



DRAFT ENVIRONMENTAL IMPACT REPORT

Better Market Street Project EIR APPENDIX 3: STANDARD PAVING MATERIALS IN SAN FRANCISCO'S PUBLIC RIGHTS-OF-WAY

PLANNING DEPARTMENT
CASE NO. 2014.0012E

STATE CLEARINGHOUSE NO. 2015012027



SAN FRANCISCO
PLANNING
DEPARTMENT

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APPENDIX 3: STANDARD PAVING MATERIALS IN SAN FRANCISCO'S PUBLIC RIGHTS-OF-WAY (PUBLIC WORKS ORDER 200369)

City and County of San Francisco



London N. Breed, Mayor
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San Francisco Public Works

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Public Works Order No: 200369

STANDARD PAVING MATERIALS IN SAN FRANCISCO'S PUBLIC RIGHT OF WAYS

This Standard Paving Materials Public Works Director's Order shall serve as the City and County of San Francisco (CCSF) requirements on an expanded list of City standard paving materials, what they are, where permittees can install them in the public right of way and all installation requirements necessary to satisfy the Public Works approval process.

I. Introduction

This order expands the list of City standard paving materials. In addition to the current City standard concrete and asphalt paving, the standard paving materials addressed in this order will allow for the installation of a defined list of materials of different shapes, patterns and colors. These additional standard paving materials will allow for better maintenance of a broader variety of paving materials in our neighborhoods, on the streets and sidewalks throughout the City.

All paving materials not included in the Public Works standard paving palette must be permitted through Public Works Bureau of Street Use and Mapping. Permit types for non-standard paving materials can be found here: <http://www.sfbetterstreets.org/learn-the-process/permit-process/#permitProcessByProjectType> (also listed in section II number 4 Reference Documents below).

The additional standard paving materials and design criteria authorized by this order also ensures that, consistent with accessibility laws, pedestrians will continue to have a continuous and safe path of travel through the City's streets and sidewalks.

This order does not change property owners' and third parties' existing responsibilities to properly install, maintain, repair or replace paving materials. Under City law (Public Works Code Section 706), property owners are primarily responsible for maintaining the condition of sidewalks and the public right of way in front of their properties. Third parties who may disturb sidewalks and the public right of way - contractors working on behalf of the adjacent property owners, utility companies, and City agencies - are responsible for replacing any paving materials in kind (i.e., replacing any pre-existing paving materials with new paving materials of the same quality, shape, and design).

This order also does not change property owners' and third parties' existing responsibilities to obtain any necessary permits (e.g., construction, encroachment, etc.) from Public Works to install or repair paving materials. Public agencies, including City departments, are not subject to these permitting requirements; however, they are subject to the standards and information set forth in this order. Any property owner or private party that seeks to install, repair, or replace



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sidewalks in public rights of way using non-City standard paving materials must receive necessary permits from Public Works, Bureau of Street Use and Mapping.

II. Reference Documents

To learn more about San Francisco street types, character, and use of these materials, please see the following reference documents:

1. SF Better Streets Plan: <http://www.sf-planning.org/ftp/BetterStreets/index.htm>
2. SF Better Streets Plan Special Paving Guidelines: http://www.sf-planning.org/ftp/BetterStreets/docs/FINAL_6_Streetscape_Elements.pdf
3. SF Better Streets Plan Special Sidewalk Paving section: http://www.sfbetterstreets.org/find-project-types/streetscape-elements/sidewalk_paving/
4. SF Better Streets permit for non-standard paving in the right of way: <http://www.sfbetterstreets.org/learn-the-process/permit-process/#permitProcessByProjectType>
5. SF Public Works Sidewalk Landscaping Guidelines, Reference Drawings and Specifications, Paving Plans and Materials: https://www.sfpublicworks.org/sites/default/files/905-L-3.0_Paving%20Plan%20and%20Details%2011x17.pdf
6. SFMTA May 29, 2014 SFMTA Crosswalk Guidelines Memorandum: <http://www.sfbetterstreets.org/wp-content/uploads/2016/01/SFMTA-CrosswalkGuidelines-5-29-14.pdf>
7. Standard Paving Details Streets and Highways: <http://www.sfpublicworks.org/services/standards-specifications-and-plans>
8. Public Works Accessible Street Crossing Standard: <http://sfpublicworks.org/sites/default/files/K2%20DPW%20Order%28185854%29.pdf>

III. Attachments

The following documents are attached to this Director's Order to supplement the contents of the Order:

1. Attachment A: Definitions
2. Attachment B: Engineering Specifications
3. Table 1: City of San Francisco Standard Paving Palette
4. Table 2: Standard Paving Acceptable Locations Concrete and Unit Pavers
5. Table 3: Expanded Standard Paving Acceptable Locations Decorative Asphalt
6. Figure 1: Standard Paving Palette Acceptable Locations: Concrete Unit Pavers
7. Figure 2: Standard Paving Palette Acceptable Locations: Decorative Asphalt
8. Figure 3: Decorative Asphalt Patterns and Colors

IV. Areas of Use

The use and installation of the expanded standard paving systems shall comply with the following requirements and criteria shown in the attachments, tables, and figures listed above. All installations shall comply with Attachment B Engineering Specifications. The latest versions of standard paving specifications are available online at <http://sfpublicworks.org/services/standards-specifications-and-plans> and at the SF Public Works Street Use and Mapping Permit Counter.

Accessibility Performance goal: Under the Americans with Disabilities Act, maintaining a continuous Pedestrian Access Route (PAR) in the public right of way is a goal (Refer to Attachment A Definitions for distinctions between Major PAR and Minor PAR). It is important to provide adequately designed and installed paving to minimize horizontal and vertical discontinuities. Concrete unit pavers should have durable structural edges with gaps in paver joints not more than 3/8"(9.52mm).

The attachments in this order are the authoritative reference for permissible use of the expanded list of City standard paving materials. But in general:

- Colored poured-in-place concrete paving materials as shown in Table 1: City of San Francisco Standard Paving Palette may be used for all sidewalks and public right of way.
- Large scale pavers (6" x 36", 12"x18", 12"x36") must be used for the sidewalk pedestrian throughway (major pedestrian access route (PAR)). Other sizes of pavers may be used in other sidewalk areas (known as the minor PAR) as specified in the attachments.
- Stamped and painted or stamped and thermoplastic inlay asphalt may be used in crosswalks as specified in the attachments.
- Stamped and painted asphalt may be used in alleys as specified in the attachments.

A. Areas Where Integrally Colored Concrete Is Acceptable

Colored poured-in-place concrete paving material is acceptable within the right of way, including Major, Minor and non- PAR areas as defined by this Order, and as shown in Table 2: Standard Paving Acceptable Locations Concrete and Unit Pavers.

B. Areas Where Concrete Unit Paving Systems Are Acceptable

The standard unit pavers in three sizes are acceptable within the Major, Minor and non-PAR areas as defined by this Order, and as shown in Table 2: Standard Paving Acceptable Locations Concrete and Unit Pavers and Figure 1: Standard Paving Palette Acceptable Locations: Concrete Unit Pavers. Public Works determines that 6"X36", 12"X18", and 12"X36" pavers are acceptable in the Major PAR only when the permittee installs them lengthwise (parallel) in the direction of path of travel.

C. Areas Where Concrete Unit Paving Systems Are Not Acceptable

Public Works shall not accept standard unit pavers in sizes smaller than 12"X18", 6"X36" and 12"X36" within the Major PAR areas as defined by this Order, and as shown in Table 2: Standard Paving Acceptable Locations Concrete and Unit Pavers and Figure 1: Standard Paving Palette

Acceptable Locations: Concrete Unit Pavers. Public Works shall accept standard pavers in all other sizes in Minor and non-PAR areas.

D. Areas Where Concrete Unit Paving Systems May Be Acceptable If They Conform to City standards

Public Works determines that the paving palette is acceptable within the Minor PAR or other non-PAR areas as defined by this Order, and as shown in Table 2: Standard Paving Acceptable Locations Concrete and Unit Pavers and Figure 1: Standard Paving Palette Acceptable Locations: Concrete Unit Pavers. Concrete unit paving shall comply with Attachment B Engineering Specifications. Specifically:

1. Pedestrian pass-through in the Furnishing Zone (e.g. Minor PAR areas next to a parking space on the sidewalk, or edge zone/courtesy strip) in order to provide a firm, stable surface, for passengers getting out of and into parked cars.
2. Alleys. In alleys or spaces without a legislated public sidewalk that may have slow-moving vehicles and pedestrians, permittees shall design the entire width of the public right of way to support the anticipated vehicle loading to a level acceptable to Public Works. Prior Public Works approval shall include not only the paver area, but also the PAR.
3. Plazas, Courtyards, Squares, Patios, Terraces, etc. in non-PAR plaza areas. Public Works may allow all standard paving materials in these areas as long as all accessible elements provided on the site are connected by a PAR. PARs should connect to at least one installation of each accessible element. (This includes such major features as the entrance to a building off of the plaza or minor features such as a drinking fountain.)
4. Paths and areas within parks, plazas, and courtyards with vehicular loads. The permittee shall design the sub-base for concrete unit paving systems to support passenger vehicles, trucks, and buses in such a way that the sub-base shall not degrade during the life of the paving system necessary to maintain accessible features. Therefore, if any portions of the plaza, courtyard, or square routinely have vehicles, the permittee shall engineer that portion of the site to accommodate that load.

V. Maintenance Requirements

1. Colored poured-in-place concrete, concrete unit paving and decorative asphalt shall be able to be maintained via City standard mechanical sweeping equipment. Repairs shall be made with the same paving system materials, to the same tolerances and quality standards.

WHEREAS, Public Works determined that the use of the attached standard paving materials is beneficial to the City and County of San Francisco, the Director of Public Works approves its use as described above for future roadway, streetscape, and building projects.

