

UTILITIES/AUTHORITIES

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TOWNSHIP OF CRANFORD

BRIAN ANDREWS, MAYOR
TERRENCE CURRAN, DEPUTY MAYOR

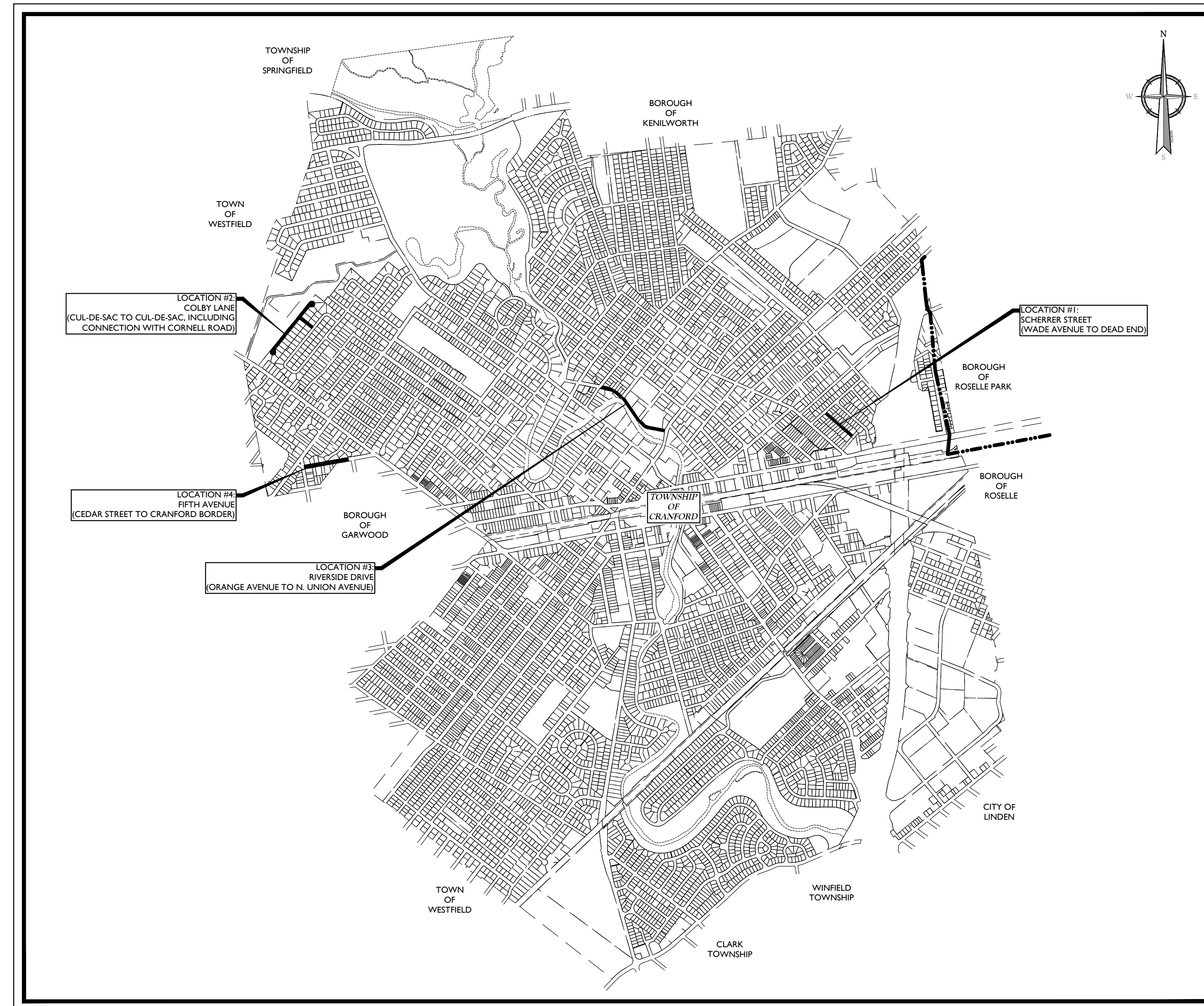
GINA BLACK, COMMISSIONER
PAUL A. GALLO, COMMISSIONER
KATHLEEN MILLER PRUNTY, COMMISSIONER

PATRICIA DONAHUE, TOWNSHIP CLERK
LAVONA PATTERSON, TOWNSHIP ADMINISTRATOR

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**CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM
TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY**



KEY MAP
SCALE: N.T.S.

- * THE NEW JERSEY DEPARTMENT OF TRANSPORTATION "STANDARD ROADWAY CONSTRUCTION/TRAFFIC CONTROL/BRIDGE CONSTRUCTION DETAILS" BOOKLET DATED (2016) AND "ELECTRICAL BUREAU STANDARD DETAILS" (2007) TO GOVERN, EXCEPT FOR THOSE DETAILS CONTAINED HEREIN
- * NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS 2019 WITH AMENDMENTS THERETO SHALL GOVERN

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION
1	3/1/24	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: 6E49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

**CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM**

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-COVER		

SHEET TITLE: COVER

SHEET NUMBER: 1 of 41

SURVEY NOTES:

- EXISTING FEATURES DEPICTED ON SCHERRER STREET ARE BASED ON INFORMATION FROM THE SURVEY ENTITLED "TOPOGRAPHIC SURVEY FOR SCHERRER STREET" FOR THE TOWNSHIP OF CRANFORD, PREPARED BY COLLIER'S ENGINEERING & DESIGN, DATED 09/19/23, LAST REVISED 10/27/23.
- EXISTING FEATURES DEPICTED ON RIVERSIDE DRIVE ARE BASED ON INFORMATION FROM THE SURVEY ENTITLED "TOPOGRAPHIC SURVEY FOR RIVERSIDE DRIVE" FOR THE TOWNSHIP OF CRANFORD, PREPARED BY COLLIER'S ENGINEERING & DESIGN, DATED 09/19/23, UNREVISED.
- EXISTING FEATURES DEPICTED ON THE SOUTH SIDE OF FIFTH AVENUE, FROM STATION 0+40 TO STATION 2+50, STATION 3+25 TO STATION 4+25, STATION 4+60 TO STATION 5+45 AND STATION 8+95 TO STATION 9+35 ARE BASED ON INFORMATION FROM THE SURVEY ENTITLED "PARTIAL TOPOGRAPHIC SURVEY FOR FIFTH AVENUE" FOR THE TOWNSHIP OF CRANFORD & BOROUGH OF GARWOOD, PREPARED BY COLLIER'S ENGINEERING & DESIGN, DATED 09/19/23, LAST REVISED 11/7/23.
- EXISTING FEATURES DEPICTED ON NORTH SIDE OF FIFTH AVENUE AND ON THE SOUTH SIDE OF FIFTH AVENUE FROM STATION 0+00 TO 0+40, STATION 2+50 TO STATION 3+25, STATION 4+25 TO STATION 4+60 AND STATION 5+45 TO STATION 8+95 ARE APPROXIMATE AND ARE BASED ON AERIAL IMAGERY AND UTILITY MARKOUTS OBSERVED IN THE FIELD. ALL INFORMATION DEPICTED ON THE PLAN SHOULD BE VERIFIED BY THE CONTRACTOR.
- EXISTING CURBLINE AND SPOT ELEVATIONS DEPICTED ON COLBY LANE ARE BASED ON INFORMATION FROM THE SURVEY ENTITLED "EXISTING GRADE ELEVATIONS EXHIBIT FOR COLBY LANE" FOR THE TOWNSHIP OF CRANFORD, PREPARED BY COLLIER'S ENGINEERING & DESIGN, DATED 09/19/23, LAST REVISED 10/27/23. ALL REMAINING EXISTING FEATURES DEPICTED ON COLBY LANE ARE APPROXIMATE AND ARE BASED ON AERIAL IMAGERY AND UTILITY MARKOUTS OBSERVED IN THE FIELD. ALL INFORMATION DEPICTED ON THE PLAN SHOULD BE VERIFIED BY THE CONTRACTOR.
- HORIZONTAL POSITION OF THESE SURVEYS IS BASED ON GPS OBSERVATION AND IS RELATIVE TO NAD83 ADJUSTMENT.
- ELEVATIONS SHOWN HEREON ARE RELATIVE TO NAVD88 ADJUSTMENT.
- THE VERTICAL AND HORIZONTAL DATUM WERE ESTABLISHED AT THE PROJECT SITES BY USING GPS SURVEY METHODS.
- UNDERGROUND UTILITIES AND FEATURES DEPICTED ON SCHERRER STREET, RIVERSIDE DRIVE, FIFTH AVENUE, FROM STATION 0+40 TO STATION 2+50, STATION 3+25 TO STATION 4+25, STATION 4+60 TO STATION 5+45 AND STATION 8+95 TO STATION 9+35 AND NORTH SIDE OF FIFTH AVENUE AND ON THE SOUTH SIDE OF FIFTH AVENUE FROM STATION 0+00 TO 0+40, STATION 2+50 TO STATION 3+25, STATION 4+25 TO STATION 4+60 AND STATION 5+45 TO STATION 8+95 WERE MAPPED USING RADIO FREQUENCY PIPE AND CABLE LOCATORS (RFL) AND GROUND PENETRATING RADAR (GPR). OTHER BURIED UTILITIES MAY BE PRESENT BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE RFL AND GPR SYSTEMS, UNFAVORABLE SOIL CONDITIONS, SITE ACCESS, AND/OR DENSE UTILITY INFRASTRUCTURE. THEREFORE, 100% DETECTION IS NOT GUARANTEED. CAUTION SHOULD BE USED WHEN EXCAVATING IN THE VICINITY OF MAPPED FEATURES.
- ALL RIGHT-OF-WAY LINES, PROPERTY LINES, AND EASEMENTS ARE APPROXIMATE AND BASED UPON TAX MAPS, PUBLICLY AVAILABLE DOCUMENTS AND PUBLICLY AVAILABLE GIS FOR UNION COUNTY.

GENERAL NOTES:

- ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION RELATED TO THE PROPOSED IMPROVEMENTS SHOWN HEREIN SHALL BE IN ACCORDANCE WITH THE FOLLOWING, UNLESS SPECIFICALLY AMENDED OR SUPPLEMENTED BY THE CONTRACT DOCUMENTS:
 - N.J. DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019", AS CURRENTLY AMENDED;
 - N.J. DEPARTMENT OF TRANSPORTATION "STANDARD ROADWAY CONSTRUCTION/TRAFFIC CONTROL/BRIDGE CONSTRUCTION DETAILS, 2016", AS CURRENTLY AMENDED;
 - "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", AS CURRENTLY AMENDED;
 - CURRENT PREVAILING MUNICIPAL, COUNTY AND/OR STATE AGENCY SPECIFICATIONS, STANDARDS, CONDITIONS AND REQUIREMENTS;
 - CURRENT PREVAILING UTILITY COMPANY/AUTHORITY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS;
 - CURRENT MANUFACTURER'S SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY INCLUDING PROVISION OF ALL SAFETY DEVICES AND TRAINING REQUIRED.
- THE CONTRACTOR IS RESPONSIBLE FOR THOROUGHLY EXAMINING THE PROJECT PLANS, SPECIFICATIONS, DETAILS, AND SITE. THE CONTRACTOR SHALL NOTIFY THE UNDERSIGNED PROFESSIONAL IMMEDIATELY IF ANY SITE CONDITIONS DIFFER MATERIALLY FROM THOSE REPRESENTED HEREIN.
- THE CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR THE PROPOSED IMPROVEMENTS.
- ALL MATERIALS MUST BE AMERICAN MADE. THE CONTRACTOR MUST PROVIDE THE ENGINEER WITH SHIPPING AND DELIVERY TICKETS/RECEIPTS FOR ALL MATERIALS TO BE USED FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
- THE CONTRACTOR SHALL OBTAIN SHOP DRAWING APPROVAL PRIOR TO THE INSTALLATION OF EACH ITEM. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL AT LEAST TWO (2) WEEKS PRIOR TO ORDERING MATERIALS.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL STAKEOUT AND LAYOUT, AS NECESSARY, TO CONSTRUCT THE PROPOSED IMPROVEMENTS IN STRICT CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS AND DETAILS.
- ACTUAL FIELD LIMITS OF MILLING, CONCRETE PROFILE MILLING, CURB AND SIDEWALK WORK WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- NO "SIDE PROJECTS" FOR RESIDENTS, UTILITIES OR BUSINESSES MAY BE CONSTRUCTED WITH MATERIAL PURCHASED FOR THE COMPLETION OF THE PROPOSED IMPROVEMENTS SHOWN HEREIN.
- THE CONTRACTOR MUST REVIEW AND AGREE TO AS-BUILT QUANTITIES WITH THE ENGINEER.
- THE ENGINEER MUST BE CONTACTED IMMEDIATELY UPON THE CONTRACTOR RECEIVING A COMPLAINT FROM ANY PERSON WITHIN THE PROJECT AREA OR MUNICIPAL OFFICIAL.
- FLUSH CONCRETE CURB SHALL BE INSTALLED IN FRONT OF CURB RAMPS.
- ALL INFORMATION DEPICTED ON THE PLAN SHOULD BE VERIFIED IN THE FIELD BY THE CONTRACTOR. THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON VISIBLE ABOVE GROUND STRUCTURES AND UTILITY MARK OUTS. NO EXCAVATIONS WERE MADE. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. THE CONTRACTOR SHALL HAVE ALL UNDERGROUND UTILITIES FIELD VERIFIED BY THE PROPER UTILITY COMPANIES BEFORE ANY CONSTRUCTION BEGINS.

UTILITY NOTES:

- NOT ALL UTILITY POLES, UTILITY VALVES AND UTILITY LINES ARE SHOWN ON THE PLAN. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL CALL FOR A UTILITY MARK-OUT PRIOR TO THE START OF CONSTRUCTION (CALL 1-800-272-1000).
- UTILITY RELOCATIONS SHOWN ON THE PLAN, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED WORK. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES/AUTHORITIES IMPACTED BY THE PROPOSED WORK AND PERFORMING UTILITY RELOCATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERTINENT UTILITY COMPANIES/AUTHORITIES.
- ALL UTILITY MANHOLES, VALVE BOXES, CLEANOUTS, METERS, ETC. SHALL BE RESET BY THE CONTRACTOR TO MEET PROPOSED ROAD, SIDEWALK AND DRIVEWAY GRADES. THE CONTRACTOR SHALL COORDINATE WITH IMPACTED UTILITY COMPANIES/AUTHORITIES AS NECESSARY.
- WATER VALVE BOXES & GAS VALVE BOXES WITHIN THE ROADWAY SHALL BE RESET TO MEET PROPOSED GRADES.
- MISCELLANEOUS UTILITY EQUIPMENT WITHIN THE SIDEWALK AND DRIVEWAYS SHALL BE RESET TO MEET PROPOSED GRADES DURING THE PROGRESS OF CURB, SIDEWALK AND DRIVEWAY CONSTRUCTION. NO SEPARATE PAYMENT WILL BE MADE. COST TO BE INCLUDED IN VARIOUS PROPOSAL ITEMS.
- THE CONTRACTOR SHALL TAKE PRECAUTION WHEN WORKING ADJACENT TO UTILITIES AND TEMPORARILY SUPPORT UTILITY POLES, IF REQUIRED, DURING THE PROGRESS OF WORK.
- THE CONTRACTOR SHALL CLEAN AND MAINTAIN ALL STORM SEWER STRUCTURES, AS NECESSARY, FOR THE DURATION OF THE PROJECT.

MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

- THE CONTRACTOR SHALL COORDINATE ALL TRAFFIC CONTROL MEASURES WITH THE LOCAL POLICE DEPARTMENT AND OWNER. TRAFFIC CONTROL DETAILS PROVIDED HEREIN ARE TYPICAL AND SUBJECT TO MODIFICATION BY THE LOCAL POLICE DEPARTMENT AND OWNER.
- THE CONTRACTOR SHALL MAKE PROVISIONS FOR MATERIAL AND EQUIPMENT STORAGE. NO EQUIPMENT OR MATERIALS SHALL BE STORED WITHIN THE R.O.W. WITHOUT EXPRESS WRITTEN CONSENT FROM THE LOCAL POLICE DEPARTMENT AND OWNER.
- THE CONTRACTOR SHALL PREPARE AND SUBMIT A TRAFFIC CONTROL SCHEDULE AND STAGING PLAN TO THE LOCAL POLICE DEPARTMENT AND OWNER FOR REVIEW AND APPROVAL. THE PLAN MUST BE APPROVED BY THE LOCAL POLICE DEPARTMENT AND OWNER PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE OWNER AND LOCAL POLICE DEPARTMENT SEVENTY-TWO (72) HOURS PRIOR TO THE START OF ANY WORK.
- THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL POLICE DEPARTMENT TO DETERMINE THE NEED FOR POLICE TRAFFIC DIRECTORS. THE CONTRACTOR SHALL PROVIDE THE LOCAL POLICE DEPARTMENT WITH AT LEAST ONE (1) WEEK NOTICE PRIOR TO REQUESTING POLICE TRAFFIC DIRECTORS.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PLACING TEMPORARY NO PARKING SIGNS AS REQUIRED BY THE LOCAL POLICE DEPARTMENT. IF REQUIRED, TEMPORARY NO PARKING SIGNS MUST BE POSTED AT LEAST FORTY-EIGHT (48) HOURS IN ADVANCE OF CONSTRUCTION.

WORKING HOURS:

- THE CONTRACTOR SHALL WORK ON WEEKDAYS ONLY. APPROVAL TO WORK ON WEEKENDS MUST BE GRANTED BY THE LOCAL POLICE DEPARTMENT AND OWNER.
- ALL MOTORIZED EQUIPMENT USED IN CONSTRUCTION OR DEMOLITION ACTIVITIES SHALL BE OPERATED WITH A MUFFLER.

SOIL EROSION AND TREE PROTECTION NOTES:

- THE CONTRACTOR SHALL INSTALL AND MAINTAIN SOIL EROSION AND SEDIMENT CONTROL MEASURES FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL MEASURES IN NEW JERSEY.
- INLET FILTERS ARE TO BE INSTALLED ON ALL EXISTING AND NEW INLETS WITHIN THE PROJECT LIMITS AND IMMEDIATELY ADJACENT TO PROJECT LIMITS.
- SILT FENCE SHALL BE INSTALLED AS DIRECTED IN THE FIELD BY THE ENGINEER, AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING DUST CONTROL MEASURES, AS NECESSARY. ALL VEHICLES SHALL BE CLEAN AND ALL ROADWAYS SHALL BE MAINTAINED TO AVOID DUST POLLUTION.
- THE CONTRACTOR SHALL PROTECT ALL TREES SCHEDULED TO REMAIN DURING CONSTRUCTION. DAMAGE TO EXISTING TREES WILL BE EVALUATED BY THE OWNER AND ENGINEER. DAMAGED TREES WILL BE REPLACED AS REQUIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- WHERE EXISTING TREES AND ROOT SYSTEMS MAY CONFLICT WITH THE PROPOSED IMPROVEMENTS, THE CONTRACTOR MUST RETAIN A CERTIFIED TREE EXPERT TO EVALUATE TREES IN QUESTION. ALL EVALUATIONS SHALL BE IN WRITING AND SHALL ACCURATELY IDENTIFY THE TREE IN QUESTION BY STATION AND OFFSET (LEFT OR RIGHT). ALL EVALUATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

DEMOLITION AND CONSTRUCTION NOTES:

- ALL EXCAVATED MATERIALS ARE TO BE DISPOSED OF IN ACCORDANCE WITH APPROVED NJDOT AND NJDEP MEANS AND METHODS. THE CONTRACTOR MUST NOT DEPOSIT EXCESS MATERIALS WITHIN THE MUNICIPAL LIMITS WITHOUT EXPRESS PERMISSION OF THE OWNER.
- ALL EXCAVATED AND DEMOLISHED MATERIALS, DEBRIS, AND EQUIPMENT, INCLUDING STONE, TOPSOIL, TREES, BLOCK AND CONCRETE FORMS, MUST BE REMOVED FROM THE PROJECT AREA AT THE CONCLUSION OF EACH DAY, UNLESS OTHERWISE APPROVED BY THE ENGINEER AND LOCAL POLICE DEPARTMENT.
- ALL EXISTING GRATES AND CASTINGS ARE THE PROPERTY OF THE MUNICIPALITY OR RESPECTIVE UTILITY AUTHORITY. ALL EXISTING GRATES AND CASTINGS THAT ARE TO BE REPLACED AS A PART OF THE PROPOSED IMPROVEMENTS SHALL BE RETURNED TO THE MUNICIPALITY OR RESPECTIVE UTILITY AUTHORITY.
- THE CONTRACTOR MUST PROTECT CONCRETE UNTIL CONCRETE IS CURED. DAMAGED AND VANDALIZED CONCRETE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL RESET ALL RAILINGS, GATES AND FENCES AS REQUIRED TO COMPLETE THE PROPOSED IMPROVEMENTS.
- THE CONTRACTOR IS RESPONSIBLE TO REPLACE/RESET ANY SPRINKLERS DAMAGED/DISTURBED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

ACCESS TO RESIDENCES AND BUSINESSES:

- THE CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN AND VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES FOR THE DURATION OF THE PROJECT.
- DURING DEMOLITION AND IMMEDIATELY AFTER POURING CONCRETE, THE CONTRACTOR MUST PLACE WOOD PLANKS, AT LEAST TWO (2) FT. WIDE, EACH ADJACENT BUILDING ENTRANCE TO ALLOW FOR SAFE ACCESS. PEDESTRIANS CANNOT BE EXPECTED TO CROSS OVER STONE, DIRT OR OTHER DEMOLISHED MATERIAL WITHOUT PLANKS. THE CONTRACTOR WILL NOT BE PERMITTED TO LEAVE THE SITE WITHOUT PLACING WOODEN PLANKS TO PROVIDE SAFE ACCESS TO RESIDENCES AND BUSINESSES.
- THE CONTRACTOR SHALL MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION. THE CONTRACTOR SHALL TEMPORARILY INSTALL AND MAINTAIN DENSE GRADED AGGREGATE OR HOT MIX ASPHALT TO PROVIDE A RIDING SURFACE FOR VEHICLE ACCESS TO EACH PROPERTY DURING CONSTRUCTION.
- THE CONTRACTOR MUST ENSURE ACCESS FOR EMERGENCY VEHICLES AND GARBAGE COLLECTION VENDORS FOR THE DURATION OF THE PROJECT.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY ACCESSIBLE CURB RAMPS WITH HAND RAILS WHEN EXISTING ACCESSIBLE ACCESS IS REMOVED OR LIMITED DUE TO CONSTRUCTION.
- NO SEPARATE PAYMENT SHALL BE MADE FOR THE PROVISION OF SAFE PEDESTRIAN AND VEHICULAR ACCESS AS DESCRIBED ABOVE AND AS DIRECTED IN THE FIELD BY THE ENGINEER.

ACCESSIBLE CURB RAMP NOTES:

- THE CONTRACTOR IS RESPONSIBLE FOR LAYING OUT FORMS, POURING CONCRETE AND CONSTRUCTING ACCESSIBLE CURB RAMPS TO MEET ADA STANDARDS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF FIELD CONDITIONS CONFLICT WITH INDICATED ACCESSIBLE CURB RAMP TYPES AND DETAILS PROVIDED HEREIN.
- THIS PROJECT MAY REQUIRE THE USE OF RECTANGULAR, RADIAL AND A COMBINATION OF RADIAL/RECTANGULAR DETECTABLE WARNING SURFACES. THE DETECTABLE WARNING SURFACES WILL BE MEASURED BASED ON ACTUAL FINISHED PRODUCT AND NOT INCLUDE SECTIONS THAT ARE CUT AND DISCARDED.
- DETECTABLE WARNING SURFACES SHALL BE CAST-IN-PLACE AND THE COLOR SHALL CONTRAST FROM THE SURROUNDING MATERIAL.
- THE ENGINEER WILL INSPECT AND MEASURE THE FINAL CONDITION OF EACH CONSTRUCTED CURB RAMP. ALL CURB RAMPS FOUND NOT TO COMPLY WITH ADA STANDARDS SHALL BE DEMOLISHED AND REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

SIGNS, STRIPING AND MARKING NOTES:

- ALL SIGNAGE, TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.), AS CURRENTLY AMENDED.
- REGULATORY SIGNS MUST BE REINSTALLED AS SOON AS SIDEWALKS ARE POURED.
- SIGNS THAT DESIGNATE PARKING STALLS MUST BE REINSTALLED AS SOON AS DEMOLITION IS COMPLETED TO ENSURE THAT HANDICAPPED INDIVIDUALS, AND OTHERS, MAINTAIN THEIR DESIGNATED PARKING SPACES THROUGHOUT CONSTRUCTION.
- ADA ACCESSIBLE PARKING SIGNS MUST BE PLACED AS CLOSE TO THE FRONT OF A SPACE AS PERMITTED BY SITE CONDITIONS.

MILLING AND PAVING NOTES:

- THE CONTRACTOR MUST PROVIDE A SMOOTH SAWCUT EDGE WHERE PROPOSED PAVEMENT ABUTS EXISTING PAVEMENT.
- AFTER MILLING AND PRIOR TO PAVING, THE CONTRACTOR SHALL PROOF ROLL THE ROAD TO DETERMINE THE CONDITION OF THE BASE COURSE. SOFT SPOTS AND UNSUITABLE ROAD BASE SHALL BE REPAIRED. THE CONTRACTOR MUST ALLOW ADEQUATE TIME FOR THE ENGINEER TO INSPECT THE MILLED SURFACE TO EVALUATE THE NEED FOR REPAIRS IN THE PAVEMENT BASE. IF & WHERE DIRECTED BY THE ENGINEER, SAWCUT, REMOVE, REPLACE EXISTING BASE COURSE AND AGGREGATE AS REQUIRED. CONSTRUCT NEW AGGREGATE AND BASE COURSE TO MEET EXISTING DEPTHS. SEE FULL DEPTH REPAIR DETAIL.
- IF REPAIRS IN THE PAVEMENT BASE ARE NECESSARY AS DETERMINED BY THE ENGINEER, THE CONTRACTOR SHALL NOT COMMENCE PAVING OPERATIONS UNTIL SUCH TIME THAT ALL REPAIRS IN THE PAVEMENT BASE ARE COMPLETE.
- THE CONTRACTOR SHALL MARK ALL RAISED UTILITY MANHOLES, INLETS AND VALVE BOXES THAT ARE EXPOSED AS A RESULT OF MILLING. IN ADDITION, THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT RAMPS AROUND RAISED UTILITIES AS DIRECTED BY THE ENGINEER WHERE SUCH UTILITIES MAY BE IN CONFLICT WITH VEHICULAR AND PEDESTRIAN TRAFFIC.

FINAL CLEAN UP AND PROJECT ACCEPTANCE:

- PRIOR TO FINAL ACCEPTANCE, ALL PROPERTY CORNERS OR MONUMENTS REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY A NEW JERSEY LICENSED LAND SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR MUST REPLACE ANY DAMAGED CONCRETE CURB AND SIDEWALK BEFORE ACCEPTANCE OF THE PROJECT BY THE OWNER.
- ALL AREAS OUTSIDE OF THE PROJECT LIMITS THAT ARE DISTURBED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER PRIOR TO PROJECT ACCEPTANCE.
- ALL GRASSED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED BY TOPSOILING, SEEDING, FERTILIZING AND MULCHING.
- THE CONTRACTOR SHALL NOT TRACK TACK COAT OR ANY OTHER CONSTRUCTION MATERIAL OR DEBRIS ONTO ADJOINING ROADS OUTSIDE THE PROJECT LIMITS. ANY EXISTING STRIPING AND/OR PAVEMENT MARKINGS LOCATED OUTSIDE THE PROJECT LIMITS THAT ARE IMPACTED, MARKED OR DAMAGED AS A RESULT OF THE CONTRACTOR'S CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO PAVEMENT OPERATIONS, MUST BE RE-STRIPED BY THE CONTRACTOR AT THE END OF CONSTRUCTION AT NO ADDITIONAL COST TO THE TOWNSHIP.

SAFETY NOTE:

- THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY AND FOR PREVENTING AND PROHIBITING ACCESS TO THE CONSTRUCTION AREAS BY THE GENERAL PUBLIC.
- ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE SAFETY CODES. APPLICABLE SAFETY CODES SHALL MEAN THE LATEST EDITION INCLUDING ANY AND ALL AMENDMENTS, REVISIONS, AND ADDITIONS THERETO OF THE FEDERAL DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION'S "OCCUPATIONAL SAFETY AND HEALTH STANDARDS" (OSHA); "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION" OF THE STATE OF NEW JERSEY, DEPARTMENT OF LABOR AND INDUSTRY; BUREAU OF ENGINEERING AND SAFETY; "CONSTRUCTION SAFETY CODE" AND "MAINTENANCE, CONSTRUCTION AND DEMOLITION" AND "BUILDING CODE".

QUANTITIES

PAY ITEM NO.	BASE BID - 2023 ROAD PROGRAM	UNIT	TOTAL BASE BID QUANTITY	IF/WHERE DIRECTED QUANTITY	PLAN SHEET QUANTITY
1	SOIL EROSION AND SEDIMENT CONTROL	LS	1	0	0
2	POLICE TRAFFIC DIRECTORS	MAN HOUR	480	480	0
3	TRAFFIC CONTROL MEASURES AND DEVICES	LS	1	0	0
4	FUEL PRICE ADJUSTMENT	DOLLAR	500	500	0
5	ASPHALT PRICE ADJUSTMENT	DOLLAR	1,000	1,000	0
6	CLEARING SITE	LS	1	0	0
7	EXCAVATION, BORROW EXCAVATION AND GRADING, UNCLASSIFIED	LS	1	0	0
8	HMA MILLING, 3" OR LESS	SY	13,134	0	13,134
9	HOT MIX ASPHALT PAVEMENT REPAIR	SY	3,132	1,314	1,818
10	TACK COAT	GALLON	2,246	0	2,246
11	HOT MIX ASPHALT 9.5M46 SURFACE COURSE, 2" THICK	TON	2,246	0	2,246
12	LEADER DRAIN, 4" POLYVINYL CHLORIDE PIPE	LF	100	100	0
13	RESET EXISTING CASTING	UNIT	2	2	0
14	RECONSTRUCTED INLET, TYPE B, USING EXISTING CASTING	UNIT	1	1	0
15	BICYCLE SAFE GRATE (PHASE II STORMWATER COMPLIANT GRATE)	UNIT	25	0	25
16	CURB PIECE (NJDEP TYPE 'N' ECO)	UNIT	25	0	25
17	REPAIR INTERIOR OF DRAINAGE STRUCTURE	UNIT	31	0	31
18	CONCRETE SIDEWALK, 4" THICK	SY	214	0	214
19	HOT MIX ASPHALT DRIVEWAY, 2" THICK	SY	256	0	256
20	CONCRETE DRIVEWAY, REINFORCED, 6" THICK	SY	91	0	91
21	DETECTABLE WARNING SURFACE	SY	15	0	15
22	RESET PAVER SIDEWALK	SY	6	0	6
23	RESET PAVER DRIVEWAY	SY	10	0	10
24	9" X 18" CONCRETE VERTICAL CURB	LF	121	25	96
25	GRANITE BLOCK CURB	LF	3,512	75	3,437
26	TRAFFIC MARKING LINES, 6"	LF	619	0	619
27	TRAFFIC MARKING LINES, 12"	LF	15	0	15
28	RECONSTRUCTED MANHOLE, SANITARY SEWER, USING EXISTING CASTING	UNIT	1	1	0
29	RESET MANHOLE, SANITARY SEWER, USING EXISTING CASTING	UNIT	2	0	2
30	TREE REMOVAL, OVER 30" TO 36" DIAMETER	UNIT	1	0	1
31	TOPSOIL SPREADING, 6" THICK	SY	1,714	150	1,564
32	FERTILIZING AND SEEDING, TYPE ERNM-X106	SY	1,714	150	1,564
33	STRAW MULCHING	SY	1,714	150	1,564
34	STREET TREE	UNIT	2	0	2

LEGEND

	EXISTING RIGHT OF WAY LINE		PROPOSED RIGHT OF WAY LINE
	EXISTING PROPERTY LINE		PROPOSED PROPERTY LINE
	EXISTING EDGE OF PAVEMENT		PROPOSED EDGE OF PAVEMENT
	EXISTING CURB		PROPOSED CURB
	EXISTING DEPRESSED CURB		PROPOSED DEPRESSED CURB
	EXISTING FLUSH CURB		PROPOSED FLUSH CURB
	EXISTING SIDEWALK		PROPOSED SIDEWALK
	EXISTING FENCES		PROPOSED FENCES
	EXISTING TREE LINE		PROPOSED TREE LINE
	EXISTING ROADWAY SIGNS		PROPOSED ROADWAY SIGNS
	EXISTING WETLAND LINE		PROPOSED WETLAND LINE
	EXISTING MUNICIPAL BOUNDARY LINE		PROPOSED MUNICIPAL BOUNDARY LINE
	B' INLET		PROPOSED B' INLET
	MODIFIED B' INLET		PROPOSED MODIFIED B' INLET
	E' INLET		PROPOSED E' INLET
	STORM MANHOLE		PROPOSED STORM MANHOLE
	SANITARY MANHOLE		PROPOSED SANITARY MANHOLE
	FLARED END SECTION		PROPOSED FLARED END SECTION
	HEADWALL		PROPOSED HEADWALL
	CONTOURS		PROPOSED CONTOURS
	SPOT ELEVATION		PROPOSED SPOT ELEVATION
	DIRECTION OF OVERLAND FLOW		PROPOSED DIRECTION OF OVERLAND FLOW
	TOP OF CURB ELEVATION		PROPOSED TOP OF CURB ELEVATION
	BOTTOM OF CURB ELEVATION		PROPOSED BOTTOM OF CURB ELEVATION
	CABLE TV CONDUIT		PROPOSED CABLE TV CONDUIT
	WATER MAIN		PROPOSED WATER MAIN
	GAS MAIN		PROPOSED GAS MAIN
	TELEPHONE CONDUIT		PROPOSED TELEPHONE CONDUIT
	ELECTRIC CONDUIT		PROPOSED ELECTRIC CONDUIT
	SANITARY PIPE		PROPOSED SANITARY PIPE
	STORM PIPE		PROPOSED STORM PIPE
	UNKNOWN UTILITY		PROPOSED UNKNOWN UTILITY
	PARKING STALL COUNT		PROPOSED PARKING STALL COUNT
	ADA ACCESSIBLE PARKING STALL		PROPOSED ADA ACCESSIBLE PARKING STALL
	DEPRESSED CURB AND ADA RAMP		PROPOSED DEPRESSED CURB AND ADA RAMP
	DIRECTION OF TRAFFIC FLOW		PROPOSED DIRECTION OF TRAFFIC FLOW
	HOT MIX ASPHALT PAVEMENT REPAIR		PROPOSED HOT MIX ASPHALT PAVEMENT REPAIR
	ASPHALT ROAD MILL AND PAVE		PROPOSED ASPHALT ROAD MILL AND PAVE
	ASPHALT ROAD CONSTRUCTED VIA FULL DEPTH RECONSTRUCTION (AS REQUIRED)		PROPOSED ASPHALT ROAD CONSTRUCTED VIA FULL DEPTH RECONSTRUCTION (AS REQUIRED)
	CONCRETE SIDEWALK, 4" THICK		PROPOSED CONCRETE SIDEWALK, 4" THICK
	CONCRETE DRIVEWAY, REINFORCED, 6" THICK		PROPOSED CONCRETE DRIVEWAY, REINFORCED, 6" THICK
	HOT MIX ASPHALT DRIVEWAY, 2" THICK		PROPOSED HOT MIX ASPHALT DRIVEWAY, 2" THICK
	TOP SOILING, FERTILIZING AND SEEDING & STRAW MULCHING		PROPOSED TOP SOILING, FERTILIZING AND SEEDING & STRAW MULCHING
	RESET EXISTING CASTING (MANHOLE)		PROPOSED RESET EXISTING CASTING (MANHOLE)
	RECONSTRUCT MANHOLE		PROPOSED RECONSTRUCT MANHOLE
	INLET FILTER		PROPOSED INLET FILTER
	RESET EXISTING CASTING (INLET)		PROPOSED RESET EXISTING CASTING (INLET)
	RESET EXISTING INLET AND INSTALL NEW CURB PIECE (NJDEP TYPE 'N' ECO)		PROPOSED RESET EXISTING INLET AND INSTALL NEW CURB PIECE (NJDEP TYPE 'N' ECO)
	RESET EXISTING INLET AND INSTALL NEW BICYCLE SAFE GRATE		PROPOSED RESET EXISTING INLET AND INSTALL NEW BICYCLE SAFE GRATE
	BICYCLE SAFE GRATE		PROPOSED BICYCLE SAFE GRATE

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REV.	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer

Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE49974
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N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS

FOR

2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

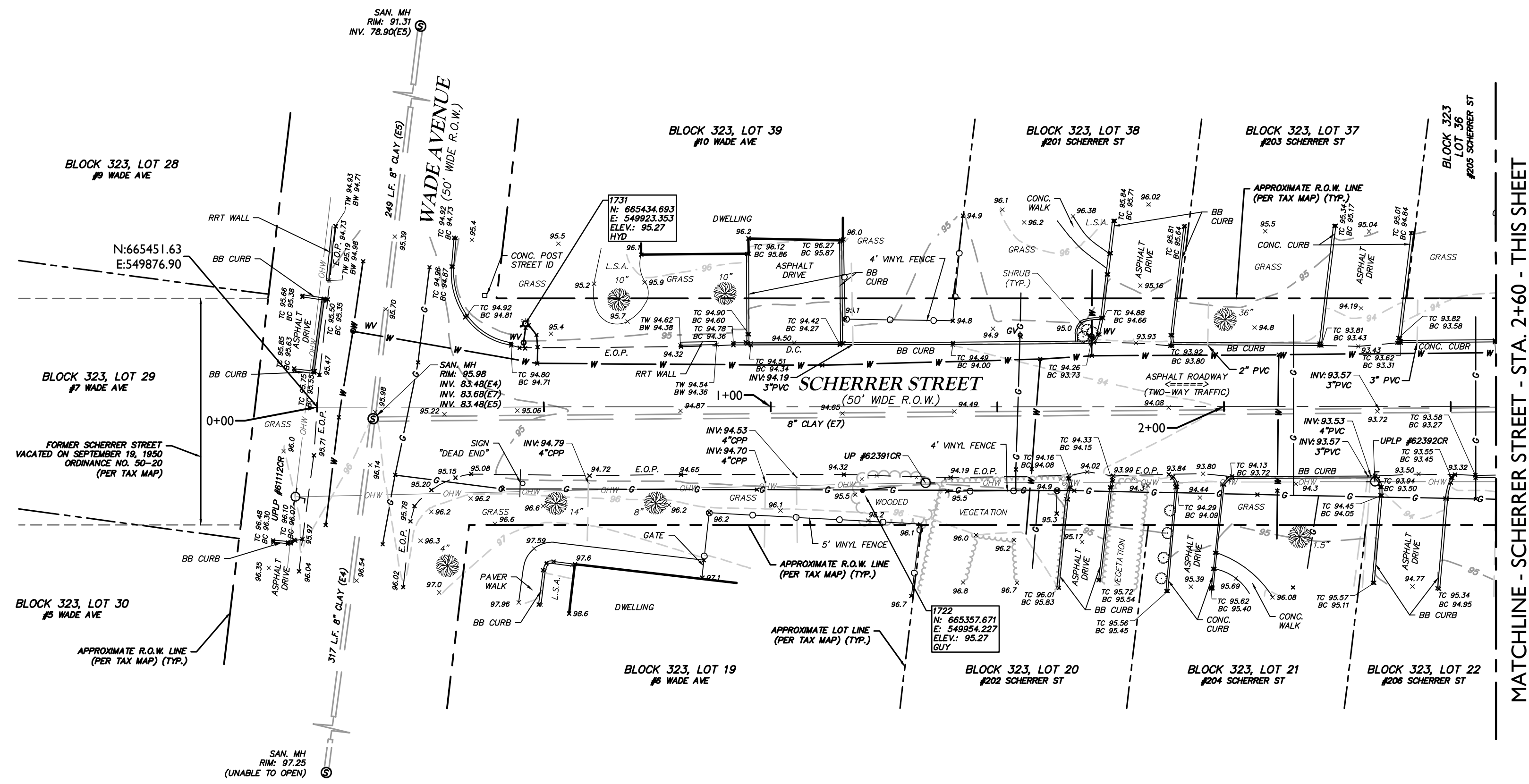
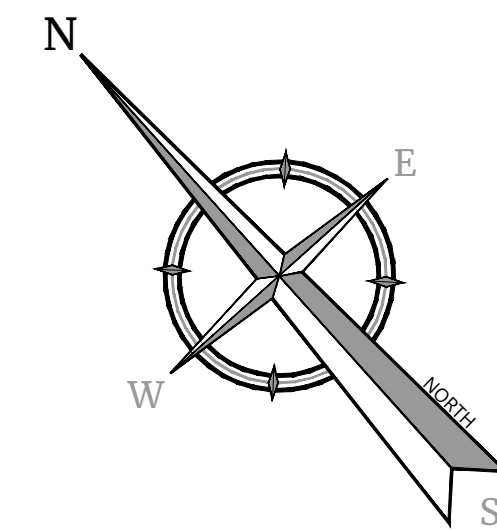
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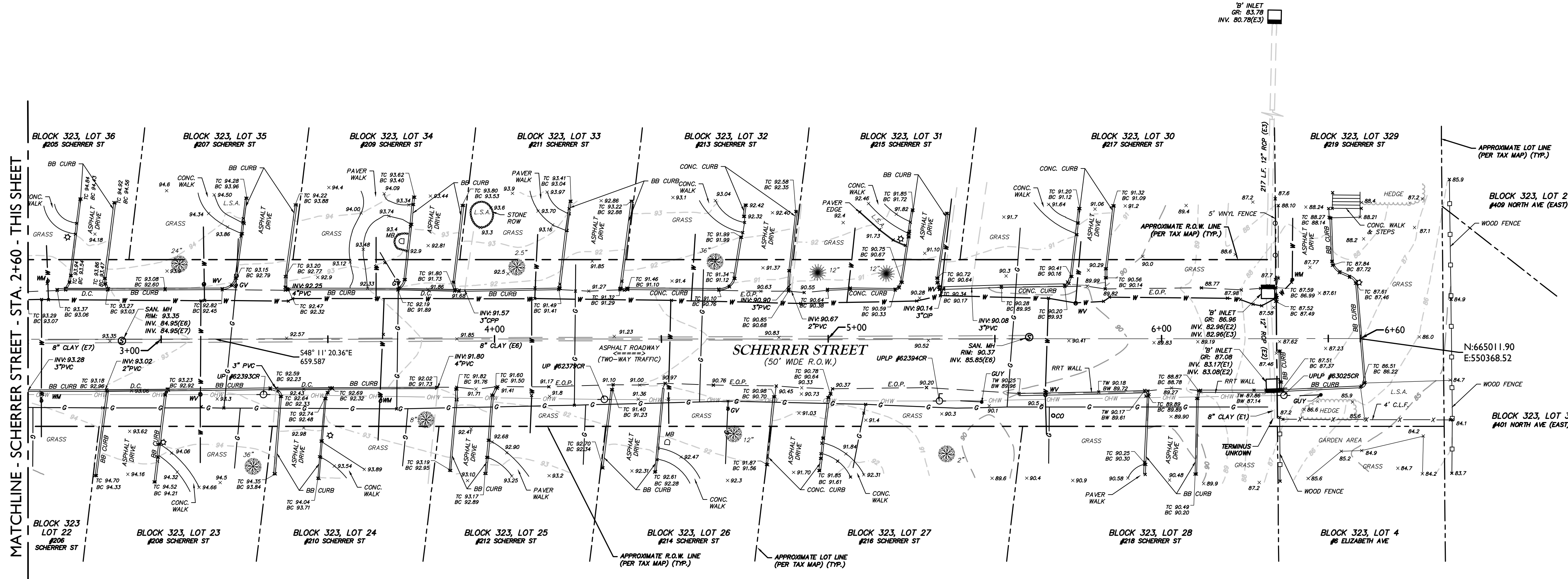


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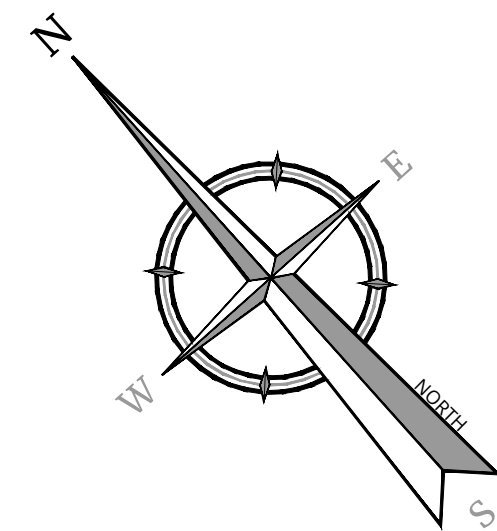
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MATCHLINE - SCHERRER STREET - STA. 2+60 - THIS SHEET



MATCHLINE - SCHERRER STREET - STA. 2+60 - THIS SHEET



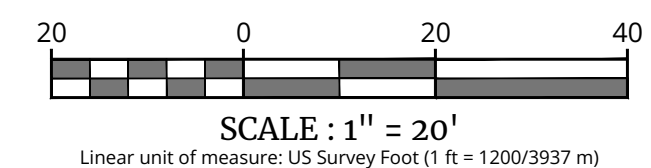
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LICENSE NUMBER: GE49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

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2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
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NEW JERSEY

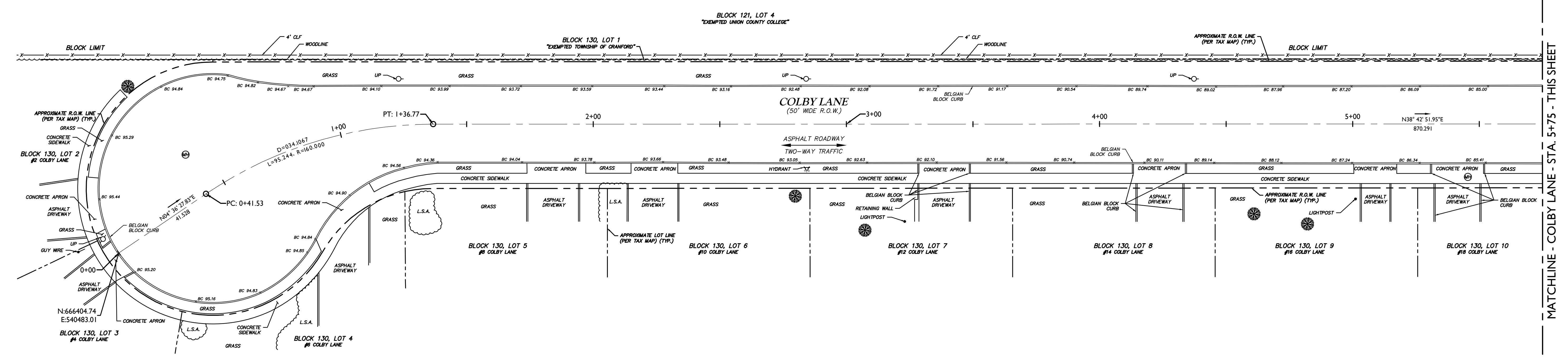
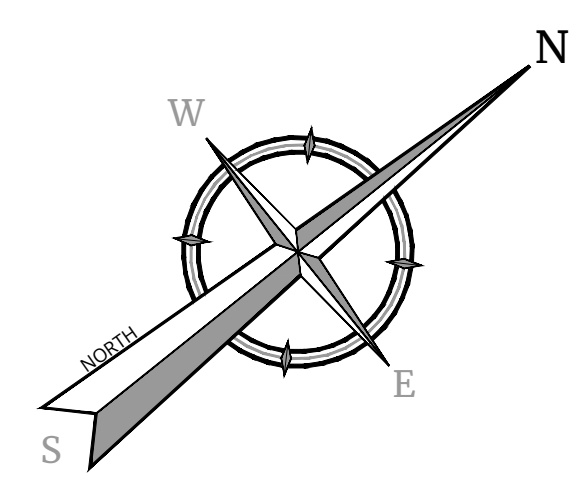
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POINT PNEZD DATA			
POINT NUMBER	NORTHING	EASTING	RAW DESCRIPTION
1722	665357.6710	549954.2270	95.274 GUY
1731	665434.6930	549923.3530	95.269 HYD

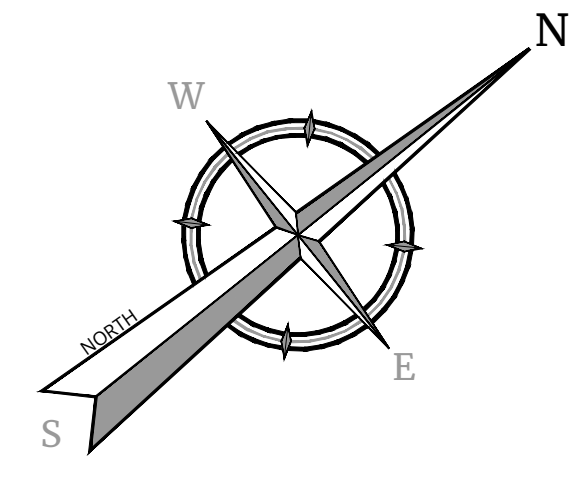
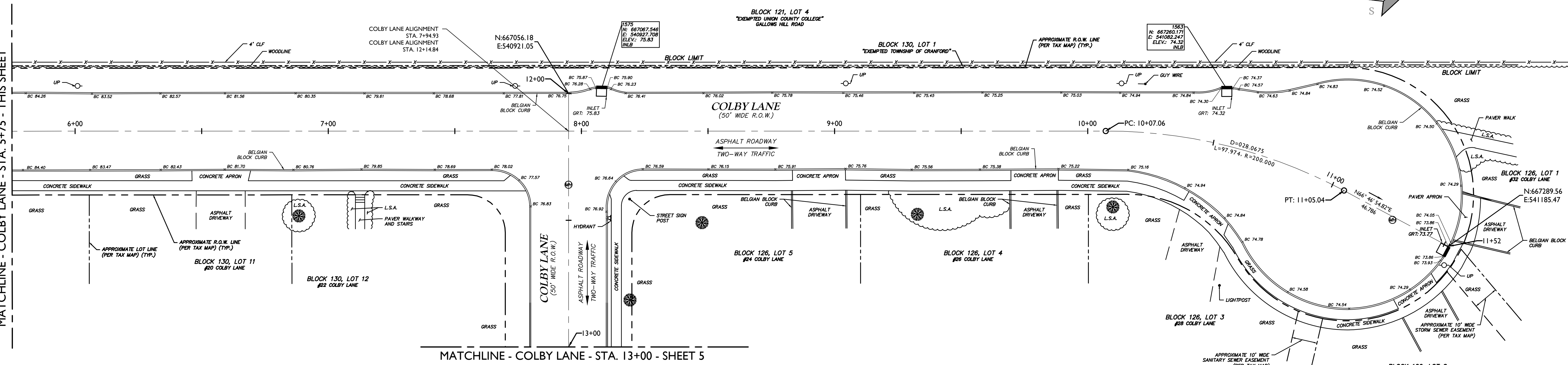


SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	09/21/23	BAK	BKP
PROJECT NUMBER:	DRAWING NAME:		
CDT0087	C-DEM0		

EXISTING
CONDITIONS PLAN
(SCHERRER STREET)



MATCHLINE - COLBY LANE - STA. 5+75 - THIS SHEET



MATCHLINE - COLBY LANE - STA. 5+75 - THIS SHEET

MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 5

REV.	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BAK	REVISED INTERSIDE DRIVE PROFILE

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Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE49974
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N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
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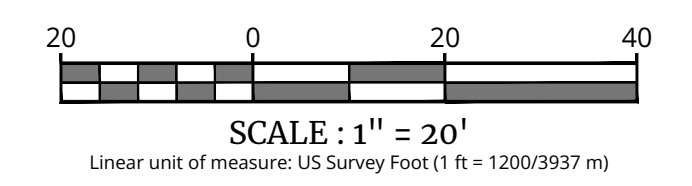
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-DEMO		

EXISTING
CONDITIONS PLAN
(COLBY LANE)

SHEET NUMBER:
4 of 41

POINT PNEZD DATA				
POINT NUMBER	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
1563	667260.1710	541082.2470	74.318	INLB
1575	667067.5460	540927.7080	75.832	INLB





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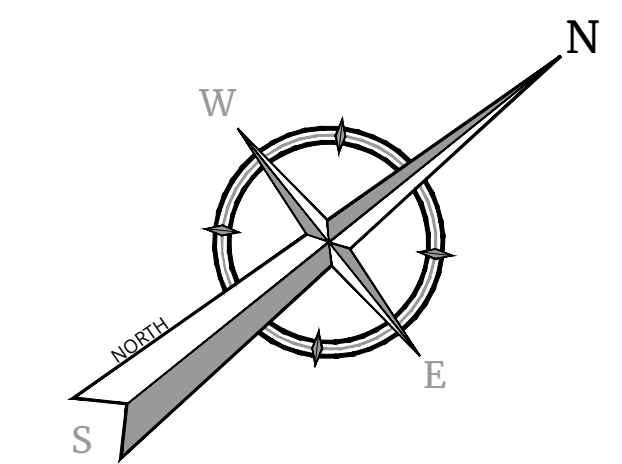
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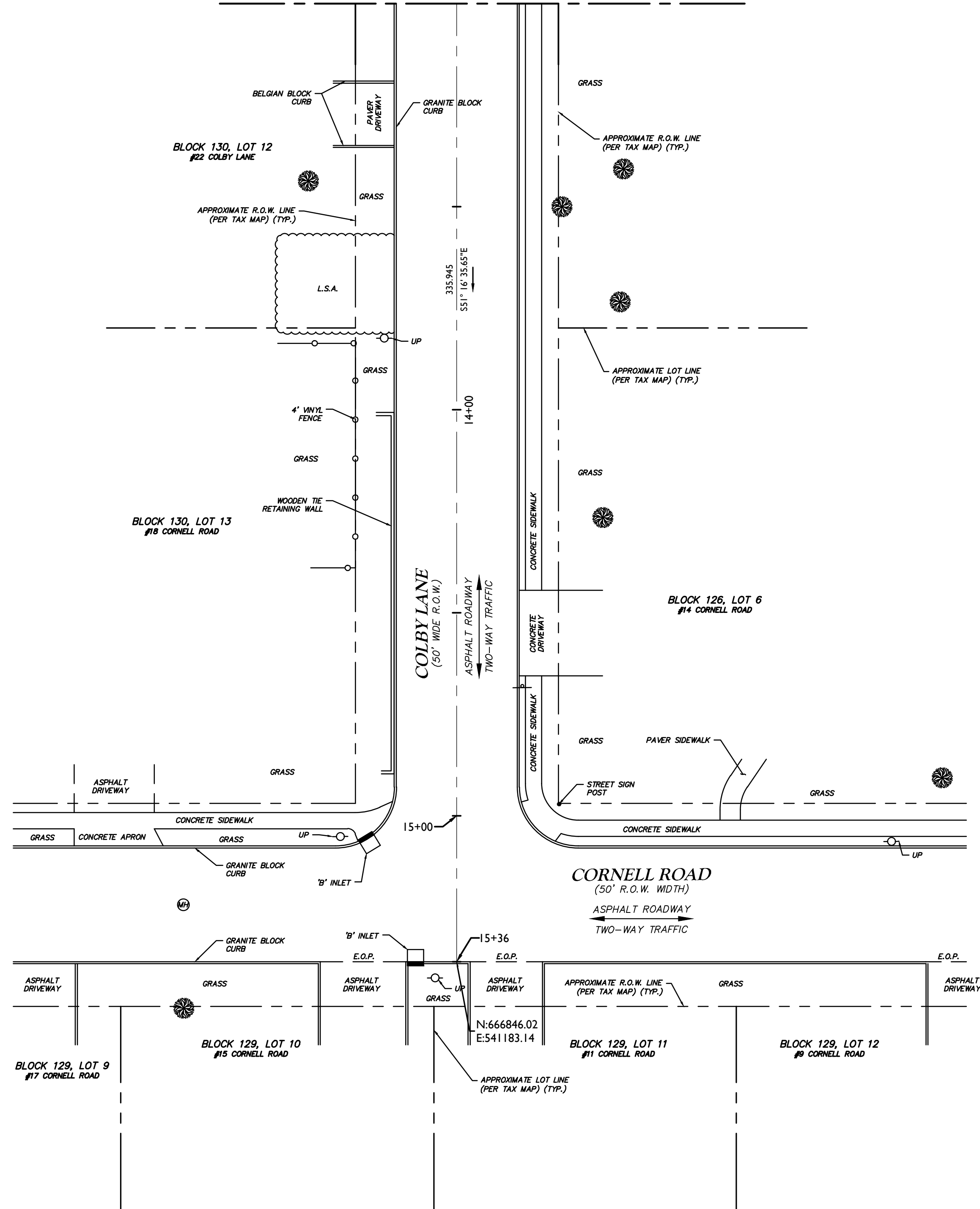


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MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 4



REV.	DATE	DESCRIPTION
1	3/15/24	REVISED INVERSIDE DRIVE PROFILE

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 N.J. C.O.A. #: 24GA27986500

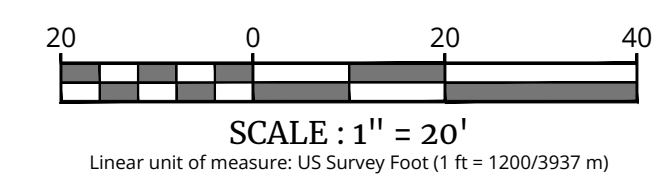
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 FOR
 2023 ROAD PROGRAM
 TOWNSHIP OF CRANFORD
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-DEMO		

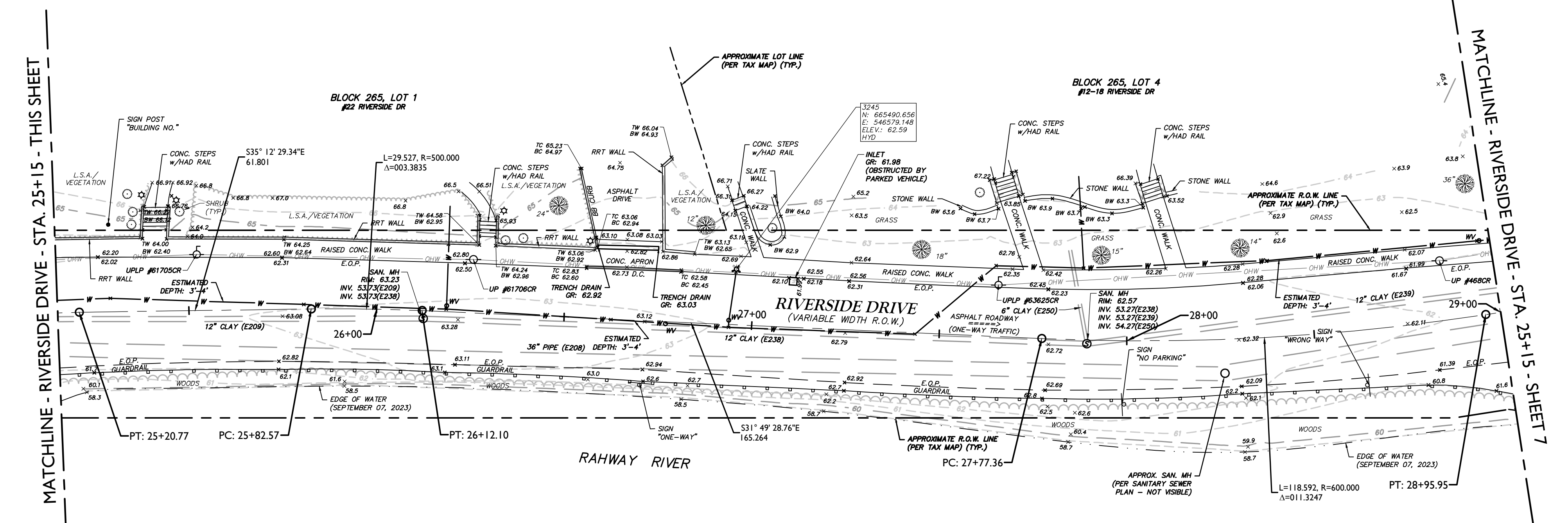
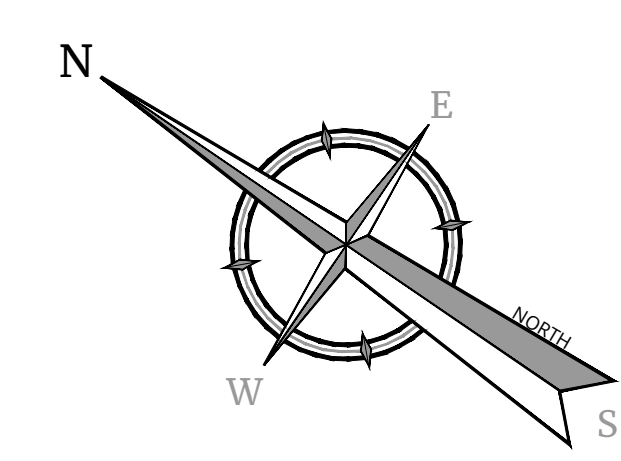
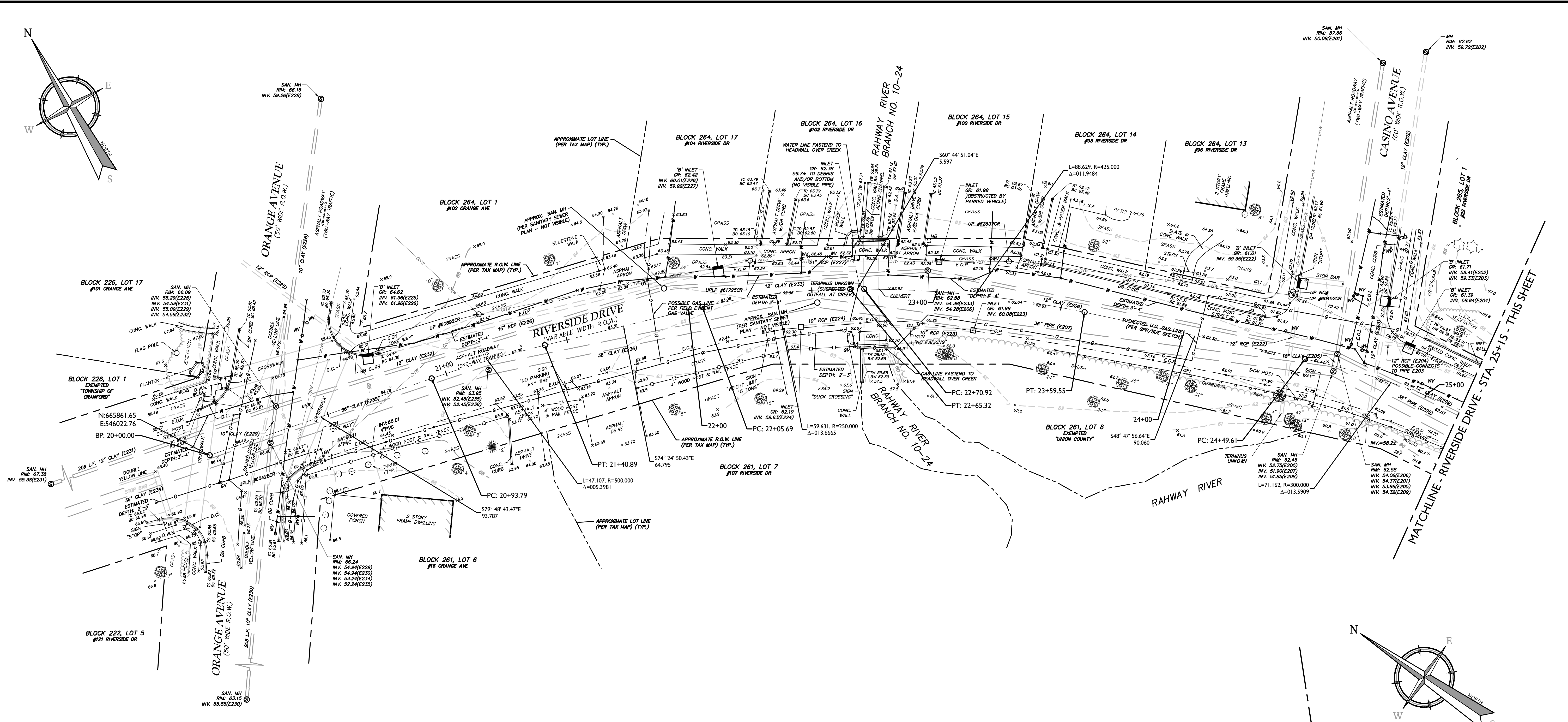
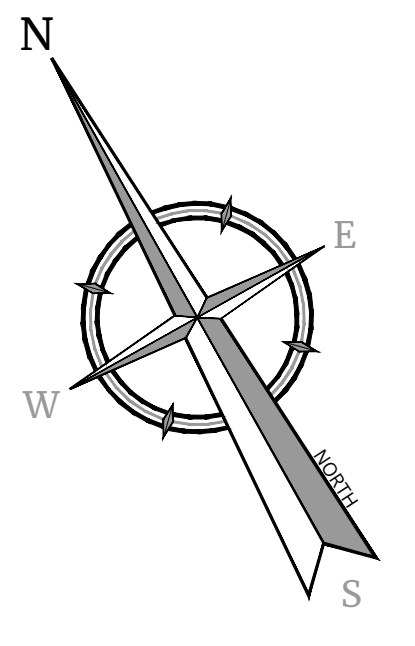
SHEET TITLE:
EXISTING CONDITIONS PLAN (COLBY LANE)

SHEET NUMBER:
 5 of 41



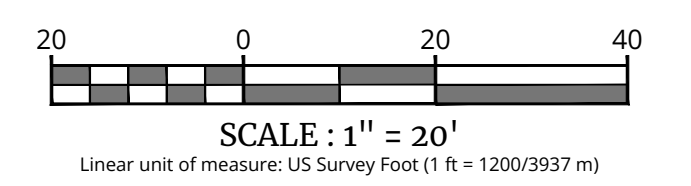
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CDT0087/Engineering/2023 Road Program/Sheet 4 of 4.dwg



POINT PNEZD DATA

POINT NUMBER	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
3245	665490.6560	546579.1480	62.586	HYD



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REV.	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
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COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24G27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM
TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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400 Valley Road,
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Phone: 973.398.3110
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SCALE: AS SHOWN DATE: 09/21/23 DRAWN BY: BAK CHECKED BY: BKP
PROJECT NUMBER: CDT0087 DRAWING NAME: C-DEM0

SHEET TITLE: EXISTING CONDITIONS PLAN (RIVERSIDE DRIVE)

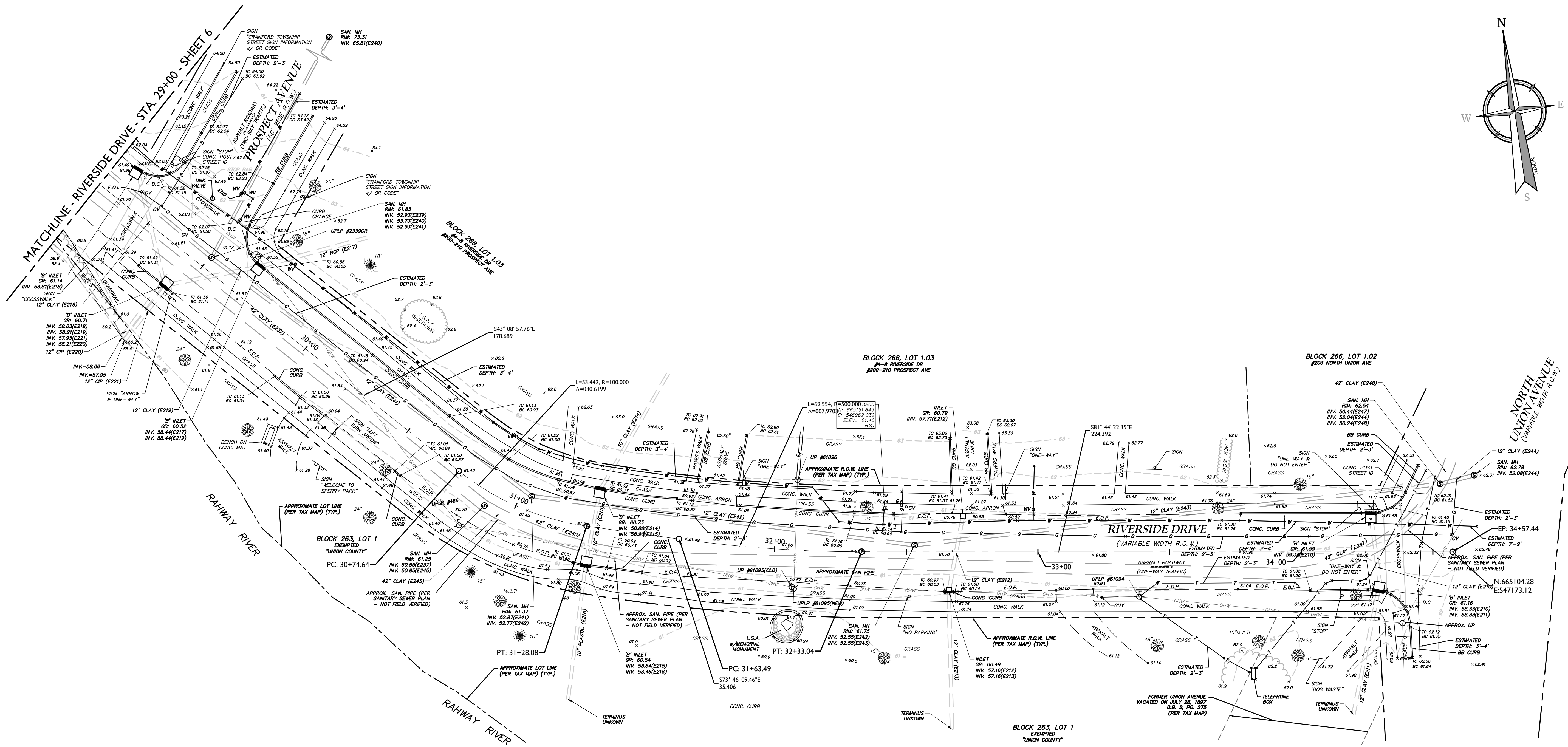
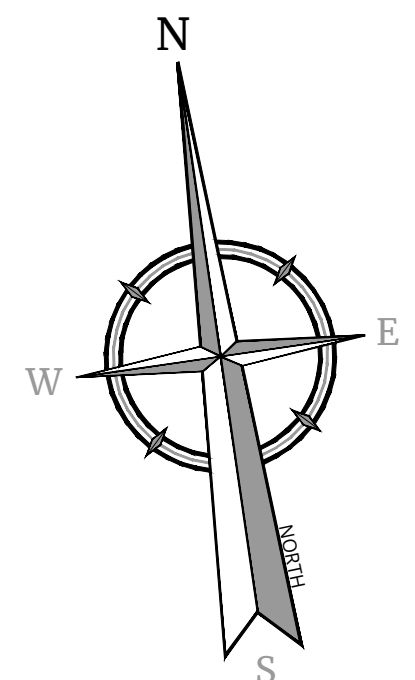
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POINT PNEZD DATA				
POINT NUMBER	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
3800	665151.6430	546962.0390	61.456	HYD



SCALE: 1" = 20'
Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

REV	DATE	DESCRIPTION
1	3/15/24	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
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CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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PROJECT NUMBER: CDT0087	DRAWING NAME: C-DEMO		

SHEET TITLE
EXISTING
CONDITIONS PLAN
(RIVERSIDE DRIVE)

REV.	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
 NEW JERSEY LICENSED PROFESSIONAL ENGINEER
 LICENSE NUMBER: GE49974
 COLLIER'S ENGINEERING & DESIGN, INC.
 N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
 FOR
 2023 ROAD PROGRAM

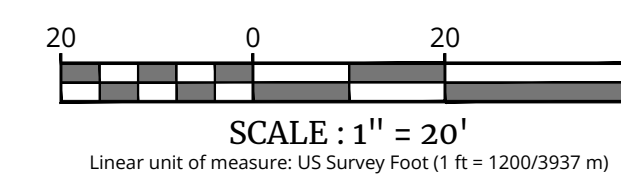
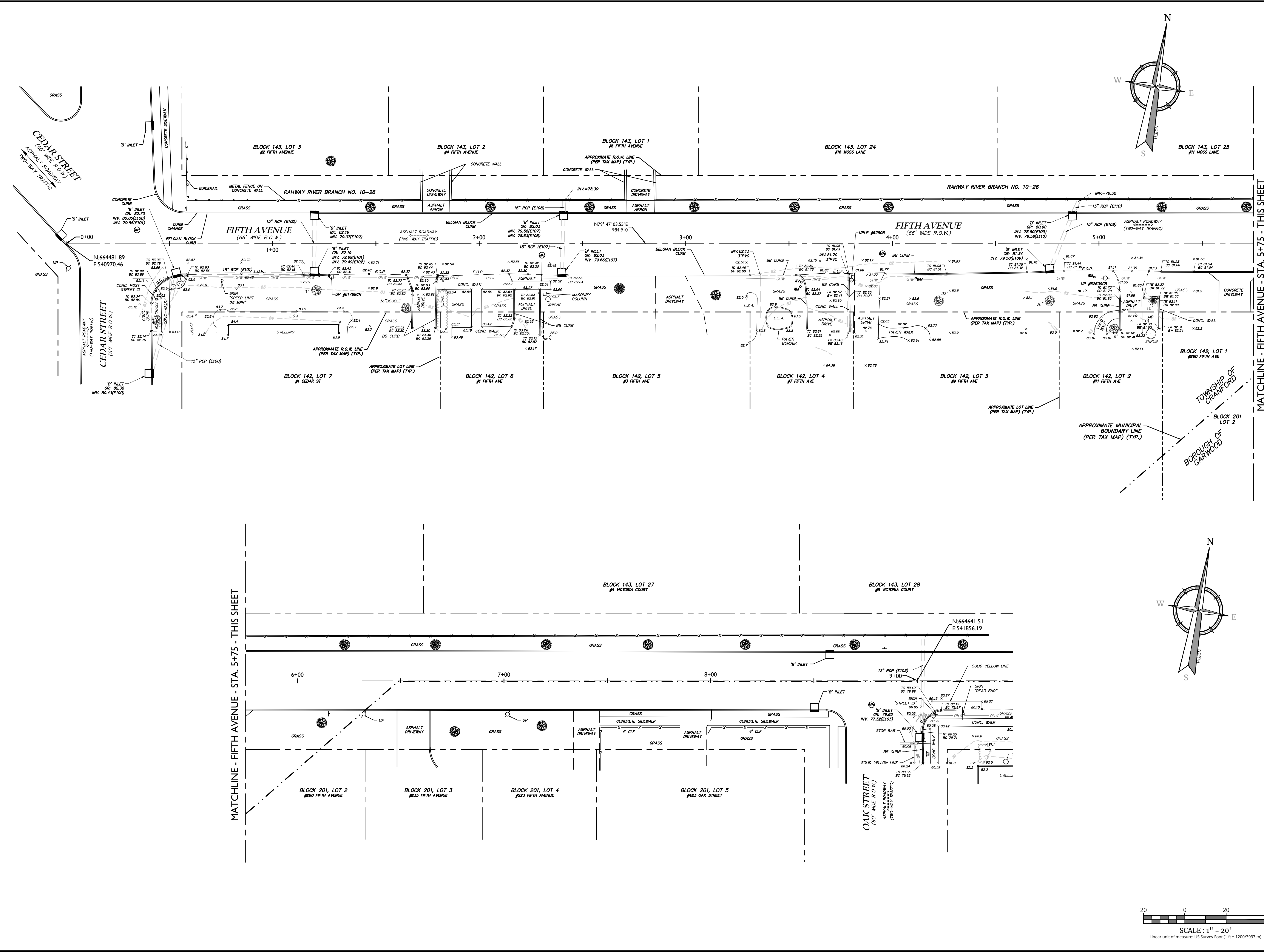
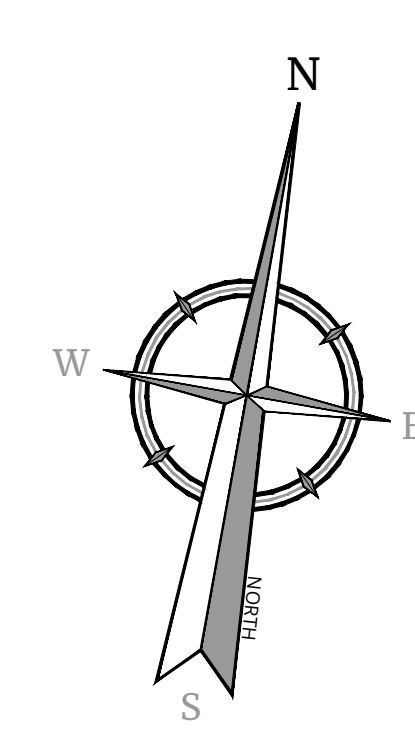
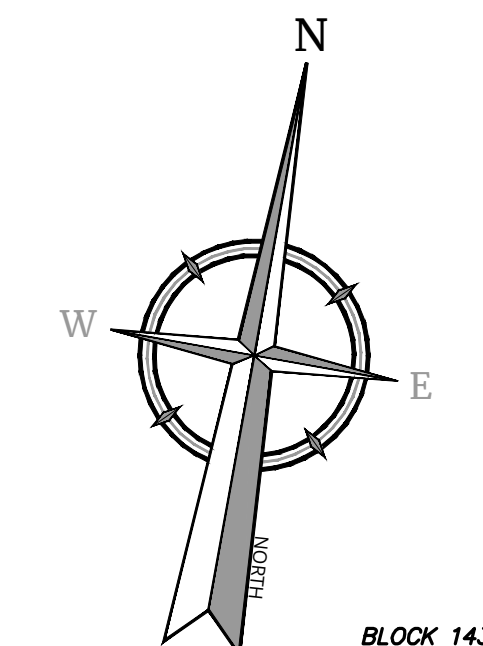
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-DEMO		

SHEET TITLE:
**EXISTING
 CONDITIONS PLAN
 (FIFTH AVENUE)**

SHEET NUMBER:
8 of 41



MATCHLINE - FIFTH AVENUE - STA. 5+75 - THIS SHEET

MATCHLINE - FIFTH AVENUE - STA. 5+75 - THIS SHEET

REV	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BHK	REVISED RIVERSIDE DRIVE PROFILE

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Kevin E. Boyer
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CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

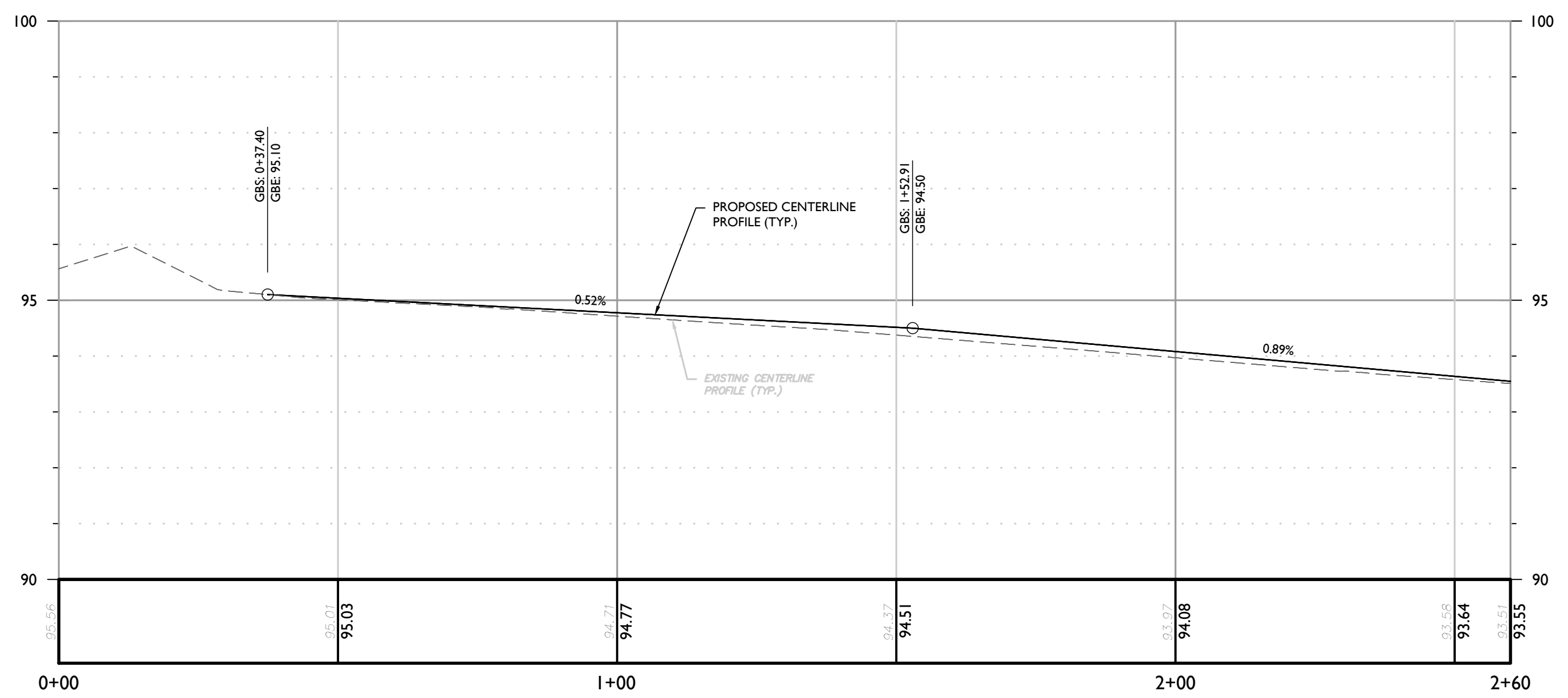
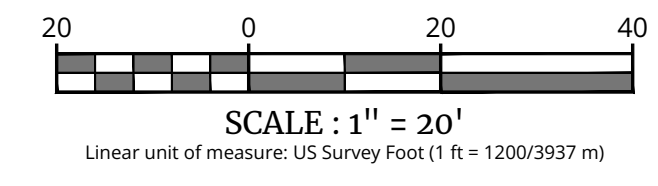
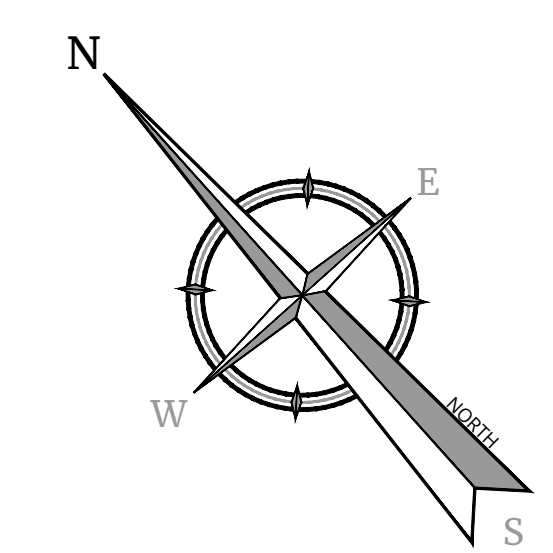
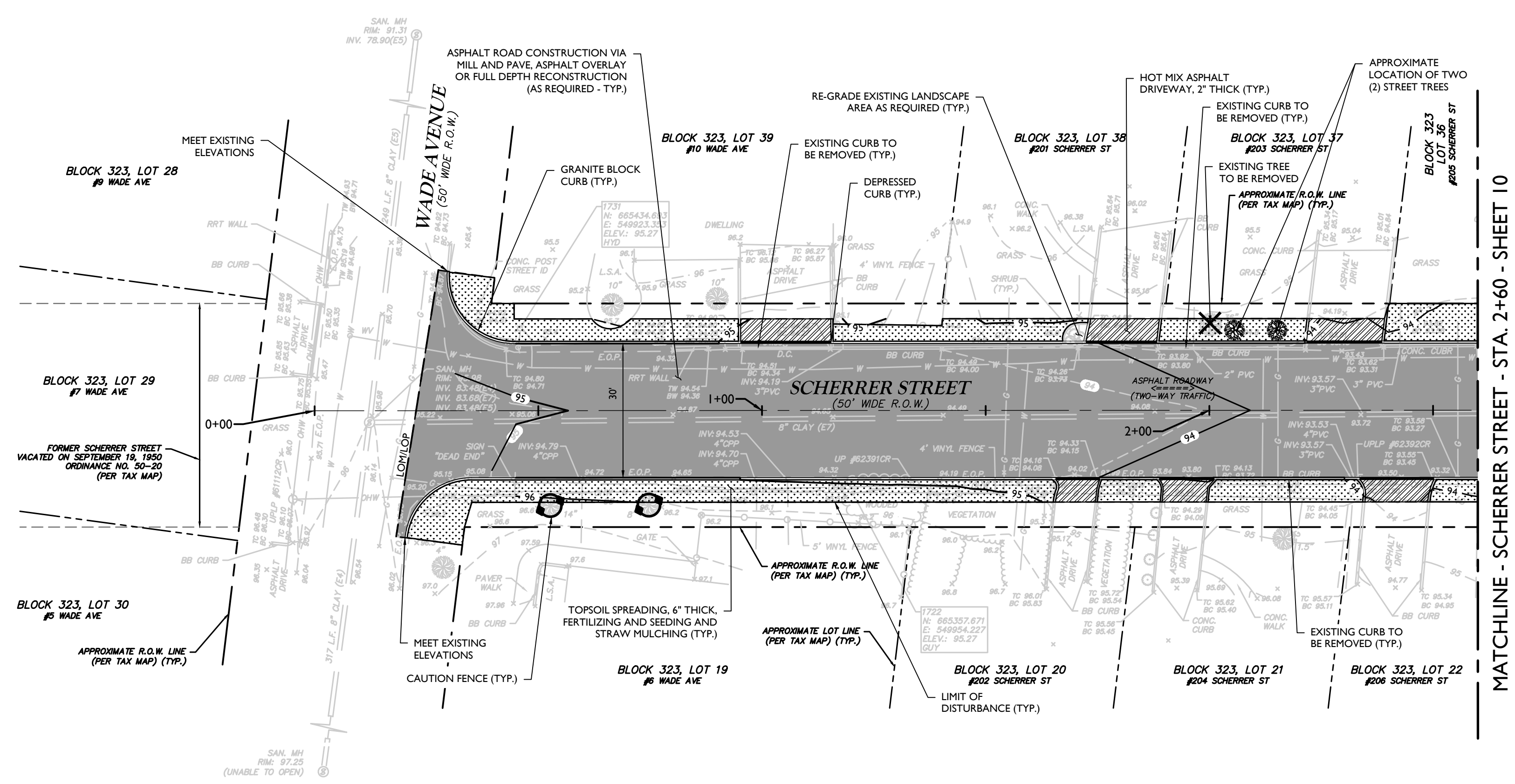
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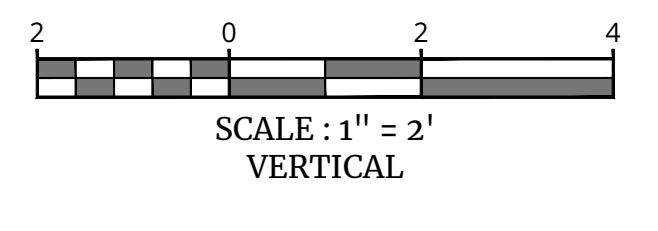
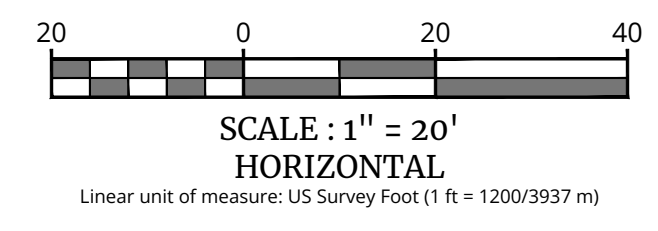
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

SHEET TITLE
DIMENSION PLAN (SCHERRER STREET)

SHEET NUMBER:
9 of 41



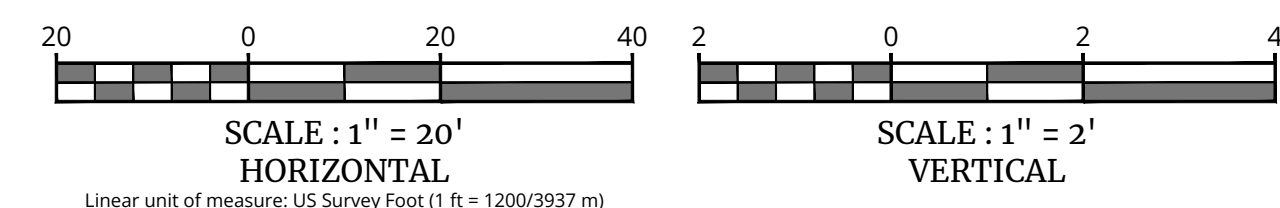
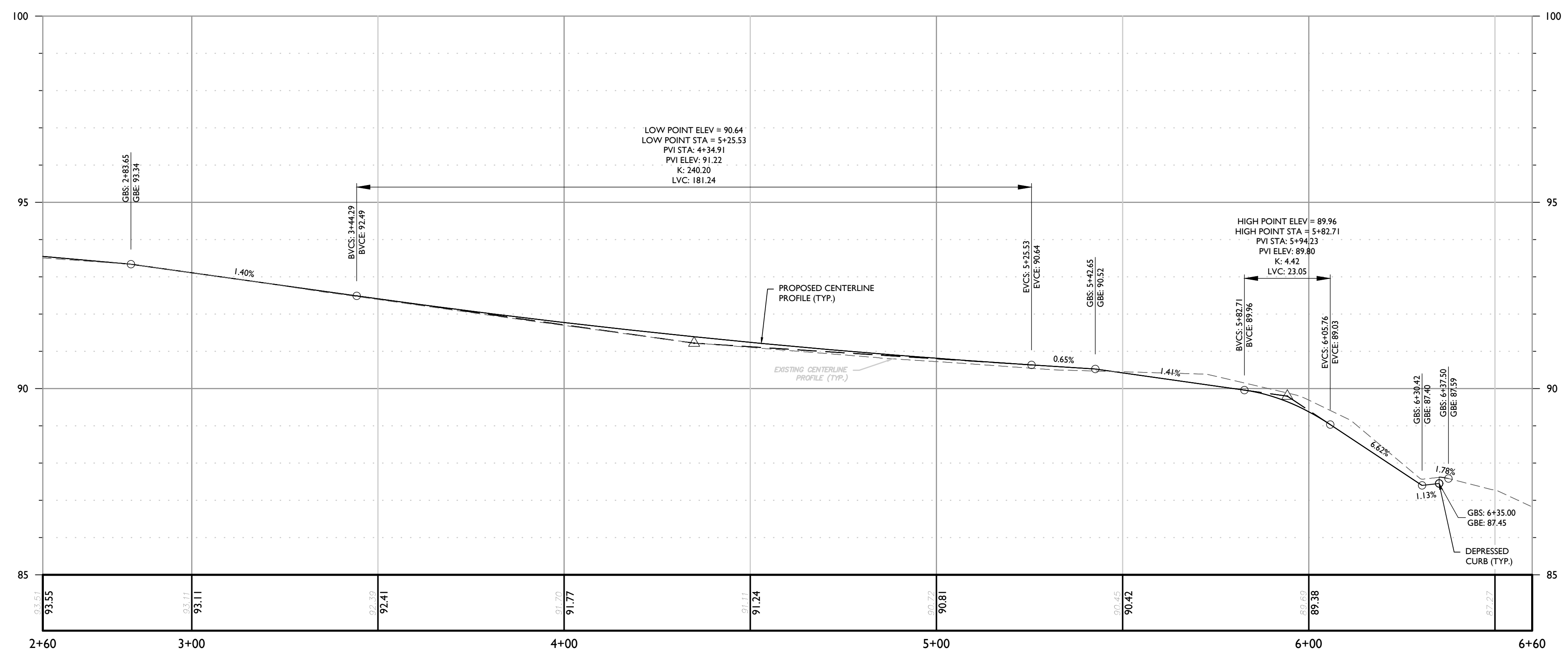
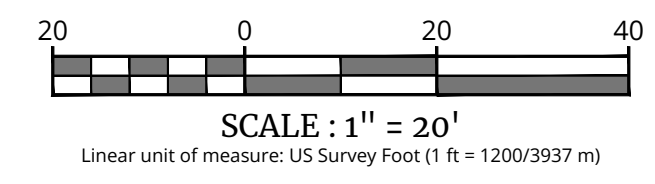
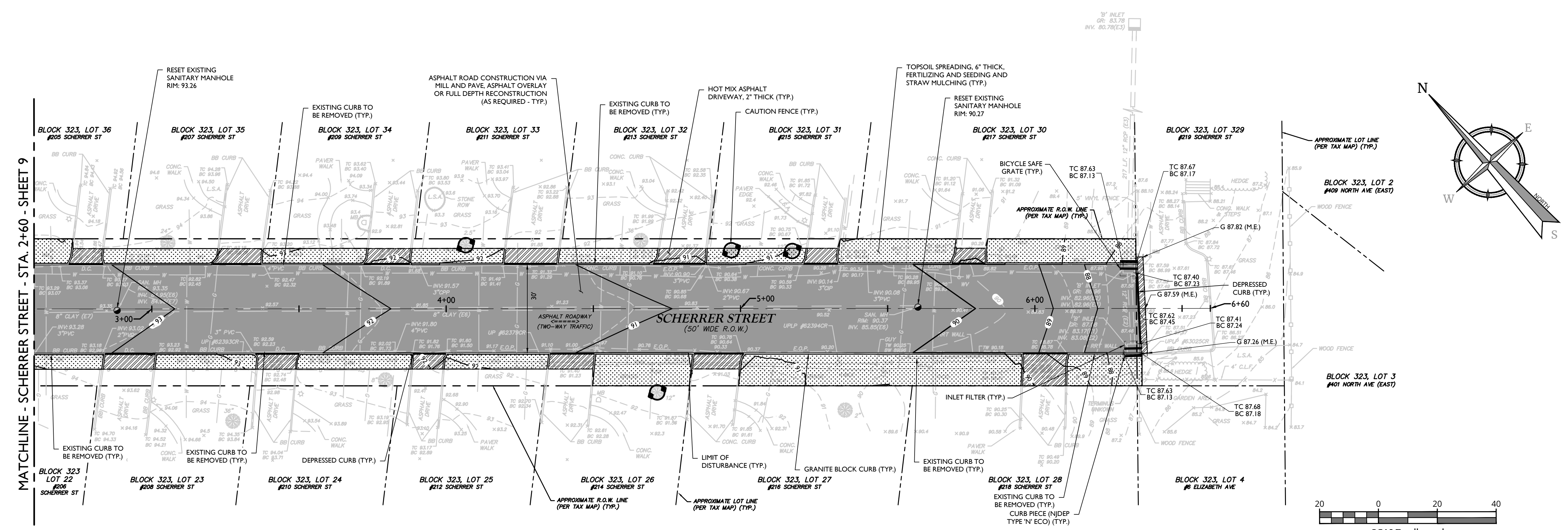
PROFILE OF SCHERRER STREET ALIGNMENT
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 2'



NOTES:

- THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA.
- THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.

