

McADAMS

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

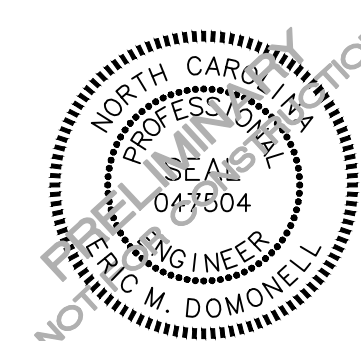
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CLIENT

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 2020110039-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

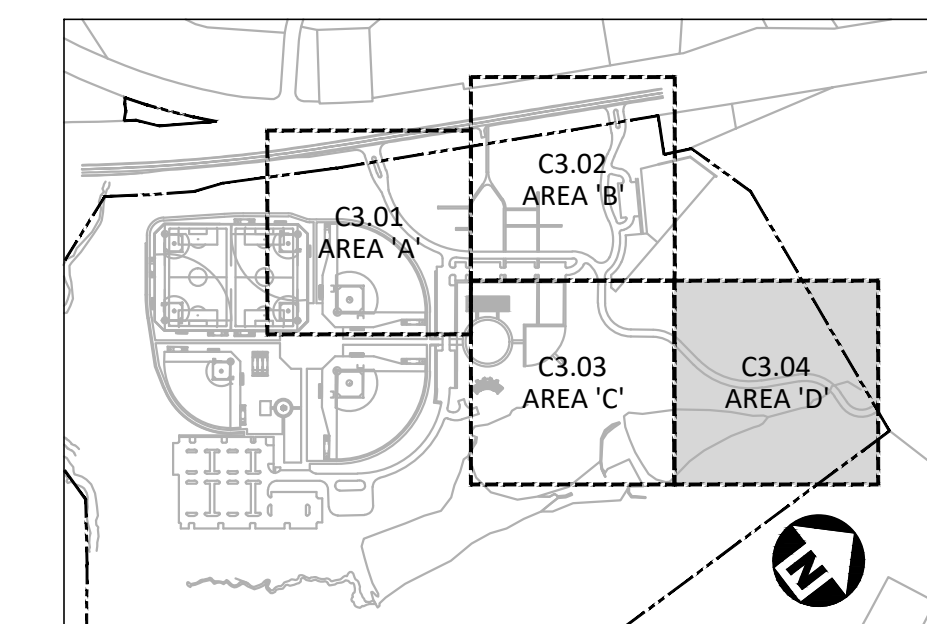
	FLARED END SECTION
	ENDWALL SECTION
	CATCH BASIN
	DROP INLET
	JUNCTION BOX
	DRAINAGE FLOW ARROW
	TOP & BOTTOM CURB ELEVATIONS
	SPOT ELEVATION
	STORM DRAINAGE
	TREE PROTECTION FENCE
	LIMITS OF DISTURBANCE
	WOODED AREA
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EASEMENT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

GRADING NOTES

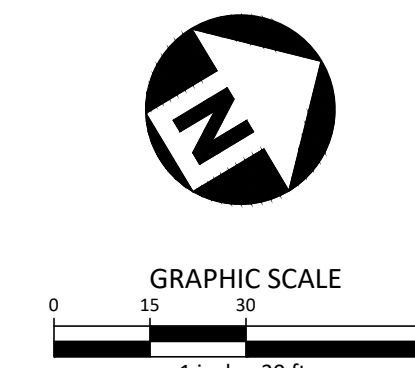
- ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. FOR NECESSARY PLAN OR GRADE CHANGES, NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR 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

Add additional existing and proposed contour labels for clarity

Verify intent of grading and/or culvert location. It looks like contours slope away from culvert inv. in? Is inv. in elevation correct?

25-YEAR STORM CALCS WILL BE NEEDED FOR CULVERTS. 10-YEAR STORM FOR ALL OTHER STORM

include slope

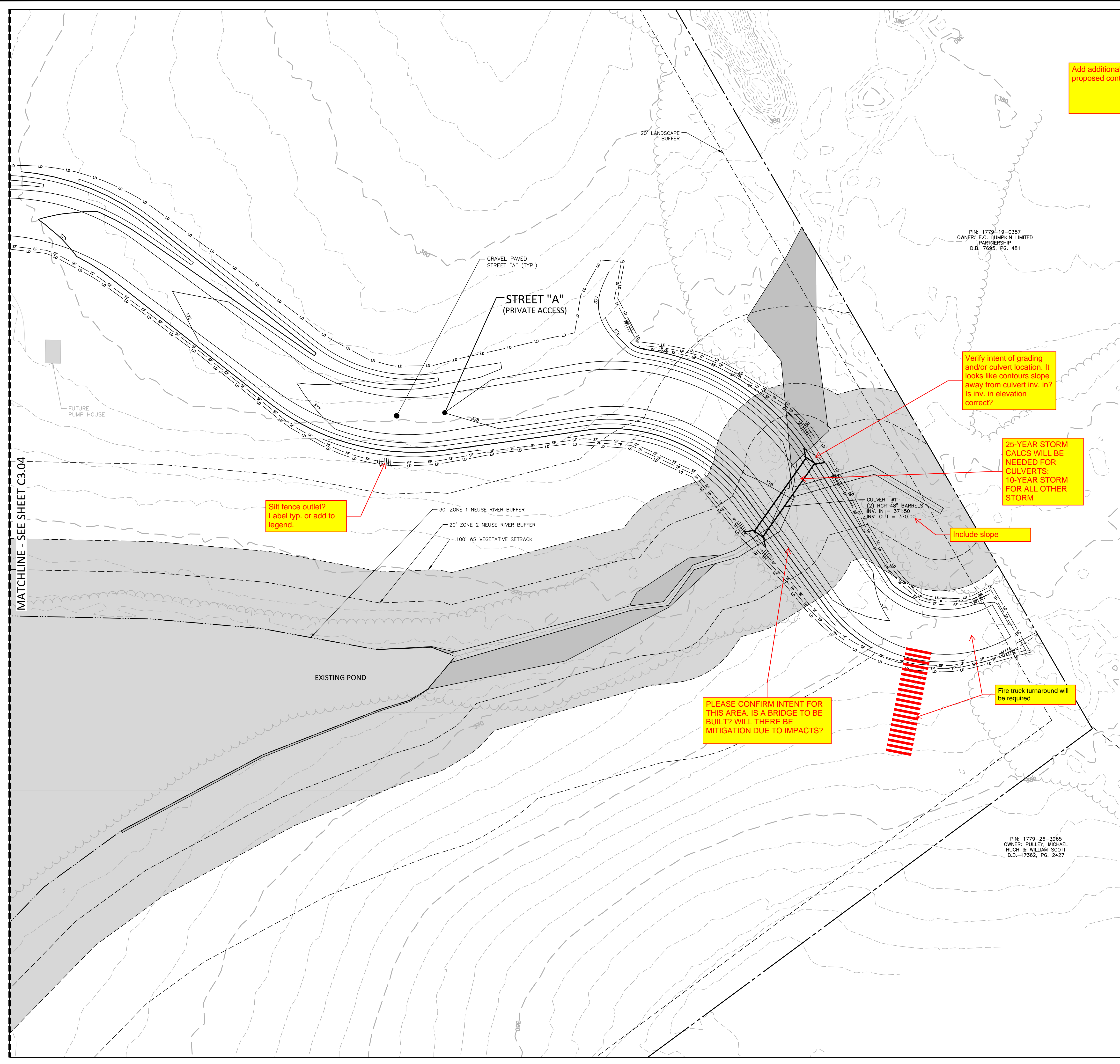
Fire truck turnaround will be required

PLEASE CONFIRM INTENT FOR THIS AREA. IS A BRIDGE TO BE BUILT? WILL THERE BE MITIGATION DUE TO IMPACTS?

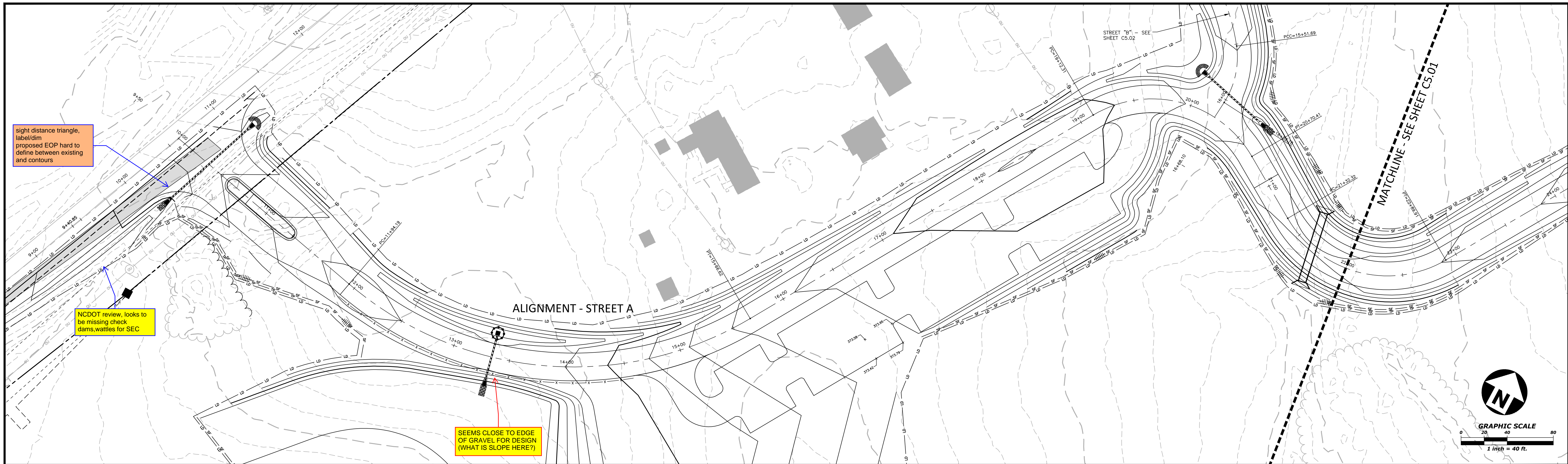
Silt fence outlet? Label typ. or add to legend.

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

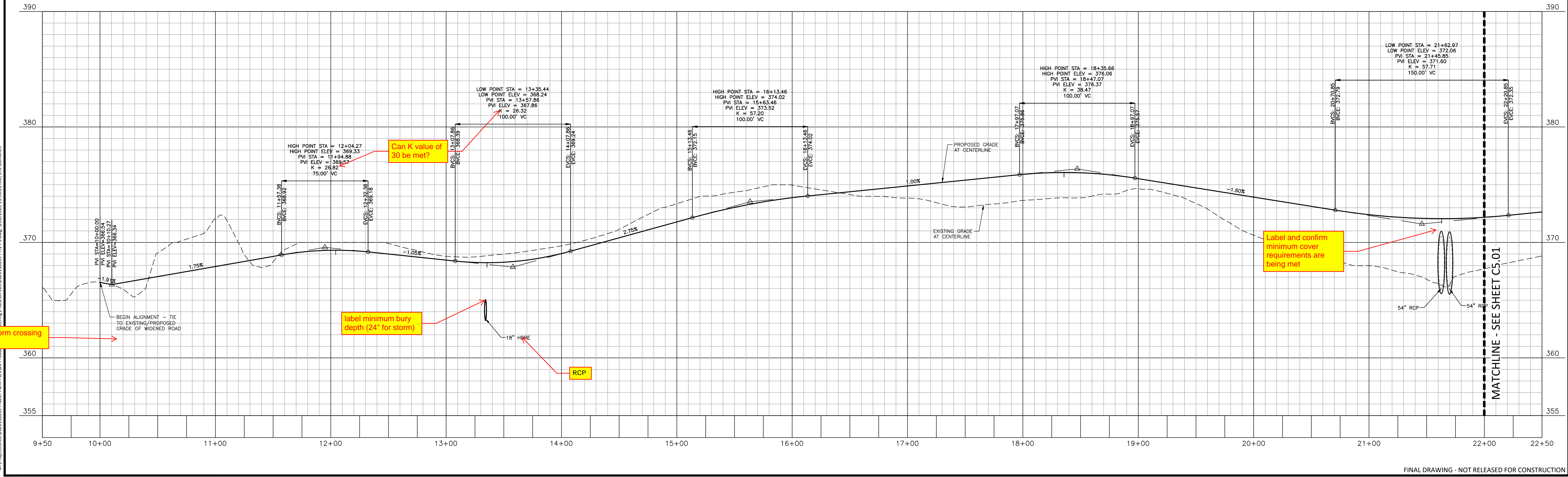
PIN: 1779-26-3965
OWNER: PULLEY, MICHAEL HUGH & WILLIAM SCOTT
D.B. 17362, PG. 2427



M:\Projects\WOL\2020110039 Frazier Farm PH1A\04-Production\Engineering\Phase1A_CD\2020110039-PH1-G1.dwg, 3/22/2023, 1:53:53 AM, Eric Domoneil



ALIGNMENT - STREET A



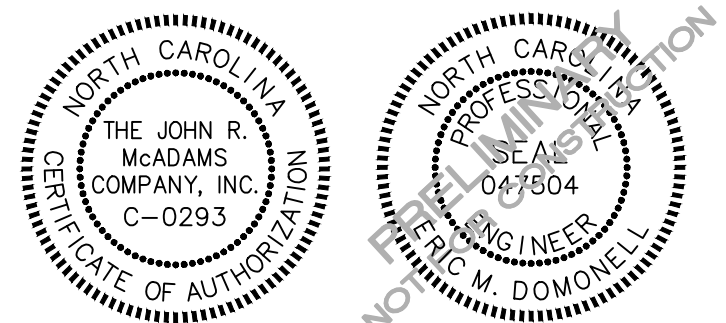
FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION



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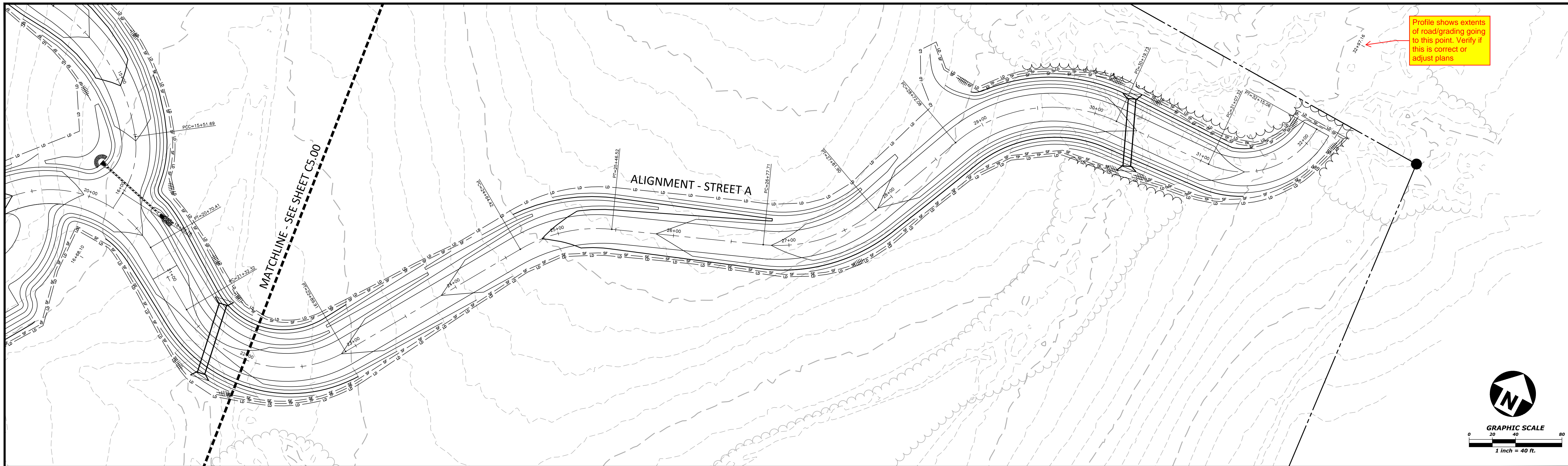
REVISIONS
NO. DATE



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

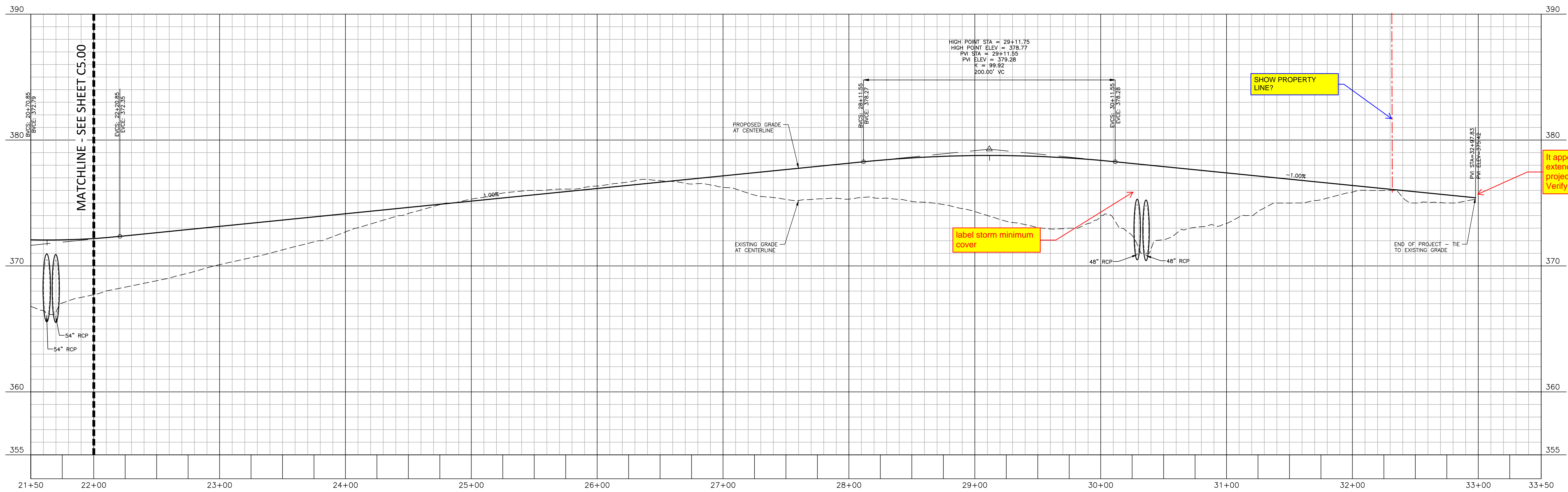
PLAN INFORMATION
PROJECT NO. 2020110039
FILENAME 2020110039-PH1-P1
CHECKED BY EMD
DRAWN BY SME
SCALE H:1"=40' / V:1"=4'
DATE 03.22.2023

PLAN AND PROFILE
STREET "A", STA. 10+00 THRU STA. 22+00
C5.00



Profile shows extents of road/grading going to this point. Verify if this is correct or adjust plans

ALIGNMENT - STREET A



SHOW PROPERTY LINE?

label storm minimum cover

It appears as if this is extending beyond project boundary. Verify this is correct.

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

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION



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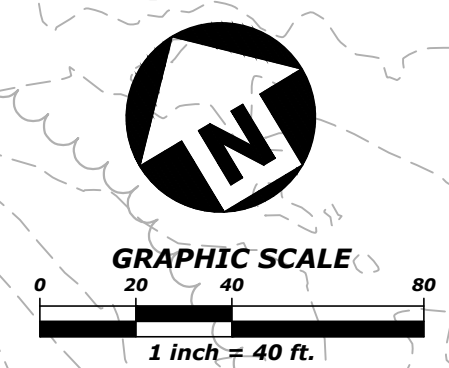
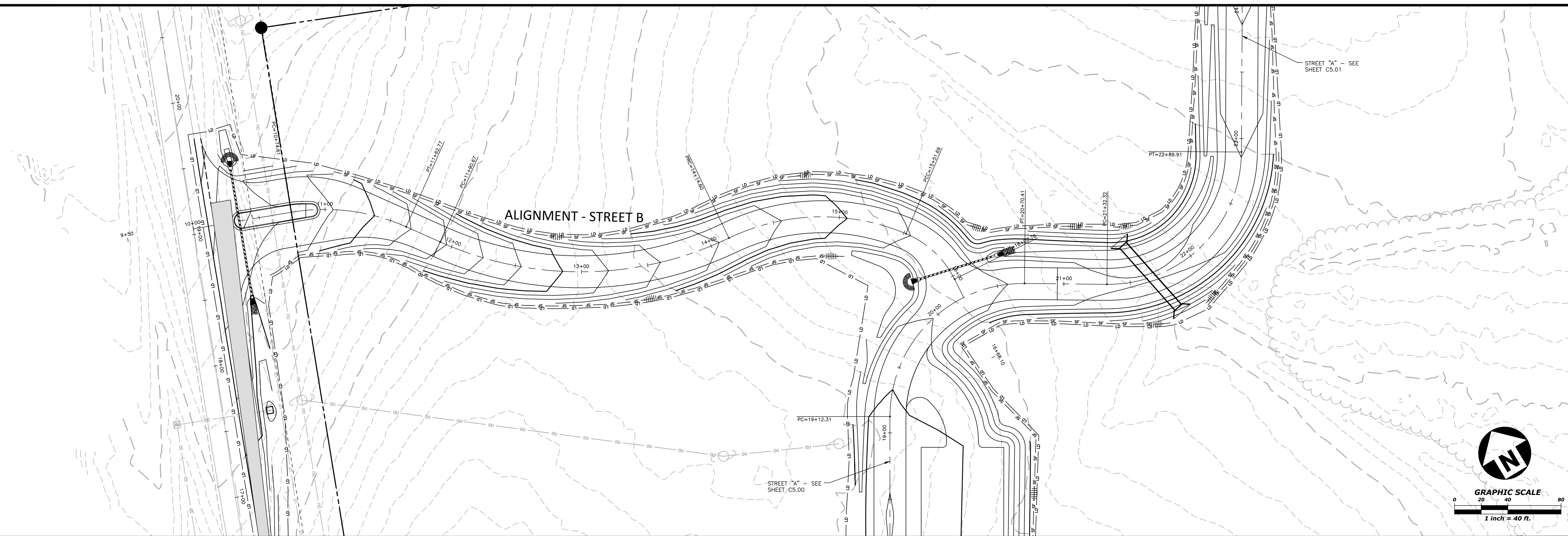
REVISIONS
NO. DATE



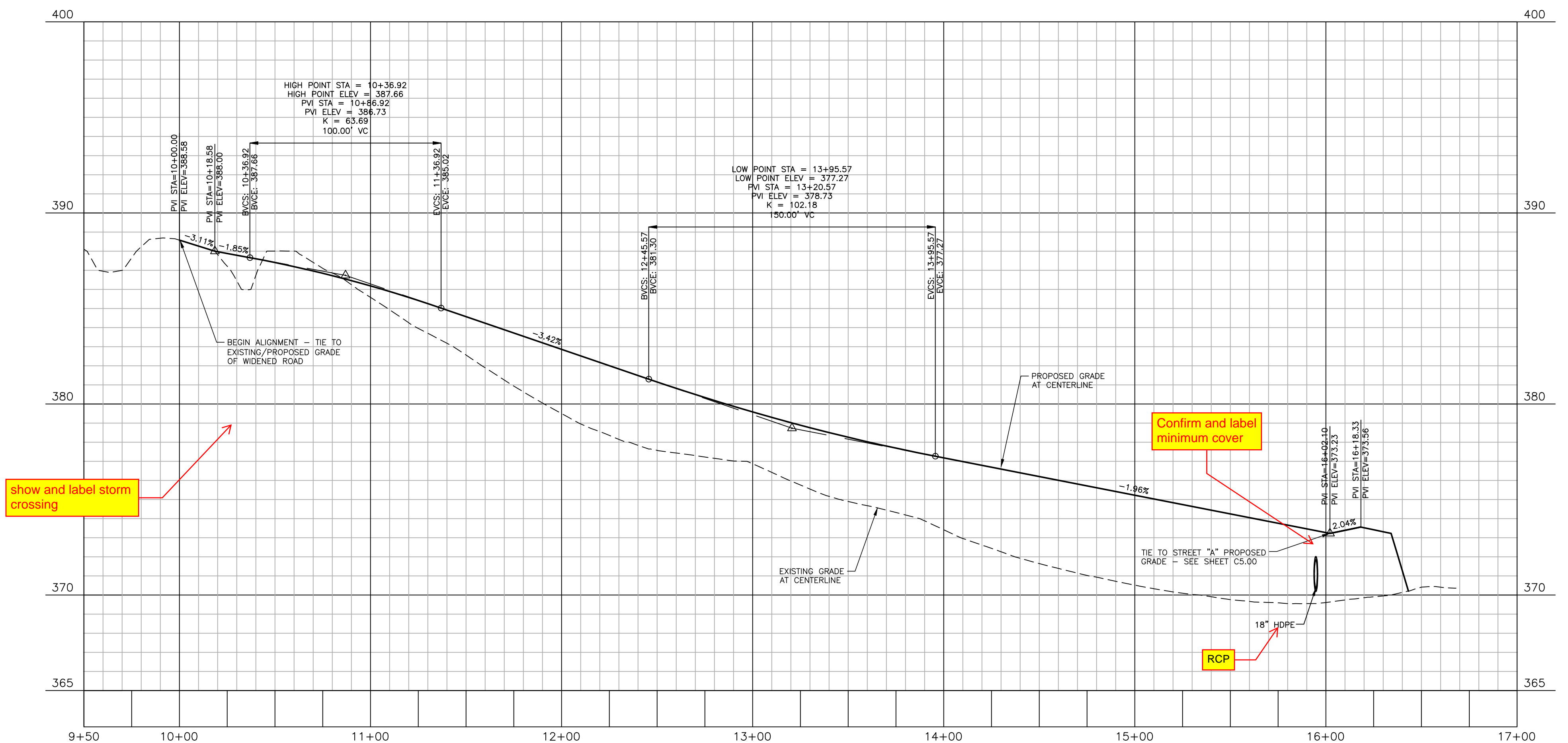
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DATE 03.22.2023

PLAN AND PROFILE
STREET A, STA. 22+00 THRU STA. 33+00
C5.01



ALIGNMENT - STREET B



show and label storm crossing

Confirm and label minimum cover

RCP

M:\Projects\B0110039\Frazier Farm\PH1-1\Production\Engineering\Phase1A\CD\202110039-PH1-1.dwg, 3/22/2023 11:54:04 AM, Eric Domonell

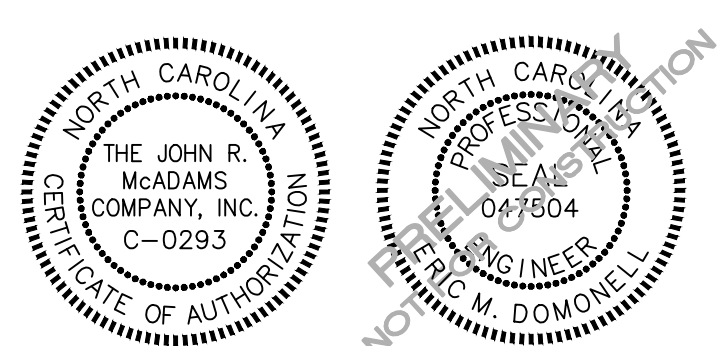
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CONSTRUCTION DRAWINGS - PHASE 1A
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ROLESVILLE, NORTH CAROLINA

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)

- 1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
2. UTILITY SEPARATION REQUIREMENTS:
a. 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.
b. WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'.
c. 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.
d. 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
e. MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS.
f. ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
3. 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.
4. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT.
5. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCEMAINS.
6. 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.
7. INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT.
8. INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
9. 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.
10. 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.
11. NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
12. 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.
13. 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.