APPROVED:

Mohammed Nuru

Director of Public Works

RECOMMENDED:

John F. Thomas

City Engineer and

Deputy Director for Infrastructure

RECOMMENDED:

Patrick Rivera

Bureau Manager, Engineering

REVIEWED BY:

Deputy Director, Operations

- Bureau Manager, Street Use and Mapping
- Deputy Division Manager, Streets and Structures
- Deputy Division Manager, Industrial Systems and Buildings
- Bureau Manager, Landscape Architecture
- Acting Bureau Manager, Project Management and Construction
- Disability Access Coordinator

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Rivera, Patrick
Bureau Manager, Engineering

X

Thomas, John
City Engineer and Deputy Director

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Nuru, Mohammed
Director

San Francisco Public Works Standard Paving Director's Order

Attachment A

Definitions

1. **Concrete unit pavers** – a paving system of solid interlocking concrete pavers of specific sizes as called out in Table 1, Standard Paving Palette
2. **Colored poured-in-place concrete** – Color pigments added to standard concrete mixes to match the colors on the City of San Francisco Standard Paving Palette. Colors may match the palette or be an approved equal. Table 1, Standard Paving Palette
3. **Pedestrian Accessible Route (PAR, see 2010 ADA)** - The pedestrian accessible route (PAR) is a continuous and unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path. A pathway with continuous connection of not less than 48 inches wide from the pedestrian zone of the sidewalk (Throughway Zone – see below) to primary property entry points, parking areas, public transportation, crosswalks, curb ramps, accessible parking zones, passenger loading zones, pedestrian refuge islands, and/or other destinations.

The PAR shall be a continuous firm, stable, slip-resistant and smooth* surface. The cross-slope of a PAR when constructed, and in use, shall not exceed 2.0%. In the sidewalk pedestrian Throughway Zone (as defined in the Better Streets Plan), the accessible route includes the width of the pedestrian throughway, typically not less than 72 inches in clear width. The PAR may pass through other sidewalk zones as defined in the Better Streets Plan, including the Frontage, Furnishings, Curb, and Shy zones. In other sites and facilities, the accessible route is that which connects all elements and program areas that are required to be accessible. At least one area of each type of distinct program or use shall be served by the PAR.

NOTE: Concrete unit pavers, when not properly designed and installed, can present challenges for people with disabilities, especially wheelchair users. Frequent joints and pavers with deep bevels may create vibration for users of wheelchairs and other mobility assistive devices.

*Smooth: an even and regular surface free from perceptible projections, lumps, or indentations.

- 4.A. **Major PAR – Pedestrian access routes** traversing public right of way sidewalks, curb ramps, crosswalks and other components of the public rights-of-way which are essential elements that define an accessible pedestrian infrastructure and the accessible environment. Major PAR includes but is not limited to: those shown on “Table 1: Standard Paving Palette, latest edition and Figure 1: Standard Paving Palette Acceptable Locations Concrete Unit Pavers

4.B. Minor PAR - Pedestrian circulation paths and areas that are supplemental to Major PAR, and which provide access to other elements and areas that may not be specifically required to be made accessible, but which may be accessed by or used by individuals with disabilities. Minor PAR include but are not limited to: those shown on “Table 1: Standard Paving Palette”, latest edition and Figure 1: Standard Paving Palette Acceptable Locations Concrete Unit Pavers

5. Types of roadways (FHWA Functional Classification System):

- a. Sidewalks, Paths, Walks, etc.: Light duty - golf carts, wheelchairs, etc.
- b. Alleys: Public Right of Way that has a maximum paved width of 25 feet and a minimum sidewalk width of 4 feet on each side. An alley with a sidewalk on only one side may be allowed only by variance to the SF DPW Subdivision Regulations.
- d. Local or Collector Streets: Medium duty - passenger vehicles predominate, occasional garbage, delivery and utility trucks.
- e. Collector or Arterial Streets: Heavy duty - trucks, vans, etc. High traffic volume.
- f. Arterial Streets and Truck Routes: Extreme heavy duty - fire trucks, utility vehicles, buses. Very high traffic volume.

The Better Streets Plan also has defined Standard Street Types (Chapter 4.0, pages 55 and 56. The SFDPW Subdivision Regulations 2015 also contains definitions of Street Types on Pages 51-53 http://sfpublicworks.org/sites/default/files/4740-2015%20Subdivision%20Regulations_final.pdf

San Francisco Public Works Standard Paving Director's Order

Attachment B

Engineering Specifications -

In order for Public Works to approve the use of concrete unit pavers in the right of way in allowable areas discussed in Section IV (A through D), the project needs to provide, at a minimum, the following information:

1. Geotechnical Testing & Report - Applicants shall submit test results from a soil boring log to characterize the soil and groundwater profile. R-values and Traffic Index shall be provided to determine the depth and compaction of subbase
2. Drawings & Specifications & Design Criteria - Applicants must submit an engineering scale design plan for any areas that will have to sustain a vehicle load with specifications for:
 - a. Depth of the paver sub-base: These should be supported by engineering calculations and/or geotechnical report.
 - b. Sub-base and materials (aggregate) specifications (specifying depth and type of rock base, where applicable). Products and materials to be reviewed and approved by Public Works before use.
 - c. Compaction. Test results and reports to be reviewed and approved by Public Works. Proper strength to withstand H-20 vehicular loads when used in driveways, shared streets/spaces, parking lots, parking strips, and alleyways.
 - d. Products must have proper strength to withstand pedestrian loads when used in sidewalks, park lands, pedestrian/bike paths, and plazas.
 - e. Concrete Unit Paver Criteria: Solid Concrete Pavers shall meet ASTM C 936-16: Standard Specification for Solid Concrete Interlocking Paving Units, and shall have a minimum thickness of the pavers for PICP subject to vehicular traffic is 3 1/8 inches. 2 3/8" thick pavers may be used in pedestrian areas. All pavers shall be manufactured to above criteria for size, manufacturing variation, compressive strength, and tolerances per industry standards (e.g.: *Interlocking Concrete Pavement Institute*, www.icpi.org)
 - Aspect Ratio (length divided by thickness): Concrete Unit Pavers for pedestrian applications shall have maximum aspect ratio of 5:1. Pavers for vehicular applications shall have a maximum aspect ratio of 3:1.

- Gap Sizes: Concrete Unit Pavers shall have gaps not less than 1/4" (6.35mm), and not more than 3/8" (9.52mm).
 - Concrete Unit Paver systems with gaps of 1/4" shall be installed only with plastic spacers, or using pavers with integral precast interlocking spacers.
 - Concrete Unit Paver systems with gaps of 3/8" shall only be installed using pavers with integral precast interlocking spacers.
- Tolerances: Construction tolerances (1/16") for installed paver gaps under this *Order* shall allow up to 5/16" gaps for paver systems designed with 1/4" spacers. For paver systems designed with 3/8" joints paver gaps, when installed, shall not exceed 7/16" (11.11mm) or the installation will be subject to rejection and reconstruction. Any gaps in a paver installation that accept a 1/2" sphere, shall be rejected and must be reconstructed.
- Warpage, Lippage and Roughness: Warpage is the variation in the planarity of the walking surface of an individual paver. Lippage is the variation in the height of the walking surface of adjacent installed pavers and adjoining materials, defined in ANSI (American National Standards Institute) Standards A108/A118/A136. Roughness, in the context of accessibility for persons with disabilities, is a measurement of whole-body vibrations caused by traveling over a surface in a wheelchair. The warpage, lippage and roughness of paver units and paver installations shall be in accordance with the following:
 - Warpage- The warpage limits in ANSI A137.1:2017 is derived from ASTM International C485-16 – Standard Test Method for Measuring Warpage of Ceramic Tile. Paver warpage shall comply with ANSI A137.1:2017, as referenced to floor tile meeting the dimensional requirements for rectified tile. For example; edge warpage shall be within the following range: at minimum the lesser of -0.75% of edge length or -0.08 inch (-2.0 mm), and at maximum the lesser of 0.75% of edge length or 0.08 inch (2.0 mm). In order to avoid excessive concentration of paver warpage, one tenth of the length of the measured span of the paver shall not represent more than 25% of the total allowable warpage. The edges of other walking surfaces adjoining pavers must also comply with this standard in order to control lippage.
 - Lippage: No greater than 5/64 (0.08) inch (2.0 mm) difference in height between adjacent pavers, and between pavers and adjacent surfaces. Pavers installed in a staggered pattern (such as running bond) must be offset no more than 1/3 of the paver

edge dimension if any edge of the paver is greater than 18 inches.

- Roughness: ASTM E3028-16e1 Standard Practice for Computing Wheelchair Pathway Roughness Index as Related to Comfort, Passability, and Whole Body Vibrations from Longitudinal Profile Measurements. The roughness index shall not exceed 0.60 in/ft.
- See also the United States Access Board's completed research: <https://www.access-board.gov/research/completed-research>
 - Dimensional Tolerances in Construction and for Surface Accessibility
 - Development of Surface Roughness Standards for Pathways Used by Wheelchair Users: Final Report

- f. Unit Paver Edge Containment: Unit paver installations must be contained by a rigid header curb edge, or other rigid interface such as a wall. Wood containment edging is not acceptable.
 - Concrete header curbs shall be minimum 4" wide x the full depth of the stone base course(s), for applications with only pedestrian loading requirements. For applications with vehicular loading requirements, the concrete header curb shall be minimum 6" wide x full depth of the stone base course(s) – curb reinforcement to be determined per project requirements.
 - Upper edges of adjacent headers, curb and other materials: Bevels at upper edges must not exceed 1/8 inch, eased or tooled upper edges must not exceed 1/8 inch radius. 90 degree square upper edges may be acceptable if appropriate to the material.
 - Metal headers must be traffic rated.
- g. Design of the accessible route: Pedestrian access route (PAR) shall be constructed to have a running slope as closely matched as feasible to the running slope of the adjoining roadway. Acceptable design cross slope range is 1% minimum to 1.67% maximum and acceptable constructed cross slope range is 0.5% minimum to 2% maximum. A level concrete landing shall be installed at accessible entrances and exits at facilities within the PAR.
- h. Unit Pavers within the PAR shall be installed with 90 degree square edges, or with top edges beveled 1/8 inch (3mm) or less.

