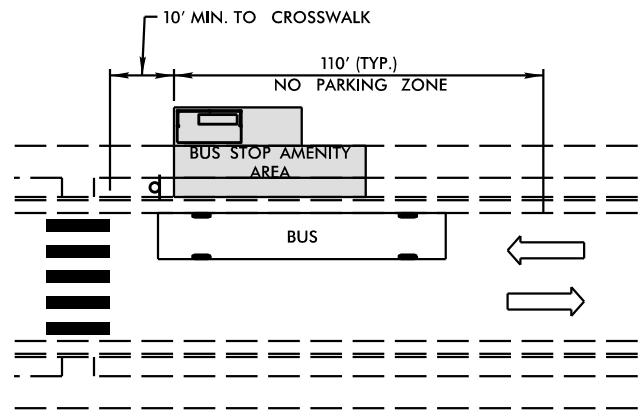
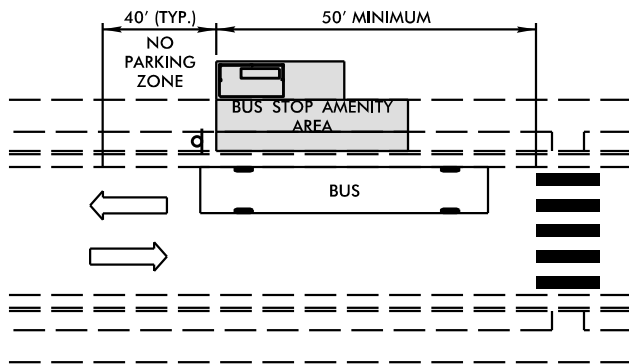
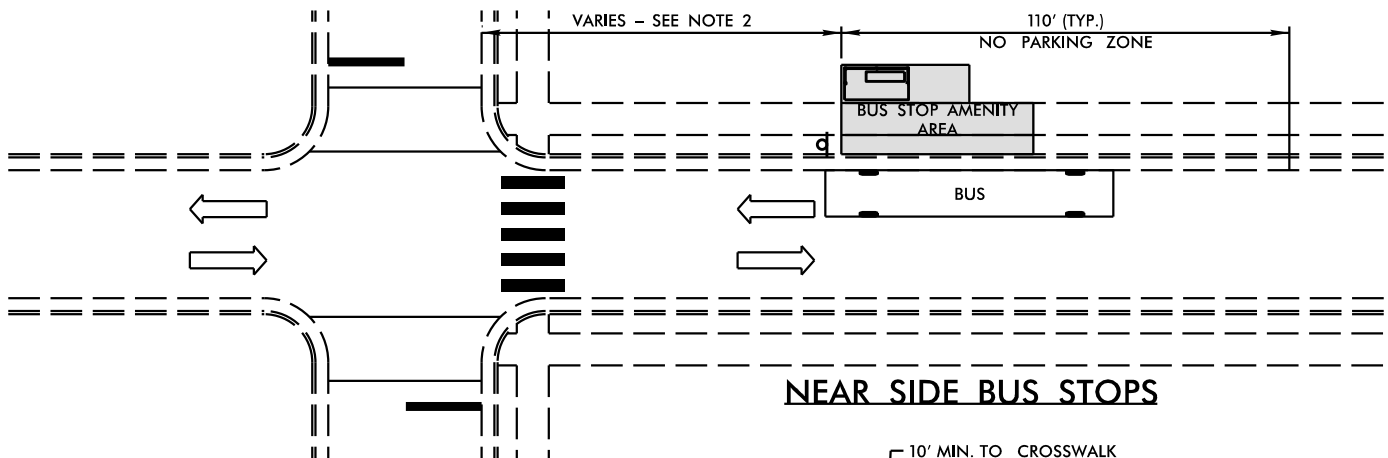
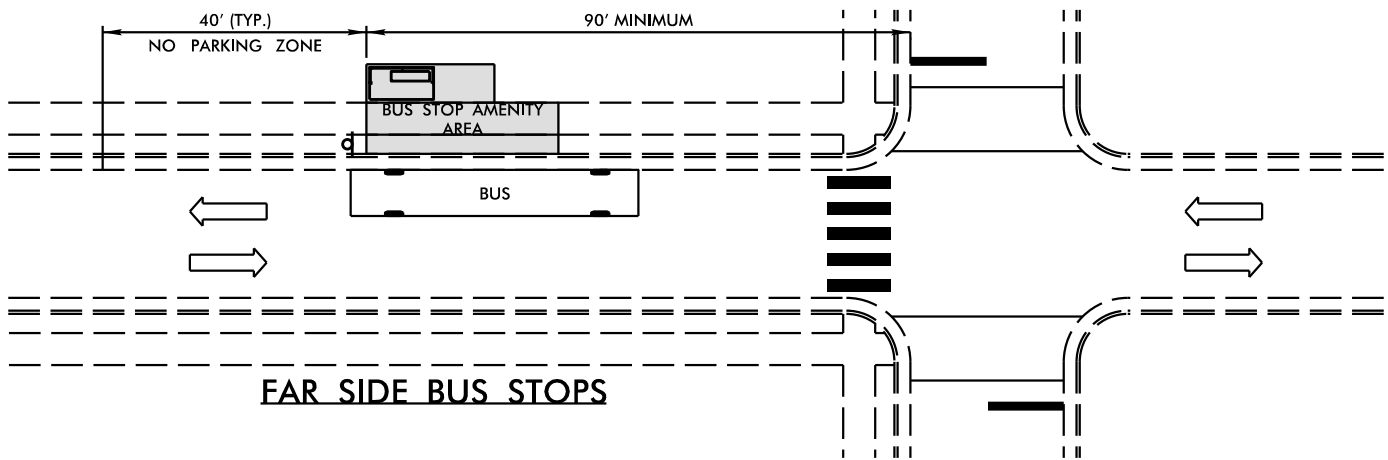




TRANSIT STANDARD DETAILS

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BUS-4.30	PEDESTRIAN SAFETY RAIL (FALL PROTECTION)



NOTES:

1. BUS STOP LOCATIONS ARE TO BE COORDINATED WITH GOTRIANGLE TO ENSURE SUFFICIENT OPERATION OF BUSES.
2. NEAR SIDE BUS STOPS ARE TO BE LOCATED OUTSIDE ANY TURN LANES AND TURN LANE TAPERS UNLESS OTHERWISE APPROVED BY GOTRIANGLE. IF NO TURN LANES ARE IMPACTED, THE BUS STOP IS TO BE LOCATED A MINIMUM 100' FROM THE NEAREST EDGE OF TRAVEL OF THE INTERSECTING ROAD.
3. BUS STOPS LOCATED ON NEAR SIDE OF SIGNALIZED INTERSECTIONS SHOULD BE EVALUATED FOR SIGNAL PRIORITY AND/OR QUEUE JUMPS.
4. FAR SIDE BUS STOPS ARE PREFERRED IN MOST CIRCUMSTANCES TO REDUCE IMPACTS TO SIGNALIZED INTERSECTIONS AND MINIMIZE SIGHT LINE CONFLICTS FOR THE INTERSECTION.
5. ALL STOP LOCATIONS SHOULD BE EVALUATED FOR ANY SIGHT LINE OBSTRUCTIONS AND DESIGNED TO PROVIDE STOPPING SIGHT DISTANCE LINES FROM THE BUS TO PASSENGERS AT THE BUS STOP.
6. BUS BAYS MAY BE REQUIRED AT SPECIFIC LOCATIONS TO BE DETERMINED BY GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT, AS APPLICABLE. SEE DETAIL BUS-01.20 FOR TYPICAL BUS BAY LAYOUTS.
7. GOTRIANGLE WILL BE REQUIRED TO PERFORM A SAFETY AND SECURITY REVIEW FOR ALL BUS STOP LOCATIONS. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO SCHEDULE A REVIEW.

REV. DATE 10-14-2024

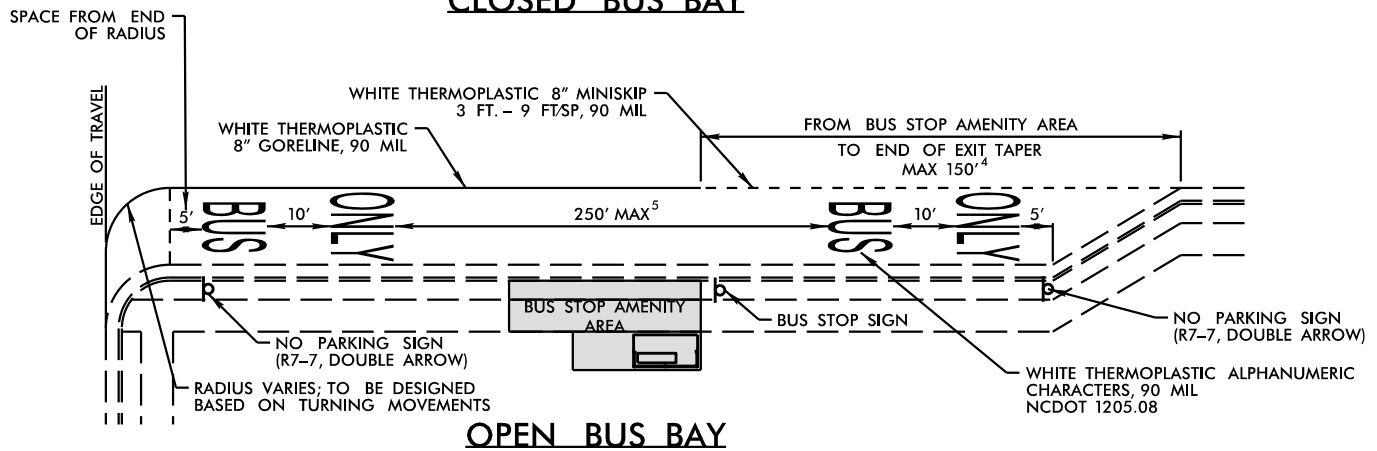
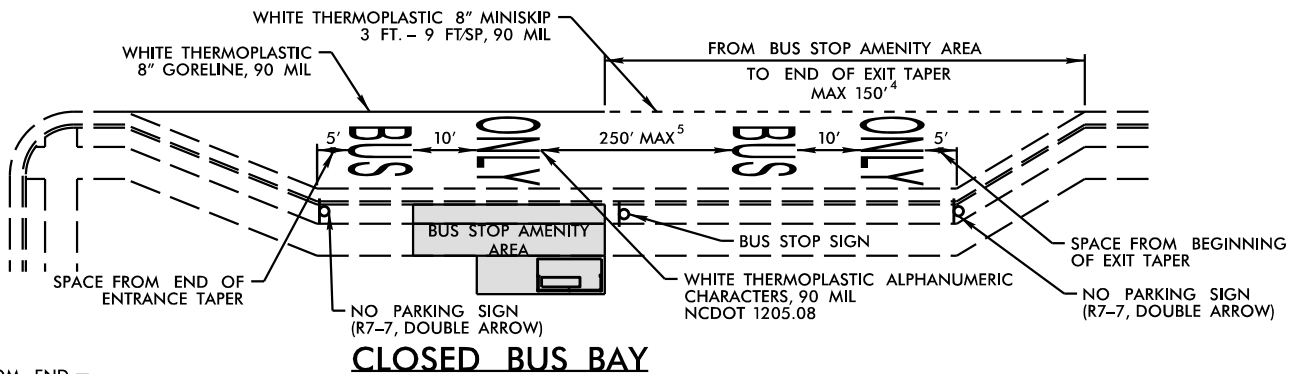
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TYPICAL BUS STOP LOCATIONS

DETAIL #
BUS-01.10

SHEET #
1 OF 1



NOTES:

1. SEE DETAIL BUS-01.20 FOR TYPICAL BUS BAY LAYOUTS, DIMENSIONS, AND NOTES.
2. ALL PAYEMENT MARKING & SIGNAGE ARE TO BE IN ACCORDANCE WITH THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
3. REQUIRED PAYEMENT MARKINGS MAY VARY BASED ON BUS STOP CONDITIONS AND TRAFFIC OPERATIONS. ALL PAYEMENT MARKING & SIGNAGE IS TO BE APPROVED BY GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT AS APPLICABLE.
4. MINISKIP LINES ARE NOT TO EXTEND FURTHER THAN BUS STOP AMENITY PAD OR 150', WHICHEVER IS SHORTER.
5. REPEAT 'BUS ONLY' MARKINGS IF FULL WIDTH BUS BAY IS 150' LONG OR GREATER. MAXIMUM SPACING BETWEEN REPEATED MARKINGS SHALL BE 250'.
6. THE USE OF RED BUS LANE MARKINGS IS TO BE COORDINATED WITH LOCAL REVIEW AGENCIES AND NCDOT AS APPLICABLE.

