

**NOTES:**

1. METAL HANDRAIL SHALL BE INSTALLED 1 FOOT FROM THE EDGE OF PAVED TRAIL ON CENTER.
2. PROVIDE FLARED END RAIL TREATMENTS AT 15 DEGREES AWAY FROM THE TRAIL BEYOND THE AREA OF NEED. FLARED END TREATMENTS SHALL EXTEND TWO FEET MINIMUM FROM THE EDGE OF TRAIL.
3. THE TOP RAIL SHALL BE INSTALLED AT A HEIGHT OF 3 FEET FROM THE FINISHED GROUND.
4. ALL CONCRETE FOOTINGS FOR HANDRAIL SHALL MEET 3,600 PSI COMPRESSIVE STRENGTH.
5. ALL HANDRAIL METAL JOINTS SHALL HAVE A  $\frac{1}{2}$  INCH WIDE FILLET WELD.
6. PRIME AND PAINT METAL HANDRAIL WITH BLACK ALL WEATHER ENAMEL PAINT AFTER INSTALLATION.

**TOWN OF APEX  
STANDARDS**

EFFECTIVE: AUGUST 12, 2025

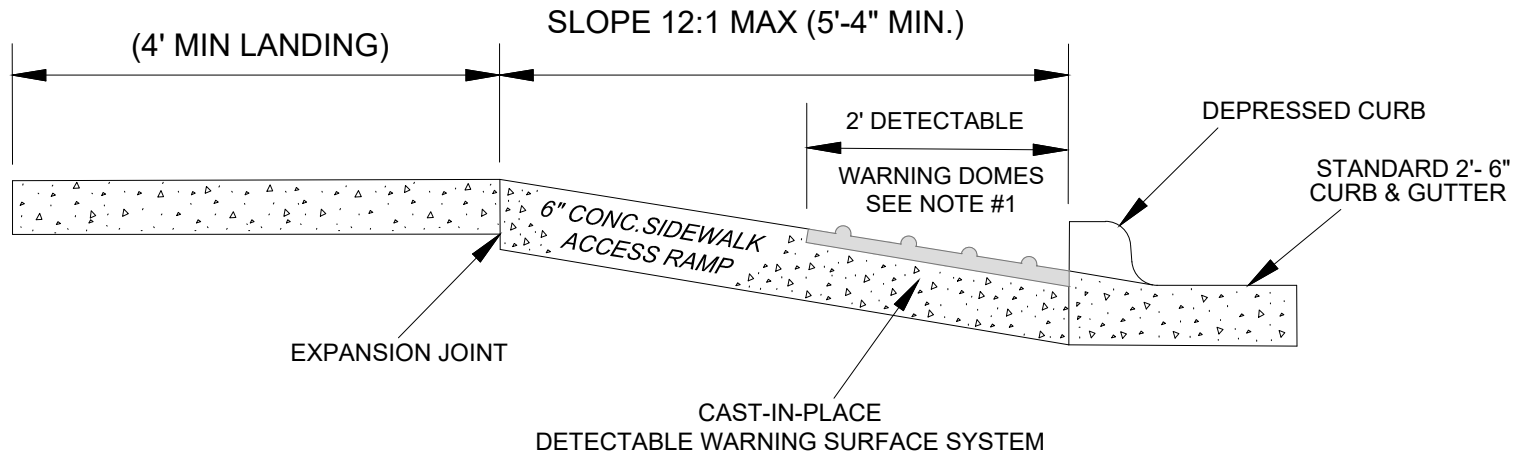
# **HANDRAIL**

STD. NO.

**200.05**

SHEET 1 OF 1

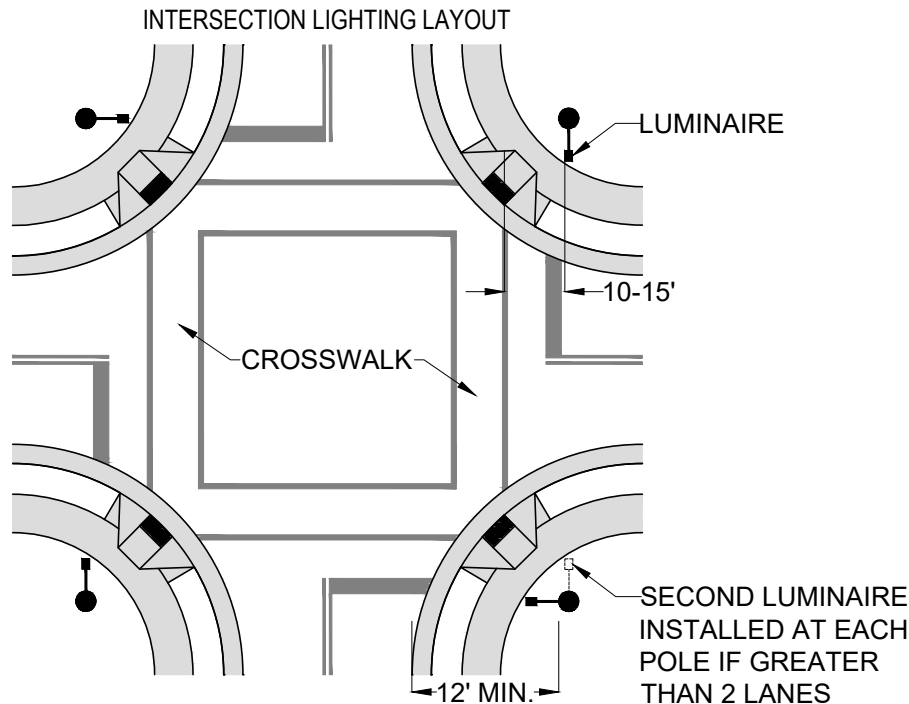
RAMP SECTION  
WITH DETECTABLE WARNING SURFACE  
CAST-IN-PLACE SYSTEM



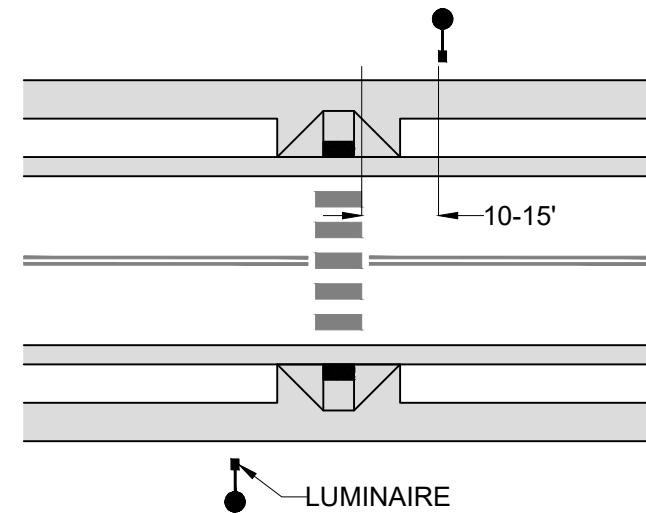
NOTES:

1. DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON DETAIL.
2. WARNING AREA SHALL BE CHARCOAL, OR BLACK FOR CONTRAST.

