORMATION
 PROJECT NO. 2020110039
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 CHECKED BY EMD
 DRAWN BY SME
 SCALE H:1"=40' / V:1"=4'
 DATE 03.22.2023

PLAN AND PROFILE
 STREET "A", STA. 10+00 THRU STA. 22+00

C5.00



ALIGNMENT - STREET A



FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

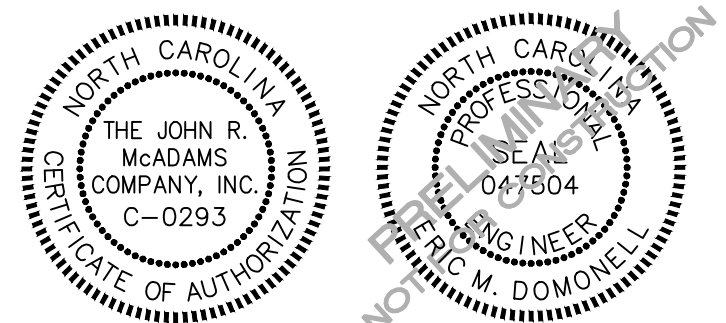
M:\Projects\RD110039\Frazer Farm Park\04-Production\Engineering\Phase1A\CD\2020110039-PH1-P1.dwg, 3/22/2023 11:54:02 AM, Eric Domonell

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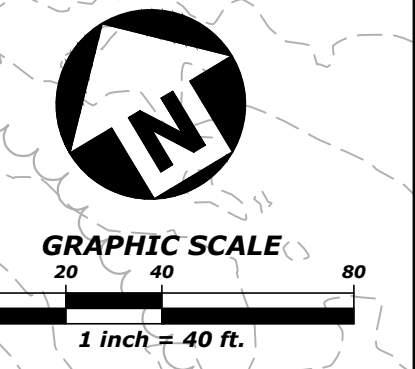
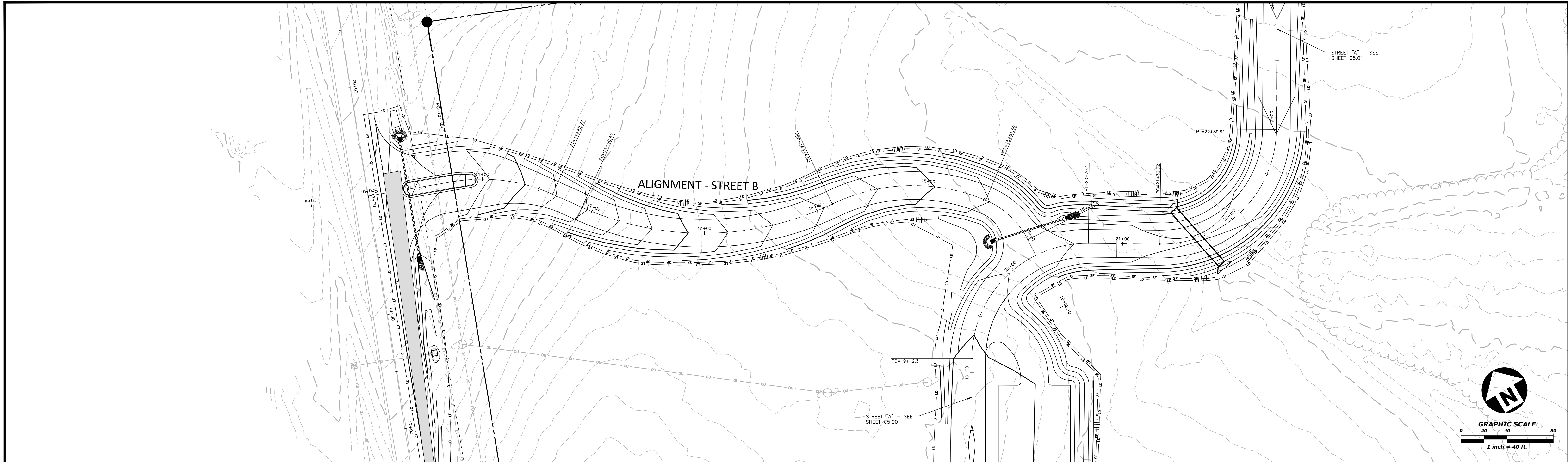
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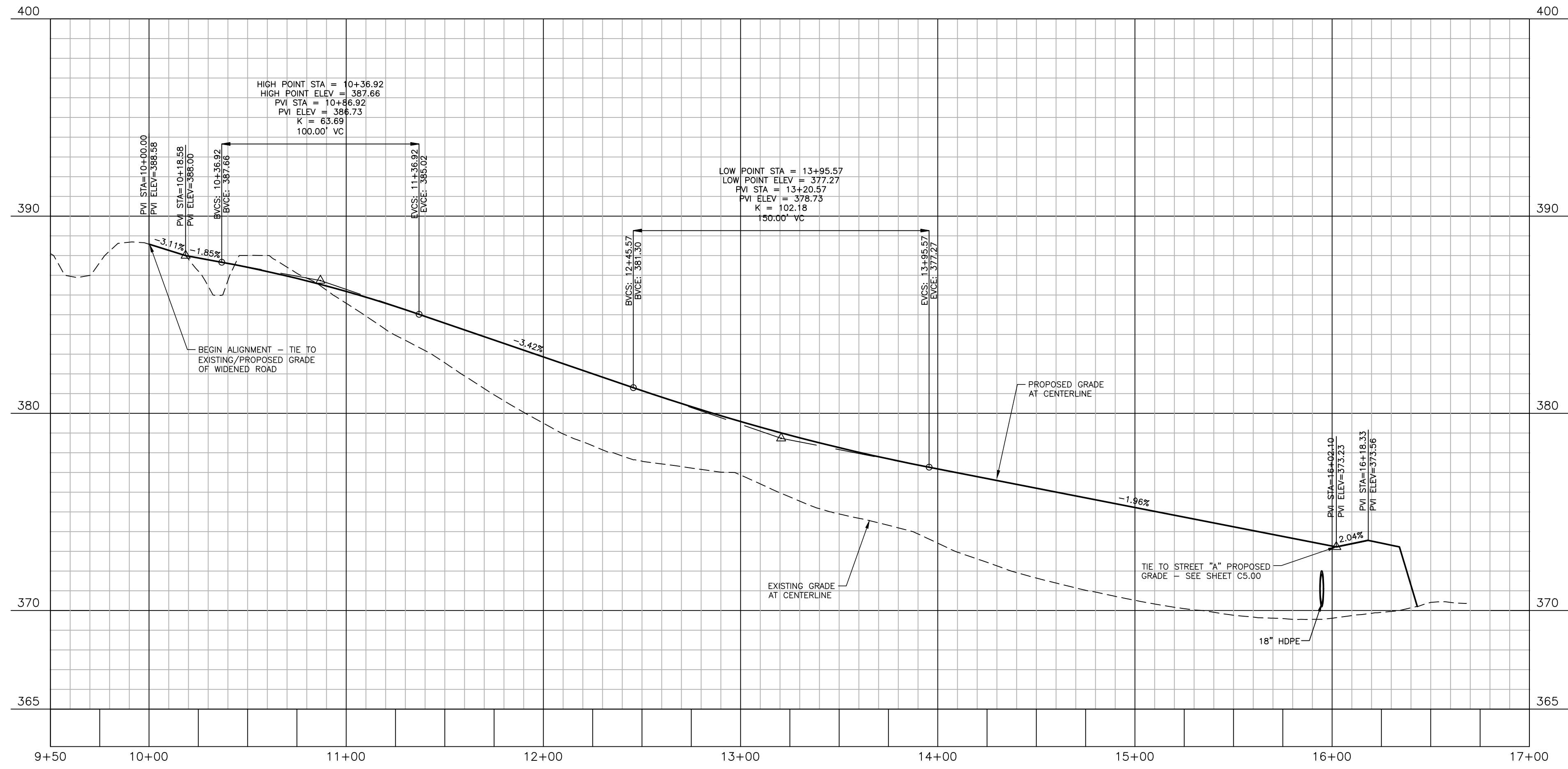
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FILENAME	2020110039-PH1-P1
CHECKED BY	EMD
DRAWN BY	SME
SCALE	H:1"=40' / V:1"=4'
DATE	03.22.2023

PLAN AND PROFILE
STREET A, STA. 22+00 THRU STA. 33+00

C5.01



ALIGNMENT - STREET B



M:\Projects\BOL\2020110039\Frazer Farm Park\04-Production\Engineering\Phase1A\CD\2020110039-PH1-P1.dwg, 3/22/2023 11:54:04 AM, Eric Domonell

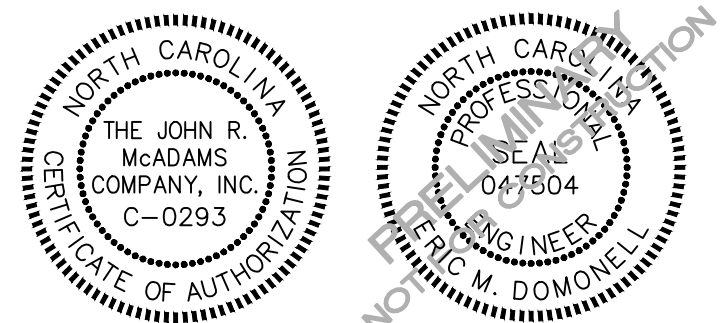
FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION



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FRAZIER FARM PARK
CONSTRUCTION DRAWINGS - PHASE 1A
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ROLESVILLE, NORTH CAROLINA

PLAN INFORMATION
PROJECT NO. 2020110039
FILENAME 2020110039-PH1-P1
CHECKED BY EMD
DRAWN BY SME
SCALE H:1"=40' / V:1"=4'
DATE 03.22.2023

PLAN AND PROFILE
STREET "B", STA. 10+00 THRU STA. 16+35
C5.02

**CITY OF RALEIGH PUBLIC UTILITIES
STANDARD UTILITY NOTES (AS APPLICABLE)**

- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
- UTILITY SEPARATION REQUIREMENTS:
 - A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
 - WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
 - WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
 - 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
 - MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS, WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & 5-49).
 - ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
- ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
- 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCEMAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
- IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.
- INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
- INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
- PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
- ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDMQU, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
- NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
- GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUD FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
- CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

NOTES:

DEEDS OF EASEMENT FOR SANITARY SEWER PURPOSES TO CITY OF RALEIGH RECORDED IN BOOK 12249, PAGE 864 AND BOOK 12466, PAGE 1149 AND AS SHOWN ON RECORDED PLAT IN BOOK OF MAPS 2006, PAGES 2216 AND 2217, WAKE COUNTY REGISTRY.

(DEED OF EASEMENT SUPERSEDED BY BM 2008 PG 480 & 481)

RIGHT OF WAY AND UTILITY EASEMENTS RECORDED IN BOOK 13736, PAGES 1287 AND 1294 AND AS SHOWN ON RECORDED PLAT IN BOOK OF MAPS 2009, PAGE 1991, WAKE COUNTY REGISTRY.

(AS SHOWN ON SURVEY)

DEEDS OF EASEMENT FOR SANITARY SEWER PURPOSES TO CITY OF RALEIGH RECORDED IN BOOK 12249, PAGE 860 AND BOOK 12466, PAGE 1171 AND AS SHOWN ON RECORDED PLAT IN BOOK OF MAPS 2006, PAGES 2216 AND 2217, WAKE COUNTY REGISTRY.

BY-PASS PUMPING NOTES:

- DEVELOPER SHALL PROVIDE 30 DAYS ADVANCE WRITTEN NOTICE TO PROPERTY OWNER FOR ANY WORK REQUIRED WITHIN AN EXISTING CITY OF RALEIGH UTILITY EASEMENT TRAVERSING PRIVATE PROPERTY.
- A BYPASS PLAN SEALED BY A NC PROFESSIONAL ENGINEER MUST BE SUBMITTED TO CITY OF RALEIGH PUBLIC UTILITIES PRIOR TO PUMPING OPERATIONS TO COORDINATE WITH ENGINEERING STAFF. PUMPS SHOULD BE SIZED TO HANDLE THE PEAK FLOW (2.5 TIMES THE AVERAGE DAILY FLOW) FOR THE LINE OR AREA OF WORK. THE CONTRACTOR SHALL SECURE THE PUMPS FROM A PUMP SUPPLIER ACCORDING TO THE PROVIDED FLOW INFORMATION. PUMPING OPERATIONS MUST BE MONITORED 24 HOURS A DAY FOR EACH OF THE PUMPING OPERATION BY QUALIFIED PERSONNEL IN ORDER TO RESPOND TO PROBLEMS OR FAILURES. 100% REDUNDANCY IS REQUIRED FOR PUMPING OPERATIONS. IN ADDITION, BACKUP PUMPS ARE TO BE CONNECTED TO THE BYPASS FORCE MAIN TO FACILITATE IMMEDIATE USE UPON FAILURE OF THE PRIMARY PUMPS.

TRAFFIC CONTROL:

- UPCHURCH LANE AND ANY CONNECTING DRIVEWAYS SHALL REMAIN OPEN AND AVAILABLE TO LOCAL TRAFFIC AT ALL TIMES DURING CONSTRUCTION OF SANITARY SEWER REPLACEMENT.
- ALL EXISTING DRIVES, ROADS, SIDEWALKS, PAVED AREAS IMPACTED BY CONSTRUCTION OPERATIONS, SHALL BE REPLACED TO EXISTING CONDITION OR BETTER.

EROSION CONTROL NOTES

- ALL CONSTRUCTION SHALL CONFORM TO THE LATEST TOWN OF ROLESVILLE, CITY OF RALEIGH AND WAKE COUNTY STANDARDS, SPECIFICATIONS AND DETAILS AS APPLICABLE.
- GRADING AND EROSION CONTROL METHODS SHALL ADHERE TO THE WAKE COUNTY SOIL AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.
- GRADING AND EROSION CONTROL METHODS SHALL ADHERE TO THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES DIVISION OF WATER QUALITY (DWQ) STANDARDS AND SPECIFICATIONS, WHERE DIFFERENT FROM WAKE COUNTY STANDARDS, THE MORE STRINGENT METHOD SHALL BE APPLIED.
- FAILURE TO FOLLOW THE APPROVED PLAN SEQUENCE AND DETAILS COULD SUBJECT THE CONTRACTOR TO FINES AND PENALTIES ISSUED BY EITHER THE COUNTY EROSION CONTROL DEPARTMENT OR THE DWQ.
- CONTRACTOR SHALL SEED AND STABILIZE ALL STEEP SLOPES (GREATER THAN 2H:1V) WITHIN 7 DAYS, 10 DAYS FOR MODERATE SLOPES (3H:1V OR GREATER) AND WITHIN 14 CALENDAR DAYS EVERYWHERE ELSE (STATE LAW 2009-486).
- FOR ANY LAND-DISTURBING ACTIVITY WHERE GRADING ACTIVITIES HAVE BEEN COMPLETED, TEMPORARY OR PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE PROVIDED AS SOON AS PRACTICAL, BUT IN NO CASE LATER THAN SEVEN (7) DAYS AFTER COMPLETING THE WORK. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON LARGE DENUDEED AREAS AND ESPECIALLY WHEN SPECIALLY REQUIRED AS PART OF THE CONSTRUCTION SEQUENCE ON THE PLAN.
- NO DEBRIS SHALL BE TRACKED ONTO PUBLIC RIGHT OF WAY. IF THE SITUATION OCCURS WHERE MUD, ROCK AND DEBRIS IS TRACKED ONTO PAVEMENT, THE CONTRACTOR SHALL CLEAN THE PAVEMENT AND INSTALL ADDITIONAL MEASURES TO PREVENT THE FUTURE OCCURRENCE.
- THE EROSION CONTROL INSPECTOR MAY REQUIRE ADDITIONAL FIELD MEASURES AS NECESSARY TO PROVIDE ADEQUATE PROTECTION FROM RECEIVING WATER COURSES.
- EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AND INSPECTED PRIOR TO ANY GRADING ON SITE. THE CONTRACTOR SHALL CALL FOR AN INSPECTION BY WAKE COUNTY SEDIMENTATION AND EROSION CONTROL (SEC) ONCE INITIAL MEASURES ARE IN PLACE. (SEE CONSTRUCTION SEQUENCE)
- CONTRACTOR SHALL INSPECT ALL SEDIMENT/EROSION CONTROL DEVICES AFTER EACH STORM EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OF THE DEVICE.
- A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE AT ALL TIMES.
- CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GRADING CONTRACTOR UNLESS OTHERWISE NOTED.
- ANY GRADING BEYOND THE DENUDEED LIMITS SHOWN ON THE PLAN IS A VIOLATION OF THE CITY/COUNTY EROSION CONTROL ORDINANCE AND IS SUBJECT TO A FINE.
- ADDITIONAL MEASURES TO CONTROL EROSION AND SEDIMENT MAY BE REQUIRED BY A REPRESENTATIVE OF THE CITY/COUNTY ENGINEERING DEPARTMENT AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- PROTECTION OF EXISTING VEGETATION: AT THE START OF GRADING INVOLVING THE STRIPPING OF TOPSOIL OR LOWERING OF EXISTING GRADE AROUND A TREE, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE. NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA AND SHALL BE POSTED ON THE PROTECTION FENCE. A PROTECTION FENCE CONSTRUCTED OF MATERIAL RESISTANT TO DEGRADATION BY SUN, WIND, AND MOISTURE FOR THE DURATION OF THE CONSTRUCTION, SHALL BE INSTALLED AT THE SAME TIME AS THE EROSION CONTROL MEASURES AND SHALL BE IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE.
- A CONSTRUCTION SEQUENCE HAS BEEN PROVIDED. INSTALLATION OF ALL PROPOSED SEDIMENTATION & EROSION CONTROL MEASURES IN THE SEQUENCE(S) PROVIDED AND MAINTENANCE OF THOSE DEVICES IS REQUIRED. THE CONTRACTOR MAY BE ALLOWED, WITH PRIOR APPROVAL FROM THE OWNER, TO COORDINATE CHANGES TO THE PLAN WITH THE ON-SITE SEDIMENTATION & EROSION CONTROL INSPECTOR AND THE ENGINEER.
- PROVIDE INLET PROTECTION AROUND ALL SITE STORM INLETS. PROTECT OPEN PIPES UNDER CONSTRUCTION WITH EITHER PLW/WOOD OR WITH MESH AND GRAVEL WEIRS. RUNOFF SHALL NOT BE ALLOWED IN ANY OPEN TRENCH.
- CONTRACTOR WILL FIELD LOCATE SILT FENCE OUTLETS AT LOW POINTS IN SILT FENCE AS REQUIRED TO PROVIDE RELIEF FROM CONCENTRATED FLOWS.
- TEMPORARY DIVERSIONS SHALL BE MAINTAINED DAILY BY CONTRACTOR SO THAT THEY ARE FUNCTIONAL AT THE END OF EACH WORKDAY AND WHEN STOPPING WORK FOR RAIN.
- ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
- DISTURBANCE OUTSIDE OF THE SITE PROPERTY LIMITS OR PUBLIC RIGHT-OF-WAY SHALL ONLY BE AS ALLOWED BY SIGNED GRADING AGREEMENTS AND/OR EASEMENTS BETWEEN THE DEVELOPER AND THE OFFSITE PROPERTY OWNER.
- THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SAFE OPEN ACCESS TO ALL PROPERTIES ALONG ADJACENT PROPERTIES DURING CONSTRUCTION PERIOD FOR IMPROVEMENTS.
- SANITARY SEWER STRUCTURE LOCATIONS AND PIPE SIZES SUBJECT TO FINAL CONSTRUCTION DRAWING APPROVAL.

CONSTRUCTION SEQUENCE:

- OBTAIN GRADING PERMIT FROM THE WAKE COUNTY ENVIRONMENTAL SERVICES DEPARTMENT.
- CALL ENVIRONMENTAL CONSULTANT JEEVAN NEUPANE, PE (919-819-8907) TO SCHEDULE A PRE-CONSTRUCTION MEETING. NOTIFY OWNER AND ENGINEER WHEN PRECON IS SCHEDULED SO THEY MAY ALSO ATTEND.
- CONTRACTOR WILL BE REQUIRED TO SUBMIT SITE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY (NCG010000) TO WAKE COUNTY INSPECTIONS THROUGHOUT THE PROJECT.
- INSTALL THE FOLLOWING EROSION AND SEDIMENTATION CONTROL DEVICES PER THE APPROVED PLAN IN THE FOLLOWING ORDER:
 - TREE PROTECTION FENCE
 - SILT FENCING SURROUNDING SITE WITH SILT FENCE OUTLETS.
 - INLET PROTECTION FOR EXISTING INLETS WITHIN ROADWAYS.
- CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES.
- CLEAR AND GRUB AREA FOR FUTURE CONSTRUCTION. CONTRACTOR TO COORDINATE WITH DEVELOPER TO OBTAIN NECESSARY OFFSITE EASEMENTS.
- CALL WAKE COUNTY ENVIRONMENTAL SERVICES FOR INSPECTION.
- MAINTAIN DEVICES AS NEEDED IN ACCORDANCE WITH THE NOTES ON THIS SHEET.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 14 DAYS OF INACTIVITY.
- CONTRACTOR SHALL INSPECT AND REPAIR ALL EROSION CONTROL DEVICES ONCE PER WEEK AND AFTER EVERY RAINFALL EVENT. GRADING ACTIVITY SHALL BE PROHIBITED IN THE AREAS OF THE SEDIMENT CONTROL DEVICES UNTIL THE AREAS UPSTREAM OF THESE DEVICES HAVE BEEN STABILIZED AND APPROVED.
- BEGIN CONSTRUCTION OF SANITARY SEWER INTERCEPTOR. AS AREAS AREA COMPLETED, STABILIZE SITE WITH VEGETATION.
- SUBMIT DOCUMENTATION REQUIRED UNDER THE SITE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY (NCG010000) TO WAKE COUNTY THROUGHOUT THE PROJECT.
- ALL OFF-SITE STREETS SHALL BE KEPT CLEAN AS NOTED IN EROSION CONTROL NOTES DURING HAUL OFF OF EXCAVATED MATERIAL.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 14 DAYS OF INACTIVITY.
- PRIOR TO THE REMOVAL, OF ANY EROSION CONTROL DEVICES, THE CONTRACTOR IS TO CONTACT THE WAKE COUNTY ENVIRONMENTAL CONSULTANT JEEVAN NEUPANE, PE (919-819-8907).

