MEMORANDUM | Transportation

DATE: December 19, 2022

TO: Transportation Department Staff

FROM: Andrew Singelakis, Transportation Director

SUBJECT: Effective Date of Updated Design Manual

As a part of a continuing program to improve City standards and practices, the Transportation Department's Design Manual, which includes design standards and drawings for construction of transportation infrastructure, has been updated.

This update consists of modifications and improvements to the Standard Drawings. The complete updated Design Manual is available online at: https://transportation.bellevuewa.gov/permits-and-standards/transportation-design-manual.

The revisions should be incorporated for projects currently under design where the revisions can be incorporated without scope change or a cost increase to the project. Projects under construction will not utilize the new design standards and drawings unless directed to do so by the Project Manager.

The effective date of this revised Design Manual is January 3, 2023.


CITY OF BELLEVUE
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DESIGN MANUAL

Transportation Department
City of Bellevue

January 3, 2017


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INTRODUCTION

The purpose of the Transportation Department's Design Manual is to establish requirements for the development of transportation-related facilities in the City of Bellevue. The Design Manual should be used for new development projects, projects that modify existing developments or city right of way, and city-constructed projects. This Manual is to be used as a resource by city staff, citizens, developers, contractors, and design professionals. The Design Manual is based upon and implements city, state, and national laws, codes, regulations, ordinances, plans, and policies.

Good design of projects is a goal of the city. These design requirements are intended to supplement, but not substitute for, competent work by design professionals. Given our complex environment, the designer of transportation facilities may need to make decisions regarding competing project elements. Since the authors of the Design Manual cannot anticipate all such situations, the design professional has the responsibility to apply engineering analysis and sound professional judgment in the design process.

It is not the intent of the city to unreasonably limit any innovative or creative effort that could result in a superior design. When innovative or creative designs are proposed that fall outside the design parameters of this Manual, additional documentation will be required to record the decision-making process. Proposed departures from these standards will be evaluated on the basis that the proposal will meet requirements for safety, economical maintenance, and pleasant appearance, and will produce acceptable results for the user, the environment, and the public.


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P A R T 1 – Design Standards

SECTIONS


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1. General Considerations

A. References and Authority. The Transportation Department Director is authorized by the Transportation Development Code, BCC 14.60, to prepare, adopt, and update design standards to establish minimum requirements for the design and construction of transportation facilities and requirements for protecting existing facilities during construction. The standards contained in this Design Manual constitute the design standards authorized by BCC 14.60.021. These standards are intended to be consistent with the most currently adopted provisions and editions of the Bellevue city code, the Comprehensive Plan, and the publications cited in the appendices of this Manual.

B. Permits. Permits, approvals, and agreements are required by the city, and sometimes other jurisdictions, prior to the initiation of any construction described within this Manual. The majority of work covered under these standards will require multiple permit authority review and approvals. Any questions about permits, approvals, and agreements should be directed to the appropriate code authority at the city's Permit Center.

C. Professional Qualifications. Professionals in the technical fields of civil engineering, structural engineering, electrical engineering, geotechnical engineering, landscape architecture, soils engineering, and surveying who prepare or are responsible for the preparation of drawings, plans, specifications, or technical reports for obtaining permits and approvals shall be currently licensed or registered in the state of Washington. These professionals shall be qualified by both experience and educational background in the technical areas as warranted by the specifics of the proposed project.

D. Deviation from Standards. Except as provided for elsewhere in other city codes or resolutions, deviations from these standards may be granted by the Transportation Department Director or the Director's designated representative. The Director's decision to grant, deny, or modify the proposed deviation shall be based upon evidence that the request can meet the following criteria:

(1) Except where infill development is proposed, the deviation will achieve the intended result with a comparable or superior design;

(2) The deviation will not adversely affect safety or operation; and

(3) The deviation will not adversely affect maintainability.

A request for approval of a deviation to a Design Manual standard must be submitted by the applicant in writing to the Development Review Manager, presenting supporting information that would justify approval of the request in terms of the above criteria. For deviations to engineering design standards addressed by the AASHTO *Policy on Geometric Design of Highways and Streets,* WSDOT's *Design Manual* and other supporting manuals, or the *Public Rights-of-Way Accessibility Guidelines,* the applicant shall complete the city's Deviation/Exception Justification Form. The applicant's engineer shall complete and stamp appropriate justification, which shall include the relevant standard, a summary of alternatives considered, and justification for the proposed design decision. The Review Engineer will submit complete documentation to the Transportation Department's Office Engineer for review and action.

Where infill development is proposed, the Review Engineer shall have the authority to allow a deviation from these standards in order to allow the new conditions to be consistent with adjacent conditions if, in the discretion of the Review Engineer, the adjacent conditions are unlikely to be replaced or modified in the foreseeable future, and if the deviation satisfies criteria (2) and (3) mentioned above.

E. Changes to This Manual. From time to time, it may be necessary to modify the standards in the Design Manual. The Director of the Transportation Department may incorporate minor changes to this Manual as they become necessary; general updates shall include an opportunity for public review and comment.

F. Other Design Criteria. In addition to the standards and design criteria in the Design Manual and in the Bellevue city code, decisions regarding sight distance, horizontal and vertical alignment, signage, and other criteria appropriate for the design of city streets shall be consistent with the AASHTO, WSDOT, and APWA design manuals, the ADA, the MUTCD, and NACTO design guides.

Design of transportation facilities and pedestrian-related infrastructure shall be consistent with the requirements of the ADA, the PROWAG, and the applicable guidelines of WSDOT's design manual.

G. Meaning of Terms. The definitions of words and phrases as contained in BCC 14.60 are hereby incorporated by reference.

H. Abbreviations.

AASHTO - American Association of State Highway and Transportation Officials
ADA - Americans with Disabilities Act
PROWAG – Public Right of Way Accessibility Guidelines
APWA - American Public Works Association
MUTCD - Manual on Uniform Traffic Control Devices
WSDOT - Washington State Department of Transportation
NACTO- National Association of City Transportation Officials

2. Engineering Plans

A. Engineering plans for transportation improvements shall be prepared and submitted for review and approval. All plans must be signed and stamped by a professional engineer licensed in the state of Washington. The plans shall clearly identify all existing and proposed improvements, and meet the submittal requirements for the type of plan.

B. As-built plans shall be provided after construction is approved. These plans shall include field-verified elevations, slopes, and dimensions for curblines, sidewalks, ramps, and other features in the right-of-way or public sidewalk easements.

3. Public Streets

A. Pursuant to BCC 14.60.110, the developer of land as described in that section is required to install street frontage improvements. The cross section and the extent of the street frontage improvements shall be determined by the Review Engineer based upon the most currently adopted provisions and editions of the Bellevue city code, this Design Manual, adopted city plans, and the Comprehensive Plan. Pavement specifications shall be as shown in Design Manual Drawings RC-100-1, RC-110-1, and other applicable RC drawings. Intersection setback and sight distance requirements are as specified in Design Manual Drawings RL-100-1, RL-110-1, and RL-120-1; and Design Manual Standards 21 and 22. Roadway sight distance, horizontal and vertical alignment, and other design criteria are as specified in the AASHTO, WSDOT, APWA, and NACTO design manuals.

B. Landscaping planter or drainage swale between the curb and sidewalk is required. The planter strip width shall be maximized based upon site conditions. The minimum planter strip width shall be four feet. The downtown and Bel-Red subareas may have greater minimum requirements. Landscaping design must conform to Water Utility Code (BCC 24.02) requirements for water conservation. Contact the Review Engineer for projects located within the downtown or Bel-Red subareas for specific planter width and landscaping requirements. Spray irrigation may be required within all landscaped right of way and public access easements. Irrigation shall be fed from a private-metered water source, unless the Review Engineer approves a connection to a city-owned meter. Planting types, including street trees and ground cover, to be determined by the Review Engineer (see SW-120-1 for soil profile and root barrier requirements).

C. Access for ten or more single family lots, or dwelling units, in new subdivisions must be provided by public streets within dedicated right of way.

D. Pavement and right of way widths for public streets in new subdivisions shall be determined by the provision of on-street parking and the number of single-family lots to be served, as illustrated in Table 1 below.

Table 1. Public Streets - Local Roads

Parking[1]	Number of Single Family Lots	Number of Lanes	Paved Width Min. (ft)	ROW Width Min. (ft)
None	10 - 15	2 lanes [2]	20	35-45
One side	10+	2 lanes [2]	24 - 26	45
Both sides	10+	2 lanes	28 - 32	50

(1) Requirement for provision of on-street parking shall be at the discretion of the Review Engineer. Preferred width of new public streets is 24 feet.

(2) Where parking is not allowed, "No Parking Anytime" signs are required.

E. See BCC 14.60.190 and Design Manual Standard 14 for sidewalk requirements and dimensions.

F. All new public streets will be named by the city's Parcel and Address Coordinator. Street signing shall be provided by the developer per Design Manual Drawings SG-100-1, SG-110-1, SG-130-1, SG-150-1, and SG-170-1. The developer shall coordinate with the Transportation Department Inspector prior to sign installation in order to determine appropriate sign locations.

4. Private Roads

A. Private roads that serve or will serve from three to nine lots, or dwelling units, must be a minimum of 20 feet wide and placed in an easement or tract having a minimum width of 25 feet. See BCC 14.60.190 for nonmotorized facility requirements. Where nonmotorized facilities are required, the width of the private road easement or tract shall be increased to 30 feet, and a public easement encompassing the nonmotorized facility may be required.

B. Private roads in commercial planned unit developments or in single-family or multi-family planned unit developments containing three or more lots or dwelling units must have a minimum pavement width of 24 feet, with a minimum six-foot wide sidewalk on at least one side and sufficient off-street parking. The 24-foot minimum pavement width in a planned unit development is to accommodate the more intense activity generated by higher density. A public easement encompassing the nonmotorized facility may be required.

C. The pavement, easement, and tract widths stated in this section are minimums. Private road width requirements may be increased at the discretion of the Review Engineer if necessary for safe vehicle movement or to accommodate grading, utilities, on-street parking, turning movements or nonmotorized facilities. In a residential development, provision of on-street parking is encouraged, and may be required, by providing some private road segments with a minimum width of 24 feet (to allow parking on one side) or a minimum width of 28 feet (to allow parking on both sides). Turning movements, sight lines, and emergency vehicle clearance must also be considered when designing to accommodate on-street parking on private roads. Where a private road is widened to allow parking, such parking areas may be constructed with a pervious surface to reduce water runoff.

D. Where public street improvements exist, the entrance to a private road shall be constructed with a driveway approach rather than a curb return. See Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, SW-170-1, and SW-180-1. A curb return may be constructed with approval of the Review Engineer if the private road entrance meets the criteria for a private intersection as specified in Design Manual Standard 6. At the discretion of the Review Engineer, a private road that is less than 24 feet wide may be required to flare out to a width of at least 24 feet in the driveway approach area in order to accommodate expected turning movements.

E. Private roads shall be limited to a grade of 10% or less for 20 feet past the back of the driveway approach and shall be limited to a maximum grade of 15% thereafter. If a driveway approach is not required, the Review Engineer will determine the start of measure for the 10% grade to accommodate sight distance requirements per Design Manual Standards 21 and 22 and future road improvements. See Table 2 (Landing Grades for Private Roads and Driveways).

F. Private roads shall be paved full-width for their entire length. See Design Manual Standard 11 for curb and gutter requirements.

G. Private roads shall be aligned with driveways, private roads, and public streets located on the opposite side of the street. Deviations from this requirement must be approved by the Review Engineer. Where compliance with this requirement is not possible, private roads shall be offset at least 100 feet from driveways, private roads, and public streets located on the opposite side of the street. The offset distance shall be measured from Point A to Point A as shown in Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, and SW-170-1. Deviations from this requirement must be approved by the Review Engineer.

H. Private roads shall be separated a minimum distance of 100 feet from adjacent driveways or private roads measured from Point A to Point A. Point A is defined in Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, and SW-170-1. Deviations from this requirement must be approved by the Review Engineer. Where compliance with this requirement is not possible, the private road shall be separated as far as possible from adjacent driveways or private roads. In no case shall the separation distance be less than 20 feet.

I. Private roads shall be separated a minimum distance of 150 feet from the nearest parallel public street. The separation distance shall be measured from Point A of the private road approach to the nearest edge of the travel lane of the public street. Point A is defined in Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, and SW-170-1. Where compliance with this requirement is not possible, the private road shall be separated as far as possible from the nearest parallel public street. In no case shall the separation distance be less than 20 feet.

J. The city shall not permit more than one private road opening on any property having a street frontage of 200 feet or less. This paragraph shall not apply if the property's street frontage is less than 200 feet and the property is at least three acres in area.

K. Except as stated in paragraphs A through J above, all private roads shall be constructed to public street standards per the specifications shown in Design Manual Drawings RC-100-1 and RC-110-1 and Design Manual Standard 11 (for curb and gutter requirements). The Review Engineer may allow modifications such as an inverted crown or a thickened asphalt edge rather than curb, provided that storm water treatment will be adequate and safety will not be compromised. A geotechnical analysis of the proposed private road design may be required at the discretion of the Review Engineer.

L. New private roads will be named by the city's Parcel and Address Coordinator. Appropriate street name signing shall be provided by the developer per Design Manual Drawings SG-100-1, SG-110-1, SG-140-1, SG-160-1, and SG-170-1. The developer shall coordinate with the Transportation Department Inspector prior to sign installation to determine appropriate sign locations.

M. The minimum design speed for a private road shall be 25 miles per hour.

5. Driveways and Driveway Approaches

Definition: a private way of vehicular ingress and egress to a site, extending into the site from a public street or private road.

A. Driveways serve:

(1) one residential lot (residential driveway);

(2) two residential lots (residential joint-use driveway); or

(3) as access to commercial development (commercial driveway).

B. Driveway approaches provide the transition from the street to the driveway or private road. Where public street improvements exist, the driveway approach shall be a formed concrete structure as specified in Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, SW-170-1 and SW-180-1. Where public street improvements do not exist, the driveway approach shall be asphalt and constructed as specified in Design Manual Drawing SW-190-1. If there is a taper from the driveway to the driveway approach, the taper design shall be as specified by the Review Engineer.

C. Residential and residential joint-use driveways must be paved full width for the entire length.

D. Joint-use driveways greater than 150 feet in length may require a turnaround as determined necessary by the Review Engineer and the fire marshal.

E. For commercial driveways located on arterials, no parking stalls shall be located closer than 20 feet from the face of curb (or the edge of the driving lane if there is no curb) in order to preclude conflicts with entering vehicles. No such clear area is required for driveways serving multifamily developments on non-arterial streets.

F. All driveways shall be 90 degrees to the street, unless designated as right turn only.

G. All driveways shall be aligned with driveways, private roads, and public streets located on the opposite side of the street. Deviations from this requirement must be approved by the Review Engineer. Where compliance with this requirement is not possible, driveways shall be offset at least 100 feet from driveways, private roads, and public streets located on the opposite side of the street. The offset distance shall be measured from Point A to Point A. Point A is defined in the Design Manual SW-140-1, SW-150-1, SW-160-1, and SW-170-1. Deviations from this requirement must be approved by the Review Engineer.

H. All driveways shall be separated a minimum distance of 100 feet from any other parallel driveway or private road. The separation distance shall be measured from Point A to Point A. Point A is defined in the Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, and SW-170-1. Where compliance with this requirement is not possible, driveways shall be separated as far as possible from adjacent driveways and private roads. In no case shall the separation distance be less than 20 feet.

I. All driveways shall be separated a minimum distance of 150 feet from the nearest parallel public street. The separation distance shall be measured from Point A of the driveway to the nearest adjacent edge of the travel lane of the public street. Point A is defined in the Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, and SW-170-1. Where compliance with this requirement is not possible, driveways shall be separated as far as possible from the nearest adjacent parallel public street. In no case shall the separation distance be less than 20 feet.

J. The city shall not permit more than one driveway opening on any property having a street frontage of 200 feet or less. This paragraph shall not apply if the property's street frontage is less than 200 feet and the property is at least three acres in area. The Review Engineer may allow an exception to this requirement if safety or traffic operations will be improved with one or more additional driveways.

K. Where the building façade or other design element is less than ten feet behind the sidewalk (as is typical Downtown), both pedestrian and vehicular sight distance shall be maintained. Sight distance and setback requirements shall be specified per Design Manual Drawings RL-100-1, RL-110-1, RL-120-1, and Design Manual Standards 21 and 22.

L. The minimum driveway length shall be 20 feet measured from the back of sidewalk or another point designated by the Review Engineer.

M. All driveways shall be limited to a grade of 10% or less for 20 feet past the back of the driveway approach, as listed in Table 2 below, and shall be limited to a maximum grade of 15% thereafter. If a driveway approach is not required, the Review Engineer will determine the start of measure for the 10% grade to accommodate sight distance requirements per Design Manual Drawings RL-100-1, RL-110-1, RL-120-1, and Design Manual Standards 21 and 22. Grade changes must be rounded off so that vehicles do not bottom out and abrupt grade changes do not interfere with the sight distance requirements.

Table 2. Landing Grades for Private Roads and Driveways

Access Types	Non-Arterial (max. grade/min. length past driveway approach)	Arterial (max. grade/min. length past driveway approach)
Single-Family Residential, Driveway	10%/20 feet	10%/20 feet
Single-Family Residential, Private Road	10%/20 feet	10%/20 feet
Commercial with parking garage at back of sidewalk	To be determined by the Review	To be determined by the Review Engineer
Commercial with no parking garage at back of sidewalk	10% / 20 feet	7% / 30 feet

N. Minimum residential driveway widths shall be as shown in Table 3 below. Required driveway widths will be specified by the Review Engineer. A greater width, but not more than 30 feet, may be considered for single-family and duplex residences with multiple car garages.

Table 3. Residential Driveway Widths

Access Road Type	Number Of Single Family Lots	Paved Width Minimum (Feet)	Easement Width Minimum (Feet)
Driveway	1	10	N/A
Joint-Use Driveway	2	16	20

O. The width of commercial driveways, including driveways for multifamily development, shall be as required by the Review Engineer. Two-lane commercial driveways should generally be 26 to 30 feet wide, with 30 feet preferred on the approach to an arterial street. Two-way 36-foot-wide multifamily and commercial driveways will be allowed when separate left- and right-turn exit lanes are required by the Review Engineer. A two-way commercial driveway wider than 36 feet may be approved by the Review Engineer where a substantial percentage of oversized-vehicle traffic exists. Commercial driveways, including multifamily development, shall maintain the driveway approach width for the length of the landing (see Table 2).

P. Gates shall be located a minimum of 30 feet behind the sidewalk or as required by the Review Engineer.

6. Private Intersections

A private intersection opening shall be designed per Design Manual Drawing CH-290-1 and Design Manual Standard 9 if permitted by the Review Engineer. See BCC 14.60.160 for additional requirements regarding private intersections. When a private intersection opening is permitted, the following criteria must be met in addition to the requirements of BCC 14.60.160:

A. A 100-foot minimum storage area shall be provided between the face of the curb (or edge of the travel lane where no curb exists) and any turning or parking maneuvers within the site;

B. The opening is at least 150 feet from the near-side face of the curb (or edge of the travel lane where no curb exists) of the nearest intersecting street; and

C. The opening is at least 100 feet away from any other driveway on the property frontage under the control of the property owner.

7. Street End Designs

A. Vehicle turnaround facilities required by BCC 14.60.170 shall be provided in accordance with this section and Design Manual Drawing RC-130-1.

B. A hammerhead per Design Manual Drawing RC-130-1 may be used to fulfill the requirement to provide a turnaround facility where the street serves (or will serve) nine or fewer dwelling units.

C. A circular turnaround per Design Manual Drawing RC-130-1 shall be provided for streets that serve (or will serve) ten or more dwelling units.

D. Alternative street end designs may be allowed subject to review and approval by the Review Engineer and the fire marshal.

E. The maximum cross grade of a street at the street end shall be 8%.

8. Medians

A. A median shall be in addition to, not part of, the specified street width. Medians shall be designed so as not to limit turning radius or sight distance at an intersection. Pedestrian access across medians shall be as required by the Review Engineer and shall conform to the Americans with Disabilities Act standards.

B. Medians shall be designed so as to allow for the full width needed in adjacent lanes for any existing or planned bicycle facility.

C. Median edges shall be cement concrete traffic curb, provided that where emergency vehicle access across the median is required, the curb shall be a mountable type. See Design Manual Drawing RC-140-1.

9. Intersection Design

A. Intersection traffic control shall be designed as specified in the MUTCD and by the Review Engineer.

B. Intersections shall be designed to accommodate the design vehicle appropriate for the highest classified street forming the intersection. The intersection design shall take into account the presence of any designated truck route, bus route, or school bus route. All elements of the intersection shall be designed so the design vehicle will not encroach onto curbs, sidewalks, traffic control devices, medians, or the travel lanes of opposing travel flow. The minimum design vehicle shall be an AASHTO SU-30 vehicle unless otherwise approved by the Review Engineer. Turning templates for the appropriate design vehicle(s) should be used to verify curb radii. Documentation may be requested by the Review Engineer.

C. Geometric Design Requirements:
(1) The angle of intersection of two streets shall be 85 degrees to 95 degrees unless otherwise approved by the Review Engineer.
(2) The minimum distance between adjacent parallel non-arterial streets shall be 150 feet, measured from nearest curb edge to nearest curb edge.

(3) The typical curb radius at intersections is shown in Table 4 below:

Table 4. Typical Curb Radius at Intersections

Intersection Type	Curb Radius Dimension (ft)
Non-Arterial Street ADT* < 400	15
Non-Arterial Street ADT* > 400	20
Arterial	25
Bus/ Truck Route	30
Where Turn is Illegal	10

**ADT = Average Daily Traffic*

10. Bridges and Retaining Walls

A. Bridges

(1) All bridges, whether on public streets or private roads, shall meet the minimum requirements set forth in the latest edition of the AASHTO *LRFD Bridge Design Specifications*, the AASHTO *Guide Specifications for LRFD Seismic Bridge Design*, and the WSDOT *Bridge Design Manual*. Vehicular live load design criteria shall be HL-93, as modified by the WSDOT *Bridge Design Manual*, except as allowed by the City of Bellevue Transportation Director. Additional loading and design considerations may be required by the Fire Marshal or the Transportation Director.

(2) All bridges shall match the full width and configuration of the street, private road, or path being served (traveled way plus curb, sidewalk, walkway, bike lane, equestrian lane, and shoulder on one or both sides). Requirements of utilities shall be considered. Traffic barrier and pedestrian railing or combination traffic barrier/pedestrian railing shall meet AASHTO specifications and the requirements of the WSDOT *Bridge Design Manual*. Vertical clearance shall be a minimum of 16.5 feet (or state standard, whichever is greater).

(3) All information required to create the Bridge Record file as described in Chapter 1.09 of the WSDOT *Bridge Inspection Manual* shall be supplied by the developer prior to acceptance of the finished structure by the Transportation Department.

B. Retaining Walls

(1) Retaining walls located within the right of way shall be installed to benefit the general public, by supporting or protecting public transportation infrastructure and shall not be for private development gain.

(2) Walls located on private property or right of way that support or protect public transportation infrastructure shall meet the minimum requirements set forth in the latest edition of the WSDOT Design Manual, Bridge Design Manual, and the International Building Code. The wall type shall be approved by the review engineer, who may take into account long term maintenance requirements, constructability, and recommendations from the applicants' or third party engineers. The Review Engineer may require a third party structural review prior to approval of the wall. Additional easements may be required for the maintenance, operation, and replacement of the wall. Rockeries that are load bearing or over four feet in height are not an acceptable retaining wall type. An architectural finish or engineered block shall be chosen that fits the character of the surrounding neighborhood with approval from the Review Engineer. Timber laggings are not considered a permanent structure when building solider pile walls and shall require a reinforced concrete finish. Concrete walls that are prone to graffiti shall be coated with a moisture barrier and anti-graffiti paint.

(3) Retaining walls shall be located such that there is a minimum of two feet clear of the sidewalk and a minimum of three feet clear of the curb face where there is no sidewalk. Barriers, railings, or fencing at the top of the wall may be required.

(4) Private and public retaining walls shall not be built integrally. Total structural isolation is required for adjacent walls.

(5) Acceptance for privately built retaining walls within the public right of way, which will be maintained and/or owned by the City of Bellevue, shall require As-Built shop drawings with final design calculations and plans in Mylar to be filed with the city.

11. Curb and Gutter

A. Cement concrete traffic curb and gutter shall be used for street edges whenever possible and shall always be used under the following conditions:

(1) On all public streets;
(2) In drainage low spots where special drainage facilities are required;
(3) On private roads with grades greater than 8%.

B. Cement concrete traffic curb shall be used for edges of islands and medians, provided that where emergency access across the median is required, the curb shall be a mountable type as per Design Manual Drawing RC-140-1.

C. All other curb and gutter shall be constructed as specified in Design Manual Drawing SW-100-1.

D. Curb and gutter shall be replaced if it is in poor condition or if replacement of the adjacent sidewalk is required.

12. Curb Ramps

Definition: a ramp cut into a roadway curb to allow access for physically challenged pedestrians to and from sidewalks and streets.

A. In accordance with state law and with federal guidelines established by the Americans with Disabilities Act, curb ramps shall be provided at all sidewalks, paths, and pedestrian crossings with curb ramp sections or elevation changes (where crossing is permitted). Ramps shall be designed as detailed in Design Manual Drawings SW-200-1, SW-210-1, SW-220-1, SW-230-1, SW-240-1, SW-250-1, and SW-260-1, and placed whenever possible as shown in Design Manual Drawings CW-100-1 and CW-110-1. Alternative placement must be approved by the Review Engineer.

B. Every ramp constructed per section A above that serves one end of a crosswalk shall be matched by another ramp at the other end of the crosswalk. No ramp shall be required if there is no curb or pedestrian facility at the other end of the crosswalk. Crosswalks may be marked or unmarked.

13. Guard Rail and Safety Railing

A. Guard rail shall be provided and installed by the developer as directed by the Review Engineer or the Inspector.

B. All guard rails along public and private roadways shall conform to the criteria of the WSDOT *Design Manual*.

C. Safety railing shall be provided and installed by the developer per the installation warrants of Design Manual Drawing RS-100-1 or as directed by the Review Engineer or the Inspector.

D. All safety railing shall conform to the requirements of Design Manual Drawings RS-110-1, RS-120-1, RS-130-1, and RS-140-1.

E. Where a safety rail is placed on top of a wall, the Review Engineer may require additional sections of railing in order to prevent access behind the wall.

14. Sidewalks and Nonmotorized Facilities

A. Non-motorized facility construction shall, in addition to complying with the design requirements of this document, conform to current WSDOT *Standard Specifications*, AASHTO standards, and NACTO design guides.. The width of the easement shall be established by the Review Engineer but shall extend at least to the back of such sidewalk or facility. See also the City of Bellevue "Pedestrian & Bicycle Transportation Plan" for the location of sidewalk, bicycle, and trail facilities. The Review Engineer will determine the specific design elements of these required facilities based upon the guides referenced above.

B. Pedestrian Facility Construction

(1) Concrete sidewalk construction:

a. All sidewalks shall be constructed with five-inch-thick Class 3000 concrete with a non-slip broom finish. For Downtown sidewalk requirements, see also Land Use Code 20.25A.060. Downtown projects are also subject to special requirements through the design review process.

b. At driveways, the concrete shall be six inches thick.
c. Specialty finishes may be allowed with the approval of the Review Engineer when the proposed material will provide a non-slip surface when wet and the adjacent property owner agrees to maintain, repair, and replace the specialty material at her/his own expense, even when the maintenance is made necessary because of city work.
d. All lids for junction boxes and utility vaults located within the sidewalk shall be of a non-slip/non-skid type per ADA requirements, subject to approval by the Review Engineer.
e. The width of a sidewalk does not include the curb. Sidewalks shall maintain their full width (five to eight feet as referenced below) around one side of obstructions that cannot be relocated. Concrete sidewalk widths shall be as follows:
   - Public streets and private roads internal to subdivisions and short subdivisions: five feet (minimum);
   - Non-arterial streets external to subdivisions and short subdivisions: five feet to six feet;
   - Arterial streets external to subdivisions and short subdivisions: six to eight feet (width to be determined by the Review Engineer);
   - Downtown: See Land Use Code 20.25A.060;
   - Bel Red Subarea: See Land Use Code 20.25.D.140, Bel-Red Street Development Standards.
f. Sidewalks shall meander no more than four feet from the curb at pedestrian crossings and at driveways.

(2) Multi-purpose path construction:

a. Acceptable surface materials are asphalt and concrete.
b. The edges of asphalt paths shall be defined by inverted thickened edges along both sides to prevent edge deterioration.
c. The maximum grade shall not exceed 10% (5% when bicyclist use is anticipated). Depending upon site conditions, stairs and/or switchbacks may be required. The Review Engineer may specify special paving and other treatment to be used on grades greater than 5%.
d. Paths shall be located a minimum of five feet from the edge of the vehicular travel way. A physical barrier may be required in lieu of the five-foot separation when conditions dictate, particularly when bicyclist use is anticipated.
e. The appropriate paved width for a multi-purpose path is dependent on the context, volume, and mix of users. The desirable paved width is 12 feet, excluding the shoulders; the minimum paved width is 10 feet, excluding the shoulders. The shoulder is typically unpaved and two feet on either side of the path
f. A two-foot-wide graded shoulder is required on both sides of a paved bicycle pathway. The Review Engineer may require a wider graded shoulder if heavy pedestrian or equestrian use is anticipated.
g. If equestrian use is anticipated, ten feet of vertical clearance is required.

C. Bicycle Facility Construction

(1) Separated bicycle path – See requirements for multi-purpose path construction and NACTO design guides. Acceptable surface materials are asphalt and concrete.

(2) Bicycle lane:
   a. Acceptable surface materials are asphalt and concrete.
   b. A bicycle lane on a public roadway shall be a minimum of five feet wide when curb and gutter are in place. The distance shall be measured from the face of the curb to the center of the fogline that designates the bicycle lane. A cement concrete traffic curb and gutter is required. See Design Manual Drawing SW-100-1.
   c. A bicycle lane on a public roadway shall be a minimum of four feet wide when no curb and gutter is in place or when the bicycle lane is located between a through lane and a right turn lane. The width shall be measured from the edge of the pavement to the inside edge of the bicycle lane marking or between the nearest edges of the bike lane markings. A minimum two-foot-wide graded shoulder is required adjacent to the paved surface.

(3) Shared roadway:
   a. Acceptable surface materials are asphalt and concrete.
   b. The curb lane of a shared roadway shall be a minimum of 14 feet wide for flat or downhill sections and 15 feet wide for uphill sections. The distance shall be measured from the face of the curb to the center of the lane marking.

D. Safety railing shall be provided and installed by the developer when warrants for safety railing as shown in Design Manual Drawing RS-100-1 are met, or as directed by the Review Engineer or the Inspector.

E. When hard surfaces are disturbed, all junction boxes within the hard surface shall be replaced with new junction boxes with non-skid lids.

15. Fixed Objects

Definition: an object having properties greater than a four-inch by four-inch wooden post.

A. A clear recovery area is a consideration when placing fixed objects along the roadside or within medians. The intent is to provide a traversable recovery area when opportunity allows. The design clear zone, as defined by the WSDOT *Design Manual*, is ten feet for roadways with a speed limit of 35 mph or under. See the WSDOT *Design Manual* for speed limits above 35 mph. It is acknowledged by the WSDOT *Design Manual* that within urban areas, it will not always be practical to provide this ten foot clear zone area.

B. When placing new fixed objects along a roadside or along a median with a traffic curb, attempt to select locations with the least likelihood of an impact by an errant vehicle. Always meet the minimum operational offset of three feet from the face of curb to the face of the object. This offset distance may be modified to 1.5 feet at the discretion of the Review Engineer (except for street light poles and signal equipment, for which the minimum offset distance shall be three feet).

C. New fixed objects placed along a roadside or median that does not have a curb shall meet the clear zone requirements listed below. If the clear zone requirement cannot be met, justification is required and must be approved by the Review Engineer.

(1) Minimum clear zone offset distance from roadside or median without a curb and with a speed limit 35 mph or less is ten feet. Modifications must be approved by the Review Engineer.

(2) Minimum clear zone offset distance from roadside or median without a curb and with a speed limit of 40 mph or greater shall be determined from the WSDOT Design Manual. Modifications must be approved by the Review Engineer.

D. Fixed objects shall not be located, or be allowed to remain, closer than ten feet to the edge of a driveway, identified as Point A in the Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, SW-170-1, SW-180-1, and SW-190-1, unless modification is approved by the Review Engineer. Fixed objects shall be located such that they do not violate the vehicle and pedestrian sight obstruction requirements of Transportation Standards 21 and 22. See Design Manual Drawings RL-100-1, RL-110-1, and RL-120-1 as well. The Review Engineer may modify this requirement if the modification will not compromise the safety of pedestrian or vehicular traffic.

16. Breakaway Objects

Definition: an object having properties up to and including that of a four-inch by four-inch wooden post. The following separation distances shall apply:

A. Minimum operational separation distance from roadside or median with a traffic curb is 1.5 feet. Modifications must be approved by the Review Engineer.

B. Minimum operational separation distance from roadside or median without a traffic curb is ten feet. Modifications must be approved by the Review Engineer.

17. Mailboxes

A. Mailboxes shall be clustered together where practical and where reasonably convenient to the houses being served. For groupings of three or more boxes within a new residential development, a neighborhood delivery and collection box unit consisting of locked boxes on a single pedestal shall be provided.

B. When mailboxes are located within the sidewalk, the sidewalk shall be widened to provide the full design width around the mailboxes.

C. In the case of new street construction, or street reconstruction that requires mailboxes to be installed or moved, the designer and builder shall coordinate with the station master or postmaster at the post office that serves the location. Mailbox locations approved by the U.S. Postal Service, and approved by the City of Bellevue Transportation Department to facilitate vehicle, bicycle, and pedestrian safety, shall be shown on approved street construction plans and installed at the approved locations. Temporary mailbox locations may be allowed during construction, if acceptable to the U.S. Postal Service and the City of Bellevue Transportation Department.

D. Mailboxes shall be installed as follows:
(1) The base of the box shall be 41 to 45 inches above the street, or per US Postal Service requirements.

(2) On non-arterial streets, the front of the mailbox shall be six to eight inches behind the vertical curb face or edge of pavement.
(3) On arterial streets, the front of the mailbox shall be one foot behind the back of the sidewalk on walking delivery routes, or twelve inches behind the curb face on vehicular delivery routes.
(4) The mailbox shall be placed on posts strong enough to give firm support, but not to exceed the breakaway characteristics of a four-inch by four-inch wood post or 2-inch standard steel or aluminum diameter pipe. See Design Manual Drawings RC-270-1 and RC-280-1.
(5) Additional non-breakaway fixtures shall not be installed adjacent to mailbox locations. See Design Manual Sections 15 and 16.
(6) Clustered mailboxes mounted on new concrete pads require a right of way permit.

E. Where feasible, installation of vehicle pullouts for mailbox access may be required by the Review Engineer.

18. Metal Covers within Streets

No junction boxes for traffic signalization or street lighting shall be placed within the street. Where feasible, manhole lids, valve boxes, and any other metal covers shall be located outside the vehicle tire paths of through lanes on any city street and outside of bicycle facilities. All covers placed within the travelled way shall be round. Preferred locations for metal covers are:

A. Outside the paved surface;

B. In a turn lane, where vehicle speeds and volumes are typically lower;

C. In parking lanes or on the shoulder, if not used for bicycle travel;

D. Near the center of a through lane, typically five to seven feet from the centerline of a two-lane street;

E. On the line separating two lanes, except for utilities that require frequent access or maintenance.

19. Street Illumination and Traffic Signals

A. Street Lighting

The street lighting system should be a complete, unified design that addresses the various mobility needs within the City of Bellevue in accordance with BCC 14.60.210.

(1) Street lighting system designs shall follow the city's "Street Lighting Design Guide" (see Appendix A) and must be stamped by a licensed engineer experienced with lighting design.
(2) Street lighting system design requirements are as follows:
   a. Designs shall contain luminaire with pole spacing and type, illumination level, uniformity ratio, line losses, power source, the electrical and physical layout, installation details, and plans and specifications.

b. As-built street lighting plans for city-owned systems shall be provided to the city on 22-inch by 34-inch plan sheets prior to final occupancy, final plat approval, or release of an assurance device.
c. Lighting in residential plats is typically designed and installed by Puget Sound Energy after city approval of design.
d. Street lighting systems shall be designed to be accessible by a wheeled vehicle weighing 30,000 lbs.
e. Contactor cabinets equipped with electrical meters, time clocks, circuit breakers, and other required components are required on arterial installations, or as required by the Review Engineer.
f. The exact location of the power source shall be indicated together with the remaining capacity of that circuit. System continuity and extension shall be provided.

(3) Street light pole bases shall be removed in their entirety, wherever necessary.
(4) A combined street tree and street light plan is required for review and approval prior to completion of engineering and landscape plans for installation. The goal is to provide the optimum number of street trees while not compromising the light and safety provided by streetlights. Street trees and street lights must be shown on the same plan sheet with the proper separation (generally 25 feet apart) and the proper spacing from driveways (ten feet from Point A in Design Manual Drawings SW-140-1, SW-150-1, SW-160-1, and SW-170-1).
(5) Street lighting is allowed but not required along private roads. Street lighting systems for private roads shall be designed and constructed on a separate power source from the public street lighting system. All street light maintenance, installation, and power costs for private road systems shall be paid by the property owner, homeowner, or homeowners' association.

B. Traffic Signals

If an existing traffic signal requires modification or relocation, or if a new traffic signal is warranted, the following standards shall be met in accordance with BCC 14.60.200:

(1) Traffic signal designs shall be prepared by a licensed engineer experienced in traffic signal design. The engineer shall use common city practices, standard drawings, and city special provisions to the WSDOT *Standard Specifications*. A signal warrant study prepared by a licensed engineer shall be required for all new signal installations.
(2) New or modified signals per BCC 14.60.200 may include requirement for payment for license and personality for the Sydney Coordinated Adaptive Traffic System (SCATS).
(3) Communication systems that are modified by the developer will require a cutover plan and may require new cable between existing splice locations.
(4) A minimum of two three-inch conduits shall be provided and installed across the frontage of the project with Type 7 junction boxes at each end.

20. Channelization and Signing

A. The Review Engineer shall review and approve all traffic control devices. All traffic control devices used on public streets and private roads shall conform to the MUTCD.

(1) All signs such as street name, parking, stop, dead end, speed limit, and nonmotorized indicators shall be clearly indicated on the plans and will be

field-located by the Review Engineer and the Inspector. It is the responsibility of the property owner to ensure that signs are maintained in good condition until the development and right of way are accepted by the city. Any damaged signs must be replaced by the property owner at her/his expense.

(2) All channelization and pavement markings such as raised pavement markers, paint, thermoplastics, etc., shall be pre-marked by a city-approved striping contractor, and the layout approved by the Review Engineer, prior to permanent installation by the contractor.

(3) Temporary traffic control and construction zone signing and barricades to ensure traffic safety during construction activities shall be provided by the developer.

B. Channelization and signing plans shall be shown on a separate plan and prepared by a licensed engineer.

21. Sight Distance - Vehicles

A. For the purposes of this standard, sight obstructions are objects that block or obscure the view of motor vehicle operators at intersections. An intersection shall include the intersection of two public streets, the intersection of a commercial driveway with a public street, the intersection of a residential driveway with a public street, and the intersection of a private road with a public street. Sight obstructions are not permitted above a line two feet above the street surface and below a line seven-and-a-half feet above the street surface. This line is reduced from seven-and-a-half feet to six feet within the setback areas for residential driveways.

B. Development proposals shall demonstrate that no vehicle will be parked (or any sign, fence, rail, hedge, shrubbery, natural growth, or other obstruction installed) that obstructs the view of motor vehicle operators at an intersection within the sight areas established in Design Manual Drawings RL-100-1, RL-110-1 and RL-120-1, and between the height limits established herein.

C. The sight area at an intersection is defined as the area bounded by setback lines or bounded by setback lines and the edge of the travel lane (see Design Manual Drawings RL-100-1, RL-110-1 and RL-120-1). Setbacks for intersection types are as specified in the following:

(1) Major Street/Minor Street, Major Street/Commercial Driveway, and Major Street/Private Road. Intersections of these types have either no control or flashing yellow on the major street and have a stop sign or flashing red signal on the minor street. Private commercial driveways (which may or may not have a stop sign) used by the public for entering any city street are also included in intersections of this type.

The right and left setback lines are defined as the lines that join a point in the center of the minor street approach lane located 14 feet back from the edge of the major through-street approach lane (Point A) and a point in the center of the major through-street approach lane (Point B). The locations of Points A and B in the minor street approach lane and the major through-street approach lane, respectively, are specified in Design Manual Drawing RL-100-1.

Where the major street is a divided highway, only the left setback line applies. Where the major street is a one-way street, only the setback line toward the direction of approach applies.

(2) Uncontrolled Intersection. For intersections with no traffic control on any approach, the setback lines join a point on the approach located 50 feet back from the center of the intersection with points located 80 feet back from the center of the intersection on the right- and left-hand streets. All points are on the street centerlines. See Design Manual Drawing RL-110-1.

(3) Yield Intersection and T Intersection. Yield intersections have a yield sign on one or both minor street approaches and no control on the major street approach. The setback lines for yield intersections join a point in the center of the yield approach lane 25 feet back from the edge of the crossing traffic lane with points in the centers of the crossing approach lanes 100 feet back from the center of the intersection. This setback also applies to a T intersection with no restrictive control; in this case, the 25-foot setback point is on the stem of the T. See Design Manual Drawing RL-110-1.

(4) Signalized Intersection. For signalized intersection approaches with right-turn-on-red-after-stop permitted, the left setback line joins a point in the center of the minor street approach lane located 14 feet back from the edge of the through-street approach lane (Point A) and a point in the center of the left through-street approach lane (Point B). The location of Point A may be reduced to ten feet subject to approval of the Review Engineer. The locations of Points A and B are specified in Design Manual Drawing RL-100-1.

(5) Residential Driveway Intersection. For the intersection of a residential driveway with a public street, the setback line joins a point in the center of the driveway (Point A) with a point in the center of the through-street approach lane (Point B). The setback distance of Point A from the edge of the traveled lane is ten feet. The location of Point B is specified in Design Manual Drawing RL-100-1.

a. Modification: When the residential driveway is located on a residential street with a sharp curve adjacent to the driveway, the distance of Point B may be reduced from 150 feet to 100 feet. For residential driveways with major obstacles or other special circumstances obscuring sight distance, the setback distance on the driveway (Point A) may be reduced from ten feet to eight feet subject to the approval of the Review Engineer.

(6) Sightline Setback – Other. For intersections not clearly included in the above types and for which special circumstances obscuring sight distance exist, the Review Engineer will establish setback lines to the most feasible extent.

D. The Review Engineer may allow a deviation from the foregoing provisions, including the requirement of a greater sight distance, to meet special circumstances provided that the resulting sight distance is reasonable given the circumstances and is anticipated to meet the intention of the sight distance standards described herein. The Review Engineer may require or impose additional requirements to mitigate the allowed deviation, including but not limited to: the removal or relocation of fences and vegetation; the modification of handrails on subject property, adjacent property, or street right of way; and the restriction of turning movements by the installation of c-curbs.

E. Sight lines from vehicles to traffic control devices, including but not limited to signs and signals, shall not be obscured by landscaping, street furniture, marquees, awnings, or other such obstructions.

F. Every obstruction of the sort prohibited in this section hereafter installed or permitted to remain shall be deemed a violation of this sight distance standard.

22. Sight Distance - Pedestrians

A. The minimum sight distance for pedestrian safety shall be as shown in Design Manual Drawing RL-120-1 and determined as follows: The driver of an exiting vehicle shall be able to view a one-foot-high object 15 feet away from the edges of the exiting lane or lanes, measured at the back of the sidewalk, when the driver's eye is 14 feet behind the back of the sidewalk.

B. The minimum sight distance as defined in Design Manual Standard 22.A shall be maintained at all driveways, buildings, and garage entrances where structures, wing walls, etc., are located adjacent to or in close proximity to a pedestrian walkway.

23. Pavement Restoration and Trench Backfill

A. Materials and workmanship shall be in conformance with the WSDOT/APWA *Standard Specifications for Road, Bridge, and Municipal Construction.* Construction shall be in conformance with the Design Manual Drawings, the details and conditions outlined in the Right of Way Use Permit, and the following:

(1) Trench restoration shall be accomplished with a patch or an overlay as required by the Pavement Restoration Requirement Map or the Review Engineer.
(2) If a patch is used, the trench limits shall be sawcut prior to final patch.
(3) All trench and pavement cuts shall be made by sawcuts or by grinding. The sawcuts or grinding shall have a minimum distance outside the trench width as shown in Design Manual Drawings RC-190-1, RC-200-1, RC-210-1, and RC-220-1.
(4) If the Right-of-Way Use Permit requires an overlay, then the contractor may use a jackhammer or drum grinder for the cutting of the existing pavement.
(5) Within the top four feet of trenching, backfill shall be crushed surfacing materials or a controlled-density fill material conforming to section 4-04 of the WSDOT/APWA Standard Specifications. Backfill materials must be inspected and accepted by the Review Engineer
(6) If the existing material is determined by the Inspector to be suitable for backfill and the trench is not perpendicular to a travel lane or driveway, the contractor may use the native material as long as the top eight inches is crushed surfacing material.
(7) Material used for backfill below four feet in depth must be approved by the Inspector.
(8) All trench backfill shall be compacted to 95% maximum density, as described in section 2-03 of the WSDOT/APWA Standard Specifications.

(9) Backfill compaction shall be performed in eight-inch to 12-inch lifts. The compaction tests shall be performed in maximum backfill increments of two feet. The test results shall be given to the Inspector for review and approval prior to paving. Material testing will be required for trench backfill (native or imported), asphalt, and concrete. Testing shall be performed by a certified independent testing laboratory. The cost of testing is the responsibility of the franchise utility or contractor. The number of tests required shall be the same as for asphalt density testing, or as directed by the Inspector. Acceptance testing may also be performed as directed by the city Materials Engineer as required.

(10) Temporary restoration of trenches for overnight use shall be accomplished by using hot mix asphalt (HMA) or steel plates. HMA used for temporary restoration may be dumped directly into the trench, bladed out, and rolled. After rolling, the trench must be filled flush with asphalt to provide a smooth riding surface.

(11) HMA shall be placed to the compacted depth as shown on Design Manual Drawings RC-190-1, RC-200-1, RC-210-1, RC-220-1, RC-230-1, RC-240-1 and RC-250-1, and as directed by the Review Engineer. Asphalt cement shall be paving asphalt. Materials shall conform to the WSDOT/APWA Standard Specifications.

(12) Tack shall be emulsified asphalt grade CSS-1 as specified in the WSDOT/APWA Standard Specifications and shall be applied to the existing pavement and edges of sawcuts as specified in the WSDOT/APWA Standard Specifications.

(13) HMA shall be placed on the prepared surface by an approved paving machine and shall be in accordance with the requirements of the WSDOT/APWA Standard Specifications. Fine and coarse aggregate shall be in accordance with the WSDOT/APWA Standard Specifications. Asphalt concrete over two inches thick shall be placed in equal lifts not to exceed the guidelines set forth in the WSDOT/APWA Standard Specifications. See Design Manual Drawings RC-100-1 and RC-110-1.

(14) Cuts for trenches in all street surfaces, walks, and driveways shall be either ground or sawcut. Ground joints shall be feathered and shimmed to provide a smooth surface. Feathering and shimming shall be accomplished by raking out the oversized aggregates from the mix. Surface smoothness shall conform to the WSDOT/APWA Standard Specifications. The paving shall be corrected by removal and repaving of the trench only.

(15) Compaction of all lifts of asphalt shall be at an average of 92% of maximum density as determined by the WSDOT Field Operating Procedures for AASHTO 209 Test Method. The number of tests required per square foot of trenching shall be as follows:

a. One set of three tests for less than 300 square feet of trenching area;

b. One additional test for every 200 square feet over 300 square feet of trenching area or every 100 lineal feet of trench, if applicable.

Testing shall be performed by a certified independent testing laboratory. The cost of testing is the responsibility of the franchise utility or contractor. Acceptance testing may also be performed as directed by the city Materials Engineer. The testing is not intended to relieve the contractor from any liability for the trench restoration. It is intended to show the Inspector and the city that the restoration meets these specifications.

(16) All joints shall be sealed using paving asphalt.

B. Contractors performing asphalt restoration work must be pre-qualified by the Transportation Department. To be pre-qualified, a contractor must submit qualifications in writing to the Pavement Manager. Past performance and available paving equipment will be reviewed to determine eligibility for the approved contractor list.

C. A five-year moratorium on pavement excavation and trenching will be enforced following the completion of a new street or street overlay. This requirement restricts all street trenching except in the event of an emergency or as authorized by the city Transportation Director or his/her designee (the Right of Way Manager) per BCC 14.60.250.

D. Asphalt patch depths will vary based upon the classification of the streets being trenched. The asphalt depths shall be shown on the Right-of-Way Use Permit and the work shall be performed as required per Design Manual Drawings RC-190-1, RC-200-1, RC-210-1, RC-220-1, RC-230-1, RC-240-1, and RC-250-1. The minimum paving depths for all trenching shall be approved by the Inspector prior to restoration activity.

E. When trenching occurs within the street shoulder, the shoulder shall be restored to its original or better condition within 30 days of first opening the trench.

F. The final patch shall be completed within 30 days of first opening the trench. This time frame may be adjusted if delays are due to inclement weather or other adverse conditions. Delay of the final patch or overlay work must be approved by the Review Engineer and will require an assurance device to guarantee completion.

G. Any patch or overlay located Downtown shall be permanent and be completed as soon as possible.

H. Upon completion of asphalt restoration, the restored area shall be swept clear of loose material.

I. Additional pavement restoration may be required by the Transportation Inspector if warranted by field conditions.

P A R T 2 – Standard Drawings

In January 2017 there was a major update of the Design Manual which included a reorganization of the standard drawings. This reorganization consisted of new groupings of the drawings, new titles for those groupings, and all new drawing numbers. For each drawing listed below, the old drawing number or the year the drawing was first included (2017 or later) is listed next to the new drawing number.

New No.	Old No.	Drawing Title
ROADSIDE LAYOUT		
RL-100-1	TE-1	Sight Distance Setback Lines
RL-110-1	TE-2	Sight Distance – Uncontrolled and Yield Intersections
RL-120-1	TE-3	Pedestrian Sight Lines
SIDEWALKS, CURB RAMPS, AND DRIVEWAYS		
SW-100-1	TE-10	Cement Concrete Curbs
SW-110-1	TE-11	Sidewalk
SW-120-1	DEV-15	[DELETED 2018]
SW-130-1	(new 2017)	Soil Preparation for Landscape Strips
SW-140-1	DEV-7D	Driveway or Private Road Approach with Sidewalk - Option 1
SW-150-1	DEV-7E	Driveway or Private Road Approach with Sidewalk - Option 2
SW-160-1	DEV-7F	Driveway or Private Road Approach with Sidewalk - Option 3
SW-170-1	DEV-7A	Driveway or Private Road Approach with Sidewalk - Option 4
SW-180-1	DEV-7C	Driveway Approach Where Curb-Gutter Exists (No Sidewalk)
SW-190-1	DEV-7B	Driveway Approach Where No Curb-Gutter Exists
SW-200-1	TE-12A	Curb Ramp Construction Notes
SW-210-1	TE-12C	Parallel Cement Concrete Curb Ramp (Type 2)
SW-220-1	(new 2017)	Combination Curb Ramp
SW-230-1	TE-12B	Perpendicular Cement Concrete Curb Ramp (Type 1)
SW-240-1	TE-12D	Directional Cement Concrete Curb Ramp (Type 3)
SW-250-1	(new 2017)	Detectable Warning Surfaces
SW-260-1	(new 2017)	Detectable Warning Surface Placement
ROADWAY CONSTRUCTION		
RC-100-1	DEV-9	Typical Collector/Arterial Street
RC-110-1	DEV-8	Typical Local Street
RC-120-1	DEV-22	Right Angle "L" Intersection
RC-121-1	(new 2022)	Median Nose Layout
RC-130-1	DEV-1	Turnaround Facilities
RC-140-1	TE-27	Traffic Circle Details
RC-150-1	TE-26	Traffic Circle Dimensions
RC-160-1	TE-32	Patterned Concrete Entry Treatment
RC-170-1	TE-28	Speed Hump

RC-180-1	TE-29	Elongated Speed Hump
RC-190-1	ROW-1	Typical Trench in Right of Way
RC-200-1	(new 2017)	Asphalt Overlay for Trench Restoration
RC-201-1	(new 2022)	Asphalt Overlay for Trench Restoration on 'No-Cut' Roadways
RC-210-1	ROW-2	Rigid Pavement Patching and Restoration Details
RC-220-1	ROW-7	Pavement Restoration for Window Cuts
RC-230-1	DEV-10	Commercial Project Site - Street Frontage Improvements
RC-240-1	ROW-9	Typical Asphalt Pavement Details at Curb and Gutter Installation
RC-250-1	ROW-8	Utility Adjustment Detail
RC-260-1	DEV-12	Pipe Monument, Case and Cover
RC-270-1	DEV-11	Mailbox Stand
RC-280-1	(new 2017)	Cluster Mailbox Detail

CROSSWALKS

CW-100-1	TE-7A	Crosswalk Markings
CW-110-1	TE-7B	Crosswalk Markings at Median
CW-120-1	TE-30A	Raised Crosswalk
CW-130-1	TE-30B	Raised Crosswalk with Perpendicular Curb Ramp
CW-140-1	TE-30C	Raised Crosswalk with Parallel Curb Ramp
CW-150-1	TE-31B	Raised Crosswalk Signing
CW-160-1	TE-31A	Raised School Crosswalk Signing
CW-170-1	TE-31C	At-Grade School Crosswalk Signing

CHANNELIZATION

CH-100-1	TE-4A	Channelization Lines - A
CH-110-1	TE-4B	Channelization Lines - B
CH-120-1	TE-5	Raised Pavement Marker Details
CH-130-1	TE-9A	Precast Traffic Curbs for Maintenance of Existing Curb
CH-140-1	TE-9B	Precast Traffic Curb Installation for Maintenance of Existing Curb
CH-150-1	TE-9C	Precast Concrete Dual Faced Sloped Mountable Curb
CH-160-1	TE-9D	Precast Concrete Sloped Mountable Curb
CH-170-1	TE-6	Pavement Arrow Markings
CH-180-1	TE-8	Highway - Rail Grade Crossing Pavement Markings
CH-190-1	TE-14	Noncontinuous Left Turn Lane
CH-200-1	TE-15A	Left Turn and Two Way Left Turn Lane
CH-210-1	TE-15B	Dual Left Turn at Intersection
CH-220-1	TE-15C	Typical Channelization at Median Islands
CH-230-1	TE-16	Drop Lanes and Pockets
CH-240-1	TE-17	Buffered Bicycle Lane Channelization
CH-241-1	(new 2018)	Striped Bicycle Lane Channelization
CH-250-1	TE-18	Bicycle Lanes at Intersections
CH-260-1	TE-19	Bike Lane Treatment at Right Turn Pocket
CH-270-1	TE-20	Bike Facility Markings
CH-280-1	TE-25	Rumble Strip and 25 MPH Legend
CH-290-1	DEV-2	Private Commercial Road/Public Street Intersection
CH-300-1	(new 2018)	Material Specification for Channelization

ROADSIDE SAFETY

RS-100-1	TE-33	Safety Railing Installation Warrants
RS-110-1	(new 2017)	Notes for Metal Safety Railing
RS-120-1	TE-34	Metal Safety Railing Details
RS-130-1	TE-35	Wood Safety Railing
RS-140-1	TE-36	Combination Guardrail & Handrail

SIGNING

SG-100-1	TE-21A	Sign Installation Details
SG-101-1	(new 2022)	Solar Powered Edge-Lit Sign Foundation
SG-110-1	TE-21B	Stop and Yield Sign Post Reflector Attachment
SG-120-1	(new 2017)	Time Restricted Parking
SG-130-1	TE-22A	Street Name Sign - Type 1, Non-Arterial Street
SG-140-1	TE-22B	Street Name Sign (Private Road) - Type 1, Non-Arterial Street
SG-150-1	TE-23A	Street Name Sign - Type 2, Arterial Street
SG-160-1	TE-23B	Street Name Sign (Private Road) - Type 2, Arterial Street
SG-170-1	TE-24	Street Name Sign - Types 3A, 3B, & 3C; Mast Arm
SG-180-1	TE-37A	Memorial Sign Layouts - A
SG-190-1	TE-37B	Memorial Sign Layouts – B

TRAFFIC SIGNALS & STREET LIGHTING

SL-100-2	TSSL-1	Steel Roadway Lighting Pole (Small Wireless Facility Compatible)
SL-101-1	(new 2019)	Steel Roadway Lighting Pole Details (Small Wireless Facility Compatible)
SL-102-1	(new 2019)	Steel Roadway Lighting Pole Details (Small Wireless Facility Compatible)
SL-103-1	(new 2019)	Steel Roadway Lighting Pole Details (Small Wireless Facility Compatible)
SL-104-1	(new 2019)	Steel Roadway Lighting Pole Details (Small Wireless Facility Compatible)
SL-105-1	(new 2019)	Roadway Lighting Pole Foundation at Sidewalk (SWF Compatible)
SL-106-1	(new 2019)	Roadway Lighting Pole Foundation with Ground Slope (SWF Compatible)
SL-110-1	TSSL-2	[DELETED 2019]
SL-111-1	(new 2022)	Aluminum Roadway Lighting Pole
SL-112-1	(new 2022)	Aluminum Roadway Lighting Pole Details
SL-113-1	(new 2022)	Aluminum Roadway Lighting Pole Details
SL-120-1	TSSL-3	Typical Luminaire Locations and Small Wireless Facility Conduit Layout
SL-121-1	(new 2019)	Small Wireless Facility COB-Provided Power Conduit and Junction Box Layout
SL-122-1	(new 2019)	Conduit Trench Detail
SL-123-1	(new 2020)	Small Wireless Facility DC Power Layout
SL-124-1	(new 2020)	Small Wireless Facility PSE-Provided Service Layout
SL-125-1	(new 2021)	Small Wireless Facility Shared Illumination Circuit
SL-130-1	TSSL-4	Luminaire Schedule and Illumination Wire Schedule
SL-140-1	TSSL-31	4" Aluminum Pole Bases
SL-141-1	(new 2022)	4" Aluminum Pole Base Foundation
SL-150-1	(new 2017)	RRFB Assembly
SL-151-1	(new 2023)	Typical School Zone Flashing Beacon Assembly
SL-152-1	(new 2023)	Typical Radar Feedback Sign Assembly

SL-160-1	TSSL-5	Type 1/Type 2 Junction Box on Grade for Landscape Areas
SL-170-1	TSSL-6	Type 8 Modified Junction Box
SL-180-1	TSSL-7	Communication Junction Box Detail
SL-181-1	(new 2019)	Large Communication Junction Box Detail
SL-190-1	TSSL-8	Fiber Optic Vault
SL-200-1	TSSL-19	Signal Cabinet Foundation Detail
SL-210-1	TSSL-20	Signal and Service Cabinet Foundation Detail
SL-211-1	(new 2018)	Service Cabinet Foundation Detail
SL-212-1	(new 2022)	"Tiny" Service Cabinet Foundation Detail
SL-213-1	(new 2023)	Service Cabinet Grounding Detail
SL-220-1	TSSL-21	Service Cabinet Detail
SL-221-1	(new 2022)	"Tiny" Service Cabinet Detail
SL-230-1	TSSL-22	Service Cabinet Wiring Detail
SL-240-1	TSSL-23	Panel Schedule
SL-250-1	TSSL-24	Fiber Optic Cabinet
SL-260-1	TSSL-26	COHU Video Camera Mount - Luminaire Arm Detail
SL-270-1	TSSL-27	Video Converter Cabinet Detail
SL-280-1	TSSL-9	Standard Intersection Movements and Head Numbers
SL-290-1	TSSL-10	Loop Detector Layout and Bicycle Marking
SL-300-1	TSSL-11	Loop Numbering Scheme
SL-310-1	TSSL-12	Loop Winding Details
SL-320-1	TSSL-13	Loop Detector Detail
SL-330-1	TSSL-14	Typical Conduit Placement for Loop Detectors
SL-340-1	TSSL-15	Induction Loop Test
SL-350-1	TSSL-16	Field Wiring Chart
SL-360-1	TSSL-28	Signal Head Clearance Detail

DOWNTOWN

DT-100-1	DEV-3	Downtown Driveway
DT-110-1	(new 2017)	Downtown Sidewalk with Tree Pits
DT-120-1	(new 2017)	Downtown Sidewalk with Landscape Strip
DT-130-1	(new 2017)	Downtown Sidewalk Construction Notes
DT-140-1	(new 2017)	Enhanced and Exceptional Intersections
DT-150-1	(new 2017)	Typical Raised All-Way Stop Intersection
DT-160-1	DEV-23	Brick Paver Installation for Old Bellevue District

BELRED CORRIDOR

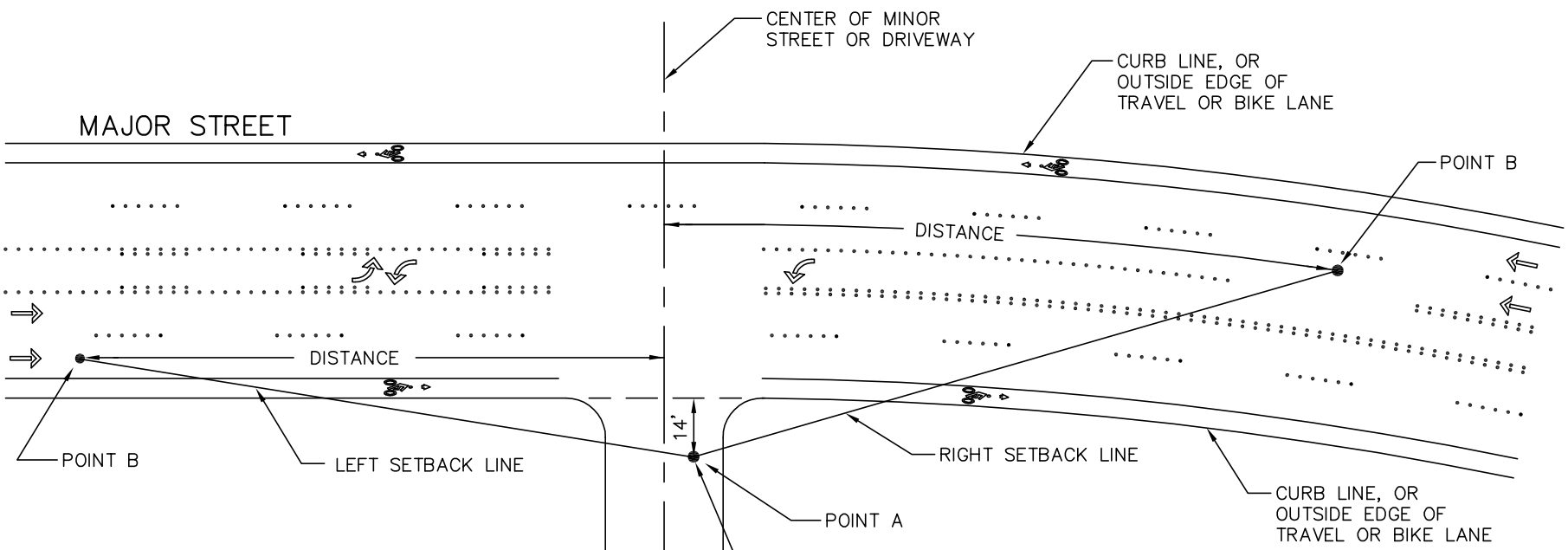
BR-100-1	BR-1	Concrete Intersection at Transit Crossing
BR-110-1	BR-2	Concrete Intersection
BR-120-1	BR-3	Concrete Intersection Details
BR-130-1	BR-4	Crosswalk Wave Pattern Detail
BR-140-1	BR-5	Crosswalk Wave Template Placement, 5 Lane Section
BR-150-1	BR-6	Crosswalk Wave Template Placement with Guideway
BR-160-1	BR-7	Crosswalk Wave - Stamped Ring Templates

TRANSPORTATION DESIGN MANUAL

RL Drawings

Roadside Layout


CITY OF BELLEVUE
WASHINGTON



SIGNALIZED INTERSECTION WITH RIGHT ON RED PERMITTED

SPEED LIMIT	DISTANCE (LEFT APPROACH ONLY)
40 MPH	325 FEET
35 MPH	250 FEET
30 MPH	200 FEET
25 MPH	150 FEET

MINOR STREET, PRIVATE ROAD, COMMERCIAL AND RESIDENTIAL DRIVEWAYS

MINOR STREETS, PRIVATE ROADS, AND COMMERCIAL DRIVEWAYS

SPEED LIMIT	DISTANCE
40 MPH	410 FEET
35 MPH	360 FEET
30 MPH	300 FEET
25 MPH	250 FEET

RESIDENTIAL DRIVEWAYS

SPEED LIMIT	DISTANCE
40 MPH	325 FEET
35 MPH	250 FEET
30 MPH	200 FEET
25 MPH	150 FEET

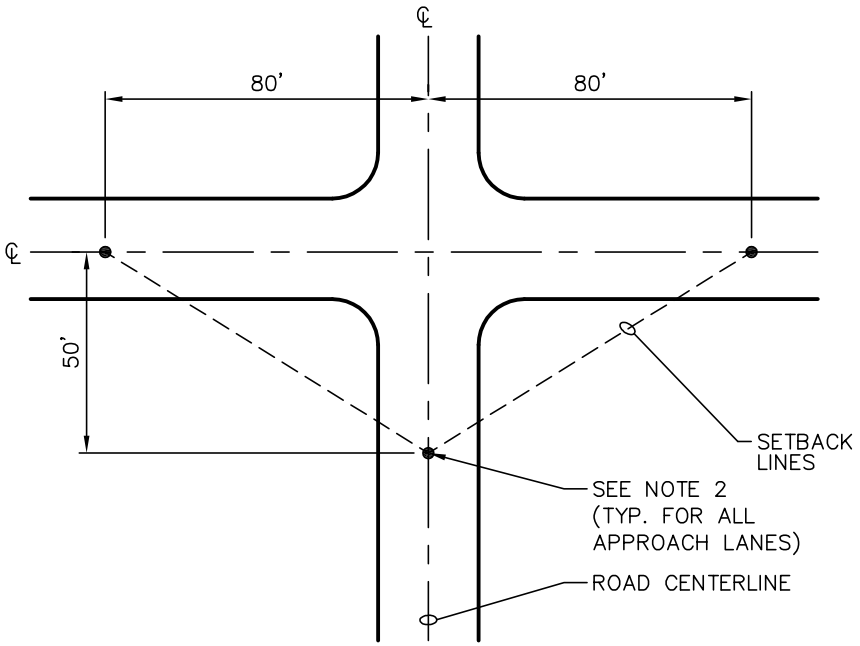
NOTES:

1. SEE DESIGN MANUAL STANDARD 21 (SIGHT DISTANCE – VEHICLES).
2. FOR RESIDENTIAL DRIVEWAYS, DISTANCE OF POINT A FROM EDGE OF TRAVEL LANE IS TEN FEET.

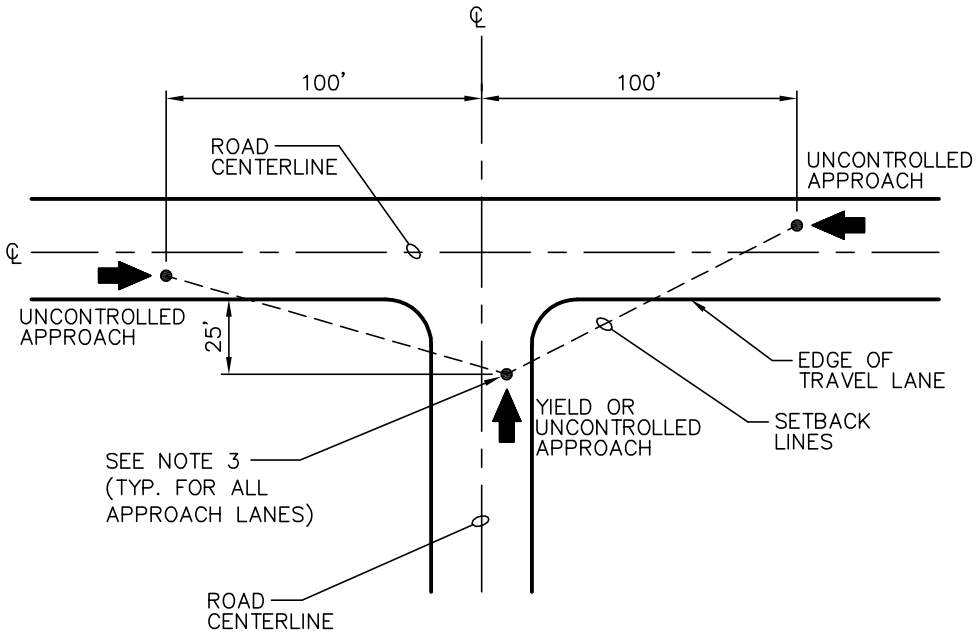
City of Bellevue

SIGHT DISTANCE SETBACK LINES

DRAWING NUMBER	RL–100–1
SCALE	NONE
REVISION DATE	012/15
DEPARTMENT	TRANS



UNCONTROLLED 4-WAY INTERSECTION



YIELD OR UNCONTROLLED "T" INTERSECTIONS

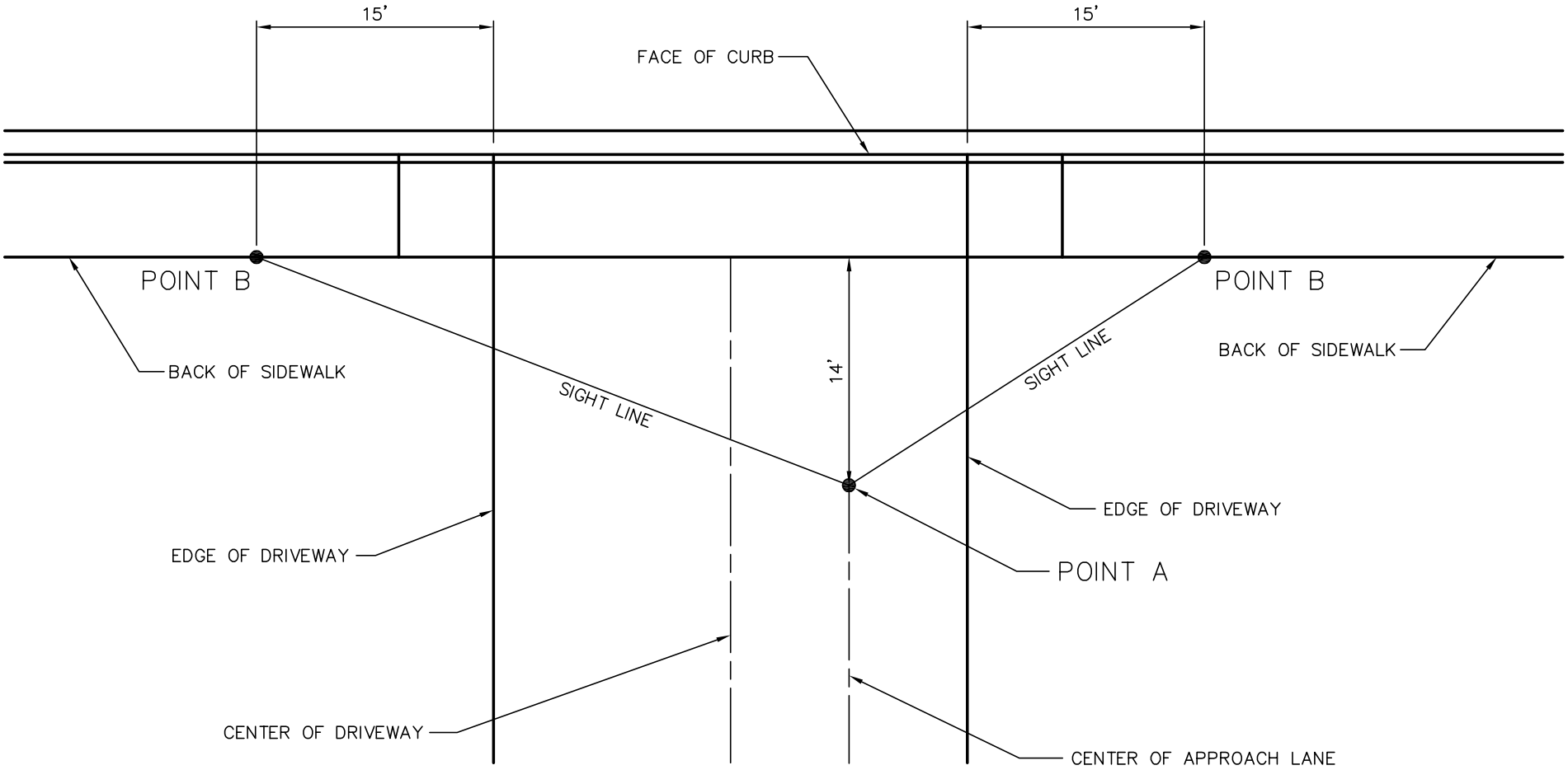
NOTES:

1. SEE DESIGN MANUAL STANDARD 21 (SIGHT DISTANCE – VEHICLES).
2. FOR UNCONTROLLED 4–WAY INTERSECTION, SETBACK POINTS ARE MEASURED FROM ROAD CENTERLINES.
3. FOR YIELD OR UNCONTROLLED "T" INTERSECTION, SETBACK POINTS ARE MEASURED FROM CENTER OF APPROACH LANE.
4. FOR USE ON 25 MPH STREETS. FOR STREETS WITH SPEED LIMITS GREATER THAN 25 MPH, SEE THE ENGINEER.

City of Bellevue

SIGHT DISTANCE – UNCONTROLLED AND YIELD INTERSECTIONS

DRAWING NUMBER	RL–110–1
SCALE	NONE
REVISION DATE	012/15
DEPARTMENT	TRANS



NOTES:

1. SEE DESIGN MANUAL STANDARD 22 (SIGHT DISTANCE – PEDESTRIANS).

City of Bellevue

PEDESTRIAN SIGHT LINES

DRAWING NUMBER	RL–120–1
SCALE	NONE
REVISION DATE	12/15
DEPARTMENT	TRANS

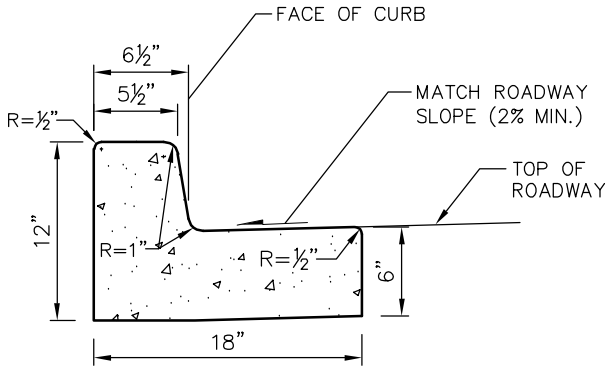

CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

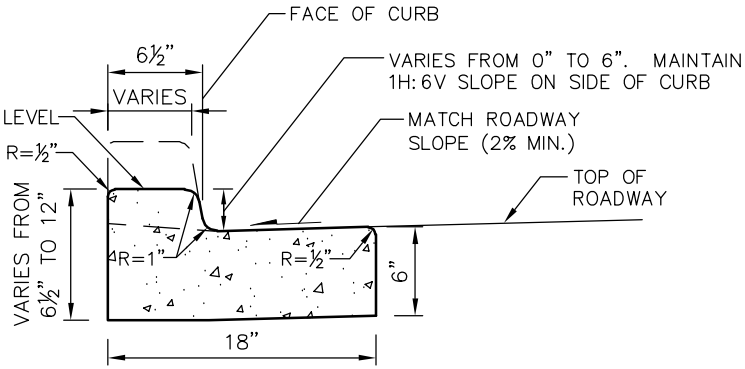
SW Drawings

Sidewalks, Curb Ramps, and Driveways

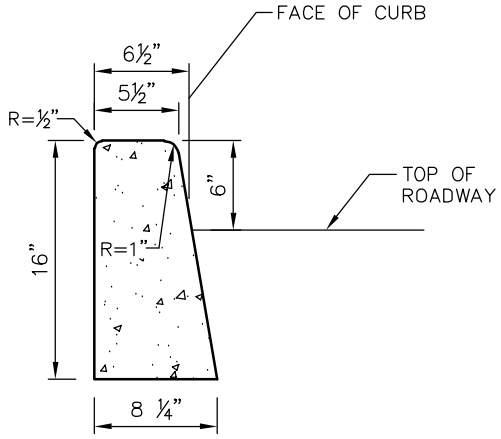

CITY OF BELLEVUE
WASHINGTON



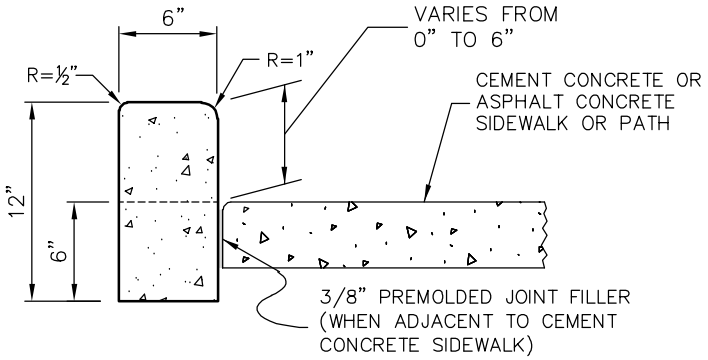
CEMENT CONCRETE
TRAFFIC CURB AND GUTTER



DEPRESSED CURB SECTION



CEMENT CONCRETE TRAFFIC
CURB



CEMENT CONCRETE
PEDESTRIAN CURB

NOTES:

1. ALL CEMENT CONCRETE CURBS SHALL BE CONSTRUCTED WITH AIR ENTRAINED CONCRETE CLASS 3000 CONFORMING TO WSDOT STD. SPEC. 6-02 EXCEPT AS SPECIFIED IN NOTE 2.

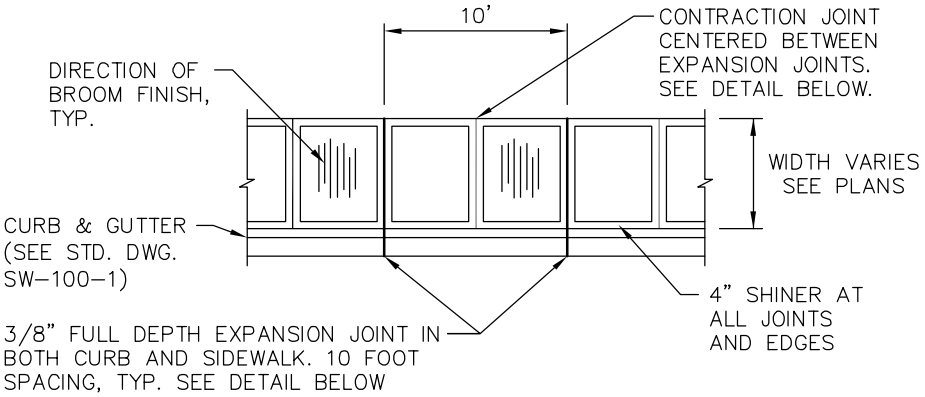
2. CEMENT CONCRETE CURB OR CURB AND GUTTER ALONG THE FULL WIDTH OF A DRIVEWAY ENTRANCE SHALL BE CONSTRUCTED WITH AIR ENTRAINED CONCRETE CLASS 4000 CONFORMING TO WSDOT STD. SPEC. 6-02.

3. REMOVAL/REPLACEMENT OF CEMENT CONCRETE CURB SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

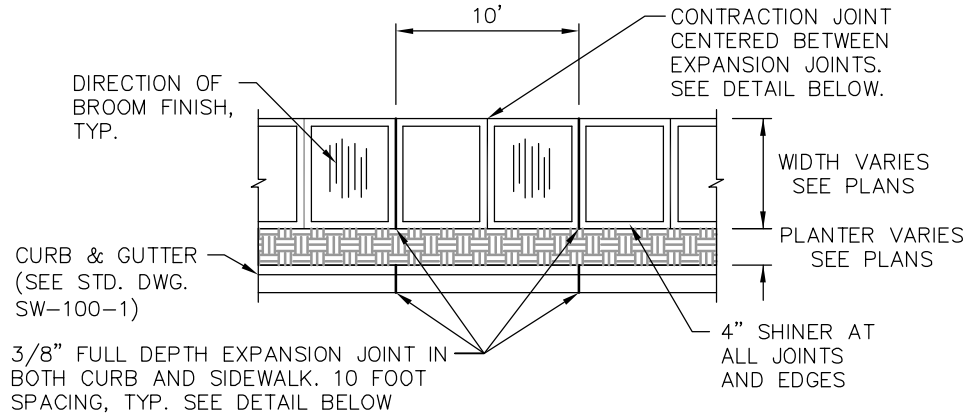
City of Bellevue

CEMENT CONCRETE CURBS

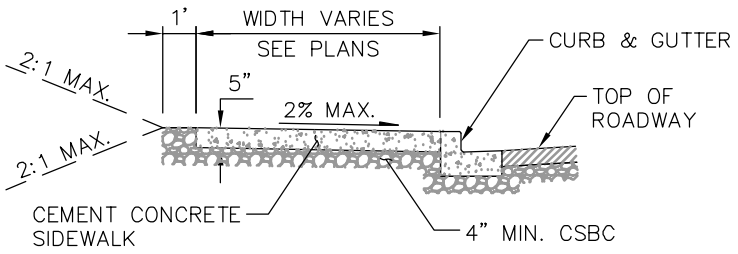
DRAWING NUMBER	SW-100-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



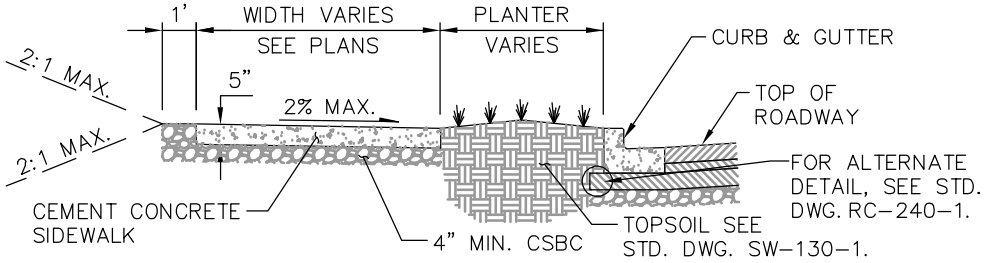
PLAN - CURBSIDE SIDEWALK



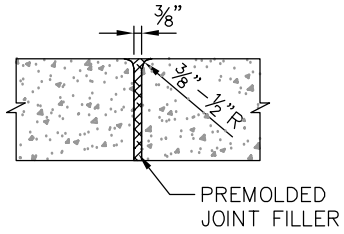
PLAN - SIDEWALK WITH PLANTER STRIP



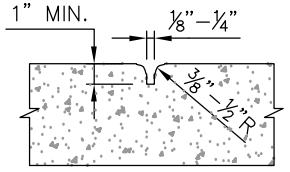
SECTION - CURBSIDE SIDEWALK



SECTION - SIDEWALK WITH PLANTER STRIP



FULL DEPTH EXPANSION JOINT DETAIL



CONTRACTION JOINT DETAIL

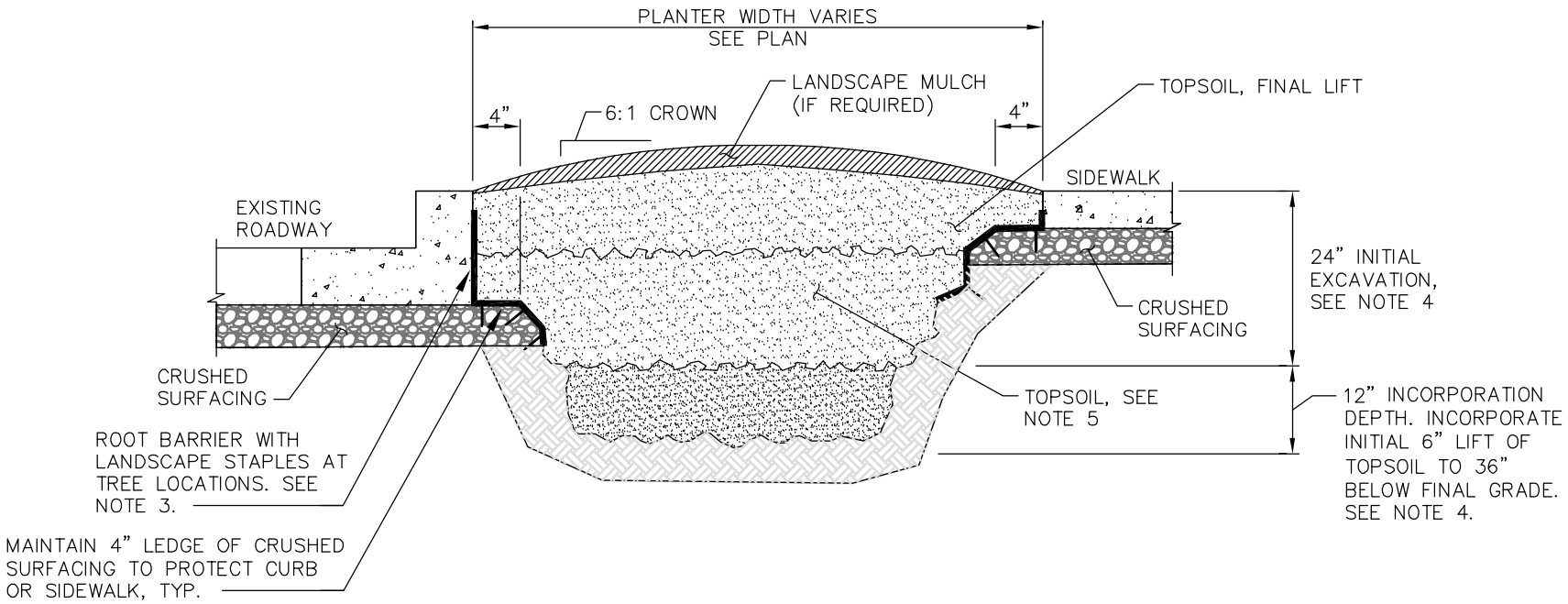
NOTES:

1. CONCRETE SHALL BE AIR ENTRAINED CLASS 3000 PER SECTION 6-02 OF WSDOT STANDARD SPECIFICATIONS.
2. FINISH: LIGHT FINISH WITH A STIFF BROOM PERPENDICULAR TO CURB. FOR GRADES OVER 4%, FINISH WITH A STIPPLE BRUSH.
3. REMOVAL/REPLACEMENT OF CEMENT CONCRETE CURB AND SIDEWALK SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. LIDS FOR JUNCTION BOXES AND UTILITY VAULTS SHALL BE NON-SLIP AS SPECIFIED BY THE ENGINEER.

City of Bellevue

SIDEWALK

DRAWING NUMBER	SW-110-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



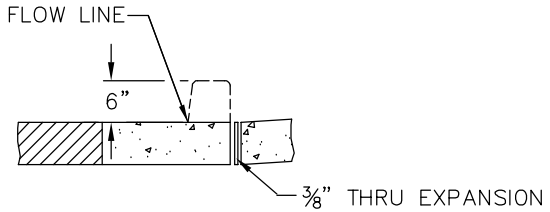
SOIL PREPARATION NOTES

1. EXCAVATE EXISTING SOIL TO 24"± DEPTH FROM TOP OF ADJACENT CURB OR SIDEWALK. AVOID UNDERMINING ADJACENT CURB OR SIDEWALK.
2. ROOT BARRIER SHALL BE FLEXIBLE MESH MATERIAL, 100% NYLON, RASCHEL KNIT CONSTRUCTION, MINIMUM BURST STRENGTH 250 LBF (ASTM D 3787–89 BURST OF KNIT GOODS).
3. INSTALL ROOT BARRIER WITH A MINIMUM WIDTH OF 18", SECURE WITH LANDSCAPE STAPLES AS NECESSARY. ROOT BARRIER SHALL BE INSTALLED IN 10' LENGTHS AT TREE LOCATIONS, CENTERED TO EXTEND 5' EITHER SIDE OF TREE, AND SHALL BE INSTALLED NO HIGHER THAN 2" BELOW THE TOP OF CURB OR SIDEWALK. ROOT BARRIERS SHALL NOT BE INSTALLED AT LOCATIONS WHERE STRUCTURAL SOIL OR SOIL CELLS EXIST.
4. EXCAVATE TO 24" BELOW FINAL GRADE. ADD 6" LIFT OF TOPSOIL AND INCORPORATE TO 36" BELOW FINAL GRADE (12" INTO THE SUBGRADE). ADDITIONAL LIFTS SHALL BE ADDED AS SPECIFIED IN NOTE 5.
5. INSTALL 12"± LIFT OF TOPSOIL TYPE A AND LIGHTLY TAMP BETWEEN LIFTS.
6. INSTALL FINAL LIFT OF TOPSOIL TYPE A TO ACHIEVE FINISH GRADE, FLUSH WITH THE TOP OF CURB OR SIDEWALK WITH A MOUND IN THE CENTER OF 6:1, AND LIGHTLY TAMP.
7. INSTALL 1.5" LANDSCAPE MULCH, FULL DEPTH IN THE CENTER AND FEATHERED AT THE EDGES TO BECOME FLUSH WITH CURB OR SIDEWALK.

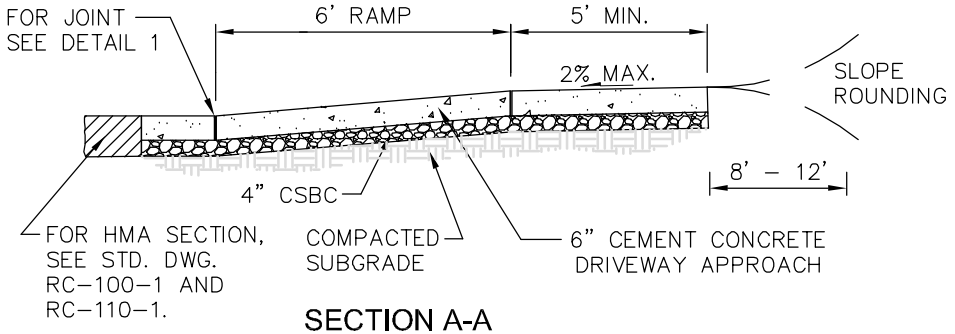
City of Bellevue

SOIL PREPARATION FOR LANDSCAPE STRIPS

DRAWING NUMBER	SW–130–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



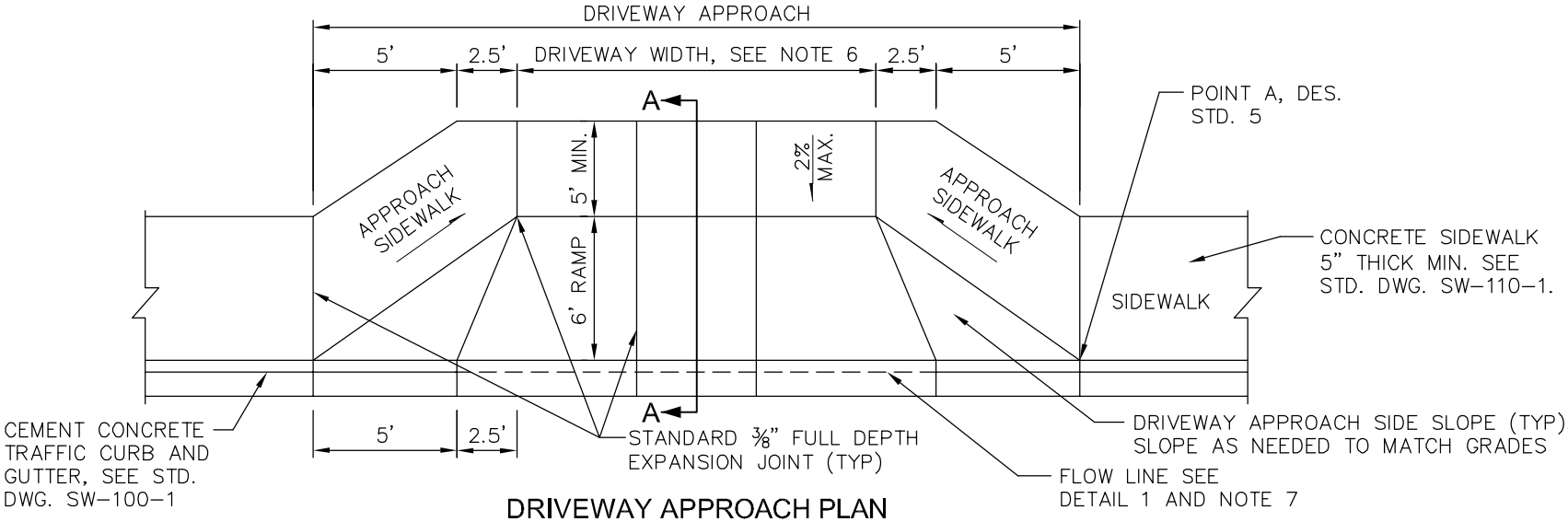
DETAIL 1



SECTION A-A

NOTES:

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. SEE DESIGN STANDARD 5 FOR GRADE REQUIREMENTS. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER, PERPENDICULAR TO THE WALKING DIRECTION.
5. 3/8" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.

