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DEPARTMENT OF
PUBLIC WORKS

TECHNICAL SERVICES
DIVISION

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September 11, 2000

APPROVED
SEP 26 2000
OFFICE OF THE
CITY CLERK

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: TRAFFIC UNDULATION PROGRAM MODIFICATIONS

LOCATION AND COUNCIL DISTRICT: Citywide, all council districts.

RECOMMENDATION:
This report recommends that the City Council adopt the attached resolution to amend the Traffic Undulation Program to accomplish the following:

- Change the name of the program to Speed Hump Program
- Establish a minimum requirement for traffic speeds
- Re-evaluate currently qualified streets using new requirements
- Establish a minimum ballot return rate
- Expand the testing of speed lumps to two streets in each council district

CONTACT PERSON: Karen Shipley, Administrative Services Officer, 264-8365

FOR COUNCIL MEETING OF: September 26, 2000

SUMMARY:

Staff recommends that the Traffic Undulation Program be modified to be more descriptive (by changing the name to Speed Hump Program), effective (include a minimum requirement for traffic speeds and ballot returns) and responsive (expanding the test of speed lumps citywide) to the need for calming traffic on residential streets. Adoption of the attached resolution will accomplish these objectives. The Speed Hump Program guidelines reflecting the proposed modifications are shown as Attachment 1.

Department of PUBLICWORKS CITY OF SACRAMENTO

COMMITTEE/COMMISSION ACTION:

The modifications outlined in this report have been presented to the Community Advisory Committee (CAC), the body that reviews criteria for the Transportation Programming Guide (TPG). The CAC is in agreement with the proposed changes.

BACKGROUND INFORMATION:

Speed Humps

The City of Sacramento has been installing speed humps to control vehicle speed on residential streets since 1980. To date, there are approximately 350 streets in Sacramento with speed humps or undulations. The undulation design includes placement of two humps at one location. Since 1995, the city has installed speed humps (one hump) rather than undulations (two humps) because it was determined that one hump was just as effective at slowing traffic as two humps, less costly and easier to find spacing for installation on streets. Speed humps are not installed on streets designated by the Fire Department as an emergency response route, or on Sacramento Regional Transit (RT) bus routes. The majority of streets demonstrating need for speed humps, based on ranking criteria, have received them using the process outlined as follows.

Current Process

The current criteria for speed humps includes the following:

- Street must be two lanes and function primarily as local or neighborhood collector street.
- Street must be 75% residential development (except when fronted by a park or school).
- Street must meet a length criteria (750 ft. for residential streets and 500 ft. for parks and schools streets) between traffic controls.
- Speed limit must be 30 mph or less.
- Street cannot be a RT bus or emergency response route (designated by RT and Fire).

Streets that meet the above criteria are then ranked by assigning points based on the following:

- Traffic volume
- Traffic speed
- Number of homes fronting the street (or frontage feet if adjacent to school, park or apartment complex)

Based on the results of applying the above ranking system, streets are ranked with those receiving the highest points on the top. With annual funding approved by City Council through the CIP process, the highest ranked streets by council district are balloted and if approved by residents, receive speed humps.

Funding approved over the years has allowed the majority of streets demonstrating real need (based on the criteria) to receive speed humps. The waiting list of qualified streets currently has 177 streets. However, many of these streets have an average speed of vehicles traveling under 30 mph.

The Neighborhood Traffic Management Program (NTMP) is a partnership program with residents to address traffic concerns throughout a neighborhood. Some of the streets within these NTMP areas had previously qualified for speed humps through the speed hump program. However, these streets have been removed from the speed hump list so that they can be considered in the overall traffic calming plan developed for the neighborhood. Sometimes a traffic problem can move to an adjacent street when one street receives speed humps. This potential concern can more effectively be addressed in the NTMP by evaluating the needs of an entire neighborhood.