- i. Slip Resistance: Pavers shall meet criteria set forth in the DPW Director's Order for Slip Resistance.
4. Quality control and supervision of the project – Applicant must submit a plan for Quality Control and supervision of the project, including excavation, compaction, and installation of the finished concrete unit paver pavement.

TABLE 1: STANDARD PAVING PALETTE

	POURED-IN-PLACE CONCRETE			
	Colors			Manufacturers
1	Dark Grey:	860 "Jet Black"	7.5lbs per 94lb sack	Davis Colors; or equal
		C-34 "Dark Grey"		Scofield; or equal
2	Medium Grey:	860 "Grey Stone"	1.5lb per 94lb sack	Davis Colors; or equal
		1266 "Cool Grey"		Scofield; or equal
3	Dark Tan:	677 "Mesquite"	1.5lb per 94lb sack	Davis Colors; or equal
		SG-677 "Soft Chestnut"		Scofield; or equal
4	Medium Tan:	5237 "Sandstone"	1.5lb per 94lb sack	Davis Colors; or equal
		5237 "San Diego Buff"		Scofield; or equal
	Finishes ****			
1	Medium Broom			
2	Water Jet, or Acid Wash or similar finish			
3	Sparkle			
	UNIT PAVERS			
	Dimensions			Manufacturers
1	Square: 12" x 12"			Hanover*, Pacific Interlocking Paving (PIP)*, Basalite; or equal
2	Rectangular: 4" x 8"			Acker-stone, Hanover*, Basalite; or equal
3	Linear: 3" x 18", 12"x18"			Stepstone, Hanover*, Basalite; or equal
4	Large**: 6" x 36", 12"x18", 12"x36"			Hanover, Stepstone; or equal
	Colors/ Finishes			Manufacturers
1	Dark Grey:	"Charcoal" / "Shot Blast"		Acker-stone; or equal
		"Charcoal" / "Tudor"		Hanover; or equal
		"French Grey" / "Light Sandblast"		Stepstone; or equal
		"Charcoal" / "Estate"		PIP; or equal
		"Truckee" / "Ground Face"		Basalite; or equal
2	Medium Grey:	"Agave" / "Shot Blast"		Acker-stone; or equal
		"Limestone Grey" / "Tudor"		Hanover; or equal
		"Porcelain" / "Light Sandblast"		Stepstone; or equal
		"Grey" / "Estate"		PIP; or equal
		"Ukiah" / "Ground Face"		Basalite; or equal
3	Dark Tan:	"Tan" / "Shot Blast"		Acker-stone; or equal
		"Chocolate" / "Tudor"		Hanover; or equal
		"Espresso Brown" / "Light Sandblast"		Stepstone; or equal
		"Brown" / "Estate"		PIP; or equal
		"Healdsburg" / "Ground Face"		Basalite; or equal
4	Medium Tan:	"Carmel" / "Shot Blast"		Acker-stone; or equal
		"Cream" / "Tudor"		Hanover; or equal
		"Almond" / "Light Sandblast"		Stepstone; or equal
		"Tan" / "Estate"		PIP; or equal
		"Indio" / "Ground Face"		Basalite; or equal
	DECORATIVE ASPHALT***			
1	Stamped Asphalt with Surface Color			
	Colors/Patterns			Product and Manufacturers
	Grey, Light Grey, Sand, Tan, Santa Fe Clay, Brick Red; See Figure 3 for standard patterns			StreetPrint by Integrated Paving Concepts, Inc.; StreetBond by Ennis-Flint; or equal
2	Thermoplastic Inlay			
	Colors/Patterns			Product and Manufacturers
	Custom colors and patterns per SFMTA Crosswalk Guidelines.			Duratherm by Ennis-Flint; or equal
3	Thermoplastic Overlay			
	Colors/Patterns			Product and Manufacturers
	Colors and patterns reviewed and approved on a per project basis			TrafficPatternsXD by Ennis-Flint; or equal

See Attachment B - Specifications for detailed requirements.

- *Hanover (12"x12," "4x8," 3"x18," 6"x36") and Pacific Interlocking Paving (all sizes) pavers have integrated spacers, and for the purposes of installation details shall be referred to as "interlocking." All other pavers by Hanover, Acker-stone, Basalite, and Stepstone lack integrated spacers and shall be referred to as "non-interlocking."
- **The large size paver is the only size allowable in the major PAR; it must be placed with the longest dimension parallel with the direction of travel.
- ***Refer to SFMTA Crosswalk Guidelines for decorative asphalt crosswalk requirements: <http://www.sfbetterstreets.org/wp-content/uploads/2016/01/SFMTA-CrosswalkGui>
- ****Poured in place paving finishes must result in a slip-resistant finish that does not expose rounded aggregate that may not be slip-resistant and too rough for pedestrians. The concrete mix design for such finishes must use an angular or crushed exposed aggregate and all such exposed aggregate shall pass through a 1/4" sieve.