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:

- 1. 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.
2. 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.
Upchurch Lane does not appear on plans. There is also no sanitary sewer replacement shown.

TRAFFIC CONTROL:

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

EROSION CONTROL NOTES

- 1. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST TOWN OF ROLESVILLE, CITY OF RALEIGH AND WAKE COUNTY STANDARDS, SPECIFICATIONS AND DETAILS AS APPLICABLE.
2. GRADING AND EROSION CONTROL METHODS SHALL ADHERE TO THE WAKE COUNTY SOIL AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.
3. GRADING AND EROSION CONTROL METHODS SHALL ADHERE TO THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES DIVISION OF WATER QUALITY (DWQ) STANDARDS AND SPECIFICATIONS.
4. 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.
5. 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).
6. 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.
7. 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.
8. THE EROSION CONTROL INSPECTOR MAY REQUIRE ADDITIONAL FIELD MEASURES AS NECESSARY TO PROVIDE ADEQUATE PROTECTION FROM RECEIVING WATER COURSES.
9. 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.
10. 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.
11. A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE AT ALL TIMES.
12. CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GRADING CONTRACTOR UNLESS OTHERWISE NOTED.
13. ANY GRADING BEYOND THE DENUDED LIMITS SHOWN ON THE PLAN IS A VIOLATION OF THE CITY/COUNTY EROSION CONTROL ORDINANCE AND IS SUBJECT TO A FINE.
14. 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.
15. 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.
16. A CONSTRUCTION SEEDING HAS BEEN PROVIDED. INSTALLATION OF ALL PROPOSED SEDIMENTATION & EROSION CONTROL MEASURES IN THE SEQUENCE(S) PROVIDED AND MAINTENANCE OF THOSE DEVICES IS REQUIRED.
17. PROVIDE INLET PROTECTION AROUND ALL SITE STORM INLETS. PROTECT OPEN PIPES UNDER CONSTRUCTION WITH EITHER PLW/WOOD OR WITH MESH AND GRAVEL WEIRS.
18. CONTRACTOR WILL FIELD LOCATE SILT FENCE OUTLETS AT LOW POINTS IN SILT FENCE AS REQUIRED TO PROVIDE RELIEF FROM CONCENTRATED FLOWS.
19. 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.
20. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
21. 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.
22. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SAFE OPEN ACCESS TO ALL PROPERTIES ALONG ADJACENT PROPERTIES DURING CONSTRUCTION PERIOD FOR IMPROVEMENTS.
23. SANITARY SEWER STRUCTURE LOCATIONS AND PIPE SIZES SUBJECT TO FINAL CONSTRUCTION DRAWING APPROVAL.

CONSTRUCTION SEQUENCE:

- 1. OBTAIN GRADING PERMIT FROM THE WAKE COUNTY ENVIRONMENTAL SERVICES DEPARTMENT.
2. CALL ENVIRONMENTAL CONSULTANT JEEVAN NEUPANE, PE (919-819-8907) TO SCHEDULE A PRE-CONSTRUCTION MEETING.
3. CONTRACTOR WILL BE REQUIRED TO SUBMIT SITE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY (NCG10000) TO WAKE COUNTY INSPECTIONS THROUGHOUT THE PROJECT.
4. INSTALL THE FOLLOWING EROSION AND SEDIMENTATION CONTROL DEVICES PER THE APPROVED PLAN IN THE FOLLOWING ORDER:
a. TREE PROTECTION FENCE
b. SILT FENCING SURROUNDING SITE WITH SILT FENCE OUTLETS.
c. INLET PROTECTION FOR EXISTING INLETS WITH ROADWAYS.
5. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES.
6. CLEAR AND GRUB AREA FOR FUTURE CONSTRUCTION.
7. CALL WAKE COUNTY ENVIRONMENTAL SERVICES FOR INSPECTION.
8. MAINTAIN DEVICES AS NEEDED IN ACCORDANCE WITH THE NOTES ON THIS SHEET.
9. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 14 DAYS OF INACTIVITY.
10. CONTRACTOR SHALL INSPECT AND REPAIR ALL EROSION CONTROL DEVICES ONCE PER WEEK AND AFTER EVERY RAINFALL EVENT.
11. BEGIN CONSTRUCTION OF SANITARY SEWER INTERCEPTOR.
12. SUBMIT DOCUMENTATION REQUIRED UNDER THE SITE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY (NCG10000) TO WAKE COUNTY THROUGHOUT THE PROJECT.
13. ALL OFF-SITE STREETS SHALL BE KEPT CLEAN AS NOTED IN EROSION CONTROL NOTES DURING HAUL OFF OF EXCAVATED MATERIAL.
14. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 14 DAYS OF INACTIVITY.
15. 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

- 1. 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.
2. THE SEDIMENT BASINS SHALL BE INSPECTED REGULARLY DURING LAND DISTURBING ACTIVITIES AND AFTER EACH RUNOFF-PRODUCING RAINFALL.
3. SEDIMENT FENCES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL.
4. DIVERSION DITCHES MUST REMAIN IN PLACE UNTIL PROJECT IS STABILIZED.

STOCKPILE NOTES

DESIGN CRITERIA

- A. STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
B. STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
C. STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
D. OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDO AND STATE REGULATIONS.
E. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS.
F. 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.
G. THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE IS REQUIRED.
H. ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).
I. 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.

Table with 3 columns: SEEDING PERIOD, TYPE, APPLICATION RATE (PER ACRE, PER 1000 SF). Rows include August 15 - November 1, November 1 - March 1, March 1 - April 15, April 15 - June 30, July 1 - August 15.

Table with 3 columns: SEEDING PERIOD, TYPE, APPLICATION RATE (PER ACRE, PER 1000 SF). Rows include March 1 - June 1, March 1 - April 15, March 1 - June 30, June 1 - September 1, September 1 - March 1, November 1 - March 1.

*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 DENUDED AREAS.

SEEDBED PREPARATION

- 1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6-INCH DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLE SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLE UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE.

- * 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



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



REVISIONS

NO. DATE

PLAN INFORMATION

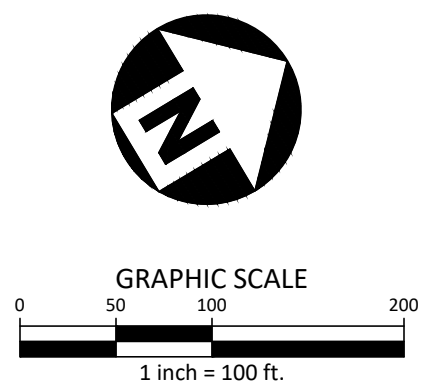
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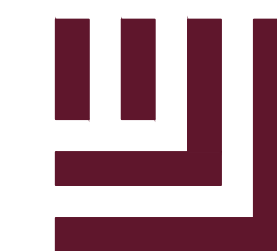
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EROSION CONTROL NOTES

C6.00

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





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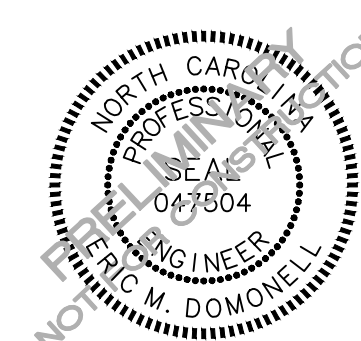
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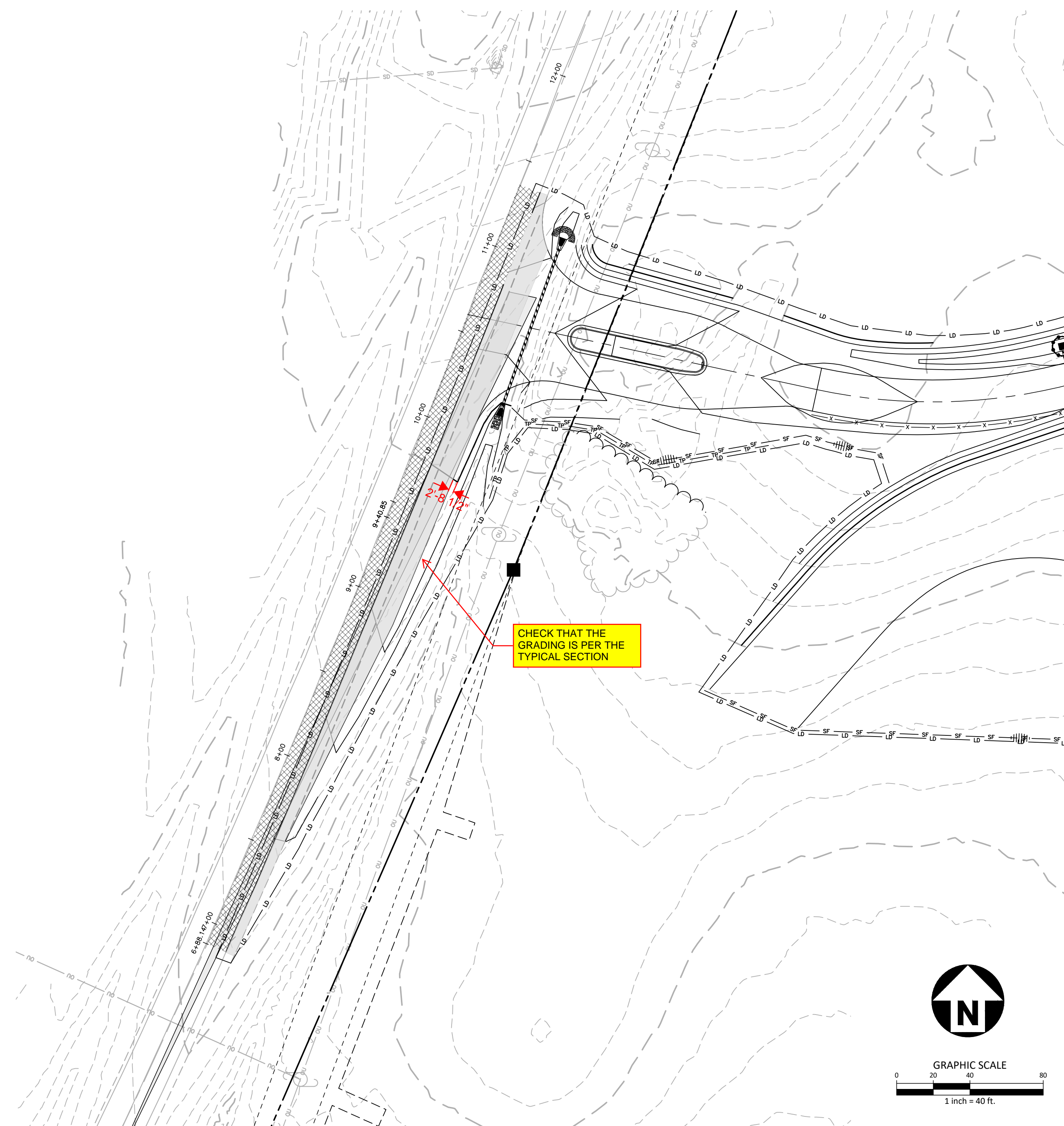
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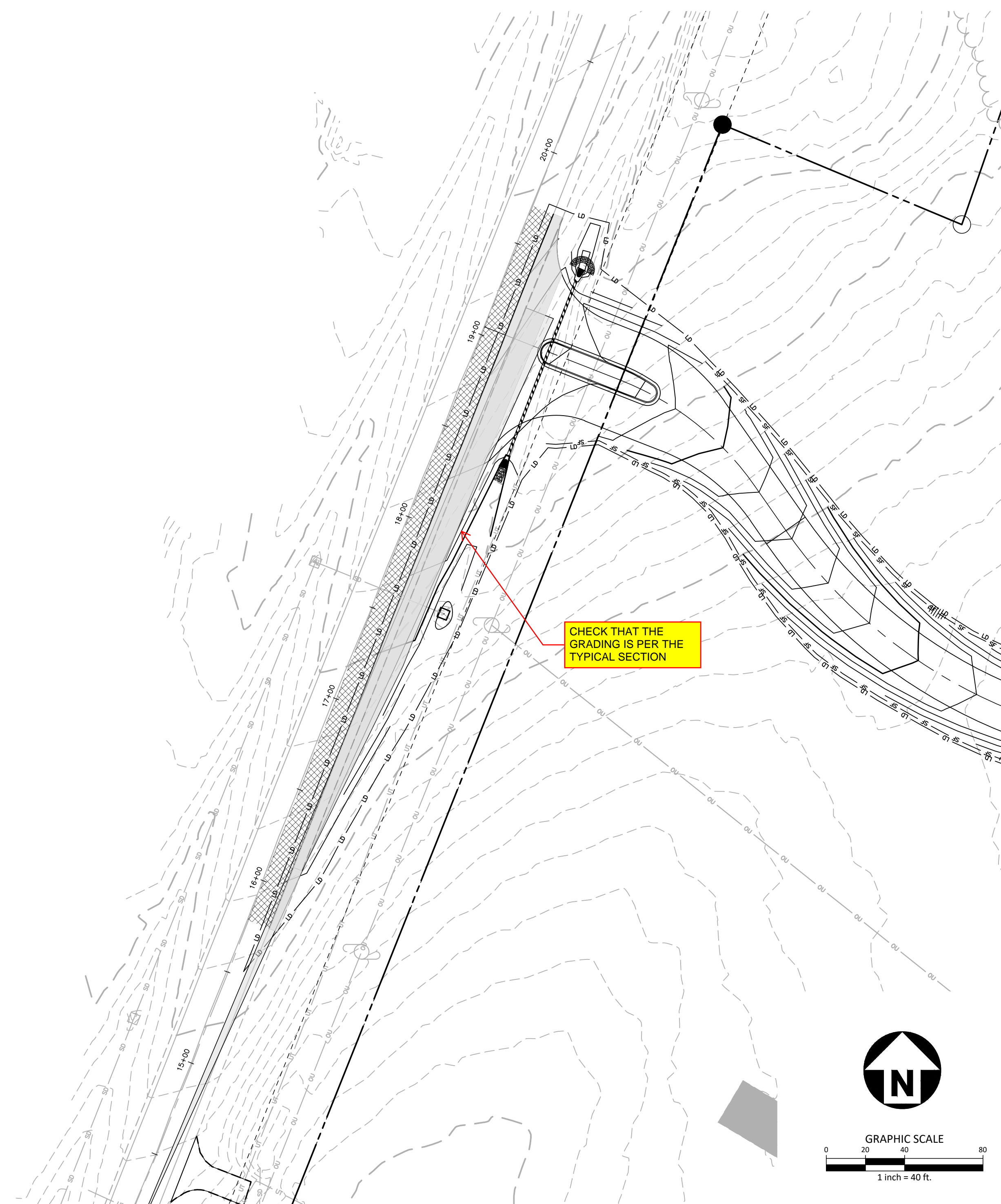
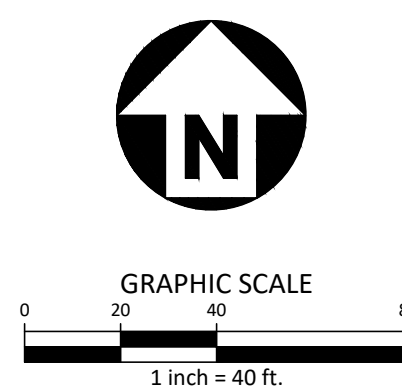
**LOUISBURG RD
WIDENING PLAN**

C7.00

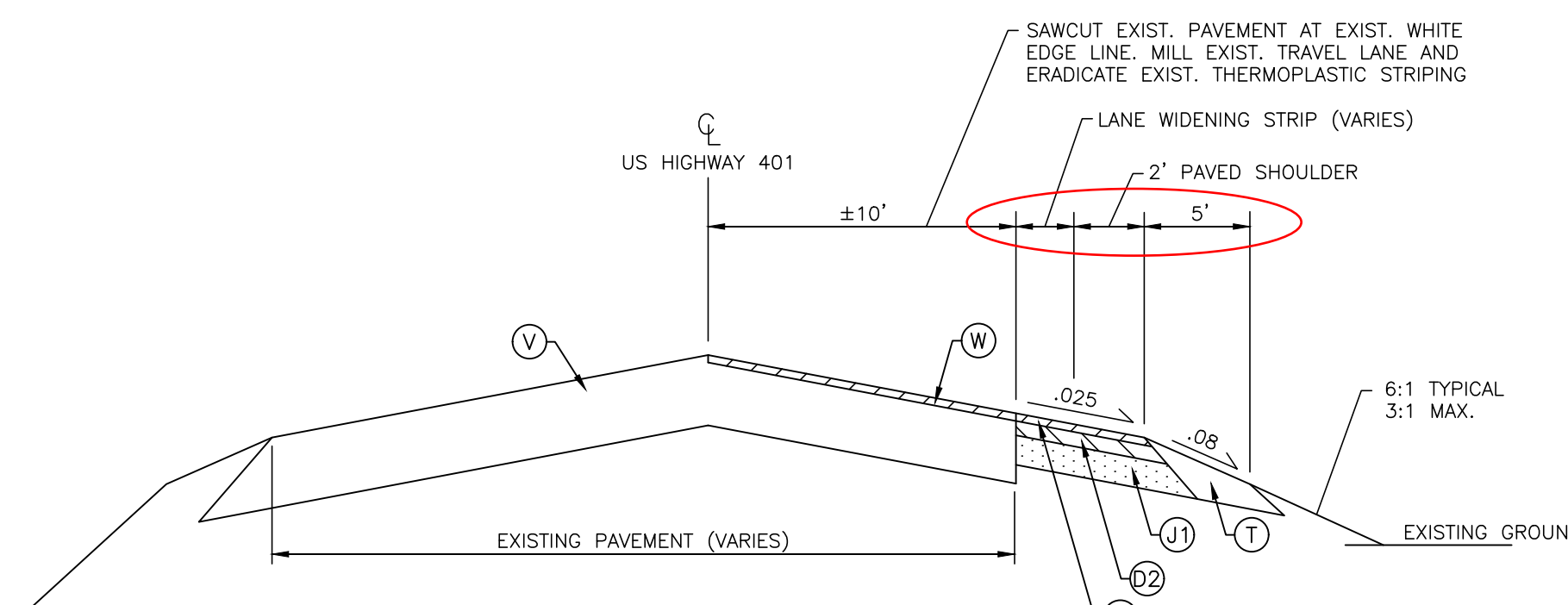
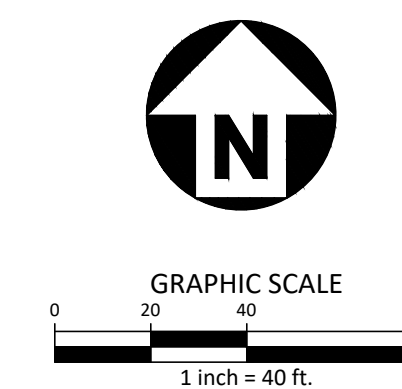
PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



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**

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

PAVEMENT MARKING LEGEND

- LANE LINES/MARKINGS**
- T1 16" WHITE LINE, RAILROAD CROSSBAR
 - T2 24" WHITE STOPBAR
 - T3 24" WHITE CROSSWALK LINE (HIGH VISIBILITY)
 - T4 4" WHITE RUMBLE STRIP
 - T5 4" YELLOW RUMBLE STRIP
 - T6 6" WHITE EDGE LINE
 - T7 6" YELLOW EDGE LINE
 - T8 4" WHITE MINISKIP (2' - 6' SP.)
 - T9 4" YELLOW MINISKIP (2' - 6' SP.)
 - T10 12" WHITE MINISKIP (3' - 3' SP.) (ROUNDBABOUTS ONLY)
 - T11 6" WHITE MINISKIP (2' - 6' SP.)
 - T12 6" YELLOW MINISKIP (2' - 6' SP.)
 - T13 8" WHITE MINISKIP (3' - 9' SP.)
 - T14 12" WHITE MINISKIP (3' - 9' SP.)
 - T15 6" YELLOW SINGLE CENTER
 - T16 6" YELLOW DOUBLE CENTER
 - T17 8" WHITE MINISKIP (3' - 3' SP.) (ROUNDBABOUTS ONLY)
 - TA 4" WHITE EDGE LINE
 - TB 4" YELLOW EDGE LINE
 - TC 4" WHITE SKIP (10' - 30' SP.)
 - TD 4" WHITE MINISKIP (3' - 9' SP.)
 - TE 4" WHITE SOLID LANE LINE
 - TF 4" YELLOW SKIP (10' - 30' SP.)
 - TH 4" YELLOW SINGLE CENTER
 - TI 4" YELLOW DOUBLE CENTER
 - TJ 6" WHITE SKIP (10' - 30' SP.)
 - TK 6" WHITE MINISKIP (3' - 9' SP.)
 - 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)