CROSSWALK TYPE	NUMBER OF LANES	NUMBER OF FIXTURES
MIDBLOCK	$\geq 2$	2
INTERSECTION	2	4
INTERSECTION	$> 2$	8



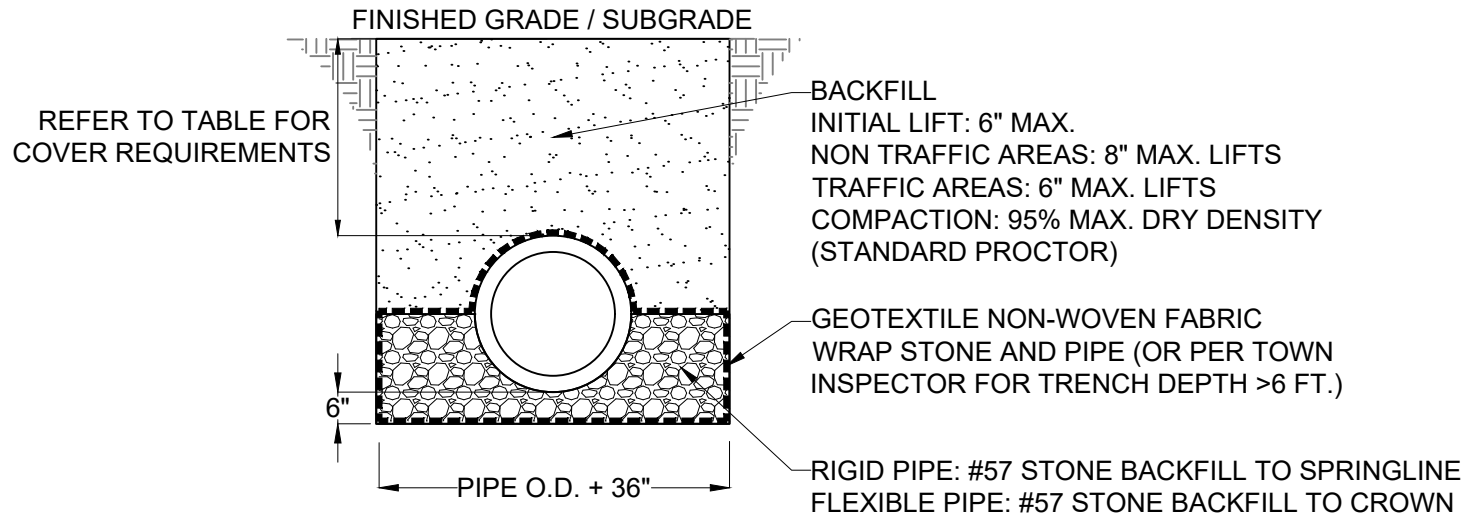
MID-BLOCK CROSSWALK LIGHTING LAYOUT



NOTES:

1. LUMINAIRES TO BE PLACED A MINIMUM OF 12' FROM THE FACE OF CURB OR EDGE OF TRAVEL LANE. ALL LUMINAIRES WITHIN THE ROADWAY CLEAR ZONE SHALL BE PLACED ON A BREAKAWAY BASE.
2. LUMINAIRES FOR CROSSWALKS ARE TO BE LOCATED BETWEEN 10-15 FEET FROM THE CROSSWALK WHERE POSSIBLE.
3. LUMINAIRES SHOULD BE PLACED PRIOR TO THE CROSSWALK FROM THE DRIVERS' PERSPECTIVE.
4. LUMINAIRE TYPE BY ROADWAY DESIGNATION AND CROSSWALK TYPE:
  - A. ACROSS THOROUGHFARES AND AT SIGNALIZED INTERSECTIONS: COBRA-HEAD LED, ROADWAY DISTRIBUTION III, 3000K, WITH ~18,000 LUMEN OUTPUT/~150 WATT INPUT.
  - B. ACROSS MAJOR COLLECTOR STREETS AND YIELD-CONTROLLED OR HIGH-VISIBILITY CROSSWALKS ACROSS MINOR COLLECTOR STREETS AND RESIDENTIAL STREETS: COBRA-HEAD LED, ROADWAY DISTRIBUTION III, 3000K, WITH ~7,000 LUMEN OUTPUT/~50 WATT INPUT.
  - C. TWO-BAR CROSSWALKS ACROSS RESIDENTIAL AND MINOR COLLECTOR STREETS: LUMINAIRES TO BE LANTERN STYLE, LED, ROADWAY DISTRIBUTION III, 3000K, WITH ~5,000 LUMEN OUTPUT/~50 WATT INPUT. MULTIPLE LUMINAIRES MAY BE NEEDED DEPENDING ON THE ROADWAY CONFIGURATION.





RCP		
CLASS	MIN (ft)	MAX (ft)
III	2	20
IV	1	30

Pipe Diameter (in)	PP		CSP		CAAP	
	MIN (in)	MAX (ft)	MIN (in)	MAX (ft)	MIN (in)	MAX (ft)
15	12	28	12	158	12	98
18	12	28	12	131	12	81
21			12	113	12	69
24	12	26	12	98	12	60
30	12	26	12	79	12	57
36	12	20	12	65	12	47
42	12	20	12	55	12	40
48	12	20	12	48	12	35
54			12	56	15	31
60	24	20	12	50	15	28

#### NOTES:

1. EXCAVATE TO 6 INCHES BELOW THE PROPOSED PIPE ELEVATION.
2. PROVIDE 6 INCHES STONE BEDDING.
3. WHERE BELL AND SPIGOT PIPE IS USED, PROVIDE RECESSES TO RECEIVE PIPE BELL.
4. UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH STONE OR OTHER APPROVED MATERIAL.
5. BACKFILL MATERIAL SHALL BE APPROVED SUITABLE MATERIAL.
6. MAX. BACKFILL LIFTS ARE STATED IN UNCOMPACTED DEPTHS.
7. WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION. DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES.