EROSION CONTROL MAINTENANCE PLAN

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED BY THE SITE CONTRACTOR FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL MEASURES AS DESIGNED.
- THE SEDIMENT BASINS SHALL BE INSPECTED REGULARLY DURING LAND DISTURBING ACTIVITIES AND AFTER EACH RUNOFF-PRODUCING RAINFALL. SEDIMENT SHALL BE REMOVED AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH OF EACH BASIN. PORTIONS OF THE BASIN'S GRAVEL FACING THAT ARE CONTAMINATED BY SEDIMENT SHALL BE REPLACED WITH FRESH GRAVEL DURING EACH SEDIMENT REMOVAL EPISODE.
- SEDIMENT FENCES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED AS NEEDED TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAINFALL EVENT, AND TO REDUCE PRESSURE ON THE FENCE. FENCING MATERIALS AND SEDIMENT DEPOSITS SHALL BE REMOVED, AND THE AREA BROUGHT TO GRADE FOLLOWING STABILIZATION OF UPGRADMENT DISTURBED AREAS.
- DIVERSION DITCHES MUST REMAIN IN PLACE UNTIL PROJECT IS STABILIZED. PERMISSION SHALL BE GIVEN BY THE EROSION CONTROL INSPECTOR FOR REMOVAL UPON COMPLETION OF PERMANENT UPSTREAM STABILIZATION.

STOCKPILE NOTES

DESIGN CRITERIA

- STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
- STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
- STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
- OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDO AND STATE REGULATIONS. ALL SPOIL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY WAKE COUNTY OF ANY OFFSITE DISPOSAL OF SOIL, PRIOR TO DISPOSAL. FILL OF FEMA FLOODWAYS AND NON-ENCROACHMENT AREAS ARE PROHIBITED EXCEPT AS OTHERWISE PROVIDED BY SUBSECTION 14-19.2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).
- SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEPT IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
- IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
- THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE IS REQUIRED.
- ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).
- STOCKPILE MUST HAVE SILT FENCE WRAPPED AROUND THE LOW SIDE(S) AND A SILT FENCE OUTLET AT ALL LOW POINTS.

SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE CARRIED OUT IMMEDIATELY BEHIND CONSTRUCTION IN ACCORDANCE WITH FOLLOWING SPECIFICATIONS.

SEEDING SPECIFICATIONS			
SHOULDER, SIDE DITCHES, SLOPES (MAX 3:1)			
SEEDING PERIOD	TYPE	APPLICATION RATE	
		PER ACRE	PER 1000 SF
AUGUST 15 - NOVEMBER 1	TALL FESCUE	300#	7#
	TALL FESCUE AND	300#	7#
NOVEMBER 1 - MARCH 1	ABRUZZI RYE	25#	0.6#
	TALL FESCUE	300#	7#
MARCH 1 - APRIL 15	TALL FESCUE	300#	7#
APRIL 15 - JUNE 30	HULLED COMMON BERMUDAGRASS	25#	0.6#
JULY 1 - AUGUST 15	TALL FESCUE AND	120#	2.8#
	*BROWNTOP MILLET	35#	0.8#
	*OR SORGHUM-SUDAN HYBRIDS	30#	0.7#

SEEDING SPECIFICATIONS			
SLOPES (3:1 TO 2:1)			
SEEDING PERIOD	TYPE	APPLICATION RATE	
		PER ACRE	PER 1000 SF
MARCH 1 - JUNE 1	SERICA LESPEDeza (SCARIFIED)	50#	1.2#
	AND		
MARCH 1 - APRIL 15	ADD TALL FESCUE	120#	2.8#
MARCH 1 - JUNE 30	OR ADD WEEPING LOVE GRASS	10#	0.2#
MARCH 1 - JUNE 30	OR ADD HULLED COMMON BERMUDAGRASS	25#	0.6#
JUNE 1 - SEPTEMBER 1	*TALL FESCUE AND	120#	2.8#
	*OR BROWNTOP MILLET	35#	0.8#
	*OR SORGHUM-SUDAN HYBRIDS	30#	0.7#
SEPTEMBER 1 - MARCH 1	SERICA LESPEDeza (UNHULLED, UNSCARIFIED)	70#	1.6#
	AND TALL FESCUE	120#	2.8#
NOVEMBER 1 - MARCH 1	ADD ABRUZZI RYE	25#	0.6#

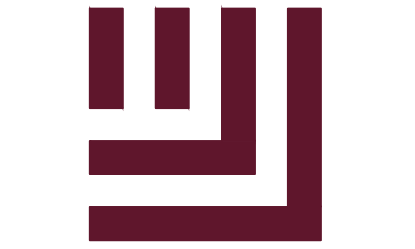
*TEMPORARY - RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW TO MORE THAN 12 INCHES HEIGHT BEFORE MOWING, OTHERWISE FESCUE MAY BE SHADED OUT.

CONSULT WAKE SOIL AND WATER CONSERVATION DISTRICT OR NORTH CAROLINA DIVISION OF SOIL AND WATER CONSERVATION FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDEED AREAS. THE ABOVE VEGETATION RATES ARE THOSE THAT DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
- RIP THE ENTIRE AREA TO 6-INCH DEPTH.
- REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLE SMOOTH AND UNIFORM.
- APPLY AGRICULTURAL LIME, FERTILIZER AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW).
- CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLE UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
- SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60 PERCENT DAMAGED, RE-ESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- CONSULT WAKE SOIL AND WATER CONSERVATION DISTRICT ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

- APPLY:
 - AGRICULTURAL LIMESTONE - 2 TONS/ACRE (3/TONS/ACRES IN CLAY SOILS)
 - FERTILIZER - 1000 LB/ACRE -10-10-10
 - SUPERPHOSPHATE - 500 LB/ACRE - 20 PERCENT ANALYSIS
 - MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW
 - ANCHOR - ASPHALT EMULSION @ 300 GALS/ACRE



McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

NAME: TOWN OF ROLESVILLE
ADDRESS: 502 SOUTHTOWN CIRCLE
ADDRESS: ROLESVILLE NC 27571
PHONE: 919.554.6582

FRAZIER FARM PARK
CONSTRUCTION DRAWINGS
PHASE 1A
11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA



REVISIONS

NO. DATE

PLAN INFORMATION

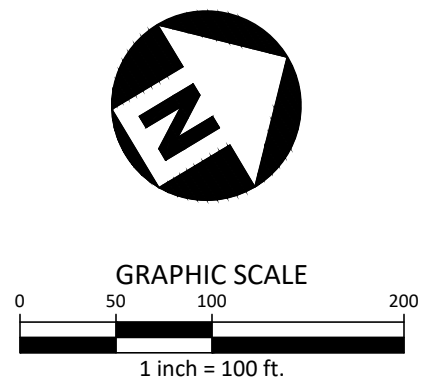
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SCALE N/A
DATE 03.22.2023

SHEET

EROSION CONTROL NOTES

C6.00

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF ROLESVILLE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS





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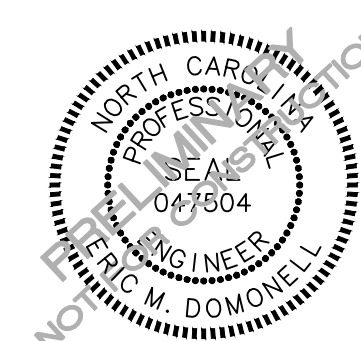
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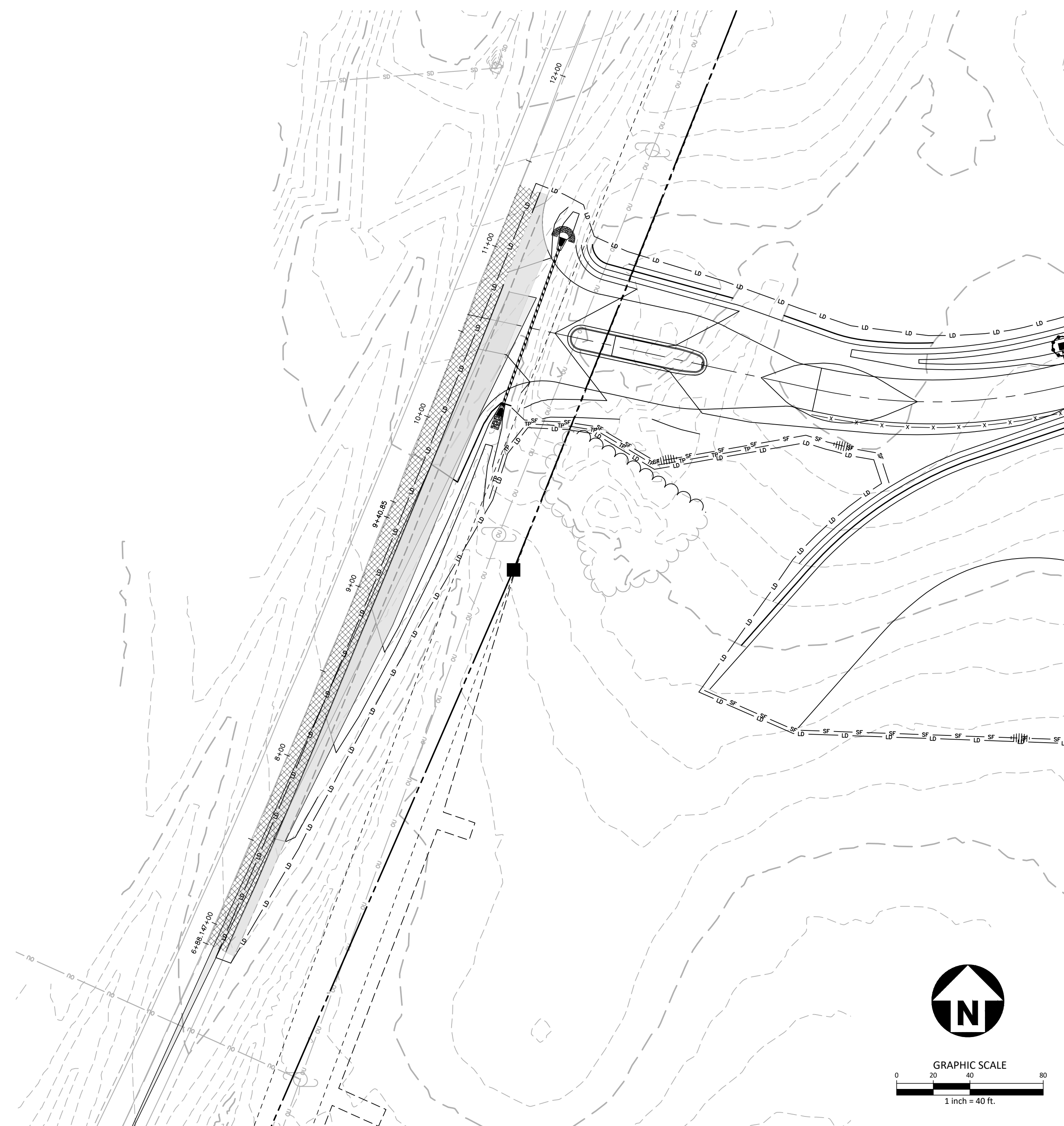
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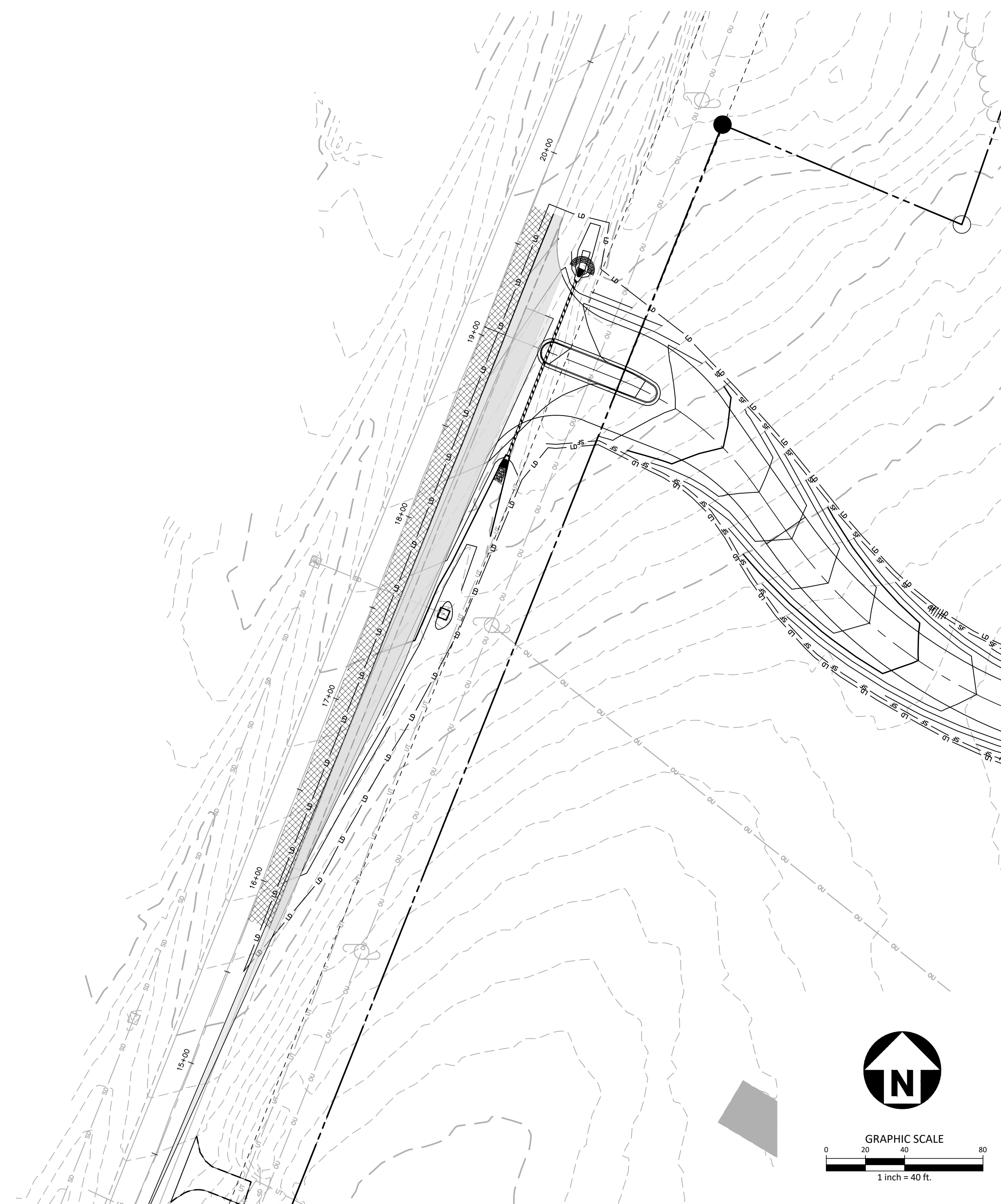
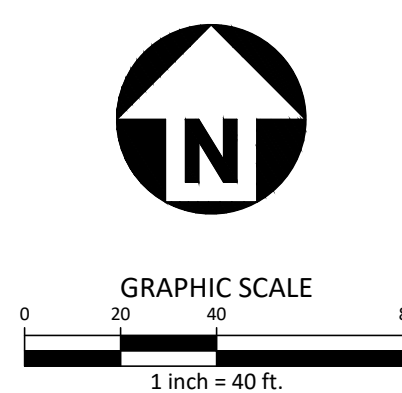
**LOUISBURG RD
WIDENING PLAN**

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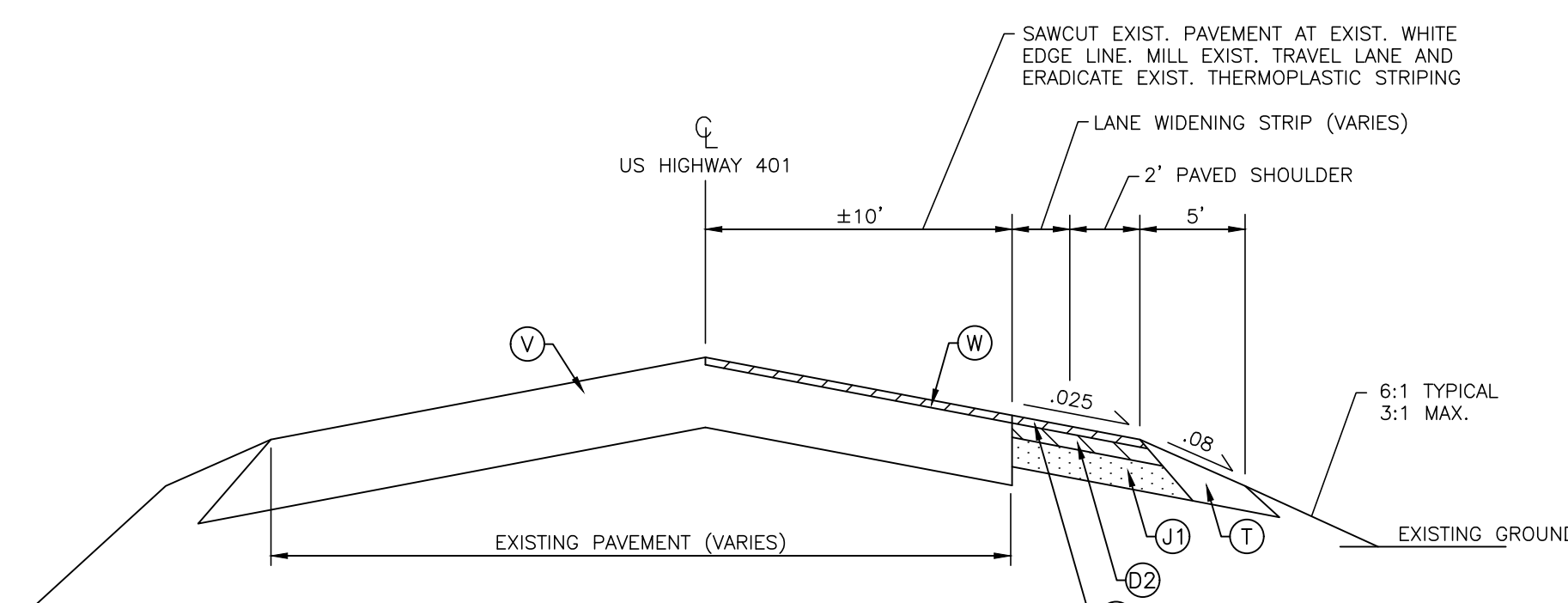
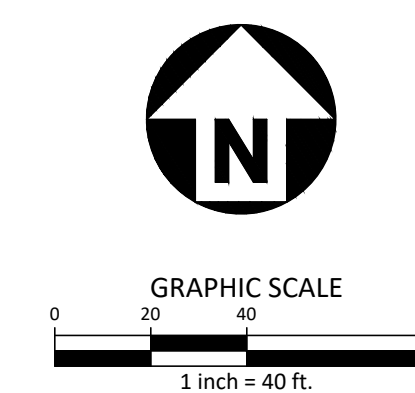
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PARK ENTRANCE "A"



PARK ENTRANCE "B"



TYPICAL SECTION NO. 1
US HIGHWAY 401 / LOUISBURG RD
STA. 6+88 TO 11+36
STA. 15+78 TO 19+71

- (C4) 1.5" S9.5C
- (D2) 3" I19.0C
- (J1) 5.5" B25.0C
- (T) COMPACTED EARTH
- (W) WEDGING/OVERLAY (MIN. 1 1/2" S9.5C)
- (V) EXISTING ROADWAY

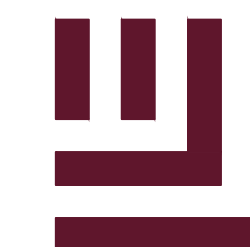
PAVEMENT MARKING LEGEND

LANE LINES/MARKINGS	ARROWS/CHARACTERS
T1 16" WHITE LINE, RAILROAD CROSSBAR	UA LEFT TURN ARROW
T2 24" WHITE STOPBAR	UB RIGHT TURN ARROW
T3 24" WHITE CROSSWALK LINE (HIGH VISIBILITY)	UC STRAIGHT ARROW
T4 4" WHITE RUMBLE STRIP	UD COMBINATION STRAIGHT/LEFT TURN ARROW
T5 4" YELLOW RUMBLE STRIP	UE COMBINATION STRAIGHT/RIGHT TURN ARROW
T6 6" WHITE EDGE LINE	UF COMBINATION LEFT/RIGHT ARROW
T7 6" YELLOW EDGE LINE	UG COMBINATION LEFT/STRAIGHT/RIGHT ARROW
T8 4" WHITE MINISKIP (2' - 6' SP.)	UH HANDICAP PARKING
T9 4" YELLOW MINISKIP (2' - 6' SP.)	UI ALPHANUMERIC CHARACTER
T10 12" WHITE MINISKIP (3' - 3' SP.) (ROUNDBABOUTS ONLY)	UJ BICYCLE STRAIGHT ARROW
T11 6" WHITE MINISKIP (2' - 6' SP.)	UK BICYCLE CHARACTER
T12 6" YELLOW MINISKIP (2' - 6' SP.)	UM 12" YIELD LINE TRIANGLE
T13 8" WHITE MINISKIP (3' - 9' SP.)	UN 24" YIELD LINE TRIANGLE
T14 12" WHITE MINISKIP (3' - 9' SP.)	UO BICYCLE LEFT ARROW
T15 6" YELLOW SINGLE CENTER	UQ MERGE ARROW
T16 6" YELLOW DOUBLE CENTER	UR RAMP ARROW SYMBOL
T17 8" WHITE MINISKIP (3' - 3' SP.) (ROUNDBABOUTS ONLY)	US SHARROW
TA 4" WHITE EDGE LINE	UT BICYCLE LOOP DETECTOR
TB 4" YELLOW EDGE LINE	UU U-TURN ARROW
TC 4" WHITE SKIP (10' - 30' SP.)	UV FISH-HOOK STRAIGHT ARROW
TD 4" WHITE MINISKIP (3' - 9' SP.)	UW FISH-HOOK STRAIGHT/LEFT ARROW
TE 4" WHITE SOLID LANE LINE	UX FISH-HOOK STRAIGHT/RIGHT ARROW
TF 4" YELLOW SKIP (10' - 30' SP.)	UY FISH-HOOK LEFT/RIGHT ARROW
TH 4" YELLOW SINGLE CENTER	UZ FISH-HOOK LEFT/STRAIGHT/RIGHT ARROW
TI 4" YELLOW DOUBLE CENTER	VA FISH-HOOK W/CIRCLE STRAIGHT ARROW
TJ 6" WHITE SKIP (10' - 30' SP.)	WB FISH-HOOK W/CIRCLE STRAIGHT/LEFT ARROW
TK 6" WHITE MINISKIP (3' - 9' SP.)	WC FISH-HOOK W/CIRCLE LEFT/STRAIGHT/RIGHT ARROW
TL 6" WHITE SOLID LANE LINE	
TM 6" YELLOW SKIP (10' - 30' SP.)	
TN 8" WHITE GORELINE	
TO 8" WHITE DIAGONAL	
TP 8" YELLOW DIAGONAL	
TQ 8" WHITE CROSSWALK LINE	
TR 8" WHITE SOLID LANE LINE	
TS 12" WHITE GORELINE	
TT 12" WHITE SOLID LANE LINE	
TU 12" WHITE DIAGONAL (45MPH OR GREATER)	
TV 12" YELLOW DIAGONAL (45MPH OR GREATER)	