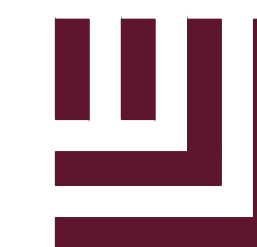
- ARROWS/CHARACTERS**
- UA LEFT TURN ARROW
 - UB RIGHT TURN ARROW
 - UC STRAIGHT ARROW
 - UD COMBINATION STRAIGHT/LEFT TURN ARROW
 - UE COMBINATION STRAIGHT/RIGHT TURN ARROW
 - UF COMBINATION LEFT/RIGHT ARROW
 - UG COMBINATION LEFT/STRAIGHT/RIGHT ARROW
 - UH HANDICAP PARKING
 - UI ALPHANUMERIC CHARACTER
 - UJ BICYCLE STRAIGHT ARROW
 - UK BICYCLE CHARACTER
 - UL BICYCLE CHARACTER
 - UM 12" YIELD LINE TRIANGLE
 - UN 24" YIELD LINE TRIANGLE
 - UO BICYCLE LEFT ARROW
 - UP MERGE ARROW
 - UQ RAMP ARROW SYMBOL
 - UR SHARROW
 - US BICYCLE LOOP DETECTOR
 - UT U-TURN ARROW
 - UU FISH-HOOK STRAIGHT ARROW
 - UV FISH-HOOK STRAIGHT/LEFT ARROW
 - UW FISH-HOOK STRAIGHT/RIGHT ARROW
 - UX FISH-HOOK LEFT/RIGHT ARROW
 - UY FISH-HOOK LEFT/STRAIGHT/RIGHT ARROW
 - UZ FISH-HOOK W/CIRCLE STRAIGHT ARROW
 - VA FISH-HOOK W/CIRCLE LEFT ARROW
 - VB FISH-HOOK W/CIRCLE STRAIGHT/LEFT ARROW
 - VC FISH-HOOK W/CIRCLE LEFT/STRAIGHT/RIGHT ARROW

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

ROAD WIDENING LEGEND

- NEW FULL DEPTH PAVEMENT
- MILLING LIMITS

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FRAZIER FARM PARK
CONSTRUCTION DRAWINGS
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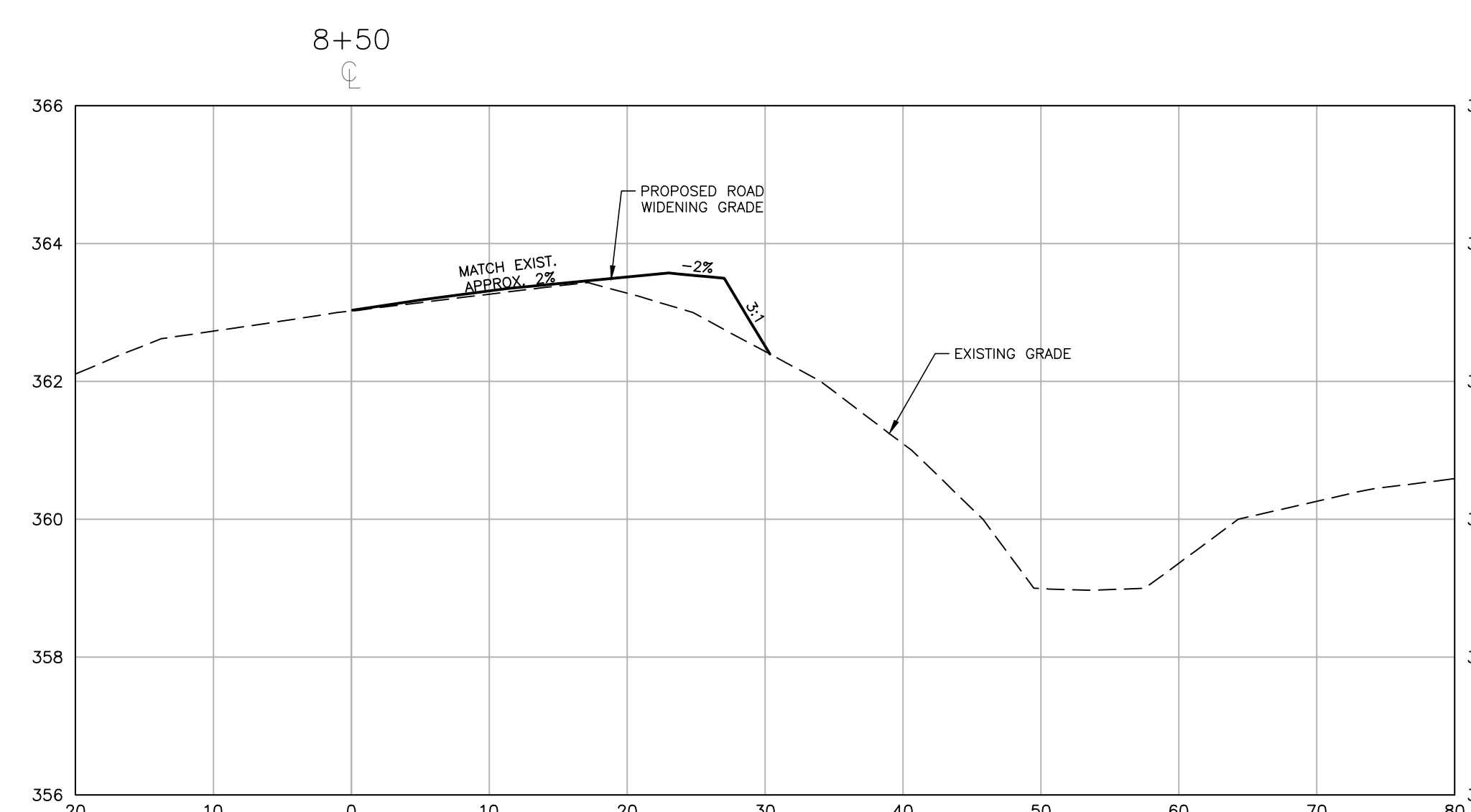
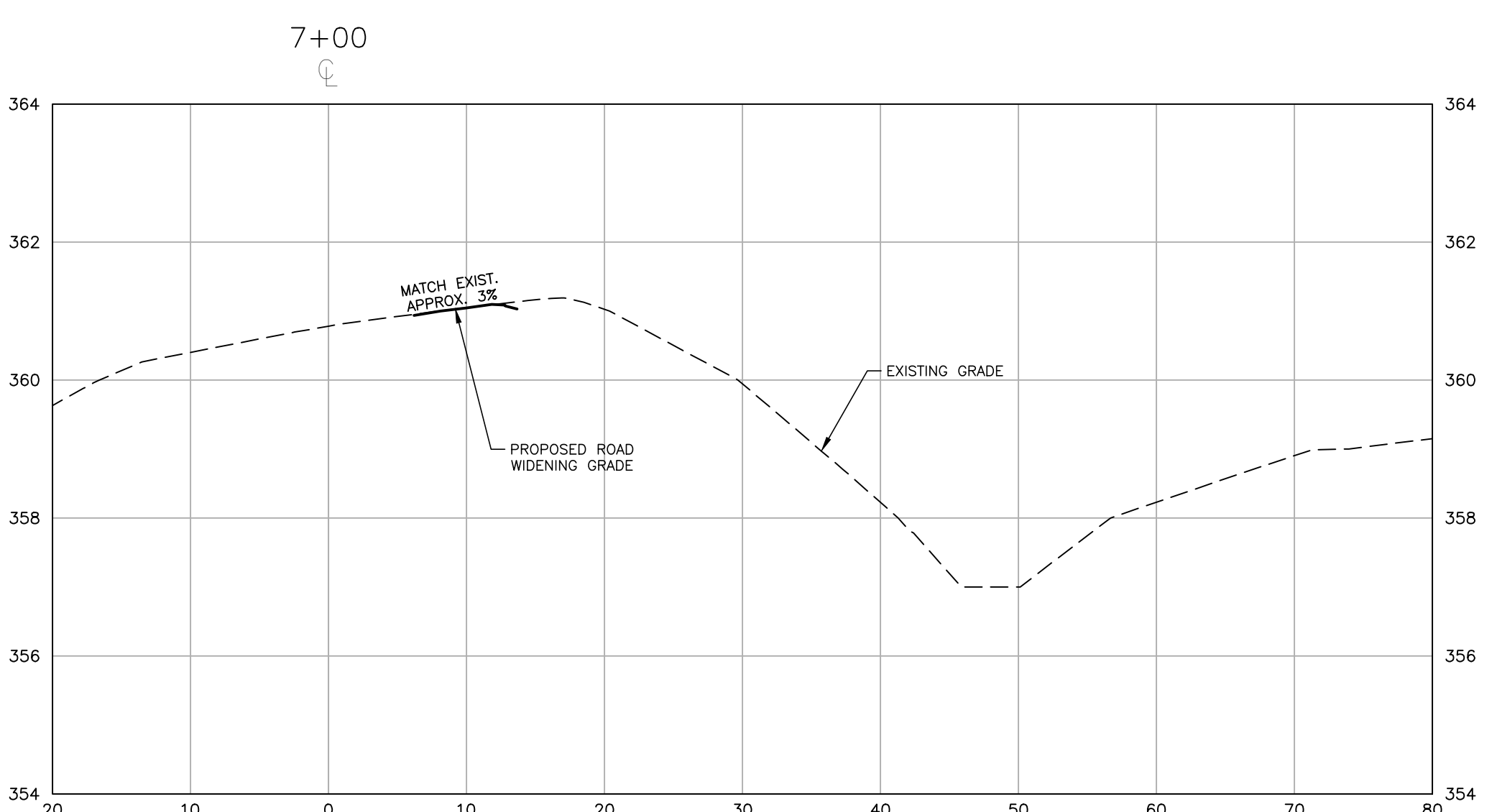
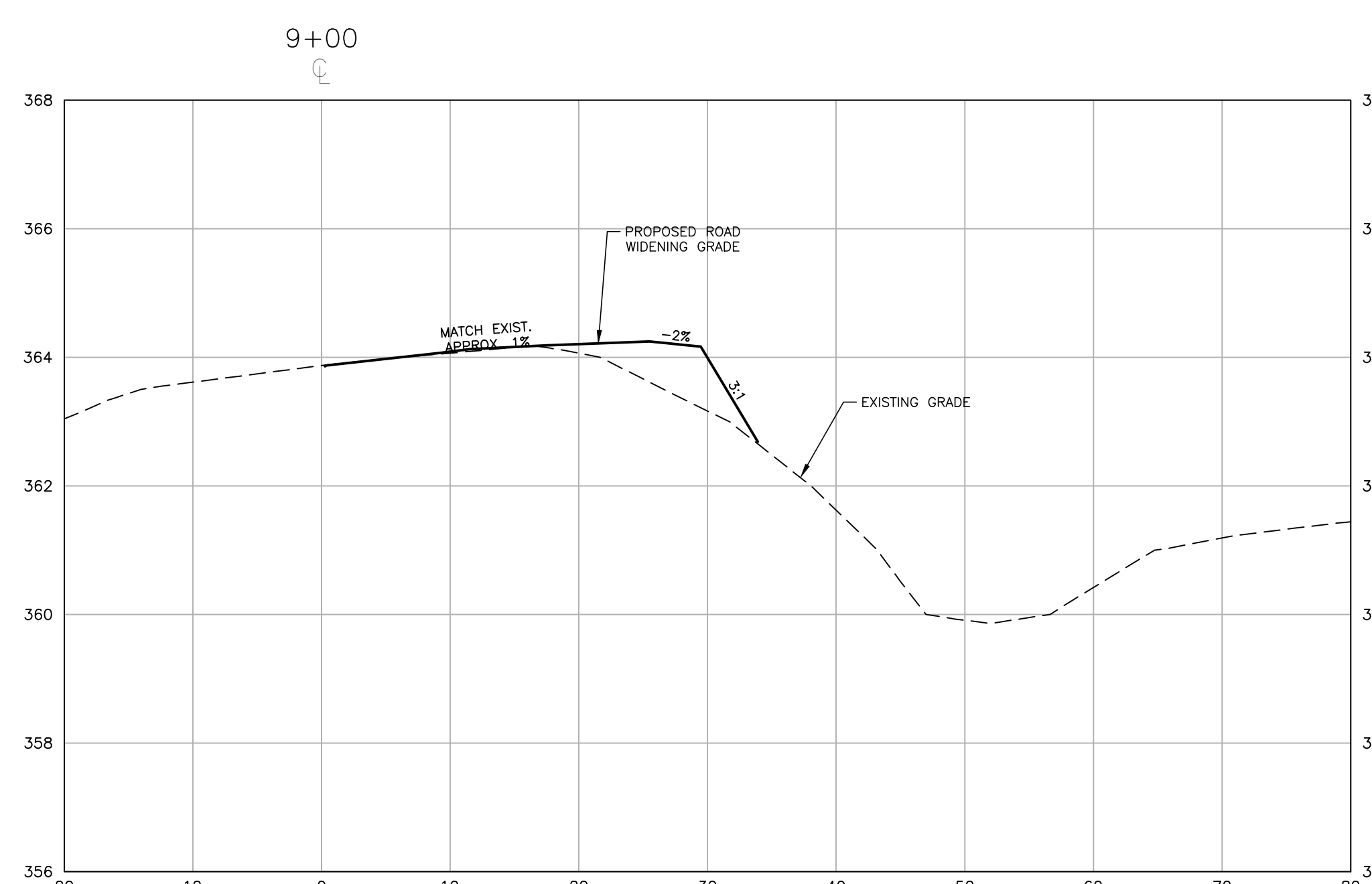
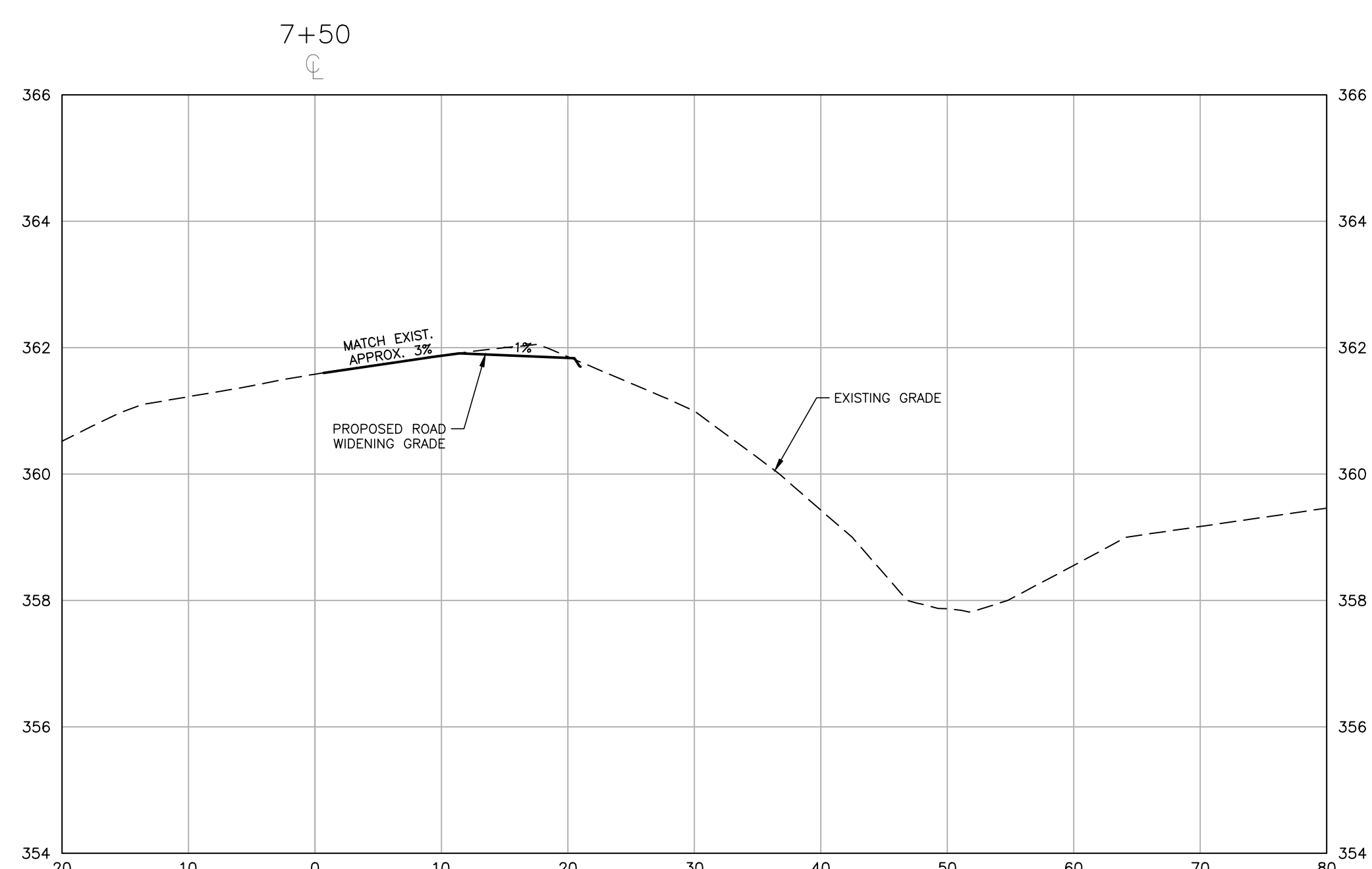
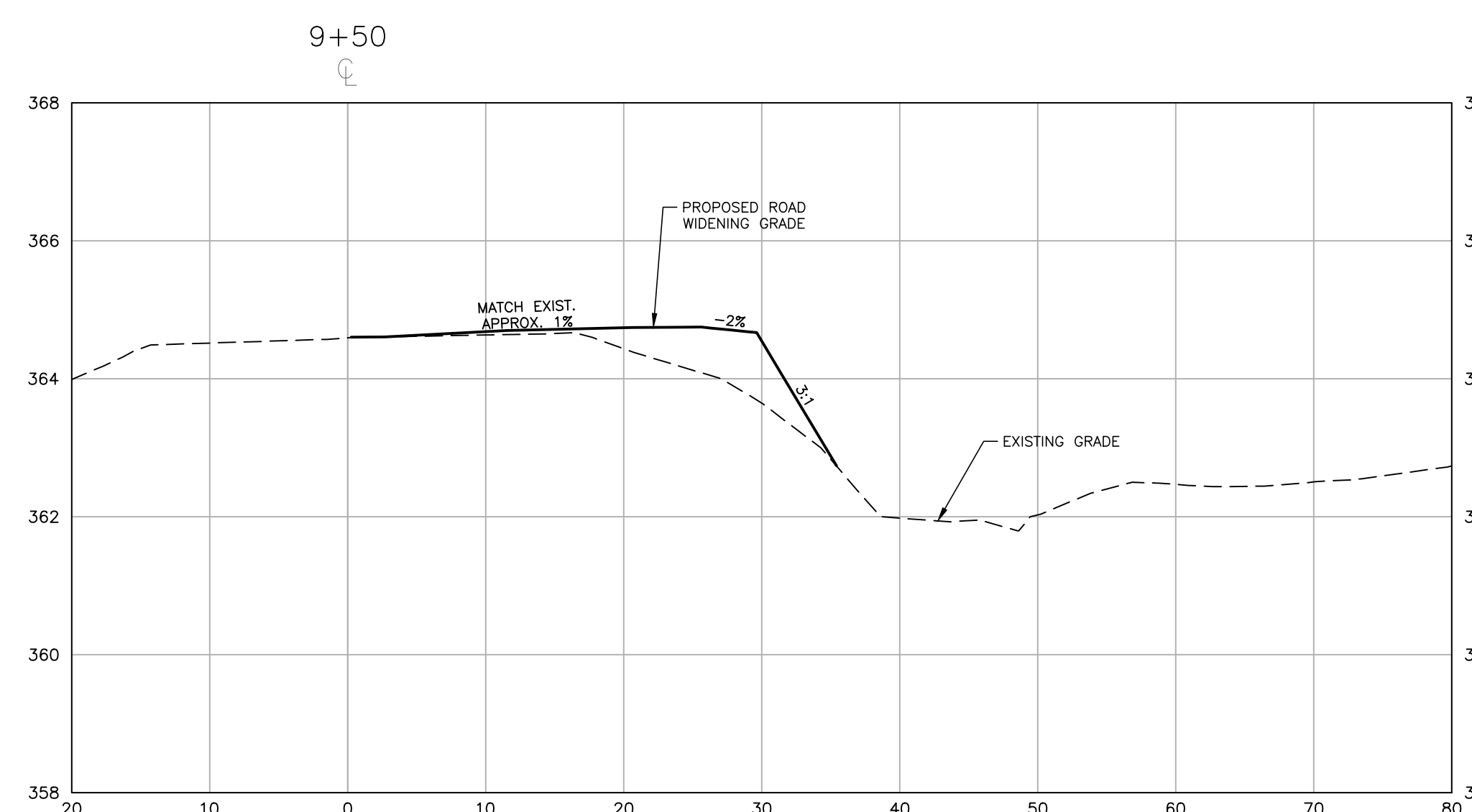
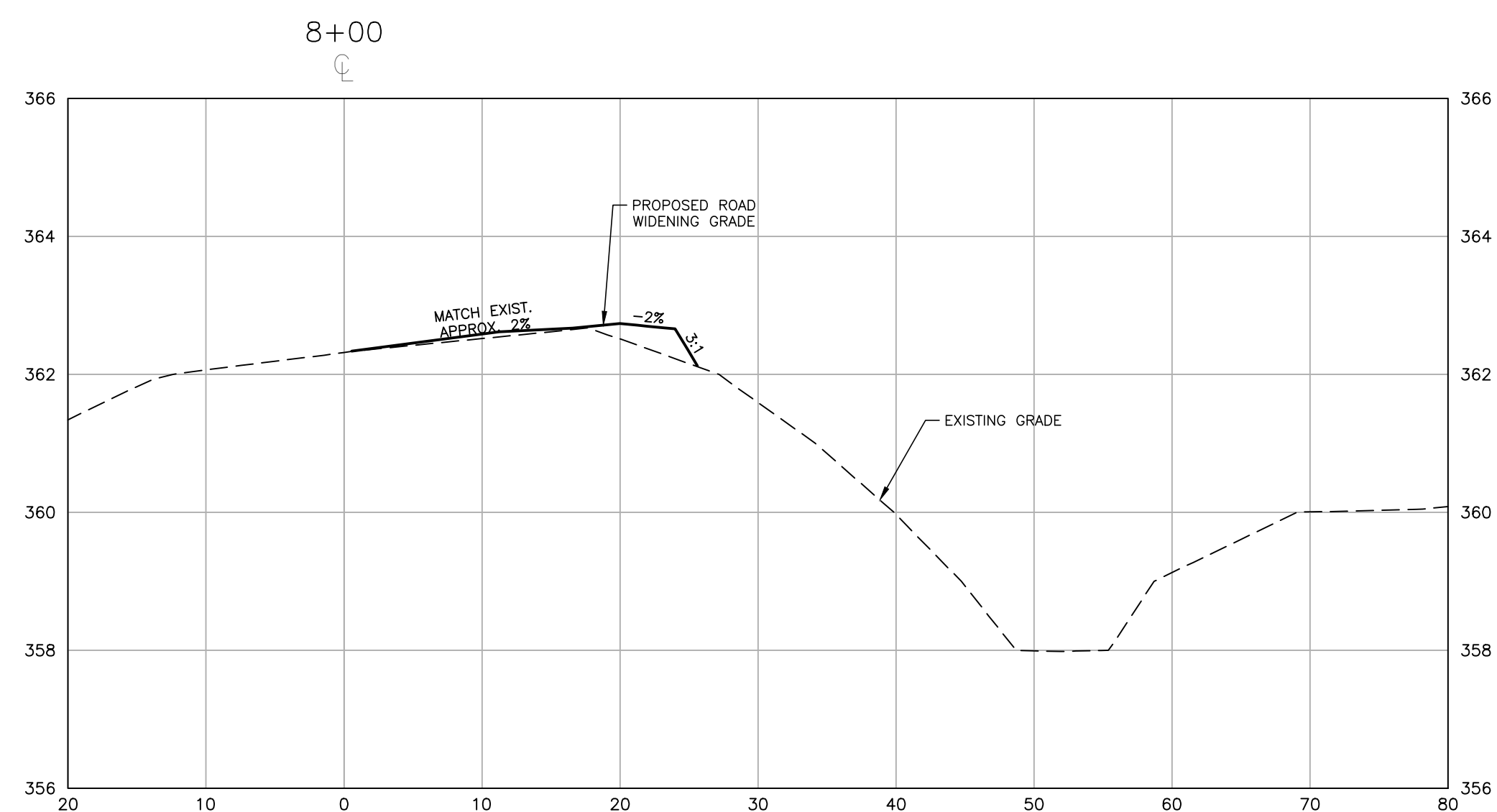
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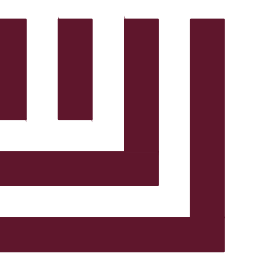
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**LOUISBURG RD
WIDENING
CROSS SECTIONS**

C7.01



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**FRAZIER FARM PARK
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ROLESVILLE, NORTH CAROLINA**