SOIL EROSION AND SEDIMENT CONTROL PLAN



- NOTES:
- THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA.
 - THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.

SOIL EROSION AND SEDIMENT CONTROL PLAN

REV	DATE	DRAWN BY	DESCRIPTION
1	9/15/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
 NEW JERSEY LICENSED PROFESSIONAL ENGINEER
 LICENSE NUMBER: GE49974
 COLLIER'S ENGINEERING & DESIGN, INC.
 N.J. C.O.A. #: 24GA27986500

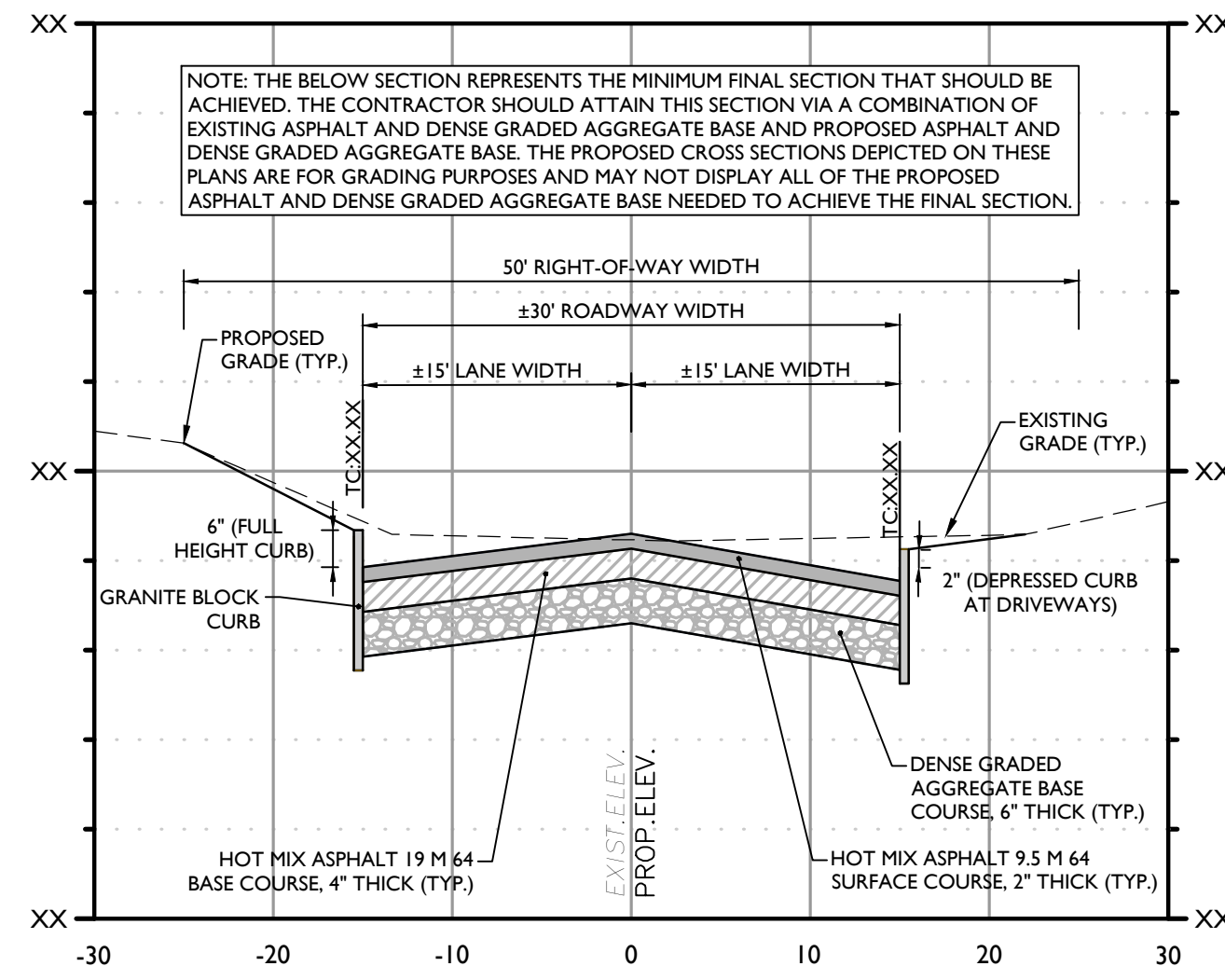
CONSTRUCTION PLANS
 FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
 UNION COUNTY
 NEW JERSEY

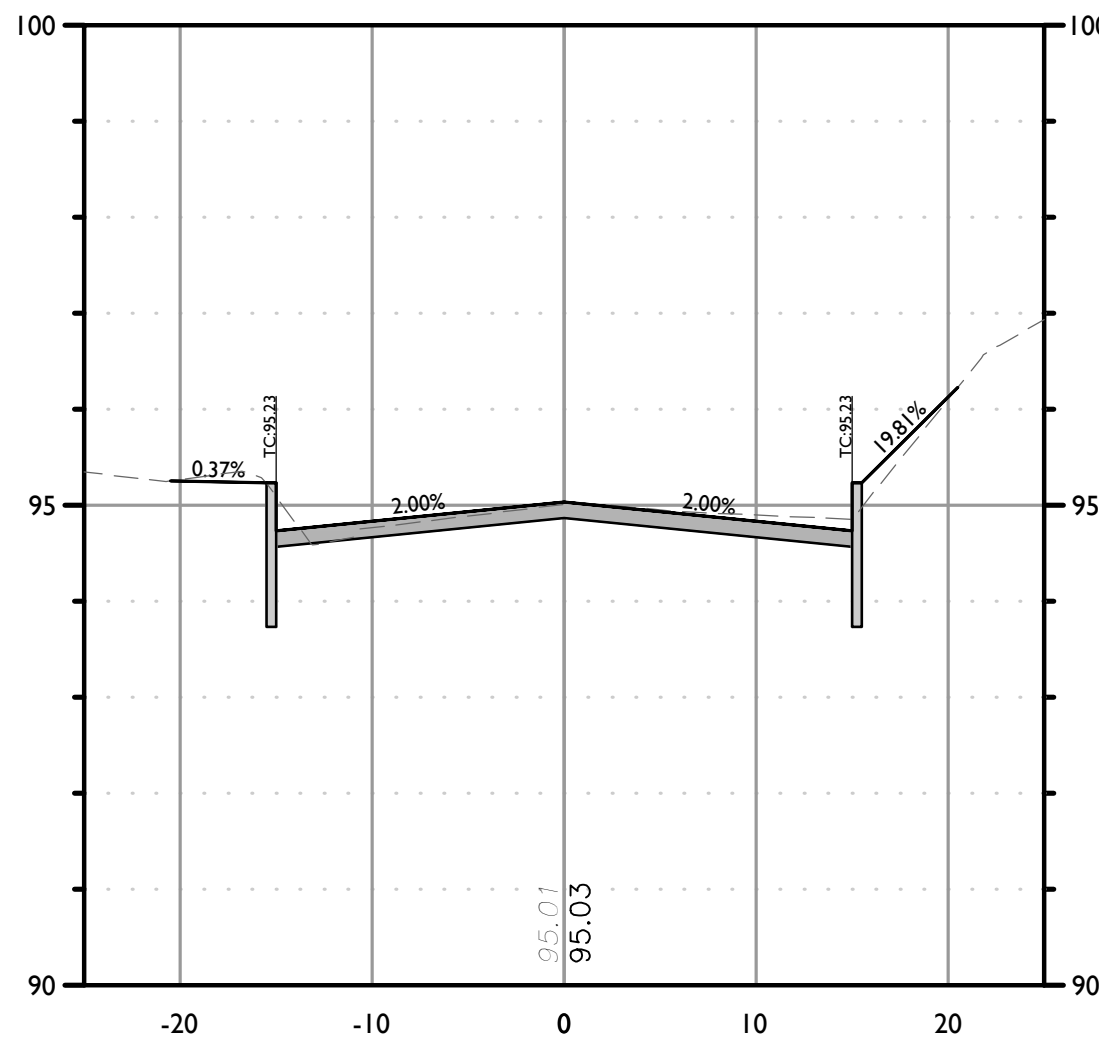
Colliers
 Engineering & Design
 MT. ARLINGTON
 400 Valley Road,
 Suite 304
 Mt. Arlington, NJ 07856
 Phone: 973.398.3110
 COLLIER'S ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

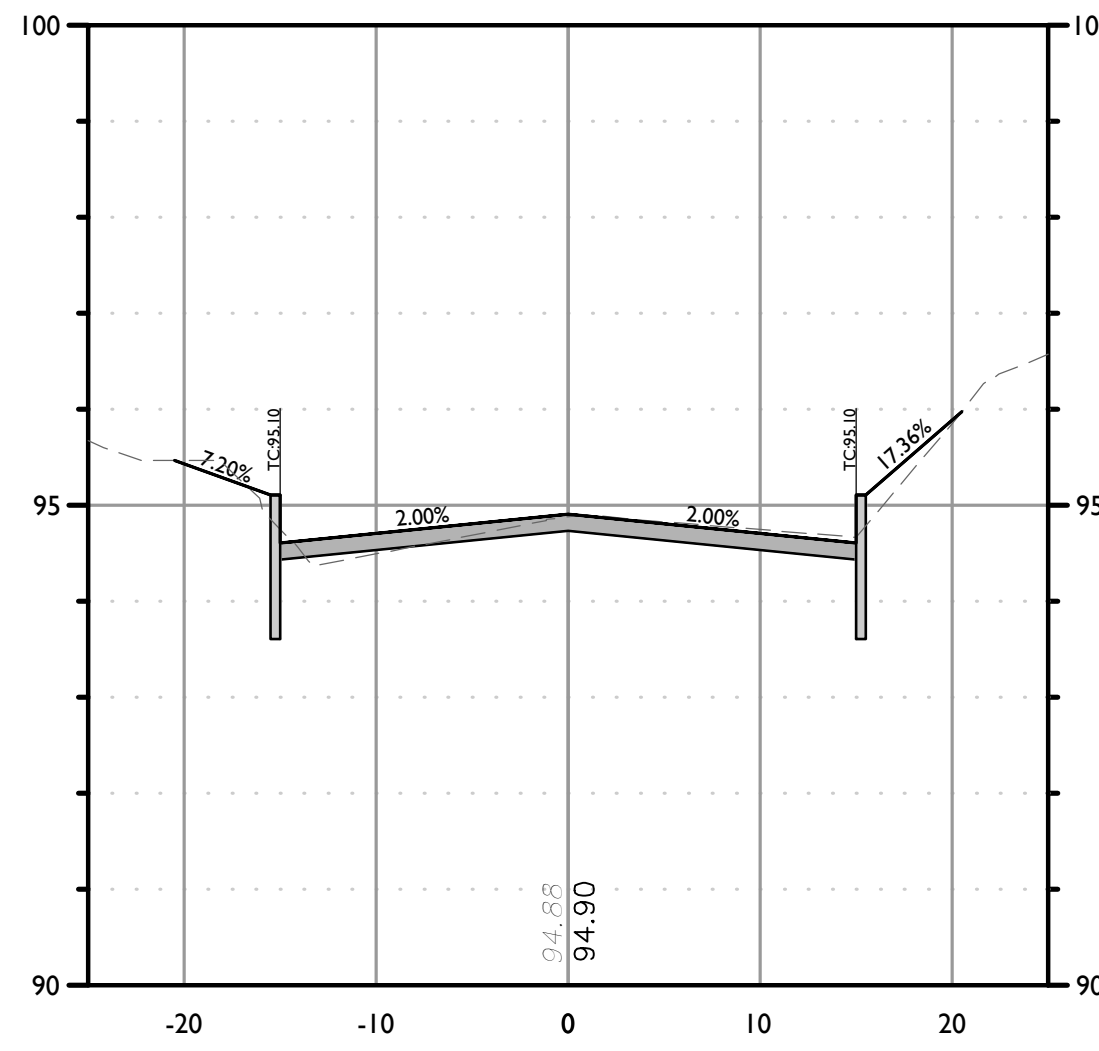
DIMENSION PLAN
 (SCHERRER STREET)



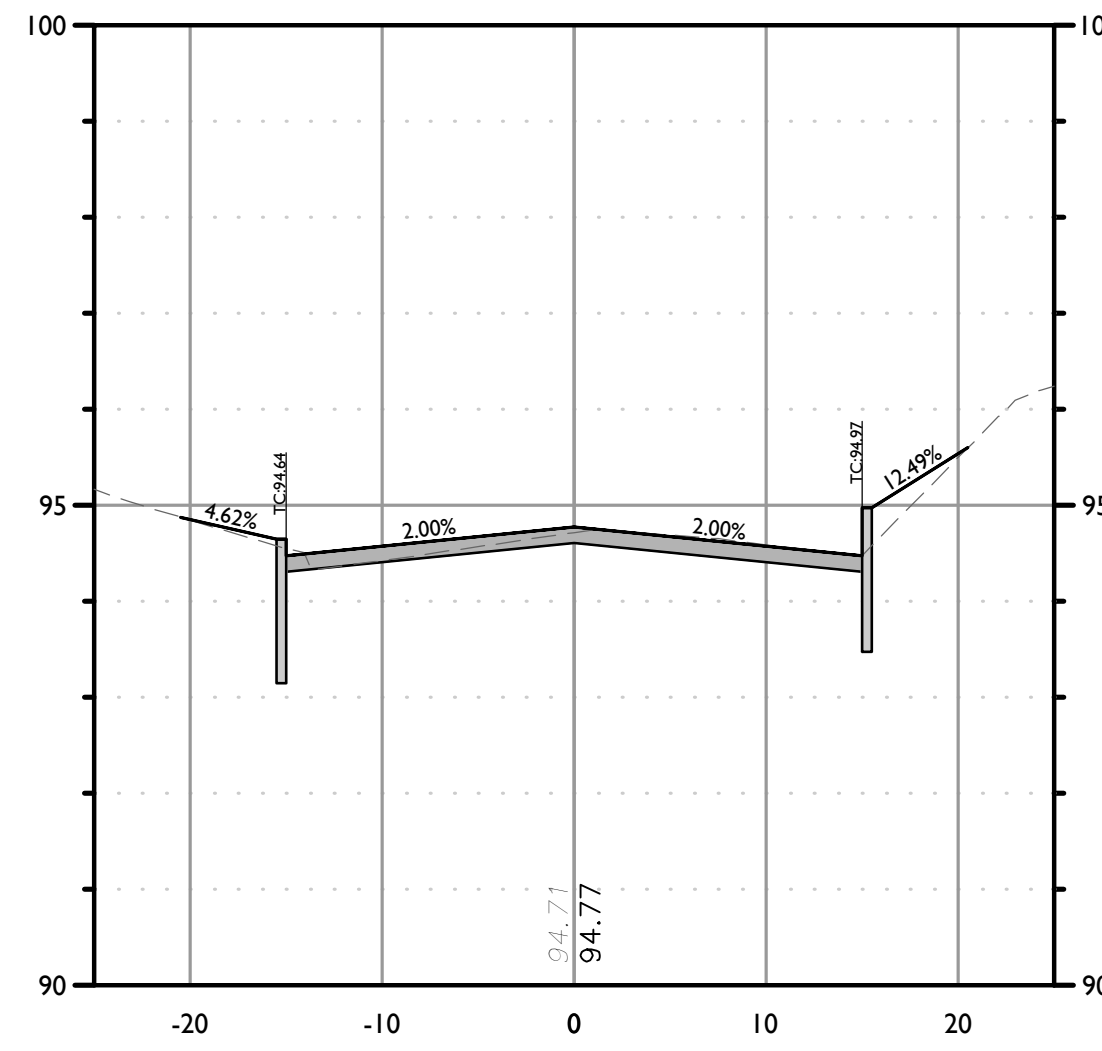
TYPICAL CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: XX+XX.XX
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



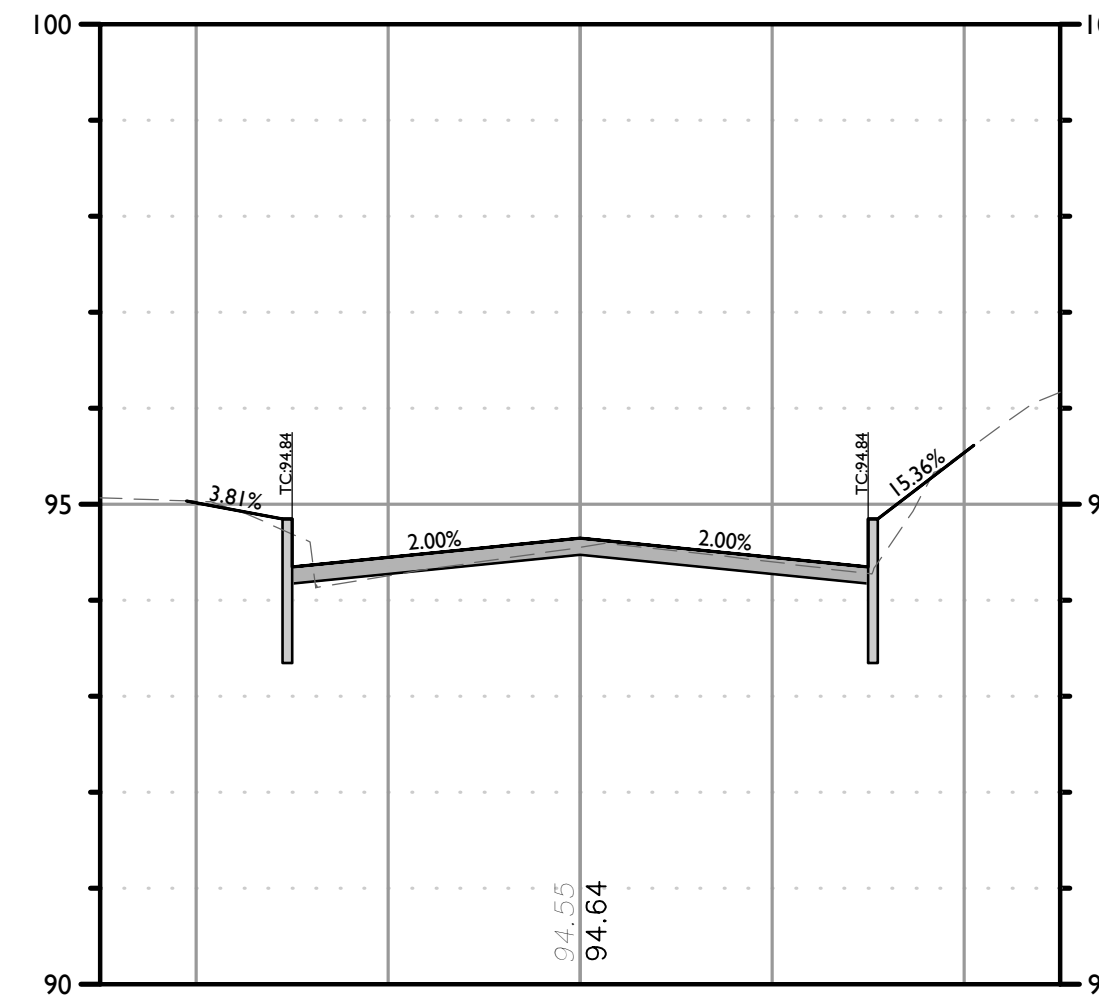
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 STATION: 0+50
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



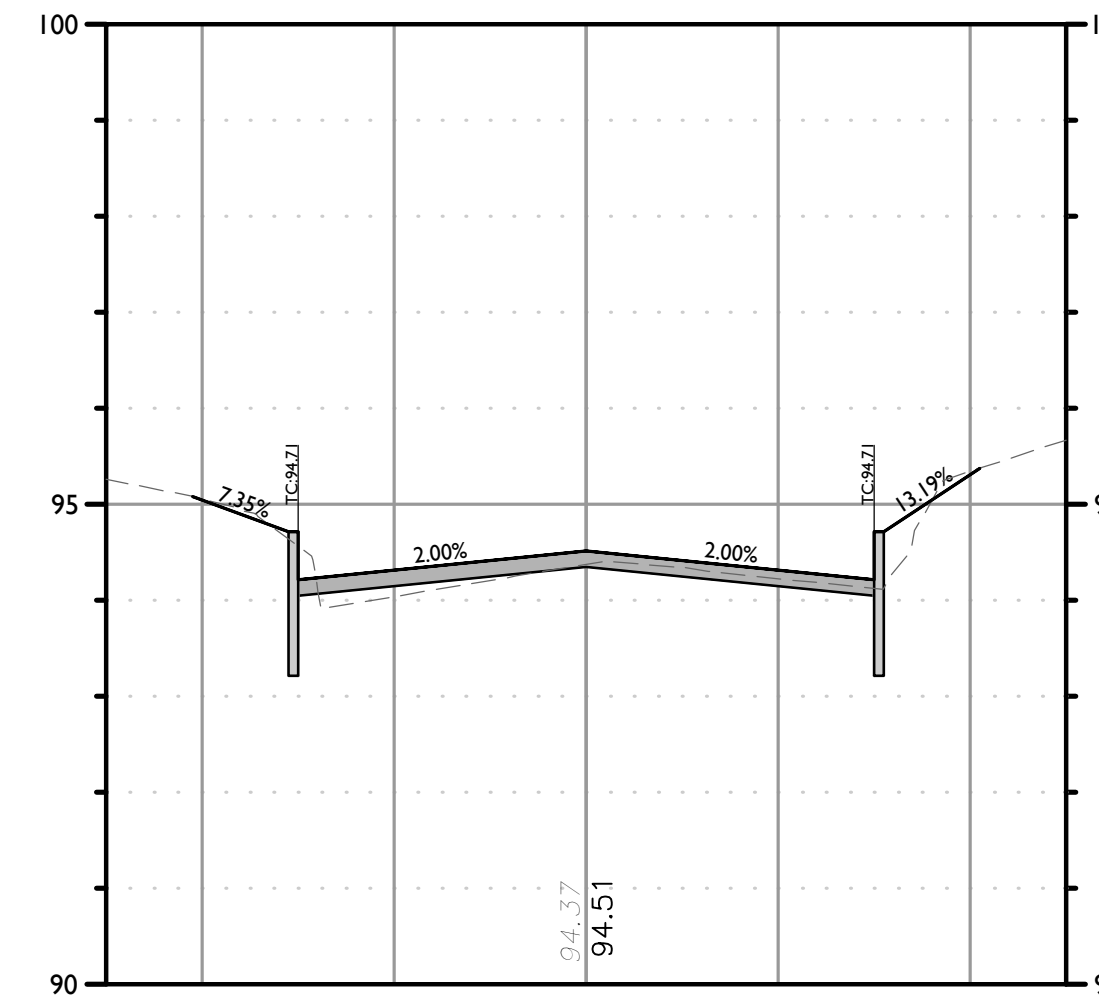
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 STATION: 0+75
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



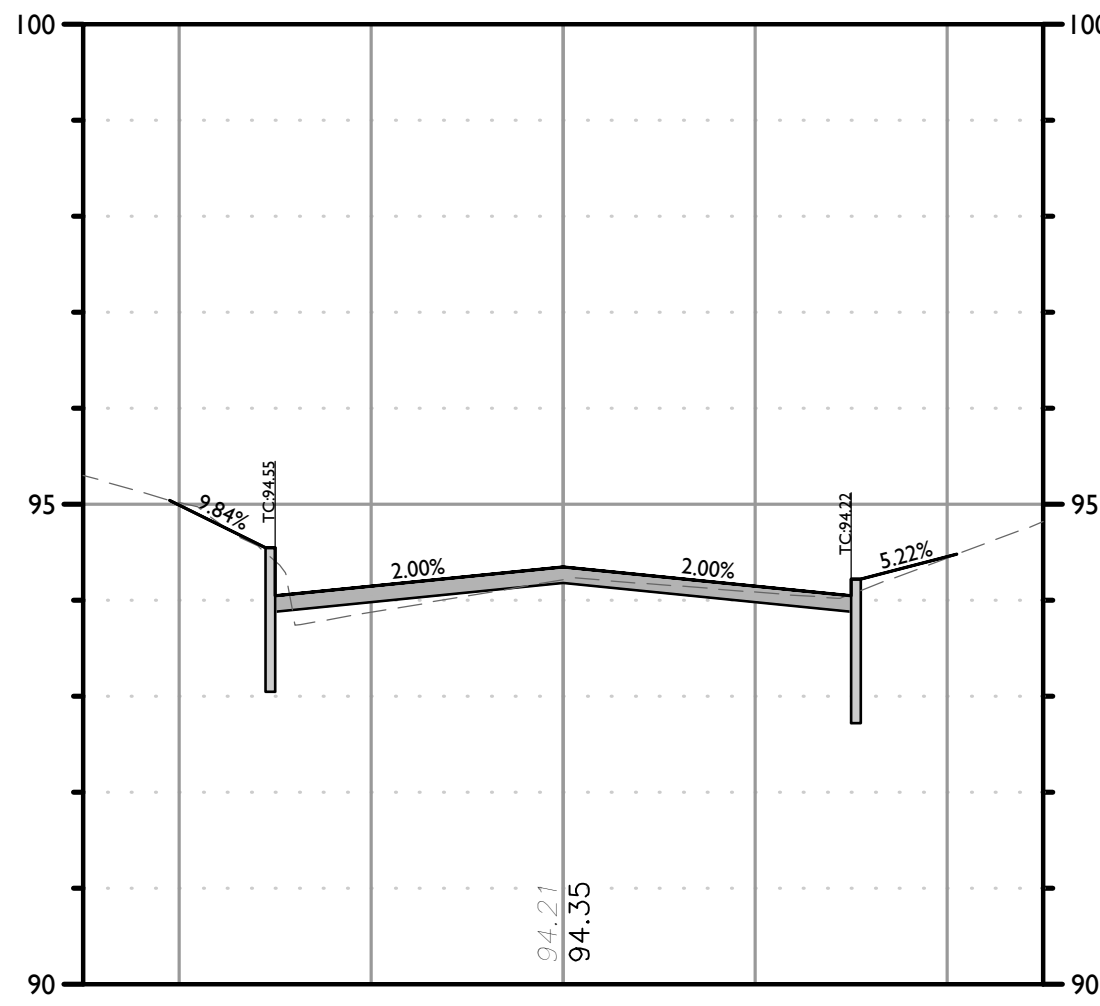
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 1+00
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



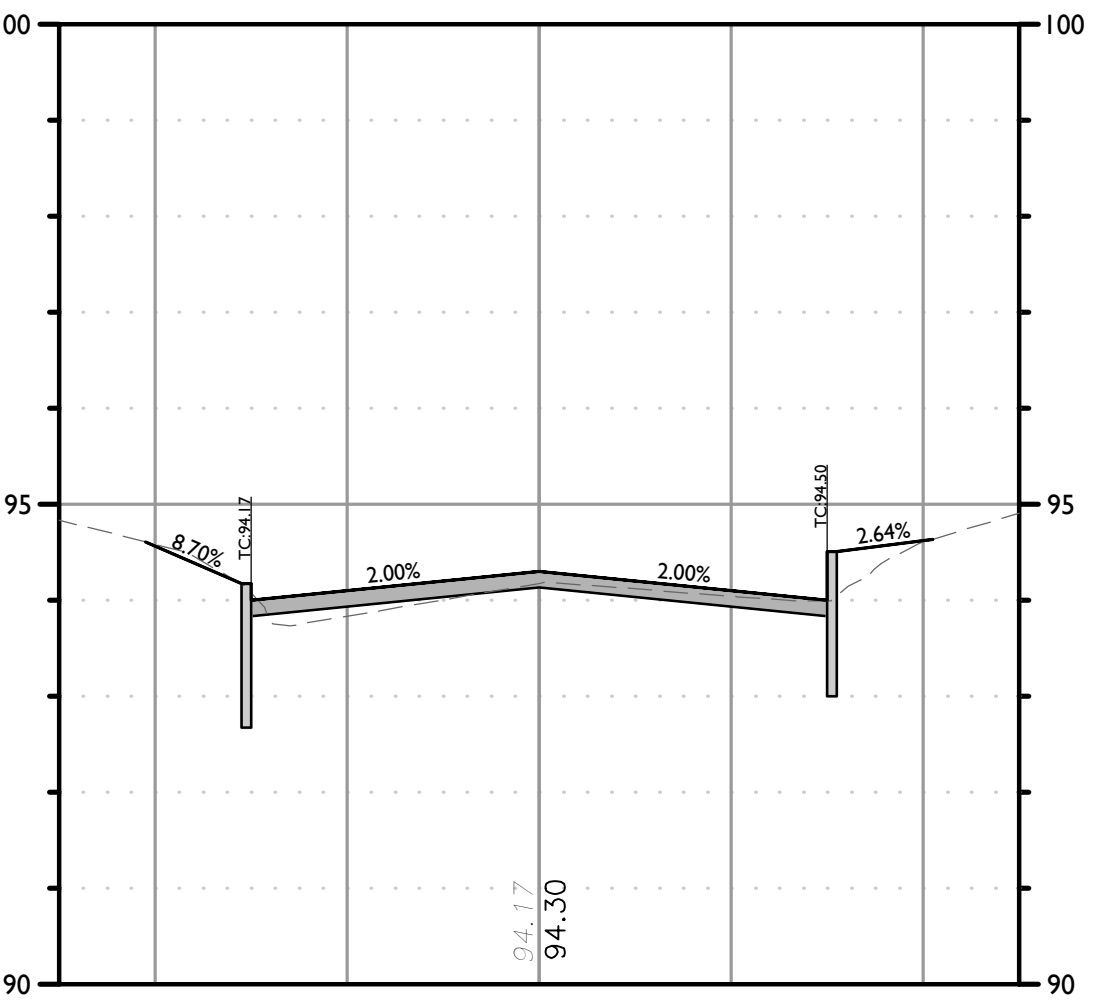
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 STATION: 1+25
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



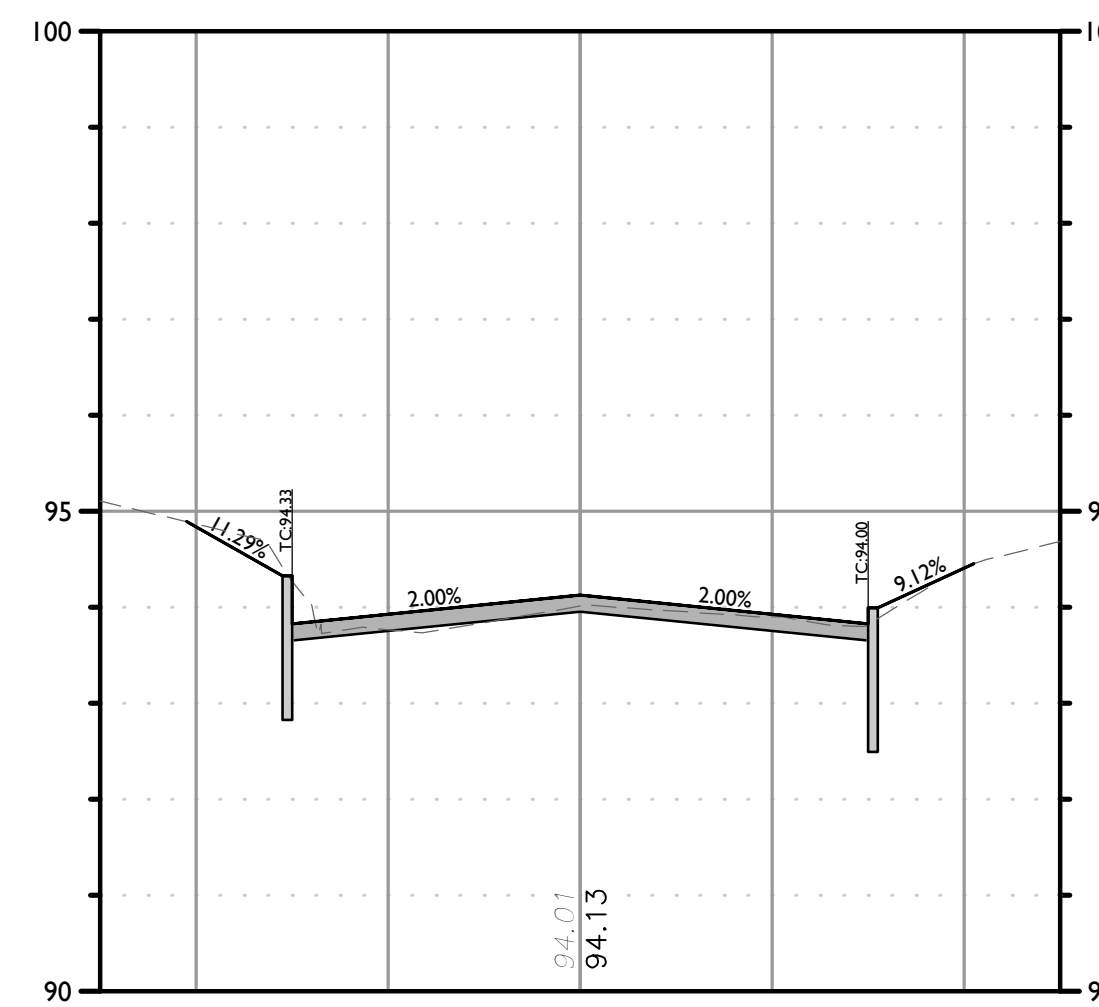
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 1+50
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



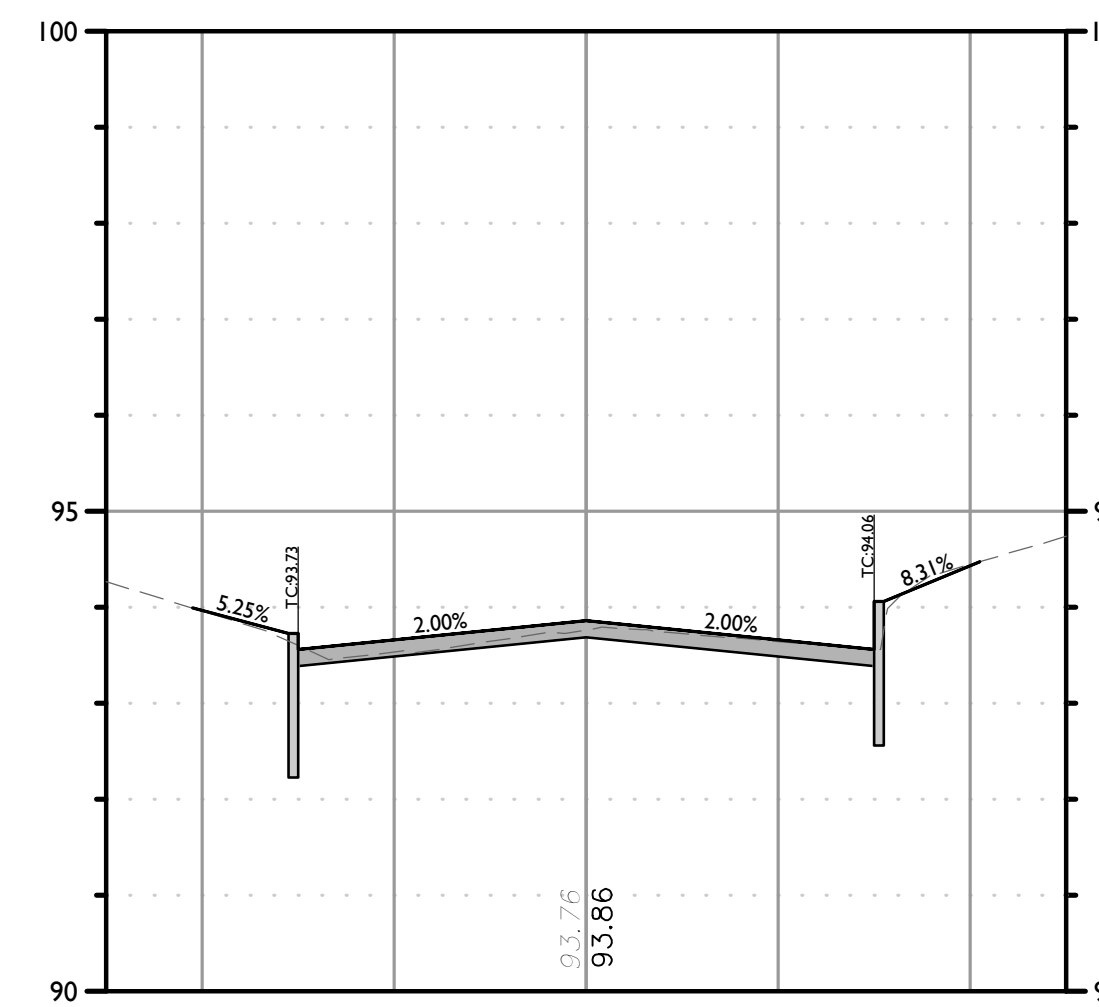
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 STATION: 1+70
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 VERTICAL : 1" = 2'



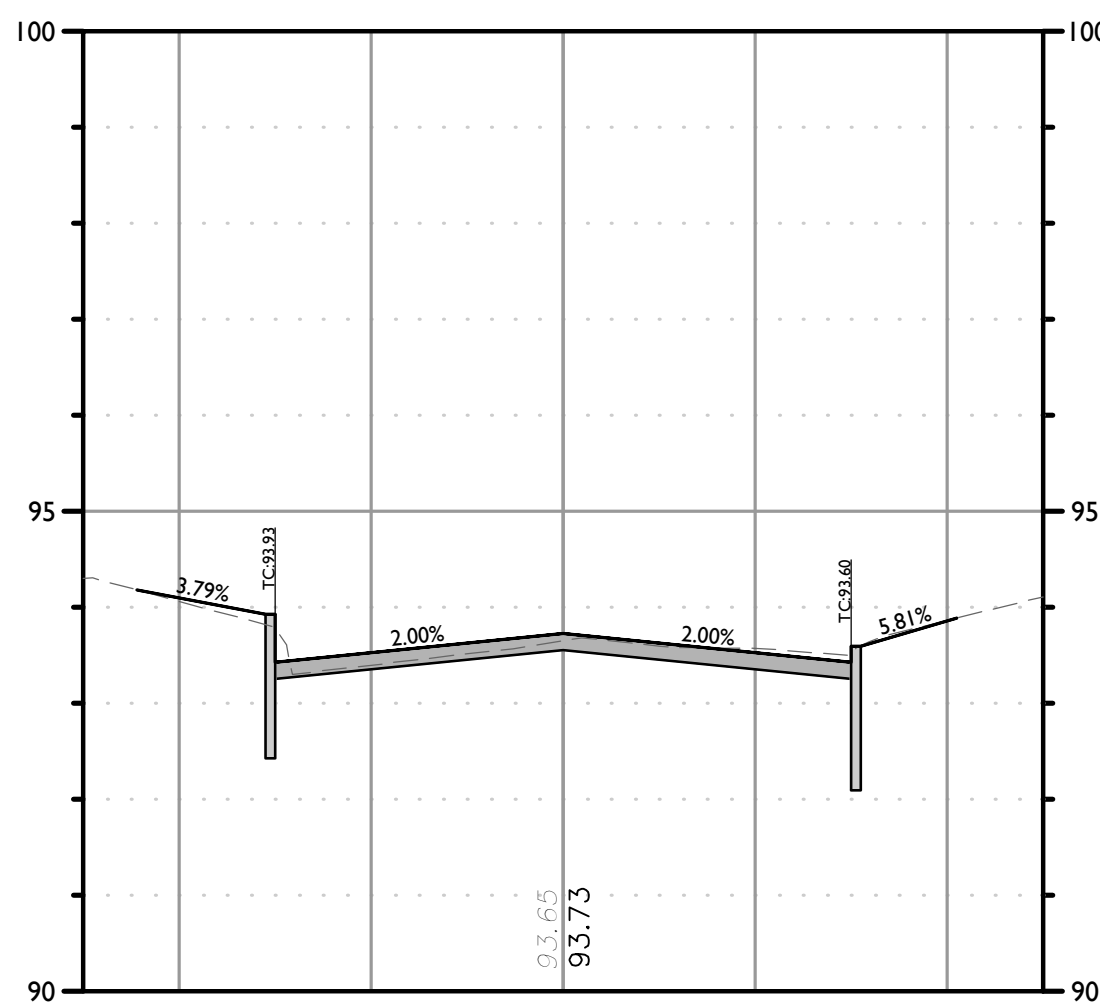
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 STATION: 1+75
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



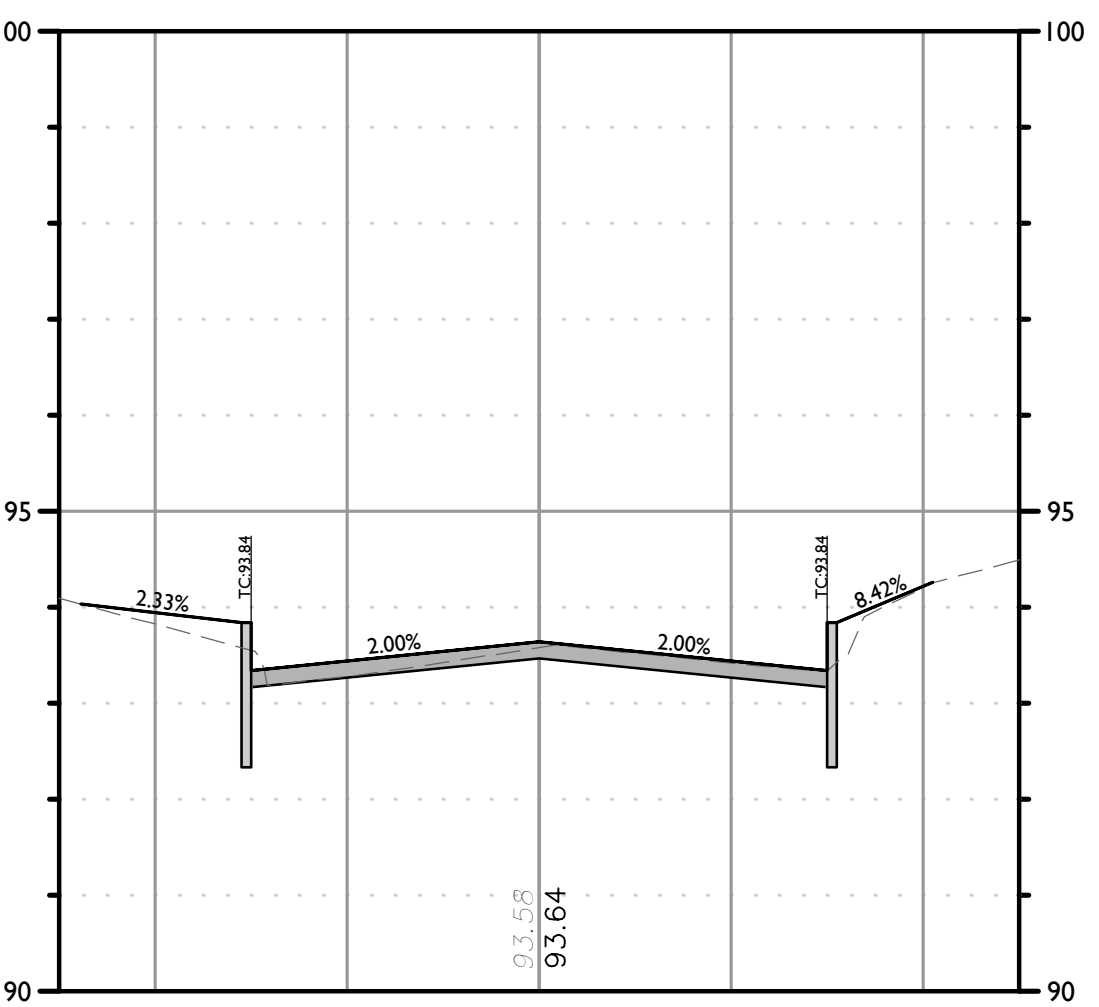
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 1+95
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



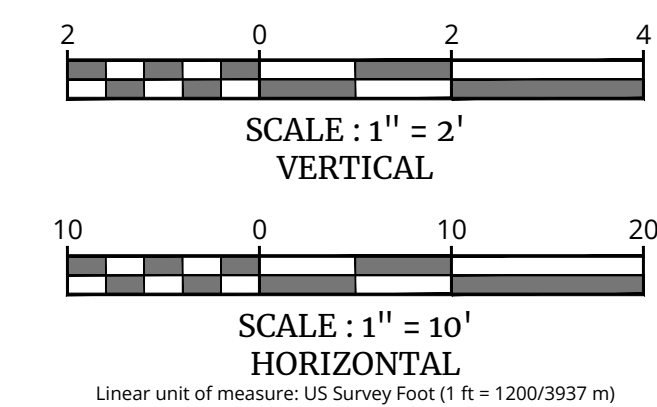
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 2+25
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 2+40
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 2+50
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



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REV	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BAK	REVISED IN-RSIDE DRIVE PROFILE

Kevin E Boyer

NEW JERSEY LICENSED PROFESSIONAL ENGINEER
 LICENSE NUMBER: 6E49974
 COLLIER'S ENGINEERING & DESIGN, INC.
 N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
 FOR
 2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
 UNION COUNTY
 NEW JERSEY

Colliers Engineering & Design
 400 Valley Road,
 Suite 304
 Mt. Arlington, NJ 07856
 Phone: 973.398.3110
 COLLIER'S ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTANTS

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	09/21/23	BAK	BAK
PROJECT NUMBER:	COT0087	DRAWING NAME:	C-LAY1

CROSS SECTIONS (SCHERRER STREET)

SHEET NUMBER:
 11 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

REV	DATE	DRAWN BY	DESCRIPTION
1	3/1/24	BAK	REVISED IN-RSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: 6449974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

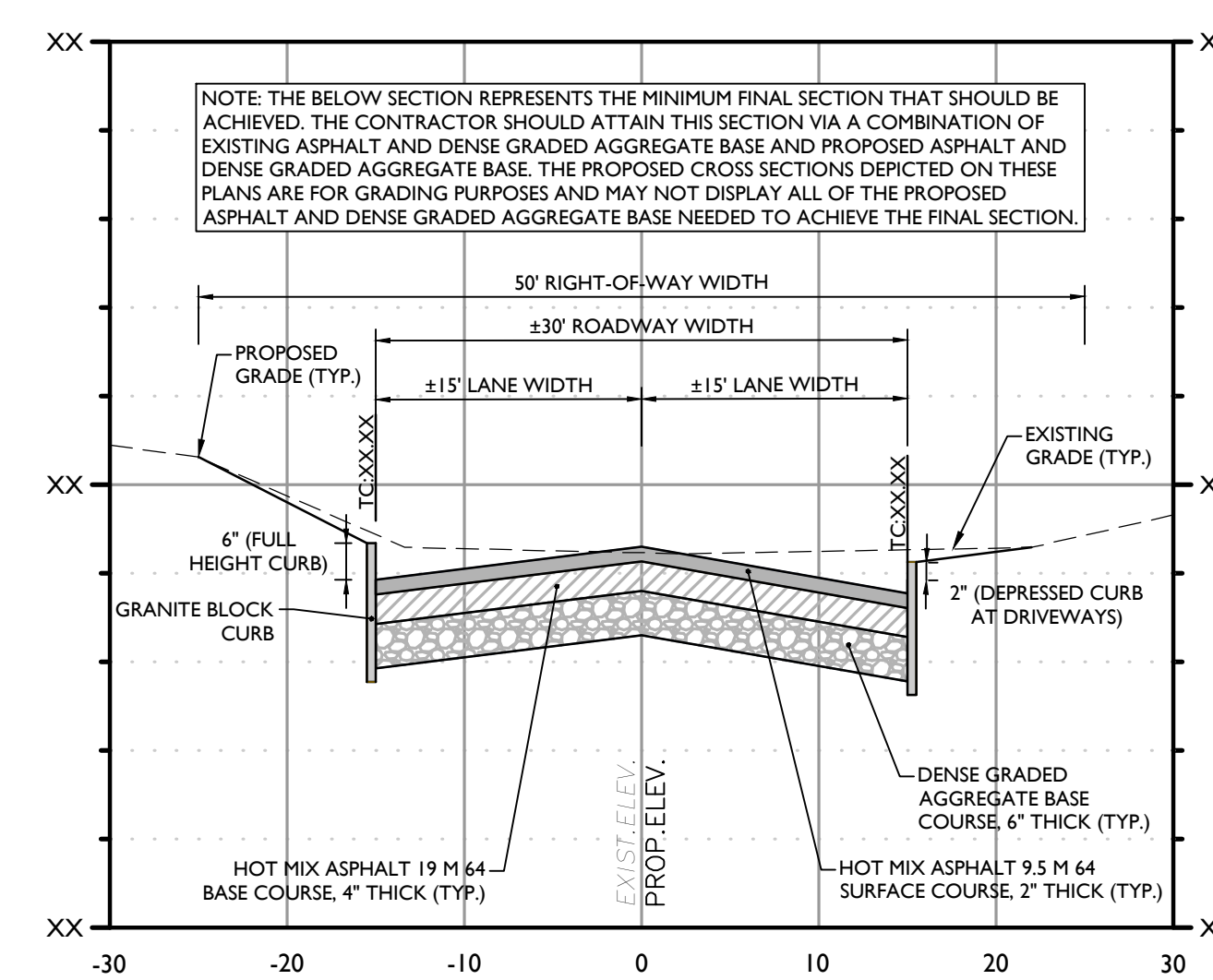
CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM
TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
Engineering & Design
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

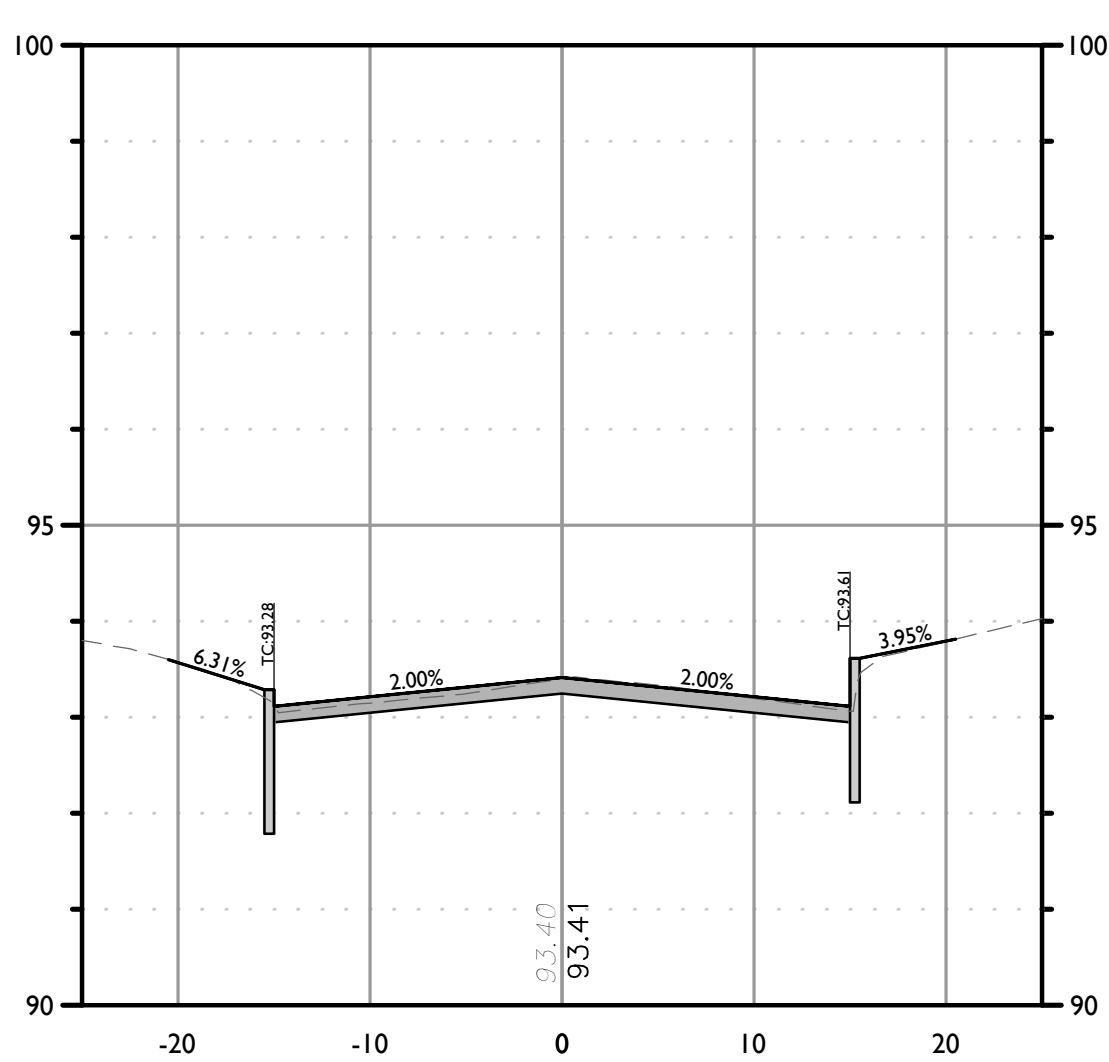
SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

SHEET TITLE
CROSS SECTIONS (SCHERRER STREET)

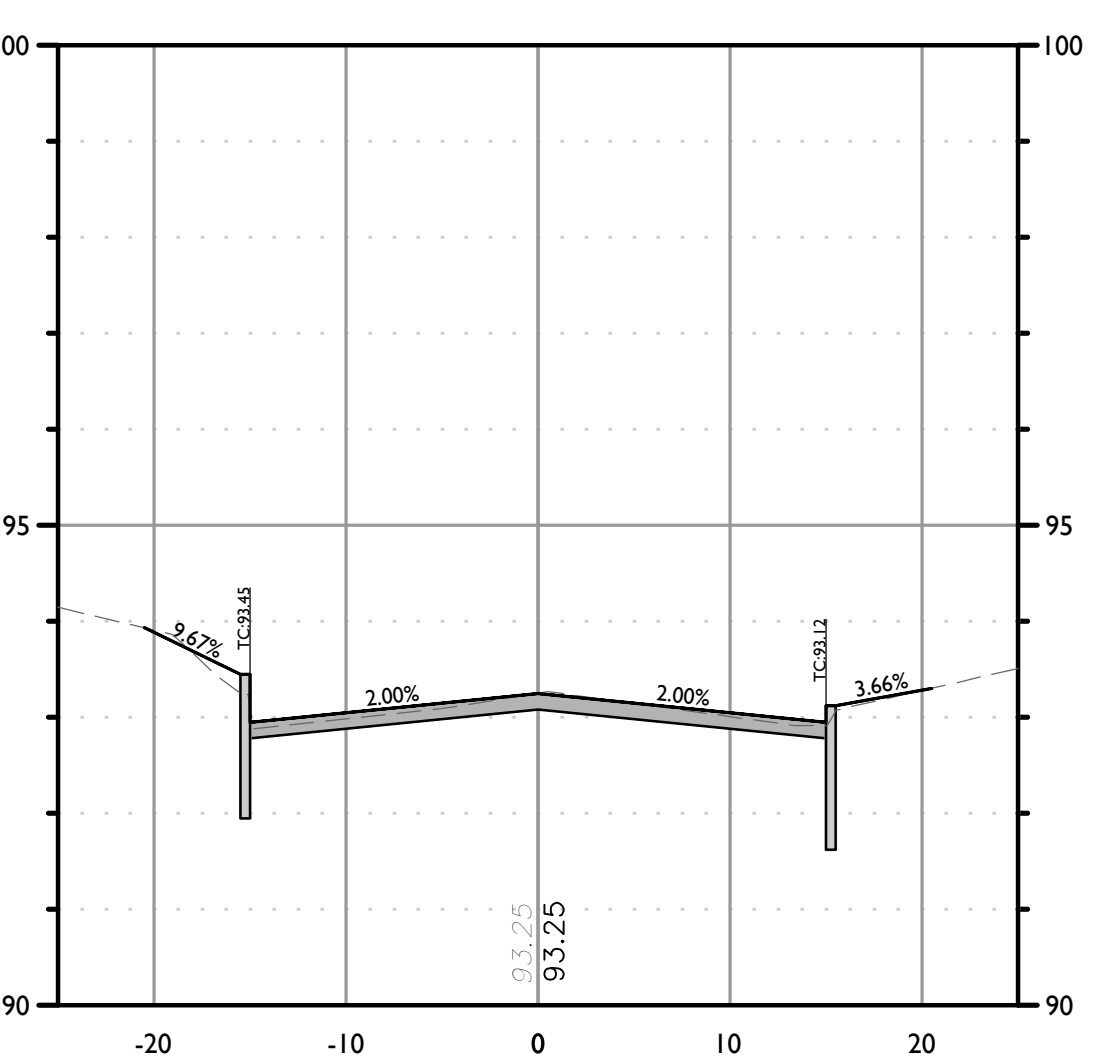
SHEET NUMBER
12 of 41



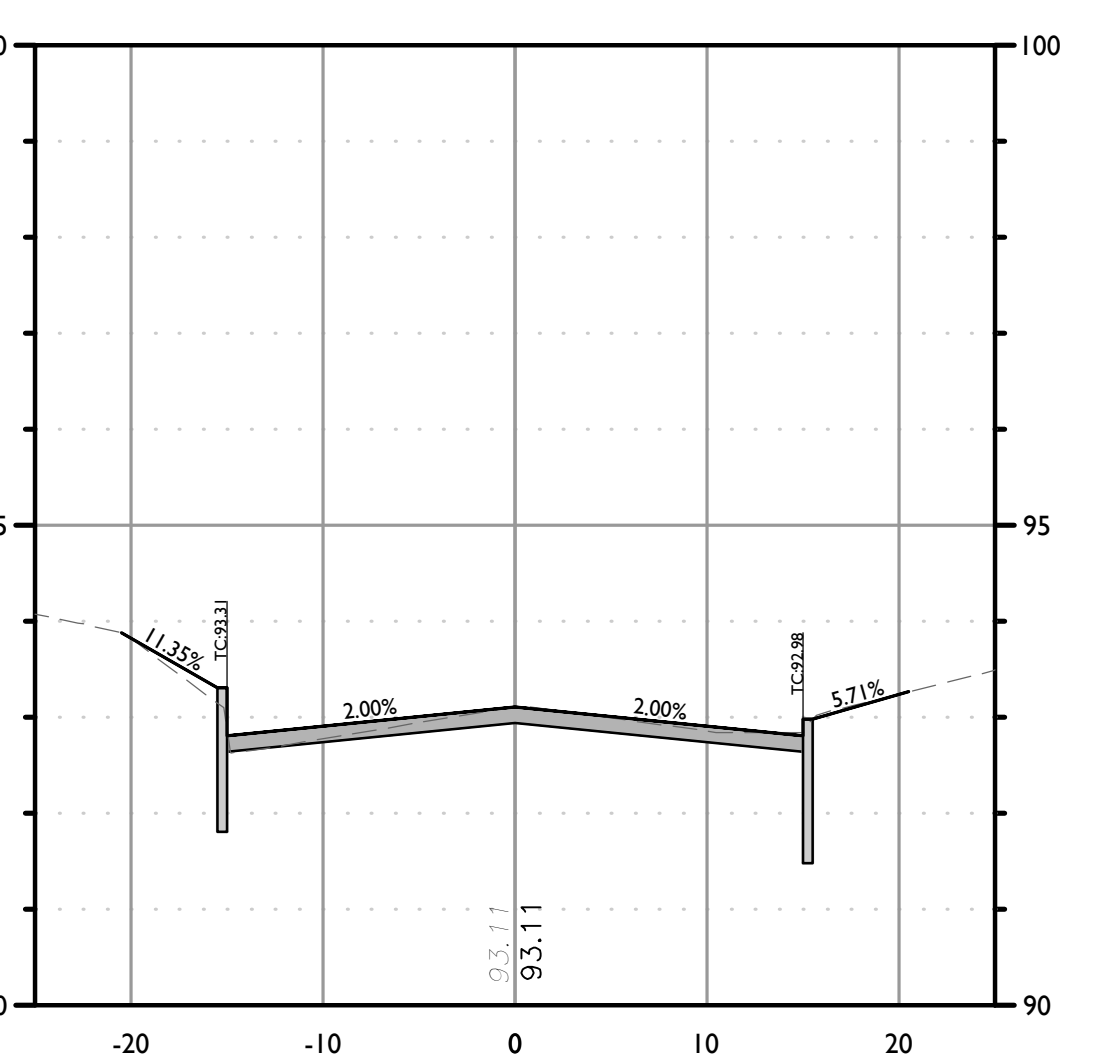
TYPICAL CROSS SECTION OF SCHERRER STREET ALIGNMENT
STATION: XX+XX.XX
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



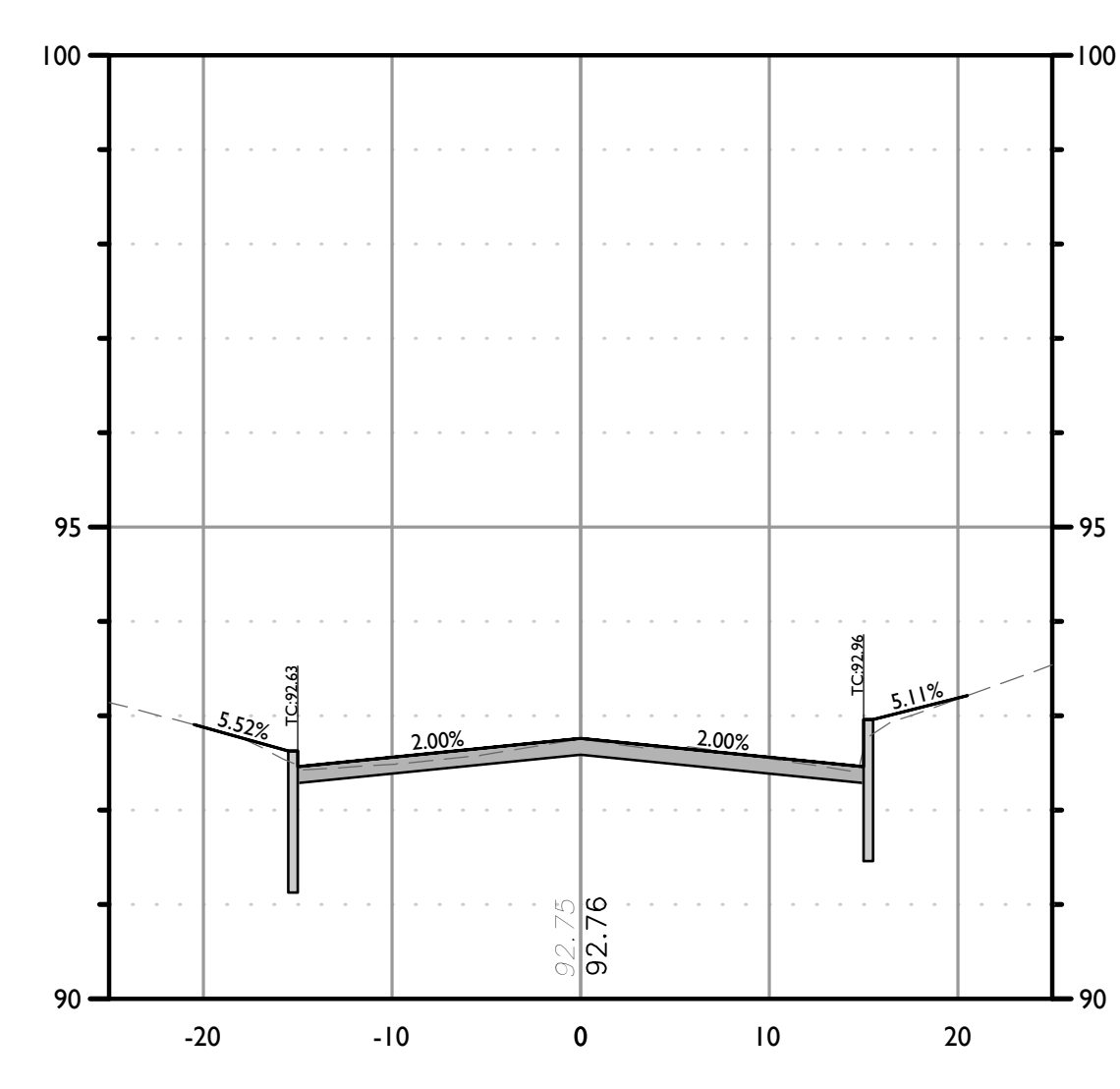
CROSS SECTION OF SCHERRER STREET ALIGNMENT
STATION: 2+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



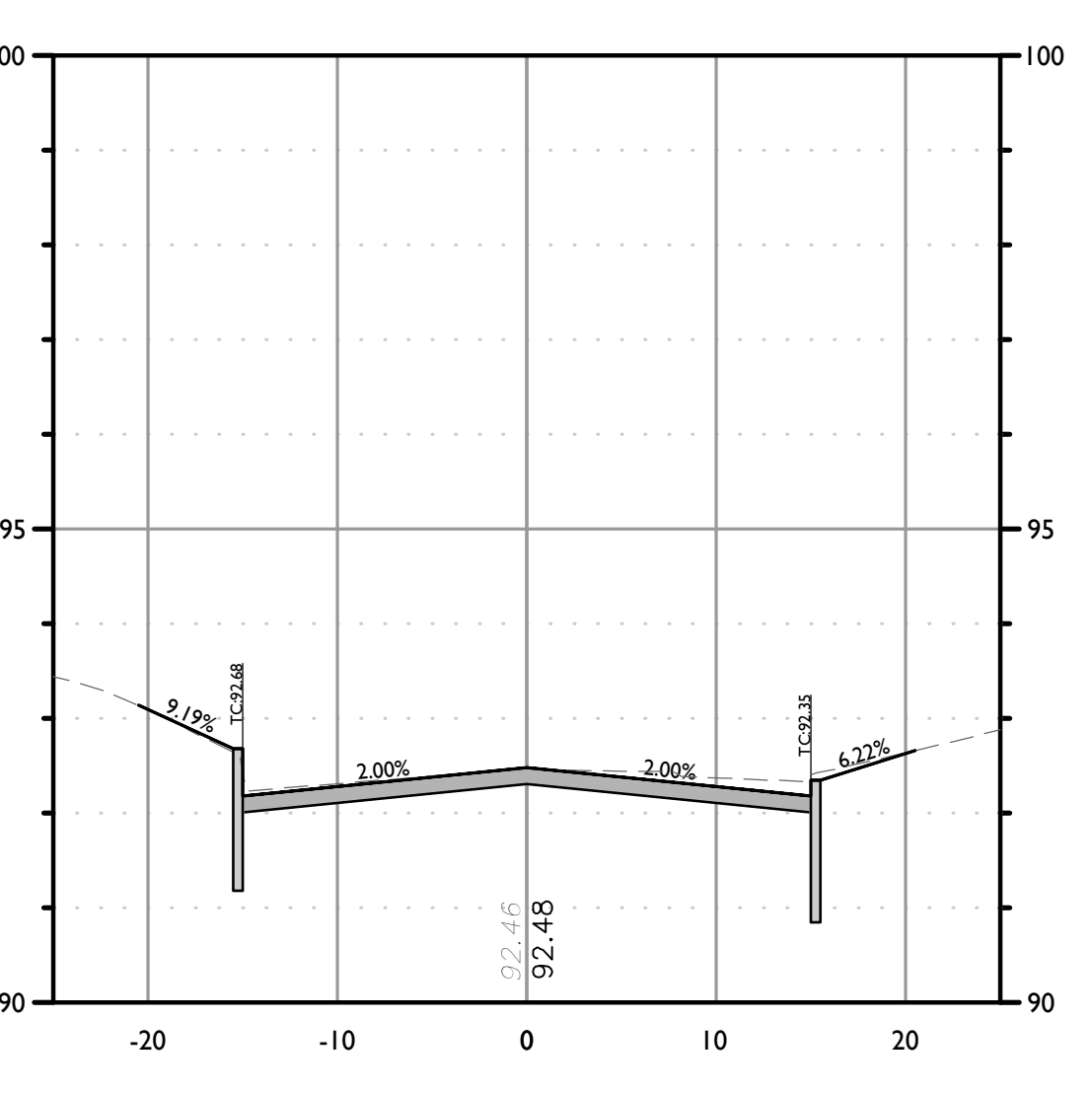
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STATION: 2+90
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



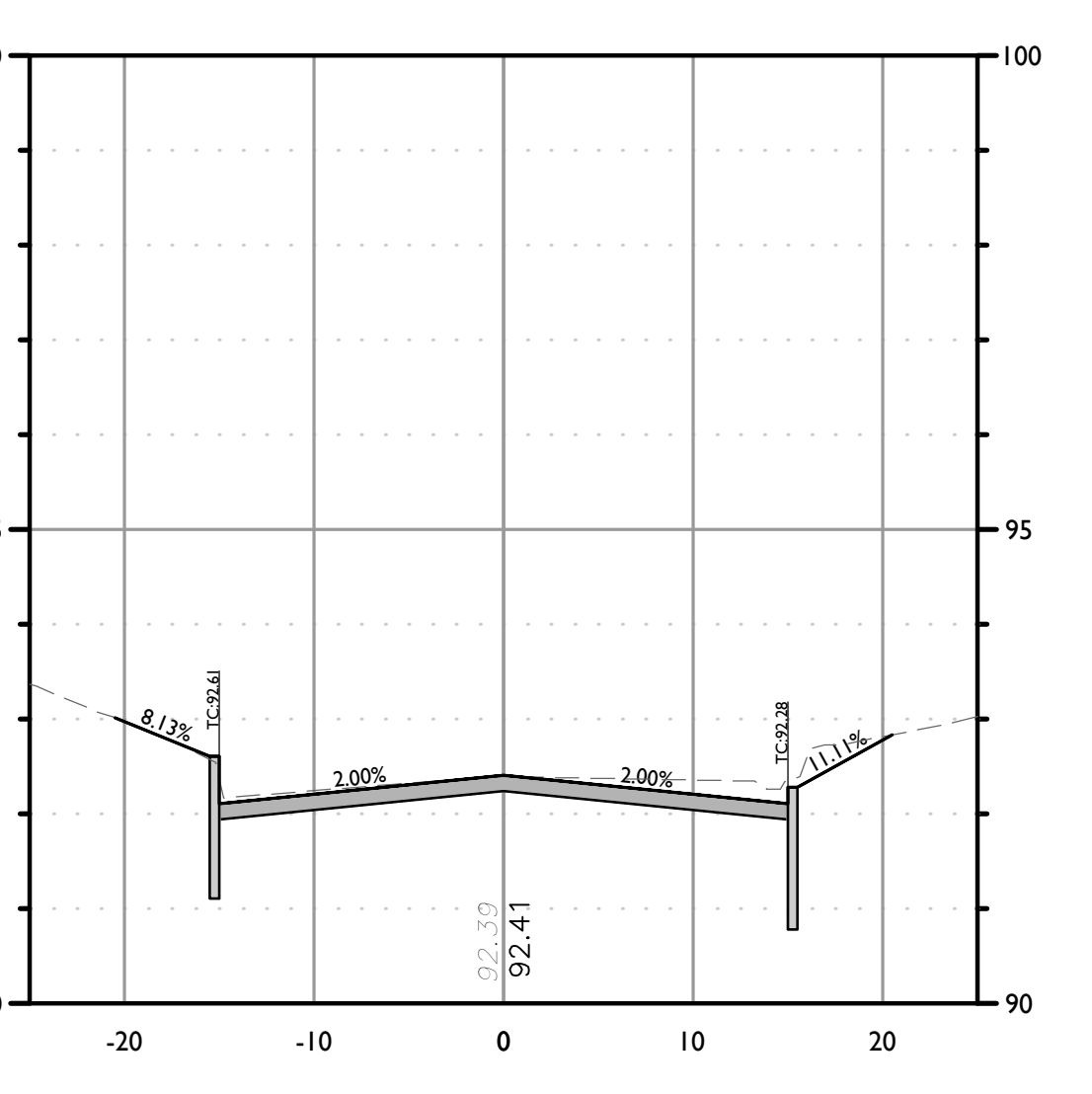
CROSS SECTION OF SCHERRER STREET ALIGNMENT
STATION: 3+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



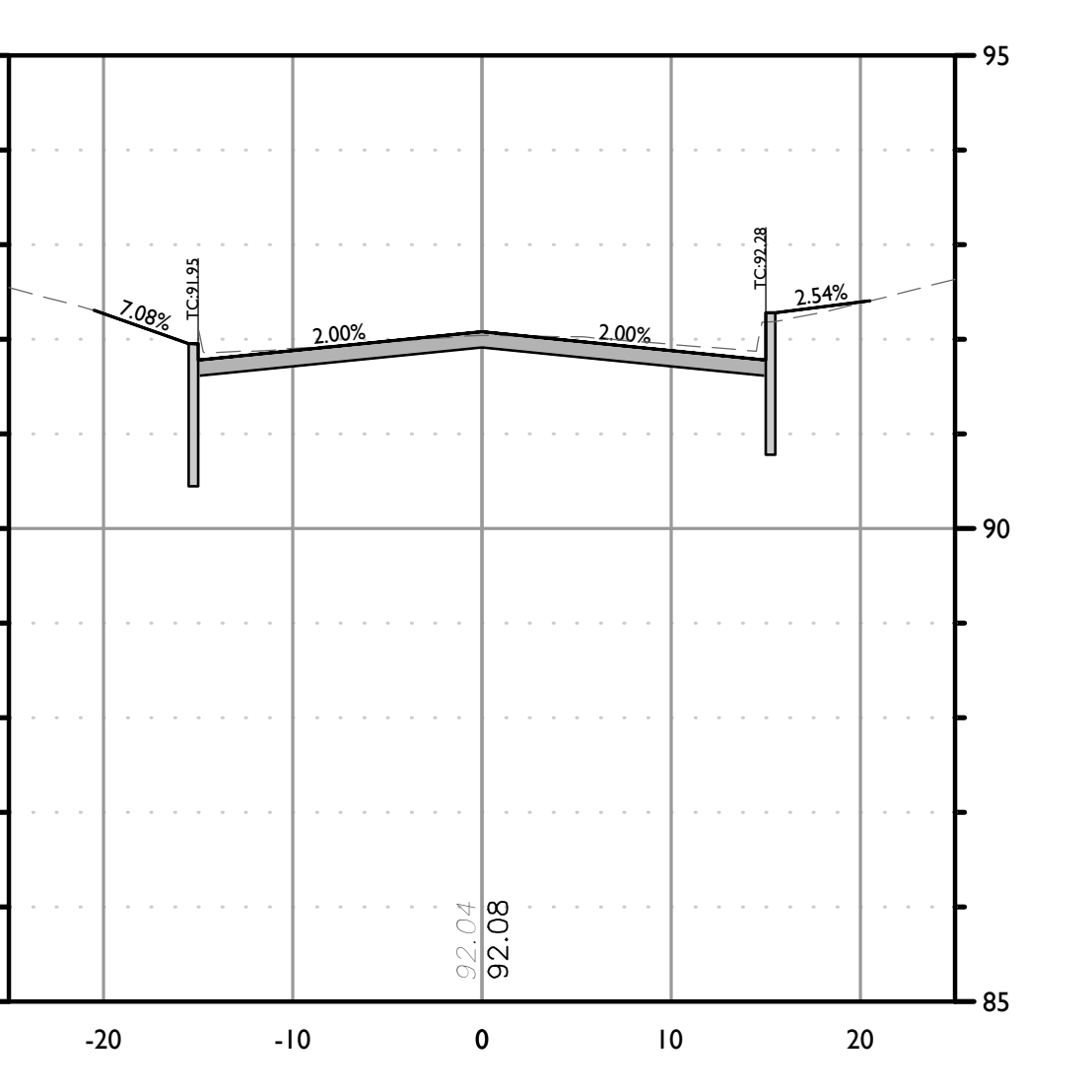
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STATION: 3+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



