

SITE LAYOUT STRATEGY: Provide Efficient Site Design



SOURCE: NEVUE NGAN ASSOCIATES

Figure 2-6: This narrow residential street allows for adequate traffic flow and generates less stormwater runoff than conventionally wider streets.



SOURCE: NEVUE NGAN ASSOCIATES

Figure 2-7: This typical urban street is almost 100% impervious and designed primarily for auto flow. This combination creates a bleak streetscape environment that also generates large quantities of stormwater runoff.



SOURCE: NEVUE NGAN ASSOCIATES

Figure 2-8: By utilizing a more efficient site design, the wasted space in the street example above can easily be converted into conventional landscaping or be used for stormwater facilities. This retrofit opportunity also includes space for a bike lane.

One of the first questions a designer or builder should ask themselves about their project is: Has the impervious area from streets, parking lots, and/or buildings been minimized? From a design perspective, there are several effective strategies to minimize these areas. However, what makes sense from a design perspective may conflict with prevailing policy. Design and policy must work together in order to achieve site-specific stormwater goals. A carefully thought out site plan will often yield the space for a stormwater facility(s) that fits seamlessly with the other site uses. This holds true for new streets, parking lots, and buildings, but is especially evident when designing street and parking lot retrofit projects. The following describes possibilities for gaining additional landscape space for streets, parking lots, and building envelopes.

Streets

- Narrow travel lanes from 12 feet to 10 feet (or less depending on street type). This helps to reduce impervious area, reduces new development infrastructure costs, calms traffic in pedestrian-oriented areas, and helps create room for stormwater facilities.
- Consolidate travel lanes/on-street parking. Can a travel lane on multi-lane streets be eliminated altogether? Can the size or number of parking spaces be reduced in order to increase landscape area along a street? Exploring a “yes” answer to these questions can often yield landscape space for stormwater facilities, as well as create space for bike lanes, wider sidewalks, and a more balanced and vibrant streetscape.
- Convert unused asphalt space next to travel lanes into landscape areas that can be used for stormwater management.

Parking Lots

- Shorten parking stall lengths to 15 feet and/or shorten the drive/back-up aisles to 22 feet (this will most likely require revisions in municipal code). The shorter stalls can still accommodate SUVs, and the drive aisles can still allow cars to comfortably back up and travel within the parking lot. Portland, Oregon and other cities have allowed even smaller parking lot dimensions within their city codes. These strategies are especially effective for creating landscape space in parking lot retrofits.

- When looking at parking lots, it is important to ask the question of how much parking is needed on an “average day.” Parking lots often have many empty parking stalls for most of the year. This is especially true with shopping mall and “big box” store parking lots. As municipal requirements allow, parking lots can provide for the average day (as opposed to peak) condition, or at least can provide peak overflow parking zones with pervious paving.

Building Envelopes

- Buildings and their adjacent surroundings can also be designed to use space efficiently, which can affect how surrounding streets and parking lots will be designed. For example, in new construction, buildings can be designed to allow for parking stalls to be tucked under the second floor podium. Using this design strategy can greatly reduce or possibly eliminate the need for additional site parking.

- Many buildings already have conventional landscaping around the building envelope that functions only as screening or aesthetics. Depending on site conditions, these landscape areas can be converted into stormwater facilities and thus maximize the use of the space.



SOURCE: KEVIN ROBERT PERRY - CITY OF PORTLAND

Figure 2-9: An existing, inefficiently designed parking lot with little landscaping.



SOURCE: KEVIN ROBERT PERRY - CITY OF PORTLAND

Figure 2-10: The same parking lot redesigned to efficiently use space yielded a vegetated swale, sidewalk, and landscape zone for street trees.



SOURCE: NEVUE NGAN ASSOCIATES

Figure 2-11: This apartment complex allows for cars to park underneath the building's second floor. This allows for a more efficient site plan.

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Figure 2-12: A typical commercial main street in San Mateo County that uses angled on-street parking.

Street Example: Angled Parking

Many commercial main streets in San Mateo County use angled on-street parking rather than parallel parking stalls. The angled parking configuration yields more parking spaces along the street frontage compared to parallel parking. However, angled parking requires much of the street's right-of-way to be dominated by parking at the expense of sidewalk, landscape, and stormwater management space. This is especially true along streets with active outdoor storefronts, such as restaurants and boutique shops. Figures 2-14 and 2-15 compare the existing condition of using 30 degree angled on-street parking with that of a redesigned condition using parallel parking. By switching from an angled to parallel parking configuration, considerable space can be made available for wider sidewalks, more landscaping, and stormwater management.