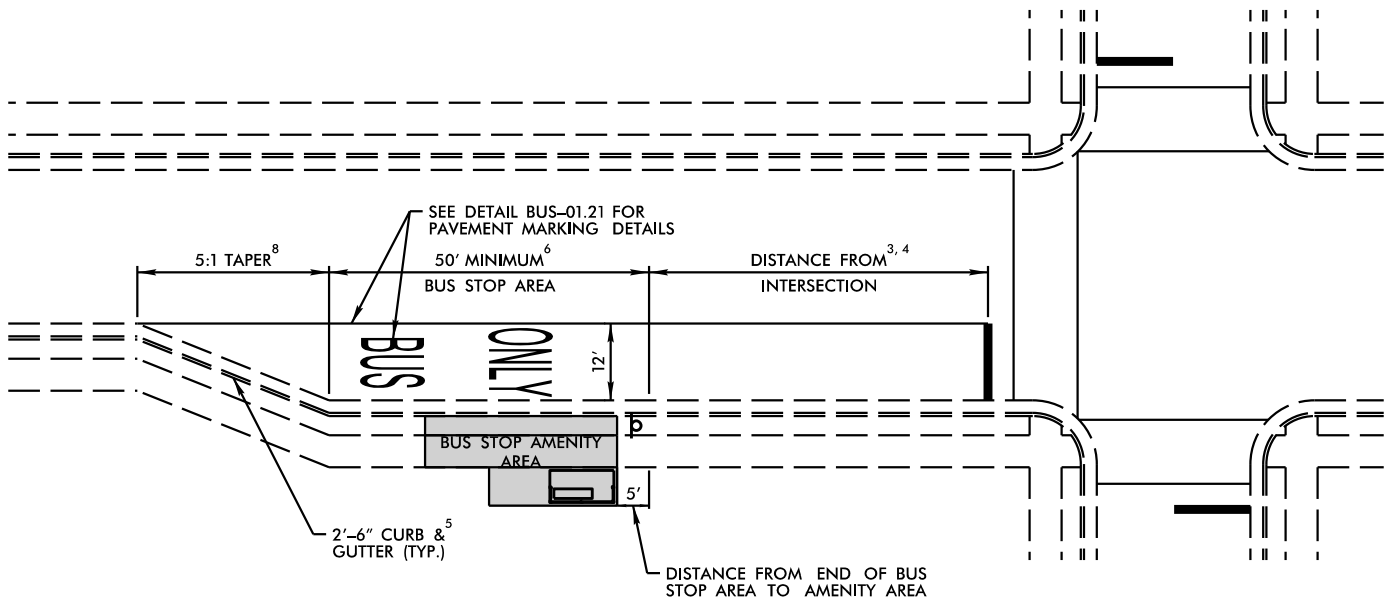
REV. DATE 10-14-2024

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BUS BAY PAVEMENT MARKINGS & SIGNAGE

DETAIL #
BUS-01.20
SHEET #
2 OF 2



NEAR SIDE BUS BAY

NOTES:

1. BUS STOP LOCATIONS ARE TO BE COORDINATED WITH GOTRIANGLE TO ENSURE SUFFICIENT OPERATION OF BUSES.
2. NEAR SIDE OPEN BUS BAYS WILL NOT BE PERMITTED UNLESS ABLE TO UTILIZE A SIGNALIZED QUEUE JUMP. QUEUE JUMPS MAY BE CONSIDERED ON A CASE-BY-CASE BASIS WITH APPROVAL FROM GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT AS APPLICABLE.
3. TRAFFIC AND SITE CONDITIONS AT EACH LOCATION ARE TO BE EVALUATED TO DETERMINE APPROPRIATE LAYOUT OF QUEUE JUMP. TRAFFIC STUDIES SHOULD BE PERFORMED TO DETERMINE APPROPRIATE VEHICLE MOVEMENTS. QUEUE JUMP LAYOUT CAN VARY BASED ON INTERSECTION TYPE AND VEHICLE MOVEMENTS REFER TO NACTO'S 'TRANSIT STREET DESIGN GUIDE' FOR ADDITIONAL GUIDANCE ON QUEUE JUMP LAYOUTS.
4. COORDINATE WITH SIGNAL DESIGNER WHEN DETERMINING DESIRED DISTANCE FROM INTERSECTION TO LOCATE THE BUS STOP AREA TO ENSURE QUEUE JUMP DETECTION CAN BE INSTALLED.
5. BUS BAYS WITH NO CURB & GUTTER WILL BE CONSIDERED ON A CASE-BY-CASE BASIS.
6. 50' MINIMUM STOPPING AREA IS REQUIRED FOR ALL BUS BAYS. WHERE MORE THAN 1 BUS IS ANTICIPATED TO STOP IN THE BAY WITHIN THE SAME TIME FRAME, AN ADDITIONAL 50' WILL BE REQUIRED FOR EACH ADDITIONAL BUS. STOPS USED BY ARTICULATED BUSES WILL REQUIRE ADDITIONAL LENGTH. STOPS IDENTIFIED AS "TIME POINTS" FOR BUS OPERATIONS MAY REQUIRE ADDITIONAL LENGTH OR OTHER DESIGN CONSIDERATIONS.
7. TRAFFIC AND SITE CONDITIONS AT EACH LOCATION ARE TO BE EVALUATED TO DETERMINE APPROPRIATE ACCELERATION/DECELERATION DISTANCES TO ENSURE BUS OPERATIONS ARE NOT IMPEDED BY ADJACENT TRAFFIC.
8. REFER TO AASHTO'S 'GUIDE FOR GEOMETRIC DESIGN OF TRANSIT FACILITIES ON HIGHWAYS AND STREETS' FOR ADDITIONAL GUIDANCE.
9. GOTRIANGLE WILL BE REQUIRED TO PERFORM A SAFETY AND SECURITY REVIEW FOR ALL BUS STOP LOCATIONS. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO SCHEDULE A REVIEW.
10. THE USE OF RED BUS LANE MARKINGS IS TO BE COORDINATED WITH LOCAL REVIEW AGENCIES AND NCDOT AS APPLICABLE.

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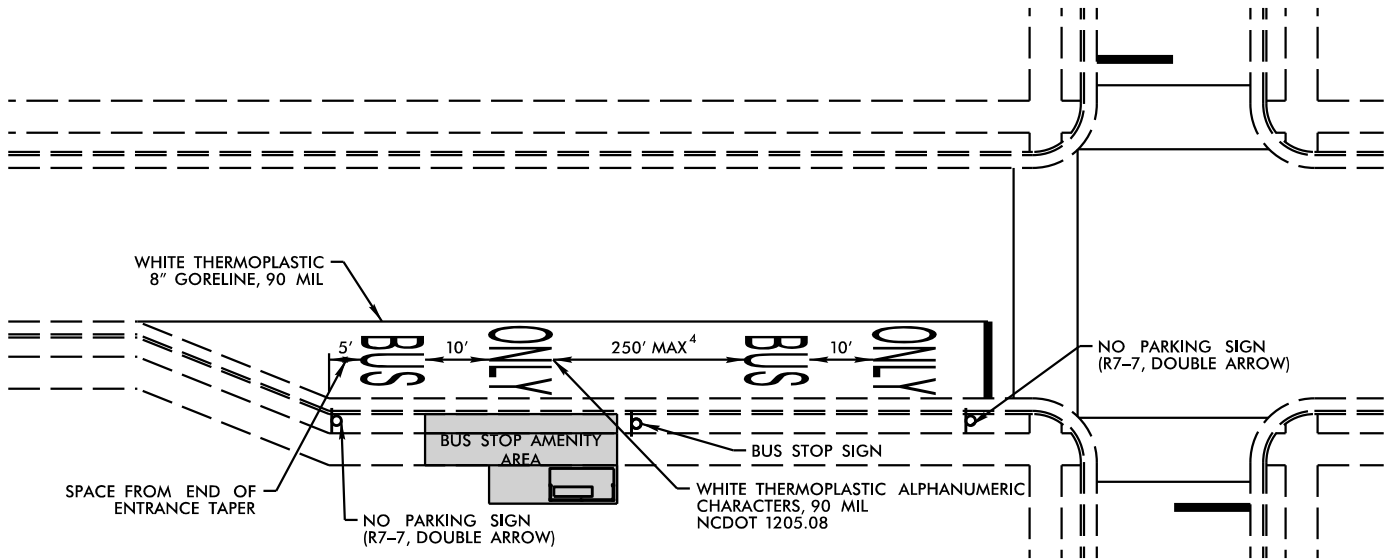
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BUS STOP LAYOUT – TYPICAL NEAR SIDE BUS BAY

DETAIL #
BUS-01.21

SHEET #
1 OF 2



NEAR SIDE BUS BAY

NOTES:

1. SEE DETAIL BUS-01.21 FOR TYPICAL NEAR SIDE BUS BAY LAYOUTS, DIMENSIONS, AND NOTES.
2. ALL PAVEMENT MARKING & SIGNAGE ARE TO BE IN ACCORDANCE WITH THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
3. REQUIRED PAVEMENT MARKINGS MAY VARY BASED ON BUS STOP CONDITIONS AND TRAFFIC OPERATIONS. ALL PAVEMENT MARKING & SIGNAGE IS TO BE APPROVED BY GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT AS APPLICABLE.
4. REPEAT 'BUS ONLY' MARKINGS IF FULL WIDTH BUS BAY IS 150' LONG OR GREATER. MAXIMUM SPACING BETWEEN REPEATED MARKINGS SHALL BE 250'.
5. THE USE OF RED BUS LANE MARKINGS IS TO BE COORDINATED WITH LOCAL REVIEW AGENCIES AND NCDOT AS APPLICABLE.

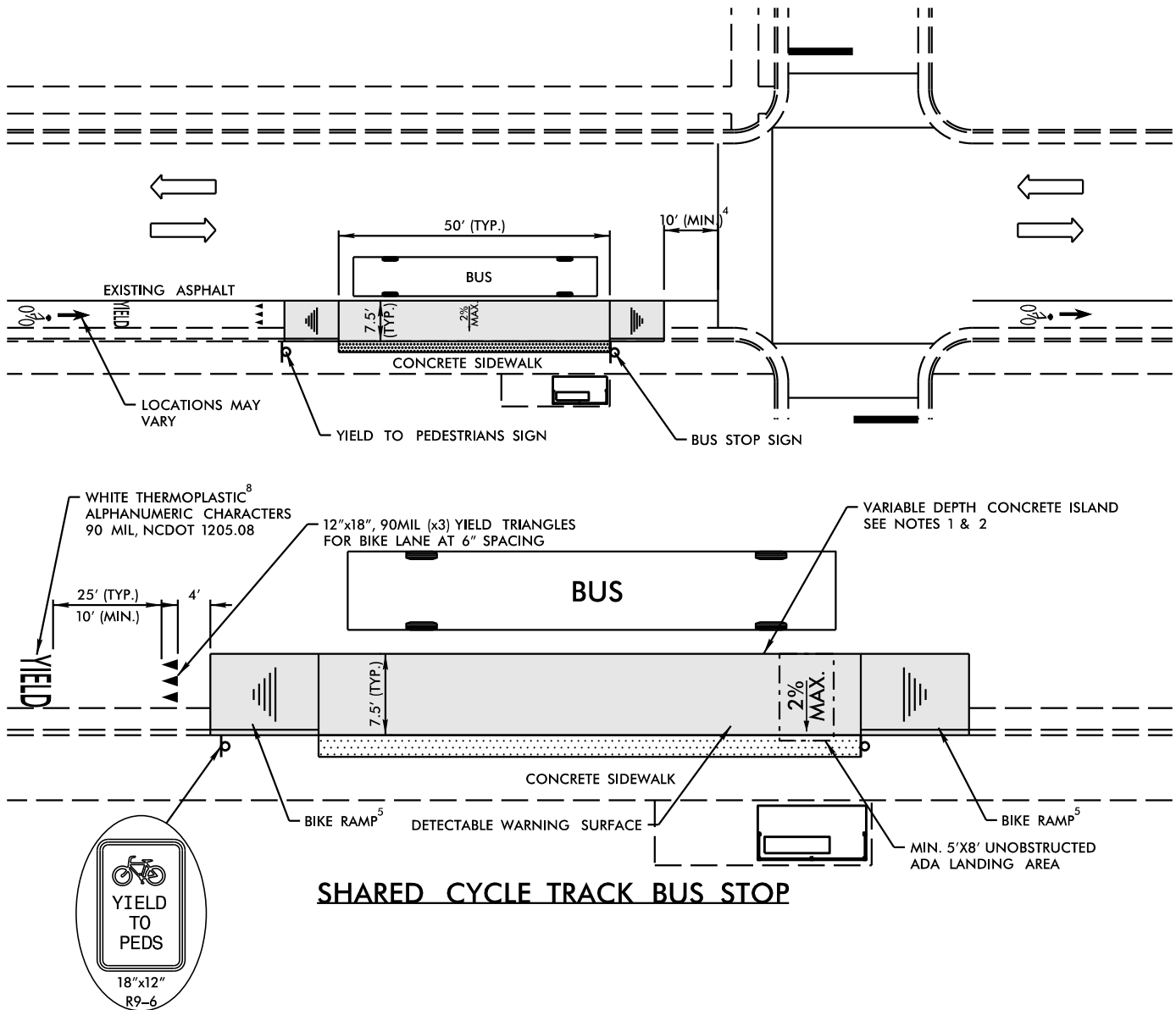
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NEAR SIDE BUS BAY PAVEMENT MARKINGS & SIGNAGE