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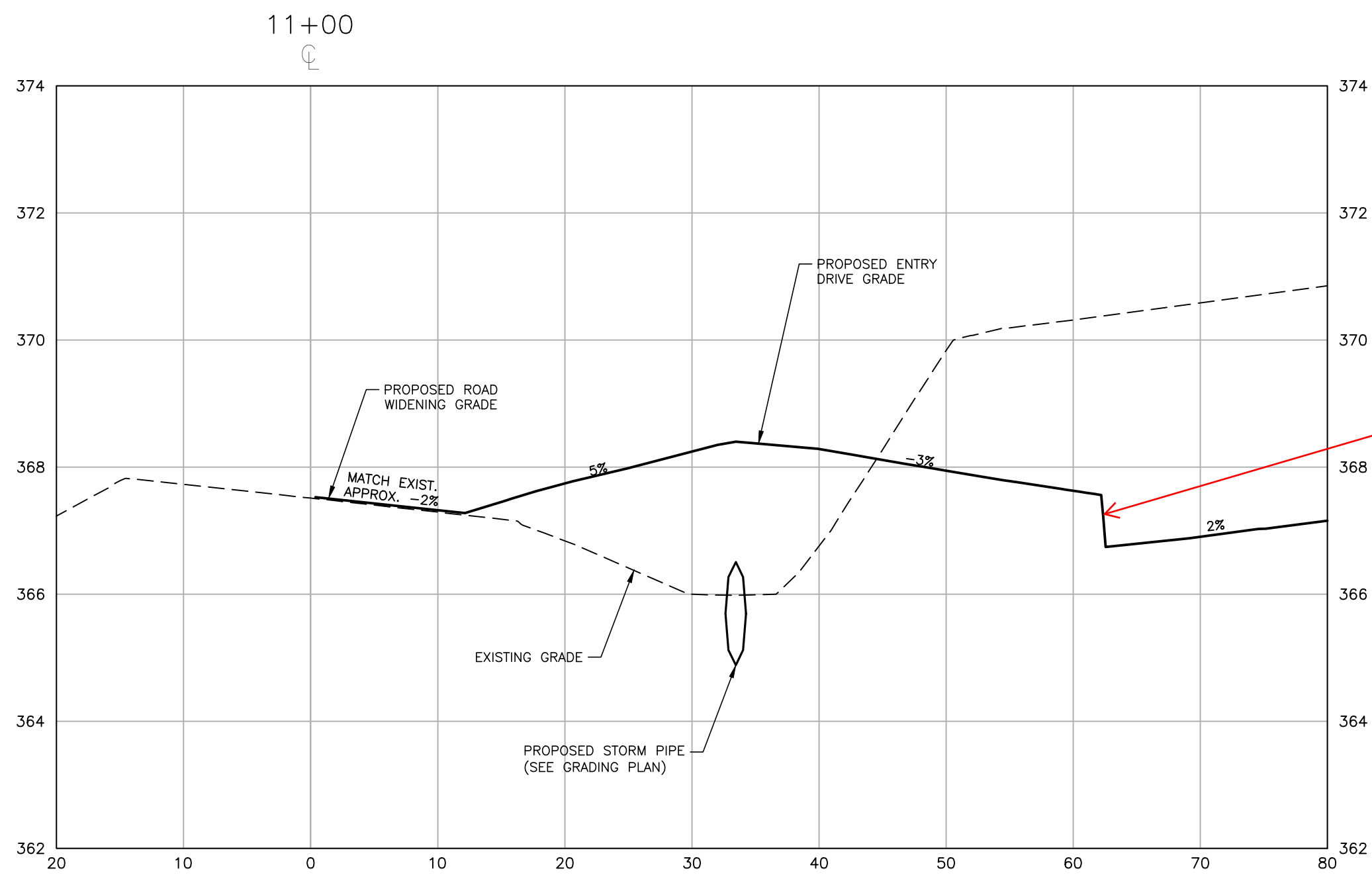
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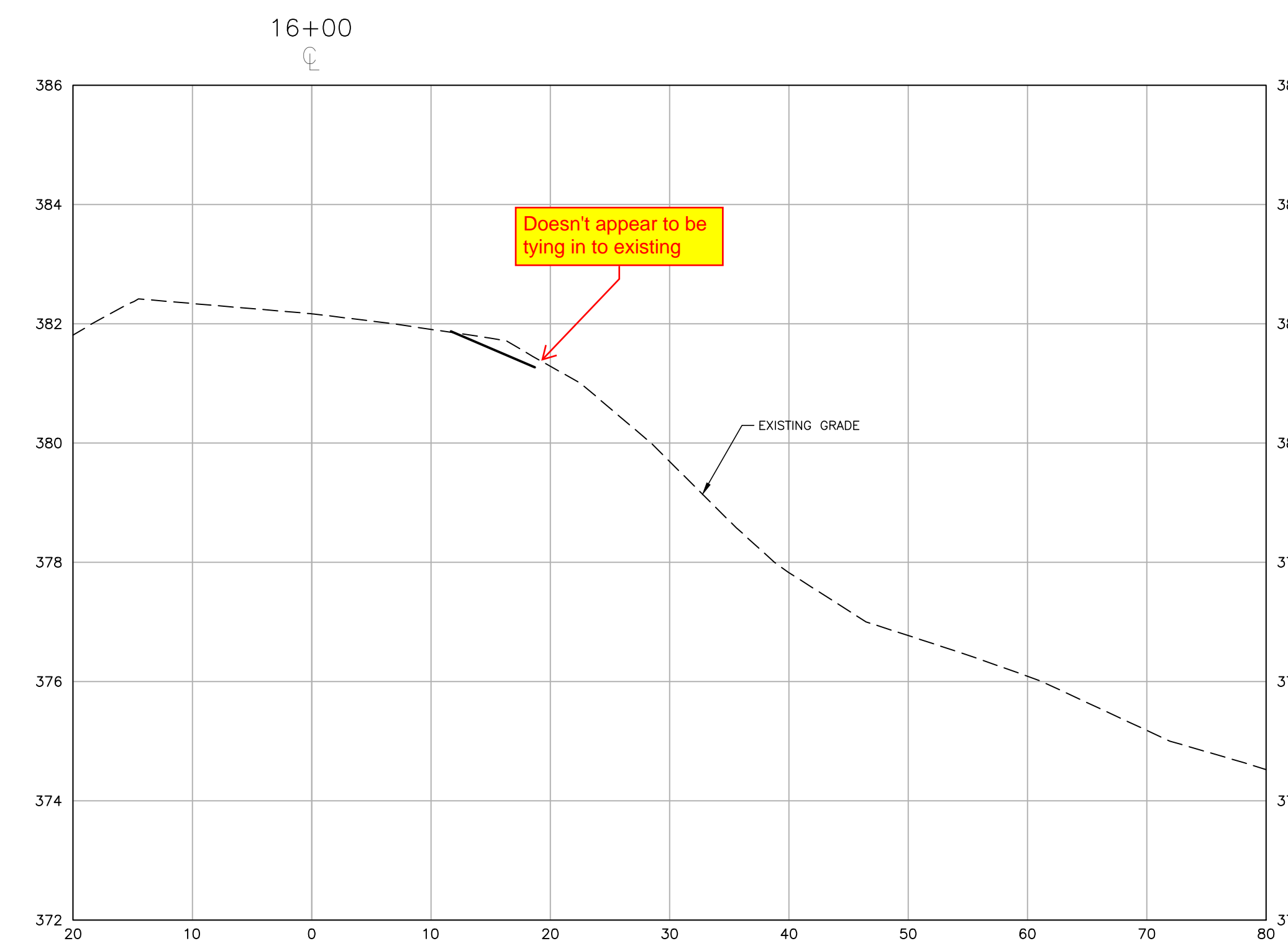
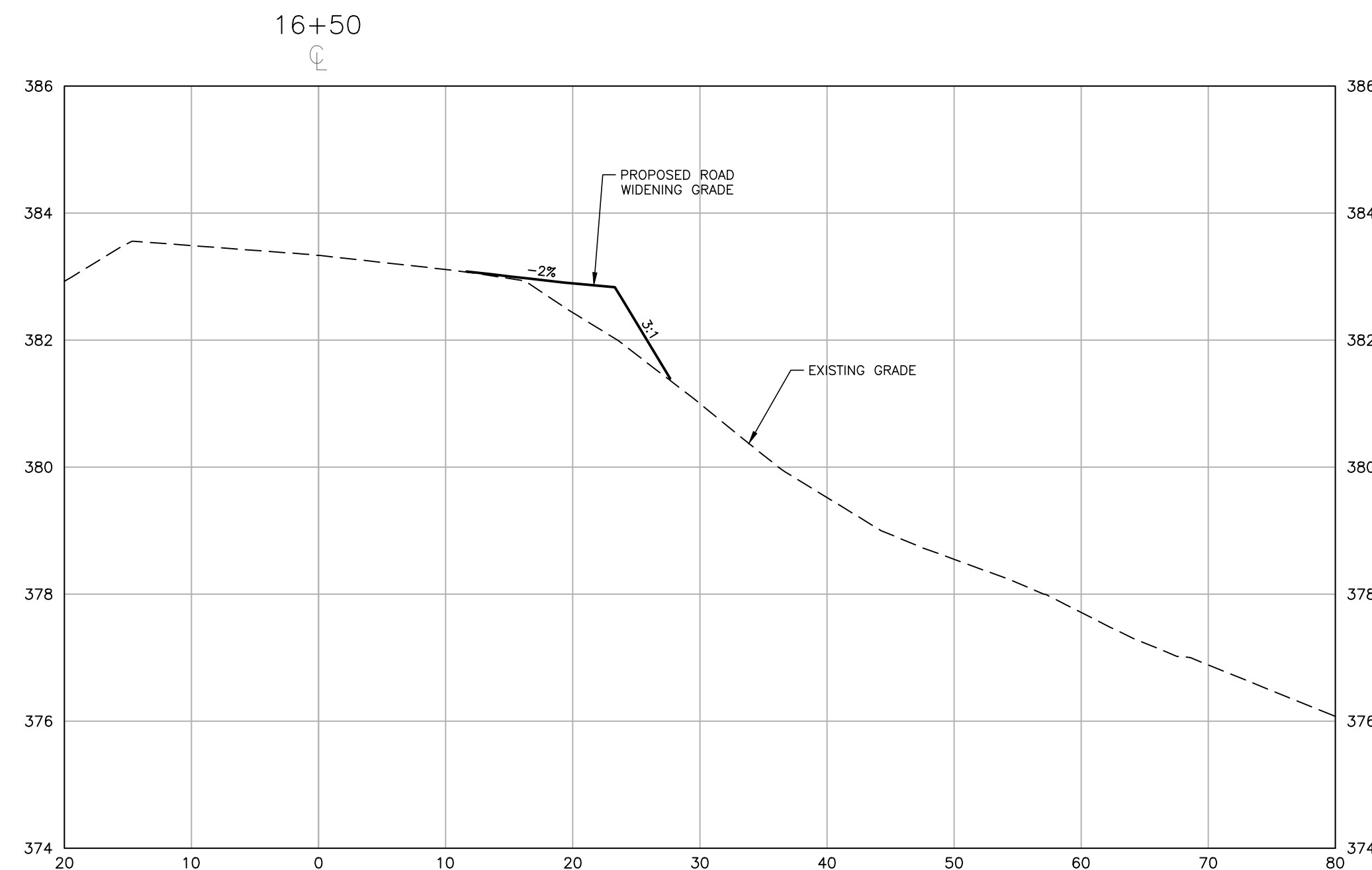
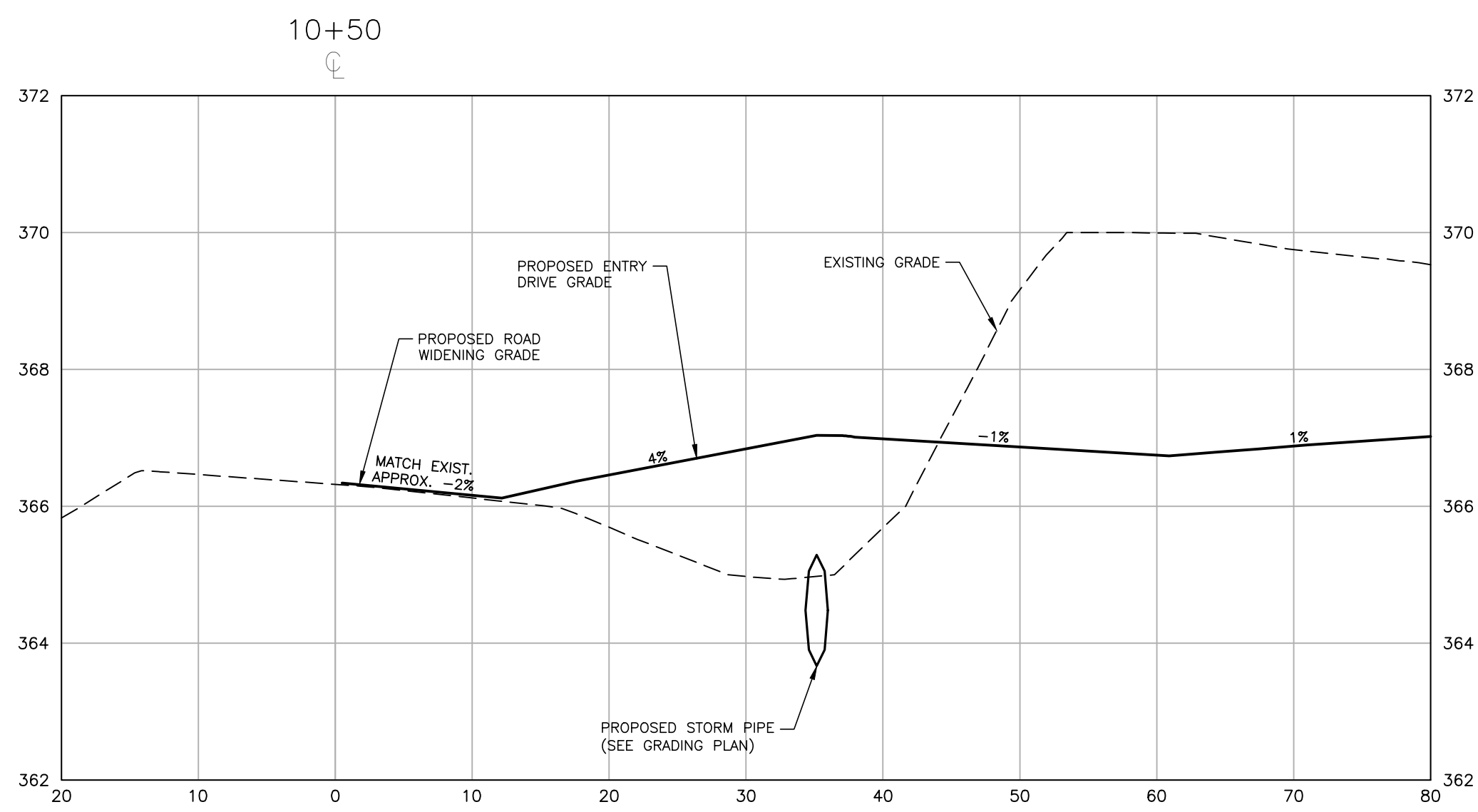
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**LOUISBURG RD
WIDENING
CROSS SECTIONS**

C7.02



Is this correct? This seems steep and there does not appear to be curb where a jump would occur.