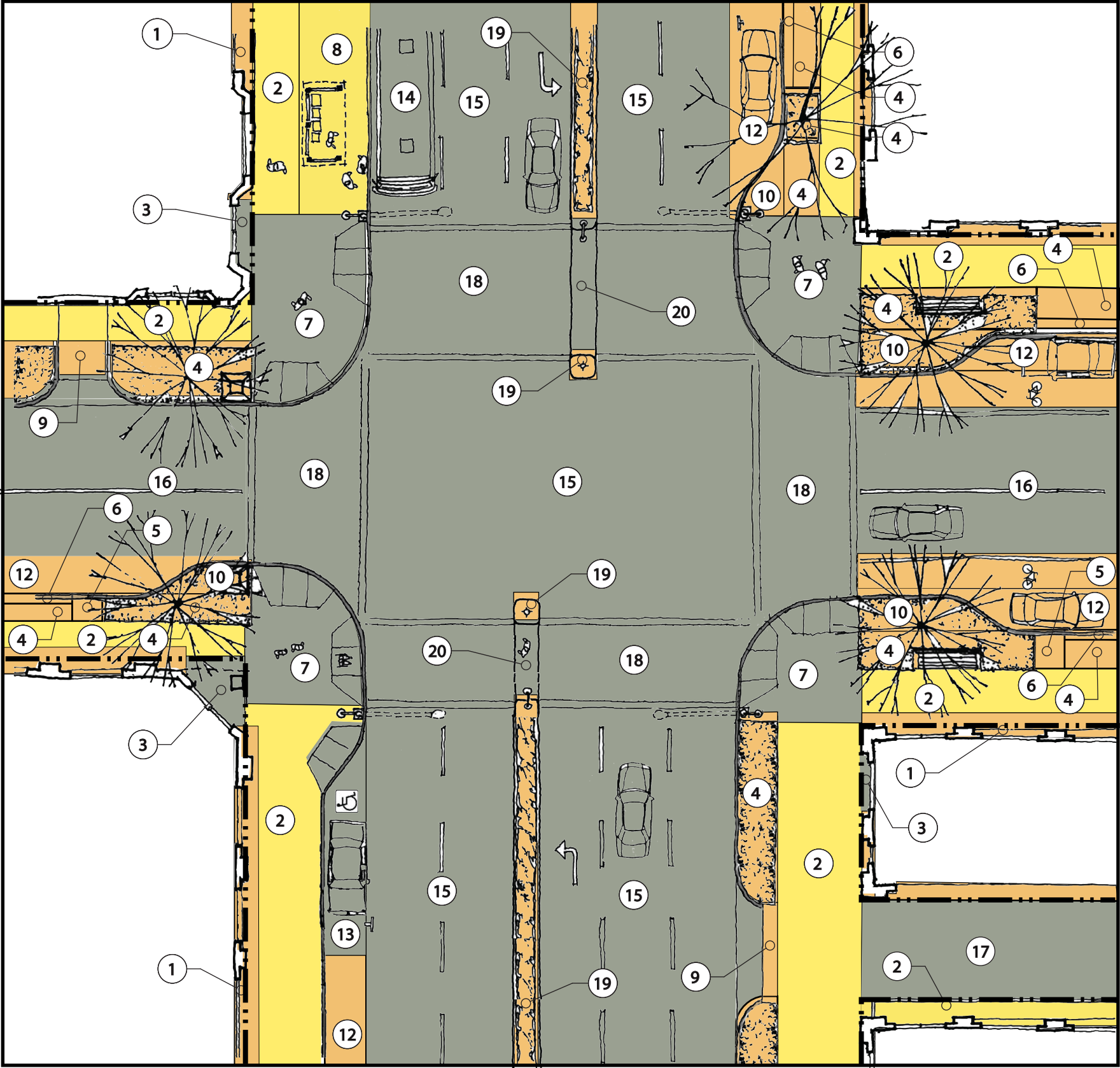
TABLE 2: STANDARD PAVING ACCEPTABLE LOCATIONS CONCRETE AND UNIT PAVERS

			FIGURE 1		FIGURE 1 (Note 3)
Figure Keynote #	PAR Level	LOCATION ¹	All Paver Sizes	Large Scale Pavers Only (See table 1 for sizes)	Colored Poured in Place Concrete
Sidewalks					
1	minor	Building Frontage Zone	Acceptable	Acceptable	Acceptable
2	major	Pedestrian Throughway Zone	Not Acceptable	Acceptable	Acceptable
3	major	Building Access / Maneuvering Area	Not Acceptable	Not Acceptable	Acceptable
4	minor	Furnishing Zone	Acceptable	Acceptable	Acceptable
5	minor	Furnishing Zone: 4-ft Pedestrian Pass-Through (for street parking)	Acceptable	Acceptable	Acceptable
6	minor	Edge Zone (aka. Curb Zone, or Courtesy Strip at street parking)	Acceptable	Acceptable	Acceptable
7	major	Corner Zone	Not Acceptable	Not Acceptable	Acceptable
8	major	Transit Boarding Zone (on sidewalk & in raised islands)	Not Acceptable	Acceptable	Acceptable
9	minor	Driveway Zone (except Driveway Curb Cut)	Acceptable	Acceptable	Acceptable
10	minor	Corner Bulb Out / Extension Zone	Acceptable	Acceptable	Acceptable
11	minor	Mid- Block Bulb Out (Not Shown in Figures 1-2)	Acceptable	Acceptable	Acceptable
Streets					
12	minor	Non-Accessible Parking Lane (with or without Combined Curb Gutter)	Acceptable	Acceptable	Acceptable
13	major	Accessible Parking Lane (Blue Curb) / Loading Zone (White Curb)	Not Acceptable	Not Acceptable	Acceptable
14	none	Bus Pad (heavy loading zone)	Not Acceptable	Not Acceptable	Acceptable
15	none	Traffic Lane & Bike Lane (Non-Separated): Arterials, Collectors, Peak Hour Lanes, Transit or Truck routes, etc.	Not Acceptable	Not Acceptable	Acceptable
16	minor	Traffic Lane & Bike Lane (Non-Separated): Neighborhood Residential, Frontage Roads, Lanes, etc.	Not Acceptable	Not Acceptable	Acceptable
17	minor	Alleys (pavers require approval by Public Works Director)	Not Acceptable	Not Acceptable	Acceptable
18	major	Crosswalk	Not Acceptable	Not Acceptable	Acceptable
19	minor	Median: Non-PAR Area	Acceptable	Acceptable	Acceptable
20	major	Median, Pedestrian Refuge / Pass-Through	Not Acceptable	Not Acceptable	Acceptable
Other Public Spaces (Not shown on Figures 1-2)					
21	major	Bikeway and Pedway, Shared: PAR Area	Not Acceptable	Not Acceptable	Acceptable
22	minor	Bikeway, Separate: Non-PAR Area	Acceptable	Acceptable	Acceptable
23	major	Plaza, Courtyard, Square, Patio, and Terrace: PAR Area	Not Acceptable	Not Acceptable	Acceptable
24	minor	Plaza, Courtyard, Square, Patio, and Terrace: Non-PAR Area	Acceptable	Acceptable	Acceptable
25	minor	Parking Lot: Non-PAR Area	Acceptable	Acceptable	Acceptable
26	major	Accessible Parking Spaces and PAR within Parking Lots: PAR Areas	Not Acceptable	Not Acceptable	Acceptable
27	minor	Paths with Vehicular Loads: Non-PAR Area	Acceptable	Acceptable	Acceptable
28	minor	Driveways: Non-PAR Area	Acceptable	Acceptable	Acceptable

1. When two ROW zones intersect, areas of higher PAR classification will take precedent.

2 Gap sizes: Concrete Unit Pavers shall have gaps not less than 1/4" (6.35mm), and not more than 3/8" (9.52mm). Unit Pavers within the PAR should be installed with top edges beveled 1/8 inch or less.

FIGURE 1
STANDARD PAVING PALETTE ACCEPTABLE LOCATIONS: **CONCRETE UNIT PAVERS**



LEGEND

- | | | |
|-------------------------------------|----------------|-------------------------------------|
| ACCEPTABLE: ALL PAVER SIZES | NOT ACCEPTABLE | MAJOR PAR (PEDESTRIAN ACCESS ROUTE) |
| ACCEPTABLE: LARGE SCALE PAVERS ONLY | BUILDING | PROPERTY LINE |

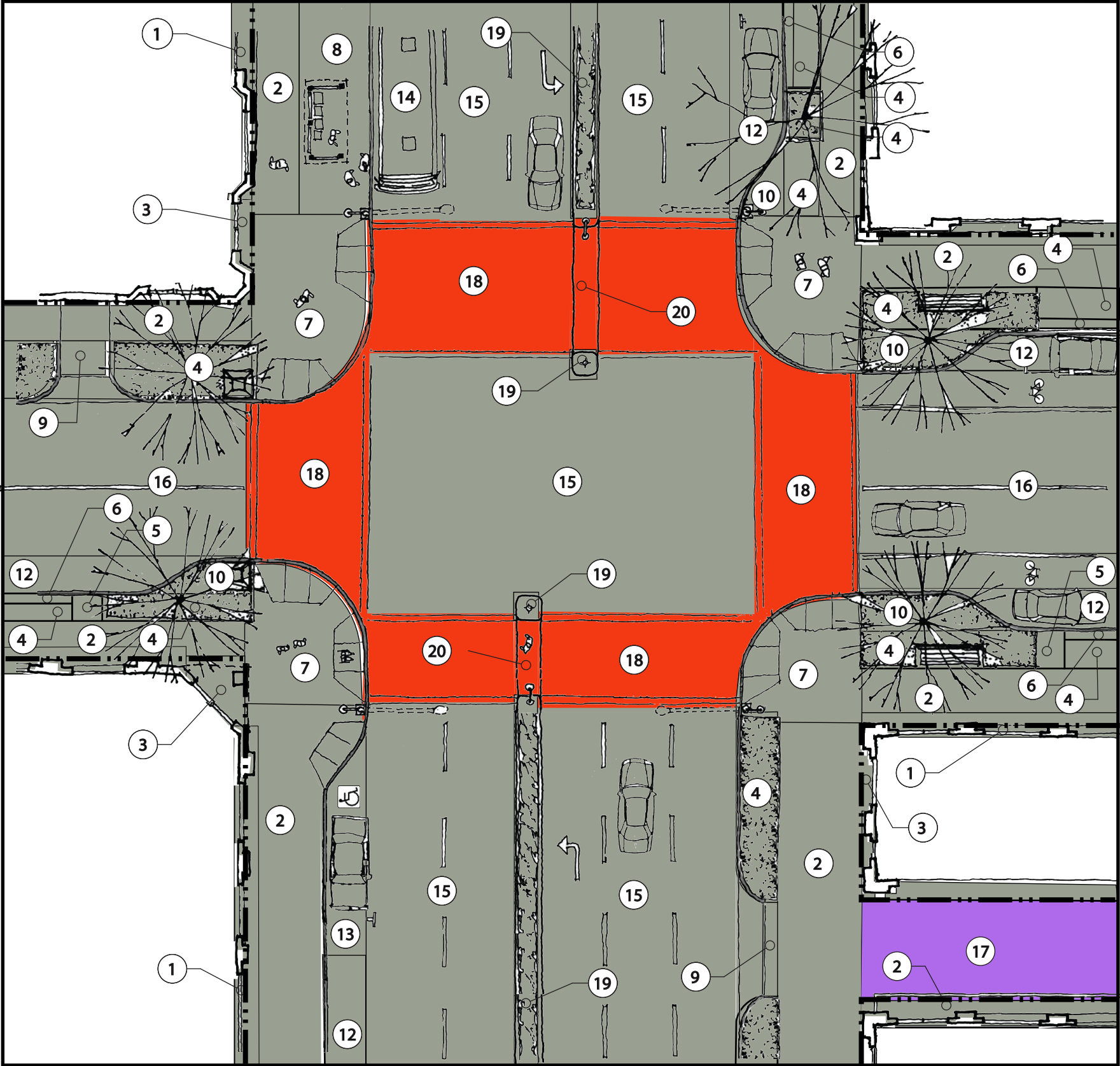
SIDEWALKS AND STREETS

- BUILDING FRONTAGE ZONE
- PEDESTRIAN THROUGHWAY ZONE
- BUILDING ACCESS / MANEUVERING AREA
- FURNISHING ZONE
- FURNISHING ZONE - 4-FT PEDESTRIAN PASS-THROUGH (AT STREET PARKING)
- EDGE ZONE - (AKA, CURB ZONE, OR COURTESY STRIP AT STREET PARKING)
- CORNER ZONE
- TRANSIT BOARDING ZONE (ON SIDEWALK AND IN RAISED ISLANDS)
- DRIVEWAY ZONE (EXCEPT DRIVEWAY CURB CUT)
- CORNER BULB OUT / EXTENSION ZONE
- MID-BLOCK BULB OUT (NOT SHOWN IN THIS FIGURE)
- NON ACCESSIBLE PARKING LANE (W OR W/OUT COMBINED CURB GUTTER)
- ACCESSIBLE PARKING LANE (BLUE CURB) / LOADING ZONE (WHITE CURB)
- BUS PAD (HEAVY LOADING)
- TRAFFIC LANES AND BIKE LANES ON ARTERIALS, COLLECTORS, PEAK HOUR LANES, TRANSIT OR TRUCK ROUTES, ETC.
- TRAFFIC LANES AND BIKE LANES ON NEIGHBORHOOD RESIDENTIAL, FRONTAGE ROADS, LANES, ETC.
- ALLEY (REQUIRES APPROVAL BY PUBLIC WORKS DIRECTOR)
- CROSS WALKS
- MEDIANS
- MEDIANS: PEDESTRIAN REFUGE / PASS THROUGH

NOTES

1. FIGURE PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY. ALL TREES, PROPERTY LINES, VEGETATION, STREET FURNISHINGS, AND CROSSWALKS ARE APPROXIMATE AND BASED ON BETTER STREET PLAN RENDERINGS.
2. PAVEMENT DESIGN MUST MEET ALL APPLICABLE CITY CODES AND STANDARDS.
3. POURED-IN-PLACE CONCRETE IS ACCEPTABLE IN LOCATIONS 1-28 (SEE TABLE 2 FOR LOCATIONS NOT SHOWN ON THIS PLAN)