DETAIL #
BUS-01.21
SHEET #
2 OF 2



NOTES:

1. CONCRETE ISLAND SHOULD BE INSTALLED ON EXISTING ASPHALT VIA TYPICAL NCDOT METHODS OR BY REMOVING EXISTING PAVEMENT AND INSTALLING A NEW PAVEMENT SECTION FOR APPROVAL BY GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT AS APPLICABLE. MINIMUM OF 5" THICK CONCRETE SECTION REQUIRED.
2. EDGES OF CONCRETE ISLAND SHOULD MATCH NCDOT 852.01 ISLAND SHAPE WHEN ADJACENT TO VEHICLE LANES. OTHER EDGE SHAPES MAY VARY.
3. ALL PAVEMENT MARKING & SIGNAGE ARE TO BE IN ACCORDANCE WITH THE LATEST VERSION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). GREEN PAVEMENT MARKING SHALL MEET REQUIREMENTS ESTABLISHED IN MUTCD 1A-14 DATED APRIL 15, 2011 AND ANY FURTHER AMENDMENTS ISSUED AS PART OF THE INTERIM APPROVAL. COORDINATE GREEN PAVEMENT MARKING TYPE WITH GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT AS APPLICABLE.
4. BOARDING PLATFORMS AND RAMPS SHOULD BE TERMINATED AT LEAST 10' FROM INTERSECTION. DISTANCE MAY VARY TO ENSURE BICYCLISTS ARE WELL POSITIONED IN VIEW OF TURNING VEHICLES AND ALLOW TYPICAL VEHICLES TO TURN WITHOUT CONFLICTING WITH THE CONCRETE ISLAND.
5. SLOPE OF BIKE RAMP NOT TO EXCEED 10% UNLESS OTHERWISE APPROVED BY LOCAL REVIEW AGENCIES OR NCDOT AS APPLICABLE.
6. DRAINAGE CONSIDERATIONS AND GUTTER SPREAD CALCULATIONS ARE TO BE DETERMINED BY ENGINEER AND APPROVED BY THE LOCAL REVIEW AGENCIES AND NCDOT AS APPLICABLE.
7. GOTRIANGLE WILL BE REQUIRED TO PERFORM A SAFETY AND SECURITY REVIEW FOR ALL BUS STOP LOCATIONS. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO SCHEDULE A REVIEW.
8. SCALE ALPHANUMERIC CHARACTERS TO FIT WITHIN DESIGNATED LANE LINES.

REV. DATE 10-14-2024

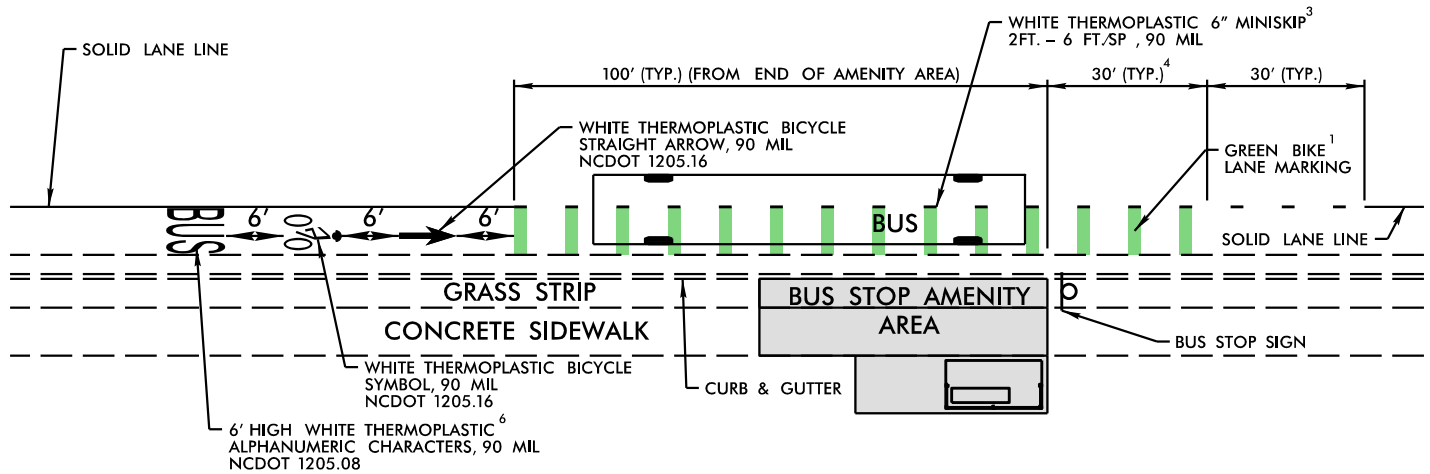
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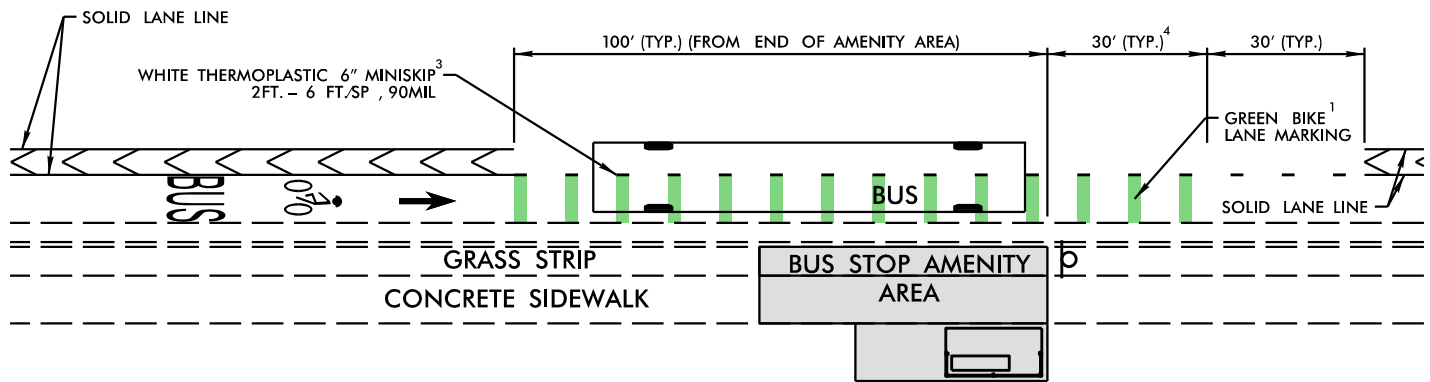
BUS STOP LAYOUT – TYPICAL SHARED CYCLE TRACK

DETAIL #
BUS-01.40

SHEET #
1 OF 1

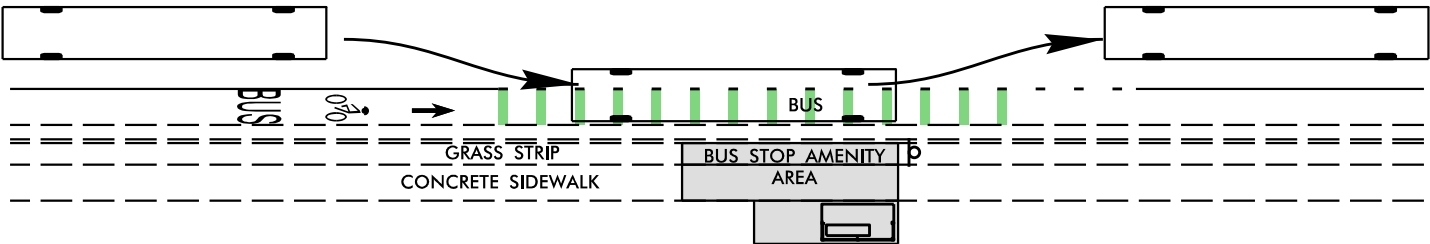


BUS STOP IN BIKE LANE PAVEMENT MARKING DETAIL (NO BUFFER)



BUS STOP IN BIKE LANE PAVEMENT MARKING DETAIL (WITH BUFFER)

SAME DIMENSIONS AS 'NO BUFFER'



BUS MANEUVER DETAIL

NOTES:

1. ALL PAVEMENT MARKING & SIGNAGE ARE TO BE IN ACCORDANCE WITH THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). GREEN PAVEMENT MARKING SHALL MEET REQUIREMENTS ESTABLISHED IN MUTCD 1A-14 DATED APRIL 15, 2011 AND ANY FURTHER AMENDMENTS ISSUED AS PART OF THE INTERIM APPROVAL. COORDINATE GREEN PAVEMENT MARKING TYPE WITH GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT AS APPLICABLE.
2. REQUIRED PAVEMENT MARKINGS MAY VARY BASED ON BUS STOP CONDITIONS AND TRAFFIC OPERATIONS. ALL PAVEMENT MARKING & SIGNAGE IS TO BE APPROVED BY GOTRIANGLE, LOCAL REVIEW AGENCIES, AND NCDOT, AS APPLICABLE.
3. IF BIKE LANE IS A BUFFERED BIKE LANE, BOTH LANE LINES ARE TO BE MINISKIP LINES FOR THE ENTIRE DURATION OF THE GREEN BIKE LANE MARKING, PLUS 30' (TYP.) BEYOND THE GREEN BIKE LANE MARKING.
4. IF BUS STOP IS LOCATED IN CLOSE PROXIMITY TO AN INTERSECTION, GREEN BIKE LANE MARKING IS TO EXTEND TO THE END OF THE INTERSECTION RADIUS. SEE LOCAL GUIDANCE FOR OTHER BIKE LANE PAVEMENT MARKING STANDARDS.
5. GOTRIANGLE WILL BE REQUIRED TO PERFORM A SAFETY AND SECURITY REVIEW FOR ALL BUS STOP LOCATIONS. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO SCHEDULE A REVIEW.
6. SCALE ALPHANUMERIC CHARACTERS TO FIT WITHIN DESIGNATED LANE LINES.

REV. DATE 10-14-2024

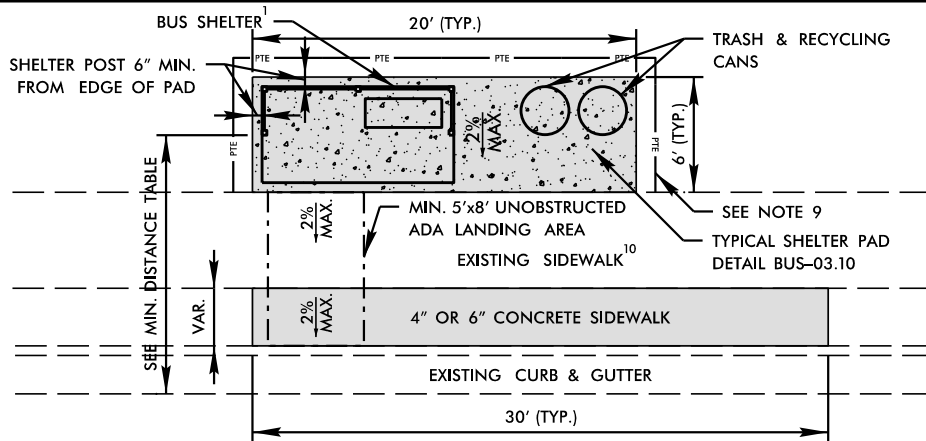
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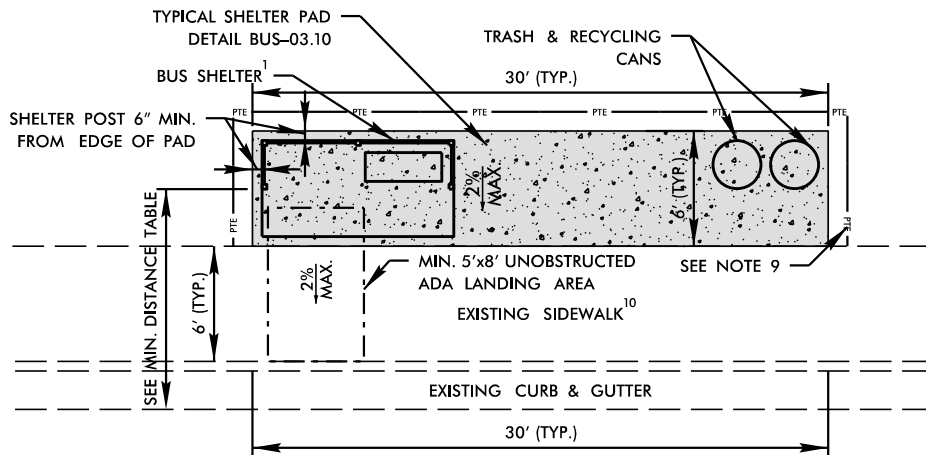
BUS STOP IN BIKE LANE PAVEMENT MARKINGS AND SIGNAGE