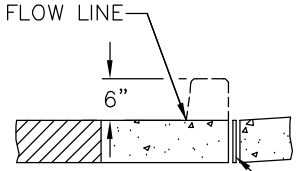


DRIVEWAY APPROACH PLAN

City of Bellevue

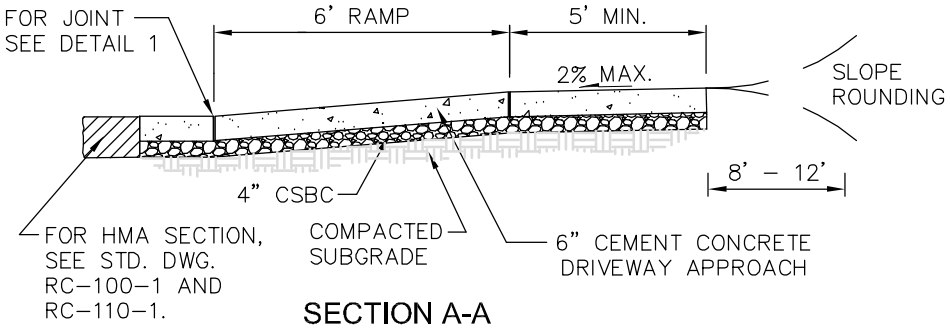
DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (OPTION 1)

DRAWING NUMBER	SW–140–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



DETAIL 1

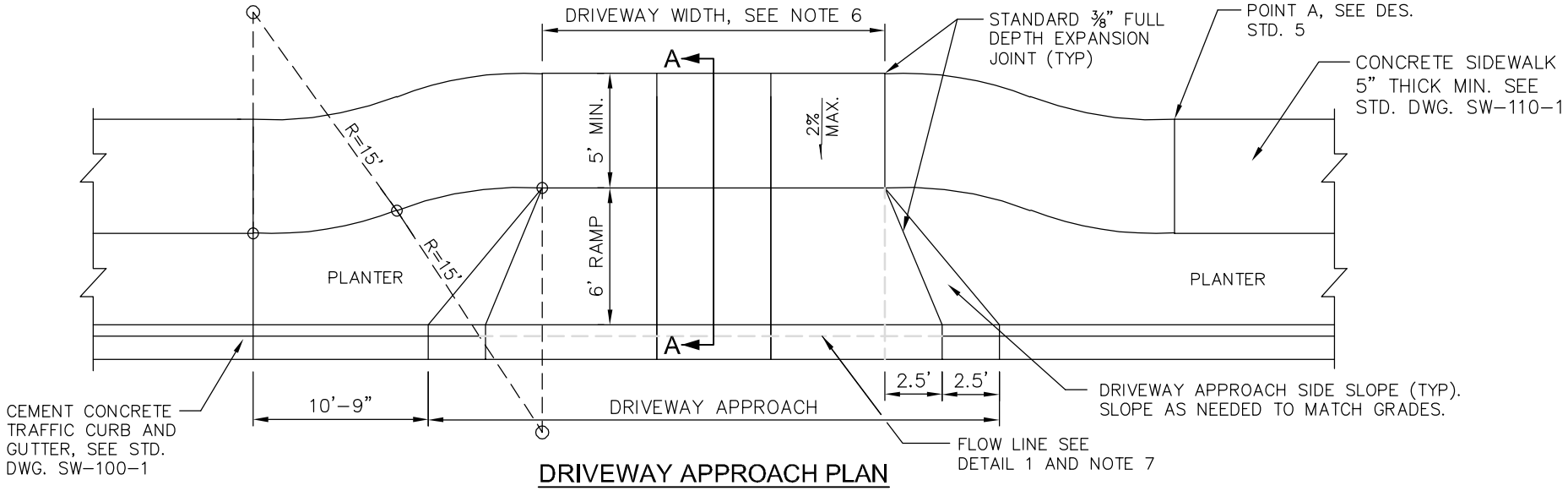
⅜" THRU EXPANSION JOINT IF POURED MONOLITHIC.



SECTION A-A

NOTES:

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. SEE DESIGN STANDARD 5 FOR GRADE REQUIREMENTS. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER, PERPENDICULAR TO THE WALKING DIRECTION.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.

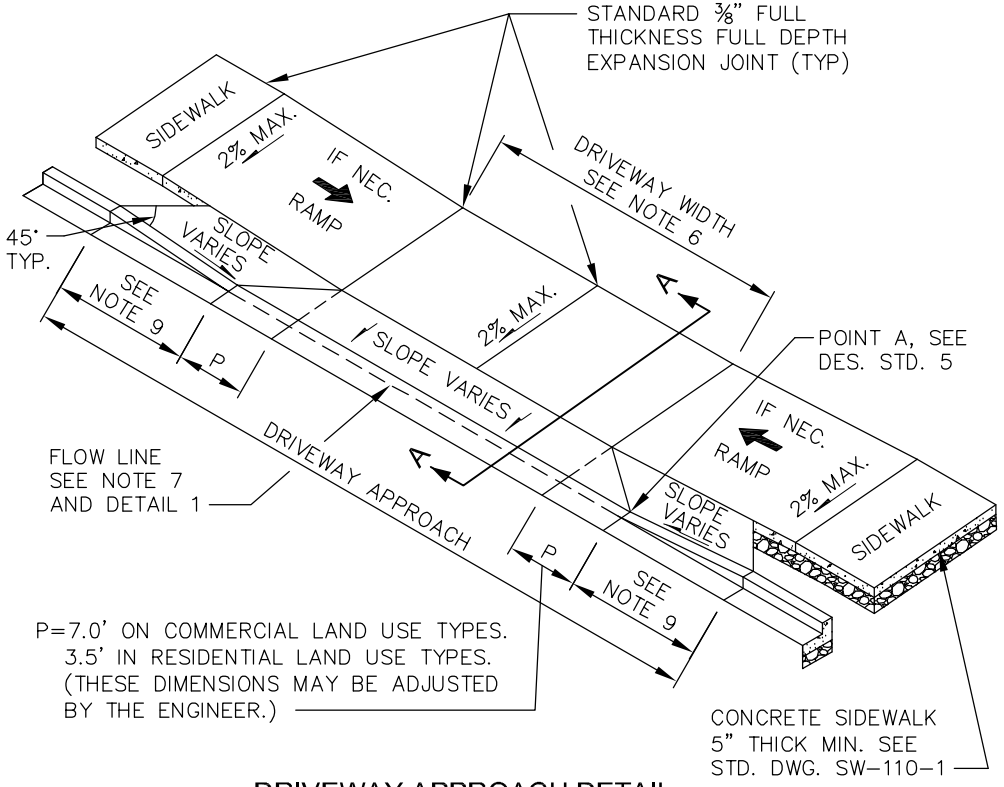


DRIVEWAY APPROACH PLAN

City of Bellevue

DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (OPTION 2)

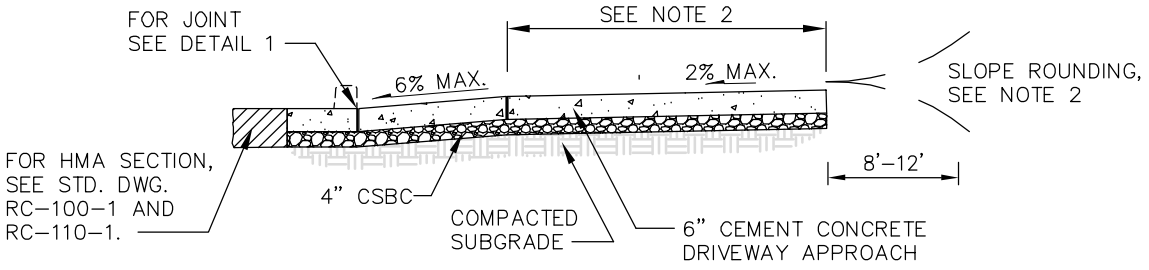
DRAWING NUMBER	SW–150–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



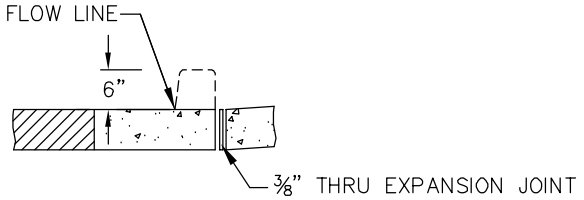
DRIVEWAY APPROACH DETAIL

NOTES:

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. SEE DESIGN STANDARD 5 FOR GRADE REQUIREMENTS. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER, PERPENDICULAR TO THE WALKING DIRECTION.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER, SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.
8. ALL SOFT AREA BEHIND SIDEWALK SHALL BE GRADED TO MATCH SIDEWALK PROFILE TO PREVENT TRIPPING HAZARDS.
9. TYPICAL LENGTH IS 7 FEET. RAMP LENGTH SHALL BE ADJUSTED TO MEET ADA REQUIREMENTS.



SECTION A-A

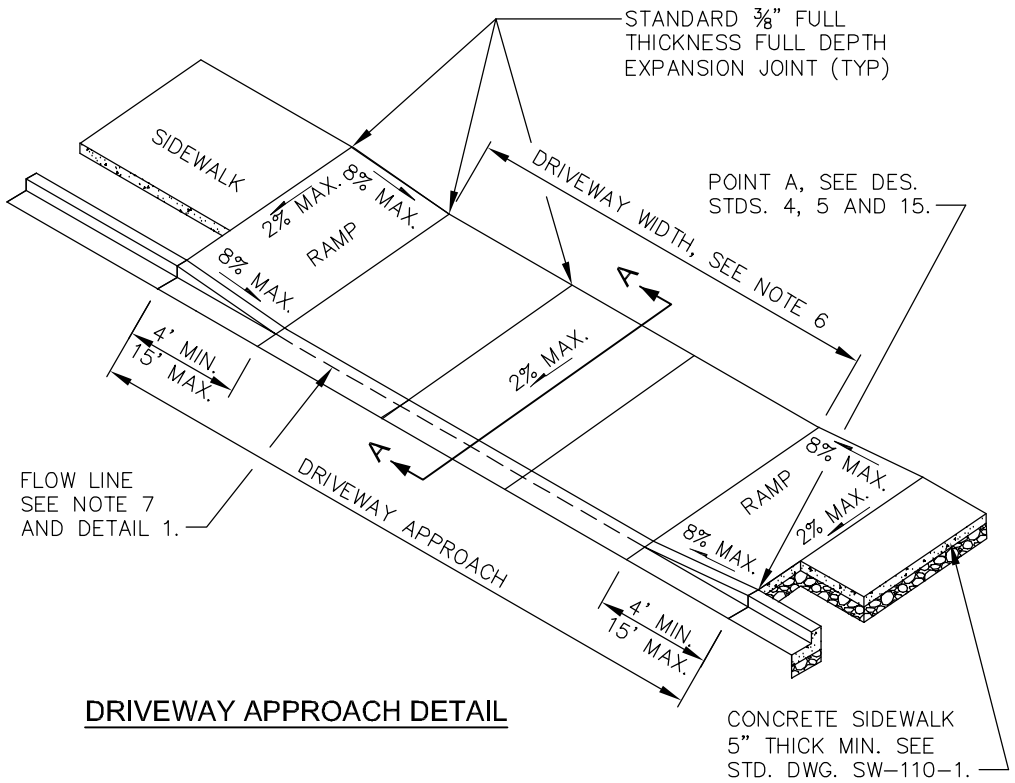


DETAIL 1

City of Bellevue

DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (OPTION 3)

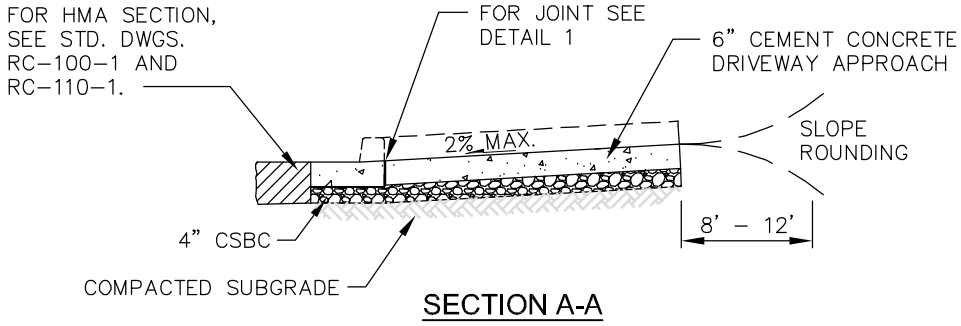
DRAWING NUMBER	SW-160-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



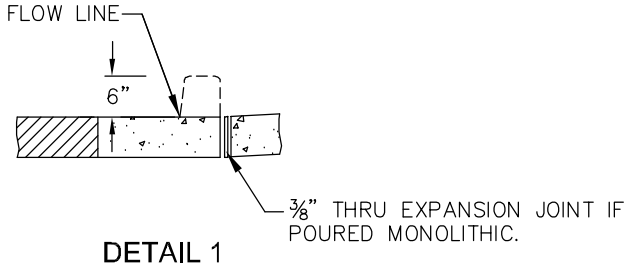
DRIVEWAY APPROACH DETAIL

NOTES:

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. SEE DESIGN STANDARD 5 FOR GRADE REQUIREMENTS. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER, PERPENDICULAR TO THE WALKING DIRECTION.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.



SECTION A-A

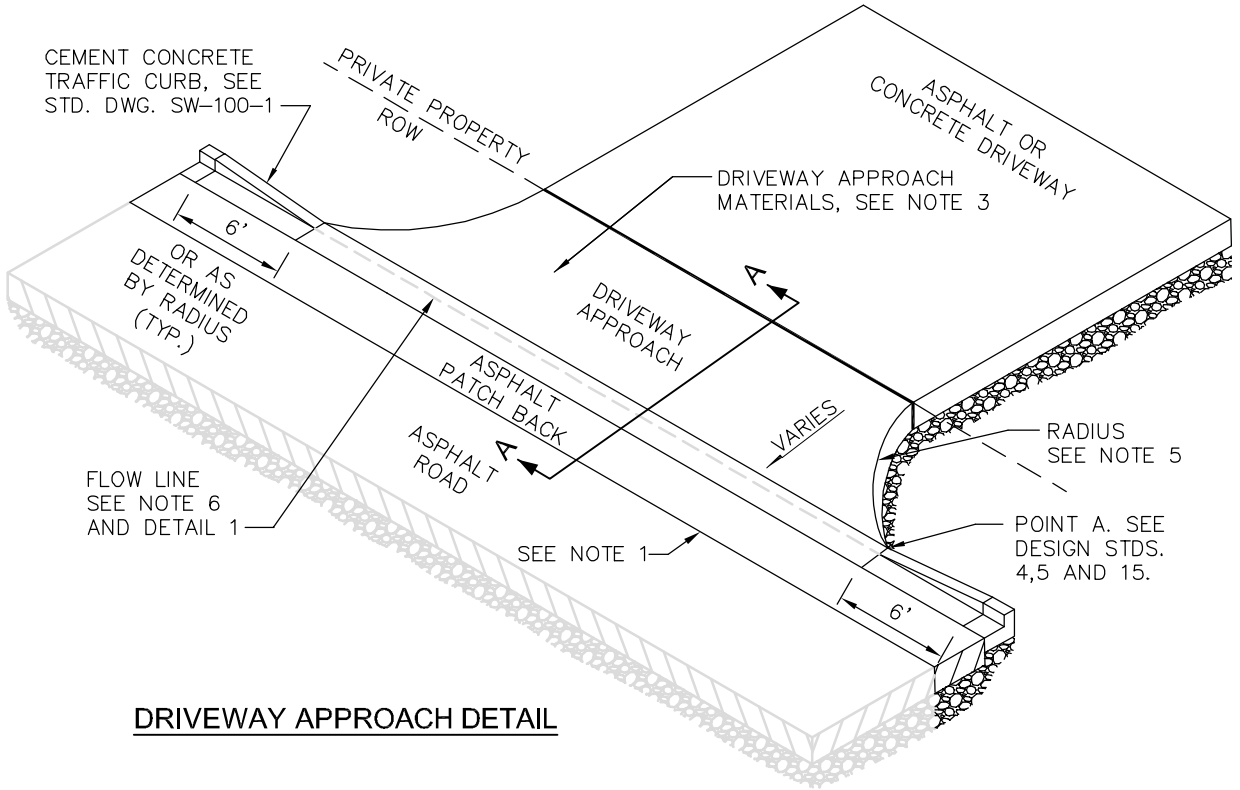


DETAIL 1

City of Bellevue

DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (OPTION 4)

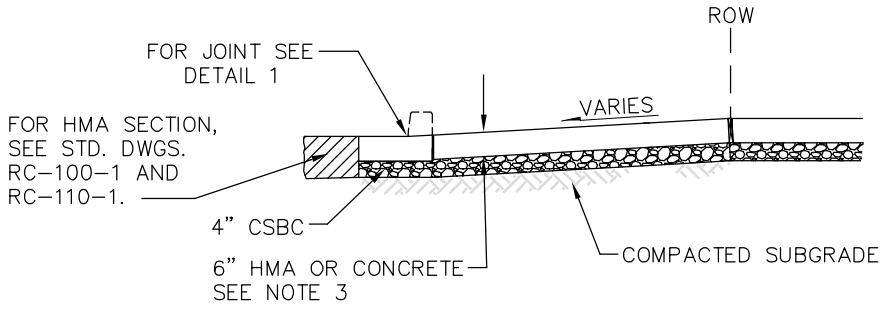
DRAWING NUMBER	SW-170-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



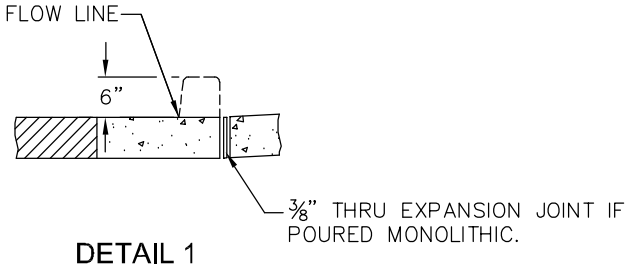
DRIVEWAY APPROACH DETAIL

NOTES:

1. SEE DESIGN STANDARD 5 FOR DRIVEWAY GUIDELINES, INCLUDING GRADE REQUIREMENTS FOR LANDING AND DRIVEWAY. DRIVEWAY WIDTH SHALL BE SPECIFIED BY THE ENGINEER
2. SAWCUT AND SEAL JOINT WITH ASPHALT OIL.
3. DRIVEWAY APPROACH TO BE 6" HMA CLASS ½" PG 58H-22 ASPHALT IN 2" LIFTS OR 6" OF CLASS 4000 P.C.C. MIX WITH COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS, FROM ROAD TO PROPERTY LINE. MATERIAL TO BE DETERMINED BY THE ENGINEER.
4. HOT MIX ASPHALT OR CONCRETE TO BE PLACED OVER COMPACTED SUBGRADE AND 4" OF CSTC COMPACTED TO 95%.
5. TYPICAL EDGE RADIUS: COMMERCIAL 15'
   SINGLE FAMILY 10'
6. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.



SECTION A-A



DETAIL 1

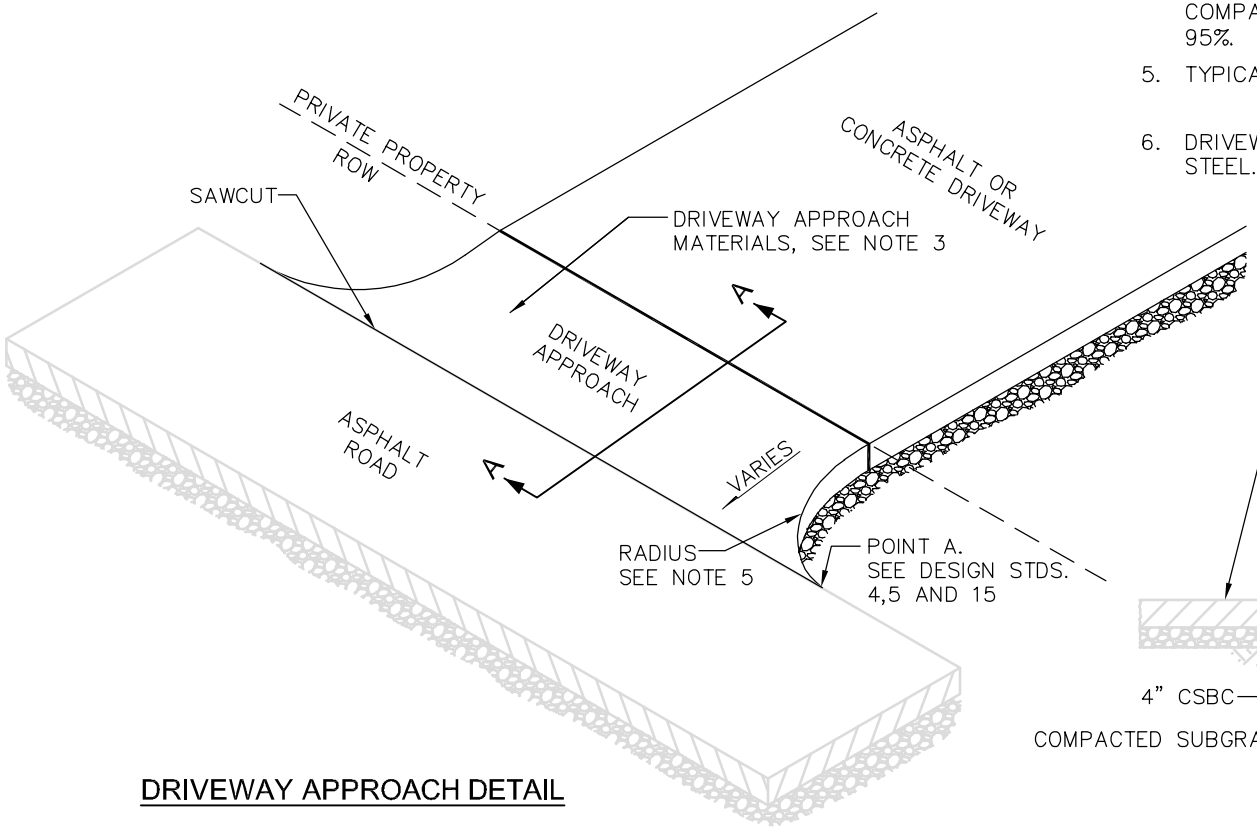
City of Bellevue

DRIVEWAY APPROACH WHERE CURB-GUTTER EXISTS (NO SIDEWALK)

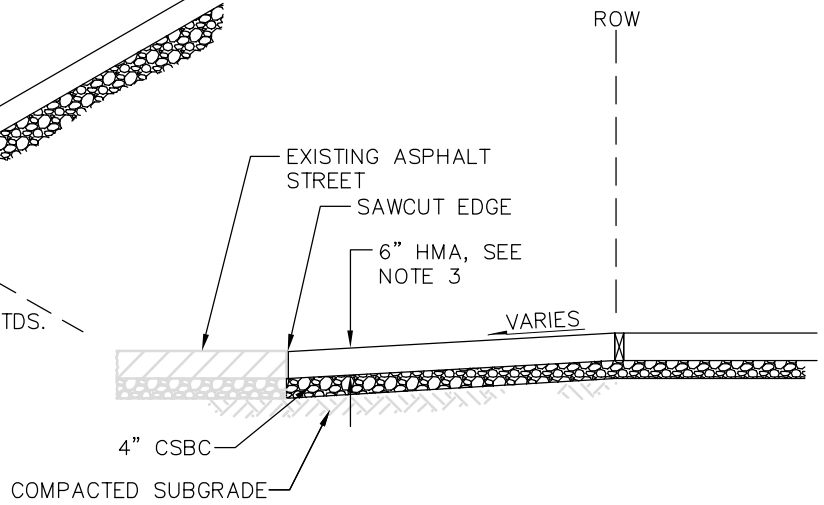
DRAWING NUMBER	SW-180-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

NOTES:

1. SEE DESIGN STANDARD 5 FOR DRIVEWAY GUIDELINES, INCLUDING GRADE REQUIREMENTS FOR LANDING AND DRIVEWAY. DRIVEWAY WIDTH SHALL BE SPECIFIED BY THE ENGINEER.
2. SAWCUT AND TACK ROAD TO DRIVEWAY APPROACH JOINT.
3. DRIVEWAY APPROACH TO BE 6" HMA CLASS ½" PG 58H–22 ASPHALT IN 2" LIFT OVER 4" LIFT.
4. HOT MIX ASPHALT OR CONCRETE TO BE PLACED OVER COMPACTED SUBGRADE AND 4" OF CSTC COMPACTED TO 95%.
5. TYPICAL EDGE RADIUS: COMMERCIAL 15'
   SINGLE FAMILY 10'
6. DRIVEWAY APPROACH SHALL NOT CONTAIN REINFORCING STEEL.



DRIVEWAY APPROACH DETAIL



SECTION A-A

City of Bellevue

DRIVEWAY APPROACH
WHERE NO CURB–GUTTER EXISTS

DRAWING NUMBER	SW–190–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

CURB RAMP NOTES FOR CURB RAMP STANDARD DRAWINGS

1. A SEPARATE CURB RAMP SHALL BE PROVIDED FOR EACH MARKED OR UNMARKED CROSSWALK. CURB RAMP LOCATION SHALL BE PLACED WITHIN THE WIDTH OF THE ASSOCIATED CROSSWALK OR AS SHOWN IN THE CONTRACT PLANS WHEN NO MARKED CROSSWALK IS PRESENT. IF ONLY ONE RAMP IS TO BE PROVIDED, PRIOR APPROVAL BY THE ENGINEER SHALL BE OBTAINED.

2. CURB DESIGN TYPE, WIDTH, AND SLOPES SHALL BE INDICATED ON THE DESIGN DRAWINGS AND AS PER THE STANDARD DETAILS.

3. A MINIMUM 4'x4' FLAT LANDING, WITH 2% MAXIMUM SLOPE IN ALL DIRECTIONS, SHALL BE PROVIDED AT THE TOP AND BOTTOM OF ALL RAMPS (4'x5' IF CONSTRAINED ON TWO OR MORE SIDES). AREA IN THE ROADWAY WITHIN CROSSWALK MARKINGS MAY BE USED AS LANDING.

4. MAXIMUM SLOPES ARE INCLUSIVE OF ALL CONSTRUCTION TOLERANCES.

5. SEE STD. DWG. SW–100–1 FOR CEMENT CONCRETE TRAFFIC CURB AND GUTTER, DEPRESSED CURB SECTION, CEMENT CONCRETE TRAFFIC CURB, AND CEMENT CONCRETE PEDESTRIAN CURB DETAILS.

6. PEDESTRIAN CURB MAY BE OMITTED IF THE GROUND SURFACE AT THE BACK OF THE CURB RAMP AND/OR LANDING WILL BE THE SAME ELEVATION AS THE CURB RAMP OR LANDING AND THERE WILL BE NO MATERIAL TO RETAIN.

7. SEE STD. DWG. SW–110–1 FOR SIDEWALK DETAILS.

8. CURB RAMP, LANDING, AND FLARE SURFACES SHALL BE BROOM FINISHED AND MINIMUM 5" THICK AS PER STD. DWG. SW–110–1.

9. CEMENT CONCRETE FOR RAMPS SHALL BE AIR ENTRAINED CONCRETE CLASS 3000, CONFORMING TO WSDOT STD. SPEC. 6–02.

10. REMOVAL/REPLACEMENT OF CEMENT CONCRETE CURB AND SIDEWALK SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

11. GRADE BREAKS FOR RAMPS SHALL BE PERPENDICULAR TO DIRECTION OF TRAVEL.

12. AT GRADE BREAKS, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.

13. GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES SHALL NOT BE PLACED IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING, UNLESS APPROVED IN ADVANCE BY THE ENGINEER.

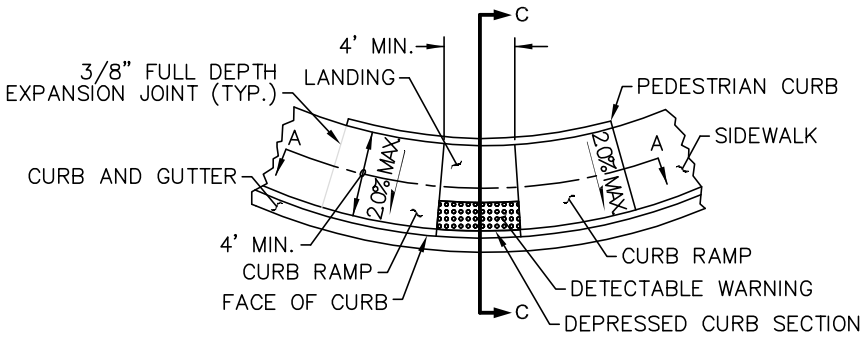
14. RAMPS AND WINGS SHALL PROVIDE AND MAINTAIN POSITIVE DRAINAGE TOWARDS THE ROADWAY.

15. PAY LIMITS ON CITY–FUNDED PROJECTS SHALL BE AS PER WSDOT STD. PLANS F–40.12–03, F–40.14–03, F–40.15–03, AND F–40.16–03.

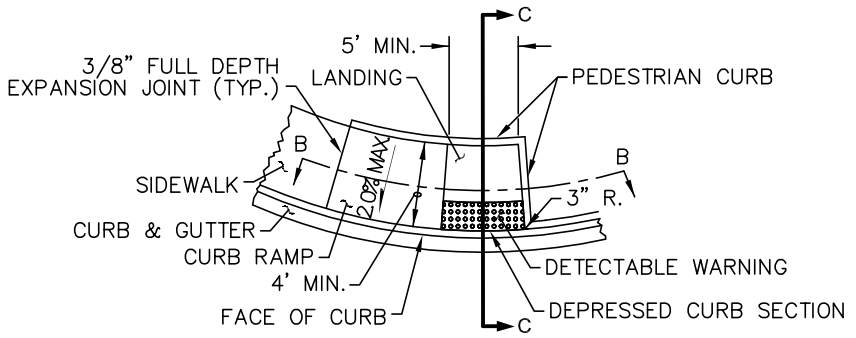
City of Bellevue

CURB RAMP CONSTRUCTION NOTES

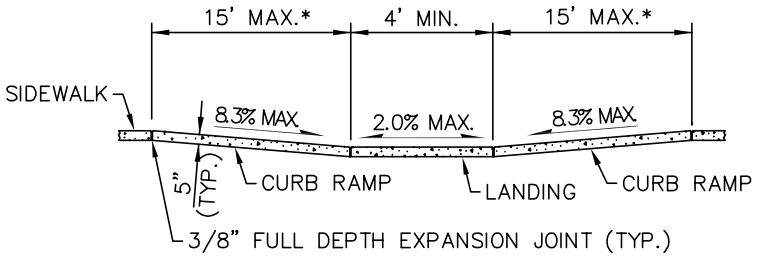
DRAWING NUMBER	SW–200–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



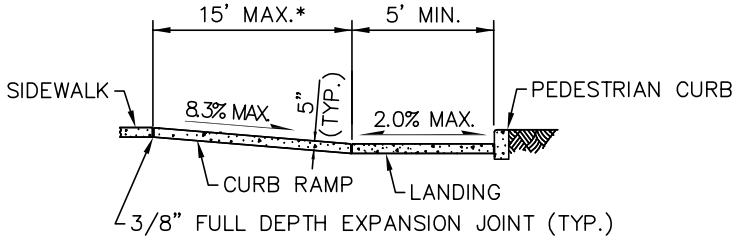
CURB RAMP TYPE PARALLEL A



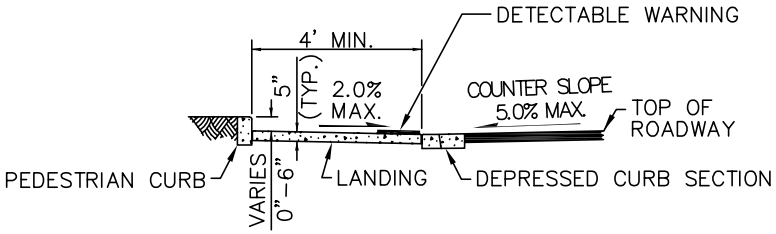
CURB RAMP TYPE PARALLEL B



SECTION A-A



SECTION B-B



SECTION C-C

*RUNNING SLOPE OF THE CURB RAMP SHALL BE 8.3% MAXIMUM BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FT. AS MEASURED RADIALLY AT BACK OF RAMP.

NOTE: SEE SW-200-1 FOR CURB RAMP CONSTRUCTION NOTES

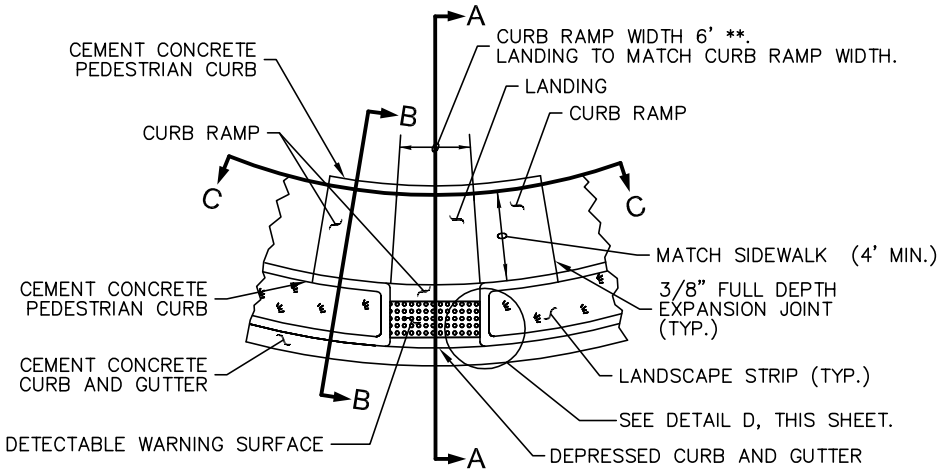
LEGEND

SLOPE IN EITHER DIRECTION

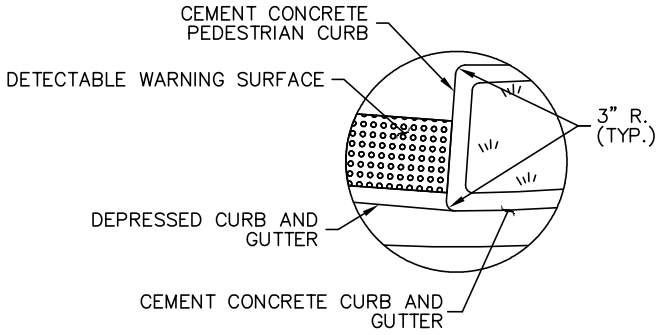
City of Bellevue

PARALLEL CEMENT CONCRETE CURB RAMP (TYPE 2)

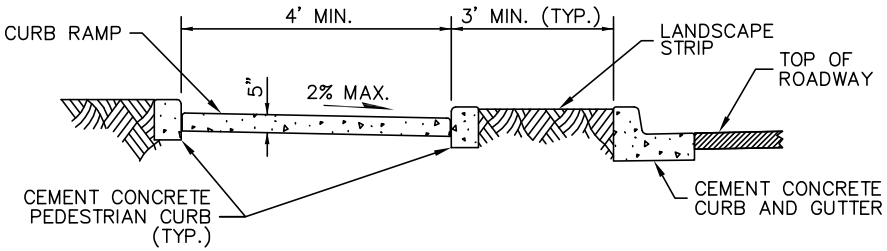
DRAWING NUMBER	SW-210-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



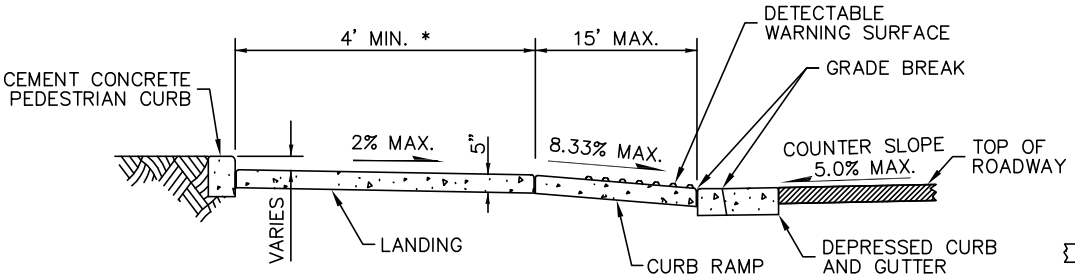
CURB RAMP TYPE COMBINATION



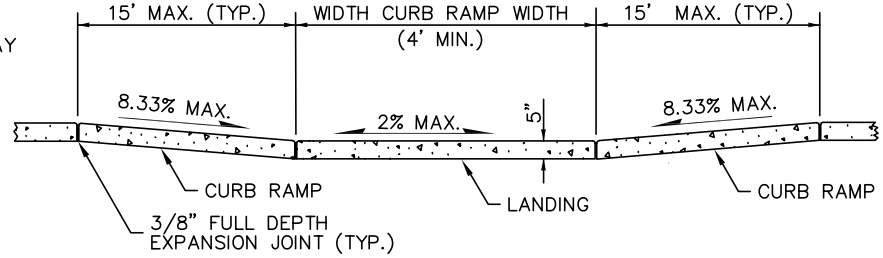
DETAIL D



SECTION B-B



SECTION A-A



SECTION C-C

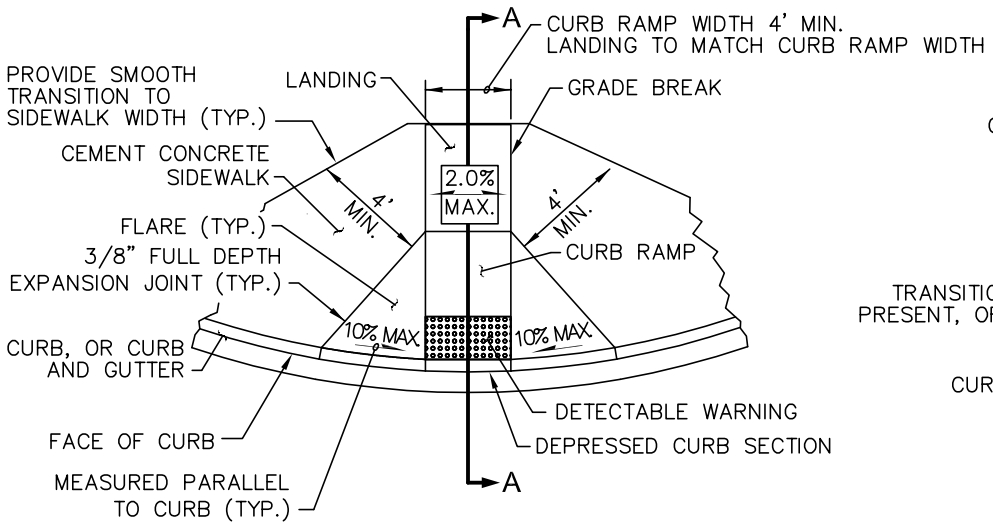
NOTE: SEE SW-200-1 FOR CURB RAMP CONSTRUCTION NOTES.
* 5' IF CONSTRAINED AT BACK OF LANDING (WALL, FENCE, RAILING, ETC).
** MAY BE REDUCED TO A MINIMUM WIDTH OF NO LESS THAN 4' WITH PRIOR APPROVAL FROM THE ENGINEER.

LEGEND
SLOPE IN EITHER DIRECTION

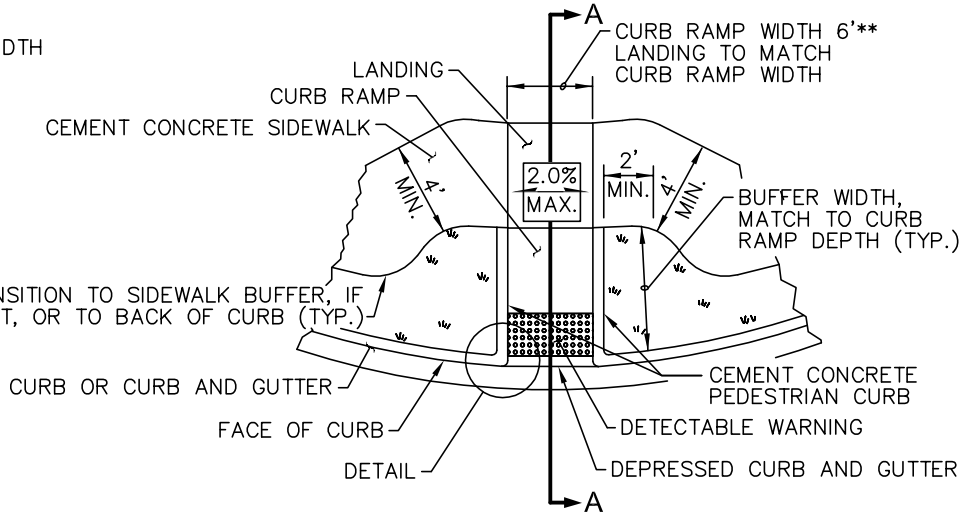
City of Bellevue

COMBINATION CURB RAMP

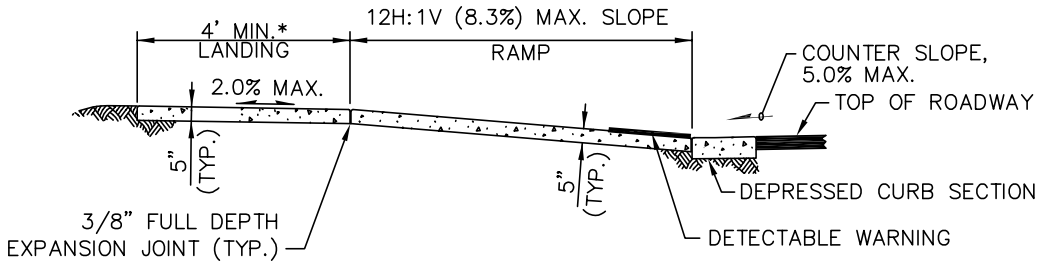
DRAWING NUMBER	SW-220-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



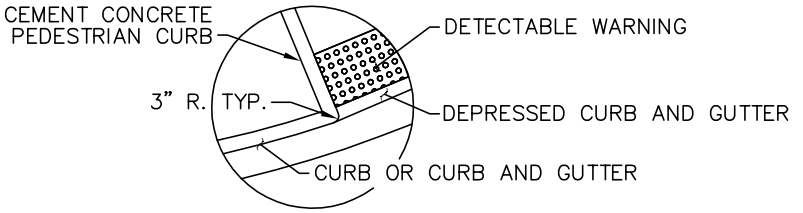
CURB RAMP TYPE PERPENDICULAR A



CURB RAMP TYPE PERPENDICULAR B



SECTION A-A



DETAIL

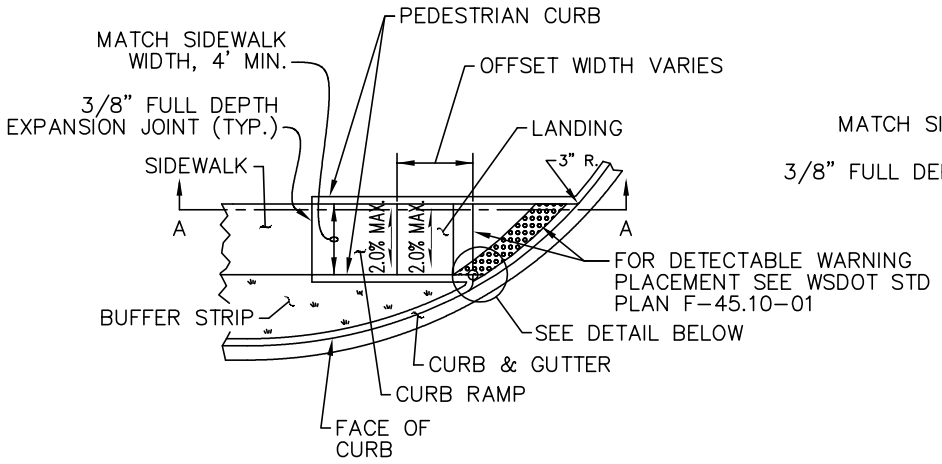
NOTE: SEE SW–200–1 FOR CURB RAMP CONSTRUCTION NOTES.
* 5' IF CONSTRAINED AT BACK OF LANDING (WALL, FENCE, RAILING, ETC).
** MAY BE REDUCED TO A MINIMUM WIDTH OF NO LESS THAN 4' WITH PRIOR APPROVAL FROM THE ENGINEER.

LEGEND
SLOPE IN EITHER DIRECTION

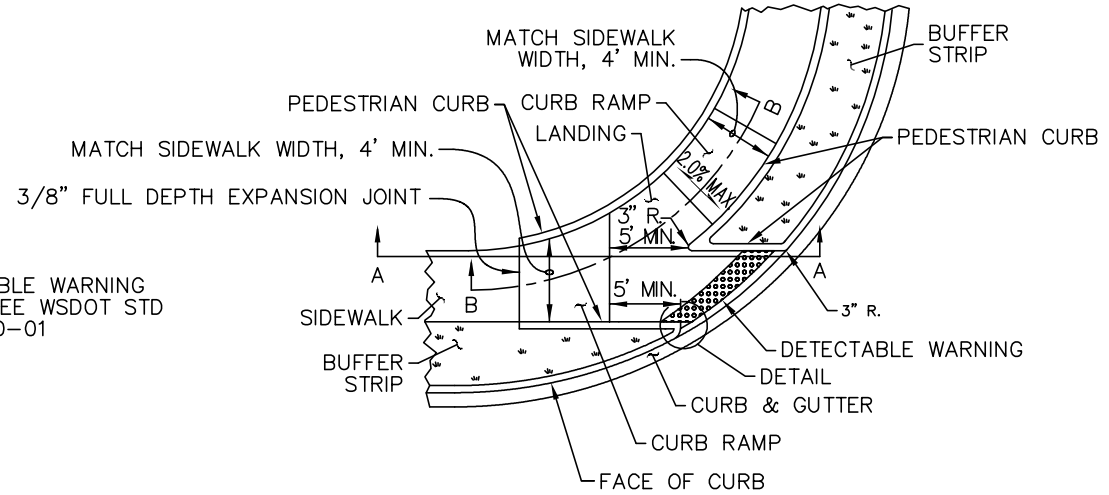
City of Bellevue

PERPENDICULAR CEMENT CONCRETE CURB RAMP (TYPE 1)

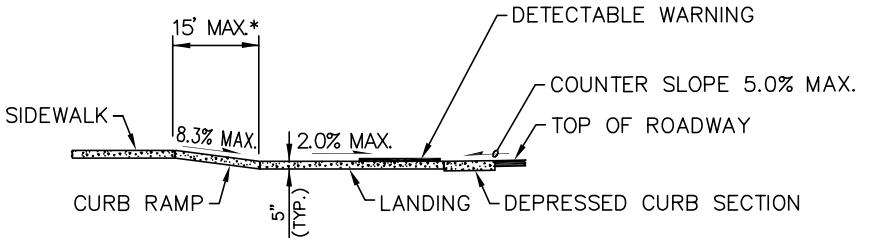
DRAWING NUMBER	SW–230–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



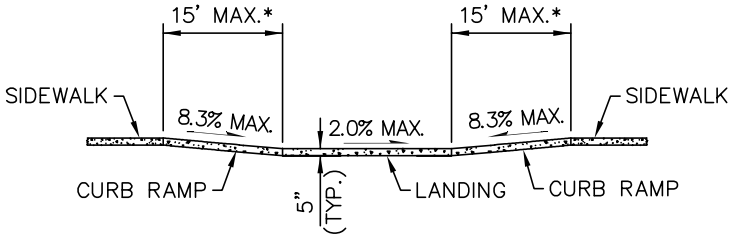
CURB RAMP TYPE DIRECTIONAL A



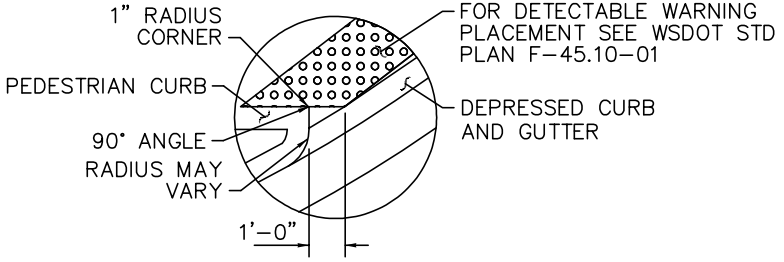
CURB RAMP TYPE DIRECTIONAL B



SECTION A-A



SECTION B-B



DETAIL

*RUNNING SLOPE OF THE CURB RAMP SHALL BE 8.3% MAXIMUM BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15FT AS MEASURED RADIALLY AT BACK OF RAMP.

NOTE: SEE SW-200-1 FOR CURB RAMP CONSTRUCTION NOTES

LEGEND

SLOPE IN EITHER DIRECTION

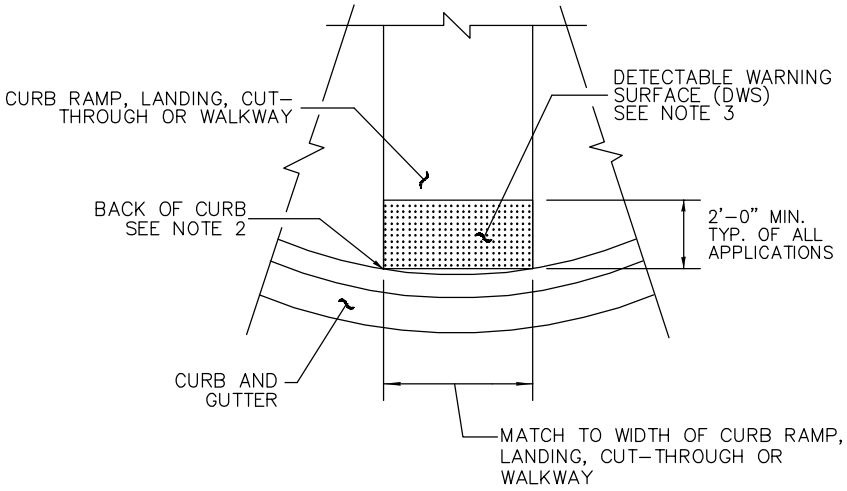
City of Bellevue

DIRECTIONAL CEMENT CONCRETE CURB RAMP (TYPE 3)

DRAWING NUMBER	SW-240-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

DETECTABLE WARNING SURFACE NOTES

1. THE DETECTABLE WARNING SURFACE (DWS) SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR OTHER ROADWAY ENTRANCE AS APPLICABLE. EXCEPTION: IF THE MANUFACTURER OF THE DWS REQUIRES A CONCRETE BORDER AROUND THE DWS, A VARIANCE OF UP TO 2 INCHES ON EACH SIDE OF THE DWS IS PERMITTED.
2. THE DETECTABLE WARNING SURFACE (DWS) SHALL BE PLACED AT THE BACK OF CURB, WITH TWO LEADING CORNERS OF THE DWS PANEL PLACED ADJACENT TO THE BACK OF THE CURB, AND WITH NO MORE THAN A 2 INCH GAP BETWEEN THE DWS AND THE BACK OF THE CURB MEASURED AT THE CENTER OF THE DWS PANEL. EXCEPTION: IF THE MANUFACTURER REQUIRES A CONCRETE BORDER AROUND THE DWS, A VARIANCE OF UP TO 2 INCHES FROM THE BACK OF THE CURB IS PERMITTED (MEASURED AT THE LEADING CORNERS OF THE DWS PANEL).
3. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED TO BE PERPENDICULAR TO THE GRADE BREAK AT THE BACK OF THE CURB.
4. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED TO BE PARALLEL TO THE DIRECTION OF TRAVEL.
5. IF CURB AND GUTTER ARE NOT PRESENT, SUCH AS A SHARED–USE PATH CONNECTION, THE DETECTABLE WARNING SURFACE SHALL BE PLACED AT THE PAVEMENT EDGE.
6. WHEN THE GRADE BREAK BETWEEN THE CURB RAMP AND THE LANDING IS LESS THAN OR EQUAL TO 5 FT. FROM THE BACK OF THE CURB AT ALL POINTS, PLACE THE DETECTABLE WARNING SURFACE ON THE BOTTOM OF THE CURB RAMP DIRECTLY ABOVE THE GRADE BREAK.
7. FOR NEW CONCRETE CONSTRUCTION, DETECTABLE WARNING SURFACE MATERIAL SHALL BE "CAST–IN–PLACE" BY ARMOR–TILE, ADA SOLUTIONS, OR ALERTTILE APPLIED INTEGRAL TO THE CONCRETE POURING OF THE RAMP. FOR RETROFIT CONCRETE APPLICATIONS, DETECTABLE WARNING MATERIAL SHALL BE "SURFACE APPLIED" BY ARMOR–TILE, ADA SOLUTIONS, OR ALERTTILE. NO SUBSTITUTIONS WILL BE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER. DETECTABLE WARNINGS SHALL BE FEDERAL YELLOW. INSTALLATION SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS.

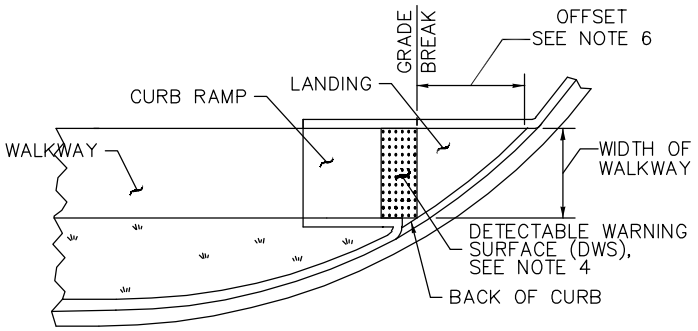


DETECTABLE WARNING SURFACE DETAIL

City of Bellevue

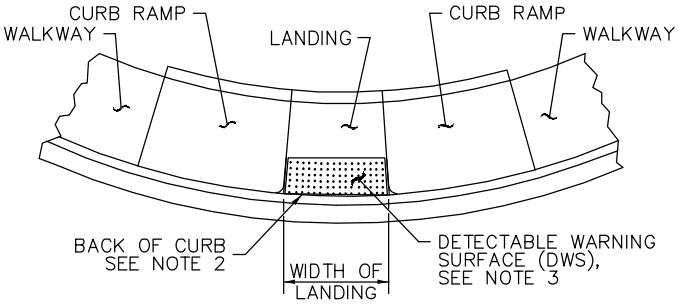
DETECTABLE WARNING SURFACE

DRAWING NUMBER	SW–250–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

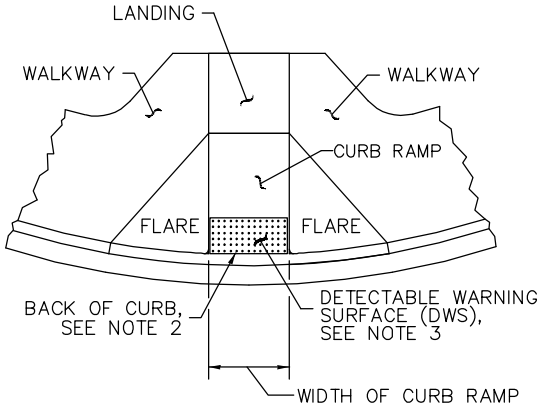


SINGLE DIRECTION CURB RAMP

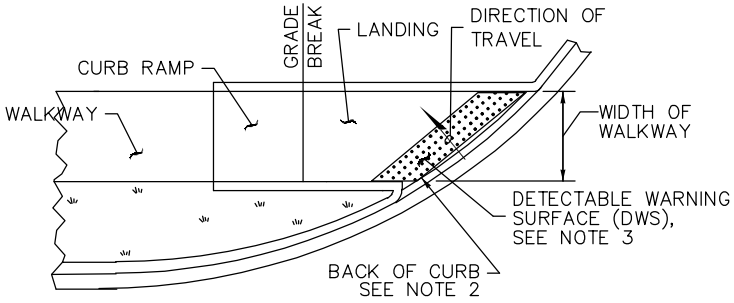
(GRADE BREAK BETWEEN CURB AND LANDING ≤ 5 FT. FROM BACK OF CURB)



PARALLEL CURB RAMP

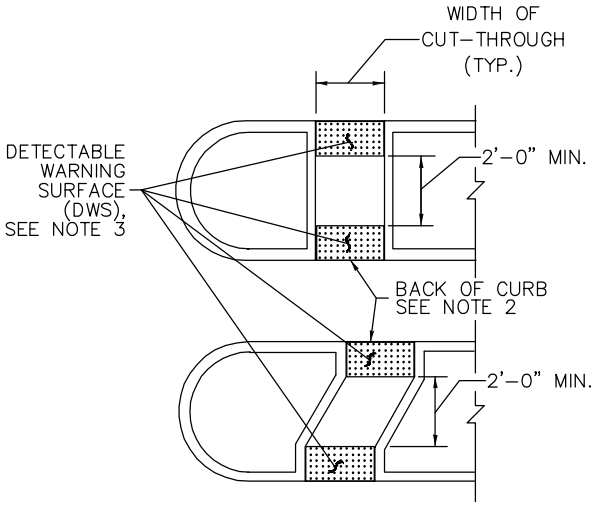


PERPENDICULAR CURB RAMP



SINGLE DIRECTION CURB RAMP

(GRADE BREAK BETWEEN CURB AND LANDING > 5 FT. FROM BACK OF CURB)



MEDIAN CUT-THROUGH

NOTES REFERENCED ARE LOCATED ON STD. DWG. SW-250-1

City of Bellevue

DETECTABLE WARNING SURFACE PLACEMENT

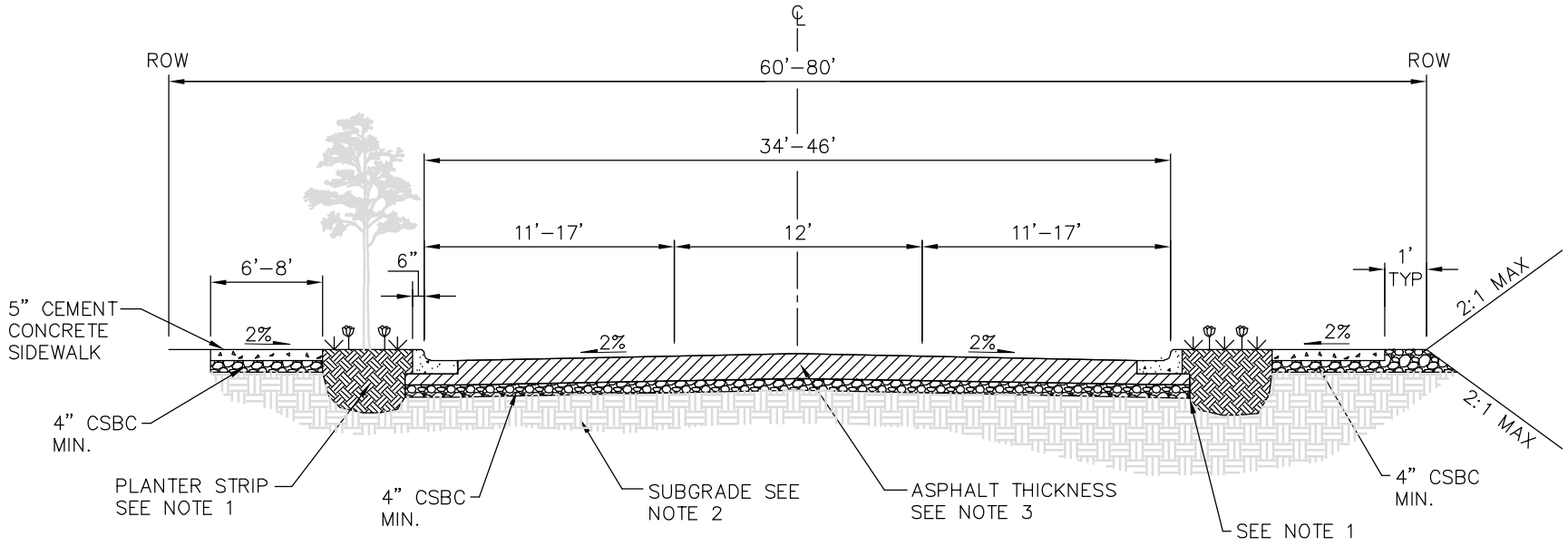
DRAWING NUMBER	SW-260-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

TRANSPORTATION DESIGN MANUAL

RC Drawings

Roadway Construction


CITY OF BELLEVUE
WASHINGTON



NOTES:

1. LANDSCAPED PLANTER STRIP REQUIREMENTS (WIDTH, LANDSCAPE TYPE, MAINTENANCE, ETC.) WILL BE SPECIFIED BY THE ENGINEER. SEE STD. DWG. RC–240–1 FOR ASPHALT DETAIL ADJACENT TO LANDSCAPE STRIP AND STD. DWG. SW–130–1 FOR SOIL PREPARATION.

2. REQUIRED SUBGRADE MATERIALS (GRAVEL BORROW, ETC.) AND THICKNESS WILL BE SPECIFIED BY THE ENGINEER. A GEOTECHNICAL REPORT/SOIL ANALYSIS MAY BE REQUIRED.

3. MINIMUM PAVEMENT THICKNESS SHALL BE 10 INCHES OF HOT MIX ASPHALT PLACED IN THE FOLLOWING COURSES TO CONFORM TO WSDOT STANDARD SPECIFICATION 5–04.3(9): 2 INCHES OF HOT MIX ASPHALT CLASS ½" PG 58H–22 WEARING COURSE, OVER TWO 4 INCH LIFTS OF HOT MIX ASPHALT CLASS ½" PG 58H–22. A GEOTECHNICAL REPORT/SOIL ANALYSIS MAY BE REQUIRED BY THE ENGINEER, AND ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED. PG 58V–22 MAY BE REQUIRED FOR HIGHER VOLUME ROADS.

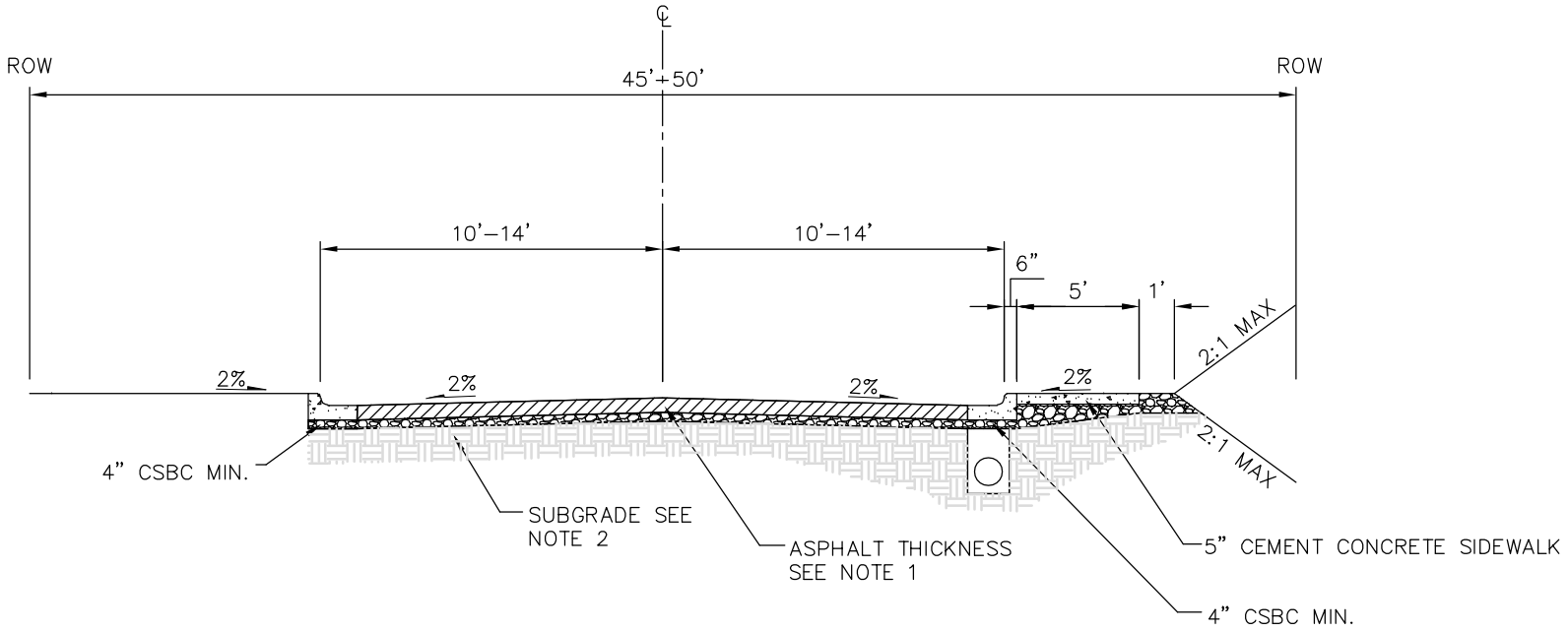
4. RIGHT–OF–WAY, SIDEWALK AND TRAVEL LANE WIDTHS SHOWN ARE TYPICAL RANGES. REQUIRED WIDTHS WILL BE SPECIFIED BY THE ENGINEER.

5. ONE FOOT SETBACK DISTANCE REQUIRED FROM ALL SLOPED AREAS AS SHOWN.

City of Bellevue

TYPICAL COLLECTOR / ARTERIAL STREET

DRAWING NUMBER	RC–100–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



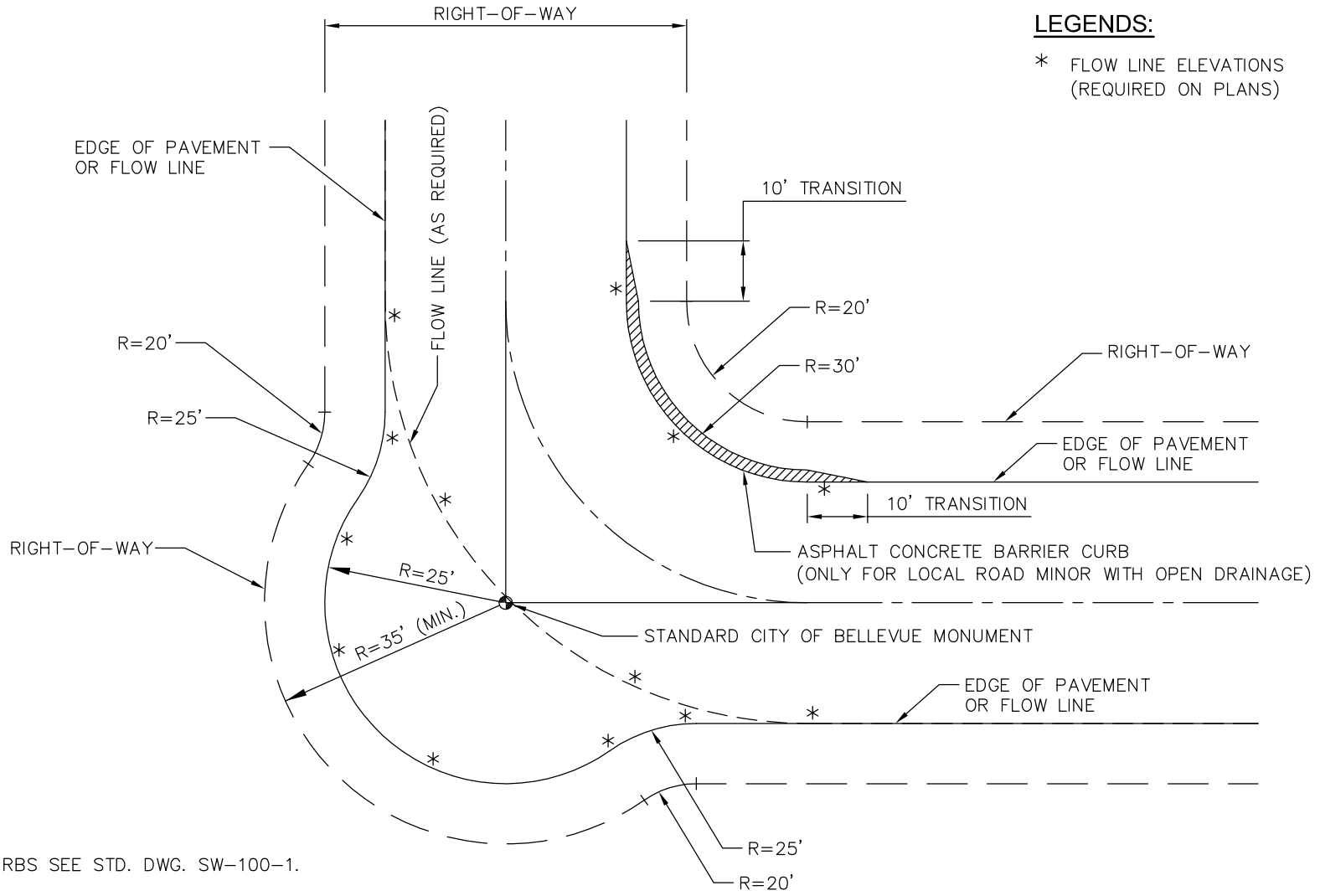
NOTES:

1. MINIMUM PAVEMENT THICKNESS SHALL BE 2 INCHES OF HOT MIX ASPHALT CLASS ½" PG 58H-22 OVER 4 INCHES OF HOT MIX ASPHALT CLASS ½" PG 58H-22. IF REQUIRED, ADDITIONAL PAVEMENT THICKNESS WILL BE SPECIFIED BY THE ENGINEER.
2. REQUIRED SUBGRADE MATERIALS (GRAVEL BORROW, ETC.) AND THICKNESS WILL BE SPECIFIED BY THE ENGINEER BASED ON VERIFIED SOIL CONDITIONS.
3. SIDEWALK AT DRIVEWAY/PRIVATE ROAD APPROACHES SHALL BE 6 INCHES THICK.
4. RIGHT-OF-WAY, PAVEMENT AND SIDEWALK WIDTHS SHOWN ARE TYPICAL RANGES. REQUIRED WIDTHS WILL BE SPECIFIED BY THE ENGINEER. SEE DESIGN STANDARD 3.
5. ONE FOOT SETBACK DISTANCE REQUIRED FROM ALL SLOPED AREAS AS SHOWN.
6. PLANTER STRIP MAY BE REQUIRED BETWEEN THE CURB AND SIDEWALK AT THE DISCRETION OF THE ENGINEER.

City of Bellevue

TYPICAL LOCAL STREET

DRAWING NUMBER	RC-110-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



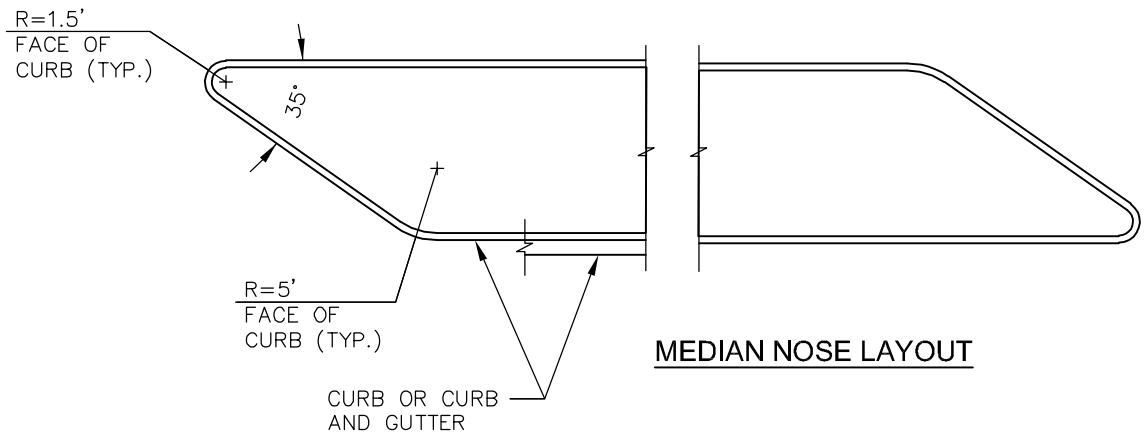
NOTES:

1. FOR CURBS SEE STD. DWG. SW–100–1.

City of Bellevue

RIGHT ANGLE "L" INTERSECTION

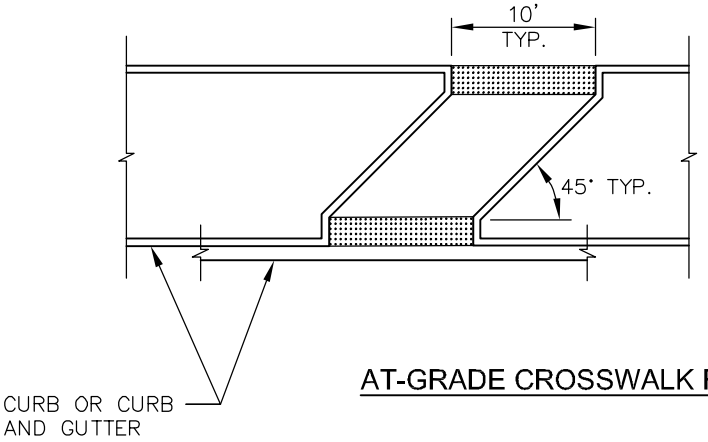
DRAWING NUMBER	RC–120–1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



MEDIAN NOSE LAYOUT

NOTES:

1. FOR TYPICAL CHANNELIZATION AT MEDIAN ISLAND, SEE STD. DWG. NO. CH-220-1.
2. IF MEDIAN IS LESS THAN 8' IN WIDTH, ANGLING OF CROSSWALK REFUGE MAY NOT BE REQUIRED, AS DETERMINED BY REVIEW ENGINEER.

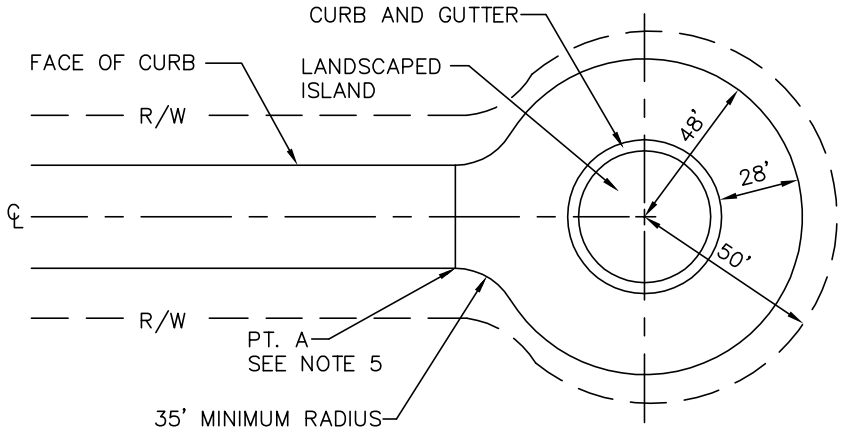


AT-GRADE CROSSWALK REFUGE

City of Bellevue

MEDIAN ISLAND DETAILS

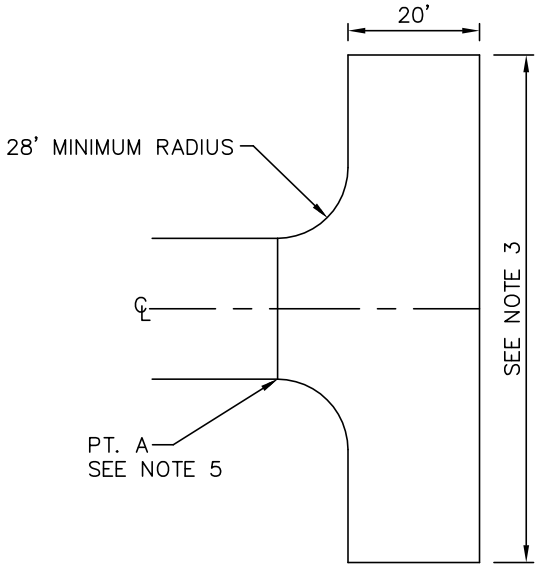
DRAWING NUMBER	RC-121-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



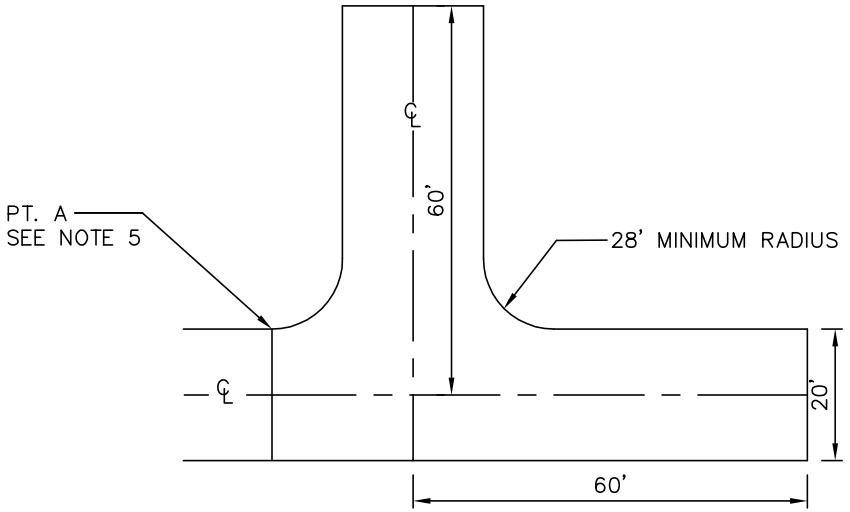
CIRCULAR TURNAROUND

NOTES:

1. LANDSCAPED ISLAND WITH VERTICAL CURB AT CENTER OF CIRCULAR TURNAROUND IS REQUIRED.
2. CIRCULAR TURNAROUNDS SHALL BE PLACED WITHIN A 50' MINIMUM RIGHT-OF-WAY RADIUS. SIDEWALKS AND UTILITIES MAY BE PLACED WITHIN A PUBLIC EASEMENT AT THE DISCRETION OF THE REVIEW ENGINEER.
3. HAMMERHEAD WIDTH MAY RANGE FROM 90' TO 120' DEPENDING UPON ROAD LENGTH. A WIDTH LESS THAN 120' IS ALLOWED ONLY IF ALL HOMES SERVED BY THE HAMMERHEAD ARE SPRINKLERED.
4. TURNAROUND FACILITIES CANNOT BE LOCATED ON DRIVEWAYS.
5. POINT A (LOCATED AT THE START OF RADIUS) REPRESENTS THE MEASURED END OF THE STREET/ROAD LENGTH AS REFERENCED IN 14.60.170 (STREET ENDS).
6. ALL STREET ENDS SHALL BE SIGNED PER THE MUTCD.
7. ALTERNATIVE STREET END DESIGNS MAY BE ALLOWED SUBJECT TO REVIEW AND APPROVAL OF THE ENGINEER AND THE FIRE MARSHALL.



HAMMERHEAD

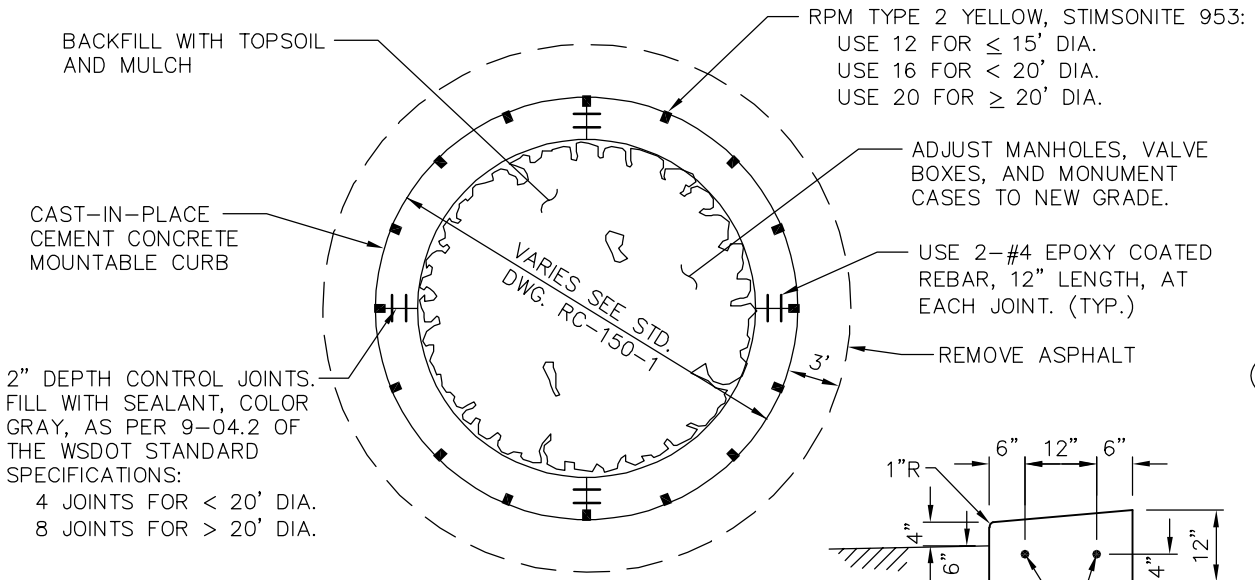


OFFSET HAMMERHEAD

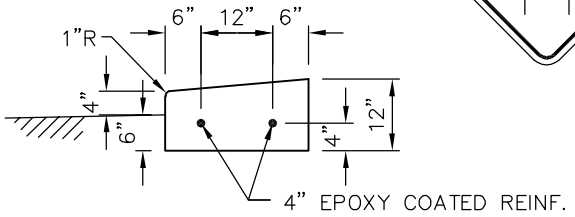
City of Bellevue

TURNAROUND FACILITIES

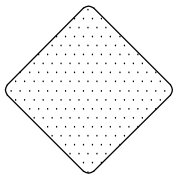
DRAWING NUMBER	RC-130-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



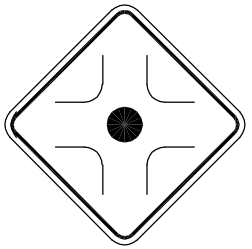
TYPICAL TRAFFIC CIRCLE



CURB DETAIL

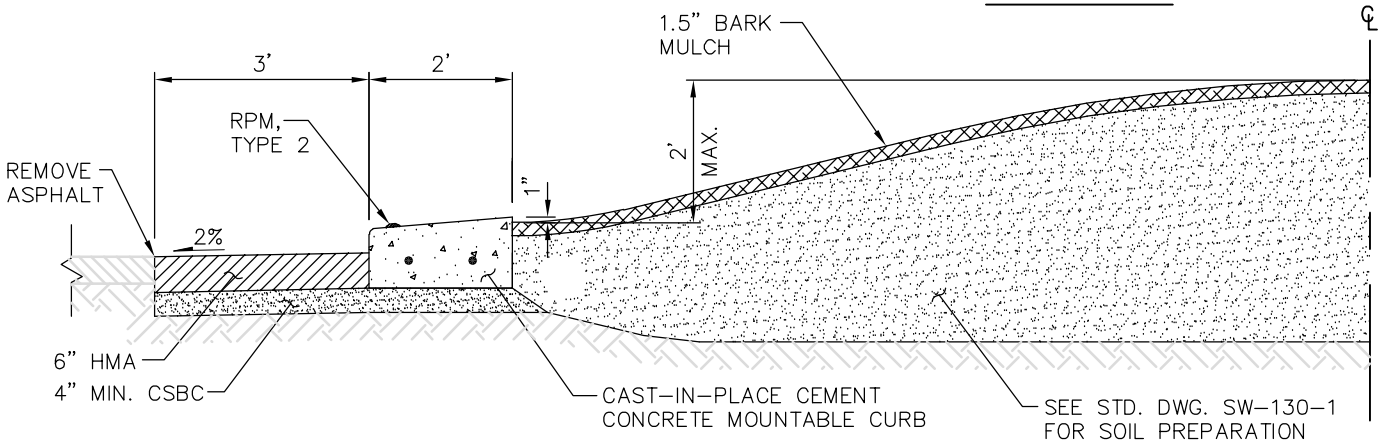


18" X 18" YELLOW HIGH INTENSITY TYPE 1 OBJECT MARKER PLACED IN TRAFFIC CIRCLE FOR EACH APPROACH. ALL SIGNS TO BE MOUNTED ON SINGLE POST. LOCATION TO BE DETERMINED BY ENGINEER. SIGN HEIGHT: 5' FROM BOTTOM OF LOWER SIGN TO BARK MULCH.



30" X 30" BLACK ON YELLOW PLACED 75' TO 100' BACK FROM TRAFFIC CIRCLE ON EACH APPROACH. SEE STD. DWG. SG-100-1 FOR POST TYPE AND INSTALLATION.

SIGNING



TYPICAL SECTION

NOTES:

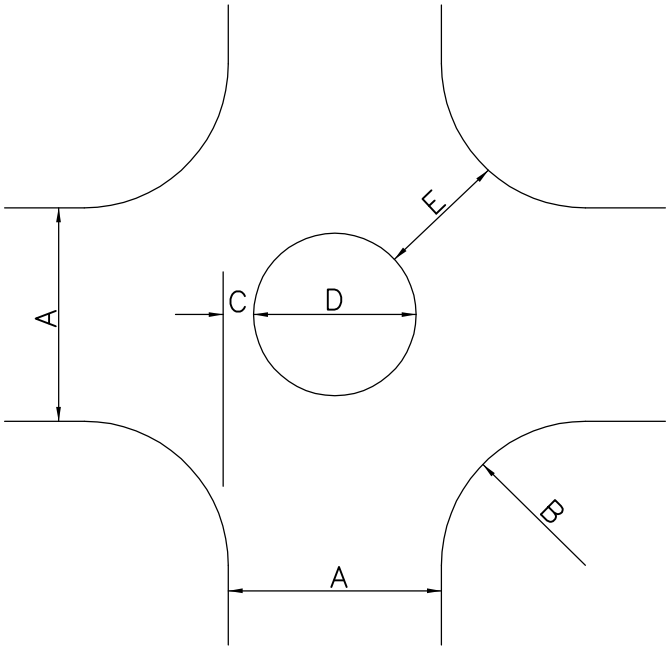
1. LANDSCAPING TO BE DETERMINED BY TRANSPORTATION/PARKS STAFF.
2. MONUMENT PROTECTION/PRESERVATION: NOTIFY C.O.B. SURVEYING PRIOR TO MONUMENT ADJUSTMENT. RAISE MONUMENT TO GRADE IN APPROPRIATE CASING.
3. CONCRETE SHALL BE AIR ENTRAINED CLASS 4000 PER SECTION 6-02 OF WSDOT STANDARD SPECIFICATIONS.

City of Bellevue

TRAFFIC CIRCLE DETAILS

DRAWING NUMBER	RC-140-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

GEOMETRY



DIMENSIONS

A STREET WIDTH	B CURB RETURN RADIUS	C OFFSET DISTANCE	D CIRCLE DIAMETER	E OPENING WIDTH
20'	<15'	RECONSTRUCT CURBS		
	15'	5.5'	9'	16'+
	18'	5.0'	10'	17'+
	20'	4.5'	11'	18'–
	25'	4.0'	12'	19'+
24'	<12'	RECONSTRUCT CURBS		
	12'	5.5'	13'	16'
	15'	5.0'	14'	17'–
	20'	4.5'	15'	18'+
	25'	3.5'	17'	20'–
25'	<12'	RECONSTRUCT CURBS		
	12'	5.5'	14'	16'+
	15'	5.0'	15'	17'–
	18'	4.5'	16'	18'–
	20'	4.5'	16'	18'+
	25'	3.5'	18'	20'–
30'	10'	5.5'	19'	16'+
	12'	5.0'	20'	17'–
	15'	5.0'	20'	17'+
	18'	4.5'	21'	18'+
	20'	4.0'	22'	19'+
	25'	3.0'	24'	20'
32'	10'	5.5'	21'	16'+
	12'	5.0'	22'	17'–
	15'	4.5'	23'	18'–
	18'	4.0'	24'	19'–
	20'	4.0'	24'	19'+
	25'	2.5'	27'	20'
36'	10'	5.0'	26'	17'–
	12'	5.0'	26'	17'+
	15'	4.5'	27'	18'+
	18'	4.0'	28'	19'+
	20'	3.5'	29'	20'–
	25'	1.5'	33'	20'
40'	10'	5.0'	30'	17'+
	12'	4.5'	31'	18'+
	15'	4.0'	32'	19'–
	18'	3.5'	33'	20'–
	20'	3.0'	34'	20'
	25'	1.0'	38'	20'

NOTES:

1. USE DIMENSION SCHEDULE AS A DESIGN GUIDE. FINAL DIMENSIONS TO BE DETERMINED BY THE ENGINEER.
2. FOR PLANTER ISLAND SPECIFICATIONS SEE TRAFFIC CIRCLE DETAIL RC–140–1.

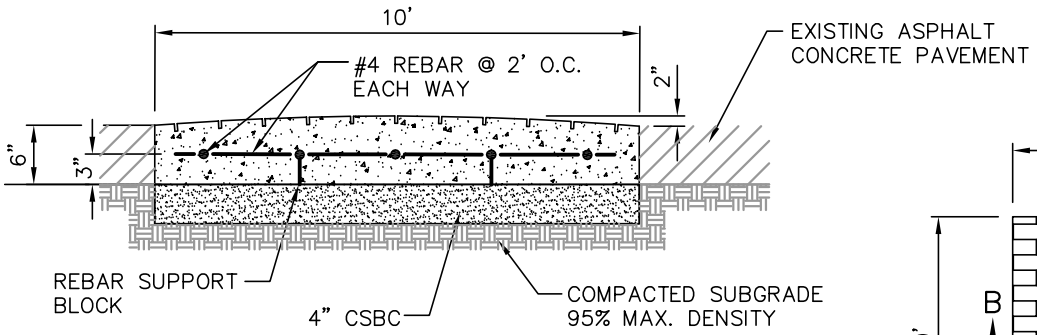
OPTIMUM CRITERIA

OFFSET DISTANCE (C)	OPENING WIDTH (E)
5.5' MAX.	16' MIN.
5.0'	17' ±
4.5'	18' ±
4.0'	19' ±
3.5' OR LESS	20' ±

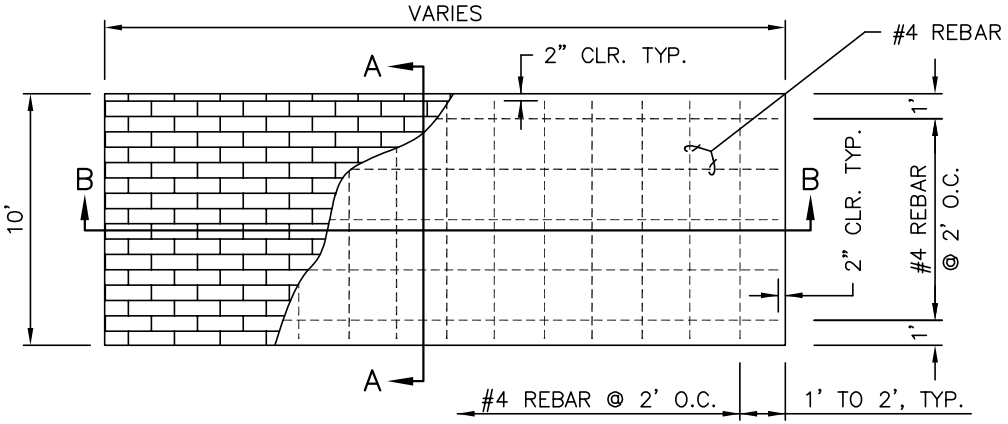
City of Bellevue

TRAFFIC CIRCLE DIMENSIONS

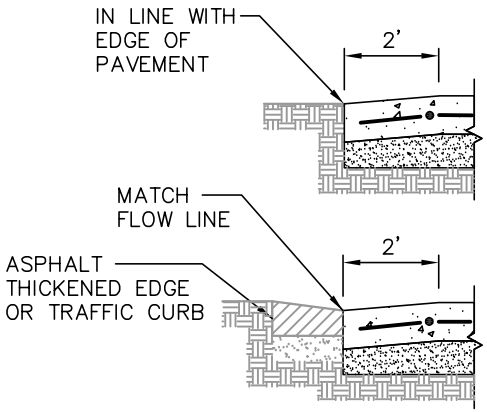
DRAWING NUMBER	RC–150–1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS

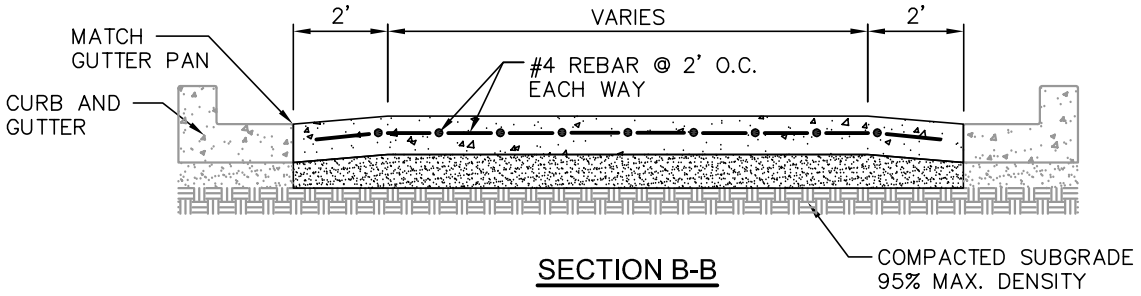


SECTION A-A



PLAN





SECTION B-B

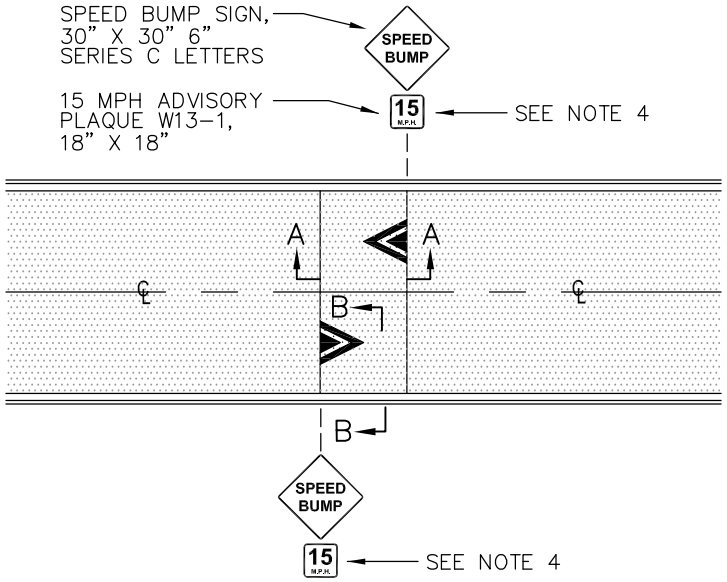
NOTES:

1. MATERIAL SHALL BE PATTERNED, COLORED CONCRETE WITH COLOR INTEGRAL TO THE CONCRETE.
2. COLOR AND PATTERN TO BE AS SPECIFIED ON THE PLANS.

