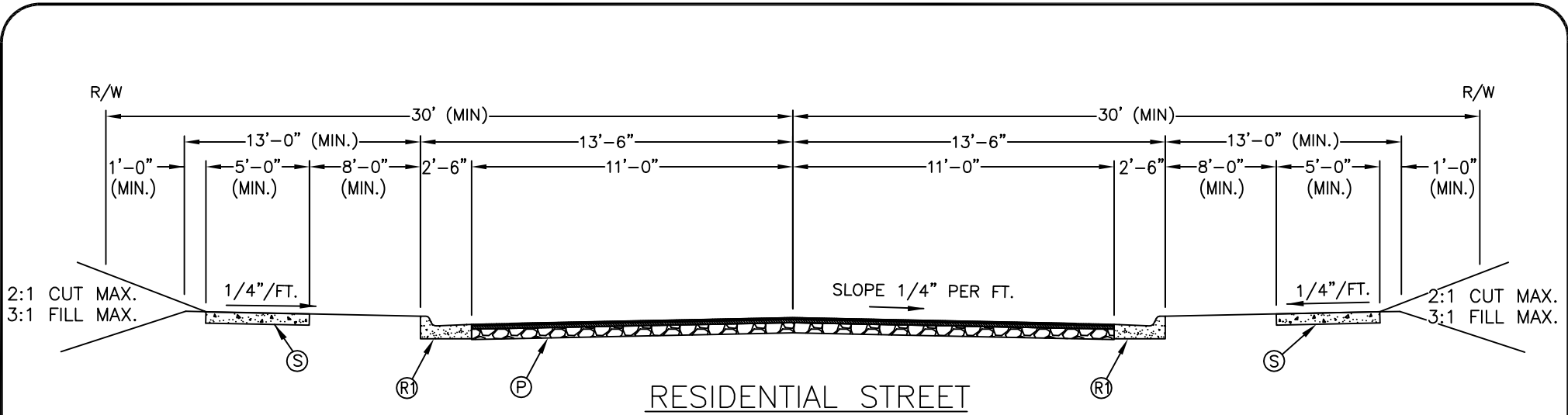


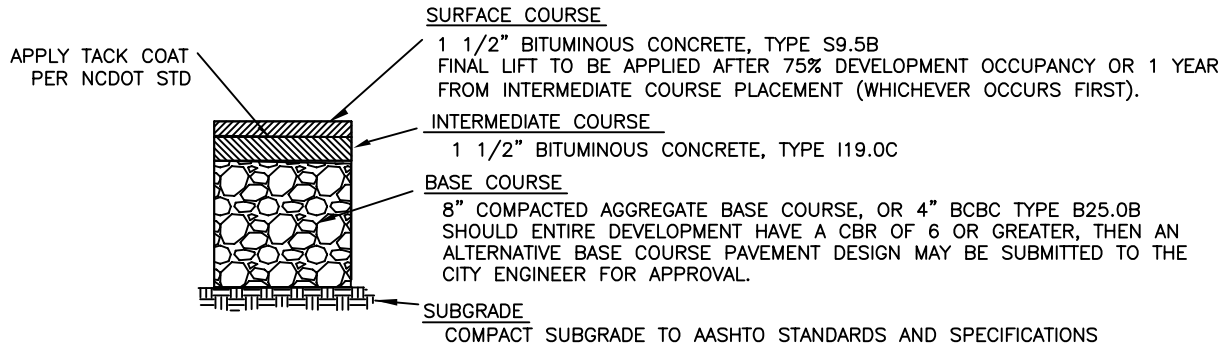
CITY OF LOWELL

TECHNICAL STANDARDS AND SPECIFICATIONS MANUAL



NOTES:

1. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BASED ON SPECIFIC TRAFFIC PARAMETERS.
2. ALL DIMENSIONS NOTED AS MINIMUMS ARE SUBJECT TO STANDARDS REQUIRED BY CITY OF LOWELL DEVELOPMENT ORDINANCE.



KEY

- (R1) 2'-6" CURB AND GUTTER
- (S) 4" CONCRETE SIDEWALK
- (P) TYPICAL PAVEMENT SECTION

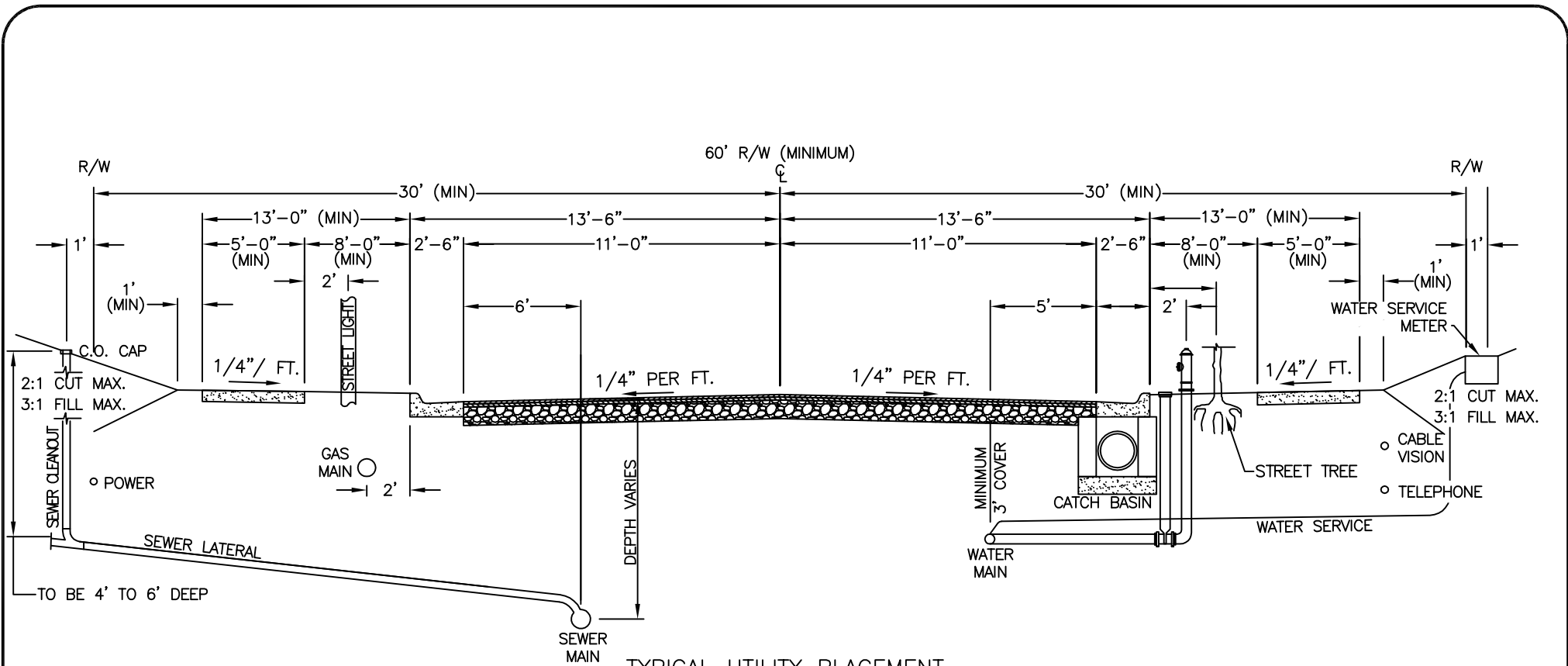
NOT TO SCALE

CITY OF
LOWELL, NC

STREET SECTION
60' (MIN.) RIGHT-OF-WAY

STD.
1.01

REVISIONS			
NO	DATE	BY	COMMENT
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NOTES:

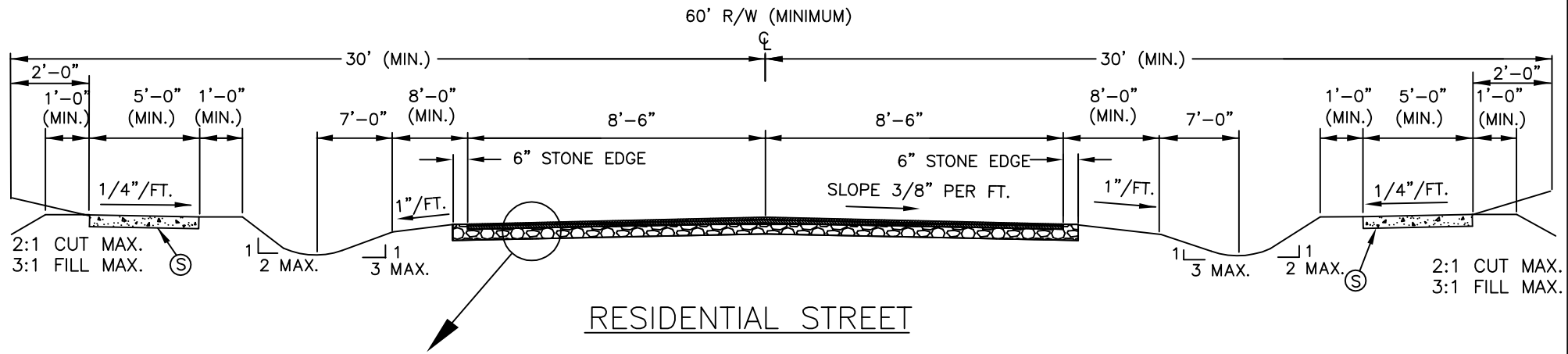
1. ALL DIMENSIONS NOTED AS MINIMUM ARE SUBJECT TO APPLICABLE STANDARDS.
2. WATER AND SEWER MAY BE REVERSED FROM LOCATION SHOWN ABOVE.
3. WATER AND SEWER SEPARATION SHALL BE IN ACCORDANCE WITH SECTION .0900 OF THE RULES GOVERNING PUBLIC WATER SYSTEMS.
4. WATER AND SEWER SHALL BE INSTALLED UNDER PAVEMENT TO MINIMIZE DISRUPTION TO PRIVATE PROPERTY DURING MAINTENANCE ACTIVITIES.
5. TELEPHONE, CABLE TV, AND POWER SHALL BE LOCATED JUST INSIDE THE STREET RIGHT-OF-WAY (COLOCATION IS REQUIRED).