DETAIL #
BUS-01.50

SHEET #
1 OF 1



SHELTER WITH SIDEWALK AND UTILITY STRIP



SHELTER WITH SIDEWALK AT BACK OF CURB

MINIMUM DISTANCES FROM ² STRUCTURE ANCHOR TO EDGE OF PAVEMENT (BASED ON POSTED SPEED LIMIT)	
25 MPH	8'
35 MPH	10'
45 MPH	12'

COMMON BUS SHELTER MANUFACTURERS & MODELS
BRASCO ECLIPSE-ARCHED ROOF WITH (CANTILEVERED OR FULL) WALLS & WITH CLEAR POLYCARBONATE PANELS & (BLACK OR WHITE ALUMINUM) FINISH
BRASCO SLIMLINE-ARCHED ROOF WITH (CANTILEVERED OR FULL) WALLS & WITH CLEAR POLYCARBONATE PANELS & (BLACK OR WHITE ALUMINUM) FINISH
TOLAR EURO SERIES WITH (CANTILEVERED OR FULL) WALLS & WITH CLEAR POLYCARBONATE WALLS & (BLACK OR WHITE ALUMINUM) FINISH

COMMON AMENITIES TO ¹ BE INCLUDED IN AMENITY AREA
BUS SHELTER LEAN BAR IN SHELTER BUS SHELTER BENCH FREE STANDING BENCH SIMME-SEAT BIKE RACK POST MOUNTED SECURITY LIGHT SYSTEM REAL-TIME DISPLAY SIGNAGE SHELTER SOLAR LIGHTING TRASH & RECYCLING CANS ELECTRICAL CONNECTIONS FOR AMENITIES

BUS STOP SHELTER & AMENITY NOTES:

- COORDINATE WITH GOTRIANGLE FOR AMENITIES REQUIRED AT EACH BUS STOP LOCATION. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO DETERMINE AMENITY MANUFACTURERS, MODELS, AND FINISH COLORS REQUIRED AT EACH LOCATION. SEE LISTS ON THIS SHEET FOR COMMON SHELTER MODELS AND MANUFACTURERS AND COMMON AMENITIES INCLUDED AT BUS STOP LOCATIONS.
- MINIMUM DISTANCE REQUIREMENTS ARE BASED ON DISTANCES REFERENCED IN 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' DATED FEBRUARY 3, 2017 OR LATEST VERSION.
- BUS STOP LOCATIONS WITH NO CURB & GUTTER REQUIRE PROPOSED SHELTERS TO BE LOCATED OUTSIDE THE CLEAR RECOVERY AREA AS DEFINED BY THE LATEST VERSION OF THE AASHTO ROADSIDE DESIGN GUIDE.
- ANY CUSTOM AMENITIES PROPOSED WILL REQUIRE REVIEW AND APPROVAL BY GOTRIANGLE & LOCAL REVIEW AGENCIES, AS APPLICABLE. IF A CUSTOM SHELTER IS PROPOSED WITHIN NCDOT RIGHT-OF-WAY, THE SHELTER MUST BE ADDED TO NCDOT'S APPROVED PRODUCTS LIST PRIOR TO INSTALLATION.
- ANY REQUIRED STRUCTURAL CALCULATIONS FOR CUSTOM SHELTERS ARE TO BE PROVIDED TO GOTRIANGLE PRIOR TO APPROVAL.
- BUS SHELTERS SHALL BE LOCATED A MINIMUM OF 15' FROM FIRE HYDRANTS AND UTILITY POLES. ANY EXCEPTIONS ARE TO BE APPROVED BY GOTRIANGLE & LOCAL REVIEW AGENCIES, AS APPLICABLE.
- BUS SHELTERS AT NEAR SIDE STOPS ARE TO BE LOCATED ON NEAREST SIDE OF AMENITY PAD TO ENSURE MAXIMUM SIGHT DISTANCES ARE MAINTAINED.
- A MINIMUM 6' PEDESTRIAN PATH IS TO BE RETAINED BETWEEN THE BACK OF CURB AND ANY AMENITIES AT ALL LOCATIONS.

GENERAL BUS STOP IMPROVEMENTS NOTES:

- A PERMANENT TRANSIT EASEMENT (PTE) OR PERMANENT PUBLIC RIGHT-OF-WAY IS TO BE PROVIDED FOR THE AMENITY AREA, IF LOCATED OUTSIDE OF EXISTING RIGHT-OF-WAY, AT A MINIMUM 1' OFFSET FROM THE AMENITY AREA. COORDINATE WITH GOTRIANGLE FOR ANY REQUIRED EASEMENT LANGUAGE.
- ANY EXISTING SIDEWALK IN VICINITY IS TO BE EVALUATED FOR ADA COMPLIANCE. IF EXISTING SIDEWALK CROSS SLOPES EXCEED 2% OR HAS ABRUPT SURFACE TRANSITIONS THE SIDEWALK WILL BE REQUIRED TO BE REMOVED AND REPLACED AT A MAXIMUM CROSS SLOPE OF 2% TO PROVIDE AN ADA ACCESSIBLE AREA FOR THE LENGTH OF THE BUS STOP AREA (30' TYP.)
- A FLAT, CLEARED AREA OF A MINIMUM OF 1' IS TO BE PROVIDED AROUND THE AMENITY AREA FOR MAINTENANCE.
- STORMWATER RUNOFF IS TO BE DIVERTED AWAY FROM THE AMENITY AREA.
- REFER TO THE LATEST VERSION 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' FOR MORE INFORMATION. THE FEBRUARY 3, 2017 UPDATE CAN BE FOUND AT THE FOLLOWING WEB ADDRESS:
<https://connect.ncdot.gov/business/Transit/Documents/2017%20NCDOT%20Bus%20Shelter%20&%20Bus%20Stop%20Guidelines.pdf>

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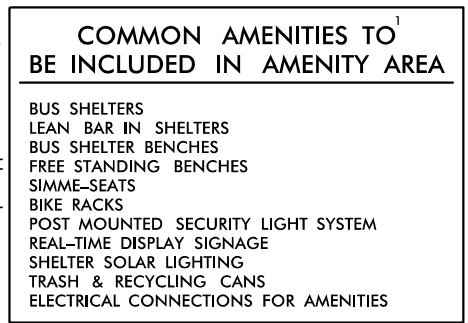
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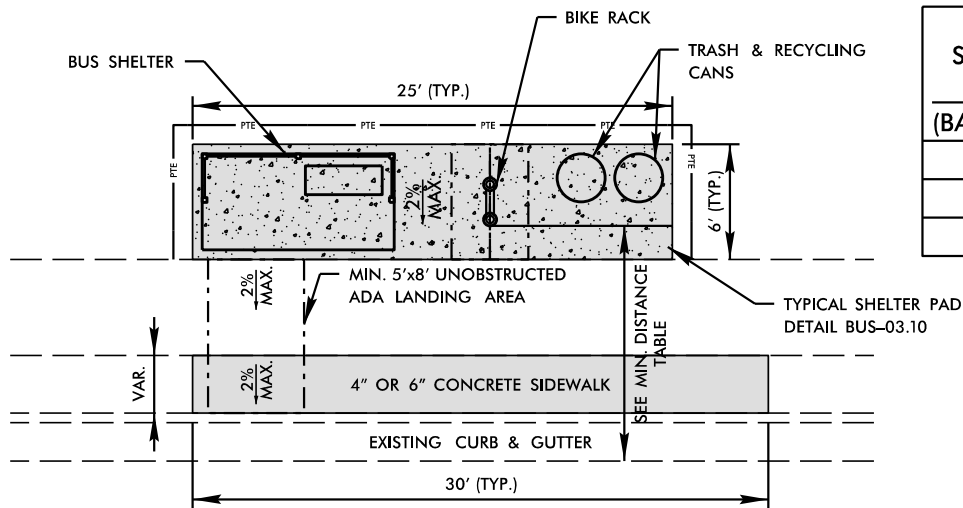
BUS STOP AMENITY AREA – TYPICAL SHELTER LAYOUT

DETAIL #
BUS-02.10

SHEET #
1 OF 3

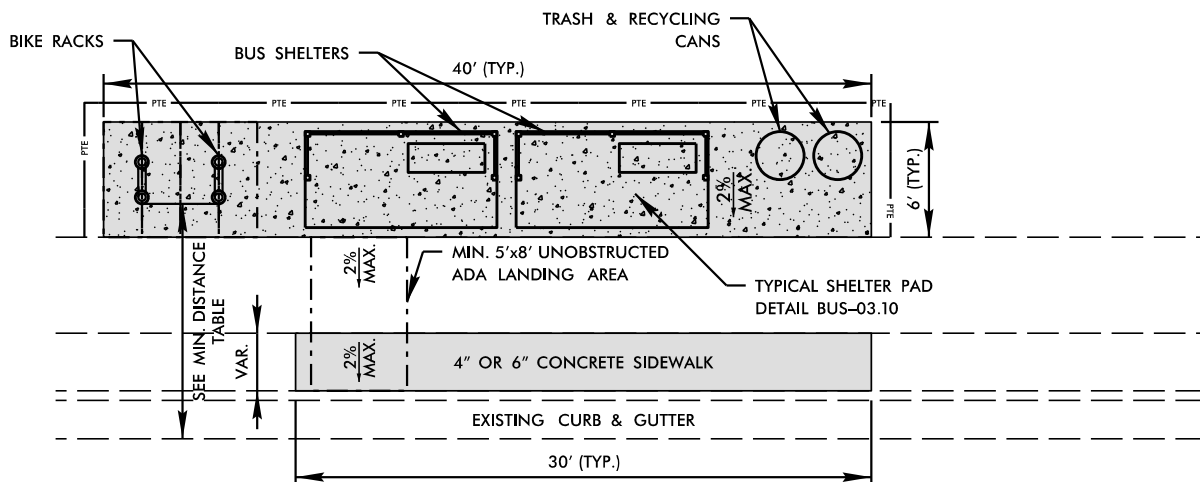


SHELTER WITH SIDEWALK AT BACK OF CURB



MINIMUM DISTANCES FROM ² STRUCTURE ANCHOR TO EDGE OF PAVEMENT	
(BASED ON POSTED SPEED LIMIT)	
25 MPH	8'
35 MPH	10'
45 MPH	12'

SINGLE SHELTER BIKE RACK LAYOUT



MULTI-SHELTER BIKE RACK LAYOUT

NOTES:

1. COORDINATE WITH GOTRIANGLE FOR AMENITIES REQUIRED AT EACH BUS STOP LOCATION. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO DETERMINE AMENITY MANUFACTURERS, MODELS, AND FINISH COLORS REQUIRED AT EACH LOCATION. SEE LISTS ON SHEET BUS-2.10 FOR COMMON SHELTER MODELS AND MANUFACTURERS AND COMMON AMENITIES INCLUDED AT BUS STOP LOCATIONS.
2. MINIMUM DISTANCE REQUIREMENTS ARE BASED ON DISTANCES REFERENCED IN 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' DATED FEBRUARY 3, 2017 OR LATEST VERSION.
3. SEE SHEET BUS-2.10 FOR GUIDANCE ON AMENITY LAYOUTS AND ADDITIONAL NOTES.
4. SEE SHEET BUS-4.10 FOR GUIDANCE ON BIKE RACK INSTALLATION AND SPACING.