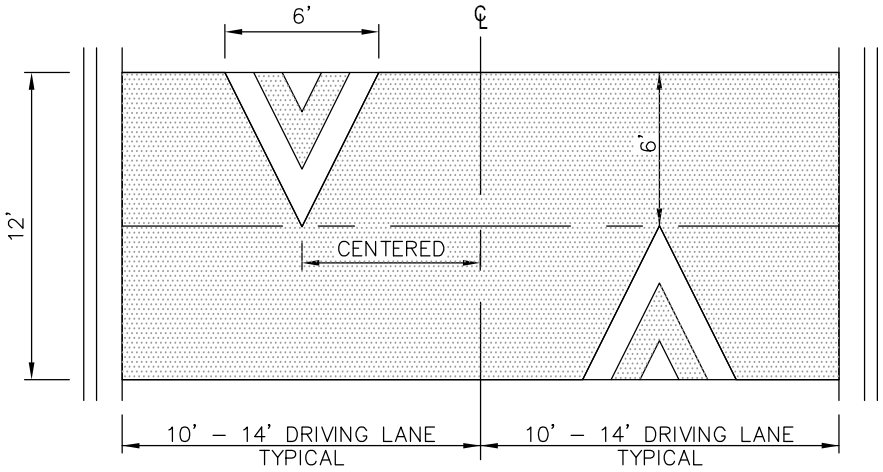
City of Bellevue

PATTERNED CONCRETE ENTRY TREATMENT

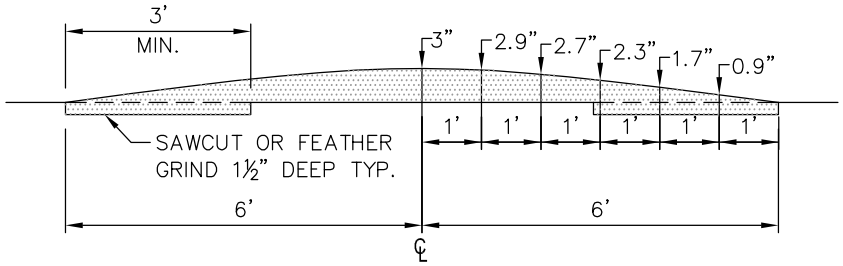
DRAWING NUMBER	RC-160-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



SPEED HUMP MARKING AND SIGNING



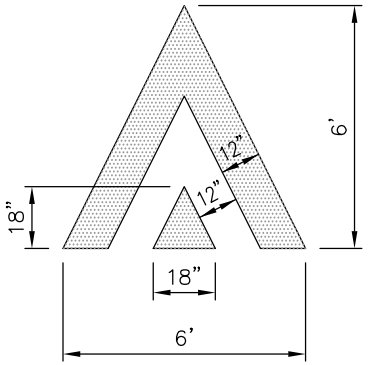
MARKING DETAIL



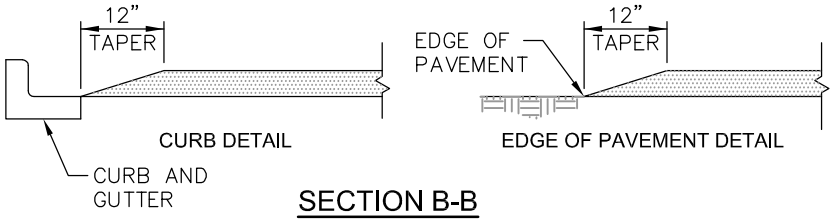
SECTION A-A

NOTES:

1. SAWCUT OR FEATHER GRIND TO KEY IN SPEED HUMP. SEE SECTION A–A.
2. SIGN LOCATIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. SPEED HUMP CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
4. FOR A SERIES OF SPEED HUMPS IN CLOSE PROXIMITY, THE ADVISORY SPEED PLAQUE MAY BE ELIMINATED ON ALL BUT THE FIRST SPEED BUMP SIGN IN THE SERIES FOR EACH DIRECTION OF TRAVEL.
5. SPEED HUMP SHALL BE CONSTRUCTED ON TOP OF NEW OR EXISTING WEARING COURSE USING CITY PROVIDED TEMPLATE, 48 HOURS NOTICE REQUIRED.



CHEVRON DETAIL

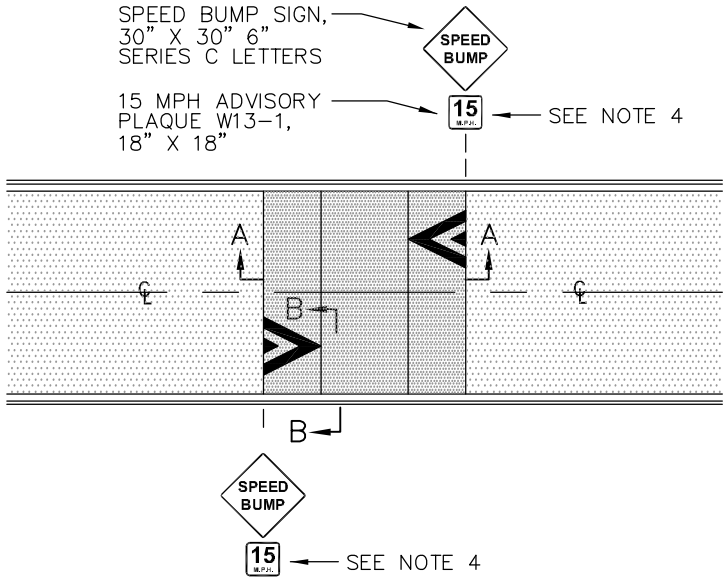


SECTION B-B

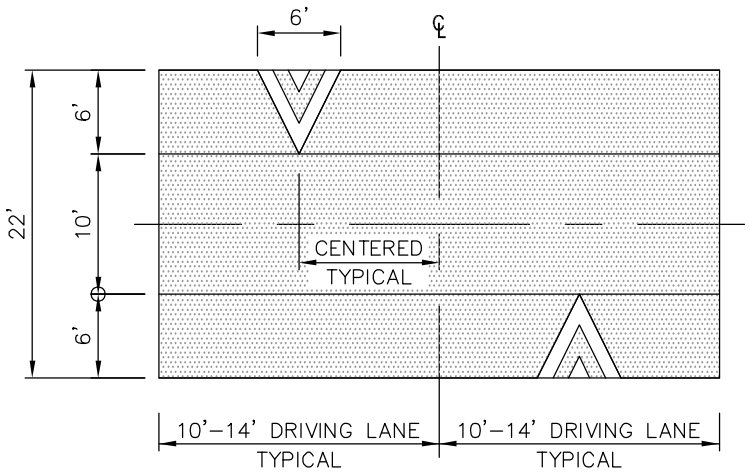
City of Bellevue

SPEED HUMP

DRAWING NUMBER	RC–170–1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



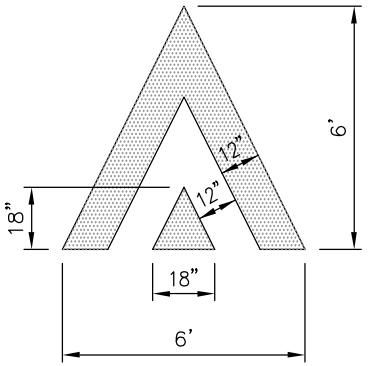
SPEED HUMP MARKING AND SIGNING



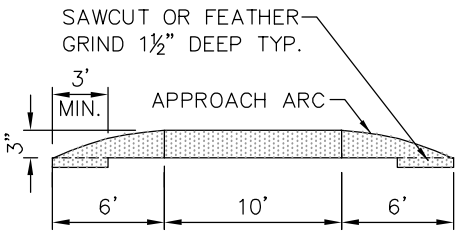
MARKING DETAIL

NOTES:

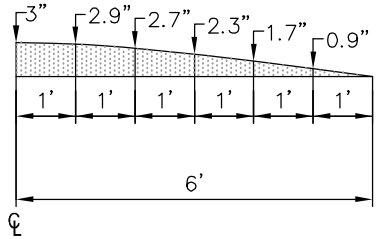
1. SAWCUT OR FEATHER GRIND TO KEY IN SPEED HUMP. SEE SECTION A-A.
2. SIGN LOCATIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. SPEED HUMP CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
4. FOR A SERIES OF SPEED HUMPS IN CLOSE PROXIMITY, THE ADVISORY SPEED PLAQUE MAY BE ELIMINATED ON ALL BUT THE FIRST SPEED BUMP SIGN IN THE SERIES FOR EACH DIRECTION OF TRAVEL.
5. SPEED HUMP SHALL BE CONSTRUCTED ON TOP OF NEW OR EXISTING WEARING COURSE USING CITY PROVIDED TEMPLATE, 48 HOURS NOTICE REQUIRED.



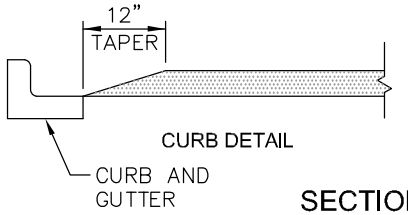
CHEVRON DETAIL



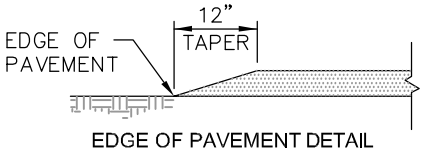
SECTION A-A



APPROACH ARC DETAIL



CURB DETAIL



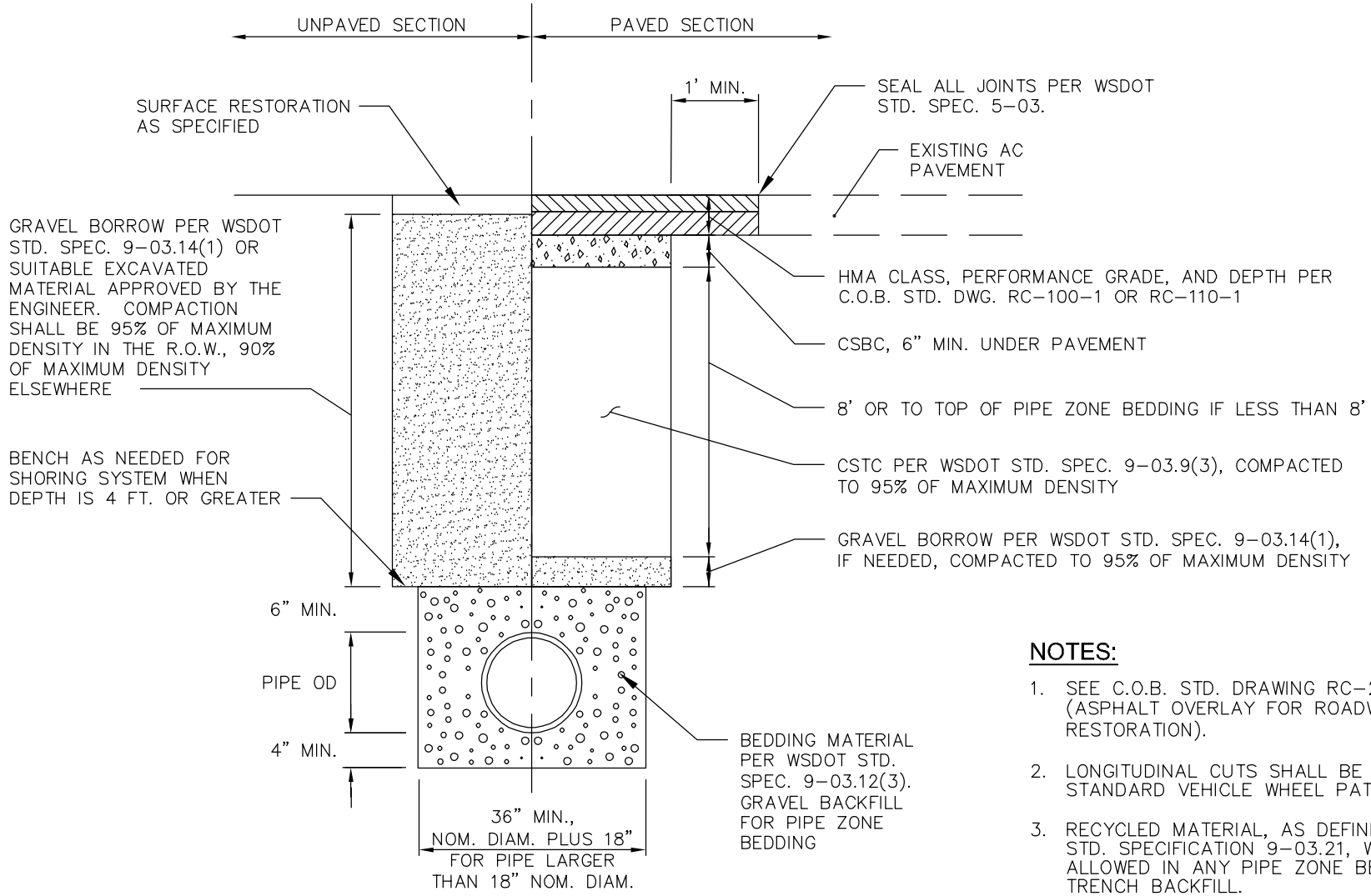
EDGE OF PAVEMENT DETAIL

SECTION B-B

City of Bellevue

ELONGATED SPEED HUMP

DRAWING NUMBER	RC-180-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



CROSS SECTION
NTS

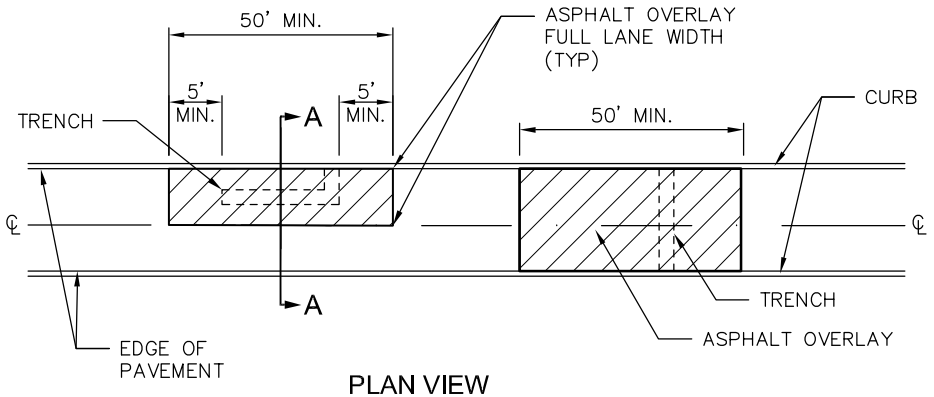
NOTES:

1. SEE C.O.B. STD. DRAWING RC-200-1 (ASPHALT OVERLAY FOR ROADWAY TRENCH RESTORATION).
2. LONGITUDINAL CUTS SHALL BE OUTSIDE STANDARD VEHICLE WHEEL PATH.
3. RECYCLED MATERIAL, AS DEFINED BY WSDOT STD. SPECIFICATION 9-03.21, WILL NOT BE ALLOWED IN ANY PIPE ZONE BEDDING OR TRENCH BACKFILL.

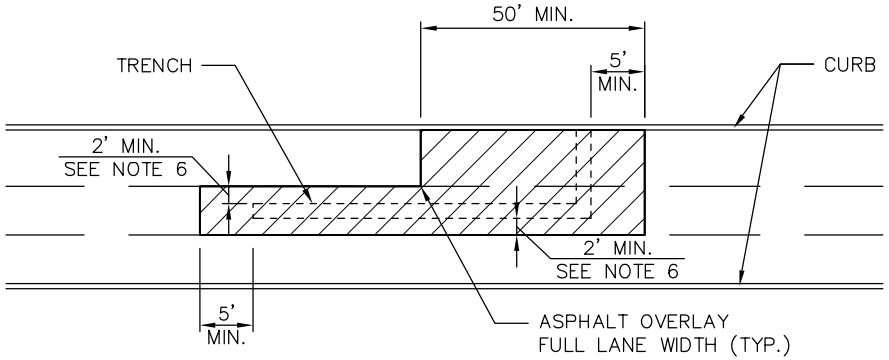
City of Bellevue

TYPICAL TRENCH IN RIGHT-OF-WAY

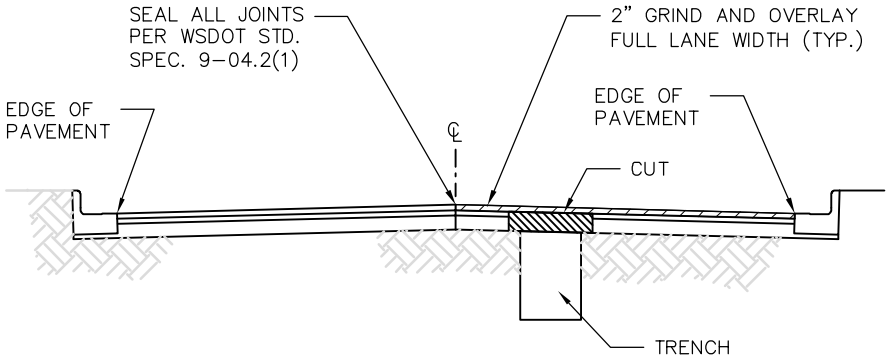
DRAWING NUMBER	RC-190-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



PLAN VIEW
NTS



PLAN VIEW
NTS



A-A
NTS

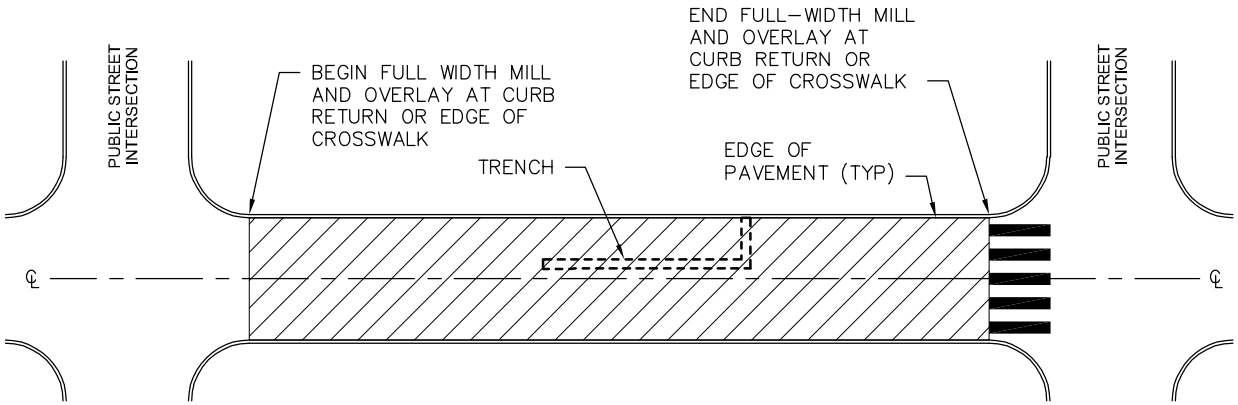
NOTES:

1. THIS STANDARD APPLIES TO ALL CUTS IN ROADWAY DESIGNATED ON THE CURRENT TRENCH RESTORATION MAP.
2. GRIND/OVERLAY WITHIN SIGNAL LOOP DETECTION ZONE MAY BE EXTENDED TO INCLUDE ADDITIONAL LANES AND/OR DETECTORS
3. OVERLAY AREA MAY BE EXTENDED AT THE DISCRETION OF THE TRANSPORTATION ENGINEER TO ENCOMPASS ADJACENT STREET CUTS OR PREVIOUS RESTORATIONS.
4. ADJUST ALL UTILITY CASTINGS TO FINISHED GRADE AFTER OVERLAY AND RESTORE CHANNELIZATION AND LOOP DETECTION.
5. WHERE NO MARKED LANE LINE EXISTS, GRIND SHALL EXTEND TO CENTERLINE OF TRAVELED WAY OR PHYSICAL CROWN OF ROADWAY.
6. IF EDGE OF TRENCH IS LESS THAN 2-FT FROM LANE LINE, OVERLAY SHALL INCLUDE FULL WIDTH OF ADJACENT LANE.

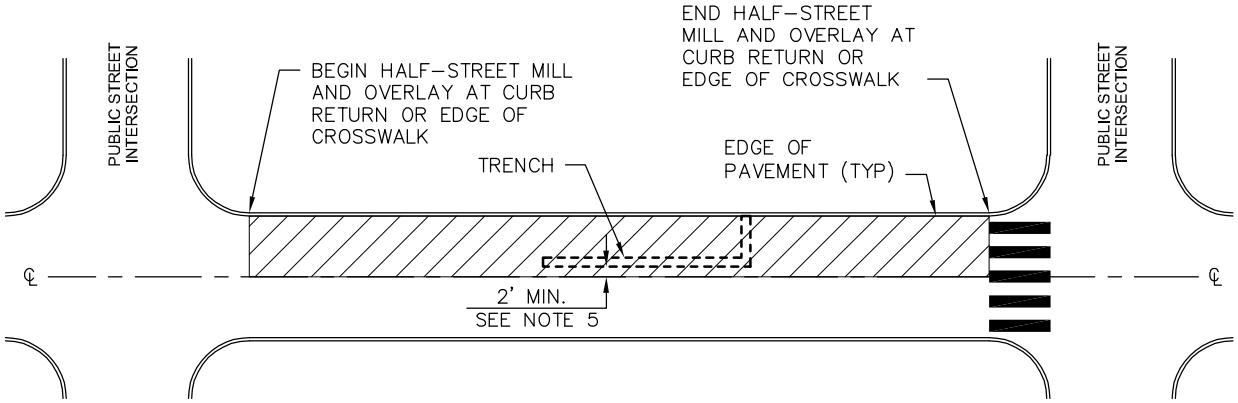
City of Bellevue

ASPHALT OVERLAY FOR ROADWAY TRENCH RESTORATION

DRAWING NUMBER	RC-200-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



RESTORATION LIMITS (0-2 YEARS FOLLOWING PAVEMENT OVERLAY OR NEW STREET CONSTRUCTION)
NTS



RESTORATION LIMITS (2-5 YEARS FOLLOWING PAVEMENT OVERLAY OR NEW STREET CONSTRUCTION)
NTS

NOTES:

1. A FIVE-YEAR MORATORIUM ON PAVEMENT TRENCHING IS EFFECTIVE UPON COMPLETION OF NEW STREET CONSTRUCTION AND UPON PAVEMENT OVERLAY OF AN EXISTING STREET. SEE BELLEVUE CITY CODE 14.60.250.
2. THIS STANDARD APPLIES TO ALL CUTS IN PAVEMENT DESIGNATED "NO CUT" ON THE CURRENT TRENCH RESTORATION MAP.
3. MILL AND OVERLAY DEPTH SHALL BE 2.0 INCHES UNLESS OTHERWISE SPECIFIED BY THE CITY OF BELLEVUE.
4. ALL UTILITY CASTINGS SHALL BE ADJUSTED TO FINISHED GRADE AFTER OVERLAY AND CHANNELIZATION AND TRAFFIC SIGNAL INDUCTION LOOPS SHALL BE RESTORED.
5. IF EDGE OF TRENCH IS LESS THAN 2 FEET FROM THE ROADWAY CENTERLINE OR CROWN, A FULL WIDTH OVERLAY WILL BE REQUIRED.

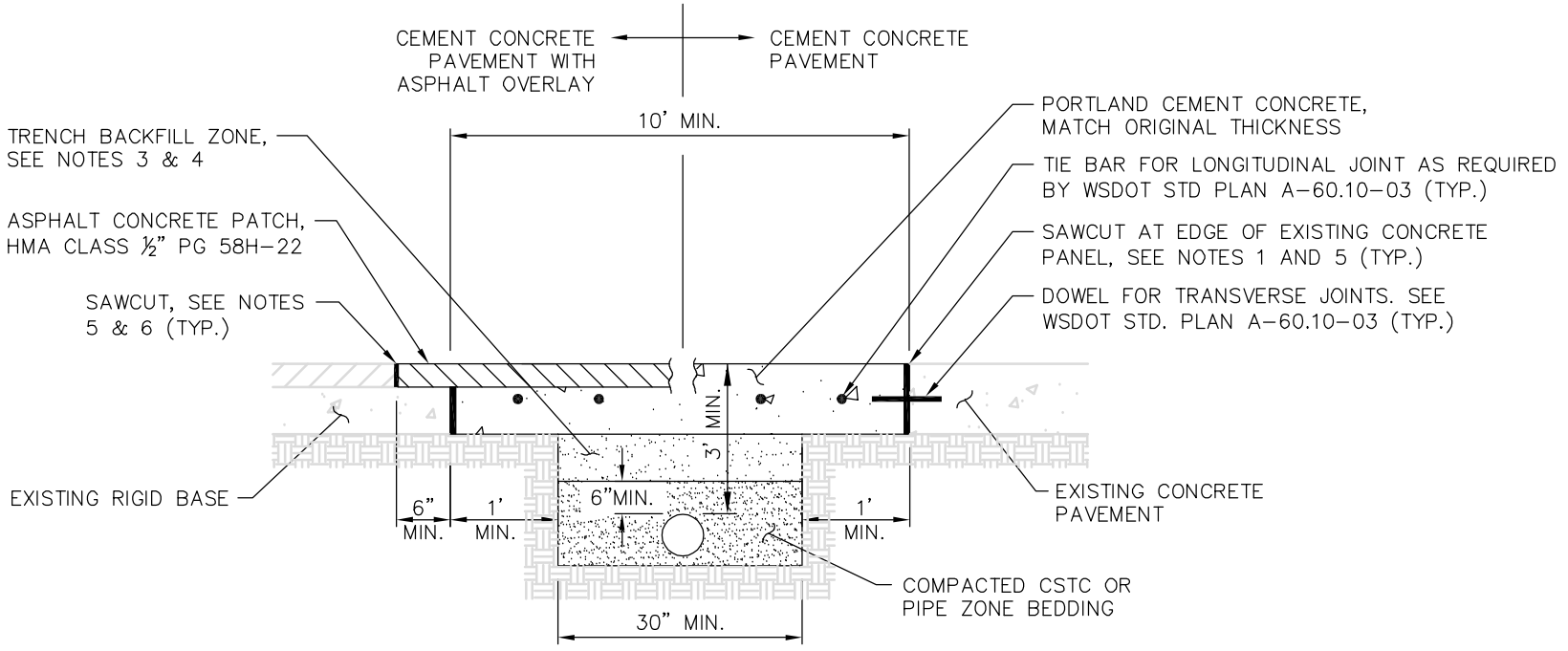
City of Bellevue

ASPHALT OVERLAY FOR TRENCH RESTORATION ON 'NO CUT' ROADWAYS

DRAWING NUMBER	RC-201-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

NOTES:

1. CEMENT CONCRETE PANEL REPLACEMENT SHALL BE FULL PANEL REPLACEMENT AS PER WSDOT STD. PLAN A–60.10–03 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. FOR CONCRETE ROADWAY WITH EXISTING ASPHALT OVERLAY, REPLACEMENT OVERLAY SHALL BE ½ INCH HMA PG 58H–22 AND MATCH EXISTING THICKNESS. GRIND/OVERLAY LIMITS OF ASPHALT SHALL BE DETERMINED BY THE ENGINEER.
3. ALL TRENCH BACKFILL SHALL BE CSTC OR CONTROLLED DENSITY FILL.
4. CONTROL DENSITY FILL SHALL MEET WSDOT STD. SPEC. 2–09.3(1)E.
5. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES.
6. SEAL ALL JOINTS PER WSDOT STD. SPEC. 9–04.2(1).
7. RECYCLED MATERIAL, AS DEFINED BY WSDOT STD. SPECIFICATION 9–03.21, WILL NOT BE ALLOWED IN ANY PIPE ZONE BEDDING OR TRENCH BACKFILL..

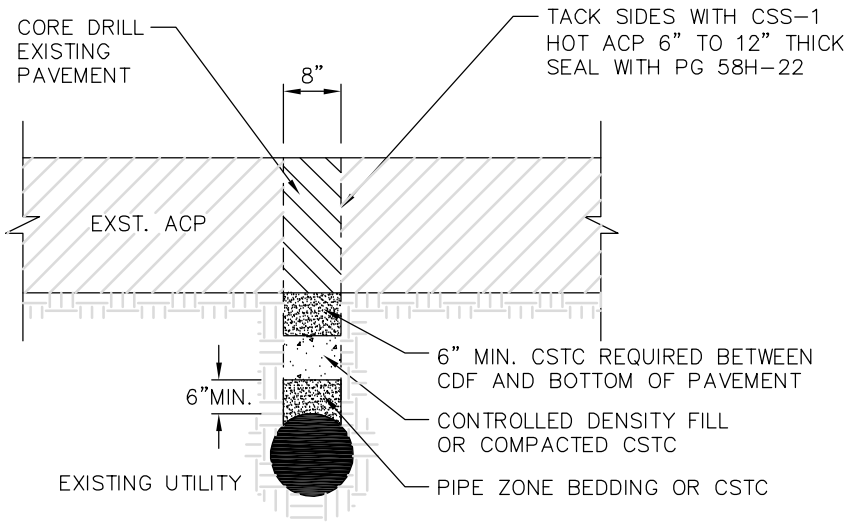


SECTION

City of Bellevue

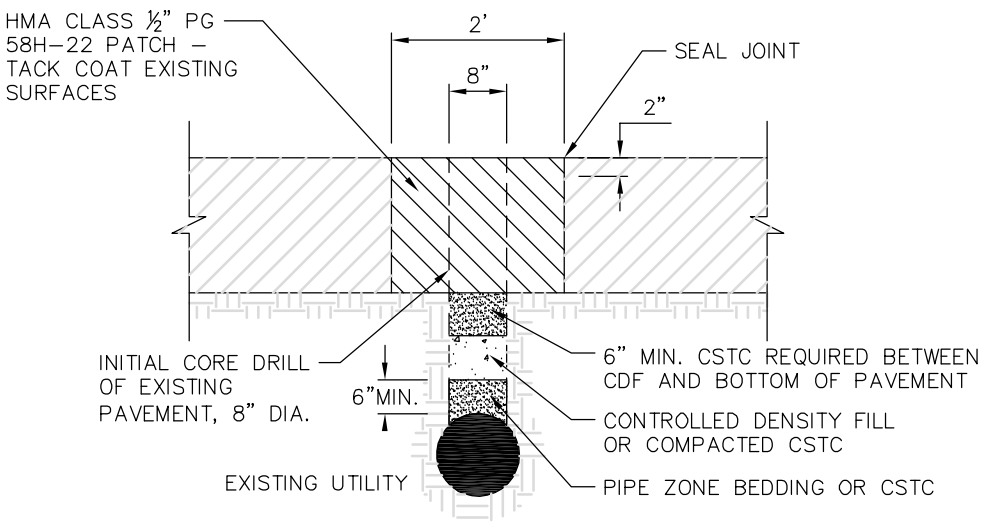
RIGID PAVEMENT PATCHING AND RESTORATION DETAILS

DRAWING NUMBER	RC–210–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



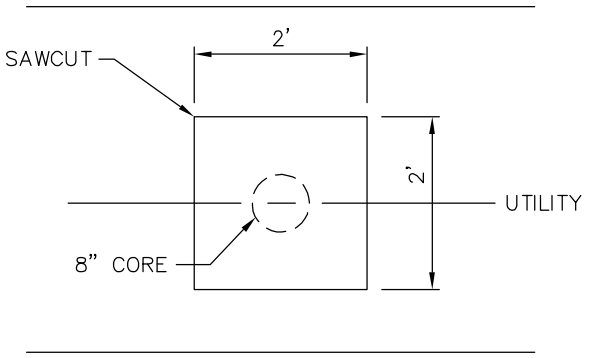
ALTERNATE REPAIR

WHEN REQUIRED BY ENGINEER



NOTES:

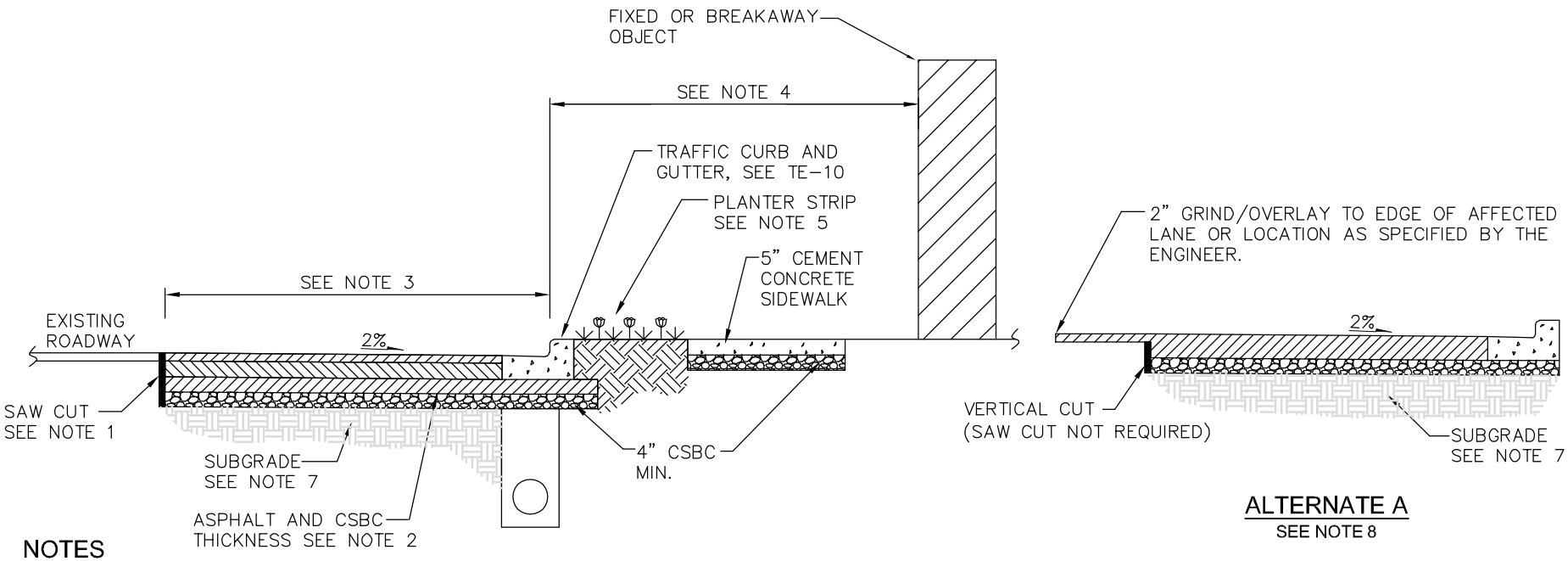
1. TO BE USED FOR NO-CUT AND GRIND & OVERLAY STREET RESTORATION CLASSIFICATIONS
2. THE EXISTING PAVEMENT SHALL BE CUT FULL DEPTH WITH AN EIGHT INCH DIAMETER CORE DRILL. THE SUBBASE MATERIAL SHALL BE REMOVED USING A VACUUM EXCAVATOR, KEEPING THE EXCAVATION AS MINIMAL AS POSSIBLE.
3. BACKFILL THE EXCAVATION WITH A SIX INCH CUSHION OF PIPE ZONE BEDDING OR CSTC OVER THE UTILITY THEN PLACE THE REMAINING VOID WITH CDF OR COMPACTED CSTC, WITH 6" MIN. CSTC BETWEEN CDF AND BOTTOM OF PAVEMENT.
4. REPAIR THE CORED PAVEMENT SECTION WITH HMA CLASS ½" PG 58H-22 AND SEAL THE JOINT.
5. IF THE EXCAVATION BELOW THE ASPHALT PAVEMENT IS LARGER THAN THE 8 INCH CORE, THE PAVEMENT RESTORATION WILL INCLUDE A 2' BY 2' TEE PATCH FULL DEPTH OF THE ASPHALT CENTERED ON THE EXCAVATION, AS SHOWN ABOVE AS ALTERNATE REPAIR.
6. IF THE EXCAVATION IS LARGER THAN 2' BY 2', THE STANDARD GRIND AND OVERLAY RESTORATION SHALL BE USED.
7. RECYCLED MATERIAL, AS DEFINED BY WSDOT STD. SPECIFICATION 9-03.21, WILL NOT BE ALLOWED IN ANY PIPE ZONE BEDDING OR TRENCH BACKFILL.
8. TWO OR MORE WINDOW CUTS WITHIN 50' OF EACH OTHER IN A LANE OF TRAVEL WILL REQUIRE GRIND/OVERLAY RESTORATION.



City of Bellevue

PAVEMENT RESTORATION FOR WINDOW CUTS

DRAWING NUMBER	RC-220-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



ALTERNATE A
SEE NOTE 8

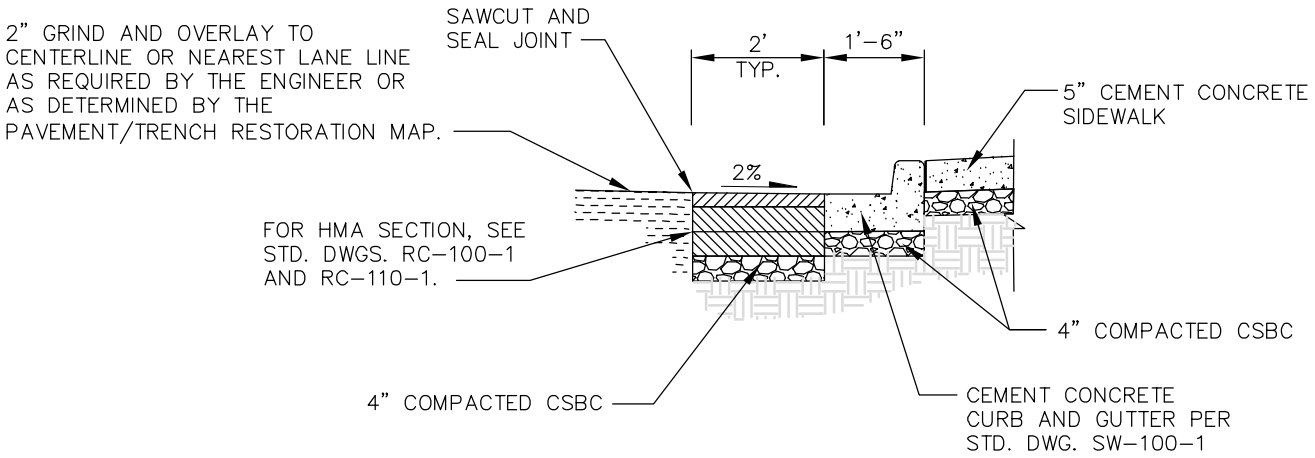
NOTES

1. SAW CUT TO REMOVE IRREGULARITIES. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY THE ENGINEER. SEAL ALL SAW CUTS WITH CSS-1. TACK FACES OF ALL SAW CUTS.
2. PAVEMENT AND CSBC THICKNESS WILL BE SPECIFIED BY THE REVIEW ENGINEER. SEE STD. DWGS. RC-100-1 AND RC-110-1 FOR MINIMUM THICKNESS REQUIREMENTS. A GEOTECHNICAL REPORT/SOIL ANALYSIS MAY BE REQUIRED.
3. PAVEMENT WIDENING TO FACILITATE STREET FRONTAGE IMPROVEMENTS MAY BE REQUIRED. REQUIRED WIDTH WILL BE SPECIFIED BY THE ENGINEER.
4. SEE DEVELOPMENT STANDARDS 15 AND 16 FOR REQUIRED CLEARANCE BETWEEN FIXED AND BREAKAWAY OBJECTS AND THE FACE OF CURB.
5. LANDSCAPED PLANTER STRIP REQUIREMENTS (WIDTH, LANDSCAPE TYPE, MAINTENANCE. ETC.) WILL BE SPECIFIED BY THE ENGINEER. SEE STD. DWG. RC-240-1 FOR ALTERNATE ASPHALT DETAIL ADJACENT TO PLANTER STRIP. SEE STD. DWG. SW-130-1 FOR SOIL PREPARATION.
6. NO UTILITIES SHALL BE LOCATED BELOW THE SIDEWALK (UNLESS NO OTHER ALTERNATIVE EXISTS).
7. REQUIRED SUBGRADE MATERIALS AND THICKNESS WILL BE SPECIFIED BY THE ENGINEER. AT A MINIMUM, SUBGRADE SHOULD MATCH SUBGRADE OF EXISTING ROADWAY.
8. AT THE DISCRETION OF THE ENGINEER, ALTERNATE "A" WILL BE ALLOWED OR MAY BE REQUIRED. ALTERNATE "A" MODIFIES STREET CUT METHOD ONLY. NO CHANGES IN MATERIALS OR PAVEMENT AND SUBGRADE THICKNESS ARE ALLOWED WITH THE USE OF ALTERNATE "A".

City of Bellevue

COMMERCIAL PROJECT SITE-STREET FRONTAGE IMPROVEMENTS

DRAWING NUMBER	RC-230-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

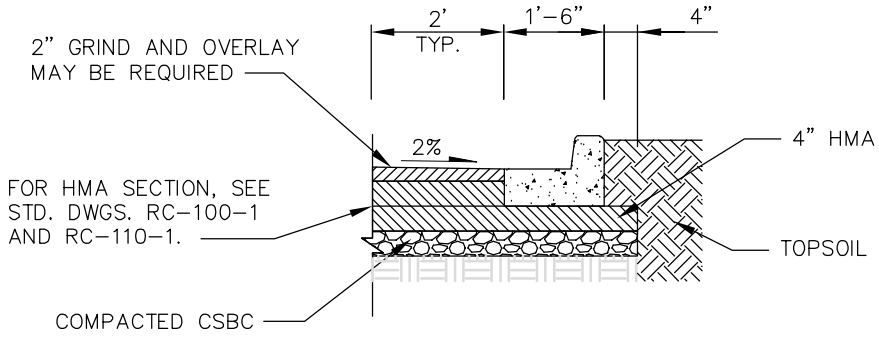


TYPICAL ASPHALT PAVEMENT DETAIL AT CURB/GUTTER INSTALLATION

NTS

NOTES:

1. TOP COURSE OF ASPHALT SHALL BE COMPACTED BY ROLLER ONLY. PLATE COMPACTION IS NOT ALLOWED FOR TOP COURSE.
2. WIDTH OF SAWCUT FROM GUTTER LINE OR CURB FACE MAY BE INCREASED AT THE DISCRETION OF THE ENGINEER. DECREASE IN WIDTH SHALL BE APPROVED IN ADVANCE BY THE REVIEW ENGINEER.
3. ALTERNATE DETAIL IS REQUIRED ADJACENT TO NDP FEATURE, AND IS RECOMMENDED AND MAY BE REQUIRED ADJACENT TO LANDSCAPE STRIP AS DETERMINED BY THE REVIEW ENGINEER.



ALTERNATE ASPHALT PAVEMENT DETAIL FOR CURB/GUTTER ADJACENT TO LANDSCAPE STRIP OR NDP FEATURE

NTS

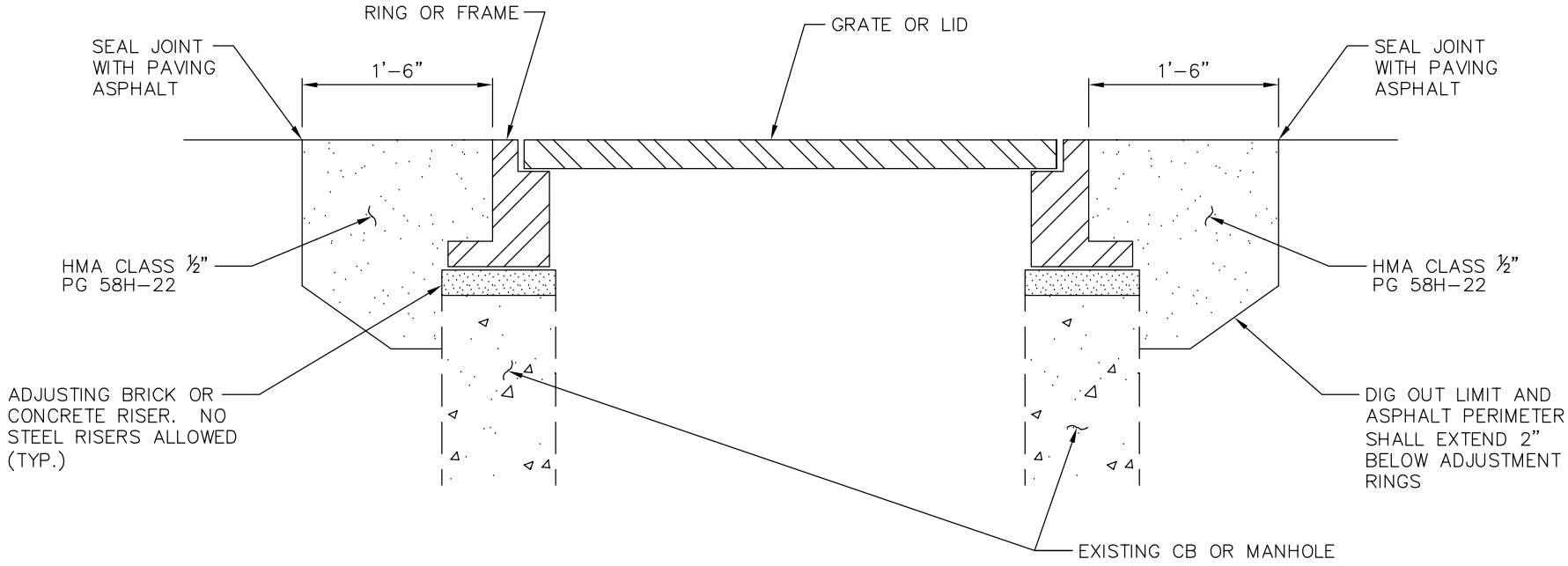
City of Bellevue

TYPICAL ASPHALT PAVEMENT DETAILS AT CURB AND GUTTER INSTALLATION

DRAWING NUMBER	RC-240-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

UTILITY MANHOLE AND VAULT ADJUSTMENT

THE EXISTING IRON FRAME AND COVER OR GRATE SHALL BE REMOVED AND THOROUGHLY CLEANED FOR REINSTALLATION TO THE NEW ELEVATION. THE EXISTING STRUCTURE SHALL BE RAISED OR LOWERED TO THE REQUIRED ELEVATION USING CONCRETE BLOCKS, BRICK, AND/OR CONCRETE RINGS. EACH JOINT SHALL BE GROUTED USING A ¾ INCH LAYER OF NON-SHRINK MORTAR, PLASTERED SMOOTH INSIDE AND OUT. COVERS SHALL BE SEATED ON A UNIFORM LAYER OF GROUT TO PREVENT ROCKING.

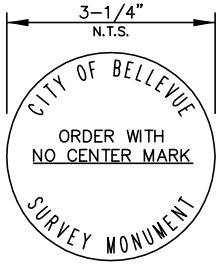


UTILITY ADJUSTMENT DETAIL
NTS

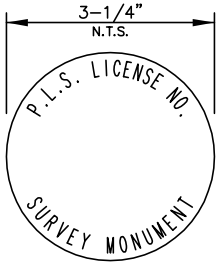
City of Bellevue

UTILITY ADJUSTMENT DETAIL

DRAWING NUMBER	RC-250-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



CAP DETAIL A
CAP LAYOUT FOR
COB CAPITAL PROJECTS

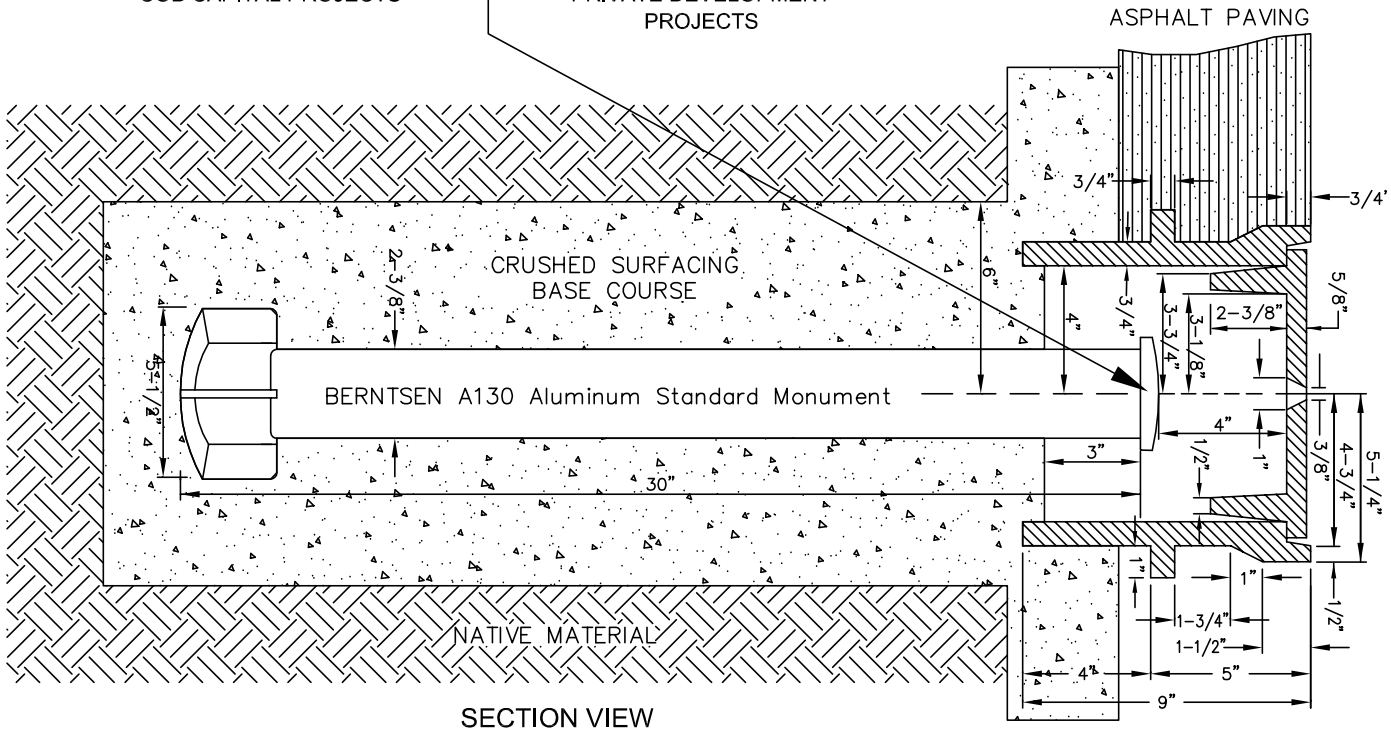


CAP DETAIL B
CAP LAYOUT FOR
PRIVATE DEVELOPMENT
PROJECTS

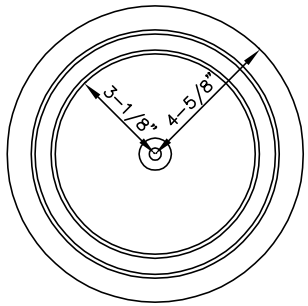
NOTES:

1. THE CASTING MATERIAL SHALL CONFORM TO ASTM–A48, CLASS 30. THE COVER AND SEAT SHALL BE MACHINED SO AS TO HAVE PERFECT CONTACT AROUND THE ENTIRE CIRCUMFERENCE AND FULL WIDTH OF BEARING SURFACE.

APPROXIMATE WEIGHTS STANDARD	
CASE	60 LBS
COVER	20 LBS
TOTAL	80 LBS



SECTION VIEW
MONUMENT & CASE

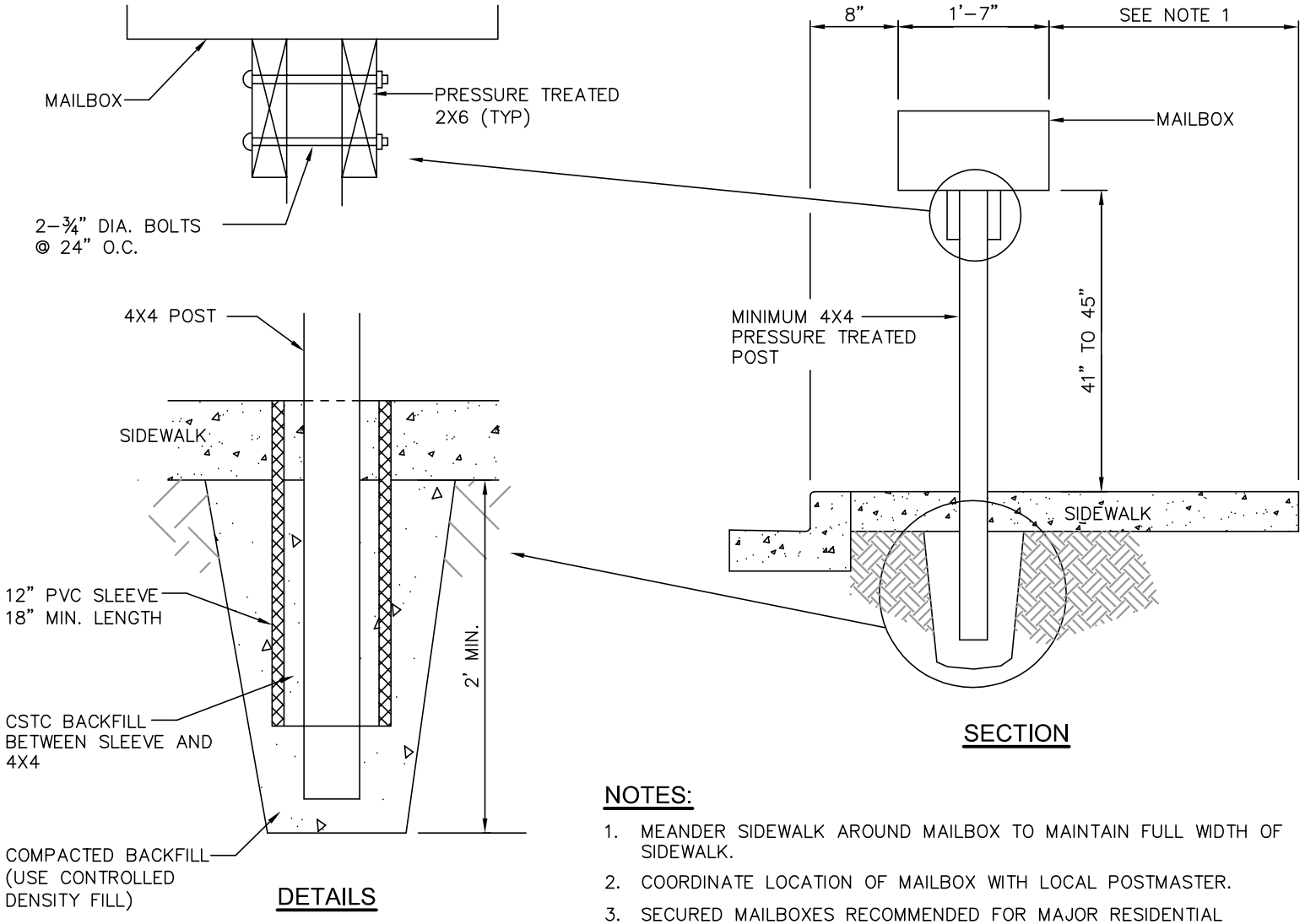


PLAN VIEW
COVER

City of Bellevue

PIPE MONUMENT, CASE AND COVER

DRAWING NUMBER	RC–260–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



NOTES:

1. MEANDER SIDEWALK AROUND MAILBOX TO MAINTAIN FULL WIDTH OF SIDEWALK.
2. COORDINATE LOCATION OF MAILBOX WITH LOCAL POSTMASTER.
3. SECURED MAILBOXES RECOMMENDED FOR MAJOR RESIDENTIAL DEVELOPMENTS.

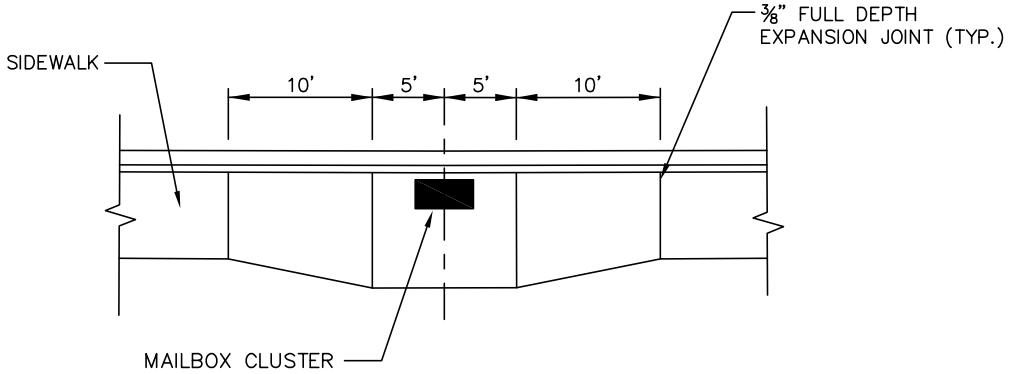
City of Bellevue

MAILBOX STAND

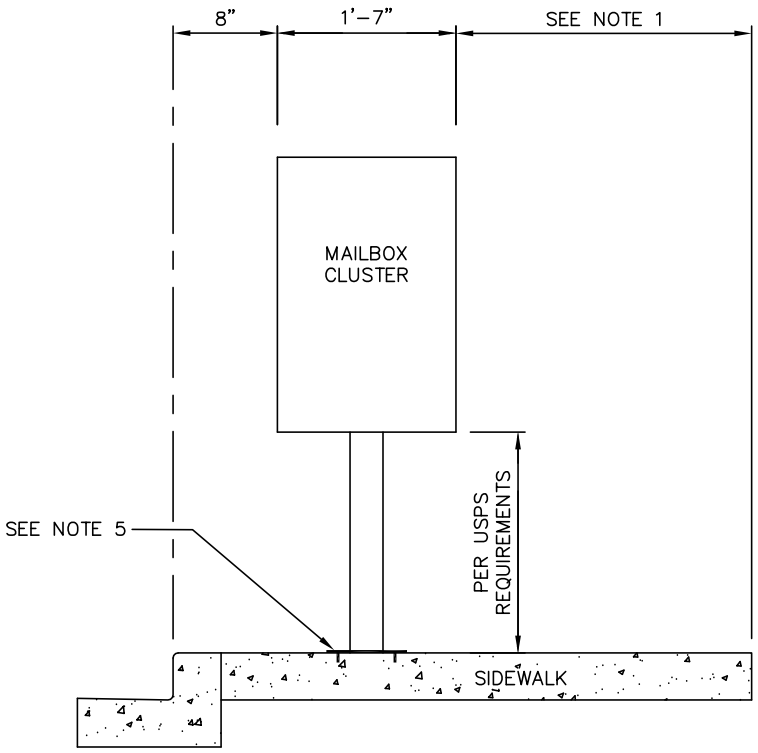
DRAWING NUMBER	RC–270–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

NOTES:

1. MEANDER SIDEWALK AROUND MAILBOX TO MAINTAIN FULL WIDTH OF SIDEWALK.
2. COORDINATE MAILBOX LOCATION WITH LOCAL POSTMASTER AND ENSURE MAILBOX SHALL NOT IMPACT SIGHT LINES.
3. ADDITIONAL REQUIREMENTS PER REVIEW ENGINEER FOR INSTALLATION ALONG ARTERIAL STREETS.
4. FOR USE WITH USPS APPROVED MAILBOXES ONLY.
5. ANCHOR BOLTS SHALL BE CUT FLUSH TO MOUNTING SURFACE.
6. ALL SIDEWALK INSTALLED PER C.O.B. STD. DWG. SW–110–1.
7. FOR INSTALLATION AT LOCATION WITHOUT CURB, TOP OF CONCRETE PAD SHALL BE FLUSH WITH GROUND SURFACE. PLACEMENT SHALL BE APPROVED IN ADVANCE BY REVIEW ENGINEER.



SIDEWALK TRANSITION DETAIL
NTS



SECTION
NTS

City of Bellevue

CLUSTER MAILBOX DETAIL

DRAWING NUMBER	RC–280–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS


CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

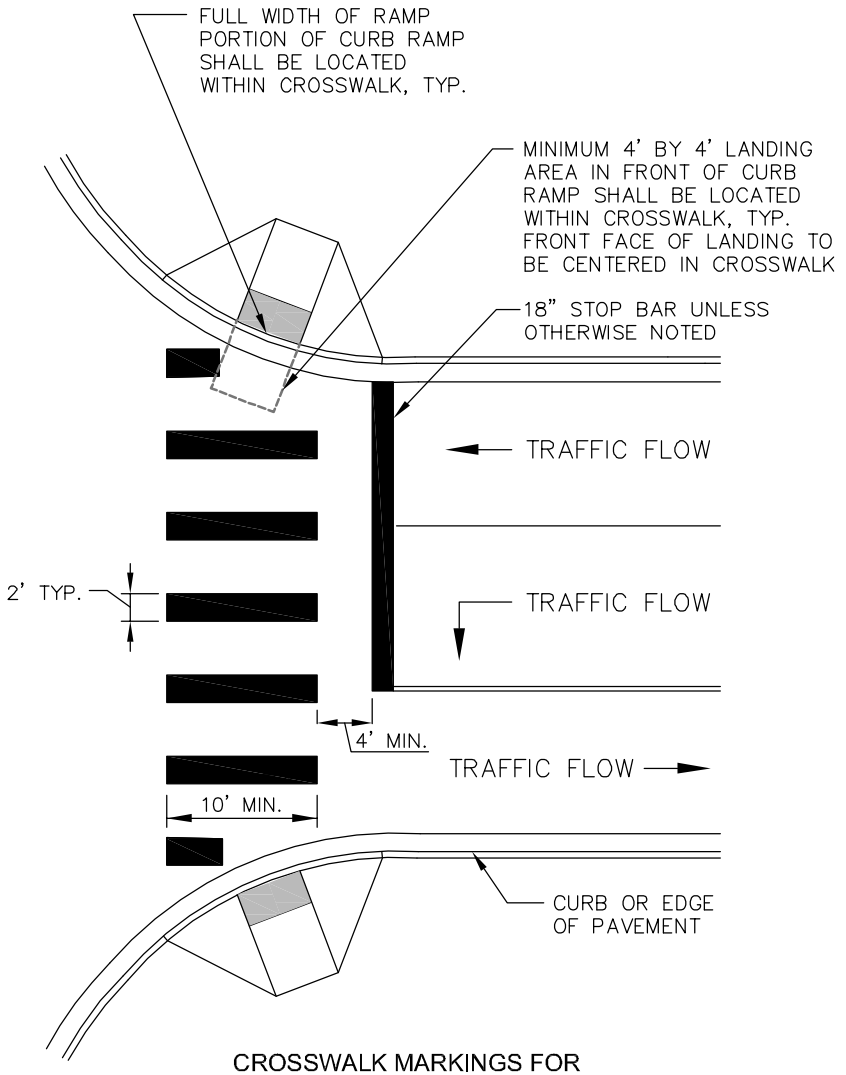
CW Drawings

Crosswalks

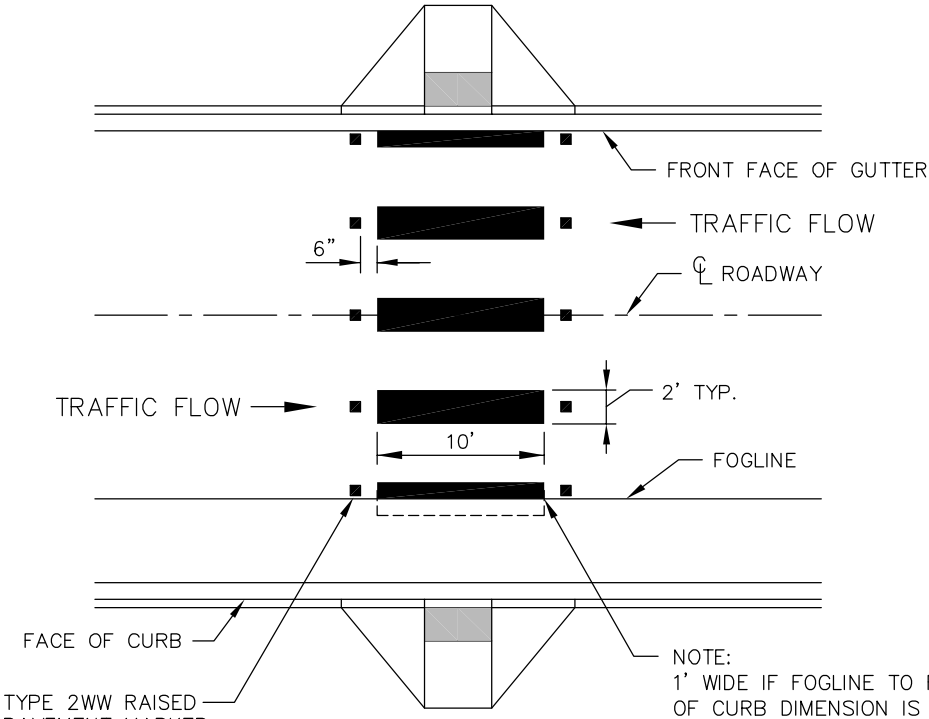

CITY OF BELLEVUE
WASHINGTON

NOTES:

1. MATERIAL SHALL BE THERMOPLASTIC, HOT APPLIED OR HEAT FUSED PREFORMED (90 MIL. MIN.), UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. GAP WIDTH SHALL BE 2' MINIMUM.
3. ALL CROSSWALK MARKINGS SHALL BE CONTINENTAL STYLE UNLESS OTHERWISE APPROVED IN ADVANCE BY THE ENGINEER.
4. BARS SHALL BE SPACED TO AVOID WHEELPATHS TO THE MAXIMUM EXTENT FEASIBLE. FINAL LAYOUT SHALL BE APPROVED BY THE TRAFFIC ENGINEER.
5. INTERIM UPGRADES TO EXISTING CROSSWALK MAY CONSIST OF NEW CONTINENTAL BARS INSTALLED WITHIN PARALLEL BARS.



CROSSWALK MARKINGS FOR INTERSECTIONS

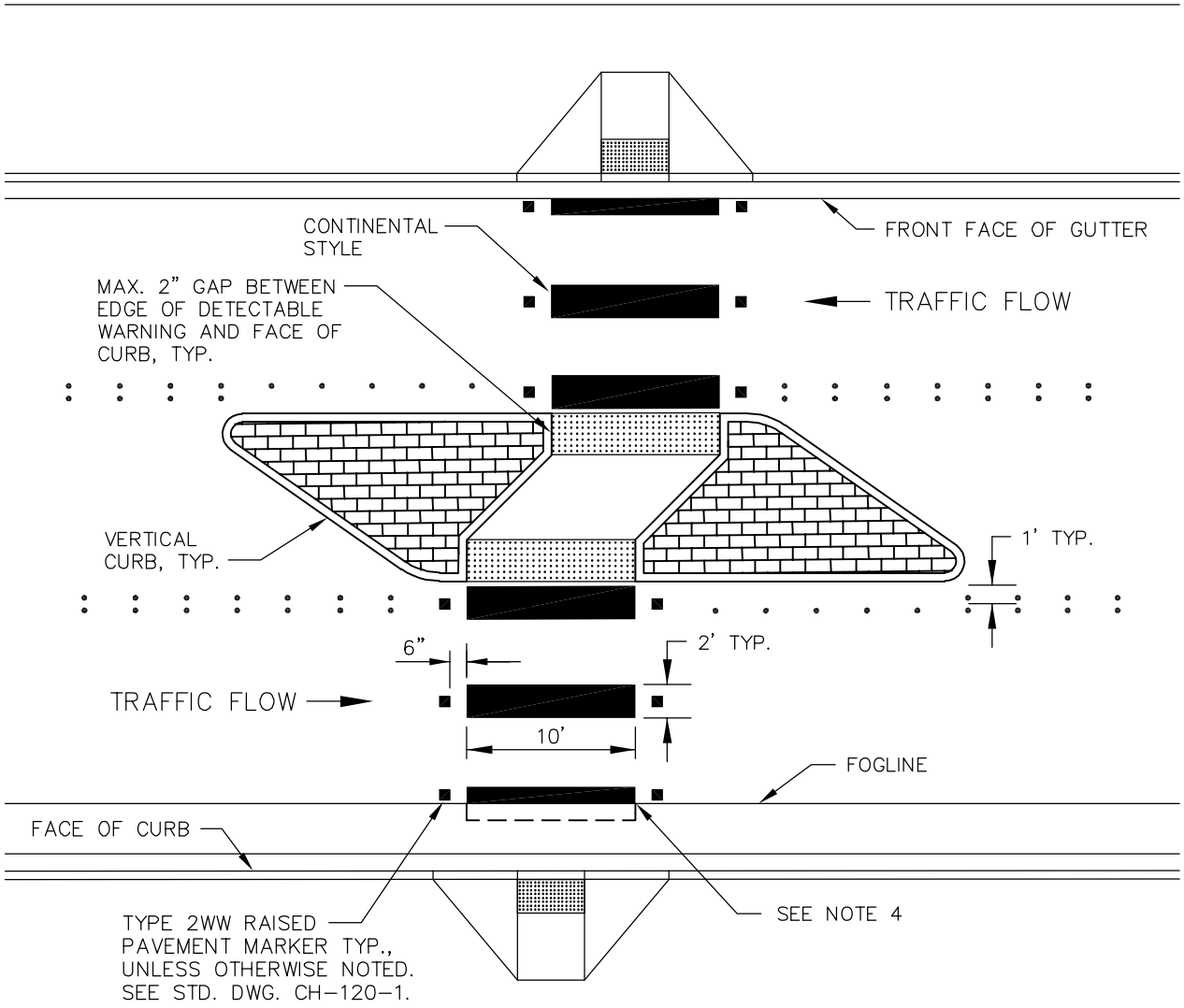


CROSSWALK MARKINGS FOR MIDBLOCK LOCATIONS

City of Bellevue

CROSSWALK MARKINGS

DRAWING NUMBER	CW-100-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



NOTES:

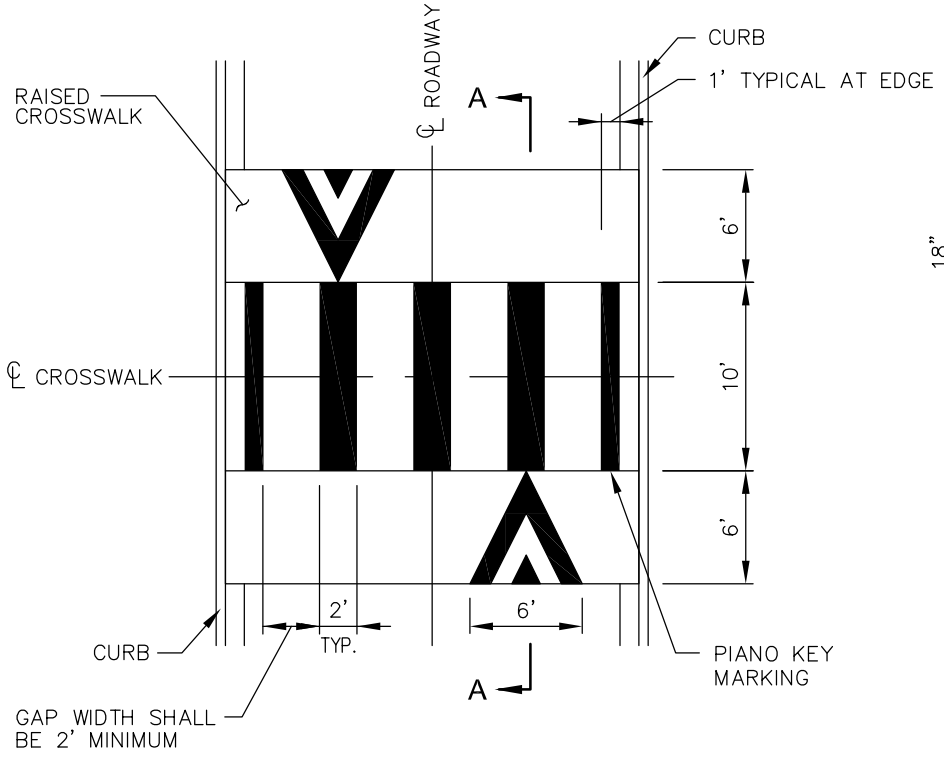
1. MATERIAL SHALL BE THERMOPLASTIC, HOT APPLIED OR HEAT FUSED PREFORMED (90 MIL. MIN.), UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. DISTANCE BETWEEN DETECTABLE WARNINGS IN MEDIAN SHALL BE 2' MINIMUM.
3. IF THERE IS NO CURB AND GUTTER CONTACT TRAFFIC ENGINEER FOR LAYOUT AT EDGE OF ROAD.
4. 1' WIDE IF FOGLINE TO FACE OF CURB DIMENSION IS < 4'.

   2' WIDE IF FOGLINE TO FACE OF CURB DIMENSION ≥ 4', CENTERED ON FOGLINE.

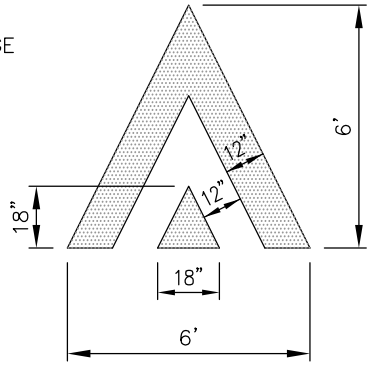
City of Bellevue

CROSSWALK MARKINGS AT MEDIAN

DRAWING NUMBER	CW-110-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



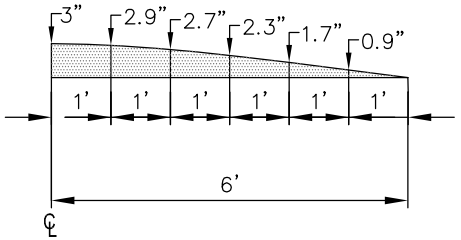
MARKING DETAIL



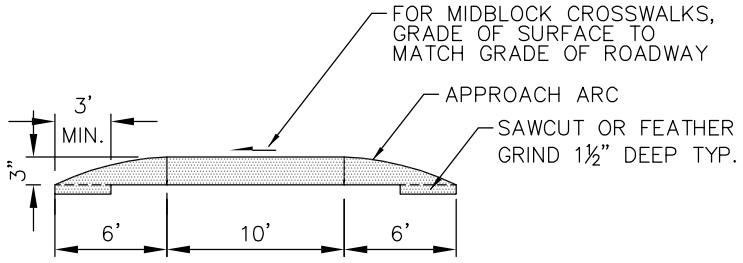
CHEVRON DETAIL

NOTES:

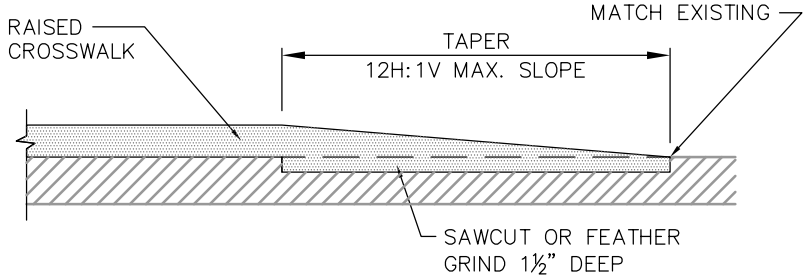
1. RAISED CROSSWALK CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
2. CHEVRON TO BE CENTERED IN THE DRIVING LANE. LOCATION SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. RAISED CROSSWALK SHALL BE CONSTRUCTED ON TOP OF NEW OR EXISTING WEARING COURSE USING CITY PROVIDED TEMPLATE, 48 HOURS NOTICE REQUIRED.



APPROACH ARC DETAIL



SECTION A-A

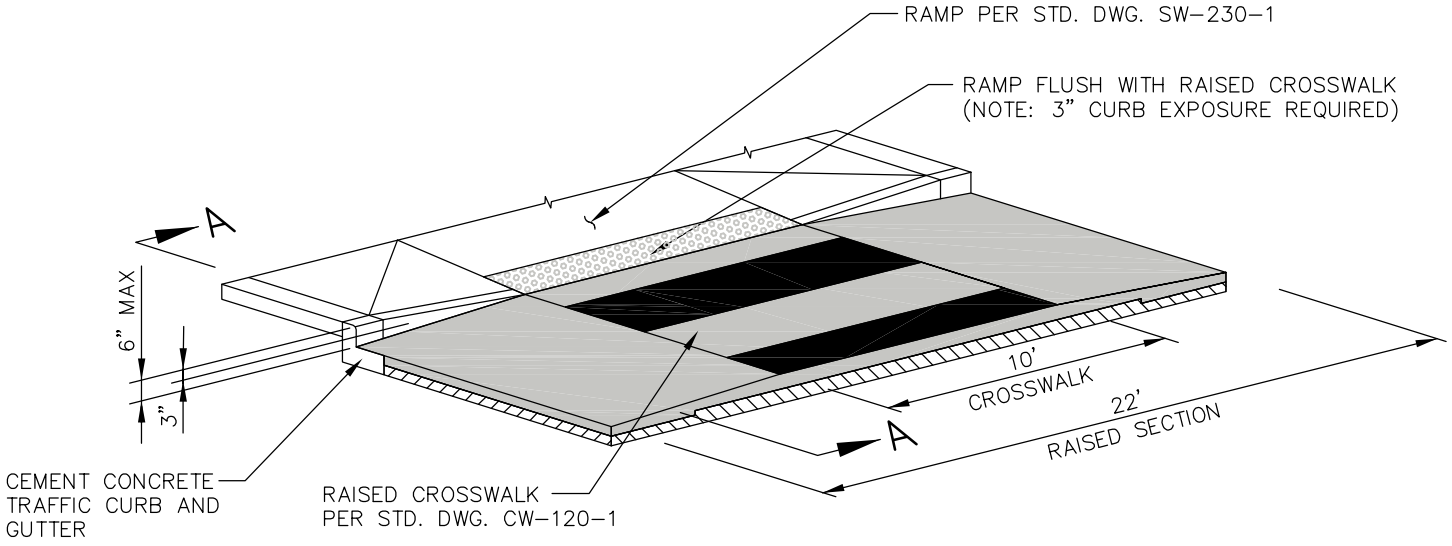


SECTION - RAISED CROSSWALK AT ASPHALT SHOULDER

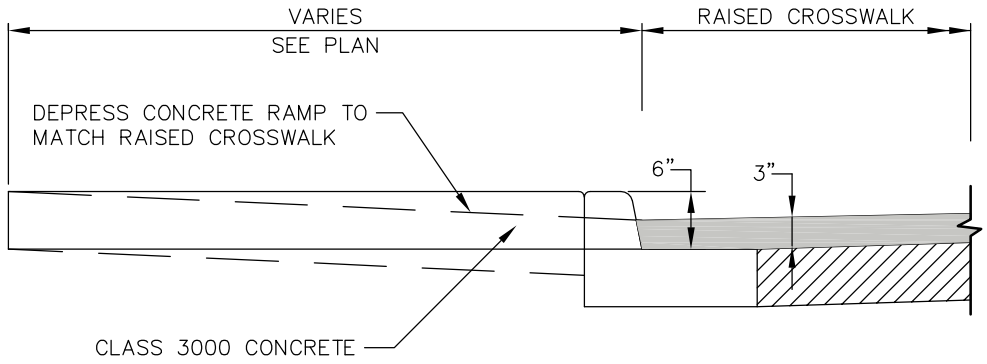
City of Bellevue

RAISED CROSSWALK

DRAWING NUMBER	CW-120-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



MODIFIED PERPENDICULAR CURB RAMP

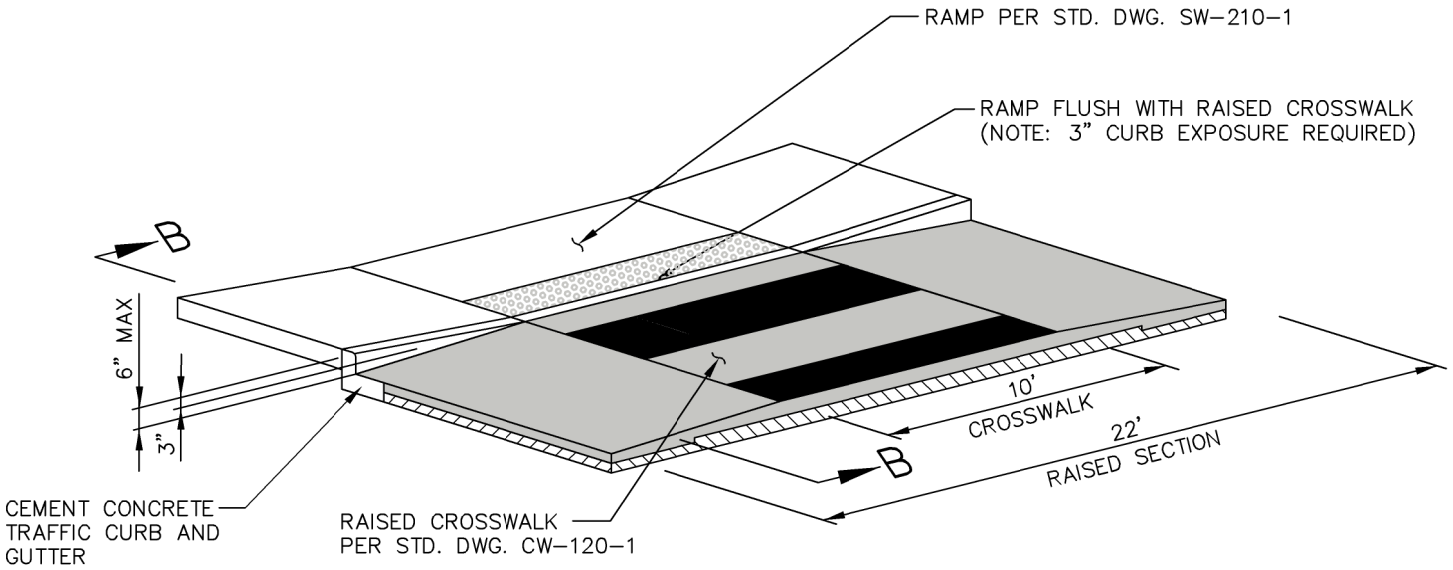


SECTION A-A

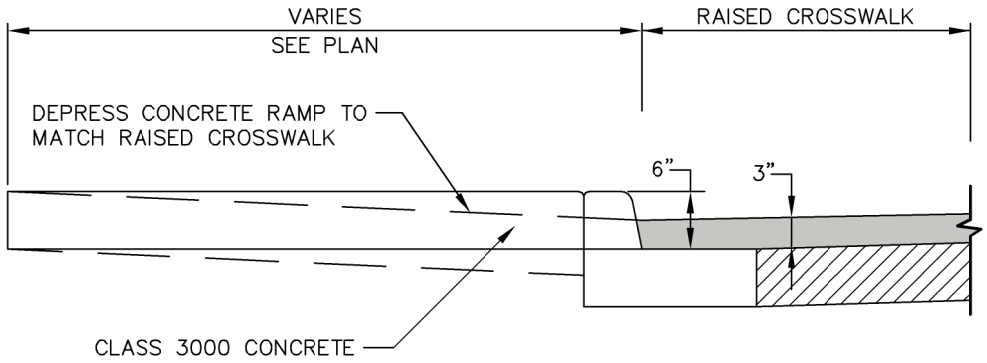
City of Bellevue

RAISED CROSSWALK WITH PERPENDICULAR CURB RAMP

DRAWING NUMBER	CW-130-1
SCALE	NONE
REVISION DATE	1/18
DEPARTMENT	TRANS



MODIFIED PARALLEL CURB RAMP

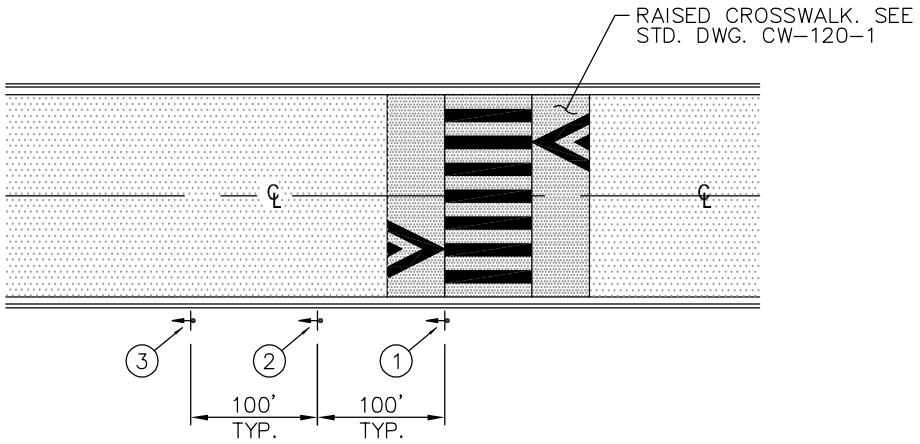


SECTION B-B

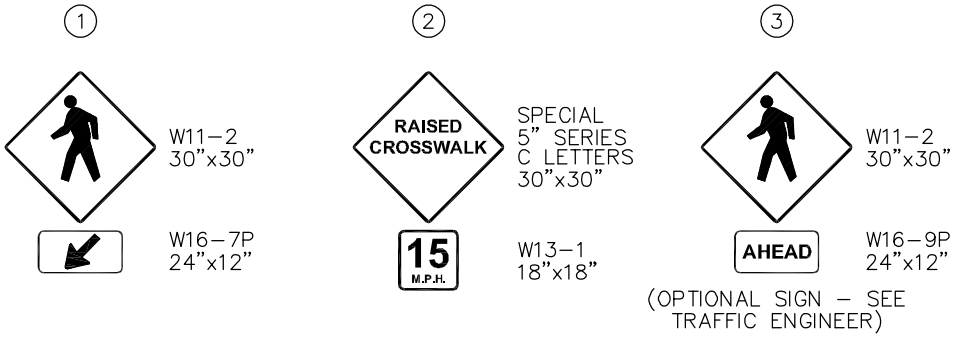
City of Bellevue

RAISED CROSSWALK WITH PARALLEL CURB RAMP

DRAWING NUMBER	CW–140–1
SCALE	NONE
REVISION DATE	1/18
DEPARTMENT	TRANS



SIGNING PLACEMENT



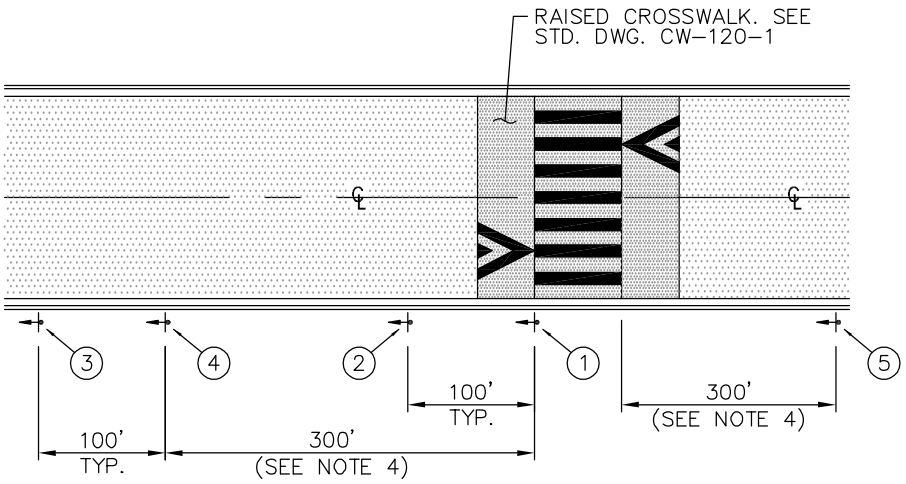
NOTES:

1. SIGNS SHALL HAVE YELLOW BACKGROUND WITH BLACK LEGEND AND BORDER.

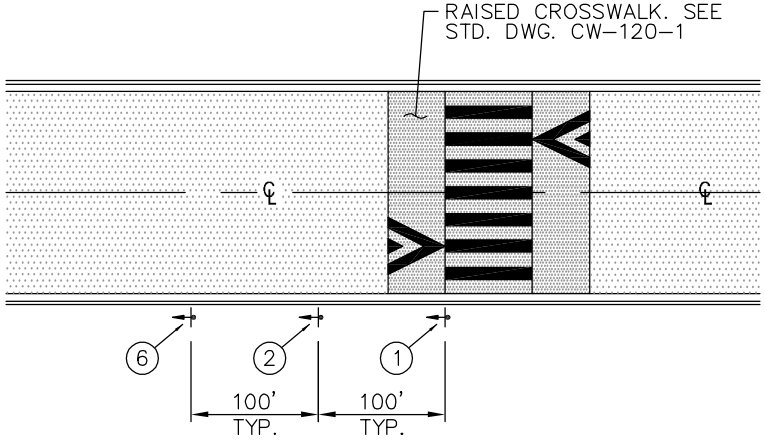
City of Bellevue

RAISED CROSSWALK SIGNING

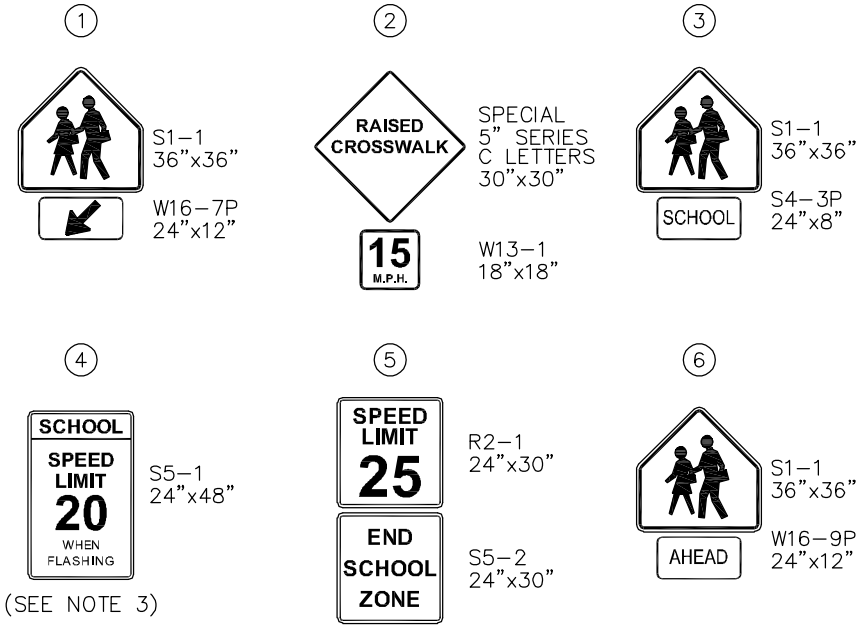
DRAWING NUMBER	CW-150-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



WITHIN SCHOOL SPEED ZONE



OUTSIDE SCHOOL SPEED ZONE



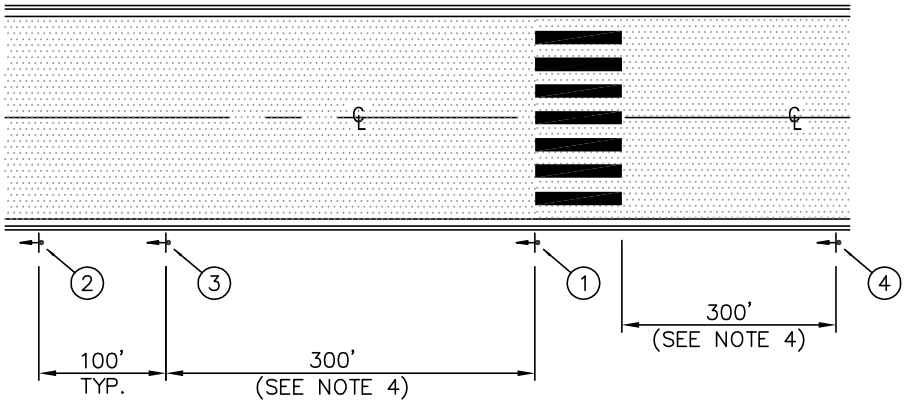
NOTES:

1. SIGN COMBINATIONS ①, ②, ③, ⑥, THE "SCHOOL" LEGEND ON SIGN ④ AND ANY ADDITIONAL PLAQUES SHALL BE FLUORESCENT YELLOW-GREEN WITH BLACK LEGEND AND BORDER.
2. SIGN SPACING MAY BE ADJUSTED TO REFLECT SITE CONDITIONS AND SHALL BE APPROVED BY THE ENGINEER.
3. IN SCHOOL SPEED ZONES WITHOUT FLASHING BEACONS, USE BOTTOM MESSAGE "WHEN CHILDREN ARE PRESENT" OR AS DIRECTED BY THE ENGINEER.
4. IF ROADWAY BORDERS A SCHOOL, THIS DISTANCE MAY INCREASE AS PER RCW 46.61.440.

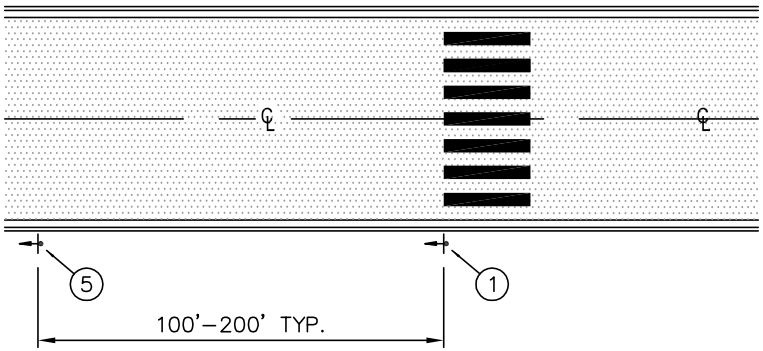
City of Bellevue

RAISED SCHOOL CROSSWALK SIGNING

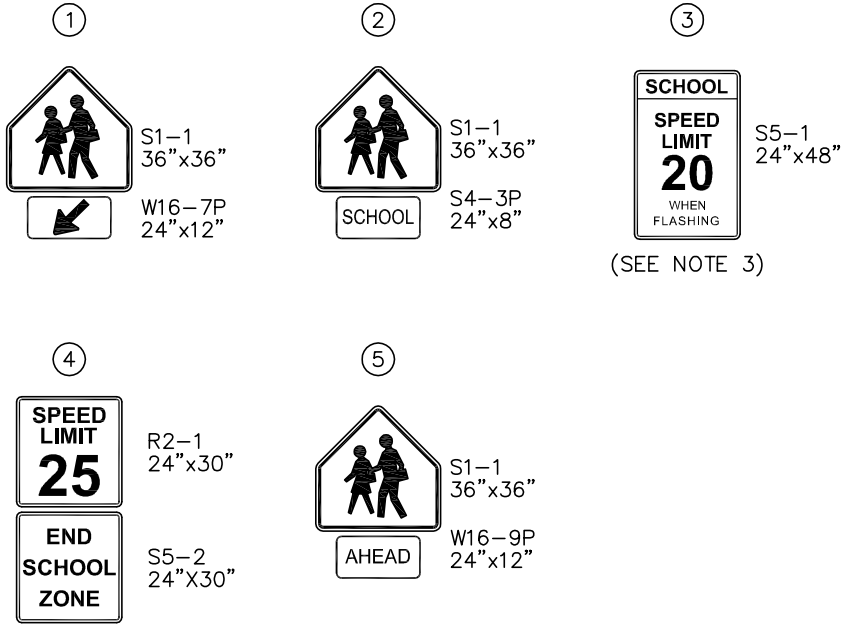
DRAWING NUMBER	CW-160-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



WITHIN SCHOOL ZONE



OUTSIDE SCHOOL ZONE



NOTES:

1. SIGN COMBINATIONS ①, ②, ⑤, THE "SCHOOL" LEGEND ON SIGN ③ AND ANY ADDITIONAL PLAQUES SHALL BE FLUORESCENT YELLOW–GREEN WITH BLACK LEGEND AND BORDER.
2. SEE STD. DWG. CW–100–1 FOR CROSSWALK MARKINGS.
3. IN SCHOOL SPEED ZONES WITHOUT FLASHING BEACONS, USE BOTTOM MESSAGE "WHEN CHILDREN ARE PRESENT" OR AS DIRECTED BY THE ENGINEER.
4. IF ROADWAY BORDERS A SCHOOL, THIS DISTANCE MAY INCREASE AS PER RCW 46.61.440.