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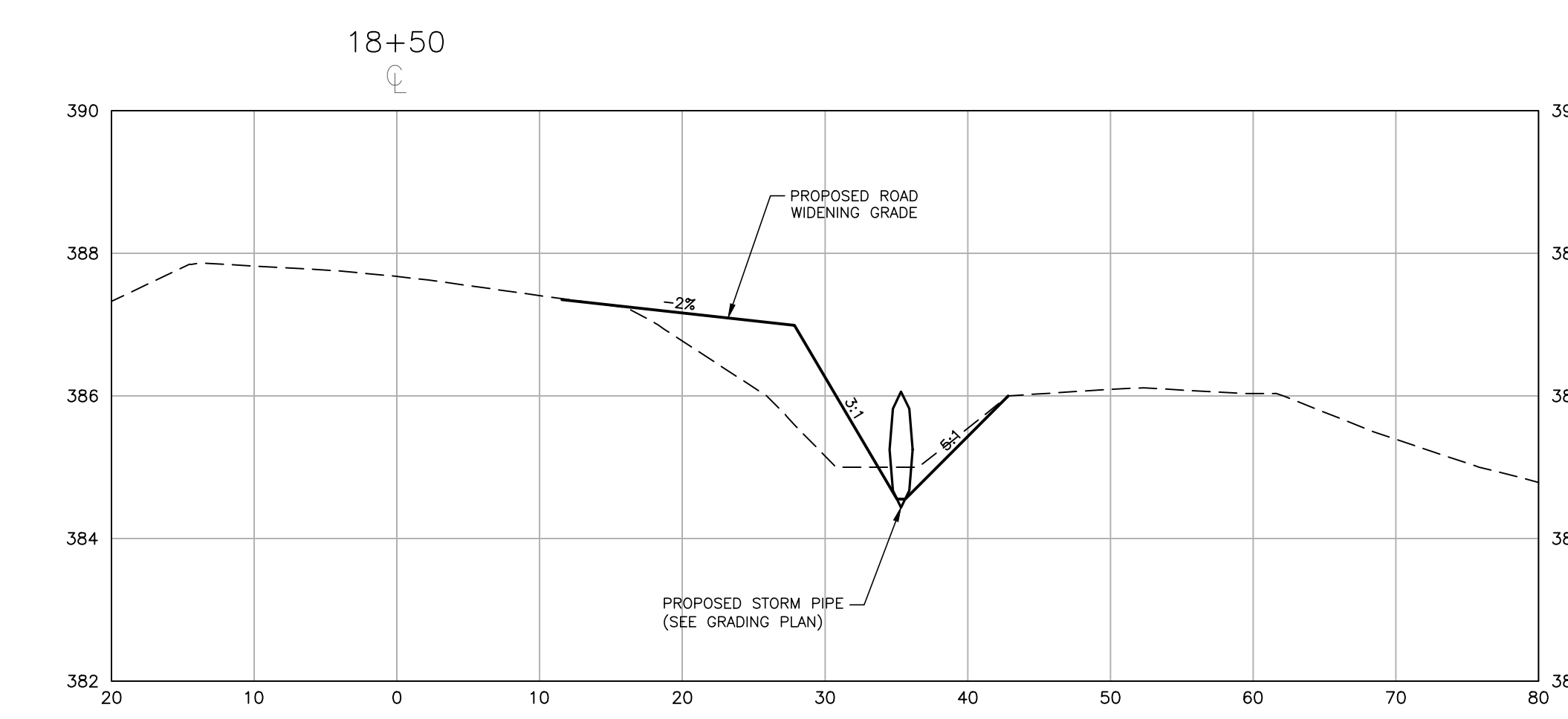
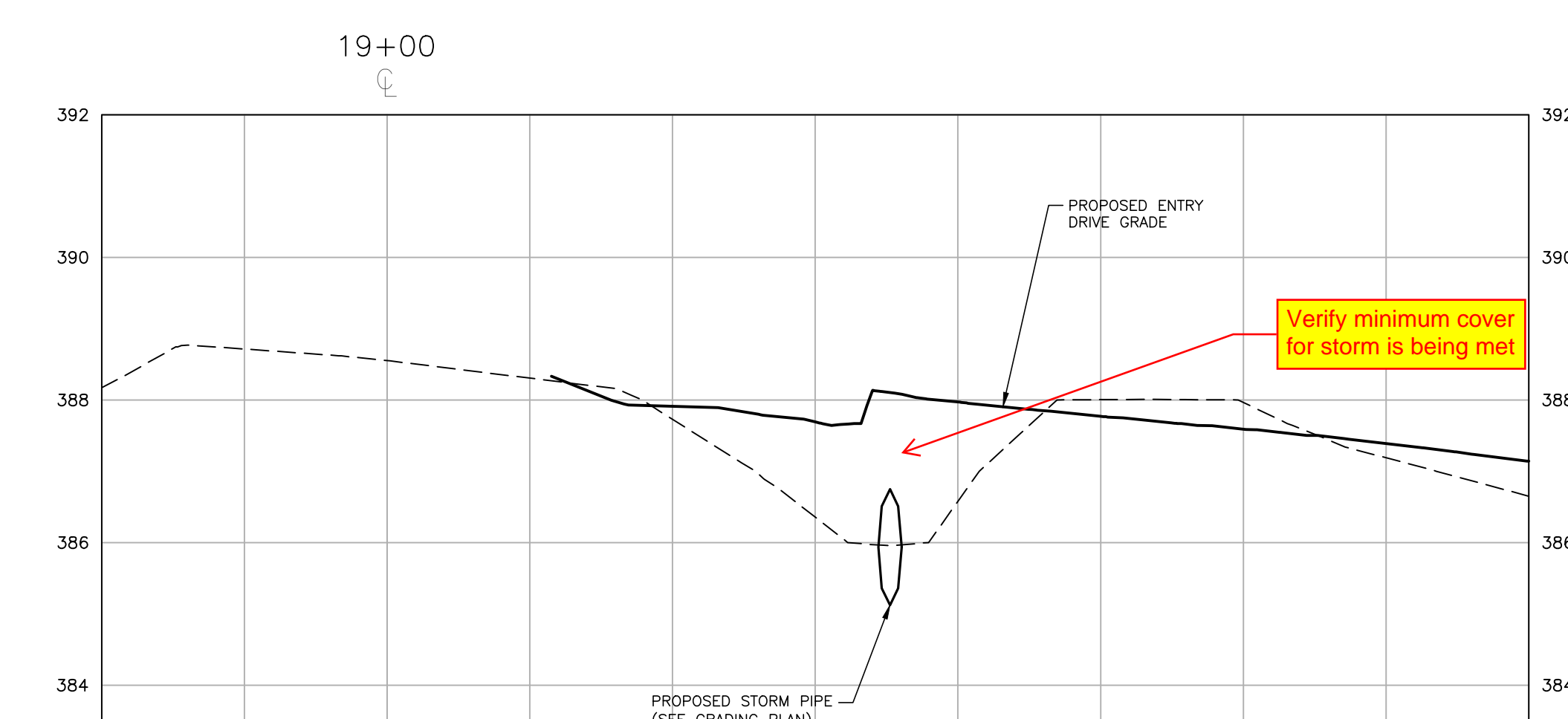
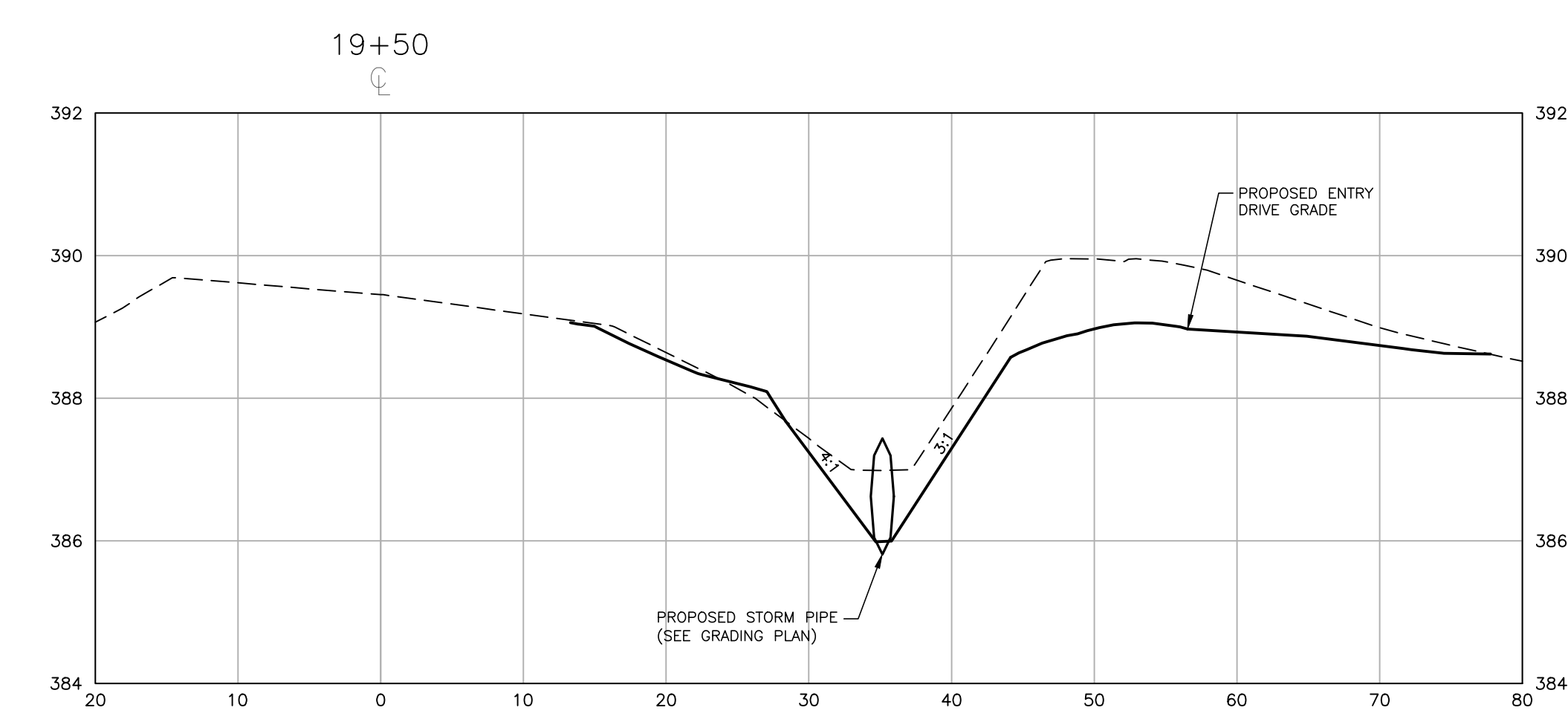
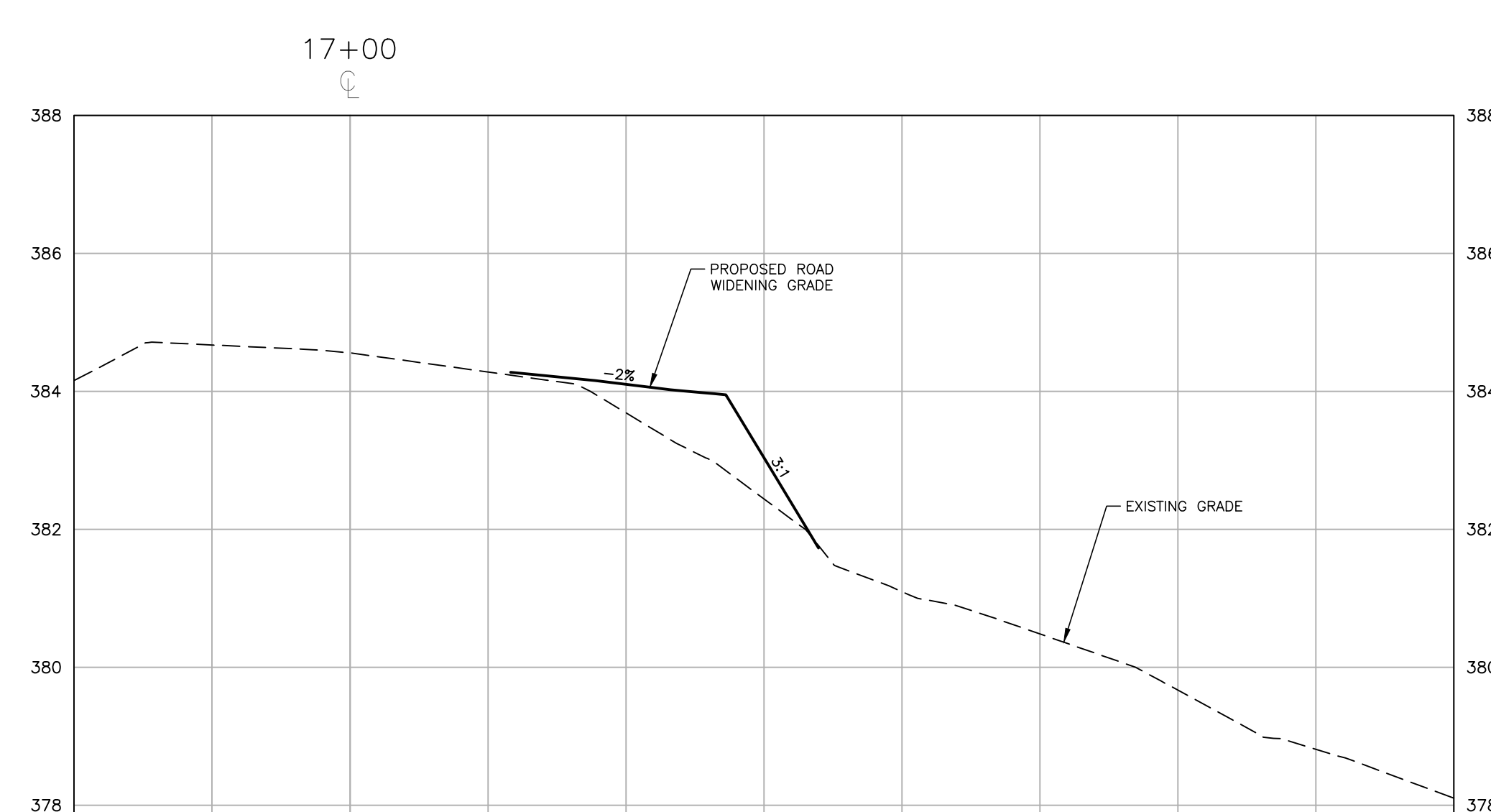
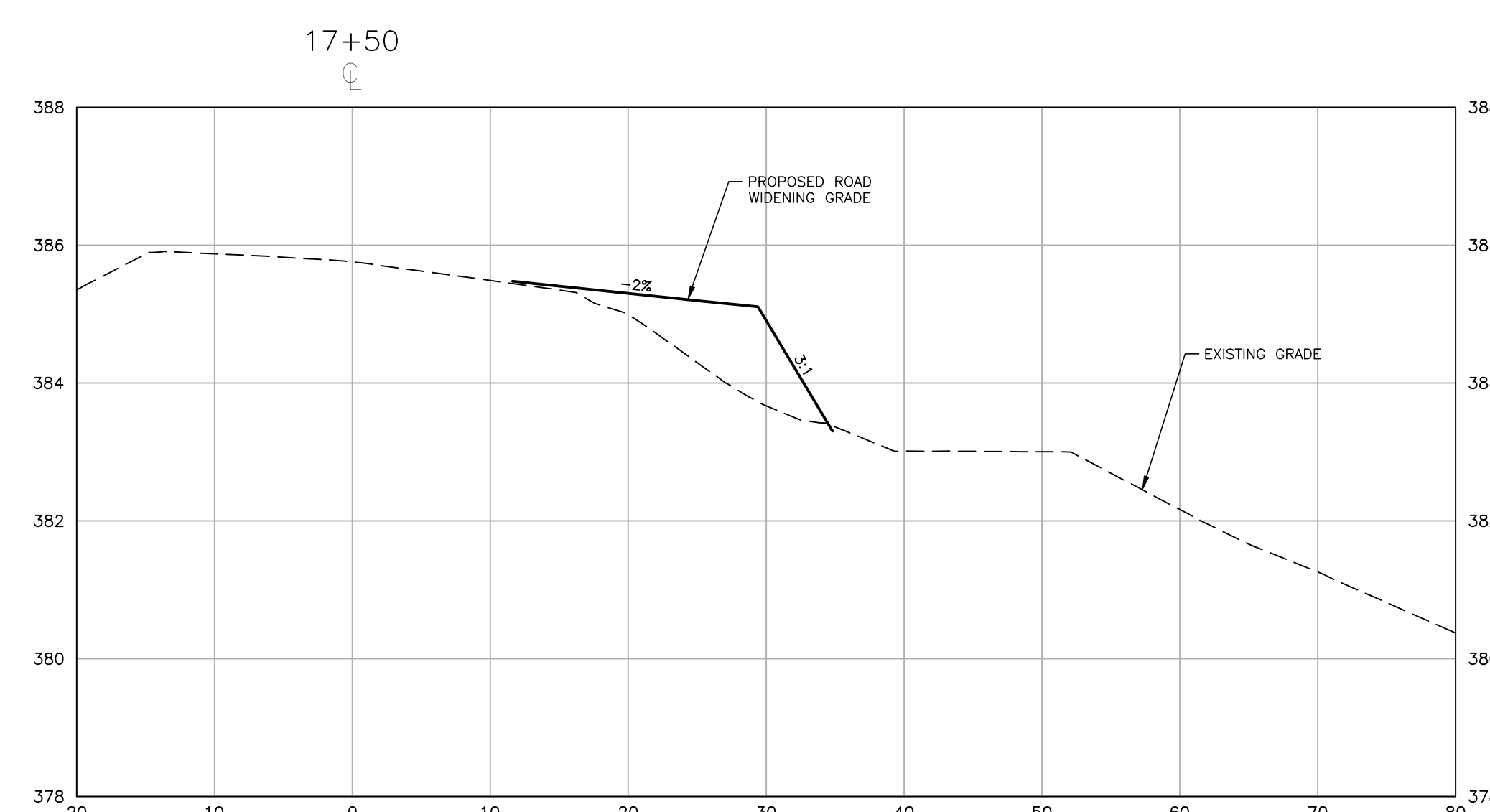
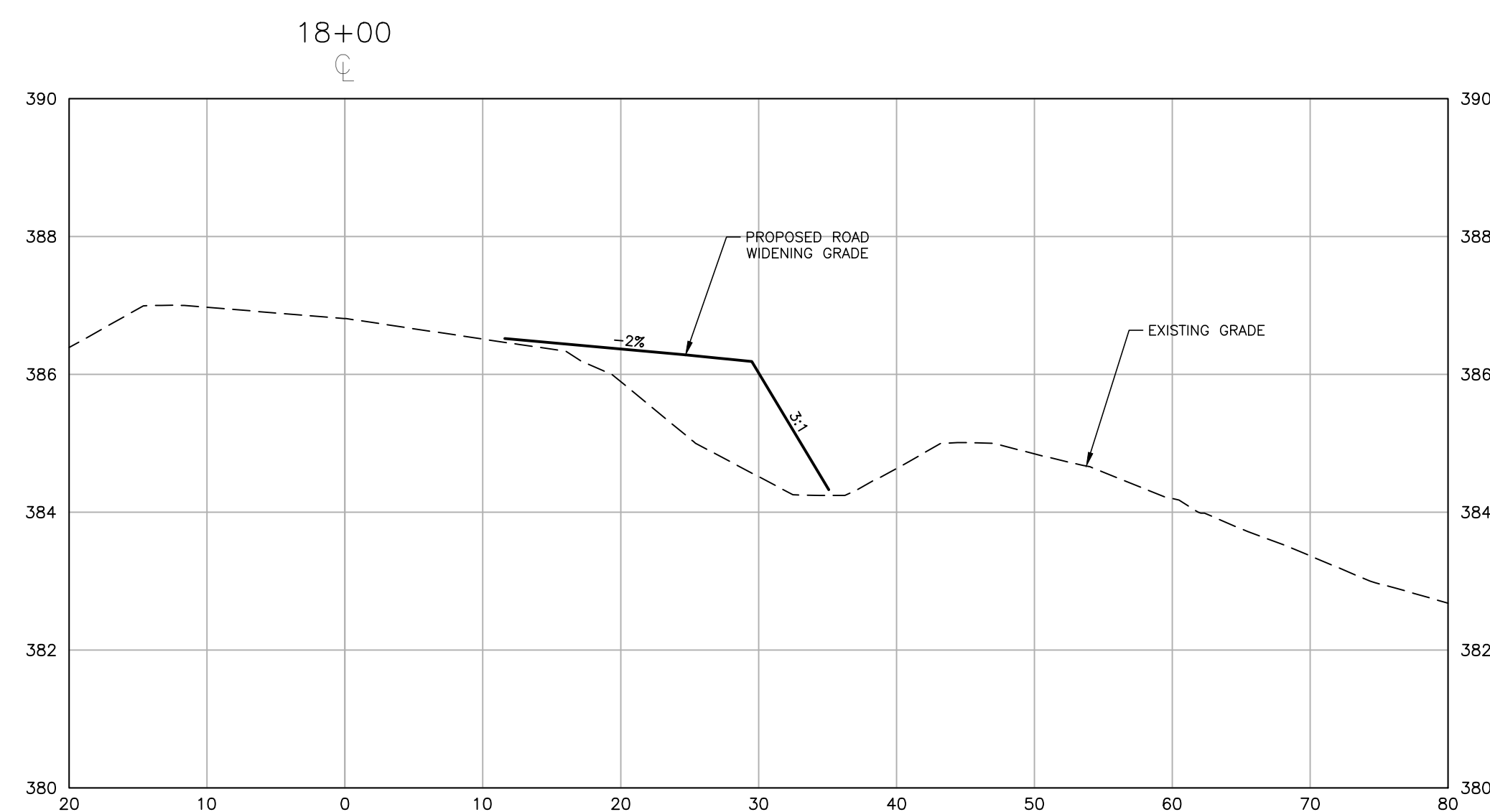
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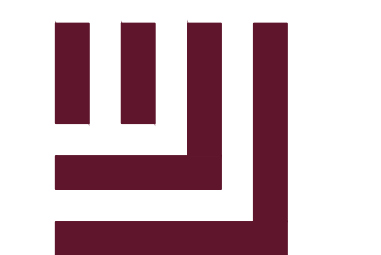
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**LOUISBURG RD
WIDENING
CROSS SECTIONS**

C7.03



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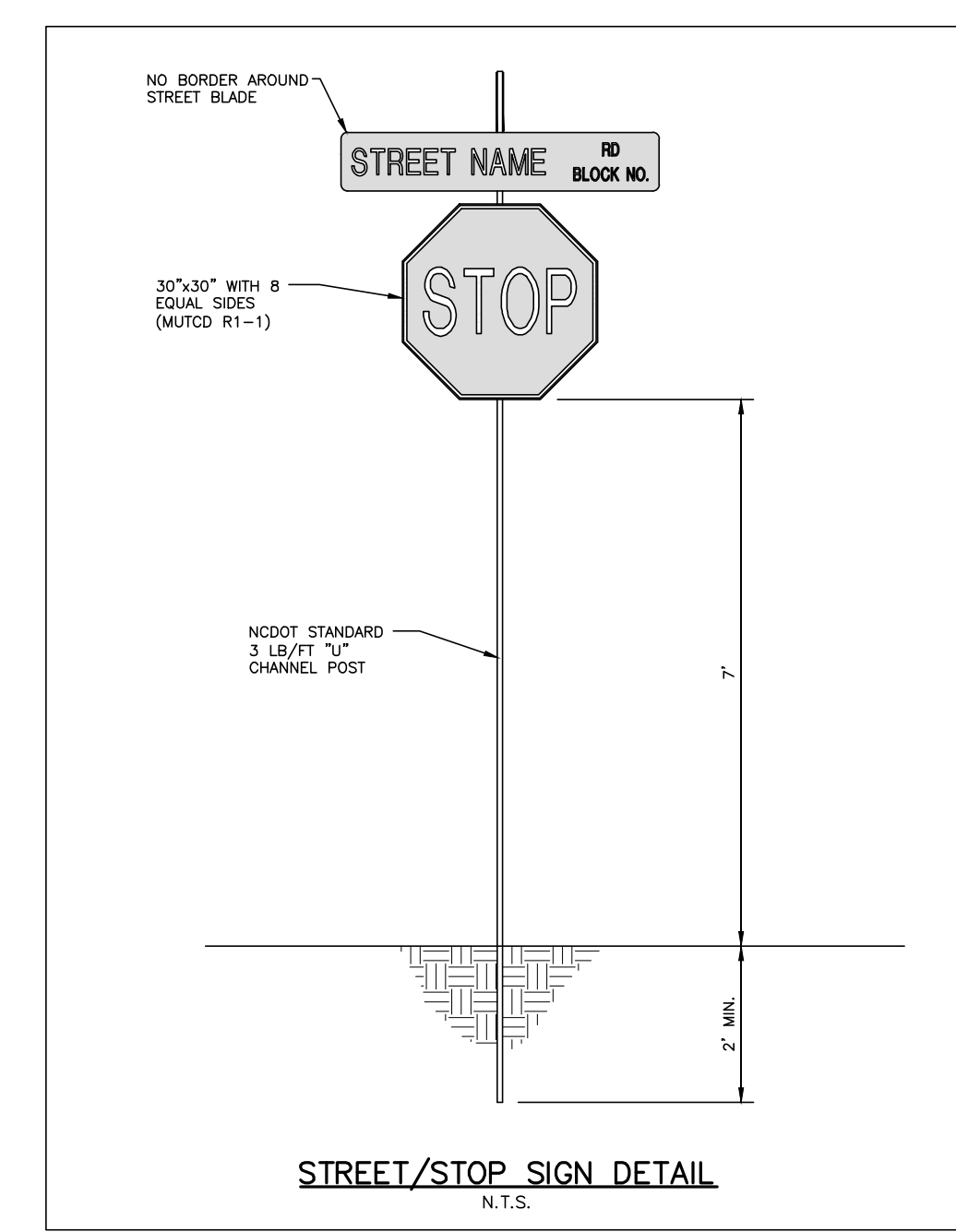
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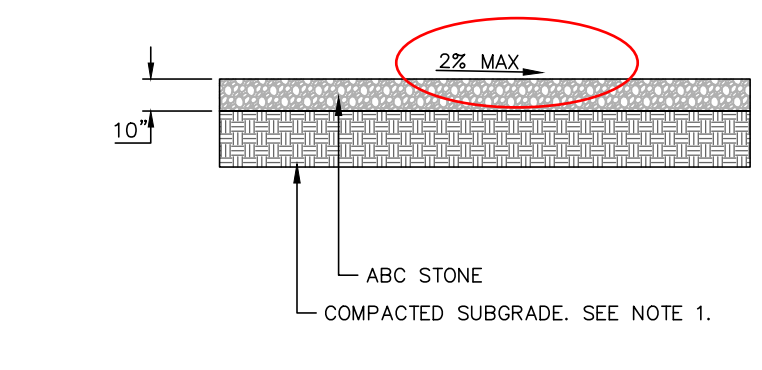
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03 STOP AND STREET SIGN DETAIL
SCALE: N.T.S.

Presuming that the gravel is maintain, it should form a sufficient base to pave over in the future.

Good drainage will be important for a gravel section roadway. The FHWA recommends minimum 4% cross slope on the travel lanes (1/2"/ft) and 1% cross slope on the shoulders (1"/ft). See <https://www.fhwa.dot.gov/construction/pubs/ots15002.pdf>



NOTES:
1. COMPACT AND PREPARE SUBGRADE PER GEOTECHNICAL REPORT.
2. GRAVEL PAVEMENT SECTION PER GEOTECHNICAL ENGINEER RECOMMENDATIONS. SEE GEOTECHNICAL REPORT.

APPENDIX A: Construction Guidelines

Backslope: no steeper than soil stability will support and as flat as a R-O-W width allows. 4% crown

Foreslope: recommended at 1V:3H slope or flatter if R-O-W width allows, never steeper than 1V:2H

A flat bottom ditch is recommended if R-O-W width allows.

FIGURE 14: A basic example of what the profile of a reshaped gravel road should look like.

Constructing a New Surface Gravel

If base gravel is placed first, it should meet a State specification. An ideal construction method is to build adequate base depth to carry the anticipated loads and then place a layer of surface gravel as a wearing course. The surface layer should be three inches minimum depth in order to have enough material for blade maintenance.

Quite often, only surface gravel is placed after construction or rehabilitation. If analysis and design by an engineer cannot be done, a basic reference to help determine suitable gravel depth taking into consideration the subgrade soil support condition and anticipated truck traffic is shown on page 107.

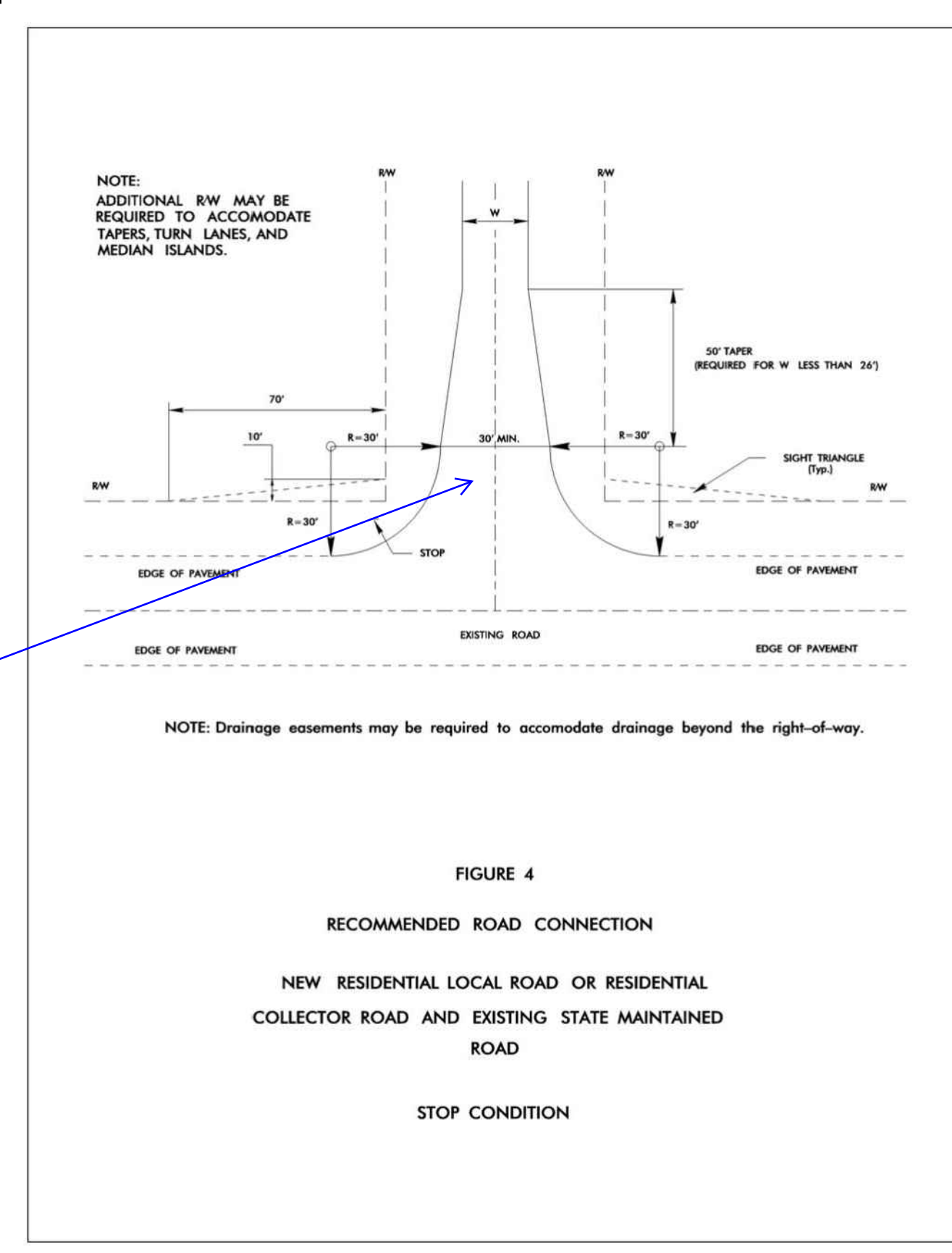
Base aggregate layer with sufficient thickness to support anticipated loads.