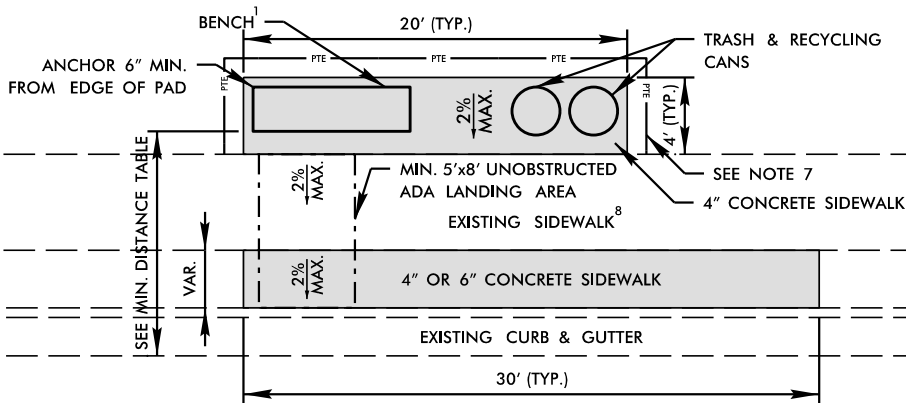
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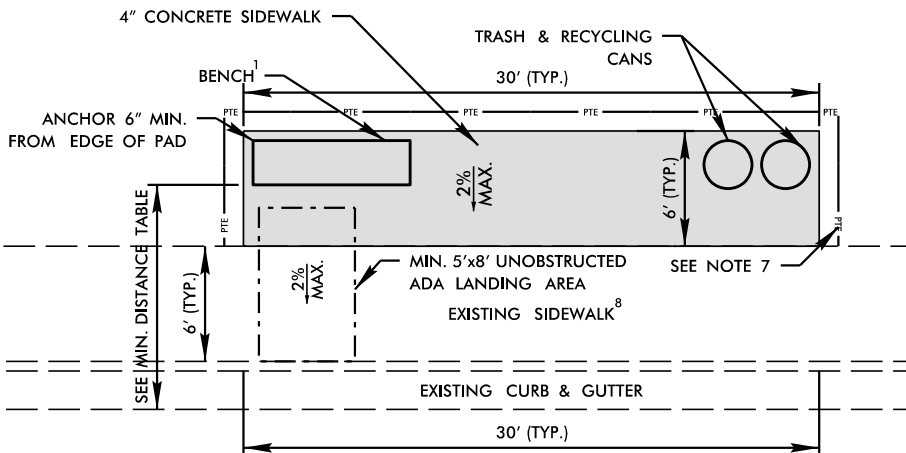


BUS STOP AMENITY AREA – TYPICAL BIKE RACK LAYOUT

DETAIL #
BUS-02.10
SHEET #
3 OF 3



BENCH WITH SIDEWALK AND UTILITY STRIP



BENCH WITH SIDEWALK AT BACK OF CURB

MINIMUM DISTANCES FROM ² STRUCTURE ANCHOR TO EDGE OF PAVEMENT	
(BASED ON POSTED SPEED LIMIT)	
25 MPH	8'
35 MPH	10'
45 MPH	12'

COMMON FREE-STANDING BENCH MANUFACTURERS & MODELS
DUMOR 58 SERIES-3AR (6 FOOT)
DUMOR 92 SERIES (6 FOOT)
TOLAR SFBEN-07 (6 FOOT)
TOLAR SFBEN-18 (6 FOOT)
TOLAR SFBEN-25 (8 FOOT)

COMMON AMENITIES TO ¹ BE INCLUDED IN AMENITY AREA
BUS SHELTER
LEAN BAR IN SHELTER
BUS SHELTER BENCH
FREE STANDING BENCH
SIMME-SEAT
BIKE RACK
POST MOUNTED SECURITY LIGHT SYSTEM
REAL-TIME DISPLAY SIGNAGE
SHELTER SOLAR LIGHTING
TRASH & RECYCLING CANS
ELECTRICAL CONNECTIONS FOR AMENITIES

BUS STOP BENCH & AMENITY NOTES:

- COORDINATE WITH GOTRIANGLE FOR AMENITIES REQUIRED AT EACH BUS STOP LOCATION. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO DETERMINE AMENITY MANUFACTURERS, MODELS, AND FINISH COLORS REQUIRED AT EACH LOCATION. SEE LISTS ON THIS SHEET FOR COMMON SHELTER MODELS AND MANUFACTURERS AND COMMON AMENITIES INCLUDED AT BUS STOP LOCATIONS.
- MINIMUM DISTANCE REQUIREMENTS ARE BASED ON DISTANCES REFERENCED IN 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' DATED FEBRUARY 3, 2017 OR LATEST VERSION.
- BUS STOP LOCATIONS WITH NO CURB & GUTTER REQUIRE PROPOSED AMENITIES TO BE LOCATED OUTSIDE THE CLEAR RECOVERY AREA AS DEFINED BY THE LATEST VERSION OF THE AASHTO ROADSIDE DESIGN GUIDE.
- ANY CUSTOM AMENITIES PROPOSED WILL REQUIRE REVIEW AND APPROVAL BY GOTRIANGLE & LOCAL REVIEW AGENCIES, AS APPLICABLE. IF A CUSTOM AMENITY IS PROPOSED WITHIN NCDOT RIGHT-OF-WAY, THE AMENITY MUST BE ADDED TO NCDOT'S APPROVED PRODUCTS LIST PRIOR TO INSTALLATION.
- BUS SHELTERS AT NEAR SIDE STOPS ARE TO BE LOCATED ON NEAREST SIDE OF AMENITY PAD TO ENSURE MAXIMUM SIGHT DISTANCES ARE MAINTAINED.
- A MINIMUM 6' PEDESTRIAN PATH IS TO BE RETAINED BETWEEN THE BACK OF CURB AND ANY AMENITIES AT ALL LOCATIONS.

GENERAL BUS STOP IMPROVEMENTS NOTES:

- A PERMANENT TRANSIT EASEMENT (PTE) OR PERMANENT PUBLIC RIGHT-OF-WAY IS TO BE PROVIDED FOR THE AMENITY AREA, IF LOCATED OUTSIDE OF EXISTING RIGHT-OF-WAY, AT A MINIMUM 1' OFFSET FROM THE AMENITY AREA. COORDINATE WITH GOTRIANGLE FOR ANY REQUIRED EASEMENT LANGUAGE.
- ANY EXISTING SIDEWALK IN VICINITY IS TO BE EVALUATED FOR ADA COMPLIANCE. IF EXISTING SIDEWALK CROSS SLOPES EXCEED 2% OR HAS ABRUPT SURFACE TRANSITIONS THE SIDEWALK WILL BE REQUIRED TO BE REMOVED AND REPLACED AT A MAXIMUM CROSS SLOPE OF 2% TO PROVIDE AN ADA ACCESSIBLE AREA FOR THE LENGTH OF THE BUS STOP AREA (30' TYP.)
- A FLAT, CLEARED AREA OF A MINIMUM OF 1' IS TO BE PROVIDED AROUND THE AMENITY AREA FOR MAINTENANCE.
- STORMWATER RUNOFF IS TO BE DIVERTED AWAY FROM THE AMENITY AREA.
- REFER TO THE LATEST VERSION 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' FOR MORE INFORMATION. THE FEBRUARY 3, 2017 UPDATE CAN BE FOUND AT THE FOLLOWING WEB ADDRESS:
<https://connect.ncdot.gov/business/Transit/Documents/2017%20NCDOT%20Bus%20Shelter%20&%20Bus%20Stop%20Guidelines.pdf>

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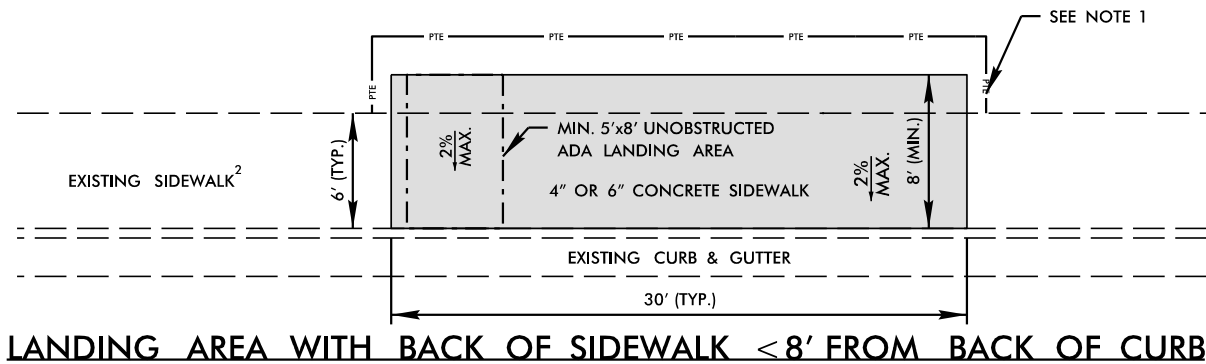
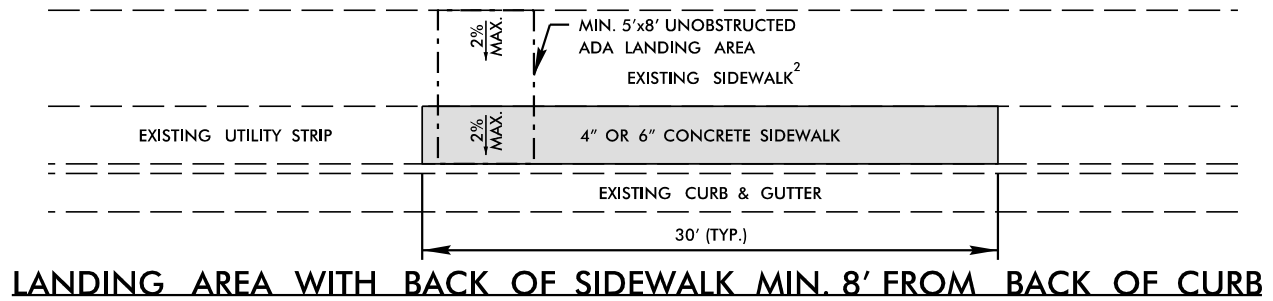
NOT TO SCALE



BUS STOP AMENITY AREA – TYPICAL BENCH LAYOUT

DETAIL #
BUS-02.20

SHEET #
1 OF 1



GENERAL BUS STOP IMPROVEMENTS NOTES:

1. A PERMANENT TRANSIT EASEMENT (PTE) OR PERMANENT PUBLIC RIGHT-OF-WAY IS TO BE PROVIDED FOR THE AMENITY/LANDING AREA, IF LOCATED OUTSIDE OF EXISTING RIGHT-OF-WAY, AT A MINIMUM 1' OFFSET FROM THE AMENITY AREA. COORDINATE WITH GOTRIANGLE FOR ANY REQUIRED EASEMENT LANGUAGE.
2. ANY EXISTING SIDEWALK IN VICINITY IS TO BE EVALUATED FOR ADA COMPLIANCE. IF EXISTING SIDEWALK CROSS SLOPES EXCEED 2% OR HAS ABRUPT SURFACE TRANSITIONS THE SIDEWALK WILL BE REQUIRED TO BE REMOVED AND REPLACED AT A MAXIMUM CROSS SLOPE OF 2% TO PROVIDE AN ADA ACCESSIBLE AREA FOR THE LENGTH OF THE BUS STOP AREA (30' TYP.)
3. A FLAT, CLEARED AREA OF A MINIMUM OF 1' IS TO BE PROVIDED AROUND THE AMENITY/LANDING AREA FOR MAINTENANCE.
4. STORMWATER RUNOFF IS TO BE DIVERTED AWAY FROM THE AMENITY AREA.
5. REFER TO THE LATEST VERSION 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' FOR MORE INFORMATION. THE FEBRUARY 3, 2017 UPDATE CAN BE FOUND AT THE FOLLOWING WEB ADDRESS:
<https://connect.ncdot.gov/business/Transit/Documents/2017%20NCDOT%20Bus%20Shelter%20&%20Bus%20Stop%20Guidelines.pdf>