Proposed Changes

The current ballot process requires that two-thirds of ballots returned to the city must be in favor of the speed humps to authorize construction. However, there is no minimum requirement for returned ballots. To insure that a reasonable number of residents have voted on the issue, it is recommended that the speed hump guidelines be amended to include a minimum requirement that 25% of all ballots (occupied residences or businesses) must be returned in order for the vote to be valid. This is the same return rate as required by the Neighborhood Traffic Management Program (NTMP) in a ballot process that includes speed humps.

With the current criteria, any street can qualify for speed humps even if they have low traffic speeds as long as it is not an emergency response or RT route. The city has had an aggressive speed hump program, resulting in the streets with the worst problems (highest ranking) receiving speed humps. Streets remaining on the waiting list have a lower ranking, meaning many may have lower traffic speed. Based on data collected, many of the remaining streets on the waiting list experience 85% of the vehicles traveling less than 30 mph. Rather than continue installing speed humps on streets with low traffic speed, the following additional requirements are recommended for speed hump installation:

- The traffic speeds, as determined by a speed survey, indicate that 15% or more of the vehicles travel at five or more miles per hour over the speed limit.
- The minimum ballot response rate from residents shall be 25% of mailed ballots (occupied residences).

Traffic volumes and speeds are updated every two years for streets on the waiting list to adjust for the change in conditions of traffic. It is uncertain how many streets would remain on the current waiting list with the additional traffic speed requirement applied to those streets. For a more thorough analysis of traffic speeds, new technology equipment will be purchased that can count the number of cars and record the speed of vehicles for a 24-hour period. This will provide more accurate data for speeds of vehicles in a 24-hour period rather than the current data collected during a normal speed survey conducted for one hour. Some of the streets on the current waiting list may not qualify for speed humps with the new minimum speed requirement. Using a minimum speed requirement insures that only streets with a validated speeding problem will be addressed. This would reduce the number of streets qualifying for speed humps to those with a clear need.

Speed Lumps

Speed lumps are unique to Sacramento and are a modified design of the speed hump. The speed lump was developed as a traffic calming tool for streets that do not qualify for speed humps because they are either a RT bus route or an emergency response route as designated by the city Fire Department. The lump design incorporates cutouts for the wheels of emergency response vehicles and Regional Transit buses which allows the wheels of these vehicles to pass through the hump rather than going over the hump. Other vehicles slow to either go over the hump, place tires on one side of the vehicle in the cutout area or straddle the center lump depending on their wheelbase.

As a test, speed lumps were placed on two streets in Colonial Village as part of the traffic calming plan for the neighborhood. The streets with the speed lumps are 25th Avenue, an emergency response route and 79th Street, a RT bus route. Speed surveys conducted before and after the lumps were installed show traffic speeds have been reduced by 18% (from 32 mph to 26 mph). A survey of residents on those streets indicated that 85% of residents felt that traffic speeds were slower as a result of the speed lumps installed. Residents also indicated that they liked having the speed lumps to slow traffic, knowing that their streets would not qualify for speed humps. The emergency response time is greatly reduced on a street with speed lumps as compared to a street with speed humps. A comparison of response times for a fire engine is shown in the chart below. In this test, a speed hump added approximately 6½ seconds per hump, while the added response time per speed lump was negligible.

	RESPONSE TIME IN SECONDS (943' street)		
Type of equipment	**Street without humps**	**Street with 2 speed lumps**	**Street with 2 speed humps**
Fire engine #10	22.10 seconds	22.51 seconds	35.18 seconds

More data regarding the effectiveness of speed lumps is needed before developing a citywide program. It is recommended that the testing of speed lumps be expanded to include two streets per council district. A variety of street widths, usage, traffic volume and speed limits would be desirable for the expanded test. Staff would work with each council office to determine the best test streets in each council district based on existing conditions and demonstrated speeding. The selected streets would also need approval from the Fire Department and RT as well as residents through a ballot process. Results of the test will be reported back to council in about a year after ballot process, lump installation, test period and evaluation.