Prepared subgrade

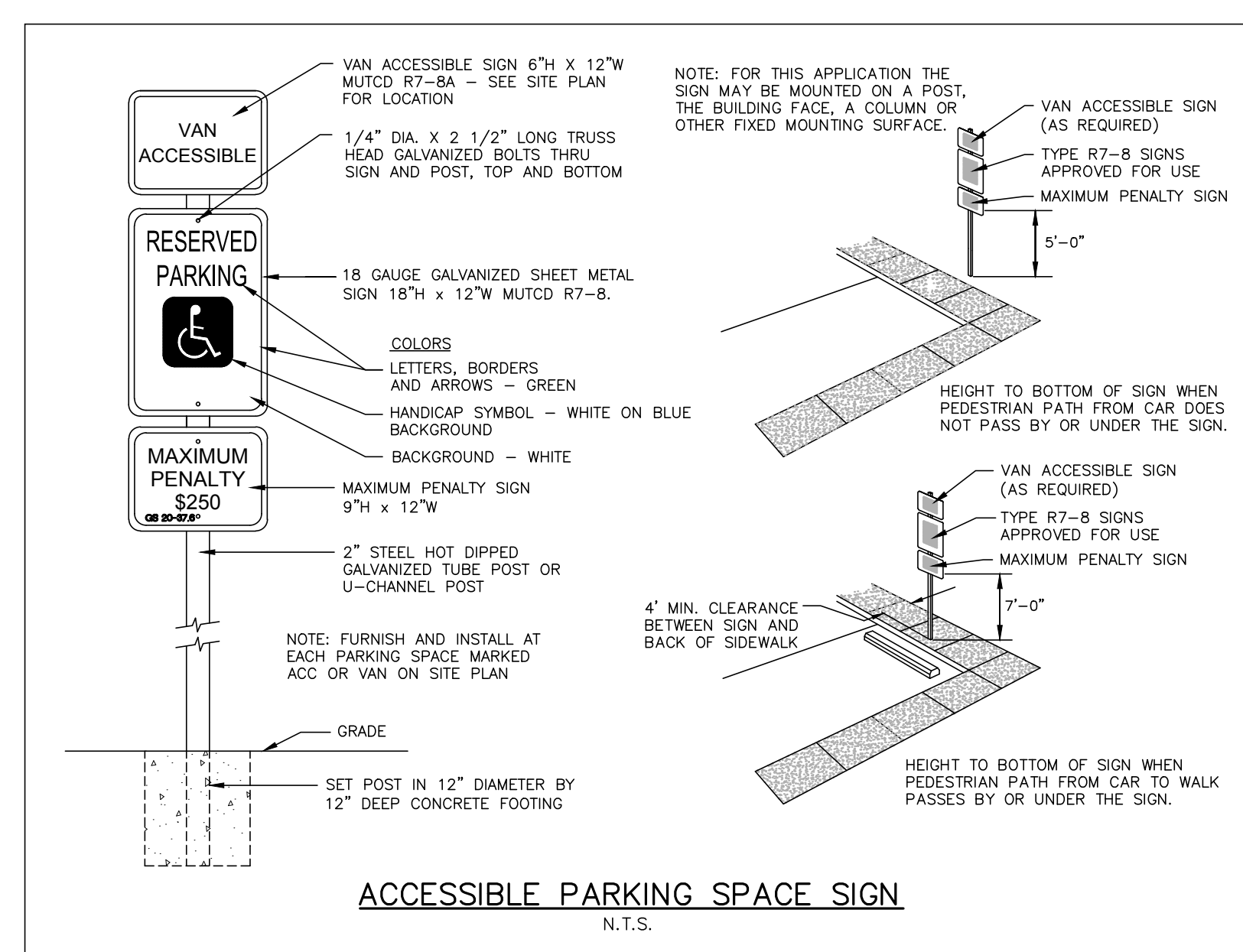
FIGURE 15: Roadway Layers: Example of building base and surface layers on a reconstructed gravel road. This may not be affordable, but will serve very well if significant truck traffic is expected.

106 Gravel Roads Construction & Maintenance Guide

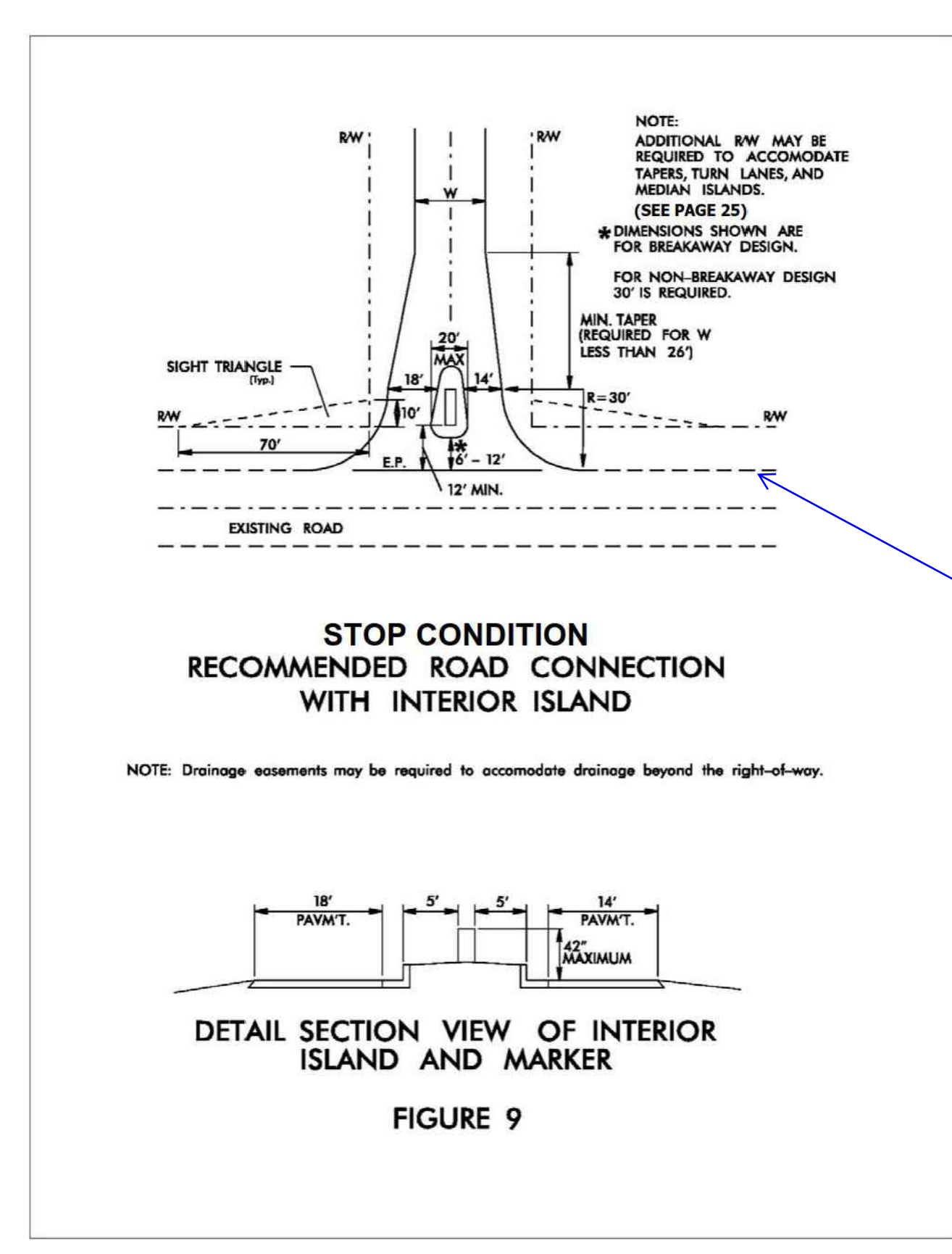
06 GRAVEL DRIVE AND PARKING LOT
SCALE: N.T.S.



02 RECOMMENDED ROAD AND STOP CONDITION
SCALE: N.T.S.

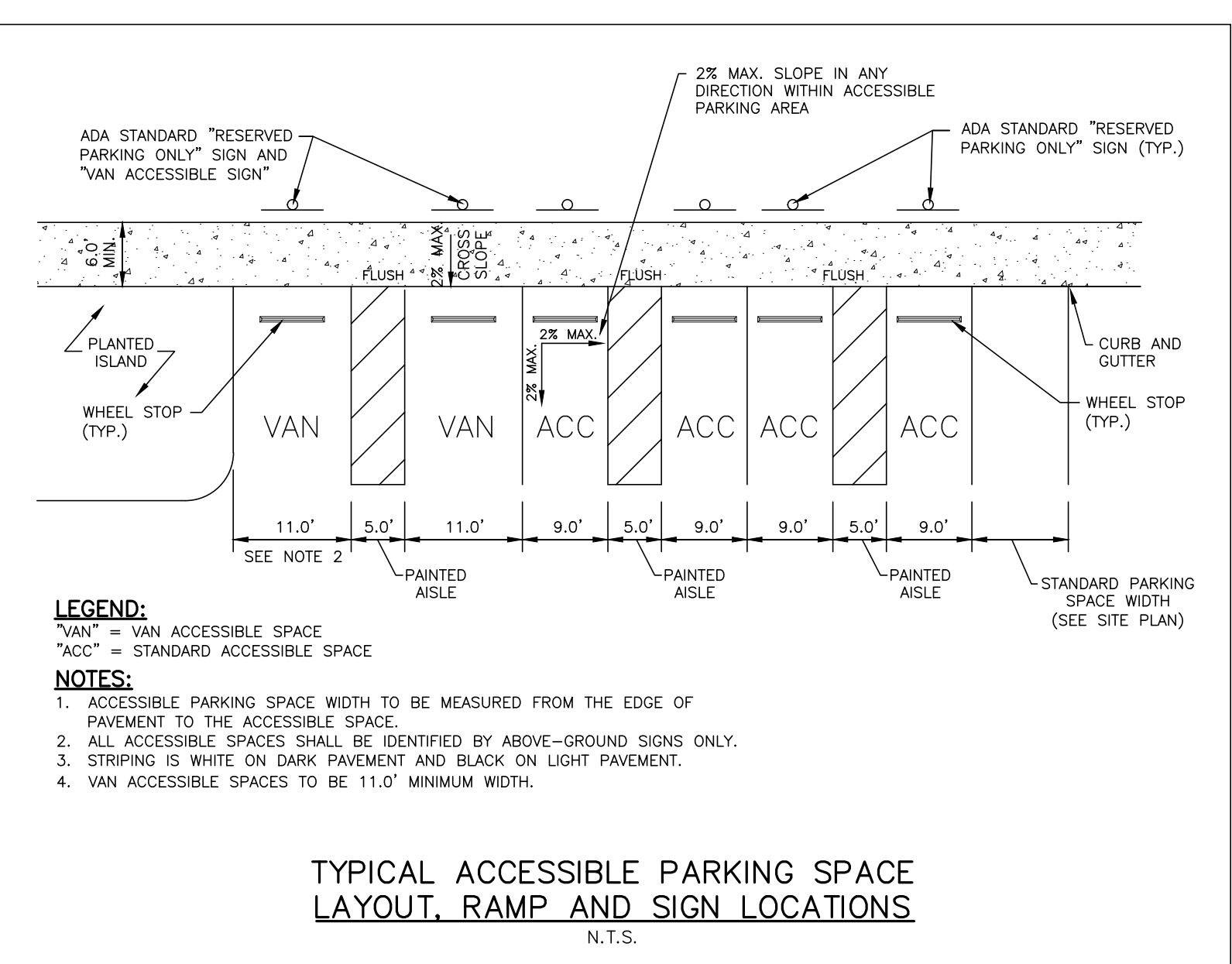


05 ACCESSIBLE PARKING SPACE SIGN
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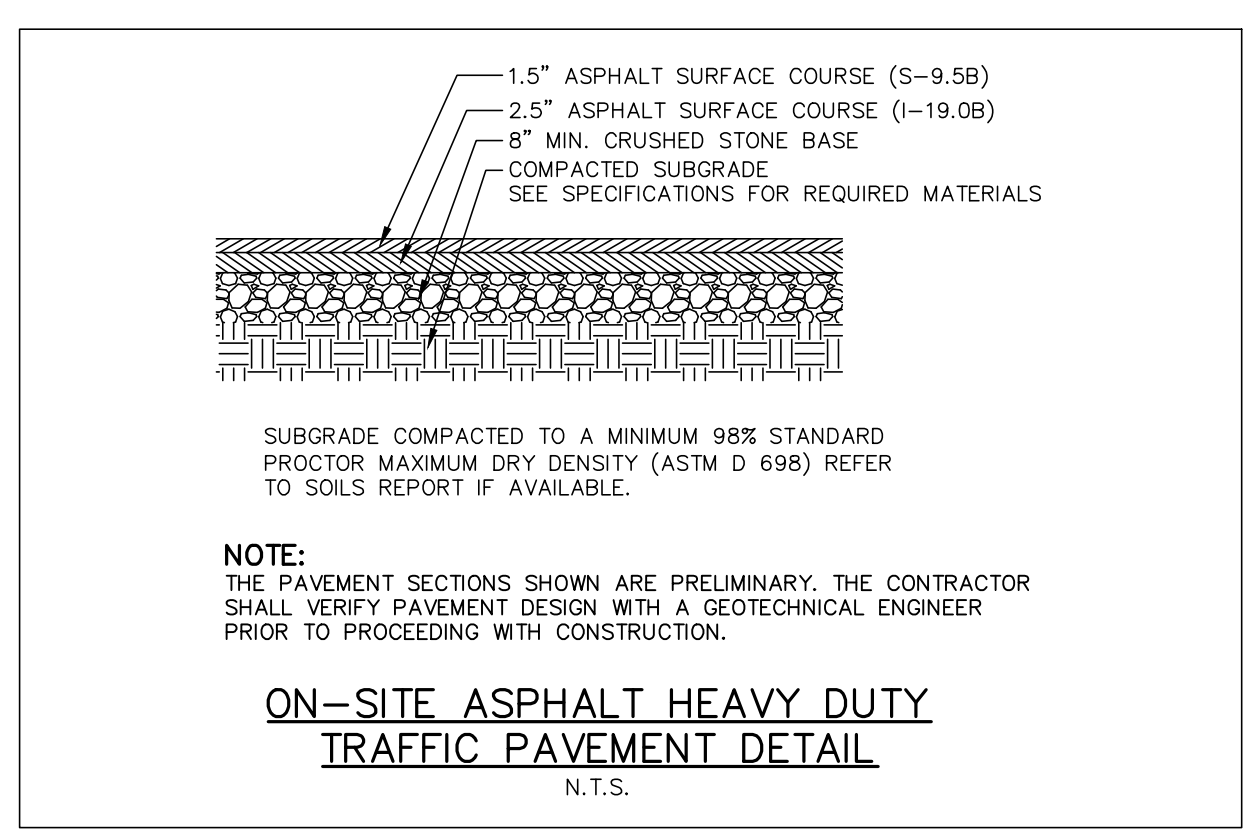


the (2) Entrances are not shown as these, label and dim your design for constructibility

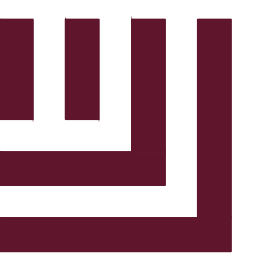
01 NCDOT STANDFARD ROAD DETAILS
SCALE: N.T.S.



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



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



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PHONE: 919.554.6582

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



REVISIONS

NO. DATE

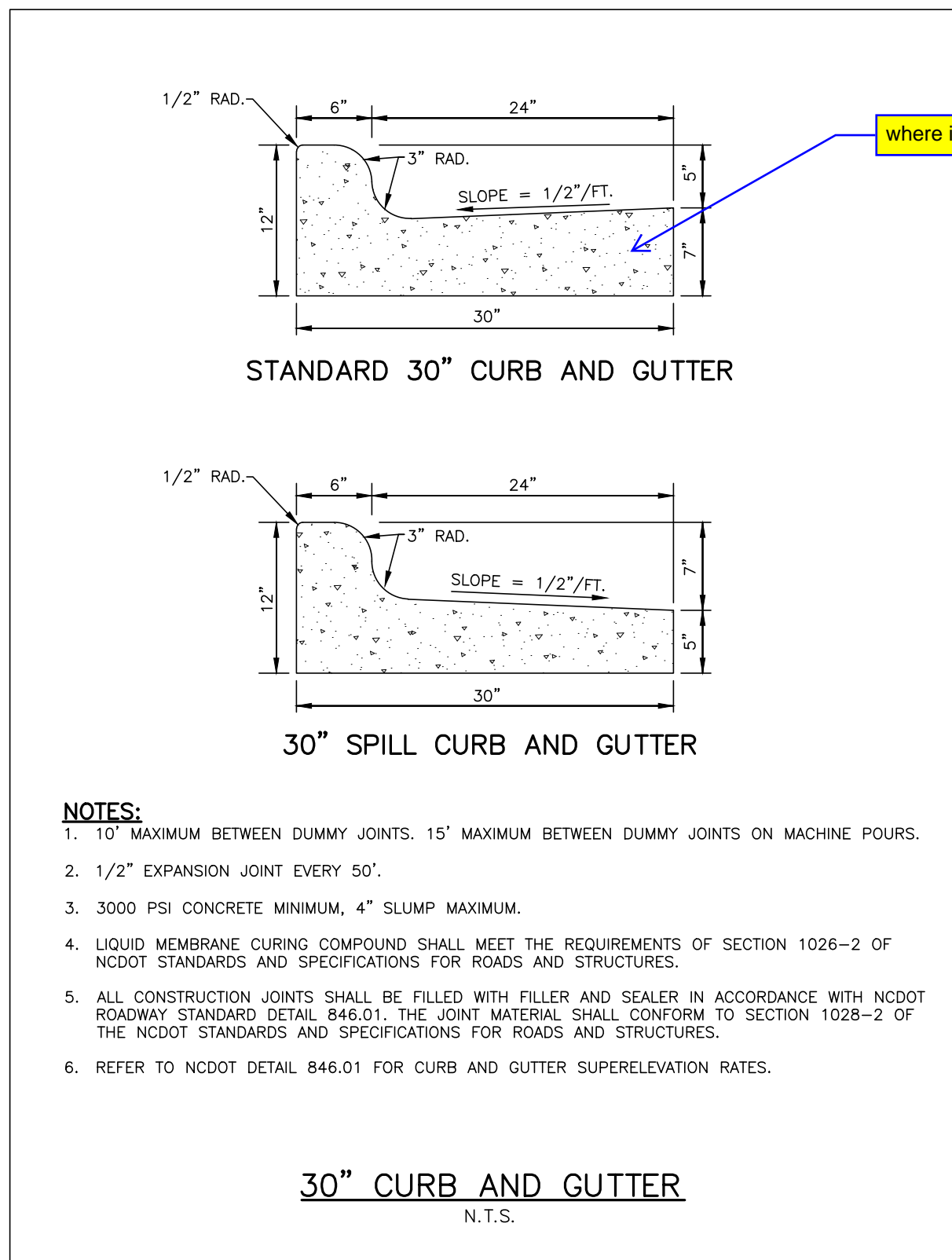
PLAN INFORMATION

PROJECT NO. 202011039
FILENAME 2020110039-PH1-D1
CHECKED BY EMD
DRAWN BY SME
SCALE N/A
DATE 03.22.2023

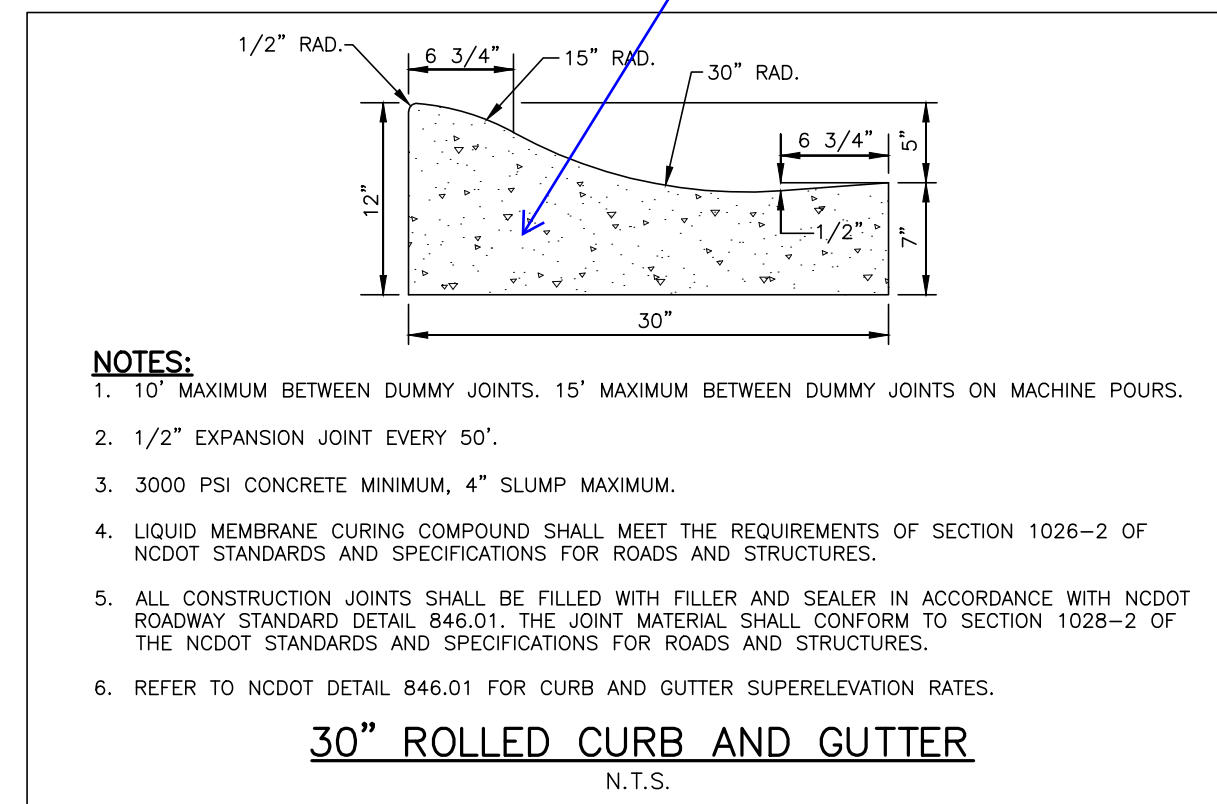
SHEET

SITE DETAILS

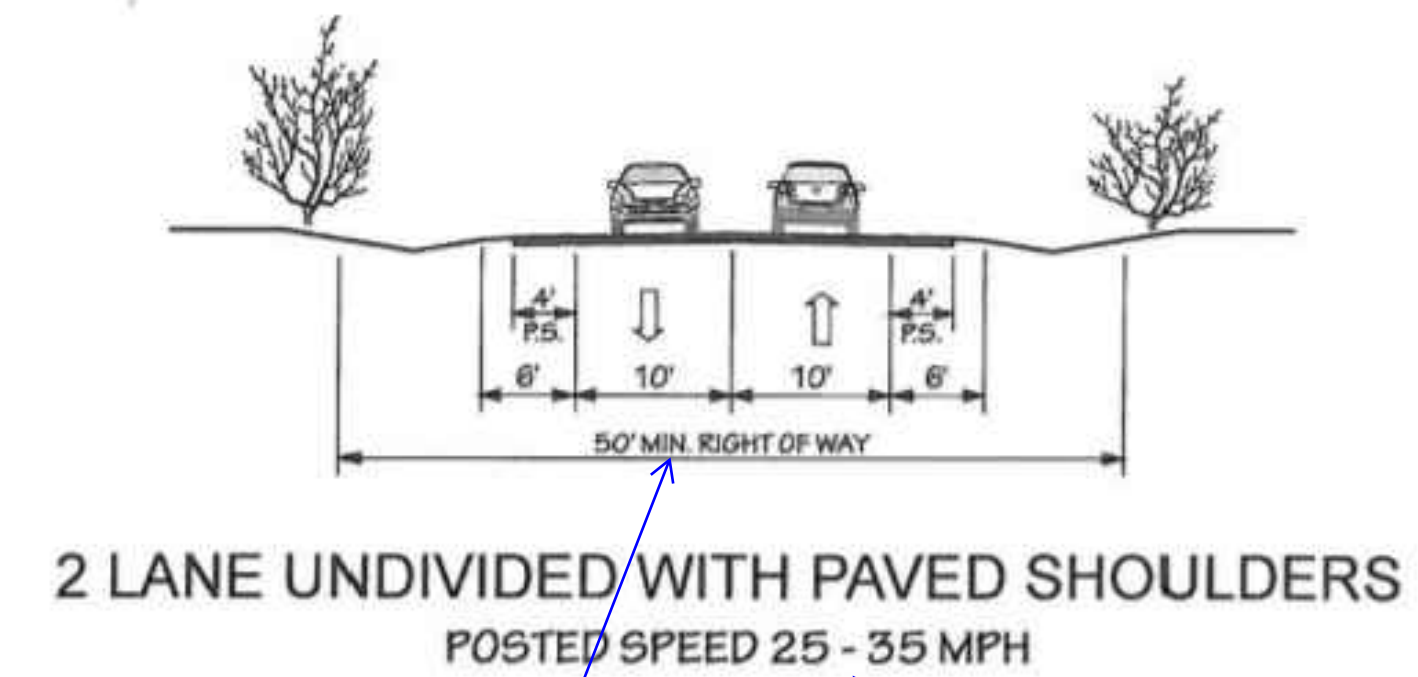
C8.01



where is this being used?



where is this being used?