City of Bellevue

AT GRADE SCHOOL CROSSWALK SIGNING

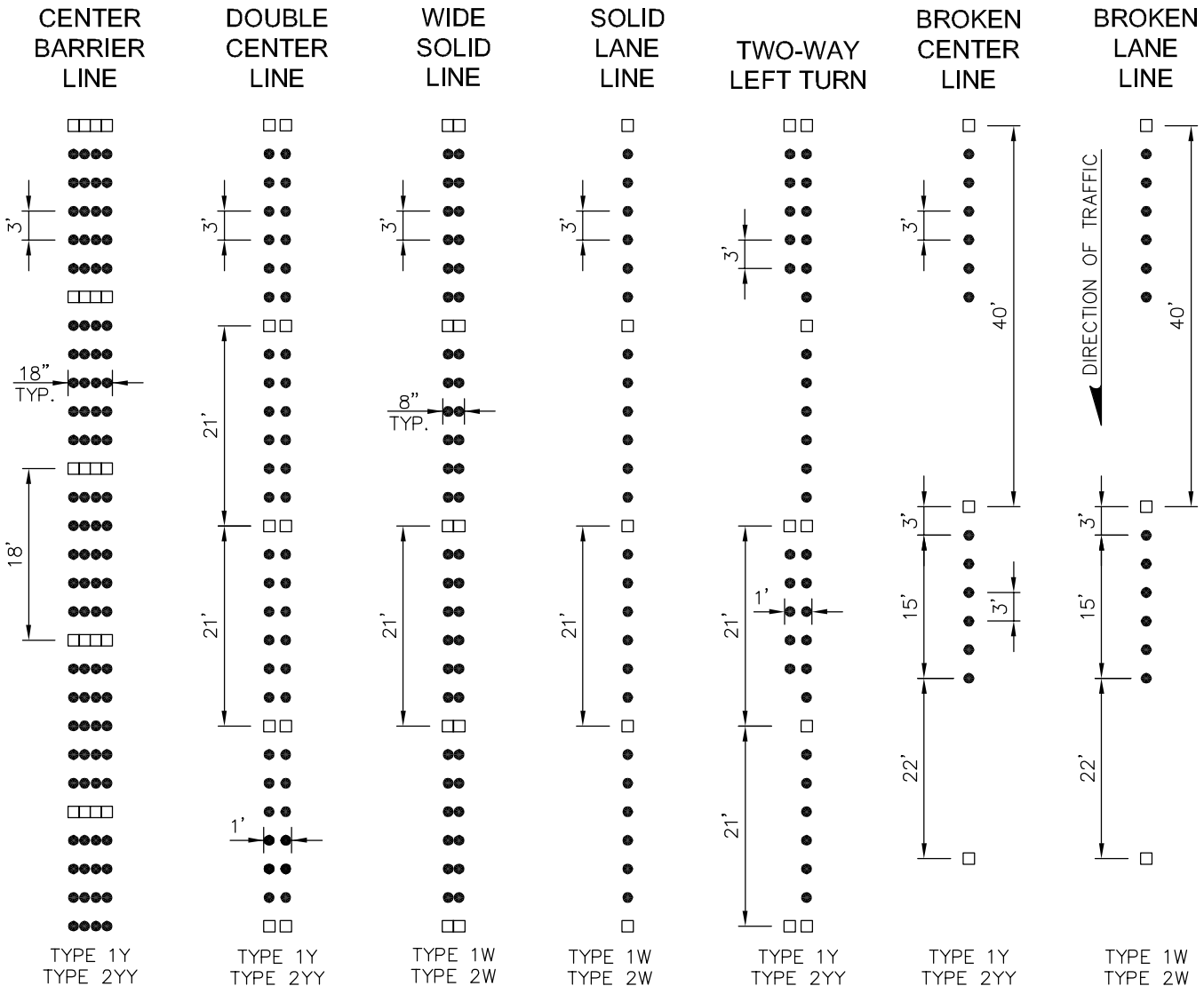
DRAWING NUMBER	CW–170–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

TRANSPORTATION DESIGN MANUAL

CH Drawings

Channelization


CITY OF BELLEVUE
WASHINGTON



NOTES:

1. A SINGLE LINE OF TYPE 2 RAISED PAVEMENT MARKERS MAY BE APPROPRIATE FOR CENTER LINE ON LOWER VOLUME STREETS, AS APPROVED BY THE ENGINEER.
2. FOR RAISED PAVEMENT MARKER DETAIL, SEE STD. DWG. CH-120-1.
3. SEE STD. DWG. CH-300-1 FOR MATERIAL SPECIFICATIONS.

● TYPE 1 RAISED PAVEMENT MARKER
□ TYPE 2 RAISED PAVEMENT MARKER

SEE DWG. CH-120-1

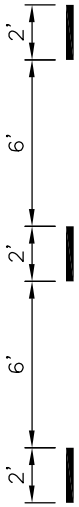
TYPE 2 RPM RAISED FACE COLORS	
TYPE 2YY	YELLOW AND YELLOW
TYPE 2W	WHITE-ONE SIDE ONLY
TYPE 2Y	YELLOW-ONE SIDE ONLY
TYPE 1 RPM COLORS	
TYPE 1W	WHITE
TYPE 1Y	YELLOW

City of Bellevue

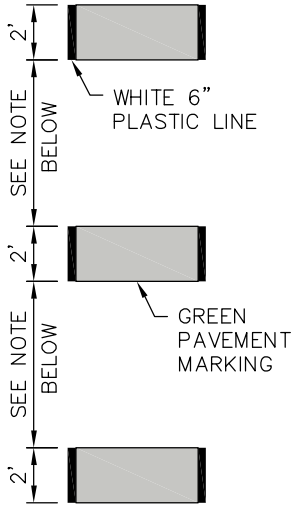
CHANNELIZATION LINES - A

DRAWING NUMBER	CH-100-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

DASHED LINE
(THROUGH INTERSECTION)

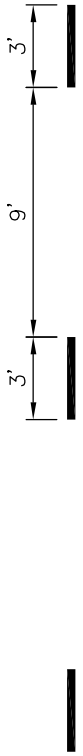


BICYCLE CROSSING MARKING
(THROUGH INTERSECTION)

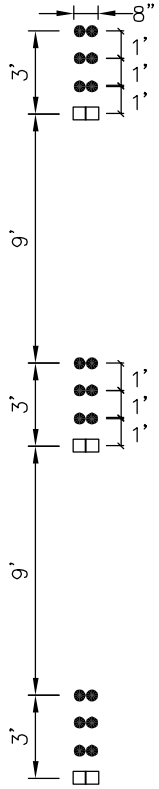


NOTE:
BICYCLE CROSSING MARKINGS SHALL ALIGN WITH CONTINENTAL CROSSWALK BARS IF PRESENT. IF NO CROSSWALK BARS EXIST, BICYCLE CROSSING MARKINGS SHALL BE PLACED AT LANE LINES AND ½ LANE WIDTH TO AVOID WHEEL PATHS OR AT 6' SPACING IF NO LANE LINES ARE PRESENT.

DASHED LINE
(DROP LANE)



DASHED LINE - RPM'S
(DROP LANE)



TYPE 1W
TYPE 2W

NOTES:

1. MATERIAL SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
2. FOR RAISED PAVEMENT MARKER DETAIL, SEE STD. DWG. CH–120–1.
3. SEE STD. DWG. CH–300–1 FOR MATERIAL SPECIFICATIONS.

● TYPE 1 RAISED PAVEMENT MARKER
□ TYPE 2 RAISED PAVEMENT MARKER

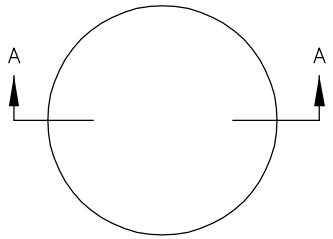
SEE DWG. CH–120–1

TYPE 2 RPM RAISED FACE COLORS	
TYPE 2YY	YELLOW AND YELLOW
TYPE 2W	WHITE–ONE SIDE ONLY
TYPE 2Y	YELLOW–ONE SIDE ONLY
TYPE 1 RPM COLORS	
TYPE 1W	WHITE
TYPE 1Y	YELLOW

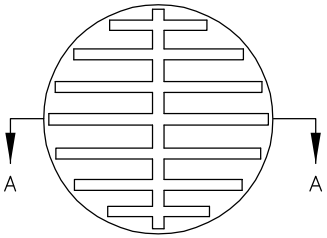
City of Bellevue

CHANNELIZATION LINES – B

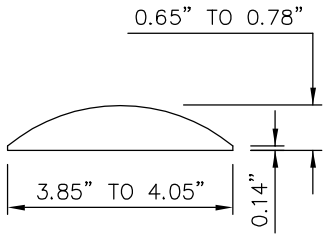
DRAWING NUMBER	CH–110–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



TOP VIEW

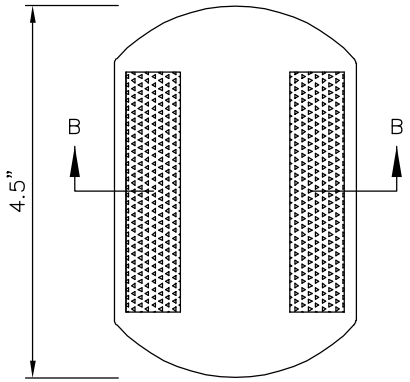


BOTTOM VIEW EXAMPLE
(SEE NOTE 2)



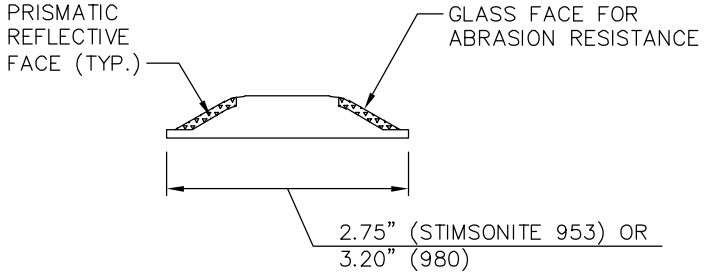
SECTION A-A

TYPE 1



PLAN

DIRECTION OF TRAFFIC



SECTION B-B

TYPE 2

NOTES:

1. RAISED PAVEMENT MARKER TYPE 1 SHALL BE ALPINE PRODUCTS MODEL ANR-Y1 OR ANR-W1, STIMSONITE MODEL B10 OR APPROVED EQUAL. MARKERS SHALL BE MOLDED OF A HIGH IMPACT, RECYCLED ACRYLONITRILE BUTADIENE STYRENE (ABS), CONFORMING TO ASTM SPEC DI 78868.
2. TYPE 1 MARKER BOTTOM SHALL ALLOW UPWARD FLOW OF ADHESIVE AND VENTING TO PREVENT AIR ENTRAPMENT.
3. RAISED PAVEMENT MARKER TYPE 2 SHALL BE STIMSONITE 953 OR 980.
4. SUBSTITUTE PAVEMENT MARKERS SHALL NOT BE ACCEPTED WITHOUT WRITTEN APPROVAL BY THE ENGINEER, PRIOR TO INSTALLATION.
5. ALL MARKERS INSTALLED ON CEMENT CONCRETE PAVEMENT SHALL BE INSTALLED WITH AN EAS-60 TWO PART EPOXY. SEE STD. DWG. CH-300-1.
6. ALL MARKERS INSTALLED ON HMA PAVEMENTS SHALL BE INSTALLED WITH BITUMINOUS ADHESIVE, CRAFCO STANDARD PAVEMENT MARKER ADHESIVE. SEE STD. DWG. CH-300-1.

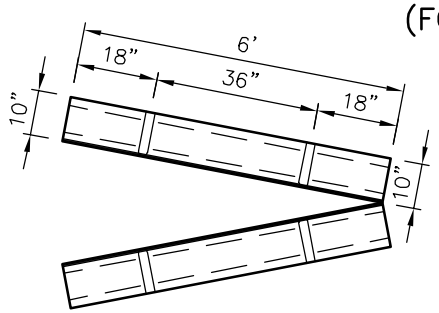
City of Bellevue

RAISED PAVEMENT MARKER DETAILS

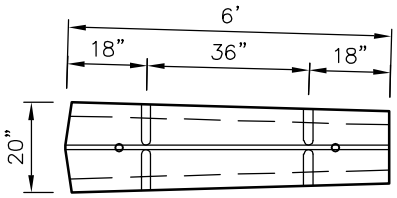
DRAWING NUMBER	CH-120-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

FOR MAINTENANCE OR EXTENSION OF EXISTING CURB ONLY. NOT FOR NEW INSTALLATIONS.

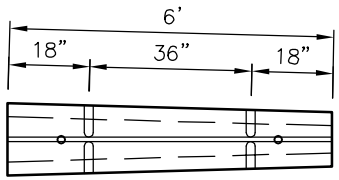
(FOR NEW INSTALLATIONS SEE STD. DWGS. CH–150–1 AND CH–160–1)



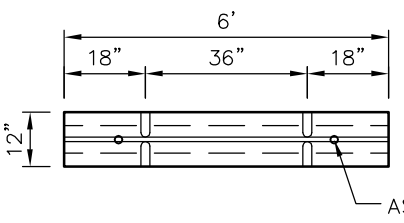
TYPE A CURB
STRAIGHT SECTION



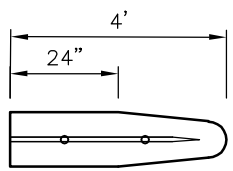
TYPE A CONNECTING
DIVIDER NO. 2



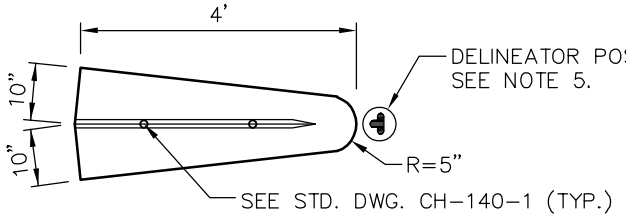
TYPE A CONNECTING
DIVIDER NO. 1



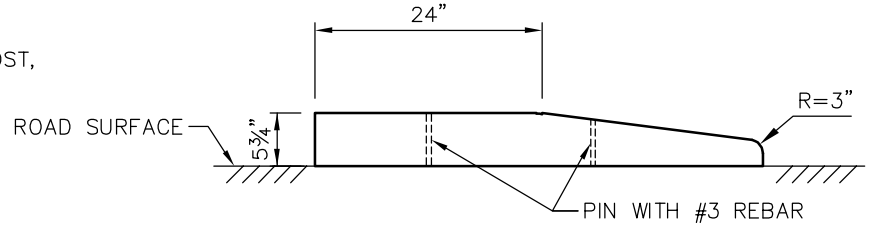
TYPE C CURB



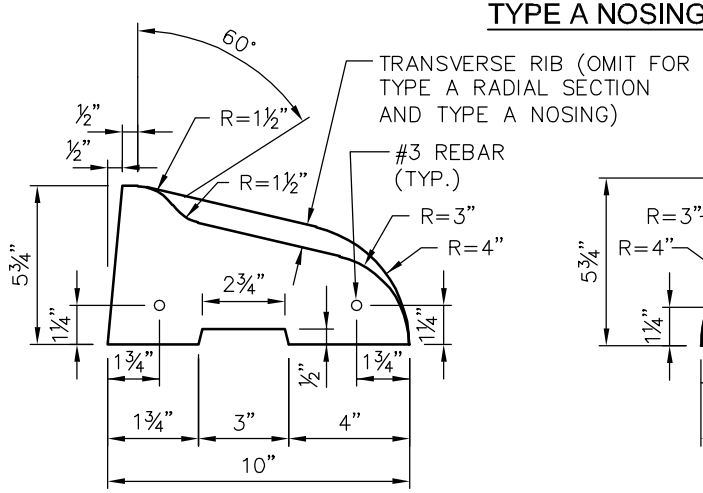
TYPE C NOSING



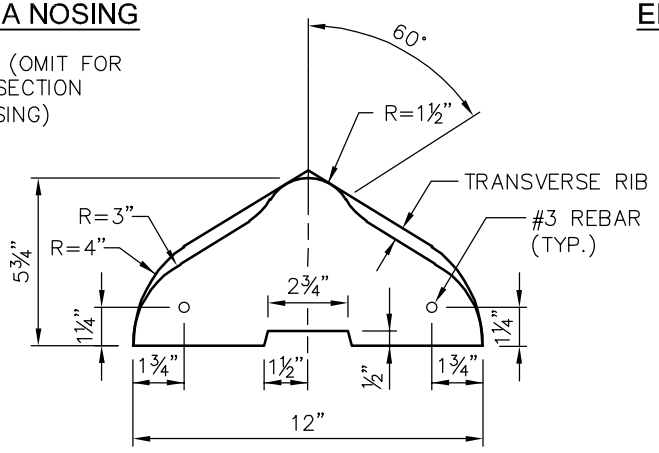
TYPE A NOSING



ELEVATION - TYPE A NOSING AND C NOSING



SECTION - TYPE A CURB



SECTION - TYPE C CURB

NOTES:

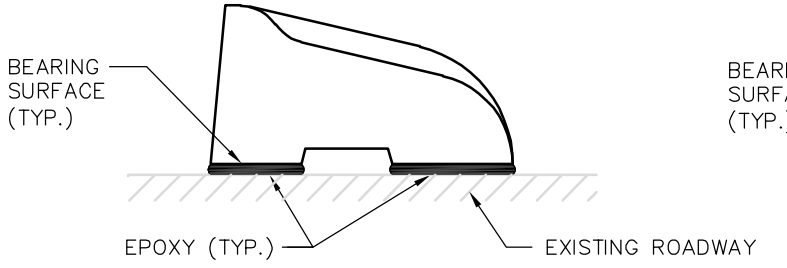
1. ONLY 6' SECTIONS OF TYPE C AND TYPE A CURB SHALL BE USED ON ALL INSTALLATIONS, EXCEPT FOR NOTE 2.
2. THE USE OF 1' BLOCK SECTIONS OF TYPE C AND TYPE A CURB SHALL ONLY BE USED TO FORM SMALL RADIUS CURVES OR ADJUSTMENTS IN FINAL LENGTH, AS APPROVED BY THE ENGINEER.
3. ALL PRECAST TRAFFIC CURBS SHALL BE SECURED USING WSDOT APPROVED 2 PART EPOXY RESIN.
4. PRECAST CURB NOSINGS AND NEXT TWO SECTIONS OF CURB SHALL BE BOTH PINNED AND EPOXIED TO THE ROAD SURFACE. SEE STD. DWG. CH–140–1.
5. DELINEATOR POST MAY BE REQUIRED AT CURB NOSE.

City of Bellevue

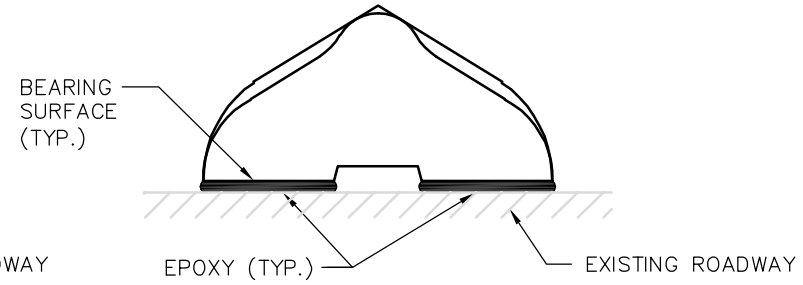
PRECAST TRAFFIC CURBS
FOR MAINTENANCE OF EXISTING CURB

DRAWING NUMBER	CH–130–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

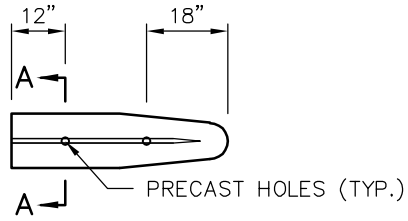
FOR MAINTENANCE OR EXTENSION OF EXISTING CURB ONLY. NOT FOR NEW INSTALLATIONS.
(FOR NEW INSTALLATIONS SEE STD. DWGS. CH–150–1 AND CH–160–1)



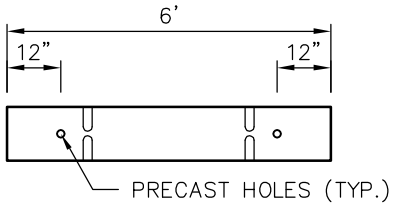
SECTION - TYPE A CURB



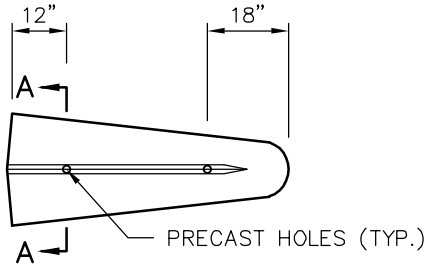
SECTION - TYPE C CURB



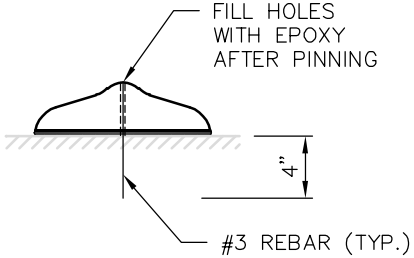
TYPE C NOSING



TYPE C OR TYPE A CONNECTING DIVIDER



TYPE A NOSING



SECTION A-A

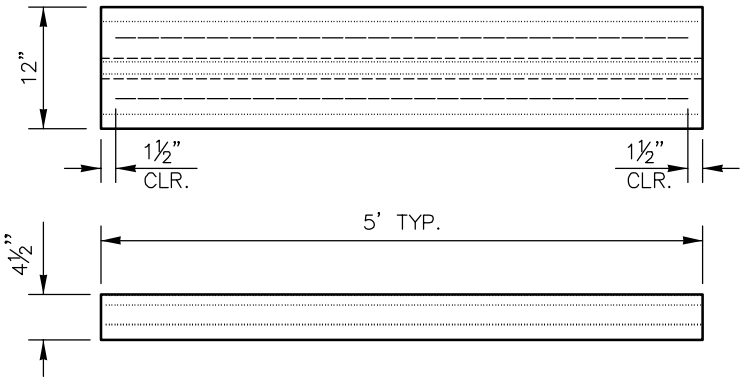
NOTES:

1. NOSING AND NEXT TWO SECTIONS OF CURB SHALL HAVE HOLES PRECAST AS SHOWN.
2. PRECAST TRAFFIC CURB SHALL BE INSTALLED WITH AN EAS–60 TWO PART EPOXY. SEE STD. DWG. CH–300–1.
3. EPOXY SHALL BE PLACED UNDER THE BEARING SURFACE OF THE PRECAST TRAFFIC CURB.
4. SUFFICIENT EPOXY SHALL BE APPLIED TO ENSURE SQUEEZE–OUT OF 50% PER EACH SIDE OF EACH CURB SECTION.

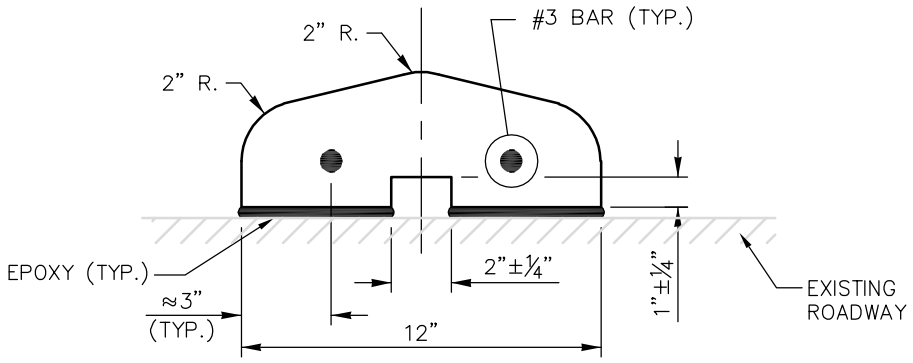
City of Bellevue

PRECAST TRAFFIC CURB INSTALLATION FOR MAINTENANCE OF EXISTING CURB

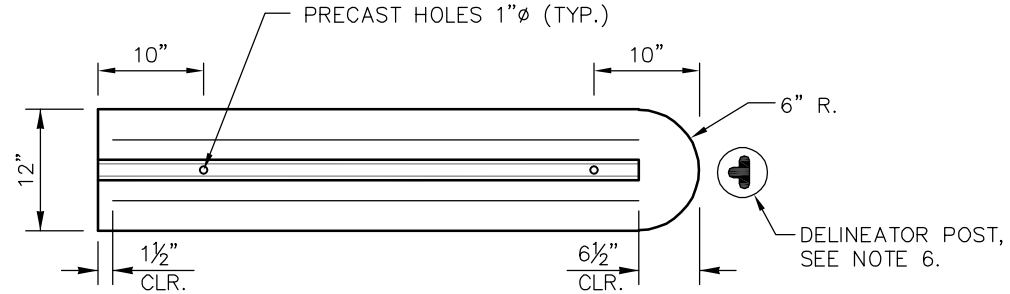
DRAWING NUMBER	CH–140–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

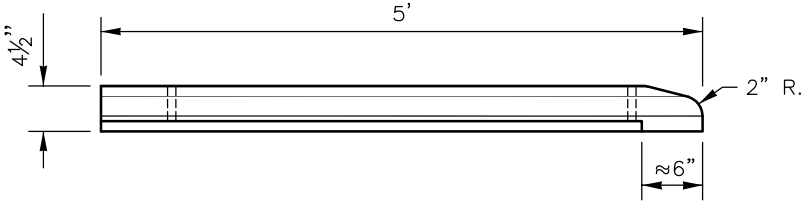


DUAL SLOPED BLOCK

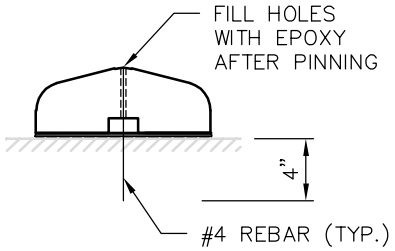


SECTION





NOSING BLOCK



PINNING SECTION

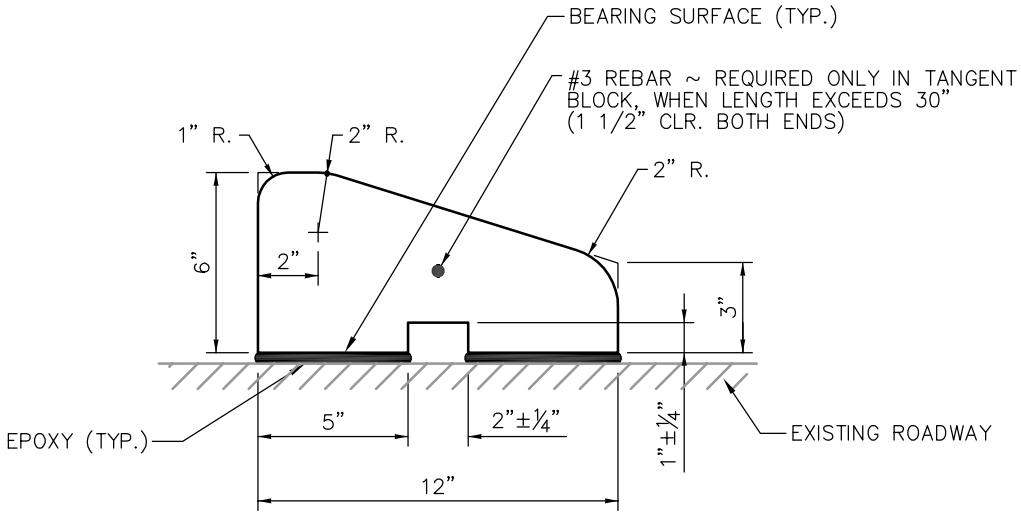
NOTES:

1. 5' LONG STANDARD SECTIONS SHALL BE USED EXCLUSIVELY, EXCEPT TO ADJUST FOR FINAL LENGTH. NOSING BLOCK SHALL BE 5' LONG, NO EXCEPTIONS.
2. NOSING SHALL HAVE HOLES PRECAST AS SHOWN.
3. PRECAST TRAFFIC CURB SHALL BE INSTALLED WITH AN EAS-06 TWO PART EPOXY. SEE STD. DWG. CH-300-1.
4. EPOXY SHALL BE PLACED UNDER THE BEARING SURFACE OF THE PRECAST TRAFFIC CURB.
5. SUFFICIENT AMOUNT OF EPOXY SHALL BE APPLIED TO ENSURE UNIFORM COVERAGE OF APPROXIMATELY ¼" ACROSS THE BEARING SURFACE. THE EPOXY SHALL SQUEEZE-OUT ALONG ALL EDGES.
6. DELINEATOR POST MAY BE REQUIRED AT CURB NOSE.

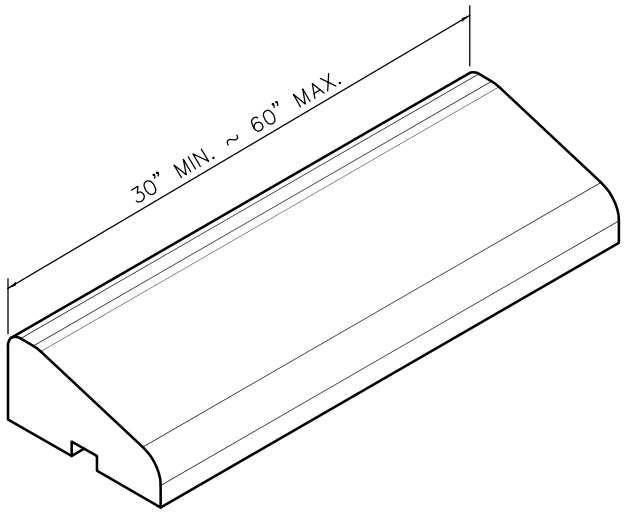
City of Bellevue

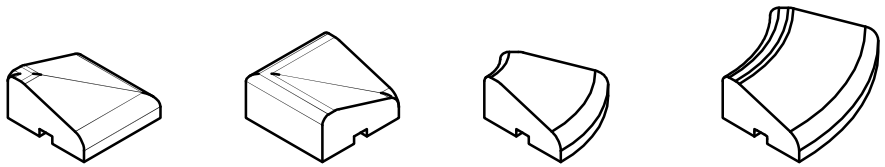
PRECAST CONCRETE DUAL FACED SLOPED MOUNTABLE CURB

DRAWING NUMBER	CH-150-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



SLOPED MOUNTABLE CURB





OUTSIDE CORNER BLOCK | INSIDE CORNER BLOCK | 18" RADIUS BLOCK | 30" RADIUS BLOCK

CORNER SEGMENTS

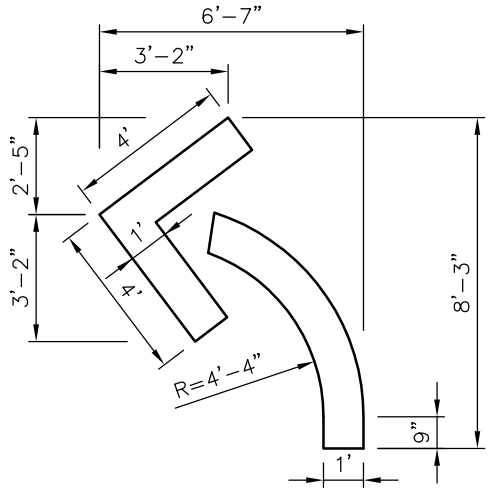
NOTES:

1. PRECAST TRAFFIC CURB SHALL BE INSTALLED WITH AN EAS–06 TWO PART EPOXY. SEE STD. DWG. CH–300–1.
2. EPOXY SHALL BE PLACED UNDER THE BEARING SURFACE OF THE PRECAST TRAFFIC CURB.
3. APPLY SUFFICIENT AMOUNT OF EPOXY TO ENSURE UNIFORM COVERAGE OF APPROXIMATELY ¼" ACROSS THE BEARING SURFACE. THE EPOXY SHALL SQUEEZE–OUT ALONG ALL EDGES.

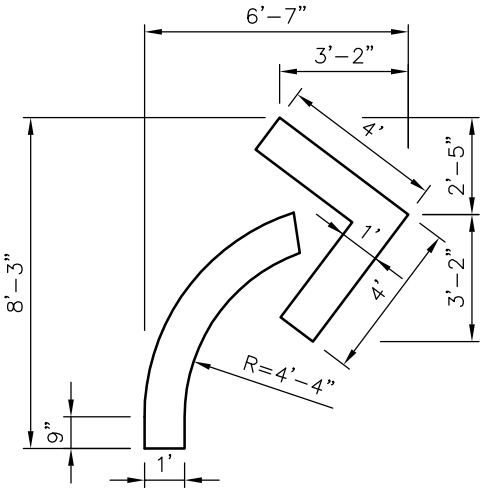
City of Bellevue

PRECAST CONCRETE SLOPED MOUNTABLE CURB

DRAWING NUMBER	CH–160–1
SCALE	NONE
REVISION DATE	1/18
DEPARTMENT	TRANS



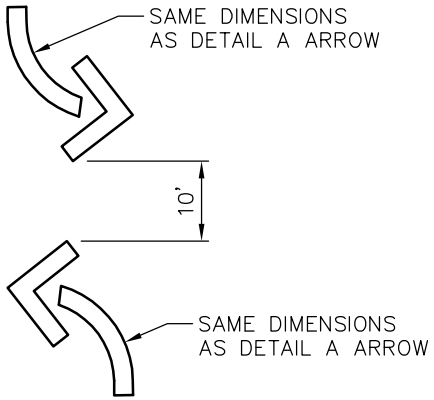
DETAIL A - LEFT



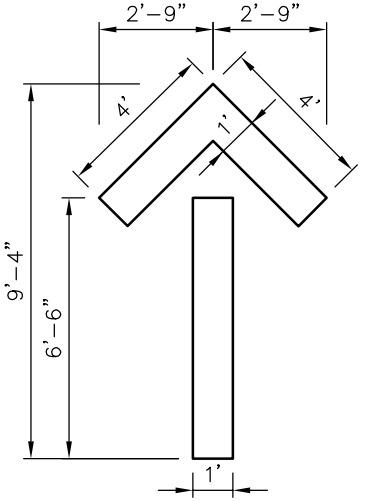
DETAIL B - RIGHT

NOTES:

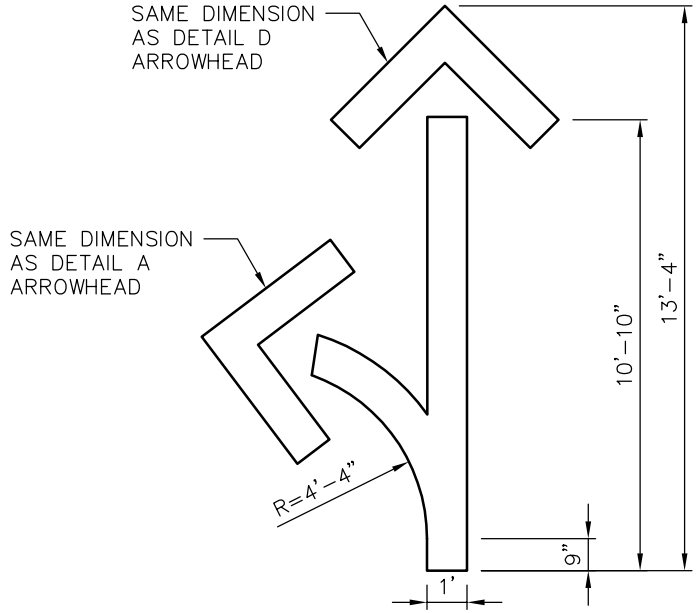
1. MATERIAL SHALL BE THERMOPLASTIC UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. SEE STD. DWG. CH–300–1 FOR MATERIAL SPECIFICATIONS.



DETAIL C - TWO WAY LEFT TURN



DETAIL D - STRAIGHT

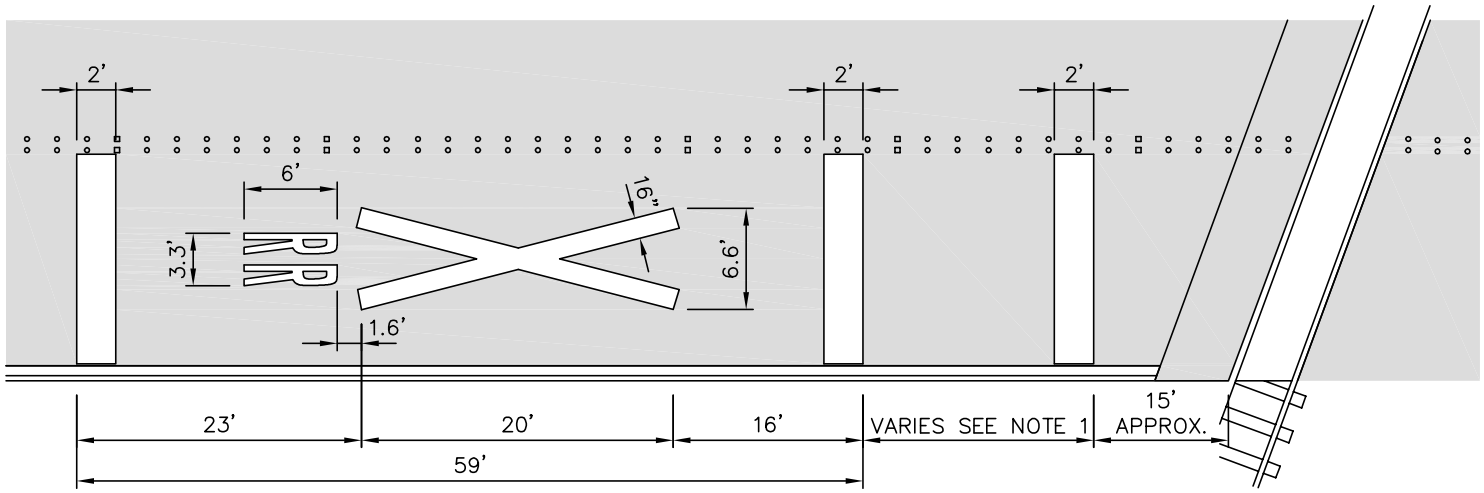


DETAIL E - STRAIGHT/LEFT

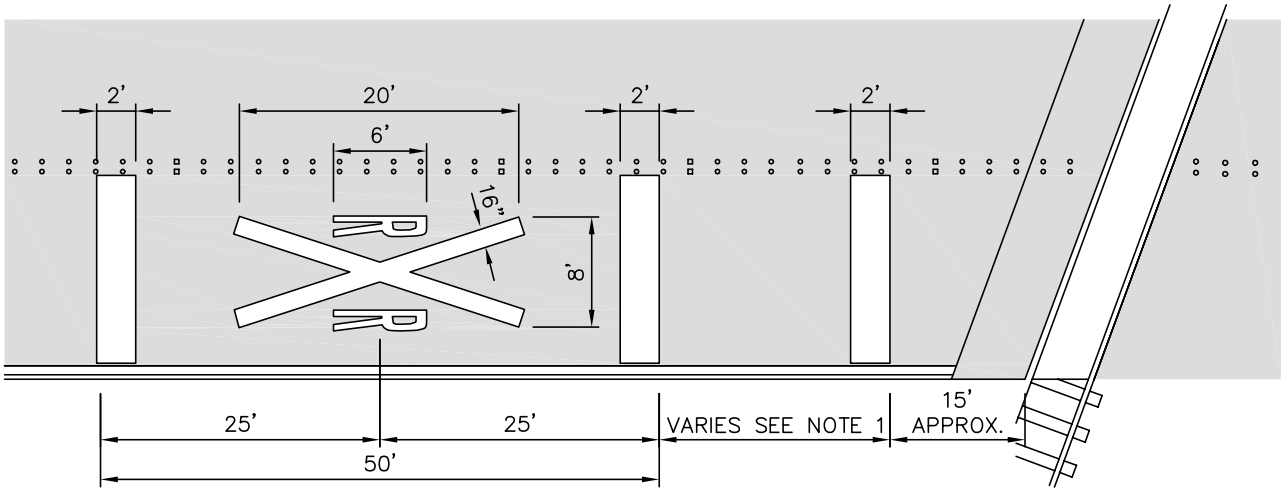
City of Bellevue

PAVEMENT ARROW MARKINGS

DRAWING NUMBER	CH–170–1
SCALE	NONE
REVISION DATE	1/18
DEPARTMENT	TRANS



HIGHWAY-RAIL GRADE CROSSING
PAVEMENT MARKINGS



ALTERNATE "WIDE" PAVEMENT
MARKINGS

NOTES:

1. FOR DISTANCE, SEE CHAPTER 2C, TABLE 2C–4 OF THE LATEST REVISION OF THE MUTCD.
2. MATERIAL SHALL BE THERMOPLASTIC UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. USE ALTERNATE "WIDE" MARKINGS ONLY WHEN APPROVED BY THE ENGINEER.

City of Bellevue

HIGHWAY – RAIL GRADE CROSSING PAVEMENT MARKINGS

DRAWING NUMBER	CH–180–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

0 TO 40 MPH

L	$\frac{WT}{120} \times S_{SL}^2$	(SYMMETRICAL ABOUT CENTERLINE)
	$\frac{WT}{60} \times S_{SL}^2$	(OFFSET)

45 MPH OR MORE

L	$\frac{WT}{2} \times S_{SL}^2$	(SYMMETRICAL ABOUT CENTERLINE)
	$WT \times S_{SL}^2$	(OFFSET)

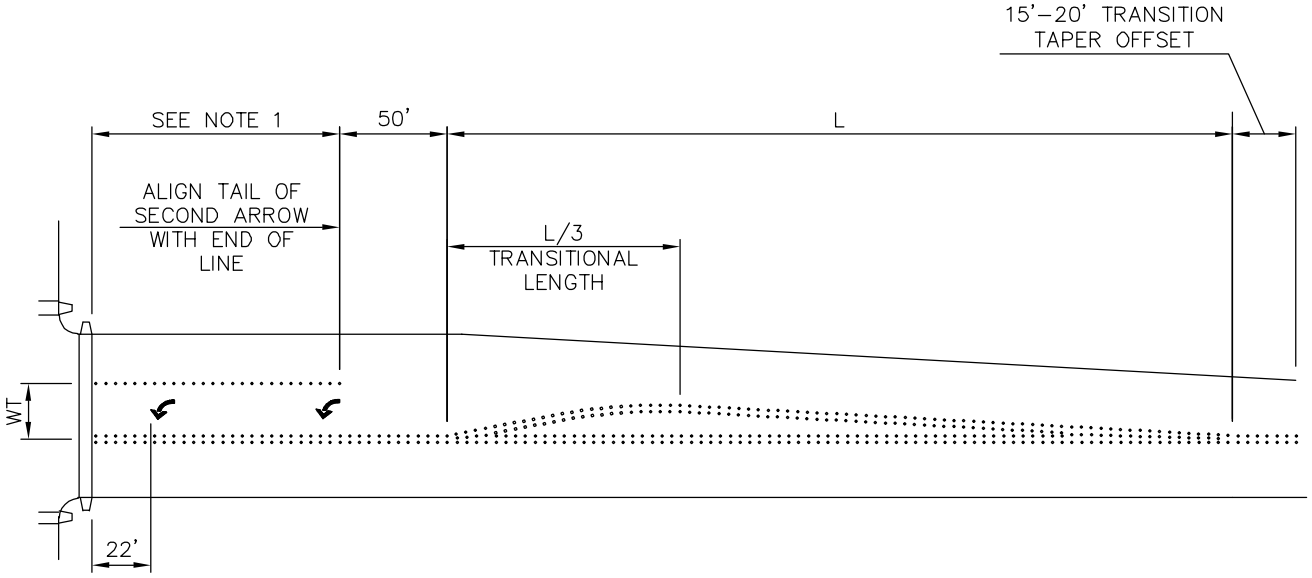
WT = WIDTH OF TURN LANE

S_{SL} = POSTED SPEED LIMIT

L = LENGTH OF CHANNELIZATION

NOTES:

1. SEE ENGINEER FOR POCKET LENGTH.



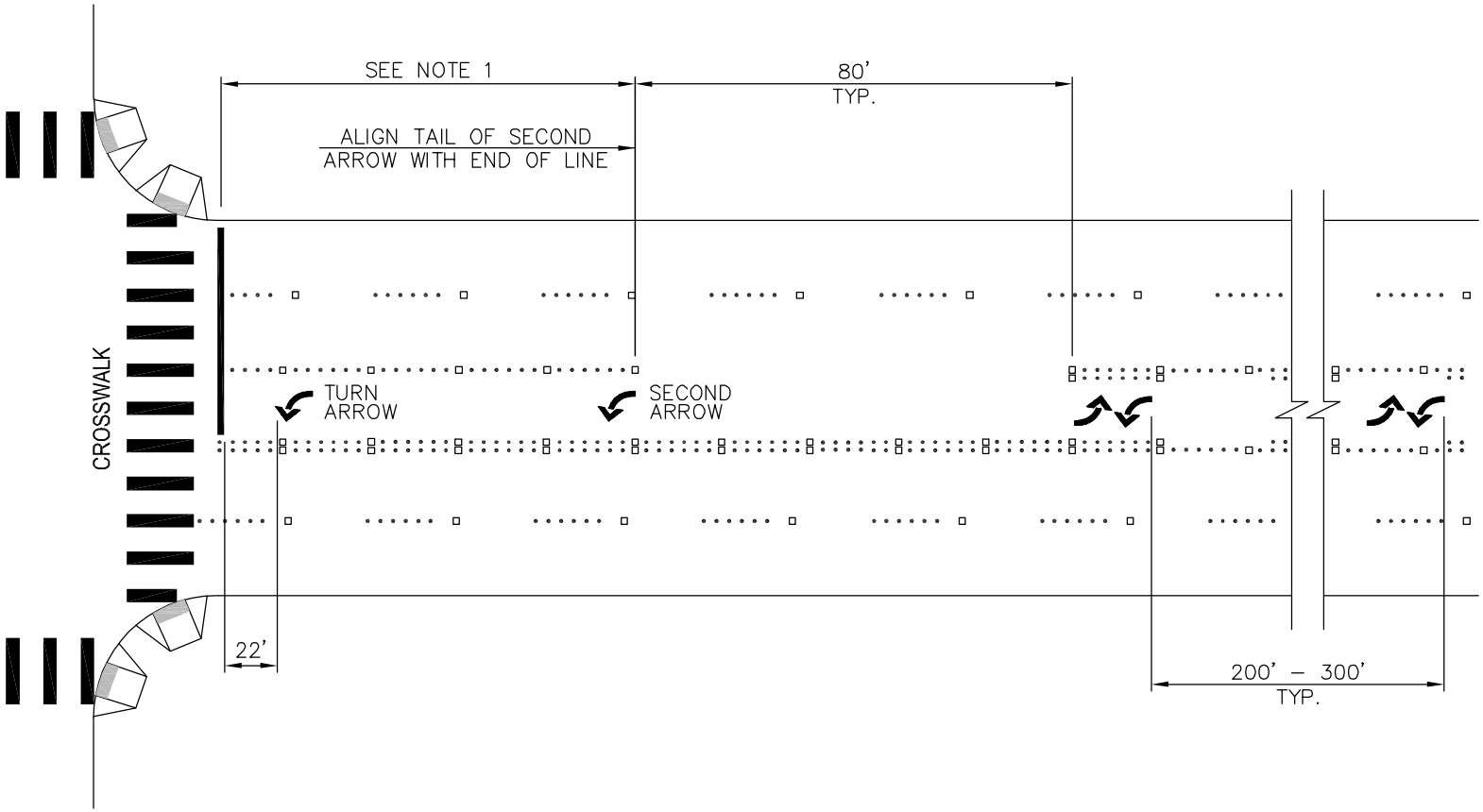
City of Bellevue

NONCONTINUOUS LEFT TURN LANE

DRAWING NUMBER	CH–190–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

NOTES:

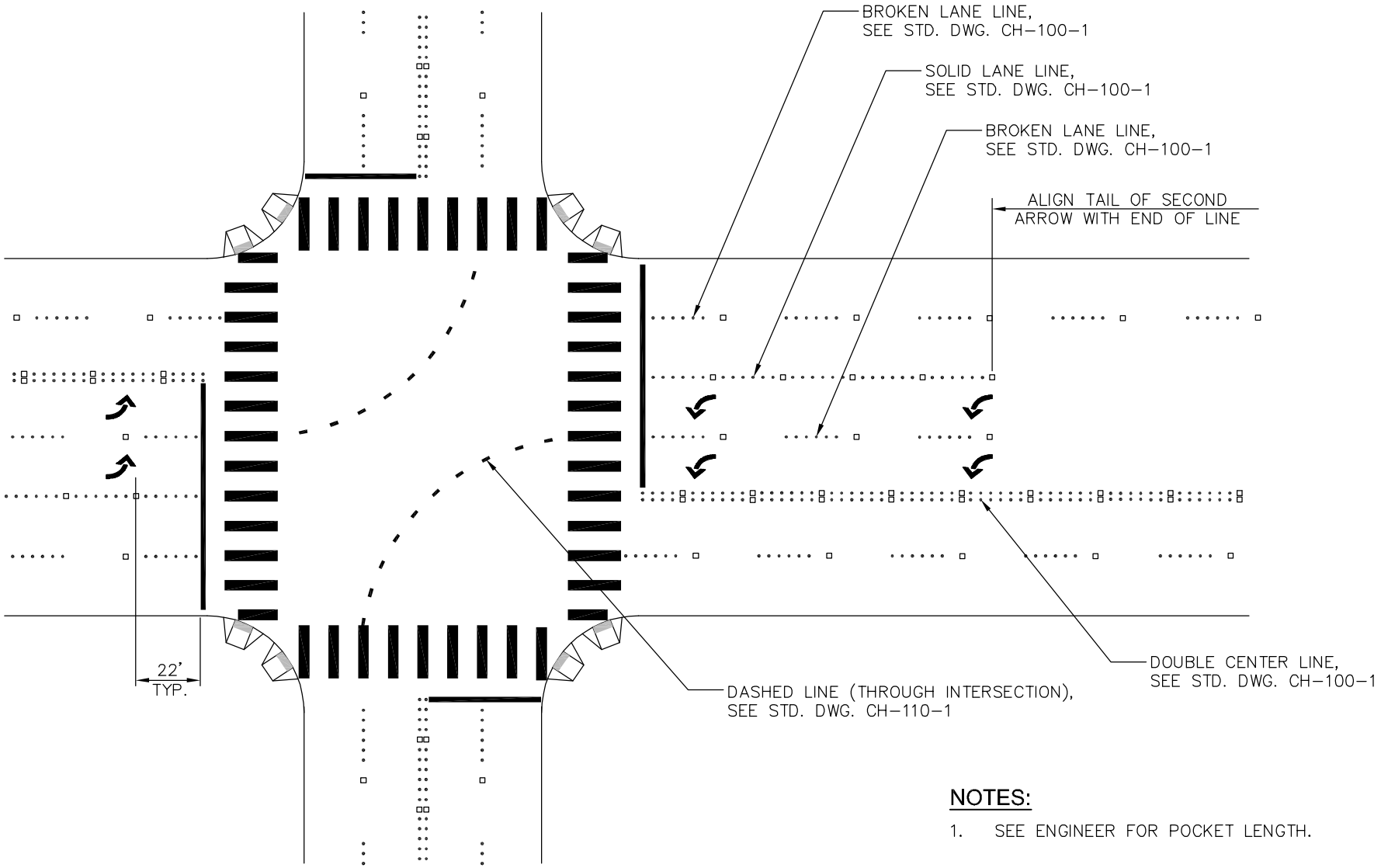
1. SEE ENGINEER FOR POCKET LENGTH.
2 DIMENSIONS SHOWN MAY BE MODIFIED TO ACCOMMODATE DRIVEWAYS.



City of Bellevue

LEFT TURN AND TWO WAY LEFT TURN LANE

DRAWING NUMBER	CH–200–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



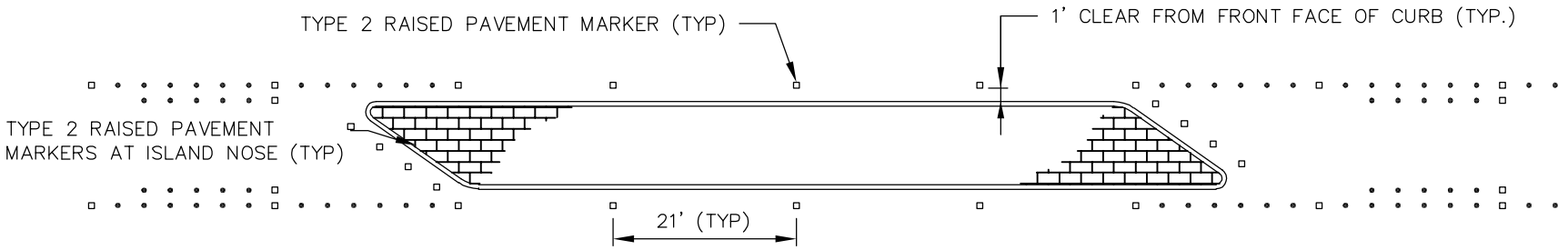
NOTES:

1. SEE ENGINEER FOR POCKET LENGTH.

City of Bellevue

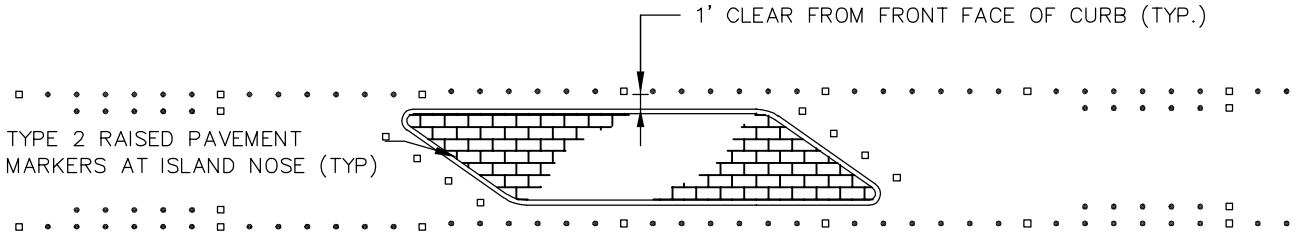
DUAL LEFT TURN AT INTERSECTION

DRAWING NUMBER	CH–210–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



TYPICAL CHANNELIZATION (MEDIAN LENGTH >50')

NOT TO SCALE



TYPICAL CHANNELIZATION (MEDIAN LENGTH <50')

NOT TO SCALE

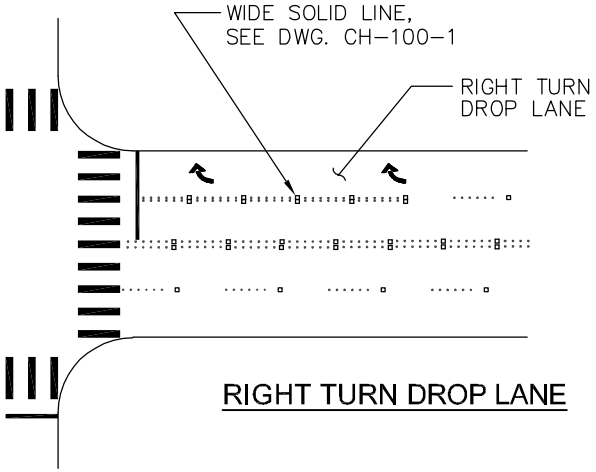
NOTES:

1. FOR CURB NOSE DIMENSIONS, SEE STD. DWG. RC–121–1
2. FOR MEDIANS WITH CROSSWALKS, SEE STD. DWG. CW–110–1.
3. RPMs SHALL NOT BE INSTALLED ON CEMENT CONCRETE CURB OR GUTTER.

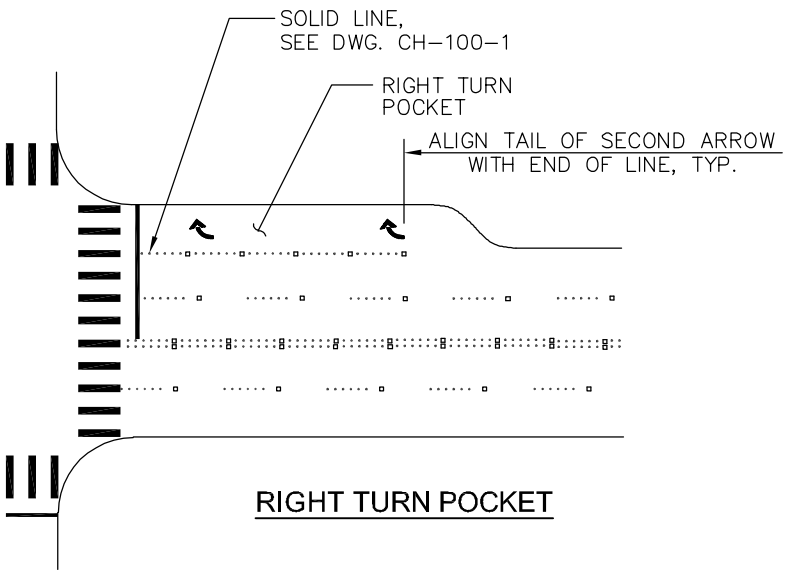
City of Bellevue

TYPICAL CHANNELIZATION AT MEDIAN ISLANDS

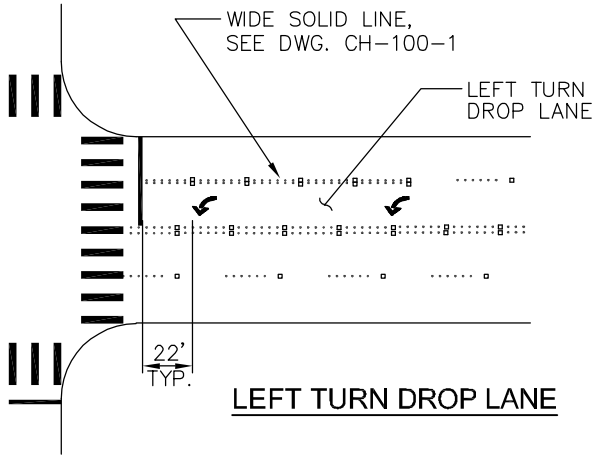
DRAWING NUMBER	CH–220–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



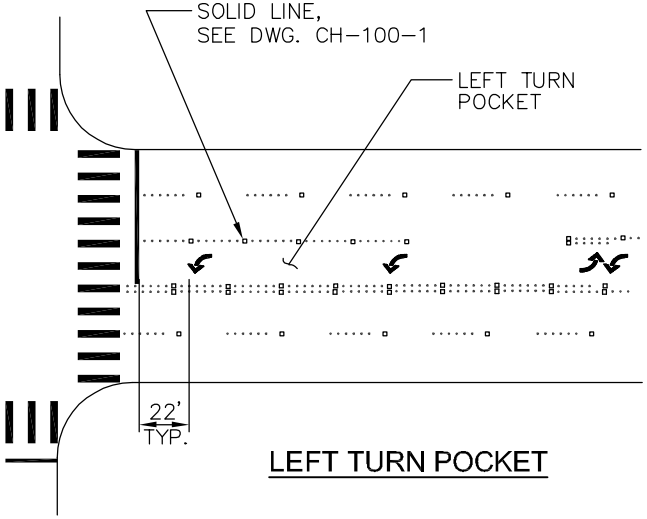
RIGHT TURN DROP LANE



RIGHT TURN POCKET



LEFT TURN DROP LANE



LEFT TURN POCKET

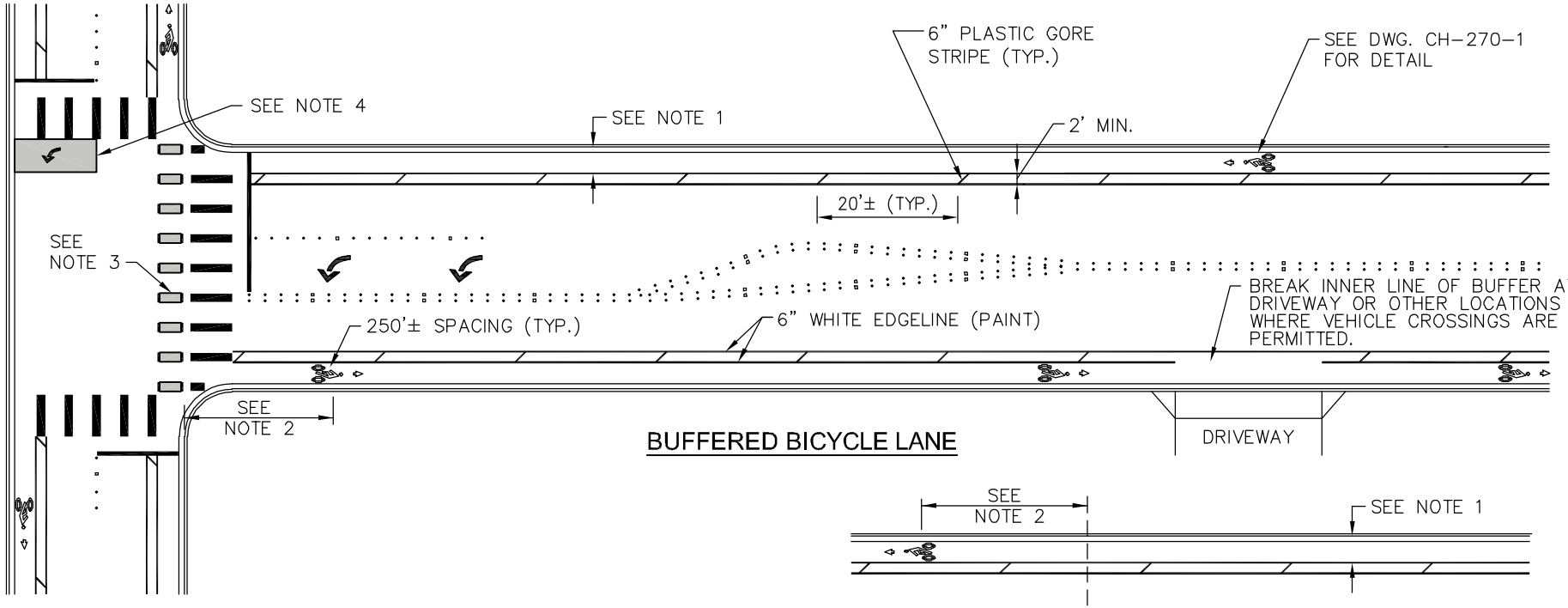
NOTES:

1. RIGHT AND LEFT TURN DROP LANES SHOULD ALSO BE SUPPLEMENTED WITH R3-7 (GROUND MOUNT) AND/OR R3-5 (OVERHEAD MOUNT) MANDATORY MOVEMENT LANE CONTROL SIGNS.

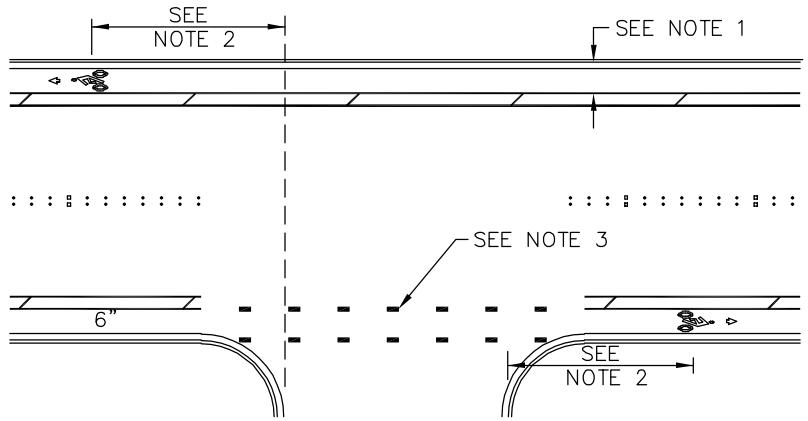
City of Bellevue

DROP LANES AND POCKETS

DRAWING NUMBER	CH-230-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



BUFFERED BICYCLE LANE



SIDE STREET TREATMENT

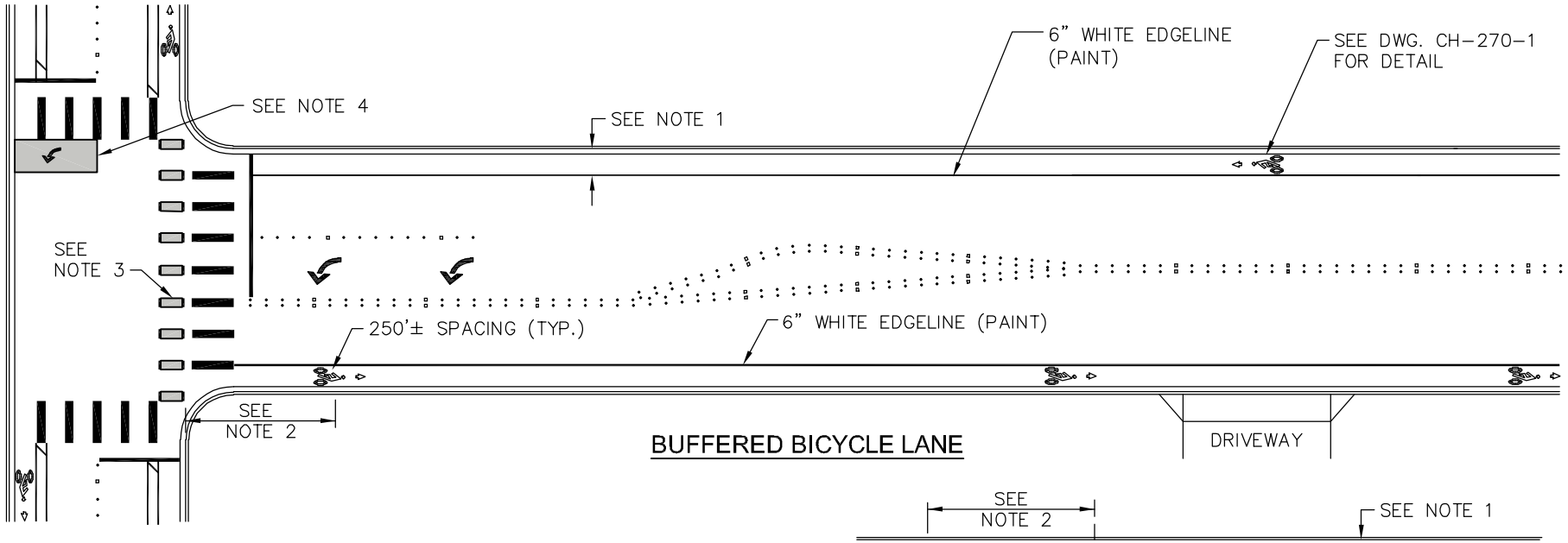
NOTES:

1. PREFERRED BIKE LANE WIDTH IS 6 FEET.
2. 40' TYPICAL (ADJUST AS NECESSARY FOR VEHICLE TRACKING).
3. BICYCLE THROUGH INTERSECTION MARKING MAY BE WARRANTED DEPENDING ON LOCATION. DESIGNS VARY. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS. SEE STD. DWG. CH-110-1 FOR MARKING DIMENSIONS.
4. CONSIDER THE USE OF TWO-STAGE TURN BOXES AT MULTI-LANE OR HIGHER SPEED SIGNALIZED INTERSECTIONS. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS. INTERSECTION OPERATION ANALYSIS REQUIRED.

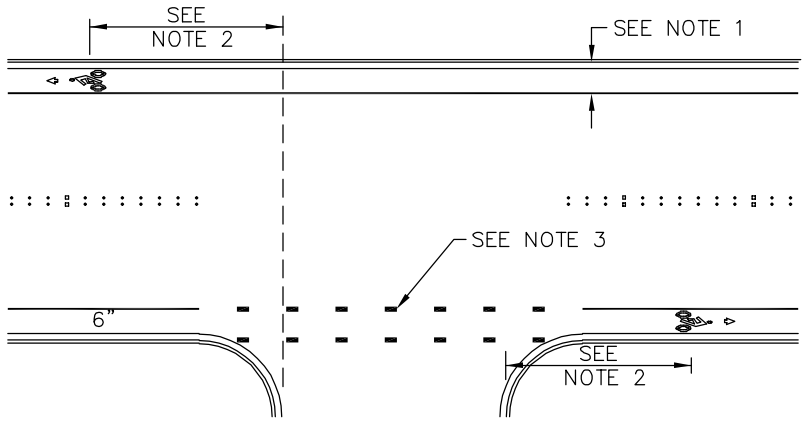
City of Bellevue

BUFFERED BICYCLE LANE CHANNELIZATION

DRAWING NUMBER	CH-240-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



BUFFERED BICYCLE LANE



SIDE STREET TREATMENT

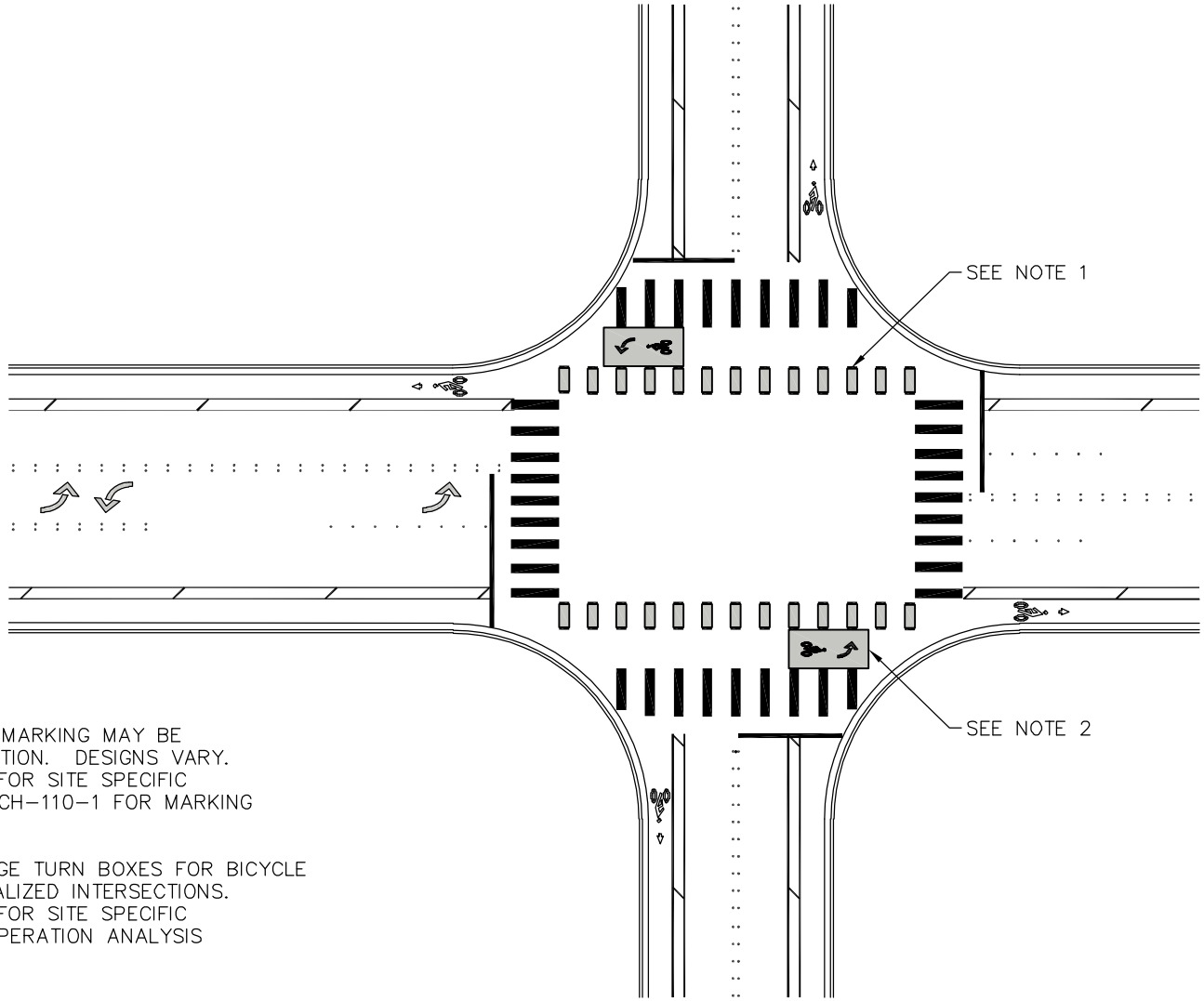
NOTES:

1. PREFERRED BIKE LANE WIDTH IS 6 FEET.
2. 40' TYPICAL (ADJUST AS NECESSARY FOR VEHICLE TRACKING.)
3. BICYCLE THROUGH INTERSECTION MARKING MAY BE WARRANTED DEPENDING ON LOCATION. DESIGNS VARY. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS. SEE STD. DWG. CH-110-1 FOR MARKING DIMENSIONS.
4. CONSIDER THE USE OF TWO-STAGE TURN BOXES AT MULTI-LANE OR HIGHER SPEED SIGNALIZED INTERSECTIONS. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS. INTERSECTION OPERATION ANALYSIS REQUIRED.
5. BUFFERED BIKE LANE SHALL BE EVALUATED AND IMPLEMENTED WHERE SPACE IS AVAILABLE.

City of Bellevue

STRIPED BICYCLE LANE CHANNELIZATION

DRAWING NUMBER	CH-241-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



NOTES:

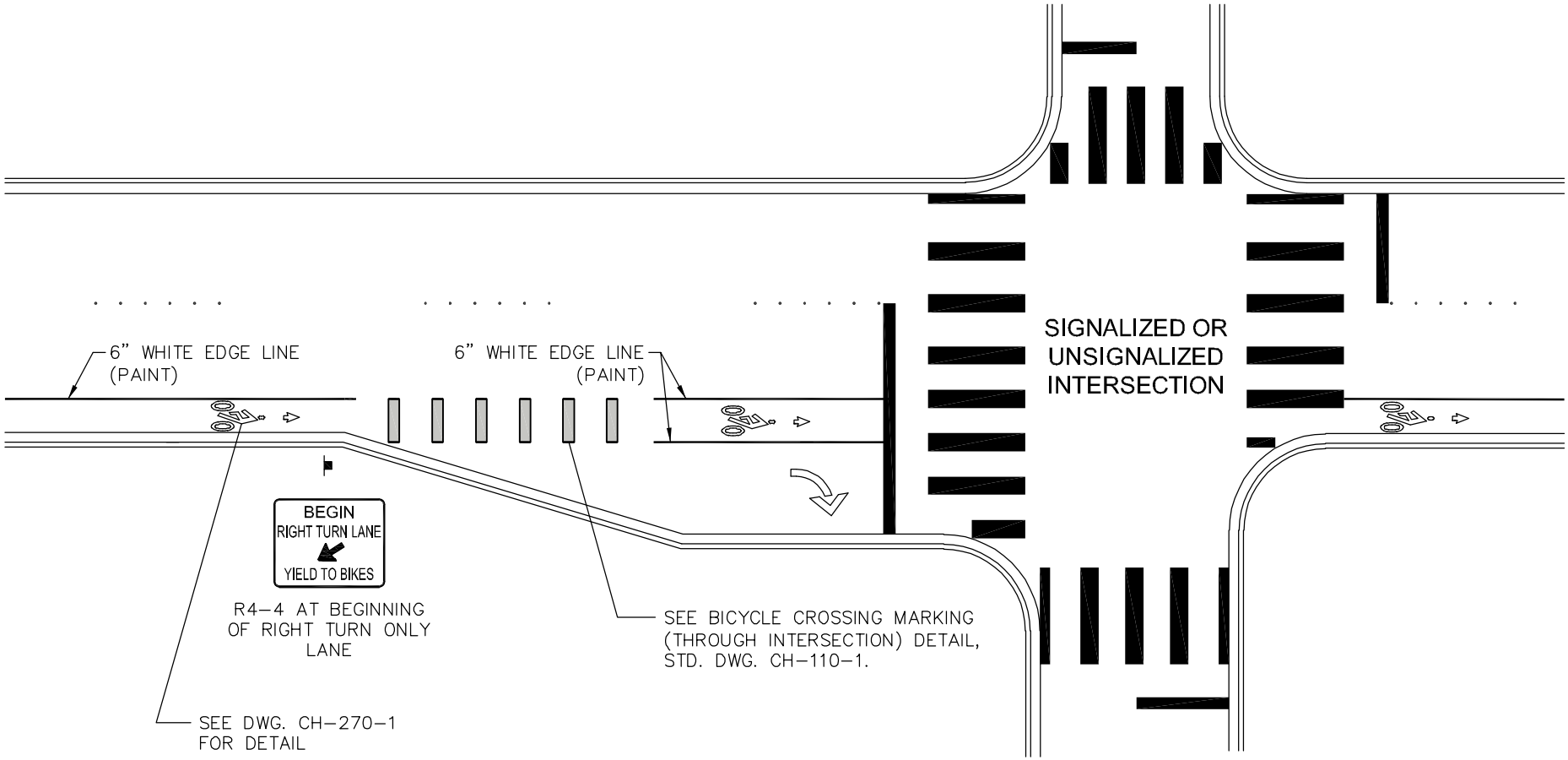
1. BICYCLE THROUGH INTERSECTION MARKING MAY BE WARRANTED DEPENDING ON LOCATION. DESIGNS VARY. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS. SEE STD. DWG. CH-110-1 FOR MARKING DIMENSIONS.

2. CONSIDER THE USE OF TWO-STAGE TURN BOXES FOR BICYCLE NETWORK CONNECTIVITY AT SIGNALIZED INTERSECTIONS. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS. INTERSECTION OPERATION ANALYSIS REQUIRED.

City of Bellevue

BICYCLE LANES AT INTERSECTIONS

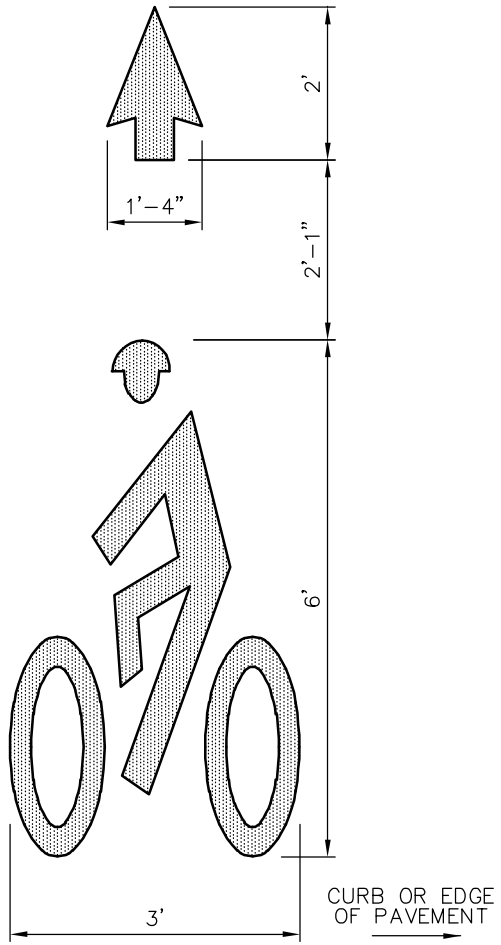
DRAWING NUMBER	CH-250-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



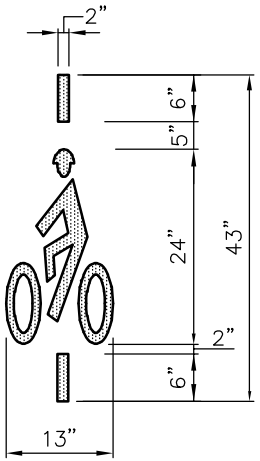
City of Bellevue

BIKE LANE TREATMENT AT RIGHT TURN POCKET

DRAWING NUMBER	CH-260-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



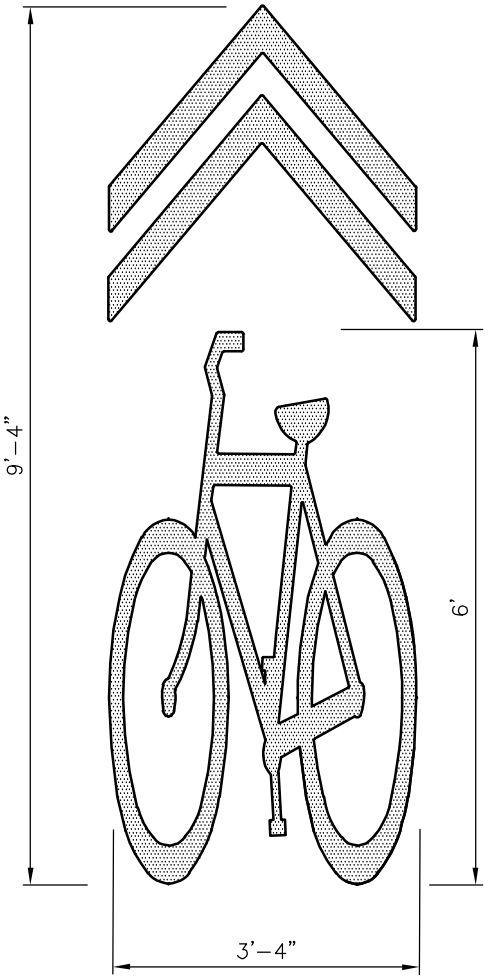
BICYCLE LANE SYMBOL



BICYCLE DETECTOR MARKING

NOTES:

1. BICYCLE LANE SYMBOL AND BICYCLE DETECTOR MARKING SHALL BE LOW PROFILE PREFORMED THERMOPLASTIC (90 MIL,). SHARED LANE SYMBOL SHALL BE 125 MIL.
2. BICYCLE MARKINGS SHALL ALWAYS FACE LEFT AND HAVE A HELMET.
3. ANY ADJUSTMENTS TO DIMENSIONS SHALL BE APPROVED IN ADVANCE BY THE ENGINEER.

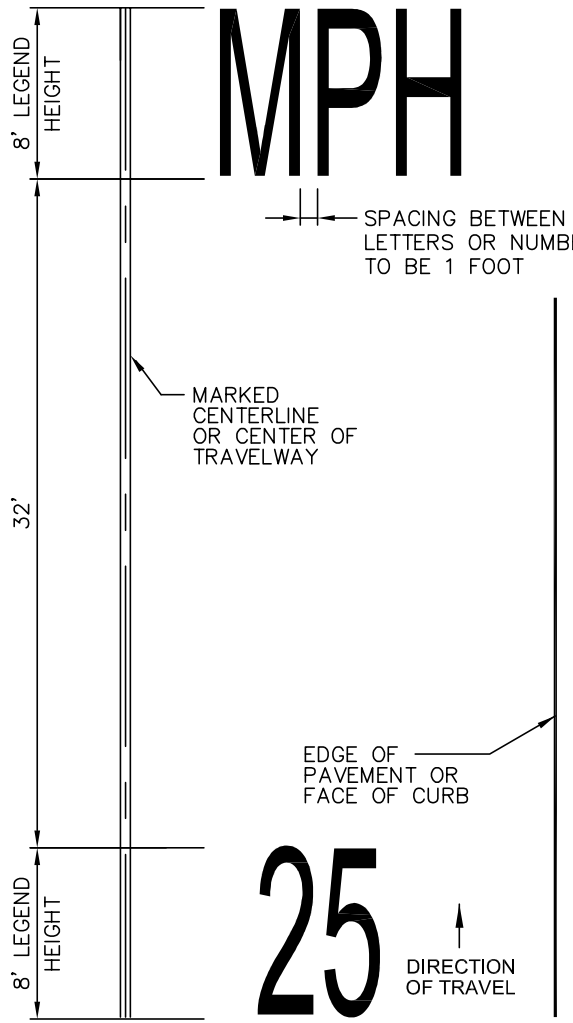


SHARED LANE SYMBOL

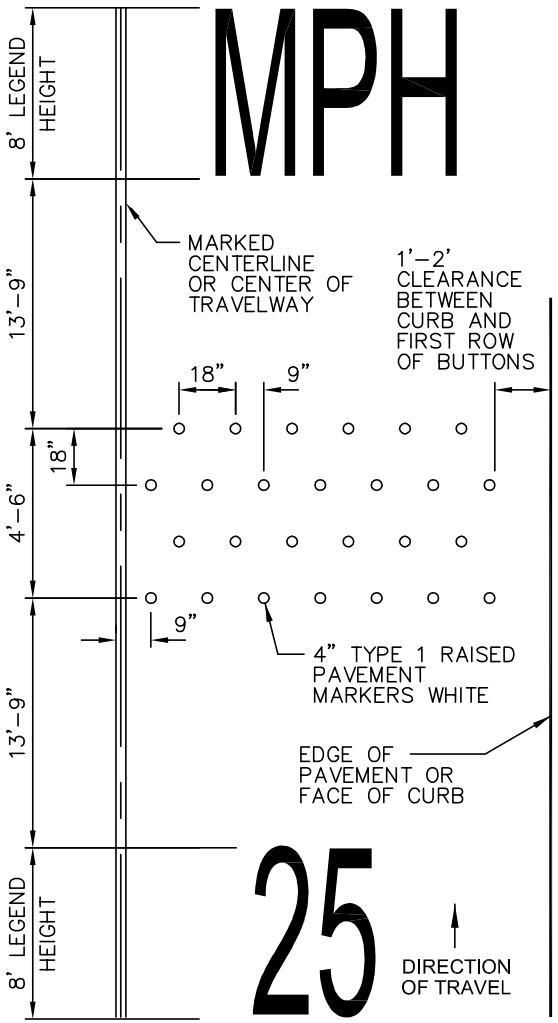
City of Bellevue

BICYCLE FACILITY MARKINGS

DRAWING NUMBER	CH–270–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



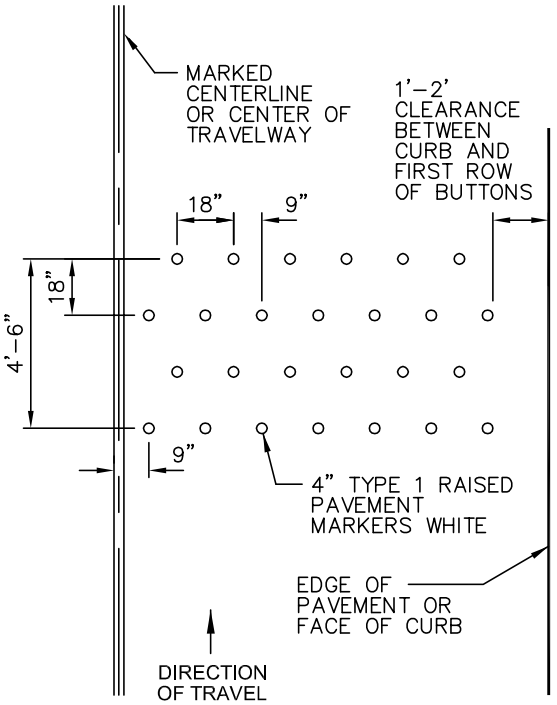
25 MPH LEGEND



RUMBLE STRIP WITH 25 MPH LEGEND

NOTES:

1. RUMBLE STRIP SHALL BE PLACED ACROSS ENTIRE ROADWAY WIDTH IF NO CENTERLINE EXISTS.
2. LEGEND MATERIAL USED SHALL BE PREFORMED THERMOPLASTIC (125 MIL. MIN.), UNLESS OTHERWISE APPROVED BY THE ENGINEER.



RUMBLE STRIP

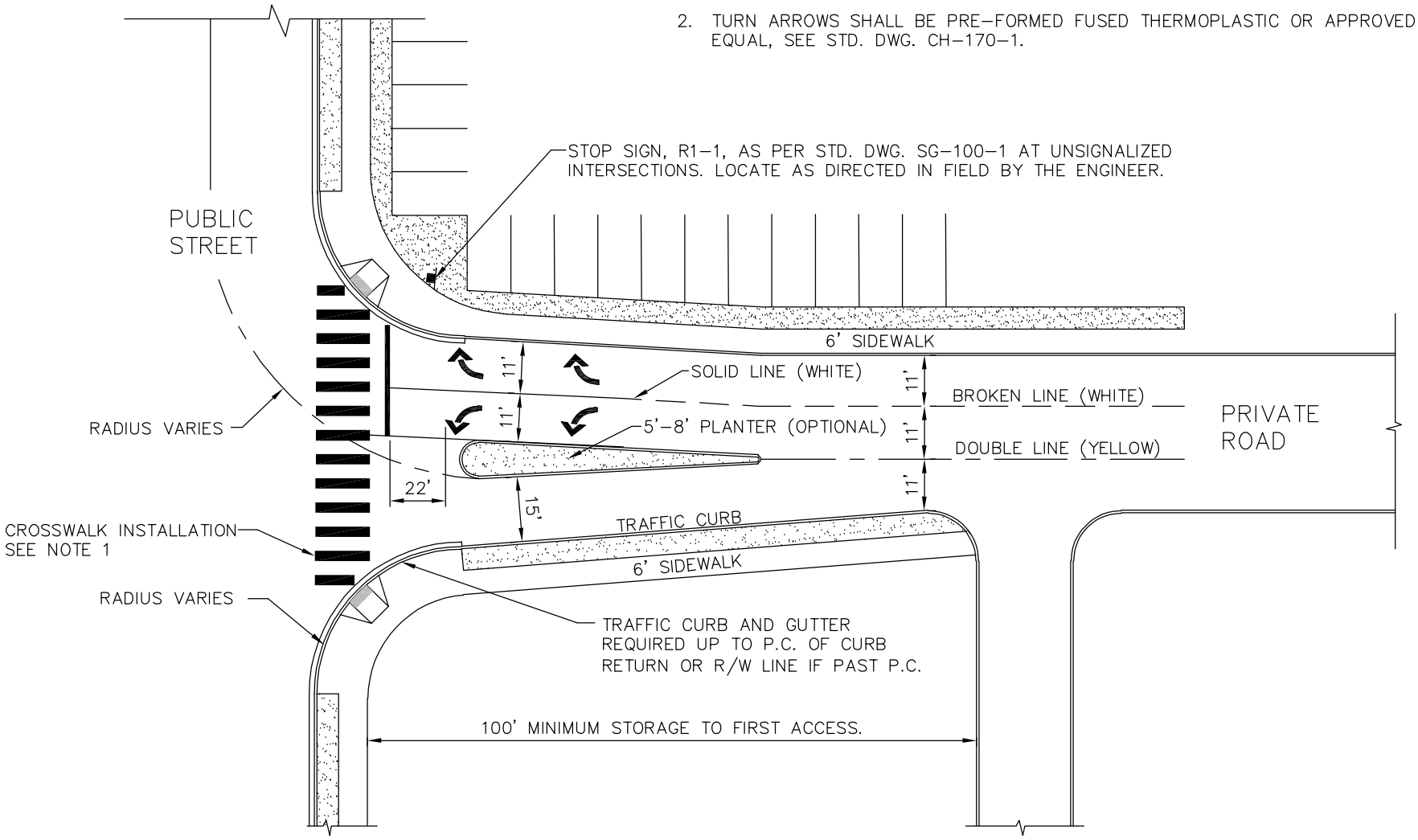
City of Bellevue

RUMBLE STRIP AND 25 MPH LEGEND

DRAWING NUMBER	CH–280–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

NOTES:

1. CROSSWALK SHALL BE HOT APPLIED THERMOPLASTIC OR APPROVED EQUAL, SEE STD. DWG. CW–100–1.
2. TURN ARROWS SHALL BE PRE–FORMED FUSED THERMOPLASTIC OR APPROVED EQUAL, SEE STD. DWG. CH–170–1.



City of Bellevue

PRIVATE COMMERCIAL ROAD/PUBLIC STREET INTERSECTION

DRAWING NUMBER	CH–290–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

CHANNELIZATION MATERIALS

THERMOPLASTIC:

1. TYPE A PLASTIC PAVEMENT MARKINGS SHALL BE HYDROCARBON BASED PLASTIC ONLY. NO ALKYD BASED TYPE A PLASTIC PAVEMENT MARKING MATERIAL WILL BE ALLOWED ON PROJECTS IN THE CITY. REFER TO SECTION 9-34.3 OF THE WSDOT STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.
   TYPE A PLASTIC PAVEMENT MARKINGS SHALL BE BC2000 HIGH PERFORMANCE EXTRUDE THERMOPLASTIC, MANUFACTURED BY ENNIS-FLINT, 4161 PIEDMONT PARKWAY SUITE 370, GREENSBORO, NC 27410.
2. TYPE B PLASTIC PAVEMENT MARKINGS SHALL BE ALKYD BASED PLASTIC ONLY. NO HYDROCARBON BASED TYPE B PLASTIC PAVEMENT MARKING MATERIAL WILL BE ALLOWED ON PROJECTS IN THE CITY. REFER TO SECTION 9-34.3 OF THE WSDOT STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION. TYPE B PLASTIC PAVEMENT MARKINGS SHALL BE PREMARK, MANUFACTURED BY ENNIS-FLINT, 4161 PIEDMONT PARKWAY SUITE 370, GREENSBORO, NC 27410.
3. TYPE D PLASTIC PAVEMENT MARKINGS SHALL BE HPS-6 MMA, MANUFACTURED BY ENNIS-FLINT, 4161 PIEDMONT PARKWAY SUITE 370, GREENSBORO, NC 27410 OR ALPINE MMA, MANUFACTURED BY ALPINE PRODUCTS INC., 550 3RD ST SW, AUBURN WA 98001.
4. PLASTIC PAVEMENT MARKINGS ON PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE TYPE D, EXCEPT FOR WORD AND SYMBOL MARKINGS SPECIFIED IN THE PLANS TO BE TYPE B.
5. TYPE B PLASTIC PAVEMENT MARKINGS SPECIFIED ON THE PLANS TO BE APPLIED ON PORTLAND CEMENT CONCRETE SHALL BE INSTALLED ON CLEAN, DRY CONCRETE IN CONJUNCTION WITH PREMARK LOW-VOC SEALER IN ACCORDANCE WITH THE MANUFACTURER'S APPLICATION INSTRUCTIONS FOR PORTLAND CEMENT CONCRETE. NEW CONCRETE SHALL BE ALLOWED TO CURE A MINIMUM OF 45 DAYS BEFORE APPLICATION.

PAINT:

1. ALL PAINT SHALL BE SOLVENT BASED PAINT. WATERBORNE PAINT WILL NOT BE PERMITTED FOR USE.

RAISED PAVEMENT MARKERS:

1. TYPE 1 RAISED PAVEMENT MARKERS SHALL BE ALPINE PRODUCTS MODEL ANR-Y1 OR ANR-W1, STIMSONITE MODEL B10 OR APPROVED EQUAL.
2. TYPE 2 RAISED PAVEMENT MARKERS SHALL BE STIMSONITE MODEL 953, STIMSONITE MODEL 980 OR APPROVED EQUAL.