FINANCIAL CONSIDERATIONS:

Funding for the speed hump program is approved annually by city council as part of the Capital Improvement Program (CIP) process. It is estimated that the speed lump expansion testing to two streets per council district would be approximately $50,000. Funding is currently available in the speed hump program CIP (SH89) for the proposed speed lump expansion testing.

ENVIRONMENTAL CONSIDERATIONS:

Based on California Environmental quality act (CEQA) guidelines, the City's Environmental Services Division has concluded that no project is being proposed at this time.

POLICY CONSIDERATIONS:

The program meets the Council's priorities of neighborhood revitalization and enhancement and public safety.

ESBD CONSIDERATIONS:

None, since no goods or services are being procured with this action.

Respectfully submitted,

Marty Hanneman
City Traffic Engineer

RECOMMENDATION APPROVED:

ROBERT P. THOMAS
City Manager

Approved:

Michael Kashiwagi
Director of Public Works

File:SH/Corr/council rpt 0900

CITY OF SACRAMENTO
SPEED HUMP PROGRAM

Program Descriptions

The City of Sacramento has three types of speed hump programs: Residential, Parks and Schools, and Bypass. The objectives, qualifying criteria, and priority ranking system for each of these programs are presented in subsequent sections of this report. Also in this report are construction specifications, location selection guidelines, signs and markings, relocation and removal requirements, other funding, Regional Transit, Fire Department emergency response route, and public notification. Between 1980 and 1995, the city installed undulations (2 humps) for traffic calming. Since 1995, the city has installed speed humps (one hump) because it was determined that one hump was just as effective at slowing traffic as two humps, less costly and easier to find spacing for installation on streets.

Program Objectives

Speed humps serve to reduce vehicular speeds as well as to reduce cut-through traffic on local residential streets. Both of these effects are realized when speed humps are installed on a street, regardless of the type of program for which a street qualifies. The principal purpose of each of the three programs is as follows: The Residential Speed Hump list serves to reduce vehicular speeds on residential streets. The Parks and Schools Speed Hump list serves to reduce vehicular speeds on streets which include park and/or school frontage; and the Bypass Speed Hump list serves primarily to reduce inappropriate traffic volumes on certain streets.

Other, less costly, forms of traffic control (e.g., stop signs) should be considered the primary means of discouraging speeding and/or bypass traffic. Stop signs are less costly to install and can be installed immediately at locations which qualify. When these forms of traffic control are inappropriate, the location may be studied further to determine whether or not it qualifies for speed humps. The application of speed humps is limited to streets where geometric configuration or design fails to passively deter many drivers from exceeding the speed limit or from using streets as bypass routes. The proper application of speed humps enhances public safety.

Qualifying Criteria

In order for a residential street to be studied for speed humps, a petition from ten residents from the affected street must first be submitted.

A street qualifies for the installation of speed humps when the results of an investigation demonstrate that the criteria presented on page two of this document are met for the respective types of programs. Once a street has qualified, it will be assigned points and ranked with other qualifying streets based on the criteria on page three of this document.

Streets which have already qualified for one of the speed hump programs under previously established criteria shall remain on the speed hump priority list. Their point totals, however, shall be adjusted, as necessary, in accordance with the priority ranking system as set forth in this document.

Qualifying Criteria

Residential

The segment must be 750 feet in length between traffic controls, four way intersections, and/or curves with less than a 250-foot radius.

Posted speed limit must be 30 mph or less.

Street frontage of subject street segment must be at least 75% residential.

Street cannot be part of the Regional Transit bus network.

Street cannot be identified as an emergency response route by the Fire Department.

A minimum of 25% of ballots mailed shall be returned and a two-thirds majority of residents that vote are in favor of the installation of speed humps. **

A speed survey shall indicate that 15% or more of the vehicles travel at five or more miles per hour over the speed limit.

Parks & Schools

The segment must be 500 feet in length between traffic controls, four-way intersections, and/or curves with less than a 250-foot radius.