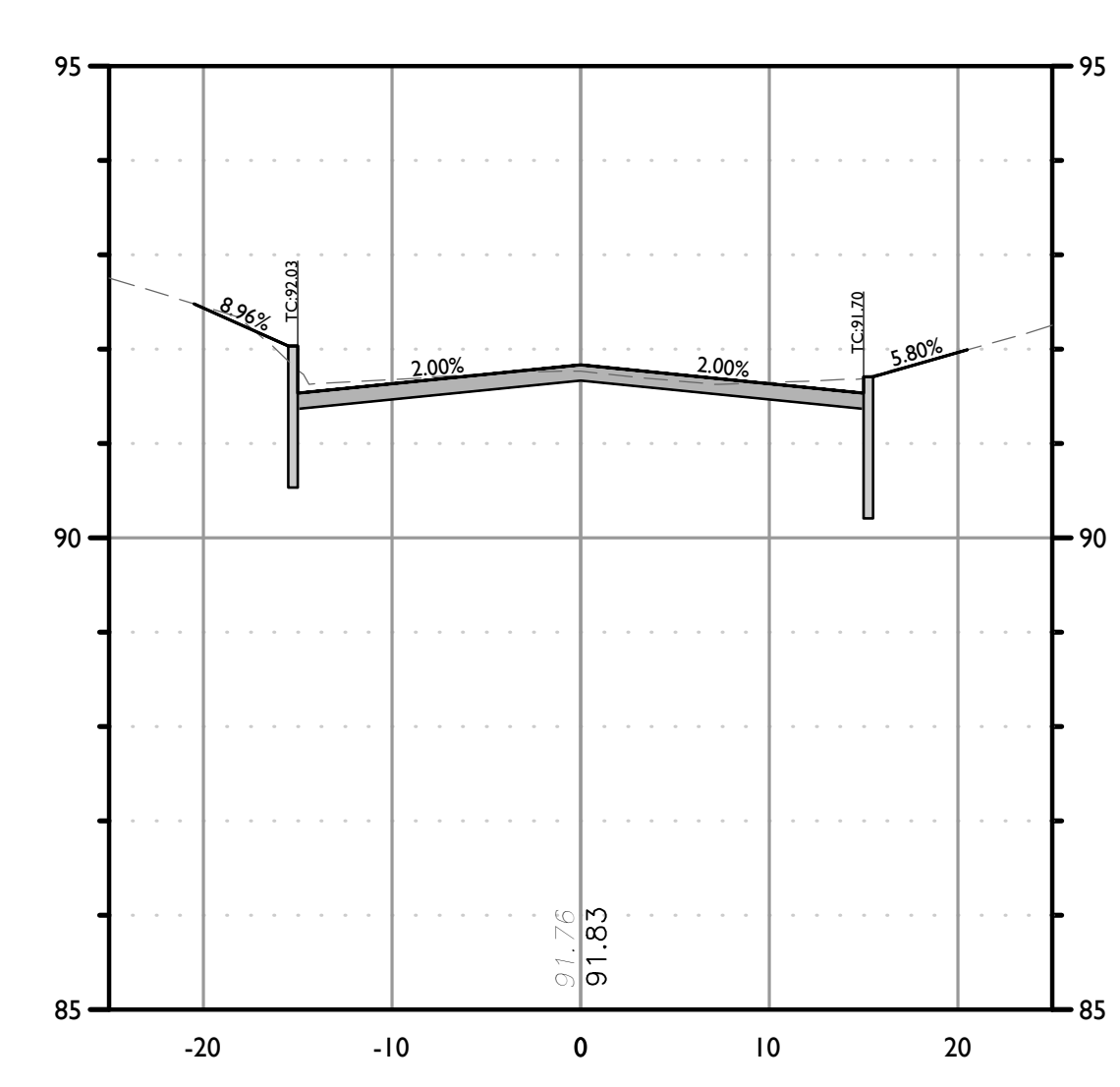
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STATION: 3+45
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



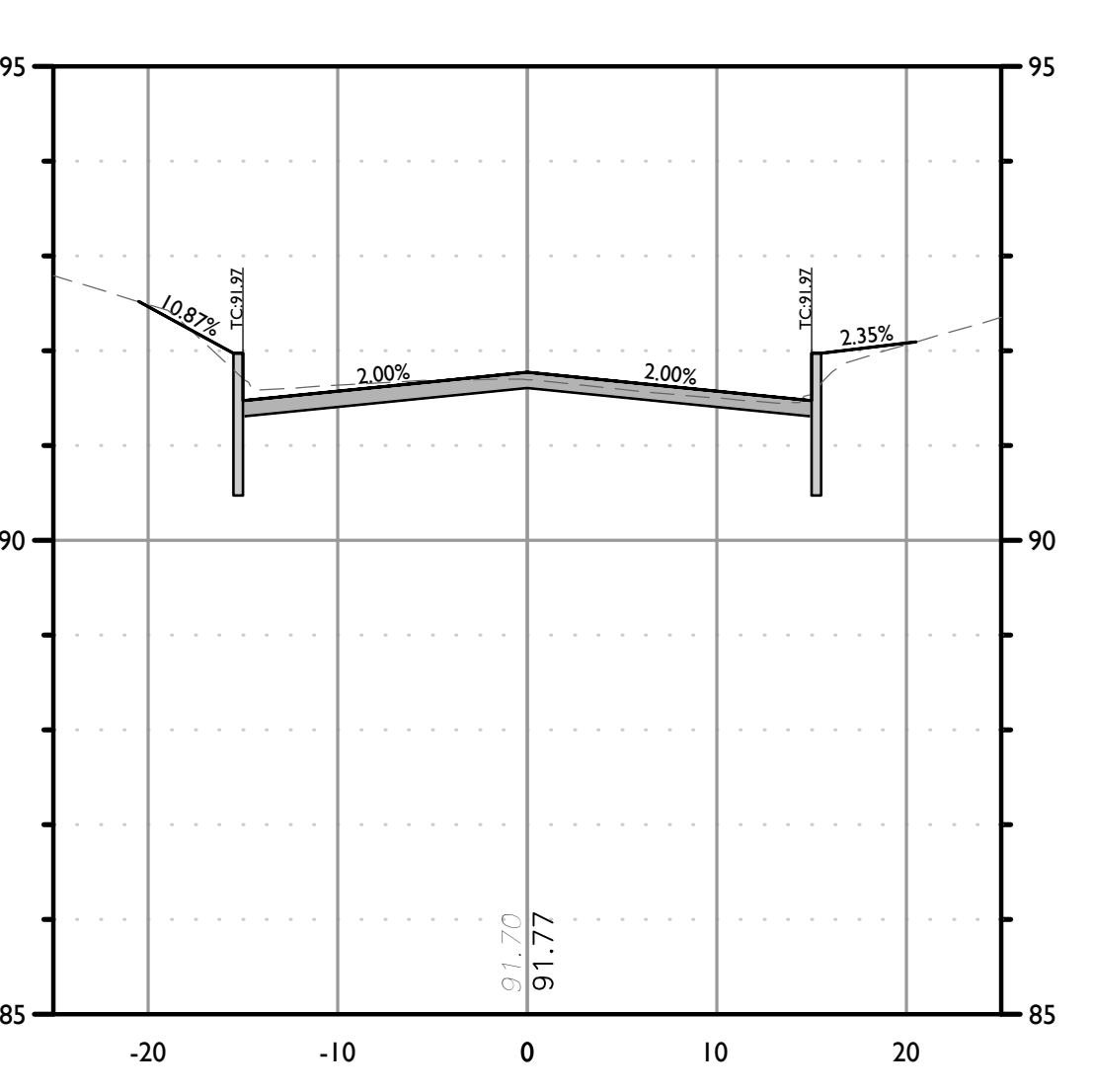
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VERTICAL : 1" = 2'



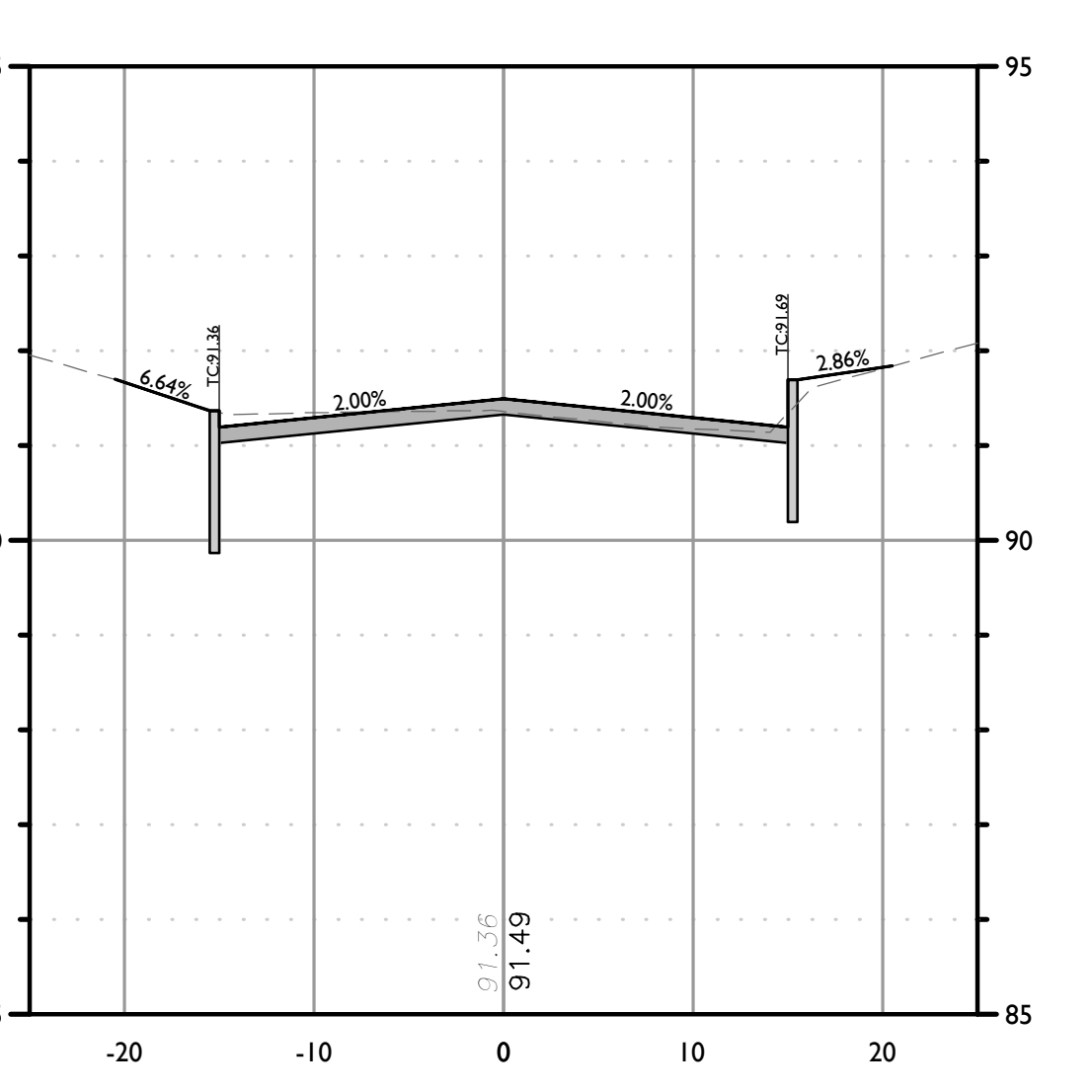
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VERTICAL : 1" = 2'



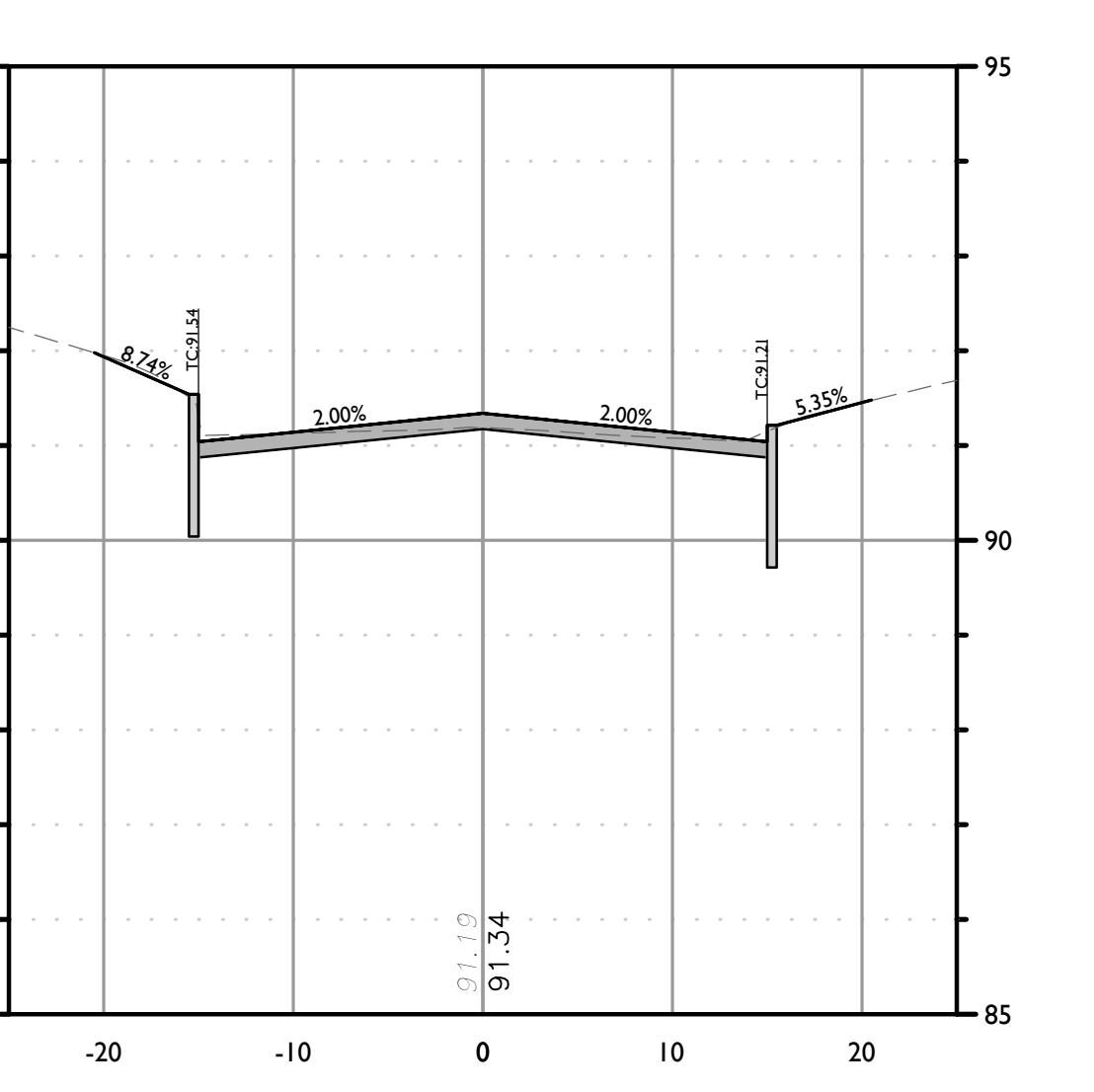
CROSS SECTION OF SCHERRER STREET ALIGNMENT
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VERTICAL : 1" = 2'



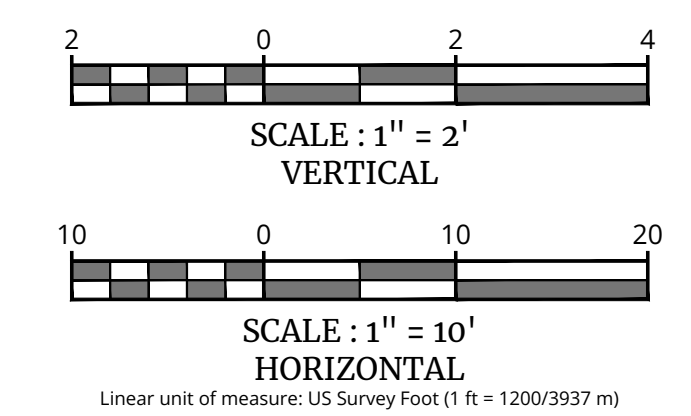
CROSS SECTION OF SCHERRER STREET ALIGNMENT
STATION: 4+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF SCHERRER STREET ALIGNMENT
STATION: 4+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF SCHERRER STREET ALIGNMENT
STATION: 4+40
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



REV	DATE	DESCRIPTION	BY	CHK
1	3/1/24	REVISED IN-RSIDE DRIVE PROFILE	BAK	

Kevin E. Boyer
Kevin E. Boyer
 NEW JERSEY LICENSED PROFESSIONAL ENGINEER
 LICENSE NUMBER: 6E49974
 COLLIER'S ENGINEERING & DESIGN, INC.
 N.J. C.O.A. #: 24GA27986500

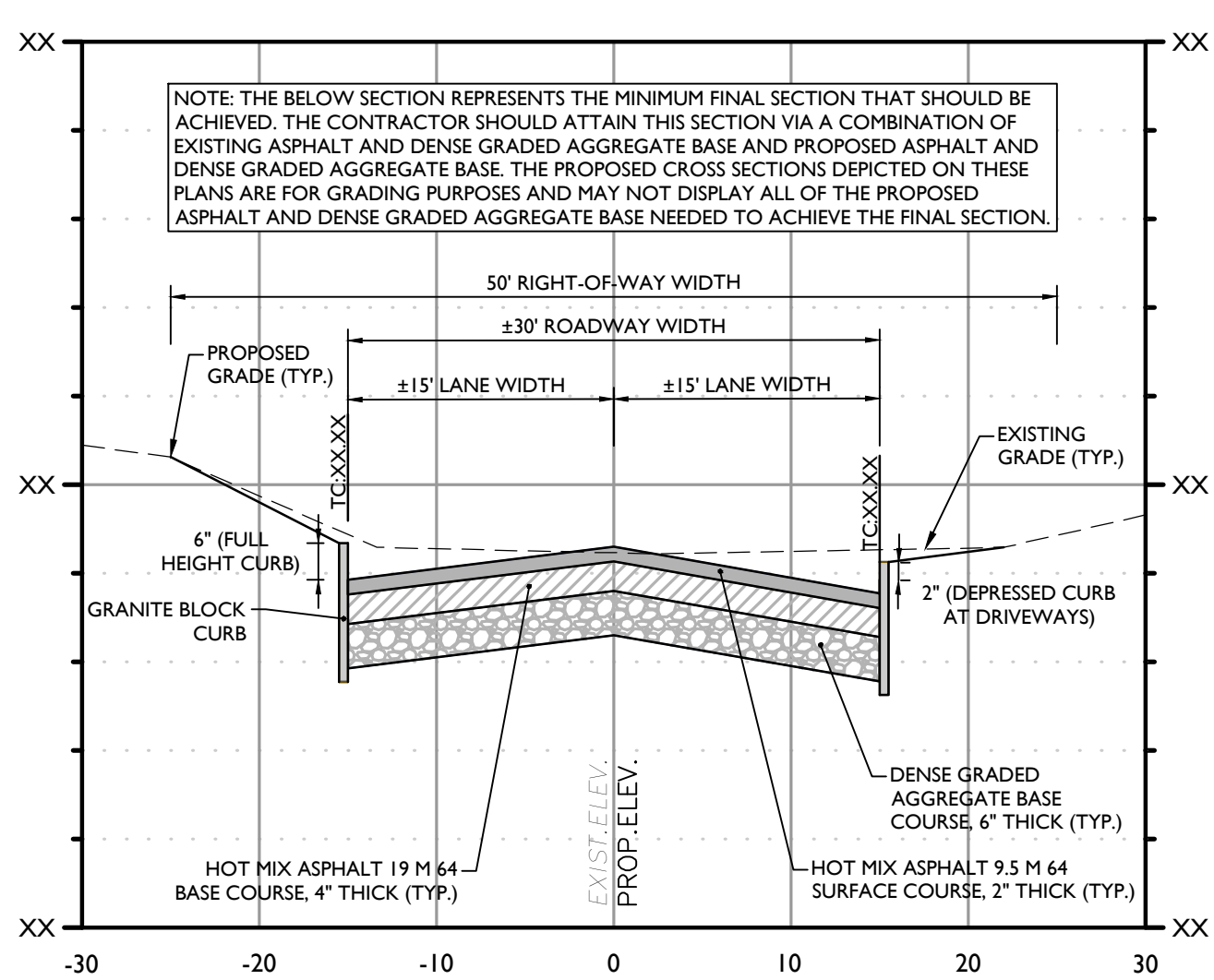
CONSTRUCTION PLANS
 FOR
 2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
 UNION COUNTY
 NEW JERSEY

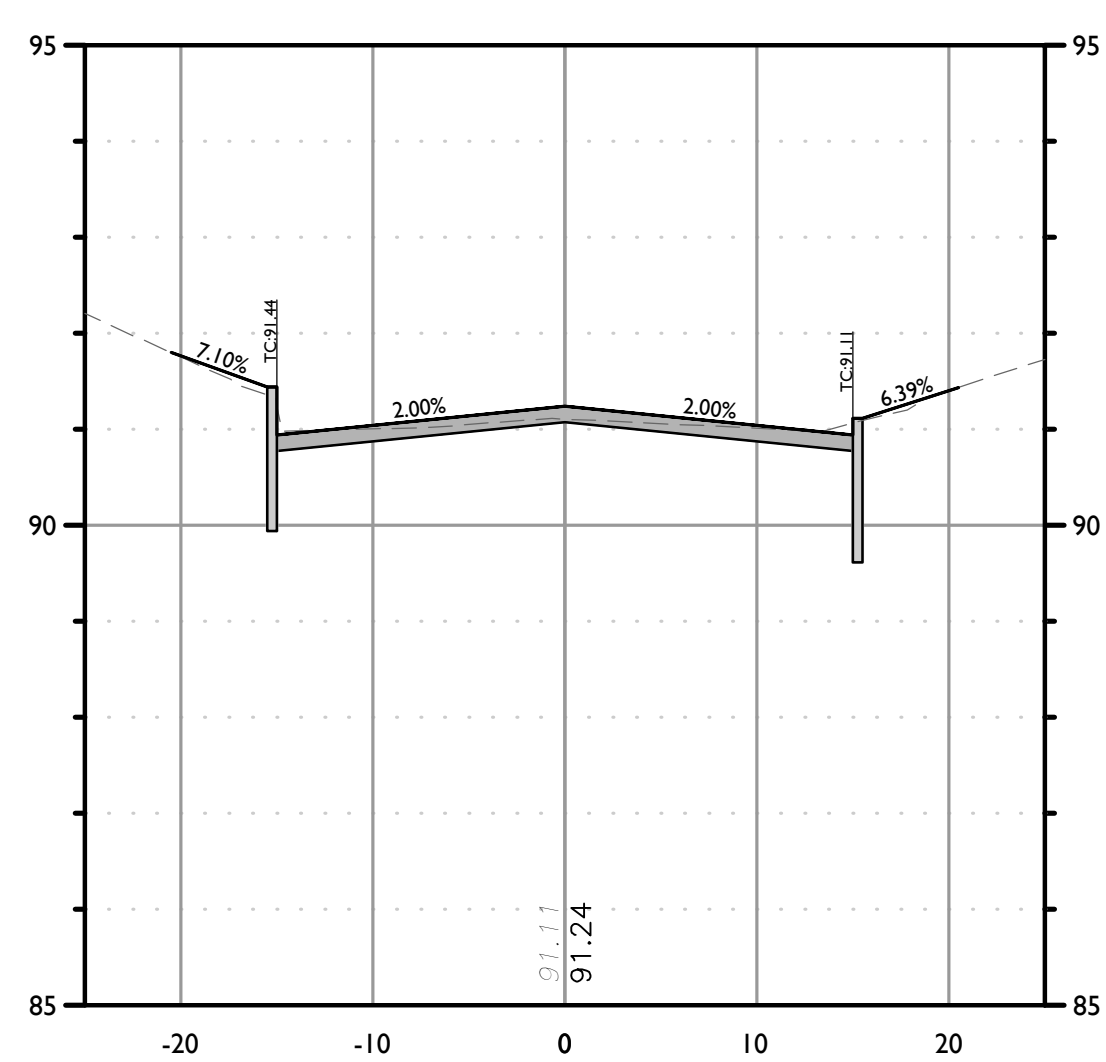
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 Suite 304
 Mt. Arlington, NJ 07856
 Phone: 973.398.3110
 COLLIER'S ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

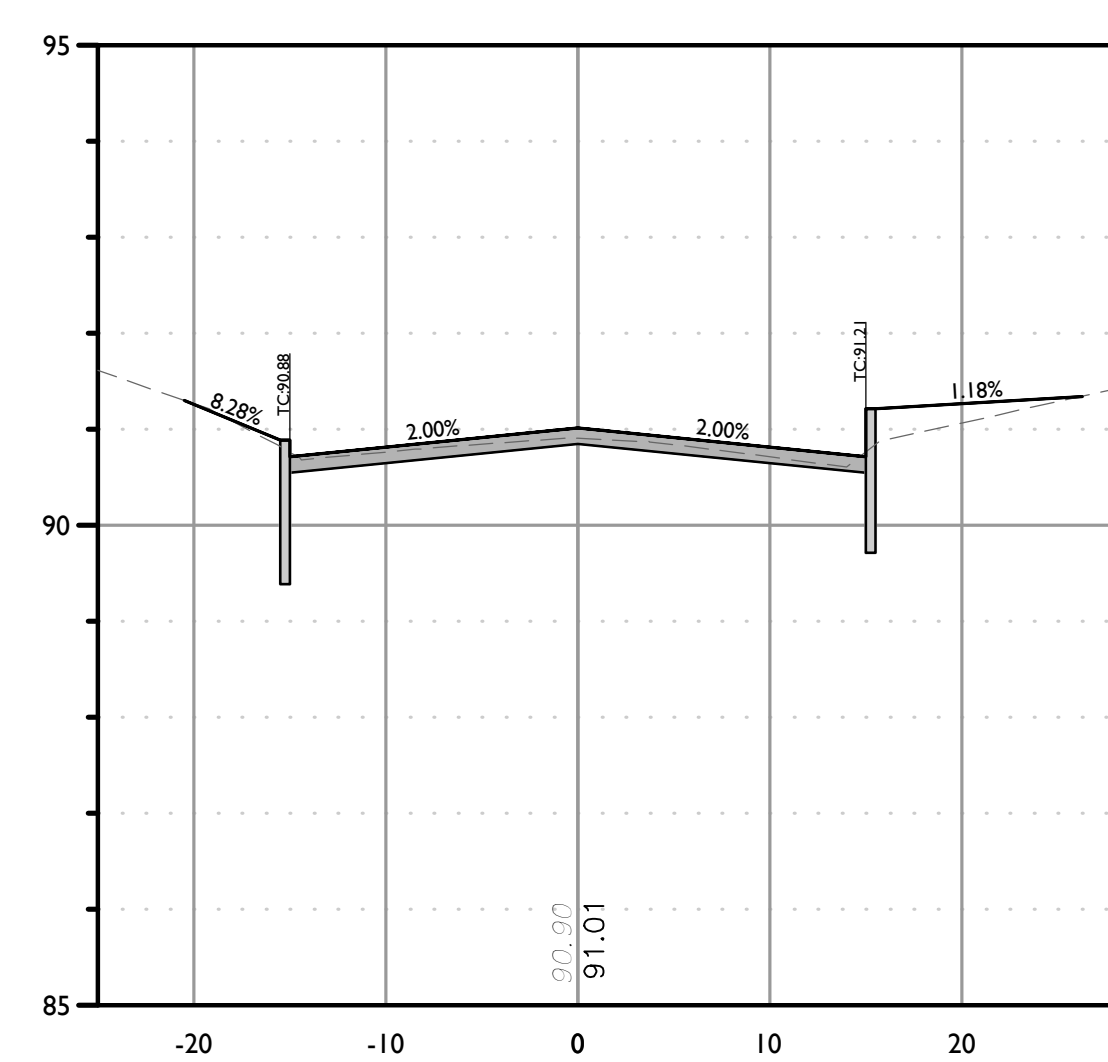
CROSS SECTIONS
 (SCHERRER STREET)



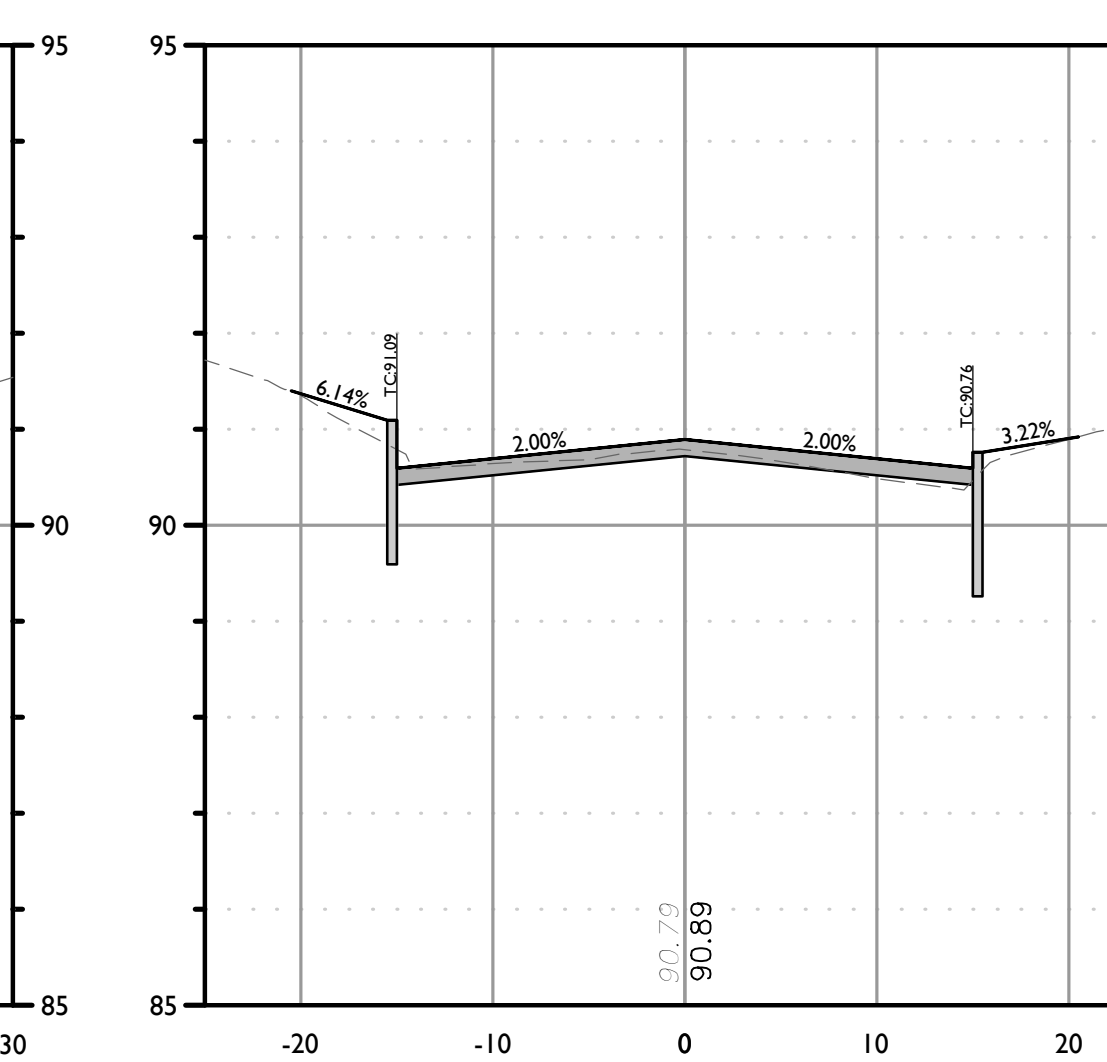
TYPICAL CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: XX+XX.XX
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



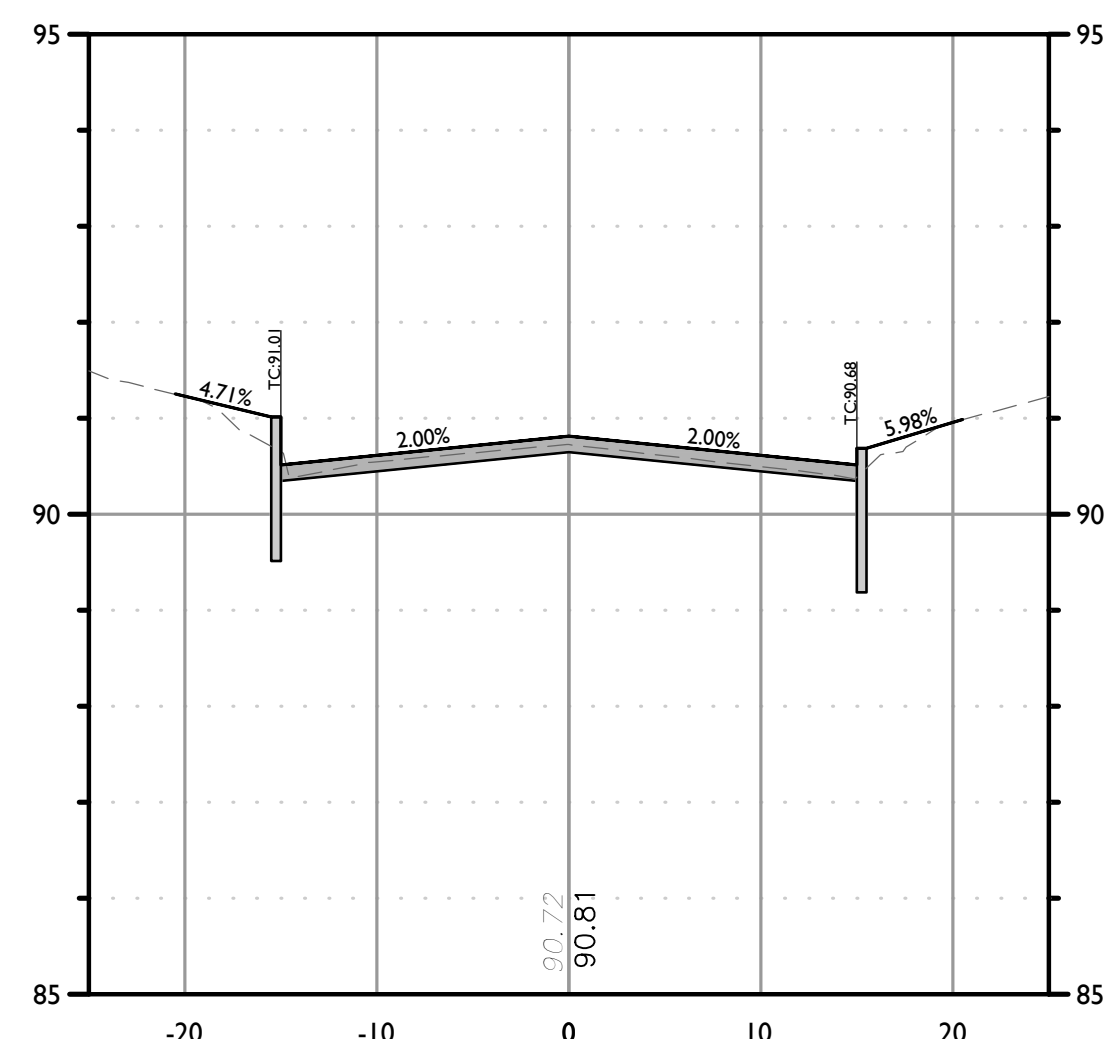
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 4+50
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



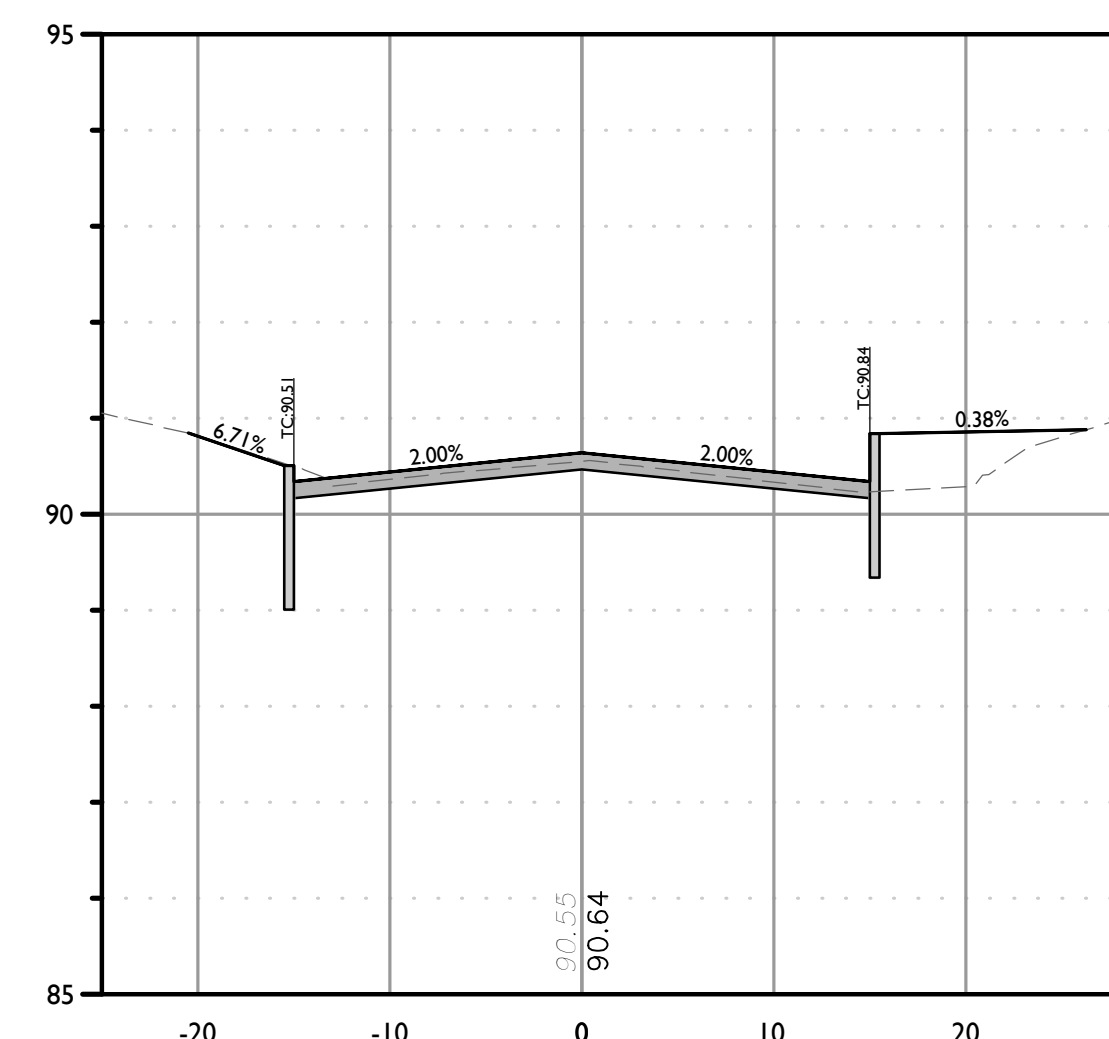
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 4+75
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



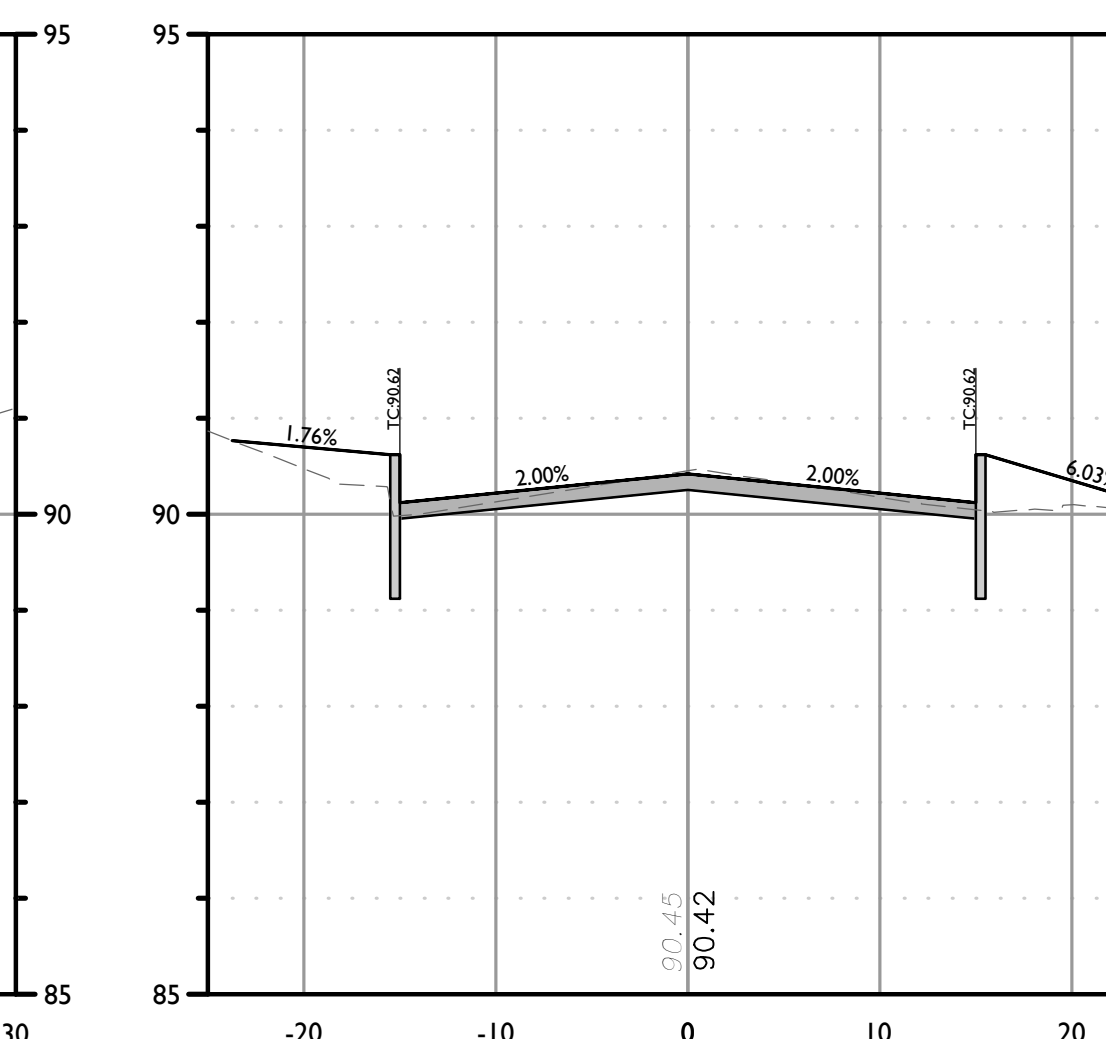
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 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



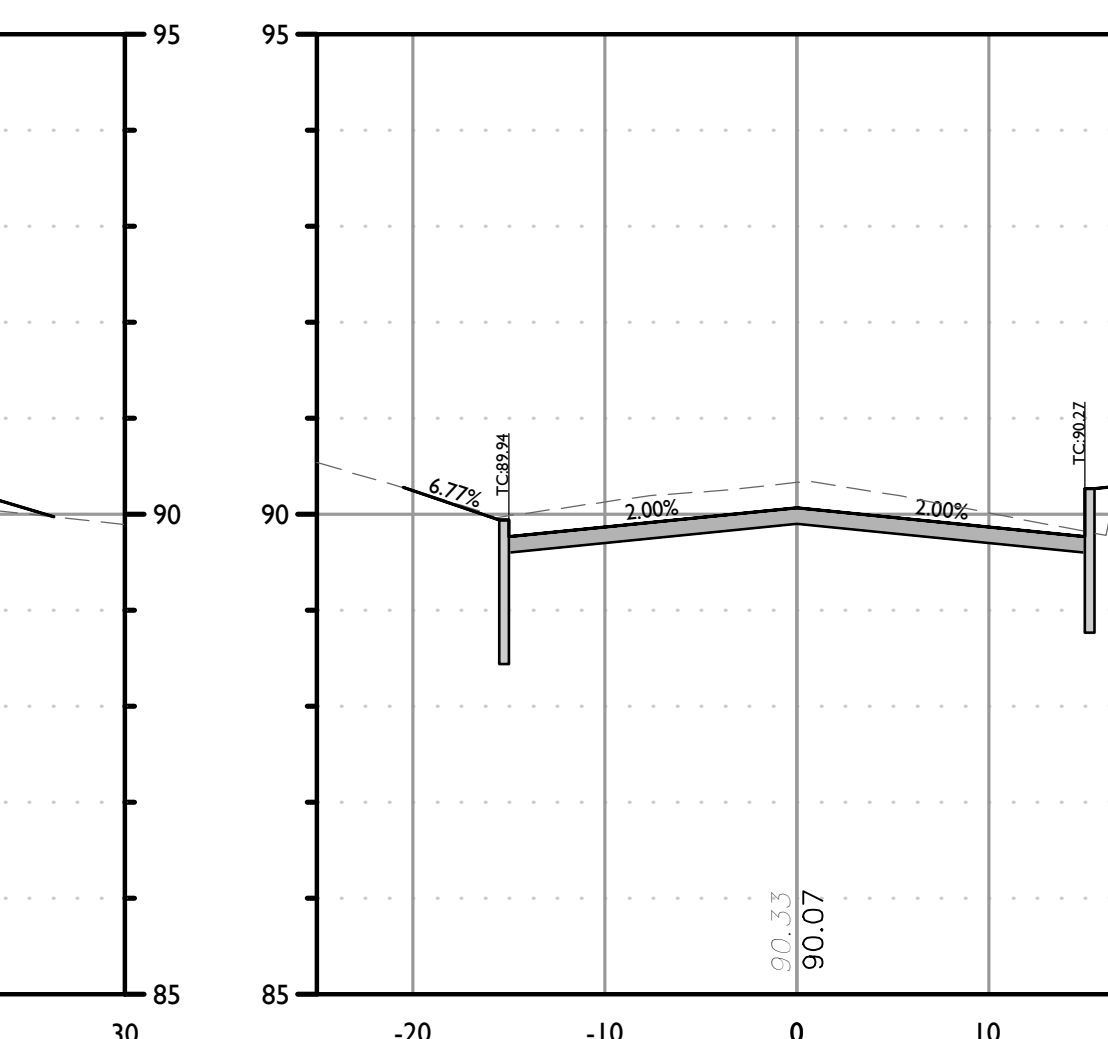
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 5+00
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



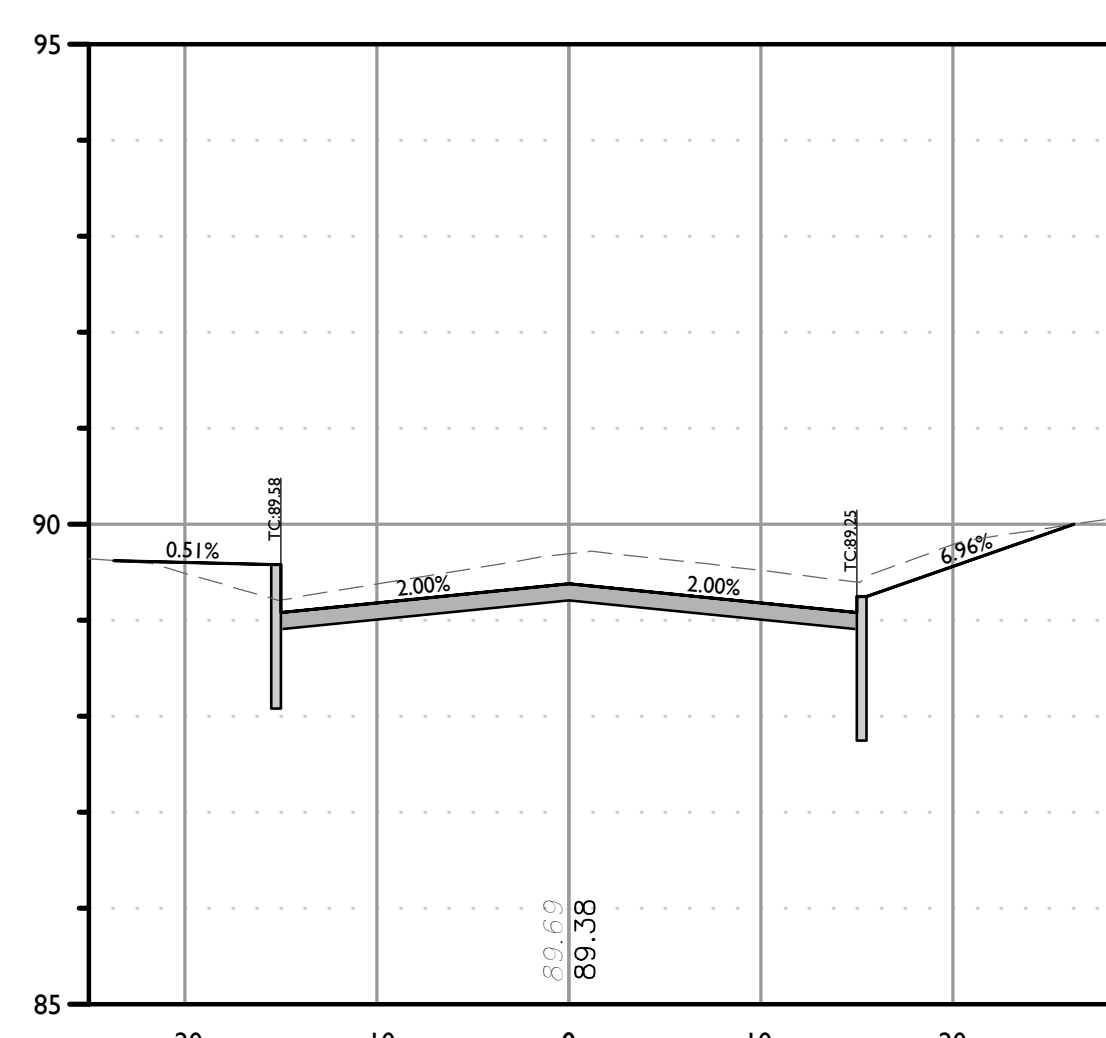
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 STATION: 5+25
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



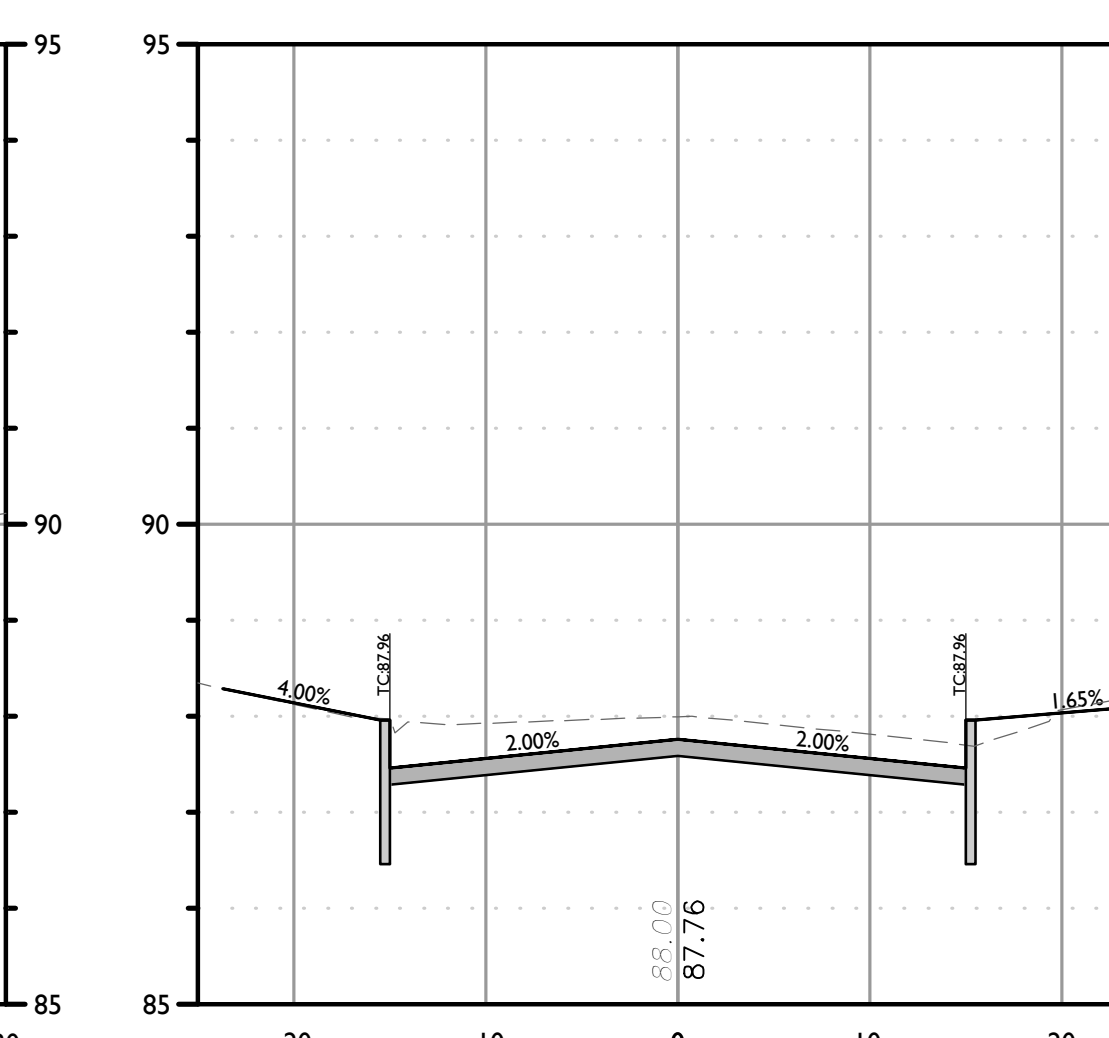
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 5+50
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 5+75
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



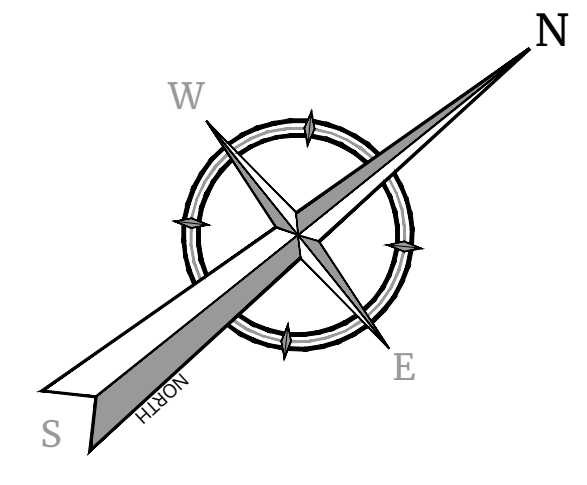
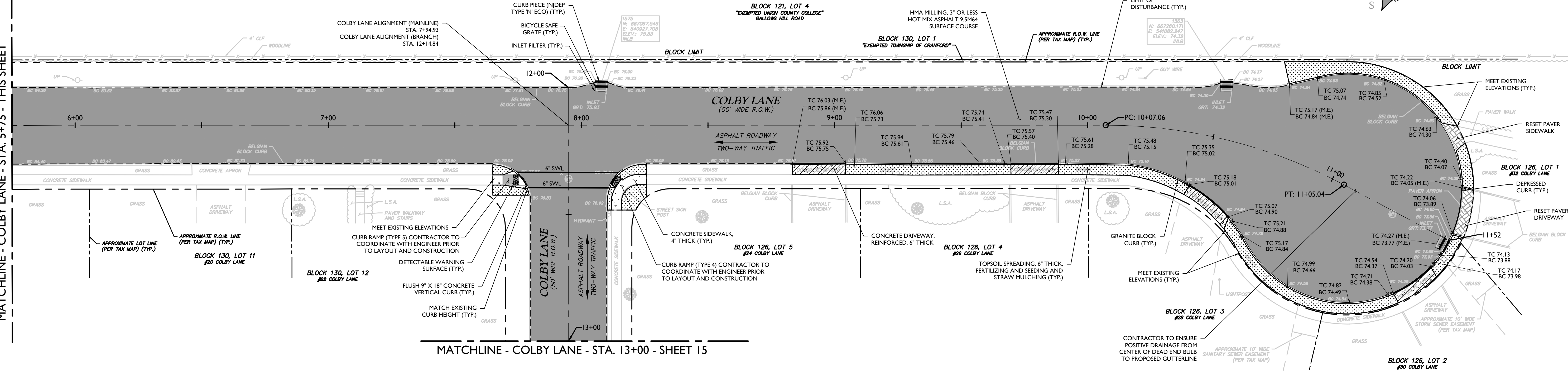
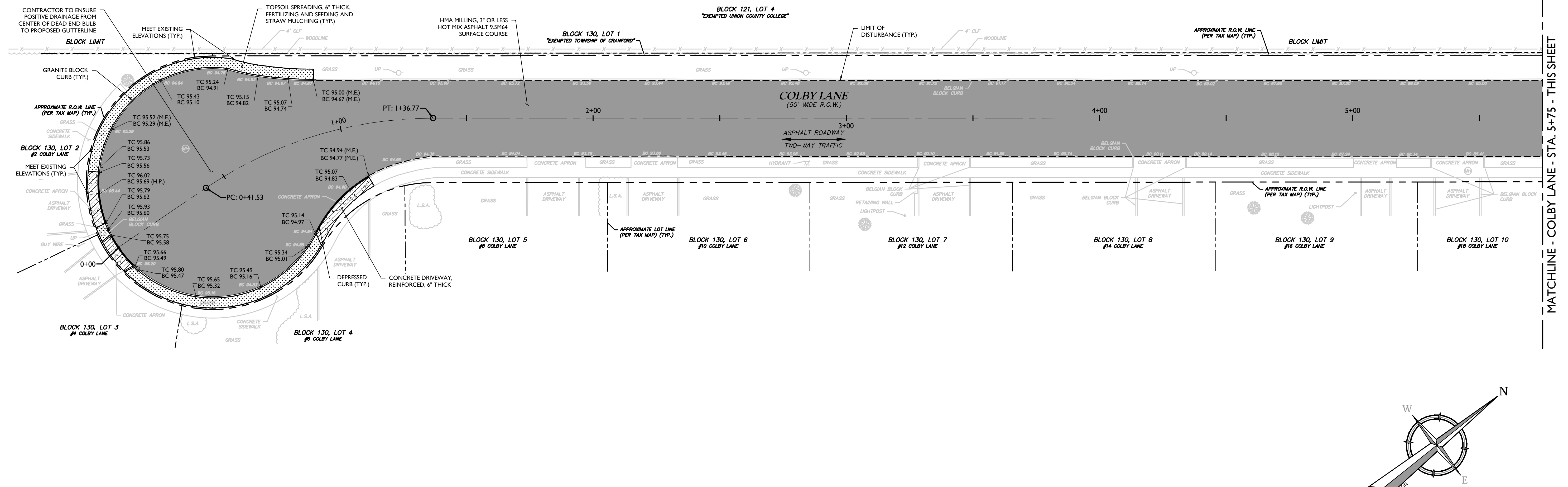
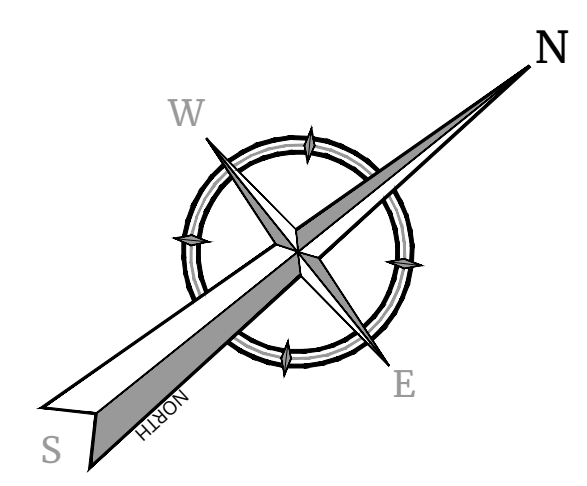
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 6+00
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



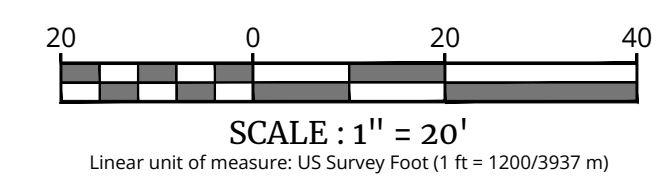
CROSS SECTION OF SCHERRER STREET ALIGNMENT
 STATION: 6+25
 HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 2'



Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)



NOTES:
1. THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA.
2. THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.



SOIL EROSION AND SEDIMENT CONTROL PLAN

MATCHLINE - COLBY LANE - STA. 5+75 - THIS SHEET

MATCHLINE - COLBY LANE - STA. 5+75 - THIS SHEET

MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 15

MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 15

REV.	DATE	BY	DESCRIPTION
1	3/15/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers Engineering & Design
MT. ARLINGTON
400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTANTS

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	09/21/23	BAK	BKP
PROJECT NUMBER:		DRAWING NAME:	
CDT0087		C-LAY1	

DIMENSION PLAN
(COLBY LANE)

SHEET NUMBER:
14 of 41



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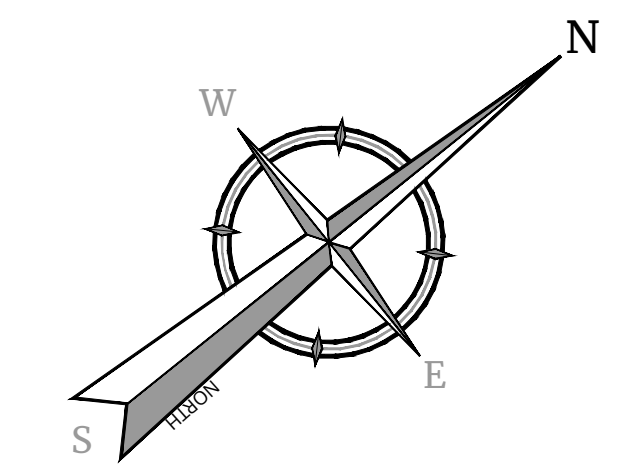
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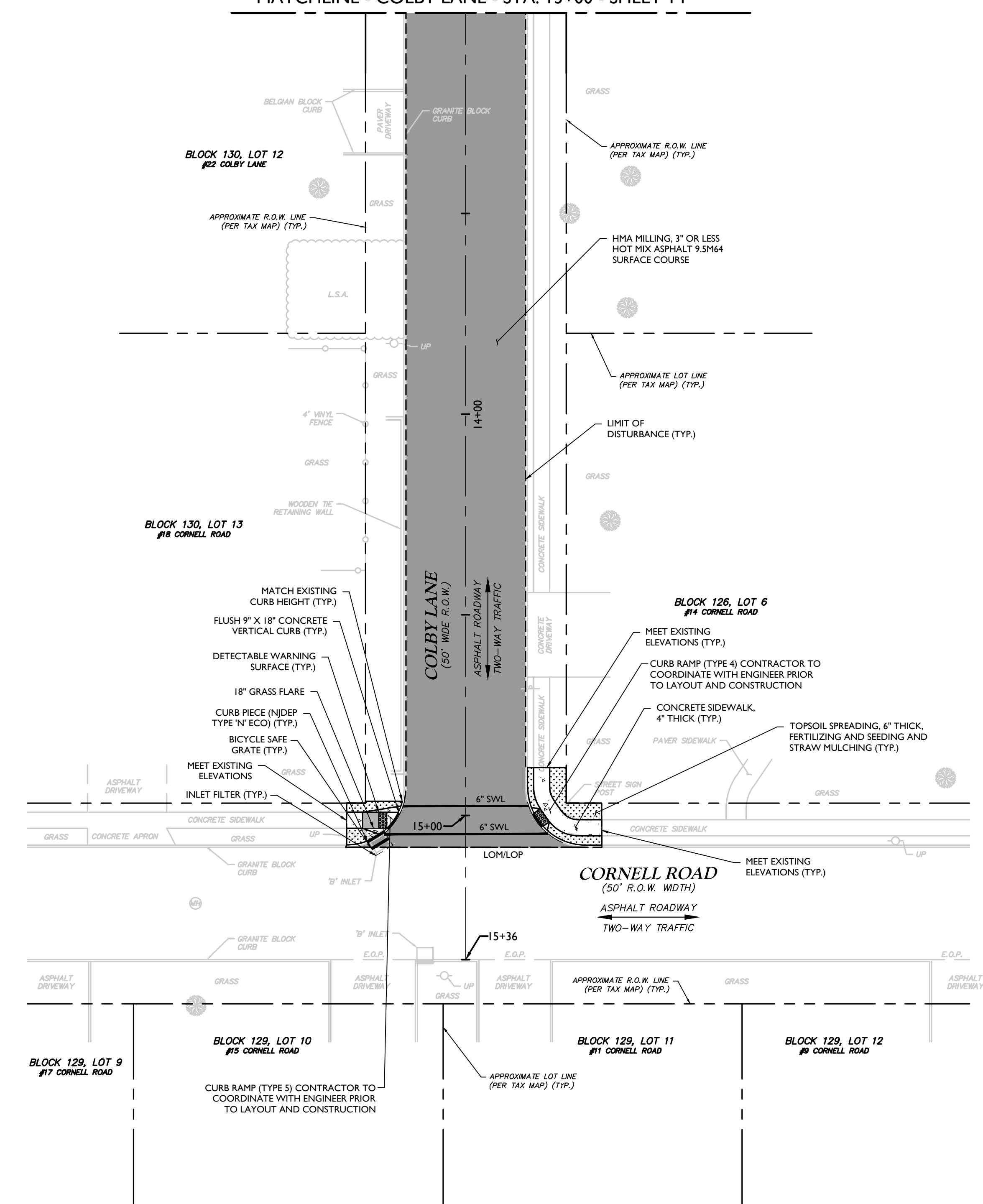


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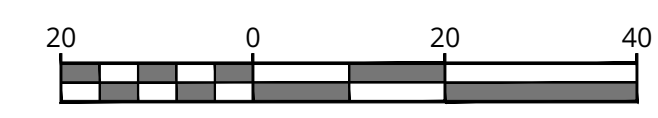


MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 14



NOTES:

1. THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA.
2. THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.



SCALE: 1" = 20'
Linear unit of measure: US Survey Foot (1 ft = 1200/9937 m)

SOIL EROSION AND SEDIMENT CONTROL PLAN

REV.	DATE	DESCRIPTION
1	3/1/24	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
 NEW JERSEY LICENSED PROFESSIONAL ENGINEER
 LICENSE NUMBER: CE49974
 COLLIER'S ENGINEERING & DESIGN, INC.
 N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
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TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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 COLLIER'S ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTANTS

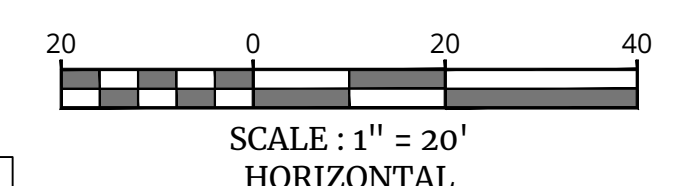
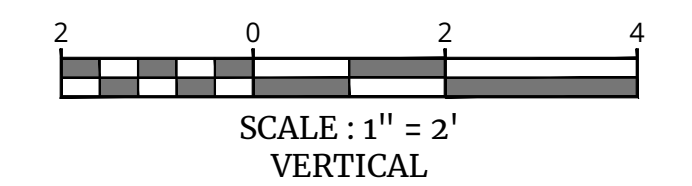
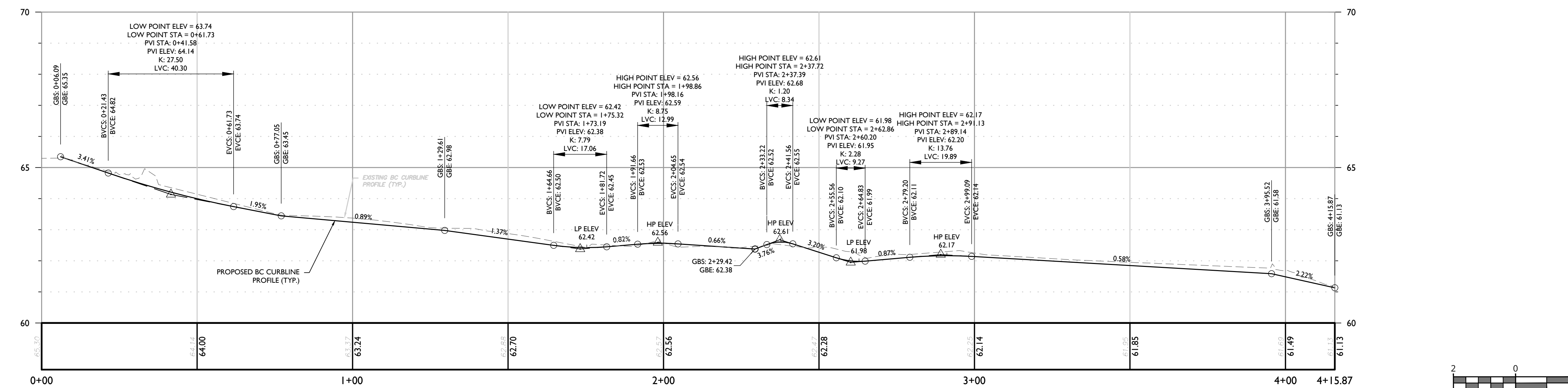
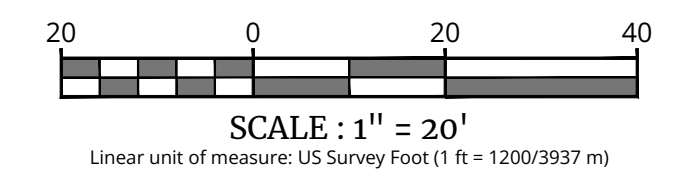
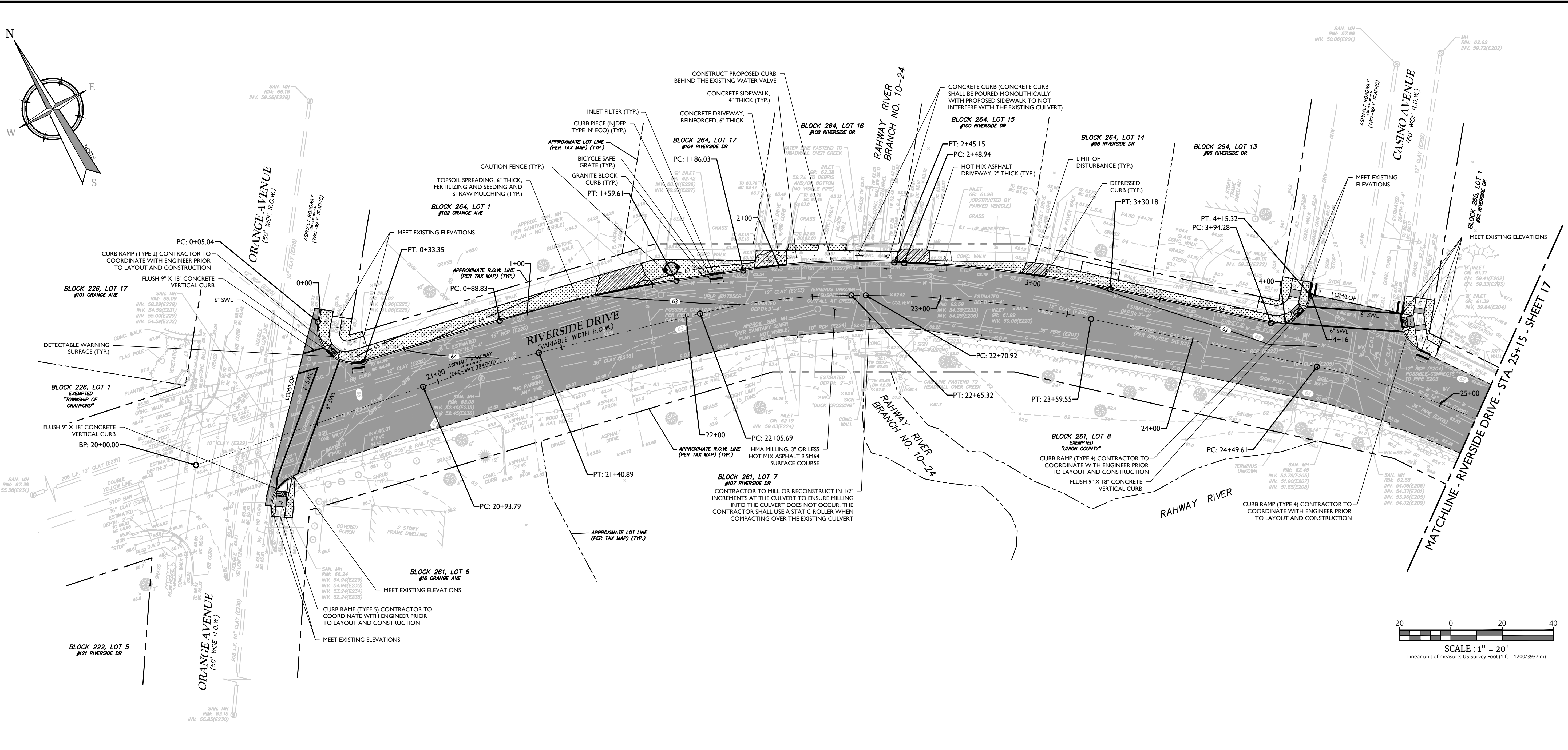
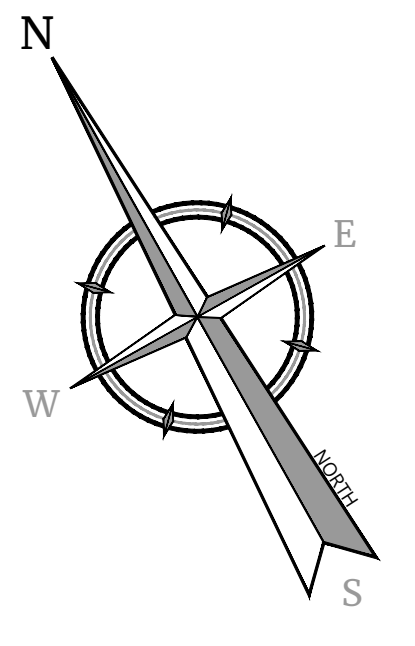
SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

SHEET TITLE
DIMENSION PLAN (COLBY LANE)

SHEET NUMBER
15 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CDT0087 Engineering & Design Plans/CLAY1.dwg/15.c



- NOTES:
- THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA.
 - THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.

SOIL EROSION AND SEDIMENT CONTROL PLAN

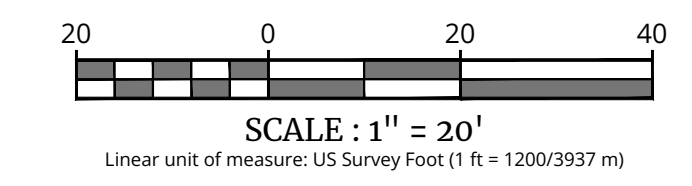
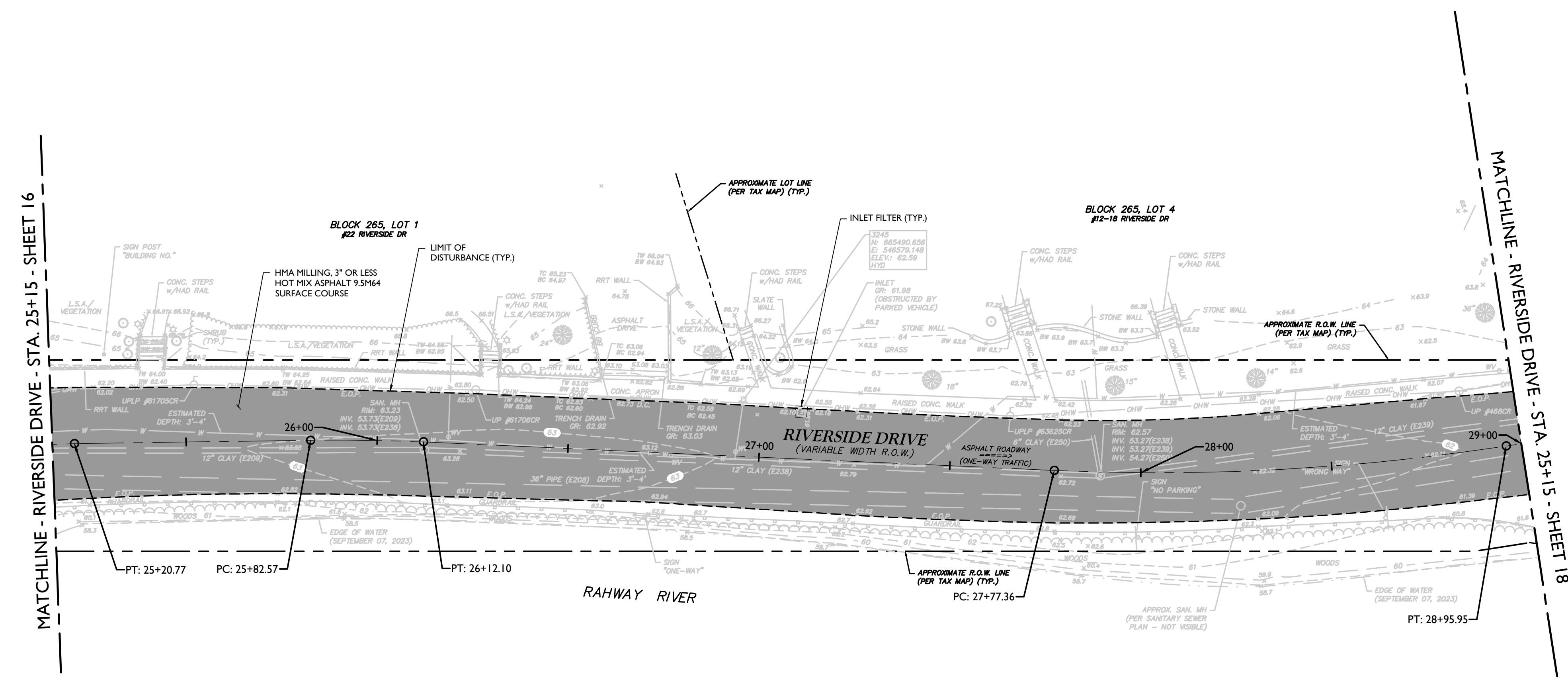
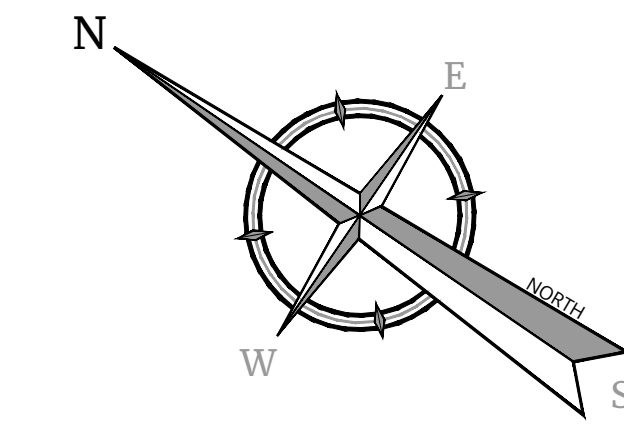
CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers
Engineering & Design
400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

DIMENSION PLAN
(RIVERSIDE DRIVE)



- NOTES:
- THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA.
 - THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.