TOWN OF APEX  
STANDARDS

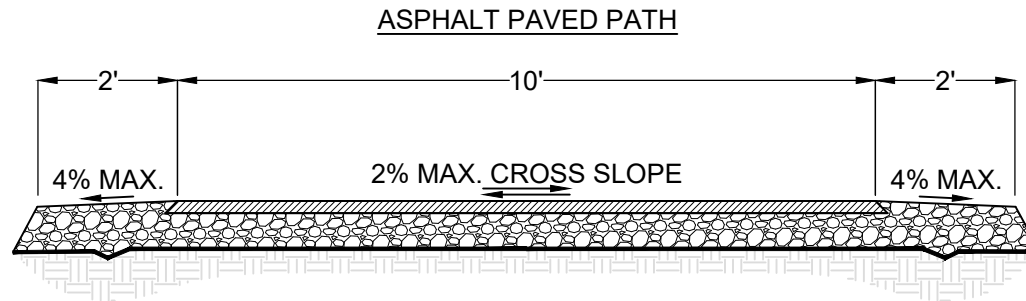
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## STORM DRAIN PIPE BEDDING & BACKFILLING

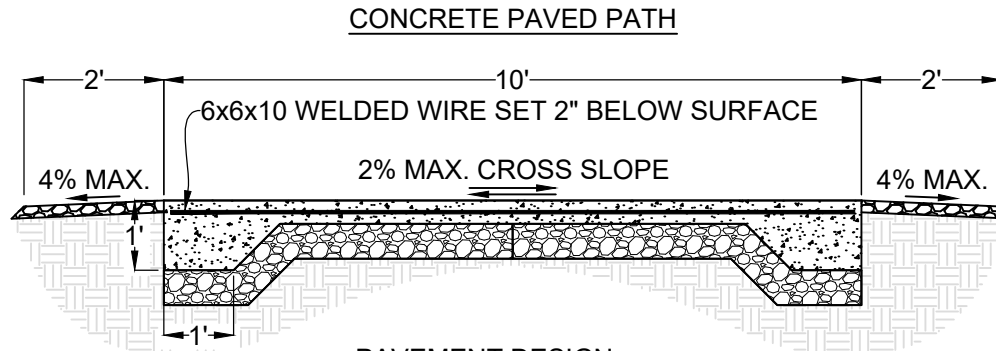
STD. NO.

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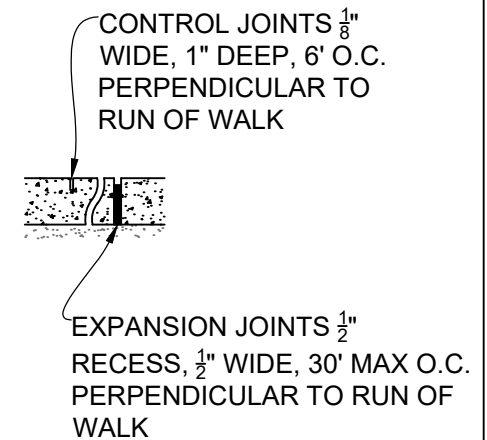
SHEET 1 OF 1



PAVEMENT DESIGN:  
 2" ASPHALT CONCRETE SURFACE COURSE  
 6" AGGREGATE BASE COURSE  
 WOVEN GEOTEXTILE FABRIC  
 2" AGGREGATE BASE COURSE SEEDED SHOULDER