Posted speed limit must be 30 mph or less.

Street frontage of street segment must contain a school * or park.

Street cannot be part of the Regional Transit bus network.

Street cannot be identified as an emergency response route by the Fire Department.

A minimum of 25% of ballots mailed shall be returned and a two-thirds majority of residents that vote are in favor of the installation of speed humps.**+

A speed survey shall indicate that 15% or more of the vehicles travel at five or more miles per hour over the speed limit.

Bypass

The segment must be 500 feet in length between traffic controls, four way intersections, and/or curves with less than a 250-foot radius.

Posted speed limit must be 30 mph or less.

Street frontage of subject street segment must be at least 75% residential.

Street cannot be part of the Regional Transit bus network.

Street cannot be identified as an emergency response route by the Fire Department.

A minimum of 25% of ballots mailed shall be returned and a two-thirds majority of residents that vote are in favor the installation of speed hump. **

A speed survey shall indicate that 15% or more of the vehicles travel at five or more miles per hour over the speed limit.

Minimum average daily traffic (ADT) of 500 vehicles per day.

The street(s) must serve to bypass *** major streets with a four-way stop, a signalized intersection, or another street with speed humps.

* Preschool, Day care school, elementary, middle, or high school.

** One vote per household is allowed; voter(s) must reside at the household (whether they are owners or tenants), as they are the primary users of the street being considered for speed humps.

\+ If the survey of residents on a parks and schools street does not demonstrate a two-thirds majority favoring the installation of speed humps, the City Council member representing the district in which the street is located may override the survey.

*** To be considered a "bypass" location, the ADT must be at least 50% higher than the volume that would be expected using the following trip generation rates: 10 trips/day/single family residential (SFR) unit, 6 trips/day/multi family residential (MFR) unit, 50 trips/day/acre of school, and 5 trips/day/acre of park. Land uses which do not front the bypass location itself, but which could reasonably be expected to use the bypass street (s) should be considered when determining the expected volume.

Priority Ranking System

The following point allocation method will be used in order to rank streets qualifying for the speed hump programs:

Residential	Parks & Schools	Bypass
One point for every 50 vehicles traveling the street in a 24-hour study period.	One point for every 50 vehicles traveling the street in a 24 hour study period.	One point for every 25 vehicles traveling the street in a 24-hour study period.
One point for each residential unit fronting the street.	One point for each residential unit fronting the street, plus two points for each 50 feet of school, park, playground, or apartment frontage.	One point for each residential unit fronting the street, plus two points for each 50 feet of school, park, playground, or apartment frontage.
Two points for every percentage point for traffic exceeding the speed limit.*	Two points for every percentage point of traffic exceeding the speed limit.*	One point for every 10 vehicles that are considered "bypass traffic."

* A radar or magnetic sensor speed survey shall be conducted to determine the percentage of traffic exceeding the speed limit. The speed survey shall be a minimum of 1 hour in length.

Construction Specifications (Single Hump)

Upon installation of the single hump, the asphalt concrete speed hump will have a width of 12 feet, a minimum height of three and one-quarter inches and a maximum height of three and three-quarters inches (3¼" to 3¾"), and a vertical curvature of 72 feet (refer to Figure 1). Speed hump will extend from lip of gutter to lip of gutter. There will be a two-foot (2') horizontal taper originating at the crest of the speed hump and converging at the lip of curb. Asphalt concrete shall be mixed and placed in accordance with Section 22 of the City of Sacramento Standard Specifications. Attached as Exhibit A is a drawing of the proposed speed hump cross section.

Location Selection Guidelines

In selecting precise locations for the speed hump installation, the following guidelines shall be adhered to:

- Speed humps shall not be located over manholes, water valves, or street monumentation, or within twenty-five feet of fire hydrants, as they prevent/impede access to these facilities.

- Speed humps should be located five to ten feet away from driveways, whenever possible, to minimize their effect on driveway access.