SOIL EROSION AND SEDIMENT CONTROL PLAN

REV	DATE	DRAWN BY	DESCRIPTION
1	3/1/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
 NEW JERSEY LICENSED PROFESSIONAL ENGINEER
 LICENSE NUMBER: 0649974
 COLLIER'S ENGINEERING & DESIGN, INC.
 N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
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SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

DIMENSION PLAN
 (RIVERSIDE DRIVE)

SHEET NUMBER:
 17 of 41

REV.	DATE	DRAWN BY	DESCRIPTION
1	3/1/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: 64-49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

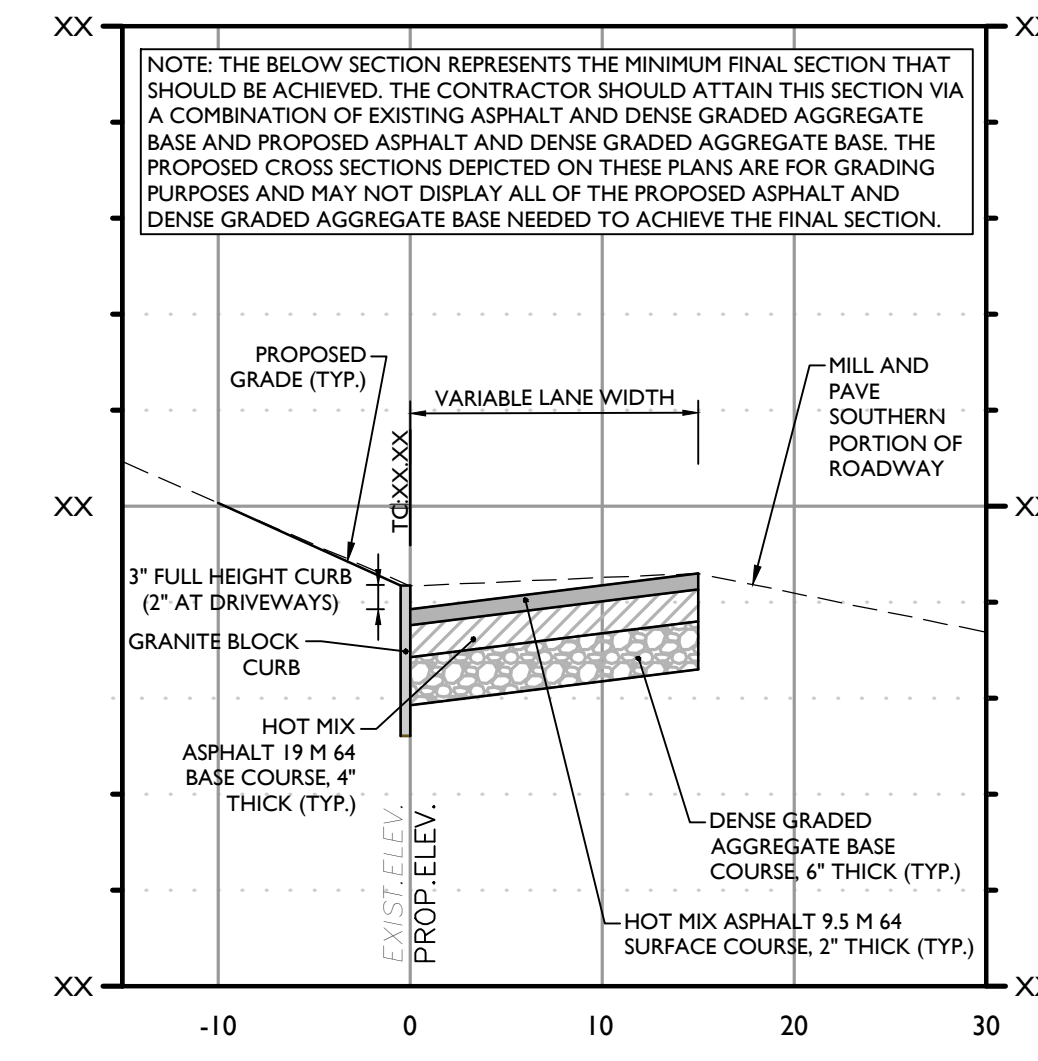
TOWNSHIP OF CRANFORD
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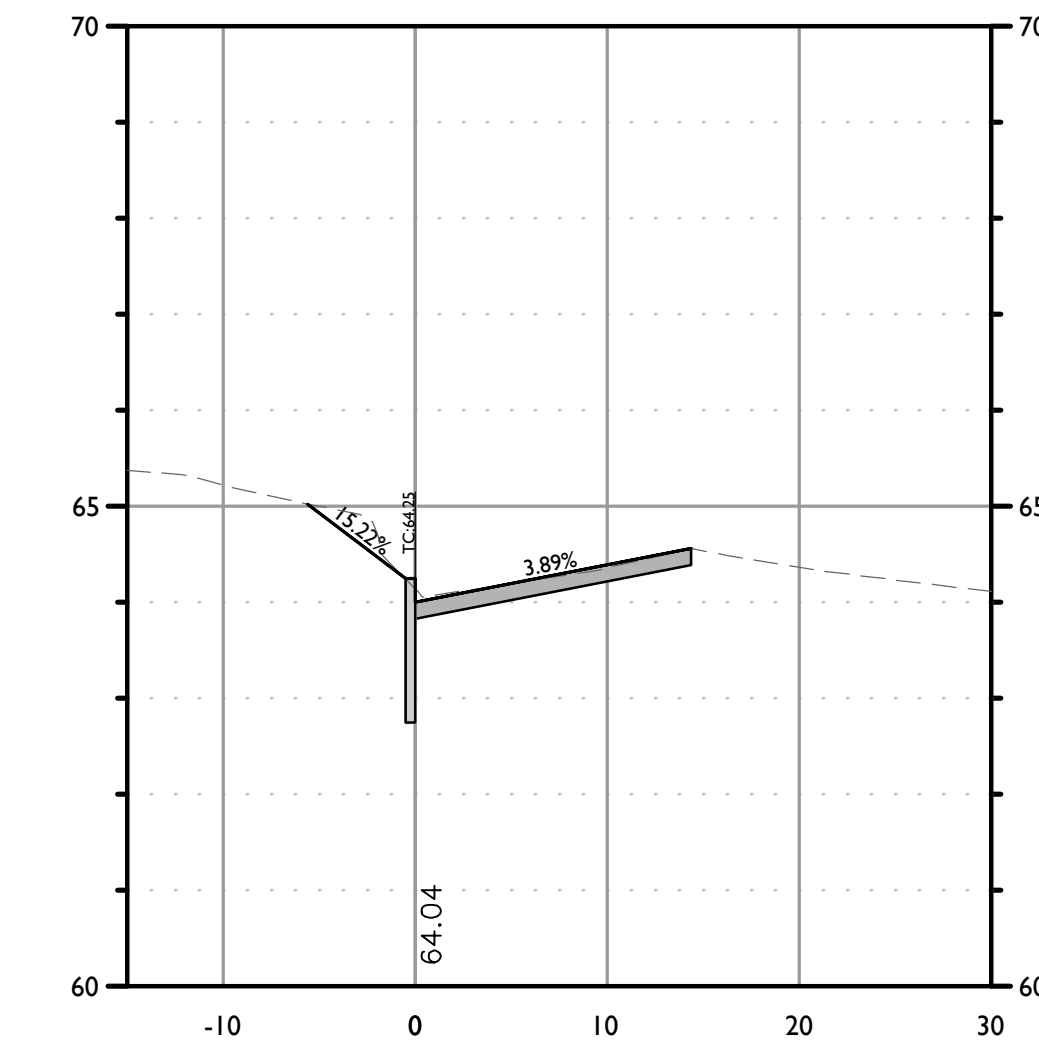
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

SHEET TITLE
CROSS SECTIONS (RIVERSIDE DRIVE)

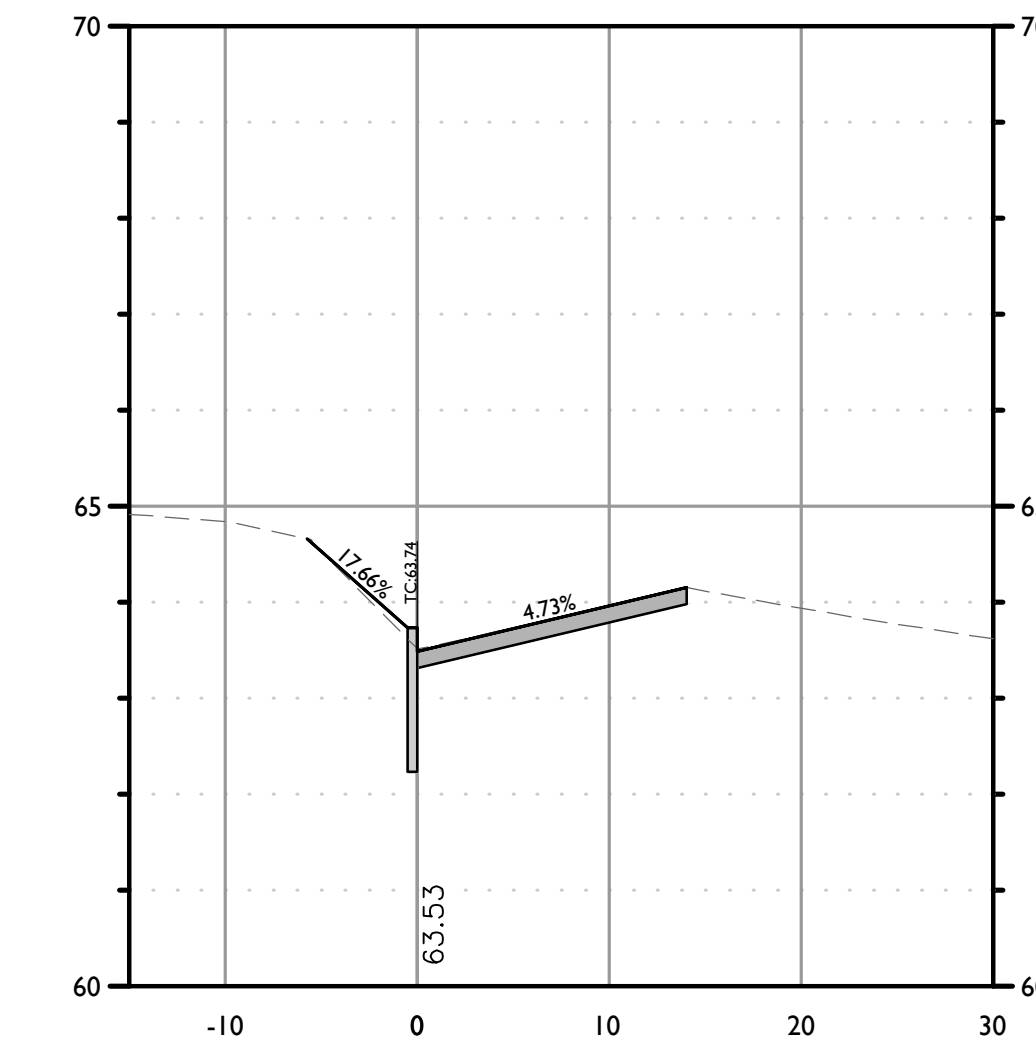
SHEET NUMBER:
19 of 41



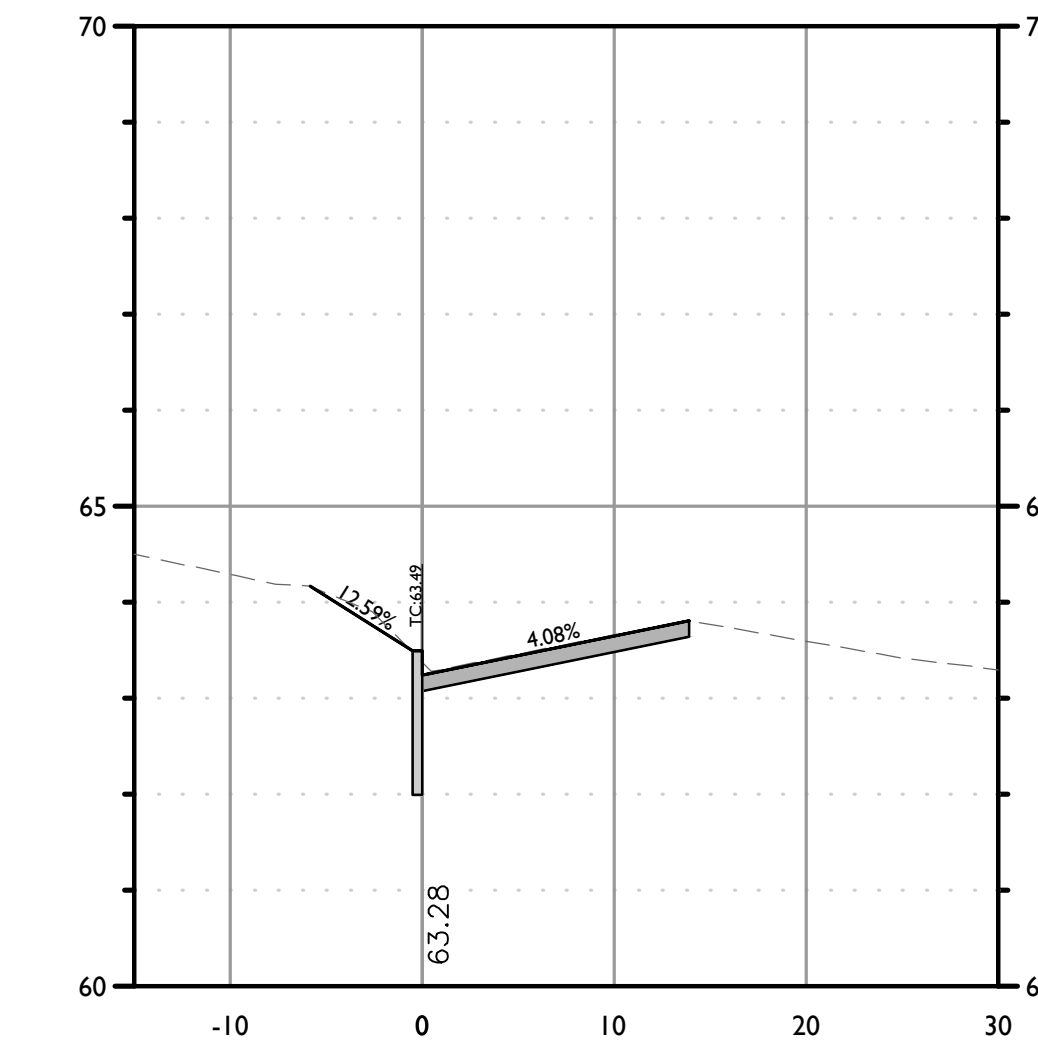
TYPICAL CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT
STATION: XX+XX.XX
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



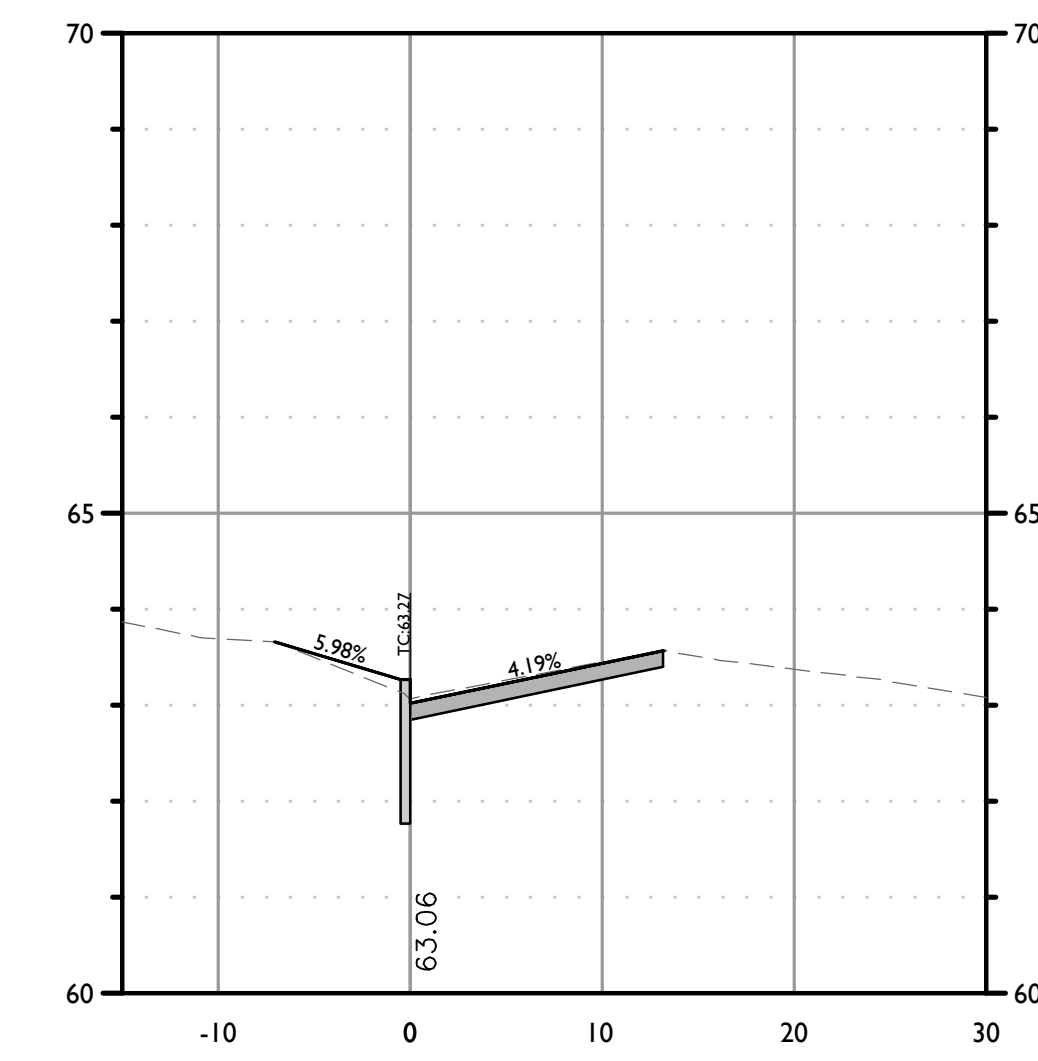
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 0+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



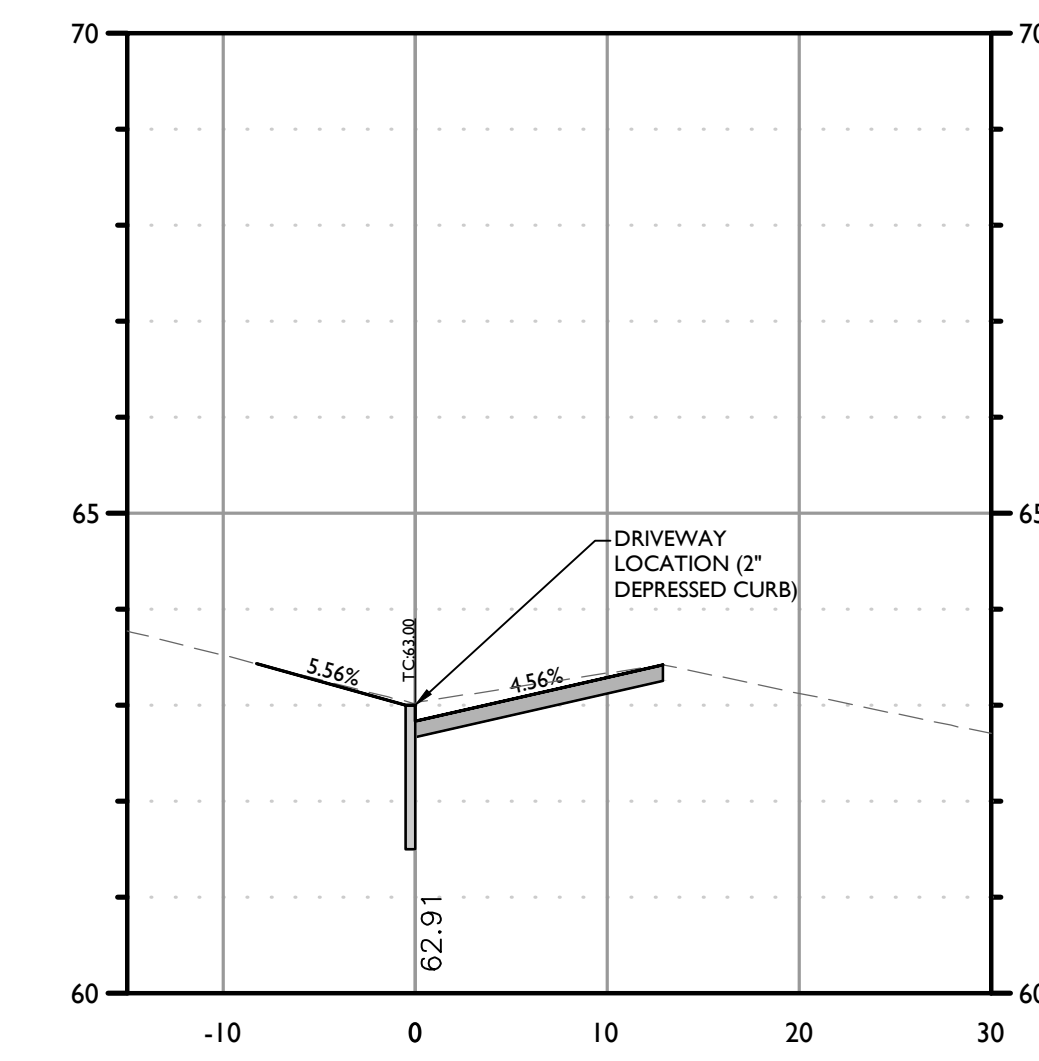
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 0+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



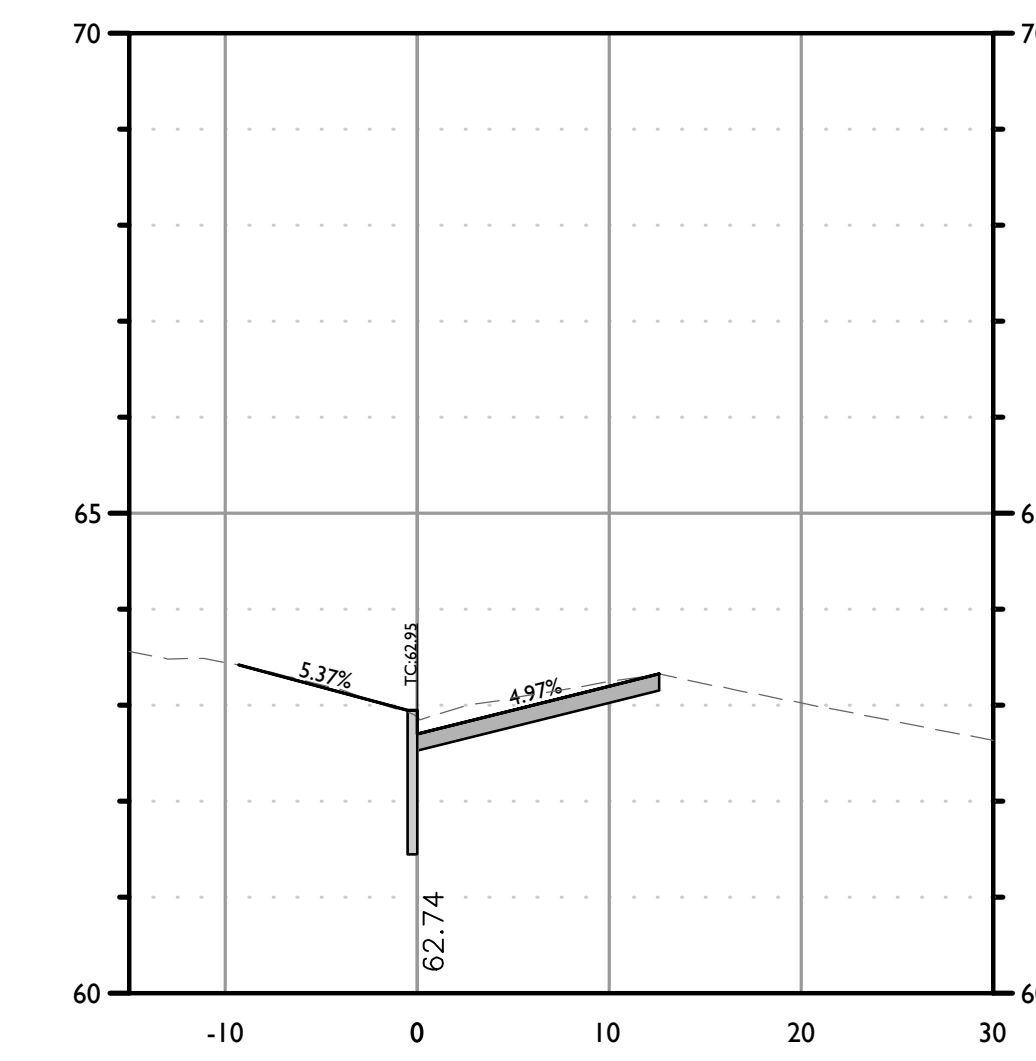
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STATION: 1+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



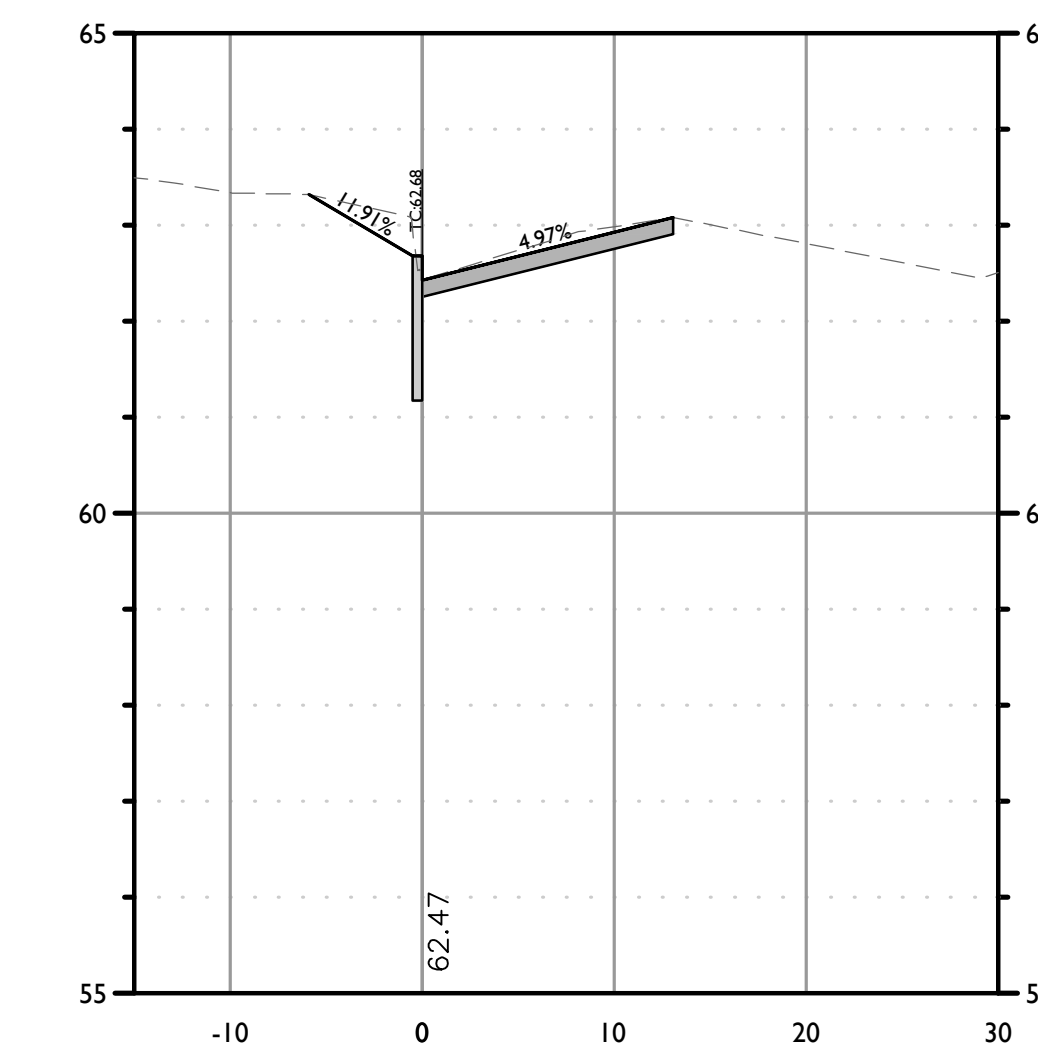
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HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



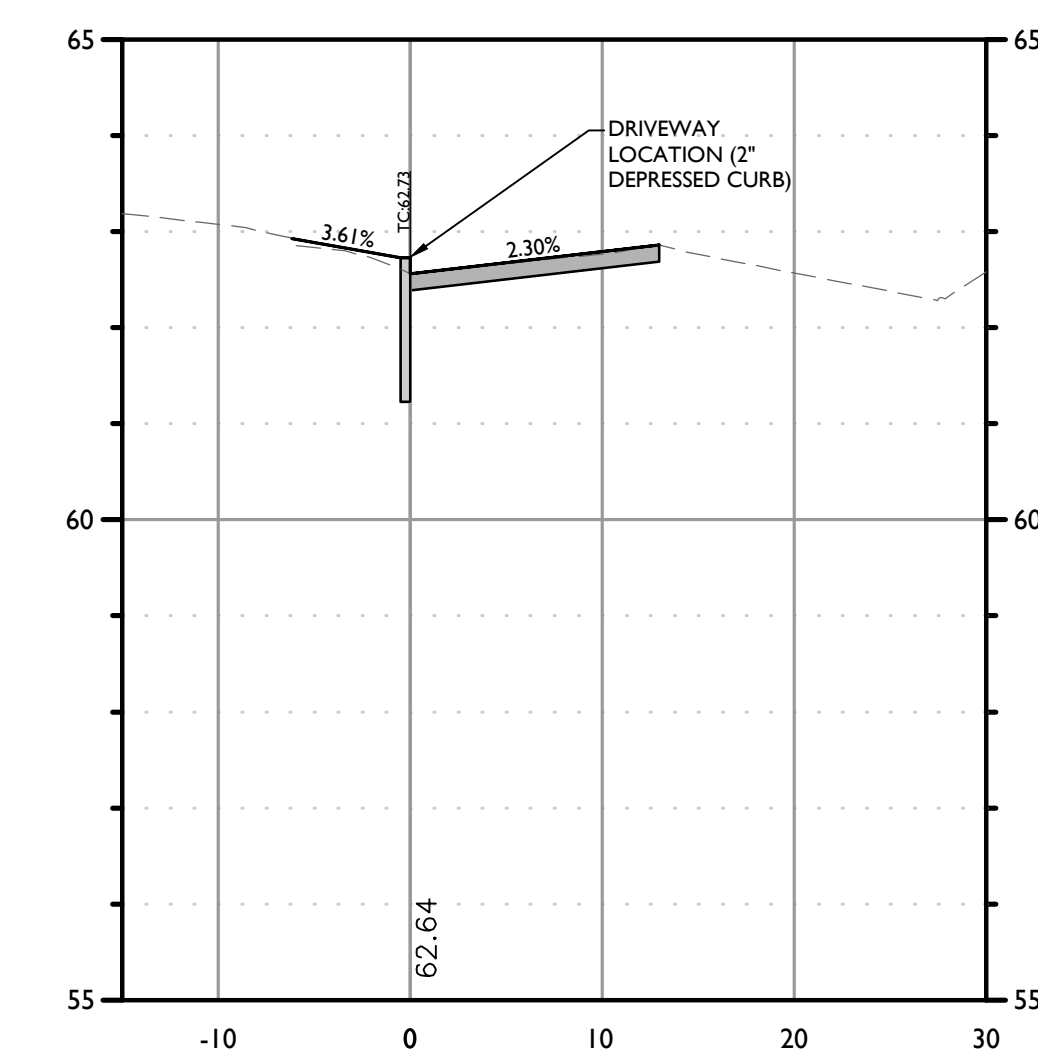
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STATION: 1+40
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



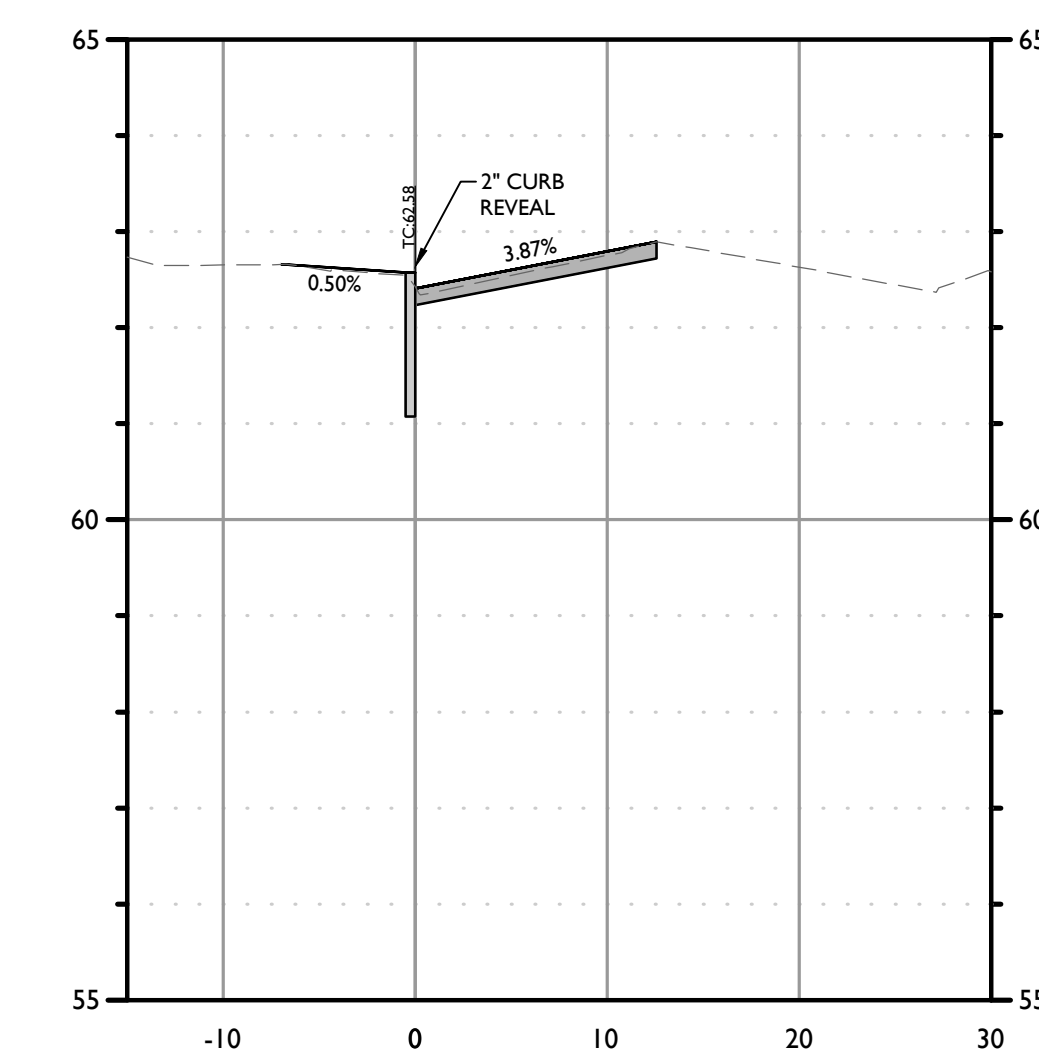
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 1+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



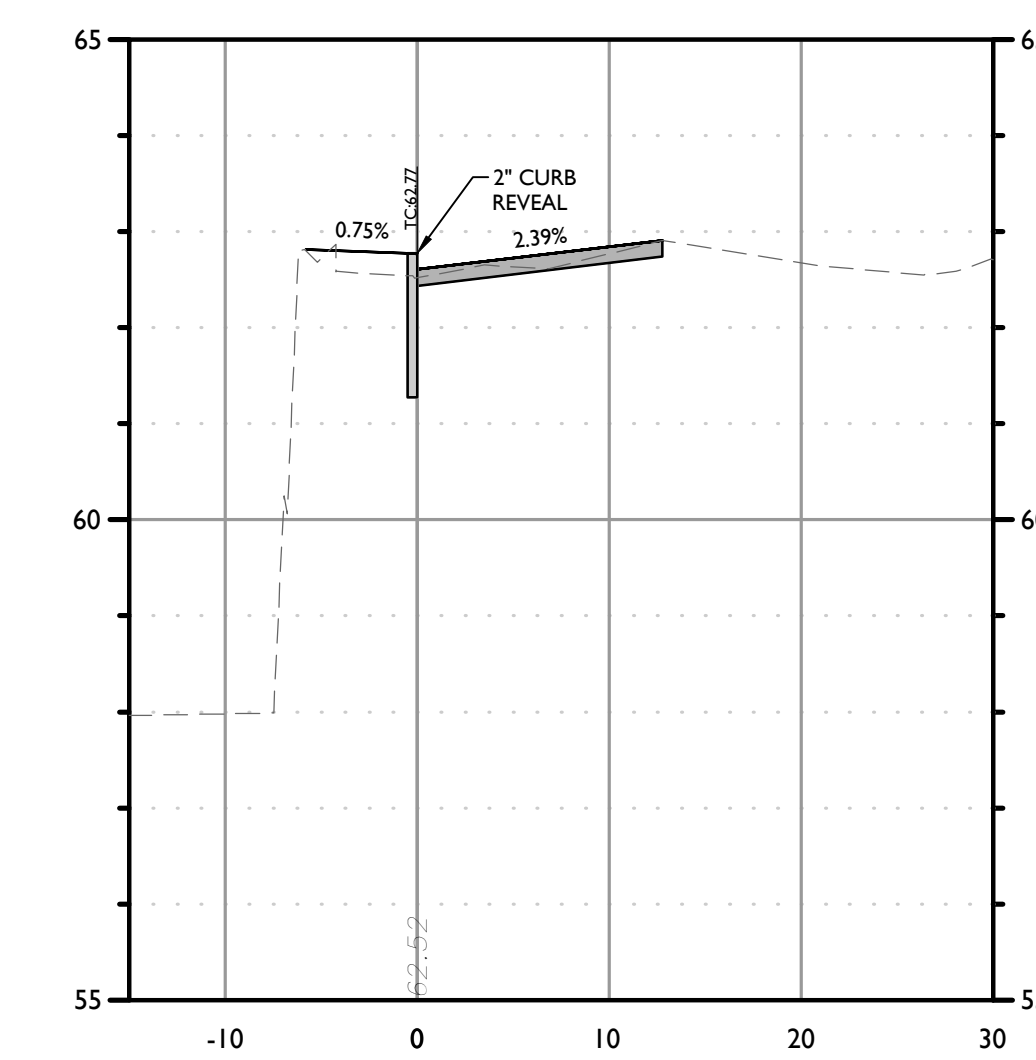
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 1+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



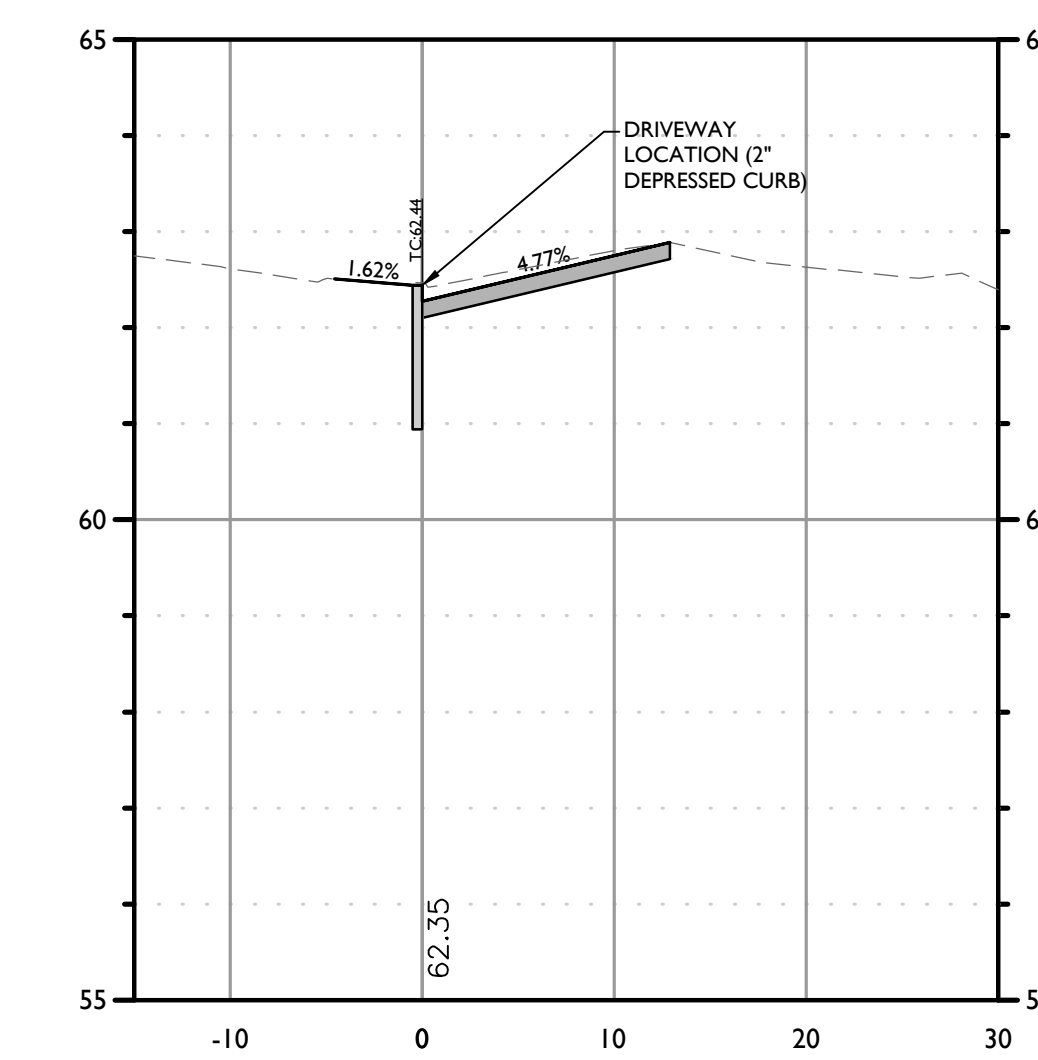
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STATION: 2+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



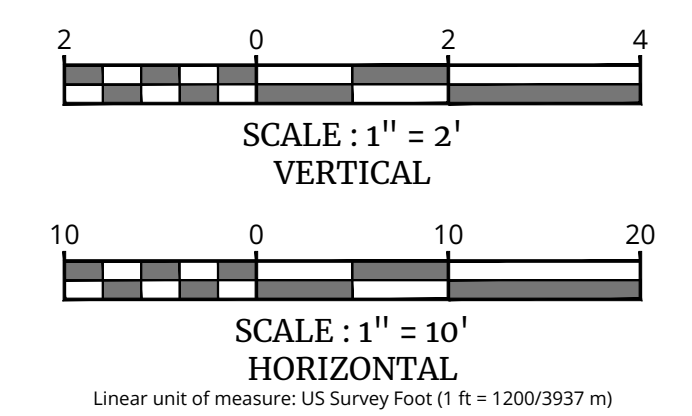
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STATION: 2+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

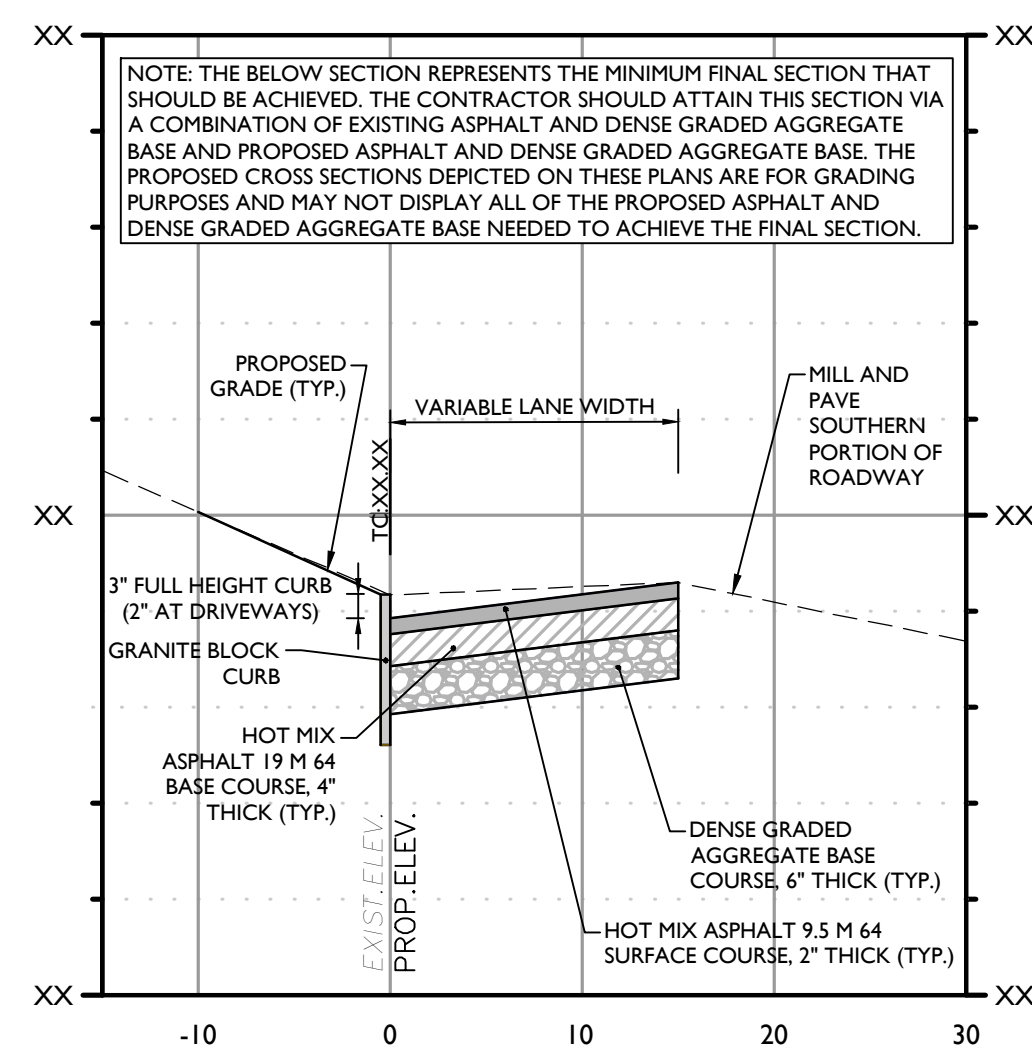


CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 2+37.50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

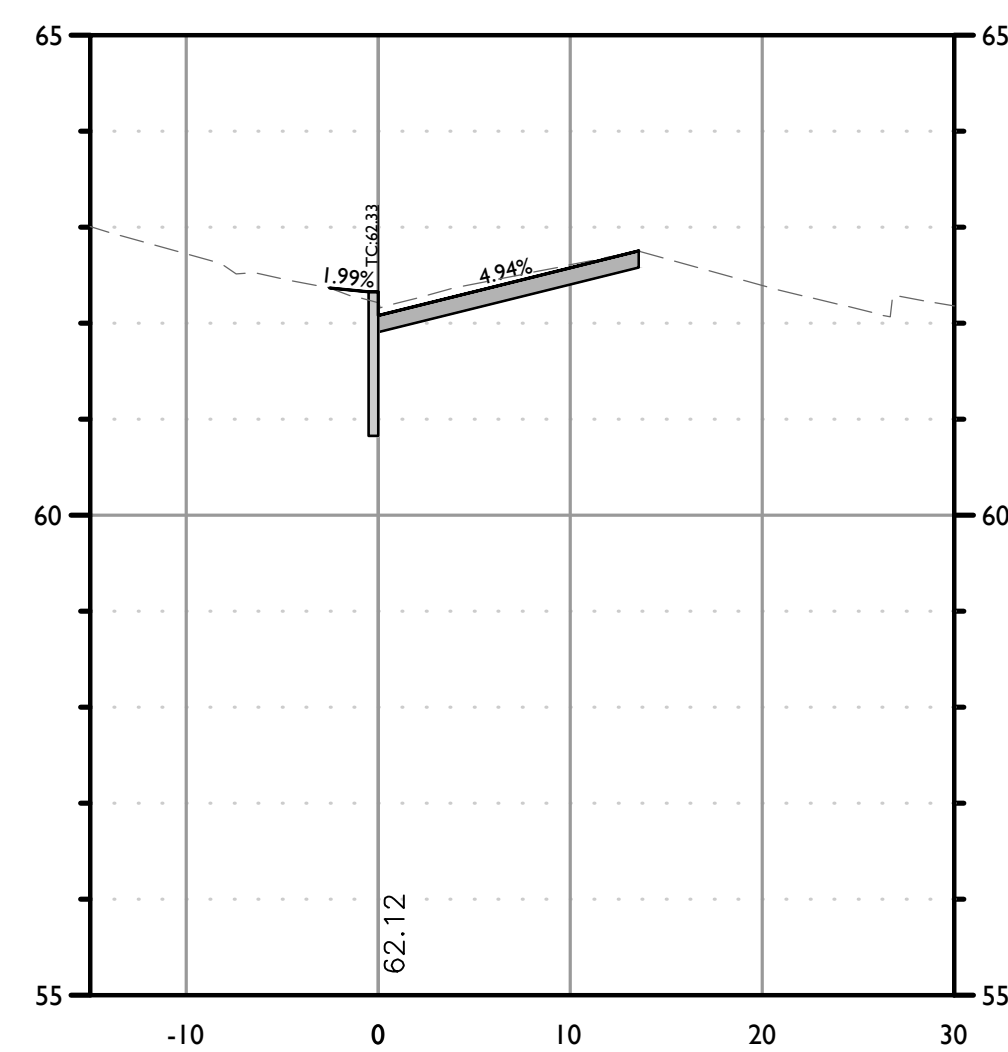


CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 2+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

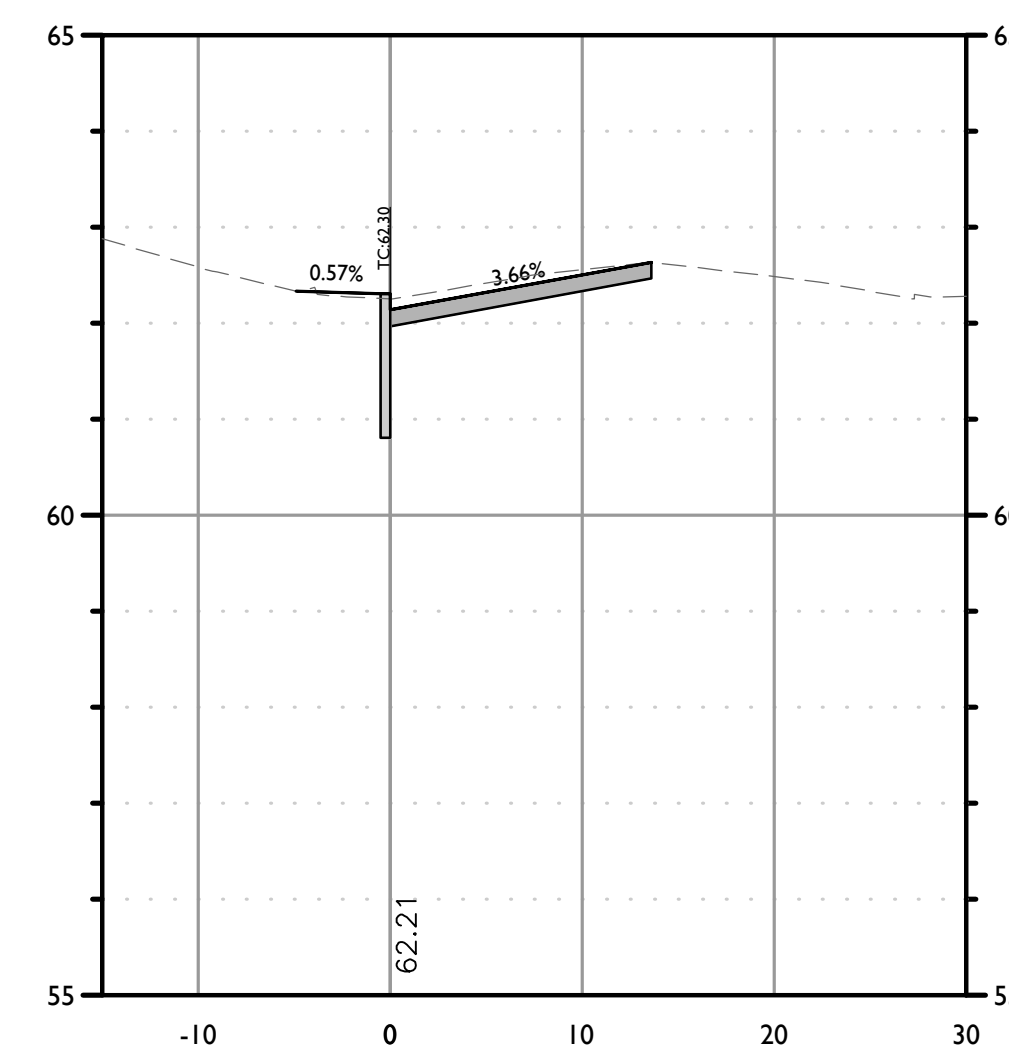




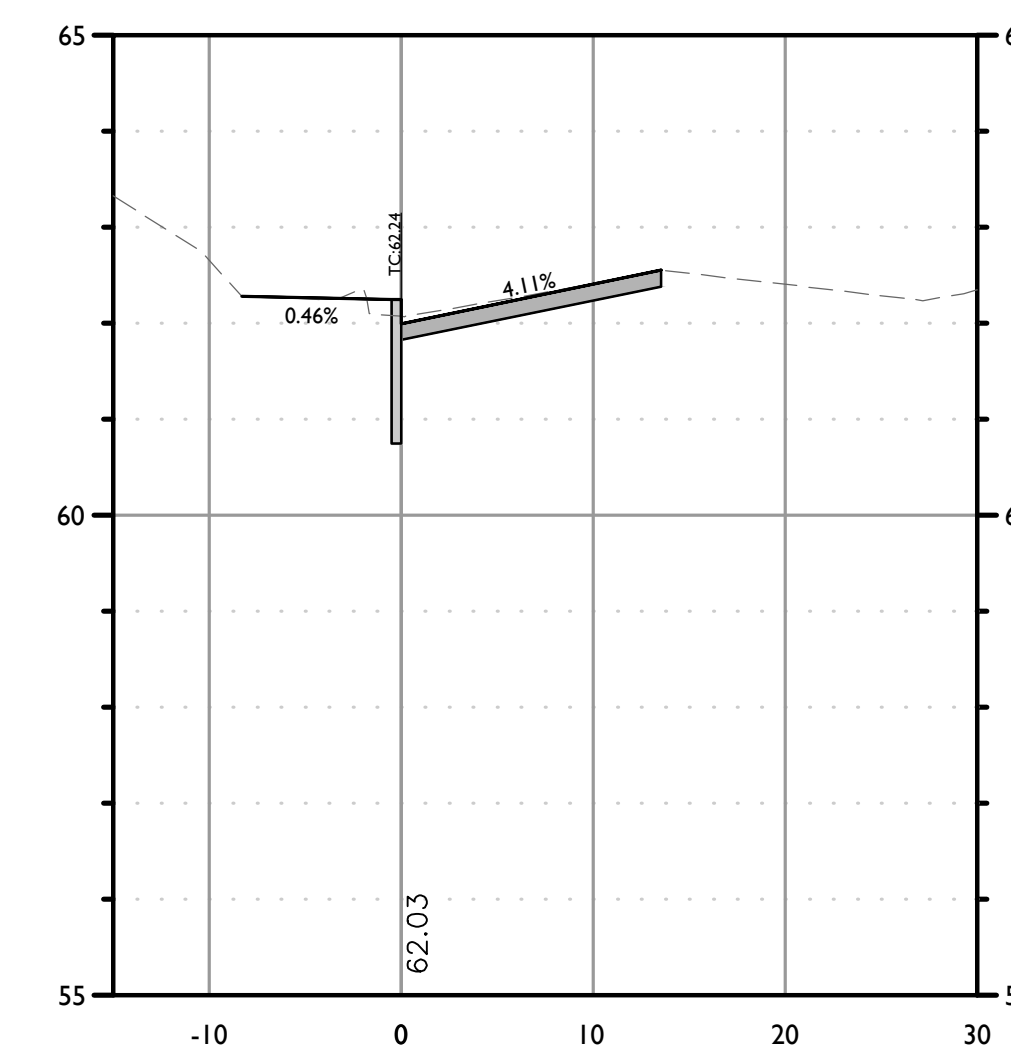
TYPICAL CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT
STATION: XX+XX.XX
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



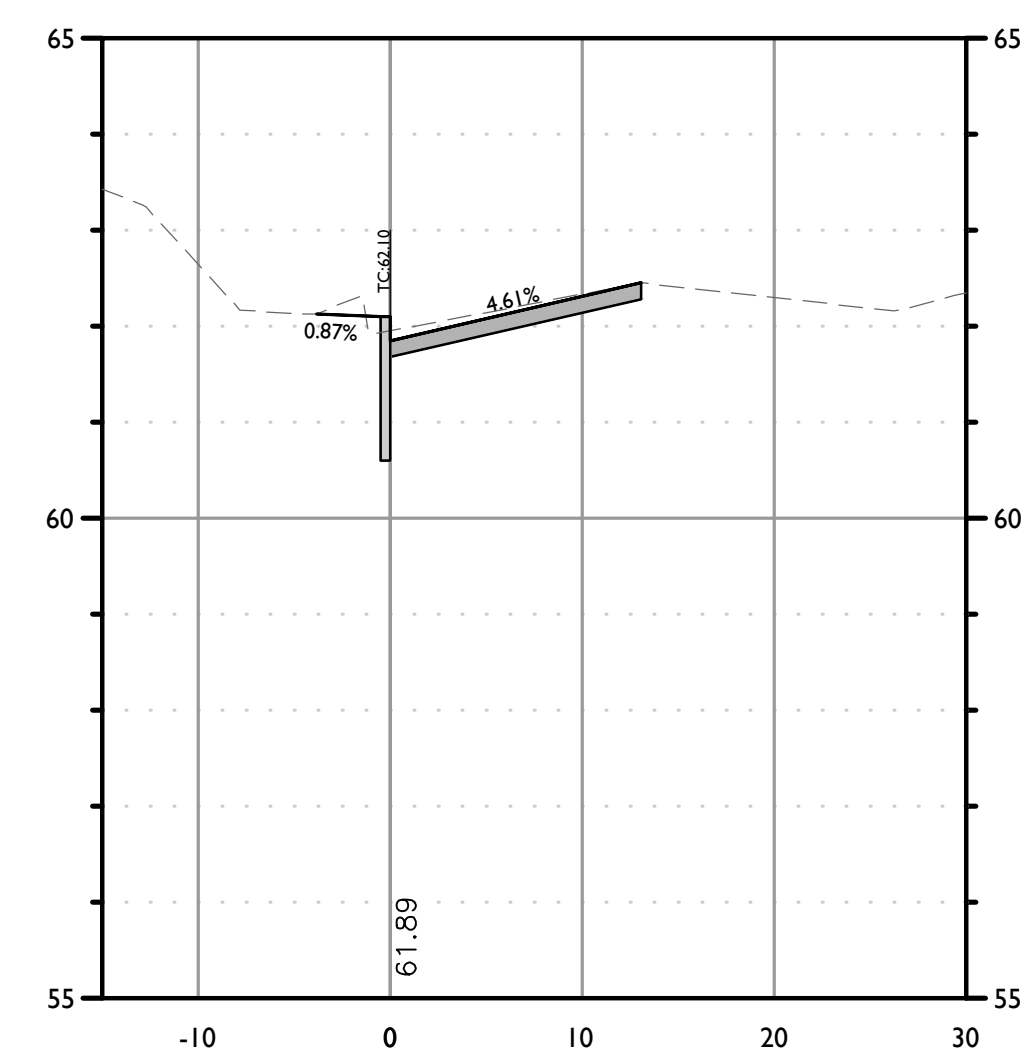
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 2+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



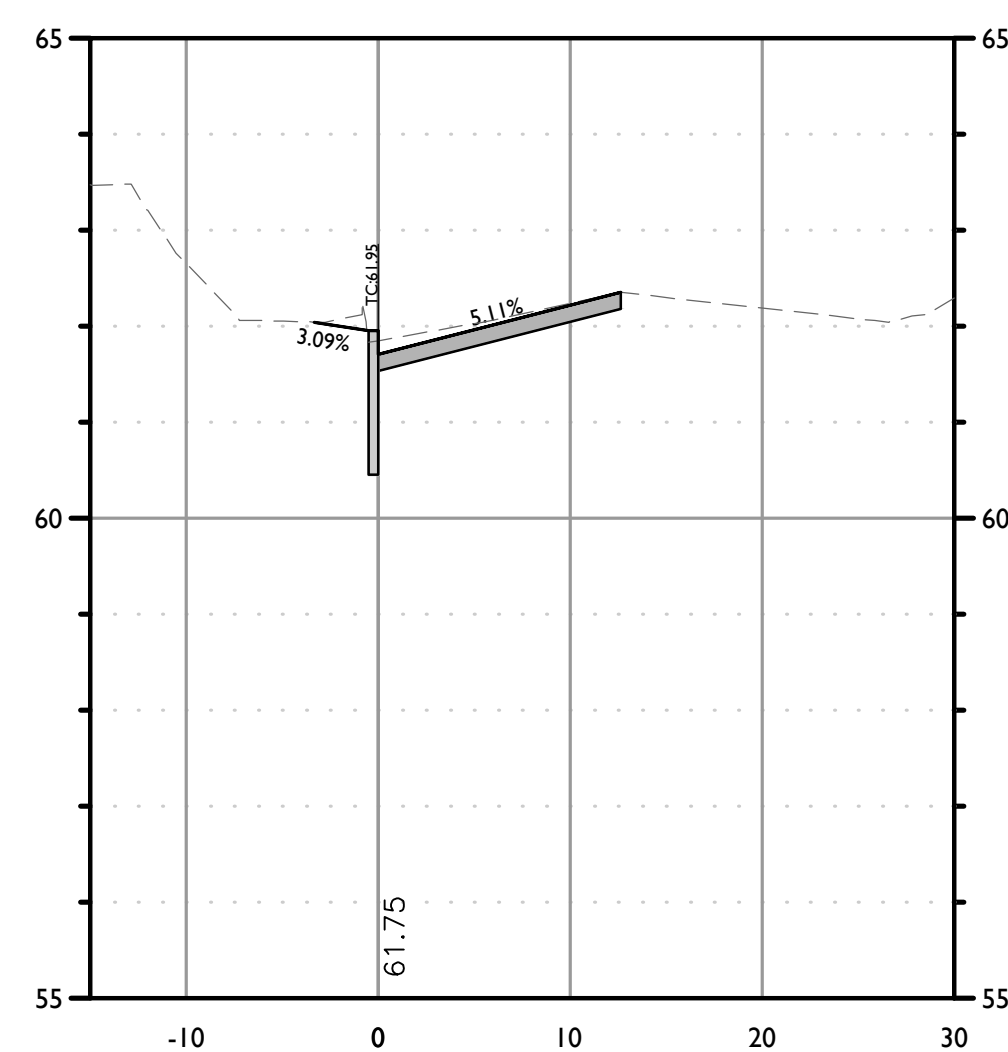
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 3+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 3+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 3+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #1
STATION: 3+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

REV.	DATE	DESCRIPTION
1	3/1/24	REVISED RIVERSIDE DRIVE PROFILE

Kevin E. Boyer
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NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE-49974
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N.J. C.O.A. #: 24GA27986500

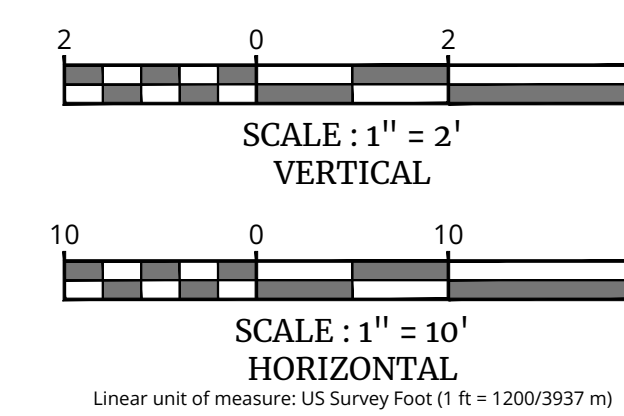
CONSTRUCTION PLANS
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TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers
Engineering & Design
400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

SHEET TITLE:
CROSS SECTIONS (RIVERSIDE DRIVE)

SHEET NUMBER:
20 of 41



REV.	DATE	DESCRIPTION	DRAWN BY	DATE
1	3/1/24	REVISED RIVERSIDE DRIVE PROFILE	BAK	

Kevin E. Boyer
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NEW JERSEY LICENSED PROFESSIONAL ENGINEER
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N.J. C.O.A. #: 24GA27986500

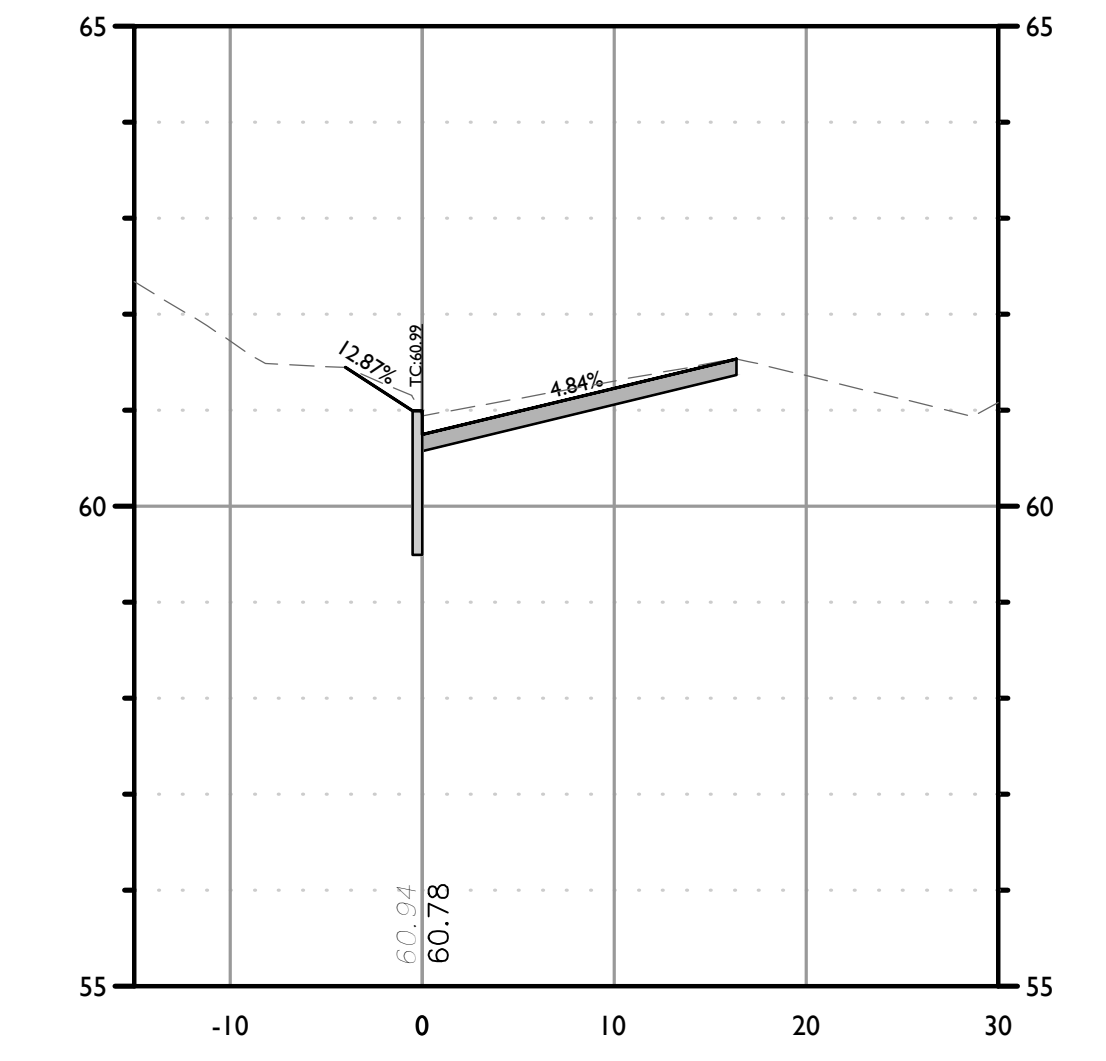
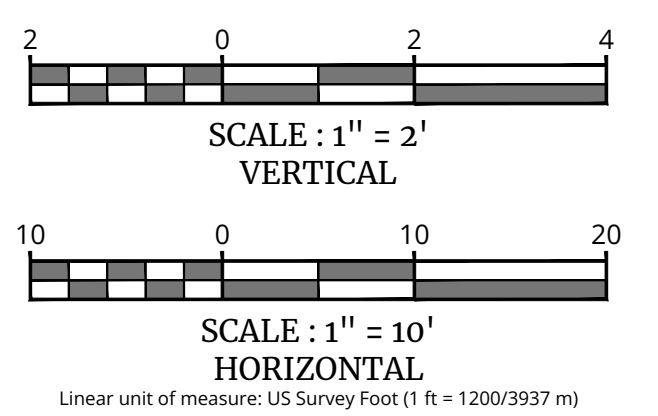
CONSTRUCTION PLANS
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2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

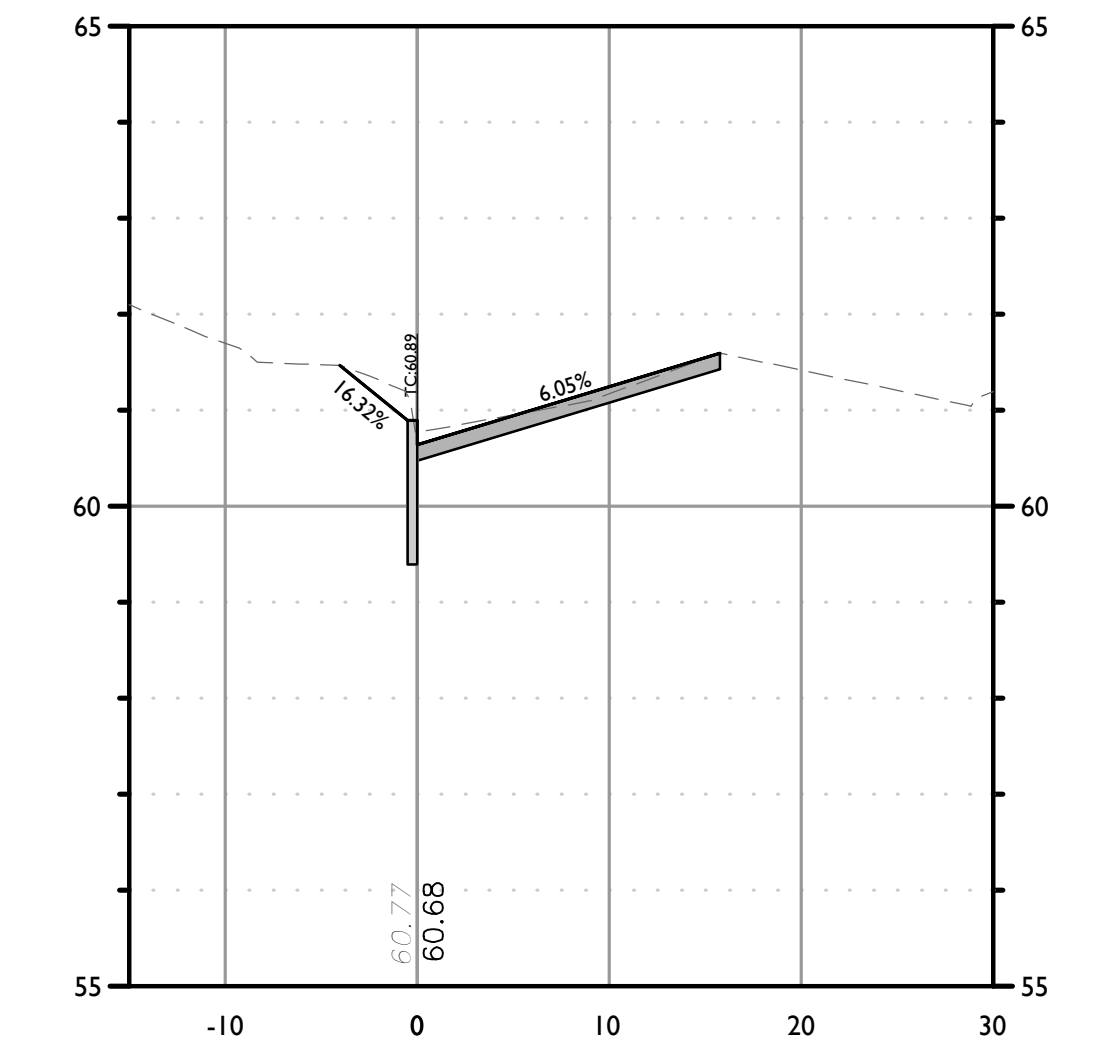
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

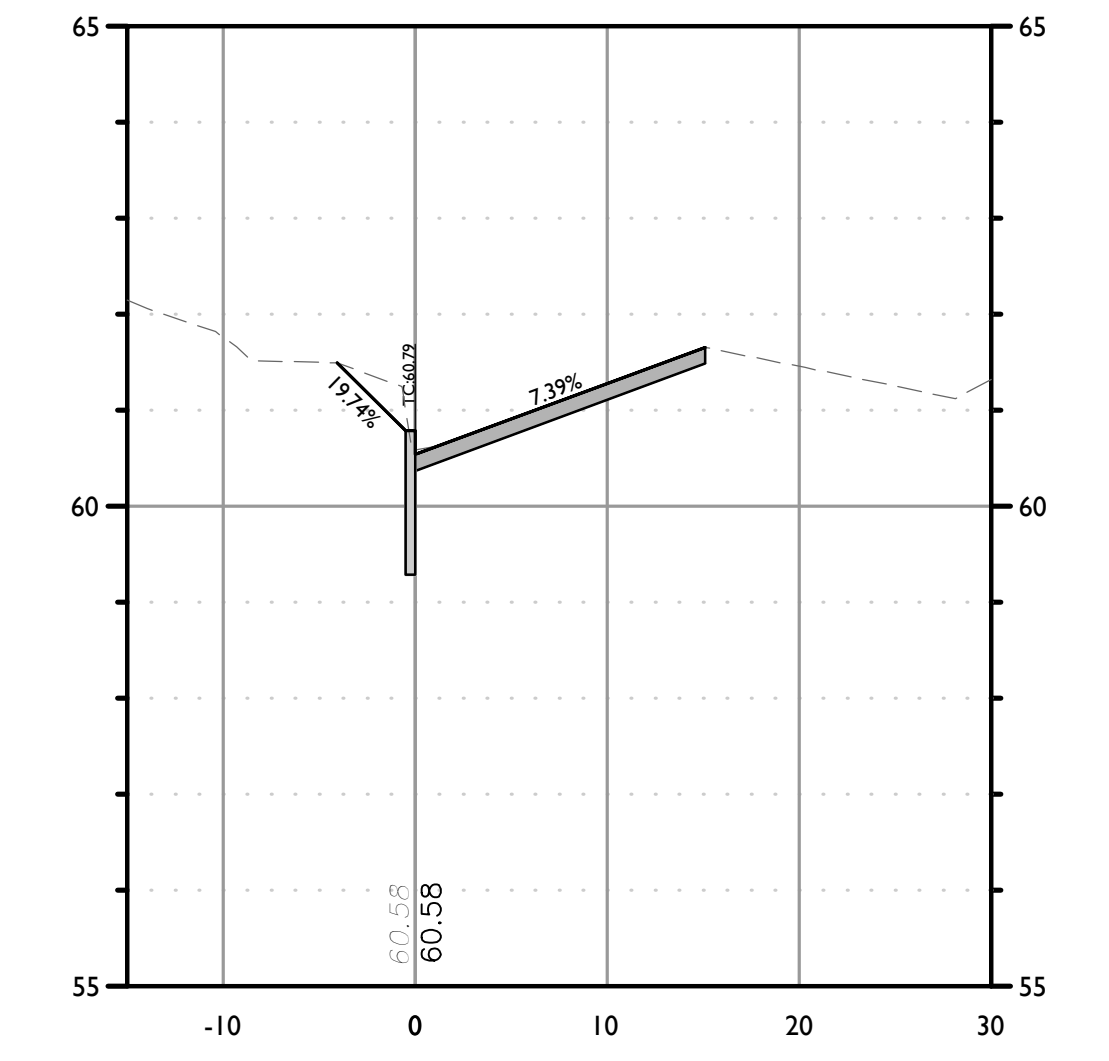
CROSS SECTIONS
(RIVERSIDE DRIVE)



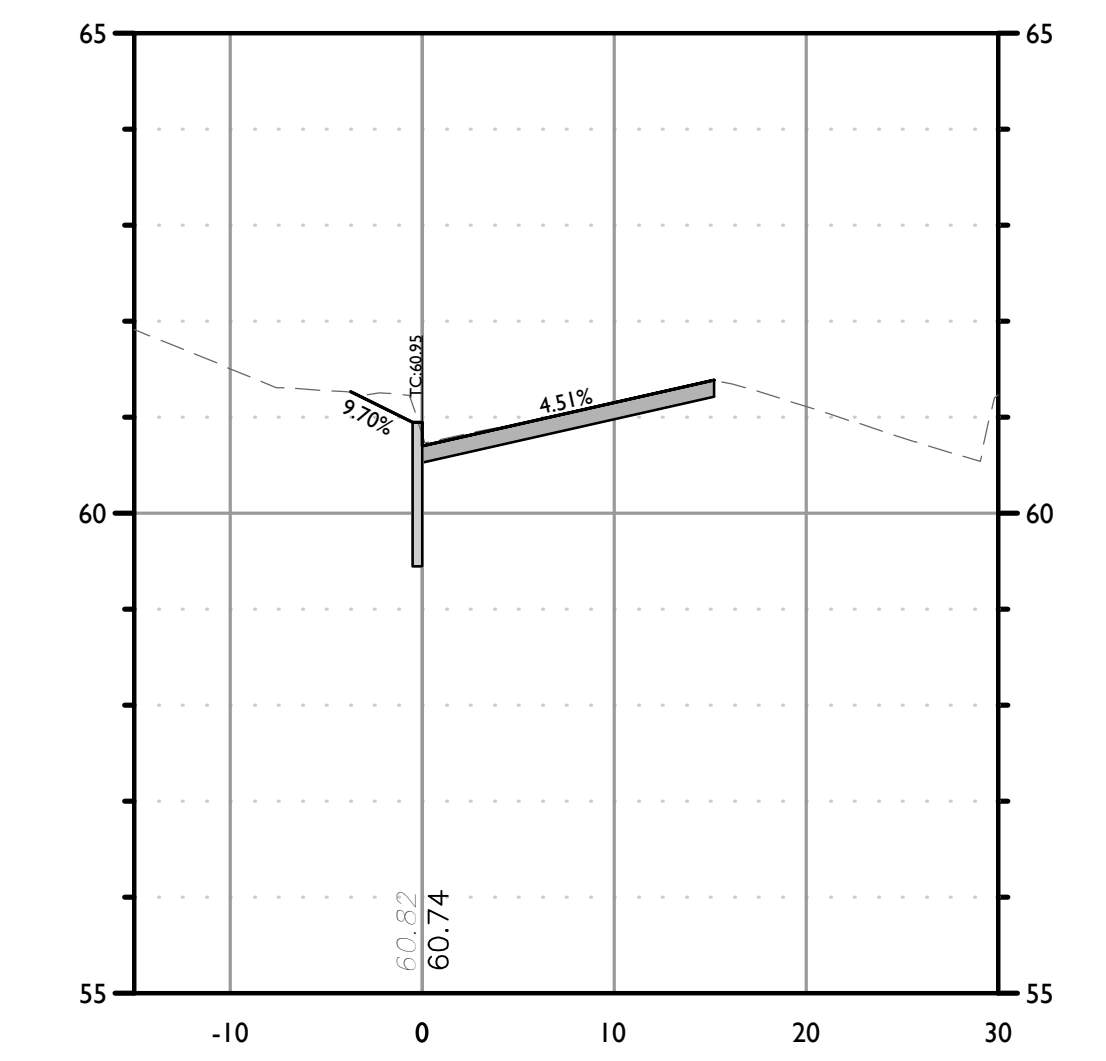
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 10+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



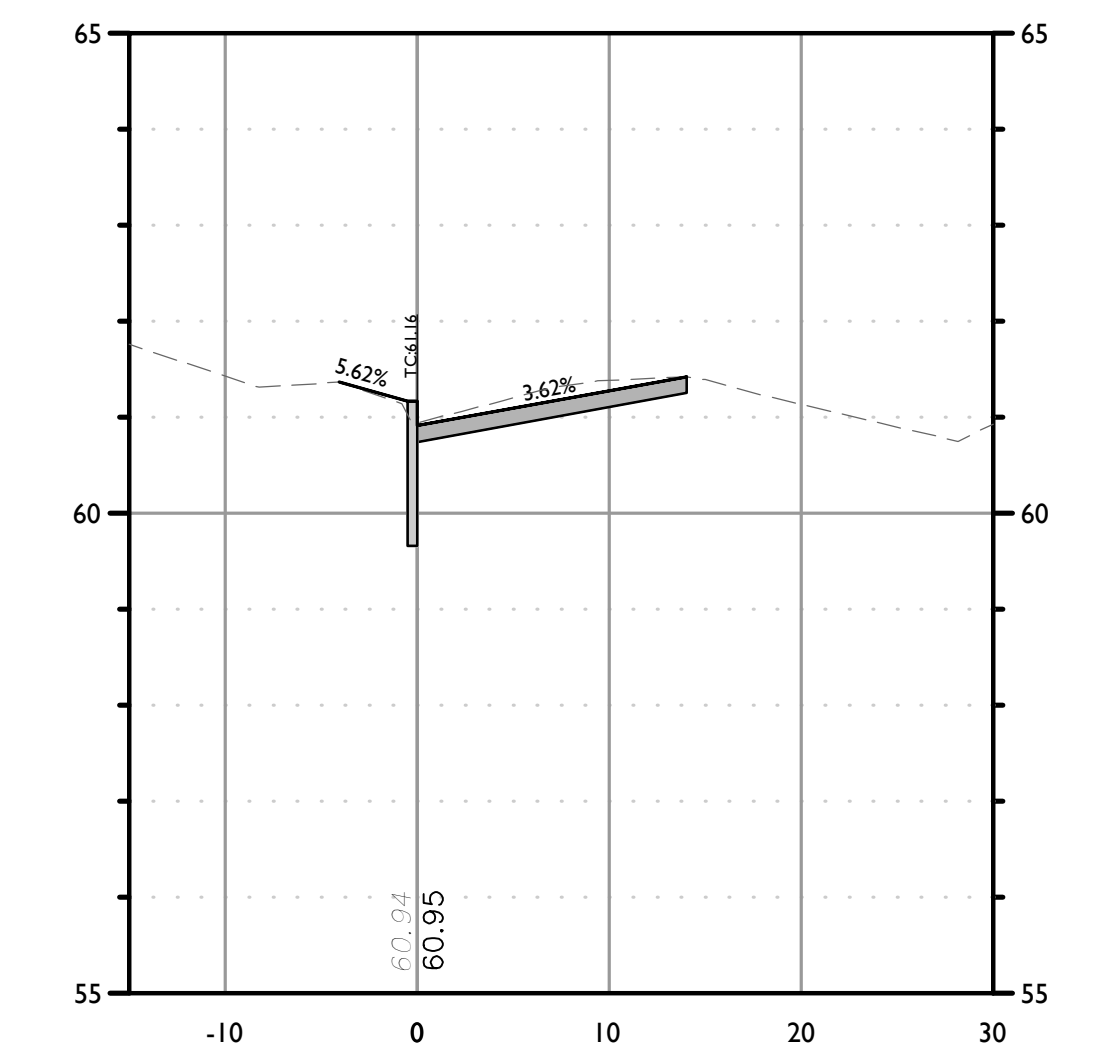
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 10+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



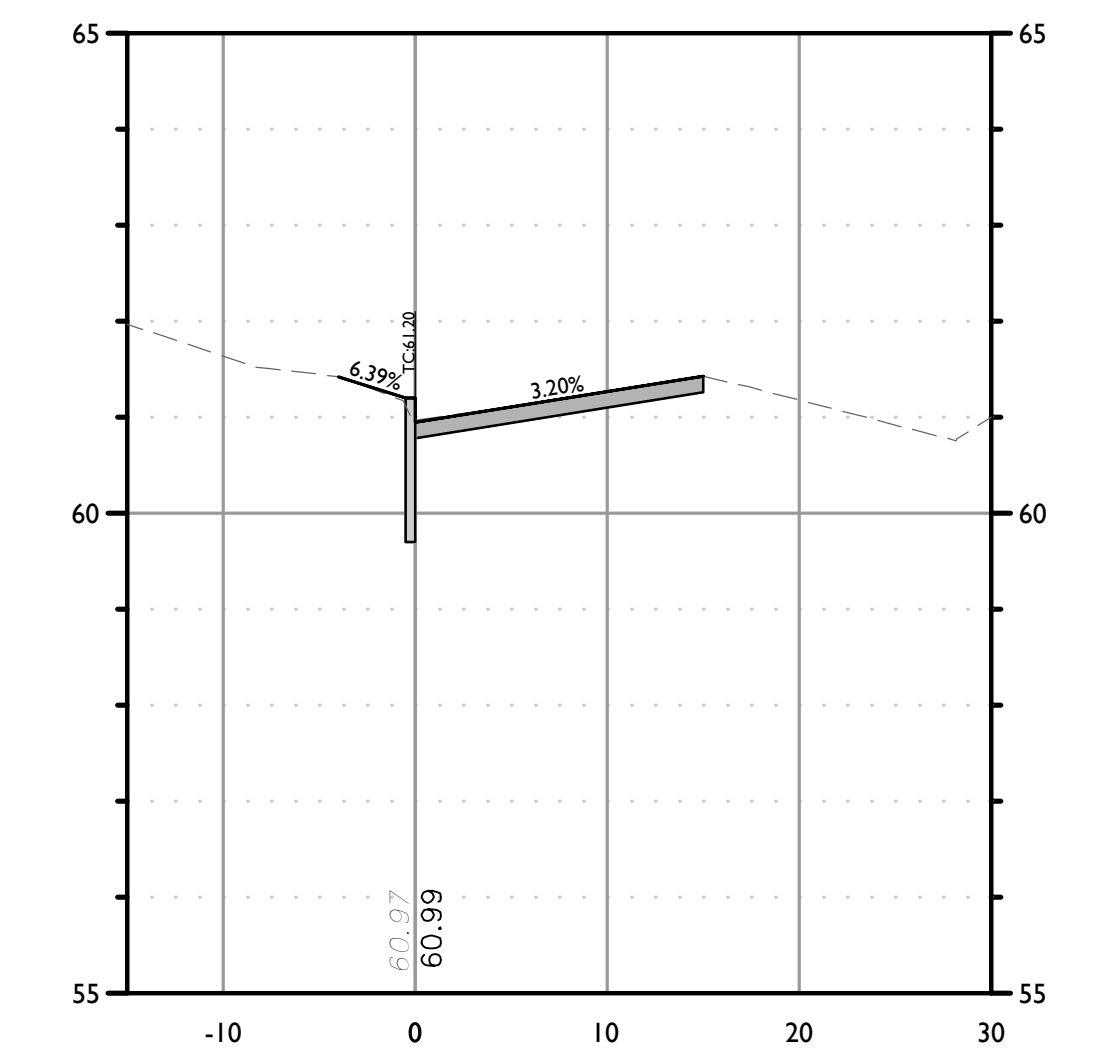
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 10+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



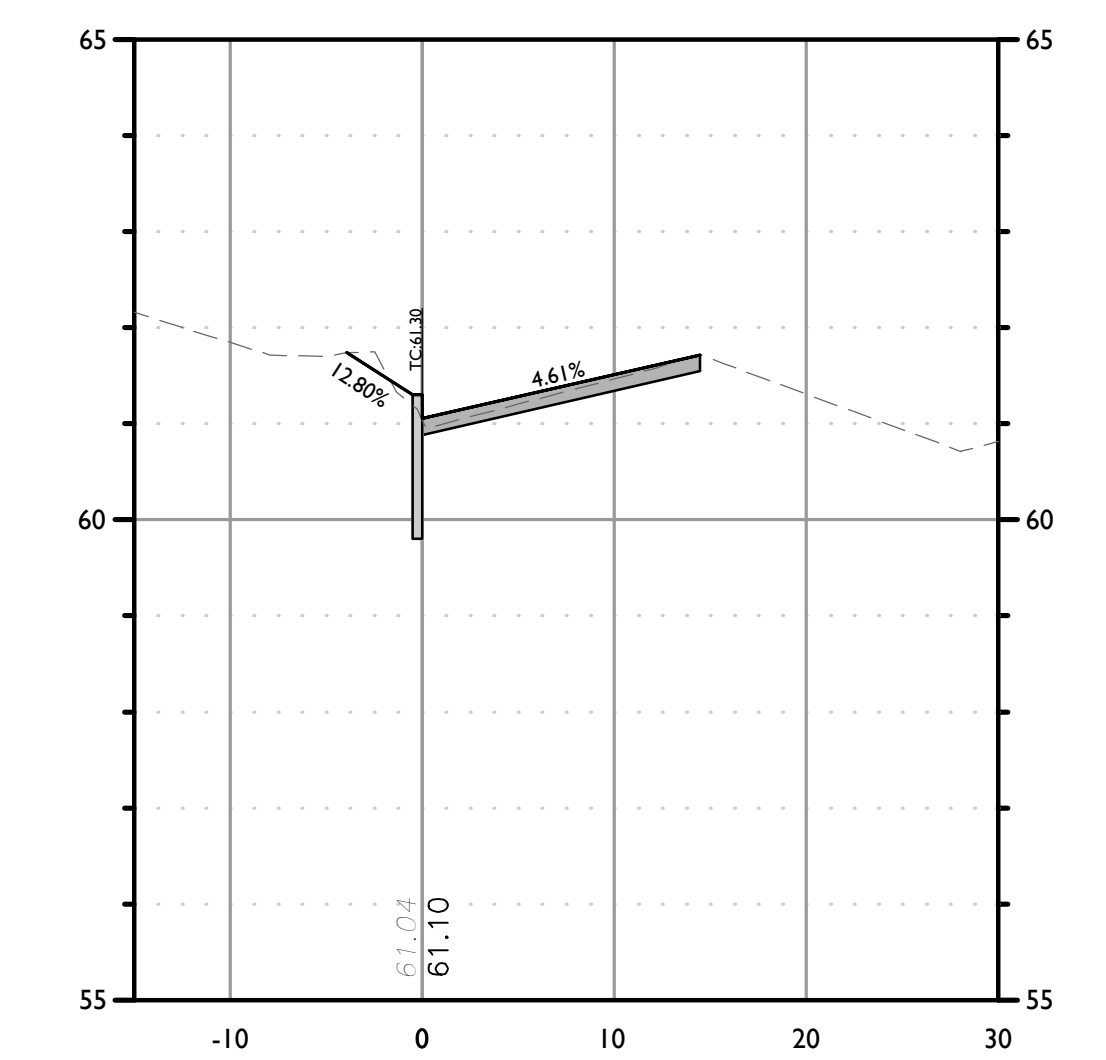
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 11+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