Figure 2-13: An aerial view of a commercial main street using 30 degree angled on-street parking. Notice how much space is wasted at the back end of each oversized parking stall. Also notice the narrow the sidewalk zone.

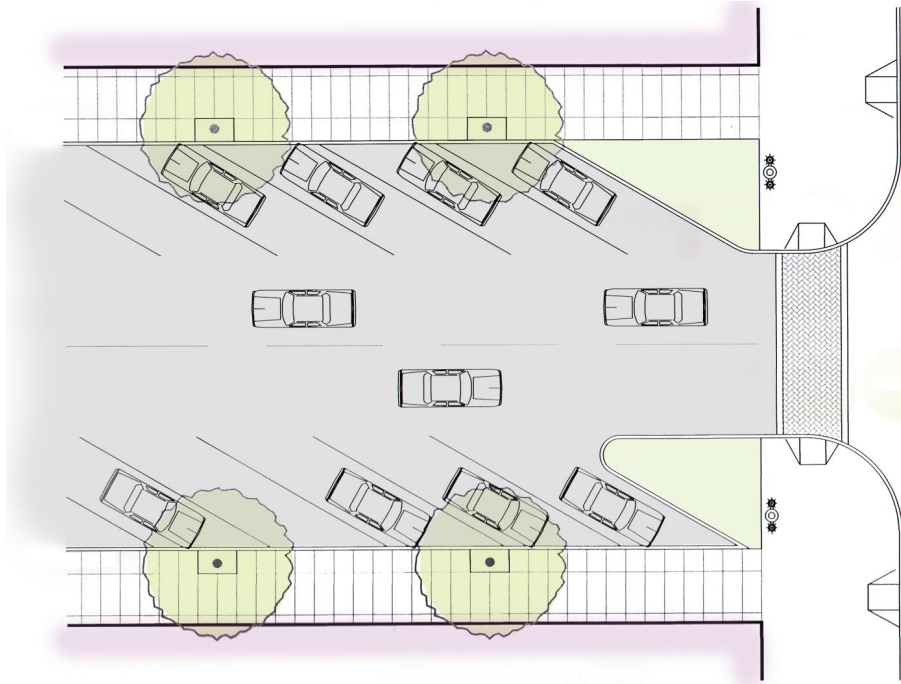


Figure 2-14: A typical commercial main street in San Mateo County that uses angled on-street parking.

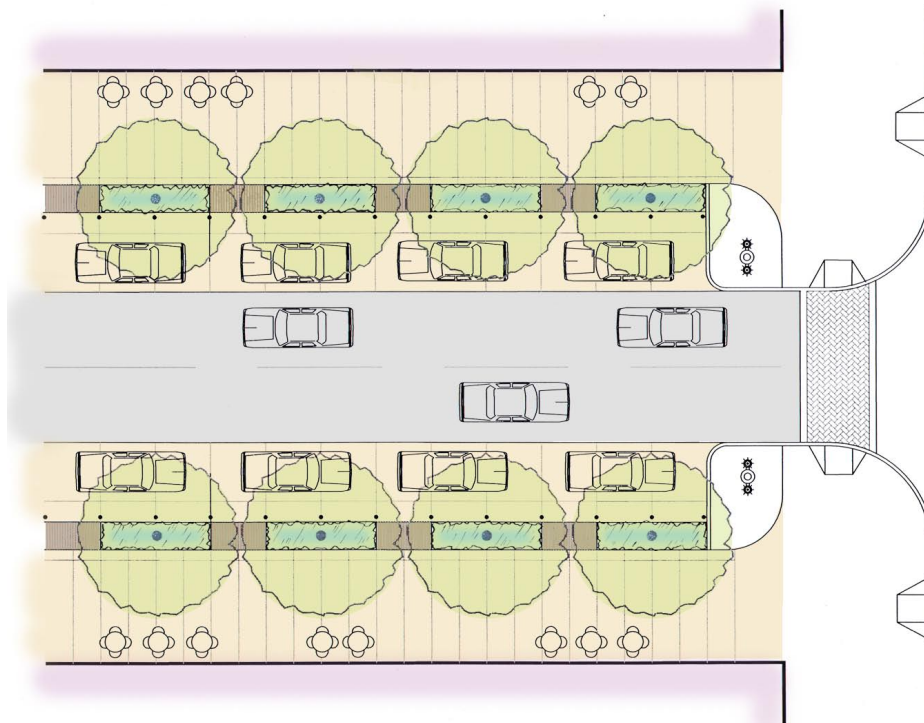


Figure 2-15: When redesigned with parallel parking, this street gains significantly wider sidewalks, more green space, and better opportunities for stormwater management.