FIGURE 2
STANDARD PAVING PALETTE ACCEPTABLE LOCATIONS: **DECORATIVE ASPHALT**



LEGEND

- ACCEPTABLE: STAMPED/PAINTED & THERMOPLASTIC INLAY ASPHALT

ACCEPTABLE: STAMPED/PAINTED ASPHALT
- NOT ACCEPTABLE

BUILDING
- MAJOR PAR (PEDESTRIAN ACCESS ROUTE)

PROPERTY LINE

SIDEWALKS AND STREETS

- 1

BUILDING FRONTAGE ZONE
- 2

PEDESTRIAN THROUGHWAY ZONE
- 3

BUILDING ACCESS / MANEUVERING AREA
- 4

FURNISHING ZONE
- 5

FURNISHING ZONE - 4-FT PEDESTRIAN PASS-THROUGH (AT STREET PARKING)
- 6

EDGE ZONE - (AKA, CURB ZONE, OR COURTESY STRIP AT STREET PARKING)
- 7

CORNER ZONE
- 8

TRANSIT BOARDING ZONE (ON SIDEWALK AND IN RAISED ISLANDS)
- 9

DRIVEWAY ZONE (EXCEPT DRIVEWAY CURB CUT)
- 10

CORNER BULB OUT / EXTENSION ZONE
- 11

MID-BLOCK BULB OUT (NOT SHOWN IN THIS FIGURE)
- 12

NON ACCESSIBLE PARKING LANE (W OR W/OUT COMBINED CURB GUTTER)
- 13

ACCESSIBLE PARKING LANE (BLUE CURB) / LOADING ZONE (WHITE CURB)
- 14

BUS PAD (HEAVY LOADING)
- 15

TRAFFIC LANES AND BIKE LANES ON ARTERIALS, COLLECTORS, PEAK HOUR LANES, TRANSIT OR TRUCK ROUTES, ETC.
- 16

TRAFFIC LANES AND BIKE LANES ON NEIGHBORHOOD RESIDENTIAL, FRONTAGE ROADS, LANES, ETC.
- 17

ALLEYS (REQUIRES APPROVAL BY PUBLIC WORKS DIRECTOR)
- 18

18

CROSS WALKS
- 19

19

MEDIANS
- 20

20

MEDIANS: PEDESTRIAN REFUGE / PASS THROUGH

NOTES

1. FIGURE PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY. ALL TREES, PROPERTY LINES, VEGETATION, STREET FURNISHINGS, AND CROSSWALKS ARE APPROXIMATE AND BASED ON BETTER STREET PLAN RENDERINGS.
2. PAVEMENT DESIGN MUST MEET ALL APPLICABLE CITY CODES AND STANDARDS.
3. SEE TABLE 1 FOR LOCATIONS NOT SHOWN ON THIS PLAN.
4. SEE TABLE 3 FOR DECORATIVE ASPHALT PATTERNS AND COLORS.

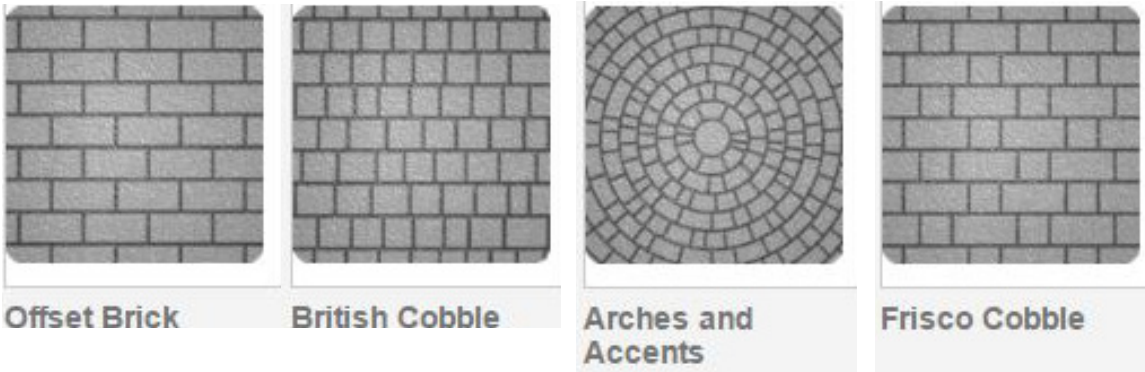
FIGURE 3

DECORATIVE ASPHALT PATTERNS AND COLORS

STAMPED ASPHALT WITH SURFACE COLOR

Standard Stamp Patterns:

Product: StreetPrint, by Integrated Paving Concepts, Inc., or equal.



Manufacturer: StreetBond, or equal.

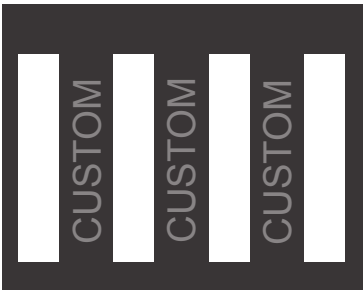
Grey, Light Grey, Sand, Tan, Santa Fe Clay, Brick Red

THERMOPLASTIC INLAY

Product: Duratherm, by Integrated Paving Concepts, Inc. or equal.

Custom Patterns:

Decorative asphalt can be installed in between SFMTA standard continental striping (see right). Decorative asphalt crosswalks require SFMTA approval



THERMOPLASTIC OVERLAY

Product: TrafficPatternsXD by Ennis-Flint, or equal.

Custom Patterns:

Colors and patterns reviewed and approved on a per project basis.

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Operating Systems:	Windows2000? or WindowsXP?
Browsers (for SENDERS):	Internet Explorer 6.0? or above
Browsers (for SIGNERS):	Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)
Email:	Access to a valid email account
Screen Resolution:	800 x 600 minimum
Enabled Security Settings:	<ul style="list-style-type: none">•Allow per session cookies•Users accessing the internet behind a Proxy Server must enable HTTP 1.1 settings via proxy connection

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San Francisco Public Works Standard Paving Director's Order

Attachment A

Definitions

1. **Concrete unit pavers** – a paving system of solid interlocking concrete pavers of specific sizes as called out in Table 1, Standard Paving Palette
2. **Colored poured-in-place concrete** – Color pigments added to standard concrete mixes to match the colors on the City of San Francisco Standard Paving Palette. Colors may match the palette or be an approved equal. Table 1, Standard Paving Palette
3. **Pedestrian Accessible Route (PAR, see 2010 ADA)** - The pedestrian accessible route (PAR) is a continuous and unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path. A pathway with continuous connection of not less than 48 inches wide from the pedestrian zone of the sidewalk (Throughway Zone – see below) to primary property entry points, parking areas, public transportation, crosswalks, curb ramps, accessible parking zones, passenger loading zones, pedestrian refuge islands, and/or other destinations.

The PAR shall be a continuous firm, stable, slip-resistant and smooth* surface. The cross-slope of a PAR when constructed, and in use, shall not exceed 2.0%. In the sidewalk pedestrian Throughway Zone (as defined in the Better Streets Plan), the accessible route includes the width of the pedestrian throughway, typically not less than 72 inches in clear width. The PAR may pass through other sidewalk zones as defined in the Better Streets Plan, including the Frontage, Furnishings, Curb, and Shy zones. In other sites and facilities, the accessible route is that which connects all elements and program areas that are required to be accessible. At least one area of each type of distinct program or use shall be served by the PAR.

NOTE: Concrete unit pavers, when not properly designed and installed, can present challenges for people with disabilities, especially wheelchair users. Frequent joints and pavers with deep bevels may create vibration for users of wheelchairs and other mobility assistive devices.

*Smooth: an even and regular surface free from perceptible projections, lumps, or indentations.

- 4.A. **Major PAR** – Pedestrian access routes traversing public right of way sidewalks, curb ramps, crosswalks and other components of the public rights-of-way which are essential elements that define an accessible pedestrian infrastructure and the accessible environment. Major PAR includes but is not limited to: those shown on “Table 1: Standard Paving Palette, latest edition and Figure 1: Standard Paving Palette Acceptable Locations Concrete Unit Pavers

4.B. Minor PAR - Pedestrian circulation paths and areas that are supplemental to Major PAR, and which provide access to other elements and areas that may not be specifically required to be made accessible, but which may be accessed by or used by individuals with disabilities. Minor PAR include but are not limited to: those shown on “Table 1: Standard Paving Palette”, latest edition and Figure 1: Standard Paving Palette Acceptable Locations Concrete Unit Pavers

5. Types of roadways (FHWA Functional Classification System):

- a. Sidewalks, Paths, Walks, etc.: Light duty - golf carts, wheelchairs, etc.
- b. Alleys: Public Right of Way that has a maximum paved width of 25 feet and a minimum sidewalk width of 4 feet on each side. An alley with a sidewalk on only one side may be allowed only by variance to the SF DPW Subdivision Regulations.
- d. Local or Collector Streets: Medium duty - passenger vehicles predominate, occasional garbage, delivery and utility trucks.
- e. Collector or Arterial Streets: Heavy duty - trucks, vans, etc. High traffic volume.
- f. Arterial Streets and Truck Routes: Extreme heavy duty - fire trucks, utility vehicles, buses. Very high traffic volume.