CITY OF
LOWELL, NC

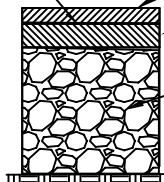
STREET SECTION WITH UTILITIES
60' (MIN.) RIGHT-OF-WAY

STD.
1.02

REVISIONS			
NO	DATE	BY	COMMENT



APPLY TACK COAT PER NCDOT STANDARDS



SURFACE COURSE

1 1/2" BITUMINOUS CONCRETE, TYPE S9.5B
FINAL LIFT TO BE APPLIED AFTER 75% DEVELOPMENT OCCUPANCY OR 1 YEAR FROM INTERMEDIATE COURSE PLACEMENT (WHICHEVER OCCURS FIRST).

INTERMEDIATE COURSE

1 1/2" BITUMINOUS CONCRETE, TYPE I19.0C

BASE COURSE

8" COMPACTED AGGREGATE BASE COURSE, OR 4" BCBC TYPE B25.0B SHOULD ENTIRE DEVELOPMENT HAVE A CBR OF 6 OR GREATER, THEN AN ALTERNATIVE BASE COURSE PAVEMENT DESIGN MAY BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

SUBGRADE

COMPACT SUBGRADE TO AASHTO STANDARDS AND SPECIFICATIONS

TYPICAL MINIMUM PAVEMENT SECTION

(SEE NOTE 4.)

NOTES:

1. SIDEWALK SHALL BE ON BOTH SIDES OF STREET AND LOCATED ON LOT SIDE OF DITCH.
2. SIDEWALK LOCATED OUTSIDE OF STREET RIGHT-OF-WAY SHALL HAVE A FIVE-FOOT (5') PERMANENT SIDEWALK EASEMENT.
3. APPROVAL BY THE CITY ENGINEER IS REQUIRED PRIOR TO USING DITCH TYPE SECTION.
4. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CITY/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
5. ONE-WAY STREETS MAY REDUCE RIGHT-OF-WAY TO 45' (MIN.) AND PAVEMENT WIDTH TO 12'-0", WITH ALL OTHER DIMENSIONS IN EFFECT, UPON APPROVAL BY CITY PLANNING, ZONING & SUBDIVISION ADMINISTRATOR.

KEY

Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

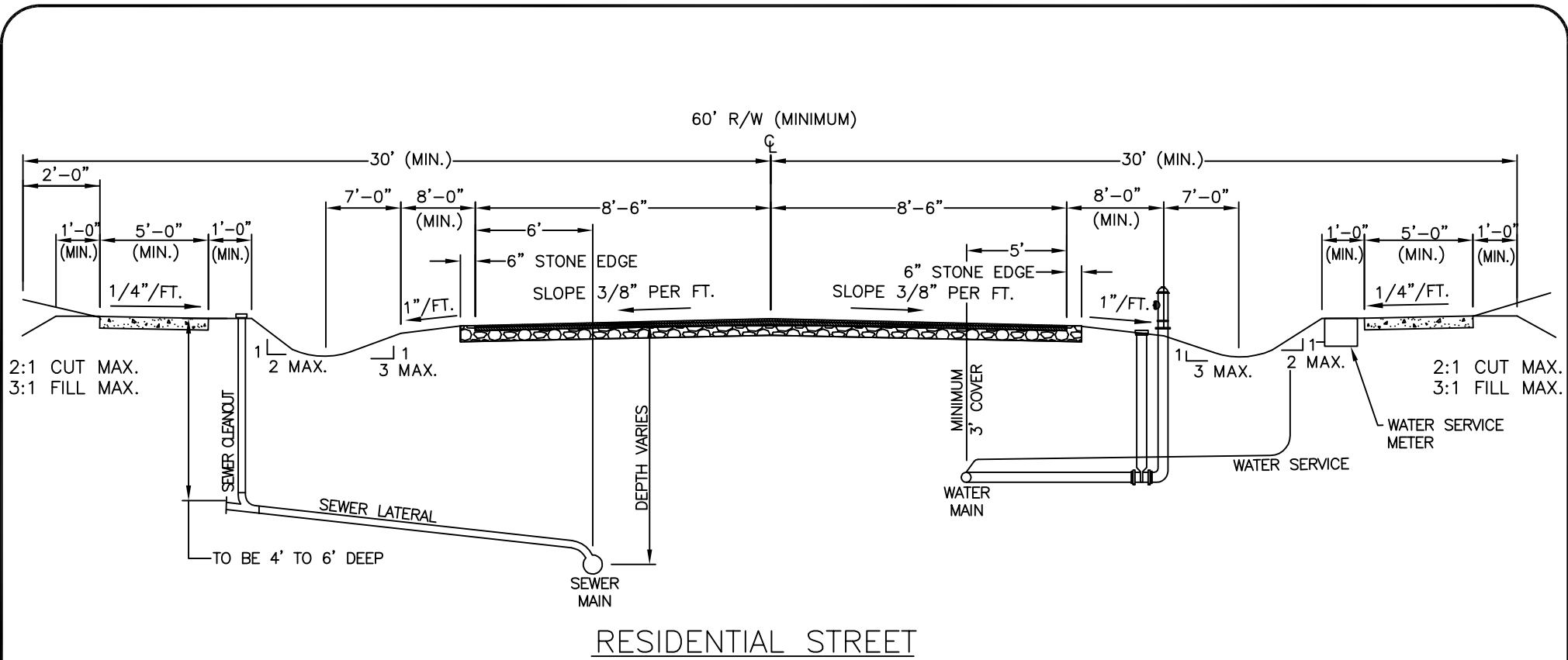
CITY OF
LOWELL, NC

RESIDENTIAL STREET
DITCH TYPE STREET TYPICAL SECTION

STD.
1.03

REVISIONS

NO	DATE	BY	COMMENT



NOTES:

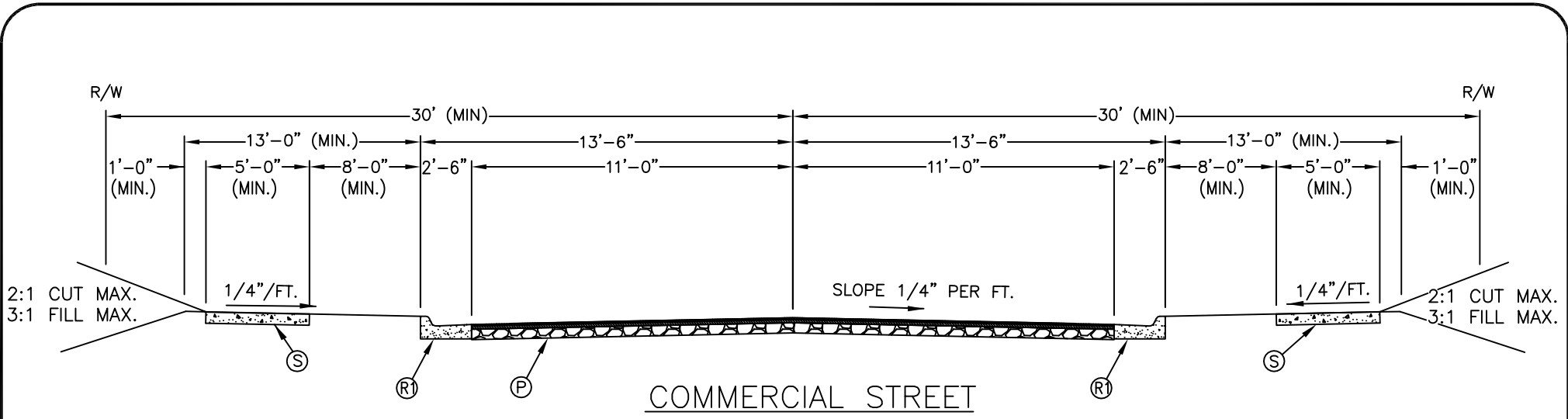
1. ALL DIMENSIONS NOTED AS MINIMUM ARE SUBJECT TO APPLICABLE STANDARDS.
2. WATER AND SEWER MAY BE REVERSED FROM LOCATION SHOWN ABOVE.
3. WATER AND SEWER SEPARATION SHALL BE IN ACCORDANCE WITH SECTION .0900 OF THE RULES GOVERNING PUBLIC WATER SYSTEMS.
4. WATER AND SEWER SHALL BE INSTALLED UNDER PAVEMENT TO MINIMIZE DISRUPTION TO PRIVATE PROPERTY DURING MAINTENANCE ACTIVITIES.
5. TELEPHONE, CABLE TV, AND POWER SHALL BE LOCATED JUST INSIDE THE STREET RIGHT-OF-WAY (COLOCATION IS REQUIRED).

CITY OF
LOWELL, NC

RESIDENTIAL STREET WITH UTILITIES
DITCH TYPE STREET TYPICAL SECTION

STD.
1.04

REVISIONS			
NO	DATE	BY	COMMENT

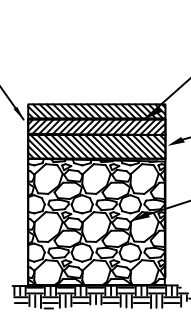


COMMERCIAL STREET

NOTES:

1. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BASED ON SPECIFIC TRAFFIC PARAMETERS.
2. ALL DIMENSIONS NOTED AS MINIMUMS ARE SUBJECT TO STANDARDS REQUIRED BY CITY OF LOWELL DEVELOPMENT ORDINANCE.