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Parking Lot Example: Reducing Parking Stall and Travel Aisle Dimensions

Sometimes local planning and design codes require more surface parking than is actually necessary for a particular business or use to thrive. Furthermore, parking lots are also often designed with oversized parking stalls and travel/back-up aisles. By fully utilizing the amount of space for parking and reducing the oversized dimensions, a considerable amount of space can be created for landscape-based stormwater management. The hypothetical parking lot conditions illustrated in Figures 2-16 through 2-19 show how a conventional parking lot with oversized parking stalls and travel aisle dimensions compares with a more efficient parking lot design. Both scenarios have the same amount of parked cars. However, the more efficient parking lot design yields far more potential green space.

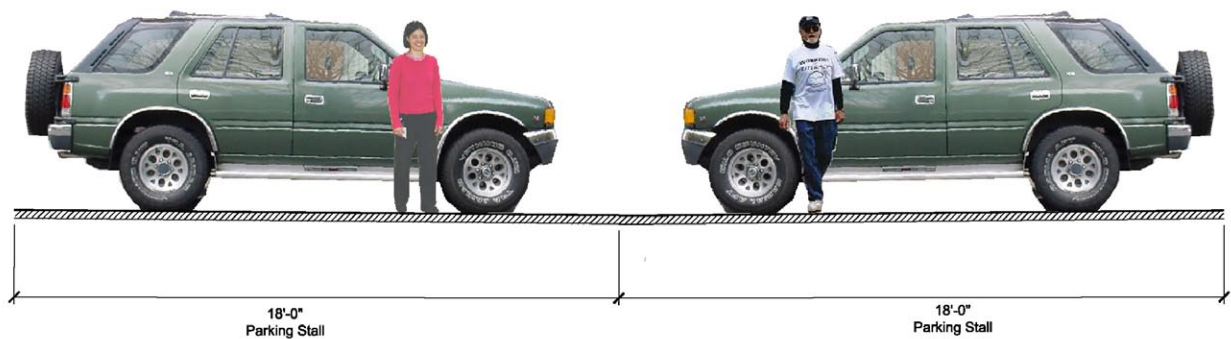


Figure 2-16: This typical cross section illustrates a conventional parking lot condition with 18 feet long parking stalls.