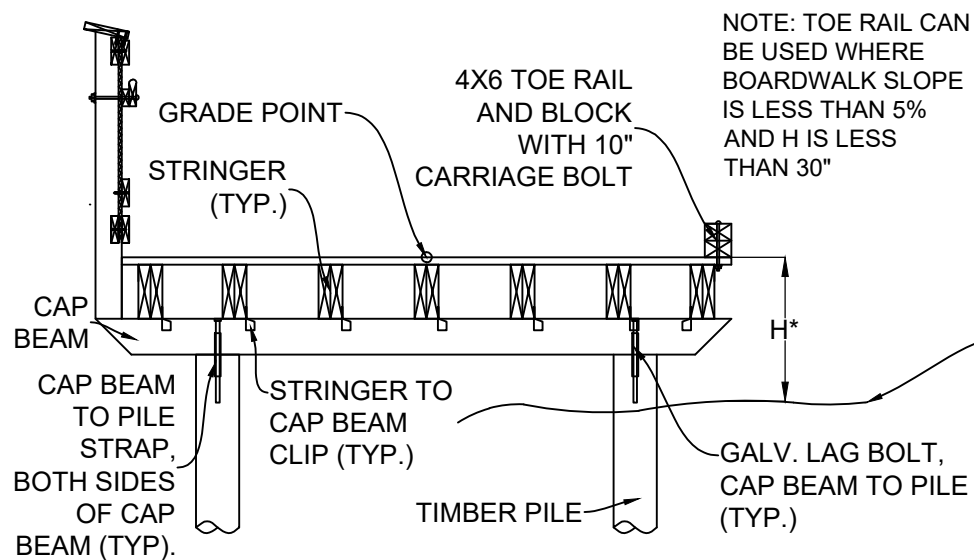


PAVEMENT DESIGN:  
 4" CONCRETE  
 6" AGGREGATE BASE COURSE  
 2" AGGREGATE BASE COURSE SEEDED SHOULDER

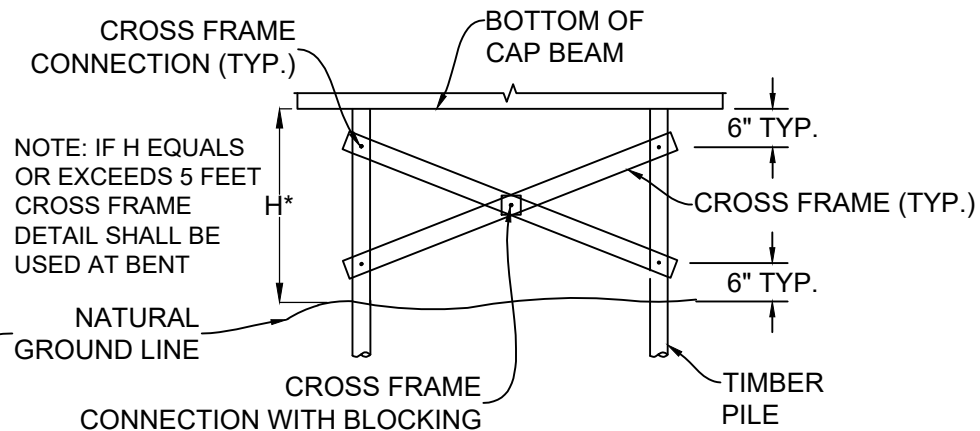


**NOTES:**

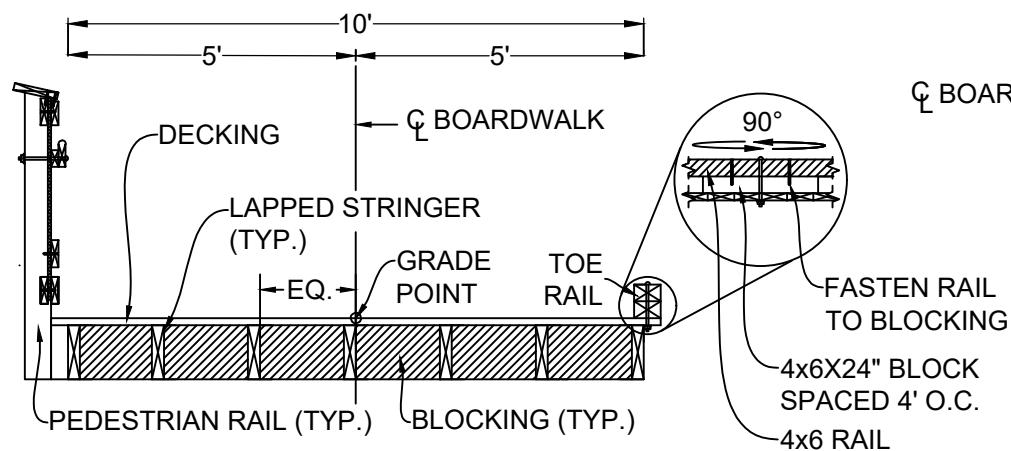
1. ALL LOCATION & SIZES OF DRAIN PIPE TO BE VERIFIED AND APPROVED BY THE TOWN OF APEX ENGINEER.
2. SUBGRADE SHALL BE STABLE AND COMPACTED.
3. IN LOW LYING AREAS PRONE TO FLOODING, A 4-INCH DEEP GRAVEL SHOULDER MAY BE USED SUBJECT TO REVIEW AND APPROVAL.