- Speed humps should be located on or near property lines, whenever possible, to minimize the impact on (access to) individual properties.

- Speed humps should be located near streetlights, whenever possible, in order to enhance their visibility at night.

- Speed humps should be located a minimum distance of 200 feet from corners, whenever possible, and should never be located within a corner radius.

- Where speed humps are constructed on streets having curves with greater than a 250-foot radius, no speed humps shall be located on the horizontal curve(s).

- Speed humps shall be spaced at a minimum interval of 250 feet and a maximum interval of 600 feet. Speed humps will be placed no closer than 200 feet from traffic control devices or four-way intersections.

- No less than two speed humps will be placed on a residential or parks and schools street, as two humps are the minimum for effective speed control. When speed humps are to be installed at a Bypass location, one hump may be placed if the street segment or one of the streets in a series of street segments is less than 600 feet in length. The maximum number of speed humps is dictated by street length and spacing requirements.

- To deter drivers from driving around speed humps where no vertical curb exists, a two-inch (2") pipe shall be set in the sidewalk, centered on the speed hump in each approach direction. The pipes shall be placed at a maximum of six inches (6") from the back of curb (refer to Figure 3).

Signs and markings

All signs and markings required with the speed humps shall be part of the contract bid package.

There are two types of advanced warning devices used to alert motorists of upcoming speed humps: street signs and pavement markings. The signing includes a 30 inch sign stating "SPEED HUMPS AHEAD" in four inch (4") series "C" letters, above which is a pictorial of a speed hump. A second sign recommending a speed of 15 mph is placed directly below the warning sign (refer to Figure 2).

Pavement markings shall include twelve inch (12") wide longitudinal ladder markings at four feet (4') on center, which are stenciled across each speed hump. In addition, raised reflectorized pavement markers shall be installed and placed on the centerline, positioned on the crest and in the front of the speed hump from approach directions. This provides warning during the night and early morning hours (refer to Figure 3). All warning devices should be easily visible on approaches to speed humps.

Relocation of Speed humps or Additional Speed humps

Changing the location or adding additional speed humps on a street may be considered when all of the criteria listed below are met.

1. For Residential and Parks and Schools Locations: Speed humps are ineffective in reducing speeds of vehicles based on a radar or magnetic sensor speed survey conducted for a minimum of 1 hour in length. If less than 30 cars are observed in one hour, the survey shall be 1-½ hours in length. The average speeds must each be less than two mph lower than those speeds demonstrated prior to the installation of speed humps in order to be considered ineffective.

   For Bypass Locations: Speed humps are ineffective in reducing the volume of vehicles, based on an average daily traffic (ADT) count. Traffic volumes must be reduced by less than 10% from the street's ADT count prior to the installation of speed humps in order to be considered ineffective.

2. Speed humps were placed in a location conflicting with the adopted guidelines, and another location exists which does not conflict with the adopted guidelines.

3. There is a petition with a two-thirds majority of the street's residents in favor of the speed humps relocation. One resident signature per household having driveway access onto the street in question is allowed; a resident may be either an owner or tenant.

A community meeting should be held, with the support of the district's City Council member, to discuss the advantages of speed humps. If the decision is made to relocate existing speed humps, a Council report and resolution must be drafted. When approved by the City Council, the relocation procedures may be initiated. Relocation of speed humps which have been installed for less than two years will only be considered if the City is compensated by those requesting speed hump relocation for the full cost of relocating the speed humps, including design, construction, inspection, and administration.

Removal of *Speed humps*

Removing speed humps from a street may be considered when all of the criteria listed below are met:

1. For Residential and Parks and Schools Locations: Speed humps are ineffective in reducing speeds of vehicles based on a radar or magnetic sensor speed survey conducted for a minimum of 1 hour in length. If less than 30 cars are observed in one hour, the survey shall be 1-½ hours in length. The 85th percentile and average speeds must each be less than 2 mph lower than those speeds demonstrated prior to the installation of speed humps in order to be considered ineffective.