ROAD WIDENING LEGEND	
	NEW FULL DEPTH PAVEMENT
	MILLING LIMITS

NOTE:
ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC
AND ARE TO BE PLACED PER NCDOT STANDARDS
(REFERENCE NCDOT DETAILS (1205.01-1205.12)

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McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

NAME: TOWN OF ROLESVILLE
ADDRESS: 502 SOUTHTOWN CIRCLE
ADDRESS: ROLESVILLE NC 27571
PHONE: 919.554.6582

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PHASE 1A
11624 LOUISBURG ROAD
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REVISIONS

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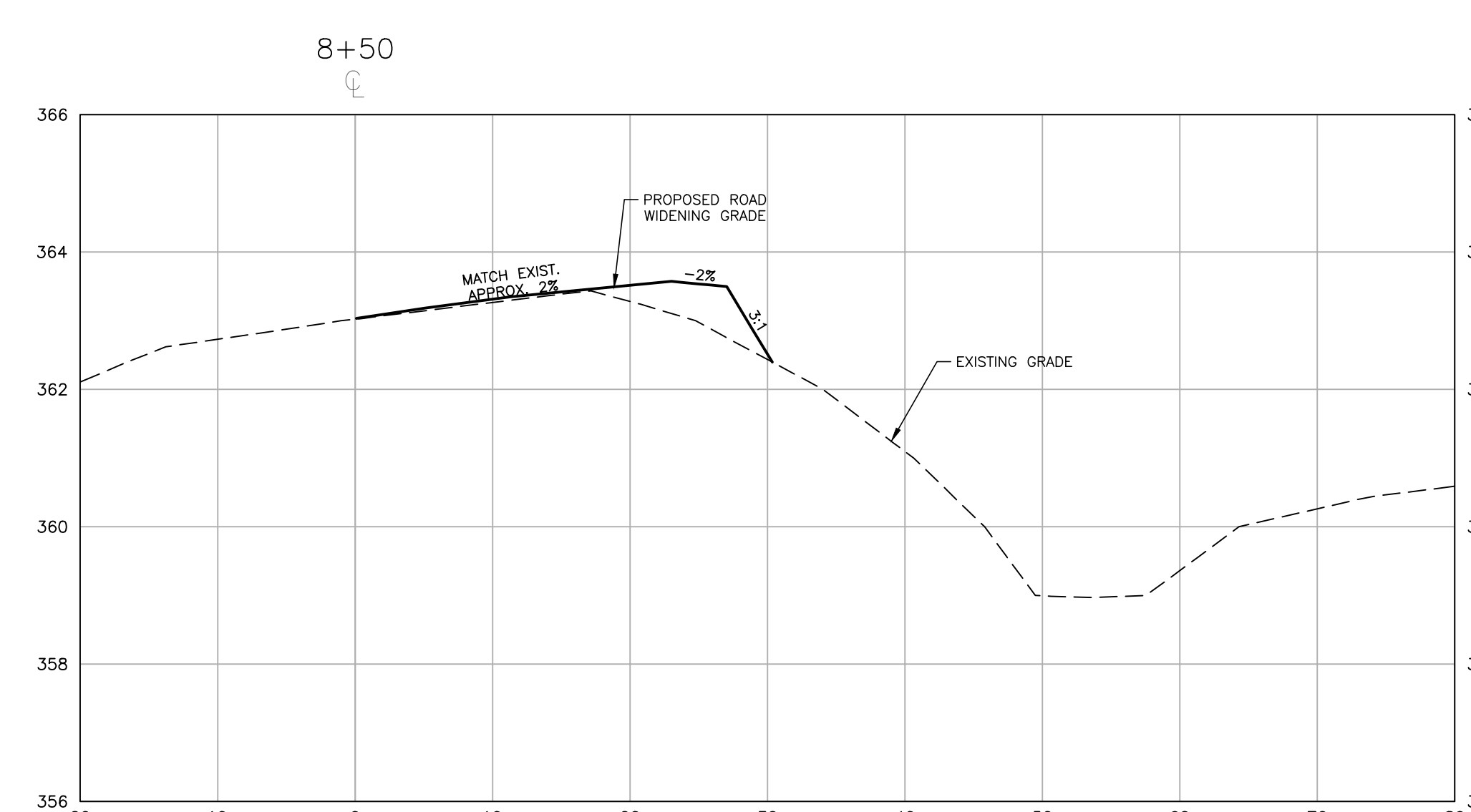
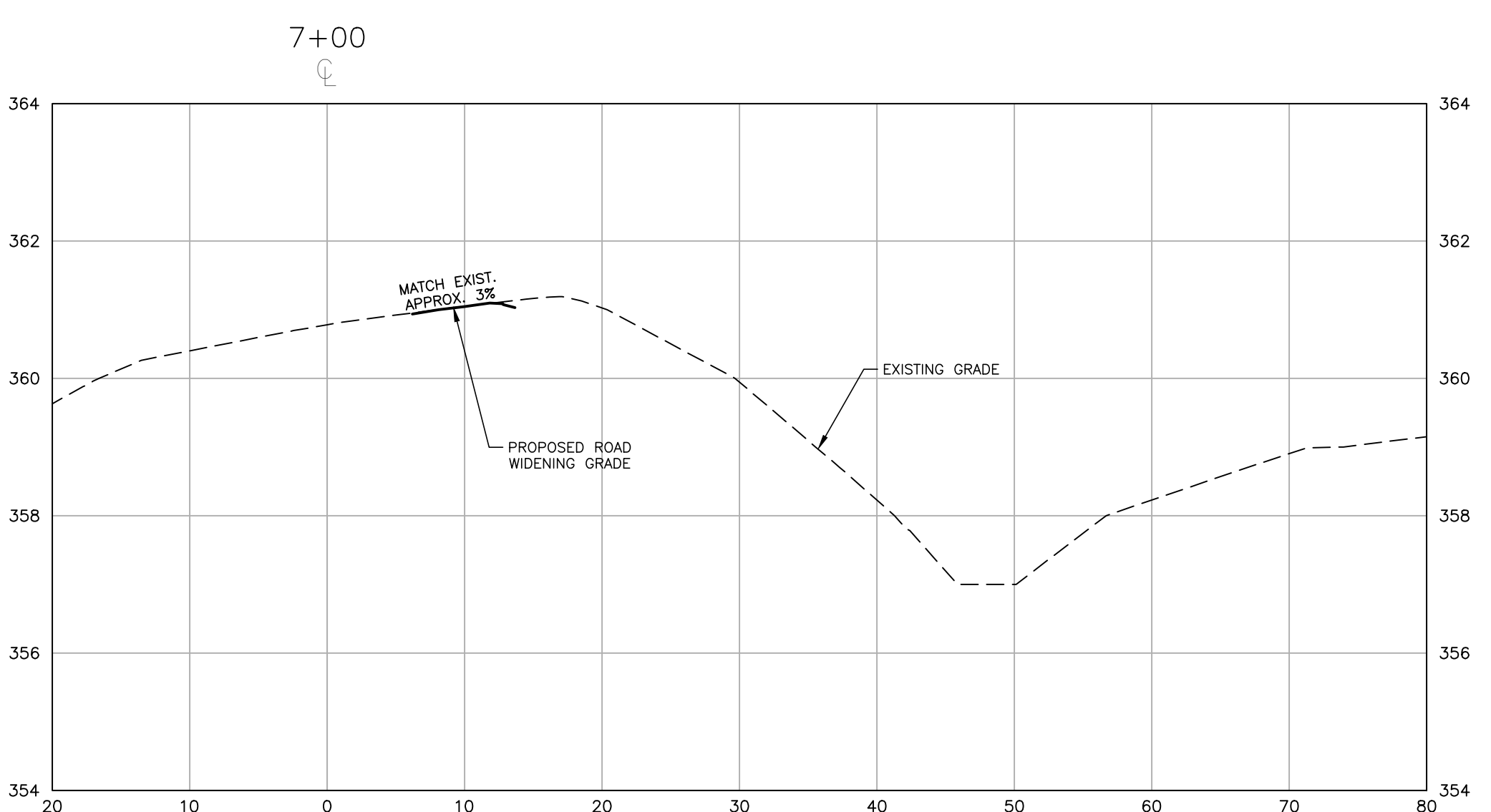
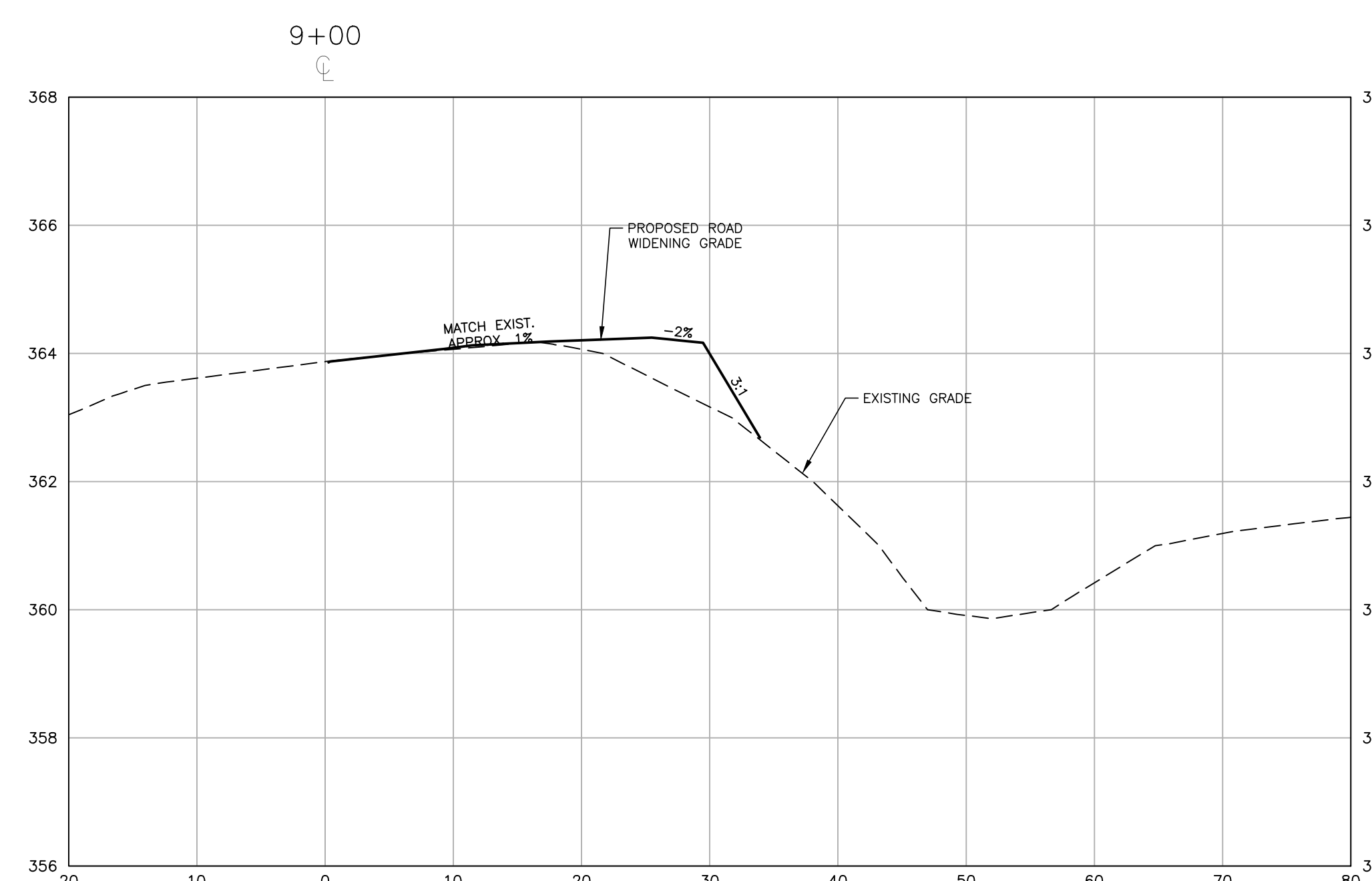
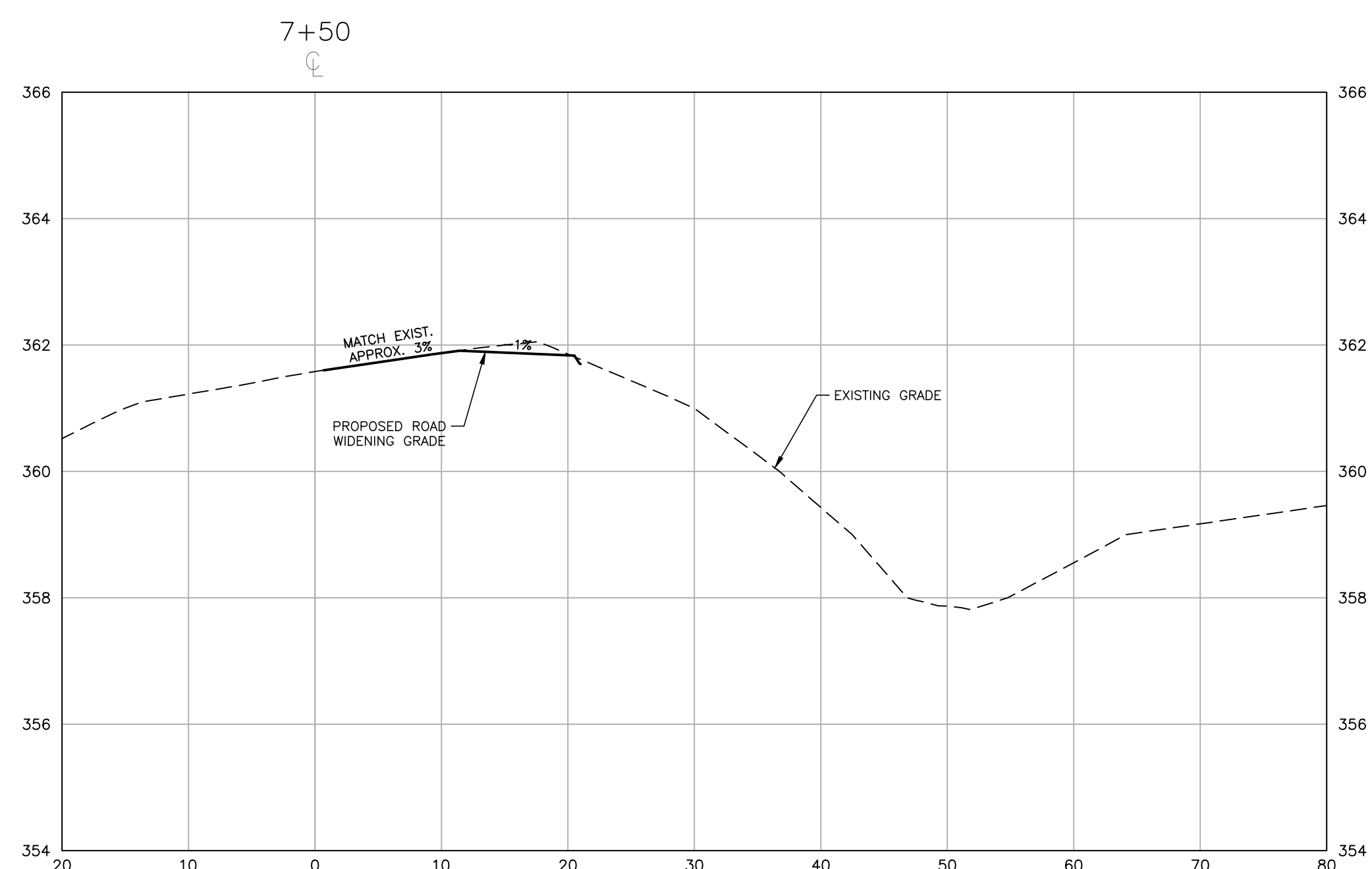
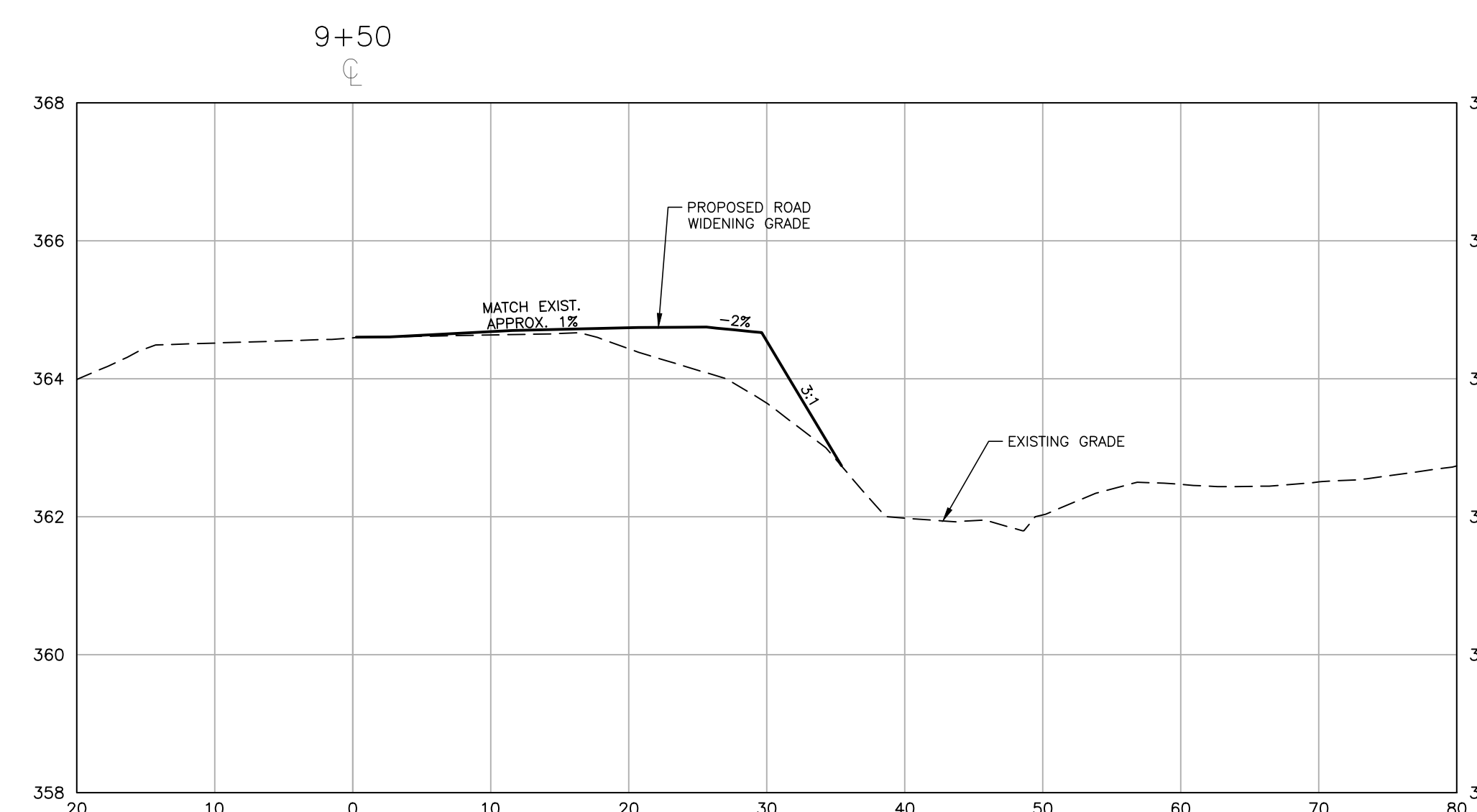
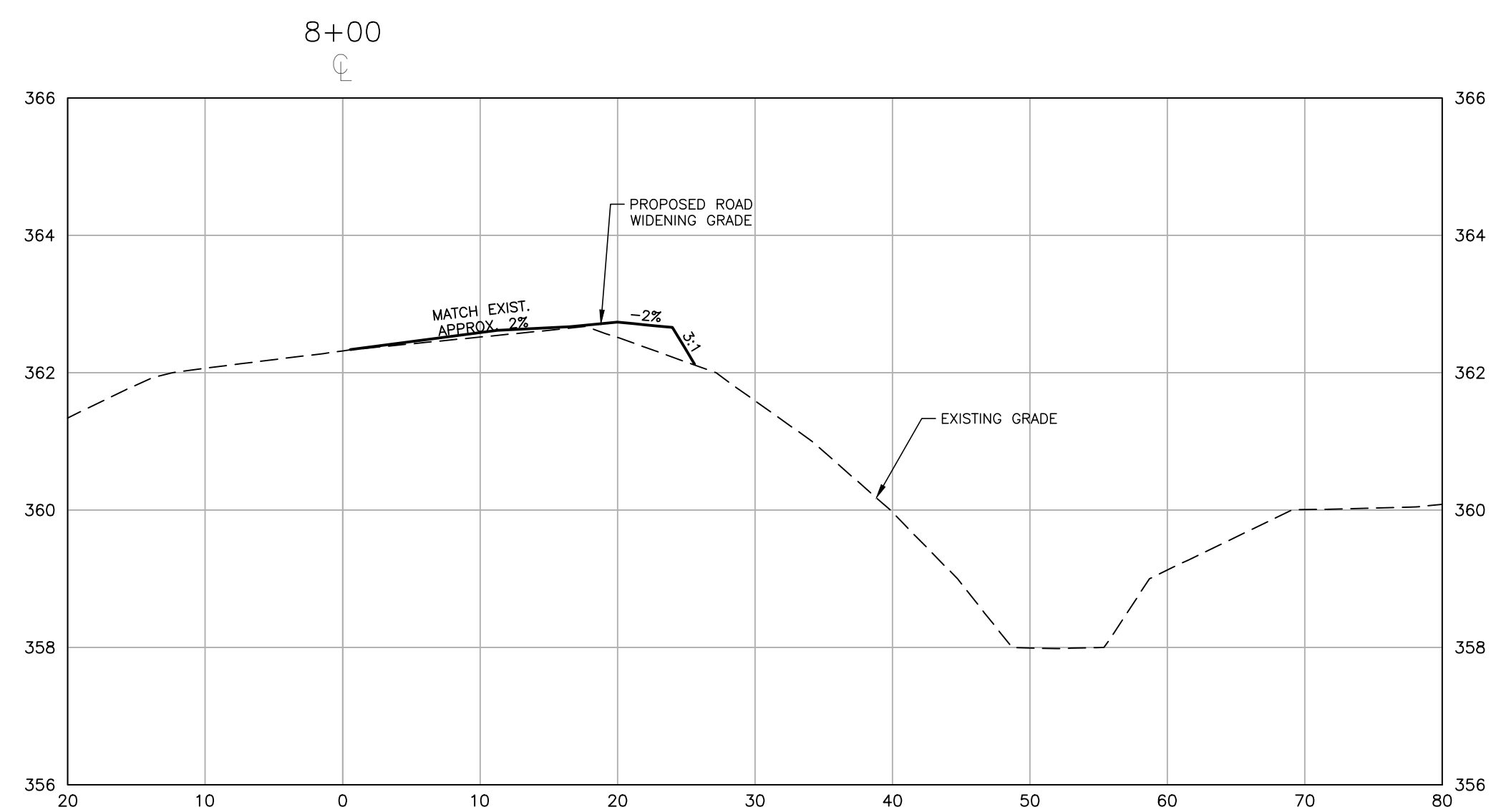
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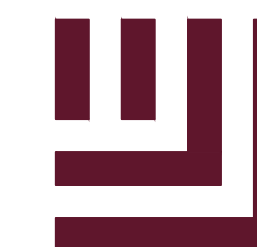
SHEET