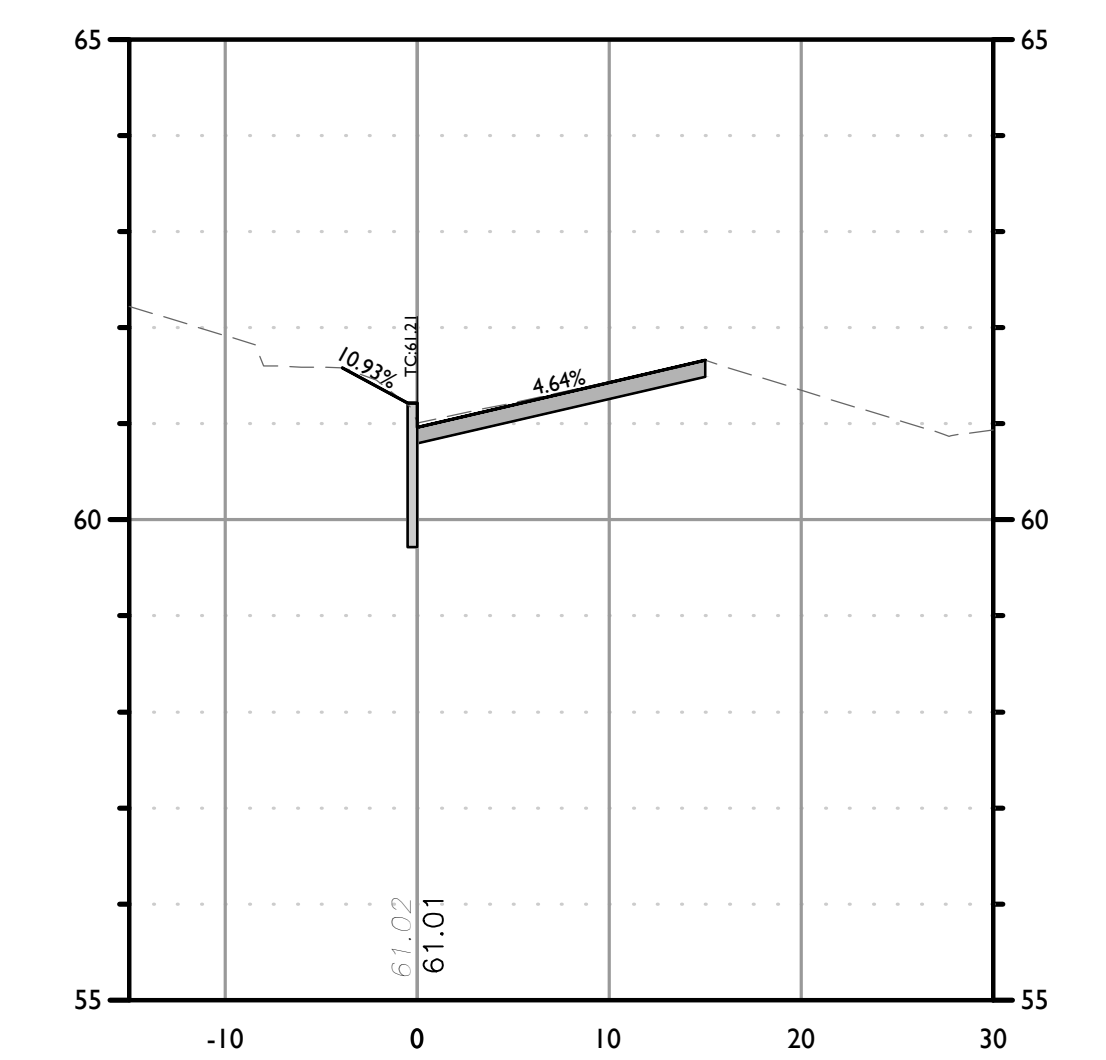
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 11+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



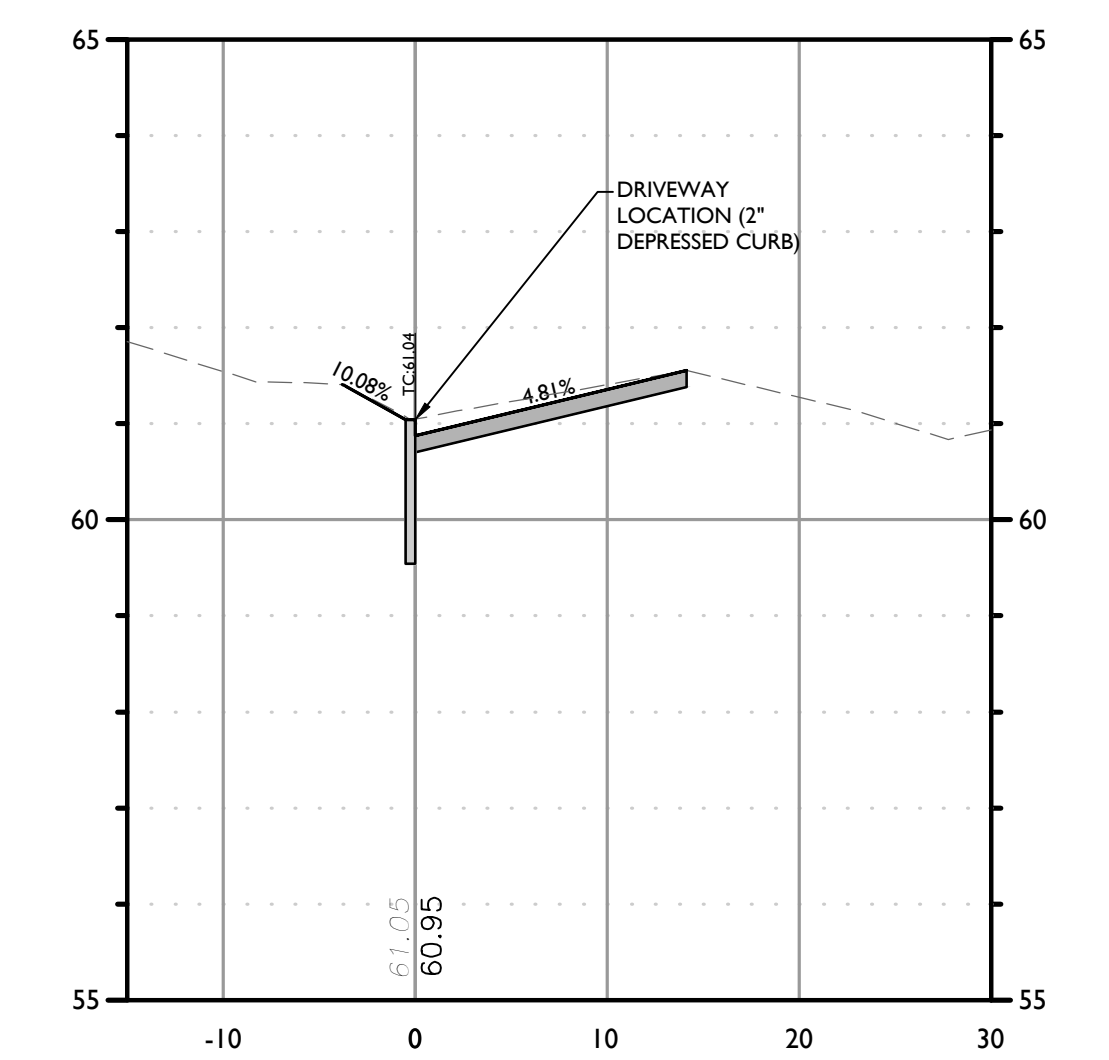
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 11+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



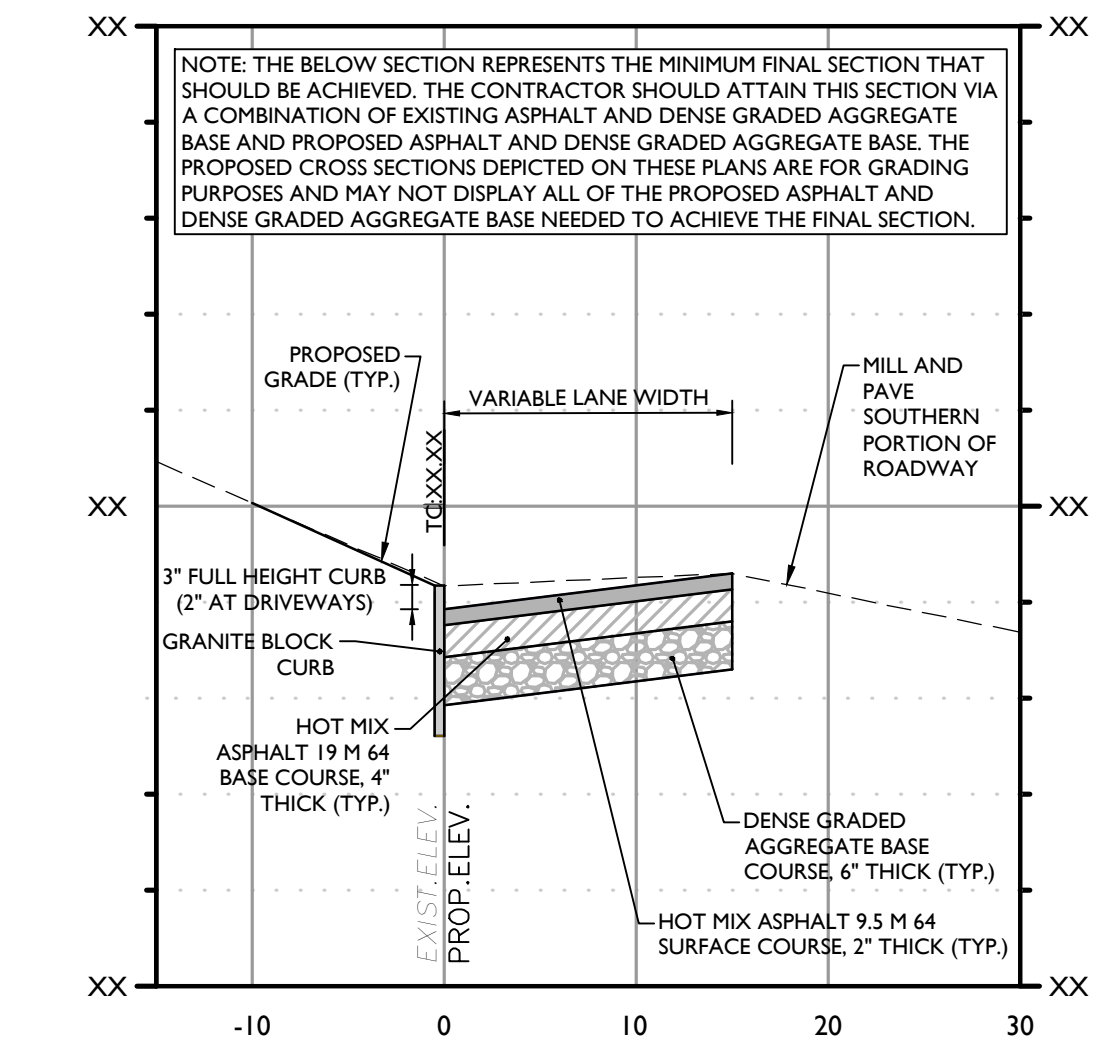
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 12+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



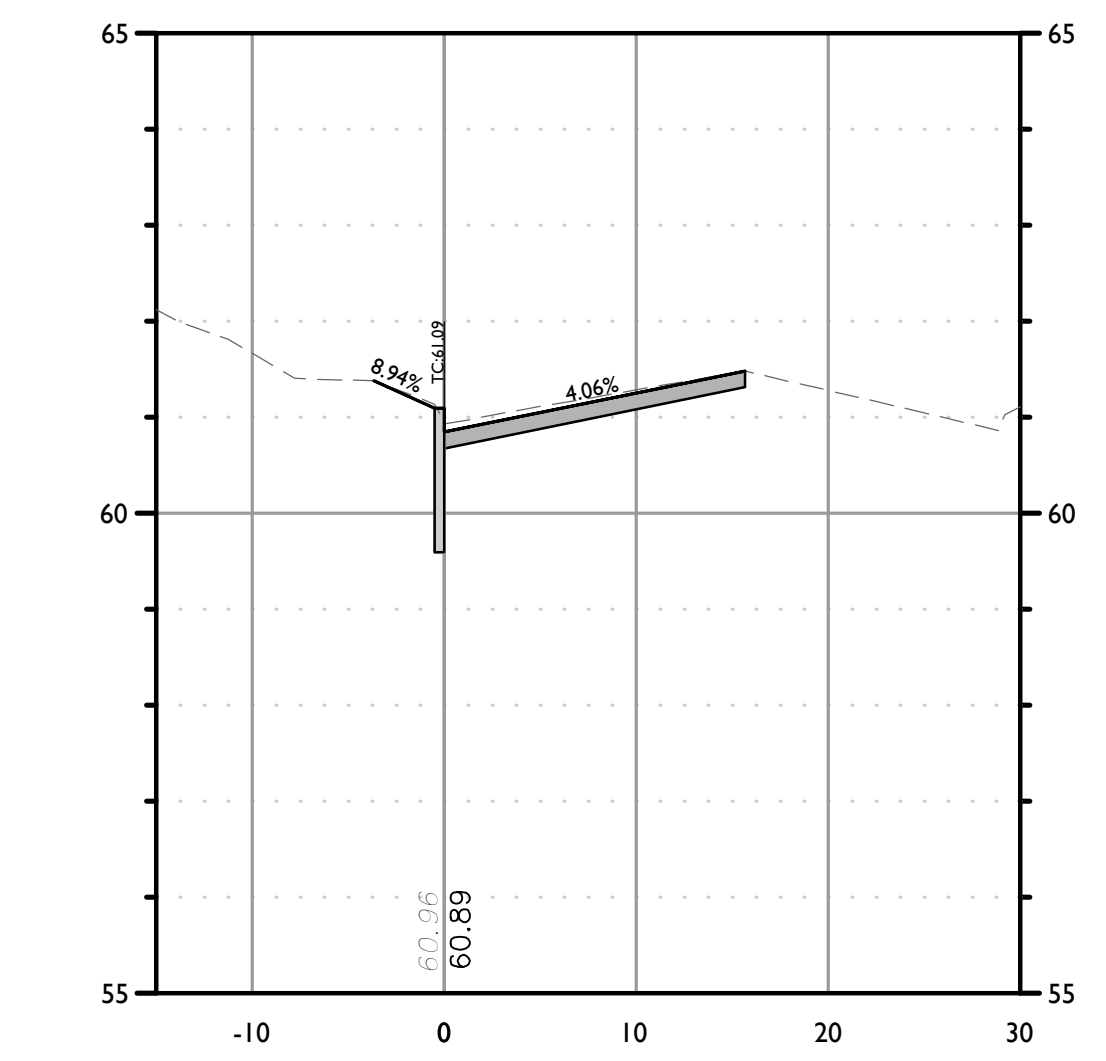
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 12+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



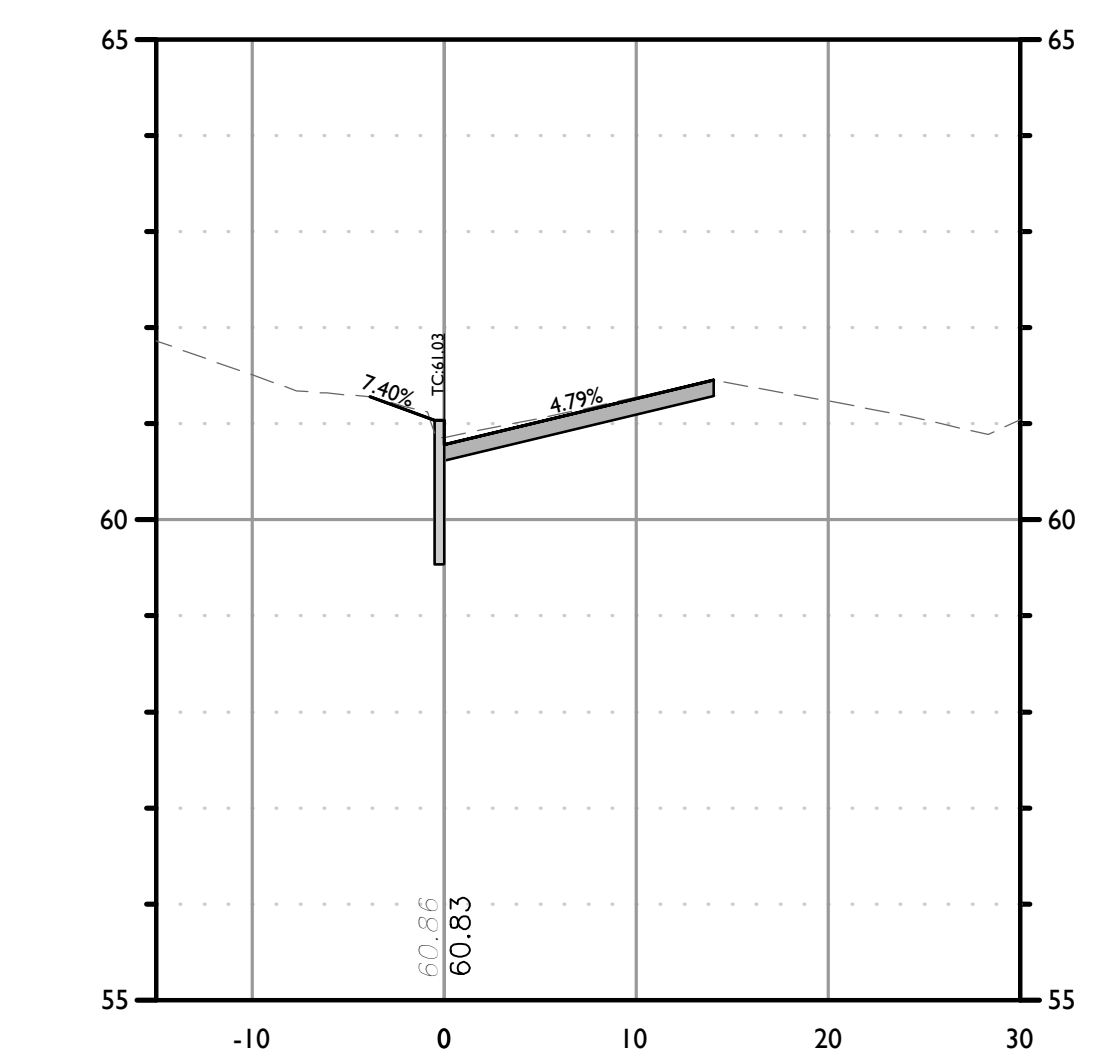
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STATION: 12+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



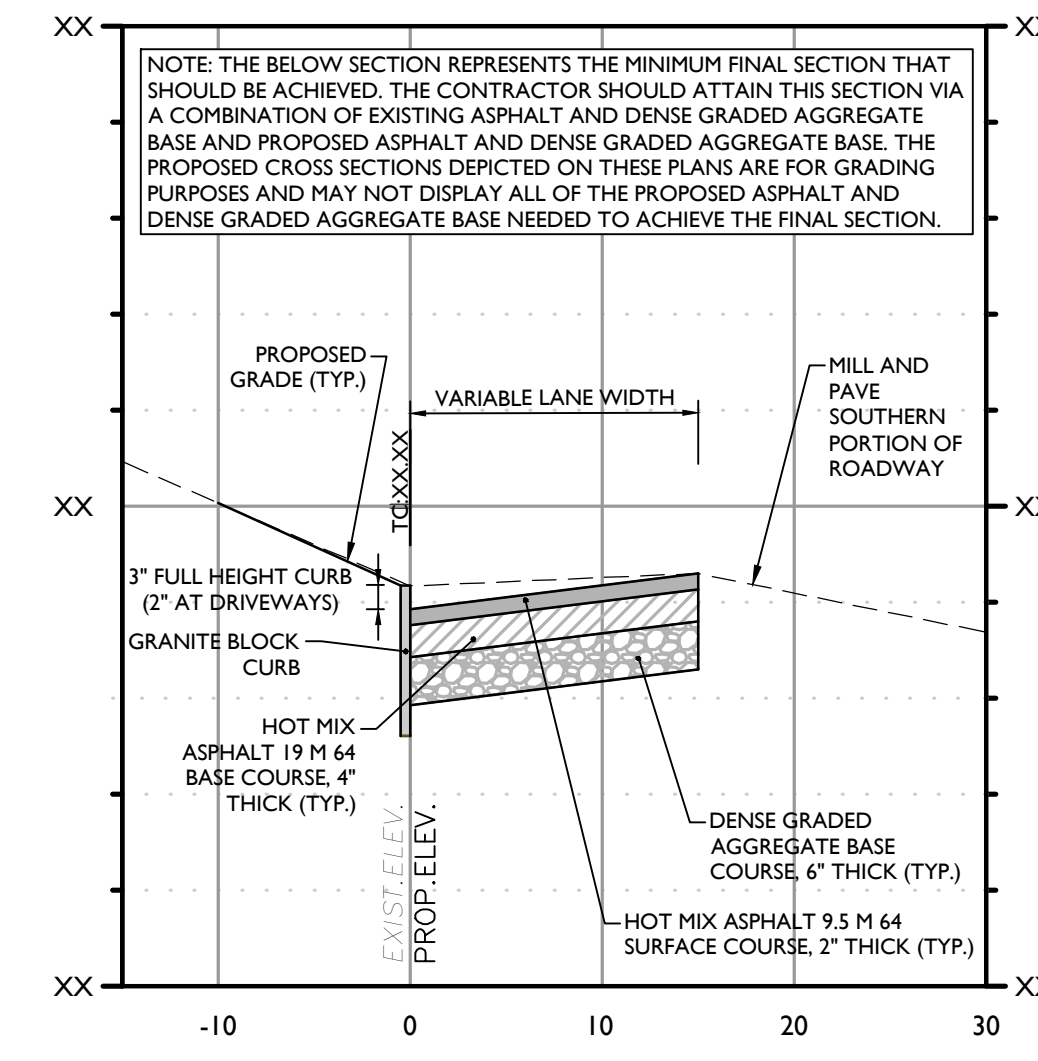
TYPICAL CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT
STATION: XX+XX.XX
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



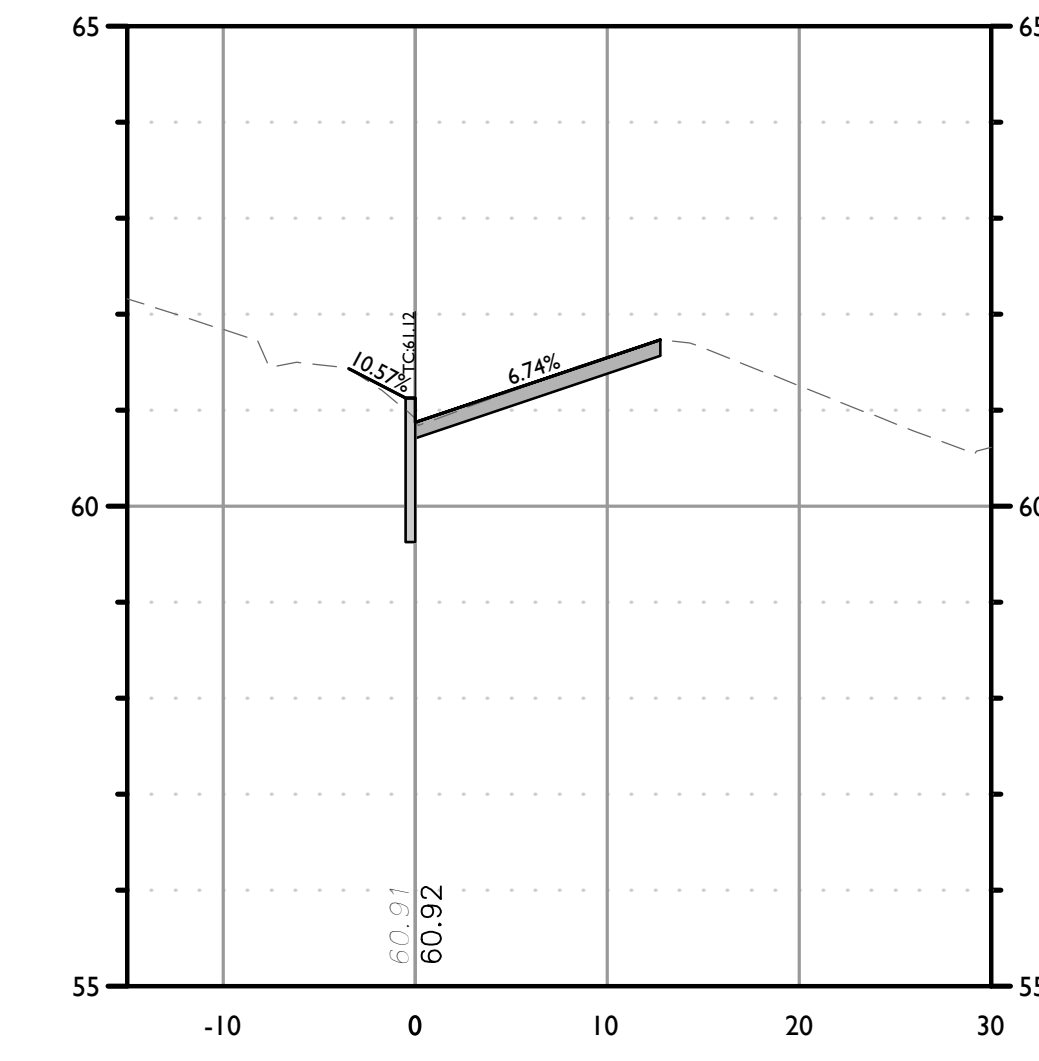
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 11+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



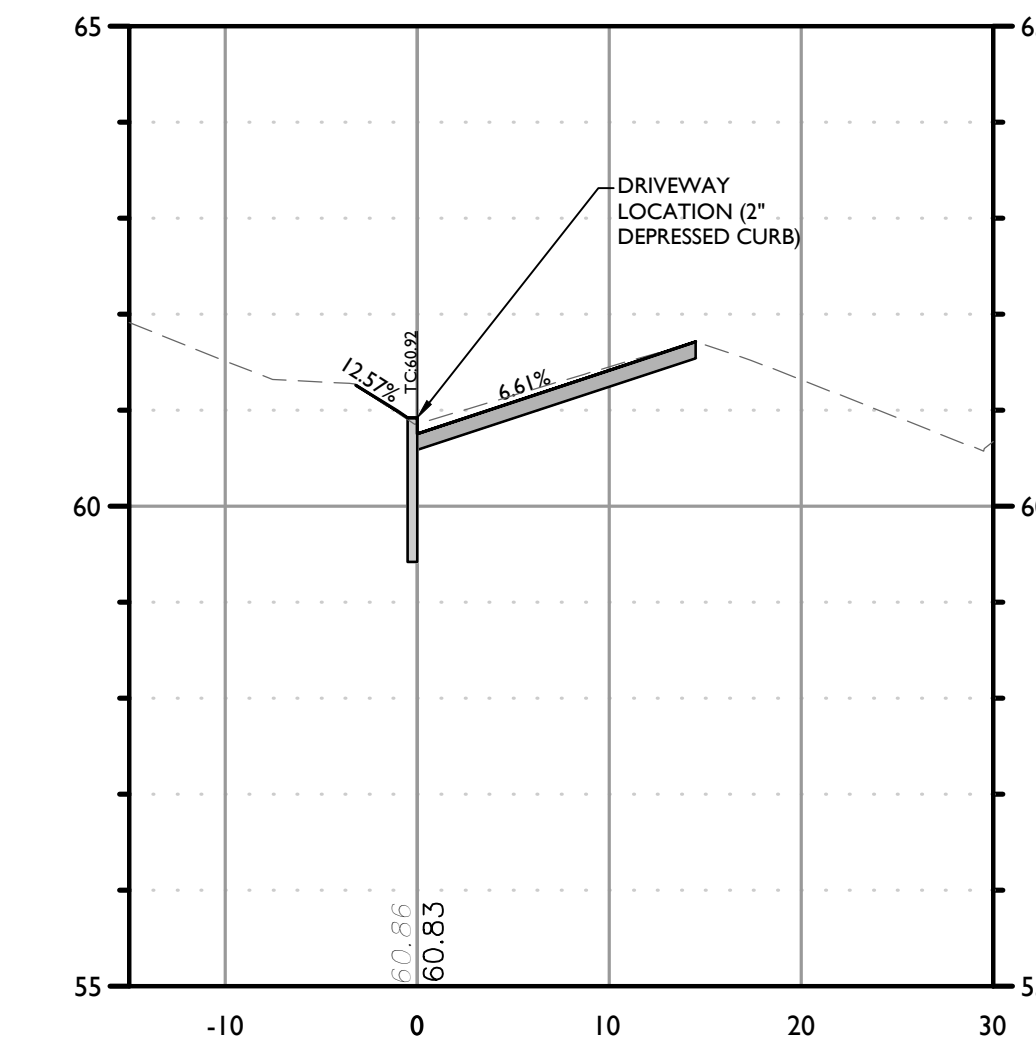
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STATION: 12+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



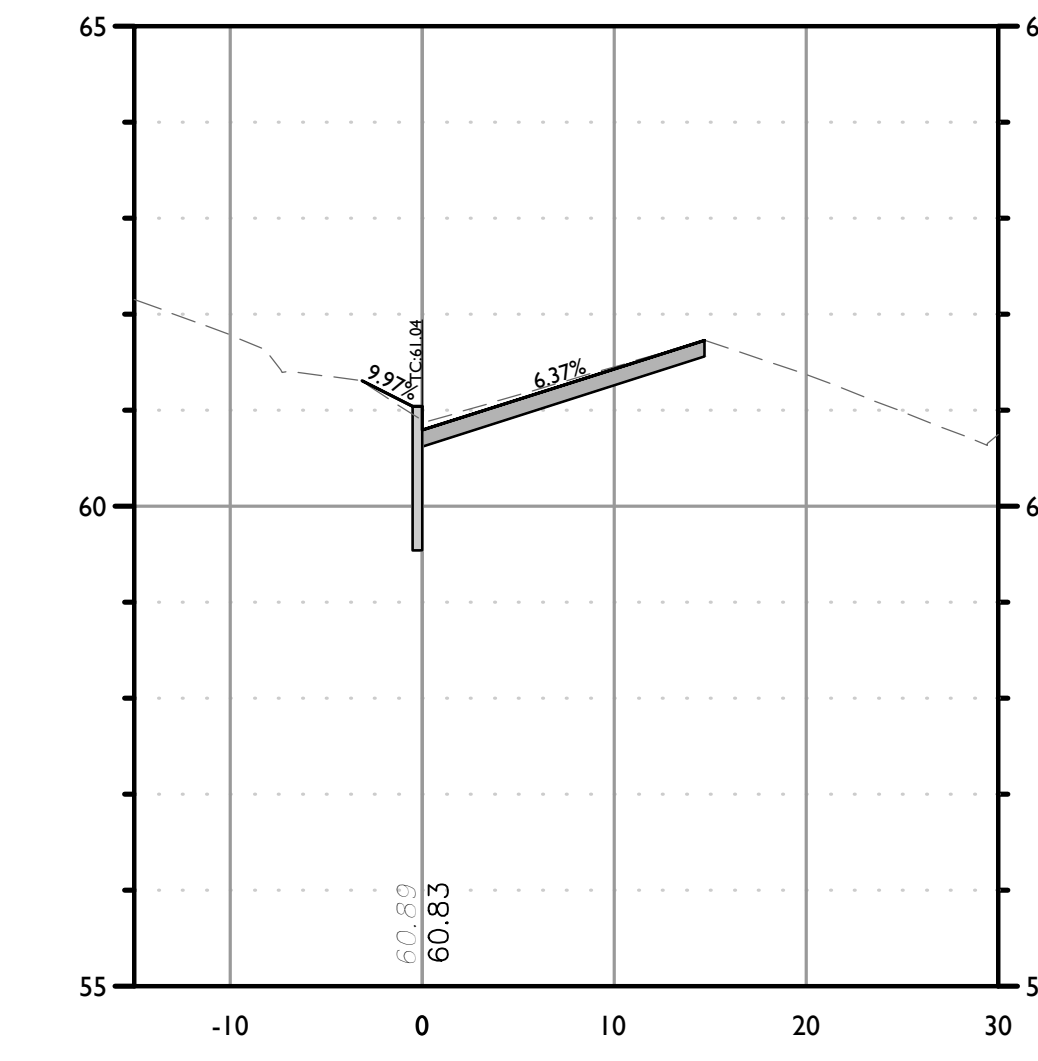
TYPICAL CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT
STATION: XX+XX.XX
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



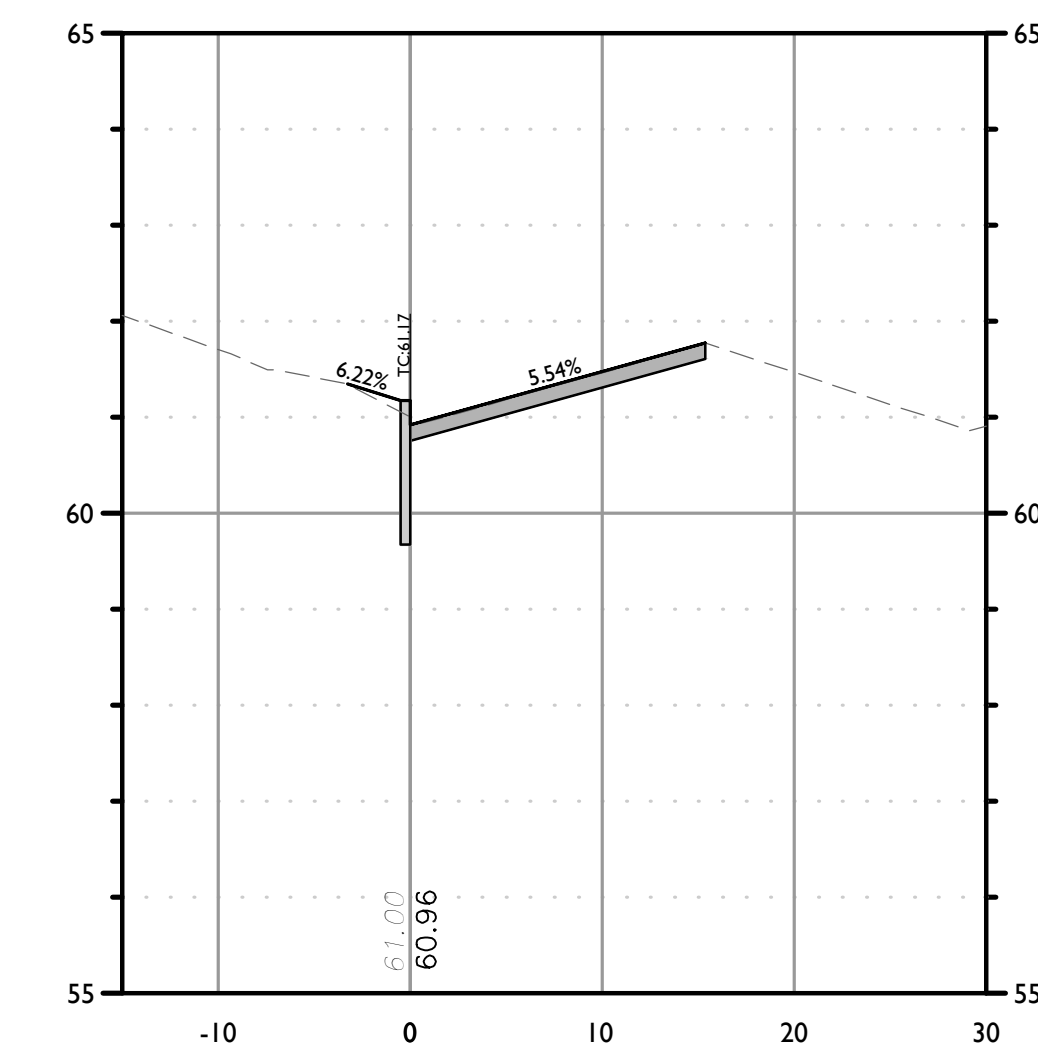
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 13+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



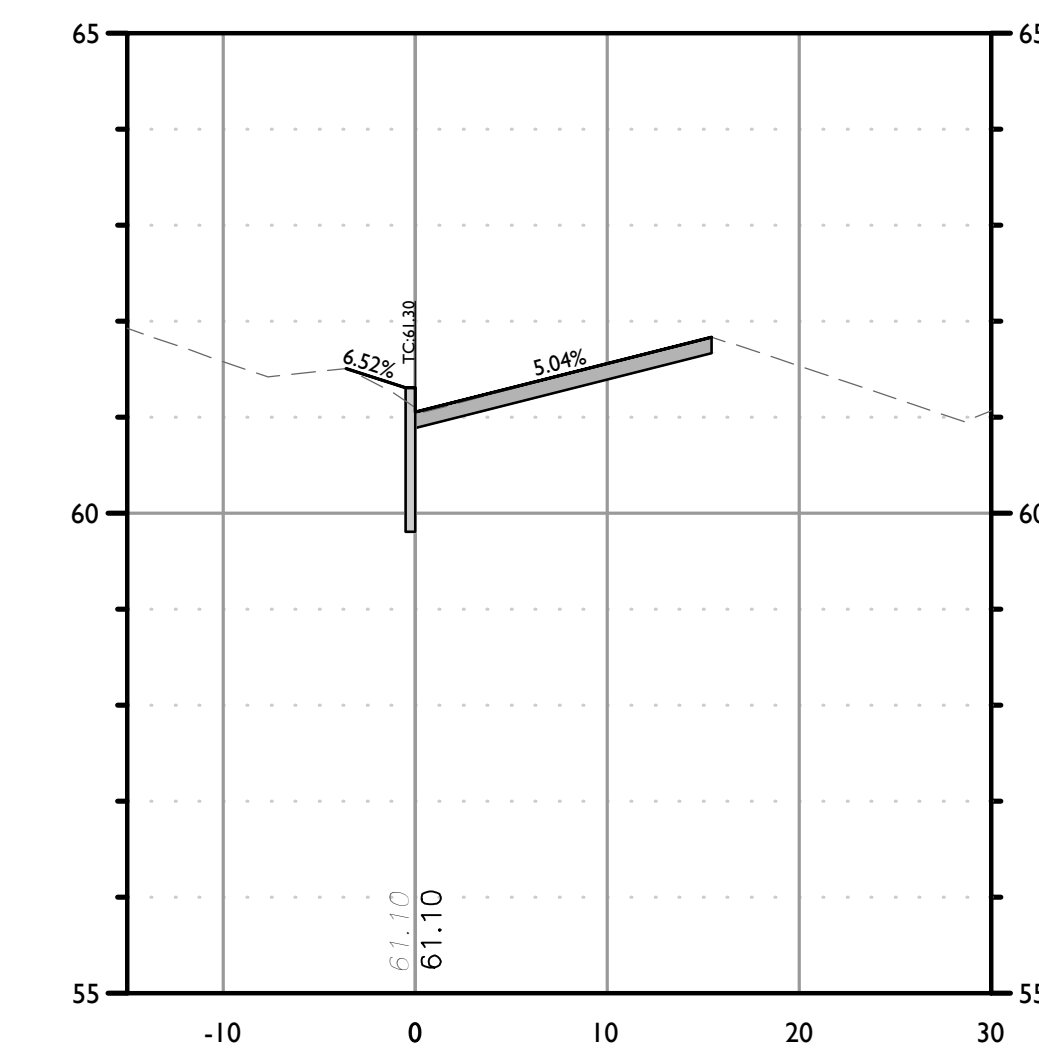
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 13+18
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



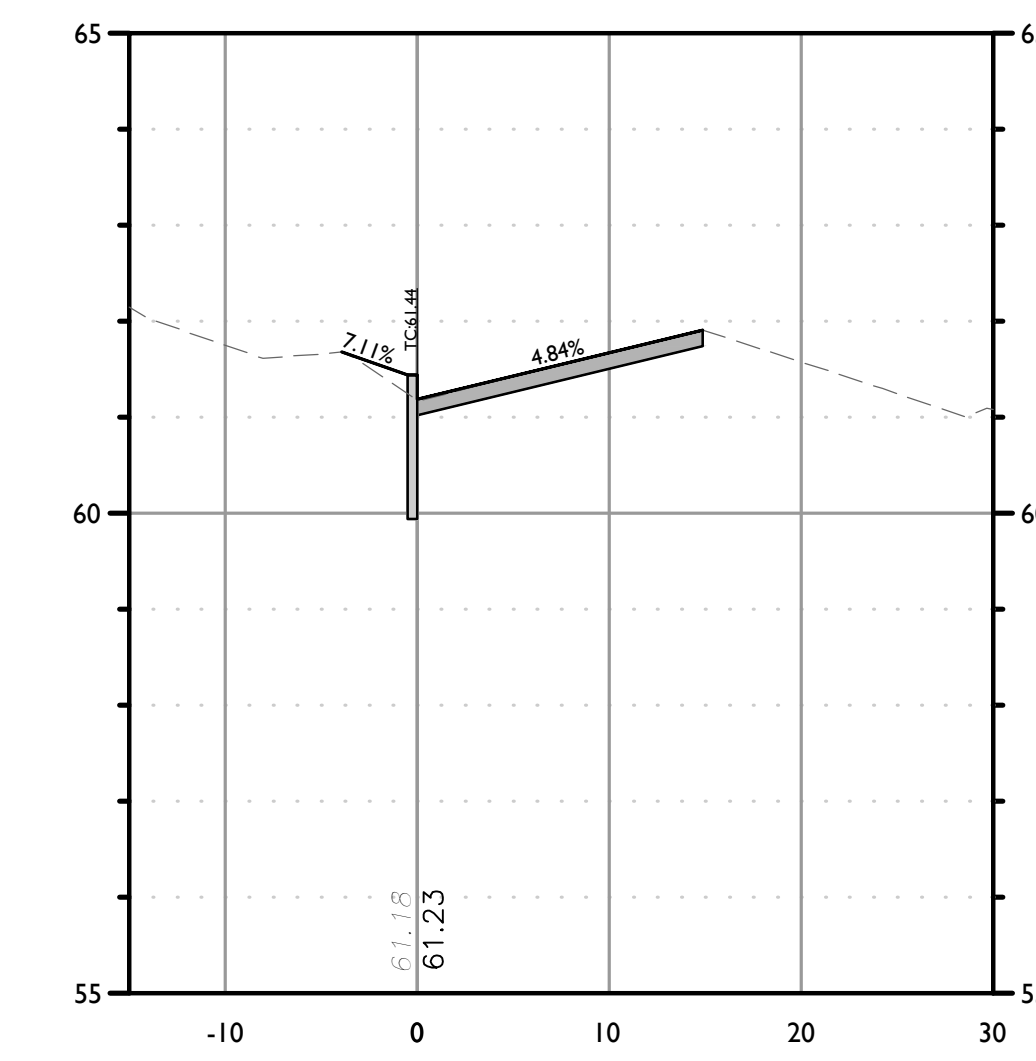
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 13+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



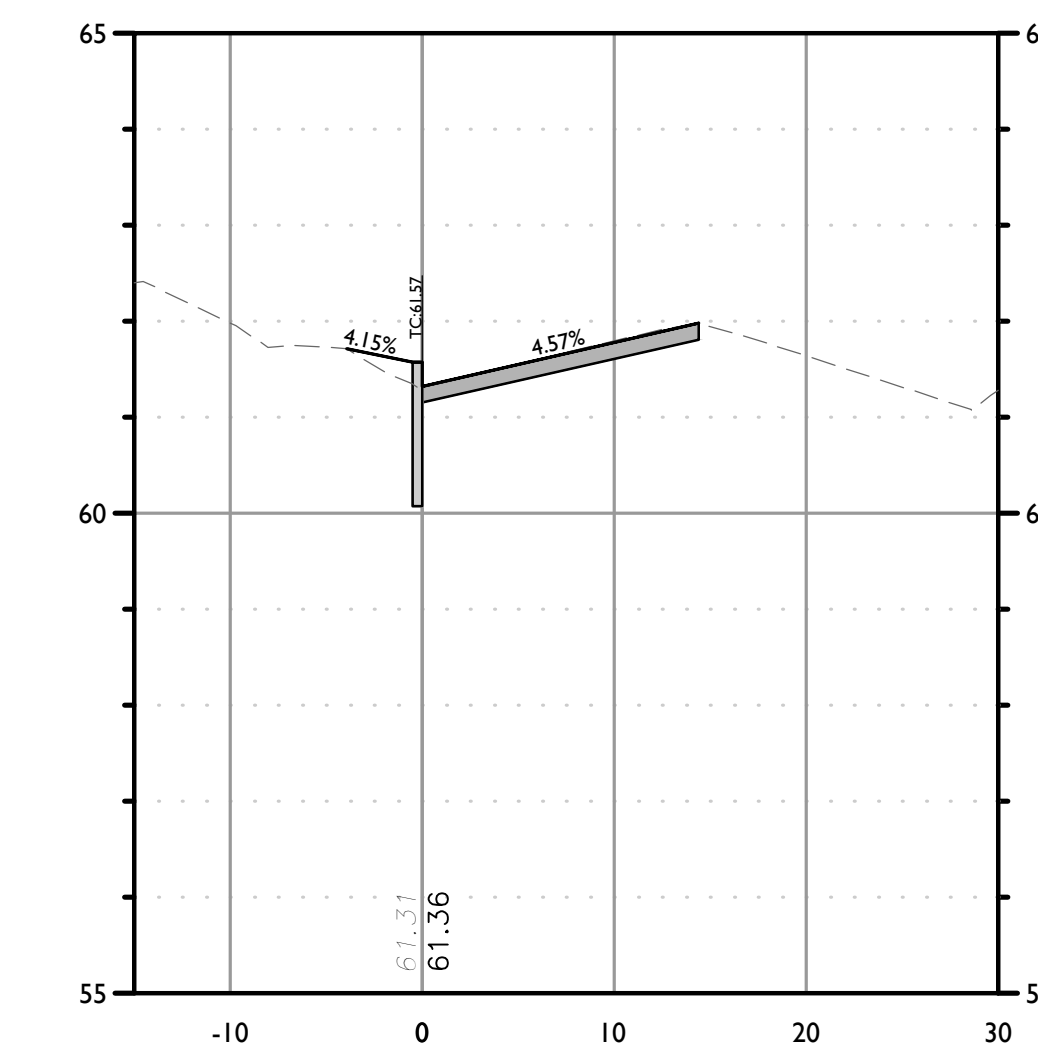
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STATION: 13+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



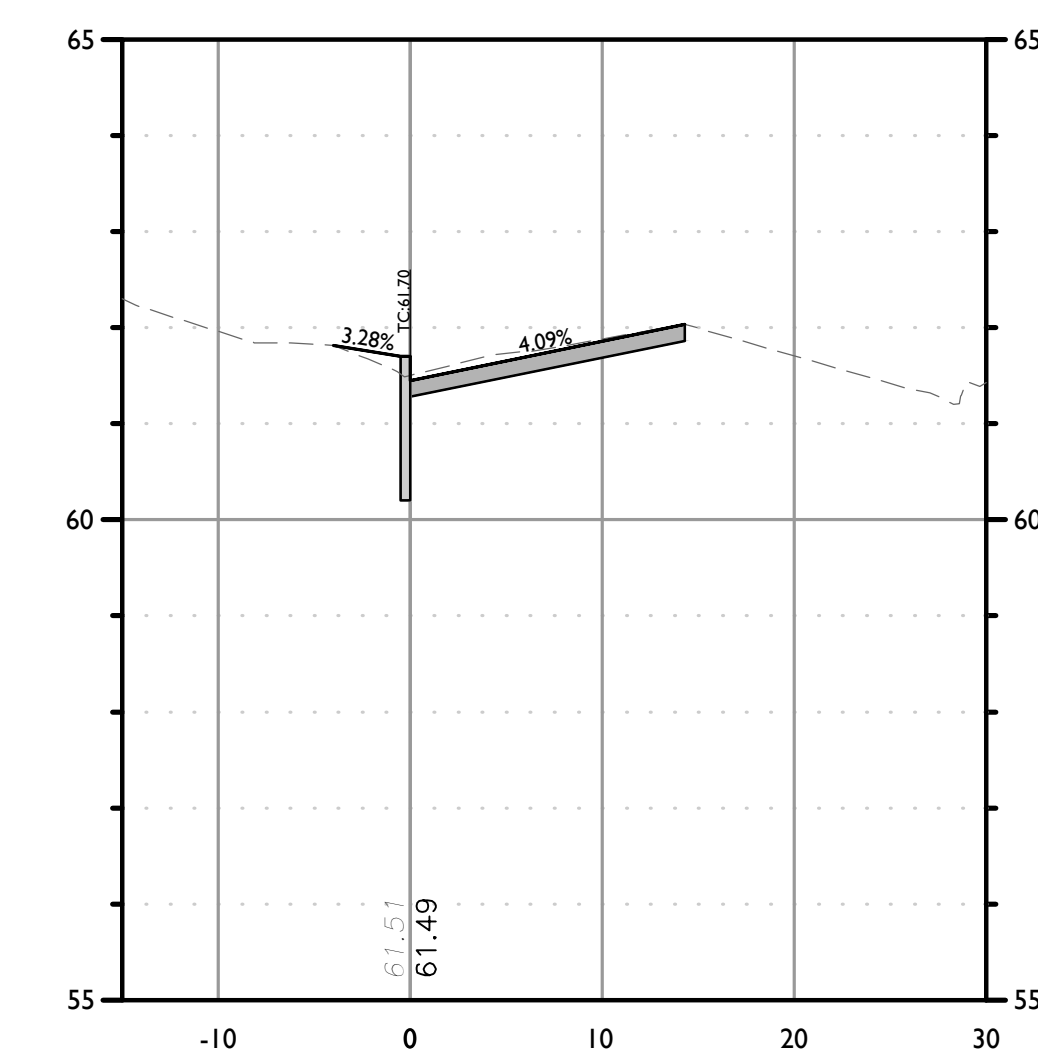
CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 13+75
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 14+00
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 14+25
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



CROSS SECTION OF RIVERSIDE DRIVE BC ALIGNMENT #3
STATION: 14+50
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

REV.	DATE	DRAWN BY	DESCRIPTION
1	3/1/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

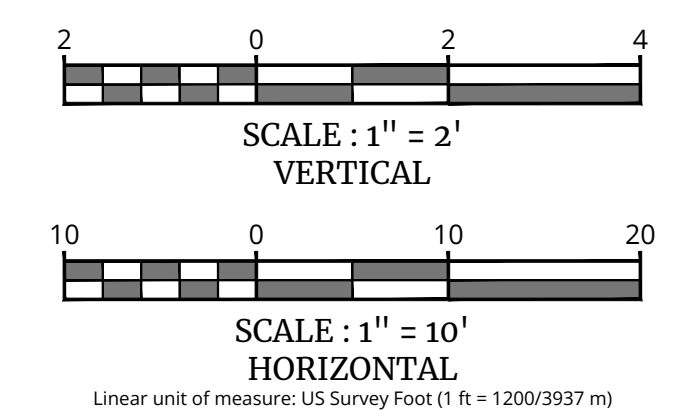
Kevin E. Boyer
Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: 6449974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM
TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers
Engineering & Design
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400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1	SHEET TITLE:	

CROSS SECTIONS
(RIVERSIDE DRIVE)



REV.	DATE	DRAWN BY	DESCRIPTION
1	3/15/24	BAK	REVISED RIVERSIDE DRIVE PROFILE

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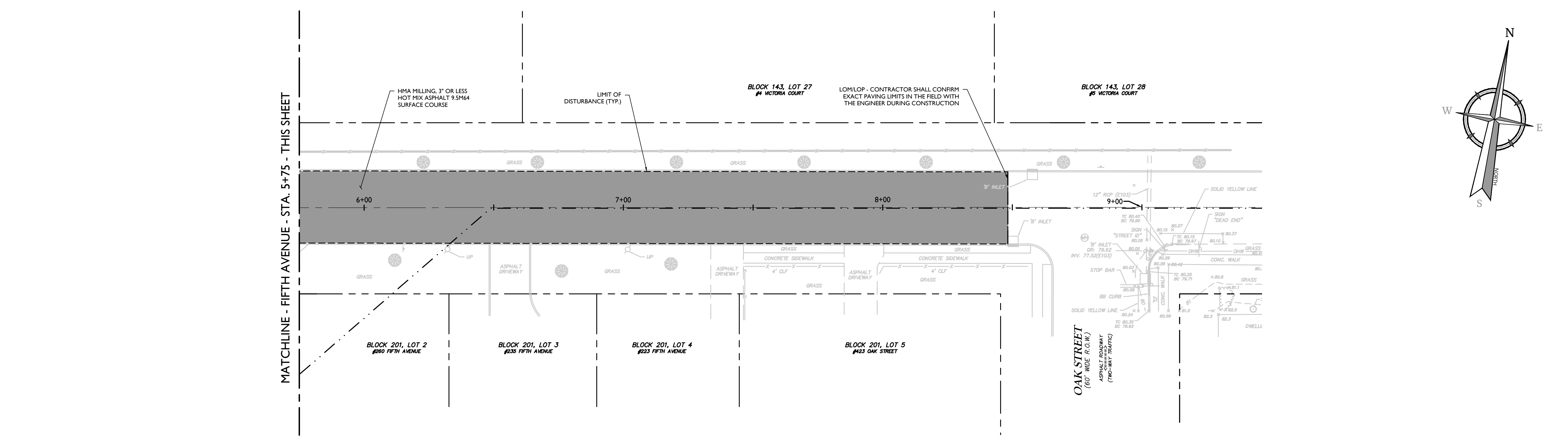
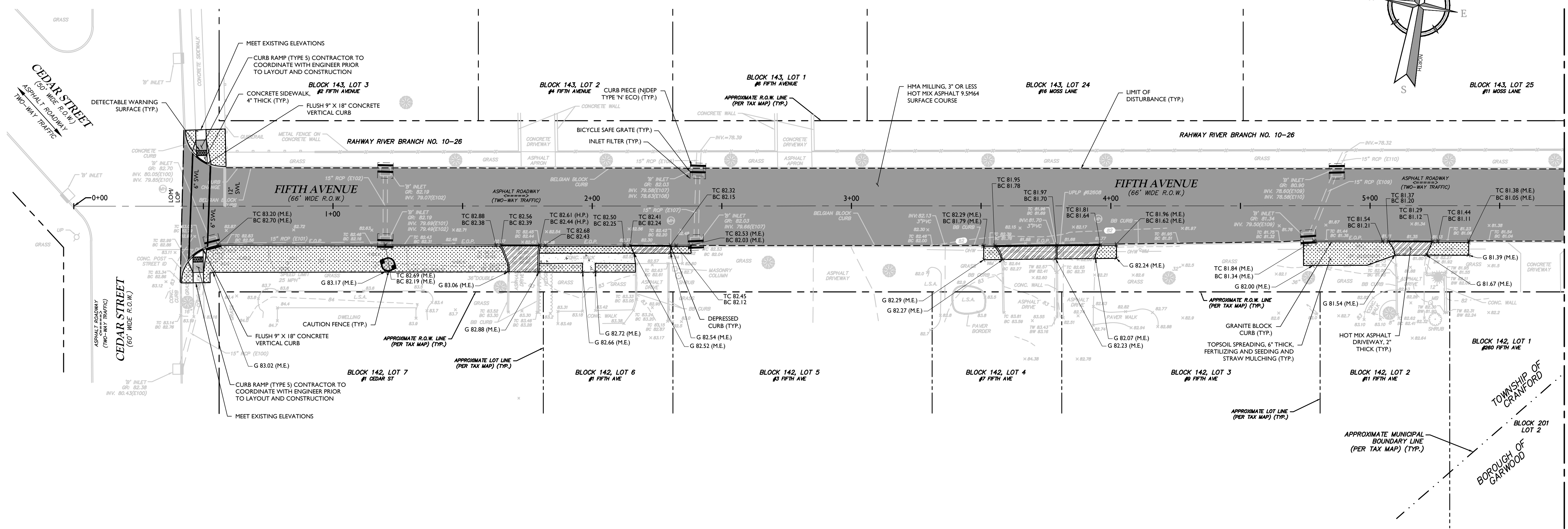
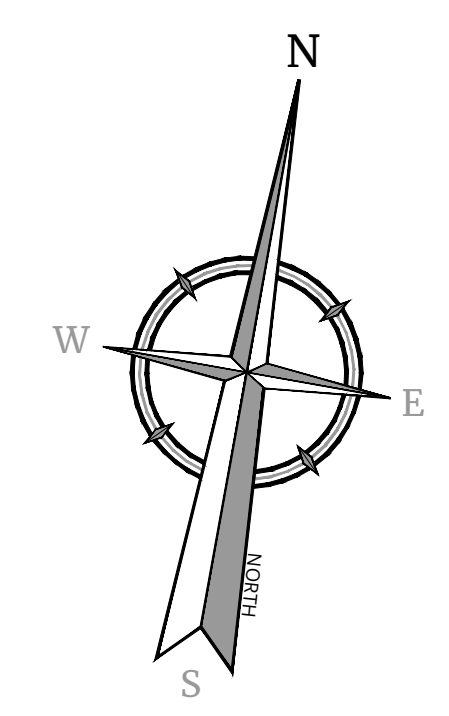
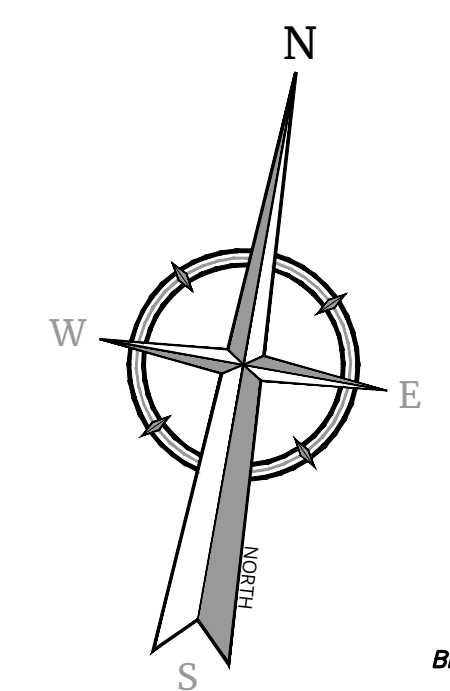
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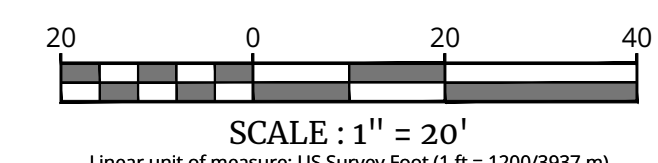
SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

DIMENSION PLAN
 (FIFTH AVENUE)



- NOTES:
- THIS PROJECT IS EXEMPT FROM SOIL DE-COMPACTION REMEDIATION AND TESTING AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA
 - THE CONTRACTOR SHOULD REFER TO THE FULL DEPTH RECONSTRUCTION MAPS FOR ALL LOCATIONS OF HOT MIX ASPHALT PAVEMENT REPAIR.

SOIL EROSION AND SEDIMENT CONTROL PLAN



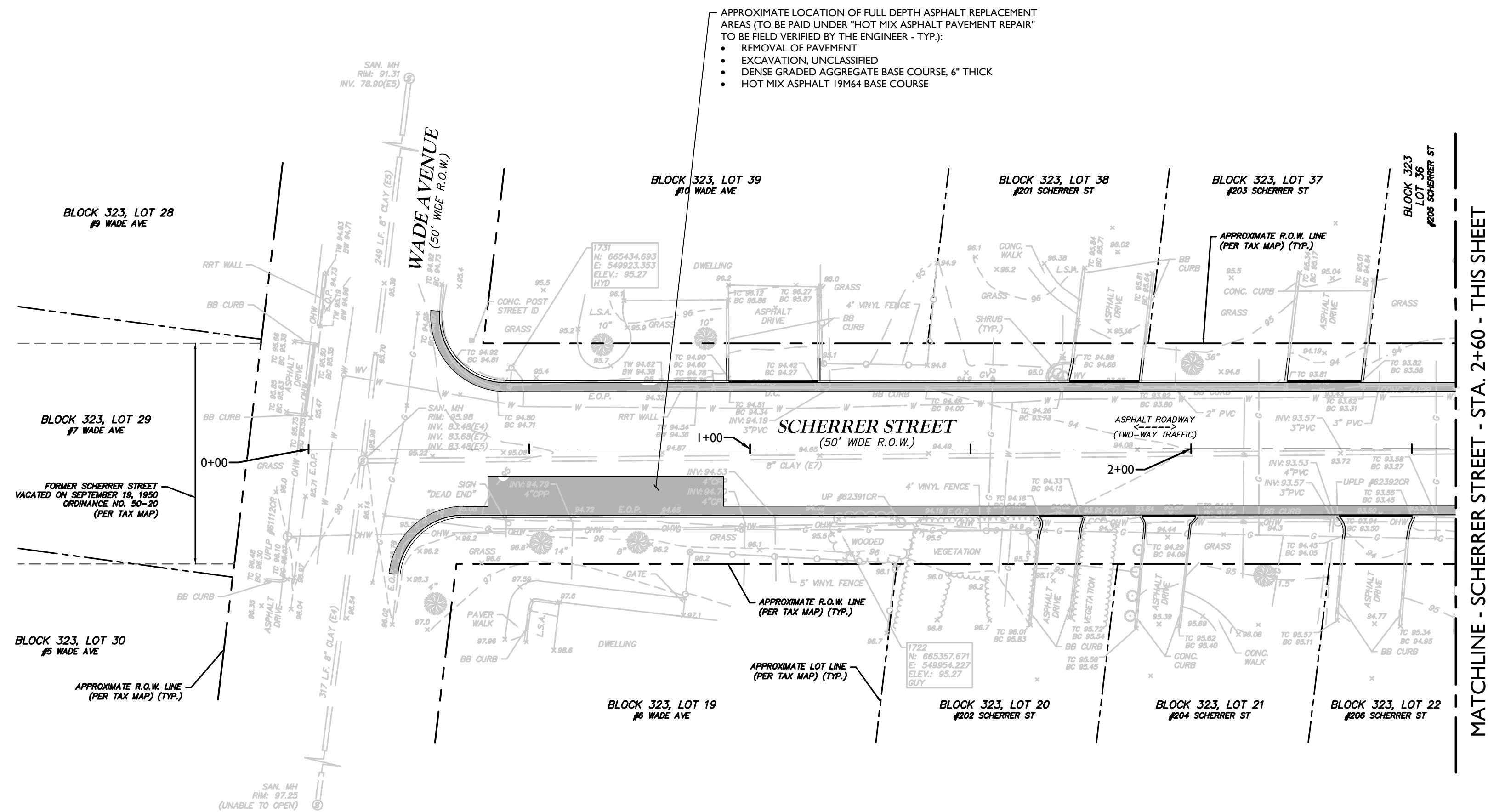
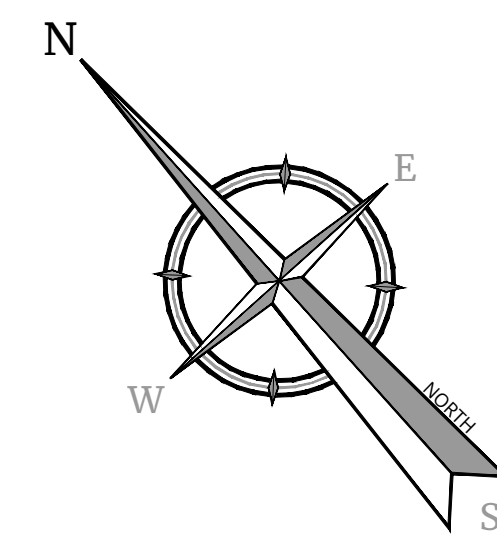
MATCHLINE - FIFTH AVENUE - STA. 5+75 - THIS SHEET

MATCHLINE - FIFTH AVENUE - STA. 5+75 - THIS SHEET



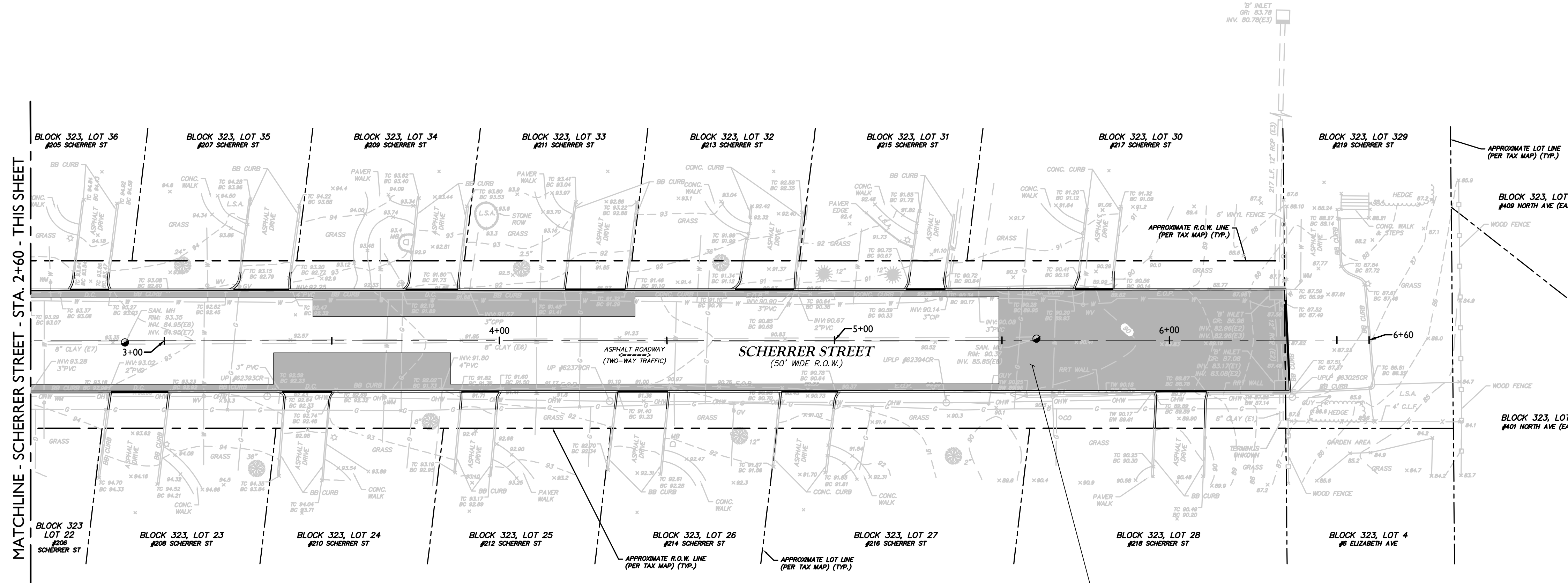
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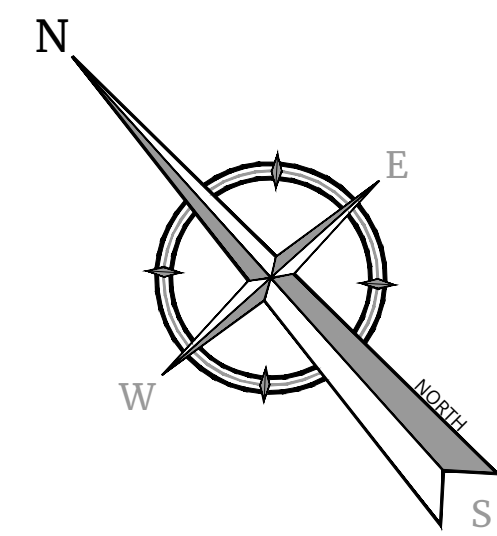


APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):
• REMOVAL OF PAVEMENT
• EXCAVATION, UNCLASSIFIED
• DENSE GRADED AGGREGATE BASE COURSE, 6" THICK
• HOT MIX ASPHALT 19M44 BASE COURSE

MATCHLINE - SCHERRER STREET - STA. 2+60 - THIS SHEET



APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):
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• DENSE GRADED AGGREGATE BASE COURSE, 6" THICK
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CONSTRUCTION PLANS
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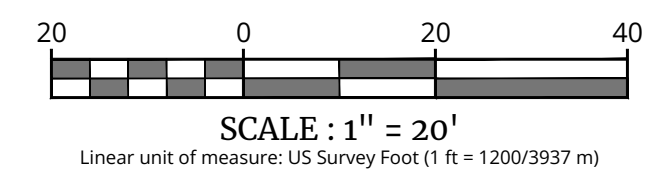
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AS SHOWN	09/21/23	BAK	BAK
PROJECT NUMBER:	DRAWING NAME:		
CDT0087	C-LAY1		

FULL DEPTH RECONSTRUCTION MAP (SCHERRER STREET)

SHEET NUMBER: 24 of 41



REV.	DATE	BY	DESCRIPTION
1	3/15/24	BK	REVISED RIVERSIDE DRIVE PROFILE

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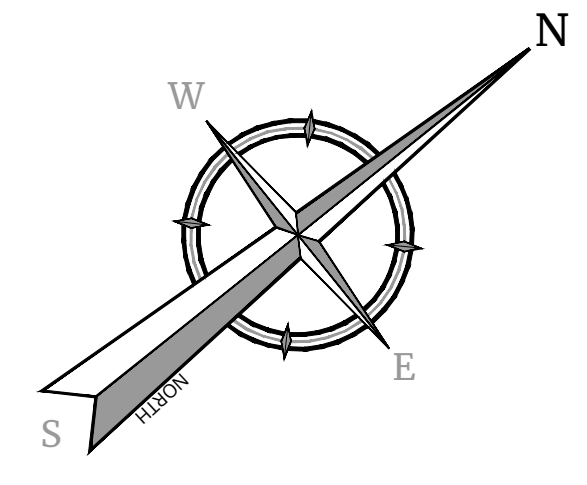
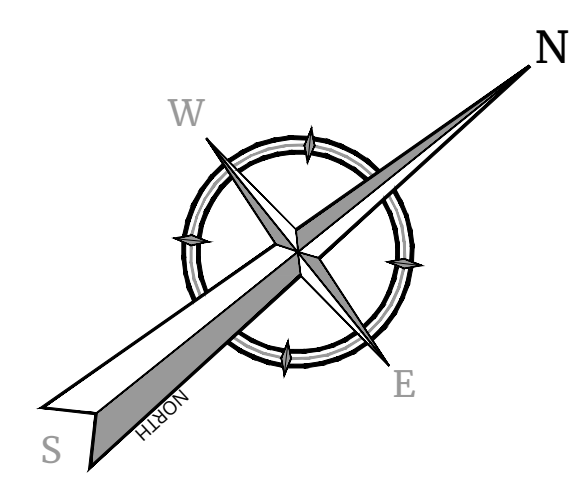
CONSTRUCTION PLANS FOR 2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD UNION COUNTY NEW JERSEY

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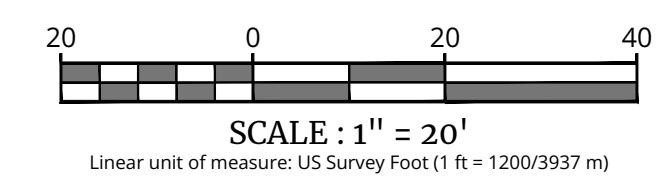
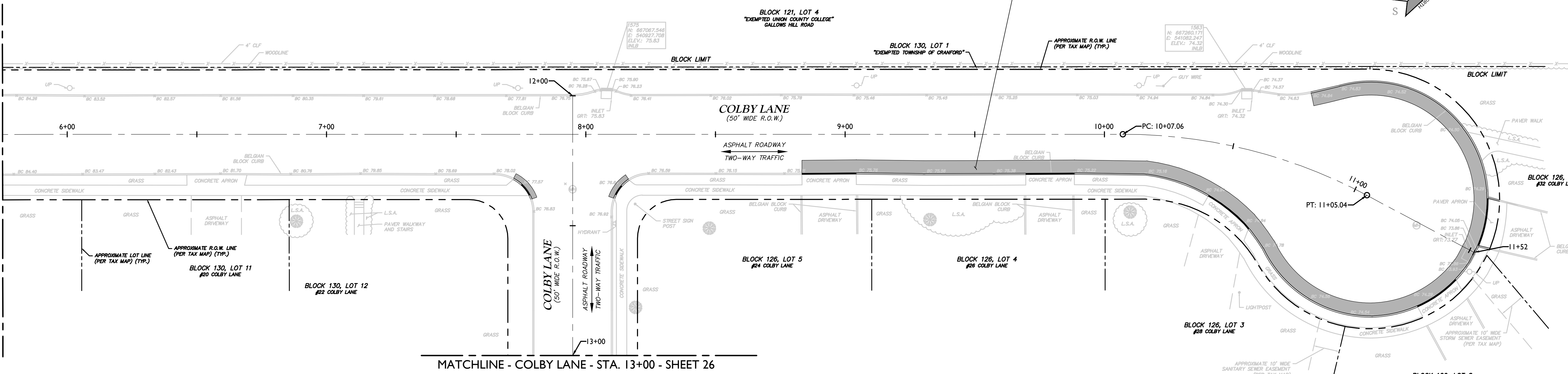
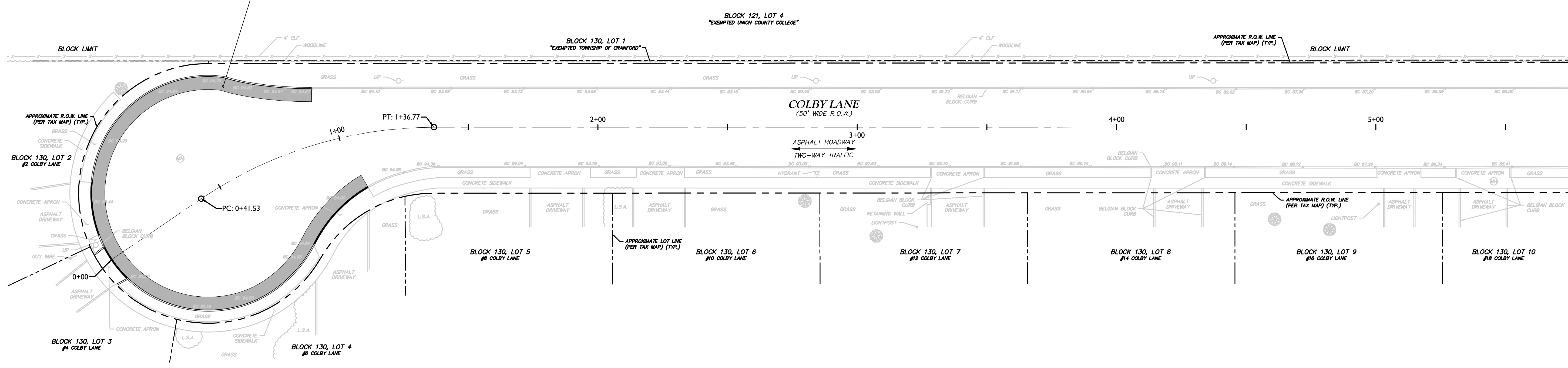
SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

FULL DEPTH RECONSTRUCTION MAP (COLBY LANE)



- APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):
- REMOVAL OF PAVEMENT
 - EXCAVATION UNCLASSIFIED
 - DENSE GRADED AGGREGATE BASE COURSE, 6" THICK
 - HOT MIX ASPHALT 19M64 BASE COURSE

- APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):
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 - DENSE GRADED AGGREGATE BASE COURSE, 6" THICK
 - HOT MIX ASPHALT 19M64 BASE COURSE



MATCHLINE - COLBY LANE - STA. 5+75 - THIS SHEET

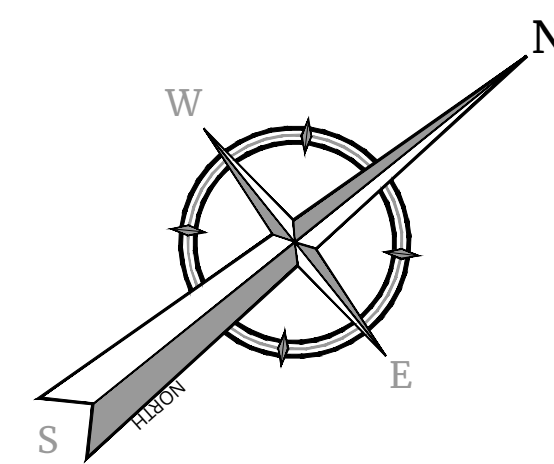
MATCHLINE - COLBY LANE - STA. 5+75 - THIS SHEET

MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 26

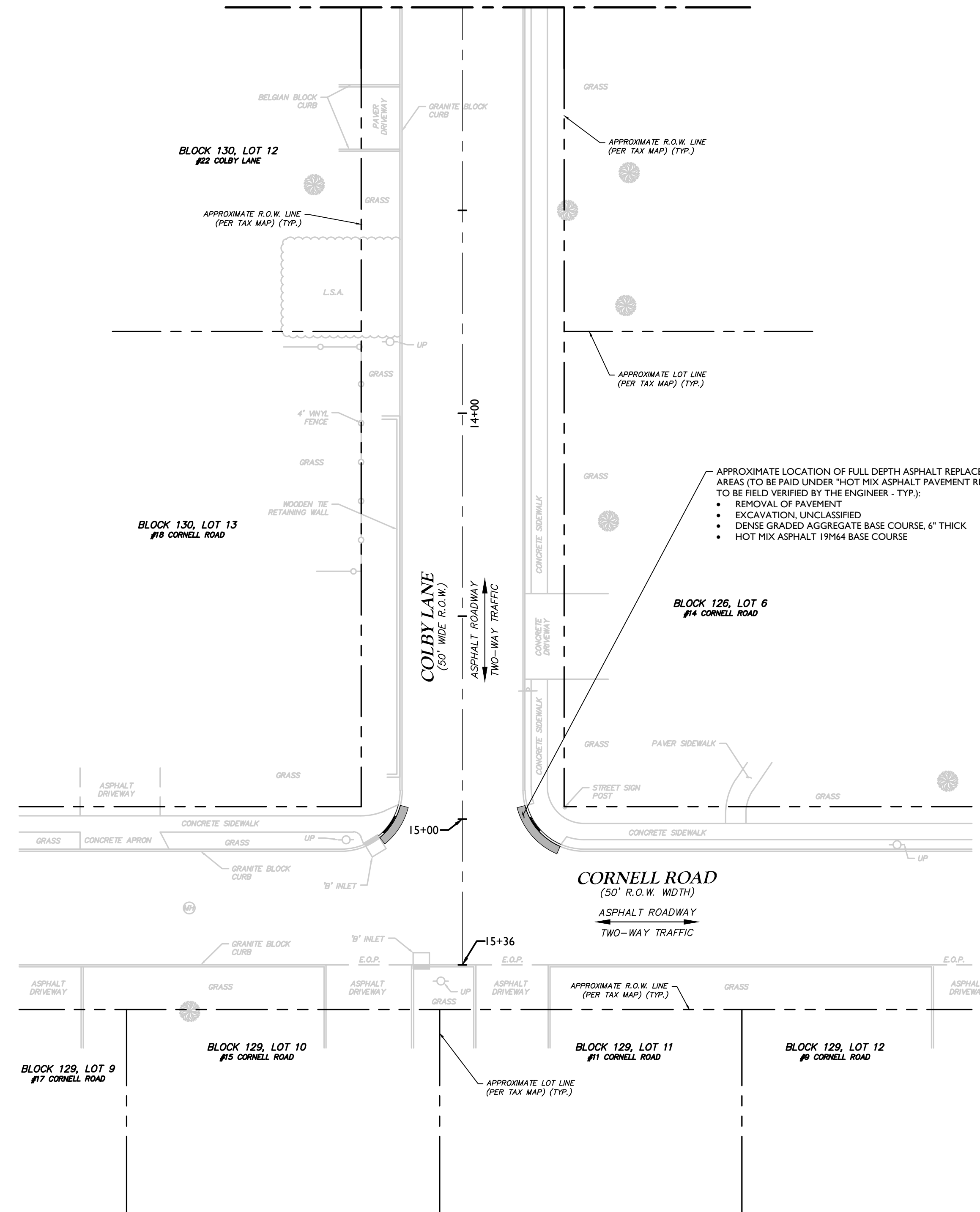


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MATCHLINE - COLBY LANE - STA. 13+00 - SHEET 25



- APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):
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 - DENSE GRADED AGGREGATE BASE COURSE, 6" THICK
 - HOT MIX ASPHALT 19M64 BASE COURSE

REV.	DATE	DESCRIPTION	DRAWN BY
1	3/1/24	REVISED INVERSIDE DRIVE PROFILE	BAK

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CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

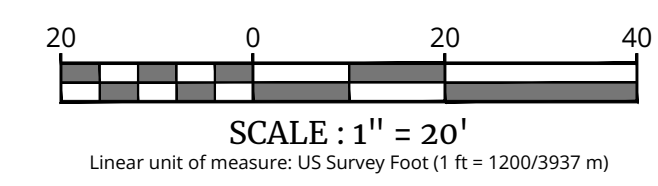
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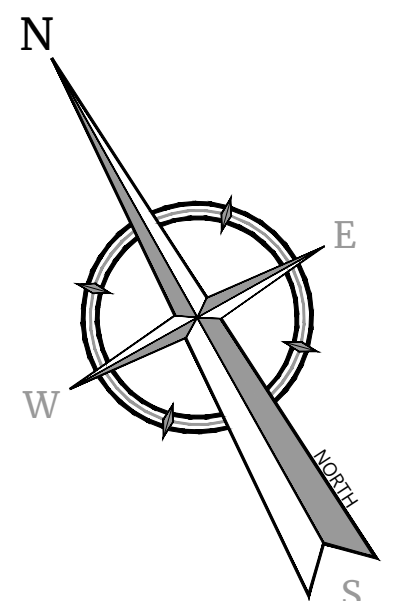
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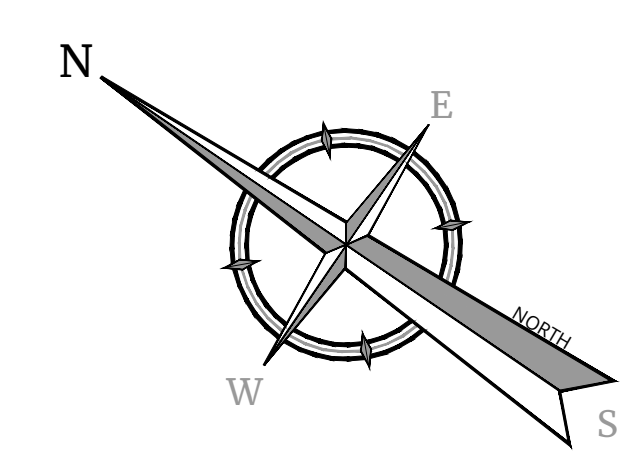
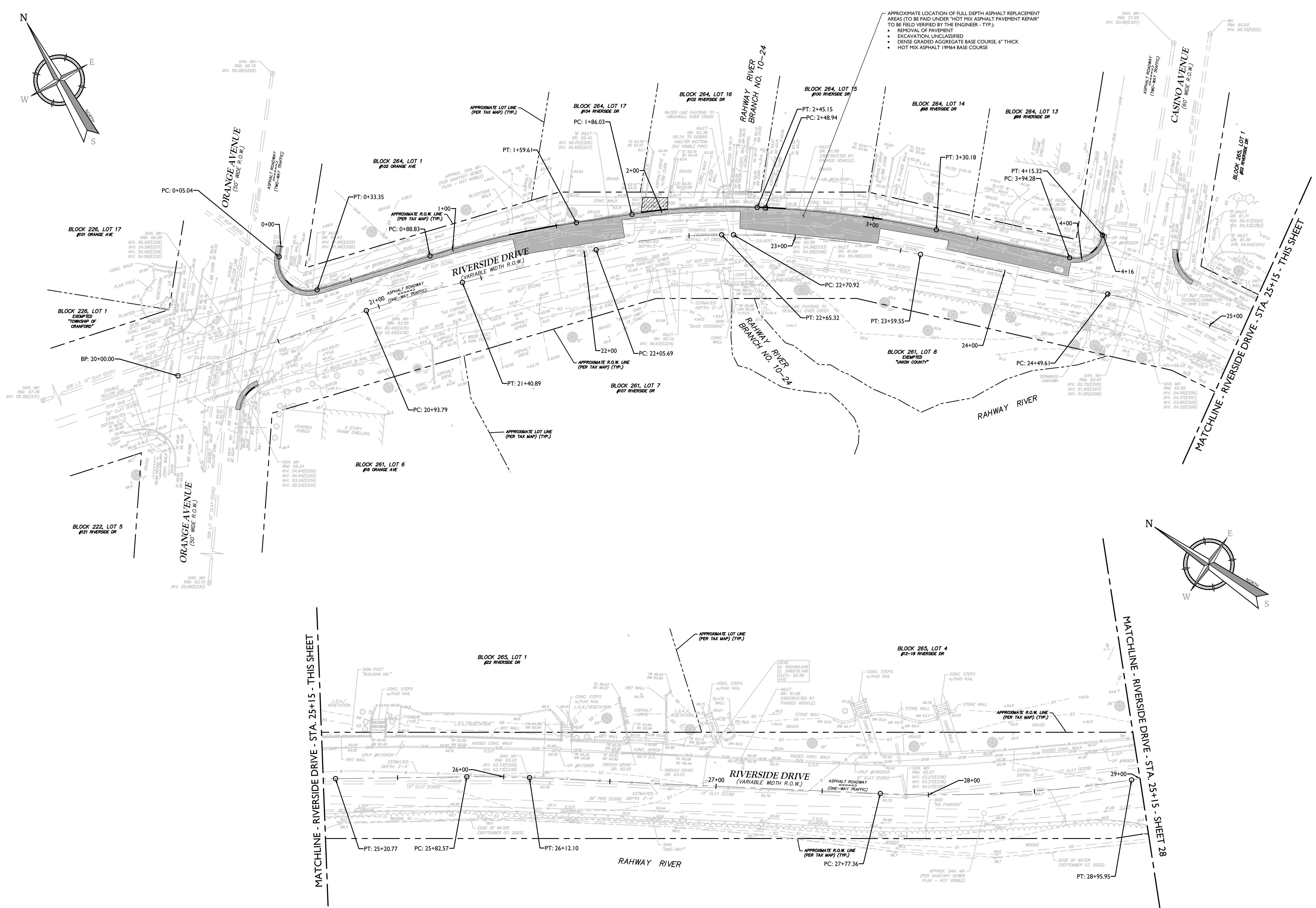
SHEET TITLE:
FULL DEPTH RECONSTRUCTION MAP (COLBY LANE)