The Better Streets Plan also has defined Standard Street Types (Chapter 4.0, pages 55 and 56. The SFDPW Subdivision Regulations 2015 also contains definitions of Street Types on Pages 51-53 http://sfpublicworks.org/sites/default/files/4740-2015%20Subdivision%20Regulations_final.pdf

San Francisco Public Works Standard Paving Director's Order

Attachment B

Engineering Specifications -

In order for Public Works to approve the use of concrete unit pavers in the right of way in allowable areas discussed in Section IV (A through D), the project needs to provide, at a minimum, the following information:

1. Geotechnical Testing & Report - Applicants shall submit test results from a soil boring log to characterize the soil and groundwater profile. R-values and Traffic Index shall be provided to determine the depth and compaction of subbase
2. Drawings & Specifications & Design Criteria - Applicants must submit an engineering scale design plan for any areas that will have to sustain a vehicle load with specifications for:
 - a. Depth of the paver sub-base: These should be supported by engineering calculations and/or geotechnical report.
 - b. Sub-base and materials (aggregate) specifications (specifying depth and type of rock base, where applicable). Products and materials to be reviewed and approved by Public Works before use.
 - c. Compaction. Test results and reports to be reviewed and approved by Public Works. Proper strength to withstand H-20 vehicular loads when used in driveways, shared streets/spaces, parking lots, parking strips, and alleyways.
 - d. Products must have proper strength to withstand pedestrian loads when used in sidewalks, park lands, pedestrian/bike paths, and plazas.
 - e. Concrete Unit Paver Criteria: Solid Concrete Pavers shall meet ASTM C 936-16: Standard Specification for Solid Concrete Interlocking Paving Units, and shall have a minimum thickness of the pavers for PICP subject to vehicular traffic is 3 1/8 inches. 2 3/8" thick pavers may be used in pedestrian areas. All pavers shall be manufactured to above criteria for size, manufacturing variation, compressive strength, and tolerances per industry standards (e.g.: *Interlocking Concrete Pavement Institute*, www.icpi.org)
 - Aspect Ratio (length divided by thickness): Concrete Unit Pavers for pedestrian applications shall have maximum aspect ratio of 5:1. Pavers for vehicular applications shall have a maximum aspect ratio of 3:1.

- Gap Sizes: Concrete Unit Pavers shall have gaps not less than 1/4" (6.35mm), and not more than 3/8" (9.52mm).
 - Concrete Unit Paver systems with gaps of 1/4" shall be installed only with plastic spacers, or using pavers with integral precast interlocking spacers.
 - Concrete Unit Paver systems with gaps of 3/8" shall only be installed using pavers with integral precast interlocking spacers.
- Tolerances: Construction tolerances (1/16") for installed paver gaps under this *Order* shall allow up to 5/16" gaps for paver systems designed with 1/4" spacers. For paver systems designed with 3/8" joints paver gaps, when installed, shall not exceed 7/16" (11.11mm) or the installation will be subject to rejection and reconstruction. Any gaps in a paver installation that accept a 1/2" sphere, shall be rejected and must be reconstructed.
- Warpage, Lippage and Roughness: Warpage is the variation in the planarity of the walking surface of an individual paver. Lippage is the variation in the height of the walking surface of adjacent installed pavers and adjoining materials, defined in ANSI (American National Standards Institute) Standards A108/A118/A136. Roughness, in the context of accessibility for persons with disabilities, is a measurement of whole-body vibrations caused by traveling over a surface in a wheelchair. The warpage, lippage and roughness of paver units and paver installations shall be in accordance with the following:
 - Warpage- The warpage limits in ANSI A137.1:2017 is derived from ASTM International C485-16 – Standard Test Method for Measuring Warpage of Ceramic Tile. Paver warpage shall comply with ANSI A137.1:2017, as referenced to floor tile meeting the dimensional requirements for rectified tile. For example; edge warpage shall be within the following range: at minimum the lesser of -0.75% of edge length or -0.08 inch (-2.0 mm), and at maximum the lesser of 0.75% of edge length or 0.08 inch (2.0 mm). In order to avoid excessive concentration of paver warpage, one tenth of the length of the measured span of the paver shall not represent more than 25% of the total allowable warpage. The edges of other walking surfaces adjoining pavers must also comply with this standard in order to control lippage.
 - Lippage: No greater than 5/64 (0.08) inch (2.0 mm) difference in height between adjacent pavers, and between pavers and adjacent surfaces. Pavers installed in a staggered pattern (such as running bond) must be offset no more than 1/3 of the paver

edge dimension if any edge of the paver is greater than 18 inches.

- Roughness: ASTM E3028-16e1 Standard Practice for Computing Wheelchair Pathway Roughness Index as Related to Comfort, Passability, and Whole Body Vibrations from Longitudinal Profile Measurements. The roughness index shall not exceed 0.60 in/ft.
 - See also the United States Access Board's completed research: <https://www.access-board.gov/research/completed-research>
 - Dimensional Tolerances in Construction and for Surface Accessibility
 - Development of Surface Roughness Standards for Pathways Used by Wheelchair Users: Final Report
- f. Unit Paver Edge Containment: Unit paver installations must be contained by a rigid header curb edge, or other rigid interface such as a wall. Wood containment edging is not acceptable.
- Concrete header curbs shall be minimum 4" wide x the full depth of the stone base course(s), for applications with only pedestrian loading requirements. For applications with vehicular loading requirements, the concrete header curb shall be minimum 6" wide x full depth of the stone base course(s) – curb reinforcement to be determined per project requirements.
 - Upper edges of adjacent headers, curb and other materials: Bevels at upper edges must not exceed 1/8 inch, eased or tooled upper edges must not exceed 1/8 inch radius. 90 degree square upper edges may be acceptable if appropriate to the material.
 - Metal headers must be traffic rated.
- g. Design of the accessible route: Pedestrian access route (PAR) shall be constructed to have a running slope as closely matched as feasible to the running slope of the adjoining roadway. Acceptable design cross slope range is 1% minimum to 1.67% maximum and acceptable constructed cross slope range is 0.5% minimum to 2% maximum. A level concrete landing shall be installed at accessible entrances and exits at facilities within the PAR.
- h. Unit Pavers within the PAR shall be installed with 90 degree square edges, or with top edges beveled 1/8 inch (3mm) or less.

- i. Slip Resistance: Pavers shall meet criteria set forth in the DPW Director's Order for Slip Resistance.
- 4. Quality control and supervision of the project – Applicant must submit a plan for Quality Control and supervision of the project, including excavation, compaction, and installation of the finished concrete unit paver pavement.

TABLE 1: STANDARD PAVING PALETTE

	POURED-IN-PLACE CONCRETE			
	Colors			Manufacturers
1	Dark Grey:	860 "Jet Black"	7.5lbs per 94lb sack	Davis Colors; or equal
		C-34 "Dark Grey"		Scofield; or equal
2	Medium Grey:	860 "Grey Stone"	1.5lb per 94lb sack	Davis Colors; or equal
		1266 "Cool Grey"		Scofield; or equal
3	Dark Tan:	677 "Mesquite"	1.5lb per 94lb sack	Davis Colors; or equal
		SG-677 "Soft Chestnut"		Scofield; or equal
4	Medium Tan:	5237 "Sandstone"	1.5lb per 94lb sack	Davis Colors; or equal
		5237 "San Diego Buff"		Scofield; or equal
	Finishes ****			
1	Medium Broom			
2	Water Jet, or Acid Wash or similar finish			
3	Sparkle			
	UNIT PAVERS			
	Dimensions			Manufacturers
1	Square: 12" x 12"			Hanover*, Pacific Interlocking Paving (PIP)*, Basalite; or equal
2	Rectangular: 4" x 8"			Acker-stone, Hanover*, Basalite; or equal
3	Linear: 3" x 18", 12"x18"			Stepstone, Hanover*, Basalite; or equal
4	Large**: 6" x 36", 12"x18", 12"x36"			Hanover, Stepstone; or equal
	Colors/ Finishes			Manufacturers
1	Dark Grey:	"Charcoal" / "Shot Blast"		Acker-stone; or equal
		"Charcoal" / "Tudor"		Hanover; or equal
		"French Grey" / "Light Sandblast"		Stepstone; or equal
		"Charcoal" / "Estate"		PIP; or equal
		"Truckee" / "Ground Face"		Basalite; or equal
2	Medium Grey:	"Agave" / "Shot Blast"		Acker-stone; or equal
		"Limestone Grey" / "Tudor"		Hanover; or equal
		"Porcelain" / "Light Sandblast"		Stepstone; or equal
		"Grey" / "Estate"		PIP; or equal
		"Ukiah" / "Ground Face"		Basalite; or equal
3	Dark Tan:	"Tan" / "Shot Blast"		Acker-stone; or equal
		"Chocolate" / "Tudor"		Hanover; or equal
		"Espresso Brown" / "Light Sandblast"		Stepstone; or equal
		"Brown" / "Estate"		PIP; or equal
		"Healdsburg" / "Ground Face"		Basalite; or equal
4	Medium Tan:	"Carmel" / "Shot Blast"		Acker-stone; or equal
		"Cream" / "Tudor"		Hanover; or equal
		"Almond" / "Light Sandblast"		Stepstone; or equal
		"Tan" / "Estate"		PIP; or equal
		"Indio" / "Ground Face"		Basalite; or equal
	DECORATIVE ASPHALT***			
1	Stamped Asphalt with Surface Color			
	Colors/Patterns			Product and Manufacturers
	Grey, Light Grey, Sand, Tan, Santa Fe Clay, Brick Red; See Figure 3 for standard patterns			StreetPrint by Integrated Paving Concepts, Inc.; StreetBond by Ennis-Flint; or equal
2	Thermoplastic Inlay			
	Colors/Patterns			Product and Manufacturers
	Custom colors and patterns per SFMTA Crosswalk Guidelines.			Duratherm by Ennis-Flint; or equal
3	Thermoplastic Overlay			
	Colors/Patterns			Product and Manufacturers
	Colors and patterns reviewed and approved on a per project basis			TrafficPatternsXD by Ennis-Flint; or equal

See Attachment B - Specifications for detailed requirements.