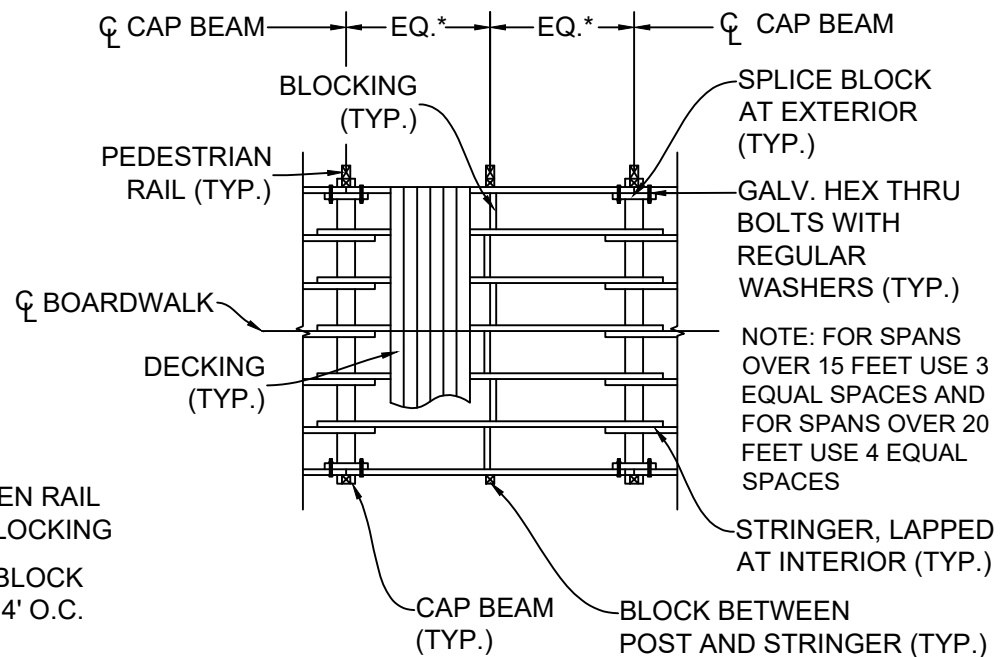
TIMBER BOARDWALK BENT ELEVATION



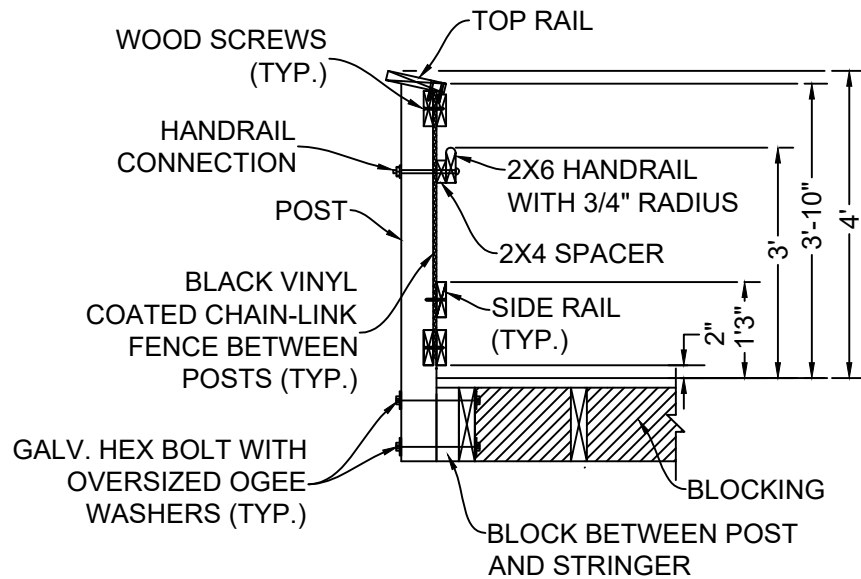
CROSS FRAME DETAIL



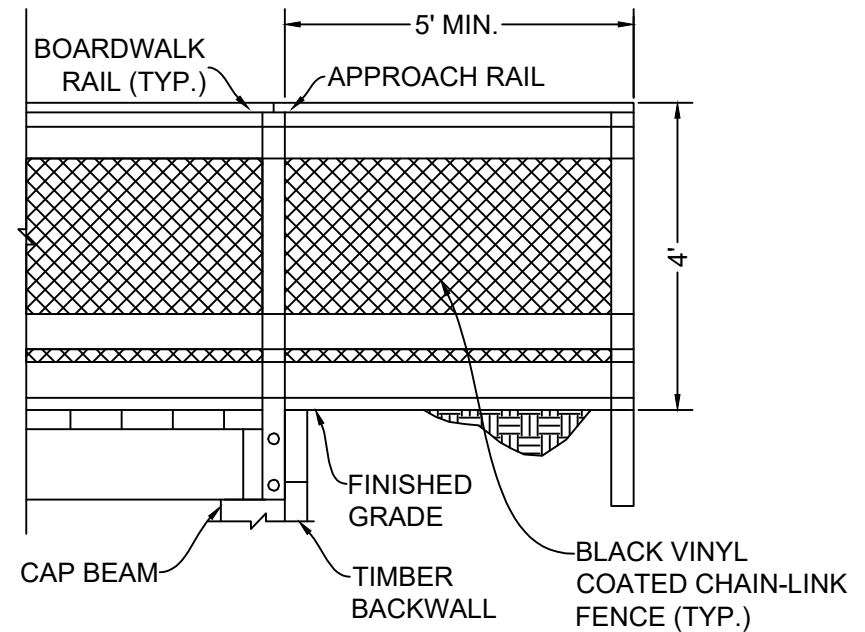
TYPICAL SECTION THROUGH MIDSPAN



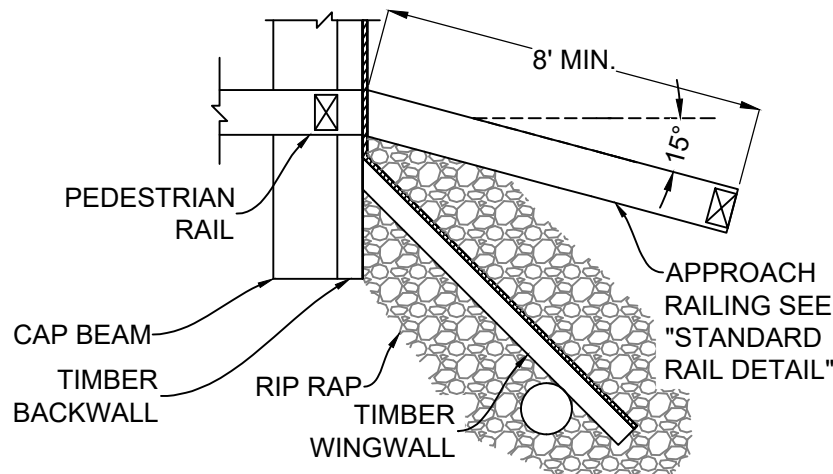
TIMBER BOARDWALK DECK FRAMING PLAN (10 FT SPAN TYP.)



PEDESTRIAN RAIL DETAIL



STANDARD RAIL DETAIL



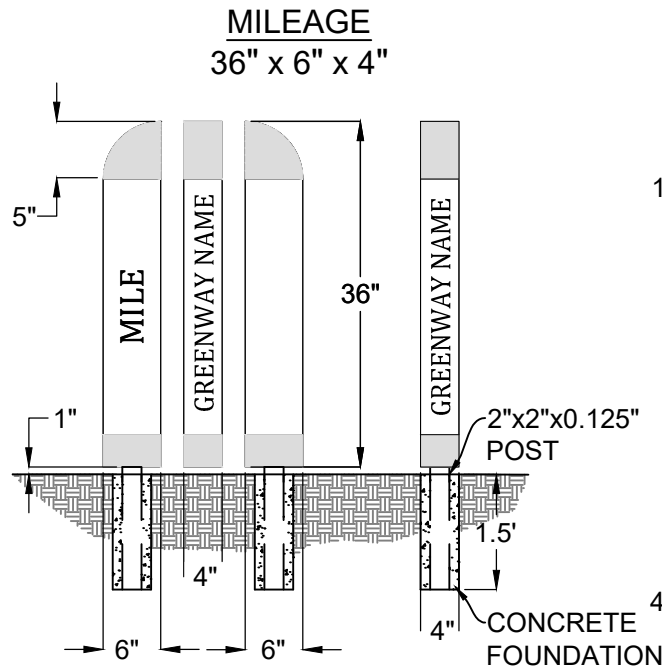
TYPICAL APPROACH RAIL PLAN (TOP VIEW)

NOTES:

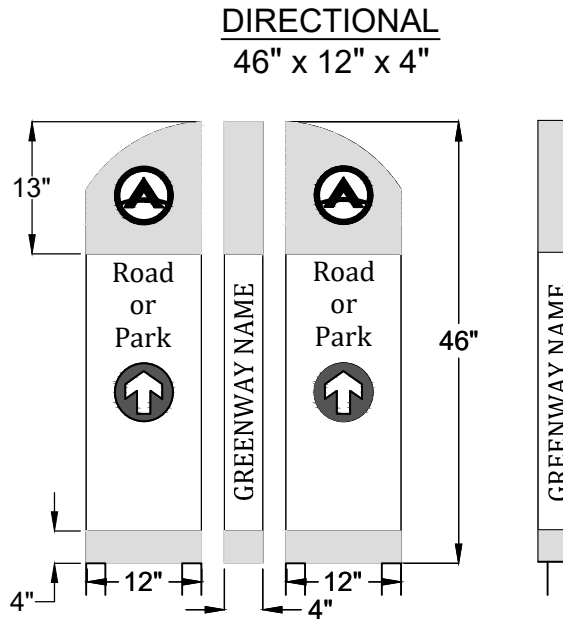
1. ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE NCDOT STANDARD SPECIFICATIONS.
2. GALVANIZE ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1079 OF THE NCDOT STANDARD SPECIFICATIONS.
3. ALL CHAIN LINK FENCE FABRIC, POSTS, RAILS, FITTING HARDWARE, AND ACCESSORIES SHALL BE BLACK VINYL COATED IN ACCORDANCE WITH ARTICLE 1050 OF THE NCDOT STANDARD SPECIFICATIONS.
4. PROVIDE A MINIMUM OF 2 FEET OF RIP RAP AROUND THE TIMBER WINGWALL TO PREVENT WASHOUT OF EARTH MATERIALS.
5. APPROACH RAIL TO BOARDWALKS SHALL BE A MINIMUM OF 8 FEET IN LENGTH, FLARED TO PROVIDE A 2-FOOT LATERAL OFFSET.