DELINEATOR POSTS:

1. DELINEATOR POSTS AT PRECAST CURB NOSES SHALL BE FG-300-UR, 24" URETHANE MANUFACTURED BY PEXCO, 3110 70TH AVE. E., TACOMA WA 98424. WHITE POSTS SHALL HAVE (2) 3" REFL. HIP WHITE WRAPS AND A WHITE BASE; YELLOW POSTS SHALL HAVE (2) 3" REFL. HIP YELLOW WRAPS AND A YELLOW BASE.

ADHESIVES:

1. ALL RAISED PAVEMENT MARKERS INSTALLED ON HMA PAVEMENTS SHALL BE INSTALLED WITH A BITUMINOUS ADHESIVE, CRAFCO STANDARD PAVEMENT MARKER ADHESIVE, PART NUMBER 34270, MANUFACTURED BY CRAFCO, INC., 6165 W. DETROIT ST., CHANDLER AZ 85526; HE184 FLEXIBLE DOT STICK BITUMINOUS MARKER ADHESIVE MANUFACTURED BY HENRY COMPANY, 999 N. SEPULVEDA BLVD, SUITE 800, EL SEGUNDO CA 90245; OR APPROVED EQUAL. INSTALLATION SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
2. ALL RAISED PAVEMENT MARKERS INSTALLED ON PORTLAND CEMENT CONCRETE PAVEMENTS SHALL BE INSTALLED WITH AN EAS-06 TWO-PART EPOXY, MANUFACTURED BY FORREST TECHNICAL COATINGS, 1011 MCKINLEY ST., EUGENE OR 97402, OR APPROVED EQUAL. INSTALLATION SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
3. PRECAST TRAFFIC CURB SHALL BE INSTALLED WITH EPOXY ADHESIVE. EPOXY SHALL BE EAS-06 TWO-PART EPOXY, MANUFACTURED BY FORREST TECHNICAL COATINGS, 1011 MCKINLEY ST., EUGENE OR 97402, OR APPROVED EQUAL. INSTALLATION SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

City of Bellevue

MATERIAL SPECIFICATION FOR CHANNELIZATION

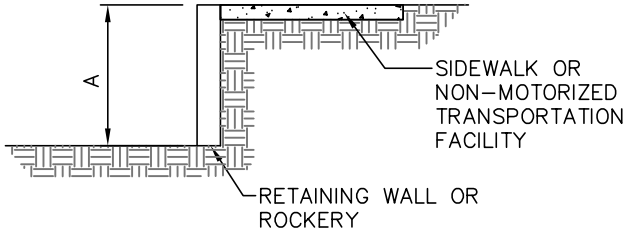
DRAWING NUMBER	CH-300-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

TRANSPORTATION DESIGN MANUAL

RS Drawings

Roadside Safety

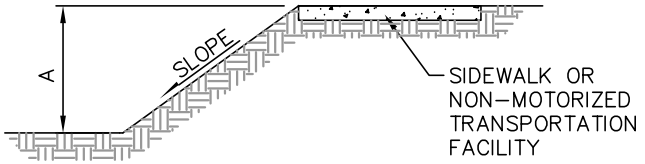

CITY OF BELLEVUE
WASHINGTON



SAFETY RAILING WARRANTED WHEN: DIMENSION "A" ≥ 1 FT

WARRANT 1

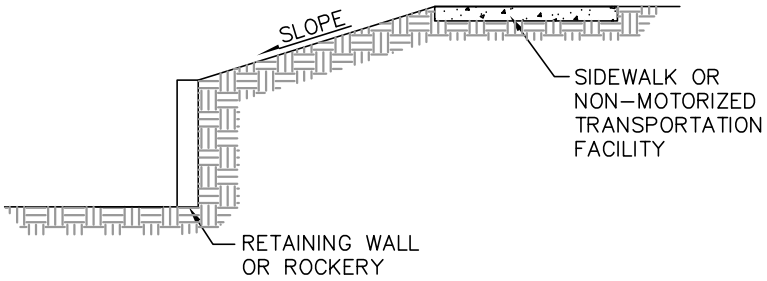
FOR DROP OFF AT BACK OF SIDEWALK



SAFETY RAILING WARRANTED WHEN: SLOPE IS STEEPER THAN 2H:1V AND DIMENSION "A" IS ≥ 1 FOOT

WARRANT 2

FOR SLOPE AT BACK OF SIDEWALK



SAFETY RAILING WARRANT TO BE DETERMINED BY THE ENGINEER

WARRANT 3

FOR SLOPE AND WALL DROP OFF AT BACK OF SIDEWALK

City of Bellevue

SAFETY RAILING INSTALLATION WARRANTS

DRAWING NUMBER	RS–100–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

METAL SAFETY RAILING NOTES:

MATERIAL REQUIREMENTS:

1. GALVANIZED STEEL RAILING SHALL BE USED. ALUMINUM MAY BE USED IN DOWNTOWN BELLEVUE.

GENERAL REQUIREMENTS:

1. SHOP DRAWINGS OF RAILING SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
2. PIPE RAILING, PIPE BALUSTERS AND PIPE RAILING SPLICES SHALL BE ADEQUATELY WRAPPED TO ENSURE SURFACE PROTECTION DURING HANDLING AND TRANSPORTATION TO THE JOB SITE.
3. CUTTING SHALL BE DONE BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH. FLAME CUTTING WILL NOT BE PERMITTED.
4. TOP AND BOTTOM RAILS SHALL BE PARALLEL TO GRADE AND ALL POSTS AND BALUSTERS SHALL BE VERTICAL (NOTE: NOT ALWAYS PERPENDICULAR TO TOP AND BOTTOM RAILS).
5. PLACE EXPANSION GAP AT EVERY OTHER PANEL.
6. ONLY USE PANEL HEIGHT OF 36 INCHES AFTER APPROVAL OF THE TRAFFIC ENGINEER.
7. SLEEVES SHALL BE 6" SCHEDULE 40 PVC PIPE. IF RAILING IS TO BE INSTALLED IN EXISTING SIDEWALK, HOLES SHALL BE CORE DRILLED 2 INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE POST, AND NO LESS THAN 6" FROM THE EDGE OF CONCRETE.
8. AVOID PLACING SAFETY RAIL IN SIGHT LINES. SEE STD. DWGS. RL–100–1, RL–110–1, AND RL–120–1.
9. SEE DESIGN STANDARD 13 FOR ADDITIONAL INFORMATION.

STEEL RAILING REQUIREMENTS:

1. POST AND RAIL MATERIAL SHALL BE SCHEDULE 40 STEEL PIPE CONFORMING TO ASTM A 53, GRADE B. BALUSTERS SHALL BE SOLID STEEL BARS CONFORMING TO AASHTO M 183.
2. SPOT WELDING IS NOT ALLOWED. ALL WELDS SHALL ENCOMPASS THE ENTIRE JOINT.
3. SAFETY RAILING WILL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
4. ANY FIELD CUTTING OR WELDING AREAS SHALL BE GROUND SMOOTH AND COATED WITH AT LEAST 2 COATS OF COLD GALVANIZED PAINT

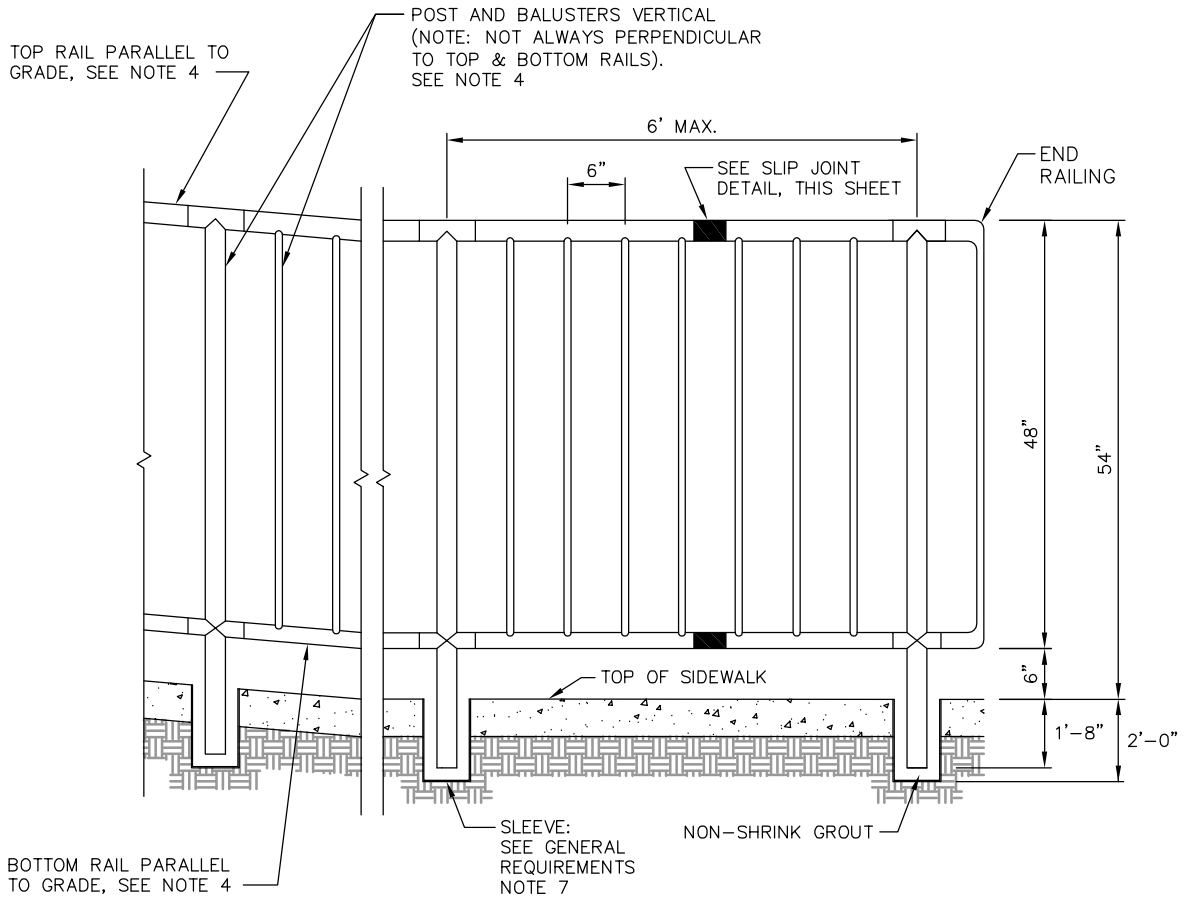
ALUMINUM RAILING REQUIREMENTS:

1. RAILING SHALL BE CV PIPE RAIL OR APPROVED EQUIVALENT. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS. BALUSTERS SHALL BE SOLID ALUMINUM FULL WELDED IN PLACE.
2. ALL ALUMINUM PARTS SHALL BE GIVEN A CLEAR ANODIC COATING AT LEAST 0.0006 INCH THICK AND BE HOT WATER SEALED AND SHALL HAVE A UNIFORM FINISH.
3. PIPE RAILING AND PIPE RAILING SPLICES MAY BE HEATED TO NOT MORE THAN 400°F FOR A PERIOD NOT TO EXCEED 30 MINUTES TO FACILITATE FORMING OR BENDING.
4. WELDING OF ALUMINUM SHALL BE IN ACCORDANCE WITH THE LATEST AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
5. RAILS, POSTS AND FORMED ELBOWS SHALL BE A.S.T.M. B–241 OR B–429 ALLOW 6063–T6 SCHEDULE 40 (STD PIPE). BRACKETS, END CAPS AND OTHER FITTINGS SHALL BE A.S.T.M. 6063–T5. SPLICES AND REINFORCING SLEEVES SHALL BE DRAWN ALUMINUM TUBING 6063–T832. SLEEVE I.D. SHALL BE 1" GREATER THAN POST O.D.

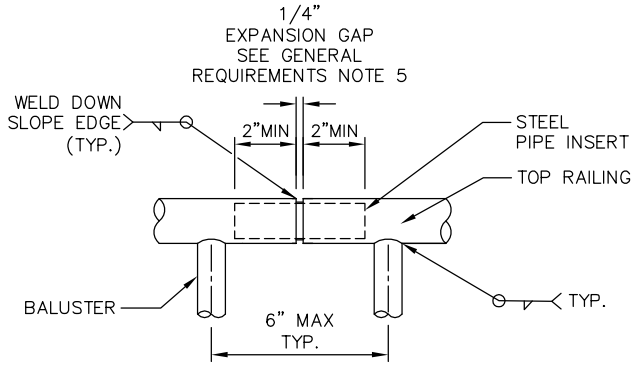
City of Bellevue

NOTES FOR METAL SAFETY RAILING

DRAWING NUMBER	RS–110–1
SCALE	NONE
REVISION DATE	2/18
DEPARTMENT	TRANS



METAL SAFETY RAILING DETAIL



SLIP JOINT DETAIL

MATERIAL DIMENSIONS

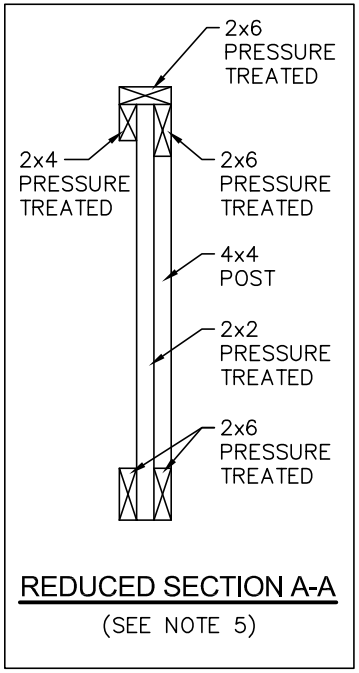
PANEL HEIGHT	48"
TOP RAIL/POST	2½" NOM.
BOTTOM RAIL	2" NOM.
BALUSTER	⅞"ø BAR

NOTES REFERENCED ON THIS SHEET ARE LOCATED ON STD. DWG. RS-110-1

City of Bellevue

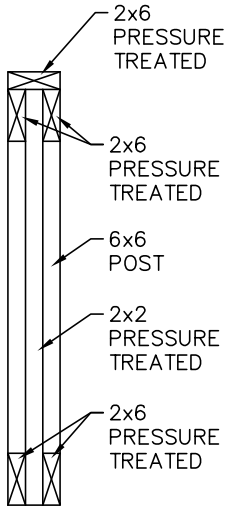
METAL SAFETY RAILING DETAILS

DRAWING NUMBER	RS-120-1
SCALE	NONE
REVISION DATE	2/18
DEPARTMENT	TRANS

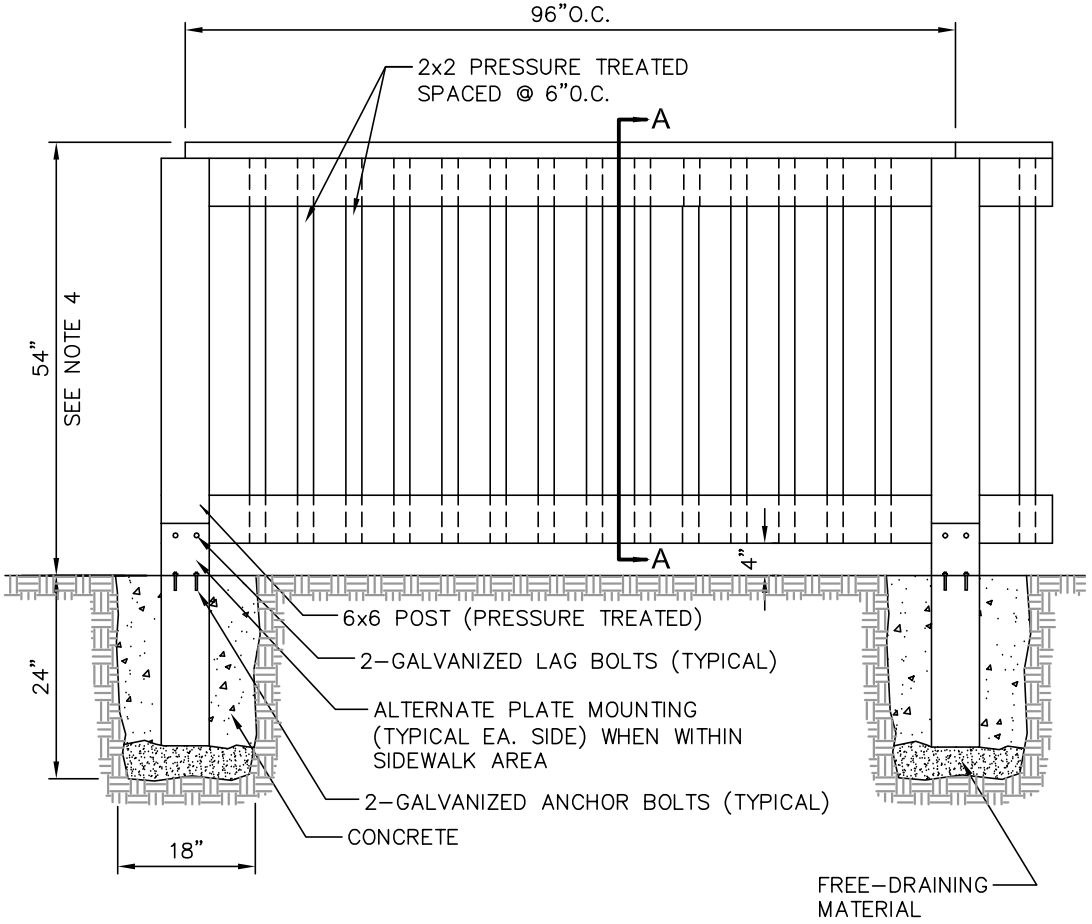


REDUCED SECTION A-A

(SEE NOTE 5)



SECTION A-A



ELEVATION VIEW

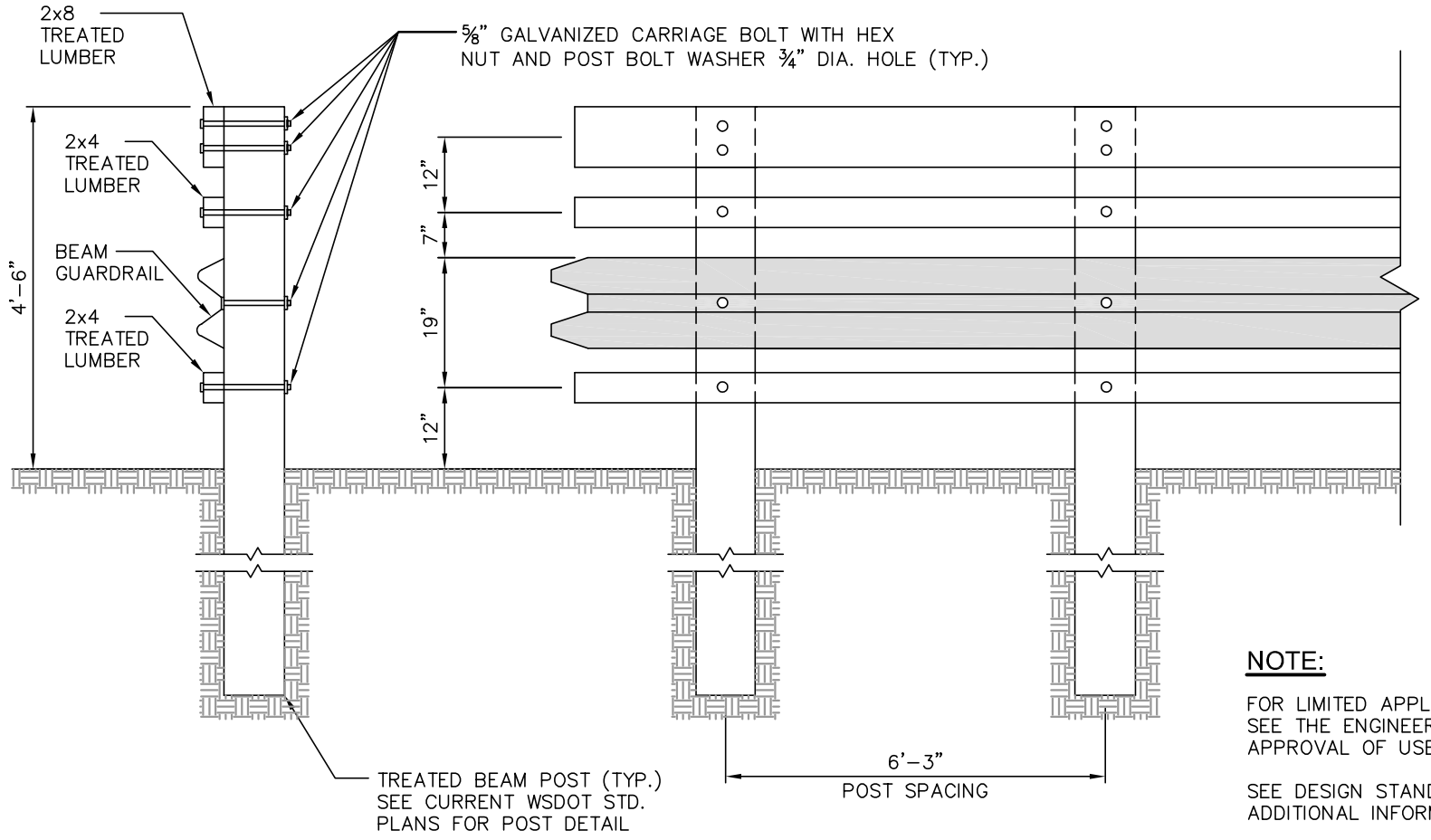
NOTES:

1. USE ON TRAILS OR TO UPGRADE EXISTING WOOD RAILING.
2. FOR NEW INSTALLATIONS IN SIDEWALK, METAL RAILING IS PREFERRED (SEE STD. DWG. RS-110-1 AND RS-120-1).
3. AVOID PLACING IN SIGHT LINES (SEE STD. DWGS. RL-100-1, RL-110-1, AND RL-120-1).
4. 42" HEIGHT MAY BE USED ONLY UPON APPROVAL OF THE ENGINEER.
5. USE REDUCED CROSS SECTION ONLY UPON APPROVAL OF THE ENGINEER.
6. NAILING – TWO NAILS PER JOINT MINIMUM, WITH PENETRATION TO ADEQUATELY SECURE THE JOINT. NAILS MUST BE GALVANIZED.
7. SEE DESIGN STANDARD 13 FOR ADDITIONAL INFORMATION.

City of Bellevue

WOOD SAFETY RAILING

DRAWING NUMBER	RS-130-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



NOTE:

FOR LIMITED APPLICATIONS.
SEE THE ENGINEER FOR
APPROVAL OF USE.

SEE DESIGN STANDARD 13 FOR
ADDITIONAL INFORMATION.

City of Bellevue

COMBINATION GUARDRAIL & HANDRAIL

DRAWING NUMBER	RS-140-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

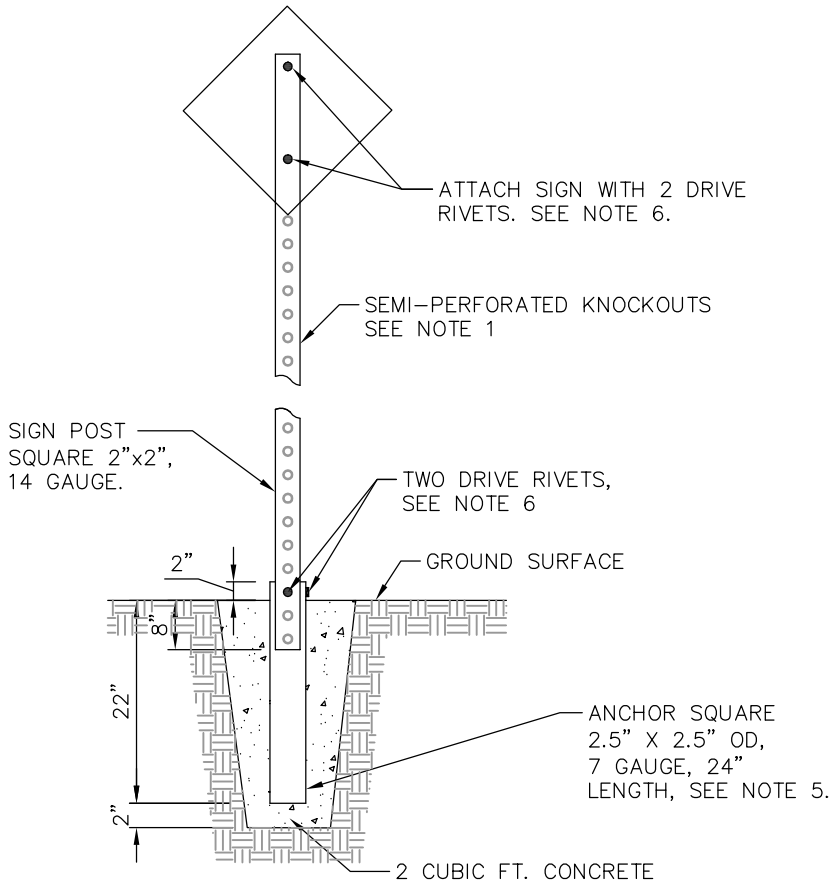

CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

SG Drawings

Signing


CITY OF BELLEVUE
WASHINGTON



SQUARE METAL POST

SIGN POST NOTES

1. SIGN POST SHALL BE 2"x2" SQUARE STEEL POSTS, MINIMUM 14 GAUGE, WITH 7/16" SEMI-PERFORATED KNOCKOUTS ON 1" CENTERS FULL LENGTH FOUR SIDES..
2. STOP AND YIELD SIGN POSTS SHALL HAVE REFLECTOR ATTACHMENT FOR ALTERNATING 1' BANDS OF RED AND WHITE, SEE STD. DWG. SG-110-1.
3. FOR IN-SIDEWALK INSTALLATIONS, CORE 4" DIAM. HOLE. ANCHOR LENGTH MAY BE DECREASED TO 12".
4. POST SHALL BE ROLLED CARBON SHEET STEEL AND SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A653, G90, STRUCTURAL QUALITY GRADE 50.
5. ANCHOR SHALL HAVE FOUR 7/16" DIAM. HOLES, ONE EACH SIDE, 2" FROM TOP END. ANCHOR SHALL MEET THE REQUIREMENTS OF ASTM A500 GRADE B AND SHALL BE HOT DIPPED GALVANIZED.
6. INSTALL TWO DRIVE RIVETS AT 90 DEGREES TO EACH OTHER. DRIVE RIVETS TO BE 3/8" DIA., ZUMAR TL3806 OR DUNLAP INDUSTRIAL VCR221.

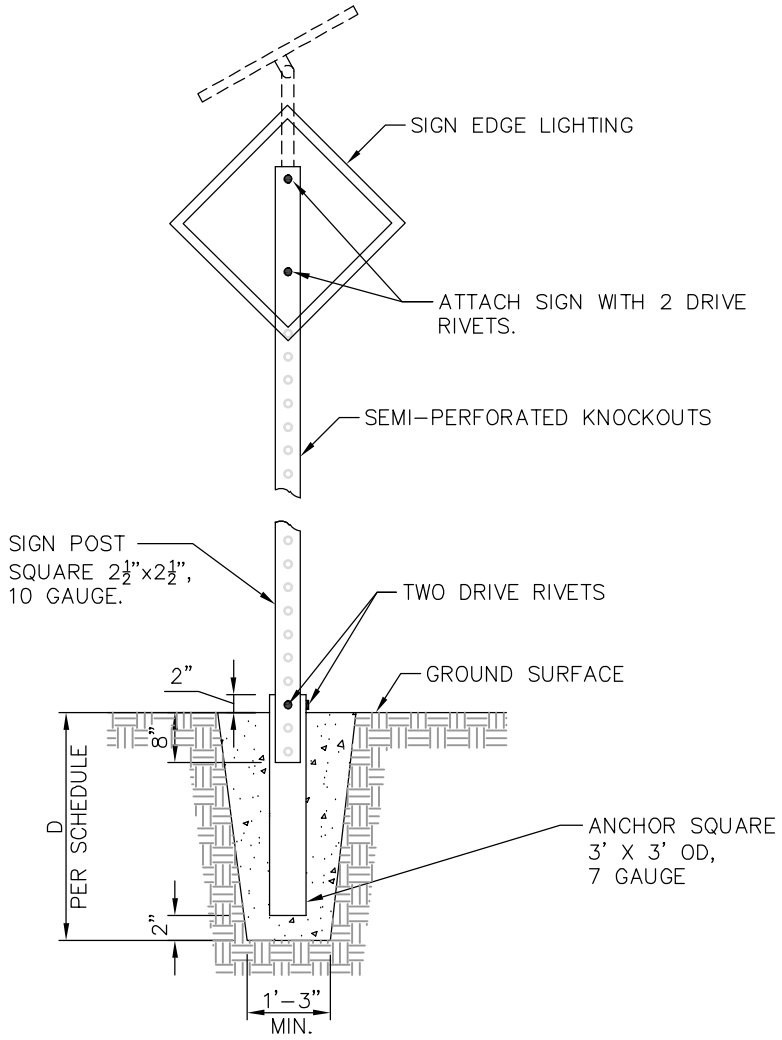
SIGN INSTALLATION NOTES

1. SIGN SHEETING REQUIREMENTS:
   STOP, YIELD, KEEP RT, TURN RESTRICTION, LARGE ARROW, CHEVRON, CURVE/TURN WARNING, PED & ADV PED CROSSING, SCHOOL AND ADV SCHOOL CROSSING, STOP/YIELD/SIGNAL AHEAD, OBJECT MARKERS, END OF ROAD MARKER, ALL STREET NAME SIGNS AND ALL MAST ARM OR OVERHEAD MOUNTED SIGNS SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL OTHER SIGNS SHALL BE 3M HIGH INTENSITY PRISMATIC SHEETING, OR APPROVED EQUAL.
2. SIGN HEIGHT SHALL BE 7' FROM BOTTOM OF SIGN TO STREET OR SIDEWALK OR 6.5' FROM BOTTOM OF LOWER SIGN FOR MULTIPLE SIGNS ON ONE POST. EXCEPTIONS ONLY AS SPECIFICALLY STATED ON PLANS OR APPROVED BY THE ENGINEER.

City of Bellevue

SIGN INSTALLATION DETAILS

DRAWING NUMBER	SG-100-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



SQUARE METAL POST

FOUNDATION SCHEDULE		
LOADING AT BASE M	GROUND CONDITION (SEE NOTES)	FOUNDATION DEPTH D
< 3500 FT-LB	FLAT	4'-0"
	SLOPED	5'-0"

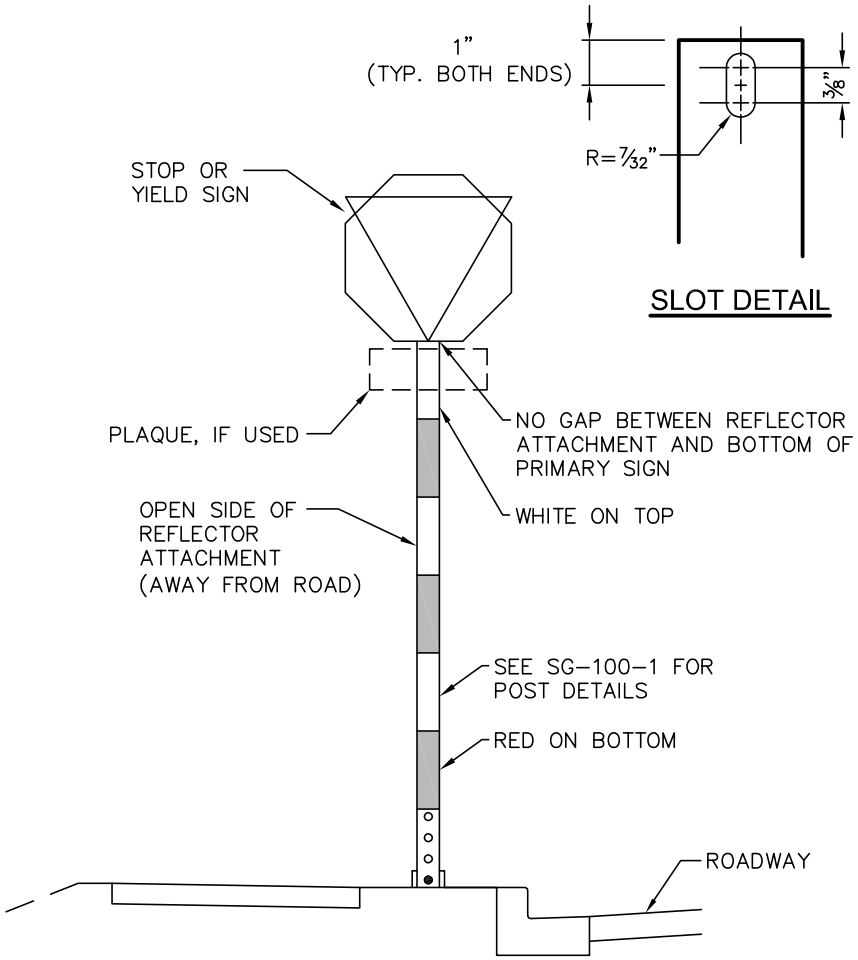
NOTES:

1. THIS EDGE-LIT SIGN DETAIL SHALL ONLY BE USED FOR SOLAR POWERED SIGNS. AC-POWERED EDGE-LIT SIGNS SHALL USE 4" PIPE, PEDESTAL, AND FOUNDATION DETAILED IN STD. DWGS. SL-140-2 AND SL-141-1.
2. REFER TO CITY OF BELLEVUE STANDARD DRAWING SG-100-1 FOR SIGN INFORMATION NOT SHOWN HERE.
3. IF SIGN BASE MOMENT EXCEEDS 3500 FT-LB THEN USE PIPE, PEDESTAL, AND FOUNDATION DETAILS IN STD. DWGS. SL-140-2 AND SL-141-1.
4. FLAT GROUND CONDITION SHOULD BE USED IF SLOPE IS 4H:1V OR LESS.
5. SLOPED GROUND CONDITION SHOULD BE USED IF SLOPE IS GREATER THAN 4H:1V BUT LESS THAN 2H:1V.
6. FOUNDATION DEPTHS PROVIDED ASSUME SOIL CAN BE CLASSIFIED AS SAND. FOR PREDOMINATELY CLAY SOILS A PROJECT SPECIFIC DESIGN WILL BE REQUIRED.

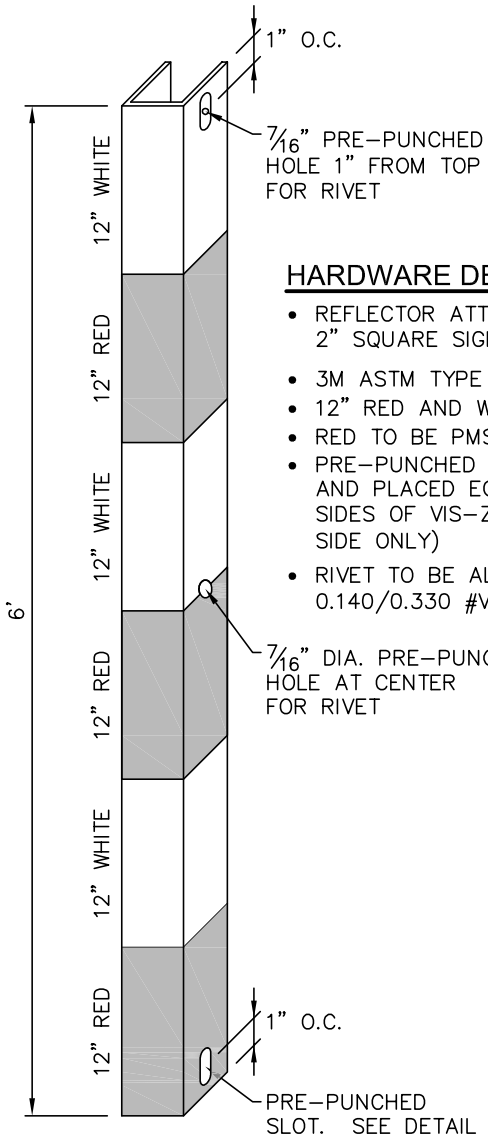
City of Bellevue

SOLAR POWERED EDGE-LIT SIGN FOUNDATION

DRAWING NUMBER	SG-101-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



SLOT DETAIL



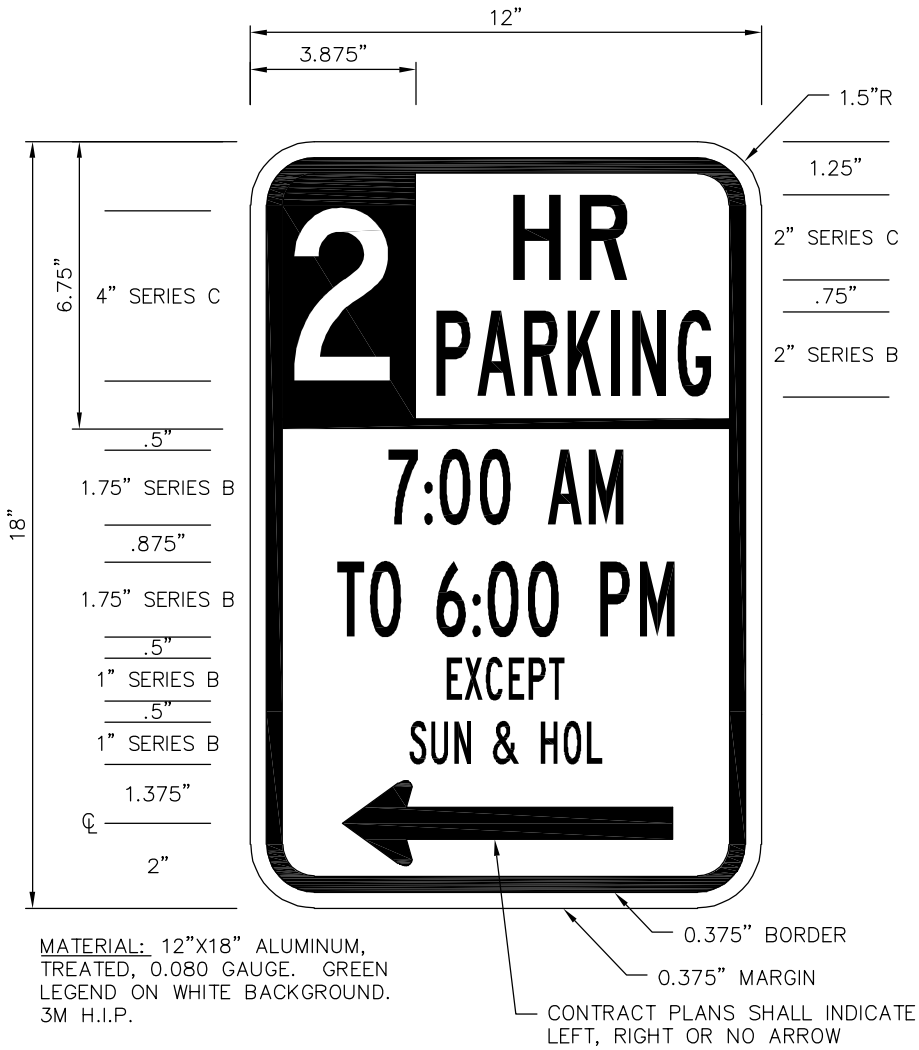
HARDWARE DETAIL NOTES

- REFLECTOR ATTACHMENT TO BE VIS-Z-SHIELD® FOR 2" SQUARE SIGN POST, OR APPROVED EQUAL.
- 3M ASTM TYPE 1V REFLECTIVE SHEETING.
- 12" RED AND WHITE ALTERNATING REFLECTIVE BANDS.
- RED TO BE PMS 186 TRANSPARENT INK.
- PRE-PUNCHED SLOTS AND HOLES ARE MEASURED AND PLACED EQUALLY ON BOTH LEFT AND RIGHT SIDES OF VIS-Z-SHIELD® (DRAWING SHOWS ONE SIDE ONLY)
- RIVET TO BE ALUMINUM DRIVE PIN RIVETS 3/8" GP 0.140/0.330 #VCR221, OR APPROVED EQUAL.

City of Bellevue

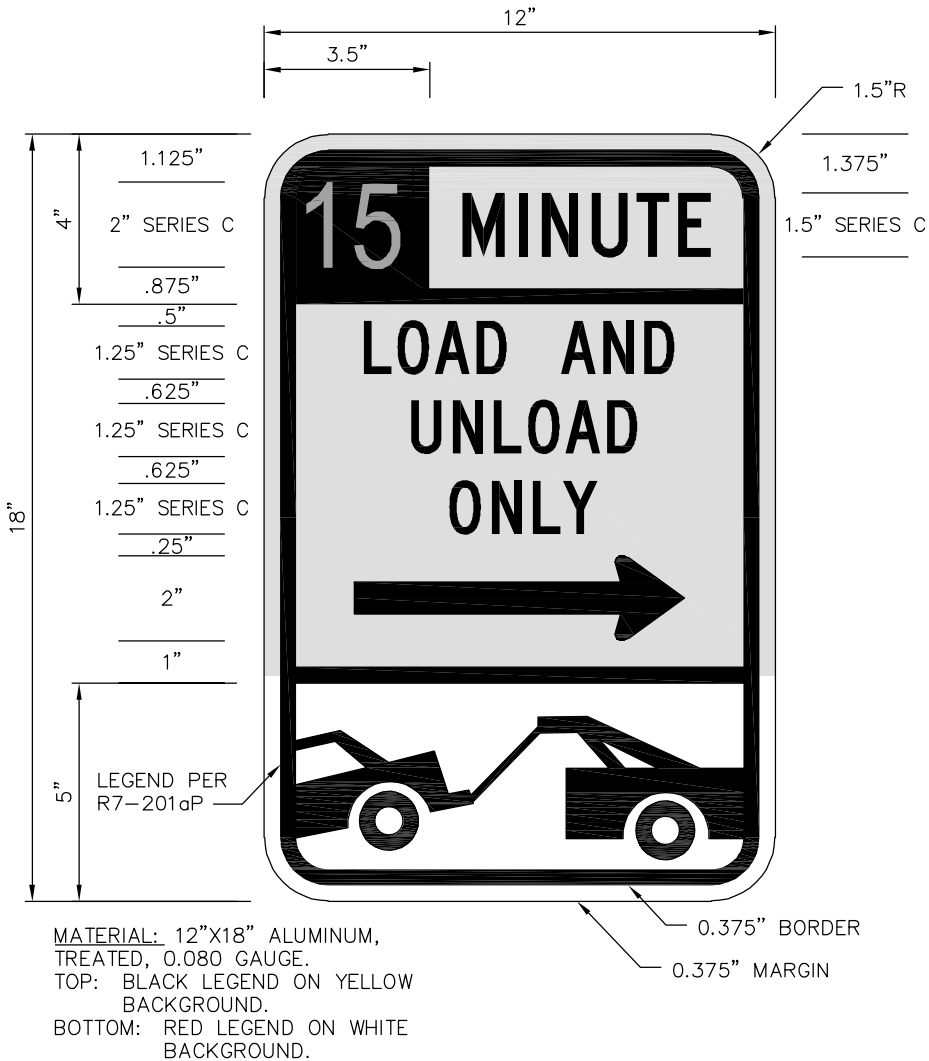
STOP AND YIELD SIGN POST REFLECTOR ATTACHMENT

DRAWING NUMBER	SG-110-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



MATERIAL: 12"X18" ALUMINUM, TREATED, 0.080 GAUGE. GREEN LEGEND ON WHITE BACKGROUND.
3M H.I.P.

2-HR PARKING



MATERIAL: 12"X18" ALUMINUM, TREATED, 0.080 GAUGE.
TOP: BLACK LEGEND ON YELLOW BACKGROUND.
BOTTOM: RED LEGEND ON WHITE BACKGROUND.
3M H.I.P.

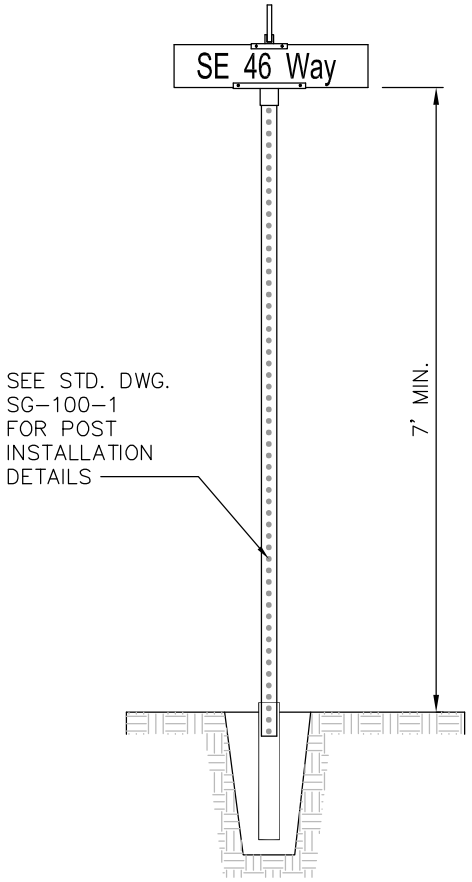
15-MINUTE LOAD ZONE

NOTE: FOR OTHER SIGNS, CONTACT THE REVIEW ENGINEER

City of Bellevue

TIME RESTRICTED PARKING

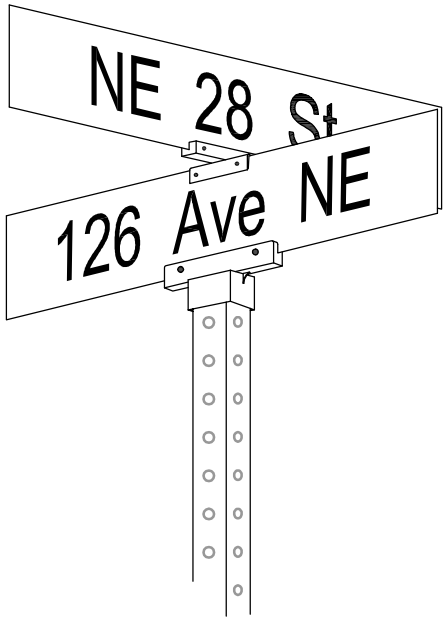
DRAWING NUMBER	SG-120-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

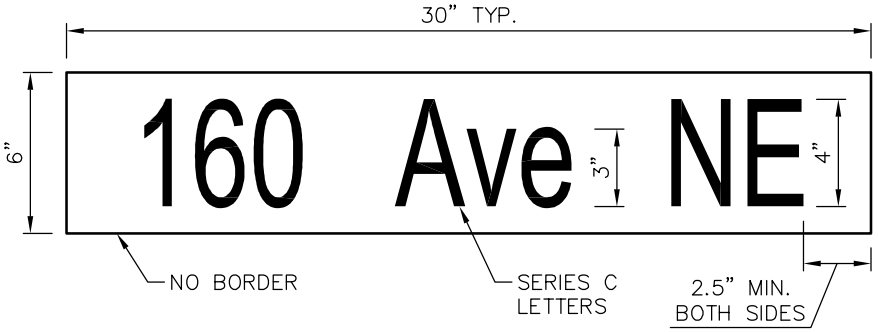


TYPICAL INSTALLATION

ABBREVIATIONS:

STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter





159 Pl SE

SE 23 Ln

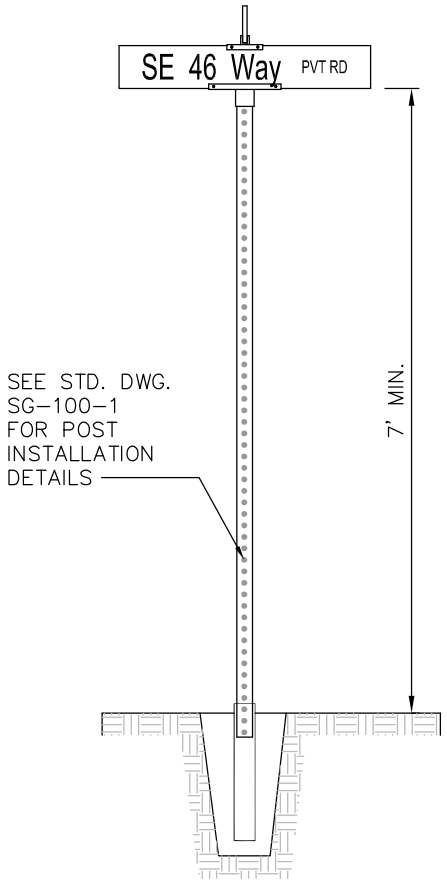
NOTES:

1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 1 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, NO BORDER, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 6" EXTRUDED ALUMINUM, TREATED, EXCEPT 9" BLADE SHALL BE USED FOR STREET NAMES CONTAINING LOWER CASE LETTERS WITH DESCENDING STEMS OR TAILS (E.G., "g", "p", "y").
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 4" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG SG-100-1.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.
9. LAYOUT OF NON-NUMBERED STREET NAME LETTERING (E.G., Newport Key, Vineyard Crest) WILL BE PROVIDED BY THE ENGINEER.

City of Bellevue

STREET NAME SIGN – TYPE 1
NON-ARTERIAL STREET

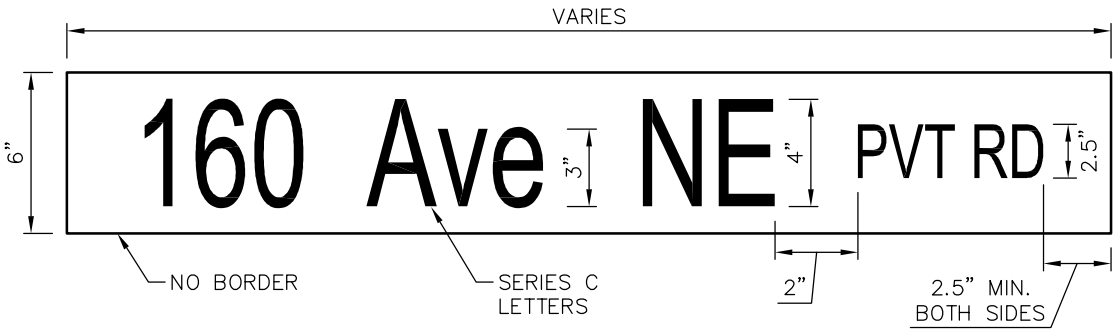
DRAWING NUMBER	SG-130-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



TYPICAL INSTALLATION

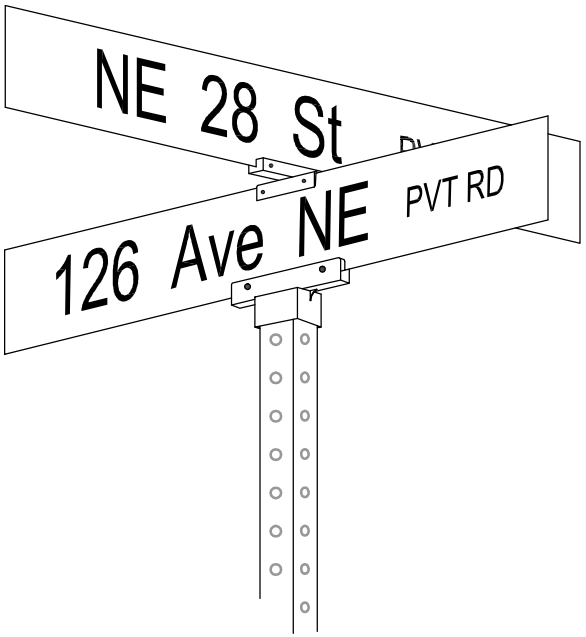
ABBREVIATIONS:

STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter



159 Pl SE PVT RD

SE 23 Ln PVT RD



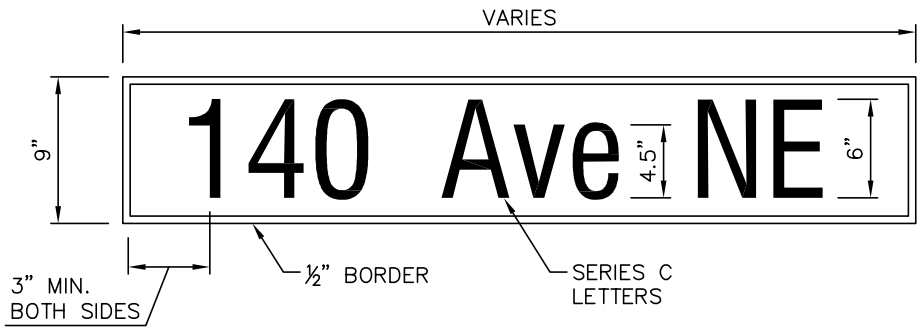
NOTES:

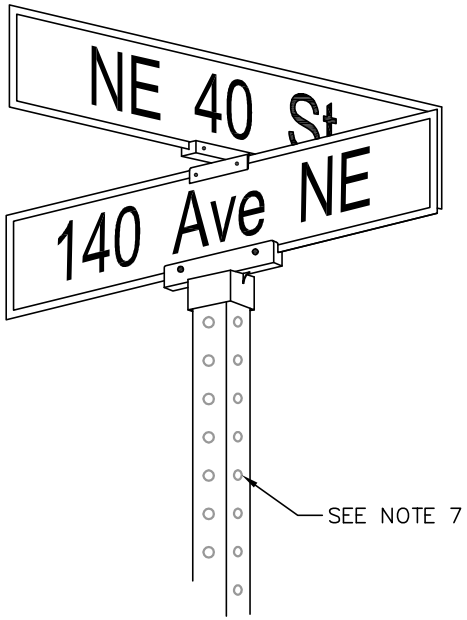
1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 1 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, NO BORDER, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 6" EXTRUDED ALUMINUM, TREATED.
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 4" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG SG-100-1.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.

City of Bellevue

STREET NAME SIGN (PRIVATE ROAD) – TYPE 1
NON-ARTERIAL STREET

DRAWING NUMBER	SG-140-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS





ABBREVIATIONS:

STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter

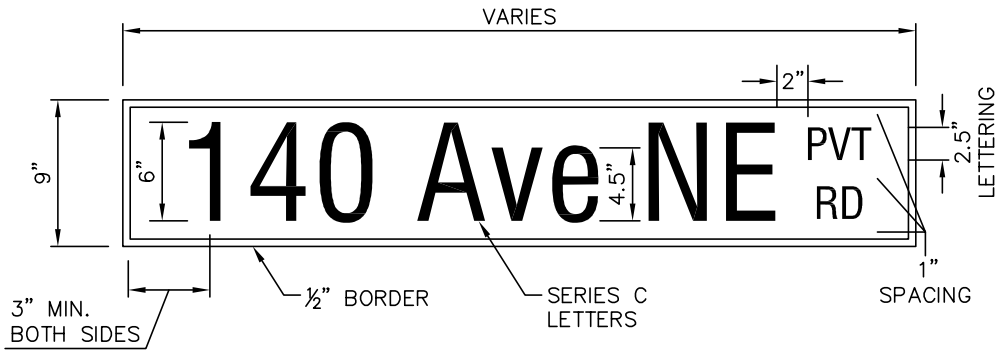
NOTES:

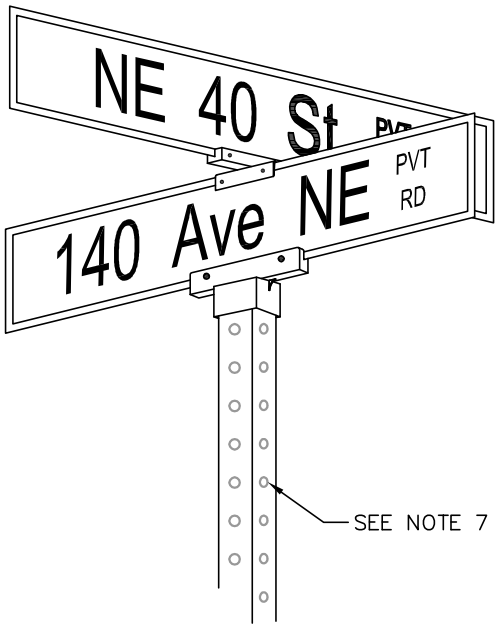
1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9–28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 2 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, ½" WHITE BORDER, NO MARGIN, DOUBLE–SIDED.
3. SIGN BLADE SHALL BE 9" EXTRUDED ALUMINUM, TREATED, EXCEPT 12" BLADE SHALL BE USED FOR STREET NAMES CONTAINING LOWER CASE LETTERS WITH DESCENDING STEMS OR TAILS (E.G., "g", "p", "y").
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 6" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG SG–100–1.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.
9. LAYOUT OF NON–NUMBERED STREET NAME LETTERING (E.G., Bellevue Way SE, Coal Creek Pkwy SE) WILL BE PROVIDED BY THE ENGINEER.

City of Bellevue

STREET NAME SIGN – TYPE 2
ARTERIAL STREET

DRAWING NUMBER	SG–150–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS





NOTES:

1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 2 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, ½" WHITE BORDER, NO MARGIN, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 9" EXTRUDED ALUMINUM, TREATED.
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 6" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG SG-100-1.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.

ABBREVIATIONS:

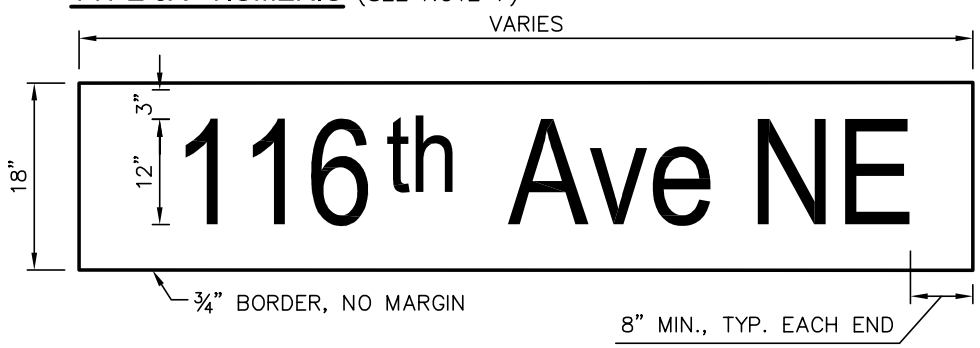
STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter

City of Bellevue

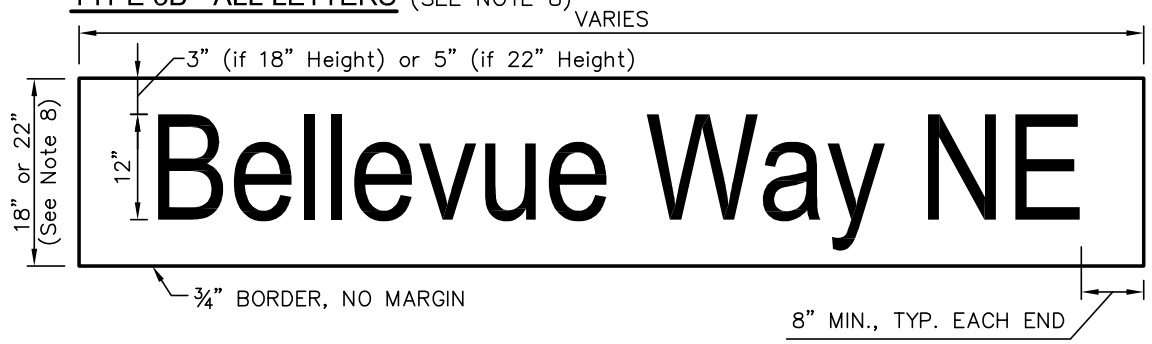
STREET NAME SIGN (PRIVATE ROAD) – TYPE 2
ARTERIAL STREET

DRAWING NUMBER	SG-160-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

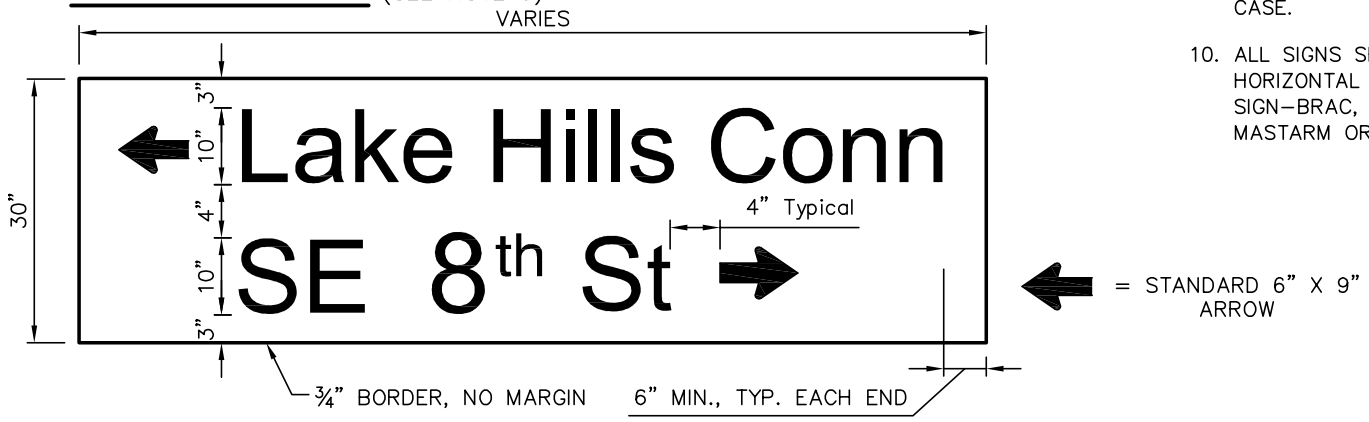
TYPE 3A - NUMERIC (SEE NOTE 7)



TYPE 3B - ALL LETTERS (SEE NOTE 8)



TYPE 3C - TWO LINES (SEE NOTE 9)



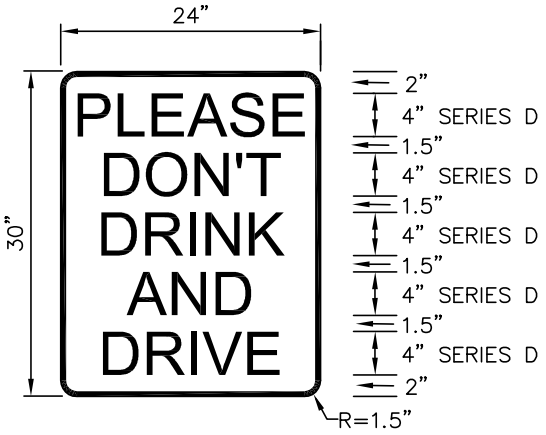
NOTES:

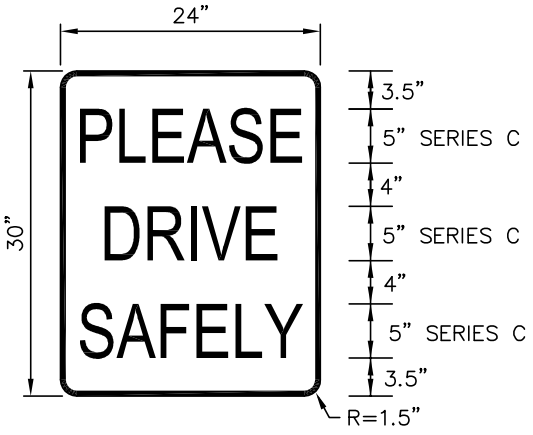
1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. ALL TYPE 3 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, ¾" WHITE BORDER, NO MARGIN, SINGLE-SIDED.
3. SIGN BLADE SHALL BE ALUMINUM, TREATED, 0.125 GAUGE.
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C.
7. TYPE 3A SIGN SHALL HAVE 12" UPPER AND LOWER CASE EXCEPT NUMERICAL SUFFIX (E.G., th, st) SHALL BE 10" LOWER CASE.
8. TYPE 3B SIGN SHALL HAVE 12" UPPER AND LOWER CASE. SIGN BLADE SHALL BE 18" TALL, EXCEPT 22" BLADE SHALL BE USED FOR STREET NAMES CONTAINING LOWER CASE LETTERS WITH DESCENDING STEMS OR TAILS (E.G., "g", "p", "y").
9. TYPE 3C SIGN SHALL HAVE 10" UPPER AND LOWER CASE EXCEPT NUMERICAL SUFFIX (E.G., th, st) SHALL BE 8" LOWER CASE.
10. ALL SIGNS SHALL BE INSTALLED USING EITHER BANDING (TO HORIZONTAL SECTION OF MASTARM) OR PELCO ASTRO SIGN-BRAC, TALLON CABLE MOUNT (TO CURVED SECTION OF MASTARM OR VERTICAL SECTION OF POLE).

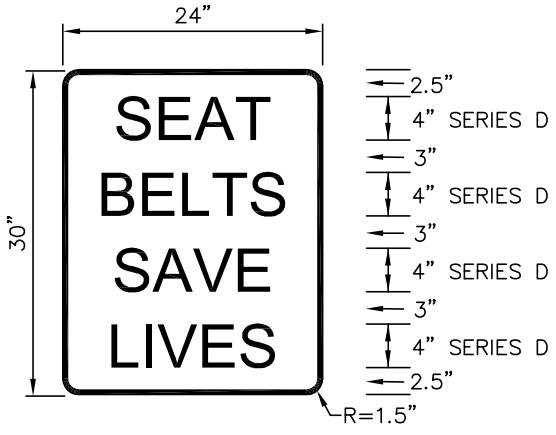
City of Bellevue

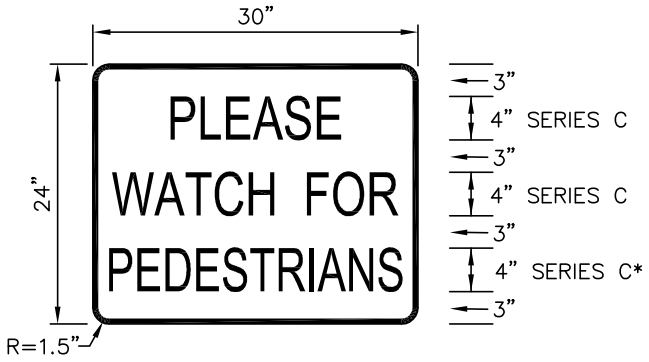
STREET NAME SIGN – TYPES 3A, 3B, & 3C; MAST ARM

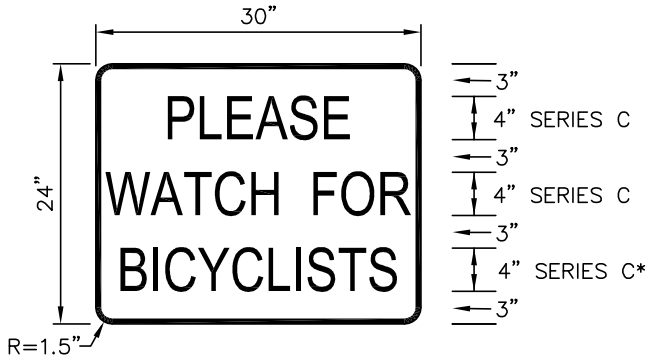
DRAWING NUMBER	SG-170-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS











*WIDTH FACTOR = 0.5

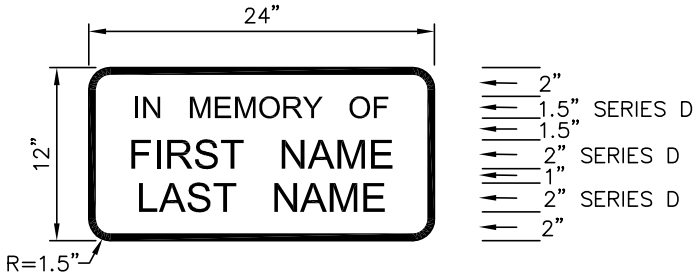
NOTES:

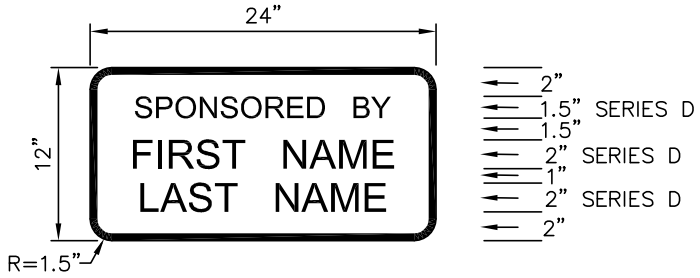
1. USE ½" WHITE BORDER WITH NO MARGIN.
2. USE WHITE LEGEND ON BLUE BACKGROUND.

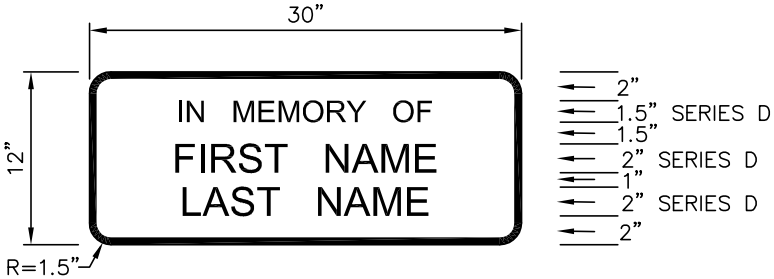
City of Bellevue

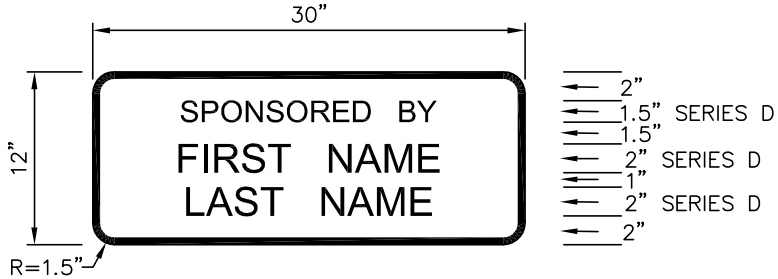
MEMORIAL SIGN LAYOUTS – A

DRAWING NUMBER	SG–180–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS









NOTES:

1. USE ½" WHITE BORDER WITH NO MARGIN.
2. USE WHITE LEGEND ON BLUE BACKGROUND.

City of Bellevue

MEMORIAL SIGN LAYOUTS – B

DRAWING NUMBER	SG-190-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

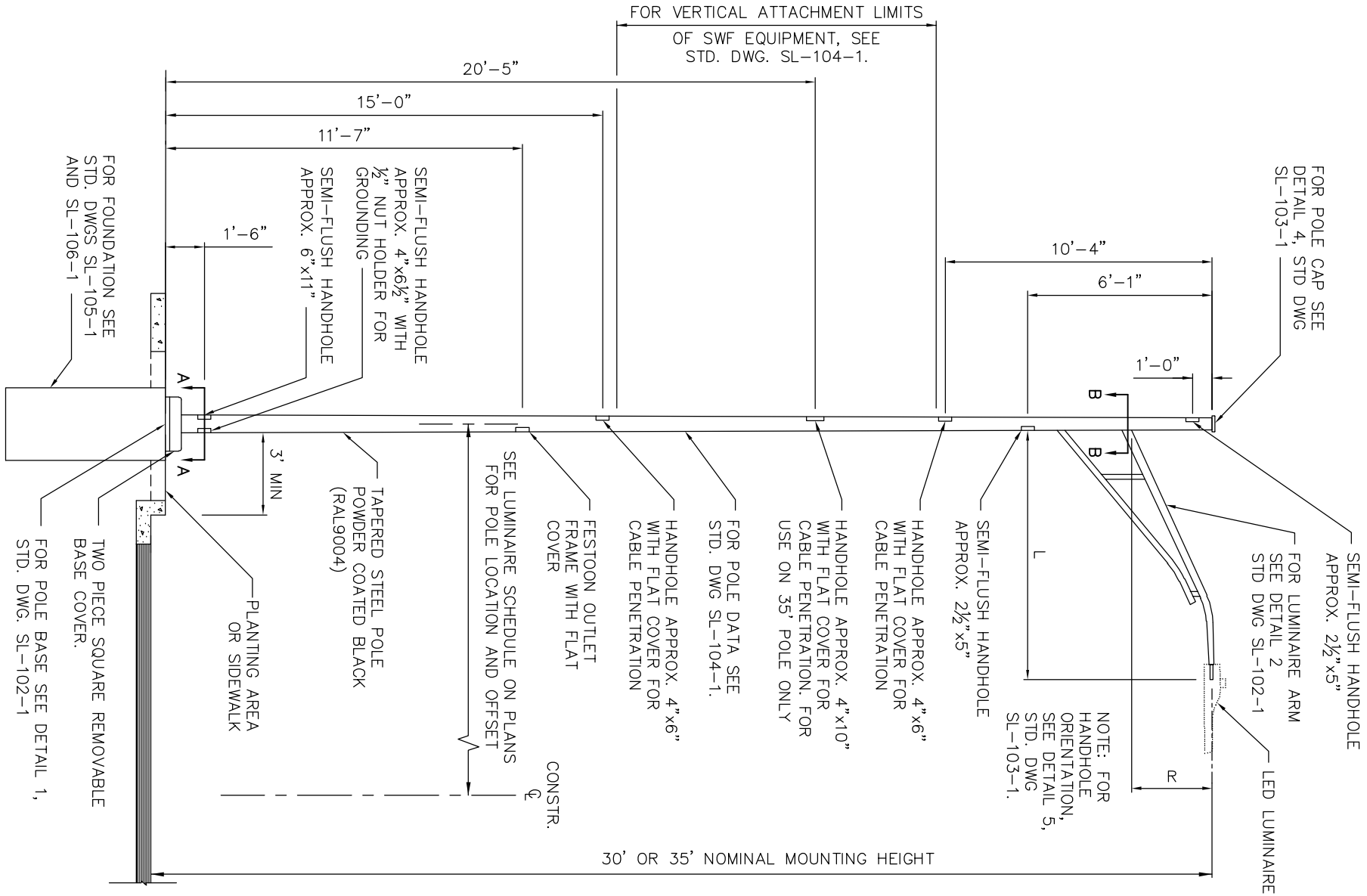

CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

SL Drawings

Traffic Signals & Street Lighting

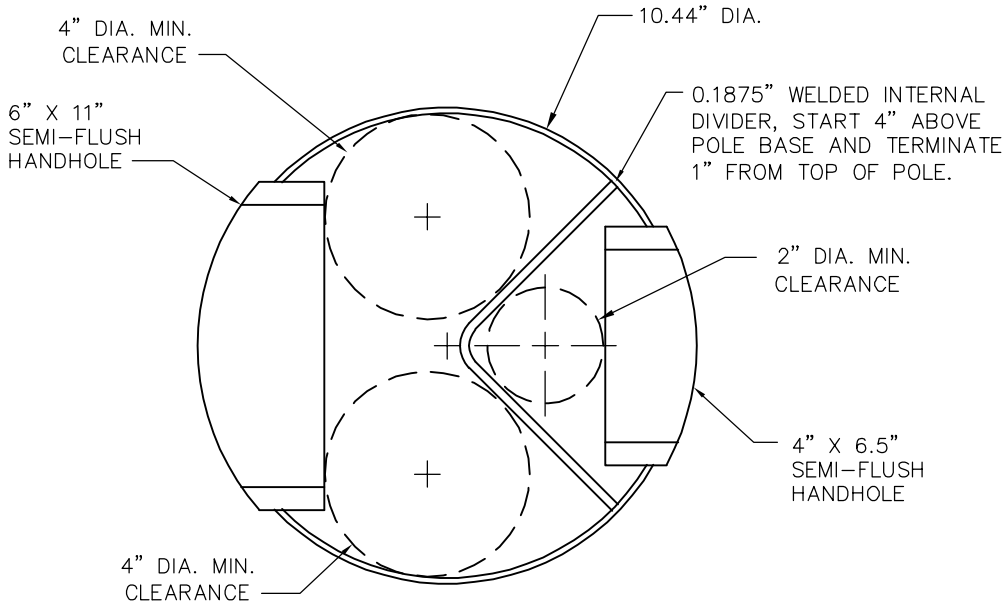

CITY OF BELLEVUE
WASHINGTON



City of Bellevue

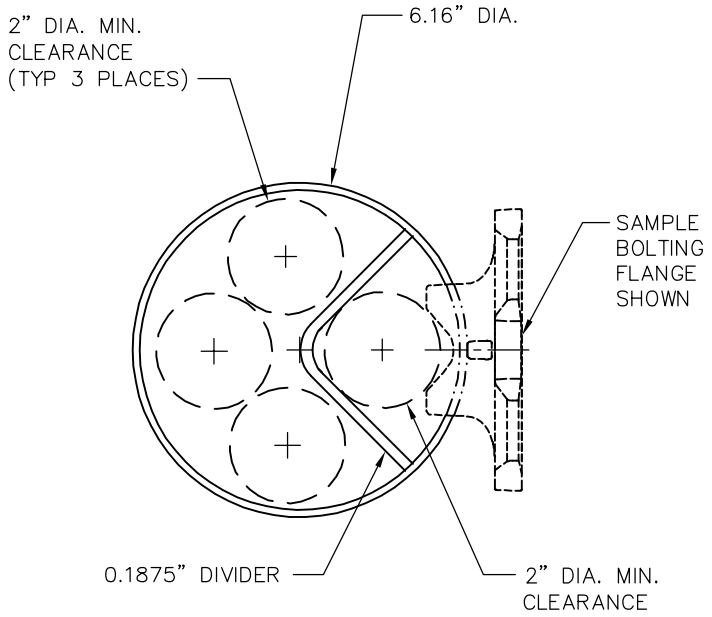
STEEL ROADWAY LIGHTING POLE
(SMALL WIRELESS FACILITY COMPATIBLE)

DRAWING NUMBER	SL-100-2
SCALE	NONE
REVISION DATE	6/22
DEPARTMENT	TRANS



CLEARANCE FOR WIRE AT 1'-6" ELEVATION

SECTION A-A
LOWER SECTION CLEARANCE



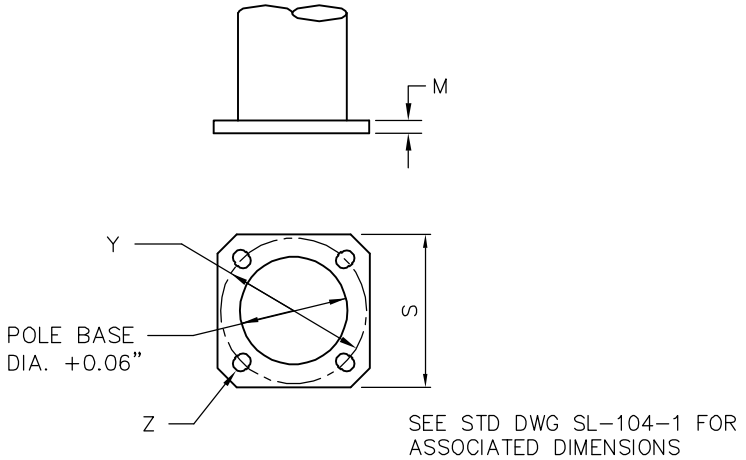
CLEARANCE FOR WIRE AT LUMINAIRE ARM UPPER CONNECTION

SECTION B-B
UPPER SECTION CLEARANCE

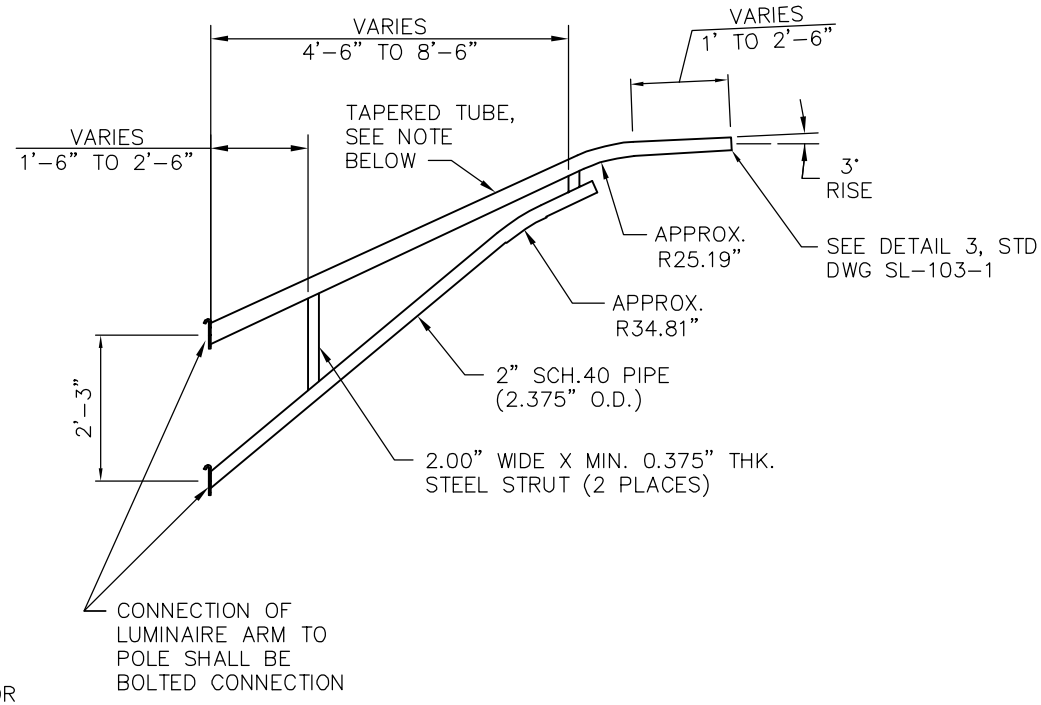
City of Bellevue

STEEL ROADWAY LIGHTING POLE DETAILS (SMALL WIRELESS FACILITY COMPATIBLE)

DRAWING NUMBER	SL-101-1
SCALE	NONE
REVISION DATE	6/21
DEPARTMENT	TRANS



DETAIL 1 – POLE BASE



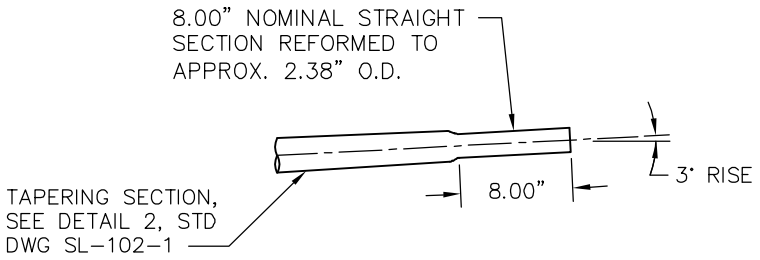
DETAIL 2 – LUMINAIRE ARM

NOTE: TAPERED TUBE HAS CROSS-SECTION OF 4.00"x2.75" (LONGER DIMENSION VERTICAL) AT CONNECTION TO POLE AND TAPERS TO A 2.75" O.D. CROSS-SECTION, THEN CONTINUES TO TAPER TO AN O.D. OF APPROX. 2.40". SEE DETAIL 3, STD DWG SL-103-1 FOR ARM END DIMENSIONS.

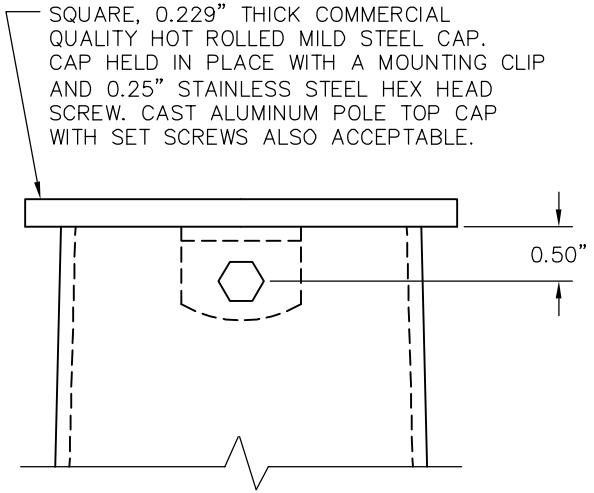
City of Bellevue

STEEL ROADWAY LIGHTING POLE DETAILS (SMALL WIRELESS FACILITY COMPATIBLE)

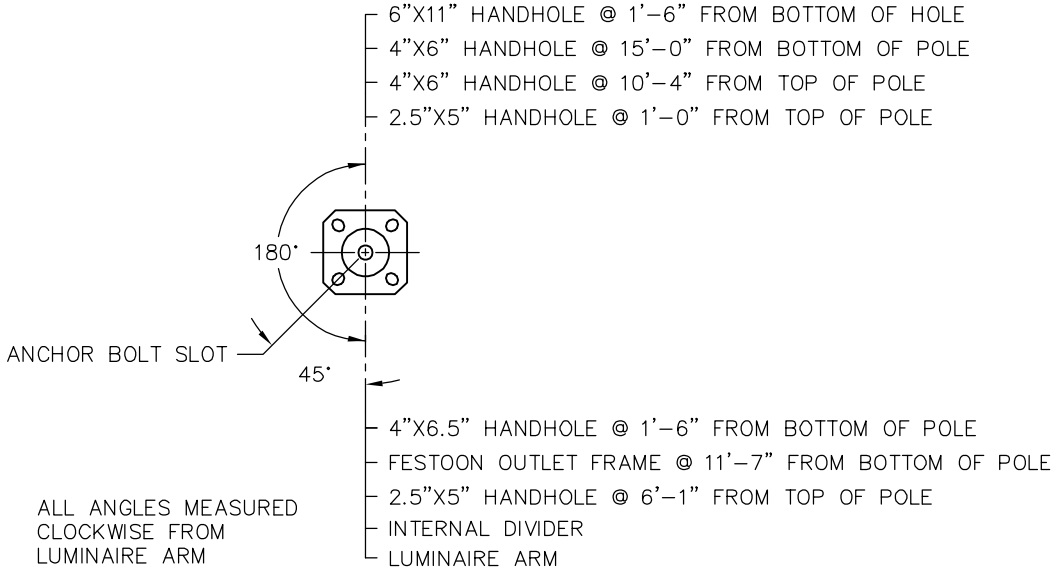
DRAWING NUMBER	SL-102-1
SCALE	NONE
REVISION DATE	6/21
DEPARTMENT	TRANS



DETAIL 3 – ARM END



DETAIL 4 – POLE CAP PLATE



DETAIL 5 – RADIAL INDEX

City of Bellevue

STEEL ROADWAY LIGHTING POLE DETAILS (SMALL WIRELESS FACILITY COMPATIBLE)

DRAWING NUMBER	SL-103-1
SCALE	NONE
REVISION DATE	6/21
DEPARTMENT	TRANS

FINISH DATA

BASE COAT: HOT-DIP GALVANIZED TO ASTM A123

PRIME COAT: HIGH BUILD EPOXY POWDER

FINISH COAT: TGIC POWDER

COLOR: BLACK (RAL 9004)

NOTES:

1. LIGHTING STRUCTURES HAVE BEEN DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE LOADING AND THE NOMINAL STRENGTH REQUIREMENTS OF THE 2015 AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, FIRST EDITION", SLTS-1. THE WIND LOADS WERE CALCULATED FROM AN ULTIMATE WIND VELOCITY OF 120 MPH WITH A MEAN RECURRENCE INTERVAL OF 1700 YEARS.
2. SEE COB DESIGN MANUAL APPENDIX A, SECTION IV.A FOR POLE DESIGN LOAD INFORMATION FOR FUTURE SMALL WIRELESS FACILITY INSTALLATIONS.

SMALL WIRELESS FACILITY (SWF) VERTICAL ATTACHMENT LIMITS

POLE HEIGHT	SWF DISCONNECT/SURGE DEVICE	SWF ENCLOSURE, PANEL ANTENNA ZONE
30'	BOTTOM ≥ 15'-7" AFG	BOTTOM ≥ 18'-6" AFG TOP ≤ 23' AFG
35'	BOTTOM ≥ 15'-7" AFG	BOTTOM ≥ 20' AFG TOP ≤ 28' AFG

AFG = ABOVE FINISHED GRADE AT SIDEWALK

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
TAPERED TUBES	A595 GR.A	55
BASE PLATE	A36	36
PIPE	A513 OR EQUIV	36
ANCHOR BOLTS(BY OTHERS)	F1554 GR.55	55
GALVANIZE-HARDWARE	HOT DIP ZINC	

POLE DATA

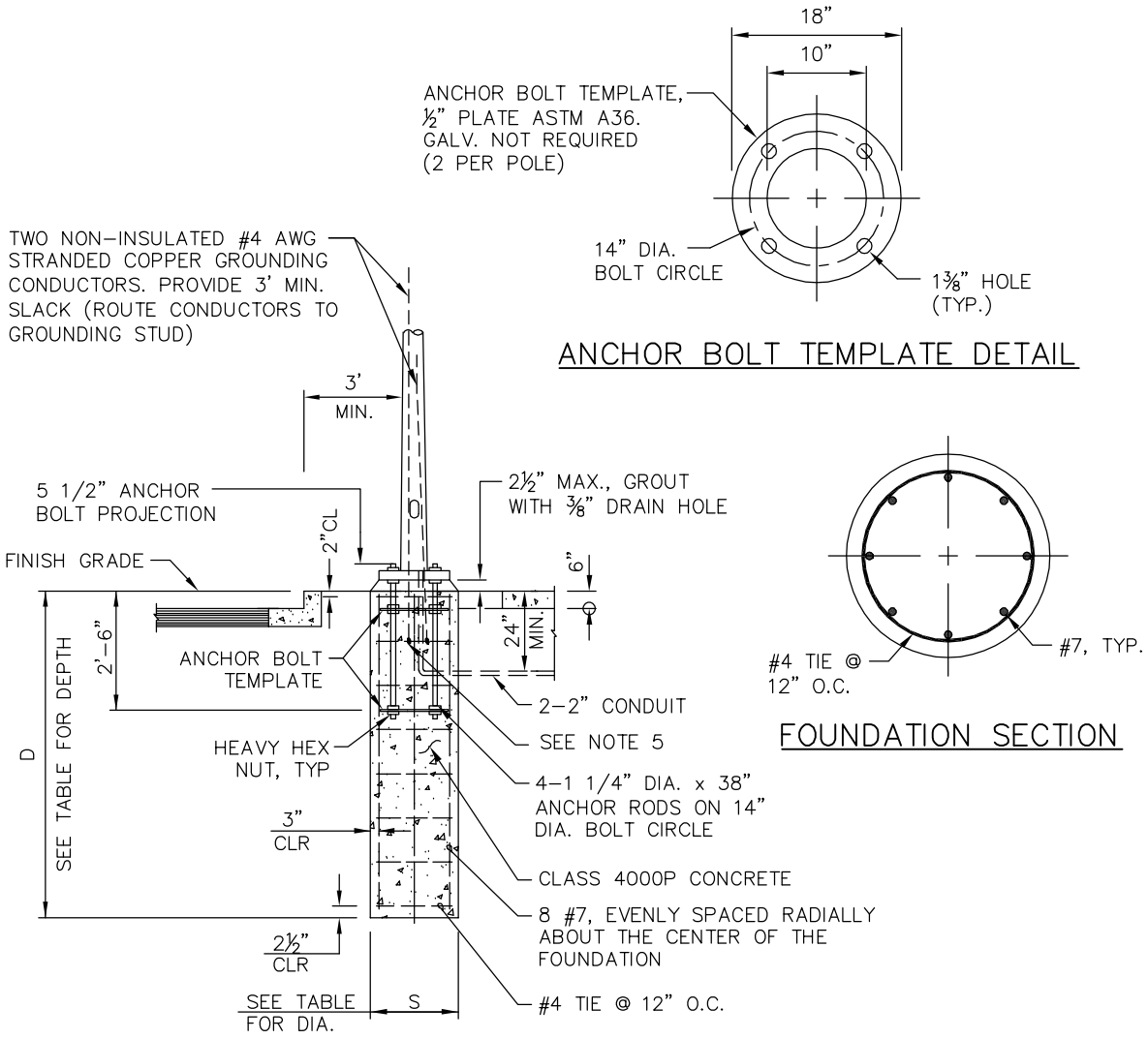
POLE TUBE				POLE BASE				ANCHOR BOLT					LUMINAIRE ARM		
BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	MIN. THICKNESS (GAUGE)	SQUARE S (IN)	BOLT CIRCLE Y (IN)	THK. M (IN)	SLOT Z (IN)	DIA. K (IN)	LENGTH J (IN)	HOOK H (IN)	UPPER THREAD LENGTH U1 (IN)	LOWER THREAD LENGTH U2 (IN)	SPAN LENGTH L (FT)	RISE R (FT)	MIN. THICKNESS (GAUGE)
10.65	5.75	35.00	10	14.50	14.00	1.25	1.38 X 1.79	1.25	38.00	NA	14.00	6.00	(1)	3.00	11
10.65	6.5	30.00	10	14.50	14.00	1.25	1.38 X 1.79	1.25	38.00	NA	14.00	6.00	(1)	3.00	11

NOTES:
1. LUMINAIRE ARMS CAN BE 6', 8' 10' OR 12'
2. DIMENSIONS MAY VARY BY MANUFACTURER

City of Bellevue

STEEL ROADWAY LIGHTING POLE DETAILS (SMALL WIRELESS FACILITY COMPATIBLE)

DRAWING NUMBER	SL-104-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



ANCHOR BOLT TEMPLATE DETAIL

FOUNDATION SECTION

FOUNDATION – SIDEWALK CONDITION

NOTES:

1. THE FOUNDATION HAS BEEN DESIGNED ACCORDING TO THE AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, FIRST EDITION, 2015. ULTIMATE WIND SPEED IS 120 MPH.
2. THE FOUNDATION HAS BEEN DESIGNED FOR THE FOLLOWING POLE BASE FORCES:

BENDING MOMENT:	41,816 FT-LB
TORSION:	2,330 FT-LB
SHEAR FORCE:	1,814 LB
AXIAL FORCE:	1,798 LB

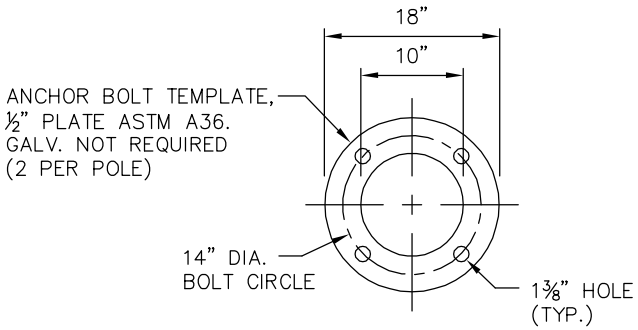
3. FOUNDATIONS FOR POLES WITH FORCES GREATER THAN ONE OR MORE OF THE FORCES LISTED ABOVE SHALL REQUIRE SPECIAL DESIGN.
4. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE HOT DIPPED GALVANIZED FULL LENGTH PER ASTM A153 OR F2329. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 55, WITH 14" OF THREADS AT TOP AND 6" OF THREADS AT BOTTOM. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563, GRADE A. WASHERS SHALL CONFORM TO ASTM F436.
5. CLAMP CONDUCTORS TO STEEL REINFORCING WITH LISTED CONNECTOR SUITABLE FOR USE EMBEDDED IN CONCRETE.
6. REINFORCING STEEL SHALL CONFORM TO ASTM A706, GRADE 60.