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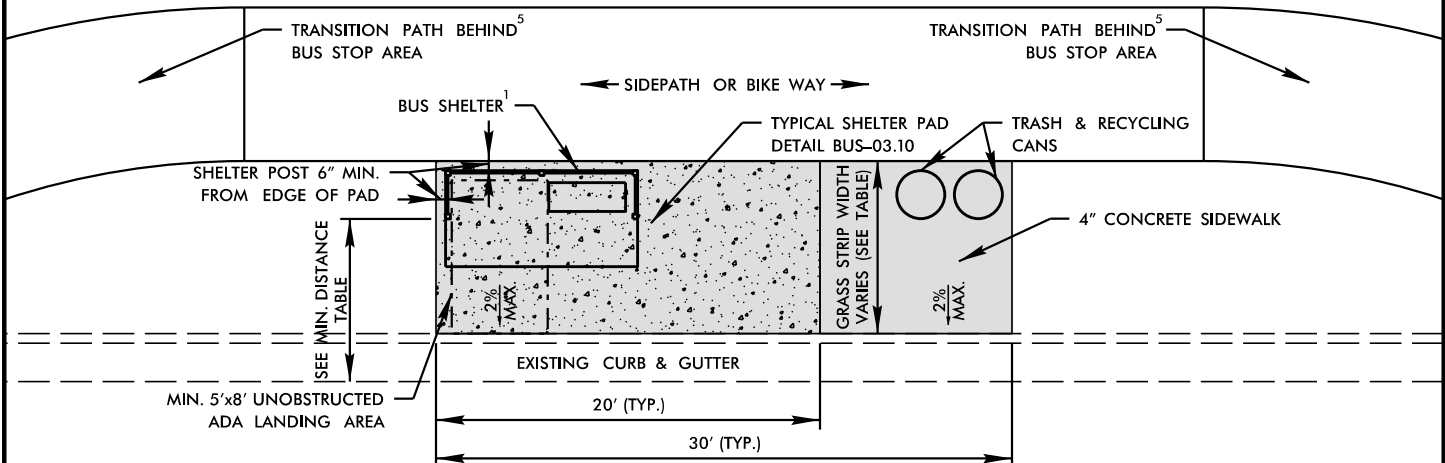
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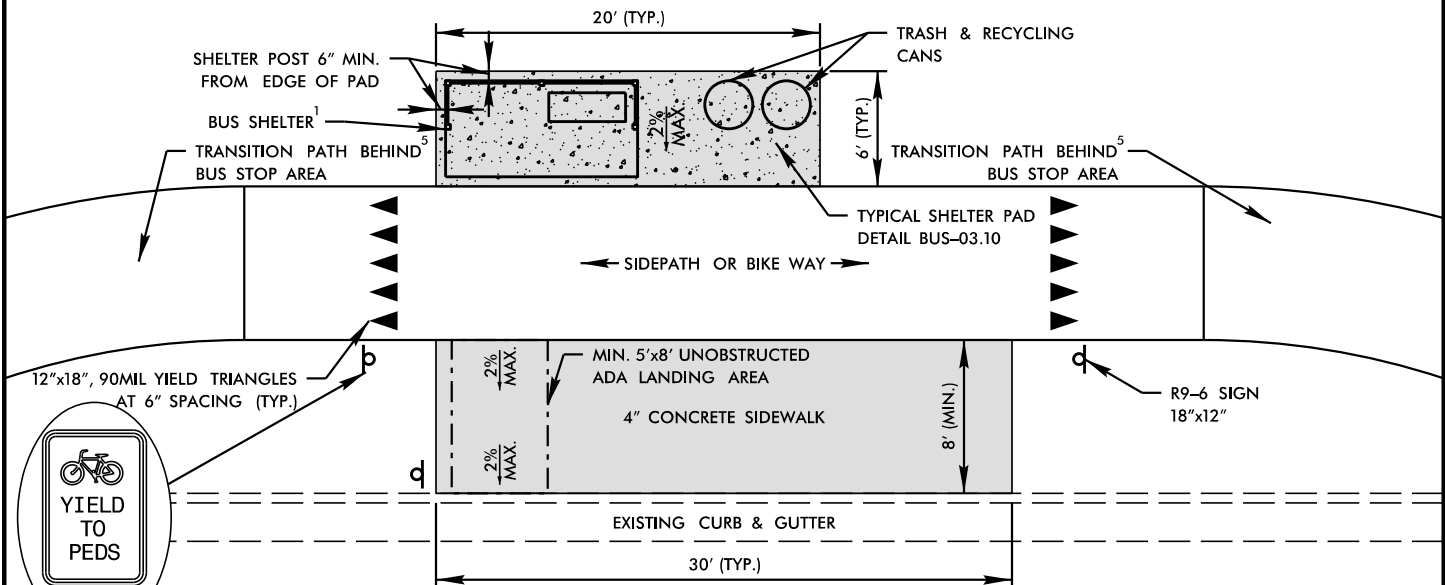
BUS STOP AMENITY AREA – TYPICAL LANDING AREA LAYOUT

DETAIL #
BUS-02.30
SHEET #
1 OF 1

MINIMUM DISTANCES FROM ² STRUCTURE ANCHOR TO EDGE OF PAVEMENT		TYPICAL GRASS STRIP WIDTH REQUIRED
(BASED ON POSTED SPEED LIMIT)		
25 MPH	8'	9'
35 MPH	10'	11'
45 MPH	12'	13'



SIDEPATH WITH BUS STOP & SHELTER – SHELTER IN FRONT



SIDEPATH WITH BUS STOP & SHELTER – FULL LANDING IN FRONT

NOTES:

- COORDINATE WITH GOTRIANGLE FOR AMENITIES REQUIRED AT EACH BUS STOP LOCATION. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO DETERMINE AMENITY MANUFACTURERS, MODELS, AND FINISH COLORS REQUIRED AT EACH LOCATION. SEE LISTS ON DETAIL BUS-2.10 FOR COMMON SHELTER MODELS AND MANUFACTURERS AND COMMON AMENITIES INCLUDED AT BUS STOP LOCATIONS.
- MINIMUM DISTANCE REQUIREMENTS ARE BASED ON DISTANCES REFERENCED IN 'NCDOT BUS SHELTER & BUS STOP GUIDELINES' DATED FEBRUARY 3, 2017 OR LATEST VERSION.
- BUS STOP LOCATIONS WITH NO CURB & GUTTER REQUIRE PROPOSED SHELTERS TO BE LOCATED OUTSIDE THE CLEAR RECOVERY AREA AS DEFINED BY THE LATEST VERSION OF THE AASHTO ROADSIDE DESIGN GUIDE.
- SEE TYPICAL SHELTER LAYOUT DETAIL BUS-02.10 FOR ADDITIONAL INFORMATION.
- THE SIDEPATH OR BIKE WAY IS TO BE ADJUSTED TO RUN BEHIND THE PROPOSED BUS STOP AREA WHERE POSSIBLE. TRANSITIONS SHOULD BE DESIGNED BASED ON LOCAL GUIDANCE AND STANDARDS AND BASED ON THE ACTUAL SITE CONDITIONS.

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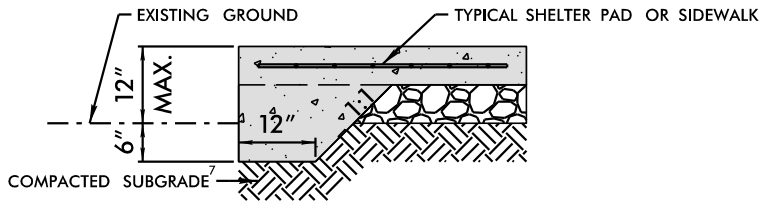
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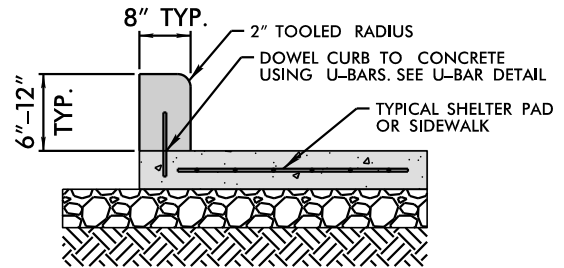
BUS STOP AMENITY AREA – TYPICAL SIDEPATH LAYOUT

DETAIL #
BUS-02.40

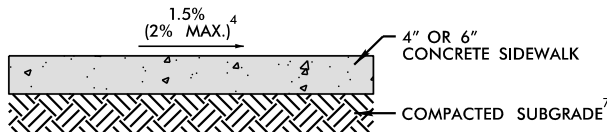
SHEET #
1 OF 1



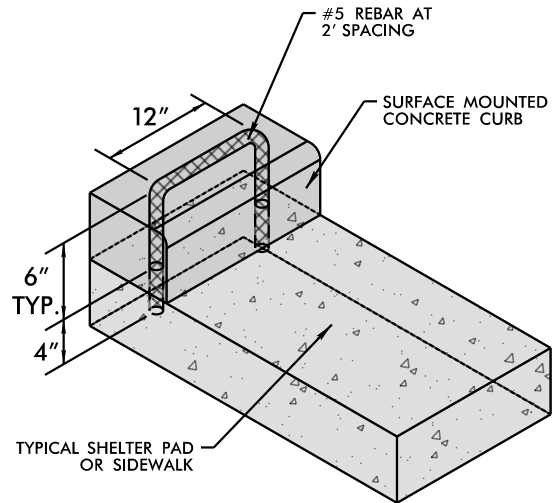
CONCRETE TURNDOWN³
APPLICABLE FOR USE ADJACENT TO PAVED AREAS



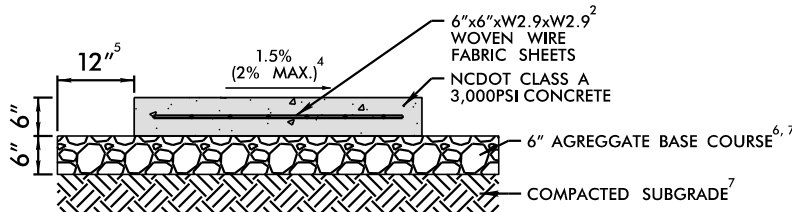
SURFACE MOUNTED CONCRETE CURB
HEIGHT & WIDTH MAY VARY BASED ON FIELD CONDITIONS. SPECIFY ON PLANS



CONCRETE SIDEWALK¹



U-BAR DETAIL
ADJUST U-BAR HEIGHT TO PROVIDE MINIMUM 2" COVER WHERE CURB HEIGHT VARIES



SHELTER PAD
USE FOR AMENITY AREAS WHERE SHELTERS ARE TO BE INSTALLED

NOTES:

1. SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STD. 848.01 - CONCRETE SIDEWALKS OF THE LATEST VERSION OF THE NCDOT ROADWAY STANDARD DRAWINGS OR IN ACCORDANCE WITH LOCAL STANDARDS FOR CONCRETE SIDEWALKS, AS APPLICABLE.
2. REINFORCE SHELTER PAD WITH WOVEN WIRE FABRIC SHEETS. WOVEN WIRE FABRIC SHEETS SHALL HAVE MINIMUM 6" OVERLAPS AND PLACED WITHIN 3" ON ALL SIDES.
3. CONCRETE TURNDOWN IS TO PROVIDE A 12" WIDE CONCRETE SECTION TO EXTEND A MINIMUM 6" BELOW THE EXISTING ADJACENT GROUND WITH A 45 DEGREE SECTION TO BRING BACK TO THE STANDARD 6" THICKNESS. SPECIFY LOCATIONS FOR USE ON THE PLANS.
4. CROSS SLOPE OF AMENITY AREA PAVEMENTS SHALL BE 1.5% RECOMMENDED, 1% MINIMUM, 2% MAXIMUM UNLESS OTHERWISE APPROVED BY GOTRIANGLE.
5. EXTEND AGGREGATE BASE COURSE 12" BEYOND EDGE OF PAD IN ALL DIRECTIONS EXCEPT WHERE BORDERED BY EXISTING PAVEMENTS.
6. AGGREGATE BASE COURSE SHALL MEET NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
7. SUBGRADE AND AGGREGATE BASE COURSE SHALL BE PROPERLY COMPACTED WITH PLATE TAMPERS PRIOR TO PLACING CONCRETE.
8. WHERE HANDRAIL IS PROPOSED WITHIN LIMITS OF CONCRETE PAD, INCREASE PAD THICKNESS AS SHOWN ON DETAIL BUS-04.20. TO INSTALL HANDRAIL.
9. TYPICAL SHELTER PAD IS MINIMUM DESIGN STANDARD FOR ALL SHELTERS TO BE INSTALLED FOR ALL GOTRIANGLE BUS STOPS. SHELTER PAD DESIGN MAY REQUIRE ADDITIONAL THICKNESS, REINFORCEMENT, OR SUBGRADE BASED ON SHELTER MODEL TO BE INSTALLED. VERIFY REQUIREMENTS WITH THE SHELTER MANUFACTURER.
10. ALL NEW PAVEMENTS SHALL BE FLUSH WITH EXISTING SIDEWALKS AND OTHER PAVEMENTS TO PREVENT TRIPPING HAZARDS AND TO ENSURE THE BUS STOP LANDING MEETS CURRENT ADA REQUIREMENTS.
11. ANY PROPOSED CONCRETE ABUTTING EXISTING CONCRETE IS TO HAVE AN EXPANSION JOINT (SEE NCDOT STD. 848.01).
12. COMPACTION OF SUBGRADE SHALL BE CHECKED BY A TECHNICIAN UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER; PRIOR TO POURING CONCRETE BY USING A PROBE ROD OR TESTING THE SOIL IF NECESSARY.
13. QUALITY OF CONCRETE SHALL BE CHECKED PER ASTM STANDARDS TO ENSURE PROPER MIX DESIGN AND SPECIFICATIONS. TESTING SHALL BE PERFORMED BY A TECHNICIAN UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL.
14. A FINAL REPORT WITH SUBGRADE AND CONCRETE TEST RESULTS AND VERIFICATION OF FINAL PAD/SIDEWALK GRADE MUST BE PROVIDED TO GOTRIANGLE FOR FINAL APPROVAL.