*Hanover (12"x12," "4x8," 3"x18," 6"x36") and Pacific Interlocking Paving (all sizes) pavers have integrated spacers, and for the purposes of installation details shall be referred to as "interlocking." All other pavers by Hanover, Acker-stone, Basalite, and Stepstone lack integrated spacers and shall be referred to as "non-interlocking."

**The large size paver is the only size allowable in the major PAR; it must be placed with the longest dimension parallel with the direction of travel.

***Refer to SFMTA Crosswalk Guidelines for decorative asphalt crosswalk requirements: <http://www.sfbetterstreets.org/wp-content/uploads/2016/01/SFMTA-CrosswalkGui>

****Poured in place paving finishes must result in a slip-resistant finish that does not expose rounded aggregate that may not be slip-resistant and too rough for pedestrians. The concrete mix design for such finishes must use an angular or crushed exposed aggregate and all such exposed aggregate shall pass through a 1/4" sieve.

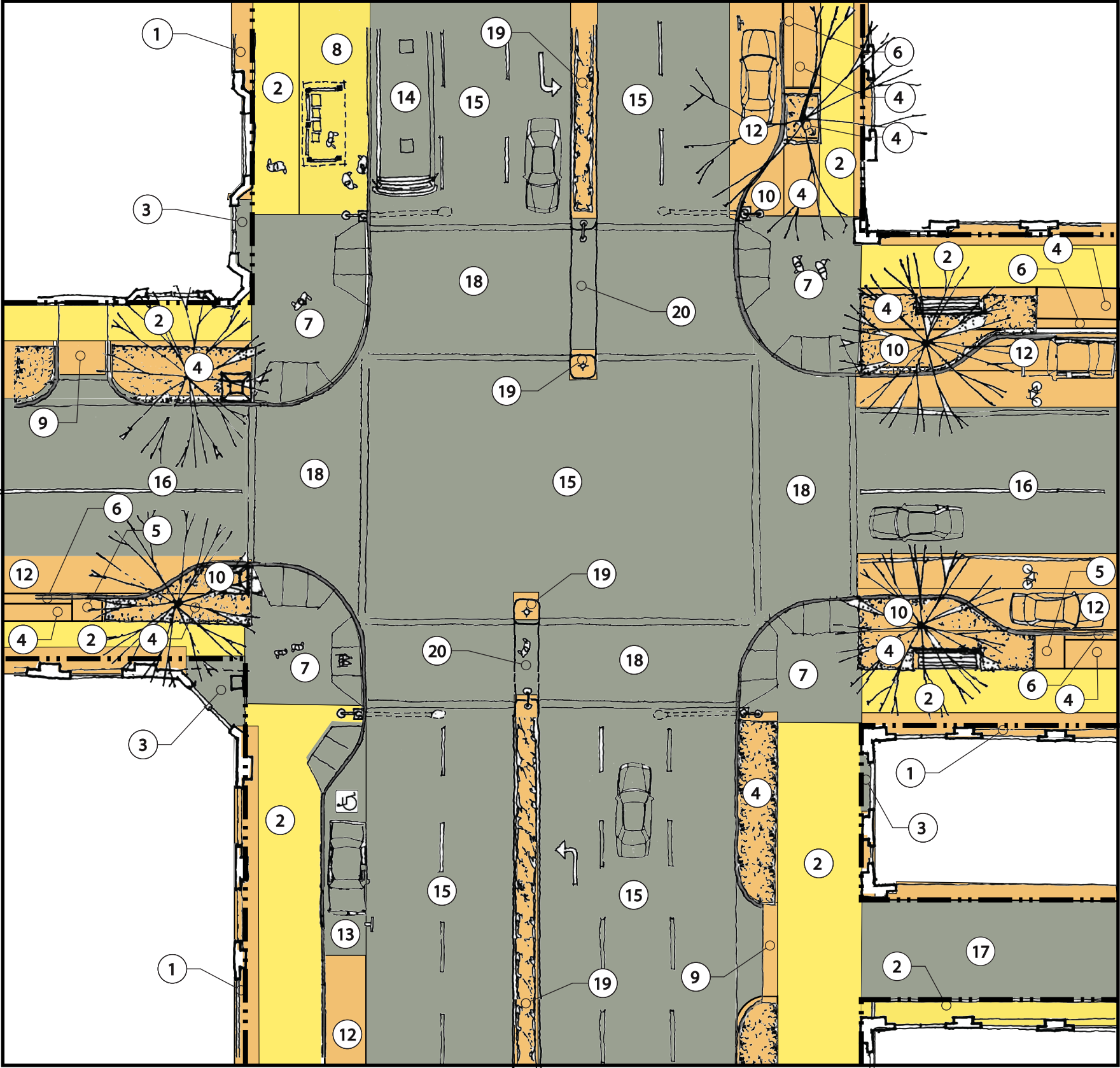
TABLE 2: STANDARD PAVING ACCEPTABLE LOCATIONS CONCRETE AND UNIT PAVERS

			FIGURE 1		FIGURE 1 (Note 3)
Figure Keynote #	PAR Level	LOCATION ¹	All Paver Sizes	Large Scale Pavers Only (See table 1 for sizes)	Colored Poured in Place Concrete
Sidewalks					
1	minor	Building Frontage Zone	Acceptable	Acceptable	Acceptable
2	major	Pedestrian Throughway Zone	Not Acceptable	Acceptable	Acceptable
3	major	Building Access / Maneuvering Area	Not Acceptable	Not Acceptable	Acceptable
4	minor	Furnishing Zone	Acceptable	Acceptable	Acceptable
5	minor	Furnishing Zone: 4-ft Pedestrian Pass-Through (for street parking)	Acceptable	Acceptable	Acceptable
6	minor	Edge Zone (aka. Curb Zone, or Courtesy Strip at street parking)	Acceptable	Acceptable	Acceptable
7	major	Corner Zone	Not Acceptable	Not Acceptable	Acceptable
8	major	Transit Boarding Zone (on sidewalk & in raised islands)	Not Acceptable	Acceptable	Acceptable
9	minor	Driveway Zone (except Driveway Curb Cut)	Acceptable	Acceptable	Acceptable
10	minor	Corner Bulb Out / Extension Zone	Acceptable	Acceptable	Acceptable
11	minor	Mid- Block Bulb Out (Not Shown in Figures 1-2)	Acceptable	Acceptable	Acceptable
Streets					
12	minor	Non-Accessible Parking Lane (with or without Combined Curb Gutter)	Acceptable	Acceptable	Acceptable
13	major	Accessible Parking Lane (Blue Curb) / Loading Zone (White Curb)	Not Acceptable	Not Acceptable	Acceptable
14	none	Bus Pad (heavy loading zone)	Not Acceptable	Not Acceptable	Acceptable
15	none	Traffic Lane & Bike Lane (Non-Separated): Arterials, Collectors, Peak Hour Lanes, Transit or Truck routes, etc.	Not Acceptable	Not Acceptable	Acceptable
16	minor	Traffic Lane & Bike Lane (Non-Separated): Neighborhood Residential, Frontage Roads, Lanes, etc.	Not Acceptable	Not Acceptable	Acceptable
17	minor	Alleys (pavers require approval by Public Works Director)	Not Acceptable	Not Acceptable	Acceptable
18	major	Crosswalk	Not Acceptable	Not Acceptable	Acceptable
19	minor	Median: Non-PAR Area	Acceptable	Acceptable	Acceptable
20	major	Median, Pedestrian Refuge / Pass-Through	Not Acceptable	Not Acceptable	Acceptable
Other Public Spaces (Not shown on Figures 1-2)					
21	major	Bikeway and Pedway, Shared: PAR Area	Not Acceptable	Not Acceptable	Acceptable
22	minor	Bikeway, Separate: Non-PAR Area	Acceptable	Acceptable	Acceptable
23	major	Plaza, Courtyard, Square, Patio, and Terrace: PAR Area	Not Acceptable	Not Acceptable	Acceptable
24	minor	Plaza, Courtyard, Square, Patio, and Terrace: Non-PAR Area	Acceptable	Acceptable	Acceptable
25	minor	Parking Lot: Non-PAR Area	Acceptable	Acceptable	Acceptable
26	major	Accessible Parking Spaces and PAR within Parking Lots: PAR Areas	Not Acceptable	Not Acceptable	Acceptable
27	minor	Paths with Vehicular Loads: Non-PAR Area	Acceptable	Acceptable	Acceptable
28	minor	Driveways: Non-PAR Area	Acceptable	Acceptable	Acceptable







1. When two ROW zones intersect, areas of higher PAR classification will take precedent.

2 Gap sizes: Concrete Unit Pavers shall have gaps not less than 1/4" (6.35mm), and not more than 3/8"(9.52mm). Unit Pavers within the PAR should be installed with top edges beveled 1/8 inch or less.