LOUISBURG RD
WIDENING
CROSS SECTIONS

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McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
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CLIENT

NAME: TOWN OF ROLESVILLE
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ADDRESS: ROLESVILLE NC 27571
PHONE: 919.554.6582

**FRAZIER FARM PARK
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PHASE 1A
11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA**



REVISIONS

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PLAN INFORMATION

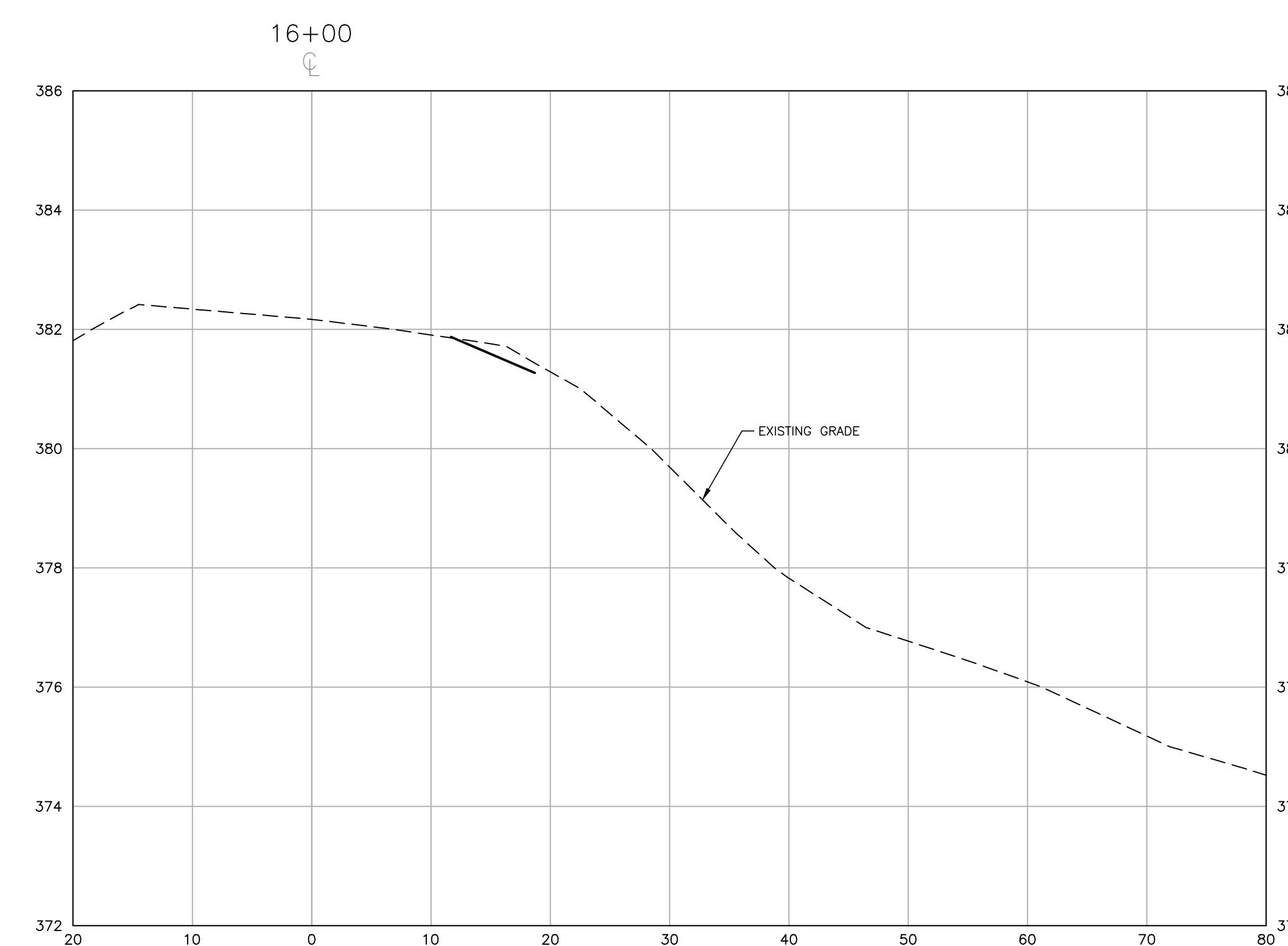
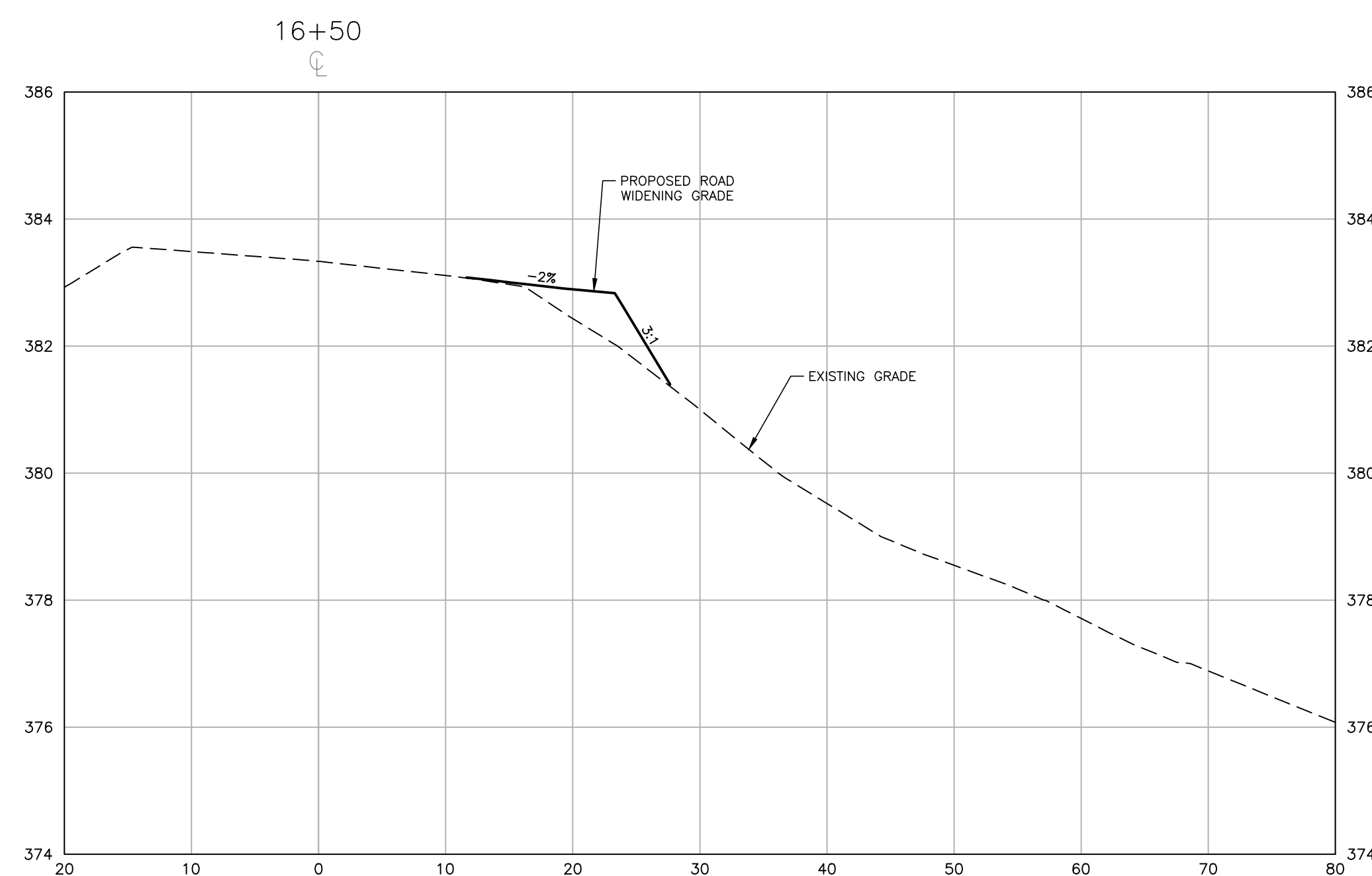
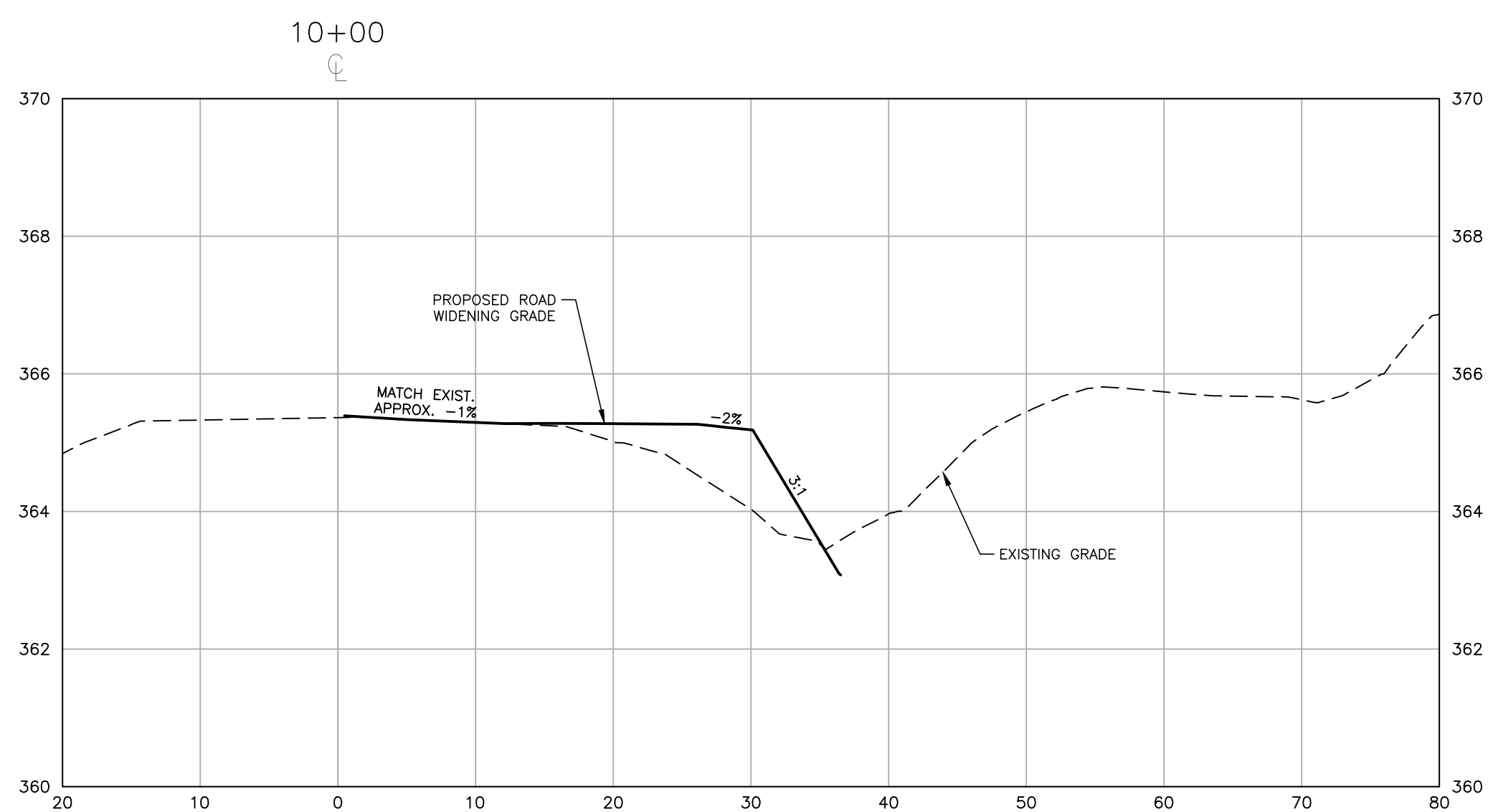
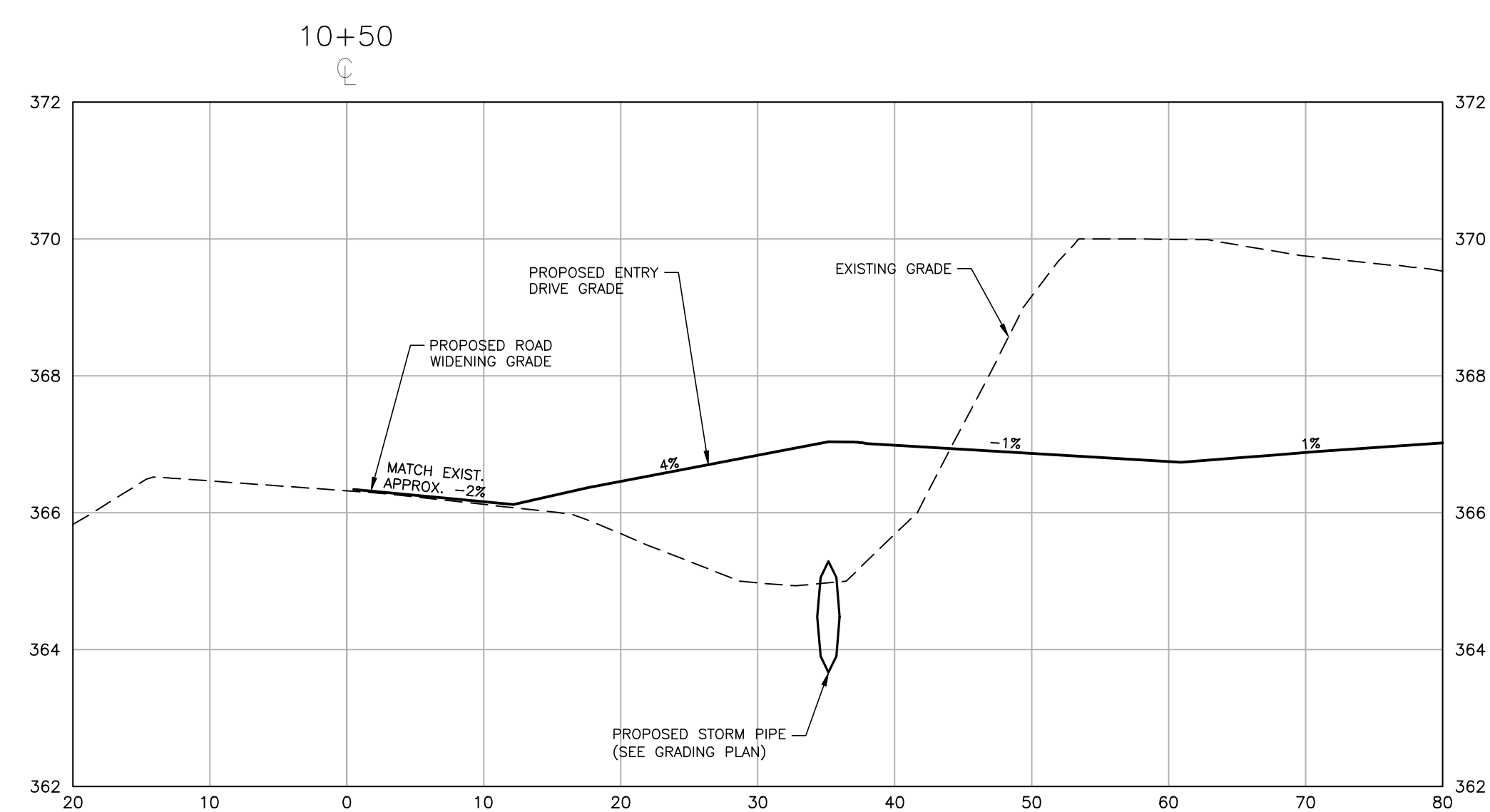
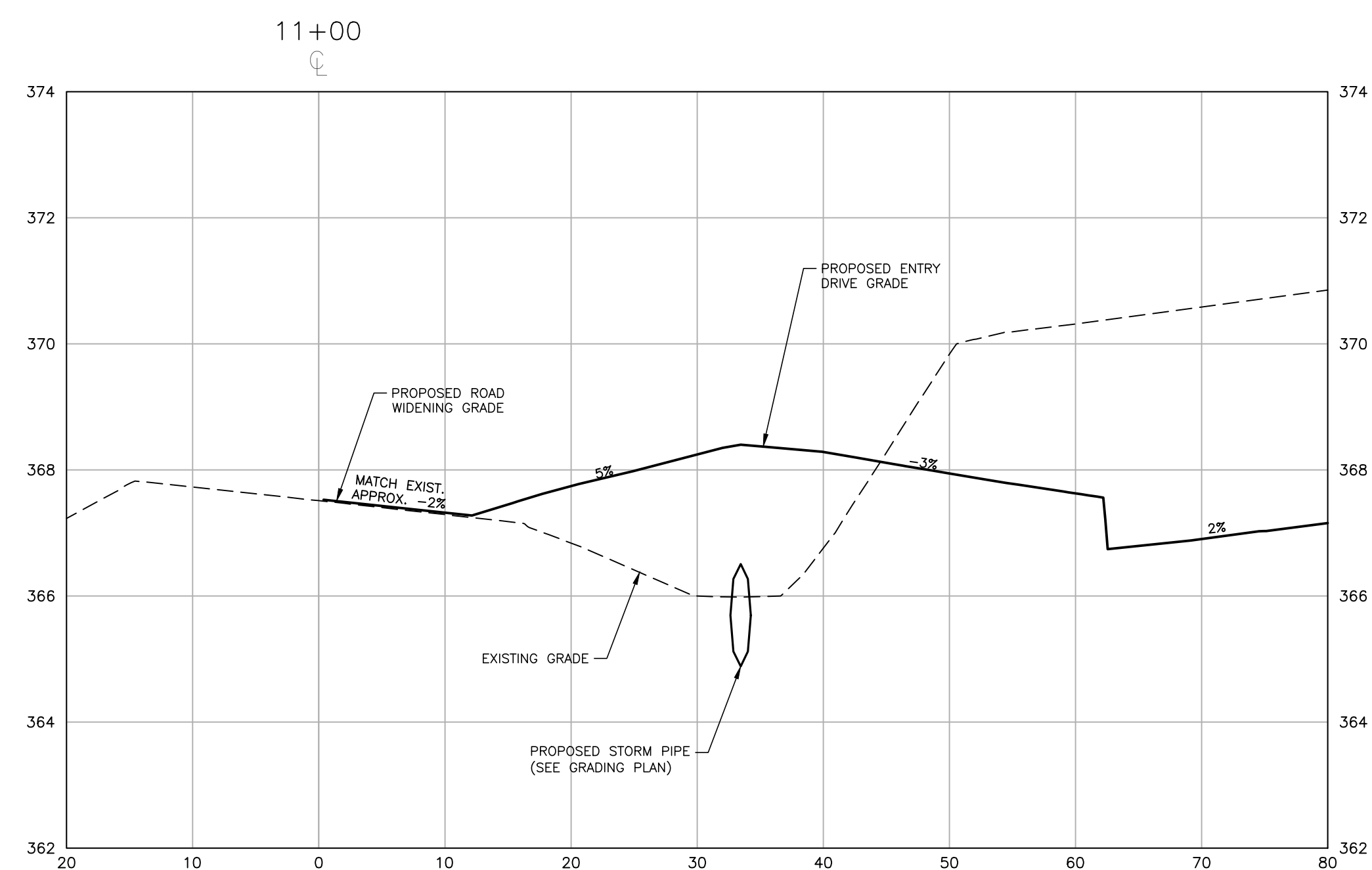
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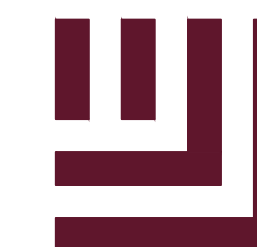
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WIDENING
CROSS SECTIONS**

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McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

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fax 919. 361. 2269
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CLIENT

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CONSTRUCTION DRAWINGS
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11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA



REVISIONS

NO. DATE

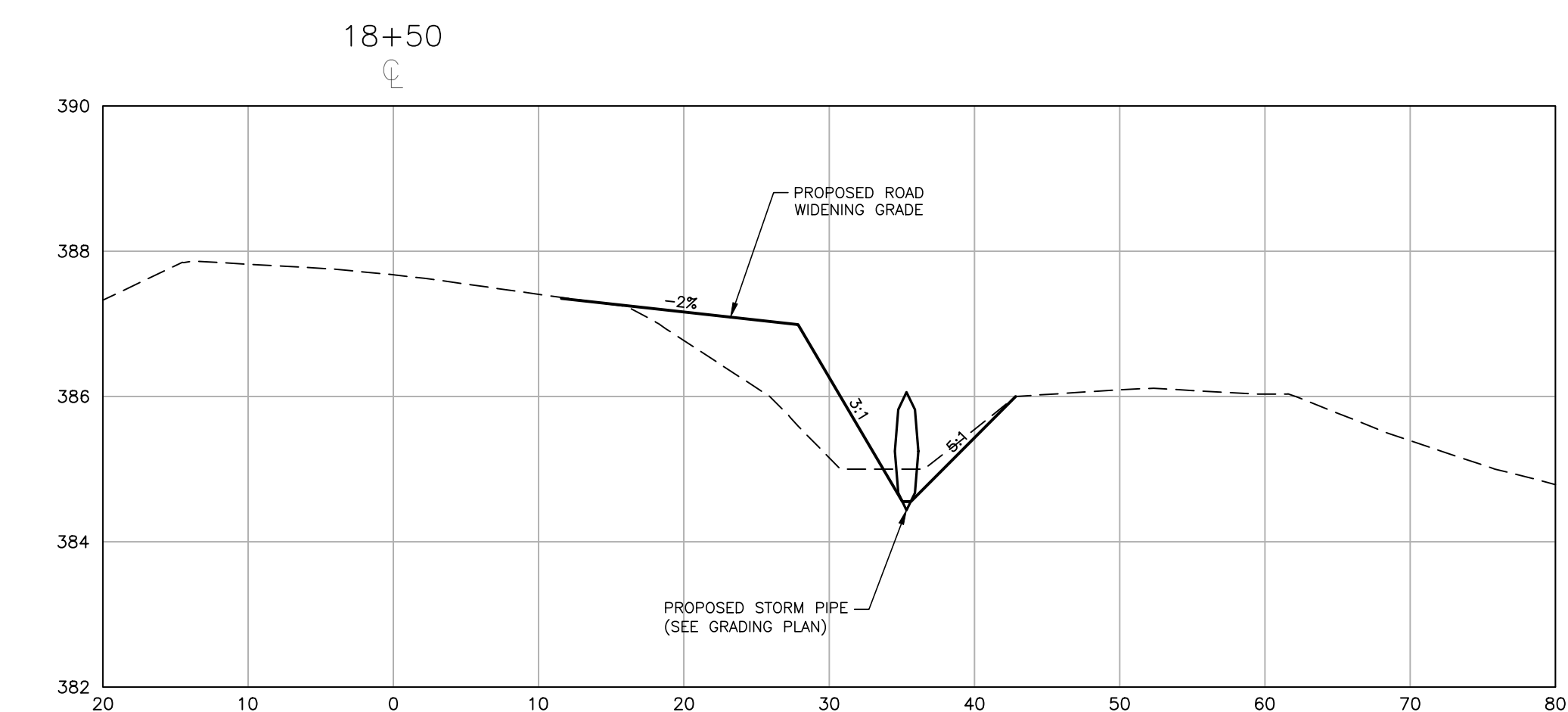
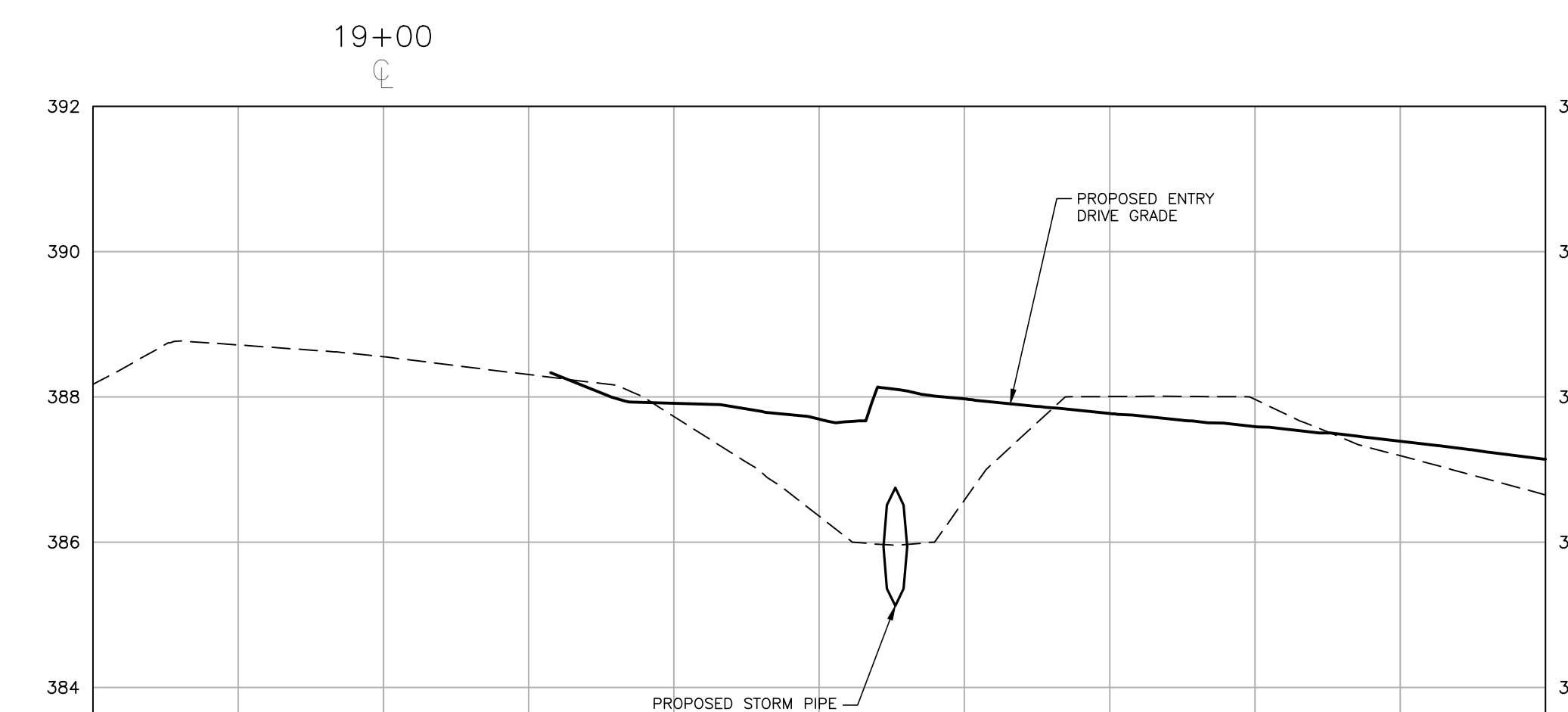
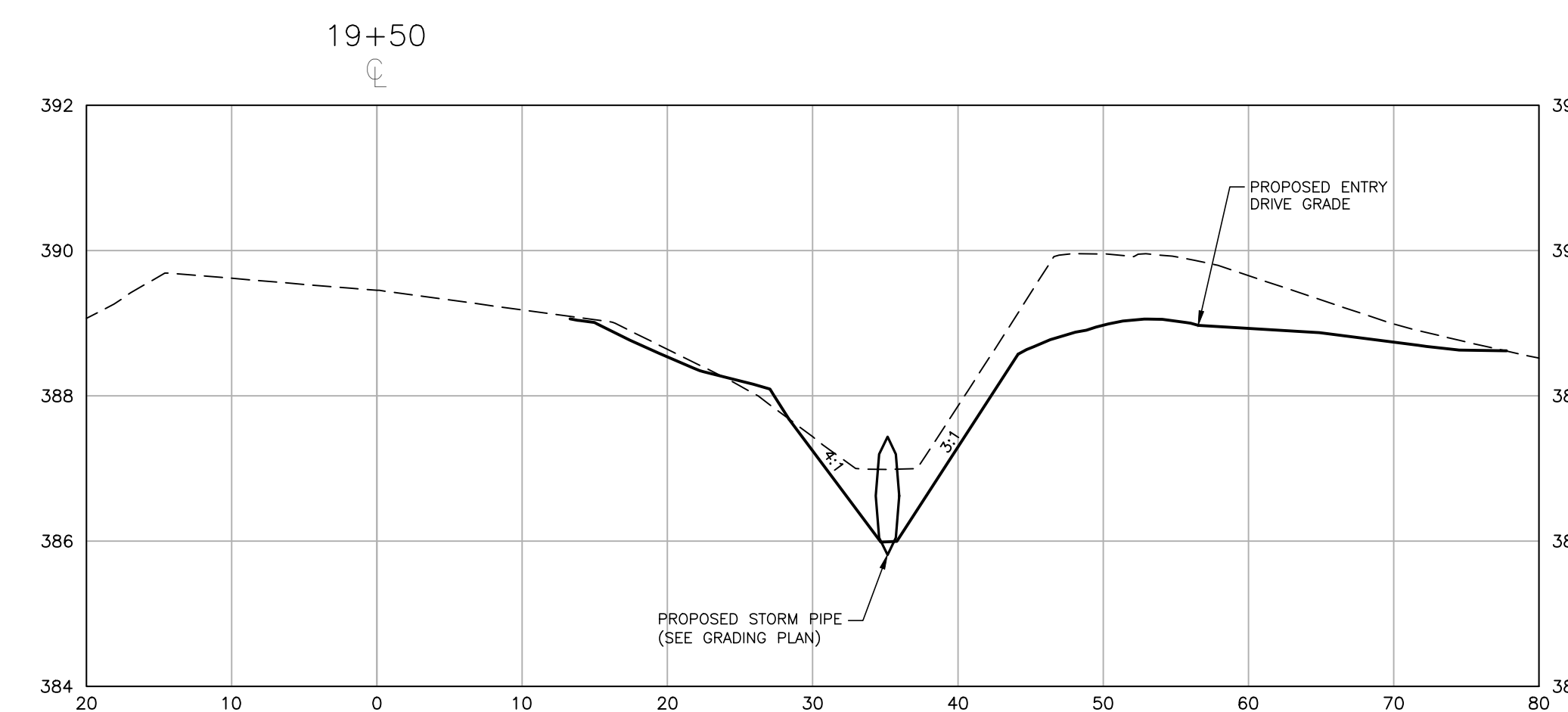
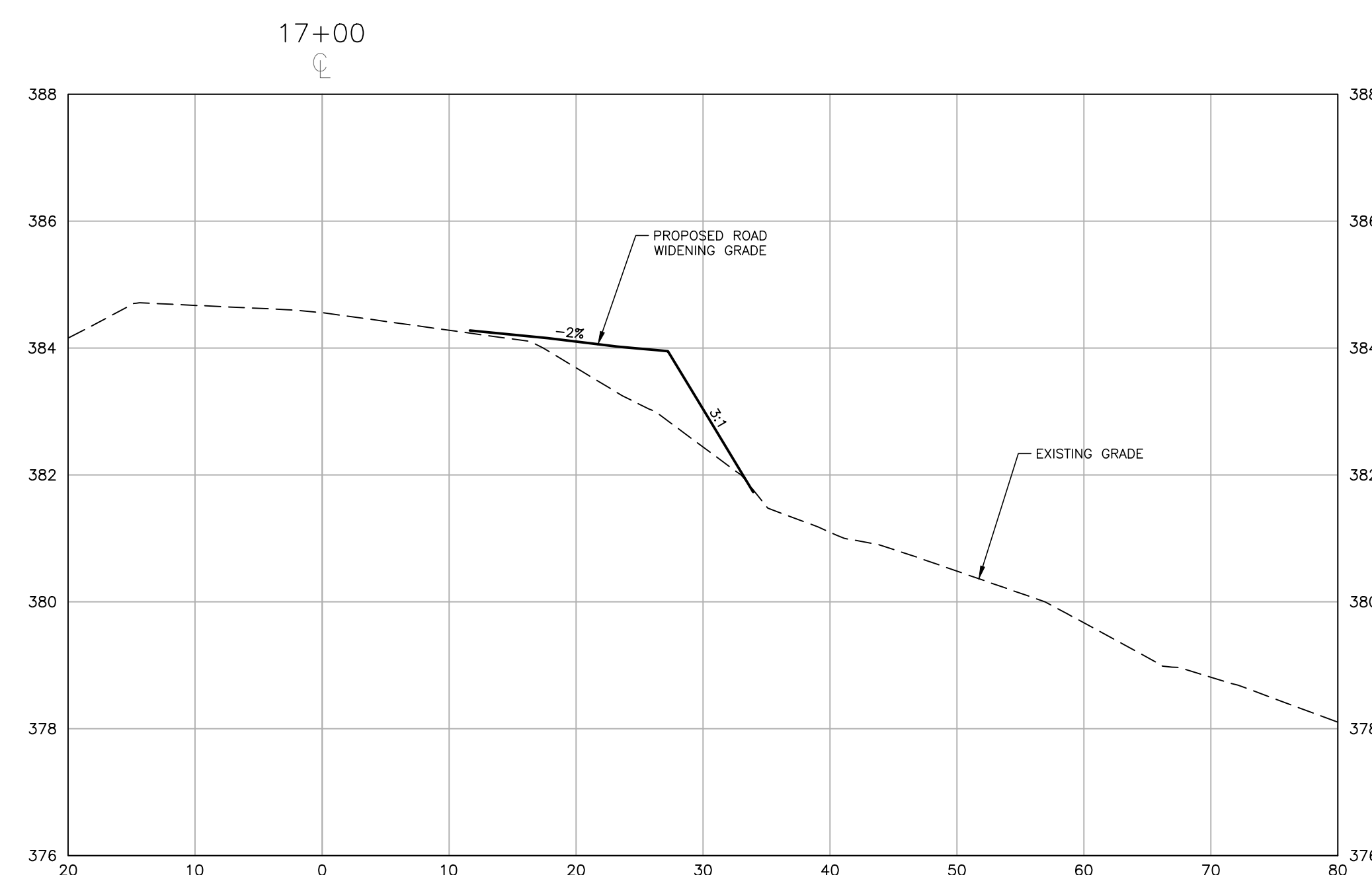
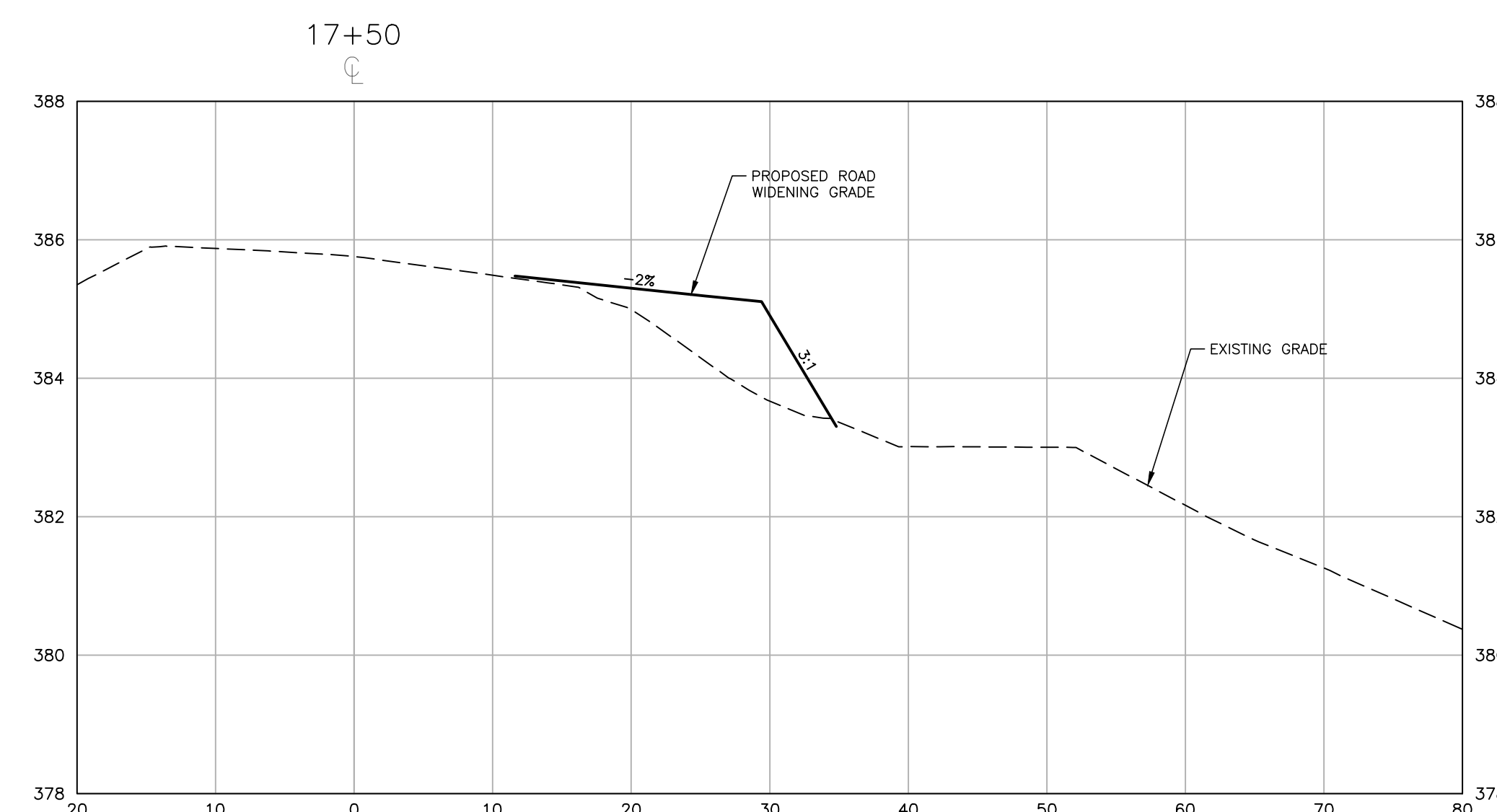
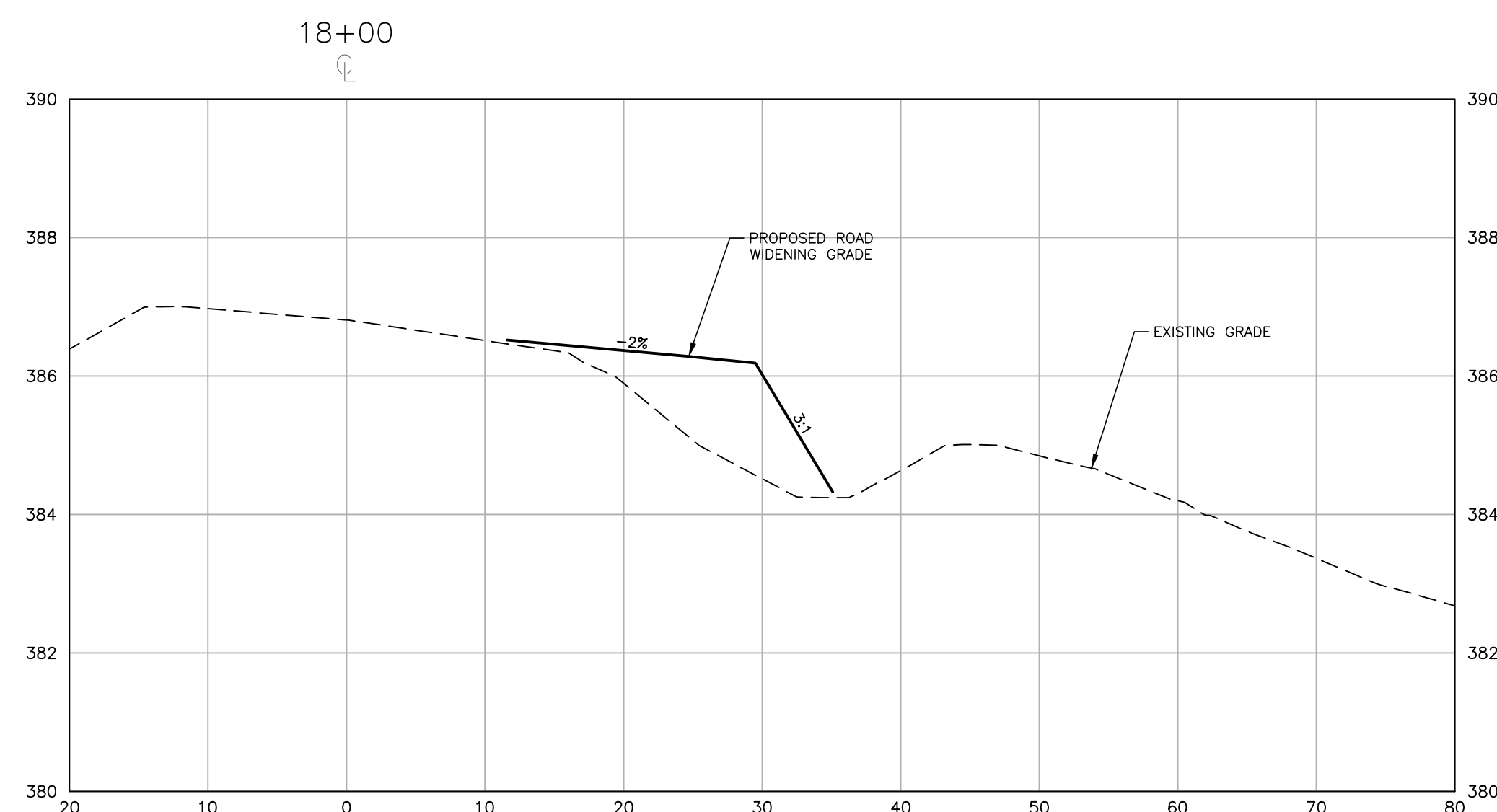
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FILENAME 202011039-PH1-RW2
CHECKED BY EMD
DRAWN BY SME
SCALE H:1"=10' / V:1"=2'
DATE 03.22.2023

SHEET

**LOUISBURG RD
WIDENING
CROSS SECTIONS**

C7.03



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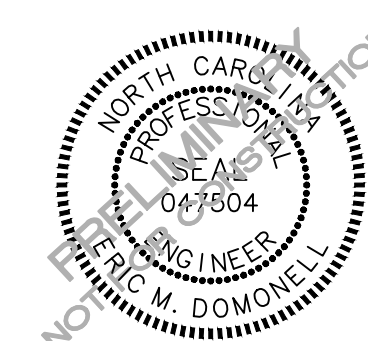
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