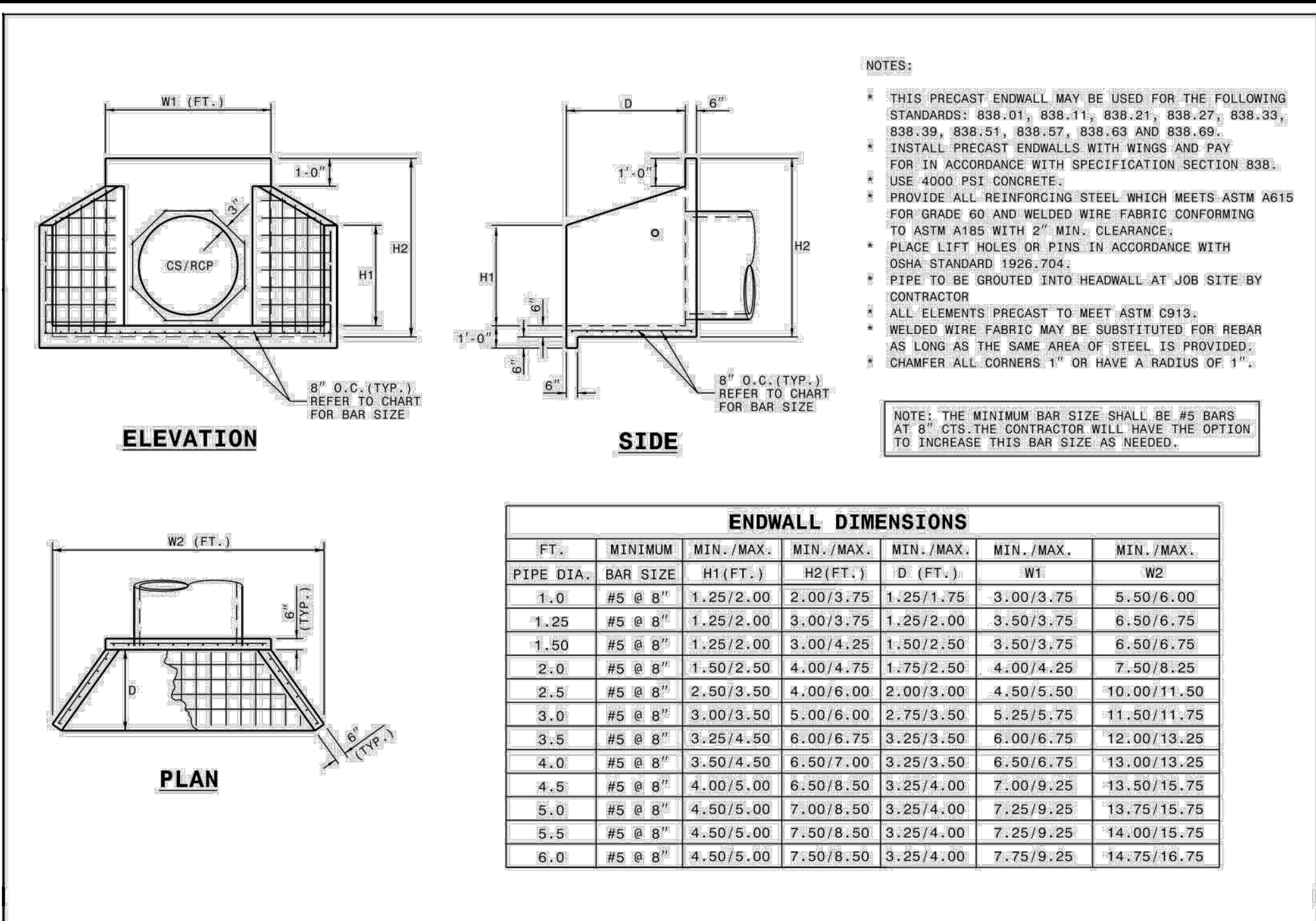
ARE YOU DOING A ROW?
PUBLIC / PRIVATE?

with these posted speeds
and design speeds (the
lane(s) need handle the
design

09 STANDARD 30" CURB AND GUTTER DETAILS
SCALE: N.T.S.

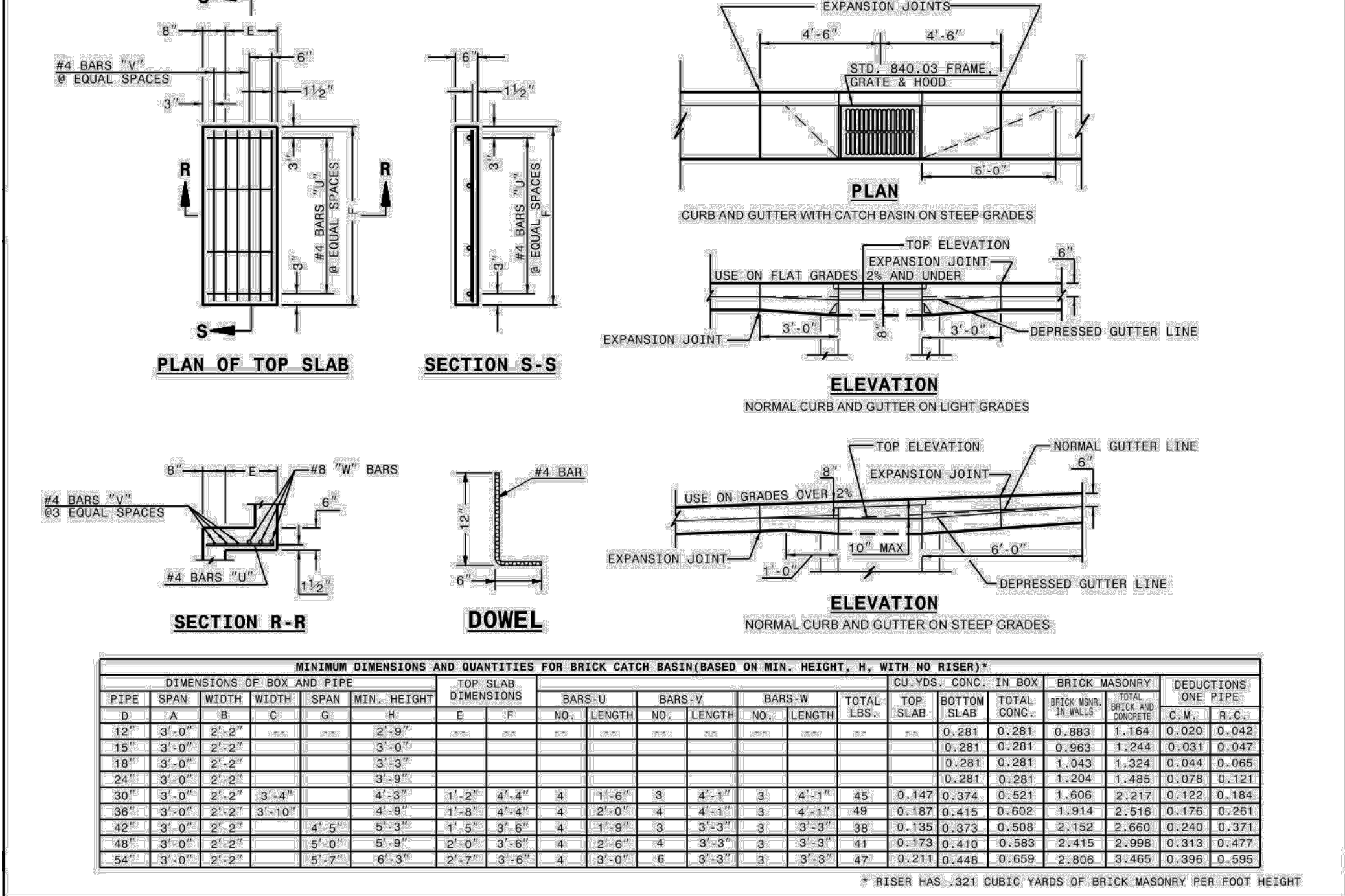
10 30" ROLLED CURB AND GUTTER DETAIL
SCALE: N.T.S.

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



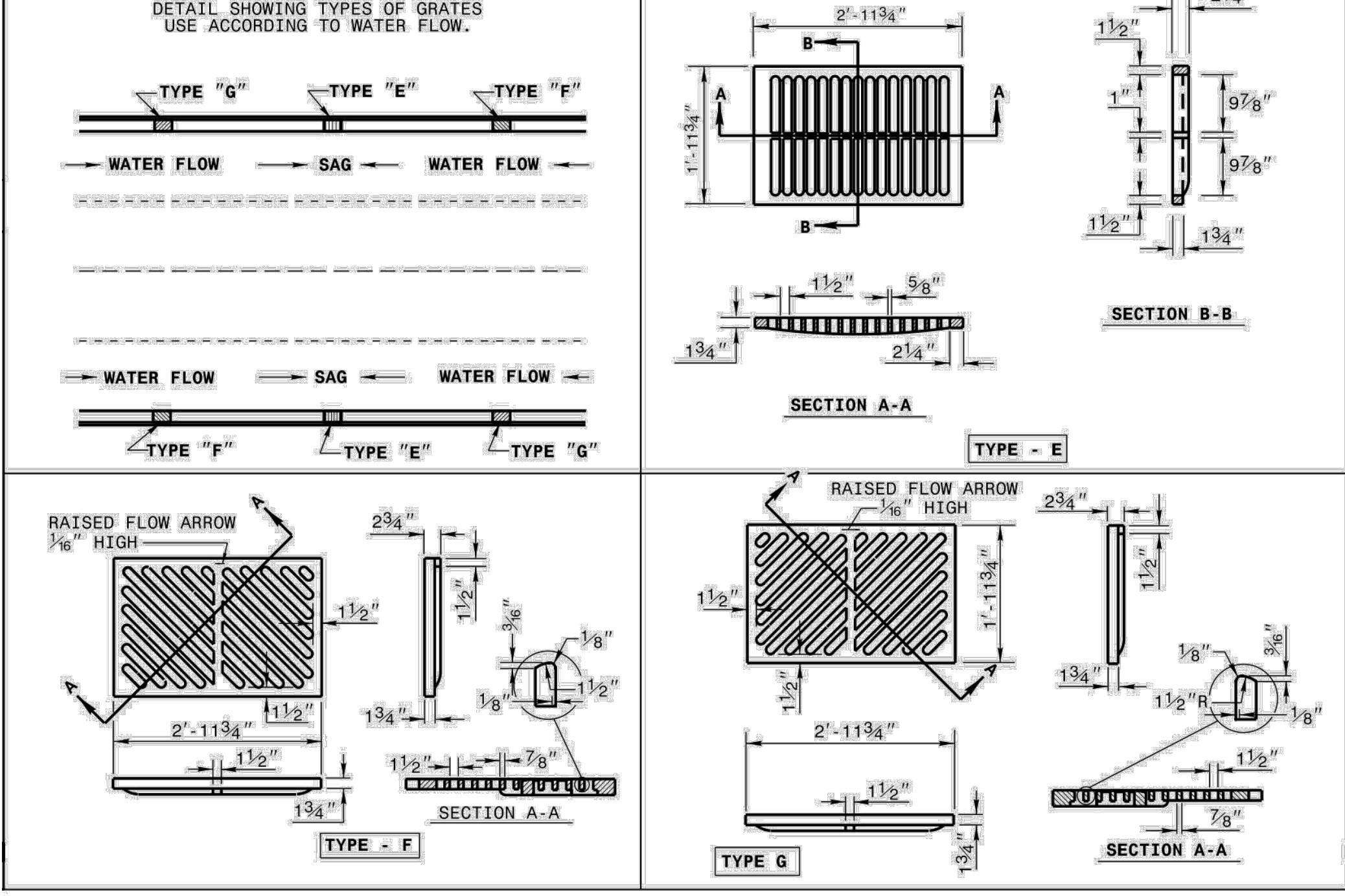
ROADWAY STANDARD DRAWING FOR PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1
838.80



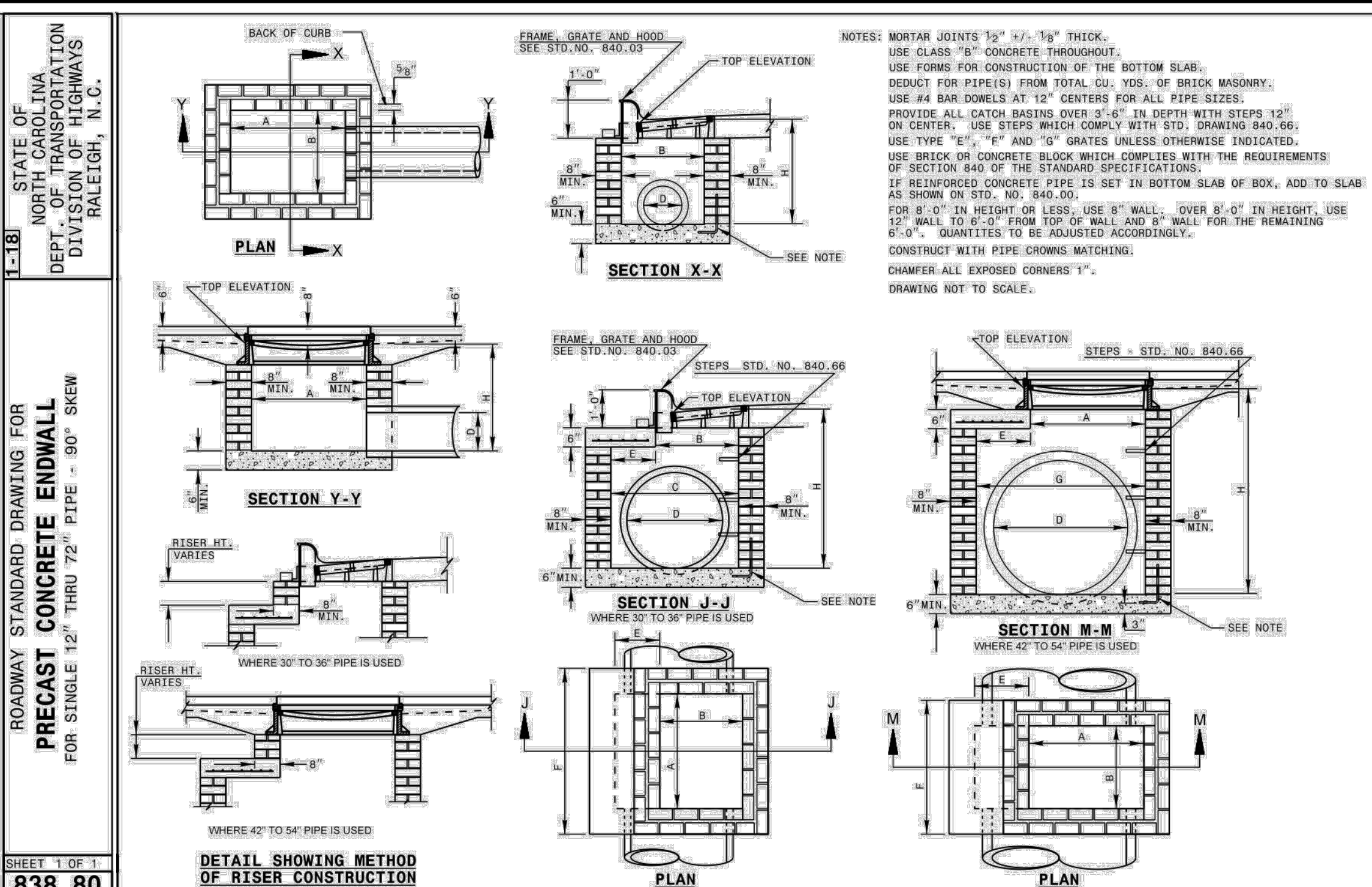
ROADWAY STANDARD DRAWING FOR BRICK CATCH BASIN 12" THRU 54" PIPE

SHEET 2 OF 2
840.01



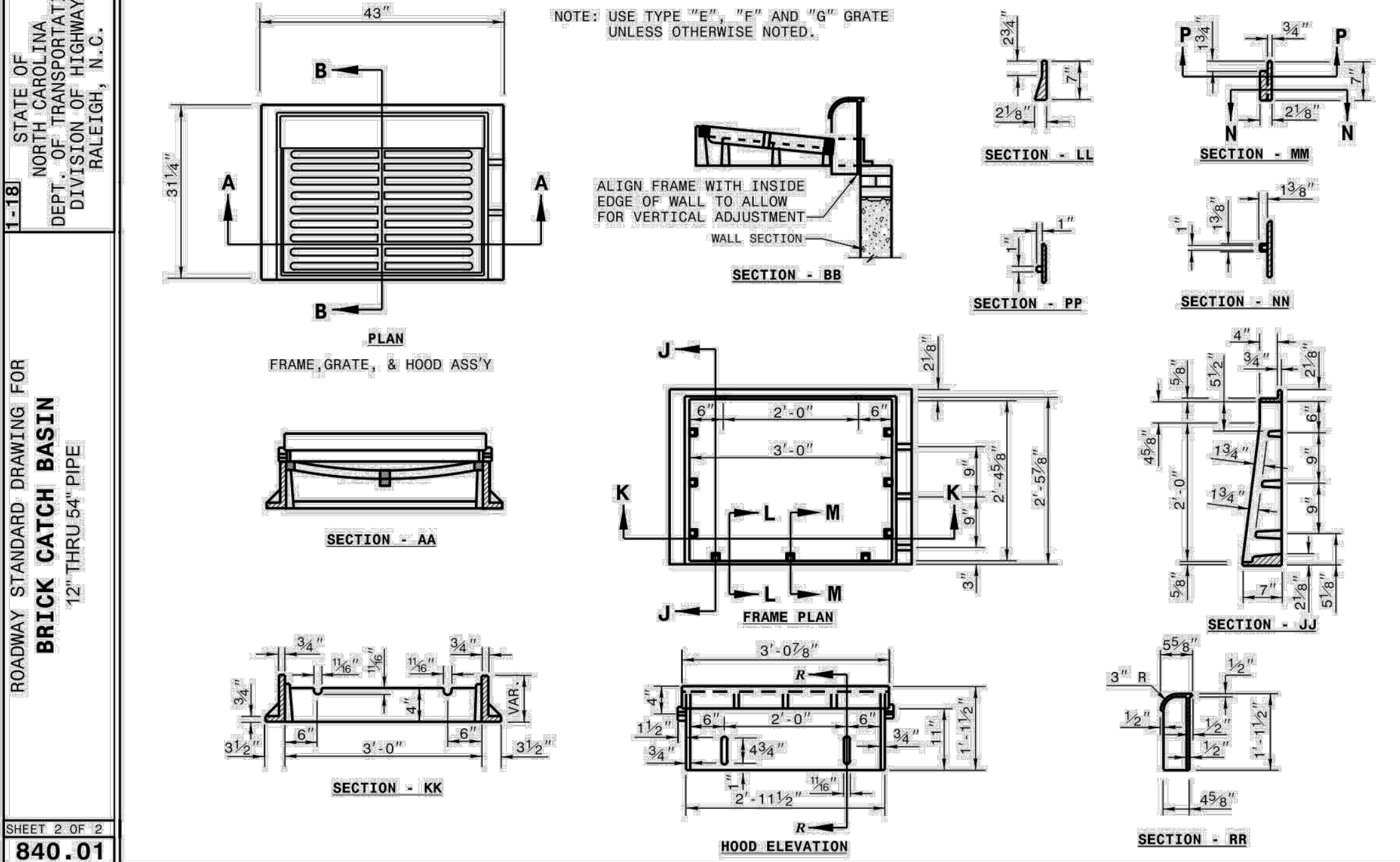
ROADWAY STANDARD DRAWING FOR CONCRETE BRIDGE APPROACH DROP INLET 12" THRU 24" PIPE

SHEET 1 OF 1
840.13



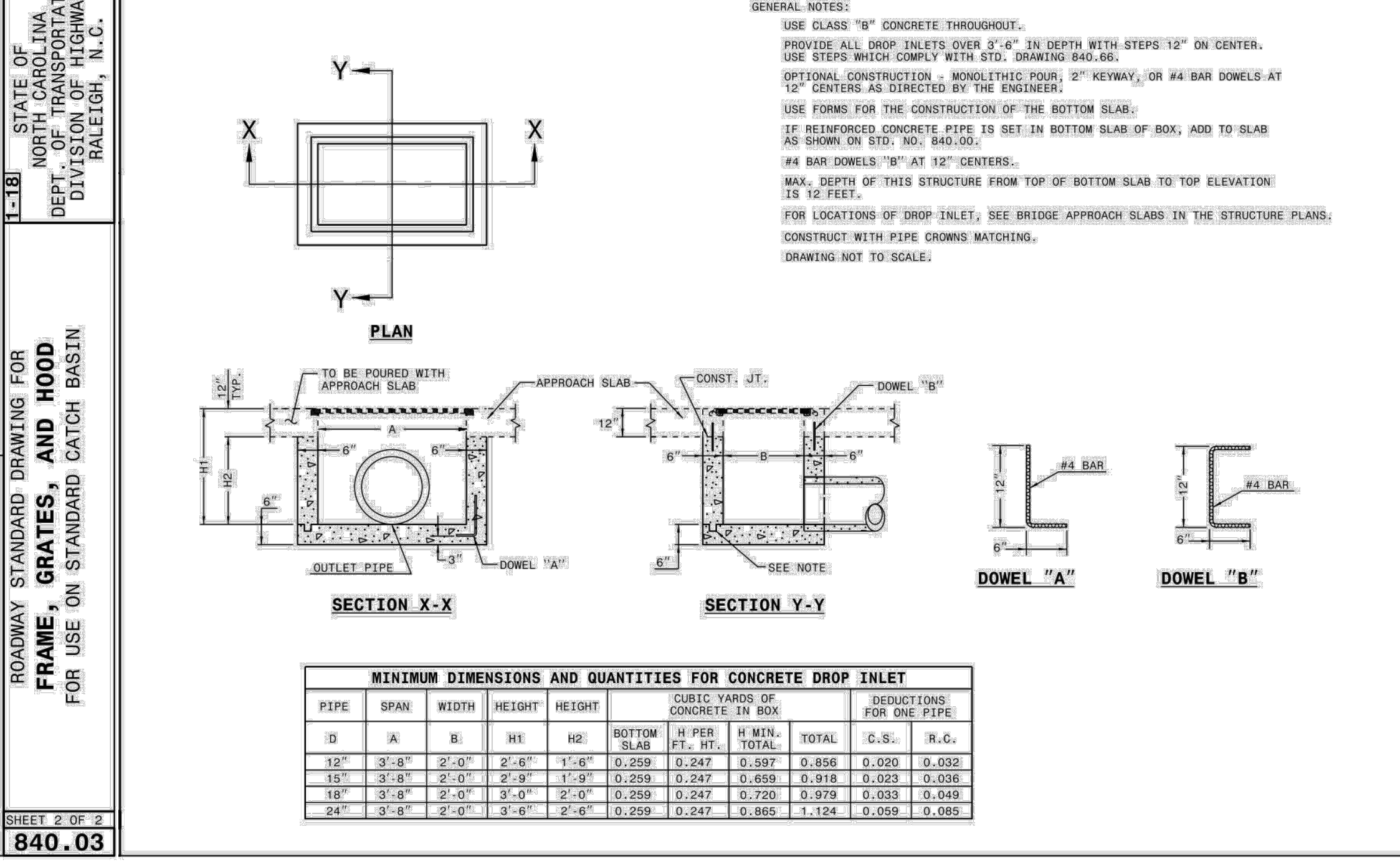
ROADWAY STANDARD DRAWING FOR BRICK CATCH BASIN 12" THRU 54" PIPE

SHEET 1 OF 2
840.01



ROADWAY STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2
840.03



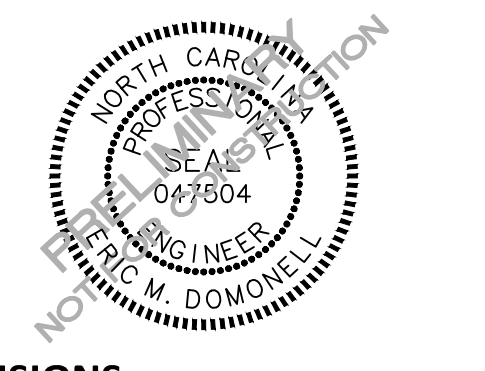
ROADWAY STANDARD DRAWING FOR CONCRETE BRIDGE APPROACH DROP INLET 12" THRU 24" PIPE

SHEET 1 OF 1
840.13

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FRAZIER FARM PARK
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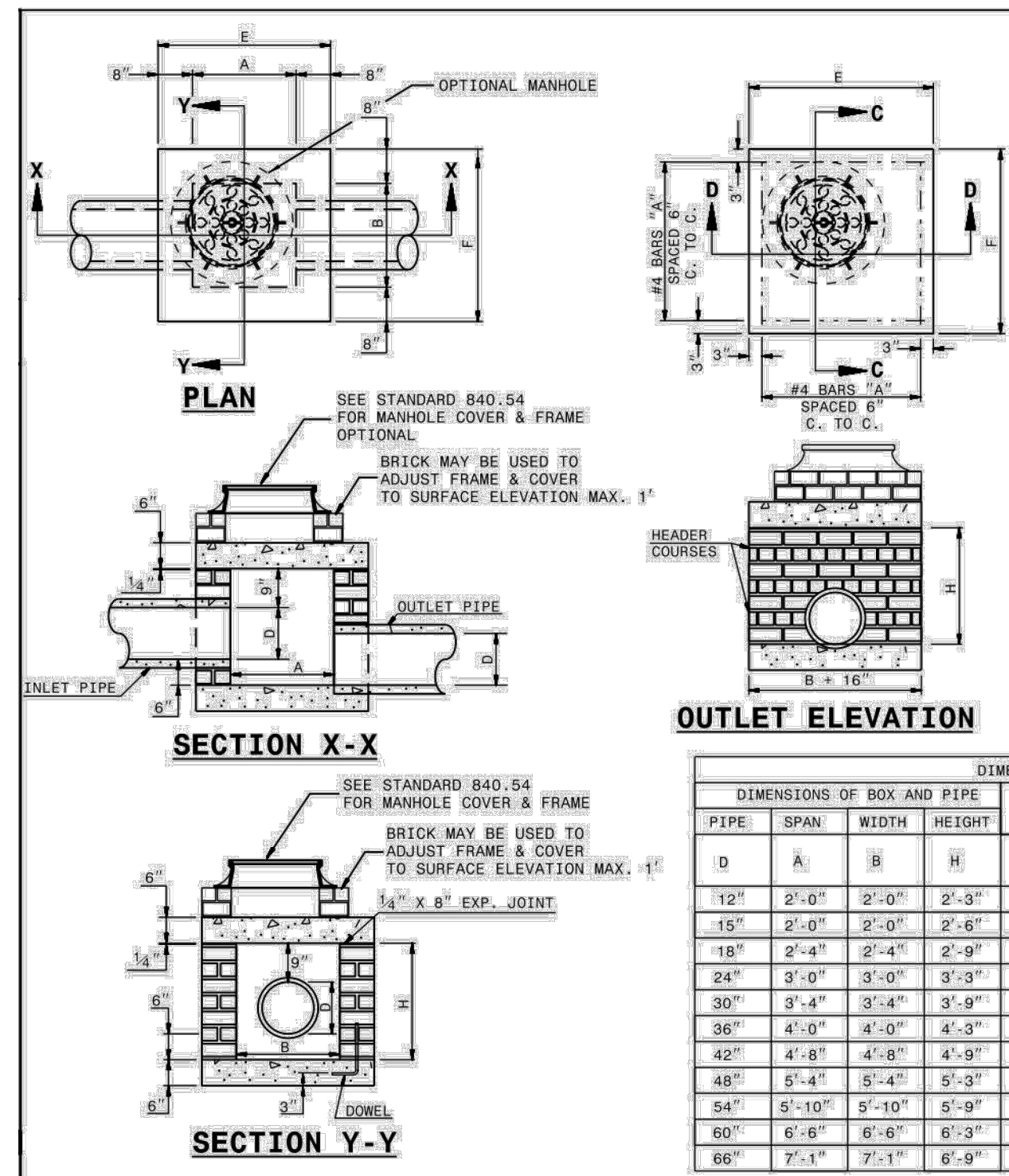
REVISIONS

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STORM DRAINAGE & UTILITY DETAILS
C8.02



GENERAL NOTES:
 CHAMFER ALL EXPOSED CORNERS 1".
 USE CLASS "B" CONCRETE THROUGHOUT.
 USE #4 BAR DOWELS AT 12" CENTERS.
 MORTAR JOINTS 1/2" x 1/8" THICK.
 LONGHAND 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.
 PROVIDE ALL EXPANSION JOINTS.
 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 11.5" DIAMETER 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.