APPLY TACK COAT PER NCDOT STD



SURFACE COURSE

3" BITUMINOUS CONCRETE, TYPE S9.5B, PLACED IN TWO (2) 1 1/2" LIFTS. FINAL LIFT TO BE APPLIED AFTER 75% DEVELOPMENT OCCUPANCY OR 1 YEAR FROM INTERMEDIATE COURSE PLACEMENT (WHICHEVER OCCURS FIRST).

INTERMEDIATE COURSE

2 1/2" BITUMINOUS CONCRETE, TYPE I19.0C

BASE COURSE

8" COMPACTED AGGREGATE BASE COURSE, OR 4" BCBC TYPE B25.0B SHOULD ENTIRE DEVELOPMENT HAVE A CBR OF 6 OR GREATER, THEN AN ALTERNATIVE BASE COURSE PAVEMENT DESIGN MAY BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

SUBGRADE

COMPACT SUBGRADE TO AASHTO STANDARDS AND SPECIFICATIONS

TYPICAL MINIMUM PAVEMENT SECTION (MINIMUM)

KEY

- (R1) 2'-6" CURB AND GUTTER
- (S) 4" CONCRETE SIDEWALK
- (P) TYPICAL PAVEMENT SECTION

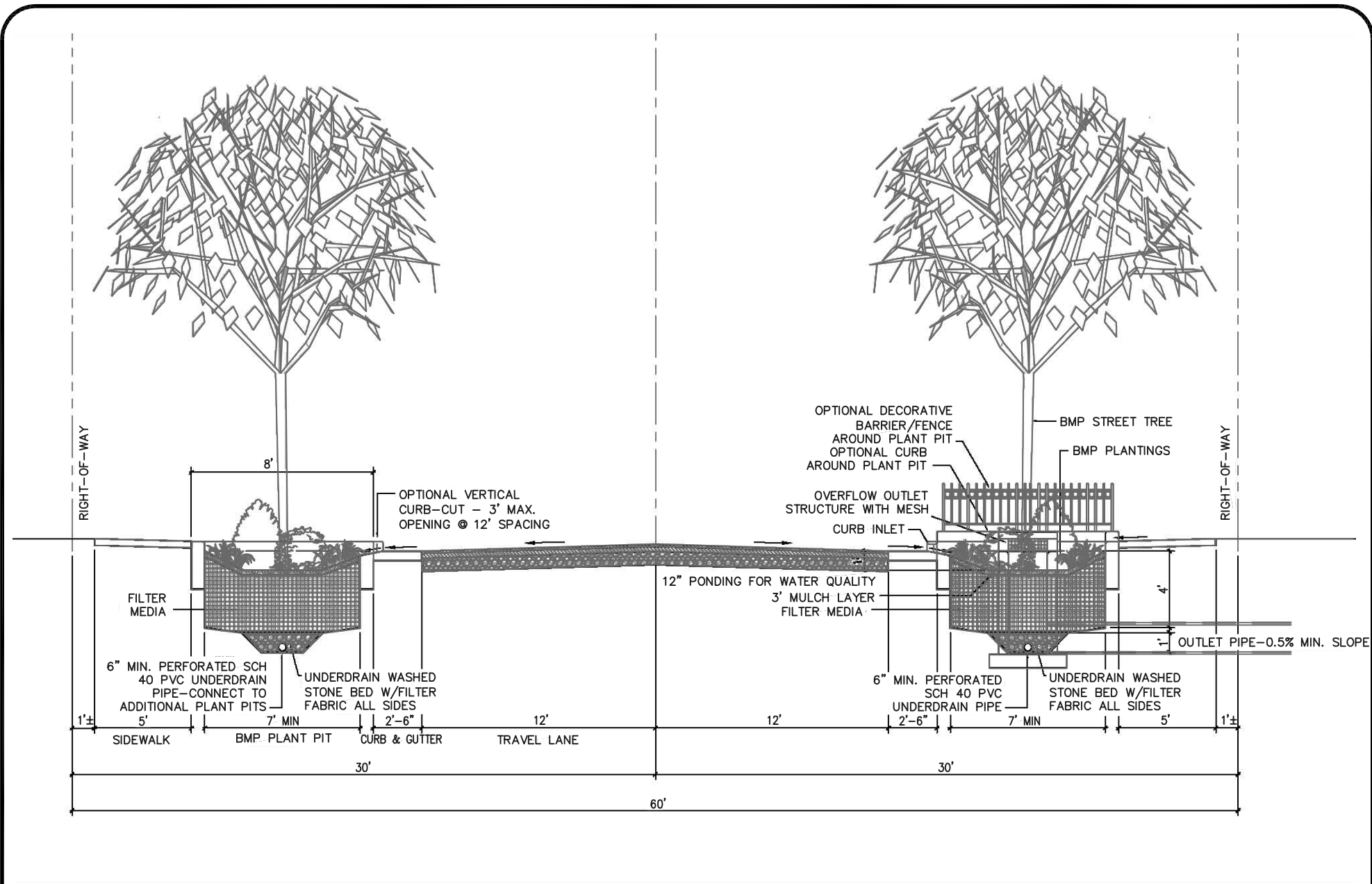
NOT TO SCALE

CITY OF LOWELL, NC

COMMERCIAL STREET SECTION
60' (MIN.) RIGHT-OF-WAY

STD.
1.05

REVISIONS			
NO	DATE	BY	COMMENT
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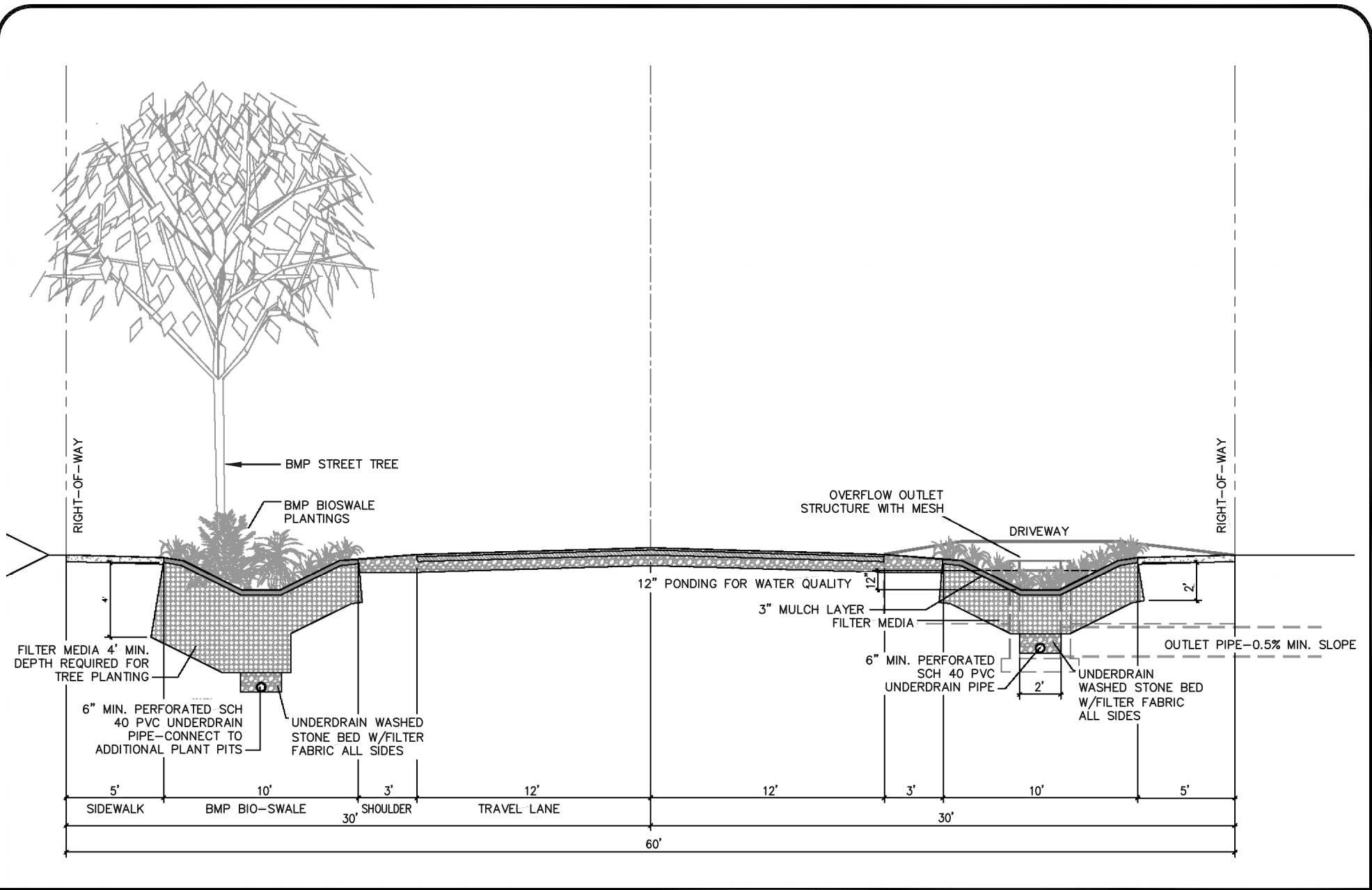
CITY OF
LOWELL, NC