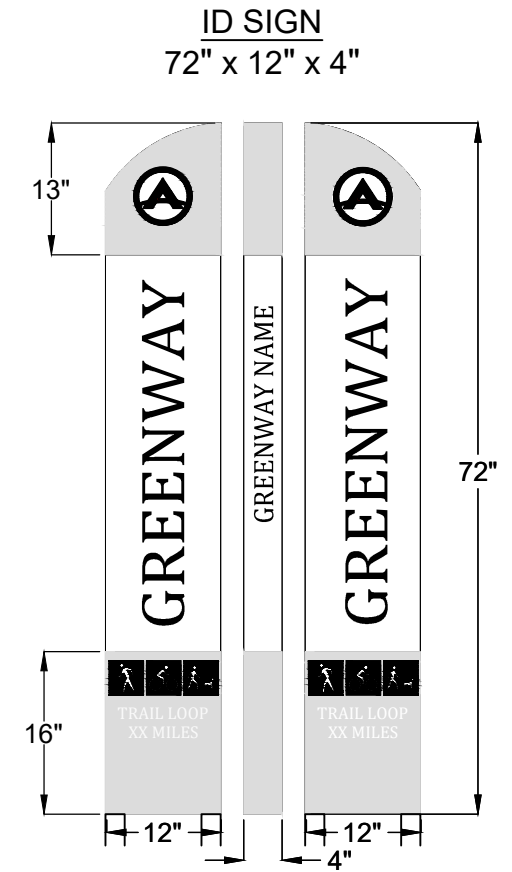
# WAYFINDING



SINGLE-SIDED  
MILEAGE NUMBER: TBD



LOCATE AT STREET/SIDEWALK  
DOUBLE-SIDED  
ARROW DIRECTION: TBD



LOCATED AT TRAIL START  
DOUBLE-SIDED  
LOOP REFERENCE: TBD

## NOTES:

1. WAYFINDING SIGNAGE SHALL BE MOUNTED ON A 1" X 4" X 0.125" ALUMINUM C-CHANNEL FRAME.
2. SIGN FACES SHALL BE 0.080" MILL FINISHED (MF) ALUMINUM EPOXIED TO THE FRAME.
3. THE EXTERIOR OF THE SIGN SHALL HAVE A MINIMUM OF TWO  $\frac{1}{4}$ " DRAIN HOLES ALONG THE BOTTOM KEPT FREE OF DEBRIS.
4. MILEAGE SIGNS SHALL BE MOUNTED ON A SINGLE STUB MOUNT. DIRECTIONAL AND ID SIGNS SHALL BE MOUNTED ON A DOUBLE STUB MOUNT WITH 2" X 2" X 0.125" ALUMINUM TUBE POSTS. A VERTICAL CLEARANCE OF ONE (1) INCH SHALL BE MAINTAINED BETWEEN THE BOTTOM OF THE SIGN AND GROUND SURFACE. POSTS SHALL BE DRIVEN MINIMUM 18 INCHES INTO THE GROUND AND ENCASED IN CONCRETE.
5. THE COLOR SCHEME OF SIGN FACES SHALL BE WHITE SATIN AND GREEN (PMS 7743 C SATIN). THE CUT AND PRINTED VINYL SHALL BE BLACK AND WHITE.

TOWN OF APEX  
STANDARDS

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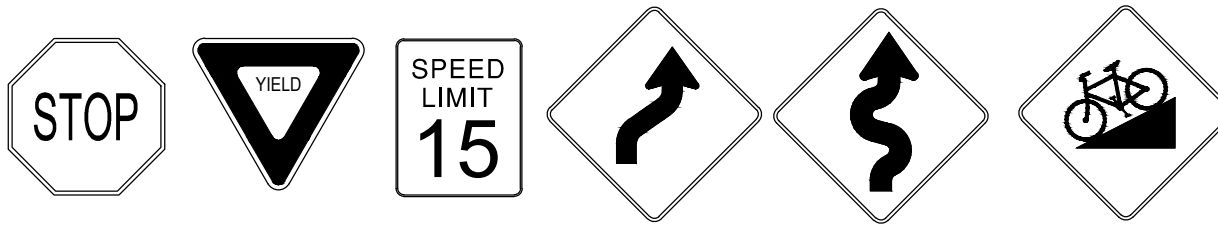
## GREENWAY SIGNAGE

STD. NO.

900.03

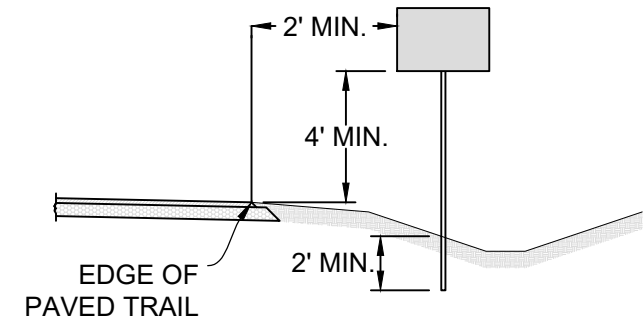
SHEET 1 OF 2

# TYPICAL GREENWAY REGULATORY AND WARNING SIGNAGE



SIGN TYPE	SIGN SIZE
R1-1 (STOP)	18" x 18"
R1-2 (YIELD)	18" x 18" x 18"
R2-1 (SPEED LIMIT)	18" x 18"
W1-4 (CURVE WARNING)	18" x 18"
W1-5 (CURVES WARNING)	18" x 18"
W7-5 (SLOPE/HILL WARNING)	18" x 18"
FUTURE TRAIL EXTENSION	30" x 18"

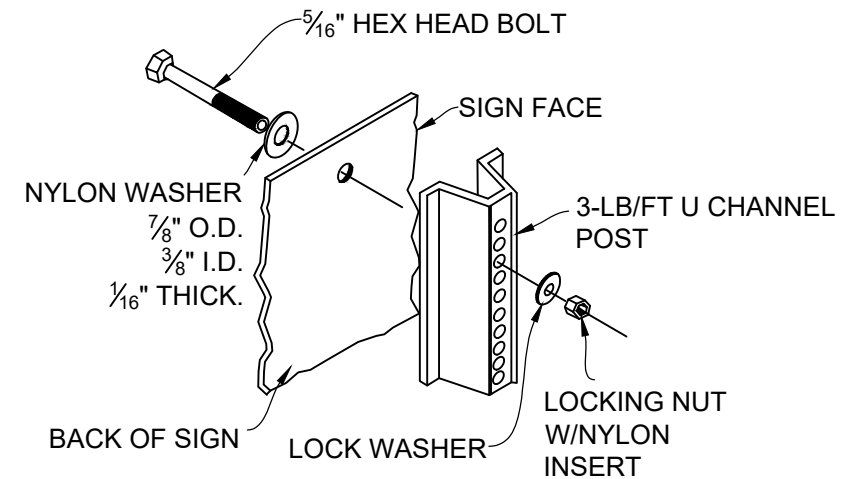
\* FOR OTHER TYPES OF SIGNAGE CONSULT THE MUTCD



SIGN PLACEMENT

## NOTES:

1. SHEETING MATERIAL FOR ALL SIGNS SHALL BE HIGH INTENSITY PRISMATIC (HIP) TYPE IV MULTI-LAYER SHEETING.
2. A STOP SIGN SHALL BE INSTALLED WHENEVER A PUBLIC GREENWAY INTERSECTS A ROADWAY (EXCEPT FOR STREET-SIDE GREENWAYS), AND SHALL BE INSTALLED FOR PRIVATE GREENWAYS AS INDICATED ON PLANS.
3. A YIELD SIGN SHALL BE INSTALLED ON THE MINOR APPROACHES AT CROSSINGS OF TWO GREENWAYS, OR WHERE INDICATED ON THE PLANS.
4. STEEP SLOPE/HILL WARNING SIGNAGE SHALL BE INSTALLED AT A MINIMUM DISTANCE OF 50 FEET APPROACHING DOWNHILL SLOPES THAT EXCEED 5 PERCENT.
5. CURVE WARNING (W1-4) SIGNAGE SHALL BE INSTALLED AT A MINIMUM DISTANCE OF 50 FEET APPROACHING HORIZONTAL CURVES WITH A RADIUS OF LESS THAN 50 FEET. MULTIPLE CURVES (W1-5) SIGNAGE SHALL BE INSTALLED WHERE A COMBINATION OF SLOPE EXCEEDS 5 PERCENT AND HORIZONTAL CENTERLINE CURVE RADIUS IS LESS THAN 50 FEET.
6. REFER TO MUTCD FOR ALL OTHER GUIDANCE.