FOUNDATION DEPTH D			
ALLOWABLE LATERAL BEARING PRESSURE	SHAFT DIA. S	GROUND SLOPE	
		SIDEWALK, OR SLOPE 4H:1V OR FLATTER	SLOPE BTWN 4H:1V & 2H:1V
1000 TO 1500 PSF	30"	11'-0"	SPECIAL DESIGN REQ'D
	36"	10'-0"	
GREATER THAN 1500 PSF	30"	8'-0"	10'-0"
	36"	7'-6"	9'-0"

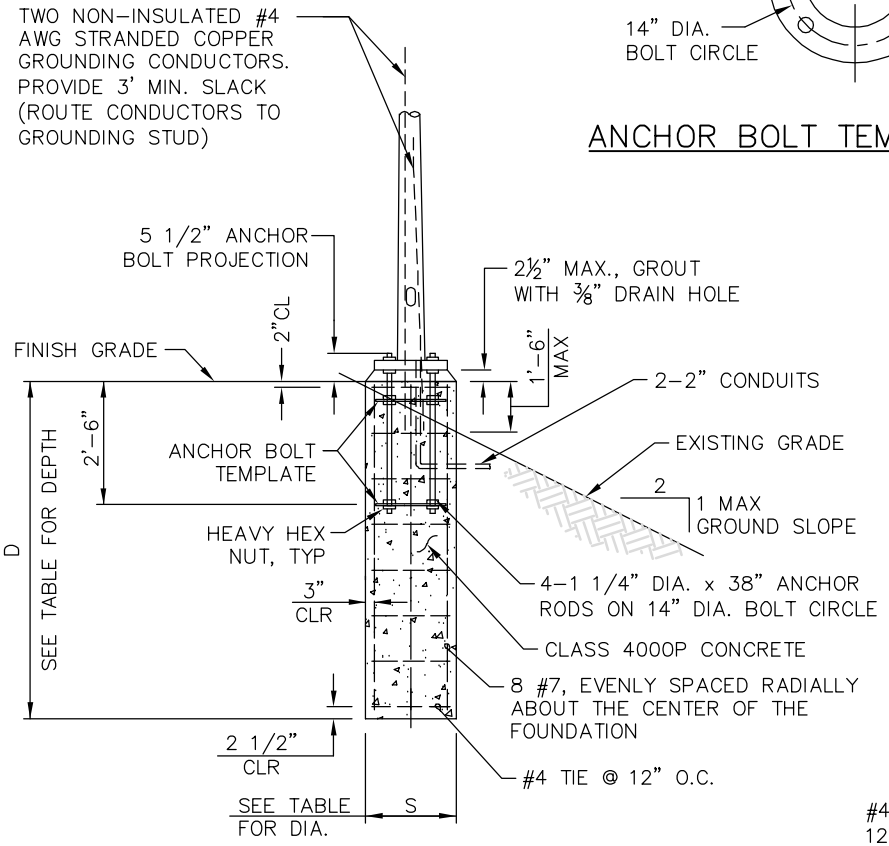
City of Bellevue

ROADWAY LIGHTING POLE FOUNDATION AT SIDEWALK (SMALL WIRELESS FACILITY COMPATIBLE)

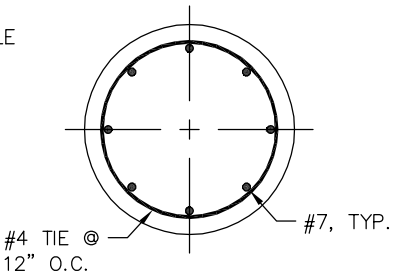
DRAWING NUMBER	SL-105-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



ANCHOR BOLT TEMPLATE DETAIL



FOUNDATION – SLOPED GROUND CONDITION



FOUNDATION SECTION

NOTES:

1. THE FOUNDATION HAS BEEN DESIGNED ACCORDING TO THE AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, FIRST EDITION, 2015. ULTIMATE WIND SPEED IS 120 MPH.
2. THE FOUNDATION HAS BEEN DESIGNED FOR THE FOLLOWING POLE BASE FORCES:

BENDING MOMENT:	41,816 FT-LB
TORSION:	2,330 FT-LB
SHEAR FORCE:	1,814 LB
AXIAL FORCE:	1,798 LB

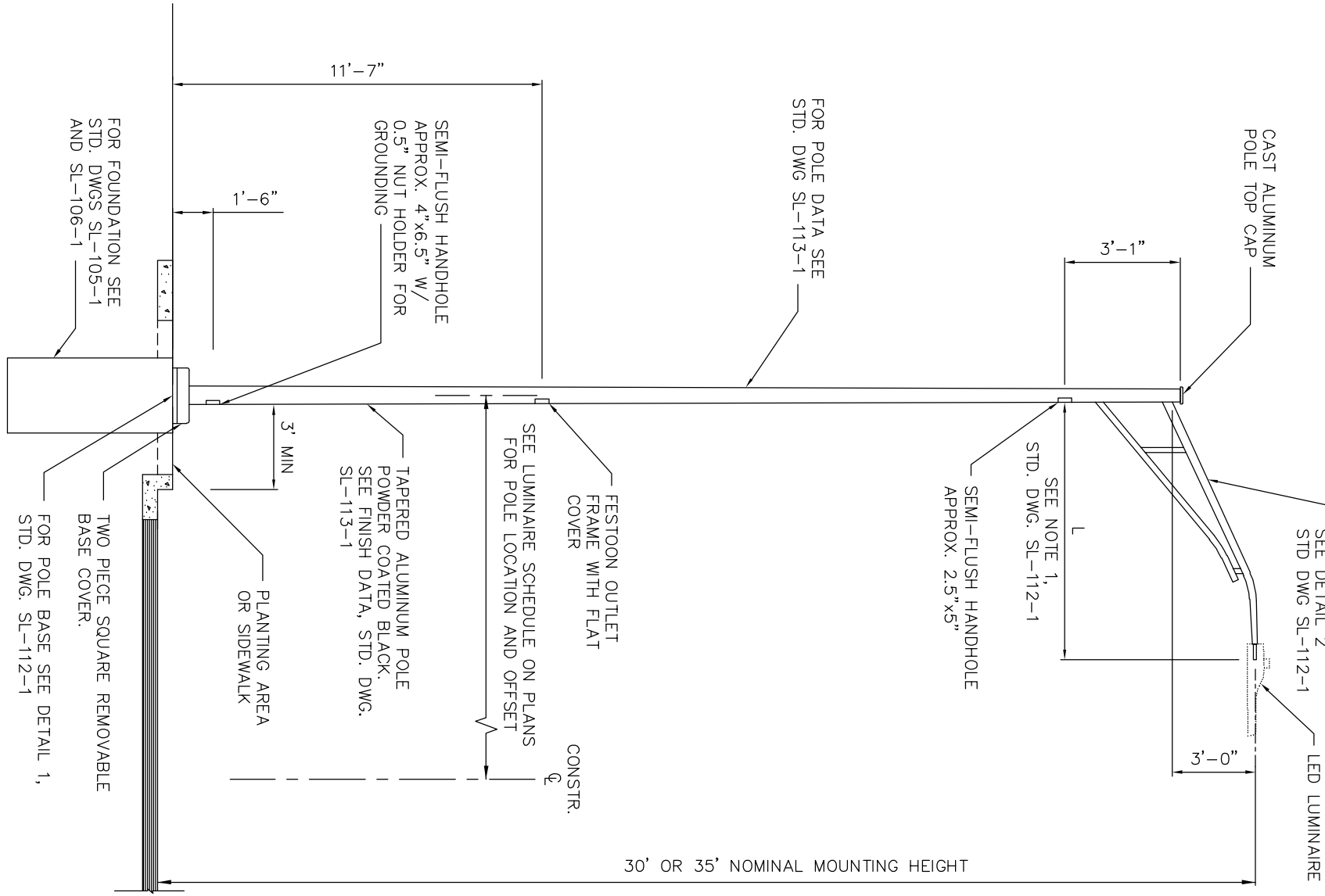
3. FOUNDATIONS FOR POLES WITH FORCES GREATER THAN ONE OR MORE OF THE FORCES LISTED ABOVE SHALL REQUIRE SPECIAL DESIGN.
4. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE HOT DIPPED GALVANIZED FULL LENGTH PER ASTM A153 OR F2329. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 55, WITH 14" OF THREADS AT TOP AND 6" OF THREADS AT BOTTOM. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563, GRADE A. WASHERS SHALL CONFORM TO ASTM F436.
5. CLAMP CONDUCTORS TO STEEL REINFORCING WITH LISTED CONNECTOR SUITABLE FOR USE EMBEDDED IN CONCRETE.
6. REINFORCING STEEL SHALL CONFORM TO ASTM A706, GRADE 60.

FOUNDATION DEPTH "D"			
ALLOWABLE LATERAL BEARING PRESSURE	SHAFT DIA. S	GROUND SLOPE	
		SIDEWALK, OR SLOPE 4H:1V OR FLATTER	SLOPE BTWN 4H:1V & 2H:1V
1000 TO 1500 PSF	30"	11'	SPECIAL DESIGN REQ'D
GREATER THAN 1500 PSF	30"	8'	10'
1000 TO 1500 PSF	36"	10'	SPECIAL DESIGN REQ'D
GREATER THAN 1500 PSF	36"	7'-6"	9'

City of Bellevue

ROADWAY LIGHTING POLE FOUNDATION WITH GROUND SLOPE (SMALL WIRELESS FACILITY COMPATIBLE)

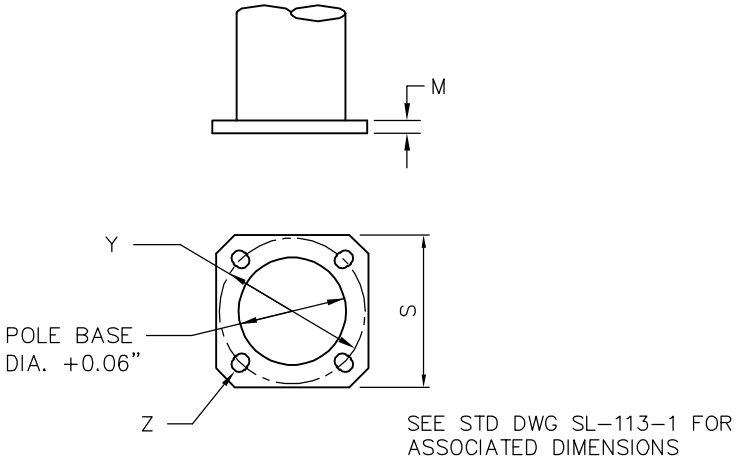
DRAWING NUMBER	SL-106-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



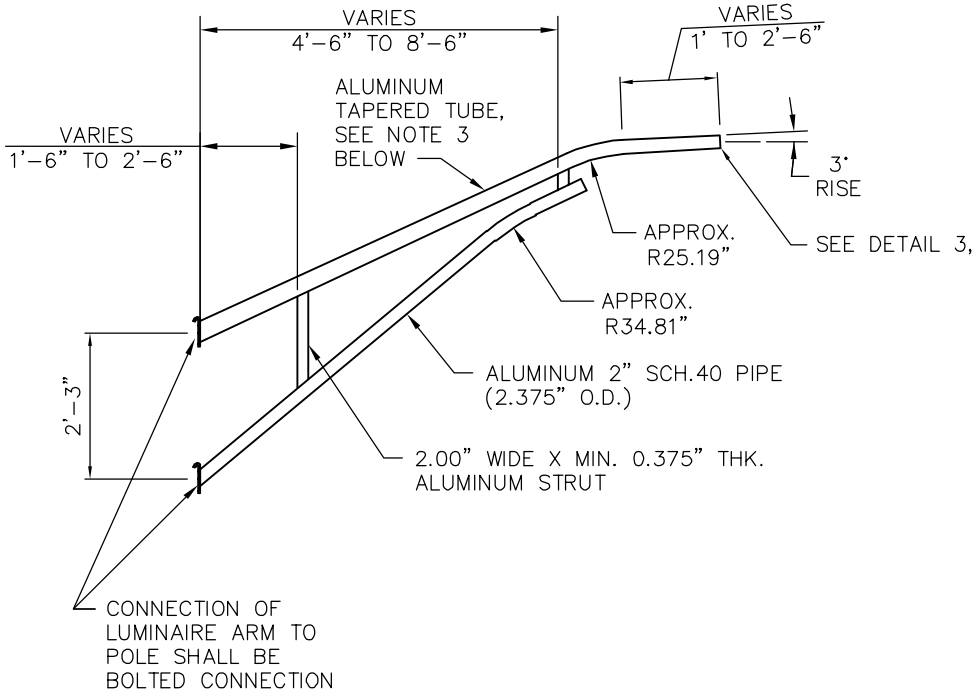
City of Bellevue

ALUMINUM ROADWAY LIGHTING POLE

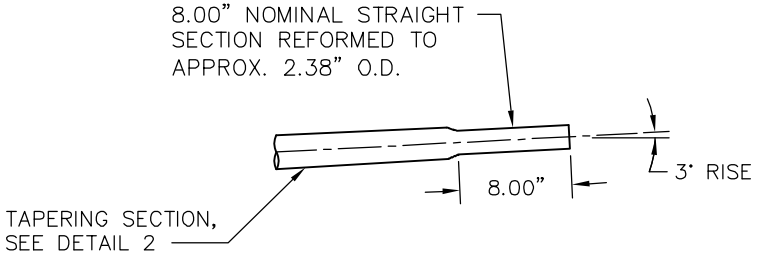
DRAWING NUMBER	SL-111-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



DETAIL 1 – POLE BASE



DETAIL 2 – LUMINAIRE ARM



DETAIL 3 – ARM END

NOTES:

1. LUMINAIRE ARM LENGTH L=6', 8', 10', OR 12'.
2. DIMENSIONS MAY VARY BY MANUFACTURER.
3. ALUMINUM TAPERED TUBE HAS CROSS-SECTION OF 4.00"X2.75" (LONGER DIMENSION VERTICAL) AT CONNECTION TO POLE AND TAPERS TO A 2.75" O.D. CROSS-SECTION, THEN CONTINUES TO TAPER TO AN O.D. OF APPROX. 2.40". SEE DETAIL 3, THIS SHEET, FOR ARM END DIMENSIONS.

City of Bellevue

ALUMINUM ROADWAY LIGHTING POLE DETAILS

DRAWING NUMBER	SL-112-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

FINISH DATA

PRIME COAT: HIGH BUILD EPOXY POWDER

FINISH COAT: TGIC POWDER

COLOR: BLACK (RAL 9004)

NOTES:

1. LIGHTING STRUCTURES HAVE BEEN DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE LOADING AND THE NOMINAL STRENGTH REQUIREMENTS OF THE 2015 AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, FIRST EDITION", SLTS-1. THE WIND LOADS WERE CALCULATED FROM AN ULTIMATE WIND VELOCITY OF 120 MPH WITH A MEAN RECURRENCE INTERVAL OF 1700 YEARS.

COMPONENT	MATERIAL	ASTM DESIGNATION
POLE SHAFT	6063-T6 AL. ALLOY	B221
TAPERED TUBES	6063-T6 AL. ALLOY	B221
SCH 40 PIPE	6063-T6 AL. ALLOY	B221
STRUT	6063-T6 AL. ALLOY	B221
BASE PLATE	356-T6 AL. ALLOY	B26 OR B108
GALVANIZE-HARDWARE	HOT DIP ZINC	

POLE DATA

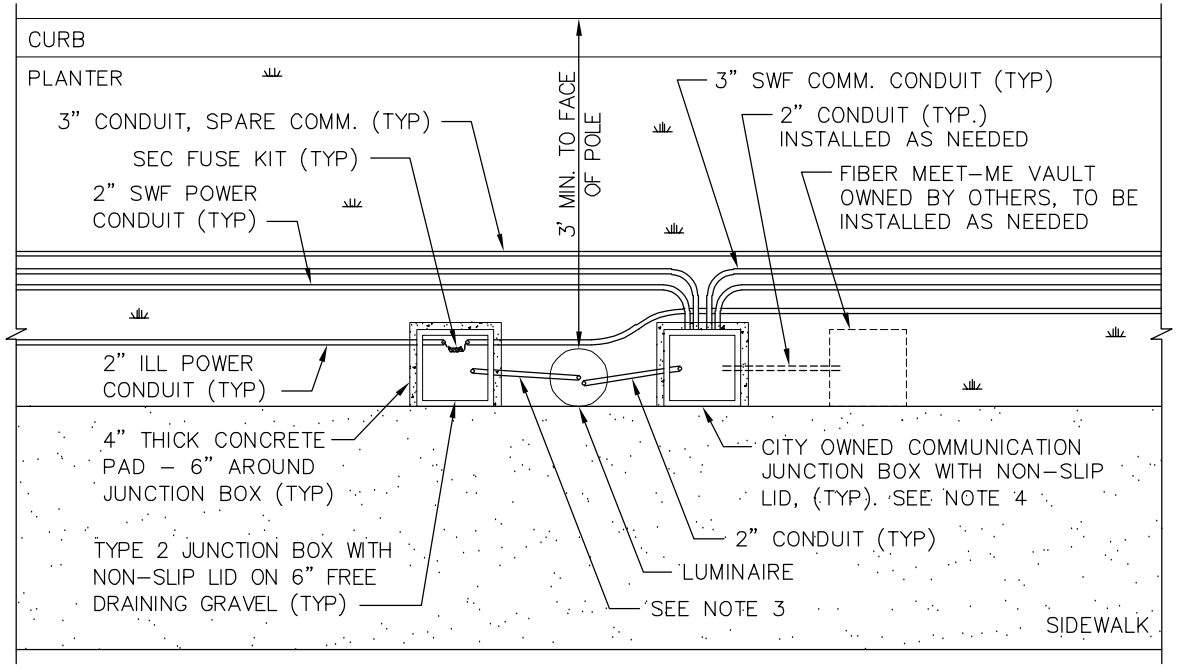
POLE TUBE				POLE BASE				ANCHOR BOLT				
BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	MIN. THICKNESS (IN)	SQUARE S (IN)	BOLT CIRCLE Y (IN)	THK. M (IN)	SLOT Z (IN)	DIA. K (IN)	LENGTH J (IN)	HOOK H (IN)	UPPER THREAD LENGTH U1 (IN)	LOWER THREAD LENGTH U2 (IN)
10.65	5.75	35.00	0.25	14.50	14.00	1.25	1.38 X 1.79	1.25	38.00	NA	14.00	6.00
10.65	6.5	30.00	0.25	14.50	14.00	1.25	1.38 X 1.79	1.25	38.00	NA	14.00	6.00

NOTE:
1. DIMENSIONS MAY VARY BY MANUFACTURER

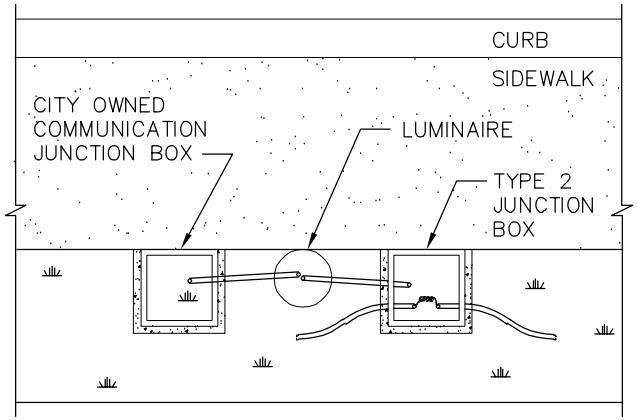
City of Bellevue

ALUMINUM ROADWAY LIGHTING POLE DETAILS

DRAWING NUMBER	SL-113-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



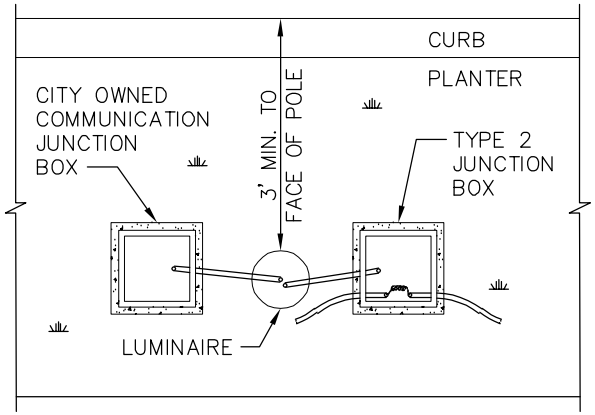
SIDEWALK WITH PLANTER STRIP



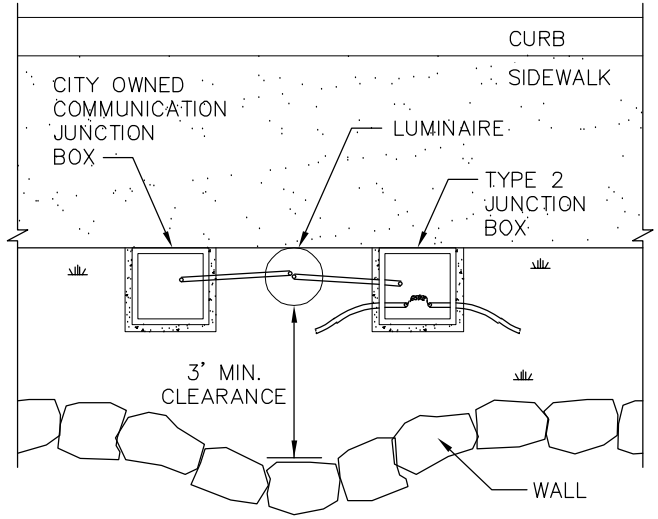
SIDEWALK WITH PLANTER BEHIND

NOTES:

1. MUST MAINTAIN 3' MINIMUM CLEARANCE FROM POLE HANDHOLE TO ANY OBSTRUCTION.
2. ALL CONDUIT AT COMMUNICATION JUNCTION BOX SHOWN IN "SIDEWALK WITH PLANTER STRIP" DETAIL TYPICAL FOR ALL DETAILS THIS SHEET.
3. 1-2" CONDUIT (TYP.). 2-2" CONDUITS SHALL BE INSTALLED WHEN POWER IS OBTAINED FROM A SHARED ILLUMINATION CIRCUIT OR WHEN 2" SWF POWER CONDUIT AND 3" SWF COMM CONDUIT IS NOT PRESENT.
4. CITY OWNED COMMUNICATION JUNCTION BOX WITH NON-SLIP LID PER STD DWG SL-180-1. IF CONNECTING TO FIBER MEET-ME VAULT VIA 2" CONDUIT, JUNCTION BOX SHALL BE INSTALLED PER STD DWG SL-181-1.



NO SIDEWALK

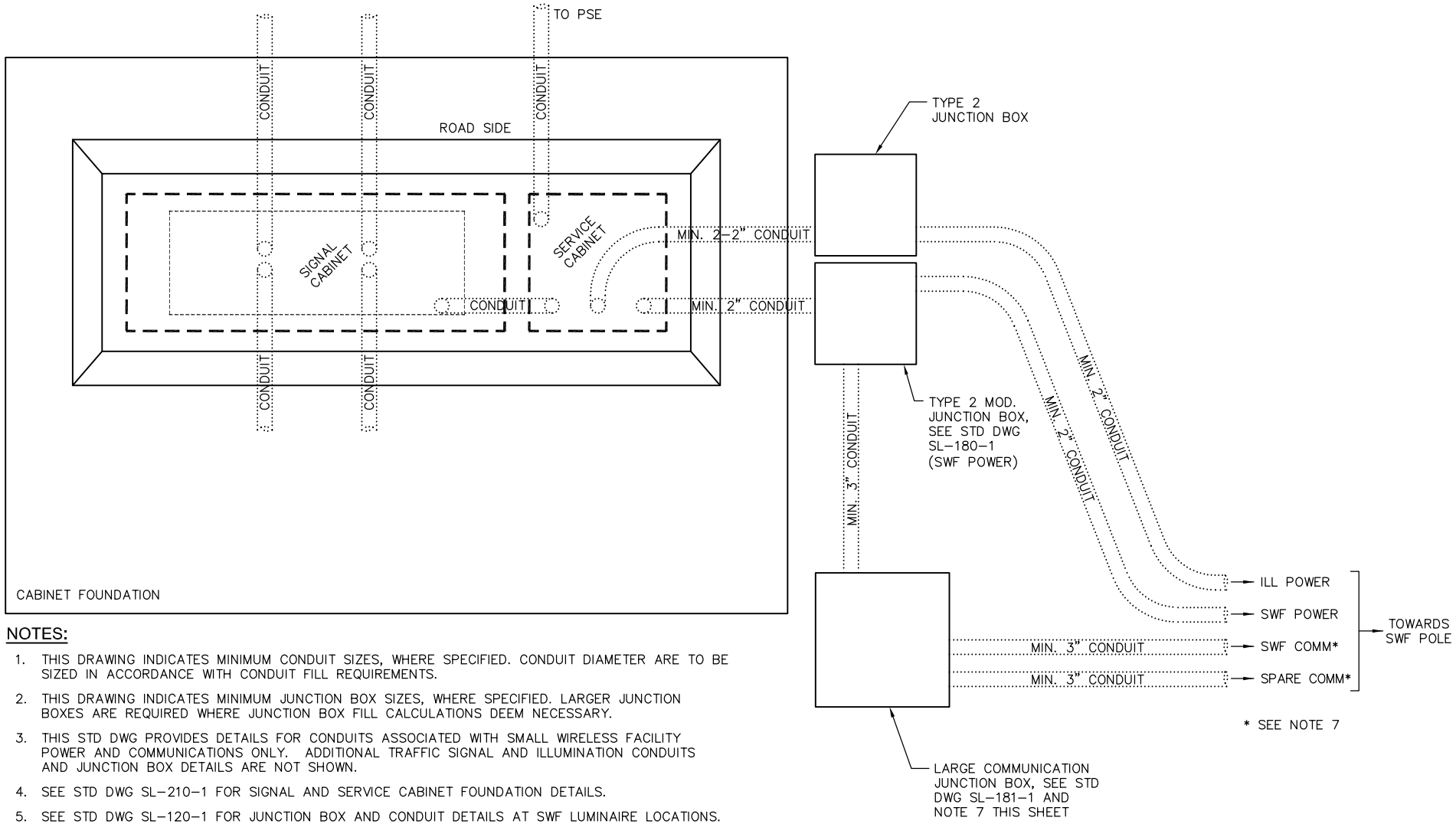


SIDEWALK WITH VERTICAL WALL

City of Bellevue

TYPICAL LUMINAIRE LOCATIONS AND SMALL WIRELESS FACILITY CONDUIT LAYOUT

DRAWING NUMBER	SL-120-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



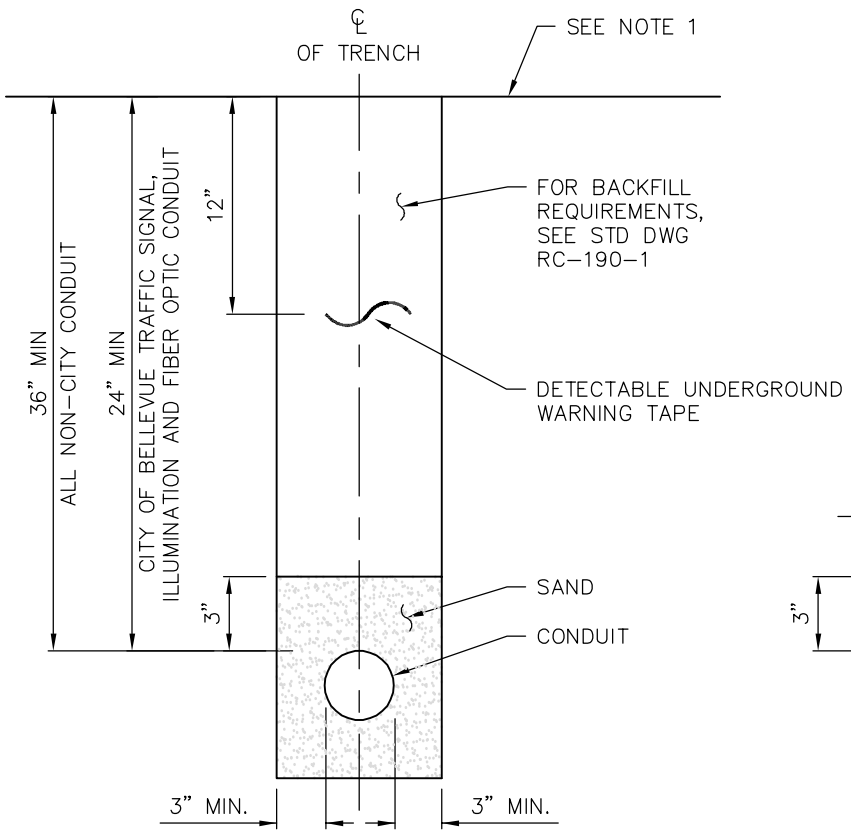
NOTES:

1. THIS DRAWING INDICATES MINIMUM CONDUIT SIZES, WHERE SPECIFIED. CONDUIT DIAMETER ARE TO BE SIZED IN ACCORDANCE WITH CONDUIT FILL REQUIREMENTS.
2. THIS DRAWING INDICATES MINIMUM JUNCTION BOX SIZES, WHERE SPECIFIED. LARGER JUNCTION BOXES ARE REQUIRED WHERE JUNCTION BOX FILL CALCULATIONS DEEM NECESSARY.
3. THIS STD DWG PROVIDES DETAILS FOR CONDUITS ASSOCIATED WITH SMALL WIRELESS FACILITY POWER AND COMMUNICATIONS ONLY. ADDITIONAL TRAFFIC SIGNAL AND ILLUMINATION CONDUITS AND JUNCTION BOX DETAILS ARE NOT SHOWN.
4. SEE STD DWG SL-210-1 FOR SIGNAL AND SERVICE CABINET FOUNDATION DETAILS.
5. SEE STD DWG SL-120-1 FOR JUNCTION BOX AND CONDUIT DETAILS AT SWF LUMINAIRE LOCATIONS.
6. FINAL CONDUIT LAYOUT SHALL BE APPROVED BY REVIEW ENGINEER.
7. COMMUNICATION CONDUIT AND LARGE COMMUNICATION JUNCTION BOX ARE REQUIRED WHEN THERE IS AN EXECUTED AGREEMENT WITH DATA/TELECOMMUNICATION CARRIERS OPERATING UNDER A ROW AGREEMENT OR FRANCHISE OR WHEN A PROJECT REQUIRES FRONTAGE IMPROVEMENTS.

City of Bellevue

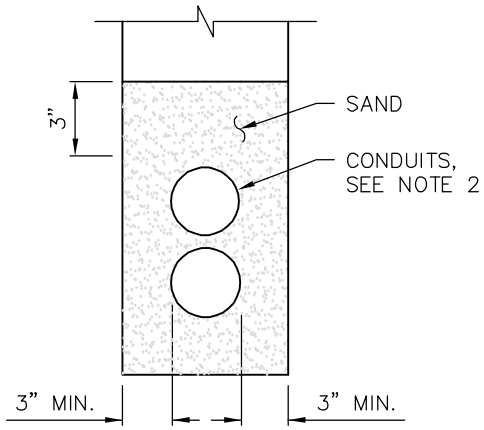
SMALL WIRELESS FACILITY COB-PROVIDED POWER CONDUIT AND JUNCTION BOX LAYOUT

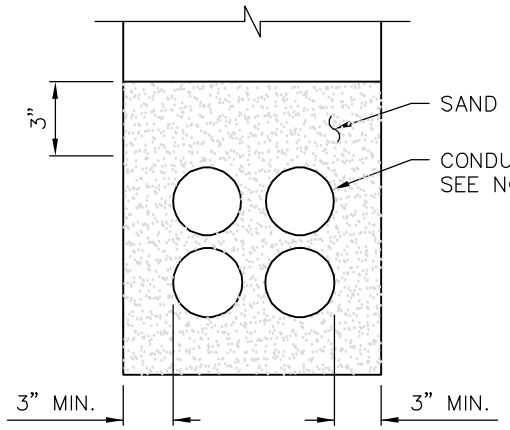
DRAWING NUMBER	SL-121-1
SCALE	NONE
REVISION DATE	5/21
DEPARTMENT	TRANS



NOTES:

1. MINIMUM DEPTH TO TOP OF CONDUIT SHALL BE MEASURED:
   - FROM TOP OF FINISH GRADE AT SIDEWALKS, DRIVEWAY APPROACHES, AND UNPAVED AREAS.
   - FROM BOTTOM OF PAVEMENT (HMA OR PCC) AT ROADWAY.
2. MULTIPLE CONDUIT CONFIGURATION MAY VARY (1x2, 2x2, 2x3, ETC). HOWEVER, MINIMUM DEPTH AND UTILITY CLEARANCES SHALL BE MAINTAINED.
3. ADDITIONAL REQUIREMENTS MAY APPLY FOR JOINT TRENCHES.





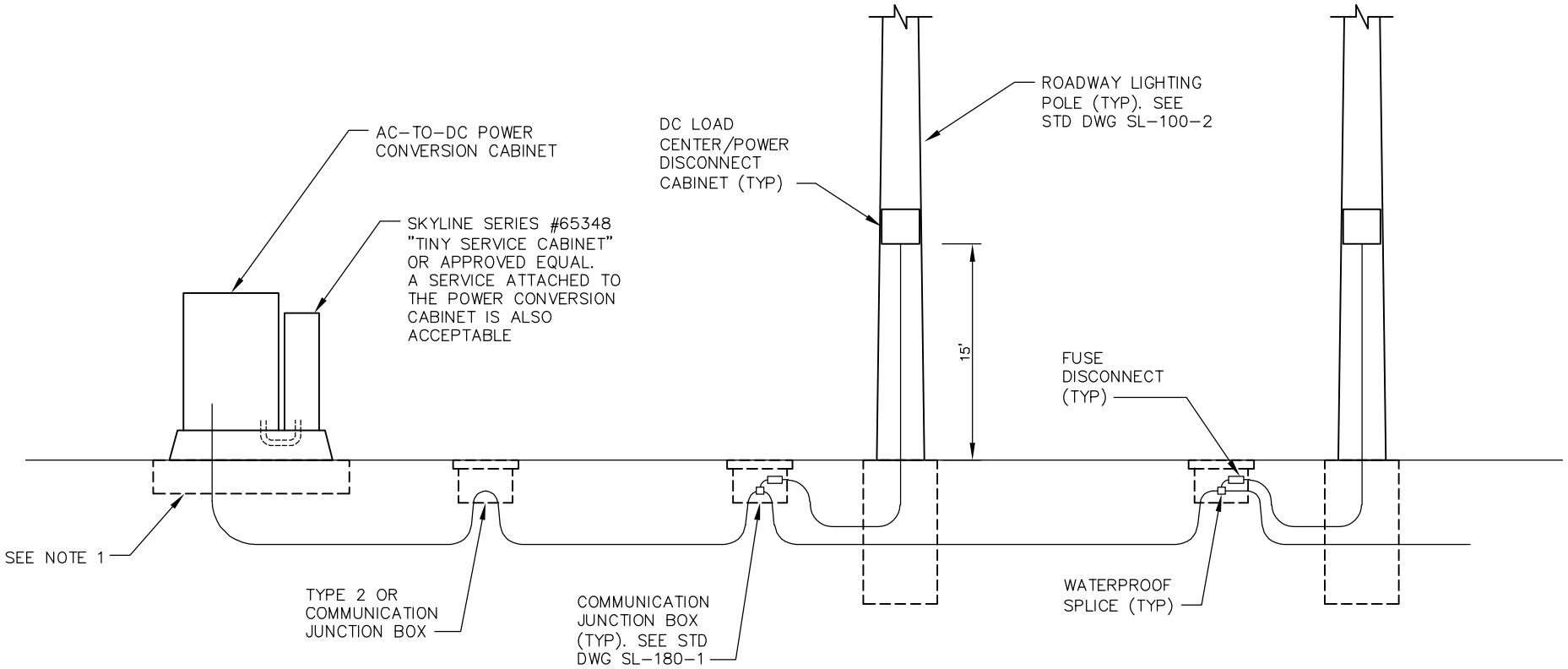
CONDUIT TRENCH DETAIL

ALTERNATE CONDUIT CONFIGURATION EXAMPLES

City of Bellevue

CONDUIT TRENCH DETAIL

DRAWING NUMBER	SL-122-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



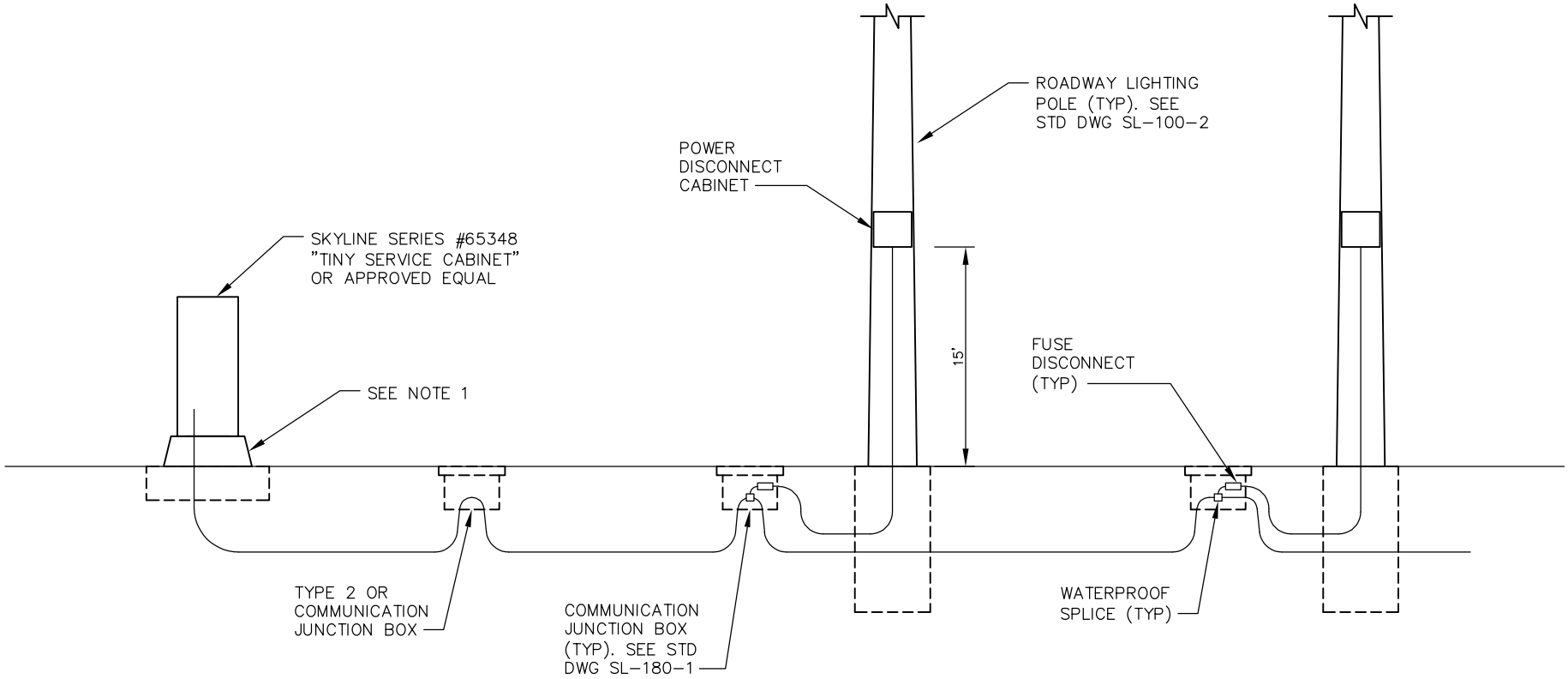
NOTES:

1. FOUNDATION SHALL BE CONSTRUCTED PER STD DWG SL-210-1. WIDTH AND HORIZONTAL DEPTH SHALL BE SCALED TO THE DIMENSIONS OF THE CABINET SELECTED. CONDUIT QUANTITY AND LAYOUT TO BE DETERMINED BY THE CARRIER. A CONDUIT WELL IS OPTIONAL.
2. CABINET PAD SHALL BE LOCATED IN THE LANDSCAPE STRIP/SIDEWALK AMENITY ZONE OR BEHIND THE SIDEWALK. THE EDGE OF THE CABINET PAD MUST BE A MINIMUM OF 3' FROM THE FACE OF CURB AND SHALL NOT EXTEND INTO THE PRIMARY WALKING PATH. SEE COB DESIGN MANUAL SECTION 15 FOR ADDITIONAL INFORMATION REGARDING LOCATING FIXED OBJECTS.
3. COB MUST HAVE ACCESS TO THE BREAKER DOOR ON THE SERVICE CABINET. A COMMON KEY, UNIQUE TO EACH CARRIER, SHALL BE PROVIDED.

City of Bellevue

SMALL WIRELESS FACILITY DC POWER LAYOUT

DRAWING NUMBER	SL-123-1
SCALE	NONE
REVISION DATE	5/21
DEPARTMENT	TRANS



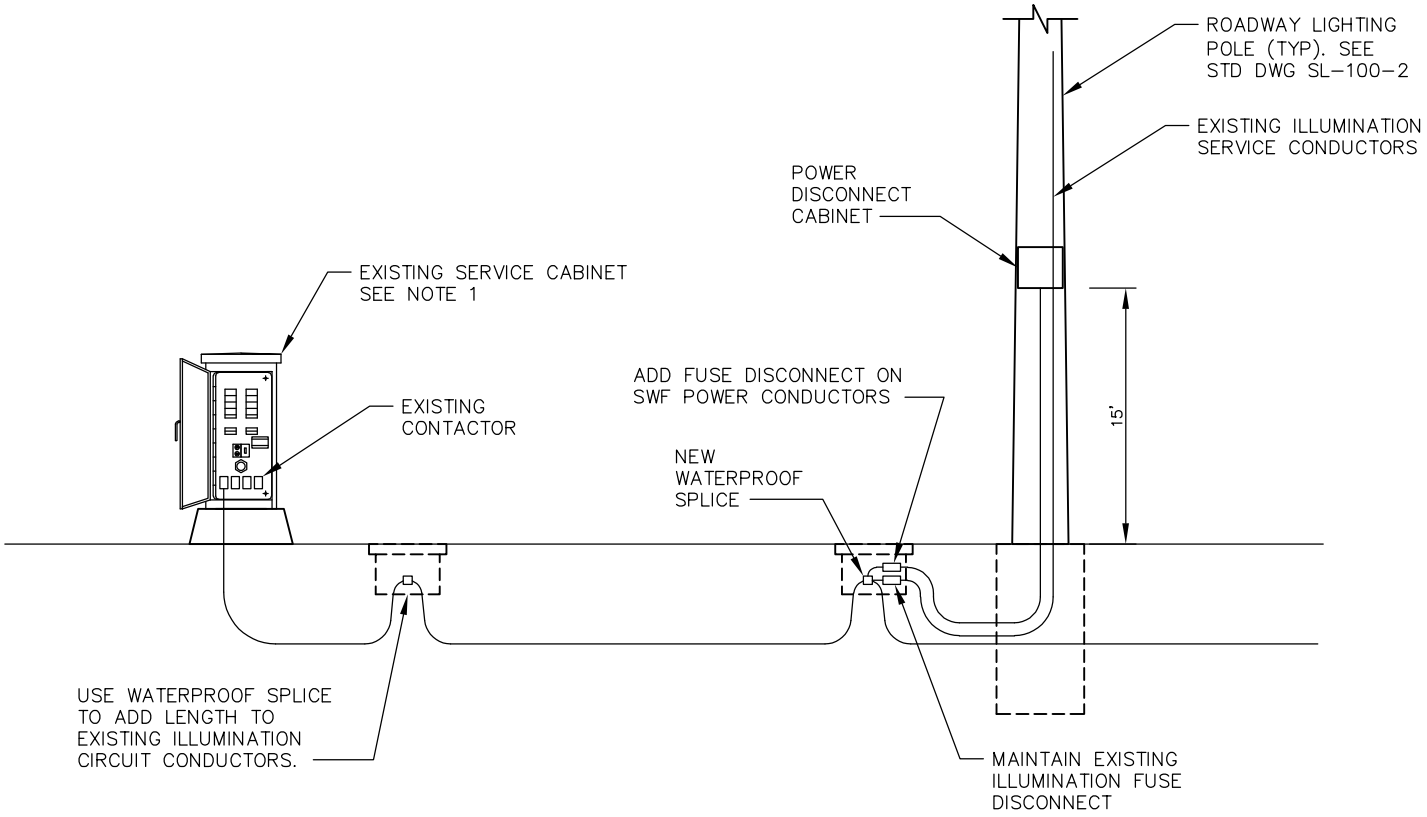
NOTES:

1. FOUNDATION SHALL BE CONSTRUCTED PER STD DWG SL-211-1. WIDTH AND HORIZONTAL DEPTH SHALL BE SCALED TO THE DIMENSIONS OF THE CABINET SELECTED. CONDUIT QUANTITY AND LAYOUT TO BE DETERMINED BY THE CARRIER.
2. CABINET PAD SHALL BE LOCATED IN THE LANDSCAPE STRIP/SIDEWALK AMENITY ZONE OR BEHIND THE SIDEWALK. THE EDGE OF THE CABINET PAD MUST BE A MINIMUM OF 3' FROM THE FACE OF CURB AND SHALL NOT EXTEND INTO THE PRIMARY WALKING PATH. SEE COB DESIGN MANUAL SECTION 15 FOR ADDITIONAL INFORMATION REGARDING LOCATING FIXED OBJECTS.
3. COB MUST HAVE ACCESS TO THE BREAKER DOOR ON THE SERVICE CABINET. A COMMON KEY, UNIQUE TO EACH CARRIER, SHALL BE PROVIDED.

City of Bellevue

SMALL WIRELESS FACILITY PSE-PROVIDED SERVICE LAYOUT

DRAWING NUMBER	SL-124-1
SCALE	NONE
REVISION DATE	5/21
DEPARTMENT	TRANS



NOTES:

1. TO POWER SWF EQUIPMENT OFF AN EXISTING ILLUMINATION CIRCUIT, THE EXISTING ILLUMINATION CONDUCTORS SHALL BE DISCONNECTED FROM THE ASSOCIATED CONTACTOR AND ROUTED DIRECT TO THE ASSOCIATED BREAKER. PULL EXISTING CONDUCTORS BACK TO CLOSEST JUNCTION BOX TO SPLICE ADDITIONAL LENGTH AS NEEDED.

2. ALL STREETLIGHT POLES ON THE SAME CIRCUIT AS THE SWF POLE SHALL HAVE PHOTOCELLS INSTALLED. STREETLIGHT FIXTURES THAT ARE NOT COMPATIBLE WITH A 3-PIN TWIST-LOCK PHOTOCELL SHALL BE REPLACED.

City of Bellevue

SMALL WIRELESS FACILITY SHARED ILLUMINATION CIRCUIT

DRAWING NUMBER	SL-125-1
SCALE	NONE
REVISION DATE	5/21
DEPARTMENT	TRANS

LUMINAIRE SCHEDULE FOR CONTACTOR CABINET @ _____ STA. CABINET #_____

COB POLE NO.*	LUM. NO. ⬡	CIRCUIT NO.	STATION (OFFSET)	LIGHT SPECIFICATION	POLE HEIGHT	POLE TYPE	COMMENTS
NE 8@100-01	1	1	12+73 (38 LT)	LED COBRAHEAD TYPE XX-XX WATTS	35'	ROADWAY LIGHTING POLE	
EGATE@139-06	2	2	14+05 (30 RT)	LED COBRAHEAD TYPE XX-XX WATTS	35'	ROADWAY LIGHTING POLE	
	3						
	4						
	5						

* ASSIGNED BY C.O.B. SIGNAL & LIGHTING ENGINEER.

ILLUMINATION WIRE SCHEDULE

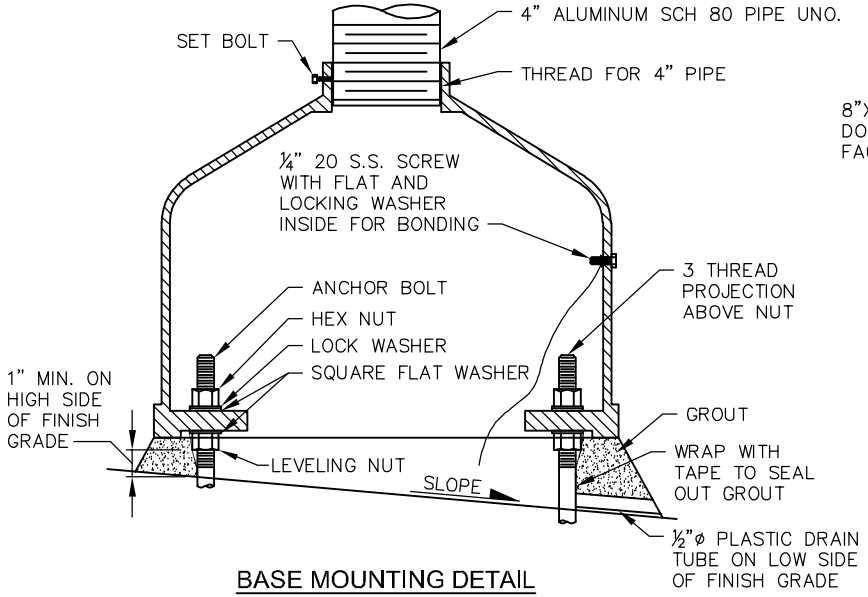
RUN NO. △	CONDUCTORS	CONDUIT
1	2#8 (ILL.), 2#8 (REC.), 1#8 (GROUND)	2"
2	4#8 (ILL.), 2#8 (REC.), 1#8 (GROUND)	2"
3		
4		
5		

ILL. = ILLUMINATION
REC. = RECEPTACLES

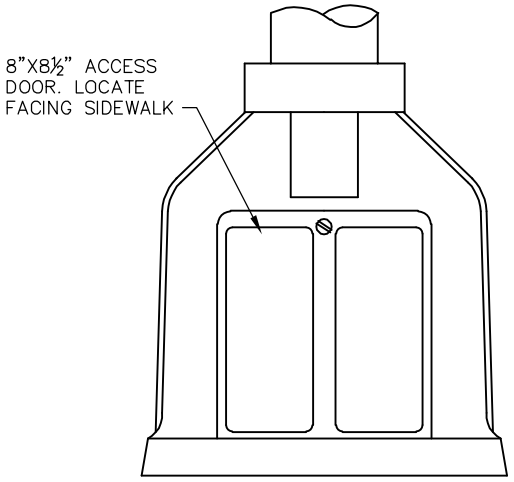
City of Bellevue

LUMINAIRE SCHEDULE AND ILLUMINATION WIRE SCHEDULE

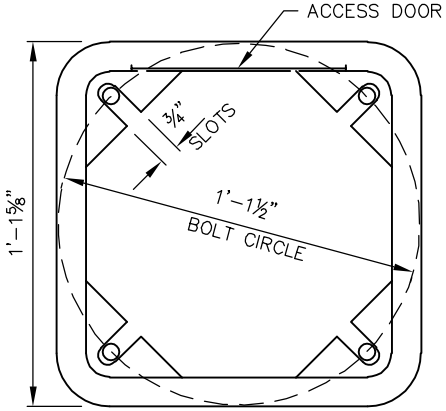
DRAWING NUMBER	SL-130-1
SCALE	NONE
REVISION DATE	11/19
DEPARTMENT	TRANS



BASE MOUNTING DETAIL



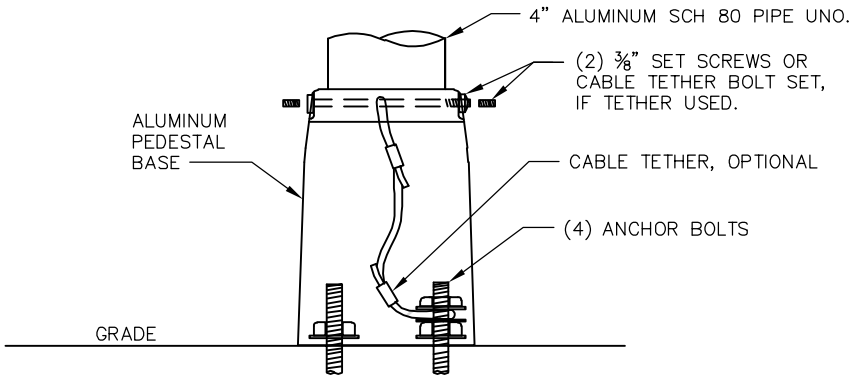
BASE ELEVATION



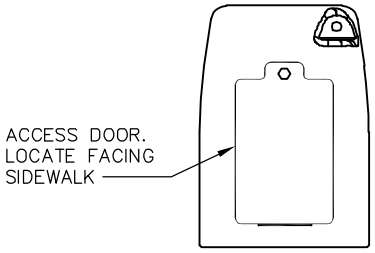
NOTE: BASE SHALL MEET AASHTO BREAKAWAY REQUIREMENTS

BOTTOM VIEW

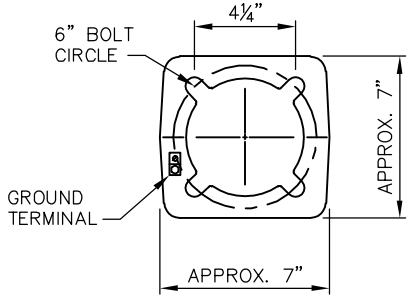
PEDESTAL OPTION A - 1'-1½" BOLT CIRCLE



BASE MOUNTING DETAIL



BASE ELEVATION



BOTTOM VIEW

PEDESTAL OPTION B - 6" BOLT CIRCLE

City of Bellevue

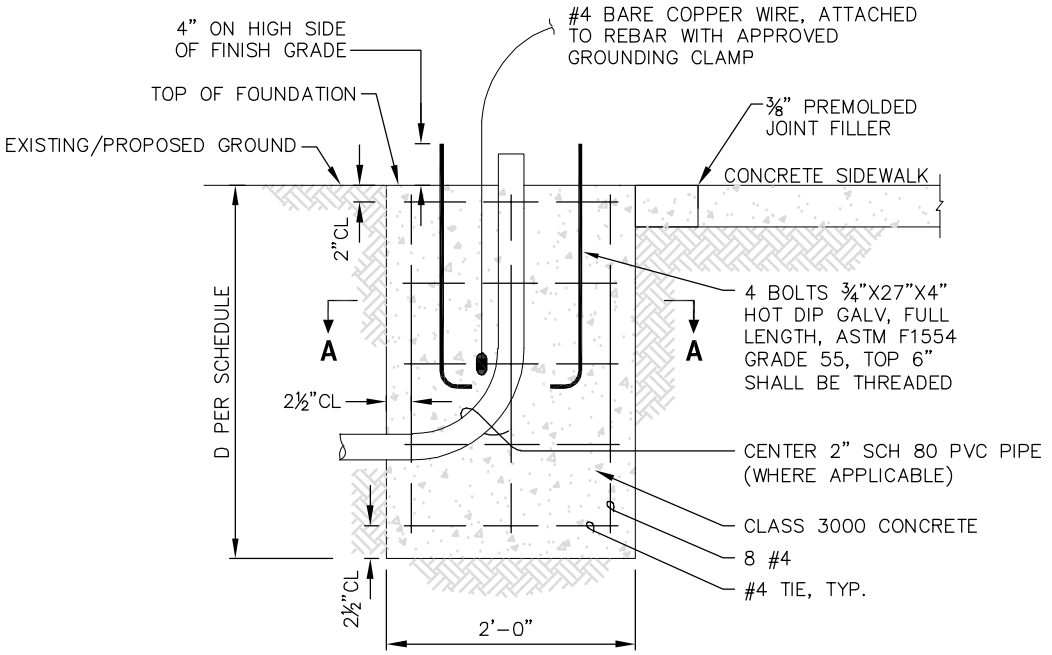
4" ALUMINUM POLE BASES

DRAWING NUMBER	SL-140-2
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

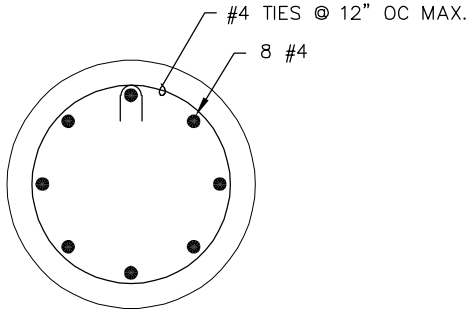
FOUNDATION SCHEDULE		
LOADING AT BASE M	GROUND CONDITION (SEE NOTES)	FOUNDATION DEPTH D
M < 8500 FT–LB	FLAT SLOPED	4'–0" 5'–0"
8500 FT–LB < M < 12,000 FT–LB	FLAT SLOPED	5'–0" 6'–0"

NOTES:

1. THIS FOUNDATION HAS BEEN DESIGNED ACCORDING TO THE AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, FIRST EDITION, 2015. ULTIMATE WIND SPEED IS 100 MPH.
2. FLAT GROUND CONDITION SHALL BE USED IF SLOPE IS 4H:1V OR LESS.
3. SLOPED GROUND CONDITION SHALL BE USED IF SLOPE IS GREATER THAN 4H:1V BUT LESS THAN 2H:1V.
4. FOUNDATION DEPTHS PROVIDED ASSUME SOIL CAN BE CLASSIFIED AS SAND. FOR PREDOMINATELY CLAY SOILS A PROJECT–SPECIFIC DESIGN WILL BE REQUIRED.
5. IF THE LOADING AT THE BASE OF THE POLE IS GREATER THAN 12,000 FT–LB, A PROJECT–SPECIFIC DESIGN WILL BE REQUIRED.



PEDESTAL FOUNDATION



FOUNDATION SECTION (A-A)

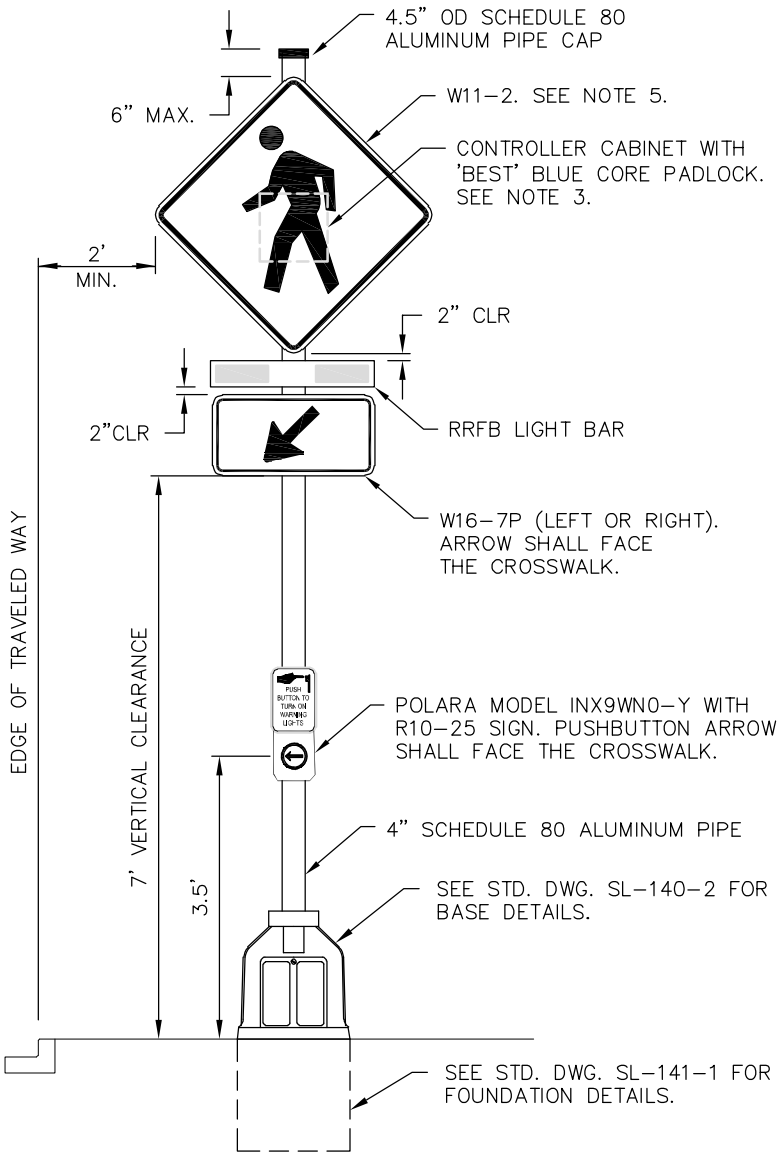
City of Bellevue

4" ALUMINUM POLE BASE FOUNDATION

DRAWING NUMBER	SL–141–1
SCALE	NONE
REVISION DATE	7/22
DEPARTMENT	TRANS

NOTES:

1. SEE CONTRACT PLANS AND SPECIFICATIONS FOR POLE HEIGHT, SIGN SIZES, SHEETING TYPE, AND OTHER DETAILS.
2. REFER TO THE CURRENT BELLEVUE SPECIAL PROVISIONS FOR APPROVED RRFB COMPONENTS.
3. THE PREFERRED PLACEMENT OF RRFB CONTROLLER CABINET HOUSING THE RRFB CONTROLLER IS BEHIND THE W11-2 SIGN. CONTACT THE CITY'S TRAFFIC ENGINEER FOR CONTROLLER PLACEMENT WHEN USING DUAL SIDED SIGN ASSEMBLIES.
4. POLE, POLE BASE, POLE CAP, SIGN BACKS, BANDING, AND CONTROLLER CABINET SHALL BE POWDER COATED BLACK (RAL 9004 OR P33) UNLESS OTHERWISE NOTED ON THE PLANS.
5. FOR SCHOOL CROSSINGS, A S1-1 SHALL BE USED.
6. THE RRFB BASE AND FOUNDATION SHALL BE LOCATED SO THAT 4' MINIMUM CLEARANCE IS MAINTAINED FOR THE PEDESTRIAN ACCESS ROUTE.



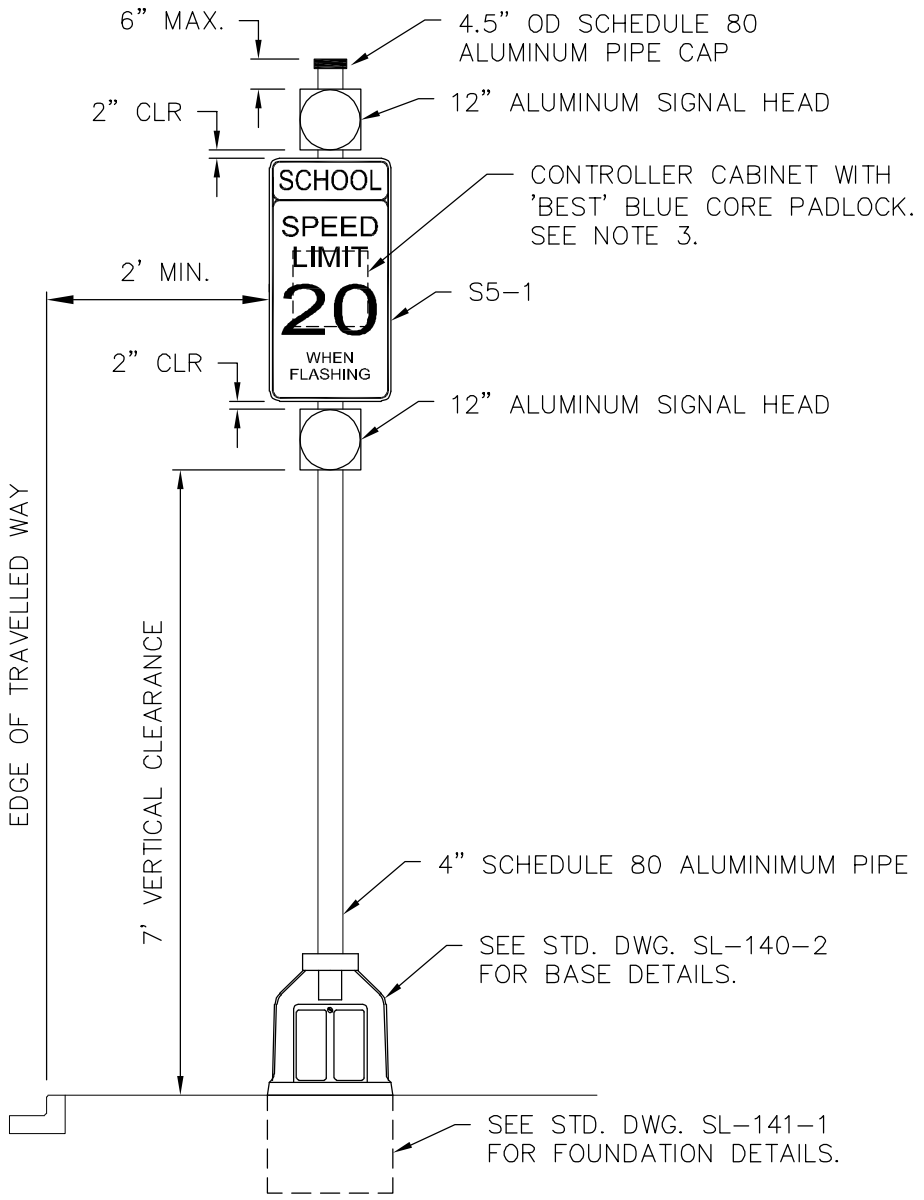
City of Bellevue

TYPICAL RRFB ASSEMBLY

DRAWING NUMBER	SL-150-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

NOTES:

1. SEE CONTRACT PLANS AND SPECIFICATIONS FOR POLE HEIGHT, SIGN SIZES, SHEETING TYPE, AND OTHER DETAILS.
2. REFER TO THE CURRENT BELLEVUE SPECIAL PROVISIONS FOR APPROVED SCHOOL ZONE FLASHING BEACON COMPONENTS.
3. THE PREFERRED PLACEMENT OF THE CONTROLLER CABINET HOUSING THE SCHOOL ZONE FLASHING BEACON CONTROLLER IS BEHIND THE SCHOOL SPEED LIMIT SIGN (S5–1).
4. POLE, POLE BASE, POLE CAP, SIGN BACKS, BANDING, AND CONTROLLER CABINET SHALL BE POWDER COATED "BLACK" (RAL9004 OR P33) UNLESS OTHERWISE NOTED ON THE PLANS.
5. SUPPORTING SCHOOL ZONE SIGNAGE SHALL BE INSTALLED ALONG THE ROADWAY CORRIDOR INCLUDING SCHOOL ZONE SIGN (S1–1) WITH SCHOOL PLAQUE (S4–3P) AND END SCHOOL ZONE SIGN (S5–2), IN ACCORDANCE WITH THE MUTCD.
6. THE SCHOOL ZONE FLASHING BEACON SIGN BASE AND FOUNDATION SHALL BE LOCATED SO THAT 4' MINIMUM CLEARANCE IS MAINTAINED FOR THE PEDESTRIAN ACCESS ROUTE.



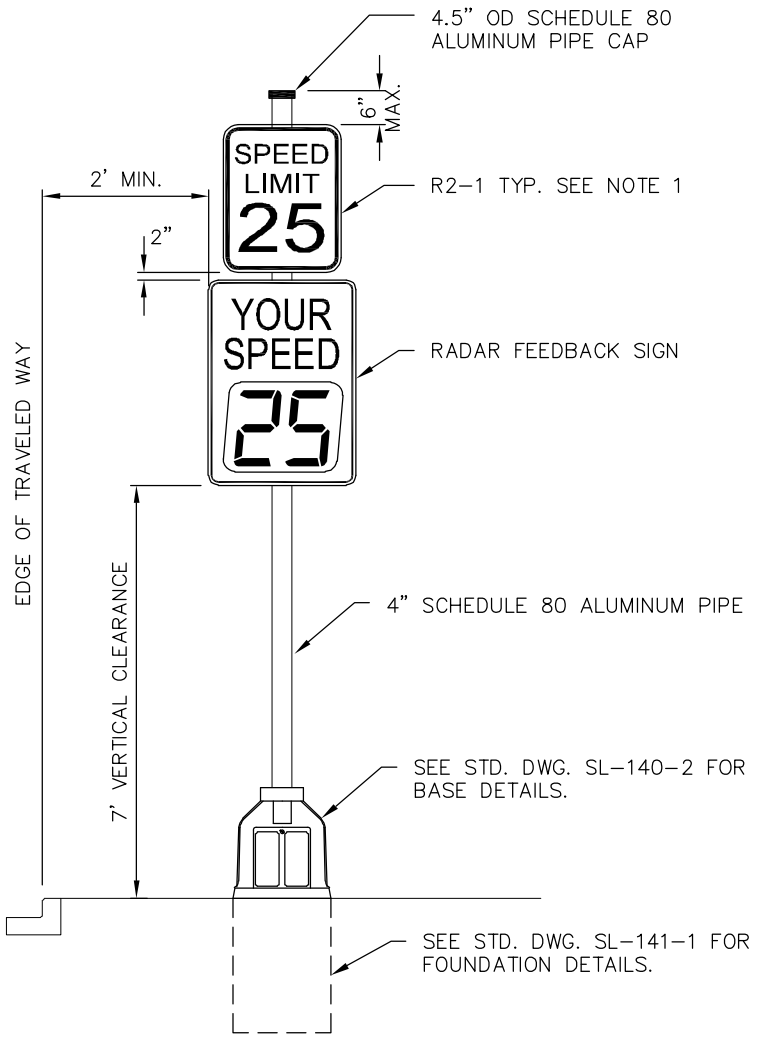
City of Bellevue

TYPICAL SCHOOL ZONE FLASHING BEACON ASSEMBLY

DRAWING NUMBER	SL–151–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

NOTES:

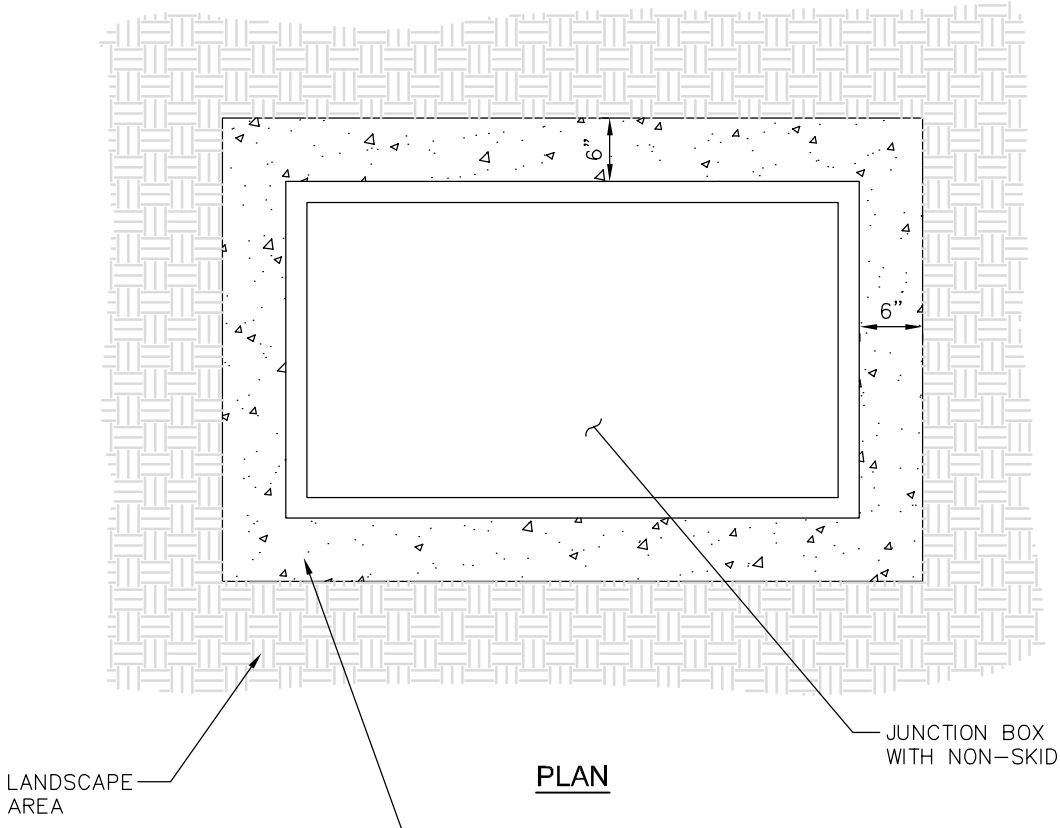
1. SEE CONTRACT PLANS AND SPECIFICATIONS FOR POLE HEIGHT, SIGN SIZES, SHEETING TYPE, SPEED LIMIT, AND OTHER DETAILS.
2. REFER TO THE CURRENT BELLEVUE SPECIAL PROVISIONS FOR APPROVED RADAR FEEDBACK SIGN COMPONENTS.
3. POLE, POLE BASE, POLE CAP, SIGN BACKS, BANDING, AND CONTROLLER CABINET SHALL BE POWDER COATED "BLACK" (RAL9004 OR P33) UNLESS OTHERWISE NOTED ON THE PLANS.
4. THE RADAR FEEDBACK SIGN BASE AND FOUNDATION SHALL BE LOCATED SO THAT 4' MINIMUM CLEARANCE IS MAINTAINED FOR THE PEDESTRIAN ACCESS ROUTE.



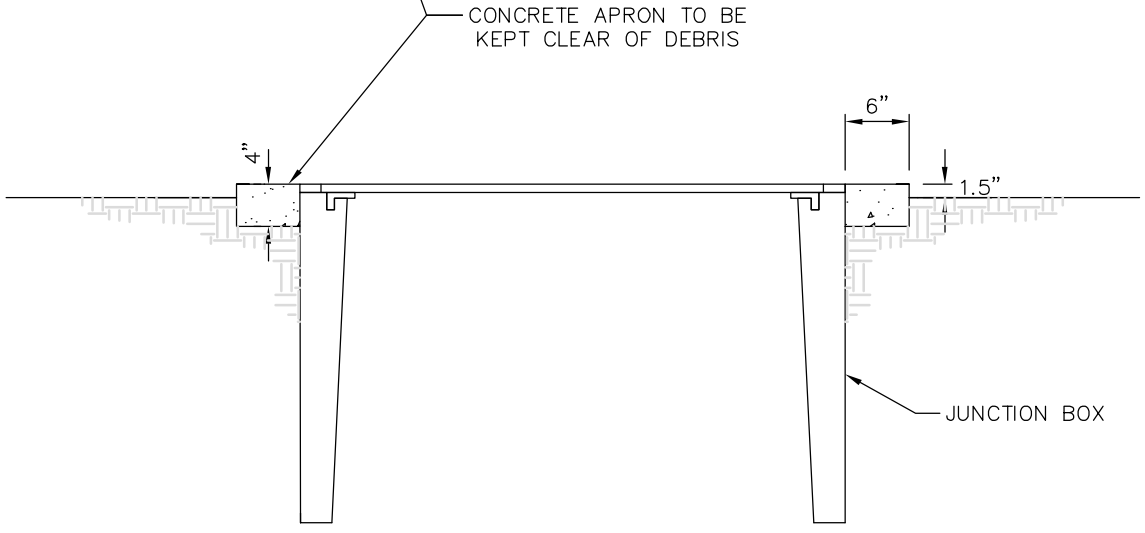
City of Bellevue

TYPICAL RADAR FEEDBACK SIGN ASSEMBLY

DRAWING NUMBER	SL-152-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



PLAN



CROSS SECTION

NOTE: DO NOT INSTALL CONCRETE COLLAR IN SIDEWALK OR ASPHALT PATH

DRAWING NUMBER	SL-160-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

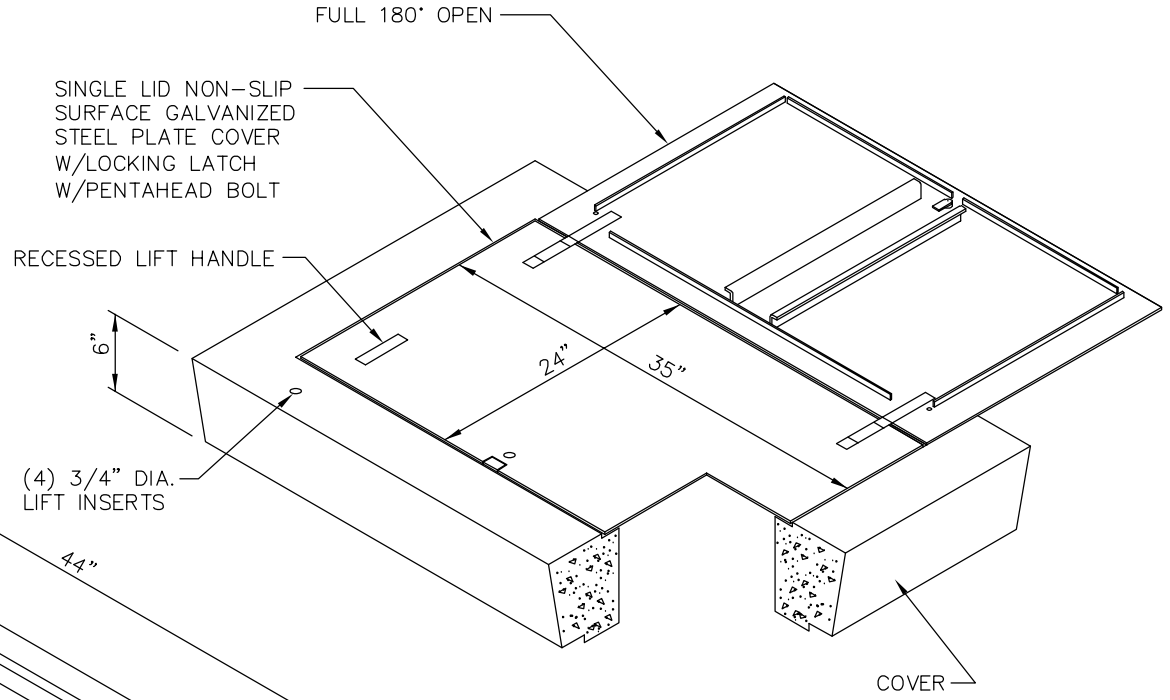
JUNCTION BOX IN LANDSCAPE AREAS

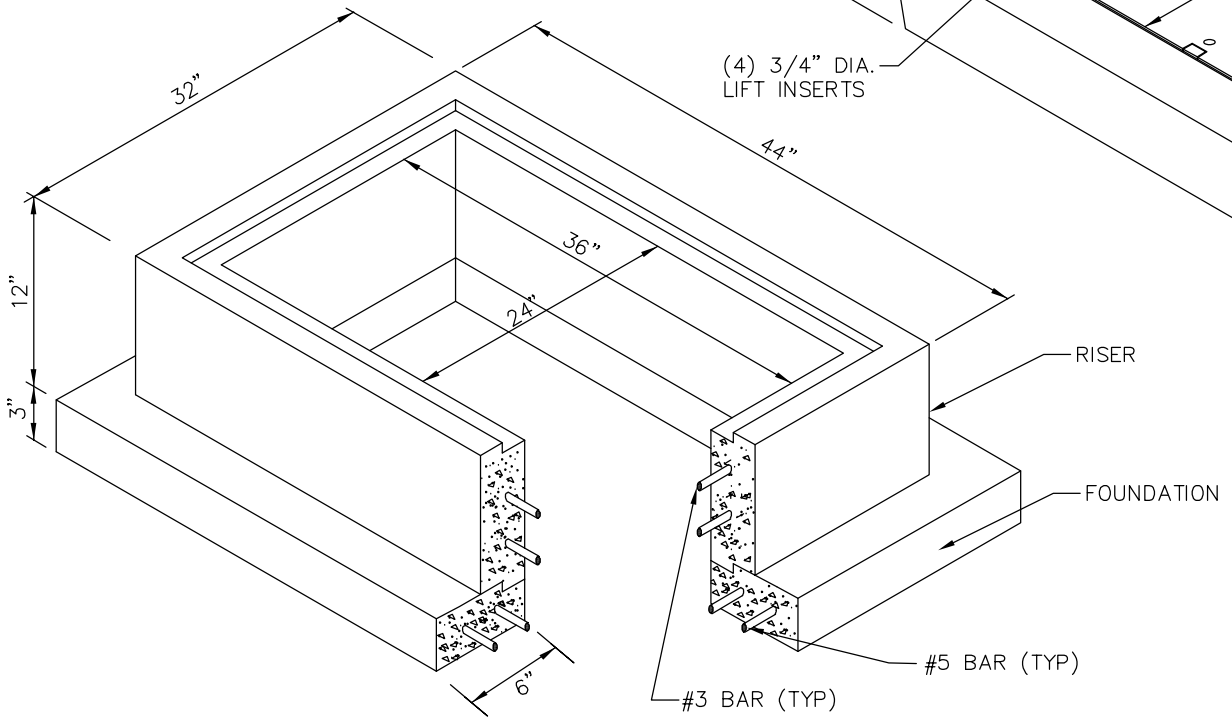
City of Bellevue

BELLEVUE WASHINGTON CITY OF

NOTE:

1. THE COVER SHALL HAVE 1/16" TO 1/8" CLEARANCE ON EACH EDGE WITHIN THE FRAME GALVANIZING
2. CONDUIT ELBOWS OR SWEEPS INTO JUNCTION BOX SHALL BE DETERMINED IN THE FIELD BY THE INSPECTOR.
3. DISTANCE BETWEEN THE TOP OF THE CONDUIT AND THE BOTTOM OF THE LID SHALL BE 10" MIN. TO 12" MAX.

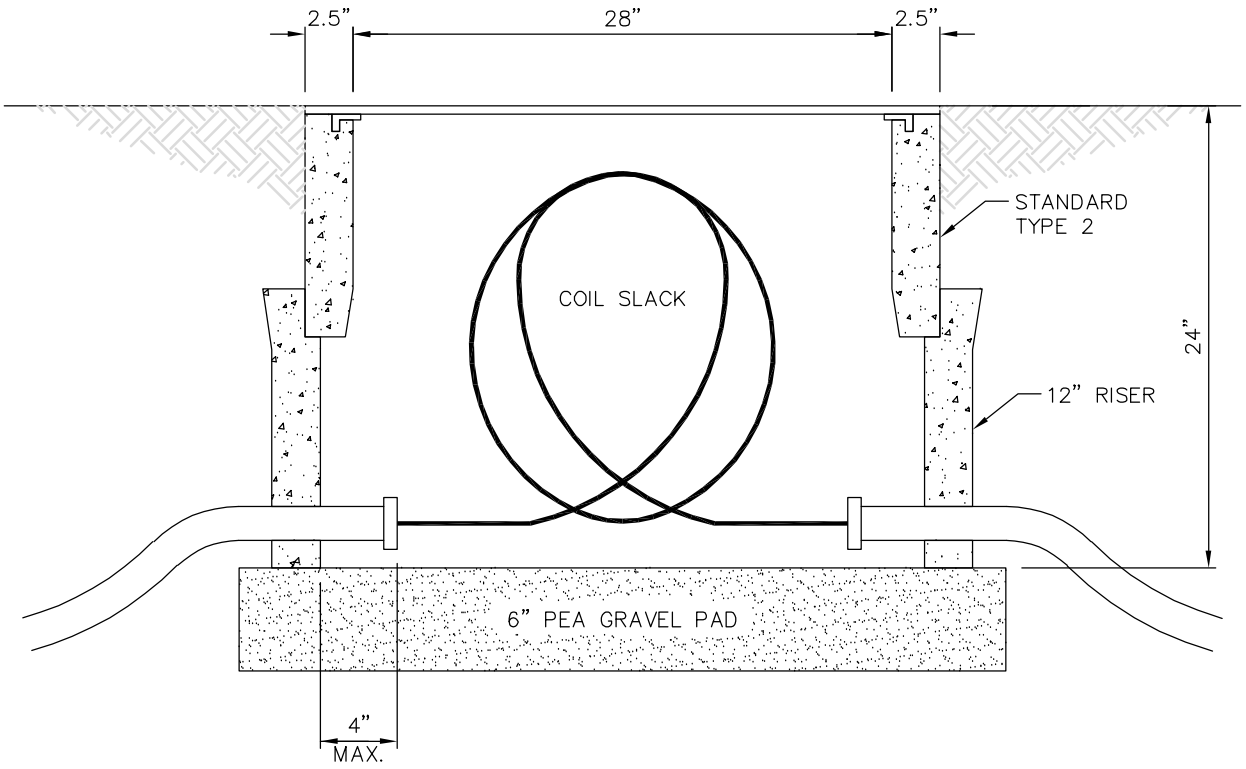




City of Bellevue

TYPE 8 MODIFIED JUNCTION BOX

DRAWING NUMBER	SL-170-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

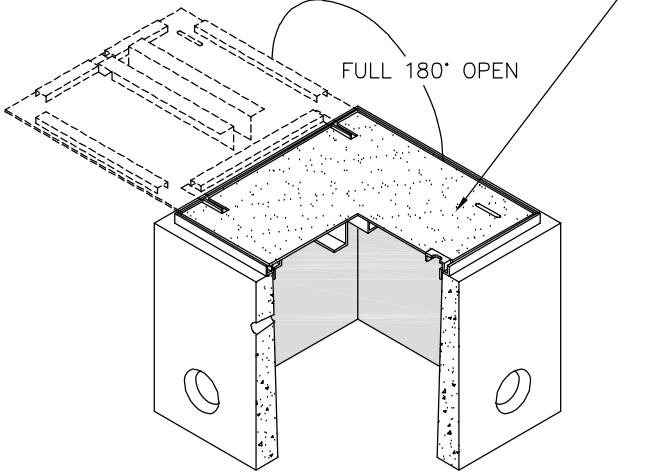


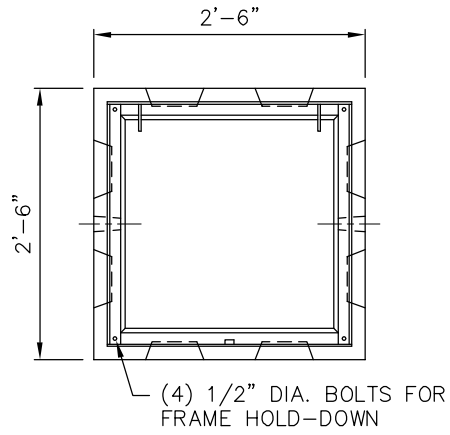
MODIFIED TYPE 2 JUNCTION BOX

City of Bellevue

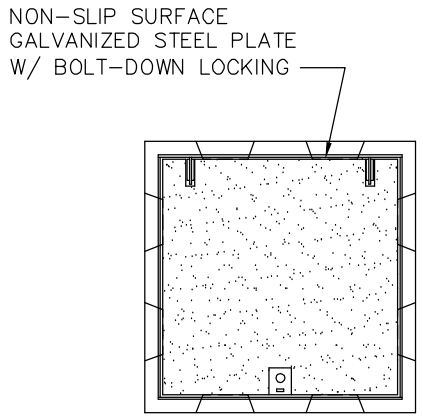
COMMUNICATION JUNCTION BOX DETAIL

DRAWING NUMBER	SL-180-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

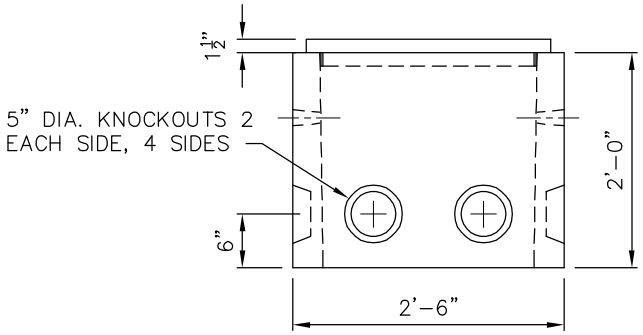




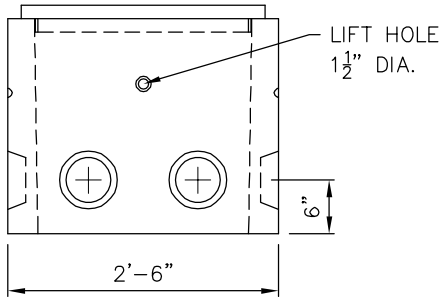
PLAN VIEW
COVER NOT SHOWN



PLAN VIEW
SHOWN WITH COVER



FRONT VIEW

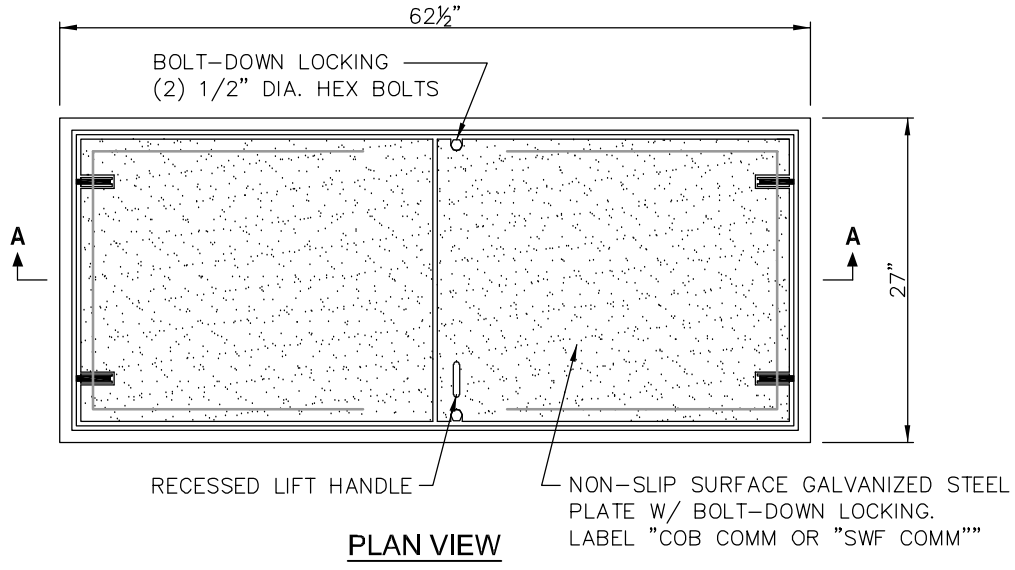


SIDE VIEW

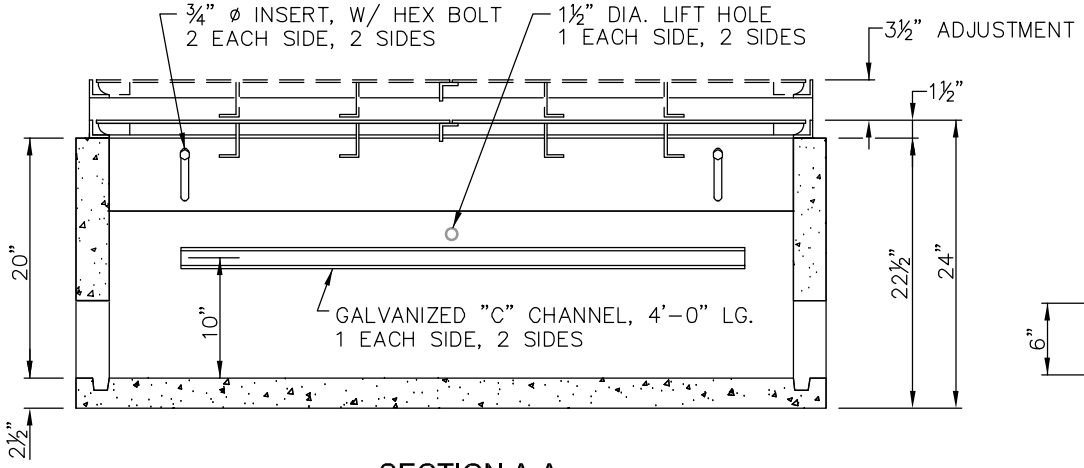
City of Bellevue

LARGE COMMUNICATION JUNCTION BOX DETAIL

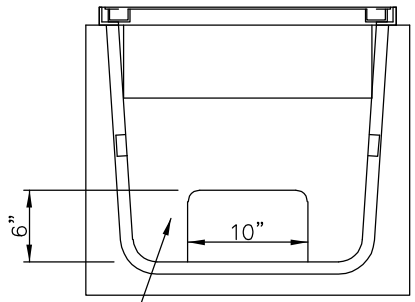
DRAWING NUMBER	SL-181-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



PLAN VIEW



SECTION A-A

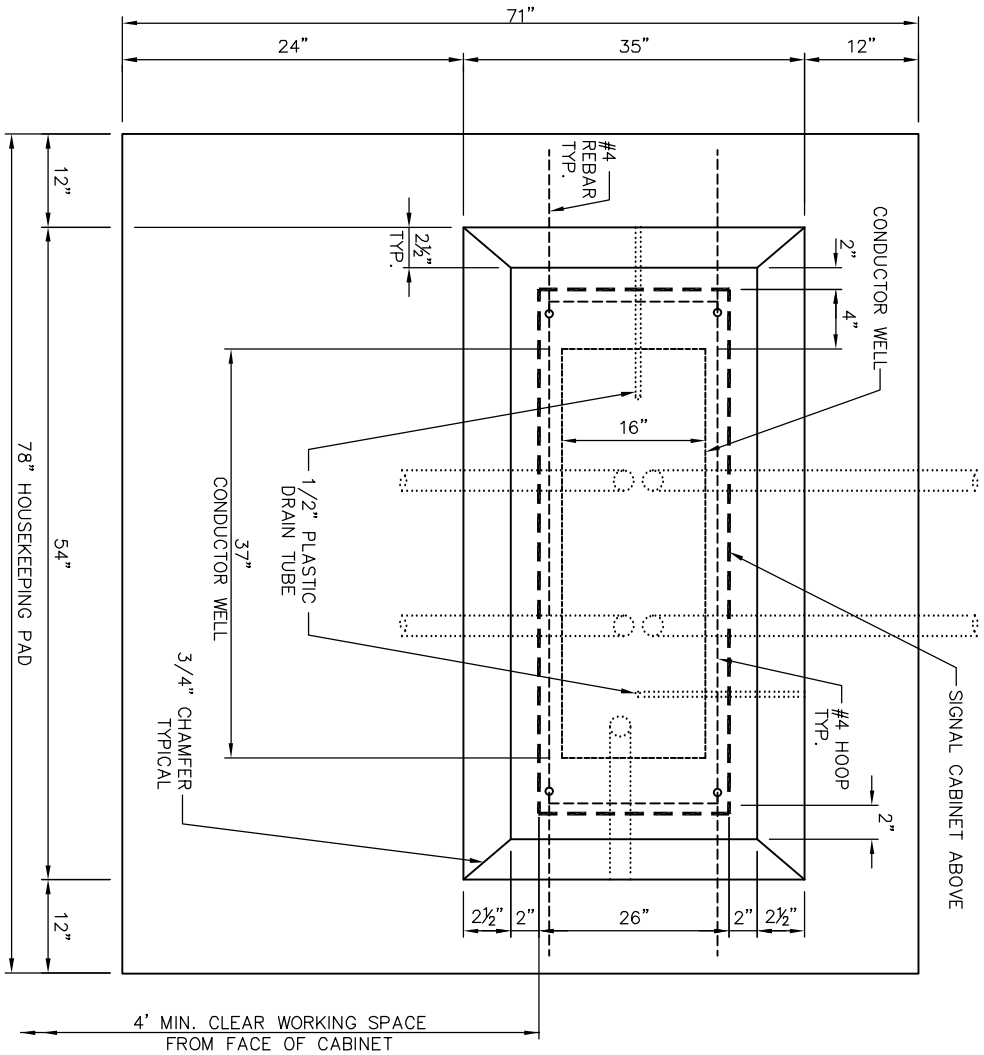


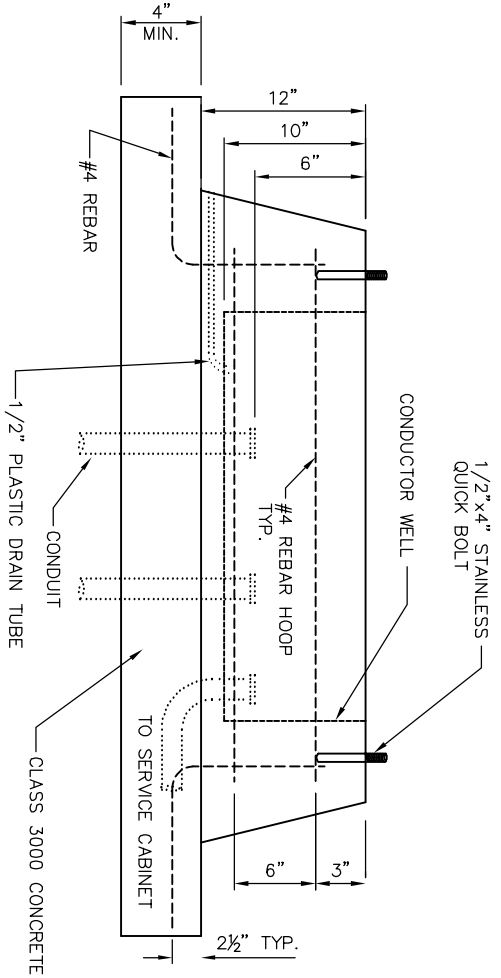
END VIEW

City of Bellevue

FIBER OPTIC VAULT

DRAWING NUMBER	SL–190–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS





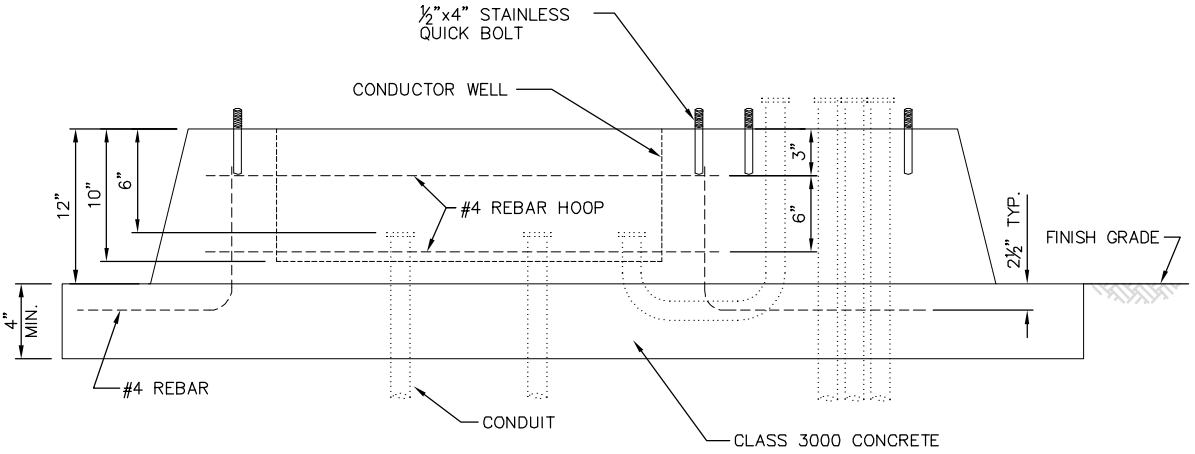
NEMA CONTROLLER CABINET FOUNDATION DETAIL

*NOTE: CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINET

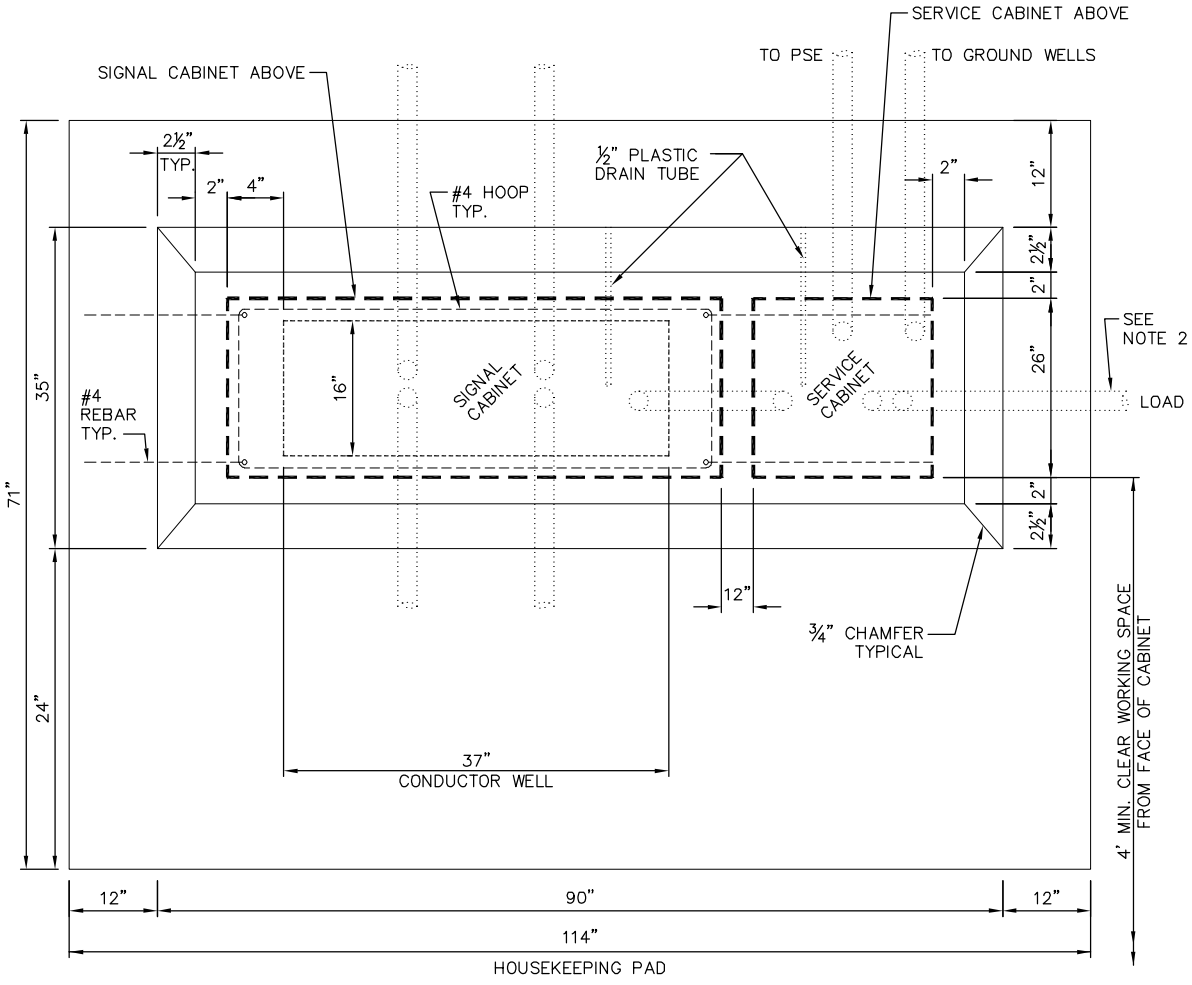
City of Bellevue

SIGNAL CABINET FOUNDATION DETAIL

DRAWING NUMBER	SL-200-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



ELEVATION



PLAN

NEMA CONTROLLER CABINET AND SERVICE CABINET FOUNDATION DETAIL

NOTES:

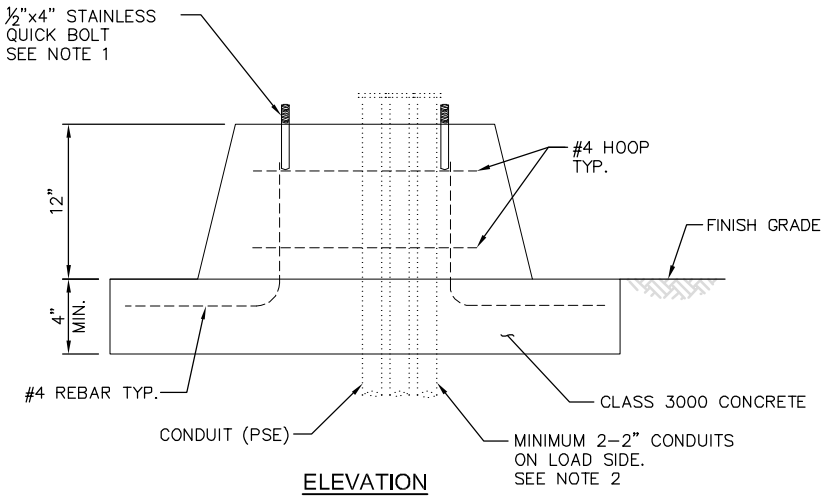
1. CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINETS.
2. MINIMUM 2–2" CONDUITS. FOR CONDUIT LOCATION SEE SERVICE CABINET DETAIL, STD DWG SL–220–1.
3. INSTALL GROUND RODS PER SERVICE CABINET GROUNDING DETAIL, STD. DWG. SL–213–1.