URBAN/NEIGHBORHOOD STREET
SECTION WITH STORM BMP

STD.
1.21

REVISIONS

NO	DATE	BY	COMMENT



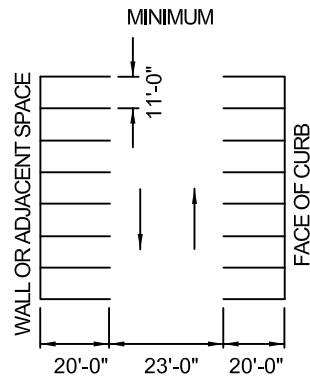
CITY OF
LOWELL, NC

RURAL STREET SECTION
WITH STORM BMP

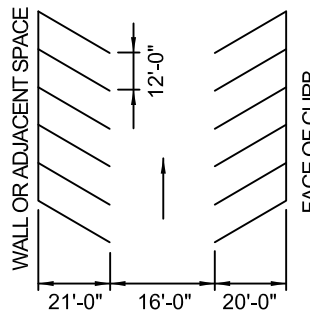
STD.
1.22

REVISIONS			
NO	DATE	BY	COMMENT

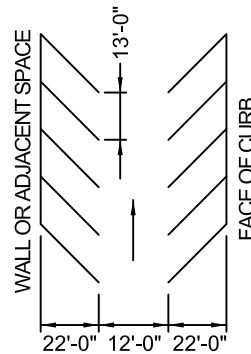
**PARKING ANGLE 90°
(TWO WAY OPERATION ONLY)**



**PARKING ANGLE 60°
(ONE WAY OPERATION ONLY)**



**PARKING ANGLE 45°
(ONE WAY OPERATION ONLY)**



NOTES:

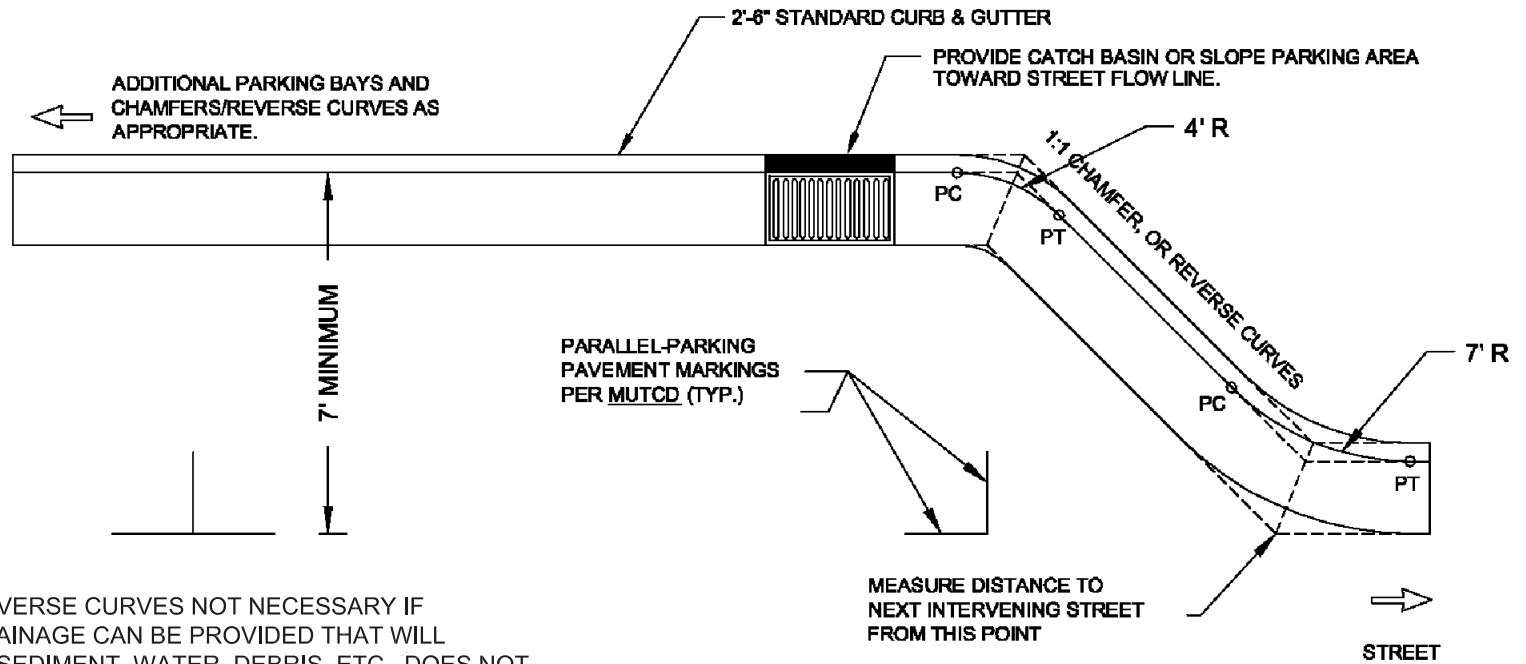
1. FOR ACCESSIBLE PARKING STANDARDS/SIGNAGE SEE ADDITIONAL STANDARDS.
2. PAVEMENT MARKINGS SHALL BE 4" WHITE PAINT.
3. ALTERNATIVE PARKING ANGLES, AISLE WIDTHS, AND OPERATION (TWO-WAY ANGLED PARKING OR REVERSE-ANGLE PARKING) WILL BE CONSIDERED ON A CASE-BY-CASE BASIS.

CITY OF
LOWELL, NC

PARKING STANDARDS

STD.
2.01

REVISIONS			
NO	DATE	BY	COMMENT



NOTES:

1. CHAMFERS/REVERSE CURVES NOT NECESSARY IF ADEQUATE DRAINAGE CAN BE PROVIDED THAT WILL ENSURE THAT SEDIMENT, WATER, DEBRIS, ETC., DOES NOT COLLECT IN 90-DEGREE CORNERS.
2. PARALLEL ACCESSIBLE SPACES AND LOADING ZONES TO BE REVIEWED ON A CASE-BY-CASE BASIS.
3. FOR PARKING BAYS THAT ARE EIGHT FEET (8') IN WIDTH OR GREATER, THE PAVEMENT MARKINGS SHALL BE SET AT ONE FOOT (1') LESS THAN THE STALL WIDTH.
4. SEPARATION FROM INTERVENING STREET DISTANCES SHALL BE REVIEWED AND APPROVED BY THE CITY.
5. POSITIVE DRAINAGE SHALL BE PROVIDED EITHER BY INSTALLATION OF APPROPRIATE DRAINAGE STRUCTURES OR SLOPE PARKING AREA TO STREET FLOW LINE.

CITY OF
LOWELL, NC

PARALLEL PARKING STANDARDS

STD.
2.02

REVISIONS			
NO	DATE	BY	COMMENT

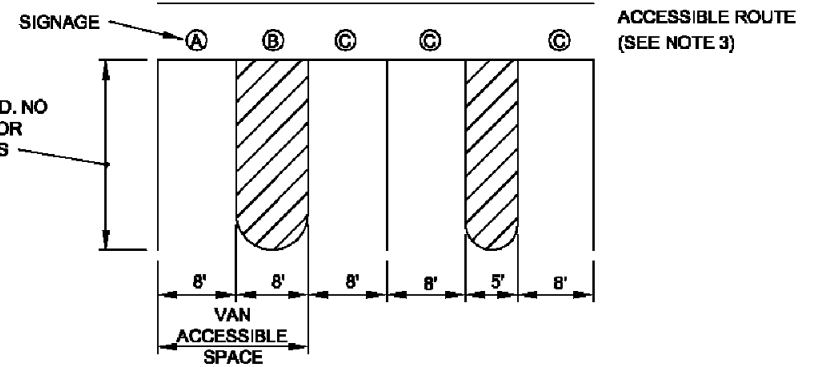
ACCESSIBLE PARKING REQUIREMENTS

TOTAL PARKING SPACES PROVIDED	MINIMUM NUMBER OF ACCESSIBLE SPACES SPACES REQUIRED	MINIMUM NUMBER OF ACCESSIBLE SPACES REQUIRED TO BE VAN ACCESSIBLE
1 TO 25	1	1
26 TO 50	2	1
51 TO 75	3	1
76 TO 100	4	1
101 TO 150	5	1
151 TO 200	6	1
201 TO 300	7	1
301 TO 400	8	1
401 TO 500	9	2
501 TO 1000	2% OF TOTAL	1 IN EVERY 8 ACCESSIBLE SPACES
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000	1 IN EVERY 8 ACCESSIBLE SPACES

SECTION 4.1.2 (5) OF THE AMERICANS WITH DISABILITIES ACT (ADA).
SEE 4.1.2.(5) (d) FOR MEDICAL CARE FACILITIES

NOTES:


1. ALL 12"x18" ACCESSIBLE SIGNS (R7-8a & R7-1) SHALL BE MOUNTED AT 7 FEET FROM GRADE TO BOTTOM EDGE OF SIGN FACE (MUTCD). MOUNTING HEIGHT CAN BE REDUCED TO 5 FEET IF PLACED IN AN AREA BETWEEN SIDEWALK AND BUILDING FACE IN WHICH PEDESTRIANS ARE NOT EXPECTED TO USE.
2. REFER TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) U.S. DEPARTMENT OF TRANSPORTATION AND NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUPPLEMENT.
3. IF ACCESSIBLE ROUTE IS A RAISED SIDEWALK AREA, THEN RAMPS ARE REQUIRED AT LOADING ZONE AREA.




ONE OUT OF EVERY EIGHT (8) ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, IS REQUIRED TO BE VAN ACCESSIBLE.