NAME: TOWN OF ROLESVILLE
ADDRESS: 502 SOUTHTOWN CIRCLE
ADDRESS: ROLESVILLE NC 27571
PHONE: 919.554.6582

FRAZIER FARM PARK
CONSTRUCTION DRAWINGS
PHASE 1A
11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA



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NO. DATE

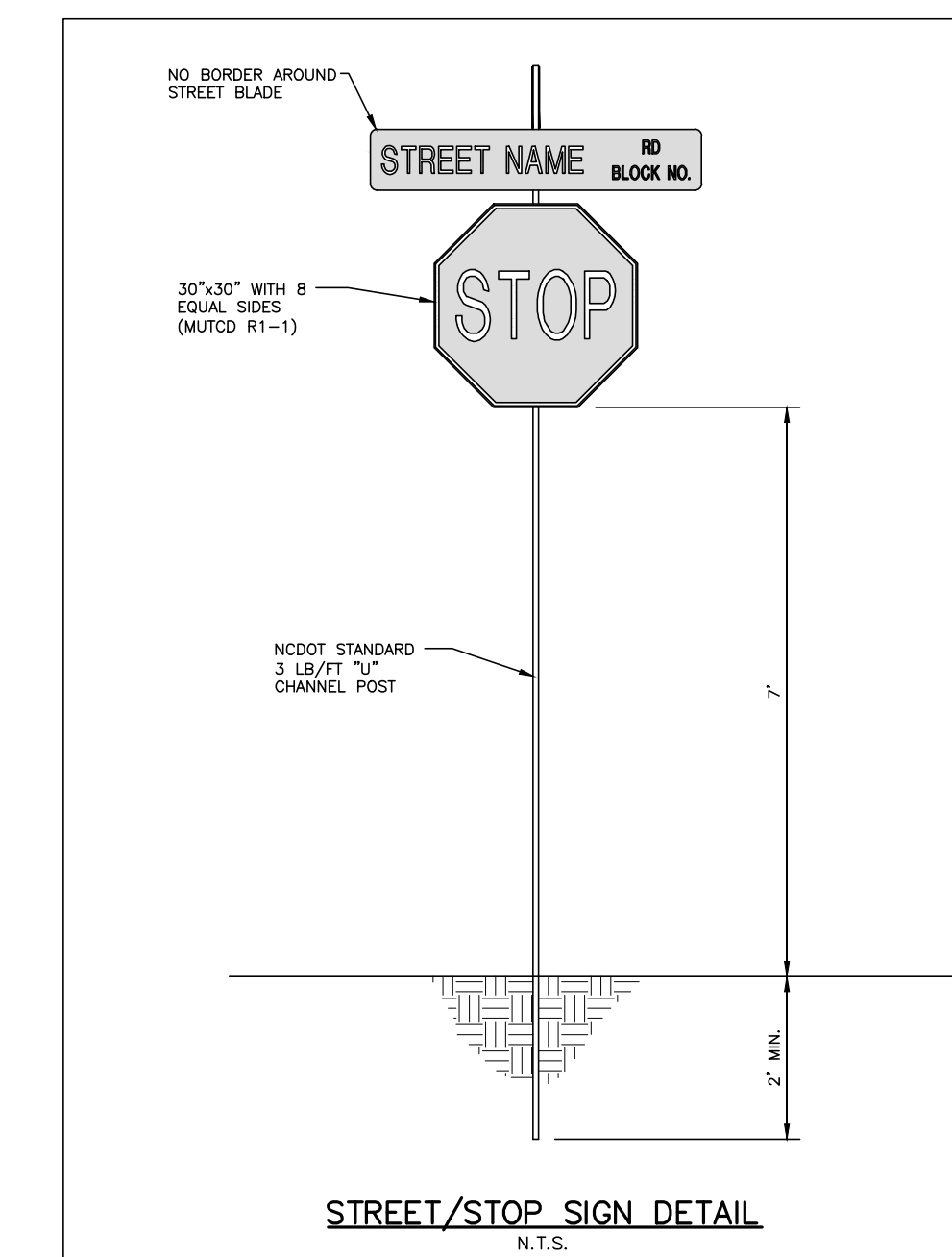
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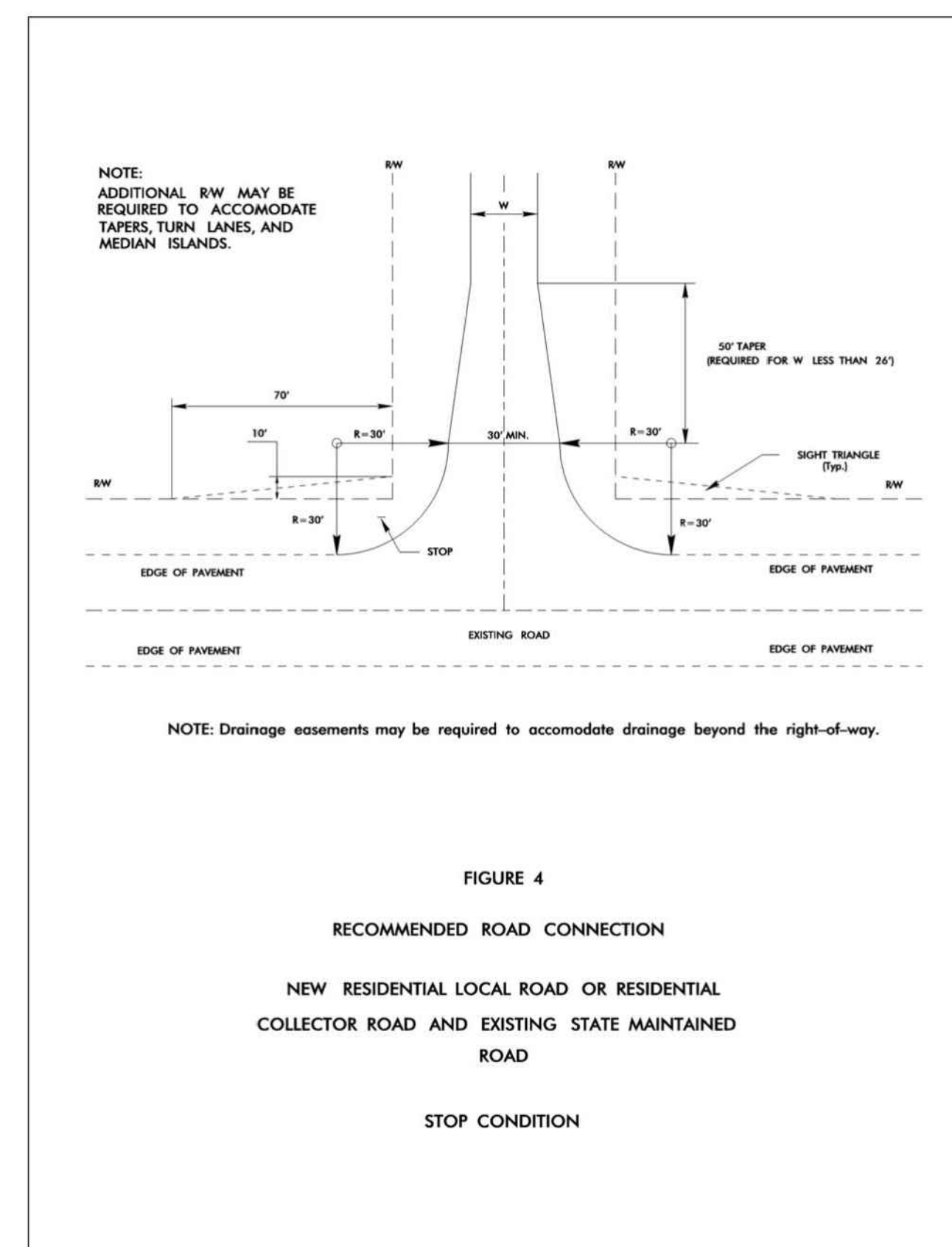
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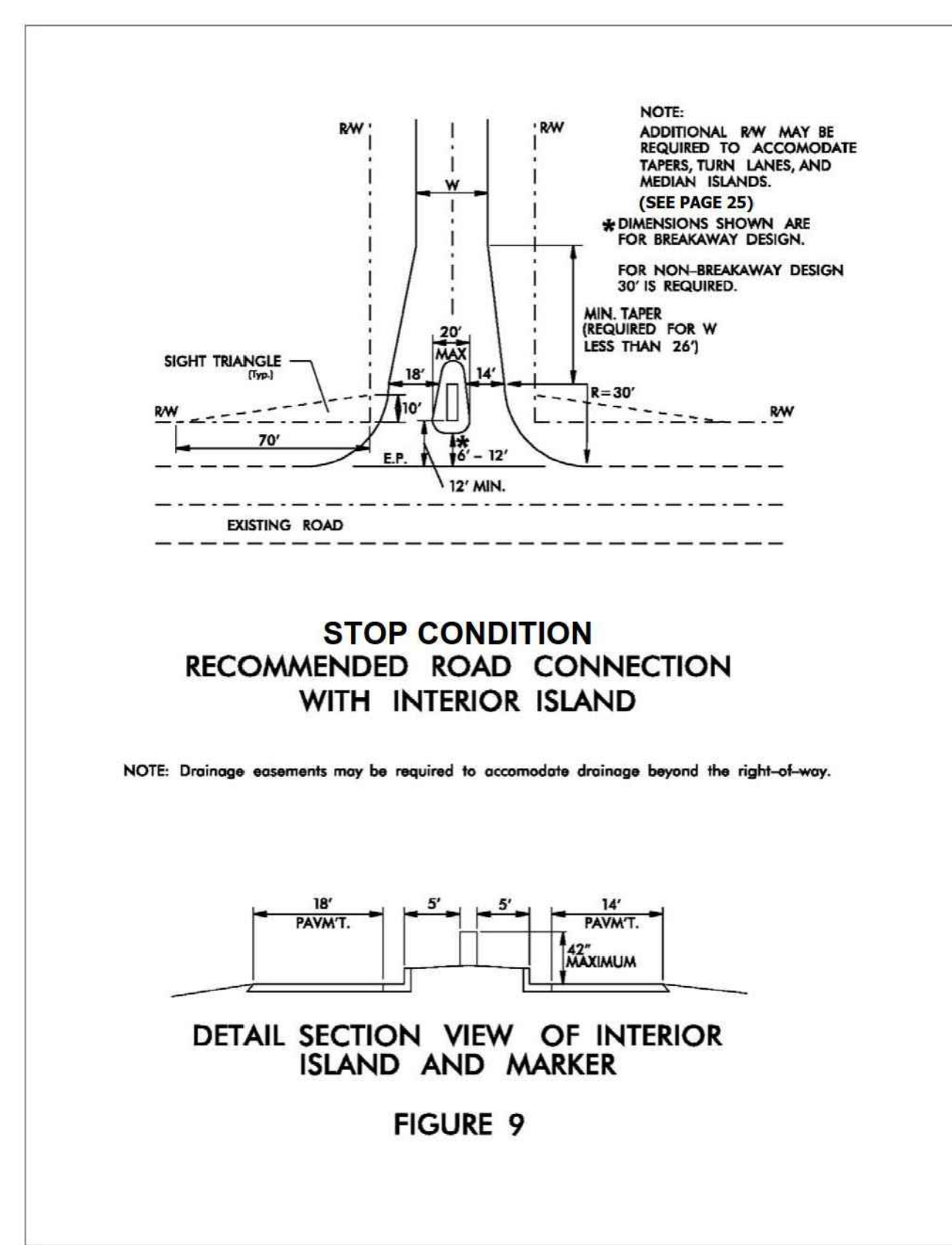
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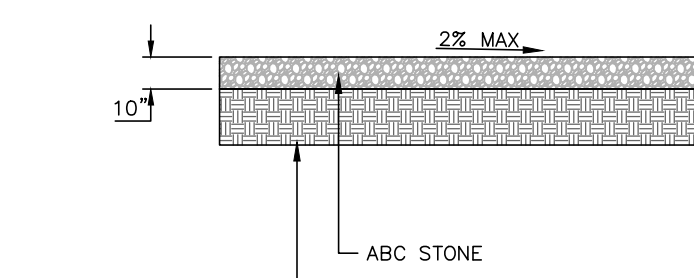
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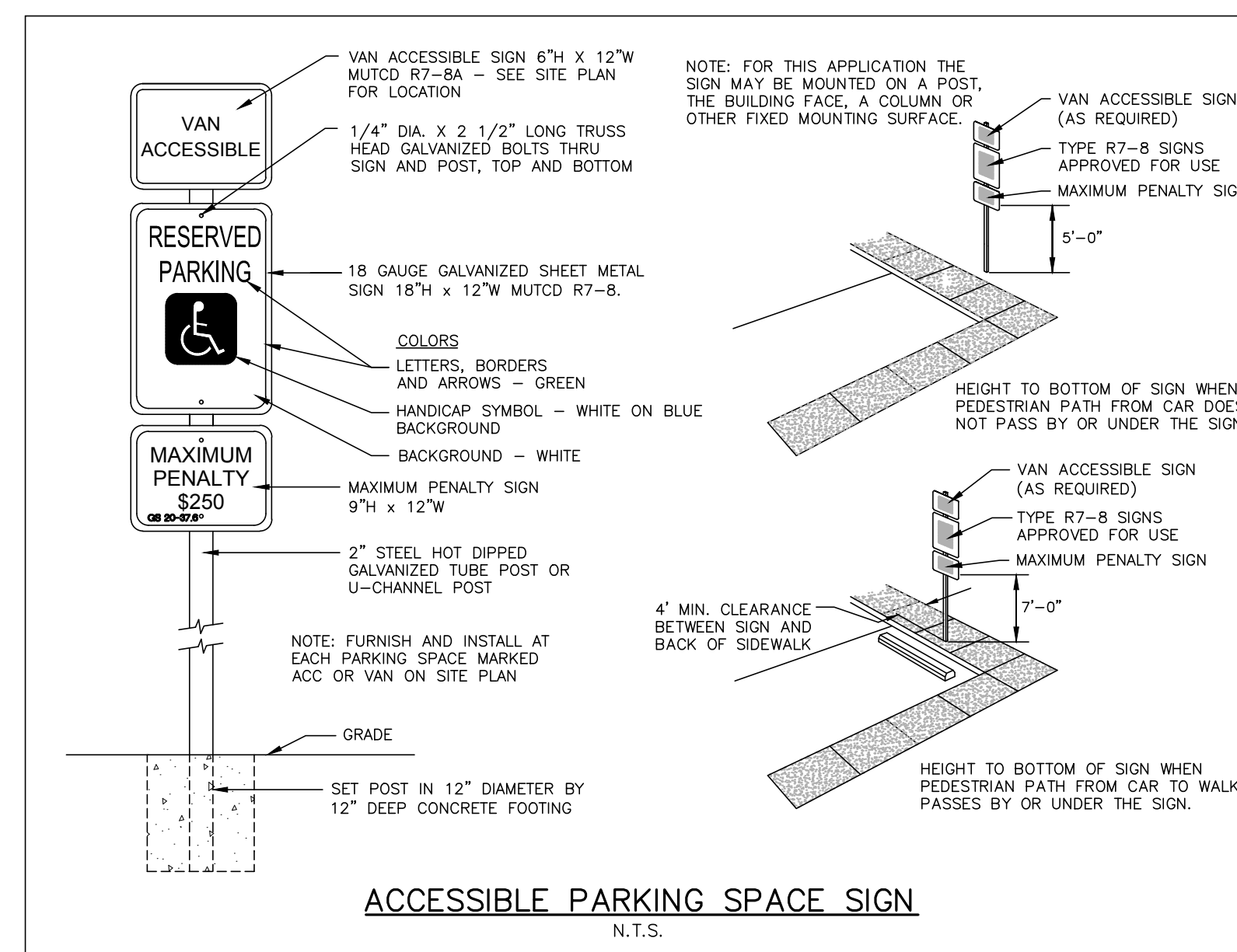
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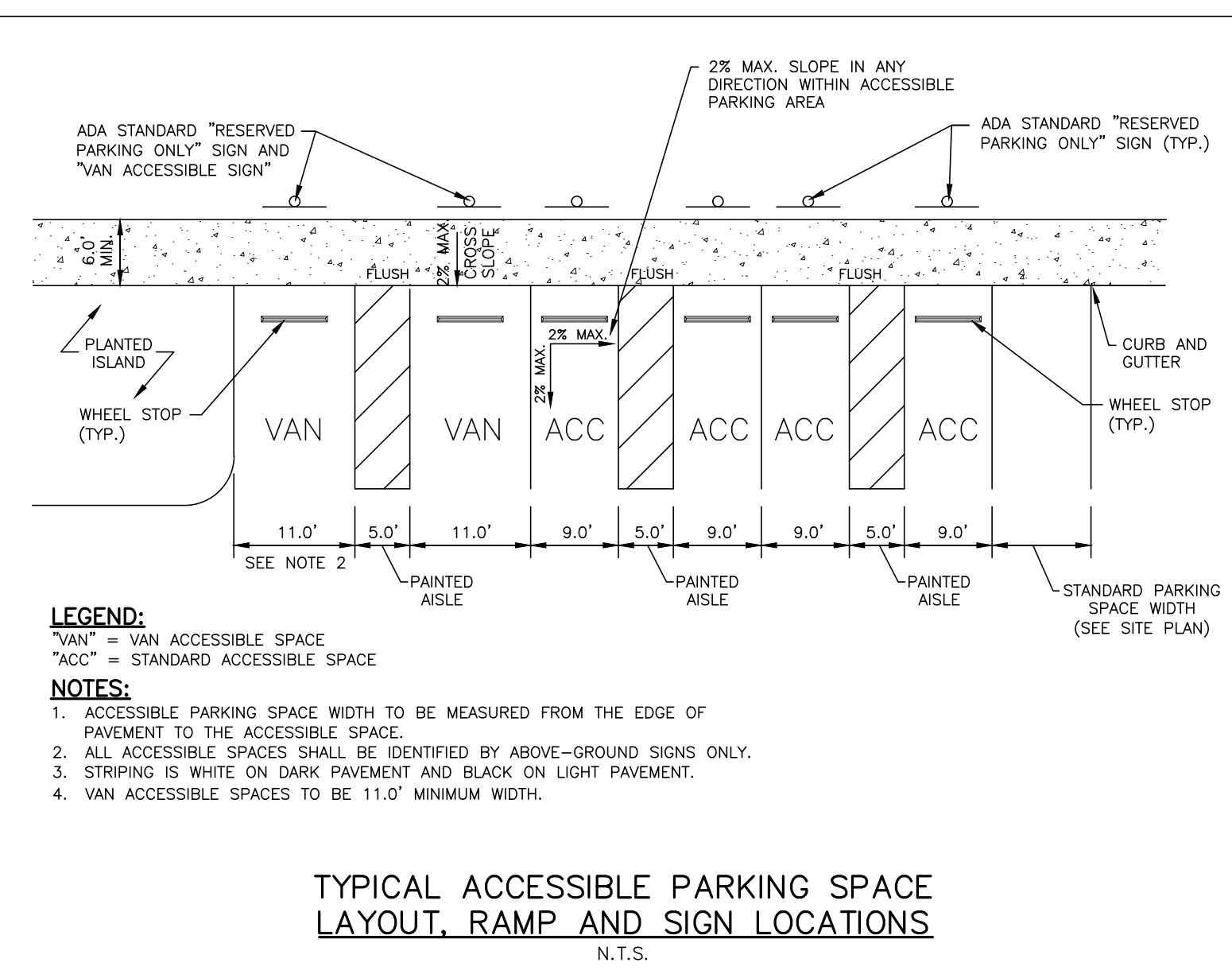
01 NCDOT STANDFARD ROAD DETAILS
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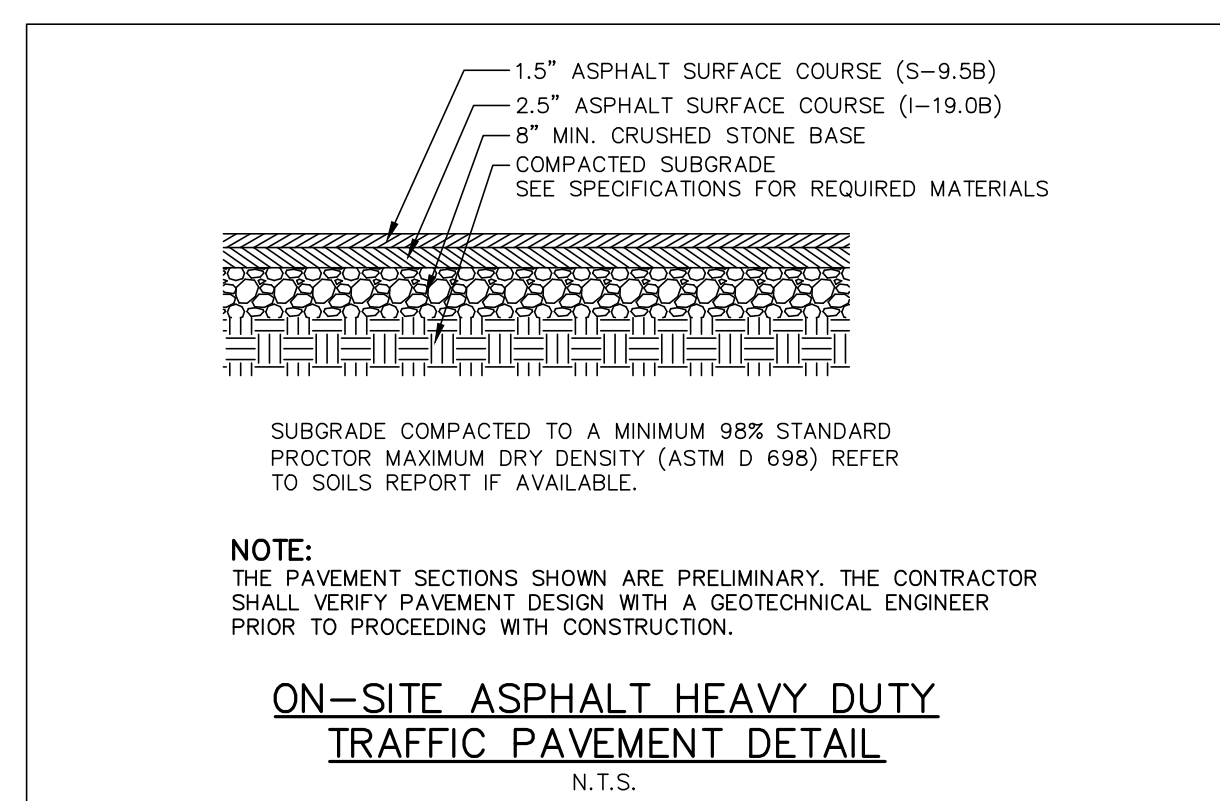
06 GRAVEL DRIVE AND PARKING LOT
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05 ACCESSIBLE PARKING SPACE SIGN
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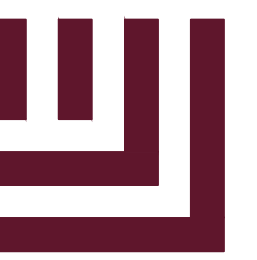


04 ACCESSIBLE PARKING AND STRIPING DETAIL
SCALE: N.T.S.



07 ON-SITE HEAVY-DUTY ASPHALT PAVEMENT DETAIL
SCALE: N.T.S.

M:\Projects\WOL\2020110039 Frazier Farm PH1\04-Production\Engineering\Phase1A_CD\2020110039-PH1-D1.dwg, 3/22/2023 11:54:23 AM, Eric D'Amico



McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919.361.5000
fax 919.361.2269
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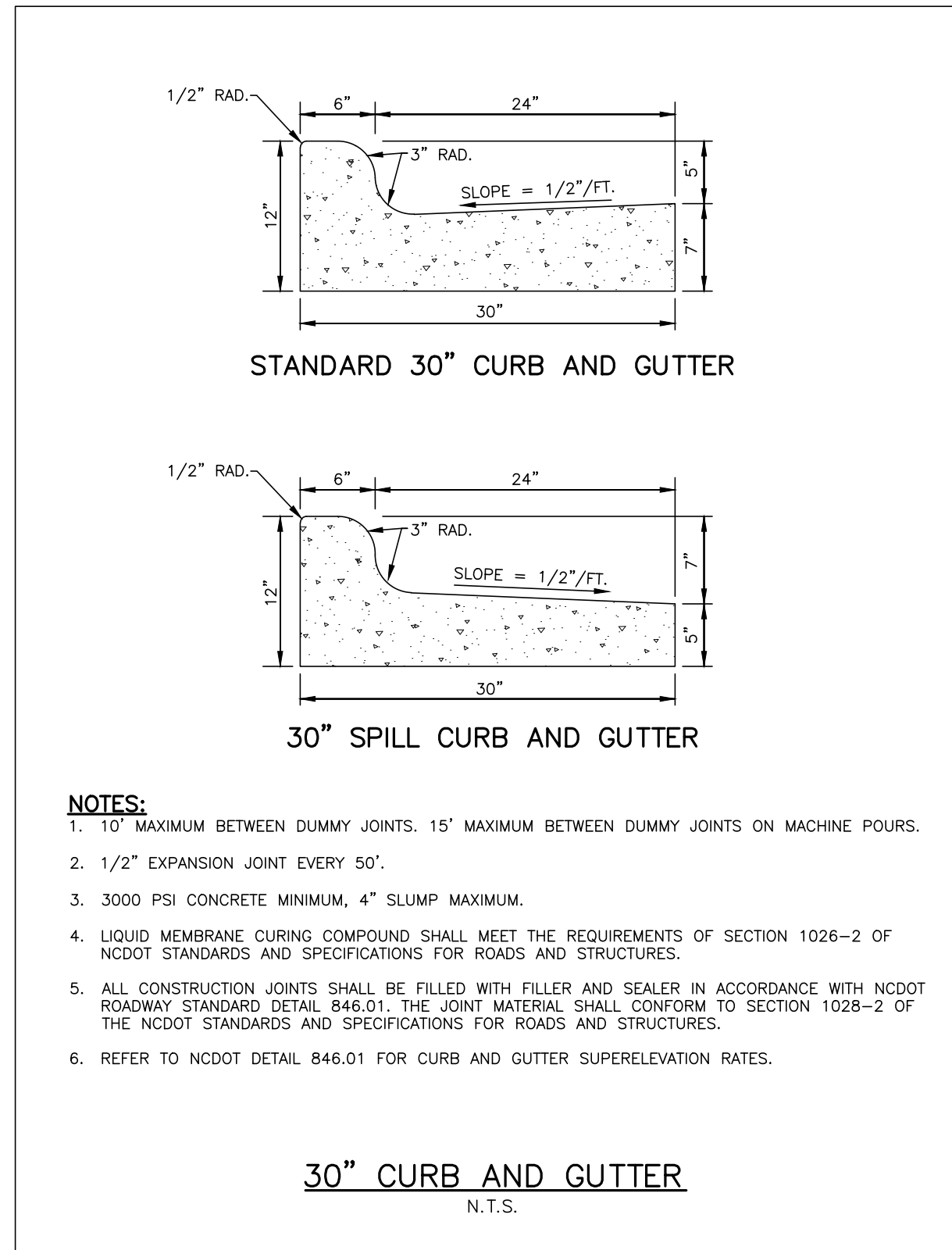
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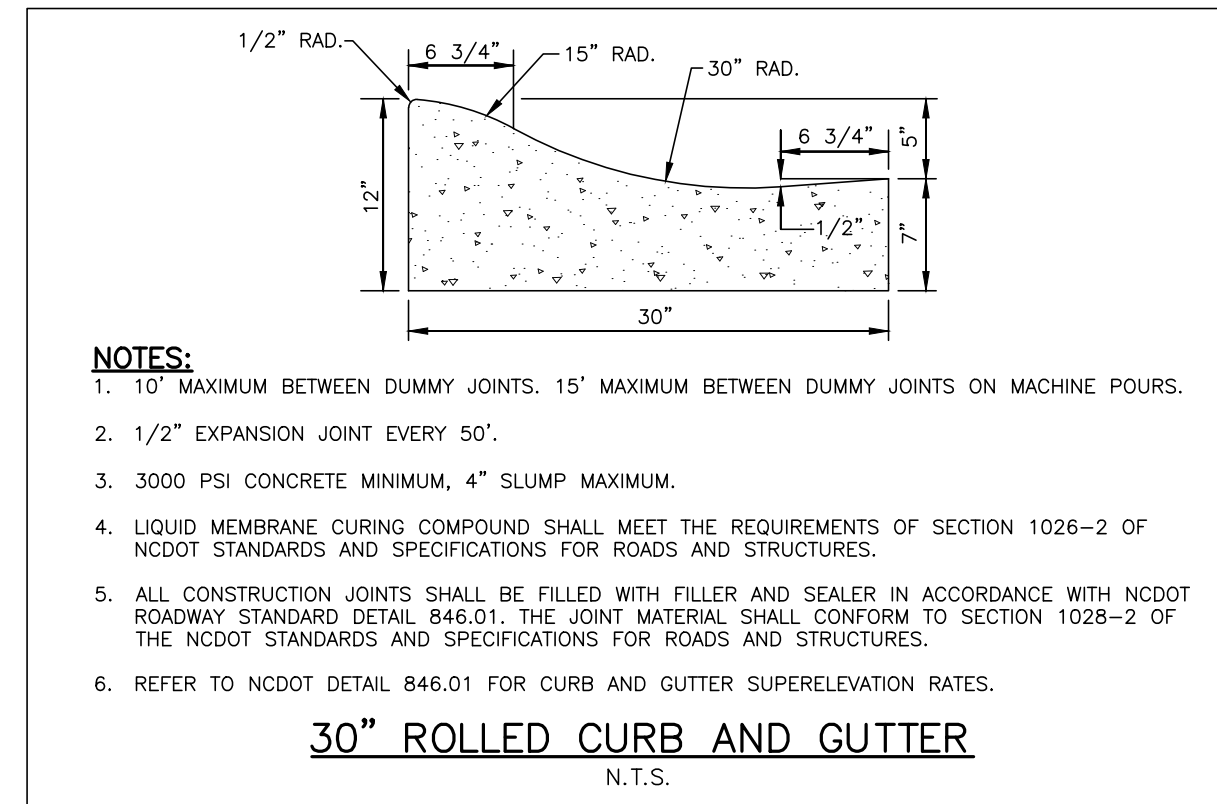
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SITE DETAILS

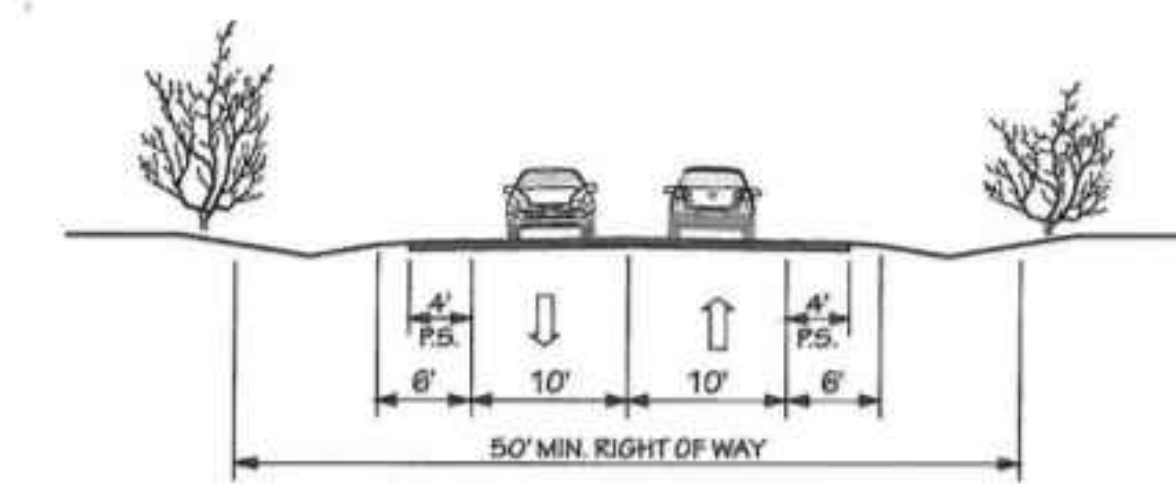
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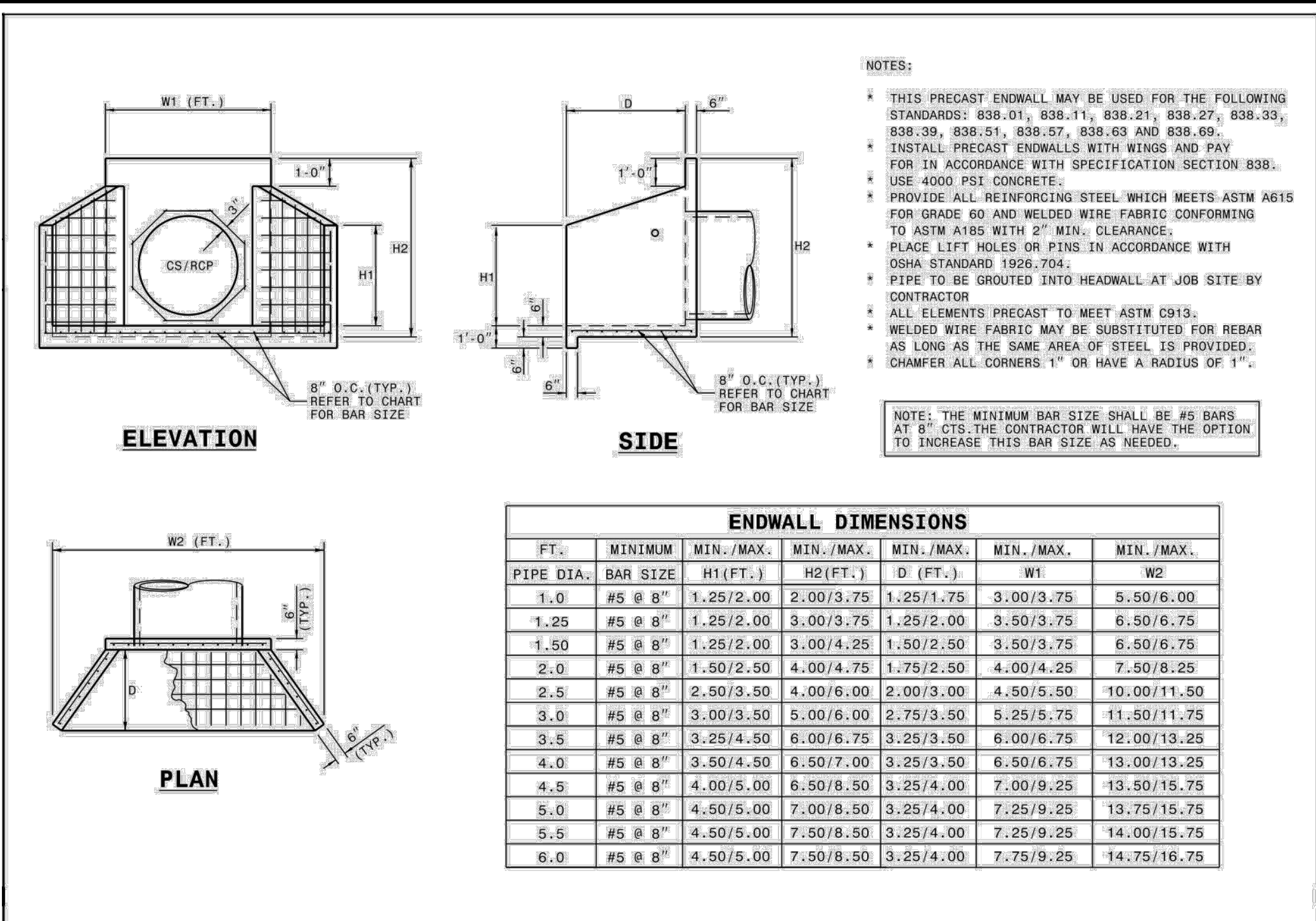
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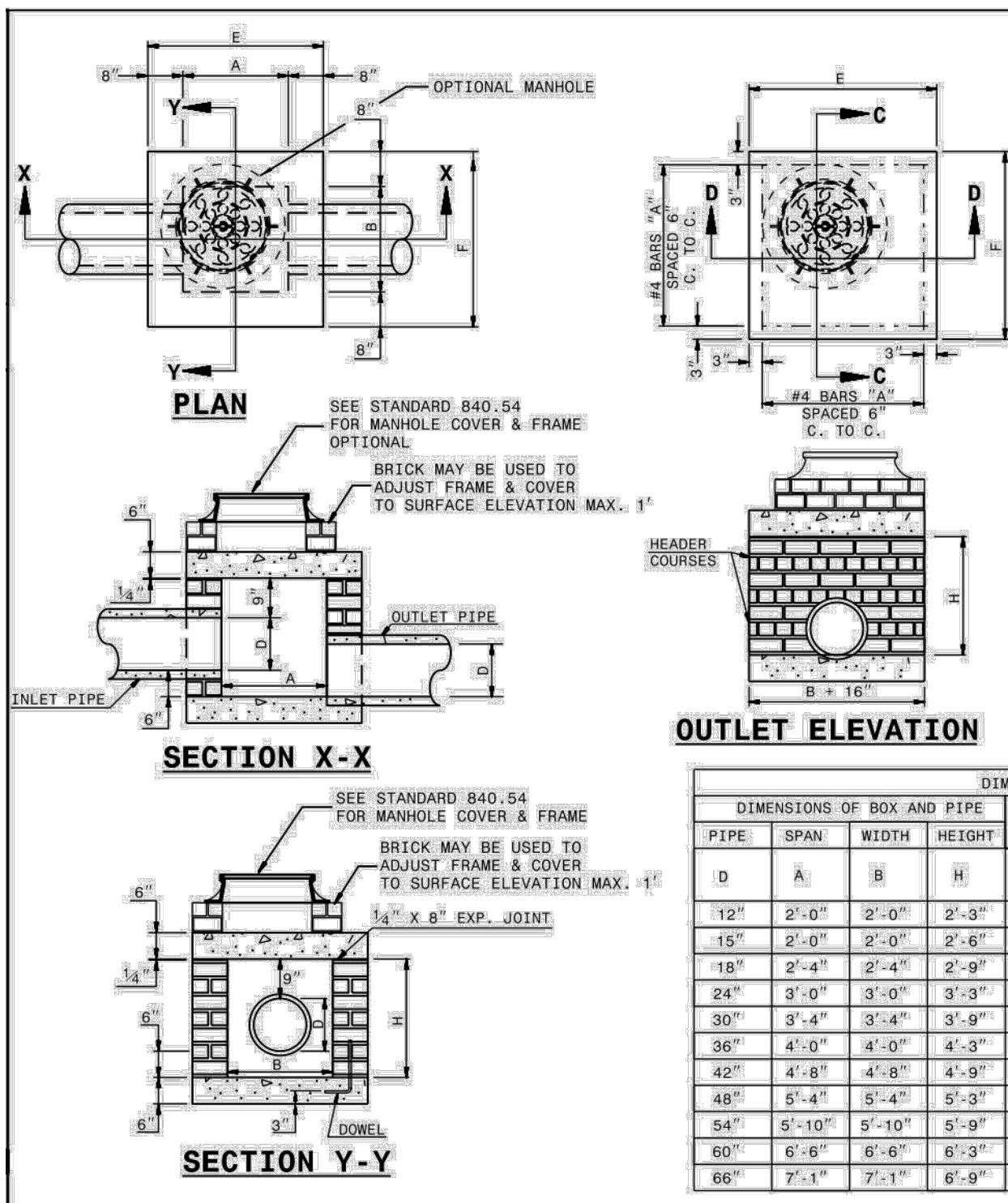


10 30" ROLLED CURB AND GUTTER DETAIL
SCALE: N.T.S.



11 TYPICAL ROADWAY SECTION
SCALE: N.T.S.





GENERAL NOTES:
 CHAMFER ALL EXPOSED CORNERS 1".
 USE CLASS "B" CONCRETE THROUGHOUT.
 USE #4 BAR DOWELS AT 12" CENTERS.
 MORTAR JOINTS 1/2" x 1/2" THICK.
 CONDENSE TO ALL EXPOSED JOINTS.
 USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
 JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.
 FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL. OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL, AND 8" WALL FOR THE REMAINING 6'-0". ADJUST DIMENSIONS AND QUANTITIES ACCORDINGLY.
 IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
 PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
 ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE 11-18 STANDARD BARS SHORTENED AROUND OPENING IN TOP SLAB. ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.
 MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 18 FEET.

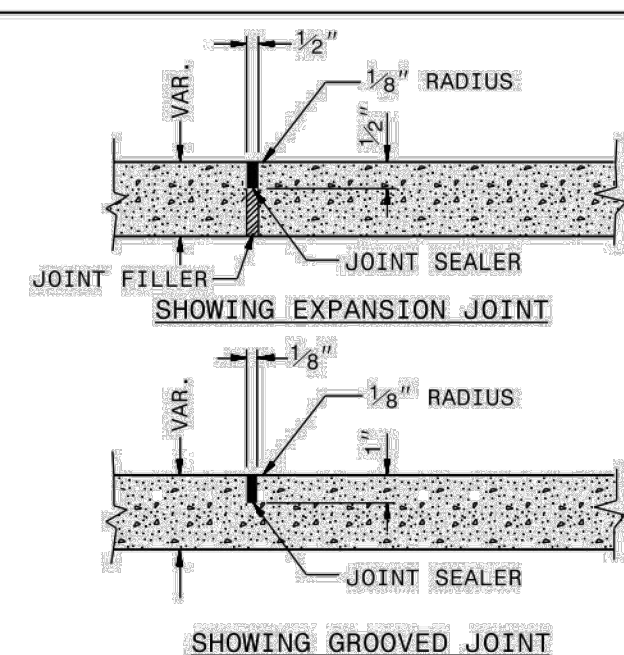
DIMENSIONS AND QUANTITIES FOR BRICK JUNCTION BOXES

PIPE DIMENSIONS	SPAN	WIDTH	HEIGHT	REINFORCEMENT BARS			TOP SLAB DIMENSIONS			CUBIC YARDS			DEDUCTIONS FOR ONE PIPE (CU. YDS.)	
				NO.	LENGTH	E	F	TOP & BOTTOM	MIN. HEIGHT	WALL PER	CONC.	BRICK MASONRY	C.S.	R.C.
12"	2'-0"	2'-0"	2'-6"	12	3'-1"	3'-4"	3'-4"	0.412	0.657	0.263	0.031	0.047		
15"	2'-0"	2'-0"	2'-6"	12	3'-1"	3'-4"	3'-4"	0.412	0.657	0.263	0.031	0.047		
18"	2'-4"	2'-4"	2'-9"	14	3'-5"	3'-8"	3'-8"	0.488	0.814	0.296	0.044	0.062		
24"	3'-0"	3'-0"	3'-3"	16	4'-1"	4'-4"	4'-4"	0.655	1.176	0.362	0.078	0.113		
30"	3'-4"	3'-4"	3'-9"	16	4'-5"	4'-8"	4'-8"	0.807	1.481	0.358	0.122	0.170		
36"	4'-0"	4'-0"	4'-3"	20	5'-1"	5'-4"	5'-4"	1.053	1.959	0.461	0.176	0.238		
42"	4'-8"	4'-8"	4'-9"	22	5'-9"	6'-0"	6'-0"	1.333	2.503	0.527	0.240	0.323		
48"	5'-4"	5'-4"	5'-3"	26	6'-5"	6'-8"	6'-8"	1.646	2.940	0.560	0.313	0.422		
54"	5'-10"	5'-10"	5'-9"	28	6'-11"	7'-2"	7'-2"	1.902	3.502	0.609	0.396	0.535		
60"	6'-6"	6'-6"	6'-3"	30	7'-7"	7'-10"	7'-10"	2.272	4.113	0.658	0.489	0.660		
66"	7'-1"	7'-1"	6'-9"	32	8'-2"	8'-5"	8'-5"	2.624	4.778	0.708	0.591	0.798		

11-18
 STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
 BRICK JUNCTION BOX
 (WITH OPTIONAL MANHOLE)
 12" THRU 66" PIPE

SHEET 1 OF 1
 840.32



5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED) ON ASPHALT CONCRETE PAVEMENT
 (USE ON ISLAND 4' WIDE OR GREATER)

5" MONOLITHIC CONCRETE ISLAND (KEYED IN) ON ASPHALT CONCRETE PAVEMENT
 (USE ON ISLAND LESS THAN 4' WIDE)

5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED) ON CONCRETE PAVEMENT

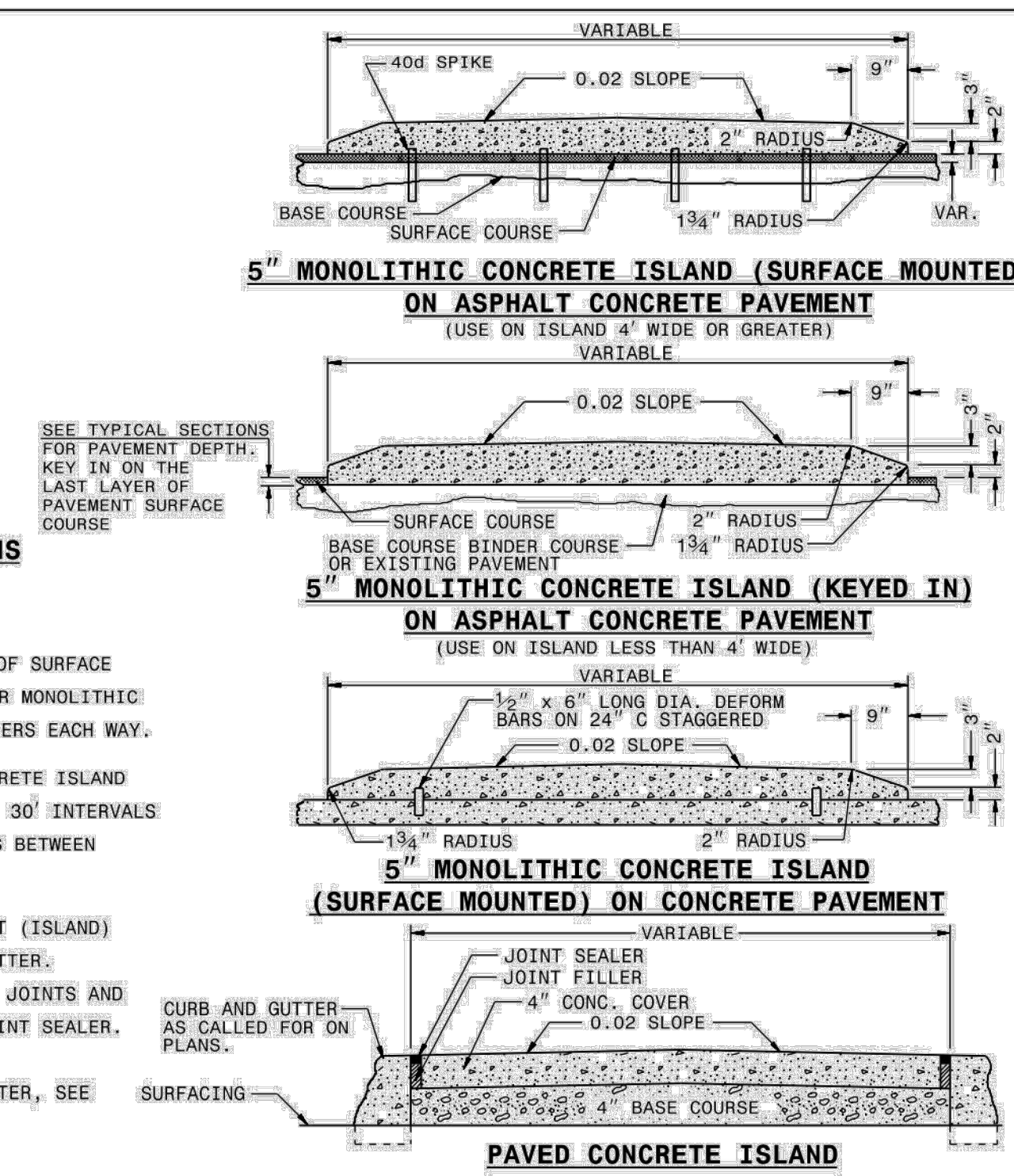
PAVED CONCRETE ISLAND

NOTE:
 WHEN MONOLITHIC CONCRETE ISLAND IS ON TOP OF SURFACE COURSE, DRIVE 40d SPIKES INTO SURFACE UNDER MONOLITHIC CONCRETE ISLAND. STAGGER SPIKES ON 2' CENTERS EACH WAY.