FIGURE 1
STANDARD PAVING PALETTE ACCEPTABLE LOCATIONS: **CONCRETE UNIT PAVERS**



LEGEND

- | | | |
|---|--|---|
|  ACCEPTABLE: ALL PAVER SIZES |  NOT ACCEPTABLE |  MAJOR PAR (PEDESTRIAN ACCESS ROUTE) |
|  ACCEPTABLE: LARGE SCALE PAVERS ONLY |  BUILDING |  PROPERTY LINE |

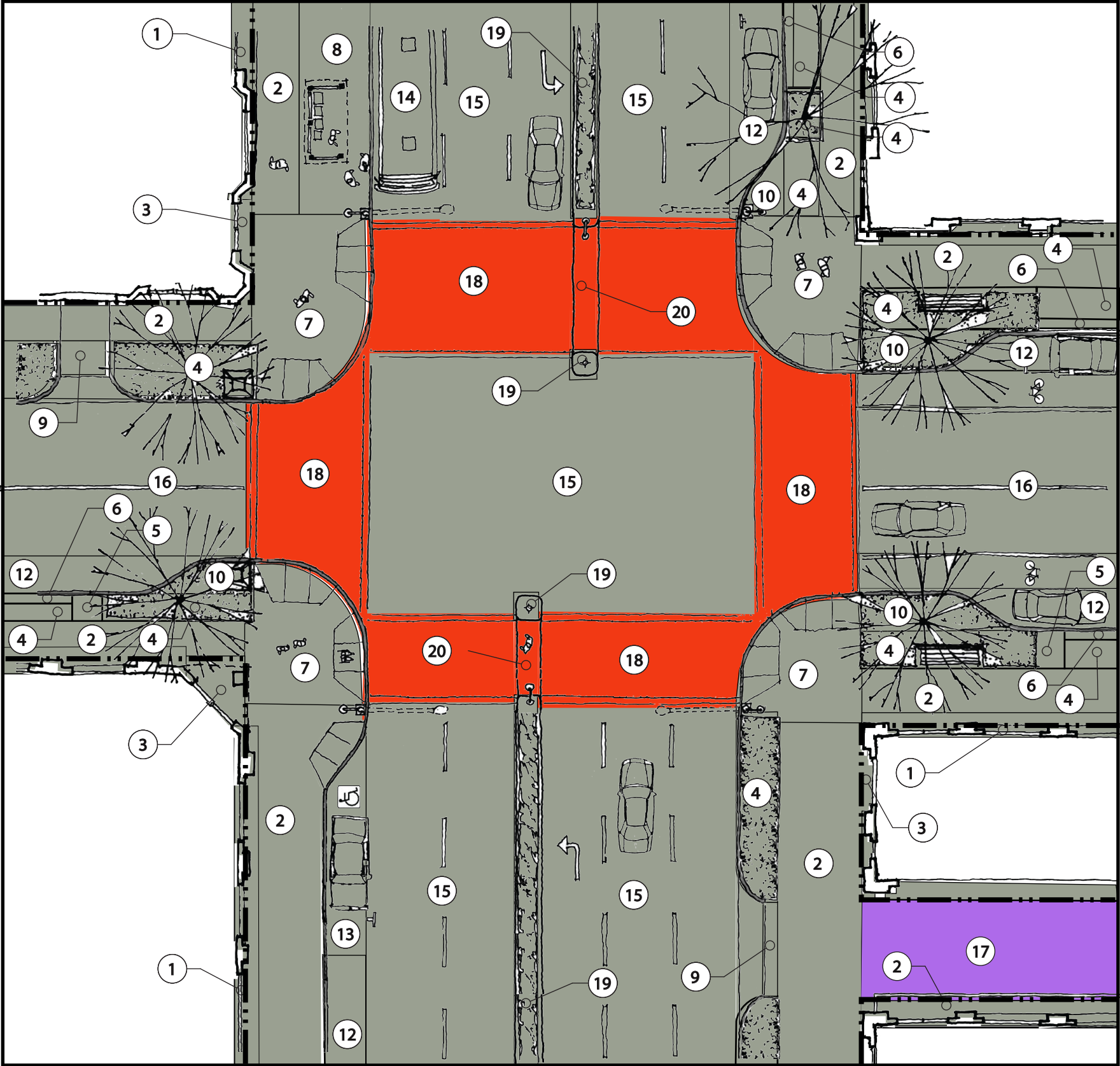
SIDEWALKS AND STREETS

-  1 BUILDING FRONTAGE ZONE
-  2 PEDESTRIAN THROUGHWAY ZONE
-  3 BUILDING ACCESS / MANEUVERING AREA
-  4 FURNISHING ZONE
-  5 FURNISHING ZONE - 4-FT PEDESTRIAN PASS-THROUGH (AT STREET PARKING)
-  6 EDGE ZONE - (AKA, CURB ZONE, OR COURTESY STRIP AT STREET PARKING)
-  7 CORNER ZONE
-  8 TRANSIT BOARDING ZONE (ON SIDEWALK AND IN RAISED ISLANDS)
-  9 DRIVEWAY ZONE (EXCEPT DRIVEWAY CURB CUT)
-  10 CORNER BULB OUT / EXTENSION ZONE
-  11 MID-BLOCK BULB OUT (NOT SHOWN IN THIS FIGURE)
-  12 NON ACCESSIBLE PARKING LANE (W OR W/OUT COMBINED CURB GUTTER)
-  13 ACCESSIBLE PARKING LANE (BLUE CURB) / LOADING ZONE (WHITE CURB)
-  14 BUS PAD (HEAVY LOADING)
-  15 TRAFFIC LANES AND BIKE LANES ON ARTERIALS, COLLECTORS, PEAK HOUR LANES, TRANSIT OR TRUCK ROUTES, ETC.
-  16 TRAFFIC LANES AND BIKE LANES ON NEIGHBORHOOD RESIDENTIAL, FRONTAGE ROADS, LANES, ETC.
-  17 ALLEY (REQUIRES APPROVAL BY PUBLIC WORKS DIRECTOR)
-  18 CROSS WALKS
-  19 MEDIANS
-  20 MEDIANS: PEDESTRIAN REFUGE / PASS THROUGH







NOTES

1. FIGURE PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY. ALL TREES, PROPERTY LINES, VEGETATION, STREET FURNISHINGS, AND CROSSWALKS ARE APPROXIMATE AND BASED ON BETTER STREET PLAN RENDERINGS.
2. PAVEMENT DESIGN MUST MEET ALL APPLICABLE CITY CODES AND STANDARDS.
3. POURED-IN-PLACE CONCRETE IS ACCEPTABLE IN LOCATIONS 1-28 (SEE TABLE 2 FOR LOCATIONS NOT SHOWN ON THIS PLAN)

FIGURE 2
STANDARD PAVING PALETTE ACCEPTABLE LOCATIONS: **DECORATIVE ASPHALT**



LEGEND

- | | | |
|---|--|---|
|  ACCEPTABLE: STAMPED/PAINTED & THERMOPLASTIC INLAY ASPHALT |  NOT ACCEPTABLE |  MAJOR PAR (PEDESTRIAN ACCESS ROUTE) |
|  ACCEPTABLE: STAMPED/PAINTED ASPHALT |  BUILDING |  PROPERTY LINE |

SIDEWALKS AND STREETS

- 1 BUILDING FRONTAGE ZONE
-  2 PEDESTRIAN THROUGHWAY ZONE
-  3 BUILDING ACCESS / MANEUVERING AREA
- 4 FURNISHING ZONE
- 5 FURNISHING ZONE - 4-FT PEDESTRIAN PASS-THROUGH (AT STREET PARKING)
- 6 EDGE ZONE - (AKA, CURB ZONE, OR COURTESY STRIP AT STREET PARKING)
-  7 CORNER ZONE
-  8 TRANSIT BOARDING ZONE (ON SIDEWALK AND IN RAISED ISLANDS)
- 9 DRIVEWAY ZONE (EXCEPT DRIVEWAY CURB CUT)
- 10 CORNER BULB OUT / EXTENSION ZONE
- 11 MID-BLOCK BULB OUT (NOT SHOWN IN THIS FIGURE)
- 12 NON ACCESSIBLE PARKING LANE (W OR W/OUT COMBINED CURB GUTTER)
-  13 ACCESSIBLE PARKING LANE (BLUE CURB) / LOADING ZONE (WHITE CURB)
- 14 BUS PAD (HEAVY LOADING)
- 15 TRAFFIC LANES AND BIKE LANES ON ARTERIALS, COLLECTORS, PEAK HOUR LANES, TRANSIT OR TRUCK ROUTES, ETC.
- 16 TRAFFIC LANES AND BIKE LANES ON NEIGHBORHOOD RESIDENTIAL, FRONTAGE ROADS, LANES, ETC.
- 17 ALLEYS (REQUIRES APPROVAL BY PUBLIC WORKS DIRECTOR)
-  18 19 CROSS WALKS
- 19 MEDIANS
-  20 20 MEDIANS: PEDESTRIAN REFUGE / PASS THROUGH

NOTES

1. FIGURE PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY. ALL TREES, PROPERTY LINES, VEGETATION, STREET FURNISHINGS, AND CROSSWALKS ARE APPROXIMATE AND BASED ON BETTER STREET PLAN RENDERINGS.
2. PAVEMENT DESIGN MUST MEET ALL APPLICABLE CITY CODES AND STANDARDS.
3. SEE TABLE 1 FOR LOCATIONS NOT SHOWN ON THIS PLAN.
4. SEE TABLE 3 FOR DECORATIVE ASPHALT PATTERNS AND COLORS.

FIGURE 3

DECORATIVE ASPHALT PATTERNS AND COLORS

STAMPED ASPHALT WITH SURFACE COLOR

Standard Stamp Patterns:

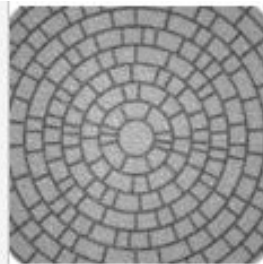
Product: StreetPrint, by Integrated Paving Concepts, Inc., or equal.



Offset Brick



British Cobble



Arches and
Accents



Frisco Cobble

Manufacturer: StreetBond, or equal.

Grey, Light Grey, Sand, Tan, Santa Fe Clay, Brick Red

THERMOPLASTIC INLAY

Product: Duratherm, by Integrated Paving Concepts, Inc. or equal.

Custom Patterns:

Decorative asphalt can be installed in between SFMTA standard continental striping (see right). Decorative asphalt crosswalks require SFMTA approval



THERMOPLASTIC OVERLAY

Product: TrafficPatternsXD by Ennis-Flint, or equal.

Custom Patterns:

Colors and patterns reviewed and approved on a per project basis.