PARKING SPACE PAVEMENT MARKINGS


(A)



R7-8e
12"x6"




MUTCD
R7-8a
12"x18"



R7-8D
12"x9"


(B)




MUTCD
R7-1
12"x18"

REQUIRED ACCESSIBLE
RESERVED PARKING SIGN

(C)



MUTCD
R7-8a
12"x18"



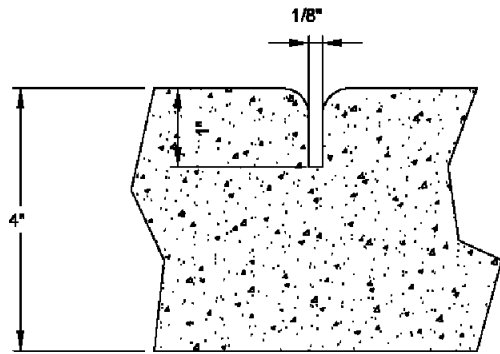
R7-8D
12"x9"

CITY OF
LOWELL, NC

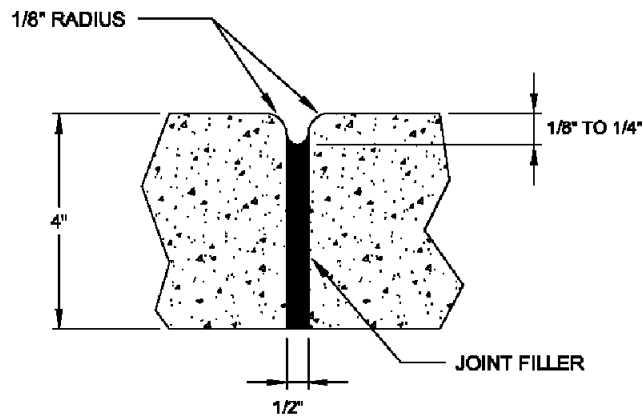
ACCESSIBLE PARKING
AND SIGNAGE

STD.
2.11

REVISIONS			
NO	DATE	BY	COMMENT



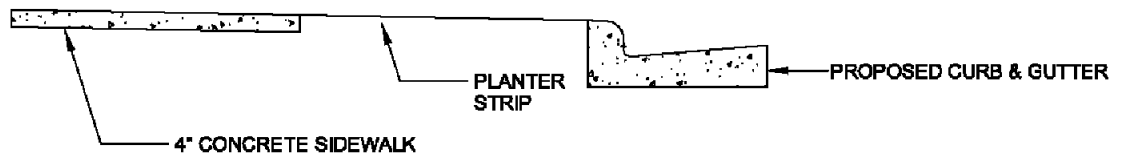
GROOVE JOINT IN SIDEWALK



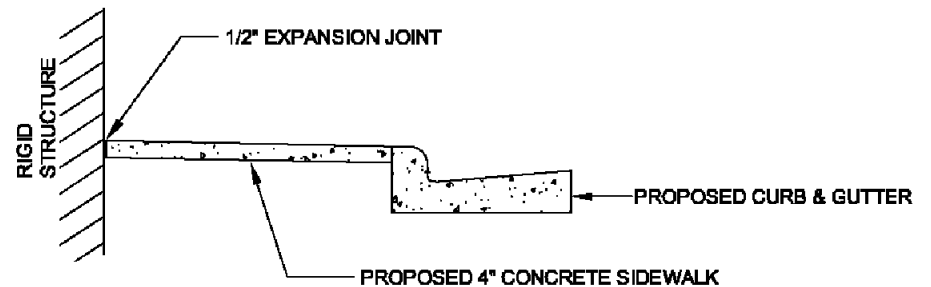
TRANSVERSE EXPANSION JOINT IN SIDEWALK

GENERAL NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
3. WIDTH OF SIDEWALK ON ALL STREETS SHALL BE A MINIMUM OF 5'.
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI. IN 28 DAYS.
5. ZONING CONDITIONS MAY REQUIRE ADDITIONAL WIDTH SIDEWALKS WHICH SHALL SUPERSEDE THESE STANDARD DIMENSIONS SHOWN.



CONCRETE SIDEWALK WITH PLANTER STRIP



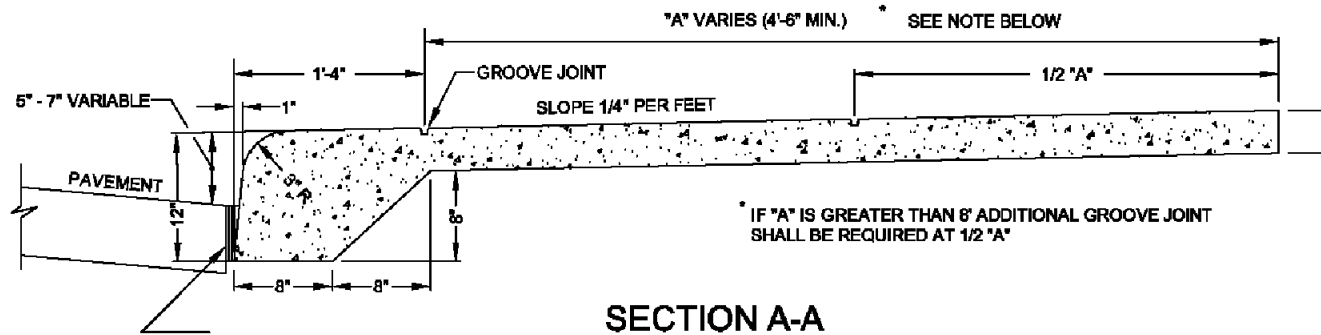
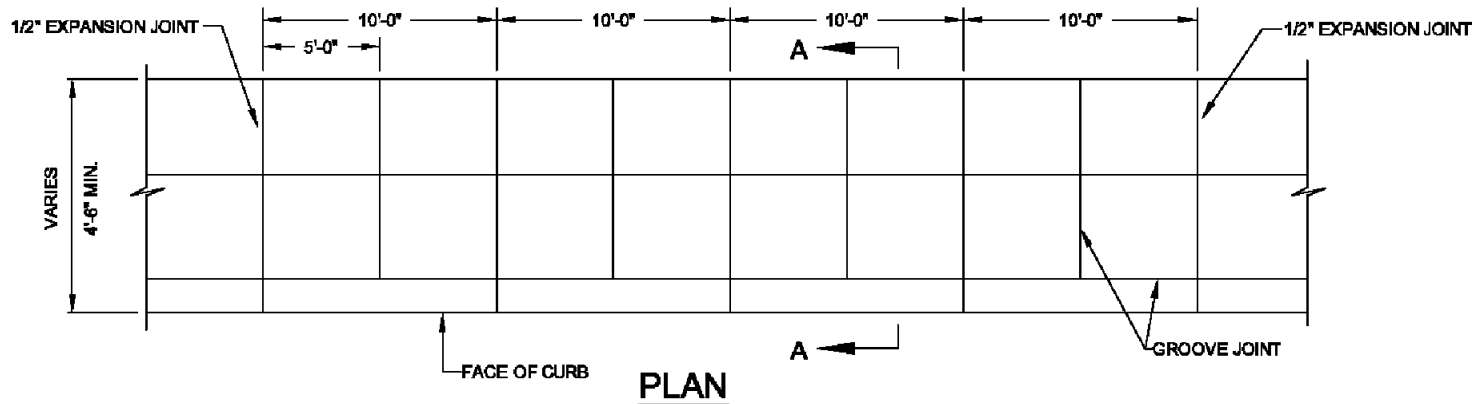
DETAILS SHOWING EXPANSION JOINTS FOR CONCRETE SIDEWALK

CITY OF
LOWELL, NC

CONCRETE SIDEWALK

STD.
3.01

REVISIONS			
NO	DATE	BY	COMMENT



TWO 1/2" THICK PIECES BITUMINOUS FIBER REQUIRED
IF SUBBASE IS CONCRETE. MUST BE SEALED WITH
APPROVED JOINT SEALER.

GENERAL NOTES:

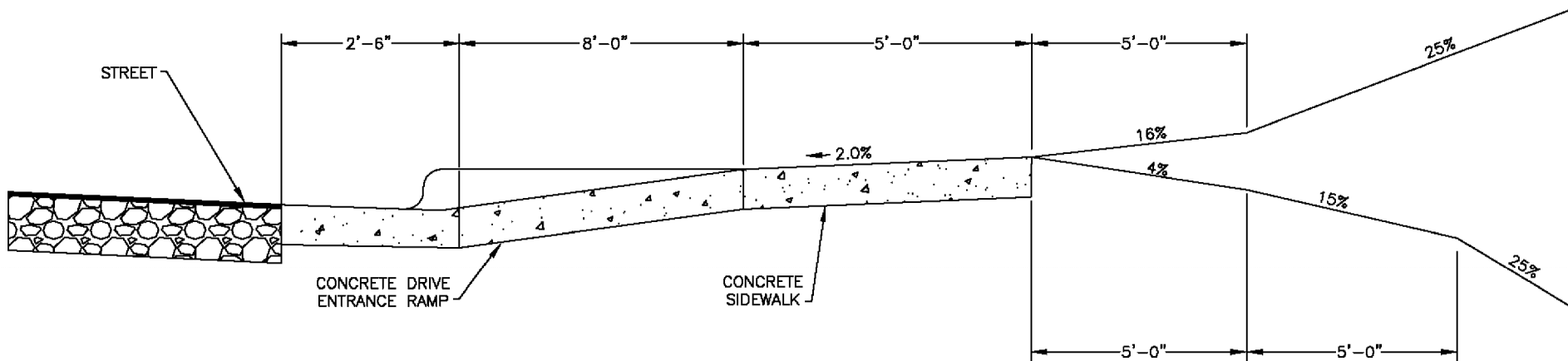
1. A GROOVE JOINT 1" DEEP WITH 1/3" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 40' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
3. SEE STANDARD FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.
4. SEE STANDARD FOR DETAIL OF DRIVEWAY.
5. MONOLITHIC CURB AND SIDEWALK TO BE CONSTRUCTED ONLY WHEN APPROVED BY THE APPROPRIATE PUBLIC WORKS ENGINEER.

CITY OF
LOWELL, NC

MONOLITHIC CURB AND SIDEWALK

STD.
3.02

REVISIONS			
NO	DATE	BY	COMMENT



NOTE:

GRADES ARE SHOWN FOR SINGLE FAMILY & TWO FAMILY LOTS ONLY.
 COMMERCIAL TYPE USES MUST FLATTEN GRADES ACCORDINGLY
 FOR HIGHER VOLUMES OF TRAFFIC, ACCORDING TO THE CITY
 ENGINEER'S DIRECTION.