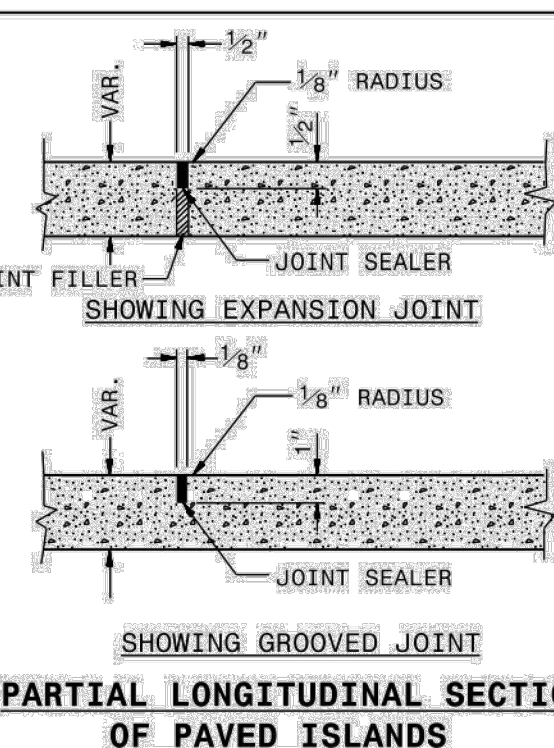
DIMENSIONS AND QUANTITIES FOR BRICK JUNCTION BOXES

PIPE DIMENSIONS	SPAN	WIDTH	HEIGHT	REINFORCEMENT BARS		TOP SLAB DIMENSIONS		CUBIC YARDS			DEDUCTIONS FOR ONE PIPE (CU. YDS.)		
				NO.	LENGTH	E	F	TOP 5' HEIGHT CU. YD.	MIN. WALL PER FT. HT. CU. YD.	CONC. BRICK MASONRY CU. YD.	C.S.	R.C.	
12"	2'-0"	2'-0"	2'-3"	12	3'-1"	3'-4"	3'-4"	0.412	0.591	0.263	0.020	0.032	
15"	2'-0"	2'-0"	2'-6"	12	3'-1"	3'-4"	3'-4"	0.412	0.591	0.263	0.031	0.047	
18"	2'-4"	2'-4"	2'-9"	14	3'-5"	3'-8"	3'-8"	0.488	0.614	0.296	0.044	0.062	
24"	3'-0"	3'-0"	3'-3"	16	4'-1"	4'-4"	4'-4"	0.595	1.176	0.592	0.078	0.113	
30"	3'-4"	3'-4"	3'-9"	16	4'-5"	4'-8"	4'-8"	0.607	1.461	0.398	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'-2"	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	0.796	

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)

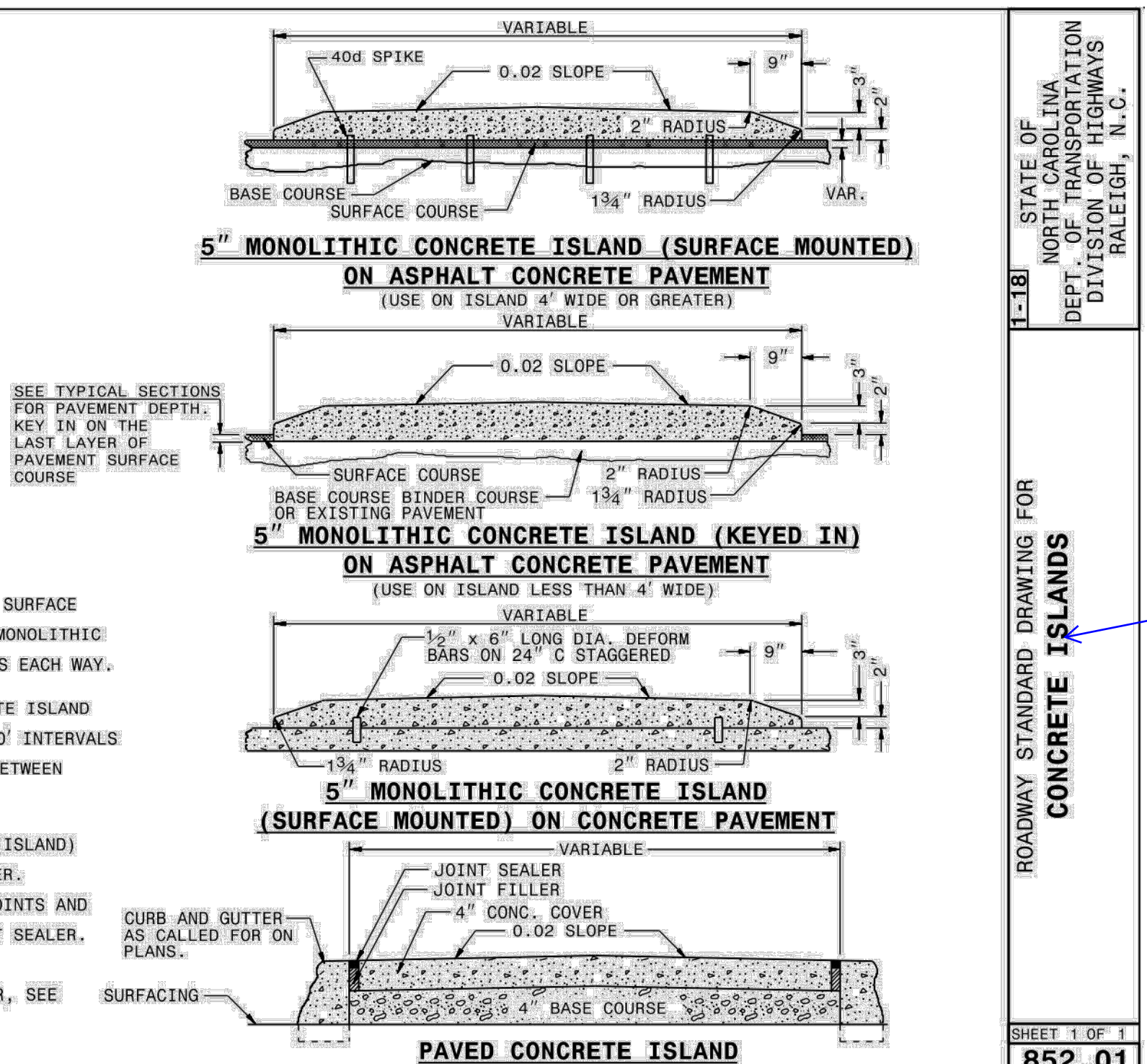
5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED) ON CONCRETE PAVEMENT
 (PAVED CONCRETE ISLAND)

NOTES:
 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.

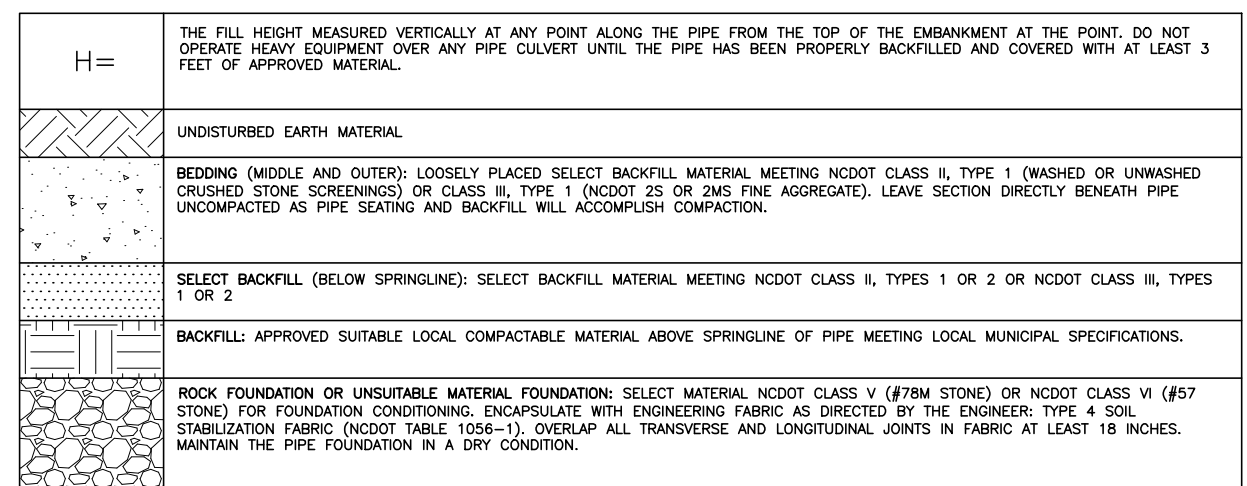
FOR JOINTS IN THE CURB AND/OR CURB AND GUTTER, SEE STANDARD NO. 846.01



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



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

SIDD	USCS	NC DOT/AASHTO
GRAVELLY SAND (CATEGORY I)	SW, SP, OW, GP	-NC DOT CLASS II-TYPE I (CRUSHED STONE SCREENINGS), LL<30, PI<6 -NC DOT CLASS II, TYPE I (2S OR 2MS), LL<30, PI<6
SANDY SILT (CATEGORY II)	GM, SM, ALSO GC, SC WITH LESS THAN 20% PASSING #200 SIEVE	-NC DOT 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) -NC DOT CLASS II, TYPE 1 (2S OR 2MS) OR CLASS II, TYPE 2 (ASHTO M145 FOR SOIL CLASSIFICATION A-1 OR A-3)
SILTY CLAY (CATEGORY III)	CL, MH, GC, SC	AS, AE

**TABLE 2
 STANDARD INSTALLATIONS SOILS AND MINIMUM COMPACTION REQUIREMENTS**

INSTALLATION TYPE	BEDDING THICKNESS	OUTER BEDDING (B1) SIDE 5	HAUNCH ZONE & SELECT BACKFILL AREA (% COMPACTION/CATEGORY)	LOCATION
TYPE 1	B1 = 2 1/2" (6" MIN) RIGID FOUNDATION, P/FIT OF 1/4", 12" MIN/24" MAX	90% CATEGORY I	80% CATEGORY I / 90% CATEGORY II	PAVED AREAS WITH 2" OR LESS BURRY
TYPE 2	B1 = 2 1/2" (6" MIN) RIGID FOUNDATION OR 80% UNDESIRABLE FOUNDATION, P/FIT OF 1/4", 12" MIN/24" MAX	90% CATEGORY I	85% CATEGORY I / 90% CATEGORY II	PAVED AREAS WITH GREATER THAN 2" BURRY
TYPE 3	B1 = 2 1/2" (6" MIN) RIGID FOUNDATION OR 80% UNDESIRABLE FOUNDATION, P/FIT OF 1/4", 12" MIN/24" MAX	90% CATEGORY I	85% CATEGORY I / 90% CATEGORY II	IN 5' OR OUTSIDE OF PAVEMENT
TYPE 4	B1 = 2 1/2" (6" MIN) RIGID FOUNDATION OR 80% UNDESIRABLE FOUNDATION, P/FIT OF 1/4", 12" MIN/24" MAX	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY II, USE 90% CATEGORY III	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY II, USE 85% CATEGORY II	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 NC DOT STANDARDS AS SHOWN IN DETAIL 300.01 RIGID PIPE IN TRENCH CONDITION.

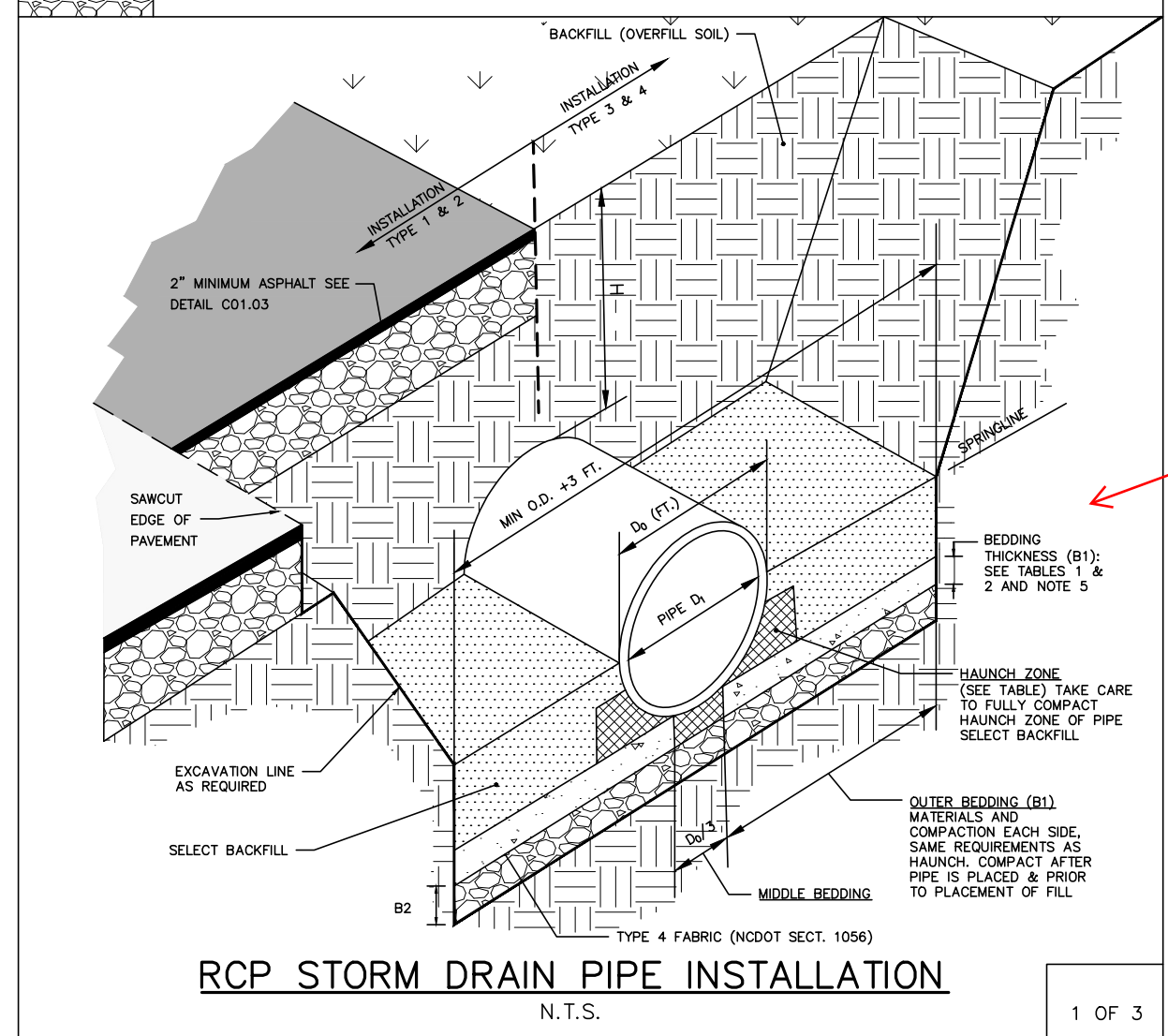
REFERENCE SOURCES:
 1. AMERICAN CONCRETE PIPE ASSOCIATION DESIGN STANDARDS
 2. 2012 NC DOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES AND NC DOT STANDARD DETAILS 300.01 FOR RIGID PIPE, TRENCH CONDITIONS.

FILL HEIGHT TABLE¹

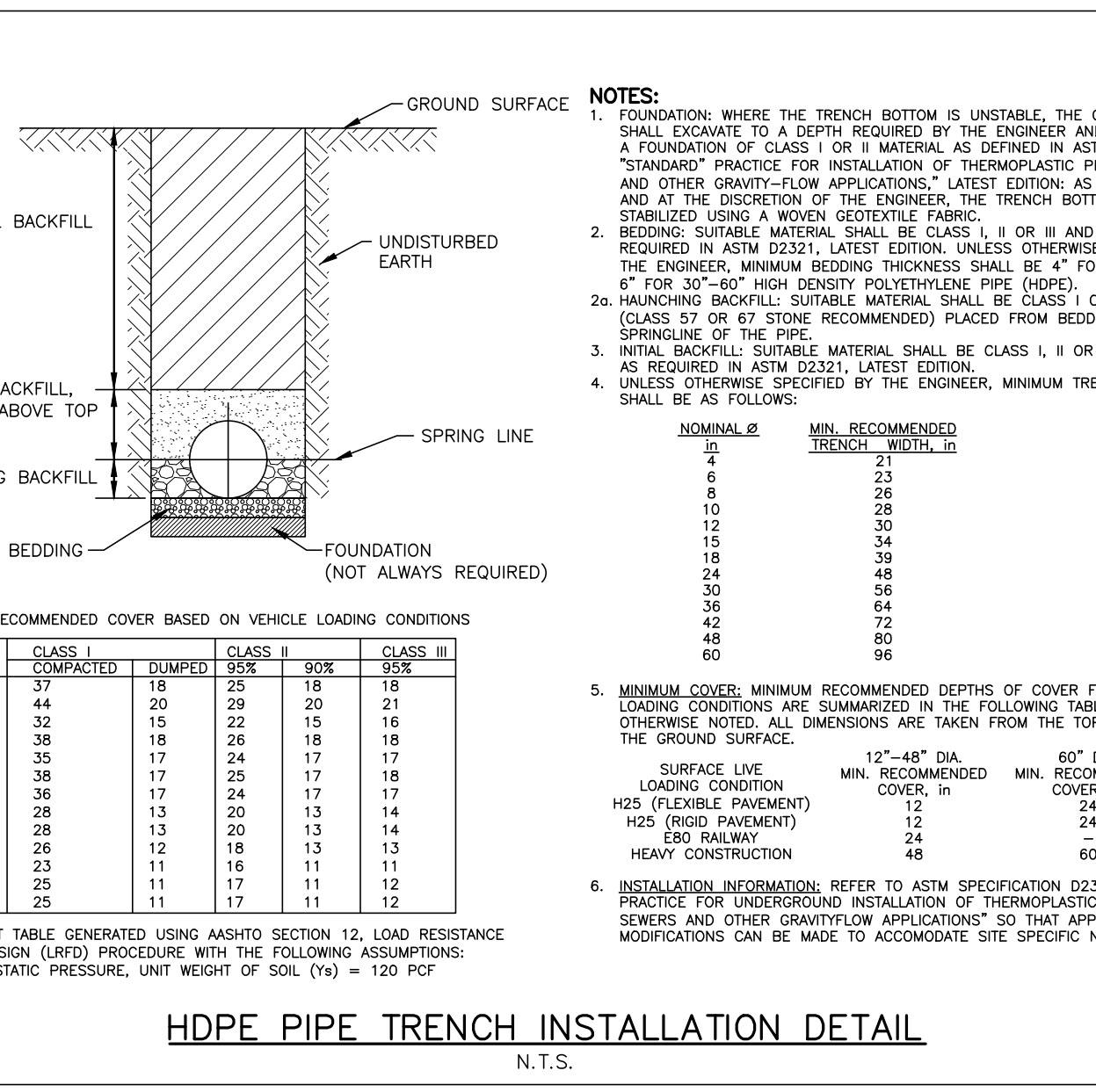
INSIDE PIPE DIAMETER DI (INCHES)	TYPE 3 (BEDDING) INSTALLATION (0.01 INCH CRACK)		TYPE 4 (BEDDING) INSTALLATION (0.01 INCH CRACK)	
	CLASS III PIPE MAXIMUM BURRY H (FEET)	CLASS IV PIPE MAXIMUM BURRY H (FEET)	CLASS III PIPE MAXIMUM BURRY H (FEET)	CLASS IV PIPE MAXIMUM BURRY H (FEET)
12	2 MIN, 12 MAX	1 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, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
54	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
60	1 MIN, 12 MAX	1 MIN, 20 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.

NOTES:
 1. GREATER BURRY 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 BURRY 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 BURRY DEPTH POSSIBILITIES.



STORM DRAIN PIPE INSTALLATION
 2 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 II OR I MATERIAL, AS DETAILED IN ASTM D3331.
 2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS II, III, OR IV AND INSTALLED AS REQUIRED IN ASTM D3331, 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).
 3. 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.
 4. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D3331, LATEST EDITION.
 5. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

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

6. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING 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.	MIN. RECOMMENDED COVER, IN.	MIN. RECOMMENDED COVER, IN.	MIN. RECOMMENDED COVER, IN.
4"	12	12	12
6"	15	15	15
8"	18	18	18
10"	21	21	21
12"	24	24	24
15"	27	27	27
18"	30	30	30
24"	36	36	36
30"	42	42	42
36"	48	48	48
42"	54	54	54
48"	60	60	60
60"	72	72	72

7. INSTALLATION INFORMATION: REFER TO ASTM SPECIFICATION D2331, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITYFLOW APPLICATIONS" SO THAT APPROPRIATE MODIFICATIONS CAN BE MADE TO ACCOMMODATE SITE SPECIFIC NEEDS.

STORM DRAIN PIPE INSTALLATION
 2 OF 3

Please include details for erosion control measures, such as:
 -Silt fence
 -Silt fence outlet
 -tree protection fence
 -inlet protection

For the storm system, RCP to be use within the influence of the gravel road (future paved)
 Town Public Works Director to review and approve if HDPE will be allowed in area not with in the influence of the road/parking areas.

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C8.03