SIGN MOUNTING DETAIL

TOWN OF APEX  
STANDARDS

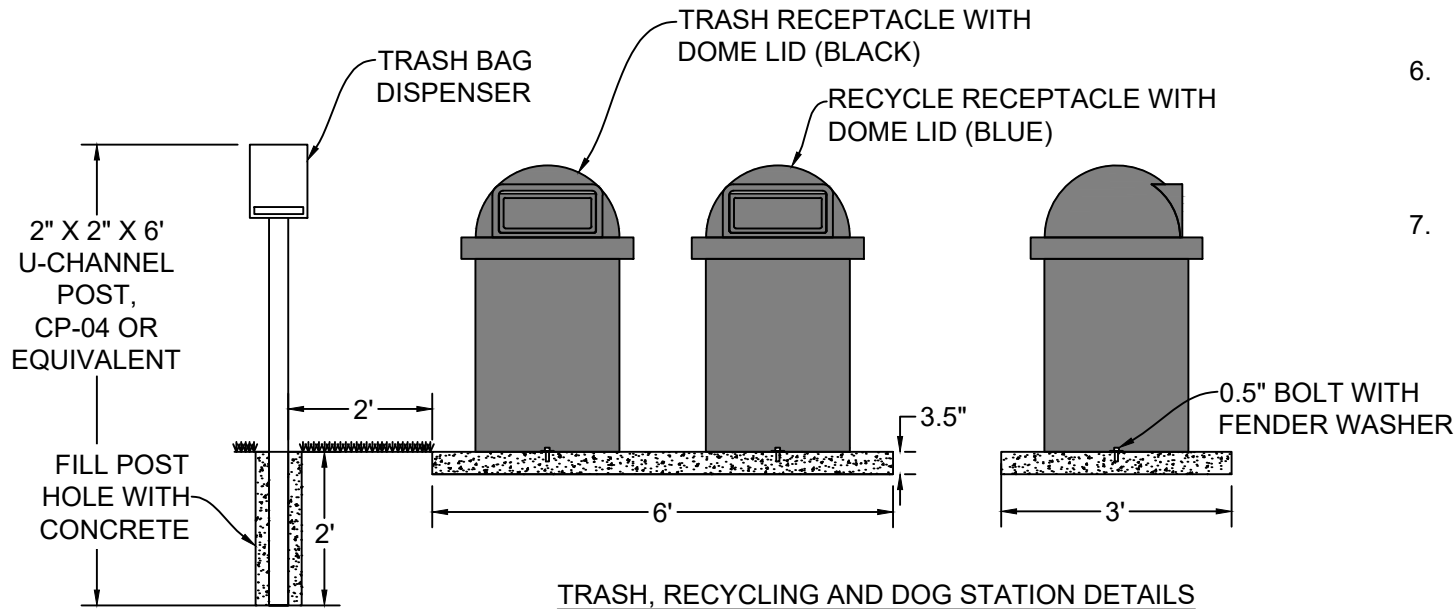
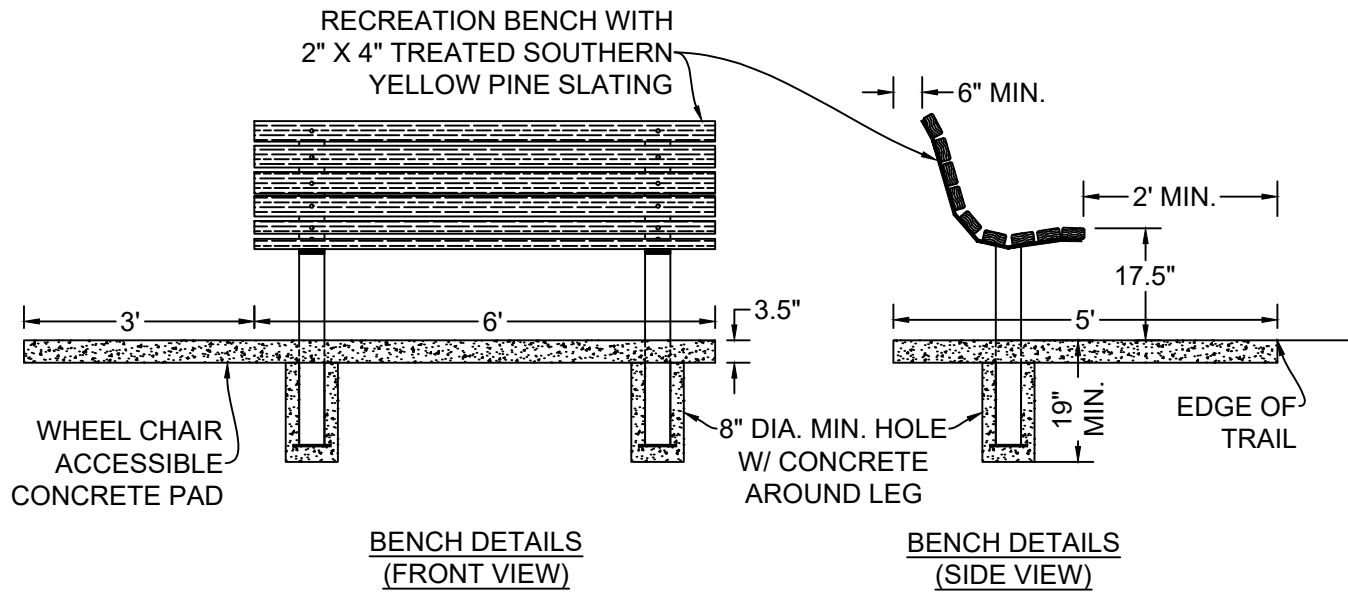
EFFECTIVE: AUGUST 12, 2025