NOT TO SCALE

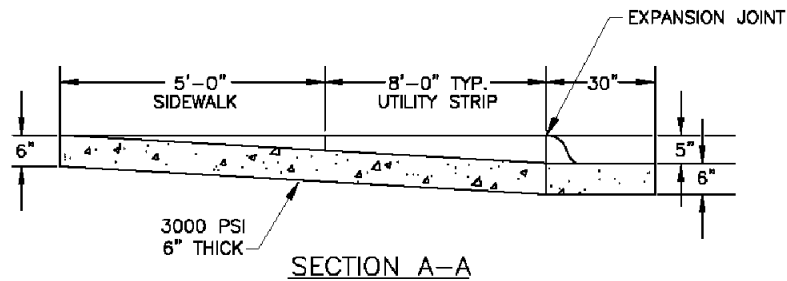
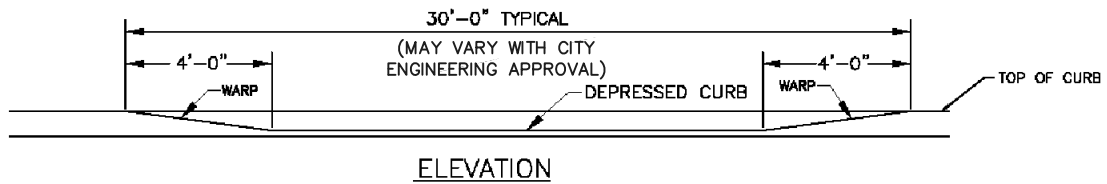
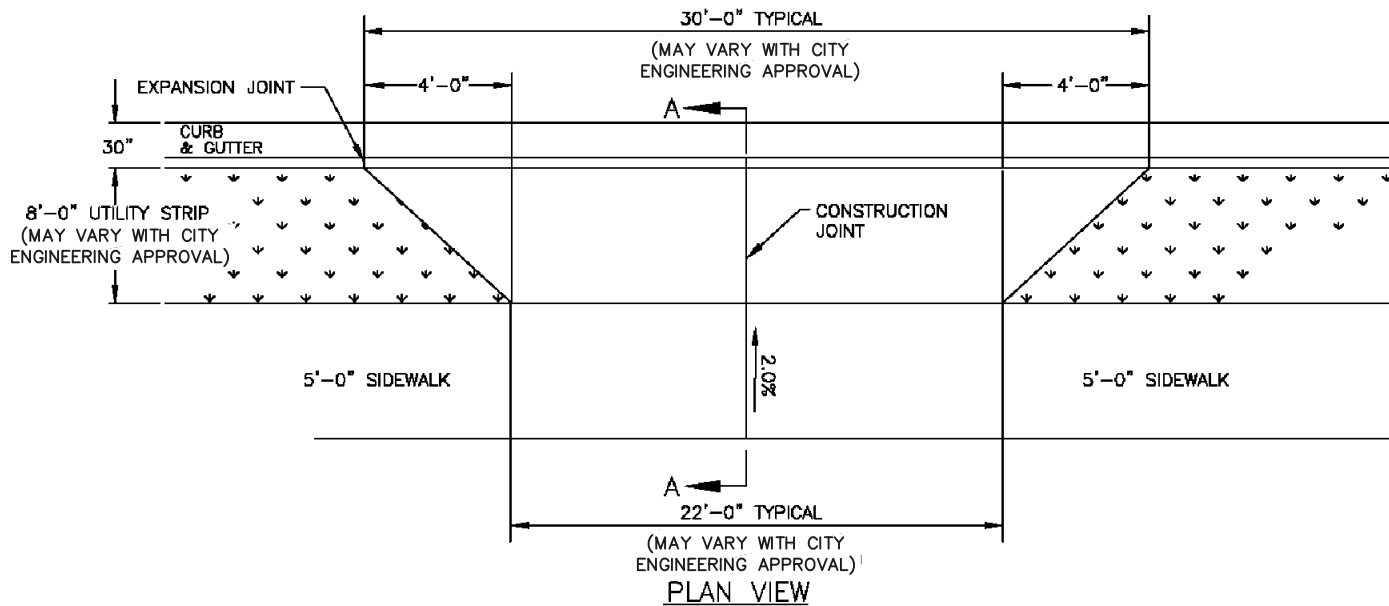
CITY OF
LOWELL, NC

DRIVEWAY GRADES

STD.
4.01

REVISIONS

NO	DATE	BY	COMMENT

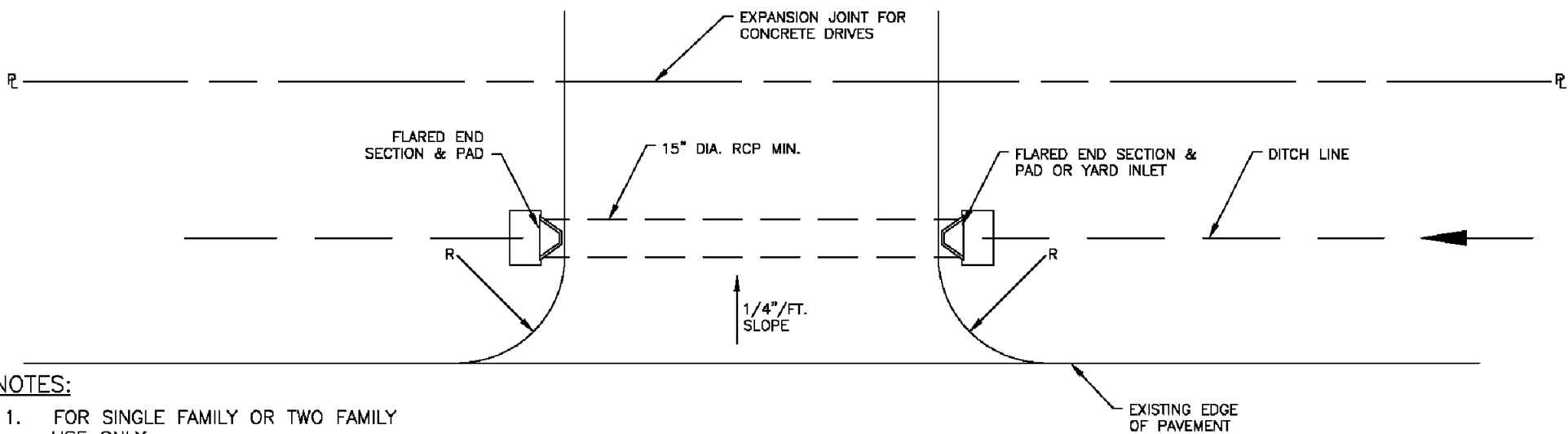


CITY OF
LOWELL, NC

FAN TYPE DRIVEWAY ENTRANCE

STD.
4.02

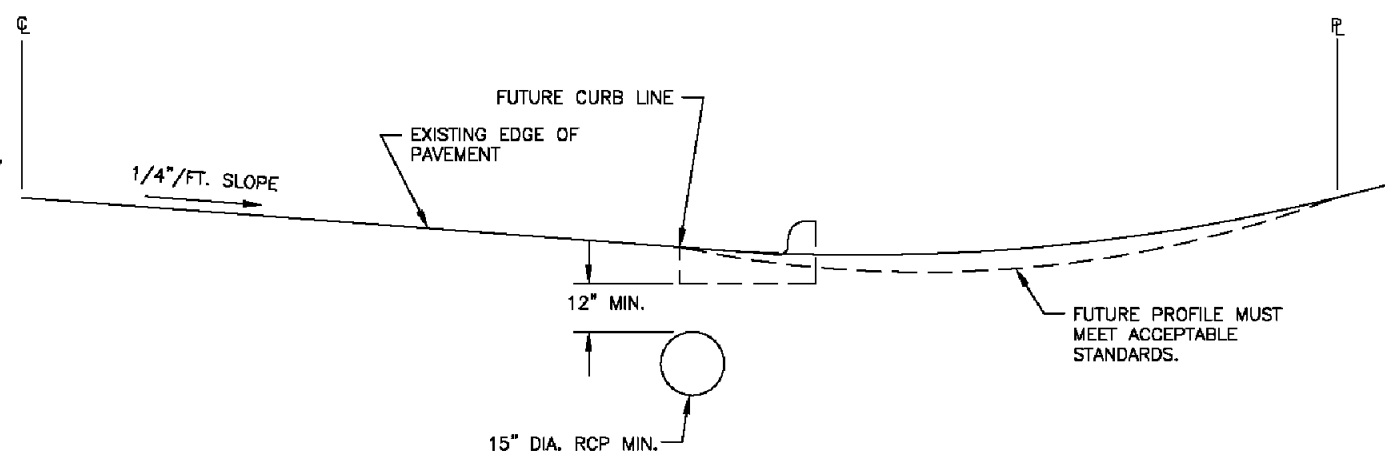
REVISIONS			
NO	DATE	BY	COMMENT



NOTES:

1. FOR SINGLE FAMILY OR TWO FAMILY USE ONLY.
2. ASPHALT DRIVES ARE PREFERRED, CONCRETE WILL BE ALLOWED. IF CONCRETE DRIVE IS USED, AN EXPANSION JOINT SHALL BE PROVIDED AT THE PROPERTY LINE OR BACK OF FUTURE SIDEWALK LINE - WHICHEVER IS FURTHER FROM THE STREET.
3. GRADE PROFILE SHALL BE DESIGNED TO PROPERLY TIE IN WITH THE ULTIMATE WIDENING OF THE STREET.
4. DRIVEWAY PROFILE SHALL FALL @ 1/4" PER FOOT FROM EDGE OF PAVEMENT TO ϕ OF ROADSIDE DITCH. PIPE SHALL BE PLACED TO HAVE 12" OF CLEARANCE BELOW FINISHED PAVEMENT AT THIS POINT.