DRAWING NUMBER	SL–210–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

SIGNAL AND SERVICE CABINET FOUNDATION DETAIL

City of Bellevue

BELLEVUE WASHINGTON CITY OF



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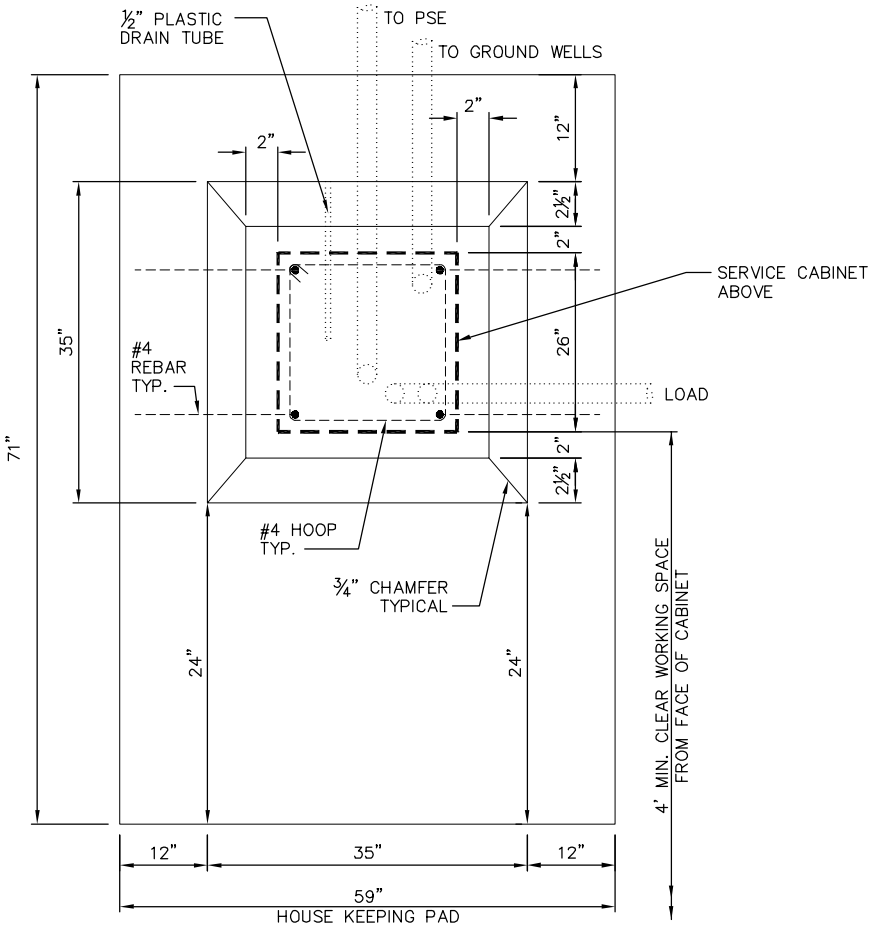


PLAN

SERVICE CABINET FOUNDATION DETAIL

NOTES:

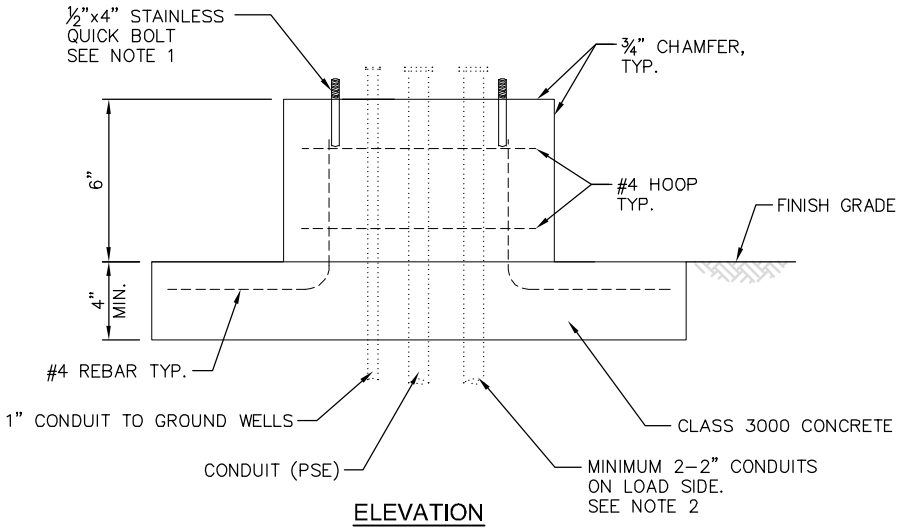
1. CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINETS.
2. FOR CONDUIT LOCATION SEE SERVICE CABINET DETAIL, STD DWG SL–220–1.
3. INSTALL GROUND RODS PER CABINET GROUNDING DETAIL, STD. DWG. SL–213–1.

DRAWING NUMBER	SL–211–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

SERVICE CABINET FOUNDATION DETAIL

City of Bellevue

CITY OF BELLEVUE WASHINGTON



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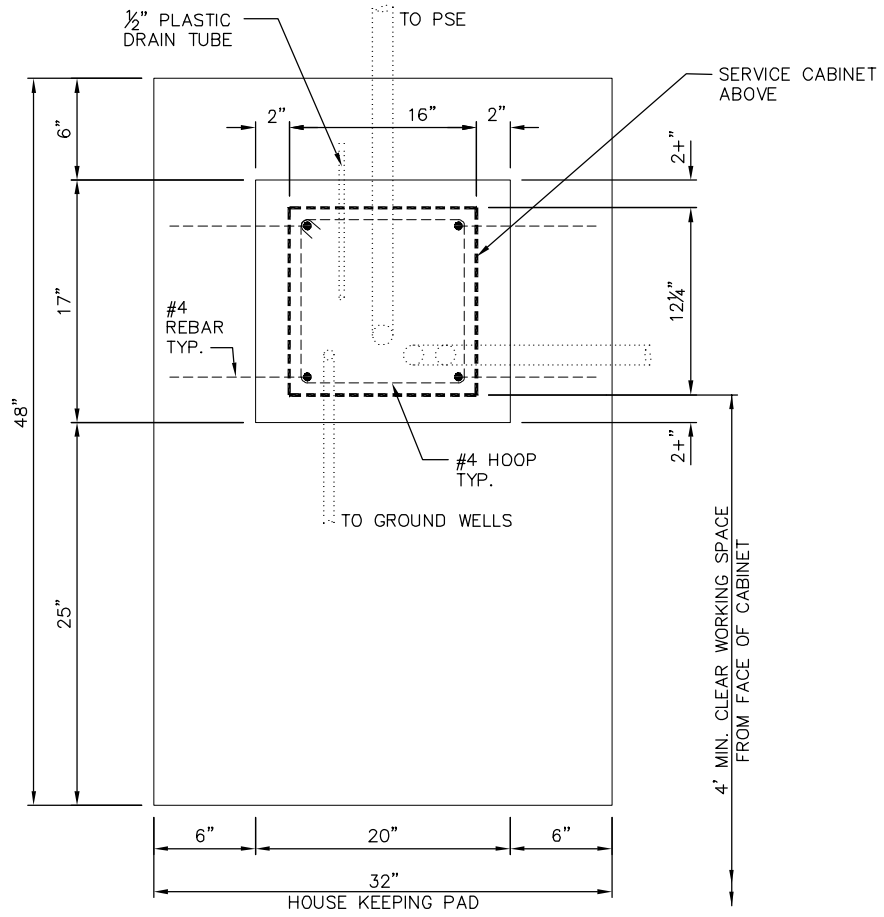


PLAN

"TINY" SERVICE CABINET FOUNDATION DETAIL

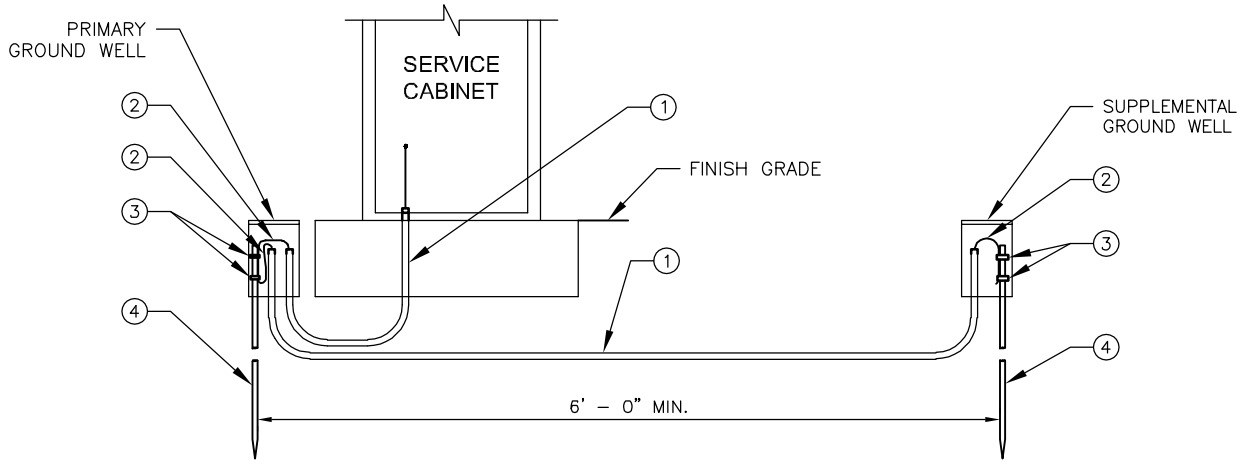
NOTES:

1. CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINETS.
2. FOR CONDUIT LOCATION SEE SERVICE CABINET DETAIL, STD DWG SL–220–1.
3. INSTALL GROUND RODS PER CABINET GROUNDING DETAIL, STD. DWG. SL–213–1.

DRAWING NUMBER	SL–212–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

"TINY" SERVICE CABINET FOUNDATION DETAIL

City of Bellevue

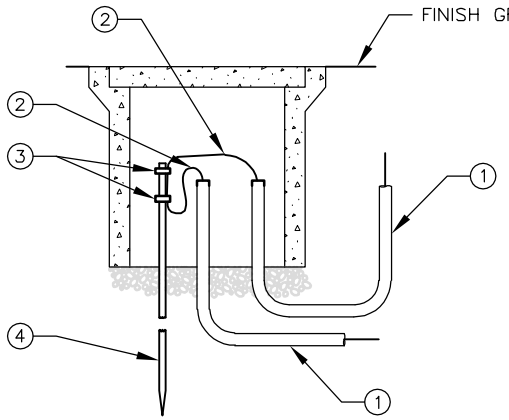


CABINET GROUND DETAIL

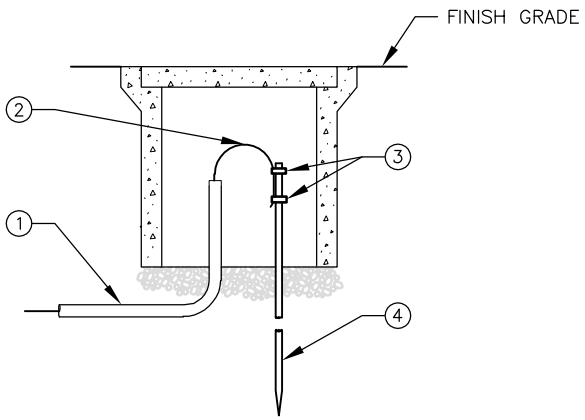
SCHEDULE	
1	1 INCH PVC CONDUIT
2	#4 COPPER GROUNDING CONDUCTOR
3	GROUNDING CONNECTORS
4	GROUND ROD A MINIMUM OF 8 FOOT LONG AND A MINIMUM 5/8" INCH DIAMETER

NOTE:

FOR RETROFIT APPLICATION, GROUND RODS MUST BE INSTALLED UNTIL THE RESISTANCE READING OF THE TOTAL CONNECTED GROUND ROD SYSTEM IS 25 OHMS OR LESS.
GROUND WELLS CAN BE INSTALLED IN EARTH OR CONCRETE.



PRIMARY GROUND WELL

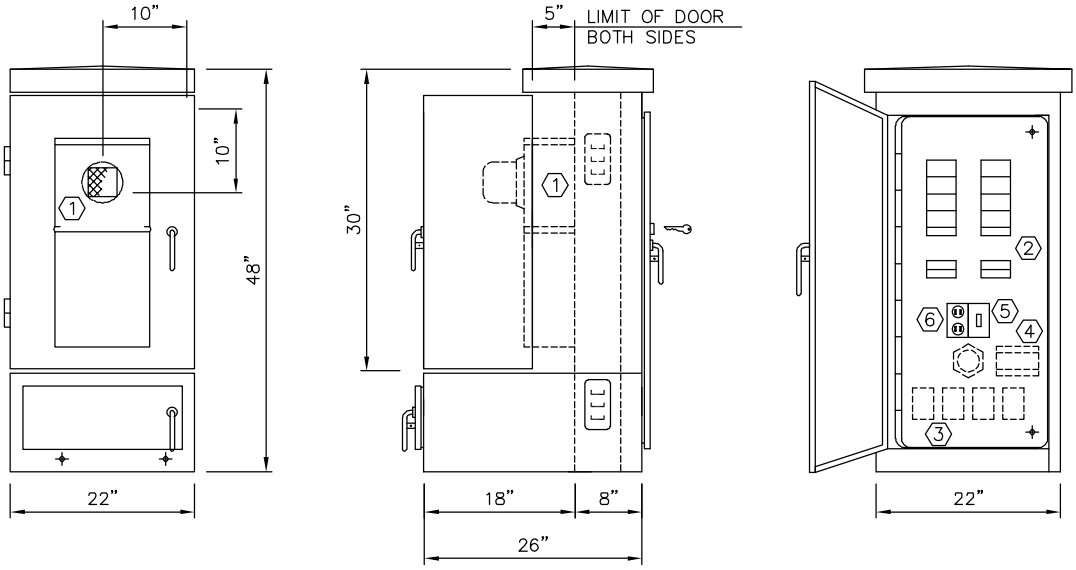


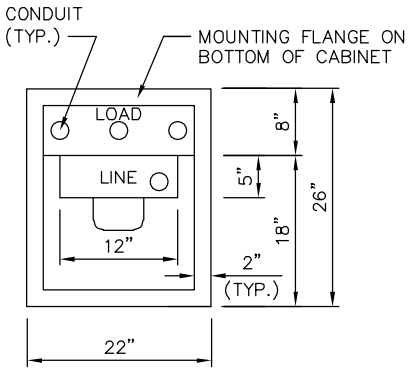
SUPPLEMENTAL GROUND WELL

City of Bellevue

SERVICE CABINET GROUNDING DETAIL

DRAWING NUMBER	SL–213–1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS





TYPICAL CONDUIT LAYOUT

CITY OF BELLEVUE

SERVICE CABINET FOR STREET AND TRAFFIC SIGNAL

COMPONENT SCHEDULE

(1) METERBASE: 200 AMP SAFETY SOCKET, 5th JAW INSTALLED AT 9:00 POSITION

(2) PANELBOARD: 120/240 VAC, 225 AMP COPPER BUS, 1 PHASE, 3 WIRE, SPLIT BUS, COPPER BUS, 22 KAIC BREAKERS
SIGNAL SECTION: MLO, 4CKT, 1-30/1 SIGNAL BRANCH
ILLUMINATION SECTION: MAIN BREAKER, 150 AMP, 2 POLE
4-30/2 STREET ILLUMINATION BRANCH
1-15/1 CONTROL CKT BRANCH
1-20/1 GROUND FAULT RECEPTACLE BRANCH
2-20/1 SMALL WIRELESS FACILITY
2-20/1 DUPLEX RECEPTACLES

(3) CONTACTORS: LIGHTING RATED, 120 VAC COIL, 4-REQUIRED FOR STREET LIGHTING AT 30 AMP, 4 POLE

(4) TERMINAL BLOCK TO REMOTE PHOTO CELL (FOR CONTROL OF STREET LIGHTING), INCLUDES 5" UNUSED DIN RAIL SPACE FOR FUTURE ENERGY METER.

(5) PHOTO-CELL BYPASS SWITCH, SPDT, 15 AMP, UP TO 277 VAC

(6) GROUND FAULT RECEPTACLE: 20 AMP, 125 VAC, DUPLEX

CABINET: NEMA 3R, PADMOUNT, 2 SCREENED, AND GASKETED VENTS

DOORS: HEAVY DUTY STAINLESS STEEL HINGES (LIFT-OFF TYPE), 3 POINT LATCHES, STAINLESS STEEL VAULT HANDLES, "BEST" LOCK ON DISTRIBUTION DOOR, PADLOCKABLE METER DOOR WITH POLISHED WIRE GLASS WINDOW CLOSED CELL NEOPRENE GASKET, CARD HOLDER.

FINISH: POLYESTER POWDER COAT, ZINC PRIME, ASA 61 GRAY INSIDE AND OUT. DEADFRONT AND WIREWAY COVERS WHITE.

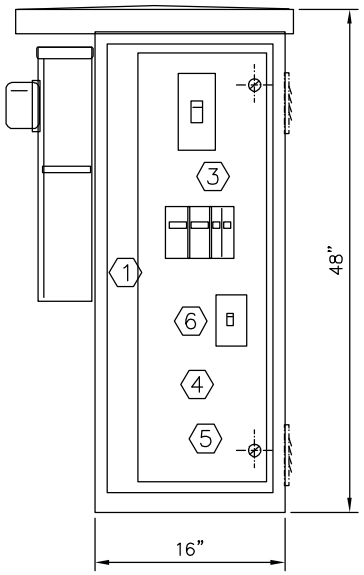
NOTES:

1. CABINET SHALL MEET CURRENT ELECTRIC UTILITY SERVICE EQUIPMENT COMMITTEE (EUSERC) STD. 308.
2. ANCHOR BOLTS AND DATA FOR SPACING TO BE SUPPLIED BY CABINET MANUFACTURER.
3. FOR SERVICE CABINET FOUNDATION, SEE STD. DWG. SL-210-1 AND SL-211-1.
4. METER DOOR SHALL BE REMOVABLE. STANDARD HINGING ON LEFT, HINGING ON RIGHT SHALL BE AVAILABLE IF REQUIRED.
5. WHERE SMALL WIRELESS FACILITIES ARE POWERED FROM A CITY SERVICE, AN ETHERNET-READY ENERGY METER SHALL BE PROVIDED. THE DEVICE SHALL BE DIN-RAIL MOUNTED. AN ETHERNET CABLE SHALL BE INSTALLED FROM THE DEVICE TO THE TRAFFIC SIGNAL CONTROLLER CABINET IF THE SERVICE IS LOCATED WITHIN 300' OF A TRAFFIC SIGNAL CABINET.

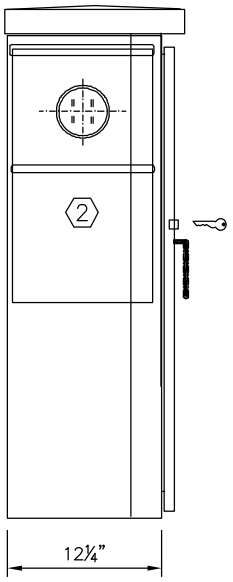
DRAWING NUMBER	SL-220-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

SERVICE CABINET DETAIL

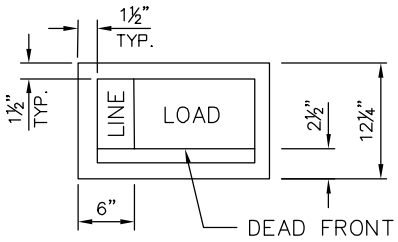
City of Bellevue



FRONT ELEVATION
(DOOR NOT SHOWN)



SIDE ELEVATION



FOOTPRINT

CABINET DESIGNATION

CITY OF BELLEVUE "TINY" CABINET

SKYLINE SERIES #65348

1 REQUIRED

CABINET:

CONSTRUCTION:
NEMA TYPE 3R, OUTDOOR PADMOUNT, ⅛" 5052–H32 ALUMINUM CONSTRUCTION, 2 SCREENED AND GASKETED VENTS, REMOVABLE EQUIPMENT MOUNTING PAN, CABINET GROUND WITH MINIMUM BONDING WIRE TO NEUTRAL.

DOORS:
HEAVY–DUTY CONCEALED HINGES (LIFT–OFF TYPE), STAINLESS STEEL VAULT HANDLE WITH ROLLER RODS THAT PROVIDE 3–POINT COMPRESSION ON CLOSED CELL NEOPRENE GASKET, "BEST" LOCK AND PADLOCK TABS ON DOOR

DEADFRONT:
HINGED AND SECURED WITH QUARTER–TURN FASTENERS

FINISH:
MILL FINISH ALUMINUM, DEADFRONT AND WIREWAY COVER WHITE

COMPONENT SCHEDULE:

(1) SERVICE WIREWAY

(2) METER BASE: 200A, 4 JAW, MANUAL BYPASS, B–LINE U264, W/ 5TH JAW

(3) PANELBOARD: 120/240 VAC, 125 AMP COPPER BUS, 1 PHASE, 3 WIRE, 6 CKT, FULLY RATED AT 10K AIC, WITH ENGRAVED NAME PLATES
MAIN BREAKER: 100AMP, 2 POLE, EATON QC2100
BRANCH BREAKERS, BOLT ON, EATON TYPE BAB:
2–20/2 LIGHTING 1, 2
1–20/1 RRFB
1–15/1 CONTROL

(4) CONTACTOR: LIGHTING RATED, 30A, 4 POLE, 120V COIL, SQD 8910DPA34V02U1

(5) TERMINAL BLOCK FOR FIELD WIRE CONNECTION TO REMOTE PHOTO CELL

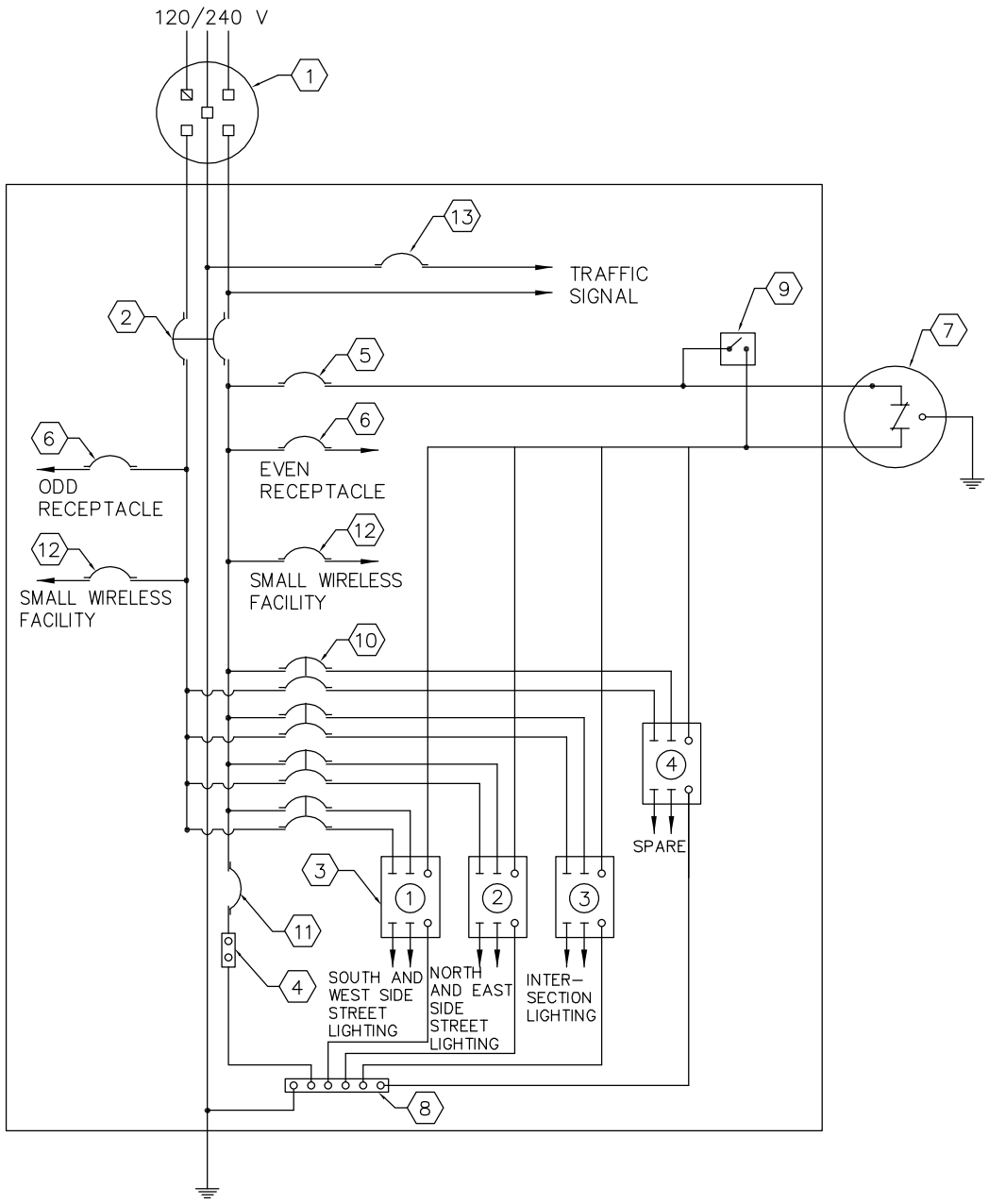
(6) PHOTO–CELL BYPASS SWITCH

UL LISTED PER STANDARD #508A
SUITABLE FOR USE AS SERVICE ENTRANCE

City of Bellevue

"TINY" SERVICE CABINET DETAIL

DRAWING NUMBER	SL–221–1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



SERVICE CABINET WIRING

ELECTRICAL SERVICE LEGEND:

1. METER
2. MAIN BREAKER (150 AMP.)
3. CONTACTORS (30 AMP.)
4. 120 V GFCI RECEPTACLE
5. CONTROL BREAKER (15 AMP.)
6. RECEPTACLE BREAKER – (20 AMP.)
7. PHOTOCELL
8. NEUTRAL BUS
9. TEST SWITCH (15 AMP.)
10. SERVICE BREAKER (30 AMP.)
11. GFCI BREAKER (20 AMP.)
12. SMALL WIRELESS FACILITY BREAKER (20 AMP.)
13. SIGNAL BREAKER (30 AMP.)

DRAWING NUMBER	SCALE	REVISION DATE	DEPARTMENT
SL-230-1	NONE	12/22	TRANS

SERVICE CABINET WIRING DETAIL

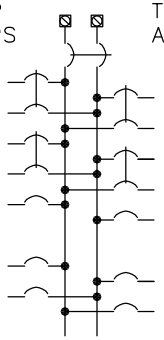
City of Bellevue

SOUTH AND WEST SIDE LIGHTING ARE ODD # LIGHTS & CONNECTED TO CONTACTOR #1
NORTH AND EAST SIDE LIGHTING ARE EVEN # LIGHTS & CONNECTED TO CONTACTOR #2

PANEL SCHEDULE

NO.	LOCATION		
S	LOCATION: PEDESTAL PANEL SERVING: STREET LIGHTS, ETC.	120/240 VOLTS 1 PHASE 3 WIRE 150 AMP with MAIN BREAKER	

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	ODD # STREET LIGHTS		30	30		EVEN # STREET LIGHTS	2
5	INTERSECTION LIGHTS		30	30		SPARE/FUTURE	6
9	SMALL WIRELESS FACILITY		20	20		SMALL WIRELESS FACILITY	10
13	DUPLEX RECEPTACLE ODD # SL		20	20		DUPLEX RECEPTACLE EVEN # SL	14
15	GFCI		20	15		LIGHTING CONTROL	16

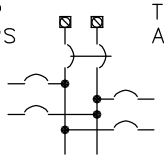


REMARKS:	CONNECTED LOAD:	KVA	AMPS
	DEMAND LOAD:	KVA	AMPS

PANEL SCHEDULE

NO.	LOCATION		
T	LOCATION: PEDESTAL PANEL SERVING: TRAFFIC SIGNAL CONTROL	120/240 VOLTS 1 PHASE 3 WIRE 50 AMP with MAIN LUGS ONLY	

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	SPARE/FUTURE						
3	SPACE			30		TRAFFIC SIGNAL CONTROL	2
						SPACE	4

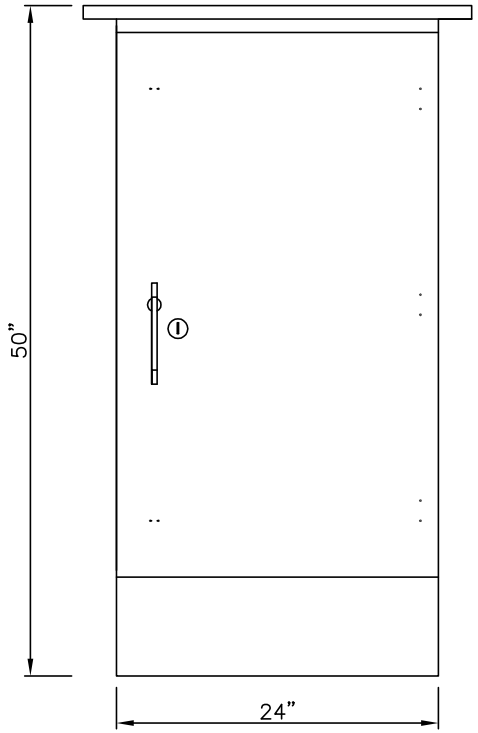


REMARKS:	CONNECTED LOAD:	KVA	AMPS
	DEMAND LOAD:	KVA	AMPS

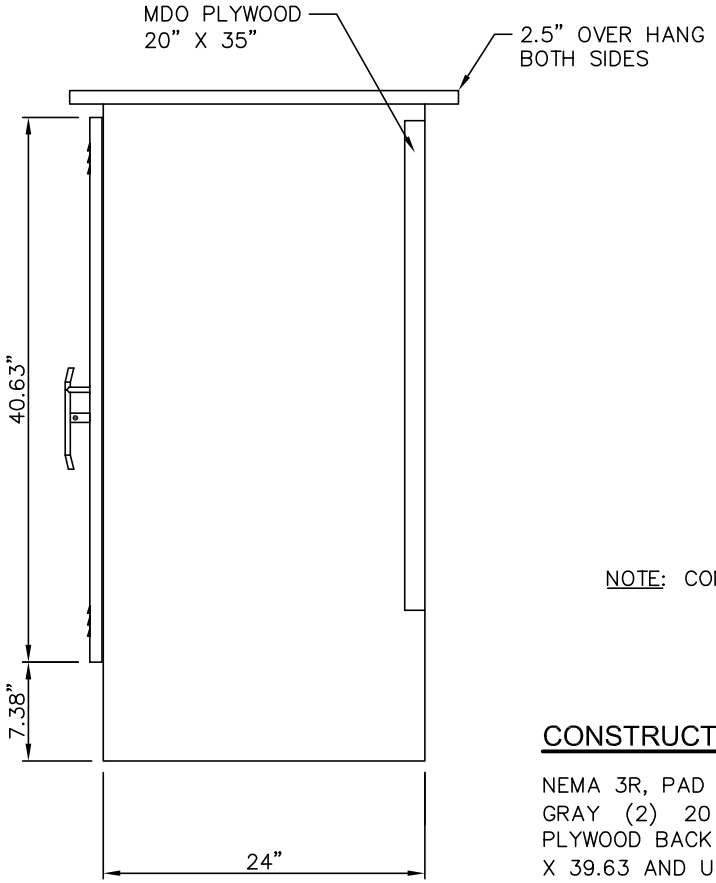
City of Bellevue

PANEL SCHEDULE

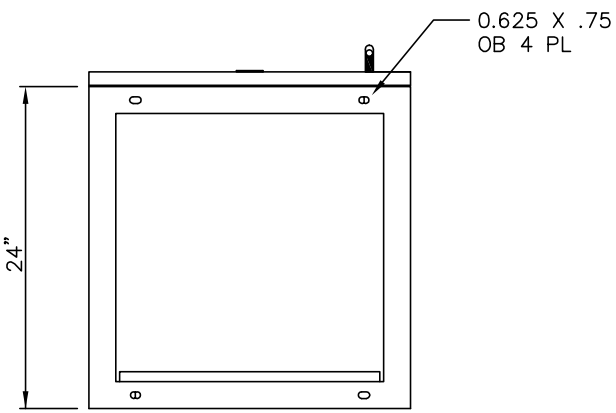
DRAWING NUMBER	SL-240-1
SCALE	NONE
REVISION DATE	5/21
DEPARTMENT	TRANS



FRONT VIEW



SIDE VIEW



TOP VIEW

NOTE: CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINET.

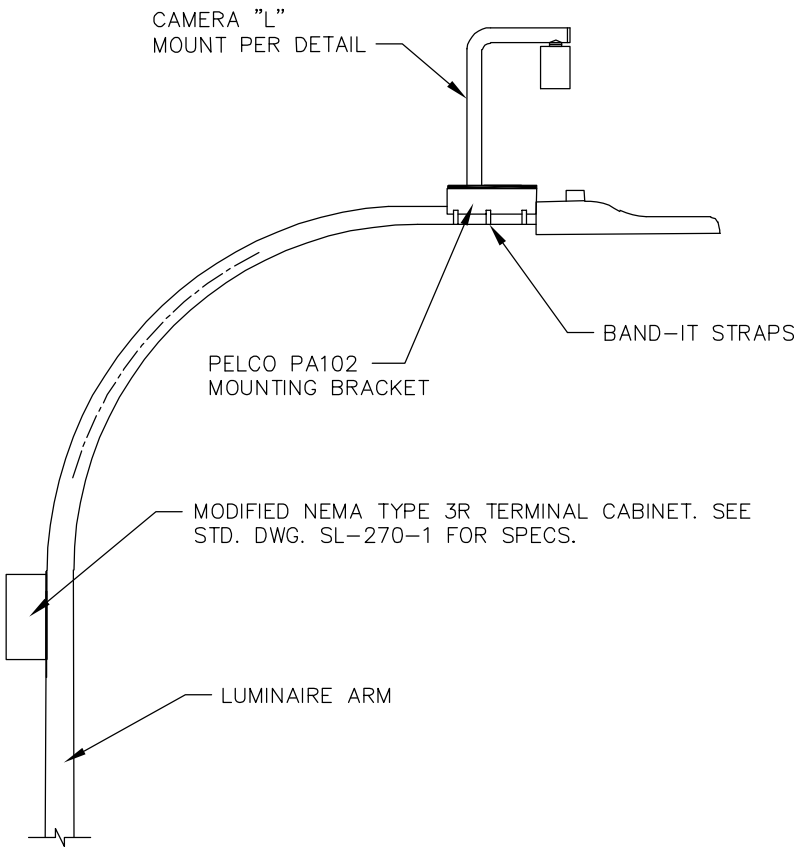
CONSTRUCTION NOTES:

NEMA 3R, PAD MOUNT, 1/8" ALUMINUM, POWDERCOATED ASA 61 GRAY (2) 20 X 35 X 1/2" MDO (MEDIUM DENSITY OVERLAID) PLYWOOD BACK BOARD. DOOR HAS AN APPROXIMATE OPENING OF 21 X 39.63 AND USES LIFT OFF CONCEALED HINGES WITH "BEST" LOCK ON DOOR AND 3 POINT LATCH SYSTEM, SEALED BY A CLOSED CELL NEOPRENE GASKET.

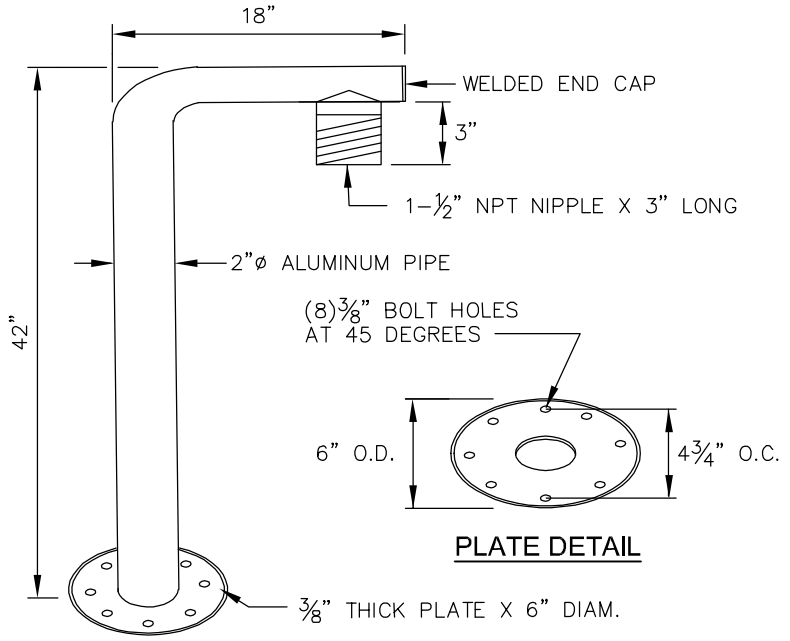
City of Bellevue

FIBER OPTIC CABINET

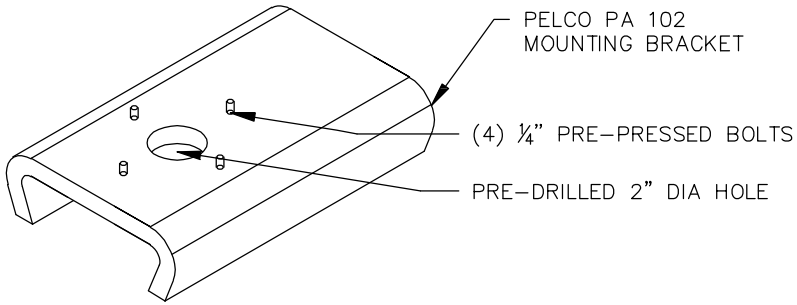
DRAWING NUMBER	SL-250-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



TYPICAL LUMINAIRE ARM MOUNT



CAMERA "L" MOUNT DETAIL

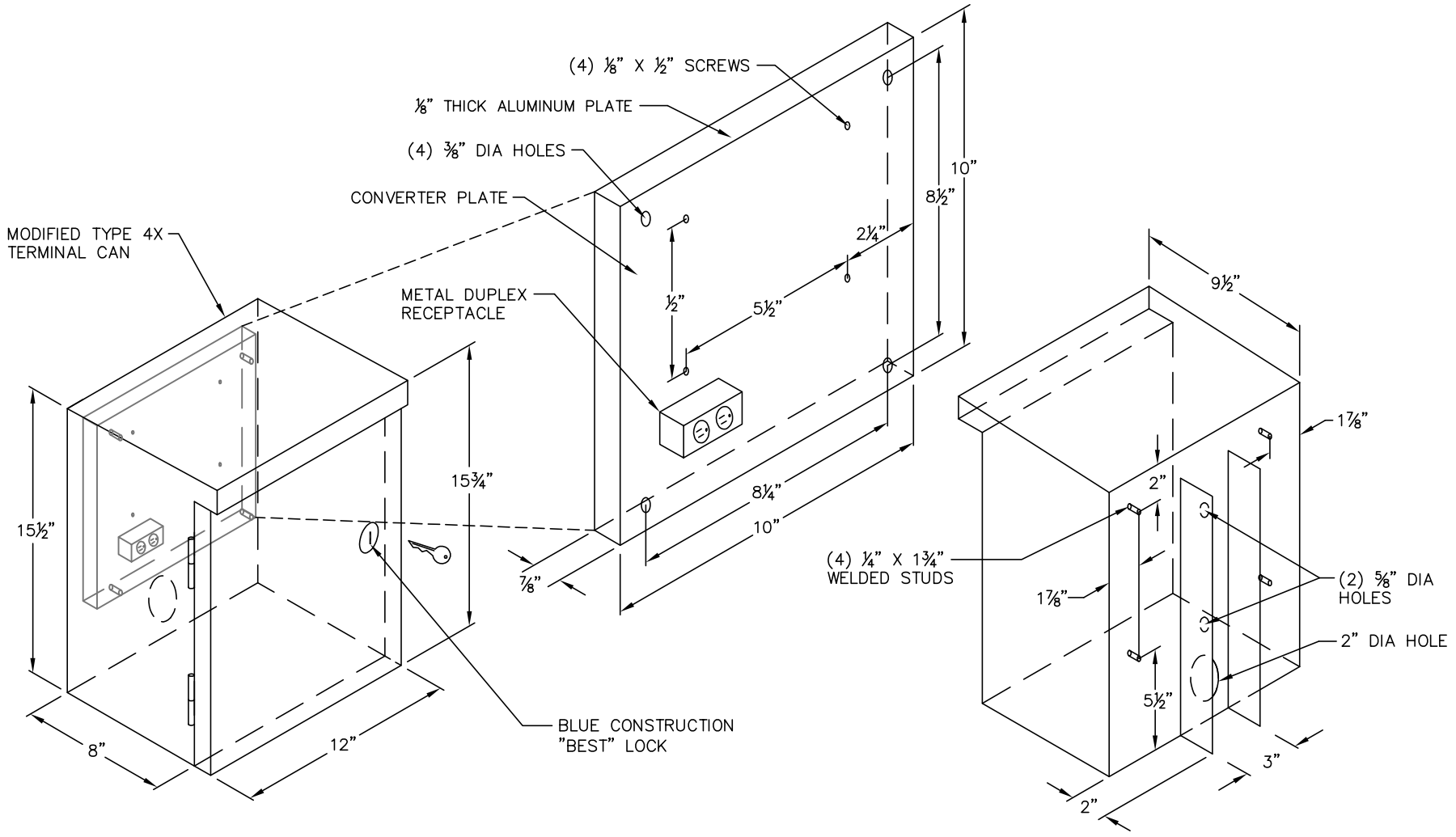


MOUNTING BRACKET DETAIL

City of Bellevue

VIDEO CAMERA MOUNT – LUMINAIRE ARM DETAIL

DRAWING NUMBER	SL-260-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



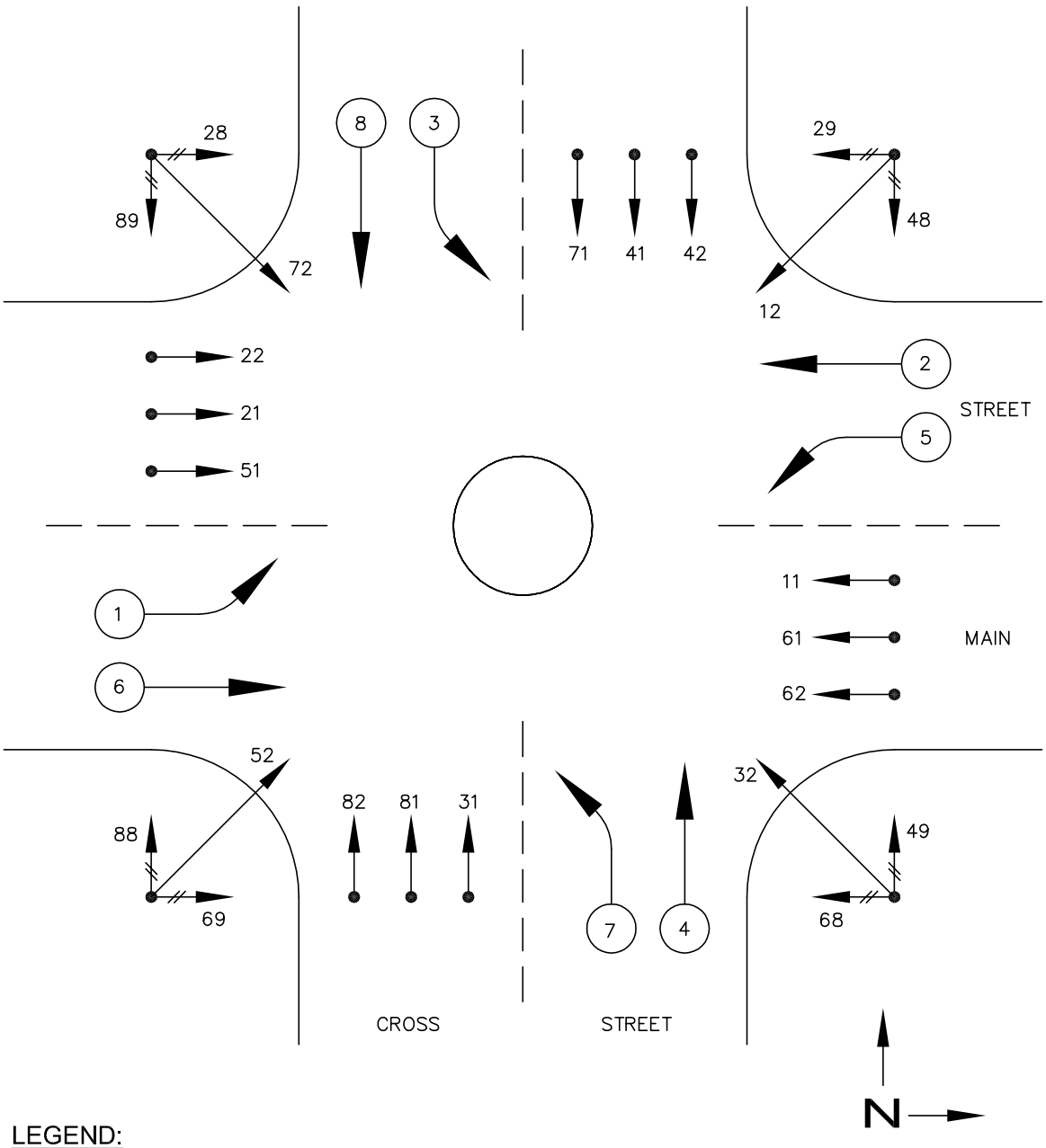
FRONT VIEW

BACK VIEW

City of Bellevue

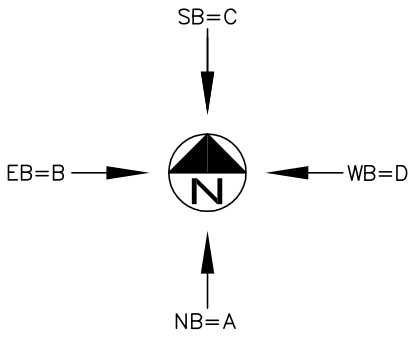
VIDEO CONVERTER CABINET DETAIL

DRAWING NUMBER	SL-270-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



LEGEND:

- VEHICLE HEADS
- PEDESTRIAN HEADS
- X — VEHICLE PHASE

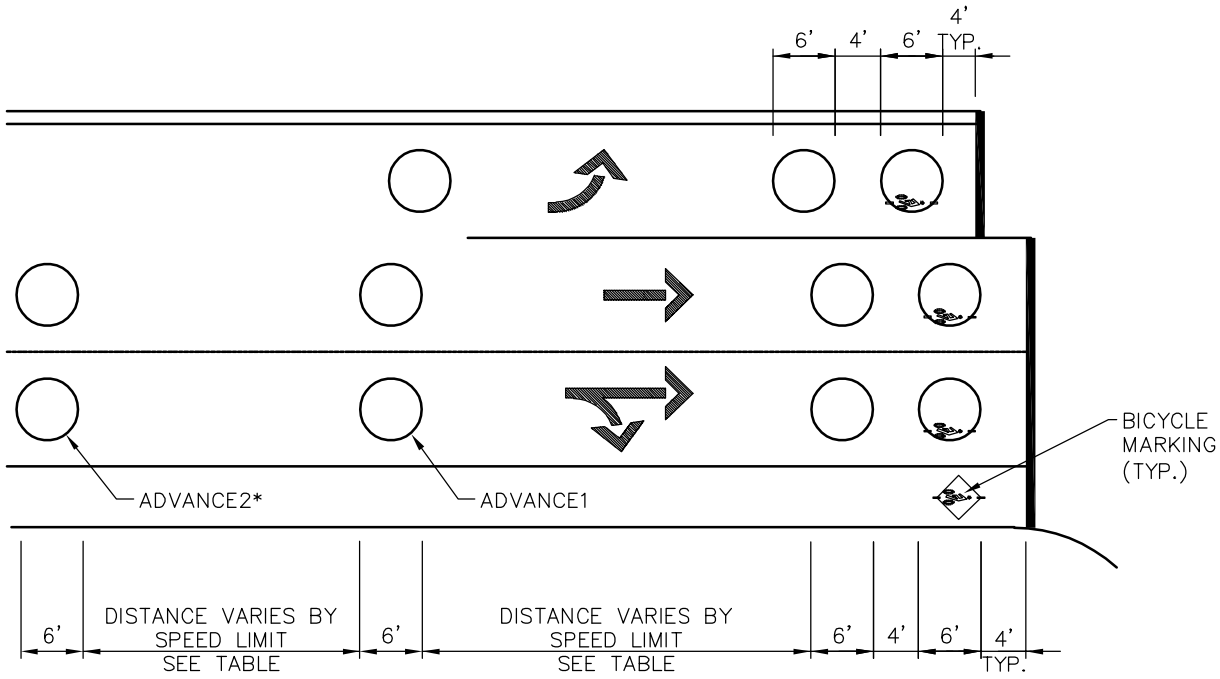


PRE-EMPTION DETECTOR NUMBERING

DRAWING NUMBER	SL-280-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

STANDARD INTERSECTION MOVEMENTS AND HEAD NUMBERS

City of Bellevue

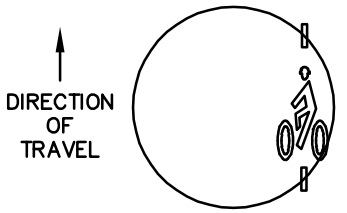


POSTED SPEED LIMIT	DISTANCE
25 MPH	73 FEET
30 MPH	88 FEET
35 MPH	103 FEET
40 MPH	120 FEET

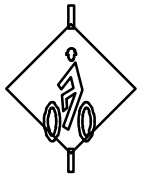
LOOP DISTANCE TABLE

TYPICAL LOOP AND MARKING LAYOUT

*USE ADVANCE2 ON HIGHER VOLUME STREETS.
SEE TRAFFIC ENGINEER FOR DIRECTION.



ROUND LOOP
(ALWAYS RIGHT SIDE)



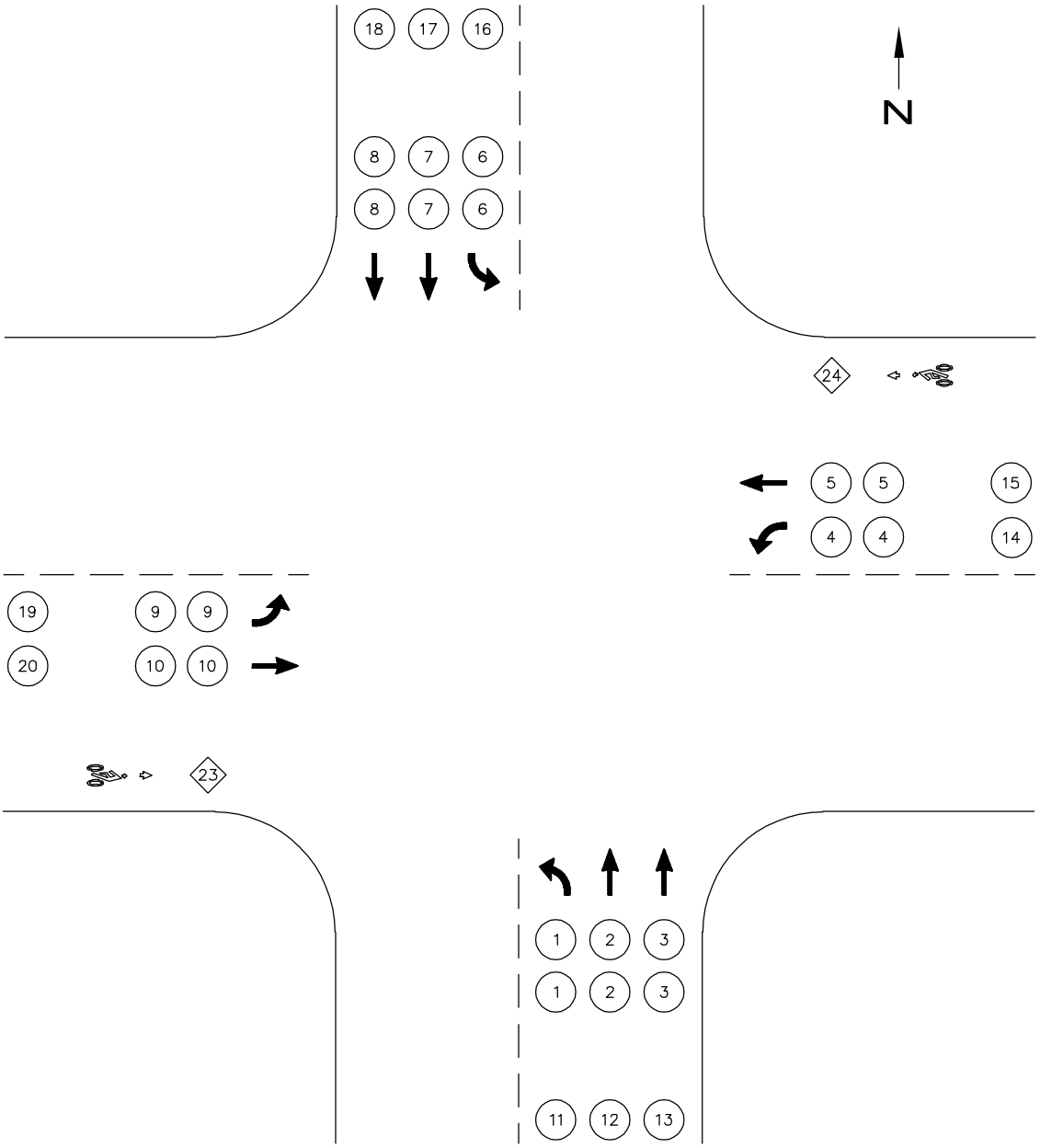
BIKE LOOP
(ALWAYS CENTERED)

BICYCLE MARKING LOCATION

City of Bellevue

LOOP DETECTOR LAYOUT AND BICYCLE MARKING

DRAWING NUMBER	SL-290-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



LOOP NUMBERING SCHEME

LOOP NUMBER 1 (TWO LOOPS) WILL BE THE STOP BAR LOOP ON THE INNER-MOST NORTHBOUND LANE STOP BAR. STOP BAR LOOPS ARE THEN NUMBERED COUNTER-CLOCKWISE AROUND THE INTERSECTIONS. THE NUMBERING CONTINUES WITH ADVANCED LOOPS, COUNTER-CLOCKWISE AROUND THE INTERSECTION.

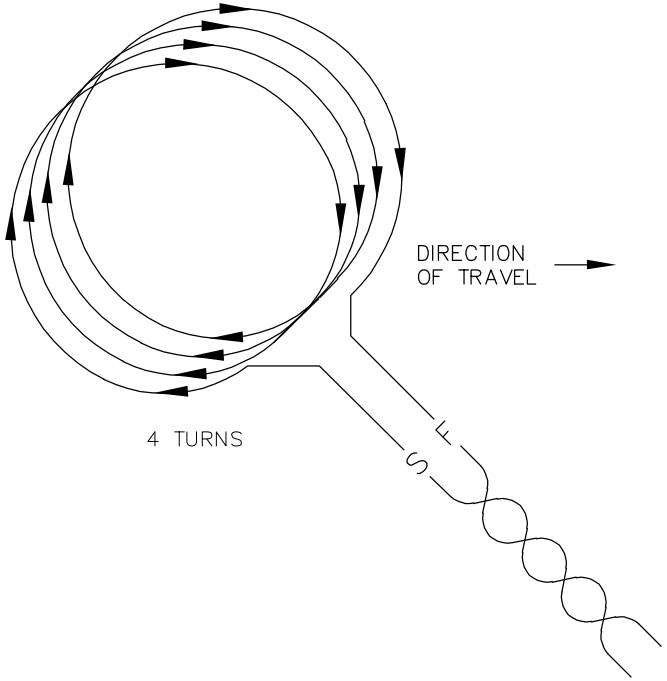
BIKE LOOPS START WITH NUMBER 24 AT THE NORTHBOUND POSITION AND THEN DECREASE IN NUMBER (I.E., 23, 22, 21) IN THE COUNTER-CLOCKWISE DIRECTION. IF NO NORTHBOUND BIKE LOOP IS PRESENT, CONTINUE IN THE COUNTER-CLOCKWISE DIRECTION UNTIL A BIKE LOOP IS PRESENT AND USE NUMBER 24.

DRAWING NUMBER	SL-300-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

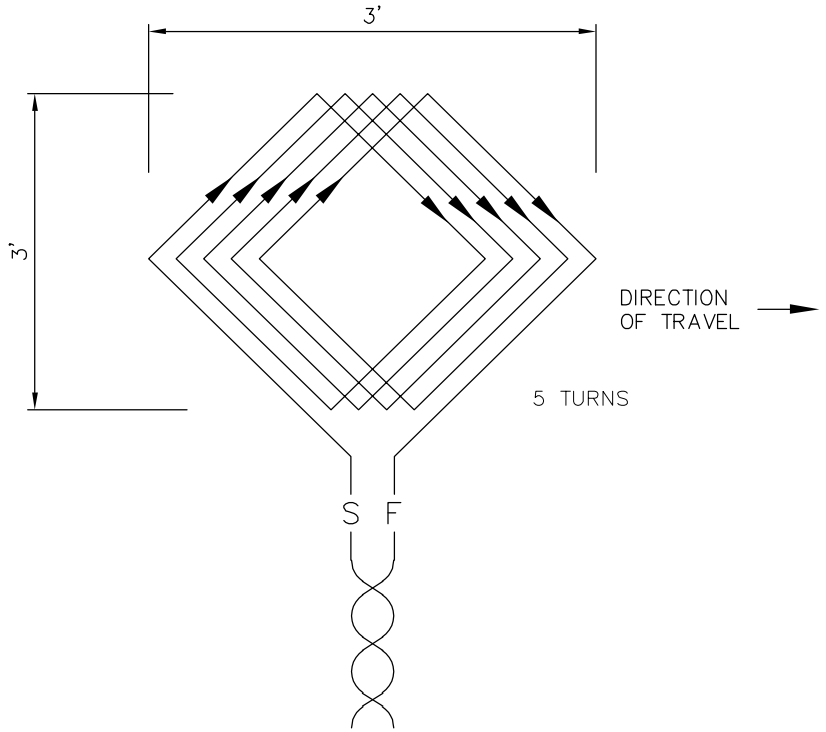
LOOP NUMBERING SCHEME

City of Bellevue

CITY OF BELLEVUE WASHINGTON



TYPICAL 6' ROUND VEHICLE LOOP WINDING



TYPICAL 3'x3' BICYCLE LOOP WINDING

VEHICLE LOOP NOTE:

1. THE NUMBER OF TURNS SHALL BE AS SHOWN UNLESS NOTED OTHERWISE IN THE PLANS.

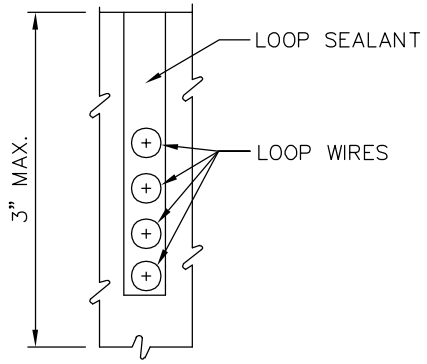
BICYCLE LOOP NOTES:

1. THE NUMBER OF TURNS SHALL BE AS SHOWN UNLESS NOTED OTHERWISE IN THE PLANS.
2. PLACE LOOP IN CENTER OF BIKE LANE. OUTSIDE LOOP EDGES SHALL BE 3" FROM GUTTER (IF PRESENT) AND 3" FROM EDGELINE.
3. FOR DEDICATED BICYCLE PHASE TRAFFIC SIGNAL OPERATIONS, THERMAL DETECTION SHALL BE USED FOR BICYCLE DETECTION IN ADDITION TO THE BICYCLE LOOP. THE TYPE AND MOUNTING LOCATION OF THE THERMAL DETECTION SENSOR SHALL BE CONFIRMED BY THE TRAFFIC ENGINEER PRIOR TO INSTALLATION.

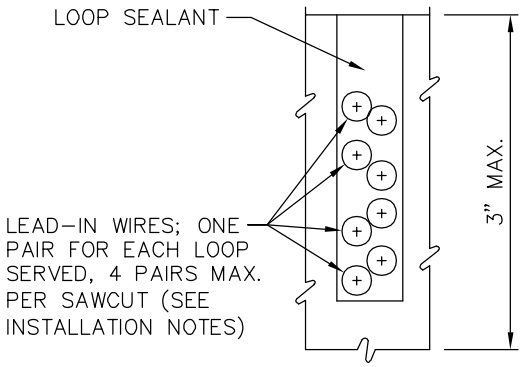
City of Bellevue

LOOP WINDING DETAILS

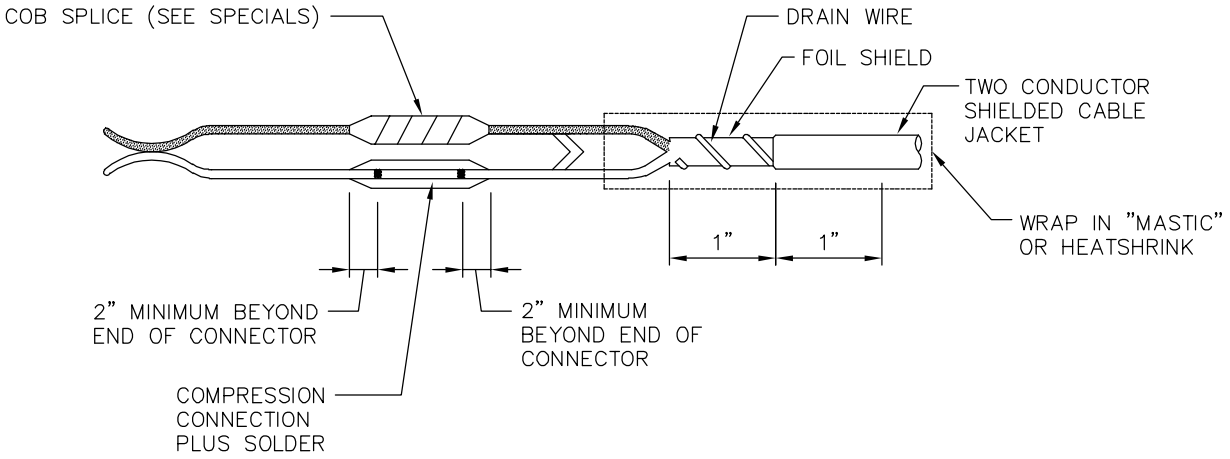
DRAWING NUMBER	SL-310-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



1/4" LOOP SAWCUT CROSS-SECTION



1/2" LEAD-IN SAWCUT CROSS-SECTION

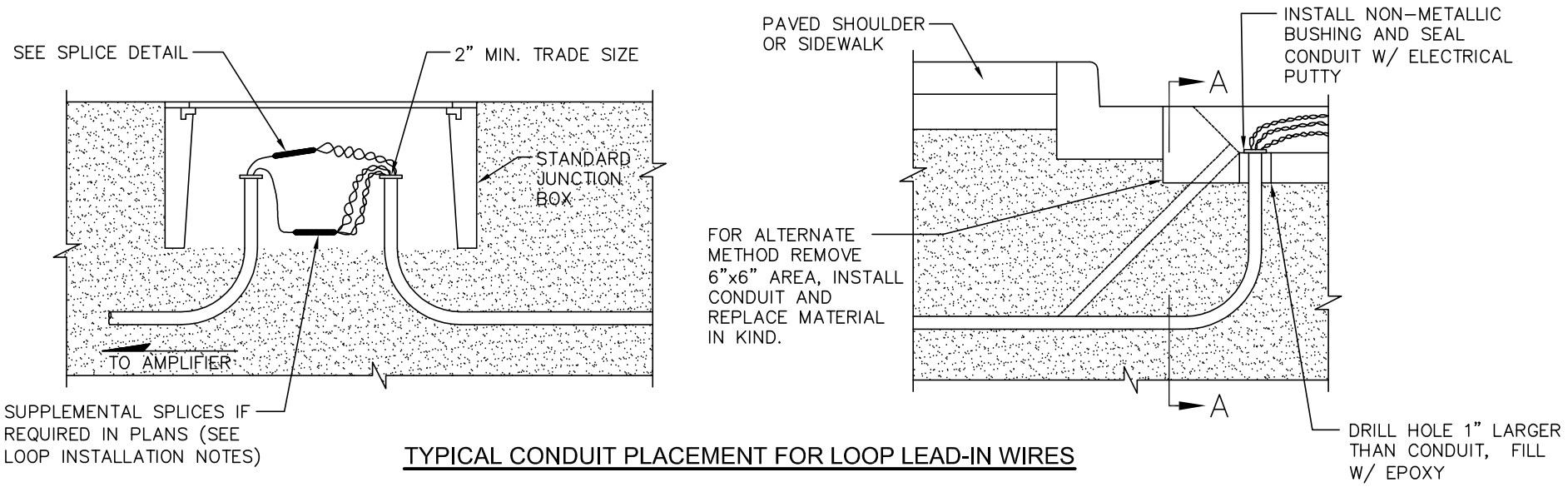


LOOP SPLICE

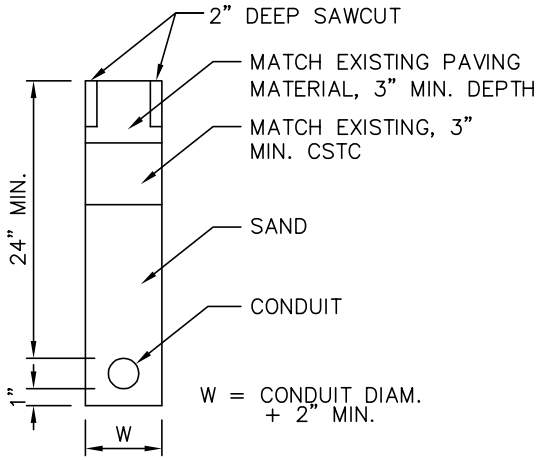
City of Bellevue

LOOP DETECTOR DETAIL

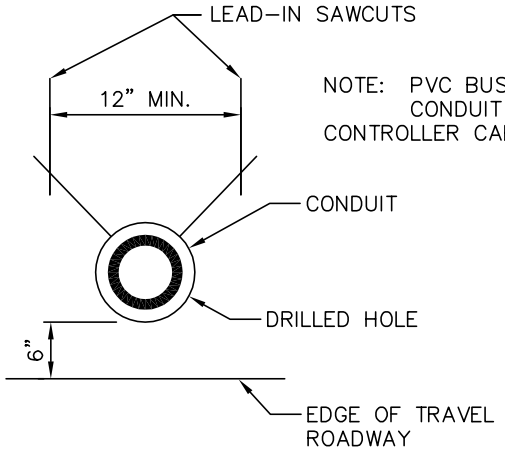
DRAWING NUMBER	SL-320-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



TYPICAL CONDUIT PLACEMENT FOR LOOP LEAD-IN WIRES



SECTION A-A



LEAD-IN SAWCUTS AND CONDUIT PLACEMENT DETAIL

City of Bellevue

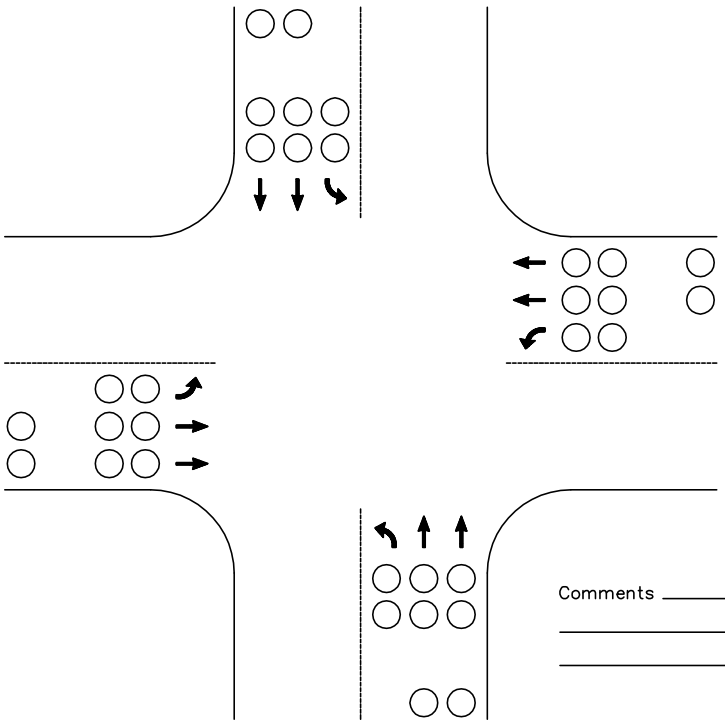
TYPICAL CONDUIT PLACEMENT FOR LOOP DETECTORS

DRAWING NUMBER	SL-330-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

INDUCTION LOOP TEST RESULTS

Location _____ Date _____

Tested By _____ Verified By _____



Comments _____

TEST RESULTS						TEST RESULTS					
Loop #	Inductance	Meggar Reading	Loop #	Inductance	Meggar Reading	Loop #	Inductance	Meggar Reading	Loop #	Inductance	Meggar Reading

DRAWING NUMBER	SL-340-1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS

INDUCTION LOOP TEST

City of Bellevue

CITY OF BELLEVUE
FIELD WIRING CHART

DRAWING NUMBER	SCALE	REVISION DATE	DEPARTMENT
SL-350-1	NONE	12/16	TRANS

Emergency Pre-empt		Detector Number 1-NB	2-EB	3-SB	4-WB
Main Detection	(Org)	511	521	531	541
	(Yellow)	512	522	532	542
	(Blue)	513	523	533	543
Advance Detection	(Org)	511	521	531	541
	(Yellow)	A1	B1	C1	D1
	(Blue)	513	523	533	543
	(Org)	511	521	531	541
	(Yellow)	A2	B2	C2	D2
	(Blue)	513	523	533	543

Service Connection	
AC+ Input	AC+
AC- Input	AC-
Equipment Ground	EQ GND

Vehicle Heads		Phase Number 1	2	3	4	5	6	7	8		Overlap A	B	C	D
Red Ball	R	611	621	631	641	651	661	671	681	R	6A1	6B1	6C1	6D1
Amber Ball	O	612	622	632	642	652	662	672	682	O	6A2	6B2	6C2	6D2
Green Ball	G	613	623	633	643	653	663	673	683	G	6A3	6B3	6C3	6D3
AC-	W	616	626	636	646	656	666	676	686	W	6A6	6B6	6C6	6D6
Spare/FYA	BLK	615	625	635	645	655	665	675	685	BLK	6A5	6B5	6C5	6D5

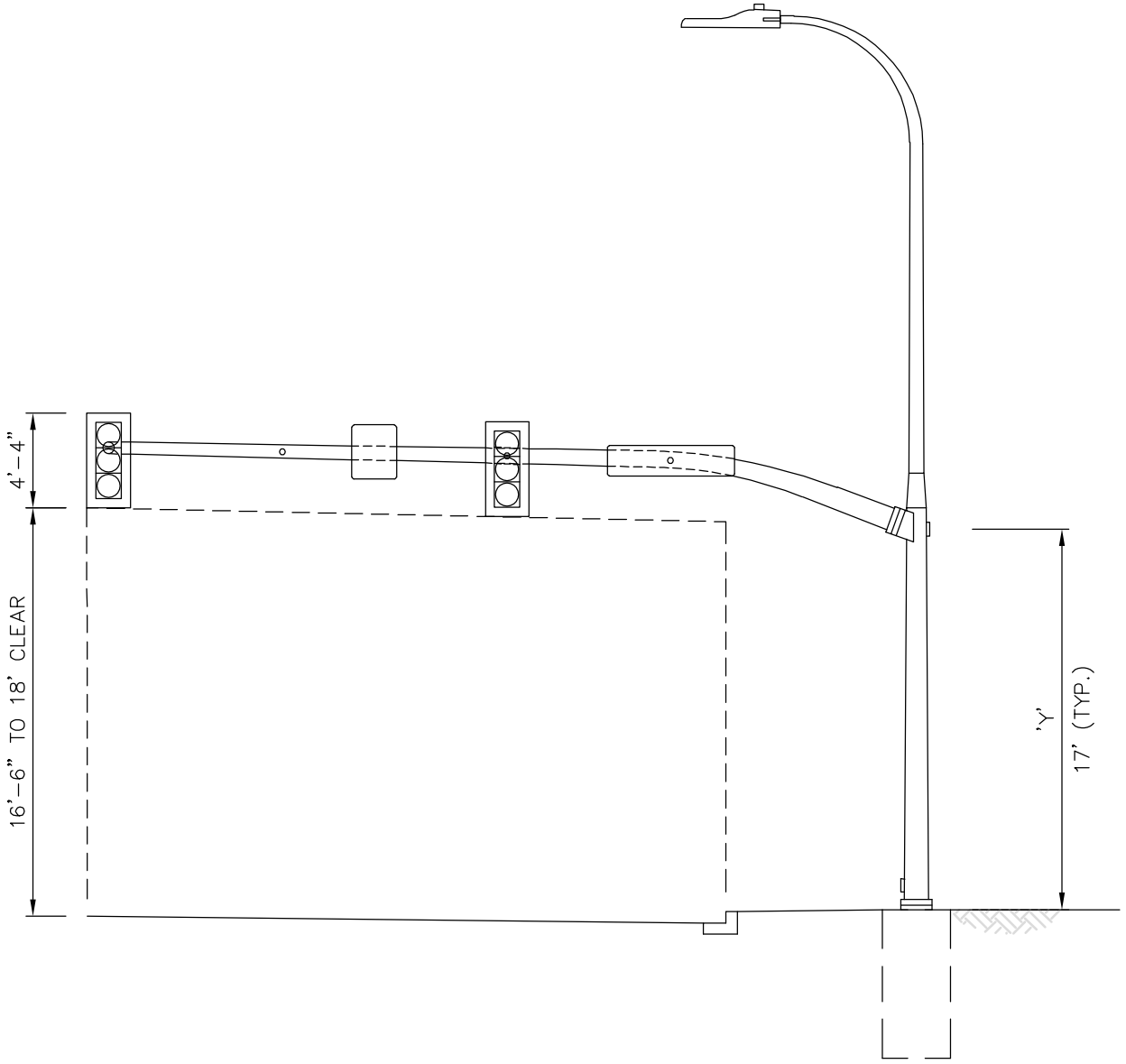
Pedestrian Heads & Dets.	2	4	6	8	
Don't Walk	721	741	761	781	R
Walk	722	742	762	782	G
AC-	723	743	763	783	W
Detection	724	744	764	784	O
Common-Detection	725	745	765	785	BLK

Vehicle Detection

Loop Channel 1 (a)	B	11	21	25	31	41	45	51	61	65	71	81	85
Loop Channel 1 (b)	W	11	21	25	31	41	45	51	61	65	71	81	85
Loop Channel 2 (a)	B	12	22	26	32	42	46	52	62	66	72	82	86
Loop Channel 2 (b)	W	12	22	26	32	42	46	52	62	66	72	82	86
Loop Channel 3 (a)	B	13	23	27	33	43	47	53	63	67	73	83	87
Loop Channel 3 (b)	W	13	23	27	33	43	47	53	63	67	73	83	87
Loop Channel 4 (a)	B	14	24	28	34	44	48	54	64	68	74	84	88
Loop Channel 4 (b)	W	14	24	28	34	44	48	54	64	68	74	84	88

FIELD WIRING CHART

City of Bellevue



City of Bellevue

SIGNAL HEAD CLEARANCE DETAIL

DRAWING NUMBER	SL-360-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS

TRANSPORTATION DESIGN MANUAL

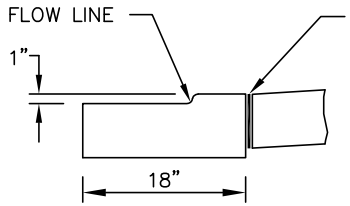
DT Drawings

Downtown


CITY OF BELLEVUE
WASHINGTON

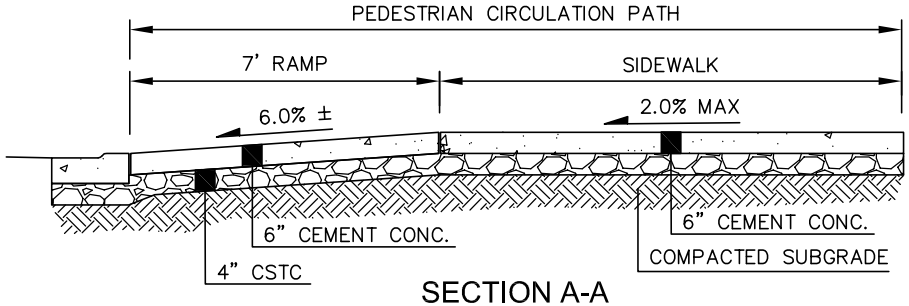
NOTES:

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. MAXIMUM DRIVEWAY GRADE BEHIND DRIVEWAY APPROACH IS 10% FOR 20 FEET. THEREAFTER, DRIVEWAY GRADE SHALL NOT EXCEED 15%. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED TRANSVERSELY WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. SIDEWALK WIDTH SHOWN IS TYPICAL. REQUIRED SIDEWALK WIDTH WILL BE SPECIFIED BY THE ENGINEER.
8. RAMP SLOPE MAY BE INCREASED TO 8.33% MAXIMUM WITH APPROVAL BY THE REVIEW ENGINEER.

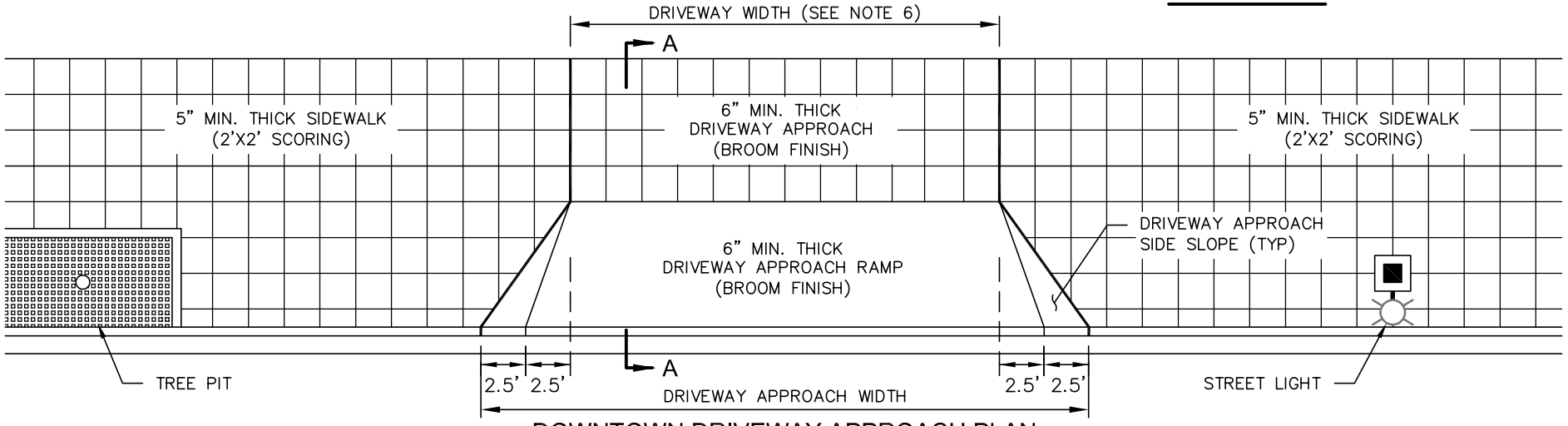


NOTE: DEPRESSED CURB AND GUTTER SHALL BE FLUSH WHEN DRIVEWAY IS USED FOR PEDESTRIAN ACCESS.

DEPRESSED CURB & GUTTER DETAIL



SECTION A-A

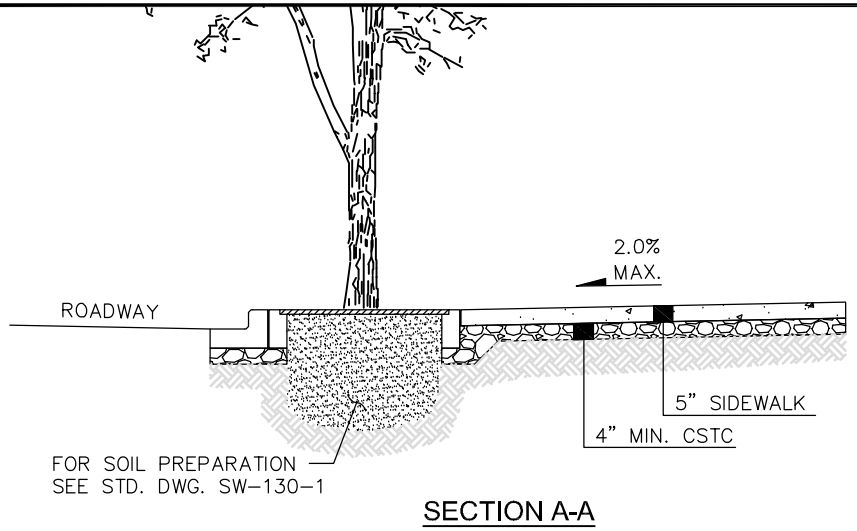


DOWNTOWN DRIVEWAY APPROACH PLAN

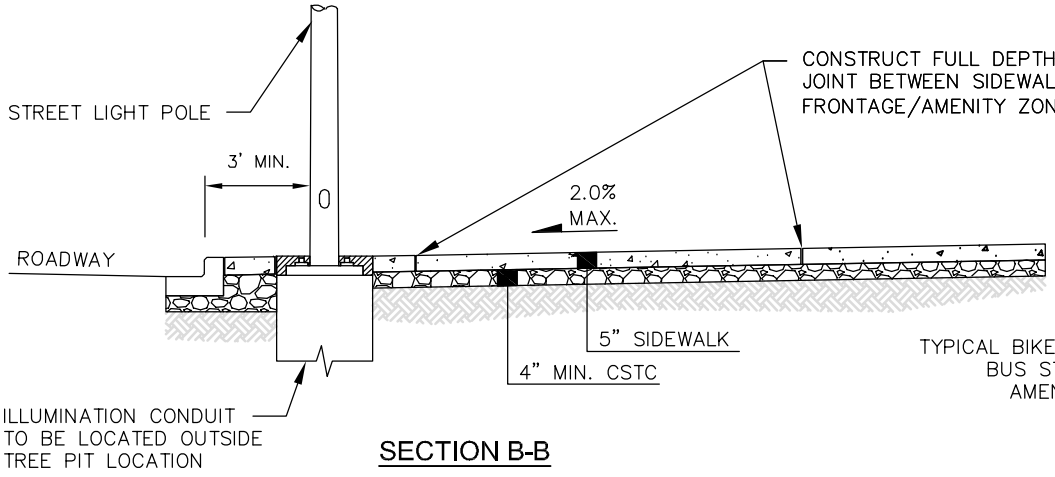
City of Bellevue

DOWNTOWN DRIVEWAY

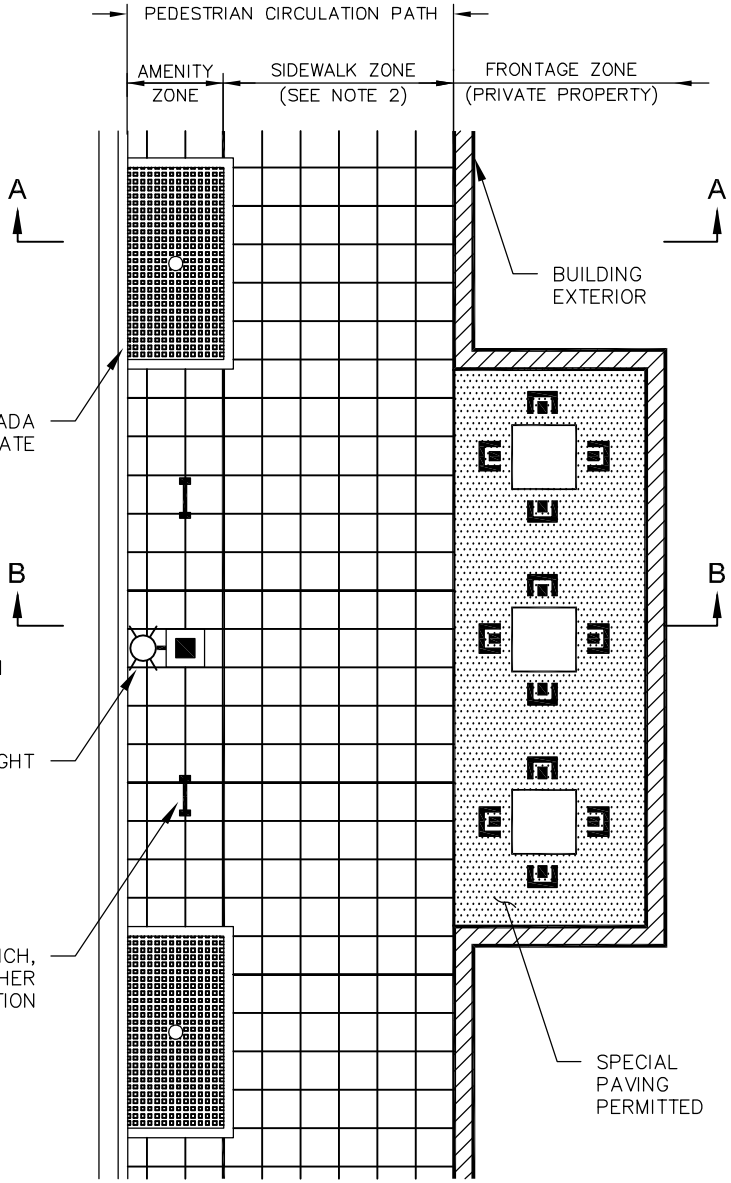
DRAWING NUMBER	DT–100–1
SCALE	NONE
REVISION DATE	12/16
DEPARTMENT	TRANS



SECTION A-A



SECTION B-B

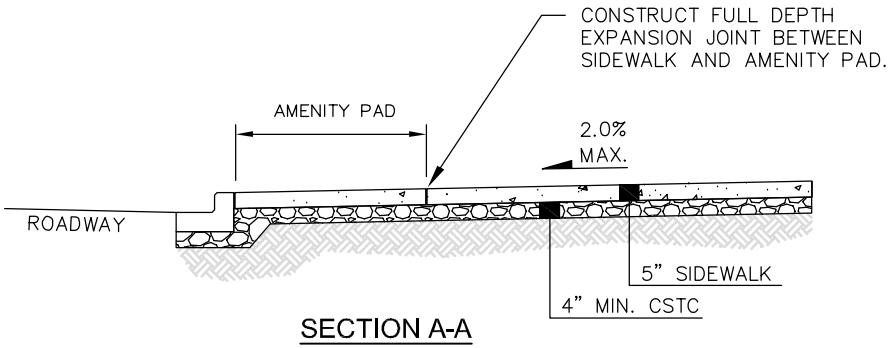


NOTE: SEE STD. DWG. DT-130-1 FOR DOWNTOWN SIDEWALK CONSTRUCTION NOTES.