## GREENWAY SIGNAGE

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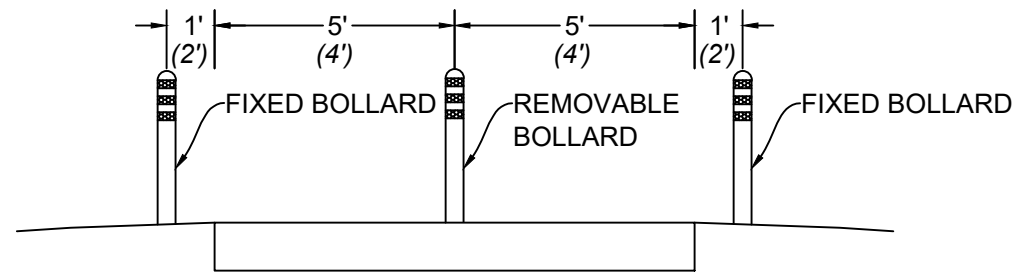
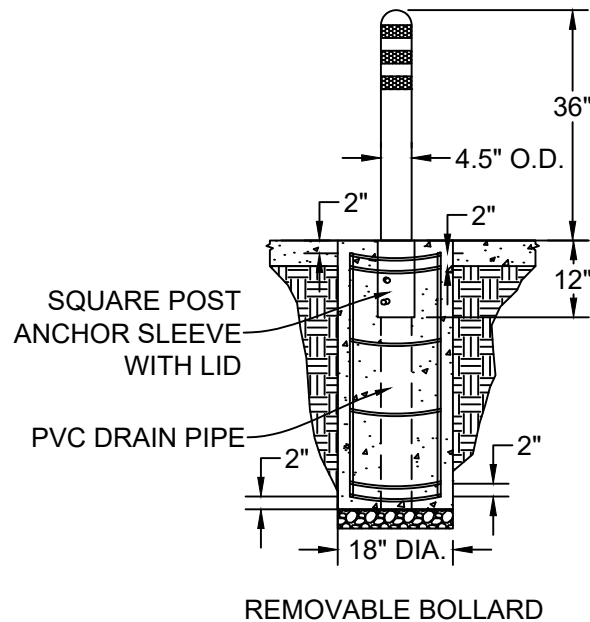
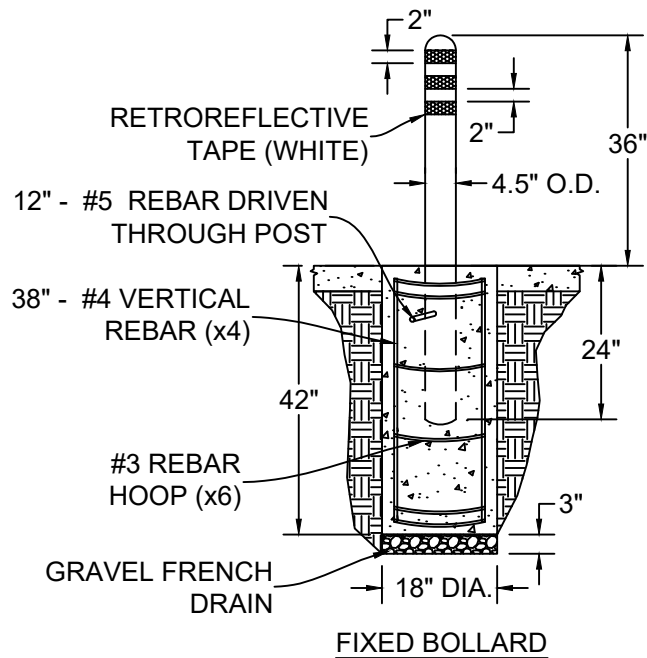
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SHEET 2 OF 2

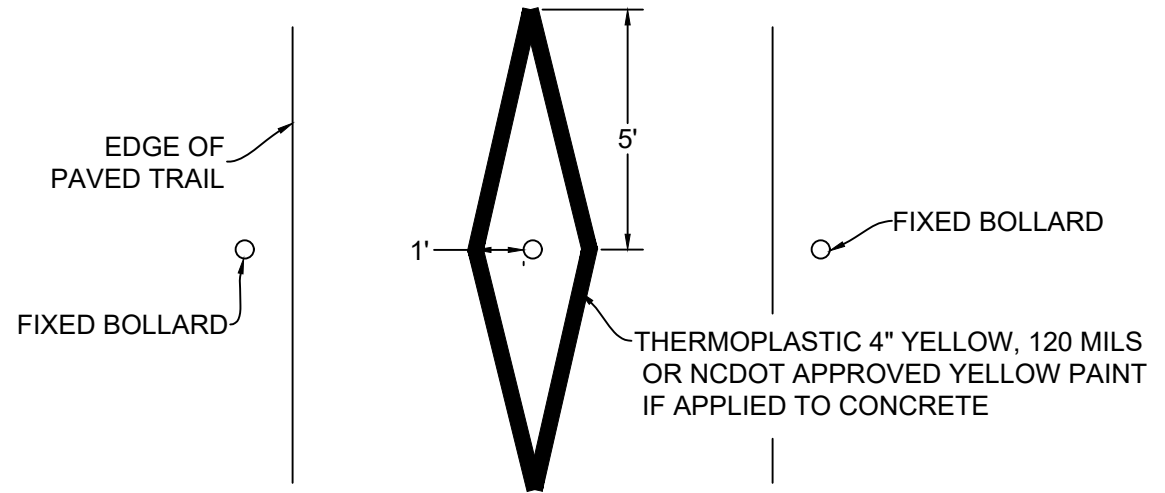


#### NOTES:

1. BENCHES SHALL BE KAY PARK RECREATION MODEL NO 6CB2SYPIG OR EQUIVALENT.
2. BENCHES TO BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.
3. BENCHES SHALL BE MOUNTED IN CONCRETE AND PAD POURED AFTER BENCHES ARE SECURED.
4. TRASH RECEPTACLE SHALL BE OCC OUTDOORS REC-S8331A-00-092 (BLACK) WITH DOME LID AND PUSH DOOR (BLACK) OR EQUIVALENT.
5. RECYCLING RECEPTACLE SHALL BE OCC OUTDOORS REC-S8331A-00-055 (BLUE) WITH DOME LID AND PUSH DOOR (BLUE) OR EQUIVALENT.
6. DOG STATION SHALL BE CROWN PRODUCTS REGAL PET WASTE STATION, ID NO. PP-H-DSP, COLOR HUNTER GREEN, OR EQUIVALENT.
7. DOG STATION, TRASH AND RECYCLE RECEPTACLES TO BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.



TYPICAL BOLLARD PLACEMENT AT ENTRANCE



PAVEMENT MARKING DETAIL (TOP VIEW)

#### NOTES:

1. FIXED BOLLARDS SHALL BE TRAFFICGUARD MODEL RFP4560R; REMOVABLE BOLLARDS SHALL BE TRAFFICGUARD MODEL TL1004RL, OR APPROVED EQUAL. BOLLARDS SHALL BE FINISHED WITH POWDER COATED BLACK PAINT. REMOVABLE BOLLARDS SHALL BE INSTALLED UTILIZING THE LIDDED GROUND SLEEVE ONLY.
2. BOLLARDS AND SIGNS SHALL BE INSTALLED PER MANUFACTURER DETAILS AND SPECIFICATIONS.
3. CONCRETE FOUNDATIONS SHALL BE CONSTRUCTED TO WITHSTAND 6,000 LBS OF STATIC LOAD AT 27 INCHES ABOVE GRADE PER MANUFACTURER SPECIFICATIONS.
4. BOLLARDS SHALL BE INSTALLED OUTSIDE THE CLEAR ZONE WHEN ADJACENT TO ROADWAY. BOLLARDS SHALL BE INSTALLED MINIMUM 10 FEET FROM THE BACK OF CURB RAMP WHEN APPLICABLE.
5. PROVIDE A 2-FOOT SEPARATION BETWEEN TRAIL AND BOLLARDS WHEN TRAIL IS 8 FEET IN WIDTH.
6. FIXED BOLLARDS SHALL NOT BE REQUIRED WHEN MOTOR VEHICLE ACCESS IS BLOCKED BY PEDESTRIAN RAILING OR FENCING.