   For Bypass Locations: Speed humps are ineffective in reducing the volume of vehicles, based on an average daily traffic (ADT) count. Traffic volumes must be reduced by less than 10% from the street's ADT count prior to the installation of speed humps in order to be considered ineffective.

2. Speed humps were placed in a location conflicting with the adopted guidelines, and no other location exists which does not conflict with the adopted guidelines.

3. There is a petition with a two-thirds majority of street's residents' signatures in favor of the speed hump removal. One resident signature per household having driveway access onto the street in question is allowed; a resident may be either an owner or tenant.

A community meeting should be held, with the support of the district's City Council Member, to discuss the advantages of speed humps. If the decision is made to remove existing speed humps, a Council report and resolution must be drafted. When approved by the City Council, the removal procedures may be initiated. Removal of speed humps which have been installed for less than two years will only be considered if the City is compensated by those requesting speed humps removal for the full cost of the original installation, including design, construction, inspection, and administration. This would not apply if a street became a Regional Transit bus route.

Other Funding

A street which qualifies for any one of the speed hump programs may be funded by an individual or a group of individuals. The individual or group of individuals must enter into a memorandum of understanding (MOU) with the City of Sacramento, wherein they agree to pay for all costs associated with the installation of speed humps on their street (construction, inspection, administration, etc.). Once a MOU is executed, the location to receive speed humps shall be included in the next City CIP speed hump project. Private payment for speed humps does not relieve a location from the requirement of a two-thirds majority of residents favoring the installation of speed humps, or from any other criterium set forth in these Guidelines.

Regional Transit

Regional Transit (RT) adopted a policy on bus routing with regard to speed humps in 1982. This policy authorizes RT staff to modify bus routes so they do not utilize streets with existing or future speed humps, and to coordinate future placement of such devices. The Department of Public Works' policy is to provide RT with the locations of future speed humps so that problems which this might create can be avoided. Speed humps will not be placed on streets where RT bus service exists.

Fire Department Emergency Response Routes

The City of Sacramento Fire Department has expressed concerns regarding speed humps, and desires that they not be placed on streets which they identify as emergency response routes. The Department of Public Works' policy is to provide the Fire Department with the locations of future speed humps so that they can identify emergency response routes. Speed humps will not be placed on streets which the Fire Department identifies as emergency response routes.

Public Notification

Public notifications, which are used for balloting and to inform resident of purposed speed humps and to have them vote, may be distributed by one of two methods:

1. Door hangers, with ballots attached, may be hand delivered by an area youth group or a temporary service.

2. The fliers/ballots may be mailed out to residents of affected streets.

Note: Fliers which require a response should be sent far enough in advance to reach the public two and one half (2 ½) weeks prior to the response deadlines.

APPROVED

SEP 2 6 2000

OFFICE OF THE CITY CLERK

RESOLUTION NO. 2000-567

ADOPTED BY THE SACRAMENTO CITY COUNCIL

ON DATE OF _____

A RESOLUTION AMENDING THE TRAFFIC UNDULATION PROGRAM

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO

1. That the name of the Traffic Undulation Program shall be changed to the Speed Hump Program.

2. That the minimum requirement for traffic speeds on a street requesting speed humps shall be that 15% or more of the vehicles travel at five or more miles per hour greater than the speed limit as determined by a speed survey conducted during peak hours on a weekday.

3. The current list of qualified streets shall be reevaluated using the new minimum criteria.

4. The minimum return rate for ballots in the voting process shall be 25% of all ballots mailed to occupied residences or businesses.

5. The testing of speed lumps on residential streets shall be expanded to include two streets per council district for further evaluation of the effectiveness of speed lumps.

_____
MAYOR

ATTEST:

_____
CITY CLERK

FOR CITY CLERK USE ONLY

RESOLUTION NO.: _____

DATE ADOPTED: _____