SHEET NUMBER:
26 of 41



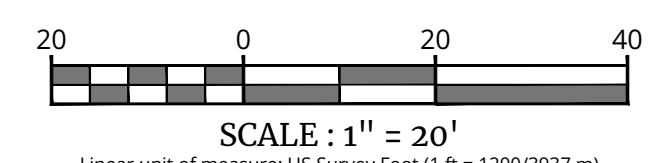


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MATCHLINE - RIVERSIDE DRIVE - STA. 25+15 - THIS SHEET

MATCHLINE - RIVERSIDE DRIVE - STA. 25+15 - SHEET 28



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REV.	DATE	DRAWN BY	DESCRIPTION
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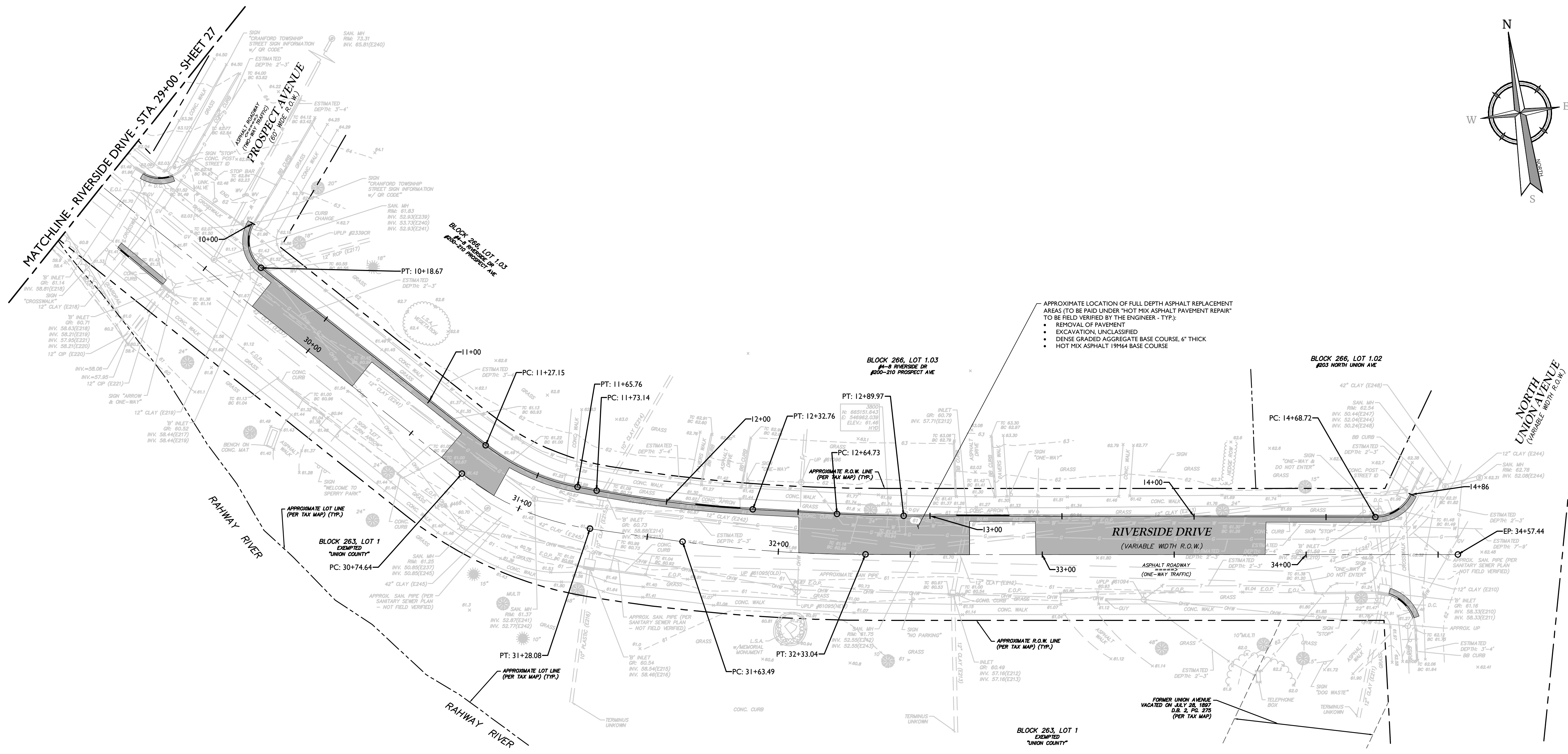
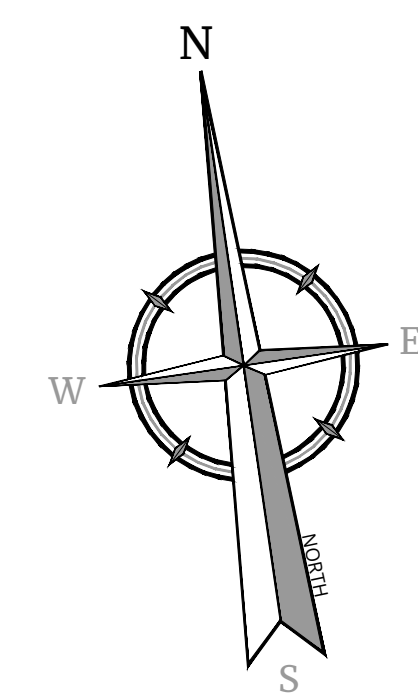
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PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

SHEET TITLE:
FULL DEPTH RECONSTRUCTION MAP (RIVERSIDE DRIVE)

SHEET NUMBER:
27 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



- APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):
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1	3/1/24	REVISED RIVERSIDE DRIVE PROFILE

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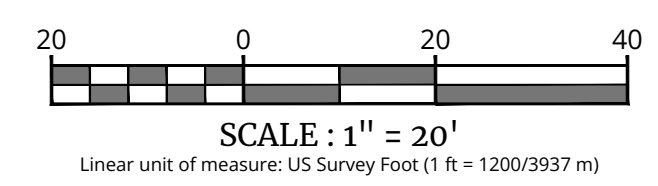
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FULL DEPTH RECONSTRUCTION MAP (RIVERSIDE DRIVE)



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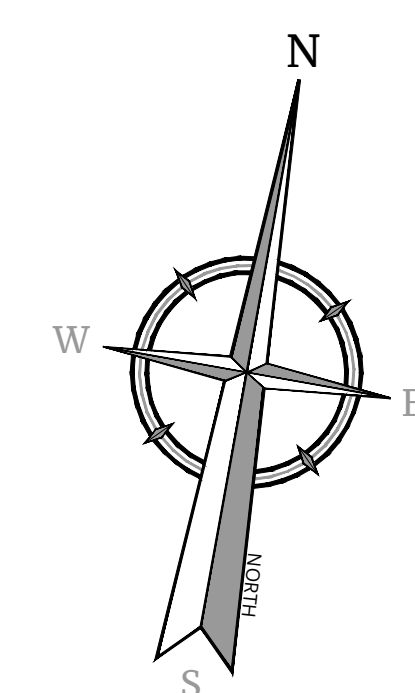
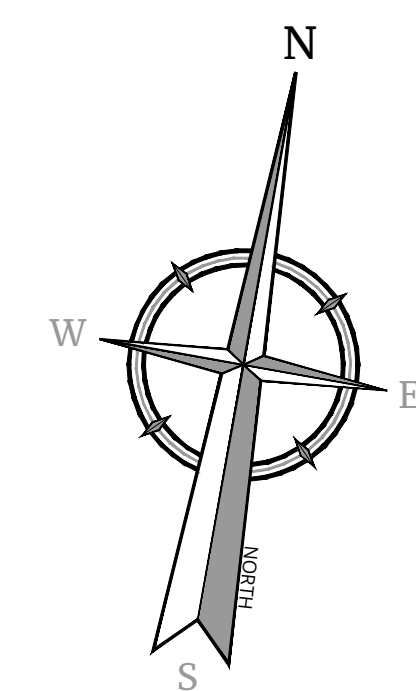
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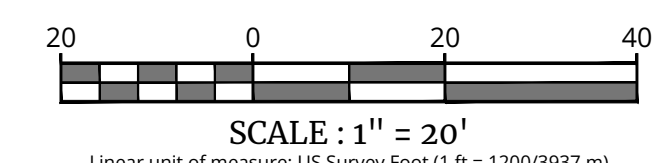
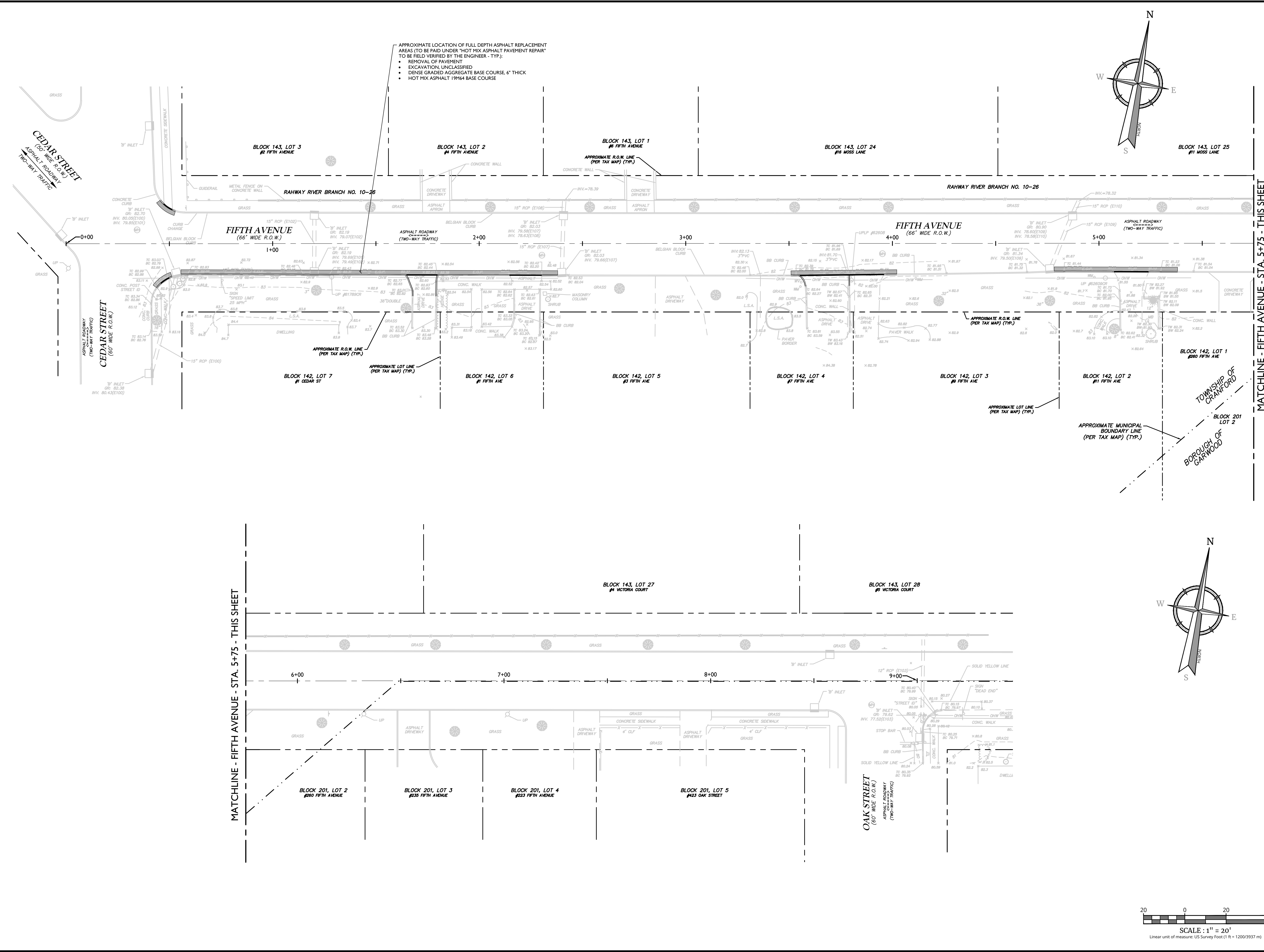
SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-LAY1		

FULL DEPTH RECONSTRUCTION MAP (FIFTH AVENUE)



APPROXIMATE LOCATION OF FULL DEPTH ASPHALT REPLACEMENT AREAS (TO BE PAID UNDER "HOT MIX ASPHALT PAVEMENT REPAIR" TO BE FIELD VERIFIED BY THE ENGINEER - TYP.):

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- HOT MIX ASPHALT 19M64 BASE COURSE



MATCHLINE - FIFTH AVENUE - STA. 5+75 - THIS SHEET

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SOMERSET-UNION SOIL CONSERVATION DISTRICT NOTES

MCNJ-SOIL-NOTE-1013 05/01/17

- ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 30 DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO NJ STATE STANDARDS.
- PERMANENT VEGETATION SHALL BE SEEDING OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH WILL BE USED FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NJ STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY, 7TH EDITION LAST REVISED JANUARY 2014.
- A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS IN ORDER TO STABILIZE STREETS, ROADS, DRIVEWAYS AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN 15 DAYS OR PRELIMINARY GRADING.
- IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES, ROADWAY EMBANKMENTS) WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO THE NJ STATE STANDARDS.
- ANY STEEP SLOPES RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION PROCEEDS (I.E. SLOPES GREATER THAN 3:1)
- TRAFFIC CONTROL STANDARDS REQUIRE THE INSTALLATION OF A 50'X30'X6" PAD OF 1 1/2" OR 2" STONE, AT ALL CONSTRUCTION DRIVEWAYS, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 48 HOURS IN ADVANCE OF ANY LAND DISTURBING ACTIVITY.
- AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER, SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED. TOP SOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS REQUIRED ON ALL SITES.
- IN THAT N.J.S.A. 42A-39 ET SEQ., REQUIRES THAT NO CERTIFICATE OF OCCUPANCY BE ISSUED BEFORE THE PROVISIONS OF THE CERTIFIED PLAN FOR SOIL EROSION AND SEDIMENT CONTROL HAVE BEEN COMPLIED WITH FOR PERMANENT MEASURES. ALL SITE WORK FOR SITE PLANS AND ALL WORK AROUND INDIVIDUAL LOTS IN SUBDIVISIONS, WILL HAVE TO BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.
- CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
- ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT NJ STATE SOIL EROSION & SEDIMENT CONTROL STANDARDS.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED OF ANY CHANGES IN OWNERSHIP.
- MULCHING TO THE NJ STANDARDS IS REQUIRED FOR OBTAINING A CONDITIONAL REPORT OF COMPLIANCE. CONDITIONALS ARE ONLY ISSUED WHEN THE SEASON PROHIBITS SEEDING.
- CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ADJACENT ROADS CLEAN DURING LIFE OF CONSTRUCTION PROJECT.
- THE DEVELOPER SHALL BE RESPONSIBLE FOR REMEDIATING ANY EROSION OR SEDIMENT PROBLEMS THAT ARISE AS A RESULT OF ONGOING CONSTRUCTION AT THE REQUEST OF THE SOMERSET-UNION SOIL CONSERVATION DISTRICT.
- HYDRO SEEDING IS A TWO-STEP PROCESS. THE FIRST STEP INCLUDES SEED, FERTILIZER, LIME, ETC., ALONG WITH MINIMAL AMOUNTS OF MULCH TO PROMOTE CONSISTENCY, GOOD SEED TO SOIL CONTACT, AND GIVE A VISUAL INDICATION OF COVERAGE UPON COMPLETION OF SEEDING OPERATION. HYDRO-MULCH SHOULD BE APPLIED AT A RATE OF 1500 LBS. PER ACRE IN SECOND STEP. THE USE OF HYDRO-MULCH, AS OPPOSED TO STRAW, IS LIMITED TO OPTIMUM SEEDING DATES AS LISTED IN THE NJ STANDARDS.

CONSTRUCTION SEQUENCE

IMPLEMENTATION OF SOIL EROSION & SEDIMENT CONTROL MEASURES INCLUDING:
- INLET FILTERS 1 DAY

CONSTRUCT IMPROVEMENTS:
- SITE CLEARING 1 WEEK
- COMPLETE HILLING OPERATIONS 3 WEEKS
- INSTALL CURB RAMPS AND CURBING 2 WEEKS
- COMPLETE PAVING OPERATIONS 2 WEEKS
- UNIFORMLY APPLY TOPSOIL TO AN AVERAGE DEPTH OF 5"; MINIMUM OF 4"; FIRMED IN PLACE 1 DAY
- FERTILIZING, SEEDING AND STRAW MULCHING 2 DAYS
- REMOVAL OF SOIL EROSION & SEDIMENT CONTROL MEASURES 1 DAY

NOTE: TOTAL ESTIMATED PROJECT DURATION: 9 WEEKS

THIS SCHEDULE IS FOR SOIL EROSION AND SEDIMENT CONTROL PURPOSES ONLY.

STOCKPILE

- ALL EXCAVATED MATERIAL, INCLUDING TOPSOIL, SHALL BE DISPOSED OF OFF-SITE. ALL TOPSOIL STOCKPILES SHALL BE REMOVED ON A DAILY BASIS.

AREA OF DISTURBANCE = 17,257 SF OR 3.57 ACRES

PERMANENT SEEDING SPECIFICATIONS

1. SITE PREPARATION

- INSTALL EROSION CONTROL MEASURES AND FACILITIES SUCH AS SILT FENCE, DIVERSIONS, SEDIMENT BASINS, CHANNEL STABILIZATION, ETC. SEE STANDARDS I THROUGH 42.
- GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, MULCH ANCHORING AND MAINTENANCE. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.

2. SEEDBED PREPARATION

- APPLY A UNIFORM 5 INCHES (UNSETTLED) OF TOPSOIL IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING OVER ALL DISTURBED AREAS. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING PH OF 6.0 OR MORE IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOIL.
- TOPSOIL SHOULD BE HANDLED ONLY WHEN DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.

- APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS CO-OPERATIVE EXTENSION OFFICES. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 0-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE. APPLY LIMESTONE IN ACCORDANCE WITH THE TABLE BELOW AND THE RESULTS OF SOIL TESTING. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES. THE TABLE BELOW IS A GENERAL GUIDELINE FOR LIMESTONE APPLICATION RATES.

LIMESTONE APPLICATION RATE BY SOIL TEXTURE	TONS/ACRE	LBS/1,000 SQ. FT.
CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL	3	135
SANDY LOAM, LOAM, SILT LOAM	2	90
LOAMY SAND, SAND	1	45

- IMMEDIATELY PRIOR TO SEEDING AND TOPSOIL APPLICATION, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

- WORK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF APPROXIMATELY 4 INCHES. THE FINAL HARROWING OR DISC OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.

- REMOVE FROM THE SURFACE ALL STONES 3 INCHES OR LARGER IN ANY DIMENSION AND OTHER DEBRIS SUCH AS WIRE, TREE ROOTS, PIECES OF CONCRETE, CLODS LUMPS OR OTHER UNSUITABLE MATERIAL.

3. SEEDING

- SELECT THE SEED MIXTURE AS SPECIFIED ON THIS SHEET AND APPLY AS NOTED WITHIN THE DATES SPECIFIED IN THE STANDARD.

- CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER EXCEPT FOR DRILLED, HYDROSEEDER OR CULTIPACKED SEEDINGS. SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

- HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. (ALSO SEE SECTION 4 MULCHING BELOW) HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.

- AFTER SEEDING, FIRING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

4. MULCHING

- MULCHING IS REQUIRED ON ALL SEEDING.

- STRAW OR HAY - UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED. STRAW OR HAY MULCH MUST BE ANCHORED IMMEDIATELY AFTER PLACEMENT USING REG AND TWINE, MULCH NETTING, MECHANICAL CRIMPER OR LIQUID MULCH BINDERS IN ACCORDANCE WITH THE STANDARD.

- WOOD-FIBER OR PAPER-FIBER MULCH - SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS. USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.

DUST CONTROL NOTES

THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST:

MULCHES SEE STANDARD FOR STABILIZATION WITH MULCHES ONLY. (PAGE 5-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION)

VEGETATIVE COVER SEE STANDARD FOR TEMPORARY VEGETATIVE COVER (PAGE 7-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION), PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION (PAGE 4-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION), AND PERMANENT STABILIZATION WITH SOD (PAGE 6-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION).

SPRAY-ON ADHESIVES ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS.

TABLE 16-1: DUST CONTROL MATERIALS

MATERIAL	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLONS/ACRE
ANIONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1200
LATEX EMULSION	12.5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300
POLYACRYLAMIDE (PAM) - SPRAY ON	APPLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS. MAY ALSO BE USED AS AN ADDITIVE TO SEDIMENT BASINS TO FLOCCULATE AND PRECIPITATE SUSPENDED COLLOIDS. (SEE SEDIMENT BASIN STANDARD (PAGE 36-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION)		
POLYACRYLAMIDE (PAM) - DRY SPRAY			
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200

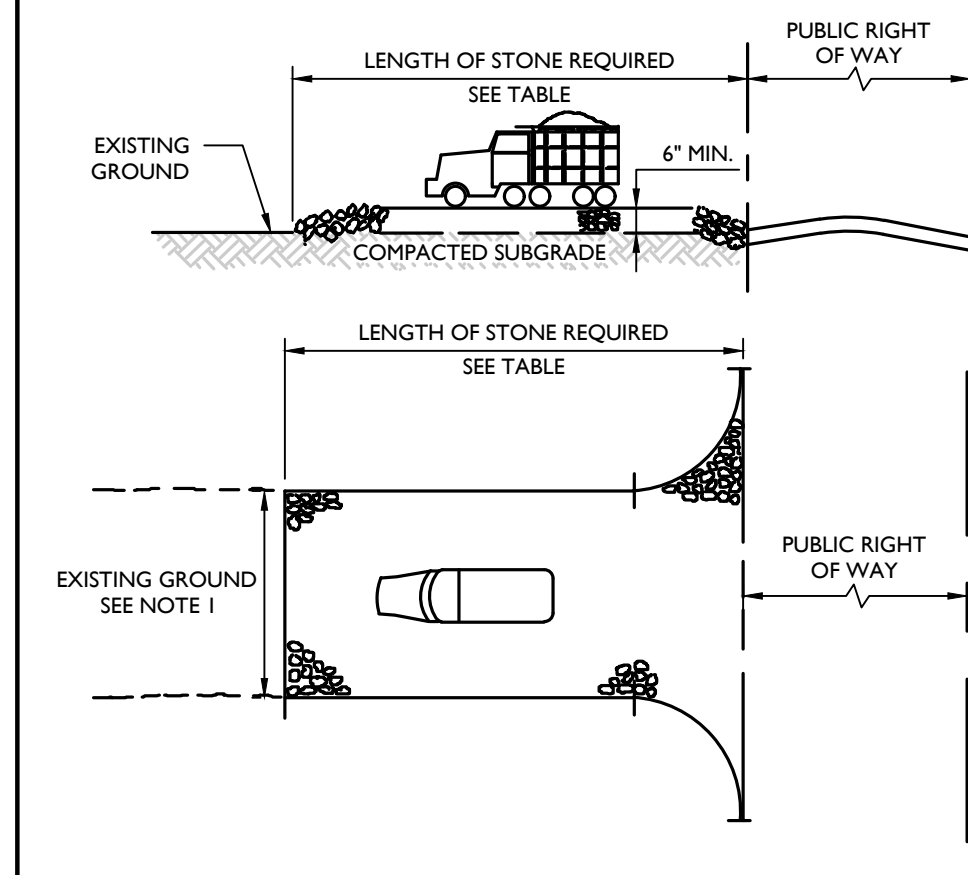
TILLAGE TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.

SPRINKLING SITE IS SPRINKLED UNTIL THE SURFACE IS WET.

BARRIERS SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.

CALCIUM CHLORIDE SHALL BE IN THE FORM OF LOOSE, DRY GRANULATES OF FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.

STONE COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.



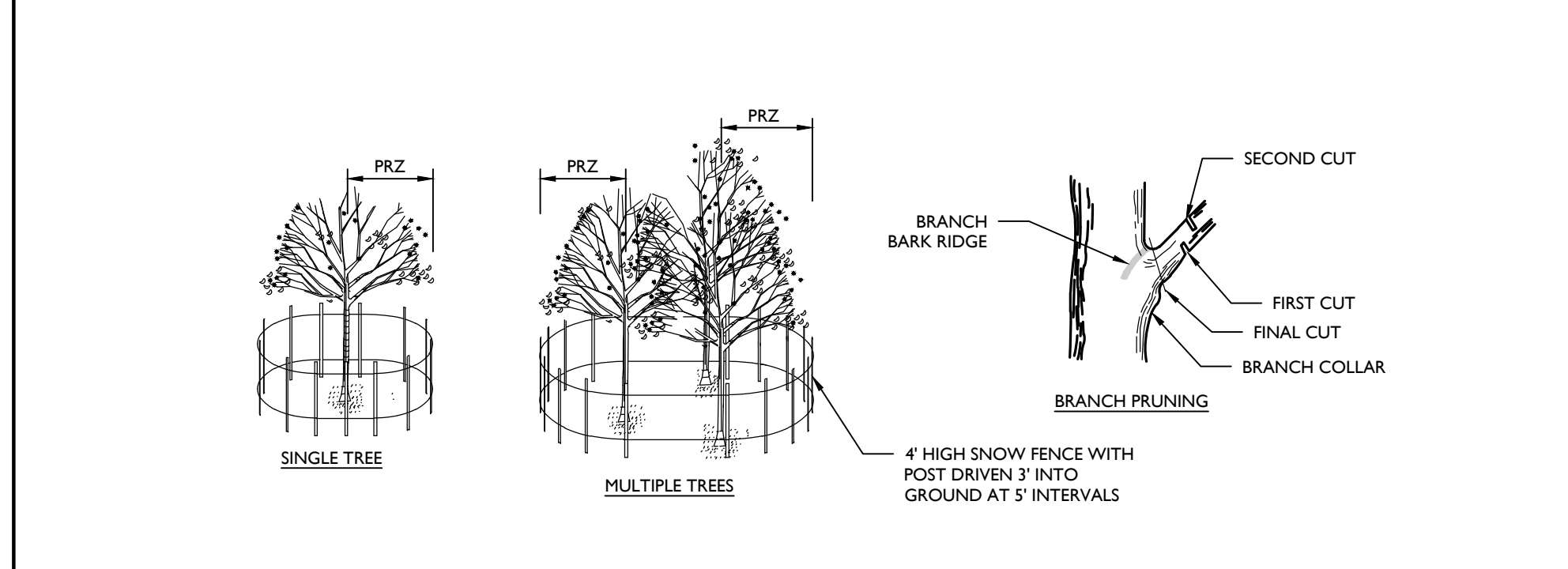
NOTES:

- THE WIDTH OF CONSTRUCTION ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF POINTS OF INGRESS OR EGRESS, OR AS SHOWN ON THE PLAN.
- THICKNESS SHOWN IS FOR STONE CONSTRUCTION ENTRANCE ONLY.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS.
- THE ENTRANCE SHALL BE PERIODICALLY TOP DRESSED WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS ON-SITE CONDITIONS REQUIRE.
- SPILLED, DROPPED, WASHED, OR TRACKED SEDIMENT ONTO ROADWAYS OR OTHER IMPERVIOUS SURFACES SHALL BE REMOVED IMMEDIATELY.
- WHERE ACCUMULATION OF DUST AND SEDIMENT IS INADEQUATELY CLEANED OR REMOVED BY CONVENTIONAL METHODS, A POWER BROOM OR STREET SWEEPER SHALL BE USED TO CLEAN PAVED AREAS.
- ALL OTHER ACCESS POINTS TO THE SITE WHICH DO NOT CONTAIN A CONSTRUCTION ACCESS PAD SHALL BE BLOCKED OFF.
- STONE SIZE PER ASTM C-33, SIZE #2 (2 1/2" TO 1 1/2") OR #3 (2" TO 1 1/2") STONE.
- INDIVIDUAL INTERIOR LOT INGRESS/EGRESS CONSTRUCTION ACCESS SHALL HAVE # 3 (1" TO 2") STONE, MINIMUM 10' (L) X 10' (W) AND 6" THICK.

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED
0% TO 2%	COARSE GRAINED SOILS 50 FT FINE GRAINED SOILS 100 FT
2% TO 5%	100 FT 200 FT
> 5%	ENTIRE SURFACE STABILIZED WITH HMA BASE COURSE, MIX I-2

STABILIZED CONSTRUCTION ACCESS DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-1000 05/01/17

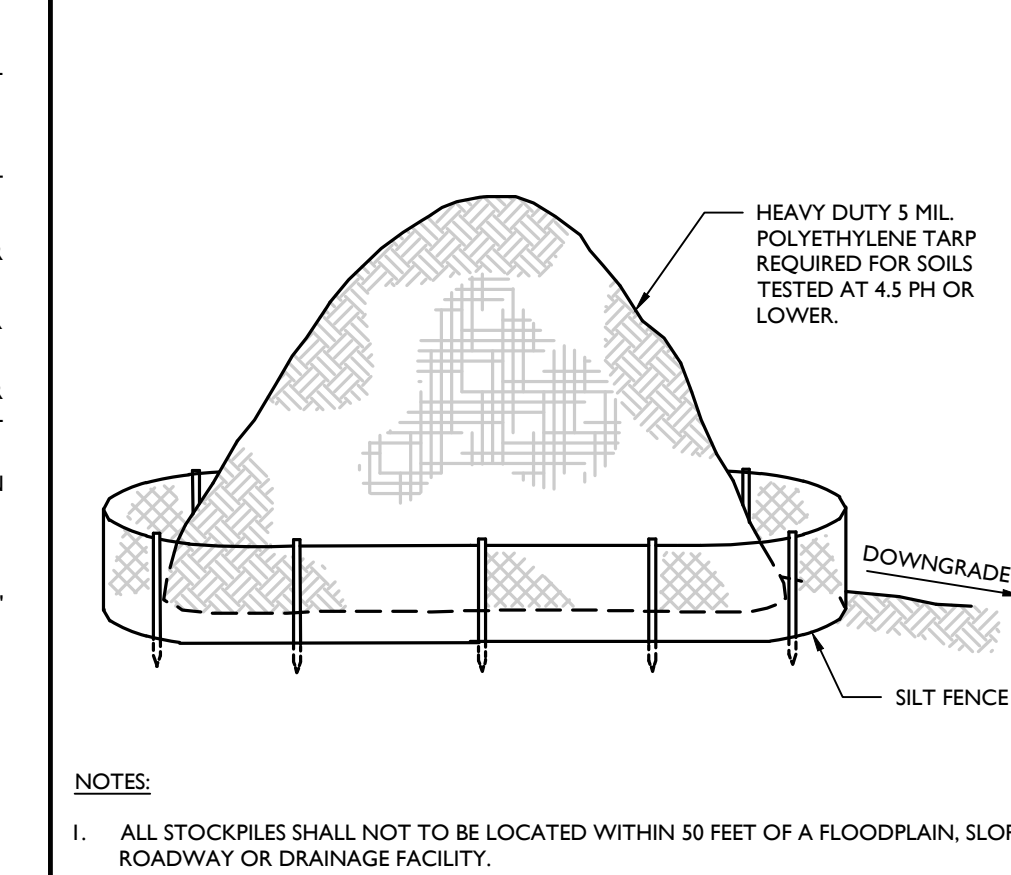


NOTES:

- PROTECTIVE FENCING IS TO BE ERRECTED PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION AS DIRECTED BY THE LANDSCAPE ARCHITECT, SOIL CONSERVATION DISTRICT AND/OR MUNICIPAL ENGINEER.
- NO CONSTRUCTION ACTIVITY IS PERMITTED WITHIN THE PROTECTIVE FENCING.
- AS CONSTRUCTION NEARS COMPLETION THE FENCING WILL BE REMOVED AS DIRECTED.
- AT THE COMPLETION OF CONSTRUCTION, ALL TREES WILL BE PRUNED AS NECESSARY TO CORRECT ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITY.
- GENERAL MECHANICAL DAMAGE - SEE CRITICAL ROOT ZONE CALCULATION (CRZ) FOR CORRECT PLACEMENT OF TREE PROTECTION.
- BOX TREES WITHIN 25 FEET OF A BUILDING SITE TO PREVENT MECHANICAL INJURY. FENCING OR OTHER BARRIER SHOULD BE INSTALLED BEYOND THE CRITICAL ROOT ZONE.
- BOARDS WILL NOT BE NAILED TO TREES DURING BUILDING OPERATIONS.
- FEEDER ROOTS SHOULD NOT BE CUT IN AN AREA INSIDE THE PROTECTED ROOT ZONE (PRZ) OR CRITICAL ROOT ZONE (CRZ). TREE ROOT SYSTEM COMMONLY EXTEND BEYOND THE DRIP LINE.
- DAMAGED TRUNKS OR EXPOSED ROOTS SHOULD HAVE DAMAGED BARK REMOVED IMMEDIATELY AND NO PAINT SHALL BE APPLIED. EXPOSED ROOTS SHOULD BE COVERED WITH TOPSOIL IMMEDIATELY AFTER EXCAVATION IS COMPLETE. ROOTS SHALL BE PRUNED TO GIVE A CLEAN, SHARP SURFACE AMENABLE TO HEALING. ROOTS EXPOSED DURING HOT WEATHER SHOULD BE IRRIGATED TO PREVENT PERMANENT TREE INJURY. CARE FOR SERIOUS INJURY SHOULD BE PRESCRIBED BY A PROFESSIONAL FORESTER OR CERTIFIED TREE EXPERT.
- TREE LIMB REMOVAL WHERE NECESSARY, WILL BE DONE AS NATURAL TARGET PRUNING TO REMOVE THE DESIRED BRANCH COLLAR. THERE SHOULD BE NO FLUSH CUTS. FLUSH CUTS DESTROY A MAJOR DEFENSE SYSTEM OF THE TREE. NO TREE PAINT SHALL BE APPLIED. ALL CUTS SHALL BE MADE AT THE OUTSIDE EDGE OF THE BRANCH COLLAR. CUTS MADE TOO FAR BEYOND THE BRANCH COLLAR MAY LEAD TO EXCESS SPROUTING, CRACKS AND ROT. REMOVAL OF A "V" CROTCH SHOULD BE CONSIDERED FOR TREE STANDING SPECIMEN TREES TO AVOID FUTURE SPLITTING DAMAGE.
- CRITICAL ROOT ZONE (CRZ) OR PROTECTED ROOT ZONE (PRZ) CALCULATION: MEASURE DBH OF THE TREE (DIAMETER OF TREE IN BREAST HEIGHT OR 4.5' ABOVE GROUND ON THE UPHILL SIDE) IN INCHES. CRZ OR PRZ = DBH TIMES 1.5 (FOR OLD/UNHEALTHY/SENSITIVE TREES) OR DBH X 1.0 (FOR YOUNG/HEALTHY/TOLERANT TREES), EXPRESS IN FEET.

TEMPORARY TREE PROTECTION DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-2100 05/01/17

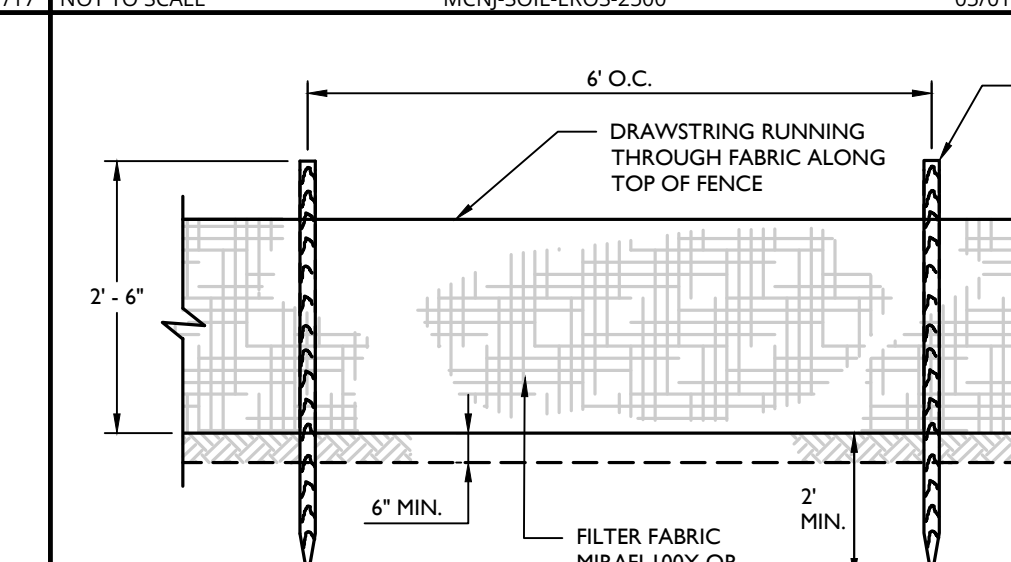


NOTES:

- ALL STOCKPILES SHALL NOT TO BE LOCATED WITHIN 50 FEET OF A FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITY.

TOPSOIL STOCKPILE DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-2500 05/01/17



NOTES:

- GEOTEXTILE TO BE FASTENED SECURELY TO FENCE POST BY USING WIRE TIES OR HOG RINGS. USE 4 TO 6 FASTENERS PER POST.
- SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.
- ALL SILT FENCE TO BE INSPECTED AND REMEDIAL MAINTENANCE PERFORMED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH RAINFALL. REMOVE THE SILT ACCUMULATION WHEN IT REACHES 1/3 OF THE FENCE FABRIC HEIGHT.
- FOR EVERY 100 FEET OF SILT FENCE, OR 1/4 ACRE OF DRAINAGE AREA, PROVIDE AN OVERFLOW POINT TO REDUCE PONDING IN FRONT OF THE FENCE.
- IF SPACE PERMITTED, LOCATE SILT FENCE 10' AWAY FROM TOE OF SLOPE IF THE SLOPE IS STEEPER THAN 1:1.
- SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND THE POST TWICE AND ATTACHING AS SPECIFIED IN NOTE 1 ABOVE.

SILT FENCE DETAIL

NOT TO SCALE CD-158-1.1

Athletic Field Mix - ERNMX-106

Botanical Name	Common Name
30.00 % <i>Festuca arundinacea</i> , 'Fawn'	Tall Fescue, 'Fawn'
30.00 % <i>Lolium perenne</i> , 'Fastball RGL'	Perennial Ryegrass, 'Fastball RGL' (turf type)
15.00 % <i>Poa pratensis</i> , 'Shamrock'	Kentucky Bluegrass, 'Shamrock'
15.00 % <i>Poa pratensis</i> , 'Volt'	Kentucky Bluegrass, 'Volt'
10.00 % <i>Lolium multiflorum</i>	Annual Ryegrass

100.00 %

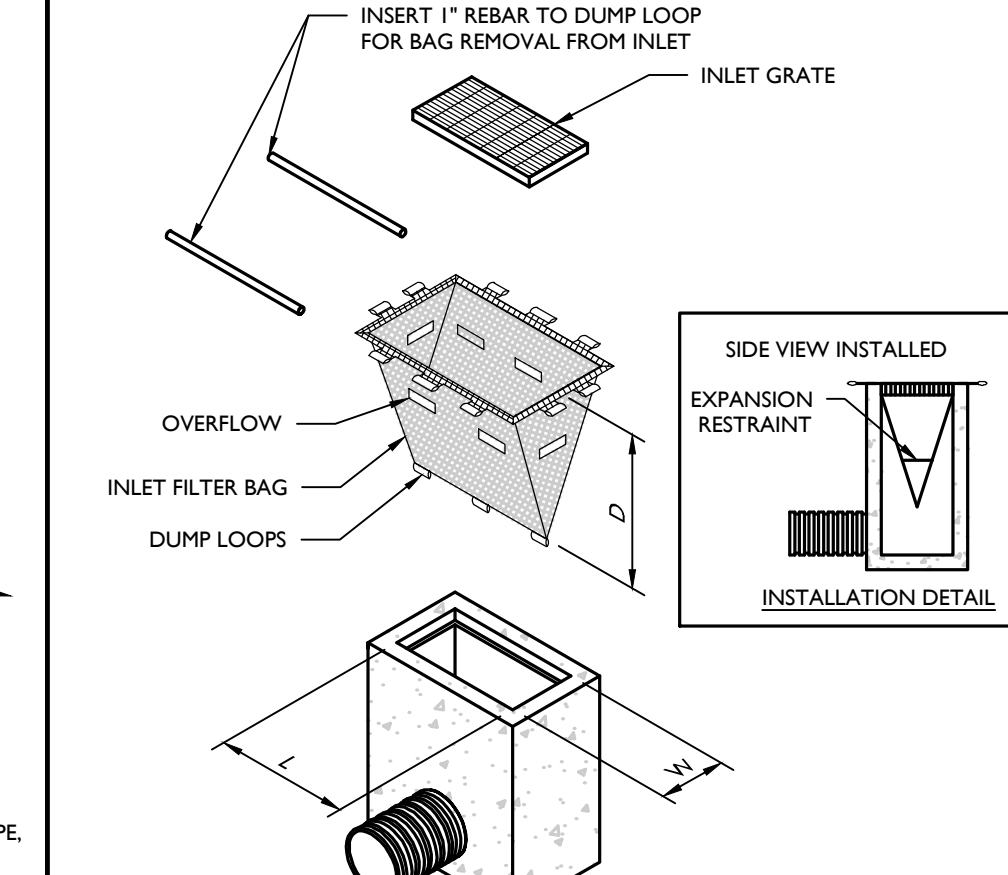
Seeding Rate: 75-150 lb per acre, or 3-5 lb per 1,000 sq ft

Lawn & Turfgrass Sites

This mix is good for high-traffic areas. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

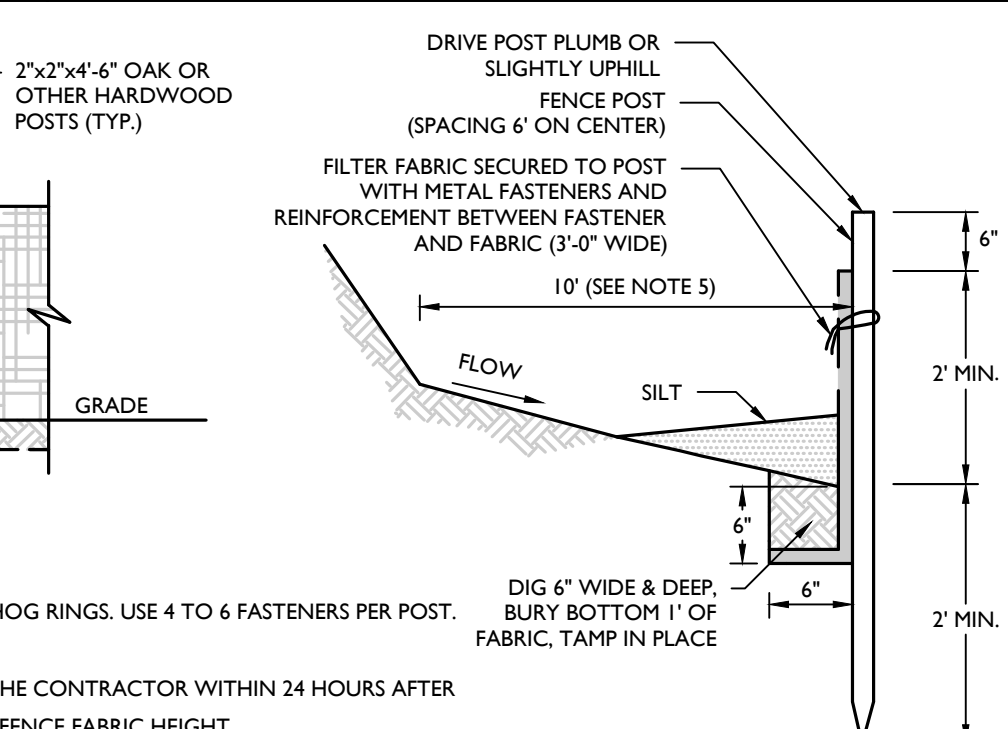
SEEDING MIX

NOT TO SCALE



INLET PROTECTION (FILTER BAG) DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-1500 09/01/17



- GEOTEXTILE TO BE FASTENED SECURELY TO FENCE POST BY USING WIRE TIES OR HOG RINGS. USE 4 TO 6 FASTENERS PER POST.
- SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.
- ALL SILT FENCE TO BE INSPECTED AND REMEDIAL MAINTENANCE PERFORMED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH RAINFALL. REMOVE THE SILT ACCUMULATION WHEN IT REACHES 1/3 OF THE FENCE FABRIC HEIGHT.
- FOR EVERY 100 FEET OF SILT FENCE, OR 1/4 ACRE OF DRAINAGE AREA, PROVIDE AN OVERFLOW POINT TO REDUCE PONDING IN FRONT OF THE FENCE.
- IF SPACE PERMITTED, LOCATE SILT FENCE 10' AWAY FROM TOE OF SLOPE IF THE SLOPE IS STEEPER THAN 1:1.
- SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND THE POST TWICE AND ATTACHING AS SPECIFIED IN NOTE 1 ABOVE.

SILT FENCE DETAIL

NOT TO SCALE CD-158-1.1

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Kevin E. Boyer
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LICENSE NUMBER: GE49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS FOR 2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD UNION COUNTY NEW JERSEY

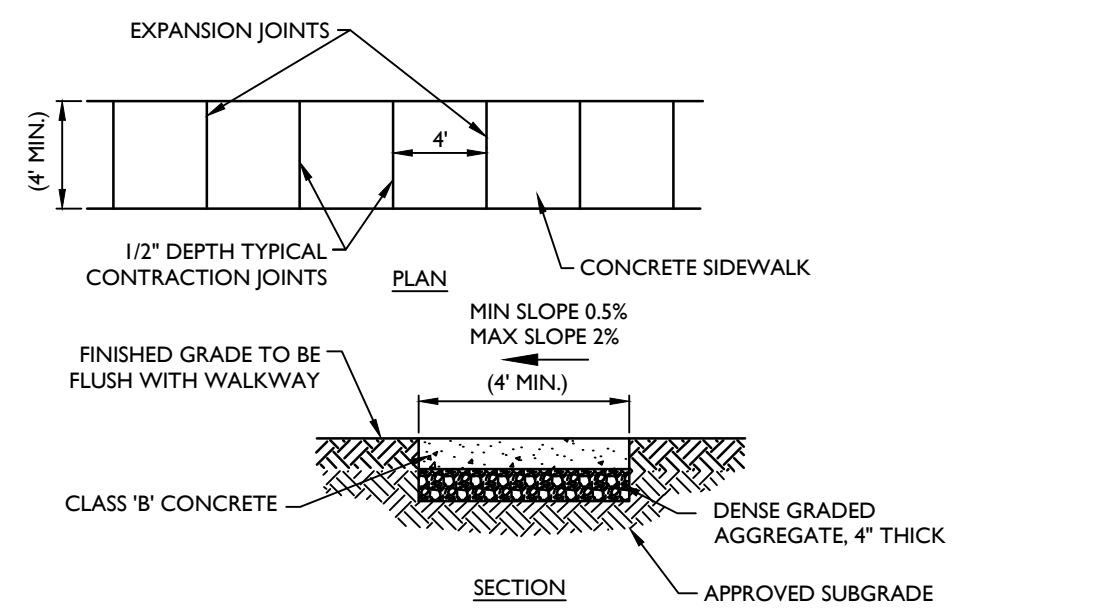
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PROJECT NUMBER:	CDD0087	DRAWING NAME:	C-DTL5

SOIL EROSION & SEDIMENT CONTROL NOTES AND DETAILS

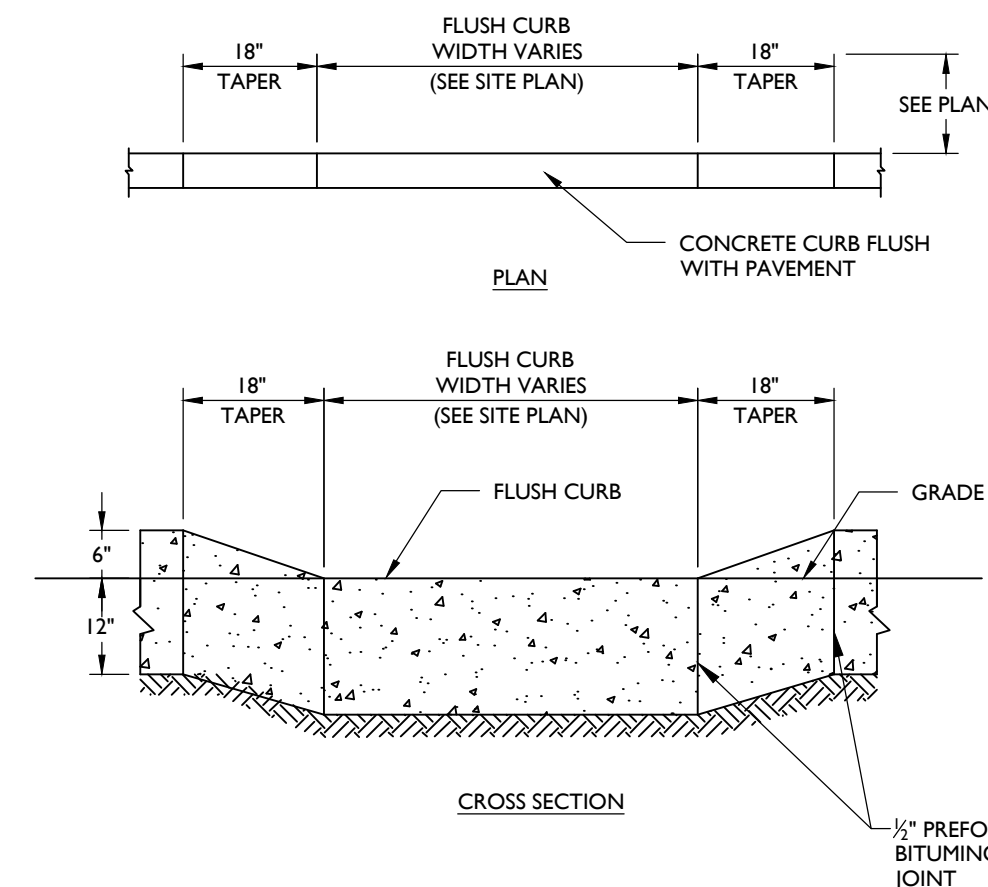
SHEET NUMBER: 30 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

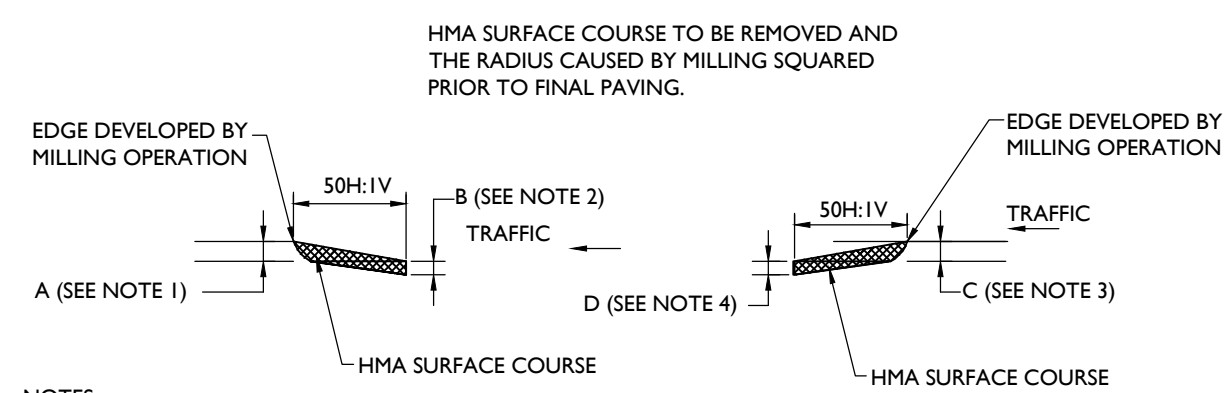


- NOTES:**
1. THE CONTRACTOR SHALL PROVIDE 1.5% CROSS SLOPE (TYP.), 2% MAX. TOWARDS ROADWAY.
 2. CURB AND SIDEWALK CONCRETE TO BE NJ DOT CLASS "B" AIR-ENTRAINED.
 3. PROVIDE PREFORMED BITUMINOUS FIBER EXPANSION JOINTS 1/2" THICK, AT 12'-0" INTERVALS. PROVIDE DUMMY JOINTS (FORMED) MIDWAY BETWEEN EXPANSION JOINTS.
 4. UNLESS SPECIFICALLY SHOWN DIFFERENTLY ON PLANS, CONCRETE SIDEWALK SHALL BE INSTALLED WITHOUT DISTURBING EXISTING CURB.
 5. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH DENSE GRADED AGGREGATE. ALL SUBGRADES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AFTER REMOVAL OF THE EXISTING SIDEWALK BUT BEFORE PLACING AND COMPACTION OF DENSE GRADED AGGREGATE.

CONCRETE SIDEWALK, 4" THICK
N.T.S.

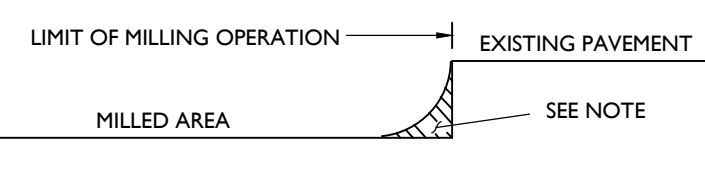


CONCRETE FLUSH CURB
N.T.S.

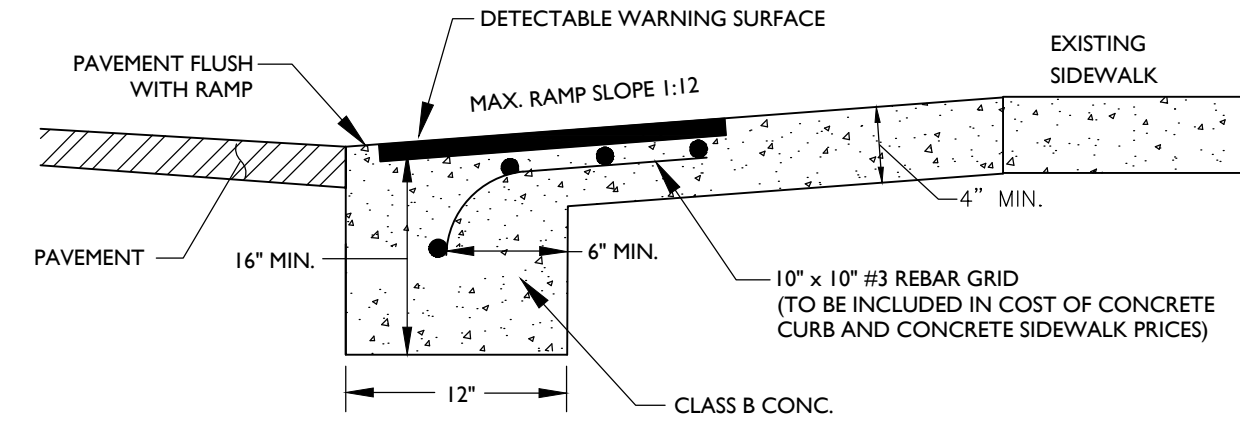


- NOTES:**
1. USE HMA SURFACE COURSE IN THE MILLING TRANSITION WHEN LEADING EDGE DEVELOPED BY MILLING OPERATION IS EQUAL TO OR GREATER THAN 1 INCH. NONE REQUIRED FOR EDGE LESS THAN 1 INCH.
 2. ENSURE THAT THE THICKNESS OF THE HMA SURFACE COURSE IN THE MILLING TRANSITION IS NOT LESS THAN B. B IS EQUAL TO 2 INCHES OR A, WHICHEVER IS LESS.
 3. USE HMA SURFACE COURSE IN THE MILLING TRANSITION WHEN TRAILING EDGE DEVELOPED BY MILLING OPERATION IS EQUAL TO OR GREATER THAN 1 1/2 INCHES. NONE REQUIRED FOR EDGE LESS THAN 1 1/2 INCHES. ENSURE THAT THE THICKNESS OF THE HMA SURFACE COURSE IN THE MILLING TRANSITION IS NOT LESS THAN D. D IS EQUAL TO 2 INCHES OR C, WHICHEVER IS LESS.
 4. ENSURE THAT THE THICKNESS OF THE HMA SURFACE COURSE IN THE MILLING TRANSITION IS NOT LESS THAN D. D IS EQUAL TO 2 INCHES OR C, WHICHEVER IS LESS.

MILLING TRANSITIONS DETAIL
N.T.S.

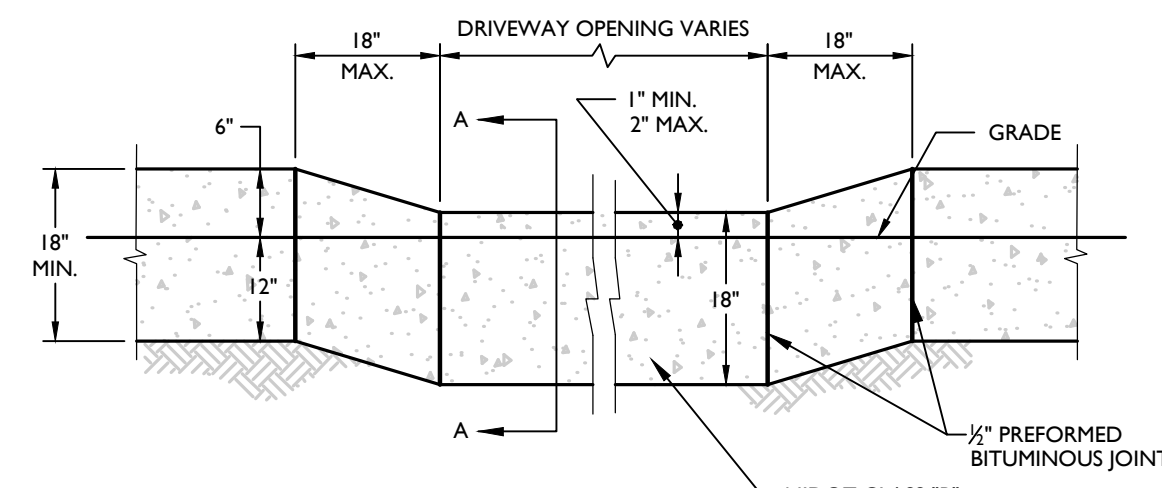


END TREATMENT FOR MILLING OPERATIONS DETAIL
N.T.S.

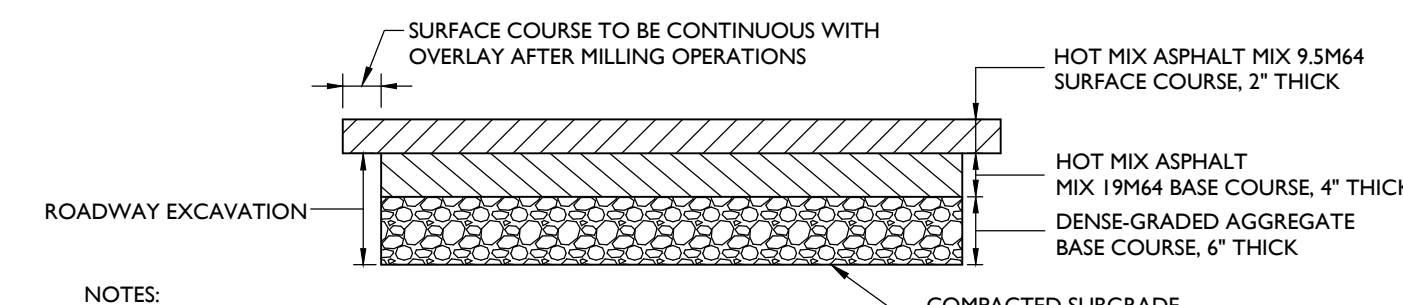


- NOTES:**
1. NO SEPARATE PAYMENT WILL BE MADE FOR REBAR/CONCRETE REINFORCEMENT. INCLUDE COST UNDER THE CONCRETE SIDEWALK, REINFORCED, 4" THICK PAY ITEM.
 2. FLUSH CURBS AT CURB RAMPS SHALL BE POURED MONOLITICALLY WITH CURB RAMP. FLUSH BELGIAN BLOCK CURB IS NOT ACCEPTABLE.

ADA RAMP DETAIL
N.T.S.

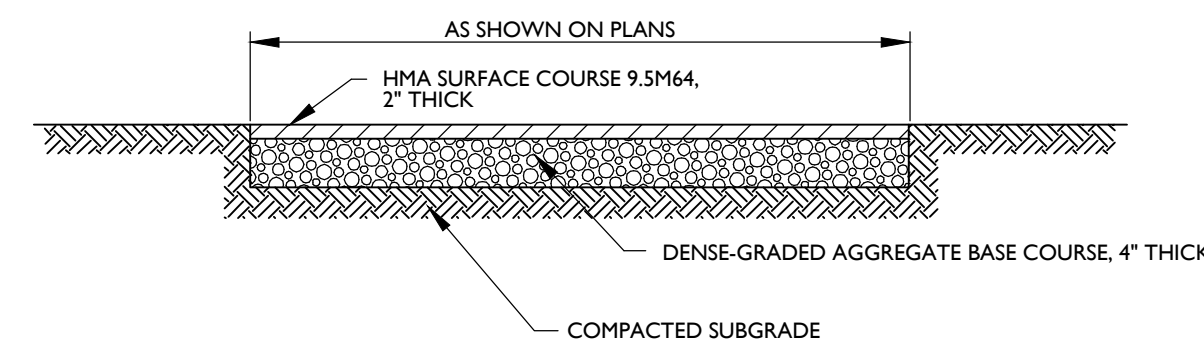


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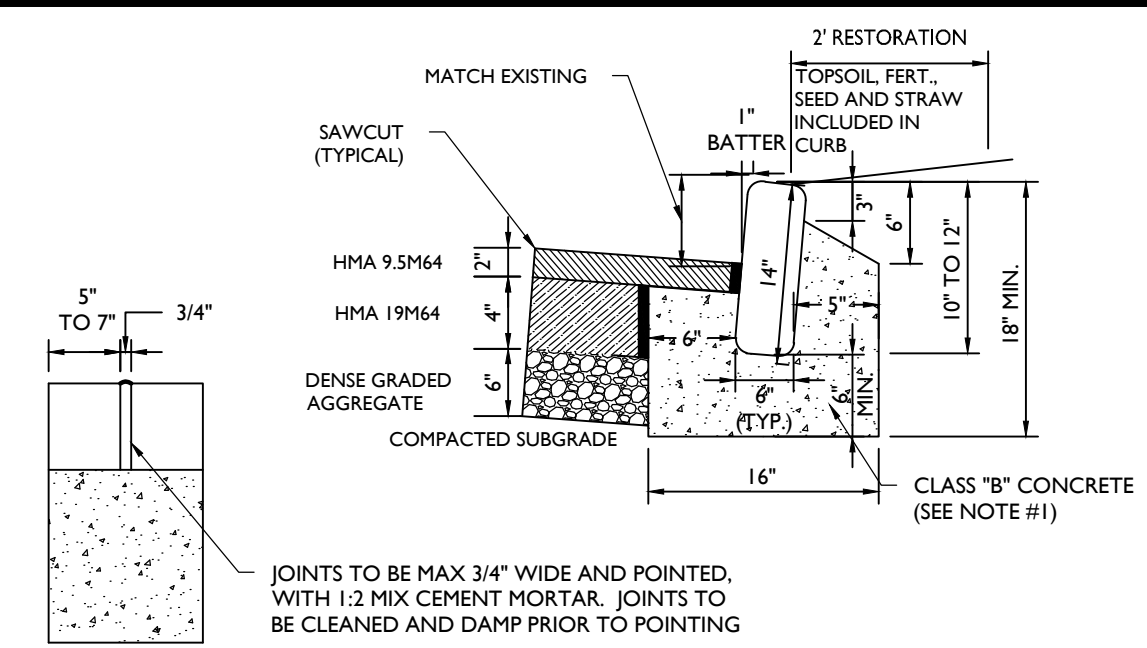
- NOTES:**
1. THE CONTRACTOR SHALL COMPLETE HOT MIX ASPHALT PAVEMENT REPAIRS. HOT MIX ASPHALT PAVEMENT REPAIRS SHALL CONSIST OF SAWCUTTING, ROADWAY EXCAVATION, BACKFILL AND COMPACTION OF DENSE-GRADED AGGREGATE BASE AND HOT MIX ASPHALT 19M64 BASE COURSE. THE COST TO SAWCUT THE PERIMETER OF FULL DEPTH REPAIRS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PAY ITEMS "HOT MIX ASPHALT PAVEMENT REPAIR" AND "FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA".
 2. THE PROPOSED SURFACE COURSE SHALL NOT BE INCLUDED IN THE WORK ASSOCIATED WITH HMA PAVEMENT REPAIR. THE PROPOSED SURFACE COURSE SHALL BE PLACED IN ACCORDANCE WITH THE ITEM "HOT MIX ASPHALT 9.5 M 64 SURFACE COURSE, 2\"
 3. ALL COSTS ASSOCIATED WITH HOT MIX ASPHALT PAVEMENT REPAIRS, SHALL INCLUDE THE FOLLOWING WORK:
- SAWCUTTING
- EXCAVATION UNCLASSIFIED
- DENSE-GRADED AGGREGATE BASE COURSE, 6\"

HOT MIX ASPHALT PAVEMENT REPAIR AND FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA
N.T.S.



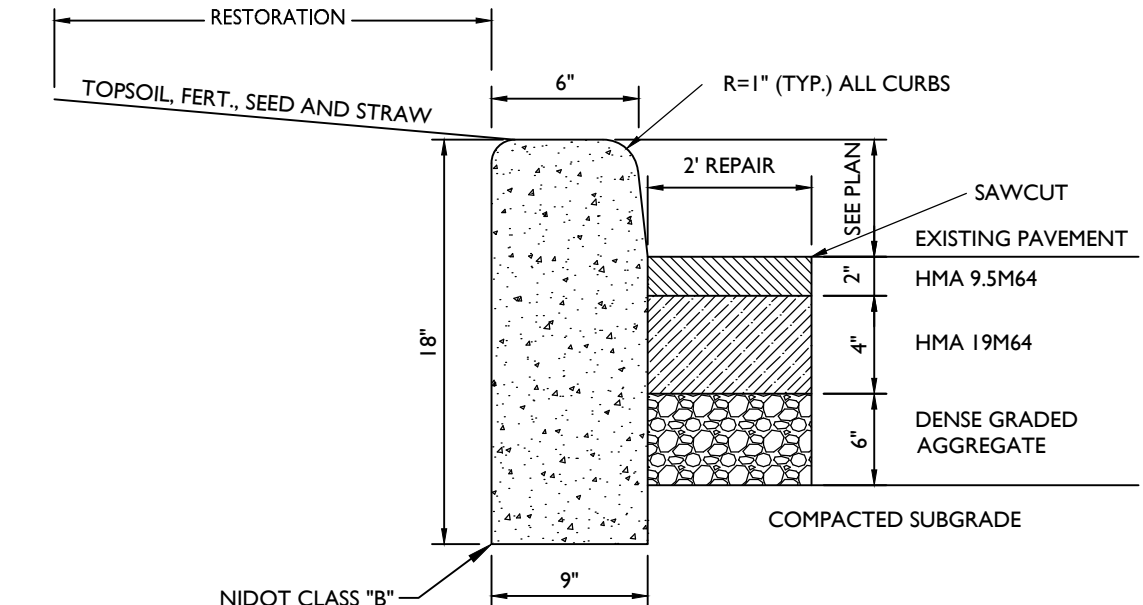
- NOTES:**
1. THE CONTRACTOR SHALL REPAIR HOT MIX ASPHALT DRIVEWAYS AS DIRECTED BY THE ENGINEER. LIMITS OF DRIVEWAY REPAIR SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 2. PAYMENT FOR ALL ITEMS AND WORK INCLUDED IN THE CONSTRUCTION OF HOT MIX ASPHALT DRIVEWAYS SHALL BE PAID FOR UNDER THE ITEM "HOT MIX ASPHALT DRIVEWAY, 2\"
 3. SAWCUT, REMOVAL, AND DISPOSAL OF EXISTING DRIVEWAY SURFACE AND SUBSOILS FOR DRIVEWAY REPAIR SHALL BE PAID FOR UNDER THE ITEM "CLEARING SITE".

HOT MIX ASPHALT DRIVEWAY, 2\"/>



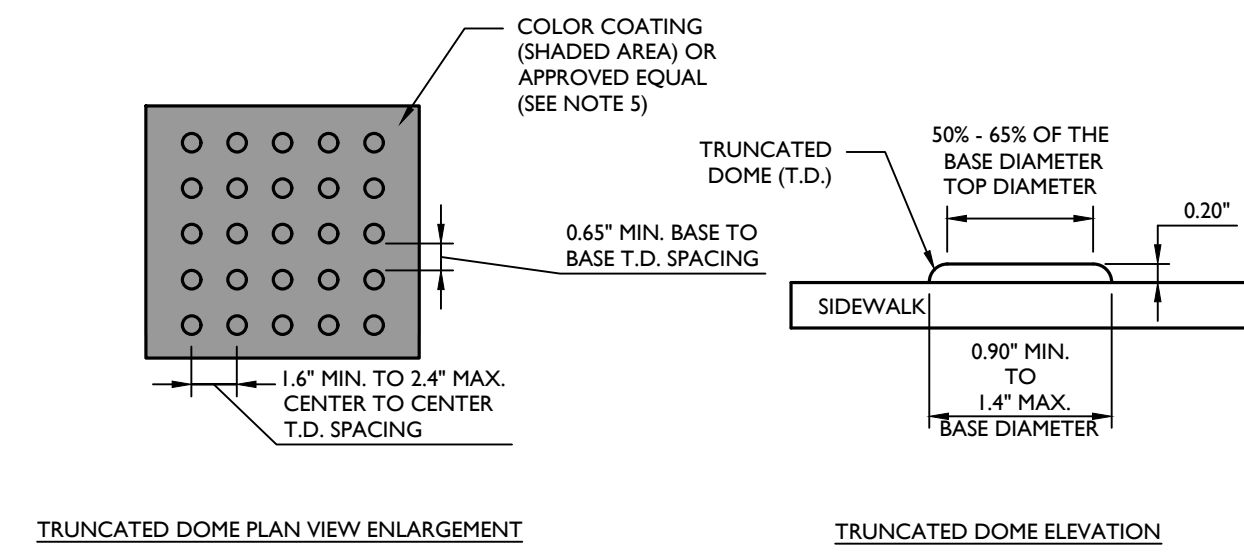
- NOTES:**
1. CONCRETE TO TEST 4500 PSI MINIMUM ON 28 DAY COMPRESSIVE TEST.
 2. ALL CONCRETE IS TO BE PROPERLY CURED USING A CURING COMPOUND, SALT HAY, BURLAP OR OTHER METHOD ACCEPTABLE TO THE TOWNSHIP ENGINEER.
 3. CONCRETE SLUMP TO BE 3" (±1"), OR AS DIRECTED BY THE TOWNSHIP ENGINEER.
 4. A HALF INCH EXPANSION JOINT OF A NON-EXTRUDABLE, BITUMINOUS MATERIAL SHALL BE PLACED ON 20'-0" CENTERS MAXIMUM.
 5. CONTRACTOR TO NOTIFY OWNER'S ENGINEER 24 HOURS PRIOR TO POURING.
 6. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE FOR THE CURB. PROVIDE DUMMY JOINTS (FORMED) MIDWAY BETWEEN EXPANSION JOINTS.

GRANITE BLOCK CURB
N.T.S.



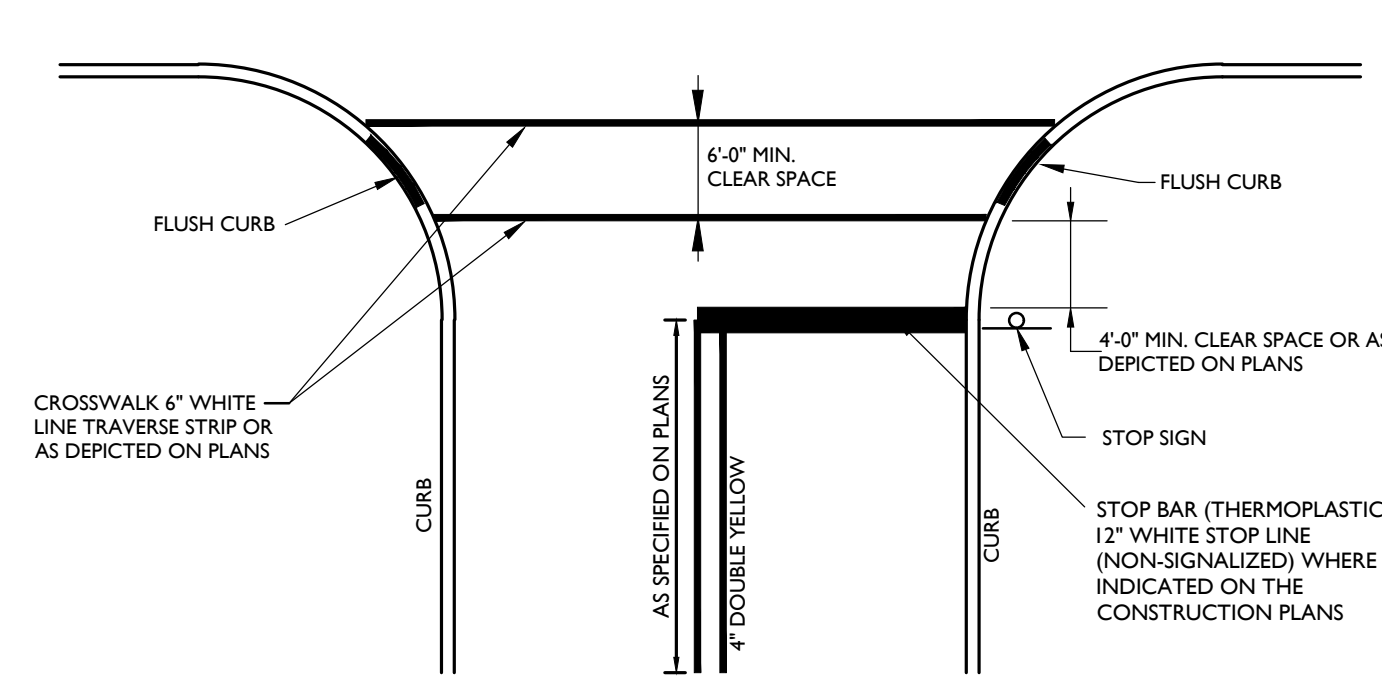
- NOTES:**
1. TRAVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB 20 FEET APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB.
 2. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE FOR THE CURB. PROVIDE DUMMY JOINTS (FORMED) MIDWAY BETWEEN EXPANSION JOINTS.

9\"/>



- NOTES:**
1. THE DETECTABLE WARNING SURFACE IS TO BE MANUFACTURED MATS THAT ARE EMBEDDED AND CAST-IN-PLACE IN THE CONCRETE.
 2. IN LIEU OF A CAST IN PLACE DETECTABLE WARNING SURFACE, THE CONTRACTOR MAY UTILIZE A SURFACE APPLIED DETECTABLE WARNING SURFACE WITH PRIOR APPROVAL OF THE UNDERSIGNED ENGINEER AND PRIOR TO POURING OF THE CONCRETE RAMP.
 3. THE CONTRACTOR MUST SUBMIT TO THE ENGINEER FOR APPROVAL A SHOP DRAWING OF THE DETECTABLE WARNING SURFACE PRIOR TO CONSTRUCTION.
 4. THE CONTRACTOR MUST PROVIDE A MANUFACTURER CERTIFICATION THAT THE DETECTABLE WARNING SURFACE COMPLIES WITH THE CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN AS PUBLISHED BY THE DEPARTMENT OF JUSTICE AND THE ADA STANDARDS AS SUPPORTED BY THE UNITED STATES ACCESS BOARD, AND THE STATE AND/OR LOCAL ADA STANDARDS.
 5. **SAFETY RED** AS APPROVED BY THE LOCAL JURISDICTION PRIOR TO INSTALLATION. DETECTABLE WARNING SURFACES MUST CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. ALTERNATIVE COLOR MAY BE PROVIDED SUCH COLOR COMPLIES WITH CURRENT ADA STANDARDS.
 6. DETECTABLE WARNINGS ARE TO CONSIST OF A SURFACE OF TRUNCATED DOMES.
 7. TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE MUST HAVE A CENTER-TO-CENTER SPACING OF 0.9 INCH (23 mm) MINIMUM AND 1.4 INCHES (36 mm) MAXIMUM, A TOP DIAMETER OF 50 PERCENT OF THE BASE DIAMETER MINIMUM TO 65 PERCENT OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2 INCH (5.1 mm).
 8. TRUNCATED DOMES IN DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE BACK OF CURB WHERE RAISED PEDESTRIAN STREET CROSSINGS, DEPRESSED CORNERS OR OTHER LEVEL PEDESTRIAN STREET CROSSINGS ARE PROVIDED. DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE FLUSH TRANSITION BETWEEN THE STREET AND THE SIDEWALK.
 9. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. WHERE REQUIRED BY THE MANUFACTURER, THE CONCRETE BORDER MUST NOT EXCEED 2 INCHES (51 mm).
 10. DETECTABLE WARNING SURFACES ARE NOT TO BE PLACED ON PAVING OR EXPANSION JOINTS AT CURB RAMPS. THE ROWS OF TRUNCATED DOMES IN DETECTABLE WARNING SURFACES ARE TO BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP RUN AND THE STREET SO PEDESTRIANS WHO USE WHEELCHAIRS CAN "TRACK" BETWEEN THE DOMES.
 11. ON PERPENDICULAR CURB RAMPS, DETECTABLE WARNING SURFACES ARE TO BE PLACED AS FOLLOWS:
 - a. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE IN FRONT OF THE BACK OF CURB, DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE BACK OF CURB.
 - b. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE BEHIND THE BACK OF CURB AND THE DISTANCE FROM EITHER END OF THE BOTTOM GRADE BREAK TO THE BACK OF CURB IS 5.0 FT OR LESS, DETECTABLE WARNING SURFACES ARE TO BE PLACED ON THE RAMP RUN WITHIN ONE DOME SPACING OF THE BOTTOM GRADE BREAK.
 - c. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE BEHIND THE BACK OF CURB AND THE DISTANCE FROM EITHER END OF THE BOTTOM GRADE BREAK TO THE BACK OF CURB IS MORE THAN 5.0 FT, DETECTABLE WARNING SURFACES ARE TO BE PLACED ON THE LOWER LANDING AT THE BACK OF CURB.
 12. ON PARALLEL CURB RAMPS, DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE FLUSH TRANSITION BETWEEN THE STREET AND SIDEWALKS.
 13. ON BLENDED TRANSITIONS, DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE BACK OF CURB WHERE RAISED PEDESTRIAN STREET CROSSINGS, DEPRESSED CORNERS OR OTHER LEVEL PEDESTRIAN STREET CROSSINGS ARE PROVIDED. DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE FLUSH TRANSITION BETWEEN THE STREET AND THE SIDEWALK.

DETECTABLE WARNING SURFACE DETAIL
N.T.S.



- NOTES:**
1. THE CONTRACTOR SHALL CONSTRUCT ROADWAY STRIPING AS INDICATED WITHIN THE CONSTRUCTION PLANS. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE STRIPING LOCATION FROM THE MUNICIPAL TRAFFIC SAFETY BUREAU AND ENGINEER.
 2. ALL TRAFFIC STRIPES AND MARKINGS SHALL BE THERMOPLASTIC.

CROSSWALK & STOP BAR LINE DETAIL
N.T.S.

Colliers Engineering & Design
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811 PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATIONS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION
1	3/15/24	REVISED IN-RSIDE DRIVE PROFILE

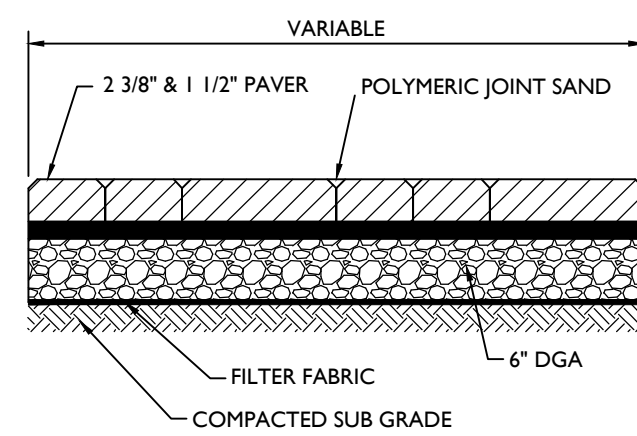
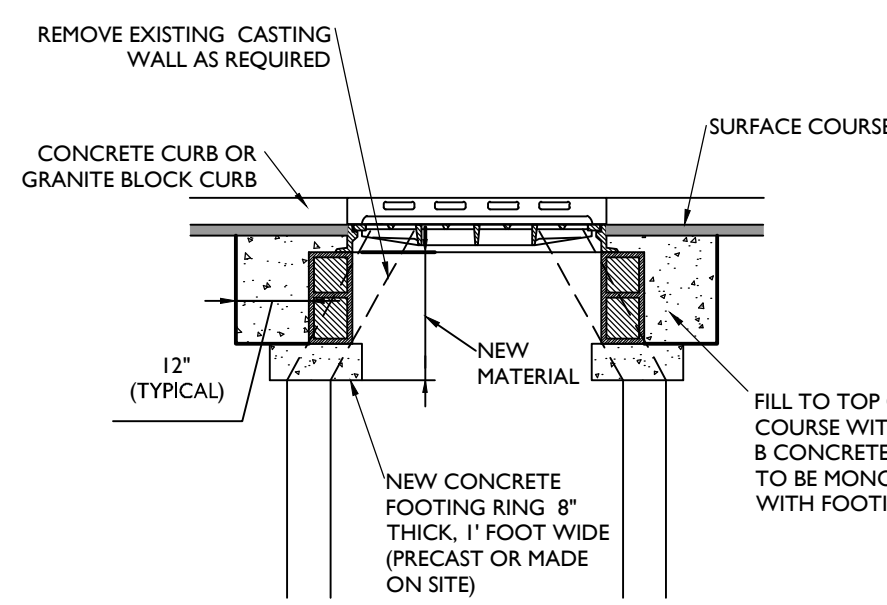
Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM
TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers Engineering & Design
MT. ARLINGTON
400 Valley Road, Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTANTS

SCALE: AS SHOWN	DATE: 09/21/23	DRAWN BY: BAK	CHECKED BY: BKP
PROJECT NUMBER: CDT0087	DRAWING NAME: C-DTL5		

SHEET TITLE: CONSTRUCTION DETAILS
SHEET NUMBER: 31 of 41

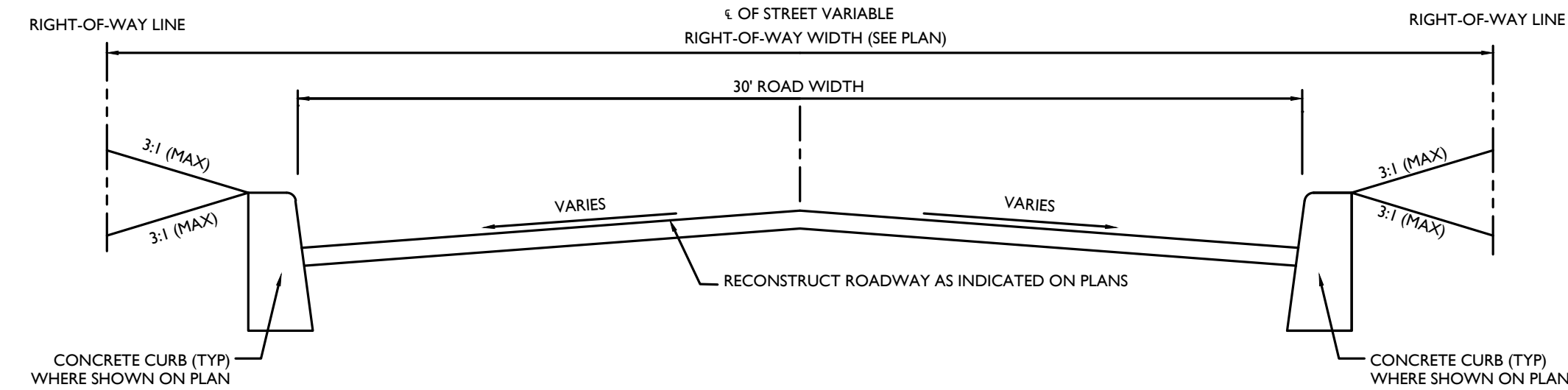


NOTES:

- CONTRACTOR TO SET TOP OF BEDDING SO THAT TOP OF PAVERS ARE AT FINISHED GRADE AFTER COMPACTION.
- PAVERS SHOULD BE RESET FLUSH WITH ADJACENT PAVEMENT.
- EXISTING PAVERS SHALL BE RESET AS SHOWN ON THE PLANS AND DIRECTED IN THE FIELD BY THE ENGINEER.
- ALL COSTS ASSOCIATED WITH THE RESETTING OF THE EXISTING PAVEMENT DRIVEWAY, INCLUDING REMOVAL AND REPLACEMENT OF BEDDING MATERIAL AND BASE COURSE SHALL BE INCLUDED IN THE SQUARE YARD PRICE BID FOR RESET PAVERS PAY ITEM.