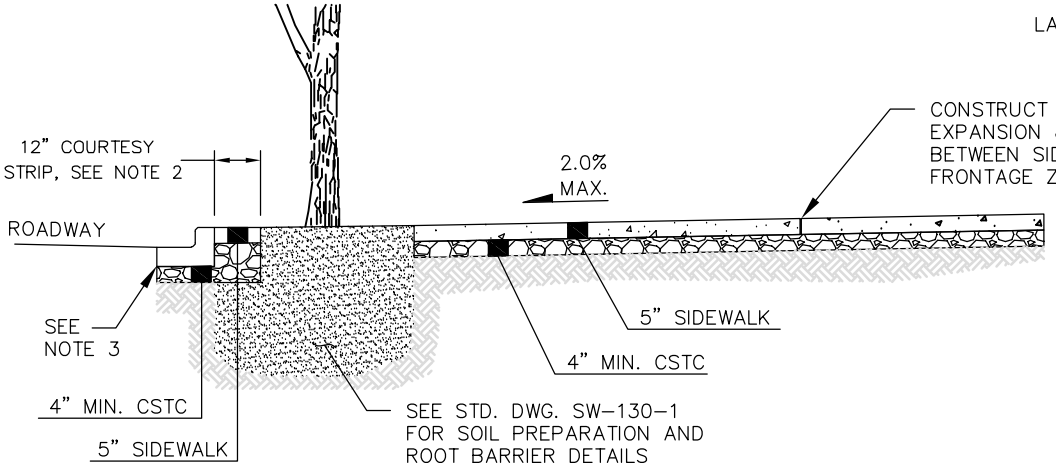
City of Bellevue

DOWNTOWN SIDEWALK WITH TREE PITS

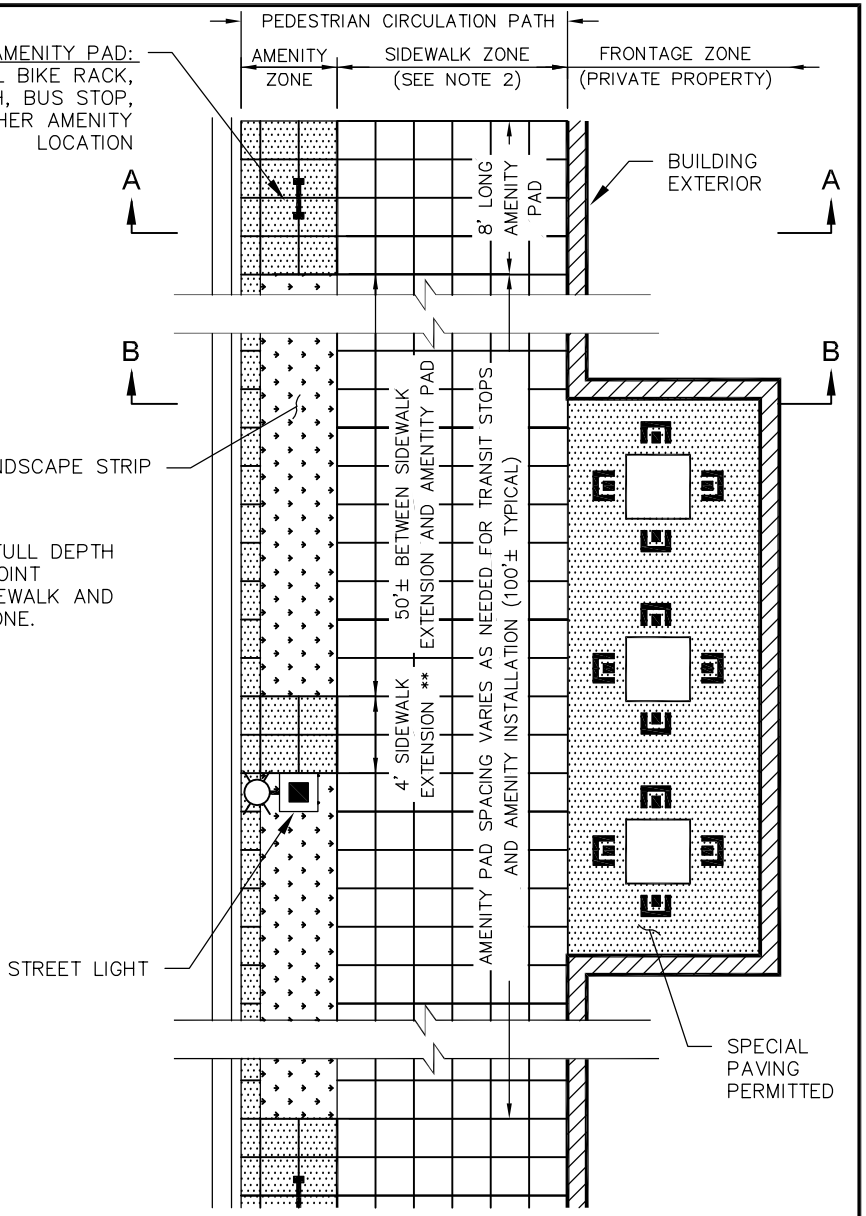
DRAWING NUMBER	DT-110-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



SECTION A-A



SECTION B-B



NOTES:

1. SEE STD. DWG. DT-130-1 FOR DOWNTOWN SIDEWALK CONSTRUCTION NOTES.
2. COURTESY STRIP AND SIDEWALK EXTENSIONS SHALL BE INSTALLED ONLY ADJACENT TO ON-STREET PARKING. OMIT WHERE NO ON-STREET PARKING IS PRESENT.
3. IF NO COURTESY STRIP, SEE STD. DW. RC-240-1 FOR CURB/GUTTER DETAIL ADJACENT TO LANDSCAPE STRIP.

City of Bellevue

DOWNTOWN SIDEWALK WITH LANDSCAPE STRIP

DRAWING NUMBER	DT-120-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS

DOWNTOWN SIDEWALK CONSTRUCTION NOTES

1. SIDEWALK SHALL BE CEMENT CONCRETE CLASS 3000 WITH 2'X2' SCORING PATTERN AND BROOM FINISH ONLY. SEE STANDARD DRAWING SW-110-1 FOR BROOM FINISH DETAILS.

2. THE SIDEWALK ZONE IS CONSIDERED THE PEDESTRIAN ACCESS ROUTE (PAR). 2011 PROPOSED GUIDELINES FOR PEDESTRIAN FACILITIES WITHIN PUBLIC RIGHT-OF-WAY (UNITED STATES ACCESS BOARD) REQUIREMENTS APPLY.

3. THE FULL WIDTH OF THE SIDEWALK ZONE SHALL REMAIN CLEAR OF OBSTRUCTIONS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

4. SEE DOWNTOWN LAND USE CODE FOR SIDEWALK WIDTH, PLANTER STRIP WIDTH, STREET TREE, AND TREE GRATE REQUIREMENTS.

5. VERIFICATION OF UTILITIES BELOW GRADE IS REQUIRED PRIOR TO INSTALLATION OF ALL FIXED AND BREAKAWAY OBJECTS INCLUDING BUT NOT LIMITED TO: STREET TREES, STREET LIGHTS, SIGNAL EQUIPMENT, AND SIGNAGE. RELOCATE UTILITIES IN CONFLICT AS FEASIBLE.

6. STANDARD STREET TREE / STREET LIGHT SPACING IS 25-FEET ON CENTER. SPACING MAY BE AMENDED BY THE ENGINEER.

7. SEE DESIGN STANDARDS 15 AND 16 FOR CLEAR DISTANCE REQUIREMENTS BETWEEN FIXED AND BREAKAWAY OBJECTS AND THE FACE OF CURB.

8. COVERS FOR JUNCTION BOXES AND UTILITY VAULTS SHOULD NOT BE INSTALLED WITHIN THE PEDESTRIAN ACCESS ROUTE AS FEASIBLE AND SHALL BE NON-SKID WITH FACTORY INSTALLED NON-SKID SURFACE AS SPECIFIED BY THE ENGINEER. SEE DESIGN MANUAL.

9. OPTIONAL ELECTRICAL CONNECTIONS SHALL COMPLY WITH ELECTRICAL CODES AND PASS ELECTRICAL INSPECTION.

DEFINITIONS:

AMENITY ZONE: THE AMENITY ZONE IS THE AREA LOCATED BETWEEN THE BACK OF CURB AND SIDEWALK ZONE. THIS AREA TYPICALLY CONSISTS OF LANDSCAPING AND SOME PAVED AREAS FOR STREET FURNITURE SUCH AS BENCHES, BICYCLE PARKING, LIGHTING, AND WAYFINDING KIOSKS/SIGNAGE. PAVED AREAS WITHIN THIS ZONE ARE CONSIDERED PART OF THE PEDESTRIAN CIRCULATION PATH. THIS AREA IS SOMETIMES ALSO REFERRED TO AS THE 'STREET FURNITURE ZONE' OR 'CURB ZONE'.

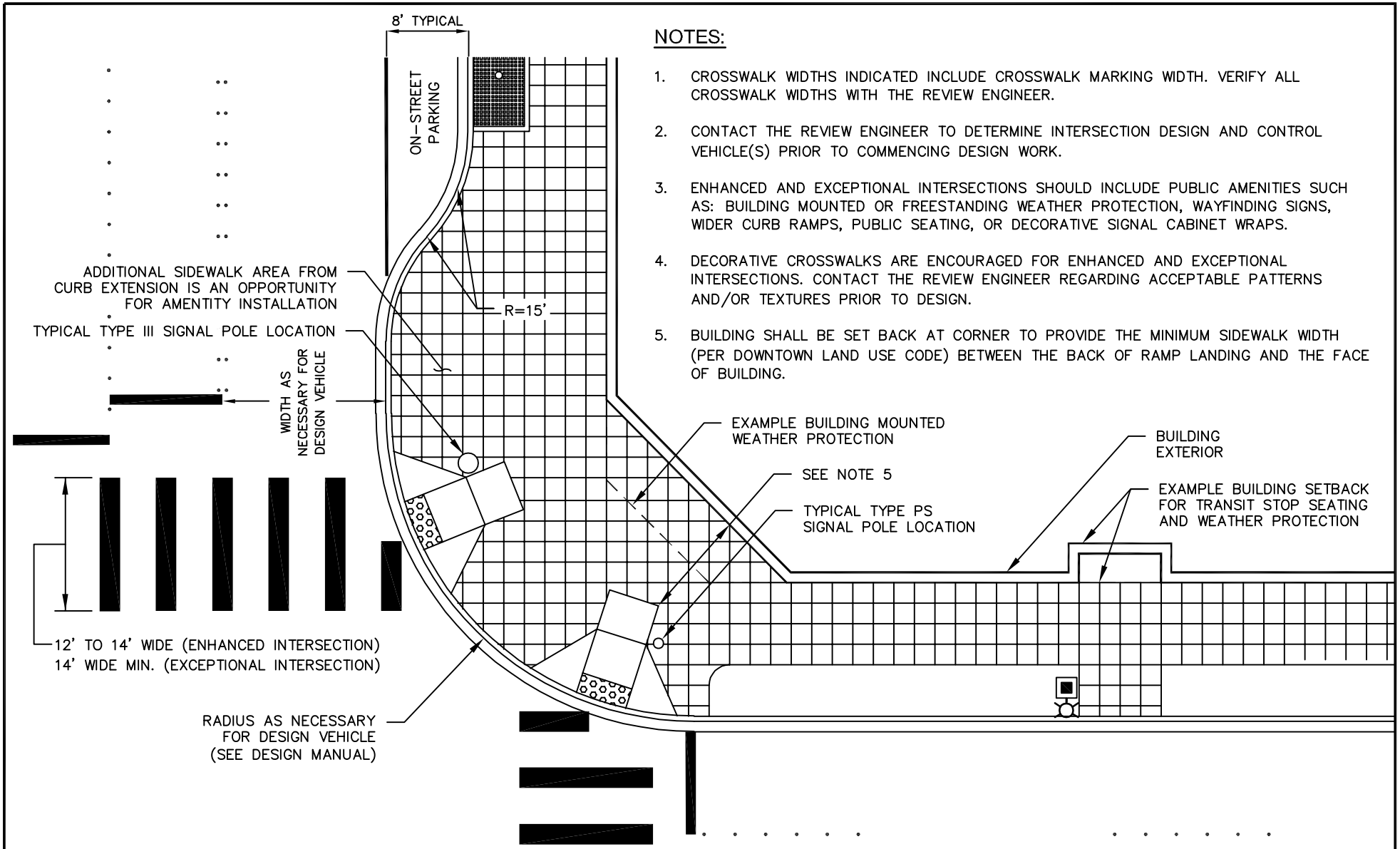
SIDEWALK ZONE: THE SIDEWALK ZONE IS THE AREA LOCATED BETWEEN THE AMENITY ZONE AND THE FRONTAGE ZONE. THE SIDEWALK ZONE IS THE PRIMARY PATHWAY OF PEDESTRIANS AND IS CONSIDERED THE PEDESTRIAN ACCESS ROUTE. THE FULL WIDTH OF THE SIDEWALK ZONE SHALL BE CLEAR OF ALL OBSTRUCTIONS ALLOWING FREE MOVEMENT OF PEDESTRIANS. THIS AREA IS SOMETIMES ALSO REFERRED TO AS THE 'PEDESTRIAN THROUGH ZONE'

FRONTAGE ZONE: THE FRONTAGE ZONE IS LOCATED BETWEEN THE SIDEWALK ZONE AND THE ADJACENT BUILDING STRUCTURE. THIS AREA SERVES AS AN EXTENSION OF THE BUILDING AND IS LOCATED OUTSIDE OF PUBLIC RIGHT-OF-WAY OR EASEMENTS. THE FRONTAGE ZONE MAY CONTAIN ITEMS SUCH AS SIDEWALK CAFES, ARTWORK, AND SANDWICH BOARDS. SPECIAL PAVING TREATMENTS ARE PERMITTED WITHIN THE FRONTAGE ZONE.

City of Bellevue

DOWNTOWN SIDEWALK CONSTRUCTION NOTES

DRAWING NUMBER	DT-130-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



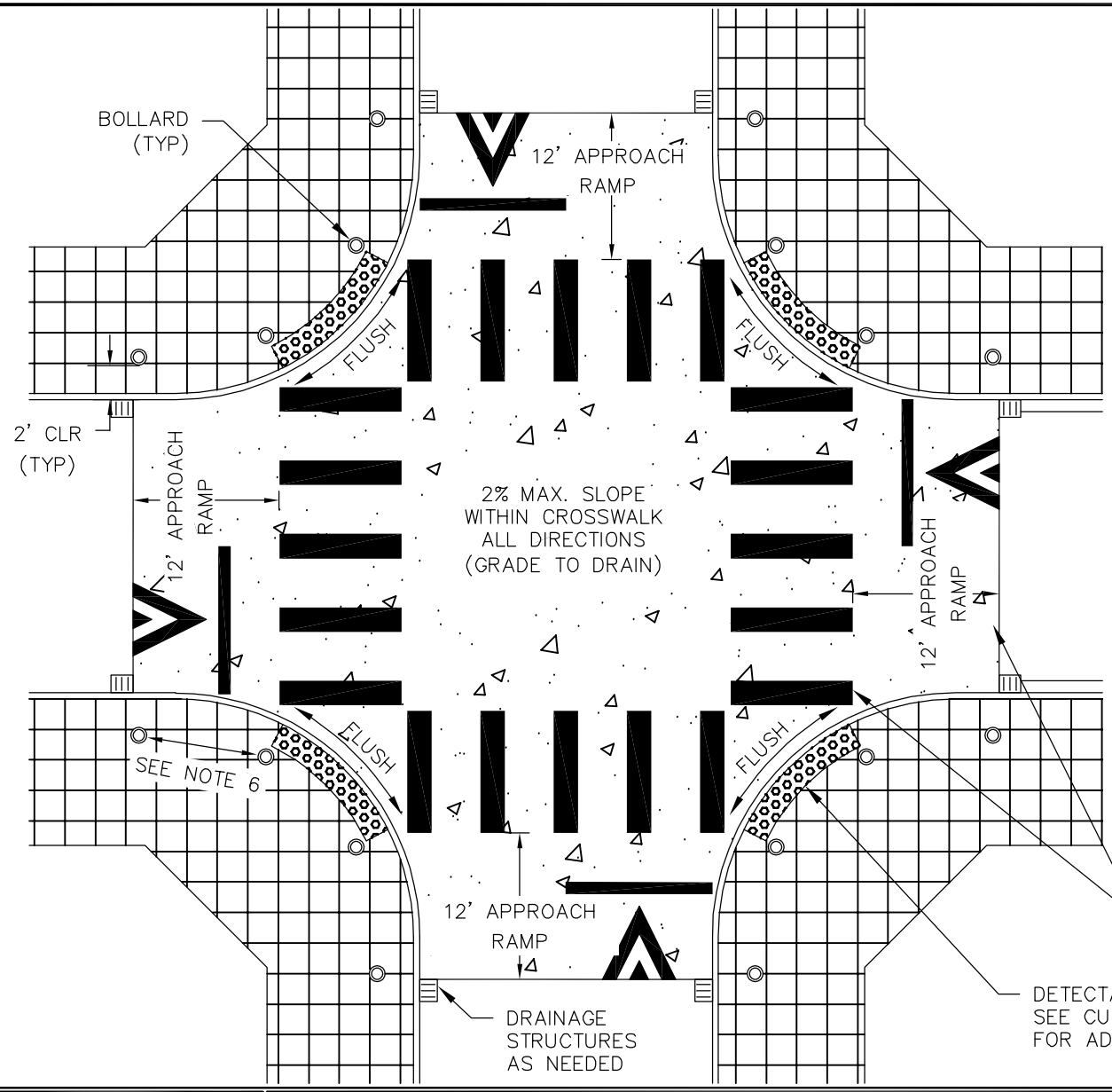
NOTES:

1. CROSSWALK WIDTHS INDICATED INCLUDE CROSSWALK MARKING WIDTH. VERIFY ALL CROSSWALK WIDTHS WITH THE REVIEW ENGINEER.
2. CONTACT THE REVIEW ENGINEER TO DETERMINE INTERSECTION DESIGN AND CONTROL VEHICLE(S) PRIOR TO COMMENCING DESIGN WORK.
3. ENHANCED AND EXCEPTIONAL INTERSECTIONS SHOULD INCLUDE PUBLIC AMENITIES SUCH AS: BUILDING MOUNTED OR FREESTANDING WEATHER PROTECTION, WAYFINDING SIGNS, WIDER CURB RAMPS, PUBLIC SEATING, OR DECORATIVE SIGNAL CABINET WRAPS.
4. DECORATIVE CROSSWALKS ARE ENCOURAGED FOR ENHANCED AND EXCEPTIONAL INTERSECTIONS. CONTACT THE REVIEW ENGINEER REGARDING ACCEPTABLE PATTERNS AND/OR TEXTURES PRIOR TO DESIGN.
5. BUILDING SHALL BE SET BACK AT CORNER TO PROVIDE THE MINIMUM SIDEWALK WIDTH (PER DOWNTOWN LAND USE CODE) BETWEEN THE BACK OF RAMP LANDING AND THE FACE OF BUILDING.

City of Bellevue

ENHANCED AND EXCEPTIONAL INTERSECTIONS

DRAWING NUMBER	DT-140-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



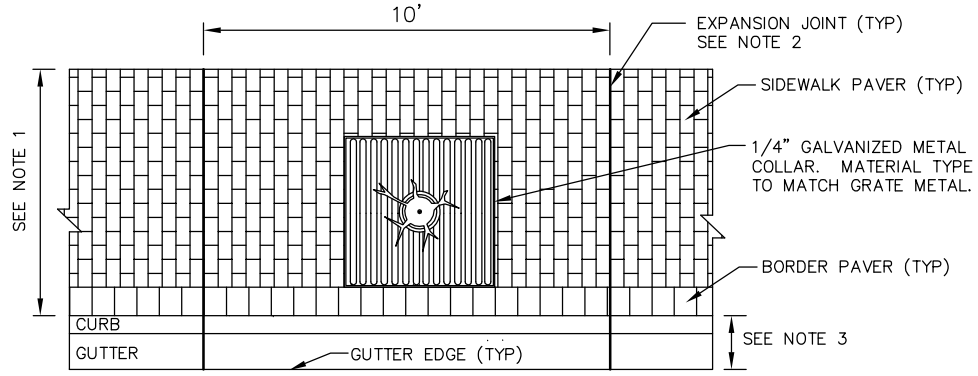
NOTES:

1. RAISED INTERSECTION AND APPROACH RAMPS SHALL BE CEMENT CONC. CONFORMING TO SPEC. SECTION 5-05. THICKNESS SHALL BE 10" THICK MINIMUM. ROADWAY SECTIONS SHALL BE INCLUDED IN THE DESIGN PLANS SHOWING THE PROPOSED INTERSECTION PAVEMENT SECTION.
2. CEMENT CONC. PAVEMENT JOINTS AND DOWELING SHALL BE PER WSDOT STD PLAN A-40.10-03. CONCRETE JOINT SPACING SHALL NOT EXCEED 15'. A JOINTING PLAN SHALL BE SUBMITTED FOR REVIEW BY THE PAVEMENT MANAGER.
3. CONCRETE JOINTS SHALL ALIGN WITH LANE LINE PROJECTIONS.
4. PAVEMENT COLOR OR TEXTURE MAY BE ACCEPTABLE WITH THE APPROVAL OF THE REVIEW ENGINEER. IF APPROVED, COLOR SHALL BE INTEGRAL TO THE CEMENT CONC. MIX AND TEXTURE SHALL COMPLY WITH ADA REQUIREMENTS.
5. INSIDE CROSSWALK MARKING MAY BE OMITTED WITH THE APPROVAL OF THE REVIEW ENGINEER.
6. BOLLARD SPACING VARIES DEPENDING ON SITE CONDITIONS AND BOLLARD USED. TYPICAL CLEARANCE BETWEEN BOLLARDS IS 10'-12'. CONTACT THE REVIEW ENGINEER FOR SITE SPECIFIC REQUIREMENTS.
7. A SPECIAL CONSTRUCTION INSPECTION WILL BE REQUIRED DURING CONSTRUCTION OF RAISED ALL-WAY STOP INTERSECTIONS.

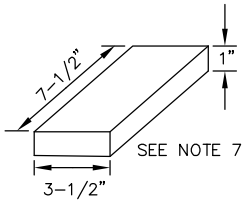
City of Bellevue

TYPICAL RAISED ALL-WAY STOP INTERSECTION

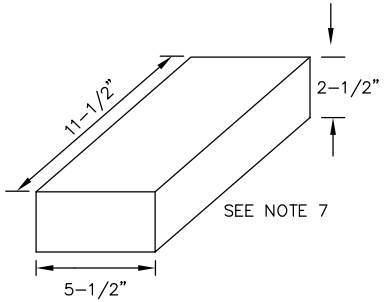
DRAWING NUMBER	DT-150-1
SCALE	NONE
REVISION DATE	12/22
DEPARTMENT	TRANS



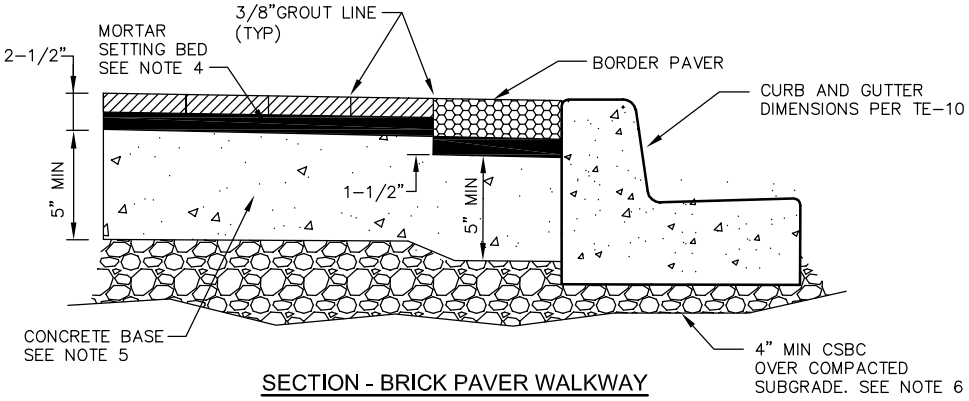
PLAN - BRICK PAVER WALKWAY



SIDEWALK PAVER



BORDER PAVER



SECTION - BRICK PAVER WALKWAY

NOTES:

1. SIDEWALK DIMENSIONS SHALL BE PER THE APPROVED PLANS.
2. 3/8" FULL DEPTH EXPANSION JOINT EVERY 10' OF WALKWAY LENGTH. EXPANSION JOINT SHALL RUN FROM BACK OF WALK TO FRONT OF CONCRETE GUTTER; AT FULL DEPTH FROM TOP OF PAVERS TO CONCRETE BASE. JOINT MATERIAL AND SEAL PER MANUFACTURER'S SPECIFICATIONS.
3. SEE STD. DWG. SW-100-1 FOR CURB AND GUTTER DIMENSIONS AND SPECIFICATIONS.
4. PLACE 1/16 INCH OR LESS SLURRY BOND COAT TO CONCRETE BASE IMMEDIATELY PRIOR TO INSTALLING MORTAR BED SETTING. MORTAR/ SLURRY SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
5. ADDITIONAL DEPTH MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER. CONCRETE SHALL BE AIR ENTRAINED CLASS 3000 PER WSDOT STANDARD SPECIFICATIONS. REBAR MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
6. CSTC THICKNESS MAY BE INCREASED AT THE DISCRETION OF THE ENGINEER. ENGINEER TO APPROVE SUBGRADE MATERIAL & COMPACTION PRIOR TO CONCRETE BASE INSTALLATION.
7. PAVERS SHALL BE MUTUAL MATERIALS CHESTNUT WITH WIRE CUT SURFACE FINISH. APPLY THIN SLURRY BOND COAT WITH TROWEL ON THE BOTTOM OF PAVER PRIOR TO INSTALLING IN MORTAR SETTING BED.
8. ALL VAULT/UTILITY/ JUNCTION BOX LIDS LOCATED IN THE WALKWAY SHALL HAVE A NON-SKID SURFACE, SLIPNOT GRIP PLATE GRADE 3 SURFACE, IKG INDUSTRIES MEBAC #1 OR APPROVED EQUAL AND ABLE TO BEAR HL-93 DESIGN VEHICLE WHEEL LOADING. MIN. 2" CONCRETE COLLAR REQUIRED.
9. ALL PAVERS AND GROUT LINES SHALL BE WATERSEALED PER MANUFACTURER'S SPECIFICATIONS.

City of Bellevue

BRICK PAVER INSTALLATION FOR OLD BELLEVUE DISTRICT

DRAWING NUMBER	DT-160-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS

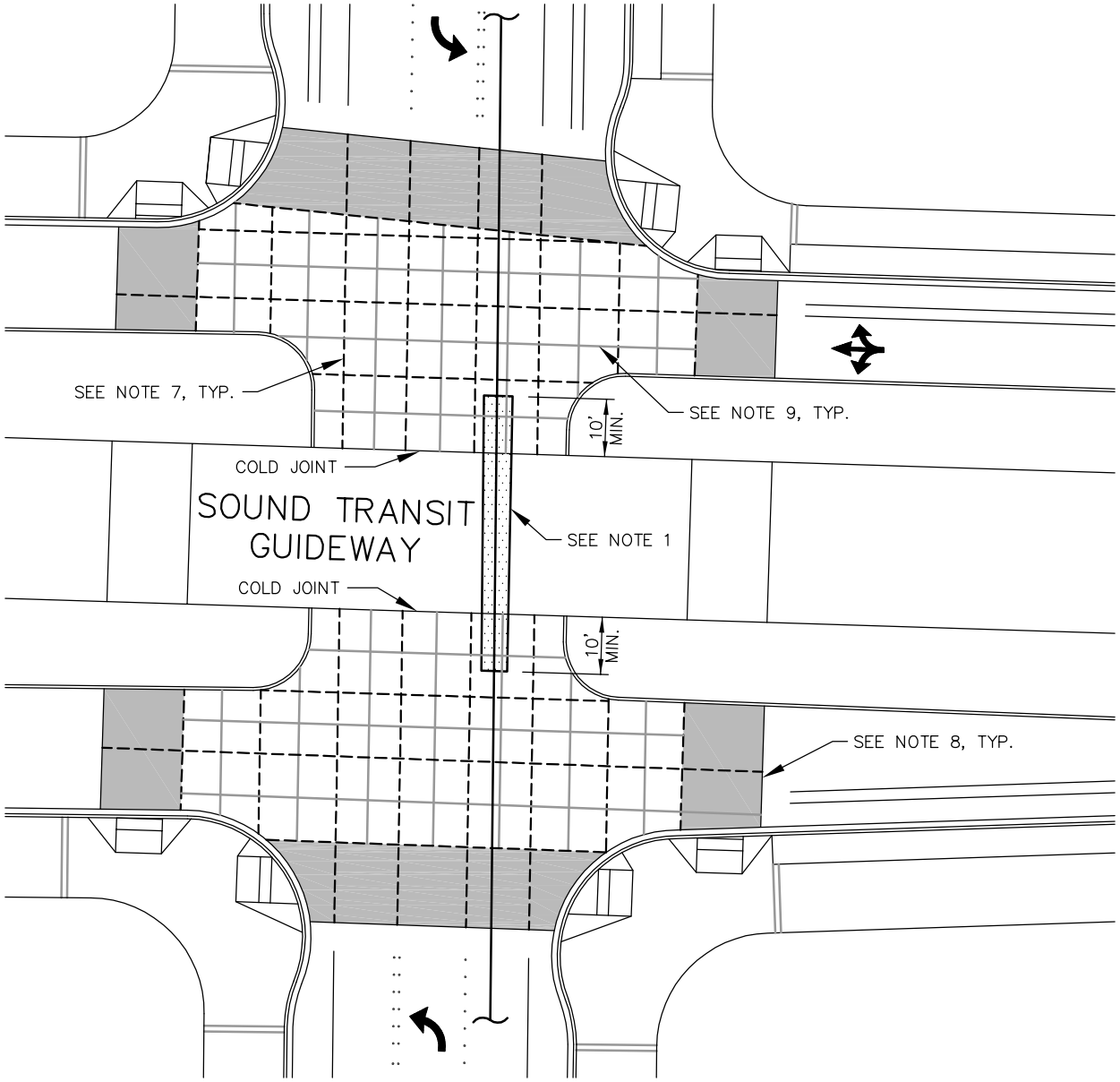

CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

BR Drawings

BelRed Corridor


CITY OF BELLEVUE
WASHINGTON



NOTES:

1. PUBLIC AND FRANCHISE UTILITIES SHALL BE ENCASED UNDERNEATH SOUND TRANSIT GUIDEWAY. CASINGS SHALL EXTEND MIN. 10–FEET BEYOND THE GUIDEWAY.
2. THE MINIMUM THICKNESS OF CONCRETE INTERSECTION AND CONCRETE CROSSWALK SHALL BE 10", OR AS DETERMINED BY THE ENGINEER.
3. INTERSECTION CONCRETE SHALL HAVE A MEDIUM BROOM FINISH.
4. SEE STD. DWG. BR–120–1 FOR MODIFIED CURB AND GUTTER SECTION WITHIN THE CONCRETE INTERSECTION.
5. CONCRETE JOINT SPACING SHALL NOT EXCEED 15–FEET AND SHALL BE APPROVED BY THE CITY.
6. THE CONCRETE JOINTS SHALL ALIGN WITH ULTIMATE LANE LINE PROJECTIONS.
7. FOR TRANSVERSE CONSTRUCTION JOINT AND COLD JOINT, SEE STD. DWG. BR–120–1.
8. FOR HMA TRANSITION DETAIL, SEE STD. DWG. BR–120–1.
9. SAWCUT SQUARE INTERSECTION SCORING PATTERN, 4' MIN DIMENSION EACH SIDE. CONTRACTOR SHALL VERIFY SCORING LAYOUT WITH ENGINEER PRIOR TO IMPLEMENTATION.
10. TRAFFIC LOOPS SHALL BE PLACED OUTSIDE OF AND LOOP STUBS POINTING AWAY FROM CONCRETE PANELS.
11. ALL CATCH BASINS, MANHOLES, VALVES, TEES, ETC SHALL BE PLACED A MIN OF 10' AWAY FROM SOUND TRANSIT GUIDEWAY.
12. SEE WSDOT STANDARD PLAN A–40.15–00 WHEN CATCH BASINS AND/OR MANHOLES ARE PLACED IN THE INTERSECTION.

DECORATIVE CONCRETE CROSSWALK

SCORED CONCRETE INTERSECTION

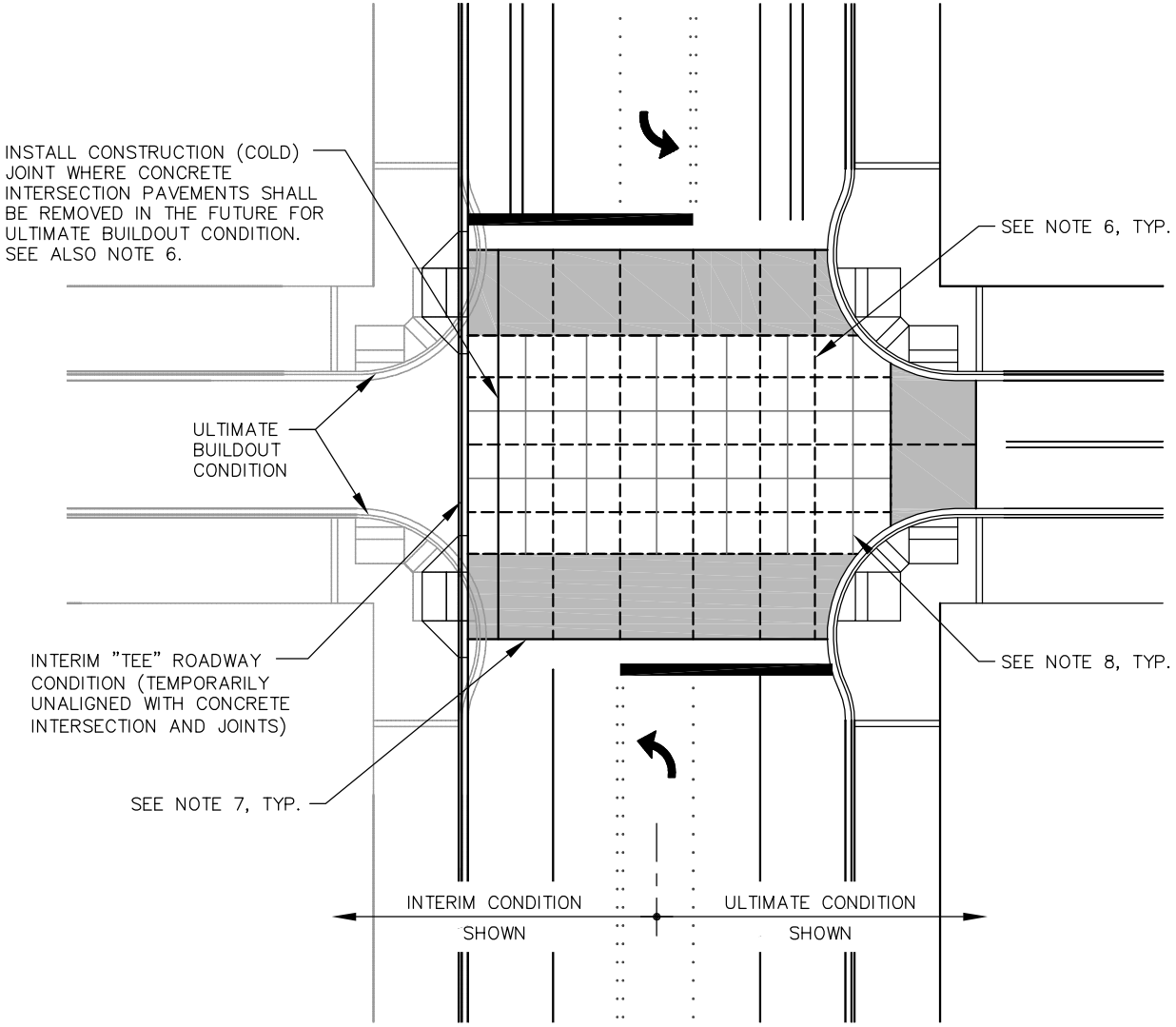
TRANSVERSE JOINT, PER WSDOT STANDARD. PLAN A–40.10–02

SAWCUT JOINT, ¼" WIDE X ¼" DEEP

City of Bellevue

CONCRETE INTERSECTION AT TRANSIT CROSSING

DRAWING NUMBER	BR–100–1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



NOTES:

1. THE MINIMUM THICKNESS OF CONCRETE INTERSECTION AND CONCRETE CROSSWALK SHALL BE 10", OR AS DETERMINED BY THE ENGINEER.
2. INTERSECTION CONCRETE SHALL HAVE A MEDIUM BROOM FINISH.
3. SEE STD. DWG. BR–120–1 FOR MODIFIED CURB AND GUTTER SECTION WITHIN THE CONCRETE INTERSECTION.
4. CONCRETE JOINT SPACING SHALL NOT EXCEED 15–FEET AND SHALL BE APPROVED BY THE CITY.
5. THE CONCRETE JOINTS SHALL ALIGN WITH ULTIMATE LANE LINE PROJECTIONS.
6. FOR TRANSVERSE CONSTRUCTION JOINT AND COLD JOINT, SEE STD. DWG. BR–120–1.
7. FOR HMA TRANSITION DETAIL, SEE STD. DWG. BR–120–1.
8. SAWCUT SQUARE INTERSECTION SCORING PATTERN, 4' MIN DIMENSION EACH SIDE. CONTRACTOR SHALL VERIFY SCORING LAYOUT WITH ENGINEER PRIOR TO IMPLEMENTATION.
9. TRAFFIC LOOPS SHALL BE PLACED OUTSIDE OF AND LOOP STUBS POINTING AWAY FROM CONCRETE PANELS.
10. SEE WSDOT STANDARD PLAN A–40.15–00 WHEN CATCH BASINS AND/OR MANHOLES ARE PLACED IN THE INTERSECTION.

DECORATIVE CONCRETE CROSSWALK

SCORED CONCRETE INTERSECTION

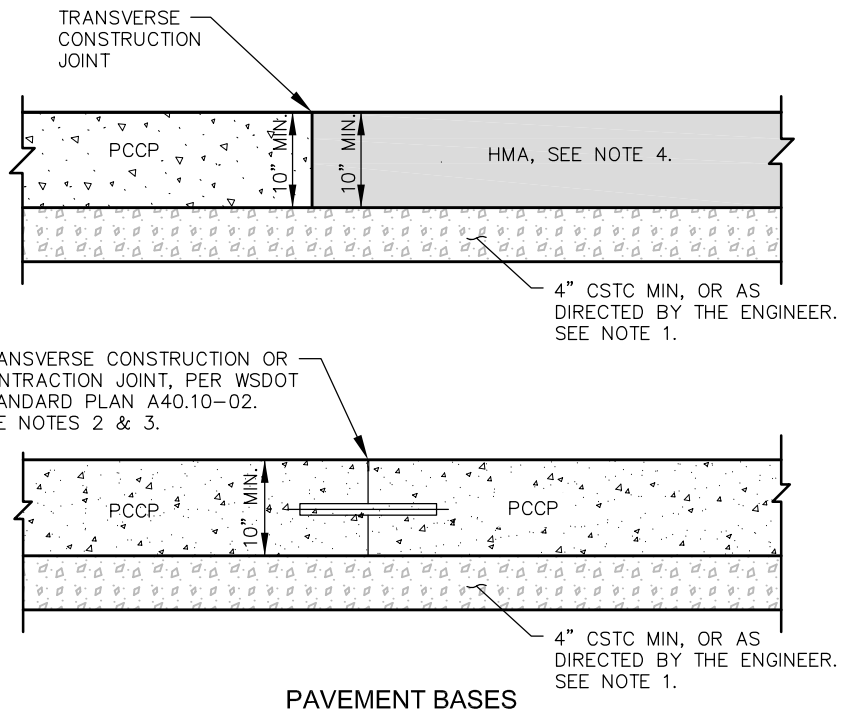
TRANSVERSE JOINT, PER WSDOT STANDARD. PLAN A–40.10–02

SAWCUT JOINT, ¼" WIDE X ¼" DEEP

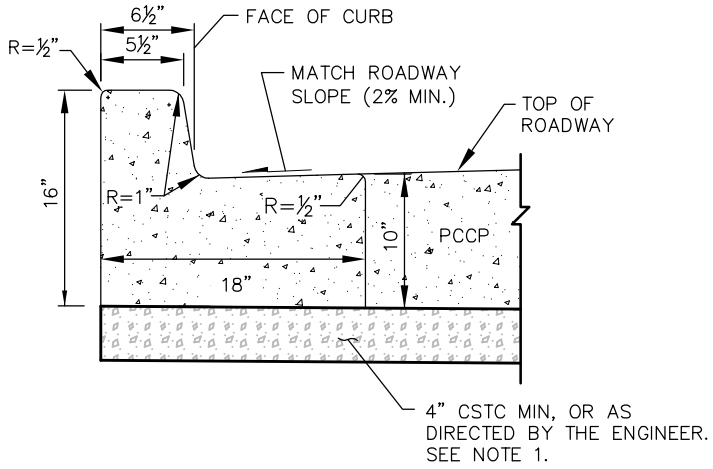
City of Bellevue

CONCRETE INTERSECTION

DRAWING NUMBER	BR–110–1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



PAVEMENT BASES



MODIFIED CEMENT CONCRETE TRAFFIC CURB & GUTTER

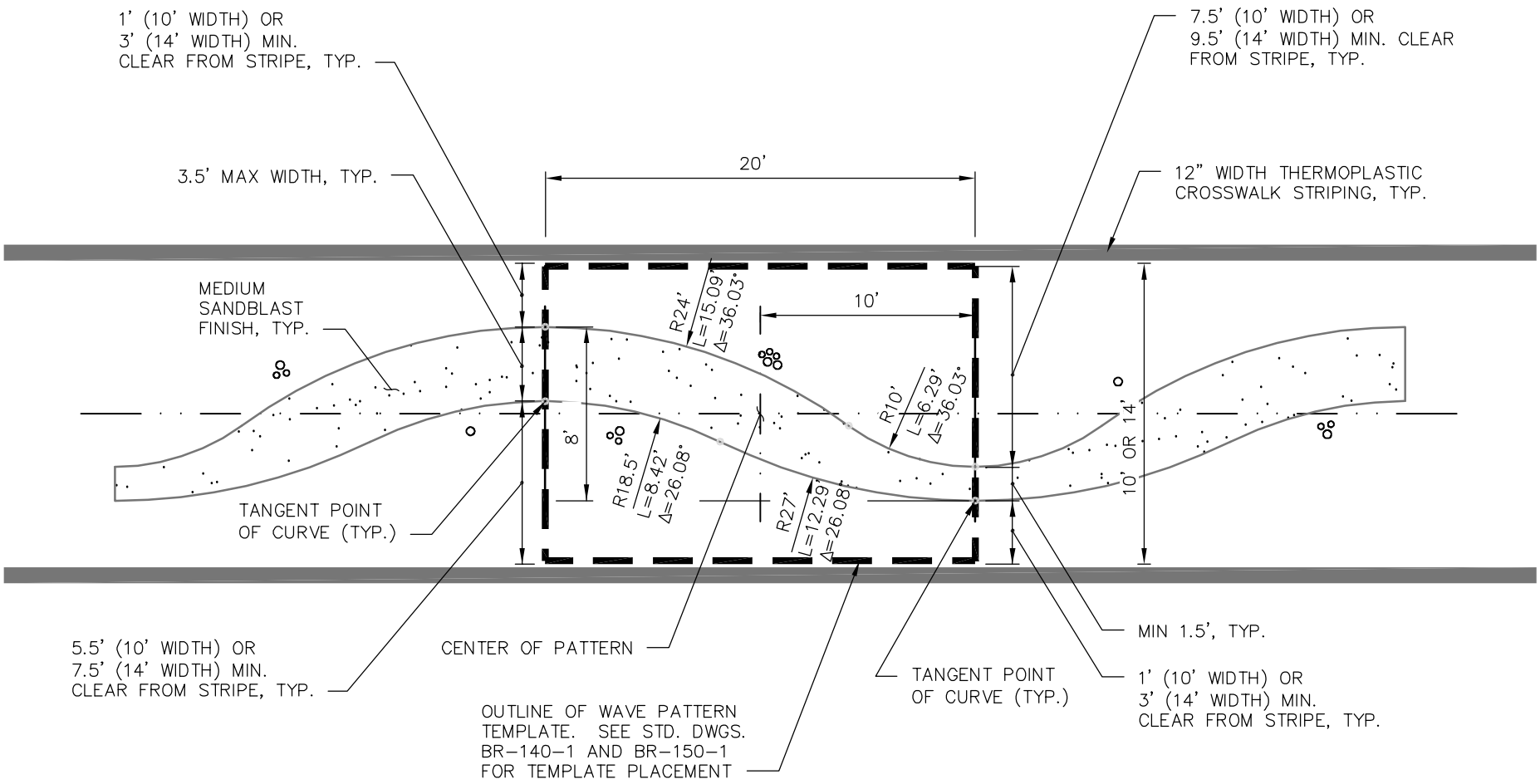
NOTES:

1. PROVIDE CONTINUOUS THICKNESS OF SUBBASE MATERIALS ACROSS ALL PAVEMENT TRANSITIONS. IF GEOTECHNICAL RECOMMENDATIONS FOR EACH SECTION DIFFER, USE THE GREATER FOR BOTH PAVEMENT SECTIONS.
2. SOLID STAINLESS STEEL DOWELS SHALL BE INSTALLED AT ALL CONCRETE PANEL JOINTS, EXCEPT WHERE CONCRETE PAVEMENT PANELS ABUT THE FOLLOWING:
   - CONCRETE HEADERS ASSOCIATED WITH SOUND TRANSIT GUIDEWAY;
   - CURB AND GUTTER; OR
   - CONSTRUCTION (COLD) JOINT FOR ULTIMATE BUILDOUT CONDITION
3. ALL DOWEL BARS SHALL HAVE A PARTING COMPOUND, GREASE OR OTHER APPROVED EQUAL APPLIED TO THEM PRIOR TO PLACEMENT.
4. SEE STD. DWG. RC-100-1 FOR PAVEMENT THICKNESSES.
5. CONCRETE PAVEMENT SHALL HAVE MEDIUM BROOM FINISH.

City of Bellevue

CONCRETE INTERSECTION DETAILS

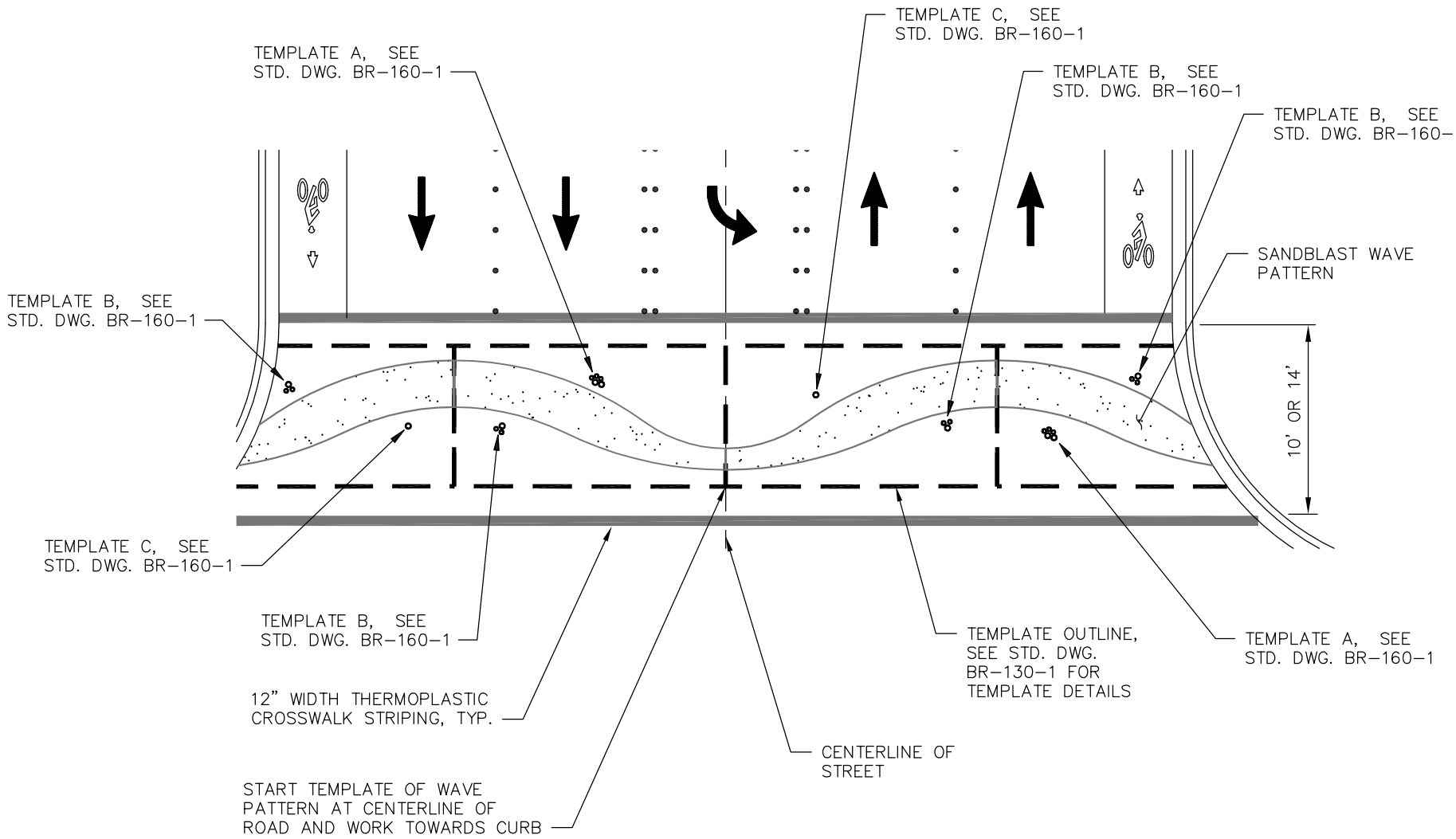
DRAWING NUMBER	BR-120-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



City of Bellevue

CROSSWALK WAVE PATTERN DETAIL

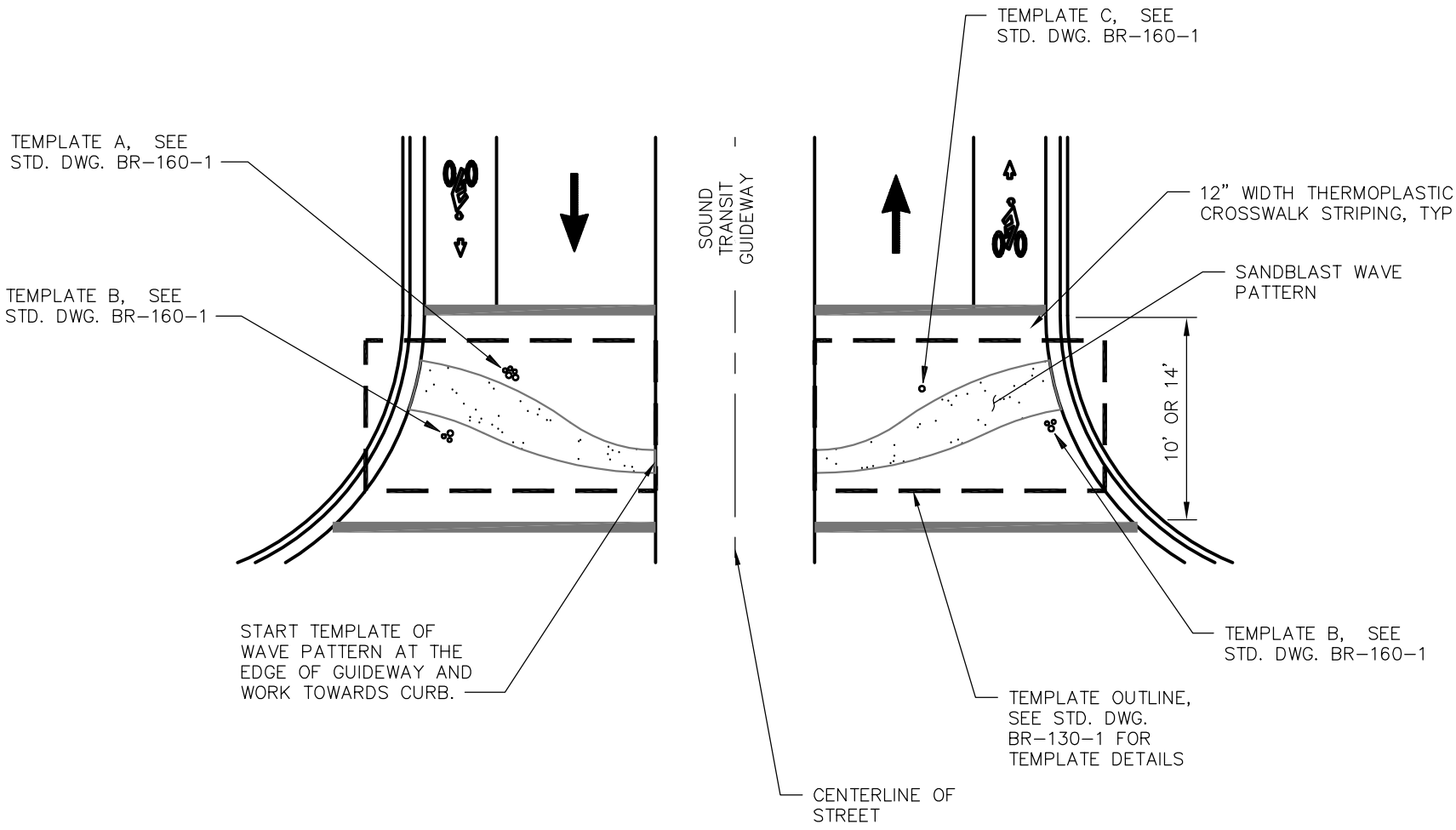
DRAWING NUMBER	BR-130-1
SCALE	NONE
REVISION DATE	2/22
DEPARTMENT	TRANS



City of Bellevue

CROSSWALK WAVE TEMPLATE PLACEMENT 5 LANE SECTION

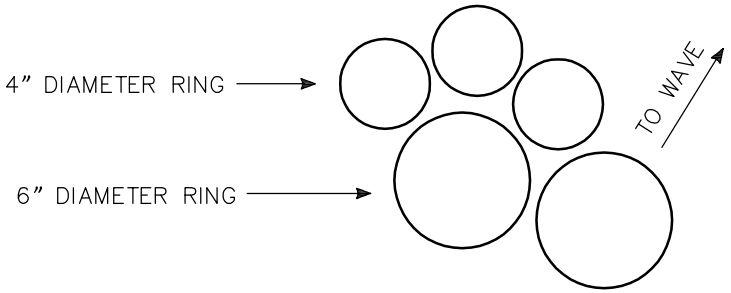
DRAWING NUMBER	BR-140-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



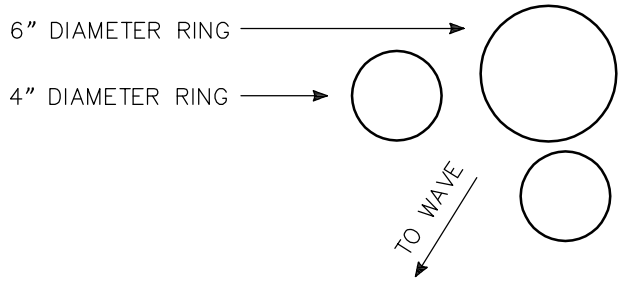
City of Bellevue

CROSSWALK WAVE TEMPLATE PLACEMENT WITH GUIDEWAY

DRAWING NUMBER	BR-150-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS



STAMPED RING TEMPLATE A



STAMPED RING TEMPLATE B

STAMPED RING TEMPLATE C

NOTES:

1. STAMPED TEMPLATE SHALL BE PLACED BETWEEN ONE AND TWO FEET FROM WAVE. FOR APPROXIMATE LOCATION SEE STD. DWGS. BR-140-1 AND BR-150-1. LOCATION OF STAMP SHOULD BE OUTSIDE OF THE WHEEL PATH.
2. THICKNESS OF STAMPED RING SHALL NOT EXCEED ¼". DEPTH OF STAMPED RING SHALL NOT EXCEED ¼" INTO CONCRETE.
3. STAMPED RING LOCATION TO BE DETERMINED BY THE ENGINEER.

City of Bellevue

CROSSWALK WAVE – STAMPED RING TEMPLATES

DRAWING NUMBER	BR-160-1
SCALE	NONE
REVISION DATE	12/17
DEPARTMENT	TRANS


CITY OF BELLEVUE
WASHINGTON

A P P E N D I X A

Street Lighting Design Guide

Revised March 7, 2022

March 2022

I. GENERAL

The street lighting system should be a complete, unified design that addresses the various mobility needs within the City of Bellevue. Lighting levels should be appropriate for street function, classification, and pedestrian use. The lighting system should also have a pleasing appearance and complement surrounding features.

It is not practical, economically feasible, nor desirable to complete the illumination system for the entire City at one time. Development and road construction projects are constantly changing city streets. When consistent design criteria are applied to each project, an effective and functional overall lighting system can be established over time.

The City must maintain a consistent style, operational mode, and maintenance program in order to keep the overall lighting system manageable. This Street Lighting Design Guide has been prepared to assist the city, developers, and anyone involved in improvements to accomplish this objective.

II. PROCEDURES

The following is a summary of the procedures for obtaining approval of street lighting designs within the City.

A. Refer to the Transportation Development Review Engineer or assigned Traffic Engineering Reviewer (herein referred to as "Review Engineer") who is assigned to review the proposed project to obtain site specific guidelines. They will provide requirements on if the system is to be City owned (typical) or if it can be allowed on existing PSE infrastructure (requires Review Engineer Approval). The review staff will also provide guidelines on the pole, fixture, and arm based on the location of the project.

B. Submit the following:

   1. Plans
   2. Specifications
   3. AGi32 Calculation File

   Development projects shall submit through the Permit Center or *mybuildingpermit.com*. Capital projects shall submit through the City's project manager.

   Proposed deviations to standard should be discussed and agreed upon with the Review Engineer prior to submittal and documented in a submittal letter. The submittal will be reviewed and comments will be returned to the applicant.

C. Incorporate any review comments and re-submit as noted in Step B above.

D. After the Review Engineer verifies that all comments have been addressed and standards met, the plans and specifications will be approved, and permits issued. All work must be done by a

qualified electrical contractor with experience in outside electrical work. Call for City inspections prior to starting work, as noted on the right-of-way use permit.

E. Call for final Transportation inspection and acceptance. Street lighting is required to be completed prior to issuance of a Temporary Certificate of Occupancy or the Certificate of Occupancy; street lighting cannot be bonded for.

F. When the improvements have been completed, inspected, and accepted, update the plans with all as-built information and provide them to the Review Engineer.

III. SUBMITTAL REQUIREMENTS

A. Plans

The preferred scale is 1" = 20', provided on 24" x 36" sheets.

These plans must show any adjacent existing luminaires, the new luminaires, their stations, installation details, existing and proposed street trees, building awnings, overhangs, details of the service cabinet or connections to existing service cabinet, conduit locations, junction boxes, above and underground utilities, wire notes including a connection to Puget Sound Energy, and any additional information necessary to complete the electrical system.

Final plans must be signed and sealed by a Professional Engineer licensed in the state of Washington.

B. Specifications

The City of Bellevue uses the Standard Specifications for Road, Bridge, and Municipal Construction as published by the Washington State Department of Transportation and modified by the City of Bellevue Special Provisions.

C. Supporting Calculations

Street lighting is to be designed using the illuminance method for calculations prepared with AGi32 software. Digital design files from AGi32 are to be provided to the City, along with line loss calculations for the system.

IV. DESIGN PARAMETERS

Where street frontage improvements are required, new facilities shall be built to the current street light standards. If there is an existing street light system, the portion of system required to meet the photometric design values along the frontage shall be brought into compliance with the current street light standards.

The Review Engineer may approve deviations from the standards and requirements of this design guide based upon meeting sound engineering judgement, maintenance interests, appearance interests, and if it is in the public interest.

A. Poles

Street lighting is required to be installed on City owned facilities. Any new street light pole required shall be a City of Bellevue Roadway Lighting Pole (Standard Drawing SL-100-2). Existing City owned poles may be reused if photometric design values can be met and with Review Engineer approval. Existing street lighting on PSE poles may need to be removed and City owned facilities installed.

The Review Engineer may approve a deviation to allow new and existing street lighting to be installed and remain on PSE owned utility poles.

New Roadway Lighting Poles (per Standard Drawing SL-100-2) shall be designed to support a future load of Small Wireless Facility (SWF) equipment and antennas and a future city sign load as outlined in the Table 1 below:

TABLE 1: SMALL WIRELESS FACILITY EQUIPMENT

Item	Centroid Height	Weight	Wind Load
Pole Top Shroud and Antennas	37’6”	100lbs	218.6lbs
Equipment Cabinet	22’	200lbs	173.1lbs
5G Antennas/Radios	26’6”	87lbs	180.7lbs
Disconnect	20’	30lbs	32.1lbs
Sign	10’	66lbs	450lbs

The total loads at the base of a 35’ tall pole with 12’ luminaire arm cannot exceed the following:

- Bending Moment: 41,816 ft-lb
- Torsion: 2,330 ft-lb
- Shear: 1,814 lb
- Axial Force: 1,798 lb

B. Fixture

Light-Emitting Diode (LED) street lighting fixture are required for new and retrofit installation. The wattage of the fixture will be recommended by the applicant’s engineer based on the street

light analysis. In no case shall the system be design higher than 20% above the minimum average values.

Retrofit installations may require an adapter plate. Contact the Review Engineer for specific type of adapter plate required and include appropriate details in final plans.

Fixture color will typically match color of the pole. Confirm fixture colors with the Review Engineer prior to submittal.

C. Arm

For new pole installations: See Standard Drawing SL-102-1.

For retrofit installations: The arm length shall be recommended by the applicant's design engineer based on the street light analysis and on maintaining consistency along the public road.

D. Typical Design Parameters

There are several streets and neighborhoods that require special decorative lighting in addition to the standard street lighting systems. Several of these locations are defined in Table 2:

TABLE 2: APPROVED FIXTURES AND USAGE

Location	Design Parameters
Downtown (except Old Bellevue)	Street Scale: New Pole Installation Pole: Roadway Lighting Pole (SL-100-2) Fixture: Leotek GreenCobra Series LED Street Scale: Retrofit Fixture: Leoteck Arieta Series LED
Old Bellevue (except Main Street)	Street Scale: New Pole Installation Pole: Roadway Lighting Pole (SL-100-2) Fixture: Leotek GreenCobra Series LED Pedestrian Scale Pole: Round concrete pole Fixture: Cyclone post-top LED
Main Street in Old Bellevue	Pole: Round concrete pole Fixture: Cyclone post-top LED
Major, Collector, Tertiary Arterials Outside Downtown	Street Scale: New Pole Installation: Pole: Roadway Lighting Pole (SL-100-2) Fixture: Leotek GreenCobra Series LED Street Scale: Retrofit Fixture: Leotek GreenCobra Series LED Leotek Arieta Series LED
BelRed Subarea Arterials	See Design Manual Appendix B: The BelRed Corridor Plan
Local Streets	Pole: Roadway Lighting Pole (SL-100-2) Fixture: Leotek GreenCobra Series LED Leotek Arieta Series LED
Multi-family, Commercial, Light Industrial, School, or other institutional areas or streets	May be designed to the Tertiary Light Level. Verify with the Review Engineer prior to Design.

The above approved fixtures and usage is for typical cases although there may be site specific deviations. Check with Review Engineer for confirmation prior to design.

E. Midblock Crosswalks

For street light installations at new or existing midblock crosswalks, two streetlights (one on each side of the crosswalk) is required. The preference is for each streetlight to be placed in advance of the crosswalk with respect to the direction of vehicular travel. The Review Engineer may approve a deviation for a single streetlight installation.

F. Temporary Lighting

Temporary lighting shall be installed under the following circumstances:

- Any time a street light is going to be removed for more than 30 days.
- When more than one street light on the same block or within 400-feet of the subject street light (either side of the street) is impacted by construction.
- When the impacted street light is located within 50-feet of a crosswalk or intersection.
- As directed by the Review Engineer.

G. Additional Design Parameters

The designer should contact the project owner to verify final building layout and the location of windows that could be affected by the location of the required street light poles and luminaires. Consideration should be given to windows when locating poles and deciding on pole heights to minimize impacts to adjacent buildings. If light poles are proposed near windows, house-side shields should be utilized and reflected in the design calculations.

The design of the street lighting system shall be such that no street trees are placed within 25-feet of a new street light.

See *Design Manual Appendix D – Fiber Optic Communication Systems Design Requirements* for information on space conduits and junction boxes that shall be included with all projects requiring frontage improvements.

V. PHOTOMETRIC DESIGN VALUES

A. Lighting Levels

1. Arterial Streets

Bellevue's Transportation Department organizes streets into three classifications for arterial street light levels - Major, Collector, and Tertiary. These classifications are shown on Figure 1 with associated design parameters in Table 3.

For tertiary, Table 3 shows two values for uniformity. Lower uniformity should be provided for completely new city owned systems, whereas retrofit projects (where existing light poles are being utilized) or projects using existing PSE poles (with Review Engineer approval) may be designed to the higher uniformity value.

2. Local Streets

Streets not classified as Major, Collector, or Tertiary (see Figure 1) are considered local streets. No specific photometric design values have been established for local streets. For new

plats or newly developed local streets, city-owned systems are preferred and luminaires shall be installed as follows:

- at intersections
- at horizontal curves
- at vertical curves
- at street ends
- at marked pedestrian crossings
- at traffic calming devices
- and at no greater than 250 foot intervals

3. Sidewalks and Paths

   For sidewalks adjacent to the roadway, whether curbside or separated by a planter strip, no separate calculations are conducted for light levels on the sidewalk area. This is the standard practice, in recognition that the sidewalk will be illuminated by the lighting system installed for the roadway and adjoining properties.

   For Multipurpose Paths (MPPs) installed in lieu of or in addition to sidewalks and bike lanes, lighting is typically required with a minimum maintained average light level of 5 lux and a uniformity ratio of 10:1. Verify requirements for MPPs with the Review Engineer prior to starting design.

4. Calculation Values

   A maintenance factor of 0.80 is to be used for all LED systems.

B. PSE Modification

PSE Modification to design may apply on tertiary or collector arterials that:

1) Serve a residential area with a significant amount of single family residential driveways, and
2) Have above-ground electrical distribution on PSE poles that will remain above-ground after the project is complete.

Verify PSE Modification lighting design with the Review Engineer prior to proceeding with the design. For PSE Modification designs, the lighting design is typically limited to the PSE pole locations. Designs should meet the average light levels shown in Table 3 only to the extent practical, as the pole spacing and mounting heights may preclude the ability to reasonably meet minimum average light levels. Uniformity is not considered in PSE Modification designs. In-fill poles (new poles with lights only) are only required when necessary to meet the average light level at a marked midblock pedestrian crossing or an uncontrolled marked crosswalk at an intersection.

TABLE 3: ILLUMINANCE METHOD PHOTOMETRIC DESIGN VALUES

ROADWAY SEGMENTS

CLASSIFICATION	LIGHT LEVEL MINIMUM MAINTAINED AVERAGE VALUES* (LUX)		UNIFORMITY RATIO EAVG/EMIN
	ASPHALT CONCRETE	PORTLAND CEMENT CONCRETE	
MAJOR	13	9	4
COLLECTOR	9	6	4
TERTIARY	5	4	4 (New Systems) 6 (Retrofits)

INTERSECTIONS

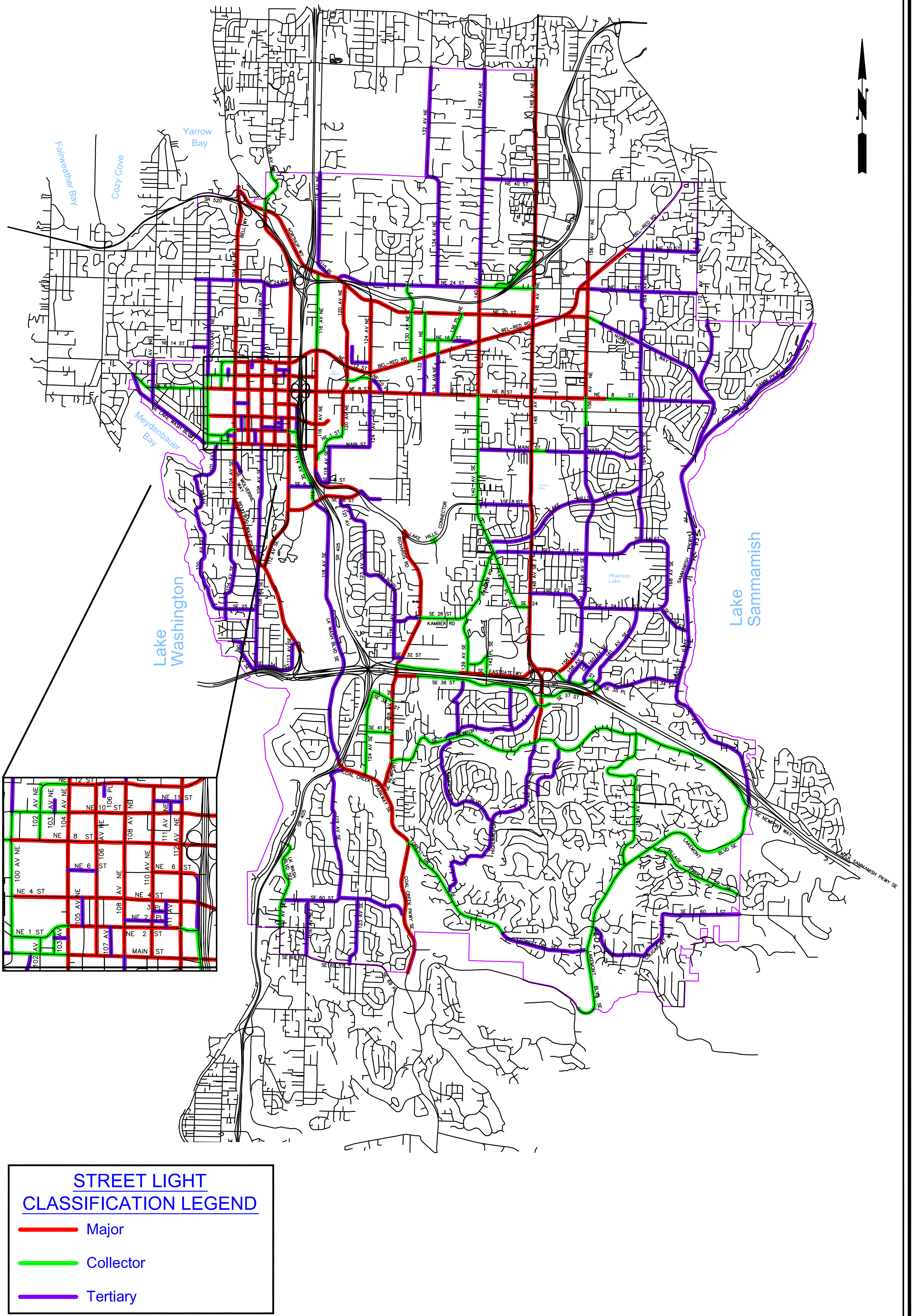
CLASSIFICATION	LIGHT LEVEL MINIMUM MAINTAINED AVERAGE VALUES* (LUX)		UNIFORMITY RATIO EAVG/EMIN
	ASPHALT CONCRETE	PORTLAND CEMENT CONCRETE	
MAJOR – MAJOR	26	18	4
MAJOR – COLLECTOR	22	15	4
MAJOR – TERTIARY	18	13	4
COLLECTOR – COLLECTOR	18	12	4
COLLECTOR – TERTIARY	14	10	4
TERTIARY - TERTIARY	10	8	4 (New Systems) 6 (Retrofits)

MARKED MIDBLOCK PEDESTRIAN CROSSING**

CLASSIFICATION	LIGHT LEVEL MINIMUM MAINTAINED AVERAGE VALUES* (LUX)		UNIFORMITY RATIO EAVG/EMIN
	ASPHALT CONCRETE	PORTLAND CEMENT CONCRETE	
MAJOR	26	18	N/A
COLLECTOR	18	12	N/A
TERTIARY	10	8	N/A

* Systems should be designed no higher than 20% above minimum average values

**Includes uncontrolled marked crosswalks at intersections



City of Bellevue

FIGURE 1

STREET LIGHT LEVEL MAP

REVISION DATE	01/15
DEPARTMENT	TRANS


CITY OF BELLEVUE
WASHINGTON

A P P E N D I X B

BelRed Streetscape Plan

Revised December 2021

This appendix is available as separate file

See individual link on Transportation Design Manual site


CITY OF BELLEVUE
WASHINGTON

A P P E N D I X C

Fiber Optic Design Requirements

May 21, 2021


CITY OF BELLEVUE
WASHINGTON

FIBER OPTIC COMMUNICATION SYSTEM

The City of Bellevue operates and maintains an expansive citywide fiber optic system that provides network connectivity for critical city functions. Critical functions include, but are not limited to, network connectivity for traffic signal operations, traffic cameras, emergency services, and operations at off-site city facilities. Bellevue requires available conduit and fiber optic infrastructure to establish network connections and provision for future system expansion. The City of Bellevue's approach to communication system design aims to separate fiber optic cables in a dedicated infrastructure system, which is important for overall network management and system maintenance. This Design Requirements Manual describes the requirements necessary to accomplish this approach and applies to projects where the fiber optic system is impacted or where new communication systems are required. These standards ensure that City of Bellevue's communication network is available, functional and reliable.

I. GENERAL

Plan, specifications and estimate (PS&E) submittals in the City of Bellevue shall convey the necessary detail to provide clear instructions on how to establish communications to new traffic signals and Intelligent Transportation Systems (ITS) via a fiber optic communication system. Additionally, projects that disrupt the existing fiber communication systems within city right-of-way shall include the necessary design detail to maintain connectivity during construction.

A good design results in a complete, fully-functional and maintainable communication network. Fiber optic communication design may be included in the illumination and traffic signal plans, except in cases where separate ITS communication plans are necessary to provide design clarity and intent. The fiber optic components shown shall include all the information necessary for a complete review of the work being performed. They must also include all the information required for construction or installation, and for documentation of the completed work for future reference.

II. SUBMITTAL REQUIREMENTS

Plans:

- Title block, north arrow and scale bar
- Legend of symbols
- Existing communication conduit, junction box and splice vault layout
- Temporary fiber optic communications design, if necessary
- Permanent fiber optic communications design
- Fiber optic splice details
- Patch panel layout details
- One-line fiber distribution diagram (if design complexity necessitates)
- Details for all non-standard installations and elements
- All other information needed or required elsewhere to properly document the work being done

III. COMMUNICATION SYSTEM INFRASTRUCTURE DESIGN PARAMETERS

The City of Bellevue's communication system infrastructure standard implements purpose-built infrastructure that separates fiber optic cabling from all other conductor types. This approach is applied to conduit systems, junction boxes and splice vaults and is intended to provide a highly available, functional and reliable system as described in the overview.

A. Communication Junction Boxes

1. Fiber optic cables shall be routed through City of Bellevue Type 2 modified junction boxes (Standard Plan SL-180-1) or a large communication junction box (Standard Plan SL-181-1). Junction boxes are permitted for fiber routing where fiber splices do not exist. Fiber optic splices shall be located in fiber optic splice vaults only (see Section 1.1.2), unless otherwise directed by the City of Bellevue ITS Engineer.

2. New communication junction boxes shall not be located on paved roadway surfaces. If an existing communication junction box is located on a paved roadway surface, within the project limits, the junction box shall be relocated or the lid shall be upgraded to traffic bearing, if relocation is not possible.

3. All communication system junction boxes shall be marked as "COB COMM" on the lid.

4. All Junction boxes shall include a non-skid lid.

5. All junction boxes shall be located outside of existing or proposed curb ramps.

6. The minimum spacing between communication junction boxes and/or vaults is 200 ft, except on road crossings, infrastructure associated with Small Wireless Facility (SWF) communications, and other instances directed by the City of Bellevue ITS Engineer.

7. The maximum spacing between communication junction boxes and/or vaults is 600 ft.

8. Communication junction boxes are required at both ends of roadway crossings, borings, or bridges.

9. Conduits shall only enter the sides of a communication junction box, and not the bottom.

B. Fiber Optic Splice Vaults

1. Fiber optic splice enclosures shall only be permitted in a Fiber Optic Splice Vault in accordance with Bellevue Standard Plan SL-190-1, unless otherwise directed by the City of Bellevue ITS Engineer.

2. Each signalized intersection shall include a minimum of two fiber optic splice vaults, which may be located on the same corner or on adjacent corners. The location of the splice vaults shall be reviewed and approved by the City of Bellevue ITS Engineer. The conduit

configuration shall be in accordance with the layout shown on Figure 2, located at the end of this document.

3. All fiber optic splice vaults shall be marked as "COB COMM" on the lid.

4. Splice vaults are not permitted on paved surfaces, except sidewalk, unless otherwise approved by the City of Bellevue ITS Engineer.

5. All splice vaults shall include a non-skid lid.

6. The maximum space between two fiber optic splice vaults is 1,500 ft.

7. Conduits shall only enter the manufacturer's designed entry points of a fiber optic splice vault.

C. Communication System Conduits

1. All new projects shall install a standard configuration of conduits for the purposes of communications, as shown on Figure 2. The standard configuration includes three 3" conduits and one 2" conduit along a project frontage, unless otherwise directed by the City of Bellevue ITS Engineer.

2. The standard configuration of communication system conduits shall be placed on both sides of the road for any roadway classified as a Major, Minor, and Collector Arterial.

3. Neighborhood streets shall include one 3" conduit on both sides of the road for communication purposes where the improvements exceed 200' along the roadway, unless otherwise directed by the City of Bellevue ITS Engineer.

4. Communication conduits shall connect with junction boxes and vaults in accordance with the layout shown on Figure 2.

5. Communication conduits shall only connect with communication junction boxes and fiber optic splice vaults, unless otherwise directed by the City of Bellevue ITS Engineer. The only exception to this requirement is the final fiber optic cable conduit entry into the signal cabinet foundation as shown on Figure 2. The City of Bellevue ITS Engineer may also specify other communication conduit tie-in points.

6. Existing conduits used for the installations of a new communication system shall conform to the conduit and junction box layouts as shown on Figure 2. Coordination with the City of Bellevue signal shop staff will be necessary to identify conduit and junction box upgrades needed for conformity.

7. Projects will be required to tie into existing communication system conduits across the road or driveway at its project limits where a continued communication conduit pathway exists.

8. Projects that do interface with a traffic signal shall terminate communication conduits at a Type 2 modified junction boxes (Standard Plan SL-180-1) at the project limits or alternative location determined by the City of Bellevue ITS Engineer. Separate junction boxes will be required for the SWF system infrastructure described in Section 1.2.

9. All communication system conduits shall include detectable mule tape. Detectable mule tape shall be replaced for any instance where it is used for pulling new communication cabling.

10. Parallel communication conduits shall be combined in the same trench or bore location to the maximum extents feasible. Conduits shall be installed in accordance with the trench detail shown on Bellevue Standard Plan SL-122-1.

11. Communication conduits, as specified in Section 1.1.3.2 and 1.1.3.3, shall be included in a shared roadway crossing trench or underground bore where other utility infrastructure is proposed. A communication junction box shall be installed on both sides of the road to receive the communication conduits.

12. Communication conduits, as specified in Section 1.1.3.2 and 1.1.3.3, shall be extended by means of a roadway conduit crossing to connect with an existing communication conduit system, where one exists. **This requirement may result in infrastructure improvements extending beyond the property limits of a project.**

IV. SMALL WIRELESS FACILITY (SWF) COMMUNICATION INFRASTRUCTURE DESIGN PARAMETERS

The City of Bellevue's communication system design standards is forward-compatible with Small Wireless Facility (SWF) deployments. SWF equipment will occupy city-owned streetlight poles and require a conduit system capable of providing SWF power and communications. Figure 2, located at the end of this document, identifies the City of Bellevue's standard for SWF deployments and is intended for application on new construction projects in the city. Adherence to this standard is required for the installation of any new street light pole owned by the City of Bellevue. In cases where the street lighting system is impacted, the project shall coordinate with the City of Bellevue Transportation Department to determine application of the standard depicted in Figure 2.

A. A: SWF Communication Junction Boxes

1. One large communication junction box is required for SWF at each corner of a signalized intersection in accordance with the layout shown on Figure 2, unless a fiber optic splice vault exists or is proposed for SWF. A large junction box shall be deployed in accordance with the Bellevue Standard Plan SL-181-1.

2. One Type 2 modified junction box as shown on Bellevue Standard Plan SL-180-1 shall be placed adjacent to each streetlight pole, in addition to the standard street lighting junction box.

3. All SWF junction boxes shall be marked as "SWF COMM" on the lid.

4. All SWF junction boxes shall include a non-skid lid.

5. All SWF junction boxes shall be separate from the City of Bellevue street lighting, communications and traffic signal conduit systems, unless otherwise specified by the City of Bellevue ITS Engineer.

V. FIBER OPTIC CABLING DESIGN PARAMETERS

The City of Bellevue deploys Single Mode Fiber Optic (SMFO) as an Outside Plant (OSP) standard in the city. Fiber optic cables are deployed as they support long distance network communications and high-speed data. This section outlines the deployment standards for Bellevue's trunk, distribution, and lateral fiber optic cables.

A. Installation

1. Fiber optic cables shall be only be placed in conduit systems separated from all other conductive cabling, except low-voltage Ethernet cables.

2. Fiber optic cables shall not use cabinets as a raceway or junction box. If a cable is not intended for use in a cabinet, it shall not be installed into or through that cabinet.

B. Slack Fiber Optic Cable

1. All fiber optic cables pulled continuously through a vault must contain a minimum of 100 feet of slack. Slack fiber optic cable shall be racked in a "Figure 8" configuration inside each vault.

2. 100 feet of slack cable shall be provided for each direction of every cable entering a splice enclosure, unless otherwise specified by the ITS Engineer.

C. Removal of Unused Cabling

Any fiber optic or copper interconnect cables that are not part of a permanent ITS network shall be removed on a given project, unless otherwise directed by the City of Bellevue ITS Engineer.

D. Fiber Optic Trunk Cables

Fiber optic trunk cables are purposed for backhaul communications between two major splice points or fiber termination points. Trunk cables may carry multiple owner/operators and are intended to have as few splices as possible to preserve data transmission quality.

1. The minimum strand count for new fiber optic trunk cables shall be 144 count single-mode fiber, unless specified otherwise by the City of Bellevue ITS Engineer.

2. Where an existing trunk fiber optic cable is impacted by a project, the cable shall be replaced between existing splices (i.e. no new splices shall be added, unless approved the City of Bellevue ITS Engineer). **Infrastructure improvements may extend beyond the project limits to re-install the replacement fiber optic trunk cable.**

3. New fiber optic trunk cables shall be required for all major and minor arterials where the project area exceeds ½ mile (2,640 ft) of continuous roadway improvements. Splices points for the new fiber optic trunk cable shall be determined by the City of Bellevue ITS Engineer.

E. Fiber Optic Distribution Cables

Fiber optic distribution cables are used for providing connections to field devices including, but not limited to, traffic signal systems, traffic cameras, data collection devices, and Wi-Fi antennas. Distribution fiber optic cables typically only carry City of Bellevue applications.

1. The minimum fiber optic distribution cable shall be 96 count single-mode fiber, unless specified otherwise by the City of Bellevue ITS Engineer.

2. Where an existing fiber optic distribution cable is impacted by a project, the project shall coordinate with the City of Bellevue ITS Engineer and signal shop staff to determine the appropriate design for the replacement cable. **Infrastructure improvements may extend beyond the project limits to re-install the replacement fiber optic distribution cable.**

3. A new fiber optic distribution cable shall be required for all major, minor and collector arterials, unless otherwise directed by the City of Bellevue ITS Engineer. A new fiber optic distribution cable is not required when an existing distribution cable that meets current design standards already exists.

F. Fiber Optic Lateral and Drop Cables

In the City of Bellevue. fiber optic lateral and drop cables are used to provide a network connection between the fiber distribution cable and an end-device. These single end-point connections are also referred to as drop cables as they provide a network drop to the end-device. Lateral cables typically connect to the distribution fiber optic cable but may also connect to trunk cables in limited scenarios.

1. The minimum strand count for a fiber optic lateral cable is 24ct when the end-device is a traffic signal cabinet. All other applications shall be reviewed by the City of Bellevue ITS Engineer.

2. The length of lateral fiber optic cables shall not exceed the distance between two fiber optic splice enclosures that are along the conduit pathway to the end-device.

3. Lateral fiber optic cables are permitted in traffic signal and illumination junction boxes when the end-device is owned and operated by the City of Bellevue. All other applications will require a dedicated communication system for the lateral fiber optic cable as described in the overview.

G. Fiber Optic Splices

Fiber optic splices vary in configuration due to many factors, including but not limited to, the availability of dark strands on existing fiber optic cables, necessary connections to end-devices, number of cables meeting at a splice point, etc. As a result of this variability, a standardized splice in the City of Bellevue does not exist. This section provides general design guidance for a typical splice at a traffic signal cabinet location.

1. A typical fiber optic splice in the City of Bellevue includes a single 24ct SMFO drop cable from a distribution fiber optic cable to a traffic signal cabinet. The typical layout is shown in Figure 1 below:

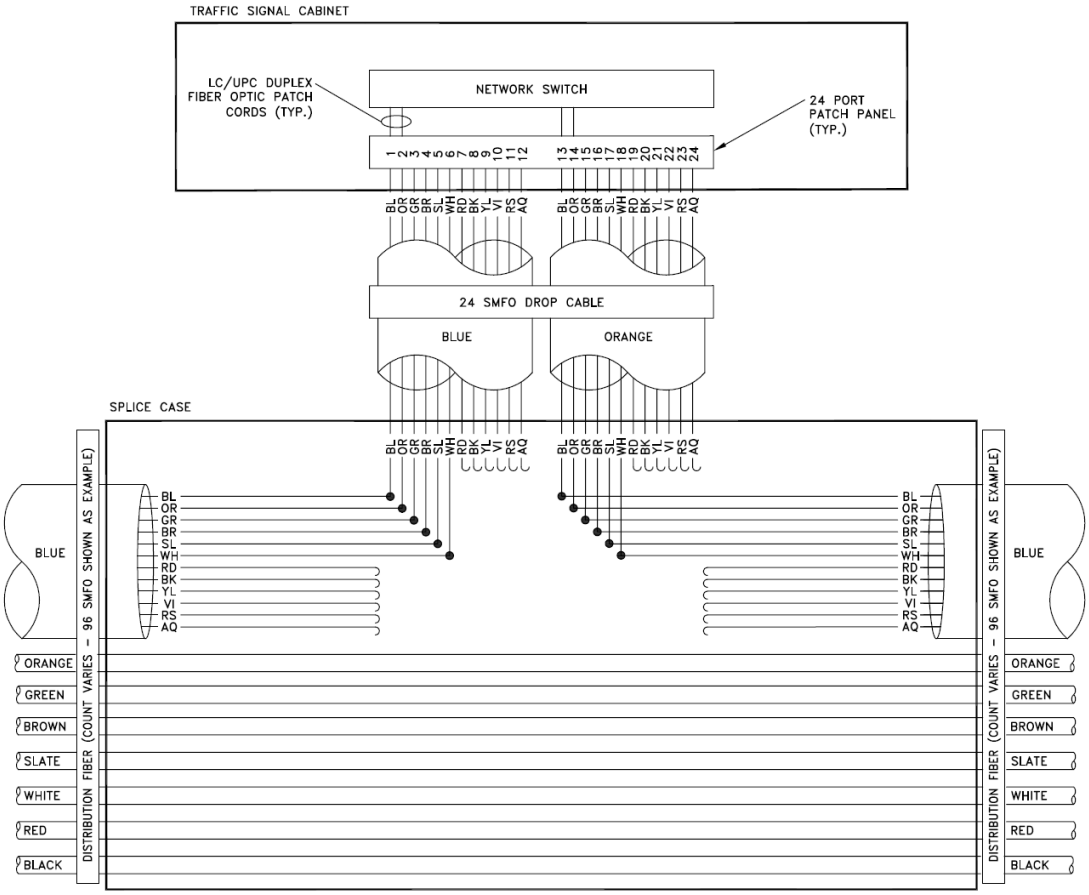


Figure 1: Typical Splice Detail at Traffic Signal Cabinet Location

2. All fiber optic splice designs shall be coordinated with and approved by the City of Bellevue ITS Engineer.

V. TEMPORARY FIBER OPTIC COMMUNICATION SYSTEMS

During construction, it is necessary to maintain operations of the communication system at the project owner's expense. Impacts to the communication system are typically encountered when a communication conduit system is disturbed. In many cases, it will be necessary to temporarily relocate or modify the City of Bellevue's fiber optic system to maintain operations. For all instances where the communication system is impacted, the project shall coordinate with the City of Bellevue Transportation Department on available options to maintain network connectivity. Temporary network connections may include, but are not limited to, the installation of temporary fiber optic cables, fiber optic splices, conduit, and other network equipment.

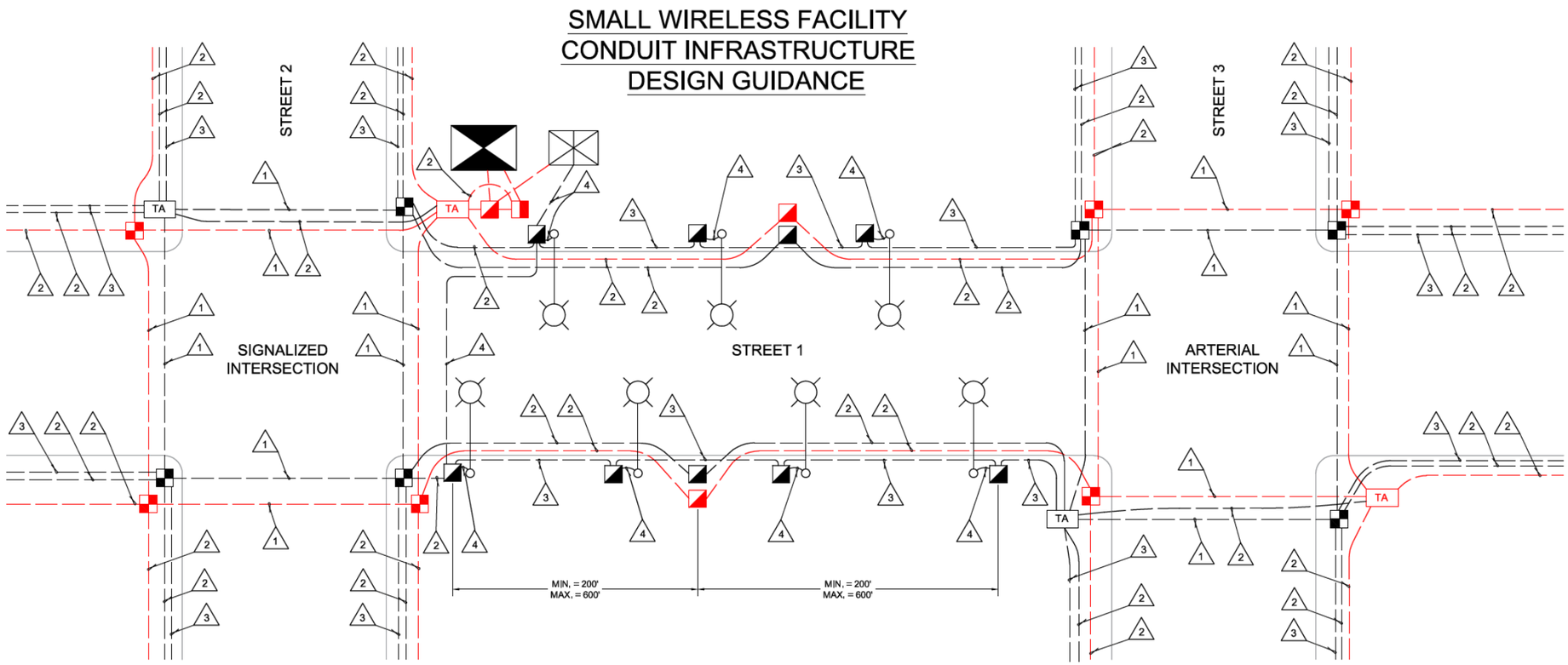


Figure 2: Small Wireless Facility Conduit Infrastructure Design Guidance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