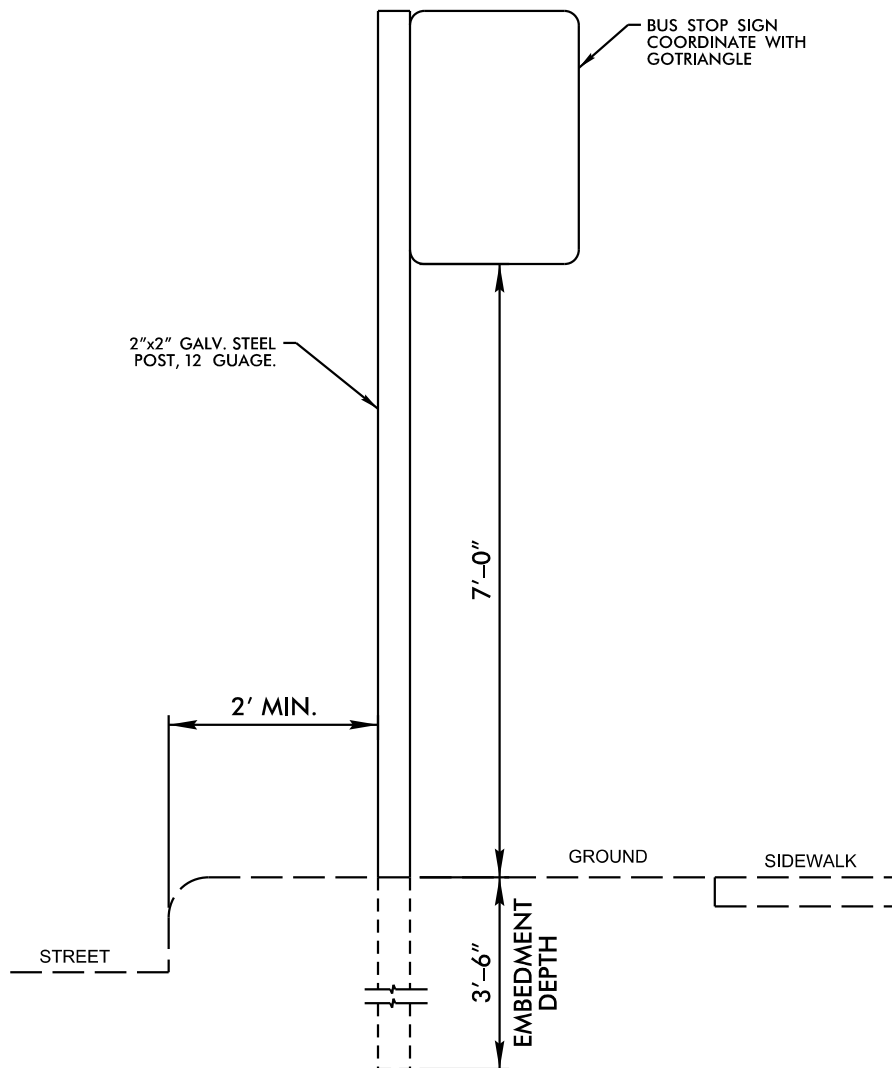
REV. DATE 10-14-2024

NOT TO SCALE



CONCRETE INFRASTRUCTURE

DETAIL #
BUS-03.10
SHEET #
1 OF 1



NOTES:

1. INSTALL SIGN 2' AHEAD OF BUS STOP LANDING AREA, WITHIN THE UTILITY STRIP. IF NO UTILITY STRIP IS PRESENT OR IF UTILITY STRIP IS PAVED CORE 12" DIAMETER HOLE FOR SIGN INSTALLATION.
2. CALL 811 FOR UNDERGROUND UTILITY LOCATION PRIOR TO INSTALLATION.
3. POST MOUNTED LIGHTING SYSTEMS, REAL TIME DISPLAYS, AND OTHER POST MOUNTED SYSTEMS SHOULD BE INSTALLED ON SEPERATE SIGN POSTS AND COMPLY WITH THE MINIMUM DISTANCE REQUIREMENTS, AS APPLICABLE. BUS STOP SIGN SHOULD NOT BE MOUNTED ON SIGN POSTS OR NCDOT PEDESTALS WITH WARNING SIGNAGE OR WARNING SIGNALS.
4. SIGN POST LOCATION SHOULD BE ADJUSTED TO ENSURE BUS STOP SIGNAGE DOES NOT OBSTRUCT OTHER ROADWAY SIGNAGE.

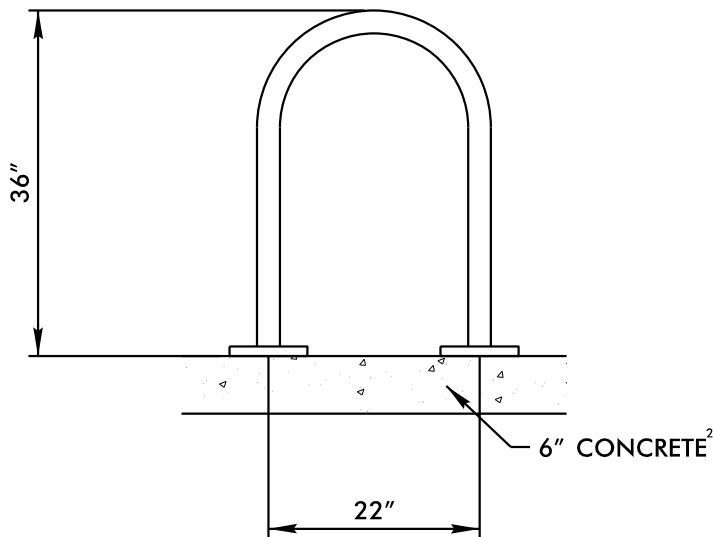
REV. DATE 10-14-2024

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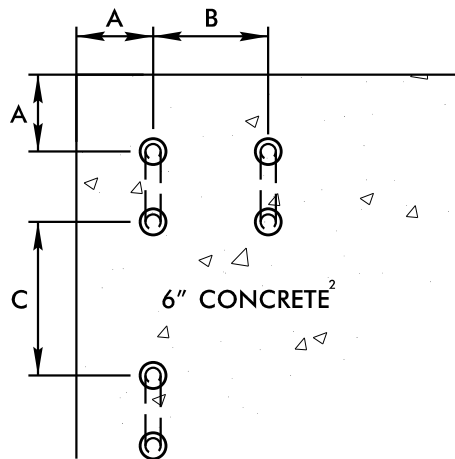


SIGN POST INSTALLATION

DETAIL #
BUS-3.20
SHEET #
1 OF 1

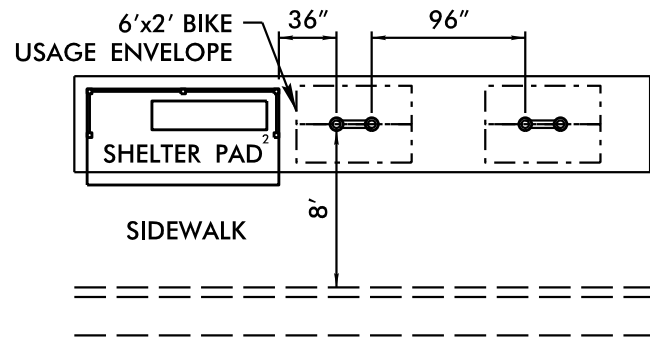
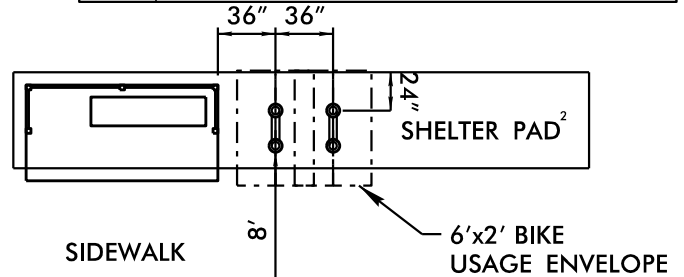


SURFACE MOUNTED 'U' RACK^{3,6}



**MINIMUM DIMENSIONS
(SEE LEGEND)**

LEGEND	
A	DISTANCE FROM EDGE OF CONCRETE TO CENTER OF MOUNT
	36" RECOMMENDED 24" MIN.
	36" MIN. IF ADJACENT TO VERTICAL OBSTRUCTION (WALL, SHELTER, CURB, ETC.)
B	DISTANCE BETWEEN RACKS (PARALLEL)
	36" MIN.
C	DIST. BETWEEN RACKS (LATERAL)
	96" MIN.



BIKE RACK LAYOUTS

NOTES:

1. COORDINATE WITH GOTRIANGLE TO DETERMINE THE QUANTITY OF BIKE RACKS REQUIRED AT EACH BUS STOP LOCATION.
2. SEE DETAIL BUS-02.10, DETAIL BUS-02.20, & DETAIL BUS-03.10 FOR BUS STOP AMENITY AREA LAYOUTS AND CONCRETE INFRASTRUCTURE REQUIREMENTS.
3. BIKE RACKS ARE TO BE SURFACE MOUNTED UNLESS OTHERWISE APPROVED BY GOTRIANGLE.
4. MATERIAL & COLOR OF BIKE RACK IS TO BE APPROVED BY GOTRIANGLE & LOCAL REVIEW AGENCIES, AS APPLICABLE.
5. PROVIDE MANUFACTURER SPECIFICATIONS & DETAILS FOR GOTRIANGLE REVIEW.
6. BIKE RACKS ARE TO MEET ALL REQUIREMENTS OF THE LOCAL GUIDELINES WHERE APPLICABLE.

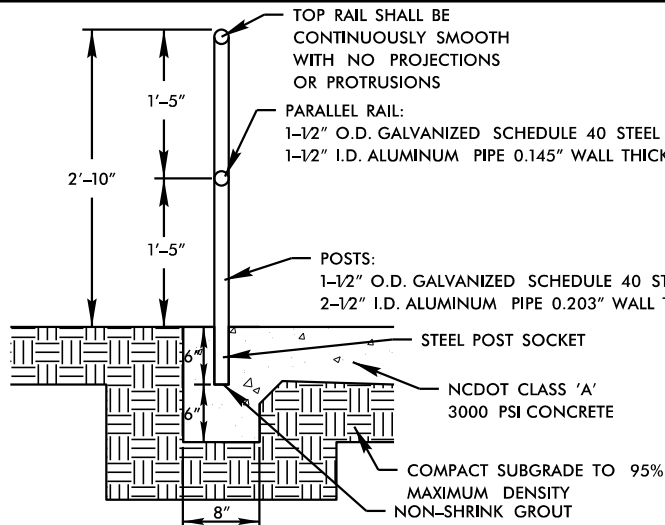
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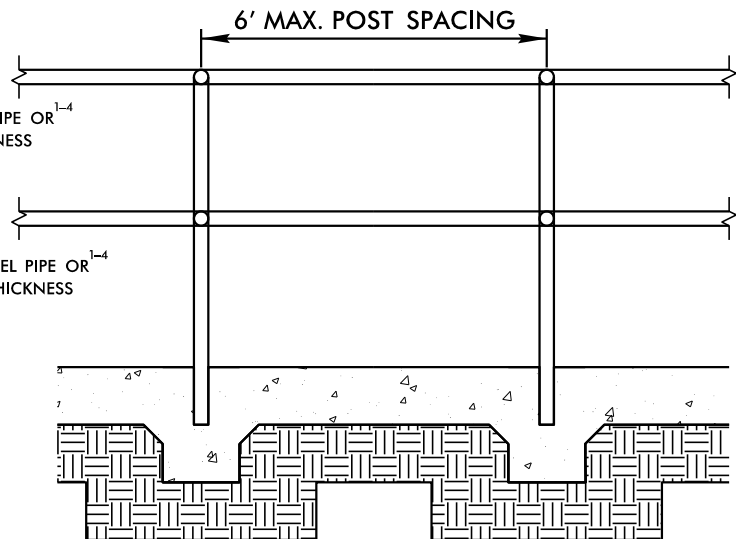