RESET PAVEMENT DRIVEWAY AND SIDEWALK DETAIL

N.T.S.



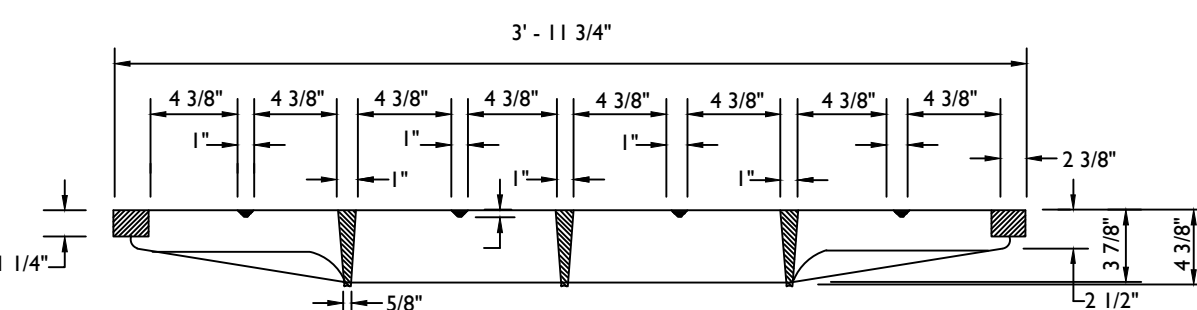
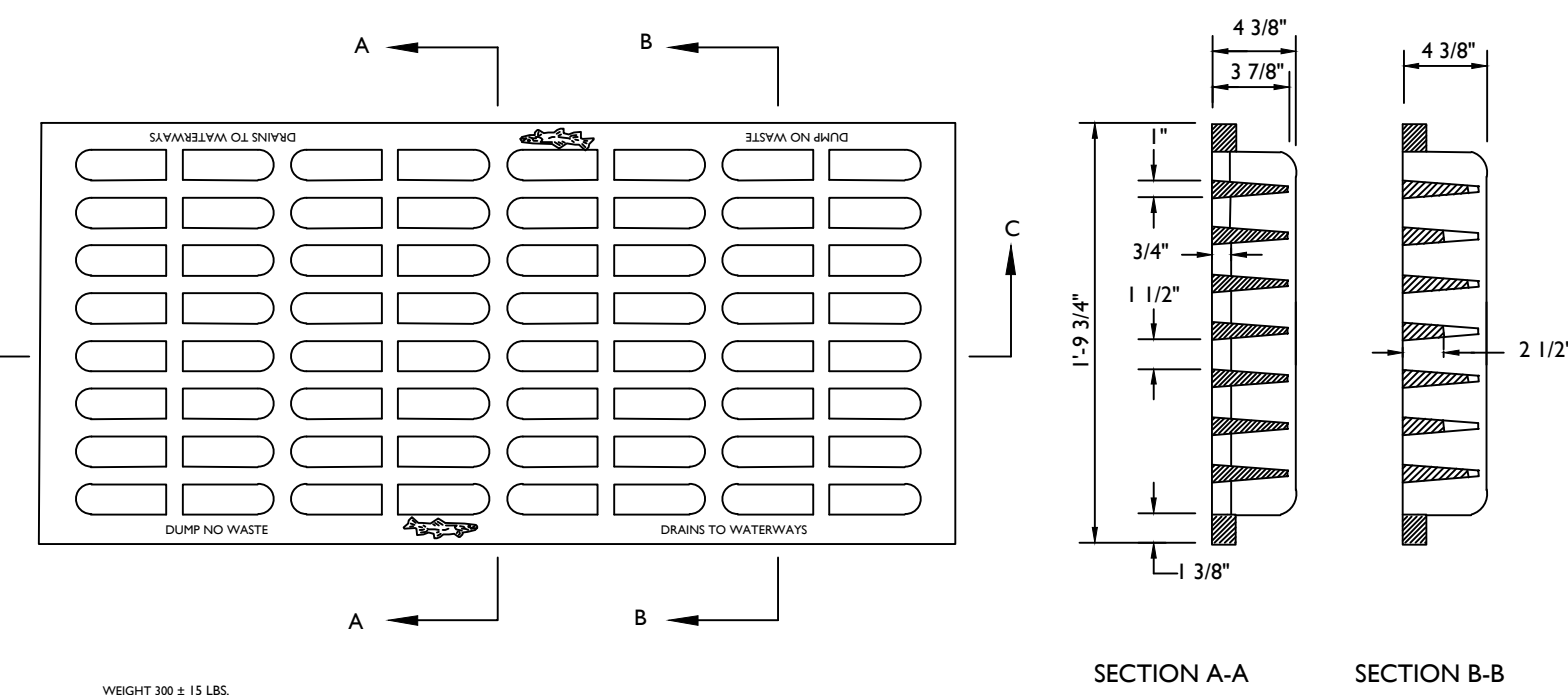
ASPHALT TYPE	MINIMUM COMPACTED THICKNESS	MAXIMUM COMPACTED THICKNESS PER LIFT
HOT MIX ASPHALT 9.5M64	1.5" - LEVELING COURSE, 2" SURFACE COURSE	4"
HOT MIX ASPHALT 19M64	3" - LEVELING COURSE, 4" BASE COURSE	6"

INSTRUCTIONS:

- WHEN PROPOSED HMA SURFACE IS 0" - 2" ABOVE EXISTING HMA SURFACE COURSE, MILL EXISTING HMA SURFACE COURSE AND PROPOSED SURFACE. INSTALL 9.5M64 2" COMPACTED LIFT THICKNESS. AFTER MILLING, PERFORM CRACK SEALING OR BASE REPAIR AS DIRECTED IN THE FIELD BY THE ENGINEER. PRIOR TO OVERLAYING SURFACE.
- WHEN PROPOSED HMA SURFACE IS 2" - 4" ABOVE EXISTING HMA SURFACE COURSE, INSTALL 9.5M64 2" - 4" COMPACTED LIFT THICKNESS. LIFTS MAY BE SEPARATED INTO MULTIPLE THINNER LIFTS AS LONG AS MINIMUM COMPACTED THICKNESSES ARE ADHERED TO. PERFORM CRACK SEALING OR BASE REPAIR AS DIRECTED IN THE FIELD BY THE ENGINEER. PRIOR TO OVERLAYING SURFACE.
- WHEN PROPOSED SURFACE IS 4" - 6" ABOVE EXISTING HMA SURFACE COURSE, INSTALL TWO LIFTS OF 9.5M64. ADHERING TO MINIMUM AND MAXIMUM COMPACTED LIFT THICKNESS DESCRIBED ABOVE.
- WHEN PROPOSED HMA SURFACE IS 6" - 10" ABOVE EXISTING HMA SURFACE COURSE, INSTALL DENSE GRADED AGGREGATE FROM THE TOP OF THE EXISTING HOT MIX ASPHALT PAVEMENT SECTION TO 6" BELOW THE FINAL GRADE. A LIFT OF 19M64 AND A LIFT OF 9.5M64. ADHERING TO MINIMUM AND MAXIMUM COMPACTED LIFT THICKNESS DESCRIBED ABOVE. LIFTS MAY BE SEPARATED INTO MULTIPLE THINNER LIFTS AS LONG AS MINIMUM COMPACTED THICKNESSES ARE ADHERED TO.
- WHEN PROPOSED HMA SURFACE IS INSTALLED IN AN AREA WHERE THERE IS NO EXISTING HMA SURFACE COURSE, INSTALL THE SECTION DEPICTED IN THE FULL DEPTH REPAIR DETAIL.
- WHEN PROPOSED HMA SURFACE IS BELOW THE EXISTING HMA SURFACE, REMOVE THE EXISTING SECTION USING MILLING, PAVEMENT REMOVAL AND EXCAVATION UNLESS DIRECTED OTHERWISE BY THE ENGINEER. INSTALL THE SECTION DEPICTED IN THE FULL DEPTH REPAIR DETAIL, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- INSTALLATION OF HMA SHALL BE REIMBURSED BY THE TON FOR THE HMA INSTALLED. NO SEPARATE PAYMENT SHALL BE MADE FOR INSTALLING MULTIPLE LIFTS OF HMA. INCLUDE COSTS IN HOT MIX ASPHALT PAY ITEMS.

TYPICAL ROAD SECTION

N.T.S.

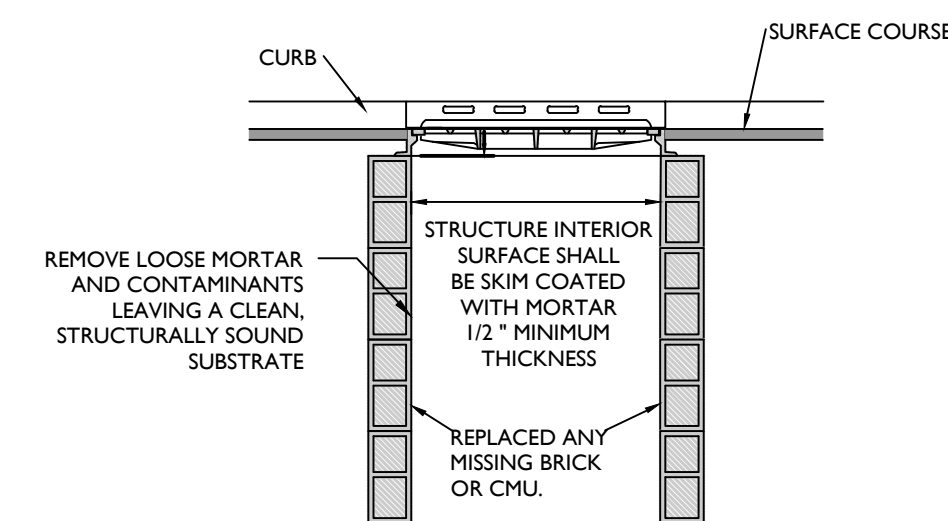


NOTES: DIMENSION, WEIGHTS AND OTHER CRITERIA SHOWN ON THESE DETAILS ARE FOR CLASS 35B CAST IRON.

BICYCLE SAFE GRATE (CAST IRON)

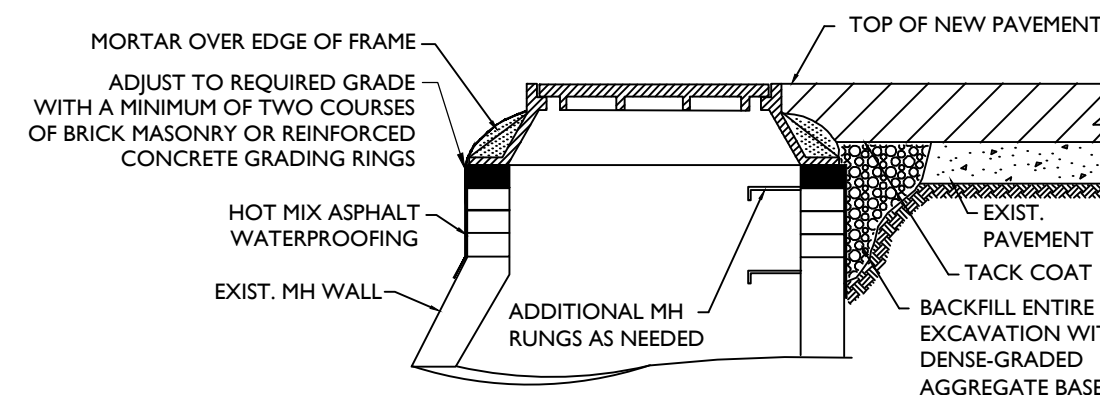
(CAMPBELL FOUNDRY PATTERN NO. 2618 OR APPROVED EQUAL)

N.T.S.



REPAIR INTERIOR OF DRAINAGE STRUCTURE

N.T.S.

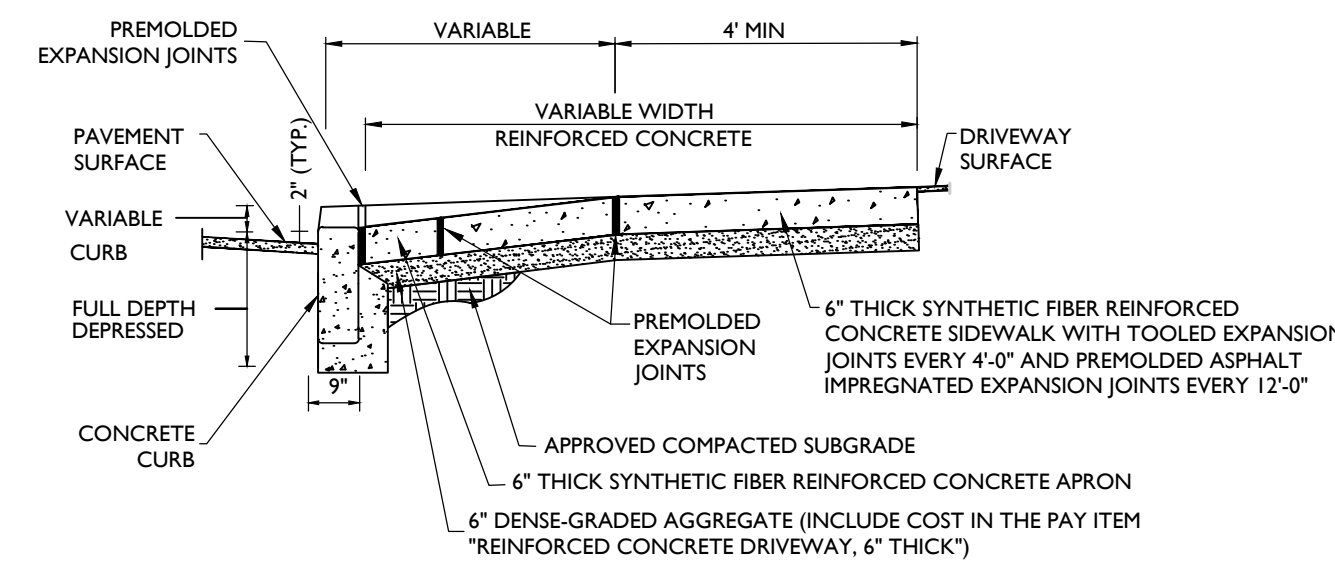
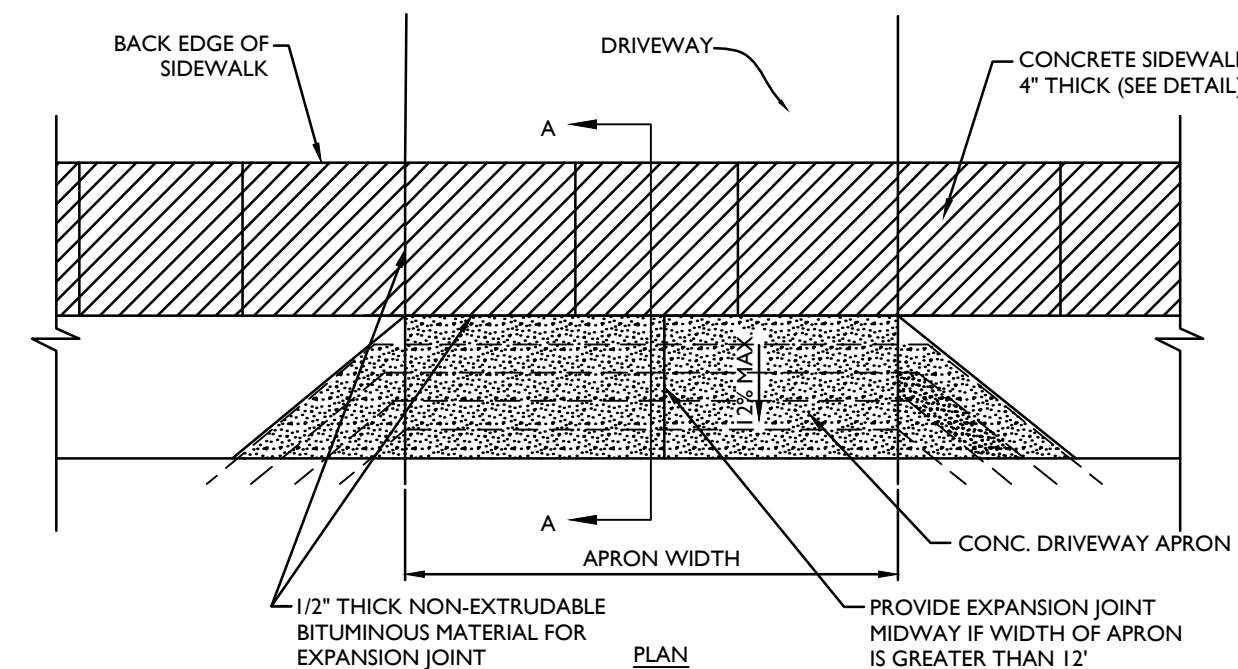


NOTES: FRAMES AND COVERS: CAST IRON MINIMUM CLASS 25 CONFORMING TO ASTM A48, AND AS FOLLOWS:

- CASTINGS TO BE FREE FROM SCALE, LUMPS, BLISTERS AND SANDHOLES.
 - MACHINE CONTACT SURFACES TO PREVENT ROCKING.
 - THOROUGHLY CLEAN AND HAMMER INSPECT.
 - CAPABLE OF WITHSTANDING AASHTO H-20 LOADING UNLESS OTHERWISE INDICATED OR SPECIFIED.
 - COVERS FOR SEWER MANHOLES SHALL BE MARKED "SEWER".
 - COVERS FOR DRAIN MANHOLES SHALL BE MARKED "DRAIN".
 - STANDARD MANHOLE FRAMES AND COVERS SHALL BE PATTERN No. 1202B AS MANUFACTURED BY CAMPBELL FOUNDRY COMPANY OR APPROVED EQUAL.
- BITUMINOUS WATERPROOFING MATERIAL:
- H.B. TNECOL 46-465, BY TNECOL COMPANY.
 - AMERCOAT 78HB, BY AMERON INTERNATIONAL.
 - BITUMASTIC SUPER SERVICE BLACK, BY CARBOLINE OR ACCEPTABLE EQUIVALENT PRODUCT.

RESET EXISTING CASTING (MANHOLE)

N.T.S.

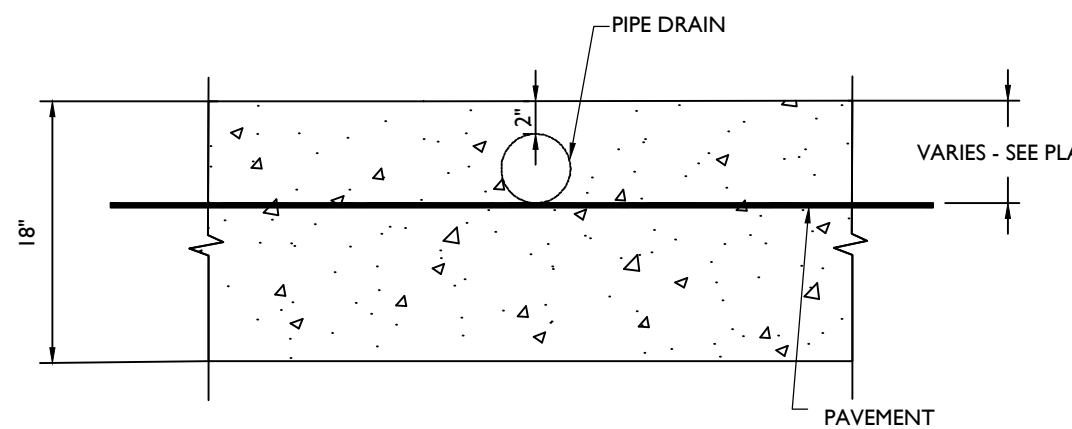


NOTES:

- CONCRETE PAD SHALL BE 6" THICK FIBER REINFORCED CONCRETE, WITH A 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI AND INCLUDE 6" THICK DENSE GRADED AGGREGATE BEDDING ON COMPACTED SUBGRADE.
- CONCRETE SLAB SHALL INCLUDE SYNTHETIC FIBER REINFORCEMENT.
- SYNTHETIC FIBER REINFORCEMENT SHALL BE FIBRILLATED POLYPROPYLENE MICRO-FIBER, PSI FIBERSTRAND F, AS MANUFACTURED BY EUCILD CHEMICAL, OR APPROVED EQUAL.
- SYNTHETIC FIBER DOSAGE RATE SHALL BE 1.5 LBS/CY.
- CONCRETE SHALL HAVE BROOM FINISH.

CONCRETE DRIVEWAY, REINFORCED 6" THICK

N.T.S.

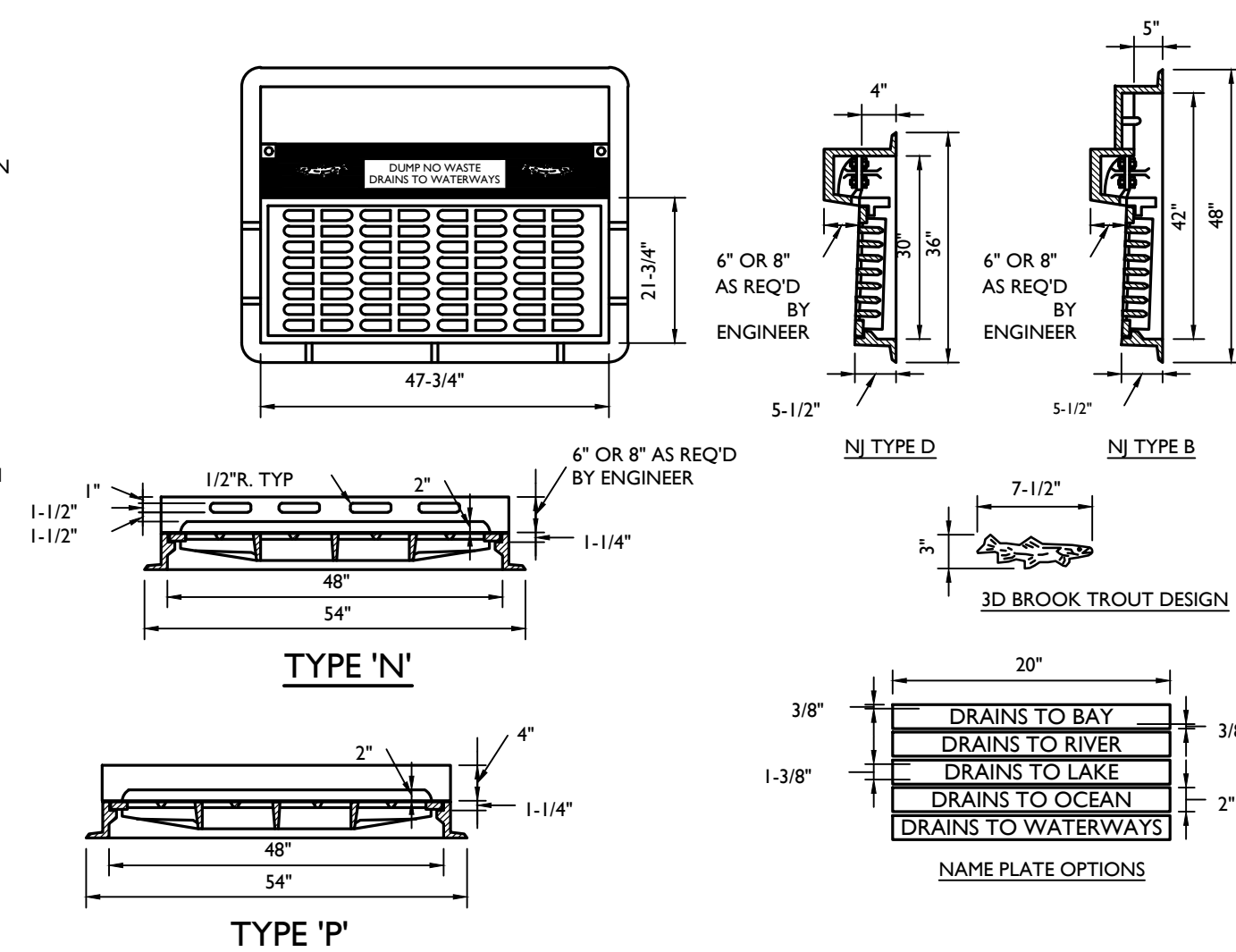


NOTES:

- ALL STORM PIPES DISCHARGING TO THE SURFACE WITHIN THE LIMITS OF CURB REPLACEMENT SHALL BE EXTENDED TO THE CURB AND DISCHARGE THROUGH THE CURB, WITH THE EXCEPTION OF ANY ROOF LEADERS TO BE DIRECTLY CONNECTED TO EXISTING OR PROPOSED SUBGRADE STORMWATER INFRASTRUCTURE.

PIPE DRAIN DETAIL

N.T.S.

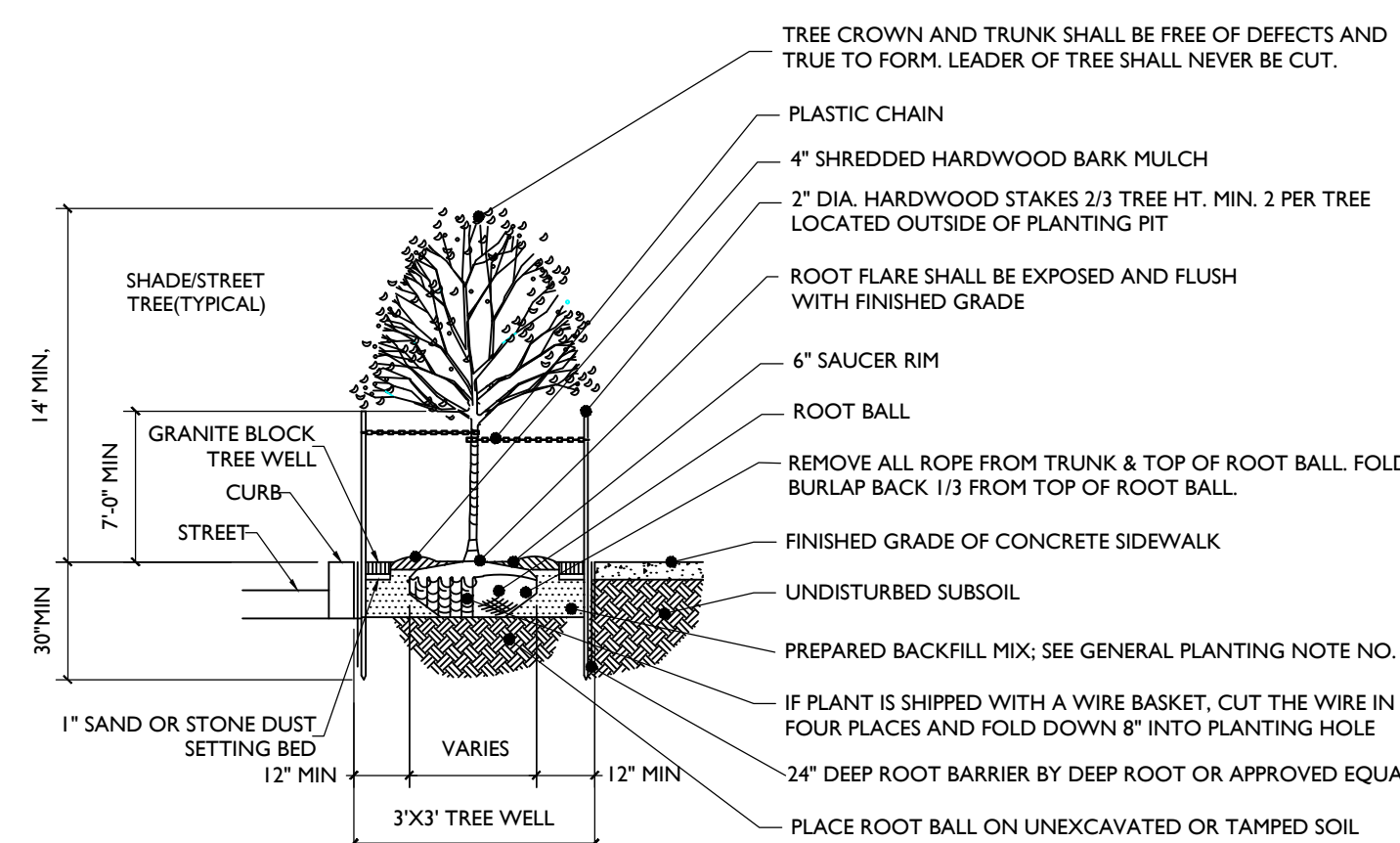


NOTES:

- MATERIAL: GRAY CAST IRON ASTM A48-83, CLASS 30B
- AASHTO H-20-44 HIGHWAY LOADING
- SUPPLIED WITHOUT SURFACE COATING
- NAME PLATE SHALL READ "DRAINS TO WATERWAYS"

CURB PIECE (TYPE 'N' & 'P') DETAIL

N.T.S.



NOTES:

- NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
- PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.

STREET TREE PLANTING DETAIL

N.T.S.

REV	DATE	DESCRIPTION
1	3/15/24	REVISED INTERIOR DRIVE PROFILE

Kevin E. Boyer
Kevin E. Boyer
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE49974
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.#. #: 24GA27986500

CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

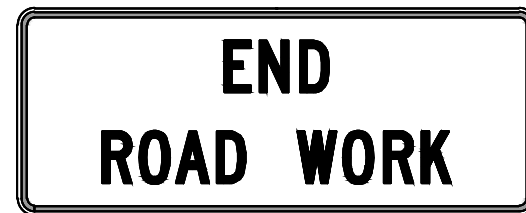
Colliers
Engineering & Design
MT. ARLINGTON
400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE	DATE	DRAWN BY	CHECKED BY
AS SHOWN	09/21/23	BAK	BKP

PROJECT NUMBER	DRAWING NAME
CDT0087	C-DTL5

CONSTRUCTION DETAILS

SHEET NUMBER: 32 of 41



G20-2A
60" x 24"
(10 S.F.)



M4-9L (LEFT)
M4-9R (RIGHT)
30" x 24"
(5 S.F.)

M4-9 (L OR R) (S)
48" x 36"
(12 S.F.)



M4-9LX (LEFT)
M4-9RX (RIGHT)
30" x 24"
(5 S.F.)

M4-9 (L OR R) (XS)
48" x 36"
(12 S.F.)



M4-9X
30" x 24"
(5 S.F.)

M4-9X (S)
48" x 36"
(12 S.F.)



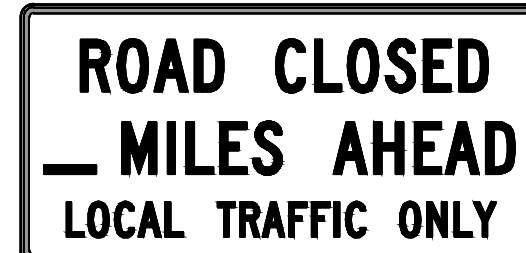
M4-10L (LEFT)
M4-10R (RIGHT)
48" x 18"
(6 S.F.)



M4-11
30" x 24"
(5 S.F.)



R11-2
48" x 30"
(10 S.F.)



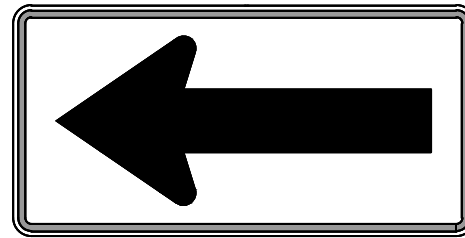
R11-3
60" x 30"
(12.5 S.F.)



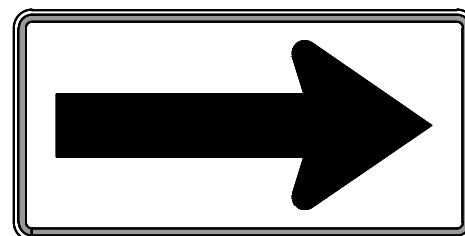
G20-2
60" x 24"
(10 S.F.)



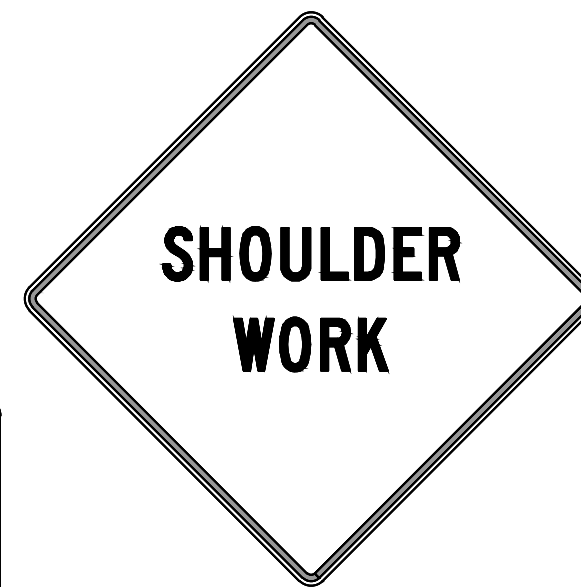
R11-4
60" x 30"
(12.5 S.F.)



W1-6(L)
48" x 30"

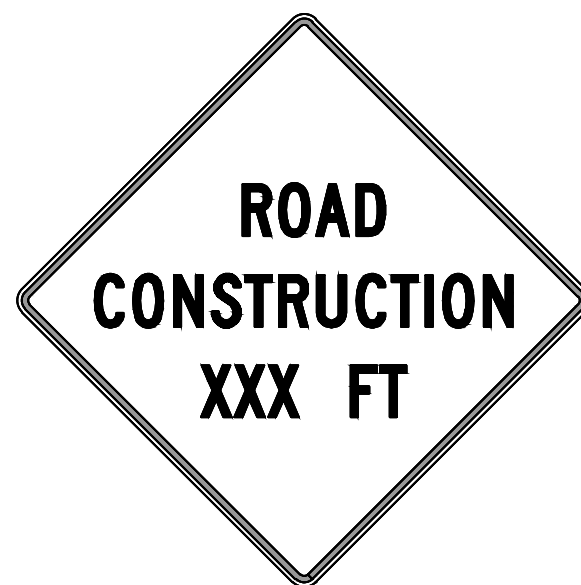


W1-6(R)
48" x 30"



W21-5
48" x 48"

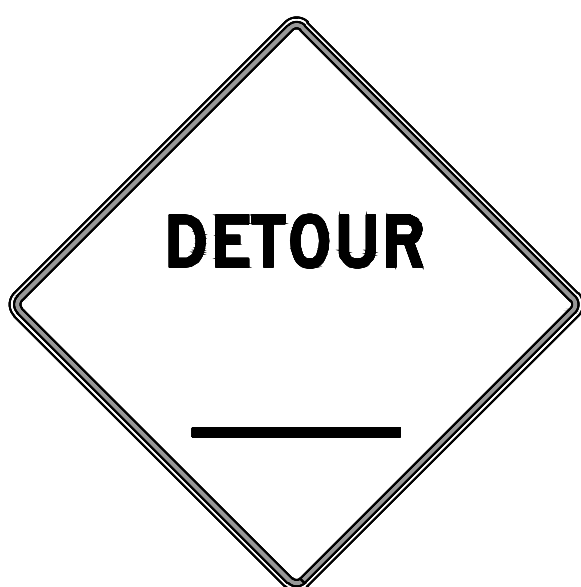
CONSTRUCTION SIGN DETAILS
N.T.S. CD-159-6.1



W20-1
48" x 48"



W20-1A
48" x 48"
(16 S.F.)



W20-2
48" x 48"
(16 S.F.)



W20-3
48" x 48"
(16 S.F.)



W99-2
48" x 48"
(16 S.F.)



W20-7A
48" x 48"
(16 S.F.)

SIGN NOTES:

- 1. DIMENSIONS, COLORS AND DETAILS OF VARIOUS SIZE SIGNS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGN PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
- 2. (S) REPRESENTS A SPECIAL SIZE SIGN.
- 3. LETTERS AND NUMERALS SHALL CONFORM TO THE CURRENT MANUAL "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- 4. THE CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE ENGINEER FOR THE DISTANCE TO BE USED ON THE ADVANCE WARNING SIGNS, AND FOR THE SPEED LIMIT TO BE USED ON THE R2-1 SIGN.
- 5. DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY LETTER & DISTANCE

Table with 2 columns: LETTER (A-E) and DISTANCE (1500, 1000, 500, MILE, MILES AHEAD, AHEAD)

BACKING MATERIAL:

- 1. ALUMINUM SHALL BE FLAT SHEET OF ALLOY AND TEMPER 5052-H38 OR 6061-T6:
 - A. 0.10" THICK FOR ALL CONSTRUCTION SIGNS EXCEPT SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.
 - B. 0.024" THICK FOR ALL CONSTRUCTION SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.

TEMPORARY SIGN SUPPORTS:

- 1. SIGN SUPPORTS SHALL BE OF WELL SEASONED LUMBER, S4S, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
- 2. WOOD POSTS SHALL HAVE A UNIFORM CROSS-SECTION AND SHALL NOT EXCEED THE FOLLOWING DIMENSIONS FOR:
 - SINGLE POST = 4" x 6"
 - TWO POSTS = 3" x 6" OR 4" x 5"
 - THREE POSTS = 3" x 5" OR 4" x 4"
- 4" x 6" WOOD POSTS SHALL BE MODIFIED BY DRILLING 1/8" DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- 3. NO BRACING IS PERMITTED. VERTICAL CLEARANCES FOR SIGNS MOUNTED ON WOOD SUPPORTS SHALL BE 7 FOOT MINIMUM. EMBEDMENT DEPTH FOR THE WOOD POST SHALL NOT EXCEED 3.5 FEET.
- 4. STEEL POSTS SHALL BE IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
- 5. TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA SHALL BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
- 6. WOOD POSTS TO BE USED ONLY ON TEMPORARY SIGN SUPPORT.

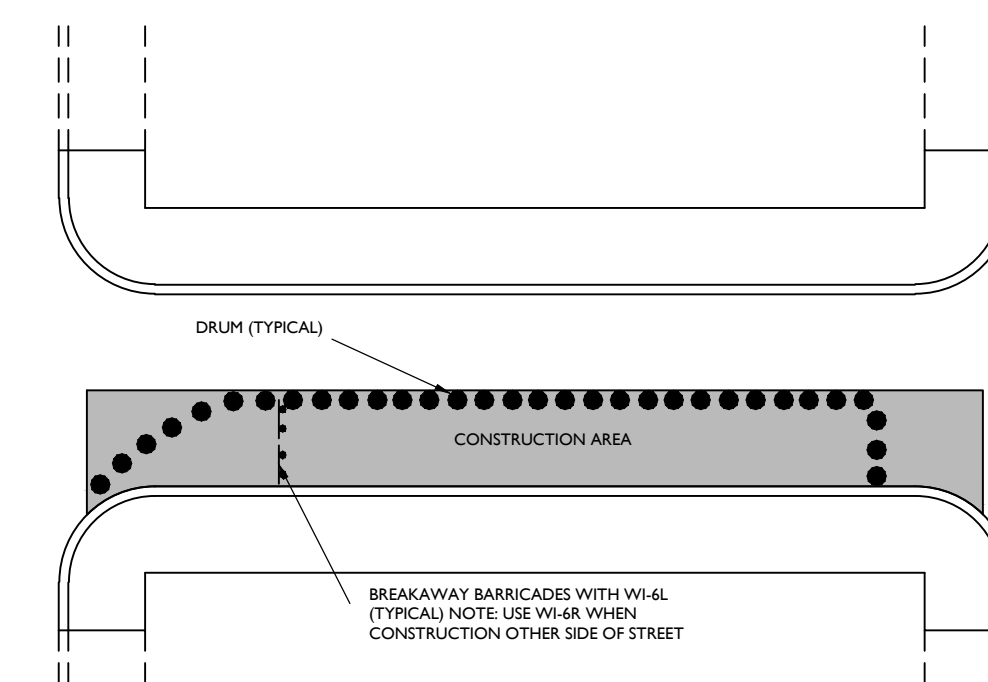
SIGN FACES:

- 1. SIGN FACES SHALL BE ASTM D 4956 TYPE VII OR VIII FLUORESCENT ORANGE SHEETING.

FASTENING:

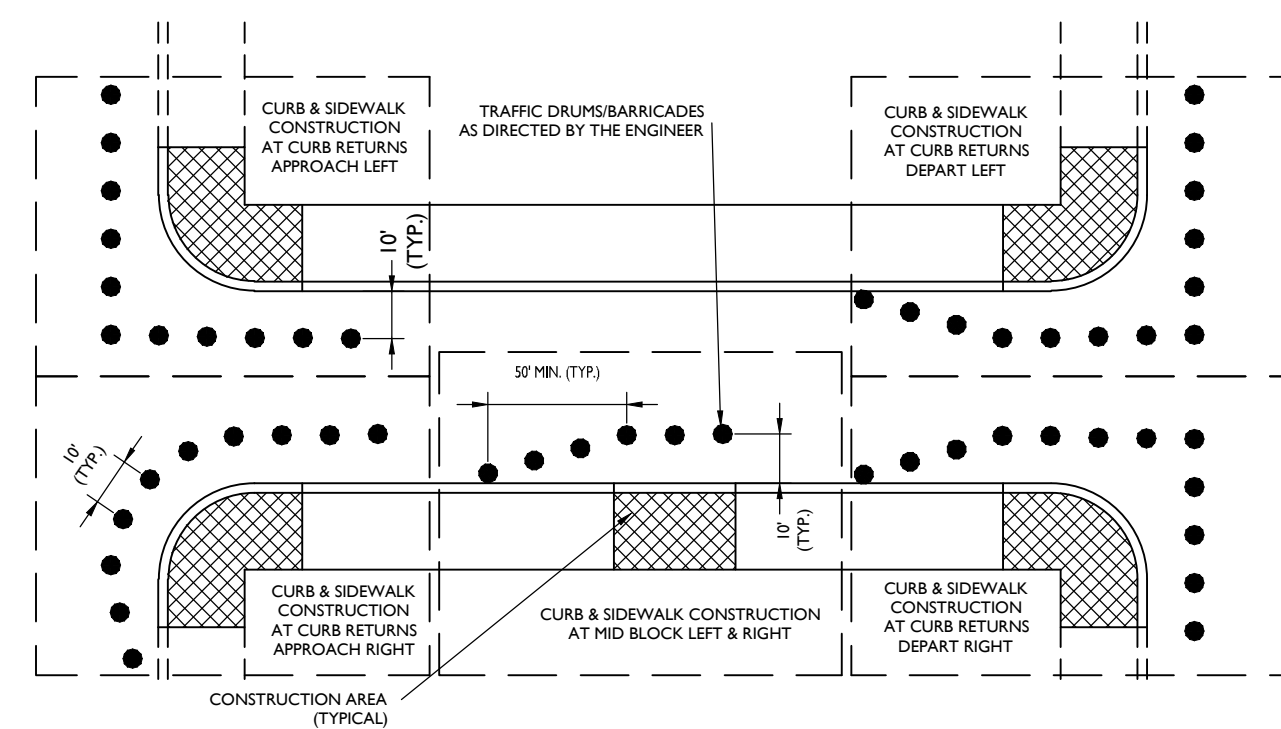
- 1. ALL SIGNS SHALL BE SECURELY FASTENED TO THEIR SUPPORTS WITH BOLTS, NUTS AND WASHERS IN ACCORDANCE WITH THE SPECIFICATIONS.

CONSTRUCTION SIGNS NOTES
N.T.S. CD-159-6.1



- NOTE:
 - 1. TRAFFIC CONTROL FOR MILLING AND OVERLAY DETAIL SHALL BE USED IN CONJUNCTION WITH ENCLOSED STANDARD TRAFFIC CONTROL DETAILS.

TRAFFIC CONTROL FOR MILLING & OVERLAY DETAIL
N.T.S.



- NOTE:
 - 1. TRAFFIC CONTROL FOR CURB & SIDEWALK DETAIL SHALL BE USED IN CONJUNCTION WITH ENCLOSED STANDARD TRAFFIC CONTROL DETAILS.

TRAFFIC CONTROL FOR CURB & SIDEWALK CONSTRUCTION DETAIL
N.T.S.

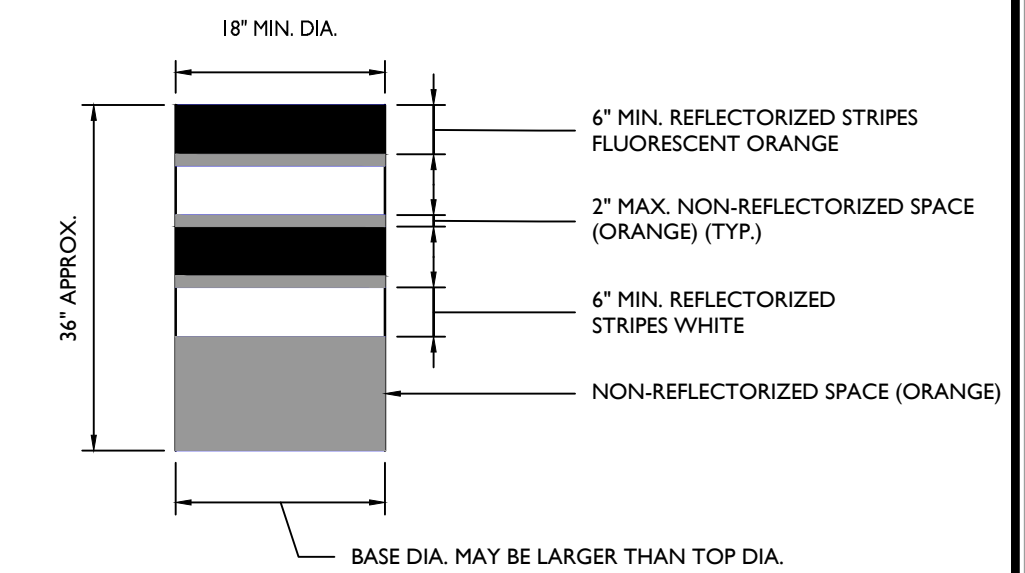
MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

- 1. ALL DEVICES AND PROCEDURES FOR THE MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS. THE CONTRACTOR SHALL PLAN AND CARRY OUT HIS WORK TO PROVIDE FOR THE CONVENIENT AND SAFE PASSAGE OF ALL VEHICULAR AND PEDESTRIAN TRAFFIC.
- 2. CONTRACTOR TO DEVELOP DETAILED MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR REVIEW BY THE ENGINEER PRIOR TO CONSTRUCTION.
- 3. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDED TRAFFIC CONTROL PROCEDURES IF THE CONTRACTOR DESIRES TO CHANGE THE PROCEDURE. HE SHALL PRESENT HIS CHANGES IN WRITING TO THE ENGINEER FOR REVIEW AND APPROVAL. THERE MAY BE UTILITY RELOCATIONS, ADJUSTMENTS AND IMPROVEMENTS WHICH ARE NECESSITATED BY THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH EACH OF THE UTILITY COMPANIES LOCATED WITHIN THE PROJECT.
- 4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING MAINTENANCE AND PROTECTION OF TRAFFIC THROUGHOUT THE DURATION OF CONSTRUCTION. THE COSTS FOR THE INDIVIDUAL DEVICES USED TO MAINTAIN AND PROTECT TRAFFIC SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE SPECIFIC TRAFFIC CONTROL DEVICES IN THE PROPOSAL. NO ADDITIONAL PAYMENT WILL BE MADE FOR RELOCATING THE DEVICES AS REQUIRED, OR AS DIRECTED BY THE ENGINEER, DURING THE COURSE OF CONSTRUCTION.
- 5. THE CONTRACTOR WILL NOT BE PERMITTED TO CLOSE DOWN THE ENTIRE STREET. THE CONTRACTOR SHALL PROVIDE MEANS OF ACCESS AT ALL TIMES FOR PEDESTRIANS AND VEHICULAR TRAFFIC AT ALL PRIVATE DRIVEWAYS AND OCCUPIED BUILDINGS AFFECTED BY THE WORK OF THIS CONTRACT. DURING CONSTRUCTION, IN THE VICINITY OF A DRIVEWAY, THE ACCESS WIDTH AT THE DRIVEWAY ENTRANCE SHALL BE PLAINLY MARKED BY LIGHTS, BARRICADES OR OTHER SUCH DEVICES APPROVED BY THE ENGINEER.
- 6. DURING CONSTRUCTION, ALL ROADS SHALL BE PROPERLY MAINTAINED TO ACCOMMODATE EMERGENCY VEHICLES AT ALL TIMES.
- 7. ALL BARRICADES SHALL BE TYPE III BREAKAWAY BARRICADES.
- 8. FILL MATERIAL FOR ESCAPE RAMPS SHALL BE ON-SITE MATERIAL. ALL COSTS FOR STORING, PLACING, MOVING, AND REMOVING FILLET MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR THE CLEARING SITE PAY ITEM.

DRUMS SHALL BE MADE OF ORANGE PLASTIC WITH A MINIMUM OF FOUR ALTERNATE FLUORESCENT ORANGE AND WHITE RETROREFLECTIVE STRIPES. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE STRIPES, THEY SHALL BE NO MORE THAN 2" WIDE. RETROREFLECTIVE SHEETING FOR STRIPES SHALL CONFORM WITH ASTM D 4956 TYPE VII OR VIII WITH S2 REQUIREMENTS.

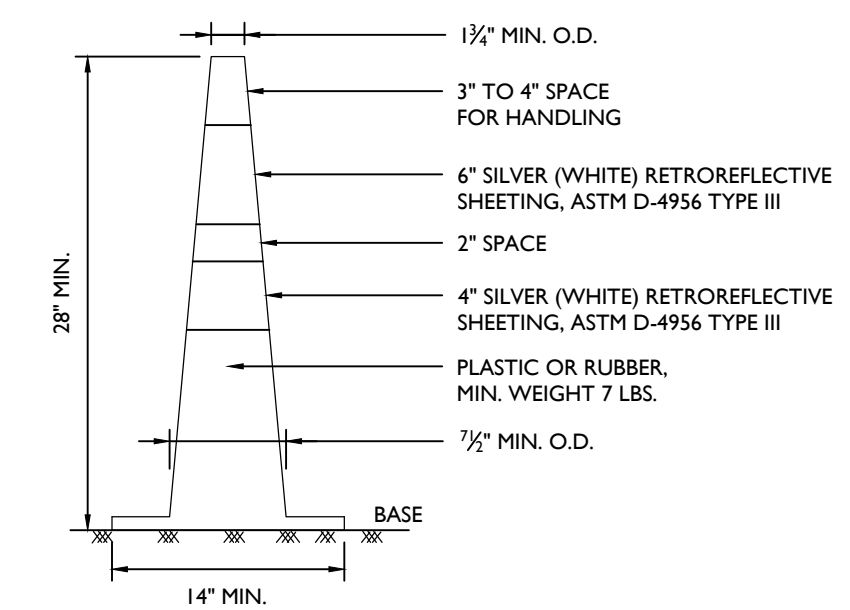
THE TOP OF THE DRUM SHALL NOT BE OPEN. DRUMS SHALL BE CONSTRUCTED TO INHIBIT ROLLING IF KNOCKED OVER.

THE REFLECTORIZED AREA OF DRUMS SHALL BE ROUND EXCEPT THAT OTHER SHAPES, WHICH PROVIDE THE SAME VISIBILITY AS AN 18 INCH DIAMETER ROUND DRUM REGARDLESS OF ORIENTATION, MAY BE USED.



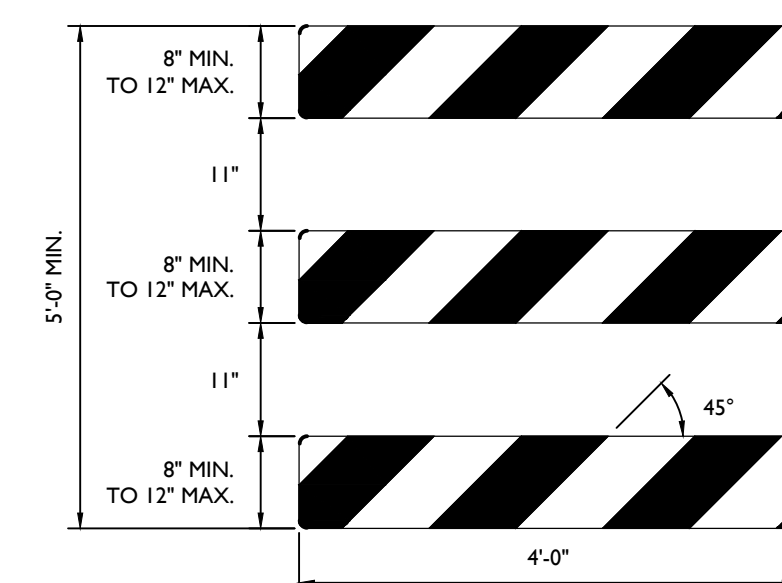
WHEN BALLAST IS REQUIRED BY THE ENGINEER, SAND SHALL BE USED. THE MAXIMUM WEIGHT OF THE BALLAST SHALL BE 50 LBS. AND BE LOCATED APPROXIMATELY AT GROUND LEVEL. ALTERNATE TYPES OF BALLAST SHALL BE APPROVED BY THE ENGINEER.

DRUM
N.T.S. CD-159-1.1



- NOTES:
 - 1. TRAFFIC CONES SHALL BE PREDOMINATELY ORANGE IN COLOR.
 - 2. BASES MAY BE OF BREAKAWAY BALLASTED TYPE.
 - 3. MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER.

TRAFFIC CONE DETAIL
N.T.S. CD-159-1.2



TYPE III BARRICADE - FRONT VIEW

- NOTES:
 - 1. THE 8" MIN. X 48" OR 12" MAX. X 48" BARRICADE RAILS SHALL BE FABRICATED FROM 0.125" MAX. PLASTIC SHEETING AND SHALL BE ATTACHED 4 PER RAIL WITH 1 INCH NO. 14 PAN HEAD METAL SCREWS OR PLASTIC RIVETS. ALL CORNERS SHALL BE ROUNDED.
 - 2. ORANGE AND SILVER (WHITE) STRIPES SHALL BE RETROREFLECTIVE SHEETING, ASTM D 4956 TYPE III, AS SHOWN FOR CONSTRUCTION SIGNS. ALTERNATE ORANGE AND SILVER (WHITE) STRIPES 6" WIDE SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS.
 - 3. IF NECESSARY, THE SANDBAGS SHALL BE FABRICATED AND PLACED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
 - 4. THE FRAMING FOR BARRICADE PANELS SHALL BE NCHRP-350 CRASHED TESTED AND FHWA APPROVED.

BREAKAWAY BARRICADES
N.T.S. CD-159-1.3



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Revision table with columns: REV, DATE, DRAWN BY, DESCRIPTION

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NEW JERSEY LICENSED PROFESSIONAL ENGINEER
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CONSTRUCTION PLANS
FOR
2023 ROAD PROGRAM

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

MT. ARLINGTON
400 Valley Road,
Suite 304
Mt. Arlington, NJ 07856
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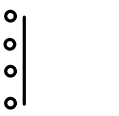
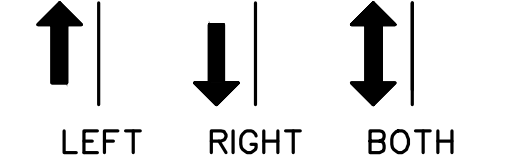

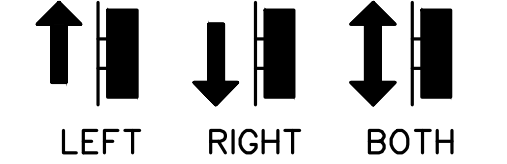


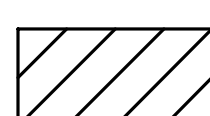

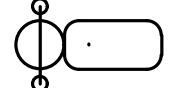
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SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER
33 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

LEGEND

-  BREAKAWAY BARRICADES
-  BREAKAWAY BARRICADES WITH SIGN
-  CONSTRUCTION SIGNS
-  DRUMS
-  CONE
-  PRECAST CONCRETE CURB CONSTRUCTION BARRIER (TYPE SPECIFIED)
-  DIRECTION OF TRAFFIC FLOW
-  TRAFFIC DIRECTOR, FLAGGER
-  TRAILER MOUNTED MOUNTED ARROW BOARD SHOWING CAUTION MODE
-  ILLUMINATED FLASHING ARROW MOUNTED ON TOWING VEHICLE SHOWING ARROW PATTERN (Left, Right, Both)
-  TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING CAUTION MODE
-  TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING ARROW PATTERN (Left, Right, Both)
-  TEMPORARY CRASH CUSHION, INERTIAL BARRIER SYSTEM
-  TEMPORARY CRASH CUSHION, (all other approved)
-  BUFFER ZONE
-  WORK AREA
-  PAINT STRIPING TRUCK OR OTHER OPERATING VEHICLE

GENERAL NOTES:

1. ADVANCE WARNING SIGNS DISTANCES, AND TAPER LENGTHS MAY BE EXTENDED, AT DIRECTION OF THE DEPARTMENT, TO ADJUST FOR REDUCED VISIBILITY DUE TO HORIZONTAL AND VERTICAL CURVATURE OF THE ROADWAY.
2. THE APPROXIMATE LOCATIONS OF THE ILLUMINATED FLASHING ARROW BOARDS ARE SHOWN ON THE TRAFFIC CONTROL PLANS. THESE LOCATIONS MAY BE MODIFIED AS APPROVED BY RE TO ADJUST FOR VISIBILITY DUE TO HORIZONTAL OR VERTICAL CURVATURE OF THE ROADWAY OR TO POSITION AT A SAFER LOCATION. ILLUMINATED FLASHING ARROW BOARDS ARE TO BE USED FOR TEMPORARY LANE CLOSINGS AND AT LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLANS.
3. PRIOR TO ANY ROAD CONSTRUCTION, TRAFFIC CONTROL SIGNS AND DEVICES SHALL BE IN PLACE.
4. RAMPS AND/OR SIDE STREETS ENTERING THE ROADWAY AFTER THE FIRST ADVANCE WARNING SIGN SHALL BE PROVIDED WITH AT LEAST ONE W20-IF SIGN (ROAD WORK AHEAD) AS A MINIMUM.
5. ALL EXISTING ROAD SIGNS, PAVEMENT MARKINGS AND/OR PLOWABLE PAVEMENT REFLECTORS WHICH CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLAN SHALL BE COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE RE.
6. CONFLICTING OR NON-OPERATING SIGNAL INDICATIONS ON EITHER THE EXISTING, TEMPORARY, OR PROPOSED TRAFFIC SIGNAL SYSTEMS SHALL BE BAGGED OR COVERED.
7. MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - PART VI "STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND INCIDENT MANAGEMENT OPERATIONS", UNLESS OTHERWISE NOTED IN THE PLANS AND SPECIFICATIONS.
8. CONSTRUCTION SIGN W99-2 (GIVE US A BRAKE) SHALL BE LOCATED 200 FEET IN ADVANCE OF PROJECT LIMITS.
9. A W1-6 (ARROW) SIGN MOUNTED ON A BREAKAWAY BARRICADE AND CENTERED ON THE CLOSED WIDTH SHALL BE LOCATED 100 FEET BEYOND EACH INTERSECTION OR MAIN ACCESS POINT WITHIN THE AREA OF A LANE OR SHOULDER CLOSURE.
10. CONSTRUCTION SIGNS R11-4 (ROAD CLOSED TO THRU TRAFFIC) SHALL BE PLACED AT THE INTERSECTING STREETS WHICH ARE CLOSED TO TRAFFIC BECAUSE OF CONSTRUCTION.
11. CONSTRUCTION SIGNS W8-9A (SYMBOL FOR UNEVEN PAVEMENT) AND W8-14A (GROOVED PAVEMENT) SHALL BE USED WHEN SUCH PAVEMENT CONDITIONS EXIST. THE PLACEMENT OF THESE SIGNS SHALL BE AS DIRECTED BY THE RE.
12. MOVING WORK AREAS IN A LANE CLOSURE REQUIRE A TRAILER MOUNTED ILLUMINATED FLASHING ARROW TO REMAIN AT THE END OF THE TAPER, THE TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION THAT SHALL MOVE WITH THE WORK AREAS TO KEEP A 70 FEET MIN. AND 150 FEET MAX. BUFFER IN ADVANCE OF EACH WORK AREA.
13. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE SAFE ACCESS OF CONSTRUCTION VEHICLES THROUGHOUT THE WORK SITE WHERE SPACE CONSTRAINTS PREVENT THE USE OF LANE CLOSURES. THE PLAN SHALL BE SUBMITTED TO THE RE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
14. TRAFFIC SAFETY SERVICES SHALL BE USED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL.
15. ALL EXCAVATED AREAS WITHIN OR ADJACENT TO THE ROADWAY SHALL BE BACKFILLED AND PLACED ON AT LEAST 6H : 1V SLOPE BEFORE THE END OF EACH WORK DAY. OTHER EXCAVATED AREA WITHIN THE CLEAR ZONE SHALL BE BACKFILLED.
16. WHERE REQUIRED, THE CONTRACTOR SHALL MAKE PROVISIONS FOR MAINTAINING PEDESTRIAN CROSSING LOCATIONS AND TYPE AS DIRECTED BY THE RE.
17. BITUMINOUS CONCRETE PLACED DURING THE VARIOUS CONSTRUCTION STAGES SHALL BE TRANSITIONED ON A MINIMUM 20H : 1V SLOPE TO MEET THE ADJACENT EXISTING GRADE AT THE LONGITUDINAL AND TRANSVERSE LIMITS OF THE STAGE CONSTRUCTION AREAS UNLESS OTHERWISE NOTED ON THE STAGE CONSTRUCTION PLANS.
18. THE PLACEMENT AND OR RELOCATION OF PRECAST CONCRETE CURB, CONSTRUCTION BARRIER SHALL BE DONE DURING APPROVED OFF-PEAK HOURS WHEN TRAFFIC MAY BE REDUCED TO ONE LANE IN EACH DIRECTION.
19. CONSTRUCTION ZONE SPEED LIMIT WILL BE DETERMINED BY THE TRAFFIC SIGNAL & SAFETY ENGINEERING, REGIONAL TRAFFIC ENGINEER - WORK ZONE, AT THE TIME OF OR DURING CONSTRUCTION, AS REQUESTED BY THE R.E..
20. THE SPEED LIMIT, R2-1 (BLACK ON WHITE) WITH ADDED WORK ZONE PLATE (BLACK ON ORANGE) SIGNS SHALL BE LOCATED THROUGH WORK AREAS AS DIRECTED BY THE TRAFFIC SIGNAL & SAFETY ENGINEERING REGIONAL TRAFFIC ENGINEER - WORK ZONE.
21. THE REDUCED SPEED AHEAD SIGN, W3-5(S) (BLACK ON ORANGE) SHALL BE LOCATED IN ADVANCE OF SPEED LIMIT R2-1 SIGNS WHICH REDUCE THE NORMAL POSTED SPEED LIMIT THROUGH THE CONSTRUCTION ZONE.
22. TRAFFIC FINES DOUBLED IN WORK AREA R(NJ)5-17(S) , 4 FEET BY 2.5 FEET SIGN SHALL BE LOCATED 500 FEET AFTER THE FIRST ADVANCE WARNING SIGN, (W20 SERIES) AT EACH WORK AREA LOCATED WITHIN URBAN AREAS. THIS SIGN SHALL ALSO BE USED ON PROJECTS REQUIRING MOVING OPERATIONS IN WHICH CASE THE SIGN SHALL BE MOUNTED ON A SLOW MOVING CONSTRUCTION VEHICLE.
23. THE FINAL HMA SURFACE PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL THE FINAL STAGE OF THE PROJECT UNLESS OTHERWISE DIRECTED BY THE RE OR INDICATED ON THE PLANS. MANHOLES AND INLETS SHALL BE SET TO FINISHED GRADE AND TEMPORARY PAVEMENT RAMPS ARE TO BE CONSTRUCTED AROUND THEM WITH A MINIMUM 20H : 1V SLOPE IN ALL DIRECTIONS USING HOT MIX ASPHALT PAVEMENT. THIS TEMPORARY MATERIAL WILL BE REMOVED IMMEDIATELY PRIOR TO PLACING THE SURFACE COURSE.
24. TRAFFIC CONTROL DEVICES FOR LANE CLOSURES INCLUDING SIGNS, CONES, BARRICADES, ETC. SHALL BE PLACED AS SHOWN ON PLANS. SIGNS SHALL NOT BE PLACED WITHOUT ACTUAL LANE CLOSURES AND SHALL BE IMMEDIATELY REMOVED UPON REMOVAL OF THE CLOSURES.
25. CONES MAY BE SUBSTITUTED FOR DRUMS AND INSTALLED UPON THE APPROVAL OF THE RE.
26. TRAFFIC IMPACT NOTICES AND CHANGES
 - A. TERMS: WHEN THE FOLLOWING TERMS ARE USED, THE INTENT AND MEANING SHALL BE AS FOLLOWS:
 - i. IMPACTS TO NORMAL TRAFFIC FLOW - WORK THAT REQUIRES A PORTION OF THE PAVED ROADWAY BEING BLOCKED OR CLOSED WITH SAFETY DEVICES OR VEHICLES, INCLUDING, BUT NOT LIMITED TO, FULL OR PARTIAL LANE CLOSURES, FULL OR PARTIAL RAMP CLOSURES, SHOULDER CLOSURES, MOVING OPERATIONS, SUCH AS TRAFFIC STRIPING OR SWEEPING, LANE SHIFTS, OR ALTERNATING TRAFFIC. THIS APPLIES EVEN WHEN DETOURS ARE PROVIDED.
 - ii. TEMPORARY LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH IS ROUTINELY SET UP AND REMOVED ON A DAILY BASIS.
 - iii. PERMANENT LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH REMAINS IN PLACE CONTINUOUSLY FOR 24 HOURS OR MORE.
 - B. ADVANCE NOTICES

FOR THE INITIAL START OF WORK THAT REQUIRES "IMPACTS TO NORMAL TRAFFIC FLOW", THE CONTRACTOR SHALL NOTIFY THE RE IN WRITING, ON THE ADVANCE FORM TO-103 PROVIDED BY THE DEPARTMENT, OF THE PROPOSED DATE. THE NOTICE SHALL BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, BEFORE THE PROPOSED DATE. START OF WORK THAT IMPACTS NORMAL TRAFFIC FLOW WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR SHALL CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE SEVEN (AND/OR FOURTEEN) CALENDAR DAYS BEFORE STARTING THE ESTABLISHMENT OF THE TRAFFIC CONTROL MEASURES FOR THE TRAFFIC IMPACT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CAN NOT BE COMPLETED ON THE PROPOSED DATE.

FOR A "PERMANENT LANE CLOSURE", THE CONTRACTOR SHALL NOTIFY THE RE IN WRITING, ON ADVANCE FORM TO-103, OF THE PROPOSED DATE A NEW TRAFFIC PATTERN WILL BE ESTABLISHED. THE NOTICE SHALL BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, IN ADVANCE OF THE PROPOSED DATE. START OF A NEW TRAFFIC PATTERN WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR SHALL CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE OF THE NEW TRAFFIC PATTERN SEVEN (AND/OR FOURTEEN) DAYS BEFORE STARTING TRAFFIC CONTROL MEASURES FOR THE ESTABLISHMENT OF THE NEW PATTERN. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CAN NOT BE COMPLETED ON THE PROPOSED DATE.

STARTING THE ESTABLISHMENT OF A NEW PERMANENT TRAFFIC PATTERN SHALL BEGIN NO EARLIER THAN 11:00 PM FRIDAY AND SHALL BE COMPLETED AND READY FOR OPERATIONS BY 6:00 PM THE FOLLOWING SUNDAY. THE ESTABLISHMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE LANE CLOSURE HOURS SPECIFIED IN THE CONTRACT.

ADVANCE NOTICES SENT PRIOR TO THE PRE-CONSTRUCTION MEETING SHALL BE ADDRESSED TO THE CONTACT PERSON AS SPECIFIED IN SUBSECTION 101.04 OF THE SPECIAL PROVISIONS.
 - C. PROGRESS NOTICES

ALL "IMPACTS TO NORMAL TRAFFIC FLOW" SCHEDULED FOR THE SEVEN DAY PERIOD STARTING ON THE FOLLOWING MONDAY SHALL BE SUBMITTED TO THE RE BY 9:00 AM OF EACH FRIDAY ON WEEKLY FORM TO-101 PROVIDED BY THE DEPARTMENT.

EACH DAY OF "TEMPORARY LANE CLOSURES" SHALL BE SUBMITTED TO THE RE BY 9:00 AM THE DAY IN ADVANCE OF THE START OF THOSE OPERATIONS ON DAILY FORM TO-102 PROVIDED BY THE DEPARTMENT.

"TEMPORARY LANE CLOSURES" FOR WEEKENDS SHALL BE SUBMITTED TO THE RE BY 9:00 AM ON THE IMMEDIATELY PRECEDING FRIDAY ON THE DAILY FORM TO-102 PROVIDED BY THE DEPARTMENT.
 - D. CHANGES TO THE SCHEDULED CLOSURES

REQUEST FOR A CHANGE TO THE TRAFFIC CONTROL REQUIREMENTS IN THE CONTRACT DOCUMENTS SHALL BE SUBMITTED IN WRITING TO THE RE AS FOLLOWS:

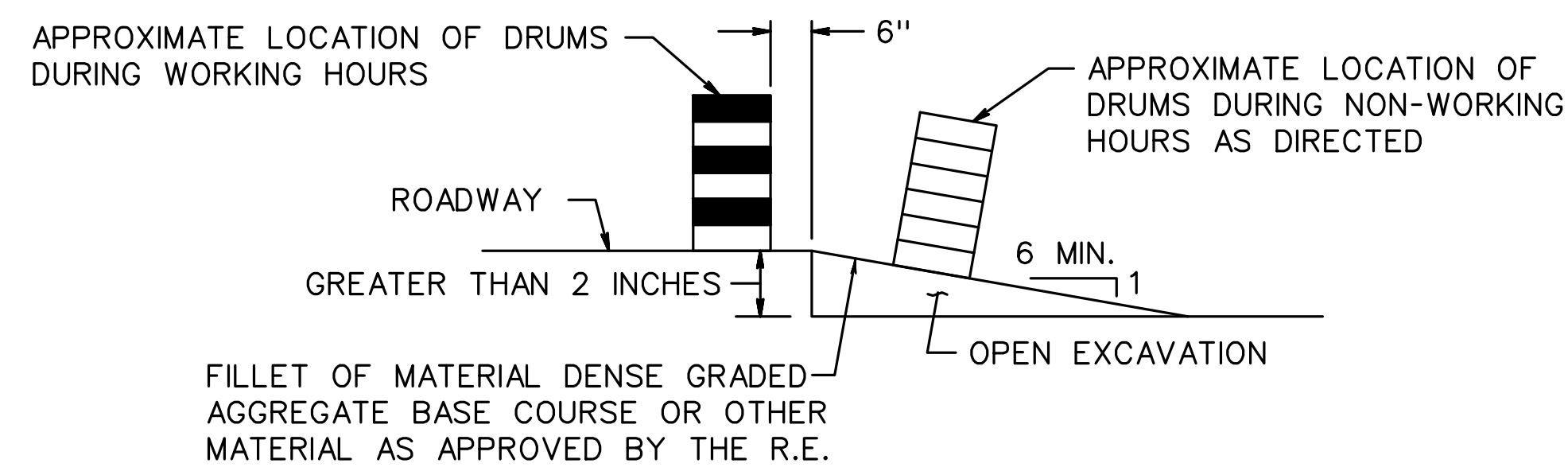
CHANGES TO THE SCHEDULED HOURS FOR "TEMPORARY LANE CLOSURES" SHALL BE SUBMITTED TO THE R.E. AT LEAST EIGHT CALENDAR DAYS IN ADVANCE OF WHEN THE CHANGE IS PROPOSED TO START.

OTHER PROPOSED CHANGES TO "TEMPORARY LANE CLOSURES" AND ALL CHANGES TO "PERMANENT LANE CLOSURES" SHALL BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.

TCO-1

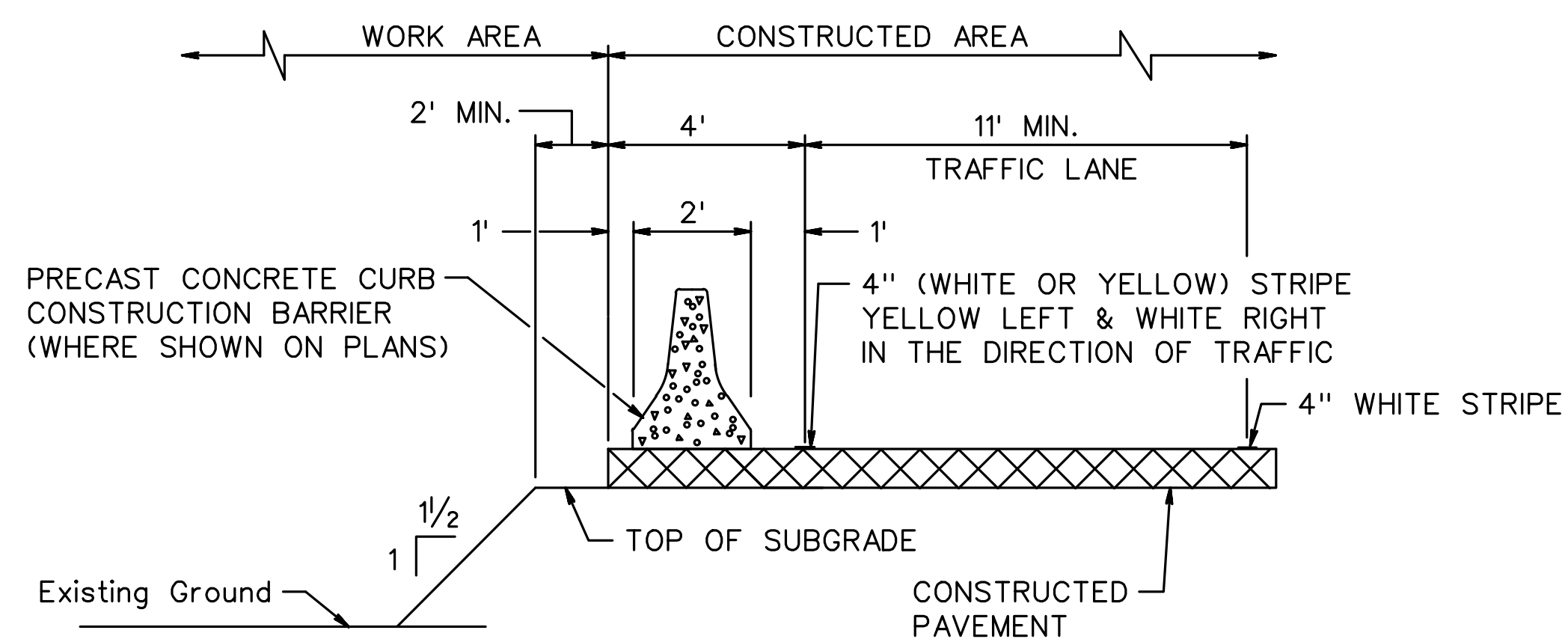
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



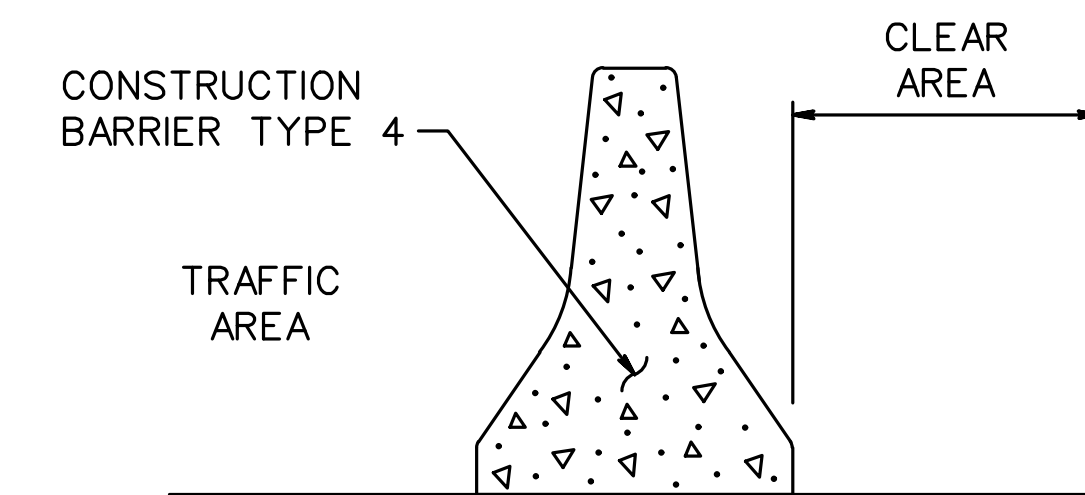
NOTE:
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

ESCAPE RAMP DETAIL



TYPICAL SECTION

PLACEMENT OF PRECAST CONCRETE CONSTRUCTION BARRIER



NOTES:

1. CHANGES TO THE PROPOSED JOINT CLASS AT ANY LOCATION MUST BE APPROVED BY THE DEPT.
2. NO ROADWAY DROP OFFS, OBSTRUCTIONS, STORAGE OF MATERIALS OR WORK WILL BE PERMITTED IN THE CLEAR AREA UNLESS APPROVED BY THE R.E.

STAGE	LOCATION	JOINT CLASS
	RTE. STA. TO	

JOINT CLASS	CLEAR AREA
A	20 INCHES
B	16 INCHES
C	11 INCHES

CONSTRUCTION BARRIER, TYPE 4
JOINT CLASS AND CLEAR AREA

REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	RECOMMENDED SIGHT DISTANCE TO BEGINNING OF CHANNELIZING TAPERS		
	DESIRABLE		MINIMUM
	RURAL FEET	URBAN FEET	RURAL AND URBAN FEET
25	375	525	150
30	450	625	200
35	525	725	250
40	600	825	325
45	675	925	400
50	750	1025	475
55	875	1150	550
60	1000	1275	650
65	1050		725

NOTES:

1. AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND/OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
2. RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES SHALL BE DOUBLE THE VALUES SHOWN ABOVE.
3. RURAL AND URBAN ROAD DESIGNATIONS SHALL BE AS DEFINED IN THE NJDOT STATE HIGHWAY STRAIGHT LINE DIAGRAMS.
4. DESIRABLE VALUES SHALL BE PROVIDED WHEREVER POSSIBLE. IF IT IS NOT FEASIBLE OR PRACTICAL TO PROVIDE DESIRABLE VALUES BECAUSE OF HORIZONTAL OR VERTICAL CURVATURE OR IF RELOCATION OF THE TAPER IS NOT POSSIBLE, THEN MINIMUM VALUES CAN BE APPLIED. WHEN MINIMUM VALUES ARE USED, SPECIAL ATTENTION SHOULD BE GIVEN TO THE USE OF SUITABLE TRAFFIC CONTROL DEVICES FOR PROVIDING ADVANCED WARNING OF THE CONDITIONS THAT ARE LIKELY TO BE ENCOUNTERED.
5. TAPERS SHALL BE LOCATED TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.

REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS				MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	RECOMMENDED SPACING ALONG TANGENTS	
	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	MINIMUM TAPER LENGTH L - FOR LANE WIDTHS					MAXIMUM DEVICE (D) SPACING ALONG TANGENTS IN FEET
		10'	11'	12'			
25	10.5:1	105	115	125	25	50	
30	15:1	150	165	180	30	60	
35	20.5:1	205	225	245	35	70	
40	27:1	270	300	325	40	80	
45	45:1	450	495	540	45	90	
50	50:1	500	550	600	50	100	
55	55:1	550	605	660	55	110	
60	60:1	600	660	720	60	120	
65	65:1	650	715	780	65	130	

NOTE:

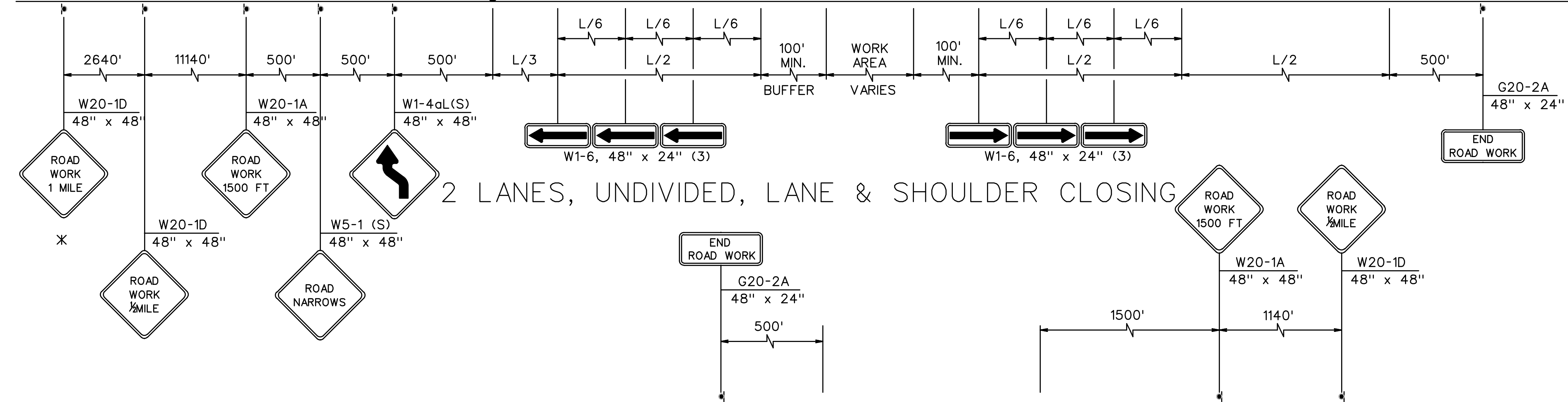
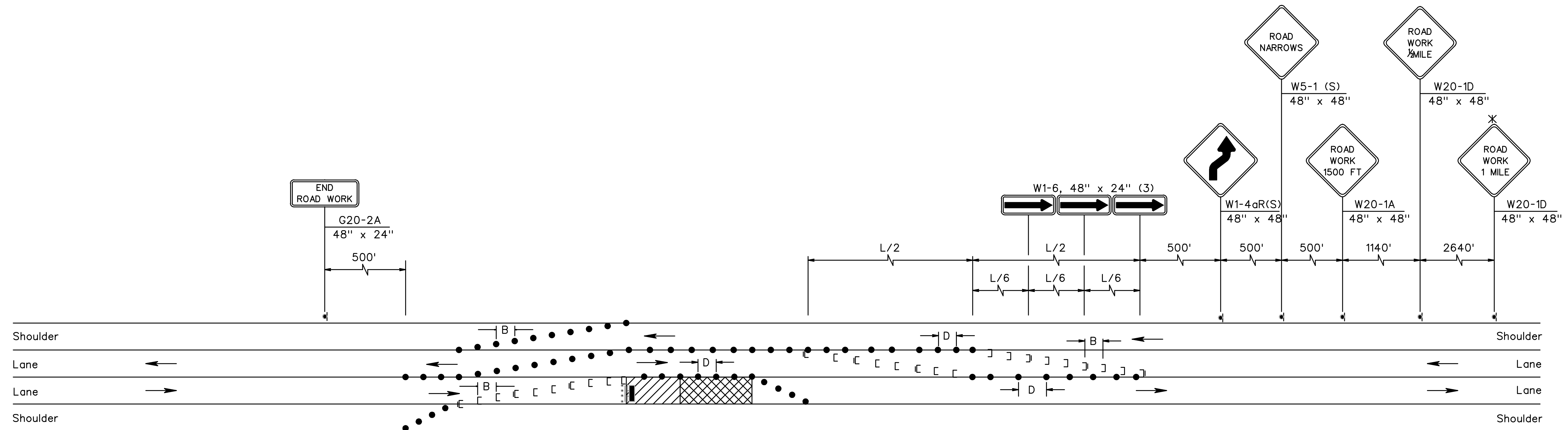
THE MAXIMUM DEVICE SPACING ALONG CURVES SHALL BE AS DEFINED FOR TAPERS (B) IN THE ABOVE TABLE.

N.T.S.