PLAN
NO CURB & GUTTER ON STREET



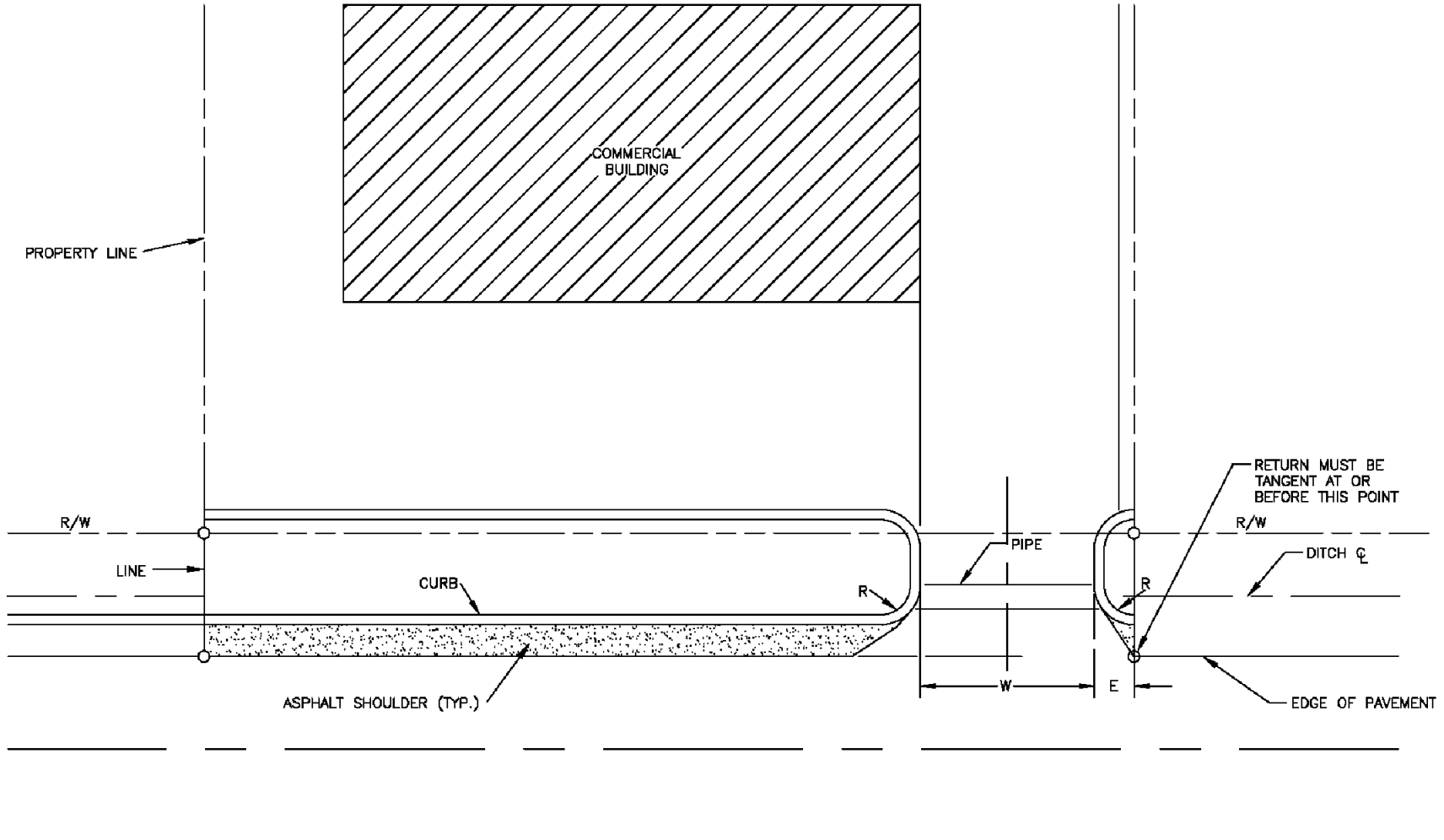
SECTION
NO SCALE

CITY OF
LOWELL, NC

DRIVEWAY DITCH SECTION STREET

STD.
4.03

REVISIONS			
NO	DATE	BY	COMMENT



1. R - 10' MIN., 30' MAX.
 E - 10' MIN.
 W - ONE WAY: 12' MIN., 20' MAX.
 - TWO WAY: 20' MIN., 36' MAX.
2. ALL RADII ARE TO BACK OF CURB.

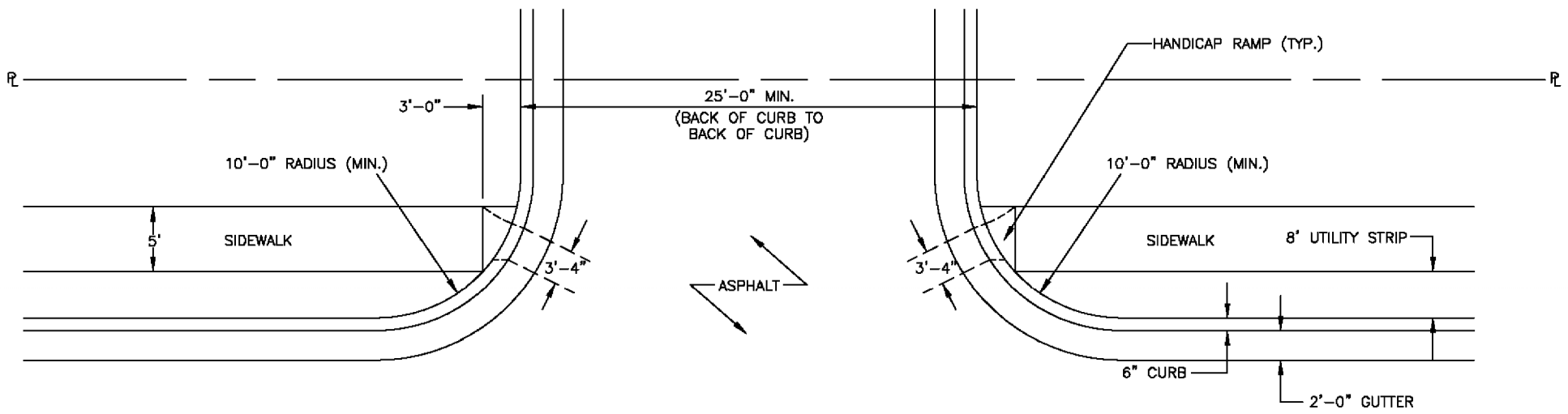
NOT TO SCALE

CITY OF
LOWELL, NC

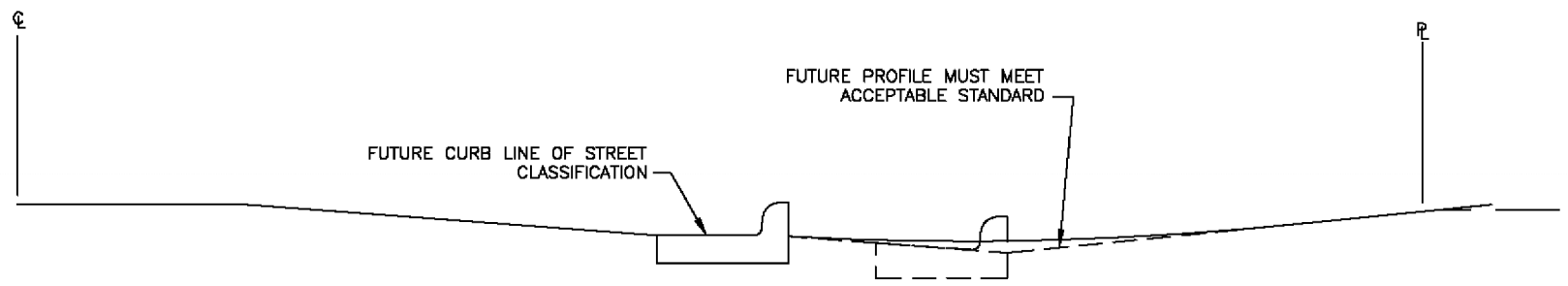
COMMERCIAL SINGLE DRIVEWAY
DITCH SECTION

STD.
4.04

REVISIONS			
NO	DATE	BY	COMMENT



PLAN
WITH CURB & GUTTER



NOTES:

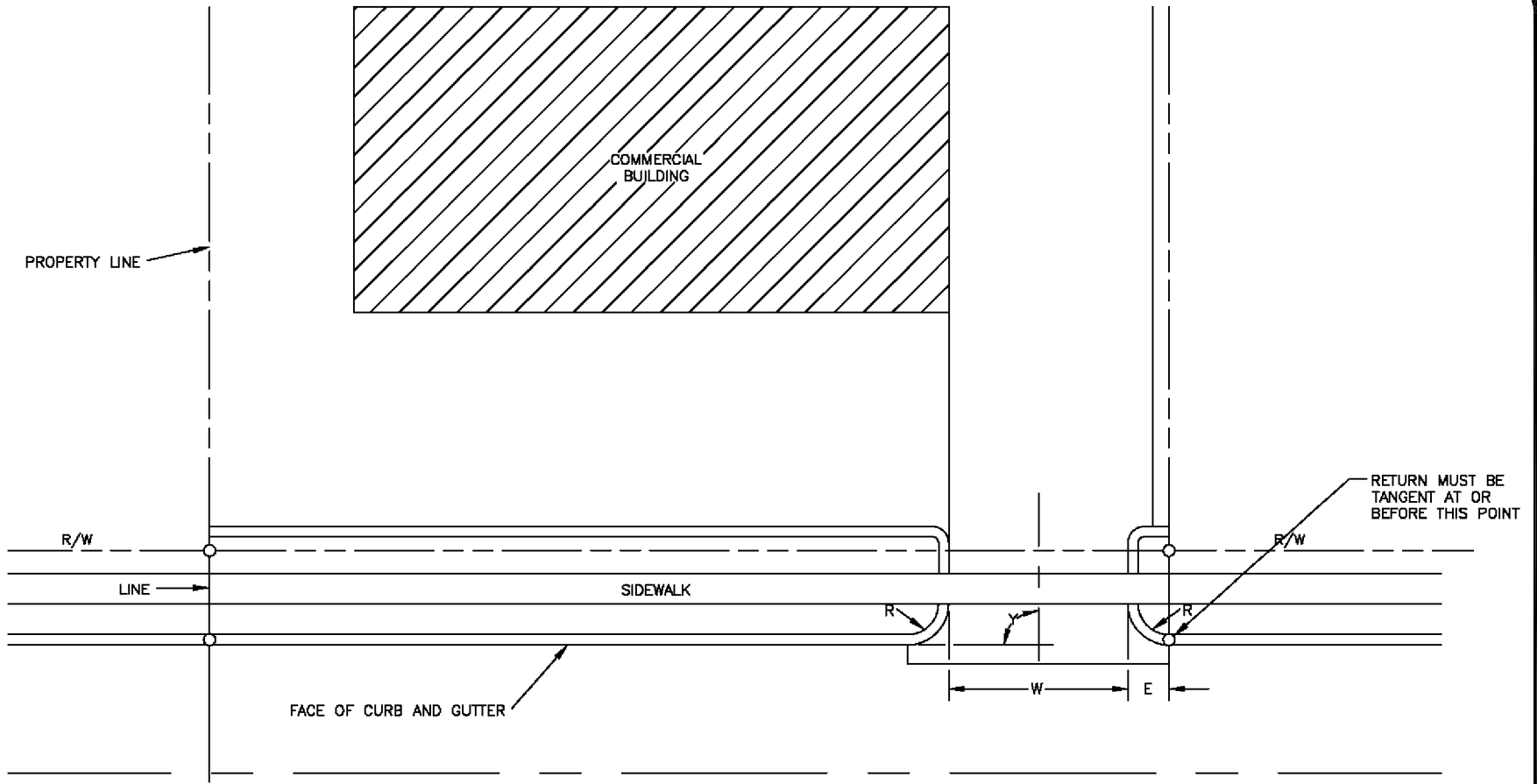
1. FOR COMMERCIAL & MULTI-FAMILY USES ONLY.
2. DRIVES TO BE GRADED TO DRAIN TOWARD STREET FROM PROPERTY LINE & AWAY FROM STREET FROM PROPERTY LINE UNLESS STORM DRAINAGE STRUCTURES ARE PROVIDED TO INTERCEPT STORM FLOWS.
3. DRIVE GRADE PROFILE SHALL BE DESIGNED TO TIE IN WITH ULTIMATE WIDENING OF STREET.

CITY OF
LOWELL, NC

DRIVEWAY – STREET TYPE,
CURB & GUTTER SECTION

STD.
4.05

REVISIONS			
NO	DATE	BY	COMMENT



1. R - 3' (CITY STD. RAMP)
 - 10' MIN., 20' MAX. (STREET TYPE)
- W - (STREET TYPE)
 - ONE WAY: 12' MIN., 20' MAX.
 - TWO WAY: 20' MIN., 36' MAX.
- E - 3' MIN.
- Y - 90° PREFERRED
 - 75°-90° WITH CITY ENGINEERING APPROVAL
2. ALL RADII ARE TO BACK OF CURB.

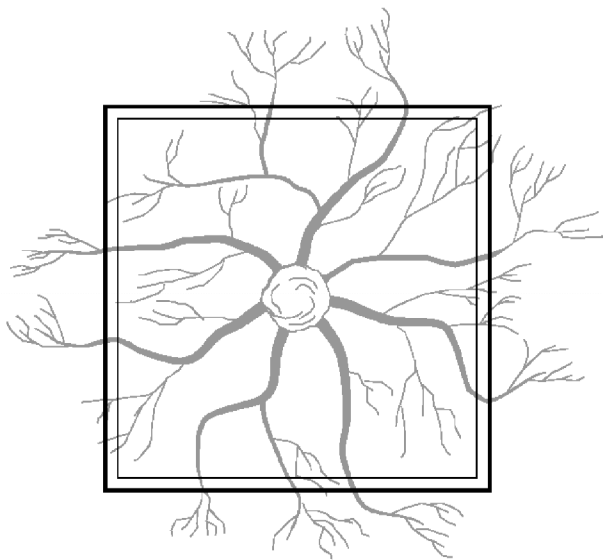
NOT TO SCALE

CITY OF
LOWELL, NC

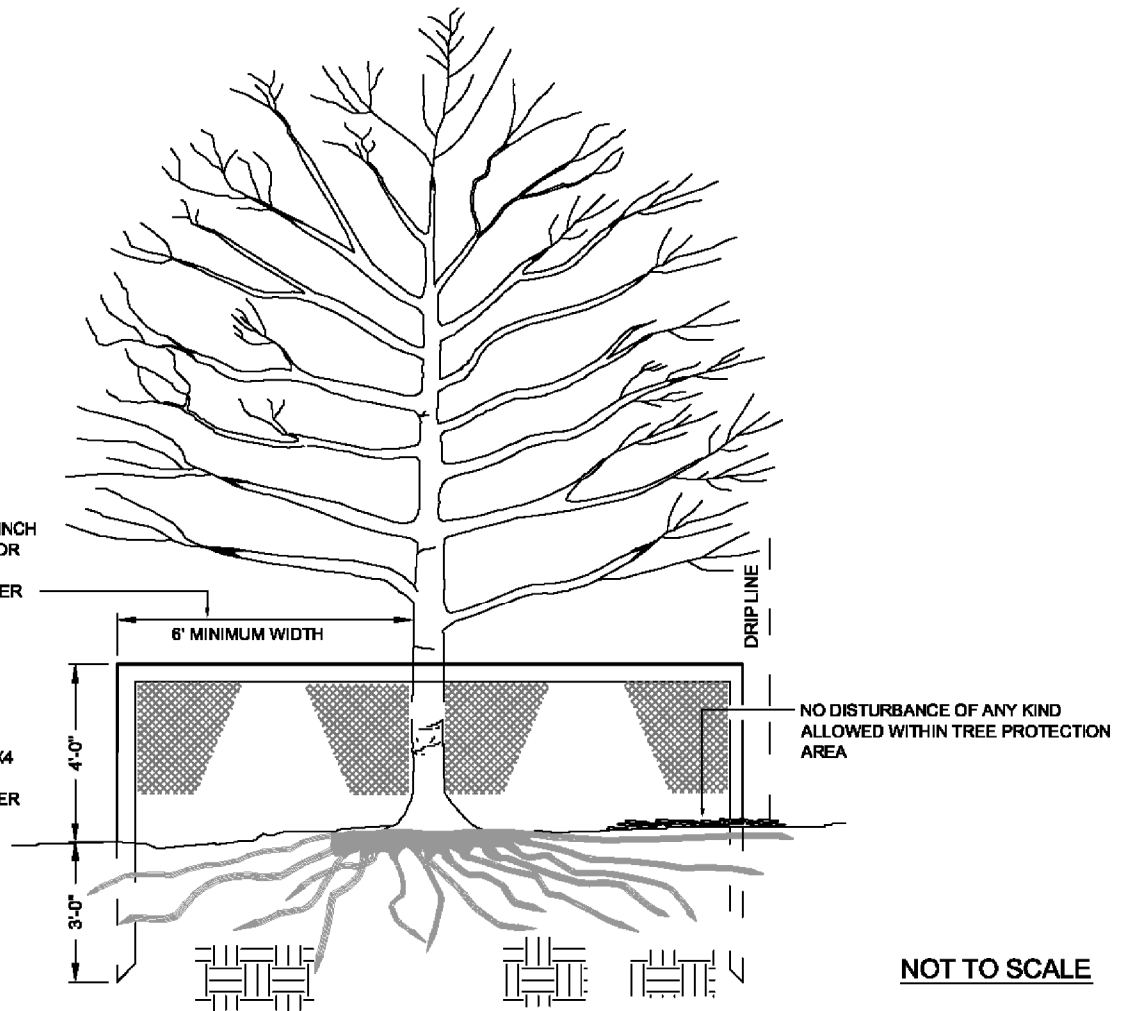
COMMERCIAL SINGLE DRIVEWAY
CURB AND GUTTER

STD.
4.06

REVISIONS			
NO	DATE	BY	COMMENT



PLAN VIEW OF TREE PROTECTION



ONE FOOT FOR EACH INCH OF TRUNK DIAMETER OR 1/2 HEIGHT OF TREE - WHICHEVER IS GREATER

TREE PROTECTION BARRIERS TO BE 2X4 MIN. STANDARDS AND EITHER 1X4 RAILS (3 PER SIDE) OR ORANGE SAFETY FENCING AROUND PERIMETER

NO DISTURBANCE OF ANY KIND ALLOWED WITHIN TREE PROTECTION AREA

NOTES:

1. REMOVE ALL TREE PROTECTION BARRIERS UPON COMPLETION OF PROJECT.
2. PLANTING PLANS OR GRADING PLANS SHALL INDICATE LOCATIONS OF ALL TREE PROTECTION FOR INDIVIDUAL AND/OR CLUSTERS OF TREES TO BE PROTECTED.

NOT TO SCALE

CITY OF
LOWELL, NC

TREE PROTECTION BARRIER

STD.
5.01

REVISIONS			
NO	DATE	BY	COMMENT