TYPICAL BIKE RACKS & SPACING

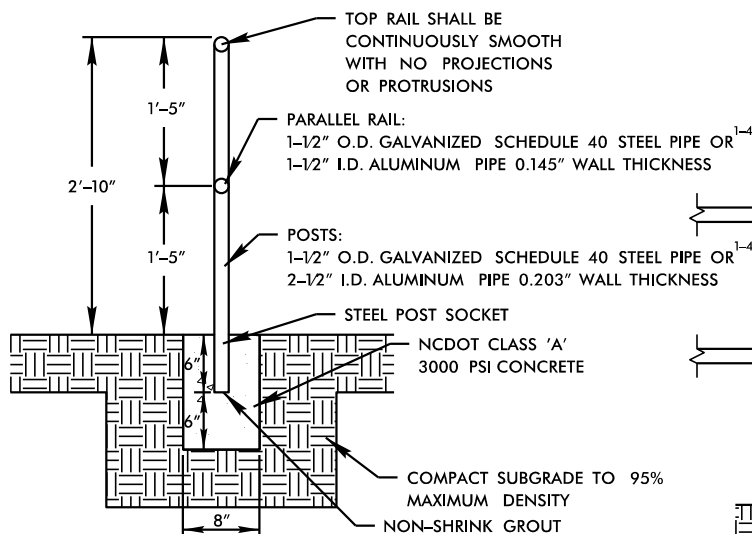
DETAIL #
BUS-04.10
SHEET #
1 OF 1



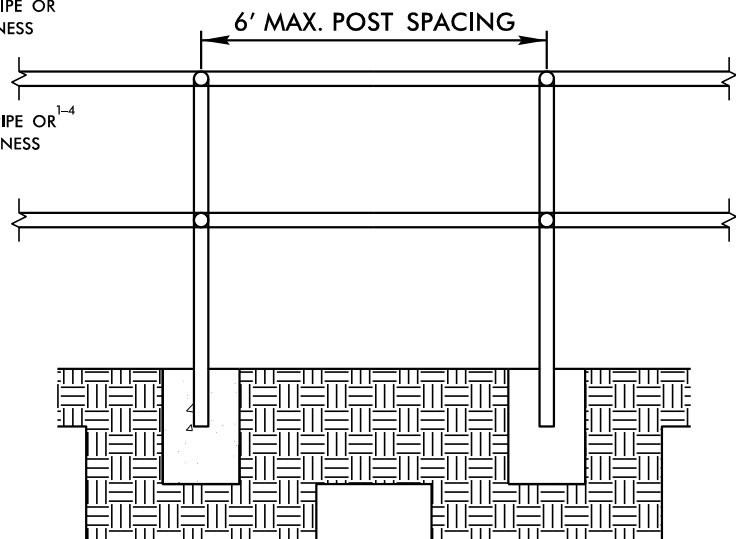
SECTION VIEW (METHOD A)



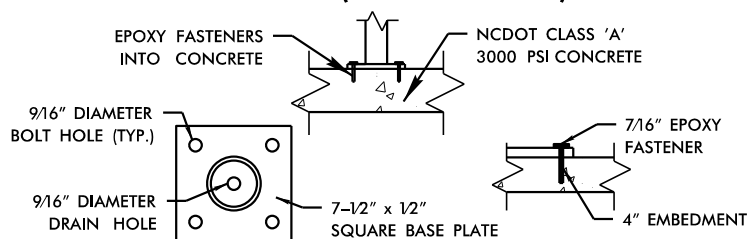
HORIZONTAL VIEW (METHOD A)



SECTION VIEW (METHOD B)



HORIZONTAL VIEW (METHOD B)



ALUMINUM POST MOUNT (METHOD C)

NOTES:

1. CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1.5" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING REQUIREMENTS OF ASTM A53.
2. REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.
3. PAINT, IF REQUIRED BY ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE NCDOT STANDARD SPECIFICATIONS.
4. WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE NCDOT STANDARD SPECIFICATIONS.
5. GOTRIANGLE WILL BE REQUIRED TO PERFORM A SAFETY AND SECURITY REVIEW FOR ALL BUS STOP LOCATIONS. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO SCHEDULE A REVIEW.
6. SHOP DRAWINGS OF PEDESTRIAN HANDRAIL ARE TO BE PROVIDED TO GOTRIANGLE FOR REVIEW PRIOR TO APPROVAL.
7. PREFERRED METHOD OF INSTALLATION IS TO BE DETERMINED BY GOTRIANGLE.
8. HANDRAIL IS NOT ADEQUATE FOR PROVIDING FALL PROTECTION. AT LOCATIONS WHERE FALL PROTECTION IS NEEDED REFER TO DETAIL BUS-4.30 FOR PEDESTRIAN SAFETY RAIL.

REV. DATE 10-14-2024

NOT TO SCALE

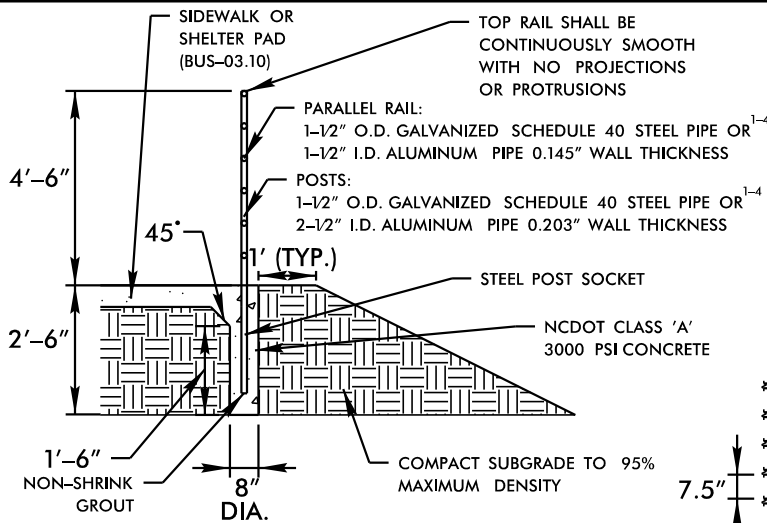


**PEDESTRIAN HANDRAIL
(RAMPS AND STAIRS)**

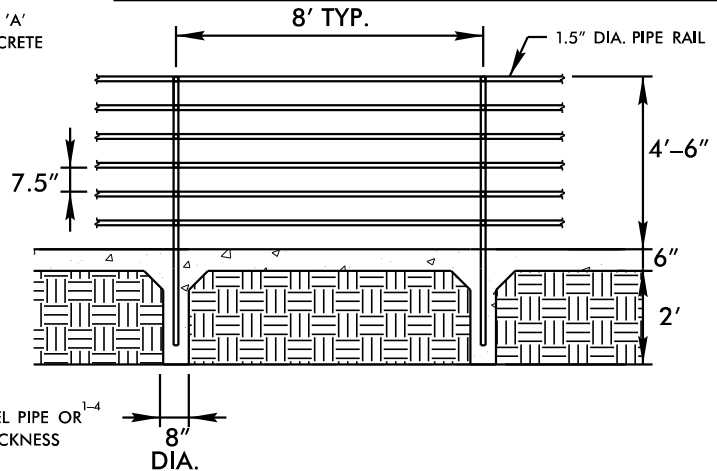
DETAIL #
BUS-04.20
SHEET #
1 OF 1

SAFETY RAIL REQUIREMENTS:

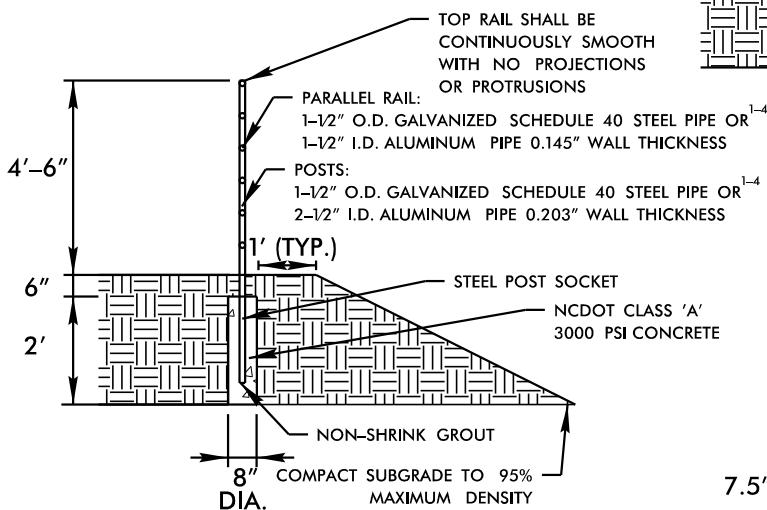
1. SLOPES 3:1 OR STEEPER WITHIN 4' OF THE BUS STOP AREA WITH A TOTAL ELEVATION CHANGE OF 6' OR GREATER.
2. SLOPES 2:1 OR STEEPER WITHIN 4' OF THE BUS STOP AREA WITH A TOTAL ELEVATION CHANGE OF 4' OR GREATER.
3. SLOPE 1:1 OR STEEPER WITHIN 4' OF THE BUS STOP AREA WITH A TOTAL ELEVATION CHANGE OF 2.5' OR GREATER.
4. SLOPE 1:1 OR STEEPER WITHIN 2' OF THE BUS STOP AREA WITH A TOTAL ELEVATION CHANGE OF 1' OR GREATER.
5. ANY LOCATIONS DETERMINED BY GOTRIANGLE'S SAFETY AND SECURITY REVIEW TO REQUIRE PEDESTRIAN SAFETY RAIL.



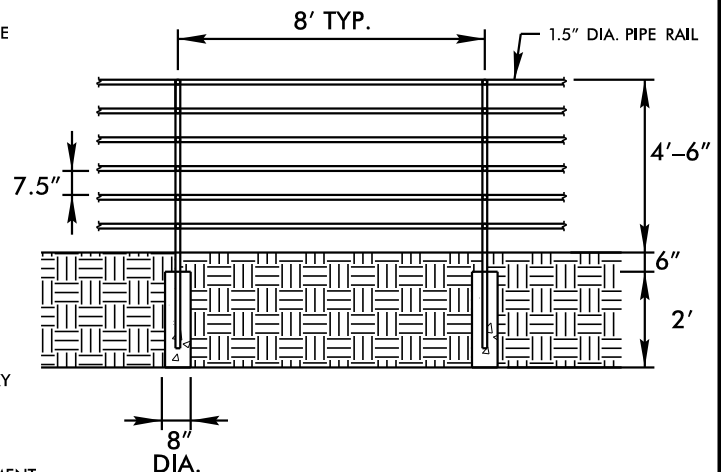
SECTION VIEW (METHOD A)¹⁰



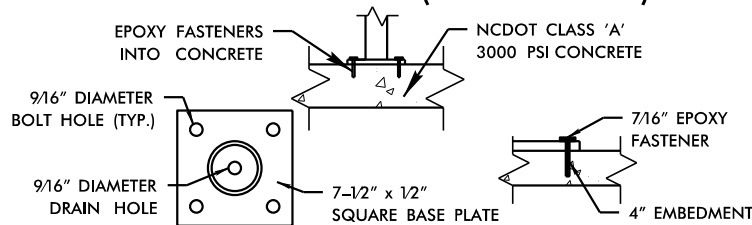
HORIZONTAL VIEW (METHOD A)¹⁰



SECTION VIEW (METHOD B)¹⁰



HORIZONTAL VIEW (METHOD B)¹⁰



ALUMINUM POST MOUNT (METHOD C)¹⁰

NOTES:

1. CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1.5" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING REQUIREMENTS OF ASTM A53.
2. REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.
3. PAINT, IF REQUIRED BY ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE NCDOT STANDARD SPECIFICATIONS.
4. WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE NCDOT STANDARD SPECIFICATIONS.
5. GOTRIANGLE WILL BE REQUIRED TO PERFORM A SAFETY AND SECURITY REVIEW FOR ALL BUS STOP LOCATIONS. CONTACT GOTRIANGLE'S PLANNING & CAPITAL DEVELOPMENT STAFF AT 919-485-7557 TO SCHEDULE A REVIEW.
6. SHOP DRAWINGS OF PEDESTRIAN SAFETY RAIL ARE TO BE PROVIDED TO GOTRIANGLE FOR REVIEW PRIOR TO APPROVAL.
7. EARTH SLOPES STEEPER THAN 2:1 ADJACENT TO TRANSIT PASSENGER AREAS ARE NOT RECOMMENDED AND WOULD REQUIRE SUPPORTING CALCULATIONS AND APPROVAL BY GOTRIANGLE.
8. PLACEMENT OF SAFETY RAIL IN RELATION TO SHOULDER BREAK POINT AND SIDEWALK MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.
9. EXCEPTIONS TO THE REQUIREMENTS STATED MAY BE CONSIDERED ON A CASE-BY-CASE BASIS WITH DOCUMENTATION BY THE ENGINEER AND APPROVAL BY GOTRIANGLE.
10. PREFERRED METHOD OF INSTALLATION IS TO BE DETERMINED BY GOTRIANGLE.

REV. DATE 10-14-2024

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PEDESTRIAN SAFETY RAIL (FALL PROTECTION)

DETAIL #
BUS-04.30

SHEET #
1 OF 1