TCD-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



2 LANES, UNDIVIDED, LANE & SHOULDER CLOSING

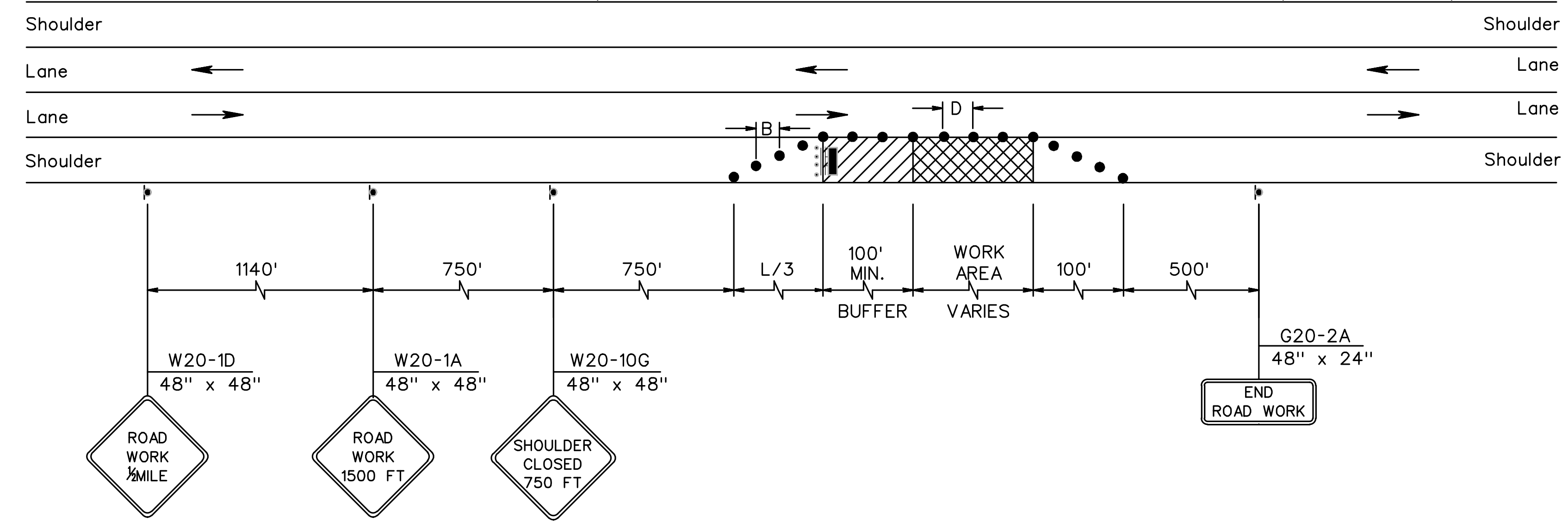
* THIS SIGN SHALL BE INSTALLED FOR ROADS WITH A SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B AND D.

N.T.S.



R8-8 SIGN DETAIL
24" x 30"
NOT TO SCALE



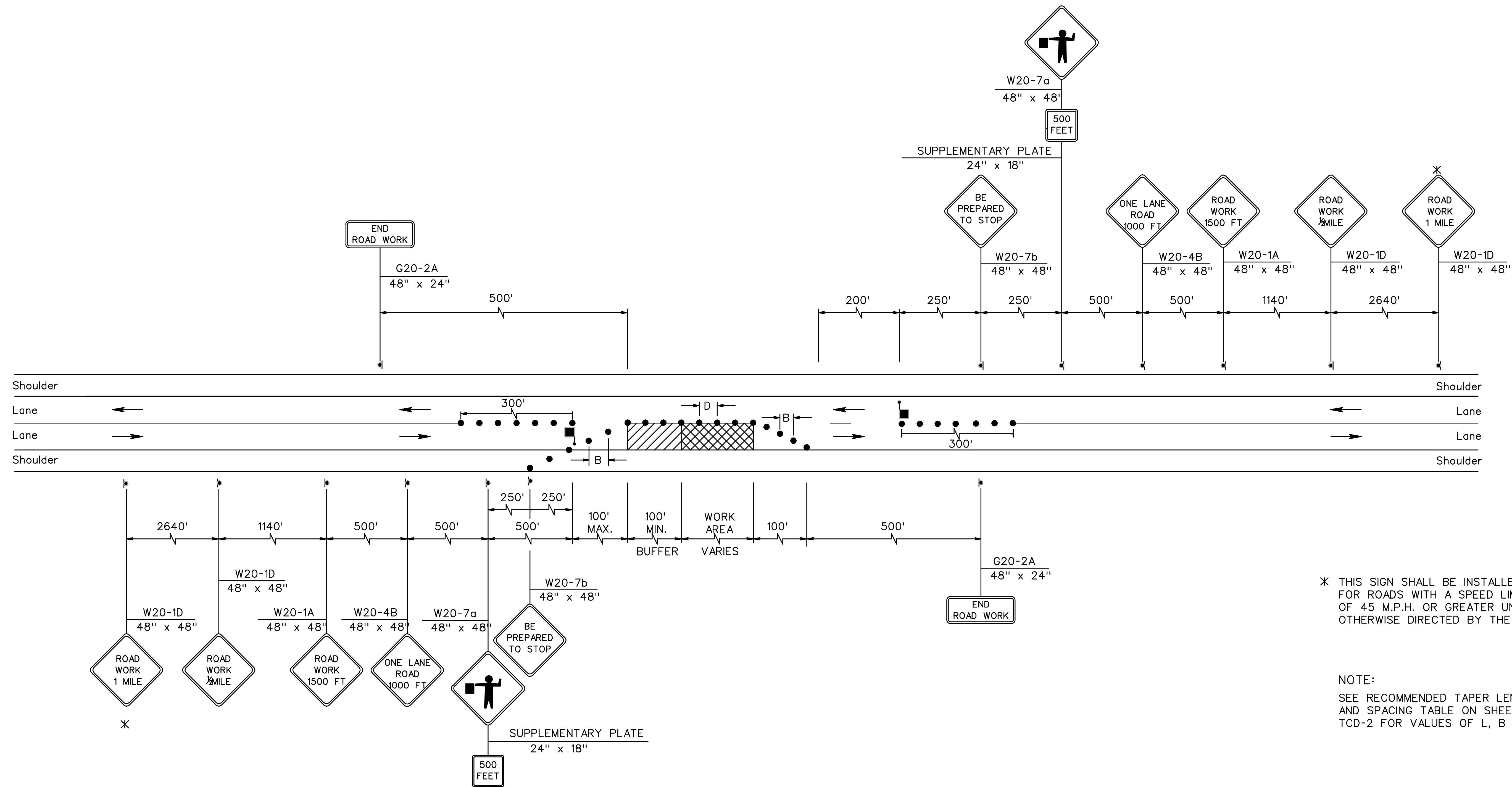
2 LANES, UNDIVIDED, SHOULDER CLOSING

TCD-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

BDC07D-01- ORIGINAL SHEET



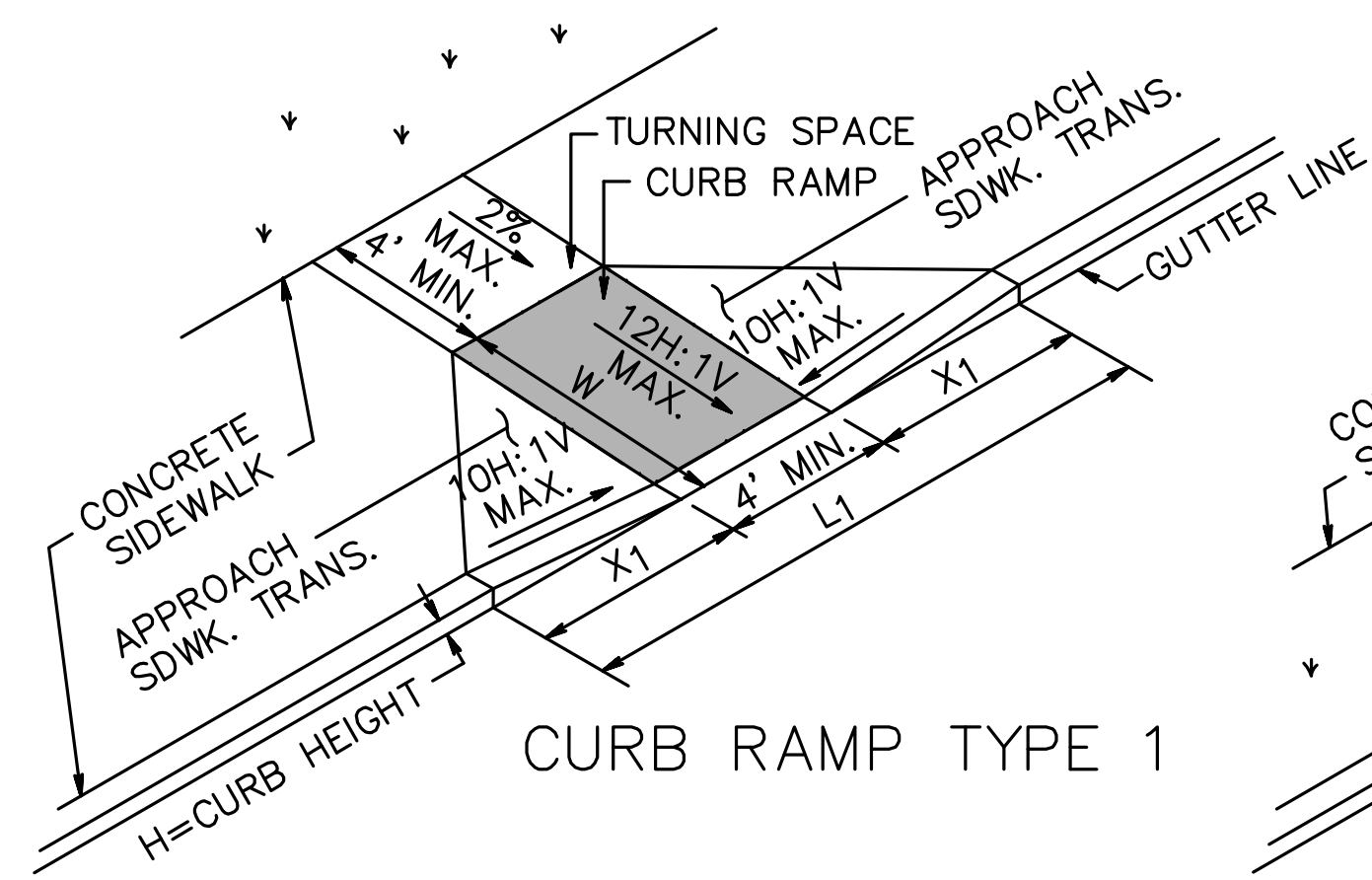
* THIS SIGN SHALL BE INSTALLED FOR ROADS WITH A SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B AND D.

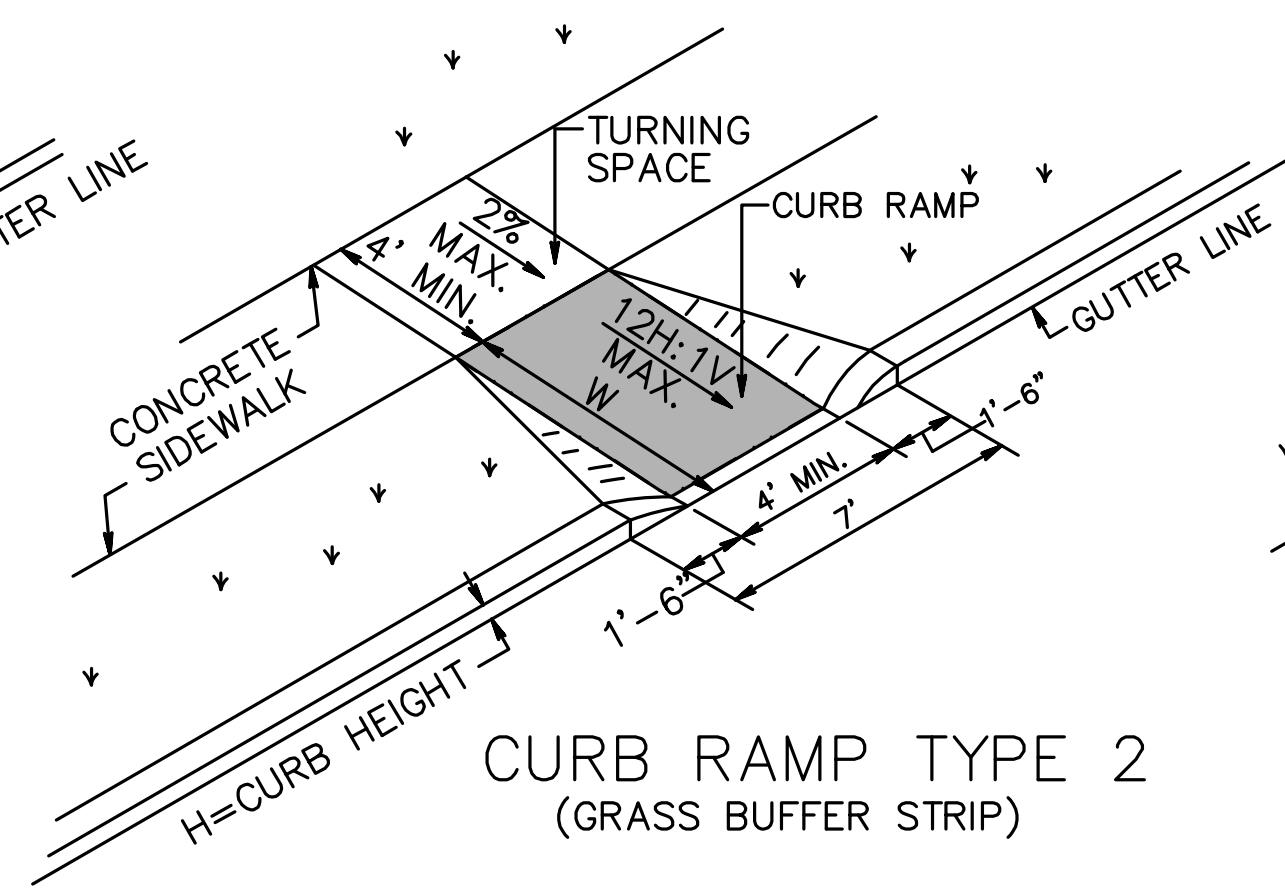
2 LANES, UNDIVIDED, LANE & SHOULDER CLOSING W/FLAGGING

N.T.S.

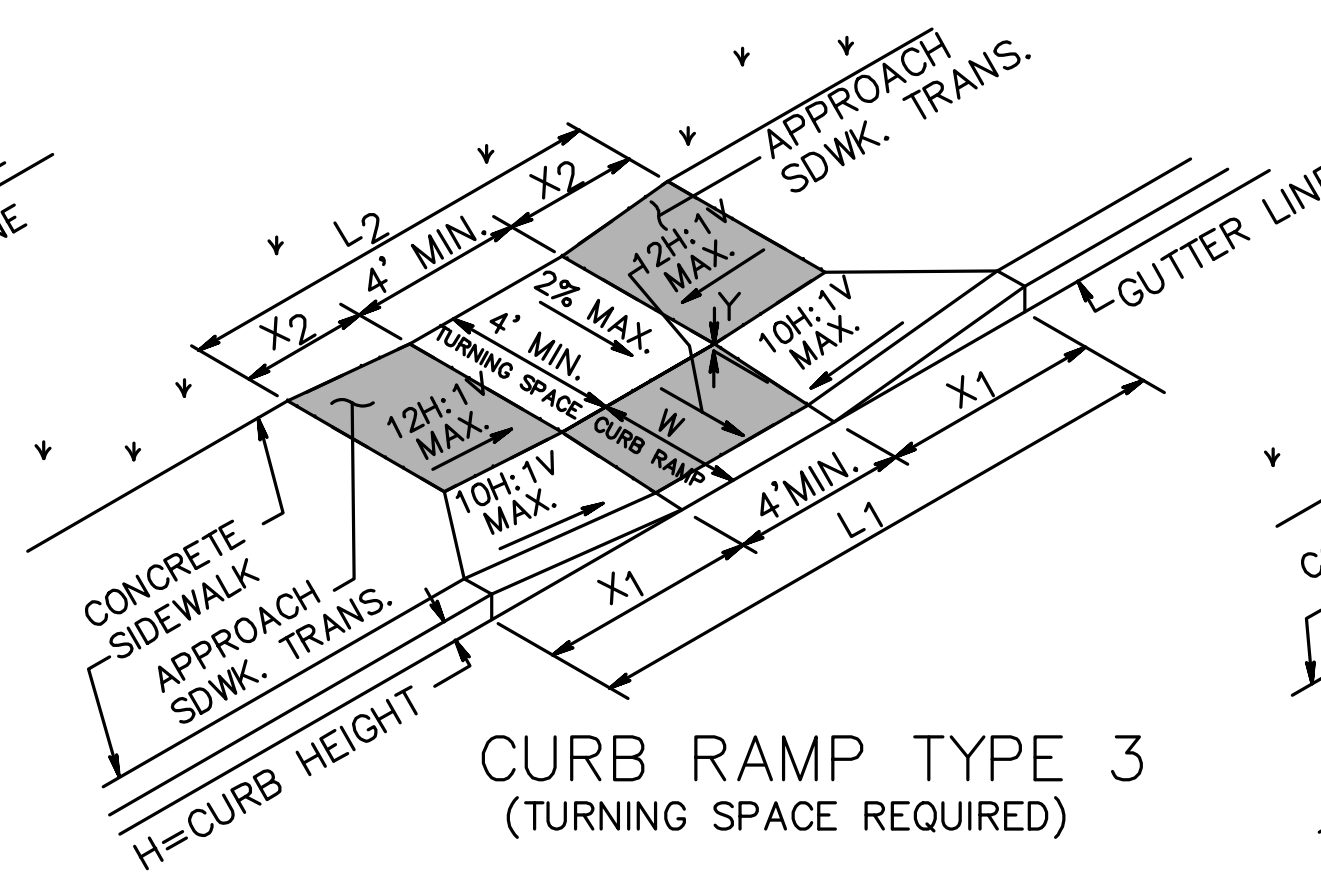
TCD-4
NEW JERSEY DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL DETAILS



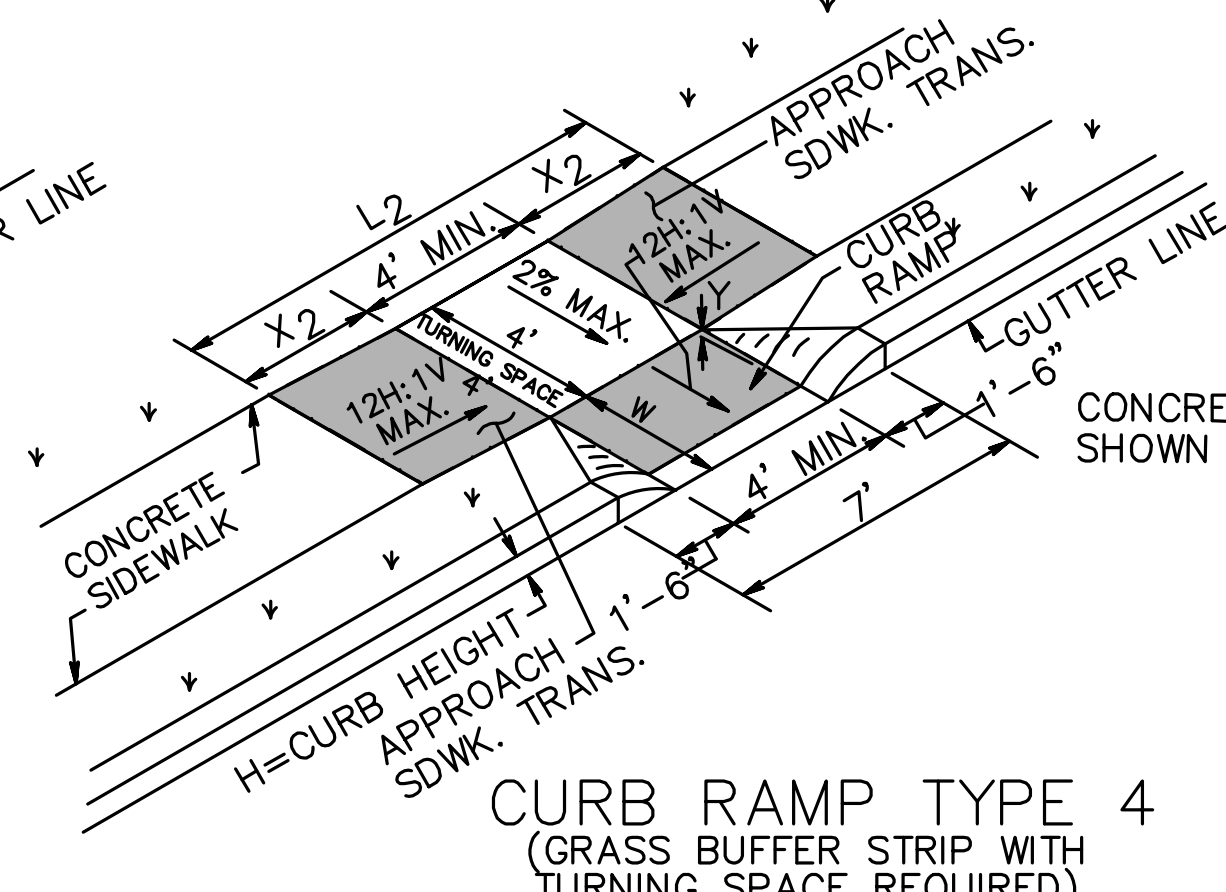
CURB RAMP TYPE 1



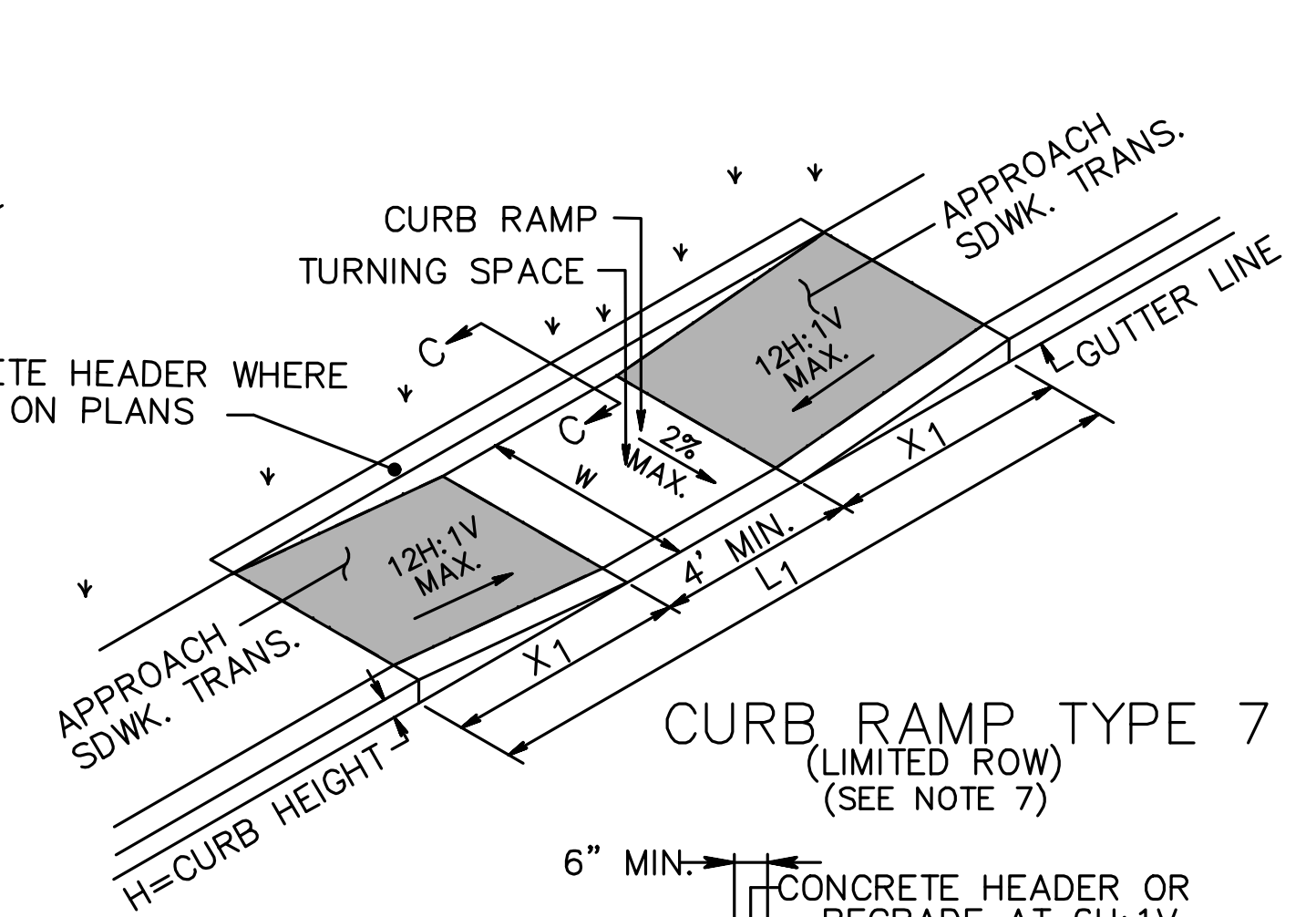
CURB RAMP TYPE 2
(GRASS BUFFER STRIP)



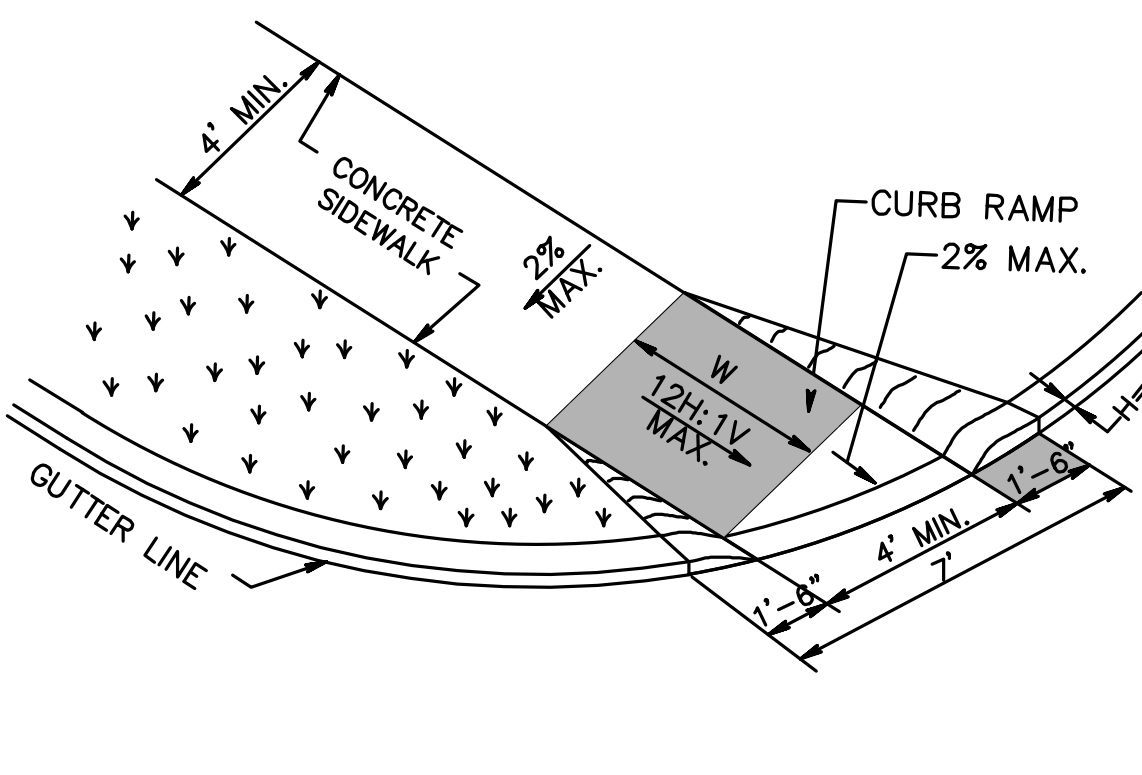
CURB RAMP TYPE 3
(TURNING SPACE REQUIRED)



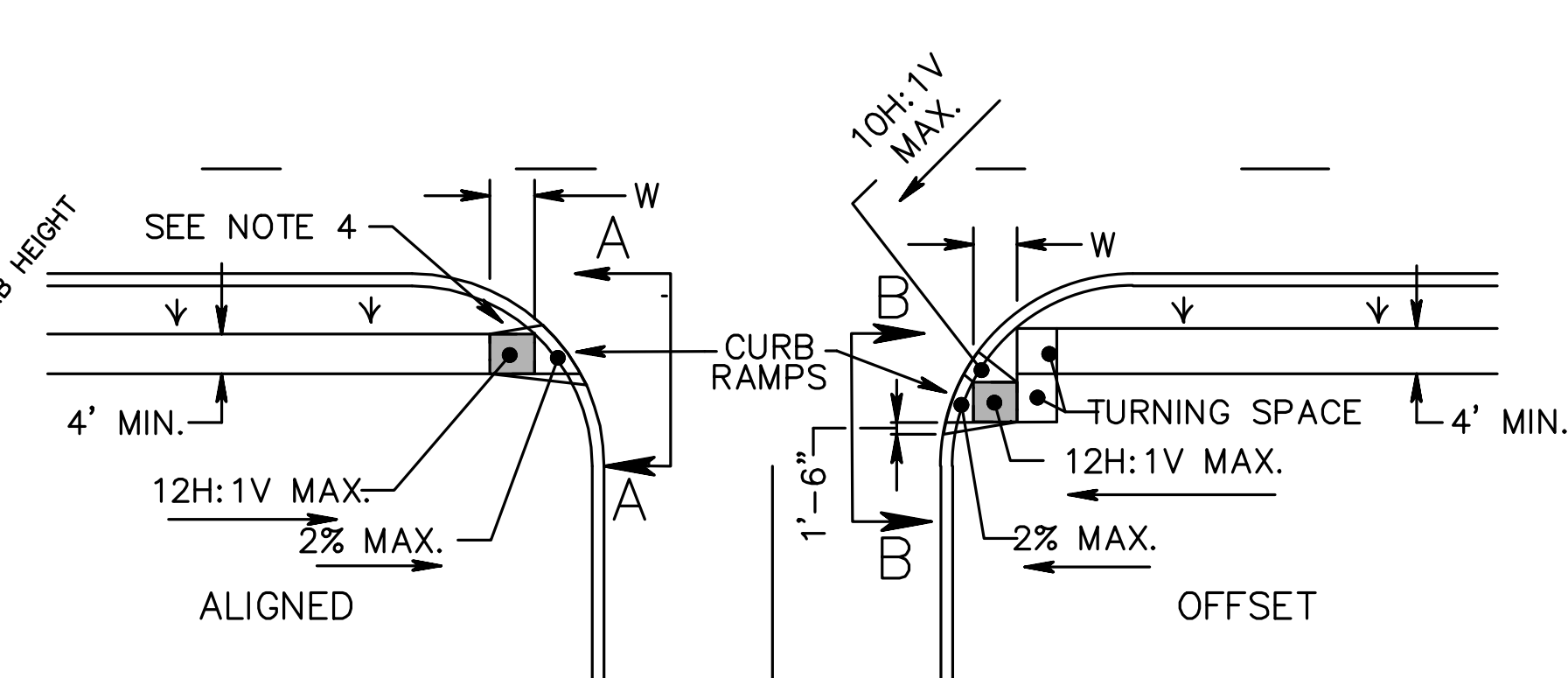
CURB RAMP TYPE 4
(GRASS BUFFER STRIP WITH
TURNING SPACE REQUIRED)



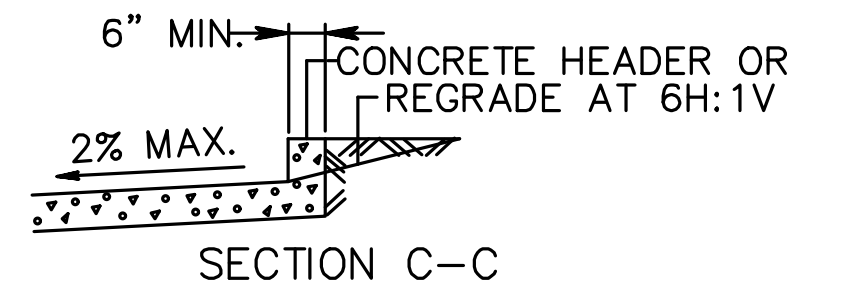
CURB RAMP TYPE 7
(LIMITED ROW)
(SEE NOTE 7)



CURB RAMP TYPE 5



CURB RAMP TYPE 6

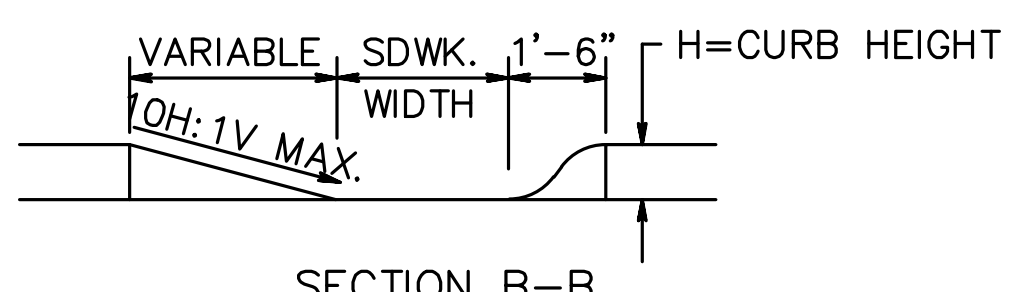


SECTION C-C

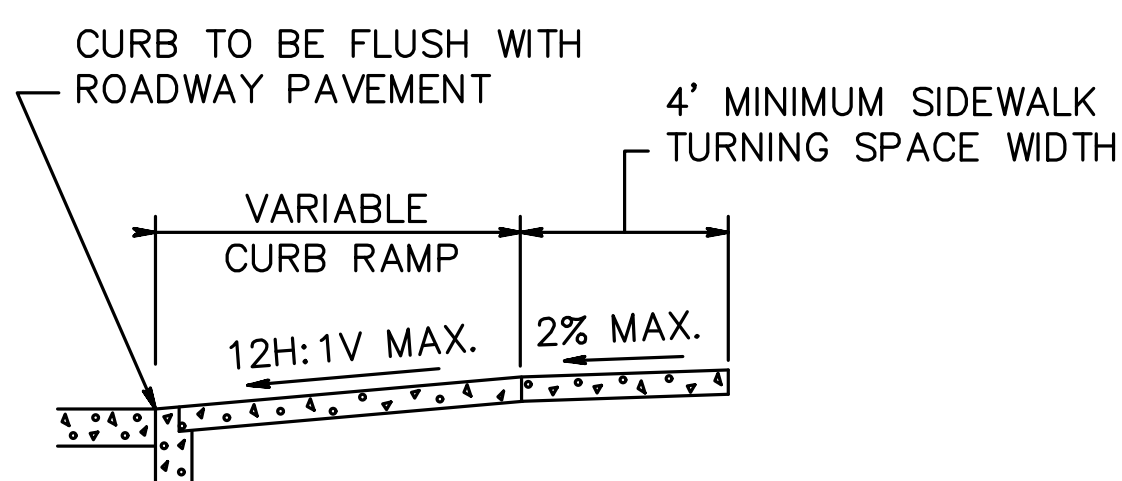


SECTION A-A

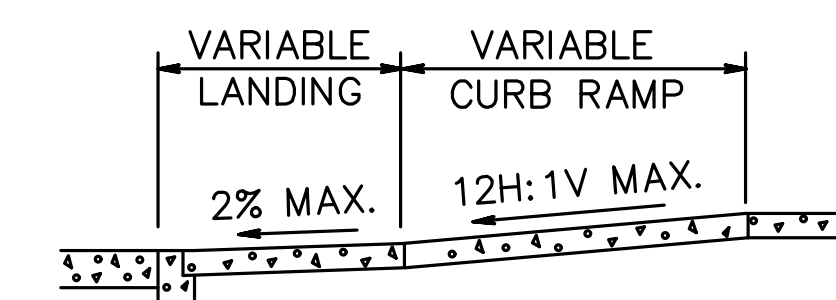
NOTE:
CURB RAMP OPENING TO BE FLUSH WITH ROADWAY PAVEMENT (CURB RAMP TYPES 5 & 6).



SECTION B-B



SECTION THROUGH CURB RAMPS 1 THROUGH 4

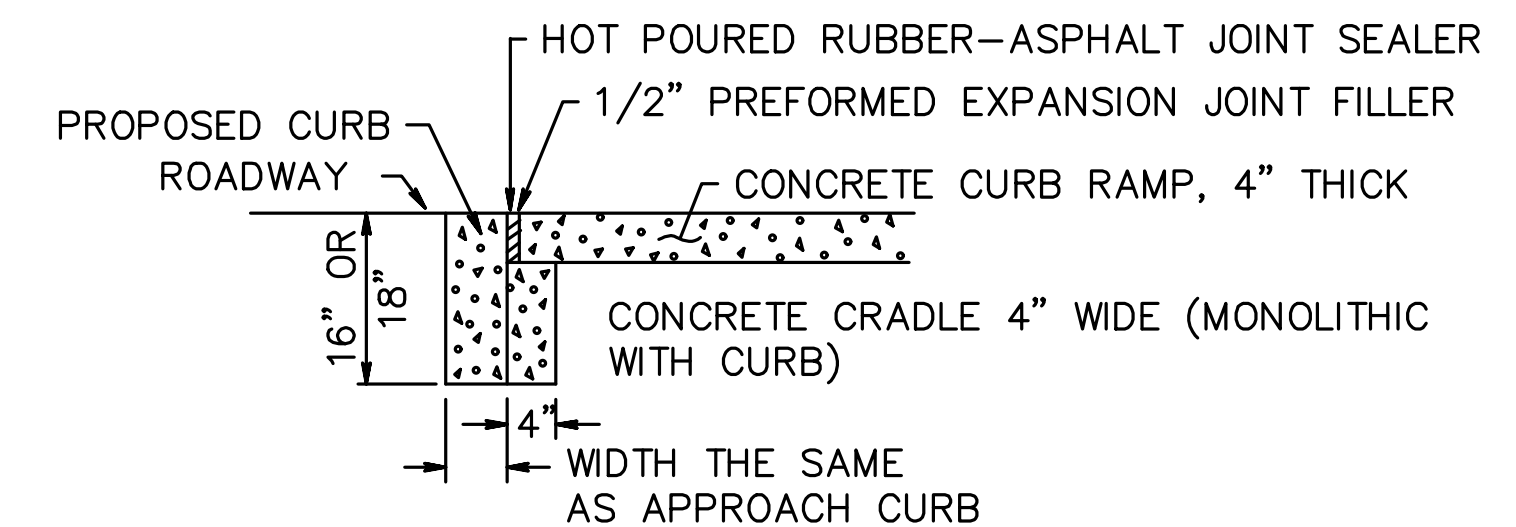


SECTION THROUGH CURB RAMPS 5 AND 6

- NOTES:
- KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SIDEWALK.
 - FOR DIMENSIONS SEE CD-606-1B AND CD-606-1C.
 - CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4 FEET AT ALL CURB RAMPS.
 - FOR CURB RAMP TYPES 5 AND 6, IF A GRASS BUFFER DOES NOT EXIST, SLOPE CURB TO EQUAL SLOPE OF ADJACENT CURB RAMP.
 - SIDEWALK AND CURB RAMP WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
 - CURB AND HEADER WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR VERTICAL CURB OR SLOPING CURB OF THE APPROPRIATE ADJACENT SIZE AND KIND.
 - WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF SIDEWALK IS 6 FEET OR LESS, USE CURB RAMP TYPE 7, INSTEAD OF CURB RAMP TYPE 1 THROUGH 4.
 - CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED. SEE PLANS.
 - DIMENSIONS SHOWN IN TABLES ARE FOR 3 INCH TO 9 INCH CURB HEIGHTS. WHERE THE CURB HEIGHTS ARE OTHER THAN WHAT IS PROVIDED IN THE TABLES, THE DIMENSIONS OF THE RAMPS WILL HAVE TO BE CALCULATED BASED ON CROSS SLOPES SHOWN.
 - THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H:1V SLOPE MEASURED AS X2 IS THE RUNNING SLOPE FOR TYPE 3 AND TYPE 4 CURB RAMPS. ENSURE THE RUNNING SLOPE OF CURB RAMPS DOES NOT REQUIRE ITS LENGTH TO EXCEED 15 FEET. THE RUNNING SLOPE MAY EXCEED THE 12H:1V MAX SLOPE SO AS NOT TO EXCEED THE 15 FEET MAXIMUM LENGTH.

CURB RAMP NOTES:

- THE MAXIMUM CROSS SLOPE OF SIDEWALKS SHALL BE 2%.
- THE MAXIMUM LONGITUDINAL TRANSITION SLOPE OF SIDEWALKS SHALL BE 5%.
- THE MAXIMUM LONGITUDINAL SLOPE OF CURB RAMPS SHALL BE 8%.
- THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE ALONG ALL SIDEWALKS, CURB RAMPS AS WELL ADJACENT TO ALL SIDEWALKS. STORMWATER RUNOFF SHALL NOT BE BLOCKED BY SIDEWALKS OR CURBS.
- FOR TYPE 5 & TYPE 6 RAMPS, LEADING EDGE OF DETECTABLE WARNING SURFACE MUST BE LOCATED A MAXIMUM OF 5 FEET FROM EDGE OF TRAVELWAY - THIS REQUIREMENT MAY WARRANT MULTIPLE DETECTABLE WARNING SURFACES FOR A SINGLE RAMP.
- THERE MUST BE A MINIMUM OF 24 INCH OF DETECTABLE WARNING SURFACE IN THE DIRECTION OF PEDESTRIAN TRAVEL, THE FULL WIDTH OF THE SIDEWALK - THIS REQUIREMENT MAY WARRANT MULTIPLE DETECTABLE WARNING SURFACES FOR A SINGLE RAMP.
- A MINIMUM 4' X 4' LANDING AREA, GRADED AT A MAXIMUM SLOPE OF 2% IN ALL DIRECTIONS, MUST BE PROVIDED AT THE TOP OF EVERY RAMP.



DROPPED CURB AND CRADLE

CONCRETE SIDEWALK
(PUBLIC SIDEWALK CURB RAMP)
N.T.S.

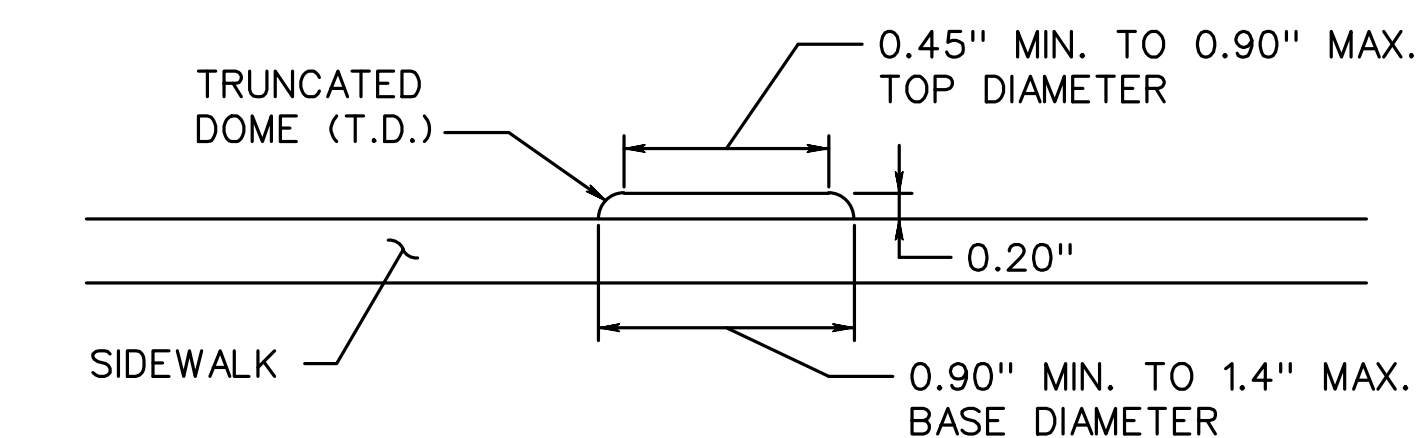
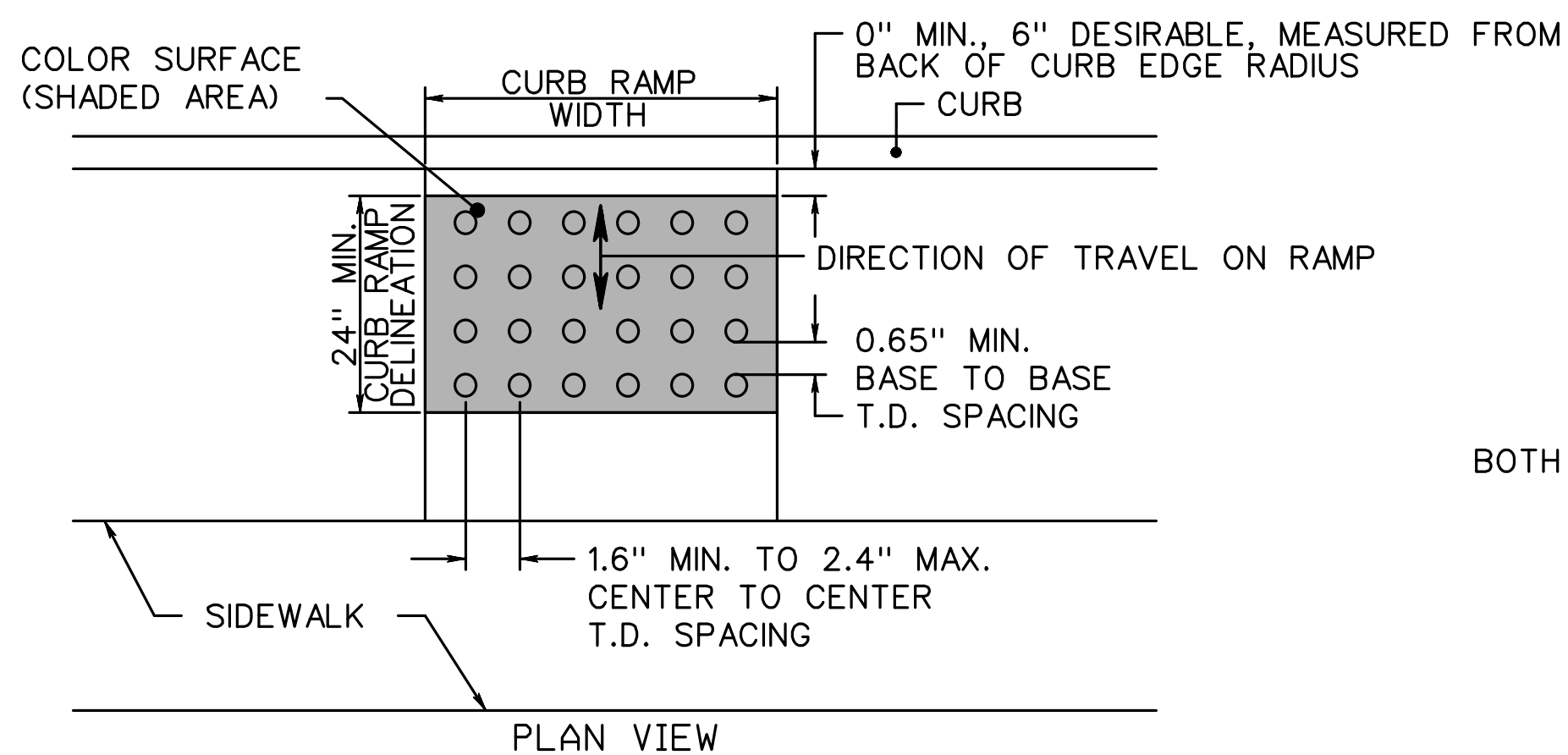
CD-606-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

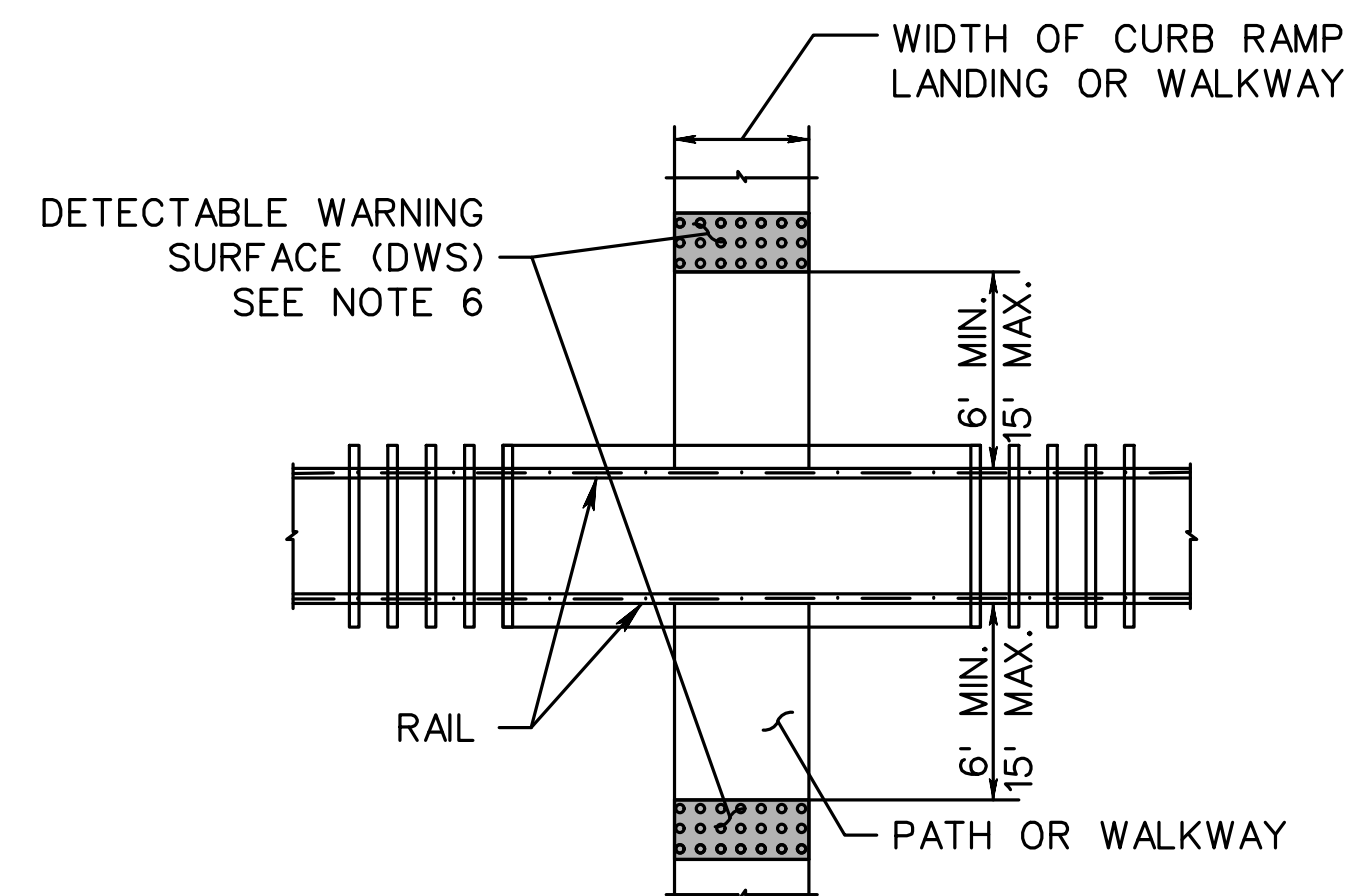
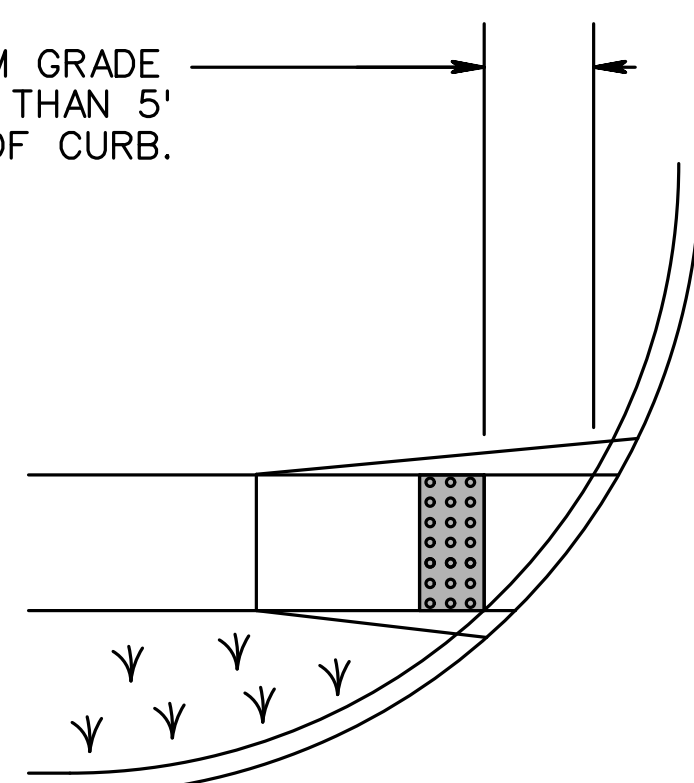
CURB RAMPS

CD-606-1.1

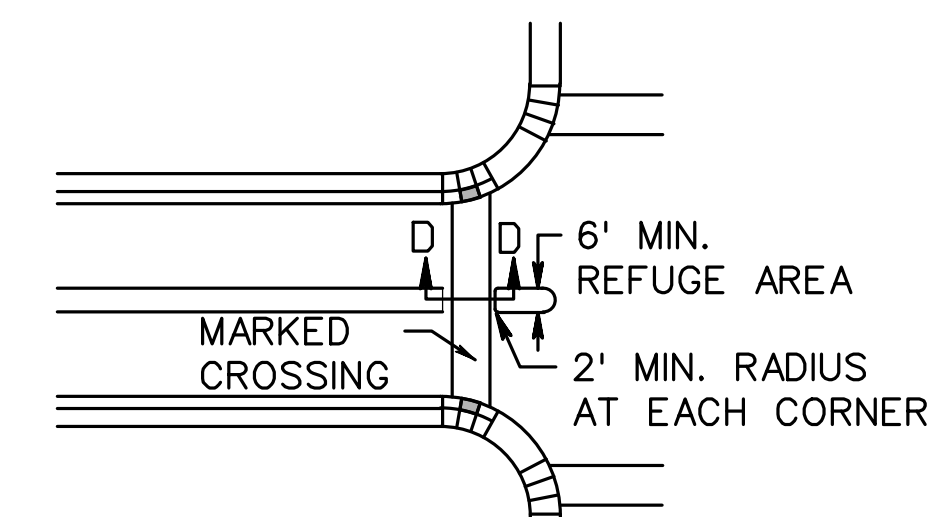


DETECTABLE WARNING SURFACE

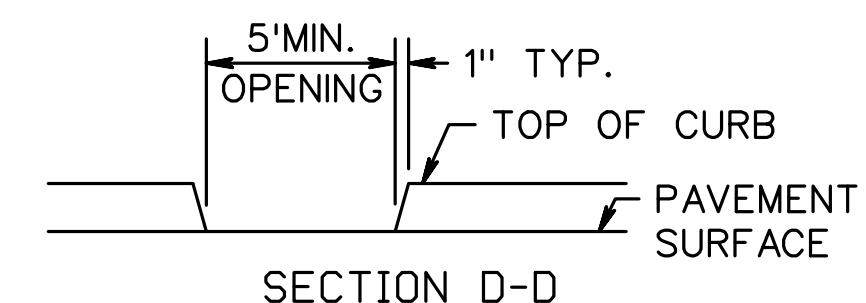
BOTH ENDS OF THE BOTTOM GRADE BREAK ARE LESS THAN 5' FROM BACK OF CURB.



PEDESTRIAN RAILROAD CROSSING

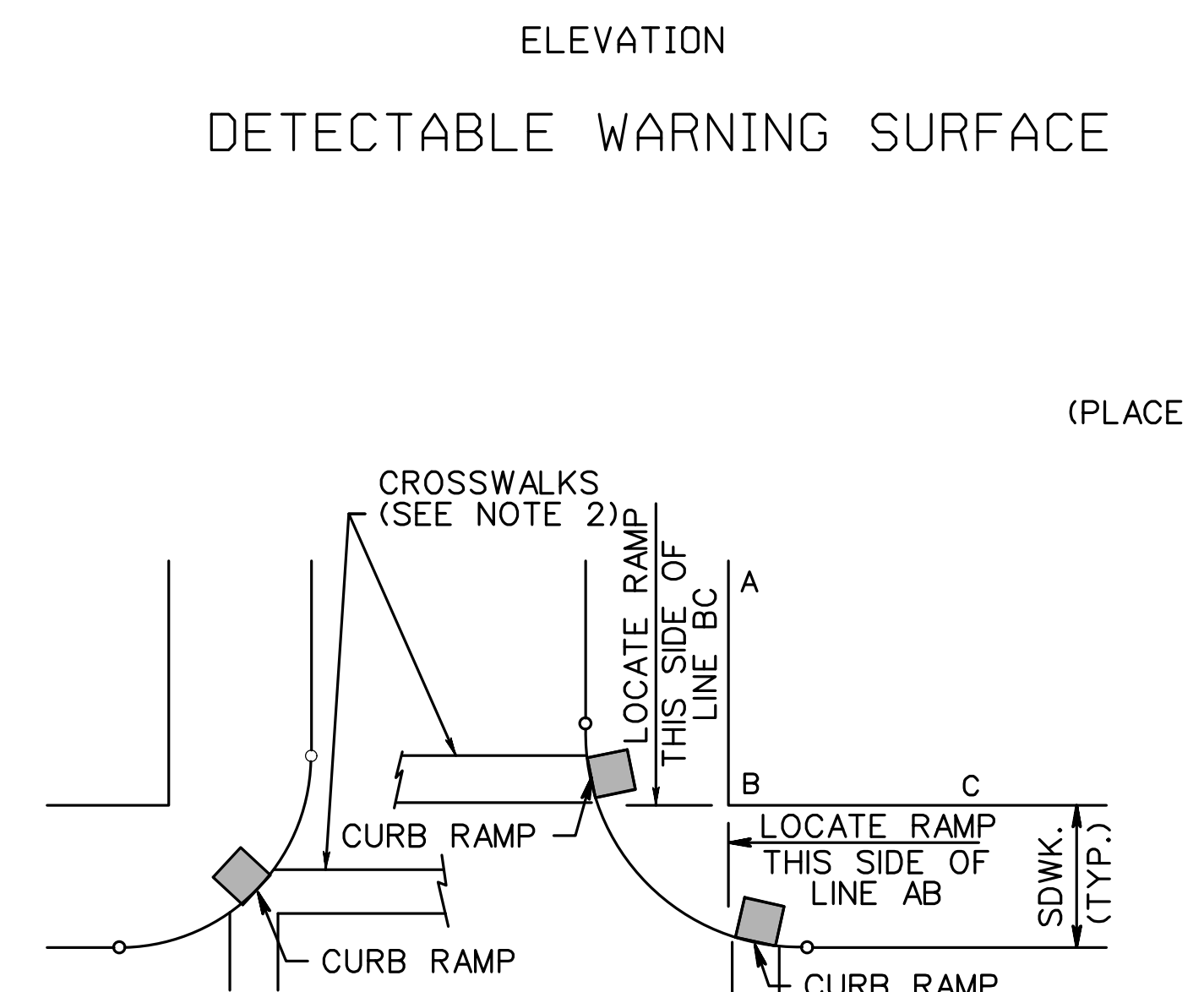


NOTE: WHERE PRACTICAL, END LEFT TURN ISLAND OR DIVISIONAL ISLAND BEFORE CROSSWALK TO ELIMINATE CUT-THROUGH

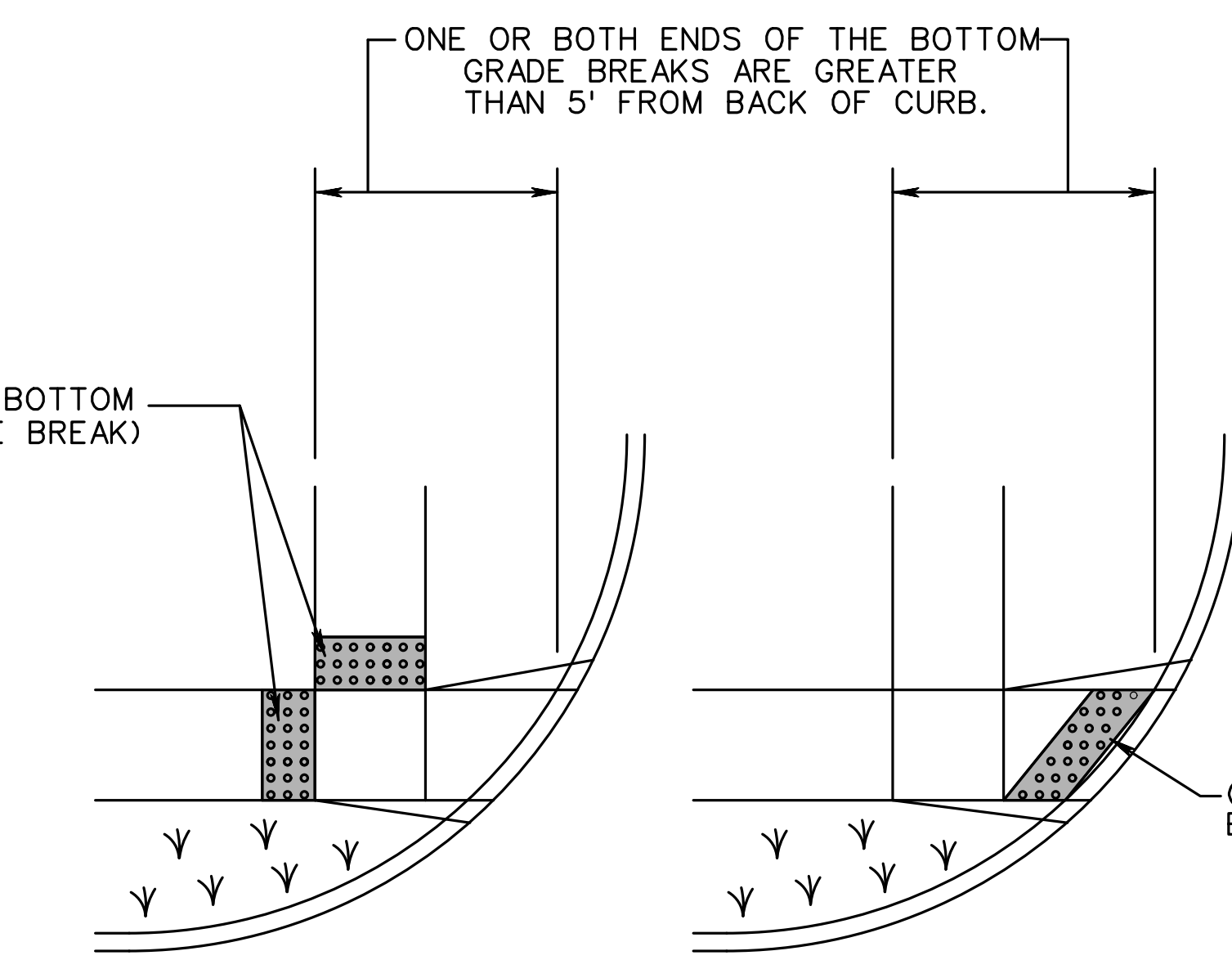


PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS

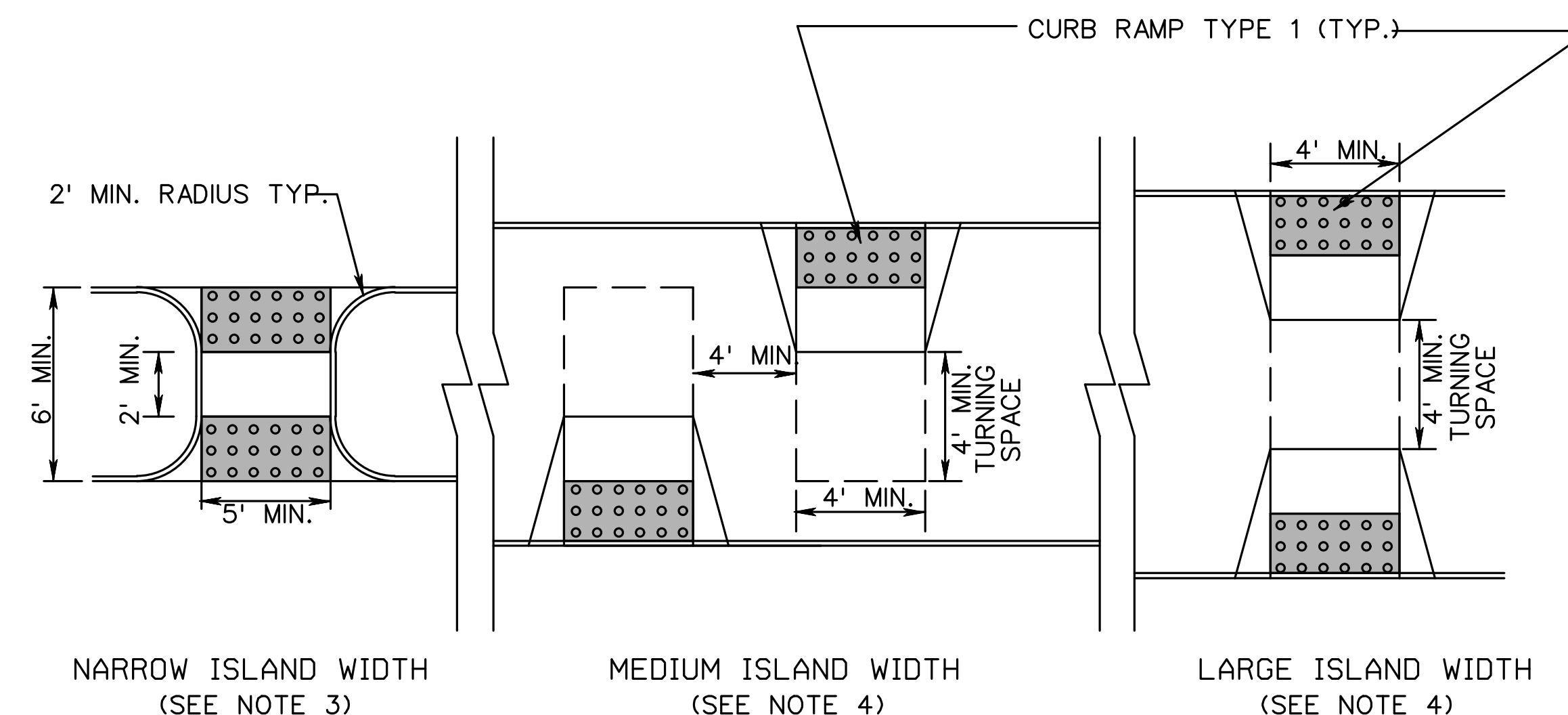
NOTE: 5' MIN. WIDE OPENING TO BE FLUSH WITH ROADWAY PAVEMENT



LOCATION OF CURB RAMP TYPES 1, 2, 3, 4, & 7 FOR CROSSING PARALLEL AND PERPENDICULAR TO HIGHWAY



PLACEMENT OF DETECTABLE WARNING SURFACE FOR CURB RAMP TYPE 5 AND 6



PEDESTRIAN REFUGE ISLAND

DETECTABLE WARNING SURFACE N.T.S.

NOTES:

- KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
- CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED, SEE PLANS.
- FOR NARROW ISLAND WIDTH, SEE PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS DETAIL.
- FOR MEDIUM AND LARGE ISLAND WIDTH, SEE CURB RAMP TYPE 1 ON CD-606-1.
- CONSTRUCT CURB RAMP TYPES 1, 2, 3, 4, & 7 PERPENDICULAR TO CURBLINE, AS SHOWN.
- IF A CURB RAMP IS REQUIRED, THE LOCATION OF THE DETECTABLE WARNING SURFACE MUST BE AT THE BOTTOM OF THE RAMP AND WITHIN THE REQUIRED DISTANCE FROM THE RAIL.
- A STANDARD DETECTABLE WARNING (DWS) SURFACE IS NOT AVAILABLE TO FIT THIS APPLICATION, AND THEREFORE ONE WILL NEED TO BE CUSTOMIZED. THE DWS SHOULD COVER THE ENTIRE WIDTH OF THE RAMP. THE ROWS OF DOMES ON THE DWS SHOULD FOLLOW THE DIRECTION OF TRAVEL OF THE RAMP, SO PEDESTRIANS WHO USE MOBILE DEVICES CAN TRACK BETWEEN THE DOMES.

CD-606-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-606-2.1

CURB RAMP TYPE 1

0.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	2.50	2.50	9.00
4	4	3.33	3.33	10.67
5	5	4.17	4.17	12.33
6	6	5.00	5.00	14.00
7	7	5.83	5.83	15.67
8	8	6.67	6.67	17.33
9	9	7.50	7.50	19.00

1.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	2.78	2.27	9.05
4	4	3.70	3.03	10.73
5	5	4.63	3.79	12.42
6	6	5.56	4.55	14.10
7	7	6.48	5.30	15.78
8	8	7.41	6.06	17.47
9	9	8.33	6.82	19.15

2.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	3.13	2.08	9.21
4	4	4.17	2.78	10.94
5	5	5.21	3.47	12.68
6	6	6.25	4.17	14.42
7	7	7.29	4.86	16.15
8	8	8.33	5.56	17.89
9	9	9.38	6.25	19.63

3.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	3.57	1.92	9.49
4	4	4.76	2.56	11.33
5	5	5.95	3.21	13.16
6	6	7.14	3.85	14.99
7	7	8.33	4.49	16.82
8	8	9.52	5.13	18.65
9	9	10.71	5.77	20.48

4.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	4.17	1.79	9.95
4	4	5.56	2.38	11.94
5	5	6.94	2.98	13.92
6	6	8.33	3.57	15.90
7	7	9.72	4.17	17.89
8	8	11.11	4.76	19.87
9	9	12.50	5.36	21.86

5.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	5.00	1.67	10.67
4	4	6.67	2.22	12.89
5	5	8.33	2.78	15.11
6	6	10.00	3.33	17.33
7	7	11.67	3.89	19.56
8	8	13.33	4.44	21.78
9	9	15.00	5.00	24.00

6.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	6.25	1.56	11.81
4	4	8.33	2.08	14.42
5	5	10.42	2.60	17.02
6	6	12.50	3.13	19.63
7	7	14.58	3.65	22.23
8	8	16.67	4.17	24.84
9	9	18.75	4.69	27.44

7.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	8.33	1.47	13.80
4	4	11.11	1.96	17.07
5	5	13.89	2.45	20.34
6	6	16.67	2.94	23.61
7	7	19.44	3.43	26.88
8	8	22.22	3.92	30.15
9	9	25.00	4.41	33.42

CURB RAMP TYPE 3

0.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	2.75	2.50	2.50	9.00	2.75	0.91	0.91	5.82
4	2.75	3.33	3.33	10.67	2.75	1.91	1.91	7.82
5	2.75	4.17	4.17	12.33	2.75	2.91	2.91	9.82
6	2.75	5.00	5.00	14.00	2.75	3.91	3.91	11.83
7	2.75	5.83	5.83	15.67	2.75	4.91	4.91	13.83
8	2.75	6.67	6.67	17.33	2.75	5.91	5.91	15.83
9	2.75	7.50	7.50	19.00	2.75	6.91	6.91	17.83

1.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	3.0	3.33	3.33	10.67	3.0	1.72	1.72	7.44
4	3.0	4.17	4.17	12.33	3.0	2.72	2.72	9.44
5	3.0	5.00	5.00	14.00	3.0	3.72	3.72	11.45
6	3.0	5.83	5.83	15.67	3.0	4.72	4.72	13.45
7	3.0	6.67	6.67	17.33	3.0	5.72	5.72	15.45
8	3.0	7.50	7.50	19.00	3.0	6.72	6.72	17.45

2.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	3.5	4.17	4.17	12.33	3.5	1.34	1.34	6.68
4	3.5	5.00	5.00	14.00	3.5	2.34	2.34	8.68
5	3.5	5.83	5.83	15.67	3.5	3.34	3.34	10.69
6	3.5	6.67	6.67	17.33	3.5	4.34	4.34	12.69
7	3.5	7.50	7.50	19.00	3.5	5.34	5.34	14.69
8	3.5	8.33	8.33	20.67	3.5	6.34	6.34	16.69

3.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	5.00	5.00	14.00	4.0	2.96	2.96	9.93
4	4.0	5.83	5.83	15.67	4.0	3.96	3.96	11.93
5	4.0	6.67	6.67	17.33	4.0	4.96	4.96	13.93
6	4.0	7.50	7.50	19.00	4.0	5.96	5.96	15.93

4.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	6.25	6.25	18.65	4.0	3.36	3.36	13.93
4	4.0	7.50	7.50	21.86	4.0	4.36	4.36	15.93
5	4.0	8.75	8.75	25.07	4.0	5.36	5.36	17.93
6	4.0	10.00	10.00	28.28	4.0	6.36	6.36	19.93

5.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	7.50	7.50	21.86	4.0	4.76	4.76	17.93
4	4.0	8.75	8.75	25.07	4.0	5.76	5.76	19.93
5	4.0	10.00	10.00	28.28	4.0	6.76	6.76	21.93
6	4.0	11.25	11.25	31.49	4.0	7.76	7.76	23.93

6.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	8.75	8.75	25.07	4.0	6.16	6.16	21.93
4	4.0	10.00	10.00	28.28	4.0	7.16	7.16	23.93
5	4.0	11.25	11.25	31.49	4.0	8.16	8.16	25.93
6	4.0	12.50	12.50	34.70	4.0	9.16	9.16	27.93

0-8 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	1.50	1.50	7.00
4	4	1.50	1.50	7.00
5	5	1.50	1.50	7.00
6	6	1.50	1.50	7.00
7	7	1.50	1.50	7.00
8	8	1.50	1.50	7.00
9	9	1.50	1.50	7.00

1.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	2.75	2.78	2.27	9.05	2.75	1.04	0.81	5.85
4	2.75	3.70	3.03	10.73	2.75	2.17	1.71	7.88
5	2.75	4.63	3.79	12.42	2.75	3.31	2.60	9.91
6	2.75	5.56	4.55	14.10	2.75	4.45	3.49	11.94
7	2.75	6.48	5.30	15.78	2.75	5.58	4.39	13.97
8	2.75	7.41	6.06	17.47	2.75	6.72	5.28	16.00
9	2.75	8.33	6.82	19.15	2.75	7.86	6.17	18.03

2.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	3.0	3.70	3.03	10.73	3.0	1.96	1.54	7.49
4	3.0	4.63	3.79	12.42	3.0	3.09	2.43	9.52
5	3.0	5.56	4.55	14.10	3.0	4.23	3.32	11.55
6	3.0	6.48	5.30	15.78	3.0	5.37	4.22	13.58
7	3.0	7.41	6.06	17.47	3.0	6.50	5.11	15.61
8	3.0	8.33	6.82	19.15	3.0	7.64	6.00	17.64

3.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	3.5	4.63	3.79	12.42	3.5	2.66	2.09	8.75
4	3.5	5.56	4.55	14.10	3.5	3.80	2.98	10.78
5	3.5	6.48	5.30	15.78	3.5	4.94	3.88	12.81
6	3.5	7.41	6.06	17.47	3.5	6.07	4.77	14.84
7	3.5	8.33	6.82	19.15	3.5	7.21	5.66	16.87

4.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	5.56	4.55	14.10	4.0	3.37	2.65	10.01
4	4.0	6.48	5.30	15.78	4.0	4.50	3.54	12.04
5	4.0	7.41	6.06	17.47	4.0	5.64	4.43	14.07
6	4.0	8.33	6.82	19.15	4.0	6.78	5.32	16.10

5.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	6.67	5.66	16.67	4.0	4.31	3.48	12.51
4	4.0	7.78	6.77	18.78	4.0	5.45	4.52	14.54
5	4.0	8.89	7.88	20.89	4.0	6.59	5.59	16.57
6	4.0	10.00	8.99	23.00	4.0	7.73	6.63	18.60

6.0 % GUTTER LINE PROFILE								
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET
3	4.0	7.78	6.77	18.78	4.0	5.45	4.52	14.54
4	4.0	8.89	7.88	20.89	4.0	6.59	5.59	16.57
5	4.0	10.00	8.99	23.00	4.0	7.73	6.63	18.60
6	4.0	11.11	10.11	25.				

CURB RAMP TYPE 4

0.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	0.91	0.91	5.82		
4			1.91	1.91	7.82		
5			2.91	2.91	9.82		
6			3.91	3.91	11.82		
7			4.91	4.91	13.83		
8			5.91	5.91	15.83		
9			6.91	6.91	17.83		
3			3.0	3.0	**	**	**
4					1.72	1.72	7.44
5	2.72	2.72			9.44		
6	3.72	3.72			11.45		
7	4.72	4.72			13.45		
8	5.72	5.72			15.45		
9	6.72	6.72			17.45		
3	3.5	3.5			**	**	**
4					1.34	1.34	6.68
5			2.34	2.34	8.68		
6			3.34	3.34	10.69		
7			4.34	4.34	12.69		
8			5.34	5.34	14.69		
9			6.34	6.34	16.69		
3			4.0	4.0	**	**	**
4					1.96	1.96	7.92
5	2.96	2.96			9.93		
6	3.96	3.96			11.93		
7	4.96	4.96			13.93		
8	5.96	5.96			15.93		
9	6.96	6.96			17.93		

4.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.75	0.62	6.37		
4			3.68	1.29	8.97		
5			5.60	1.97	11.57		
6			7.53	2.64	14.17		
7			9.45	3.32	16.77		
8			11.38	4.00	19.37		
9			13.30	4.67	21.97		
3			3.0	3.0	1.39	0.49	5.88
4					3.31	1.16	8.48
5	5.24	1.84			11.08		
6	7.16	2.52			13.68		
7	9.09	3.19			16.28		
8	11.01	3.87			18.88		
9	12.94	4.54			21.48		
3	3.5	3.5			0.66	0.23	4.89
4					2.58	0.91	7.49
5			4.51	1.58	10.09		
6			6.43	2.26	12.69		
7			8.36	2.93	15.29		
8			10.28	3.61	17.89		
9			12.20	4.29	20.49		
3			4.0	4.0	**	**	**
4					1.85	0.65	6.50
5	3.78	1.33			9.10		
6	5.70	2.00			11.70		
7	7.62	2.68			14.30		
8	9.55	3.35			16.90		
9	11.47	4.03			19.50		

1.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.04	0.81	5.85		
4			2.17	1.71	7.88		
5			3.31	2.60	9.91		
6			4.45	3.49	11.94		
7			5.58	4.39	13.97		
8			6.72	5.28	16.00		
9			7.86	6.17	18.03		
3			3.0	3.0	0.82	0.64	5.46
4					1.96	1.54	7.49
5	3.09	2.43			9.52		
6	4.23	3.32			11.55		
7	5.37	4.22			13.58		
8	6.50	5.11			15.61		
9	7.64	6.00			17.64		
3	3.5	3.5			0.39	0.30	4.69
4					1.53	1.20	6.72
5			2.66	2.09	8.75		
6			3.80	2.98	10.78		
7			4.94	3.88	12.81		
8			6.07	4.77	14.84		
9			7.21	5.66	16.87		
3			4.0	4.0	**	**	**
4					1.09	0.86	5.95
5	2.23	1.75			7.98		
6	3.37	2.65			10.01		
7	4.50	3.54			12.04		
8	5.64	4.43			14.07		
9	6.78	5.32			16.10		

5.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	2.28	0.57	6.85		
4			4.78	1.19	9.98		
5			7.29	1.82	13.10		
6			9.79	2.45	16.23		
7			12.29	3.07	19.36		
8			14.79	3.70	22.49		
9			17.29	4.32	25.62		
3			3.0	3.0	1.80	0.45	6.26
4					4.31	1.08	9.38
5	6.81	1.70			12.51		
6	9.31	2.33			15.64		
7	11.81	2.95			18.77		
8	14.32	3.58			21.89		
9	16.82	4.20			25.02		
3	3.5	3.5			0.85	0.21	5.07
4					3.36	0.84	8.20
5			5.86	1.46	11.32		
6			8.36	2.09	14.45		
7			10.86	2.71	17.58		
8			13.37	3.34	20.71		
9			15.87	3.96	23.84		
3			4.0	4.0	**	**	**
4					2.41	0.60	7.01
5	4.91	1.23			10.14		
6	7.41	1.85			13.26		
7	9.91	2.48			16.39		
8	12.42	3.10			19.52		
9	14.92	3.73			22.65		

2.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.20	0.73	5.93		
4			2.52	1.54	8.06		
5			3.83	2.35	10.19		
6			5.15	3.16	12.30		
7			6.47	3.96	14.43		
8			7.78	4.77	16.55		
9			9.10	5.58	18.67		
3			3.0	3.0	0.95	0.58	5.53
4					2.27	1.39	7.65
5	3.58	2.20			9.78		
6	4.90	3.00			11.90		
7	6.22	3.81			14.02		
8	7.53	4.62			16.15		
9	8.85	5.42			18.27		
3	3.5	3.5			0.45	0.28	4.72
4					1.77	1.08	6.85
5			3.08	1.89	8.97		
6			4.40	2.70	11.09		
7			5.72	3.50	13.22		
8			7.03	4.31	15.34		
9			8.35	5.12	17.46		
3			4.0	4.0	**	**	**
4					1.27	0.78	6.04
5	2.58	1.58			8.16		
6	3.90	2.39			10.29		
7	5.22	3.20			12.41		
8	6.53	4.00			14.53		
9	7.85	4.81			16.66		

6.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	3.26	0.53	7.79		
4			6.84	1.11	11.95		
5			10.41	1.69	16.10		
6			13.99	2.27	20.26		
7			17.56	2.86	24.41		
8			21.14	3.44	28.57		
9			24.72	4.02	32.72		
3			3.0	3.0	2.58	0.42	7.00
4					6.16	1.00	11.16
5	9.73	1.58			15.31		
6	13.31	2.16			19.47		
7	16.89	2.75			23.62		
8	20.47	3.33			27.78		
9	24.05	3.91			31.93		
3	3.5	3.5			1.22	0.20	5.42
4					4.80	0.78	9.58
5			8.37	1.36	13.74		
6			11.95	1.94	17.89		
7			15.53	2.52	22.05		
8			19.11	3.10	26.20		
9			22.69	3.69	30.35		
3			4.0	4.0	**	**	**
4					3.44	0.56	8.00
5	7.02	1.14			12.16		
6	10.59	1.72			16.31		
7	14.17	2.30			20.47		
8	17.75	2.89			24.62		
9	21.33	3.47			28.77		

3.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.42	0.67	6.09		
4			2.99	1.41	8.39		
5			4.55	2.14	10.69		
6			6.11	2.88	12.99		
7			7.68	3.61	15.29		
8			9.24	4.35	17.59		
9			10.81	5.08	19.89		
3			3.0	3.0	1.13	0.53	5.66
4					2.69	1.27	7.96
5	4.25	2.00			10.26		
6	5.82	2.74			12.55		
7	7.38	3.47			14.85		
8	8.94	4.21			17.15		
9	10.51	4.94			19.45		
3	3.5	3.5			0.53	0.25	4.78
4					2.10	0.99	7.08
5			3.66	1.72	9.38		
6			5.22	2.46	11.68		
7			6.79	3.19	13.98		
8			8.35	3.93	16.28		
9			9.91	4.66	18.58		
3			4.0	4.0	**	**	**
4					1.50	0.71	6.21
5	3.07	1.44			8.51		
6	4.63	2.18			10.81		
7	6.19	2.91			13.11		
8	7.76	3.65			15.41		
9	9.32	4.38			17.71		

7.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	5.71	0.50	10.20		
4			11.97	1.04	17.01		
5			18.23	1.58	23.82		
6			24.49	2.13	30.62		
7			30.75	2.67	37.43		
8			37.01	3.21	44.23		
9			43.27	3.76	51.04		
3			3.0	3.0	4.52	0.39	8.91
4					10.78	0.94	15.72
5	17.04	1.48			22.53		
6	23.30	2.02			29.34		
7	29.56	2.57			36.14		
8	35.82	3.11			42.95		
9	42.08	3.65			49.76		
3	3.5	3.5			2.14	0.19	6.32
4					8.40	0.73	13.13
5			14.67	1.27	19.94		
6			20.94	1.82	26.75		
7			27.21	2.36	33.56		
8			33.48	2.90	40.37		
9			39.75	3.45	47.18		
3			4.0	4.0	**	**	**
4					6.03	0.52	10.55
5	12.29	1.07			17.36		
6	18.56	1.61			24.17		
7	24.82	2.15			30.98		
8	31.09	2.70			37.79		
9	37.35	3.24			44.60		

CURB RAMP TYPE 7

0.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	
3	2.75	2.75	3.00	3.00	10.00
4			4.00	4.00	12.00
5			5.00	5.00	14.00
6			6.00	6.00	16.00
7			7.00	7.00	18.01
8			8.00	8.00	20.01
9			9.00	9.00	22.01

1.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	
3	2.75	2.75	3.41	2.68	10.09
4			4.55	3.57	12.12
5			5.68	4.47	14.15
6			6.82	5.36	16.18
7			7.96	6.25	18.21
8			9.10	7.15	20.24
9			10.23	8.04	22.27

2.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	
3	2.75	2.75	3.95	2.42	10.37
4			5.27	3.23	12.49
5			6.58	4.03	14.62
6			7.90	4.84	16.74
7			9.22	5.65	18.86
8			10.53	6.45	20.99
9			11.85	7.26	23.11

3.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	
3	2.75	2.75	4.69	2.21	10.90
4			6.25	2.94	13.20
5			7.82	3.68	15.49
6			9.38	4.41	17.79