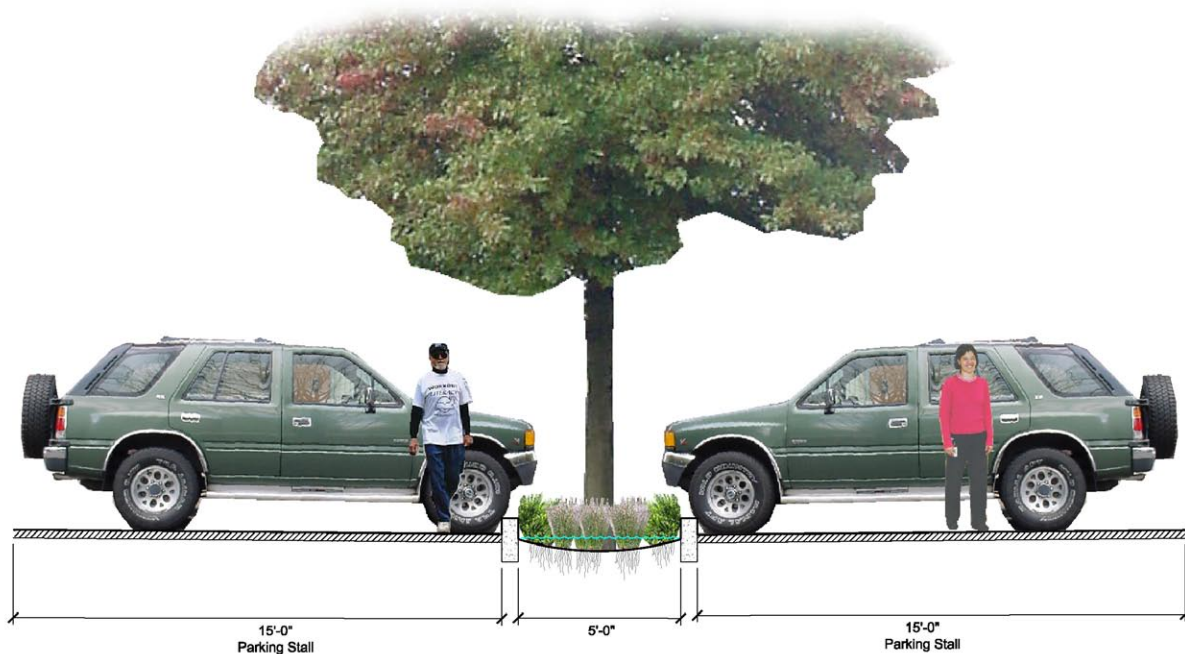


Figure 2-17: This cross section shows how a 15 feet parking stall can help create room for landscaping used for stormwater management. Note that the parked cars in both scenarios are placed in the same place and fit within reduced length the parking stalls.

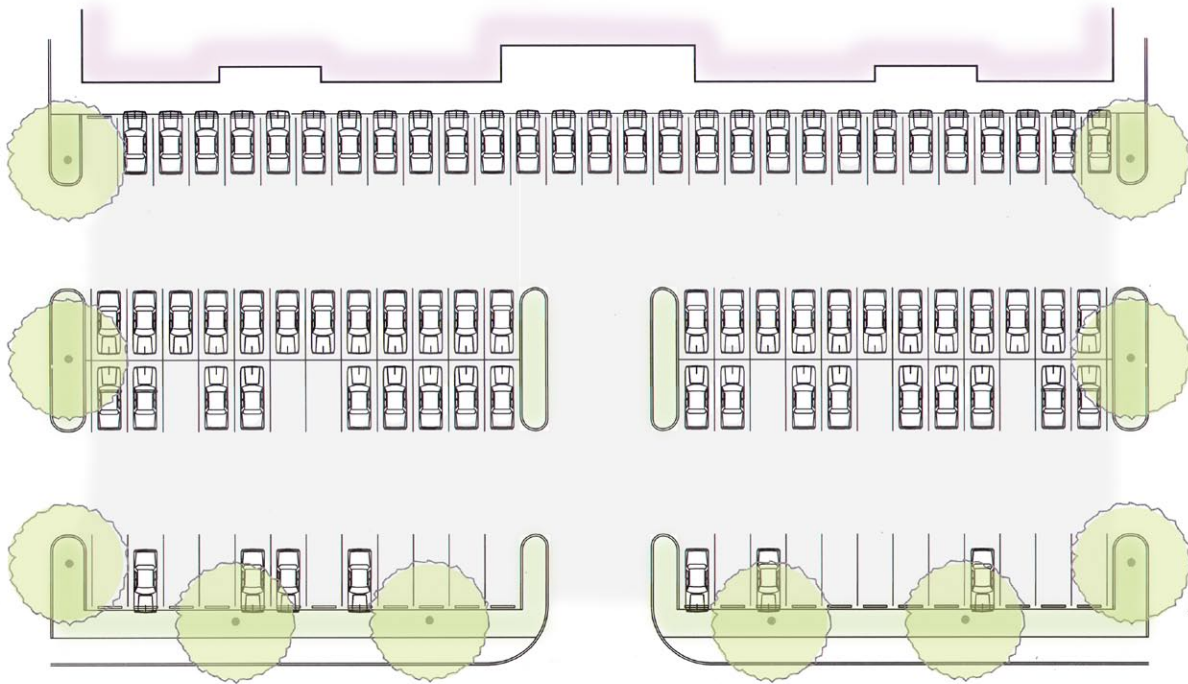


Figure 2-18: This is a hypothetical parking lot example with both oversized parking stalls and vehicle travel aisles.



Figure 2-19: A redesigned parking lot using 15 foot long parking stalls and 22 foot wide vehicle travel aisles yields significant amounts of landscape space that can be used for stormwater management. This example also has improved pedestrian circulation within the parking lot.