IN THE CONCRETE PAVEMENT (ISLAND) AND CONCRETE ISLAND (MONOLITHIC) PLACE 1/2" EXPANSION JOINTS AT 30' INTERVALS AND GROOVED JOINTS 1" DEEP AT 10' INTERVALS BETWEEN EXPANSION JOINTS.

LINE UP THE JOINTS IN THE CONCRETE PAVEMENT (ISLAND) WITH THE JOINTS IN THE CURB OR CURB AND GUTTER. FILL AND SEAL THE TOP 1/2" OF THE EXPANSION JOINTS AND THE ENTIRE DEPTH OF GROOVED JOINTS WITH JOINT SEALER.

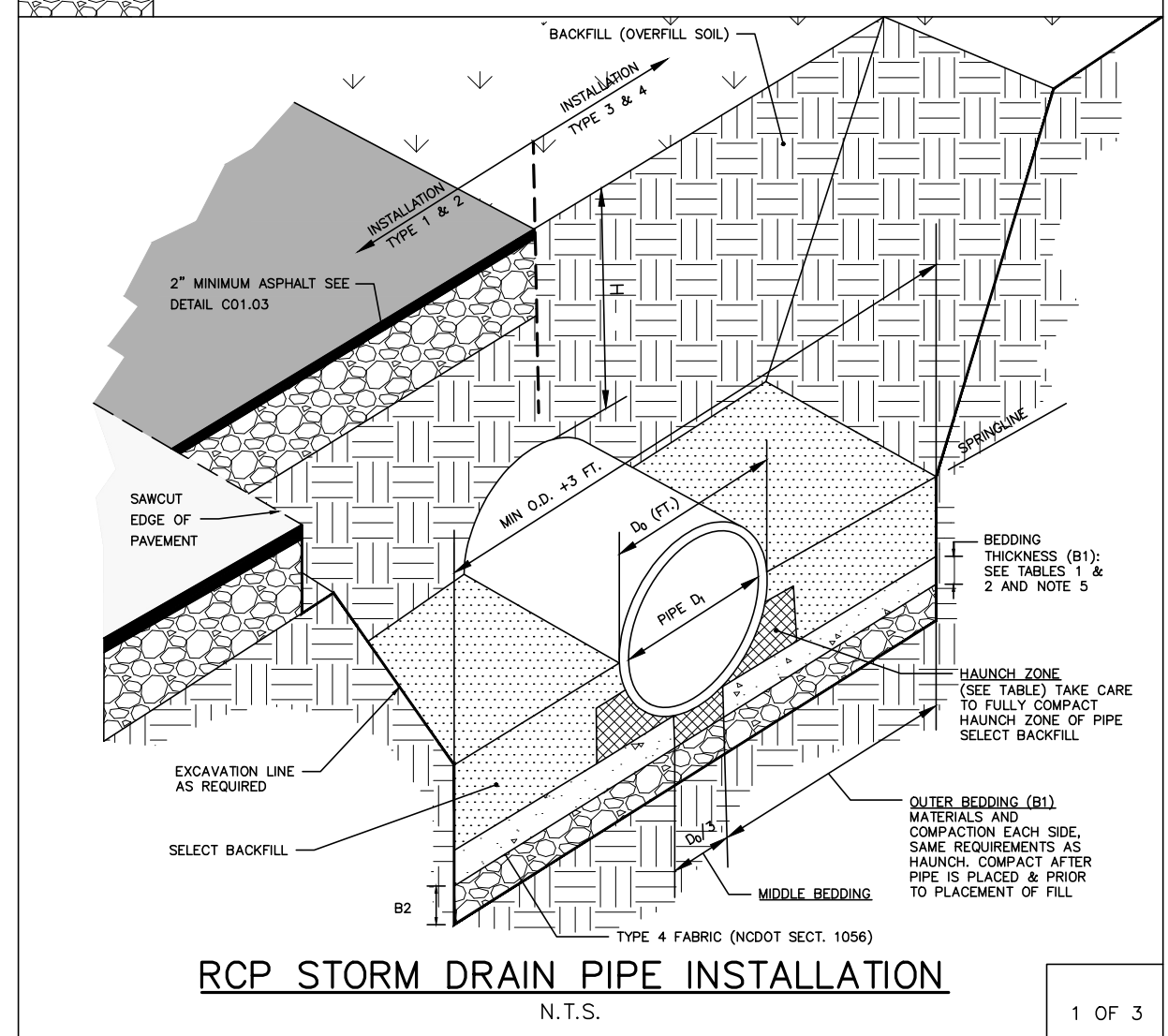
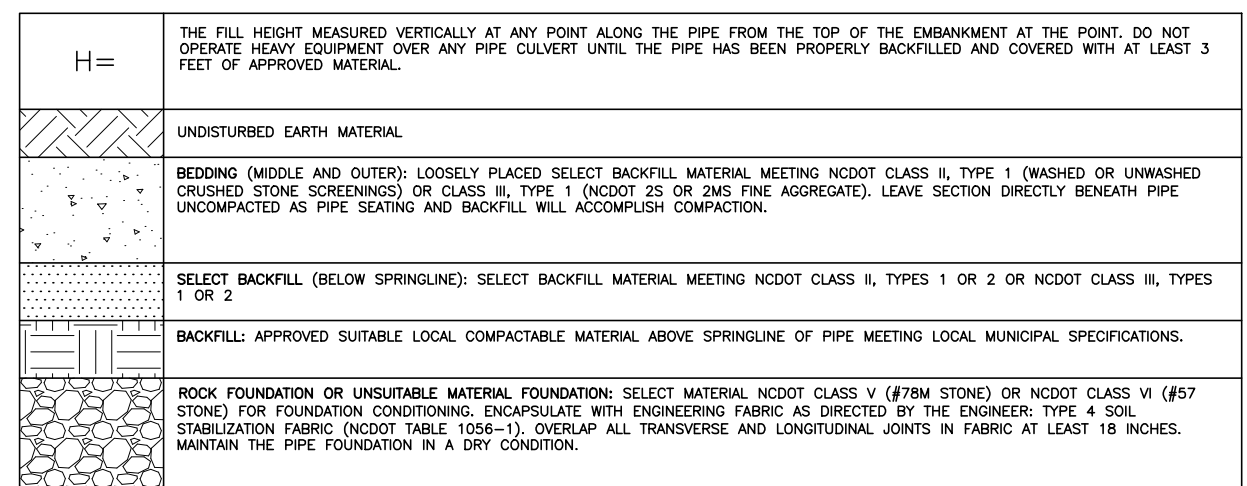
FOR JOINTS IN THE CURB AND/OR CURB AND GUTTER, SEE STANDARD NO. 846.01



STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
 CONCRETE ISLANDS

SHEET 1 OF 1
 852.01



RCP STORM DRAIN PIPE INSTALLATION
 N.T.S. 1 OF 3

TABLE 1
 EQUIVALENT USCS¹ AND AASHTO SOIL CLASSIFICATION FOR SID² SOIL DESIGNATIONS

SIDD	USCS	NCDDOT/AASHTO
GRAVELLY SAND (CATEGORY I)	SW, SP, OW, GP	-NCDDOT CLASS II-TYPE I (CRUSHED STONE SCREENINGS), LL<30; PI<6 -NCDDOT CLASS III, TYPE I (2S OR 2M3), LL<30; PI<6
SANDY SILT (CATEGORY II)	GM, SM, ALSO GC, SC WITH LESS THAN 20% PASSING #200 SIEVE	-NCDDOT CLASS II-TYPE 2 (CRUSHED STONE SCREENINGS) AND CLASS II, TYPE 2 (ASHTO M145 FOR A-2-4 WITH MAX PI OF 6, A-4-W/ MAX 40% PASSING #200 SIEVE AND A MAX PI OF 6) -NCDDOT CLASS III, TYPE 1 (2S OR 2M3) OR CLASS II, TYPE 2 (ASHTO M145 FOR SOIL CLASSIFICATION A-1 OR A-3)
SILT CLAY (CATEGORY III)	CL, ML, GC, SC	AS, AE

¹ UNIFIED SOIL CLASSIFICATION SYSTEM
² STANDARD INSTALLATIONS DIRECT DESIGN

TABLE 2
 STANDARD INSTALLATIONS SOILS AND MINIMUM COMPACTION REQUIREMENTS

INSTALLATION TYPE	BEDDING THICKNESS	OUTER BEDDING (B1) SIDE S	HAUNCH ZONE & SELECT BACKFILL AREA (% COMPACTION/CATEGORY)	LOCATION
TYPE 1	B1 = 5/8" (6" MIN) FOUNDATION, F/FT OF 1/2" MIN/24" MAX	95% CATEGORY I	95% CATEGORY I OR 95% CATEGORY II	PAVED AREAS WITH 2" OR LESS BURY
TYPE 2	B1 = 5/8" (6" MIN) FOUNDATION, F/FT OF 1/2" MIN/24" MAX	95% CATEGORY I	95% CATEGORY I OR 95% CATEGORY II	PAVED AREAS WITH GREATER THAN 2" BURY
TYPE 3	B1 = 5/8" (6" MIN) FOUNDATION, F/FT OF 1/2" MIN/24" MAX	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY II, USE 95% CATEGORY III	95% CATEGORY I OR 95% CATEGORY II	IN 9" W/ OUTSIDE OF PAVEMENT
TYPE 4	B1 = 5/8" (6" MIN) FOUNDATION, F/FT OF 1/2" MIN/24" MAX	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY II, USE 95% CATEGORY III	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY II, USE 95% CATEGORY III	NATURAL AREAS

NOTES:
 1. COMPACTION AND SOIL SYMBOLS - I.E. "95% CATEGORY I" - REFERS TO CATEGORY I SOIL MATERIAL WITH MINIMUM STANDARD PROCTOR COMPACTION OF 95%.
 2. SOIL IN THE OUTER BEDDING, HAUNCH, AND LOWER SIDE ZONES, EXCEPT UNDER THE MIDDLE 1' OF THE PIPE, SHALL BE COMPACTED TO AT LEAST THE SAME COMPACTION AS THE MAJORITY OF THE SOIL IN THE OVERFILL (BACKFILL) ZONE.
 3. FOR TRENCHES, THE TOP ELEVATION SHALL BE NO LOWER THAN 0.1H BELOW FINISHED GRADE OR, FOR ROADWAYS, ITS TOP SHALL BE NO LOWER THAN AN ELEVATION OF 1'-FOOT BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL.
 4. FOR TRENCHES, THE WIDTH SHALL BE WIDER THAN SHOWN IF REQUIRED FOR ADEQUATE SPACE TO ATTAIN THE SPECIFIED COMPACTION IN THE HAUNCH AND BEDDING ZONES.
 5. COMPACT OUTER BEDDING AFTER PIPE IS PLACED AND PRIOR TO PLACEMENT OF SELECT FILL. MIDDLE BEDDING IS UNCOMPACTED.
 6. OVERFILL (BACKFILL) SOILS TO BE PLACED PER STANDARD SPECIFICATION 02700 STORM DRAINAGE FOR THE APPLICABLE BACKFILL TYPE AND BURY LIMITATIONS.
 7. THESE TWO TABLES WERE MODIFIED TO GENERALLY CONFORM TO THE NCDDOT STANDARDS AS SHOWN IN DETAIL 300.01 RIGID PIPE IN TRENCH CONDITION.

REFERENCE SOURCES:
 1. AMERICAN CONCRETE PIPE ASSOCIATION DESIGN STANDARDS
 2. 2012 NCDDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES AND NCDDOT STANDARD DETAILS 300.01 FOR RIGID PIPE, TRENCH CONDITIONS.

STORM DRAIN PIPE INSTALLATION 2 OF 3

FILL HEIGHT TABLE²

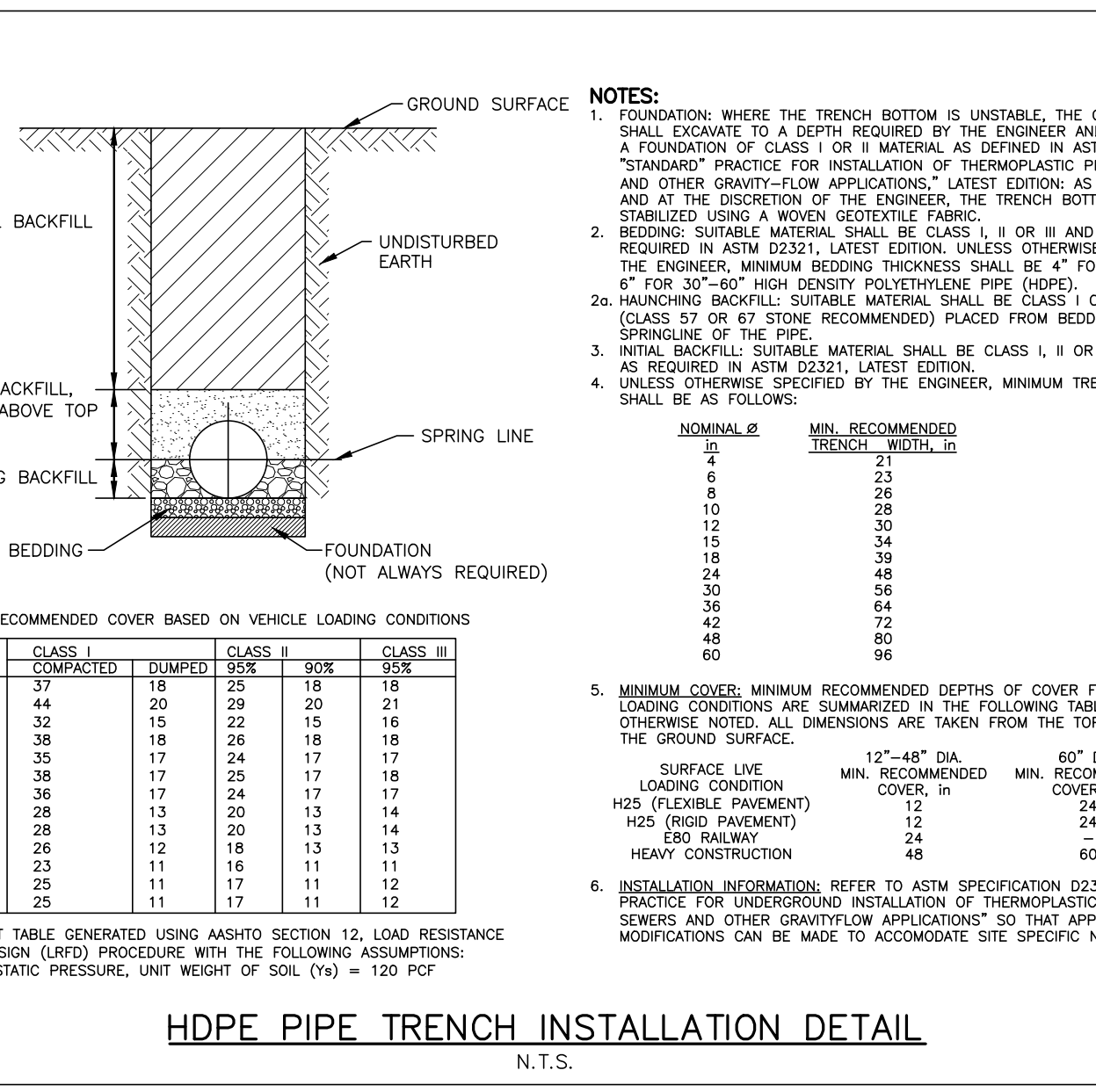
INSIDE PIPE DIAMETER DI (INCHES)	TYPE 3 (BEDDING) INSTALLATION (0.01 INCH CRACK)		TYPE 4 (BEDDING) INSTALLATION (0.01 INCH CRACK)	
	CLASS III PIPE MAXIMUM BURY H (FEET)	CLASS IV PIPE MAXIMUM BURY H (FEET)	CLASS III PIPE MAXIMUM BURY H (FEET)	CLASS IV PIPE MAXIMUM BURY H (FEET)
12	2 MIN, 12 MAX	1 MIN, 20 MAX	3 MIN, 7 MAX	2 MIN, 12 MAX
18	2 MIN, 12 MAX	1 MIN, 20 MAX	3 MIN, 7 MAX	1 MIN, 13 MAX
24	1 MIN, 12 MAX	1 MIN, 20 MAX	2 MIN, 8 MAX	1 MIN, 13 MAX
30	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
36	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
42	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
48	1 MIN, 12 MAX	1 MIN, 19 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
54	1 MIN, 12 MAX	1 MIN, 19 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
60	1 MIN, 12 MAX	1 MIN, 19 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
72	1 MIN, 11 MAX	1 MIN, 19 MAX	1 MIN, 7 MAX	1 MIN, 13 MAX

FILL HEIGHT TABLE BASE ON:
 1. Y_s = 120 PCF (BACKFILL LOAD)
 2. ASHTO HL-93 LIVE LOAD
 3. POSITIVE PROJECTING EMBANKMENT CONDITION (THIS GIVES CONSERVATIVE RESULTS IN COMPARISON TO TRENCH CONDITIONS)
 4. PIPE = REINFORCED CONCRETE PIPE MEETING ASTM C76 (ASHTO M170), WALL C THICKNESS
 5. CONCRETE PIPE SHOULD BE INSTALLED IN ACCORDANCE WITH ASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS SECTION 27 OR ASTM C1479.

² FILL HEIGHT TABLES, THE PORTION EXCEPTED HERE, WAS DEVELOPED BY THE AMERICAN CONCRETE PIPE ASSOCIATION (ACPA) USING THE INDIRECT DESIGN METHOD IN ACCORDANCE WITH SECTION 12.10.4.3 OF THE ASHTO LRFD BRIDGE DESIGN SPECIFICATION, 4TH, 2007 WITH 2008 INTERIM.

NOTES:
 1. GREATER BURY DEPTHS THAN THOSE SHOWN ABOVE ARE ACHIEVABLE BY EITHER USING TYPE 1 OR 2 INSTALLATION, USING CLASS V PIPE, CONTROLLING BACKFILL TYPE, CALCULATING DEPTH USING A TRENCH CONDITION, OR BY SPECIAL DESIGN. SEE ALSO DESIGN DATA 9 PUBLISHED BY THE ACPA FOR DESIGN METHODOLOGY.
 2. IN LIEU OF CALCULATING BURY DEPTH FOR OTHER CONDITIONS, FIRST SEE "LRFD FILL HEIGHT TABLES FOR CONCRETE PIPE", LAST REVISED JULY 2009 OR LATER, PREPARED BY THE ACPA FOR OTHER BURY DEPTH POSSIBILITIES.

STORM DRAIN PIPE INSTALLATION 3 OF 3



NOTES:
 1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL, AS DETAILED IN ASTM D2321.
 2. "STANDARD" PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS LATEST EDITION AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOOD GEOTEXTILE.
 3. BEDDING: SUITABLE MATERIAL SHALL BE CLASS II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 12"-24" AND 6" FOR 30"-60" HIGH DENSITY POLYETHYLENE PIPE (HDPE).
 4. HAUNCHING BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II MATERIAL (CLASS 57 OR 67 STONE RECOMMENDED) PLACED FROM BEDDING TO THE SPRINGLINE OF THE PIPE.
 5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
 6. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

NOMINAL R	MIN. RECOMMENDED TRENCH WIDTH, IN
21	21
24	24
30	30
36	36
42	42
48	48
60	60

5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOAD CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE, UNLESS OTHERWISE NOTED. ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

PIPE DIA.	CLASS I	CLASS II	CLASS III
4"	37	25	18
6"	44	29	20
8"	52	32	19
10"	58	36	18
12"	65	40	17
15"	75	46	17
18"	84	51	17
24"	100	61	14
30"	117	70	13
36"	134	80	13
42"	151	90	11
48"	168	100	11
60"	200	120	11

6. INSTALLATION INFORMATION: REFER TO ASTM SPECIFICATION D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS" SO THAT APPROPRIATE MODIFICATIONS CAN BE MADE TO ACCOMMODATE SITE SPECIFIC NEEDS.

FILL HEIGHT TABLE GENERATED USING ASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
 NO HYDROSTATIC PRESSURE, UNIT WEIGHT OF SOIL (Y_s) = 120 PCF

HDPE PIPE TRENCH INSTALLATION DETAIL
 N.T.S.

McADAMS
 The John R. McAdams Company, Inc.
 2905 Meridian Parkway
 Durham, NC 27713

phone 919. 361. 5000
 fax 919. 361. 2269
 license number: C-0293

www.mcadamsco.com

CLIENT

NAME: TOWN OF ROLESVILLE
 ADDRESS: 502 SOUTHTOWN CIRCLE
 ADDRESS: ROLESVILLE NC 27571
 PHONE: 919.554.6582

FRAZIER FARM PARK
 CONSTRUCTION DRAWINGS
 PHASE 1A
 11624 LOUISBURG ROAD
 ROLESVILLE, NORTH CAROLINA



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PLAN INFORMATION

PROJECT NO. 202011039
 FILENAME 2020110039-PH1-01
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 DATE 03.22.2023

SHEET

STORM DRAINAGE & UTILITY DETAILS
C8.03